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SEQUENCE LISTING

<110> BASF Plant Science GmbH

<120> Plants with increased yield and/or increased tolerance to environmental stress (IY-BM)

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<141> 2008-12-19

<160> 3756

<170> Biomax PatentTool according to PatentIN 3.1 format

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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```

Ser Tyr Lys Lys Val Pro Leu Tyr Tyr Arg Asn Val Ser Ala Thr Gly
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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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35

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Page 34

20

25

30

Arg Ser Ser Ser Ala Thr Arg Ala Pro Pro Lys Leu Ala Leu Lys Ser  
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&lt;211&gt; 85

&lt;212&gt; PRT

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&lt;400&gt; 26

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tctaaaacct	taaataccag	aaaacagctt	tttcaaagtt	gttttcaaag	ttggcgata	8220

## PhoenixTemp32470.tmp.txt

```

acatagtatc gacggagccg attttgaaac cgcggtgatc acaggcagca acgctctgtc 8280
atcgttacaa tcaacatgct accctccgcg agatcatccg tgtttcaaac ccggcagctt 8340
agttgccgtt cttccgaata gcatcggtaa catgagcaaa gtctgccgcc ttacaacggc 8400
tctcccgtg acgccgtccc ggactgatgg gctgcctgta tcgagtgggtg attttgtgcc 8460
gagctgccgg tcgggggagct gttggctggc tgggtggcagg atatatgttg gtgtaaacia 8520
attgacgctt agacaactta ataacacatt gcggacgttt ttaatgtact gaattaacgc 8580
cgaattaa 8588

```

```

<210> 39
<211> 417
<212> DNA
<213> ARABIDOPSIS THALIANA

```

```

<220>
<221> CDS
<222> (1)..(417)

```

```

<400> 39
atg gct tcg agt ttc att aca gta cct aaa ccc ttc ttg tcc ttc ccc 48
Met Ala Ser Ser Phe Ile Thr Val Pro Lys Pro Phe Leu Ser Phe Pro
1 5 10 15
atc aaa acc aat gct cct act cta cct cag cag acc ctt ctc gga att 96
Ile Lys Thr Asn Ala Pro Thr Leu Pro Gln Gln Thr Leu Leu Gly Ile
20 25 30
cga aga aat tcc ttt aga att aac gcc gtt tcc acc aaa tgg gaa ccg 144
Arg Arg Asn Ser Phe Arg Ile Asn Ala Val Ser Thr Lys Trp Glu Pro
35 40 45
gca aag gtt gta cca caa gca gac agg gtc ctt gtc cgc ctt gaa gtg 192
Ala Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu Val
50 55 60
ctt cct gag aaa tcc tca gga gga gta ctg ttg cct aaa tca gct gtg 240
Leu Pro Glu Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ser Ala Val
65 70 75 80
aaa ttc gag agg tac cta aca ggc gag gtt gtc tct gtt ggg tct gag 288
Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser Glu
85 90 95
gtt ggg gaa gtg gaa cct ggc aag aag gtt ttg ttc tct gat atg agc 336
Val Gly Glu Val Glu Pro Gly Lys Lys Val Leu Phe Ser Asp Met Ser
100 105 110
gcc tat gag gtt gat ttt gga aca gaa gat gct aag cat tgc ttt tgc 384
Ala Tyr Glu Val Asp Phe Gly Thr Glu Asp Ala Lys His Cys Phe Cys
115 120 125
aaa gaa agc gac ttg tta gct atc gtc cag tga 417
Lys Glu Ser Asp Leu Leu Ala Ile Val Gln
130 135

```

```

<210> 40
<211> 138
<212> PRT
<213> ARABIDOPSIS THALIANA

```

```

<400> 40
Met Ala Ser Ser Phe Ile Thr Val Pro Lys Pro Phe Leu Ser Phe Pro
1 5 10 15
Ile Lys Thr Asn Ala Pro Thr Leu Pro Gln Gln Thr Leu Leu Gly Ile
20 25 30
Arg Arg Asn Ser Phe Arg Ile Asn Ala Val Ser Thr Lys Trp Glu Pro
35 40 45
Ala Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu Val
50 55 60
Leu Pro Glu Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ser Ala Val

```

PhoenixTemp32470.tmp.txt

65	Lys	Phe	Glu	Arg	Tyr	Leu	Thr	Gly	Glu	Val	Val	Ser	Val	Gly	Ser	Glu
				85						90					95	
	Val	Gly	Glu	Val	Glu	Pro	Gly	Lys	Lys	Val	Leu	Phe	Ser	Asp	Met	Ser
			100						105					110		
	Ala	Tyr	Glu	Val	Asp	Phe	Gly	Thr	Glu	Asp	Ala	Lys	His	Cys	Phe	Cys
			115					120					125			
	Lys	Glu	Ser	Asp	Leu	Leu	Ala	Ile	Val	Gln						
		130					135									

<210> 41  
<211> 757  
<212> DNA  
<213> Glycine max

<220>  
<221> CDS  
<222> (134)..(538)

<400> 41  
ccacgcgtcc ggcaccttg tcttttcttt ggccttttagc aacacttttag ataaacctaa 60

gagggtttaa cctcgtttcc ttaatccatt ctttgctccc tcgaactgct gtttggtctc 120

ttcactctta tcc atg gca tca acg ttt ctc acc cta cca act ccc ttc 169  
Met Ala Ser Thr Phe Leu Thr Leu Pro Thr Pro Phe

cta cac aaa act aat gcc atc act ttc tct gac aag aga ccc tca ttt 217  
Leu His Lys Thr Asn Ala Ile Thr Phe Ser Asp Lys Arg Pro Ser Phe  
15 20 25

ttg cag agg agc tct ctg aag atc aat gca att acc aaa aaa tgg gaa 265  
Leu Gln Arg Ser Ser Leu Lys Ile Asn Ala Ile Thr Lys Lys Trp Glu  
30 35 40

ccc act aag gtt gta cct cag gct gat aga gtt ctt gtt cgt ttg gag 313  
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu  
45 50 55 60

gag cta tca gat aaa acg gtt ggt gga gtt ttg ctg ccc aag tca gct 361  
Glu Leu Ser Asp Lys Thr Val Gly Gly Val Leu Leu Pro Lys Ser Ala  
65 70 75

gtt aaa ttt gag cga tat ctt gtg gga gaa atc cta act gtt ggt gct 409  
Val Lys Phe Glu Arg Tyr Leu Val Gly Glu Ile Leu Thr Val Gly Ala  
80 85 90

gag gct gga gaa cta aag gct gga aca aag gta cta ttc act gac atg 457  
Glu Ala Gly Glu Leu Lys Ala Gly Thr Lys Val Leu Phe Thr Asp Met  
95 100 105

aat gct tat gag gtg gat ttg ggg act gat gca aaa cac tgc ttc tgt 505  
Asn Ala Tyr Glu Val Asp Leu Gly Thr Asp Ala Lys His Cys Phe Cys  
110 115 120

aaa gca agt gac tta ttg gcc gtg gtt gag taggggtttgc cactgtatga 555  
 Lys Ala Ser Asp Leu Leu Ala Val Val Glu  
 125 130

gacaaaacgg gagcaatcct ttttatgata tatctttgac aaatgtatTTT ttagtagaat 615

aaaccatttt tattcattgg tgttaaaatt ttatctttct atgttacaat aacttgcttt 675

ccccaggtag tttctgattc aaaactctac ttataaagat gcctgttgtg ctctaaaaaa 735

aaaaaaaaaa aaaaaaaaaa aa 757

<210>	42
<211>	134
<212>	PRT

&lt;213&gt; Glycine max

&lt;400&gt; 42

```

Met Ala Ser Thr Phe Leu Thr Leu Pro Thr Pro Phe Leu His Lys Thr
1      5      10      15
Asn Ala Ile Thr Phe Ser Asp Lys Arg Pro Ser Phe Leu Gln Arg Ser
20      25      30
Ser Leu Lys Ile Asn Ala Ile Thr Lys Lys Trp Glu Pro Thr Lys Val
35      40      45
Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu Glu Leu Ser Asp
50      55      60
Lys Thr Val Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu
65      70      75      80
Arg Tyr Leu Val Gly Glu Ile Leu Thr Val Gly Ala Glu Ala Gly Glu
85      90      95
Leu Lys Ala Gly Thr Lys Val Leu Phe Thr Asp Met Asn Ala Tyr Glu
100      105      110
Val Asp Leu Gly Thr Asp Ala Lys His Cys Phe Cys Lys Ala Ser Asp
115      120      125
Leu Leu Ala Val Val Glu
130

```

&lt;210&gt; 43

&lt;211&gt; 594

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (95)..(499)

&lt;400&gt; 43

```

caacacttta ggtaaaccta agagggttta acctcgtttc cttaatccat tctttgctcc      60

ctcgaactgt tgtttggtct cttctctctt atcc atg gca tca acg ttt ctc acc      115
                               Met Ala Ser Thr Phe Leu Thr
                               1      5
cta cca act ccc ttc cta cac aaa acc aat gcc atc agt ttc tct aac      163
Leu Pro Thr Pro Phe Leu His Lys Thr Asn Ala Ile Ser Phe Ser Asn
10      15      20
aag aga ccc tca ttt ttg cag agg agc tct ctg aag att cat gca att      211
Lys Arg Pro Ser Phe Leu Gln Arg Ser Ser Leu Lys Ile His Ala Ile
25      30      35
acc aaa aaa tgg gaa ccc aca aag gtt gtg cct cag gct gat aga gtt      259
Thr Lys Lys Trp Glu Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val
40      45      50      55
ctt att cgt ttg gag gag ctt tca gat aaa aca gtt ggt gga gtt ttg      307
Leu Ile Arg Leu Glu Glu Leu Ser Asp Lys Thr Val Gly Gly Val Leu
60      65      70
ctg cct aaa tca gct gtt aaa ttt gag cgc tat ctt gtg gga gaa atc      355
Leu Pro Lys Ser Ala Val Lys Phe Glu Arg Tyr Leu Val Gly Glu Ile
75      80      85
cta act gtt ggt gct gaa gct gga gaa cta aag gct gga aca aag gta      403
Leu Thr Val Gly Ala Glu Ala Gly Glu Leu Lys Ala Gly Thr Lys Val
90      95      100
cta ttc act gac atg aat gct tat gag gtg gat ttg ggg act gat gca      451
Leu Phe Thr Asp Met Asn Ala Tyr Glu Val Asp Leu Gly Thr Asp Ala
105      110      115
aaa cac tgc ttc tgt aaa gca agt gac tta ttg gcc gtt gtg gag      496
Lys His Cys Phe Cys Lys Ala Ser Asp Leu Leu Ala Val Val Glu
120      125      130
taagggttttg gccactggac gagacaaaac gggagccatc ctttttatgg tatatctttg      556

ataagtgtat tttagtagaa taaaccattt ttttcatt      594

```

<210> 44  
 <211> 134  
 <212> PRT  
 <213> Glycine max

<400> 44  
 Met Ala Ser Thr Phe Leu Thr Leu Pro Thr Pro Phe Leu His Lys Thr  
 1 5 10 15  
 Asn Ala Ile Ser Phe Ser Asn Lys Arg Pro Ser Phe Leu Gln Arg Ser  
 20 25 30  
 Ser Leu Lys Ile His Ala Ile Thr Lys Lys Trp Glu Pro Thr Lys Val  
 35 40 45  
 Val Pro Gln Ala Asp Arg Val Leu Ile Arg Leu Glu Glu Leu Ser Asp  
 50 55 60  
 Lys Thr Val Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu  
 65 70 75 80  
 Arg Tyr Leu Val Gly Glu Ile Leu Thr Val Gly Ala Glu Ala Gly Glu  
 85 90 95  
 Leu Lys Ala Gly Thr Lys Val Leu Phe Thr Asp Met Asn Ala Tyr Glu  
 100 105 110  
 Val Asp Leu Gly Thr Asp Ala Lys His Cys Phe Cys Lys Ala Ser Asp  
 115 120 125  
 Leu Leu Ala Val Val Glu  
 130

<210> 45  
 <211> 750  
 <212> DNA  
 <213> Sorghum bicolor

<220>  
 <221> CDS  
 <222> (122)..(526)

<400> 45  
 gccggccggg ccgggggtgca aaagcagaag cagataaggg aaggcacacg acgcaactat 60  
  
 cctcccagcc cccaggaag aagcctacgt ttccacgctc cctccccttg tccccactcc 120  
  
 a atg gcg ccc tcc ctc ctc gcc gcc gtg tcc gcc tcg ccc ttc ctc cta 169  
 Met Ala Pro Ser Leu Leu Ala Ala Val Ser Ala Ser Pro Phe Leu Leu  
 1 5 10 15  
 gcc ggc agc ggc agc agc cgc agg ccc ctg ggc gcc gcc ccc atc cgc 217  
 Ala Gly Ser Gly Ser Ser Arg Arg Pro Leu Gly Ala Ala Pro Ile Arg  
 20 25 30  
 cgg gcc ggg ctg cgc gtg gct gcg ctt aag tac gac cct gcc aag gtg 265  
 Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys Val  
 35 40 45  
 gcg ccg cag aac gac cgg gtg ctt gtc cgt atc cag cag atc cct gag 313  
 Ala Pro Gln Asn Asp Arg Val Leu Val Arg Ile Gln Gln Ile Pro Glu  
 50 55 60  
 aaa tct gct ggt ggt gta ttg cta ccg aaa tct gct gtt aag ttt gag 361  
 Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu  
 65 70 75 80  
 aga tat ctg atg gcc gag att cta tcg gtc ggt gct gat gtt agt gaa 409  
 Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Ser Glu  
 85 90 95  
 gtt gag gct ggg aag aag gtt ctc ttc tca gac atc gat gct tat gag 457  
 Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asp Ala Tyr Glu  
 100 105 110  
 gtg gac ctt ggt acc gat gag aag cac tgc ttc tgc cgc gag tca gat 505  
 Val Asp Leu Gly Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser Asp  
 115 120 125  
 cta ttg gct tta gtt gaa tgaaatttca taccatgaaa attacggact 553  
 Leu Leu Ala Leu Val Glu  
 130  
 tacctatgct ccaactgcat ggacttatgt cactcctact ttgttgatg ccatttgata 613

tttgaatggt cgtgaattca gcttagcttc tagatgagtg ttagtcagca ttgaattttg 673

gccgccataa actggaatta tgttgatgcc caaattgctc agataccgaa ctggaaagta 733

aaaaaaaaaa aaaaaaa 750

<210> 46  
 <211> 134  
 <212> PRT  
 <213> Sorghum bicolor

<400> 46  
 Met Ala Pro Ser Leu Leu Ala Ala Val Ser Ala Ser Pro Phe Leu Leu  
 1 5 10 15  
 Ala Gly Ser Gly Ser Ser Arg Arg Pro Leu Gly Ala Ala Pro Ile Arg  
 20 25 30  
 Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys Val  
 35 40 45  
 Ala Pro Gln Asn Asp Arg Val Leu Val Arg Ile Gln Gln Ile Pro Glu  
 50 55 60  
 Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu  
 65 70 75 80  
 Arg Tyr Leu Met Gly Ile Leu Ser Val Gly Ala Asp Val Ser Glu  
 85 90 95  
 Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asp Ala Tyr Glu  
 100 105 110  
 Val Asp Leu Gly Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser Asp  
 115 120 125  
 Leu Leu Ala Leu Val Glu  
 130

<210> 47  
 <211> 723  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (144)..(548)

<400> 47  
 ccggccgggc cgggccacc cgtccgggga cggcacgcga cgcaactatc ctcgagagag 60

agagagagag agaggaagcc cgtcgttctg gaagtttcca cgctccgcgc ctccgcccc 120

tggtctgagt ggtctccgct cca atg gcg ccc tca ctc ctc gcc gcc atg tcc 173  
 Met Ala Pro Ser Leu Leu Ala Ala Met Ser  
 1 5 10

acc tcg ccc ttc cta gcc agc agc ggc agc agc cgc agg ccg cta ggc 221  
 Thr Ser Pro Phe Leu Ala Ser Ser Gly Ser Ser Arg Arg Pro Leu Gly  
 15 20 25

gct gcc cac acc cga cgg gct gga ctg cgc gtg gcc gcg ctt aag tac 269  
 Ala Ala His Thr Arg Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr  
 30 35 40

gac cct gcc aag gtg gcg ccg cag aac gac cgg gtt ctc gtc cgt ctt 317  
 Asp Pro Ala Lys Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu  
 45 50 55

gag cag atc cct gag aaa tct gct ggc ggt gtg ttg cta cca aaa tct 365  
 Glu Gln Ile Pro Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser  
 60 65 70

gct gtt aag ttt gag aga tat ctg atg ggt gag att cta tcg atc ggt 413

## PhoenixTemp32470.tmp.txt

Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Ile Gly  
75 80 85 90  
gct gaa gtc agt gaa gtt gag gct ggg aag aag gtt ctc ttc tca gac 461  
Ala Glu Val Ser Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp  
95 100 105  
atc aat gct tat gag gtg gag ctt ggt acc gat gat gag aag cac tgc 509  
Ile Asn Ala Tyr Glu Val Glu Leu Gly Thr Asp Asp Glu Lys His Cys  
110 115 120  
ttc tgc cgt gag tca gac ttg tta gct gta gtt gaa tgaattttac 555  
Phe Cys Arg Glu Ser Asp Leu Leu Ala Val Val Glu  
125 130  
catgaaaatt tcggacttac ctgggaatta tcttgccccc actttggtgt atgccatttg 615  
  
aacgttcgtg aattcagctt ctagaggctc ttgctcacgt tggaacacga aactgtgaac 675  
  
cgaatttgaa atgcttacat tgctcgtctg acgtttgtgc ttctgaac 723

<210> 48  
<211> 134  
<212> PRT  
<213> Zea mays

<400> 48  
Met Ala Pro Ser Leu Leu Ala Ala Met Ser Thr Ser Pro Phe Leu Ala  
1 5 10 15  
Ser Ser Gly Ser Arg Arg Pro Leu Gly Ala Ala His Thr Arg Arg  
20 25 30  
Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys Val Ala  
35 40 45  
Pro Gln Asn Asp Arg Val Leu Val Arg Leu Glu Gln Ile Pro Glu Lys  
50 55 60  
Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu Arg  
65 70 75 80  
Tyr Leu Met Gly Glu Ile Leu Ser Ile Gly Ala Glu Val Ser Glu Val  
85 90 95  
Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu Val  
100 105 110  
Glu Leu Gly Thr Asp Asp Glu Lys His Cys Phe Cys Arg Glu Ser Asp  
115 120 125  
Leu Leu Ala Val Val Glu  
130

<210> 49  
<211> 405  
<212> DNA  
<213> Zea mays

<220>  
<221> CDS  
<222> (1)..(405)

<400> 49  
atg gcg ccc tca ctc ctc gcc gcc atg tcc acc tcg ccc ttc cta gcc 48  
Met Ala Pro Ser Leu Leu Ala Ala Met Ser Thr Ser Pro Phe Leu Ala  
1 5 10 15  
agc agc ggc agc agc cgc agg ccg cta ggc gct gcc cac acc cga cgg 96  
Ser Ser Gly Ser Ser Arg Arg Pro Leu Gly Ala Ala His Thr Arg Arg  
20 25 30  
gct gga ctg cgc gtg gcc gcg ctt aag tac gac cct gcc aag gtg gcg 144  
Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys Val Ala  
35 40 45  
ccg cag aac gac cgg gtt ctc gtc cgt ctt gag cag atc cct gag aaa 192  
Pro Gln Asn Asp Arg Val Leu Val Arg Leu Glu Gln Ile Pro Glu Lys  
50 55 60  
tct gct ggc ggt gtg ttg cta cca aaa tct gct gtt aag ttt gag aga 240



## PhoenixTemp32470.tmp.txt

Ser	Ala	Gly	Gly	Val	Leu	Leu	Pro	Lys	Ser	Ala	Val	Lys	Phe	Glu	Arg		
65					70				75						80		
tat	ctg	atg	ggt	gag	att	cta	tcg	atc	ggt	gct	gaa	gtc	agt	gaa	gtt	288	
Tyr	Leu	Met	Gly	Glu	Ile	Leu	Ser	Ile	Gly	Ala	Glu	Val	Ser	Glu	Val		
				85					90					95			
aag	gct	ggg	aag	aag	gtt	ttt	ttc	tca	gac	atc	aat	gct	tat	gag	gtg	336	
Lys	Ala	Gly	Lys	Lys	Val	Phe	Phe	Ser	Asp	Ile	Asn	Ala	Tyr	Glu	Val		
			100					105					110				
gag	ctt	ggt	acc	gat	gat	gag	aag	cac	tgc	ttt	tgc	cgt	gag	tca	gac	384	
Glu	Leu	Gly	Thr	Asp	Asp	Glu	Lys	His	Cys	Phe	Cys	Arg	Glu	Ser	Asp		
		115					120					125					
ttg	tta	gct	gta	gtt	gaa	tga										405	
Leu	Leu	Ala	Val	Val	Glu												
	130																

&lt;210&gt; 50

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 50

Met	Ala	Pro	Ser	Leu	Leu	Ala	Ala	Met	Ser	Thr	Ser	Pro	Phe	Leu	Ala		
1				5					10					15			
Ser	Ser	Gly	Ser	Ser	Arg	Arg	Pro	Leu	Gly	Ala	Ala	His	Thr	Arg	Arg		
			20					25					30				
Ala	Gly	Leu	Arg	Val	Ala	Ala	Leu	Lys	Tyr	Asp	Pro	Ala	Lys	Val	Ala		
		35					40					45					
Pro	Gln	Asn	Asp	Arg	Val	Leu	Val	Arg	Leu	Glu	Gln	Ile	Pro	Glu	Lys		
	50					55				60							
Ser	Ala	Gly	Gly	Val	Leu	Leu	Pro	Lys	Ser	Ala	Val	Lys	Phe	Glu	Arg		
65					70				75						80		
Tyr	Leu	Met	Gly	Glu	Ile	Leu	Ser	Ile	Gly	Ala	Glu	Val	Ser	Glu	Val		
				85					90					95			
Lys	Ala	Gly	Lys	Lys	Val	Phe	Phe	Ser	Asp	Ile	Asn	Ala	Tyr	Glu	Val		
			100					105					110				
Glu	Leu	Gly	Thr	Asp	Asp	Glu	Lys	His	Cys	Phe	Cys	Arg	Glu	Ser	Asp		
		115					120					125					
Leu	Leu	Ala	Val	Val	Glu												
	130																

&lt;210&gt; 51

&lt;211&gt; 690

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (98)..(493)

&lt;400&gt; 51

gccggccggg	tcgggacggc	acgcgacgca	actatcctaa	gcccgtcgtt	ctggaagttt	60											
ccacgctccg	cgctccgcc	ccctggtctc	cgctcca	atg	gcg	ccc	tca	ctc	ctc							115	
				Met	Ala	Pro	Ser	Leu	Leu								
				1				5									
gcc	gcc	atg	tcc	acc	tcg	ccc	ttc	cta	gcc	agc	agc	cg	agg	ccg	cta		
Ala	Ala	Met	Ser	Thr	Ser	Pro	Phe	Leu	Ala	Ser	Ser	Arg	Arg	Pro	Leu		
			10					15					20				
ggt	gct	gcc	cac	acc	cga	cgg	gct	gga	ctg	cg	gtg	gcc	gcg	ctt	aag		
Gly	Ala	Ala	His	Thr	Arg	Arg	Ala	Gly	Leu	Arg	Val	Ala	Ala	Leu	Lys		
		25					30					35					
tac	gac	cct	gcc	aag	gtg	acg	ccg	cag	aac	gac	cg	gtt	ctc	gtc	cgt		
Tyr	Asp	Pro	Ala	Lys	Val	Thr	Pro	Gln	Asn	Asp	Arg	Val	Leu	Val	Arg		
	40					45				50							
ctt	gag	cag	atc	cct	gag	aaa	tct	gct	ggc	ggt	gtg	ttg	cta	cca	aaa		
Leu	Glu	Gln	Ile	Pro	Glu	Lys	Ser	Ala	Gly	Gly	Val	Leu	Leu	Pro	Lys		
	55				60					65					70		
tct	gct	gtt	aag	ttt	gag	aga	tat	ctg	atg	ggt	gag	att	cta	tcg	atc		

## PhoenixTemp32470.tmp.txt

Ser Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Ile  
 75 80 85  
 ggt gct gaa gtc agt gaa gtt gag gct ggg aag aag gtt ctc ttc tca 403  
 Gly Ala Glu Val Ser Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser  
 90 95 100  
 gac atc aat gct tat gag gtg gag ctt ggt acc gat gat gag aag cac 451  
 Asp Ile Asn Ala Tyr Glu Val Glu Leu Gly Thr Asp Asp Glu Lys His  
 105 110 115  
 tgc ttc tgc cgt gag tca gac ttg tta gct gta gtt gaa tgaattttac 500  
 Cys Phe Cys Arg Glu Ser Asp Leu Leu Ala Val Val Glu  
 120 125 130  
 catgaaaatt tcggacttac ctgggaatgc tccaacggca tgaacttatc ttgccccac 560  
 tttggtgtat gccatttgaa cgttcgtgaa ttcagcttct agaggctctt gctcacgttg 620  
 gaacacgaaa ctgtgaaccg aatttgaaat gcttacattg ctcattctgaa aaaaaaaaaa 680  
 aggcccccta 690

<210> 52  
 <211> 131  
 <212> PRT  
 <213> Zea mays

<400> 52  
 Met Ala Pro Ser Leu Leu Ala Ala Met Ser Thr Ser Pro Phe Leu Ala  
 1 5 10 15  
 Ser Ser Arg Arg Pro Leu Gly Ala Ala His Thr Arg Arg Ala Gly Leu  
 20 25 30  
 Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys Val Thr Pro Gln Asn  
 35 40 45  
 Asp Arg Val Leu Val Arg Leu Glu Gln Ile Pro Glu Lys Ser Ala Gly  
 50 55 60  
 Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu Arg Tyr Leu Met  
 65 70 75 80  
 Gly Glu Ile Leu Ser Ile Gly Ala Glu Val Ser Glu Val Glu Ala Gly  
 85 90 95  
 Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu Val Glu Leu Gly  
 100 105 110  
 Thr Asp Asp Glu Lys His Cys Phe Cys Arg Glu Ser Asp Leu Leu Ala  
 115 120 125  
 Val Val Glu  
 130

<210> 53  
 <211> 741  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> CDS  
 <222> (120)..(539)

<400> 53  
 tgcgaaagga aagcagataa gacgagcctc ccccatctcc ccgctgagcg aagcaaccga 60  
 gcaaaaccct cctctttccc tagaaccttc cgggcgcatt caccagcatc cacctccca 119  
 atg gcc ccc tcc ctc ctc gcc gcc gcc gcc tcg ccc ttc ctc atc cac 167  
 Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Ile His  
 1 5 10 15  
 ggc gcc acc gga agc acc agc cgc agg ccg gtc gcc gcc gtc gcc ccc 215

PhoenixTemp32470.tmp.txt

Gly	Ala	Thr	Gly <sub>20</sub>	Ser	Thr	Ser	Arg	Arg <sub>25</sub>	Pro	Val	Ala	Ala	Val <sub>30</sub>	Ala	Pro		
ggc	cg	cg	gcc	gca	tcc	tcc	gtg	cg	atg	cg	gcc	gcc	atc	aag	tgc		263
Gly	Arg	Arg <sub>35</sub>	Ala	Ala	Ser	Ser	Val <sub>40</sub>	Arg	Met	Arg	Ala	Ala <sub>45</sub>	Ile	Lys	Cys		
gac	cct	tcc	aag	gtg	gaa	ccg	cag	tcc	gac	cg	gtg	ctc	gtc	cg	ctt		311
Asp	Pro <sub>50</sub>	Ser	Lys	Val	Glu	Pro <sub>55</sub>	Gln	Ser	Asp	Arg	Val <sub>60</sub>	Leu	Val	Arg	Leu		
gag	act	atc	cca	gag	aaa	tct	gct	ggg	gga	gtc	ctg	cta	ccg	aaa	tct		359
Glu	Thr	Ile	Pro	Glu	Lys <sub>70</sub>	Ser	Ala	Gly	Gly	Val <sub>75</sub>	Leu	Leu	Pro	Lys	Ser <sub>80</sub>		
gct	gtt	aaa	ttc	gag	aga	tat	ttg	atg	ggc	gag	att	tta	tcg	gtc	ggt		407
Ala	Val	Lys	Phe <sub>85</sub>	Glu	Arg	Tyr	Leu	Met	Gly <sub>90</sub>	Glu	Ile	Leu	Ser	Val <sub>95</sub>	Gly		
gtt	gat	gtt	agt	gaa	gtt	gaa	gct	gga	aag	aag	gtt	ctc	ttc	tcg	gac		455
Val	Asp	Val <sub>100</sub>	Ser	Glu	Val	Glu	Ala	Gly <sub>105</sub>	Lys	Lys	Val	Leu	Phe <sub>110</sub>	Ser	Asp		
ata	aac	gct	tat	gag	gtg	gac	ctg	gga	aca	gaa	gag	aag	cac	tgc	ttc		503
Ile	Asn <sub>115</sub>	Ala	Tyr	Glu	Val	Asp <sub>120</sub>	Leu	Gly	Thr	Glu	Glu	Lys <sub>125</sub>	His	Cys	Phe		
tgc	cga	gag	tcg	gat	ctc	ttg	gct	gtc	gtc	gca	tgagcgtact	cttaaattct					556
Cys	Arg <sub>130</sub>	Glu	Ser	Asp	Leu <sub>135</sub>	Leu	Ala	Val	Val	Ala							
agtgtggtgc	acacatgctc	caaatgcctt	atctcagttg	cgcaagcttt	tgctagcatg												616
aactctttct	tttgatgatc	atggggttgag	taattgatga	gttttagaca	caggtgcttc												676
ttttgttgcc	aaaagacggg	gcacggtgat	ttaattttac	tcatacccac	gtgcattttc												736
cctcg																	741

<210> 54  
 <211> 139  
 <212> PRT  
 <213> Triticum aestivum

<400> 54  
 Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Ile His  
 1 5 10 15  
 Gly Ala Thr Gly Ser Thr Ser Arg Arg Pro Val Ala Ala Val Ala Pro  
 20 25 30  
 Gly Arg Arg Ala Ala Ser Ser Val Arg Met Arg Ala Ala Ile Lys Cys  
 35 40 45  
 Asp Pro Ser Lys Val Glu Pro Gln Ser Asp Arg Val Leu Val Arg Leu  
 50 55 60  
 Glu Thr Ile Pro Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser  
 65 70 75 80  
 Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly  
 85 90 95  
 Val Asp Val Ser Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp  
 100 105 110  
 Ile Asn Ala Tyr Glu Val Asp Leu Gly Thr Glu Glu Lys His Cys Phe  
 115 120 125  
 Cys Arg Glu Ser Asp Leu Leu Ala Val Val Ala  
 130 135

<210> 55  
 <211> 661  
 <212> DNA  
 <213> Gossypium hirsutum

<220>  
 <221> CDS  
 <222> (116)..(523)

<400> 55  
 cccacgcgtc cgccactcg tccgcccacg cgtccgcccc cgcgtccgcc cagcgtgta 60

gccaaacgct cccttacttt gattctatcg tcgattcaaa gcagctttct tatcc atg 118  
 Met  
 1

gcg tct aca ttt ttg gca cta ccc aaa acc ttc act tca aac aag cct 166  
 Ala Ser Thr Phe Leu Ala Leu Pro Lys Thr Phe Thr Ser Asn Lys Pro  
 5 10 15

acc ttc cct tct ctt tca acc cac aaa ctt ctc ggg act cga aga aat 214  
 Thr Phe Pro Ser Leu Ser Thr His Lys Leu Leu Gly Thr Arg Arg Asn  
 20 25 30

tca ctt aga atc aat gct gtg gcc act aaa tgg gaa ccc acc aag gtt 262  
 Ser Leu Arg Ile Asn Ala Val Ala Thr Lys Trp Glu Pro Thr Lys Val  
 35 40 45

gtt cct caa gct gac aga gtt ctt atc cgt ctc caa gaa tta cct gag 310  
 Val Pro Gln Ala Asp Arg Val Leu Ile Arg Leu Gln Glu Leu Pro Glu  
 50 55 60 65

aaa tca gct ggt gga gtt ttg ttg ccc aaa tca gct gtc aag ttt gag 358  
 Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu  
 70 75 80

agg tac ctg atg ggg gag ata gtt tcg gtc ggt gcc gaa gta gga aac 406  
 Arg Tyr Leu Met Gly Glu Ile Val Ser Val Gly Ala Glu Val Gly Asn  
 85 90 95

gtg gaa act gga aag aag gtt ctt ttc tcg gat ata aat gct tat gag 454  
 Val Glu Thr Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu  
 100 105 110

gtg gat ttg gga aca gat act agg cat gtg ttt tgt aaa gag agt gac 502  
 Val Asp Leu Gly Thr Asp Thr Arg His Val Phe Cys Lys Glu Ser Asp  
 115 120 125

ttg tta gct gaa gtt gat tgaagttttt tctggtcttt tgttttaaga 550  
 Leu Leu Ala Glu Val Asp  
 130 135

tgaagagtca attgtatttc agaatttagc ggtttttatt tgcaattata atgttcttca 610

gctgctgcta catttatggt agtaacttat tggagatgat atttaattgt t 661

<210> 56  
 <211> 135  
 <212> PRT  
 <213> Gossypium hirsutum

<400> 56  
 Met Ala Ser Thr Phe Leu Ala Leu Pro Lys Thr Phe Thr Ser Asn Lys  
 1 5 10 15  
 Pro Thr Phe Pro Ser Leu Ser Thr His Lys Leu Leu Gly Thr Arg Arg  
 20 25 30  
 Asn Ser Leu Arg Ile Asn Ala Val Ala Thr Lys Trp Glu Pro Thr Lys  
 35 40 45  
 Val Val Pro Gln Ala Asp Arg Val Leu Ile Arg Leu Gln Glu Leu Pro  
 50 55 60  
 Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe  
 65 70 75 80  
 Glu Arg Tyr Leu Met Gly Glu Ile Val Ser Val Gly Ala Glu Val Gly  
 85 90 95  
 Asn Val Glu Thr Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr  
 100 105 110  
 Glu Val Asp Leu Gly Thr Asp Thr Arg His Val Phe Cys Lys Glu Ser  
 115 120 125  
 Asp Leu Leu Ala Glu Val Asp  
 130 135

<210> 57  
 <211> 420

<212> DNA  
 <213> Viridiplantae

<220>  
 <221> CDS  
 <222> (1)..(420)

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<400> 57
atg gct tcc act ttc gtc tgc tct cta cca aat cct ttc ttt gct ttt      48
Met Ala Ser Thr Phe Val Cys Ser Leu Pro Asn Pro Phe Phe Ala Phe
  1          5          10          15
ccg gtc aaa gca act act cct tcg acg gct aac tat acg ctt ctc gga      96
Pro Val Lys Ala Thr Thr Pro Ser Thr Ala Asn Tyr Thr Leu Leu Gly
          20          25          30
agt cga aga ggt tgt ctt aga atc aaa gcg att tcc act aaa tgg gaa     144
Ser Arg Arg Gly Cys Leu Arg Ile Lys Ala Ile Ser Thr Lys Trp Glu
          35          40          45
ccg aca aag gtt gtt cct cag gca gac aga gtt ctt gtt cgt ctt gaa     192
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu
          50          55          60
gat ctt cct att aaa tcc tca ggt gga gta ttg ttg cct aaa gca gct     240
Asp Leu Pro Ile Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ala Ala
          65          70          75          80
gtg aag ttt gag aga tac cta aca gga gag att ata tct gtt ggt tct     288
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Ile Ile Ser Val Gly Ser
          85          90          95
gag gtt gga caa caa gtt gga cct gga aag agg gtt ttg ttc tct gat     336
Glu Val Gly Gln Gln Val Gly Pro Gly Lys Arg Val Leu Phe Ser Asp
          100          105          110
gtg agc gct tat gag gtc gat ttg gga acc gat gct agg cat tgc ttc     384
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Asp Ala Arg His Cys Phe
          115          120          125
tgt aaa gag agt gac ttg ttg gcc ctc gtt gag tga                       420
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu
          130          135

```

<210> 58  
 <211> 139  
 <212> PRT  
 <213> Viridiplantae

```

<400> 58
Met Ala Ser Thr Phe Val Cys Ser Leu Pro Asn Pro Phe Phe Ala Phe
  1          5          10          15
Pro Val Lys Ala Thr Thr Pro Ser Thr Ala Asn Tyr Thr Leu Leu Gly
          20          25          30
Ser Arg Arg Gly Cys Leu Arg Ile Lys Ala Ile Ser Thr Lys Trp Glu
          35          40          45
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu
          50          55          60
Asp Leu Pro Ile Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ala Ala
          65          70          75          80
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Ile Ile Ser Val Gly Ser
          85          90          95
Glu Val Gly Gln Gln Val Gly Pro Gly Lys Arg Val Leu Phe Ser Asp
          100          105          110
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Asp Ala Arg His Cys Phe
          115          120          125
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu
          130          135

```

<210> 59  
 <211> 411  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(411)

## PhoenixTemp32470.tmp.txt

```

<400> 59
atg gcc ccc tcc ctc ctc gcc gcc gcc gcc tcg ccc ttc ctc ctc cac      48
Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Leu His
  1          5          10          15
ggc gcc gcc gcc gcc agt ggc agc cgc agg ccg ctc gtc gcc gcc gcc      96
Gly Ala Ala Ala Ala Ser Gly Ser Arg Arg Pro Leu Val Ala Ala Ala
          20          25          30
gcc acc ggc cgc cgc gcc gcc tcc tcc ctc cgc gtc gcc gcc ctc aag      144
Ala Thr Gly Arg Arg Ala Ala Ser Ser Leu Arg Val Ala Ala Leu Lys
          35          40          45
tac gac cct tcc aag gtg gcg ccg cag tcc gac cgg gtg ctc gtc cgc      192
Tyr Asp Pro Ser Lys Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg
          50          55          60
ctc gaa cag att cct gag aaa tct gtt gga gga gtc ctg ctg cca aaa      240
Leu Glu Gln Ile Pro Glu Lys Ser Val Gly Gly Val Leu Leu Pro Lys
          65          70          75          80
tct gct gtt aag ttt gag agg tat ttg atg ggt gag att ttg tct gtt      288
Ser Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val
          85          90          95
ggt gct gat gtt aat gaa gtt gaa gct gga aag aag gtt ctc ttc tct      336
Gly Ala Asp Val Asn Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser
          100          105          110
gac ata aat gct tat gag gtg gac ctg ggt acc gat gag aag cac tgc      384
Asp Ile Asn Ala Tyr Glu Val Asp Leu Gly Thr Asp Glu Lys His Cys
          115          120          125
ttc tgc cct tgg agt aaa ata ttt tga      411
Phe Cys Pro Trp Ser Lys Ile Phe
          130          135

```

```

<210> 60
<211> 136
<212> PRT
<213> Oryza sativa Japonica Group

```

```

<400> 60
Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Leu His
  1          5          10          15
Gly Ala Ala Ala Ala Ser Gly Ser Arg Arg Pro Leu Val Ala Ala Ala
          20          25          30
Ala Thr Gly Arg Arg Ala Ala Ser Leu Arg Val Ala Ala Leu Lys
          35          40          45
Tyr Asp Pro Ser Lys Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg
          50          55          60
Leu Glu Gln Ile Pro Glu Lys Ser Val Gly Gly Val Leu Leu Pro Lys
          65          70          75          80
Ser Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val
          85          90          95
Gly Ala Asp Val Asn Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser
          100          105          110
Asp Ile Asn Ala Tyr Glu Val Asp Leu Gly Thr Asp Glu Lys His Cys
          115          120          125
Phe Cys Pro Trp Ser Lys Ile Phe
          130          135

```

```

<210> 61
<211> 363
<212> DNA
<213> Deinococcus radiodurans R1

```

```

<220>
<221> CDS
<222> (1)..(363)
<223> transl_table=11

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<400> 61
ttg aag gcg ctg ggc ggg aaa aag ctc gcc gcc acg act ctc cgc cat      48
Met Lys Ala Leu Gly Gly Lys Lys Leu Ala Gly Thr Thr Leu Arg His
  1          5          10          15

```

## PhoenixTemp32470.tmp.txt

tcc	atc	tca	ctc	aca	gga	gga	ccc	cac	atg	ctg	aaa	cct	tta	ggc	gac	96
Ser	Ile	Ser	Leu	Thr	Gly	Gly	Pro	His	Met	Leu	Lys	Pro	Leu	Gly	Asp	
			20					25					30			
cgc	gtt	ctg	gtt	gaa	att	atc	gaa	gaa	gcc	gag	cag	aag	act	gcc	ggc	144
Arg	Val	Leu	Val	Glu	Ile	Ile	Glu	Glu	Ala	Glu	Gln	Lys	Thr	Ala	Gly	
		35					40					45				
ggc	ctg	tac	gtc	ccc	gat	tcc	gcc	aag	gaa	aag	agc	cag	cgc	ggc	aaa	192
Gly	Leu	Tyr	Val	Pro	Asp	Ser	Ala	Lys	Glu	Lys	Ser	Gln	Arg	Gly	Lys	
	50					55					60					
gtc	gtt	gcc	gtc	ggc	acg	ggg	aag	acc	ctg	gac	aac	ggc	acc	aaa	gtc	240
Val	Val	Ala	Val	Gly	Thr	Gly	Lys	Thr	Leu	Asp	Asn	Gly	Thr	Lys	Val	
	65				70					75					80	
gcc	atg	gaa	gtc	aag	gaa	ggc	gac	acc	gtg	tac	ttc	gcc	aag	tac	ggc	288
Ala	Met	Glu	Val	Lys	Glu	Gly	Asp	Thr	Val	Tyr	Phe	Ala	Lys	Tyr	Gly	
				85					90					95		
ggc	acc	gaa	gtc	agc	ctc	gaa	ggc	aag	aac	tac	agc	ctg	ctg	agc	gag	336
Gly	Thr	Glu	Val	Ser	Leu	Glu	Gly	Lys	Asn	Tyr	Ser	Leu	Leu	Ser	Glu	
			100					105					110			
cgc	gac	ctg	ctc	gcc	att	gtc	gag	taa								363
Arg	Asp	Leu	Leu	Ala	Ile	Val	Glu									
		115					120									

&lt;210&gt; 62

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Deinococcus radiodurans R1

&lt;400&gt; 62

Met	Lys	Ala	Leu	Gly	Gly	Lys	Lys	Leu	Ala	Gly	Thr	Thr	Leu	Arg	His	
1				5					10					15		
Ser	Ile	Ser	Leu	Thr	Gly	Gly	Pro	His	Met	Leu	Lys	Pro	Leu	Gly	Asp	
			20					25					30			
Arg	Val	Leu	Val	Glu	Ile	Ile	Glu	Glu	Ala	Glu	Gln	Lys	Thr	Ala	Gly	
		35					40					45				
Gly	Leu	Tyr	Val	Pro	Asp	Ser	Ala	Lys	Glu	Lys	Ser	Gln	Arg	Gly	Lys	
	50					55					60					
Val	Val	Ala	Val	Gly	Thr	Gly	Lys	Thr	Leu	Asp	Asn	Gly	Thr	Lys	Val	
	65				70					75					80	
Ala	Met	Glu	Val	Lys	Glu	Gly	Asp	Thr	Val	Tyr	Phe	Ala	Lys	Tyr	Gly	
				85					90					95		
Gly	Thr	Glu	Val	Ser	Leu	Glu	Gly	Lys	Asn	Tyr	Ser	Leu	Leu	Ser	Glu	
			100					105					110			
Arg	Asp	Leu	Leu	Ala	Ile	Val	Glu									
		115					120									

&lt;210&gt; 63

&lt;211&gt; 420

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(420)

&lt;400&gt; 63

atg	gct	tcc	act	ttc	gtc	tgc	tct	cta	cca	aat	cct	ttc	ttt	gct	ttt	48
Met	Ala	Ser	Thr	Phe	Val	Cys	Ser	Leu	Pro	Asn	Pro	Phe	Phe	Ala	Phe	
	1			5					10					15		
ccg	gtc	aaa	gca	act	act	cct	tcg	acg	gct	aac	cat	acg	ctt	ctc	gga	96
Pro	Val	Lys	Ala	Thr	Thr	Pro	Ser	Thr	Ala	Asn	His	Thr	Leu	Leu	Gly	
			20					25					30			
agt	cga	aga	ggg	tgt	ctt	aga	atc	aaa	gcg	att	tcc	act	aaa	tgg	gaa	144
Ser	Arg	Arg	Gly	Cys	Leu	Arg	Ile	Lys	Ala	Ile	Ser	Thr	Lys	Trp	Glu	
		35				40					45					
ccg	aca	aag	gtt	gtt	cct	cag	gca	gac	aga	gtt	ctt	gtt	cgt	ctt	gaa	192
Pro	Thr	Lys	Val	Val	Pro	Gln	Ala	Asp	Arg	Val	Leu	Val	Arg	Leu	Glu	
		50				55					60					
gat	ctt	cct	att	aaa	tcc	tca	ggg	gga	gta	ttg	ctt	aaa	gca	gct		240
Asp	Leu	Pro	Ile	Lys	Ser	Ser	Gly	Gly	Val	Leu	Leu	Pro	Lys	Ala	Ala	

## PhoenixTemp32470.tmp.txt

65	gtg	aag	ttt	gag	aga	tac	cta	aca	gga	gag	att	ata	tct	ggt	ggt	tct	80	
	Val	Lys	Phe	Glu	Arg	Tyr	Leu	Thr	Gly	Glu	Ile	Ile	Ser	Val	Gly	Ser	288	
					85					90				95				
	gag	ggt	gga	caa	caa	ggt	gga	cct	gga	aag	agg	ggt	ttg	ttc	tct	gat	336	
	Glu	Val	Gly	Gln	Gln	Val	Gly	Pro	Gly	Lys	Arg	Val	Leu	Phe	Ser	Asp		
				100					105					110				
	gtg	agc	gct	tat	gag	gtc	gat	ttg	gga	acc	gat	gct	agg	cat	tgc	ttc	384	
	Val	Ser	Ala	Tyr	Glu	Val	Asp	Leu	Gly	Thr	Asp	Ala	Arg	His	Cys	Phe		
			115					120					125					
	tgt	aaa	gag	agt	gac	ttg	ttg	gcc	ctc	ggt	gag	tga					420	
	Cys	Lys	Glu	Ser	Asp	Leu	Leu	Ala	Leu	Val	Glu							
		130					135											

&lt;210&gt; 64

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 64

Met	Ala	Ser	Thr	Phe	Val	Cys	Ser	Leu	Pro	Asn	Pro	Phe	Phe	Ala	Phe	
1				5					10					15		
Pro	Val	Lys	Ala	Thr	Thr	Pro	Ser	Thr	Ala	Asn	His	Thr	Leu	Leu	Gly	
			20					25					30			
Ser	Arg	Arg	Gly	Cys	Leu	Arg	Ile	Lys	Ala	Ile	Ser	Thr	Lys	Trp	Glu	
		35					40					45				
Pro	Thr	Lys	Val	Val	Pro	Gln	Ala	Asp	Arg	Val	Leu	Val	Arg	Leu	Glu	
	50					55					60					
Asp	Leu	Pro	Ile	Lys	Ser	Ser	Gly	Gly	Val	Leu	Leu	Pro	Lys	Ala	Ala	
65				70					75					80		
Val	Lys	Phe	Glu	Arg	Tyr	Leu	Thr	Gly	Glu	Ile	Ile	Ser	Val	Gly	Ser	
				85					90					95		
Glu	Val	Gly	Gln	Gln	Val	Gly	Pro	Gly	Lys	Arg	Val	Leu	Phe	Ser	Asp	
			100					105					110			
Val	Ser	Ala	Tyr	Glu	Val	Asp	Leu	Gly	Thr	Asp	Ala	Arg	His	Cys	Phe	
		115					120					125				
Cys	Lys	Glu	Ser	Asp	Leu	Leu	Ala	Leu	Val	Glu						
	130					135										

&lt;210&gt; 65

&lt;211&gt; 321

&lt;212&gt; DNA

&lt;213&gt; Bradyrhizobium japonicum USDA 110

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(321)

&lt;223&gt; transl\_table=11

&lt;400&gt; 65

atg	tgt	atg	cat	ttc	cgc	ccg	ctg	cac	gac	cgc	gtg	ctt	gtg	cgc	cgc	48
Met	Cys	Met	His	Phe	Arg	Pro	Leu	His	Asp	Arg	Val	Leu	Val	Arg	Arg	
1				5					10					15		
att	gat	gcc	gag	gaa	aag	acc	gcc	ggc	ggc	atc	atc	att	ccc	gac	acc	96
Ile	Asp	Ala	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Ile	Ile	Ile	Pro	Asp	Thr	
			20					25					30			
gca	aag	gag	aag	ccg	cag	gaa	ggc	gag	atc	atc	gcc	gcg	ggc	tcc	ggt	144
Ala	Lys	Glu	Lys	Pro	Gln	Glu	Gly	Glu	Ile	Ile	Ala	Ala	Gly	Ser	Gly	
		35					40					45				
ggc	aga	aac	gag	caa	ggc	cag	ttg	atc	ccg	atc	gat	gtc	aag	ccg	gga	192
Gly	Arg	Asn	Glu	Gln	Gly	Gln	Leu	Ile	Pro	Ile	Asp	Val	Lys	Pro	Gly	
	50					55			60							
gac	cgc	ggt	ttg	ttc	ggc	aaa	tgg	tcg	ggt	act	gaa	gtg	aag	atc	gac	240
Asp	Arg	Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Lys	Ile	Asp	
65				70					75					80		
ggc	cag	gac	tac	ttg	atc	atg	aag	gag	agc	gat	ctt	ctg	ggc	gtg	gtc	288
Gly	Gln	Asp	Tyr	Leu	Ile	Met	Lys	Glu	Ser	Asp	Leu	Leu	Gly	Val	Val	
			85						90					95		
gac	aag	acc	ggc	tcg	gtc	aag	aag	gcc	gcc	tga						321



Asp Lys Thr Gly Ser Val Lys Lys Ala Ala  
100 105

<210> 66

<211> 106

<212> PRT

<213> Bradyrhizobium japonicum USDA 110

<400> 66

Met Cys Met His Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg  
1 5 10 15  
Ile Asp Ala Glu Lys Thr Ala Gly Ile Ile Ile Pro Asp Thr  
20 25 30  
Ala Lys Glu Lys Pro Gln Glu Gly Ile Ile Ala Ala Gly Ser Gly  
35 40 45  
Gly Arg Asn Glu Gln Gly Gln Leu Ile Pro Ile Asp Val Lys Pro Gly  
50 55 60  
Asp Arg Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp  
65 70 75 80  
Gly Gln Asp Tyr Leu Ile Met Lys Glu Ser Asp Leu Leu Gly Val Val  
85 90 95  
Asp Lys Thr Gly Ser Val Lys Lys Ala Ala  
100 105

<210> 67

<211> 312

<212> DNA

<213> Gloeobacter violaceus PCC 7421

<220>

<221> CDS

<222> (1)..(312)

<223> transl\_table=11

<400> 67

atg gca acg atc acg ttg gct acg acg aca ctg cgc ccc ctg ggg gac	48
Met Ala Thr Ile Thr Leu Ala Thr Thr Thr Leu Arg Pro Leu Gly Asp	
1 5 10 15	
cgt gtg ttg gtc aag gtg gta gag caa gag gag cgg acc gcc ggg ggt	96
Arg Val Leu Val Lys Val Val Glu Gln Glu Glu Arg Thr Ala Gly Gly	
20 25 30	
att ttt ctg ccc gac acc gcc aaa gag aag ccc cag acc ggt gaa gtg	144
Ile Phe Leu Pro Asp Thr Ala Lys Glu Lys Pro Gln Thr Gly Glu Val	
35 40 45	
gtc gcc gtg ggg ccg ggc cgt ctc aaa gac gac ggc acc cgg gtc gac	192
Val Ala Val Gly Pro Gly Arg Leu Lys Asp Asp Gly Thr Arg Val Asp	
50 55 60	
ccg gag gtg aag gtg ggc gac acc gtg ctg tac ggc aaa tat tcc ggc	240
Pro Glu Val Lys Val Gly Asp Thr Val Leu Tyr Gly Lys Tyr Ser Gly	
65 70 75 80	
acc gac ctg aaa ctt ggc gac gcc gag tac atg ctg gtg gcc gaa aaa	288
Thr Asp Leu Lys Leu Gly Asp Ala Glu Tyr Met Leu Val Ala Glu Lys	
85 90 95	
gac att ctg gca atc gtg gct taa	312
Asp Ile Leu Ala Ile Val Ala	
100	

<210> 68

<211> 103

<212> PRT

<213> Gloeobacter violaceus PCC 7421

<400> 68

Met Ala Thr Ile Thr Leu Ala Thr Thr Thr Leu Arg Pro Leu Gly Asp  
1 5 10 15  
Arg Val Leu Val Lys Val Val Glu Gln Glu Glu Arg Thr Ala Gly Gly  
20 25 30  
Ile Phe Leu Pro Asp Thr Ala Lys Glu Lys Pro Gln Thr Gly Glu Val  
35 40 45

## PhoenixTemp32470.tmp.txt

Val Ala Val Gly Pro Gly Arg Leu Lys Asp Asp Gly Thr Arg Val Asp  
 50 55 60  
 Pro Glu Val Lys Val Gly Asp Thr Val Leu Tyr Gly Lys Tyr Ser Gly  
 65 70 75 80  
 Thr Asp Leu Lys Leu Gly Asp Ala Glu Tyr Met Leu Val Ala Glu Lys  
 85 90 95  
 Asp Ile Leu Ala Ile Val Ala  
 100

<210> 69  
 <211> 501  
 <212> DNA  
 <213> Prochlorococcus marinus str. MIT 9303

<220>  
 <221> CDS  
 <222> (1)..(501)  
 <223> transl\_table=11

<400> 69  
 atg ccc tta cag agc ggc gca aca tta cca ctg cat ggc gag atc ttc 48  
 Met Pro Leu Gln Ser Gly Ala Thr Leu Pro Leu His Gly Glu Ile Phe  
 1 5 10 15  
 tca ggg ttc ggt gac ccg cac agg tat cga cta gtc ggc aca gca tca 96  
 Ser Gly Phe Gly Asp Pro His Arg Tyr Arg Leu Val Gly Thr Ala Ser  
 20 25 30  
 aca cac ata ggg ttg gca ctc aat ggc cac gag tgc tac tcc agg tcg 144  
 Thr His Ile Gly Leu Ala Leu Asn Gly His Glu Cys Tyr Ser Arg Ser  
 35 40 45  
 tta tgc ggt gct tcg gcg ccc tgt tct tgc tct ttc aat aca ccc atg 192  
 Leu Cys Gly Ala Ser Ala Pro Cys Ser Cys Ser Phe Asn Thr Pro Met  
 50 55 60  
 gca gct gtt tct ctc agc gtc tcc acc gtt aag cct ctc gga gat cgc 240  
 Ala Ala Val Ser Leu Ser Val Ser Thr Val Lys Pro Leu Gly Asp Arg  
 65 70 75 80  
 gtt ttt gtg aaa gtc tct gaa tca gag gag aaa act gcg ggc ggc atc 288  
 Val Phe Val Lys Val Ser Glu Ser Glu Glu Lys Thr Ala Gly Gly Ile  
 85 90 95  
 ctt ttg cct gac acc gcc aag gaa aag ccc cag gtg ggc gag gtg gtt 336  
 Leu Leu Pro Asp Thr Ala Lys Glu Lys Pro Gln Val Gly Glu Val Val  
 100 105 110  
 caa gtt ggc cct gga aag cgc aat gac gat ggt tcc cgc cag gct ccc 384  
 Gln Val Gly Pro Gly Lys Arg Asn Asp Asp Gly Ser Arg Gln Ala Pro  
 115 120 125  
 gaa gtg gga gtt gga gac aag gtt ctt tac agc aag tac gca ggt aca 432  
 Glu Val Gly Val Gly Asp Lys Val Leu Tyr Ser Lys Tyr Ala Gly Thr  
 130 135 140  
 gac atc aag ctc agc aca gat gag tac gtg ctg ttg tcc gag aag gac 480  
 Asp Ile Lys Leu Ser Thr Asp Glu Tyr Val Leu Leu Ser Glu Lys Asp  
 145 150 155 160  
 atc ctt gct gtc gtc aac tga 501  
 Ile Leu Ala Val Val Asn  
 165

<210> 70  
 <211> 166  
 <212> PRT  
 <213> Prochlorococcus marinus str. MIT 9303

<400> 70  
 Met Pro Leu Gln Ser Gly Ala Thr Leu Pro Leu His Gly Glu Ile Phe  
 1 5 10 15  
 Ser Gly Phe Gly Asp Pro His Arg Tyr Arg Leu Val Gly Thr Ala Ser  
 20 25 30  
 Thr His Ile Gly Leu Ala Leu Asn Gly His Glu Cys Tyr Ser Arg Ser  
 35 40 45  
 Leu Cys Gly Ala Ser Ala Pro Cys Ser Cys Ser Phe Asn Thr Pro Met  
 50 55 60  
 Ala Ala Val Ser Leu Ser Val Ser Thr Val Lys Pro Leu Gly Asp Arg

## PhoenixTemp32470.tmp.txt

```

65      70      75      80
Val Phe Val Lys Val Ser Glu Ser Glu Glu Lys Thr Ala Gly Gly Ile
      85      90      95
Leu Leu Pro Asp Thr Ala Lys Glu Lys Pro Gln Val Gly Glu Val Val
      100      105      110
Gln Val Gly Pro Gly Lys Arg Asn Asp Asp Gly Ser Arg Gln Ala Pro
      115      120      125
Glu Val Gly Val Gly Asp Lys Val Leu Tyr Ser Lys Tyr Ala Gly Thr
      130      135      140
Asp Ile Lys Leu Ser Thr Asp Glu Tyr Val Leu Leu Ser Glu Lys Asp
      145      150      155      160
Ile Leu Ala Val Val Asn
      165

```

<210> 71  
 <211> 315  
 <212> DNA  
 <213> Bradyrhizobium sp. ORS278

<220>  
 <221> CDS  
 <222> (1)..(315)  
 <223> transl\_table=11

```

<400> 71
atg cat ttc cgt cca ttg cac gac cgc gtg ctc gtg cgc cgt atc gat      48
Met His Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Ile Asp
      1      5      10
gcc gag gag aag acc aag ggc ggc atc att ccc gac acc gcc aag      96
Ala Glu Glu Lys Thr Lys Gly Gly Ile Ile Pro Asp Thr Ala Lys
      20      25      30
gag aag ccg cag gag ggc gag atc gtc gcc gcc ggt ccc ggc gcg cgg      144
Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Ala Gly Pro Gly Ala Arg
      35      40      45
aat gag cag gga caa ctc gtg ccg ctc gac gtc aag ccc ggc gac cgc      192
Asn Glu Gln Gly Gln Leu Val Pro Leu Asp Val Lys Pro Gly Asp Arg
      50      55      60
gtg ctg ttc ggc aag tgg tcg ggg acc gag gtg aag atc gac ggc aag      240
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Lys
      65      70      75      80
gat ctc ctg atc atg aag gag agc gac ctg ctc ggc atc gtc gac gcc      288
Asp Leu Leu Ile Met Lys Glu Ser Asp Leu Leu Gly Ile Val Asp Ala
      85      90      95
ccc gtc gcg gcg aag aaa gcc gcg tga      315
Pro Val Ala Ala Lys Lys Ala Ala
      100

```

<210> 72  
 <211> 104  
 <212> PRT  
 <213> Bradyrhizobium sp. ORS278

```

<400> 72
Met His Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Ile Asp
      1      5      10
Ala Glu Glu Lys Thr Lys Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys
      20      25      30
Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Ala Gly Pro Gly Ala Arg
      35      40      45
Asn Glu Gln Gly Gln Leu Val Pro Leu Asp Val Lys Pro Gly Asp Arg
      50      55      60
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Lys
      65      70      75      80
Asp Leu Leu Ile Met Lys Glu Ser Asp Leu Leu Gly Ile Val Asp Ala
      85      90      95
Pro Val Ala Ala Lys Lys Ala Ala
      100

```

<210> 73

## PhoenixTemp32470.tmp.txt

<211> 291  
 <212> DNA  
 <213> Colwellia psychrerythraea 34H

<220>  
 <221> CDS  
 <222> (1)..(291)  
 <223> transl\_table=11

<400> 73  
 atg agc att cgt cca cta cat gat cgt gta att gtt aaa cgt aaa aaa 48  
 Met Ser Ile Arg Pro Leu His Asp Arg Val Ile Val Lys Arg Lys Lys  
 1 5 10 15  
 gtt gaa tca aaa tca gct ggc ggt att gta tta aca ggc agc gca gcg 96  
 Val Glu Ser Lys Ser Ala Gly Gly Ile Val Leu Thr Gly Ser Ala Ala  
 20 25 30  
 gaa aaa tca aca cgt ggt gaa gtt att gct gta ggt aat ggc cgt atc 144  
 Glu Lys Ser Thr Arg Gly Glu Val Ile Ala Val Gly Asn Gly Arg Ile  
 35 40 45  
 tta gaa aat ggt gaa gta cgc cca tta gac gta aaa gtt ggc gat caa 192  
 Leu Glu Asn Gly Glu Val Arg Pro Leu Asp Val Lys Val Gly Asp Gln  
 50 55 60  
 gtt atc ttt agt gaa ggt tac ggc gtt aaa act gaa aaa att gat ggc 240  
 Val Ile Phe Ser Glu Gly Tyr Gly Val Lys Thr Glu Lys Ile Asp Gly  
 65 70 75 80  
 gaa gaa gtc tta att ctt tca gag tca gat att tta gcg atc gtt gag 288  
 Glu Glu Val Leu Ile Leu Ser Glu Ser Asp Ile Leu Ala Ile Val Glu  
 85 90 95  
 tag 291

<210> 74  
 <211> 96  
 <212> PRT  
 <213> Colwellia psychrerythraea 34H

<400> 74  
 Met Ser Ile Arg Pro Leu His Asp Arg Val Ile Val Lys Arg Lys Lys  
 1 5 10 15  
 Val Glu Ser Lys Ser Ala Gly Gly Ile Val Leu Thr Gly Ser Ala Ala  
 20 25 30  
 Glu Lys Ser Thr Arg Gly Glu Val Ile Ala Val Gly Asn Gly Arg Ile  
 35 40 45  
 Leu Glu Asn Gly Glu Val Arg Pro Leu Asp Val Lys Val Gly Asp Gln  
 50 55 60  
 Val Ile Phe Ser Glu Gly Tyr Gly Val Lys Thr Glu Lys Ile Asp Gly  
 65 70 75 80  
 Glu Glu Val Leu Ile Leu Ser Glu Ser Asp Ile Leu Ala Ile Val Glu  
 85 90 95

<210> 75  
 <211> 288  
 <212> DNA  
 <213> Novosphingobium aromaticivorans DSM 12444

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

<400> 75  
 atg act ttc cgt ccg ctg cac gat cgc gtg ctc gta cgc cgc gtc gaa 48  
 Met Thr Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Val Glu  
 1 5 10 15  
 gcc gag gaa aag acc gcc ggc ggc atc atc atc ccc gac agc gcc aag 96  
 Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Ser Ala Lys  
 20 25 30  
 gaa aag cct gcc gag ggc atc gtc gtc gcc gtt ggt tcg ggc gcc cgc 144

PhoenixTemp32470.tmp.txt

Glu	Lys	Pro	Ala	Glu	Gly	Ile	Val	Val	Ala	Val	Gly	Ser	Gly	Ala	Arg	
		35					40					45				
gcc	gag	aac	ggc	acg	atc	acc	ccg	ctc	gac	gtg	aag	gcc	aat	gat	cgc	192
Ala	Glu	Asn	Gly	Thr	Ile	Thr	Pro	Leu	Asp	Val	Lys	Ala	Asn	Asp	Arg	
	50					55					60					
gtg	ctg	ttc	ggc	aag	tgg	tcc	ggc	acc	gaa	gtc	aag	gtc	gac	ggg	gaa	240
Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Lys	Val	Asp	Gly	Glu	
	65				70					75					80	
gac	ctg	ctc	atc	atg	aag	gaa	tcg	gac	atc	ctc	ggc	gtg	atc	ggc		285
Asp	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Leu	Gly	Val	Ile	Gly		
				85					90					95		
tga																288

<210> 76  
 <211> 95  
 <212> PRT  
 <213> Novosphingobium aromaticivorans DSM 12444

<400> 76

Met	Thr	Phe	Arg	Pro	Leu	His	Asp	Arg	Val	Leu	Val	Arg	Arg	Val	Glu	
1				5					10					15		
Ala	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Ile	Ile	Ile	Pro	Asp	Ser	Ala	Lys	
			20					25					30			
Glu	Lys	Pro	Ala	Glu	Gly	Ile	Val	Val	Ala	Val	Gly	Ser	Gly	Ala	Arg	
		35					40					45				
Ala	Glu	Asn	Gly	Thr	Ile	Thr	Pro	Leu	Asp	Val	Lys	Ala	Asn	Asp	Arg	
	50					55					60					
Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Lys	Val	Asp	Gly	Glu	
65					70					75					80	
Asp	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Leu	Gly	Val	Ile	Gly		
				85					90					95		

<210> 77  
 <211> 315  
 <212> DNA  
 <213> Mesorhizobium sp. BNC1

<220>  
 <221> CDS  
 <222> (1)..(315)  
 <223> transl\_table=11

<400> 77

atg	aag	ttc	cgt	cct	ttg	cat	gac	cgc	ctg	ctt	gtc	cgc	cgc	atc	gag	48
Met	Lys	Phe	Arg	Pro	Leu	His	Asp	Arg	Leu	Leu	Val	Arg	Arg	Ile	Glu	
1				5					10					15		
gcg	gag	gag	aaa	acg	gcg	gga	ggg	gtg	atc	att	ccc	gat	acc	gcg	aag	96
Ala	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Val	Ile	Ile	Pro	Asp	Thr	Ala	Lys	
			20					25					30			
gaa	aaa	ccg	cag	gaa	ggc	gag	gtg	ctg	gca	gtc	ggc	cct	ggc	gtc	cgc	144
Glu	Lys	Pro	Gln	Glu	Gly	Glu	Val	Leu	Ala	Val	Gly	Pro	Gly	Val	Arg	
		35					40					45				
gac	gag	aag	ggg	gag	ctc	atc	gcc	ctg	gaa	gtg	aag	gtc	gga	gac	cgc	192
Asp	Glu	Lys	Gly	Glu	Leu	Ile	Ala	Leu	Glu	Val	Lys	Val	Gly	Asp	Arg	
	50					55					60					
atc	ctt	ttc	gga	aag	tgg	tcc	ggc	aca	gaa	atc	cgc	ctt	caa	ggc	gag	240
Ile	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Ile	Arg	Leu	Gln	Gly	Glu	
	65				70					75					80	
gat	ctg	ctc	atc	atg	aag	gaa	agc	gac	gtc	ctc	ggc	att	ctc	gac	aag	288
Asp	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Val	Leu	Gly	Ile	Leu	Asp	Lys	
				85					90					95		
gaa	gcc	gag	gtc	aag	aag	gct	gct	tga								315
Glu	Ala	Glu	Val	Lys	Lys	Ala	Ala									
			100													

<210> 78  
 <211> 104

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;400&gt; 78

```

Met Lys Phe Arg Pro Leu His Asp Arg Leu Leu Val Arg Arg Ile Glu
1      5      10      15
Ala Glu Glu Lys Thr Ala Gly Gly Val Ile Ile Pro Asp Thr Ala Lys
20      25      30
Glu Lys Pro Gln Glu Gly Glu Val Leu Ala Val Gly Pro Gly Val Arg
35      40      45
Asp Glu Lys Gly Glu Leu Ile Ala Leu Glu Val Lys Val Gly Asp Arg
50      55      60
Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Ile Arg Leu Gln Gly Glu
65      70      75      80
Asp Leu Leu Ile Met Lys Glu Ser Asp Val Leu Gly Ile Leu Asp Lys
85      90      95
Glu Ala Glu Val Lys Lys Ala Ala
100

```

&lt;210&gt; 79

&lt;211&gt; 288

&lt;212&gt; DNA

&lt;213&gt; Magnetospirillum magnetotacticum MS-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(288)

&lt;223&gt; transl\_table=11

&lt;400&gt; 79

```

atg aag ttc aga ccg ctc cat gat cgc gtg ctg gtg aag cgc ctc gac      48
Met Lys Phe Arg Pro Leu His Asp Arg Val Leu Val Lys Arg Leu Asp
1      5      10      15
gcg gaa gag aag acc gct ggc ggc atc atc atc ccc gac acc gcc aag      96
Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys
20      25      30
gaa aag ccc atg cag ggt gaa gtc gtg gcc gtc ggc tcc ggc acc cgt      144
Glu Lys Pro Met Gln Gly Glu Val Val Ala Val Gly Ser Gly Thr Arg
35      40      45
ggc gat gac ggc aag ctg gtc gct ctc gac gtc aag gcc ggt gat cgc      192
Gly Asp Asp Gly Lys Leu Val Ala Leu Asp Val Lys Ala Gly Asp Arg
50      55      60
gtg ctg ttc ggc aag tgg tcc ggc acc gag gtc aag atc gac ggc gtc      240
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Val
65      70      75      80
gat ctg ctg atc atg aag gaa tcc gac att ctc ggc att ctc gcc      285
Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ala
85      90      95
taa
288

```

&lt;210&gt; 80

&lt;211&gt; 95

&lt;212&gt; PRT

&lt;213&gt; Magnetospirillum magnetotacticum MS-1

&lt;400&gt; 80

```

Met Lys Phe Arg Pro Leu His Asp Arg Val Leu Val Lys Arg Leu Asp
1      5      10      15
Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys
20      25      30
Glu Lys Pro Met Gln Gly Glu Val Ala Val Gly Ser Gly Thr Arg
35      40      45
Gly Asp Asp Gly Lys Leu Val Ala Leu Asp Val Lys Ala Gly Asp Arg
50      55      60
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Val
65      70      75      80
Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ala

```

<210> 81  
 <211> 288  
 <212> DNA  
 <213> Roseovarius nubinihibens ISM

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

```

<400> 81
atg gca ttt aaa ccg ctg cat gac cgc gtg ctt gtt cgc cgc gtt gaa      48
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Glu
   1           5           10          15
agc gaa gag aaa act tct ggc ggg ctg atc atc ccc gac agc gcc aag      96
Ser Glu Glu Lys Thr Ser Gly Gly Leu Ile Ile Pro Asp Ser Ala Lys
           20          25          30
gaa aaa ccc agc gaa ggc gaa gtt gtt gct tgt ggc gac ggc gcc cgc      144
Glu Lys Pro Ser Glu Gly Glu Val Val Ala Cys Gly Asp Gly Ala Arg
           35          40          45
aaa gac agc ggc gag ctg atc gag atg gct gtg aaa gcc ggt gat cgc      192
Lys Asp Ser Gly Glu Leu Ile Glu Met Ala Val Lys Ala Gly Asp Arg
           50          55          60
gtg ctg ttc ggc aaa tgg tcg ggc acc gag atc acg atc gac ggc gaa      240
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Ile Thr Ile Asp Gly Glu
   65           70          75          80
gag ctg ctg atc atg aaa gag agc gac att ctg ggc gta atg gcc      285
Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Val Met Ala
           85          90          95
tga
                                     288
  
```

<210> 82  
 <211> 95  
 <212> PRT  
 <213> Roseovarius nubinihibens ISM

```

<400> 82
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Glu
   1           5           10          15
Ser Glu Glu Lys Thr Ser Gly Gly Leu Ile Ile Pro Asp Ser Ala Lys
           20          25          30
Glu Lys Pro Ser Glu Gly Glu Val Ala Cys Gly Asp Gly Ala Arg
           35          40          45
Lys Asp Ser Gly Glu Leu Ile Glu Met Ala Val Lys Ala Gly Asp Arg
           50          55          60
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Ile Thr Ile Asp Gly Glu
   65           70          75          80
Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Val Met Ala
           85          90          95
  
```

<210> 83  
 <211> 312  
 <212> DNA  
 <213> Oceanicola batsensis HTCC2597

<220>  
 <221> CDS  
 <222> (1)..(312)  
 <223> transl\_table=11

```

<400> 83
atg gca ttc aaa ccg ctt cat gac cgg gtt ctg gtc aag cgc gtc gag      48
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Lys Arg Val Glu
   1           5           10          15
agc gaa gag aaa acc gcg ggc ggg ctg atc att ccc gac agc gcc aag      96
  
```

PhoenixTemp32470.tmp.txt

Ser	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Leu	Ile	Ile	Pro	Asp	Ser	Ala	Lys		
			20					25					30				
gaa	aag	ccg	gcg	gaa	ggt	gaa	gtc	gtg	gcc	gtg	ggc	gag	ggc	gcc	cgc	144	
Glu	Lys	Pro	Ala	Glu	Gly	Glu	Val	Val	Ala	Val	Gly	Glu	Gly	Ala	Arg		
		35					40					45					
aag	gac	aac	ggc	gaa	ctg	atc	gag	atg	gcc	gtg	aaa	gcc	ggc	gac	aag	192	
Lys	Asp	Asn	Gly	Glu	Leu	Ile	Glu	Met	Ala	Val	Lys	Ala	Gly	Asp	Lys		
		50				55					60						
gtt	ctg	ttc	ggc	aag	tgg	tcc	ggc	acc	gaa	gtc	acg	atc	gac	ggc	cag	240	
Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Thr	Ile	Asp	Gly	Gln		
					70					75					80		
gaa	ctc	ctg	atc	atg	aaa	gag	agc	gac	atc	ctc	ggg	atc	atc	acc	gac	288	
Glu	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Leu	Gly	Ile	Ile	Thr	Asp		
				85					90					95			
ggc	gcg	gcg	gcg	aaa	gct	gcc	tga									312	
Gly	Ala	Ala	Ala	Lys	Ala	Ala											
			100														

<210> 84  
 <211> 103  
 <212> PRT  
 <213> Oceanicola batsensis HTCC2597

<400> 84

Met	Ala	Phe	Lys	Pro	Leu	His	Asp	Arg	Val	Leu	Val	Lys	Arg	Val	Glu		
				5					10					15			
Ser	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Leu	Ile	Ile	Pro	Asp	Ser	Ala	Lys		
			20					25					30				
Glu	Lys	Pro	Ala	Glu	Gly	Glu	Val	Val	Ala	Val	Gly	Glu	Gly	Ala	Arg		
		35					40				45						
Lys	Asp	Asn	Gly	Glu	Leu	Ile	Glu	Met	Ala	Val	Lys	Ala	Gly	Asp	Lys		
		50				55					60						
Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Thr	Ile	Asp	Gly	Gln		
					70					75					80		
Glu	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Leu	Gly	Ile	Ile	Thr	Asp		
				85					90					95			
Gly	Ala	Ala	Ala	Lys	Ala	Ala											
			100														

<210> 85  
 <211> 288  
 <212> DNA  
 <213> Erythrobacter sp. SD-21

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

<400> 85

atg	gca	ttt	cgt	ccg	ttg	cac	gac	cgc	ggt	ctc	gtg	cgc	cgc	atc	gaa	48	
Met	Ala	Phe	Arg	Pro	Leu	His	Asp	Arg	Val	Leu	Val	Arg	Arg	Ile	Glu		
				5					10					15			
gca	gaa	gaa	aag	acc	gcc	ggc	ggg	atc	atc	att	ccc	gac	agc	gcc	aag	96	
Ala	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Ile	Ile	Ile	Pro	Asp	Ser	Ala	Lys		
			20					25					30				
gaa	aag	ccg	agc	gaa	ggc	gag	atc	gtc	gct	ggt	ggc	tcc	ggc	tcc	aag	144	
Glu	Lys	Pro	Ser	Glu	Gly	Glu	Ile	Val	Ala	Val	Gly	Ser	Gly	Ser	Lys		
		35					40				45						
gcc	gag	gac	ggc	acg	gtc	acc	ccg	ctc	gac	gtc	aag	gct	ggc	gac	cgc	192	
Ala	Glu	Asp	Gly	Thr	Val	Thr	Pro	Leu	Asp	Val	Lys	Ala	Gly	Asp	Arg		
		50				55					60						
gtg	ctg	ttc	ggc	aag	tgg	tcg	ggc	act	gag	atc	aag	ctc	gac	ggc	gaa	240	
Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Ile	Lys	Leu	Asp	Gly	Glu		
					70					75					80		
gac	ctg	ctg	atc	atg	aag	gaa	agc	gac	atc	atg	ggg	atc	atg	ggc		285	
Asp	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Met	Gly	Ile	Met	Gly			
				85					90					95			
tga																288	



<210> 86  
 <211> 95  
 <212> PRT  
 <213> Erythrobacter sp. SD-21

<400> 86  
 Met Ala Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Ile Glu  
 1 5 10 15  
 Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Ser Ala Lys  
 20 25 30  
 Glu Lys Pro Ser Glu Gly Glu Ile Val Ala Val Gly Ser Gly Ser Lys  
 35 40 45  
 Ala Glu Asp Gly Thr Val Thr Pro Leu Asp Val Lys Ala Gly Asp Arg  
 50 55 60  
 Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Ile Lys Leu Asp Gly Glu  
 65 70 75 80  
 Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Met Gly Ile Met Gly  
 85 90 95

<210> 87  
 <211> 420  
 <212> DNA  
 <213> Brassica campestris

<220>  
 <221> CDS  
 <222> (1)..(420)

<400> 87  
 atg gct act tcc act ttc gtc tct cta cca aaa ccc ttc ttt act tgt 48  
 Met Ala Thr Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Thr Cys  
 1 5 10 15  
 cct gtt aaa acc aac act cct gcg cta gct aac cat aag ctt ctc ggg 96  
 Pro Val Lys Thr Asn Thr Pro Ala Leu Ala Asn His Lys Leu Leu Gly  
 20 25 30  
 agc cga aga ggt tgt ctc aga gtc aaa gct gtt tcc acc aaa tgg gaa 144  
 Ser Arg Arg Gly Cys Leu Arg Val Lys Ala Val Ser Thr Lys Trp Glu  
 35 40 45  
 ccg aca aag gtt gtt cct caa gca gac agg gtt ctt gtt cga ctt gaa 192  
 Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu  
 50 55 60  
 gag ctt gct cag aca acc tca ggt gga gtg ttg tta cct aaa gca gct 240  
 Glu Leu Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala  
 65 70 75 80  
 gtt aag ttt gag agg tac cta acc gga gag gtt gtc tct gtt ggt tct 288  
 Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser  
 85 90 95  
 gag gtt gga caa caa gtt ggc cct gga aac aag gtt ctg ttc tct gac 336  
 Glu Val Gly Gln Gln Val Gly Pro Gly Asn Lys Val Leu Phe Ser Asp  
 100 105 110  
 gtg agc gca tac gag gtc gat ttg ggg acc ggt gct agg cat tgc ttt 384  
 Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe  
 115 120 125  
 tgc aaa gag agc gac ctg ttg gcc ctc gtg gag tag 420  
 Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu  
 130 135

<210> 88  
 <211> 139  
 <212> PRT  
 <213> Brassica campestris

<400> 88  
 Met Ala Thr Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Thr Cys  
 1 5 10 15  
 Pro Val Lys Thr Asn Thr Pro Ala Leu Ala Asn His Lys Leu Leu Gly

PhoenixTemp32470.tmp.txt

```

      20      25      30
Ser Arg Arg Gly Cys Leu Arg Val Lys Ala Val Ser Thr Lys Trp Glu
      35      40      45
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu
      50      55      60
Glu Leu Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala
65      70      75      80
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser
      85      90      95
Glu Val Gly Gln Gln Val Gly Pro Gly Asn Lys Val Leu Phe Ser Asp
      100      105      110
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe
      115      120      125
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu
      130      135

```

<210> 89  
 <211> 420  
 <212> DNA  
 <213> Brassica campestris

<220>  
 <221> CDS  
 <222> (1)..(420)

```

<400> 89
atg gct tct tca act ttc gtc tct ctg cca aaa ccc ttc ttt gct ttt      48
Met Ala Ser Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Ala Phe
  1      5      10      15
ccg gtt aaa acc agt tcc cct ccc cta gct aac cat aag ctt ctc gga      96
Pro Val Lys Thr Ser Ser Pro Pro Leu Ala Asn His Lys Leu Leu Gly
      20      25      30
agt cga aga ggc tgt ctg agt gtc aaa gcg att tcc act aaa tgg gaa      144
Ser Arg Arg Gly Cys Leu Ser Val Lys Ala Ile Ser Thr Lys Trp Glu
      35      40      45
ccg aca aag gtt gtt cct caa gca gac agg gtt ctt gtt cgt ctt gaa      192
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu
      50      55      60
gag ctt gca cag aca acc tca ggt gga gtg ttg ttg cct aaa gca gct      240
Glu Leu Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala
65      70      75      80
gtg aag ttt gag aga tac tta acc gga gag gtt gtc tct gtt ggt tct      288
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser
      85      90      95
gag gtt gga caa caa gtt ggc cct ggc aag aag gtt ctg ttc tct gac      336
Glu Val Gly Gln Val Gly Pro Gly Lys Lys Val Leu Phe Ser Asp
      100      105      110
gtg agc gct tat gag gtt gat ttg ggg acg ggt gct agg cat tgc ttt      384
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe
      115      120      125
tgt aaa gag agc gac ttg ttg gcc ctc gtt gag tga      420
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu
      130      135

```

<210> 90  
 <211> 139  
 <212> PRT  
 <213> Brassica campestris

```

<400> 90
Met Ala Ser Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Ala Phe
  1      5      10      15
Pro Val Lys Thr Ser Ser Pro Pro Leu Ala Asn His Lys Leu Leu Gly
      20      25      30
Ser Arg Arg Gly Cys Leu Ser Val Lys Ala Ile Ser Thr Lys Trp Glu
      35      40      45
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu
      50      55      60
Glu Leu Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala

```

## PhoenixTemp32470.tmp.txt

65 Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser 80  
 70 75 85 90 95  
 Glu Val Gly Gln Gln Val Gly Pro Gly Lys Lys Val Leu Phe Ser Asp  
 100 105 110  
 Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe  
 115 120 125  
 Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu  
 130 135

&lt;210&gt; 91

&lt;211&gt; 459

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(459)

&lt;400&gt; 91

atg gcc ccc tcc ctc ctc gcc gcc gcc gcc tcg ccc ttc ctc ctc cac	48
Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Leu His	
1 5 10 15	
ggc gcc gcc gcc gcc agt ggc agc cgc agg ccg ctc gtc gcc gcc gcc	96
Gly Ala Ala Ala Ala Ser Gly Ser Arg Arg Pro Leu Val Ala Ala Ala	
20 25 30	
gcc acc ggc cgc cgc gcc gcc tcc tcc ctc cgc gtc gcc gcc ctc aag	144
Ala Thr Gly Arg Arg Ala Ala Ser Ser Leu Arg Val Ala Ala Leu Lys	
35 40 45	
tac gac cct tcc aag gtg gcg ccg cag tcc gac cgg gtg ctc gtc cgc	192
Tyr Asp Pro Ser Lys Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg	
50 55 60	
ctc gaa cag att cct gag cgt gaa tcg aaa cat cta ggt tta ggt gga	240
Leu Glu Gln Ile Pro Glu Arg Glu Ser Lys His Leu Gly Leu Gly Gly	
65 70 75 80	
atg ctg aaa tct gtt gga gga gtc ctg ctg cca aaa tct gct gtt aag	288
Met Leu Lys Ser Val Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys	
85 90 95	
ttt gag agg tat ttg atg ggt gag att ttg tct gtt ggt gct gat gtt	336
Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val	
100 105 110	
aat gaa gtt gaa gct gga aag aag gtt ctc ttc tct gac ata aat gct	384
Asn Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala	
115 120 125	
tat gag gtg gac ctg ggt acc gat gag aag cac tgc ttc tgc cgt gag	432
Tyr Glu Val Asp Leu Gly Thr Asp Glu Lys His Cys Phe Cys Arg Glu	
130 135 140	
tct gat ctg tta gcc gtt gtt gaa tga	459
Ser Asp Leu Leu Ala Val Val Glu	
145 150	

&lt;210&gt; 92

&lt;211&gt; 152

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 92

Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Leu His	
1 5 10 15	
Gly Ala Ala Ala Ala Ser Gly Ser Arg Arg Pro Leu Val Ala Ala Ala	
20 25 30	
Ala Thr Gly Arg Arg Ala Ala Ser Leu Arg Val Ala Ala Leu Lys	
35 40 45	
Tyr Asp Pro Ser Lys Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg	
50 55 60	
Leu Glu Gln Ile Pro Glu Arg Glu Ser Lys His Leu Gly Leu Gly Gly	
65 70 75 80	
Met Leu Lys Ser Val Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys	
85 90 95	

## PhoenixTemp32470.tmp.txt

Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val  
 100 105 110  
 Asn Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala  
 115 120 125  
 Tyr Glu Val Asp Leu Gly Thr Asp Glu Lys His Cys Phe Cys Arg Glu  
 130 135 140  
 Ser Asp Leu Leu Ala Val Val Glu  
 145 150

&lt;210&gt; 93

&lt;211&gt; 444

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(444)

&lt;400&gt; 93

atg gcc ccc tcc ctc ctt ggc cgc cgc cgc ctc gcc ctt cct cct cca	48
Met Ala Pro Ser Leu Leu Gly Arg Arg Arg Leu Ala Leu Pro Pro Pro	
1 5 10 15	
cgg cgc cgc cgc cgc cag tgg cag ccg cag gcc gct cgt cgc cgc cgc	96
Arg Arg Arg Arg Arg Gln Trp Gln Pro Gln Ala Ala Arg Arg Arg Arg	
20 25 30	
cgc cac cgg ccg ccg cgc cgc ctc ctc cct ccg cgt cgc cgc cct caa	144
Arg His Arg Pro Pro Arg Arg Leu Leu Pro Pro Arg Arg Arg Pro Gln	
35 40 45	
gtg gcg ccg cag tcc gac cgg gtg ctc gtc cgc ctc gaa cag att cct	192
Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg Leu Glu Gln Ile Pro	
50 55 60	
gag cgt gaa tcg aaa cat cta ggt tta ggt gga atg ctg aaa tct gtt	240
Glu Arg Glu Ser Lys His Leu Gly Leu Gly Gly Met Leu Lys Ser Val	
65 70 75 80	
gga gga gtc ctg ctg cca aaa tct gct gtt aag ttt gag agg tat ttg	288
Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu Arg Tyr Leu	
85 90 95	
atg ggt gag att ttg tct gtt ggt gct gat gtt aat gaa gtt gaa gct	336
Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Asn Glu Val Glu Ala	
100 105 110	
gga aag aag gtt ctc ttc tct gac ata aat gct tat gag gtg gac ctg	384
Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu Val Asp Leu	
115 120 125	
ggt acc gat gag aag cac tgc ttc tgc cgt gag tct gat ctg tta gcc	432
Gly Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser Asp Leu Leu Ala	
130 135 140	
gtt gtt gaa tga	444
Val Val Glu	
145	

&lt;210&gt; 94

&lt;211&gt; 147

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 94

Met Ala Pro Ser Leu Leu Gly Arg Arg Arg Leu Ala Leu Pro Pro Pro	
1 5 10 15	
Arg Arg Arg Arg Arg Gln Trp Gln Pro Gln Ala Ala Arg Arg Arg Arg	
20 25 30	
Arg His Arg Pro Pro Arg Arg Leu Leu Pro Pro Arg Arg Arg Pro Gln	
35 40 45	
Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg Leu Glu Gln Ile Pro	
50 55 60	
Glu Arg Glu Ser Lys His Leu Gly Leu Gly Gly Met Leu Lys Ser Val	
65 70 75 80	
Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu Arg Tyr Leu	
85 90 95	
Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Asn Glu Val Glu Ala	

## PhoenixTemp32470.tmp.txt

100 105 110  
 Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu Val Asp Leu  
 115 120 125  
 Gly Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser Asp Leu Leu Ala  
 130 135 140  
 Val Val Glu  
 145

<210> 95  
 <211> 288  
 <212> DNA  
 <213> Magnetospirillum gryphiswaldense

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

<400> 95  
 atg aag ttc cgc ccg ctc cat gat cgt gtg ctg gtg aag cgc ctt gac 48  
 Met Lys Phe Arg Pro Leu His Asp Arg Val Leu Val Lys Arg Leu Asp  
 1 5 10 15  
 gcg gaa gaa aag acc gct ggt ggc atc atc atc ccc gat acc gcc aag 96  
 Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Pro Asp Thr Ala Lys  
 20 25 30  
 gaa aag ccc atg cag ggc gaa gtg atc gcc gtt ggc tcc ggc gtt cgc 144  
 Glu Lys Pro Met Gln Gly Glu Val Ile Ala Val Gly Ser Gly Val Arg  
 35 40 45  
 ggc gaa gac ggc aag atc gtc gct ctc gac gtc aag gcc ggt gac cgc 192  
 Gly Glu Asp Gly Lys Ile Val Ala Leu Asp Val Lys Ala Gly Asp Arg  
 50 55 60  
 atc ctg ttc ggc aag tgg tcc ggc acc gaa gtc aag atc gac ggc gaa 240  
 Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Glu  
 65 70 75 80  
 gac ctg ttg atc atg aag gaa tcc gac att ctg ggc att ctg gcc 285  
 Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ala  
 85 90 95  
 tga 288

<210> 96  
 <211> 95  
 <212> PRT  
 <213> Magnetospirillum gryphiswaldense

<400> 96  
 Met Lys Phe Arg Pro Leu His Asp Arg Val Leu Val Lys Arg Leu Asp  
 1 5 10 15  
 Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys  
 20 25 30  
 Glu Lys Pro Met Gln Gly Glu Val Ile Ala Val Gly Ser Gly Val Arg  
 35 40 45  
 Gly Glu Asp Gly Lys Ile Val Ala Leu Asp Val Lys Ala Gly Asp Arg  
 50 55 60  
 Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Glu  
 65 70 75 80  
 Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ala  
 85 90 95

<210> 97  
 <211> 405  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(405)

## PhoenixTemp32470.tmp.txt

```

<400> 97
atg gca tcc act ttc atc aca ctc gct aga ccc ttc tcg tct cac aag      48
Met Ala Ser Thr Phe Ile Thr Leu Ala Arg Pro Phe Ser Ser His Lys
1      5      10      15
ccc cac act cct tcc ccc agc aag aga tta cta gga ctt cgc agt agt      96
Pro His Thr Pro Ser Pro Ser Lys Arg Leu Leu Gly Leu Arg Ser Ser
20      25      30
gca ctg aaa atc aac gca atc gcc aag aag tgg gaa ccc aca aag gtt      144
Ala Leu Lys Ile Asn Ala Ile Ala Lys Lys Trp Glu Pro Thr Lys Val
35      40      45
gtt cca caa gct gat aga gtc ctg att cgt ttg cag gac cta cct gag      192
Val Pro Gln Ala Asp Arg Val Leu Ile Arg Leu Gln Asp Leu Pro Glu
50      55      60
aaa tca tct ggt gga gtt ttg ctg ccc aaa tct gct gtt aaa ttt gag      240
Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu
65      70      75      80
cga tac ctt atg ggg gag att ctc tct att ggt gct gat gtt ggg gaa      288
Arg Tyr Leu Met Gly Glu Ile Leu Ser Ile Gly Ala Asp Val Gly Glu
85      90      95
gtt gag gct ggg aag aag gtt ctt ttc tca gac ata aat gct tat gag      336
Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu
100      105      110
gtg gat ttg gga aca gat ggt aga cac tgc ttt tgc aaa gaa agt gac      384
Val Asp Leu Gly Thr Asp Gly Arg His Cys Phe Cys Lys Glu Ser Asp
115      120      125
ctg ttg gct gtg gtt gag tag
Leu Leu Ala Val Val Glu
130

```

```

<210> 98
<211> 134
<212> PRT
<213> Vitis vinifera

```

```

<400> 98
Met Ala Ser Thr Phe Ile Thr Leu Ala Arg Pro Phe Ser Ser His Lys
1      5      10      15
Pro His Thr Pro Ser Pro Ser Lys Arg Leu Leu Gly Leu Arg Ser Ser
20      25      30
Ala Leu Lys Ile Asn Ala Ile Ala Lys Lys Trp Glu Pro Thr Lys Val
35      40      45
Val Pro Gln Ala Asp Arg Val Leu Ile Arg Leu Gln Asp Leu Pro Glu
50      55      60
Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe Glu
65      70      75      80
Arg Tyr Leu Met Gly Glu Ile Leu Ser Ile Gly Ala Asp Val Gly Glu
85      90      95
Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr Glu
100      105      110
Val Asp Leu Gly Thr Asp Gly Arg His Cys Phe Cys Lys Glu Ser Asp
115      120      125
Leu Leu Ala Val Val Glu
130

```

```

<210> 99
<211> 291
<212> DNA
<213> Gluconobacter oxydans

```

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<220>
<221> CDS
<222> (1)..(291)
<223> transl_table=11

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<400> 99
atg acg aag ttt cgt ccc ctt cat gac cgc gtg gtg gtc cgt cgc ctg      48
Met Thr Lys Phe Arg Pro Leu His Asp Arg Val Val Val Arg Arg Leu
1      5      10      15
acg ggc gag gag aag acc gcc ggc ggc atc atc att cct gac acc gcc      96

```

PhoenixTemp32470.tmp.txt

Thr	Gly	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Ile	Ile	Ile	Pro	Asp	Thr	Ala		
			20					25					30				
aag	gac	aag	ccg	acc	gaa	ggc	gaa	gtc	ggt	tct	gtc	ggc	ccg	ggt	gcc	144	
Lys	Asp	Lys	Pro	Thr	Glu	Gly	Glu	Val	Val	Ser	Val	Gly	Pro	Gly	Ala		
		35					40					45					
cgc	aac	gag	cag	ggc	cag	ggt	gtg	gct	ctg	gac	gtc	aag	gct	ggt	gac	192	
Arg	Asn	Glu	Gln	Gly	Gln	Val	Val	Ala	Leu	Asp	Val	Lys	Ala	Gly	Asp		
	50					55					60						
aag	gtg	ctg	ttc	ggc	aag	tgg	tcc	ggc	acc	gag	gtc	aag	atc	gac	ggc	240	
Lys	Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Lys	Ile	Asp	Gly		
	65				70				75						80		
gaa	gag	ctg	ctg	atc	atg	aaa	gag	agc	gac	atc	atg	ggt	gtg	atc	ggc	288	
Glu	Glu	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Met	Gly	Val	Ile	Gly		
				85					90					95			
tga																291	

<210> 100  
 <211> 96  
 <212> PRT  
 <213> Gluconobacter oxydans

<400> 100

Met	Thr	Lys	Phe	Arg	Pro	Leu	His	Asp	Arg	Val	Val	Val	Arg	Arg	Leu		
1				5					10					15			
Thr	Gly	Glu	Glu	Lys	Thr	Ala	Gly	Gly	Ile	Ile	Ile	Pro	Asp	Thr	Ala		
			20					25					30				
Lys	Asp	Lys	Pro	Thr	Glu	Gly	Glu	Val	Val	Ser	Val	Gly	Pro	Gly	Ala		
		35					40					45					
Arg	Asn	Glu	Gln	Gly	Gln	Val	Val	Ala	Leu	Asp	Val	Lys	Ala	Gly	Asp		
	50					55				60							
Lys	Val	Leu	Phe	Gly	Lys	Trp	Ser	Gly	Thr	Glu	Val	Lys	Ile	Asp	Gly		
65					70				75					80			
Glu	Glu	Leu	Leu	Ile	Met	Lys	Glu	Ser	Asp	Ile	Met	Gly	Val	Ile	Gly		
				85					90					95			

<210> 101  
 <211> 420  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(420)

<400> 101

atg	gct	tcc	act	ttc	gtc	tgc	tct	cta	cca	gat	cct	ttc	ttt	gct	ttt	48	
Met	Ala	Ser	Thr	Phe	Val	Cys	Ser	Leu	Pro	Asp	Pro	Phe	Phe	Ala	Phe		
1				5					10					15			
ccg	gtc	aaa	gca	act	act	cct	tcg	acg	gct	aac	cat	acg	ctt	ctc	gga	96	
Pro	Val	Lys	Ala	Thr	Thr	Pro	Ser	Thr	Ala	Asn	His	Thr	Leu	Leu	Gly		
			20					25					30				
agt	cga	aga	ggt	tgt	ctt	aga	atc	aaa	gcg	att	tcc	act	aaa	tgg	gaa	144	
Ser	Arg	Arg	Gly	Cys	Leu	Arg	Ile	Lys	Ala	Ile	Ser	Thr	Lys	Trp	Glu		
		35				40					45						
ccg	aca	aag	gtt	gtt	cct	cag	gca	gac	aga	gtt	ctt	gtt	cgt	ctt	gaa	192	
Pro	Thr	Lys	Val	Val	Pro	Gln	Ala	Asp	Arg	Val	Leu	Val	Arg	Leu	Glu		
		50				55					60						
gat	ctt	cct	att	aaa	tcc	tca	ggt	gga	gta	ttg	ttg	cct	aaa	gca	gct	240	
Asp	Leu	Pro	Ile	Lys	Ser	Ser	Gly	Gly	Val	Leu	Leu	Pro	Lys	Ala	Ala		
	65				70				75					80			
gtg	aag	ttt	gag	aga	tac	cta	aca	gga	gag	att	ata	tct	gtt	ggt	tct	288	
Val	Lys	Phe	Glu	Arg	Tyr	Leu	Thr	Gly	Glu	Ile	Ile	Ser	Val	Gly	Ser		
				85					90					95			
gag	gtt	gga	caa	caa	gtt	gga	cct	gga	aag	agg	gtt	ttg	ttc	tct	gat	336	
Glu	Val	Gly	Gln	Gln	Val	Gly	Pro	Gly	Lys	Arg	Val	Leu	Phe	Ser	Asp		
			100					105					110				
gtg	agc	gct	tat	gag	gtc	gat	ttg	gga	acc	gat	gct	agg	cat	tgc	ttc	384	

PhoenixTemp32470.tmp.txt

Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Asp Ala Arg His Cys Phe  
115 120 125  
tgt aaa gag agt gac ttg ttg gcc ctc gtt gag tga  
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu  
130 135

<210> 102  
<211> 139  
<212> PRT  
<213> Arabidopsis thaliana

<400> 102  
Met Ala Ser Thr Phe Val Cys Ser Leu Pro Asp Pro Phe Phe Ala Phe  
1 5 10 15  
Pro Val Lys Ala Thr Thr Pro Ser Thr Ala Asn His Thr Leu Leu Gly  
20 25 30  
Ser Arg Arg Gly Cys Leu Arg Ile Lys Ala Ile Ser Thr Lys Trp Glu  
35 40 45  
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu  
50 55 60  
Asp Leu Pro Ile Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ala Ala  
65 70 75 80  
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Ile Ile Ser Val Gly Ser  
85 90 95  
Glu Val Gly Gln Val Gly Pro Gly Lys Arg Val Leu Phe Ser Asp  
100 105 110  
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Asp Ala Arg His Cys Phe  
115 120 125  
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu  
130 135

<210> 103  
<211> 315  
<212> DNA  
<213> Bradyrhizobium japonicum

<220>  
<221> CDS  
<222> (1)..(315)  
<223> transl\_table=11

<400> 103  
atg cat ttc cgc ccg ctg cac gac cgc gtg ctt gtg cgc cgc att gat  
Met His Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Ile Asp  
1 5 10 15  
gcc gag gaa aag acc gcc ggc ggc atc att ccc gac acc gca aag  
Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Pro Asp Thr Ala Lys  
20 25 30  
gag aag ccg cag gaa ggc gag atc atc gcc gcg ggc tcc ggt ggc aga  
Glu Lys Pro Gln Glu Gly Glu Ile Ile Ala Ala Gly Ser Gly Gly Arg  
35 40 45  
aac gag caa ggc cag ttg atc ccg atc gat gtc aag ccg gga gac cgc  
Asn Glu Gln Gly Gln Leu Ile Pro Ile Asp Val Lys Pro Gly Asp Arg  
50 55 60  
gtt ttg ttc ggc aaa tgg tgc ggt act gaa gtg aag atc gac ggc cag  
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Gln  
65 70 75 80  
gac tac ttg atc atg aag gag agc gat ctt ctg ggc gtg gtc gac aag  
Asp Tyr Leu Ile Met Lys Glu Ser Asp Leu Leu Gly Val Val Asp Lys  
85 90 95  
acc ggc tcg gtc aag aag gcc gcc tga  
Thr Gly Ser Val Lys Lys Ala Ala  
100

<210> 104  
<211> 104  
<212> PRT  
<213> Bradyrhizobium japonicum



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 104

```

Met His Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Ile Asp
1      5      10      15
Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys
      20      25      30
Glu Lys Pro Gln Glu Gly Glu Ile Ile Ala Ala Gly Ser Gly Gly Arg
      35      40      45
Asn Glu Gln Gly Gln Leu Ile Pro Ile Asp Val Lys Pro Gly Asp Arg
      50      55      60
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile Asp Gly Gln
65      70      75      80
Asp Tyr Leu Ile Met Lys Glu Ser Asp Leu Leu Gly Val Val Asp Lys
      85      90      95
Thr Gly Ser Val Lys Lys Ala Ala
      100

```

&lt;210&gt; 105

&lt;211&gt; 297

&lt;212&gt; DNA

&lt;213&gt; Rhizobium meliloti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(297)

&lt;223&gt; transl\_table=11

&lt;400&gt; 105

```

atg gca agc acc aat ttc cgt ccg ctg cac gac cgc gtt gtc gtc cgc      48
Met Ala Ser Thr Asn Phe Arg Pro Leu His Asp Arg Val Val Val Arg
1      5      10      15
cgc gtc gag tct gaa gaa aag acc aag ggc ggc atc atc att ccg gac      96
Arg Val Glu Ser Glu Glu Lys Thr Lys Gly Gly Ile Ile Ile Pro Asp
      20      25      30
acc gct aag gaa aag ccg cag gaa ggc gaa atc gtg gct gtc ggt tcg      144
Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Val Gly Ser
      35      40      45
ggt gcc cgt gac gaa agc ggc aag gtt gtt ccg ctc gac gtg aag gct      192
Gly Ala Arg Asp Glu Ser Gly Lys Val Val Pro Leu Asp Val Lys Ala
      50      55      60
ggc gac cgc atc ctg ttc ggc aag tgg tcc ggc acc gaa gtc aag atc      240
Gly Asp Arg Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile
65      70      75      80
aac ggc gaa gac ctt ctg atc atg aag gaa gcc gac atc atg ggt gtc      288
Asn Gly Glu Asp Leu Leu Ile Met Lys Glu Ala Asp Ile Met Gly Val
      85      90      95
atc ggc tga
Ile Gly
      297

```

&lt;210&gt; 106

&lt;211&gt; 98

&lt;212&gt; PRT

&lt;213&gt; Rhizobium meliloti

&lt;400&gt; 106

```

Met Ala Ser Thr Asn Phe Arg Pro Leu His Asp Arg Val Val Val Arg
1      5      10      15
Arg Val Glu Ser Glu Glu Lys Thr Lys Gly Gly Ile Ile Ile Pro Asp
      20      25      30
Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Val Gly Ser
      35      40      45
Gly Ala Arg Asp Glu Ser Gly Lys Val Val Pro Leu Asp Val Lys Ala
      50      55      60
Gly Asp Arg Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile
65      70      75      80
Asn Gly Glu Asp Leu Leu Ile Met Lys Glu Ala Asp Ile Met Gly Val
      85      90      95
Ile Gly

```

## PhoenixTemp32470.tmp.txt

<210> 107  
 <211> 288  
 <212> DNA  
 <213> Rhodobacter sphaeroides

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

```
<400> 107
atg gct ttc aaa ccg ctg cat gac cgt gtg ctg gtc cgc cgc gtc cag      48
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Gln
   1               5               10              15
agc gac gaa aag acc aag ggc ggt ctg atc atc ccc gat acc gcc aag      96
Ser Asp Glu Lys Thr Lys Gly Gly Leu Ile Ile Pro Asp Thr Ala Lys
               20              25              30
gaa aaa ccg gct gaa ggc gaa gtc gtg tcc tgc ggc gaa ggc gcc cgc      144
Glu Lys Pro Ala Glu Gly Glu Val Val Ser Cys Gly Glu Gly Ala Arg
               35              40              45
aag gat tcg ggc gag ctc atc gcc atg tcg gtg aag gcg ggc gac cgc      192
Lys Asp Ser Gly Glu Leu Ile Ala Met Ser Val Lys Ala Gly Asp Arg
               50              55              60
gtg ctg ttc ggc aaa tgg tcg ggc acc gaa gtc acc atc gac ggt gcc      240
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Thr Ile Asp Gly Ala
   65               70              75              80
gag ctg ctc atc atg aag gaa agc gac atc ctg ggg atc ctc agc      285
Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ser
               85              90              95
tga                                                                288
```

<210> 108  
 <211> 95  
 <212> PRT  
 <213> Rhodobacter sphaeroides

```
<400> 108
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Gln
1               5               10              15
Ser Asp Glu Lys Thr Lys Gly Gly Leu Ile Ile Pro Asp Thr Ala Lys
               20              25              30
Glu Lys Pro Ala Glu Gly Glu Val Val Ser Cys Gly Glu Gly Ala Arg
               35              40              45
Lys Asp Ser Gly Glu Leu Ile Ala Met Ser Val Lys Ala Gly Asp Arg
               50              55              60
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Thr Ile Asp Gly Ala
65               70              75              80
Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ser
               85              90              95
```

<210> 109  
 <211> 297  
 <212> DNA  
 <213> Rhizobium meliloti

<220>  
 <221> CDS  
 <222> (1)..(297)  
 <223> transl\_table=11

```
<400> 109
atg gca agc acc gat ttc cgt ccg ctg cac gac cgc gtt gtc gtc cgc      48
Met Ala Ser Thr Asp Phe Arg Pro Leu His Asp Arg Val Val Val Arg
   1               5               10              15
cgc gtc gag tct gaa gaa aag acc aag ggc gtc atc att ccg gac      96
Arg Val Glu Ser Glu Glu Lys Thr Lys Gly Gly Val Ile Ile Pro Asp
```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
acc gct aag gaa aag ccg cag gaa ggc gaa atc gtg gct gtc ggt tgc      144
Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Val Gly Ser
      35      40      45
ggt gcc cgt gac gaa agc ggc aag gtt gtt ccg ctc gac gtg aag gct      192
Gly Ala Arg Asp Glu Ser Gly Lys Val Val Pro Leu Asp Val Lys Ala
      50      55      60
ggc gac cgc atc ctg ttc ggc aag tgg tcc ggc acc gaa gtc aag atc      240
Gly Asp Arg Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile
      65      70      75      80
aac ggc gaa gac ctt ctg atc atg aag gaa gcc gac atc atg ggt gtc      288
Asn Gly Glu Asp Leu Leu Ile Met Lys Glu Ala Asp Ile Met Gly Val
      85      90      95
atc ggc tga
Ile Gly
      297

```

<210> 110  
 <211> 98  
 <212> PRT  
 <213> Rhizobium meliloti

```

<400> 110
Met Ala Ser Thr Asp Phe Arg Pro Leu His Asp Arg Val Val Val Arg
1      5      10      15
Arg Val Glu Ser Glu Glu Lys Thr Lys Gly Gly Val Ile Ile Pro Asp
      20      25      30
Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Val Gly Ser
      35      40      45
Gly Ala Arg Asp Glu Ser Gly Lys Val Val Pro Leu Asp Val Lys Ala
      50      55      60
Gly Asp Arg Ile Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile
65      70      75      80
Asn Gly Glu Asp Leu Leu Ile Met Lys Glu Ala Asp Ile Met Gly Val
      85      90      95
Ile Gly

```

<210> 111  
 <211> 297  
 <212> DNA  
 <213> Agrobacterium tumefaciens

<220>  
 <221> CDS  
 <222> (1)..(297)  
 <223> transl\_table=11

```

<400> 111
atg aca agc acc aat ttc cgt ccg ctt cat gat cgc gtc gtc gtt cgt      48
Met Thr Ser Thr Asn Phe Arg Pro Leu His Asp Arg Val Val Val Arg
1      5      10      15
cgc gtt gag tcc gaa gca aag acc aag ggc ggc atc atc att ccc gat      96
Arg Val Glu Ser Glu Ala Lys Thr Lys Gly Gly Ile Ile Ile Pro Asp
      20      25      30
acc gcc aag gaa aag ccg cag gaa ggc gaa atc gtc gcc gtc ggt tcc      144
Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Val Gly Ser
      35      40      45
ggc gcg cgc gat gag gcc ggc aag gtc gtc gct ctc gac gtc aag gtt      192
Gly Ala Arg Asp Glu Ala Gly Lys Val Val Ala Leu Asp Val Lys Val
      50      55      60
ggc gat cgc gtt ctg ttc ggc aag tgg tcc ggc act gaa gtc aag ctc      240
Gly Asp Arg Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Leu
      65      70      75      80
gac ggc gaa gac ctt ctg atc atg aag gaa gcc gac atc atg ggt atc      288
Asp Gly Glu Asp Leu Leu Ile Met Lys Glu Ala Asp Ile Met Gly Ile
      85      90      95
atc ggc tga
Ile Gly
      297

```

<210> 112  
 <211> 98  
 <212> PRT  
 <213> Agrobacterium tumefaciens

<400> 112  
 Met Thr Ser Thr Asn Phe Arg Pro Leu His Asp Arg Val Val Val Arg  
 1 5 10 15  
 Arg Val Glu Ser Glu Ala Lys Thr Lys Gly Gly Ile Ile Ile Pro Asp  
 20 25 30  
 Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Ile Val Ala Val Gly Ser  
 35 40 45  
 Gly Ala Arg Asp Glu Ala Gly Lys Val Val Ala Leu Asp Val Lys Val  
 50 55 60  
 Gly Asp Arg Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Leu  
 65 70 75 80  
 Asp Gly Glu Asp Leu Leu Ile Met Lys Glu Ala Asp Ile Met Gly Ile  
 85 90 95  
 Ile Gly

<210> 113  
 <211> 297  
 <212> DNA  
 <213> Brucella abortus

<220>  
 <221> CDS  
 <222> (1)..(297)  
 <223> transl\_table=11

<400> 113  
 atg gct gat atc aag ttc cgc ccg ctt cat gac cgc gtc gtc gtt cgc 48  
 Met Ala Asp Ile Lys Phe Arg Pro Leu His Asp Arg Val Val Val Arg  
 1 5 10 15  
 cgc gtc gaa tcg gaa gcc aag act gcc ggc ggc atc atc atc cct gac 96  
 Arg Val Glu Ser Glu Ala Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp  
 20 25 30  
 act gcc aag gaa aag ccg cag gaa ggc gaa gtc gtt gca gcc ggt gct 144  
 Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Val Val Ala Ala Gly Ala  
 35 40 45  
 ggc gct cgt gac gaa gct ggc aag ctg gtt ccg ctg gat gtc aag gct 192  
 Gly Ala Arg Asp Glu Ala Gly Lys Leu Val Pro Leu Asp Val Lys Ala  
 50 55 60  
 ggc gac cgc gtt ctg ttc ggc aag tgg tcg ggc acc gaa gtc aag atc 240  
 Gly Asp Arg Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile  
 65 70 75 80  
 ggc ggc gaa gac ctg ctg atc atg aag gaa tcc gac att ctg ggt att 288  
 Gly Gly Glu Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile  
 85 90 95  
 gtc ggc taa 297  
 Val Gly

<210> 114  
 <211> 98  
 <212> PRT  
 <213> Brucella abortus

<400> 114  
 Met Ala Asp Ile Lys Phe Arg Pro Leu His Asp Arg Val Val Val Arg  
 1 5 10 15  
 Arg Val Glu Ser Glu Ala Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp  
 20 25 30  
 Thr Ala Lys Glu Lys Pro Gln Glu Gly Glu Val Val Ala Ala Gly Ala  
 35 40 45  
 Gly Ala Arg Asp Glu Ala Gly Lys Leu Val Pro Leu Asp Val Lys Ala

## PhoenixTemp32470.tmp.txt

50 55 60  
 Gly Asp Arg Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Lys Ile  
 65 70 75 80  
 Gly Gly Glu Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile  
 85 90 95  
 Val Gly

<210> 115  
 <211> 288  
 <212> DNA  
 <213> Paracoccus denitrificans

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

<400> 115  
 atg gct ttc aaa ccg ctg cat gac cgt gtt ctg gtc cgt cgc gtc cag 48  
 Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Gln  
 1 5 10 15  
 tcg gac gaa aag acc aag ggc ggg ctg atc atc ccc gac agc gcc aag 96  
 Ser Asp Glu Lys Thr Lys Gly Gly Leu Ile Ile Pro Asp Ser Ala Lys  
 20 25 30  
 gag aaa ccg gcc gag ggc gaa atc acg tcc gtt ggc gaa ggc gcg cgc 144  
 Glu Lys Pro Ala Glu Gly Glu Ile Thr Ser Val Gly Glu Gly Ala Arg  
 35 40 45  
 aag gat tct ggc gaa ctg atc gcg ccc gcg gtc aag gcc ggc gac cgg 192  
 Lys Asp Ser Gly Glu Leu Ile Ala Pro Ala Val Lys Ala Gly Asp Arg  
 50 55 60  
 gtg ctc ttc ggc aaa tgg tcg ggc acc gag gtc acg gtc gac ggc gaa 240  
 Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Thr Val Asp Gly Glu  
 65 70 75 80  
 gag ctg ctg atc atg aag gaa agc gac atc ctg ggc atc atc gcc 285  
 Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Ile Ala  
 85 90 95  
 tga 288

<210> 116  
 <211> 95  
 <212> PRT  
 <213> Paracoccus denitrificans

<400> 116  
 Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Gln  
 1 5 10 15  
 Ser Asp Glu Lys Thr Lys Gly Gly Leu Ile Ile Pro Asp Ser Ala Lys  
 20 25 30  
 Glu Lys Pro Ala Glu Gly Glu Ile Thr Ser Val Gly Glu Gly Ala Arg  
 35 40 45  
 Lys Asp Ser Gly Glu Leu Ile Ala Pro Ala Val Lys Ala Gly Asp Arg  
 50 55 60  
 Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Thr Val Asp Gly Glu  
 65 70 75 80  
 Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Ile Ala  
 85 90 95

<210> 117  
 <211> 288  
 <212> DNA  
 <213> Rhodopseudomonas palustris

<220>  
 <221> CDS  
 <222> (1)..(288)  
 <223> transl\_table=11

## PhoenixTemp32470.tmp.txt

```

<400> 117
atg gct ttc aaa ccg ctg cat gac cgt gtg ctg gtc cgc cgc gtc cag      48
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Gln
  1          5          10          15
agc gac gaa aag acc aag ggc ggt ctg atc atc ccc gac acc gcc aag      96
Ser Asp Glu Lys Thr Lys Gly Gly Leu Ile Ile Pro Asp Thr Ala Lys
          20          25          30
gaa aag ccg gcg gaa ggc gaa gtc gtg gcc tgc ggc gaa ggc gcc cgc      144
Glu Lys Pro Ala Glu Gly Glu Val Val Ala Cys Gly Glu Gly Ala Arg
          35          40          45
aag gac tcg ggc gag ctg atc gcc atg tcg gtg aag gcg ggc gac cgc      192
Lys Asp Ser Gly Glu Leu Ile Ala Met Ser Val Lys Ala Gly Asp Arg
          50          55          60
gtg ctg ttc ggc aaa tgg tcg ggc acc gag gtc acc atc gac ggt gcg      240
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Thr Ile Asp Gly Ala
  65          70          75          80
gaa ctg ctc atc atg aag gaa agc gac atc ctc ggc atc ctc agc      285
Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ser
          85          90          95
tga
      288

```

```

<210> 118
<211> 95
<212> PRT
<213> Rhodopseudomonas palustris

```

```

<400> 118
Met Ala Phe Lys Pro Leu His Asp Arg Val Leu Val Arg Arg Val Gln
  1          5          10          15
Ser Asp Glu Lys Thr Lys Gly Gly Leu Ile Ile Pro Asp Thr Ala Lys
          20          25          30
Glu Lys Pro Ala Glu Gly Glu Val Val Ala Cys Gly Glu Gly Ala Arg
          35          40          45
Lys Asp Ser Gly Glu Leu Ile Ala Met Ser Val Lys Ala Gly Asp Arg
          50          55          60
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Thr Ile Asp Gly Ala
  65          70          75          80
Glu Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Leu Ser
          85          90          95

```

```

<210> 119
<211> 288
<212> DNA
<213> Zymomonas mobilis

```

```

<220>
<221> CDS
<222> (1)..(288)
<223> transl_table=11

```

```

<400> 119
atg aat ttt cgt ccg cta cat gat cga gtt tta gtc cgt cgc gtt gct      48
Met Asn Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Val Ala
  1          5          10          15
gct gaa gaa aag aca gct ggc ggt atc att atc cct gat aca gcc aaa      96
Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys
          20          25          30
gaa aag ccg cag gaa ggt gaa gtt atc gca gct ggt aac gga acc cat      144
Glu Lys Pro Gln Glu Gly Glu Val Ile Ala Ala Gly Asn Gly Thr His
          35          40          45
agc gaa gac ggt aaa gtc gtt cct ttg gac gtc aaa gct ggt gat cgg      192
Ser Glu Asp Gly Lys Val Val Pro Leu Asp Val Lys Ala Gly Asp Arg
          50          55          60
gtt ctg ttt ggc aaa tgg tca ggc acc gaa gtt cgc gtt gat ggt gaa      240
Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Arg Val Asp Gly Glu
  65          70          75          80

```

## PhoenixTemp32470.tmp.txt

gac ctc ctc atc atg aag gaa agc gat att ctt ggc att atc agc 285  
 Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Ile Ser 95  
 taa 288

<210> 120  
 <211> 95  
 <212> PRT  
 <213> Zymomonas mobilis

<400> 120  
 Met Asn Phe Arg Pro Leu His Asp Arg Val Leu Val Arg Arg Val Ala  
 1 5 10 15  
 Ala Glu Glu Lys Thr Ala Gly Gly Ile Ile Ile Pro Asp Thr Ala Lys  
 20 25 30  
 Glu Lys Pro Gln Glu Gly Glu Val Ile Ala Ala Gly Asn Gly Thr His  
 35 40 45  
 Ser Glu Asp Gly Lys Val Val Pro Leu Asp Val Lys Ala Gly Asp Arg  
 50 55 60  
 Val Leu Phe Gly Lys Trp Ser Gly Thr Glu Val Arg Val Asp Gly Glu  
 65 70 75 80  
 Asp Leu Leu Ile Met Lys Glu Ser Asp Ile Leu Gly Ile Ile Ser 95  
 85 90

<210> 121  
 <211> 423  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(423)

<400> 121  
 atg gcc ccc tcc ctc ctc gcc gcc gcc gcc tcg ccc ttc ctc ctc cac 48  
 Met Ala Pro Ser Leu Leu Ala Ala Ala Ala Ser Pro Phe Leu Leu His 15  
 1 5 10  
 ggc gcc gcc gcc gcc agt ggc agc cgc agg ccg ctc gtc gcc gcc gcc 96  
 Gly Ala Ala Ala Ser Gly Ser Arg Arg Pro Leu Val Ala Ala Ala 20 25 30  
 gcc acc ggc cgc cgc gcc gcc tcc tcc ctc cgc gtc gcc gcc ctc aag 144  
 Ala Thr Gly Arg Arg Ala Ala Ser Ser Leu Arg Val Ala Ala Leu Lys 35 40 45  
 tac gac cct tcc aag gtg gcg ccg cag tcc gac cgg gtc gtc gtc cgc 192  
 Tyr Asp Pro Ser Lys Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg 50 55 60  
 ctc gaa cag att cct gag aaa tct gtt gga gga gtc ctg ctg cca aaa 240  
 Leu Glu Gln Ile Pro Glu Lys Ser Val Gly Gly Val Leu Leu Pro Lys 65 70 75 80  
 tct gct gtt aag ttt gag agg tat ttg atg ggt gag att ttg tct gtt 288  
 Ser Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val 85 90 95  
 ggt gct gat gtt aat gaa gtt gaa gct gga aag aag gtt ctc ttc tct 336  
 Gly Ala Asp Val Asn Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser 100 105 110  
 gac ata aat gct tat gag gtg gac ctg ggt acc gat gag aag cac tgc 384  
 Asp Ile Asn Ala Tyr Glu Val Asp Leu Gly Thr Asp Glu Lys His Cys 115 120 125  
 ttc tgc cgt gag tct gat ctg tta gcc gtt gtt gaa tga 423  
 Phe Cys Arg Glu Ser Asp Leu Leu Ala Val Val Glu 130 135 140

<210> 122  
 <211> 140  
 <212> PRT  
 <213> Oryza sativa

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 122

Met Ala Pro Ser Leu Leu Ala Ala Ala Ser Pro Phe Leu Leu His  
 1 5 10 15  
 Gly Ala Ala Ala Ser Gly Ser Arg Arg Pro Leu Val Ala Ala Ala  
 20 25 30  
 Ala Thr Gly Arg Arg Ala Ala Ser Ser Leu Arg Val Ala Ala Leu Lys  
 35 40 45  
 Tyr Asp Pro Ser Lys Val Ala Pro Gln Ser Asp Arg Val Leu Val Arg  
 50 55 60  
 Leu Glu Gln Ile Pro Glu Lys Ser Val Gly Gly Val Leu Leu Pro Lys  
 65 70 75 80  
 Ser Ala Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val  
 85 90 95  
 Gly Ala Asp Val Asn Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser  
 100 105 110  
 Asp Ile Asn Ala Tyr Glu Val Asp Leu Gly Thr Asp Glu Lys His Cys  
 115 120 125  
 Phe Cys Arg Glu Ser Asp Leu Ala Val Val Glu  
 130 135 140

&lt;210&gt; 123

&lt;211&gt; 420

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(420)

&lt;400&gt; 123

atg gct act tcc act ttc gtc tct cta cca aaa ccc ttc ttc gct ttt	48
Met Ala Thr Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Ala Phe	
1 5 10 15	
ccg gtt aaa acc aac act cct ccc cta gct aac cat aag ctt ctc gga	96
Pro Val Lys Thr Asn Thr Pro Pro Leu Ala Asn His Lys Leu Leu Gly	
20 25 30	
agc cga aga ggt tgt ctg aga gtc aaa gcg att tcc act aaa tgg gaa	144
Ser Arg Arg Gly Cys Leu Arg Val Lys Ala Ile Ser Thr Lys Trp Glu	
35 40 45	
ccg aca aag gtt gtt cct caa gca gac agg gtt ctt gtt cgc ctt gaa	192
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu	
50 55 60	
gag ctt gct cag aca acc tca ggt gga gtg ttg ttg cct aaa gca gct	240
Glu Leu Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala	
65 70 75 80	
gtt aag ttt gag aga tac tta acc gga gag gtt gtc tct gtt ggt tct	288
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser	
85 90 95	
gag gtt gga caa caa gtt ggc cct gga aag aag gtt ctg ttc tct gac	336
Glu Val Gly Gln Gln Val Gly Pro Gly Lys Lys Val Leu Phe Ser Asp	
100 105 110	
gtg agc gct tat gag gtc gat ttg ggg acg ggt gct agg cat tgc ttt	384
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe	
115 120 125	
tgt aaa gag agc gac ttg ttg gcc ctc gtg gag taa	420
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu	
130 135	

&lt;210&gt; 124

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 124

Met Ala Thr Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Ala Phe  
 1 5 10 15  
 Pro Val Lys Thr Asn Thr Pro Pro Leu Ala Asn His Lys Leu Leu Gly  
 20 25 30  
 Ser Arg Arg Gly Cys Leu Arg Val Lys Ala Ile Ser Thr Lys Trp Glu



## PhoenixTemp32470.tmp.txt

35 40 45  
 Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu  
 50 55 60  
 Glu Leu Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala  
 65 70 75 80  
 Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser  
 85 90 95  
 Glu Val Gly Gln Val Gly Pro Gly Lys Lys Val Leu Phe Ser Asp  
 100 105 110  
 Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe  
 115 120 125  
 Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu  
 130 135

&lt;210&gt; 125

&lt;211&gt; 420

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(420)

&lt;400&gt; 125

atg gct act tcc act ttc gtc tct cta cca aaa ccc ttc ttc gct ttt	48
Met Ala Thr Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Ala Phe	
1 5 10 15	
ccg gtg aaa acc aac act cct gct ctg gct aac cac aag ctt ctc gga	96
Pro Val Lys Thr Asn Thr Pro Ala Leu Ala Asn His Lys Leu Leu Gly	
20 25 30	
agc cga aga ggt tgt ctc aga gtc aaa gcg att tca act aaa tgg gaa	144
Ser Arg Arg Gly Cys Leu Arg Val Lys Ala Ile Ser Thr Lys Trp Glu	
35 40 45	
ccg aca aag gtt gtt cct caa gca gac agg gtt ctt gtt cgc ctt gaa	192
Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu	
50 55 60	
gag gtt gct cag aca acc tca ggt gga gtg ttg ttg cct aaa gca gct	240
Glu Val Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala	
65 70 75 80	
gtt aag ttt gag aga tac tta acc gga gag gtt gtc tct gtt ggt tct	288
Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser	
85 90 95	
gag gtt gga caa caa gtt ggc cct gga aag aag gtt ctg ttc tct gac	336
Glu Val Gly Gln Gln Val Gly Pro Gly Lys Lys Val Leu Phe Ser Asp	
100 105 110	
gtg agc gct tat gag gtc gat ttg ggg acg ggt gct agg cat tgc ttt	384
Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe	
115 120 125	
tgt aaa gag agc gac ttg ttg gcc ctc gtg gag tga	420
Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu	
130 135	

&lt;210&gt; 126

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 126

Met Ala Thr Ser Thr Phe Val Ser Leu Pro Lys Pro Phe Phe Ala Phe  
 1 5 10 15  
 Pro Val Lys Thr Asn Thr Pro Ala Leu Ala Asn His Lys Leu Leu Gly  
 20 25 30  
 Ser Arg Arg Gly Cys Leu Arg Val Lys Ala Ile Ser Thr Lys Trp Glu  
 35 40 45  
 Pro Thr Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu  
 50 55 60  
 Glu Val Ala Gln Thr Thr Ser Gly Gly Val Leu Leu Pro Lys Ala Ala  
 65 70 75 80  
 Val Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser

## PhoenixTemp32470.tmp.txt

85 90 95  
 Glu Val Gly Gln Val Gly Pro Gly Lys Lys Val Leu Phe Ser Asp  
 100 105 110  
 Val Ser Ala Tyr Glu Val Asp Leu Gly Thr Gly Ala Arg His Cys Phe  
 115 120 125  
 Cys Lys Glu Ser Asp Leu Leu Ala Leu Val Glu  
 130 135

<210> 127  
 <211> 408  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(408)

<400> 127  
 atg gcg ccc tcc ctc ctg gcc gcc gtc tcc gcc tcg ccc ttc ctc cta 48  
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 1 5 10 15  
 ccc gcc agc agc gcc atc agc cgc agg cca ctg gcc gct gcc cca acc 96  
 Pro Gly Ser Ser Gly Ile Ser Arg Arg Pro Leu Gly Ala Ala Pro Thr  
 20 25 30  
 cgc cgg gcc gga ctg cgc gtg gcc gcg ctt aag tac gac cct gct aag 144  
 Arg Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys  
 35 40 45  
 gtg gca ccg cag aac gac cgg gtg ctc gtc cgt ctt cag cag atc cct 192  
 Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu Gln Gln Ile Pro  
 50 55 60  
 gag aaa tct gct ggt ggt gta ttg cta ccg aaa tct gct gtt aag ttt 240  
 Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe  
 65 70 75 80  
 gag agg tat ctg atg ggt gag att cta tcg gtt ggt gct gat gtt agt 288  
 Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Ser  
 85 90 95  
 gaa gtt gag gct ggg aag aag gtt ctc ttc tca gac atc aat gct tac 336  
 Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr  
 100 105 110  
 gag gtg gac ctt gat acg gat gag aag cac tgc ttc tgc cgg gag tca 384  
 Glu Val Asp Leu Asp Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser  
 115 120 125  
 gat ttg tta gct gta gtt gaa tga 408  
 Asp Leu Leu Ala Val Val Glu  
 130 135

<210> 128  
 <211> 135  
 <212> PRT  
 <213> Zea mays

<400> 128  
 Met Ala Pro Ser Leu Leu Ala Ala Val Ser Ala Ser Pro Phe Leu Leu  
 1 5 10 15  
 Pro Gly Ser Ser Gly Ile Ser Arg Arg Pro Leu Gly Ala Ala Pro Thr  
 20 25 30  
 Arg Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys  
 35 40 45  
 Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu Gln Gln Ile Pro  
 50 55 60  
 Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe  
 65 70 75 80  
 Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Ser  
 85 90 95  
 Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr  
 100 105 110  
 Glu Val Asp Leu Asp Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser  
 115 120 125  
 Asp Leu Leu Ala Val Val Glu

130

135

<210> 129  
 <211> 408  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(408)

<400> 129  
 atg gcg ccc tcc ctc ctg gcc gcc gtc tcc gcc tcg ccc ttc ctc cta 48  
 Met Ala Pro Ser Leu Leu Ala Ala Val Ser Ala Ser Pro Phe Leu Leu  
 1 5 10 15  
 ccc ggc agc aac ggc atc agc cgc agg cca ctg ggc gct gcc cca acc 96  
 Pro Gly Ser Asn Gly Ile Ser Arg Arg Pro Leu Gly Ala Ala Pro Thr  
 20 25 30  
 cgc cgg gcc gga ctg cgc gtg gcc gcg ctt aag tac gac cct gct aag 144  
 Arg Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys  
 35 40 45  
 gtg gca ccg cag aac gac cgg gtg ctc gtc cgt ctt cag cag atc cct 192  
 Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu Gln Gln Ile Pro  
 50 55 60  
 gag aaa tct gct ggt ggt gta ttg cta ccg aaa tct gct gtt aag ttt 240  
 Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe  
 65 70 75 80  
 gag agg tat ctg atg ggt gag att cta tcg gtt ggt gct gat gtt agt 288  
 Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Ser  
 85 90 95  
 gaa gtt gag gct ggg aag aag gtt ctc ttc tca gac atc aat gct tac 336  
 Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr  
 100 105 110  
 gag gtg gac ctt gat acg gat gag aag cac tgc ttc tgc cgg gag tca 384  
 Glu Val Asp Leu Asp Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser  
 115 120 125  
 gat ttg tta gct gta gtt gaa tga 408  
 Asp Leu Leu Ala Val Val Glu  
 130 135

<210> 130  
 <211> 135  
 <212> PRT  
 <213> Zea mays

<400> 130  
 Met Ala Pro Ser Leu Leu Ala Ala Val Ser Ala Ser Pro Phe Leu Leu  
 1 5 10 15  
 Pro Gly Ser Asn Gly Ile Ser Arg Arg Pro Leu Gly Ala Ala Pro Thr  
 20 25 30  
 Arg Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp Pro Ala Lys  
 35 40 45  
 Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu Gln Gln Ile Pro  
 50 55 60  
 Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala Val Lys Phe  
 65 70 75 80  
 Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Val Gly Ala Asp Val Ser  
 85 90 95  
 Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile Asn Ala Tyr  
 100 105 110  
 Glu Val Asp Leu Asp Thr Asp Glu Lys His Cys Phe Cys Arg Glu Ser  
 115 120 125  
 Asp Leu Leu Ala Val Val Glu  
 130 135

<210> 131  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer  
 <400> 131  
 atggcttcga gtttcattac 20  
 <210> 132  
 <211> 22  
 <212> DNA  
 <213> Artificial sequence  
 <220>  
 <223> primer  
 <400> 132  
 tcactggacg atagctaaca ag 22  
 <210> 133  
 <211> 103  
 <212> PRT  
 <213> Artificial sequence  
 <220>  
 <223> consensus sequence  
 <220>  
 <221> Variant  
 <222> (2)..(3)  
 <223> Xaa in position 2 to 3 is any amino acid  
 <220>  
 <221> Variant  
 <222> (10)..(15)  
 <223> Xaa in position 10 to 15 is any amino acid  
 <220>  
 <221> Variant  
 <222> (16)..(27)  
 <223> Xaa in position 16 to 27 is any or no amino acid  
 <220>  
 <221> Variant  
 <222> (29)..(30)  
 <223> Xaa in position 29 to 30 is any amino acid  
 <220>  
 <221> Variant  
 <222> (33)..(35)  
 <223> Xaa in position 33 to 35 is any amino acid  
 <220>  
 <221> Variant  
 <222> (37)..(38)  
 <223> Xaa in position 37 to 38 is any amino acid  
 <220>  
 <221> Variant  
 <222> (40)..(40)  
 <223> Xaa in position 40 is any amino acid  
 <220>  
 <221> Variant  
 <222> (41)..(42)  
 <223> Xaa in position 41 to 42 is any or no amino acid  
 <220>  
 <221> Variant

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<222> (44)..(47)
<223> Xaa in position 44 to 47 is any amino acid

<220>
<221> Variant
<222> (50)..(53)
<223> Xaa in position 50 to 53 is any amino acid

<220>
<221> Variant
<222> (55)..(59)
<223> Xaa in position 55 to 59 is any amino acid

<220>
<221> Variant
<222> (60)..(68)
<223> Xaa in position 60 to 68 is any or no amino acid

<220>
<221> Variant
<222> (70)..(71)
<223> Xaa in position 70 to 71 is any amino acid

<220>
<221> Variant
<222> (73)..(74)
<223> Xaa in position 73 to 74 is any amino acid

<220>
<221> Variant
<222> (78)..(83)
<223> Xaa in position 78 to 83 is any amino acid

<220>
<221> Variant
<222> (86)..(96)
<223> Xaa in position 86 to 96 is any amino acid

<220>
<221> Variant
<222> (97)..(98)
<223> Xaa in position 97 to 98 is any or no amino acid

<220>
<221> Variant
<222> (102)..(102)
<223> Xaa in position 102 is any amino acid

<400> 133
Pro Xaa Xaa Asp Arg Val Leu Val Arg Xaa Xaa Xaa Xaa Xaa Xaa
1      5      10      15
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Lys Xaa Xaa Gly Gly
20      25      30
Xaa Xaa Xaa Pro Xaa Xaa Ala Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Gly
35      40      45
Glu Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
50      55      60
Xaa Xaa Xaa Xaa Val Xaa Xaa Gly Xaa Xaa Val Leu Phe Xaa Xaa Xaa
65      70      75      80
Xaa Xaa Xaa Glu Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
85      90      95
Xaa Xaa Glu Ser Asp Xaa Leu
100

<210> 134
<211> 20
<212> PRT
<213> Artificial sequence

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<220>
<223> protein pattern

<220>
<221> Variant
<222> (2)..(5)
<223> Xaa in position 2 to 5 is any or no amino acid

<220>
<221> Variant
<222> (9)..(9)
<223> Xaa in position 9 is Gly, Ser or Thr

<220>
<221> Variant
<222> (10)..(10)
<223> Xaa in position 10 is Asp or Lys

<220>
<221> Variant
<222> (11)..(11)
<223> Xaa in position 11 is any amino acid

<220>
<221> Variant
<222> (12)..(12)
<223> Xaa in position 12 is Asp, Asn or Ser

<220>
<221> Variant
<222> (13)..(13)
<223> Xaa in position 13 is Ala or Gly

<220>
<221> Variant
<222> (14)..(14)
<223> Xaa in position 14 is any amino acid

<220>
<221> Variant
<222> (16)..(16)
<223> Xaa in position 16 is Ile or Val

<220>
<221> Variant
<222> (17)..(17)
<223> Xaa in position 17 is any amino acid

<220>
<221> Variant
<222> (18)..(18)
<223> Xaa in position 18 is Phe, Ile, Leu or Val

<220>
<221> Variant
<222> (19)..(19)
<223> Xaa in position 19 is Asp or Gly

<220>
<221> Variant
<222> (20)..(20)
<223> Xaa in position 20 is Gly or Thr

<400> 134
Lys Xaa Xaa Xaa Xaa Val Leu Phe Xaa Xaa Xaa Xaa Xaa Glu Xaa
1          5          10          15
Xaa Xaa Xaa Xaa
20

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<210> 135  
 <211> 9  
 <212> PRT  
 <213> Artificial sequence  
  
 <220>  
 <223> protein pattern  
  
 <220>  
 <221> Variant  
 <222> (2)..(3)  
 <223> Xaa in position 2 to 3 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (8)..(8)  
 <223> Xaa in position 8 is Ile or Val  
  
 <220>  
 <221> Variant  
 <222> (9)..(9)  
 <223> Xaa in position 9 is Lys or Arg  
  
 <400> 135  
 Pro Xaa Xaa Asp Arg Val Leu Xaa Xaa  
 1 5

<210> 136  
 <211> 12  
 <212> PRT  
 <213> Artificial sequence  
  
 <220>  
 <223> protein pattern  
  
 <220>  
 <221> Variant  
 <222> (2)..(2)  
 <223> Xaa in position 2 is Ser or Thr  
  
 <220>  
 <221> Variant  
 <222> (3)..(3)  
 <223> Xaa in position 3 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (6)..(6)  
 <223> Xaa in position 6 is Ile, Leu or Val  
  
 <220>  
 <221> Variant  
 <222> (7)..(8)  
 <223> Xaa in position 7 to 8 is Ile or Leu  
  
 <220>  
 <221> Variant  
 <222> (10)..(10)  
 <223> Xaa in position 10 is Asp or Lys  
  
 <220>  
 <221> Variant  
 <222> (11)..(11)  
 <223> Xaa in position 11 is Ala, Ser or Thr  
  
 <400> 136

Lys Xaa Xaa Gly Gly Xaa Xaa Xaa Pro Xaa Xaa Ala  
 1 5 10

<210> 137  
 <211> 390  
 <212> DNA  
 <213> Azotobacter vinelandii

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 137  
 atg gca aaa cct gct gct cgt cct cgt aag aaa gtc aag aag acc gtg 48  
 Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Val Lys Lys Thr Val  
 1 5 10 15  
 gtg gat ggc atc gcc cat atc cat gcg tcc ttc aac aac acc atc gtg 96  
 Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 acc atc acc gac cgc cag ggt aat gcc ctt tcc tgg gcc acc tcc ggt 144  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly  
 35 40 45  
 ggc tcc ggc ttc cgt ggc tcg cgc aag agt act ccg ttc gcc gcc cag 192  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 gtg gct gcc gag cgt gcc ggt caa gcc gct ttg gaa tat gga ctg aag 240  
 Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys  
 65 70 75 80  
 aac ctg gac gtg aac gtc aag gga cct ggc ccg ggt cgc gag tcc gct 288  
 Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
 85 90 95  
 gtc cgt gcc ctg aat gcc tgc ggt tac aag att gcc agc atc acc gat 336  
 Val Arg Ala Leu Asn Ala Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp  
 100 105 110  
 gtg acc ccg atc ccg cac aat ggc tgc cgt ccg ccg aag aag cgt cgc 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 gtg taa 390  
 Val

<210> 138  
 <211> 129  
 <212> PRT  
 <213> Azotobacter vinelandii

<400> 138  
 Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Val Lys Lys Thr Val  
 1 5 10 15  
 Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys  
 65 70 75 80  
 Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
 85 90 95  
 Val Arg Ala Leu Asn Ala Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 139  
 <211> 390



<212> DNA  
 <213> Yersinia pestis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

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<400> 139
atg gca aag gca cct att cgt gca cgt aag cgt gta aga aag aca gtc      48
Met Ala Lys Ala Pro Ile Arg Ala Arg Lys Arg Val Arg Lys Thr Val
  1          5          10          15
tct gac ggt gtg gct cat atc cat gct tct ttc aac aac acc atc gtt      96
Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
          20          25          30
acc att act gat cgt cag ggt aac gca ttg ggt tgg gca aca gca ggt      144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly
          35          40          45
ggg tcc ggt ttc cgt ggt tct cgt aag tct act ccg ttt gca gcg caa      192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
          50          55          60
gtt gca gca gag cgc tgc gct gaa gca gtg aaa gaa tac ggt atc aag      240
Val Ala Ala Glu Arg Cys Ala Glu Ala Val Lys Glu Tyr Gly Ile Lys
          65          70          75
aat ctg gaa gtt atg gtt aaa gga cct ggt ccg ggc cgt gag tct act      288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
          85          90          95
atc cgt gcg tta aac gcg gct ggt ttt cgc atc act aat att act gat      336
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
          100          105          110
gtg act ccg atc cct cat aac ggt tgt cgt ccg ccg aaa aag cgc cgc      384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
          115          120          125
gta taa
Val
390

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<210> 140  
 <211> 129  
 <212> PRT  
 <213> Yersinia pestis

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<400> 140
Met Ala Lys Ala Pro Ile Arg Ala Arg Lys Arg Val Arg Lys Thr Val
  1          5          10          15
Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
          20          25          30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly
          35          40          45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
          50          55          60
Val Ala Ala Glu Arg Cys Ala Glu Ala Val Lys Glu Tyr Gly Ile Lys
          65          70          75
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
          85          90          95
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
          100          105          110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
          115          120          125
Val

```

<210> 141  
 <211> 456  
 <212> DNA  
 <213> Aedes aegypti

<220>  
 <221> CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 141

atg gct ccc cgt aag aac aaa acc gta aag gaa gag gtg cag gtc tcg	48
Met Ala Pro Arg Lys <sub>5</sub> Asn Lys Thr Val Lys <sub>10</sub> Glu Glu Val Gln Val Ser <sub>15</sub>	
ctc ggt ccc cag gtc cgc gag ggt gag atc gtc ttc gga gtg gct cac	96
Leu Gly Pro Gln <sub>20</sub> Val Arg Glu Gly <sub>25</sub> Ile Val Phe Gly <sub>30</sub> Val Ala His	
atc tac gcc agc ttc aac gac acc ttc gtc cat gtc acg gat ctg tcc	144
Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
ggc aag gaa acc atc tcc cgc gtc acc gga gga atg aag gtc aag gcc	192
Gly Lys Glu Thr Ile Ser Arg Val Thr Gly Gly Met <sub>60</sub> Lys Val Lys Ala	
gat cgt gac gag gct tcg ccc tac gcc gct atg ttg gcc gct cag gac	240
Asp Arg Asp Glu Ala Ser <sub>70</sub> Pro Tyr Ala Ala Met <sub>75</sub> Leu Ala Ala Gln Asp <sub>80</sub>	
gtc gcc gag aag tgc aag tcc ctg gga atc acc gcc ctg cac atc aag	288
Val Ala Glu Lys Cys <sub>85</sub> Lys Ser Leu Gly Ile <sub>90</sub> Thr Ala Leu His Ile <sub>95</sub> Lys	
ctg cgc gcc acc ggt ggt aac cgc acc aag acc ccg gga ccc ggt gcc	336
Leu Arg Ala Thr <sub>100</sub> Gly Gly Asn Arg Thr <sub>105</sub> Lys Thr Pro Gly <sub>110</sub> Pro Gly Ala	
cag tcc gcc ctg cgc gct ctg gcc cgt tcg tcg atg aag att ggc cgc	384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg	
atc gag gac gtg acc cca atc cca tcg gat tcc acc cgc cgg aag gga	432
Ile Glu Asp Val Thr Pro Ile <sub>135</sub> Pro Ser Asp Ser Thr <sub>140</sub> Arg Arg Lys Gly	
ggt cgc cgc ggt cgt cgt ctg taa	456
Gly Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 142

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Aedes aegypti

&lt;400&gt; 142

Met Ala Pro Arg Lys <sub>5</sub> Asn Lys Thr Val Lys <sub>10</sub> Glu Glu Val Gln Val Ser <sub>15</sub>
Leu Gly Pro Gln <sub>20</sub> Val Arg Glu Gly <sub>25</sub> Ile Val Phe Gly <sub>30</sub> Val Ala His
Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser
Gly Lys Glu Thr Ile Ser Arg Val Thr Gly Gly Met <sub>60</sub> Lys Val Lys Ala
Asp Arg Asp Glu Ala Ser <sub>70</sub> Pro Tyr Ala Ala Met <sub>75</sub> Leu Ala Ala Gln Asp <sub>80</sub>
Val Ala Glu Lys Cys <sub>85</sub> Lys Ser Leu Gly Ile <sub>90</sub> Thr Ala Leu His Ile <sub>95</sub> Lys
Leu Arg Ala Thr <sub>100</sub> Gly Gly Asn Arg Thr <sub>105</sub> Lys Thr Pro Gly <sub>110</sub> Pro Gly Ala
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg
Ile Glu Asp Val Thr Pro Ile <sub>135</sub> Pro Ser Asp Ser Thr <sub>140</sub> Arg Arg Lys Gly
Gly Arg Arg Gly Arg Arg Leu
145 150

&lt;210&gt; 143

&lt;211&gt; 588

&lt;212&gt; DNA

&lt;213&gt; Aedes aegypti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(588)

## PhoenixTemp32470.tmp.txt

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<400> 143
atg ttc ctg aga cct ctg gag atg ctg tcc aac gtg ctg cgg gtg gct      48
Met Phe Leu Arg Pro Leu Glu Met Leu Ser Asn Val Leu Arg Val Ala
  1          5          10          15
tcc aag cga acc atc cat cag agc gcg gct ttg ctc aag gtg gaa gac      96
Ser Lys Arg Thr Ile His Gln Ser Ala Leu Leu Lys Val Glu Asp
          20          25          30
cgc aag gcc atg ctc gct tcg ctt ccc ggc aag gac gaa gga acg att      144
Arg Lys Ala Met Leu Ala Ser Leu Pro Gly Lys Asp Glu Gly Thr Ile
          35          40          45
ggc gaa cgc gct gtg gac atc gat tcc ctg att acc aaa aaa gag cgt      192
Gly Glu Arg Ala Val Asp Ile Asp Ser Leu Ile Thr Lys Lys Glu Arg
          50          55          60
atc ttt ccc gat gcc aac acg ccg acc acc cta ttt aac ggg ata ccc      240
Ile Phe Pro Asp Ala Asn Thr Pro Thr Thr Leu Phe Asn Gly Ile Pro
          65          70          75          80
ttc aac gag att ccg atc tgt aac att agg gtg tcg cca aat aac acc      288
Phe Asn Glu Ile Pro Ile Cys Asn Ile Arg Val Ser Pro Asn Asn Thr
          85          90          95
atc atc acg ata tgc gac gcc aag ggg acg ccc cag ttc atc cgc tct      336
Ile Ile Thr Ile Cys Asp Ala Lys Gly Thr Pro Gln Phe Ile Arg Ser
          100          105          110
tgc ggc atc gaa ggg ttc aag aat acc cgc aaa gga acg aac att gcc      384
Cys Gly Ile Glu Gly Phe Lys Asn Thr Arg Lys Gly Thr Asn Ile Ala
          115          120          125
gct caa gcc act gcc atc agt atc tgc tcg aaa gcg atc gaa cgt ggg      432
Ala Gln Ala Thr Ala Ile Ser Ile Cys Ser Lys Ala Ile Glu Arg Gly
          130          135          140
tac aag caa gta cgg gtt acg gta cgg ggg ttg ggt ccg gga cga atg      480
Tyr Lys Gln Val Arg Val Thr Val Arg Gly Leu Gly Pro Gly Arg Met
          145          150          155          160
tct gct atc aaa ggt tta gaa atg gcc ggt atg aat atc gtt tca att      528
Ser Ala Ile Lys Gly Leu Glu Met Ala Gly Met Asn Ile Val Ser Ile
          165          170          175          180
aca gat acg act cct gtg tcg tgg aac cca ccg cgg ccc cgg aag caa      576
Thr Asp Thr Thr Pro Val Ser Trp Asn Pro Pro Arg Pro Arg Lys Gln
          180          185          190
cgc aag ctg tag
Arg Lys Leu
          195

```

```

<210> 144
<211> 195
<212> PRT
<213> Aedes aegypti

```

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<400> 144
Met Phe Leu Arg Pro Leu Glu Met Leu Ser Asn Val Leu Arg Val Ala
  1          5          10          15
Ser Lys Arg Thr Ile His Gln Ser Ala Leu Leu Lys Val Glu Asp
          20          25          30
Arg Lys Ala Met Leu Ala Ser Leu Pro Gly Lys Asp Glu Gly Thr Ile
          35          40          45
Gly Glu Arg Ala Val Asp Ile Asp Ser Leu Ile Thr Lys Lys Glu Arg
          50          55          60
Ile Phe Pro Asp Ala Asn Thr Pro Thr Thr Leu Phe Asn Gly Ile Pro
          65          70          75          80
Phe Asn Glu Ile Pro Ile Cys Asn Ile Arg Val Ser Pro Asn Asn Thr
          85          90          95
Ile Ile Thr Ile Cys Asp Ala Lys Gly Thr Pro Gln Phe Ile Arg Ser
          100          105          110
Cys Gly Ile Glu Gly Phe Lys Asn Thr Arg Lys Gly Thr Asn Ile Ala
          115          120          125
Ala Gln Ala Thr Ala Ile Ser Ile Cys Ser Lys Ala Ile Glu Arg Gly
          130          135          140
Tyr Lys Gln Val Arg Val Thr Val Arg Gly Leu Gly Pro Gly Arg Met
          145          150          155          160
Ser Ala Ile Lys Gly Leu Glu Met Ala Gly Met Asn Ile Val Ser Ile

```

## PhoenixTemp32470.tmp.txt

Thr Asp Thr Thr 165 Pro Val Ser Trp Asn 170 Pro Pro Arg Pro Arg 175 Lys Gln  
 Arg Lys Leu 180 185 190 195

<210> 145  
 <211> 417  
 <212> DNA  
 <213> Ipomoea purpurea

<220>  
 <221> CDS  
 <222> (1)..(417)

<400> 145  
 atg gca aaa gct ata ccg aga aga agt tcg cgt agg aat gga cgt att 48  
 Met Ala Lys Ala Ile Pro Arg Arg Ser Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 ggt tca cgt aag agt gca cgt aga ata cca aag gga gtt att cat gtt 96  
 Gly Ser Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 caa gct agt ttc aat aat acc att gtc act gtt aca gat gta cgg ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 cgg gta gtt tct tgg tcc tcc gcc ggt act tct gga ttc aag gga acg 192  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr  
 50 55 60  
 aga aga ggg aca cct ttt gct gct gaa acc gcg gca tca aat gct atc 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Glu Thr Ala Ala Ser Asn Ala Ile  
 65 70 75 80  
 cgt aca gta gtt gat cgg ggt atg cta cga gca gaa gtc atg ata aag 288  
 Arg Thr Val Val Asp Arg Gly Met Leu Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 ggt ccc ggt ctc gga aga gac gca gca tta cgc gct att ctt caa agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Leu Gln Ser  
 100 105 110  
 ggt ata cta tta act ttc gta cgg gat gta acc cct atg cca cac aat 384  
 Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 ggc tgt aga cct ccg aaa aaa aga cgt gtg tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 146  
 <211> 138  
 <212> PRT  
 <213> Ipomoea purpurea

<400> 146  
 Met Ala Lys Ala Ile Pro Arg Arg Ser Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Glu Thr Ala Ala Ser Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Arg Gly Met Leu Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Leu Gln Ser  
 100 105 110  
 Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 147  
 <211> 393  
 <212> DNA  
 <213> Prochlorococcus marinus str. MIT 9215

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 147  
 atg gca gct aca gta aaa aaa aca ggt tca aag aaa tct aaa cgt aat 48  
 Met Ala Ala Thr Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn  
 1 5 10 15  
 gta cct aat ggt gtg gta cac att caa agc aca ttt aat aat act atc 96  
 Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 gtc tca ata tct gac aca tct ggt cat gta att tct tgg tct tct gca 144  
 Val Ser Ile Ser Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala  
 35 40 45  
 ggt gca agt gga ttt aaa ggc gct cgt aaa ggt acg cca ttt gcc gct 192  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 caa act gct gct gaa gcc gca gca aga aga gca ctt gat caa ggt atg 240  
 Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Asp Gln Gly Met  
 65 70 75 80  
 aga caa ata gaa gta cta gtg aga ggg cca ggc gca ggt agg gaa acg 288  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ala Gly Arg Glu Thr  
 85 90 95  
 gcc ata aga gct tta caa gtg gcc gga tta gaa ata act cta ata aga 336  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 gat gta act cca tta cct cat aat gga tgt aga aga cct aaa cgg aga 384  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
 115 120 125  
 cgc gtc tag 393  
 Arg Val  
 130

<210> 148  
 <211> 130  
 <212> PRT  
 <213> Prochlorococcus marinus str. MIT 9215

<400> 148  
 Met Ala Ala Thr Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn  
 1 5 10 15  
 Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Val Ser Ile Ser Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met  
 65 70 75 80  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ala Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

<210> 149  
 <211> 384  
 <212> DNA  
 <213> Rickettsia akari str. Hartford

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 149

atg	aat	cag	acg	ggt	aaa	ggt	aag	aaa	aag	aaa	aaa	act	atc	act	ctt	48
Met	Asn	Gln	Thr	Val	Lys	Val	Lys	Lys	Lys	Lys	Lys	Thr	Ile	Thr	Leu	
1				5					10					15		
ggt	ggt	gtg	cat	atc	cga	gca	tcg	ttt	aat	aat	act	ata	gta	aca	ttt	96
Gly	Val	Val	His	Ile	Arg	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Phe	
			20					25					30			
act	gat	atc	caa	ggt	aat	act	att	tct	tct	gca	tcg	gca	gga	ggt	aat	144
Thr	Asp	Ile	Gln	Gly	Asn	Thr	Ile	Ser	Ser	Ala	Ser	Ala	Gly	Gly	Asn	
			35				40					45				
ggg	ttt	aaa	ggg	gca	aga	aaa	gca	aca	cct	tac	gca	gct	caa	gtg	aca	192
Gly	Phe	Lys	Gly	Ala	Arg	Lys	Ala	Thr	Pro	Tyr	Ala	Ala	Gln	Val	Thr	
	50					55					60					
att	gat	aga	gca	tcg	gca	aag	gca	aaa	gaa	cat	ggg	ctc	aaa	act	att	240
Ile	Asp	Arg	Ala	Ser	Ala	Lys	Ala	Lys	Glu	His	Gly	Leu	Lys	Thr	Ile	
	65				70					75					80	
tct	att	agg	att	gga	gga	ccg	gga	gct	cag	cgt	gaa	tca	gca	atg	aga	288
Ser	Ile	Arg	Ile	Gly	Gly	Pro	Gly	Ala	Gln	Arg	Glu	Ser	Ala	Met	Arg	
				85					90					95		
gct	ttg	ttc	ggg	caa	aat	ttt	ggt	ggt	acg	tca	att	tta	gat	gta	tcg	336
Ala	Leu	Phe	Gly	Gln	Asn	Phe	Val	Val	Thr	Ser	Ile	Leu	Asp	Val	Ser	
			100					105					110			
tca	att	gct	cat	aat	gga	gta	aga	ccg	ccg	aaa	aga	aga	aga	gta		381
Ser	Ile	Ala	His	Asn	Gly	Val	Arg	Pro	Pro	Lys	Arg	Arg	Arg	Val		
		115					120					125				
taa																384

&lt;210&gt; 150

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Rickettsia akari str. Hartford

&lt;400&gt; 150

Met	Asn	Gln	Thr	Val	Lys	Val	Lys	Lys	Lys	Lys	Lys	Thr	Ile	Thr	Leu	
1				5					10					15		
Gly	Val	Val	His	Ile	Arg	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Phe	
			20					25					30			
Thr	Asp	Ile	Gln	Gly	Asn	Thr	Ile	Ser	Ser	Ala	Ser	Ala	Gly	Gly	Asn	
			35				40					45				
Gly	Phe	Lys	Gly	Ala	Arg	Lys	Ala	Thr	Pro	Tyr	Ala	Ala	Gln	Val	Thr	
	50					55					60					
Ile	Asp	Arg	Ala	Ser	Ala	Lys	Ala	Lys	Glu	His	Gly	Leu	Lys	Thr	Ile	
	65				70					75					80	
Ser	Ile	Arg	Ile	Gly	Pro	Gly	Ala	Gln	Arg	Glu	Ser	Ala	Met	Arg		
				85				90					95			
Ala	Leu	Phe	Gly	Gln	Asn	Phe	Val	Val	Thr	Ser	Ile	Leu	Asp	Val	Ser	
			100					105					110			
Ser	Ile	Ala	His	Asn	Gly	Val	Arg	Pro	Pro	Lys	Arg	Arg	Arg	Val		
		115					120					125				

&lt;210&gt; 151

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Bombyx mori

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 151

atg	gcc	ccg	aga	aaa	aac	aaa	ggt	gct	aag	gag	gag	gtc	cag	gtg	acc	48
Met	Ala	Pro	Arg	Lys	Asn	Lys	Val	Ala	Lys	Glu	Glu	Val	Gln	Val	Thr	

## PhoenixTemp32470.tmp.txt

1	ctc	ggg	ccc	cag	cat	tta	gtg	ggc	gaa	aca	gtg	ttt	ggg	gta	gca	cac	96
	Leu	Gly	Pro	Gln	His	Leu	Val	Gly	Glu	Thr	Val	Phe	Gly	Val	Ala	His	
				20					25					30			
	att	ttc	gct	tca	ttc	aat	gac	aca	ttc	ggt	cat	ggt	act	gat	tta	tcc	144
	Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser	
			35					40					45				
	ggc	cgg	gaa	act	atc	gcc	cgt	gtc	act	ggg	ggc	atg	aag	gtg	aag	gct	192
	Gly	Arg	Glu	Thr	Ile	Ala	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
		50					55					60					
	ggc	cgt	gat	gaa	gcg	tca	ccc	tac	gct	gct	atg	ttg	gcg	gca	cag	gat	240
	Gly	Arg	Asp	Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	
	65					70					75					80	
	gta	gca	gag	aaa	tgc	aaa	act	ctt	ggc	ata	acg	gcc	ttg	cac	ata	aag	288
	Val	Ala	Glu	Lys	Cys	Lys	Thr	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	
				85						90					95		
	ctc	cgt	gct	act	ggg	gga	aac	aaa	aca	aag	acc	cct	ggg	cct	ggg	gct	336
	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
				100					105					110			
	cag	tct	gca	ctt	cgg	gct	ctt	gct	cgt	tca	agt	atg	aag	att	ggc	cgc	384
	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Ser	Met	Lys	Ile	Gly	Arg	
			115					120					125				
	att	gaa	gat	gtc	acc	ccc	gta	cca	tca	gac	tcg	acc	cgt	agg	aag	ggg	432
	Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
		130					135					140					
	ggc	cga	aga	gga	cg	agg	ctg	taa									456
	Gly	Arg	Arg	Gly	Arg	Arg	Leu										
	145					150											

<210> 152  
 <211> 151  
 <212> PRT  
 <213> Bombyx mori

<400> 152  
 Met Ala Pro Arg Lys Asn Lys Val Ala Lys Glu Glu Val Gln Val Thr  
 1  
 Leu Gly Pro Gln His Leu Val Gly Glu Thr Val Phe Gly Val Ala His  
 20  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50  
 Gly Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65  
 Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys  
 80  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg  
 115  
 Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130  
 Gly Arg Arg Gly Arg Arg Leu  
 145  
 150

<210> 153  
 <211> 453  
 <212> DNA  
 <213> Oryza sativa (japonica cultivar-group)

<220>  
 <221> CDS  
 <222> (1)..(453)

<400> 153	atg	tcg	aag	agg	aag	acc	agg	gag	ccc	aag	gag	gag	aac	gtc	act	ctt	48
	Met	Ser	Lys	Arg	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	Leu	
	1				5					10					15		

## PhoenixTemp32470.tmp.txt

gga	ccc	act	gtc	cgt	gaa	gga	gag	tat	gtg	ttc	gga	ggt	gcc	cac	atc	96
Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	Phe	Gly	Val	Ala	His	Ile	
			20					25					30			
ttc	gca	tcc	ttc	aat	gac	act	ttc	att	cat	gtc	act	gac	ttg	tct	gga	144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
		35					40					45				
agg	gaa	act	ctt	gtt	cgc	att	act	ggt	ggc	atg	aag	gtc	aaa	gct	gac	192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
cgt	gat	gag	tca	tca	cca	tat	gca	gct	atg	ctt	gct	tct	caa	gat	gtt	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	Val	
	65				70				75						80	
gca	cag	cgt	tgc	aag	gag	ctt	ggt	att	act	gct	ctg	cac	atc	aag	ctt	288
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	Leu	
				85				90						95		
cgt	gcc	act	gga	ggc	aac	aag	aca	aag	aca	cct	ggt	cct	ggt	gct	caa	336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	
			100					105					110			
tct	gct	ctt	agg	gct	ctt	gct	cgc	tct	ggc	atg	aag	att	ggt	cgc	att	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				
gag	gat	gtg	acc	ccg	gtt	ccc	acg	gac	agc	acc	cgc	aga	aag	gga	ggt	432
Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
	130					135					140					
agg	aga	gga	agg	agg	ctg	tag										453
Arg	Arg	Gly	Arg	Arg	Leu											
	145				150											

&lt;210&gt; 154

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa (japonica cultivar-group)

&lt;400&gt; 154

Met	Ser	Lys	Arg	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	Leu	
1				5					10					15		
Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	Phe	Gly	Val	Ala	His	Ile	
			20					25					30			
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
		35					40					45				
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	Val	
	65				70				75						80	
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	Leu	
				85				90						95		
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	
			100					105					110			
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				
Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
	130					135					140					
Arg	Arg	Gly	Arg	Arg	Leu											
	145				150											

&lt;210&gt; 155

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa (japonica cultivar-group)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 155

atg	tcc	ggg	agg	aag	aag	aca	cgg	gag	ccc	aag	gag	gag	aac	gtc	acc	48
Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	
1				5					10					15		
ctc	ggc	ccg	acc	gtg	cgc	gag	ggc	gag	tac	gtc	ttc	ggc	gtc	gcc	cac	96



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Leu	Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	Phe	Gly	Val	Ala	His	
atc	ttc	gcc	tcc	ttc	aac	gac	acc	ttc	atc	cat	gtc	acc	gat	ctg	tcc	144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	
		35					40					45				
ggg	agg	gag	acg	ctc	gtc	cgc	atc	act	ggg	ggc	atg	aag	ggt	aaa	gct	192
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
		50				55					60					
gat	cgc	gac	gaa	tct	tcc	cct	tat	gct	gct	atg	ctt	gct	tca	cag	gat	240
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	
		65			70					75					80	
ggt	gct	caa	aga	tgc	aag	gag	ctt	gga	ata	act	gct	ttg	cat	atc	aag	288
Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	
				85					90					95		
ctc	cgt	gct	act	ggg	ggg	aac	aag	aca	aaa	acc	cct	ggg	cct	ggg	gct	336
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
			100				105					110				
cag	tcc	gca	ctt	aga	gca	ctt	gct	cga	tct	ggc	atg	aag	att	ggg	cgt	384
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	
		115				120					125					
att	gag	gat	ggt	act	cca	gtg	ccg	act	gat	agc	aca	cgc	aga	aag	ggg	432
Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
		130				135					140					
ggg	aga	agg	ggg	agg	agg	ctg	taa									456
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
		145			150											

<210> 156  
 <211> 151  
 <212> PRT  
 <213> Oryza sativa (japonica cultivar-group)

<400> 156

Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	
1				5				10					15			
Leu	Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	Phe	Gly	Val	Ala	His	
			20					25					30			
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	
		35				40						45				
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
		50				55					60					
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	
		65			70					75					80	
Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	
				85					90					95		
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
			100				105					110				
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	
		115				120					125					
Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
		130				135					140					
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
		145			150											

<210> 157  
 <211> 366  
 <212> DNA  
 <213> Mycoplasma genitalium G37

<220>  
 <221> CDS  
 <222> (1)..(366)  
 <223> transl\_table=4

<400> 157

atg	gct	aag	aaa	aaa	aag	att	aat	gtt	ccc	agt	ggg	ttg	atc	cat	gtc	48
Met	Ala	Lys	Lys	Lys	Lys	Ile	Asn	Val	Pro	Ser	Gly	Leu	Ile	His	Val	
		1		5					10					15		
tcc	tgt	tca	cct	aac	aat	acc	ata	gta	tca	gcc	act	gat	ccc	agt	ggg	96

## PhoenixTemp32470.tmp.txt

Ser	Cys	Ser	Pro	Asn	Asn	Thr	Ile	Val	Ser	Ala	Thr	Asp	Pro	Ser	Gly		
aat	gtc	tgt	tgc	tga	gcg	agc	agt	ggg	aca	gta	gga	ttc	aaa	ggg	ttt		144
Asn	Val	Leu	Cys	Trp	Ala	Ser	Ser	Gly	Thr	Val	Gly	Phe	Lys	Gly	Phe		
		35					40					45					
aga	aag	aaa	acc	cct	tac	tca	gca	ggg	gta	gca	gct	gat	aag	gtg	gct		192
Arg	Lys	Lys	Thr	Pro	Tyr	Ser	Ala	Gly	Val	Ala	Ala	Asp	Lys	Val	Ala		
		50				55					60						
aaa	act	gtg	aaa	gag	atg	gga	atg	ggg	agt	gtt	aag	atg	tat	ctg	aag		240
Lys	Thr	Val	Lys	Glu	Met	Gly	Met	Gly	Ser	Val	Lys	Met	Tyr	Leu	Lys		
		65			70					75					80		
gga	aca	ggg	aga	gga	aaa	gac	acc	acg	att	aga	agc	ttt	gct	aat	gct		288
Gly	Thr	Gly	Arg	Gly	Lys	Asp	Thr	Thr	Ile	Arg	Ser	Phe	Ala	Asn	Ala		
				85					90					95			
ggg	att	acg	atc	aca	gaa	atc	aat	gaa	aaa	acc	cct	att	ccc	cac	aat		336
Gly	Ile	Thr	Ile	Thr	Glu	Ile	Asn	Glu	Lys	Thr	Pro	Ile	Pro	His	Asn		
			100					105					110				
ggc	tgc	aag	cct	cct	aag	cgt	ccg	cg	taa								366
Gly	Cys	Lys	Pro	Pro	Lys	Arg	Pro	Arg									
		115					120										

&lt;210&gt; 158

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Mycoplasma genitalium G37

&lt;400&gt; 158

Met	Ala	Lys	Lys	Lys	Lys	Ile	Asn	Val	Pro	Ser	Gly	Leu	Ile	His	Val		
1				5					10				15				
Ser	Cys	Ser	Pro	Asn	Asn	Thr	Ile	Val	Ser	Ala	Thr	Asp	Pro	Ser	Gly		
			20					25				30					
Asn	Val	Leu	Cys	Trp	Ala	Ser	Ser	Gly	Thr	Val	Gly	Phe	Lys	Gly	Phe		
		35					40					45					
Arg	Lys	Lys	Thr	Pro	Tyr	Ser	Ala	Gly	Val	Ala	Ala	Asp	Lys	Val	Ala		
		50				55				60							
Lys	Thr	Val	Lys	Glu	Met	Gly	Met	Gly	Ser	Val	Lys	Met	Tyr	Leu	Lys		
		65			70					75					80		
Gly	Thr	Gly	Arg	Gly	Lys	Asp	Thr	Thr	Ile	Arg	Ser	Phe	Ala	Asn	Ala		
				85					90					95			
Gly	Ile	Thr	Ile	Thr	Glu	Ile	Asn	Glu	Lys	Thr	Pro	Ile	Pro	His	Asn		
			100					105					110				
Gly	Cys	Lys	Pro	Pro	Lys	Arg	Pro	Arg									
		115					120										

&lt;210&gt; 159

&lt;211&gt; 408

&lt;212&gt; DNA

&lt;213&gt; Sulfolobus tokodaii str. 7

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(408)

&lt;223&gt; trans1\_table=11

&lt;400&gt; 159

gtg	aag	aaa	atg	tcc	agc	agg	cgt	gaa	att	agg	tgg	ggg	ata	gct	aga		48
Met	Lys	Lys	Met	Ser	Ser	Arg	Arg	Glu	Ile	Arg	Trp	Gly	Ile	Ala	Arg		
				5				10					15				
gtt	tat	gca	tct	cag	aac	aat	aca	tta	ata	act	ata	aca	gat	att	act		96
Val	Tyr	Ala	Ser	Gln	Asn	Asn	Thr	Leu	Ile	Thr	Ile	Thr	Asp	Ile	Thr		
			20					25					30				
ggg	gct	gag	ata	atc	tct	aga	gct	tct	ggg	ggg	atg	gta	gtt	aaa	gcg		144
Gly	Ala	Glu	Ile	Ile	Ser	Arg	Ala	Ser	Gly	Gly	Met	Val	Val	Lys	Ala		
		35					40				45						
gac	aga	gaa	aaa	cca	tcg	cct	tac	gct	gct	atg	tta	gct	gca	aat	aaa		192
Asp	Arg	Glu	Lys	Pro	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Asn	Lys		
		50				55					60						
gcc	gct	acg	gaa	gca	ttt	gat	aag	gga	ata	tct	gca	ata	cat	ata	aaa		240
Ala	Ala	Thr	Glu	Ala	Phe	Asp	Lys	Gly	Ile	Ser	Ala	Ile	His	Ile	Lys		

## PhoenixTemp32470.tmp.txt

65	70	75	80	
ggt aga gca caa ggc ggt tac ggt tct aaa aca cct ggt cct ggt gcg	288			
Val Arg Ala Gln Gly Tyr Gly Ser Lys Thr Pro Gly Pro Gly Ala				
caa cca gct ata aga gct tta gca aga gct ggt ttt att att ggt agg	336			
Gln Pro Ala Ile Arg Ala Leu Ala Arg Ala Gly Phe Ile Ile Gly Arg				
att gaa gat gtt aca cca ata cct cat gac agt att agg agg cca gga	384			
Ile Glu Asp Val Thr Pro Ile Pro His Asp Ser Ile Arg Arg Pro Gly				
ggc aga aga gga aga aga gtc tga	408			
Gly Arg Arg Gly Arg Arg Val				

&lt;210&gt; 160

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Sulfolobus tokodaii str. 7

&lt;400&gt; 160

Met Lys Lys Met Ser Ser Arg Arg Glu Ile Arg Trp Gly Ile Ala Arg	
Val Tyr Ala Ser Gln Asn Asn Thr Leu Ile Thr Ile Thr Asp Ile Thr	
Gly Ala Glu Ile Ile Ser Arg Ala Ser Gly Gly Met Val Val Lys Ala	
Asp Arg Glu Lys Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala Asn Lys	
Ala Ala Thr Glu Ala Phe Asp Lys Gly Ile Ser Ala Ile His Ile Lys	
Val Arg Ala Gln Gly Gly Tyr Gly Ser Lys Thr Pro Gly Pro Gly Ala	
Gln Pro Ala Ile Arg Ala Leu Ala Arg Ala Gly Phe Ile Ile Gly Arg	
Ile Glu Asp Val Thr Pro Ile Pro His Asp Ser Ile Arg Arg Pro Gly	
Gly Arg Arg Gly Arg Arg Val	

&lt;210&gt; 161

&lt;211&gt; 603

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(603)

&lt;400&gt; 161

atg tca ctg aaa agt gta ttt cta agt gct ctt cgg agt att act atg	48
Met Ser Leu Lys Ser Val Phe Leu Ser Ala Leu Arg Ser Ile Thr Met	
ccc gct gtg ccg ctc cag act tct agg ata cac acg agc gct tgc tgg	96
Pro Ala Val Pro Leu Gln Thr Ser Arg Ile His Thr Ser Ala Cys Trp	
cgg aag gcg gag gac cgc aag gaa atg ctg gca tct tta ccg gcc aaa	144
Arg Lys Ala Glu Asp Arg Lys Glu Met Leu Ala Ser Leu Pro Ala Lys	
gac gaa gga acc gtg ggc gaa aag acc gtg gac atc gac aca ctt atc	192
Asp Glu Gly Thr Val Gly Glu Lys Thr Val Asp Ile Asp Thr Leu Ile	
aac cgc aag gct aag ttt ttc ccg gat gcc agc acc gcc aac acg tta	240
Asn Arg Lys Ala Lys Phe Pro Asp Ala Ser Thr Ala Asn Thr Leu	
ttc aat gga ata ccc ttc aac gag ctg ccc atc tgc aac att cgc gtt	288
Phe Asn Gly Ile Pro Phe Asn Glu Leu Pro Ile Cys Asn Ile Arg Val	
tca ccc aac aac aca att att tcc gtc acg gat cac aaa gga gtc ctc	336
Ser Pro Asn Asn Thr Ile Ile Ser Val Thr Asp His Lys Gly Val Leu	

## PhoenixTemp32470.tmp.txt

100	105	110	
cgg ctg ata tcc tgt gga att gag gga ttc aaa aac act cgc aag			384
Arg Leu Ile Arg Ser Cys Gly Ile Glu Gly Phe Lys Asn Thr Arg Lys			
115	120	125	
gga acc aac ata gca gct caa gct aca gcg gtt acc att agt gga aaa			432
Gly Thr Asn Ile Ala Ala Gln Ala Thr Ala Val Thr Ile Ser Gly Lys			
130	135	140	
gcc att gaa ttg ggc tgg aag aca gtg cga gta aag gtt cgt ggt ctt			480
Ala Ile Glu Leu Gly Trp Lys Thr Val Arg Val Lys Val Arg Gly Leu			
145	150	155	
ggc cct gga aga atg tgc gcc atc aaa gga ctg caa atg ggt ggg ctg			528
Gly Pro Gly Arg Met Ser Ala Ile Lys Gly Leu Gln Met Gly Gly Leu			
165	170	175	
aac atc gtt tcc att acc gac aac aca cat gtt tcc ttc aat cct cca			576
Asn Ile Val Ser Ile Thr Asp Asn Thr His Val Ser Phe Asn Pro Pro			
180	185	190	
aga ccc cga aag cag aga agt ctt taa			603
Arg Pro Arg Lys Gln Arg Ser Leu			
195	200		

&lt;210&gt; 162

&lt;211&gt; 200

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 162

Met Ser Leu Lys Ser Val Phe Leu Ser Ala Leu Arg Ser Ile Thr Met	
1 5 10 15	
Pro Ala Val Pro Leu Gln Thr Ser Arg Ile His Thr Ser Ala Cys Trp	
20 25 30	
Arg Lys Ala Glu Asp Arg Lys Glu Met Leu Ala Ser Leu Pro Ala Lys	
35 40 45	
Asp Glu Gly Thr Val Gly Glu Lys Thr Val Asp Ile Asp Thr Leu Ile	
50 55 60	
Asn Arg Lys Ala Lys Phe Phe Pro Asp Ala Ser Thr Ala Asn Thr Leu	
65 70 75 80	
Phe Asn Gly Ile Pro Phe Asn Glu Leu Pro Ile Cys Asn Ile Arg Val	
85 90 95	
Ser Pro Asn Asn Thr Ile Ile Ser Val Thr Asp His Lys Gly Val Leu	
100 105 110	
Arg Leu Ile Arg Ser Cys Gly Ile Glu Gly Phe Lys Asn Thr Arg Lys	
115 120 125	
Gly Thr Asn Ile Ala Ala Gln Ala Thr Ala Val Thr Ile Ser Gly Lys	
130 135 140	
Ala Ile Glu Leu Gly Trp Lys Thr Val Arg Val Lys Val Arg Gly Leu	
145 150 155 160	
Gly Pro Gly Arg Met Ser Ala Ile Lys Gly Leu Gln Met Gly Gly Leu	
165 170 175	
Asn Ile Val Ser Ile Thr Asp Asn Thr His Val Ser Phe Asn Pro Pro	
180 185 190	
Arg Pro Arg Lys Gln Arg Ser Leu	
195 200	

&lt;210&gt; 163

&lt;211&gt; 351

&lt;212&gt; DNA

&lt;213&gt; Chaetosphaeridium globosum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(351)

&lt;400&gt; 163

atg gca aca caa aac ggc atc gcc tat att caa tcc act tta aat aat	
Met Ala Thr Gln Asn Gly Ile Ala Tyr Ile Gln Ser Thr Leu Asn Asn	48
1 5 10 15	
aca atc att aca ata aca gat agc aaa gga cat ata aaa gta tgg tgt	
Thr Ile Ile Thr Ile Thr Asp Ser Lys Gly His Ile Lys Val Trp Cys	96
20 25 30	

## PhoenixTemp32470.tmp.txt

```

tcc tct ggc tgt gtt ggc ttc aaa gga agc aaa cgt agc aca aat tat      144
Ser Ser Gly 35 Cys Val Gly Phe Lys 40 Gly Ser Lys Arg Ser Thr Asn Tyr
gcg gct caa gcc aca gcc gaa aaa gct gca gct agt gca aaa aaa cat      192
Ala Ala Gln Ala Thr Ala Glu Lys Ala Ala Ala Ser Ala Lys Lys His
50 55 60
ggg atc aaa ttt gtt aaa gtt cga atc aaa gga cta ggg tat ggt aaa      240
Gly Ile Lys Phe Val Lys 70 Val Arg Ile Lys Gly 75 Leu Gly Tyr Gly Lys
65 70 75 80
gat tca tcc ctt cgt ggt tta caa ata gca ggt ctt aaa att act cat      288
Asp Ser Ser Leu Arg 85 Gly Leu Gln Ile Ala Gly Leu Lys Ile Thr His
90 95
ctt tgg gat gtt aca cca ata cca cac aat ggt tgt cgt cct cct aaa      336
Leu Trp Asp Val Thr Pro Ile Pro His 105 Asn Gly Cys Arg Pro Pro Lys
100 110
aaa cgt cgc gtt taa
Lys Arg Arg Val
115

```

&lt;210&gt; 164

&lt;211&gt; 116

&lt;212&gt; PRT

&lt;213&gt; Chaetosphaeridium globosum

&lt;400&gt; 164

```

Met Ala Thr Gln Asn Gly Ile Ala Tyr Ile Gln Ser Thr Leu Asn Asn
1 5 10 15
Thr Ile Ile Thr Ile Thr Asp Ser Lys Gly His Ile Lys Val Trp Cys
20 25 30
Ser Ser Gly Cys Val Gly Phe Lys Gly Ser Lys Arg Ser Thr Asn Tyr
35 40 45
Ala Ala Gln Ala Thr Ala Glu Lys Ala Ala Ala Ser Ala Lys Lys His
50 55 60
Gly Ile Lys Phe Val Lys 70 Val Arg Ile Lys Gly 75 Leu Gly Tyr Gly Lys
65 70 75 80
Asp Ser Ser Leu Arg 85 Gly Leu Gln Ile Ala Gly Leu Lys Ile Thr His
90 95
Leu Trp Asp Val Thr Pro Ile Pro His 105 Asn Gly Cys Arg Pro Pro Lys
100 110
Lys Arg Arg Val
115

```

&lt;210&gt; 165

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Chara vulgaris

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;400&gt; 165

```

atg cat ctt atc ata ctt gca aag tca aat aac atc aaa aac gcc atg      48
Met His Leu Ile Ile Leu Ala Lys Ser Asn Asn Ile Lys Asn Ala Met
1 5 10 15
caa aca aaa cac ggt att gct tat att caa tca act tta agt aac act      96
Gln Thr Lys His 20 Gly Ile Ala Tyr 25 Gln Ser Thr Leu Ser Asn Thr
30
ata att acc ata aca gat tct ttt gga gat acc aaa tct tgg tcc tct      144
Ile Ile Thr Ile Thr Asp Ser Phe 40 Gly Asp Thr Lys Ser Trp Ser Ser
35 40 45
tct ggt tca gtg gga ttt aaa gga tct cgt cgt tca acc aat tat gct      192
Ser Gly 50 Ser Val Gly Phe Lys 55 Gly Ser Arg Arg Ser Thr Asn Tyr Ala
60
gct caa gct act gct gag aat gta gcg cgt gct gct att cca tta gga      240
Ala Gln Ala Thr Ala Glu Asn Val Ala Arg Ala Ala Ile Pro Leu Gly
65 70 75 80
att aag tca gtt gaa gtg aga atc aaa ggt tta ggt tat gga aag cct      288
Ile Lys Ser Val Glu Val Arg Ile Lys Gly Leu Gly Tyr Gly Lys Pro

```

## PhoenixTemp32470.tmp.txt

				85					90					95			
tcg	gcc	tta	cgt	ggt	tta	caa	tta	gga	ggt	ctt	att	ata	acc	aag	att		
Ser	Ala	Leu	Arg	Gly	Leu	Gln	Leu	Gly	Gly	Leu	Ile	Ile	Thr	Lys	Ile		336
			100					105					110				
agc	gat	gta	act	cca	acg	cca	cat	aac	gga	tgt	cgt	cct	cct	aag	aaa		384
Ser	Asp	Val	Thr	Pro	Thr	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys		
		115					120					125					
cgc	cgc	gta	taa														396
Arg	Arg	Val															
		130															

&lt;210&gt; 166

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Chara vulgaris

&lt;400&gt; 166

Met	His	Leu	Ile	Ile	Leu	Ala	Lys	Ser	Asn	Asn	Ile	Lys	Asn	Ala	Met		
1				5					10					15			
Gln	Thr	Lys	His	Gly	Ile	Ala	Tyr	Ile	Gln	Ser	Thr	Leu	Ser	Asn	Thr		
			20					25					30				
Ile	Ile	Thr	Ile	Thr	Asp	Ser	Phe	Gly	Asp	Thr	Lys	Ser	Trp	Ser	Ser		
		35					40					45					
Ser	Gly	Ser	Val	Gly	Phe	Lys	Gly	Ser	Arg	Arg	Ser	Thr	Asn	Tyr	Ala		
	50					55					60						
Ala	Gln	Ala	Thr	Ala	Glu	Asn	Val	Ala	Arg	Ala	Ala	Ile	Pro	Leu	Gly		
65					70				75						80		
Ile	Lys	Ser	Val	Glu	Val	Arg	Ile	Lys	Gly	Leu	Gly	Tyr	Gly	Lys	Pro		
				85					90					95			
Ser	Ala	Leu	Arg	Gly	Leu	Gln	Leu	Gly	Gly	Leu	Ile	Ile	Thr	Lys	Ile		
			100					105					110				
Ser	Asp	Val	Thr	Pro	Thr	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys		
		115					120					125					
Arg	Arg	Val															
		130															

&lt;210&gt; 167

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Strongylocentrotus purpuratus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 167

atg	gcg	cca	cgt	aaa	ggg	aag	gtg	caa	aag	cca	gaa	gtg	cag	gtc	aac		48
Met	Ala	Pro	Arg	Lys	Gly	Lys	Val	Gln	Lys	Pro	Glu	Val	Gln	Val	Asn		
1				5					10					15			
ctt	ggc	ccc	cag	gtt	cca	gaa	gga	gaa	aat	gtc	ttt	ggt	gtt	gcc	cac		96
Leu	Gly	Pro	Gln	Val	Pro	Glu	Gly	Glu	Asn	Val	Phe	Gly	Val	Ala	His		
			20					25					30				
atc	ttc	gct	tca	ttc	aac	gac	acc	ttt	gtc	cat	gtg	act	gat	ctg	tct		144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser		
		35					40					45					
ggc	agg	gaa	acc	atc	gcc	agg	gtg	acc	ggt	ggt	atg	aag	gtg	aag	gct		192
Gly	Arg	Glu	Thr	Ile	Ala	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala		
	50					55					60						
gac	cgt	gac	gag	gcc	tcc	ccg	tac	gcc	gcc	atg	ttg	gct	gcc	cag	gac		240
Asp	Arg	Asp	Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp		
				70					75						80		
gtt	gcc	atc	aag	tgc	aag	gat	ctc	ggc	atc	aca	gct	ctt	cac	atc	aag		288
Val	Ala	Ile	Lys	Cys	Lys	Asp	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys		
				85					90					95			
ctc	agg	gcc	acc	gga	gga	aac	aag	acc	aag	acc	cct	gga	cct	ggt	gct		336
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala		
			100					105					110				
cag	tct	gcc	cta	cgt	gcc	ctg	gct	cgc	tct	ggc	atg	aag	att	gga	cgt		384
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg		

## PhoenixTemp32470.tmp.txt

115  
 att gag gat gta acg cca atc 120  
 Ile Glu Asp Val Thr Pro Ile cca tca gac agt act 125  
 130 135 140  
 ggt cgc cga ggt cgc cgt ctc tag  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

432

456

<210> 168  
 <211> 151  
 <212> PRT  
 <213> Strongylocentrotus purpuratus

<400> 168  
 Met Ala Pro Arg Lys Gly Lys Val Gln Lys Pro Glu Val Gln Val Asn  
 1 5 10 15  
 Leu Gly Pro Gln Val Pro Glu Gly Glu Asn Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Ile Lys Cys Lys Asp Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 169  
 <211> 456  
 <212> DNA  
 <213> Nasonia vitripennis

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 169  
 atg gca ccg aag agg ggt aag gtt caa aaa gag gag gtg cag gtt tcc  
 Met Ala Pro Lys Arg Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser  
 1 5 10 15  
 ctc gga cct cag gtc cgt gaa gga gaa aat gtt ttc gga gtc gct cac  
 Leu Gly Pro Gln Val Arg Glu Gly Glu Asn Val Phe Gly Val Ala His  
 20 25 30  
 att ttc gcc agc ttc aac gac aca ttc gtc cac gtt acc gat ctt tcg  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 ggc aga gaa act atc gcc cgt gtc act gga gga atg aaa gtc aag gct  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gat cgt gat gaa gct tcc ccg tat gcc gct atg ttg gct gcc cag gat  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 gtc gct gaa aaa tgc aaa tcc ctt gga atc aca gct ctc cac atc aag  
 Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctt agg gct act ggt gga aac aag aca aag acg cca gga cct ggt gca  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tcg gca ctc cgt gct ctt gcc cgt tca aac atg aag att gga cgt  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg  
 115 120 125

48

96

144

192

240

288

336

384

## PhoenixTemp32470.tmp.txt

att gag gac gtt acg ccg att ccc tct gac tcg acg cgc agg aag gga 432  
 ile Glu Asp Val Thr Pro ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 ggt cgt cgt ggt cgc agg ctt taa 456  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 170  
 <211> 151  
 <212> PRT  
 <213> Nasonia vitripennis

<400> 170  
 Met Ala Pro Lys Arg Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser  
 1 5 10 15  
 Leu Gly Pro Gln Val Arg Glu Gly Glu Asn Val Phe Gly Val Ala His  
 20 25 30  
 ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Ser Leu Gly ile Thr Ala Leu His ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys ile Gly Arg  
 115 120 125  
 ile Glu Asp Val Thr Pro ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 171  
 <211> 639  
 <212> DNA  
 <213> Nasonia vitripennis

<220>  
 <221> CDS  
 <222> (1)..(639)

<400> 171  
 atg ttt aga ccg gct ttg aac ttg ctg agg ttg atg cca ggg tcg act 48  
 Met Phe Arg Pro Ala Leu Asn Leu Leu Arg Leu Met Pro Gly Ser Thr  
 1 5 10 15  
 gcg act cta gtg aaa acg acg cag atc aac gaa ctc gcg aac cca gtg 96  
 Ala Thr Leu Val Lys Thr Thr Gln ile Asn Glu Leu Ala Asn Pro Val  
 20 25 30  
 ttg ctg tcg cgg tct ctg cac cta acc tcc aat gtc gcc aag gag agg 144  
 Leu Leu Ser Arg Ser Leu His Leu Thr Ser Asn Val Ala Lys Glu Arg  
 35 40 45  
 aga gat cta aga act tac aga atg tcg atg ccg ggc aaa gac gag ggc 192  
 Arg Asp Leu Arg Thr Tyr Arg Met Ser Met Pro Gly Lys Asp Glu Gly  
 50 55 60  
 act gca gga gaa aaa tcc gtt gac atc gat ggt ctt gga gta caa gag 240  
 Thr Ala Gly Glu Lys Ser Val Asp ile Asp Gly Leu Gly Val Gln Glu  
 65 70 75 80  
 gat ctt ttc ccc gat gag aat acg cca aac aga tta ttc gat ggt att 288  
 Asp Leu Phe Pro Asp Glu Asn Thr Pro Asn Arg Leu Phe Asp Gly ile  
 85 90 95  
 ccc tac aaa gag ctg cct ata ttt aac ata aag gtc act ccc aac aac 336  
 Pro Tyr Lys Glu Leu Pro ile Phe Asn ile Lys Val Thr Pro Asn Asn  
 100 105 110  
 acc atc ata act ctc aca gat ttc aaa gga ggt gta cac ata ttg aaa 384  
 Thr ile ile Thr Leu Thr Asp Phe Lys Gly Gly Val His ile Leu Lys  
 115 120 125  
 tcg tgc ggt act gaa ggc ttt aga act gcc agg aaa gga act aat att 432  
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PhoenixTemp32470.tmp.txt

Ser	Cys	Gly	Thr	Glu	Gly	Phe	Arg	Thr	Ala	Arg	Lys	Gly	Thr	Asn	Ile	
130	130					135					140					
gcg	gca	cag	aca	act	gct	att	tct	ata	agc	aca	aaa	gct	cag	tcc	ata	480
Ala	Ala	Gln	Thr	Thr	Ala	Ile	Ser	Ile	Ser	Thr	Lys	Ala	Gln	Ser	Ile	
145					150					155					160	
ggt	gtt	aga	act	gca	aga	gtg	cga	atc	cga	ggc	ata	ggt	cct	ggt	cga	528
Gly	Val	Arg	Thr	Ala	Arg	Val	Arg	Ile	Arg	Gly	Ile	Gly	Pro	Gly	Arg	
				165					170					175		
ttg	gct	gcc	atc	aag	ggt	ctt	caa	atg	gga	ggc	act	aat	atc	gta	tcc	576
Leu	Ala	Ala	Ile	Lys	Gly	Leu	Gln	Met	Gly	Gly	Thr	Asn	Ile	Val	Ser	
			180					185					190			
atc	aca	gac	aac	acc	cac	gtg	tcg	tgg	tgt	cca	ccc	aga	cca	aga	aaa	624
Ile	Thr	Asp	Asn	Thr	His	Val	Ser	Trp	Cys	Pro	Pro	Arg	Pro	Arg	Lys	
		195					200					205				
cag	aga	cgt	gtc	taa												639
Gln	Arg	Arg	Val													
210																

<210> 172  
 <211> 212  
 <212> PRT  
 <213> Nasonia vitripennis

<400> 172

Met	Phe	Arg	Pro	Ala	Leu	Asn	Leu	Leu	Arg	Leu	Met	Pro	Gly	Ser	Thr	
1				5					10					15		
Ala	Thr	Leu	Val	Lys	Thr	Thr	Gln	Ile	Asn	Glu	Leu	Ala	Asn	Pro	Val	
			20				25						30			
Leu	Leu	Ser	Arg	Ser	Leu	His	Leu	Thr	Ser	Asn	Val	Ala	Lys	Glu	Arg	
		35					40					45				
Arg	Asp	Leu	Arg	Thr	Tyr	Arg	Met	Ser	Met	Pro	Gly	Lys	Asp	Glu	Gly	
	50					55					60					
Thr	Ala	Gly	Glu	Lys	Ser	Val	Asp	Ile	Asp	Gly	Leu	Gly	Val	Gln	Glu	
65				70						75				80		
Asp	Leu	Phe	Pro	Asp	Glu	Asn	Thr	Pro	Asn	Arg	Leu	Phe	Asp	Gly	Ile	
				85					90					95		
Pro	Tyr	Lys	Glu	Leu	Pro	Ile	Phe	Asn	Ile	Lys	Val	Thr	Pro	Asn	Asn	
		100						105					110			
Thr	Ile	Ile	Thr	Leu	Thr	Asp	Phe	Lys	Gly	Gly	Val	His	Ile	Leu	Lys	
		115					120					125				
Ser	Cys	Gly	Thr	Glu	Gly	Phe	Arg	Thr	Ala	Arg	Lys	Gly	Thr	Asn	Ile	
	130					135					140					
Ala	Ala	Gln	Thr	Thr	Ala	Ile	Ser	Ile	Ser	Thr	Lys	Ala	Gln	Ser	Ile	
145					150					155					160	
Gly	Val	Arg	Thr	Ala	Arg	Val	Arg	Ile	Arg	Gly	Ile	Gly	Pro	Gly	Arg	
				165					170					175		
Leu	Ala	Ala	Ile	Lys	Gly	Leu	Gln	Met	Gly	Gly	Thr	Asn	Ile	Val	Ser	
			180					185					190			
Ile	Thr	Asp	Asn	Thr	His	Val	Ser	Trp	Cys	Pro	Pro	Arg	Pro	Arg	Lys	
		195					200					205				
Gln	Arg	Arg	Val													
210																

<210> 173  
 <211> 459  
 <212> DNA  
 <213> Anopheles gambiae str. PEST

<220>  
 <221> CDS  
 <222> (1)..(459)

<400> 173

atg	gcc	ccg	tca	cga	aag	aac	aaa	gtt	gtg	aag	gag	gaa	gtg	caa	gtg	48
Met	Ala	Pro	Ser	Arg	Lys	Asn	Lys	Val	Val	Lys	Glu	Glu	Val	Gln	Val	
1				5				10						15		
tcg	ctc	gga	ccg	cag	gtt	cgc	gac	ggt	gag	gtg	gtg	ttt	gga	gtg	gcg	96
Ser	Leu	Gly	Pro	Gln	Val	Arg	Asp	Gly	Glu	Val	Val	Phe	Gly	Val	Ala	
			20					25					30			

## PhoenixTemp32470.tmp.txt

cac	atc	tac	gcc	agt	ttc	aac	gat	acc	ttt	gtc	cac	ggt	acg	gac	ctg	144
His	Ile	Tyr	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	
		35					40					45				
tcc	ggc	aag	gaa	acc	atc	tcg	cgc	gtg	acc	ggc	ggg	atg	aag	gtc	aaa	192
Ser	Gly	Lys	Glu	Thr	Ile	Ser	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	
	50					55				60						
gct	gat	cgc	gat	gag	gcc	tcg	cct	tac	gcc	gct	atg	ttg	gcc	gct	cag	240
Ala	Asp	Arg	Asp	Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	
	65				70				75						80	
gac	gtt	gcg	gaa	aag	tgc	aaa	tcg	ctt	ggc	atc	acc	gcg	ctt	cac	att	288
Asp	Val	Ala	Glu	Lys	Cys	Lys	Ser	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	
			85						90					95		
aag	ctg	cgt	gct	acg	ggc	gga	aac	cgc	acc	aaa	acg	ccg	gga	ccg	ggc	336
Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Arg	Thr	Lys	Thr	Pro	Gly	Pro	Gly	
			100				105					110				
gcc	cag	tcg	gcg	ctg	cgt	gcg	ctg	gcg	cgt	tcc	tcg	atg	aag	att	ggg	384
Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Ser	Met	Lys	Ile	Gly	
		115				120						125				
cgc	atc	gaa	gac	gtt	acg	ccc	atc	ccg	tcg	gac	tcc	act	cgc	cga	aag	432
Arg	Ile	Glu	Asp	Val	Thr	Pro	Ile	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	
	130					135					140					
ggg	ggg	cgt	cgc	ggg	cgt	cgt	cta	tag								459
Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu									
	145				150											

&lt;210&gt; 174

&lt;211&gt; 152

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 174

Met	Ala	Pro	Ser	Arg	Lys	Asn	Lys	Val	Val	Lys	Glu	Glu	Val	Gln	Val	
1				5				10						15		
Ser	Leu	Gly	Pro	Gln	Val	Arg	Asp	Gly	Glu	Val	Val	Phe	Gly	Val	Ala	
			20					25					30			
His	Ile	Tyr	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	
		35					40					45				
Ser	Gly	Lys	Glu	Thr	Ile	Ser	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	
	50					55				60						
Ala	Asp	Arg	Asp	Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	
	65				70				75						80	
Asp	Val	Ala	Glu	Lys	Cys	Lys	Ser	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	
			85						90					95		
Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Arg	Thr	Lys	Thr	Pro	Gly	Pro	Gly	
			100				105					110				
Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Ser	Met	Lys	Ile	Gly	
		115				120						125				
Arg	Ile	Glu	Asp	Val	Thr	Pro	Ile	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	
	130					135					140					
Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu									
	145				150											

&lt;210&gt; 175

&lt;211&gt; 459

&lt;212&gt; DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(459)

&lt;400&gt; 175

atg	gct	ccg	tct	cgc	aag	aat	aag	gtc	gcg	aag	gaa	gag	gtg	cag	gtg	48
Met	Ala	Pro	Ser	Arg	Lys	Asn	Lys	Val	Ala	Lys	Glu	Glu	Val	Gln	Val	
	1			5				10						15		
tcg	ctc	ggc	ccg	cag	gtc	cgc	gac	ggg	gag	gtc	gtg	ttc	ggc	gtg	gca	96
Ser	Leu	Gly	Pro	Gln	Val	Arg	Asp	Gly	Glu	Val	Val	Phe	Gly	Val	Ala	
			20					25					30			
cac	atc	tac	gcc	agc	ttc	aac	gat	acg	ttc	gtg	cat	gtg	acg	gat	ctg	144

## PhoenixTemp32470.tmp.txt

His	Ile	Tyr	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	
		35					40				45					
tcc	ggc	aag	gaa	acc	atc	tcc	cgg	gtg	acg	ggc	ggc	atg	aag	gtg	aag	192
Ser	Gly	Lys	Glu	Thr	Ile	Ser	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	
	50					55				60						
gcc	gat	cgt	gac	gaa	gcg	tcg	ccg	tac	gcc	gct	atg	ttg	gcc	gcc	cag	240
Ala	Asp	Arg	Asp	Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	
	65				70				75						80	
gat	gtg	gcc	gag	aag	tgc	aaa	tcg	ctc	ggc	att	acc	gca	ctg	cac	atc	288
Asp	Val	Ala	Glu	Lys	Cys	Lys	Ser	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	
				85					90					95		
aag	ctg	cgc	gct	acc	ggg	ggg	aac	cgc	acc	aag	acg	ccc	ggc	ccg	ggg	336
Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Arg	Thr	Lys	Thr	Pro	Gly	Pro	Gly	
			100				105					110				
gcc	cag	tcg	gcg	ctc	cgt	gcg	ctc	gcc	cgt	tcg	tcg	atg	aag	atc	ggc	384
Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Ser	Met	Lys	Ile	Gly	
	115					120						125				
cgc	atc	gag	gat	gtg	acc	ccg	atc	ccg	tcg	gat	tct	acc	cgc	cgc	aag	432
Arg	Ile	Glu	Asp	Val	Thr	Pro	Ile	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	
	130					135					140					
ggg	ggg	cgt	cgt	gga	cgt	cgt	ttg	taa								459
Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu									
	145				150											

&lt;210&gt; 176

&lt;211&gt; 152

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 176

Met	Ala	Pro	Ser	Arg	Lys	Asn	Lys	Val	Ala	Lys	Glu	Glu	Val	Gln	Val	
				5					10					15		
Ser	Leu	Gly	Pro	Gln	Val	Arg	Asp	Gly	Glu	Val	Val	Phe	Gly	Val	Ala	
			20					25					30			
His	Ile	Tyr	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	
		35					40				45					
Ser	Gly	Lys	Glu	Thr	Ile	Ser	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	
	50					55					60					
Ala	Asp	Arg	Asp	Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	
	65				70				75						80	
Asp	Val	Ala	Glu	Lys	Cys	Lys	Ser	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	
				85					90					95		
Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Arg	Thr	Lys	Thr	Pro	Gly	Pro	Gly	
			100				105					110				
Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Ser	Met	Lys	Ile	Gly	
	115					120						125				
Arg	Ile	Glu	Asp	Val	Thr	Pro	Ile	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	
	130					135					140					
Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu									
	145				150											

&lt;210&gt; 177

&lt;211&gt; 600

&lt;212&gt; DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(600)

&lt;400&gt; 177

atg	tcc	ttg	ctg	aag	cag	ctc	aat	cta	tta	tcc	ggc	cta	gtg	cgc	cgg	48
Met	Ser	Leu	Leu	Lys	Gln	Leu	Asn	Leu	Leu	Ser	Gly	Leu	Val	Arg	Arg	
				5					10					15		
aca	ctg	gtc	ggc	agt	gta	agg	ccg	ctg	cac	cag	acg	gcc	aca	ctc	cgc	96
Thr	Leu	Val	Gly	Ser	Val	Arg	Pro	Leu	His	Gln	Thr	Ala	Thr	Leu	Arg	
			20					25					30			
aag	gtg	gaa	gat	cgc	aag	gca	atg	ctg	gct	tcg	ctg	ccc	agc	aaa	gac	144
Lys	Val	Glu	Asp	Arg	Lys	Ala	Met	Leu	Ala	Ser	Leu	Pro	Ser	Lys	Asp	

## PhoenixTemp32470.tmp.txt

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      35      40      45
gag ggc acg gtc ggc gaa cgt tcc atc gac att gat tcc atg atc gac      192
Glu Gly Thr Val Gly Glu Arg Ser Ile Asp Ile Asp Ser Met Ile Asp
      50      55      60
aag aaa acg agc ata ttt ccc gat gcc aac aca ccg acc tcc ctg atc      240
Lys Lys Thr Ser Ile Phe Pro Asp Ala Asn Thr Pro Thr Ser Leu Ile
      65      70      75      80
aat ggg gta ccg ttc aac gag ata ccg att tgc cac atc cgc gtg tca      288
Asn Gly Val Pro Phe Asn Glu Ile Pro Ile Cys His Ile Arg Val Ser
      85      90      95
ccg aac aat acc atc att tcg atc acg gat gcc aag ggt gtg cca cag      336
Pro Asn Asn Thr Ile Ile Ser Ile Thr Asp Ala Lys Gly Val Pro Gln
      100      105      110
ttt atc cgc tcg tgc ggc atc gag ggc ttc aag aac acg cgc aaa ggc      384
Phe Ile Arg Ser Cys Gly Ile Glu Gly Phe Lys Asn Thr Arg Lys Gly
      115      120      125
acg aac att gcg gcg cag gcg acc gca atc agc atc agc acg agg gcg      432
Thr Asn Ile Ala Ala Gln Ala Thr Ala Ile Ser Ile Ser Thr Arg Ala
      130      135      140
atc gaa cgt ggc tac aaa acg gtt cgc gtc acg gtc cga ggg ctc ggc      480
Ile Glu Arg Gly Tyr Lys Thr Val Arg Val Thr Val Arg Gly Leu Gly
      145      150      155      160
ccg gga cga atg tcc gct ata aag ggg ctc gag atg gct ggg ctg aac      528
Pro Gly Arg Met Ser Ala Ile Lys Gly Leu Glu Met Ala Gly Leu Asn
      165      170      175
att gtt tcc att acg gac acg acc ccg gta tcg tgg aat ccc ccc cgt      576
Ile Val Ser Ile Thr Asp Thr Thr Pro Val Ser Trp Asn Pro Pro Arg
      180      185      190
ccc aga aag caa agg aag ctg taa
Pro Arg Lys Gln Arg Lys Leu
      195

```

&lt;210&gt; 178

&lt;211&gt; 199

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 178

```

Met Ser Leu Leu Lys Gln Leu Asn Leu Leu Ser Gly Leu Val Arg Arg
1      5      10      15
Thr Leu Val Gly Ser Val Arg Pro Leu His Gln Thr Ala Thr Leu Arg
      20      25      30
Lys Val Glu Asp Arg Lys Ala Met Leu Ala Ser Leu Pro Ser Lys Asp
      35      40      45
Glu Gly Thr Val Gly Glu Arg Ser Ile Asp Ile Asp Ser Met Ile Asp
      50      55      60
Lys Lys Thr Ser Ile Phe Pro Asp Ala Asn Thr Pro Thr Ser Leu Ile
      65      70      75      80
Asn Gly Val Pro Phe Asn Glu Ile Pro Ile Cys His Ile Arg Val Ser
      85      90      95
Pro Asn Asn Thr Ile Ile Ser Ile Thr Asp Ala Lys Gly Val Pro Gln
      100      105      110
Phe Ile Arg Ser Cys Gly Ile Glu Gly Phe Lys Asn Thr Arg Lys Gly
      115      120      125
Thr Asn Ile Ala Ala Gln Ala Thr Ala Ile Ser Ile Ser Thr Arg Ala
      130      135      140
Ile Glu Arg Gly Tyr Lys Thr Val Arg Val Thr Val Arg Gly Leu Gly
      145      150      155      160
Pro Gly Arg Met Ser Ala Ile Lys Gly Leu Glu Met Ala Gly Leu Asn
      165      170      175
Ile Val Ser Ile Thr Asp Thr Thr Pro Val Ser Trp Asn Pro Pro Arg
      180      185      190
Pro Arg Lys Gln Arg Lys Leu
      195

```

&lt;210&gt; 179

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 179

atg cct ccc aag aag act caa cgt ccc gcc cag gag aac atc tcc ttg	48
Met Pro Pro Lys Lys Thr Gln Arg Pro Ala Gln Glu Asn Ile Ser Leu	
1 5 10 15	
ggc ccc cag gtc cgc gag ggt gag ctc gtc ttc ggc gtt gcc cgt atc	96
Gly Pro Gln Val Arg Glu Gly Glu Leu Val Phe Gly Val Ala Arg Ile	
20 25 30	
ttc gct tcg ttc aac gac acc ttc gtc cac gtc acc gat ctg agt ggc	144
Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly	
35 40 45	
cgc gaa acc atc tgc cgt gtc acc ggt gga atg aag gtc aag gcc gac	192
Arg Glu Thr Ile Cys Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp	
50 55 60	
cgt gac gag tcg tcg ccc tac gcc gcc atg ttg gct gct cag gac gtc	240
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val	
65 70 75 80	
gcc gct cgc tgc aag gag ctg ggc atc acc gcc ctg cac atc aag atc	288
Ala Ala Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Ile	
85 90 95	
cgt gcc act ggt ggt aac ggc acc aag acc gcc gcc ggt gcc cag	336
Arg Ala Thr Gly Gly Asn Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln	
100 105 110	
tcc gcc ctc cgt gcc ttg gcc cgt tct ggc atg aag atc ggc cgt atc	384
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile	
115 120 125	
gag gac gtt act ccc acg ccc tcc gac tcg acc cgc cgc aag ggt ggt	432
Glu Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly	
130 135 140	
cgc cgt ggt cgt cgt ctc tga	453
Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 180

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 180

Met Pro Pro Lys Lys Thr Gln Arg Pro Ala Gln Glu Asn Ile Ser Leu
1 5 10 15
Gly Pro Gln Val Arg Glu Gly Glu Leu Val Phe Gly Val Ala Arg Ile
20 25 30
Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly
35 40 45
Arg Glu Thr Ile Cys Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp
50 55 60
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val
65 70 75 80
Ala Ala Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Ile
85 90 95
Arg Ala Thr Gly Asn Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln
100 105 110
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile
115 120 125
Glu Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly
130 135 140
Arg Arg Gly Arg Arg Leu
145 150

&lt;210&gt; 181

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 181

atg	cct	ccc	aag	aag	acc	gcc	acc	cgt	gct	ccc	cag	gag	aac	atc	tcc	48
Met	Pro	Pro	Lys	Lys	Thr	Ala	Thr	Arg	Ala	Pro	Gln	Glu	Asn	Ile	Ser	
1				5					10					15		
ctc	gga	cct	tcc	gtt	cgc	gat	ggc	gag	ctg	gtc	ttc	ggc	gtt	gcc	cgt	96
Leu	Gly	Pro	Ser	Val	Arg	Asp	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	Arg	
			20					25					30			
atc	ttc	gcc	tcc	ttc	aac	gat	acc	ttc	gtc	cac	gtc	acc	gat	ctg	agt	144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser	
		35					40					45				
ggc	cgt	gag	act	atc	acc	cgt	gtt	act	ggg	ggg	atg	aag	gtc	aag	gcc	192
Gly	Arg	Glu	Thr	Ile	Thr	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
	50					55					60					
gac	cgt	gac	gag	tcc	tcc	ccc	tac	gct	gcc	atg	ttg	gct	gcc	cag	gac	240
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	
	65				70					75					80	
gtc	gct	gcc	cgc	tgc	aag	gag	ctt	ggc	atc	aac	gct	ctt	cac	atc	aag	288
Val	Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Asn	Ala	Leu	His	Ile	Lys	
			85					90						95		
atc	cgt	gcc	act	ggg	ggg	aac	ggg	acc	aag	acc	ccc	ggg	ccc	ggg	gcc	336
Ile	Arg	Ala	Thr	Gly	Gly	Asn	Gly	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
			100				105						110			
cag	tcc	gct	ctc	cgt	gcc	ctt	gcc	cgt	gct	ggg	atg	aag	att	ggc	cga	384
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Met	Lys	Ile	Gly	Arg	
		115				120						125				
att	gag	gac	gtt	acc	cct	act	cct	tcc	gac	tct	acc	cgc	aga	aag	ggg	432
Ile	Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
	130					135					140					
ggg	cgc	cgt	ggg	cgt	cgt	ctc	tga									456
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
145					150											

&lt;210&gt; 182

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 182

Met	Pro	Pro	Lys	Lys	Thr	Ala	Thr	Arg	Ala	Pro	Gln	Glu	Asn	Ile	Ser	
1				5					10					15		
Leu	Gly	Pro	Ser	Val	Arg	Asp	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	Arg	
			20					25					30			
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser	
		35					40					45				
Gly	Arg	Glu	Thr	Ile	Thr	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
	50					55					60					
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	
	65				70					75					80	
Val	Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Asn	Ala	Leu	His	Ile	Lys	
			85					90						95		
Ile	Arg	Ala	Thr	Gly	Gly	Asn	Gly	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
		100					105						110			
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Met	Lys	Ile	Gly	Arg	
		115				120						125				
Ile	Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
	130					135					140					
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
145					150											

&lt;210&gt; 183

&lt;211&gt; 591

&lt;212&gt; DNA

&lt;213&gt; Apis mellifera

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(591)

&lt;400&gt; 183

atg	att	tta	ttt	aat	gaa	aaa	ctt	att	act	tta	cca	tgt	ttg	aaa	ttc	48
Met	Ile	Leu	Phe	Asn	Glu	Lys	Leu	Ile	Thr	Leu	Pro	Cys	Leu	Lys	Phe	
1				5				10					15			
atg	aat	gtt	cga	aat	att	cat	tta	acc	tca	aat	att	atg	aaa	gaa	ttt	96
Met	Asn	Val	Arg	Asn	Ile	His	Leu	Thr	Ser	Asn	Ile	Met	Lys	Glu	Phe	
			20					25					30			
cga	agt	gga	ttt	tcc	aaa	gta	aga	gct	aat	aca	aaa	aga	aaa	aat	gta	144
Arg	Ser	Gly	Phe	Ser	Lys	Val	Arg	Ala	Asn	Thr	Lys	Arg	Lys	Asn	Val	
		35					40					45				
gtt	atg	gaa	gga	gaa	aaa	gca	att	gat	ttt	att	gat	gta	aaa	tca	aaa	192
Val	Met	Glu	Gly	Glu	Lys	Ala	Ile	Asp	Phe	Ile	Asp	Val	Lys	Ser	Lys	
	50					55					60					
tca	tta	ttt	cct	gat	gct	tct	aca	cta	tat	caa	ttt	ttt	gat	ggg	gta	240
Ser	Leu	Phe	Pro	Asp	Ala	Ser	Thr	Leu	Tyr	Gln	Phe	Phe	Asp	Gly	Val	
	65				70					75					80	
caa	tat	act	caa	tta	cat	gtt	att	aat	ata	aaa	tca	tct	cat	aat	aat	288
Gln	Tyr	Thr	Gln	Leu	His	Val	Ile	Asn	Ile	Lys	Ser	Ser	His	Asn	Asn	
			85					90						95		
aca	ata	atg	tct	ctt	act	gat	ttt	aaa	gga	tca	gga	ata	ata	tta	cat	336
Thr	Ile	Met	Ser	Leu	Thr	Asp	Phe	Lys	Gly	Ser	Gly	Ile	Ile	Leu	His	
			100					105				110				
tct	gct	gga	ctt	gaa	ggg	ttt	aaa	aat	aca	aag	aaa	ggg	act	aat	att	384
Ser	Ala	Gly	Leu	Glu	Gly	Phe	Lys	Asn	Thr	Lys	Lys	Gly	Thr	Asn	Ile	
	115					120						125				
gca	gca	caa	caa	gct	gca	att	aca	ttt	gga	aca	cgt	gtt	ctt	aat	cat	432
Ala	Ala	Gln	Gln	Ala	Ala	Ile	Thr	Phe	Gly	Thr	Arg	Val	Leu	Asn	His	
	130					135					140					
ggg	att	aaa	aca	gtc	aaa	tta	aga	ata	caa	ggg	att	gga	cct	gga	aga	480
Gly	Ile	Lys	Thr	Val	Lys	Leu	Arg	Ile	Gln	Gly	Ile	Gly	Pro	Gly	Arg	
	145				150				155						160	
atg	ggg	gct	ata	aaa	ggg	ttg	cag	cta	aca	gaa	tta	aat	att	gtt	tct	528
Met	Gly	Ala	Ile	Lys	Gly	Leu	Gln	Leu	Thr	Glu	Leu	Asn	Ile	Val	Ser	
				165				170						175		
atc	aca	gat	gat	act	aga	gta	tca	tgg	aat	cct	cca	aga	cca	aga	aaa	576
Ile	Thr	Asp	Asp	Thr	Arg	Val	Ser	Trp	Asn	Pro	Pro	Arg	Pro	Arg	Lys	
			180					185					190			
caa	aga	aga	ata	taa												591
Gln	Arg	Arg	Ile													
			195													

&lt;210&gt; 184

&lt;211&gt; 196

&lt;212&gt; PRT

&lt;213&gt; Apis mellifera

&lt;400&gt; 184

Met	Ile	Leu	Phe	Asn	Glu	Lys	Leu	Ile	Thr	Leu	Pro	Cys	Leu	Lys	Phe
1				5				10					15		
Met	Asn	Val	Arg	Asn	Ile	His	Leu	Thr	Ser	Asn	Ile	Met	Lys	Glu	Phe
			20					25					30		
Arg	Ser	Gly	Phe	Ser	Lys	Val	Arg	Ala	Asn	Thr	Lys	Arg	Lys	Asn	Val
		35					40					45			
Val	Met	Glu	Gly	Glu	Lys	Ala	Ile	Asp	Phe	Ile	Asp	Val	Lys	Ser	Lys
	50					55					60				
Ser	Leu	Phe	Pro	Asp	Ala	Ser	Thr	Leu	Tyr	Gln	Phe	Phe	Asp	Gly	Val
	65				70					75					80
Gln	Tyr	Thr	Gln	Leu	His	Val	Ile	Asn	Ile	Lys	Ser	Ser	His	Asn	Asn
			85					90					95		
Thr	Ile	Met	Ser	Leu	Thr	Asp	Phe	Lys	Gly	Ser	Gly	Ile	Ile	Leu	His
			100					105				110			
Ser	Ala	Gly	Leu	Glu	Gly	Phe	Lys	Asn	Thr	Lys	Lys	Gly	Thr	Asn	Ile
		115					120					125			
Ala	Ala	Gln	Gln	Ala	Ala	Ile	Thr	Phe	Gly	Thr	Arg	Val	Leu	Asn	His
	130					135					140				
Gly	Ile	Lys	Thr	Val	Lys	Leu	Arg	Ile	Gln	Gly	Ile	Gly	Pro	Gly	Arg

## PhoenixTemp32470.tmp.txt

145 Met Gly Ala Ile Lys 150 Gly Leu Gln Leu Thr 155 Glu Leu Asn Ile Val 160 Ser  
 Ile Thr Asp Asp Thr 165 Arg Val Ser Trp 170 Asn Pro Pro Arg Pro 175 Arg Lys  
 Gln Arg Arg Ile 180 185 190 195

&lt;210&gt; 185

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;400&gt; 185

atg gct aaa gac ctt gtt caa tcc cgt gac gct tcc caa gtc ttt ggt	48
Met Ala Lys Asp Leu Val Gln Ser Arg Asp Ala Ser Gln Val Phe Gly	
1 5 10 15	
gtt gct aga atc tac gct tcc ttc aac gat act ttc gtg cat gtt acc	96
Val Ala Arg Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr	
20 25 30	
gac ctg tct ggt aga gaa acc atc tcc aga gtc act ggt ggt atg aag	144
Asp Leu Ser Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys	
35 40 45	
gtt aag gct gac aga gat gag tcc tct cct tac gct gct atg ttg gcc	192
Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala	
50 55 60	
gcc caa gat gtt gcc gct aag tgt ttg gaa gtc ggt att act gct gtc	240
Ala Gln Asp Val Ala Ala Lys Cys Leu Glu Val Gly Ile Thr Ala Val	
65 70 75 80	
cat gtt aag atc aga gcc act ggt ggt act aga acc aag acc cca ggc	288
His Val Lys Ile Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly	
85 90 95	
cct ggt ggt caa gcc gct ttg aga gct ttg gct aga tct ggt ttg aga	336
Pro Gly Gly Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg	
100 105 110	
att ggt aga atc gaa gac gtt act cca gtt cca tcc gat tcc acc aga	384
Ile Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg	
115 120 125	
aag aag ggt ggt aga aga ggt aga aga ttg tga	417
Lys Lys Gly Gly Arg Arg Gly Arg Arg Leu	
130 135	

&lt;210&gt; 186

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 186

Met Ala Lys Asp Leu Val Gln Ser Arg Asp Ala Ser Gln Val Phe Gly
1 5 10 15
Val Ala Arg Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr
20 25 30
Asp Leu Ser Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys
35 40 45
Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala
50 55 60
Ala Gln Asp Val Ala Ala Lys Cys Leu Glu Val Gly Ile Thr Ala Val
65 70 75 80
His Val Lys Ile Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly
85 90 95
Pro Gly Gly Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg
100 105 110
Ile Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg
115 120 125
Lys Lys Gly Gly Arg Arg Gly Arg Arg Leu



130

135

&lt;210&gt; 187

&lt;211&gt; 408

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(408)

&lt;400&gt; 187

atg gtt gtt caa gct cgt gac gct tcc caa gtc ttt ggt gtt gct aga	48
Met Val Val Gln Ala Arg Asp Ala Ser Gln Val Phe Gly Val Ala Arg	
1 5 10 15	
atc tac gcc tcc ttc aac gat act ttc gtc cat gtt act gac ttg tct	96
Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
20 25 30	
ggt aga gaa acc atc gcc aga gtt act ggt ggt atg aag gtc aag gct	144
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala	
35 40 45	
gac aga gat gaa tct tct cca tac gct gct atg ttg gct gcc caa gat	192
Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp	
50 55 60	
gtt gct gct aag tgt ttg gaa gtt ggt atc act gcc gtc cac gtt aag	240
Val Ala Ala Lys Cys Leu Glu Val Gly Ile Thr Ala Val His Val Lys	
65 70 75 80	
atc aga gct act ggt ggt act aga acc aag acc cca ggt cca ggt ggt	288
Ile Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly Pro Gly Gly	
85 90 95	
caa gct gct ttg aga gct ttg gct aga tcc ggt ttg aga att ggt aga	336
Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile Gly Arg	
100 105 110	
atc gaa gat gtc act cca gtt cca tcc gac tcc acc aga aag aag ggt	384
Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Lys Lys Gly	
115 120 125	
ggt aga aga ggt aga aga ttg tga	408
Gly Arg Arg Gly Arg Arg Leu	
130 135	

&lt;210&gt; 188

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 188

Met Val Val Gln Ala Arg Asp Ala Ser Gln Val Phe Gly Val Ala Arg
1 5 10 15
Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser
20 25 30
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala
35 40 45
Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp
50 55 60
Val Ala Ala Lys Cys Leu Glu Val Gly Ile Thr Ala Val His Val Lys
65 70 75 80
Ile Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly Pro Gly Gly
85 90 95
Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile Gly Arg
100 105 110
Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Lys Lys Gly
115 120 125
Gly Arg Arg Gly Arg Arg Leu
130 135

&lt;210&gt; 189

&lt;211&gt; 420

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

## PhoenixTemp32470.tmp.txt

<220>  
 <221> CDS  
 <222> (1)..(420)

```

<400> 189
atg cga ctg gga atg gtt att gtt gga tca gat ggc tcc caa gtt ttt      48
Met Arg Leu Gly Met Val Ile Val Gly Ser Asp Gly Ser Gln Val Phe
1      5      10      15
ggt gtt gcc cgt atc ttt gct tca ttc aac gat acc ttc gtt cac gtt      96
Gly Val Ala Arg Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val
20      25      30
act gat tta tcc ggt caa gaa act att gct aga gtt acc ggt atg      144
Thr Asp Leu Ser Gly Gln Glu Thr Ile Ala Arg Val Thr Gly Gly Met
35      40      45
aaa gtc aag gct gat aga gat gaa tct tct cca tac gcc gct atg ttg      192
Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu
50      55      60
gct gcc caa gat gtt gct caa aaa tgt aaa gaa gtc ggt att act gcc      240
Ala Ala Gln Asp Val Ala Gln Lys Cys Lys Glu Val Gly Ile Thr Ala
65      70      75      80
gtc cac gtt aag ttg aga gct acc ggt ggt acc aag acc aag acc cca      288
Val His Val Lys Leu Arg Ala Thr Gly Gly Thr Lys Thr Lys Thr Pro
85      90      95
ggt cca ggt ggt caa tcc gct tta aga gct tta gcc aga tcc ggt tta      336
Gly Pro Gly Gly Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu
100      105      110
aga atc ggt aga atc gaa gat gtt act cca gtt cca tct gat tcc acc      384
Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr
115      120      125
aga aga aag ggt ggt aga cgt ggt aga aga ttg tga      420
Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu
130      135

```

<210> 190  
 <211> 139  
 <212> PRT  
 <213> Debaryomyces hansenii CBS767

```

<400> 190
Met Arg Leu Gly Met Val Ile Val Gly Ser Asp Gly Ser Gln Val Phe
1      5      10      15
Gly Val Ala Arg Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val
20      25      30
Thr Asp Leu Ser Gly Gln Glu Thr Ile Ala Arg Val Thr Gly Gly Met
35      40      45
Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu
50      55      60
Ala Ala Gln Asp Val Ala Gln Lys Cys Lys Glu Val Gly Ile Thr Ala
65      70      75      80
Val His Val Lys Leu Arg Ala Thr Gly Gly Thr Lys Thr Lys Thr Pro
85      90      95
Gly Pro Gly Gly Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu
100      105      110
Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr
115      120      125
Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu
130      135

```

<210> 191  
 <211> 450  
 <212> DNA  
 <213> Aspergillus nidulans FGSC A4

<220>  
 <221> CDS  
 <222> (1)..(450)

<400> 191

## PhoenixTemp32470.tmp.txt

```

atg gct ccc aag acc aag gcc ccc gct aag gac aac gtc act ctc ggc      48
Met Ala Pro Lys Thr Lys Ala Pro Ala Lys Asp Asn Val Thr Leu Gly
1      5      10      15
cct ctc gcc ggt gat ggc aag ctc gtt ttc ggc gtt gcg cgt atc ttc      96
Pro Leu Ala Gly Asp Gly Lys Leu Val Phe Gly Val Ala Arg Ile Phe
20      25      30
gcc tct ttc aac gac acc ttc gtc cac gtt acc gat ctc tcc ggt cgc      144
Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly Arg
35      40      45
gaa acc atc tgc cgt gtc acc ggt ggt atg aag gtc aag gct gac cgt      192
Glu Thr Ile Cys Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp Arg
50      55      60
gac gag tct tct ccc tac gcc atg ttg gct gct cag gac gtt gcc      240
Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val Ala
65      70      75      80
gcc cgc tgc aag gag ctc ggc att aac gct ctt cac atc aag atc cgt      288
Ala Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Ile Arg
85      90      95
gct act ggt ggt aac ggc acc aag acc ccc ggt ccc gga gcc cag tct      336
Ala Thr Gly Gly Asn Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln Ser
100      105      110
gcc ctt cgt gct ctc gcc cgt tcc ggt atg aga atc ggt cgt att gag      384
Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile Glu
115      120      125
gac gtc acc cct act cct tcc gac tct act cgt cgc aag ggt ggt cgc      432
Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly Arg
130      135      140
cgc ggt cgt cgt ctg tag
Arg Gly Arg Arg Leu
145

```

&lt;210&gt; 192

&lt;211&gt; 149

&lt;212&gt; PRT

<213> *Aspergillus nidulans* FGSC A4

&lt;400&gt; 192

```

Met Ala Pro Lys Thr Lys Ala Pro Ala Lys Asp Asn Val Thr Leu Gly
1      5      10      15
Pro Leu Ala Gly Asp Gly Lys Leu Val Phe Gly Val Ala Arg Ile Phe
20      25      30
Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly Arg
35      40      45
Glu Thr Ile Cys Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp Arg
50      55      60
Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val Ala
65      70      75      80
Ala Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Ile Arg
85      90      95
Ala Thr Gly Gly Asn Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln Ser
100      105      110
Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile Glu
115      120      125
Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly Arg
130      135      140
Arg Gly Arg Arg Leu
145

```

&lt;210&gt; 193

&lt;211&gt; 453

&lt;212&gt; DNA

<213> *Cryptococcus neoformans* var. *neoformans* B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 193

```

atg gcc ccc aag aag gtt cga gcc ccc cag gaa gct gct gtc tct ctc

```

48

## PhoenixTemp32470.tmp.txt

Met	Ala	Pro	Lys	Lys	Val	Arg	Ala	Pro	Gln	Glu	Ala	Ala	Val	Ser	Leu		
1				5					10					15			
ggt	ccc	cag	gtc	gct	gag	ggt	gag	aat	gtc	ttc	ggc	ggt	gcc	cac	atc		96
Gly	Pro	Gln	Val	Ala	Glu	Gly	Glu	Asn	Val	Phe	Gly	Val	Ala	His	Ile		
			20					25					30				
ttc	gct	tcc	ttc	aac	gac	act	ttc	gtc	cac	ggt	acc	gac	ttg	acc	ggc		144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Thr	Gly		
		35					40					45					
aag	gag	acc	atc	tcc	cga	ggt	act	ggt	ggt	atg	aag	gtc	aag	gct	gac		192
Lys	Glu	Thr	Ile	Ser	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
	50					55					60						
cgt	gac	gag	tct	tcc	cct	tac	gct	gcg	atg	ctt	gcc	gct	cag	gac	ggt		240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
	65				70					75					80		
gcc	gct	aag	tgc	aag	gag	gtc	ggc	att	acc	gcc	ctc	cac	gtc	aag	ctc		288
Ala	Ala	Lys	Cys	Lys	Glu	Val	Gly	Ile	Thr	Ala	Leu	His	Val	Lys	Leu		
			85					90						95			
cgt	gct	act	ggt	ggt	acc	ggc	acc	aag	caa	ccc	ggt	ccc	ggt	ggg	cag		336
Arg	Ala	Thr	Gly	Gly	Thr	Gly	Thr	Lys	Gln	Pro	Gly	Pro	Gly	Gly	Gln		
			100					105					110				
gcc	gct	ctc	cga	gcc	ctc	gcc	cgt	gcc	ggt	atg	agg	atc	ggt	cga	att		384
Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Met	Arg	Ile	Gly	Arg	Ile		
		115					120					125					
gag	gac	ggt	acc	cct	act	cct	tcc	gac	tcc	acc	agg	agg	aag	ggt	ggt		432
Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
	130					135					140						
agg	cgt	ggt	agg	agg	ttg	taa											453
Arg	Arg	Gly	Arg	Arg	Leu												
	145				150												

&lt;210&gt; 194

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 194

Met	Ala	Pro	Lys	Lys	Val	Arg	Ala	Pro	Gln	Glu	Ala	Ala	Val	Ser	Leu		
1				5					10					15			
Gly	Pro	Gln	Val	Ala	Glu	Gly	Glu	Asn	Val	Phe	Gly	Val	Ala	His	Ile		
			20					25					30				
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Thr	Gly		
		35					40					45					
Lys	Glu	Thr	Ile	Ser	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
	50					55					60						
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
	65				70					75					80		
Ala	Ala	Lys	Cys	Lys	Glu	Val	Gly	Ile	Thr	Ala	Leu	His	Val	Lys	Leu		
			85					90						95			
Arg	Ala	Thr	Gly	Gly	Thr	Gly	Thr	Lys	Gln	Pro	Gly	Pro	Gly	Gly	Gln		
			100					105					110				
Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Met	Arg	Ile	Gly	Arg	Ile		
		115					120					125					
Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
	130					135					140						
Arg	Arg	Gly	Arg	Arg	Leu												
	145				150												

&lt;210&gt; 195

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Tribolium castaneum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 195

atg	gca	cca	aga	aaa	ggc	aaa	gtc	cag	aag	gag	gaa	gtc	cag	gtg	tca		48
Met	Ala	Pro	Arg	Lys	Gly	Lys	Val	Gln	Lys	Glu	Glu	Val	Gln	Val	Ser		

## PhoenixTemp32470.tmp.txt

1	5	10	15	
ctg ggc ccc cag gtg cgc gag ggt gag atc gtc ttc ggc gtg gcg cac	96			
Leu Gly Pro Gln Val Arg Glu Gly Glu Ile Val Phe Gly Val Ala His				
20	25	30		
att ttc gcc agt ttc aac gac act ttc gtg cac gtt acc gat ctg tcg	144			
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser				
35	40	45		
ggc cgt gag acc atc tcc agg gtg acc ggg ggc atg aag gtg aag gcc	192			
Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val Lys Ala				
50	55	60		
gac agg gac gag gct tcg ccc tat gct gct atg ttg gct gcg cag gac	240			
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp				
65	70	75		
gtc gct gag aag tgc aag tcg ttg ggg atc aca gca ttg cat att aaa	288			
Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys				
85	90	95		
ttg agg gcc acg ggg ggc aac aag acc aag aca ccc ggc ccg ggg gcg	336			
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Gly Ala				
100	105	110		
cag agc gcg ttg agg gcc tta gcc cgg tcg aat atg aaa att ggg agg	384			
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg				
115	120	125		
att gag gat gtc acc ccc att ccg agc gac tcc acg cgc agg aag ggc	432			
Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly				
130	135	140		
gga cgg cgt ggc cgt agg ttg taa	456			
Gly Arg Arg Gly Arg Arg Leu				
145	150			

&lt;210&gt; 196

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Tribolium castaneum

&lt;400&gt; 196

Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser			
1	5	10	15
Leu Gly Pro Gln Val Arg Glu Gly Glu Ile Val Phe Gly Val Ala His			
20	25	30	
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser			
35	40	45	
Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val Lys Ala			
50	55	60	
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp			
65	70	75	
Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys			
85	90	95	
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala			
100	105	110	
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg			
115	120	125	
Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly			
130	135	140	
Gly Arg Arg Gly Arg Arg Leu			
145	150		

&lt;210&gt; 197

&lt;211&gt; 615

&lt;212&gt; DNA

&lt;213&gt; Tribolium castaneum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(615)

&lt;400&gt; 197

atg ttt tct aaa caa att att tca act ttc caa aaa ttt aca agt gcc	48		
Met Phe Ser Lys Gln Ile Ile Ser Thr Phe Gln Lys Phe Thr Ser Ala			
1	5	10	15

## PhoenixTemp32470.tmp.txt

caa	agt	ggt	ctc	att	gca	aat	cat	aat	gtc	cgt	tct	ttg	ttt	ctc	acc	96
Gln	Ser	Gly	Leu	Ile	Ala	Asn	His	Asn	Val	Arg	Ser	Leu	Phe	Leu	Thr	
			20					25					30			
agt	cag	aga	cag	agg	gag	ggt	gtc	gac	aga	aga	gaa	atg	ctt	cgt	tct	144
Ser	Gln	Arg	Gln	Arg	Glu	Val	Val	Asp	Arg	Arg	Glu	Met	Leu	Arg	Ser	
		35				40					45					
ggt	cca	aaa	tta	gac	gag	gga	agt	gct	ggg	gaa	aaa	gcc	ttt	gaa	ggt	192
Val	Pro	Lys	Leu	Asp	Glu	Gly	Ser	Ala	Gly	Glu	Lys	Ala	Phe	Glu	Val	
	50					55					60					
gat	gca	ctg	atc	cac	caa	aaa	aca	gat	att	ttt	cca	gat	gct	gat	act	240
Asp	Ala	Leu	Ile	His	Gln	Lys	Thr	Asp	Ile	Phe	Pro	Asp	Ala	Asp	Thr	
	65				70					75					80	
cca	aat	agg	ctt	ttc	aat	ggt	att	cca	ttt	aag	aac	ttg	cct	ata	atg	288
Pro	Asn	Arg	Leu	Phe	Asn	Gly	Ile	Pro	Phe	Lys	Asn	Leu	Pro	Ile	Met	
				85					90					95		
aac	ata	aga	gta	tcc	cca	aat	aac	aca	ata	att	act	atg	acc	gat	gat	336
Asn	Ile	Arg	Val	Ser	Pro	Asn	Asn	Thr	Ile	Ile	Thr	Met	Thr	Asp	Asp	
			100					105					110			
aag	ggt	gct	gtg	aaa	ctg	ctg	agg	tct	tgt	ggt	att	gag	ggc	ttt	aag	384
Lys	Gly	Ala	Val	Lys	Leu	Leu	Arg	Ser	Cys	Gly	Ile	Glu	Gly	Phe	Lys	
		115					120					125				
aac	acg	aga	aaa	ggg	acg	aac	ata	gcg	gca	caa	gcc	acg	gca	att	act	432
Asn	Thr	Arg	Lys	Gly	Thr	Asn	Ile	Ala	Ala	Gln	Ala	Thr	Ala	Ile	Thr	
	130					135					140					
ata	gga	aca	aaa	ggt	tta	gaa	aga	gga	ata	aag	aca	ggt	agg	gtg	cgt	480
Ile	Gly	Thr	Lys	Val	Leu	Glu	Arg	Gly	Ile	Lys	Thr	Val	Arg	Val	Arg	
	145				150					155					160	
gtg	agg	ggg	cta	gga	cct	ggc	aga	atg	tcg	gcg	att	aaa	ggc	ttg	caa	528
Val	Arg	Gly	Leu	Gly	Pro	Gly	Arg	Met	Ser	Ala	Ile	Lys	Gly	Leu	Gln	
				165					170					175		
atg	tca	ggc	cta	gag	att	ggt	tca	ata	aca	gac	agc	act	cca	gta	tct	576
Met	Ser	Gly	Leu	Glu	Ile	Val	Ser	Ile	Thr	Asp	Ser	Thr	Pro	Val	Ser	
			180					185					190			
tgg	aac	ccg	cca	agg	ccg	cga	aag	gcg	aaa	aag	ttg	taa				615
Trp	Asn	Pro	Pro	Arg	Pro	Arg	Lys	Ala	Lys	Lys	Leu					
		195					200									

&lt;210&gt; 198

&lt;211&gt; 204

&lt;212&gt; PRT

&lt;213&gt; Tribolium castaneum

&lt;400&gt; 198

Met	Phe	Ser	Lys	Gln	Ile	Ile	Ser	Thr	Phe	Gln	Lys	Phe	Thr	Ser	Ala	
1				5					10				15			
Gln	Ser	Gly	Leu	Ile	Ala	Asn	His	Asn	Val	Arg	Ser	Leu	Phe	Leu	Thr	
			20					25				30				
Ser	Gln	Arg	Gln	Arg	Glu	Val	Val	Asp	Arg	Arg	Glu	Met	Leu	Arg	Ser	
		35				40					45					
Val	Pro	Lys	Leu	Asp	Glu	Gly	Ser	Ala	Gly	Glu	Lys	Ala	Phe	Glu	Val	
	50					55					60					
Asp	Ala	Leu	Ile	His	Gln	Lys	Thr	Asp	Ile	Phe	Pro	Asp	Ala	Asp	Thr	
	65				70					75					80	
Pro	Asn	Arg	Leu	Phe	Asn	Gly	Ile	Pro	Phe	Lys	Asn	Leu	Pro	Ile	Met	
				85					90					95		
Asn	Ile	Arg	Val	Ser	Pro	Asn	Asn	Thr	Ile	Ile	Thr	Met	Thr	Asp	Asp	
			100					105				110				
Lys	Gly	Ala	Val	Lys	Leu	Leu	Arg	Ser	Cys	Gly	Ile	Glu	Gly	Phe	Lys	
		115					120					125				
Asn	Thr	Arg	Lys	Gly	Thr	Asn	Ile	Ala	Ala	Gln	Ala	Thr	Ala	Ile	Thr	
	130					135					140					
Ile	Gly	Thr	Lys	Val	Leu	Glu	Arg	Gly	Ile	Lys	Thr	Val	Arg	Val	Arg	
	145				150					155					160	
Val	Arg	Gly	Leu	Gly	Pro	Gly	Arg	Met	Ser	Ala	Ile	Lys	Gly	Leu	Gln	
				165					170					175		
Met	Ser	Gly	Leu	Glu	Ile	Val	Ser	Ile	Thr	Asp	Ser	Thr	Pro	Val	Ser	
			180					185					190			
Trp	Asn	Pro	Pro	Arg	Pro	Arg	Lys	Ala	Lys	Lys	Leu					
		195					200									

<210> 199  
 <211> 417  
 <212> DNA  
 <213> Nuphar advena

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

```
<400> 199
atg aca aaa cct ata cca aga att ggt tca cgt aga aat agc cgt att      48
Met Thr Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Ser Arg Ile
  1      5      10      15
agt tca cgt aag agt ggg ggt cga aca cca ata gga gtt att cat gtt      96
Ser Ser Arg Lys Ser Gly Gly Arg Thr Pro Ile Gly Val Ile His Val
      20      25      30
caa gcg agt ttc aac aat act att gtt act gtt aca gac cca caa ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Pro Gln Gly
      35      40      45
cgg gtc gtt tct tgg tcc tcc gcg ggt acc tgt gga ttc aag ggc aca      192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
aga agg ggt acc cca ttt gct gct caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75      80
cgt acg gta gta gac cag ggt atg caa cga gca gaa gtc atg ata aaa      288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      85      90      95
ggt ccc ggt ctc gga aga gat gca gca tta cga gcg att cgt agg agt      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
ggt ata cta tta aat ttc gta cgt gac gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Asn Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
gga tgt aga ccg cca aaa aaa agg cgc gtt tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135
```

<210> 200  
 <211> 138  
 <212> PRT  
 <213> Nuphar advena

```
<400> 200
Met Thr Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Ser Arg Ile
  1      5      10      15
Ser Ser Arg Lys Ser Gly Gly Arg Thr Pro Ile Gly Val Ile His Val
      20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Pro Gln Gly
      35      40      45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75      80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
Gly Ile Leu Leu Asn Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135
```

<210> 201  
 <211> 405  
 <212> DNA  
 <213> Herminiimonas arsenicoxydans

```

<220>
<221> CDS
<222> (1)..(405)
<223> transl_table=11

<400> 201
atg gca aaa gca cct aat aac gcc gca gca gca cgt gtg cgt aag aaa      48
Met Ala Lys Ala Pro Asn Asn Ala Ala Ala Arg Val Arg Lys Lys
  1          5          10          15
gtt aag aaa aac gtt gca gaa ggc atc gcg cac atc cac gcg tcc ttc      96
Val Lys Lys Asn Val Ala Glu Gly Ile Ala His Ile His Ala Ser Phe
          20          25          30
aac aac acc atc atc acg atc acc gat cgt caa ggc aat gcg ctg tca      144
Asn Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser
          35          40          45
tgg gca acg tct ggc ggt gcc ggc ttc aaa ggt tcg cgt aaa tcg acc      192
Trp Ala Thr Ser Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr
          50          55          60
ccg ttt gca gcg cag gtt gca gct gaa gcc gcg ggt aaa gtc gcg atc      240
Pro Phe Ala Ala Gln Val Ala Ala Glu Ala Ala Gly Lys Val Ala Ile
          65          70          75          80
gaa tgc ggc atc aag aat ctg gaa gta cgc atc aag ggt cca ggc cca      288
Glu Cys Gly Ile Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro
          85          90          95
ggc cgt gag tcg tcg gtg cgt gcg ttg aac aat ctc ggt atc aaa att      336
Gly Arg Glu Ser Ser Val Arg Ala Leu Asn Asn Leu Gly Ile Lys Ile
          100          105          110
acc cag att caa gac gtc act cca gtg ccg cac aac ggt tgc cgc cca      384
Thr Gln Ile Gln Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro
          115          120          125
cct aag cgt cgt cgt atc taa
Pro Lys Arg Arg Arg Ile
          130

<210> 202
<211> 134
<212> PRT
<213> Herminiimonas arsenicoxydans

<400> 202
Met Ala Lys Ala Pro Asn Asn Ala Ala Ala Ala Arg Val Arg Lys Lys
  1          5          10          15
Val Lys Lys Asn Val Ala Glu Gly Ile Ala His Ile His Ala Ser Phe
          20          25          30
Asn Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser
          35          40          45
Trp Ala Thr Ser Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr
          50          55          60
Pro Phe Ala Ala Gln Val Ala Ala Glu Ala Ala Gly Lys Val Ala Ile
          65          70          75          80
Glu Cys Gly Ile Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro
          85          90          95
Gly Arg Glu Ser Ser Val Arg Ala Leu Asn Asn Leu Gly Ile Lys Ile
          100          105          110
Thr Gln Ile Gln Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro
          115          120          125
Pro Lys Arg Arg Arg Ile
          130

<210> 203
<211> 399
<212> DNA
<213> Dichelobacter nodosus VCS1703A

<220>
<221> CDS
<222> (1)..(399)
<223> transl_table=11

```



## PhoenixTemp32470.tmp.txt

```

<400> 203
atg gct aag gct gct ggt aaa caa aaa aac gta aga aag aaa gca aag      48
Met Ala Lys Ala Ala Gly Lys Gln Lys Asn Val Arg Lys Lys Ala Lys
  1          5          10          15
cgt gtc gtt gtg gac gcc gtt gcg cac gtt cat gca tca ttt aat aac      96
Arg Val Val Val Asp Ala Val Ala His Val His Ala Ser Phe Asn Asn
          20          25          30
aca att gta acg att act gat ggt caa gga aac acg ctt tct tgg gca      144
Thr Ile Val Thr Ile Thr Asp Gly Gln Gly Asn Thr Leu Ser Trp Ala
          35          40          45
act gcc ggt ggt tca ggt ttt cga ggt tct cgt aaa agt acc cct ttt      192
Thr Ala Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe
          50          55          60
gct gca caa att gcc gct gaa cgc gcg ggt gaa gtt gca aag gaa tac      240
Ala Ala Gln Ile Ala Ala Glu Arg Ala Gly Glu Val Ala Lys Glu Tyr
          65          70          75          80
ggt gta caa aat ctt gat gtc aac atc aaa ggt cca gga cct gga cgt      288
Gly Val Gln Asn Leu Asp Val Asn Ile Lys Gly Pro Gly Pro Gly Arg
          85          90          95
gaa tct gca att cgt gca tta aat tcg gct ggt ttt aat att cac agc      336
Glu Ser Ala Ile Arg Ala Leu Asn Ser Ala Gly Phe Asn Ile His Ser
          100          105          110
ata acg gat gtc aca ccg att cct cac gga tgt cgt ccc cct aag      384
Ile Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys
          115          120          125
aag cgt cgc gtg taa
Lys Arg Arg Val
          130

```

```

<210> 204
<211> 132
<212> PRT
<213> Dichelobacter nodosus VCS1703A

```

```

<400> 204
Met Ala Lys Ala Ala Gly Lys Gln Lys Asn Val Arg Lys Lys Ala Lys
  1          5          10          15
Arg Val Val Val Asp Ala Val Ala His Val His Ala Ser Phe Asn Asn
          20          25          30
Thr Ile Val Thr Ile Thr Asp Gly Gln Gly Asn Thr Leu Ser Trp Ala
          35          40          45
Thr Ala Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe
          50          55          60
Ala Ala Gln Ile Ala Ala Glu Arg Ala Gly Glu Val Ala Lys Glu Tyr
          65          70          75          80
Gly Val Gln Asn Leu Asp Val Asn Ile Lys Gly Pro Gly Pro Gly Arg
          85          90          95
Glu Ser Ala Ile Arg Ala Leu Asn Ser Ala Gly Phe Asn Ile His Ser
          100          105          110
Ile Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys
          115          120          125
Lys Arg Arg Val
          130

```

```

<210> 205
<211> 393
<212> DNA
<213> Synechococcus sp. WH 7803

```

```

<220>
<221> CDS
<222> (1)..(393)
<223> trans1_table=11

```

```

<400> 205
atg gcc aag acc gtc aag aaa tca ggc ccg aag aag gcc aag cgc aac      48
Met Ala Lys Thr Val Lys Lys Ser Gly Pro Lys Lys Lys Ala Lys Arg Asn
  1          5          10          15

```

## PhoenixTemp32470.tmp.txt

```

gtc ccc aac ggc gtt gct cat att cag agc acg ttc aac aac acg atc      96
Val Pro Asn Gly 20 Val Ala His Ile Gln 25 Ser Thr Phe Asn 30 Asn Thr Ile
gtt tcc att acc gac acc acc gga gaa gtc atc tcc tgg tca tcg gct      144
Val Ser Ile Thr Asp Thr Thr Gly 40 Glu Val Ile Ser Trp 45 Ser Ser Ala
ggg gcc agc ggt ttc aaa ggt gct cgc aaa ggc aca ccc ttc gca gcc      192
Gly Ala Ser Gly Phe Lys Gly 55 Ala Arg Lys Gly Thr 60 Pro Phe Ala Ala
cag aca gcg gcc gaa gct gca gcc cgt cgc gca ctc gat cag gga atg      240
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met 80
cgt cag atc gaa gtg ttg gtc cgt ggc cct ggc tca ggc cgg gaa acc      288
Arg Gln Ile Glu Val Leu Val Arg Gly 90 Pro Gly Ser Gly Arg Glu Thr 95
gcc att cgc gcg ctt cag gtc gct ggc ctg gaa atc acc ctg atc cgt      336
Ala Ile Arg Ala Leu Gln Val Ala Gly 105 Leu Glu Ile Thr Leu 110 Ile Arg
gat gtc acg ccg ttg cct cac aac ggc tgc cgc cgt ccc aag cgt cgc      384
Asp Val Thr Pro Leu Pro His Asn 120 Gly Cys Arg Arg Pro 125 Lys Arg Arg
cgc gtc tga
Arg Val 130

```

&lt;210&gt; 206

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 7803

&lt;400&gt; 206

```

Met Ala Lys Thr Val 5 Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn
1 Val Pro Asn Gly 20 Val Ala His Ile Gln 25 Ser Thr Phe Asn 30 Asn Thr Ile
Val Ser Ile Thr Asp Thr Thr Gly 40 Glu Val Ile Ser Trp 45 Ser Ser Ala
Gly Ala Ser Gly Phe Lys Gly 55 Ala Arg Lys Gly Thr 60 Pro Phe Ala Ala
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met
65 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
85 Ala Ile Arg Ala Leu Gln Val Ala Gly 105 Leu Glu Ile Thr Leu 110 Ile Arg
Asp Val Thr 100 Pro Leu Pro His Asn 120 Gly Cys Arg Arg Pro 125 Lys Arg Arg
Arg Val 115
Arg Val 130

```

&lt;210&gt; 207

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Chloranthus spicatus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 207

```

atg aca aaa cct ata cca aga att ggt tca cgc aag aat gga cgt att      48
Met Thr Lys Pro Ile 5 Pro Arg Ile Gly Ser 10 Arg Lys Asn Gly Arg Ile
agt tca cgt aag aat gga cgt aga ata cca aag gga gtt att cat gtt      96
Ser Ser Arg Lys 20 Asn Gly Arg Arg Ile 25 Pro Lys Gly Val 30 Ile His Val
caa gcg agt ttc aac aat acc att gtg act gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly

```

PhoenixTemp32470.tmp.txt

cgg	gtg	ggt	tct	tgg	tcc	tcc	gct	ggg	act	tcc	gga	ttt	aga	gga	aca	192
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Ser	Gly	Phe	Arg	Gly	Thr	
aga	aga	gga	acc	cca	ttt	gct	gct	caa	acc	gca	gca	gga	aat	gct	att	240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile	
cgt	aca	gta	gtg	gat	caa	ggg	atg	cag	cga	gca	gaa	gtc	atg	ata	aag	288
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys	
gga	ccc	ggt	ctc	gga	aga	gat	gca	gca	tta	cga	gcc	att	cgt	aga	agt	336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	
ggg	cta	cta	tta	agt	ttc	gta	cgt	gac	gta	acc	cct	atg	cca	cat	aat	384
Gly	Leu	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	
gga	tgt	aga	cct	cct	aaa	aaa	aga	cgt	gtg	tag						417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val							

<210> 208  
<211> 138  
<212> PRT  
<213> Chloranthus spicatus

<400>	208														
Met	Thr	Lys	Pro	Ile <sub>5</sub>	Pro	Arg	Ile	Gly	Ser <sub>10</sub>	Arg	Lys	Asn	Gly	Arg <sub>15</sub>	Ile
1	Ser	Ser	Arg	Lys <sub>20</sub>	Asn	Gly	Arg	Arg	Ile <sub>25</sub>	Pro	Lys	Gly	Val	Ile <sub>30</sub>	His
Gln	Ala	Ser <sub>35</sub>	Phe	Asn	Asn	Thr	Ile <sub>40</sub>	Val	Thr	Val	Thr	Asp <sub>45</sub>	Val	Arg	Gly
Arg	Val <sub>50</sub>	Val	Ser	Trp	Ser	Ser <sub>55</sub>	Ala	Gly	Thr	Ser	Gly <sub>60</sub>	Phe	Arg	Gly	Thr
Arg	Arg	Gly	Thr	Pro	Phe <sub>70</sub>	Ala	Ala	Gln	Thr	Ala <sub>75</sub>	Ala	Gly	Asn	Ala	Ile <sub>80</sub>
65	Arg	Thr	Val	Val	Asp <sub>85</sub>	Gln	Gly	Met	Gln	Arg <sub>90</sub>	Ala	Glu	Val	Met	Ile <sub>95</sub>
Gly	Pro	Gly	Leu <sub>100</sub>	Gly	Arg	Asp	Ala	Ala <sub>105</sub>	Leu	Arg	Ala	Ile	Arg	Arg	Ser
Gly	Leu	Leu <sub>115</sub>	Leu	Ser	Phe	Val	Arg <sub>120</sub>	Asp	Val	Thr	Pro	Met <sub>125</sub>	Pro	His	Asn
Gly	Cys <sub>130</sub>	Arg	Pro	Pro	Lys	Lys <sub>135</sub>	Arg	Arg	Val						

<210> 209  
<211> 417  
<212> DNA  
<213> Buxus microphylla

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<220>  
<221> CDS  
<222> (1)..(417)  
<223> transl_table=11
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<b>&lt;400&gt; 209</b>																
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Met	Ala	Lys	Pro	Ile	Pro	Arg	Ile	Gly	Ser	Arg	Lys	Asn	Gly	Arg	Ile	
1				5					10					15		
ggt	tca	cgt	aag	agt	gga	cgt	aga	ata	cca	aag	ggg	gtt	att	cat	gtt	96
Gly	Ser	Arg	Lys	Ser	Gly	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val	
			20					25					30			
caa	gca	agt	ttc	aac	aat	acc	att	gtg	act	gtt	aca	gat	gta	cgg	ggc	144
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	
		35					40					45				
agg	gtg	gtt	tct	tgg	tcc	tcc	gcc	ggc	act	tgt	gga	ttc	agg	gga	aca	192
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr	
	50					55					60					
aga	aga	ggg	aca	cct	ttt	gct	gct	caa	acc	gca	gcg	gga	aat	gct	att	240

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Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
65					70				75						80		
cgt	aca	gta	atg	gat	cag	ggt	atg	caa	cga	gca	gaa	gtc	atg	ata	aag		288
Arg	Thr	Val	Met	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85					90					95			
ggt	cct	ggt	ctc	gga	aga	gat	gca	gca	tta	cga	gct	att	cgt	aga	agt		336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100					105					110				
ggt	cta	cta	tta	agt	ttc	gta	cgg	gac	gta	acc	cct	atg	cca	cat	aat		384
Gly	Leu	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
gga	tgt	aga	cct	cct	aaa	aaa	aga	cgt	gtg	tag							417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 210  
 <211> 138  
 <212> PRT  
 <213> Buxus microphylla

<400> 210

Met	Ala	Lys	Pro	Ile	Pro	Arg	Ile	Gly	Ser	Arg	Lys	Asn	Gly	Arg	Ile		
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Gly	Ser	Arg	Lys	Ser	Gly	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val		
			20					25					30				
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr		
	50				55					60							
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
65					70				75						80		
Arg	Thr	Val	Met	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85					90					95			
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
		100					105						110				
Gly	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn			
	115					120					125						
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 211  
 <211> 417  
 <212> DNA  
 <213> Illicium oligandrum

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 211

atg	aca	aaa	cct	ata	cca	aga	att	ggt	tta	cgt	agg	aat	gga	cgt	att		48
Met	Thr	Lys	Pro	Ile	Pro	Arg	Ile	Gly	Leu	Arg	Arg	Asn	Gly	Arg	Ile		
1				5					10					15			
ggt	tta	cgt	aag	aat	gga	cgt	aga	ata	tca	aaa	gga	gtt	att	cat	gtt		96
Gly	Leu	Arg	Lys	Asn	Gly	Arg	Arg	Ile	Ser	Lys	Gly	Val	Ile	His	Val		
			20					25					30				
caa	gcg	agt	ttc	aac	aat	acc	att	gtg	act	gtt	aca	gat	gta	cgg	ggt		144
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
cgg	gtt	gtt	tct	tgg	tcc	tcc	gcg	ggt	act	tgt	gga	ttc	aga	ggc	gca		192
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Ala		
	50				55					60							
aga	aga	ggg	aca	cca	ttt	gct	gct	caa	acc	gca	gca	gga	aat	gct	att		240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
	65				70				75						80		
cgt	aca	gta	gtg	gat	cag	ggt	atg	caa	cga	gca	gaa	gtt	atg	ata	aag		288
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85					90					95			

## PhoenixTemp32470.tmp.txt

ggc ccc ggt ctc gga aga gat gca gca tta cga gcc att cgt aga agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Ser  
 100 105 110  
 ggt ata cta tta agt ttc gta cgt gac gta act cct atg cca cat aat 384  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 gga tgt aga ccg cct aaa aaa agg cgc gta tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 212

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Illicium oligandrum

&lt;400&gt; 212

Met Thr Lys Pro Ile Pro Arg Ile Gly Leu Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Gly Leu Arg Lys Asn Gly Arg Arg Ile Ser Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Ala  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 213

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Dioscorea elephantipes

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 213

atg aca aaa cct ata cca aga att ggt tcc cgt agg aat ggg cgt att 48  
 Met Thr Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 ggt tca cgc aag aat gca cgt aga ata cca aaa gga gtt att cat gtt 96  
 Gly Ser Arg Lys Asn Ala Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 caa gcg agt ttc aat aat acc att gta act gtt tca gat gta cgt ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Ser Asp Val Arg Gly  
 35 40 45  
 cag gtg att tct tgg gcc tcc gcg ggt act tct gga ttc aaa ggc aca 192  
 Gln Val Ile Ser Trp Ala Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr  
 50 55 60  
 aga aga gga aca ccc tat gct gct caa gct gca gca gta aac gct att 240  
 Arg Arg Gly Thr Pro Tyr Ala Ala Gln Ala Ala Val Asn Ala Ile  
 65 70 75 80  
 cgt aca ata att gat cag gat atg caa cga gca gaa gtt atg ata aag 288  
 Arg Thr Ile Ile Asp Gln Asp Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 ggt gct ggt ttc gga aga gat gca gca tta cga gcc att cgt aga agt 336  
 Gly Ala Gly Phe Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 ggt ata cta tta agt ttc gta cgt gat gta aca cct atg cca cat aat 384  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125

115  
gga tgt cga cct ccc caa aaa aga cgt gta tag 417  
Gly Cys Arg Pro Pro Gln Lys Arg Arg Val  
130 135 125

<210> 214  
<211> 138  
<212> PRT  
<213> Dioscorea elephantipes

<400> 214  
Met Thr Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile  
1 5 10 15  
Gly Ser Arg Lys Asn Ala Arg Arg Ile Pro Lys Gly Val Ile His Val  
20 25 30  
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Ser Asp Val Arg Gly  
35 40 45  
Gln Val Ile Ser Trp Ala Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr  
50 55 60  
Arg Arg Gly Thr Pro Tyr Ala Ala Gln Ala Ala Val Asn Ala Ile  
65 70 75 80  
Arg Thr Ile Ile Asp Gln Asp Met Gln Arg Ala Glu Val Met Ile Lys  
85 90 95  
Gly Ala Gly Phe Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
100 105 110  
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
115 120 125  
Gly Cys Arg Pro Pro Gln Lys Arg Arg Val  
130 135

<210> 215  
<211> 393  
<212> DNA  
<213> Cycas taitungensis

<220>  
<221> CDS  
<222> (1)..(393)  
<223> transl\_table=11

<400> 215  
atg tca aaa cct ata aga aaa att ggt tca cgt aga aat gaa cgt aga 48  
Met Ser Lys Pro Ile Arg Lys Ile Gly Ser Arg Arg Asn Glu Arg Arg  
1 5 10 15  
ata cca aaa gga gtt att cac gtt caa gca agt ttt aac aat acc att 96  
Ile Pro Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
20 25 30  
gtt act gtt acg gat gta cgg gga cag gtg gtt tct tgg tct tct gcc 144  
Val Thr Val Thr Asp Val Arg Gly Gln Val Val Ser Trp Ser Ser Ala  
35 40 45  
ggt gcc tgt gga ttc aaa ggc acg aaa aga agt aca cca ttt gct gct 192  
Gly Ala Cys Gly Phe Lys Gly Thr Lys Arg Ser Thr Pro Phe Ala Ala  
50 55 60  
cag act gca gca gaa aat gct att cgt acg tta atg gat caa ggt atg 240  
Gln Thr Ala Ala Glu Asn Ala Ile Arg Thr Leu Met Asp Gln Gly Met  
65 70 75 80  
gaa cga gca gaa gtc atg ata agt ggc cct ggt ccg ggg aga gat aca 288  
Glu Arg Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
85 90 95  
gca tta cgg gcc att cgt aga agt ggt gta ctc tta agt ttt gta cgt 336  
Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Leu Leu Ser Phe Val Arg  
100 105 110  
gac gta acc cct atg cca cat aat gga tgt aga cct ccc aag aga 384  
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
115 120 125  
cgt gtg tag 393  
Arg Val  
130

## PhoenixTemp32470.tmp.txt

<210> 216  
 <211> 130  
 <212> PRT  
 <213> Cycas taitungensis

<400> 216  
 Met Ser Lys Pro Ile Arg Lys Ile Gly Ser Arg Arg Asn Glu Arg Arg  
 1 5 10 15  
 Ile Pro Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Val Thr Asp Val Arg Gly Gln Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Thr Lys Arg Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Asn Ala Ile Arg Thr Leu Met Asp Gln Gly Met  
 65 70 75 80  
 Glu Arg Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Leu Leu Ser Phe Val Arg  
 100 105 110  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 Arg Val  
 130

<210> 217  
 <211> 789  
 <212> DNA  
 <213> Chlorokybus atmophyticus

<220>  
 <221> CDS  
 <222> (1)..(789)

<400> 217  
 atg ata aga aat act att gtg act tca aaa gaa gaa aac aaa ggc gag 48  
 Met Ile Arg Asn Thr Ile Val Thr Ser Lys Glu Glu Asn Lys Gly Glu  
 1 5 10 15  
 caa tct cca aat atg aca caa gaa aaa aga ctg act gga atc ccc cct 96  
 Gln Ser Pro Asn Met Thr Gln Glu Lys Arg Leu Thr Gly Ile Pro Pro  
 20 25 30  
 ttc cca gtt gat gcg gcg ggg gag cgc ccc caa ttg cag gtt gaa tca 144  
 Phe Pro Val Asp Ala Ala Gly Glu Arg Pro Gln Leu Gln Val Glu Ser  
 35 40 45  
 tat aac ttg gtt cac caa ggc ggc tta act ggt ttt tcc cta aag act 192  
 Tyr Asn Leu Val His Gln Gly Gly Leu Thr Gly Phe Ser Leu Lys Thr  
 50 55 60  
 ttg tta cac cag cga ggc tca ttt tca agt gaa aat ttt caa agg ggg 240  
 Leu Leu His Gln Arg Gly Ser Phe Ser Ser Glu Asn Phe Gln Arg Gly  
 65 70 75 80  
 ttg ccc atc ggg aaa aat ggc tac caa tcg gac tct ttt caa aag ggg 288  
 Leu Pro Ile Gly Lys Asn Gly Tyr Gln Ser Asp Ser Phe Gln Lys Gly  
 85 90 95  
 caa gac aaa gag ggg agg cag ctg ata aaa tcg gaa aat tac gaa aga 336  
 Gln Asp Lys Glu Gly Arg Gln Leu Ile Lys Ser Glu Asn Tyr Glu Arg  
 100 105 110  
 gtg gat tgg acc aaa ggt tca gaa aag atc ggt aaa aaa gaa gtg gga 384  
 Val Asp Trp Thr Lys Gly Ser Glu Lys Ile Gly Lys Lys Glu Val Gly  
 115 120 125  
 act atc tcg ctt ttg cac agg aaa cta gct gat aag atg gga aag aaa 432  
 Thr Ile Ser Leu Leu His Arg Lys Leu Ala Asp Lys Met Gly Lys Lys  
 130 135 140  
 aaa aga ggg gta cag cgt ttg ggg gta gca cac att caa aca aca tta 480  
 Lys Arg Gly Val Gln Arg Leu Gly Val Ala His Ile Gln Thr Thr Leu  
 145 150 155 160  
 aat aat act ata ata aca ata acc gat tta gat ggt aat act aaa tct 528  
 Asn Asn Thr Ile Ile Thr Ile Thr Asp Leu Asp Gly Asn Thr Lys Ser  
 165 170 175  
 tgg tct tct tca ggt agt ata ggg ttt aaa gga tcc cga cga aaa aca 576

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Trp	Ser	Ser	Ser	Gly	Ser	Ile	Gly	Phe	Lys	Gly	Ser	Arg	Arg	Lys	Thr		
			180					185					190				
agc	tat	gct	gcg	caa	gcc	gca	gca	gaa	act	gcg	gca	aaa	aag	tca	att	624	
Ser	Tyr	Ala	Ala	Gln	Ala	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Lys	Ser	Ile		
		195					200					205					
caa	ttg	gga	att	aaa	gat	gta	acc	gtt	aaa	att	cgt	gga	ttt	ggt	cct	672	
Gln	Leu	Gly	Ile	Lys	Asp	Val	Thr	Val	Lys	Ile	Arg	Gly	Phe	Gly	Pro		
	210					215					220						
ggt	aga	gat	tct	tca	tta	cgt	ggt	tta	caa	att	ggc	ggg	tta	aaa	atc	720	
Gly	Arg	Asp	Ser	Ser	Leu	Arg	Gly	Leu	Gln	Ile	Gly	Gly	Leu	Lys	Ile		
225					230					235					240		
tat	aaa	att	caa	gat	act	acg	cca	tta	cct	cat	aat	gga	tgt	agg	cct	768	
Tyr	Lys	Ile	Gln	Asp	Thr	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Pro		
				245					250					255			
cca	aaa	aaa	cct	cgt	ggt	taa										789	
Pro	Lys	Lys	Pro	Arg	Gly												
			260														

<210> 218

<211> 262

<212> PRT

<213> Chlorokybus atmophyticus

<400> 218

Met	Ile	Arg	Asn	Thr	Ile	Val	Thr	Ser	Lys	Glu	Glu	Asn	Lys	Gly	Glu		
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Gln	Ser	Pro	Asn	Met	Thr	Gln	Glu	Lys	Arg	Leu	Thr	Gly	Ile	Pro	Pro		
			20					25					30				
Phe	Pro	Val	Asp	Ala	Ala	Gly	Glu	Arg	Pro	Gln	Leu	Gln	Val	Glu	Ser		
		35					40					45					
Tyr	Asn	Leu	Val	His	Gln	Gly	Gly	Leu	Thr	Gly	Phe	Ser	Leu	Lys	Thr		
	50					55					60						
Leu	Leu	His	Gln	Arg	Gly	Ser	Phe	Ser	Ser	Glu	Asn	Phe	Gln	Arg	Gly		
65					70					75				80			
Leu	Pro	Ile	Gly	Lys	Asn	Gly	Tyr	Gln	Ser	Asp	Ser	Phe	Gln	Lys	Gly		
				85					90					95			
Gln	Asp	Lys	Glu	Gly	Arg	Gln	Leu	Ile	Lys	Ser	Glu	Asn	Tyr	Glu	Arg		
			100					105					110				
Val	Asp	Trp	Thr	Lys	Gly	Ser	Glu	Lys	Ile	Gly	Lys	Lys	Glu	Val	Gly		
		115					120					125					
Thr	Ile	Ser	Leu	Leu	His	Arg	Lys	Leu	Ala	Asp	Lys	Met	Gly	Lys	Lys		
	130					135					140						
Lys	Arg	Gly	Val	Gln	Arg	Leu	Gly	Val	Ala	His	Ile	Gln	Thr	Thr	Leu		
145					150					155					160		
Asn	Asn	Thr	Ile	Ile	Thr	Ile	Thr	Asp	Leu	Asp	Gly	Asn	Thr	Lys	Ser		
				165					170					175			
Trp	Ser	Ser	Ser	Gly	Ser	Ile	Gly	Phe	Lys	Gly	Ser	Arg	Arg	Lys	Thr		
			180					185					190				
Ser	Tyr	Ala	Ala	Gln	Ala	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Lys	Ser	Ile		
		195					200					205					
Gln	Leu	Gly	Ile	Lys	Asp	Val	Thr	Val	Lys	Ile	Arg	Gly	Phe	Gly	Pro		
	210					215					220						
Gly	Arg	Asp	Ser	Ser	Leu	Arg	Gly	Leu	Gln	Ile	Gly	Gly	Leu	Lys	Ile		
225					230					235					240		
Tyr	Lys	Ile	Gln	Asp	Thr	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Pro		
				245					250					255			
Pro	Lys	Lys	Pro	Arg	Gly												
			260														

<210> 219

<211> 408

<212> DNA

<213> Kineococcus radiotolerans SRS30216

<220>

<221> CDS

<222> (1)..(408)

<223> transl\_table=11



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<400> 219
atg cct ccc aag agc cgt acg gcc acg gcg tcg cgc aag ccg cgt cgc      48
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1      5      10      15
aag gag aag aag aac gtc gcg cac ggt cac gcg cac atc aag tcg acg      96
Lys Glu Lys Lys Asn Val Ala His Gly His Ala His Ile Lys Ser Thr
20      25      30
ttc aac aac acg atc gtc tcg atc acc gac ccg acc ggc gcg gtc atc      144
Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Thr Gly Ala Val Ile
35      40      45
gcg tgg gcc tcg gcc ggc cag gtc ggc ttc aag ggg tcc cgc aag tcg      192
Ala Trp Ala Ser Ala Gly Gln Val Gly Phe Lys Gly Ser Arg Lys Ser
50      55      60
acc ccg ttc gcc gcg cag atg gcc gcc gag gcg gcc gcc cgc cgt gcg      240
Thr Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Ala Arg Arg Ala
65      70      75      80
cag gag cac ggc atg cgc aag gtc gac gtc ttc gtc aag ggg ccg ggc      288
Gln Glu His Gly Met Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly
85      90      95
tcc ggc cgc gag acc gcg atc cgc tcc ctc cag gcc acc ggc ctc gag      336
Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu
100      105      110
gtc ggc gcg atc cag gac gtc acc ccc agc ccg cac aac ggc tgc cgg      384
Val Gly Ala Ile Gln Asp Val Thr Pro Ser Pro His Asn Gly Cys Arg
115      120      125
ccg ccc aag cgt cgg cgc gtc tga      408
Pro Pro Lys Arg Arg Arg Val
130      135

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<210> 220

<211> 135

<212> PRT

<213> Kineococcus radiotolerans SRS30216

<400> 220

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Met Pro Pro Lys Ser Arg Thr Ala Thr Ala Ser Arg Lys Pro Arg Arg
1      5      10      15
Lys Glu Lys Lys Asn Val Ala His Gly His Ala His Ile Lys Ser Thr
20      25      30
Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Thr Gly Ala Val Ile
35      40      45
Ala Trp Ala Ser Ala Gly Gln Val Gly Phe Lys Gly Ser Arg Lys Ser
50      55      60
Thr Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Ala Arg Arg Ala
65      70      75      80
Gln Glu His Gly Met Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly
85      90      95
Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu
100      105      110
Val Gly Ala Ile Gln Asp Val Thr Pro Ser Pro His Asn Gly Cys Arg
115      120      125
Pro Pro Lys Arg Arg Arg Val
130      135

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<210> 221

<211> 417

<212> DNA

<213> Medicago truncatula

<220>

<221> CDS

<222> (1)..(417)

<223> transl\_table=11

<400> 221

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atg gca aaa tct ata cca aaa att ggt tca cgt aaa aat gga cgt att      48
Met Ala Lys Ser Ile Pro Lys Ile Gly Ser Arg Lys Asn Gly Arg Ile
1      5      10      15
ggg tcg cgt aaa cat cct cgt aaa ata cca aag gga gtt att tat gtt      96

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PhoenixTemp32470.tmp.txt

Gly	Ser	Arg	Lys <sub>20</sub>	His	Pro	Arg	Lys	Ile <sub>25</sub>	Pro	Lys	Gly	Val	Ile <sub>30</sub>	Tyr	Val		
caa	gct	agt	ttc	aac	aat	acc	att	gtg	act	ggt	aca	gat	gta	cga	ggt		144
Gln	Ala	Ser <sub>35</sub>	Phe	Asn	Asn	Thr	Ile <sub>40</sub>	Val	Thr	Val	Thr	Asp <sub>45</sub>	Val	Arg	Gly		
cgg	gtg	att	tct	tgg	tcc	tct	gcc	ggt	tcg	tgt	gga	ttc	aag	ggt	aca		192
Arg	Val <sub>50</sub>	Ile	Ser	Trp	Ser	Ser <sub>55</sub>	Ala	Gly	Ser	Cys	Gly <sub>60</sub>	Phe	Lys	Gly	Thr		
cga	agg	ggg	aca	cca	ttt	gcc	gct	caa	acc	gca	gca	gca	aat	gct	att		240
Arg	Arg	Gly	Thr	Pro	Phe <sub>70</sub>	Ala	Ala	Gln	Thr	Ala <sub>75</sub>	Ala	Ala	Asn	Ala	Ile <sub>80</sub>		
cga	aca	gta	gta	gat	caa	ggc	atg	caa	cga	gcc	gta	gtc	ata	ata	aaa		288
Arg	Thr	Val	Val	Asp <sub>85</sub>	Gln	Gly	Met	Gln	Arg <sub>90</sub>	Ala	Val	Val	Ile	Ile <sub>95</sub>	Lys		
ggt	ccc	ggt	cta	gga	aga	gat	gcg	gca	tta	aga	gct	att	gct	aga	agt		336
Gly	Pro	Gly	Leu <sub>100</sub>	Gly	Arg	Asp	Ala <sub>105</sub>	Ala	Leu	Arg	Ala	Ile	Ala <sub>110</sub>	Arg	Ser		
ggt	ata	cta	tta	aga	ttt	ata	cgg	gat	gta	acc	cct	atc	cca	cat	aat		384
Gly	Ile <sub>115</sub>	Leu	Leu	Arg	Phe	Ile	Arg <sub>120</sub>	Asp	Val	Thr	Pro	Ile <sub>125</sub>	Pro	His	Asn		
gga	tgt	agg	gct	cct	aaa	aaa	aga	cgt	gtg	taa							417
Gly	Cys <sub>130</sub>	Arg	Ala	Pro	Lys	Lys <sub>135</sub>	Arg	Arg	Val								

<210> 222  
 <211> 138  
 <212> PRT  
 <213> Medicago truncatula

<400> 222

Met	Ala	Lys	Ser	Ile <sub>5</sub>	Pro	Lys	Ile	Gly	Ser	Arg	Lys	Asn	Gly	Arg	Ile		
1																	
Gly	Ser	Arg	Lys <sub>20</sub>	His	Pro	Arg	Lys	Ile <sub>25</sub>	Pro	Lys	Gly	Val	Ile <sub>30</sub>	Tyr	Val		
Gln	Ala	Ser <sub>35</sub>	Phe	Asn	Asn	Thr	Ile <sub>40</sub>	Val	Thr	Val	Thr	Asp <sub>45</sub>	Val	Arg	Gly		
Arg	Val <sub>50</sub>	Ile	Ser	Trp	Ser	Ser <sub>55</sub>	Ala	Gly	Ser	Cys	Gly <sub>60</sub>	Phe	Lys	Gly	Thr		
Arg	Arg	Gly	Thr	Pro	Phe <sub>70</sub>	Ala	Ala	Gln	Thr	Ala <sub>75</sub>	Ala	Ala	Asn	Ala	Ile <sub>80</sub>		
65																	
Arg	Thr	Val	Val	Asp <sub>85</sub>	Gln	Gly	Met	Gln	Arg <sub>90</sub>	Ala	Val	Val	Ile	Ile <sub>95</sub>	Lys		
Gly	Pro	Gly	Leu <sub>100</sub>	Gly	Arg	Asp	Ala <sub>105</sub>	Ala	Leu	Arg	Ala	Ile	Ala <sub>110</sub>	Arg	Ser		
Gly	Ile <sub>115</sub>	Leu	Leu	Arg	Phe	Ile	Arg <sub>120</sub>	Asp	Val	Thr	Pro	Ile <sub>125</sub>	Pro	His	Asn		
Gly	Cys <sub>130</sub>	Arg	Ala	Pro	Lys	Lys <sub>135</sub>	Arg	Arg	Val								

<210> 223  
 <211> 390  
 <212> DNA  
 <213> Leptosira terrestris

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 223

atg	gca	aaa	cta	act	cga	aaa	att	cct	aaa	aaa	aca	aaa	cgc	aaa	ttt		48
Met	Ala	Lys	Leu	Thr <sub>5</sub>	Arg	Lys	Ile	Pro	Lys <sub>10</sub>	Lys	Thr	Lys	Arg	Lys <sub>15</sub>	Phe		
1																	
tcc	cgg	ggc	ctt	gtt	cat	att	caa	gta	agt	ttt	aat	aat	aca	att	gtt		96
Ser	Arg	Gly	Leu <sub>20</sub>	Val	His	Ile	Gln	Val <sub>25</sub>	Ser	Phe	Asn	Asn	Thr	Ile	Val		
acc	att	act	aat	tta	aag	ggt	gat	gtt	ctt	gct	tgg	tct	tcc	gcg	gga		144
Thr	Ile	Thr <sub>35</sub>	Asn	Leu	Lys	Gly	Asp <sub>40</sub>	Val	Leu	Ala	Trp	Ser <sub>45</sub>	Ser	Ala	Gly		

## PhoenixTemp32470.tmp.txt

gct tgc gga ttt aaa ggg gcg cga aaa gga act cct ttt gca gca caa 192  
 Ala Cys Gly Phe Lys Gly Ala 55 Arg Lys Gly Thr Pro Phe Ala Ala Gln  
 50 60  
 att gtt gct gaa aca gct gca cga aaa tca ttt gat cgt gga tta aaa 240  
 Ile Val Ala Glu Thr Ala Ala Arg Lys Ser Phe Asp Arg Gly Leu Lys  
 65 70 75 80  
 caa gca cag gtt tta gta aaa gga ccg gga cca gga cga gat aaa gct 288  
 Gln Ala Gln Val Leu Val Lys Gly Pro Gly Pro Gly Arg Asp Lys Ala  
 85 90 95  
 ctc gta ggg cta ttt aaa gct gga att cag ata tct ctt att aga gat 336  
 Leu Val Gly Leu Phe Lys Ala Gly Ile Gln Ile Ser Leu Ile Arg Asp  
 100 105 110  
 att act gca att ccg cat aat ggt tgt aga cct ccc aaa aaa agg cgt 384  
 Ile Thr Ala Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 tta taa 390  
 Leu

&lt;210&gt; 224

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Leptosira terrestris

&lt;400&gt; 224

Met Ala Lys Leu Thr Arg Lys Ile Pro Lys Lys Thr Lys Arg Lys Phe  
 1 5 10 15  
 Ser Arg Gly Leu Val His Ile Gln Val Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asn Leu Lys Gly Asp Val Leu Ala Trp Ser Ala Gly  
 35 40 45  
 Ala Cys Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Ile Val Ala Glu Thr Ala Ala Arg Lys Ser Phe Asp Arg Gly Leu Lys  
 65 70 75 80  
 Gln Ala Gln Val Leu Val Lys Gly Pro Gly Pro Gly Arg Asp Lys Ala  
 85 90 95  
 Leu Val Gly Leu Phe Lys Ala Gly Ile Gln Ile Ser Leu Ile Arg Asp  
 100 105 110  
 Ile Thr Ala Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Leu

&lt;210&gt; 225

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Xanthobacter autotrophicus Py2

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 225

atg gct aag gaa gct acc cgc gtt aag cgc cgc gag cgc aag aac att 48  
 Met Ala Lys Glu Ala Thr Arg Val Lys Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 gcc tcg ggc gtg gcg cat gtg aac gcc tcg ttc aac aac acc atg atc 96  
 Ala Ser Gly Val Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Ile  
 20 25 30  
 acc atc acc gac gcc cag ggc aac acc atc tcc tgg tcc tcg gcc ggc 144  
 Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ala Gly  
 35 40 45  
 gcc atg ggg ttc aag ggt tcg cgc aag tcc acc ccg tac gcc gcg cag 192  
 Ala Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 gtg gcg gcc gag gac gcg gcc cgc aag gcg gcc gag cac ggg atg cgc 240  
 Val Ala Ala Glu Asp Ala Ala Arg Lys Ala Ala Glu His Gly Met Arg

## PhoenixTemp32470.tmp.txt

65					70				75					80			
acc	ctt	gag	gtg	gaa	gtc	tcc	ggc	ccc	ggt	tcg	gga	cgt	gag	tcc	gcc		
Thr	Leu	Glu	Val	Glu	Val	Ser	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		288
				85					90					95			
ctg	cgc	gcg	ctg	cag	gcg	gcg	ggt	ttc	ctc	gtc	acc	tcc	atc	cgc	gac		336
Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Phe	Leu	Val	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
gtg	acg	ccg	atc	ccg	cac	aac	ggc	tgc	cgt	ccg	cgc	aag	cgc	cgt	cgc		384
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Arg	Arg	Arg		
		115					120					125					
gtc	tga																390
Val																	

&lt;210&gt; 226

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Xanthobacter autotrophicus Py2

&lt;400&gt; 226

Met	Ala	Lys	Glu	Ala	Thr	Arg	Val	Lys	Arg	Arg	Glu	Arg	Lys	Asn	Ile		
1				5					10					15			
Ala	Ser	Gly	Val	Ala	His	Val	Asn	Ala	Ser	Phe	Asn	Asn	Thr	Met	Ile		
			20					25					30				
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Thr	Ile	Ser	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
Ala	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55				60							
Val	Ala	Ala	Glu	Asp	Ala	Ala	Arg	Lys	Ala	Ala	Glu	His	Gly	Met	Arg		
65				70					75					80			
Thr	Leu	Glu	Val	Glu	Val	Ser	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
			85					90					95				
Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Phe	Leu	Val	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

&lt;210&gt; 227

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Cuscuta gronovii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 227

atg	gta	aaa	tta	atc	ccg	aga	ctt	agt	tcg	cgt	cgg	aat	gga	cgt	att		48
Met	Val	Lys	Leu	Ile	Pro	Arg	Leu	Ser	Ser	Arg	Arg	Asn	Gly	Arg	Ile		
1				5					10					15			
cgt	tta	cgt	aaa	aat	aca	cgt	aaa	atc	tca	caa	gga	gta	att	cat	att		96
Arg	Leu	Arg	Lys	Asn	Thr	Arg	Lys	Ile	Ser	Gln	Gly	Val	Ile	His	Ile		
			20					25					30				
cag	gcc	agt	tta	cag	aat	act	ata	gtc	act	gtt	aca	gat	gta	cga	ggg		144
Gln	Ala	Ser	Leu	Gln	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
cgc	gta	gtt	tcg	tgg	gct	tct	gca	ggt	agt	gcc	gga	ttc	aaa	gga	act		192
Arg	Val	Val	Ser	Trp	Ala	Ser	Ala	Gly	Ser	Ala	Gly	Phe	Lys	Gly	Thr		
	50					55				60							
aca	aga	cgg	acg	ccg	ttt	gct	gcg	caa	acg	gca	gca	aca	aat	gct	atc		240
Thr	Arg	Arg	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Thr	Asn	Ala	Ile		
	65				70				75					80			
cgt	aca	gca	ata	aac	cat	ggt	atg	cgt	gaa	gca	gac	gtg	tta	ata	aaa		288
Arg	Thr	Ala	Ile	Asn	His	Gly	Met	Arg	Glu	Ala	Asp	Val	Leu	Ile	Lys		
			85						90				95				
ggc	cct	ggg	ctt	gga	aga	gac	gca	gca	tta	cga	gcg	att	cgt	cga	agt		336

PhoenixTemp32470.tmp.txt

Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
ggt	ata	cga	tta	gag	ttg	ata	ctg	gat	gtc	act	cct	atg	cca	cac	aat		384
Gly	Ile	Arg	Leu	Glu	Leu	Ile	Leu	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
ggc	tgt	aga	cct	ccg	aaa	aaa	cga	cgt	gta	tag							417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 228  
 <211> 138  
 <212> PRT  
 <213> Cuscuta gronovii

Met	Val	Lys	Leu	Ile	Pro	Arg	Leu	Ser	Ser	Arg	Arg	Asn	Gly	Arg	Ile		
1				5				10						15			
Arg	Leu	Arg	Lys	Asn	Thr	Arg	Lys	Ile	Ser	Gln	Gly	Val	Ile	His	Ile		
			20					25					30				
Gln	Ala	Ser	Leu	Gln	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
Arg	Val	Val	Ser	Trp	Ala	Ser	Ala	Gly	Ser	Ala	Gly	Phe	Lys	Gly	Thr		
	50					55				60							
Thr	Arg	Arg	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Thr	Asn	Ala	Ile		
65					70					75					80		
Arg	Thr	Ala	Ile	Asn	His	Gly	Met	Arg	Glu	Ala	Asp	Val	Leu	Ile	Lys		
				85					90					95			
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
Gly	Ile	Arg	Leu	Glu	Leu	Ile	Leu	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 229  
 <211> 417  
 <212> DNA  
 <213> Cuscuta reflexa

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

atg	gca	aaa	tct	ata	ccg	aga	att	agt	tcg	cgt	agg	aat	gga	cgt	att		48
Met	Ala	Lys	Ser	Ile	Pro	Arg	Ile	Ser	Ser	Arg	Arg	Asn	Gly	Arg	Ile		
1				5					10					15			
ggt	tca	ggt	aat	aat	gta	cgg	aga	ata	cca	aaa	gga	gta	att	cat	gtt		96
Gly	Ser	Gly	Asn	Asn	Val	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val		
			20					25					30				
caa	gct	agt	ttc	cat	aat	acc	ata	gtc	act	ggt	aca	gat	gta	cgg	ggt		144
Gln	Ala	Ser	Phe	His	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
cgg	gta	ggt	tct	tgg	tcc	tct	gcc	ggt	act	tct	gga	ttc	aaa	gga	act		192
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Ser	Gly	Phe	Lys	Gly	Thr		
	50					55					60						
aga	aga	ggg	aca	cct	ttt	gct	caa	act	gcg	gca	aca	aat	gct	atc			240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Thr	Asn	Ala	Ile		
	65				70				75					80			
cgt	aca	gta	gtg	gat	caa	ggt	atg	cta	cga	gca	gaa	gta	ttg	ata	aaa		288
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Leu	Arg	Ala	Glu	Val	Leu	Ile	Lys		
				85					90					95			
ggt	cct	ggt	ctc	gga	aga	gac	gca	gca	tta	cga	gct	att	cgt	aga	agt		336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
ggt	ata	ctt	tta	act	ttt	gta	cgg	gat	cta	acc	cct	atg	cca	cac	aat		384
Gly	Ile	Leu	Leu	Thr	Phe	Val	Arg	Asp	Leu	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					

ggc tgt aga cct ccg aaa caa aga cgt gtg tag  
 Gly Cys Arg Pro Pro Lys Gln Arg Arg Val  
 130 135

<210> 230  
 <211> 138  
 <212> PRT  
 <213> Cuscuta reflexa

<400> 230  
 Met Ala Lys Ser Ile Pro Arg Ile Ser Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Gly Ser Gly Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe His Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Thr Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Leu Arg Ala Glu Val Leu Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Thr Phe Val Arg Asp Leu Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Gln Arg Arg Val  
 130 135

<210> 231  
 <211> 342  
 <212> DNA  
 <213> Anaplasma marginale str. St. Maries

<220>  
 <221> CDS  
 <222> (1)..(342)  
 <223> transl\_table=11

<400> 231  
 gtg ggc gag gtg cat atc tac gcc acg tat aac aac gta att gtg acg  
 Met Gly Glu Val His Ile Tyr Ala Thr Tyr Asn Asn Val Ile Val Thr  
 1 5 10 15  
 att gct gat cag cag ggg cac gtt ctt gtc act acc tcg gcc ggg gct  
 Ile Ala Asp Gln Gln Gly His Val Leu Val Thr Thr Ser Ala Gly Ala  
 20 25 30  
 tgt aac ttt aaa ggc tcc aag aag gcg acc cct tat gcc gct cag gag  
 Cys Asn Phe Lys Gly Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu  
 35 40 45  
 acg gtc gcg aga gca gtt aaa gcc gtt gtt gag cgg aat ggt atg agg  
 Thr Val Ala Arg Ala Val Lys Ala Val Val Glu Arg Asn Gly Met Arg  
 50 55 60  
 acg gtg tcg gtg tgc ata tcc ggt cct ggt gct ggt agg gaa gct gcc  
 Thr Val Ser Val Cys Ile Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 65 70 75 80  
 atc agg gcg gtt cag acc tgt aac ctc aat gtt acg tcc ata agg gat  
 Ile Arg Ala Val Gln Thr Cys Asn Leu Asn Val Thr Ser Ile Arg Asp  
 85 90 95  
 act act aag ctc cct cac aat ggg tgt aag ctg ccg aag agg cgc agg  
 Thr Thr Lys Leu Pro His Asn Gly Cys Lys Leu Pro Lys Arg Arg Arg  
 100 105 110  
 gta tag  
 Val  
 48  
 96  
 144  
 192  
 240  
 288  
 336  
 342

<210> 232  
 <211> 113  
 <212> PRT  
 <213> Anaplasma marginale str. St. Maries

## PhoenixTemp32470.tmp.txt

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<400> 232
Met Gly Glu Val His Ile Tyr Ala Thr Tyr Asn Asn Val Ile Val Thr
1      5      10      15
Ile Ala Asp Gln Gln Gly His Val Leu Val Thr Thr Ser Ala Gly Ala
20      25
Cys Asn Phe Lys Gly Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu
35      40      45
Thr Val Ala Arg Ala Val Lys Ala Val Val Glu Arg Asn Gly Met Arg
50      55      60
Thr Val Ser Val Cys Ile Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala
65      70      75      80
Ile Arg Ala Val Gln Thr Cys Asn Leu Asn Val Thr Ser Ile Arg Asp
85      90      95
Thr Thr Lys Leu Pro His Asn Gly Cys Lys Leu Pro Lys Arg Arg Arg
100      105      110
Val

```

```

<210> 233
<211> 357
<212> DNA
<213> Physcomitrella patens

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<220>
<221> CDS
<222> (1)..(357)

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<400> 233
atg cag aag aaa aaa aag cac ggt att gca tat att cga tca act tta      48
Met Gln Lys Lys Lys Lys His Gly Ile Ala Tyr Ile Arg Ser Thr Leu
1      5      10      15
agt aat acc att att act gta aca gat tat aaa gga gat aca aaa act      96
Ser Asn Thr Ile Ile Thr Val Thr Asp Tyr Lys Gly Asp Thr Lys Thr
20      25      30
tgg tcc tcc tca ggt tca ttg ggg ttc aag gga tct cgt cgc tca acc      144
Trp Ser Ser Ser Gly Ser Leu Gly Phe Lys Gly Ser Arg Arg Ser Thr
35      40      45
aat tat gct gct caa gca act gca gaa aat gct gcc cga act gct att      192
Asn Tyr Ala Ala Gln Ala Thr Ala Glu Asn Ala Ala Arg Thr Ala Ile
50      55      60
caa ctg gga att aag tcg gtt gaa gtt gaa ata aaa ggg tta ggt tac      240
Gln Leu Gly Ile Lys Ser Val Glu Val Glu Ile Lys Gly Leu Gly Tyr
65      70      75      80
gga aag gaa tcg tcg cta cgt ggt tta cga cta gga ggt ctt att att      288
Gly Lys Glu Ser Ser Leu Arg Gly Leu Arg Leu Gly Gly Leu Ile Ile
85      90      95
acc aaa att aga gat gta acc cca acc cca cat aat gga tgc cga ccc      336
Thr Lys Ile Arg Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg Pro
100      105      110
cct aaa aaa cgc cgt gtt taa
Pro Lys Lys Arg Arg Val
115

```

```

<210> 234
<211> 118
<212> PRT
<213> Physcomitrella patens

```

```

<400> 234
Met Gln Lys Lys Lys Lys His Gly Ile Ala Tyr Ile Arg Ser Thr Leu
1      5      10      15
Ser Asn Thr Ile Ile Thr Val Thr Asp Tyr Lys Gly Asp Thr Lys Thr
20      25      30
Trp Ser Ser Ser Gly Ser Leu Gly Phe Lys Gly Ser Arg Arg Ser Thr
35      40      45
Asn Tyr Ala Ala Gln Ala Thr Ala Glu Asn Ala Ala Arg Thr Ala Ile
50      55      60
Gln Leu Gly Ile Lys Ser Val Glu Val Glu Ile Lys Gly Leu Gly Tyr

```

PhoenixTemp32470.tmp.txt

65 Gly Lys Glu Ser Ser Leu Arg Gly Leu Arg Leu Gly Gly Leu Ile Ile  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115

<210> 235  
<211> 387  
<212> DNA  
<213> *Nephroselmis olivacea*

<220>  
<221> CDS  
<222> (1) .. (387)

[illegible]

<210> 236  
<211> 128  
<212> PRT  
<213> Nephroselmis olivacea

<400>	236														
Met	Leu	Lys	Lys	Gln	Gln	Lys	Gln	Arg	Arg	Lys	Gln	Ser	Ile	Asn	Leu
1				5					10					15	
Leu	Gly	Ile	Ile	Tyr	Val	Gln	Ser	Thr	Lys	Asn	Asn	Thr	Ile	Leu	Thr
			20					25					30		
Leu	Thr	Asp	Ser	Val	Gly	Ala	Ala	Lys	Ala	Trp	Ser	Ser	Ala	Gly	Ser
		35					40					45			
Val	Gly	Phe	Lys	Gly	Ala	Arg	Arg	Ala	Thr	Gly	Phe	Ala	Ala	Gln	Thr
	50					55					60				
Ala	Ala	Glu	Thr	Leu	Ala	Lys	Lys	Ser	Ser	Arg	Leu	Gly	Phe	Phe	His
65				70						75					80
Ile	Asp	Val	Lys	Leu	Lys	Gly	Leu	Gly	Asn	Gly	Arg	Arg	Ser	Ser	Leu
				85					90					95	
Arg	Gly	Leu	Lys	Leu	Gly	Gly	Leu	Lys	Ile	Arg	Lys	Ile	Gln	Asp	Ile
			100					105					110		
Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Gln	Pro	Lys	Gln	Arg	Arg	Ile
		115					120					125			



## PhoenixTemp32470.tmp.txt

<210> 237  
 <211> 387  
 <212> DNA  
 <213> Mesostigma viride

<220>  
 <221> CDS  
 <222> (1)..(387)

<400> 237  
 atg aaa aca aca gga aat cgt agc aac aaa aca gca gtt gca tta cca 48  
 Met Lys Thr Thr Gly Asn Arg Ser Asn Lys Thr Ala Val Ala Leu Pro  
 1 5 10 15  
 ata gga ata ctt cat gtt caa aca aca tta aat aat act ata atg acg 96  
 Ile Gly Ile Leu His Val Gln Thr Thr Leu Asn Asn Thr Ile Met Thr  
 20 25 30  
 ctt aca gat aga aaa gga aat acg att ttt gga ttt tct tcg ggt atg 144  
 Leu Thr Asp Arg Lys Gly Asn Thr Ile Phe Gly Phe Ser Ser Gly Met  
 35 40 45  
 ctc gga ttt gga ggt tct cgt aaa aaa act cgg ttt gct tct cgt tct 192  
 Leu Gly Phe Gly Gly Ser Arg Lys Lys Thr Arg Phe Ala Ser Arg Ser  
 50 55 60  
 gta gct caa cat atg gta ctt cgt tgt aaa caa tta cgt att caa aga 240  
 Val Ala Gln His Met Val Leu Arg Cys Lys Gln Leu Arg Ile Gln Arg  
 65 70 75 80  
 tta att tta gct att aaa ggt cgt atg aat tta aat ttt tta act tct 288  
 Leu Ile Leu Ala Ile Lys Gly Arg Met Asn Leu Asn Phe Leu Thr Ser  
 85 90 95  
 tta ata aaa aaa gga cga aaa att tct att gtg caa att ata gat aaa 336  
 Leu Ile Lys Lys Gly Arg Lys Ile Ser Ile Val Gln Ile Ile Asp Lys  
 100 105 110  
 act cca aaa gtg cat aat ggt tgt cgt cct cca aaa atg cct aga aaa 384  
 Thr Pro Lys Val His Asn Gly Cys Arg Pro Pro Lys Met Pro Arg Lys  
 115 120 125  
 taa 387

<210> 238  
 <211> 128  
 <212> PRT  
 <213> Mesostigma viride

<400> 238  
 Met Lys Thr Thr Gly Asn Arg Ser Asn Lys Thr Ala Val Ala Leu Pro  
 1 5 10 15  
 Ile Gly Ile Leu His Val Gln Thr Thr Leu Asn Asn Thr Ile Met Thr  
 20 25 30  
 Leu Thr Asp Arg Lys Gly Asn Thr Ile Phe Gly Phe Ser Ser Gly Met  
 35 40 45  
 Leu Gly Phe Gly Gly Ser Arg Lys Lys Thr Arg Phe Ala Ser Arg Ser  
 50 55 60  
 Val Ala Gln His Met Val Leu Arg Cys Lys Gln Leu Arg Ile Gln Arg  
 65 70 75 80  
 Leu Ile Leu Ala Ile Lys Gly Arg Met Asn Leu Asn Phe Leu Thr Ser  
 85 90 95  
 Leu Ile Lys Lys Gly Arg Lys Ile Ser Ile Val Gln Ile Ile Asp Lys  
 100 105 110  
 Thr Pro Lys Val His Asn Gly Cys Arg Pro Pro Lys Met Pro Arg Lys  
 115 120 125

<210> 239  
 <211> 390  
 <212> DNA  
 <213> Magnetospirillum magnetotacticum MS-1

<220>  
 <221> CDS  
 <222> (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 239

```

atg gcc aag gaa ccg acc cgc gtc cgc cgc cgc gaa cgc aag aac atc      48
Met Ala Lys Glu Pro Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
gtc tcc ggc gtg gcg cat gtg aac gcc tcg ttc aac aac acg atg atc      96
Val Ser Gly Val Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Ile
20      25      30
acc atc acc gac gcg cag ggc aac acg atc tcg tgg tcg tcc gcc gcc      144
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ala Gly
35      40      45
gcc atg gcc ttc aag ggc tcg cgc aag tcg acc ccg tac gcg gcc cag      192
Ala Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
50      55      60
gtc gcc gcc gag gat gcc gcc cgc aag gct gcc gag cac gcc atg cgc      240
Val Ala Ala Glu Asp Ala Gly Arg Lys Ala Ala Glu His Gly Met Arg
65      70      75      80
acc ctc gag gtc gag gtg tcc ggt ccg ggt tcg ggc cgt gag tcg gcg      288
Thr Leu Glu Val Glu Val Ser Gly Pro Gly Ser Gly Arg Glu Ser Ala
85      90      95
ctc cgc gcg ttg cag gcc gcc gcc ttc acc gtg acc tcg atc cgc gac      336
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp
100      110
gtc acc tcg atc ccg cat aac gcc tgc cgc ccg cgc aag cgc cgt cgc      384
Val Thr Ser Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg
115      120      125
gtc tga
Val
390

```

&lt;210&gt; 240

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Magnetospirillum magnetotacticum MS-1

&lt;400&gt; 240

```

Met Ala Lys Glu Pro Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
Val Ser Gly Val Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Ile
20      25      30
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ala Gly
35      40      45
Ala Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
50      55      60
Val Ala Ala Glu Asp Ala Gly Arg Lys Ala Ala Glu His Gly Met Arg
65      70      75      80
Thr Leu Glu Val Glu Val Ser Gly Pro Gly Ser Gly Arg Glu Ser Ala
85      90      95
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp
100      110
Val Thr Ser Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg
115      120      125
Val

```

&lt;210&gt; 241

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Nostoc punctiforme PCC 73102

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 241

```

atg gcg aga caa cca act aaa aaa tcc ggg agc aag aag cag aaa cgg      48
Met Ala Arg Gln Pro Thr Lys Lys Ser Gly Ser Lys Lys Gln Lys Arg

```

PhoenixTemp32470.tmp.txt

```

1          5          10          15
aac gta ccc agc ggg atg gcc tac atc cag tct act ttc aac aat agc      96
Asn Val Pro Ser Gly Met Ala Tyr Ile Gln Ser Thr Phe Asn Asn Ser
          20          25          30
att gtc acc att acc gat caa aat gga gat gtc atc tcc tgg gcc agc      144
Ile Val Thr Ile Thr Asp Gln Asn Gly Asp Val Ile Ser Trp Ala Ser
          35          40          45
gct ggt tct agc ggt ttt aag gga gca aaa aag gga act ccc ttt gca      192
Ala Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala
          50          55          60
gcg caa act gct gct gaa agt gca gcc cgt aga gct ata gat caa gga      240
Ala Gln Thr Ala Ala Glu Ser Ala Ala Arg Arg Ala Ile Asp Gln Gly
          65          70          75          80
atg cgc caa att gag gta atg gta agt ggg cca gga gca ggt aga gaa      288
Met Arg Gln Ile Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu
          85          90          95
acc gct atc cgc gca ctt caa gga gca gga ctg gaa att aca ctc att      336
Thr Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile
          100          105          110
cgg gat att acc ccc att cct cac aat ggc tgc cgt cca ccc aag cgc      384
Arg Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg
          115          120          125
cgt cga gtt taa
Arg Arg Val
          130

```

<210> 242  
 <211> 131  
 <212> PRT  
 <213> Nostoc punctiforme PCC 73102

```

<400> 242
Met Ala Arg Gln Pro Thr Lys Lys Ser Gly Ser Lys Lys Gln Lys Arg
1          5          10          15
Asn Val Pro Ser Gly Met Ala Tyr Ile Gln Ser Thr Phe Asn Asn Ser
          20          25          30
Ile Val Thr Ile Thr Asp Gln Asn Gly Asp Val Ile Ser Trp Ala Ser
          35          40          45
Ala Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala
          50          55          60
Ala Gln Thr Ala Ala Glu Ser Ala Ala Arg Arg Ala Ile Asp Gln Gly
65          70          75          80
Met Arg Gln Ile Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu
          85          90          95
Thr Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile
          100          105          110
Arg Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg
          115          120          125
Arg Arg Val
          130

```

<210> 243  
 <211> 390  
 <212> DNA  
 <213> Bacillus anthracis str. A2012

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<220>  
 <221> misc\_feature  
 <222> (25)..(25)  
 <223> w i s a o r t

<220>  
 <221> misc\_feature  
 <222> (26)..(26)

<223> w is a or t

<220>

<221> misc\_feature

<222> (247)..(247)

<223> k is g or t

<400> 243

atg	gca	cgt	aaa	aca	aac	act	cgt	wwa	aaa	cgt	gtg	aaa	aag	aat	att	48
Met	Ala	Arg	Lys	Thr	Asn	Thr	Arg	Xaa	Lys	Arg	Val	Lys	Lys	Asn	Ile	
1				5				10						15		
gaa	gct	ggt	gta	gct	cat	att	cgt	tct	act	ttc	aac	aac	aca	atc	gta	96
Glu	Ala	Gly	Val	Ala	His	Ile	Arg	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	
			20					25					30			
aca	ctt	aca	gat	act	cac	ggt	aac	gca	ctt	tct	tgg	tct	agt	gct	ggt	144
Thr	Leu	Thr	Asp	Thr	His	Gly	Asn	Ala	Leu	Ser	Trp	Ser	Ser	Ala	Gly	
			35				40					45				
gca	ctt	ggt	ttc	cgt	gga	tct	cgt	aaa	tct	act	cca	ttc	gct	gca	caa	192
Ala	Leu	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	
			50			55					60					
atg	gct	gct	gaa	act	gct	gct	aaa	gct	gca	atg	gaa	cac	ggt	tta	aaa	240
Met	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Ala	Ala	Met	Glu	His	Gly	Leu	Lys	
65				70				75						80		
act	tta	kag	gtt	act	gtt	aaa	ggt	cct	ggt	gct	ggt	cgt	gaa	gct	gca	288
Thr	Leu	Xaa	Val	Thr	Val	Lys	Gly	Pro	Gly	Ala	Gly	Arg	Glu	Ala	Ala	
				85				90						95		
att	cgt	gct	ctt	caa	gct	gca	ggt	cta	gaa	gta	aca	gca	att	aga	gat	336
Ile	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Leu	Glu	Val	Thr	Ala	Ile	Arg	Asp	
			100					105					110			
gtt	act	cca	gtt	cct	cat	aat	gga	tgt	cgt	cca	cca	aaa	cgt	cgt	cgt	384
Val	Thr	Pro	Val	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg	
			115				120					125				
gtg	taa															390
Val																

<210> 244

<211> 129

<212> PRT

<213> Bacillus anthracis str. A2012

<220>

<221> misc\_feature

<222> (9)..(9)

<223> The Xaa at location 9 stands for Stop, Ile, Leu, or Lys.

<220>

<221> misc\_feature

<222> (83)..(83)

<223> The Xaa at location 83 stands for Stop, or Glu.

<400> 244

Met	Ala	Arg	Lys	Thr	Asn	Thr	Arg	Xaa	Lys	Arg	Val	Lys	Lys	Asn	Ile	
1				5				10						15		
Glu	Ala	Gly	Val	Ala	His	Ile	Arg	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	
			20					25					30			
Thr	Leu	Thr	Asp	Thr	His	Gly	Asn	Ala	Leu	Ser	Trp	Ser	Ser	Ala	Gly	
			35				40					45				
Ala	Leu	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	
			50			55					60					
Met	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Ala	Ala	Met	Glu	His	Gly	Leu	Lys	
65				70				75						80		
Thr	Leu	Xaa	Val	Thr	Val	Lys	Gly	Pro	Gly	Ala	Gly	Arg	Glu	Ala	Ala	
				85				90						95		
Ile	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Leu	Glu	Val	Thr	Ala	Ile	Arg	Asp	
			100					105					110			
Val	Thr	Pro	Val	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg	
			115				120					125				
Val																

<210> 245  
 <211> 393  
 <212> DNA  
 <213> Crocosphaera watsonii WH 8501

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 245  
 atg gcg cga cca aca aaa aaa ggc gga cca aaa aga caa aag aaa aac 48  
 Met Ala Arg Pro Thr Lys Lys Gly Gly Pro Lys Arg Gln Lys Lys Asn  
 1 5 10 15  
 gtt cct aat gga gtg gct cat att caa tcc act ttc aac aat acc att 96  
 Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 atc acc att tct gat acc aaa gga gat gtg gtt tct tgg tct tca gca 144  
 Ile Thr Ile Ser Asp Thr Lys Gly Asp Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 gga gcc agt ggc ttt aaa gga gcc aaa aaa ggg act ccc ttt gct gct 192  
 Gly Ala Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 caa acc gca gcc gac tca gca gcc cgt cgg gcg ata gat cag gga atg 240  
 Gln Thr Ala Ala Asp Ser Ala Ala Arg Arg Ala Ile Asp Gln Gly Met  
 65 70 75 80  
 cgg caa ata gaa gtg atg gta agc gga cct gga gcc ggt cga gaa aca 288  
 Arg Gln Ile Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu Thr  
 85 90 95  
 gcg atc cgc gca tta caa ggg gca gga tta gaa att acc cta att cgt 336  
 Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 gat gtt acc cct att ccc cat aac ggc tgt cgt cct cca aaa aga cga 384  
 Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 aga gtt tag 393  
 Arg Val  
 130

<210> 246  
 <211> 130  
 <212> PRT  
 <213> Crocosphaera watsonii WH 8501

<400> 246  
 Met Ala Arg Pro Thr Lys Lys Gly Gly Pro Lys Arg Gln Lys Lys Asn  
 1 5 10 15  
 Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Ile Thr Ile Ser Asp Thr Lys Gly Asp Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Asp Ser Ala Ala Arg Arg Ala Ile Asp Gln Gly Met  
 65 70 75 80  
 Arg Gln Ile Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

<210> 247  
 <211> 396  
 <212> DNA

<213> *Exiguobacterium sibiricum* 255-15

<220>

<221> CDS

<222> (1)..(396)

<223> transl\_table=11

<400> 247

```

atg gca aaa cgt aaa cag aat gtt cgt agt aaa cgt aaa gtc aaa aag      48
Met Ala Lys Arg Lys Gln Asn Val Arg Ser Lys Arg Lys Val Lys Lys
 1          5          10          15
aat att gaa tct ggt atc gtg cat atc cgt tca aca ttc aac aac aca      96
Asn Ile Glu Ser Gly Ile Val His Ile Arg Ser Thr Phe Asn Asn Thr
 20          25          30
atc gtt acg atc act gac atg caa ggg aat gca atc tct tgg gca act     144
Ile Val Thr Ile Thr Asp Met Gln Gly Asn Ala Ile Ser Trp Ala Thr
 35          40          45
gca ggt aac atg ggc ttc aaa ggc tca cgt aaa tct act cca ttt gct     192
Ala Gly Asn Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala
 50          55          60
gcg caa ctc gct tca gaa act gct gcg aaa aca gca atg gac aac ggt     240
Ala Gln Leu Ala Ser Glu Thr Ala Ala Lys Thr Ala Met Asp Asn Gly
 65          70          75          80
atg cgt act gta gaa gtt aac gtt aaa ggt cct ggt gca ggt cgt gaa     288
Met Arg Thr Val Glu Val Asn Val Lys Gly Pro Gly Ala Gly Arg Glu
 85          90          95
gct gca atc cgt gcg ctt caa gca atc ggt ctt gaa gta aca gcg atc     336
Ala Ala Ile Arg Ala Leu Gln Ala Ile Gly Leu Glu Val Thr Ala Ile
100          105          110
cgt gac gta act cca gtt cca cac aac ggt tgc cgc cct cca aaa cgt     384
Arg Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg
115          120          125
cgt cgc gtg taa
Arg Arg Val
130

```

<210> 248

<211> 131

<212> PRT

<213> *Exiguobacterium sibiricum* 255-15

<400> 248

```

Met Ala Lys Arg Lys Gln Asn Val Arg Ser Lys Arg Lys Val Lys Lys
 1          5          10          15
Asn Ile Glu Ser Gly Ile Val His Ile Arg Ser Thr Phe Asn Asn Thr
 20          25          30
Ile Val Thr Ile Thr Asp Met Gln Gly Asn Ala Ile Ser Trp Ala Thr
 35          40          45
Ala Gly Asn Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala
 50          55          60
Ala Gln Leu Ala Ser Glu Thr Ala Ala Lys Thr Ala Met Asp Asn Gly
 65          70          75          80
Met Arg Thr Val Glu Val Asn Val Lys Gly Pro Gly Ala Gly Arg Glu
 85          90          95
Ala Ala Ile Arg Ala Leu Gln Ala Ile Gly Leu Glu Val Thr Ala Ile
100          105          110
Arg Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg
115          120          125
Arg Arg Val
130

```

<210> 249

<211> 384

<212> DNA

<213> *Prosthecochloris aestuarii* DSM 271

<220>

<221> CDS

<222> (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 249

atg gct aca att agc agg aaa aag aaa aag gta aaa gtt acg cct gaa	48
Met Ala Thr Ile Ser Arg Lys Lys Lys Lys Val Lys Val Thr Pro Glu	
1 5 10 15	
ggt gcc gta cat atc aag gcc tcc ttc aat aac gtt ctg gtt acc att	96
Gly Ala Val His Ile Lys Ala Ser Phe Asn Asn Val Leu Val Thr Ile	
20 25 30	
acc gat atg cag gga aac aca gtt tcc tgg tca agc gct ggt aaa aac	144
Thr Asp Met Gln Gly Asn Thr Val Ser Trp Ser Ser Ala Gly Lys Asn	
35 40 45	
ggt ttt aaa ggt tcc aag aaa aat acc cct tat gct tcg cag gtt act	192
Gly Phe Lys Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ser Gln Val Thr	
50 55 60	
tca gag gct gct gct aag gaa gct ttt gac ctc ggc atg agg tat gtg	240
Ser Glu Ala Ala Ala Lys Glu Ala Phe Asp Leu Gly Met Arg Tyr Val	
65 70 75 80	
cat gtg ttt atc aaa ggc ccc ggc tct ggt agg gat gct gct atc cgt	288
His Val Phe Ile Lys Gly Pro Gly Ser Gly Arg Asp Ala Ala Ile Arg	
85 90 95	
gca ctc cag gga gca ggt ctt gat gtg aaa acc atc aag gat atc acc	336
Ala Leu Gln Gly Ala Gly Leu Asp Val Lys Thr Ile Lys Asp Ile Thr	
100 105 110	
ccg ctg ccg cat aac ggt tgc cgc cct ccc aag cgc aga agg gta	381
Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Val	
115 120 125	
taa	384

&lt;210&gt; 250

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Prosthecochloris aestuarii DSM 271

&lt;400&gt; 250

Met Ala Thr Ile Ser Arg Lys Lys Lys Lys Val Lys Val Thr Pro Glu	
1 5 10 15	
Gly Ala Val His Ile Lys Ala Ser Phe Asn Asn Val Leu Val Thr Ile	
20 25 30	
Thr Asp Met Gln Gly Asn Thr Val Ser Trp Ser Ser Ala Gly Lys Asn	
35 40 45	
Gly Phe Lys Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ser Gln Val Thr	
50 55 60	
ser Glu Ala Ala Ala Lys Glu Ala Phe Asp Leu Gly Met Arg Tyr Val	
65 70 75 80	
His Val Phe Ile Lys Gly Pro Gly Ser Gly Arg Asp Ala Ala Ile Arg	
85 90 95	
Ala Leu Gln Gly Ala Gly Leu Asp Val Lys Thr Ile Lys Asp Ile Thr	
100 105 110	
Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Val	
115 120 125	

&lt;210&gt; 251

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Xylella fastidiosa Ann-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 251

atg gct aaa cag tct gtt gtc aaa act aag aag agg gtt aag cgt gtt	48
Met Ala Lys Gln Ser Val Val Lys Thr Lys Lys Arg Val Lys Arg Val	
1 5 10 15	
atc acc gat ggc gtt gcc cat att tgc gct tct ttc aat aat act att	96

PhoenixTemp32470.tmp.txt

Ile	Thr	Asp	Gly <sub>20</sub>	Val	Ala	His	Ile	Cys <sub>25</sub>	Ala	Ser	Phe	Asn	Asn <sub>30</sub>	Thr	Ile		
gtt	acc	att	act	gac	cga	cag	ggg	aat	tcg	ttg	ttc	tggt	tgt	acc	tcc		144
Val	Thr	Ile	Thr	Asp	Arg	Gln	Gly <sub>40</sub>	Asn	Ser	Leu	Phe	Trp	Cys <sub>45</sub>	Thr	Ser		
ggg	gct	tct	ggg	ttt	cgc	ggg	tca	cgt	aaa	tgt	aca	cct	ttt	gct	gcg		192
Gly	Ala	Ser	Gly	Phe	Arg	Gly <sub>55</sub>	Ser	Arg	Lys	Cys	Thr	Pro	Phe	Ala	Ala		
cag	gta	gct	gcc	gag	aag	gct	ggg	cgt	gct	gtc	tta	gat	tat	gga	atg		240
Gln	Val	Ala	Ala	Glu	Lys	Ala	Gly	Arg	Ala	Val	Leu	Asp	Tyr	Gly	Met		
aaa	tct	ttg	gaa	gtg	cgg	atc	aat	ggg	cca	ggg	cct	ggg	cga	gaa	tca		288
Lys	Ser	Leu	Glu	Val	Arg	Ile	Asn	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser		
gca	gtc	cgt	tct	tta	agt	aac	gtc	ggg	tat	aaa	att	aca	aat	atc	att		336
Ala	Val	Arg	Ser	Leu	Ser	Asn	Val	Gly <sub>105</sub>	Tyr	Lys	Ile	Thr	Asn <sub>110</sub>	Ile	Ile		
gat	gtg	acg	cca	atc	ccg	cat	aat	ggc	tgt	cgt	cct	cca	aaa	aag	cgt		384
Asp	Val	Thr	Pro	Ile	Pro	His	Asn <sub>120</sub>	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg		
cgt	gtc	taa															393
Arg	Val																

<210> 252

<211> 130

<212> PRT

<213> Xylella fastidiosa Ann-1

<400> 252

Met	Ala	Lys	Gln	Ser	Val	Val	Lys	Thr	Lys	Lys	Arg	Val	Lys	Arg	Val		
1																	
Ile	Thr	Asp	Gly <sub>20</sub>	Val	Ala	His	Ile	Cys <sub>25</sub>	Ala	Ser	Phe	Asn	Asn <sub>30</sub>	Thr	Ile		
Val	Thr	Ile	Thr	Asp	Arg	Gln	Gly <sub>40</sub>	Asn	Ser	Leu	Phe	Trp	Cys <sub>45</sub>	Thr	Ser		
Gly	Ala	Ser	Gly	Phe	Arg	Gly <sub>55</sub>	Ser	Arg	Lys	Cys	Thr	Pro	Phe	Ala	Ala		
Gln	Val	Ala	Ala	Glu	Lys	Ala	Gly	Arg	Ala	Val	Leu	Asp	Tyr	Gly	Met		
65																	
Lys	Ser	Leu	Glu	Val	Arg	Ile	Asn	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser		
Ala	Val	Arg	Ser	Leu	Ser	Asn	Val	Gly <sub>105</sub>	Tyr	Lys	Ile	Thr	Asn <sub>110</sub>	Ile	Ile		
Asp	Val	Thr	Pro	Ile	Pro	His	Asn <sub>120</sub>	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg		
Arg	Val																

<210> 253

<211> 414

<212> DNA

<213> Croceibacter atlanticus HTCC2559

<220>

<221> CDS

<222> (1)..(414)

<223> transl\_table=11

<400> 253

atg	gca	aaa	caa	gta	aaa	ggg	aaa	gct	ggg	gca	gct	aaa	gcc	aaa	gct		48
Met	Ala	Lys	Gln	Val	Lys	Gly	Lys	Ala	Gly <sub>10</sub>	Ala	Ala	Lys	Ala	Lys	Ala		
1																	
aga	aaa	cgt	aaa	gtt	gct	gtt	gaa	gca	ttt	gga	gaa	gca	cat	atc	tct		96
Arg	Lys	Arg	Lys	Val	Ala	Val	Glu	Ala	Phe	Gly	Glu	Ala	His	Ile	Ser		
gca	tct	ttc	aac	aac	att	atc	gtt	tct	tta	acc	aat	aag	aaa	ggg	gat		144
Ala	Ser	Phe	Asn	Asn	Ile	Ile	Val	Val	Ser	Leu	Thr	Asn	Lys	Gly	Asp		



## PhoenixTemp32470.tmp.txt

```

gta atc tct tgg tct tct gca ggt aag atg ggc ttt aga gga tct aag 192
Val Ile Ser Trp Ser Ser Ala Gly Lys Met Gly Phe Arg Gly Ser Lys
50 55 60
aaa aac act cct tac gct gct caa tta gca gca gaa gat gca agt ggt 240
Lys Asn Thr Pro Tyr Ala Ala Gln Leu Ala Ala Glu Asp Ala Ser Gly
65 70 75 80
gtt gct cat gaa gct ggt tta cgt aaa gta aaa gta tat gtg aaa ggt 288
Val Ala His Glu Ala Gly Leu Arg Lys Val Lys Val Tyr Val Lys Gly
85 90 95
cct gga aat ggt aga gaa tct gct atc cgt tct att cac aat gca gga 336
Pro Gly Asn Gly Arg Glu Ser Ala Ile Arg Ser Ile His Asn Ala Gly
100 105 110
att gaa gta aca gaa att att gat gtt act cca atg cct cac aat ggt 384
Ile Glu Val Thr Glu Ile Ile Asp Val Thr Pro Met Pro His Asn Gly
115 120 125
tgt cgt cca cca aaa aga cgt cga gtt taa 414
Cys Arg Pro Pro Lys Arg Arg Arg Val
130 135

```

&lt;210&gt; 254

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Croceibacter atlanticus HTCC2559

&lt;400&gt; 254

```

Met Ala Lys Gln Val Lys Gly Lys Ala Gly Ala Ala Lys Ala Lys Ala
1 5 10 15
Arg Lys Arg Lys Val Ala Val Glu Ala Phe Gly Glu Ala His Ile Ser
20 25 30
Ala Ser Phe Asn Asn Ile Ile Val Ser Leu Thr Asn Lys Lys Gly Asp
35 40 45
Val Ile Ser Trp Ser Ser Ala Gly Lys Met Gly Phe Arg Gly Ser Lys
50 55 60
Lys Asn Thr Pro Tyr Ala Ala Gln Leu Ala Ala Glu Asp Ala Ser Gly
65 70 75 80
Val Ala His Glu Ala Gly Leu Arg Lys Val Lys Val Tyr Val Lys Gly
85 90 95
Pro Gly Asn Gly Arg Glu Ser Ala Ile Arg Ser Ile His Asn Ala Gly
100 105 110
Ile Glu Val Thr Glu Ile Ile Asp Val Thr Pro Met Pro His Asn Gly
115 120 125
Cys Arg Pro Pro Lys Arg Arg Arg Val
130 135

```

&lt;210&gt; 255

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Roseovarius nubinhibens ISM

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 255

```

atg gca cgt gat act cgt cgc ggg aag cgc aag gtt tcc aag aat atc 48
Met Ala Arg Asp Thr Arg Arg Gly Lys Arg Lys Val Ser Lys Asn Ile
1 5 10 15
gcc act ggt gtg gcg cat gtg aac agc tcg ttc aac aac acc aag atc 96
Ala Thr Gly Val Ala His Val Asn Ser Ser Phe Asn Asn Thr Lys Ile
20 25 30
ctg atc tcg gac gtg caa ggc aat gcg atc gct tgg tcg tcg gcc gcc 144
Leu Ile Ser Asp Val Gln Gly Asn Ala Ile Ala Trp Ser Ala Gly
35 40 45
acc atg ggt ttc aaa ggt tcg cgg aag tcg acc ccc tat gcc gca cag 192
Thr Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
50 55 60
atg gcc gca gaa gac gcg gcc aag aag gca cag gaa cat gcc atg aag 240
Met Ala Ala Glu Asp Ala Gly Lys Lys Ala Gln Glu His Gly Met Lys

```

## PhoenixTemp32470.tmp.txt

65					70					75					80		
acc	ctt	gag	gtc	gaa	gtg	cag	ggt	ccg	ggt	tcg	ggc	cgt	gag	agc	gcg		
Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		288
				85					90					95			
ctg	cgc	gcc	ctg	gcc	gct	gtc	ggt	ttc	aac	atc	acg	tcg	atc	cgt	gac		336
Leu	Arg	Ala	Leu	Ala	Ala	Val	Gly	Phe	Asn	Ile	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
gtg	acg	ccg	atc	gcc	cac	aat	ggc	tgc	cgc	ccg	ccg	aag	cgc	cgc	cgg		384
Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
gtc	taa																390
Val																	

&lt;210&gt; 256

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Roseovarius nubinihibens ISM

&lt;400&gt; 256

Met	Ala	Arg	Asp	Thr	Arg	Arg	Gly	Lys	Arg	Lys	Val	Ser	Lys	Asn	Ile		
1				5				10						15			
Ala	Thr	Gly	Val	Ala	His	Val	Asn	Ser	Ser	Phe	Asn	Asn	Thr	Lys	Ile		
			20					25					30				
Leu	Ile	Ser	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55					60						
Met	Ala	Ala	Glu	Asp	Ala	Gly	Lys	Lys	Ala	Gln	Glu	His	Gly	Met	Lys		
65					70					75				80			
Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
Leu	Arg	Ala	Leu	Ala	Ala	Val	Gly	Phe	Asn	Ile	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

&lt;210&gt; 257

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Oceanicola batsensis HTCC2597

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 257

atg	gca	cgt	gat	acc	cgc	cgc	gtc	aaa	aag	aag	gtt	tcc	aag	aac	atc		48
Met	Ala	Arg	Asp	Thr	Arg	Arg	Val	Lys	Lys	Lys	Val	Ser	Lys	Asn	Ile		
1				5				10						15			
gcc	gcc	ggc	gtt	gcg	cat	gtg	aac	tct	tcg	ttc	aac	aac	acc	aag	atc		96
Ala	Ala	Gly	Val	Ala	His	Val	Asn	Ser	Ser	Phe	Asn	Asn	Thr	Lys	Ile		
			20					25					30				
ctg	atc	tcg	gac	gtc	cag	ggc	aat	gcg	att	tcc	tgg	tcc	tcg	gcc	ggc		144
Leu	Ile	Ser	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
acc	atg	ggc	ttc	aag	ggc	tcg	cgc	aag	tcg	acc	ccc	tac	gcc	gcc	cag		192
Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55					60						
atg	gcc	gcc	gaa	gat	gcc	ggc	cgc	aag	gcg	cag	gaa	cac	ggc	gtg	aag		240
Met	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Glu	His	Gly	Val	Lys		
65					70					75				80			
acg	ctg	gaa	gtc	gaa	gtg	cag	ggg	ccg	ggt	tcg	ggc	cgc	gag	agc	gcg		288
Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
ctg	cgc	gcc	ctg	gcc	gcc	gtc	ggg	ttc	aac	atc	acc	tcg	atc	cgt	gac		336

PhoenixTemp32470.tmp.txt

Leu	Arg	Ala	Leu	Ala	Ala	Val	Gly	Phe	Asn	Ile	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
gtg	acc	ccg	atc	gcg	cac	aac	ggc	tgc	cgc	ccg	ccg	aag	cgc	cgc		384	
Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
gtc	tga															390	
Val																	

<210> 258  
 <211> 129  
 <212> PRT  
 <213> Oceanicola batsensis HTCC2597

<400> 258

Met	Ala	Arg	Asp	Thr	Arg	Arg	Val	Lys	Lys	Lys	Val	Ser	Lys	Asn	Ile		
1				5				10					15				
Ala	Ala	Gly	Val	Ala	His	Val	Asn	Ser	Phe	Asn	Asn	Thr	Lys	Ile			
			20				25					30					
Leu	Ile	Ser	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55				60							
Met	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Glu	His	Gly	Val	Lys		
65					70					75					80		
Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
			85						90					95			
Leu	Arg	Ala	Leu	Ala	Ala	Val	Gly	Phe	Asn	Ile	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

<210> 259  
 <211> 393  
 <212> DNA  
 <213> Prochlorococcus marinus str. MIT 9211

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 259

atg	gcc	aca	ccc	gca	aag	aaa	act	ggt	tct	aaa	aag	tct	aag	cgc	aac		48
Met	Ala	Thr	Pro	Ala	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5				10					15				
gtc	cca	aac	ggc	ggt	gtg	cat	att	caa	agc	act	ttt	aat	aac	acc	atc		96
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
ggt	tca	atc	act	gat	act	aat	ggt	gaa	ggt	ggt	tct	tgg	tct	tct	gca		144
Val	Ser	Ile	Thr	Asp	Thr	Asn	Gly	Glu	Val	Val	Ser	Trp	Ser	Ser	Ala		
		35					40					45					
ggg	gca	agt	gga	ttt	aaa	ggt	gcc	cga	aaa	ggt	acc	cca	ttc	gct	gct		192
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55				60							
caa	act	gcc	gct	gag	gca	gca	gca	aga	cgt	gct	cta	gaa	caa	ggt	atg		240
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Glu	Gln	Gly	Met		
65					70					75					80		
aga	caa	atc	gag	ggt	ctc	gta	aga	gga	cca	ggt	tcc	ggc	cgg	gaa	aca		288
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
			85						90					95			
gcc	ata	aga	gct	ttg	caa	ggt	gct	ggc	ttg	gag	att	act	ttg	atc	aga		336
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100					105					110				
gat	ggt	act	cct	ctt	cct	cac	aat	ggt	tgc	agg	aga	ccc	aaa	cgc	aga		384
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
		115					120					125					

cgc gtt tga  
Arg Val  
130

<210> 260  
<211> 130  
<212> PRT  
<213> *Prochlorococcus marinus* str. MIT 9211

<400> 260  
Met Ala Thr Pro Ala Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn  
1 5 10 15  
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
20 25 30  
Val Ser Ile Thr Asp Thr Asn Gly Glu Val Val Ser Trp Ser Ser Ala  
35 40 45  
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
50 55 60  
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
65 70 75 80  
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
85 90 95  
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
100 105 110  
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
115 120 125  
Arg Val  
130

<210> 261  
<211> 390  
<212> DNA  
<213> *Erythrobacter* sp. NAP1

<220>  
<221> CDS  
<222> (1)..(390)  
<223> transl\_table=11

<400> 261  
atg gca cgc gaa ccc ggc aaa gta agg cgc cgc gac aga aag aac atc 48  
Met Ala Arg Glu Pro Gly Lys Val Arg Arg Arg Asp Arg Lys Asn Ile  
1 5 10 15  
acg agc ggc gtt gcg cac atc aac gcc agc ttc aac aac acc atg atc 96  
Thr Ser Gly Val Ala His Ile Asn Ala Ser Phe Asn Asn Thr Met Ile  
20 25 30  
acc atc acc gat gcg cag ggc aat gcn atc agc tgg tcc agc gcc ggc 144  
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly  
35 40 45  
atg atg ggc ttc aag ggt agc cgt aag tcg acc ccg tat gca gca cag 192  
Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
50 55 60  
gtt gct gcc gat gac gcg ggc aag aag gct gct gaa cac ggt gtt cgc 240  
Val Ala Ala Asp Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Arg  
65 70 75 80  
acc ctc gag gtt gaa gtg aag ggt ccg ggc tcg ggc cgt gaa agc gca 288  
Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala  
85 90 95  
ctt cgc ggt ctc gcc gca gtg ggc ttc aac atc acc tcg atc cgt gac 336  
Leu Arg Gly Leu Ala Ala Val Gly Phe Asn Ile Thr Ser Ile Arg Asp  
100 105 110  
gtg acc ccg atc ccg cac aac ggt gtg cgt cct tcc aag cgc cgc cgc 384  
Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ser Lys Arg Arg Arg  
115 120 125  
gtt tga 390  
Val

<210> 262

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Erythrobacter sp. NAP1

&lt;400&gt; 262

```

Met Ala Arg Glu Pro Gly Lys Val Arg Arg Arg Asp Arg Lys Asn Ile
1      5      10      15
Thr Ser Gly Val Ala His Ile Asn Ala Ser Phe Asn Asn Thr Met Ile
20      25      30
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly
35      40      45
Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
50      55      60
Val Ala Ala Asp Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Arg
65      70      75      80
Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala
85      90      95
Leu Arg Gly Leu Ala Ala Val Gly Phe Asn Ile Thr Ser Ile Arg Asp
100     105     110
Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ser Lys Arg Arg Arg
115     120     125
Val

```

&lt;210&gt; 263

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. RS9917

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 263

```

atg gcc aaa ccc gcc aaa aaa tca ggc cca aag aag gcc aag cgc aac      48
Met Ala Lys Pro Ala Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn
1      5      10      15
gtc ccc aac ggt gtt gcc cat atc cag agc acc ttc aac aac acg atc      96
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20      25      30
gtg tcg atc acc gac acc acc ggt gag gtg atc tcc tgg tcc tcc gcc      144
Val Ser Ile Thr Asp Thr Thr Gly Glu Val Ile Ser Trp Ser Ser Ala
35      40      45
gga gcc agc ggc ttc aaa ggt gcc cgt aaa ggc acc ccc ttc gcc gcc      192
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50      55      60
cag acc gct gcc gaa gcc gcg gca cgt cgt gct ctc gag cag ggc atg      240
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Glu Gln Gly Met
65      70      75      80
cga cag atc gaa gtg ctg gtg cgc ggc ccc ggc tca ggt cgt gaa act      288
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
85      90      95
gcc atc cgg gct ctg cag gtg gcc ggc ctg gaa atc acg ctc atc cgt      336
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg
100     105     110
gat gtc acc ccc ttg ccc cac aac ggc tgc cgt cgt ccc aag cgt cgc      384
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg
115     120     125
cgc gtc tga
Arg Val
130

```

&lt;210&gt; 264

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. RS9917

&lt;400&gt; 264

## PhoenixTemp32470.tmp.txt

Met Ala Lys Pro Ala Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn  
 1 5 10 15  
 Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Val Ser Ile Thr Asp Thr Thr Gly Glu Val Ile Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
 65 70 75 80  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 265

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. WH 5701

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 265

atg gcg aag cca gcc aag aaa acc ggc gcg aag aaa acc aag cgc aac	48
Met Ala Lys Pro Ala Lys Lys Thr Gly Ala Lys Lys Thr Lys Arg Asn	
1 5 10 15	
gtg ccc aac ggt gtg gca cac atc cag agc acc ttc aac aac acc atc	96
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile	
20 25 30	
gtg tcg atc acc gac acg gcc ggt gag gtg atc tcc tgg tcg tcg gcc	144
Val Ser Ile Thr Asp Thr Ala Gly Glu Val Ile Ser Trp Ser Ser Ala	
35 40 45	
ggc gcc agc ggc ttc aaa gga gct cgt aag ggc acc ccc ttc gcc gcc	192
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala	
50 55 60	
cag acc gcc gct gaa gcc gca ggc cgc agg gcc ctt gag cag ggg atg	240
Gln Thr Ala Ala Glu Ala Ala Gly Arg Arg Ala Leu Glu Gln Gly Met	
65 70 75 80	
cgt cag atc gag gtg ctg gtg cgc ggt ccg ggc tcc ggg cgt gaa acc	288
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr	
85 90 95	
gct atc cgg gcc ctg cag gtg gcc ggc ctt gag atc acc ctc atc cgg	336
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg	
100 105 110	
gat gtc acc ccc ctg ccc cac aac ggc tgc cgc cgc tcc aag cgc cgc	384
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Ser Lys Arg Arg	
115 120 125	
cgg gtc tga	393
Arg Val	
130	

&lt;210&gt; 266

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 5701

&lt;400&gt; 266

Met Ala Lys Pro Ala Lys Lys Thr Gly Ala Lys Lys Thr Lys Arg Asn  
 1 5 10 15  
 Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Val Ser Ile Thr Asp Thr Ala Gly Glu Val Ile Ser Trp Ser Ser Ala

## PhoenixTemp32470.tmp.txt

35 40 45  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Ala Ala Gly Arg Arg Ala Leu Glu Gln Gly Met  
 65 70 75 80  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Ser Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 267

&lt;211&gt; 387

&lt;212&gt; DNA

&lt;213&gt; Pseudoalteromonas tunicata D2

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(387)

&lt;223&gt; transl\_table=11

&lt;400&gt; 267

atg gca aaa gca cca att cgt cgt aag aaa gtt aaa aaa caa gtt gct	48
Met Ala Lys Ala Pro Ile Arg Arg Lys Lys Val Lys Lys Gln Val Ala	
1 5 10 15	
gat ggt atg gct cat gtt cat gca tct ttc aac aac act att gta acg	96
Asp Gly Met Ala His Val His Ala Ser Phe Asn Asn Thr Ile Val Thr	
20 25 30	
att aca gat cgc caa ggt aac gcg tta tct tgg gca act gca ggt ggt	144
Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly Gly	
35 40 45	
tct ggt ttc cgt ggt tca cgt aaa tct act cca ttc gct gca cag gtt	192
Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Val	
50 55 60	
gct gct gag cgt gca ggt act gca gct caa gag tac ggt ttg aaa aac	240
Ala Ala Glu Arg Ala Gly Thr Ala Ala Gln Glu Tyr Gly Leu Lys Asn	
65 70 75 80	
cta gaa gta ttc att aag gga cca ggc cca ggc cgt gag tct gca gtt	288
Leu Glu Val Phe Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala Val	
85 90 95	
cgt gct ctt aat gca gta ggt tac cgt att aca aac atc act gac gtg	336
Arg Ala Leu Asn Ala Val Gly Tyr Arg Ile Thr Asn Ile Thr Asp Val	
100 105 110	
acg cca att cct cat aac ggt tgt cgt cca ccg aag aaa cgt cgc gta	384
Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Val	
115 120 125	
taa	387

&lt;210&gt; 268

&lt;211&gt; 128

&lt;212&gt; PRT

&lt;213&gt; Pseudoalteromonas tunicata D2

&lt;400&gt; 268

Met Ala Lys Ala Pro Ile Arg Arg Lys Lys Val Lys Lys Gln Val Ala  
 1 5 10 15  
 Asp Gly Met Ala His Val His Ala Ser Phe Asn Asn Thr Ile Val Thr  
 20 25 30  
 Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly Gly  
 35 40 45  
 Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Val  
 50 55 60  
 Ala Ala Glu Arg Ala Gly Thr Ala Ala Gln Glu Tyr Gly Leu Lys Asn  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

Leu Glu Val Phe Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala Val  
 Arg Ala Leu Asn Ala Val Gly Tyr Arg Ile Thr Asn Ile Thr Asp Val  
 Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 85 90 95  
 100 105 110  
 115 120 125

&lt;210&gt; 269

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Oceanospirillum sp. MED92

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 269

atg gca aag cca ggt aat cgc aca cgc aaa aaa gtg aag aag caa ata	48
Met Ala Lys Pro Gly Asn Arg Thr Arg Lys Lys Val Lys Lys Gln Ile	
1 5 10 15	
gct gat ggc ttc gcg cac atc cat gct tct ttt aac aat acg atc att	96
Ala Asp Gly Phe Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Ile	
20 25 30	
aca att acc gat cgt cag ggt aac gct ctt tct tgg gca act gcg ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly	
35 40 45	
ggc tcc ggc ttc cgt ggt tct cgt aag agt acc cct ttc gct gct cag	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtt gcg gct gag cgc gct gga cag gct gca tta gaa tat ggc ctg aaa	240
Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys	
65 70 75 80	
aac tta gac gta ttt gta aaa ggc cca gga cca ggt cgc gaa tca gcg	288
Asn Leu Asp Val Phe Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala	
85 90 95	
gtt cgt gct ctg aat gct gta ggc tac aaa att gca aat atc act gac	336
Val Arg Ala Leu Asn Ala Val Gly Tyr Lys Ile Ala Asn Ile Thr Asp	
100 105 110	
gtg acg cca atc cct cac aat ggt tgt cgt cca ccg aag aaa cgt cgc	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
gtt taa	390
Val	

&lt;210&gt; 270

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Oceanospirillum sp. MED92

&lt;400&gt; 270

Met Ala Lys Pro Gly Asn Arg Thr Arg Lys Lys Val Lys Lys Gln Ile
1 5 10 15
Ala Asp Gly Phe Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Ile
20 25 30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly
35 40 45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys
65 70 75 80
Asn Leu Asp Val Phe Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala
85 90 95
Val Arg Ala Leu Asn Ala Val Gly Tyr Lys Ile Ala Asn Ile Thr Asp
100 105 110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115 120 125
Val



<210> 271  
 <211> 390  
 <212> DNA  
 <213> Flavobacteria bacterium BBFL7

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

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<400> 271
atg gca aag tct aaa aca gta tca aaa aag cgt aag gtt gtt gtt gaa      48
Met Ala Lys Ser Lys Thr Val Ser Lys Lys Arg Lys Val Val Val Glu
  1          5          10          15
tca gta gga gag gta cat atc tct tct tcc ttt aat aac ata cta gtt      96
Ser Val Gly Glu Val His Ile Ser Ser Ser Phe Asn Asn Ile Leu Val
          20          25          30
tct ttg aca aat aaa aaa gga gaa gtt att tct tgg tca tct gct ggg      144
Ser Leu Thr Asn Lys Lys Gly Glu Val Ile Ser Trp Ser Ser Ala Gly
          35          40          45
aaa atg ggt ttc cgt ggt tct aag aaa aac act cca tat gct gcg caa      192
Lys Met Gly Phe Arg Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ala Gln
          50          55          60
cta gct gca gag gat gct tct aaa gta gca cat gag gca ggt tta cgt      240
Leu Ala Ala Glu Asp Ala Ser Lys Val Ala His Glu Ala Gly Leu Arg
          65          70          75          80
aag gtg aaa gca tat gta aag gga cct ggt aat ggt cgt gaa agt gct      288
Lys Val Lys Ala Tyr Val Lys Gly Pro Gly Asn Gly Arg Glu Ser Ala
          85          90          95
atc cgt agt att cac aat tct gga att gaa gta act gaa att att gat      336
Ile Arg Ser Ile His Asn Ser Gly Ile Glu Val Thr Glu Ile Ile Asp
          100          105          110
gtt act cca ttg cca cat aat gga tgt cgt cct cct aaa cgt aga      384
Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
          115          120          125
gta taa
Val
      390

```

<210> 272  
 <211> 129  
 <212> PRT  
 <213> Flavobacteria bacterium BBFL7

```

<400> 272
Met Ala Lys Ser Lys Thr Val Ser Lys Lys Arg Lys Val Val Val Glu
  1          5          10          15
Ser Val Gly Glu Val His Ile Ser Ser Ser Phe Asn Asn Ile Leu Val
          20          25          30
Ser Leu Thr Asn Lys Lys Gly Glu Val Ile Ser Trp Ser Ser Ala Gly
          35          40          45
Lys Met Gly Phe Arg Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ala Gln
          50          55          60
Leu Ala Ala Glu Asp Ala Ser Lys Val Ala His Glu Ala Gly Leu Arg
          65          70          75          80
Lys Val Lys Ala Tyr Val Lys Gly Pro Gly Asn Gly Arg Glu Ser Ala
          85          90          95
Ile Arg Ser Ile His Asn Ser Gly Ile Glu Val Thr Glu Ile Ile Asp
          100          105          110
Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
          115          120          125
Val

```

<210> 273  
 <211> 396  
 <212> DNA

<213> delta proteobacterium MLMS-1

<220>

<221> CDS

<222> (1)..(396)

<223> transl\_table=11

<400> 273

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atg gcc aag ccg agc aaa acc gtg cgt ccc cgc aag aag gac cgc aaa      48
Met Ala Lys Pro Ser 5 Lys Thr Val Arg Pro Arg Lys Lys Asp Arg Lys
1 10 15
aat att ccc gaa ggg gtt tgc ttt att aag tcg acc ttc aac aac acc      96
Asn Ile Pro Glu Gly Val Cys Phe Ile Lys Ser Thr Phe Asn Asn Thr
20 25 30
atc gtc act ttt gcc gat ccc gcc ggg aat gtg att tcc tgg tgc agt      144
Ile Val Thr Phe Ala Asp Pro Ala Gly Asn Val Ile Ser Trp Cys Ser
35 40 45
tcc ggt tgc ctg ggt ttc aag ggg tcg cgc aag agc acc cct ttt gcc      192
Ser Gly Cys Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala
50 55 60
gcc cag aac gcc gtg gaa acc gcg gtc aaa aag gcc cag gac cac gga      240
Ala Gln Asn Ala Val Glu Thr Ala Val Lys Lys Ala Gln Asp His Gly
65 70 75 80
ctg cgc aag gtg gaa gta cgg gtc aac ggc ccc ggc ccc ggt cgt gag      288
Leu Arg Lys Val Glu Val Arg Val Asn Gly Pro Gly Pro Gly Arg Glu
85 90 95
tcc gct att cgg gcc ttg cag gcg gcc ggc gtc gag gtt aat ttt att      336
Ser Ala Ile Arg Ala Leu Gln Ala Ala Gly Val Glu Val Asn Phe Ile
100 105 110
cgc gac atg aca ccg ctg ccc cac aat gga tgt aag ccc ccc aag cgg      384
Arg Asp Met Thr Pro Leu Pro His Asn Gly Cys Lys Pro Pro Lys Arg
115 120 125
cgg cgg gtg taa
Arg Arg Val
130

```

<210> 274

<211> 131

<212> PRT

<213> delta proteobacterium MLMS-1

<400> 274

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Met Ala Lys Pro Ser 5 Lys Thr Val Arg Pro Arg Lys Lys Asp Arg Lys
1 10 15
Asn Ile Pro Glu Gly Val Cys Phe Ile Lys Ser Thr Phe Asn Asn Thr
20 25 30
Ile Val Thr Phe Ala Asp Pro Ala Gly Asn Val Ile Ser Trp Cys Ser
35 40 45
Ser Gly Cys Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala
50 55 60
Ala Gln Asn Ala Val Glu Thr Ala Val Lys Lys Ala Gln Asp His Gly
65 70 75 80
Leu Arg Lys Val Glu Val Arg Val Asn Gly Pro Gly Pro Gly Arg Glu
85 90 95
Ser Ala Ile Arg Ala Leu Gln Ala Ala Gly Val Glu Val Asn Phe Ile
100 105 110
Arg Asp Met Thr Pro Leu Pro His Asn Gly Cys Lys Pro Pro Lys Arg
115 120 125
Arg Arg Val
130

```

<210> 275

<211> 444

<212> DNA

<213> Rickettsiella grylli

<220>

<221> CDS

<222> (1)..(444)

&lt;223&gt; transl\_table=11

&lt;400&gt; 275

atg gca gat tac aat tta cat gca tcg cag caa tta acg atg gct gag	48
Met Ala Asp Tyr Asn Leu His Ala Ser Gln Gln Leu Thr Met Ala Glu	
1 5 10 15	
agg gcg ggg tcg cat cgt aag cgt aaa gag att gtt ccc gat gca atc	96
Arg Ala Gly Ser His Arg Lys Arg Lys Glu Ile Val Pro Asp Ala Ile	
20 25 30	
gtt cat ttg agc acc tct ttt aat aat acg att att tgt atc cgt aaa	144
Val His Leu Ser Thr Ser Phe Asn Asn Thr Ile Ile Cys Ile Arg Lys	
35 40 45	
gga ggg gat act tta ggg ata tcc tca gcg gga gcg tgt gat ttt aaa	192
Gly Gly Asp Thr Leu Gly Ile Ser Ser Ala Gly Ala Cys Asp Phe Lys	
50 55 60	
ggg act aaa aaa ggc acg gct ttt gcg gct cga gtc gct ttc gaa aaa	240
Gly Thr Lys Lys Gly Thr Ala Phe Ala Ala Arg Val Ala Phe Glu Lys	
65 70 75 80	
gcg att gaa aaa gca gtc gat aag tat aaa tca aaa tat aaa cat aat	288
Ala Ile Glu Lys Ala Val Asp Lys Tyr Lys Ser Lys Tyr Lys His Asn	
85 90 95	
tta gga cgc gtt gaa gtg aga att aaa ggg cca ggt caa ggg tct gag	336
Leu Gly Arg Val Glu Val Arg Ile Lys Gly Pro Gly Gln Gly Ser Glu	
100 105 110	
caa gcg ata atg gct tta aaa aat aag gat att gag gtt act caa atc	384
Gln Ala Ile Met Ala Leu Lys Asn Lys Asp Ile Glu Val Thr Gln Ile	
115 120 125	
ttg aat att aca ggc gtg cct cat aat ggt tgc cga ccg ccc aaa cgg	432
Leu Asn Ile Thr Gly Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg	
130 135 140	
cgt cgt gta tag	444
Arg Arg Val	
145	

&lt;210&gt; 276

&lt;211&gt; 147

&lt;212&gt; PRT

&lt;213&gt; Rickettsiella grylli

&lt;400&gt; 276

Met Ala Asp Tyr Asn Leu His Ala Ser Gln Gln Leu Thr Met Ala Glu	
1 5 10 15	
Arg Ala Gly Ser His Arg Lys Arg Lys Glu Ile Val Pro Asp Ala Ile	
20 25 30	
Val His Leu Ser Thr Ser Phe Asn Asn Thr Ile Ile Cys Ile Arg Lys	
35 40 45	
Gly Gly Asp Thr Leu Gly Ile Ser Ser Ala Gly Ala Cys Asp Phe Lys	
50 55 60	
Gly Thr Lys Lys Gly Thr Ala Phe Ala Ala Arg Val Ala Phe Glu Lys	
65 70 75 80	
Ala Ile Glu Lys Ala Val Asp Lys Tyr Lys Ser Lys Tyr Lys His Asn	
85 90 95	
Leu Gly Arg Val Glu Val Arg Ile Lys Gly Pro Gly Gln Gly Ser Glu	
100 105 110	
Gln Ala Ile Met Ala Leu Lys Asn Lys Asp Ile Glu Val Thr Gln Ile	
115 120 125	
Leu Asn Ile Thr Gly Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg	
130 135 140	
Arg Arg Val	
145	

&lt;210&gt; 277

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Oceanobacter sp. RED65

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 277

atg gca aag cca caa cgt aac gtt aag aaa aaa gtt aaa aag acc gtc	48
Met Ala Lys Pro Gln Arg Asn Val Lys Lys Lys Val Lys Lys Thr Val	
1 5 10 15	
gta gac ggc gtg gcg cac atc cat gcg tca ttt aat aac acc atc gta	96
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
acc att act gat cgt caa ggt aac gca tta tct tgg gcg act gca ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly	
35 40 45	
ggt tct ggt ttc cgt ggt tct cgt aag agt acc cct ttc gct gca cag	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtt gct gcg gaa cgc gct ggt gaa gcc gct aaa gag tat ggt tta aag	240
Val Ala Ala Glu Arg Ala Gly Glu Ala Ala Lys Glu Tyr Gly Leu Lys	
65 70 75 80	
aac ttg gac gtg gaa gtt aaa ggc cca ggt cct ggt cgt gaa tct gct	288
Asn Leu Asp Val Glu Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala	
85 90 95	
gta cgt gca ttg aat gca tgt ggc tat aaa att ggc aac att acc gat	336
Val Arg Ala Leu Asn Ala Cys Gly Tyr Lys Ile Gly Asn Ile Thr Asp	
100 105 110	
gtg act cct att cct cac aac ggt tgt cgc cca ccg aag aaa cgt cgc	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
gtt taa	390
Val	

&lt;210&gt; 278

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Oceanobacter sp. RED65

&lt;400&gt; 278

Met Ala Lys Pro Gln Arg Asn Val Lys Lys Lys Val Lys Lys Thr Val	
1 5 10 15	
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly	
35 40 45	
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
Val Ala Ala Glu Arg Ala Gly Glu Ala Ala Lys Glu Tyr Gly Leu Lys	
65 70 75 80	
Asn Leu Asp Val Glu Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala	
85 90 95	
Val Arg Ala Leu Asn Ala Cys Gly Tyr Lys Ile Gly Asn Ile Thr Asp	
100 105 110	
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
Val	

&lt;210&gt; 279

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. RS9916

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 279

atg gcc aag acc gtc aaa aaa tct ggc ccc aaa aag gcc aag cgc aat	48
Met Ala Lys Thr Val Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn	

## PhoenixTemp32470.tmp.txt

1	gtc	ccc	aac	ggc	ggt	gac	cac	att	cag	agc	ttc	aac	aac	acg	atc	96
	Val	Pro	Asn	Gly	Val	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile
				20					25				30			
	gtg	tcc	atc	acc	gac	acc	acc	gga	gaa	gtg	atc	tcc	tgg	tcg	tcg	gct
	Val	Ser	Ile	Thr	Asp	Thr	Thr	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala
			35					40				45				
	ggt	gcc	agc	ggc	ttc	aag	ggc	gcc	cgt	aag	gga	acc	cct	ttc	gct	gca
	Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala
		50					55				60					
	cag	acc	gca	gct	gaa	gct	gct	gcc	cgc	cgt	gct	ctt	gag	caa	ggc	atg
	Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Glu	Gln	Gly	Met
	65				70				75							80
	cgt	caa	atc	gaa	gta	ctg	gtg	cgc	ggc	cct	ggt	tca	ggc	cgt	gaa	acc
	Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr
				85				90							95	
	gcc	atc	cgc	gcc	ctt	caa	gtg	gcc	ggc	ctg	gaa	atc	acc	ctg	att	cgc
	Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg
				100				105					110			
	gac	gtc	aca	cct	ctg	ccc	cac	aac	ggc	tgc	cgt	cgt	tcc	aag	cgt	cgt
	Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Ser	Lys	Arg	Arg
			115					120					125			
	cgc	gtc	tga													
	Arg	Val														
		130														

&lt;210&gt; 280

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. RS9916

&lt;400&gt; 280

Met	Ala	Lys	Thr	Val	Lys	Lys	Ser	Gly	Pro	Lys	Lys	Ala	Lys	Arg	Asn
1				5				10						15	
Val	Pro	Asn	Gly	Val	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile
			20					25				30			
Val	Ser	Ile	Thr	Asp	Thr	Thr	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala
		35					40				45				
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala
	50					55				60					
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Glu	Gln	Gly	Met
65				70				75						80	
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr
			85				90						95		
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg
			100				105					110			
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Ser	Lys	Arg	Arg
		115					120					125			
Arg	Val														
	130														

&lt;210&gt; 281

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; marine gamma proteobacterium HTCC2143

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 281

atg	gct	aaa	gat	aat	aag	ccg	gct	cgt	aaa	aag	gtc	aaa	aag	acc	gtt	48
Met	Ala	Lys	Asp	Asn	Lys	Pro	Ala	Arg	Lys	Lys	Val	Lys	Lys	Thr	Val	
1				5				10						15		
gtg	gat	ggc	att	gcg	cac	att	cat	gcg	tct	ttt	aat	aac	acc	ata	att	96
Val	Asp	Gly	Ile	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Ile	
			20				25					30				
act	ata	act	gac	cgt	cag	ggt	aac	gct	ctt	agt	tgg	gcg	act	gcg	ggc	144

PhoenixTemp32470.tmp.txt

Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ala	Gly		
35							40					45					
ggg	tct	ggt	ttc	cgt	ggg	tct	cgt	aaa	agt	acg	cct	ttc	gct	gcc	cag	192	
Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
50						55					60						
gtg	gct	gct	gag	cgt	gct	ggt	ata	gca	gcc	cag	gaa	tat	ggt	cta	aaa	240	
Val	Ala	Ala	Glu	Arg	Ala	Gly	Ile	Ala	Ala	Gln	Glu	Tyr	Gly	Leu	Lys		
65					70					75					80		
aat	ctc	gac	gtt	gaa	gtt	aag	ggc	cca	ggt	cca	ggt	cga	gag	tct	gcc	288	
Asn	Leu	Asp	Val	Glu	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
gta	cgt	gca	ctt	aat	aat	gca	ggg	tac	aag	ata	ggt	agc	att	aat	gac	336	
Val	Arg	Ala	Leu	Asn	Asn	Ala	Gly	Tyr	Lys	Ile	Gly	Ser	Ile	Asn	Asp		
			100					105					110				
gta	acg	cca	att	cca	cac	aat	ggc	tgc	cgt	cct	ccc	aag	aaa	cgt	cgc	384	
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg		
		115					120					125					
ggt	taa															390	
Val																	

<210> 282  
 <211> 129  
 <212> PRT  
 <213> marine gamma proteobacterium HTCC2143

<400> 282

Met	Ala	Lys	Asp	Asn	Lys	Pro	Ala	Arg	Lys	Lys	Val	Lys	Lys	Thr	Val		
1				5					10					15			
Val	Asp	Gly	Ile	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Ile		
			20					25					30				
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ala	Gly		
		35					40					45					
Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
	50					55					60						
Val	Ala	Ala	Glu	Arg	Ala	Gly	Ile	Ala	Ala	Gln	Glu	Tyr	Gly	Leu	Lys		
65					70					75					80		
Asn	Leu	Asp	Val	Glu	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
Val	Arg	Ala	Leu	Asn	Asn	Ala	Gly	Tyr	Lys	Ile	Gly	Ser	Ile	Asn	Asp		
			100					105					110				
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg		
		115					120					125					
Val																	

<210> 283  
 <211> 399  
 <212> DNA  
 <213> marine gamma proteobacterium HTCC2080

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

<400> 283

atg	gcc	aag	aac	gcc	aag	aac	agt	aag	aca	acg	aaa	cgc	aag	atc	act	48	
Met	Ala	Lys	Asn	Ala	Lys	Asn	Ser	Lys	Thr	Thr	Lys	Arg	Lys	Ile	Thr		
1				5					10					15			
aag	cag	gtg	gtc	gac	ggt	gtc	gcc	cac	gtg	cat	gcg	tcc	ttt	aac	aat	96	
Lys	Gln	Val	Val	Asp	Gly	Val	Ala	His	Val	His	Ala	Ser	Phe	Asn	Asn		
			20					25					30				
acg	atc	gtg	acc	att	acc	gac	cgc	caa	ggc	aat	aca	ctt	agc	tgg	gcc	144	
Thr	Ile	Val	Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Thr	Leu	Ser	Trp	Ala		
		35					40					45					
aca	gcg	ggg	ggc	tct	ggc	ttc	cgt	gga	tcc	aga	aaa	tct	acg	ccg	ttt	192	
Thr	Ala	Gly	Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe		
		50				55					60						

## PhoenixTemp32470.tmp.txt

gct gca cag gtg gct gca gaa cgc gct gga gaa gcc gcc aag gag tat	240
Ala Ala Gln Val Ala Ala Glu Arg Ala Gly Glu Ala Ala Lys Glu Tyr	
65 70 75 80	
ggg tta aaa aac cta gac gtt cag gtt aaa ggc ccc ggt cca ggc cgt	288
Gly Leu Lys Asn Leu Asp Val Gln Val Lys Gly Pro Gly Pro Gly Arg	
85 90 95	
gag tca gcg gtt cga gcg ttg aac agc tgt ggt tac aag att act aac	336
Glu Ser Ala Val Arg Ala Leu Asn Ser Cys Gly Tyr Lys Ile Thr Asn	
100 105 110	
att acc gac gtg acg ccc att ccc cat aat ggc tgt cgc ccc cct aag	384
Ile Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys	
115 120 125	
aag cgc cgc gtc taa	399
Lys Arg Arg Val	
130	

&lt;210&gt; 284

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; marine gamma proteobacterium HTCC2080

&lt;400&gt; 284

Met Ala Lys Asn Ala Lys Asn Ser Lys Thr Thr Lys Arg Lys Ile Thr	
1 5 10 15	
Lys Gln Val Val Asp Gly Val Ala His Val His Ala Ser Phe Asn Asn	
20 25 30	
Thr Ile Val Thr Ile Thr Asp Arg Gln Gly Asn Thr Leu Ser Trp Ala	
35 40 45	
Thr Ala Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe	
50 55 60	
Ala Ala Gln Val Ala Ala Glu Arg Ala Gly Glu Ala Ala Lys Glu Tyr	
65 70 75 80	
Gly Leu Lys Asn Leu Asp Val Gln Val Lys Gly Pro Gly Pro Gly Arg	
85 90 95	
Glu Ser Ala Val Arg Ala Leu Asn Ser Cys Gly Tyr Lys Ile Thr Asn	
100 105 110	
Ile Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys	
115 120 125	
Lys Arg Arg Val	
130	

&lt;210&gt; 285

&lt;211&gt; 387

&lt;212&gt; DNA

&lt;213&gt; Candidatus Desulfococcus oleovorans Hxd3

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(387)

&lt;223&gt; transl\_table=11

&lt;400&gt; 285

atg gcg aaa cga gtc cag acc aag aaa aag gta aga aag aat att gca	48
Met Ala Lys Arg Val Gln Thr Lys Lys Lys Val Arg Lys Asn Ile Ala	
1 5 10 15	
agc ggg gtg gtc cat att cag tcc acc ttt aac aat acc atc gtg acc	96
Ser Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile Val Thr	
20 25 30	
gtt acc gat gtg gcc ggt aac gtg atc tcc tgg tcg tcg gcc ggg ggc	144
Val Thr Asp Val Ala Gly Asn Val Ile Ser Trp Ser Ser Ala Gly Gly	
35 40 45	
cgc gga ttc aag ggg tcg cgc aag agc acg ccc ttt gcc gcc cag atg	192
Arg Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Met	
50 55 60	
gcg tcc gag gac gcg gtg aag aag gcc atg gcc cag ggc ttg cag acg	240
Ala Ser Glu Asp Ala Val Lys Lys Ala Met Ala Gln Gly Leu Gln Thr	
65 70 75 80	
gtt gaa gtc tat gtc aag gga ccg ggg ccg ggc cgg gaa tcg gcg cta	288
Val Glu Val Tyr Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala Leu	

## PhoenixTemp32470.tmp.txt

```

      85      90      95
cgc gcc ctt cag gcc gcc ggg ctt acc gtg acc atg att cgg gac gta 336
Arg Ala Leu Gln Ala Ala Gly Leu Thr Val Thr Met Ile Arg Asp Val
      100      105      110
acc ccc att cct cac aac ggc tgc cgg cct ccc aag cgg cgc cgg gtg 384
Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
      115      120      125
taa 387

```

<210> 286  
 <211> 128  
 <212> PRT  
 <213> Candidatus Desulfococcus oleovorans Hxd3

```

<400> 286
Met Ala Lys Arg Val Gln Thr Lys Lys Lys Val Arg Lys Asn Ile Ala
1      5      10      15
Ser Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile Val Thr
      20      25      30
Val Thr Asp Val Ala Gly Asn Val Ile Ser Trp Ser Ser Ala Gly Gly
      35      40      45
Arg Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Met
      50      55      60
Ala Ser Glu Asp Ala Val Lys Lys Ala Met Ala Gln Gly Leu Gln Thr
65      70      75      80
Val Glu Val Tyr Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala Leu
      85      90      95
Arg Ala Leu Gln Ala Ala Gly Leu Thr Val Thr Met Ile Arg Asp Val
      100      105      110
Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
      115      120      125

```

<210> 287  
 <211> 390  
 <212> DNA  
 <213> Pseudomonas putida GB-1

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

```

<400> 287
atg gca aaa cct gct gct cgt cct cgt aag aaa atc aaa aag aca gtg 48
Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Ile Lys Lys Thr Val
1      5      10      15
gtt gat ggc atc gcc cac atc cat gcg tct ttc aac aac acc atc gtg 96
Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
      20      25      30
acc atc acc gac cgt cag ggc aat gct ttg tcc tgg gcg acc tcc ggt 144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly
      35      40      45
ggt tcg ggt ttc cgt ggt tcg cgc aaa tcc acc ccg ttc gca gct cag 192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
      50      55      60
atc gct gct gag cgt gct ggt caa gct gcg ctg gaa tac ggt ctg aag 240
Ile Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys
      65      70      75      80
aac ctc gac gtt aac gtc aag ggt cca ggt cca ggt cgt gag tcc gcc 288
Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala
      85      90      95
gtt cgt gca ttg aac agc tgc ggc tac aag atc gcc agc atc acc gac 336
Val Arg Ala Leu Asn Ser Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp
      100      105      110
gtg acg cct atc ccg cat aac ggc tgc cgt ccg ccg aag aag cgt cgc 384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
      115      120      125

```



gtg taa  
Val

<210> 288  
<211> 129  
<212> PRT  
<213> Pseudomonas putida GB-1

<400> 288  
Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Ile Lys Lys Thr Val  
1 5 10 15  
Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
20 25 30  
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly  
35 40 45  
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
50 55 60  
Ile Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys  
65 70 75 80  
Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
85 90 95  
Val Arg Ala Leu Asn Ser Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp  
100 105 110  
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
115 120 125  
Val

<210> 289  
<211> 390  
<212> DNA  
<213> Marinobacter sp. ELB17

<220>  
<221> CDS  
<222> (1)..(390)  
<223> transl\_table=11

<400> 289  
atg gca aag cca ggt aca cgt acc cgt aaa aag gtg aaa aaa acg gtt 48  
Met Ala Lys Pro Gly Thr Arg Thr Arg Lys Lys Val Lys Lys Thr Val  
1 5 10 15  
gtt gat ggc gtc gcg cac att cac gct tcc ttc aac aac act atc gtg 96  
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
20 25 30  
acc att tcg gac cgc cag ggc aac gta ttg tct tgg gcc act gct ggt 144  
Thr Ile Ser Asp Arg Gln Gly Asn Val Leu Ser Trp Ala Thr Ala Gly  
35 40 45  
ggt tct ggt ttc cgc ggt tca cgt aag agt aca cct ttt gct gcg cag 192  
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
50 55 60  
gta gca gct gaa aga gcc ggt aat gcg gct gct gaa tac ggc ctt aaa 240  
Val Ala Ala Glu Arg Ala Gly Asn Ala Ala Ala Glu Tyr Gly Leu Lys  
65 70 75 80  
aac ctg gat gtt gaa gtc aag ggc ccc ggc cct ggt cgt gaa tct gca 288  
Asn Leu Asp Val Glu Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
85 90 95  
gtt cgt gcg ctt aac tcg tgc ggc tac aag atc aac aac atc aca gat 336  
Val Arg Ala Leu Asn Ser Cys Gly Tyr Lys Ile Asn Asn Ile Thr Asp  
100 105 110  
gtg acg ccg att ccc cac aac gga tgt cgc ccg cct aaa aag cgc cgc 384  
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
115 120 125  
gtc taa 390  
Val

<210> 290

<211> 129  
 <212> PRT  
 <213> Marinobacter sp. ELB17

<400> 290  
 Met Ala Lys Pro Gly Thr Arg Thr Arg Lys Lys Val Lys Lys Thr Val  
 1 5 10 15  
 Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Ser Asp Arg Gln Gly Asn Val Leu Ser Trp Ala Thr Ala Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Arg Ala Gly Asn Ala Ala Glu Tyr Gly Leu Lys  
 65 70 75 80  
 Asn Leu Asp Val Glu Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
 85 90 95  
 Val Arg Ala Leu Asn Ser Cys Gly Tyr Lys Ile Asn Asn Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 291  
 <211> 390  
 <212> DNA  
 <213> Erythrobacter sp. SD-21

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 291  
 atg gca cgc gaa cca ggc cgc gta cgg cgc cgc gat aag aag aac att 48  
 Met Ala Arg Glu Pro Gly Arg Val Arg Arg Arg Asp Lys Lys Asn Ile  
 1 5 10 15  
 tct tcg ggc gtc gcg cac atc aac gcc agc ttc aac aac acg atg atc 96  
 Ser Ser Gly Val Ala His Ile Asn Ala Ser Phe Asn Asn Thr Met Ile  
 20 25 30  
 acc atc acc gac gcg cag ggc aac gct atc agc tgg tcc agc gcc gcc 144  
 Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly  
 35 40 45  
 atg atg ggc ttc aag ggc agc cgc aag tcg act ccc tat gcc gca cag 192  
 Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 gtt gcc gcc gac gac gca ggc cgt aag gcc gcc gaa cac ggc gtg cgc 240  
 Val Ala Ala Asp Asp Ala Gly Arg Lys Ala Ala Glu His Gly Val Arg  
 65 70 75 80  
 acc ctc gaa gtc gaa gtg aag ggc ccg ggc tcg ggt cgt gag agc gcg 288  
 Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala  
 85 90 95  
 ctg cgc ggt ctc gcg gct gtg ggc ttc acc atc acc tcg atc cgc gac 336  
 Leu Arg Gly Leu Ala Ala Val Gly Phe Thr Ile Thr Ser Ile Arg Asp  
 100 105 110  
 gtg acg ccg atc ccg cac aac ggg gtc cgt cct tcc aag cgt cgt cgc 384  
 Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ser Lys Arg Arg Arg  
 115 120 125  
 gtc tga 390  
 Val

<210> 292  
 <211> 129  
 <212> PRT  
 <213> Erythrobacter sp. SD-21

<400> 292

## PhoenixTemp32470.tmp.txt

Met Ala Arg Glu Pro Gly Arg Val Arg Arg Arg Asp Lys Lys Asn Ile  
 1 5 10 15  
 Ser Ser Gly Val Ala His Ile Asn Ala Ser Phe Asn Asn Thr Met Ile  
 20 25 30  
 Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly  
 35 40 45  
 Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 Val Ala Ala Asp Asp Ala Gly Arg Lys Ala Ala Glu His Gly Val Arg  
 65 70 75 80  
 Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala  
 85 90 95  
 Leu Arg Gly Leu Ala Ala Val Gly Phe Thr Ile Thr Ser Ile Arg Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ser Lys Arg Arg Arg  
 115 120 125  
 Val

&lt;210&gt; 293

&lt;211&gt; 399

&lt;212&gt; DNA

&lt;213&gt; unidentified eubacterium SCB49

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(399)

&lt;223&gt; transl\_table=11

&lt;400&gt; 293

atg gca aag gca aat cca aaa gct aaa agc aca aaa aaa cgt aaa gtt	48
Met Ala Lys Ala Asn Pro Lys Ala Lys Ser Thr Lys Lys Arg Lys Val	
1 5 10 15	
aat gtg gag tct gta ggt gca gcg cac ata aca gcg tca ttc aat aat	96
Asn Val Glu Ser Val Gly Ala Ala His Ile Thr Ala Ser Phe Asn Asn	
20 25 30	
att att gtt tcg ttg aca aat aaa gca gga gat gtt atc tct tgg tca	144
Ile Ile Val Ser Leu Thr Asn Lys Ala Gly Asp Val Ile Ser Trp Ser	
35 40 45	
tct gcc ggt aaa atg ggc ttc aga gga tct aag aaa aat act cct tat	192
Ser Ala Gly Lys Met Gly Phe Arg Gly Ser Lys Lys Asn Thr Pro Tyr	
50 55 60	
gca gca caa tta gct tct gaa gac tgt gca aaa gtt gct cac gaa gca	240
Ala Ala Gln Leu Ala Ser Glu Asp Cys Ala Lys Val Ala His Glu Ala	
65 70 75 80	
gga atg cgt aaa tgt aaa gta tac gtt aaa gga cca gga aat ggt aga	288
Gly Met Arg Lys Cys Lys Val Tyr Val Lys Gly Pro Gly Asn Gly Arg	
85 90 95	
gaa tct gct att cgt gca ata cat aat atg gga ata gaa gta aca gaa	336
Glu Ser Ala Ile Arg Ala Ile His Asn Met Gly Ile Glu Val Thr Glu	
100 105 110	
att att gat gtt act cca atg cca cat aat ggt tgt cgt cct gca aaa	384
Ile Ile Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Ala Lys	
115 120 125	
aga cgt aga gta taa	399
Arg Arg Arg Val	
130	

&lt;210&gt; 294

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; unidentified eubacterium SCB49

&lt;400&gt; 294

Met Ala Lys Ala Asn Pro Lys Ala Lys Ser Thr Lys Lys Arg Lys Val  
 1 5 10 15  
 Asn Val Glu Ser Val Gly Ala Ala His Ile Thr Ala Ser Phe Asn Asn  
 20 25 30  
 Ile Ile Val Ser Leu Thr Asn Lys Ala Gly Asp Val Ile Ser Trp Ser

## PhoenixTemp32470.tmp.txt

```

      35      40      45
Ser Ala Gly Lys Met Gly Phe Arg Gly Ser Lys Lys Asn Thr Pro Tyr
50 55 60
Ala Ala Gln Leu Ala Ser Glu Asp Cys Ala Lys Val Ala His Glu Ala
65 70 75 80
Gly Met Arg Lys Cys Lys Val Tyr Val Lys Gly Pro Gly Asn Gly Arg
85 90 95
Glu Ser Ala Ile Arg Ala Ile His Asn Met Gly Ile Glu Val Thr Glu
100 105 110
Ile Ile Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Ala Lys
115 120 125
Arg Arg Arg Val
130

```

&lt;210&gt; 295

&lt;211&gt; 636

&lt;212&gt; DNA

&lt;213&gt; Opitutaceae bacterium TAV2

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(636)

&lt;223&gt; transl\_table=11

&lt;400&gt; 295

```

atg gcc gaa gaa acg tct gct ccc aag aaa gag aag gct ccc aag aag      48
Met Ala Glu Glu Thr Ser Ala Pro Lys Lys Glu Lys Ala Pro Lys Lys
1 5 10 15
gaa gcc tcc gcc gct gct ccc gct gcc ggc gcc cct gtc gcc gcc gag      96
Glu Ala Ser Ala Ala Ala Pro Ala Gly Ala Pro Val Ala Ala Glu
20 25 30
aag ccc gcc aag gct ccc aag gcc gcc aag ccc gcc gct gaa ggc gag      144
Lys Pro Ala Lys Ala Pro Lys Ala Ala Lys Pro Ala Ala Glu Gly Glu
35 40 45
gcc gcc gct ccc gcc gct cct gcg gct gcc tcg gca gaa aaa ccc gtt      192
Ala Ala Ala Pro Ala Ala Pro Ala Ala Ser Ala Glu Lys Pro Val
50 55 60
gaa ctc gtc ggt ggc gtt gcc aag cag ccc acc gct gaa gag ctc ctc      240
Glu Leu Val Gly Gly Val Ala Lys Gln Pro Thr Ala Glu Glu Leu Leu
65 70 75 80
aag gaa gag ctt ggc gcg atc aag atc cgc cgt gcc aag ggc tcc aag      288
Lys Glu Glu Leu Gly Ala Ile Lys Ile Arg Arg Ala Lys Gly Ser Lys
85 90 95
aac gtc acc tcg ggc atc gcc acg gtg ctc gcc tcg ttc aac aac acc      336
Asn Val Thr Ser Gly Ile Ala Thr Val Leu Ala Ser Phe Asn Asn Thr
100 105 110
atc gtc tcg atc acc gac gcc aag ggc cag gtc atc gcc tgg tcc agc      384
Ile Val Ser Ile Thr Asp Ala Lys Gly Gln Val Ile Ala Trp Ser Ser
115 120 125
gcc ggc aag tgc aac ttc cgc ggt tcg cgc aag tcc acc gcc tac gcc      432
Ala Gly Lys Cys Asn Phe Arg Gly Ser Arg Lys Thr Ala Tyr Ala
130 135 140
gct cag gtc gtc gcc cag gac gcc gcc cgc aac gcc atg tcg cac gga      480
Ala Gln Val Val Ala Gln Asp Ala Ala Arg Asn Ala Met Ser His Gly
145 150 155 160
ctc aag gac gtc acc atc cgc ctc tcc ggc ccc ggc ctc gga cgc gac      528
Leu Lys Asp Val Thr Ile Arg Leu Ser Gly Pro Gly Leu Gly Arg Asp
165 170 175
agc gcc gtc cgc gcc ctg caa gcc atc ggc ctc gaa atc aac tcc atc      576
Ser Ala Val Arg Ala Leu Gln Ala Ile Gly Leu Glu Ile Asn Ser Ile
180 185 190
atc gac gtc acg ccg gtg ccg cac aac ggc tgc cgt cca cgc aag cgc      624
Ile Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys Arg
195 200 205
cgc cgc gtc taa
Arg Arg Val
210

```

&lt;210&gt; 296

&lt;211&gt; 211

&lt;212&gt; PRT

&lt;213&gt; Opitutaceae bacterium TAV2

&lt;400&gt; 296

```

Met Ala Glu Glu Thr Ser Ala Pro Lys Lys Glu Lys Ala Pro Lys Lys
1      5      10      15
Glu Ala Ser Ala Ala Pro Ala Ala Gly Ala Pro Val Ala Ala Glu
20      25      30
Lys Pro Ala Lys Ala Pro Lys Ala Ala Lys Pro Ala Ala Glu Gly Glu
35      40      45
Ala Ala Ala Pro Ala Ala Pro Ala Ala Ala Ser Ala Glu Lys Pro Val
50      55      60
Glu Leu Val Gly Gly Val Ala Lys Gln Pro Thr Ala Glu Glu Leu Leu
65      70      75      80
Lys Glu Glu Leu Gly Ala Ile Lys Ile Arg Arg Ala Lys Gly Ser Lys
85      90      95
Asn Val Thr Ser Gly Ile Ala Thr Val Leu Ala Ser Phe Asn Asn Thr
100     105     110
Ile Val Ser Ile Thr Asp Ala Lys Gly Gln Val Ile Ala Trp Ser Ser
115     120     125
Ala Gly Lys Cys Asn Phe Arg Gly Ser Arg Lys Ser Thr Ala Tyr Ala
130     135     140
Ala Gln Val Val Ala Gln Asp Ala Ala Arg Asn Ala Met Ser His Gly
145     150     155     160
Leu Lys Asp Val Thr Ile Arg Leu Ser Gly Pro Gly Leu Gly Arg Asp
165     170     175
Ser Ala Val Arg Ala Leu Gln Ala Ile Gly Leu Glu Ile Asn Ser Ile
180     185     190
Ile Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys Arg
195     200     205
Arg Arg Val
210

```

&lt;210&gt; 297

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Maconellicoccus hirsutus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 297

```

atg gcg cca cga aaa gga aaa caa cag caa gaa caa gtt caa gta gct      48
Met Ala Pro Arg Lys Gly Lys Gln Gln Gln Glu Gln Val Gln Val Ala
1      5      10      15
ttg ggc ccc caa gtt aaa gac gga gag gac gta ttc ggt gtc gca cat      96
Leu Gly Pro Gln Val Lys Asp Gly Glu Asp Val Phe Gly Val Ala His
20      25      30
ata ttc gct agc ttt aac gat act ttc gtc cat gtc acc gat tta tcg      144
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser
35      40      45
ggg aga gaa acg att gct cgt gtt acc ggt ggt atg aaa gta aaa gct      192
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala
50      55      60
gac aga gat gaa gct tct ccc tat gct gct atg ttg gct gca cag gat      240
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp
65      70      75      80
gtt gcc gag aaa tgt aga gca gta gga atc act gca ttg cac atc aaa      288
Val Ala Glu Lys Cys Arg Ala Val Gly Ile Thr Ala Leu His Ile Lys
85      90      95
ttg aga gct acc ggt gga aat aaa acg aaa acg cca ggt cca gga gct      336
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala
100     105     110
caa tct gct ctg aga gct tta gcc aga tcc gga atg cat att gga cga      384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met His Ile Gly Arg
115     120     125
att gaa gac gta aca cca att cct tct gat gct acc cga agg aaa gga      432

```

Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ala Thr Arg Arg Lys Gly  
 130 135 140  
 ggt aga cgt ggt cgc aga ttg taa  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

456

&lt;210&gt; 298

&lt;211&gt; 151

&lt;212&gt; PRT

<213> *Maconellicoccus hirsutus*

&lt;400&gt; 298

Met Ala Pro Arg Lys Gly Lys Gln Gln Gln Glu Gln Val Gln Val Ala  
 1 5 10 15  
 Leu Gly Pro Gln Val Lys Asp Gly Glu Asp Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Arg Ala Val Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met His Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ala Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

&lt;210&gt; 299

&lt;211&gt; 489

&lt;212&gt; DNA

<213> *Oryza sativa* subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(489)

&lt;400&gt; 299

atg tcg aag agg aag acc agg gag cct aag gag gag aat gtc act ctt 48  
 Met Ser Lys Arg Lys Thr Arg Glu Pro Lys Glu Glu Asn Val Thr Leu  
 1 5 10 15  
 gga ccc act gtc cgt gaa gga gag tat gtg ttc gga gtt gcc cac atc 96  
 Gly Pro Thr Val Arg Glu Gly Glu Tyr Val Phe Gly Val Ala His Ile  
 20 25 30  
 ttc gca tcc ttc aat gac act ttc att cat gtc act gac ttg tct gga 144  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
 35 40 45  
 agg gaa act ctt gtt cgc att act ggt ggc atg aag gtc aaa gct gac 192  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 cgt gat gag tca tca cca tat gca gct atg ctt gct tct caa gat gtt 240  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp Val  
 65 70 75 80  
 gca cag cgt tgc aag gag ctt ggt att act gct ctg cac atc aag ctt 288  
 Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 cgt gcc act gga ggc aac aag aca aag aca ccc ggt cct ggt gct caa 336  
 Arg Ala Thr Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 tct gct ctt agg gct ctt gct cgc tct ggc atg aag att ggt cgc att 384  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
 gag gat gtg acc ccg gtt ccc acg gac agc acc cgc aga aag gga gta 432  
 Glu Asp Val Thr Pro Val Pro Thr Asp Ser Thr Arg Arg Lys Gly Val

## PhoenixTemp32470.tmp.txt

130 135 140  
 ctg gaa cta gtc aat tct aag cta gca tta gga ggt gat tca ttc tct 480  
 Leu Glu Leu Val Asn Ser Lys Leu Ala Leu Gly Gly Asp Ser Phe Ser  
 145 150 155 160  
 ctg agg tga 489  
 Leu Arg

<210> 300  
 <211> 162  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 300  
 Met Ser Lys Arg Lys Thr Arg Glu Pro Lys Glu Glu Asn Val Thr Leu  
 1 5 10 15  
 Gly Pro Thr Val Arg Glu Gly Glu Tyr Val Phe Gly Val Ala His Ile  
 20 25 30  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
 35 40 45  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp Val  
 65 70 75 80  
 Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
 Glu Asp Val Thr Pro Val Pro Thr Asp Ser Thr Arg Arg Lys Gly Val  
 130 135 140 145 150 155 160  
 Leu Glu Leu Val Asn Ser Lys Leu Ala Leu Gly Gly Asp Ser Phe Ser  
 145 150 155 160  
 Leu Arg

<210> 301  
 <211> 489  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(489)

<400> 301  
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 Met Ser Gly Arg Lys Lys Thr Arg Glu Pro Lys Glu Glu Asn Val Thr  
 1 5 10 15  
 ctc ggc ccg acc gtg cgc gag ggc gag tac gtc ttc ggc gtc gcc cac 96  
 Leu Gly Pro Thr Val Arg Glu Gly Glu Tyr Val Phe Gly Val Ala His  
 20 25 30  
 atc ttc gcc tcc ttc aac gac acc ttc atc cat gtc acc gat ctg tcc 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser  
 35 40 45  
 ggg agg gag acg ctc gtc cgc atc act ggt ggc atg aag gtt aaa gct 192  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gat cgc gac gaa tct tcc cct tat gct gct atg ctt gct tca cag gat 240  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 gtt gct caa aga tgc aag gag ctt gga ata act gct ttg cat atc aag 288  
 Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctc cgt gct act ggt ggt aac aag aca aaa acc cct ggt cct ggt gct 336  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tcc gca ctt aga gca ctt gct cga tct ggc atg aag att ggt cgt 384  
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## PhoenixTemp32470.tmp.txt

Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg		
		115					120					125					
att	gct	gat	gac	gtc	tgt	tca	att	ttc	tgt	cat	aca	gag	gat	ggt	act		432
Ile	Ala	Asp	Asp	Val	Leu	Ser	Ile	Phe	Cys	His	Thr	Glu	Asp	Val	Thr		
	130					135					140						
cca	gtg	ccg	act	gat	agc	aca	cgc	aga	aag	ggg	ggg	aga	agg	ggg	agg		480
Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	Arg	Arg	Gly	Arg		
	145				150					155					160		
agg	ctg	taa															489
Arg	Leu																

&lt;210&gt; 302

&lt;211&gt; 162

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 302

Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr		
1				5					10					15			
Leu	Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	Phe	Gly	Val	Ala	His		
			20					25					30				
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser		
		35					40					45					
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala		
	50					55					60						
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp		
65					70					75					80		
Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys		
				85					90					95			
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala		
			100					105					110				
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg		
		115					120					125					
Ile	Ala	Asp	Asp	Val	Leu	Ser	Ile	Phe	Cys	His	Thr	Glu	Asp	Val	Thr		
	130					135					140						
Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	Arg	Arg	Gly	Arg		
	145				150					155					160		
Arg	Leu																

&lt;210&gt; 303

&lt;211&gt; 471

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(471)

&lt;400&gt; 303

atg	gag	cag	agg	ttc	aag	tcc	ggg	agg	aag	aag	acg	cga	gag	ccc	aag		48
Met	Glu	Gln	Arg	Phe	Lys	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys		
	1			5					10					15			
gag	gag	aac	gtg	acg	ctc	ggc	ccc	acg	gtc	cgc	gag	ggc	gag	tac	gtc		96
Glu	Glu	Asn	Val	Thr	Leu	Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val		
			20					25					30				
ttc	ggc	gtc	gcg	cac	atc	ttc	gcg	tcg	ttc	aac	gac	acc	ttc	atc	cac		144
Phe	Gly	Val	Ala	His	Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His		
		35					40					45					
gtg	acg	gat	ctg	tcc	ggc	agg	gag	acg	ctc	gtc	cgc	atc	acc	ggg	ggc		192
Val	Thr	Asp	Leu	Ser	Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly		
		50				55					60						
atg	aag	gtg	aaa	gct	gac	cgt	gat	gag	tca	tcc	cct	tat	gct	gcc	atg		240
Met	Lys	Val	Lys	Ala	Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met		
	65				70					75					80		
ctt	gca	tcc	cag	gat	gtt	gca	cag	aga	tgc	aag	gag	ctt	gga	att	act		288
Leu	Ala	Ser	Gln	Asp	Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr		
				85					90					95			



## PhoenixTemp32470.tmp.txt

gct	ctg	cac	att	aag	ctc	cgt	gct	act	ggt	gga	aac	aag	aca	aaa	act	336
Ala	Leu	His	Ile	Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	
			100					105					110			
cct	ggt	cct	ggt	gct	caa	tct	gcg	ctt	aga	gct	ctt	gca	cgt	tct	ggc	384
Pro	Gly	Pro	Gly	Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	
			115				120					125				
atg	aag	att	gga	cgc	att	gag	gat	ggt	act	cca	gtc	cca	act	gac	agt	432
Met	Lys	Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	
			130			135					140					
acc	cgc	aga	aag	ggt	ggc	aga	aga	gga	agg	agg	ctg	taa				471
Thr	Arg	Arg	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu					
145					150					155						

&lt;210&gt; 304

&lt;211&gt; 156

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 304

Met	Glu	Gln	Arg	Phe	Lys	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	
1				5					10					15		
Glu	Glu	Asn	Val	Thr	Leu	Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	
			20					25					30			
Phe	Gly	Val	Ala	His	Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	
			35				40					45				
Val	Thr	Asp	Leu	Ser	Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	
			50			55					60					
Met	Lys	Val	Lys	Ala	Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	
65					70					75					80	
Leu	Ala	Ser	Gln	Asp	Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	
				85					90					95		
Ala	Leu	His	Ile	Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	
			100					105					110			
Pro	Gly	Pro	Gly	Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	
			115				120					125				
Met	Lys	Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	
			130			135					140					
Thr	Arg	Arg	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu					
145					150					155						

&lt;210&gt; 305

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Magnetospirillum gryphiswaldense

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 305

atg	gca	aag	cct	gct	gcc	gct	cgt	ccg	cgt	cgt	cgc	gag	cgc	aaa	aac	48
Met	Ala	Lys	Pro	Ala	Ala	Ala	Arg	Pro	Arg	Arg	Arg	Glu	Arg	Lys	Asn	
1				5					10					15		
atc	acc	tcc	ggt	gtt	gct	cac	gtg	aac	tcc	acg	ttc	aac	aac	acc	atg	96
Ile	Thr	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Thr	Phe	Asn	Asn	Thr	Met	
			20					25						30		
atc	acc	atc	acc	gac	gcc	cag	ggc	aac	acc	atc	tcg	tgg	tcg	tcc	tcg	144
Ile	Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Thr	Ile	Ser	Trp	Ser	Ser	Ser	
			35				40					45				
ggt	atg	cag	ggc	ttc	aag	ggc	tcg	cgc	aag	tcg	acc	ccg	tac	gcc	gcc	192
Gly	Met	Gln	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	
			50			55					60					
cag	gtg	gct	gcc	gaa	gac	gct	ggc	cgc	aag	gcc	atg	gaa	cac	ggc	atg	240
Gln	Val	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Met	Glu	His	Gly	Met	
					70					75					80	
cgc	acc	ctg	gaa	gtg	gaa	gtc	aag	ggt	ccg	ggc	gct	ggt	cgt	gaa	agc	288
Arg	Thr	Leu	Glu	Val	Glu	Val	Lys	Gly	Pro	Gly	Ala	Gly	Arg	Glu	Ser	
				85					90					95		

PhoenixTemp32470.tmp.txt

gcc ttg cgc gcg ctg cag gcg gtg ggc ttt tcc atc acc tcg atc cgc	336
Ala Leu Arg Ala Leu Gln Ala Val Gly Phe Ser Ile Thr Ser Ile Arg	
100 105 110	
gac gtc act ccg atc ccg cac aac ggt tgc cgt ccg cgc aag cgt cgt	384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg	
115 120 125	
cgc gtc tga	393
Arg Val	
130	

<210> 306  
 <211> 130  
 <212> PRT  
 <213> Magnetospirillum gryphiswaldense

<400> 306

Met Ala Lys Pro Ala Ala Ala Arg Pro Arg Arg Arg Glu Arg Lys Asn	
1 Ile Thr Ser Gly Val Ala His Val Asn Ser Thr Phe Asn Asn Thr Met	
5 20 25 30	
Ile Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ser	
35 40 45	
Gly Met Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala	
50 55 60	
Gln Val Ala Ala Glu Asp Ala Gly Arg Lys Ala Met Glu His Gly Met	
65 70 75 80	
Arg Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ala Gly Arg Glu Ser	
85 90 95	
Ala Leu Arg Ala Leu Gln Ala Val Gly Phe Ser Ile Thr Ser Ile Arg	
100 105 110	
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg	
115 120 125	
Arg Val	
130	

<210> 307  
 <211> 453  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(453)

<400> 307

atg tcg agg agg aag gtc agg gaa cca aag gaa gaa aat gta acc ctt	48
Met Ser Arg Arg Lys Val Arg Glu Pro Lys Glu Glu Asn Val Thr Leu	
1 5 10 15	
gga cca act gta agg gat gga gaa cat gtt ttt ggt gtg gct cac att	96
Gly Pro Thr Val Arg Asp Gly Glu His Val Phe Gly Val Ala His Ile	
20 25 30	
ttt gct tcc ttc aat gac aca ttc att cat gtg act gat ttg tct ggc	144
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly	
35 40 45	
aga gag acc ttg gtt cgc atc act ggt ggc atg aag gtg aaa gct gac	192
Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp	
50 55 60	
agg gat gag tct tca cca tat gca gcc atg ctt gcg gcc caa gat gtt	240
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val	
65 70 75 80	
tca caa aga tgc aag gaa ctt ggc gtt act gct ctt cat atc aag ctc	288
Ser Gln Arg Cys Lys Glu Leu Gly Val Thr Ala Leu His Ile Lys Leu	
85 90 95	
cgt gcc act gga gga aat aag acc aag aca cct ggt cct ggt gcc cag	336
Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln	
100 105 110	
tct gct ctc cga gcc ctt gct cgt tct gga atg aga att ggt cgc ata	384
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile	
115 120 125	

## PhoenixTemp32470.tmp.txt

gag gat gtt acc cca atc ccc act gac agc act cga aga aag ggt gga 432  
 Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly  
 130 135 140  
 aga aga ggg aga aga ctg tga 453  
 Arg Arg Gly Arg Arg Leu  
 145 150

<210> 308  
 <211> 150  
 <212> PRT  
 <213> Vitis vinifera

<400> 308  
 Met Ser Arg Arg Lys Val Arg Glu Pro Lys Glu Glu Asn Val Thr Leu  
 1 5 10 15  
 Gly Pro Thr Val Arg Asp Gly Glu His Val Phe Gly Val Ala His Ile  
 20 25 30  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
 35 40 45  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
 65 70 75 80  
 Ser Gln Arg Cys Lys Glu Leu Gly Val Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile  
 115 120 125  
 Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly  
 130 135 140  
 Arg Arg Gly Arg Arg Leu  
 145 150

<210> 309  
 <211> 399  
 <212> DNA  
 <213> Gnetum parvifolium

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

<400> 309  
 atg gca cta aca aaa ccg aaa aaa ata cct aga tat aga cgt aat aag 48  
 Met Ala Leu Thr Lys Pro Lys Lys Ile Pro Arg Tyr Arg Arg Asn Lys  
 1 5 10 15  
 cca gaa ata cgc aaa gtg gat aaa gga att atc cat atc cga gca agt 96  
 Pro Glu Ile Arg Lys Val Asp Lys Gly Ile Ile His Ile Arg Ala Ser  
 20 25 30  
 ttt aat aat acc att att acc gtg aca aat gtt tta gga tgt gtg att 144  
 Phe Asn Asn Thr Ile Ile Thr Val Thr Asn Val Leu Gly Cys Val Ile  
 35 40 45  
 tct tgg tcc tcc gcc ggc gct tgt ggt ttt aaa gga ccg aaa aag ggc 192  
 Ser Trp Ser Ser Ala Gly Ala Cys Gly Phe Lys Gly Pro Lys Lys Gly  
 50 55 60  
 tca gcg ttt gct gct cag aaa gct acc gaa aac gtt att cgt atg gtt 240  
 Ser Ala Phe Ala Ala Gln Lys Ala Thr Glu Asn Val Ile Arg Met Val  
 65 70 75 80  
 gtt att aac cgt gca acc gtt ttg ata act ggc tgc ggt aag gga cga 288  
 Val Ile Asn Arg Ala Thr Val Leu Ile Thr Gly Cys Gly Lys Gly Arg  
 85 90 95  
 gat gca gca tta cgt gta att cac caa aat tac ata cct ata cac gct 336  
 Asp Ala Ala Leu Arg Val Ile His Gln Asn Tyr Ile Pro Ile His Ala  
 100 105 110  
 gtg ctt gat gta acc ccc act ccc cat aat ggg tgt aga cct cct gta 384  
 Val Leu Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg Pro Pro Val  
 115 120 125

aaa aga cgt ata taa  
Lys Arg Arg Ile  
130

<210> 310  
<211> 132  
<212> PRT  
<213> Gnetum parvifolium

<400> 310  
Met Ala Leu Thr Lys Pro Lys Lys Ile Pro Arg Tyr Arg Arg Asn Lys  
1 5 10 15  
Pro Glu Ile Arg Lys Val Asp Lys Gly Ile Ile His Ile Arg Ala Ser  
20 25 30  
Phe Asn Asn Thr Ile Ile Thr Val Thr Asn Val Leu Gly Cys Val Ile  
35 40 45  
Ser Trp Ser Ser Ala Gly Ala Cys Gly Phe Lys Gly Pro Lys Lys Gly  
50 55 60  
Ser Ala Phe Ala Ala Gln Lys Ala Thr Glu Asn Val Ile Arg Met Val  
65 70 75 80  
Val Ile Asn Arg Ala Thr Val Leu Ile Thr Gly Cys Gly Lys Gly Arg  
85 90 95  
Asp Ala Ala Leu Arg Val Ile His Gln Asn Tyr Ile Pro Ile His Ala  
100 105 110  
Val Leu Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg Pro Pro Val  
115 120 125  
Lys Arg Arg Ile  
130

<210> 311  
<211> 522  
<212> DNA  
<213> Vitis vinifera

<220>  
<221> CDS  
<222> (1)..(522)

<400> 311  
atg gca aga tta tgt gac ggc tgt aaa tgt ttt ata ctt ttt ttg tgc 48  
Met Ala Arg Leu Cys Asp Gly Cys Lys Cys Phe Ile Leu Phe Leu Cys  
1 5 10 15  
ttt gat tat ttt ata act ttt aat tca agg agg aag gtt aga gag ccc 96  
Phe Asp Tyr Phe Ile Thr Phe Asn Ser Arg Arg Lys Val Arg Glu Pro  
20 25 30  
aag gag gaa aat gtg aca ctc gga ccc act gta agg gat ggg gag cat 144  
Lys Glu Asn Val Thr Leu Gly Pro Thr Val Arg Asp Gly Glu His  
35 40 45  
gct ttt ggt gtg gcc cat att ttt gca tca ttt aac gat aca ttc atc 192  
Ala Phe Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile  
50 55 60  
cat gtt act gac ttg tct ggg aga gaa acc ctt gtt cgc att act ggt 240  
His Val Thr Asp Leu Ser Gly Arg Glu Thr Leu Val Arg Ile Thr Gly  
65 70 75 80  
ggt atg aag gta aaa gct gac agg gat gaa tcg tca cca tat gca gcc 288  
Gly Met Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala  
85 90 95  
atg ctt gca gca caa gat gtt gct caa aga tgc aag gaa ctt gga atc 336  
Met Leu Ala Ala Gln Asp Val Ala Gln Arg Cys Lys Glu Leu Gly Ile  
100 105 110  
act gcc ctc cac att aag ctc cgg gct act gga ggg aac aag act aag 384  
Thr Ala Leu His Ile Lys Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys  
115 120 125  
acc cct ggt cca ggc gcc cag tct gcg ctt aga gcc ctg gct agg tca 432  
Thr Pro Gly Pro Gly Ala Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser  
130 135 140  
ggc atg aga att ggc cgc ata gag gat gtt act ccc att cct act gac 480  
Gly Met Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Ile Pro Thr Asp  
145 150 155 160

agt acg cga aga aaa ggt ggc aga agg gga aga agg ttg tga  
 Ser Thr Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 165 170

522

<210> 312  
 <211> 173  
 <212> PRT  
 <213> Vitis vinifera

<400> 312  
 Met Ala Arg Leu Cys Asp Gly Cys Lys Cys Phe Ile Leu Phe Leu Cys  
 1 5 10 15  
 Phe Asp Tyr Phe Ile Thr Phe Asn Ser Arg Arg Lys Val Arg Glu Pro  
 20 25 30  
 Lys Glu Glu Asn Val Thr Leu Gly Pro Thr Val Arg Asp Gly Glu His  
 35 40 45  
 Ala Phe Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile  
 50 55 60  
 His Val Thr Asp Leu Ser Gly Arg Glu Thr Leu Val Arg Ile Thr Gly  
 65 70 75 80  
 Gly Met Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala  
 85 90 95  
 Met Leu Ala Ala Gln Asp Val Ala Gln Arg Cys Lys Glu Leu Gly Ile  
 100 105 110  
 Thr Ala Leu His Ile Lys Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys  
 115 120 125  
 Thr Pro Gly Pro Gly Ala Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser  
 130 135 140  
 Gly Met Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Ile Pro Thr Asp  
 145 150 155 160  
 Ser Thr Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 165 170

<210> 313  
 <211> 417  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(417)

<400> 313  
 atg gca aaa cct ata cca aga att ggt tca cgt agg aat gga cgt att 48  
 Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile 15  
 1 5 10 15  
 ggt tca cat aag agt gcg cgt aga gta cca aag gga gtt att cat gtt 96  
 Gly Ser His Lys Ser Ala Arg Arg Val Pro Lys Gly Val Ile His Val 20 25 30  
 caa gca agt ttt aac aat acc att gtg act gtt aca gat gta cga ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly 35 40 45  
 cgg gtg gtt tct tgg tcc tcg gcc ggt act tgt gga ttc agg ggt aca 192  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr 50 55 60  
 aga aga ggg acg cca ttt gct gct caa acc gca gca gga aat gct att 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile 65 70 75 80  
 cgt aca gta gtg gat caa ggt atg caa cga gca gaa gtc atg ata aag 288  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys 85 90 95  
 ggt cct ggt ctc gga aga gat gca gca tta cga gct att ctt aga agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Leu Arg Ser 100 105 110  
 ggt ata cta tta agt ttc gta cgg gat gta act cct atg cca cat aac 384  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn 115 120 125  
 ggc tgt aga cct cct aaa aaa aga cgt gta tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val

130

135

<210> 314  
 <211> 138  
 <212> PRT  
 <213> Vitis vinifera

<400> 314  
 Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Gly Ser His Lys Ser Ala Arg Arg Val Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Leu Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 315  
 <211> 579  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(579)

<400> 315  
 atg ttt ctt tat gag gaa cta tgt ctt ctt gtt caa ttt tgt gtc caa 48  
 Met Phe Leu Tyr Glu Glu Leu Cys Leu Leu Val Gln Phe Cys Val Gln  
 1 5 10 15  
 aaa ttt cta aga aag cat aca tat tat tgc agg att gaa ctt att act 96  
 Lys Phe Leu Arg Lys His Thr Tyr Tyr Cys Arg Ile Glu Leu Ile Thr  
 20 25 30  
 ttg aat aga agg ttt aga ccc caa att tct ctg tgc agg agg aag gtc 144  
 Leu Asn Arg Arg Phe Arg Pro Gln Ile Ser Leu Ser Arg Arg Lys Val  
 35 40 45  
 agg gaa cca aag gaa gaa aat gta acc ctt gga cca act gta agg gat 192  
 Arg Glu Pro Lys Glu Glu Asn Val Thr Leu Gly Pro Thr Val Arg Asp  
 50 55 60  
 gga gaa cat gtt ttt ggt gtg gct cac att ttt gct tcc ttc aat gac 240  
 Gly Glu His Val Phe Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp  
 65 70 75 80  
 aca ttc att cat gtg act gat ttg tct ggc aga gag acc ttg gtt cgc 288  
 Thr Phe Ile His Val Thr Asp Leu Ser Gly Arg Glu Thr Leu Val Arg  
 85 90 95  
 atc act ggt ggc atg aag gtg aaa gct gac agg gat gag tct tca cca 336  
 Ile Thr Gly Gly Met Lys Val Lys Ala Asp Arg Asp Glu Ser Pro  
 100 105 110  
 tat gca gcc atg ctt gcg gcc caa gat gtt tca caa aga tgc aag gaa 384  
 Tyr Ala Ala Met Leu Ala Ala Gln Asp Val Ser Gln Arg Cys Lys Glu  
 115 120 125  
 ctt ggc gtt act gct ctt cat atc aag ctc cgt gcc act gga gga aat 432  
 Leu Gly Val Thr Ala Leu His Ile Lys Leu Arg Ala Thr Gly Gly Asn  
 130 135 140  
 aag acc aag aca cct ggt cct ggt gcc cag tct gct ctc cga gcc ctt 480  
 Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln Ser Ala Leu Arg Ala Leu  
 145 150 155 160  
 gct cgt tct gga atg aga att ggt cgc ata gag gat gtt acc cca atc 528  
 Ala Arg Ser Gly Met Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Ile

## PhoenixTemp32470.tmp.txt

ccc act gac agc 165 cga aga aag ggt 170 gga aga aga ggg aga 175  
 Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu 576  
 tga 579

<210> 316  
 <211> 192  
 <212> PRT  
 <213> Vitis vinifera

<400> 316  
 Met Phe Leu Tyr Glu Glu Leu Cys Leu Leu Val Gln Phe Cys Val Gln  
 1 5 10 15  
 Lys Phe Leu Arg Lys His Thr Tyr Tyr Cys Arg Ile Glu Leu Ile Thr  
 20 25 30  
 Leu Asn Arg Arg Phe Arg Pro Gln Ile Ser Leu Ser Arg Arg Lys Val  
 35 40 45  
 Arg Glu Pro Lys Glu Glu Asn Val Thr Leu Gly Pro Thr Val Arg Asp  
 50 55 60  
 Gly Glu His Val Phe Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp  
 65 70 75 80  
 Thr Phe Ile His Val Thr Asp Leu Ser Gly Arg Glu Thr Leu Val Arg  
 85 90 95  
 Ile Thr Gly Gly Met Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro  
 100 105 110  
 Tyr Ala Ala Met Leu Ala Ala Gln Asp Val Ser Gln Arg Cys Lys Glu  
 115 120 125  
 Leu Gly Val Thr Ala Leu His Ile Lys Leu Arg Ala Thr Gly Gly Asn  
 130 135 140  
 Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln Ser Ala Leu Arg Ala Leu  
 145 150 155 160  
 Ala Arg Ser Gly Met Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Ile  
 165 170 175  
 Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 180 185 190

<210> 317  
 <211> 471  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(471)

<400> 317  
 atg gac aac cct agg ttt gaa tcg agg agg aag gtt aga gaa ccc aag 48  
 Met Asp Asn Pro Arg Phe Glu Ser Arg Arg Lys Val Arg Glu Pro Lys  
 1 5 10 15  
 gaa gaa aat gtg aca ctt gga ccc act gta aga gat gga gag cat gtt 96  
 Glu Glu Asn Val Thr Leu Gly Pro Thr Val Arg Asp Gly Glu His Val  
 20 25 30  
 ttc ggt gtt gcc cat atc ttt gca tca ttt aat gat act ttc att cat 144  
 Phe Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile His  
 35 40 45  
 gtg act gac ttg tca gga aga gaa act ctt gtt cgc att act ggt ggt 192  
 Val Thr Asp Leu Ser Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly  
 50 55 60  
 atg aag gtg aaa gct gac agg gat gag tca tcc cca tat gca gcc atg 240  
 Met Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met  
 65 70 75 80  
 ctt gca gct cag gat gtt gcc caa aga tgc aag gaa ctt gga atc act 288  
 Leu Ala Ala Gln Asp Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr  
 85 90 95  
 gct ctt cac att aag ctc cgt gct aca ggt ggt aat aaa aca aaa aca 336  
 Ala Leu His Ile Lys Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr

PhoenixTemp32470.tmp.txt

cct	ggt	cca	ggt	gcc	cag	tct	gca	ctc	agg	gct	ctt	gct	cgt	tct	gga	384
Pro	Gly	Pro	Gly	Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	
		115					120					125				432
atg	aga	att	ggt	cgt	ata	gag	gat	gtg	acc	cca	atc	cca	act	gac	agc	
Met	Arg	Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	
	130					135					140					471
act	agg	aga	aag	ggt	ggt	aga	aga	ggg	aga	agg	ctg	taa				
Thr	Arg	Arg	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu					
145					150					155						

<210> 318  
<211> 156  
<212> PRT  
<213> Vitis vinifera

<400>	318															
Met	Asp	Asn	Pro	Arg	Phe	Glu	Ser	Arg	Arg	Lys	Val	Arg	Glu	Pro	Lys	
1				5					10					15		
Glu	Glu	Asn	Val	Thr	Leu	Gly	Pro	Thr	Val	Arg	Asp	Gly	Glu	His	Val	
		20						25					30			
Phe	Gly	Val	Ala	His	Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	
		35					40					45				
Val	Thr	Asp	Leu	Ser	Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	
	50					55					60					
Met	Lys	Val	Lys	Ala	Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	
65					70					75					80	
Leu	Ala	Ala	Gln	Asp	Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	
				85					90					95		
Ala	Leu	His	Ile	Lys	Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	
			100					105					110			
Pro	Gly	Pro	Gly	Ala	Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	
		115					120					125				
Met	Arg	Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	
	130					135					140					
Thr	Arg	Arg	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu					
145				150						155						

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<210> 319
<211> 417
<212> DNA
<213> vitis vinifera
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<220>  
<221> CDS  
<222> (1)..(417)

[illegible]



## PhoenixTemp32470.tmp.txt

ggt ata cta tta agt ttc gta cgg gat gta act cct atg cca cat aac 384  
 Gly Ile Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125

ggc tgt aga cct cct aaa aaa aga cgt gta tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 320

<211> 138

<212> PRT

<213> Vitis vinifera

<400> 320

Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Gly Ser His Lys Ser Ala Arg Arg Val Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 321

<211> 456

<212> DNA

<213> Diaphorina citri

<220>

<221> CDS

<222> (1)..(456)

<400> 321

atg gca cca cgt aaa gga aaa gta cag aaa gaa gaa gtg ttg gtg tct 48  
 Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Leu Val Ser  
 1 5 10 15  
 ctt gga cct caa gtt aag gaa ggt gaa gat gtg ttt gga gtt gct cac 96  
 Leu Gly Pro Gln Val Lys Glu Gly Glu Asp Val Phe Gly Val Ala His  
 20 25 30  
 att ttc gcc agt ttc aat gac acc ttt gtc cac gtt act gat ttg tcc 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 ggc cgt gaa acc att gct aga atc acc gga gga atg aaa gtg aag gct 192  
 Gly Arg Glu Thr Ile Ala Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gac aga gat gag gct tca cca tat gct gct atg ttg gct gca cag gat 240  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 gtt gct gaa aaa tgc aaa act cta gga atc act gca cta cac atc aag 288  
 Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctg aga gcc acc ggt gga aac aga acc aag acc cca gga cct gga gct 336  
 Leu Arg Ala Thr Gly Gly Asn Arg Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 caa tct gca ctc cga gct tta gcc cgt tcc aac atg aaa att ggc aga 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg  
 115 120 125  
 att gaa gat gtt aca ccc atc cca tct gat tcc acc aga agg aag gga 432  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140

ggt cgc aga ggt aga cgt ctg taa  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 322  
 <211> 151  
 <212> PRT  
 <213> Diaphorina citri

<400> 322  
 Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Leu Val Ser  
 1 5 10 15  
 Leu Gly Pro Gln Val Lys Glu Gly Glu Asp Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ala Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Arg Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 323  
 <211> 435  
 <212> DNA  
 <213> Phaeosphaeria nodorum

<220>  
 <221> CDS  
 <222> (1)..(435)

<400> 323  
 atg cct ccc aag aag aag gtc gag cgc ggt gcg cag gag aac atc cag 48  
 Met Pro Pro Lys Lys Lys Val Glu Arg Gly Ala Gln Glu Asn Ile Gln 15  
 1 5 10  
 ggc gag ctc gtc ttc ggc gtt gcc cgc att ttc gct tcc ttc aac gac 96  
 Gly Glu Leu Val Phe Gly Val Ala Arg Ile Phe Ala Ser Phe Asn Asp 20 25 30  
 acc ttc gtc cac atc acc gat ctg tcc ggc cgc gaa acc atc tcc cgt 144  
 Thr Phe Val His Ile Thr Asp Leu Ser Gly Arg Glu Thr Ile Ser Arg 35 40 45  
 gtc acc ggt ggc atg aag gtc aag gct gac cgt gac gag tcc tcc ccc 192  
 Val Thr Gly Gly Met Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro 50 55 60  
 tac gct gcc atg ttg gcg gcc cag gac gtc gct gcc cgc tgc aag gaa 240  
 Tyr Ala Ala Met Leu Ala Ala Gln Asp Val Ala Ala Arg Cys Lys Glu 65 70 75 80  
 ctc ggc atc tct gcc ctc cac gtc aag atc agg gcc act ggt gga aac 288  
 Leu Gly Ile Ser Ala Leu His Val Lys Ile Arg Ala Thr Gly Gly Asn 85 90 95  
 ggc acc aag acc ccc ggc ccc ggt gcc cag tct gct ctc cgc gcg ctt 336  
 Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln Ser Ala Leu Arg Ala Leu 100 105 110  
 gcc cgt gcc ggt atg cgc att gga cgt atc gag gat gtc acc ccc acc 384  
 Ala Arg Ala Gly Met Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Thr 115 120 125  
 ccg tcc gac tcc acc agg agg aag ggt ggt cgc cgt ggt cgt cgt ctc 432  
 Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu 130 135 140  
 tga 435

<210> 324  
 <211> 144  
 <212> PRT  
 <213> Phaeosphaeria nodorum

<400> 324  
 Met Pro Pro Lys Lys Lys Val Glu Arg Gly Ala Gln Glu Asn Ile Gln  
 1 5 10 15  
 Gly Glu Leu Val Phe Gly Val Ala Arg Ile Phe Ala Ser Phe Asn Asp  
 20 25 30  
 Thr Phe Val His Ile Thr Asp Leu Ser Gly Arg Glu Thr Ile Ser Arg  
 35 40 45  
 Val Thr Gly Gly Met Lys Val Lys Ala Asp Arg Asp Glu Ser Ser Pro  
 50 55 60  
 Tyr Ala Ala Met Leu Ala Ala Gln Asp Val Ala Ala Arg Cys Lys Glu  
 65 70 75 80  
 Leu Gly Ile Ser Ala Leu His Val Lys Ile Arg Ala Thr Gly Gly Asn  
 85 90 95  
 Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln Ser Ala Leu Arg Ala Leu  
 100 105 110  
 Ala Arg Ala Gly Met Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Thr  
 115 120 125  
 Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 130 135 140

<210> 325  
 <211> 390  
 <212> DNA  
 <213> Spiroplasma citri

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=4

<400> 325  
 atg gct gtt aga aaa aaa acg aat aag aaa aaa gtt aaa aaa aat gtc 48  
 Met Ala Val Arg Lys Lys Thr Asn Lys Lys Lys Val Lys Lys Asn Val 15  
 1 5 10  
 cta aaa gga att gca cat att cat tca act ttc aat aat aca att gtt 96  
 Leu Lys Gly Ile Ala His Ile His Ser Thr Phe Asn Asn Thr Ile Val 20 25 30  
 act ctt tct gat gaa gcg ggt aat gtc att tca tga gca tca gca ggg 144  
 Thr Leu Ser Asp Glu Ala Gly Asn Val Ile Ser Trp Ala Ser Ala Gly 35 40 45  
 gca atg ggt ttt aaa gga agc aaa aag tca act cct tat gct gct caa 192  
 Ala Met Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gln 50 55 60  
 atg gtt gct gaa gca gct ggg aaa gca agc caa gaa cac gga atg agt 240  
 Met Val Ala Glu Ala Ala Gly Lys Ala Ser Gln Glu His Gly Met Ser 65 70 75 80  
 agt gtt caa gtt gaa gta aaa ggg cca ggc cca ggg cgt gat gct gcg 288  
 Ser Val Gln Val Glu Val Lys Gly Pro Gly Pro Gly Arg Asp Ala Ala 85 90 95  
 gta cgg agc att caa aca att gga tta gaa atc act tca att aaa gat 336  
 Val Arg Ser Ile Gln Thr Ile Gly Leu Glu Ile Thr Ser Ile Lys Asp 100 105 110  
 gta act cca att cct cac aat ggg gca cgc cca cca aaa agg cca aga 384  
 Val Thr Pro Ile Pro His Asn Gly Ala Arg Pro Pro Lys Arg Pro Arg 115 120 125  
 gga tag 390  
 Gly

<210> 326  
 <211> 129

&lt;212&gt; PRT

&lt;213&gt; Spiroplasma citri

&lt;400&gt; 326

```

Met Ala Val Arg Lys Lys Thr Asn Lys Lys Lys Val Lys Lys Asn Val
1      5      10      15
Leu Lys Gly Ile Ala His Ile His Ser Thr Phe Asn Asn Thr Ile Val
20      25      30
Thr Leu Ser Asp Glu Ala Gly Asn Val Ile Ser Trp Ala Ser Ala Gly
35      40      45
Ala Met Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gln
50      55      60
Met Val Ala Glu Ala Ala Gly Lys Ala Ser Gln Glu His Gly Met Ser
65      70      75      80
Ser Val Gln Val Glu Val Lys Gly Pro Gly Pro Gly Arg Asp Ala Ala
85      90      95
Val Arg Ser Ile Gln Thr Ile Gly Leu Glu Ile Thr Ser Ile Lys Asp
100     105     110
Val Thr Pro Ile Pro His Asn Gly Ala Arg Pro Pro Lys Arg Pro Arg
115     120     125
Gly

```

&lt;210&gt; 327

&lt;211&gt; 378

&lt;212&gt; DNA

&lt;213&gt; Candidatus Kuenenia stuttgartiensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(378)

&lt;223&gt; transl\_table=11

&lt;400&gt; 327

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atg tct aaa act agc aaa aaa att agg cgc aat gtt aca aga gct atc      48
Met Ser Lys Thr Ser Lys Lys Ile Arg Arg Asn Val Thr Arg Ala Ile
1      5      10      15
gca aat att aaa gct aca ttt aat aat act tat gtg aca ata gca gat      96
Ala Asn Ile Lys Ala Thr Phe Asn Asn Thr Tyr Val Thr Ile Ala Asp
20      25      30
gtt aat ggt gag aca att tgc tgg gca agt gct ggt acc gca ggt tat      144
Val Asn Gly Glu Thr Ile Cys Trp Ala Ser Ala Gly Thr Ala Gly Tyr
35      40      45
aaa gga tcc cgg aaa agc acc cct ttt gca gct caa aaa gca gcg aca      192
Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Lys Ala Ala Thr
50      55      60
agt gct gct gaa aaa gca cag aaa tat gga ata caa gaa ata gaa ata      240
Ser Ala Ala Glu Lys Ala Gln Lys Tyr Gly Ile Gln Glu Ile Glu Ile
65      70      75      80
aga gtt aag ggg cct ggg cct ggc aga gaa tct gct atc acg gcc ctt      288
Arg Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala Ile Thr Ala Leu
85      90      95
caa gcc gca gga ttg agt gta aaa gcg ata gaa gat gtt acg cct ctt      336
Gln Ala Ala Gly Leu Ser Val Lys Ala Ile Glu Asp Val Thr Pro Leu
100     105     110
cca cat aat ggt tgc aga ccc cgt aaa aag cgc agg gtg taa      378
Pro His Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg Val
115     120     125

```

&lt;210&gt; 328

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Candidatus Kuenenia stuttgartiensis

&lt;400&gt; 328

```

Met Ser Lys Thr Ser Lys Lys Ile Arg Arg Asn Val Thr Arg Ala Ile
1      5      10      15
Ala Asn Ile Lys Ala Thr Phe Asn Asn Thr Tyr Val Thr Ile Ala Asp
20      25      30

```

## PhoenixTemp32470.tmp.txt

Val Asn Gly<sub>35</sub> Glu Thr Ile Cys Trp<sub>40</sub> Ala Ser Ala Gly<sub>45</sub> Thr Ala Gly Tyr  
 Lys Gly<sub>50</sub> Ser Arg Lys Ser Thr<sub>55</sub> Pro Phe Ala Ala Gln<sub>60</sub> Lys Ala Ala Thr  
 Ser Ala Ala Glu Lys Ala<sub>70</sub> Gln Lys Tyr Gly Ile<sub>75</sub> Gln Glu Ile Glu Ile<sub>80</sub>  
 Arg Val Lys Gly<sub>85</sub> Pro Gly Pro Gly Arg Glu<sub>90</sub> Ser Ala Ile Thr Ala<sub>95</sub> Leu  
 Gln Ala Ala Gly<sub>100</sub> Leu Ser Val Lys Ala<sub>105</sub> Ile Glu Asp Val Thr<sub>110</sub> Pro Leu  
 Pro His Asn<sub>115</sub> Gly Cys Arg Pro Arg<sub>120</sub> Lys Lys Arg Arg Val<sub>125</sub>

&lt;210&gt; 329

&lt;211&gt; 378

&lt;212&gt; DNA

&lt;213&gt; Medicago truncatula

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(378)

&lt;400&gt; 329

atg	gat	ttt	gag	atg	gat	gcg	aaa	aag	cta	agg	cgg	cct	cgt	aaa	ata	48
Met	Asp	Phe	Glu	Met	Asp	Ala	Lys	Lys	Leu	Arg	Arg	Pro	Arg	Lys	Ile	
1				5					10					15		
cca	aag	gga	gtt	att	tat	gtt	caa	gct	agt	ttc	aac	aat	acc	att	gtg	96
Pro	Lys	Gly	Val	Ile	Tyr	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	
			20				25						30			
act	gtt	aca	aat	gta	cga	ggg	cgg	gcg	att	tct	tgg	tcc	tct	gcc	ggg	144
Thr	Val	Thr	Asn	Val	Arg	Gly	Arg	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly	
			35				40					45				
tcg	tgt	gga	ttc	aag	ggg	aca	cga	agg	ggg	aca	cca	ttt	gcc	gct	caa	192
Ser	Cys	Gly	Phe	Lys	Gly	Thr	Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	
			50			55					60					
acc	gca	gca	gca	aat	gct	att	cga	aca	gca	gta	gat	caa	ggc	atg	caa	240
Thr	Ala	Ala	Ala	Asn	Ala	Ile	Arg	Thr	Ala	Val	Asp	Gln	Gly	Met	Gln	
					70					75					80	
cga	gcc	gta	gtc	ata	ata	aaa	ggg	ccc	ggg	cta	gga	aga	gat	gcg	gca	288
Arg	Ala	Val	Val	Ile	Ile	Lys	Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	
				85					90					95		
tta	aga	gct	att	gct	aga	agt	ggg	ata	cta	tta	aga	ttt	ata	cgg	gat	336
Leu	Arg	Ala	Ile	Ala	Arg	Ser	Gly	Ile	Leu	Leu	Arg	Phe	Ile	Arg	Asp	
			100				105						110			
gta	acc	cct	atc	cca	cat	aat	gga	tgt	agg	gct	aca	ttg	tga			378
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Ala	Thr	Leu				
			115				120					125				

&lt;210&gt; 330

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Medicago truncatula

&lt;400&gt; 330

Met	Asp	Phe	Glu	Met	Asp	Ala	Lys	Lys	Leu	Arg	Arg	Pro	Arg	Lys	Ile	
1				5					10					15		
Pro	Lys	Gly	Val	Ile	Tyr	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	
			20				25						30			
Thr	Val	Thr	Asn	Val	Arg	Gly	Arg	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly	
			35				40					45				
Ser	Cys	Gly	Phe	Lys	Gly	Thr	Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	
			50			55					60					
Thr	Ala	Ala	Ala	Asn	Ala	Ile	Arg	Thr	Ala	Val	Asp	Gln	Gly	Met	Gln	
					70					75					80	
Arg	Ala	Val	Val	Ile	Ile	Lys	Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	
				85					90					95		
Leu	Arg	Ala	Ile	Ala	Arg	Ser	Gly	Ile	Leu	Leu	Arg	Phe	Ile	Arg	Asp	
			100				105						110			
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Ala	Thr	Leu				

115

<210> 331  
<211> 453  
<212> DNA  
<213> Aspergillus oryzae

<220>  
<221> CDS  
<222> (1)..(453)

<400> 331  
atg gcc ccc aag cag aag acc gct gcc gct aag gag aac gtc act ctc 48  
Met Ala Pro Lys Gln Lys Thr Ala Ala Ala Lys Glu Asn Val Thr Leu  
1 5 10 15  
ggc cct ctg gcc gga gat ggc aag ctc gtt ttc ggc gtt gcc cgt atc 96  
Gly Pro Leu Ala Gly Asp Gly Lys Leu Val Phe Gly Val Ala Arg Ile  
20 25 30  
ttc gcc tcc ttc aac gat acc ttc gtc cac gtc acc gat ctg agt ggt 144  
Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly  
35 40 45  
cgc gaa acc atc tgc cgt gtc acc ggt ggt atg aag gtc aag gct gac 192  
Arg Glu Thr Ile Cys Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp  
50 55 60  
cgt gac gag tct tct cct tac gct gcc atg ttg gct gct cag gat gtt 240  
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
65 70 75 80  
gct gcc cgt tgc aag gag ctc ggt atc aac gct ctc cac atc aag atc 288  
Ala Ala Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Ile  
85 90 95  
cgt gct acc ggt ggt aac ggt acc aag acc ccc ggt ccc ggt gct cag 336  
Arg Ala Thr Gly Gly Asn Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln  
100 105 110  
tcc gcc ctc cgt gct ctt gcc cgt tcc ggc atg aga atc ggc cgt atc 384  
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile  
115 120 125  
gag gac gtc acc ccc act ccc tcc gac tct act cgt cgc aag ggt ggt 432  
Glu Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly  
130 135 140  
cgc cgt ggt cgt cgt ctc tag 453  
Arg Arg Gly Arg Arg Leu  
145 150

<210> 332  
<211> 150  
<212> PRT  
<213> Aspergillus oryzae

<400> 332  
Met Ala Pro Lys Gln Lys Thr Ala Ala Ala Lys Glu Asn Val Thr Leu  
1 5 10 15  
Gly Pro Leu Ala Gly Asp Gly Lys Leu Val Phe Gly Val Ala Arg Ile  
20 25 30  
Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly  
35 40 45  
Arg Glu Thr Ile Cys Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp  
50 55 60  
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
65 70 75 80  
Ala Ala Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Ile  
85 90 95  
Arg Ala Thr Gly Asn Gly Thr Lys Thr Pro Gly Pro Gly Ala Gln  
100 105 110  
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile  
115 120 125  
Glu Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly  
130 135 140  
Arg Arg Gly Arg Arg Leu  
145 150

<210> 333  
 <211> 453  
 <212> DNA  
 <213> Solanum tuberosum

<220>  
 <221> CDS  
 <222> (1)..(453)

<400> 333  
 atg tcg agg aga aag acc agg gag cct aag gaa gag act gtt aca ctt 48  
 Met Ser Arg Arg Lys Thr Arg Glu Pro Lys Glu Glu Thr Val Thr Leu  
 1 5 10 15  
 gga cca gca acg agg gaa ggt gaa ttg gtg ttc ggt gtt gca cac att 96  
 Gly Pro Ala Thr Arg Glu Gly Glu Leu Val Phe Gly Val Ala His Ile  
 20 25 30  
 ttt gca tcg ttc aat gat aca ttc att cac gtt act gat ttg tct gga 144  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
 35 40 45  
 aga gaa act atg gtt cgc att act ggt gga atg aag gtg aag gct gac 192  
 Arg Glu Thr Met Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 aga gat gag tct tct cca tat gct gct atg ctt gct gct cag gat gtg 240  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
 65 70 75 80  
 tca cag cga tgc aag gaa ctt gga att aat gct ctt cac att aag ctc 288  
 Ser Gln Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Leu  
 85 90 95  
 cga gct aca gga ggc aac aag acc aag act cct ggt cct ggt gcc cag 336  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 tcc gct ctt aga gct ttg gct cgt tct ggc atg aaa att gga cgt ata 384  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
 gag gat gtt act cca att cct acc gat agt act cgc aga aag ggt ggt 432  
 Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly  
 130 135 140  
 aga agg gga agg agg ctg tga 453  
 Arg Arg Gly Arg Arg Leu  
 145 150

<210> 334  
 <211> 150  
 <212> PRT  
 <213> Solanum tuberosum

<400> 334  
 Met Ser Arg Arg Lys Thr Arg Glu Pro Lys Glu Glu Thr Val Thr Leu  
 1 5 10 15  
 Gly Pro Ala Thr Arg Glu Gly Glu Leu Val Phe Gly Val Ala His Ile  
 20 25 30  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
 35 40 45  
 Arg Glu Thr Met Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
 65 70 75 80  
 Ser Gln Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
 Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly  
 130 135 140  
 Arg Arg Gly Arg Arg Leu  
 145 150

<210> 335  
 <211> 453  
 <212> DNA  
 <213> Solanum tuberosum

<220>  
 <221> CDS  
 <222> (1)..(453)

```

<400> 335
atg tcg aag agg aga act agg gag cca aag gaa gag acc gtc act ctt      48
Met Ser Lys Arg Arg Thr Arg Glu Pro Lys Glu Glu Thr Val Thr Leu
 1          5          10          15
ggt cct tct gtg aga gag gga gag ctt gtt ttc ggt gtc gct cac att      96
Gly Pro Ser Val Arg Glu Gly Glu Leu Val Phe Gly Val Ala His Ile
          20          25          30
ttt gca tca ttc aat gac act ttc att cac gtg act gat ttg tct gga      144
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly
          35          40          45
cgg gaa aca atg gtt cgt att act ggt ggg atg aag gtc aaa gct gat      192
Arg Glu Thr Met Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp
          50          55          60
agg gat gaa tct tcc cca tat gct gct atg ctt gct gca caa gat gtt      240
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val
          65          70          75          80
tct cag aga tgc aag gag ctt ggc atc aat gca ctt cac atc aag ctt      288
Ser Gln Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Leu
          85          90          95
cga gcc act ggt gga aac aag acc aaa aca cct gga cct ggt gct cag      336
Arg Ala Thr Gly Glu Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln
          100          105          110
tct gct ctc agg gct ctt gct cgt tca gga atg aaa att ggt cgt ata      384
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile
          115          120          125
gag gac gtg act cca att cct act gat agc act cgc aga aag ggt ggt      432
Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly
          130          135          140
agg aga gga aga agg ctg taa
Arg Arg Gly Arg Arg Leu
145          150

```

<210> 336  
 <211> 150  
 <212> PRT  
 <213> Solanum tuberosum

```

<400> 336
Met Ser Lys Arg Arg Thr Arg Glu Pro Lys Glu Glu Thr Val Thr Leu
 1          5          10          15
Gly Pro Ser Val Arg Glu Gly Glu Leu Val Phe Gly Val Ala His Ile
          20          25          30
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly
          35          40          45
Arg Glu Thr Met Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp
          50          55          60
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val
          65          70          75          80
Ser Gln Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Leu
          85          90          95
Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln
          100          105          110
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile
          115          120          125
Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly
          130          135          140
Arg Arg Gly Arg Arg Leu
145          150

```

<210> 337



<211> 405  
 <212> DNA  
 <213> Corynebacterium ammoniagenes

<220>  
 <221> CDS  
 <222> (1)..(405)  
 <223> transl\_table=11

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<400> 337
atg gct cag aag act cag tcc acg tcg cgc cgt tcc ggc cgt cgt gta      48
Met Ala Gln Lys Thr 5 Gln Ser Thr Ser Arg 10 Arg Ser Gly Arg Arg Val 15
1
gtc aag aag aac gtg gcc cag ggc cac gct tac att aag tca aac ttc      96
Val Lys Lys Asn Val Ala Gln Gly His 25 Ala Tyr Ile Lys Ser Asn Phe 30
20
aac aac acc atc gtg tcc atc acg gac cca tcc ggt gct gtt atc tct      144
Asn Asn Thr 35 Ile Val Ser Ile Thr 40 Asp Pro Ser Gly Ala Val Ile Ser 45
35
tgg tca tct tcc gga cag gtt ggt ttc aag gga tcc cgt aag tcc act      192
Trp Ser Ser Ser Gly Gln Val Gly Phe Lys Gly Ser Arg Lys Ser Thr 60
50
cca ttc gca gcg cag atg gca gca gag tct gca gca cgc aag gcg atg      240
Pro Phe Ala Ala Gln Met 70 Ala Ala Glu Ser Ala Ala Arg Lys Ala Met 80
65
gag cac ggc atg aag aag gtt gac gta ttc gtt aag ggc cca ggt tcg      288
Glu His Gly Met Lys 85 Lys Val Asp Val Phe 90 Val Lys Gly Pro Gly Ser 95
85
ggc cgc gaa acc gca atc cgc tca cta cag gcc gcc ggc ttg gaa gtt      336
Gly Arg Glu Thr 100 Ala Ile Arg Ser Leu 105 Gln Ala Ala Gly Leu Glu Val 110
100
tcg tcc atc tct gac gta act cct cag cca cac aat ggc tgc cga cca      384
Ser Ser Ile Ser Asp Val Thr Pro Gln Pro His Asn Gly Cys Arg Pro 125
115
ccg aag cgt cgc cac gtt taa      405
Pro Lys Arg Arg His Val 130
130

```

<210> 338  
 <211> 134  
 <212> PRT  
 <213> Corynebacterium ammoniagenes

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<400> 338
Met Ala Gln Lys Thr 5 Gln Ser Thr Ser Arg 10 Arg Ser Gly Arg Arg Val 15
1
Val Lys Lys Asn Val Ala Gln Gly His 25 Ala Tyr Ile Lys Ser Asn Phe 30
20
Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Ser Gly Ala Val Ile Ser 45
35
Trp Ser Ser Ser Gly Gln Val Gly Phe Lys Gly Ser Arg Lys Ser Thr 60
50
Pro Phe Ala Ala Gln Met Ala Ala Glu Ser Ala Ala Arg Lys Ala Met 80
65
Glu His Gly Met Lys 85 Lys Val Asp Val Phe 90 Val Lys Gly Pro Gly Ser 95
85
Gly Arg Glu Thr 100 Ala Ile Arg Ser Leu 105 Gln Ala Ala Gly Leu Glu Val 110
100
Ser Ser Ile Ser Asp Val Thr Pro Gln Pro His Asn Gly Cys Arg Pro 125
115
Pro Lys Arg Arg His Val 130
130

```

<210> 339  
 <211> 456  
 <212> DNA  
 <213> Curculio glandium

<220>

<221> CDS  
 <222> (1)..(456)

<220>  
 <221> misc\_feature  
 <222> (171)..(171)  
 <223> w is a or t

<220>  
 <221> misc\_feature  
 <222> (229)..(229)  
 <223> s is g or c

<220>  
 <221> misc\_feature  
 <222> (230)..(230)  
 <223> m is a or c

<220>  
 <221> misc\_feature  
 <222> (308)..(308)  
 <223> w is a or t

<220>  
 <221> misc\_feature  
 <222> (328)..(328)  
 <223> s is g or c

<400> 339	
atg gca cca agg aaa gga aaa gtt caa aaa gaa gaa gtt caa gtg tct	48
Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser	
1 5 10 15	
cta gga cct cag gtc cgt gag gga gaa att gtt ttt gga gta gct cac	96
Leu Gly Pro Gln Val Arg Glu Gly Glu Ile Val Phe Gly Val Ala His	
20 25 30	
atc ttt gct agt ttc aat gat aca ttt gta cat gtc aca gat tta tca	144
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
35 40 45	
ggt aga gaa act att tca aga gtt acw gga ggc atg aaa gta aaa gca	192
Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val Lys Ala	
50 55 60	
gat cgt gat gaa gct tct cct tac gct gct atg tta smt gcc caa gat	240
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Xaa Ala Gln Asp	
65 70 75 80	
gtg gct gaa aaa tgc aag tcc ctt ggt atc aca gca ctc cac att aaa	288
Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys	
85 90 95	
ctg aga gct act gga ggc awc aag act aaa act ccc ggc sct gga gct	336
Leu Arg Ala Thr Gly Gly Xaa Lys Thr Lys Thr Pro Gly Xaa Gly Ala	
100 105 110	
caa agt gct ctt aga gct ttg gct cgt tca aac atg aaa atc gga cgt	384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg	
115 120 125	
att gaa gac gtc aca cct att cct tct gac tcc acc cgc agg aag gga	432
Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly	
130 135 140	
ggt cgc cgt ggt cgt aga ttg taa	456
Gly Arg Arg Gly Arg Arg Leu	
145 150	

<210> 340  
 <211> 151  
 <212> PRT  
 <213> Curculio glandium

<220>  
 <221> misc\_feature  
 <222> (77)..(77)  
 <223> The Xaa at location 77 stands for Ala, Asp, His, or Pro.

<220>  
 <221> misc\_feature  
 <222> (103)..(103)  
 <223> The Xaa at location 103 stands for Asn, or Ile.

<220>  
 <221> misc\_feature  
 <222> (110)..(110)  
 <223> The Xaa at location 110 stands for Ala, or Pro.

<400> 340  
 Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser  
 1 5 10 15  
 Leu Gly Pro Gln Val Arg Glu Gly Glu Ile Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Xaa Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Xaa Lys Thr Lys Thr Pro Gly Xaa Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 341  
 <211> 456  
 <212> DNA  
 <213> Ixodes scapularis

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 341  
 atg gca cca cgt aaa gga aag cag aag gaa gaa cag ccc gtc gtg gcc 48  
 Met Ala Pro Arg Lys Gly Lys Gln Lys Glu Glu Gln Pro Val Val Ala  
 1 5 10 15  
 tta ggc ccg caa gct ctc gga ggc gaa aac gtg ttt ggc gta gcc cac 96  
 Leu Gly Pro Gln Ala Leu Gly Gly Glu Asn Val Phe Gly Val Ala His  
 20 25 30  
 ata tac gcc agt ttc aac gac acc ttc gtt cac gtc acc gat ctc tcc 144  
 Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 ggc agg gaa acc att gct cgg gtg acg ggt ggc atg aag gtg aag gcc 192  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gac cgt gat gag gca tct ccc tac gcg gcc atg ttg gct gct cag gac 240  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 gtg gcc gag aaa tgc aag cag gtc ggc atc act gca ctt cac atc aag 288  
 Val Ala Glu Lys Cys Lys Gln Val Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctg cgt gcc aca ggg gga aca cgg aca aag acg cct gga ccg gga gct 336  
 Leu Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tct gct ctc cgg gcc ttg gcc cgt tca gac atg aag att ggc cgc 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asp Met Lys Ile Gly Arg  
 115 120 125  
 att gag gat gtg acg cca atc tca gac agc act cgg agg aaa ggc 432  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly

130 135 140 456  
 ggt cgt cgg ggc agg cgt taa  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 342  
 <211> 151  
 <212> PRT  
 <213> Ixodes scapularis

<400> 342  
 Met Ala Pro Arg Lys Gly Lys Gln Lys Glu Glu Gln Pro Val Val Ala  
 1 5 10 15  
 Leu Gly Pro Gln Ala Leu Gly Gly Glu Asn Val Phe Gly Val Ala His  
 20 25 30  
 Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Gln Val Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asp Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 343  
 <211> 456  
 <212> DNA  
 <213> Lysiphlebus testaceipes

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 343 48  
 atg gca cca aga aaa aac aaa gct cca aaa gaa gac gtc caa ctt caa  
 Met Ala Pro Arg Lys Asn Lys Ala Pro Lys Glu Asp Val Gln Leu Gln  
 1 5 10 15  
 ctt gga cca caa gta cgt gaa ggt gaa gat gta ttt ggt gtt gca cat  
 Leu Gly Pro Gln Val Arg Glu Gly Glu Asp Val Phe Gly Val Ala His  
 20 25 30 96  
 att ttt gca agt ttc aat gat aca ttt gtt cat gtt act gat tta aca  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Thr  
 35 40 45 144  
 ggc cgt gaa aca att gtt cgt gta act ggt ggc atg aaa gtt aag gca  
 Gly Arg Glu Thr Ile Val Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60 192  
 gat cgt gat gaa gca tct cct tat gcc gct atg ttg gca gct cag gat  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80 240  
 gtt gct gaa aaa tgt aaa tca ctt ggc att act gct ctt cat att aaa  
 Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95 288  
 ttg aga gca act ggt ggt aac aga aca aaa aca cca gga cca ggt gca  
 Leu Arg Ala Thr Gly Gly Asn Arg Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110 336  
 caa tca gca ctt cgt gct ctt gct cgt tca tca atg aaa att gga cgt  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg  
 115 120 125 384  
 att gaa gat gtt aca cca att cca tca gat tca aca cgc aga aag ggt  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140 432

ggt cgt cgt ggt cgc aga ctt taa  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 344  
 <211> 151  
 <212> PRT  
 <213> Lysiphlebus testaceipes

<400> 344  
 Met Ala Pro Arg Lys Asn Lys Ala Pro Lys Glu Asp Val Gln Leu Gln  
 1 5 10 15  
 Leu Gly Pro Gln Val Arg Glu Gly Glu Asp Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Thr  
 35 40 45  
 Gly Arg Glu Thr Ile Val Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Arg Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 345  
 <211> 456  
 <212> DNA  
 <213> Bombyx mori

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 345  
 atg gcc ccg aga aaa aac aaa gtt gct aaa gag gag gtc cag gtg acc 48  
 Met Ala Pro Arg Lys Asn Lys Val Ala Lys Glu Glu Val Gln Val Thr 15  
 1 5 10 15  
 ctc ggg ccc cag cat tta gtg ggc gaa aca gtg ttt ggt gta gca cac 96  
 Leu Gly Pro Gln His Leu Val Gly Glu Thr Val Phe Gly Val Ala His 20 25 30  
 att ttc gct tca ttc aat gac aca ttc gtt cat gtt act gat tta tcc 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser 35 40 45  
 ggc cgg gaa act atc gcc cgt gtc act ggt ggc atg aag gtg aag gct 192  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala 50 55 60  
 gac cgt gat gaa gcg tca ccc tac gct gct atg ttg gcg gca cag gat 240  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp 65 70 75 80  
 gta gca gag aaa tgc aaa act ctt ggc ata acg gcc ttg cac ata aag 288  
 Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys 85 90 95  
 ctc cgt gct act ggt gga aac aaa aca aag acc cct ggt cct ggt gct 336  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala 100 105 110  
 cag tct gca ctt cgg gct ctt gct tca agt atg aag att ggc cgc 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg 115 120 125  
 att gaa gat gtc acc ccc gta cca tca gac tcg acc cgt agg aag ggt 432  
 Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly 130 135 140  
 ggc cga aga gga cgc agg ctg taa 456

Gly Arg Arg Gly Arg Arg Leu  
145 150

<210> 346  
<211> 151  
<212> PRT  
<213> Bombyx mori

<400> 346  
Met Ala Pro Arg Lys Asn Lys Val Ala Lys Glu Glu Val Gln Val Thr  
1 5 10 15  
Leu Gly Pro Gln His Leu Val Gly Glu Thr Val Phe Gly Val Ala His  
20 25 30  
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
35 40 45  
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
50 55 60  
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
65 70 75 80  
Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys  
85 90 95  
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
100 105 110  
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg  
115 120 125  
Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly  
130 135 140  
Gly Arg Arg Gly Arg Arg Leu  
145 150

<210> 347  
<211> 456  
<212> DNA  
<213> Dascillus cervinus

<220>  
<221> CDS  
<222> (1)..(456)

<400> 347  
atg gcg cca cga aaa gga aaa gtt cag aaa gag gaa gta caa gtg tcg 48  
Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser  
1 5 10 15  
tta gga cca caa gtt cgc gaa gga gaa att gtc ttt ggt gta gct cac 96  
Leu Gly Pro Gln Val Arg Glu Gly Glu Ile Val Phe Gly Val Ala His  
20 25 30  
att ttt gcc agt ttc aat gac act ttt gtc cat gta acg gat ttg tca 144  
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
35 40 45  
ggc cga gaa act atc tca aga gtt aca ggt ggc atg aaa gtg aaa gca 192  
Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val Lys Ala  
50 55 60  
gac aga gat gaa gct tct ccg tat gct gca atg tta gca gct caa gat 240  
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
65 70 75 80  
gtg gca gaa aag tgc aag gca ttg gga ata acg gct ctt cac ata aaa 288  
Val Ala Glu Lys Cys Lys Ala Leu Gly Ile Thr Ala Leu His Ile Lys  
85 90 95  
ctg agg gct aca ggt gga aac aag aca aaa acc cct ggt cca ggt gct 336  
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
100 105 110  
cag agt gct tta cgt gca tta gct cgt tca aat atg aag att ggc cgt 384  
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg  
115 120 125  
att gaa gat gtt act cca att ccg tca gat tcc aca cgc aga aag gga 432  
Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
130 135 140  
ggt cgt cgt ggc cgt agg ctg taa 456  
Gly Arg Arg Gly Arg Arg Leu

145

150

<210> 348  
 <211> 151  
 <212> PRT  
 <213> Dascillus cervinus

<400> 348  
 Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Ser  
 1 5 10 15  
 Leu Gly Pro Gln Val Arg Glu Gly Glu Ile Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Ala Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Asn Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 349  
 <211> 456  
 <212> DNA  
 <213> Branchiostoma belcheri tsingtauense

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 349  
 atg gct ccc cgc aag ggt aag aag gag aag gaa gaa cag gtc atc tct 48  
 Met Ala Pro Arg Lys Gly Lys Lys Glu Lys Glu Glu Gln Val Ile Ser 15  
 1 5 10 15  
 ctg ggg ccg cag gtc gcg gag ggc gag aac gtt ttc ggc gtc gcc cac 96  
 Leu Gly Pro Gln Val Ala Glu Gly Glu Asn Val Phe Gly Val Ala His 20 25 30  
 atc ttc gct tca ttc aac gac aca ttt tgc cac gtc aca gat ctc tcg 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Cys His Val Thr Asp Leu Ser 35 40 45  
 ggc aga gag acg att gtc ctt gtg act ggc ggc atg aag gtc gag gcc 192  
 Gly Arg Glu Thr Ile Val Leu Val Thr Gly Gly Met Lys Val Glu Ala 50 55 60  
 gat cgt gac gag gct tcc ccc tac gcc gcc atg ttg gca gcc cag gac 240  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp 65 70 75 80  
 gtg gcc acc cgc tgt aaa gaa atc ggc atc acc gcc ctg cac atc aag 288  
 Val Ala Thr Arg Cys Lys Glu Ile Gly Ile Thr Ala Leu His Ile Lys 85 90 95  
 ctc agg gct acg gga gga aac aag acc aag act cca ggc cca ggc gcc 336  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala 100 105 110  
 cag tct gcc ctg aga gcg ctg gca aga tgc ggc atg aag atc ggc cgt 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg 115 120 125  
 att gag gac gtg acg cct atc cca tca gac agc acg cgt agg agc ggt 432  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Ser Gly 130 135 140  
 gga cgt cgc ggt cgc cgt ctc tag 456  
 Gly Arg Arg Gly Arg Arg Leu 145 150

<210> 350  
 <211> 151  
 <212> PRT  
 <213> Branchiostoma belcheri tsingtauense

<400> 350  
 Met Ala Pro Arg Lys Gly Lys Lys Glu Lys Glu Glu Gln Val Ile Ser  
 1 5 10 15  
 Leu Gly Pro Gln Val Ala Glu Gly Glu Asn Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Cys His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Val Leu Val Thr Gly Gly Met Lys Val Glu Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Thr Arg Cys Lys Glu Ile Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Ser Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 351  
 <211> 378  
 <212> DNA  
 <213> uncultured marine gamma proteobacterium EBAC20E09

<220>  
 <221> CDS  
 <222> (1)..(378)  
 <223> transl\_table=11

<400> 351  
 atg gca gca aaa gga aag aaa aat aaa aaa gta gtg aat gat ggg gta 48  
 Met Ala Ala Lys Gly Lys Lys Asn Lys Lys Val Val Asn Asp Gly Val 15  
 1 5 10 15  
 gct cat att cat tcg tct ttt aac aac act att gtg act att aca gat 96  
 Ala His Ile His Ser Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp 20 25 30  
 aaa caa gga aat aca ata tgt tgg gca aca tca ggt gga tcc gga ttc 144  
 Lys Gln Gly Asn Thr Ile Cys Trp Ala Thr Ser Gly Gly Ser Gly Phe 35 40 45  
 aaa ggc tca aga aaa agt aca cct ttt gca gct caa att gct gct gat 192  
 Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Ile Ala Ala Asp 50 55 60  
 aag gca gga aat gca gct aaa gaa ttt ggc atg gta aat tta gat gta 240  
 Lys Ala Gly Asn Ala Ala Lys Glu Phe Gly Met Val Asn Leu Asp Val 65 70 75 80  
 aaa gta aaa ggc ccg ggg ggt ggt aga gag tct gct att aga gca tta 288  
 Lys Val Lys Gly Pro Gly Gly Gly Arg Glu Ser Ala Ile Arg Ala Leu 85 90 95  
 aat gca tgc ggc ttg aag atc aaa agc ata acc gat gta aca cct tta 336  
 Asn Ala Cys Gly Leu Lys Ile Lys Ser Ile Thr Asp Val Thr Pro Leu 100 105 110  
 ccc cac aat gga tgt cga cca tct aaa aaa aga cga gtt taa 378  
 Pro His Asn Gly Cys Arg Pro Ser Lys Lys Arg Arg Val 115 120 125

<210> 352  
 <211> 125  
 <212> PRT  
 <213> uncultured marine gamma proteobacterium EBAC20E09



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 352

```

Met Ala Ala Lys Gly Lys Lys Asn Lys Lys Val Val Asn Asp Gly Val
1      5      10      15
Ala His Ile His Ser Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp
20      25      30
Lys Gln Gly Asn Thr Ile Cys Trp Ala Thr Ser Gly Gly Ser Gly Phe
35      40      45
Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Ile Ala Ala Asp
50      55      60
Lys Ala Gly Asn Ala Ala Lys Glu Phe Gly Met Val Asn Leu Asp Val
65      70      75      80
Lys Val Lys Gly Pro Gly Gly Gly Arg Glu Ser Ala Ile Arg Ala Leu
85      90      95
Asn Ala Cys Gly Leu Lys Ile Lys Ser Ile Thr Asp Val Thr Pro Leu
100     105     110
Pro His Asn Gly Cys Arg Pro Ser Lys Lys Arg Arg Val
115     120     125

```

&lt;210&gt; 353

&lt;211&gt; 378

&lt;212&gt; DNA

&lt;213&gt; uncultured bacterium 562

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(378)

&lt;223&gt; transl\_table=11

&lt;400&gt; 353

```

atg gca gta aaa gga aag aag ggt aaa aaa att gtt act gat ggt gtt      48
Met Ala Val Lys Gly Lys Lys Gly Lys Lys Ile Val Thr Asp Gly Val
1      5      10      15
gca cac att cac tca tca ttt aac aac aca att gta acc ata act gac      96
Ala His Ile His Ser Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp
20      25      30
aag caa ggt aat acc gta tgt tgg gct acc tcg ggt gga tct ggt ttt      144
Lys Gln Gly Asn Thr Val Cys Trp Ala Thr Ser Gly Gly Ser Gly Phe
35      40      45
aag gga tca aga aaa agt aca cca ttt gct gct cag ata gct gca gat      192
Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Ile Ala Ala Asp
50      55      60
aaa gct ggt aat gct gca aaa gaa ttt gga atg ata aat tta gac gtt      240
Lys Ala Gly Asn Ala Ala Lys Glu Phe Gly Met Ile Asn Leu Asp Val
65      70      75      80
aag gtt aaa ggg cct ggt ggt gga aga gag tct gca atc aga tct tta      288
Lys Val Lys Gly Pro Gly Gly Gly Arg Glu Ser Ala Ile Arg Ser Leu
85      90      95
aat gcg tgt gga tta aaa att aaa agt atc aca gat gtt acg cca cta      336
Asn Ala Cys Gly Leu Lys Ile Lys Ser Ile Thr Asp Val Thr Pro Leu
100     105     110
cct cac aat ggt tgt cgt cca tct aag aaa aga aga gtt taa      378
Pro His Asn Gly Cys Arg Pro Ser Lys Lys Arg Arg Val
115     120     125

```

&lt;210&gt; 354

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; uncultured bacterium 562

&lt;400&gt; 354

```

Met Ala Val Lys Gly Lys Lys Gly Lys Lys Ile Val Thr Asp Gly Val
1      5      10      15
Ala His Ile His Ser Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp
20      25      30
Lys Gln Gly Asn Thr Val Cys Trp Ala Thr Ser Gly Gly Ser Gly Phe
35      40      45
Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Ile Ala Ala Asp
50      55      60
Lys Ala Gly Asn Ala Ala Lys Glu Phe Gly Met Ile Asn Leu Asp Val

```

## PhoenixTemp32470.tmp.txt

65	Lys	Val	Lys	Gly	Pro	Gly	Gly	Gly	Arg	Glu	Ser	Ala	Ile	Arg	Ser	Leu
					85					90					95	
	Asn	Ala	Cys	Gly	Leu	Lys	Ile	Lys	Ser	Ile	Thr	Asp	Val	Thr	Pro	Leu
				100					105					110		
	Pro	His	Asn	Gly	Cys	Arg	Pro	Ser	Lys	Lys	Arg	Arg	Val			
			115					120					125			

```
<210> 355
<211> 390
<212> DNA
<213> Spiroplasma kunkelii
```

```
<220>
<221> CDS
<222> (1)..(390)
<223> transl_table=4
```

[illegible]

<210> 356  
<211> 129  
<212> PRT  
<213> Spiroplasma kunkelii

<400>	356															
Met	Val	Val	Arg	Lys <sub>5</sub>	Lys	Thr	Asn	Lys	Lys <sub>10</sub>	Lys	Ile	Lys	Lys	Asn <sub>15</sub>	Ile	
Leu	Lys	Gly	Ile <sub>20</sub>	Ala	His	Val	His	Ser <sub>25</sub>	Thr	Phe	Asn	Asn	Thr <sub>30</sub>	Ile	Val	
Thr	Leu	Ser <sub>35</sub>	Asp	Glu	Ala	Gly	Asn <sub>40</sub>	Val	Ile	Ser	Trp	Ala <sub>45</sub>	Ser	Ala	Gly	
Ala	Met <sub>50</sub>	Gly	Phe	Lys	Gly	Ser <sub>55</sub>	Lys	Lys	Ser	Thr	Pro <sub>60</sub>	Tyr	Ala	Ala	Gln	
Met	Val	Ala	Glu	Ala	Ala <sub>70</sub>	Gly	Lys	Ala	Ser	Gln <sub>75</sub>	Glu	His	Gly	Met	Ser <sub>80</sub>	
Ser	Val	Gln	Val	Glu <sub>85</sub>	Val	Lys	Gly	Pro	Gly <sub>90</sub>	Pro	Gly	Arg	Asp	Ala <sub>95</sub>	Ala	
Val	Arg	Ser	Ile <sub>100</sub>	Gln	Ala	Ile	Gly	Leu <sub>105</sub>	Glu	Ile	Thr	Ser	Ile <sub>110</sub>	Lys	Asp	
Val	Thr	Pro <sub>115</sub>	Ile	Pro	His	Asn	Gly <sub>120</sub>	Ala	Arg	Pro	Pro	Lys <sub>125</sub>	Arg	Pro	Arg	

Gly

<210> 357  
 <211> 393  
 <212> DNA  
 <213> Candidatus Portiera aleyrodidarum

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 357  
 atg gta aca ata aaa tct aga aaa aaa aaa gta cta aaa aaa aaa gaa 48  
 Met Val Thr Ile Lys Ser Arg Lys Lys Lys Val Leu Lys Lys Lys Glu  
 1 5 10 15  
 att ata aat gca gta gca cat att aat gct tct ttt aac aat act att 96  
 Ile Ile Asn Ala Val Ala His Ile Asn Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 gtt aca ata aca gat aaa aat ggt aat act tta gct tgg gca act tca 144  
 Val Thr Ile Thr Asp Lys Asn Gly Asn Thr Leu Ala Trp Ala Thr Ser  
 35 40 45  
 ggg ggg gct ggt ttt aaa gga tcg aga aaa agt act ccg ttt gct gcg 192  
 Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 caa acg gca agt gac cgt gta gca aaa tca gca gca gaa tgt gga gta 240  
 Gln Thr Ala Ser Asp Arg Val Ala Lys Ser Ala Ala Glu Cys Gly Val  
 65 70 75 80  
 aaa tat ata gat gtt ata gta aag gga cca ggt cca ggc cga gag tca 288  
 Lys Tyr Ile Asp Val Ile Val Lys Gly Pro Gly Pro Gly Arg Glu Ser  
 85 90 95  
 gca gtt aga gca ttg aat tct cat ggt att aat gta aaa agt ata aca 336  
 Ala Val Arg Ala Leu Asn Ser His Gly Ile Asn Val Lys Ser Ile Thr  
 100 105 110  
 gac gca act cca ata cca cat aat gga tgt cgt cca cct aaa aga aga 384  
 Asp Ala Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 aga gta taa 393  
 Arg Val  
 130

<210> 358  
 <211> 130  
 <212> PRT  
 <213> Candidatus Portiera aleyrodidarum

<400> 358  
 Met Val Thr Ile Lys Ser Arg Lys Lys Lys Val Leu Lys Lys Lys Glu  
 1 5 10 15  
 Ile Ile Asn Ala Val Ala His Ile Asn Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Ile Thr Asp Lys Asn Gly Asn Thr Leu Ala Trp Ala Thr Ser  
 35 40 45  
 Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ser Asp Arg Val Ala Lys Ser Ala Ala Glu Cys Gly Val  
 65 70 75 80  
 Lys Tyr Ile Asp Val Ile Val Lys Gly Pro Gly Pro Gly Arg Glu Ser  
 85 90 95  
 Ala Val Arg Ala Leu Asn Ser His Gly Ile Asn Val Lys Ser Ile Thr  
 100 105 110  
 Asp Ala Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

<210> 359  
 <211> 453

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 359

atg	tcg	agg	aga	aag	aca	aga	gag	cca	aag	gag	gag	aca	gtg	aca	ctt	48
Met	Ser	Arg	Arg	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Thr	Val	Thr	Leu	
1				5					10				15			
ggg	cca	gct	ggt	cgt	gac	gga	gag	caa	gtc	ttt	ggt	ggt	gtc	cac	atc	96
Gly	Pro	Ala	Val	Arg	Asp	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile	
			20					25					30			
ttt	gct	tct	ttc	aac	gat	act	ttc	att	cat	gtg	act	gat	ttg	tct	gga	144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
			35				40					45				
cgg	gaa	aca	ctt	ggt	cgt	atc	act	ggt	ggg	atg	aag	gtg	aaa	gcc	gac	192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
aga	gat	gag	tcc	tca	cct	tat	gct	gct	atg	ctt	gct	gct	caa	gat	gtc	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
	65				70				75						80	
gct	cag	cgt	tgc	aag	gaa	ctt	ggt	atc	aca	gcc	atg	cat	gtg	aag	ctc	288
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu	
				85				90						95		
cgt	gcc	act	ggt	ggt	aac	aag	acc	aag	acc	cct	ggc	cct	ggt	gct	cag	336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	
			100					105					110			
tct	gca	ctc	aga	gcc	ctt	gcc	cgt	tct	ggc	atg	aaa	att	ggt	cgc	att	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				
gag	gat	gtg	acc	cca	gtc	cca	aca	gac	agt	acc	cgc	aga	aag	ggt	gga	432
Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
	130					135					140					
aga	agg	gga	agg	agg	ctt	tga										453
Arg	Arg	Gly	Arg	Arg	Leu											
145					150											

&lt;210&gt; 360

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 360

Met	Ser	Arg	Arg	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Thr	Val	Thr	Leu	
1				5					10					15		
Gly	Pro	Ala	Val	Arg	Asp	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile	
			20					25					30			
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
			35				40					45				
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
	65				70				75					80		
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu	
				85				90						95		
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	
			100					105					110			
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				
Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
	130					135					140					
Arg	Arg	Gly	Arg	Arg	Leu											
145					150											

&lt;210&gt; 361

&lt;211&gt; 537

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(537)

&lt;400&gt; 361

atg	tca	ctg	aaa	agt	gta	ttt	cta	agt	gct	ctt	cgg	agt	att	act	atg	48
Met	Ser	Leu	Lys	Ser	Val	Phe	Leu	Ser	Ala	Leu	Arg	Ser	Ile	Thr	Met	
1				5					10					15		
ccc	gct	gtg	ccg	ctc	cag	act	tct	agg	ata	cac	acg	agc	gct	tgc	tgg	96
Pro	Ala	Val	Pro	Leu	Gln	Thr	Ser	Arg	Ile	His	Thr	Ser	Ala	Cys	Trp	
			20					25					30			
cgg	aag	gcg	gag	gac	cgc	aag	gaa	atg	ctg	gca	ttt	tta	ccg	gcc	aaa	144
Arg	Lys	Ala	Glu	Asp	Arg	Lys	Glu	Met	Leu	Ala	Phe	Leu	Pro	Ala	Lys	
		35					40					45				
gac	gaa	gga	acc	gtg	ggc	gaa	aag	acc	gtg	gac	atc	gac	aca	ctt	atc	192
Asp	Glu	Gly	Thr	Val	Gly	Glu	Lys	Thr	Val	Asp	Ile	Asp	Thr	Leu	Ile	
	50					55					60					
aac	gag	ctg	ccc	atc	tgc	aac	att	cgc	gtt	tca	ccc	aac	aac	aca	att	240
Asn	Glu	Leu	Pro	Ile	Cys	Asn	Ile	Arg	Val	Ser	Pro	Asn	Asn	Thr	Ile	
	65				70				75					80		
att	tcc	gtc	acg	gat	cac	aaa	gga	gtc	ctc	cgg	ctg	ata	cga	tcc	tgt	288
Ile	Ser	Val	Thr	Asp	His	Lys	Gly	Val	Leu	Arg	Leu	Ile	Arg	Ser	Cys	
				85					90					95		
gga	att	gag	gga	ttc	aaa	aac	act	cgc	aag	gga	acc	aac	ata	gca	gct	336
Gly	Ile	Glu	Gly	Phe	Lys	Asn	Thr	Arg	Lys	Gly	Thr	Asn	Ile	Ala	Ala	
			100					105					110			
caa	gct	aca	gcg	gtt	acc	att	agt	gga	aaa	gcc	att	gaa	ttg	ggc	tgg	384
Gln	Ala	Thr	Ala	Val	Thr	Ile	Ser	Gly	Lys	Ala	Ile	Glu	Leu	Gly	Trp	
		115					120					125				
aag	aca	gtg	cga	gta	aag	gtt	cgt	ggt	ctt	ggc	cct	gga	aga	atg	tcg	432
Lys	Thr	Val	Arg	Val	Lys	Val	Arg	Gly	Leu	Gly	Pro	Gly	Arg	Met	Ser	
	130				135						140					
gcc	atc	aaa	gga	ctg	caa	atg	ggg	ctg	aac	atc	gtt	tcc	att	acc		480
Ala	Ile	Lys	Gly	Leu	Gln	Met	Gly	Gly	Leu	Asn	Ile	Val	Ser	Ile	Thr	
	145				150					155				160		
gac	aac	aca	cat	gtt	tcc	ttc	aat	cct	cca	aga	ccc	cga	aag	cag	aga	528
Asp	Asn	Thr	His	Val	Ser	Phe	Asn	Pro	Pro	Arg	Pro	Arg	Lys	Gln	Arg	
				165					170					175		
agt	ctt	taa														537
Ser	Leu															

&lt;210&gt; 362

&lt;211&gt; 178

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 362

Met	Ser	Leu	Lys	Ser	Val	Phe	Leu	Ser	Ala	Leu	Arg	Ser	Ile	Thr	Met	
1				5					10					15		
Pro	Ala	Val	Pro	Leu	Gln	Thr	Ser	Arg	Ile	His	Thr	Ser	Ala	Cys	Trp	
			20					25					30			
Arg	Lys	Ala	Glu	Asp	Arg	Lys	Glu	Met	Leu	Ala	Phe	Leu	Pro	Ala	Lys	
		35					40					45				
Asp	Glu	Gly	Thr	Val	Gly	Glu	Lys	Thr	Val	Asp	Ile	Asp	Thr	Leu	Ile	
	50					55					60					
Asn	Glu	Leu	Pro	Ile	Cys	Asn	Ile	Arg	Val	Ser	Pro	Asn	Asn	Thr	Ile	
	65				70					75				80		
Ile	Ser	Val	Thr	Asp	His	Lys	Gly	Val	Leu	Arg	Leu	Ile	Arg	Ser	Cys	
				85					90					95		
Gly	Ile	Glu	Gly	Phe	Lys	Asn	Thr	Arg	Lys	Gly	Thr	Asn	Ile	Ala	Ala	
			100					105					110			
Gln	Ala	Thr	Ala	Val	Thr	Ile	Ser	Gly	Lys	Ala	Ile	Glu	Leu	Gly	Trp	
		115					120					125				
Lys	Thr	Val	Arg	Val	Lys	Val	Arg	Gly	Leu	Gly	Pro	Gly	Arg	Met	Ser	
	130				135						140					
Ala	Ile	Lys	Gly	Leu	Gln	Met	Gly	Gly	Leu	Asn	Ile	Val	Ser	Ile	Thr	

145 Asp Asn Thr His Val Ser Phe Asn Pro Pro Arg Pro Arg Lys Gln Arg  
                                 165                                170                                175                                180  
 Ser Leu

$\langle 220 \rangle$   
 $\langle 221 \rangle$  CDS  
 $\langle 222 \rangle$  (1) .. (456)

<210> 364  
<211> 151  
<212> PRT  
<213> *Penaeus japonicus*

<400>	364														
Met	Ala	Pro	Arg	Lys	Gly	Lys	Val	Gln	Lys	Glu	Glu	Val	His	Val	Ser
1				5					10					15	
Leu	Gly	Pro	Gln	Val	Arg	Glu	Gly	Glu	Asn	Val	Phe	Ala	Val	Cys	His
			20					25					30		
Ile	Tyr	Ala	Ser	Tyr	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser
		35					40					45			
Gly	Arg	Glu	Thr	Ile	Val	Arg	Ile	Thr	Gly	Gly	Gln	Lys	Val	Lys	Ala
	50					55					60				
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp
65					70					75				80	
Val	Ser	Glu	Lys	Cys	Lys	Ser	Leu	Gly	Ile	Asn	Ala	Leu	His	Val	Lys
				85					90					95	
Ile	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Gly
			100					105					110		
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg
		115					120					125			

Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 365

<211> 456

<212> DNA

<213> Spodoptera frugiperda

<220>

<221> CDS

<222> (1)..(456)

<400> 365

atg gca cca agg aaa aac aaa gtt cag aaa gag gag gtc cag gtt act	48
Met Ala Pro Arg Lys Asn Lys Val Gln Lys Glu Glu Val Gln Val Thr	
1 5 10 15	
ctg ggc cct cag cac ttg gtg ggt gag aca gtg ttc ggt gta gct cac	96
Leu Gly Pro Gln His Leu Val Gly Glu Thr Val Phe Gly Val Ala His	
20 25 30	
att ttc gcc tcc ttc aat gac aca ttc gtg cac gtt acc gac ctg tct	144
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
35 40 45	
ggc cgg gaa acc att gcc cgt gtc acc ggt ggc atg aag gtg aag gct	192
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala	
50 55 60	
gac cgt gac gag gcc tca ccc tac gcc gct atg ttg gcc gct cag gat	240
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp	
65 70 75 80	
gtt gct gag aag tgc aag act ctt ggc atc act gcc cta cac atc aaa	288
Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys	
85 90 95	
ctg cgt gcc aca gga ggc aac aag acc aag aca ccc gga cct ggt gct	336
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala	
100 105 110	
cag tct gct ctc cgt gcc ctg gct cgt tcc agc atg aag att ggc cgc	384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg	
115 120 125	
att gag gat gtg acc ccc gtg cct tca gac tct acc cgc agg aag ggt	432
Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly	
130 135 140	
gga cga cga gga cgc agg ctg taa	456
Gly Arg Arg Gly Arg Arg Leu	
145 150	

<210> 366

<211> 151

<212> PRT

<213> Spodoptera frugiperda

<400> 366

Met Ala Pro Arg Lys Asn Lys Val Gln Lys Glu Glu Val Gln Val Thr
1 5 10 15
Leu Gly Pro Gln His Leu Val Gly Glu Thr Val Phe Gly Val Ala His
20 25 30
Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser
35 40 45
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala
50 55 60
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp
65 70 75 80
Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys
85 90 95
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala
100 105 110
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg
115 120 125
Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly

130 135  
Gly Arg Arg Gly Arg Arg Leu  
145 150

<210> 367  
<211> 708  
<212> DNA  
<213> Arabidopsis thaliana

<220>  
<221> CDS  
<222> (1)..(708)

<400> 367  
atg aaa gca ggc ttg tta aac aga gga gtc aat ggt ttc tcg gct cct 48  
Met Lys Ala Gly Leu Leu Asn Arg Gly Val Asn Gly Phe Ser Ala Pro  
1 5 10 15  
aat gct cct cct acc ttc aaa agt tca ctg aga tca aga tta cca aac 96  
Asn Ala Pro Pro Thr Phe Lys Ser Ser Leu Arg Ser Arg Leu Pro Asn  
20 25 30  
tct cta cct gat cag ttc ggt cag acg aat cca ggc tta cca aac acg 144  
Ser Leu Pro Asp Gln Phe Gly Gln Thr Asn Pro Gly Leu Pro Asn Thr  
35 40 45  
gga gga agc gga ttc tct gct cca agt tta tca agc tac gag aat ttc 192  
Gly Gly Ser Gly Phe Ser Ala Pro Ser Leu Ser Ser Tyr Glu Asn Phe  
50 55 60  
act caa tct tct tcg ctt ctt aag gag aat tcc cgc agt gga ggg aag 240  
Thr Gln Ser Ser Ser Leu Leu Lys Glu Asn Ser Arg Ser Gly Gly Lys  
65 70 75 80  
tca agc gac ctg gat ttt gtt aga gaa gta ata gaa gat gaa gga agg 288  
Ser Ser Asp Leu Asp Phe Val Arg Glu Val Ile Glu Asp Glu Gly Arg  
85 90 95  
aga acc gca ggg ata ttc tct cat ttc caa cgc cca aac ctc gaa acg 336  
Arg Thr Ala Gly Ile Phe Ser His Phe Gln Arg Pro Asn Leu Glu Thr  
100 105 110  
aat gct gac atc att cac atc aag atg ttg agg aac aac act ttt gtc 384  
Asn Ala Asp Ile Ile His Ile Lys Met Leu Arg Asn Asn Thr Phe Val  
115 120 125  
acg gtt aca gat tcc aaa gga aac gtc aaa tgc aaa gct aca tct ggt 432  
Thr Val Thr Asp Ser Lys Gly Asn Val Lys Cys Lys Ala Thr Ser Gly  
130 135 140  
agt tta ccc gat ctg aaa ggt gga agg aag atg acg aat tac aca gct 480  
Ser Leu Pro Asp Leu Lys Gly Gly Arg Lys Met Thr Asn Tyr Thr Ala  
145 150 155 160  
gat gca acc gct gaa aac att ggg aga aga gct aag gct atg ggg ctg 528  
Asp Ala Thr Ala Glu Asn Ile Gly Arg Ala Lys Ala Met Gly Leu  
165 170 175  
aaa tct gtg gtg gtt aag gtg aac gga ttt acg cat ttc gga aag aag 576  
Lys Ser Val Val Val Lys Val Asn Gly Phe Thr His Phe Gly Lys Lys  
180 185 190  
aag aaa gct att atc gcg ttt aga gac ggt ttc acc aac tcg agg tct 624  
Lys Lys Ala Ile Ile Ala Phe Arg Asp Gly Phe Thr Asn Ser Arg Ser  
195 200 205  
gat cag aat ccg ata gtc tac atc gag gac act act agg aaa gct cat 672  
Asp Gln Asn Pro Ile Val Tyr Ile Glu Asp Thr Thr Arg Lys Ala His  
210 215 220  
aat ggt tgc aga tta cca agg aaa cgt cgg gtg tga 708  
Asn Gly Cys Arg Leu Pro Arg Lys Arg Arg Val  
225 230 235

<210> 368  
<211> 235  
<212> PRT  
<213> Arabidopsis thaliana

<400> 368  
Met Lys Ala Gly Leu Leu Asn Arg Gly Val Asn Gly Phe Ser Ala Pro  
1 5 10 15  
Asn Ala Pro Pro Thr Phe Lys Ser Ser Leu Arg Ser Arg Leu Pro Asn  
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## PhoenixTemp32470.tmp.txt

20 25 30  
 Ser Leu Pro Asp Gln Phe Gly Gln Thr Asn Pro Gly Leu Pro Asn Thr  
 35 40 45  
 Gly Gly Ser Gly Phe Ser Ala Pro Ser Leu Ser Ser Tyr Glu Asn Phe  
 50 55 60  
 Thr Gln Ser Ser Ser Leu Leu Lys Glu Asn Ser Arg Ser Gly Gly Lys  
 65 70 75 80  
 Ser Ser Asp Leu Asp Phe Val Arg Glu Val Ile Glu Asp Glu Gly Arg  
 85 90 95  
 Arg Thr Ala Gly Ile Phe Ser His Phe Gln Arg Pro Asn Leu Glu Thr  
 100 105 110  
 Asn Ala Asp Ile Ile His Ile Lys Met Leu Arg Asn Asn Thr Phe Val  
 115 120 125  
 Thr Val Thr Asp Ser Lys Gly Asn Val Lys Cys Lys Ala Thr Ser Gly  
 130 135 140  
 Ser Leu Pro Asp Leu Lys Gly Gly Arg Lys Met Thr Asn Tyr Thr Ala  
 145 150 155 160  
 Asp Ala Thr Ala Glu Asn Ile Gly Arg Arg Ala Lys Ala Met Gly Leu  
 165 170 175  
 Lys Ser Val Val Val Lys Val Asn Gly Phe Thr His Phe Gly Lys Lys  
 180 185 190  
 Lys Lys Ala Ile Ile Ala Phe Arg Asp Gly Phe Thr Asn Ser Arg Ser  
 195 200 205  
 Asp Gln Asn Pro Ile Val Tyr Ile Glu Asp Thr Thr Arg Lys Ala His  
 210 215 220  
 Asn Gly Cys Arg Leu Pro Arg Lys Arg Arg Val  
 225 230 235

&lt;210&gt; 369

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Stomoxys calcitrans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 369

atg gct cct aga aag gct aaa gct caa aaa gaa gaa gtc caa gtc tcc	48
Met Ala Pro Arg Lys Ala Lys Ala Gln Lys Glu Glu Val Gln Val Ser	
1 5 10 15	
ttg ggc ccc caa gtg cgt gat ggc gaa ttt gtt ttc ggt gtt gcc cac	96
Leu Gly Pro Gln Val Arg Asp Gly Glu Phe Val Phe Gly Val Ala His	
20 25 30 35	
atc tat gcc agt ttc aat gac act ttc gtg cat gtc acc gat ttg tct	144
Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
40 45 50 55 60	
ggc cgt gaa acc att gcc cgt gtc act ggc ggc atg aag gta aaa gct	192
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala	
65 70 75 80	
gat cgt gat gaa gcc tct ccc tac gct gct atg ttg gct gct caa gat	240
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp	
85 90 95 100 105 110	
gtt gcc gaa aaa tgc aaa acc ttg ggc atc act gct ttg cac atc aaa	288
Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys	
115 120 125 130 135 140	
ttg cgt gcc acc ggt ggc aac aag acc aaa acc cct gga cct ggt gcc	336
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala	
145 150 155 160 165 170	
caa tct gcc ctc cgt gct ttg gcc cgt tct tcc atg aag att ggc cgc	384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg	
175 180 185 190 195 200	
att gaa gat gtt act ccc att cct tcc gat tcc aca cgc aga aag ggt	432
Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly	
205 210 215 220 225 230	
ggt cgt cgt ggt cgc cgt ttg taa	456
Gly Arg Arg Gly Arg Arg Leu	
145 150	

<210> 370  
 <211> 151  
 <212> PRT  
 <213> Stomoxys calcitrans

<400> 370  
 Met Ala Pro Arg Lys<sub>5</sub> Ala Lys Ala Gln<sub>10</sub> Glu Glu Val Gln<sub>15</sub> Val Ser  
 1 Leu Gly Pro Gln<sub>20</sub> Val Arg Asp Gly Glu<sub>25</sub> Phe Val Phe Gly Val<sub>30</sub> Ala His  
 Ile Tyr Ala<sub>35</sub> Ser Phe Asn Asp Thr<sub>40</sub> Phe Val His Val Thr<sub>45</sub> Asp Leu Ser  
 Gly Arg Glu Thr Ile Ala Arg<sub>55</sub> Val Thr Gly Gly Met<sub>60</sub> Lys Val Lys Ala  
 Asp Arg Asp Glu Ala Ser<sub>70</sub> Pro Tyr Ala Ala Met<sub>75</sub> Leu Ala Ala Gln Asp  
 65 Val Ala Glu Lys Cys<sub>85</sub> Lys Thr Leu Gly Ile<sub>90</sub> Thr Ala Leu His Ile<sub>95</sub> Lys  
 Leu Arg Ala Thr<sub>100</sub> Gly Gly Asn Lys Thr<sub>105</sub> Lys Thr Pro Gly Pro<sub>110</sub> Gly Ala  
 Gln Ser Ala<sub>115</sub> Leu Arg Ala Leu Ala Arg Ser Ser Met<sub>125</sub> Lys Ile Gly Arg  
 Ile Glu Asp Val Thr Pro Ile<sub>135</sub> Pro Ser Asp Ser Thr<sub>140</sub> Arg Arg Lys Gly  
 130 Gly Arg Arg Gly Arg Arg<sub>150</sub> Leu  
 145

<210> 371  
 <211> 417  
 <212> DNA  
 <213> Acorus calamus

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 371  
 atg aca aaa act ata cca aga att ggt tca cgt agg aat gga cgt att 48  
 Met Thr Lys Thr Ile<sub>5</sub> Pro Arg Ile Gly Ser<sub>10</sub> Arg Arg Asn Gly Arg<sub>15</sub> Ile  
 ggt tta cgt aag act gga cgt aga ata cca aaa gga att att cat gtt 96  
 Gly Leu Arg Lys<sub>20</sub> Thr Gly Arg Arg Ile<sub>25</sub> Pro Lys Gly Ile<sub>30</sub> Ile His Val  
 cag gca agt ttc aac aat acc att gtg act gtt aca gat gtt cgg ggt 144  
 Gln Ala Ser<sub>35</sub> Phe Asn Asn Thr<sub>40</sub> Val Thr Val Thr Asp<sub>45</sub> Val Arg Gly  
 cga gta gtt tct tgg tcc tcc gcc ggt act tgt gga ttc aaa ggc aca 192  
 Arg Val Val Ser Trp Ser Ser<sub>55</sub> Ala Gly Thr Cys<sub>60</sub> Gly Phe Lys Gly Thr  
 aga aga ggg acg ccg ttt gcg gct caa acc gca gcg gga aat gct att 240  
 Arg Arg Gly Thr Pro<sub>70</sub> Phe Ala Ala Gln Thr<sub>75</sub> Ala Ala Gly Asn Ala<sub>80</sub> Ile  
 cgt aca gta gta gat cag ggt atg caa cga gca gaa gtc atg ata aaa 288  
 Arg Thr Val Val Asp<sub>85</sub> Gln Gly Met Gln Arg<sub>90</sub> Ala Glu Val Met<sub>95</sub> Ile Lys  
 ggt cct ggg ctc gga aga gac gca gca tta cga gcc att cgt aga agc 336  
 Gly Pro Gly<sub>100</sub> Gly Arg Asp Ala<sub>105</sub> Ala Leu Arg Ala Ile<sub>110</sub> Arg Arg Ser  
 ggc ata tta tta aat ttc gta cgt gac gtg acc cct atg cca cat aat 384  
 Gly Ile Leu<sub>115</sub> Leu Asn Phe Val Arg<sub>120</sub> Asp Val Thr Pro Met<sub>125</sub> Pro His Asn  
 gga tgt aga cct cct aaa aaa aga cgt gtg tag 417  
 Gly Cys Arg Pro Pro Lys<sub>135</sub> Arg Arg Val  
 130

<210> 372  
 <211> 138  
 <212> PRT

&lt;213&gt; Acorus calamus

&lt;400&gt; 372

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Met Thr Lys Thr Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile
1      5      10      15
Gly Leu Arg Lys Thr Gly Arg Arg Ile Pro Lys Gly Ile Ile His Val
20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100     105     110
Gly Ile Leu Leu Asn Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115     120     125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130     135

```

&lt;210&gt; 373

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Adiantum capillus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 373

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atg tca aat aaa tcg aga aaa att cgt tca cgt ggg gga aaa cgc gga      48
Met Ser Asn Lys Ser Arg Lys Ile Arg Ser Arg Gly Gly Lys Arg Gly
1      5      10      15
gtt caa aaa gga gtc att cat ata cag gcg agt ttc aat aac act atc      96
Val Gln Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
20      25      30
att acc gtc aca gac gtc cgg gga cag gta att att tgg tct tcc gcc      144
Ile Thr Val Thr Asp Val Arg Gly Gln Val Ile Ile Trp Ser Ser Ala
35      40      45
ggg gcc tgt gga ttt aag gga aca cgc aaa agc acg cca ttt gct gcg      192
Gly Ala Cys Gly Phe Lys Gly Thr Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
caa gct gcg gct gag aat gca att aaa gca tca gtg gat cgg ggt atg      240
Gln Ala Ala Ala Glu Asn Ala Ile Lys Ala Ser Val Asp Arg Gly Met
65      70      75      80
aaa caa gca gaa gtt atg atg agc ggg ccc gga ccg ggg aga gat acc      288
Lys Gln Ala Glu Val Met Met Ser Gly Pro Gly Pro Gly Arg Asp Thr
85      90      95
gct ttg cga gct att cgc aga agc ggc ata atc ctc agt ttc ata cgt      336
Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile Ile Leu Ser Phe Ile Arg
100     105     110
gac gtg act cct atg ccg tat aat ggt tgt aga ccc ccc aga aag aga      384
Asp Val Thr Pro Met Pro Tyr Asn Gly Cys Arg Pro Pro Arg Lys Arg
115     120     125
cgc gtc taa
Arg Val
130

```

&lt;210&gt; 374

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Adiantum capillus

&lt;400&gt; 374

```

Met Ser Asn Lys Ser Arg Lys Ile Arg Ser Arg Gly Gly Lys Arg Gly
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Val Gln Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Ile Thr Val Thr Asp Val Arg Gly Gln Val Ile Ile Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Thr Arg Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Ala Ala Ala Glu Asn Ala Ile Lys Ala Ser Val Asp Arg Gly Met  
 65 70 75 80  
 Lys Gln Ala Glu Val Met Met Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile Ile Leu Ser Phe Ile Arg  
 100 105 110  
 Asp Val Thr Pro Met Pro Tyr Asn Gly Cys Arg Pro Pro Arg Lys Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 375

&lt;211&gt; 432

&lt;212&gt; DNA

<213> *Agrostis stolonifera*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(432)

&lt;223&gt; transl\_table=11

&lt;400&gt; 375

atg gca aaa gct ata cca aaa att ggt tca cgt aag aaa gtg cgt att	48
Met Ala Lys Ala Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile	
1 5 10 15	
ggt tta cgt agg aat gca cgt ttt agt tta cgg aaa agt gca cgt aga	96
Gly Leu Arg Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg	
20 25 30	
ata aca aaa ggg gtt att cat gtt caa gct agt ttc aac aat acc att	144
Ile Thr Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile	
35 40 45	
ata act gtg aca gac ccg caa ggt cgg gtg gtt ttc tgg tcc tcc gcg	192
Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala	
50 55 60	
ggt act tgt gga ttc aaa agc tca aga aaa gca tca ccc tat gct ggt	240
Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly	
65 70 75 80	
caa aga aca gca gta gat gct att cgt aca gta ggt ttg caa cga gca	288
Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala	
85 90 95	
gaa gtt atg gta aag ggc gct ggt agt gga aga gat gct gca tta cga	336
Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg	
100 105 110	
gcc att gct aaa agc ggt gtg cga tta agt tgt ata cgc gat gta aca	384
Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr	
115 120 125	
cct atg ccg cat aat gga tgt cga ccg cct aaa aaa aga cgg ctg	429
Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu	
130 135 140	
taa	432

&lt;210&gt; 376

&lt;211&gt; 143

&lt;212&gt; PRT

<213> *Agrostis stolonifera*

&lt;400&gt; 376

Met Ala Lys Ala Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile  
 1 5 10 15  
 Gly Leu Arg Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg  
 20 25 30

## PhoenixTemp32470.tmp.txt

Ile Thr Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 35 40 45  
 Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala  
 50 55 60  
 Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly  
 65 70 75 80  
 Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala  
 85 90 95  
 Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg  
 100 105 110  
 Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr  
 115 120 125  
 Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu  
 130 135 140

&lt;210&gt; 377

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Amborella trichopoda

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 377

atg	aaa	aaa	cct	ata	cca	aga	att	ggt	tcg	cgt	aga	aat	gga	cgt	att	48
Met	Lys	Lys	Pro	Ile	Pro	Arg	Ile	Gly	Ser	Arg	Arg	Asn	Gly	Arg	Ile	
1				5				10					15			
ggt	tca	cgt	aag	aat	gga	cgt	aga	ata	ccc	aaa	gga	gtt	att	cat	gtt	96
Gly	Ser	Arg	Lys	Asn	Gly	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val	
			20					25				30				
caa	gcg	agt	ttc	aat	aat	acc	att	gtg	act	gtt	aca	gat	gta	cga	ggg	144
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	
			35				40				45					
cgg	gtg	gtt	tct	tgg	tgc	tcc	gcg	ggt	acc	tgt	gga	ttc	aga	ggc	aca	192
Arg	Val	Val	Ser	Trp	Cys	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr	
			50			55		60			65					
aga	aga	gga	aca	ccg	ttt	gct	gct	caa	acc	gca	gca	aca	aat	gct	att	240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Thr	Asn	Ala	Ile	
					70			75							80	
cgt	acg	gta	gtg	gat	cag	ggt	atg	caa	cga	gca	gaa	gtt	atg	ata	aag	288
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys	
				85				90						95		
gga	cct	ggt	ctc	gga	aga	gat	gca	gca	tta	cga	gcc	att	cgc	aga	agt	336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	
			100				105					110				
ggt	gta	cta	tta	agt	ttc	gta	cgt	gac	gta	act	ccc	atg	cca	cat	aat	384
Gly	Val	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	
			115				120					125				
gga	tgt	aga	ccc	cct	aaa	aaa	aga	cgc	gtg	tag						417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val							
			130			135										

&lt;210&gt; 378

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Amborella trichopoda

&lt;400&gt; 378

Met Lys Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys Asn Gly Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Cys Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Thr Asn Ala Ile

## PhoenixTemp32470.tmp.txt

65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Val Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 379  
 <211> 393  
 <212> DNA  
 <213> Angiopteris evecta

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 379  
 atg gca aaa ccg ata aga aag att ggc tta cgc aaa gga aaa cgt aaa 48  
 Met Ala Lys Pro Ile Arg Lys Ile Gly Leu Arg Lys Gly Lys Arg Lys  
 1 5 10 15  
 ata cct aaa gga gtt att cat att caa gca agt ttt aat aat acc att 96  
 Ile Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 gtt act gtt aca gat att cga gga caa gtt gtt tct tgg tct tct gct 144  
 Val Thr Val Thr Asp Ile Arg Gly Gln Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 ggt gct tgt gga ttc aaa ggt acg aga aaa agt aca cca ttt gct gct 192  
 Gly Ala Cys Gly Phe Lys Gly Thr Arg Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 cag act gca gca gaa aac gct att cgt aca ctt att gat caa ggt atg 240  
 Gln Thr Ala Ala Glu Asn Ala Ile Arg Thr Leu Ile Asp Gln Gly Met  
 65 70 75 80  
 aaa cag gct gaa gtt atg ata agt ggt ccc ggc cca gga aga gaa aca 288  
 Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Glu Thr  
 85 90 95  
 gct tta cga gct att cgt aga agc ggt gta gtt ttg agt ttc gta cgt 336  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Val Leu Ser Phe Val Arg  
 100 105 110  
 gat gta act cct atg cca cat aat gga tgt aga ccc ccc aag aaa aga 384  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 cgt gta taa 393  
 Arg Val  
 130

<210> 380  
 <211> 130  
 <212> PRT  
 <213> Angiopteris evecta

<400> 380  
 Met Ala Lys Pro Ile Arg Lys Ile Gly Leu Arg Lys Gly Lys Arg Lys  
 1 5 10 15  
 Ile Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Val Thr Asp Ile Arg Gly Gln Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Thr Arg Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Asn Ala Ile Arg Thr Leu Ile Asp Gln Gly Met  
 65 70 75 80  
 Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Glu Thr  
 85 90 95  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Val Leu Ser Phe Val Arg  
 100 105 110

## PhoenixTemp32470.tmp.txt

Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 381

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Arabis hirsuta

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 381

atg	gca	aaa	cct	ata	tta	aga	att	ggt	tca	cgt	aaa	aat	aca	cgt	agt	48
Met	Ala	Lys	Pro	Ile	Leu	Arg	Ile	Gly	Ser	Arg	Lys	Asn	Thr	Arg	Ser	
1				5				10					15			
ggt	tca	cgt	aaa	aat	gta	cgt	aga	ata	cca	aag	gga	att	att	cat	gtt	96
Gly	Ser	Arg	Lys	Asn	Val	Arg	Arg	Ile	Pro	Lys	Gly	Ile	Ile	His	Val	
			20					25				30				
caa	gca	agt	ttc	aac	aat	acc	att	gtg	acc	gtt	aca	gat	gta	cgg	ggt	144
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	
			35				40					45				
cgg	gtg	atc	tct	tgg	tcc	tcc	gcg	ggt	act	tgt	gga	ttc	agg	ggt	aca	192
Arg	Val	Ile	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr	
			50			55					60					
aga	aga	ggt	aca	cct	ttt	gct	gct	caa	acc	gca	gca	gga	aat	gct	att	240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile	
					70					75					80	
cga	gca	gta	gtg	gat	caa	ggc	atg	caa	cga	gct	gaa	gta	agg	ata	aaa	288
Arg	Ala	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Arg	Ile	Lys	
				85				90						95		
ggc	cct	gga	ctg	gga	aga	gat	gca	gca	tta	cga	gct	att	cgt	aga	agt	336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	
			100				105						110			
ggt	ata	ctt	tta	agt	ttc	gta	cga	gac	gta	acc	cct	atg	cca	cat	aat	384
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	
		115					120					125				
ggt	tgt	aga	ccc	cct	aaa	aaa	aga	cgt	gta	tag						417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val							
	130					135										

&lt;210&gt; 382

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Arabis hirsuta

&lt;400&gt; 382

Met	Ala	Lys	Pro	Ile	Leu	Arg	Ile	Gly	Ser	Arg	Lys	Asn	Thr	Arg	Ser	
1				5				10					15			
Gly	Ser	Arg	Lys	Asn	Val	Arg	Arg	Ile	Pro	Lys	Gly	Ile	Ile	His	Val	
			20					25				30				
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	
			35				40					45				
Arg	Val	Ile	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr	
			50			55					60					
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile	
					70					75					80	
Arg	Ala	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Arg	Ile	Lys	
				85				90						95		
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	
			100				105						110			
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	
		115					120					125				
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val							
	130					135										

<210> 383  
 <211> 417  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

```
<400> 383
atg gca aaa cct ata tta aga att ggt tgc cgt aaa aat aca cgt agt      48
Met Ala Lys Pro Ile Leu Arg Ile Gly Ser Arg Lys Asn Thr Arg Ser
1      5      10      15
ggt tca cgt aaa aat gta cgt aga ata cca aag gga gtt att cat gtt      96
Gly Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
20      25      30
caa gca agt ttc aac aat acc att gta acc gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
cgg gtg att tct tgg tcc tcc gca ggt act tgt gga ttc cgg ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
50      55      60
aga aga gga aca ccc ttt gct gcc caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
cga gca gta gtg gat caa ggt atg caa cga gct gaa gta agg ata aaa      288
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys
85      90      95
ggc cct gga ctc gga aga gat gcg gca tta cga gct att cgt aga agc      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
ggt ata ctt tta agt ttc gta cga gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
ggt tgt aga ccc cct aaa aaa aga cgt gta tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135
```

<210> 384  
 <211> 138  
 <212> PRT  
 <213> Arabidopsis thaliana

```
<400> 384
Met Ala Lys Pro Ile Leu Arg Ile Gly Ser Arg Lys Asn Thr Arg Ser
1      5      10      15
Gly Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys
85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135
```

<210> 385  
 <211> 417  
 <212> DNA  
 <213> Atropa belladonna



## PhoenixTemp32470.tmp.txt

```

<220>
<221> CDS
<222> (1)..(417)
<223> transl_table=11

<400> 385
atg gca aaa gct ata ccg aaa att agt tcg cgt agg aat gga cgt att      48
Met Ala Lys Ala Ile Pro Lys Ile Ser Ser Arg Arg Asn Gly Arg Ile
  1          5          10          15
ggt tca cgt aag ggt gca cgt aga ata cca aag gga gtt att cat gtt      96
Gly Ser Arg Lys Gly Ala Arg Arg Ile Pro Lys Gly Val Ile His Val
          20          25          30
caa gca agt ttc aat aat acc att gtc act gtt aca gat gta cgg ggt     144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
          35          40          45
cga gta gtt tct tgg tcc tcc gct ggt act tct gga ttc aaa ggt acg     192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr
  50          55          60
aga aga gga aca ccg ttt gct gct caa acc gca gca gca aac gct atc     240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ala Asn Ala Ile
  65          70          75          80
cgt aca gta gtg gat caa ggt atg caa cga gca gaa gtc atg ata aaa     288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
          85          90          95
ggt ccc ggt ctc gga aga gat gca gca tta cga gct att cgt cga agt     336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
          100          105          110
ggt ata cta tta act ttc gta cgg gat gta act cct atg cca cat aat     384
Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn
          115          120          125
ggc tgt aga cct ccg aaa aaa aga cgt gtg tag                        417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
  130          135

```

```

<210> 386
<211> 138
<212> PRT
<213> Atropa belladonna

```

```

<400> 386
Met Ala Lys Ala Ile Pro Lys Ile Ser Ser Arg Arg Asn Gly Arg Ile
  1          5          10          15
Gly Ser Arg Lys Gly Ala Arg Arg Ile Pro Lys Gly Val Ile His Val
          20          25          30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
          35          40          45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr
  50          55          60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ala Asn Ala Ile
  65          70          75          80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
          85          90          95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
          100          105          110
Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn
          115          120          125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
  130          135

```

```

<210> 387
<211> 417
<212> DNA
<213> Barbarea verna

```

```

<220>
<221> CDS
<222> (1)..(417)
<223> transl_table=11

```

## PhoenixTemp32470.tmp.txt

```

<400> 387
atg gca aaa cct ata tta aga att ggt tca cgt aaa aat aca cgt agt      48
Met Ala Lys Pro Ile Leu Arg Ile Gly Ser Arg Lys Asn Thr Arg Ser
  1          5          10          15
ggt tca cgt aaa aat gta cgt aga ata cca aag gga gtt att cat gtt      96
Gly Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
          20          25          30
caa gca agt ttc aac aat acc att gtg acc gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
          35          40          45
cgg gtg att tct tgg tcc tcc gcg ggt act tgt gga ttc aag ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
          50          55          60
aga aga gga aca cct ttt gct gcc caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
          65          70          75          80
cga gca gta gtg gat caa ggt atg caa cga gct gaa gta agg ata aaa      288
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys
          85          90          95
ggc cct gga ctg gga aga gat gca gca tta cga gct att cgt aga agc      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
          100          105          110
ggt ata ctt tta agt ttc gta cga gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
          115          120          125
ggt tgt aga ccc cct aaa aaa aga cgt gta tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
          130          135

```

```

<210> 388
<211> 138
<212> PRT
<213> Barbarea verna

```

```

<400> 388
Met Ala Lys Pro Ile Leu Arg Ile Gly Ser Arg Lys Asn Thr Arg Ser
  1          5          10          15
Gly Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
          20          25          30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
          35          40          45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
          50          55          60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
          65          70          75          80
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys
          85          90          95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
          100          105          110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
          115          120          125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
          130          135

```

```

<210> 389
<211> 417
<212> DNA
<213> Calycanthus fertilis var

```

```

<220>
<221> CDS
<222> (1)..(417)
<223> transl_table=11

```

```

<400> 389
atg aca aaa tct ata cca aga att ggt tca cgg agg ggt ggg cgt att      48
Met Thr Lys Ser Ile Pro Arg Ile Gly Ser Arg Arg Gly Gly Arg Ile
  1          5          10          15
gct tca cgt aag aat gca cgt aga ata cca aaa gga gtt att cat gtt      96

```

PhoenixTemp32470.tmp.txt

Ala	Ser	Arg	Lys	Asn	Ala	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val		
caa	gcg	agt	ttc	aac	aat	acc	att	gtg	act	ggt	aca	gat	gta	aca	ggt		144
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Thr	Gly		
		35					40					45					
cgg	gtg	gtt	tct	tgg	tcc	tcc	gca	ggt	act	tgt	gga	ttc	agg	ggc	aca		192
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr		
		50				55					60						
aga	aga	ggg	aca	cca	ttt	gct	gct	caa	acc	gca	gca	gca	aac	gct	att		240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Ala	Asn	Ala	Ile		
		65			70				75						80		
cgt	aca	gta	atc	gat	cag	ggt	atg	caa	cga	gca	gaa	gtc	atg	ata	aag		288
Arg	Thr	Val	Ile	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85					90					95			
ggc	ccc	ggg	ctc	gga	aga	gat	gca	gca	tta	cga	gcc	att	cgt	aga	agt		336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
ggt	ata	ctg	tta	agt	ttc	gta	cgt	gac	gta	acc	cct	atg	cca	cat	aat		384
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
gga	tgt	agg	cct	cct	aaa	aaa	aga	cgt	gtg	tag							417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 390

<211> 138

<212> PRT

<213> Calycanthus fertilis var

<400> 390

Met	Thr	Lys	Ser	Ile	Pro	Arg	Ile	Gly	Ser	Arg	Arg	Gly	Gly	Arg	Ile		
1				5					10					15			
Ala	Ser	Arg	Lys	Asn	Ala	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val		
			20					25					30				
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Thr	Gly		
		35					40					45					
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr		
		50				55					60						
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Ala	Asn	Ala	Ile		
		65			70				75						80		
Arg	Thr	Val	Ile	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85					90					95			
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 391

<211> 393

<212> DNA

<213> Chaetosphaeridium globosum

<220>

<221> CDS

<222> (1)..(393)

<223> transl\_table=11

<400> 391

atg	cct	aaa	cct	agt	aaa	aaa	att	aac	tta	aga	aaa	ata	aaa	aaa	aaa		48
Met	Pro	Lys	Pro	Ser	Lys	Lys	Ile	Asn	Leu	Arg	Lys	Ile	Lys	Lys	Lys		
				5					10					15			
gtt	ccg	aaa	gga	gta	ata	cat	att	caa	gct	agt	ttt	aac	aat	aca	att		96
Val	Pro	Lys	Gly	Val	Ile	His	Ile	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile		
			20					25				30					
gtt	act	att	acg	gac	gtt	aga	gga	caa	gtt	att	tca	tgg	tct	tct	gca		144
Val	Thr	Ile	Thr	Asp	Val	Arg	Gly	Gln	Val	Ile	Ser	Trp	Ser	Ser	Ala		
		35					40					45					

## PhoenixTemp32470.tmp.txt

```

ggt gct tgt gga ttt aaa gga gca aaa aaa agt aca cct ttt gca gcg      192
Gly Ala Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala
   50      55      60
caa aca gct gct gaa aaa gct tta cga cct tta atc gac caa gga atg      240
Gln Thr Ala Ala Glu Lys Ala Leu Arg Pro Leu Ile Asp Gln Gly Met
   65      70      75      80
cgt caa gct gaa gtt atg att agc gga cct gga aga gga aga gat aca      288
Arg Gln Ala Glu Val Met Ile Ser Gly Pro Gly Arg Gly Arg Asp Thr
   85      90      95
gct ttg aga ata ata cga aaa agt ggt att aca cta aat ttt gta cga      336
Ala Leu Arg Ile Ile Arg Lys Ser Gly Ile Thr Leu Asn Phe Val Arg
   100      105      110
gat gtt aca cct att cct cat aac ggt tgc aga cct cct agc aaa aga      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Ser Lys Arg
   115      120      125
cgt gtt taa
Arg Val
   130

```

&lt;210&gt; 392

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Chaetosphaeridium globosum

&lt;400&gt; 392

```

Met Pro Lys Pro Ser Lys Lys Ile Asn Leu Arg Lys Ile Lys Lys Lys
1      5      10      15
Val Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
   20      25      30
Val Thr Ile Thr Asp Val Arg Gly Gln Val Ile Ser Trp Ser Ser Ala
   35      40      45
Gly Ala Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala
   50      55      60
Gln Thr Ala Ala Glu Lys Ala Leu Arg Pro Leu Ile Asp Gln Gly Met
   65      70      75      80
Arg Gln Ala Glu Val Met Ile Ser Gly Pro Gly Arg Gly Arg Asp Thr
   85      90      95
Ala Leu Arg Ile Ile Arg Lys Ser Gly Ile Thr Leu Asn Phe Val Arg
   100      105      110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Ser Lys Arg
   115      120      125
Arg Val
   130

```

&lt;210&gt; 393

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Chara vulgaris

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 393

```

atg ata aga cct ata aaa aaa ata act ctc cgt aaa aca aaa aaa aag      48
Met Ile Arg Pro Ile Lys Lys Ile Thr Leu Arg Lys Thr Lys Lys Lys
   1      5      10      15
agc cct aaa gga gta att cat ata cag gct agc ttc aat aac act att      96
Ser Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
   20      25      30
gta act ata aca gac tta cga ggg caa gta att tcc tgg tct tct tcg      144
Val Thr Ile Thr Asp Leu Arg Gly Gln Val Ile Ser Trp Ser Ser Ser
   35      40      45
gga gcc tgt gga ttt aaa gga gca aaa aaa agt act gct tat gct gct      192
Gly Ala Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Ala Tyr Ala Ala
   50      55      60
caa att gct act gaa aat gca att aaa caa tgg aca gat caa aat acc      240
Gln Ile Ala Thr Glu Asn Ala Ile Lys Gln Trp Thr Asp Gln Asn Thr

```

## PhoenixTemp32470.tmp.txt

```

65          70          75          80
aag caa gct gaa gtt atg atg agt gga cca gga aga gaa act
Lys Gln Ala Glu Val Met Met Ser Gly Pro Gly Pro Gly Arg Glu Thr 288
85
gca tta cgt gct att aga aat agt agg gta att ctt agc ttt ata aga
Ala Leu Arg Ala Ile Arg Asn Ser Arg Val Ile Leu Ser Phe Ile Arg 336
100
gac gtt act cct ata cct cat aat ggt tgt aga cct cct aag aaa aga
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg 384
115
cgc gtt taa
Arg Val 130 393

```

&lt;210&gt; 394

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Chara vulgaris

&lt;400&gt; 394

```

Met Ile Arg Pro Ile Lys Lys Ile Thr Leu Arg Lys Thr Lys Lys Lys
1          5          10          15
Ser Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
20
Val Thr Ile Thr Asp Leu Arg Gly Gln Val Ile Ser Trp Ser Ser Ser
35
Gly Ala Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Ala Tyr Ala Ala
50
Gln Ile Ala Thr Glu Asn Ala Ile Lys Gln Trp Thr Asp Gln Asn Thr
65          70          75          80
Lys Gln Ala Glu Val Met Met Ser Gly Pro Gly Pro Gly Arg Glu Thr
85
Ala Leu Arg Ala Ile Arg Asn Ser Arg Val Ile Leu Ser Phe Ile Arg
100
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115
Arg Val 130

```

&lt;210&gt; 395

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Chlorokybus atmophyticus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 395

```

atg gca aaa aaa ata aga aag ata ggt att cgt aag ggc aaa cgg aag
Met Ala Lys Lys Ile Arg Lys Ile Gly Ile Arg Lys Gly Lys Arg Lys 48
1          5          10          15
att cct aaa gga gtg gta cat gta caa gct acc ttt aat aat act att
Ile Pro Lys Gly Val Val His Val Gln Ala Thr Phe Asn Asn Thr Ile 96
20
gta acc att aca gat ata aag gga gag gta tct tgg tct tcc gcg
Val Thr Ile Thr Asp Ile Lys Gly Glu Val Ile Ser Trp Ser Ser Ala 144
35
gga tct tgt ggg ttt aaa gga aca aaa aaa gga act cct ttt gct gct
Gly Ser Cys Gly Phe Lys Gly Thr Lys Lys Gly Thr Pro Phe Ala Ala 192
50
caa act gca gcg gag aac gct gtc cgt caa gcc ata gaa caa ggt atg
Gln Thr Ala Ala Glu Asn Ala Val Arg Gln Ala Ile Glu Gln Gly Met 240
65          70          75          80
aaa gaa gct gaa att act gta agt ggt cca ggg tcg gga cga gaa aca
Lys Glu Ala Glu Ile Thr Val Ser Gly Pro Gly Ser Gly Arg Glu Thr 288
85
gct att cgt gct att cga act gct ggg tta gga ata act gtt ctt aaa

```

```

PhoenixTemp32470.tmp.txt
Ala Ile Arg Ala Ile Arg Thr Ala Gly Leu Gly Ile Thr Val Leu Lys
100 110
gat gta act cct att ccc cat aat ggt tgt cga cct cct aag aaa cgt 384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115 125
cga gtt taa
Arg Val 393
130

<210> 396
<211> 130
<212> PRT
<213> Chlorokybus atmophyticus

<400> 396
Met Ala Lys Lys Ile Arg Lys Ile Gly Ile Arg Lys Gly Lys Arg Lys
1 5 10 15
Ile Pro Lys Gly Val Val His Val Gln Ala Thr Phe Asn Asn Thr Ile
20 25 30
Val Thr Ile Thr Asp Ile Lys Gly Glu Val Ile Ser Trp Ser Ser Ala
35 40 45
Gly Ser Cys Gly Phe Lys Gly Thr Lys Lys Gly Thr Pro Phe Ala Ala
50 55 60
Gln Thr Ala Ala Glu Asn Ala Val Arg Gln Ala Ile Glu Gln Gly Met
65 70 75 80
Lys Glu Ala Glu Ile Thr Val Ser Gly Pro Gly Ser Gly Arg Glu Thr
85 90 95
Ala Ile Arg Ala Ile Arg Thr Ala Gly Leu Gly Ile Thr Val Leu Lys
100 105 110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115 125
Arg Val
130

<210> 397
<211> 393
<212> DNA
<213> Chlamydomonas reinhardtii

<220>
<221> CDS
<222> (1)..(393)
<223> transl_table=11

<400> 397
atg gca aaa caa aca cgt aaa tta aca aca aat aaa aca aaa aag aaa 48
Met Ala Lys Gln Thr Arg Lys Leu Thr Thr Asn Lys Thr Lys Lys Lys
1 5 10 15
att ttt aga ggt gta gtt cat att caa gca ggc cac cat aat aca att 96
Ile Phe Arg Gly Val Val His Ile Gln Ala Gly His His Asn Thr Ile
20 25 30
gta acc att aca aat att cgt ggt gaa gtt tta tgc tgg agc tct gct 144
Val Thr Ile Thr Asn Ile Arg Gly Glu Val Leu Cys Trp Ser Ser Ala
35 40 45
gga gct tgt ggc ttt aga ggt aaa cgt aaa tca aca agt ttt gct gct 192
Gly Ala Cys Gly Phe Arg Gly Lys Arg Lys Ser Thr Ser Phe Ala Ala
50 55 60
aaa aaa gca gct gaa aca gta gct cgt aaa tca cgt gat ttc aca atg 240
Lys Lys Ala Ala Glu Thr Val Ala Arg Lys Ser Arg Asp Phe Thr Met
65 70 75 80
aaa gca gct aaa att tta gta aca ggc ccg ggt caa ggt cgt gaa agt 288
Lys Ala Ala Lys Ile Leu Val Thr Gly Pro Gly Gln Gly Arg Glu Ser
85 90 95
gct att cgt gag att ttt aaa gct ggt att aaa gta agt gtt att cgt 336
Ala Ile Arg Glu Ile Phe Lys Ala Gly Ile Lys Val Ser Val Ile Arg
100 105 110
gaa aaa aca ggt atc cca cac aat ggt tgt cgt cca ccg aaa aaa cgt 384
Glu Lys Thr Gly Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115 125

```

agt gtt taa  
Ser Val  
130

<210> 398  
<211> 130  
<212> PRT  
<213> Chlamydomonas reinhardtii

<400> 398  
Met Ala Lys Gln Thr Arg Lys Leu Thr Thr Asn Lys Thr Lys Lys Lys  
1 5 10 15  
Ile Phe Arg Gly Val Val His Ile Gln Ala Gly His His Asn Thr Ile  
20 25 30  
Val Thr Ile Thr Asn Ile Arg Gly Glu Val Leu Cys Trp Ser Ser Ala  
35 40 45  
Gly Ala Cys Gly Phe Arg Gly Lys Arg Lys Ser Thr Ser Phe Ala Ala  
50 55 60  
Lys Lys Ala Ala Glu Thr Val Ala Arg Lys Ser Arg Asp Phe Thr Met  
65 70 75 80  
Lys Ala Ala Lys Ile Leu Val Thr Gly Pro Gly Gln Gly Arg Glu Ser  
85 90 95  
Ala Ile Arg Glu Ile Phe Lys Ala Gly Ile Lys Val Ser Val Ile Arg  
100 105 110  
Glu Lys Thr Gly Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
115 120 125  
Ser Val  
130

<210> 399  
<211> 393  
<212> DNA  
<213> Chlorella vulgaris

<220>  
<221> CDS  
<222> (1)..(393)  
<223> transl\_table=11

<400> 399  
atg gca aaa aaa atc gaa aaa agt gcg aaa aaa aaa ttt cgc gag aaa 48  
Met Ala Lys Lys Ile Glu Lys Ser Ala Lys Lys Lys Phe Arg Glu Lys  
1 5 10 15  
gtt ctt cta ggt gta gct cat ata caa tct aca ttt aac aat act ata 96  
Val Leu Leu Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
20 25 30  
gta acc att aca aca aac aag gga aat gta tta gcc tgg tct tct gcc 144  
Val Thr Ile Thr Thr Asn Lys Gly Asn Val Leu Ala Trp Ser Ser Ala  
35 40 45  
gga gct tgt ggt ttt aaa ggt gca cgt aaa aaa aca cca cta gct gca 192  
Gly Ala Cys Gly Phe Lys Gly Ala Arg Lys Lys Thr Pro Leu Ala Ala  
50 55 60  
aaa caa gct gct gaa aat gca gca caa acg tgt gta agt caa ggt atg 240  
Lys Gln Ala Ala Glu Asn Ala Ala Gln Thr Cys Val Ser Gln Gly Met  
65 70 75 80  
aga gaa atc cga gta aac gta aaa ggt gct ggt gct ggc cga gaa gct 288  
Arg Glu Ile Arg Val Asn Val Lys Gly Ala Gly Ala Gly Arg Glu Ala  
85 90 95  
gca tta cgc ggc tta cgt gat gcc ggg tta aat att aca att att cga 336  
Ala Leu Arg Gly Leu Arg Asp Ala Gly Leu Asn Ile Thr Ile Ile Arg  
100 105 110  
gat att acc ccc att cct cat aac ggg tgt aga ccc cct aaa aaa cgt 384  
Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
115 120 125  
aga att taa 393  
Arg Ile  
130

<210> 400

<211> 130  
 <212> PRT  
 <213> *Chlorella vulgaris*

<400> 400  
 Met Ala Lys Lys Ile Glu Lys Ser Ala Lys Lys Lys Phe Arg Glu Lys  
 1 5 10 15  
 Val Leu Leu Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Ile Thr Thr Asn Lys Gly Asn Val Leu Ala Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Ala Arg Lys Lys Thr Pro Leu Ala Ala  
 50 55 60  
 Lys Gln Ala Ala Glu Asn Ala Ala Gln Thr Cys Val Ser Gln Gly Met  
 65 70 75 80  
 Arg Glu Ile Arg Val Asn Val Lys Gly Ala Gly Ala Gly Arg Glu Ala  
 85 90 95  
 Ala Leu Arg Gly Leu Arg Asp Ala Gly Leu Asn Ile Thr Ile Ile Arg  
 100 105 110  
 Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 Arg Ile  
 130

<210> 401  
 <211> 417  
 <212> DNA  
 <213> *Citrus sinensis*

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 401  
 atg gca aaa tct cca cca cga agt ggt tca cgt agg ccg gga cgg atc 48  
 Met Ala Lys Ser Pro Pro Arg Ser Gly Ser Arg Arg Pro Gly Arg Ile  
 1 5 10 15  
 ggt tca cgt aaa agt gga cgt cga ata cca aag ggc gtt att cat gtt 96  
 Gly Ser Arg Lys Ser Gly Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 caa gca agt ttc aac aac acc att gtg act gtt aca gat gtc cgg ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 cgg gta att tct tgg tcc tcg gcc ggt act tgt gga ttc agg ggt aca 192  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 aga aga ggt acg cct ttt gct gct caa acc gca gca gga aat gct att 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 cga gca gta gcg gat caa ggt atg caa cga gca gaa gtc atg ata aag 288  
 Arg Ala Val Ala Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 ggt cct ggt ctc gga aga gat gcg gca tta cga gct att cgt aga agc 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 ggt atc ctt tta aat ttc gta cgg gat gta acc cct atg cca cac aat 384  
 Gly Ile Leu Leu Asn Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 ggt tgc aga ccc cct aaa aaa aga cgg gtg tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 402  
 <211> 138  
 <212> PRT  
 <213> *Citrus sinensis*

<400> 402



## PhoenixTemp32470.tmp.txt

Met Ala Lys Ser Pro Pro Arg Ser Gly Ser Arg Arg Pro Gly Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys Ser Gly Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Ala Val Ala Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Asn Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 403

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Coffea arabica

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 403

atg gca aaa gct ata ccg aga gtt ggt tca cgt aag aac gga cgt att	48
Met Ala Lys Ala Ile Pro Arg Val Gly Ser Arg Lys Asn Gly Arg Ile	
1 5 10 15	
agt tca cgt aag agt gcg cgt aga ata cca aag gga gtt att cat gtt	96
Ser Ser Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val	
20 25 30	
caa gca agt ttt cat aat acc att gtc act gtt aca gat gta cgg ggt	144
Gln Ala Ser Phe His Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly	
35 40 45	
cga gtg gtt tct tgg tcc tcc gcc ggt act tgt gga ttc aga ggt acg	192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr	
50 55 60	
aga aga ggg aca cca ttt gct gct caa acc gca gca gca aat gct att	240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ala Asn Ala Ile	
65 70 75 80	
cgt aca gta gtg gat caa ggt atg caa cga gca gaa gtc atg ata aaa	288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys	
85 90 95	
ggt ccc ggc ctc ggg aga gac gca gcg ctt cga gct att cgt aga agt	336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser	
100 105 110	
ggt ata gta tta act ttc gta cga gat gta act cct atg cca cat aat	384
Gly Ile Val Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn	
115 120 125	
ggc tgt aga cct ccc aaa aaa aga cgt gtg tag	417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val	
130 135	

&lt;210&gt; 404

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Coffea arabica

&lt;400&gt; 404

Met Ala Lys Ala Ile Pro Arg Val Gly Ser Arg Lys Asn Gly Arg Ile  
 1 5 10 15  
 Ser Ser Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe His Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly

## PhoenixTemp32470.tmp.txt

```

      35      40      45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
  50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ala Asn Ala Ile
65      70      75      80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
Gly Ile Val Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
  130      135

```

&lt;210&gt; 405

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Cucumis sativus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 405

```

atg gca aaa ccc ata cca aga atc ggt tca cgt aga aat gga cgt att      48
Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile
  1      5      10
agc tca cgt aaa agt acg cgt aga ata cca aag ggc gtt att cat gtt      96
Ser Ser Arg Lys Ser Thr Arg Arg Ile Pro Lys Gly Val Ile His Val
      20      25      30
caa gca agt ttc aac aat aca att gtg act gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
cgg gta att tct tgg tcc tcc gcc ggt acg tgt gga ttc aaa ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
aga aga ggg aca cca ttt gcc gct caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75      80
cgg gga gta gtg gat caa ggg atg caa cga gcc gaa gtt atg ata aag      288
Arg Gly Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      85      90      95
ggc ccc ggt ctc gga aga gat gca gca tta aga gct att cgg aga agc      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
ggt ata tta tta agt ttc ata cgg gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Ile Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
ggc tgt agg ccc cct aaa aaa cga cgt gtg taa      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
  130      135

```

&lt;210&gt; 406

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Cucumis sativus

&lt;400&gt; 406

```

Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile
  1      5      10      15
Ser Ser Arg Lys Ser Thr Arg Arg Ile Pro Lys Gly Val Ile His Val
      20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80

```

## PhoenixTemp32470.tmp.txt

Arg Gly Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Ser Phe Ile Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 407

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Daucus carota

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 407

atg gca aaa act ata ccg aga att ggt tca cgt aag aat gga cgt att	48
Met Ala Lys Thr Ile Pro Arg Ile Gly Ser Arg Lys Asn Gly Arg Ile	
1 5 10 15	
ggt tca cgt aag aat aca cgg aga ata cca aag ggg gtt att cat gtt	96
Gly Ser Arg Lys Asn Thr Arg Arg Ile Pro Lys Gly Val Ile His Val	
20 25 30	
caa gca agt ttc aat aat act att gtg act gtt aca gat gta cgg ggt	144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly	
35 40 45	
cga gtg gtt tct tgg tcc tcc gcc ggt act tgt gga ttc aag ggt aca	192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr	
50 55 60	
cga agg ggt acg ccc ttt gct gct caa acc gca gca gga aac gct att	240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile	
65 70 75 80	
cgt aca gta gtg gat caa ggt atg caa cga gcg gaa gtc atg ata aaa	288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys	
85 90 95	
gga ccg ggt ctc gga aga gac gcg gca tta cgc gct att cgc aga agt	336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser	
100 105 110	
ggt ata cta tta act ttt gtg cgt gat gta acc cct atg cca cat aat	384
Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn	
115 120 125	
ggc tgt aga cct cca aaa aag cga cgt gtg tag	417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val	
130 135	

&lt;210&gt; 408

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Daucus carota

&lt;400&gt; 408

Met Ala Lys Thr Ile Pro Arg Ile Gly Ser Arg Lys Asn Gly Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys Asn Thr Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn

115  
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
130 135

125

<210> 409  
<211> 417  
<212> DNA  
<213> Draba nemorosa

<220>  
<221> CDS  
<222> (1)..(417)  
<223> transl\_table=11

<400> 409  
atg gca aaa cct ata tta aga gtt ggt tca cgt aaa aat aca cgt agt 48  
Met Ala Lys Pro Ile Leu Arg Val Gly Ser Arg Lys Asn Thr Arg Ser  
1 5 10 15  
gct tca cgt aaa aat gta cgt aaa ata cca aag gga gtt att cat gtt 96  
Ala Ser Arg Lys Asn Val Arg Lys Ile Pro Lys Gly Val Ile His Val  
20 25 30  
caa gca agt ttc aac aat acc att gtg acc gtt aca gat gta cgg ggt 144  
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
35 40 45  
cgg gtt att tct tgg tcc tcc gcg ggt act tgt gga ttc agg ggt aca 192  
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
50 55 60  
aga aga ggc aca cct ttt gct gct caa acc gca gca gga aat gct att 240  
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
65 70 75 80  
cga gca gta gtg gat caa ggc atg caa cga gct gaa gta agg ata aaa 288  
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys  
85 90 95  
ggc ccc gga cta gga aga gat gca gca tta cgc gct att cgt aga agt 336  
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
100 105 110  
ggt ata ctt tta agt ttc gta cga gac gta acc cct atg cca cat aat 384  
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
115 120 125  
ggt tgt aga ccc cct aaa aaa aga cgt gta tag 417  
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
130 135

<210> 410  
<211> 138  
<212> PRT  
<213> Draba nemorosa

<400> 410  
Met Ala Lys Pro Ile Leu Arg Val Gly Ser Arg Lys Asn Thr Arg Ser  
1 5 10 15  
Ala Ser Arg Lys Asn Val Arg Lys Ile Pro Lys Gly Val Ile His Val  
20 25 30  
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
35 40 45  
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
50 55 60  
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
65 70 75 80  
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys  
85 90 95  
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
100 105 110  
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
115 120 125  
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
130 135

<210> 411

<211> 393  
 <212> DNA  
 <213> *Drimys granadensis*

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 411  
 atg gca aaa cct ata cca aga att ggt tcg cgt agg aat gga cgt aga 48  
 Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Arg  
 1 5 10 15  
 ata cca aaa gga gtt att cat gtt caa gcg agt ttc aac aat acc att 96  
 Ile Pro Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 gta act gtt acg gat gtg cga ggt cgg gtg gtt tct tgg tcc tcc gcg 144  
 Val Thr Val Thr Asp Val Arg Gly Arg Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 ggt act tgt gga ttc aga ggc aca aga aga ggg aca cct ttt gct gct 192  
 Gly Thr Cys Gly Phe Arg Gly Thr Arg Arg Gly Thr Pro Phe Ala Ala  
 50 55 60  
 caa acc gca gca gga aat gct att cgt aca gta gtg gat cag ggt atg 240  
 Gln Thr Ala Ala Gly Asn Ala Ile Arg Thr Val Val Asp Gln Gly Met  
 65 70 75 80  
 caa cga gca gaa gtc atg ata aag ggt cct ggt ctc gga aga gat gca 288  
 Gln Arg Ala Glu Val Met Ile Lys Gly Pro Gly Leu Gly Arg Asp Ala  
 85 90 95  
 gca tta cga gcc att cgt aga agt ggt ata cta tta agt ttc gta cgt 336  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile Leu Leu Ser Phe Val Arg  
 100 105 110  
 gac gta acc cct atg cca cat aat gga tgt aga cct cct aaa aaa agg 384  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 cgt gtg tag 393  
 Arg Val  
 130

<210> 412  
 <211> 130  
 <212> PRT  
 <213> *Drimys granadensis*

<400> 412  
 Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Arg  
 1 5 10 15  
 Ile Pro Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Val Thr Asp Val Arg Gly Arg Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Thr Cys Gly Phe Arg Gly Thr Arg Arg Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Gly Asn Ala Ile Arg Thr Val Val Asp Gln Gly Met  
 65 70 75 80  
 Gln Arg Ala Glu Val Met Ile Lys Gly Pro Gly Leu Gly Arg Asp Ala  
 85 90 95  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile Leu Leu Ser Phe Val Arg  
 100 105 110  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 Arg Val  
 130

<210> 413  
 <211> 411  
 <212> DNA  
 <213> *Epifagus virginiana*

<220>

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(411)

&lt;223&gt; transl\_table=11

&lt;400&gt; 413

```

atg gca aaa gct ata cca ata act ggt tca cgt agg aat gta cat gtt      48
Met Ala Lys Ala Ile Pro Ile Thr Gly Ser Arg Arg Asn Val His Val
 1      5      10      15
ggt tca cgt aag agt tca ttt aga ata caa aag gga gtt att cat gta      96
Gly Ser Arg Lys Ser Ser Phe Arg Ile Gln Lys Gly Val Ile His Val
      20      25      30
caa aca agt ttc aat aat acc att gtt gca gtt aca gat ata aag ggt      144
Gln Thr Ser Phe Asn Asn Thr Ile Val Ala Val Thr Asp Ile Lys Gly
      35      40      45
cgg gtt gtt tcc tgg tcc tcg gct ggt act tgt gga ttt aag ggt acg      192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
aga aga ggg aca tcc ttt gct gcc caa att gca gca aca aat gct att      240
Arg Arg Gly Thr Ser Phe Ala Ala Gln Ile Ala Ala Thr Asn Ala Ile
      65      70      75      80
cgt ata gtc caa ggt atg caa cga gca gaa gta atg ata aaa ggt ccc      288
Arg Ile Val Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys Gly Pro
      85      90      95
ggt ata gga aga gac gca gta tta cga gct att cgt gga agt ggt gta      336
Gly Ile Gly Arg Asp Ala Val Leu Arg Ala Ile Arg Gly Ser Gly Val
      100      105      110
cta tta act ttt gta cgg gat gta acc cct atg cca cat aat ggc tgt      384
Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn Gly Cys
      115      120      125
aga cca cct aaa aaa aga cgt gtg taa      411
Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 414

&lt;211&gt; 136

&lt;212&gt; PRT

&lt;213&gt; Epifagus virginiana

&lt;400&gt; 414

```

Met Ala Lys Ala Ile Pro Ile Thr Gly Ser Arg Arg Asn Val His Val
 1      5      10      15
Gly Ser Arg Lys Ser Ser Phe Arg Ile Gln Lys Gly Val Ile His Val
      20      25      30
Gln Thr Ser Phe Asn Asn Thr Ile Val Ala Val Thr Asp Ile Lys Gly
      35      40      45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
Arg Arg Gly Thr Ser Phe Ala Ala Gln Ile Ala Ala Thr Asn Ala Ile
      65      70      75      80
Arg Ile Val Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys Gly Pro
      85      90      95
Gly Ile Gly Arg Asp Ala Val Leu Arg Ala Ile Arg Gly Ser Gly Val
      100      105      110
Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn Gly Cys
      115      120      125
Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 415

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Eucalyptus globulus subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 415

## PhoenixTemp32470.tmp.txt

```

atg gca aaa tct ata cca aga act ggt tca cgt agg aat gtc cgt agt      48
Met Ala Lys Ser Ile Pro Arg Thr Gly Ser Arg Arg Asn Val Arg Ser
1      5      10      15
ggt tca cgt aaa agt aca cgt aga ata cca aag gga gtt att cat gtt      96
Gly Ser Arg Lys Ser Thr Arg Arg Ile Pro Lys Gly Val Ile His Val
20      25      30
caa gca agt ttc aac aat acc att gtg act gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
cgg gta att tct tgg tcc tcc gcc ggt act tgt gga ttc aat ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Asn Gly Thr
50      55      60
aga agg ggg aca cca ttt gct gct caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
cgg aca gta gta gat caa ggt atg caa cga gca gaa gtc atg ata aaa      288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
ggt cct ggt ctc gga aga gat gca gca tta aga gct att cgt aga agt      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
ggt ata cta tta agt ttc gta cgt gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
ggc tgt aga cct cct aaa aaa aga cgt gtg tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135

```

&lt;210&gt; 416

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Eucalyptus globulus subsp

&lt;400&gt; 416

```

Met Ala Lys Ser Ile Pro Arg Thr Gly Ser Arg Arg Asn Val Arg Ser
1      5      10      15
Gly Ser Arg Lys Ser Thr Arg Arg Ile Pro Lys Gly Val Ile His Val
20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Asn Gly Thr
50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135

```

&lt;210&gt; 417

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Gossypium barbadense

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 417

```

atg gca aaa cct ata cca aaa gtt ggt tca cgt agg aat ggg cgc agt      48
Met Ala Lys Pro Ile Pro Lys Val Gly Ser Arg Arg Asn Gly Arg Ser
1      5      10      15
agt gca cgg aaa agt gca cgt aga ata cca aaa gga gtt att cat gtt      96
Ser Ala Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val

```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
caa gca agt ttc aac aat acc att gtt act gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
cgg gta atc tct tgg tcc tcc gcc ggc act tgt gga ttc aag ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
aga agg ggg acc cct ttt gct gca acc gca gcg gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75
cga gca gta gta gac caa ggt atg caa cga gcg gaa gtt atg ata aag      288
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      80      85      90
ggt cct ggt ctc gga aga gat gca gca tta cga gct att cgt aga agt      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
ggt ata cta tta agt ttc gta cgg gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
ggc tgt aga cct cct aaa aaa aga cgt gtg tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 418

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Gossypium barbadense

&lt;400&gt; 418

```

Met Ala Lys Pro Ile Pro Lys Val Gly Ser Arg Arg Asn Gly Arg Ser
1      5      10      15
Ser Ala Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val
      20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
      50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      80      85      90
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 419

&lt;211&gt; 411

&lt;212&gt; DNA

&lt;213&gt; Helianthus annuus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(411)

&lt;223&gt; transl\_table=11

&lt;400&gt; 419

```

atg gca aaa gct ata ccg aaa aag ggt tca cgt gga cgt att agt tcg      48
Met Ala Lys Ala Ile Pro Lys Lys Gly Ser Arg Gly Arg Ile Ser Ser
1      5      10      15
cgt aag agt ata cgt aaa ata cca aag ggt gtt att cat att caa gca      96
Arg Lys Ser Ile Arg Lys Ile Pro Lys Gly Val Ile His Ile Gln Ala
      20      25      30
agt ttc aat aat acc att gtg act gtt aca gat gta cga ggg cga gtg      144
Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly Arg Val
      35      40      45
gtt tct tgg tcc tct gcc ggt act tgt ggc ttc caa ggt aca aga aga      192

```



PhoenixTemp32470.tmp.txt

Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Gln	Gly	Thr	Arg	Arg		
50						55					60						
ggg	acg	ccg	ttt	gct	gct	caa	acc	gca	gcg	gca	aat	gct	att	cgt	gca	240	
Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Ala	Asn	Ala	Ile	Arg	Ala		
65					70					75					80		
gta	gta	gat	caa	ggt	atg	caa	cga	gca	gaa	gtc	atg	att	aaa	ggt	ccc	288	
Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys	Gly	Pro		
				85					90					95			
ggt	ctt	gga	aga	gac	gca	gca	tta	cga	gct	att	cgc	aga	agt	ggt	ata	336	
Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	Gly	Ile		
			100				105						110				
cta	tta	act	ttc	gta	cgg	gat	gta	acc	cct	atg	cca	cat	aat	ggc	tgt	384	
Leu	Leu	Thr	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	Gly	Cys		
			115				120					125					
aga	ccc	ccg	aaa	aaa	aga	cgt	gtg	tag								411	
Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val										
130						135											

<210> 420  
 <211> 136  
 <212> PRT  
 <213> Helianthus annuus

<400> 420

Met	Ala	Lys	Ala	Ile	Pro	Lys	Lys	Gly	Ser	Arg	Gly	Arg	Ile	Ser	Ser		
1				5					10					15			
Arg	Lys	Ser	Ile	Arg	Lys	Ile	Pro	Lys	Gly	Val	Ile	His	Ile	Gln	Ala		
			20				25					30					
Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	Arg	Val		
		35				40					45						
Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Gln	Gly	Thr	Arg	Arg		
		50				55					60						
Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Ala	Asn	Ala	Ile	Arg	Ala		
65				70					75					80			
Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys	Gly	Pro		
				85					90				95				
Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	Gly	Ile		
			100				105						110				
Leu	Leu	Thr	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	Gly	Cys		
		115					120					125					
Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val										
130						135											

<210> 421  
 <211> 399  
 <212> DNA  
 <213> Huperzia lucidula

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

<400> 421

atg	cca	aga	ctt	att	aaa	aaa	gta	ggt	agt	cta	cgt	agg	ggt	aaa	cgt	48	
Met	Pro	Arg	Leu	Ile	Lys	Lys	Val	Gly	Ser	Leu	Arg	Arg	Gly	Lys	Arg		
1				5					10					15			
gga	gta	cca	aaa	gga	gtt	att	cac	att	caa	gca	agc	ttt	aat	aat	acc	96	
Gly	Val	Pro	Lys	Gly	Val	Ile	His	Ile	Gln	Ala	Ser	Phe	Asn	Asn	Thr		
			20				25					30					
atc	gtg	act	gtt	aca	gat	gta	cga	gga	cag	gct	gtt	tct	tgg	tct	tcc	144	
Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	Gln	Ala	Val	Ser	Trp	Ser	Ser		
			35				40					45					
gcc	ggt	gcc	tgc	gga	tcc	aga	ggt	aca	aag	aaa	agt	acg	ccg	ttt	gct	192	
Ala	Gly	Ala	Cys	Gly	Ser	Arg	Gly	Thr	Lys	Lys	Ser	Thr	Pro	Phe	Ala		
		50				55					60						
gct	caa	act	gca	gca	gaa	aat	gct	att	cgt	atg	tta	atc	gat	caa	ggg	240	
Ala	Gln	Thr	Ala	Ala	Glu	Asn	Ala	Ile	Arg	Met	Leu	Ile	Asp	Gln	Gly		
65					70				75						80		

## PhoenixTemp32470.tmp.txt

```

ggt atg gaa caa gca gaa att ata atg aaa ggt ccg ggt cca gga aga      288
Gly Met Glu Gln Ala Glu Ile Ile Met Lys Gly Pro Gly Pro Gly Arg
      85      90      95
gac aca gca tca cga gct att cgt aaa agt ggt gta gta ctg agt ttc      336
Asp Thr Ala Ser Arg Ala Ile Arg Lys Ser Gly Val Val Leu Ser Phe
      100      105      110
gta cgt gac ata act cct atg cca cat aat ggg tgt aga cct ccc aag      384
Val Arg Asp Ile Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys
      115      120      125
aaa aga cgt gta taa      399
Lys Arg Arg Val
      130

```

&lt;210&gt; 422

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Huperzia lucidula

&lt;400&gt; 422

```

Met Pro Arg Leu Ile Lys Lys Val Gly Ser Leu Arg Arg Gly Lys Arg
1      5      10      15
Gly Val Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr
      20      25      30
Ile Val Thr Val Thr Asp Val Arg Gly Gln Ala Val Ser Trp Ser Ser
      35      40      45
Ala Gly Ala Cys Gly Ser Arg Gly Thr Lys Lys Ser Thr Pro Phe Ala
      50      55      60
Ala Gln Thr Ala Ala Glu Asn Ala Ile Arg Met Leu Ile Asp Gln Gly
65      70      75      80
Gly Met Glu Gln Ala Glu Ile Ile Met Lys Gly Pro Gly Pro Gly Arg
      85      90      95
Asp Thr Ala Ser Arg Ala Ile Arg Lys Ser Gly Val Val Leu Ser Phe
      100      105      110
Val Arg Asp Ile Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys
      115      120      125
Lys Arg Arg Val
      130

```

&lt;210&gt; 423

&lt;211&gt; 441

&lt;212&gt; DNA

&lt;213&gt; Jasminum nudiflorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(441)

&lt;223&gt; transl\_table=11

&lt;400&gt; 423

```

atg gca aaa gga act cgt ttt att aat ttt cgt aga tat gga cgt ttt      48
Met Ala Lys Gly Thr Arg Phe Ile Asn Phe Arg Arg Tyr Gly Arg Phe
1      5      10      15
ggt tca cgt aga tat aga cgt ttt ggt tca cat aag agt gta cgt aaa      96
Gly Ser Arg Arg Tyr Arg Arg Phe Gly Ser His Lys Ser Val Arg Lys
      20      25      30
ata cca aga ggg gtt att cat att caa aca agt ttc cac aat acc att      144
Ile Pro Arg Gly Val Ile His Ile Gln Thr Ser Phe His Asn Thr Ile
      35      40      45
gtc acg gtt aca gac gga cgg ggt cag gtg gtt tct tgg tcc tcg gcg      192
Val Thr Val Thr Asp Gly Arg Gly Gln Val Val Ser Trp Ser Ser Ala
      50      55      60
ggt act tgt aga ttc aag ggt ccg aga aaa agg aca ccc ttt gcc gct      240
Gly Thr Cys Arg Phe Lys Gly Pro Arg Lys Arg Thr Pro Phe Ala Ala
      65      70      75      80
caa att gta gca gca gat gct att ggt cca gta gtg gat cag ggt ctg      288
Gln Ile Val Ala Ala Asp Ala Ile Gly Pro Val Val Asp Gln Gly Leu
      85      90      95
caa cga gca aaa atc aag cta aag ggt acc ggt cgc gga aga gac gca      336
Gln Arg Ala Lys Ile Lys Leu Lys Gly Thr Gly Arg Gly Arg Asp Ala

```

## PhoenixTemp32470.tmp.txt

100 105 110  
 gca tta cga act att tct aaa agt ggt ata gga ttt act tcc gta cag 384  
 Ala Leu Arg Thr Ile Ser Lys Ser Gly Ile Gly Phe Thr Ser Val Gln  
 115 120 125  
 gat gta acc cct gtc ccc cat aat ggt tgc aga ccc ccg aac aaa aaa 432  
 Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Asn Lys Lys  
 130 135 140  
 cgt caa tag 441  
 Arg Gln  
 145

&lt;210&gt; 424

&lt;211&gt; 146

&lt;212&gt; PRT

&lt;213&gt; Jasminum nudiflorum

&lt;400&gt; 424

Met Ala Lys Gly Thr Arg Phe Ile Asn Phe Arg Arg Tyr Gly Arg Phe  
 1 5 10 15  
 Gly Ser Arg Arg Tyr Arg Arg Phe Gly Ser His Lys Ser Val Arg Lys  
 20 25 30  
 Ile Pro Arg Gly Val Ile His Ile Gln Thr Ser Phe His Asn Thr Ile  
 35 40 45  
 Val Thr Val Thr Asp Gly Arg Gly Gln Val Val Ser Trp Ser Ser Ala  
 50 55 60  
 Gly Thr Cys Arg Phe Lys Gly Pro Arg Lys Arg Thr Pro Phe Ala Ala  
 65 70 75 80  
 Gln Ile Val Ala Ala Asp Ala Ile Gly Pro Val Val Asp Gln Gly Leu  
 85 90 95  
 Gln Arg Ala Lys Ile Lys Leu Lys Gly Thr Gly Arg Gly Arg Asp Ala  
 100 105 110  
 Ala Leu Arg Thr Ile Ser Lys Ser Gly Ile Gly Phe Thr Ser Val Gln  
 115 120 125  
 Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Asn Lys Lys  
 130 135 140  
 Arg Gln  
 145

&lt;210&gt; 425

&lt;211&gt; 411

&lt;212&gt; DNA

&lt;213&gt; Lactuca sativa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(411)

&lt;223&gt; transl\_table=11

&lt;400&gt; 425

atg gca aaa gct ata ccg aaa aaa ggt tca cgt gga cgt att ggt tca 48  
 Met Ala Lys Ala Ile Pro Lys Lys Gly Ser Arg Gly Arg Ile Gly Ser  
 1 5 10 15  
 cgt aag agt aca cgt aaa ata cca aag ggg gtt att cat att caa gca 96  
 Arg Lys Ser Thr Arg Lys Ile Pro Lys Gly Val Ile His Ile Gln Ala  
 20 25 30  
 agt ttc aat aat acc att gtg act gtt aca gat gta cgg ggg cga gtg 144  
 Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly Arg Val  
 35 40 45  
 gtt tct tgg tcc tct gcc ggt act tct ggc ttc cga ggt aca aaa aga 192  
 Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Arg Gly Thr Lys Arg  
 50 55 60  
 ggg acg cca ttt gct gct caa acc gca gca gga cat gct att cgt gca 240  
 Gly Thr Pro Phe Ala Gln Thr Ala Ala Gly His Ala Ile Arg Ala  
 65 70 75 80  
 gta gta gat caa ggt atg caa cga gca gaa gtc atg att aaa ggt ccc 288  
 Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys Gly Pro  
 85 90 95  
 ggt ctc gga aga gac gca gca tta cga gct att cgc aga agt ggt ata 336  
 Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile

## PhoenixTemp32470.tmp.txt

cta	tta	act	100	gta	cgg	gat	105	gta	acc	cct	atg	cca	cat	110	aat	ggc	tgt	384
Leu	Leu	Thr	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	Gly	Cys			
		115					120						125					
aga	ccc	ccg	aaa	aaa	aga	cgt	gtg	tag										411
Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val											
	130					135												

&lt;210&gt; 426

&lt;211&gt; 136

&lt;212&gt; PRT

&lt;213&gt; Lactuca sativa

&lt;400&gt; 426

Met	Ala	Lys	Ala	Ile	Pro	Lys	Lys	Gly	Ser	Arg	Gly	Arg	Ile	Gly	Ser			
1				5				10						15				
Arg	Lys	Ser	Thr	Arg	Lys	Ile	Pro	Lys	Gly	Val	Ile	His	Ile	Gln	Ala			
			20					25					30					
Ser	Phe	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly	Arg	Val				
		35					40				45							
Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Ser	Gly	Phe	Arg	Gly	Thr	Lys	Arg			
		50				55				60								
Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	His	Ala	Ile	Arg	Ala			
65				70				75						80				
Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys	Gly	Pro			
			85					90						95				
Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser	Gly	Ile			
			100					105					110					
Leu	Leu	Thr	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn	Gly	Cys			
		115					120					125						
Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val											
	130					135												

&lt;210&gt; 427

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Liriodendron tulipifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 427

atg	aca	aaa	cct	ata	cca	aga	att	ggt	tca	cgt	agg	aat	ggg	cgt	att			48
Met	Thr	Lys	Pro	Ile	Pro	Arg	Ile	Gly	Ser	Arg	Arg	Asn	Gly	Arg	Ile			
1				5				10					15					
ggt	tca	cgt	aag	agt	ggg	cgt	aga	ata	cca	aaa	gga	gtt	att	cat	gtt			96
Gly	Ser	Arg	Lys	Ser	Gly	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val			
			20					25					30					
caa	gcg	agt	ttc	aac	aat	acc	att	gtg	act	gtt	aca	gat	gta	cta	ggt			144
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Leu	Gly			
		35					40				45							
cag	gtg	gtt	tct	tgg	tcc	tcc	gct	ggt	act	tgt	gga	ttt	aga	ggc	aca			192
Gln	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Arg	Gly	Thr			
		50				55				60								
aga	aga	ggg	aca	cca	ttt	gct	caa	acc	gca	gca	gga	aac	gct	att				240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile			
		65			70			75						80				
cgt	aca	gta	gtg	gat	cag	ggt	atg	caa	cga	gca	gaa	gtc	atg	ata	aag			288
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys			
			85					90						95				
ggt	cct	ggt	ctc	gga	aga	gat	gca	gca	cta	cga	gct	att	cgt	aga	agt			336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser			
			100				105						110					
ggt	ata	cta	tta	agt	ttc	gta	cgt	gac	gta	acc	cct	atg	cca	cat	aat			384
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn			
		115					120					125						
gga	tgt	aga	cct	cct	aaa	aaa	aga	cgt	gtg	tag								417

Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
130 135

<210> 428  
<211> 138  
<212> PRT  
<213> Liriodendron tulipifera

<400> 428  
Met Thr Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile  
1 5 10 15  
Gly Ser Arg Lys Ser Gly Arg Arg Ile Pro Lys Gly Val Ile His Val  
20 25 30  
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Leu Gly  
35 40 45  
Gln Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
50 55 60  
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
65 70 75 80  
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
85 90 95  
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
100 105 110  
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
115 120 125  
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
130 135

<210> 429  
<211> 417  
<212> DNA  
<213> Lotus japonicus

<220>  
<221> CDS  
<222> (1)..(417)  
<223> transl\_table=11

<400> 429  
atg gca aaa cct ata cca aag att ggt tca cgt aaa aat gca cgt agt 48  
Met Ala Lys Pro Ile Pro Lys Ile Gly Ser Arg Lys Asn Ala Arg Ser 15  
1 5 10  
ggt tct cgt aag cat ctt cgt aaa ata cca aag ggg att att cat gtt 96  
Gly Ser Arg Lys His Leu Arg Lys Ile Pro Lys Gly Ile Ile His Val 20 25 30  
caa gct agt ttt aac aat acc att gta act gtt aca gat gta cga ggt 144  
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly 35 40 45  
agg gtg att tct tgg tcc tcc gcc ggt act tgt gga ttc aag ggt aca 192  
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr 50 55 60  
cga agg gga aca cca ttt gcc gct caa acc gca gca gga aat gct att 240  
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile 65 70 75 80  
cga aca gta gcg gat caa ggt atg caa cga gca gaa gtc atg ata aaa 288  
Arg Thr Val Ala Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys 85 90 95  
ggt ccc ggt ctc gga aga gat gca gca tta aga gct att cgt aga agc 336  
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser 100 105 110  
ggt ata tta tta aac ttt ata cgg gat gta act cct atg cca cat aat 384  
Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn 115 120 125  
gga tgt agg tca cct aaa aaa aga cgt gta taa 417  
Gly Cys Arg Ser Pro Lys Lys Arg Arg Val 130 135

<210> 430  
<211> 138

&lt;212&gt; PRT

&lt;213&gt; Lotus japonicus

&lt;400&gt; 430

```

Met Ala Lys Pro Ile Pro Lys Ile Gly Ser Arg Lys Asn Ala Arg Ser
1      5      10      15
Gly Ser Arg Lys His Leu Arg Lys Ile Pro Lys Gly Ile Ile His Val
20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75
Arg Thr Val Ala Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100     105     110
Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn
115     120     125
Gly Cys Arg Ser Pro Lys Lys Arg Arg Val
130     135

```

&lt;210&gt; 431

&lt;211&gt; 432

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(432)

&lt;400&gt; 431

```

atg aca aaa gct ata cca aaa ata ggt tca cgt aag aaa gtg cgt att      48
Met Thr Lys Ala Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile
1      5      10      15
ggt ttg cgt agg aat gcc cgt ttt agt tta cgg aag agt gca cgt aga      96
Gly Leu Arg Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg
20      25      30
ata aca aaa ggg att att cat gtt caa gct agt ttc aac aat acc att      144
Ile Thr Lys Gly Ile Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile
35      40      45
ata acc gtt aca gac cca caa ggt cgg gtc gtt ttc tgg tcc tcc gca      192
Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala
50      55      60
ggt act tgt gga ttc aaa agc tca aga aaa gca tca ccc tat gct ggt      240
Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly
65      70      75
caa aga aca gca gta gat gct att cgt aca gtg ggt ttg caa cga gca      288
Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala
85      90      95
gaa gtt atg gta aaa ggt gct ggt agc gga aga gat gcc gca tta cga      336
Glu Val Met Val Lys Gly Ala Gly Ser Gln Arg Asp Ala Ala Leu Arg
100     105     110
gcc att gct aaa agt ggt gta cgg tta agt tgt ata cgc gat gta aca      384
Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr
115     120     125
cct atg ccg cat aat gga tgt cga cct cct aaa aaa aga cgt ctg      429
Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu
130     135     140
taa
432

```

&lt;210&gt; 432

&lt;211&gt; 143

&lt;212&gt; PRT

&lt;213&gt; Zea mays

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 432

```

Met Thr Lys Ala Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile
1      5      10      15
Gly Leu Arg Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg
20      25      30
Ile Thr Lys Gly Ile Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile
35      40      45
Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala
50      55      60
Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly
65      70      75      80
Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala
85      90      95
Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg
100      105      110
Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr
115      120      125
Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu
130      135      140

```

&lt;210&gt; 433

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Marchantia polymorpha

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 433

```

atg cca aaa tct gta aaa aaa att aat tta cgt aaa gga aaa cgt agg      48
Met Pro Lys Ser Val Lys Lys Ile Asn Leu Arg Lys Gly Lys Arg Arg
1      5      10      15
tta cct aaa gga gtt att cat att caa gcc agc ttt aat aat aca att      96
Leu Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
20      25      30
gta act gtt aca gat att aga ggg caa gtc gtt tca tgg tct tct gct      144
Val Thr Val Thr Asp Ile Arg Gly Gln Val Val Ser Trp Ser Ser Ala
35      40      45
ggg gct tgc gga ttt aaa ggt aca aaa aaa agt acc cca ttt gcc gct      192
Gly Ala Cys Gly Phe Lys Gly Thr Lys Lys Ser Thr Pro Phe Ala Ala
50      55      60
caa acc gct gca gaa aat gct att cgg ata tta att gat caa ggt atg      240
Gln Thr Ala Ala Glu Asn Ala Ile Arg Ile Leu Ile Asp Gln Gly Met
65      70      75      80
aaa caa gcg gaa gtt atg att agt ggt cca gga cca ggc aga gat acg      288
Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr
85      90      95
gca tta cga gca att cgt cgg agt ggt ata ata ctt agt ttt gta cgt      336
Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile Ile Leu Ser Phe Val Arg
100      105      110
gac gta act ccc atg cct cat aat gga tgt aga cca cct aga aaa aga      384
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Arg Lys Arg
115      120      125
cgt gta taa
Arg Val
130

```

&lt;210&gt; 434

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Marchantia polymorpha

&lt;400&gt; 434

```

Met Pro Lys Ser Val Lys Lys Ile Asn Leu Arg Lys Gly Lys Arg Arg
1      5      10      15
Leu Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
20      25      30

```

## PhoenixTemp32470.tmp.txt

Val Thr Val Thr Asp Ile Arg Gly Gln Val Val Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Thr Lys Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Asn Ala Ile Arg Ile Leu Ile Asp Gln Gly Met  
 65 70 75 80  
 Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Ile Ile Leu Ser Phe Val Arg  
 100 105 110  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Arg Lys Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 435

&lt;211&gt; 411

&lt;212&gt; DNA

&lt;213&gt; Marsilea quadrifolia

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (19)..(411)

&lt;400&gt; 435

atgaacaata	aaataact	atg	tca	aaa	att	tca	aga	aag	tct	cgt	ttg	cgt	51
		Met	Ser	Lys	Ile	Ser	Arg	Lys	Ser	Arg	Leu	Arg	
		1				5					10		
aaa gga	aaa cgc	gga gtc	caa aaa	ggg att	att cac	att caa	gca ggt	99					
Lys Gly	Lys Arg	Gly Val	Gln Lys	Gly Ile	Ile His	Ile Gln	Ala Gly						
	15			20		25							
ttt aat	aat acc	atc att	act gtc	acg gat	ggt cga	gga caa	gtc att	147					
Phe Asn	Asn Thr	Ile Ile	Thr Val	Thr Asp	Val Arg	Gly Gln	Val Ile						
	30		35		40								
ctt tgg	tct tct	gcc ggt	gct tgc	gga ttc	aaa ggt	act cgc	agg agt	195					
Leu Trp	Ser Ser	Ala Gly	Ala Cys	Gly Phe	Lys Gly	Thr Arg	Arg Ser						
	45		50		55								
aca cca	ttt gcc	gcc caa	gct gca	gcg gaa	aat gcc	gtc cgt	gcg tcc	243					
Thr Pro	Phe Ala	Ala Gln	Ala Ala	Ala Glu	Asn Ala	Val Arg	Ala Ser						
	60	65		70									
atg gat	cgg gga	ctg aaa	cag gca	gag gta	atg ata	agc ggg	cct ggt	291					
Met Asp	Arg Gly	Leu Lys	Gln Ala	Glu Val	Met Ile	Ser Gly	Pro Gly						
		80		85			90						
cca ggg	aga gac	acc gct	tta cga	gcc att	cga cga	agc ggt	gta acc	339					
Pro Gly	Arg Asp	Thr Ala	Leu Arg	Ala Ile	Arg Arg	Ser Gly	Val Thr						
	95			100		105							
ctt agt	ttc gta	cgt gat	gtg act	cct atg	cca cat	aat gga	tgt aga	387					
Leu Ser	Phe Val	Arg Asp	Val Thr	Pro Met	Pro His	Asn Gly	Cys Arg						
	110		115			120							
ccc cca	aaa aag	aga cgc	gta tga					411					
Pro Pro	Lys Lys	Arg Arg	Val										
	125		130										

&lt;210&gt; 436

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Marsilea quadrifolia

&lt;400&gt; 436

Met Ser Lys Ile Ser Arg Lys Ser Arg Leu Arg Lys Gly Lys Arg Gly  
 1 5 10 15  
 Val Gln Lys Gly Ile Ile His Ile Gln Ala Gly Phe Asn Asn Thr Ile  
 20 25 30  
 Ile Thr Val Thr Asp Val Arg Gly Gln Val Ile Leu Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Thr Arg Arg Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Ala Ala Ala Glu Asn Ala Val Arg Ala Ser Met Asp Arg Gly Leu  
 65 70 75 80



## PhoenixTemp32470.tmp.txt

Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Thr Leu Ser Phe Val Arg  
 100 105 110  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 437

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Mesostigma viride

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 437

atg gca aaa caa ata aga aag ata ggt gtt cgt aaa aca aag aga aag	48
Met Ala Lys Gln Ile Arg Lys Ile Gly Val Arg Lys Thr Lys Arg Lys	
1 5 10 15	
att cct aaa gga gtc gtt cat gta caa gct acg ttc aat aat act att	96
Ile Pro Lys Gly Val Val His Val Gln Ala Thr Phe Asn Asn Thr Ile	
20 25 30	
gta acc ata aca gat gtt aga ggt gaa gta ttg tca tgg tct tct gct	144
Val Thr Ile Thr Asp Val Arg Gly Glu Val Leu Ser Trp Ser Ser Ala	
35 40 45	
ggt gct tgt ggc ttc aaa gga aca aaa gga act cct ttt gca gca	192
Gly Ala Cys Gly Phe Lys Gly Thr Lys Lys Gly Thr Pro Phe Ala Ala	
50 55 60	
caa act gct gct gaa aat gca gtt aga caa gta att gat caa ggc atg	240
Gln Thr Ala Ala Glu Asn Ala Val Arg Gln Val Ile Asp Gln Gly Met	
65 70 75 80	
aaa caa gca gaa ata atg att agt gga cct ggt tct gga aga gaa aca	288
Lys Gln Ala Glu Ile Met Ile Ser Gly Pro Gly Ser Gly Arg Glu Thr	
85 90 95	
gct ata cgt gct att caa gct gct gga tta ggt att act tta att cgt	336
Ala Ile Arg Ala Ile Gln Ala Ala Gly Leu Gly Ile Thr Leu Ile Arg	
100 105 110	
gat gta act cct att cct cat aat ggt tgt cga cct cct aaa aaa cgt	384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg	
115 120 125	
aga gtc taa	393
Arg Val	
130	

&lt;210&gt; 438

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Mesostigma viride

&lt;400&gt; 438

Met Ala Lys Gln Ile Arg Lys Ile Gly Val Arg Lys Thr Lys Arg Lys	
1 5 10 15	
Ile Pro Lys Gly Val Val His Val Gln Ala Thr Phe Asn Asn Thr Ile	
20 25 30	
Val Thr Ile Thr Asp Val Arg Gly Glu Val Leu Ser Trp Ser Ser Ala	
35 40 45	
Gly Ala Cys Gly Phe Lys Gly Thr Lys Lys Gly Thr Pro Phe Ala Ala	
50 55 60	
Gln Thr Ala Ala Glu Asn Ala Val Arg Gln Val Ile Asp Gln Gly Met	
65 70 75 80	
Lys Gln Ala Glu Ile Met Ile Ser Gly Pro Gly Ser Gly Arg Glu Thr	
85 90 95	
Ala Ile Arg Ala Ile Gln Ala Ala Gly Leu Gly Ile Thr Leu Ile Arg	
100 105 110	
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg	

Arg Val 115  
130

<210> 439  
<211> 417  
<212> DNA  
<213> Morus indica

<220>  
<221> CDS  
<222> (1)..(417)  
<223> transl\_table=11

```
<400> 439
atg gca aaa cct cta cca aga att ggt tca cgt aag aat aga cat atg      48
Met Ala Lys Pro Leu Pro Arg Ile Gly Ser Arg Lys Asn Arg His Met
1      5      10      15
ggt tca cgt aaa aat gta cgt aga ata cca aag gga gtt att cat gtc      96
Gly Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
20      25      30
caa gca agt ttc aac aat act att gtg act gtt aca gat gta cgg ggg      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
cgg gta att tct tgg tcc tcc gcc ggt act tgc gga ttc aaa ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
50      55      60
aaa aga ggg aca cca ttt gcc gct caa acc gca gca gga aat gct att      240
Lys Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
cgg aca gta gtg gat cag ggt atg caa cga gca gaa gtc atg ata aaa      288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
ggc ccc ggt ctc gga aga gat gcg gca tta aga gct att cgc aga agt      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
ggt ata cta tta agt ttc ata cga gac gta act cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Ile Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
ggc tgc agg ccc cct aaa aaa aga cgt gtg taa      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135
```

<210> 440  
<211> 138  
<212> PRT  
<213> Morus indica

```
<400> 440
Met Ala Lys Pro Leu Pro Arg Ile Gly Ser Arg Lys Asn Arg His Met
1      5      10      15
Gly Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr
50      55      60
Lys Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
Gly Ile Leu Leu Ser Phe Ile Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135
```

<210> 441

<211> 417  
 <212> DNA  
 <213> Nandina domestica

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 441  
 atg aca aaa ccc ata tca aga att ggt tca cgt agg aat gta cgc atc 48  
 Met Thr Lys Pro Ile Ser Arg Ile Gly Ser Arg Arg Asn Val Arg Ile  
 1 5 10 15  
 ggt tca cgt aag agt gga cgt aga ata cca aaa gga gtt att cat gtt 96  
 Gly Ser Arg Lys Ser Gly Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 caa gca agt ttc aac aat acc att gta acg gtt aca gat ata cgg ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Ile Arg Gly  
 35 40 45  
 cgg gtg gtt tcg tgg tcc tcc gcc ggt act tgt gga ttc agg ggc aca 192  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 aga aga ggc acg cca ttt gct gct caa acc gca gca tca aat gct att 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ser Asn Ala Ile  
 65 70 75 80  
 cgt aca gta gta gat cag ggt atg caa cga gca gaa gtc agg ata aaa 288  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys  
 85 90 95  
 ggt cct ggt ctc gga aga gat gca gca tta cga gcc att cgt aga agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 ggt ata cta tta agt ttt gtc aga gac gta acc cct atg cca cat aat 384  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 gga tgt aga cct cct aaa aaa aga cgt gta tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 442  
 <211> 138  
 <212> PRT  
 <213> Nandina domestica

<400> 442  
 Met Thr Lys Pro Ile Ser Arg Ile Gly Ser Arg Arg Asn Val Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys Ser Gly Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Ile Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ser Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 443  
 <211> 417  
 <212> DNA  
 <213> Nasturtium officinale

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 443

```

atg gca aaa cct ata tta aga att ggt tca cgt aaa aat aca cgt agt      48
Met Ala Lys Pro Ile Leu Arg Ile Gly Ser Arg Lys Asn Thr Arg Ser
 1      5      10      15
agt tca cgt aaa aat gta cgt aga ata cca aag gga gtt att cat gtt      96
Ser Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
      20      25      30
caa gca agt ttc aac aat acc att gtg acc gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
cgg gtg att tct tgg tcc tcc gcg ggt act tgt gga ttc agg ggt aca      192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
      50      55      60
aga aga gga aca cct ttt gct gcc caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75      80
cga gca gta gtg gat caa ggt atg caa cga gct gaa gta agg ata aaa      288
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys
      85      90      95
ggc cct gga ctg gga aga gat gca gca tta cga gct att cgt aga agc      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
ggg ata ctt tta agt ttc gta cga gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
ggg tgt aga ccc cct aaa aaa aga cgt gta tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 444

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Nasturtium officinale

&lt;400&gt; 444

```

Met Ala Lys Pro Ile Leu Arg Ile Gly Ser Arg Lys Asn Thr Arg Ser
 1      5      10      15
Ser Ser Arg Lys Asn Val Arg Arg Ile Pro Lys Gly Val Ile His Val
      20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
      50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
      65      70      75      80
Arg Ala Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys
      85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 445

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Nephrolepis olivacea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 445

## PhoenixTemp32470.tmp.txt

```

atg gca aga cag tcg aaa cga ctt gca cca cgc cga ctt aaa cgc aag      48
Met Ala Arg Gln Ser Lys Arg Leu Ala Pro Arg Arg Leu Lys Arg Lys
1      5      10      15
gtt tca aaa gga gtt gtg cat att caa gcc agt ttt aat aat aca att      96
Val Ser Lys Gly Val Val His Ile Gln Ala Ser Phe Asn Asn Thr Ile
20      25      30
gtc acc att aca gat tcc tca ggt ggc gta ctt gct tgg tct tct gca      144
Val Thr Ile Thr Asp Ser Ser Gly Gly Val Leu Ala Trp Ser Ser Ala
35      40      45
gga gct tgc ggc ttt cga gga gcg aaa aaa gga act cct ttt gct gct      192
Gly Ala Cys Gly Phe Arg Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala
50      55      60
caa acc gct gca gaa act gct att cgt caa tgc att gat cag ggg atg      240
Gln Thr Ala Ala Glu Thr Ala Ile Arg Gln Cys Ile Asp Gln Gly Met
65      70      75      80
cga caa gct gat att att gtt caa ggg cca ggg aat ggt cgt gaa aca      288
Arg Gln Ala Asp Ile Ile Val Gln Gly Pro Gly Asn Gly Arg Glu Thr
85      90      95
gca att cgt gca tta caa ctt gcg ggt gtc ggt gtt tct ttg att cgt      336
Ala Ile Arg Ala Leu Gln Leu Ala Gly Val Gly Val Ser Leu Ile Arg
100      105      110
gat att act tct gta cca cat aac ggt tgc aga cct cca aaa caa cga      384
Asp Ile Thr Ser Val Pro His Asn Gly Cys Arg Pro Pro Lys Gln Arg
115      120      125
cgt att taa
Arg Ile
130

```

&lt;210&gt; 446

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Nephroselmis olivacea

&lt;400&gt; 446

```

Met Ala Arg Gln Ser Lys Arg Leu Ala Pro Arg Arg Leu Lys Arg Lys
1      5      10      15
Val Ser Lys Gly Val Val His Ile Gln Ala Ser Phe Asn Asn Thr Ile
20      25      30
Val Thr Ile Thr Asp Ser Ser Gly Gly Val Leu Ala Trp Ser Ser Ala
35      40      45
Gly Ala Cys Gly Phe Arg Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala
50      55      60
Gln Thr Ala Ala Glu Thr Ala Ile Arg Gln Cys Ile Asp Gln Gly Met
65      70      75      80
Arg Gln Ala Asp Ile Ile Val Gln Gly Pro Gly Asn Gly Arg Glu Thr
85      90      95
Ala Ile Arg Ala Leu Gln Leu Ala Gly Val Gly Val Ser Leu Ile Arg
100      105      110
Asp Ile Thr Ser Val Pro His Asn Gly Cys Arg Pro Pro Lys Gln Arg
115      120      125
Arg Ile
130

```

&lt;210&gt; 447

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Nicotiana tomentosiformis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 447

```

atg gca aaa gct ata ccg aaa att agt tcg cgt agg aat gga cgt att      48
Met Ala Lys Ala Ile Pro Lys Ile Ser Ser Arg Arg Asn Gly Arg Ile
1      5      10      15
ggt tca cgt aag ggt gca cgt aga ata cca aag gga gtt att cat gtt      96
Gly Ser Arg Lys Gly Ala Arg Arg Ile Pro Lys Gly Val Ile His Val

```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
caa gca agt ttc aat aat acc att gtc act gtt aca gat gta cgg ggt 144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
cga gta gtt tct tgg tcc tcc gcc ggt act tct gga ttc aaa ggt aca 192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr
      50      55      60
aga aga gga aca ccg ttt gct gct caa acc gca gta gca aac gct atc 240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Val Ala Asn Ala Ile
      65      70      75
cgt aca gta gtg gat caa ggt atg caa cga gct gaa gtc atg ata aaa 288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      85      90      95
ggt ccc ggt ctc gga aga gat gca gca tta cga gct att cgt cga agt 336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
ggt ata cta tta act ttc gta cgg gat gta act cct atg cca cat aat 384
Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
ggc tgt aga cct ccg aaa aaa aga cgt gtg tag 417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 448

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Nicotiana tomentosiformis

&lt;400&gt; 448

```

Met Ala Lys Ala Ile Pro Lys Ile Ser Ser Arg Arg Asn Gly Arg Ile
1      5      10      15
Gly Ser Arg Lys Gly Ala Arg Arg Ile Pro Lys Gly Val Ile His Val
      20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
      35      40      45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr
      50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Val Ala Asn Ala Ile
      65      70      75
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
      85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
      100      105      110
Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn
      115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
      130      135

```

&lt;210&gt; 449

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Nymphaea alba

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 449

```

atg aca aaa cct ata cca aaa att ggt tca cgt aga aat agc cgt att 48
Met Thr Lys Pro Ile Pro Lys Ile Gly Ser Arg Arg Asn Ser Arg Ile
1      5      10      15
agt tca cgt aag agt ggg tgt aga aca cca ata gga gtt att cat gtt 96
Ser Ser Arg Lys Ser Gly Cys Arg Thr Pro Ile Gly Val Ile His Val
      20      25      30
caa gcg agt ttc aac aat act att gtt act gtt aca gac cca caa ggt 144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Pro Gln Gly
      35      40      45
cgg gtc gtt tct tgg tct tcc gca ggt acc tgt ggg ttc aag ggc aca 192

```

## PhoenixTemp32470.tmp.txt

Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Lys	Gly	Thr		
aga	agg	ggt	acc	cca	ttt	gct	gct	caa	acc	gca	gca	gga	aat	gct	att		240
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
cgt	gcg	gta	gtg	gac	cag	ggt	atg	caa	cga	gca	gaa	gtc	atg	ata	aag		288
Arg	Ala	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
ggg	ccc	ggt	ctc	ggg	aga	gat	gca	gca	tta	cga	gcg	att	cgt	aga	agt		336
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
ggt	ata	cta	tta	aat	ttt	gta	cgt	gac	gta	acc	cct	atg	ccg	cat	aat		384
Gly	Ile	Leu	Leu	Asn	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
gga	tgt	aga	ccg	cca	aaa	aaa	agg	cgc	gtt	tag							417
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								

&lt;210&gt; 450

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Nymphaea alba

&lt;400&gt; 450

Met	Thr	Lys	Pro	Ile	Pro	Lys	Ile	Gly	Ser	Arg	Arg	Asn	Ser	Arg	Ile		
1				5					10					15			
Ser	Ser	Arg	Lys	Ser	Gly	Cys	Arg	Thr	Pro	Ile	Gly	Val	Ile	His	Val		
			20					25					30				
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Pro	Gln	Gly		
		35					40					45					
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Thr	Cys	Gly	Phe	Lys	Gly	Thr		
		50				55					60						
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
65					70					75					80		
Arg	Ala	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85				90						95			
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
Gly	Ile	Leu	Leu	Asn	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

&lt;210&gt; 451

&lt;211&gt; 435

&lt;212&gt; DNA

&lt;213&gt; Oenothera hookeri

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(435)

&lt;223&gt; transl\_table=11

&lt;400&gt; 451

atg	gca	aaa	tct	ata	cca	agc	gct	ggt	tta	cgt	tta	cgt	tta	cgt	tta		48
Met	Ala	Lys	Ser	Ile	Pro	Ser	Ala	Gly	Leu	Arg	Leu	Arg	Leu	Arg	Leu		
1				5					10					15			
cgt	agg	aat	gcg	cgt	agg	cgt	tca	cgt	aag	agt	acg	cgt	aaa	atc	cca		96
Arg	Arg	Asn	Ala	Arg	Arg	Arg	Ser	Arg	Lys	Ser	Thr	Arg	Lys	Ile	Pro		
			20					25					30				
aag	ggg	gtt	att	cat	gtt	caa	gcg	agt	ttc	cac	aat	act	att	gtg	act		144
Lys	Gly	Val	Ile	His	Val	Gln	Ala	Ser	Phe	His	Asn	Thr	Ile	Val	Thr		
		35				40						45					
gtt	aca	gat	gtg	cgg	ggg	cgg	gta	att	tct	tgg	tcc	tcc	gcc	ggt	act		192
Val	Thr	Asp	Val	Arg	Gly	Arg	Val	Ile	Ser	Trp	Ser	Ser	Ala	Gly	Thr		
		50				55						60					
tgt	gga	ttc	aag	agt	aca	aga	aaa	ggg	acg	cca	ttt	gct	gct	caa	acc		240
Cys	Gly	Phe	Lys	Ser	Thr	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr		
		65				70				75					80		

## PhoenixTemp32470.tmp.txt

gca gca gga gat gct att cgg cca gta gtg gat caa ggt atg caa cga	288
Ala Ala Gly Asp Ala Ile Arg Pro Val Val Asp Gln Gly Met Gln Arg	
85 90 95	
gca gaa gtc agg ata aaa ggt ccc ggt ctc gga aga gat gcg gca tta	336
Ala Glu Val Arg Ile Lys Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu	
100 105 110	
cga gcg att cgt aga agt ggt ata cga tta agt tgt ata cgt gat gta	384
Arg Ala Ile Arg Arg Ser Gly Ile Arg Leu Ser Cys Ile Arg Asp Val	
115 120 125	
acc cct ctg cca cat aat ggc tgt atg ccc ccg aaa aaa agg cgc gtg	432
Thr Pro Leu Pro His Asn Gly Cys Met Pro Pro Lys Lys Arg Arg Val	
130 135 140	
tag	435

<210> 452  
 <211> 144  
 <212> PRT  
 <213> Oenothera hookeri

<400> 452	
Met Ala Lys Ser Ile Pro Ser Ala Gly Leu Arg Leu Arg Leu Arg Leu	
1 5 10 15	
Arg Arg Asn Ala Arg Arg Arg Ser Arg Lys Ser Thr Arg Lys Ile Pro	
20 25 30	
Lys Gly Val Ile His Val Gln Ala Ser Phe His Asn Thr Ile Val Thr	
35 40 45	
Val Thr Asp Val Arg Gly Arg Val Ile Ser Trp Ser Ser Ala Gly Thr	
50 55 60	
Cys Gly Phe Lys Ser Thr Arg Lys Gly Thr Pro Phe Ala Ala Gln Thr	
65 70 75 80	
Ala Ala Gly Asp Ala Ile Arg Pro Val Val Asp Gln Gly Met Gln Arg	
85 90 95	
Ala Glu Val Arg Ile Lys Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu	
100 105 110	
Arg Ala Ile Arg Arg Ser Gly Ile Arg Leu Ser Cys Ile Arg Asp Val	
115 120 125	
Thr Pro Leu Pro His Asn Gly Cys Met Pro Pro Lys Lys Arg Arg Val	
130 135 140	

<210> 453  
 <211> 390  
 <212> DNA  
 <213> Oltmannsiellopsis viridis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 453	
atg gca aaa caa gta cgt aag gcc tca aaa aaa aca aaa tta aaa gtt	48
Met Ala Lys Gln Val Arg Lys Ala Ser Lys Lys Thr Lys Leu Lys Val	
1 5 10 15	
cca agc ggc gtc gct cat gta caa gca act ttt aat aat acc att att	96
Pro Ser Gly Val Ala His Val Gln Ala Thr Phe Asn Asn Thr Ile Ile	
20 25 30	
aca att aca aac cct gcg ggg gat gtt ctt gca tgg tgc tca gca ggc	144
Thr Ile Thr Asn Pro Ala Gly Asp Val Leu Ala Trp Cys Ser Ala Gly	
35 40 45	
gca agt ggt ttt aaa ggt gcg cgt aaa tca acg ccc ttt gca gct aaa	192
Ala Ser Gly Phe Lys Gly Ala Arg Lys Ser Thr Pro Phe Ala Ala Lys	
50 55 60	
att gca gct gaa aca gca gcc cgt aaa tca atg gat tac ggg tta cgt	240
Ile Ala Ala Glu Thr Ala Ala Arg Lys Ser Met Asp Tyr Gly Leu Arg	
65 70 75 80	
caa att agt gta att att aaa gga gca ggt tcg ggt cgt gaa tct gct	288
Gln Ile Ser Val Ile Ile Lys Gly Ala Gly Ser Gly Arg Glu Ser Ala	



## PhoenixTemp32470.tmp.txt

				85					90					95				
att	cgt	gga	tta	tca	gaa	gcg	ggg	cta	gaa	att	aaa	tta	tta	cgt	gat			
Ile	Arg	Gly	Leu	Ser	Glu	Ala	Gly	Leu	Glu	Ile	Lys	Leu	Leu	Arg	Asp			336
			100					105				110						
att	act	tct	att	cca	cac	aat	ggg	tgt	cgt	cca	cct	aaa	aaa	cgt	cgt			384
Ile	Thr	Ser	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg			
		115					120					125						
gtt	taa																	390
Val																		

&lt;210&gt; 454

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Oltmannsiellopsis viridis

&lt;400&gt; 454

Met	Ala	Lys	Gln	Val	Arg	Lys	Ala	Ser	Lys	Lys	Thr	Lys	Leu	Lys	Val			
1				5				10					15					
Pro	Ser	Gly	Val	Ala	His	Val	Gln	Ala	Thr	Phe	Asn	Asn	Thr	Ile	Ile			
			20					25					30					
Thr	Ile	Thr	Asn	Pro	Ala	Gly	Asp	Val	Leu	Ala	Trp	Cys	Ser	Ala	Gly			
			35				40					45						
Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Lys			
			50			55					60							
Ile	Ala	Ala	Glu	Thr	Ala	Ala	Arg	Lys	Ser	Met	Asp	Tyr	Gly	Leu	Arg			
65					70					75				80				
Gln	Ile	Ser	Val	Ile	Ile	Lys	Gly	Ala	Gly	Ser	Gly	Arg	Glu	Ser	Ala			
				85					90					95				
Ile	Arg	Gly	Leu	Ser	Glu	Ala	Gly	Leu	Glu	Ile	Lys	Leu	Leu	Arg	Asp			
			100					105				110						
Ile	Thr	Ser	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg			
		115					120					125						
Val																		

&lt;210&gt; 455

&lt;211&gt; 432

&lt;212&gt; DNA

&lt;213&gt; Oryza nivara

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(432)

&lt;223&gt; transl\_table=11

&lt;400&gt; 455

atg	aca	aaa	gct	ata	cca	aaa	att	ggg	tca	cgt	agg	aaa	gta	cgt	att			
1				5				10					15					48
Met	Thr	Lys	Ala	Ile	Pro	Lys	Ile	Gly	Ser	Arg	Arg	Lys	Val	Arg	Ile			
ggg	ttg	cgt	agg	aat	gcg	cgt	ttt	agt	tta	cgg	aag	agt	gca	cgt	aga			96
Gly	Leu	Arg	Arg	Asn	Ala	Arg	Phe	Ser	Leu	Arg	Lys	Ser	Ala	Arg	Arg			
			20					25					30					
ata	aca	aaa	gga	gtt	att	cat	gtt	caa	gct	agt	ttc	aac	aat	act	att			144
Ile	Thr	Lys	Gly	Val	Ile	His	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile			
			35				40					45						
ata	act	gtt	aca	gat	ccg	caa	ggg	gtg	gtt	ttc	tgg	tcc	tcc	gcg				192
Ile	Thr	Val	Thr	Asp	Pro	Gln	Gly	Arg	Val	Val	Phe	Trp	Ser	Ser	Ala			
			50			55					60							
ggg	act	tgt	gga	ttc	aaa	agc	tca	aga	aaa	gca	tca	ccc	tat	gct	ggg			240
Gly	Thr	Cys	Gly	Phe	Lys	Ser	Ser	Arg	Lys	Ala	Ser	Pro	Tyr	Ala	Gly			
			65		70				75					80				
caa	aga	aca	gct	gta	gat	gct	att	cgt	aca	gtg	ggg	ttg	caa	cga	gca			288
Gln	Arg	Thr	Ala	Val	Asp	Ala	Ile	Arg	Thr	Val	Gly	Leu	Gln	Arg	Ala			
				85					90				95					
gaa	gtt	atg	gta	aag	ggg	gct	ggg	agt	gga	aga	gat	gcc	gca	tta	cga			336
Glu	Val	Met	Val	Lys	Gly	Ala	Gly	Ser	Gly	Arg	Asp	Ala	Ala	Leu	Arg			
			100					105				110						
gcc	att	gct	aaa	agt	ggg	gta	cga	tta	agt	tgt	ata	cgc	gat	gta	aca			384

PhoenixTemp32470.tmp.txt

Ala	Ile	Ala	Lys	Ser	Gly	Val	Arg	Leu	Ser	Cys	Ile	Arg	Asp	Val	Thr		
		115					120					125					
cct	atg	ccg	cat	aat	ggg	tgt	cga	cct	cct	aaa	aaa	aga	cgt	ctg		429	
Pro	Met	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Leu			
		130				135					140						
taa																432	

<210> 456  
 <211> 143  
 <212> PRT  
 <213> Oryza nivara

<400> 456

Met	Thr	Lys	Ala	Ile	Pro	Lys	Ile	Gly	Ser	Arg	Arg	Lys	Val	Arg	Ile		
1				5					10					15			
Gly	Leu	Arg	Arg	Asn	Ala	Arg	Phe	Ser	Leu	Arg	Lys	Ser	Ala	Arg	Arg		
			20					25					30				
Ile	Thr	Lys	Gly	Val	Ile	His	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile		
		35					40					45					
Ile	Thr	Val	Thr	Asp	Pro	Gln	Gly	Arg	Val	Val	Phe	Trp	Ser	Ser	Ala		
	50					55					60						
Gly	Thr	Cys	Gly	Phe	Lys	Ser	Ser	Arg	Lys	Ala	Ser	Pro	Tyr	Ala	Gly		
65					70					75					80		
Gln	Arg	Thr	Ala	Val	Asp	Ala	Ile	Arg	Thr	Val	Gly	Leu	Gln	Arg	Ala		
			85					90					95				
Glu	Val	Met	Val	Lys	Gly	Ala	Gly	Ser	Gly	Arg	Asp	Ala	Ala	Leu	Arg		
		100					105					110					
Ala	Ile	Ala	Lys	Ser	Gly	Val	Arg	Leu	Ser	Cys	Ile	Arg	Asp	Val	Thr		
		115					120					125					
Pro	Met	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Leu			
		130				135					140						

<210> 457  
 <211> 393  
 <212> DNA  
 <213> Ostreococcus tauri

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 457

atg	gca	aca	aaa	cag	cgt	aaa	gtt	acg	caa	aag	aaa	tca	cgt	cgc	aaa		48
Met	Ala	Thr	Lys	Gln	Arg	Lys	Val	Thr	Gln	Lys	Lys	Ser	Arg	Arg	Lys		
1				5					10					15			
gtt	caa	cgt	gga	gta	gtt	cac	att	tta	gcg	acg	ttt	aac	aat	aca	tta		96
Val	Gln	Arg	Gly	Val	Val	His	Ile	Leu	Ala	Thr	Phe	Asn	Asn	Thr	Leu		
			20					25					30				
gta	act	atc	agt	gat	cgt	tct	ggt	ctt	gtt	att	gca	tcg	tca	tct	gct		144
Val	Thr	Ile	Ser	Asp	Arg	Ser	Gly	Leu	Val	Ile	Ala	Ser	Ser	Ser	Ala		
		35					40					45					
ggt	gct	tgc	ggg	ttc	cgt	ggg	gca	cga	aaa	gga	acg	cca	ttt	gct	gca		192
Gly	Ala	Cys	Gly	Phe	Arg	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55					60						
caa	act	gca	tct	gaa	gaa	gct	gtt	cgt	aaa	gct	ctt	gat	tac	ggt	tta		240
Gln	Thr	Ala	Ser	Glu	Glu	Ala	Val	Arg	Lys	Ala	Leu	Asp	Tyr	Gly	Leu		
	65				70				75					80			
aaa	tat	gtg	gat	gta	atg	gta	aaa	ggt	cct	gga	gct	ggt	cgt	gaa	atg		288
Lys	Tyr	Val	Asp	Val	Met	Val	Lys	Gly	Pro	Gly	Ala	Gly	Arg	Glu	Met		
				85					90					95			
gca	att	cgt	gct	ctt	caa	cag	ctt	gga	tta	ggg	gtt	act	tta	att	cgt		336
Ala	Ile	Arg	Ala	Leu	Gln	Gln	Leu	Gly	Leu	Gly	Val	Thr	Leu	Ile	Arg		
			100				105					110					
gac	gtt	act	cca	tta	cca	cac	aat	ggt	tgt	cgt	cct	ccg	aag	aag	cgt		384
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg		
		115					120					125					

cgt gta taa  
Arg Val  
130

<210> 458  
<211> 130  
<212> PRT  
<213> *Ostreococcus tauri*

<400> 458  
Met Ala Thr Lys Gln Arg Lys Val Thr Gln Lys Lys Ser Arg Arg Lys  
1 5 10 15  
Val Gln Arg Gly Val Val His Ile Leu Ala Thr Phe Asn Asn Thr Leu  
20 25 30  
Val Thr Ile Ser Asp Arg Ser Gly Leu Val Ile Ala Ser Ser Ser Ala  
35 40 45  
Gly Ala Cys Gly Phe Arg Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
50 55 60  
Gln Thr Ala Ser Glu Glu Ala Val Arg Lys Ala Leu Asp Tyr Gly Leu  
65 70 75 80  
Lys Tyr Val Asp Val Met Val Lys Gly Pro Gly Ala Gly Arg Glu Met  
85 90 95  
Ala Ile Arg Ala Leu Gln Gln Leu Gly Leu Gly Val Thr Leu Ile Arg  
100 105 110  
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
115 120 125  
Arg Val  
130

<210> 459  
<211> 417  
<212> DNA  
<213> *Panax ginseng*

<220>  
<221> CDS  
<222> (1)..(417)  
<223> transl\_table=11

<400> 459  
atg gca aaa gct ata ccg aga agt ggt tca cgt agg agt ggg cgt att 48  
Met Ala Lys Ala Ile Pro Arg Ser Gly Ser Arg Arg Ser Gly Arg Ile  
1 5 10 15  
ggt tca cgt aag agt aca cgt aga ata cca aag ggg gtt att cat gtt 96  
Gly Ser Arg Lys Ser Thr Arg Arg Ile Pro Lys Gly Val Ile His Val  
20 25 30  
caa gca agt ttc aat aat act att gtg act gtt aca gat gta cgg ggt 144  
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
35 40 45  
cgg gtg gtc tct tgg tcc tct gcc ggt act tgt gga ttc aag ggt aca 192  
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr  
50 55 60  
aga agg ggg acg ccg ttt gct gct caa acc gca gca gga aac gct att 240  
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
65 70 75 80  
cgt aca gta gtg gat caa ggt atg caa cga gca gaa gtc atg ata aaa 288  
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
85 90 95  
gga ccc ggt ctc gga aga gac gca gca tta cga gct att cgc aga agt 336  
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
100 105 110  
ggt ata cta tta act ttc gtg cgg gat gta acc ccc atg cca cat aat 384  
Gly Ile Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
115 120 125  
ggc tgt aga cct ccg aaa aaa cga cgt gtg tag 417  
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
130 135

<210> 460

<211> 138  
 <212> PRT  
 <213> Panax ginseng

<400> 460  
 Met Ala Lys Ala Ile Pro Arg Ser Gly Ser Arg Arg Ser Gly Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys Ser Thr Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

<210> 461  
 <211> 417  
 <212> DNA  
 <213> Pisum sativum

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 461  
 atg gca aaa tct ata cca aaa att ggt tca cgg aaa act gga cgt att 48  
 Met Ala Lys Ser Ile Pro Lys Ile Gly Ser Arg Lys Thr Gly Arg Ile  
 1 5 10 15  
 ggt tcg cgt aag cat cct cgt aaa ata cca aag ggg gtt att tat att 96  
 Gly Ser Arg Lys His Pro Arg Lys Ile Pro Lys Gly Val Ile Tyr Ile  
 20 25 30  
 caa gct agt ttc aac aat acc att gtg act gtt aca gat gta cga ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 cgg gtg att tct tgg tcc tcc gcc ggt tca tgt gga ttc aag ggt aca 192  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Ser Cys Gly Phe Lys Gly Thr  
 50 55 60  
 cga agg ggg aca cca ttt gcc gct caa acc gca gcg gga aat gct att 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 caa aca gta gtc gag caa ggc atg caa cga gca gaa gta agg ata aag 288  
 Gln Thr Val Val Glu Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys  
 85 90 95  
 ggt ccg ggt cta gga aga gat gcg gca tta aga gct att tat aga agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Tyr Arg Ser  
 100 105 110  
 ggg ata cta tta aag gtt ata cgg gat gta acc cct ctg cca cat aat 384  
 Gly Ile Leu Leu Lys Val Ile Arg Asp Val Thr Pro Leu Pro His Asn  
 115 120 125  
 gga tgt cgg gct cct aaa aaa aga cgt gtg taa 417  
 Gly Cys Arg Ala Pro Lys Lys Arg Arg Val  
 130 135

<210> 462  
 <211> 138  
 <212> PRT  
 <213> Pisum sativum

<400> 462

## PhoenixTemp32470.tmp.txt

Met Ala Lys Ser Ile Pro Lys Ile Gly Ser Arg Lys Thr Gly Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys His Pro Arg Lys Ile Pro Lys Gly Val Ile Tyr Ile  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Ser Cys Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Gln Thr Val Val Glu Gln Gly Met Gln Arg Ala Glu Val Arg Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Tyr Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Lys Val Ile Arg Asp Val Thr Pro Leu Pro His Asn  
 115 120 125  
 Gly Cys Arg Ala Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 463

&lt;211&gt; 423

&lt;212&gt; DNA

&lt;213&gt; Pelargonium hortorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(423)

&lt;223&gt; transl\_table=11

&lt;400&gt; 463

atg gca aaa acg ata cga aga tat agt tca ttt aga ttg agg aat aga	48
Met Ala Lys Thr Ile Arg Arg Tyr Ser Ser Phe Arg Leu Arg Asn Arg	
1 5 10 15	
cgc att cgt tcg cgt aag agt gca cgg aaa ata ccc aaa gga att att	96
Arg Ile Arg Ser Arg Lys Ser Ala Arg Lys Ile Pro Lys Gly Ile Ile	
20 25 30	
cac gtt caa gca agt ttc agc aat acc att gtt act gtt aca gat gta	144
His Val Gln Ala Ser Phe Ser Asn Thr Ile Val Thr Val Thr Asp Val	
35 40 45	
ggg ggt cgg gtg gtt act tcg gcc tct gcc ggc gct tgt gga ttc aag	192
Gly Gly Arg Val Val Thr Ser Ala Ser Ala Gly Ala Cys Gly Phe Lys	
50 55 60	
ggt aga aga agg ggt acg ccc ttt gcc gcc caa aca acc gcc gaa aat	240
Gly Arg Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Thr Ala Glu Asn	
65 70 75 80	
gct att cgc aca gta gta act caa ggt atg cac cga gct gtt gtc tta	288
Ala Ile Arg Thr Val Val Thr Gln Gly Met His Arg Ala Val Val Leu	
85 90 95	
gta aaa ggt gtc ggt cgt ggg aga gat gcg gca tta cga gct att ttg	336
Val Lys Gly Val Gly Arg Gly Arg Asp Ala Ala Leu Arg Ala Ile Leu	
100 105 110	
aga agc ggt gtg cgg ttg cat ttg tta cga gat aga acc cct tta cca	384
Arg Ser Gly Val Arg Leu His Leu Leu Arg Asp Arg Thr Pro Leu Pro	
115 120 125	
cac aat ggg tgt agg cct cct aaa aga aga cgt acg tag	423
His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Thr	
130 135 140	

&lt;210&gt; 464

&lt;211&gt; 140

&lt;212&gt; PRT

&lt;213&gt; Pelargonium hortorum

&lt;400&gt; 464

Met Ala Lys Thr Ile Arg Arg Tyr Ser Ser Phe Arg Leu Arg Asn Arg  
 1 5 10 15  
 Arg Ile Arg Ser Arg Lys Ser Ala Arg Lys Ile Pro Lys Gly Ile Ile  
 20 25 30  
 His Val Gln Ala Ser Phe Ser Asn Thr Ile Val Thr Val Thr Asp Val

## PhoenixTemp32470.tmp.txt

35  
 Gly Gly Arg Val Val Thr Ser 40 Ala Ser Ala Gly Ala Cys Gly Phe Lys  
 50  
 Gly Arg Arg Arg Gly Thr Pro 55 Phe Ala Ala Gln Thr Thr Ala Glu Asn  
 65  
 Ala Ile Arg Thr Val Val Thr 70 Gln Gly Met His Arg Ala Val Val Leu  
 85  
 Val Lys Gly Val Gly Arg Gly Arg Asp 90 Ala Ala Leu Arg Ala Ile Leu  
 100  
 Arg Ser Gly Val Arg Leu His 105 Leu Leu Arg Asp Arg Thr Pro Leu Pro  
 115  
 His Asn Gly Cys Arg Pro 120 Lys Arg Arg Arg Thr 125  
 130 135 140

&lt;210&gt; 465

&lt;211&gt; 432

&lt;212&gt; DNA

&lt;213&gt; Pennisetum americanum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(432)

&lt;223&gt; transl\_table=11

&lt;400&gt; 465

atg acc aaa act ata ccc aaa ata ggt tca cgt aag aaa gta cgt att	48
Met Thr Lys Thr Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile	
1 5 10 15	
ggt ttg cgt agg aat gcc cgt ttt agt tta cga aag agt gca cgt aga	96
Gly Leu Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg	
20 25 30	
ata aca aaa ggg gtt att cat gtt caa gcc agt ttc aac aat acc att	144
Ile Thr Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile	
35 40 45	
ata acc gtt aca gac cca caa ggt gtg gtt ttc tgg tcc tcc gca	192
Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala	
50 55 60	
ggt act tgt gga ttc aaa agc tca cga aaa gca tca ccc tat gct ggt	240
Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly	
65 70 75 80	
caa aga aca gca gta gat gct att cgt aca gtg ggt ttg caa cga gca	288
Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala	
85 90 95	
gaa gtt atg gta aaa ggt gct ggt agc gga aga gac gcc gca tta cga	336
Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg	
100 105 110	
gcc att gct aaa agt ggt gta cgg tta agt tgt ata cgc gat gta aca	384
Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr	
115 120 125	
cct atg ccg cat aat gga tgt cga cct cct aaa aaa aga cgt ctg	429
Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu	
130 135 140	
taa	432

&lt;210&gt; 466

&lt;211&gt; 143

&lt;212&gt; PRT

&lt;213&gt; Pennisetum americanum

&lt;400&gt; 466

Met Thr Lys Thr Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile  
 1 5 10 15  
 Gly Leu Arg Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg  
 20 25 30  
 Ile Thr Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 35 40 45  
 Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala

## PhoenixTemp32470.tmp.txt

50 55 60  
 Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly  
 65 70 75 80  
 Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala  
 85 90 95  
 Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg  
 100 105 110  
 Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr  
 115 120 125  
 Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu  
 130 135 140

&lt;210&gt; 467

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Phaseolus angularis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 467

atg gca aaa tct ata cct aaa aca ggt tcg cgt aaa aat gta cgt att	48
Met Ala Lys Ser Ile Pro Lys Thr Gly Ser Arg Lys Asn Val Arg Ile	
1 5 10 15	
ggt tcg cgt aat cag act cgt aaa ata cca aag gga att att cat gtt	96
Gly Ser Arg Asn Gln Thr Arg Lys Ile Pro Lys Gly Ile Ile His Val	
20 25 30	
caa gct agt ttc aac aat act att gtg act att aca gat gta cga ggt	144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Val Arg Gly	
35 40 45	
cgg gtg att tct tgg tcc tcc gct ggt act tgc gga ttc aag ggt aca	192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr	
50 55 60	
cga agg gga aca cct ttt gcc gct caa act gca gca gga aat gct att	240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile	
65 70 75 80	
cga aca gta tcg gat caa ggc atg caa cga gca gaa atc atg ata aaa	288
Arg Thr Val Ser Asp Gln Gly Met Gln Arg Ala Glu Ile Met Ile Lys	
85 90 95	
ggg cct ggc ctc gga aga gat gca gca tta aga gct att cgt aga agt	336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser	
100 105 110	
ggt ata cta tta aat ttt ata cga gat gta act cct atg cca cat aat	384
Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn	
115 120 125	
gga tgt agg tct cct aaa aaa aga cgt gta taa	417
Gly Cys Arg Ser Pro Lys Lys Arg Arg Val	
130 135	

&lt;210&gt; 468

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Phaseolus angularis

&lt;400&gt; 468

Met Ala Lys Ser Ile Pro Lys Thr Gly Ser Arg Lys Asn Val Arg Ile  
 1 5 10 15  
 Gly Ser Arg Asn Gln Thr Arg Lys Ile Pro Lys Gly Ile Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Ser Asp Gln Gly Met Gln Arg Ala Glu Ile Met Ile Lys  
 85 90 95

## PhoenixTemp32470.tmp.txt

Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Ser Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 469

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Phaeodactylum tricornutum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 469

atg gca caa	aca acg	aga aaa	tca aca	att aga	aaa gag	aaa aat	agt	48
Met Ala Gln	Thr Thr	Arg Lys	Ser Thr	Ile Arg	Lys Glu	Lys Asn	Ser	
1	5			10		15		
ttt aca agt	ggg gtt	gtt cat	att caa	tca act	ttt aac	aat aca	att	96
Phe Thr Ser	Gly Val	Val His	Ile Gln	Ser Thr	Phe Asn	Asn Thr	Ile	
	20		25			30		
gtg acg att	act aat	tta act	gga gat	aca att	tcc tgg	gca tct	gct	144
Val Thr Ile	Thr Asn	Leu Thr	Gly Asp	Thr Ile	Ser Trp	Ala Ser	Ala	
	35		40		45			
gga agt tca	ggc ttt	aaa ggt	gcc aga	aag agt	aca cca	ttt gca	gct	192
Gly Ser Ser	Gly Phe	Lys Gly	Ala Arg	Lys Ser	Thr Pro	Phe Ala	Ala	
	50		55		60			
caa aca gct	gct gaa	aaa gct	gcc cta	gaa gct	tta agt	acg ggt	atg	240
Gln Thr Ala	Ala Glu	Lys Ala	Ala Leu	Glu Ala	Leu Ser	Thr Gly	Met	
	65		70		75		80	
aaa act gtt	gaa att	tta gta	aaa ggg	caa gga	tca gga	cgt gag	aca	288
Lys Thr Val	Glu Ile	Leu Val	Lys Gly	Gln Gly	Ser Gly	Arg Glu	Thr	
	85			90		95		
gcc att cga	gca att	gaa ggt	gca ggt	ttt gat	att att	tct ata	caa	336
Ala Ile Arg	Ala Ile	Glu Gly	Ala Gly	Phe Asp	Ile Ile	Ser Ile	Gln	
	100		105		110			
gat ata aca	tca gtt	cct cat	aat ggt	tgt cga	cca cca	aaa aga	cgt	384
Asp Ile Thr	Ser Val	Pro His	Asn Gly	Cys Arg	Pro Pro	Lys Arg	Arg	
	115		120		125			
cgc gtt tag								393
Arg Val								
	130							

&lt;210&gt; 470

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Phaeodactylum tricornutum

&lt;400&gt; 470

Met Ala Gln	Thr Thr	Arg Lys	Ser Thr	Ile Arg	Lys Glu	Lys Asn	Ser	
1	5			10		15		
Phe Thr Ser	Gly Val	Val His	Ile Gln	Ser Thr	Phe Asn	Asn Thr	Ile	
	20		25			30		
Val Thr Ile	Thr Asn	Leu Thr	Gly Asp	Thr Ile	Ser Trp	Ala Ser	Ala	
	35		40		45			
Gly Ser Ser	Gly Phe	Lys Gly	Ala Arg	Lys Ser	Thr Pro	Phe Ala	Ala	
	50		55		60			
Gln Thr Ala	Ala Glu	Lys Ala	Ala Leu	Glu Ala	Leu Ser	Thr Gly	Met	
	65		70		75		80	
Lys Thr Val	Glu Ile	Leu Val	Lys Gly	Gln Gly	Ser Gly	Arg Glu	Thr	
	85			90		95		
Ala Ile Arg	Ala Ile	Glu Gly	Ala Gly	Phe Asp	Ile Ile	Ser Ile	Gln	
	100		105		110			
Asp Ile Thr	Ser Val	Pro His	Asn Gly	Cys Arg	Pro Pro	Lys Arg	Arg	
	115		120		125			
Arg Val								



130

<210> 471  
 <211> 417  
 <212> DNA  
 <213> Phaseolus vulgaris

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 471  
 atg gca aaa tat ata cct aaa aca ggt tcg cgt aaa aat gta cgt att 48  
 Met Ala Lys Tyr Ile Pro Lys Thr Gly Ser Arg Lys Asn Val Arg Ile  
 1 5 10 15  
 ggt tcg cgg aat cat acg cgt aaa ata cca aaa gga att att cat gtt 96  
 Gly Ser Arg Asn His Thr Arg Lys Ile Pro Lys Gly Ile Ile His Val  
 20 25 30  
 caa gct agt ttc aac aat act att gta act att aca gat gta cga ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Val Arg Gly  
 35 40 45  
 cgg gtg att tct tgg tcc tcc gct ggt act tgt gga ttc aag ggt aca 192  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr  
 50 55 60  
 cga agg gga aca cct ttt gcc gct caa act gca gca gga aat gct att 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 cga aca gta tcg gat caa ggc atg caa cga gca gaa atc atg atc aaa 288  
 Arg Thr Val Ser Asp Gln Gly Met Gln Arg Ala Glu Ile Met Ile Lys  
 85 90 95  
 ggg cct ggt ctc gga aga gat gca gca tta aga gct att cgt aga agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 ggt ata ctc tta aat ttt ata cga gat gta act cct atg cca cat aat 384  
 Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 gga tgt agg tct cct aaa aaa aga cgt gta taa 417  
 Gly Cys Arg Ser Pro Lys Lys Arg Arg Val  
 130 135

<210> 472  
 <211> 138  
 <212> PRT  
 <213> Phaseolus vulgaris

<400> 472  
 Met Ala Lys Tyr Ile Pro Lys Thr Gly Ser Arg Lys Asn Val Arg Ile  
 1 5 10 15  
 Gly Ser Arg Asn His Thr Arg Lys Ile Pro Lys Gly Ile Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Ser Asp Gln Gly Met Gln Arg Ala Glu Ile Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Ser Pro Lys Lys Arg Arg Val  
 130 135

<210> 473  
 <211> 393  
 <212> DNA

&lt;213&gt; Physcomitrella patens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 473

```

atg gca aaa tta ata aaa aaa att agt tta cgt aaa ggt aaa cgt aga      48
Met Ala Lys Leu Ile Lys Lys Ile Ser Leu Arg Lys Gly Lys Arg Arg
  1          5          10          15
ata cct aaa gga gtt att cat att caa gca agt ttt aat aat act att      96
Ile Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
          20          25          30
gtt act gta aca gat ata cgt gga caa gtc gtt ttt tgg tct tct gcg      144
Val Thr Val Thr Asp Ile Arg Gly Gln Val Val Phe Trp Ser Ser Ala
          35          40          45
ggg gct tgt ggt ttt aaa ggt gca aaa aaa agt acc cct ttt gca gct      192
Gly Ala Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala
          50          55          60
caa act gcc gca gaa aat gct att cgt gtt tta att gat caa ggt atg      240
Gln Thr Ala Ala Glu Asn Ala Ile Arg Val Leu Ile Asp Gln Gly Met
          65          70          75          80
aaa caa gct gaa gtt atg ata agt ggt cct ggt cca ggg cga gat aca      288
Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr
          85          90          95
gca tta cgt gct att cgc cga agt ggt gtt att tta aat ttt gtt cgt      336
Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Ile Leu Asn Phe Val Arg
          100          105          110
gat gta act cct atg cca cat aat gga tgt aga cct ccg aaa cga      384
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
          115          120          125
cgt gtt taa
Arg Val
          130

```

&lt;210&gt; 474

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Physcomitrella patens

&lt;400&gt; 474

```

Met Ala Lys Leu Ile Lys Lys Ile Ser Leu Arg Lys Gly Lys Arg Arg
  1          5          10          15
Ile Pro Lys Gly Val Ile His Ile Gln Ala Ser Phe Asn Asn Thr Ile
          20          25          30
Val Thr Val Thr Asp Ile Arg Gly Gln Val Val Phe Trp Ser Ser Ala
          35          40          45
Gly Ala Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala
          50          55          60
Gln Thr Ala Ala Glu Asn Ala Ile Arg Val Leu Ile Asp Gln Gly Met
          65          70          75          80
Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr
          85          90          95
Ala Leu Arg Ala Ile Arg Arg Ser Gly Val Ile Leu Asn Phe Val Arg
          100          105          110
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
          115          120          125
Arg Val
          130

```

&lt;210&gt; 475

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Pinus koraiensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 475

atg	tca	aaa	act	ata	aaa	aga	att	ggt	tca	cgt	agg	aat	gaa	cat	cga	48
Met	Ser	Lys	Thr	Ile	Lys	Arg	Ile	Gly	Ser	Arg	Arg	Asn	Glu	His	Arg	
1				5				10					15			
gta	ctc	aaa	gga	ggt	att	tac	ggt	caa	gca	agt	ttt	aac	aat	acc	att	96
Val	Leu	Lys	Gly	Val	Ile	Tyr	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	
			20					25				30				
gtg	act	gct	aca	gat	gta	cgg	gga	caa	ggt	att	tct	tgg	tct	tct	gct	144
Val	Thr	Ala	Thr	Asp	Val	Arg	Gly	Gln	Val	Ile	Ser	Trp	Ser	Ser	Ala	
			35				40					45				
ggt	gcc	tgt	gga	ttc	aaa	ggt	aca	agg	aga	ggt	aca	cca	ttt	gct	gcc	192
Gly	Ala	Cys	Gly	Phe	Lys	Gly	Thr	Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	
	50					55					60					
cag	act	gca	gca	gaa	aat	ggt	att	cgc	aca	tta	atg	gat	cgg	ggt	ata	240
Gln	Thr	Ala	Ala	Glu	Asn	Val	Ile	Arg	Thr	Leu	Met	Asp	Arg	Gly	Ile	
	65				70					75					80	
gga	cga	gta	gaa	ggt	atg	ata	agt	ggc	cct	ggt	cga	ggg	aga	gat	aca	288
Gly	Arg	Val	Glu	Val	Met	Ile	Ser	Gly	Pro	Gly	Arg	Gly	Arg	Asp	Thr	
				85					90					95		
gca	tta	cga	acc	att	cgt	aga	agt	ggc	ata	cta	tta	agt	ttt	gta	cgt	336
Ala	Leu	Arg	Thr	Ile	Arg	Arg	Ser	Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	
			100					105					110			
gac	gta	acc	cct	atg	cca	cat	aat	gga	tgt	aga	cct	ccc	aaa	aag	aga	384
Asp	Val	Thr	Pro	Met	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	
		115					120					125				
cgt	ggt	taa														393
Arg	Val															
	130															

&lt;210&gt; 476

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Pinus koraiensis

&lt;400&gt; 476

Met	Ser	Lys	Thr	Ile	Lys	Arg	Ile	Gly	Ser	Arg	Arg	Asn	Glu	His	Arg	
1				5				10					15			
Val	Leu	Lys	Gly	Val	Ile	Tyr	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	
			20					25				30				
Val	Thr	Ala	Thr	Asp	Val	Arg	Gly	Gln	Val	Ile	Ser	Trp	Ser	Ser	Ala	
			35				40					45				
Gly	Ala	Cys	Gly	Phe	Lys	Gly	Thr	Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	
	50					55					60					
Gln	Thr	Ala	Ala	Glu	Asn	Val	Ile	Arg	Thr	Leu	Met	Asp	Arg	Gly	Ile	
	65				70					75					80	
Gly	Arg	Val	Glu	Val	Met	Ile	Ser	Gly	Pro	Gly	Arg	Gly	Arg	Asp	Thr	
				85					90					95		
Ala	Leu	Arg	Thr	Ile	Arg	Arg	Ser	Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	
			100					105					110			
Asp	Val	Thr	Pro	Met	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	
		115					120					125				
Arg	Val															
	130															

&lt;210&gt; 477

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Pinus thunbergii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 477

atg	tca	aaa	act	ata	aaa	aga	att	ggt	tca	cgt	agg	aat	gaa	cat	cga	48
Met	Ser	Lys	Thr	Ile	Lys	Arg	Ile	Gly	Ser	Arg	Arg	Asn	Glu	His	Arg	

## PhoenixTemp32470.tmp.txt

1	5	10	15	
gta ctc aaa gga gtt att tac gtt caa gca agt ttt aac aat acc ata	96			
Val Leu Lys Gly Val Ile Tyr Val Gln Ala Ser Phe Asn Asn Thr Ile				
20	25	30		
gtg act gct aca gat gta cgg gga caa gtt ctt tct tgg tct tct gct	144			
Val Thr Ala Thr Asp Val Arg Gly Gln Val Leu Ser Trp Ser Ser Ala				
35	40	45		
ggt gcc tgt gga ttc aaa ggt aca agg aga ggt aca cca ttt gct gcc	192			
Gly Ala Cys Gly Phe Lys Gly Thr Arg Arg Gly Thr Pro Phe Ala Ala				
50	55	60		
cag act gca gca gaa aat gtt att cgt gca tta atg gat cgg ggt atg	240			
Gln Thr Ala Ala Glu Asn Val Ile Arg Ala Leu Met Asp Arg Gly Met				
65	70	75	80	
gaa cga gta gaa gtt atg ata agt ggc cct ggt cga ggg aga gat aca	288			
Glu Arg Val Glu Val Met Ile Ser Gly Pro Gly Arg Gly Arg Asp Thr				
85	90	95		
gca tta cga acc att cgt aga agt ggc ata cta tta agt ttt gta cgt	336			
Ala Leu Arg Thr Ile Arg Arg Ser Gly Ile Leu Leu Ser Phe Val Arg				
100	105	110		
gac gta acc cct atg cca cat aat gga tgt aga cct ccc aaa aag aga	384			
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg				
115	120	125		
cgt gtg taa	393			
Arg Val				
130				

&lt;210&gt; 478

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Pinus thunbergii

&lt;400&gt; 478

Met Ser Lys Thr Ile Lys Arg Ile Gly Ser Arg Arg Asn Glu His Arg			
1	5	10	15
Val Leu Lys Gly Val Ile Tyr Val Gln Ala Ser Phe Asn Asn Thr Ile			
20	25	30	
Val Thr Ala Thr Asp Val Arg Gly Gln Val Leu Ser Trp Ser Ser Ala			
35	40	45	
Gly Ala Cys Gly Phe Lys Gly Thr Arg Arg Gly Thr Pro Phe Ala Ala			
50	55	60	
Gln Thr Ala Ala Glu Asn Val Ile Arg Ala Leu Met Asp Arg Gly Met			
65	70	75	80
Glu Arg Val Glu Val Met Ile Ser Gly Pro Gly Arg Gly Arg Asp Thr			
85	90	95	
Ala Leu Arg Thr Ile Arg Arg Ser Gly Ile Leu Leu Ser Phe Val Arg			
100	105	110	
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg			
115	120	125	
Arg Val			
130			

&lt;210&gt; 479

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Platanus occidentalis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 479

atg gca aaa cct ata caa aga att ggt tca cgt agg aat gga cct att	48		
Met Ala Lys Pro Ile Gln Arg Ile Gly Ser Arg Arg Asn Gly Pro Ile			
1	5	10	15
ggt tca cgt aag aat gga cgt aga ata cca aag gga gtt att cat gtt	96		
Gly Ser Arg Lys Asn Gly Arg Arg Ile Pro Lys Gly Val Ile His Val			
20	25	30	
caa gca agt ttc aac aac acc att gtg act gtt aca gat gta agg ggt	144		

PhoenixTemp32470.tmp.txt

Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
cgg	gtg	gtt	tct	tgg	tcc	tcc	gcc	ggg	gct	tgt	gga	ttt	agg	ggc	aca	192	
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Ala	Cys	Gly	Phe	Arg	Gly	Thr		
		50				55					60						
aga	aga	ggg	aca	cct	ttt	gct	gct	caa	acc	gca	gca	gga	aat	gct	att	240	
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
		65			70					75					80		
cgt	aca	gta	gtg	gat	cag	ggg	atg	caa	cga	gca	gaa	gtc	atg	ata	aag	288	
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85				90						95			
ggg	cct	ggg	ctc	gga	aga	gat	gca	gca	tta	cga	gcc	att	cgt	aga	agt	336	
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
ggg	ata	cta	tta	agt	ttc	gta	cgg	gac	gta	act	cct	atg	cca	cat	aat	384	
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
gga	tgt	aga	cct	cct	aaa	aaa	aga	cgt	gtg	tag						417	
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 480  
 <211> 138  
 <212> PRT  
 <213> Platanus occidentalis

<400> 480

Met	Ala	Lys	Pro	Ile	Gln	Arg	Ile	Gly	Ser	Arg	Arg	Asn	Gly	Pro	Ile		
1				5					10					15			
Gly	Ser	Arg	Lys	Asn	Gly	Arg	Arg	Ile	Pro	Lys	Gly	Val	Ile	His	Val		
			20					25					30				
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
Arg	Val	Val	Ser	Trp	Ser	Ser	Ala	Gly	Ala	Cys	Gly	Phe	Arg	Gly	Thr		
		50				55					60						
Arg	Arg	Gly	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Ala	Ala	Gly	Asn	Ala	Ile		
					70					75					80		
Arg	Thr	Val	Val	Asp	Gln	Gly	Met	Gln	Arg	Ala	Glu	Val	Met	Ile	Lys		
				85				90						95			
Gly	Pro	Gly	Leu	Gly	Arg	Asp	Ala	Ala	Leu	Arg	Ala	Ile	Arg	Arg	Ser		
			100				105						110				
Gly	Ile	Leu	Leu	Ser	Phe	Val	Arg	Asp	Val	Thr	Pro	Met	Pro	His	Asn		
		115					120					125					
Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val								
	130					135											

<210> 481  
 <211> 417  
 <212> DNA  
 <213> Populus alba

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 481

atg	gca	aaa	ctt	tta	cca	aga	att	ggg	tcc	cgc	aag	aat	gga	cgt	att	48	
Met	Ala	Lys	Leu	Leu	Pro	Arg	Ile	Gly	Ser	Arg	Lys	Asn	Gly	Arg	Ile		
1				5					10					15			
agt	tca	cgt	aaa	aat	gca	cgt	aaa	att	cct	aag	gga	gtt	att	cat	gtc	96	
Ser	Ser	Arg	Lys	Asn	Ala	Arg	Lys	Ile	Pro	Lys	Gly	Val	Ile	His	Val		
			20					25					30				
caa	gca	agt	ttc	aac	aat	act	att	gtg	acc	gtt	aca	gat	gta	cga	ggg	144	
Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr	Val	Thr	Asp	Val	Arg	Gly		
		35					40					45					
cgg	gtg	atc	tct	tgg	tcc	tcc	gca	ggc	gct	tgt	gga	ttc	agg	ggc	aca	192	
Arg	Val	Ile	Ser	Trp	Ser	Ser	Ala	Gly	Ala	Cys	Gly	Phe	Arg	Gly	Thr		
		50				55					60						

## PhoenixTemp32470.tmp.txt

```

aga aga ggg acg cca ttt gct gct caa act gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
cgg acc gta gtg gat caa ggt atg caa cga gca gaa gtc atg ata aag      288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
ggt cct ggt cta gga aga gat gcg gca tta aga gct att cgt aga agt      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Ser
100      105      110
ggt ata cta tta agt ttc gtc cgg gat gta acc cct atg cca cat aat      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
ggc tgc agg cct cct aaa aaa aga cgt gtg taa      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135

```

&lt;210&gt; 482

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Populus alba

&lt;400&gt; 482

```

Met Ala Lys Leu Leu Pro Arg Ile Gly Ser Arg Lys Asn Gly Arg Ile
1      5      10      15
Ser Ser Arg Lys Asn Ala Arg Lys Ile Pro Lys Gly Val Ile His Val
20      25      30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
35      40      45
Arg Val Ile Ser Trp Ser Ser Ala Gly Ala Cys Gly Phe Arg Gly Thr
50      55      60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
65      70      75      80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
85      90      95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
100      105      110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
115      120      125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
130      135

```

&lt;210&gt; 483

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Pseudendoclonium akinetum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 483

```

atg gca aaa caa att cga aaa aca aac aaa aaa gta aaa atg aca aag      48
Met Ala Lys Gln Ile Arg Lys Thr Asn Lys Lys Val Lys Met Thr Lys
1      5      10      15
ctc cca aaa ggc gtt gtc cat att caa tca act ttt aat aat aca ata      96
Leu Pro Lys Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20      25      30
gtc aca att aca aat tta aaa ggg gaa gtt ata tct tgg tca tct gct      144
Val Thr Ile Thr Asn Leu Lys Gly Glu Val Ile Ser Trp Ser Ser Ala
35      40      45
ggt gct gtt ggc ttc aaa ggt gcg cgt aaa tcc acg cca ttt gcg gca      192
Gly Ala Val Gly Phe Lys Gly Ala Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
aaa acc gct gcg caa act gct gct cga caa tca atg gat caa ggt ctt      240
Lys Thr Ala Ala Gln Thr Ala Ala Arg Gln Ser Met Asp Gln Gly Leu
65      70      75      80
aaa caa gca aaa gtt tta gta aaa gga gca ggt cca gga aga gaa aca      288
Lys Gln Ala Lys Val Leu Val Lys Gly Ala Gly Pro Gly Arg Glu Thr

```

## PhoenixTemp32470.tmp.txt

```

      85      90      95
gcg att cgt gga tta att gat tcg ggt ctt caa att act tta att cgc      336
Ala Ile Arg Gly Leu Ile Asp Ser Gly Leu Gln Ile Thr Leu Ile Arg
      100      105      110
gat att aca gcg att cct cac aat ggt tgc aga cct cca aaa aaa aga      384
Asp Ile Thr Ala Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
      115      120      125
cgt gtt taa
Arg Val
      130

```

<210> 484  
 <211> 130  
 <212> PRT  
 <213> Pseudendoclonium akinetum

```

<400> 484
Met Ala Lys Gln Ile Arg Lys Thr Asn Lys Lys Val Lys Met Thr Lys
1      5      10      15
Leu Pro Lys Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
      20      25      30
Val Thr Ile Thr Asn Leu Lys Gly Glu Val Ile Ser Trp Ser Ser Ala
      35      40      45
Gly Ala Val Gly Phe Lys Gly Ala Arg Lys Ser Thr Pro Phe Ala Ala
      50      55      60
Lys Thr Ala Ala Gln Thr Ala Ala Arg Gln Ser Met Asp Gln Gly Leu
65      70      75      80
Lys Gln Ala Lys Val Leu Val Lys Gly Ala Gly Pro Gly Arg Glu Thr
      85      90      95
Ala Ile Arg Gly Leu Ile Asp Ser Gly Leu Gln Ile Thr Leu Ile Arg
      100      105      110
Asp Ile Thr Ala Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
      115      120      125
Arg Val
      130

```

<210> 485  
 <211> 393  
 <212> DNA  
 <213> Psilotum nudum

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

```

<400> 485
atg cca aaa cct ata aaa aga ctt agt tca cat aaa aag aaa cgt gta      48
Met Pro Lys Pro Ile Lys Arg Leu Ser Ser His Lys Lys Lys Arg Val
1      5      10      15
ata ttt aaa gga att att caa att aaa gca agt ttt aat aat act att
Ile Phe Lys Gly Ile Ile Gln Ile Lys Ala Ser Phe Asn Asn Thr Ile
      20      25      30
gtc act gtt aca aat agt caa gga cag gtt att acc tgg tct tct gct      144
Val Thr Val Thr Asn Ser Gln Gly Gln Val Ile Thr Trp Ser Ser Ala
      35      40      45
ggt gct tgt gga ttc aaa gga acg aaa agg agt aca cca ttc gct gct
Gly Ala Cys Gly Phe Lys Gly Thr Lys Arg Ser Thr Pro Phe Ala Ala
      50      55      60
caa att gca aca gaa aac gct att cgt acc ttg att agt caa ggt atg
Gln Ile Ala Thr Glu Asn Ala Ile Arg Thr Leu Ile Ser Gln Gly Met
65      70      75      80
aaa caa gca gaa gtt atg ata agc ggt cct ggt cca gga aga gac aca
Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr
      85      90      95
gca ttg cgt act att cgt aaa agt ggt cta gtc tta cat ttt gtg cgc      336
Ala Leu Arg Thr Ile Arg Lys Ser Gly Leu Val Leu His Phe Val Arg
      100      105      110
gat gta act cct ttg ccg cat aat gga tgt aga cct ccc aaa agg aga      384

```

Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 cgt gta taa  
 Arg Val  
 130

393

<210> 486  
 <211> 130  
 <212> PRT  
 <213> Psilotum nudum

<400> 486  
 Met Pro Lys Pro Ile Lys Arg Leu Ser Ser His Lys Lys Lys Arg Val  
 1 5 10 15  
 Ile Phe Lys Gly Ile Ile Gln Ile Lys Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Val Thr Asn Ser Gln Gly Gln Val Ile Thr Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Lys Gly Thr Lys Arg Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Ile Ala Thr Glu Asn Ala Ile Arg Thr Leu Ile Ser Gln Gly Met  
 65 70 75 80  
 Lys Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 Ala Leu Arg Thr Ile Arg Lys Ser Gly Leu Val Leu His Phe Val Arg  
 100 105 110  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

<210> 487  
 <211> 432  
 <212> DNA  
 <213> Saccharum hybrid

<220>  
 <221> CDS  
 <222> (1)..(432)  
 <223> transl\_table=11

<400> 487  
 atg aca aaa gct ata cca aaa ata ggt tca cgt aag aaa gtg cgt att 48  
 Met Thr Lys Ala Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile 15  
 1 5 10  
 ggt ttg cgt agg aat gcc cgt ttt agt tta cgg aag agt gca cgt aga 96  
 Gly Leu Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg 20 25 30  
 ata aca aaa ggg gtt att cat gtt caa gcc agt ttc aac aat acc att 144  
 Ile Thr Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile 35 40 45  
 ata acc gtt aca gac cca caa ggt gtc gtt ttc tgg tcc tcc gca 192  
 Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala 50 55 60  
 ggt act tgt gga ttc aaa agc tca aga aaa gca tca ccc tat gct ggt 240  
 Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly 65 70 75 80  
 caa aga aca gca gta gat gct att cgt aca gtg ggt ttg caa cga gca 288  
 Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala 85 90 95  
 gaa gtt atg gta aaa ggt gct ggt agc gga aga gat gcc gca tta cga 336  
 Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg 100 105 110  
 gcc att gct aaa agt ggt gta cgg tta agt tgt ata cgc gat gta aca 384  
 Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr 115 120 125  
 cct atg ccg cat aat gga tgt cga cct cct aaa aaa aga cgt ctg 429  
 Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Leu 130 135 140



taa

432

<210> 488  
 <211> 143  
 <212> PRT  
 <213> Saccharum hybrid

<400> 488  
 Met Thr Lys Ala Ile Pro Lys Ile Gly Ser Arg Lys Lys Val Arg Ile  
 1 5 10 15  
 Gly Leu Arg Arg Asn Ala Arg Phe Ser Leu Arg Lys Ser Ala Arg Arg  
 20 25 30  
 Ile Thr Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 35 40 45  
 Ile Thr Val Thr Asp Pro Gln Gly Arg Val Val Phe Trp Ser Ser Ala  
 50 55 60  
 Gly Thr Cys Gly Phe Lys Ser Ser Arg Lys Ala Ser Pro Tyr Ala Gly  
 65 70 75 80  
 Gln Arg Thr Ala Val Asp Ala Ile Arg Thr Val Gly Leu Gln Arg Ala  
 85 90 95  
 Glu Val Met Val Lys Gly Ala Gly Ser Gly Arg Asp Ala Ala Leu Arg  
 100 105 110  
 Ala Ile Ala Lys Ser Gly Val Arg Leu Ser Cys Ile Arg Asp Val Thr  
 115 120 125  
 Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Leu  
 130 135 140

<210> 489  
 <211> 393  
 <212> DNA  
 <213> Scenedesmus obliquus

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 489  
 atg gct aga caa act aga aaa gta tca cct aca aaa att aaa aaa cgt 48  
 Met Ala Arg Gln Thr Arg Lys Val Ser Pro Thr Lys Ile Lys Lys Arg  
 1 5 10 15  
 aca tat cga gga att gtt tat att caa gct gga cat cat aat act att 96  
 Thr Tyr Arg Gly Ile Val Tyr Ile Gln Ala Gly His His Asn Thr Ile  
 20 25 30  
 att aca tta gca aat ctt cgt ggt gaa gtc ctt tgt tgg agt tct gct 144  
 Ile Thr Leu Ala Asn Leu Arg Gly Glu Val Leu Cys Trp Ser Ser Ala  
 35 40 45  
 gga gct tgt ggt ttc cgt gga aaa aga aaa gca aca aca ttt gca gca 192  
 Gly Ala Cys Gly Phe Arg Gly Lys Arg Lys Ala Thr Thr Phe Ala Ala  
 50 55 60  
 aaa aaa gct gct gaa gtt gtg gca aaa aaa tca cgt gaa ttt gca tta 240  
 Lys Lys Ala Ala Glu Val Val Ala Lys Lys Ser Arg Glu Phe Ala Leu  
 65 70 75 80  
 aat gaa gca aaa att tta gta act ggt cca gga caa ggg cgc gaa aca 288  
 Asn Glu Ala Lys Ile Leu Val Thr Gly Pro Gly Gln Gly Arg Glu Thr  
 85 90 95  
 gct att cgt gaa att ttt aaa gct gga att aaa gta aat gtt att cga 336  
 Ala Ile Arg Glu Ile Phe Lys Ala Gly Ile Lys Val Asn Val Ile Arg  
 100 105 110  
 gaa aaa aca gga att cca cat aat gga tgt cgt cct cca aaa aaa aga 384  
 Glu Lys Thr Gly Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 cgt gtt taa 393  
 Arg Val  
 130

<210> 490

<211> 130  
 <212> PRT  
 <213> Scenedesmus obliquus

<400> 490  
 Met Ala Arg Gln Thr Arg Lys Val Ser Pro Thr Lys Ile Lys Lys Arg  
 1 5 10 15  
 Thr Tyr Arg Gly Ile Val Tyr Ile Gln Ala Gly His His Asn Thr Ile  
 20 25 30  
 Ile Thr Leu Ala Asn Leu Arg Gly Glu Val Leu Cys Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Cys Gly Phe Arg Gly Lys Arg Lys Ala Thr Thr Phe Ala Ala  
 50 55 60  
 Lys Lys Ala Ala Glu Val Val Ala Lys Lys Ser Arg Glu Phe Ala Leu  
 65 70 75 80  
 Asn Glu Ala Lys Ile Leu Val Thr Gly Pro Gly Gln Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Glu Ile Phe Lys Ala Gly Ile Lys Val Asn Val Ile Arg  
 100 105 110  
 Glu Lys Thr Gly Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
 115 120 125  
 Arg Val  
 130

<210> 491  
 <211> 417  
 <212> DNA  
 <213> Solanum bulbocastanum

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 491  
 atg gca aaa gct ata ccg aaa att agt tgc cgt cgg aat gga cgt att 48  
 Met Ala Lys Ala Ile Pro Lys Ile Ser Ser Arg Arg Asn Gly Arg Ile 15  
 1 5 10 15  
 agt tca cgt aag ggt gca cgt aga ata cca aag gga gtt att cat gtt 96  
 Ser Ser Arg Lys Gly Ala Arg Arg Ile Pro Lys Gly Val Ile His Val 20 25 30  
 20 25 30  
 caa gca agt ttc aat aat acc att gtc act gtt aca gat gta cgg ggt 144  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly 35 40 45  
 35 40 45  
 cga gta gtt tct tgg tcc tca gct ggt act tct gga ttc aaa ggt acg 192  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr 50 55 60  
 50 55 60  
 aga aga gga aca ccg ttt gct gct caa acc gca gca gca aac gct atc 240  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ala Asn Ala Ile 65 70 75 80  
 65 70 75 80  
 cgt aca gta gtg gat caa ggt atg caa cga gcg gaa gtc atg ata aaa 288  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys 85 90 95  
 85 90 95  
 ggt ccc ggt ctc gga aga gat gca gca tta cga gct att cgt cgc agt 336  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser 100 105 110  
 100 105 110  
 ggt ata cta tta act ttc gta cgg gat gta act ccg atg cca cat aat 384  
 Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn 115 120 125  
 115 120 125  
 ggc tgt aga cct ccg aaa aaa aga cgt gtg tag 417  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val 130 135  
 130 135

<210> 492  
 <211> 138  
 <212> PRT  
 <213> Solanum bulbocastanum

<400> 492

## PhoenixTemp32470.tmp.txt

Met Ala Lys Ala Ile Pro Lys Ile Ser Ser Arg Arg Asn Gly Arg Ile  
 1 5 10 15  
 Ser Ser Arg Lys Gly Ala Arg Arg Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly  
 35 40 45  
 Arg Val Val Ser Trp Ser Ser Ala Gly Thr Ser Gly Phe Lys Gly Thr  
 50 55 60  
 Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Ala Asn Ala Ile  
 65 70 75 80  
 Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85 90 95  
 Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser  
 100 105 110  
 Gly Ile Leu Leu Thr Phe Val Arg Asp Val Thr Pro Met Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 130 135

&lt;210&gt; 493

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 493

atg gca aaa cct ata tct aaa aag ggt tcg cgt aaa aat gta cgt att	48
Met Ala Lys Pro Ile Ser Lys Lys Gly Ser Arg Lys Asn Val Arg Ile	
1 5 10 15	
ggt tcg cgt aag cat act cgt aaa ata cca aag gga gtt att cat gtt	96
Gly Ser Arg Lys His Thr Arg Lys Ile Pro Lys Gly Val Ile His Val	
20 25 30	
caa gct agt ttc aac aat act att gta act gtt aca gat gta cga ggt	144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly	
35 40 45	
cgg gtg att tct tgg tcc tcc gcc ggt act tgc gga ttc aaa ggt aca	192
Arg Val Ile Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Lys Gly Thr	
50 55 60	
cga agg ggg aca cct ttt gcc gct caa act gca gca gga aat gct att	240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile	
65 70 75 80	
cga aca gta tcg gat caa ggc atg caa cga gca gaa gtc atg ata aaa	288
Arg Thr Val Ser Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys	
85 90 95	
ggt cct ggt ctc gga aga gat gcg gca tta aga gct att cgt aga agt	336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser	
100 105 110	
ggt ata cta tta aat ttt ata cga gat gta act cct atg cca cat aat	384
Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met Pro His Asn	
115 120 125	
gga tgt aga tct cct aaa aaa aga cgt gtg taa	417
Gly Cys Arg Ser Pro Lys Lys Arg Arg Val	
130 135	

&lt;210&gt; 494

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 494

Met Ala Lys Pro Ile Ser Lys Lys Gly Ser Arg Lys Asn Val Arg Ile  
 1 5 10 15  
 Gly Ser Arg Lys His Thr Arg Lys Ile Pro Lys Gly Val Ile His Val  
 20 25 30  
 Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly

## PhoenixTemp32470.tmp.txt

35  
 Arg Val Ile Ser Trp Ser Ser 40 Ala Gly Thr Cys Gly 45 Phe Lys Gly Thr  
 50  
 Arg Arg Gly Thr Pro Phe 55 Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile  
 65  
 Arg Thr Val Ser Asp 70 Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys  
 85  
 Gly Pro Gly Leu 100 Gly Arg Asp Ala Ala 105 Leu Arg Ala Ile Arg Arg Ser  
 Gly Ile Leu Leu Asn Phe Ile Arg Asp Val Thr Pro Met 110 Pro His Asn  
 115  
 Gly Cys Arg Ser Pro Lys Lys 120 Arg Arg Val 125  
 130  
 135

&lt;210&gt; 495

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Spirogyra maxima

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;400&gt; 495

atg	gca	aaa	aca	gca	aac	aaa	ata	aat	ata	cgt	aaa	gta	aaa	aga	aaa	48
Met	Ala	Lys	Thr	Ala	Asn	Lys	Ile	Asn	Ile	Arg	Lys	Val	Lys	Arg	Lys	
1				5				10						15		
act	cca	aaa	gca	ata	att	cac	gta	caa	gca	agt	ttt	aat	aat	act	att	96
Thr	Pro	Lys	Ala	Ile	Ile	His	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	
			20					25					30			
gtg	act	gtg	act	gat	gta	caa	gga	caa	gtt	ata	tct	tct	tgc	tct	gca	144
Val	Thr	Val	Thr	Asp	Val	Gln	Gly	Gln	Val	Ile	Ser	Ser	Cys	Ser	Ala	
		35				40						45				
gga	gct	tgt	ggt	ttt	aaa	gga	gct	aaa	aag	aac	act	cct	ttt	gct	gct	192
Gly	Ala	Cys	Gly	Phe	Lys	Gly	Ala	Lys	Lys	Asn	Thr	Pro	Phe	Ala	Ala	
	50					55					60					
caa	act	gca	gca	gaa	aat	gct	att	cgt	tta	tta	ata	gat	caa	ggc	tta	240
Gln	Thr	Ala	Ala	Glu	Asn	Ala	Ile	Arg	Leu	Leu	Ile	Asp	Gln	Gly	Leu	
	65				70				75						80	
aaa	caa	gca	gaa	gtt	atg	ata	agt	ggt	cca	ggt	cgg	gga	cga	gat	aca	288
Lys	Gln	Ala	Glu	Val	Met	Ile	Ser	Gly	Pro	Gly	Arg	Gly	Arg	Asp	Thr	
			85					90						95		
gca	tta	cgc	gct	att	agg	aat	agt	ggt	ata	aca	cta	agt	tta	gta	aga	336
Ala	Leu	Arg	Ala	Ile	Arg	Asn	Ser	Gly	Ile	Thr	Leu	Ser	Leu	Val	Arg	
			100				105						110			
gat	gtt	act	cca	tta	cct	cat	aat	ggt	aga	cgc	cct	aaa	aca	cgt		384
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Thr	Arg	
		115					120					125				
cgt	gta	taa														393
Arg	Val															
	130															

&lt;210&gt; 496

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Spirogyra maxima

&lt;400&gt; 496

Met	Ala	Lys	Thr	Ala	Asn	Lys	Ile	Asn	Ile	Arg	Lys	Val	Lys	Arg	Lys	
1				5				10						15		
Thr	Pro	Lys	Ala	Ile	Ile	His	Val	Gln	Ala	Ser	Phe	Asn	Asn	Thr	Ile	
			20					25					30			
val	Thr	val	Thr	Asp	val	Gln	Gly	Gln	val	Ile	Ser	Ser	Cys	Ser	Ala	
		35				40						45				
Gly	Ala	Cys	Gly	Phe	Lys	Gly	Ala	Lys	Lys	Asn	Thr	Pro	Phe	Ala	Ala	
	50					55					60					
Gln	Thr	Ala	Ala	Glu	Asn	Ala	Ile	Arg	Leu	Leu	Ile	Asp	Gln	Gly	Leu	
	65				70				75						80	
Lys	Gln	Ala	Glu	Val	Met	Ile	Ser	Gly	Pro	Gly	Arg	Gly	Arg	Asp	Thr	

## PhoenixTemp32470.tmp.txt

Ala Leu Arg Ala<sup>85</sup> Ile Arg Asn Ser Gly<sup>90</sup> Ile Thr Leu Ser Leu<sup>95</sup> Val Arg  
 Asp Val Thr<sup>100</sup> Pro Leu Pro His Asn<sup>105</sup> Gly Cys Arg Arg Pro<sup>110</sup> Lys Thr Arg  
 Arg Val<sup>115</sup>  
 Arg Val<sup>130</sup>

&lt;210&gt; 497

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Spinacia oleracea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;400&gt; 497

atg gca aaa cct ata cca aaa att ggt tca cgt aga aat gga cgt att	48
Met Ala Lys Pro Ile <sup>5</sup> Pro Lys Ile Gly Ser <sup>10</sup> Arg Arg Asn Gly Arg <sup>15</sup> Ile	
agt tcg cgt aaa agt gca cgt aaa ata cca aag ggt gtt att cat gtt	96
Ser Ser Arg Lys <sup>20</sup> Ser Ala Arg Lys Ile <sup>25</sup> Pro Lys Gly Val <sup>30</sup> Ile His Val	
caa gca agt ttt aat aat acc att gta act gtt aca gat gta cga ggt	144
Gln Ala Ser <sup>35</sup> Phe Asn Asn Thr Ile <sup>40</sup> Val Thr Val Thr Asp <sup>45</sup> Val Arg Gly	
cga gtc gtt tct tgg gct tct gcc ggt act tgt gga ttc agg ggt aca	192
Arg Val <sup>50</sup> Val Ser Trp Ala Ser <sup>55</sup> Ala Gly Thr Cys Gly <sup>60</sup> Phe Arg Gly Thr	
aaa aga gga aca cca ttt gcg gct caa acc gca gcg gga aat gct att	240
Lys Arg Gly Thr <sup>65</sup> Pro Phe <sup>70</sup> Ala Ala Gln Thr Ala <sup>75</sup> Ala Gly Asn Ala <sup>80</sup> Ile	
cgt acg gtg gtg gaa caa ggt atg caa cga gca gaa gtc atg ata aaa	288
Arg Thr Val <sup>85</sup> Val Glu Gln Gly Met Gln Arg <sup>90</sup> Ala Glu Val Met <sup>95</sup> Ile Lys	
ggt cct ggt ctc gga agg gat gca gca tta cgg gct att cgt aga agc	336
Gly Pro Gly Leu <sup>100</sup> Gly Arg Asp Ala <sup>105</sup> Ala Leu Arg Ala Ile <sup>110</sup> Arg Arg Ser	
ggt ata cta tta agt ttc gtg cga gac gta acc cct atg ccg cat aat	384
Gly Ile <sup>115</sup> Leu Ser Phe Val <sup>120</sup> Arg Asp Val Thr Pro Met <sup>125</sup> Pro His Asn	
ggc tgt agg cct cct aaa aaa aga cgc gtc tag	417
Gly Cys Arg Pro Pro Lys Lys <sup>135</sup> Arg Arg Val	

&lt;210&gt; 498

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Spinacia oleracea

&lt;400&gt; 498

Met Ala Lys Pro Ile <sup>5</sup> Pro Lys Ile Gly Ser <sup>10</sup> Arg Arg Asn Gly Arg <sup>15</sup> Ile
Ser Ser Arg Lys <sup>20</sup> Ser Ala Arg Lys Ile <sup>25</sup> Pro Lys Gly Val <sup>30</sup> Ile His Val
Gln Ala Ser <sup>35</sup> Phe Asn Asn Thr Ile <sup>40</sup> Val Thr Val Thr Asp <sup>45</sup> Val Arg Gly
Arg Val <sup>50</sup> Val Ser Trp Ala Ser <sup>55</sup> Ala Gly Thr Cys Gly <sup>60</sup> Phe Arg Gly Thr
Lys Arg Gly Thr <sup>65</sup> Pro Phe <sup>70</sup> Ala Ala Gln Thr Ala <sup>75</sup> Ala Gly Asn Ala <sup>80</sup> Ile
Arg Thr Val <sup>85</sup> Val Glu Gln Gly Met Gln Arg <sup>90</sup> Ala Glu Val Met <sup>95</sup> Ile Lys
Gly Pro Gly Leu <sup>100</sup> Gly Arg Asp Ala <sup>105</sup> Ala Leu Arg Ala Ile <sup>110</sup> Arg Arg Ser
Gly Ile <sup>115</sup> Leu Ser Phe Val <sup>120</sup> Arg Asp Val Thr Pro Met <sup>125</sup> Pro His Asn
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val

130

135

<210> 499  
 <211> 393  
 <212> DNA  
 <213> Stauroastrum punctulatum

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 499  
 atg gca aga cct tca aaa aaa ata agt cta aga aaa ggg aaa aaa aga 48  
 Met Ala Arg Pro Ser Lys Lys Ile Ser Leu Arg Lys Gly Lys Lys Arg  
 1 5 10 15  
 gct ccg aaa gga gtt att cat gtt caa gct agt ttt aat aat act ata 96  
 Ala Pro Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 gtt aca gta acc gat gta aga gga caa aca atg tcg tgg tct tct gct 144  
 Val Thr Val Thr Asp Val Arg Gly Gln Thr Met Ser Trp Ser Ser Ala  
 35 40 45  
 ggt tct tgt ggt ttt aaa gga gca aaa aaa agt aca cct ttt gca gct 192  
 Gly Ser Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 caa aca gct gct gaa aat gcg att tct ctt tta ata gat caa ggt atg 240  
 Gln Thr Ala Ala Glu Asn Ala Ile Ser Leu Leu Ile Asp Gln Gly Met  
 65 70 75 80  
 aga caa gca gaa gta atg att agt ggt cct ggt ccc gga agg gat acc 288  
 Arg Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 gct ttg cga gct att aaa aat agt ggt ctt gta ata agt ttt gta cga 336  
 Ala Leu Arg Ala Ile Lys Asn Ser Gly Leu Val Ile Ser Phe Val Arg  
 100 105 110  
 gat gta act cct atg ccg cat aat ggt tgt aga cct tct agc caa cgt 384  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Ser Ser Gln Arg  
 115 120 125  
 cgc gtt taa 393  
 Arg Val  
 130

<210> 500  
 <211> 130  
 <212> PRT  
 <213> Stauroastrum punctulatum

<400> 500  
 Met Ala Arg Pro Ser Lys Lys Ile Ser Leu Arg Lys Gly Lys Lys Arg  
 1 5 10 15  
 Ala Pro Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile  
 20 25 30  
 Val Thr Val Thr Asp Val Arg Gly Gln Thr Met Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ser Cys Gly Phe Lys Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Asn Ala Ile Ser Leu Leu Ile Asp Gln Gly Met  
 65 70 75 80  
 Arg Gln Ala Glu Val Met Ile Ser Gly Pro Gly Pro Gly Arg Asp Thr  
 85 90 95  
 Ala Leu Arg Ala Ile Lys Asn Ser Gly Leu Val Ile Ser Phe Val Arg  
 100 105 110  
 Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Pro Ser Ser Gln Arg  
 115 120 125  
 Arg Val  
 130

<210> 501  
 <211> 393  
 <212> DNA

&lt;213&gt; Stigeoclonium helveticum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 501

ttg tca aaa caa att aga aaa aat gtc aag aaa cct aga aaa aaa att	48
Met Ser Lys Gln Ile Arg Lys Asn Val Lys Lys Pro Arg Lys Lys Ile	
1 5 10 15	
tat cgt ggg gta gtt tat att caa acg act caa aat aat act att gta	96
Tyr Arg Gly Val Val Tyr Ile Gln Thr Thr Gln Asn Asn Thr Ile Val	
20 25 30	
aca atc aca aat att aaa ggg gat gct gta tgt tgg agt tca gct ggg	144
Thr Ile Thr Asn Ile Lys Gly Asp Ala Val Cys Trp Ser Ser Ala Gly	
35 40 45	
tca tgt gat ttg aaa gga cgc cgt aag gca aca gct tat gct gca aaa	192
Ser Cys Asp Leu Lys Gly Arg Arg Lys Ala Thr Ala Tyr Ala Ala Lys	
50 55 60	
tta gca gca gca aat gct gca aaa aaa gca cgc cgt gag ttt gta tta	240
Leu Ala Ala Ala Asn Ala Ala Lys Lys Ala Arg Arg Glu Phe Val Leu	
65 70 75 80	
aaa gag gct aaa gta tta att act ggt cca gga gca gct cgc gat act	288
Lys Glu Ala Lys Val Leu Ile Thr Gly Pro Gly Ala Ala Arg Asp Thr	
85 90 95	
gct ata cat gaa atc cac aaa gct ggg att aaa tta acg att tta aga	336
Ala Ile His Glu Ile His Lys Ala Gly Ile Lys Leu Thr Ile Leu Arg	
100 105 110	
gaa aaa tca ggt gtt cct cat aat ggt tgt cga ccg cca aaa cgt cgt	384
Glu Lys Ser Gly Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg	
115 120 125	
cgt gtt taa	393
Arg Val	
130	

&lt;210&gt; 502

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Stigeoclonium helveticum

&lt;400&gt; 502

Met Ser Lys Gln Ile Arg Lys Asn Val Lys Lys Pro Arg Lys Lys Ile
1 5 10 15
Tyr Arg Gly Val Val Tyr Ile Gln Thr Thr Gln Asn Asn Thr Ile Val
20 25 30
Thr Ile Thr Asn Ile Lys Gly Asp Ala Val Cys Trp Ser Ser Ala Gly
35 40 45
Ser Cys Asp Leu Lys Gly Arg Arg Lys Ala Thr Ala Tyr Ala Ala Lys
50 55 60
Leu Ala Ala Ala Asn Ala Ala Lys Lys Ala Arg Glu Phe Val Leu
65 70 75 80
Lys Glu Ala Lys Val Leu Ile Thr Gly Pro Gly Ala Ala Arg Asp Thr
85 90 95
Ala Ile His Glu Ile His Lys Ala Gly Ile Lys Leu Thr Ile Leu Arg
100 105 110
Glu Lys Ser Gly Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115 120 125
Arg Val
130

&lt;210&gt; 503

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 503

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atg gca aaa cct ata cca aga att ggt tca cgt agg aat gga cgt att      48
Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile
  1          5          10          15
ggt tca cgt aag agt gcg cgt aga ata cca aag gga gtt att cat gtt      96
Gly Ser Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val
          20          25          30
caa gca agt ttt aac aat acc att gtg acc gtt aca gat gta cgg ggt      144
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
          35          40          45
cgg gtg gtt tct tgg tcc tcg gcc ggt act tgt gga ttc agg ggt aca      192
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
          50          55          60
aga aga ggg acg cca ttt gct gct caa acc gca gca gga aat gct att      240
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
          65          70          75          80
cgt aca gta gtg gat caa ggt atg caa cga gca gaa gtc atg ata aag      288
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
          85          90          95
ggt cct ggt ctc gga aga gat gca gca tta cga gct att cgt aga agt      336
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
          100          105          110
ggt ata cta tta agt ttc gta cgg gat gta act cct atg cca cat aac      384
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
          115          120          125
ggc tgt aga cct cct aaa aaa aga cgt gta tag      417
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
          130          135

```

&lt;210&gt; 504

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 504

```

Met Ala Lys Pro Ile Pro Arg Ile Gly Ser Arg Arg Asn Gly Arg Ile
  1          5          10          15
Gly Ser Arg Lys Ser Ala Arg Arg Ile Pro Lys Gly Val Ile His Val
          20          25          30
Gln Ala Ser Phe Asn Asn Thr Ile Val Thr Val Thr Asp Val Arg Gly
          35          40          45
Arg Val Val Ser Trp Ser Ser Ala Gly Thr Cys Gly Phe Arg Gly Thr
          50          55          60
Arg Arg Gly Thr Pro Phe Ala Ala Gln Thr Ala Ala Gly Asn Ala Ile
          65          70          75          80
Arg Thr Val Val Asp Gln Gly Met Gln Arg Ala Glu Val Met Ile Lys
          85          90          95
Gly Pro Gly Leu Gly Arg Asp Ala Ala Leu Arg Ala Ile Arg Arg Ser
          100          105          110
Gly Ile Leu Leu Ser Phe Val Arg Asp Val Thr Pro Met Pro His Asn
          115          120          125
Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
          130          135

```

&lt;210&gt; 505

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Zygnema circumcarinatum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 505

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atg gtt aga cca gca aat aaa att ctt att cga aaa aat aaa agg aga      48
Met Val Arg Pro Ala Asn Lys Ile Leu Ile Arg Lys Asn Lys Arg Arg

```



## PhoenixTemp32470.tmp.txt

1	5	10	15	
act tca aag gga gta atc cat gtt caa gct agc ttt aac aat acg att	96			
Thr Ser Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile				
20	25	30		
att act atc aca gat gta cga gga cag gta ata tct tgg tct tct gct	144			
Ile Thr Ile Thr Asp Val Arg Gly Gln Val Ile Ser Trp Ser Ser Ala				
35	40	45		
gga gct tct gga ttt aaa gca gct aaa aaa agc aca cct ttt gcc gca	192			
Gly Ala Ser Gly Phe Lys Ala Ala Lys Lys Ser Thr Pro Phe Ala Ala				
50	55	60		
caa att gca gca gaa aat gct tta cgc gtt ctt att gat caa ggc atg	240			
Gln Ile Ala Ala Glu Asn Ala Leu Arg Val Leu Ile Asp Gln Gly Met				
65	70	75	80	
aaa caa gca gaa gtt atg ttg agt ggt cca ggt cga ggt cga gac aca	288			
Lys Gln Ala Glu Val Met Leu Ser Gly Pro Gly Arg Gly Arg Asp Thr				
85	90	95		
gca tta agg gca att atc aat agt ggt att caa ctt agt ttt gtt aga	336			
Ala Leu Arg Ala Ile Ile Asn Ser Gly Ile Gln Leu Ser Phe Val Arg				
100	105	110		
gac gta acc ccg atg cca cat aat ggc tgt aga gcg ccc aaa aaa cga	384			
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Ala Pro Lys Lys Arg				
115	120	125		
cgt gta taa	393			
Arg Val				
130				

&lt;210&gt; 506

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Zygnema circumcarinatum

&lt;400&gt; 506

Met Val Arg Pro Ala Asn Lys Ile Leu Ile Arg Lys Asn Lys Arg Arg			
1	5	10	15
Thr Ser Lys Gly Val Ile His Val Gln Ala Ser Phe Asn Asn Thr Ile			
20	25	30	
Ile Thr Ile Thr Asp Val Arg Gly Gln Val Ile Ser Trp Ser Ser Ala			
35	40	45	
Gly Ala Ser Gly Phe Lys Ala Ala Lys Lys Ser Thr Pro Phe Ala Ala			
50	55	60	
Gln Ile Ala Ala Glu Asn Ala Leu Arg Val Leu Ile Asp Gln Gly Met			
65	70	75	80
Lys Gln Ala Glu Val Met Leu Ser Gly Pro Gly Arg Gly Arg Asp Thr			
85	90	95	
Ala Leu Arg Ala Ile Ile Asn Ser Gly Ile Gln Leu Ser Phe Val Arg			
100	105	110	
Asp Val Thr Pro Met Pro His Asn Gly Cys Arg Ala Pro Lys Lys Arg			
115	120	125	
Arg Val			
130			

&lt;210&gt; 507

&lt;211&gt; 387

&lt;212&gt; DNA

&lt;213&gt; Acinetobacter sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(387)

&lt;223&gt; transl\_table=11

&lt;400&gt; 507

atg gct aaa gat act cgc aca cgc aag aag gtc acc cgt acc gtc tct	48		
Met Ala Lys Asp Thr Arg Thr Arg Lys Lys Val Thr Arg Thr Val Ser			
1	5	10	15
gaa ggt gtt gca cac att cac gcg tct ttt aat aac acc att gtt acg	96		
Glu Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val Thr			
20	25	30	
att acc gat cgt caa ggt aat gca ttg gct tgg gcc acc tca ggt gga	144		

PhoenixTemp32470.tmp.txt

Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ala	Trp	Ala	Thr	Ser	Gly	Gly		
		35					40					45					
caa	ggc	ttc	cgt	ggt	tca	cgt	aaa	tca	act	ccg	ttt	gct	gct	cag	gta		192
Gln	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	Val		
	50					55					60						
gct	gct	gaa	gtt	gct	ggt	aaa	gca	gct	ttg	gat	tac	ggt	ttg	aaa	aac		240
Ala	Ala	Glu	Val	Ala	Gly	Lys	Ala	Ala	Leu	Asp	Tyr	Gly	Leu	Lys	Asn		
	65				70					75					80		
cta	gac	gtc	ctt	gta	aaa	ggt	cct	ggt	cca	ggt	cgt	gag	tct	gcg	gtt		288
Leu	Asp	Val	Leu	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala	Val		
			85						90					95			
cgt	gca	tta	ggc	gca	gtg	ggt	tat	aag	atc	aac	agc	att	acc	gat	gtg		336
Arg	Ala	Leu	Gly	Ala	Val	Gly	Tyr	Lys	Ile	Asn	Ser	Ile	Thr	Asp	Val		
			100					105					110				
act	cca	atc	cct	cac	aac	ggt	tgc	cgt	cca	cct	aaa	aaa	cgt	cgc	gtg		384
Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val		
		115					120					125					
taa																	387

<210> 508  
 <211> 128  
 <212> PRT  
 <213> Acinetobacter sp

<400> 508

Met	Ala	Lys	Asp	Thr	Arg	Thr	Arg	Lys	Lys	Val	Thr	Arg	Thr	Val	Ser		
1				5					10					15			
Glu	Gly	Val	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	Thr		
			20					25					30				
Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ala	Trp	Ala	Thr	Ser	Gly	Gly		
		35					40					45					
Gln	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	Val		
	50					55					60						
Ala	Ala	Glu	Val	Ala	Gly	Lys	Ala	Ala	Leu	Asp	Tyr	Gly	Leu	Lys	Asn		
	65				70					75					80		
Leu	Asp	Val	Leu	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala	Val		
			85						90					95			
Arg	Ala	Leu	Gly	Ala	Val	Gly	Tyr	Lys	Ile	Asn	Ser	Ile	Thr	Asp	Val		
			100					105					110				
Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val		
		115					120					125					

<210> 509  
 <211> 405  
 <212> DNA  
 <213> Acidovorax sp

<220>  
 <221> CDS  
 <222> (1)..(405)  
 <223> trans1\_table=11

<400> 509

atg	gct	aaa	tct	cct	gcc	aat	aat	gcc	gcg	caa	cgt	gtg	cgc	aag	aag		48
Met	Ala	Lys	Ser	Pro	Ala	Asn	Asn	Ala	Ala	Gln	Arg	Val	Arg	Lys	Lys		
1				5					10					15			
gtt	cgc	aag	aac	att	tcg	gac	ggc	atc	gcc	cac	gtg	cac	gcc	tcc	ttc		96
Val	Arg	Lys	Asn	Ile	Ser	Asp	Gly	Ile	Ala	His	Val	His	Ala	Ser	Phe		
			20					25					30				
aac	aac	acg	atc	att	acg	atc	acc	gat	cgc	caa	ggc	aat	gct	ctg	tcc		144
Asn	Asn	Thr	Ile	Ile	Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser		
		35					40					45					
tgg	gcg	tct	tct	ggt	ggc	cag	ggc	ttc	aag	ggt	tcg	cgc	aag	tca	act		192
Trp	Ala	Ser	Ser	Gly	Gly	Gln	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr		
	50					55					60						
cct	ttt	gct	gct	cag	gtg	gca	tcg	gaa	gtg	gcc	ggt	cgc	gca	gcc	att		240
Pro	Phe	Ala	Ala	Gln	Val	Ala	Ser	Glu	Val	Ala	Gly	Arg	Ala	Ala	Ile		

## PhoenixTemp32470.tmp.txt

65					70					75				80		
gag	caa	ggc	atc	aag	aac	ctc	gat	gtc	gaa	atc	aag	ggt	ccc	ggt	cct	
Glu	Gln	Gly	Ile	Lys	Asn	Leu	Asp	Val	Glu	Ile	Lys	Gly	Pro	Gly	Pro	288
				85					90					95		
ggc	cgc	gaa	tcc	tcg	gtg	cgc	gcg	ctg	ggc	gct	ctc	ggc	atc	cgc	atc	336
Gly	Arg	Glu	Ser	Ser	Val	Arg	Ala	Leu	Gly	Ala	Leu	Gly	Ile	Arg	Ile	
			100					105					110			
acc	tcc	atc	tcg	gat	gtg	acg	cct	gtg	ccc	cac	aac	ggt	tgc	cgc	ccc	384
Thr	Ser	Ile	Ser	Asp	Val	Thr	Pro	Val	Pro	His	Asn	Gly	Cys	Arg	Pro	
		115					120					125				
cag	aaa	cgc	cgc	cgt	att	taa										405
Gln	Lys	Arg	Arg	Arg	Ile											
	130															

&lt;210&gt; 510

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Acidovorax sp

&lt;400&gt; 510

Met	Ala	Lys	Ser	Pro	Ala	Asn	Asn	Ala	Ala	Gln	Arg	Val	Arg	Lys	Lys
1				5				10						15	
Val	Arg	Lys	Asn	Ile	Ser	Asp	Gly	Ile	Ala	His	Val	His	Ala	Ser	Phe
			20					25					30		
Asn	Asn	Thr	Ile	Ile	Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser
		35					40					45			
Trp	Ala	Ser	Ser	Gly	Gly	Gln	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr
	50					55				60					
Pro	Phe	Ala	Ala	Gln	Val	Ala	Ser	Glu	Val	Ala	Gly	Arg	Ala	Ala	Ile
65				70					75					80	
Glu	Gln	Gly	Ile	Lys	Asn	Leu	Asp	Val	Glu	Ile	Lys	Gly	Pro	Gly	Pro
				85					90					95	
Gly	Arg	Glu	Ser	Ser	Val	Arg	Ala	Leu	Gly	Ala	Leu	Gly	Ile	Arg	Ile
			100				105					110			
Thr	Ser	Ile	Ser	Asp	Val	Thr	Pro	Val	Pro	His	Asn	Gly	Cys	Arg	Pro
		115					120					125			
Gln	Lys	Arg	Arg	Arg	Ile										
	130														

&lt;210&gt; 511

&lt;211&gt; 402

&lt;212&gt; DNA

&lt;213&gt; Aeropyrum pernix

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(402)

&lt;223&gt; transl\_table=11

&lt;400&gt; 511

ttg	gcc	atg	tac	cct	agg	gag	ctt	aaa	tgg	ggt	gta	gcc	cat	att	tac
Met	Ala	Met	Tyr	Pro	Arg	Glu	Leu	Lys	Trp	Gly	Val	Ala	His	Ile	Tyr
1				5				10						15	
agc	agc	ttc	aat	aac	aca	cac	gtc	cac	atc	acc	gac	ctt	acg	ggt	gcc
Ser	Ser	Phe	Asn	Asn	Thr	His	Val	His	Ile	Thr	Asp	Leu	Thr	Gly	Ala
			20					25					30		
gaa	acg	gta	gcg	agg	gtg	acc	gga	ggt	atg	ggt	gtc	aag	gcc	gac	agg
Glu	Thr	Val	Ala	Arg	Val	Thr	Gly	Gly	Met	Val	Val	Lys	Ala	Asp	Arg
		35					40					45			
gag	aag	ccc	agc	ccc	tac	gcg	gcc	atg	ata	gcc	gcc	agc	agg	gcg	gct
Glu	Lys	Pro	Ser	Pro	Tyr	Ala	Ala	Met	Ile	Ala	Ala	Ser	Arg	Ala	Ala
	50					55			60						
cag	aag	gcc	atg	gag	cgt	ggt	ata	gct	gct	ata	cac	ata	aag	gtc	agg
Gln	Lys	Ala	Met	Glu	Arg	Gly	Ile	Ala	Ala	Ile	His	Ile	Lys	Val	Arg
65				70				75						80	
gcg	ccc	ggg	ggg	cat	ggt	ccc	aag	acc	ccg	ggt	ccc	ggt	gct	cag	gcg
Ala	Pro	Gly	Gly	His	Gly	Pro	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	Ala
				85					90					95	
gcc	ata	agg	gct	cta	gct	aga	gca	ggc	ttc	atc	ata	ggc	agg	ata	gag

PhoenixTemp32470.tmp.txt

Ala	Ile	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Phe	Ile	Ile	Gly	Arg	Ile	Glu		
			100					105					110				
gat	gtg	acg	ccg	ata	ccc	cac	gac	aca	act	aga	agg	cca	ggc	ggc	agg	384	
Asp	Val	Thr	Pro	Ile	Pro	His	Asp	Thr	Thr	Arg	Arg	Pro	Gly	Gly	Arg		
		115					120					125					
agg	ggt	agg	aga	gtc	tag											402	
Arg	Gly	Arg	Arg	Val													
	130																

<210> 512  
 <211> 133  
 <212> PRT  
 <213> Aeropyrum pernix

Met	Ala	Met	Tyr	Pro	Arg	Glu	Leu	Lys	Trp	Gly	Val	Ala	His	Ile	Tyr		
1				5					10					15			
Ser	Ser	Phe	Asn	Asn	Thr	His	Val	His	Ile	Thr	Asp	Leu	Thr	Gly	Ala		
			20					25					30				
Glu	Thr	Val	Ala	Arg	Val	Thr	Gly	Gly	Met	Val	Val	Lys	Ala	Asp	Arg		
		35					40					45					
Glu	Lys	Pro	Ser	Pro	Tyr	Ala	Ala	Met	Ile	Ala	Ala	Ser	Arg	Ala	Ala		
		50				55					60						
Gln	Lys	Ala	Met	Glu	Arg	Gly	Ile	Ala	Ala	Ile	His	Ile	Lys	Val	Arg		
65				70						75					80		
Ala	Pro	Gly	Gly	His	Gly	Pro	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	Ala		
				85					90					95			
Ala	Ile	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Phe	Ile	Ile	Gly	Arg	Ile	Glu		
			100					105					110				
Asp	Val	Thr	Pro	Ile	Pro	His	Asp	Thr	Thr	Arg	Arg	Pro	Gly	Gly	Arg		
		115					120					125					
Arg	Gly	Arg	Arg	Val													
	130																

<210> 513  
 <211> 390  
 <212> DNA  
 <213> Agrobacterium tumefaciens

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

atg	gcc	aag	gaa	gcc	gca	cgc	gtc	cgt	cgt	cgc	gaa	cgc	aaa	aat	atc		
Met	Ala	Lys	Glu	Ala	Ala	Arg	Val	Arg	Arg	Arg	Glu	Arg	Lys	Asn	Ile		48
1				5					10					15			
acg	tct	ggc	gtc	gcg	cac	gtc	aat	tcg	acc	ttc	aac	aac	acg	atg	atc		96
Thr	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Thr	Phe	Asn	Asn	Thr	Met	Ile		
			20					25					30				
acc	atc	acc	gac	gca	cag	ggc	aat	gct	att	gcc	tgg	tcg	tcc	gct	ggc		144
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
gcc	aag	ggc	ttc	aag	ggt	tcg	cgc	aag	tcg	act	ccg	ttc	gct	gcc	cag		192
Ala	Lys	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
		50				55					60						
atc	gct	gct	gaa	gat	tgc	gcg	aag	aag	gct	cag	gaa	cac	ggc	atg	aag		240
Ile	Ala	Ala	Glu	Asp	Cys	Ala	Lys	Lys	Ala	Gln	Glu	His	Gly	Met	Lys		
		65			70					75					80		
tcg	ctt	gaa	gtc	gaa	gtt	tgc	ggt	ccg	ggt	tcc	ggt	cgt	gaa	tcg	gca		288
Ser	Leu	Glu	Val	Glu	Val	Cys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
ctt	cgc	gct	ctg	cag	gct	gcc	ggt	ttc	atg	atc	act	tcc	att	cgc	gac		336
Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Phe	Met	Ile	Thr	Ser	Ile	Arg	Asp		
			100					105					110				
gtg	acg	ccg	atc	ccg	cac	aac	ggt	tgc	cgt	ccg	cgc	aag	aag	cgc	cgc		384
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Lys	Arg	Arg		
		115					120					125					

gtc tga  
val

<210> 514  
<211> 129  
<212> PRT  
<213> Agrobacterium tumefaciens

<400> 514  
Met Ala Lys Glu Ala Ala Arg Val Arg Arg Arg Glu Arg Lys Asn Ile  
1 5 10 15  
Thr Ser Gly Val Ala His Val Asn Ser Thr Phe Asn Asn Thr Met Ile  
20 25 30  
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly  
35 40 45  
Ala Lys Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
50 55 60  
Ile Ala Ala Glu Asp Cys Ala Lys Lys Ala Gln Glu His Gly Met Lys  
65 70 75 80  
Ser Leu Glu Val Glu Val Cys Gly Pro Gly Ser Gly Arg Glu Ser Ala  
85 90 95  
Leu Arg Ala Leu Gln Ala Ala Gly Phe Met Ile Thr Ser Ile Arg Asp  
100 105 110  
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg  
115 120 125  
val

<210> 515  
<211> 393  
<212> DNA  
<213> Alkalilimnicola ehrlichei

<220>  
<221> CDS  
<222> (1)..(393)  
<223> transl\_table=11

<400> 515  
atg gcg aaa gca gcg acc cgg tca cgc act aag cgt gcc aag cgt acg 48  
Met Ala Lys Ala Ala Thr Arg Ser Arg Thr Lys Arg Ala Lys Arg Thr  
1 5 10 15  
gtg gtt gac ggc atc gcg cac atc aac gcg acc ttc aac aac acg att 96  
Val Val Asp Gly Ile Ala His Ile Asn Ala Thr Phe Asn Asn Thr Ile  
20 25 30  
atc acc atc acg gac cgc cag ggc aat ggc ctg gcc tgg gcc agc gcc 144  
Ile Thr Ile Thr Asp Arg Gln Gly Asn Gly Leu Ala Trp Ala Ser Ala  
35 40 45  
ggc ggc agt ggc ttt cgt ggc tcc cgt aag agc acg ccc ttt gcg gcc 192  
Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala  
50 55 60  
cag gtg gct tcc gag cgt gcc ggc cgg gct gcc ctg gat tac ggc ctg 240  
Gln Val Ala Ser Glu Arg Ala Gly Arg Ala Ala Leu Asp Tyr Gly Leu  
65 70 75 80  
aaa aac ctg gag gtt cgc gtc aag ggc ccg ggg ccg ggt cgt gag tcg 288  
Lys Asn Leu Glu Val Arg Val Lys Gly Pro Gly Pro Gly Arg Glu Ser  
85 90 95  
gcg gtg cgc gca ttg aac gcc gtg ggc tac cgg atc acc aat att tcc 336  
Ala Val Arg Ala Leu Asn Ala Val Gly Tyr Arg Ile Thr Asn Ile Ser  
100 105 110  
gac gtc agc ccc att ccg cac aac ggc tgc cgg ccg ccc aag aag cgc 384  
Asp Val Ser Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg  
115 120 125  
cgc gtc tga 393  
Arg Val  
130

<210> 516

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Alkalilimnicola ehrlichei

&lt;400&gt; 516

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Met Ala Lys Ala Ala Thr Arg Ser Arg Thr Lys Arg Ala Lys Arg Thr
1      5      10      15
Val Val Asp Gly Ile Ala His Ile Asn Ala Thr Phe Asn Asn Thr Ile
20      25      30
Ile Thr Ile Thr Asp Arg Gln Gly Asn Gly Leu Ala Trp Ala Ser Ala
35      40      45
Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
Gln Val Ala Ser Glu Arg Ala Gly Arg Ala Ala Leu Asp Tyr Gly Leu
65      70      75      80
Lys Asn Leu Glu Val Arg Val Lys Gly Pro Gly Pro Gly Arg Glu Ser
85      90      95
Ala Val Arg Ala Leu Asn Ala Val Gly Tyr Arg Ile Thr Asn Ile Ser
100     105     110
Asp Val Ser Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115     120     125
Arg Val
130

```

&lt;210&gt; 517

&lt;211&gt; 375

&lt;212&gt; DNA

&lt;213&gt; Anaplasma marginale

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(375)

&lt;223&gt; transl\_table=11

&lt;400&gt; 517

```

atg gcg gta gtt aag aag agg agg aac gtt gtt gtg ggc gag gtg cat      48
Met Ala Val Val Lys Lys Arg Arg Asn Val Val Val Gly Glu Val His
1      5      10      15
atc tac gcc acg tat aac aac gta att gtg acg att gct gat cag cag      96
Ile Tyr Ala Thr Tyr Asn Asn Val Ile Val Thr Ile Ala Asp Gln Gln
20      25      30
ggg cac gtt ctt gtc act acc tcg gcc ggg gct tgt aac ttt aaa ggc      144
Gly His Val Leu Val Thr Thr Ser Ala Gly Ala Cys Asn Phe Lys Gly
35      40      45
tcc aag aag gcg acc cct tat gcc gct cag gag acg gtc gcg aga gca      192
Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu Thr Val Ala Arg Ala
50      55      60
gtt aaa gcc gtt gtt gag cgg aat ggt atg agg acg gtg tcg gtg tgc      240
Val Lys Ala Val Val Glu Arg Asn Gly Met Arg Thr Val Ser Val Cys
65      70      75      80
ata tcc ggt cct ggt gct ggt agg gaa gct gcc atc agg gcg gtt cag      288
Ile Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala Ile Arg Ala Val Gln
85      90      95
acc tgt aac ctc aat gtt acg tcc ata agg gat act act aag ctc cct      336
Thr Cys Asn Leu Asn Val Thr Ser Ile Arg Asp Thr Thr Lys Leu Pro
100     105     110
cac aat ggg tgt aag ctg ccg aag agg cgc agg gta tag      375
His Asn Gly Cys Lys Leu Pro Lys Arg Arg Arg Val
115     120

```

&lt;210&gt; 518

&lt;211&gt; 124

&lt;212&gt; PRT

&lt;213&gt; Anaplasma marginale

&lt;400&gt; 518

```

Met Ala Val Val Lys Lys Arg Arg Asn Val Val Val Gly Glu Val His
1      5      10      15
Ile Tyr Ala Thr Tyr Asn Asn Val Ile Val Thr Ile Ala Asp Gln Gln

```

## PhoenixTemp32470.tmp.txt

Gly His Val<sup>20</sup> Leu Val Thr Thr Ser<sup>25</sup> Ala Gly Ala Cys Asn<sup>30</sup> Phe Lys Gly  
 Ser Lys Lys<sup>35</sup> Ala Thr Pro Tyr<sup>40</sup> Ala Ala Gln Glu Thr Val<sup>45</sup> Ala Arg Ala  
 Val Lys Ala Val Val Glu Arg Asn Gly Met Arg Thr Val Ser Val Cys<sup>50</sup>  
 Ile Ser Gly Pro Gly<sup>55</sup> Ala Gly Arg Glu Ala<sup>60</sup> Ala Ile Arg Ala Val<sup>65</sup> Gln<sup>70</sup>  
 Thr Cys Asn Leu Asn Val Thr Ser Ile Arg Asp Thr Thr Lys<sup>75</sup> Leu Pro<sup>80</sup>  
 His Asn Gly<sup>85</sup> Cys Lys Leu Pro Lys<sup>90</sup> Arg Arg Arg Val<sup>95</sup>  
 His Asn Gly<sup>100</sup> Cys Lys Leu Pro Lys<sup>105</sup> Arg Arg Arg Val<sup>110</sup>  
 His Asn Gly<sup>115</sup> Cys Lys Leu Pro Lys<sup>120</sup> Arg Arg Arg Val

&lt;210&gt; 519

&lt;211&gt; 375

&lt;212&gt; DNA

&lt;213&gt; Anaplasma phagocytophilum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(375)

&lt;223&gt; transl\_table=11

&lt;400&gt; 519

atg gcg gta gtt aag aag aag aga aat gtt gta gtt gga agg gtg cac	48
Met Ala Val Val Lys Lys Lys Arg Asn Val Val Val Gly Arg Val His	
1 5 10 15	
att tgc gct act tat aac aat gtc atc gtg act ata gcg gat cag cag	96
Ile Cys Ala Thr Tyr Asn Asn Val Ile Val Thr Ile Ala Asp Gln Gln	
20 25 30	
ggg cat gtg ctt gtc act act tcc gct ggg gca tgt aat ttt aag ggt	144
Gly His Val Leu Val Thr Thr Ser Ala Gly Ala Cys Asn Phe Lys Gly	
35 40 45	
agt aag aag tct act cct tat gcg gcg cag gag act gtg gct agg gct	192
Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gln Glu Thr Val Ala Arg Ala	
50 55 60	
gta aag gct gta atc gag cga aat ggt atg aag act gta tcg gta tgt	240
Val Lys Ala Val Ile Glu Arg Asn Gly Met Lys Thr Val Ser Val Cys	
65 70 75 80	
att tca ggg ccg ggt gca ggt agg gaa gcg gcg att agg gct gtg cag	288
Ile Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala Ile Arg Ala Val Gln	
85 90 95	
gct tgc aat ctg aat gtt acg tct att aag gat gtg act aaa ctt cct	336
Ala Cys Asn Leu Asn Val Thr Ser Ile Lys Asp Val Thr Lys Leu Pro	
100 105 110	
cac aat ggg tgt aag ttg cca aaa agg cgc agg gtg tag	375
His Asn Gly Cys Lys Leu Pro Lys Arg Arg Arg Val	
115 120	

&lt;210&gt; 520

&lt;211&gt; 124

&lt;212&gt; PRT

&lt;213&gt; Anaplasma phagocytophilum

&lt;400&gt; 520

Met Ala Val Val Lys Lys Lys Arg Asn Val Val Val Gly Arg Val His  
 1 5 10 15  
 Ile Cys Ala Thr Tyr Asn Asn Val Ile Val Thr Ile Ala Asp Gln Gln  
 20 25 30  
 Gly His Val Leu Val Thr Thr Ser Ala Gly Ala Cys Asn Phe Lys Gly  
 35 40 45  
 Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gln Glu Thr Val Ala Arg Ala  
 50 55 60  
 Val Lys Ala Val Ile Glu Arg Asn Gly Met Lys Thr Val Ser Val Cys  
 65 70 75 80  
 Ile Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala Ile Arg Ala Val Gln  
 85 90 95  
 Ala Cys Asn Leu Asn Val Thr Ser Ile Lys Asp Val Thr Lys Leu Pro

## PhoenixTemp32470.tmp.txt

100  
 His Asn Gly Cys Lys Leu Pro Lys Arg Arg Arg Val  
 115 120 110

<210> 521  
 <211> 396  
 <212> DNA  
 <213> Anabaena sp

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 521  
 atg gca aga caa cca aca aaa aaa tct ggg agt aag aag cag aaa cgg 48  
 Met Ala Arg Gln Pro Thr Lys Lys Ser Gly Ser Lys Lys Gln Lys Arg  
 1 5 10 15  
 aac gtt ccc aat gga atg gct tac atc caa tct act ttc aac aat agc 96  
 Asn Val Pro Asn Gly Met Ala Tyr Ile Gln Ser Thr Phe Asn Asn Ser  
 20 25 30  
 att gtc acc atc acc gac caa aat gga gat gta att tct tgg gct agt 144  
 Ile Val Thr Ile Thr Asp Gln Asn Gly Asp Val Ile Ser Trp Ala Ser  
 35 40 45  
 gca ggt tct agc ggt ttt aaa ggt gct aaa aaa gga act ccc ttt gca 192  
 Ala Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala  
 50 55 60  
 gca caa acc gca gca gaa agt gca gcc aga cga gct atc gac caa gga 240  
 Ala Gln Thr Ala Ala Glu Ser Ala Ala Arg Arg Ala Ile Asp Gln Gly  
 65 70 75 80  
 atg cgc caa att gaa gtg atg gtt agt ggg cca gga gca ggt aga gaa 288  
 Met Arg Gln Ile Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu  
 85 90 95  
 act gcg att cgg gcg ctt caa gga gca ggg cta gaa att acc ctg att 336  
 Thr Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile  
 100 105 110  
 cga gac ata acc ccc att cct cac aat ggt tgc cgt ccg cca aaa cgc 384  
 Arg Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 cgt cgc gta tag 396  
 Arg Arg Val  
 130

<210> 522  
 <211> 131  
 <212> PRT  
 <213> Anabaena sp

<400> 522  
 Met Ala Arg Gln Pro Thr Lys Lys Ser Gly Ser Lys Lys Gln Lys Arg  
 1 5 10 15  
 Asn Val Pro Asn Gly Met Ala Tyr Ile Gln Ser Thr Phe Asn Asn Ser  
 20 25 30  
 Ile Val Thr Ile Thr Asp Gln Asn Gly Asp Val Ile Ser Trp Ala Ser  
 35 40 45  
 Ala Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala  
 50 55 60  
 Ala Gln Thr Ala Ala Glu Ser Ala Ala Arg Arg Ala Ile Asp Gln Gly  
 65 70 75 80  
 Met Arg Gln Ile Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu  
 85 90 95  
 Thr Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile  
 100 105 110  
 Arg Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 Arg Arg Val  
 130

<210> 523



<211> 378  
 <212> DNA  
 <213> Aquifex aeolicus

<220>  
 <221> CDS  
 <222> (1)..(378)  
 <223> transl\_table=11

```

<400> 523
atg gcg aaa aag aaa aag aaa cag aaa aga cag gta aca aaa gcc ata      48
Met Ala Lys Lys Lys Lys Lys Gln Lys Arg Gln Val Thr Lys Ala Ile
 1          5          10          15
gtt cac ata cac aca acc ttt aac aac acg ata gtt aac gta aca gac      96
Val His Ile His Thr Thr Phe Asn Asn Thr Ile Val Asn Val Thr Asp
          20          25          30
act cag gga aat acc atc gca tgg gct agc ggt gga act gta ggg ttt      144
Thr Gln Gly Asn Thr Ile Ala Trp Ala Ser Gly Gly Thr Val Gly Phe
          35          40          45
aag ggc acg aga aaa tca acc cct tac gca gca cag ctt gca gct caa      192
Lys Gly Thr Arg Lys Ser Thr Pro Tyr Ala Ala Gln Leu Ala Ala Gln
          50          55          60
aag gct atg aaa gag gca aag gaa cac gga gtt cag gaa gtt gag ata      240
Lys Ala Met Lys Glu Ala Lys Glu His Gly Val Gln Glu Val Glu Ile
          65          70          75
tgg gtc aaa ggc ccc gga gca gga agg gag tca gcg gta agg gct gta      288
Trp Val Lys Gly Pro Gly Ala Gly Arg Glu Ser Ala Val Arg Ala Val
          85          90          95
ttc gct tcg ggg gta aag gta acc gcc ata agg gat gtt acg cct att      336
Phe Ala Ser Gly Val Lys Val Thr Ala Ile Arg Asp Val Thr Pro Ile
          100          105          110
ccc cac aac ggt tgc aga cca cct gcg agg agg aga gtg taa      378
Pro His Asn Gly Cys Arg Pro Pro Ala Arg Arg Arg Val
          115          120          125

```

<210> 524  
 <211> 125  
 <212> PRT  
 <213> Aquifex aeolicus

```

<400> 524
Met Ala Lys Lys Lys Lys Lys Gln Lys Arg Gln Val Thr Lys Ala Ile
 1          5          10          15
Val His Ile His Thr Thr Phe Asn Asn Thr Ile Val Asn Val Thr Asp
          20          25          30
Thr Gln Gly Asn Thr Ile Ala Trp Ala Ser Gly Gly Thr Val Gly Phe
          35          40          45
Lys Gly Thr Arg Lys Ser Thr Pro Tyr Ala Ala Gln Leu Ala Ala Gln
          50          55          60
Lys Ala Met Lys Glu Ala Lys Glu His Gly Val Gln Glu Val Glu Ile
          65          70          75
Trp Val Lys Gly Pro Gly Ala Gly Arg Glu Ser Ala Val Arg Ala Val
          85          90          95
Phe Ala Ser Gly Val Lys Val Thr Ala Ile Arg Asp Val Thr Pro Ile
          100          105          110
Pro His Asn Gly Cys Arg Pro Pro Ala Arg Arg Arg Val
          115          120          125

```

<210> 525  
 <211> 402  
 <212> DNA  
 <213> Archaeoglobus fulgidus

<220>  
 <221> CDS  
 <222> (1)..(402)  
 <223> transl\_table=11

<400> 525

## PhoenixTemp32470.tmp.txt

```

atg gcc gag aag aag aag gga gga agg tgg ggg ata gct cac atc tac      48
Met Ala Glu Lys Lys Lys Gly Gly Arg Trp Gly Ile Ala His Ile Tyr
1      5      10      15
tcg tca tac aac aac acg att atc acg att aca gac ata acc gga gcg      96
Ser Ser Tyr Asn Asn Thr Ile Ile Thr Ile Thr Asp Ile Thr Gly Ala
20      25      30
gag ata att gca aga gta agc ggc gga atg atc gtc aag gcc gac aga      144
Glu Ile Ile Ala Arg Val Ser Gly Gly Met Ile Val Lys Ala Asp Arg
35      40      45
gat gag ggc aac cct tac acc gca atg cag gcg gca ctt agg gct gca      192
Asp Glu Gly Asn Pro Tyr Thr Ala Met Gln Ala Ala Leu Arg Ala Ala
50      55      60
gcg ata gcg aag gaa aag gga att gac ggt gtg cac ata aag gtt agg      240
Ala Ile Ala Lys Glu Lys Gly Ile Asp Gly Val His Ile Lys Val Arg
65      70      75      80
gct ccg gga gga aac aag cac aca act ccc ggc cct ggg gcg cag gcg      288
Ala Pro Gly Gly Asn Lys His Thr Thr Pro Gly Pro Gly Ala Gln Ala
85      90      95
gcg ata aga gcc ctt gca agg gca ggg ctt aag ata gga aga att gaa      336
Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile Gly Arg Ile Glu
100      105      110
gac gtt acg cca att ccg cac gac gga acg aga cct ccg gga ggt aag      384
Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Pro Pro Gly Gly Lys
115      120      125
aga ggc agg aga gtc tga
Arg Gly Arg Arg Val
130

```

&lt;210&gt; 526

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Archaeoglobus fulgidus

&lt;400&gt; 526

```

Met Ala Glu Lys Lys Lys Gly Gly Arg Trp Gly Ile Ala His Ile Tyr
1      5      10      15
Ser Ser Tyr Asn Asn Thr Ile Ile Thr Ile Thr Asp Ile Thr Gly Ala
20      25      30
Glu Ile Ile Ala Arg Val Ser Gly Gly Met Ile Val Lys Ala Asp Arg
35      40      45
Asp Glu Gly Asn Pro Tyr Thr Ala Met Gln Ala Ala Leu Arg Ala Ala
50      55      60
Ala Ile Ala Lys Glu Lys Gly Ile Asp Gly Val His Ile Lys Val Arg
65      70      75      80
Ala Pro Gly Gly Asn Lys His Thr Thr Pro Gly Pro Gly Ala Gln Ala
85      90      95
Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile Gly Arg Ile Glu
100      105      110
Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Pro Pro Gly Gly Lys
115      120      125
Arg Gly Arg Arg Val
130

```

&lt;210&gt; 527

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Azoarcus sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 527

```

atg gcc aag act gca act aag gtt cgc aag aag atc aag aag aac gtt      48
Met Ala Lys Thr Ala Thr Lys Val Arg Lys Lys Ile Lys Lys Asn Val
1      5      10      15
gcc gag ggt atc gcc cac gtg cac gcg agc ttc aac aac acg atc atc      96
Ala Glu Gly Ile Ala His Val His Ala Ser Phe Asn Asn Thr Ile Ile

```

## PhoenixTemp32470.tmp.txt

			20				25		30									
acg	atc	acc	gat	cgc	cag	ggc	aac	gcc	ctg	tcg	tgg	gcg	act	tcc	ggg			
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ser	Gly			144
		35					40					45						
ggc	gcc	ggc	ttc	aag	ggc	tcg	cgt	aag	agc	acc	ccg	ttc	gcc	gct	cag			192
Gly	Ala	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln			
	50					55					60							
gtc	gcc	gcc	gag	gcg	gcc	ggc	aag	gtg	gcg	cag	gag	tgc	ggc	gtc	aag			240
Val	Ala	Ala	Glu	Ala	Ala	Gly	Lys	Val	Ala	Gln	Glu	Cys	Gly	Val	Lys			
	65				70					75					80			
aat	ctc	gag	gtt	cgc	atc	aag	ggg	ccc	ggc	ccc	ggc	cgc	gaa	tcc	gcc			288
Asn	Leu	Glu	Val	Arg	Ile	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala			
				85					90					95				
gtt	cgc	gcg	ctg	aac	gcg	ctg	ggg	atg	aag	att	tcc	agc	atc	acg	gat			336
Val	Arg	Ala	Leu	Asn	Ala	Leu	Gly	Met	Lys	Ile	Ser	Ser	Ile	Thr	Asp			
			100					105					110					
atc	acc	ccc	att	ccg	cac	aac	ggc	tgc	cgt	ccg	ccg	aag	aag	cgc	cgt			384
Ile	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg			
		115					120					125						
atc	tga																	390
Ile																		

&lt;210&gt; 528

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Azoarcus sp

&lt;400&gt; 528

Met	Ala	Lys	Thr	Ala	Thr	Lys	Val	Arg	Lys	Lys	Ile	Lys	Lys	Asn	Val			
1				5					10					15				
Ala	Glu	Gly	Ile	Ala	His	Val	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Ile			
			20					25					30					
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ser	Gly			
		35					40					45						
Gly	Ala	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln			
	50					55					60							
Val	Ala	Ala	Glu	Ala	Ala	Gly	Lys	Val	Ala	Gln	Glu	Cys	Gly	Val	Lys			
	65				70					75					80			
Asn	Leu	Glu	Val	Arg	Ile	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala			
				85					90					95				
Val	Arg	Ala	Leu	Asn	Ala	Leu	Gly	Met	Lys	Ile	Ser	Ser	Ile	Thr	Asp			
		100						105					110					
Ile	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg			
		115					120					125						
Ile																		

&lt;210&gt; 529

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Azoarcus sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 529

atg	gct	aaa	act	gct	gcg	aaa	gtt	cgc	aag	aag	gtc	aag	aag	aac	gtc			48
Met	Ala	Lys	Thr	Ala	Ala	Lys	Val	Arg	Lys	Lys	Val	Lys	Lys	Asn	Val			
1				5					10					15				
gcc	gag	ggc	atc	gcc	cac	gtg	cac	gcg	agc	ttc	aac	aac	acg	atc	atc			96
Ala	Glu	Gly	Ile	Ala	His	Val	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Ile			
			20					25					30					
act	atc	acc	gac	cgc	cag	ggc	aat	gcg	ttg	tcc	tgg	gcg	acc	tct	ggt			144
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ser	Gly			
		35					40					45						
ggt	gcc	ggc	ttc	aag	ggc	tca	cgg	aaa	agt	acc	ccg	ttt	gcc	gcc	cag			192

PhoenixTemp32470.tmp.txt

Gly	Ala	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
50						55					60						
gtc	gcg	gcc	gaa	gct	gcc	ggc	aaa	gct	gca	cag	gaa	tgt	ggc	gtc	aag	240	
Val	Ala	Ala	Glu	Ala	Ala	Gly	Lys	Ala	Ala	Gln	Glu	Cys	Gly	Val	Lys		
65					70					75					80		
aac	ctg	gag	gtc	cgc	atc	aag	ggc	ccg	ggg	ccc	ggg	cgc	gaa	tcc	gct	288	
Asn	Leu	Glu	Val	Arg	Ile	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
gtc	cgt	gca	ctc	aat	gcg	ctg	ggc	atg	aag	atc	tcc	agc	att	acc	gac	336	
Val	Arg	Ala	Leu	Asn	Ala	Leu	Gly	Met	Lys	Ile	Ser	Ser	Ile	Thr	Asp		
			100					105					110				
atc	acg	ccg	atc	ccg	cat	aac	ggc	tgc	cgc	ccg	ccg	aaa	aag	cgc	cgc	384	
Ile	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg		
		115					120					125					
atc	tga															390	
Ile																	

<210> 530  
 <211> 129  
 <212> PRT  
 <213> Azoarcus sp

<400> 530

Met	Ala	Lys	Thr	Ala	Ala	Lys	Val	Arg	Lys	Lys	Val	Lys	Lys	Asn	Val		
1				5					10					15			
Ala	Glu	Gly	Ile	Ala	His	Val	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Ile		
			20					25					30				
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ser	Gly		
		35					40					45					
Gly	Ala	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
	50					55					60						
Val	Ala	Ala	Glu	Ala	Ala	Gly	Lys	Ala	Ala	Gln	Glu	Cys	Gly	Val	Lys		
65				70					75					80			
Asn	Leu	Glu	Val	Arg	Ile	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
Val	Arg	Ala	Leu	Asn	Ala	Leu	Gly	Met	Lys	Ile	Ser	Ser	Ile	Thr	Asp		
		100						105					110				
Ile	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg		
		115					120					125					
Ile																	

<210> 531  
 <211> 390  
 <212> DNA  
 <213> Bacillus cereus

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 531

atg	gca	cgt	aaa	aca	aac	act	cgt	aaa	aaa	cgt	gtg	aaa	aag	aat	att	48	
Met	Ala	Arg	Lys	Thr	Asn	Thr	Arg	Lys	Lys	Arg	Val	Lys	Lys	Asn	Ile		
1				5				10						15			
gaa	gct	ggc	ata	gct	cat	att	cgt	tct	act	ttc	aac	aac	aca	atc	gta	96	
Glu	Ala	Gly	Ile	Ala	His	Ile	Arg	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val		
			20					25					30				
aca	ctt	aca	gat	act	cac	ggc	aac	gca	ctt	tct	tgg	tct	agt	gct	ggc	144	
Thr	Leu	Thr	Asp	Thr	His	Gly	Asn	Ala	Leu	Ser	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
gca	ctt	ggc	ttc	cgt	gga	tct	cgt	aaa	tct	act	cca	ttc	gct	gcg	caa	192	
Ala	Leu	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
	50				55						60						
atg	gct	gct	gaa	act	gct	gct	aaa	gct	gca	atg	gaa	cac	ggc	tta	aaa	240	
Met	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Ala	Ala	Met	Glu	His	Gly	Leu	Lys		
65					70				75					80			

## PhoenixTemp32470.tmp.txt

act tta gag gtt act gtt aaa ggt cct ggt gct ggt cgt gaa gct gca	288
Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala	
85 90 95	
att cgt gct ctt caa gct gca ggt cta gaa gta aca gca att aga gat	336
Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Arg Asp	
100 105 110	
gtt act cca gtt cct cat aat gga tgt cgt cca cca aaa cgt cgt cgt	384
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg	
115 120 125	
gtg taa	390
Val	

<210> 532  
 <211> 129  
 <212> PRT  
 <213> Bacillus cereus

<400> 532

Met Ala Arg Lys Thr Asn Thr Arg Lys Lys Arg Val Lys Lys Asn Ile	
1 5 10 15	
Glu Ala Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val	
20 25 30	
Thr Leu Thr Asp Thr His Gly Asn Ala Leu Ser Trp Ser Ala Gly	
35 40 45	
Ala Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His Gly Leu Lys	
65 70 75 80	
Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala	
85 90 95	
Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Arg Asp	
100 105 110	
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg	
115 120 125	
Val	

<210> 533  
 <211> 390  
 <212> DNA  
 <213> Bacteroides fragilis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 533

atg gca aaa aaa aca gtc gca gct aag aag aga aat gtt aag gta gat	48
Met Ala Lys Lys Thr Val Ala Ala Lys Lys Arg Asn Val Lys Val Asp	
1 5 10 15	
gct aat gga caa ttg cat gtt cat tca tct ttc aac aat att att gtt	96
Ala Asn Gly Gln Leu His Val His Ser Ser Phe Asn Asn Ile Ile Val	
20 25 30	
tct ctt gca aat agt gaa ggg cag att atc tct tgg tcg tct gca gga	144
Ser Leu Ala Asn Ser Glu Gly Gln Ile Ile Ser Trp Ser Ser Ala Gly	
35 40 45	
aag atg gga ttt aga ggt tct aaa aag aat act cct tat gca gct cag	192
Lys Met Gly Phe Arg Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ala Gln	
50 55 60	
atg gct gcc cag gat tgt gct aaa att gca ttc gat ctt ggc ctg aga	240
Met Ala Ala Gln Asp Cys Ala Lys Ile Ala Phe Asp Leu Gly Leu Arg	
65 70 75 80	
aag gta aaa gca tat gtt aaa ggt ccg ggt aac ggt cgt gaa tct gct	288
Lys Val Lys Ala Tyr Val Lys Gly Pro Gly Asn Gly Arg Glu Ser Ala	
85 90 95	
att aga acg att cat ggt gcc ggt att gaa gtt aca gaa atc att gac	336
Ile Arg Thr Ile His Gly Ala Gly Ile Glu Val Thr Glu Ile Ile Asp	

## PhoenixTemp32470.tmp.txt

```

      100      105      110
gta act ccg ctt ccg cat aac ggt tgt cgt cct ccg aaa aga cgt aga
Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
      115      120      125
gtt taa
Val

```

384

390

<210> 534  
 <211> 129  
 <212> PRT  
 <213> Bacteroides fragilis

```

<400> 534
Met Ala Lys Lys Thr Val Ala Ala Lys Lys Arg Asn Val Lys Val Asp
1      5      10      15
Ala Asn Gly Gln Leu His Val His Ser Ser Phe Asn Asn Ile Ile Val
      20      25      30
Ser Leu Ala Asn Ser Glu Gly Gln Ile Ile Ser Trp Ser Ala Gly
      35      40      45
Lys Met Gly Phe Arg Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ala Gln
      50      55      60
Met Ala Ala Gln Asp Cys Ala Lys Ile Ala Phe Asp Leu Gly Leu Arg
65      70      75      80
Lys Val Lys Ala Tyr Val Lys Gly Pro Gly Asn Gly Arg Glu Ser Ala
      85      90      95
Ile Arg Thr Ile His Gly Ala Gly Ile Glu Val Thr Glu Ile Ile Asp
      100      105      110
Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
      115      120      125
Val

```

<210> 535  
 <211> 390  
 <212> DNA  
 <213> Bacillus halodurans

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> trans1\_table=11

```

<400> 535
atg gct aag aaa acg aac act cgt aaa cgt cgc caa cgt aaa aat gtg
Met Ala Lys Lys Thr Asn Thr Arg Lys Arg Arg Gln Arg Lys Asn Val
1      5      10      15
gag act ggc gta gcg cac att cgt tct acg ttc aac aac aca atc gtg
Glu Thr Gly Val Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val
      20      25      30
acg att aca gac cct cat gga aac gcc att tct tgg gcg tct gct ggg
Thr Ile Thr Asp Pro His Gly Asn Ala Ile Ser Trp Ala Ser Ala Gly
      35      40      45
gct ctt ggt ttc aaa ggt tct cgt aaa tcc aca cca ttc gca gca cag
Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
      50      55      60
atg gct gct gaa act gct gca aaa gca gca atg gag cat ggc atg aag
Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His Gly Met Lys
65      70      75      80
tca att gaa gtg tca gtt aaa ggt cct ggt gct ggt cgt gaa gca gcg
Ser Ile Glu Val Ser Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala
      85      90      95
atc cgt tca tta caa gcc gtt gga tta gaa gtt aac atg atc aaa gat
Ile Arg Ser Leu Gln Ala Val Gly Leu Glu Val Asn Met Ile Lys Asp
      100      105      110
gtg act cct gtt cca cat aac ggt tgc cgt ccg cca aaa cgt cgt cgt
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
      115      120      125
gtg taa

```

48

96

144

192

240

288

336

384

390

Val

<210> 536  
 <211> 129  
 <212> PRT  
 <213> Bacillus halodurans

<400> 536  
 Met Ala Lys Lys Thr Asn Thr Arg Lys Arg Arg Gln Arg Lys Asn Val  
 1 5 10 15  
 Glu Thr Gly Val Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Pro His Gly Asn Ala Ile Ser Trp Ala Ser Ala Gly  
 35 40 45  
 Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His Gly Met Lys  
 65 70 75 80  
 Ser Ile Glu Val Ser Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 85 90 95  
 Ile Arg Ser Leu Gln Ala Val Gly Leu Glu Val Asn Met Ile Lys Asp  
 100 105 110  
 Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 537  
 <211> 396  
 <212> DNA  
 <213> Bacillus licheniformis

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 537  
 atg gct gct gca cgt aaa aca aac acg cgt aaa cgt cgc gtg aaa aag 48  
 Met Ala Ala Ala Arg Lys Thr Asn Thr Arg Lys Arg Arg Val Lys Lys  
 1 5 10 15  
 aat att gaa tct gga att gct cat atc cgt tca act ttc aac aac acg 96  
 Asn Ile Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr  
 20 25 30  
 att gtt act atc aca gat gtt cat ggc aat gct ctt tct tgg tca agt 144  
 Ile Val Thr Ile Thr Asp Val His Gly Asn Ala Leu Ser Trp Ser Ser  
 35 40 45  
 gcc gga gct tta gga ttt aaa ggt tct aaa aaa tcc act cca ttc gct 192  
 Ala Gly Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala  
 50 55 60  
 gca caa atg gct gct gaa aca gct gct aaa ggt tct atc gaa cat gga 240  
 Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Gly Ser Ile Glu His Gly  
 65 70 75 80  
 ctt aaa act ctt gaa gtt act gta aaa gga cca ggt tcc ggc cgt gaa 288  
 Leu Lys Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu  
 85 90 95  
 gct gca att cgt gca ctt caa gct gct gga cta gaa gtt aca gcg atc 336  
 Ala Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile  
 100 105 110  
 aga gac gta acg cct gtt cct cat aac gga tgc cgt ccg cca aaa cgt 384  
 Arg Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 cgc cgc gtg taa 396  
 Arg Arg Val  
 130

<210> 538  
 <211> 131

&lt;212&gt; PRT

&lt;213&gt; Bacillus licheniformis

&lt;400&gt; 538

```

Met Ala Ala Ala Arg Lys Thr Asn Thr Arg Lys Arg Arg Val Lys Lys
1      5      10      15
Asn Ile Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr
20      25      30
Ile Val Thr Ile Thr Asp Val His Gly Asn Ala Leu Ser Trp Ser Ser
35      40      45
Ala Gly Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala
50      55      60
Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Gly Ser Ile Glu His Gly
65      70      75      80
Leu Lys Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu
85      90      95
Ala Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile
100     105     110
Arg Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Lys Arg
115     120     125
Arg Arg Val
130

```

&lt;210&gt; 539

&lt;211&gt; 402

&lt;212&gt; DNA

&lt;213&gt; Bacillus clausii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(402)

&lt;223&gt; transl\_table=11

&lt;400&gt; 539

```

atg aaa aac atg gct aaa aaa acg aat act cgt cca aaa cgt cgt caa      48
Met Lys Asn Met Ala Lys Lys Thr Asn Thr Arg Pro Lys Arg Arg Gln
1      5      10      15
aga aaa aac att gac agt ggt gtg gct cac atc cgt tct aca ttc aac      96
Arg Lys Asn Ile Asp Ser Gly Val Ala His Ile Arg Ser Thr Phe Asn
20      25      30
aac aca att gtg acg att aca gat cct cat ggc aat gcg att tct tgg      144
Asn Thr Ile Val Thr Ile Thr Asp Pro His Gly Asn Ala Ile Ser Trp
35      40      45
gct agc gct ggc gca ctt ggt ttt aaa ggc tct cgt aag tca aca cca      192
Ala Ser Ala Gly Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro
50      55      60
ttt gct gcg caa atg gct gct gaa tca gct gcc aaa aca gcg atg gag      240
Phe Ala Ala Gln Met Ala Ala Glu Ser Ala Ala Lys Thr Ala Met Glu
65      70      75      80
cat ggc atg aaa acg atc gaa gtt tca gtt aaa ggc cca gga gct ggc      288
His Gly Met Lys Thr Ile Glu Val Ser Val Lys Gly Pro Gly Ala Gly
85      90      95
cgt gaa gcg gca atc cgt tca ttg caa gct gta ggg ctt gaa gtg aac      336
Arg Glu Ala Ala Ile Arg Ser Leu Gln Ala Val Gly Leu Glu Val Asn
100     105     110
atg att aaa gat gtg aca cca gtt cca cac aat ggc tgc cgt ccg ccg      384
Met Ile Lys Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro
115     120     125
aaa cgt cgt aga gtg taa
Lys Arg Arg Arg Val
130

```

&lt;210&gt; 540

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Bacillus clausii

&lt;400&gt; 540

```

Met Lys Asn Met Ala Lys Lys Thr Asn Thr Arg Pro Lys Arg Arg Gln

```



## PhoenixTemp32470.tmp.txt

```

1           5           10           15
Arg Lys Asn Ile Asp Ser Gly Val Ala His Ile Arg Ser Thr Phe Asn
20
Asn Thr Ile Val Thr Ile Thr Asp Pro His Gly Asn Ala Ile Ser Trp
35
Ala Ser Ala Gly Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro
50
Phe Ala Ala Gln Met Ala Ala Glu Ser Ala Ala Lys Thr Ala Met Glu
65
His Gly Met Lys Thr Ile Glu Val Ser Val Lys Gly Pro Gly Ala Gly
85
Arg Glu Ala Ala Ile Arg Ser Leu Gln Ala Val Gly Leu Glu Val Asn
100
Met Ile Lys Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro
115
Lys Arg Arg Arg Val
130

```

&lt;210&gt; 541

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 541

```

atg gct gct gct cgt aaa tct aac acg cgt aaa cgt cgc gtg aaa aag      48
Met Ala Ala Ala Arg Lys Ser Asn Thr Arg Lys Arg Arg Val Lys Lys
1           5           10           15
aat att gag tct gga att gct cat att cgt tca act ttc aat aac acg      96
Asn Ile Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr
20
atc gtt acg atc act gac act cat ggt aat gct att tct tgg tct agt      144
Ile Val Thr Ile Thr Asp Thr His Gly Asn Ala Ile Ser Trp Ser Ser
35
gcc gga gct tta gga ttc aga ggt tct cgt aaa tct act cct ttt gct      192
Ala Gly Ala Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala
50
gcg caa atg gct gca gaa aca gct gct aaa ggt tca atc gaa cat ggt      240
Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Gly Ser Ile Glu His Gly
65
ctt aaa act cta gag gtt act gtt aaa gga cct ggt tca ggc cgt gaa      288
Leu Lys Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu
85
gct gca atc cgt gca ctt caa gct gct gga cta gaa gtc act gct atc      336
Ala Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile
100
aga gac gta act cct gtt cct cat aac gga tgc cgt cca cca aaa cgt      384
Arg Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg
115
cgc cgc gtg taa
Arg Arg Val
130

```

&lt;210&gt; 542

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Bacillus subtilis

&lt;400&gt; 542

```

Met Ala Ala Ala Arg Lys Ser Asn Thr Arg Lys Arg Arg Val Lys Lys
1           5           10           15
Asn Ile Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr
20
Ile Val Thr Ile Thr Asp Thr His Gly Asn Ala Ile Ser Trp Ser Ser
35

```

## PhoenixTemp32470.tmp.txt

Ala Gly Ala Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala  
 50 55 60  
 Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Gly Ser Ile Glu His Gly  
 65 70 75 80  
 Leu Lys Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu  
 85 90 95  
 Ala Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile  
 100 105 110  
 Arg Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 Arg Arg Val  
 130

&lt;210&gt; 543

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Bartonella henselae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 543

atg gcc aag gaa gcc aca cgt gtt cgt cgc cgc gag cgc aaa aat att	48
Met Ala Lys Glu Ala Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile	
1 5 10 15	
tca tcc ggt gtt gtg cat atc aat tca aca ttt aat aat aca atg att	96
Ser Ser Gly Val Val His Ile Asn Ser Thr Phe Asn Asn Thr Met Ile	
20 25 30	
acc att act gat gct cag gga aat gca att gcc tgg tct tcc gct ggt	144
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly	
35 40 45	
gct cag ggg ttt aaa ggt tca cgt aaa tct acg cct ttt gca gcg cag	192
Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtg gct gca gaa gat tgt gct aga aag gcg cag gaa cat ggt atg cgt	240
Val Ala Ala Glu Asp Cys Ala Arg Lys Ala Gln Glu His Gly Met Arg	
65 70 75 80	
tca tta gaa gtt gag gtt tgc ggt cct gga tca ggt cgt gaa tca gct	288
Ser Leu Glu Val Glu Val Cys Gly Pro Gly Ser Gly Arg Glu Ser Ala	
85 90 95	
ctg cgt gca tta caa tct gtc ggt ttt att att act tca att cgt gat	336
Leu Arg Ala Leu Gln Ser Val Gly Phe Ile Ile Thr Ser Ile Arg Asp	
100 105 110	
gta acg ccg att cct cat aat gga tgt cgt cca cgg aaa agg cgg cgt	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg	
115 120 125	
gtt taa	390
Val	

&lt;210&gt; 544

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Bartonella henselae

&lt;400&gt; 544

Met Ala Lys Glu Ala Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 Ser Ser Gly Val Val His Ile Asn Ser Thr Phe Asn Asn Thr Met Ile  
 20 25 30  
 Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly  
 35 40 45  
 Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Asp Cys Ala Arg Lys Ala Gln Glu His Gly Met Arg  
 65 70 75 80  
 Ser Leu Glu Val Glu Val Cys Gly Pro Gly Ser Gly Arg Glu Ser Ala

## PhoenixTemp32470.tmp.txt

85 90 95  
 Leu Arg Ala Leu Gln Ser Val Gly Phe Ile Ile Thr Ser Ile Arg Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 545  
 <211> 390  
 <212> DNA  
 <213> Bartonella quintana

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 545  
 atg gcc aag caa gcc aca cgt gtg cgt cgt cgc gag cgc aaa aat att 48  
 Met Ala Lys Gln Ala Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 tta tcc ggt gtt gtg cat atc aat tca aca ttt aac aat aca atg gtt 96  
 Leu Ser Gly Val Val His Ile Asn Ser Thr Phe Asn Asn Thr Met Val  
 20 25 30  
 act att act gat gct cag gga aat gcg att gcg tgg tcg tct gct ggt 144  
 Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly  
 35 40 45  
 gct cag ggt ttt aaa gga tca cgt aaa tct acc cct ttt gca gct cag 192  
 Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 gtt gct gcg gaa gat tgt gct aga aaa gcg cag gaa cat ggt atg cgt 240  
 Val Ala Ala Glu Asp Cys Ala Arg Lys Ala Gln Glu His Gly Met Arg  
 65 70 75 80  
 tca tta gaa gtt gag gtt tgt ggt cct ggg gca ggt cgt gaa tct gct 288  
 Ser Leu Glu Val Glu Val Cys Gly Pro Gly Ala Gly Arg Glu Ser Ala  
 85 90 95  
 cta cgt gcg tta cag tct gct ggt ttt gtt att act tct att cgt gat 336  
 Leu Arg Ala Leu Gln Ser Ala Gly Phe Val Ile Thr Ser Ile Arg Asp  
 100 105 110  
 gta acg cca att cct cat aat gga tgt cgt cca cgg aaa agg cga cgt 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg  
 115 120 125  
 gtt taa 390  
 Val

<210> 546  
 <211> 129  
 <212> PRT  
 <213> Bartonella quintana

<400> 546  
 Met Ala Lys Gln Ala Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 Leu Ser Gly Val Val His Ile Asn Ser Thr Phe Asn Asn Thr Met Val  
 20 25 30  
 Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ala Gly  
 35 40 45  
 Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Asp Cys Ala Arg Lys Ala Gln Glu His Gly Met Arg  
 65 70 75 80  
 Ser Leu Glu Val Glu Val Cys Gly Pro Gly Ala Gly Arg Glu Ser Ala  
 85 90 95  
 Leu Arg Ala Leu Gln Ser Ala Gly Phe Val Ile Thr Ser Ile Arg Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg  
 115 120 125

val

<210> 547  
 <211> 393  
 <212> DNA  
 <213> Bdellovibrio bacteriovorus

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 547  
 atg aac act gat aaa aaa gct gtt aca aag aaa aaa gta aaa aga aac 48  
 Met Asn Thr Asp Lys Lys Ala Val Thr Lys Lys Lys Val Lys Arg Asn  
 1 5 10 15  
 gtt cct caa ggg aac tgc tat atc caa gct ggg ttc ggt aac gtt atc 96  
 Val Pro Gln Gly Asn Cys Tyr Ile Gln Ala Gly Phe Gly Asn Val Ile  
 20 25 30  
 gta acg atg act gat cca acc ggt gct acc gtg tcc tgg tcc tct gca 144  
 Val Thr Met Thr Asp Pro Thr Gly Ala Thr Val Ser Trp Ser Ser Ala  
 35 40 45  
 ggt cac ctc ggt ttc aaa gga agc cgt aaa ggt act cca ttt gca gct 192  
 Gly His Leu Gly Phe Lys Gly Ser Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 caa gtc gcg gca gaa gac gct gca aag aaa gct atg gaa gca ggc atg 240  
 Gln Val Ala Ala Glu Asp Ala Ala Lys Lys Ala Met Glu Ala Gly Met  
 65 70 75 80  
 aaa tct gtg gac gtt tac ttg aaa gga cca ggc gct ggt cgt gag cct 288  
 Lys Ser Val Asp Val Tyr Leu Lys Gly Pro Gly Ala Gly Arg Glu Pro  
 85 90 95  
 gca att cgt gca ttg gct gct act gga atg aga atc ttg tct ctt aaa 336  
 Ala Ile Arg Ala Leu Ala Ala Thr Gly Met Arg Ile Leu Ser Leu Lys  
 100 105 110  
 gac gtg act cca gtt cct cac aac ggt tgc cgt cca cct aag cgt aga 384  
 Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 aga atc taa 393  
 Arg Ile  
 130

<210> 548  
 <211> 130  
 <212> PRT  
 <213> Bdellovibrio bacteriovorus

<400> 548  
 Met Asn Thr Asp Lys Lys Ala Val Thr Lys Lys Lys Val Lys Arg Asn  
 1 5 10 15  
 Val Pro Gln Gly Asn Cys Tyr Ile Gln Ala Gly Phe Gly Asn Val Ile  
 20 25 30  
 Val Thr Met Thr Asp Pro Thr Gly Ala Thr Val Ser Trp Ser Ser Ala  
 35 40 45  
 Gly His Leu Gly Phe Lys Gly Ser Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Val Ala Ala Glu Asp Ala Ala Lys Lys Ala Met Glu Ala Gly Met  
 65 70 75 80  
 Lys Ser Val Asp Val Tyr Leu Lys Gly Pro Gly Ala Gly Arg Glu Pro  
 85 90 95  
 Ala Ile Arg Ala Leu Ala Ala Thr Gly Met Arg Ile Leu Ser Leu Lys  
 100 105 110  
 Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Arg Ile  
 130

<210> 549  
 <211> 399

&lt;212&gt; DNA

&lt;213&gt; Bifidobacterium longum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(399)

&lt;223&gt; transl\_table=11

&lt;400&gt; 549

```

atg gca gcg cct aag caa gcc gct cgt aag ccc cgt cgt cgc gac cgc      48
Met Ala Ala Pro Lys Gln Ala Ala Arg Lys Pro Arg Arg Arg Asp Arg
 1      5      10      15
aag tcg gtc ccg gtc ggc cag gct cac atc aag tcc act ttc aac aac      96
Lys Ser Val Pro Val Gly Gln Ala His Ile Lys Ser Thr Phe Asn Asn
      20      25      30
acg atc att tcg atc acc gat ccg tcc ggc gcc gtg gtg tcc tgg gcg      144
Thr Ile Ile Ser Ile Thr Asp Pro Ser Gly Ala Val Val Ser Trp Ala
      35      40      45
tcc ggt ggc gat gtc ggc ttc aag ggc tcc cgt aag tcc acg ccg tac      192
Ser Gly Gly Asp Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr
      50      55      60
gcc gct ggt atg gct gcc gag tcc gcc gcc cgc aag gcg atg gaa cac      240
Ala Ala Gly Met Ala Ala Glu Ser Ala Ala Arg Lys Ala Met Glu His
      65      70      75
ggc gtc aag aag gtc gac gtg ttc gtc aag ggc ccg ggt tcc ggt cgt      288
Gly Val Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg
      85      90      95
gaa acc gcc atc cgt tcc ctg cag tct gcg ggc ctc gag gtt ggt tcc      336
Glu Thr Ala Ile Arg Ser Leu Gln Ser Ala Gly Leu Glu Val Gly Ser
      100      105      110
atc acc gac gtc acc ccg caa gcc cac aac ggc gtt cgt cct ccg aag      384
Ile Thr Asp Val Thr Pro Gln Ala His Asn Gly Val Arg Pro Pro Lys
      115      120      125
cgt cgt cgc gtc tga
Arg Arg Arg Val
      130

```

&lt;210&gt; 550

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Bifidobacterium longum

&lt;400&gt; 550

```

Met Ala Ala Pro Lys Gln Ala Ala Arg Lys Pro Arg Arg Arg Asp Arg
1      5      10      15
Lys Ser Val Pro Val Gly Gln Ala His Ile Lys Ser Thr Phe Asn Asn
      20      25      30
Thr Ile Ile Ser Ile Thr Asp Pro Ser Gly Ala Val Val Ser Trp Ala
      35      40      45
Ser Gly Gly Asp Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr
      50      55      60
Ala Ala Gly Met Ala Ala Glu Ser Ala Ala Arg Lys Ala Met Glu His
      65      70      75
Gly Val Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg
      85      90      95
Glu Thr Ala Ile Arg Ser Leu Gln Ser Ala Gly Leu Glu Val Gly Ser
      100      105      110
Ile Thr Asp Val Thr Pro Gln Ala His Asn Gly Val Arg Pro Pro Lys
      115      120      125
Arg Arg Arg Val
      130

```

&lt;210&gt; 551

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Blochmannia floridanus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 551

```

atg att aaa tca tct tct ctt aga tta cgt aag cgg att aaa aaa caa      48
Met Ile Lys Ser Ser Ser Leu Arg Leu Arg Lys Arg Ile Lys Lys Gln
 1      5      10      15
gtt act gat ggt att gct cat ata cat gct tct ttt aat aat act att      96
Val Thr Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile
      20      25      30
gtg act att agc gat cgt caa ggc aat act ttg gga tgg gct aca tct      144
Val Thr Ile Ser Asp Arg Gln Gly Asn Thr Leu Gly Trp Ala Thr Ser
      35      40      45
ggg gga tca ggt ttt cga ggt tct aga aaa tct act cca ttt gcg gct      192
Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
      50      55      60
caa ata gca gcg gag cgt tgt gcg gaa ata gta caa gaa tat gga gtg      240
Gln Ile Ala Ala Glu Arg Cys Ala Glu Ile Val Gln Glu Tyr Gly Val
      65      70      75      80
aaa aat tta gaa gtt atg gtt aag gga cca ggg cca ggt agg gaa tct      288
Lys Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser
      85      90      95
gcg gtt cga gct tta aat gca gca ggt ttt cat att atc agt ata ata      336
Ala Val Arg Ala Leu Asn Ala Ala Gly Phe His Ile Ile Ser Ile Ile
      100      105      110
gat gtc act cca att cct cat aat ggt tgc cgt cct gct aaa aaa cgt      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Ala Lys Lys Arg
      115      120      125
cgt gtc taa
Arg Val
      130

```

&lt;210&gt; 552

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Blochmannia floridanus

&lt;400&gt; 552

```

Met Ile Lys Ser Ser Ser Leu Arg Leu Arg Lys Arg Ile Lys Lys Gln
 1      5      10      15
Val Thr Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile
      20      25      30
Val Thr Ile Ser Asp Arg Gln Gly Asn Thr Leu Gly Trp Ala Thr Ser
      35      40      45
Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
      50      55      60
Gln Ile Ala Ala Glu Arg Cys Ala Glu Ile Val Gln Glu Tyr Gly Val
      65      70      75      80
Lys Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser
      85      90      95
Ala Val Arg Ala Leu Asn Ala Ala Gly Phe His Ile Ile Ser Ile Ile
      100      105      110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Ala Lys Lys Arg
      115      120      125
Arg Val
      130

```

&lt;210&gt; 553

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Borrelia burgdorferi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=11

&lt;400&gt; 553

```

ttg gag ggc aag ttg agc gca aaa tta tca act aat agt aaa aaa aaa      48

```

Met 1	Glu	Gly	Lys	Leu 5	Ser	Ala	Lys	Leu	Ser 10	Thr	Asn	Ser	Lys	Lys 15	Lys
att Ile	aaa Lys	aga Arg	aat Asn 20	atc Ile	gga Gly	gaa Glu	gga Gly	aac Asn 25	gtt Val	tat Tyr	ata Ile	caa Gln	gct Ala 30	act Thr	ttt Phe
aat Asn	aat Asn	acc Thr 35	ata Ile	gtt Val	act Thr	gta Val	tct Ser 40	gat Asp	ata Ile	aag Lys	gga Gly 45	aat Asn	gct Ala	tta Leu	gct Ala
tgg Trp	gca Ala 50	agt Ser	gct Ala	ggg Gly	ggg Gly	atg Met 55	ggg Gly	ttt Phe	aaa Lys	ggg Gly 60	gct Ala 65	aaa Lys	aag Lys	tcg Ser	acc Thr
cca Pro 65	tat Tyr	gct Ala	gct Ala	caa Gln 70	ata Ile	aca Thr	gca Ala	gag Glu	tct Ser	gct Ala 75	tta Leu	aat Asn	aaa Lys	gtg Val 80	aga Arg
gat Asp	ttt Phe	gga Gly	att Ile	aat Asn 85	tat Tyr	gtt Val	cat His	gtg Val	tat Tyr 90	ata Ile	aaa Lys	ggg Gly	cca Pro	ggc Gly 95	att Ile
ggc Gly	aga Arg	gaa Glu	tct Ser 100	gca Ala	ata Ile	aga Arg	gct Ala	att Ile 105	ggg Gly	tcg Ser	att Ile	ggg Gly 110	atg Met 115	act Thr	gta Val
aaa Lys	tca Ser	att Ile 115	tca Ser	gat Asp	att Ile	act Thr	ccc Pro 120	att Ile	cct Pro	cat His	aat Asn	gga Gly 125	tgc Cys	aga Arg	ccg Pro
aaa Lys	aaa Lys 130	acc Thr	aga Arg	cga Arg	gtt Val	tag									

<210> 554  
<211> 134  
<212> PRT  
<213> Borrelia burgdorferi

<400> 554

[illegible]

<210>	555
<211>	390
<212>	DNA
<213>	Bradyrhizobium japonicum

```
<220>
<221> CDS
<222> (1)..(390)
<223> transl_table=11
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<400> 555

atg	ggc	aag	gaa	gcc	acc	cgc	gtt	cgc	cgt	cgt	gaa	cgc	aag	aac	atc	48
Met	Gly	Lys	Glu	Ala	Thr	Arg	Val	Arg	Arg	Arg	Glu	Arg	Lys	Asn	Ile	
1				5				10						15		
gcc	tcc	ggc	gtt	gcg	cac	gtg	aac	tcg	tcg	ttc	aac	aac	acg	acc	atc	96
Ala	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Ser	Phe	Asn	Asn	Thr	Thr	Ile	
			20					25					30			

## PhoenixTemp32470.tmp.txt

```

acc atc acc gac gcg cag ggc aac acg att gcc tgg tcc tcc gcc ggc 144
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ala Trp Ser Ser Ala Gly
      35      40      45
acg atg ggc ttc aag ggc tcg cgc aag tcg acc ccg tac gcg gcg cag 192
Thr Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
      50      55      60
gtt gcc gcc gag gac gtg tcg aag aag gcg cag gag cac ggc atg cgc 240
Val Ala Ala Glu Asp Val Ser Lys Lys Ala Gln Glu His Gly Met Arg
      65      70      75      80
acg ctg gaa gtc gaa gtc gcc ggt ccc ggt tcg ggc cgc gaa tcg gcg 288
Thr Leu Glu Val Glu Val Ala Gly Pro Gly Ser Gly Arg Glu Ser Ala
      85      90      95
ctg cgc gcg ctc cag gcc gcc ggc ttc acc gtc acc tcg atc cgc gac 336
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp
      100      105      110
gtg acc acg atc ccg cac aac ggt tgc cgt ccc cgc aag cgt cgg cgc 384
Val Thr Thr Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg
      115      120      125
gtt tga 390
Val

```

&lt;210&gt; 556

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium japonicum

&lt;400&gt; 556

```

Met Gly Lys Glu Ala Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
Ala Ser Gly Val Ala His Val Asn Ser Ser Phe Asn Asn Thr Thr Ile
      20      25      30
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ala Trp Ser Ser Ala Gly
      35      40      45
Thr Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
      50      55      60
Val Ala Ala Glu Asp Val Ser Lys Lys Ala Gln Glu His Gly Met Arg
65      70      75      80
Thr Leu Glu Val Glu Val Ala Gly Pro Gly Ser Gly Arg Glu Ser Ala
      85      90      95
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp
      100      105      110
Val Thr Thr Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg
      115      120      125
Val

```

&lt;210&gt; 557

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Bradyrhizobium sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 557

```

atg gcc aag gaa gcc gca cgt gtc cgc cgt cgt gag cgc aag aac atc 48
Met Ala Lys Glu Ala Ala Arg Val Arg Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
gcc tcc ggc gtc gcc cat gtg aat tcg tcg ttc aac aac acc acg atc 96
Ala Ser Gly Val Ala His Val Asn Ser Ser Phe Asn Asn Thr Thr Ile
      20      25      30
acc atc acc gac gcg cag ggc aac acc att gcc tgg tcg tcc gct ggg 144
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ala Trp Ser Ser Ala Gly
      35      40      45
acg atg ggc ttc aag gga tcg cgc aag tcg acc ccg tat gcc gcc cag 192
Thr Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln

```



## PhoenixTemp32470.tmp.txt

50	55	60	
gtc gcg gcg gag gat gtg tcc aag aag gcc cag gag cac ggc atg cgc	240		
Val Ala Ala Glu Asp Val Ser Lys Lys Ala Gln Glu His Gly Met Arg			
65	70	75	80
acc ctc gag gtc gag gtg gcc ggt ccg ggc tcc gga cgt gag tcg gcc	288		
Thr Leu Glu Val Glu Val Ala Gly Pro Gly Ser Gly Arg Glu Ser Ala			
85	90	95	
ctg cgc gcg ctg cag gcc gcg ggc ttc acc gtc acc tcg atc cgc gat	336		
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp			
100	105	110	
gtg acg acg atc ccg cac aat ggt tgc cgt ccg cgc aag cgt cgt cgc	384		
Val Thr Thr Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg			
115	120	125	
gtc tga	390		
Val			

&lt;210&gt; 558

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium sp

&lt;400&gt; 558

Met Ala Lys Glu Ala Ala Arg Val Arg Arg Arg Glu Arg Lys Asn Ile	
1	5
Ala Ser Gly Val Ala His Val Asn Ser Ser Phe Asn Asn Thr Thr Ile	
20	25
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ala Trp Ser Ser Ala Gly	
35	40
Thr Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln	
50	55
Val Ala Ala Glu Asp Val Ser Lys Lys Ala Gln Glu His Gly Met Arg	
65	70
Thr Leu Glu Val Glu Val Ala Gly Pro Gly Ser Gly Arg Glu Ser Ala	
85	90
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp	
100	105
Val Thr Thr Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg	
115	120
Val	

&lt;210&gt; 559

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Buchnera aphidicola subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 559

atg gta aag aat tca acg tct att cga aca cga aaa cgt gta aaa aaa	48
Met Val Lys Asn Ser Thr Ser Ile Arg Thr Arg Lys Arg Val Lys Lys	
1	5
caa att tta gat gga att gct cat att cat gca tct ttt aat aat act	96
Gln Ile Leu Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr	
20	25
att gtt aca att aca gat aga caa ggg aat gct tta gga tgg gct act	144
Ile Val Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr	
35	40
tct ggc ggt tct ggt ttt aga ggt tct cga aaa tct act cct ttt gct	192
Ser Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala	
50	55
gca caa gtt gct gct gaa cgt tgt gca gaa ata gta aaa gat tat ggt	240
Ala Gln Val Ala Ala Glu Arg Cys Ala Glu Ile Val Lys Asp Tyr Gly	
65	70
ata aaa aat tta gaa gta atg gtt aaa ggc cct ggt cca ggt aga gag	288

PhoenixTemp32470.tmp.txt

Ile	Lys	Asn	Leu	Glu	Val	Met	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu		
				85					90					95			
tct	act	att	cga	gct	tta	aat	gct	gct	gga	ttt	cgt	att	aca	aat	att		336
Ser	Thr	Ile	Arg	Ala	Leu	Asn	Ala	Ala	Gly	Phe	Arg	Ile	Thr	Asn	Ile		
			100				105						110				
act	gat	gtg	aca	cca	att	cct	cat	aat	ggg	tgc	cgt	cct	cct	aaa	aaa		384
Thr	Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys		
		115					120					125					
cgt	cgc	gtg	tga														396
Arg	Arg	Val															
		130															

<210> 560  
 <211> 131  
 <212> PRT  
 <213> Buchnera aphidicola subsp

<400> 560

Met	Val	Lys	Asn	Ser	Thr	Ser	Ile	Arg	Thr	Arg	Lys	Arg	Val	Lys	Lys		
1				5					10					15			
Gln	Ile	Leu	Asp	Gly	Ile	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr		
			20					25					30				
Ile	Val	Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Gly	Trp	Ala	Thr		
		35					40					45					
Ser	Gly	Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala		
	50					55					60						
Ala	Gln	Val	Ala	Ala	Glu	Arg	Cys	Ala	Glu	Ile	Val	Lys	Asp	Tyr	Gly		
65				70				75						80			
Ile	Lys	Asn	Leu	Glu	Val	Met	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu		
			85					90					95				
Ser	Thr	Ile	Arg	Ala	Leu	Asn	Ala	Ala	Gly	Phe	Arg	Ile	Thr	Asn	Ile		
			100				105					110					
Thr	Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys		
		115					120					125					
Arg	Arg	Val															
		130															

<210> 561  
 <211> 393  
 <212> DNA  
 <213> Buchnera aphidicola subsp

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 561

atg	gta	aaa	aat	tca	tct	gtt	cgc	aca	cgt	aaa	cgt	gta	aaa	aaa	caa		48
Met	Val	Lys	Asn	Ser	Ser	Val	Arg	Thr	Arg	Lys	Arg	Val	Lys	Lys	Gln		
1				5					10					15			
att	aca	gac	ggg	ata	gct	cat	att	cat	gct	tca	ttt	aac	aat	act	att		96
Ile	Thr	Asp	Gly	Ile	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile		
			20					25				30					
gtt	act	att	act	gac	aga	caa	gga	aat	gct	tta	ggg	tgg	gca	act	tct		144
Val	Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Gly	Trp	Ala	Thr	Ser		
		35					40				45						
gga	gga	tca	ggg	ttt	aga	ggg	tct	cgg	aaa	tcg	act	ccc	ttt	gcc	gca		192
Gly	Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala		
	50			55				60									
cag	att	gct	gct	gaa	cga	tgt	gct	gaa	ata	gtt	aaa	gat	tat	ggg	ata		240
Gln	Ile	Ala	Ala	Glu	Arg	Cys	Ala	Glu	Ile	Val	Lys	Asp	Tyr	Gly	Ile		
65				70				75						80			
aaa	aat	tta	gaa	gtt	atg	gtt	aag	gga	cct	gga	cct	ggg	aga	gaa	tct		288
Lys	Asn	Leu	Glu	Val	Met	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser		
			85					90					95				
act	att	cga	gct	ttg	aat	gct	gct	ggc	ttt	cgt	att	aca	aat	att	act		336
Thr	Ile	Arg	Ala	Leu	Asn	Ala	Ala	Gly	Phe	Arg	Ile	Thr	Asn	Ile	Thr		
			100					105					110				

PhoenixTemp32470.tmp.txt

gat gta aca cct att cct cat aat ggt tgc cgt cct cct aaa aaa cgt	384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg	
115 120 125	
cgt gtt taa	393
Arg Val	
130	

<210> 562  
 <211> 130  
 <212> PRT  
 <213> Buchnera aphidicola subsp

<400> 562

Met Val Lys Asn Ser Ser Val Arg Thr Arg Lys Arg Val Lys Lys Gln	
1 5 10 15	
Ile Thr Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile	
20 25 30	
Val Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ser	
35 40 45	
Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala	
50 55 60	
Gln Ile Ala Ala Glu Arg Cys Ala Glu Ile Val Lys Asp Tyr Gly Ile	
65 70 75 80	
Lys Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser	
85 90 95	
Thr Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr	
100 105 110	
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg	
115 120 125	
Arg Val	
130	

<210> 563  
 <211> 390  
 <212> DNA  
 <213> Buchnera aphidicola subsp

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 563

atg gta aaa gaa cta att cgt gta aaa aaa cgt gtt aaa aaa caa att	48
Met Val Lys Glu Leu Ile Arg Val Lys Lys Arg Val Lys Lys Gln Ile	
1 5 10 15	
tta gat ggt att gca cat att cat gca tca ttt aat aat act ata att	96
Leu Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Ile	
20 25 30	
tct att agt gat aaa aaa gga aat gtt tta gga tgg gct act tca gga	144
Ser Ile Ser Asp Lys Lys Gly Asn Val Leu Gly Trp Ala Thr Ser Gly	
35 40 45	
gga tct gga ttt cga gga tct aga aaa tct act cca ttt gct gct caa	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtt gct gtt gag cgt tgt gca gat att gtg aaa agt tat ggt ata aaa	240
Val Ala Val Glu Arg Cys Ala Asp Ile Val Lys Ser Tyr Gly Ile Lys	
65 70 75 80	
aat tta gaa gta atg gtt aaa ggt cca gga cct ggt cga gaa tct agt	288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ser	
85 90 95	
att aga act tta aac act att gga ttt cgt atc att aat att act gat	336
Ile Arg Thr Leu Asn Thr Ile Gly Phe Arg Ile Ile Asn Ile Thr Asp	
100 105 110	
gtg act cct att cct cat aat ggt tgt cgt tct cct aaa aag cgt agg	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Ser Pro Lys Lys Arg Arg	
115 120 125	
gtt tag	390
Val	

<210> 564  
 <211> 129  
 <212> PRT  
 <213> Buchnera aphidicola subsp

<400> 564  
 Met Val Lys Glu Leu Ile Arg Val Lys Lys Arg Val Lys Lys Gln Ile  
 1 5 10 15  
 Leu Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Ile  
 20 25 30  
 Ser Ile Ser Asp Lys Lys Gly Asn Val Leu Gly Trp Ala Thr Ser Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Val Glu Arg Cys Ala Asp Ile Val Lys Ser Tyr Gly Ile Lys  
 65 70 75 80  
 Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ser  
 85 90 95  
 Ile Arg Thr Leu Asn Thr Ile Gly Phe Arg Ile Ile Asn Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Ser Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 565  
 <211> 405  
 <212> DNA  
 <213> Burkholderia xenovorans

<220>  
 <221> CDS  
 <222> (1)..(405)  
 <223> transl\_table=11

<400> 565  
 atg gct aag gct tcg aac aac tcc gcg gcg caa cgc gtt cgc aag aag 48  
 Met Ala Lys Ala Ser Asn Asn Ser Ala Ala Gln Arg Val Arg Lys Lys 15  
 1 5 10  
 gtc aag aag aac gtc gcc gag ggc gtg gtt cac gtt cac gcg tcg ttc 96  
 Val Lys Lys Asn Val Ala Glu Gly Val Val His Val His Ala Ser Phe 20 25 30  
 aat aac acc atc atc acg atc act gat cgt caa ggc aat gca ctt gct 144  
 Asn Asn Thr Ile Ile Thr Ile Asp Arg Gln Gly Asn Ala Leu Ala 35 40 45  
 tgg gca acg tcg ggt ggt cag ggc ttc aag ggt tcg cgt aaa tcg acc 192  
 Trp Ala Thr Ser Gly Gly Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr 50 55 60  
 ccg ttt gca gct cag gtg gca gcc gaa tcg gca ggc cgc gtg gcg atg 240  
 Pro Phe Ala Ala Gln Val Ala Ala Glu Ser Ala Gly Arg Val Ala Met 65 70 75 80  
 gaa tac ggc gtg aag aac ctc gaa gtg cgg atc aag ggc ccc ggt cca 288  
 Glu Tyr Gly Val Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro 85 90 95  
 ggc cgt gag tcg gcg gtg cgc gcg ttg cat ggt ctt ggt atc aag atc 336  
 Gly Arg Glu Ser Ala Val Arg Ala Leu His Gly Leu Gly Ile Lys Ile 100 105 110  
 acc gcg atc tcc gac gtg act ccg gtt ccg cac aac ggc tgc cgt ccg 384  
 Thr Ala Ile Ser Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro 115 120 125  
 ccg aag cgt cgt atc taa 405  
 Pro Lys Arg Arg Ile 130

<210> 566  
 <211> 134  
 <212> PRT

&lt;213&gt; Burkholderia xenovorans

&lt;400&gt; 566

```

Met Ala Lys Ala Ser Asn Asn Ser Ala Ala Gln Arg Val Arg Lys Lys
1      5      10      15
Val Lys Lys Asn Val Ala Glu Gly Val Val His Val His Ala Ser Phe
20      25      30
Asn Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala
35      40      45
Trp Ala Thr Ser Gly Gly Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr
50      55      60
Pro Phe Ala Ala Gln Val Ala Ala Glu Ser Ala Gly Arg Val Ala Met
65      70      75      80
Glu Tyr Gly Val Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro
85      90      95
Gly Arg Glu Ser Ala Val Arg Ala Leu His Gly Leu Gly Ile Lys Ile
100     105     110
Thr Ala Ile Ser Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro
115     120     125
Pro Lys Arg Arg Arg Ile
130

```

&lt;210&gt; 567

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Campylobacter jejuni

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 567

```

atg gca aaa aga aaa atc gta aag aaa aaa gta gtt aaa aaa aat ata      48
Met Ala Lys Arg Lys Ile Val Lys Lys Lys Val Val Lys Lys Asn Ile
1      5      10      15
gca aaa ggt att gtt tat atc agt gcg act ttt aac aat act atg gtt      96
Ala Lys Gly Ile Val Tyr Ile Ser Ala Thr Phe Asn Asn Thr Met Val
20      25      30
aca gta act gat gaa atg gga aat gct atc gct tgg agt agt gca ggt      144
Thr Val Thr Asp Glu Met Gly Asn Ala Ile Ala Trp Ser Ala Gly
35      40      45
ggt tta gga ttt aaa ggt tct aaa aaa tca act cct tat gca gca caa      192
Gly Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gln
50      55      60
caa gca gta gaa gac gct tta aat aaa gca aaa gaa cac gga att aaa      240
Gln Ala Val Glu Asp Ala Leu Asn Lys Ala Lys Glu His Gly Ile Lys
65      70      75      80
gaa gta ggc att aaa gta caa gga cca gga agc ggt aga gaa act gct      288
Glu Val Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr Ala
85      90      95
gtt aag agt gta ggt gct atg gaa gga atc aaa gta act ttc tta aaa      336
Val Lys Ser Val Gly Ala Met Glu Gly Ile Lys Val Thr Phe Leu Lys
100     105     110
gat atc act cca tta gct cac aat ggt tgc aga ccg cct aag cgt cgt      384
Asp Ile Thr Pro Leu Ala His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115     120     125
cgt gtc taa
Arg Val
130

```

&lt;210&gt; 568

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Campylobacter jejuni

&lt;400&gt; 568

```

Met Ala Lys Arg Lys Ile Val Lys Lys Lys Val Val Lys Lys Asn Ile
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Ala Lys Gly Ile Val Tyr Ile Ser Ala Thr Phe Asn Asn Thr Met Val  
 Thr Val Thr Asp Glu Met Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly  
 Gly Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gln  
 Gln Ala Val Glu Asp Ala Leu Asn Lys Ala Lys Glu His Gly Ile Lys  
 Glu Val Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr Ala  
 Val Lys Ser Val Gly Ala Met Glu Gly Ile Lys Val Thr Phe Leu Lys  
 Asp Ile Thr Pro Leu Ala His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 Arg Val

&lt;210&gt; 569

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Carboxydothemus hydrogenoformans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 569

atg atg gct cgc cgg aca aaa gcc aga aaa aag gaa aaa aag cat gtt	48
Met Met Ala Arg Arg Thr Lys Ala Arg Lys Lys Glu Lys Lys His Val	
gag caa gga gta gcc cat atc aag tct act ttt aac aat aca att gtt	96
Glu Gln Gly Val Ala His Ile Lys Ser Thr Phe Asn Asn Thr Ile Val	
acc ata acc gat ccc cag ggg aac acc ctt tcc tgg gca agt gcg gga	144
Thr Ile Thr Asp Pro Gln Gly Asn Thr Leu Ser Trp Ala Ser Ala Gly	
acc gtt ggc ttt gaa gga acc agg aaa ggc act ccc ttt gcc gca cag	192
Thr Val Gly Phe Glu Gly Thr Arg Lys Gly Thr Pro Phe Ala Ala Gln	
tta gct gcg gaa aaa gct gct aaa gaa gcg atg gaa ttt ggc gta aag	240
Leu Ala Ala Glu Lys Ala Ala Lys Glu Ala Met Glu Phe Gly Val Lys	
act gtt gag gtt tat gtg aaa gga cca ggc gca ggt cgg gaa gcg gca	288
Thr Val Glu Val Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala	
atc cgc tcg ttg caa gct gct ggc ctg gaa gtt agc ctt att aag gac	336
Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Ser Leu Ile Lys Asp	
gta acc ccg att cct cat aac ggg tgt cgt cca ccg aaa cgt agg aga	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg	
gta tag	390
Val	

&lt;210&gt; 570

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Carboxydothemus hydrogenoformans

&lt;400&gt; 570

Met Met Ala Arg Arg Thr Lys Ala Arg Lys Lys Glu Lys Lys His Val  
 Glu Gln Gly Val Ala His Ile Lys Ser Thr Phe Asn Asn Thr Ile Val  
 Thr Ile Thr Asp Pro Gln Gly Asn Thr Leu Ser Trp Ala Ser Ala Gly  
 Thr Val Gly Phe Glu Gly Thr Arg Lys Gly Thr Pro Phe Ala Ala Gln

## PhoenixTemp32470.tmp.txt

50 55 60  
 Leu Ala Ala Glu Lys Ala Lys Glu Ala Met Glu Phe Gly Val Lys  
 65 70 75 80  
 Thr Val Glu Val Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 85 90 95  
 Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Ser Leu Ile Lys Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 571  
 <211> 390  
 <212> DNA  
 <213> Caulobacter crescentus

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 571  
 atg gcc aag gaa ccg gct cgc gtt aaa cgt cgc gaa cgc aag aac atc 48  
 Met Ala Lys Glu Pro Ala Arg Val Lys Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 acc tcg ggc gtg gcg cac gtg aac gcc tcg ttc aac aac acc atg atc 96  
 Thr Ser Gly Val Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Ile  
 20 25 30  
 acc atc acc gac gcc cag ggc aac acg atc tcg tgg tcc tcg gcc ggc 144  
 Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ala Gly  
 35 40 45  
 atg atg ggc ttc aag ggc tcg cgc aag tcg acc ccg tac gcc gcg cag 192  
 Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 atg gcc gcc gaa gac gcg ggc aag aag gct gcc gag cac ggc gtg aag 240  
 Met Ala Ala Glu Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Lys  
 65 70 75 80  
 acg ctg gaa gtc aac gtt tcg ggt ccg ggt tcc ggc cgt gaa tcg gcc 288  
 Thr Leu Glu Val Asn Val Ser Gly Pro Gly Ser Gly Arg Glu Ser Ala  
 85 90 95  
 ctg cgc gct ctg caa gcc gcg ggc atg acc atc acg acc atc cgc gac 336  
 Leu Arg Ala Leu Gln Ala Ala Gly Met Thr Ile Thr Thr Ile Arg Asp  
 100 105 110  
 gtc acg ccg atc ccg cac aac ggc tgc cgt ccg ccc aag cgt cgt cgc 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 gtc tag 390  
 Val

<210> 572  
 <211> 129  
 <212> PRT  
 <213> Caulobacter crescentus

<400> 572  
 Met Ala Lys Glu Pro Ala Arg Val Lys Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 Thr Ser Gly Val Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Ile  
 20 25 30  
 Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ala Gly  
 35 40 45  
 Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 Met Ala Ala Glu Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Lys  
 65 70 75 80  
 Thr Leu Glu Val Asn Val Ser Gly Pro Gly Ser Gly Arg Glu Ser Ala  
 85 90 95

PhoenixTemp32470.tmp.txt  
 Leu Arg Ala Leu Gln Ala Ala Gly Met Thr Ile Thr Thr Ile Arg Asp  
           100          110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
           115          120          125  
 Val

<210> 573  
 <211> 399  
 <212> DNA  
 <213> Chlamydomophila abortus

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

<400> 573  
 ttg gtt aaa cat caa gcg cag aaa aaa ggc gta aaa aga aaa cag tta 48  
 Met Val Lys His Gln Ala Gln Lys Lys Gly Val Lys Arg Lys Gln Leu  
   1          5          10          15  
 aag aat att cct tca ggc att gtt cat gtt aag gct acc ttc aac aat 96  
 Lys Asn Ile Pro Ser Gly Ile Val His Val Lys Ala Thr Phe Asn Asn  
           20          25          30  
 acg att gtg tct ata aca gac cct gca ggg aat act atc tct tgg gct 144  
 Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn Thr Ile Ser Trp Ala  
           35          40          45  
 tca gct gga aaa gtt gga tat tcc gga tct cgt aag tcg tct gct ttt 192  
 Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe  
           50          55          60  
 gct gca acg gtg gcc gca caa gac gct gca aaa att gct atg aat tct 240  
 Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Ile Ala Met Asn Ser  
           65          70          75          80  
 ggc ctt aag gaa gtc gaa gtg tgt tta aaa ggc acc gga gct ggt aga 288  
 Gly Leu Lys Glu Val Glu Val Cys Leu Lys Gly Thr Gly Ala Gly Arg  
           85          90          95  
 gaa tct gca gtc cgc gct ctc ata gcc gct ggt tta gtt gtt tct gtc 336  
 Glu Ser Ala Val Arg Ala Leu Ile Ala Ala Gly Leu Val Val Ser Val  
           100          105          110  
 atc cgt gac gaa act cct gtt cct cac aat ggt tgt cgg cca aga aaa 384  
 Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys  
           115          120          125  
 agg cgc aga gtg tag 399  
 Arg Arg Arg Val  
           130

<210> 574  
 <211> 132  
 <212> PRT  
 <213> Chlamydomophila abortus

<400> 574  
 Met Val Lys His Gln Ala Gln Lys Lys Gly Val Lys Arg Lys Gln Leu  
   1          5          10          15  
 Lys Asn Ile Pro Ser Gly Ile Val His Val Lys Ala Thr Phe Asn Asn  
           20          25          30  
 Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn Thr Ile Ser Trp Ala  
           35          40          45  
 Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe  
           50          55          60  
 Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Ile Ala Met Asn Ser  
           65          70          75          80  
 Gly Leu Lys Glu Val Glu Val Cys Leu Lys Gly Thr Gly Ala Gly Arg  
           85          90          95  
 Glu Ser Ala Val Arg Ala Leu Ile Ala Ala Gly Leu Val Val Ser Val  
           100          105          110  
 Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys  
           115          120          125  
 Arg Arg Arg Val



130

<210> 575  
 <211> 399  
 <212> DNA  
 <213> Chlamydomonas caviae

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

<400> 575  
 ttg gtt aaa cat caa acg cag aaa aaa ggc gta aaa aga aaa cag tta 48  
 Met Val Lys His Gln Thr Gln Lys Lys Gly Val Lys Arg Lys Gln Leu  
 1 5 10 15  
 aaa aat att cct tca ggc gtt gtt cat gtt aag gct acc ttc aac aat 96  
 Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn Asn  
 20 25 30  
 acg att gta tcc ata aca gat cct gca gga aat act atc tct tgg gct 144  
 Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn Thr Ile Ser Trp Ala  
 35 40 45  
 tca gct gga aaa gtt gga tat tct gga tct cgt aag tca tct gct ttt 192  
 Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe  
 50 55 60  
 gct gca acg atg gct gca caa gac gct gca aaa aat gct atg aat tct 240  
 Ala Ala Thr Met Ala Ala Gln Asp Ala Ala Lys Asn Ala Met Asn Ser  
 65 70 75 80  
 ggc ctt aaa gaa gtc gaa gta tgt tta aaa ggt act gga gct ggc aga 288  
 Gly Leu Lys Glu Val Glu Val Cys Leu Lys Gly Thr Gly Ala Gly Arg  
 85 90 95  
 gaa tct gcg gtt cgc gct ctc ata gcc tct ggt tta gtt gtt tct gtc 336  
 Glu Ser Ala Val Arg Ala Leu Ile Ala Ser Gly Leu Val Val Ser Val  
 100 105 110  
 atc cgt gac gaa act cct gtt cct cat aat ggt tgt cga cca aga aaa 384  
 Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys  
 115 120 125  
 agg cgc aga gtg tag 399  
 Arg Arg Arg Val  
 130

<210> 576  
 <211> 132  
 <212> PRT  
 <213> Chlamydomonas caviae

<400> 576  
 Met Val Lys His Gln Thr Gln Lys Lys Gly Val Lys Arg Lys Gln Leu  
 1 5 10 15  
 Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn Asn  
 20 25 30  
 Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn Thr Ile Ser Trp Ala  
 35 40 45  
 Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe  
 50 55 60  
 Ala Ala Thr Met Ala Ala Gln Asp Ala Ala Lys Asn Ala Met Asn Ser  
 65 70 75 80  
 Gly Leu Lys Glu Val Glu Val Cys Leu Lys Gly Thr Gly Ala Gly Arg  
 85 90 95  
 Glu Ser Ala Val Arg Ala Leu Ile Ala Ser Gly Leu Val Val Ser Val  
 100 105 110  
 Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys  
 115 120 125  
 Arg Arg Arg Val  
 130

<210> 577  
 <211> 399  
 <212> DNA

&lt;213&gt; Chlamydia muridarum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(399)

&lt;223&gt; transl\_table=11

&lt;400&gt; 577

ttg gtt aaa aat cag acg caa aaa aaa ggc gta aaa aga aaa caa gta	48
Met Val Lys Asn Gln Thr Gln Lys Lys Gly Val Lys Arg Lys Gln Val	
1 5 10 15	
aaa aac att cct tcg ggc gtt gtc cat gtt aag gct act ttt aat aat	96
Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn Asn	
20 25 30	
aca att gta acc ata aca gac cct gct ggt aat gtg att tcg tgg gct	144
Thr Ile Val Thr Ile Thr Asp Pro Ala Gly Asn Val Ile Ser Trp Ala	
35 40 45	
tct gct ggg aaa gtt ggt tat tca ggc tct cgt aaa tct tca gca ttt	192
Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe	
50 55 60	
gca gcg acg gtt gct gcc caa gat gct gct aag act gct atg agt tct	240
Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Thr Ala Met Ser Ser	
65 70 75 80	
ggg tta aaa gag gtt gaa gta agt ttg aaa gga act ggt gct ggg cgg	288
Gly Leu Lys Glu Val Glu Val Ser Leu Lys Gly Thr Gly Ala Gly Arg	
85 90 95	
gaa tct gcc gta cga gcg ctt att tct tct gga ctt att gtt tct gtt	336
Glu Ser Ala Val Arg Ala Leu Ile Ser Ser Gly Leu Ile Val Ser Val	
100 105 110	
atc cga gat gaa act ccc gtt cct cat aac ggg tgt cga cca aga aaa	384
Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys	
115 120 125	
cga cga aga gtg tag	399
Arg Arg Arg Val	
130	

&lt;210&gt; 578

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Chlamydia muridarum

&lt;400&gt; 578

Met Val Lys Asn Gln Thr Gln Lys Lys Gly Val Lys Arg Lys Gln Val	
1 5 10 15	
Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn Asn	
20 25 30	
Thr Ile Val Thr Ile Thr Asp Pro Ala Gly Asn Val Ile Ser Trp Ala	
35 40 45	
Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe	
50 55 60	
Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Thr Ala Met Ser Ser	
65 70 75 80	
Gly Leu Lys Glu Val Glu Val Ser Leu Lys Gly Thr Gly Ala Gly Arg	
85 90 95	
Glu Ser Ala Val Arg Ala Leu Ile Ser Ser Gly Leu Ile Val Ser Val	
100 105 110	
Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys	
115 120 125	
Arg Arg Arg Val	
130	

&lt;210&gt; 579

&lt;211&gt; 402

&lt;212&gt; DNA

&lt;213&gt; Chlamydia pneumoniae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(402)

&lt;223&gt; transl\_table=11

&lt;400&gt; 579

```

ttg gtt aaa aat caa gcg cag gca aaa aag agc gta aaa aga aaa caa      48
Met Val Lys Asn Gln Ala Gln Ala Lys Lys Ser Val Lys Arg Lys Gln
 1      5      10      15
cta aaa aat att cct tca ggt gtt gtg cat gtt aaa gca acc ttt aac      96
Leu Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn
      20      25      30
aat aca ata gta tct ata aca gat cct gct ggt aat gtg att tct tgg      144
Asn Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn Val Ile Ser Trp
      35      40      45
gca tca gca ggt aaa gta gga tat tct ggt tca aga aaa tct tca gcc      192
Ala Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala
      50      55      60
ttt gct gcc act gta gca gct caa gac gct gct aaa act gcc atg aac      240
Phe Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Thr Ala Met Asn
      65      70      75      80
tct ggt tta aag gaa gta gag gtt tgt ttg aag ggt act gga gct ggg      288
Ser Gly Leu Lys Glu Val Glu Val Cys Leu Lys Gly Thr Gly Ala Gly
      85      90      95
aga gag tct gct gtt cgt gct ttg ata tct gct ggt ttg gta gtt tct      336
Arg Glu Ser Ala Val Arg Ala Leu Ile Ser Ala Gly Leu Val Val Ser
      100      105      110
gta atc cgt gat gaa act cct gtt cct cat aat ggt tgc cgg cca aga      384
Val Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg
      115      120      125
aaa agg cgc aga gtg tag
Lys Arg Arg Arg Val
      130

```

&lt;210&gt; 580

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 580

```

Met Val Lys Asn Gln Ala Gln Ala Lys Lys Ser Val Lys Arg Lys Gln
 1      5      10      15
Leu Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn
      20      25      30
Asn Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn Val Ile Ser Trp
      35      40      45
Ala Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala
      50      55      60
Phe Ala Ala Thr Val Ala Gln Asp Ala Ala Lys Thr Ala Met Asn
      65      70      75      80
Ser Gly Leu Lys Glu Val Glu Val Cys Leu Lys Gly Thr Gly Ala Gly
      85      90      95
Arg Glu Ser Ala Val Arg Ala Leu Ile Ser Ala Gly Leu Val Val Ser
      100      105      110
Val Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg
      115      120      125
Lys Arg Arg Arg Val
      130

```

&lt;210&gt; 581

&lt;211&gt; 384

&lt;212&gt; DNA

&lt;213&gt; Chlorobium tepidum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 581

```

atg gca aca gcg agc agg aaa aaa aag aaa gtc aag gtt acc ccg gaa      48
Met Ala Thr Ala Ser Arg Lys Lys Lys Lys Val Lys Val Thr Pro Glu

```

## PhoenixTemp32470.tmp.txt

```

1          5          10          15
ggt acc gtc cat atc aag gct tct ttt aac gtc atg gtg acc att
Gly Thr Val His Ile Lys Ala Ser Phe Asn Asn Val Met Val Thr Ile    96
20
acc gat acg ctc ggc aat acg gtt tca tgg tct agc gct ggc aag aac
Thr Asp Thr Leu Gly Asn Thr Val Ser Trp Ser Ser Ala Gly Lys Asn    144
35
ggc ttc aag ggc tcc aag aaa aat acc cct tat gca tct cag gtg act
Gly Phe Lys Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ser Gln Val Thr    192
50
tcc gag gcg gca gcc aaa gag gcc tac gat ctt ggt atg cgt tat gtc
Ser Glu Ala Ala Ala Lys Glu Ala Tyr Asp Leu Gly Met Arg Tyr Val    240
65
gac gtg ctt atc aaa gga cct ggt tcc ggt cgt gat gct gcc atc agg
Asp Val Leu Ile Lys Gly Pro Gly Ser Gly Arg Asp Ala Ala Ile Arg    288
85
gcg ctt cag gga gtt ggt ctg gag gtg cgt tcc att cgc gat att acg
Ala Leu Gln Gly Val Gly Leu Glu Val Arg Ser Ile Arg Asp Ile Thr    336
100
ccg ctt ccg cat aac ggt tgc agg cct ccc aag cgc aga agg gtc
Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Val    381
115
tga
384

```

<210> 582  
 <211> 127  
 <212> PRT  
 <213> Chlorobium tepidum

```

<400> 582
Met Ala Thr Ala Ser Arg Lys Lys Lys Lys Val Lys Val Thr Pro Glu
1          5          10          15
Gly Thr Val His Ile Lys Ala Ser Phe Asn Asn Val Met Val Thr Ile
20
Thr Asp Thr Leu Gly Asn Thr Val Ser Trp Ser Ser Ala Gly Lys Asn
35
Gly Phe Lys Gly Ser Lys Lys Asn Thr Pro Tyr Ala Ser Gln Val Thr
50
Ser Glu Ala Ala Ala Lys Glu Ala Tyr Asp Leu Gly Met Arg Tyr Val
65
Asp Val Leu Ile Lys Gly Pro Gly Ser Gly Arg Asp Ala Ala Ile Arg
85
Ala Leu Gln Gly Val Gly Leu Glu Val Arg Ser Ile Arg Asp Ile Thr
100
Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
115
120
125

```

<210> 583  
 <211> 396  
 <212> DNA  
 <213> Chromobacterium violaceum

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

```

<400> 583
atg gct aaa gca aac aca gct gtc cgt gta cgt aaa aaa gtg cgc aag
Met Ala Lys Ala Asn Thr Ala Val Arg Val Arg Lys Lys Val Arg Lys
1          5          10          15
tct gtt agc gaa ggc atc gtg cac gtg cac gct tct ttc aac aac acc
Ser Val Ser Glu Gly Ile Val His Val His Ala Ser Phe Asn Asn Thr    96
20
atc atc act atc acc gac cgt caa ggc aat gca ctg tct tgg gct acc
Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr    144
35
40
45

```

PhoenixTemp32470.tmp.txt

tct ggc ggc gct ggt ttt aag ggc tcg cgc aag agt aca ccc ttt gcc	192
Ser Gly 50 Gly Ala Gly Phe Lys 55 Gly Ser Arg Lys 60 Ser Thr Pro Phe Ala	
gct cag gta gct gca gag cac gct ggt aaa gtt gcc caa gaa tat ggt	240
Ala Gln Val Ala Ala Glu His Ala Gly Lys Val Ala Gln Glu Tyr Gly 80	
gtg aag aac ctc gaa gtt cgt atc aaa ggc ccg ggc ccg ggt cgt gaa	288
Val Lys Asn Leu Glu 85 Val Arg Ile Lys 90 Pro Gly Pro Gly Arg 95 Glu	
tcc gct gtt cgc gca ctc aac tcg ctg ggt ttc aag atc acc agc atc	336
Ser Ala Val Arg Ala Leu Asn Ser Leu 105 Gly Phe Lys Ile Thr Ser Ile 110	
tcc gac gtg acg ccg gta ccg cac aac ggt tgc cgt ccg ccc aaa aaa	384
Ser Asp Val 115 Thr Pro Val Pro His 120 Asn Gly Cys Arg Pro 125 Pro Lys Lys	
cgt cgt atc taa	396
Arg Arg Ile 130	

<210> 584  
 <211> 131  
 <212> PRT  
 <213> Chromobacterium violaceum

<400> 584

Met Ala Lys Ala Asn Thr Ala Val Arg Val Arg Lys Lys Val Arg Lys	
1 Ser Val Ser Glu Gly Ile Val His Val His Ala Ser Phe Asn Asn Thr	
20 Ile Ile Thr 35 Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr	
40 Ser Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala	
50 Ala Gln Val Ala Ala Glu His Ala Gly Lys Val Ala Gln Glu Tyr Gly	
65 Val Lys Asn Leu Glu 85 Val Arg Ile Lys Gly 90 Pro Gly Pro Gly Arg Glu	
100 Ser Ala Val Arg Ala Leu Asn Ser Leu 105 Gly Phe Lys Ile Thr Ser Ile	
110 Ser Asp Val 115 Thr Pro Val Pro His 120 Asn Gly Cys Arg Pro 125 Pro Lys Lys	
Arg Arg Ile 130	

<210> 585  
 <211> 396  
 <212> DNA  
 <213> Clostridium acetobutylicum

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 585

atg gct gta cag aaa aat aag aaa act aga aga aga aaa gag aaa aaa	48
Met Ala Val Gln Lys 5 Asn Lys Lys Thr Arg 10 Arg Arg Lys Glu Lys Lys 15	
aat ata gag cac ggt tgt gca cat att aaa tca act ttt aac aat tct	96
Asn Ile Glu His Gly Cys Ala His Ile Lys Ser Thr Phe Asn Asn Ser 30	
ata gtt act ata act gat gtt aat gga aat gct tta tca tgg tca agt	144
Ile Val Thr 35 Ile Thr Asp Val Asn 40 Gly Asn Ala Leu 45 Trp Ser Ser	
gca ggt gga tta gga ttt aaa gga tca aga aaa agc act cct ttt gct	192
Ala Gly Gly Leu Gly Phe Lys 55 Gly Ser Arg Lys Ser Thr Pro Phe Ala 60	
gct caa atg gct gct gaa aca gct gct aaa aca gca atg gaa cac gga	240
Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Thr Ala Met Glu His Gly	

## PhoenixTemp32470.tmp.txt

```

65          70          75          80
ctt aag agt gtt gat gtg ttt gta aaa gga cca gga tca gga aga gaa
Leu Lys Ser Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg Glu
85          90          95
gct gca ata aga tca tta cag gct gca gga tta gag gtt aca tta ata
Ala Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Thr Leu Ile
100         105         110
aaa gat gtt act cca ata cca cac aat ggc tgc aga cca cca aaa aga
Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg
115         120         125
aga aga gtt taa
Arg Arg Val
130

```

288

336

384

396

&lt;210&gt; 586

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Clostridium acetobutylicum

&lt;400&gt; 586

```

Met Ala Val Gln Lys Asn Lys Lys Thr Arg Arg Arg Lys Glu Lys Lys
1          5          10          15
Asn Ile Glu His Gly Cys Ala His Ile Lys Ser Thr Phe Asn Asn Ser
20         25         30
Ile Val Thr Ile Thr Asp Val Asn Gly Asn Ala Leu Ser Trp Ser Ser
35         40         45
Ala Gly Gly Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala
50         55         60
Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Thr Ala Met Glu His Gly
65         70         75         80
Leu Lys Ser Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg Glu
85         90         95
Ala Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Thr Leu Ile
100        105        110
Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg
115        120        125
Arg Arg Val
130

```

&lt;210&gt; 587

&lt;211&gt; 399

&lt;212&gt; DNA

&lt;213&gt; Clostridium difficile

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(399)

&lt;223&gt; transl\_table=11

&lt;400&gt; 587

```

atg gct aaa cca aaa aag aaa gtt aca cgt att aga aga aga gaa cgt
Met Ala Lys Pro Lys Lys Lys Val Thr Arg Ile Arg Arg Arg Glu Arg
1          5          10          15
aaa aat ata gaa cgt ggt cat gct cat ata caa tca act ttc aat aat
Lys Asn Ile Glu Arg Gly His Ala His Ile Gln Ser Thr Phe Asn Asn
20         25         30
aca ata ata act tta act gac gtt cac gga aat gct ata tct tgg gca
Thr Ile Ile Thr Leu Thr Asp Val His Gly Asn Ala Ile Ser Trp Ala
35         40         45
agt tct gga caa tta gga ttc aaa gga tca aga aaa tca act cca ttt
Ser Ser Gly Gln Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe
50         55         60
gca tct caa atg gct gct gaa aca gct gca aaa gct gcg atg gaa cac
Ala Ser Gln Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His
65         70         75         80
gga cta aaa agt gtt gag gta ttc gta aag ggg cca ggt tca gga aga
Gly Leu Lys Ser Val Glu Val Phe Val Lys Gly Pro Gly Ser Gly Arg
85         90         95
gaa gct gca ata aga gct tta caa gca act gga cta gaa gta act atg

```

48

96

144

192

240

288

336

PhoenixTemp32470.tmp.txt

Glu	Ala	Ala	Ile	Arg	Ala	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	Thr	Met		
			100					105					110				
ata	aaa	gac	gtt	act	cca	atc	cca	cat	aac	gga	tgc	aga	cca	aag		384	
Ile	Lys	Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys		
		115					120					125					
aga	aga	aga	gtg	taa												399	
Arg	Arg	Arg	Val														
	130																

<210> 588  
 <211> 132  
 <212> PRT  
 <213> Clostridium difficile

Met	Ala	Lys	Pro	Lys	Lys	Lys	Val	Thr	Arg	Ile	Arg	Arg	Arg	Glu	Arg		
1				5					10					15			
Lys	Asn	Ile	Glu	Arg	Gly	His	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn		
			20					25					30				
Thr	Ile	Ile	Thr	Leu	Thr	Asp	Val	His	Gly	Asn	Ala	Ile	Ser	Trp	Ala		
		35					40					45					
Ser	Ser	Gly	Gln	Leu	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe		
	50					55					60						
Ala	Ser	Gln	Met	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Ala	Ala	Met	Glu	His		
65				70					75						80		
Gly	Leu	Lys	Ser	Val	Glu	Val	Phe	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg		
				85					90					95			
Glu	Ala	Ala	Ile	Arg	Ala	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	Thr	Met		
			100					105					110				
Ile	Lys	Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys		
		115					120					125					
Arg	Arg	Arg	Val														
	130																

<210> 589  
 <211> 396  
 <212> DNA  
 <213> Clostridium perfringens

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

atg	gca	gct	caa	aaa	gtt	aaa	aaa	act	aga	aga	aga	aaa	gaa	aga	aaa		48
Met	Ala	Ala	Gln	Lys	Val	Lys	Lys	Thr	Arg	Arg	Arg	Lys	Glu	Arg	Lys		
1				5					10				15				
aat	gtt	gag	cat	ggt	gca	gca	cac	atc	caa	tca	aca	ttc	aat	aac	tca		96
Asn	Val	Glu	His	Gly	Ala	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Ser		
			20					25				30					
ata	gtt	act	tta	act	gat	gca	aaa	gga	aat	gca	tta	gca	tgg	gca	agt		144
Ile	Val	Thr	Leu	Thr	Asp	Ala	Lys	Gly	Asn	Ala	Leu	Ala	Trp	Ala	Ser		
		35					40				45						
gct	ggt	ggc	ctt	gga	ttc	aaa	ggt	tca	aga	aag	agc	aca	cca	ttt	gca		192
Ala	Gly	Gly	Leu	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala		
	50					55					60						
gct	caa	atg	gca	gct	gaa	aca	gca	gct	aaa	gca	gct	atg	gaa	cac	gga		240
Ala	Gln	Met	Ala	Ala	Glu	Thr	Ala	Ala	Lys	Ala	Ala	Met	Glu	His	Gly		
65				70					75						80		
tta	aaa	agc	gtt	gag	gtt	tac	gta	aaa	gga	cca	ggt	gct	gga	aga	gaa		288
Leu	Lys	Ser	Val	Glu	Val	Tyr	Val	Lys	Gly	Pro	Gly	Ala	Gly	Arg	Glu		
				85					90					95			
gca	gct	ata	aga	agc	tta	caa	gca	gct	gga	tta	gaa	gtt	act	tta	ata		336
Ala	Ala	Ile	Arg	Ser	Leu	Gln	Ala	Ala	Gly	Leu	Glu	Val	Thr	Leu	Ile		
			100				105					110					
aaa	gat	gta	act	cca	atc	cca	cac	aat	gga	tgt	aga	cca	cca	aaa	aga		384
Lys	Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg		
		115					120					125					

aga aga gtt tag  
Arg Arg Val  
130

<210> 590  
<211> 131  
<212> PRT  
<213> Clostridium perfringens

<400> 590  
Met Ala Ala Gln Lys Val Lys Lys Thr Arg Arg Arg Lys Glu Arg Lys  
1 5 10 15  
Asn Val Glu His Gly Ala Ala His Ile Gln Ser Thr Phe Asn Asn Ser  
20 25 30  
Ile Val Thr Leu Thr Asp Ala Lys Gly Asn Ala Leu Ala Trp Ala Ser  
35 40 45  
Ala Gly Gly Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala  
50 55 60  
Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Ala Met Glu His Gly  
65 70 75 80  
Leu Lys Ser Val Glu Val Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu  
85 90 95  
Ala Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Thr Leu Ile  
100 105 110  
Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Lys Arg  
115 120 125  
Arg Arg Val  
130

<210> 591  
<211> 399  
<212> DNA  
<213> Clostridium tetani

<220>  
<221> CDS  
<222> (1)..(399)  
<223> transl\_table=11

<400> 591  
atg gca gct gta tca aaa act aaa aga aca aga aga aga aaa gaa aga 48  
Met Ala Ala Val Ser Lys Thr Lys Arg Thr Arg Arg Arg Lys Glu Arg  
1 5 10 15  
aag aat att gaa cgc ggt tgt gca cat ata aaa tca aca ttt aac aat 96  
Lys Asn Ile Glu Arg Gly Cys Ala His Ile Lys Ser Thr Phe Asn Asn  
20 25 30  
tcc att gtt aca tta act gat act gct ggg aat gct ctt tca tgg gcc 144  
Ser Ile Val Thr Leu Thr Asp Thr Ala Gly Asn Ala Leu Ser Trp Ala  
35 40 45  
agt gca ggt gga tta gga ttt aga ggt tca aga aag agt act cca ttc 192  
Ser Ala Gly Gly Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe  
50 55 60  
gca gct caa atg gca gca gaa act gca gca aaa gca gct atg gaa cat 240  
Ala Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His  
65 70 75 80  
ggc tta aag agt gta gag gtt tat gta aag gga cct gga tca ggt aga 288  
Gly Leu Lys Ser Val Glu Val Tyr Val Lys Gly Pro Gly Ser Gly Arg  
85 90 95  
gaa gca gct ata aga tct cta cag gca gca ggg cta gaa gta act tta 336  
Glu Ala Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Thr Leu  
100 105 110  
ata aaa gac gtt act cca atc cct cat aat gga tgt aga cca cca aaa 384  
Ile Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys  
115 120 125  
aga aga aga gtt taa 399  
Arg Arg Arg Val  
130

<210> 592



<211> 132  
 <212> PRT  
 <213> Clostridium tetani

<400> 592  
 Met Ala Ala Val Ser Lys Thr Lys Arg Thr Arg Arg Arg Lys Glu Arg  
 1 5 10 15  
 Lys Asn Ile Glu Arg Gly Cys Ala His Ile Lys Ser Thr Phe Asn Asn  
 20 25 30  
 Ser Ile Val Thr Leu Thr Asp Thr Ala Gly Asn Ala Leu Ser Trp Ala  
 35 40 45  
 Ser Ala Gly Gly Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe  
 50 55 60  
 Ala Ala Gln Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His  
 65 70 75 80  
 Gly Leu Lys Ser Val Glu Val Tyr Val Lys Gly Pro Gly Ser Gly Arg  
 85 90 95  
 Glu Ala Ala Ile Arg Ser Leu Gln Ala Gly Leu Glu Val Thr Leu  
 100 105 110  
 Ile Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys  
 115 120 125  
 Arg Arg Arg Val  
 130

<210> 593  
 <211> 405  
 <212> DNA  
 <213> Clostridium thermocellum

<220>  
 <221> CDS  
 <222> (1)..(405)  
 <223> transl\_table=11

<400> 593  
 atg gct act aaa atg gct ggt gtc aaa agg gct ggt aga aaa aga aaa 48  
 Met Ala Thr Lys Met Ala Gly Val Lys Arg Ala Gly Arg Lys Arg Lys  
 1 5 10 15  
 gag cgc aaa aat att gaa cgt gga gcg gca cac ata cgt tca aca ttt 96  
 Glu Arg Lys Asn Ile Glu Arg Gly Ala Ala His Ile Arg Ser Thr Phe  
 20 25 30  
 aat aat aca ata gtt aca ata act gac gta gaa ggg aac acc att tcc 144  
 Asn Asn Thr Ile Val Thr Ile Thr Asp Val Glu Gly Asn Thr Ile Ser  
 35 40 45  
 tgg tca agt gcc gga act ttg gga ttc aga ggt tcg aga aag agt aca 192  
 Trp Ser Ser Ala Gly Thr Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr  
 50 55 60  
 cct ttt gcg gct cag atg gca gcc gaa gct gca gct aaa gcg gca atg 240  
 Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Lys Ala Ala Met  
 65 70 75 80  
 gaa cat gga ctt aag act gtt gaa gtt tat gtt aaa ggt ccg ggt tca 288  
 Glu His Gly Leu Lys Thr Val Glu Val Tyr Val Lys Gly Pro Gly Ser  
 85 90 95  
 gga aga gaa gca gca ata aga gca ctg cag gct gca gga ctt gaa gtg 336  
 Gly Arg Glu Ala Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val  
 100 105 110  
 agc ctt att aaa gat gtg act cca att cct cac aac ggc tgc aga ccg 384  
 Ser Leu Ile Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro  
 115 120 125  
 cca aag aga aga aga gta taa 405  
 Pro Lys Arg Arg Arg Val  
 130

<210> 594  
 <211> 134  
 <212> PRT  
 <213> Clostridium thermocellum

<400> 594

## PhoenixTemp32470.tmp.txt

Met Ala Thr Lys Met Ala Gly Val Lys Arg Ala Gly Arg Lys Arg Lys  
 1 5 10 15  
 Glu Arg Lys Asn Ile Glu Arg Gly Ala His Ile Arg Ser Thr Phe  
 20 25 30  
 Asn Asn Thr Ile Val Thr Ile Thr Asp Val Glu Gly Asn Thr Ile Ser  
 35 40 45  
 Trp Ser Ser Ala Gly Thr Leu Gly Phe Arg Gly Ser Arg Lys Ser Thr  
 50 55 60  
 Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Lys Ala Ala Met  
 65 70 75 80  
 Glu His Gly Leu Lys Thr Val Glu Val Tyr Val Lys Gly Pro Gly Ser  
 85 90 95  
 Gly Arg Glu Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val  
 100 105 110  
 Ser Leu Ile Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro  
 115 120 125  
 Pro Lys Arg Arg Arg Val  
 130

&lt;210&gt; 595

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Colwellia psychrerythraea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 595

atg gct aaa aca cca gtt cgt acg cgt aaa cgc gta aaa aaa caa gtt 48  
 Met Ala Lys Thr Pro Val Arg Thr Arg Lys Arg Val Lys Lys Gln Val  
 1 5 10 15  
 gct gat ggc atg gct cat atc cat gct tct ttc aac aac aca atc gtg 96  
 Ala Asp Gly Met Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 act ctt aca gac cgt caa ggt aat gcg tta tct tgg gcg act gcc ggt 144  
 Thr Leu Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly  
 35 40 45  
 ggt tca ggt ttc cgt ggt tca cgt aaa tca act ccg ttc gct gcg caa 192  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 gta gct gca gac cgc gca ggc gct gtt gca aaa gag ttt ggc ttg aag 240  
 Val Ala Ala Asp Arg Ala Gly Ala Val Ala Lys Glu Phe Gly Leu Lys  
 65 70 75 80  
 aat att gaa gtg ttc gta aaa ggt cca ggt ggt cgt gaa tct gct 288  
 Asn Ile Glu Val Phe Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
 85 90 95  
 atc cgt gcc tta aat gct gct ggt ttt aaa atc acc aac att act gac 336  
 Ile Arg Ala Leu Asn Ala Ala Gly Phe Lys Ile Thr Asn Ile Thr Asp  
 100 105 110  
 gta aca cct att cct cat aat ggt tgt cgt cct ccg aag aaa cgt cgc 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 gtt taa 390  
 Val

&lt;210&gt; 596

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Colwellia psychrerythraea

&lt;400&gt; 596

Met Ala Lys Thr Pro Val Arg Thr Arg Lys Arg Val Lys Lys Gln Val  
 1 5 10 15  
 Ala Asp Gly Met Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Leu Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly

## PhoenixTemp32470.tmp.txt

Gly Ser 35 Phe Arg Gly Ser 40 Lys Ser Thr Pro 45 Phe Ala Ala Gln  
 Val 50 Ala Ala Asp Arg Ala 55 Gly Ala Val Ala Lys 60 Glu Phe Gly Leu Lys  
 65 Asn Ile Glu Val Phe 70 Val Lys Gly Pro Gly 75 Gly Arg Glu Ser 80 Ala  
 Ile Arg Ala Leu 85 Asn Ala Ala Gly Phe 90 Lys Ile Thr Asn Ile 95 Thr Asp  
 Val Thr Pro 100 Ile Pro His Asn Gly 105 Cys Arg Pro Pro Lys 110 Lys Arg Arg  
 Val 115 120 125

&lt;210&gt; 597

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium diphtheriae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=11

&lt;400&gt; 597

atg cct cca aag act cgc agc act gca cgt cgc tct ggt cgt cgt gta	48
Met Pro Pro Lys Thr 5 Arg Ser Thr Ala Arg 10 Arg Ser Gly Arg Arg Val	
1 gtt aag aag aac gtg gct cag ggc cac gct tac atc aag tcc acc ttc	96
Val Lys Lys Asn 20 Val Ala Gln Gly 25 Ala Tyr Ile Lys 30 Thr Phe	
aac aac acc atc gtt tcc atc acg gat cct tcc ggt gct gtt atc gca	144
Asn Asn Thr 35 Ile Val Ser Ile Thr Asp Pro Ser Gly Ala Val Ile Ala	
tgg gca tcc tcc ggc cac gtt ggc ttc aag ggt tcc cgt aag tcc acc	192
Trp Ala Ser Ser Gly His 55 Val Gly Phe Lys Gly 60 Arg Lys Ser Thr	
cca ttc gct gca cag ctt gct gct gag aac gct gct cgc aag gca atg	240
Pro Phe Ala Ala Gln Leu 70 Ala Ala Glu Asn 75 Ala Ala Arg Lys Ala Met	
65 gat cac ggc atg aag aag gtc gac gta ttc gtt aag ggc cca ggc tct	288
Asp His Gly Met 85 Lys Lys Val Asp Val Phe 90 Val Lys Gly Pro Gly Ser	
gga cgt gag acc gct att cgt tcc ctc cag gct gct ggc ctc gag gtc	336
Gly Arg Glu Thr 100 Ala Ile Arg Ser Leu 105 Gln Ala Ala Gly Leu Glu Val	
acc tcg atc tcc gat gtc act cct cag cca ttc aac ggc tgc cgc cca	384
Thr Ser Ile Ser Asp Val Thr Pro Gln Pro Phe Asn 125 Gly Cys Arg Pro	
cca aag cgt cgt cgc gtt taa	405
Pro Lys Arg Arg Arg Val	
130	

&lt;210&gt; 598

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Corynebacterium diphtheriae

&lt;400&gt; 598

Met Pro Pro Lys Thr 5 Arg Ser Thr Ala Arg 10 Arg Ser Gly Arg Arg Val  
 1 Val Lys Lys Asn 20 Val Ala Gln Gly 25 Ala Tyr Ile Lys 30 Thr Phe  
 Asn Asn Thr 35 Ile Val Ser Ile Thr Asp Pro Ser Gly Ala Val Ile Ala  
 Trp Ala Ser Ser Gly His 40 Val Gly Phe Lys Gly Ser Arg Lys Ser Thr  
 50 55 60  
 Pro Phe Ala Ala Gln Leu 70 Ala Ala Glu Asn Ala Arg Lys Ala Met  
 65 75 80

## PhoenixTemp32470.tmp.txt

Asp His Gly Met Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser  
 85 90 95  
 Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val  
 100 105 110  
 Thr Ser Ile Ser Asp Val Thr Pro Gln Pro Phe Asn Gly Cys Arg Pro  
 115 120 125  
 Pro Lys Arg Arg Arg Val  
 130

&lt;210&gt; 599

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium efficiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=11

&lt;400&gt; 599

atg cct cct aaa gca cgc tcc ggc gcg cgc cgt acc ggc cgt cgc gtc	48
Met Pro Pro Lys Ala Arg Ser Gly Ala Arg Arg Thr Gly Arg Arg Val	
1 5 10 15	
gta aag aag aat gtg gcc cag ggc cac gca tac atc aag tcc acc ttt	96
Val Lys Lys Asn Val Ala Gln Gly His Ala Tyr Ile Lys Ser Thr Phe	
20 25 30	
aac aac acc atc gtg tgc atc act gac ccg aac ggc gcc gtt atc tcc	144
Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Asn Gly Ala Val Ile Ser	
35 40 45	
tgg gct tcc tct ggt cac gtc gga ttc aag ggc tct cgt aag tcc act	192
Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser Arg Lys Ser Thr	
50 55 60	
ccg ttt gct gct cag atg gcc gct gaa aac gct gcc cgc aag gca atg	240
Pro Phe Ala Ala Gln Met Ala Ala Glu Asn Ala Ala Arg Lys Ala Met	
65 70 75 80	
gat cac ggc atg aag aag gtt gac gtt ttc gtc aag ggc ccg ggc tgc	288
Asp His Gly Met Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser	
85 90 95	
ggc cga gag acc gct atc cgt tcc ctc cag gcc gcc ggc ctc gag gtc	336
Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val	
100 105 110	
agc tcg atc tcc gac gtg acc cca cag ccg cac aac ggc tgc cgt ccg	384
Ser Ser Ile Ser Asp Val Thr Pro Gln Pro His Asn Gly Cys Arg Pro	
115 120 125	
ccg aag cgt cgt cgc gtt taa	405
Pro Lys Arg Arg Arg Val	
130	

&lt;210&gt; 600

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Corynebacterium efficiens

&lt;400&gt; 600

Met Pro Pro Lys Ala Arg Ser Gly Ala Arg Arg Thr Gly Arg Arg Val
1 5 10 15
Val Lys Lys Asn Val Ala Gln Gly His Ala Tyr Ile Lys Ser Thr Phe
20 25 30
Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Asn Gly Ala Val Ile Ser
35 40 45
Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser Arg Lys Ser Thr
50 55 60
Pro Phe Ala Ala Gln Met Ala Ala Glu Asn Ala Ala Arg Lys Ala Met
65 70 75 80
Asp His Gly Met Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser
85 90 95
Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val
100 105 110
Ser Ser Ile Ser Asp Val Thr Pro Gln Pro His Asn Gly Cys Arg Pro

115  
Pro Lys Arg Arg Arg Val  
130

<210> 601  
<211> 372  
<212> DNA  
<213> Coxiella burnetii

<220>  
<221> CDS  
<222> (1)..(372)  
<223> transl\_table=11

<400> 601  
atg gca aag aaa cgt tat cgc aaa gtg act gaa ggg att gct cac att 48  
Met Ala Lys Lys Arg Tyr Arg Lys Val Thr Glu Gly Ile Ala His Ile  
1 5 10 15  
aag gca act ttt aat aat acg atg atc agt gtt tct gat cct caa gga 96  
Lys Ala Thr Phe Asn Asn Thr Met Ile Ser Val Ser Asp Pro Gln Gly  
20 25 30  
aat gtc tta tgt ttt cgt tcc gcg ggc gga tcg ggt ttc aaa ggt tcg 144  
Asn Val Leu Cys Phe Arg Ser Ala Gly Gly Ser Gly Phe Lys Gly Ser  
35 40 45  
cgt aaa ggg acc cct tac gga gca caa atg gct tcc gaa gaa gtg ggc 192  
Arg Lys Gly Thr Pro Tyr Gly Ala Gln Met Ala Ser Glu Glu Val Gly  
50 55 60  
agg tta gca cgg gat aat ttc gac atg cgg cga att gcc gtg cga gta 240  
Arg Leu Ala Arg Asp Asn Phe Asp Met Arg Arg Ile Ala Val Arg Val  
65 70 75 80  
aag ggc cca ggc gct ggt cgg gat tct gcc att cga gga ttg cgt tcg 288  
Lys Gly Pro Gly Ala Gly Arg Asp Ser Ala Ile Arg Gly Leu Arg Ser  
85 90 95  
gct ggt ctg gaa gtt atc cat tta gaa gat cgt aca ccg tta cct cat 336  
Ala Gly Leu Glu Val Ile His Leu Glu Asp Arg Thr Pro Leu Pro His  
100 105 110  
aac ggc tgt cga ccg cgc aaa aaa cga cga gtt tag 372  
Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg Val  
115 120

<210> 602  
<211> 123  
<212> PRT  
<213> Coxiella burnetii

<400> 602  
Met Ala Lys Lys Arg Tyr Arg Lys Val Thr Glu Gly Ile Ala His Ile  
1 5 10 15  
Lys Ala Thr Phe Asn Asn Thr Met Ile Ser Val Ser Asp Pro Gln Gly  
20 25 30  
Asn Val Leu Cys Phe Arg Ser Ala Gly Gly Ser Gly Phe Lys Gly Ser  
35 40 45  
Arg Lys Gly Thr Pro Tyr Gly Ala Gln Met Ala Ser Glu Glu Val Gly  
50 55 60  
Arg Leu Ala Arg Asp Asn Phe Asp Met Arg Arg Ile Ala Val Arg Val  
65 70 75 80  
Lys Gly Pro Gly Ala Gly Arg Asp Ser Ala Ile Arg Gly Leu Arg Ser  
85 90 95  
Ala Gly Leu Glu Val Ile His Leu Glu Asp Arg Thr Pro Leu Pro His  
100 105 110  
Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg Val  
115 120

<210> 603  
<211> 408  
<212> DNA  
<213> Cytophaga hutchinsonii

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(408)

&lt;223&gt; transl\_table=11

&lt;400&gt; 603

atg gct caa caa tca act gcc gcg aaa aga aaa gat aaa gct aaa aaa	48
Met Ala Gln Gln Ser Thr Ala Ala Lys Arg Lys Asp Lys Ala Lys Lys	
1 5 10 15	
aga atc gta gtt atc gaa cct aca ggt cag gtt cat atc aga gct tct	96
Arg Ile Val Val Ile Glu Pro Thr Gly Gln Val His Ile Arg Ala Ser	
20 25 30	
ttt aac aac att atc att tct gtt acc aat agt aca ggt caa gta ata	144
Phe Asn Asn Ile Ile Ile Ser Val Thr Asn Ser Thr Gly Gln Val Ile	
35 40 45	
tct tgg gct tct gct ggt aaa atg gga ttc cgc gga tct aaa aag aat	192
Ser Trp Ala Ser Ala Gly Lys Met Gly Phe Arg Gly Ser Lys Lys Asn	
50 55 60	
act cct tac gct gct cag gtt gca gcg caa aac tgt gct cag gtt gcc	240
Thr Pro Tyr Ala Ala Gln Val Ala Ala Gln Asn Cys Ala Gln Val Ala	
65 70 75 80	
ttt gaa ggc gga atg aga aag tgt gaa gtt ttt gta aaa gga cca ggc	288
Phe Glu Gly Gly Met Arg Lys Cys Glu Val Phe Val Lys Gly Pro Gly	
85 90 95	
tca ggt aga gag tct gca att cgc acc atc caa aat gca ggt atc gaa	336
Ser Gly Arg Glu Ser Ala Ile Arg Thr Ile Gln Asn Ala Gly Ile Glu	
100 105 110	
gtg tta acg att aaa gac gtt acg cct atg cca cat aac gga tgc aga	384
Val Leu Thr Ile Lys Asp Val Thr Pro Met Pro His Asn Gly Cys Arg	
115 120 125	
cct cct aaa aag aga aga gtc taa	408
Pro Pro Lys Lys Arg Arg Val	
130 135	

&lt;210&gt; 604

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Cytophaga hutchinsonii

&lt;400&gt; 604

Met Ala Gln Gln Ser Thr Ala Ala Lys Arg Lys Asp Lys Ala Lys Lys	
1 5 10 15	
Arg Ile Val Val Ile Glu Pro Thr Gly Gln Val His Ile Arg Ala Ser	
20 25 30	
Phe Asn Asn Ile Ile Ile Ser Val Thr Asn Ser Thr Gly Gln Val Ile	
35 40 45	
Ser Trp Ala Ser Ala Gly Lys Met Gly Phe Arg Gly Ser Lys Lys Asn	
50 55 60	
Thr Pro Tyr Ala Ala Gln Val Ala Ala Gln Asn Cys Ala Gln Val Ala	
65 70 75 80	
Phe Glu Gly Gly Met Arg Lys Cys Glu Val Phe Val Lys Gly Pro Gly	
85 90 95	
Ser Gly Arg Glu Ser Ala Ile Arg Thr Ile Gln Asn Ala Gly Ile Glu	
100 105 110	
Val Leu Thr Ile Lys Asp Val Thr Pro Met Pro His Asn Gly Cys Arg	
115 120 125	
Pro Pro Lys Lys Arg Arg Val	
130 135	

&lt;210&gt; 605

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Dechloromonas aromatica

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 605

## PhoenixTemp32470.tmp.txt

```

atg gca aag act gct acg aaa gtt cgc aaa aag gtc aag aag aac gtt 48
Met Ala Lys Thr Ala Thr Lys Val Arg Lys Lys Val Lys Lys Asn Val
1 5 10 15
gct gag ggc att gcc cac atc cac gca tcg ttc aac aat acc atc atc 96
Ala Glu Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Ile
20 25 30
acc att acc gac cgt cag ggc aac gct ctg tcg tgg gct acc tcc ggt 144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly
35 40 45
ggg gcc ggc ttc cgc ggt tcg cgt aag tcc acc ccg ttc gct gcc cag 192
Gly Ala Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
gtt gcc gcc gaa gcc gcc ggc aag gct gct cag gaa tgt ggc gtc aag 240
Val Ala Ala Glu Ala Ala Gly Lys Ala Ala Gln Glu Cys Gly Val Lys
65 70 75 80
aat gtc gaa gtc cgt atc aag ggc cct ggt cct ggt cgt gaa tcc tct 288
Asn Val Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser Ser
85 90 95
gtc cgt gcg ctc aat gcg ctg ggc atg aag atc act tcc att tcg gac 336
Val Arg Ala Leu Asn Ala Leu Gly Met Lys Ile Thr Ser Ile Ser Asp
100 105 110
gtg acg ccg gta ccg cac aac ggt tgc cgt ccg cct aaa aag cgc cgc 384
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115 120 125
atc taa 390
Ile

```

&lt;210&gt; 606

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Dechloromonas aromatica

&lt;400&gt; 606

```

Met Ala Lys Thr Ala Thr Lys Val Arg Lys Lys Val Lys Lys Asn Val
1 5 10 15
Ala Glu Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Ile
20 25 30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly
35 40 45
Gly Ala Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
Val Ala Ala Glu Ala Ala Gly Lys Ala Ala Gln Glu Cys Gly Val Lys
65 70 75 80
Asn Val Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser Ser
85 90 95
Val Arg Ala Leu Asn Ala Leu Gly Met Lys Ile Thr Ser Ile Ser Asp
100 105 110
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115 120 125
Ile

```

&lt;210&gt; 607

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Dehalococcoides ethenogenes

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 607

```

atg gca gtt aaa aaa cgt gcc ggt gcc aag aaa aaa gag aag aaa gtt 48
Met Ala Val Lys Lys Arg Ala Gly Ala Lys Lys Lys Glu Lys Lys Val
1 5 10 15
ata cct gta ggt aaa gcc ttc gta cag gct acc ttt aat aat act atc 96
Ile Pro Val Gly Lys Ala Phe Val Gln Ala Thr Phe Asn Asn Thr Ile

```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
gta act ctg act gac ctg cag ggc aat gta att gcc tgg gcc agc tgc      144
Val Thr Leu Thr Asp Leu Gln Gly Asn Val Ile Ala Trp Ala Ser Cys
      35      40      45
ggg act gcc ggt ttc aag ggc tca cgc aaa ggt act ccc tat gcc gcc      192
Gly Thr Ala Gly Phe Lys Gly Ser Arg Lys Gly Thr Pro Tyr Ala Ala
      50      55      60
cag atg gct gct cag gct gcc gcc cgc aag gct gct gaa agc ggc ctc      240
Gln Met Ala Ala Gln Ala Ala Ala Arg Lys Ala Ala Glu Ser Gly Leu
      65      70      75
agg cag gtg gag gta ttg gta aag ggg ccg ggc agt ggc cgt gaa gct      288
Arg Gln Val Glu Val Leu Val Lys Gly Pro Gly Ser Gly Arg Glu Ala
      80      85      90
gct atc cgc tct ctt cag gcg tca ggt atc aat gtg acc gca atc agg      336
Ala Ile Arg Ser Leu Gln Ala Ser Gly Ile Asn Val Thr Ala Ile Arg
      100      105      110
gac gta act ccc att ccg cat aat ggt tgc cgt cct ccc aag aga agg      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
      115      120      125
agg gta tag
Arg Val
130

```

&lt;210&gt; 608

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Dehalococcoides ethenogenes

&lt;400&gt; 608

```

Met Ala Val Lys Lys Arg Ala Gly Ala Lys Lys Lys Glu Lys Lys Val
1      5      10      15
Ile Pro Val Gly Lys Ala Phe Val Gln Ala Thr Phe Asn Asn Thr Ile
      20      25      30
Val Thr Leu Thr Asp Leu Gln Gly Asn Val Ile Ala Trp Ala Ser Cys
      35      40      45
Gly Thr Ala Gly Phe Lys Gly Ser Arg Lys Gly Thr Pro Tyr Ala Ala
      50      55      60
Gln Met Ala Ala Gln Ala Ala Ala Arg Lys Ala Ala Glu Ser Gly Leu
65      70      75
Arg Gln Val Glu Val Leu Val Lys Gly Pro Gly Ser Gly Arg Glu Ala
      80      85      90
Ala Ile Arg Ser Leu Gln Ala Ser Gly Ile Asn Val Thr Ala Ile Arg
      100      105      110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
      115      120      125
Arg Val
130

```

&lt;210&gt; 609

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Dehalococcoides sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 609

```

atg gca gtt aaa aag cgt gcc ggt gcc aag aaa aaa gag aag aaa gta      48
Met Ala Val Lys Lys Arg Ala Gly Ala Lys Lys Lys Glu Lys Lys Val
1      5      10      15
ata cct gta ggt aag gcc tat gta cag gct acc ttt aat aat act atc      96
Ile Pro Val Gly Lys Ala Tyr Val Gln Ala Thr Phe Asn Asn Thr Ile
      20      25      30
gta act ctg act gac ctt cag ggc aat gtt att gcc tgg gcc agc tgt      144
Val Thr Leu Thr Asp Leu Gln Gly Asn Val Ile Ala Trp Ala Ser Cys
      35      40      45
ggg act gcc ggt ttc aag ggc tcg cgc aag ggt act ccc tat gcc gcc      192

```



## PhoenixTemp32470.tmp.txt

Gly	Thr	Ala	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Gly	Thr	Pro	Tyr	Ala	Ala		
	50					55					60						
cag	atg	gcc	gcc	cag	acc	gct	gcc	cgc	aag	gct	gct	gaa	agc	ggg	ctg		240
Gln	Met	Ala	Ala	Gln	Thr	Ala	Ala	Arg	Lys	Ala	Ala	Glu	Ser	Gly	Leu		
65					70					75					80		
cgt	cag	gta	gag	gta	ctg	gta	aag	gga	ccg	ggc	agc	ggc	cgt	gaa	gct		288
Arg	Gln	Val	Glu	Val	Leu	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ala		
				85					90					95			
gct	atc	cgt	tct	ctt	cag	gct	tca	ggt	ata	aat	gtg	acc	gca	ata	agg		336
Ala	Ile	Arg	Ser	Leu	Gln	Ala	Ser	Gly	Ile	Asn	Val	Thr	Ala	Ile	Arg		
			100					105					110				
gac	gtc	aca	ccc	att	cct	cat	aat	ggt	tgc	cgt	cct	ccc	aag	aga	agg		384
Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg		
		115					120					125					
agg	gta	tag															393
Arg	Val																
130																	

&lt;210&gt; 610

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Dehalococcoides sp

&lt;400&gt; 610

Met	Ala	Val	Lys	Lys	Arg	Ala	Gly	Ala	Lys	Lys	Lys	Glu	Lys	Lys	Val		
1				5					10						15		
Ile	Pro	Val	Gly	Lys	Ala	Tyr	Val	Gln	Ala	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
Val	Thr	Leu	Thr	Asp	Leu	Gln	Gly	Asn	Val	Ile	Ala	Trp	Ala	Ser	Cys		
		35					40					45					
Gly	Thr	Ala	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Gly	Thr	Pro	Tyr	Ala	Ala		
	50					55					60						
Gln	Met	Ala	Ala	Gln	Thr	Ala	Ala	Arg	Lys	Ala	Ala	Glu	Ser	Gly	Leu		
65					70					75					80		
Arg	Gln	Val	Glu	Val	Leu	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ala		
				85					90					95			
Ala	Ile	Arg	Ser	Leu	Gln	Ala	Ser	Gly	Ile	Asn	Val	Thr	Ala	Ile	Arg		
			100					105					110				
Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg		
		115					120					125					
Arg	Val																
130																	

&lt;210&gt; 611

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Deinococcus radiodurans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 611

atg	gcg	aaa	ccc	acc	aaa	ggc	aag	gct	ccg	cgc	cgc	tcc	cgg	cgc	aac		48
Met	Ala	Lys	Pro	Thr	Lys	Gly	Lys	Ala	Pro	Arg	Arg	Ser	Arg	Arg	Asn		
1				5					10					15			
atc	agc	gct	ggg	cgc	gcc	tac	gtg	cac	gcc	agc	tac	aac	aac	act	atc		96
Ile	Ser	Ala	Gly	Arg	Ala	Tyr	Val	His	Ala	Ser	Tyr	Asn	Asn	Thr	Ile		
			20					25					30				
gtc	acc	atc	acc	gac	ctc	gac	ggc	aac	tcc	gtg	gcg	tgg	tct	tcc	ggc		144
Val	Thr	Ile	Thr	Asp	Leu	Asp	Gly	Asn	Ser	Val	Ala	Trp	Ser	Ser	Gly		
			35				40					45					
ggc	acc	atc	ggc	tac	aag	ggc	agc	aag	aag	ggc	acc	ccc	tac	gct	gct		192
Gly	Thr	Ile	Gly	Tyr	Lys	Gly	Ser	Lys	Lys	Gly	Thr	Pro	Tyr	Ala	Ala		
	50					55					60						
cag	ctc	gcc	gcc	gcc	gac	ggc	gtg	aag	aag	gcc	cag	acc	tcc	ttc	ggc		240
Gln	Leu	Ala	Ala	Ala	Asp	Ala	Val	Lys	Lys	Ala	Gln	Thr	Ser	Phe	Gly		
65					70					75					80		

## PhoenixTemp32470.tmp.txt

```

atg gcc gcc gtg gac gtg atc gtg cgt ggg agc ggc tcg ggc cgt gaa      288
Met Ala Ala Val Asp Val Ile Val Arg Gly Ser Gly Ser Gly Arg Glu
      85      90      95
cag gcg atc cgc gcc atc cag gct tcg ggc atc gaa gtc cgc agc atc      336
Gln Ala Ile Arg Ala Ile Gln Ala Ser Gly Ile Glu Val Arg Ser Ile
      100      105      110
atg gac gac agc ccc gtg cct cac aac ggc tgc cgc ccc aag aag aag      384
Met Asp Asp Ser Pro Val Pro His Asn Gly Cys Arg Pro Lys Lys Lys
      115      120      125
ttc cgc gcc taa
Phe Arg Ala
      130

```

&lt;210&gt; 612

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Deinococcus radiodurans

&lt;400&gt; 612

```

Met Ala Lys Pro Thr Lys Gly Lys Ala Pro Arg Arg Ser Arg Arg Asn
1      5      10      15
Ile Ser Ala Gly Arg Ala Tyr Val His Ala Ser Tyr Asn Asn Thr Ile
      20      25      30
Val Thr Ile Thr Asp Leu Asp Gly Asn Ser Val Ala Trp Ser Ser Gly
      35      40      45
Gly Thr Ile Gly Tyr Lys Gly Ser Lys Lys Gly Thr Pro Tyr Ala Ala
      50      55      60
Gln Leu Ala Ala Ala Asp Ala Val Lys Lys Ala Gln Thr Ser Phe Gly
65      70      75      80
Met Ala Ala Val Asp Val Ile Val Arg Gly Ser Gly Ser Gly Arg Glu
      85      90      95
Gln Ala Ile Arg Ala Ile Gln Ala Ser Gly Ile Glu Val Arg Ser Ile
      100      105      110
Met Asp Asp Ser Pro Val Pro His Asn Gly Cys Arg Pro Lys Lys Lys
      115      120      125
Phe Arg Ala
      130

```

&lt;210&gt; 613

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Desulfovibrio desulfuricans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 613

```

atg gca aga cct aag cgc gtg ggc aag aag aaa gag aaa aag tcc atc      48
Met Ala Arg Pro Lys Arg Val Gly Lys Lys Lys Glu Lys Lys Ser Ile
1      5      10      15
ccc gtc ggg gtt gcc cat att cag gcg acg ttc aat aac acc atc att      96
Pro Val Gly Val Ala His Ile Gln Ala Thr Phe Asn Asn Thr Ile Ile
      20      25      30
acc ttc act gat acc agg ggt aac acg gtg agt tgg gcc agt gca gga      144
Thr Phe Thr Asp Thr Arg Gly Asn Thr Val Ser Trp Ala Ser Ala Gly
      35      40      45
cag agc ggc ttc aag gga tcg cgt aag agc act ccc ttt gcc gca cag      192
Gln Ser Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
      50      55      60
ata gct gcc gat cag gca gcc cgt cgt gca cag gaa aac gga atg cgc      240
Ile Ala Ala Asp Gln Ala Arg Arg Ala Gln Glu Asn Gly Met Arg
65      70      75      80
aca gtg ggt atc ttt gtt aag ggc ccc ggt tcc gga cgt gag tcc gct      288
Thr Val Gly Ile Phe Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala
      85      90      95
atg cgc gct atc aat gcc gcc ggt ttc aag gtg gca ttc atc cgt gat      336
Met Arg Ala Ile Asn Ala Ala Gly Phe Lys Val Ala Phe Ile Arg Asp

```

## PhoenixTemp32470.tmp.txt

```

100      105      110
atc acc ccc att ccc cac aac ggc tgc cgt cct ccc aaa cgg cgc cgc 384
Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115      120      125

ggt tag 390
Val

```

```

<210> 614
<211> 129
<212> PRT
<213> Desulfovibrio desulfuricans

```

```

<400> 614
Met Ala Arg Pro Lys Arg Val Gly Lys Lys Lys Glu Lys Lys Ser Ile
1      5      10      15
Pro Val Gly Val Ala His Ile Gln Ala Thr Phe Asn Asn Thr Ile Ile
20      25      30
Thr Phe Thr Asp Thr Arg Gly Asn Thr Val Ser Trp Ala Ser Ala Gly
35      40      45
Gln Ser Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
Ile Ala Ala Asp Gln Ala Ala Arg Arg Ala Gln Glu Asn Gly Met Arg
65      70      75      80
Thr Val Gly Ile Phe Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala
85      90      95
Met Arg Ala Ile Asn Ala Ala Gly Phe Lys Val Ala Phe Ile Arg Asp
100      105      110
Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115      120      125

Val

```

```

<210> 615
<211> 390
<212> DNA
<213> Desulfitobacterium hafniense

```

```

<220>
<221> CDS
<222> (1)..(390)
<223> transl_table=11

```

```

<400> 615
atg gcg cgt aaa gtt gta cgc aca aaa cgc cgt gag cgt aaa aac atc 48
Met Ala Arg Lys Val Val Arg Thr Lys Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
gct act ggc gtt gcc cat att aag tcc aca ttt aac aat agt atg gtc 96
Ala Thr Gly Val Ala His Ile Lys Ser Thr Phe Asn Asn Ser Met Val
20      25      30
acc att acc gat cca aaa ggt aat gtg atc tct tgg tcc agt gcg gga 144
Thr Ile Thr Asp Pro Lys Gly Asn Val Ile Ser Trp Ser Ala Gly
35      40      45
gcc ctt ggc ttc aaa gga tct cgt aag agc act cct tat gct gcc caa 192
Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
50      55      60
atg gct gcc gaa act gct gcc aaa gct gcc atg gaa cat ggc ctg aaa 240
Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His Gly Leu Lys
65      70      75      80
gaa gtt gaa tgc ttt gtc aag gga ccg ggt gcc ggc cgt gag gct gcg 288
Glu Val Glu Cys Phe Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala
85      90      95
atc cgt gct ctg caa gct gcc ggc ttg gaa gtc aat atg att aaa gac 336
Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Asn Met Ile Lys Asp
100      105      110
gtg acg ccg att ccc cat aat ggt tgt cgg cct ccg aaa cgt aga agg 384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115      120      125

gta taa 390

```

Val

<210> 616  
 <211> 129  
 <212> PRT  
 <213> Desulfitobacterium hafniense

<400> 616  
 Met Ala Arg Lys Val Val Arg Thr Lys Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 Ala Thr Gly Val Ala His Ile Lys Ser Thr Phe Asn Asn Ser Met Val  
 20 25 30  
 Thr Ile Thr Asp Pro Lys Gly Asn Val Ile Ser Trp Ser Ser Ala Gly  
 35 40 45  
 Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 Met Ala Ala Glu Thr Ala Ala Lys Ala Ala Met Glu His Gly Leu Lys  
 65 70 75 80  
 Glu Val Glu Cys Phe Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 85 90 95  
 Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Asn Met Ile Lys Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 617  
 <211> 381  
 <212> DNA  
 <213> Desulfotalea psychrophila

<220>  
 <221> CDS  
 <222> (1)..(381)  
 <223> transl\_table=11

<400> 617  
 atg gca gtt gca aaa aag aga aag gta aaa aag aat atc cca gaa ggg 48  
 Met Ala Val Ala Lys Lys Arg Lys Val Lys Lys Asn Ile Pro Glu Gly  
 1 5 10 15  
 att gtt tat att tat tct acc ttc aat aat acc att gtt acc atc tca 96  
 Ile Val Tyr Ile Tyr Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Ser  
 20 25 30  
 gac aag cag gga aac gtg gtt tct tgg tgc agc gct ggt gtt ctt ggc 144  
 Asp Lys Gln Gly Asn Val Val Ser Trp Cys Ser Ala Gly Val Leu Gly  
 35 40 45  
 ttt aaa ggt tct cgt aag agt act cct ttt gca gcc cag aat gcg ctt 192  
 Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Asn Ala Leu  
 50 55 60  
 gct gat gca gcg aag aaa gct gat tgt ggt atg aga aaa gta gaa 240  
 Ala Asp Ala Ala Lys Lys Ala Ala Asp Cys Gly Met Arg Lys Val Glu  
 65 70 75 80  
 gtt aaa gtg aaa gga cca gga cct ggt cgt gaa gct gct cta cgt gct 288  
 Val Lys Val Lys Gly Pro Gly Pro Gly Arg Glu Ala Ala Leu Arg Ala  
 85 90 95  
 ttg gta agt acc ggt ttt gag gta agt cgc att tat gat gtt acc cca 336  
 Leu Val Ser Thr Gly Phe Glu Val Ser Arg Ile Tyr Asp Val Thr Pro  
 100 105 110  
 gtt cct cac aat gga tgt aaa cca cct aaa cgt cgc cgc gta taa 381  
 Val Pro His Asn Gly Cys Lys Pro Pro Lys Arg Arg Arg Val  
 115 120 125

<210> 618  
 <211> 126  
 <212> PRT  
 <213> Desulfotalea psychrophila

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 618

```

Met Ala Val Ala Lys Lys Arg Lys Val Lys Lys Asn Ile Pro Glu Gly
1      5      10      15
Ile Val Tyr Ile Tyr Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Ser
20      25      30
Asp Lys Gln Gly Asn Val Val Ser Trp Cys Ser Ala Gly Val Leu Gly
35      40      45
Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Asn Ala Leu
50      55      60
Ala Asp Ala Ala Lys Lys Ala Ala Asp Cys Gly Met Arg Lys Val Glu
65      70      75      80
Val Lys Val Lys Gly Pro Gly Pro Gly Arg Glu Ala Ala Leu Arg Ala
85      90      95
Leu Val Ser Thr Gly Phe Glu Val Ser Arg Ile Tyr Asp Val Thr Pro
100     105     110
Val Pro His Asn Gly Cys Lys Pro Pro Lys Arg Arg Arg Val
115     120     125

```

&lt;210&gt; 619

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Desulfovibrio vulgaris

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 619

```

atg gca aga ccc aag cgt acg gtc aaa aag aga gag aag aag aac gtc      48
Met Ala Arg Pro Lys Arg Thr Val Lys Lys Arg Glu Lys Lys Asn Val
1      5      10      15
cct gtc ggg ctc gcc cac atc cag gcg acg ttc aac aac acc atc gtg      96
Pro Val Gly Leu Ala His Ile Gln Ala Thr Phe Asn Asn Thr Ile Val
20      25      30
acc ttc acg gac acc agg ggt aac acc atc agc tgg gcc agc gcc ggg      144
Thr Phe Thr Asp Thr Arg Gly Asn Thr Ile Ser Trp Ala Ser Ala Gly
35      40      45
cag agc ggt ttc aag ggg tct cgc aag agc act cct ttc gcc gcc cag      192
Gln Ser Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
atg gcc gcc gag cag gct gcc aag aag gct cag gaa aac ggc atg agg      240
Met Ala Ala Glu Gln Ala Ala Lys Lys Ala Gln Glu Asn Gly Met Arg
65      70      75      80
acc gtg ggc atc tac gtg aag ggc ccc ggt tcc ggt cgt gaa gcc gcc      288
Thr Val Gly Ile Tyr Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala
85      90      95
atg cgt gct atc aat gcc gcc ggt ttc aag gtc gcg ttc att cgc gac      336
Met Arg Ala Ile Asn Ala Ala Gly Phe Lys Val Ala Phe Ile Arg Asp
100     105     110
atc acc ccc att ccg cac aac ggt tgc cgt ccg ccc aag cgg cgc cgc      384
Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115     120     125
gtc taa
Val
390

```

&lt;210&gt; 620

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Desulfovibrio vulgaris

&lt;400&gt; 620

```

Met Ala Arg Pro Lys Arg Thr Val Lys Lys Arg Glu Lys Lys Asn Val
1      5      10      15
Pro Val Gly Leu Ala His Ile Gln Ala Thr Phe Asn Asn Thr Ile Val
20      25      30
Thr Phe Thr Asp Thr Arg Gly Asn Thr Ile Ser Trp Ala Ser Ala Gly
35      40      45

```

## PhoenixTemp32470.tmp.txt

Gln Ser Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Met Ala Ala Glu Gln Ala Ala Lys Lys Ala Gln Glu Asn Gly Met Arg  
 65 70 75 80  
 Thr Val Gly Ile Tyr Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala  
 85 90 95  
 Met Arg Ala Ile Asn Ala Ala Gly Phe Lys Val Ala Phe Ile Arg Asp  
 100 105 110  
 Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 621  
 <211> 390  
 <212> DNA  
 <213> Escherichia coli 0157

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 621  
 atg gca aag gca cca att cgt gca cgt aaa cgt gta aga aaa caa gtc 48  
 Met Ala Lys Ala Pro Ile Arg Ala Arg Lys Arg Val Arg Lys Gln Val 15  
 1 5 10  
 tct gac ggc gtg gct cat atc cat gct tct ttc aac aac acc atc gtg 96  
 Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val 20 25 30  
 act atc act gat cgt cag ggt aac gcg ttg ggt tgg gca aca gcc ggt 144  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly 35 40 45  
 ggt tcc ggt ttc cgt ggt tct cgc aaa tcc act ccg ttt gca gct cag 192  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln 50 55 60  
 gtt gca gca gag cgt tgc gct gac gcc gtg aaa gaa tac ggc atc aag 240  
 Val Ala Ala Glu Arg Cys Ala Asp Ala Val Lys Glu Tyr Gly Ile Lys 65 70 75 80  
 aat ctg gaa gtt atg gtt aaa ggt ccg ggt cca ggc cgc gaa tct act 288  
 Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr 85 90 95  
 att cgt gct ctg aac gcc gca ggt ttc cgc atc act aac att act gat 336  
 Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp 100 105 110  
 gtg act ccg atc cct cat aac ggt tgt cgt ccg ccg aaa aaa cgc cgc 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg 115 120 125  
 gta taa 390  
 Val

<210> 622  
 <211> 129  
 <212> PRT  
 <213> Escherichia coli 0157

<400> 622  
 Met Ala Lys Ala Pro Ile Arg Ala Arg Lys Arg Val Arg Lys Gln Val  
 1 5 10 15  
 Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Arg Cys Ala Asp Ala Val Lys Glu Tyr Gly Ile Lys  
 65 70 75 80  
 Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr

## PhoenixTemp32470.tmp.txt

85 90 95  
 Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 623  
 <211> 381  
 <212> DNA  
 <213> Ehrlichia canis

<220>  
 <221> CDS  
 <222> (1)..(381)  
 <223> transl\_table=11

<400> 623  
 atg agt gta gtg tat aaa aag aaa aag aga aat gtt gta gtt ggg gtg 48  
 Met Ser Val Val Tyr Lys Lys Lys Lys Arg Asn Val Val Val Gly Val  
 1 5 10 15  
 gtg tac att cat gct acc tat aat aat att att gta aca gtt aca gat 96  
 Val Tyr Ile His Ala Thr Tyr Asn Asn Ile Ile Val Thr Val Thr Asp  
 20 25 30  
 cag caa ggc cat tcg tta ata tgt act tct gct gga gca tgt agc ttt 144  
 Gln Gln Gly His Ser Leu Ile Cys Thr Ser Ala Gly Ala Cys Ser Phe  
 35 40 45  
 aaa gga tct aaa aaa gcg act cct tat gca gcg cag gaa aca gcc agt 192  
 Lys Gly Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu Thr Ala Ser  
 50 55 60  
 cat gct gtt aag aca gtt gtt gag caa aat ggg atg aaa aca gta tct 240  
 His Ala Val Lys Thr Val Val Glu Gln Asn Gly Met Lys Thr Val Ser  
 65 70 75 80  
 att aag gtt tct ggt cct ggt gca ggt aga gaa gca gct ata aga gct 288  
 Ile Lys Val Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala Ile Arg Ala  
 85 90 95  
 gtt caa gct tgt aat tta aat gtt act tct att aaa gat act aca aag 336  
 Val Gln Ala Cys Asn Leu Asn Val Thr Ser Ile Lys Asp Thr Thr Lys  
 100 105 110  
 ctt ccg cat aat gga tgt aag ctt cca gga aga cgt aga gtt taa 381  
 Leu Pro His Asn Gly Cys Lys Leu Pro Gly Arg Arg Arg Val  
 115 120 125

<210> 624  
 <211> 126  
 <212> PRT  
 <213> Ehrlichia canis

<400> 624  
 Met Ser Val Val Tyr Lys Lys Lys Lys Arg Asn Val Val Val Gly Val  
 1 5 10 15  
 Val Tyr Ile His Ala Thr Tyr Asn Asn Ile Ile Val Thr Val Thr Asp  
 20 25 30  
 Gln Gln Gly His Ser Leu Ile Cys Thr Ser Ala Gly Ala Cys Ser Phe  
 35 40 45  
 Lys Gly Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu Thr Ala Ser  
 50 55 60  
 His Ala Val Lys Thr Val Val Glu Gln Asn Gly Met Lys Thr Val Ser  
 65 70 75 80  
 Ile Lys Val Ser Gly Pro Gly Ala Gly Arg Glu Ala Ala Ile Arg Ala  
 85 90 95  
 Val Gln Ala Cys Asn Leu Asn Val Thr Ser Ile Lys Asp Thr Thr Lys  
 100 105 110  
 Leu Pro His Asn Gly Cys Lys Leu Pro Gly Arg Arg Arg Val  
 115 120 125

<210> 625  
 <211> 381

<212> DNA  
 <213> Ehrlichia chaffeensis

<220>  
 <221> CDS  
 <222> (1)..(381)  
 <223> transl\_table=11

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<400> 625
atg agt gta gtt tat aaa aag aaa aag aga aat gtt gta gtt ggg gta      48
Met Ser Val Val Tyr Lys Lys Lys Lys Arg Asn Val Val Val Gly Val
1      5      10      15
gtt tat att cat gct acc tat aat aat atc att gta aca gtt aca gac      96
Val Tyr Ile His Ala Thr Tyr Asn Asn Ile Ile Val Thr Val Thr Asp
20      25      30
cag caa gga cat tcg tta ata tgt act tct gct gga gca tgt ggt ttt      144
Gln Gln Gly His Ser Leu Ile Cys Thr Ser Ala Gly Ala Cys Gly Phe
35      40      45
aaa gga tct aag aaa gct act cct tat gca gca caa gag act gca agt      192
Lys Gly Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu Thr Ala Ser
50      55      60
cat gct gtt aaa aca gtt gtt gaa caa aat ggg atg aag aca gta tct      240
His Ala Val Lys Thr Val Val Glu Gln Asn Gly Met Lys Thr Val Ser
65      70      75
att aaa gtt tct ggt cct ggt gca ggt agg gaa tca gct ata aga gct      288
Ile Lys Val Ser Gly Pro Gly Ala Gly Arg Glu Ser Ala Ile Arg Ala
85      90      95
gtg caa gct tgc aat tta aat gtt act tct att aaa gat act aca aag      336
Val Gln Ala Cys Asn Leu Asn Val Thr Ser Ile Lys Asp Thr Thr Lys
100      105      110
ctt cca cat aat ggg tgt aaa ctt cca gga aga cgt aga gtt taa      381
Leu Pro His Asn Gly Cys Lys Leu Pro Gly Arg Arg Arg Val
115      120      125

```

<210> 626  
 <211> 126  
 <212> PRT  
 <213> Ehrlichia chaffeensis

```

<400> 626
Met Ser Val Val Tyr Lys Lys Lys Lys Arg Asn Val Val Val Gly Val
1      5      10      15
Val Tyr Ile His Ala Thr Tyr Asn Asn Ile Ile Val Thr Val Thr Asp
20      25      30
Gln Gln Gly His Ser Leu Ile Cys Thr Ser Ala Gly Ala Cys Gly Phe
35      40      45
Lys Gly Ser Lys Lys Ala Thr Pro Tyr Ala Ala Gln Glu Thr Ala Ser
50      55      60
His Ala Val Lys Thr Val Val Glu Gln Asn Gly Met Lys Thr Val Ser
65      70      75
Ile Lys Val Ser Gly Pro Gly Ala Gly Arg Glu Ser Ala Ile Arg Ala
85      90      95
Val Gln Ala Cys Asn Leu Asn Val Thr Ser Ile Lys Asp Thr Thr Lys
100      105      110
Leu Pro His Asn Gly Cys Lys Leu Pro Gly Arg Arg Arg Val
115      120      125

```

<210> 627  
 <211> 390  
 <212> DNA  
 <213> Enterococcus faecalis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

```

<400> 627
atg gca gca aaa aaa gtt agt cgt aaa cgc cgt gtc aaa aag aat ata      48

```



## PhoenixTemp32470.tmp.txt

Met	Ala	Ala	Lys	Lys	Val	Ser	Arg	Lys	Arg	Arg	Val	Lys	Lys	Asn	Ile	
1				5				10						15		
gaa	tca	ggt	gta	gca	cat	atc	cat	tct	aca	ttc	aac	aat	aca	atc	gta	96
Glu	Ser	Gly	Val	Ala	His	Ile	His	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	
			20					25					30			
atg	att	act	gat	aca	cat	ggt	aat	gca	tta	gca	tgg	tca	tca	gca	gga	144
Met	Ile	Thr	Asp	Thr	His	Gly	Asn	Ala	Leu	Ala	Trp	Ser	Ser	Ala	Gly	
		35					40					45				
tca	tta	ggc	ttt	aaa	gga	agc	aaa	aaa	tca	act	cct	ttt	gcc	gct	caa	192
Ser	Leu	Gly	Phe	Lys	Gly	Ser	Lys	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	
	50					55					60					
atg	gct	gca	gaa	gcc	gca	act	aaa	gtg	gca	atg	gaa	cat	gga	ctt	aaa	240
Met	Ala	Ala	Glu	Ala	Ala	Thr	Lys	Val	Ala	Met	Glu	His	Gly	Leu	Lys	
	65				70					75				80		
act	gta	gac	gta	aca	ggt	aaa	gga	cct	ggt	tct	gga	cgt	gaa	gca	gca	288
Thr	Val	Asp	Val	Thr	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ala	Ala	
				85				90					95			
att	cgt	tca	tta	caa	gca	aca	ggt	tta	gaa	gtg	act	gca	att	cgt	gac	336
Ile	Arg	Ser	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	Thr	Ala	Ile	Arg	Asp	
			100					105					110			
gtg	act	cca	ggt	cct	cat	aat	gga	tgc	cgc	cct	cca	aaa	cgc	cgt	cgt	384
Val	Thr	Pro	Val	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg	
		115					120					125				
ggt	taa															390
Val																

&lt;210&gt; 628

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Enterococcus faecalis

&lt;400&gt; 628

Met	Ala	Ala	Lys	Lys	Val	Ser	Arg	Lys	Arg	Arg	Val	Lys	Lys	Asn	Ile	
1				5				10						15		
Glu	Ser	Gly	Val	Ala	His	Ile	His	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	
			20					25					30			
Met	Ile	Thr	Asp	Thr	His	Gly	Asn	Ala	Leu	Ala	Trp	Ser	Ser	Ala	Gly	
		35					40					45				
Ser	Leu	Gly	Phe	Lys	Gly	Ser	Lys	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	
	50					55					60					
Met	Ala	Ala	Glu	Ala	Ala	Thr	Lys	Val	Ala	Met	Glu	His	Gly	Leu	Lys	
	65				70					75				80		
Thr	Val	Asp	Val	Thr	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ala	Ala	
				85				90					95			
Ile	Arg	Ser	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	Thr	Ala	Ile	Arg	Asp	
			100					105					110			
Val	Thr	Pro	Val	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg	
		115					120					125				
Val																

&lt;210&gt; 629

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Erwinia carotovora subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 629

atg	gca	aag	gca	cct	att	cgt	gca	cgt	aag	cgt	gta	aga	aag	caa	gtc	48
Met	Ala	Lys	Ala	Pro	Ile	Arg	Ala	Arg	Lys	Arg	Val	Arg	Lys	Gln	Val	
	1			5				10						15		
tct	gac	ggt	gtg	gct	cat	atc	cat	gct	tct	ttc	aac	aac	acc	atc	gta	96
Ser	Asp	Gly	Val	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val	
			20					25					30			

## PhoenixTemp32470.tmp.txt

acc att act gat cgt cag ggt aat gcg ctg ggt tgg gca act gcc ggt	144
Thr Ile Thr 35 Asp Arg Gln Gly Asn 40 Ala Leu Gly Trp 45 Ala Thr Ala Gly	
ggt tcc ggc ttc cgt ggt tct cgt aaa tct acg ccg ttc gct gct caa	192
Gly Ser Gly Phe Arg Gly Ser 55 Arg Lys Ser Thr Pro 60 Phe Ala Ala Gln	
gta gct gca gaa cgt tgc gca gag gcc gtg aaa gaa tac ggt att aag	240
Val Ala Ala Glu Arg Cys 70 Ala Glu Ala Val Lys 75 Glu Tyr Gly Ile Lys 80	
aac ctg gaa gtt atg gtt aaa gga cct ggt ccg ggc cgt gag tct act	288
Asn Leu Glu Val Met 85 Val Lys Gly Pro 90 Gly Pro Gly Arg Glu Ser Thr 95	
atc cgc gca tta aac gcg gct ggt ttc cgc atc act aat att act gat	336
Ile Arg Ala 100 Leu Asn Ala Ala Gly Phe 105 Arg Ile Thr Asn 110 Ile Thr Asp	
gtg act ccg atc cct cat aac ggt tgt cgt ccg ccg aaa aag cgc cgc	384
Val Thr Pro 115 Ile Pro His Asn Gly 120 Cys Arg Pro Pro Lys 125 Lys Arg Arg	
gta taa	390
Val	

&lt;210&gt; 630

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Erwinia carotovora subsp

&lt;400&gt; 630

Met Ala Lys Ala Pro 5 Ile Arg Ala Arg 10 Arg Val Arg Lys Gln Val 15
Ser Asp Gly Val 20 Ala His Ile His Ala 25 Ser Phe Asn Asn Thr Ile Val 30
Thr Ile Thr 35 Asp Arg Gln Gly Asn 40 Ala Leu Gly Trp 45 Ala Thr Ala Gly
Gly Ser Gly Phe Arg Gly Ser 55 Arg Lys Ser Thr Pro 60 Phe Ala Ala Gln
Val Ala Ala Glu Arg Cys 70 Ala Glu Ala Val Lys 75 Glu Tyr Gly Ile Lys 80
Asn Leu Glu Val Met 85 Val Lys Gly Pro Gly 90 Pro Gly Arg Glu Ser Thr 95
Ile Arg Ala 100 Leu Asn Ala Ala Gly Phe 105 Arg Ile Thr Asn 110 Ile Thr Asp
Val Thr Pro 115 Ile Pro His Asn Gly 120 Cys Arg Pro Pro Lys 125 Lys Arg Arg
Val

&lt;210&gt; 631

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Frankia sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=11

&lt;400&gt; 631

atg cct ccc aag acg cgc gca gcc ggc gcc aag aag gtc cgg cgc aag	48
Met Pro Pro Lys Thr 5 Arg Ala Ala Gly Ala 10 Lys Lys Val Arg Arg 15 Lys	
gaa aag aag aac gtc gcc cac gga cac gct cac atc aag agc acg ttc	96
Glu Lys Lys Asn 20 Val Ala His Gly 25 Ala His Ile Lys 30 Ser Thr Phe	
aac aac acg atc gtc tcc atc acc gac ccg tcc ggg aac gtg atc tcc	144
Asn Asn Thr 35 Ile Val Ser Ile Thr 40 Asp Pro Ser Gly Asn 45 Val Ile Ser	
tgg gct tcg gcg ggt cat gtc ttc aag ggc tcc cgc aag tcc acg	192
Trp Ala Ser Ala Gly His Val Gly Phe Lys Gly Ser Arg Lys Ser Thr	

## PhoenixTemp32470.tmp.txt

ccc	ttc	gcc	gcc	cag	atg	gcc	gag	aac	gcg	gcc	cgc	aag	gcg	cag	240
Pro	Phe	Ala	Ala	Gln	Met	Ala	Ala	Glu	Asn	Ala	Ala	Arg	Lys	Ala	Gln
65					70				75					80	
gag	cac	ggg	atg	cgc	aag	gtc	gac	gtc	ttc	gtg	aag	ggc	ccg	ggt	tcc
Glu	His	Gly	Met	Arg	Lys	Val	Asp	Val	Phe	Val	Lys	Gly	Pro	Gly	Ser
				85					90					95	
ggc	cgg	gag	acc	gcg	atc	cgt	tcc	ctg	cag	gcc	gcg	ggg	ctc	gag	gtc
Gly	Arg	Glu	Thr	Ala	Ile	Arg	Ser	Leu	Gln	Ala	Ala	Gly	Leu	Glu	Val
			100					105					110		
ggt	gcg	atc	cag	gac	gtc	acc	ccg	acc	ccg	cac	aac	ggt	tgc	cgc	ccg
Gly	Ala	Ile	Gln	Asp	Val	Thr	Pro	Thr	Pro	His	Asn	Gly	Cys	Arg	Pro
		115					120					125			
ccc	aag	cgg	cgc	agg	gtg	tga									405
Pro	Lys	Arg	Arg	Arg	Val										
130															

&lt;210&gt; 632

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Frankia sp

&lt;400&gt; 632

Met	Pro	Pro	Lys	Thr	Arg	Ala	Ala	Gly	Ala	Lys	Lys	Val	Arg	Arg	Lys
1				5				10					15		
Glu	Lys	Lys	Asn	Val	Ala	His	Gly	His	Ala	His	Ile	Lys	Ser	Thr	Phe
			20					25				30			
Asn	Asn	Thr	Ile	Val	Ser	Ile	Thr	Asp	Pro	Ser	Gly	Asn	Val	Ile	Ser
		35					40					45			
Trp	Ala	Ser	Ala	Gly	His	Val	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr
	50					55					60				
Pro	Phe	Ala	Ala	Gln	Met	Ala	Ala	Glu	Asn	Ala	Ala	Arg	Lys	Ala	Gln
65				70				75						80	
Glu	His	Gly	Met	Arg	Lys	Val	Asp	Val	Phe	Val	Lys	Gly	Pro	Gly	Ser
			85					90					95		
Gly	Arg	Glu	Thr	Ala	Ile	Arg	Ser	Leu	Gln	Ala	Ala	Gly	Leu	Glu	Val
		100						105				110			
Gly	Ala	Ile	Gln	Asp	Val	Thr	Pro	Thr	Pro	His	Asn	Gly	Cys	Arg	Pro
		115					120					125			
Pro	Lys	Arg	Arg	Arg	Val										
130															

&lt;210&gt; 633

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Fusobacterium nucleatum subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 633

ttg	gct	aaa	aaa	aca	gta	gct	aag	ata	aaa	aag	aaa	agt	aaa	aat	att	48
Met	Ala	Lys	Lys	Thr	Val	Ala	Lys	Ile	Lys	Lys	Lys	Ser	Lys	Asn	Ile	
1				5				10					15			
cct	aat	gga	gta	gct	cat	ata	cat	tca	act	ttt	aat	aac	aca	ata	gtt	96
Pro	Asn	Gly	Val	Ala	His	Ile	His	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	
			20					25					30			
gca	ata	act	gat	gta	gat	ggt	aag	gtt	gta	agc	tgg	aaa	tct	ggt	gga	144
Ala	Ile	Thr	Asp	Val	Asp	Gly	Lys	Val	Val	Ser	Trp	Lys	Ser	Gly	Gly	
		35				40						45				
act	tct	ggg	ttc	aaa	gga	act	aag	aaa	gga	act	ccg	ttt	gca	gct	caa	192
Thr	Ser	Gly	Phe	Lys	Gly	Thr	Lys	Lys	Gly	Thr	Pro	Phe	Ala	Ala	Gln	
		50				55					60					
ata	gca	gct	gaa	caa	gca	gca	caa	atc	gct	atg	gaa	aac	gga	atg	aga	240
Ile	Ala	Ala	Glu	Gln	Ala	Ala	Gln	Ile	Ala	Met	Glu	Asn	Gly	Met	Arg	
65				70				75						80		
aag	gtt	gaa	gtt	aaa	gta	aaa	gga	cct	ggt	tct	gga	aga	gaa	gct	tgt	288

PhoenixTemp32470.tmp.txt

Lys	Val	Glu	Val	Lys <sub>85</sub>	Val	Lys	Gly	Pro	Gly <sub>90</sub>	Ser	Gly	Arg	Glu	Ala <sub>95</sub>	Cys		
atc	aga	tca	ctt	caa	gca	gca	gga	tta	gaa	gtt	aca	aaa	ata	act	gat		336
Ile	Arg	Ser	Leu <sub>100</sub>	Gln	Ala	Ala	Gly <sub>105</sub>	Leu	Glu	Val	Thr	Lys	Ile <sub>110</sub>	Thr	Asp		
gta	act	cct	gta	cct	cat	aat	ggt	tgt	aga	cca	cca	aaa	aga	aga	aga		384
Val	Thr	Pro <sub>115</sub>	Val	Pro	His	Asn	Gly <sub>120</sub>	Cys	Arg	Pro	Pro	Lys <sub>125</sub>	Arg	Arg	Arg		
gtg	taa																390
Val																	

<210> 634  
 <211> 129  
 <212> PRT  
 <213> Fusobacterium nucleatum subsp

<400> 634

Met	Ala	Lys	Lys	Thr <sub>5</sub>	Val	Ala	Lys	Ile	Lys <sub>10</sub>	Lys	Lys	Ser	Lys	Asn <sub>15</sub>	Ile		
Pro	Asn	Gly	Val <sub>20</sub>	Ala	His	Ile	His	Ser <sub>25</sub>	Thr	Phe	Asn	Asn	Thr <sub>30</sub>	Ile	Val		
Ala	Ile	Thr <sub>35</sub>	Asp	Val	Asp	Gly	Lys <sub>40</sub>	Val	Val	Ser	Trp	Lys <sub>45</sub>	Ser	Gly	Gly		
Thr	Ser <sub>50</sub>	Gly	Phe	Lys	Gly	Thr <sub>55</sub>	Lys	Gly	Thr	Pro <sub>60</sub>	Phe	Ala	Ala	Gln			
Ile	Ala	Ala	Glu	Gln	Ala <sub>70</sub>	Ala	Gln	Ile	Ala	Met <sub>75</sub>	Glu	Asn	Gly	Met <sub>80</sub>	Arg		
65	Lys	Val	Glu	Val <sub>85</sub>	Val	Lys	Gly	Pro	Gly <sub>90</sub>	Ser	Gly	Arg	Glu	Ala <sub>95</sub>	Cys		
Ile	Arg	Ser	Leu <sub>100</sub>	Gln	Ala	Ala	Gly	Leu <sub>105</sub>	Glu	Val	Thr	Lys	Ile <sub>110</sub>	Thr	Asp		
Val	Thr	Pro <sub>115</sub>	Val	Pro	His	Asn	Gly <sub>120</sub>	Cys	Arg	Pro	Pro	Lys <sub>125</sub>	Arg	Arg	Arg		
Val																	

<210> 635  
 <211> 390  
 <212> DNA  
 <213> Geobacillus kaustophilus

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 635

atg	gca	cgc	aga	aca	aac	act	cgt	aaa	cgc	cgg	gta	aga	aaa	aat	att		48
Met	Ala	Arg	Arg	Thr <sub>5</sub>	Asn	Thr	Arg	Lys	Arg <sub>10</sub>	Arg	Val	Arg	Lys	Asn <sub>15</sub>	Ile		
1	gat	aca	ggc	atc	gcc	cat	atc	cgt	tca	acg	ttc	aac	aac	acg	atc	gtg	96
Asp	Thr	Gly	Ile <sub>20</sub>	Ala	His	Ile	Arg	Ser <sub>25</sub>	Thr	Phe	Asn	Asn	Thr <sub>30</sub>	Ile	Val		
acg	att	acg	gat	gtt	cat	ggc	aac	gcc	att	gct	tgg	gcg	agc	gct	ggt		144
Thr	Ile	Thr <sub>35</sub>	Asp	Val	His	Gly	Asn <sub>40</sub>	Ala	Ile	Ala	Trp	Ala	Ser <sub>45</sub>	Ala	Gly		
tcg	ctg	ggg	ttc	aaa	ggt	tcg	cgc	aaa	tca	acg	ccg	ttt	gcg	gcg	caa		192
Ser	Leu	Gly	Phe	Lys	Gly	Ser <sub>55</sub>	Arg	Lys	Ser	Thr	Pro <sub>60</sub>	Phe	Ala	Ala	Gln		
atg	gcg	gct	gaa	gca	gca	gcg	aaa	gcg	tcg	atg	gag	cat	ggc	atg	aaa		240
Met	Ala	Ala	Glu	Ala	Ala <sub>70</sub>	Ala	Lys	Ala	Ser	Met <sub>75</sub>	Glu	His	Gly	Met <sub>80</sub>	Lys		
65	acg	gtc	gaa	gtg	aac	gtc	aaa	ggt	ccg	ggg	gct	ggc	cgc	gag	gca	gcg	288
Thr	Val	Glu	Val <sub>85</sub>	Asn	Val	Lys	Gly	Pro	Gly <sub>90</sub>	Ala	Gly	Arg	Glu	Ala <sub>95</sub>	Ala		
atc	cgt	gca	tgt	caa	gca	gcc	ggg	ttg	gaa	att	acg	gcg	atc	aaa	gac		336
Ile	Arg	Ala	Leu <sub>100</sub>	Gln	Ala	Ala	Gly	Leu <sub>105</sub>	Glu	Ile	Thr	Ala	Ile <sub>110</sub>	Lys	Asp		

PhoenixTemp32470.tmp.txt  
 gtc act cca atc ccg cac aat gga tgc cgt ccg cca aaa cgt cgc cgt 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 gtg taa 390  
 Val

<210> 636  
 <211> 129  
 <212> PRT  
 <213> Geobacillus kaustophilus

<400> 636  
 Met Ala Arg Arg Thr Asn Thr Arg Lys Arg Arg Val Arg Lys Asn Ile  
 1 5 10 15  
 Asp Thr Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Val His Gly Asn Ala Ile Ala Trp Ala Ser Ala Gly  
 35 40 45  
 Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Met Ala Ala Glu Ala Ala Ala Lys Ala Ser Met Glu His Gly Met Lys  
 65 70 75 80  
 Thr Val Glu Val Asn Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 85 90 95  
 Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Ile Thr Ala Ile Lys Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 637  
 <211> 396  
 <212> DNA  
 <213> Geobacter metallireducens

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 637  
 atg gca agc ccg gct aaa aaa gtt gtc aag aag aag aag gaa aaa aag 48  
 Met Ala Ser Pro Ala Lys Lys Val Val Lys Lys Lys Lys Glu Lys Lys  
 1 5 10 15  
 aat att cct aat gga gtg gcc cac att cag gct acg ttc aat aat act 96  
 Asn Ile Pro Asn Gly Val Ala His Ile Gln Ala Thr Phe Asn Asn Thr  
 20 25 30  
 atc atc acc ata act gat cct gct ggt aat gtg gtt gct tgg tct tct 144  
 Ile Ile Thr Ile Thr Asp Pro Ala Gly Asn Val Val Ala Trp Ser Ser  
 35 40 45  
 gct ggc ggc aaa ggc ttt aag ggc tct cgt aag agt acg ccg ttc gct 192  
 Ala Gly Gly Lys Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala  
 50 55 60  
 gct cag gtt gca gca gag gac tgc gcg aaa aag gct cag gat cat ggc 240  
 Ala Gln Val Ala Ala Glu Asp Cys Ala Lys Lys Ala Gln Asp His Gly  
 65 70 75 80  
 atg cgt agt gtc gaa gtg tat gtg aaa ggt cct gga tct ggt cgt gag 288  
 Met Arg Ser Val Glu Val Tyr Val Lys Gly Pro Gly Ser Gly Arg Glu  
 85 90 95  
 tct gct ttg cgt gct ctt cag gct gct ggt ttt cat gtc aac ttc atc 336  
 Ser Ala Leu Arg Ala Leu Gln Ala Ala Gly Phe His Val Asn Phe Ile  
 100 105 110  
 cgt gac gtc acg ccg att ccc cat aac ggc tgt cgt ccg ccg aag cgc 384  
 Arg Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 aga agg gtc taa 396  
 Arg Arg Val

130

<210> 638  
 <211> 131  
 <212> PRT  
 <213> Geobacter metallireducens

<400> 638  
 Met Ala Ser Pro Ala Lys Lys Val Val Lys Lys Lys Lys Glu Lys Lys  
 1 5 10 15  
 Asn Ile Pro Asn Gly Val Ala His Ile Gln Ala Thr Phe Asn Asn Thr  
 20 25 30  
 Ile Ile Thr Ile Thr Asp Pro Ala Gly Asn Val Val Ala Trp Ser Ser  
 35 40 45  
 Ala Gly Gly Lys Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala  
 50 55 60  
 Ala Gln Val Ala Ala Glu Asp Cys Ala Lys Lys Ala Gln Asp His Gly  
 65 70 75 80  
 Met Arg Ser Val Glu Val Tyr Val Lys Gly Pro Gly Ser Gly Arg Glu  
 85 90 95  
 Ser Ala Leu Arg Ala Leu Gln Ala Ala Gly Phe His Val Asn Phe Ile  
 100 105 110  
 Arg Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 Arg Arg Val  
 130

<210> 639  
 <211> 396  
 <212> DNA  
 <213> Geobacter sulfurreducens

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 639  
 atg gct agc cct tct aaa aaa gtc gtt agg aaa aaa aag gaa aag aag 48  
 Met Ala Ser Pro Ser Lys Lys Val Val Arg Lys Lys Lys Glu Lys Lys 15  
 1 5 10  
 aat atc ccc aac ggc gtt gca cat atc cag gca acg ttt aac aat acg 96  
 Asn Ile Pro Asn Gly Val Ala His Ile Gln Ala Thr Phe Asn Asn Thr 20 25 30  
 atc ata acc atc acc gat ccc gtg ggg aac gtc gtg gca tgg tct tca 144  
 Ile Ile Thr Ile Thr Asp Pro Val Gly Asn Val Val Ala Trp Ser Ser 35 40 45  
 gcc ggc tcc aag ggc ttc aag ggg tcg cgc aag agc act ccc ttc gcc 192  
 Ala Gly Ser Lys Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala 50 55 60  
 gct cag atc gcg gct gag gag tgt gca cgc aag gct cag gag cat ggc 240  
 Ala Gln Ile Ala Ala Glu Glu Cys Ala Arg Lys Ala Gln Glu His Gly 65 70 75 80  
 atg cgg agc gtg gag gtt ttc gta aag gga ccg ggg tcc gga cgc gag 288  
 Met Arg Ser Val Glu Val Phe Val Lys Gly Pro Gly Ser Gly Arg Glu 85 90 95  
 tcg gcc ctt cgc gca ctc cag gct gcc ggc ttc cac gtc aat ttc ata 336  
 Ser Ala Leu Arg Ala Leu Gln Ala Ala Gly Phe His Val Asn Phe Ile 100 105 110  
 cgg gac gtg acg ccg att cct cat aac ggc tgc cgt cct ccc aag cgc 384  
 Arg Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg 115 120 125  
 aga aga gtc taa 396  
 Arg Arg Val  
 130

<210> 640  
 <211> 131  
 <212> PRT

&lt;213&gt; Geobacter sulfurreducens

&lt;400&gt; 640

```

Met Ala Ser Pro Ser Lys Lys Val Val Arg Lys Lys Lys Glu Lys Lys
1      5      10      15
Asn Ile Pro Asn Gly Val Ala His Ile Gln Ala Thr Phe Asn Asn Thr
20      25      30
Ile Ile Thr Ile Thr Asp Pro Val Gly Asn Val Val Ala Trp Ser Ser
35      40      45
Ala Gly Ser Lys Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala
50      55      60
Ala Gln Ile Ala Ala Glu Glu Cys Ala Arg Lys Ala Gln Glu His Gly
65      70      75      80
Met Arg Ser Val Glu Val Phe Val Lys Gly Pro Gly Ser Gly Arg Glu
85      90      95
Ser Ala Leu Arg Ala Leu Gln Ala Ala Gly Phe His Val Asn Phe Ile
100     105     110
Arg Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Lys Arg
115     120     125
Arg Arg Val
130

```

&lt;210&gt; 641

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Gloeobacter violaceus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 641

```

atg gcg aaa cca acc cgt ggc ggg cag aaa aag aaa gtt cgg cgc aat      48
Met Ala Lys Pro Thr Arg Gly Gly Gln Lys Lys Val Arg Arg Asn
1      5      10      15
gtg ccg agt ggt gtg gcc cac att caa tcc acg ttc aac aac acg atc      96
Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20      25      30
gtc act att gcc gat acc gtc ggc gat gtg att tcc tgg gcg tct gcc      144
Val Thr Ile Ala Asp Thr Val Gly Asp Val Ile Ser Trp Ala Ser Ala
35      40      45
ggc tcc agc ggc ttc aaa ggc gcc aaa aaa ggc acc ccc ttc gcc gct      192
Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala
50      55      60
cag cag gcg gcc gaa tcg gcc ggc cgc cgg gcc atc gac tcg ggc atg      240
Gln Gln Ala Ala Glu Ser Ala Gly Arg Arg Ala Ile Asp Ser Gly Met
65      70      75      80
cgc cag tgc gag gtg atg gtc agc ggc ccc ggc gcc ggc cgg gag acg      288
Arg Gln Cys Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu Thr
85      90      95
gcc atc cgg gct ttg cag gcg gtg ggg ctt gag att acc ctc atc cgc      336
Ala Ile Arg Ala Leu Gln Ala Val Gly Leu Glu Ile Thr Leu Ile Arg
100     105     110
gac gtc act ccg att ccc cac aac ggc tgc cgc ccg ccc aag cgc cgc      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115     120     125
cgc gtc taa
Arg Val
130

```

&lt;210&gt; 642

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Gloeobacter violaceus

&lt;400&gt; 642

```

Met Ala Lys Pro Thr Arg Gly Gly Gln Lys Lys Lys Val Arg Arg Asn
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 30  
 Val Thr Ile Ala Asp Thr Val Gly Asp Val Ile Ser Trp Ala Ser Ala  
 35 40 45  
 Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Gln Ala Ala Glu Ser Ala Gly Arg Arg Ala Ile Asp Ser Gly Met  
 65 70 75 80  
 Arg Gln Cys Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Ala Leu Gln Ala Val Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 643

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Gluconobacter oxydans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 643

atg gcc aag gcc gct gct ccg cgt atc cgt aaa aag gaa cgc aag aat	48
Met Ala Lys Ala Ala Pro Arg Ile Arg Lys Lys Glu Arg Lys Asn	
1 5 10 15	
atc att tcc ggt gtt gct cac gtg ctt tcc acg ttc aac aac acc atg	96
Ile Ile Ser Gly Val Ala His Val Leu Ser Thr Phe Asn Asn Thr Met	
20 25 30	
atc acc att tct gac gca cag ggc aac gcg att gcc tgg tcg tcg tcg	144
Ile Thr Ile Ser Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ser	
35 40 45	
ggt gcg cag ggc ttc aaa ggc tcc cgt aag tcc acg ccg tat gct gct	192
Gly Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala	
50 55 60	
cag gtc gct gca gaa gat gcc ggc cgc aag gca gcg gag cat ggc atg	240
Gln Val Ala Ala Glu Asp Ala Gly Arg Lys Ala Arg Glu His Gly Met	
65 70 75 80	
gaa acg ctt gag atc gag gtc tcc ggt ccg ggt tcg ggg cgt gaa agc	288
Glu Thr Leu Glu Ile Glu Val Ser Gly Pro Gly Ser Gly Arg Glu Ser	
85 90 95	
gct ctc cgt gcc ctt cag gcc gta ggg ttc aac att acg tcc atc cgc	336
Ala Leu Arg Ala Leu Gln Ala Val Gly Phe Asn Ile Thr Ser Ile Arg	
100 105 110	
gac atg acg ccc gtg ccg cac aat ggt tgc cgt ccc ccg aag cgt cgt	384
Asp Met Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg	
115 120 125	
cgc gtc tga	393
Arg Val	
130	

&lt;210&gt; 644

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Gluconobacter oxydans

&lt;400&gt; 644

Met Ala Lys Ala Ala Ala Pro Arg Ile Arg Lys Lys Glu Arg Lys Asn  
 1 5 10 15  
 Ile Ile Ser Gly Val Ala His Val Leu Ser Thr Phe Asn Asn Thr Met  
 20 25 30  
 Ile Thr Ile Ser Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ser  
 35 40 45  
 Gly Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala



## PhoenixTemp32470.tmp.txt

50 55 60  
 Gln Val Ala Ala Glu Asp Ala Gly Arg Lys Ala Arg Glu His Gly Met  
 65 70 75 80  
 Glu Thr Leu Glu Ile Glu Val Ser Gly Pro Gly Ser Gly Arg Glu Ser  
 85 90 95  
 Ala Leu Arg Ala Leu Gln Ala Val Gly Phe Asn Ile Thr Ser Ile Arg  
 100 105 110  
 Asp Met Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 645

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Haemophilus influenzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 645

atg gct aaa aca cca gtt cgt gca cgt aaa cgt gta aaa aaa caa gtt	48
Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val	
1 5 10 15	
gta gat ggc gta gca cat att cac gca tct ttc aat aat aca atc gtt	96
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
act att act gac cgt caa ggt aat gct cta gct tgg gca act gca ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly	
35 40 45	
ggg tca ggt ttc cgt ggt tct cgt aaa tca act ccg ttc gca gcg caa	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtt gcg gca gag cgt tgt gct gaa atc gtt aaa gaa ttt ggc tta aag	240
Val Ala Ala Glu Arg Cys Ala Glu Ile Val Lys Glu Phe Gly Leu Lys	
65 70 75 80	
aac ttg gaa gtt atg gtt aaa ggt ccg ggt cca ggt cgt gaa tct aca	288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr	
85 90 95	
att cgt gcg tta aac gca gcg ggt ttc cgt atc acg aat att act gat	336
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp	
100 105 110	
gtg act ccg att cct cat aac ggt tgt cgt cca ccg aaa aaa cgt cgt	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
gtt taa	390
Val	

&lt;210&gt; 646

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Haemophilus influenzae

&lt;400&gt; 646

Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val	
1 5 10 15	
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly	
35 40 45	
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
Val Ala Ala Glu Arg Cys Ala Glu Ile Val Lys Glu Phe Gly Leu Lys	
65 70 75 80	
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr	
85 90 95	

PhoenixTemp32470.tmp.txt  
 Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 647  
 <211> 390  
 <212> DNA  
 <213> Haemophilus influenzae

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 647  
 atg gct aaa aca cca gtt cgt gca cgt aaa cgt gta aaa aaa caa gtt 48  
 Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val 15  
 1 5 10  
 gta gat ggc gta cga cat att cac gca tct ttc aat aat aca atc gtt 96  
 Val Asp Gly Val Arg His Ile His Ala Ser Phe Asn Asn Thr Ile Val 20 25 30  
 20  
 act att act gac cgt caa ggt aat gct cta gct tgg gca act gca ggt 144  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly 35 40 45  
 35  
 ggt tca ggt ttc cgt ggt tct cgt aaa tca act ccg ttc gca gcg caa 192  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln 50 55 60  
 50  
 gtt gcg gca gag cgt tgt gct gaa atc gtt aaa gaa ttt ggc tta aag 240  
 Val Ala Ala Glu Arg Cys Ala Glu Ile Val Lys Glu Phe Gly Leu Lys 65 70 75 80  
 65  
 aac ttg gaa gtt atg gtt aaa ggt ccg ggt cca ggt cgt gaa tct aca 288  
 Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr 85 90 95  
 85  
 att cgt gcg tta aac gca gcg ggt ttc cgt atc acg aat att act gat 336  
 Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp 100 105 110  
 100  
 gtg act ccg att cct cat aac ggt tgt cgt cca ccg aaa aaa cgt cgt 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg 115 120 125  
 115  
 gtt taa 390  
 Val

<210> 648  
 <211> 129  
 <212> PRT  
 <213> Haemophilus influenzae

<400> 648  
 Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val  
 1 5 10 15  
 Val Asp Gly Val Arg His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Arg Cys Ala Glu Ile Val Lys Glu Phe Gly Leu Lys  
 65 70 75 80  
 Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr  
 85 90 95  
 Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 649  
 <211> 390  
 <212> DNA  
 <213> Haemophilus somnus

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

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<400> 649
atg gct aaa aca cca gtt cgt aca cgt aaa cgt gta aaa aaa caa gtt      48
Met Ala Lys Thr Pro Val Arg Thr Arg Lys Arg Val Lys Lys Gln Val
  1          5          10          15
gta gat ggc gtt gct cat att cac gca tct ttc aat aat aca atc gtt      96
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
          20          25          30
aca att act gac cgt caa ggg aat gct cta gca tgg gca act gca ggt      144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly
          35          40          45
ggg tca ggt ttc cgt ggt tct cgt aaa tct acc cct ttt gct gca caa      192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
          50          55          60
gtt gca gca gaa cgt tgt gcc gaa gtt gta aaa gaa ttc ggt tta aag      240
Val Ala Ala Glu Arg Cys Ala Glu Val Val Lys Glu Phe Gly Leu Lys
          65          70          75
aac ttg gaa gtt atg gtt aag ggg ccg ggt cct ggt cgt gaa tca aca      288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
          85          90          95
atc cgt gct tta aat gca gcg gga ttt cgt atc acg aat att aca gat      336
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
          100          105          110
gtg act ccg att cca cat aac ggt tgt cgt cca ccg aag aaa cgt cgt      384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
          115          120          125
gtt taa
Val
      390

```

<210> 650  
 <211> 129  
 <212> PRT  
 <213> Haemophilus somnus

```

<400> 650
Met Ala Lys Thr Pro Val Arg Thr Arg Lys Arg Val Lys Lys Gln Val
  1          5          10          15
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
          20          25          30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly
          35          40          45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
          50          55          60
Val Ala Ala Glu Arg Cys Ala Glu Val Val Lys Glu Phe Gly Leu Lys
          65          70          75
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
          85          90          95
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
          100          105          110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
          115          120          125
Val

```

<210> 651  
 <211> 390  
 <212> DNA

&lt;213&gt; Haloarcula marismortui

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 651

atg	agc	gaa	gaa	acc	gaa	gac	atc	tgg	ggc	atc	gcc	cac	gtg	cac	gca	48
Met	Ser	Glu	Glu	Thr	Glu	Asp	Ile	Trp	Gly	Ile	Ala	His	Val	His	Ala	
1				5					10				15			
tcg	ttc	aac	aac	acg	atc	atc	acc	atc	acc	gac	cag	acc	ggc	gcg	gaa	96
Ser	Phe	Asn	Asn	Thr	Ile	Ile	Thr	Ile	Thr	Asp	Gln	Thr	Gly	Ala	Glu	
			20					25					30			
acg	ctc	gca	aag	agc	tcc	ggc	ggg	acg	ggt	gtc	aag	cag	aac	cgc	gac	144
Thr	Leu	Ala	Lys	Ser	Ser	Gly	Gly	Thr	Val	Val	Lys	Gln	Asn	Arg	Asp	
		35				40					45					
gaa	gcg	tcg	ccg	tac	gcg	gcg	atg	cag	atg	gcc	gag	gtc	ggt	gcc	gaa	192
Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Gln	Met	Ala	Glu	Val	Val	Ala	Glu	
	50				55					60						
aag	gcc	ctc	gac	cgt	ggc	gtc	gaa	ggc	gtc	gat	ggt	cgg	gtc	cgt	ggt	240
Lys	Ala	Leu	Asp	Arg	Gly	Val	Glu	Gly	Val	Asp	Val	Arg	Val	Arg	Gly	
	65				70			75						80		
ccc	ggc	ggc	aac	ctc	cag	acc	tcg	ccc	ggt	ccg	ggt	gcg	cag	gcg	acg	288
Pro	Gly	Gly	Asn	Leu	Gln	Thr	Ser	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Thr	
			85					90					95			
att	cgc	gca	ctc	gcc	cga	gcg	ggt	ctg	gag	atc	ggt	cgc	atc	gag	gac	336
Ile	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Leu	Glu	Ile	Gly	Arg	Ile	Glu	Asp	
			100					105					110			
gtc	acg	ccg	acc	ccg	cac	gac	ggc	act	cgt	gca	ccc	aag	aac	tcc	gga	384
Val	Thr	Pro	Thr	Pro	His	Asp	Gly	Thr	Arg	Ala	Pro	Lys	Asn	Ser	Gly	
		115					120					125				
ttc	taa															390
Phe																

&lt;210&gt; 652

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Haloarcula marismortui

&lt;400&gt; 652

Met	Ser	Glu	Glu	Thr	Glu	Asp	Ile	Trp	Gly	Ile	Ala	His	Val	His	Ala	
1				5					10					15		
Ser	Phe	Asn	Asn	Thr	Ile	Ile	Thr	Ile	Thr	Asp	Gln	Thr	Gly	Ala	Glu	
			20					25					30			
Thr	Leu	Ala	Lys	Ser	Ser	Gly	Gly	Thr	Val	Val	Lys	Gln	Asn	Arg	Asp	
		35				40					45					
Glu	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Gln	Met	Ala	Glu	Val	Val	Ala	Glu	
	50				55					60						
Lys	Ala	Leu	Asp	Arg	Gly	Val	Glu	Gly	Val	Asp	Val	Arg	Val	Arg	Gly	
	65				70			75						80		
Pro	Gly	Gly	Asn	Leu	Gln	Thr	Ser	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Thr	
			85					90					95			
Ile	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Leu	Glu	Ile	Gly	Arg	Ile	Glu	Asp	
			100					105					110			
Val	Thr	Pro	Thr	Pro	His	Asp	Gly	Thr	Arg	Ala	Pro	Lys	Asn	Ser	Gly	
		115					120					125				
Phe																

&lt;210&gt; 653

&lt;211&gt; 384

&lt;212&gt; DNA

&lt;213&gt; Halobacterium salinarium

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 653

atg gct gac gac acc aaa tgg ggc atc gcg cac gtt cac gcc tcg ttc	48
Met Ala Asp Asp Thr Lys Trp Gly Ile Ala His Val His Ala Ser Phe	
1 5 10 15	
aac aac acc atc atg acc gtc acg gac cag acg ggc gcc gaa acg ctc	96
Asn Asn Thr Ile Met Thr Val Thr Asp Gln Thr Gly Ala Glu Thr Leu	
20 25 30	
gcg aag tcc agt ggc ggc tcg gtg gtc aag cag aac cgg gac gag gcg	144
Ala Lys Ser Ser Gly Gly Ser Val Val Lys Gln Asn Arg Asp Glu Ala	
35 40 45	
tcg ccg tac gcc gcg atg cag atg gca gaa cag ctc gcc gag gaa gta	192
Ser Pro Tyr Ala Ala Met Gln Met Ala Glu Gln Leu Ala Glu Glu Val	
50 55 60	
ctc gat cag ggc atc gag aag gtc cac gtc cgg gtc cgc ggt ccg ggc	240
Leu Asp Gln Gly Ile Glu Lys Val His Val Arg Val Arg Gly Pro Gly	
65 70 75 80	
ggg aac ctc cag cga agc ccg ggt ccg ggc gcg cag gca gcg atc cgc	288
Gly Asn Leu Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg	
85 90 95	
gcg ctc gcc cgc gcc ggc ctc gaa atc ggt cgc atc gag gac gtc acg	336
Ala Leu Ala Arg Ala Gly Leu Glu Ile Gly Arg Ile Glu Asp Val Thr	
100 105 110	
ccc atc ccc cac gac ggg acg cga ccg aag aac agc ggg tac	381
Pro Ile Pro His Asp Gly Thr Arg Pro Pro Lys Asn Ser Gly Tyr	
115 120 125	
tag	384

&lt;210&gt; 654

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Halobacterium salinarium

&lt;400&gt; 654

Met Ala Asp Asp Thr Lys Trp Gly Ile Ala His Val His Ala Ser Phe
1 5 10 15
Asn Asn Thr Ile Met Thr Val Thr Asp Gln Thr Gly Ala Glu Thr Leu
20 25 30
Ala Lys Ser Ser Gly Gly Ser Val Val Lys Gln Asn Arg Asp Glu Ala
35 40 45
Ser Pro Tyr Ala Ala Met Gln Met Ala Glu Gln Leu Ala Glu Glu Val
50 55 60
Leu Asp Gln Gly Ile Glu Lys Val His Val Arg Val Arg Gly Pro Gly
65 70 75 80
Gly Asn Leu Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg
85 90 95
Ala Leu Ala Arg Ala Gly Leu Glu Ile Gly Arg Ile Glu Asp Val Thr
100 105 110
Pro Ile Pro His Asp Gly Thr Arg Pro Pro Lys Asn Ser Gly Tyr
115 120 125

&lt;210&gt; 655

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Helicobacter hepaticus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 655

atg gca aaa aaa agt gta aca aag aaa aaa aat gtt aaa aag aat att	48
Met Ala Lys Lys Ser Val Thr Lys Lys Lys Asn Val Lys Lys Asn Ile	
1 5 10 15	
gca cgg ggt ata gtg tgt att tct gca tca ttt aac aat aca aat gta	96

## PhoenixTemp32470.tmp.txt

Ala	Arg	Gly	Ile	Val	Cys	Ile	Ser	Ala	Ser	Phe	Asn	Asn	Thr	Asn	Val		
			20					25					30				
aca	att	acc	gat	gaa	atg	gga	aat	gta	ttg	tgt	ttg	gct	act	gcg	ggt	144	
Thr	Ile	Thr	Asp	Glu	Met	Gly	Asn	Val	Leu	Cys	Trp	Ala	Thr	Ala	Gly		
		35					40					45					
ggt	tta	gga	ttc	aaa	gga	agt	aag	aaa	tct	aca	cct	tat	gcc	gca	caa	192	
Gly	Leu	Gly	Phe	Lys	Gly	Ser	Lys	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
		50				55					60						
caa	gca	gta	gaa	tct	gca	atg	gaa	aaa	gct	aaa	gag	cac	ggc	att	aag	240	
Gln	Ala	Val	Glu	Ser	Ala	Met	Glu	Lys	Ala	Lys	Glu	His	Gly	Ile	Lys		
		65			70				75						80		
gaa	gta	ggt	att	aag	gtt	caa	gga	cca	ggc	agc	gga	cgc	gaa	aca	gct	288	
Glu	Val	Gly	Ile	Lys	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr	Ala		
				85					90					95			
gta	aaa	agt	gtg	gga	gcg	gtt	gaa	ggt	att	aag	gtg	cta	tgg	ctt	aaa	336	
Val	Lys	Ser	Val	Gly	Ala	Val	Glu	Gly	Ile	Lys	Val	Leu	Trp	Leu	Lys		
			100					105					110				
gat	att	aca	cca	ttg	ccg	cac	aat	ggg	tgc	aga	ccg	cca	aaa	aga	cga	384	
Asp	Ile	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg		
		115					120					125					
aga	gtg	taa														393	
Arg	Val																
		130															

&lt;210&gt; 656

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Helicobacter hepaticus

&lt;400&gt; 656

Met	Ala	Lys	Lys	Ser	Val	Thr	Lys	Lys	Lys	Asn	Val	Lys	Lys	Asn	Ile		
1				5					10					15			
Ala	Arg	Gly	Ile	Val	Cys	Ile	Ser	Ala	Ser	Phe	Asn	Asn	Thr	Asn	Val		
			20					25					30				
Thr	Ile	Thr	Asp	Glu	Met	Gly	Asn	Val	Leu	Cys	Trp	Ala	Thr	Ala	Gly		
		35					40					45					
Gly	Leu	Gly	Phe	Lys	Gly	Ser	Lys	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
		50				55					60						
Gln	Ala	Val	Glu	Ser	Ala	Met	Glu	Lys	Ala	Lys	Glu	His	Gly	Ile	Lys		
		65			70				75						80		
Glu	Val	Gly	Ile	Lys	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr	Ala		
				85					90					95			
Val	Lys	Ser	Val	Gly	Ala	Val	Glu	Gly	Ile	Lys	Val	Leu	Trp	Leu	Lys		
			100					105					110				
Asp	Ile	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg		
		115					120					125					
Arg	Val																
		130															

&lt;210&gt; 657

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Helicobacter pylori J99

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 657

atg	gct	aag	aga	aat	gta	acg	gct	aaa	aag	aaa	gta	gtc	aaa	aag	aat	48	
Met	Ala	Lys	Arg	Asn	Val	Thr	Ala	Lys	Lys	Lys	Val	Val	Lys	Lys	Asn		
1				5					10					15			
att	gcg	aga	ggg	gtt	gtt	tat	att	tca	gcg	acc	ttt	aac	aac	acc	aac	96	
Ile	Ala	Arg	Gly	Val	Val	Tyr	Ile	Ser	Ala	Thr	Phe	Asn	Asn	Thr	Asn		
			20					25				30					
atc	act	atc	act	gat	gaa	atg	ggc	aat	gtg	att	tgt	tgg	agc	acg	gcg	144	
Ile	Thr	Ile	Thr	Asp	Glu	Met	Gly	Asn	Val	Ile	Cys	Trp	Ser	Thr	Ala		
		35					40					45					

## PhoenixTemp32470.tmp.txt

```

ggc ggt tta ggg ttt aaa ggc tct aaa aaa tcc acc cct tat gcg gcc 192
Gly Gly 50 Leu Gly Phe Lys Gly 55 Ser Lys Lys Ser Thr 60 Pro Tyr Ala Ala
caa caa gct gta gaa agc gct cta agc aag gct aaa gag cat ggc gtt 240
Gln Gln Ala Val Glu Ser Ala Leu Ser Lys Ala Lys Glu His Gly Val 80
65 70 75
aaa gaa gtg ggc att aag gtt caa ggg cca ggc agt ggg cgt gag acc 288
Lys Glu Val Gly Ile 85 Lys Val Gln Gly Pro 90 Gly Ser Gly Arg Glu Thr
95
gct att aag agc gtg ggc gcg aca gag ggc gtt aaa gtg ctt tgg att 336
Ala Ile Lys Ser Val Gly Ala Thr Glu Gly Val Lys Val Leu Trp Ile
100 105 110
aaa gac atc acc ccg ctc cct cat aat ggt tgc aga ccc cct aaa aga 384
Lys Asp Ile Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg
115 120 125
aga aga gtg taa 396
Arg Arg Val
130

```

&lt;210&gt; 658

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Helicobacter pylori J99

&lt;400&gt; 658

```

Met Ala Lys Arg Asn Val Thr Ala Lys Lys Lys Val Val Lys Lys Asn
1 5 10 15
Ile Ala Arg Gly Val Val Tyr Ile Ser Ala Thr Phe Asn Asn Thr Asn
20 25 30
Ile Thr Ile Thr Asp Glu Met Gly Asn Val Ile Cys Trp Ser Thr Ala
35 40 45
Gly Gly Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala
50 55 60
Gln Gln Ala Val Glu Ser Ala Leu Ser Lys Ala Lys Glu His Gly Val
65 70 75 80
Lys Glu Val Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr
85 90 95
Ala Ile Lys Ser Val Gly Ala Thr Glu Gly Val Lys Val Leu Trp Ile
100 105 110
Lys Asp Ile Thr Pro Leu Pro His Asn Gly Cys Arg Pro Lys Arg
115 120 125
Arg Arg Val
130

```

&lt;210&gt; 659

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Helicobacter pylori

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 659

```

atg gct aag aga aat gta acg gct aaa aag aaa gta gtc aaa aag aat 48
Met Ala Lys Arg Asn Val Thr Ala Lys Lys Lys Val Val Lys Lys Asn
1 5 10 15
att gcg aga ggg gtt gtt tat att tca gcg acc ttt aac aac acc aac 96
Ile Ala Arg Gly Val Val Tyr Ile Ser Ala Thr Phe Asn Asn Thr Asn
20 25 30
atc act atc act gat gaa atg ggc aat gtg att tgc tgg agc acg gcg 144
Ile Thr 35 Thr Asp Glu Met Gly 40 Asn Val Ile Cys 45 Ser Thr Ala
ggc ggt tta ggg ttt aaa ggc tct aaa aaa tcc acc cct tat gcg gcc 192
Gly Gly Leu Gly Phe Lys Gly 55 Ser Lys Lys Ser Thr 60 Pro Tyr Ala Ala
50 55 60
caa cag gct gta gaa agc gct cta agc aag gct aaa gag cat ggc gtt 240
Gln Gln Ala Val Glu Ser Ala Leu Ser Lys Ala Lys Glu His Gly Val

```

## PhoenixTemp32470.tmp.txt

```

65          70          75          80
aaa gaa gtg ggc att aag gtt caa ggg cca ggc agt ggg cgt gag acc
Lys Glu Val Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr      288
          85          90          95
gcc att aag agc gtg ggc gcg aca gag ggc att aaa gtg ctt tgg att
Ala Ile Lys Ser Val Gly Ala Thr Glu Gly Ile Lys Val Leu Trp Ile      336
          100          105          110
aaa gac atc acc ccg ctc cct cat aat ggt tgc aga ccc cct aaa aga
Lys Asp Ile Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg      384
          115          120          125
aga aga gtg taa
Arg Arg Val
          130

```

&lt;210&gt; 660

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Helicobacter pylori

&lt;400&gt; 660

```

Met Ala Lys Arg Asn Val Thr Ala Lys Lys Lys Val Val Lys Lys Asn
1          5          10          15
Ile Ala Arg Gly Val Val Tyr Ile Ser Ala Thr Phe Asn Asn Thr Asn
          20          25          30
Ile Thr Ile Thr Asp Glu Met Gly Asn Val Ile Cys Trp Ser Thr Ala
          35          40          45
Gly Gly Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala
          50          55          60
Gln Gln Ala Val Glu Ser Ala Leu Ser Lys Ala Lys Glu His Gly Val
65          70          75          80
Lys Glu Val Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr
          85          90          95
Ala Ile Lys Ser Val Gly Ala Thr Glu Gly Ile Lys Val Leu Trp Ile
          100          105          110
Lys Asp Ile Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg
          115          120          125
Arg Arg Val
          130

```

&lt;210&gt; 661

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Hyphomonas neptunium

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 661

```

atg gcc cgc gaa gct acc cgt atc cgc cgc cgc gaa cgc aag aac att
Met Ala Arg Glu Ala Thr Arg Ile Arg Arg Glu Arg Lys Asn Ile      48
1          5          10          15
acc tct ggt att gtt cat gtg aac tcg agc ttc aac aac acg atg gtc
Thr Ser Gly Ile Val His Val Asn Ser Ser Phe Asn Asn Thr Met Val      96
          20          25          30
acc atc acc gac gca cag ggc aac acc att tcc tgg tcg tcg tcg ggc
Thr Ile Thr Asp Ala Gln Gly Asn Thr Ile Ser Trp Ser Ser Ser Gly      144
          35          40          45
gtg atg aac ttc aaa ggc tcg cgc aag tcg acg cct tac gcc gct cag
Val Met Asn Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln      192
          50          55          60
atg gct gct gaa gac gct gcc aag aag gcg aaa gag cac ggc ctg cag
Met Ala Ala Glu Asp Ala Ala Lys Lys Ala Lys Glu His Gly Leu Gln      240
65          70          75          80
acg gtt gaa gtg cgt gtt cgc ggt ccc ggt tcg ggc cgt gag agt gcc
Thr Val Glu Val Arg Val Arg Gly Pro Gly Ser Gly Arg Glu Ser Ala      288
          85          90          95
ctg cgc gcc ctc cag gcc gct ggc ctt acc gtg acg gcg atc aac gac

```



PhoenixTemp32470.tmp.txt

Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Leu	Thr	Val	Thr	Ala	Ile	Asn	Asp		
			100					105					110				
acg	acg	ccg	atc	ccg	cat	aac	gga	tgc	cgt	ccg	ccc	aag	cgc	cgc		384	
Thr	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
gtc	taa															390	
Val																	

<210> 662  
 <211> 129  
 <212> PRT  
 <213> Hyphomonas neptunium

<400> 662

Met	Ala	Arg	Glu	Ala	Thr	Arg	Ile	Arg	Arg	Arg	Glu	Arg	Lys	Asn	Ile		
1				5				10					15				
Thr	Ser	Gly	Ile	Val	His	Val	Asn	Ser	Phe	Asn	Asn	Thr	Met	Val			
			20				25					30					
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Thr	Ile	Ser	Trp	Ser	Ser	Ser	Gly		
			35				40					45					
Val	Met	Asn	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55					60						
Met	Ala	Ala	Glu	Asp	Ala	Ala	Lys	Lys	Ala	Lys	Glu	His	Gly	Leu	Gln		
65				70							75						
Thr	Val	Glu	Val	Arg	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Leu	Thr	Val	Thr	Ala	Ile	Asn	Asp		
			100					105					110				
Thr	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

<210> 663  
 <211> 390  
 <212> DNA  
 <213> Idiomarina loihiensis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 663

atg	gct	aaa	aca	cca	act	cgc	tct	cga	aag	cgc	ggt	aaa	aag	cag	gtc		48
Met	Ala	Lys	Thr	Pro	Thr	Arg	Ser	Arg	Lys	Arg	Val	Lys	Lys	Gln	Val		
1				5				10						15			
gcc	gat	ggc	atg	gct	cat	gtg	cat	gca	tct	ttc	aac	aac	acc	att	att		96
Ala	Asp	Gly	Met	Ala	His	Val	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Ile		
			20					25					30				
acc	att	act	gat	cgc	cag	ggt	aac	gca	cta	gcg	tgg	gct	act	gca	ggt		144
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ala	Trp	Ala	Thr	Ala	Gly		
			35				40					45					
gga	tca	ggg	ttc	cgt	ggt	tca	cgg	aaa	tca	acg	ccg	ttc	gca	gca	cag		192
Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
	50					55					60						
gtt	gca	gca	gaa	cgc	gca	ggt	gaa	atg	gcg	aag	gaa	tac	gga	ctg	aaa		240
Val	Ala	Ala	Glu	Arg	Ala	Gly	Glu	Met	Ala	Lys	Glu	Tyr	Gly	Leu	Lys		
	65			70						75					80		
aac	ctg	gaa	gta	ttt	gtg	aat	ggt	cca	ggc	cca	ggt	cgt	gaa	tca	tcg		288
Asn	Leu	Glu	Val	Phe	Val	Asn	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Ser		
				85					90					95			
att	cgt	gcc	ctg	aac	gcc	gtt	ggt	tac	aaa	atc	aca	aat	att	acc	gat		336
Ile	Arg	Ala	Leu	Asn	Ala	Val	Gly	Tyr	Lys	Ile	Thr	Asn	Ile	Thr	Asp		
			100					105					110				
gtg	aca	ccg	att	cct	cac	aac	ggt	tgt	cgt	ccg	cct	aag	aaa	cgt	cgc		384
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg		
		115					120					125					

gtt taa  
Val

<210> 664  
<211> 129  
<212> PRT  
<213> Idiomarina loihiensis

<400> 664  
Met Ala Lys Thr Pro Thr Arg Ser Arg Lys Arg Val Lys Lys Gln Val  
1 5 10 15  
Ala Asp Gly Met Ala His Val His Ala Ser Phe Asn Asn Thr Ile Ile  
20 25 30  
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly  
35 40 45  
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
50 55 60  
Val Ala Ala Glu Arg Ala Gly Glu Met Ala Lys Glu Tyr Gly Leu Lys  
65 70 75  
Asn Leu Glu Val Phe Val Asn Gly Pro Gly Pro Gly Arg Glu Ser Ser  
85 90 95  
Ile Arg Ala Leu Asn Ala Val Gly Tyr Lys Ile Thr Asn Ile Thr Asp  
100 105 110  
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
115 120 125  
Val

<210> 665  
<211> 393  
<212> DNA  
<213> Lactobacillus acidophilus

<220>  
<221> CDS  
<222> (1)..(393)  
<223> transl\_table=11

<400> 665  
ttg atg cct gca aag aaa aca gca cgt aag cgt cgt gtg aag aag cat 48  
Met Met Pro Ala Lys Lys Thr Ala Arg Lys Arg Arg Val Lys Lys His  
1 5 10 15  
gtt gaa agc ggt gtg gca cac att cac tca acg ttt aat aat act tta 96  
Val Glu Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Leu  
20 25 30  
gtc atg att act gac gtt caa ggt aat gca gtt gct tgg tct tca gct 144  
Val Met Ile Thr Asp Val Gln Gly Asn Ala Val Ala Trp Ser Ser Ala  
35 40 45  
ggt gca ttg ggt ttc aag ggt agt cgt aag tct act cca ttt gca gct 192  
Gly Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala  
50 55 60  
caa atg gca gct gaa gca gca gct aag agt gca atg gac caa ggt atg 240  
Gln Met Ala Ala Glu Ala Ala Ala Lys Ser Ala Met Asp Gln Gly Met  
65 70 75 80  
aaa cat gta gaa gtt tct gtt aaa ggt cct ggt gct ggt cgt gaa tct 288  
Lys His Val Glu Val Ser Val Lys Gly Pro Gly Ala Gly Arg Glu Ser  
85 90 95  
gct att aga tca ctt caa gca act ggt ctt gaa att act gca att cgt 336  
Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Ile Thr Ala Ile Arg  
100 105 110  
gac gtt acg cca gtt ccc cac aat ggt tcc aga cca cca aaa cgt cgt 384  
Asp Val Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys Arg Arg  
115 120 125  
cgt gct taa 393  
Arg Ala  
130

<210> 666

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Lactobacillus acidophilus

&lt;400&gt; 666

```

Met Met Pro Ala Lys Lys Thr Ala Arg Lys Arg Arg Val Lys Lys His
1      5      10      15
Val Glu Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Leu
20      25      30
Val Met Ile Thr Asp Val Gln Gly Asn Ala Val Ala Trp Ser Ser Ala
35      40      45
Gly Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
Gln Met Ala Ala Glu Ala Ala Lys Ser Ala Met Asp Gln Gly Met
65      70      75      80
Lys His Val Glu Val Ser Val Lys Gly Pro Gly Ala Gly Arg Glu Ser
85      90      95
Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Ile Thr Ala Ile Arg
100     105     110
Asp Val Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys Arg Arg
115     120     125
Arg Ala
130

```

&lt;210&gt; 667

&lt;211&gt; 384

&lt;212&gt; DNA

&lt;213&gt; Lactococcus lactis subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 667

```

atg gca aaa att aca cgt aaa cgt cgt gtt aaa aag aat att gaa tct      48
Met Ala Lys Ile Thr Arg Lys Arg Arg Val Lys Lys Asn Ile Glu Ser
1      5      10      15
gga att gtt cat atc caa tca aca ttc aac aac aca atc gtt atg atc      96
Gly Ile Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile Val Met Ile
20      25      30
aca gac gtt cat ggt aac gcc ctt gct tgg tca tca gct ggt gca ctt      144
Thr Asp Val His Gly Asn Ala Leu Ala Trp Ser Ser Ala Gly Ala Leu
35      40      45
gga ttt aaa ggt tct aaa aaa tct aca cct ttc gcc gct caa atg gct      192
Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala Ala Gln Met Ala
50      55      60
tca gaa gct gct gct aaa gct gct caa gag caa ggt ttg aaa act gta      240
Ser Glu Ala Ala Ala Lys Ala Ala Gln Glu Gln Gly Leu Lys Thr Val
65      70      75      80
tct gtt aca gtt aaa ggt cct ggt tca ggt cgc gaa tca gct atc cgc      288
Ser Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala Ile Arg
85      90      95
gca ctc gct gca gct ggt ctt aat gta aca tct atc agt gat gtg act      336
Ala Leu Ala Ala Ala Gly Leu Asn Val Thr Ser Ile Ser Asp Val Thr
100     105     110
cct gta cct cac aat ggt gca cgt cct cca aaa cgt cgt cgt gta      381
Pro Val Pro His Asn Gly Ala Arg Pro Pro Lys Arg Arg Arg Val
115     120     125
taa
384

```

&lt;210&gt; 668

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Lactococcus lactis subsp

&lt;400&gt; 668

## PhoenixTemp32470.tmp.txt

Met Ala Lys Ile Thr Arg Lys Arg Arg Val Lys Lys Asn Ile Glu Ser  
 1 5 10 15  
 Gly Ile Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile Val Met Ile  
 20 25 30  
 Thr Asp Val His Gly Asn Ala Leu Ala Trp Ser Ser Ala Gly Ala Leu  
 35 40 45  
 Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala Ala Gln Met Ala  
 50 55 60  
 Ser Glu Ala Ala Ala Lys Ala Ala Gln Glu Gln Gly Leu Lys Thr Val  
 65 70 75 80  
 Ser Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala Ile Arg  
 85 90 95  
 Ala Leu Ala Ala Gly Leu Asn Val Thr Ser Ile Ser Asp Val Thr  
 100 105 110  
 Pro Val Pro His Asn Gly Ala Arg Pro Pro Lys Arg Arg Arg Val  
 115 120 125

&lt;210&gt; 669

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Lactobacillus plantarum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 669

atg gca act aga aag aca acc cgt cgt cgt cgg gta aag aag aac att	48
Met Ala Thr Arg Lys Thr Thr Arg Arg Arg Val Lys Lys Asn Ile	
1 5 10 15	
gaa tct ggt gtg gct cac atc cat tca acg ttc aac aac aca ctt gtt	96
Glu Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Leu Val	
20 25 30	
atg atc act gat atg caa ggg aac gcc att gca tgg tca tca gct ggt	144
Met Ile Thr Asp Met Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly	
35 40 45	
tca tta ggt ttc aaa ggt agt cgt aag tca aca cct ttt gct gct caa	192
Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
atg gct gca gaa gct gct gct aag gca tca atg gaa cat ggt atg aag	240
Met Ala Ala Glu Ala Ala Lys Ala Ser Met Glu His Gly Met Lys	
65 70 75 80	
act gtt gaa gtc gct gtt aag ggt cct ggt tca ggc cgt gaa gcc gct	288
Thr Val Glu Val Ala Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala	
85 90 95	
atc cgt gct tta caa gct act ggt ttg gaa gtt agc gca att cgc gat	336
Ile Arg Ala Leu Gln Ala Thr Gly Leu Glu Val Ser Ala Ile Arg Asp	
100 105 110	
gtt acg cca gtg cct cac aat ggt tct cgt cct cca aag cgt cgt cgt	384
Val Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys Arg Arg Arg	
115 120 125	
gtt taa	390
Val	

&lt;210&gt; 670

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Lactobacillus plantarum

&lt;400&gt; 670

Met Ala Thr Arg Lys Thr Thr Arg Arg Arg Val Lys Lys Asn Ile  
 1 5 10 15  
 Glu Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Leu Val  
 20 25 30  
 Met Ile Thr Asp Met Gln Gly Asn Ala Ile Ala Trp Ser Ala Gly  
 35 40 45  
 Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln

## PhoenixTemp32470.tmp.txt

```

      50      55      60
Met Ala Ala Glu Ala Ala Lys Ala Ser Met Glu His Gly Met Lys
65 Thr Val Glu Val Ala Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala
      85      90      95
Ile Arg Ala Leu Gln Ala Thr Gly Leu Glu Val Ser Ala Ile Arg Asp
100 Val Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys Arg Arg Arg
115 Val
120

```

<210> 671  
 <211> 399  
 <212> DNA  
 <213> Leifsonia xyli subsp

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

```

<400> 671
atg gca gca ccc aag tcg gcc gct cgc aag ccg cgc aag aaa gaa aag      48
Met Ala Ala Pro Lys Ser Ala Ala Arg Lys Pro Arg Lys Lys Glu Lys
1 5 10 15
aag aac atc gct gtg ggc cag gcc cac atc aag agc acg ttc aac aac      96
Lys Asn Ile Ala Val Gly Gln Ala His Ile Lys Ser Thr Phe Asn Asn
20 25 30
acg atc gtc tcg atc acc gac acc act ggt gcg gtc ctc agc tgg gcc      144
Thr Ile Val Ser Ile Thr Asp Thr Thr Gly Ala Val Leu Ser Trp Ala
35 40 45
tcc tcc ggc ggc gtc ggg ttc aag ggc tct cgc aag tcg act ccg tac      192
Ser Ser Gly Gly Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr
50 55 60
gcc gcg cag ctg gcg gcc gag tcg gcc gcc cgc cag gcg cag gag cac      240
Ala Ala Gln Leu Ala Ala Glu Ser Ala Ala Arg Gln Ala Gln Glu His
65 70 75 80
ggc atg aaa aag gtc gac gtc ttc gtg aag ggc ccg ggc tcg ggt cgt      288
Gly Met Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg
85 90 95
gag acg gcg atc cgc tcc ctc cag gcc gcc ggc ctc gag gtg ggc tcg      336
Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Gly Ser
100 105 110
atc aac gac gtc act ccg cag gcg cac aac ggc tgt cgc ccg ccg aag      384
Ile Asn Asp Val Thr Pro Gln Ala His Asn Gly Cys Arg Pro Pro Lys
115 120 125
cgt cgc cgc gtc taa
Arg Arg Arg Val
130

```

<210> 672  
 <211> 132  
 <212> PRT  
 <213> Leifsonia xyli subsp

```

<400> 672
Met Ala Ala Pro Lys Ser Ala Ala Arg Lys Pro Arg Lys Lys Glu Lys
1 5 10 15
Lys Asn Ile Ala Val Gly Gln Ala His Ile Lys Ser Thr Phe Asn Asn
20 25 30
Thr Ile Val Ser Ile Thr Asp Thr Gly Ala Val Leu Ser Trp Ala
35 40 45
Ser Ser Gly Gly Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr
50 55 60
Ala Ala Gln Leu Ala Ala Glu Ser Ala Ala Arg Gln Ala Gln Glu His
65 70 75 80
Gly Met Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg
85 90 95

```

PhoenixTemp32470.tmp.txt  
 Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Gly Ser  
 100 105 110  
 Ile Asn Asp Val Thr Pro Gln Ala His Asn Gly Cys Arg Pro Pro Lys  
 115 120 125  
 Arg Arg Arg Val  
 130

<210> 673  
 <211> 387  
 <212> DNA  
 <213> Leuconostoc mesenteroides subsp

<220>  
 <221> CDS  
 <222> (1)..(387)  
 <223> transl\_table=11

<400> 673  
 atg gca ggt cgt aca acg cgt aag cgt cgt gtg aag aag aat att gaa 48  
 Met Ala Gly Arg Thr Thr Arg Lys Arg Arg Val Lys Lys Asn Ile Glu  
 1 5 10 15  
 tct ggt gtg gct cac atc cat tca aca ttc aac aac act att gta atg 96  
 Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Ile Val Met  
 20 25 30  
 att act gat gca caa ggt aac gca gtt gct tgg tca tca gct ggt gca 144  
 Ile Thr Asp Ala Gln Gly Asn Ala Val Ala Trp Ser Ser Ala Gly Ala  
 35 40 45  
 ctt ggc ttc aaa gga agt cgt aag tca aca cca ttc gct gct caa atg 192  
 Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Met  
 50 55 60  
 gcg gcg gaa gct gca gca aaa agt gcc atg gaa att aac atg cgt aca 240  
 Ala Ala Glu Ala Ala Ala Lys Ser Ala Met Glu Ile Asn Met Arg Thr  
 65 70 75 80  
 gtt gca gta act gtt aag ggt cct ggt tca ggt cgt gaa tca gct atc 288  
 Val Ala Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala Ile  
 85 90 95  
 cgt gct ttg gca gca gct ggc ttg gaa gta aca tca att aag gat gtt 336  
 Arg Ala Leu Ala Ala Ala Gly Leu Glu Val Thr Ser Ile Lys Asp Val  
 100 105 110  
 aca cca gtt ccc cat aac gga tca cgc cca cca aag cgt cgt cgt gtt 384  
 Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys Arg Arg Arg Val  
 115 120 125  
 taa 387

<210> 674  
 <211> 128  
 <212> PRT  
 <213> Leuconostoc mesenteroides subsp

<400> 674  
 Met Ala Gly Arg Thr Thr Arg Lys Arg Arg Val Lys Lys Asn Ile Glu  
 1 5 10 15  
 Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Ile Val Met  
 20 25 30  
 Ile Thr Asp Ala Gln Gly Asn Ala Val Ala Trp Ser Ser Ala Gly Ala  
 35 40 45  
 Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Met  
 50 55 60  
 Ala Ala Glu Ala Ala Ala Lys Ser Ala Met Glu Ile Asn Met Arg Thr  
 65 70 75 80  
 Val Ala Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala Ile  
 85 90 95  
 Arg Ala Leu Ala Ala Ala Gly Leu Glu Val Thr Ser Ile Lys Asp Val  
 100 105 110  
 Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys Arg Arg Arg Val  
 115 120 125

<210> 675  
 <211> 390  
 <212> DNA  
 <213> Listeria innocua

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

```

<400> 675
atg gct cgt aaa aca aat act cgt aaa cgt cgt gtg aaa aag aat atc      48
Met Ala Arg Lys Thr Asn Thr Arg Lys Arg Val Lys Lys Asn Ile
   1               5               10              15
gaa tct ggt att gca cac att cgt tct aca ttt aat aat acg atc gta      96
Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val
               20               25              30
atg att act gac aca cat ggt aat gct tta gct tgg tca agt gca ggt      144
Met Ile Thr Asp Thr His Gly Asn Ala Leu Ala Trp Ser Ser Ala Gly
               35               40              45
tct cta gga ttt aaa ggt tct cgt aaa tct act cct ttc gca gcg caa      192
Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
   50               55              60
atg gca gct gaa agt gca gca aaa tca gca caa gaa cat ggt tta aaa      240
Met Ala Ala Glu Ser Ala Ala Lys Ser Ala Gln Glu His Gly Leu Lys
   65               70              75              80
aca tta gaa gta act gtt aaa ggt cct ggt tca ggt cgt gaa gcg gct      288
Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala
               85               90              95
atc cgt gca cta caa gca gct ggt ctt gaa gta aca gct att aaa gat      336
Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Lys Asp
               100              105             110
gta act cca gtt cca cat aac gga tgt cgt cct cca aaa cgt cgt cgc      384
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
   115              120             125
gta taa
Val

```

<210> 676  
 <211> 129  
 <212> PRT  
 <213> Listeria innocua

```

<400> 676
Met Ala Arg Lys Thr Asn Thr Arg Lys Arg Arg Val Lys Lys Asn Ile
   1               5               10              15
Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val
               20               25              30
Met Ile Thr Asp Thr His Gly Asn Ala Leu Ala Trp Ser Ser Ala Gly
   35               40              45
Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
   50               55              60
Met Ala Ala Glu Ser Ala Ala Lys Ser Ala Gln Glu His Gly Leu Lys
   65               70              75              80
Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala
               85               90              95
Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Lys Asp
               100              105             110
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
   115              120             125
Val

```

<210> 677  
 <211> 396  
 <212> DNA  
 <213> Magnetococcus sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 677

atg gcc aag gcc caa aaa ggt gcc cgt act aag aaa aaa gag cgt aag	48
Met Ala Lys Ala Gln Lys Gly Ala Arg Thr Lys Lys Lys Glu Arg Lys	
1 5 10 15	
aat att gcg agc ggt att gct cac att cat tct acg ttc aac aac acg	96
Asn Ile Ala Ser Gly Ile Ala His Ile His Ser Thr Phe Asn Asn Thr	
20 25 30	
ttg atc act att acc gac acc cat ggt aac tcg att tcc tgg ggc agt	144
Leu Ile Thr Ile Thr Asp Thr His Gly Asn Ser Ile Ser Trp Gly Ser	
35 40 45	
gct ggt gca caa ggg ttt aag ggc tcg cgt aag tcc act ccc ttt gcc	192
Ala Gly Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala	
50 55 60	
gca cag atg gct gct gag aat gcc ggt aaa aaa gcc atg gat cat ggg	240
Ala Gln Met Ala Ala Glu Asn Ala Gly Lys Lys Ala Met Asp His Gly	
65 70 75 80	
atg cgt aac ctg gaa gtg cgt ctg aag ggt ccc ggc agc ggc cgt gaa	288
Met Arg Asn Leu Glu Val Arg Leu Lys Gly Pro Gly Ser Gly Arg Glu	
85 90 95	
tcg gct ctg cgc gcc ctg gcc gca att ggt ttt aac att tcc cat gta	336
Ser Ala Leu Arg Ala Leu Ala Ala Ile Gly Phe Asn Ile Ser His Val	
100 105 110	
cag gat gtg aca ccc atc ccg cat aac ggt tgc cgc cct ccc aag cgg	384
Gln Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg	
115 120 125	
cgt cgt gtg tga	396
Arg Arg Val	
130	

&lt;210&gt; 678

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Magnetococcus sp

&lt;400&gt; 678

Met Ala Lys Ala Gln Lys Gly Ala Arg Thr Lys Lys Lys Glu Arg Lys	
1 5 10 15	
Asn Ile Ala Ser Gly Ile Ala His Ile His Ser Thr Phe Asn Asn Thr	
20 25 30	
Leu Ile Thr Ile Thr Asp Thr His Gly Asn Ser Ile Ser Trp Gly Ser	
35 40 45	
Ala Gly Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala	
50 55 60	
Ala Gln Met Ala Ala Glu Asn Ala Gly Lys Lys Ala Met Asp His Gly	
65 70 75 80	
Met Arg Asn Leu Glu Val Arg Leu Lys Gly Pro Gly Ser Gly Arg Glu	
85 90 95	
Ser Ala Leu Arg Ala Leu Ala Ala Ile Gly Phe Asn Ile Ser His Val	
100 105 110	
Gln Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg	
115 120 125	
Arg Arg Val	
130	

&lt;210&gt; 679

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Mannheimia succiniciproducens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11



## PhoenixTemp32470.tmp.txt

```

<400> 679
atg gct aaa aca cca gtt cgt gca cgt aaa cgt gta aaa aaa caa gtt      48
Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val
1      5      10      15
gta gat ggc gta gcg cat att cac gca tct ttc aat aat aca atc gtg      96
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
20      25      30
act att act gac cgt cag ggt aac gct ctt gca tgg gca acc gca ggt      144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly
35      40      45
ggg tca ggt ttc cgt ggt tct cgt aaa tca act ccg ttc gca gct caa      192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
gta gca gca gaa cgt tgt gct gaa gct gta aaa gaa ttc ggc tta aag      240
Val Ala Ala Glu Arg Cys Ala Glu Ala Val Lys Glu Phe Gly Leu Lys
65      70      75      80
aac ttg gaa gtt atg gtt aaa ggt ccg ggt ccg ggt cgt gaa tca aca      288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
85      90      95
att cgc gca tta aat gct gcg ggt ttc cga atc acg aat att act gat      336
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
100      105      110
gtg act ccg att cct cat aac ggt tgt cgt cca ccg aaa aaa cgt cgt      384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115      120      125
gtt taa
Val
390

```

```

<210> 680
<211> 129
<212> PRT
<213> Mannheimia succiniciproducens

```

```

<400> 680
Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val
1      5      10      15
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
20      25      30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly
35      40      45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
Val Ala Ala Glu Arg Cys Ala Glu Ala Val Lys Glu Phe Gly Leu Lys
65      70      75      80
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
85      90      95
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
100      105      110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115      120      125
val

```

```

<210> 681
<211> 393
<212> DNA
<213> Mesoplasma florum

```

```

<220>
<221> CDS
<222> (1)..(393)
<223> transl_table=4

```

```

<400> 681
atg gca aaa cca aaa aca aat aat aca aaa aaa cgt att aag aaa aat      48
Met Ala Lys Pro Lys Thr Asn Asn Thr Lys Lys Arg Ile Lys Lys Asn
1      5      10      15
atc cca aaa ggt atc gct cat att cac tct act ttt aac aat aca att      96

```

## PhoenixTemp32470.tmp.txt

Ile	Pro	Lys	Gly <sub>20</sub>	Ile	Ala	His	Ile	His <sub>25</sub>	Ser	Thr	Phe	Asn	Asn <sub>30</sub>	Thr	Ile		
gtt	act	att	agt	gat	gaa	aaa	gga	aac	gta	ctt	tct	tga	tca	agt	gct		144
Val	Thr	Ile	Ser	Asp	Glu	Lys	Gly <sub>40</sub>	Asn	Val	Leu	Ser	Trp	Ser	Ser	Ala		
gga	gca	atc	ggg	ttc	aaa	ggg	tct	aaa	aaa	tct	aca	cct	tat	gct	gcg		192
Gly	Ala	Ile	Gly	Phe	Lys	Gly <sub>55</sub>	Ser	Lys	Lys	Ser	Thr	Pro	Tyr	Ala	Ala		
caa	atg	att	tca	gaa	gca	gct	gct	aaa	ggg	gca	atg	gat	caa	ggg	gtt		240
Gln	Met	Ile	Ser	Glu	Ala	Ala	Ala	Lys	Gly	Ala	Met	Asp	Gln	Gly	Val		
aaa	tca	gtt	caa	gtt	gaa	gta	aaa	ggg	cca	ggg	cca	ggg	cgt	gat	gct		288
Lys	Ser	Val	Gln	Val	Glu	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Asp	Ala		
gct	gtt	aga	gca	tta	aca	atc	gtt	gga	atg	gaa	gta	act	tca	att	aag		336
Ala	Val	Arg	Ala	Leu	Thr	Ile	Val	Gly <sub>105</sub>	Met	Glu	Val	Thr	Ser	Ile	Lys		
gat	tgt	aca	cca	atc	cct	cat	aat	gga	gtt	cgt	cct	aaa	aaa	cgt	cca		384
Asp	Cys	Thr	Pro	Ile	Pro	His	Asn <sub>120</sub>	Gly	Val	Arg	Pro	Lys	Lys	Arg	Pro		
aga	aaa	taa															393
Arg	Lys																

&lt;210&gt; 682

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Mesoplasma florum

&lt;400&gt; 682

Met	Ala	Lys	Pro	Lys <sub>5</sub>	Thr	Asn	Asn	Thr	Lys <sub>10</sub>	Lys	Arg	Ile	Lys	Lys <sub>15</sub>	Asn		
Ile	Pro	Lys	Gly <sub>20</sub>	Ile	Ala	His	Ile	His <sub>25</sub>	Ser	Thr	Phe	Asn	Asn <sub>30</sub>	Thr	Ile		
Val	Thr	Ile	Ser	Asp	Glu	Lys	Gly <sub>40</sub>	Asn	Val	Leu	Ser	Trp	Ser	Ser	Ala		
Gly	Ala	Ile	Gly	Phe	Lys	Gly <sub>55</sub>	Ser	Lys	Lys	Ser	Thr	Pro	Tyr	Ala	Ala		
Gln	Met	Ile	Ser	Glu	Ala	Ala	Ala	Lys	Gly	Ala	Met	Asp	Gln	Gly	Val		
65	Lys	Ser	Val	Gln	Val	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Asp	Ala		
Ala	Val	Arg	Ala	Leu	Thr	Ile	Val	Gly <sub>105</sub>	Met	Glu	Val	Thr	Ser	Ile	Lys		
Asp	Cys	Thr	Pro	Ile	Pro	His	Asn <sub>120</sub>	Gly	Val	Arg	Pro	Lys	Lys	Arg	Pro		
Arg	Lys																

&lt;210&gt; 683

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 683

atg	gcc	aag	gaa	gcc	gca	cgc	gtt	cgc	cgt	cgt	gaa	cgt	aag	aac	atc		48
Met	Ala	Lys	Glu	Ala <sub>5</sub>	Ala	Arg	Val	Arg	Arg <sub>10</sub>	Arg	Glu	Arg	Lys	Asn <sub>15</sub>	Ile		
tcg	tcg	ggg	gtt	gcg	cat	gtc	aac	tcg	acc	ttc	aac	aac	acc	atg	atc		96
Ser	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Thr	Phe	Asn	Asn	Thr	Met	Ile		
acc	atc	acc	gat	gcc	cag	ggc	aat	gcg	atc	gcc	tgg	tcg	tct	gcc	ggg		144
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn <sub>40</sub>	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly		

## PhoenixTemp32470.tmp.txt

```

gcc cag ggc ttc aaa ggc tcg cgt aag tcc acc ccc ttc gcc gct cag 192
Ala Gln Gly Phe Lys Gly Ser 55 Arg Lys Ser Thr 60 Phe Ala Ala Gln
50
gta gcg gca gag gat tgc gcc cgc aag gcg cag gag cat ggc atg cgc 240
Val Ala Ala Glu Asp Cys Ala Arg Lys Ala Gln Glu His Gly Met Arg
65
acc ctc gag gtt gag gtt tcc gga ccg ggc tcc ggt cgt gaa tcg gcg 288
Thr Leu Glu Val 85 Val Ser Gly Pro 90 Ser Gly Arg Glu Ser Ala
85
ctg cgc gcc ttg cag gcg gcc ggt ttc acc att aca tcc atc cgc gat 336
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Ile Thr Ser Ile Arg Asp
100
gtg acc cca atc ccg cac aac gga tgc cgc ccg cgc aag aag cgc cgg 384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg
115
gtt taa 390
Val

```

<210> 684  
 <211> 129  
 <212> PRT  
 <213> Mesorhizobium sp

```

<400> 684
Met Ala Lys Glu Ala Ala Arg Val Arg Arg Arg Glu Arg Lys Asn Ile
1 5 10 15
Ser Ser Gly Val Ala His Val Asn Ser Thr Phe Asn Asn Thr Met Ile
20 25 30
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ala Gly
35 40 45
Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
Val Ala Ala Glu Asp Cys Ala Arg Lys Ala Gln Glu His Gly Met Arg
65 70 75 80
Thr Leu Glu Val Glu Val Ser Gly Pro Gly Ser Gly Arg Glu Ser Ala
85 90 95
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Ile Thr Ser Ile Arg Asp
100 105 110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg
115 120 125
Val

```

<210> 685  
 <211> 381  
 <212> DNA  
 <213> Methanosarcina acetivorans

<220>  
 <221> CDS  
 <222> (1)..(381)  
 <223> transl\_table=11

```

<400> 685
atg gca gat atg aaa tgg gct gta gct cac atc aaa tcc tca ttt aac 48
Met Ala Asp Met Lys Trp Ala Val Ala His Ile Lys Ser Ser Phe Asn
1 5 10 15
aac aca att atc aca gtt act gat att acc ggg gct gaa acc att gca 96
Asn Thr Ile Ile Thr Val Thr Asp Ile Thr Gly Ala Glu Thr Ile Ala
20 25 30
aag tct tcc ggt ggt atg gtt gta aag gct gca agg gac gaa agt tct 144
Lys Ser Ser Gly Gly Met Val Val Lys Ala Ala Arg Asp Glu Ser Ser
35 40 45
cca tac act gcc atg cag atg gca ggc cag ctt gct gac cag ctc aag 192
Pro Tyr Thr Ala Met Gln Met Ala Gly Gln Leu Ala Asp Gln Leu Lys
50 55 60
gac aag ggt att aat gga atc cat atc cgg gta aga gct ccc gga gga 240
Asp Lys Gly Ile Asn Gly Ile His Ile Arg Val Arg Ala Pro Gly Gly

```

## PhoenixTemp32470.tmp.txt

```

65          70          75          80
aac aag cag aga agt ccc ggg ccc ggt gca cag gct gca atc agg gct
Asn Lys Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg Ala 288
85
ttt gca aga gca gga atc cgc att ggc aga atc gag gat gtc act cct
Phe Ala Arg Ala Gly Ile Arg Ile Gly Arg Ile Glu Asp Val Thr Pro 336
100
gtc ccg cac gac ggc act cgt ccg aaa ggc gga agg cgt gta taa
Val Pro His Asp Gly Thr Arg Pro Lys Gly Gly Arg Arg Val 381
115          120          125

```

&lt;210&gt; 686

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Methanosarcina acetivorans

&lt;400&gt; 686

```

Met Ala Asp Met Lys Trp Ala Val Ala His Ile Lys Ser Ser Phe Asn
1          5          10          15
Asn Thr Ile Ile Thr Val Thr Asp Ile Thr Gly Ala Glu Thr Ile Ala
20
Lys Ser Ser Gly Gly Met Val Val Lys Ala Ala Arg Asp Glu Ser Ser
35
Pro Tyr Thr Ala Met Gln Met Ala Gly Gln Leu Ala Asp Gln Leu Lys
50
Asp Lys Gly Ile Asn Gly Ile His Ile Arg Val Arg Ala Pro Gly Gly
65          70          75          80
Asn Lys Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg Ala
85
Phe Ala Arg Ala Gly Ile Arg Ile Gly Arg Ile Glu Asp Val Thr Pro
100
Val Pro His Asp Gly Thr Arg Pro Lys Gly Gly Arg Arg Val
115          120          125

```

&lt;210&gt; 687

&lt;211&gt; 381

&lt;212&gt; DNA

&lt;213&gt; Methanosarcina barkeri

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(381)

&lt;223&gt; transl\_table=11

&lt;400&gt; 687

```

atg gca gac atg aaa tgg gcc gta gct cac att aaa tct tca ttt aac
Met Ala Asp Met Lys Trp Ala Val Ala His Ile Lys Ser Ser Phe Asn
1          5          10          15
aac aca att att act gta acc gat atc aca ggg gct gaa acc att gca
Asn Thr Ile Ile Thr Val Thr Asp Ile Thr Gly Ala Glu Thr Ile Ala 96
20
aag tct tcc ggt atg gtt gta aaa gct gca aga gac gag agc tct
Lys Ser Ser Gly Gly Met Val Val Lys Ala Ala Arg Asp Glu Ser Ser 144
35
cct tat act gcc atg cag atg gca ggc cag ctt gct gac cag ctc agg
Pro Tyr Thr Ala Met Gln Met Ala Gly Gln Leu Ala Asp Gln Leu Arg 192
50
gat aag ggt atc cat ggc atc cat ata agg gta aga gcg cct ggt gga
Asp Lys Gly Ile His Gly Ile His Ile Arg Val Arg Ala Pro Gly Gly 240
65          70          75          80
aac aag cag aga agc ccg ggc ccc ggc gct cag gct gca atc agg gct
Asn Lys Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg Ala 288
85
ttt gca aga gca gga atc cgg att ggc agg att gaa gat gtt act cct
Phe Ala Arg Ala Gly Ile Arg Ile Gly Arg Ile Glu Asp Val Thr Pro 336
100
gtc ccg cac gac ggc act cgt ccc aaa ggc gga aga cgt gta taa
Val Pro His Asp Gly Thr Arg Pro Lys Gly Gly Arg Arg Val 381
115          120          125

```

<210> 688  
 <211> 126  
 <212> PRT  
 <213> Methanosarcina barkeri

<400> 688  
 Met Ala Asp Met Lys Trp Ala Val Ala His Ile Lys Ser Ser Phe Asn  
 1 5 10 15  
 Asn Thr Ile Ile Thr Val Thr Asp Ile Thr Gly Ala Glu Thr Ile Ala  
 20 25 30  
 Lys Ser Ser Gly Gly Met Val Val Lys Ala Ala Arg Asp Glu Ser Ser  
 35 40 45  
 Pro Tyr Thr Ala Met Gln Met Ala Gly Gln Leu Ala Asp Gln Leu Arg  
 50 55 60  
 Asp Lys Gly Ile His Gly Ile His Ile Arg Val Arg Ala Pro Gly Gly  
 65 70 75 80  
 Asn Lys Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg Ala  
 85 90 95  
 Phe Ala Arg Ala Gly Ile Arg Ile Gly Arg Ile Glu Asp Val Thr Pro  
 100 105 110  
 Val Pro His Asp Gly Thr Arg Pro Lys Gly Gly Arg Arg Val  
 115 120 125

<210> 689  
 <211> 381  
 <212> DNA  
 <213> Methanococcoides burtonii

<220>  
 <221> CDS  
 <222> (1)..(381)  
 <223> transl\_table=11

<400> 689  
 atg gct aac gga atc tgg ggt gtt gca cac atc aag tgc tca ttc aat 48  
 Met Ala Asn Gly Ile Trp Gly Val Ala His Ile Lys Cys Ser Phe Asn  
 1 5 10 15  
 aac act atc atc act gtg act gac ctc aca ggc gca gag acc atc gca 96  
 Asn Thr Ile Ile Thr Val Thr Asp Leu Thr Gly Ala Glu Thr Ile Ala  
 20 25 30  
 aaa tcc tct ggt gga atg gtt gta aag gca gca agg gat gaa agc tcc 144  
 Lys Ser Ser Gly Gly Met Val Val Lys Ala Ala Arg Asp Glu Ser Ser  
 35 40 45  
 cca tat act gct atg cag atg gct act cag ctt gca gac att ctt agg 192  
 Pro Tyr Thr Ala Met Gln Met Ala Thr Gln Leu Ala Asp Ile Leu Arg  
 50 55 60  
 gac aag ggt ctc gag ggt gtc cac atc aag gta aga gca ccg ggt gga 240  
 Asp Lys Gly Leu Glu Gly Val His Ile Lys Val Arg Ala Pro Gly Gly  
 65 70 75 80  
 aac aag cag agg agt cct gga cca ggg gca cag gct gct atc agg gca 288  
 Asn Lys Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg Ala  
 85 90 95  
 ttt gca aga gct ggc gtc agg atc gga agg atc gaa gac gta aca cca 336  
 Phe Ala Arg Ala Gly Val Arg Ile Gly Arg Ile Glu Asp Val Thr Pro  
 100 105 110  
 gtt cca cat gat gga act cgt cca aaa ggc gga agg cgt gta taa 381  
 Val Pro His Asp Gly Thr Arg Pro Lys Gly Gly Arg Arg Val  
 115 120 125

<210> 690  
 <211> 126  
 <212> PRT  
 <213> Methanococcoides burtonii

<400> 690  
 Met Ala Asn Gly Ile Trp Gly Val Ala His Ile Lys Cys Ser Phe Asn  
 1 5 10 15  
 Asn Thr Ile Ile Thr Val Thr Asp Leu Thr Gly Ala Glu Thr Ile Ala

## PhoenixTemp32470.tmp.txt

20 25 30  
 Lys Ser Ser Gly Gly Met Val Val Lys Ala Ala Arg Asp Glu Ser Ser  
 35 40 45  
 Pro Tyr Thr Ala Met Gln Met Ala Thr Gln Leu Ala Asp Ile Leu Arg  
 50 55 60  
 Asp Lys Gly Leu Glu Gly Val His Ile Lys Val Arg Ala Pro Gly Gly  
 65 70 75 80  
 Asn Lys Gln Arg Ser Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg Ala  
 85 90 95  
 Phe Ala Arg Ala Gly Val Arg Ile Gly Arg Ile Glu Asp Val Thr Pro  
 100 105 110  
 Val Pro His Asp Gly Thr Arg Pro Lys Gly Gly Arg Arg Val  
 115 120 125

&lt;210&gt; 691

&lt;211&gt; 387

&lt;212&gt; DNA

&lt;213&gt; Methylococcus capsulatus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(387)

&lt;223&gt; transl\_table=11

&lt;400&gt; 691

atg gcc acg aca ggt cgc ccc gta aaa aga gtc aaa aga gat atc tcg	48
Met Ala Thr Thr Gly Arg Pro Val Lys Arg Val Lys Arg Asp Ile Ser	
1 5 10 15	
gac ggg atc gcg cat atc agc gcg tct ttc aac aac acc ata atc acc	96
Asp Gly Ile Ala His Ile Ser Ala Ser Phe Asn Asn Thr Ile Thr	
20 25 30	
atc acc gat aga aag ggt aac gcg ctt tcg tgg gcc agc gcc ggt gct	144
Ile Thr Asp Arg Lys Gly Asn Ala Leu Ser Trp Ala Ser Ala Gly Ala	
35 40 45	
tcg ggc ttt cgc ggg tcg cgc aag agt aca ccg ttc gcc gct caa gtg	192
Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Val	
50 55 60	
gcc gcc gag aag gcg ggt gcg gtg gcg aag gag tac gga atc aag aat	240
Ala Ala Glu Lys Ala Gly Ala Val Ala Lys Glu Tyr Gly Ile Lys Asn	
65 70 75 80	
ctg gac gtc cac gtt acc ggt cca ggc cct gga agg gag tct gcc gtg	288
Leu Asp Val His Val Thr Gly Pro Gly Pro Gly Arg Glu Ser Ala Val	
85 90 95	
cgt tct ctg aac gct ttg ggc ttt aag att gtt aac gta gtg gat act	336
Arg Ser Leu Asn Ala Leu Gly Phe Lys Ile Val Asn Val Val Asp Thr	
100 105 110	
acg ccg ctg ccc cat aac ggg tgt cgt ccc cca aag aag cgc gtt	384
Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Val	
115 120 125	
tga	387

&lt;210&gt; 692

&lt;211&gt; 128

&lt;212&gt; PRT

&lt;213&gt; Methylococcus capsulatus

&lt;400&gt; 692

Met Ala Thr Thr Gly Arg Pro Val Lys Arg Val Lys Arg Asp Ile Ser  
 1 5 10 15  
 Asp Gly Ile Ala His Ile Ser Ala Ser Phe Asn Asn Thr Ile Thr  
 20 25 30  
 Ile Thr Asp Arg Lys Gly Asn Ala Leu Ser Trp Ala Ser Ala Gly Ala  
 35 40 45  
 Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Val  
 50 55 60  
 Ala Ala Glu Lys Ala Gly Ala Val Ala Lys Glu Tyr Gly Ile Lys Asn  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

Leu Asp Val His Val Thr Gly Pro Gly Pro Gly Arg Glu Ser Ala Val  
 85 95  
 Arg Ser Leu Asn Ala Leu Gly Phe Lys Ile Val Asn Val Val Asp Thr  
 100 110  
 Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 115 125

&lt;210&gt; 693

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Methylobacillus flagellatus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 693

atg gct aaa gct aac gta cgc gta cgc aag aaa gtc aaa aag aat att	48
Met Ala Lys Ala Asn Val Arg Val Arg Lys Lys Val Lys Lys Asn Ile	
1 5 10 15	
gcc gag ggc att gct cac gtg cac gct tct ttt aac aat acc atc atc	96
Ala Glu Gly Ile Ala His Val His Ala Ser Phe Asn Asn Thr Ile Ile	
20 25 30	
acg atc act gac cgc cag ggt aat gcg ctg tct tgg gca act tct ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly	
35 40 45	
ggc gca ggg ttc aag ggc tct cgt aaa agt acc cct ttt gct gct caa	192
Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gta gcc gct gag gct gct ggc aag gct gct cag gaa tgt ggt gtg aag	240
Val Ala Ala Glu Ala Ala Gly Lys Ala Ala Gln Glu Cys Gly Val Lys	
65 70 75 80	
aat ctt gaa gtg cgc atc aag ggg cca ggc cca ggt cgt gaa tct gct	288
Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala	
85 90 95	
gtg cgt gca ttg aat gcg gtt ggt ttc aag att acc agc att tca gat	336
Val Arg Ala Leu Asn Ala Val Gly Phe Lys Ile Thr Ser Ile Ser Asp	
100 105 110	
gtg act ccc gtg cca cac aat ggt tgc cgt ccg ccg aag aag cgt cgt	384
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
atc taa	390
Ile	

&lt;210&gt; 694

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Methylobacillus flagellatus

&lt;400&gt; 694

Met Ala Lys Ala Asn Val Arg Val Arg Lys Lys Val Lys Lys Asn Ile
1 5 10 15
Ala Glu Gly Ile Ala His Val His Ala Ser Phe Asn Asn Thr Ile Ile
20 25 30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly
35 40 45
Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
Val Ala Ala Glu Ala Ala Gly Lys Ala Ala Gln Glu Cys Gly Val Lys
65 70 75 80
Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala
85 90 95
Val Arg Ala Leu Asn Ala Val Gly Phe Lys Ile Thr Ser Ile Ser Asp
100 105 110
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115 120 125
Ile

<210> 695  
 <211> 390  
 <212> DNA  
 <213> Methanococcus jannaschii

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

```

<400> 695
atg gca gaa cag aaa aaa gaa aaa tgg gga ata gtt cat atc tac tca      48
Met Ala Glu Gln Lys Lys Glu Lys Trp Gly Ile Val His Ile Tyr Ser
  1          5          10          15
tct tac aac aac aca ata atc cat gca aca gac att aca gga gca gag      96
Ser Tyr Asn Asn Thr Ile Ile His Ala Thr Asp Ile Thr Gly Ala Glu
          20          25          30
aca att gca aga gtt tca ggt ggg agg gtt aca aga aac cag aga gat      144
Thr Ile Ala Arg Val Ser Gly Gly Arg Val Thr Arg Asn Gln Arg Asp
          35          40          45
gag ggt tct cct tac gca gca atg cag gca gca ttt aaa ttg gca gag      192
Glu Gly Ser Pro Tyr Ala Ala Met Gln Ala Ala Phe Lys Leu Ala Glu
          50          55          60
gta tta aaa gag aga gga att gaa aac atc cat atc aaa gtt aga gct      240
Val Leu Lys Glu Arg Gly Ile Glu Asn Ile His Ile Lys Val Arg Ala
          65          70          75
cca gga ggt agt ggg cag aaa aac cca gga cct gga gct cag gct gct      288
Pro Gly Gly Ser Gly Gln Lys Asn Pro Gly Pro Gly Ala Gln Ala Ala
          85          90          95
att aga gct tta gca aga gct gga tta aga att gga aga att gaa gat      336
Ile Arg Ala Leu Ala Arg Ala Gly Leu Arg Ile Gly Arg Ile Glu Asp
          100          105          110
gtt aca cca gtt cca cat gat gga aca cct aag aag agg ttc aaa      384
Val Thr Pro Val Pro His Asp Gly Thr Thr Pro Lys Lys Arg Phe Lys
          115          120          125
aag taa
Lys
      390

```

<210> 696  
 <211> 129  
 <212> PRT  
 <213> Methanococcus jannaschii

```

<400> 696
Met Ala Glu Gln Lys Lys Glu Lys Trp Gly Ile Val His Ile Tyr Ser
  1          5          10          15
Ser Tyr Asn Asn Thr Ile Ile His Ala Thr Asp Ile Thr Gly Ala Glu
          20          25          30
Thr Ile Ala Arg Val Ser Gly Gly Arg Val Thr Arg Asn Gln Arg Asp
          35          40          45
Glu Gly Ser Pro Tyr Ala Ala Met Gln Ala Ala Phe Lys Leu Ala Glu
          50          55          60
Val Leu Lys Glu Arg Gly Ile Glu Asn Ile His Ile Lys Val Arg Ala
          65          70          75
Pro Gly Gly Ser Gly Gln Lys Asn Pro Gly Pro Gly Ala Gln Ala Ala
          85          90          95
Ile Arg Ala Leu Ala Arg Ala Gly Leu Arg Ile Gly Arg Ile Glu Asp
          100          105          110
Val Thr Pro Val Pro His Asp Gly Thr Thr Pro Lys Lys Arg Phe Lys
          115          120          125
Lys

```

<210> 697  
 <211> 414  
 <212> DNA



&lt;213&gt; Methanopyrus kandleri

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;223&gt; transl\_table=11

&lt;400&gt; 697

```

atg gcc gag aag gag ggt aag aag gag aag aaa gag cgg tgg gga atc      48
Met Ala Glu Lys Glu Gly Lys Lys Glu Lys Lys Glu Arg Trp Gly Ile
  1      5      10      15
gcc cac atc tac gcc tcc ttc aac aac acg atc atc acg atc acc gac      96
Ala His Ile Tyr Ala Ser Phe Asn Asn Thr Ile Ile Thr Ile Thr Asp
      20      25      30
ctt acg ggt gcc gag acg ttc gcc cgc tgg tcc gga ggt atg gtc gtc      144
Leu Thr Gly Ala Glu Thr Phe Ala Arg Trp Ser Gly Gly Met Val Val
      35      40      45
gac gcg gac cga gag gag agc tca ccg tac gcc gcc atg aag gcc gcc      192
Asp Ala Asp Arg Glu Glu Ser Ser Pro Tyr Ala Ala Met Lys Ala Ala
      50      55      60
agg cgc gcc gcc gag gaa gcc atg gag aag ggt atc acc gcg gtc cac      240
Arg Arg Ala Ala Glu Glu Ala Met Glu Lys Gly Ile Thr Ala Val His
      65      70      75      80
gtg aag gtg cgc gca ccc ggt ggt cac ggt cct aag acg ccc gga ccg      288
Val Lys Val Arg Ala Pro Gly Gly His Gly Pro Lys Thr Pro Gly Pro
      85      90      95
ggc gcc cag gct gcc atc cga gct cta gcc cgt gca ggc ctg aag atc      336
Gly Ala Gln Ala Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile
      100      105      110
gga cgg atc gag gac gtc acg ccg atc ccg cac gac ggt acc agg agg      384
Gly Arg Ile Glu Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Arg
      115      120      125
ccc gga ggt aag aga gga cgc agg gta tga      414
Pro Gly Gly Lys Arg Gly Arg Arg Val
      130      135

```

&lt;210&gt; 698

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Methanopyrus kandleri

&lt;400&gt; 698

```

Met Ala Glu Lys Glu Gly Lys Lys Glu Lys Lys Glu Arg Trp Gly Ile
  1      5      10      15
Ala His Ile Tyr Ala Ser Phe Asn Asn Thr Ile Ile Thr Ile Thr Asp
      20      25      30
Leu Thr Gly Ala Glu Thr Phe Ala Arg Trp Ser Gly Gly Met Val Val
      35      40      45
Asp Ala Asp Arg Glu Glu Ser Ser Pro Tyr Ala Ala Met Lys Ala Ala
      50      55      60
Arg Arg Ala Ala Glu Ala Met Glu Lys Gly Ile Thr Ala Val His
      65      70      75      80
Val Lys Val Arg Ala Pro Gly Gly His Gly Pro Lys Thr Pro Gly Pro
      85      90      95
Gly Ala Gln Ala Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile
      100      105      110
Gly Arg Ile Glu Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Arg
      115      120      125
Pro Gly Gly Lys Arg Gly Arg Arg Val
      130      135

```

&lt;210&gt; 699

&lt;211&gt; 381

&lt;212&gt; DNA

&lt;213&gt; Methanosarcina mazei

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(381)

&lt;223&gt; transl\_table=11

&lt;400&gt; 699

atg	gca	gat	atg	aaa	tgg	gct	gta	gct	cac	atc	aaa	tcc	tca	ttt	aat	48
Met	Ala	Asp	Met	Lys	Trp	Ala	Val	Ala	His	Ile	Lys	Ser	Ser	Phe	Asn	
1				5				10						15		
aac	aca	att	att	aca	gta	aca	gat	atc	acc	ggg	gct	gaa	act	att	gcc	96
Asn	Thr	Ile	Ile	Thr	Val	Thr	Asp	Ile	Thr	Gly	Ala	Glu	Thr	Ile	Ala	
			20					25					30			
aag	tcc	tct	ggt	ggt	atg	gtg	gta	aag	gct	gcc	agg	gat	gaa	agc	tct	144
Lys	Ser	Ser	Gly	Gly	Met	Val	Val	Lys	Ala	Ala	Arg	Asp	Glu	Ser	Ser	
		35				40					45					
cct	tac	act	gcc	atg	cag	atg	gca	ggc	cag	ctt	gct	gac	cag	ctc	agg	192
Pro	Tyr	Thr	Ala	Met	Gln	Met	Ala	Gly	Gln	Leu	Ala	Asp	Gln	Leu	Arg	
	50				55					60						
gac	aag	ggc	att	aac	ggg	atc	cac	atc	cgt	gtg	aga	gct	ccc	gga	gga	240
Asp	Lys	Gly	Ile	Asn	Gly	Ile	His	Ile	Arg	Val	Arg	Ala	Pro	Gly	Gly	
65				70				75						80		
aac	aag	cag	aga	agc	cct	gga	ccc	ggc	gca	cag	gct	gca	atc	aga	gct	288
Asn	Lys	Gln	Arg	Ser	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg	Ala	
				85				90						95		
ttt	gca	aga	gca	gga	atc	cgt	att	ggc	agg	atc	gag	gac	gtg	act	cct	336
Phe	Ala	Arg	Ala	Gly	Ile	Arg	Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	
			100					105					110			
gtc	ccg	cac	gac	gga	acc	cgt	cca	aaa	ggc	gga	agg	cgt	gta	taa		381
Val	Pro	His	Asp	Gly	Thr	Arg	Pro	Lys	Gly	Gly	Arg	Arg	Val			
		115					120					125				

&lt;210&gt; 700

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Methanosarcina mazei

&lt;400&gt; 700

Met	Ala	Asp	Met	Lys	Trp	Ala	Val	Ala	His	Ile	Lys	Ser	Ser	Phe	Asn	
1				5				10						15		
Asn	Thr	Ile	Ile	Thr	Val	Thr	Asp	Ile	Thr	Gly	Ala	Glu	Thr	Ile	Ala	
			20					25					30			
Lys	Ser	Ser	Gly	Gly	Met	Val	Val	Lys	Ala	Ala	Arg	Asp	Glu	Ser	Ser	
		35				40						45				
Pro	Tyr	Thr	Ala	Met	Gln	Met	Ala	Gly	Gln	Leu	Ala	Asp	Gln	Leu	Arg	
	50				55					60						
Asp	Lys	Gly	Ile	Asn	Gly	Ile	His	Ile	Arg	Val	Arg	Ala	Pro	Gly	Gly	
65				70				75						80		
Asn	Lys	Gln	Arg	Ser	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg	Ala	
				85				90						95		
Phe	Ala	Arg	Ala	Gly	Ile	Arg	Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	
			100					105					110			
Val	Pro	His	Asp	Gly	Thr	Arg	Pro	Lys	Gly	Gly	Arg	Arg	Val			
		115					120					125				

&lt;210&gt; 701

&lt;211&gt; 375

&lt;212&gt; DNA

&lt;213&gt; Methanococcus maripaludis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(375)

&lt;223&gt; transl\_table=11

&lt;400&gt; 701

atg	agt	caa	aaa	tgg	gga	tta	gta	cac	att	tat	gca	tca	tac	aac	aat	48
Met	Ser	Gln	Lys	Trp	Gly	Leu	Val	His	Ile	Tyr	Ala	Ser	Tyr	Asn	Asn	
1				5				10						15		
aca	att	ctc	cac	gtt	act	gat	tta	act	gga	gca	gaa	aca	atc	gct	aaa	96
Thr	Ile	Leu	His	Val	Thr	Asp	Leu	Thr	Gly	Ala	Glu	Thr	Ile	Ala	Lys	
			20					25					30			
gtt	tca	ggc	ggt	atg	att	gta	aga	aac	cag	aga	gat	gaa	tca	tct	cca	144

PhoenixTemp32470.tmp.txt

Val	Ser	Gly <sub>35</sub>	Gly	Met	Ile	Val	Arg <sub>40</sub>	Asn	Gln	Arg	Asp	Glu <sub>45</sub>	Ser	Ser	Pro		
tac	gct	gca	atg	caa	gct	gca	ttc	aaa	ata	gca	gac	ttg	atg	aga	gat		192
Tyr	Ala	Ala	Met	Gln	Ala	Ala	Phe	Lys	Ile	Ala	Asp	Leu	Met	Arg	Asp		
		50				55					60						
aaa	gga	att	gat	cag	gta	cac	gta	aag	gtc	aga	gct	aca	ggc	ggc	cag		240
Lys	Gly	Ile	Asp	Gln	Val	His	Val	Lys	Val	Arg	Ala	Thr	Gly	Gly	Gln		
		65			70					75					80		
aaa	tcc	aaa	aac	cca	gga	cct	ggt	gca	caa	gct	gct	atc	aga	gca	tta		288
Lys	Ser	Lys	Asn	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg	Ala	Leu		
				85					90					95			
tca	aga	gca	gga	atc	aga	atc	gga	aga	att	gaa	gat	gct	aca	cca	att		336
Ser	Arg	Ala	Gly	Ile	Arg	Ile	Gly	Arg	Ile	Glu	Asp	Ala	Thr	Pro	Ile		
			100					105					110				
cca	cac	gat	ggt	act	aca	cca	aaa	aga	aag	aac	aga	taa					375
Pro	His	Asp	Gly	Thr	Thr	Pro	Lys	Arg	Lys	Asn	Arg						
		115					120										

<210> 702

<211> 124

<212> PRT

<213> Methanococcus maripaludis

<400> 702

Met	Ser	Gln	Lys	Trp	Gly	Leu	Val	His	Ile	Tyr	Ala	Ser	Tyr	Asn	Asn		
1				5					10					15			
Thr	Ile	Leu	His	Val	Thr	Asp	Leu	Thr	Gly	Ala	Glu	Thr	Ile	Ala	Lys		
			20					25					30				
Val	Ser	Gly	Gly	Met	Ile	Val	Arg	Asn	Gln	Arg	Asp	Glu	Ser	Ser	Pro		
		35					40					45					
Tyr	Ala	Ala	Met	Gln	Ala	Ala	Phe	Lys	Ile	Ala	Asp	Leu	Met	Arg	Asp		
		50				55					60						
Lys	Gly	Ile	Asp	Gln	Val	His	Val	Lys	Val	Arg	Ala	Thr	Gly	Gly	Gln		
65				70					75						80		
Lys	Ser	Lys	Asn	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg	Ala	Leu		
			85					90						95			
Ser	Arg	Ala	Gly	Ile	Arg	Ile	Gly	Arg	Ile	Glu	Asp	Ala	Thr	Pro	Ile		
			100					105					110				
Pro	His	Asp	Gly	Thr	Thr	Pro	Lys	Arg	Lys	Asn	Arg						
		115					120										

<210> 703

<211> 393

<212> DNA

<213> Methanobacterium thermoautotrophicum

<220>

<221> CDS

<222> (1)..(393)

<223> transl\_table=11

<400> 703

atg	gct	gag	aag	gaa	aaa	tgg	gga	att	gca	aat	att	tac	tca	tca	ttc		48
Met	Ala	Glu	Lys	Glu	Lys	Trp	Gly	Ile	Ala	Asn	Ile	Tyr	Ser	Ser	Phe		
				5					10					15			
aac	aac	aca	ata	atc	acc	atc	aca	gac	ata	acc	ggt	gca	gag	acc	ata		96
Asn	Asn	Thr	Ile	Ile	Thr	Ile	Thr	Asp	Ile	Thr	Gly	Ala	Glu	Thr	Ile		
			20					25					30				
aca	cag	tgg	tcc	ggt	ggt	aag	gtt	gtg	agg	gcg	gac	cgt	cag	gag	tcc		144
Thr	Gln	Trp	Ser	Gly	Gly	Lys	Val	Val	Arg	Ala	Asp	Arg	Gln	Glu	Ser		
		35				40					45						
tca	ccc	ttc	gct	gca	atg	gag	gcc	gca	aca	agg	gca	gct	gat	gat	gca		192
Ser	Pro	Phe	Ala	Ala	Met	Glu	Ala	Ala	Thr	Arg	Ala	Ala	Asp	Asp	Ala		
		50				55					60						
aag	gag	aag	ggc	atc	gtc	ggc	ctg	cac	ata	aag	gtc	agg	gct	cct	ggt		240
Lys	Glu	Lys	Gly	Ile	Val	Gly	Leu	His	Ile	Lys	Val	Arg	Ala	Pro	Gly		
		65			70				75						80		
gga	aac	ggt	cca	agg	aca	ccc	gga	cca	ggt	gca	cag	gca	gcc	ata	agg		288
Gly	Asn	Gly	Pro	Arg	Thr	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg		

## PhoenixTemp32470.tmp.txt

```

      85      90      95
gca ctg gca agg gct gga atg agg ata ggt aaa att gag gat gta act
Ala Leu Ala Arg Ala Gly Met Arg Ile Gly Lys Ile Glu Asp Val Thr
100      105      110
ccc ata cct cac gat gga aca ggt aga cct gga ggt aag agg gga aga
Pro Ile Pro His Asp Gly Thr Gly Arg Pro Gly Gly Lys Arg Gly Arg
115      120      125
agg gtc taa
Arg Val
130

```

&lt;210&gt; 704

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Methanobacterium thermoautotrophicum

&lt;400&gt; 704

```

Met Ala Glu Lys Glu Lys Trp Gly Ile Ala Asn Ile Tyr Ser Ser Phe
1      5      10      15
Asn Asn Thr Ile Ile Thr Ile Thr Asp Ile Thr Gly Ala Glu Thr Ile
20      25      30
Thr Gln Trp Ser Gly Gly Lys Val Val Arg Ala Asp Arg Gln Glu Ser
35      40      45
Ser Pro Phe Ala Ala Met Glu Ala Ala Thr Arg Ala Asp Asp Ala
50      55      60
Lys Glu Lys Gly Ile Val Gly Leu His Ile Lys Val Arg Ala Pro Gly
65      70      75      80
Gly Asn Gly Pro Arg Thr Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg
85      90      95
Ala Leu Ala Arg Ala Gly Met Arg Ile Gly Lys Ile Glu Asp Val Thr
100      105      110
Pro Ile Pro His Asp Gly Thr Gly Arg Pro Gly Gly Lys Arg Gly Arg
115      120      125
Arg Val
130

```

&lt;210&gt; 705

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Moorella thermoacetica

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 705

```

atg cca cca cgt aaa acc gcc cgg ccg cgc cgg cgg gat cgc aag cat
Met Pro Pro Arg Lys Thr Ala Arg Pro Arg Arg Arg Asp Arg Lys His
1      5      10      15
att gaa agc ggt att gcc cat att aaa tca acc ttc aat aat acc ctg
Ile Glu Ser Gly Ile Ala His Ile Lys Ser Thr Phe Asn Asn Thr Leu
20      25      30
gtg acc att acc gat aaa aac gga aat gct att tcc tgg gcc agc gcc
Val Thr Ile Thr Asp Lys Asn Gly Asn Ala Ile Ser Trp Ala Ser Ala
35      40      45
ggc acc gtg ggg ttc aag ggt tcc cgg aag agt aca ccc ttt gcg gcc
Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
caa atg gcg gct gaa gct gcc gcc aag cag gcc atg gaa cat ggc ctg
Gln Met Ala Ala Glu Ala Ala Lys Gln Ala Met Glu His Gly Leu
65      70      75      80
cgg gag gtc gag tgt tac gtc aag gga ccg ggg gcc ggc cgg gaa gcg
Arg Glu Val Glu Cys Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala
85      90      95
gcc att cgt tcc ctt cag gcc gcc ggg ctg gag gtc agc gtt att aaa
Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Ser Val Ile Lys
100      105      110
gac gtc aca cct att ccc cat aac ggt tgc cgt cct cct aaa cgg cgc

```

Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 cgg gtt tag  
 Arg Val  
 130

393

<210> 706  
 <211> 130  
 <212> PRT  
 <213> Moorella thermoacetica

<400> 706  
 Met Pro Pro Arg Lys Thr Ala Arg Pro Arg Arg Arg Asp Arg Lys His  
 1 5 10 15  
 Ile Glu Ser Gly Ile Ala His Ile Lys Ser Thr Phe Asn Asn Thr Leu  
 20 25 30  
 Val Thr Ile Thr Asp Lys Asn Gly Asn Ala Ile Ser Trp Ala Ser Ala  
 35 40 45  
 Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Met Ala Ala Glu Ala Ala Ala Lys Gln Ala Met Glu His Gly Leu  
 65 70 75 80  
 Arg Glu Val Glu Cys Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala  
 85 90 95  
 Ala Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Ser Val Ile Lys  
 100 105 110  
 Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

<210> 707  
 <211> 417  
 <212> DNA  
 <213> Mycobacterium avium

<220>  
 <221> CDS  
 <222> (1)..(417)  
 <223> transl\_table=11

<400> 707  
 atg cca cca gcc aag aag gca gcc gct gcc ccc aag aag ggg cag aag 48  
 Met Pro Pro Ala Lys Lys Ala Ala Ala Pro Lys Lys Gly Gln Lys  
 1 5 10 15  
 acc cgc cgc cgg gag aag aag aac gtc ccg cac ggc gcg gcc cac atc 96  
 Thr Arg Arg Arg Glu Lys Lys Asn Val Pro His Gly Ala Ala His Ile  
 20 25 30  
 aag agc acg ttc aac aac acg atc gtg acg atc acc gac ccg cag ggc 144  
 Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Gln Gly  
 35 40 45  
 aac gtc atc gcc tgg gcg tcg tcc ggc cac gtc ggg ttc aag ggc tcg 192  
 Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser  
 50 55 60  
 cgg aag tcg acc ccg ttc gcc gcc cag ctg gcc gcc gag aac gcg gcc 240  
 Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala  
 65 70 75 80  
 cgc aag gcg cag gaa cac ggc gtg cgc aag gtc gac gtg ttc gtc aag 288  
 Arg Lys Ala Gln Glu His Gly Val Arg Lys Val Asp Val Phe Val Lys  
 85 90 95  
 ggc ccg ggc tcg ggc cgg gag acg gcg atc ccg tcg ctg cag gcc gcc 336  
 Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala  
 100 105 110  
 ggg ctg gag gtc ggc gcg atc tcc gac gtc acc ccc cag ccg cac aac 384  
 Gly Leu Glu Val Gly Ala Ile Ser Asp Val Thr Pro Gln Pro His Asn  
 115 120 125  
 ggc gtc cgc ccc ccg aag cgc aga agg gtc tag 417  
 Gly Val Arg Pro Pro Lys Arg Arg Val  
 130 135

<210> 708  
 <211> 138  
 <212> PRT  
 <213> Mycobacterium avium

<400> 708  
 Met Pro Pro Ala Lys Lys Ala Ala Ala Ala Pro Lys Lys Gly Gln Lys  
 1 5 10 15  
 Thr Arg Arg Arg Glu Lys Lys Asn Val Pro His Gly Ala Ala His Ile  
 20 25 30  
 Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Gln Gly  
 35 40 45  
 Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser  
 50 55 60  
 Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala  
 65 70 75 80  
 Arg Lys Ala Gln Glu His Gly Val Arg Lys Val Asp Val Phe Val Lys  
 85 90 95  
 Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala  
 100 105 110  
 Gly Leu Glu Val Gly Ala Ile Ser Asp Val Thr Pro Gln Pro His Asn  
 115 120 125  
 Gly Val Arg Pro Pro Lys Arg Arg Arg Val  
 130 135

<210> 709  
 <211> 420  
 <212> DNA  
 <213> Mycobacterium bovis

<220>  
 <221> CDS  
 <222> (1)..(420)  
 <223> transl\_table=11

<400> 709  
 atg cca cca gca aaa aaa ggg ccg gca acg tcg gct agg aag ggc cag 48  
 Met Pro Pro Ala Lys Lys Gly Pro Ala Thr Ser Ala Arg Lys Gly Gln 15  
 1 5 10  
 aag acc cgc cgg cgg gag aag aag aac gtc ccg cac ggc gcc gcc cac 96  
 Lys Thr Arg Arg Arg Glu Lys Lys Asn Val Pro His Gly Ala Ala His 20 25 30  
 atc aag agc acg ttc aac aac acg atc gtg acc atc acc gac ccg caa 144  
 Ile Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Gln 35 40 45  
 ggc aac gtc att gcc tgg gca tcg tcg ggg cac gtc ggc ttc aag ggt 192  
 Gly Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly 50 55 60  
 tcc cgg aaa tcg acc ccg ttt gcg gcc cag ctg gcc gcg gag aac gcc 240  
 Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala 65 70 75 80  
 gct cgc aag gcc caa gac cac ggg gtg cgc aag gtc gac gtg ttc gtc 288  
 Ala Arg Lys Ala Gln Asp His Gly Val Arg Lys Val Asp Val Phe Val 85 90 95  
 aag ggc ccg ggc tcg ggc cgc gag acc gcg atc cgg tcg ctg cag gcc 336  
 Lys Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala 100 105 110  
 gcc ggc ctg gag gtg ggc gcg atc tcg gat gtc acc ccc cag ccg cat 384  
 Ala Gly Leu Glu Val Gly Ala Ile Ser Asp Val Thr Pro Gln Pro His 115 120 125  
 aac ggt gtc cgg ccc ccc aat cgc cgg cgc gtc tag 420  
 Asn Gly Val Arg Pro Pro Asn Arg Arg Arg Val 130 135

<210> 710  
 <211> 139  
 <212> PRT  
 <213> Mycobacterium bovis

PhoenixTemp32470.tmp.txt

```

<400> 710
Met Pro Pro Ala Lys Lys Gly Pro Ala Thr Ser Ala Arg Lys Gly Gln
1      5      10      15
Lys Thr Arg Arg Arg Glu Lys Lys Asn Val Pro His Gly Ala Ala His
      20      25      30
Ile Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Gln
      35      40      45
Gly Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly
      50      55      60
Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala
65      70      75      80
Ala Arg Lys Ala Gln Asp His Gly Val Arg Lys Val Asp Val Phe Val
      85      90      95
Lys Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala
      100      105      110
Ala Gly Leu Glu Val Gly Ala Ile Ser Asp Val Thr Pro Gln Pro His
      115      120      125
Asn Gly Val Arg Pro Pro Asn Arg Arg Arg Val
      130      135

```

```

<210> 711
<211> 417
<212> DNA
<213> Mycobacterium leprae

```

```

<220>
<221> CDS
<222> (1)..(417)
<223> transl_table=11

```

```

<400> 711
atg ccg ccg aag aag gca aac gca gcg ggt ccc aag aag gga cag aag      48
Met Pro Pro Lys Lys Ala Asn Ala Ala Gly Pro Lys Lys Gly Gln Lys
1      5      10      15
acc cgt aag cgg gaa aag aag aat atc cca tac ggt gct gcg cat att      96
Thr Arg Lys Arg Glu Lys Lys Asn Ile Pro Tyr Gly Ala Ala His Ile
      20      25      30
aag agc acc ttc aac aat acg atc gtg acc att act gac cag cag ggt      144
Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Gln Gln Gly
      35      40      45
aac gtc att gcc tgg gcg tca tcg ggc cac gtt ggc ttc aaa gga tcg      192
Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser
      50      55      60
cgg aaa tcg act ccg ttc gcc gcg cag ttg gct gct gag aac gcc gca      240
Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala
65      70      75      80
cgc aag gct cag gag cac ggg gtg cgc aag gtc gac gta ttc gtg atg      288
Arg Lys Ala Gln Glu His Gly Val Arg Lys Val Asp Val Phe Val Met
      85      90      95
ggc ccg ggc tcg ggc cgg gag act gcg atc cgg tcg ctg cag gct gct      336
Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala
      100      105      110
ggc cta gag gtc ggc gcg atc tct gac gtc acc ccc cag ccg cac aat      384
Gly Leu Glu Val Gly Ala Ile Ser Asp Val Thr Pro Gln Pro His Asn
      115      120      125
ggc tgc cgt cca ccc aag cgc aga aga gtc tag      417
Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
      130      135

```

```

<210> 712
<211> 138
<212> PRT
<213> Mycobacterium leprae

```

```

<400> 712
Met Pro Pro Lys Lys Ala Asn Ala Ala Gly Pro Lys Lys Gly Gln Lys
1      5      10      15
Thr Arg Lys Arg Glu Lys Lys Asn Ile Pro Tyr Gly Ala Ala His Ile

```

## PhoenixTemp32470.tmp.txt

20 25 30  
 Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Gln Gln Gly  
 35 40 45  
 Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser  
 50 55 60  
 Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala  
 65 70 75  
 Arg Lys Ala Gln Glu His Gly Val Arg Lys Val Asp Val Phe Val Met  
 85 90 95  
 Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala  
 100 105 110  
 Gly Leu Glu Val Gly Ala Ile Ser Asp Val Thr Pro Gln Pro His Asn  
 115 120 125  
 Gly Cys Arg Pro Pro Lys Arg Arg Val  
 130 135

&lt;210&gt; 713

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Mycoplasma mobile

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=4

&lt;400&gt; 713

atg gca gtt aaa aaa aca aaa tca aaa caa aaa gtt aaa aga aaa aat	48
Met Ala Val Lys Lys Thr Lys Ser Lys Gln Lys Val Lys Arg Lys Asn	
1 5	
att gtt agt ggt gtt gca cat att cat tca act cac caa aac aca att	96
Ile Val Ser Gly Val Ala His Ile His Ser Thr His Gln Asn Thr Ile	
20 25 30	
gtt gct ttt agt gat gaa gcc gga aac gta ttt gca tga tct tca gca	144
Val Ala Phe Ser Asp Glu Ala Gly Asn Val Phe Ala Trp Ser Ser Ala	
35 40 45	
gga gca att ggt tac aaa gga act aag aaa aaa act cct tat gca gct	192
Gly Ala Ile Gly Tyr Lys Gly Thr Lys Lys Lys Thr Pro Tyr Ala Ala	
50 55 60	
ggt ttg gca aca aca gca gct gta gaa aaa gct aaa gaa cat gga tta	240
Gly Leu Ala Thr Thr Ala Val Glu Lys Ala Lys Glu His Gly Leu	
65 70 75 80	
aaa gaa gta aga gtt gaa tta aaa gga aca ggt tct ggt aaa gat gct	288
Lys Glu Val Arg Val Glu Leu Lys Gly Thr Gly Ser Gly Lys Asp Ala	
85 90 95	
gct aga aaa caa att gaa gca tta gga atc att att aaa gaa gtt aaa	336
Ala Arg Lys Gln Ile Glu Ala Leu Gly Ile Ile Ile Lys Glu Val Lys	
100 105 110	
gat gtc act cca att cca cat aat gga aca aga cct cct aaa aaa gtg	384
Asp Val Thr Pro Ile Pro His Asn Gly Thr Arg Pro Pro Lys Lys Val	
115 120 125	
ttg aaa aga gat cta aaa taa	405
Leu Lys Arg Asp Leu Lys	
130	

&lt;210&gt; 714

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Mycoplasma mobile

&lt;400&gt; 714

Met Ala Val Lys Lys Thr Lys Ser Lys Gln Lys Val Lys Arg Lys Asn  
 1 5 10 15  
 Ile Val Ser Gly Val Ala His Ile His Ser Thr His Gln Asn Thr Ile  
 20 25 30  
 Val Ala Phe Ser Asp Glu Ala Gly Asn Val Phe Ala Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Ile Gly Tyr Lys Gly Thr Lys Lys Lys Thr Pro Tyr Ala Ala  
 50 55 60



## PhoenixTemp32470.tmp.txt

Gly Leu Ala Thr Thr Ala Ala Val Glu Lys Ala Lys Glu His Gly Leu  
 65 70 75 80  
 Lys Glu Val Arg Val Glu Leu Lys Gly Thr Gly Ser Gly Lys Asp Ala  
 85 90 95  
 Ala Arg Lys Gln Ile Glu Ala Leu Gly Ile Ile Ile Lys Glu Val Lys  
 100 105 110  
 Asp Val Thr Pro Ile Pro His Asn Gly Thr Arg Pro Pro Lys Lys Val  
 115 120 125  
 Leu Lys Arg Asp Leu Lys  
 130

&lt;210&gt; 715

&lt;211&gt; 372

&lt;212&gt; DNA

&lt;213&gt; Mycoplasma penetrans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(372)

&lt;223&gt; trans1\_table=4

&lt;400&gt; 715

atg gca aag aaa aga aaa aag aaa tta agc tct cct gaa gga att tct	48
Met Ala Lys Lys Arg Lys Lys Lys Leu Ser Pro Glu Gly Ile Ser	
1 5 10 15	
cac att cat gca tct gct aac aat act att gtt act tta act aac act	96
His Ile His Ala Ser Ala Asn Asn Thr Ile Val Thr Leu Thr Asn Thr	
20 25 30	
ggt ggg gat gct att act tga tca agt tct gga tca att ggt tat aaa	144
Gly Gly Asp Ala Ile Thr Trp Ser Ser Gly Ser Ile Gly Tyr Lys	
35 40 45	
ggt tca aaa aaa tct aca cca tat gca gct ggt ata gca gca gaa act	192
Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gly Ile Ala Ala Glu Thr	
50 55 60	
gca gct aaa gtt gca att gat tta gga tta aaa gta att gta aaa	240
Ala Ala Lys Val Ala Ile Asp Leu Gly Leu Lys Val Ile Val Lys	
65 70 75 80	
gtg aat ggg act ggt agt ggt aaa gat act gca att aga agt tta cat	288
Val Asn Gly Thr Gly Ser Gly Lys Asp Thr Ala Ile Arg Ser Leu His	
85 90 95	
gca gct gga tta gaa ata tct gaa att cac gat gtt act cca att cca	336
Ala Ala Gly Leu Glu Ile Ser Glu Ile His Asp Val Thr Pro Ile Pro	
100 105 110	
cac aat gga tgt aga ccg cct aag aaa cca aga taa	372
His Asn Gly Cys Arg Pro Pro Lys Lys Pro Arg	
115 120	

&lt;210&gt; 716

&lt;211&gt; 123

&lt;212&gt; PRT

&lt;213&gt; Mycoplasma penetrans

&lt;400&gt; 716

Met Ala Lys Lys Arg Lys Lys Lys Leu Ser Ser Pro Glu Gly Ile Ser	
1 5 10 15	
His Ile His Ala Ser Ala Asn Asn Thr Ile Val Thr Leu Thr Asn Thr	
20 25 30	
Gly Gly Asp Ala Ile Thr Trp Ser Ser Gly Ser Ile Gly Tyr Lys	
35 40 45	
Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala Gly Ile Ala Ala Glu Thr	
50 55 60	
Ala Ala Lys Val Ala Ile Asp Leu Gly Leu Lys Val Ile Val Lys	
65 70 75 80	
Val Asn Gly Thr Gly Ser Gly Lys Asp Thr Ala Ile Arg Ser Leu His	
85 90 95	
Ala Ala Gly Leu Glu Ile Ser Glu Ile His Asp Val Thr Pro Ile Pro	
100 105 110	
His Asn Gly Cys Arg Pro Pro Lys Lys Pro Arg	
115 120	

<210> 717  
 <211> 366  
 <212> DNA  
 <213> Mycoplasma pneumoniae

<220>  
 <221> CDS  
 <222> (1)..(366)  
 <223> transl\_table=4

<400> 717  
 atg gct aag aag aaa aag att aat gta tct agt gga att atc cac gta 48  
 Met Ala Lys Lys Lys Lys Ile Asn Val Ser Ser Gly Ile Ile His Val  
 1 5 10 15  
 tcc tgt tcc cca aat aac aca att gta tcc gct agt gat ccg ggg ggc 96  
 Ser Cys Ser Pro Asn Asn Thr Ile Val Ser Ala Ser Asp Pro Gly Gly  
 20 25 30  
 aac gtg ttg tgc tga gct agc agt ggt acc atg ggc ttt aag gga tcg 144  
 Asn Val Leu Cys Trp Ala Ser Ser Gly Thr Met Gly Phe Lys Gly Ser  
 35 40 45  
 cgc aaa aag acc ccg tac tca gcc ggc ata gca gcc gat aag gtg gcc 192  
 Arg Lys Lys Thr Pro Tyr Ser Ala Gly Ile Ala Ala Asp Lys Val Ala  
 50 55 60  
 aaa acc gtc aag gaa atg ggg atg gcg acc gtt aag ctc ttt gtc aag 240  
 Lys Thr Val Lys Glu Met Gly Met Ala Thr Val Lys Leu Phe Val Lys  
 65 70 75 80  
 ggt aca ggt cgg ggt aag gat acc gcc att cgc agc ttt gct aat gcg 288  
 Gly Thr Gly Arg Gly Lys Asp Thr Ala Ile Arg Ser Phe Ala Asn Ala  
 85 90 95  
 gga ctt tct att act gaa att aac gaa aag acc ccg att ccc cac aac 336  
 Gly Leu Ser Ile Thr Glu Ile Asn Glu Lys Thr Pro Ile Pro His Asn  
 100 105 110  
 ggt tgc aaa cca cca aaa cga cca cgc taa 366  
 Gly Cys Lys Pro Pro Lys Arg Pro Arg  
 115 120

<210> 718  
 <211> 121  
 <212> PRT  
 <213> Mycoplasma pneumoniae

<400> 718  
 Met Ala Lys Lys Lys Lys Ile Asn Val Ser Ser Gly Ile Ile His Val  
 1 5 10 15  
 Ser Cys Ser Pro Asn Asn Thr Ile Val Ser Ala Ser Asp Pro Gly Gly  
 20 25 30  
 Asn Val Leu Cys Trp Ala Ser Ser Gly Thr Met Gly Phe Lys Gly Ser  
 35 40 45  
 Arg Lys Lys Thr Pro Tyr Ser Ala Gly Ile Ala Ala Asp Lys Val Ala  
 50 55 60  
 Lys Thr Val Lys Glu Met Gly Met Ala Thr Val Lys Leu Phe Val Lys  
 65 70 75 80  
 Gly Thr Gly Arg Gly Lys Asp Thr Ala Ile Arg Ser Phe Ala Asn Ala  
 85 90 95  
 Gly Leu Ser Ile Thr Glu Ile Asn Glu Lys Thr Pro Ile Pro His Asn  
 100 105 110  
 Gly Cys Lys Pro Pro Lys Arg Pro Arg  
 115 120

<210> 719  
 <211> 411  
 <212> DNA  
 <213> Mycoplasma pulmonis

<220>  
 <221> CDS  
 <222> (1)..(411)  
 <223> transl\_table=4

## PhoenixTemp32470.tmp.txt

```

<400> 719
atg gca caa aga aga tca agc caa aca act aaa aaa gtt aaa cgt aaa      48
Met Ala Gln Arg Arg Ser Ser Gln Thr Thr Lys Lys Val Lys Arg Lys
1      5      10      15
aac gtt act aat ggt gtt gcc cat att cac tca act cat aac aat aca      96
Asn Val Thr Asn Gly Val Ala His Ile His Ser Thr His Asn Asn Thr
20      25      30
ata gtt act ttc tca gat gaa aaa gga aat gtt att tca tga gct tct      144
Ile Val Thr Phe Ser Asp Glu Lys Gly Asn Val Ile Ser Trp Ala Ser
35      40      45
tct gga aca att ggt tac aaa gga act aag aaa aaa aca gcc tat gca      192
Ser Gly Thr Ile Gly Tyr Lys Gly Thr Lys Lys Lys Thr Ala Tyr Ala
50      55      60
gct gga ctt gca gct caa aat gct agc gaa aaa gct aaa gaa cat gga      240
Ala Gly Leu Ala Ala Gln Asn Ala Ser Glu Lys Ala Lys Glu His Gly
65      70      75      80
att aga gaa gtt agc gtt aga gta aaa gga att ggt caa gga aga gat      288
Ile Arg Glu Val Ser Val Arg Val Lys Gly Ile Gly Gln Gly Arg Asp
85      90      95
gcc gct aga aaa caa att gaa gtt tca ggg ata tca gtg agt caa att      336
Ala Ala Arg Lys Gln Ile Glu Val Ser Gly Ile Ser Val Ser Gln Ile
100      105      110
gtt gat gta act cct caa gct cac aat ggt act cgt cct cca aaa aga      384
Val Asp Val Thr Pro Gln Ala His Asn Gly Thr Arg Pro Lys Arg
115      120      125
gtt tta aaa cga gag aaa gca agg taa      411
Val Leu Lys Arg Glu Lys Ala Arg
130      135

```

```

<210> 720
<211> 136
<212> PRT
<213> Mycoplasma pulmonis

```

```

<400> 720
Met Ala Gln Arg Arg Ser Ser Gln Thr Thr Lys Lys Val Lys Arg Lys
1      5      10      15
Asn Val Thr Asn Gly Val Ala His Ile His Ser Thr His Asn Asn Thr
20      25      30
Ile Val Thr Phe Ser Asp Glu Lys Gly Asn Val Ile Ser Trp Ala Ser
35      40      45
Ser Gly Thr Ile Gly Tyr Lys Gly Thr Lys Lys Lys Thr Ala Tyr Ala
50      55      60
Ala Gly Leu Ala Ala Gln Asn Ala Ser Glu Lys Ala Lys Glu His Gly
65      70      75      80
Ile Arg Glu Val Ser Val Arg Val Lys Gly Ile Gly Gln Gly Arg Asp
85      90      95
Ala Ala Arg Lys Gln Ile Glu Val Ser Gly Ile Ser Val Ser Gln Ile
100      105      110
Val Asp Val Thr Pro Gln Ala His Asn Gly Thr Arg Pro Lys Arg
115      120      125
Val Leu Lys Arg Glu Lys Ala Arg
130      135

```

```

<210> 721
<211> 417
<212> DNA
<213> Mycobacterium smegmatis

```

```

<220>
<221> CDS
<222> (1)..(417)
<223> trans1_table=11

```

```

<400> 721
atg gca cag gca aag aag ggc ggc acg gcc gcc aag aag ggt cag aag      48
Met Ala Gln Ala Lys Lys Gly Gly Thr Ala Ala Lys Lys Gly Gln Lys
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

```

acc cgc cgc agg gaa aag aag aac gtc ccg cac ggc gcc gct cac atc      96
Thr Arg Arg Arg 20 Glu Lys Lys Asn Val 25 Pro His Gly Ala 30 His Ile
aag agc acg ttc aac aac acg atc gtg tgc atc acc gat ccc cag ggc      144
Lys Ser Thr Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Gln Gly
35 40 45
aac gtc atc gcc tgg gcg tcc tgc ggt cac gtg ggc ttc aag ggc tgc      192
Asn Val 50 Ile Ala Trp Ala Ser 55 Ser Gly His Val 60 Phe Lys Gly Ser
cgt aag tcc acc ccg ttc gcc gcg cag ctg gcc gcc gag aac gct gcc      240
Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala
65 70 75 80
cgc aag gcg cag gag cac ggt gtg aag aag gtc gac gtg ttc gtc aag      288
Arg Lys Ala Gln 85 His Gly Val Lys 90 Val Asp Val Phe Val Lys
ggc ccg ggt tgc ggc cgt gag acc gcc atc cgc tgc ctg cag gcc gca      336
Gly Pro Gly Ser 100 Gly Arg Glu Thr Ala 105 Ile Arg Ser Leu Gln Ala Ala
ggc ctc gag gtg ggc acg atc tcc gat gtc acc ccg cag ccg cac aac      384
Gly Leu Glu Val Gly Thr Ile Ser Asp Val Thr Pro Gln Pro His Asn
115 120 125
ggt tgc cgt ccg ccg aag cgg cgc cgg gtc taa      417
Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
130 135

```

&lt;210&gt; 722

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium smegmatis

&lt;400&gt; 722

```

Met Ala Gln Ala Lys Lys Gly Gly Thr Ala Ala Lys Lys Gly Gln Lys
1 5 10 15
Thr Arg Arg Arg 20 Glu Lys Lys Asn Val 25 Pro His Gly Ala 30 His Ile
Lys Ser Thr Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Gln Gly
35 40 45
Asn Val 50 Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser
55 60
Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala
65 70 75 80
Arg Lys Ala Gln Glu His Gly Val Lys Lys Val Asp Val Phe Val Lys
85 90 95
Gly Pro Gly Ser 100 Gly Arg Glu Thr Ala 105 Ile Arg Ser Leu Gln Ala Ala
110
Gly Leu Glu Val Gly Thr Ile Ser Asp Val Thr Pro Gln Pro His Asn
115 120 125
Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
130 135

```

&lt;210&gt; 723

&lt;211&gt; 417

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(417)

&lt;223&gt; transl\_table=11

&lt;400&gt; 723

```

atg cca ccg aag aaa gca gcc gct tcc tcc gcg aag aag ggg cag aag      48
Met Pro Pro Lys Lys 5 Ala Ala Ala Ser 10 Ala Lys Lys Gly Gln Lys
1 5 10 15
acc cgc cgc agg gaa aag aag aac gtc ccg cac ggc gcc gca cac atc      96
Thr Arg Arg Arg 20 Glu Lys Lys Asn Val 25 Pro His Gly Ala 30 His Ile
aag agc acc ttc aac aac acg atc gtg tgc atc acc gat ccc cag ggc      144
Lys Ser Thr Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Gln Gly

```

## PhoenixTemp32470.tmp.txt

```

      35      40      45
aac gtc atc gcc tgg gcg tcg gga cac gtc ggg ttc aag ggc tcg      192
Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser
      50      55      60
cgt aag tcg acc ccg ttc gcc gcg cag ctg gcg gag aac gcc gcc      240
Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala
      65      70      75
cgc aag gcg cag gag cac ggc gtc aag aag gtc gac gtc ttc gtg aag      288
Arg Lys Ala Gln Glu His Gly Val Lys Lys Val Asp Val Phe Val Lys
      85      90      95
ggc ccc ggt tcg ggc cgt gag acc gcc atc cgc tcg ctg cag gcc gcc      336
Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala
      100      105      110
ggc ctc gag gtc ggc gcg atc gcc gat gtc acg ccg cag ccg cac aac      384
Gly Leu Glu Val Gly Ala Ile Ala Asp Val Thr Pro Gln Pro His Asn
      115      120      125
ggg tgc cgt ccg ccc aag cgg cgc cgg gtc taa
Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
      130      135

```

&lt;210&gt; 724

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp

&lt;400&gt; 724

```

Met Pro Pro Lys Lys Ala Ala Ala Ser Ser Ala Lys Lys Gly Gln Lys
1      5      10
Thr Arg Arg Arg Glu Lys Lys Asn Val Pro His Gly Ala Ala His Ile
      20      25      30
Lys Ser Thr Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Gln Gly
      35      40      45
Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser
      50      55      60
Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala
      65      70      75
Arg Lys Ala Gln Glu His Gly Val Lys Lys Val Asp Val Phe Val Lys
      80      85      90
Gly Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala
      100      105      110
Gly Leu Glu Val Gly Ala Ile Ala Asp Val Thr Pro Gln Pro His Asn
      115      120      125
Gly Cys Arg Pro Pro Lys Arg Arg Arg Val
      130      135

```

&lt;210&gt; 725

&lt;211&gt; 420

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium tuberculosis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(420)

&lt;223&gt; transl\_table=11

&lt;400&gt; 725

```

atg cca cca gca aaa aaa ggg ccg gca acg tcg gct agg aag ggc cag      48
Met Pro Pro Ala Lys Lys Gly Pro Ala Thr Ser Ala Arg Lys Gly Gln
1      5      10
aag acc cgc cgg cgg gag aag aag aac gtc ccg cac ggc gcc gcc cac      96
Lys Thr Arg Arg Arg Glu Lys Lys Asn Val Pro His Gly Ala Ala His
      20      25      30
atc aag agc acg ttc aac aac acg atc gtg acc atc acc gac ccg caa      144
Ile Lys Ser Thr Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Gln
      35      40      45
ggc aac gtc att gcc tgg gca tcg tcg ggg cac gtc ggc ttc aag ggt      192
Gly Asn Val Ile Ala Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly
      50      55      60
tcc cgg aaa tcg acc ccg ttt gcg gcc cag ctg gcc gcg gag aac gcc      240

```

## PhoenixTemp32470.tmp.txt

Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	Leu	Ala	Ala	Glu	Asn	Ala		
65					70					75					80		
gct	cgc	aag	gcc	caa	gac	cac	ggg	gtg	cgc	aag	gtc	gac	gtg	ttc	gtc		288
Ala	Arg	Lys	Ala	Gln	Asp	His	Gly	Val	Arg	Lys	Val	Asp	Val	Phe	Val		
				85					90					95			
aag	ggc	ccg	ggc	tcg	ggc	cgc	gag	acc	gcg	atc	cgg	tcg	ctg	cag	gcc		336
Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr	Ala	Ile	Arg	Ser	Leu	Gln	Ala		
			100					105					110				
gcc	ggc	ctg	gag	gtg	ggc	gcg	atc	tcg	gat	gtc	acc	ccc	cag	ccg	cat		384
Ala	Gly	Leu	Glu	Val	Gly	Ala	Ile	Ser	Asp	Val	Thr	Pro	Gln	Pro	His		
		115					120					125					
aac	ggt	gtc	cgg	ccc	ccc	aag	cgc	cgg	cgc	gtc	tag						420
Asn	Gly	Val	Arg	Pro	Pro	Lys	Arg	Arg	Arg	Val							
	130					135											

&lt;210&gt; 726

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis

&lt;400&gt; 726

Met	Pro	Pro	Ala	Lys	Lys	Gly	Pro	Ala	Thr	Ser	Ala	Arg	Lys	Gly	Gln		
1				5					10					15			
Lys	Thr	Arg	Arg	Glu	Lys	Lys	Asn	Val	Pro	His	Gly	Ala	Ala	His			
			20				25					30					
Ile	Lys	Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	Thr	Ile	Thr	Asp	Pro	Gln		
		35				40					45						
Gly	Asn	Val	Ile	Ala	Trp	Ala	Ser	Ser	Gly	His	Val	Gly	Phe	Lys	Gly		
	50					55					60						
Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	Leu	Ala	Ala	Glu	Asn	Ala		
65					70					75					80		
Ala	Arg	Lys	Ala	Gln	Asp	His	Gly	Val	Arg	Lys	Val	Asp	Val	Phe	Val		
				85					90					95			
Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr	Ala	Ile	Arg	Ser	Leu	Gln	Ala		
			100					105					110				
Ala	Gly	Leu	Glu	Val	Gly	Ala	Ile	Ser	Asp	Val	Thr	Pro	Gln	Pro	His		
	115						120					125					
Asn	Gly	Val	Arg	Pro	Pro	Lys	Arg	Arg	Arg	Val							
	130					135											

&lt;210&gt; 727

&lt;211&gt; 441

&lt;212&gt; DNA

&lt;213&gt; Myxococcus xanthus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(441)

&lt;223&gt; transl\_table=11

&lt;400&gt; 727

atg	gct	gac	gag	atc	aat	act	tcg	gct	gcg	gcg	tcc	acg	ggc	gcc	gag		48
Met	Ala	Asp	Glu	Ile	Asn	Thr	Ser	Ala	Ala	Ala	Ser	Thr	Gly	Ala	Glu		
	1			5					10					15			
ggc	gag	gcc	cct	gcc	gcg	aag	aag	tcg	aag	cgc	aag	ggc	aag	aag	aac		96
Gly	Glu	Ala	Pro	Ala	Ala	Lys	Lys	Ser	Lys	Arg	Lys	Gly	Lys	Lys	Asn		
			20					25					30				
atc	ctc	aac	ggc	gtg	gtc	cac	atc	cag	tcc	acg	ttc	aac	aac	acc	atc		144
Ile	Leu	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
		35				40					45						
atc	acg	atc	acg	gac	gtg	tcc	ggg	aac	gtg	atc	tcc	tgg	tcg	tcc	gcc		192
Ile	Thr	Ile	Thr	Asp	Val	Ser	Gly	Asn	Val	Ile	Ser	Trp	Ser	Ser	Ala		
		50				55					60						
ggg	gcg	cgt	ggc	ttc	aag	gga	agc	cgc	aag	tcc	acc	ccg	ttc	gcg	gcg		240
Gly	Ala	Arg	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala		
	65				70					75				80			
cag	gtg	gcc	gct	ggc	gac	gcc	gcg	gcg	aag	gcg	atg	gag	cac	ggc	ctg		288
Gln	Val	Ala	Ala	Gly	Asp	Ala	Ala	Ala	Lys	Ala	Met	Glu	His	Gly	Leu		
				85					90					95			

## PhoenixTemp32470.tmp.txt

```

aag aac gtg tcc gtg ttc gtg aag ggc cca ggc gcg ggc cgc gag tcg 336
Lys Asn Val Ser Val Phe Val Lys Gly Pro Gly Ala Gly Arg Glu Ser
100 105 110
gcg ctg cgc gcg ctg gcc gcc gcc ggt ctg aag atc aac ctc atc cgc 384
Ala Leu Arg Ala Leu Ala Ala Ala Gly Leu Lys Ile Asn Leu Ile Arg
115 120 125
gac gtg acg ccc atc ccg cac aac gga tgc cgt cag ccc aag cgt cgc 432
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Gln Pro Lys Arg Arg
130 135 140
cgc gtc taa 441
Arg Val
145

```

&lt;210&gt; 728

&lt;211&gt; 146

&lt;212&gt; PRT

&lt;213&gt; Myxococcus xanthus

&lt;400&gt; 728

```

Met Ala Asp Glu Ile Asn Thr Ser Ala Ala Ala Ser Thr Gly Ala Glu
1 5 10 15
Gly Glu Ala Pro Ala Ala Lys Lys Ser Lys Arg Lys Gly Lys Lys Asn
20 25 30
Ile Leu Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
35 40 45
Ile Thr Ile Thr Asp Val Ser Gly Asn Val Ile Ser Trp Ser Ser Ala
50 55 60
Gly Ala Arg Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
65 70 75 80
Gln Val Ala Ala Gly Asp Ala Ala Ala Lys Ala Met Glu His Gly Leu
85 90 95
Lys Asn Val Ser Val Phe Val Lys Gly Pro Gly Ala Gly Arg Glu Ser
100 105 110
Ala Leu Arg Ala Leu Ala Ala Ala Gly Leu Lys Ile Asn Leu Ile Arg
115 120 125
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Gln Pro Lys Arg Arg
130 135 140
Arg Val
145

```

&lt;210&gt; 729

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Nanoarchaeum equitans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 729

```

atg gca aaa gag cga tgg gga gta gca cat ata tat tcc tct gag aat 48
Met Ala Lys Glu Arg Trp Gly Val Ala His Ile Tyr Ser Ser Glu Asn
1 5 10 15
aac aca ata att cat ata acc gat ata act ggg gca gag act att gct 96
Asn Thr Ile Ile His Ile Thr Asp Ile Thr Gly Ala Glu Thr Ile Ala
20 25 30
gtt ggc tct gga ggt atg gtt gta aat gcc gat aga tta gaa ggt tcc 144
Val Gly Ser Gly Gly Met Val Val Asn Ala Asp Arg Leu Glu Gly Ser
35 40 45
cct act gca gct ata cta gca gca aaa aga gca gca gca tta gca aaa 192
Pro Thr Ala Ala Ile Leu Ala Ala Lys Arg Ala Ala Leu Ala Lys
50 55 60
gaa aga ggt att acc ggt tta cat ata aag gtt aga gcc cca ggt ggg 240
Glu Arg Gly Ile Thr Gly Leu His Ile Lys Val Arg Ala Pro Gly Gly
65 70 75 80
cat aat ggt cct tgg att cct gga cca ggg gca agt gca gca ata aag 288
His Asn Gly Pro Trp Ile Pro Gly Pro Gly Ala Ser Ala Ala Ile Lys
85 90 95

```

## PhoenixTemp32470.tmp.txt

aca tta gca aga gaa gga ttg aaa ata ggg att ata gag gat gtt aca 336  
 Thr Leu Ala Arg Glu Gly Leu Lys Ile Gly Ile Ile Glu Asp Val Thr  
 100 105 110  
 cca act ccc cac gat ggt tgt aga aga aaa ggc ggt aaa aga gga aga 384  
 Pro Thr Pro His Asp Gly Cys Arg Arg Lys Gly Gly Lys Arg Gly Arg  
 115 120 125  
 agg gta tag 393  
 Arg Val  
 130

&lt;210&gt; 730

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Nanoarchaeum equitans

&lt;400&gt; 730

Met Ala Lys Glu Arg Trp Gly Val Ala His Ile Tyr Ser Ser Glu Asn  
 1 5 10 15  
 Asn Thr Ile Ile His Ile Thr Asp Ile Thr Gly Ala Glu Thr Ile Ala  
 20 25 30  
 Val Gly Ser Gly Gly Met Val Val Asn Ala Asp Arg Leu Glu Gly Ser  
 35 40 45  
 Pro Thr Ala Ala Ile Leu Ala Lys Arg Ala Ala Leu Ala Lys  
 50 55 60  
 Glu Arg Gly Ile Thr Gly Leu His Ile Lys Val Arg Ala Pro Gly Gly  
 65 70 75 80  
 His Asn Gly Pro Trp Ile Pro Gly Pro Gly Ala Ser Ala Ala Ile Lys  
 85 90 95  
 Thr Leu Ala Arg Glu Gly Leu Lys Ile Gly Ile Ile Glu Asp Val Thr  
 100 105 110  
 Pro Thr Pro His Asp Gly Cys Arg Arg Lys Gly Gly Lys Arg Gly Arg  
 115 120 125  
 Arg Val  
 130

&lt;210&gt; 731

&lt;211&gt; 396

&lt;212&gt; DNA

&lt;213&gt; Neisseria gonorrhoeae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(396)

&lt;223&gt; transl\_table=11

&lt;400&gt; 731

atg gct aaa gca aac aca gct tca cgt gta cgt aaa aaa gta cgt aaa 48  
 Met Ala Lys Ala Asn Thr Ala Ser Arg Val Arg Lys Lys Val Arg Lys  
 1 5 10 15  
 acc gtg agt gag ggt att gtg cac gtt cat gca tct ttc aac aat acc 96  
 Thr Val Ser Glu Gly Ile Val His Val His Ala Ser Phe Asn Asn Thr  
 20 25 30  
 atc att aca atc act gac cgt caa ggc aat gcg ttg tct tgg gct acc 144  
 Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr  
 35 40 45  
 tct ggc ggc gct ggt ttt aaa ggt tct cgt aaa agt aca cca ttt gca 192  
 Ser Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala  
 50 55 60  
 gca caa gtt gca gca gaa gca gct ggt aaa gtt gcc caa gag tat ggc 240  
 Ala Gln Val Ala Ala Glu Ala Ala Gly Lys Val Ala Gln Glu Tyr Gly  
 65 70 75 80  
 gtt aaa aat tta gag gtt cgt att aaa ggt cca ggt cca ggt cgc gaa 288  
 Val Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu  
 85 90 95  
 tcc tct gta cgt gct ttg aat gct ctt ggt ttc aag att acc agc att 336  
 Ser Ser Val Arg Ala Leu Asn Ala Leu Gly Phe Lys Ile Thr Ser Ile  
 100 105 110  
 act gac gtt acc ccg ttg cct cat aac ggt tgc cgt ccg cct aaa aaa 384  
 Thr Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Lys



115  
cgt cgt att taa  
Arg Arg Ile  
130

<210> 732  
<211> 131  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 732  
Met Ala Lys Ala Asn Thr Ala Ser Arg Val Arg Lys Lys Val Arg Lys  
1 5 10 15  
Thr Val Ser Glu Gly Ile Val His Val His Ala Ser Phe Asn Asn Thr  
20 25 30  
Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr  
35 40 45  
Ser Gly Gly Ala Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala  
50 55 60  
Ala Gln Val Ala Ala Glu Ala Ala Gly Lys Val Ala Gln Glu Tyr Gly  
65 70 75 80  
Val Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu  
85 90 95  
Ser Ser Val Arg Ala Leu Asn Ala Leu Gly Phe Lys Ile Thr Ser Ile  
100 105 110  
Thr Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Lys  
115 120 125  
Arg Arg Ile  
130

<210> 733  
<211> 363  
<212> DNA  
<213> Neorickettsia sennetsu

<220>  
<221> CDS  
<222> (1)..(363)  
<223> transl\_table=11

<400> 733  
atg aga gaa aag aag agt atc gtt tcg ggt aat gcg cac gtt att gtg 48  
Met Arg Glu Lys Lys Ser Ile Val Ser Gly Asn Ala His Val Ile Val 15  
1 5 10  
acg ttt aat aat gtc tat atc agt gtc acc gat cat cag gga aat gtg 96  
Thr Phe Asn Asn Val Tyr Ile Ser Val Thr Asp His Gln Gly Asn Val 20 25 30  
caa ggt tgg gcc agt tct ggc tcg gtt ggc ttt aag ggt aat aag aag 144  
Gln Gly Trp Ala Ser Ser Gly Ser Val Gly Phe Lys Gly Asn Lys Lys 35 40 45  
tcc act gcg tat gct gcg cag tct gtt gca acg acc tta atg acc aag 192  
Ser Thr Ala Tyr Ala Ala Gln Ser Val Ala Thr Thr Leu Met Thr Lys 50 55 60  
ctg aag cgc att ggg tta aag atc ctt aat gtt cat ttg agt ggt tcc 240  
Leu Lys Arg Ile Gly Leu Lys Ile Leu Asn Val His Leu Ser Gly Ser 65 70 75 80  
aat cca att agg gaa gct gcg ctg cgt gcg att cgc aat tcg ggc atc 288  
Asn Pro Ile Arg Glu Ala Ala Leu Arg Ala Ile Arg Asn Ser Gly Ile 85 90 95  
gta atc atc tcc ctt cag gac atg acg cct gtt cca cat aat gga gta 336  
Val Ile Ile Ser Leu Gln Asp Met Thr Pro Val Pro His Asn Gly Val 100 105 110  
agg ttg aga aga agg cgt agg gtc tag 363  
Arg Leu Arg Arg Arg Arg Val 115 120

<210> 734  
<211> 120  
<212> PRT

&lt;213&gt; Neorickettsia sennetsu

&lt;400&gt; 734

```

Met Arg Glu Lys Lys Ser Ile Val Ser Gly Asn Ala His Val Ile Val
1      5      10      15
Thr Phe Asn Asn Val Tyr Ile Ser Val Thr Asp His Gln Gly Asn Val
20      25      30
Gln Gly Trp Ala Ser Ser Gly Ser Val Gly Phe Lys Gly Asn Lys Lys
35      40      45
Ser Thr Ala Tyr Ala Ala Gln Ser Val Ala Thr Thr Leu Met Thr Lys
50      55      60
Leu Lys Arg Ile Gly Leu Lys Ile Leu Asn Val His Leu Ser Gly Ser
65      70      75      80
Asn Pro Ile Arg Glu Ala Ala Leu Arg Ala Ile Arg Asn Ser Gly Ile
85      90      95
Val Ile Ile Ser Leu Gln Asp Met Thr Pro Val Pro His Asn Gly Val
100      105      110
Arg Leu Arg Arg Arg Arg Val
115      120

```

&lt;210&gt; 735

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Nitrosomonas europaea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 735

```

atg gta aag cct tca tta aaa att cgt aaa aaa gtt aaa aaa aat gtt      48
Met Val Lys Pro Ser Leu Lys Ile Arg Lys Lys Val Lys Lys Asn Val
1      5      10      15
gtt gag ggg gtg gcg cat att cac gcc tcc aat aac aca atc gtg      96
Val Glu Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
20      25      30
act att tct gat cgt caa ggg aat gct ctt tct tgg gca aca tcg ggc      144
Thr Ile Ser Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly
35      40      45
ggg gtg gga ttt aag ggt tcg cgt aaa agc acc cca ttt gca gca caa      192
Gly Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
gtt gct gca gaa cat gca ggc agg gca gcg ctg gaa tac ggc gtt aaa      240
Val Ala Ala Glu His Ala Gly Arg Ala Ala Leu Glu Tyr Gly Val Lys
65      70      75      80
aat ttg gag gta aga gta aaa ggg ccc ggg ccg ggt cgt gac tct gct      288
Asn Leu Glu Val Arg Val Lys Gly Pro Gly Pro Gly Arg Asp Ser Ala
85      90      95
gta cga gct ctc aac gct aca ggt ttt aaa att acc agc ata acc gat      336
Val Arg Ala Leu Asn Ala Thr Gly Phe Lys Ile Thr Ser Ile Thr Asp
100      105      110
gtg aca ccc ata cct cac aat gga tgt agg ccg cct aag aaa cgt cgt      384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115      120      125
atc taa
Ile
390

```

&lt;210&gt; 736

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Nitrosomonas europaea

&lt;400&gt; 736

```

Met Val Lys Pro Ser Leu Lys Ile Arg Lys Lys Val Lys Lys Asn Val
1      5      10      15
Val Glu Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
20      25      30

```

## PhoenixTemp32470.tmp.txt

Thr Ile Ser<sub>35</sub> Asp Arg Gln Gly Asn<sub>40</sub> Ala Leu Ser Trp<sub>45</sub> Ala Thr Ser Gly  
 Gly Val<sub>50</sub> Gly Phe Lys Gly Ser<sub>55</sub> Arg Lys Ser Thr Pro<sub>60</sub> Phe Ala Ala Gln  
 Val<sub>65</sub> Ala Ala Glu His<sub>70</sub> Ala Gly Arg Ala Ala Leu<sub>75</sub> Glu Tyr Gly Val<sub>80</sub> Lys  
 Asn Leu Glu Val<sub>85</sub> Arg Val Lys Gly Pro<sub>90</sub> Gly Pro Gly Arg Asp Ser<sub>95</sub> Ala  
 Val Arg Ala<sub>100</sub> Leu Asn Ala Thr Gly Phe<sub>105</sub> Lys Ile Thr Ser Ile<sub>110</sub> Thr Asp  
 Val Thr Pro<sub>115</sub> Ile Pro His Asn Gly<sub>120</sub> Cys Arg Pro Pro Lys<sub>125</sub> Lys Arg Arg  
 Ile

&lt;210&gt; 737

&lt;211&gt; 414

&lt;212&gt; DNA

&lt;213&gt; Nocardia farcinica

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;223&gt; transl\_table=11

&lt;400&gt; 737

atg cct ccg aag agt cgg gcc tcc ggc ccc aag aag acc cag aag tcg	48
Met Pro Pro Lys Ser <sub>5</sub> Arg Ala Ser Gly <sub>10</sub> Pro Lys Lys Thr Gln <sub>15</sub> Lys Ser	
cgg cgc cgg gac aag aag aac gtt ccg cac ggc aac gcg cac atc aag	96
Arg Arg Arg Asp <sub>20</sub> Lys Lys Asn Val <sub>25</sub> Pro His Gly Asn Ala His <sub>30</sub> Ile Lys	
agc acg ttc aac aac acg atc gtg tcc atc acc gac ccg aac ggc aac	144
Ser Thr Phe <sub>35</sub> Asn Asn Thr Ile Val <sub>40</sub> Ser Ile Thr Asp <sub>45</sub> Pro Asn Gly Asn	
gtc atc tcc tgg gcg tcc tcg ggt cac gtc ggc ttc aag ggt tcg cgc	192
Val Ile Ser Trp Ala Ser Ser Gly <sub>55</sub> His Val Gly <sub>60</sub> Phe Lys Gly Ser Arg	
aag tcg acc ccg ttc gcc gcc cag ctg gcc gcc gag aac gcg gcc cgc	240
Lys Ser Thr Pro Phe <sub>70</sub> Ala Ala Gln Leu Ala Ala <sub>75</sub> Glu Asn Ala Ala Arg <sub>80</sub>	
aag gcg cag gag cac ggc gtc aag aag gtc gac gtg ttc gtc aag ggc	288
Lys Ala Gln Glu His <sub>85</sub> Gly Val Lys Lys Val <sub>90</sub> Asp Val Phe Val <sub>95</sub> Lys Gly	
ccg ggt tcg ggc cgc gag acc gcg atc cgc tcg ctg cag gcc gcc ggc	336
Pro Gly Ser Gly <sub>100</sub> Arg Glu Thr Ala Ile <sub>105</sub> Arg Ser Leu Gln <sub>110</sub> Ala Ala Gly	
ctg gaa gtg ggc acg atc tcc gat gtc acc ccg cag ccg cac aac ggc	384
Leu Glu Val Gly Thr Ile Ser Asp <sub>120</sub> Val Thr Pro Gln <sub>125</sub> Pro His Asn Gly	
tgc cgt ccg ccc aag cgg cgt cgc gtc tag	414
Cys Arg Pro Pro Lys Arg Arg Arg Val <sub>135</sub>	

&lt;210&gt; 738

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Nocardia farcinica

&lt;400&gt; 738

Met Pro Pro Lys Ser<sub>5</sub> Arg Ala Ser Gly<sub>10</sub> Pro Lys Lys Thr Gln<sub>15</sub> Lys Ser  
 Arg Arg Arg Asp<sub>20</sub> Lys Lys Asn Val<sub>25</sub> His Gly Asn Ala His<sub>30</sub> Ile Lys  
 Ser Thr Phe<sub>35</sub> Asn Asn Thr Ile Val<sub>40</sub> Ser Ile Thr Asp<sub>45</sub> Pro Asn Gly Asn  
 Val Ile Ser Trp Ala Ser Ser<sub>55</sub> Gly His Val Gly<sub>60</sub> Phe Lys Gly Ser Arg  
 Lys Ser Thr Pro Phe Ala Ala Gln Leu Ala Ala Glu Asn Ala Ala Arg

## PhoenixTemp32470.tmp.txt

65 70 75 80  
 Lys Ala Gln Glu His Gly Val Lys Lys Val Asp Val Phe Val Lys Gly  
 85 90 95  
 Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly  
 100 105 110  
 Leu Glu Val Gly Thr Ile Ser Asp Val Thr Pro Gln Pro His Asn Gly  
 115 120 125  
 Cys Arg Pro Pro Lys Arg Arg Val  
 130 135

<210> 739  
 <211> 408  
 <212> DNA  
 <213> Nocardioides sp

<220>  
 <221> CDS  
 <222> (1)..(408)  
 <223> transl\_table=11

<400> 739  
 atg cct ccc aag agc cgc act gcg gcc ggc gcc aag aag gtg cgc cgc 48  
 Met Pro Pro Lys Ser Arg Thr Ala Ala Gly Ala Lys Lys Val Arg Arg  
 1 5 10 15  
 aag gag aag aag aac gtc gcg atg ggc gag gcc cac atc aag agc acg 96  
 Lys Glu Lys Lys Asn Val Ala Met Gly Glu Ala His Ile Lys Ser Thr  
 20 25 30  
 ttc aac aac acc atc gtc acg atc acc gac ccc acc ggt gcg gtg atc 144  
 Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Thr Gly Ala Val Ile  
 35 40 45  
 tcg tgg gcc tcg gcc ggc acc gtc ggc ttc aag ggc tcc cgc aag tcc 192  
 Ser Trp Ala Ser Ala Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser  
 50 55 60  
 acc ccg ttc gcc gcg cag atg gca gcc gag gct gcc ggt cgt cgg gcg 240  
 Thr Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Gly Arg Arg Ala  
 65 70 75 80  
 atg gag cac ggc atg aag aag atc gac gtc ttc gtg aag ggc ccg ggc 288  
 Met Glu His Gly Met Lys Lys Ile Asp Val Phe Val Lys Gly Pro Gly  
 85 90 95  
 tcg ggc cgc gag acg gcg atc cgt tcc ctg ggt gcg atc ggc ctc gag 336  
 Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gly Ala Ile Gly Leu Glu  
 100 105 110  
 gtc ggc acc atc cag gac gtc acg ccg acg ccc cac aac gga tgc cgc 384  
 Val Gly Thr Ile Gln Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg  
 115 120 125  
 ccg ccc aag cgc cgg cgc gtc tga 408  
 Pro Pro Lys Arg Arg Arg Val  
 130 135

<210> 740  
 <211> 135  
 <212> PRT  
 <213> Nocardioides sp

<400> 740  
 Met Pro Pro Lys Ser Arg Thr Ala Ala Gly Ala Lys Lys Val Arg Arg  
 1 5 10 15  
 Lys Glu Lys Lys Asn Val Ala Met Gly Glu Ala His Ile Lys Ser Thr  
 20 25 30  
 Phe Asn Asn Thr Ile Val Thr Ile Thr Asp Pro Thr Gly Ala Val Ile  
 35 40 45  
 Ser Trp Ala Ser Ala Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser  
 50 55 60  
 Thr Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Gly Arg Arg Ala  
 65 70 75 80  
 Met Glu His Gly Met Lys Lys Ile Asp Val Phe Val Lys Gly Pro Gly  
 85 90 95  
 ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gly Ala Ile Gly Leu Glu  
 100 105 110

PhoenixTemp32470.tmp.txt  
Val Gly Thr Ile Gln Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg  
115 120 125  
Pro Pro Lys Arg Arg Arg Val  
130 135

<210> 741  
<211> 390  
<212> DNA  
<213> Novosphingobium aromaticivorans

<220>  
<221> CDS  
<222> (1)..(390)  
<223> transl\_table=11

<400> 741  
atg gca cgc gaa ccc cag cgc atc aag cgc cgc gag cgc aag aac atc 48  
Met Ala Arg Glu Pro Gln Arg Ile Lys Arg Arg Glu Arg Lys Asn Ile  
1 5 10 15  
acc agc ggc att gcg cac gtc aac gcc agc ttc aac aac acg atg gtc 96  
Thr Ser Gly Ile Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Val  
20 25 30  
acc atc acc gat gcc cag ggc aac gcc att tcg tgg tgc tgc gcc ggc 144  
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly  
35 40 45  
atg atg ggc ttc aag ggc agc cgc aag tcg acg ccg tac gcc gcg cag 192  
Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
50 55 60  
gtc gct gct gac gat gcc ggc aag aag gct gcc gag cac ggc gtc cgt 240  
Val Ala Ala Asp Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Arg  
65 70 75 80  
acc ctc gaa gtc gag gtc aag ggc ccc ggt tcg ggc cgt gaa agc gcg 288  
Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala  
85 90 95  
ctg cgc gcc ctt cag gcg gtc ggt ttc acc atc acg gcc atc cgt gac 336  
Leu Arg Ala Leu Gln Ala Val Gly Phe Thr Ile Thr Ala Ile Arg Asp  
100 105 110  
gtg acc ccg atc ccg cac aac ggc gtt cgt ccg tcg aag cgt cgt cgc 384  
Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ser Lys Arg Arg Arg  
115 120 125  
gtc tga 390  
Val

<210> 742  
<211> 129  
<212> PRT  
<213> Novosphingobium aromaticivorans

<400> 742  
Met Ala Arg Glu Pro Gln Arg Ile Lys Arg Arg Glu Arg Lys Asn Ile  
1 5 10 15  
Thr Ser Gly Ile Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Val  
20 25 30  
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly  
35 40 45  
Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
50 55 60  
Val Ala Ala Asp Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Arg  
65 70 75 80  
Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala  
85 90 95  
Leu Arg Ala Leu Gln Ala Val Gly Phe Thr Ile Thr Ala Ile Arg Asp  
100 105 110  
Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ser Lys Arg Arg Arg  
115 120 125  
Val

<210> 743  
 <211> 390  
 <212> DNA  
 <213> Oceanobacillus iheyensis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 743  
 atg gca cgt aaa acg aat aca cgt aaa cgt cgt gtg aaa aag aat ata 48  
 Met Ala Arg Lys Thr Asn Thr Arg Lys Arg Val Lys Lys Asn Ile  
 1 5 10 15  
 gaa tct ggt att gct cat atc cgt tct act ttt aac aat act att gtt 96  
 Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val  
 20 25 30  
 aca att acg gat act cgc ggt aat gct att gga tgg agt tca gct ggt 144  
 Thr Ile Thr Asp Thr Arg Gly Asn Ala Ile Gly Trp Ser Ser Ala Gly  
 35 40 45  
 gca tta ggc ttt aaa ggt tct aag aaa tca act cct ttc gca gct caa 192  
 Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 atg gca gct gaa aca gca gct aag tct gct atc gaa aat gga atg aaa 240  
 Met Ala Ala Glu Thr Ala Ala Lys Ser Ala Ile Glu Asn Gly Met Lys  
 65 70 75 80  
 act tta gaa gta act gtt aaa ggc cct ggt gcg gga cgt gaa gct gca 288  
 Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 85 90 95  
 atc cgt tct tta cag gct gct ggt cta gaa gtt aca gct att gta gat 336  
 Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Val Asp  
 100 105 110  
 gta act cca gta cct cat aat ggt tgc cgt cca cca aaa cgt cgt cgt 384  
 Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 gtt taa 390  
 Val

<210> 744  
 <211> 129  
 <212> PRT  
 <213> Oceanobacillus iheyensis

<400> 744  
 Met Ala Arg Lys Thr Asn Thr Arg Lys Arg Arg Val Lys Lys Asn Ile  
 1 5 10 15  
 Glu Ser Gly Ile Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Thr Arg Gly Asn Ala Ile Gly Trp Ser Ser Ala Gly  
 35 40 45  
 Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Met Ala Ala Glu Thr Ala Ala Lys Ser Ala Ile Glu Asn Gly Met Lys  
 65 70 75 80  
 Thr Leu Glu Val Thr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala Ala  
 85 90 95  
 Ile Arg Ser Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Val Asp  
 100 105 110  
 Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 745  
 <211> 399  
 <212> DNA  
 <213> Oenococcus oeni

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(399)

&lt;223&gt; transl\_table=11

&lt;400&gt; 745

atg gca agt cgt aca agt cgc aca agt ggt cat aag cgt cgc gct aaa	48
Met Ala Ser Arg Thr Ser Arg Thr Ser Gly His Lys Arg Arg Ala Lys	
1 5 10 15	
aag aat att gaa aaa ggc gtt gcc cat att cat tca act ttt aat aac	96
Lys Asn Ile Glu Lys Gly Val Ala His Ile His Ser Thr Phe Asn Asn	
20 25 30	
acg att gtt ttg atc act gat gaa gca gga aac gca gtt tct tgg tca	144
Thr Ile Val Leu Ile Thr Asp Glu Ala Gly Asn Ala Val Ser Trp Ser	
35 40 45	
tca gct ggt tca tta ggt ttt aag ggt tct cgt aag tct act cct ttt	192
Ser Ala Gly Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe	
50 55 60	
gct gct caa ctt gct ggt gaa gct gct gcc aaa gca gca atg gaa caa	240
Ala Ala Gln Leu Ala Gly Glu Ala Ala Ala Lys Ala Ala Met Glu Gln	
65 70 75 80	
aat atg cat agt gtt gca atc agt gtt aaa gga cca ggt cct gga cgc	288
Asn Met His Ser Val Ala Ile Ser Val Lys Gly Pro Gly Pro Gly Arg	
85 90 95	
gaa tct gca att cgt gct gtt gcc gct gct ggt tta gaa att act gca	336
Glu Ser Ala Ile Arg Ala Val Ala Ala Ala Gly Leu Glu Ile Thr Ala	
100 105 110	
att agc gac gtc act ccc gtt cct cat aac ggt tct cgt cca ccg aag	384
Ile Ser Asp Val Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys	
115 120 125	
cag cgt cgg gca taa	399
Gln Arg Arg Ala	
130	

&lt;210&gt; 746

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Oenococcus oeni

&lt;400&gt; 746

Met Ala Ser Arg Thr Ser Arg Thr Ser Gly His Lys Arg Arg Ala Lys
1 5 10 15
Lys Asn Ile Glu Lys Gly Val Ala His Ile His Ser Thr Phe Asn Asn
20 25 30
Thr Ile Val Leu Ile Thr Asp Glu Ala Gly Asn Ala Val Ser Trp Ser
35 40 45
Ser Ala Gly Ser Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe
50 55 60
Ala Ala Gln Leu Ala Gly Glu Ala Ala Ala Lys Ala Ala Met Glu Gln
65 70 75 80
Asn Met His Ser Val Ala Ile Ser Val Lys Gly Pro Gly Pro Gly Arg
85 90 95
Glu Ser Ala Ile Arg Ala Val Ala Ala Ala Gly Leu Glu Ile Thr Ala
100 105 110
Ile Ser Asp Val Thr Pro Val Pro His Asn Gly Ser Arg Pro Pro Lys
115 120 125
Gln Arg Arg Ala
130

&lt;210&gt; 747

&lt;211&gt; 387

&lt;212&gt; DNA

&lt;213&gt; Onion yellows phytoplasma

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(387)

&lt;223&gt; transl\_table=11

## PhoenixTemp32470.tmp.txt

```

<400> 747
ttg gca aga aaa aaa act acc aaa cgc aaa gtt aaa aaa aat gtt cct      48
Met Ala Arg Lys Lys Thr Thr Lys Arg Lys Val Lys Lys Asn Val Pro
1      5      10      15
tta gga att gca cat att cat acc act ttt aac aac act atc gtt act      96
Leu Gly Ile Ala His Ile His Thr Thr Phe Asn Asn Thr Ile Val Thr
20      25      30
atc act gat ctt aac ggt aat gct gtt act tgg agt agt gca ggt gct      144
Ile Thr Asp Leu Asn Gly Asn Ala Val Thr Trp Ser Ser Ala Gly Ala
35      40      45
ttg ggt ttt aaa gga agt cgt aaa tca act ccc ttt gca gca caa tta      192
Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu
50      55      60
gcc gct gaa gca gtt gcc aaa gca gcg atg gaa cac gga atg gtt aaa      240
Ala Ala Glu Ala Val Ala Lys Ala Ala Met Glu His Gly Met Val Lys
65      70      75      80
gta gaa act ttc att aca gga cca ggt ccc gga aga gaa gca gct atc      288
Val Glu Thr Phe Ile Thr Gly Pro Gly Pro Gly Arg Glu Ala Ala Ile
85      90      95
cgt tct ttg caa gca gca gga tta gaa att act gct att aaa gat gtt      336
Arg Ser Leu Gln Ala Ala Gly Leu Glu Ile Thr Ala Ile Lys Asp Val
100      105      110
act gca gta cca cat aat ggt tgt cga ccg cca aaa cct cct aga gga      384
Thr Ala Val Pro His Asn Gly Cys Arg Pro Pro Lys Pro Pro Arg Gly
115      120      125
taa                                                                    387

```

```

<210> 748
<211> 128
<212> PRT
<213> Onion yellows phytoplasma

```

```

<400> 748
Met Ala Arg Lys Lys Thr Thr Lys Arg Lys Val Lys Lys Asn Val Pro
1      5      10      15
Leu Gly Ile Ala His Ile His Thr Thr Phe Asn Asn Thr Ile Val Thr
20      25      30
Ile Thr Asp Leu Asn Gly Asn Ala Val Thr Trp Ser Ser Ala Gly Ala
35      40      45
Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Leu
50      55      60
Ala Ala Glu Ala Val Ala Lys Ala Ala Met Glu His Gly Met Val Lys
65      70      75      80
Val Glu Thr Phe Ile Thr Gly Pro Gly Pro Gly Arg Glu Ala Ala Ile
85      90      95
Arg Ser Leu Gln Ala Ala Gly Leu Glu Ile Thr Ala Ile Lys Asp Val
100      105      110
Thr Ala Val Pro His Asn Gly Cys Arg Pro Pro Lys Pro Pro Arg Gly
115      120      125

```

```

<210> 749
<211> 408
<212> DNA
<213> Protochlamydia amoebophila

```

```

<220>
<221> CDS
<222> (1)..(408)
<223> transl_table=11

```

```

<400> 749
ttg agt aag caa cct gcc act aat aaa aaa cct gta aag gct aag aaa      48
Met Ser Lys Gln Pro Ala Thr Asn Lys Lys Pro Val Lys Ala Lys Lys
1      5      10      15
aaa gct ttt caa aat gtt cca tca gga atc gcg cat gtt aaa gct acc      96
Lys Ala Phe Gln Asn Val Pro Ser Gly Ile Ala His Val Lys Ala Thr
20      25      30

```



## PhoenixTemp32470.tmp.txt

ttt aac aat acc att att gcg att act gat cca tca ggt cga gtg att	144
Phe Asn Asn Thr Ile Ile Ala Ile Thr Asp Pro Ser Gly Arg Val Ile	
35 40 45	
tct tgg gca tct gcc gga aaa gtt aac ttt tca ggt tct cgt aaa tct	192
Ser Trp Ala Ser Ala Gly Lys Val Asn Phe Ser Gly Ser Arg Lys Ser	
50 55 60	
tca gct ttt gca gcc aca gta gct gct caa gat gct gct aaa aca gct	240
Ser Ala Phe Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Thr Ala	
65 70 75 80	
tct tct ctc ggt atg aaa gaa gtt gaa gta aat ttg aaa gga cct gga	288
Ser Ser Leu Gly Met Lys Glu Val Glu Val Asn Leu Lys Gly Pro Gly	
85 90 95	
gcg ggt cga gag tct gct gtg cga gga tta caa agc gcg ggc tta aca	336
Ala Gly Arg Glu Ser Ala Val Arg Gly Leu Gln Ser Ala Gly Leu Thr	
100 105 110	
att act gca att aga gat aca acg cct gta cct cat aat gga tgc cgt	384
Ile Thr Ala Ile Arg Asp Thr Thr Pro Val Pro His Asn Gly Cys Arg	
115 120 125	
ccg cgt aaa cgt cgt cgt gta taa	408
Pro Arg Lys Arg Arg Arg Val	
130 135	

&lt;210&gt; 750

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Protochlamydia amoebophila

&lt;400&gt; 750

Met Ser Lys Gln Pro Ala Thr Asn Lys Lys Pro Val Lys Ala Lys Lys	
1 5 10 15	
Lys Ala Phe Gln Asn Val Pro Ser Gly Ile Ala His Val Lys Ala Thr	
20 25 30	
Phe Asn Asn Thr Ile Ile Ala Ile Thr Asp Pro Ser Gly Arg Val Ile	
35 40 45	
Ser Trp Ala Ser Ala Gly Lys Val Asn Phe Ser Gly Ser Arg Lys Ser	
50 55 60	
Ser Ala Phe Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Thr Ala	
65 70 75 80	
Ser Ser Leu Gly Met Lys Glu Val Glu Val Asn Leu Lys Gly Pro Gly	
85 90 95	
Ala Gly Arg Glu Ser Ala Val Arg Gly Leu Gln Ser Ala Gly Leu Thr	
100 105 110	
Ile Thr Ala Ile Arg Asp Thr Thr Pro Val Pro His Asn Gly Cys Arg	
115 120 125	
Pro Arg Lys Arg Arg Arg Val	
130 135	

&lt;210&gt; 751

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Pasteurella multocida

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 751

atg gct aaa aca cca gtt cgt gca cgt aaa cgt gta aaa aaa caa gtt	48
Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val	
1 5 10 15	
gta gat ggc gta gca cat atc cac gca tct ttc aat aat aca atc gtt	96
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
act att act gac cgc caa ggc aat gct ctc gcg tgg gca aca gca ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly	
35 40 45	
ggg tca ggt ttc cgt ggt tct cgt aaa tct acc ccg ttt gcg gcg cag	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	

## PhoenixTemp32470.tmp.txt

50	55	60		
gtt gct gct gaa cgt tgt gct gaa gtt gtc aaa gaa ttc ggc tta aag	240			
Val Ala Ala Glu Arg Cys Ala Glu Val Val Lys Glu Phe Gly Leu Lys				
65	70	75	80	
aac ttg gaa gtt atg gtg aaa gga cct ggt cct ggt cgt gag tct act	288			
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr				
85	90	95		
att cgt gcg tta aac gca gcg ggt ttc cgt att acg aat att act gat	336			
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp				
100	105	110		
gtg act ccg att cct cat aac ggt tgt cgt cca ccg aaa aaa cgt cgt	384			
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg				
115	120	125		
gtt taa	390			
Val				

&lt;210&gt; 752

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Pasteurella multocida

&lt;400&gt; 752

Met Ala Lys Thr Pro Val Arg Ala Arg Lys Arg Val Lys Lys Gln Val	
1	5
Val Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20	25
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly	
35	40
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50	55
Val Ala Ala Glu Arg Cys Ala Glu Val Val Lys Glu Phe Gly Leu Lys	
65	70
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr	
85	90
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp	
100	105
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115	120
Val	

&lt;210&gt; 753

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Pediococcus pentosaceus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 753

atg gca acg aaa aag aat act cgc aaa cgt cga gta aaa aag aat att	48
Met Ala Thr Lys Lys Asn Thr Arg Lys Arg Arg Val Lys Lys Asn Ile	
1	5
gaa tct gga gta gca cat atc cat tca aca ttc aac aat act ctt gtt	96
Glu Ser Gly Val Ala His Ile His Ser Thr Phe Asn Asn Thr Leu Val	
20	25
atg att aca gat ccc caa ggt aac gca gtt gct tgg tca tct gct ggt	144
Met Ile Thr Asp Pro Gln Gly Asn Ala Val Ala Trp Ser Ser Ala Gly	
35	40
gct ctt gga ttt aag ggt agt cgt aag tct aca cct ttt gcc gca caa	192
Ala Leu Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50	55
atg gca tca gaa gct gct gct aaa gca gct atg gaa cat ggt atg aag	240
Met Ala Ser Glu Ala Ala Ala Lys Ala Ala Met Glu His Gly Met Lys	
65	70
aat gtt gaa gtt gct gtt aag gga cct ggt tca ggt cgt gaa gct gct	288

PhoenixTemp32470.tmp.txt

Asn	Val	Glu	Val	Ala	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ala	Ala		
				85					90					95			
att	cgt	gca	cta	caa	gct	act	ggg	ctt	gaa	gta	agt	gca	att	cgt	gat		336
Ile	Arg	Ala	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	Ser	Ala	Ile	Arg	Asp		
			100					105					110				
gtt	aca	cca	gtt	cct	cat	aat	gga	tct	cgt	cct	cca	aag	cgc	cgt	cgt		384
Val	Thr	Pro	Val	Pro	His	Asn	Gly	Ser	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
gta	tag																390
Val																	

<210> 754  
 <211> 129  
 <212> PRT  
 <213> *Pediococcus pentosaceus*

<400> 754

Met	Ala	Thr	Lys	Lys	Asn	Thr	Arg	Lys	Arg	Arg	Val	Lys	Lys	Asn	Ile		
1				5					10					15			
Glu	Ser	Gly	Val	Ala	His	Ile	His	Ser	Thr	Phe	Asn	Asn	Thr	Leu	Val		
			20					25					30				
Met	Ile	Thr	Asp	Pro	Gln	Gly	Asn	Ala	Val	Ala	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
Ala	Leu	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
	50					55					60						
Met	Ala	Ser	Glu	Ala	Ala	Ala	Lys	Ala	Ala	Met	Glu	His	Gly	Met	Lys		
65				70					75					80			
Asn	Val	Glu	Val	Ala	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ala	Ala		
			85						90					95			
Ile	Arg	Ala	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	Ser	Ala	Ile	Arg	Asp		
		100						105					110				
Val	Thr	Pro	Val	Pro	His	Asn	Gly	Ser	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

<210> 755  
 <211> 390  
 <212> DNA  
 <213> *Photobacterium profundum*

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 755

atg	gca	aag	caa	cca	act	cgc	gct	cgt	aag	cgc	gtt	cgc	aag	caa	gta		48
Met	Ala	Lys	Gln	Pro	Thr	Arg	Ala	Arg	Lys	Arg	Val	Arg	Lys	Gln	Val		
1				5					10					15			
gct	gat	ggc	gta	gcg	cac	atc	cat	gct	tct	ttt	aac	aac	aca	atc	gta		96
Ala	Asp	Gly	Val	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	Val		
			20					25					30				
acc	att	aca	gac	cgt	caa	ggt	aat	gct	ctt	tca	tgg	gca	act	gca	ggt		144
Thr	Ile	Thr	Asp	Arg	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Thr	Ala	Gly		
		35					40					45					
ggt	tca	ggt	ttc	cgt	ggt	tct	cgt	aaa	tct	act	ccg	ttc	gct	gca	cag		192
Gly	Ser	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln		
	50					55					60						
gtt	gct	gct	gaa	cgt	tgt	ggt	gaa	atg	gcc	aaa	gaa	tat	ggc	gtt	aag		240
Val	Ala	Ala	Glu	Arg	Cys	Gly	Glu	Met	Ala	Lys	Glu	Tyr	Gly	Val	Lys		
	65				70				75					80			
aac	ctg	gaa	gtt	atg	gtt	aag	gga	cct	ggt	cct	ggt	cgt	gag	tct	aca		288
Asn	Leu	Glu	Val	Met	Val	Lys	Gly	Pro	Gly	Pro	Gly	Arg	Glu	Ser	Thr		
			85					90					95				
atc	cgt	gca	tta	aat	gca	gcg	ggt	ttc	cgt	atc	act	aac	att	gtt	gat		336
Ile	Arg	Ala	Leu	Asn	Ala	Ala	Gly	Phe	Arg	Ile	Thr	Asn	Ile	Val	Asp		
			100					105					110				

PhoenixTemp32470.tmp.txt  
gcg act ccg att cct cat aac ggt tgt cgt cca cct aag aaa cgt cgc 384  
Ala Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
115 120 125  
gta taa 390  
Val

<210> 756  
<211> 129  
<212> PRT  
<213> Photobacterium profundum

<400> 756  
Met Ala Lys Gln Pro Thr Arg Ala Arg Lys Arg Val Arg Lys Gln Val  
1 5 10 15  
Ala Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
20 25 30  
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala Gly  
35 40 45  
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
50 55 60  
Val Ala Ala Glu Arg Cys Gly Glu Met Ala Lys Glu Tyr Gly Val Lys  
65 70 75 80  
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr  
85 90 95  
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Val Asp  
100 105 110  
Ala Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
115 120 125  
Val

<210> 757  
<211> 384  
<212> DNA  
<213> Picrophilus torridus

<220>  
<221> CDS  
<222> (1)..(384)  
<223> transl\_table=11

<400> 757  
atg aat aag aca gga ata gca cat ata tat gca tca cag aac aac aca 48  
Met Asn Lys Thr Gly Ile Ala His Ile Tyr Ala Ser Gln Asn Asn Thr  
1 5 10 15  
ata ata ctt gta aca gat cca aca ggc gcc gaa acg ata gca aaa tca 96  
Ile Ile Leu Val Thr Asp Pro Thr Gly Ala Glu Thr Ile Ala Lys Ser  
20 25 30  
agc ggc ggc atg gtt gtc aaa aac gac agg gat gag gca agc cct tac 144  
Ser Gly Gly Met Val Val Lys Asn Asp Arg Asp Glu Ala Ser Pro Tyr  
35 40 45  
gct gcc atg agg gcg gca gac atg gtc tct gaa aag ctc agg gag agg 192  
Ala Ala Met Arg Ala Ala Asp Met Val Ser Glu Lys Leu Arg Glu Arg  
50 55 60  
gaa ata aca gat ctt ata ata agg gtc cgt gca cca gga gga agc aaa 240  
Glu Ile Thr Asp Leu Ile Ile Arg Val Arg Ala Pro Gly Gly Ser Lys  
65 70 75 80  
tcg aag ata cca ggc cca gga gca cag tca gca ata agg gcg ctc tca 288  
Ser Lys Ile Pro Gly Pro Gly Ala Gln Ser Ala Ile Arg Ala Leu Ser  
85 90 95  
agg gca ggt ttt aaa ata tta aga ata gag gag gta aca cca ata ccc 336  
Arg Ala Gly Phe Lys Ile Leu Arg Ile Glu Glu Val Thr Pro Ile Pro  
100 105 110  
cat gat ggc act aaa aag aaa ggt ggc aga agg gga agg aga gtt 381  
His Asp Gly Thr Lys Lys Lys Gly Gly Arg Arg Gly Arg Arg Val  
115 120 125  
taa 384

<210> 758  
 <211> 127  
 <212> PRT  
 <213> *Picrophilus torridus*

<400> 758  
 Met Asn Lys Thr Gly Ile Ala His Ile Tyr Ala Ser Gln Asn Asn Thr  
 1 5 10 15  
 Ile Ile Leu Val Thr Asp Pro Thr Gly Ala Glu Thr Ile Ala Lys Ser  
 20 25 30  
 Ser Gly Gly Met Val Val Lys Asn Asp Arg Asp Glu Ala Ser Pro Tyr  
 35 40 45  
 Ala Ala Met Arg Ala Ala Asp Met Val Ser Glu Lys Leu Arg Glu Arg  
 50 55 60  
 Glu Ile Thr Asp Leu Ile Ile Arg Val Arg Ala Pro Gly Gly Ser Lys  
 65 70 75 80  
 Ser Lys Ile Pro Gly Pro Gly Ala Gln Ser Ala Ile Arg Ala Leu Ser  
 85 90 95  
 Arg Ala Gly Phe Lys Ile Leu Arg Ile Glu Glu Val Thr Pro Ile Pro  
 100 105 110  
 His Asp Gly Thr Lys Lys Lys Gly Gly Arg Arg Gly Arg Val  
 115 120 125

<210> 759  
 <211> 387  
 <212> DNA  
 <213> *Porphyromonas gingivalis*

<220>  
 <221> CDS  
 <222> (1)..(387)  
 <223> transl\_table=11

<400> 759  
 atg gca aag aaa gca gtc gca aaa aag aaa gtt gta agg gtg gaa gca 48  
 Met Ala Lys Lys Ala Val Ala Lys Lys Lys Val Val Arg Val Glu Ala  
 1 5 10 15  
 gtg gga cag gct cat att cat tct tcc ttt aac aac att att att tcc 96  
 Val Gly Gln Ala His Ile His Ser Ser Phe Asn Asn Ile Ile Ile Ser  
 20 25 30  
 tta gcg aac agc gaa ggt cag gtt atc agc tgg tct tca gcc ggt aaa 144  
 Leu Ala Asn Ser Glu Gly Gln Val Ile Ser Trp Ser Ser Ala Gly Lys  
 35 40 45  
 atg gga ttt cgt tct tca aag aag aat act ccc tat gct gcc cag atg 192  
 Met Gly Phe Arg Ser Ser Lys Lys Asn Thr Pro Tyr Ala Ala Gln Met  
 50 55 60  
 gca gct cag gat tgt gcc aaa gtg gca tat gat atg ggc ttg cgc aag 240  
 Ala Ala Gln Asp Cys Ala Lys Val Ala Tyr Asp Met Gly Leu Arg Lys  
 65 70 75 80  
 gta acg gtc tac gtt aag ggc ccg ggt aat ggt cgt gaa tcg gct att 288  
 Val Thr Val Tyr Val Lys Gly Pro Gly Asn Gly Arg Glu Ser Ala Ile  
 85 90 95  
 aga aca att cat gga gcg gga atc gag gtt atg gag att att gat gta 336  
 Arg Thr Ile His Gly Ala Gly Ile Glu Val Met Glu Ile Ile Asp Val  
 100 105 110  
 acg cct atg cct cat aac ggt tgt cgt cct cct aaa aag aga aga gtt 384  
 Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Val  
 115 120 125  
 taa 387

<210> 760  
 <211> 128  
 <212> PRT  
 <213> *Porphyromonas gingivalis*

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 760

```

Met Ala Lys Lys Ala Val Ala Lys Lys Lys Val Val Arg Val Glu Ala
1      5      10      15
Val Gly Gln Ala His Ile His Ser Ser Phe Asn Asn Ile Ile Ile Ser
20      25      30
Leu Ala Asn Ser Glu Gly Gln Val Ile Ser Trp Ser Ser Ala Gly Lys
35      40      45
Met Gly Phe Arg Ser Ser Lys Lys Asn Thr Pro Tyr Ala Ala Gln Met
50      55      60
Ala Ala Gln Asp Cys Ala Lys Val Ala Tyr Asp Met Gly Leu Arg Lys
65      70      75      80
Val Thr Val Tyr Val Lys Gly Pro Gly Asn Gly Arg Glu Ser Ala Ile
85      90      95
Arg Thr Ile His Gly Ala Gly Ile Glu Val Met Glu Ile Ile Asp Val
100     105     110
Thr Pro Met Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg Val
115     120     125

```

&lt;210&gt; 761

&lt;211&gt; 408

&lt;212&gt; DNA

&lt;213&gt; Propionibacterium acnes

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(408)

&lt;223&gt; transl\_table=11

&lt;400&gt; 761

```

atg gct act gca ggc cac aag ggt gca ccc aag acc aag gtg cgc cgc      48
Met Ala Thr Ala Gly His Lys Gly Ala Pro Lys Thr Lys Val Arg Arg
1      5      10      15
aag gag aag aag aac gtc gtc gcc ggt cag gcg cac atc aag agc acg      96
Lys Glu Lys Lys Asn Val Val Ala Gly Gln Ala His Ile Lys Ser Thr
20      25      30
ttc aac aac acc atc atc gct att act gac ccc tcg ggt gca gtg atc      144
Phe Asn Asn Thr Ile Ile Ala Ile Thr Asp Pro Ser Gly Ala Val Ile
35      40      45
tcg tgg gcc tct gcc ggc act gtc ggc ttc aag ggc tcc cgt aag tcc      192
Ser Trp Ala Ser Ala Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser
50      55      60
acc ccg ttc gcc gct cag atg gcc gct gag gct gct gga cgt cgt gcc      240
Thr Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Gly Arg Arg Ala
65      70      75      80
atg gag cat ggc atg aag cgc gtt gac gtc ttc gtt aag ggt ccc ggc      288
Met Glu His Gly Met Lys Arg Val Asp Val Phe Val Lys Gly Pro Gly
85      90      95
tcc ggt cgt gag acc gcc atc cgt tcc ctg ggg gct gtc ggt ttg gag      336
Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gly Ala Val Gly Leu Glu
100     105     110
atc ggc ccg atc tcc gac gtc acc cct gtt ccg cac aac gga tgc cgc      384
Ile Gly Pro Ile Ser Asp Val Thr Pro Val Pro His Asn Gly Cys Arg
115     120     125
ccg ccg aag cgc cgc cgc gtc tga      408
Pro Pro Lys Arg Arg Arg Val
130     135

```

&lt;210&gt; 762

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Propionibacterium acnes

&lt;400&gt; 762

```

Met Ala Thr Ala Gly His Lys Gly Ala Pro Lys Thr Lys Val Arg Arg
1      5      10      15
Lys Glu Lys Lys Asn Val Val Ala Gly Gln Ala His Ile Lys Ser Thr
20      25      30
Phe Asn Asn Thr Ile Ile Ala Ile Thr Asp Pro Ser Gly Ala Val Ile
35      40      45

```

## PhoenixTemp32470.tmp.txt

Ser Trp Ala Ser Ala Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser  
 50 55 60  
 Thr Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Gly Arg Arg Ala  
 65 70 75 80  
 Met Glu His Gly Met Lys Arg Val Asp Val Phe Val Lys Gly Pro Gly  
 85 90 95  
 Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gly Ala Val Gly Leu Glu  
 100 105 110  
 Ile Gly Pro Ile Ser Asp Val Thr Pro Val Pro His Asn Gly Cys Arg  
 115 120 125  
 Pro Pro Lys Arg Arg Arg Val  
 130 135

&lt;210&gt; 763

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 763

atg cca gct aca gta aaa aaa aca ggt tca aag aaa tct aaa cgt aat	48
Met Pro Ala Thr Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn	
1 5 10 15	
gta cca aat ggt gtg gta cac atc caa agc aca ttt aat aat act atc	96
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile	
20 25 30	
gtc tca att act gac acc tct ggt cat gta att tct tgg tct tct gca	144
Val Ser Ile Thr Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala	
35 40 45	
ggc gca agt gga ttt aaa ggc gct agg aaa ggg acg ccg ttt gct gct	192
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala	
50 55 60	
caa aca gct gcc gaa gct gca gct aga aga gca ctt gat caa ggt atg	240
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met	
65 70 75 80	
aga caa ata gaa gta cta gtt aga ggg ccg ggc gca ggt agg gaa acg	288
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ala Gly Arg Glu Thr	
85 90 95	
gcc ata aga gct tta caa gtg gcc gga tta gaa ata act cta ata aga	336
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg	
100 105 110	
gat gta act cca tta cct cat aat gga tgt aga aga cct aaa cgg aga	384
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg	
115 120 125	
cgc gtt tag	393
Arg Val	
130	

&lt;210&gt; 764

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus

&lt;400&gt; 764

Met Pro Ala Thr Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn  
 1 5 10 15  
 Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Val Ser Ile Thr Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met  
 65 70 75 80  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ala Gly Arg Glu Thr

## PhoenixTemp32470.tmp.txt

85 90 95  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
 115 120 125  
 Arg Val  
 130

<210> 765  
 <211> 393  
 <212> DNA  
 <213> Prochlorococcus marinus

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 765  
 atg gct aca acc tca aag aaa acc ggt tct aag aag tca aag cgc aac 48  
 Met Ala Thr Thr Ser Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn  
 1 5 10 15  
 gtt cca aat gga gtt gtg cat att caa agt acc ttc aac aac acc att 96  
 Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 gtt tca att acc gat acc tct ggt gaa gtc att tcc tgg tca tca gca 144  
 Val Ser Ile Thr Asp Thr Ser Gly Glu Val Ile Ser Trp Ser Ser Ala  
 35 40 45  
 gga gca agc ggt ttt aaa gga gct cga aag ggt act cct ttt gct gct 192  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 cag acc gcg gct gaa ctt gcg gcc cga agg gcc cta gag caa gga atg 240  
 Gln Thr Ala Ala Glu Leu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
 65 70 75 80  
 cgt caa ata gaa gtt ctt gta aga gga cca ggc tca ggt cgt gaa acc 288  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
 85 90 95  
 gca ata aga gcg ttg caa gta gct ggt ctt gaa att act ttg atc aga 336  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 gat gta act cct ctt cct cat aac ggt tgc agg aga cct aaa cgc aga 384  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
 115 120 125  
 cgc gtt taa 393  
 Arg Val  
 130

<210> 766  
 <211> 130  
 <212> PRT  
 <213> Prochlorococcus marinus

<400> 766  
 Met Ala Thr Thr Ser Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn  
 1 5 10 15  
 Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 25 30  
 Val Ser Ile Thr Asp Thr Ser Gly Glu Val Ile Ser Trp Ser Ser Ala  
 35 40 45  
 Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
 50 55 60  
 Gln Thr Ala Ala Glu Leu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
 65 70 75 80  
 Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
 85 90 95  
 Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 105 110  
 Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
 115 120 125



Arg Val  
130

<210> 767  
<211> 393  
<212> DNA  
<213> Prochlorococcus marinus

<220>  
<221> CDS  
<222> (1)..(393)  
<223> transl\_table=11

<400> 767  
atg gcc aaa ccc acc aaa aag aca ggt tcc aag aag acc aag cgc aac 48  
Met Ala Lys Pro Thr Lys Lys Thr Gly Ser Lys Lys Thr Lys Arg Asn  
1 5 10 15  
gtc ccc aat ggg gtt gcg cat att cag agc acc ttc aac aac aca atc 96  
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
20 25 30  
gtc tca atc acc gat aca gct ggg gaa gtt atc gcc tgg tca tct gct 144  
Val Ser Ile Thr Asp Thr Ala Gly Glu Val Ile Ala Trp Ser Ser Ala  
35 40 45  
gga gcc agt ggc ttc aag ggt gct cgt aaa ggc aca ccc ttc gct gct 192  
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
50 55 60  
caa act gca gct gaa gct gca gcc cgt aga gct ctc gag cag ggc atg 240  
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
65 70 75 80  
cgt cag atc gag gta ctg gtc cgt ggt ccc ggc tct ggc cgt gaa acc 288  
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
85 90 95  
gcc atc cgc gcc ctg cag gtg gca ggc ctc gaa atc act ctt att aga 336  
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
100 105 110  
gac gtc acc cca ctc ccc cat aac ggt tgc cgt cgg ccc aaa cgc cgg 384  
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
115 120 125  
cgc gtc tga 393  
Arg Val  
130

<210> 768  
<211> 130  
<212> PRT  
<213> Prochlorococcus marinus

<400> 768  
Met Ala Lys Pro Thr Lys Lys Thr Gly Ser Lys Lys Thr Lys Arg Asn  
1 5 10 15  
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
20 25 30  
Val Ser Ile Thr Asp Thr Ala Gly Glu Val Ile Ala Trp Ser Ser Ala  
35 40 45  
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
50 55 60  
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
65 70 75 80  
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
85 90 95  
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
100 105 110  
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
115 120 125  
Arg Val  
130

<210> 769  
<211> 393

## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 769

atg gca gct cca gta aaa aaa aca ggg tca aag aaa tca aag aaa aat	48
Met Ala Ala Pro Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Lys Asn	
1 5 10 15	
gta cca aat ggt gta gta cat att caa agt acc ttt aat aac act atc	96
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile	
20 25 30	
gta tct att agt gat act tca ggt cat gta att tct tgg tct tct gca	144
Val Ser Ile Ser Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala	
35 40 45	
gga gca agt gga ttt aaa ggc gcc aga aaa ggt acc cca ttc gct gct	192
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala	
50 55 60	
caa aca gct gct gag gca gca gct aaa aga gct ctg gat caa ggg atg	240
Gln Thr Ala Ala Glu Ala Ala Ala Lys Arg Ala Leu Asp Gln Gly Met	
65 70 75 80	
aga caa ata gaa gta tta gtt aga ggc cct ggc tca ggt agg gaa acc	288
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr	
85 90 95	
gcc ata aga gct tta caa gtg gcc ggt tta gaa ata act cta ata aga	336
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg	
100 105 110	
gat gta act cca tta cct cat aat gga tgt aga aga cct aaa cgt aga	384
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg	
115 120 125	
cgc gtt tag	393
Arg Val	
130	

&lt;210&gt; 770

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus

&lt;400&gt; 770

Met Ala Ala Pro Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Lys Asn
1 5 10 15
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20 25 30
Val Ser Ile Ser Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala
35 40 45
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50 55 60
Gln Thr Ala Ala Glu Ala Ala Lys Arg Ala Leu Asp Gln Gly Met
65 70 75 80
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
85 90 95
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg
100 105 110
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg
115 120 125
Arg Val
130

&lt;210&gt; 771

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 771

atg	gca	gct	aca	gta	aaa	aaa	aca	ggt	tca	aag	aaa	tcc	aaa	cgt	aat		48
Met	Ala	Ala	Thr	Val	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5				10					15				
gta	cct	aat	ggt	gtg	gta	cat	att	caa	agc	aca	ttt	aac	aac	aca	atc		96
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
gtt	tct	atc	act	gat	act	tct	ggt	cat	gta	att	tct	tgg	tct	tct	gca		144
Val	Ser	Ile	Thr	Asp	Thr	Ser	Gly	His	Val	Ile	Ser	Trp	Ser	Ser	Ala		
			35				40					45					
ggt	gcc	agt	gga	ttc	aag	ggc	gcc	cgt	aaa	ggt	acg	cca	ttt	gcc	gct		192
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55				60							
caa	aca	gcc	gct	gaa	gca	gca	gct	agg	aga	gca	ctt	gat	caa	ggt	atg		240
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Asp	Gln	Gly	Met		
	65			70						75					80		
aga	caa	ata	gaa	gta	tta	gtt	aga	ggg	cca	ggc	tca	ggt	agg	gaa	acg		288
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
			85					90					95				
gcc	ata	aga	gct	tta	caa	gtg	gcc	ggt	tta	gaa	ata	act	cta	ata	aga		336
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100				105					110					
gat	gta	act	cca	tta	cct	cat	aat	gga	tgt	aga	aga	cct	aaa	cgg	aga		384
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
			115				120					125					
cgc	gtt	tag															393
Arg	Val																
	130																

&lt;210&gt; 772

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus

&lt;400&gt; 772

Met	Ala	Ala	Thr	Val	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5				10					15				
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
Val	Ser	Ile	Thr	Asp	Thr	Ser	Gly	His	Val	Ile	Ser	Trp	Ser	Ser	Ala		
			35				40					45					
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55				60							
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Asp	Gln	Gly	Met		
	65			70						75					80		
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
			85					90					95				
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100				105					110					
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
			115				120					125					
Arg	Val																
	130																

&lt;210&gt; 773

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 773

atg	gcc	aca	cca	gca	aag	aaa	aca	ggt	tca	aag	aag	tct	aag	cgc	aac		48
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--	----

## PhoenixTemp32470.tmp.txt

Met	Ala	Thr	Pro	Ala	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5					10					15			
gtc	cca	aac	ggt	gtt	gtg	cac	att	caa	agc	acc	ttc	aat	aac	aca	att		96
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
gtt	tct	ata	act	gat	aca	aat	gga	gaa	gtt	atc	tct	tgg	tca	tca	gca		144
Val	Ser	Ile	Thr	Asp	Thr	Asn	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala		
			35				40					45					
ggt	gca	agt	ggc	ttt	aaa	gga	gct	aga	aaa	ggt	aca	cca	ttt	gcg	gcg		192
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
			50			55				60							
caa	act	gca	gct	gaa	gct	gca	gct	agg	cga	gca	ctt	gat	caa	ggc	atg		240
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Asp	Gln	Gly	Met		
					70					75					80		
cgt	cag	atc	gag	gtt	ctc	gta	aga	gga	ccc	ggt	tct	ggt	cgt	gaa	aca		288
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
				85				90					95				
gct	att	cgt	gca	cta	caa	gtg	gct	ggt	ctt	gag	atc	aca	ttg	att	aga		336
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100				105					110					
gat	gtg	aca	cct	ctc	cct	cac	aat	ggt	tgt	aga	agg	gca	aaa	cgc	agg		384
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Ala	Lys	Arg	Arg		
			115				120					125					
cgc	gtt	taa															393
Arg	Val																
			130														

&lt;210&gt; 774

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus

&lt;400&gt; 774

Met	Ala	Thr	Pro	Ala	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5					10					15			
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
Val	Ser	Ile	Thr	Asp	Thr	Asn	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala		
			35				40					45					
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
			50			55				60							
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Asp	Gln	Gly	Met		
					70					75					80		
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
				85				90					95				
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100				105					110					
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Ala	Lys	Arg	Arg		
			115				120					125					
Arg	Val																
			130														

&lt;210&gt; 775

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 775

atg	gcc	aaa	ccc	acc	aaa	aaa	aca	ggt	tcc	aaa	aag	acc	aag	cgc	aac		48
Met	Ala	Lys	Pro	Thr	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Thr	Lys	Arg	Asn		
				5				10						15			
gtc	ccc	aat	ggc	gtt	gca	cat	att	cag	agc	acc	ttc	aac	aac	acg	atc		96
Val	Pro	Asn	Gly	Val	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				

## PhoenixTemp32470.tmp.txt

```

gtc tca atc gcc gat aca gct ggg gaa gtt att gcc tgg tca tct gct 144
Val Ser Ile 35 Ala Asp Thr Ala Gly Glu Val Ile Ala Trp Ser Ser Ala
gga gcc agt ggc ttc aag ggt gct cgt aag ggc acc ccc ttt gcc gct 192
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50 55 60
caa act gca gct gaa gct gca gcg cgt agg gca ctc gaa cag ggc atg 240
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met
65 70 75 80
cgt cag atc gag gta cta gtc cgt gga ccc ggc tcc ggc cgt gaa aca 288
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
85 90 95
gcc atc cgc gcc ctg cag gtg gca ggc ctc gaa atc act ctt att aga 336
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg
100 105 110
gac gtc acc cca ctc ccc cat aac ggt tgc cgt cgg ccc aaa cgc cgg 384
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg
115 120 125
cgc gtc tga 393
Arg Val
130

```

&lt;210&gt; 776

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus

&lt;400&gt; 776

```

Met Ala Lys Pro Thr 5 Lys Lys Thr Gly Ser Lys Lys Thr Lys Arg Asn
1 10 15
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20 25 30
Val Ser Ile Ala Asp Thr Ala Gly Glu Val Ile Ala Trp Ser Ser Ala
35 40 45
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50 55 60
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Glu Gln Gly Met
65 70 75 80
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
85 90 95
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg
100 105 110
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg
115 120 125
Arg Val
130

```

&lt;210&gt; 777

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 777

```

atg gca gct cca gta aaa aaa aca ggt tca aag aaa tca aag aaa aat 48
Met Ala Ala Pro Val 5 Lys Lys Thr Gly Ser 10 Lys Lys Ser Lys Lys Asn
1 10 15
gta cca aat ggc gta gta cat att caa agt acc ttt aat aac act atc 96
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20 25 30
gta tct atc act gat act tcg ggc cat gta att tct tgg tct tct gca 144
Val Ser Ile Thr Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala
35 40 45
gga gca agt gga ttc aaa ggt gct cga aaa ggg act cca ttt gct gct 192
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala

```

## PhoenixTemp32470.tmp.txt

```

      50      55      60
caa aca gct gcc gaa gcc gct aaa aga gct ctt gat caa ggc atg
Gln Thr Ala Ala Glu Ala Ala Lys Arg Ala Leu Asp Gln Gly Met 240
65      70      75      80
aga caa ata aaa gta tta gtt aga ggc cct ggc tca ggt agg gaa acc
Arg Gln Ile Lys Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr 288
85      90      95
gcc ata aga gct tta caa gtg gcc ggt tta gaa ata act cta ata aga
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg 336
100      105      110
gat gta act cca tta cct cat aat gga tgc aga aga cct aaa cgt aga
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg 384
115      120      125
cgc gtt tag
Arg Val
130

```

&lt;210&gt; 778

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus subsp

&lt;400&gt; 778

```

Met Ala Ala Pro Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Lys Asn
1      5      10      15
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20      25      30
Val Ser Ile Thr Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala
35      40      45
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50      55      60
Gln Thr Ala Ala Glu Ala Ala Ala Lys Arg Ala Leu Asp Gln Gly Met
65      70      75      80
Arg Gln Ile Lys Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
85      90      95
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg
100      105      110
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg
115      120      125
Arg Val
130

```

&lt;210&gt; 779

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 779

```

atg gca gct aca gta aaa aaa aca ggt tca aag aaa tct aaa cga aat
Met Ala Ala Thr Val Lys Lys Thr Gly Ser Lys Lys Ser Lys Arg Asn
1      5      10      15
gta cct aat ggt gtg gta cat atc caa agc aca ttt aat aat act atc
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20      25      30
gtc tca att act gac acc tca ggt cat gta att tct tgg tct tct gct
Val Ser Ile Thr Asp Thr Ser Gly His Val Ile Ser Trp Ser Ser Ala
35      40      45
ggc gca agt gga ttt aaa ggc gct cgc aaa ggt acg cca ttt gcc gct
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50      55      60
caa aca gct gct gaa gct gca gct aga aga gct ctt gat caa ggt atg
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met
65      70      75      80
aga caa ata gaa gta cta gtt aga ggg cct ggc gca ggt agg gaa acg

```

PhoenixTemp32470.tmp.txt

Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ala	Gly	Arg	Glu	Thr		
				85					90					95			
gcc	ata	aga	gct	tta	caa	gtg	gcc	gga	tta	gaa	ata	act	cta	ata	aga		336
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100					105					110				
gat	gta	act	cca	tta	cct	cat	aat	gga	tgt	aga	aga	cct	aaa	cgc	aga		384
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
		115					120					125					
cgc	gtt	tag															393
Arg	Val																
	130																

<210> 780  
 <211> 130  
 <212> PRT  
 <213> Prochlorococcus marinus

<400> 780

Met	Ala	Ala	Thr	Val	Lys	Lys	Thr	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5					10					15			
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
Val	Ser	Ile	Thr	Asp	Thr	Ser	Gly	His	Val	Ile	Ser	Trp	Ser	Ser	Ala		
		35					40					45					
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55					60						
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Asp	Gln	Gly	Met		
65				70						75				80			
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ala	Gly	Arg	Glu	Thr		
			85					90						95			
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100					105					110				
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
		115					120					125					
Arg	Val																
	130																

<210> 781  
 <211> 393  
 <212> DNA  
 <213> Prochlorococcus marinus

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 781

atg	gct	aca	acc	tca	aag	aaa	tcc	ggt	tct	aag	aag	tca	aag	cgc	aac		48
Met	Ala	Thr	Thr	Ser	Lys	Lys	Ser	Gly	Ser	Lys	Lys	Ser	Lys	Arg	Asn		
1				5					10					15			
gtt	ccc	aat	gga	gtt	gtg	cat	att	caa	agt	acc	ttc	aac	aac	acc	att		96
Val	Pro	Asn	Gly	Val	Val	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
gtt	tct	att	acc	gac	acc	tct	ggt	gaa	gtc	att	tcc	tgg	tca	tca	gca		144
Val	Ser	Ile	Thr	Asp	Thr	Ser	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala		
		35					40					45					
gga	gca	agc	ggt	ttt	aaa	gga	gct	cga	aaa	ggt	act	cct	ttt	gct	gct		192
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55					60						
cag	acc	gcg	gct	gaa	ctt	gcg	gcc	cga	agg	gcc	cta	gag	caa	gga	atg		240
Gln	Thr	Ala	Ala	Glu	Leu	Ala	Ala	Arg	Arg	Ala	Leu	Glu	Gln	Gly	Met		
65				70						75				80			
cgt	caa	ata	gaa	gtt	ctt	gta	aga	gga	cca	ggc	tca	ggt	cgt	gaa	acc		288
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
			85					90						95			
gca	ata	aga	gcg	ttg	caa	gta	gct	ggt	ctt	gaa	att	act	ttg	atc	aga		336
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100					105					110				

PhoenixTemp32470.tmp.txt

gat gta act cct ctt cct cat aac ggt tgc agg aga cct aaa cgc aga	384
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg	
115 120 125	
cgc gtt taa	393
Arg Val	
130	

<210> 782  
 <211> 130  
 <212> PRT  
 <213> *Prochlorococcus marinus*

<400> 782

Met Ala Thr Thr Ser Lys Lys Ser Gly Ser Lys Lys Ser Lys Arg Asn	
1 5 10 15	
Val Pro Asn Gly Val Val His Ile Gln Ser Thr Phe Asn Asn Thr Ile	
20 25 30	
Val Ser Ile Thr Asp Thr Ser Gly Glu Val Ile Ser Trp Ser Ser Ala	
35 40 45	
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala	
50 55 60	
Gln Thr Ala Ala Glu Leu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met	
65 70 75 80	
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr	
85 90 95	
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg	
100 105 110	
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg	
115 120 125	
Arg Val	
130	

<210> 783  
 <211> 390  
 <212> DNA  
 <213> *Pseudomonas syringae* pv

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 783

atg gca aaa cct gct gct cgt cct cgt aaa aaa gtt aaa aag aca gtg	48
Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Val Lys Lys Thr Val	
1 5 10 15	
gtt gat ggc atc gcc cac atc cac gcg tcg ttt aac aac aca atc gtc	96
Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
acc att acc gat cgt caa ggt aac gct ctt tcg tgg gct acc tcc ggc	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly	
35 40 45	
ggt tcg ggt ttc cgt ggt tcg cgc aag tcc acc ccg ttc gct gct caa	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gta gct gct gag cgt gct ggt caa gct gcg ctg gag tac ggt ctg aag	240
Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys	
65 70 75 80	
aac ctc gac gtc aat gtc aag ggt cca ggc cca ggt cgt gaa tcc gct	288
Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala	
85 90 95	
gtc cgt gca ttg aac ggc tgt ggc tat aag atc gcc agc atc acc gac	336
Val Arg Ala Leu Asn Gly Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp	
100 105 110	
gtg acg cca atc ccg cac aac ggg tgc cgt ccg ccg aag aag cgc cgc	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
gtg taa	390
Val	



<210> 784  
 <211> 129  
 <212> PRT  
 <213> Pseudomonas syringae pv

<400> 784  
 Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Val Lys Lys Thr Val  
 1 5 10 15  
 Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys  
 65 70 75 80  
 Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
 85 90 95  
 Val Arg Ala Leu Asn Gly Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 785  
 <211> 390  
 <212> DNA  
 <213> Pseudomonas fluorescens

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 785  
 atg gca aaa cct gct gct cgt cct cgt aaa aag att aaa aag aca gtg 48  
 Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Ile Lys Lys Thr Val 15  
 1 5 10 15  
 gtt gat ggc atc gcc cac atc cac gcg tct ttc aac aac acc atc gtg 96  
 Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val 20 25 30  
 acc atc acc gac cgt caa ggt aac gct ctt tcc tgg gca acc tcc ggt 144  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly 35 40 45  
 ggt tcg ggt ttc cgc ggt tct cgc aag tcc acc ccg ttc gct gct caa 192  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln 50 55 60  
 gta gct gct gag cgt gct ggt caa gct gcg ctg gaa tat ggc ctg aaa 240  
 Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys 65 70 75 80  
 aac ctc gac gtc aac gtc aag ggt cca ggt cca ggt cgt gaa tcc gca 288  
 Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala 85 90 95  
 gtc cgc gct ttg aac ggc tgt ggc tac aag atc gcc agc atc acc gac 336  
 Val Arg Ala Leu Asn Gly Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp 100 105 110  
 gtg acg cca atc ccg cac aac ggg tgc cgt ccg ccg aag aag cgc cgc 384  
 Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg 115 120 125  
 gtg taa 390  
 Val

<210> 786  
 <211> 129  
 <212> PRT

&lt;213&gt; Pseudomonas fluorescens

&lt;400&gt; 786

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Met Ala Lys Pro Ala Ala Arg Pro Arg Lys Lys Ile Lys Lys Thr Val
1      5      10      15
Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
      20      25      30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser Gly
      35      40      45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
      50      55      60
Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Leu Glu Tyr Gly Leu Lys
65      70      75      80
Asn Leu Asp Val Asn Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala
      85      90      95
Val Arg Ala Leu Asn Gly Cys Gly Tyr Lys Ile Ala Ser Ile Thr Asp
      100      105      110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
      115      120      125
Val

```

&lt;210&gt; 787

&lt;211&gt; 414

&lt;212&gt; DNA

&lt;213&gt; Pyrococcus abyssi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;223&gt; trans1\_table=11

&lt;400&gt; 787

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atg agc gag gag gta aac ata aag aag aag gag aag tgg ggt ata      48
Met Ser Glu Glu Gln Val Asn Ile Lys Lys Lys Glu Lys Trp Gly Ile
1      5      10      15
gcc cac atc tac tca agc tat aac aac acg att atc cac ata aca gac      96
Ala His Ile Tyr Ser Ser Tyr Asn Asn Thr Ile Ile His Ile Thr Asp
      20      25      30
ata acg ggt gcc gaa act ata agc agg tgg agc ggt ggt atg gta gtc      144
Ile Thr Gly Ala Glu Thr Ile Ser Arg Trp Ser Gly Gly Met Val Val
      35      40      45
aag gcc gat agg gac gag cct tca cct tac gcc gca atg cta gcc gcg      192
Lys Ala Asp Arg Asp Glu Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala
      50      55      60
agg agg gct gcc gaa gag gca tta gag aag ggt atc gtc gga gtt cac      240
Arg Arg Ala Ala Glu Ala Leu Glu Lys Gly Ile Val Gly Val His
      65      70      75      80
ata aga gtt agg gcc cct ggt gga agt aaa agc aag act cct ggc cca      288
Ile Arg Val Arg Ala Pro Gly Gly Ser Lys Ser Lys Thr Pro Gly Pro
      85      90      95
gga gct caa gcg gct ata aga gcc cta gca agg gca gga ctt aag ata      336
Gly Ala Gln Ala Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile
      100      105      110
gga agg gtt gag gat gta acg cct att cca cac gat gga acg agg cca      384
Gly Arg Val Glu Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Pro
      115      120      125
aag ggt gga agg aga gga agg cgt gtt tga      414
Lys Gly Gly Arg Arg Gly Arg Arg Val
      130      135

```

&lt;210&gt; 788

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Pyrococcus abyssi

&lt;400&gt; 788

```

Met Ser Glu Glu Gln Val Asn Ile Lys Lys Lys Glu Lys Trp Gly Ile
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Ala His Ile Tyr Ser Ser Tyr Asn Asn Thr Ile Ile His Ile Thr Asp  
 20 25 30  
 Ile Thr Gly Ala Glu Thr Ile Ser Arg Trp Ser Gly Gly Met Val Val  
 35 40 45  
 Lys Ala Asp Arg Asp Glu Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala  
 50 55 60  
 Arg Arg Ala Ala Glu Glu Ala Leu Glu Lys Gly Ile Val Gly Val His  
 65 70 75 80  
 Ile Arg Val Arg Ala Pro Gly Gly Ser Lys Ser Lys Thr Pro Gly Pro  
 85 90 95  
 Gly Ala Gln Ala Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile  
 100 105 110  
 Gly Arg Val Glu Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Pro  
 115 120 125  
 Lys Gly Gly Arg Arg Gly Arg Arg Val  
 130 135

&lt;210&gt; 789

&lt;211&gt; 402

&lt;212&gt; DNA

&lt;213&gt; Pyrobaculum aerophilum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(402)

&lt;223&gt; transl\_table=11

&lt;400&gt; 789

atg tcc tca gag caa caa aaa ctg agg tgg gga att gcg tgg ata tac	48
Met Ser Ser Glu Gln Gln Lys Leu Arg Trp Gly Ile Ala Trp Ile Tyr	
1 5 10 15	
tcc tcg tca aac aac act ata ata aca att acc gac tta acc ggg gcg	96
Ser Ser Ser Asn Asn Thr Ile Ile Thr Ile Thr Asp Leu Thr Gly Ala	
20 25 30	
gag aca gtg gcg cgc gta agc ggc gga caa gtc gtg agg gca gat aaa	144
Glu Thr Val Ala Arg Val Ser Gly Gln Val Val Arg Ala Asp Lys	
35 40 45	
gac aag cca tct ccg tgg gca gcc atg cag gcc gcg tat aaa gcg gcg	192
Asp Lys Pro Ser Pro Trp Ala Ala Met Gln Ala Ala Tyr Lys Ala Ala	
50 55 60	
caa ctg gcc ctg gcc agg ggg ata aac gca gta cat ata aaa gtc agg	240
Gln Leu Ala Leu Ala Arg Gly Ile Asn Ala Val His Ile Lys Val Arg	
65 70 75 80	
ggg cca ggc gga tat ggt atg aaa gtg cct gga ccc ggc gcc tcg gcc	288
Gly Pro Gly Gly Tyr Gly Met Lys Val Pro Gly Pro Gly Ala Ser Ala	
85 90 95	
gct ata aga gcg ctg gcc cgg tca ggc cta gtc atc ggc cgc ata gag	336
Ala Ile Arg Ala Leu Ala Arg Ser Gly Leu Val Ile Gly Arg Ile Glu	
100 105 110	
gac gtc acg ccg att ccg cac gac ata atc agg ccg ccc agc ggg cgc	384
Asp Val Thr Pro Ile Pro His Asp Ile Ile Arg Pro Pro Ser Gly Arg	
115 120 125	
aag ggc agg aga gtc taa	402
Lys Gly Arg Arg Val	
130	

&lt;210&gt; 790

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Pyrobaculum aerophilum

&lt;400&gt; 790

Met Ser Ser Glu Gln Gln Lys Leu Arg Trp Gly Ile Ala Trp Ile Tyr  
 1 5 10 15  
 Ser Ser Ser Asn Asn Thr Ile Ile Thr Ile Thr Asp Leu Thr Gly Ala  
 20 25 30  
 Glu Thr Val Ala Arg Val Ser Gly Gln Val Val Arg Ala Asp Lys  
 35 40 45  
 Asp Lys Pro Ser Pro Trp Ala Ala Met Gln Ala Ala Tyr Lys Ala Ala

## PhoenixTemp32470.tmp.txt

50 55 60  
 Gln Leu Ala Leu Ala Arg Gly Ile Asn Ala Val His Ile Lys Val Arg  
 65 70 75 80  
 Gly Pro Gly Gly Tyr Gly Met Lys Val Pro Gly Pro Gly Ala Ser Ala  
 85 90 95  
 Ala Ile Arg Ala Leu Ala Arg Ser Gly Leu Val Ile Gly Arg Ile Glu  
 100 105 110  
 Asp Val Thr Pro Ile Pro His Asp Ile Ile Arg Pro Pro Ser Gly Arg  
 115 120 125  
 Lys Gly Arg Arg Val  
 130

&lt;210&gt; 791

&lt;211&gt; 414

&lt;212&gt; DNA

&lt;213&gt; Pyrococcus furiosus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;223&gt; transl\_table=11

&lt;400&gt; 791

atg agc gag gag caa gtt aac att aag aag aag gag aag tgg gga att	48
Met Ser Glu Glu Gln Val Asn Ile Lys Lys Lys Glu Lys Trp Gly Ile	
1 5 10 15	
gct cac atc tat tca agc ttc aac aac acg att att cat att act gac	96
Ala His Ile Tyr Ser Ser Phe Asn Asn Thr Ile Ile His Ile Thr Asp	
20 25 30	
ata aca ggt gct gaa aca ata agc aga tgg agc ggt ggt atg gta gtt	144
Ile Thr Gly Ala Glu Thr Ile Ser Arg Trp Ser Gly Gly Met Val Val	
35 40 45	
aaa gct gac aga gat gag cct tct cca tac gct gca atg ctt gcg gca	192
Lys Ala Asp Arg Asp Glu Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala	
50 55 60	
agg aga gca gca gaa gag gcc ctt gaa aag gga att gta ggc gtt cac	240
Arg Arg Ala Ala Glu Glu Ala Leu Glu Lys Gly Ile Val Gly Val His	
65 70 75 80	
att aga gtt aga gcc cca gga gga agc aag agc aag act cct gga cct	288
Ile Arg Val Arg Ala Pro Gly Gly Ser Lys Ser Lys Thr Pro Gly Pro	
85 90 95	
ggg gca cag gca gca att aga gct ttg gct aga gca ggc ttg aaa ata	336
Gly Ala Gln Ala Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile	
100 105 110	
ggt aga gtt gag gat gtt act cca ata cca cac gat ggt act agg cca	384
Gly Arg Val Glu Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Pro	
115 120 125	
aag ggt ggt aga aga ggt agg cgt gtc tga	414
Lys Gly Gly Arg Arg Gly Arg Val	
130 135	

&lt;210&gt; 792

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Pyrococcus furiosus

&lt;400&gt; 792

Met Ser Glu Glu Gln Val Asn Ile Lys Lys Lys Glu Lys Trp Gly Ile  
 1 5 10 15  
 Ala His Ile Tyr Ser Ser Phe Asn Asn Thr Ile Ile His Ile Thr Asp  
 20 25 30  
 Ile Thr Gly Ala Glu Thr Ile Ser Arg Trp Ser Gly Gly Met Val Val  
 35 40 45  
 Lys Ala Asp Arg Asp Glu Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala  
 50 55 60  
 Arg Arg Ala Ala Glu Glu Ala Leu Glu Lys Gly Ile Val Gly Val His  
 65 70 75 80  
 Ile Arg Val Arg Ala Pro Gly Gly Ser Lys Ser Lys Thr Pro Gly Pro  
 85 90 95

## PhoenixTemp32470.tmp.txt

Gly Ala Gln Ala Ala Ile Arg Ala Leu Ala Arg Ala Gly Leu Lys Ile  
 100 105  
 Gly Arg Val Glu Asp Val Thr Pro Ile Pro His Asp Gly Thr Arg Pro  
 115 120 125  
 Lys Gly Gly Arg Arg Gly Arg Arg Val  
 130 135

&lt;210&gt; 793

&lt;211&gt; 423

&lt;212&gt; DNA

&lt;213&gt; Pyrococcus kodakaraensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(423)

&lt;223&gt; transl\_table=11

&lt;400&gt; 793

atg	agc	gag	gag	cag	acc	act	cag	gtt	aac	ata	aag	aag	aag	gag	aag	48
Met	Ser	Glu	Glu	Gln	Thr	Thr	Gln	Val	Asn	Ile	Lys	Lys	Lys	Glu	Lys	
1				5					10					15		
tgg	ggt	gtc	gcc	cac	atc	tac	tcc	tca	tac	aac	aac	acc	atc	atc	cac	96
Trp	Gly	Val	Ala	His	Ile	Tyr	Ser	Ser	Tyr	Asn	Asn	Thr	Ile	Ile	His	
			20					25					30			
atc	acg	gac	ctc	acc	ggg	gcc	gag	acc	atc	tcc	agg	tgg	agc	ggt	ggt	144
Ile	Thr	Asp	Leu	Thr	Gly	Ala	Glu	Thr	Ile	Ser	Arg	Trp	Ser	Gly	Gly	
		35					40					45				
atg	gtc	gtc	aag	gcc	gac	agg	gac	gag	ccc	tca	ccg	tat	gct	gct	atg	192
Met	Val	Val	Lys	Ala	Asp	Arg	Asp	Glu	Pro	Ser	Pro	Tyr	Ala	Ala	Met	
	50					55					60					
ata	gcc	gcg	aga	agg	gcc	gcc	gaa	gag	gct	atg	gag	aag	ggc	atc	acc	240
Ile	Ala	Ala	Arg	Arg	Ala	Ala	Glu	Glu	Ala	Met	Glu	Lys	Gly	Ile	Thr	
	65				70				75					80		
ggc	gtc	cac	atc	aag	gtc	cgc	gcc	cct	gga	gga	agc	aag	agc	aag	agc	288
Gly	Val	His	Ile	Lys	Val	Arg	Ala	Pro	Gly	Gly	Ser	Lys	Ser	Lys	Ser	
				85					90					95		
ccg	gga	cca	ggt	gct	cag	gca	gcc	att	agg	gcc	ctc	tcc	agg	gcc	ggc	336
Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg	Ala	Leu	Ser	Arg	Ala	Gly	
			100					105					110			
ctt	agg	att	gga	agg	gtt	gag	gac	gtc	acc	ccg	atc	ccg	cac	gac	ggt	384
Leu	Arg	Ile	Gly	Arg	Val	Glu	Asp	Val	Thr	Pro	Ile	Pro	His	Asp	Gly	
		115					120					125				
acc	agg	ccg	aag	ggc	ggg	aga	agg	ggc	agg	cgc	gtc	tga				423
Thr	Arg	Pro	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Val					
	130					135					140					

&lt;210&gt; 794

&lt;211&gt; 140

&lt;212&gt; PRT

&lt;213&gt; Pyrococcus kodakaraensis

&lt;400&gt; 794

Met	Ser	Glu	Glu	Gln	Thr	Thr	Gln	Val	Asn	Ile	Lys	Lys	Lys	Glu	Lys	
1				5					10					15		
Trp	Gly	Val	Ala	His	Ile	Tyr	Ser	Ser	Tyr	Asn	Asn	Thr	Ile	Ile	His	
			20					25					30			
Ile	Thr	Asp	Leu	Thr	Gly	Ala	Glu	Thr	Ile	Ser	Arg	Trp	Ser	Gly	Gly	
		35					40					45				
Met	Val	Val	Lys	Ala	Asp	Arg	Asp	Glu	Pro	Ser	Pro	Tyr	Ala	Ala	Met	
	50					55					60					
Ile	Ala	Ala	Arg	Arg	Ala	Ala	Glu	Glu	Ala	Met	Glu	Lys	Gly	Ile	Thr	
	65				70				75					80		
Gly	Val	His	Ile	Lys	Val	Arg	Ala	Pro	Gly	Gly	Ser	Lys	Ser	Lys	Ser	
				85					90					95		
Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	Ile	Arg	Ala	Leu	Ser	Arg	Ala	Gly	
			100					105					110			
Leu	Arg	Ile	Gly	Arg	Val	Glu	Asp	Val	Thr	Pro	Ile	Pro	His	Asp	Gly	
	115						120					125				
Thr	Arg	Pro	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Val					

130

135

140

<210> 795  
 <211> 402  
 <212> DNA  
 <213> Ralstonia metallidurans

<220>  
 <221> CDS  
 <222> (1)..(402)  
 <223> transl\_table=11

<400> 795  
 atg gca aaa ggt ccg aat aac gcc gcc cag cgc gcg cgt aag aag gtc 48  
 Met Ala Lys Gly Pro Asn Asn Ala Ala Gln Arg Ala Arg Lys Lys Val  
 1 5 10 15  
 aag aag aac gtt gcc gac ggc att gcg cac gtc cac gct tcg ttc aac 96  
 Lys Lys Asn Val Ala Asp Gly Ile Ala His Val His Ala Ser Phe Asn  
 20 25 30  
 aac acc atc atc acc atc acc gac cgc cag ggc aac gcc ctg tcg tgg 144  
 Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp  
 35 40 45  
 gcg acc gca ggt ggc cag ggc ttc aag ggt tcg cgt aag tcg acc ccg 192  
 Ala Thr Ala Gly Gly Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro  
 50 55 60  
 ttc gct gcc cag gtt gcc gcc gag aac gcc ggc cgt gtt gcg caa gac 240  
 Phe Ala Ala Gln Val Ala Ala Glu Asn Ala Gly Arg Val Ala Gln Asp  
 65 70 75 80  
 cag ggt atc aag aat ctg gaa gtg cgc atc aag ggc ccc ggt ccc ggc 288  
 Gln Gly Ile Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly  
 85 90 95  
 cgt gag tcg gct gtc cgt gcg ctg aac gcg ctg ggc atc aag atc gcg 336  
 Arg Glu Ser Ala Val Arg Ala Leu Asn Ala Leu Gly Ile Lys Ile Ala  
 100 105 110  
 gtg atc gaa gat gtg acg ccg gtg ccg cac aac ggc tgc cgc ccg ccg 384  
 Val Ile Glu Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro  
 115 120 125  
 aag cgc cgc cgt atc taa 402  
 Lys Arg Arg Arg Ile  
 130

<210> 796  
 <211> 133  
 <212> PRT  
 <213> Ralstonia metallidurans

<400> 796  
 Met Ala Lys Gly Pro Asn Asn Ala Ala Gln Arg Ala Arg Lys Lys Val  
 1 5 10 15  
 Lys Lys Asn Val Ala Asp Gly Ile Ala His Val His Ala Ser Phe Asn  
 20 25 30  
 Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp  
 35 40 45  
 Ala Thr Ala Gly Gly Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro  
 50 55 60  
 Phe Ala Ala Gln Val Ala Ala Glu Asn Ala Gly Arg Val Ala Gln Asp  
 65 70 75 80  
 Gln Gly Ile Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly  
 85 90 95  
 Arg Glu Ser Ala Val Arg Ala Leu Asn Ala Leu Gly Ile Lys Ile Ala  
 100 105 110  
 Val Ile Glu Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro  
 115 120 125  
 Lys Arg Arg Arg Ile  
 130

<210> 797  
 <211> 402  
 <212> DNA

&lt;213&gt; Ralstonia solanacearum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(402)

&lt;223&gt; transl\_table=11

&lt;400&gt; 797

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atg gca aaa gca gcg aat acc gcc gcc cag cgc gcg cgc aag aag gtt      48
Met Ala Lys Ala Ala Asn Thr Ala Ala Gln Arg Ala Arg Lys Lys Val
 1          5          10          15
cgc aag aac gtc gcc gac ggc atc gcg cac gtt cac gcg tcg ttc aac      96
Arg Lys Asn Val Ala Asp Gly Ile Ala His Val His Ala Ser Phe Asn
          20          25          30
aac acg atc atc acc atc acc gat cgc cag ggc aac gcc ctg tcg tgg      144
Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp
          35          40          45
gcg acg tcg ggc ggc cag ggc ttc aag ggc tcg cgc aag tcg acg ccg      192
Ala Thr Ser Gly Gly Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro
          50          55          60
ttc gcc gcg cag gtt gcg gcc gag agc gcc ggc cgt gtg gct cag gat      240
Phe Ala Ala Gln Val Ala Ala Glu Ser Ala Gly Arg Val Ala Gln Asp
          65          70          75          80
caa ggc atc aag aac ctg gaa gtg cgc atc aag ggc ccg ggc ccg ggt      288
Gln Gly Ile Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly
          85          90          95
cgc gaa tcg gct gtc cgc gcc ctg aac aac ctg ggt atc aag att cag      336
Arg Glu Ser Ala Val Arg Ala Leu Asn Asn Leu Gly Ile Lys Ile Gln
          100          105          110
gtg atc gag gat gtg acg ccg gtg ccg cac aac ggc tgc cgt ccg ccg      384
Val Ile Glu Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro
          115          120          125
aag cgc cgc cgc atc taa
Lys Arg Arg Arg Ile
          130

```

&lt;210&gt; 798

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Ralstonia solanacearum

&lt;400&gt; 798

```

Met Ala Lys Ala Ala Asn Thr Ala Ala Gln Arg Ala Arg Lys Lys Val
 1          5          10          15
Arg Lys Asn Val Ala Asp Gly Ile Ala His Val His Ala Ser Phe Asn
          20          25          30
Asn Thr Ile Ile Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp
          35          40          45
Ala Thr Ser Gly Gly Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro
          50          55          60
Phe Ala Ala Gln Val Ala Ala Glu Ser Ala Gly Arg Val Ala Gln Asp
          65          70          75          80
Gln Gly Ile Lys Asn Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly
          85          90          95
Arg Glu Ser Ala Val Arg Ala Leu Asn Asn Leu Gly Ile Lys Ile Gln
          100          105          110
Val Ile Glu Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro
          115          120          125
Lys Arg Arg Arg Ile
          130

```

&lt;210&gt; 799

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Rhizobium loti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 799

atg gcc aag gaa gcc gct cgt gtt cgc cgt cgc gaa cgc aag aat atc	48
Met Ala Lys Glu Ala Ala Arg Val Arg Arg Arg Glu Arg Lys Asn Ile	
1 5 10 15	
tcg tcg ggc gtt gcc cac gtc aat tcg acc ttc aac aac acg atg atc	96
Ser Ser Gly Val Ala His Val Asn Ser Thr Phe Asn Asn Thr Met Ile	
20 25 30	
acg atc acc gac gcg cag ggc aat tca att gcc tgg tcg tcg gcc ggt	144
Thr Ile Thr Asp Ala Gln Gly Asn Ser Ile Ala Trp Ser Ser Ala Gly	
35 40 45	
gcc cag ggc ttc aag ggt tcg cgc aag tcg acc ccg ttc gct gcc cag	192
Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
atg gct gcc gag gac gtc gcc aag aag gct cag gaa cac ggc atg cgc	240
Met Ala Ala Glu Asp Val Ala Lys Lys Ala Gln Glu His Gly Met Arg	
65 70 75 80	
atg ctc gaa gtc gag gtc tgc gga cct ggc tcc ggt cgt gaa tcg gcg	288
Met Leu Glu Val Glu Val Cys Gly Pro Gly Ser Gly Arg Glu Ser Ala	
85 90 95	
ctg cgc gcg ctg cag gcg gcc ggc ttc acc atc acc tcg atc cgt gat	336
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Ile Thr Ser Ile Arg Asp	
100 105 110	
gtg acg ccg atc ccg cac aat ggc tgc cgc ccg cgc aag aag cgc cgc	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg	
115 120 125	
gtc taa	390
Val	

&lt;210&gt; 800

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Rhizobium loti

&lt;400&gt; 800

Met Ala Lys Glu Ala Ala Arg Val Arg Arg Arg Glu Arg Lys Asn Ile
1 5 10 15
Ser Ser Gly Val Ala His Val Asn Ser Thr Phe Asn Asn Thr Met Ile
20 25 30
Thr Ile Thr Asp Ala Gln Gly Asn Ser Ile Ala Trp Ser Ser Ala Gly
35 40 45
Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
Met Ala Ala Glu Asp Val Ala Lys Lys Ala Gln Glu His Gly Met Arg
65 70 75 80
Met Leu Glu Val Glu Val Cys Gly Pro Gly Ser Gly Arg Glu Ser Ala
85 90 95
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Ile Thr Ser Ile Arg Asp
100 105 110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Arg Lys Lys Arg Arg
115 120 125
Val

&lt;210&gt; 801

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Rhizobium meliloti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 801

atg gcc aag gaa gcc acc cgc gtt cgc cgt cgc gag cgc aag aac att	48
Met Ala Lys Glu Ala Thr Arg Val Arg Arg Arg Glu Arg Lys Asn Ile	



## PhoenixTemp32470.tmp.txt

1	acg	tcg	ggc	ggt	gca	cac	gtc	aac	tcg	ttc	aac	aac	acg	atg	atc	96
	Thr	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Phe	Asn	Asn	Thr	Met	Ile	
				20					25				30			
	acc	att	acc	gac	gcg	cag	ggc	aat	gct	att	gcc	tggt	tcg	tcc	gcc	gggt
	Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly
			35					40					45			
	gcg	aag	ggt	ttc	aag	gggt	tcg	cggt	aag	tcg	acc	ccg	ttc	gcc	gcg	cag
	Ala	Lys	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln
		50					55					60				
	atc	gcc	gct	gaa	gat	tgc	gcc	aag	aag	gcc	cag	gaa	cac	ggc	atg	aag
	Ile	Ala	Ala	Glu	Asp	Cys	Ala	Lys	Lys	Ala	Gln	Glu	His	Gly	Met	Lys
	65					70				75						80
	tcg	ctg	gaa	gtg	gaa	ggt	tgc	gggt	ccg	gggt	tcc	ggc	cgt	gaa	tcc	gct
	Ser	Leu	Glu	Val	Glu	Val	Cys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala
				85				90							95	
	ctt	cggt	gcg	ctc	cag	gct	gca	gggt	ttc	atg	atc	acg	tcg	atc	cgt	gac
	Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Phe	Met	Ile	Thr	Ser	Ile	Arg	Asp
				100				105						110		
	gtg	acc	ccg	atc	ccg	cac	aat	ggc	tgc	cgt	ccg	cggt	aag	aag	cggt	cggt
	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Lys	Arg	Arg
			115					120					125			
	gtc	tga														390
	Val															

&lt;210&gt; 802

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Rhizobium meliloti

&lt;400&gt; 802

Met	Ala	Lys	Glu	Ala	Thr	Arg	Val	Arg	Arg	Arg	Glu	Arg	Lys	Asn	Ile
1				5					10					15	
Thr	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Ser	Phe	Asn	Asn	Thr	Met	Ile
			20					25					30		
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly
		35					40					45			
Ala	Lys	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln
	50					55					60				
Ile	Ala	Ala	Glu	Asp	Cys	Ala	Lys	Lys	Ala	Gln	Glu	His	Gly	Met	Lys
65				70					75					80	
Ser	Leu	Glu	Val	Glu	Val	Cys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala
			85				90						95		
Leu	Arg	Ala	Leu	Gln	Ala	Ala	Gly	Phe	Met	Ile	Thr	Ser	Ile	Arg	Asp
			100				105						110		
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Lys	Arg	Arg
		115					120					125			
Val															

&lt;210&gt; 803

&lt;211&gt; 384

&lt;212&gt; DNA

&lt;213&gt; Rhodopirellula baltica

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 803

gtg	gca	aag	acc	aac	aag	aaa	aaa	cggt	atc	cggt	aga	aac	gta	agc	aac	48
Met	Ala	Lys	Thr	Asn	Lys	Lys	Lys	Arg	Ile	Arg	Arg	Asn	Val	Ser	Asn	
1				5					10					15		
gggt	gtt	gct	cac	gtt	cac	gcgt	act	ttc	aac	aac	acc	acgt	gtg	acc	atc	96
Gly	Val	Ala	His	Val	His	Ala	Thr	Phe	Asn	Asn	Thr	Thr	Val	Thr	Ile	
			20					25					30			
acgt	gac	gcc	aag	gggt	gac	acgt	ttgt	tgc	tggt	gcc	aggt	gca	gga	acc	aggt	144

## PhoenixTemp32470.tmp.txt

Thr	Asp	Ala	Lys	Gly	Asp	Thr	Leu	Cys	Trp	Ala	Ser	Ala	Gly	Thr	Ser		
		35					40					45					
gga	ttc	aag	ggc	agc	cgt	aaa	agc	acg	cct	ttc	gct	ggg	cag	tgt	gct	192	
Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Gly	Gln	Cys	Ala		
	50					55					60						
gct	caa	cag	gct	gct	gaa	aaa	gca	acc	aag	ttt	ggg	atg	cgt	gac	gtc	240	
Ala	Gln	Gln	Ala	Ala	Glu	Lys	Ala	Thr	Lys	Phe	Gly	Met	Arg	Asp	Val		
	65				70					75					80		
gaa	gtt	cgc	gtc	aaa	gga	cct	ggg	tcc	ggg	cgc	gaa	agt	gcc	atc	acc	288	
Glu	Val	Arg	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala	Ile	Thr		
				85					90					95			
gcg	ctg	caa	gct	gct	ggc	ttg	aac	gtg	aaa	ttg	atc	gag	gaa	gtg	acc	336	
Ala	Leu	Gln	Ala	Ala	Gly	Leu	Asn	Val	Lys	Leu	Ile	Glu	Glu	Val	Thr		
			100					105					110				
ccc	atc	ccg	cac	aac	ggg	tgc	cgt	cct	cgc	aag	aaa	cgc	cgc	gtc		381	
Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Lys	Arg	Arg	Val			
		115					120					125					
taa																384	

&lt;210&gt; 804

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Rhodopirellula baltica

&lt;400&gt; 804

Met	Ala	Lys	Thr	Asn	Lys	Lys	Lys	Arg	Ile	Arg	Arg	Asn	Val	Ser	Asn		
				5					10					15			
Gly	Val	Ala	His	Val	His	Ala	Thr	Phe	Asn	Asn	Thr	Thr	Val	Thr	Ile		
			20					25					30				
Thr	Asp	Ala	Lys	Gly	Asp	Thr	Leu	Cys	Trp	Ala	Ser	Ala	Gly	Thr	Ser		
		35					40					45					
Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Gly	Gln	Cys	Ala		
	50					55					60						
Ala	Gln	Gln	Ala	Ala	Glu	Lys	Ala	Thr	Lys	Phe	Gly	Met	Arg	Asp	Val		
	65				70					75					80		
Glu	Val	Arg	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala	Ile	Thr		
				85					90					95			
Ala	Leu	Gln	Ala	Ala	Gly	Leu	Asn	Val	Lys	Leu	Ile	Glu	Glu	Val	Thr		
			100					105					110				
Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Lys	Arg	Arg	Val			
		115					120					125					

&lt;210&gt; 805

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Rhodopseudomonas palustris

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 805

atg	gcc	aag	gac	gcc	acc	cgc	att	cgc	cgt	cgc	gag	cgc	aag	aac	atc	48	
Met	Ala	Lys	Asp	Ala	Thr	Arg	Ile	Arg	Arg	Arg	Glu	Arg	Lys	Asn	Ile		
	1			5					10					15			
gct	tcc	ggc	atc	gcg	cat	gtg	aat	tcg	tcg	ttc	aac	aac	acc	acc	atc	96	
Ala	Ser	Gly	Ile	Ala	His	Val	Asn	Ser	Ser	Phe	Asn	Asn	Thr	Thr	Ile		
			20					25					30				
acc	atc	acc	gac	gcg	cag	ggc	aat	gcg	att	gcc	tgg	tcg	tcg	gcc	ggc	144	
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly		
		35					40				45						
acg	atg	ggc	ttc	aag	ggc	tcg	cgc	aag	tcg	acc	ccg	tac	gct	gcg	cag	192	
Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55					60						
gtc	gcg	gcc	gag	gac	gtc	gcc	aag	aag	gcg	cag	gag	cac	ggc	atg	cgc	240	
Val	Ala	Ala	Glu	Asp	Val	Ala	Lys	Lys	Ala	Gln	Glu	His	Gly	Met	Arg		

## PhoenixTemp32470.tmp.txt

```

65          70          75          80
acc ctc gaa gtc gag gtg gct ggc ccg ggt tcg ggc cgt gag tcg gcg      288
Thr Leu Glu Val Glu Val Ala Gly Pro Gly Ser Gly Arg Glu Ser Ala
      85
ctg cgc gcg ctg cag gcg gcg ggt ttc acg gtg acc tcg atc cgc gac      336
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp
      100
gtc acc acc atc ccg cac aac ggt tgc cgt ccg cgt aag cgt cgc      384
Val Thr Thr Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg
      115
gtc tga      390
Val

```

```

<210> 806
<211> 129
<212> PRT
<213> Rhodopseudomonas palustris

```

```

<400> 806
Met Ala Lys Asp Ala Thr Arg Ile Arg Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
Ala Ser Gly Ile Ala His Val Asn Ser Ser Phe Asn Asn Thr Thr Ile
      20      25      30
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly
      35      40      45
Thr Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
      50      55      60
Val Ala Ala Glu Asp Val Ala Lys Lys Ala Gln Glu His Gly Met Arg
65      70      75      80
Thr Leu Glu Val Glu Val Ala Gly Pro Gly Ser Gly Arg Glu Ser Ala
      85      90      95
Leu Arg Ala Leu Gln Ala Ala Gly Phe Thr Val Thr Ser Ile Arg Asp
      100      110
Val Thr Thr Ile Pro His Asn Gly Cys Arg Pro Arg Lys Arg Arg Arg
      115      120      125
Val

```

```

<210> 807
<211> 390
<212> DNA
<213> Rhodospirillum rubrum

```

```

<220>
<221> CDS
<222> (1)..(390)
<223> transl_table=11

```

```

<400> 807
atg gcc aag cca gct cag aag ttg cgc agg cgc gag cgc aag aat atc      48
Met Ala Lys Pro Ala Gln Lys Leu Arg Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
acc tcg ggc atc gcc cat gtg agc gct tcg ttc aat aat acc aag atc      96
Thr Ser Gly Ile Ala His Val Ser Ala Ser Phe Asn Asn Thr Lys Ile
      20      25      30
acc atc acc gac gtt cag ggc aac gcg att gcc tgg tcg tcc gcc ggt      144
Thr Ile Thr Asp Val Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly
      35      40      45
gct cag ggc ttc aag gga tcg cgc aag tcg acc cct tac gca gcc cag      192
Ala Gln Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
      50      55      60
gtc gct gcc gag gac gcg ggc cgc aag gcc cag gaa cac ggc atg aag      240
Val Ala Ala Glu Asp Ala Gly Arg Lys Ala Gln Glu His Gly Met Lys
      65      70      75      80
acc ctg gaa gtc atg gtg aag ggt ccc ggg tcg ggc cgt gaa tcg gcg      288
Thr Leu Glu Val Met Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala
      85      90      95
ctt cgc gct ttg cag tcg gtg ggc ttc cag gtg acg tcg atc aaa gac      336

```

PhoenixTemp32470.tmp.txt

Leu	Arg	Ala	Leu	Gln	Ser	Val	Gly	Phe	Gln	Val	Thr	Ser	Ile	Lys	Asp		
			100					105					110				
gtg	acc	ccg	atc	ccc	cac	aac	ggc	tgc	cgc	cct	cgc	aag	cgc	cgt	cgc	384	
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Arg	Arg	Arg		
		115					120					125					
gtc	tga															390	
Val																	

<210> 808  
 <211> 129  
 <212> PRT  
 <213> Rhodospirillum rubrum

<400> 808

Met	Ala	Lys	Pro	Ala	Gln	Lys	Leu	Arg	Arg	Arg	Glu	Arg	Lys	Asn	Ile		
1				5				10					15				
Thr	Ser	Gly	Ile	Ala	His	Val	Ser	Ala	Ser	Phe	Asn	Asn	Thr	Lys	Ile		
			20					25					30				
Thr	Ile	Thr	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ala	Trp	Ser	Ser	Ala	Gly		
			35				40					45					
Ala	Gln	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55				60							
Val	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Glu	His	Gly	Met	Lys		
65					70					75					80		
Thr	Leu	Glu	Val	Met	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
Leu	Arg	Ala	Leu	Gln	Ser	Val	Gly	Phe	Gln	Val	Thr	Ser	Ile	Lys	Asp		
			100					105					110				
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

<210> 809  
 <211> 414  
 <212> DNA  
 <213> Rhodococcus sp

<220>  
 <221> CDS  
 <222> (1)..(414)  
 <223> transl\_table=11

<400> 809

atg	ccc	ccc	aag	tca	cgt	ggc	acc	ggt	ccg	aag	aag	acc	cag	aag	gcg		48
Met	Pro	Pro	Lys	Ser	Arg	Gly	Thr	Gly	Pro	Lys	Lys	Thr	Gln	Lys	Ala		
1				5				10					15				
cgt	cgc	agg	gac	aag	aag	aac	gtc	ccg	cac	ggc	gcc	gct	cac	atc	aag		96
Arg	Arg	Arg	Asp	Lys	Lys	Asn	Val	Pro	His	Gly	Ala	Ala	His	Ile	Lys		
			20					25					30				
agc	acg	ttc	aac	aac	acc	atc	gtg	tcc	atc	acg	gac	ccc	gcc	gga	aac		144
Ser	Thr	Phe	Asn	Asn	Thr	Ile	Val	Ser	Ile	Thr	Asp	Pro	Ala	Gly	Asn		
			35				40				45						
gtg	att	tcc	tgg	gcg	tcc	tcg	gga	cac	gtc	ggc	ttc	aag	ggt	tcg	cgt		192
Val	Ile	Ser	Trp	Ala	Ser	Ser	Gly	His	Val	Gly	Phe	Lys	Gly	Ser	Arg		
	50					55				60							
aag	tcg	acc	ccg	ttc	gcc	gct	cag	ctg	gcc	gcc	gag	aac	gca	gcc	cgc		240
Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	Leu	Ala	Ala	Glu	Asn	Ala	Ala	Arg		
	65				70				75						80		
aag	gcg	cag	gag	cac	ggt	gtc	aag	aag	gtc	gac	gtc	ttc	gtc	aag	ggc		288
Lys	Ala	Gln	Glu	His	Gly	Val	Lys	Lys	Val	Asp	Val	Phe	Val	Lys	Gly		
				85					90					95			
ccc	ggc	tcc	ggc	cgt	gag	acc	gcg	atc	cgc	tcg	ctt	cag	gcc	gcg	ggc		336
Pro	Gly	Ser	Gly	Arg	Glu	Thr	Ala	Ile	Arg	Ser	Leu	Gln	Ala	Ala	Gly		
			100					105					110				
ctc	gag	gtc	ggc	acc	atc	tcc	gat	gtc	acc	ccc	cag	ccg	cac	aac	ggc		384
Leu	Glu	Val	Gly	Thr	Ile	Ser	Asp	Val	Thr	Pro	Gln	Pro	His	Asn	Gly		
		115					120					125					

tgc cgt ccg ccc aag cgg cgt cgg gtc tag  
 Cys Arg Pro Pro Lys Arg Arg Arg Val  
 130 135

<210> 810  
 <211> 137  
 <212> PRT  
 <213> Rhodococcus sp

<400> 810  
 Met Pro Pro Lys Ser Arg Gly Thr Gly Pro Lys Lys Thr Gln Lys Ala  
 1 5 10 15  
 Arg Arg Arg Asp Lys Lys Asn Val Pro His Gly Ala Ala His Ile Lys  
 20 25 30  
 Ser Thr Phe Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Ala Gly Asn  
 35 40 45  
 Val Ile Ser Trp Ala Ser Ser Gly His Val Gly Phe Lys Gly Ser Arg  
 50 55 60  
 Lys Ser Thr Pro Phe Ala Gln Leu Ala Ala Glu Asn Ala Ala Arg  
 65 70 75 80  
 Lys Ala Gln Glu His Gly Val Lys Lys Val Asp Val Phe Val Lys Gly  
 85 90 95  
 Pro Gly Ser Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Ala Gly  
 100 105 110  
 Leu Glu Val Gly Thr Ile Ser Asp Val Thr Pro Gln Pro His Asn Gly  
 115 120 125  
 Cys Arg Pro Pro Lys Arg Arg Arg Val  
 130 135

<210> 811  
 <211> 384  
 <212> DNA  
 <213> Rickettsia conorii

<220>  
 <221> CDS  
 <222> (1)..(384)  
 <223> transl\_table=11

<400> 811  
 atg aat cag acg gtt aaa gtt aag aaa aag aaa act atc act ctt 48  
 Met Asn Gln Thr Val Lys Val Lys Lys Lys Lys Lys Thr Ile Thr Leu  
 1 5 10 15  
 ggt gtt gtg cat atc cga gca tca ttt aat aat act ata gta aca ttt 96  
 Gly Val Val His Ile Arg Ala Ser Phe Asn Asn Thr Ile Val Thr Phe  
 20 25 30  
 act gat att caa ggt aat act att gct tct gca tcg gca gga ggt aat 144  
 Thr Asp Ile Gln Gly Asn Thr Ile Ala Ser Ala Ser Ala Gly Gly Asn  
 35 40 45  
 ggg ttt aaa ggg gca aga aaa gca aca cct tat gca gct caa gta aca 192  
 Gly Phe Lys Gly Ala Arg Lys Ala Thr Pro Tyr Ala Ala Gln Val Thr  
 50 55 60  
 att gat aga gca tcg gaa aaa gca aaa gaa tat ggt cta aaa act att 240  
 Ile Asp Arg Ala Ser Glu Lys Ala Lys Glu Tyr Gly Leu Lys Thr Ile  
 65 70 75 80  
 tct att agg att gga gga ccg ggg gct cag cgt gaa tca gca atg aga 288  
 Ser Ile Arg Ile Gly Gly Pro Gly Ala Gln Arg Glu Ser Ala Met Arg  
 85 90 95  
 gct tta ttc gga caa aat ttt gtg gtt aca tca att tta gat gta tcg 336  
 Ala Leu Phe Gly Gln Asn Phe Val Val Thr Ser Ile Leu Asp Val Ser  
 100 105 110  
 tca att gct cat aat gga gta aga ccg cca aaa aga aga aga gta 381  
 Ser Ile Ala His Asn Gly Val Arg Pro Pro Lys Arg Arg Arg Val  
 115 120 125  
 taa 384

<210> 812

<211> 127  
 <212> PRT  
 <213> Rickettsia conorii

<400> 812  
 Met Asn Gln Thr Val<sub>5</sub> Lys Val Lys Lys Lys<sub>10</sub> Lys Lys Thr Ile Thr Leu  
 1 Gly Val Val His<sub>20</sub> Ile Arg Ala Ser Phe<sub>25</sub> Asn Asn Thr Ile Val<sub>30</sub> Thr Phe  
 Thr Asp Ile<sub>35</sub> Gln Gly Asn Thr Ile<sub>40</sub> Ala Ser Ala Ser<sub>45</sub> Ala Gly Gly Asn  
 Gly Phe<sub>50</sub> Lys Gly Ala Arg Lys<sub>55</sub> Ala Thr Pro Tyr<sub>60</sub> Ala Gln Val Thr  
 Ile Asp Arg Ala Ser Glu<sub>70</sub> Lys Ala Lys Glu Tyr<sub>75</sub> Gly Leu Lys Thr Ile  
 65 Ser Ile Arg Ile Gly<sub>85</sub> Gly Pro Gly Ala Gln<sub>90</sub> Arg Glu Ser Ala Met<sub>95</sub> Arg  
 Ala Leu Phe Gly<sub>100</sub> Gln Asn Phe Val<sub>105</sub> Thr Ser Ile Leu Asp<sub>110</sub> Val Ser  
 Ser Ile Ala<sub>115</sub> His Asn Gly Val Arg<sub>120</sub> Pro Pro Lys Arg Arg<sub>125</sub> Arg Val

<210> 813  
 <211> 384  
 <212> DNA  
 <213> Rickettsia felis

<220>  
 <221> CDS  
 <222> (1)..(384)  
 <223> transl\_table=11

<400> 813  
 atg aat cag acg gtt aaa gtt aag aaa aag aaa aaa act atc act cta 48  
 Met Asn Gln Thr Val<sub>5</sub> Lys Val Lys Lys<sub>10</sub> Lys Lys Thr Ile Thr Leu  
 1 ggt gtt gtg cat atc cga gca tca ttt aat aat act ata gta aca ttt 96  
 Gly Val Val His<sub>20</sub> Ile Arg Ala Ser Phe<sub>25</sub> Asn Asn Thr Ile Val<sub>30</sub> Thr Phe  
 act gat atc caa ggt aat act att tct tct gca tcg gca gga ggt aat 144  
 Thr Asp Ile<sub>35</sub> Gln Gly Asn Thr Ile<sub>40</sub> Ser Ser Ala Ser<sub>45</sub> Ala Gly Gly Asn  
 ggg ttt aaa ggg gca aga aaa gca aca cct tat gca gct caa gta aca 192  
 Gly Phe Lys Gly Ala Arg Lys<sub>55</sub> Ala Thr Pro Tyr<sub>60</sub> Ala Ala Gln Val Thr  
 att gat aga gca tcg gaa aaa gca aaa gaa tat ggt cta aaa act att 240  
 Ile Asp Arg Ala Ser Glu<sub>70</sub> Lys Ala Lys Glu Tyr<sub>75</sub> Gly Leu Lys Thr Ile  
 65 tct att agg att gga ggg ccg gga gct cag cgt gaa tca gca atg aga 288  
 Ser Ile Arg Ile Gly<sub>85</sub> Gly Pro Gly Ala Gln<sub>90</sub> Arg Glu Ser Ala Met<sub>95</sub> Arg  
 gct tta ttc ggg caa aat ttt gtg gtt aca tca att tta gat gta tcg 336  
 Ala Leu Phe Gly<sub>100</sub> Gln Asn Phe Val<sub>105</sub> Val Thr Ser Ile Leu Asp<sub>110</sub> Val Ser  
 tca att gct cat aat gga gtg aga ccg cca aaa aga aga aga gta 381  
 Ser Ile Ala<sub>115</sub> His Asn Gly Val Arg<sub>120</sub> Pro Pro Lys Arg Arg<sub>125</sub> Arg Val  
 taa 384

<210> 814  
 <211> 127  
 <212> PRT  
 <213> Rickettsia felis

<400> 814  
 Met Asn Gln Thr Val<sub>5</sub> Lys Val Lys Lys Lys<sub>10</sub> Lys Lys Thr Ile Thr Leu  
 1

## PhoenixTemp32470.tmp.txt

Gly Val Val His Ile Arg Ala Ser Phe Asn Asn Thr Ile Val Thr Phe  
 20 25 30  
 Thr Asp Ile Gln Gly Asn Thr Ile Ser Ser Ala Ser Ala Gly Gly Asn  
 35 40 45  
 Gly Phe Lys Gly Ala Arg Lys Ala Thr Pro Tyr Ala Ala Gln Val Thr  
 50 55 60  
 Ile Asp Arg Ala Ser Glu Lys Ala Lys Glu Tyr Gly Leu Lys Thr Ile  
 65 70 75 80  
 Ser Ile Arg Ile Gly Gly Pro Gly Ala Gln Arg Glu Ser Ala Met Arg  
 85 90 95  
 Ala Leu Phe Gly Gln Asn Phe Val Val Thr Ser Ile Leu Asp Val Ser  
 100 105 110  
 Ser Ile Ala His Asn Gly Val Arg Pro Pro Lys Arg Arg Arg Val  
 115 120 125

&lt;210&gt; 815

&lt;211&gt; 384

&lt;212&gt; DNA

&lt;213&gt; Rickettsia prowazekii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(384)

&lt;223&gt; transl\_table=11

&lt;400&gt; 815

atg aat cag act att aaa gtt aag aaa aag aaa aag act atc act ctt	48
Met Asn Gln Thr Ile Lys Val Lys Lys Lys Lys Lys Thr Ile Thr Leu	
1 5 10 15	
ggt gtt gta cat atc cga gcg tca ttt aat aat act ata gta aca ttt	96
Gly Val Val His Ile Arg Ala Ser Phe Asn Asn Thr Ile Val Thr Phe	
20 25 30	
act gat att caa ggt aat act att tct tct gca tca gca ggg ggc aat	144
Thr Asp Ile Gln Gly Asn Thr Ile Ser Ser Ala Ser Ala Gly Gly Asn	
35 40 45	
ggt ttt aag ggt gca aga aag gca acg cct tat gca gct caa gta acg	192
Gly Phe Lys Gly Ala Arg Lys Ala Thr Pro Tyr Ala Ala Gln Val Thr	
50 55 60	
att gat aaa gca tcg gaa aag gca aaa gaa tgt ggc cta aag act att	240
Ile Asp Lys Ala Ser Glu Lys Ala Lys Glu Cys Gly Leu Lys Thr Ile	
65 70 75 80	
tct att agg att gga ggc cct gga gca cag cgt gaa tca gca atg cgt	288
Ser Ile Arg Ile Gly Gly Pro Gly Ala Gln Arg Glu Ser Ala Met Arg	
85 90 95	
gct tta ttc ggg caa aat ttt gtg gtt aca tca att tta gat gta tca	336
Ala Leu Phe Gly Gln Asn Phe Val Val Thr Ser Ile Leu Asp Val Ser	
100 105 110	
tcc att gct cat aat gga gta aga ccg cca aaa aga aga aga gta	381
Ser Ile Ala His Asn Gly Val Arg Pro Pro Lys Arg Arg Arg Val	
115 120 125	
taa	384

&lt;210&gt; 816

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Rickettsia prowazekii

&lt;400&gt; 816

Met Asn Gln Thr Ile Lys Val Lys Lys Lys Lys Lys Thr Ile Thr Leu  
 1 5 10 15  
 Gly Val Val His Ile Arg Ala Ser Phe Asn Asn Thr Ile Val Thr Phe  
 20 25 30  
 Thr Asp Ile Gln Gly Asn Thr Ile Ser Ser Ala Ser Ala Gly Gly Asn  
 35 40 45  
 Gly Phe Lys Gly Ala Arg Lys Ala Thr Pro Tyr Ala Ala Gln Val Thr  
 50 55 60  
 Ile Asp Lys Ala Ser Glu Lys Ala Lys Glu Cys Gly Leu Lys Thr Ile

PhoenixTemp32470.tmp.txt

65					70					75					80
Ser	Ile	Arg	Ile	Gly	Gly	Pro	Gly	Ala	Gln	Arg	Glu	Ser	Ala	Met	Arg
				85					90					95	
Ala	Leu	Phe	Gly	Gln	Asn	Phe	Val	Val	Thr	Ser	Ile	Leu	Asp	Val	Ser
			100					105					110		
Ser	Ile	Ala	His	Asn	Gly	Val	Arg	Pro	Pro	Lys	Arg	Arg	Arg	Val	
		115					120					125			

```
<210> 817
<211> 408
<212> DNA
<213> Rubrobacter xylanophilus
```

```
<220>
<221> CDS
<222> (1)..(408)
<223> transl_table=11
```

[illegible]

<210> 818  
<211> 135  
<212> PRT  
<213> Rubrobacter xylanophilus

<400>	818														
Met	Gly	Arg	Gln	Arg	Gln	Gln	Arg	Ser	Arg	Gly	Ser	Arg	Ser	Arg	Arg
1				5					10				15		
Arg	Val	Arg	Lys	Asn	Ile	Ser	Thr	Ala	Val	Val	His	Ile	Lys	Ser	Ser
			20					25					30		
Phe	Asn	Asn	Thr	Ile	Ile	Ser	Val	Thr	Asp	Gln	Glu	Gly	Asn	Val	Ile
		35					40					45			
Ala	Trp	Glu	Ser	Ala	Gly	Ser	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser
	50					55					60				
Thr	Pro	Tyr	Ala	Ala	Gln	Met	Thr	Ala	Glu	Ser	Ala	Ala	Asn	Lys	Ala
65					70					75					80
Met	Glu	His	Gly	Val	Lys	Arg	Val	Asp	Ile	Gln	Val	Lys	Gly	His	Gly
				85					90					95	
Ser	Gly	Arg	Asp	Met	Ala	Ala	Arg	Thr	Phe	Gln	Ala	Met	Gly	Ile	Glu
			100					105					110		
Val	Leu	Ser	Ile	Lys	Asp	Val	Thr	Gly	Gln	Pro	His	Asn	Gly	Cys	Arg
		115					120					125			



Pro Pro Lys Arg Arg Arg Gly  
130 135

<210> 819  
<211> 396  
<212> DNA  
<213> Saccharophagus degradans

<220>  
<221> CDS  
<222> (1)..(396)  
<223> transl\_table=11

<400> 819  
atg gct aag cca agt ggt aag tca acg acc aag aaa aag gtc aaa aag 48  
Met Ala Lys Pro Ser Gly Lys Ser Thr Thr Lys Lys Lys Val Lys Lys  
1 5 10 15  
acc gtt gtt gac gga atc gcg cat att cat gct tcg ttt aat aac act 96  
Thr Val Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr  
20 25 30  
atc gtg acg att act gat cgt cag ggt aat act tta tct tgg gca act 144  
Ile Val Thr Ile Thr Asp Arg Gln Gly Asn Thr Leu Ser Trp Ala Thr  
35 40 45  
gcg ggc ggt tct ggt ttc cgc ggt tct cgt aaa agt act cct ttt gct 192  
Ala Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala  
50 55 60  
gca cag gtt gcg gca gag cgt gca ggc caa gct gca caa gac tac ggt 240  
Ala Gln Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Gln Asp Tyr Gly  
65 70 75 80  
ctt aaa aat ttg gat gta gaa gtt aag ggt cct ggt ccg ggt cgt gag 288  
Leu Lys Asn Leu Asp Val Glu Val Lys Gly Pro Gly Pro Gly Arg Glu  
85 90 95  
tca gct gta cgt gct ttg aac aat att ggt tac aaa gtt aac aac att 336  
Ser Ala Val Arg Ala Leu Asn Asn Ile Gly Tyr Lys Val Asn Asn Ile  
100 105 110  
aca gat gtg aca ccg att ccg cac aac ggc tgt cgt cca ccc aaa aag 384  
Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys  
115 120 125  
cgt cgc gta taa 396  
Arg Arg Val  
130

<210> 820  
<211> 131  
<212> PRT  
<213> Saccharophagus degradans

<400> 820  
Met Ala Lys Pro Ser Gly Lys Ser Thr Thr Lys Lys Lys Val Lys Lys  
1 5 10 15  
Thr Val Val Asp Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr  
20 25 30  
Ile Val Thr Ile Thr Asp Arg Gln Gly Asn Thr Leu Ser Trp Ala Thr  
35 40 45  
Ala Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala  
50 55 60  
Ala Gln Val Ala Ala Glu Arg Ala Gly Gln Ala Ala Gln Asp Tyr Gly 80  
65 70 75 80  
Leu Lys Asn Leu Asp Val Glu Val Lys Gly Pro Gly Pro Gly Arg Glu  
85 90 95  
Ser Ala Val Arg Ala Leu Asn Asn Ile Gly Tyr Lys Val Asn Asn Ile  
100 105 110  
Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys  
115 120 125  
Arg Arg Val  
130

<210> 821  
<211> 390

## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

<213> *Salmonella choleraesuis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 821

```

atg gca aag gca cca gtt cgc gca cgt aaa cgt gta aga aaa caa gtc      48
Met Ala Lys Ala Pro Val Arg Ala Arg Lys Arg Val Arg Lys Gln Val
 1      5      10      15
tct gac ggc gtg gct cat atc cat gct tct ttc aac aac acc atc gtg      96
Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
      20      25      30
act att acc gat cgt cag ggt aat gcg ctg ggt tgg gca aca gcc ggt      144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly
      35      40      45
ggg tcc ggt ttc cgt ggt tct cgc aaa tcc act ccg ttt gca gct cag      192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
      50      55      60
gtt gca gca gag cgt tgc gct gac gcc gtg aaa gaa tac ggt atc aag      240
Val Ala Ala Glu Arg Cys Ala Asp Ala Val Lys Glu Tyr Gly Ile Lys
      65      70      75
aat ctg gaa gtt atg gtt aaa ggt ccg ggt cca ggc cgc gaa tct act      288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
      85      90      95
att cgt gct ctg aac gcc gct ggt ttc cgc atc act aat att act gat      336
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
      100      105      110
gtg act ccg atc cct cat aac ggt tgt cgt ccg ccg aaa aaa cgt cgc      384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
      115      120      125
gta taa
Val
390

```

&lt;210&gt; 822

&lt;211&gt; 129

&lt;212&gt; PRT

<213> *Salmonella choleraesuis*

&lt;400&gt; 822

```

Met Ala Lys Ala Pro Val Arg Ala Arg Lys Arg Val Arg Lys Gln Val
1      5      10      15
Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
      20      25      30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly
      35      40      45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
      50      55      60
Val Ala Ala Glu Arg Cys Ala Asp Ala Val Lys Glu Tyr Gly Ile Lys
      65      70      75
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
      85      90      95
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
      100      105      110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
      115      120      125
Val

```

&lt;210&gt; 823

&lt;211&gt; 390

&lt;212&gt; DNA

<213> *Salmonella typhi*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 823

atg gca aag gca cca gtt tgc gca cgt aaa cgt gta aga aaa caa gtc	48
Met Ala Lys Ala Pro Val Cys Ala Arg Lys Arg Val Arg Lys Gln Val	
1 5 10 15	
tct gac ggc gtg gct cat atc cat gct tct ttc aac aac acc atc gtg	96
Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
act att acc gat cgt cag ggt aat gcg ctg ggt tgg gca aca gcc ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly	
35 40 45	
ggg tcc ggt ttc cgt ggt tct cgc aaa tcc act ccg ttt gca gct cag	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtt gca gca gag cgt tgc gct gac gcc gtg aaa gaa tac ggt atc aag	240
Val Ala Ala Glu Arg Cys Ala Asp Ala Val Lys Glu Tyr Gly Ile Lys	
65 70 75 80	
aat ctg gaa gtt atg gtt aaa ggt ccg ggt cca ggc cgc gaa tct act	288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr	
85 90 95	
att cgt gct ctg aac gcc gct ggt ttc cgc atc act aat att act gat	336
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp	
100 105 110	
gtg act ccg atc cct cat aac ggt tgt cgt ccg ccg aaa aaa cgt cgc	384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
gta taa	390
Val	

&lt;210&gt; 824

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Salmonella typhi

&lt;400&gt; 824

Met Ala Lys Ala Pro Val Cys Ala Arg Lys Arg Val Arg Lys Gln Val
1 5 10 15
Ser Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val
20 25 30
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Gly Trp Ala Thr Ala Gly
35 40 45
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50 55 60
Val Ala Ala Glu Arg Cys Ala Asp Ala Val Lys Glu Tyr Gly Ile Lys
65 70 75 80
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr
85 90 95
Ile Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Thr Asp
100 105 110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg
115 120 125
Val

&lt;210&gt; 825

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Shewanella oneidensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 825

atg gct aaa gtt ccg tca cgt tct ccg cgt aag cgc gta cgt aaa cag	48
---	----

[illegible]

<210> 826  
<211> 130  
<212> PRT  
<213> Shewanella oneidensis

[illegible]

```
<210> 827
<211> 408
<212> DNA
<213> Shewanella violacea
```

```
<220>
<221> CDS
<222> (1)..(408)
<223> transl_table=11
```

<400> 827																
atg	gct	aaa	agt	ccg	tca	cgt	tct	ccg	cgt	aag	cgt	gta	cgt	aaa	cag	48
Met	Ala	Lys	Ser	Pro	Ser	Arg	Ser	Pro	Arg	Lys	Arg	Val	Arg	Lys	Gln	
1				5					10					15		
ggt	gct	gat	ggg	atg	gct	cat	atc	cat	gcg	tct	ttc	aac	aac	aca	att	96
Val	Ala	Asp	Gly	Met	Ala	His	Ile	His	Ala	Ser	Phe	Asn	Asn	Thr	Ile	
			20					25					30			

## PhoenixTemp32470.tmp.txt

```

att acc att act gat cgt caa ggt aat gca cta tct tgg gca act tca      144
ile thr ile thr asp arg gln gly asn ala leu ser trp ala thr ser
      35      40      45
ggt ggt tca ggt ttc cgt ggt tca cgt aaa tct act cct ttt gct gca      192
gly gly ser gly phe arg gly ser arg lys ser thr pro phe ala ala
      50      55      60
cag gtt gct gct gag cgc gcc ggt gtt gct gct cag gat tac ggt gtt      240
gln val ala ala glu arg ala gly val ala ala gln asp tyr gly val
      65      70      75      80
aaa aac ctt gaa gtt ttt gta aag ggt cca ggt cca gga cgc gaa tct      288
lys asn leu glu val phe val lys gly pro gly pro gly arg glu ser
      85      90      95
gcg att cgt gca ctg aat tcg gtt ggt tat aaa ata acc aat att acc      336
ala ile arg ala leu asn ser val gly tyr lys ile thr asn ile thr
      100      105      110
gat gtg acg cct atc cct cat aat ggt tgt cgt cct cct aag gaa acg      384
asp val thr pro ile pro his asn gly cys arg pro pro lys glu thr
      115      120      125
tcg cgt tta att cgt cgt ttt taa
ser arg leu ile arg arg phe taa
      130      135

```

&lt;210&gt; 828

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Shewanella violacea

&lt;400&gt; 828

```

Met ala lys ser pro ser arg ser pro arg lys arg val arg lys gln
1      5      10      15
val ala asp gly met ala his ile his ala ser phe asn asn thr ile
      20      25      30
ile thr ile thr asp arg gln gly asn ala leu ser trp ala thr ser
      35      40      45
gly gly ser gly phe arg gly ser arg lys ser thr pro phe ala ala
      50      55      60
gln val ala ala glu arg ala gly val ala ala gln asp tyr gly val
      65      70      75      80
lys asn leu glu val phe val lys gly pro gly pro gly arg glu ser
      85      90      95
ala ile arg ala leu asn ser val gly tyr lys ile thr asn ile thr
      100      105      110
asp val thr pro ile pro his asn gly cys arg pro pro lys glu thr
      115      120      125
ser arg leu ile arg arg phe
      130      135

```

&lt;210&gt; 829

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Silicibacter pomeroyi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 829

```

atg gca cgc gat aag acc cgc acc acg aag aaa aaa gaa cgc aag aat      48
met ala arg asp lys thr arg thr thr lys lys lys glu arg lys asn
1      5      10      15
atc gca tcg ggc gtg gcc cat gtg aac tcg acg ttc aac aac acc aag      96
ile ala ser gly val ala his val asn ser thr phe asn asn thr lys
      20      25      30
atc ctg atc tcg gac gtg caa ggc aac gcc atc tcg tgg tcg tcg gct      144
ile leu ile ser asp val gln gly asn ala ile ser trp ser ser ala
      35      40      45
ggc acc atg ggc ttc aag gga tcg cgg aaa tcg acc ccc tac gcc gct      192
gly thr met gly phe lys gly ser arg lys ser thr pro tyr ala ala

```

## PhoenixTemp32470.tmp.txt

50	55	60														
cag	ctg	gct	gcc	gaa	gat	gcc	ggc	cgc	aag	gcg	cag	gat	cat	ggc	gtc	240
Gln	Leu	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Asp	His	Gly	Val	
65	70	75	80													
aag	acg	ctg	gaa	gtc	gaa	gtt	cag	ggc	ccc	ggt	tcg	ggc	cgt	gaa	tcg	288
Lys	Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	
85	90	95														
gct	ctg	cgc	gct	ctg	gct	gcc	gtg	ggc	ttc	aac	atc	acg	tcg	atc	cgc	336
Ala	Leu	Arg	Ala	Leu	Ala	Ala	Val	Gly	Phe	Asn	Ile	Thr	Ser	Ile	Arg	
100	105	110														
gat	gtg	acc	ccg	atc	gcc	cac	aac	ggc	tgc	cgc	ccg	ccg	aag	cgc	cgc	384
Asp	Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	
115	120	125														
cgc	gtc	taa														393
Arg	Val															
130																

&lt;210&gt; 830

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Silicibacter pomeroyi

&lt;400&gt; 830

Met	Ala	Arg	Asp	Lys	Thr	Arg	Thr	Thr	Lys	Lys	Lys	Glu	Arg	Lys	Asn	
1				5					10					15		
Ile	Ala	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Thr	Phe	Asn	Asn	Thr	Lys	
			20					25					30			
Ile	Leu	Ile	Ser	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ser	Trp	Ser	Ser	Ala	
		35					40					45				
Gly	Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	
	50					55					60					
Gln	Leu	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Asp	His	Gly	Val	
65				70						75				80		
Lys	Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	
			85					90						95		
Ala	Leu	Arg	Ala	Leu	Ala	Ala	Val	Gly	Phe	Asn	Ile	Thr	Ser	Ile	Arg	
			100					105					110			
Asp	Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	
		115					120					125				
Arg	Val															
130																

&lt;210&gt; 831

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Silicibacter sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 831

atg	gca	cgc	gat	aaa	acc	cgc	acg	aag	cgt	aaa	gag	cgt	aag	aac	att	48
Met	Ala	Arg	Asp	Lys	Thr	Arg	Thr	Lys	Arg	Lys	Glu	Arg	Lys	Asn	Ile	
1				5				10						15		
gca	tcg	ggc	gtt	gcc	cat	gtg	aac	tcc	tcg	ttc	aac	aac	acc	aag	atc	96
Ala	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Phe	Asn	Asn	Thr	Lys	Ile		
			20					25					30			
ctg	atc	tct	gac	gtt	cag	ggc	aac	gcg	atc	tcc	tgg	tcc	tcc	gct	ggc	144
Leu	Ile	Ser	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly	
		35				40						45				
acc	atg	ggc	ttc	aag	ggc	tcc	cgt	aag	tcc	acg	ccc	tat	gcc	gcg	cag	192
Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln	
	50					55					60					
atg	gct	gca	gaa	gac	gca	ggc	cgc	aag	gca	cag	gat	cac	ggc	gta	aag	240
Met	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Asp	His	Gly	Val	Lys	
65				70					75					80		
acc	ctc	gag	gtc	gag	gtt	caa	ggc	ccc	ggt	tcg	ggt	cgt	gaa	tcc	gcc	288

PhoenixTemp32470.tmp.txt

Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
ctg	cgc	gcg	ctg	gcc	gca	atc	ggc	ttc	aac	atc	acc	aac	atc	cgt	gat		336
Leu	Arg	Ala	Leu	Ala	Ala	Ile	Gly	Phe	Asn	Ile	Thr	Asn	Ile	Arg	Asp		
			100					105					110				
gtg	acc	ccg	atc	gca	cac	aac	ggc	tgc	cgc	ccg	ccg	aag	cgc	cgc	cgc		384
Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
gtc	taa																390
Val																	

<210> 832  
 <211> 129  
 <212> PRT  
 <213> Silicibacter sp

<400> 832

Met	Ala	Arg	Asp	Lys	Thr	Arg	Thr	Lys	Arg	Lys	Glu	Arg	Lys	Asn	Ile		
1				5				10						15			
Ala	Ser	Gly	Val	Ala	His	Val	Asn	Ser	Ser	Phe	Asn	Asn	Thr	Lys	Ile		
			20					25					30				
Leu	Ile	Ser	Asp	Val	Gln	Gly	Asn	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly		
		35					40					45					
Thr	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln		
	50					55					60						
Met	Ala	Ala	Glu	Asp	Ala	Gly	Arg	Lys	Ala	Gln	Asp	His	Gly	Val	Lys		
65				70						75					80		
Thr	Leu	Glu	Val	Glu	Val	Gln	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala		
				85					90					95			
Leu	Arg	Ala	Leu	Ala	Ala	Ile	Gly	Phe	Asn	Ile	Thr	Asn	Ile	Arg	Asp		
			100					105					110				
Val	Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg	Arg		
		115					120					125					
Val																	

<210> 833  
 <211> 408  
 <212> DNA  
 <213> Solibacter usitatus

<220>  
 <221> CDS  
 <222> (1)..(408)  
 <223> transl\_table=11

<400> 833

atg	cgc	aaa	gca	cca	gtt	aaa	gca	ggc	aag	aag	aag	agc	ttc	aag	aag		48
Met	Ala	Lys	Ala	Pro	Val	Lys	Ala	Gly	Lys	Lys	Lys	Ser	Phe	Lys	Lys		
1				5				10						15			
aag	gag	aag	cgc	gtc	gtc	cac	acg	ggc	gtc	gtg	cat	atc	cag	gcc	acc		96
Lys	Glu	Lys	Arg	Val	Val	His	Thr	Gly	Val	Val	His	Ile	Gln	Ala	Thr		
			20					25					30				
ttc	aac	aac	acc	atc	gtc	acc	atc	agc	gat	cag	gaa	ggc	aat	acg	att		144
Phe	Asn	Asn	Thr	Ile	Val	Thr	Ile	Ser	Asp	Gln	Glu	Gly	Asn	Thr	Ile		
		35					40					45					
tcc	tg	tcg	agc	gcc	ggc	tcg	ctg	ggc	ttc	cgc	ggc	tcc	cgc	aag	ggc		192
Ser	Trp	Ser	Ser	Ala	Gly	Ser	Leu	Gly	Phe	Arg	Gly	Ser	Arg	Lys	Gly		
	50				55			60									
acg	cca	ttc	gca	gcg	cag	cag	gcg	gcg	atg	acg	gcg	gcg	aac	aag	gcc		240
Thr	Pro	Phe	Ala	Ala	Gln	Gln	Ala	Ala	Met	Thr	Ala	Ala	Asn	Lys	Ala		
65				70				75							80		
aac	gaa	acc	ggg	ttg	cgc	gtg	gtg	gaa	gtc	cgg	gtg	tcc	ggc	ccg	ggc		288
Asn	Glu	Thr	Gly	Leu	Arg	Val	Val	Glu	Val	Arg	Val	Ser	Gly	Pro	Gly		
			85					90					95				
tcg	ggc	cgg	gaa	tcg	gca	gtg	cgc	gcg	ttg	agc	acg	gcc	ggc	att	gaa		336
Ser	Gly	Arg	Glu	Ser	Ala	Val	Arg	Ala	Leu	Ser	Thr	Ala	Gly	Ile	Glu		
			100					105					110				

```

PhoenixTemp32470.tmp.txt
gtt cgc gct att aaa gat gtg acg ccg atc ccg cac aac ggg tgc cgt      384
Val Arg Ala Ile Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg
115 120 125
cct ccc aag aag cgc cgc gtt taa      408
Pro Pro Lys Lys Arg Arg Val
130 135

<210> 834
<211> 135
<212> PRT
<213> Solibacter usitatus

<400> 834
Met Ala Lys Ala Pro Val Lys Ala Gly Lys Lys Lys Ser Phe Lys Lys
1 5 10 15
Lys Glu Lys Arg Val Val His Thr Gly Val Val His Ile Gln Ala Thr
20 25 30
Phe Asn Asn Thr Ile Val Thr Ile Ser Asp Gln Glu Gly Asn Thr Ile
35 40 45
Ser Trp Ser Ser Ala Gly Ser Leu Gly Phe Arg Gly Ser Arg Lys Gly
50 55 60
Thr Pro Phe Ala Ala Gln Gln Ala Ala Met Thr Ala Ala Asn Lys Ala
65 70 75 80
Asn Glu Thr Gly Leu Arg Val Val Glu Val Arg Val Ser Gly Pro Gly
85 90 95
Ser Gly Arg Glu Ser Ala Val Arg Ala Leu Ser Thr Ala Gly Ile Glu
100 105 110
Val Arg Ala Ile Lys Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg
115 120 125
Pro Pro Lys Lys Arg Arg Val
130 135

<210> 835
<211> 390
<212> DNA
<213> Sphingopyxis alaskensis

<220>
<221> CDS
<222> (1)..(390)
<223> transl_table=11

<400> 835
atg gct cgt gaa ccg cag cgc ctt cgt cgg cgc gaa cgc aag aat atc      48
Met Ala Arg Glu Pro Gln Arg Leu Arg Arg Arg Glu Arg Lys Asn Ile
1 5 10 15
tcg tcg ggt gtg gcc cac gtc aac gcg acc ttc aac aat acg atg atc      96
Ser Ser Gly Val Ala His Val Asn Ala Thr Phe Asn Asn Thr Met Ile
20 25 30
acc atc acc gac gca cag ggc aat gcg att gcc tgg tcg agc gcc ggc      144
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly
35 40 45
atg atg ggc ttc aag ggc agc cgc aaa tcg act ccc tat gcg gcg cag      192
Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
50 55 60
gtc tgc gcc gaa gac gcg ggc aag aag gcc gcc gaa cat ggc gtc cgc      240
Val Cys Ala Glu Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Arg
65 70 75 80
acg ctg gaa gtc gaa gtc aag ggc ccc ggc gcc gcc cgt gaa tcg gcg      288
Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ala Gly Arg Glu Ser Ala
85 90 95
ctg cgt gcg ctg cag gcc gtc ggt ttt cac atc acg tcg atc cgc gac      336
Leu Arg Ala Leu Gln Ala Val Gly Phe His Ile Thr Ser Ile Arg Asp
100 105 110
gtg aca ccg atc ccg cac aat ggc gtc cgc ccg gcc aaa cgt cgc cgc      384
Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ala Lys Arg Arg Arg
115 120 125
gtc tga
Val
390

```



<210> 836  
 <211> 129  
 <212> PRT  
 <213> Sphingopyxis alaskensis

<400> 836  
 Met Ala Arg Glu Pro Gln Arg Leu Arg Arg Arg Glu Arg Lys Asn Ile  
 1 5 10 15  
 Ser Ser Gly Val Ala His Val Asn Ala Thr Phe Asn Asn Thr Met Ile  
 20 25 30  
 Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ala Trp Ser Ser Ala Gly  
 35 40 45  
 Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln  
 50 55 60  
 Val Cys Ala Glu Asp Ala Gly Lys Lys Ala Ala Glu His Gly Val Arg  
 65 70 75 80  
 Thr Leu Glu Val Glu Val Lys Gly Pro Gly Ala Gly Arg Glu Ser Ala  
 85 90 95  
 Leu Arg Ala Leu Gln Ala Val Gly Phe His Ile Thr Ser Ile Arg Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asn Gly Val Arg Pro Ala Lys Arg Arg Arg  
 115 120 125  
 Val

<210> 837  
 <211> 390  
 <212> DNA  
 <213> Staphylococcus epidermidis

<220>  
 <221> CDS  
 <222> (1)..(390)  
 <223> transl\_table=11

<400> 837  
 atg gca cgt aaa caa gta tct cgt aaa cgt aga gtg aaa aag aat att 48  
 Met Ala Arg Lys Gln Val Ser Arg Lys Arg Arg Val Lys Lys Asn Ile  
 1 5 10 15  
 gaa aat ggt gta gct cac atc cgt tca aca ttc aat aat act atc gta 96  
 Glu Asn Gly Val Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val  
 20 25 30  
 act atc act gat gaa ttc ggt aat gca tta tct tgg tca tca gct ggt 144  
 Thr Ile Thr Asp Glu Phe Gly Asn Ala Leu Ser Trp Ser Ser Ala Gly  
 35 40 45  
 gca tta gga ttc aaa gga tct aaa aaa tca act cca ttt gca gct caa 192  
 Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 atg gct tca gaa aca gct tct aaa act gct atg gaa cat ggt ttg aaa 240  
 Met Ala Ser Glu Thr Ala Ser Lys Thr Ala Met Glu His Gly Leu Lys  
 65 70 75 80  
 aca gta gaa gta aca gta aaa gga cct ggt cca ggc cgt gaa tct gct 288  
 Thr Val Glu Val Thr Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala  
 85 90 95  
 atc cgt gca cta caa tct gca ggt tta gaa gta act gca atc aga gac 336  
 Ile Arg Ala Leu Gln Ser Ala Gly Leu Glu Val Thr Ala Ile Arg Asp  
 100 105 110  
 gtt act cca gta cca cac aac ggt tgt cgt cca cca aaa cgt cgt cgc 384  
 Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg  
 115 120 125  
 gta taa 390  
 Val

<210> 838  
 <211> 129  
 <212> PRT

&lt;213&gt; Staphylococcus epidermidis

&lt;400&gt; 838

```

Met Ala Arg Lys Gln Val Ser Arg Lys Arg Arg Val Lys Lys Asn Ile
1      5      10      15
Glu Asn Gly Val Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val
20      25      30
Thr Ile Thr Asp Glu Phe Gly Asn Ala Leu Ser Trp Ser Ala Gly
35      40      45
Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
Met Ala Ser Glu Thr Ala Ser Lys Thr Ala Met Glu His Gly Leu Lys
65      70      75      80
Thr Val Glu Val Thr Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Ala
85      90      95
Ile Arg Ala Leu Gln Ser Ala Gly Leu Glu Val Thr Ala Ile Arg Asp
100     105     110
Val Thr Pro Val Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115     120     125
Val

```

&lt;210&gt; 839

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Streptomyces avermitilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; trans1\_table=11

&lt;400&gt; 839

```

atg ccc ccc aag ggt cgt cag ggc gct gcc aag aag gtg cgc cgc aag      48
Met Pro Pro Lys Gly Arg Gln Gly Ala Lys Lys Val Arg Arg Lys
1      5      10      15
gaa aag aag aac gtc gct cac ggc cac gcg cac atc aag agc acg ttc      96
Glu Lys Lys Asn Val Ala His Gly His Ala His Ile Lys Ser Thr Phe
20      25      30
aac aac acg atc gtc tcg atc acg gac ccc tcg ggc aac gtg atc tcc      144
Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Ser Gly Asn Val Ile Ser
35      40      45
tgg gcc tcc gcc ggc cac gtc ggc ttc aag ggc tcg cgc aag tcc acc      192
Trp Ala Ser Ala Gly His Val Gly Phe Lys Gly Ser Arg Lys Ser Thr
50      55      60
ccc ttc gcc gcg cag atg gcc gag tcg gcc gcc cgc cgc gcg cag      240
Pro Phe Ala Ala Gln Met Ala Ala Glu Ser Ala Arg Arg Ala Gln
65      70      75      80
gag cac ggc atg cgc aag gtt gac gtc ttc gtc aag ggt ccg ggc tcc      288
Glu His Gly Met Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser
85      90      95
ggc cgc gag acc gcg atc cgt tcc ctc cag gcc act ggc ctc gag gtc      336
Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Val
100     105     110
ggc tcc atc cag gac gtc acc ccc acc ccg cac aac ggt tgc cgt ccg      384
Gly Ser Ile Gln Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg Pro
115     120     125
ccc aag cgc cgc gtc tga      405
Pro Lys Arg Arg Arg Val
130

```

&lt;210&gt; 840

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Streptomyces avermitilis

&lt;400&gt; 840

```

Met Pro Pro Lys Gly Arg Gln Gly Ala Ala Lys Lys Val Arg Arg Lys
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Glu Lys Lys Asn Val Ala His Gly His Ala His Ile Lys Ser Thr Phe  
 20 25 30  
 Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Ser Gly Asn Val Ile Ser  
 35 40 45  
 Trp Ala Ser Ala Gly His Val Gly Phe Lys Gly Ser Arg Lys Ser Thr  
 50 55 60  
 Pro Phe Ala Ala Gln Met Ala Ala Glu Ser Ala Arg Arg Ala Gln  
 65 70 75 80  
 Glu His Gly Met Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser  
 85 90 95  
 Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Val  
 100 105 110  
 Gly Ser Ile Gln Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg Pro  
 115 120 125  
 Pro Lys Arg Arg Arg Val  
 130

&lt;210&gt; 841

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=11

&lt;400&gt; 841

atg	ccc	ccc	aag	gga	cgt	cag	ggc	gct	gcc	aag	aag	gtg	cgc	cgc	aag	48
Met	Pro	Pro	Lys	Gly	Arg	Gln	Gly	Ala	Ala	Lys	Lys	Val	Arg	Arg	Lys	
1				5				10					15			
gaa	aag	aag	aac	gtc	gct	cac	ggc	cac	gcg	cac	atc	aag	agc	acg	ttc	96
Glu	Lys	Lys	Asn	Val	Ala	His	Gly	His	Ala	His	Ile	Lys	Ser	Thr	Phe	
			20					25					30			
aac	aac	acg	atc	gtg	tcc	atc	acg	gac	ccg	acc	ggc	aac	gtg	atc	tcc	144
Asn	Asn	Thr	Ile	Val	Ser	Ile	Thr	Asp	Pro	Thr	Gly	Asn	Val	Ile	Ser	
			35					40				45				
tgg	gcc	tcc	gcc	ggc	cac	gtc	ggc	ttc	aag	ggc	tcc	cgg	aag	tcc	acg	192
Trp	Ala	Ser	Ala	Gly	His	Val	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	
			50					55				60				
ccg	ttc	gcc	gcg	cag	atg	gcc	gag	tcg	gct	gcc	cgt	cgc	gcg	cag		240
Pro	Phe	Ala	Ala	Gln	Met	Ala	Ala	Glu	Ser	Ala	Ala	Arg	Arg	Ala	Gln	
					70			75							80	
gag	cac	ggc	atg	cgc	aag	gtc	gac	gtc	ttc	gtc	aag	ggc	ccg	ggt	tcc	288
Glu	His	Gly	Met	Arg	Lys	Val	Asp	Val	Phe	Val	Lys	Gly	Pro	Gly	Ser	
				85				90						95		
ggt	cgt	gag	acc	gcc	atc	cgc	tcc	ctg	cag	gcg	acc	ggc	ctc	gag	gtc	336
Gly	Arg	Glu	Thr	Ala	Ile	Arg	Ser	Leu	Gln	Ala	Thr	Gly	Leu	Glu	Val	
			100					105					110			
ggc	tcc	atc	cag	gac	gtc	acg	ccc	acc	ccg	cac	aac	ggg	tgc	cgt	ccg	384
Gly	Ser	Ile	Gln	Asp	Val	Thr	Pro	Thr	Pro	His	Asn	Gly	Cys	Arg	Pro	
			115				120					125				
ccg	aag	cgt	cgt	cgc	gtc	tga										405
Pro	Lys	Arg	Arg	Arg	Val											
130																

&lt;210&gt; 842

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor

&lt;400&gt; 842

Met Pro Pro Lys Gly Arg Gln Gly Ala Ala Lys Lys Val Arg Arg Lys  
 1 5 10 15  
 Glu Lys Lys Asn Val Ala His Gly His Ala His Ile Lys Ser Thr Phe  
 20 25 30  
 Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Thr Gly Asn Val Ile Ser  
 35 40 45  
 Trp Ala Ser Ala Gly His Val Gly Phe Lys Gly Ser Arg Lys Ser Thr

## PhoenixTemp32470.tmp.txt

50 55 60  
 Pro Phe Ala Ala Gln Met Ala Ala Glu Ser Ala Arg Arg Ala Gln  
 65 70 75 80  
 Glu His Gly Met Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser  
 85 90 95  
 Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Val  
 100 105 110  
 Gly Ser Ile Gln Asp Val Thr Pro Thr Pro His Asn Gly Cys Arg Pro  
 115 120 125  
 Pro Lys Arg Arg Arg Val  
 130

<210> 843  
 <211> 384  
 <212> DNA  
 <213> Streptococcus mutans

<220>  
 <221> CDS  
 <222> (1)..(384)  
 <223> transl\_table=11

<400> 843  
 ttg gct aaa cca aca cgt aaa cgt cgt gtc aag aaa aat att gaa tct 48  
 Met Ala Lys Pro Thr Arg Lys Arg Arg Val Lys Lys Asn Ile Glu Ser  
 1 5 10 15  
 ggt att gcc cat att cac gca aca ttt aat aac act att gtt atg att 96  
 Gly Ile Ala His Ile His Ala Thr Phe Asn Asn Thr Ile Val Met Ile  
 20 25 30  
 aca gat gtg cat ggt aac gct ctt gca tgg tca tca gct ggt gct ctt 144  
 Thr Asp Val His Gly Asn Ala Leu Ala Trp Ser Ser Ala Gly Ala Leu  
 35 40 45  
 gga ttc aaa ggt tca cgt aaa tct act cca ttt gct gct caa atg gct 192  
 Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Met Ala  
 50 55 60  
 gca gaa gcc gct gct aag tct gca caa gaa cac ggt ctt aaa aca gtt 240  
 Ala Glu Ala Ala Ala Lys Ser Ala Gln Glu His Gly Leu Lys Thr Val  
 65 70 75 80  
 gaa gtt act gta aaa ggt cca ggt tca ggt cgt gag tct gct att cgt 288  
 Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala Ile Arg  
 85 90 95  
 gcg ctt gcc gct gct ggt ctt gaa gta acg tca att cgt gat gtg act 336  
 Ala Leu Ala Ala Ala Gly Leu Glu Val Thr Ser Ile Arg Asp Val Thr  
 100 105 110  
 cct gta cca cat aat ggt gct cgt cct cca aaa cgt cgt cgt gta 381  
 Pro Val Pro His Asn Gly Ala Arg Pro Pro Lys Arg Arg Arg Val  
 115 120 125  
 taa 384

<210> 844  
 <211> 127  
 <212> PRT  
 <213> Streptococcus mutans

<400> 844  
 Met Ala Lys Pro Thr Arg Lys Arg Arg Val Lys Lys Asn Ile Glu Ser  
 1 5 10 15  
 Gly Ile Ala His Ile His Ala Thr Phe Asn Asn Thr Ile Val Met Ile  
 20 25 30  
 Thr Asp Val His Gly Asn Ala Leu Ala Trp Ser Ser Ala Gly Ala Leu  
 35 40 45  
 Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln Met Ala  
 50 55 60  
 Ala Glu Ala Ala Ala Lys Ser Ala Gln Glu His Gly Leu Lys Thr Val  
 65 70 75 80  
 Glu Val Thr Val Lys Gly Pro Gly Ser Gly Arg Glu Ser Ala Ile Arg  
 85 90 95

Ala Leu Ala Ala Ala Gly Leu Glu Val Thr Ser Ile Arg Asp Val Thr  
100 105 110  
Pro Val Pro His Asn Gly Ala Arg Pro Pro Lys Arg Arg Arg Val  
115 120 125

<210> 845  
<211> 399  
<212> DNA  
<213> Sulfolobus acidocaldarius

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<220>
<221> CDS
<222> (1)..(399)
<223> transl_table=11
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[illegible]

<210> 846  
<211> 132  
<212> PRT  
<213> Sulfolobus acidocaldarius

[illegible]

<210> 847  
 <211> 399  
 <212> DNA  
 <213> Sulfolobus solfataricus

<220>  
 <221> CDS  
 <222> (1)..(399)  
 <223> transl\_table=11

<400> 847  
 gtg tca agc agg cgt gaa atc aga tgg gga ata gct cat att tac gca 48  
 Met Ser Ser Arg Arg Glu Ile Arg Trp Gly Ile Ala His Ile Tyr Ala  
 1 5 10 15  
 tcc cag aat aac act ttg cta aca ata agt gat ctt act ggc gcg gag 96  
 Ser Gln Asn Asn Thr Leu Leu Thr Ile Ser Asp Leu Thr Gly Ala Glu  
 20 25 30  
 att atc tcc aga gct agt gga ggt atg gta gta aaa gct gat cga gaa 144  
 Ile Ile Ser Arg Ala Ser Gly Gly Met Val Val Lys Ala Asp Arg Glu  
 35 40 45  
 aaa tca tca ccc tat gct gca atg ttg gct gca aat aaa gct gct agt 192  
 Lys Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Asn Lys Ala Ala Ser  
 50 55 60  
 gac gcg ctt gaa aaa ggt ata atg gcg ctt cat att aag gtt agg gca 240  
 Asp Ala Leu Glu Lys Gly Ile Met Ala Leu His Ile Lys Val Arg Ala  
 65 70 75 80  
 cca ggt gga tat gga agt aag aca cct gga ccg ggt gcc cag cct gca 288  
 Pro Gly Gly Tyr Gly Ser Lys Thr Pro Gly Pro Gly Ala Gln Pro Ala  
 85 90 95  
 att aga gca tta gct aga gct gga ttc att ata gga agg att gag gat 336  
 Ile Arg Ala Leu Ala Arg Ala Gly Phe Ile Ile Gly Arg Ile Glu Asp  
 100 105 110  
 gtt aca cct ata cct cat gat acc ata agg aga cct ggc gga aga aga 384  
 Val Thr Pro Ile Pro His Asp Thr Ile Arg Arg Pro Gly Gly Arg Arg  
 115 120 125  
 gga aga aga gta tag 399  
 Gly Arg Arg Val  
 130

<210> 848  
 <211> 132  
 <212> PRT  
 <213> Sulfolobus solfataricus

<400> 848  
 Met Ser Ser Arg Arg Glu Ile Arg Trp Gly Ile Ala His Ile Tyr Ala  
 1 5 10 15  
 Ser Gln Asn Asn Thr Leu Leu Thr Ile Ser Asp Leu Thr Gly Ala Glu  
 20 25 30  
 Ile Ile Ser Arg Ala Ser Gly Gly Met Val Val Lys Ala Asp Arg Glu  
 35 40 45  
 Lys Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Asn Lys Ala Ala Ser  
 50 55 60  
 Asp Ala Leu Glu Lys Gly Ile Met Ala Leu His Ile Lys Val Arg Ala  
 65 70 75 80  
 Pro Gly Gly Tyr Gly Ser Lys Thr Pro Gly Pro Gly Ala Gln Pro Ala  
 85 90 95  
 Ile Arg Ala Leu Ala Arg Ala Gly Phe Ile Ile Gly Arg Ile Glu Asp  
 100 105 110  
 Val Thr Pro Ile Pro His Asp Thr Ile Arg Arg Pro Gly Gly Arg Arg  
 115 120 125  
 Gly Arg Arg Val  
 130

<210> 849  
 <211> 408  
 <212> DNA  
 <213> Sulfolobus tokodaii

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (10)..(408)

&lt;223&gt; transl\_table=11

&lt;400&gt; 849

```

gtgaagaaa atg tcc agc agg cgt gaa att agg tgg ggt ata gct aga gtt      51
          Met Ser Ser Arg Arg Glu Ile Arg Trp Gly Ile Ala Arg Val
           1               5               10
tat gca tct cag aac aat aca tta ata act ata aca gat att act ggt      99
Tyr Ala Ser Gln Asn Asn Thr Leu Ile Thr Ile Thr Asp Ile Thr Gly
 15                20                25                30
gct gag ata atc tct aga gct tct ggt ggt atg gta gtt aaa gcg gac      147
Ala Glu Ile Ile Ser Arg Ala Ser Gly Gly Met Val Val Lys Ala Asp
           35               40               45
aga gaa aaa cca tcg cct tac gct gct atg tta gct gca aat aaa gcc      195
Arg Glu Lys Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala Asn Lys Ala
           50                55                60
gct acg gaa gca ttt gat aag gga ata tct gca ata cat ata aaa gtt      243
Ala Thr Glu Ala Phe Asp Lys Gly Ile Ser Ala Ile His Ile Lys Val
           65                70                75
aga gca caa ggc ggt tac ggt tct aaa aca cct ggt cct ggt gcg caa      291
Arg Ala Gln Gly Gly Tyr Gly Ser Lys Thr Pro Gly Pro Gly Ala Gln
           80                85                90
cca gct ata aga gct tta gca aga gct ggt ttt att att ggt agg att      339
Pro Ala Ile Arg Ala Leu Ala Arg Ala Gly Phe Ile Ile Gly Arg Ile
           95                100               105               110
gaa gat gtt aca cca ata cct cat gac agt att agg agg cca gga ggc      387
Glu Asp Val Thr Pro Ile Pro His Asp Ser Ile Arg Arg Pro Gly Gly
           115               120               125
aga aga gga aga aga gtc tga
Arg Arg Gly Arg Arg Val
           130

```

&lt;210&gt; 850

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Sulfolobus tokodaii

&lt;400&gt; 850

```

Met Ser Ser Arg Arg Glu Ile Arg Trp Gly Ile Ala Arg Val Tyr Ala
1               5               10               15
Ser Gln Asn Asn Thr Leu Ile Thr Ile Thr Asp Ile Thr Gly Ala Glu
           20                25                30
Ile Ile Ser Arg Ala Ser Gly Gly Met Val Val Lys Ala Asp Arg Glu
           35               40               45
Lys Pro Ser Pro Tyr Ala Ala Met Leu Ala Ala Asn Lys Ala Ala Thr
           50                55                60
Glu Ala Phe Asp Lys Gly Ile Ser Ala Ile His Ile Lys Val Arg Ala
           65                70                75                80
Gln Gly Gly Tyr Gly Ser Lys Thr Pro Gly Pro Gly Ala Gln Pro Ala
           85                90                95
Ile Arg Ala Leu Ala Arg Ala Gly Phe Ile Ile Gly Arg Ile Glu Asp
           100               105               110
Val Thr Pro Ile Pro His Asp Ser Ile Arg Arg Pro Gly Gly Arg Arg
           115               120               125
Gly Arg Arg Val
           130

```

&lt;210&gt; 851

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Symbiobacterium thermophilum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

## PhoenixTemp32470.tmp.txt

```

<400> 851
atg gct aag cgc act gcc cgc gtg aag cgc agg gag cgg aag aac gta      48
Met Ala Lys Arg Thr Ala Arg Val Lys Arg Arg Glu Arg Lys Asn Val
1      5      10      15
gac aag ggc gtg gcc cac atc cgt tct acc ttc aat aac acg atc gtg      96
Asp Lys Gly Val Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val
20      25      30
acc atc acc gat gtc cat ggc aac gcg ctg gcc tgg gcg acc gcc ggc      144
Thr Ile Thr Asp Val His Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly
35      40      45
gcc atg ggg ttc aag ggt tcc cgg aag tcc acg ccg ttt gcg gcc cag      192
Ala Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
atg gcg gcc gag aag gcg gcc aag gac gcc atg gag cac ggc gtg cgt      240
Met Ala Ala Glu Lys Ala Ala Lys Asp Ala Met Glu His Gly Val Arg
65      70      75      80
gag gtt gaa gtg ctg gtc aag ggg ccg ggg tcc ggc cgt gag gcg gcg      288
Glu Val Glu Val Leu Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala
85      90      95
atc cgc cag ctg cag gcc gcc ggc ctg gag gtc acg gcg atc aag gac      336
Ile Arg Gln Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Lys Asp
100      105      110
gtg acc ccg att ccc cac aac ggc tgc cgc ccg ccg aag ccg cgc cgc      384
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115      120      125
gtg tag      390
Val

```

```

<210> 852
<211> 129
<212> PRT
<213> Symbiobacterium thermophilum

```

```

<400> 852
Met Ala Lys Arg Thr Ala Arg Val Lys Arg Arg Glu Arg Lys Asn Val
1      5      10      15
Asp Lys Gly Val Ala His Ile Arg Ser Thr Phe Asn Asn Thr Ile Val
20      25      30
Thr Ile Thr Asp Val His Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly
35      40      45
Ala Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln
50      55      60
Met Ala Ala Glu Lys Ala Ala Lys Asp Ala Met Glu His Gly Val Arg
65      70      75      80
Glu Val Glu Val Leu Val Lys Gly Pro Gly Ser Gly Arg Glu Ala Ala
85      90      95
Ile Arg Gln Leu Gln Ala Ala Gly Leu Glu Val Thr Ala Ile Lys Asp
100      105      110
Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg Arg
115      120      125
val

```

```

<210> 853
<211> 393
<212> DNA
<213> Syntrophus aciditrophicus

```

```

<220>
<221> CDS
<222> (1)..(393)
<223> transl_table=11

```

```

<400> 853
atg gct aag cag gta aga aag aca ggc aag aaa aaa gag aag aag aac      48
Met Ala Lys Gln Val Arg Lys Thr Gly Lys Lys Lys Glu Lys Lys Asn
1      5      10      15
att ccg gaa gga att gca cat ata cag tca act ttt aat aat aca atc      96

```



PhoenixTemp32470.tmp.txt

Ile	Pro	Glu	Gly	Ile	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
att	acc	att	aca	gat	cca	atc	gga	aac	gtt	att	gcg	tgg	tcg	tca	tct		144
Ile	Thr	Ile	Thr	Asp	Pro	Ile	Gly	Asn	Val	Ile	Ala	Trp	Ser	Ser	Ser		
		35					40					45					
gga	atg	cag	gga	ttt	aag	ggt	tcc	aga	aaa	agc	acg	cca	ttt	gcc	gct		192
Gly	Met	Gln	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala		
		50				55					60						
caa	atg	gct	gcg	gaa	gac	tgc	gta	aaa	aag	gcg	aaa	gaa	cac	ggt	cta		240
Gln	Met	Ala	Ala	Glu	Asp	Cys	Val	Lys	Lys	Ala	Lys	Glu	His	Gly	Leu		
		65			70					75					80		
aga	aag	gta	cag	gtc	tat	gta	aag	gga	cca	gga	tcc	gga	cgc	gaa	tca		288
Arg	Lys	Val	Gln	Val	Tyr	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser		
				85					90					95			
gcg	tta	cgt	tcg	ctt	cag	gcc	gca	gga	ttg	acg	att	tcg	tta	att	cga		336
Ala	Leu	Arg	Ser	Leu	Gln	Ala	Ala	Gly	Leu	Thr	Ile	Ser	Leu	Ile	Arg		
			100					105					110				
gat	gta	aca	ccg	att	ccg	cat	aac	ggc	tgt	cgc	cct	cca	aaa	aga	cga		384
Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg		
		115					120					125					
agg	gtc	tga															393
Arg	Val																
		130															

<210> 854  
 <211> 130  
 <212> PRT  
 <213> Syntrophus aciditrophicus

<400> 854

Met	Ala	Lys	Gln	Val	Arg	Lys	Thr	Gly	Lys	Lys	Lys	Glu	Lys	Lys	Asn		
				5					10					15			
Ile	Pro	Glu	Gly	Ile	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
Ile	Thr	Ile	Thr	Asp	Pro	Ile	Gly	Asn	Val	Ile	Ala	Trp	Ser	Ser	Ser		
		35					40					45					
Gly	Met	Gln	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Phe	Ala	Ala		
		50				55					60						
Gln	Met	Ala	Ala	Glu	Asp	Cys	Val	Lys	Lys	Ala	Lys	Glu	His	Gly	Leu		
		65			70					75					80		
Arg	Lys	Val	Gln	Val	Tyr	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser		
				85					90					95			
Ala	Leu	Arg	Ser	Leu	Gln	Ala	Ala	Gly	Leu	Thr	Ile	Ser	Leu	Ile	Arg		
			100					105					110				
Asp	Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	Arg		
		115					120					125					
Arg	Val																
		130															

<210> 855  
 <211> 393  
 <212> DNA  
 <213> Synechococcus elongatus

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

<400> 855

atg	gca	ccc	tct	gca	aaa	cgc	tct	ggc	cct	cgt	aag	caa	aag	cgc	aat		48
Met	Ala	Pro	Ser	Ala	Lys	Arg	Ser	Gly	Pro	Arg	Lys	Gln	Lys	Arg	Asn		
				5					10					15			
gtc	ccc	agt	ggc	gtt	gcc	cac	att	cag	tcc	aca	ttt	aat	aac	acg	att		96
Val	Pro	Ser	Gly	Val	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
			20					25					30				
gtc	tca	att	acc	gac	ccc	aat	ggt	gag	gtg	att	gct	tgg	gcc	tct	gct		144
Val	Ser	Ile	Thr	Asp	Pro	Asn	Gly	Glu	Val	Ile	Ala	Trp	Ala	Ser	Ala		
		35					40					45					

## PhoenixTemp32470.tmp.txt

```

ggc tct agt ggt ttc aaa ggt gcc aaa aaa ggc aca cct ttt gca gcc      192
Gly Ser 50 Ser Gly Phe Lys Gly 55 Ala Lys Lys Gly Thr 60 Pro Phe Ala Ala
caa act gct gct gat aat gcg gct cgc cgt gcc att gat cag ggg atg      240
Gln Thr Ala Ala Asp Asn Ala Ala Arg Arg Ala Ile Asp Gln Gly Met 80
65
cgg caa att gag gtc atg gtg agt ggt ccc ggc tcc ggt cga gaa aca      288
Arg Gln Ile Glu Val 85 Met Val Ser Gly Pro 90 Gly Ser Gly Arg Glu Thr
95
gcc att cgg gcg ttg caa gcc gca ggc cta gaa att acc ctc att cgg      336
Ala Ile Arg Ala Leu Gln Ala Ala Gly 105 Leu Glu Ile Thr Leu Ile Arg
100
gat gtg acc ccc att ccc cac aat ggt tgc cgt ccc ccc aaa cgg cgg      384
Asp Val 115 Thr Pro Ile Pro His Asn 120 Gly Cys Arg Pro Pro Lys Arg Arg
125
cgg gtt tag
Arg Val
130

```

&lt;210&gt; 856

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus elongatus

&lt;400&gt; 856

```

Met Ala Pro Ser Ala Lys Arg Ser Gly Pro Arg Lys Gln Lys Arg Asn
1 5 10 15
Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20 25 30
Val Ser Ile Thr Asp Pro Asn Gly Glu Val Ile Ala Trp Ala Ser Ala
35 40 45
Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala
50 55 60
Gln Thr Ala Ala Asp Asn Ala Ala Arg Arg Ala Ile Asp Gln Gly Met
65 70 75 80
Arg Gln Ile Glu Val 85 Met Val Ser Gly Pro Gly Ser Gly Arg Glu Thr
90 95
Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Ile Thr Leu Ile Arg
100 105 110
Asp Val 115 Thr Pro Ile Pro His Asn 120 Gly Cys Arg Pro Pro Lys Arg Arg
125
Arg Val
130

```

&lt;210&gt; 857

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; trans1\_table=11

&lt;400&gt; 857

```

atg gct cga ccc act aaa aaa tcg ggg ccc cgc aaa cag aag cgc aac      48
Met Ala Arg Pro Thr 5 Lys Lys Ser Gly Pro 10 Arg Lys Gln Lys Arg Asn
1 15
gtt cct agc ggt gtt gcc cac atc caa tcc acc ttc aat aac acg atc      96
Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20 25 30
gtt tcg atc gct gac ccc gcc ggt gaa gtc atc tct tgg gct tcc gct      144
Val Ser 35 Ile Ala Asp Pro Ala Gly 40 Glu Val Ile Ser Trp Ala Ser Ala
45
ggg tct agc ggc ttc aaa ggc gcc aaa aag ggg act ccc ttt gca gca      192
Gly Ser Ser Gly Phe Lys Gly 55 Ala Lys Lys Gly Thr 60 Pro Phe Ala Ala
50 60
caa act gcg gct gag gct gct gcc cgt cgg gcg atc gac caa ggc atg      240
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Ile Asp Gln Gly Met

```

## PhoenixTemp32470.tmp.txt

```

65          70          75          80
cgc cag ctc gaa gtg atg gtc agt ggc cca ggc tcg ggt cgt gaa acc
Arg Gln Leu Glu Val Met Val Ser Gly Pro Gly Ser Gly Arg Glu Thr
85
gcc atc cgg gcg ttg caa agc gct ggc cta gaa atc acc ctg att cgt
Ala Ile Arg Ala Leu Gln Ser Ala Gly Leu Glu Ile Thr Leu Ile Arg
100
gac gtc acg ccg att cct cac aac ggc tgc cgc ccg ccc aaa cgt cgt
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115
cgc gtt tag
Arg Val
130

```

&lt;210&gt; 858

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp

&lt;400&gt; 858

```

Met Ala Arg Pro Thr Lys Lys Ser Gly Pro Arg Lys Gln Lys Arg Asn
1          5          10          15
Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20
Val Ser Ile Ala Asp Pro Ala Gly Glu Val Ile Ser Trp Ala Ser Ala
35
Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala Ala
50
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Ile Asp Gln Gly Met
65          70          75          80
Arg Gln Leu Glu Val Met Val Ser Gly Pro Gly Ser Gly Arg Glu Thr
85
Ala Ile Arg Ala Leu Gln Ser Ala Gly Leu Glu Ile Thr Leu Ile Arg
100
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115
Arg Val
130

```

&lt;210&gt; 859

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 859

```

atg gcc aaa ccc gcc aag aaa aca ggc ccc aag aag gcc aaa cgc aac
Met Ala Lys Pro Ala Lys Lys Thr Gly Pro Lys Lys Ala Lys Arg Asn
1          5          10          15
gtc ccg aac ggc gtt gcc cac atc cag agc acc ttc aac aac acg atc
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
20
gtg tcg atc acc gac acg tct ggc gaa gtc atc tcc tgg tca tcc gct
Val Ser Ile Thr Asp Thr Ser Gly Glu Val Ile Ser Trp Ser Ser Ala
35
ggt gcc agc ggc ttc aag ggt gct cgc aaa ggc acg ccc ttc gct gcc
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
50
cag acg gct gca gaa gca gcg gca cgt cga gca ctt gat caa ggc atg
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Asp Gln Gly Met
65          70          75          80
cgc cag atc gaa gtg ctg gtg aag ggt cct gga tcc ggt cgt gag acc
Arg Gln Ile Glu Val Leu Val Lys Gly Pro Gly Ser Gly Arg Glu Thr
85
gca att cgt gcc ttg cag gtg gct ggt ctt gag atc acc ctg atc aga

```

PhoenixTemp32470.tmp.txt

Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
gac	gtc	act	ccg	ctg	ccc	cac	aac	ggt	tgc	cgg	cgg	ccc	aag	cgc	cgt	384	
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
		115					120					125					
cgc	gtc	tga														393	
Arg	Val																
	130																

<210> 860  
 <211> 130  
 <212> PRT  
 <213> Synechococcus sp

Met	Ala	Lys	Pro	Ala	Lys	Lys	Thr	Gly	Pro	Lys	Lys	Ala	Lys	Arg	Asn		
1				5				10						15			
Val	Pro	Asn	Gly	Val	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
		20						25					30				
Val	Ser	Ile	Thr	Asp	Thr	Ser	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala		
		35					40					45					
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55					60						
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Asp	Gln	Gly	Met		
65				70						75					80		
Arg	Gln	Ile	Glu	Val	Leu	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
			85					90						95			
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100					105					110				
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Pro	Lys	Arg	Arg		
		115					120					125					
Arg	Val																
	130																

<210> 861  
 <211> 393  
 <212> DNA  
 <213> Synechococcus sp

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

atg	gcc	aag	cca	gca	aag	aaa	tca	ggc	ccc	aag	aag	gcc	aaa	cgc	aac		
Met	Ala	Lys	Pro	Ala	Lys	Lys	Ser	Gly	Pro	Lys	Lys	Ala	Lys	Arg	Asn	48	
1				5				10						15			
gtc	ccc	aac	gga	ggt	gct	cac	atc	caa	agc	acg	ttc	aat	aac	acg	atc		
Val	Pro	Asn	Gly	Val	Ala	His	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	Ile		
		20						25					30				
gtg	tcc	att	acc	gac	acc	acc	gga	gaa	gtc	atc	tcc	tgg	tca	tca	gct		
Val	Ser	Ile	Thr	Asp	Thr	Thr	Gly	Glu	Val	Ile	Ser	Trp	Ser	Ser	Ala		
		35					40					45					
gga	gcc	agt	ggg	ttt	aaa	ggt	gct	cgc	aag	ggc	act	cct	ttt	gct	gct		
Gly	Ala	Ser	Gly	Phe	Lys	Gly	Ala	Arg	Lys	Gly	Thr	Pro	Phe	Ala	Ala		
	50					55					60						
caa	acc	gct	gca	gaa	gct	gcc	gct	cgc	cga	gct	ctc	gag	caa	ggc	atg		
Gln	Thr	Ala	Ala	Glu	Ala	Ala	Ala	Arg	Arg	Ala	Leu	Glu	Gln	Gly	Met		
65				70						75					80		
cgt	caa	att	gaa	ggt	ctt	ggt	cgt	ggc	cca	ggc	tca	gga	cgg	gaa	aca		
Arg	Gln	Ile	Glu	Val	Leu	Val	Arg	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Thr		
			85					90						95			
gcc	att	cgc	gct	ctt	caa	ggt	gct	ggc	tta	gag	atc	acc	ttg	atc	cgc		
Ala	Ile	Arg	Ala	Leu	Gln	Val	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	Arg		
			100					105					110				
gac	gtc	act	ccc	tta	ccc	cac	aac	ggg	tgc	cgc	cgc	tct	aag	cgg	cgt		
Asp	Val	Thr	Pro	Leu	Pro	His	Asn	Gly	Cys	Arg	Arg	Ser	Lys	Arg	Arg		
		115					120					125					

cgt gtc tga  
Arg Val  
130

<210> 862  
<211> 130  
<212> PRT  
<213> Synechococcus sp

<400> 862  
Met Ala Lys Pro Ala Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn  
1 5 10 15  
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
20 25 30  
Val Ser Ile Thr Asp Thr Thr Gly Glu Val Ile Ser Trp Ser Ser Ala  
35 40 45  
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
50 55 60  
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Glu Gln Gly Met  
65 70 75 80  
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
85 90 95  
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
100 105 110  
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Ser Lys Arg Arg  
115 120 125  
Arg Val  
130

<210> 863  
<211> 393  
<212> DNA  
<213> Synechococcus sp

<220>  
<221> CDS  
<222> (1)..(393)  
<223> transl\_table=11

<400> 863  
atg gct aaa acc gtc aaa aaa tcc ggg ccc aag aag gcc aag cga aac 48  
Met Ala Lys Thr Val Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn  
1 5 10 15  
gtc ccc aac ggt gtt gct cac atc cag agc acc ttc aac aac acc atc 96  
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
20 25 30  
gtg tcc atc acc gac acg gcc ggt gag gtg atc tcc tgg tcg tct gca 144  
Val Ser Ile Thr Asp Thr Ala Gly Glu Val Ile Ser Trp Ser Ser Ala  
35 40 45  
ggc gcc agt ggc ttc aaa ggt gct cgc aaa ggc acc ccc ttc gcg gct 192  
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala  
50 55 60  
caa acc gcc gca gaa gca gca gca cgt cgc gcc ctc gac caa ggc atg 240  
Gln Thr Ala Ala Glu Ala Ala Ala Arg Arg Ala Leu Asp Gln Gly Met  
65 70 75 80  
cgt cag atc gaa gtg ctc gta agg ggt cct ggc tca ggc cgt gag acc 288  
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr  
85 90 95  
gcc atc cgt gct ctc caa gtc gct gga ctc gaa atc acc ctg att cgc 336  
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg  
100 105 110  
gac gtc acc ccc ctg ccc cat aac ggt tgc cgc cgg ccc aag cgc cgc 384  
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg  
115 120 125  
cgc gtc tga 393  
Arg Val  
130

<210> 864

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp

&lt;400&gt; 864

```

Met Ala Lys Thr Val Lys Lys Ser Gly Pro Lys Lys Ala Lys Arg Asn
1      5      10      15
Val Pro Asn Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
      20      25      30
Val Ser Ile Thr Asp Thr Ala Gly Glu Val Ile Ser Trp Ser Ser Ala
      35      40      45
Gly Ala Ser Gly Phe Lys Gly Ala Arg Lys Gly Thr Pro Phe Ala Ala
      50      55      60
Gln Thr Ala Ala Glu Ala Ala Arg Arg Ala Leu Asp Gln Gly Met
65      70      75      80
Arg Gln Ile Glu Val Leu Val Arg Gly Pro Gly Ser Gly Arg Glu Thr
      85      90      95
Ala Ile Arg Ala Leu Gln Val Ala Gly Leu Glu Ile Thr Leu Ile Arg
      100      105      110
Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Arg Pro Lys Arg Arg
      115      120      125
Arg Val
130

```

&lt;210&gt; 865

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Synechocystis sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 865

```

atg gcg cgt cct acc aga aaa act ggg ccc aaa aag gca aaa aag aat      48
Met Ala Arg Pro Thr Arg Lys Thr Gly Pro Lys Lys Ala Lys Lys Asn
1      5      10      15
gtc cct agc ggg gtg gcc cac att caa tct act ttt aac aac acc att      96
Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile
      20      25      30
gtc acc att tcc gac att cgg ggc gat gtg att tcc tgg gct tcc gct      144
Val Thr Ile Ser Asp Ile Arg Gly Asp Val Ile Ser Trp Ala Ser Ala
      35      40      45
ggc tct agc ggt ttc aaa gga gct aaa aag ggc act ccc tac gcc gcc      192
Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Tyr Ala Ala
      50      55      60
caa acc gct gct gat tct gcg gcc cgt cgg gcc atg gaa cag ggt atg      240
Gln Thr Ala Ala Asp Ser Ala Ala Arg Arg Ala Met Glu Gln Gly Met
      65      70      75      80
cgg caa tta gag gta atg gta agt ggc ccc ggt gcc ggt cgg gaa act      288
Arg Gln Leu Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu Thr
      85      90      95
gct atc cgg gcc ctc caa ggg gct ggt ttg gaa atc acc ctg atc agg      336
Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile Arg
      100      105      110
gat gtt acc ccc atc ccc cac aat ggt tgt cgt ccc ccc aaa cgc cgt      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
      115      120      125
cgg gtc tag
Arg Val
130

```

&lt;210&gt; 866

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Synechocystis sp

&lt;400&gt; 866

## PhoenixTemp32470.tmp.txt

Met Ala Arg Pro Thr Arg Lys Thr Gly Pro Lys Lys Ala Lys Lys Asn  
 1 Val Pro Ser Gly Val Ala His Ile Gln Ser Thr Phe Asn Asn Thr Ile  
 20 Val Thr Ile Ser Asp Ile Arg Gly Asp Val Ile Ser Trp Ala Ser Ala  
 35 Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Tyr Ala Ala  
 50 Gln Thr Ala Ala Asp Ser Ala Ala Arg Arg Ala Met Glu Gln Gly Met  
 65 Arg Gln Leu Glu Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu Thr  
 80 Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile Arg  
 100 Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg  
 115 Arg Val  
 130

&lt;210&gt; 867

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Thermoplasma acidophilum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 867

gtg aga cag atg aat aag act gga ata gcc cat atc tat gca tcg cag 48  
 Met Arg Gln Met Asn Lys Thr Gly Ile Ala His Ile Tyr Ala Ser Gln  
 1 aac aac act ata ata cat gta act gat ccg acc ggc gcg gag acc atc 96  
 Asn Asn Thr Ile Ile His Val Thr Asp Pro Thr Gly Ala Glu Thr Ile  
 20 gcc atg gtt tcc ggc gga atg gtc gta aag aat gac agg gac cag gca 144  
 Ala Met Val Ser Gly Gly Met Val Val Lys Asn Asp Arg Asp Gln Ala  
 35 agc ccg tac gcg gca atg aaa gcc gcc gat atg gtt tcc gaa gcc ctg 192  
 Ser Pro Tyr Ala Ala Met Lys Ala Ala Asp Met Val Ser Glu Ala Leu  
 50 aaa gag aag gag ata acc gat ctc ata ata aag gta cgt gct ccg ggc 240  
 Lys Glu Lys Glu Ile Thr Asp Leu Ile Ile Lys Val Arg Ala Pro Gly  
 65 gga aac aag tca aag ata ccc ggt ccg ggt gct cag gca gcc ata agg 288  
 Gly Asn Lys Ser Lys Ile Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg  
 85 gcc ctt tcc agg gca ggt ttg aag atc gtc cgg ata gag gaa gtg act 336  
 Ala Leu Ser Arg Ala Gly Leu Lys Ile Val Arg Ile Glu Glu Val Thr  
 100 cct atc ccc cac gat ggt acc aag aag aag ggg gga aag aga ggg aga 384  
 Pro Ile Pro His Asp Gly Thr Lys Lys Lys Gly Gly Lys Arg Gly Arg  
 115 agg gtc tga  
 Arg Val  
 130

&lt;210&gt; 868

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Thermoplasma acidophilum

&lt;400&gt; 868

Met Arg Gln Met Asn Lys Thr Gly Ile Ala His Ile Tyr Ala Ser Gln  
 1 Asn Asn Thr Ile Ile His Val Thr Asp Pro Thr Gly Ala Glu Thr Ile  
 20 Ala Met Val Ser Gly Gly Met Val Val Lys Asn Asp Arg Asp Gln Ala

## PhoenixTemp32470.tmp.txt

```

      35      40      45
Ser Pro Tyr Ala Ala Met Lys Ala Ala Asp Met Val Ser Glu Ala Leu
      50      55      60
Lys Glu Lys Glu Ile Thr Asp Leu Ile Ile Lys Val Arg Ala Pro Gly
65      70      75      80
Gly Asn Lys Ser Lys Ile Pro Gly Pro Gly Ala Gln Ala Ala Ile Arg
      85      90      95
Ala Leu Ser Arg Ala Gly Leu Lys Ile Val Arg Ile Glu Glu Val Thr
      100      105      110
Pro Ile Pro His Asp Gly Thr Lys Lys Lys Gly Gly Lys Arg Gly Arg
      115      120      125
Arg Val
      130

```

&lt;210&gt; 869

&lt;211&gt; 405

&lt;212&gt; DNA

&lt;213&gt; Thermobifida fusca

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=11

&lt;400&gt; 869

```

atg ccg cct aag agc cgt cag ggc gcc ggg cgc aag gtg cgc cgc aaa      48
Met Pro Pro Lys Ser Arg Gln Gly Ala Gly Arg Lys Val Arg Arg Lys
1      5      10      15
gag aag aag aac gtc gtc cac ggg cac gcg cac atc aag agc acc ttc      96
Glu Lys Lys Asn Val Val His Gly His Ala His Ile Lys Ser Thr Phe
      20      25      30
aac aac acg att gtg agc atc acc gac ccg acc ggc gcg gtg atc tcc      144
Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Thr Gly Ala Val Ile Ser
      35      40      45
tgg gcc agt gcc gga cag gtc ggg ggc ttc aag ggg tcg cgg aag tcc act      192
Trp Ala Ser Ala Gly Gln Val Gly Phe Lys Gly Ser Arg Lys Ser Thr
      50      55      60
ccg ttc gcc gcg cag atg gct gcc gag gcc gcc gca cgc cgc gcg cag      240
Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Arg Arg Ala Gln
      65      70      75      80
gag cat ggg gtg cgc aag gtc gac gtc ttc gtc aag ggt ccg ggc tcg      288
Glu His Gly Val Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser
      85      90      95
ggc cgg gaa acc gcg atc cgt tcg ctg cag gcg acc ggg ctc gag gtc      336
Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Val
      100      105      110
ggc tcg atc cag gac gtc acc ccg gtt ccg cac aac ggc tgc cgt ccg      384
Gly Ser Ile Gln Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro
      115      120      125
ccg aaa ccg cgc ccg gtc tga
Pro Lys Arg Arg Arg Val
      130

```

&lt;210&gt; 870

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Thermobifida fusca

&lt;400&gt; 870

```

Met Pro Pro Lys Ser Arg Gln Gly Ala Gly Arg Lys Val Arg Arg Lys
1      5      10      15
Glu Lys Lys Asn Val Val His Gly His Ala His Ile Lys Ser Thr Phe
      20      25      30
Asn Asn Thr Ile Val Ser Ile Thr Asp Pro Thr Gly Ala Val Ile Ser
      35      40      45
Trp Ala Ser Ala Gly Gln Val Gly Phe Lys Gly Ser Arg Lys Ser Thr
      50      55      60
Pro Phe Ala Ala Gln Met Ala Ala Glu Ala Ala Arg Arg Ala Gln
65      70      75      80

```



## PhoenixTemp32470.tmp.txt

Glu His Gly Val Arg Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser  
 85 90 95  
 Gly Arg Glu Thr Ala Ile Arg Ser Leu Gln Ala Thr Gly Leu Glu Val  
 100 105 110  
 Gly Ser Ile Gln Asp Val Thr Pro Val Pro His Asn Gly Cys Arg Pro  
 115 120 125  
 Pro Lys Arg Arg Arg Val  
 130

&lt;210&gt; 871

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Thermotoga maritima

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 871

atg gca aga aaa aga ggc ggc tct tca aaa aaa cag aaa aag gtt agt	48
Met Ala Arg Lys Arg Gly Gly Ser Ser Lys Lys Gln Lys Lys Val Ser	
1 5 10 15	
ttt gat tac gga gtg gtg cat ata aaa tct act ttc aac aac act ata	96
Phe Asp Tyr Gly Val Val His Ile Lys Ser Thr Phe Asn Asn Thr Ile	
20 25 30	
atc act ctc acc gac aaa gat gga aat aca ctc acc tgg gcc agt gga	144
Ile Thr Leu Thr Asp Lys Asp Gly Asn Thr Leu Thr Trp Ala Ser Gly	
35 40 45	
gga acg gtg gga ttt gag gga aca agg aag ggc aca ccc tat gct gct	192
Gly Thr Val Gly Phe Glu Gly Thr Arg Lys Gly Thr Pro Tyr Ala Ala	
50 55 60	
cag ctg gca gcc gat aaa gtg gca aga gaa gct ctc agg atg ggc atc	240
Gln Leu Ala Ala Asp Lys Val Ala Arg Glu Ala Leu Arg Met Gly Ile	
65 70 75 80	
aaa aaa gtc gat gtt ctt gtg aaa gga cct ggc cca gga agg gaa ccc	288
Lys Lys Val Asp Val Leu Val Lys Gly Pro Gly Pro Gly Arg Glu Pro	
85 90 95	
gcg ata aga acg ctt cag ggc gcc ggt ctt gaa atc aac cag ata aag	336
Ala Ile Arg Thr Leu Gln Gly Ala Gly Leu Glu Ile Asn Gln Ile Lys	
100 105 110	
gat gtt act cct att ccg ttc aac ggt tgc aga ccc aag aag aga aga	384
Asp Val Thr Pro Ile Pro Phe Asn Gly Cys Arg Pro Lys Lys Arg Arg	
115 120 125	
aga gtg tga	393
Arg Val	
130	

&lt;210&gt; 872

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Thermotoga maritima

&lt;400&gt; 872

Met Ala Arg Lys Arg Gly Gly Ser Ser Lys Lys Gln Lys Lys Val Ser
1 5 10 15
Phe Asp Tyr Gly Val Val His Ile Lys Ser Thr Phe Asn Asn Thr Ile
20 25 30
Ile Thr Leu Thr Asp Lys Asp Gly Asn Thr Leu Thr Trp Ala Ser Gly
35 40 45
Gly Thr Val Gly Phe Glu Gly Thr Arg Lys Gly Thr Pro Tyr Ala Ala
50 55 60
Gln Leu Ala Ala Asp Lys Val Ala Arg Glu Ala Leu Arg Met Gly Ile
65 70 75 80
Lys Lys Val Asp Val Leu Val Lys Gly Pro Gly Pro Gly Arg Glu Pro
85 90 95
Ala Ile Arg Thr Leu Gln Gly Ala Gly Leu Glu Ile Asn Gln Ile Lys
100 105 110
Asp Val Thr Pro Ile Pro Phe Asn Gly Cys Arg Pro Lys Lys Arg Arg

115  
Arg Val  
130<210> 873  
<211> 390  
<212> DNA  
<213> Thermus thermophilus<220>  
<221> CDS  
<222> (1)..(390)  
<223> transl\_table=11

```
<400> 873
atg gcc aag aag ccg agc aag aaa aag gtc aag cgg cag gtg gcg agc      48
Met Ala Lys Lys Pro Ser Lys Lys Lys Val Lys Arg Gln Val Ala Ser
  1          5          10          15
ggt cgc gcc tac atc cac gcc tcc tac aac aac acc atc gtc acc atc      96
Gly Arg Ala Tyr Ile His Ala Ser Tyr Asn Asn Thr Ile Val Thr Ile
          20          25          30
acc gac ccg gac ggc aac ccc atc acc tgg tct tcg ggt ggc gtc atc      144
Thr Asp Pro Asp Gly Asn Pro Ile Thr Trp Ser Ser Gly Gly Val Ile
          35          40          45
ggc tac aag gga agc cgt aag ggc acc cct tac gcc gcc cag ctc gcg      192
Gly Tyr Lys Gly Ser Arg Lys Gly Thr Pro Tyr Ala Ala Gln Leu Ala
          50          55          60
gcc ctg gac gcc gcc aag aag gcc atg gcc tac ggc atg cag agc gtg      240
Ala Leu Asp Ala Ala Lys Lys Ala Met Ala Tyr Gly Met Gln Ser Val
          65          70          75
gac gtg atc gtg cgg ggc acc ggg gcg ggc cgg gag cag gcc ata agg      288
Asp Val Ile Val Arg Gly Thr Gly Ala Gly Arg Glu Gln Ala Ile Arg
          80          85          90
gcc ctc cag gcc tcc ggc ctc cag gtg aag tcc atc gtg gac gac acc      336
Ala Leu Gln Ala Ser Gly Leu Gln Val Lys Ser Ile Val Asp Asp Thr
          100          105          110
ccc gtc ccc cac aac ggc tgc agg ccc aag aag aag ttc cgt aag gct      384
Pro Val Pro His Asn Gly Cys Arg Pro Lys Lys Lys Phe Arg Lys Ala
          115          120          125
tcc tag
Ser
```

<210> 874  
<211> 129  
<212> PRT  
<213> Thermus thermophilus

```
<400> 874
Met Ala Lys Lys Pro Ser Lys Lys Lys Val Lys Arg Gln Val Ala Ser
  1          5          10          15
Gly Arg Ala Tyr Ile His Ala Ser Tyr Asn Asn Thr Ile Val Thr Ile
          20          25          30
Thr Asp Pro Asp Gly Asn Pro Ile Thr Trp Ser Ser Gly Gly Val Ile
          35          40          45
Gly Tyr Lys Gly Ser Arg Lys Gly Thr Pro Tyr Ala Ala Gln Leu Ala
          50          55          60
Ala Leu Asp Ala Ala Lys Lys Ala Met Ala Tyr Gly Met Gln Ser Val
          65          70          75
Asp Val Ile Val Arg Gly Thr Gly Ala Gly Arg Glu Gln Ala Ile Arg
          80          85          90
Ala Leu Gln Ala Ser Gly Leu Gln Val Lys Ser Ile Val Asp Asp Thr
          100          105          110
Pro Val Pro His Asn Gly Cys Arg Pro Lys Lys Lys Phe Arg Lys Ala
          115          120          125
Ser
```

&lt;210&gt; 875

<211> 393  
 <212> DNA  
 <213> Thermoanaerobacter tengcongensis

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

```
<400> 875
atg gcc aag aga gta aaa agg gct gga aga aaa cgc gaa aaa aag cat      48
Met Ala Lys Arg Val Lys Arg Ala Gly Arg Lys Arg Glu Lys Lys His
1      5      10      15
gtg gag aga ggt atc gct cac atc cac tcc act ttt aac aat acc att      96
Val Glu Arg Gly Ile Ala His Ile His Ser Thr Phe Asn Asn Thr Ile
20     25     30
gtg acg ata act gat cca gca ggc aat acc att gca tgg gct agc gct      144
Val Thr Ile Thr Asp Pro Ala Gly Asn Thr Ile Ala Trp Ala Ser Ala
35     40     45
gga aca gtc gga ttt aaa ggc tca aga aaa tct act cca ttt gct gct      192
Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50     55     60
cag atg gcg gct gaa tct gct gca aaa gcg gca atg gac cat ggg atg      240
Gln Met Ala Ala Glu Ser Ala Ala Lys Ala Ala Met Asp His Gly Met
65     70     75
aga act gta gat gta tat gtg aaa ggg cca ggg gca gga aga gaa gcg      288
Arg Thr Val Asp Val Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala
85     90     95
gca ata aga gcc ttg cag gca gct ggt ctt gag gta agt ctt ata aaa      336
Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Ser Leu Ile Lys
100    105    110
gac gta act cca ata ccc cat aac ggc tgc aga cca cca aag agg aga      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115    120    125
aga gtg taa
Arg Val
130
```

<210> 876  
 <211> 130  
 <212> PRT  
 <213> Thermoanaerobacter tengcongensis

```
<400> 876
Met Ala Lys Arg Val Lys Arg Ala Gly Arg Lys Arg Glu Lys Lys His
1      5      10      15
Val Glu Arg Gly Ile Ala His Ile His Ser Thr Phe Asn Asn Thr Ile
20     25     30
Val Thr Ile Thr Asp Pro Ala Gly Asn Thr Ile Ala Trp Ala Ser Ala
35     40     45
Gly Thr Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50     55     60
Gln Met Ala Ala Glu Ser Ala Ala Lys Ala Ala Met Asp His Gly Met
65     70     75
Arg Thr Val Asp Val Tyr Val Lys Gly Pro Gly Ala Gly Arg Glu Ala
85     90     95
Ala Ile Arg Ala Leu Gln Ala Ala Gly Leu Glu Val Ser Leu Ile Lys
100    105    110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg Arg
115    120    125
Arg Val
130
```

<210> 877  
 <211> 399  
 <212> DNA  
 <213> Thermoplasma volcanium

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(399)

&lt;223&gt; transl\_table=11

&lt;400&gt; 877

atg	gag	gtg	aac	agg	atg	aat	aaa	acg	gga	att	gca	cat	ata	tac	gca	48
Met	Glu	Val	Asn	Arg	Met	Asn	Lys	Thr	Gly	Ile	Ala	His	Ile	Tyr	Ala	
1				5				10					15			
tca	cag	aat	aat	aca	ata	ata	cac	gtg	act	gat	cca	act	ggc	gct	gag	96
Ser	Gln	Asn	Asn	Thr	Ile	Ile	His	Val	Thr	Asp	Pro	Thr	Gly	Ala	Glu	
			20					25					30			
aca	ata	gca	atg	gta	tct	ggc	ggc	atg	gtt	gta	aaa	aac	gat	agg	gat	144
Thr	Ile	Ala	Met	Val	Ser	Gly	Gly	Met	Val	Val	Lys	Asn	Asp	Arg	Asp	
			35				40					45				
cag	gct	agc	cct	tac	gct	gcc	atg	aag	gct	gcc	gat	atg	gta	tcc	gag	192
Gln	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Lys	Ala	Ala	Asp	Met	Val	Ser	Glu	
	50					55				60						
act	tta	aaa	gag	cat	gaa	ata	act	gat	ctg	atc	ata	aag	gta	aga	gct	240
Thr	Leu	Lys	Glu	His	Glu	Ile	Thr	Asp	Leu	Ile	Ile	Lys	Val	Arg	Ala	
	65				70				75						80	
cca	gga	ggc	aat	aaa	tct	aaa	atc	ccc	ggc	cca	ggg	gct	caa	gca	gca	288
Pro	Gly	Gly	Asn	Lys	Ser	Lys	Ile	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	
				85					90					95		
ata	agg	gcc	ctt	tcg	agg	gca	ggc	ctg	aag	ata	gta	agg	att	gaa	gag	336
Ile	Arg	Ala	Leu	Ser	Arg	Ala	Gly	Leu	Lys	Ile	Val	Arg	Ile	Glu	Glu	
			100					105					110			
gta	act	cct	att	cca	cac	gat	gga	act	aag	aag	aag	ggg	gga	aag	aga	384
Val	Thr	Pro	Ile	Pro	His	Asp	Gly	Thr	Lys	Lys	Lys	Gly	Gly	Lys	Arg	
		115					120					125				
ggg	aga	agg	gtt	tag												399
Gly	Arg	Arg	Val													
			130													

&lt;210&gt; 878

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Thermoplasma volcanium

&lt;400&gt; 878

Met	Glu	Val	Asn	Arg	Met	Asn	Lys	Thr	Gly	Ile	Ala	His	Ile	Tyr	Ala	
1				5					10					15		
Ser	Gln	Asn	Asn	Thr	Ile	Ile	His	Val	Thr	Asp	Pro	Thr	Gly	Ala	Glu	
			20					25					30			
Thr	Ile	Ala	Met	Val	Ser	Gly	Gly	Met	Val	Val	Lys	Asn	Asp	Arg	Asp	
		35					40					45				
Gln	Ala	Ser	Pro	Tyr	Ala	Ala	Met	Lys	Ala	Ala	Asp	Met	Val	Ser	Glu	
	50					55				60						
Thr	Leu	Lys	Glu	His	Glu	Ile	Thr	Asp	Leu	Ile	Ile	Lys	Val	Arg	Ala	
	65				70				75						80	
Pro	Gly	Gly	Asn	Lys	Ser	Lys	Ile	Pro	Gly	Pro	Gly	Ala	Gln	Ala	Ala	
			85						90					95		
Ile	Arg	Ala	Leu	Ser	Arg	Ala	Gly	Leu	Lys	Ile	Val	Arg	Ile	Glu	Glu	
			100					105					110			
Val	Thr	Pro	Ile	Pro	His	Asp	Gly	Thr	Lys	Lys	Lys	Gly	Gly	Lys	Arg	
		115					120					125				
Gly	Arg	Arg	Val													
			130													

&lt;210&gt; 879

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Thiobacillus denitrificans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 879

## PhoenixTemp32470.tmp.txt

```

atg gcg act aaa aca gca gcg cgt gtc cgc aag aag gtc aaa aag aac      48
Met Ala Thr Lys Thr 5 Ala Ala Arg Val Arg 10 Lys Lys Val Lys 15 Asn
1
gtc gca gaa ggt att gcg cac atc cat gcc tgc ttc aac aac acc atc      96
Val Ala Glu Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile
20
gtg acg atc acc gat cgc cag gcc aac gcc ctg tgc tgg gcg acg gca      144
Val Thr 35 Thr Asp Arg Gln Gly 40 Asn Ala Leu Ser Trp Ala Thr Ala
35
ggc ggc gcg ggc ttc aag ggc tcc cgc aag tgc acg ccg ttc gcg gcc      192
Gly Gly 50 Ala Gly Phe Lys Gly 55 Ser Arg Lys Ser Thr Pro Phe Ala Ala
50
cag gtc gcc gcg gaa aac gcc ggc aag atg gcg cag gaa tac ggc gtc      240
Gln Val Ala Ala Glu Asn Ala Gly Lys Met Ala Gln Glu Tyr Gly Val 80
65
aag aac ctg gaa gtg cgg atc aag ggc ccc ggc cct ggc cgc gag tcg      288
Lys Asn Leu Glu Val 85 Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser
85
acg gtg cgc gcg ctg aat gcg ctc ggc ttc aag atc gtt gcg atc tcc      336
Thr Val Arg Ala Leu Asn Ala Leu Gly 105 Phe Lys Ile Val Ala Ile Ser
100
gat gtc acg ccg atc ccg cac aac ggt tgc cgt ccc tcc aaa aag cgt      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Ser Lys Lys Arg
115
cgt atc taa
Arg Ile
130

```

&lt;210&gt; 880

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Thiobacillus denitrificans

&lt;400&gt; 880

```

Met Ala Thr Lys Thr 5 Ala Ala Arg Val Arg 10 Lys Lys Val Lys Lys Asn
1
Val Ala Glu Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr Ile
20
Val Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ala
35
Gly Gly 50 Ala Gly Phe Lys Gly 55 Ser Arg Lys Ser Thr 60 Phe Ala Ala
50
Gln Val Ala Ala Glu Asn Ala Gly Lys Met Ala Gln Glu Tyr Gly Val 80
65
Lys Asn Leu Glu Val 85 Arg Ile Lys Gly Pro 90 Gly Pro Gly Arg Glu Ser
85
Thr Val Arg Ala Leu Asn Ala Leu Gly 105 Phe Lys Ile Val Ala Ile Ser
100
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Ser Lys Lys Arg
115
Arg Ile
130

```

&lt;210&gt; 881

&lt;211&gt; 381

&lt;212&gt; DNA

&lt;213&gt; Treponema denticola

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(381)

&lt;223&gt; transl\_table=11

&lt;400&gt; 881

```

atg gct act gta aag aaa aga aaa gaa aag aaa agc ata tat gaa ggc      48
Met Ala Thr Val Lys 5 Lys Arg Lys Glu 10 Lys Lys Ser Ile Tyr Glu Gly
1
aat gtt tat att caa gca acc ttt aat aac aca att att acg ata acc      96
Asn Val Tyr Ile Gln Ala Thr Phe Asn Asn Thr Ile Ile Thr Ile Thr

```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
gac tta aag gga aat gtt ctt tca tgg gca tct tca ggc ggc tta ggc 144
Asp Leu Lys Gly Asn Val Leu Ser Trp Ala Ser Ser Gly Gly Leu Gly
      35      40      45
ttt gcc ggt gcc aaa aaa tcg aca ccc ttt gcg gct cag acc gtt gca 192
Phe Ala Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala Gln Thr Val Ala
      50      55      60
gaa aca gct gta caa aag tgc cag ccc tac ggc ttg cat gag gtt cat 240
Glu Thr Ala Val Gln Lys Cys Gln Pro Tyr Gly Leu His Glu Val His
      65      70      75      80
gtt ttt gta aaa ggt ccc gga gtc ggc cgt gaa tcg gct atc aga acg 288
Val Phe Val Lys Gly Pro Gly Val Gly Arg Glu Ser Ala Ile Arg Thr
      85      90      95
ctt gga aca atg gga tta aag gtt cgc tca atc agc gat gta act ccc 336
Leu Gly Thr Met Gly Leu Lys Val Arg Ser Ile Ser Asp Val Thr Pro
      100      105      110
att ccg cac aac ggc tgc cgt ccc aag aag acg cgc cga ata taa 381
Ile Pro His Asn Gly Cys Arg Pro Lys Lys Thr Arg Arg Ile
      115      120      125

```

&lt;210&gt; 882

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Treponema denticola

&lt;400&gt; 882

```

Met Ala Thr Val Lys Lys Arg Lys Glu Lys Lys Ser Ile Tyr Glu Gly
1      5      10      15
Asn Val Tyr Ile Gln Ala Thr Phe Asn Asn Thr Ile Ile Thr Ile Thr
      20      25      30
Asp Leu Lys Gly Asn Val Leu Ser Trp Ala Ser Ser Gly Gly Leu Gly
      35      40      45
Phe Ala Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala Gln Thr Val Ala
      50      55      60
Glu Thr Ala Val Gln Lys Cys Gln Pro Tyr Gly Leu His Glu Val His
65      70      75      80
Val Phe Val Lys Gly Pro Gly Val Gly Arg Glu Ser Ala Ile Arg Thr
      85      90      95
Leu Gly Thr Met Gly Leu Lys Val Arg Ser Ile Ser Asp Val Thr Pro
      100      105      110
Ile Pro His Asn Gly Cys Arg Pro Lys Lys Thr Arg Arg Ile
      115      120      125

```

&lt;210&gt; 883

&lt;211&gt; 381

&lt;212&gt; DNA

&lt;213&gt; Treponema pallidum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(381)

&lt;223&gt; transl\_table=11

&lt;400&gt; 883

```

gtg gcg gtc aca aag aag cgt aaa gaa aaa aag aat gtg tac gag ggg 48
Met Ala Val Thr Lys Lys Arg Lys Glu Lys Lys Asn Val Tyr Glu Gly
1      5      10      15
aac gtg tat atc cag gcg act ttc aat aac acc atc ata acg gtt act 96
Asn Val Tyr Ile Gln Ala Thr Phe Asn Asn Thr Ile Ile Thr Val Thr
      20      25      30
gac ctg caa gga aat gcg ctc tcc tgg gct tcg tcc ggg ggc ctt ggg 144
Asp Leu Gln Gly Asn Ala Leu Ser Trp Ala Ser Ser Gly Gly Leu Gly
      35      40      45
ttt aat ggg gca aag aaa tct act cct ttt gca gca cag acg gtc gcg 192
Phe Asn Gly Ala Lys Lys Ser Thr Pro Phe Ala Ala Gln Thr Val Ala
      50      55      60
gaa gct gcg gta cag aaa gcg cag cag tgc gga ctg cgt gaa gta cat 240
Glu Ala Ala Val Gln Lys Ala Gln Gln Cys Gly Leu Arg Glu Val His
      65      70      75      80

```

PhoenixTemp32470.tmp.txt

gtg	ttt	gtc	aaa	ggg	ccg	ggt	att	ggg	cgt	gag	tca	gca	att	aga	atg	288
Val	Phe	Val	Lys	Gly	Pro	Gly	Ile	Gly	Arg	Glu	Ser	Ala	Ile	Arg	Met	
				85				90					95			
ctt	ggt	acc	atg	gga	ctg	agg	gtg	cgt	tcg	att	cgc	gac	atc	aca	ccc	336
Leu	Gly	Thr	Met	Gly	Leu	Arg	Val	Arg	Ser	Ile	Arg	Asp	Ile	Thr	Pro	
			100					105					110			
att	cca	cat	aac	ggc	tgt	cgt	ccg	cgt	aaa	act	cgc	cgc	atc	tga		381
Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Thr	Arg	Arg	Ile			
		115					120					125				

<210> 884  
 <211> 126  
 <212> PRT  
 <213> Treponema pallidum

<400> 884

Met	Ala	Val	Thr	Lys	Lys	Arg	Lys	Glu	Lys	Lys	Asn	Val	Tyr	Glu	Gly	
1				5				10					15			
Asn	Val	Tyr	Ile	Gln	Ala	Thr	Phe	Asn	Asn	Thr	Ile	Ile	Thr	Val	Thr	
			20					25				30				
Asp	Leu	Gln	Gly	Asn	Ala	Leu	Ser	Trp	Ala	Ser	Ser	Gly	Gly	Leu	Gly	
		35					40					45				
Phe	Asn	Gly	Ala	Lys	Lys	Ser	Thr	Pro	Phe	Ala	Ala	Gln	Thr	Val	Ala	
	50					55					60					
Glu	Ala	Ala	Val	Gln	Lys	Ala	Gln	Gln	Cys	Gly	Leu	Arg	Glu	Val	His	
65					70					75					80	
Val	Phe	Val	Lys	Gly	Pro	Gly	Ile	Gly	Arg	Glu	Ser	Ala	Ile	Arg	Met	
			85					90					95			
Leu	Gly	Thr	Met	Gly	Leu	Arg	Val	Arg	Ser	Ile	Arg	Asp	Ile	Thr	Pro	
			100					105					110			
Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Arg	Lys	Thr	Arg	Arg	Ile			
		115					120					125				

<210> 885  
 <211> 396  
 <212> DNA  
 <213> Trichodesmium erythraeum

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 885

atg	gca	cga	caa	cca	aca	aaa	aaa	aca	ggc	ccg	aaa	aaa	caa	aaa	aag	48
Met	Ala	Arg	Gln	Pro	Thr	Lys	Lys	Thr	Gly	Pro	Lys	Lys	Gln	Lys	Lys	
1				5					10				15			
aat	gtg	ccc	aat	ggg	gta	gct	tac	atc	cag	tct	acc	ttt	aat	aat	acg	96
Asn	Val	Pro	Asn	Gly	Val	Ala	Tyr	Ile	Gln	Ser	Thr	Phe	Asn	Asn	Thr	
			20					25					30			
att	gta	act	att	gct	gac	cta	aat	ggg	gaa	gta	att	tct	tgg	gct	tcg	144
Ile	Val	Thr	Ile	Ala	Asp	Leu	Asn	Gly	Glu	Val	Ile	Ser	Trp	Ala	Ser	
		35					40					45				
gca	ggg	tca	agt	ggg	ttc	aag	ggg	gcc	aaa	aaa	gga	act	ccc	ttt	gca	192
Ala	Gly	Ser	Ser	Gly	Phe	Lys	Gly	Ala	Lys	Lys	Gly	Thr	Pro	Phe	Ala	
	50					55					60					
gca	cag	aca	gca	gca	gaa	agt	gca	gca	cgc	cga	gcc	aac	gat	caa	gga	240
Ala	Gln	Thr	Ala	Ala	Glu	Ser	Ala	Ala	Arg	Arg	Ala	Asn	Asp	Gln	Gly	
	65				70				75						80	
atg	cgt	cag	gtt	caa	gtg	atg	gta	agt	ggg	cca	ggg	gca	gga	aga	gaa	288
Met	Arg	Gln	Val	Gln	Val	Met	Val	Ser	Gly	Pro	Gly	Ala	Gly	Arg	Glu	
			85					90					95			
act	gca	att	aga	gct	tta	cag	ggg	gct	ggg	cta	gaa	ata	act	ttg	att	336
Thr	Ala	Ile	Arg	Ala	Leu	Gln	Gly	Ala	Gly	Leu	Glu	Ile	Thr	Leu	Ile	
			100					105					110			
cga	gat	att	acc	cca	att	cct	cat	aat	ggg	tgc	cgt	cca	cca	aaa	cgg	384
Arg	Asp	Ile	Thr	Pro	Ile	Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Arg	
		115					120					125				
cgt	aga	gtc	taa													396

Arg Arg Val  
130

<210> 886

<211> 131

<212> PRT

<213> Trichodesmium erythraeum

<400> 886

```
Met Ala Arg Gln Pro Thr Lys Lys Thr Gly Pro Lys Lys Gln Lys Lys
1      5      10      15
Asn Val Pro Asn Gly Val Ala Tyr Ile Gln Ser Thr Phe Asn Asn Thr
20      25      30
Ile Val Thr Ile Ala Asp Leu Asn Gly Glu Val Ile Ser Trp Ala Ser
35      40      45
Ala Gly Ser Ser Gly Phe Lys Gly Ala Lys Lys Gly Thr Pro Phe Ala
50      55      60
Ala Gln Thr Ala Ala Glu Ser Ala Ala Arg Arg Ala Asn Asp Gln Gly
65      70      75      80
Met Arg Gln Val Gln Val Met Val Ser Gly Pro Gly Ala Gly Arg Glu
85      90      95
Thr Ala Ile Arg Ala Leu Gln Gly Ala Gly Leu Glu Ile Thr Leu Ile
100     105     110
Arg Asp Ile Thr Pro Ile Pro His Asn Gly Cys Arg Pro Lys Arg
115     120     125
Arg Arg Val
130
```

<210> 887

<211> 393

<212> DNA

<213> Tropheryma whipplei

<220>

<221> CDS

<222> (1)..(393)

<223> transl\_table=11

<400> 887

```
ttg tca aaa cag gct cag agt agg tcg cgc aaa aaa gct agg aaa aat      48
Met Ser Lys Gln Ala Gln Ser Arg Ser Arg Lys Lys Ala Arg Lys Asn
1      5      10      15
atc cct gca ggc ctt gcc cat ata aag tca act ttc aat aac acg att      96
Ile Pro Ala Gly Leu Ala His Ile Lys Ser Thr Phe Asn Asn Thr Ile
20      25      30
gtt acg ata acc gac cta tct ggc aat gta att ggc tgg tca tcg agt      144
Val Thr Ile Thr Asp Leu Ser Gly Asn Val Ile Gly Trp Ser Ser Ser
35      40      45
ggt gca gtt ggc ttt aaa gga tcc aga aag tca aca ccc tat gcc gca      192
Gly Ala Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala
50      55      60
cag atg gca gcc gat gct gcc gct cgc tct gct cag gag cac gga gtg      240
Gln Met Ala Ala Asp Ala Ala Arg Ser Ala Gln Glu His Gly Val
65      70      75      80
aag aaa gtg gat gtg ttt gta aag ggt ccg ggt tcc ggc agg gag act      288
Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg Glu Thr
85      90      95
gcc ata cgg tcc ctc cag acg gca ggt ctt gag ata ggc tcc ata agc      336
Ala Ile Arg Ser Leu Gln Thr Ala Gly Leu Glu Ile Gly Ser Ile Ser
100     105     110
gac acg acc cct ctt gcg ttc aat gga tgt cgc ccc cct aag aaa cgc      384
Asp Thr Thr Pro Leu Ala Phe Asn Gly Cys Arg Pro Lys Lys Arg
115     120     125
ctg gtt taa
Leu Val
130      393
```

<210> 888

<211> 130



&lt;212&gt; PRT

&lt;213&gt; Tropheryma whipplei

&lt;400&gt; 888

```

Met Ser Lys Gln Ala Gln Ser Arg Ser Arg Lys Lys Ala Arg Lys Asn
1      5      10      15
Ile Pro Ala Gly Leu Ala His Ile Lys Ser Thr Phe Asn Asn Thr Ile
20      25      30
Val Thr Ile Thr Asp Leu Ser Gly Asn Val Ile Gly Trp Ser Ser Ser
35      40      45
Gly Ala Val Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala
50      55      60
Gln Met Ala Ala Asp Ala Ala Arg Ser Ala Gln Glu His Gly Val
65      70      75      80
Lys Lys Val Asp Val Phe Val Lys Gly Pro Gly Ser Gly Arg Glu Thr
85      90      95
Ala Ile Arg Ser Leu Gln Thr Ala Gly Leu Glu Ile Gly Ser Ile Ser
100      105      110
Asp Thr Thr Pro Leu Ala Phe Asn Gly Cys Arg Pro Pro Lys Lys Arg
115      120      125
Leu Val
130

```

&lt;210&gt; 889

&lt;211&gt; 366

&lt;212&gt; DNA

&lt;213&gt; Ureaplasma parvum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(366)

&lt;223&gt; transl\_table=4

&lt;400&gt; 889

```

atg gca aag aag aaa aaa ctt agt ttt act aat gga att gca tat att      48
Met Ala Lys Lys Lys Lys Leu Ser Phe Thr Asn Gly Ile Ala Tyr Ile
1      5      10      15
cat gca act aaa aat aat acg att att act ttg gct gat gaa caa gga      96
His Ala Thr Lys Asn Asn Thr Ile Ile Thr Leu Ala Asp Glu Gln Gly
20      25      30
agc gtt tta tct tga gca tca tct ggt tca atc ggt tat aaa gga aca      144
Ser Val Leu Ser Trp Ala Ser Ser Gly Ser Ile Gly Tyr Lys Gly Thr
35      40      45
aag aaa aaa act cca tat tca gca ggt att gct gct gaa gct gca gca      192
Lys Lys Lys Thr Pro Tyr Ser Ala Gly Ile Ala Ala Glu Ala Ala Ala
50      55      60
aaa gct gtg att gat atg gga tta aaa tct gtt gaa gtt cat gtt aat      240
Lys Ala Val Ile Asp Met Gly Leu Lys Ser Val Glu Val His Val Asn
65      70      75      80
gga aca ggt gca agt cgt gat aca gca att cgt agc cta caa gca gca      288
Gly Thr Gly Ala Ser Arg Asp Thr Ala Ile Arg Ser Leu Gln Ala Ala
85      90      95
ggt tta gaa gta aca aaa att aaa gat gtt act cca att cca cat aat      336
Gly Leu Glu Val Thr Lys Ile Lys Asp Val Thr Pro Ile Pro His Asn
100      105      110
ggg tgt cgt cca cct aaa aaa cca aga tag      366
Gly Cys Arg Pro Pro Lys Lys Pro Arg
115      120

```

&lt;210&gt; 890

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Ureaplasma parvum

&lt;400&gt; 890

```

Met Ala Lys Lys Lys Lys Leu Ser Phe Thr Asn Gly Ile Ala Tyr Ile
1      5      10      15
His Ala Thr Lys Asn Asn Thr Ile Ile Thr Leu Ala Asp Glu Gln Gly
20      25      30

```

## PhoenixTemp32470.tmp.txt

Ser Val Leu<sub>35</sub> Ser Trp Ala Ser Ser<sub>40</sub> Gly Ser Ile Gly Tyr<sub>45</sub> Lys Gly Thr  
 Lys Lys<sub>50</sub> Lys Thr Pro Tyr Ser<sub>55</sub> Ala Gly Ile Ala Ala Glu Ala Ala Ala  
 Lys Ala Val Ile Asp Met<sub>70</sub> Gly Leu Lys Ser Val Glu Val His Val Asn<sub>80</sub>  
 Gly Thr Gly Ala Ser<sub>85</sub> Arg Asp Thr Ala Ile Arg Ser Leu Gln Ala Ala  
 Gly Leu Glu Val<sub>100</sub> Thr Lys Ile Lys Asp Val Thr Pro Ile Pro His Asn<sub>110</sub>  
 Gly Cys Arg<sub>115</sub> Pro Pro Lys Lys Pro Arg<sub>120</sub>

&lt;210&gt; 891

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Vibrio cholerae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 891

atg gct aaa caa cca act cgc gca cgt aag cgt gta cgc aag caa gtt	48
Met Ala Lys Gln Pro Thr Arg Ala Arg Lys Arg Val Arg Lys Gln Val	
1 5 10 15	
gct gat ggc gta gcg cat atc cac gca tct ttc aac aac aca atc gta	96
Ala Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val	
20 25 30	
acc att acg gac cgt caa ggt aat gct ctt gct tgg gca act gct ggt	144
Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly	
35 40 45	
ggt tct ggt ttc cgc ggt tct cgt aag tct act ccg ttc gct gca cag	192
Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln	
50 55 60	
gtt gct gct gag cgt tgt gct gaa atg gct aaa gaa tac ggc cta aag	240
Val Ala Ala Glu Arg Cys Ala Glu Met Ala Lys Glu Tyr Gly Leu Lys	
65 70 75 80	
aac cta gag gtt atg gtt aag ggt cct ggt cca ggt cgt gaa tct act	288
Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr	
85 90 95	
gtt cgc gct ctg aat gca gct ggt ttc cgt atc acg aac atc gtt gat	336
Val Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Val Asp	
100 105 110	
gct aca cca atc cct cat aac ggt tgt cgt cca ccg aag aaa cgt cgc	384
Ala Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg	
115 120 125	
gtt taa	390
Val	

&lt;210&gt; 892

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Vibrio cholerae

&lt;400&gt; 892

Met Ala Lys Gln Pro Thr Arg Ala Arg Lys Arg Val Arg Lys Gln Val  
 1 5 10 15  
 Ala Asp Gly Val Ala His Ile His Ala Ser Phe Asn Asn Thr Ile Val  
 20 25 30  
 Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ala Trp Ala Thr Ala Gly  
 35 40 45  
 Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala Gln  
 50 55 60  
 Val Ala Ala Glu Arg Cys Ala Glu Met Ala Lys Glu Tyr Gly Leu Lys  
 65 70 75 80  
 Asn Leu Glu Val Met Val Lys Gly Pro Gly Pro Gly Arg Glu Ser Thr

## PhoenixTemp32470.tmp.txt

85 90 95  
 Val Arg Ala Leu Asn Ala Ala Gly Phe Arg Ile Thr Asn Ile Val Asp  
 100 105 110  
 Ala Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg Arg  
 115 120 125  
 Val

<210> 893  
 <211> 396  
 <212> DNA  
 <213> Wigglesworthia glossinidia brevipalpis

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 893  
 atg tct aaa aaa caa aat tct agt att tct aga aaa aaa att aaa agg 48  
 Met Ser Lys Lys Gln Asn Ser Ser Ile Ser Arg Lys Lys Ile Lys Arg  
 1 5 10 15  
 caa att tta gaa gga ata gca cat att cat gca tca ttt aat aat act 96  
 Gln Ile Leu Glu Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr  
 20 25 30  
 att gtt act ata aca gat cgt caa gga aat aca tta ggt tgg gct aca 144  
 Ile Val Thr Ile Thr Asp Arg Gln Gly Asn Thr Leu Gly Trp Ala Thr  
 35 40 45  
 tct gga gga tct ggg ttt cgt ggt tct aga aaa tcc acg cct ttt gcc 192  
 Ser Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala  
 50 55 60  
 gca caa gtt gct gcg gaa aaa tgt tct gaa ata gca aaa gaa tat gga 240  
 Ala Gln Val Ala Ala Glu Lys Cys Ser Glu Ile Ala Lys Glu Tyr Gly  
 65 70 75 80  
 ata aaa aat ttg gaa ata atg gta aaa ggg cca gga aga gaa 288  
 Ile Lys Asn Leu Glu Ile Met Val Lys Gly Pro Gly Pro Gly Arg Glu  
 85 90 95  
 tct aca ata aga gct tta aat tca tct ggg ttt aaa atc acc aat att 336  
 Ser Thr Ile Arg Ala Leu Asn Ser Ser Gly Phe Lys Ile Thr Asn Ile  
 100 105 110  
 act gat gta act cct ata cca cat aat gga tgc aga cct cca aaa aga 384  
 Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 aga aga gtt taa 396  
 Arg Arg Val  
 130

<210> 894  
 <211> 131  
 <212> PRT  
 <213> Wigglesworthia glossinidia brevipalpis

<400> 894  
 Met Ser Lys Lys Gln Asn Ser Ser Ile Ser Arg Lys Lys Ile Lys Arg  
 1 5 10 15  
 Gln Ile Leu Glu Gly Ile Ala His Ile His Ala Ser Phe Asn Asn Thr  
 20 25 30  
 Ile Val Thr Ile Thr Asp Arg Gln Gly Asn Thr Leu Gly Trp Ala Thr  
 35 40 45  
 Ser Gly Gly Ser Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala  
 50 55 60  
 Ala Gln Val Ala Ala Glu Lys Cys Ser Glu Ile Ala Lys Glu Tyr Gly  
 65 70 75 80  
 Ile Lys Asn Leu Glu Ile Met Val Lys Gly Pro Gly Pro Gly Arg Glu  
 85 90 95  
 Ser Thr Ile Arg Ala Leu Asn Ser Ser Gly Phe Lys Ile Thr Asn Ile  
 100 105 110  
 Thr Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125

Arg Arg Val  
130

<210> 895  
<211> 387  
<212> DNA  
<213> Wolbachia pipientis wMel

<220>  
<221> CDS  
<222> (1)..(387)  
<223> transl\_table=11

```

<400> 895
atg aaa aaa gtc aaa acg gtt agt aag agt aag aag gag ttt att act      48
Met Lys Lys Val Lys Thr Val Ser Lys Ser Lys Lys Glu Phe Ile Thr
  1          5          10          15
ggg gtt gtc cat att cgt gca act ttt aat aat act ttt gta aat gta      96
Gly Val Val His Ile Arg Ala Thr Phe Asn Asn Thr Phe Val Asn Val
          20          25          30
act gat gtt cat ggt aat acg cta tgt caa act tct gtg ggt gca tgt      144
Thr Asp Val His Gly Asn Thr Leu Cys Gln Thr Ser Val Gly Ala Cys
          35          40          45
ggg ttt tca ggt tcg aga aaa tcc aca cct tat gct gca ggt aag gct      192
Gly Phe Ser Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gly Lys Ala
          50          55          60
gcg gag tct gct gcg aag aac gca atg gag aga ttt ggt atg aag gtt      240
Ala Glu Ser Ala Ala Lys Asn Ala Met Glu Arg Phe Gly Met Lys Val
          65          70          75          80
gtc tct gta ata att cgc ggc cct ggc ttt ggt acc gaa gct gcg gtt      288
Val Ser Val Ile Ile Arg Gly Pro Gly Phe Gly Thr Glu Ala Ala Val
          85          90          95
aaa gca ttt cag agc tgt ggg ttg act gtg act tca att gca gat aaa      336
Lys Ala Phe Gln Ser Cys Gly Leu Thr Val Thr Ser Ile Ala Asp Lys
          100          105          110
acc gca att cct cat aat ggg tgc agg tta aga aaa aaa aga gta      384
Thr Ala Ile Pro His Asn Gly Cys Arg Leu Arg Lys Lys Arg Arg Val
          115          120          125
tag                                                                 387

```

<210> 896  
<211> 128  
<212> PRT  
<213> Wolbachia pipientis wMel

```

<400> 896
Met Lys Lys Val Lys Thr Val Ser Lys Ser Lys Lys Glu Phe Ile Thr
  1          5          10          15
Gly Val Val His Ile Arg Ala Thr Phe Asn Asn Thr Phe Val Asn Val
          20          25          30
Thr Asp Val His Gly Asn Thr Leu Cys Gln Thr Ser Val Gly Ala Cys
          35          40          45
Gly Phe Ser Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gly Lys Ala
          50          55          60
Ala Glu Ser Ala Ala Lys Asn Ala Met Glu Arg Phe Gly Met Lys Val
          65          70          75          80
Val Ser Val Ile Ile Arg Gly Pro Gly Phe Gly Thr Glu Ala Ala Val
          85          90          95
Lys Ala Phe Gln Ser Cys Gly Leu Thr Val Thr Ser Ile Ala Asp Lys
          100          105          110
Thr Ala Ile Pro His Asn Gly Cys Arg Leu Arg Lys Lys Arg Arg Val
          115          120          125

```

<210> 897  
<211> 396  
<212> DNA  
<213> Wolinella succinogenes

<220>  
 <221> CDS  
 <222> (1)..(396)  
 <223> transl\_table=11

<400> 897  
 atg gca aaa aga aaa gta aca aac aaa aaa aga gtt gtc aag aag aat 48  
 Met Ala Lys Arg Lys Val Thr Asn Lys Lys Arg Val Val Lys Lys Asn  
 1 5 10 15  
 ata gcc cga gga atc att cac atc gct gca acg ttc aat aac act agc 96  
 Ile Ala Arg Gly Ile Ile His Ile Ala Thr Phe Asn Asn Thr Ser  
 20 25 30  
 gtt acg atc act gat gag atg gga aat gtt att tgc tgg agt acc gcg 144  
 Val Thr Ile Thr Asp Glu Met Gly Asn Val Ile Cys Trp Ser Thr Ala  
 35 40 45  
 ggg gct ttg ggc ttc aag gga agc aaa aaa tcg act ccc tat gca gcg 192  
 Gly Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala  
 50 55 60  
 caa caa gcg gtt gag gat gca gta gta aag gcc aaa gag cac gga atc 240  
 Gln Gln Ala Val Glu Asp Ala Val Val Lys Ala Lys Glu His Gly Ile  
 65 70 75 80  
 aag gaa ctt gga atc aag gtt caa ggt cct gga agt gga cgc gaa aca 288  
 Lys Glu Leu Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr  
 85 90 95  
 gcc gta aag agc ctc ggt tct att gaa gga atc aaa gta ttg tgg ttt 336  
 Ala Val Lys Ser Leu Gly Ser Ile Glu Gly Ile Lys Val Leu Trp Phe  
 100 105 110  
 aaa gat gtc act cca ttg ccc cac aat gga tgc cga ccg ccc aag cgc 384  
 Lys Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 cga aga gtg taa 396  
 Arg Arg Val  
 130

<210> 898  
 <211> 131  
 <212> PRT  
 <213> Wolinella succinogenes

<400> 898  
 Met Ala Lys Arg Lys Val Thr Asn Lys Lys Arg Val Val Lys Lys Asn  
 1 5 10 15  
 Ile Ala Arg Gly Ile Ile His Ile Ala Thr Phe Asn Asn Thr Ser  
 20 25 30  
 Val Thr Ile Thr Asp Glu Met Gly Asn Val Ile Cys Trp Ser Thr Ala  
 35 40 45  
 Gly Ala Leu Gly Phe Lys Gly Ser Lys Lys Ser Thr Pro Tyr Ala Ala  
 50 55 60  
 Gln Gln Ala Val Glu Asp Ala Val Val Lys Ala Lys Glu His Gly Ile  
 65 70 75 80  
 Lys Glu Leu Gly Ile Lys Val Gln Gly Pro Gly Ser Gly Arg Glu Thr  
 85 90 95  
 Ala Val Lys Ser Leu Gly Ser Ile Glu Gly Ile Lys Val Leu Trp Phe  
 100 105 110  
 Lys Asp Val Thr Pro Leu Pro His Asn Gly Cys Arg Pro Pro Lys Arg  
 115 120 125  
 Arg Arg Val  
 130

<210> 899  
 <211> 393  
 <212> DNA  
 <213> Xanthomonas axonopodis pv

<220>  
 <221> CDS  
 <222> (1)..(393)  
 <223> transl\_table=11

## PhoenixTemp32470.tmp.txt

```

<400> 899
atg gcc aag cca gca gaa aag aaa acg aag aag aag atc aag cgc gtc      48
Met Ala Lys Pro Ala Glu Lys Lys Thr Lys Lys Lys Ile Lys Arg Val
1      5      10      15
atc acc gac ggc gtc gct cac gtc cac gct tgc ttc aac aac acc atc      96
Ile Thr Asp Gly Val Ala His Val His Ala Ser Phe Asn Asn Thr Ile
20      25      30
gtc acc atc acc gat cgc cag ggc aac gcg ctg tgc tgg gct acg tcc      144
Val Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser
35      40      45
ggc ggc gcc ggt ttc cgt ggt tgc cgc aag tgc acc ccg ttc gct gcc      192
Gly Gly Ala Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
cag gtt gcc gcc gag aag gct ggc cgc gct gcg ctc gat tac ggc gtg      240
Gln Val Ala Ala Glu Lys Ala Gly Arg Ala Ala Leu Asp Tyr Gly Val
65      70      75      80
aag tgc ctg gaa gtg cgt atc aag ggt ccg ggt ccg ggc cgt gag tgc      288
Lys Ser Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser
85      90      95
gcc gtg cgt tgc ttg aac aac gtg ggc tac aag atc acc aac atc atc      336
Ala Val Arg Ser Leu Asn Asn Val Gly Tyr Lys Ile Thr Asn Ile Ile
100      105      110
gac gtg acg cca atc ccg cac aac ggc tgc cgt ccg ccg aag aag cgt      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115      120      125
cgc gtc taa
Arg Val
130

```

```

<210> 900
<211> 130
<212> PRT
<213> Xanthomonas axonopodis pv

```

```

<400> 900
Met Ala Lys Pro Ala Glu Lys Lys Thr Lys Lys Lys Ile Lys Arg Val
1      5      10      15
Ile Thr Asp Gly Val Ala His Val His Ala Ser Phe Asn Asn Thr Ile
20      25      30
Val Thr Ile Thr Asp Arg Gln Gly Asn Ala Leu Ser Trp Ala Thr Ser
35      40      45
Gly Gly Ala Gly Phe Arg Gly Ser Arg Lys Ser Thr Pro Phe Ala Ala
50      55      60
Gln Val Ala Ala Glu Lys Ala Gly Arg Ala Ala Leu Asp Tyr Gly Val
65      70      75      80
Lys Ser Leu Glu Val Arg Ile Lys Gly Pro Gly Pro Gly Arg Glu Ser
85      90      95
Ala Val Arg Ser Leu Asn Asn Val Gly Tyr Lys Ile Thr Asn Ile Ile
100      105      110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115      120      125
Arg Val
130

```

```

<210> 901
<211> 393
<212> DNA
<213> Xylella fastidiosa

```

```

<220>
<221> CDS
<222> (1)..(393)
<223> transl_table=11

```

```

<400> 901
atg gct aaa cag tct gtt gta aaa att aag aag aag gtt aag cgt gtt      48
Met Ala Lys Gln Ser Val Val Lys Ile Lys Lys Lys Val Lys Arg Val
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

```

atc acc gat ggc gtt gcc cat att tcc gct tct ttc aat aat act att 96
Ile Thr Asp Gly Val Ala His Ile Ser Ala Ser Phe Asn Asn Thr Ile
20 25 30
gtt acc att act gac cga cag ggt aat tgc ttg ttc tgg tgt act tcc 144
Val Thr Ile Thr Asp Arg Gln Gly Asn Ser Leu Phe Trp Cys Thr Ser
35 40 45
ggg gct tct ggt ttt cgc ggg tca cgt aaa tgt act cct ttt gct gcg 192
Gly Ala Ser Gly Phe Arg Gly Ser Arg Lys Cys Thr Pro Phe Ala Ala
50 55 60
cag gta gct gcc gag aaa gct ggg cgt gct gtc tta gat tat gga atg 240
Gln Val Ala Ala Glu Lys Ala Gly Arg Ala Val Leu Asp Tyr Gly Met
65 70 75 80
aaa tct ttg gaa gtt cgg atc aat ggt ccc ggt cct ggt cga gaa tcg 288
Lys Ser Leu Glu Val Arg Ile Asn Gly Pro Gly Pro Gly Arg Glu Ser
85 90 95
gca gtc cgt tct tta aat aac gtc ggt tat aaa att aca aat atc att 336
Ala Val Arg Ser Leu Asn Asn Val Gly Tyr Lys Ile Thr Asn Ile Ile
100 105 110
gat gtg acg cca atc cct cat aat ggc tgt cgt cct cca aaa aag cgt 384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115 120 125
cgt gtc taa 393
Arg Val
130

```

&lt;210&gt; 902

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; xylella fastidiosa

&lt;400&gt; 902

```

Met Ala Lys Gln Ser Val Val Lys Ile Lys Lys Lys Val Lys Arg Val
1 5 10 15
Ile Thr Asp Gly Val Ala His Ile Ser Ala Ser Phe Asn Asn Thr Ile
20 25 30
Val Thr Ile Thr Asp Arg Gln Gly Asn Ser Leu Phe Trp Cys Thr Ser
35 40 45
Gly Ala Ser Gly Phe Arg Gly Ser Arg Lys Cys Thr Pro Phe Ala Ala
50 55 60
Gln Val Ala Ala Glu Lys Ala Gly Arg Ala Val Leu Asp Tyr Gly Met
65 70 75 80
Lys Ser Leu Glu Val Arg Ile Asn Gly Pro Gly Pro Gly Arg Glu Ser
85 90 95
Ala Val Arg Ser Leu Asn Asn Val Gly Tyr Lys Ile Thr Asn Ile Ile
100 105 110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
115 120 125
Arg Val
130

```

&lt;210&gt; 903

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; xylella fastidiosa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(393)

&lt;223&gt; transl\_table=11

&lt;400&gt; 903

```

atg tct aaa cag tct gtt gtc aaa act aag aag agg gtt aag cgt gtt 48
Met Ser Lys Gln Ser Val Val Lys Thr Lys Lys Arg Val Lys Arg Val
1 5 10 15
atc acc gat ggc gtt gcc cat att tgc gct tct ttc aat aat act att 96
Ile Thr Asp Gly Val Ala His Ile Cys Ala Ser Phe Asn Asn Thr Ile
20 25 30
gtt aca att act gac cga cag ggt aat tct ttg ttc tgg tgt acc tcc 144
Val Thr Ile Thr Asp Arg Gln Gly Asn Ser Leu Phe Trp Cys Thr Ser

```

## PhoenixTemp32470.tmp.txt

```

      35      40      45
ggg gct tct ggt ttt cgc ggg tca cgt aaa tgt aca cct ttt gct gcg      192
Gly Ala Ser Gly Phe Arg Gly Ser Arg Lys Cys Thr Pro Phe Ala Ala
      50      55      60
cag gta gct gcc gag aag gct ggg cgt gcc gtg tta gat tat gga atg      240
Gln Val Ala Ala Glu Lys Ala Gly Arg Ala Val Leu Asp Tyr Gly Met
      65      70      75      80
aaa tct ttg gaa gtg cgg atc aat ggt cca ggt cct ggt cga gaa tca      288
Lys Ser Leu Glu Val Arg Ile Asn Gly Pro Gly Pro Gly Arg Glu Ser
      85      90      95
gca gtc cgt tct tta agt aat gtc ggt tat aaa att aca aat atc att      336
Ala Val Arg Ser Leu Ser Asn Val Gly Tyr Lys Ile Thr Asn Ile Ile
      100      105      110
gat gtg acg cca atc ccg cat aat ggt tgt cgt cct cca aaa aag cgt      384
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
      115      120      125
cgt gtc taa
Arg Val
      130

```

&lt;210&gt; 904

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; xylella fastidiosa

&lt;400&gt; 904

```

Met Ser Lys Gln Ser Val Val Lys Thr Lys Lys Arg Val Lys Arg Val
1      5      10      15
Ile Thr Asp Gly Val Ala His Ile Cys Ala Ser Phe Asn Asn Thr Ile
      20      25      30
Val Thr Ile Thr Asp Arg Gln Gly Asn Ser Leu Phe Trp Cys Thr Ser
      35      40      45
Gly Ala Ser Gly Phe Arg Gly Ser Arg Lys Cys Thr Pro Phe Ala Ala
      50      55      60
Gln Val Ala Ala Glu Lys Ala Gly Arg Ala Val Leu Asp Tyr Gly Met
      65      70      75      80
Lys Ser Leu Glu Val Arg Ile Asn Gly Pro Gly Pro Gly Arg Glu Ser
      85      90      95
Ala Val Arg Ser Leu Ser Asn Val Gly Tyr Lys Ile Thr Asn Ile Ile
      100      105      110
Asp Val Thr Pro Ile Pro His Asn Gly Cys Arg Pro Pro Lys Lys Arg
      115      120      125
Arg Val
      130

```

&lt;210&gt; 905

&lt;211&gt; 390

&lt;212&gt; DNA

&lt;213&gt; Zymomonas mobilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(390)

&lt;223&gt; transl\_table=11

&lt;400&gt; 905

```

atg gca cgc gaa ccg cag cgc gtt aaa aga cgc gag cgt aaa aat att      48
Met Ala Arg Glu Pro Gln Arg Val Lys Arg Arg Glu Arg Lys Asn Ile
1      5      10      15
tca gcc ggc gta gct cat gtt aac gcc agc ttc aat aat aca atg atc      96
Ser Ala Gly Val Ala His Val Asn Ala Ser Phe Asn Asn Thr Met Ile
      20      25      30
acc atc acc gat gca cag gga aat gct att tcc tgg tca tct gct ggt      144
Thr Ile Thr Asp Ala Gln Gly Asn Ala Ile Ser Trp Ser Ser Ala Gly
      35      40      45
atg atg ggc ttc aag ggc agc cgt aaa tcg acg cct tat gct gca cag      192
Met Met Gly Phe Lys Gly Ser Arg Lys Ser Thr Pro Tyr Ala Ala Gln
      50      55      60
gtt gcc gca gaa gat gcc ggt aaa aag gcc gct gaa cat ggt gtc gcg      240

```



PhoenixTemp32470.tmp.txt

Val	Ala	Ala	Glu	Asp	Ala	Gly	Lys	Lys	Ala	Ala	Glu	His	Gly	Val	Arg	
65					70				75						80	
act	tta	gaa	gtc	gaa	gtt	aaa	ggt	ccg	ggt	tca	ggt	cgt	gaa	tct	gcc	288
Thr	Leu	Glu	Val	Glu	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala	
				85					90					95		
ctt	cgc	gct	ttg	cag	gct	gtc	ggt	ttt	cat	atc	act	tct	atc	cgt	gat	336
Leu	Arg	Ala	Leu	Gln	Ala	Val	Gly	Phe	His	Ile	Thr	Ser	Ile	Arg	Asp	
			100					105					110			
gtg	acc	ccg	att	ccg	cat	aat	ggc	gtg	cgt	cct	tct	aaa	cgg	cgt	cgt	384
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Val	Arg	Pro	Ser	Lys	Arg	Arg	Arg	
		115					120					125				
gtc	tga															390
Val																

<210> 906  
 <211> 129  
 <212> PRT  
 <213> Zymomonas mobilis

<400> 906

Met	Ala	Arg	Glu	Pro	Gln	Arg	Val	Lys	Arg	Arg	Glu	Arg	Lys	Asn	Ile	
1				5					10					15		
Ser	Ala	Gly	Val	Ala	His	Val	Asn	Ala	Ser	Phe	Asn	Asn	Thr	Met	Ile	
			20					25					30			
Thr	Ile	Thr	Asp	Ala	Gln	Gly	Asn	Ala	Ile	Ser	Trp	Ser	Ser	Ala	Gly	
			35				40						45			
Met	Met	Gly	Phe	Lys	Gly	Ser	Arg	Lys	Ser	Thr	Pro	Tyr	Ala	Ala	Gln	
	50					55					60					
Val	Ala	Ala	Glu	Asp	Ala	Gly	Lys	Lys	Ala	Ala	Glu	His	Gly	Val	Arg	
65				70					75						80	
Thr	Leu	Glu	Val	Glu	Val	Lys	Gly	Pro	Gly	Ser	Gly	Arg	Glu	Ser	Ala	
				85					90					95		
Leu	Arg	Ala	Leu	Gln	Ala	Val	Gly	Phe	His	Ile	Thr	Ser	Ile	Arg	Asp	
			100					105					110			
Val	Thr	Pro	Ile	Pro	His	Asn	Gly	Val	Arg	Pro	Ser	Lys	Arg	Arg	Arg	
		115					120					125				
Val																

<210> 907  
 <211> 453  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(453)

<400> 907

atg	tca	aag	aga	aag	act	aaa	gag	cca	aag	gtc	gat	gtt	gtg	act	ctt	48
Met	Ser	Lys	Arg	Lys	Thr	Lys	Glu	Pro	Lys	Val	Asp	Val	Val	Thr	Leu	
1				5					10					15		
gga	cca	tct	gtt	cgt	gag	gga	gag	caa	gtt	ttc	ggt	gtt	gtc	cac	atc	96
Gly	Pro	Ser	Val	Arg	Glu	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile	
			20					25					30			
ttt	gct	tca	ttc	aac	gac	act	ttc	att	cat	gtt	act	gat	ttg	tct	ggt	144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
			35				40					45				
cgt	gaa	act	ctt	gtc	cgt	atc	acc	ggt	gga	atg	aag	gtg	aaa	gct	gat	192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
aga	gat	gag	tcc	tca	cct	tac	gca	gct	atg	ctt	gca	gca	cag	gat	gtt	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
	65				70				75						80	
gct	cag	cga	tgc	aag	gaa	ctt	ggt	atc	act	gcc	atg	cat	gtg	aag	ctc	288
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu	
			85					90						95		
cgt	gcc	aca	ggt	gga	aac	aag	acc	aag	aca	cct	ggt	cct	gga	gca	cag	336

## PhoenixTemp32470.tmp.txt

Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
tct	gcc	ctt	aga	gcc	ctt	gct	cgt	tcc	ggc	atg	aaa	ata	ggc	cg	att		384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile		
		115					120					125					
gag	gat	gtt	act	ccc	atc	cca	aca	gac	agt	acc	cgc	aga	aag	gg	gg		432
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
		130				135					140						
aga	aga	gga	aga	agg	ctc	tga											453
Arg	Arg	Gly	Arg	Arg	Leu												
					150												

&lt;210&gt; 908

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 908

Met	Ser	Lys	Arg	Lys	Thr	Lys	Glu	Pro	Lys	Val	Asp	Val	Val	Thr	Leu		
1				5					10					15			
Gly	Pro	Ser	Val	Arg	Glu	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile		
			20					25					30				
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly		
		35					40					45					
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
		50				55					60						
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
65					70					75				80			
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu		
				85					90					95			
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
			100					105					110				
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile		
		115					120					125					
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
		130				135					140						
Arg	Arg	Gly	Arg	Arg	Leu												
					150												

&lt;210&gt; 909

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 909

atg	tcg	aag	aga	aaa	act	aag	gag	cca	aag	gtt	gag	act	gtg	act	ctt		48
Met	Ser	Lys	Arg	Lys	Thr	Lys	Glu	Pro	Lys	Val	Glu	Thr	Val	Thr	Leu		
1				5					10					15			
gga	cct	tct	gtt	cgt	gaa	gga	gag	caa	gtt	ttt	gg	gtt	gtt	cac	atc		96
Gly	Pro	Ser	Val	Arg	Glu	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile		
			20					25					30				
ttt	gca	tct	ttc	aat	gac	act	ttc	att	cat	gtg	act	gat	ctc	tcc	gg		144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly		
		35					40					45					
aga	gaa	act	ctc	gtc	cgc	atc	acc	gg	ggc	atg	aag	gtg	aag	gct	gac		192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
		50				55					60						
cgt	gat	gag	tcc	tct	cct	tat	gct	gct	atg	ctt	gca	gct	caa	gat	gtt		240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
					70				75					80			
gct	caa	aga	tgc	aag	gag	ctt	ggc	atc	act	gcc	atg	cac	gtg	aag	ctc		288
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu		
				85					90					95			
cgt	gct	act	gga	aac	aaa	acc	aag	cca	gg	cct	gg	cct	gg	gct	cag		336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		

PhoenixTemp32470.tmp.txt

tct	gct	ctt	100	aga	gcc	ctt	gct	105	tct	ggc	atg	aag	att	110	ggt	cgt	att	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	120	Ser	Gly	Met	Lys	Ile	125	Gly	Arg	Ile	
gag	gat	gtg	act	ccg	att	ccc	aca	gac	agt	aca	cgc	cga	aag	ggt	gga		432	
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly			
cga	aga	gga	aga	aga	ctc	tga											453	
Arg	Arg	Gly	Arg	Arg	Leu													
145					150													

<210> 910  
 <211> 150  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 910

Met	Ser	Lys	Arg	Lys	Thr	Lys	Glu	Pro	Lys	Val	Glu	Thr	Val	Thr	Leu		
1				5					10					15			
Gly	Pro	Ser	Val	Arg	Glu	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile		
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly		
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
65				70					75					80			
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu		
Arg	Ala	Thr	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln			
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile		
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
Arg	Arg	Gly	Arg	Arg	Leu												
145					150												

<210> 911  
 <211> 453  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(453)

<400> 911

atg	tcg	aag	aga	aag	acc	aaa	gag	cca	aag	gtt	gag	aat	gtg	act	ctt		48
Met	Ser	Lys	Arg	Lys	Thr	Lys	Glu	Pro	Lys	Val	Glu	Asn	Val	Thr	Leu		
1				5					10					15			
gga	cca	gct	gtt	cgt	gaa	gga	gag	caa	gtc	ttt	gga	gtt	gtt	cac	gtc		96
Gly	Pro	Ala	Val	Arg	Glu	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Val		
ttt	gct	tca	ttc	aac	gac	act	ttc	att	cac	gtg	act	gat	ttg	tct	gga		144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly		
cgg	gaa	aca	ctt	gtt	cgc	atc	act	ggg	gga	atg	aag	gtg	aaa	gcc	gac		192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
aga	gat	gag	tcc	tca	cct	tat	gct	gct	atg	ctt	gcg	gca	caa	gat	gtt		240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
gct	cag	cga	tgc	aag	gaa	ctt	gga	atc	act	gcc	ata	cat	gtg	aaa	ctc		288
Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Ile	His	Val	Lys	Leu		
cgt	gcc	act	ggg	ggg	aac	aag	acc	aag	acc	cct	gga	cct	ggg	gct	cag		336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
			100					105					110				

## PhoenixTemp32470.tmp.txt

tct gct cta aga gcc ctt gcc	cgt tct ggc atg aaa att ggt cgc att	384
Ser Ala Leu Arg Ala Leu Ala	Arg Ser Gly Met Lys Ile Gly Arg Ile	
115	125	
gag gat gtg act cca atc cca	acc gac agt acc cgc aga aag ggt gga	432
Glu Asp Val Thr Pro Ile Pro	Thr Asp Ser Thr Arg Arg Lys Gly Gly	
130	140	
135		
aga aga gga agg agg ctc tga		453
Arg Arg Gly Arg Arg Leu		
145	150	

&lt;210&gt; 912

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 912

Met Ser Lys Arg Lys Thr Lys Glu Pro Lys Val Glu Asn Val Thr Leu	
1 5 10 15	
Gly Pro Ala Val Arg Glu Gly Glu Gln Val Phe Gly Val Val His Val	
20 25 30	
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly	
35 40 45	
Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp	
50 55 60	
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val	
65 70 75 80	
Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Ile His Val Lys Leu	
85 90 95	
Arg Ala Thr Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln	
100 105 110	
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile	
115 120 125	
Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly	
130 135 140	
Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 913

&lt;211&gt; 414

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;400&gt; 913

atg tct aac gtt gtt caa gct cgt gac aat tcc caa gtt ttt ggt gtt	48
Met Ser Asn Val Val Gln Ala Arg Asp Asn Ser Gln Val Phe Gly Val	
1 5 10 15	
gct aga att tac gct tct ttc aac gat act ttc gtt cat gtt acc gat	96
Ala Arg Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp	
20 25 30	
tta tct ggt aag gaa acc atc gcc aga gtt act ggt ggt atg aag gtt	144
Leu Ser Gly Lys Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val	
35 40 45	
aag gct gac aga gat gaa tct cca tac gct gct atg ttg gct gcc	192
Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala	
50 55 60	
caa gat gtt gcc gct aag tgt aag gaa gtc ggt atc act gcc gtt cac	240
Gln Asp Val Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala Val His	
65 70 75 80	
gtt aag atc aga gct acc ggt ggt act aga acc aag act cca ggt cca	288
Val Lys Ile Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly Pro	
85 90 95	
ggt ggt caa gct gct ttg aga gct ttg gcc aga tct ggt ttg aga att	336
Gly Gly Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile	
100 105 110	
ggc cgt atc gaa gat gtt acc cca gtt cca tct gac tcc acc aga aag	384

PhoenixTemp32470.tmp.txt

Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Ser	Asp	Ser	Thr	Arg	Lys	
		115					120					125				
aag	ggt	ggt	aga	aga	ggt	aga	aga	tta	tga							414
Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu								
		130				135										

<210> 914  
 <211> 137  
 <212> PRT  
 <213> Saccharomyces cerevisiae

Met	Ser	Asn	Val	Val	Gln	Ala	Arg	Asp	Asn	Ser	Gln	Val	Phe	Gly	Val	
1				5					10					15		
Ala	Arg	Ile	Tyr	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	
		20					25					30				
Leu	Ser	Gly	Lys	Glu	Thr	Ile	Ala	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	
		35					40					45				
Lys	Ala	Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	
	50					55				60						
Gln	Asp	Val	Ala	Ala	Lys	Cys	Lys	Glu	Val	Gly	Ile	Thr	Ala	Val	His	
65					70					75					80	
Val	Lys	Ile	Arg	Ala	Thr	Gly	Gly	Thr	Arg	Thr	Lys	Thr	Pro	Gly	Pro	
			85					90						95		
Gly	Gly	Gln	Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Leu	Arg	Ile	
		100						105					110			
Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Ser	Asp	Ser	Thr	Arg	Lys	
		115					120					125				
Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu								
		130				135										

<210> 915  
 <211> 417  
 <212> DNA  
 <213> Saccharomyces cerevisiae

<220>  
 <221> CDS  
 <222> (1)..(417)

atg	gct	aac	gac	ctt	gtt	caa	gct	cgc	gat	aac	tct	caa	gtc	ttt	ggt	
Met	Ala	Asn	Asp	Leu	Val	Gln	Ala	Arg	Asp	Asn	Ser	Gln	Val	Phe	Gly	
1				5					10					15		
gtt	gcc	aga	atc	tac	gcc	tcc	ttt	aac	gat	acc	ttt	gta	cat	gtt	acc	
Val	Ala	Arg	Ile	Tyr	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	
		20						25				30				
gat	tta	tct	ggt	aag	gaa	act	atc	gcc	aga	ggt	act	ggt	ggt	atg	aaa	
Asp	Leu	Ser	Gly	Lys	Glu	Thr	Ile	Ala	Arg	Val	Thr	Gly	Gly	Met	Lys	
		35					40					45				
gtc	aag	gcc	gac	aga	gac	gaa	tca	tct	cca	tac	gct	gct	atg	ttg	gct	
Val	Lys	Ala	Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	
	50					55				60						
gcc	caa	gat	gtt	gcc	gct	aag	tgt	aag	gaa	gtc	ggt	atc	act	gcc	gtt	
Ala	Gln	Asp	Val	Ala	Ala	Lys	Cys	Lys	Glu	Val	Gly	Ile	Thr	Ala	Val	
65				70					75					80		
cac	gtt	aag	atc	aga	gct	act	ggt	ggt	acc	aga	acc	aag	acc	cca	gga	
His	Val	Lys	Ile	Arg	Ala	Thr	Gly	Gly	Thr	Arg	Thr	Lys	Thr	Pro	Gly	
			85					90						95		
cca	ggt	ggt	caa	gcc	gct	ttg	aga	gct	ttg	gcc	aga	tct	ggt	ttg	agg	
Pro	Gly	Gly	Gln	Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Leu	Arg	
			100					105					110			
att	ggc	cgt	atc	gaa	gac	gtt	act	cca	gtc	cca	tca	gac	tcc	acc	aga	
Ile	Gly	Arg	Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Ser	Asp	Ser	Thr	Arg	
		115					120					125				
aag	aag	ggt	ggt	aga	aga	ggt	aga	aga	tta	tga						
Lys	Lys	Gly	Gly	Arg	Arg	Gly	Arg	Arg	Leu							417
		130				135										

&lt;210&gt; 916

&lt;211&gt; 138

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 916

```

Met Ala Asn Asp Leu Val Gln Ala Arg Asp Asn Ser Gln Val Phe Gly
1      5      10      15
Val Ala Arg Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr
20      25      30
Asp Leu Ser Gly Lys Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys
35      40      45
Val Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala
50      55      60
Ala Gln Asp Val Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala Val
65      70      75      80
His Val Lys Ile Arg Ala Thr Gly Gly Thr Arg Thr Lys Thr Pro Gly
85      90      95
Pro Gly Gly Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg
100      105      110
Ile Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg
115      120      125
Lys Lys Gly Gly Arg Arg Gly Arg Arg Leu
130      135

```

&lt;210&gt; 917

&lt;211&gt; 405

&lt;212&gt; DNA

<213> *Candida albicans*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(405)

&lt;223&gt; transl\_table=12

&lt;400&gt; 917

```

atg tat tac acc tca tac cgt tcc caa gtt ttc ggt gtt gct aga att      48
Met Tyr Tyr Thr Ser Tyr Arg Ser Gln Val Phe Gly Val Ala Arg Ile
1      5      10      15
ttt gct tca ttc aac gat act ttc gtc cac gtt act gat tta tca ggg      96
Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly
20      25      30
aaa gaa acc att gcc aga gtt act ggt ggt atg aaa gtc aaa gct gac      144
Lys Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp
35      40      45
aga gat gaa tca tct cca tac gct gct atg ttg gct gct caa gat gtt      192
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val
50      55      60
gct gct aaa tgt aaa gaa gtt ggt att act gct gtt cac att aaa ttg      240
Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala Val His Ile Lys Leu
65      70      75      80
aga gct act ggt ggt act aaa act aaa acc cca ggt cca ggt ggt caa      288
Arg Ala Thr Gly Gly Thr Lys Thr Lys Thr Pro Gly Pro Gly Gly Gln
85      90      95
tcc gct tta aga gct tta gcc aga tct ggt tta aga att ggt aga att      336
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile Gly Arg Ile
100      105      110
gaa gat gtt acc cca gtt cca tct gat tct act aga aga aag ggt ggt      384
Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly
115      120      125
aga aga ggt aga aga tta tga
Arg Arg Gly Arg Arg Leu
130

```

&lt;210&gt; 918

&lt;211&gt; 134

&lt;212&gt; PRT

<213> *Candida albicans*

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 918

Met Tyr Tyr Thr Ser Tyr Arg Ser Gln Val Phe Gly Val Ala Arg Ile  
 1 5 10 15  
 Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser Gly  
 20 25 30  
 Lys Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala Asp  
 35 40 45  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
 50 55 60  
 Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala Val His Ile Lys Leu  
 65 70 75 80  
 Arg Ala Thr Gly Gly Thr Lys Thr Lys Thr Pro Gly Pro Gly Gly Gln  
 85 90 95  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile Gly Arg Ile  
 100 105 110  
 Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly  
 115 120 125  
 Arg Arg Gly Arg Arg Leu  
 130

&lt;210&gt; 919

&lt;211&gt; 462

&lt;212&gt; DNA

&lt;213&gt; Chlamydomonas reinhardtii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(462)

&lt;400&gt; 919

atg gcc ccc aag aag gcc gcc aag ggt gat gag gcc ccc aag gag gtg	48
Met Ala Pro Lys Lys Ala Ala Lys Gly Asp Glu Ala Pro Lys Glu Val	
1 5 10 15	
gtg agc ctg ggc ccc acc gtc cgc gag ggc gag cac gtc ttc ggc gtt	96
Val Ser Leu Gly Pro Thr Val Arg Glu Gly Glu His Val Phe Gly Val	
20 25 30	
gct cac atc ttc gcc agc ttc aac gac acg ttc gtg cat gtg acc gac	144
Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp	
35 40 45	
ctg tcg ggc cgg gaa act att tcg cgc gtc acc ggc ggc atg aag gtc	192
Leu Ser Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val	
50 55 60	
aag gcc gac cgc gac gag tcg tcg ccc tac gcg gcc atg ctt gcc gcg	240
Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala	
65 70 75 80	
cag gac gtg gcc cag aag tgc aag gag ctg ggc atc act gcc ctg cac	288
Gln Asp Val Ala Gln Lys Cys Lys Glu Leu Gly Ile Thr Ala Leu His	
85 90 95	
atc aag ctg cgc gcc acc ggc ggc aac cgg acc aag acc ccc ggc ccc	336
Ile Lys Leu Arg Ala Thr Gly Gly Asn Arg Thr Lys Thr Pro Gly Pro	
100 105 110	
ggt gcc cag tcc gcc ctg cgt gcc ctg gcc cgc gcg ggc atg aag att	384
Gly Ala Gln Ser Ala Leu Arg Ala Leu Ala Arg Ala Gly Met Lys Ile	
115 120 125	
ggc cgc atc gag gac gtg acc ccc atc ccc acc gac tcc acc cgc cgg	432
Gly Arg Ile Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg	
130 135 140	
aag ggt ggt cgc cgc ggt cgc cgc ctg tag	462
Lys Gly Gly Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 920

&lt;211&gt; 153

&lt;212&gt; PRT

&lt;213&gt; Chlamydomonas reinhardtii

&lt;400&gt; 920

Met Ala Pro Lys Lys Ala Ala Lys Gly Asp Glu Ala Pro Lys Glu Val  
 1 5 10 15

## PhoenixTemp32470.tmp.txt

Val Ser Leu Gly Pro Thr Val Arg Glu Gly Glu His Val Phe Gly Val  
 20 25 30  
 Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp  
 35 40 45  
 Leu Ser Gly Arg Glu Thr Ile Ser Arg Val Thr Gly Gly Met Lys Val  
 50 55 60  
 Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala  
 65 70 75 80  
 Gln Asp Val Ala Gln Lys Cys Lys Glu Leu Gly Ile Thr Ala Leu His  
 85 90 95  
 Ile Lys Leu Arg Ala Thr Gly Gly Asn Arg Thr Lys Thr Pro Gly Pro  
 100 105 110  
 Gly Ala Gln Ser Ala Leu Arg Ala Leu Ala Arg Ala Gly Met Lys Ile  
 115 120 125  
 Gly Arg Ile Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg  
 130 135 140  
 Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 145 150

&lt;210&gt; 921

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 921

atg gct cca aga aag gct aaa gtt cag aag gag gag gtt cag gtc cag	48
Met Ala Pro Arg Lys Ala Lys Val Gln Lys Glu Glu Val Gln Val Gln	
1 5 10 15	
ctg gga ccc caa gtt cgc gac ggc gag atc gtg ttc gga gtg gct cac	96
Leu Gly Pro Gln Val Arg Asp Gly Glu Ile Val Phe Gly Val Ala His	
20 25 30	
atc tac gcc agc ttc aac gac acc ttc gtc cat gtc acg gat ctg tcc	144
Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
35 40 45	
ggc cgt gag acc atc gct cgt gtc acc gga ggc atg aag gtg aag gcc	192
Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala	
50 55 60	
gat cgt gat gag gct tcg ccc tac gcc gct atg ttg gcc gct cag gat	240
Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp	
65 70 75 80	
gtg gct gag aag tgc aag aca ctg ggc atc act gcc ctg cat att aag	288
Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys	
85 90 95	
ctg cgt gcc acc ggc ggc aac aag acc aag acc ccc gga ccc ggc gcc	336
Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala	
100 105 110	
cag tcc gct ctg cgt gcg ttg gcc cgt tcg tcc atg aag att ggc cgc	384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg	
115 120 125	
atc gag gat gtg acc cct atc cca tcg gac tct acc cgc agg aag ggc	432
Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly	
130 135 140	
ggt cgc cga ggt cgt cgt ctg tag	456
Gly Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 922

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 922

Met Ala Pro Arg Lys Ala Lys Val Gln Lys Glu Glu Val Gln Val Gln  
 1 5 10 15  
 Leu Gly Pro Gln Val Arg Asp Gly Glu Ile Val Phe Gly Val Ala His



## PhoenixTemp32470.tmp.txt

20 25 30  
 Ile Tyr Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Thr Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Ser Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

&lt;210&gt; 923

&lt;211&gt; 414

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces lactis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;400&gt; 923

atg gct aac gtt gtt caa gct aag gat aac tct caa gtt ttc ggt gtt	48
Met Ala Asn Val Val Gln Ala Lys Asp Asn Ser Gln Val Phe Gly Val	
1 5 10 15	
gct aga atc ttc gct tct ttc aac gac act ttc gtg cac gtc act gat	96
Ala Arg Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp	
20 25 30	
ttg tcc ggt aga gaa act atc gcc aga gtt act ggt ggt atg aag gtc	144
Leu Ser Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val	
35 40 45	
aag gcc gac aga gac gaa tct tct cca tat gct gcc atg ttg gct gcc	192
Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala	
50 55 60	
caa gat gtt gct gcc aag tgt aag gaa gtt ggt atc act gcc gtt cac	240
Gln Asp Val Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala Val His	
65 70 75 80	
atc aag atc aga gct acg ggg ggt act aga tcc aag act cca ggt cca	288
Ile Lys Ile Arg Ala Thr Gly Gly Thr Arg Ser Lys Thr Pro Gly Pro	
85 90 95	
ggt ggt caa gct gct ttg aga gct ttg gct aga tcc ggt ttg aga atc	336
Gly Gly Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile	
100 105 110	
ggt cgt atc gaa gat gtt act cca gtt cca tct gac tcc acc aga aag	384
Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Thr Arg Lys	
115 120 125	
aag ggt ggt aga aga ggt aga tta tga	414
Lys Gly Gly Arg Arg Gly Arg Arg Leu	
130 135	

&lt;210&gt; 924

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis

&lt;400&gt; 924

Met Ala Asn Val Val Gln Ala Lys Asp Asn Ser Gln Val Phe Gly Val  
 1 5 10 15  
 Ala Arg Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp  
 20 25 30  
 Leu Ser Gly Arg Glu Thr Ile Ala Arg Val Thr Gly Gly Met Lys Val  
 35 40 45  
 Lys Ala Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala

## PhoenixTemp32470.tmp.txt

50 55 60  
 Gln Asp Val Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala Val His  
 65 70 75 80  
 Ile Lys Ile Arg Ala Thr Gly Gly Thr Arg Ser Lys Thr Pro Gly Pro  
 85 90 95  
 Gly Gly Gln Ala Ala Leu Arg Ala Leu Ala Arg Ser Gly Leu Arg Ile  
 100 105 110  
 Gly Arg Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Lys  
 115 120 125  
 Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 130 135

&lt;210&gt; 925

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Lupinus luteus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 925

atg	tcg	agg	aga	aag	ggt	agg	gac	aca	aag	gaa	gaa	act	ggt	aca	ctt	48
Met	Ser	Arg	Arg	Lys	Val	Arg	Asp	Thr	Lys	Glu	Glu	Thr	Val	Thr	Leu	
1				5					10					15		
ggt	cct	gct	ggt	agc	gat	ggt	gaa	cat	ggt	ttt	ggt	gtg	gct	cgt	atc	96
Gly	Pro	Ala	Val	Ser	Asp	Gly	Glu	His	Val	Phe	Gly	Val	Ala	Arg	Ile	
			20					25					30			
ttt	gct	tca	ttt	aat	gat	acc	ttc	att	cat	gtg	act	gat	ttg	tct	ggg	144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
			35				40					45				
agg	gaa	aca	ctt	ggt	aga	atc	aca	ggt	gga	atg	aag	ggt	aaa	gct	gac	192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
cga	gat	gag	tca	tct	cct	tat	gct	gct	atg	ctt	gca	gca	cag	gat	ggt	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
	65				70					75					80	
gct	acc	aga	tgc	aag	gag	ctt	ggc	att	act	gct	ctt	cac	atc	aag	ctc	288
Ala	Thr	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	Leu	
			85					90						95		
cgt	gcc	act	ggt	gga	aac	aaa	act	aaa	act	cca	ggt	cgc	ggt	gct	cag	336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Arg	Gly	Ala	Gln	
			100					105					110			
tct	gct	ctc	cgt	gcc	ttg	gct	cgt	tca	gga	atg	aaa	atc	ggc	cgc	ata	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				
gag	gat	gtg	act	cca	att	cca	tcc	gac	agc	acc	cgt	aga	aag	agt	ggt	432
Glu	Asp	Val	Thr	Pro	Ile	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Ser	Gly	
	130					135					140					
aga	agg	ggt	aga	agg	ctt	tag										453
Arg	Arg	Gly	Arg	Arg	Leu											
					150											
145																

&lt;210&gt; 926

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Lupinus luteus

&lt;400&gt; 926

Met	Ser	Arg	Arg	Lys	Val	Arg	Asp	Thr	Lys	Glu	Glu	Thr	Val	Thr	Leu	
1				5					10					15		
Gly	Pro	Ala	Val	Ser	Asp	Gly	Glu	His	Val	Phe	Gly	Val	Ala	Arg	Ile	
			20					25					30			
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
		35					40					45				
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
	65				70					75					80	

## PhoenixTemp32470.tmp.txt

Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Asn Lys Thr Lys Thr Pro Gly Arg Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
 Glu Asp Val Thr Pro Ile Pro Ser Asp Ser Thr Arg Arg Lys Ser Gly  
 130 135 140  
 Arg Arg Gly Arg Arg Leu  
 145 150

&lt;210&gt; 927

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 927

atg	ccc	ccg	aag	aag	gcc	gcc	cgt	ccc	gct	cag	gag	aac	atc	tcc	ctt	48
Met	Pro	Pro	Lys	Lys	Ala	Ala	Arg	Pro	Ala	Gln	Glu	Asn	Ile	Ser	Leu	
1				5					10					15		
ggc	cct	cag	atc	cgt	gag	ggt	gag	ctc	ggt	ttc	ggc	ggt	gct	cgc	atc	96
Gly	Pro	Gln	Ile	Arg	Glu	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	Arg	Ile	
			20					25					30			
ttc	gct	tcc	ttc	aac	gac	acc	ttc	gtc	cac	gtc	acc	gat	ctc	agt	ggc	144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser	Gly	
			35				40					45				
cgc	gag	acc	act	gac	cgt	gtc	att	ggt	ggc	ata	aag	gtc	aag	gcc	gac	192
Arg	Glu	Thr	Thr	Asp	Arg	Val	Ile	Gly	Gly	Ile	Lys	Val	Lys	Ala	Asp	
						55					60					
cgt	gac	gag	tcc	tcc	ccc	tac	gcc	gct	atg	ttg	gct	gcc	cag	gac	gtc	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
						70				75					80	
gct	gcc	cgc	tgc	aag	gag	ctc	ggc	att	act	gcc	ctc	cac	atc	aag	atc	288
Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	Ile	
				85					90					95		
cgt	gcc	act	ggt	ggt	aac	ggc	acc	agg	acc	ccc	ggc	ccc	ggt	gcc	cag	336
Arg	Ala	Thr	Gly	Gly	Asn	Gly	Thr	Arg	Thr	Pro	Gly	Pro	Gly	Ala	Gln	
			100					105					110			
tct	gct	ctc	cgt	gcc	ctt	gct	cgc	tct	ggc	atg	aag	atc	ggt	cgt	atc	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
			115				120					125				
gag	gac	gtc	acc	ccc	acc	ccc	tcc	gac	tct	act	cgt	cgc	aag	ggt	ggt	432
Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
						135					140					
cgc	cgt	ggt	cgt	cgt	ctc	tga										453
Arg	Arg	Gly	Arg	Arg	Leu											
145					150											

&lt;210&gt; 928

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 928

Met	Pro	Pro	Lys	Lys	Ala	Ala	Arg	Pro	Ala	Gln	Glu	Asn	Ile	Ser	Leu	
1				5					10					15		
Gly	Pro	Gln	Ile	Arg	Glu	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	Arg	Ile	
			20					25					30			
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser	Gly	
			35				40					45				
Arg	Glu	Thr	Thr	Asp	Arg	Val	Ile	Gly	Gly	Ile	Lys	Val	Lys	Ala	Asp	
						55					60					
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
						70				75					80	
Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	Ile	

## PhoenixTemp32470.tmp.txt

85 90 95  
 Arg Ala Thr Gly Asn Gly Thr Arg Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
 Glu Asp Val Thr Pro Thr Pro Ser Asp Ser Thr Arg Arg Lys Gly Gly  
 130 135 140  
 Arg Arg Gly Arg Arg Leu  
 145 150

&lt;210&gt; 929

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Procambarus clarkii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 929

atg gct ccc cgt aaa gga aaa gtt cag aag gag gag gtg caa gtc cag	48
Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Gln	
1 5 10 15	
ctt ggc cca caa gtg ctt gat ggg gaa gta ttt gct gtg tgt cac	96
Leu Gly Pro Gln Val Leu Asp Gly Glu Lys Val Phe Ala Val Cys His	
20 25 30	
att tat gcc agc tac aac gac aca ttt gta cac gtg act gat cta tct	144
Ile Tyr Ala Ser Tyr Asn Asp Thr Phe Val His Val Thr Asp Leu Ser	
35 40 45	
ggc cgt gaa acc att gtc cgc atc act gga gga cag aaa gtg aag gca	192
Gly Arg Glu Thr Ile Val Arg Ile Thr Gly Gly Gln Lys Val Lys Ala	
50 55 60	
gat cgt gac gag tct tcg cct tat gct gct atg ttg gct gct cag gat	240
Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp	
65 70 75 80	
gtt gca gag aaa tgt aaa tcc ctg ggt atc aat tgc ttg cac att aag	288
Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Asn Cys Leu His Ile Lys	
85 90 95	
atc cgt gcc act ggt ggc aac aag aca aag act ccg gga cct gga ggg	336
Ile Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Gly	
100 105 110	
cag tct gca tta cga gct tta gcc cgt gct ggc atg aag att ggt cgc	384
Gln Ser Ala Leu Arg Ala Leu Ala Arg Ala Gly Met Lys Ile Gly Arg	
115 120 125	
att gag gat gtt act cca gtg ccc tct gac agt aca cgc agg aag gga	432
Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly	
130 135 140	
ggt cgc cgt ggt agg cgt ctg tag	456
Gly Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 930

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Procambarus clarkii

&lt;400&gt; 930

Met Ala Pro Arg Lys Gly Lys Val Gln Lys Glu Glu Val Gln Val Gln  
 1 5 10 15  
 Leu Gly Pro Gln Val Leu Asp Gly Glu Lys Val Phe Ala Val Cys His  
 20 25 30  
 Ile Tyr Ala Ser Tyr Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Ile Val Arg Ile Thr Gly Gly Gln Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 65 70 75 80  
 Val Ala Glu Lys Cys Lys Ser Leu Gly Ile Asn Cys Leu His Ile Lys  
 85 90 95

## PhoenixTemp32470.tmp.txt

Ile Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Gly  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ala Gly Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Val Pro Ser Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 931  
 <211> 420  
 <212> DNA  
 <213> Schizosaccharomyces pombe

<220>  
 <221> CDS  
 <222> (1)..(420)

<400> 931  
 atg gct act aac gtt ggc cct caa atc cgt tcc ggt gag ctt gtt ttc 48  
 Met Ala Thr Asn Val Gly Pro Gln Ile Arg Ser Gly Glu Leu Val Phe  
 1 5 10 15  
 ggc gtt gct cac atc ttc gcc tcc ttt aat gat aca ttc gtt cac atc 96  
 Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Ile  
 20 25 30  
 act gat ttg acc ggc aag gaa acc att gtt cgt gtc acc ggt ggt atg 144  
 Thr Asp Leu Thr Gly Lys Glu Thr Ile Val Arg Val Thr Gly Gly Met  
 35 40 45  
 aag gtc aag act gat cgt gat gag tct tct cct tac gct gct atg tta 192  
 Lys Val Lys Thr Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu  
 50 55 60  
 gcc gcc caa gac gct gct gct aag tgc aag gaa gtt ggt atc act gct 240  
 Ala Ala Gln Asp Ala Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala  
 65 70 75 80  
 ctt cac atc aag atc cgt gct act ggt ggt act gct acc aag acc cct 288  
 Leu His Ile Lys Ile Arg Ala Thr Gly Gly Thr Ala Thr Lys Thr Pro  
 85 90 95  
 ggt cct ggt gct caa gct gcc ctt cgt gcc ttg gcc cgt gct ggt atg 336  
 Gly Pro Gly Ala Gln Ala Ala Leu Arg Ala Leu Ala Arg Ala Gly Met  
 100 105 110  
 cgt att ggc cgt att gag gat gtt act ccc atc ccc act gat tct act 384  
 Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr  
 115 120 125  
 cgt aga aag ggt ggt cgt cgt ggt cgc aga ctt taa 420  
 Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 130 135

<210> 932  
 <211> 139  
 <212> PRT  
 <213> Schizosaccharomyces pombe

<400> 932  
 Met Ala Thr Asn Val Gly Pro Gln Ile Arg Ser Gly Glu Leu Val Phe  
 1 5 10 15  
 Gly Val Ala His Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Ile  
 20 25 30  
 Thr Asp Leu Thr Gly Lys Glu Thr Ile Val Arg Val Thr Gly Gly Met  
 35 40 45  
 Lys Val Lys Thr Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu  
 50 55 60  
 Ala Ala Gln Asp Ala Ala Ala Lys Cys Lys Glu Val Gly Ile Thr Ala  
 65 70 75 80  
 Leu His Ile Lys Ile Arg Ala Thr Gly Gly Thr Ala Thr Lys Thr Pro  
 85 90 95  
 Gly Pro Gly Ala Gln Ala Ala Leu Arg Ala Leu Ala Arg Ala Gly Met  
 100 105 110  
 Arg Ile Gly Arg Ile Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr  
 115 120 125

Arg Arg Lys Gly Gly Arg Arg Gly Arg Arg Leu  
 130 135

<210> 933  
 <211> 405  
 <212> DNA  
 <213> *Tortula ruralis*

<220>  
 <221> CDS  
 <222> (1)..(405)

<400> 933  
 atg tct ggg gaa aga aga aag gtc aga gcc gta ttc ggc gtc gct cac 48  
 Met Ser Gly Glu Arg Arg Lys Val Arg Ala Val Phe Gly Val Ala His  
 1 5 10 15  
 atc ttc gcc tca ttc aac gac acc ttc gtg cac gtg act gat ctc tca 96  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 20 25 30  
 gga aag gag aca tcg ctc gtg tta act ggt ggc atg aag gtc aag gct 144  
 Gly Lys Glu Thr Ser Leu Val Leu Thr Gly Gly Met Lys Val Lys Ala  
 35 40 45  
 gac aga gat gag gca tca ccc tac gct gct atg ctt gcc gct cag gat 192  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 50 55 60  
 gtt gcc cag agg tgc aag gag ttg gga atc acc gct ctt cac atc aac 240  
 Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Asn  
 65 70 75 80  
 gtc cgc gct acc gga ggc aac aag acc aag acc ccc ggc ccc gga gcc 288  
 Val Arg Ala Thr Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 85 90 95  
 cag tcc ctc cgt gcg ctg gct cgt tct ggc atg aga atc ggc cgc att 336  
 Gln Ser Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile  
 100 105 110  
 gag gat gtg acc ccg atc ccc acc agc acc agg cgg aag gga gga 384  
 Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly  
 115 120 125  
 cgc agg ggc cgt cgt ctc tag 405  
 Arg Arg Gly Arg Arg Leu  
 130

<210> 934  
 <211> 134  
 <212> PRT  
 <213> *Tortula ruralis*

<400> 934  
 Met Ser Gly Glu Arg Arg Lys Val Arg Ala Val Phe Gly Val Ala His  
 1 5 10 15  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Val His Val Thr Asp Leu Ser  
 20 25 30  
 Gly Lys Glu Thr Ser Leu Val Leu Thr Gly Gly Met Lys Val Lys Ala  
 35 40 45  
 Asp Arg Asp Glu Ala Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp  
 50 55 60  
 Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Asn  
 65 70 75 80  
 Val Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 85 90 95  
 Gln Ser Leu Arg Ala Leu Ala Arg Ser Gly Met Arg Ile Gly Arg Ile  
 100 105 110  
 Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Gly Gly  
 115 120 125  
 Arg Arg Gly Arg Arg Leu  
 130

<210> 935  
 <211> 378  
 <212> DNA

&lt;213&gt; Marchantia polymorpha

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(378)

&lt;400&gt; 935

atg	caa	aaa	aag	cac	ggt	att	act	aat	atg	caa	aaa	aaa	cac	tgt	att	48
Met	Gln	Lys	Lys	His	Gly	Ile	Thr	Asn	Met	Gln	Lys	Lys	His	Cys	Ile	
1				5					10					15		
act	tat	att	caa	tca	act	ttt	ggt	aat	aca	att	att	act	tta	aca	gat	96
Thr	Tyr	Ile	Gln	Ser	Thr	Phe	Gly	Asn	Thr	Ile	Ile	Thr	Leu	Thr	Asp	
			20					25					30			
tat	aac	gga	aat	aca	aaa	act	tgg	tcc	tcc	tca	ggt	tca	gtg	ggg	ttt	144
Tyr	Asn	Gly	Asn	Thr	Lys	Thr	Trp	Ser	Ser	Ser	Gly	Ser	Val	Gly	Phe	
		35					40					45				
aag	gga	tct	cgt	cgc	tca	acc	aat	tat	gct	gct	caa	gca	act	gca	gaa	192
Lys	Gly	Ser	Arg	Arg	Ser	Thr	Asn	Tyr	Ala	Ala	Gln	Ala	Thr	Ala	Glu	
	50					55					60					
aat	gcc	gcg	cga	gtt	gcc	att	caa	ctt	gga	ttt	aag	ttt	gtt	gaa	gtg	240
Asn	Ala	Ala	Arg	Val	Ala	Ile	Gln	Leu	Gly	Phe	Lys	Phe	Val	Glu	Val	
	65			70			75							80		
aga	ata	aaa	gga	tta	ggt	tat	gga	aag	gaa	tct	tca	cta	cgt	ggt	tta	288
Arg	Ile	Lys	Gly	Leu	Gly	Tyr	Gly	Lys	Glu	Ser	Ser	Leu	Arg	Gly	Leu	
				85					90					95		
aaa	cta	gga	ggt	ctt	att	att	acc	aaa	att	cgc	gat	gta	acc	cca	acg	336
Lys	Leu	Gly	Gly	Leu	Ile	Ile	Thr	Lys	Ile	Arg	Asp	Val	Thr	Pro	Thr	
		100					105					110				
cca	cat	aat	gga	tgc	cga	ccc	cct	aaa	aaa	cgt	cgt	gtt	taa			378
Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val				
		115					120					125				

&lt;210&gt; 936

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Marchantia polymorpha

&lt;400&gt; 936

Met	Gln	Lys	Lys	His	Gly	Ile	Thr	Asn	Met	Gln	Lys	Lys	His	Cys	Ile	
1				5					10					15		
Thr	Tyr	Ile	Gln	Ser	Thr	Phe	Gly	Asn	Thr	Ile	Ile	Thr	Leu	Thr	Asp	
			20					25					30			
Tyr	Asn	Gly	Asn	Thr	Lys	Thr	Trp	Ser	Ser	Ser	Gly	Ser	Val	Gly	Phe	
		35					40					45				
Lys	Gly	Ser	Arg	Arg	Ser	Thr	Asn	Tyr	Ala	Ala	Gln	Ala	Thr	Ala	Glu	
	50				55						60					
Asn	Ala	Ala	Arg	Val	Ala	Ile	Gln	Leu	Gly	Phe	Lys	Phe	Val	Glu	Val	
	65			70			75							80		
Arg	Ile	Lys	Gly	Leu	Gly	Tyr	Gly	Lys	Glu	Ser	Ser	Leu	Arg	Gly	Leu	
			85				90							95		
Lys	Leu	Gly	Gly	Leu	Ile	Ile	Thr	Lys	Ile	Arg	Asp	Val	Thr	Pro	Thr	
		100					105					110				
Pro	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val				
		115					120					125				

&lt;210&gt; 937

&lt;211&gt; 387

&lt;212&gt; DNA

&lt;213&gt; Prototheca wickerhamii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(387)

&lt;400&gt; 937

atg	ctt	gta	aaa	aaa	tct	caa	att	tct	aga	aaa	ttt	att	gaa	aaa	aaa	48
Met	Leu	Val	Lys	Lys	Ser	Gln	Ile	Ser	Arg	Lys	Phe	Ile	Glu	Lys	Lys	
1			5						10				15			
agt	gga	att	gta	cat	ata	caa	agt	aca	aca	aat	aac	act	tta	ata	act	96

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Ser	Gly	Ile	Val	His	Ile	Gln	Ser	Thr	Thr	Asn	Asn	Thr	Leu	Ile	Thr		
			20					25					30				
ctt	act	gat	tta	gaa	ggg	aat	aca	caa	ttt	ttt	gta	tct	gca	ggg	act	144	
Leu	Thr	Asp	Leu	Glu	Gly	Asn	Thr	Gln	Phe	Phe	Val	Ser	Ala	Gly	Thr		
		35					40					45					
tta	ggg	ttt	aaa	aat	tca	cga	aaa	tct	aca	gtt	tac	gct	tca	gga	gct	192	
Leu	Gly	Phe	Lys	Asn	Ser	Arg	Lys	Ser	Thr	Val	Tyr	Ala	Ser	Gly	Ala		
	50					55					60						
gca	gca	gaa	gct	tta	gct	agt	aaa	gca	ttt	aac	gaa	ggc	tat	cgt	aca	240	
Ala	Ala	Glu	Ala	Leu	Ala	Ser	Lys	Ala	Phe	Asn	Glu	Gly	Tyr	Arg	Thr		
	65				70					75					80		
att	att	gta	aaa	att	aaa	ggc	tta	ggg	tat	gga	aaa	aaa	agt	gca	att	288	
Ile	Ile	Val	Lys	Ile	Lys	Gly	Leu	Gly	Tyr	Gly	Lys	Lys	Ser	Ala	Ile		
				85					90					95			
cgc	ggg	ctt	cag	aaa	tca	aat	tta	gtt	ata	aaa	cag	att	caa	gaa	gtt	336	
Arg	Gly	Leu	Gln	Lys	Ser	Asn	Leu	Val	Ile	Lys	Gln	Ile	Gln	Glu	Val		
		100						105					110				
aca	cct	atc	gct	cat	aat	ggg	tgc	cgt	cct	cca	aaa	aaa	cgt	cgc	gtt	384	
Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val		
		115					120					125					
taa																387	

<210> 938  
 <211> 128  
 <212> PRT  
 <213> Prototheca wickerhamii

<400> 938

Met	Leu	Val	Lys	Lys	Ser	Gln	Ile	Ser	Arg	Lys	Phe	Ile	Glu	Lys	Lys		
				5					10					15			
Ser	Gly	Ile	Val	His	Ile	Gln	Ser	Thr	Thr	Asn	Asn	Thr	Leu	Ile	Thr		
			20					25					30				
Leu	Thr	Asp	Leu	Glu	Gly	Asn	Thr	Gln	Phe	Phe	Val	Ser	Ala	Gly	Thr		
		35					40					45					
Leu	Gly	Phe	Lys	Asn	Ser	Arg	Lys	Ser	Thr	Val	Tyr	Ala	Ser	Gly	Ala		
	50					55					60						
Ala	Ala	Glu	Ala	Leu	Ala	Ser	Lys	Ala	Phe	Asn	Glu	Gly	Tyr	Arg	Thr		
	65				70					75				80			
Ile	Ile	Val	Lys	Ile	Lys	Gly	Leu	Gly	Tyr	Gly	Lys	Lys	Ser	Ala	Ile		
				85					90					95			
Arg	Gly	Leu	Gln	Lys	Ser	Asn	Leu	Val	Ile	Lys	Gln	Ile	Gln	Glu	Val		
		100						105					110				
Thr	Pro	Ile	Ala	His	Asn	Gly	Cys	Arg	Pro	Pro	Lys	Lys	Arg	Arg	Val		
		115					120					125					

<210> 939  
 <211> 456  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 939

atg	cct	ccc	aag	aag	acc	gcc	ccc	cgt	gct	ccc	cag	gag	aac	atc	tcc	48	
Met	Pro	Pro	Lys	Lys	Thr	Ala	Pro	Arg	Ala	Pro	Gln	Glu	Asn	Ile	Ser		
	1			5					10					15			
ctc	gga	cct	tcc	gtt	cgc	gat	ggc	gag	ctg	gtc	ttc	ggc	gtt	gcc	cgt	96	
Leu	Gly	Pro	Ser	Val	Arg	Asp	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	Arg		
			20					25					30				
atc	ttc	gcc	tcc	ttc	aac	gat	acc	ttc	gtc	cac	gtc	acc	gat	ctg	agt	144	
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser		
		35				40						45					
ggc	cgt	gag	act	atc	acc	cgt	gtt	act	ggg	ggg	atg	aag	gtc	aag	gcc	192	
Gly	Arg	Glu	Thr	Ile	Thr	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala		
	50					55					60						



## PhoenixTemp32470.tmp.txt

gac	cgt	gac	gag	tcc	tcc	ccc	tac	gct	gcc	atg	ttg	gct	gcc	cag	gac	240
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	
65					70				75						80	
gtc	gct	gcc	cgc	tgc	aag	gag	ctt	ggc	atc	aac	gct	ctt	cac	atc	aag	288
Val	Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Asn	Ala	Leu	His	Ile	Lys	
				85				90						95		
atc	cgt	gcc	act	ggg	ggg	aac	ggg	acc	aag	acc	ccc	ggg	ccc	ggg	gcc	336
Ile	Arg	Ala	Thr	Gly	Gly	Asn	Gly	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
			100				105						110			
cag	tcc	gct	ctc	cgt	gcc	ctt	gcc	cgt	gct	ggc	atg	aag	att	ggc	cga	384
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Met	Lys	Ile	Gly	Arg	
		115					120					125				
act	gag	gac	gtt	acc	cct	act	cct	tcc	gac	tct	acc	cgc	aga	aag	ggg	432
Thr	Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
	130					135					140					
ggg	cgc	cgt	ggg	cgt	cgt	ctc	tga									456
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
145					150											

&lt;210&gt; 940

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Triticum aestivum

&lt;400&gt; 940

Met	Pro	Pro	Lys	Lys	Thr	Ala	Pro	Arg	Ala	Pro	Gln	Glu	Asn	Ile	Ser	
1				5					10					15		
Leu	Gly	Pro	Ser	Val	Arg	Asp	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	Arg	
			20				25						30			
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Val	His	Val	Thr	Asp	Leu	Ser	
		35					40					45				
Gly	Arg	Glu	Thr	Ile	Thr	Arg	Val	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
		50				55					60					
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	
65					70					75					80	
Val	Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Asn	Ala	Leu	His	Ile	Lys	
				85					90					95		
Ile	Arg	Ala	Thr	Gly	Gly	Asn	Gly	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
			100				105						110			
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ala	Gly	Met	Lys	Ile	Gly	Arg	
		115					120					125				
Thr	Glu	Asp	Val	Thr	Pro	Thr	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Gly	
	130					135					140					
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
145					150											

&lt;210&gt; 941

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 941

atg	tct	ggg	agg	aag	aag	acg	cgg	gag	ccc	aag	gag	gag	aac	gtg	acg	48
Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	
1				5					10					15		
ctt	ggc	ccc	gct	gtc	cgc	gag	gga	gaa	cac	gtc	ttt	ggc	ggt	gcg	cac	96
Leu	Gly	Pro	Ala	Val	Arg	Glu	Gly	Glu	His	Val	Phe	Gly	Val	Ala	His	
			20				25						30			
atc	ttc	gcc	tcc	ttc	aac	gac	act	ttc	atc	cat	gtg	acg	gat	ctg	tct	144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	
		35					40					45				
gga	agg	gag	acg	ctc	gtc	cgc	atc	act	ggg	ggc	atg	aag	ggt	aaa	gct	192
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
		50				55					60					
gat	cgt	gat	gag	tcc	tcg	cct	tat	gct	gct	atg	ctt	gcc	tca	cag	gag	240

## PhoenixTemp32470.tmp.txt

Asp 65	Arg	Asp	Glu	Ser	Ser 70	Pro	Tyr	Ala	Ala	Met 75	Leu	Ala	Ser	Gln	Glu 80	
gtc	gcg	caa	aga	tgc	aag	gag	ctt	gga	att	act	gca	ttg	cac	att	aag	288
Val	Ala	Gln	Arg	Cys 85	Lys	Glu	Leu	Gly	Ile 90	Thr	Ala	Leu	His	Ile 95	Lys	
ctc	cgt	gct	act	ggt	gga	aac	aag	acc	aaa	acc	cct	ggc	cct	ggt	gct	336
Leu	Arg	Ala	Thr 100	Gly	Gly	Asn	Lys	Thr 105	Lys	Thr	Pro	Gly	Pro 110	Gly	Ala	
cag	tct	gct	ctt	aga	gct	ctt	gct	cga	tct	ggc	atg	aag	ata	ggc	cgt	384
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala 120	Arg	Ser	Gly	Met 125	Lys	Ile	Gly	Arg	
att	gag	gat	gtt	act	cca	gtc	ccc	aca	gac	agc	aca	cgc	aga	aag	ggt	432
Ile	Glu	Asp	Val	Thr	Pro	Val 135	Pro	Thr	Asp	Ser	Thr 140	Arg	Arg	Lys	Gly	
ggt	aga	aga	gga	agg	agg	ctg	taa									456
Gly	Arg	Arg	Gly	Arg	Arg	Leu										
145						150										

&lt;210&gt; 942

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 942

Met	Ser	Gly	Arg	Lys 5	Lys	Thr	Arg	Glu	Pro 10	Lys	Glu	Glu	Asn	Val 15	Thr
Leu	Gly	Pro	Ala	Val 20	Arg	Glu	Gly	Glu 25	His	Val	Phe	Gly	Val 30	Ala	His
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr 40	Phe	Ile	His	Val	Thr 45	Asp	Leu	Ser
Gly	Arg	Glu	Thr	Leu	Val	Arg 55	Ile	Thr	Gly	Gly	Met 60	Lys	Val	Lys	Ala
Asp	Arg	Asp	Glu	Ser	Ser 70	Pro	Tyr	Ala	Ala	Met 75	Leu	Ala	Ser	Gln	Glu 80
Val	Ala	Gln	Arg	Cys 85	Lys	Glu	Leu	Gly	Ile 90	Thr	Ala	Leu	His	Ile 95	Lys
Leu	Arg	Ala	Thr 100	Gly	Gly	Asn	Lys	Thr 105	Lys	Thr	Pro	Gly	Pro 110	Gly	Ala
Gln	Ser	Ala	Leu	Arg	Ala	Leu	Ala 120	Arg	Ser	Gly	Met 125	Lys	Ile	Gly	Arg
Ile	Glu	Asp	Val	Thr	Pro	Val 135	Pro	Thr	Asp	Ser	Thr 140	Arg	Arg	Lys	Gly
Gly	Arg	Arg	Gly	Arg	Arg	Leu									
145						150									

&lt;210&gt; 943

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 943

atg	tca	ggg	agg	aag	aag	acc	cgc	gag	ccc	aag	gag	gag	aac	gtg	acg	48
Met	Ser	Gly	Arg	Lys 5	Lys	Thr	Arg	Glu	Pro 10	Lys	Glu	Glu	Asn	Val 15	Thr	
ctc	ggc	ccc	gcc	gtc	cgc	gag	ggg	gag	cac	gtc	ttc	ggc	gtc	gcg	cac	96
Leu	Gly	Pro	Ala	Val 20	Arg	Glu	Gly	Glu 25	His	Val	Phe	Gly	Val 30	Ala	His	
atc	ttc	gcc	tcc	ttc	aac	gac	act	ttc	atc	cat	gtc	acg	gat	ctg	tcc	144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr 40	Phe	Ile	His	Val	Thr 45	Asp	Leu	Ser	
ggg	agg	gag	acg	ctc	gtc	cgc	atc	acc	ggg	ggg	atg	aag	gtt	aaa	gct	192
Gly	Arg	Glu	Thr	Leu	Val	Arg 55	Ile	Thr	Gly	Gly	Met 60	Lys	Val	Lys	Ala	
gat	cgt	gat	gaa	tca	tcc	cct	tat	gca	gct	atg	ctt	gca	tca	cag	gat	240
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	

## PhoenixTemp32470.tmp.txt

65	ggt	gct	gta	aga	tcg	70	aag	gag	ctt	gga	att	act	gct	ctg	cac	att	80	aag	
Val	Ala	Val	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys				288
				85															
ctc	cgt	gct	act	ggt	gga	aac	aag	aca	aaa	act	cca	ggt	cct	ggt	gct				336
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala				
			100					105					110						
caa	gct	gcg	ctt	aga	gct	ctt	gca	cgt	tct	ggc	atg	aag	att	gga	cgc				384
Gln	Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg				
		115					120					125							
att	gag	gat	gtt	act	cca	gtc	cca	act	gac	agc	act	cgc	cgg	aag	ggt				432
Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly				
	130					135					140								
ggt	aga	aga	gga	agg	agg	ctg	taa												456
Gly	Arg	Arg	Gly	Arg	Arg	Leu													
145					150														

&lt;210&gt; 944

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 944

Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr				
1				5				10					15						
Leu	Gly	Pro	Ala	Val	Arg	Glu	Gly	Glu	His	Val	Phe	Gly	Val	Ala	His				
			20					25					30						
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser				
		35					40					45							
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala				
		50				55					60								
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp				
65					70					75					80				
Val	Ala	Val	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys				
				85										95					
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala				
			100					105					110						
Gln	Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg				
		115					120					125							
Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly				
	130					135					140								
Gly	Arg	Arg	Gly	Arg	Arg	Leu													
145					150														

&lt;210&gt; 945

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 945

atg	tcg	agg	aga	aag	acc	aga	gag	cct	aag	gag	gaa	act	gtc	act	ctc				48
Met	Ser	Arg	Arg	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Thr	Val	Thr	Leu				
1				5					10				15						
gga	cca	gct	gtt	cgt	gat	ggt	gag	caa	gtc	ttt	gga	gtt	gtt	cac	atc				96
Gly	Pro	Ala	Val	Arg	Asp	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile				
			20					25					30						
ttt	gct	tcc	ttc	aat	gac	aca	ttc	att	cat	gtg	act	gat	ctg	tct	gga				144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly				
		35					40					45							
agg	gaa	act	ctc	gtt	cgt	atc	act	ggt	gga	atg	aaa	gta	aag	gct	gac				192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp				
		50				55					60								
cgt	gat	gag	tcc	tct	cct	tat	gct	gct	atg	ctt	gct	gct	caa	gat	gtt				240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val				
	65				70					75					80				

## PhoenixTemp32470.tmp.txt

gct	caa	aga	tgc	aag	gag	ctt	ggc	atc	aca	gct	atg	cat	gtg	aaa	ctc	288
Ala	Gln	Arg	Cys	Lys <sub>85</sub>	Glu	Leu	Gly	Ile	Thr <sub>90</sub>	Ala	Met	His	Val	Lys <sub>95</sub>	Leu	
cgc	gcc	act	gga	gga	aac	aag	act	aag	acc	cca	ggt	cct	ggt	gct	cag	336
Arg	Ala	Thr	Gly <sub>100</sub>	Gly	Asn	Lys	Thr	Lys <sub>105</sub>	Thr	Pro	Gly	Pro	Gly <sub>110</sub>	Ala	Gln	
tct	gcc	ctc	aga	gct	ctt	gct	cgt	tct	ggc	atg	aag	att	ggt	cgc	att	384
Ser	Ala	Leu <sub>115</sub>	Arg	Ala	Leu	Ala	Arg <sub>120</sub>	Ser	Gly	Met	Lys	Ile <sub>125</sub>	Gly	Arg	Ile	
gag	gat	gtg	act	cca	att	cca	acc	gat	agc	acc	cgt	aga	aag	ggt	ggt	432
Glu	Asp	Val	Thr	Pro	Ile	Pro <sub>135</sub>	Thr	Asp	Ser	Thr	Arg <sub>140</sub>	Arg	Lys	Gly	Gly	
aga	agg	gga	aga	cgt	ctt	tga										453
Arg	Arg	Gly	Arg	Arg	Leu <sub>150</sub>											

&lt;210&gt; 946

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 946

Met	Ser	Arg	Arg	Lys <sub>5</sub>	Thr	Arg	Glu	Pro	Lys <sub>10</sub>	Glu	Glu	Thr	Val	Thr	Leu	
Gly	Pro	Ala	Val	Arg	Asp	Gly	Glu	Gln	Val	Phe	Gly	Val	Val	His	Ile	
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
Ala	Gln	Arg	Cys	Lys <sub>85</sub>	Glu	Leu	Gly	Ile	Thr	Ala	Met	His	Val	Lys	Leu	
Arg	Ala	Thr	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
Arg	Arg	Gly	Arg	Arg	Leu <sub>150</sub>											

&lt;210&gt; 947

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 947

atg	tcg	agg	aga	aag	gtt	aga	gag	cca	aag	gag	gaa	aac	gtg	act	ctg	48
Met	Ser	Arg	Arg	Lys <sub>5</sub>	Val	Arg	Glu	Pro	Lys <sub>10</sub>	Glu	Glu	Asn	Val	Thr	Leu	
ggc	cca	gct	gtt	aga	gat	ggt	gaa	cat	gtt	ttt	gga	gtc	gct	cgc	atc	96
Gly	Pro	Ala	Val	Arg	Asp	Gly	Glu	His	Val	Phe	Gly	Val	Ala	Arg	Ile	
ttt	gcc	tcc	ttc	aat	gac	acc	ttc	att	cat	gtc	act	gat	ctg	tct	ggg	
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
agg	gaa	aca	ctt	gtc	cgc	atc	act	ggc	ggg	atg	aag	gtt	aaa	gct	gac	192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
aga	gat	gaa	tca	tct	cca	tat	gct	gct	atg	ctt	gct	gcg	cag	gat	gtt	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
gct	gct	aga	tgc	aag	gaa	ctg	ggc	ata	act	gct	ctt	cat	atc	aag	ctc	288

## PhoenixTemp32470.tmp.txt

Ala	Ala	Arg	Cys	Lys <sub>85</sub>	Glu	Leu	Gly	Ile	Thr <sub>90</sub>	Ala	Leu	His	Ile	Lys <sub>95</sub>	Leu		
cgt	gcc	aca	ggt	gga	aac	aag	aca	aaa	aca	cca	ggt	cct	ggt	gct	caa		336
Arg	Ala	Thr	Gly <sub>100</sub>	Gly	Asn	Lys	Thr	Lys <sub>105</sub>	Thr	Pro	Gly	Pro	Gly <sub>110</sub>	Ala	Gln		
tca	gct	ctt	cga	gcc	ctt	gct	cgt	tca	gga	atg	aaa	att	ggt	cgc	ata		384
Ser	Ala	Leu <sub>115</sub>	Arg	Ala	Leu	Ala	Arg <sub>120</sub>	Ser	Gly	Met	Lys	Ile <sub>125</sub>	Gly	Arg	Ile		
gag	gat	gtg	acc	ccc	att	cct	tcc	gat	agc	aca	cgg	aga	aag	agt	ggt		432
Glu	Asp	Val	Thr	Pro	Ile	Pro <sub>135</sub>	Ser	Asp	Ser	Thr	Arg <sub>140</sub>	Arg	Lys	Ser	Gly		
aga	agg	ggt	aga	agg	ctt	taa											453
Arg	Arg	Gly	Arg	Arg	Leu <sub>150</sub>												
145																	

&lt;210&gt; 948

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 948

Met	Ser	Arg	Arg	Lys <sub>5</sub>	Val	Arg	Glu	Pro	Lys <sub>10</sub>	Glu	Glu	Asn	Val	Thr <sub>15</sub>	Leu		
Gly	Pro	Ala	Val	Arg	Asp	Gly	Glu	His <sub>25</sub>	Val	Phe	Gly	Val	Ala <sub>30</sub>	Arg	Ile		
Phe	Ala	Ser <sub>35</sub>	Phe	Asn	Asp	Thr	Phe <sub>40</sub>	Ile	His	Val	Thr	Asp <sub>45</sub>	Leu	Ser	Gly		
Arg	Glu <sub>50</sub>	Thr	Leu	Val	Arg	Ile <sub>55</sub>	Thr	Gly	Gly	Met	Lys <sub>60</sub>	Val	Lys	Ala	Asp		
Arg	Asp	Glu	Ser	Ser	Pro <sub>70</sub>	Tyr	Ala	Ala	Met	Leu <sub>75</sub>	Ala	Ala	Gln	Asp	Val <sub>80</sub>		
Ala	Ala	Arg	Cys	Lys <sub>85</sub>	Glu	Leu	Gly	Ile	Thr <sub>90</sub>	Ala	Leu	His	Ile	Lys <sub>95</sub>	Leu		
Arg	Ala	Thr	Gly <sub>100</sub>	Gly	Asn	Lys	Thr	Lys <sub>105</sub>	Thr	Pro	Gly	Pro	Gly <sub>110</sub>	Ala	Gln		
Ser	Ala	Leu <sub>115</sub>	Arg	Ala	Leu	Ala	Arg <sub>120</sub>	Ser	Gly	Met	Lys	Ile <sub>125</sub>	Gly	Arg	Ile		
Glu	Asp	Val	Thr	Pro	Ile	Pro <sub>135</sub>	Ser	Asp	Ser	Thr	Arg <sub>140</sub>	Arg	Lys	Ser	Gly		
Arg	Arg	Gly	Arg	Arg	Leu <sub>150</sub>												
145																	

&lt;210&gt; 949

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 949

atg	tcg	agg	aga	aag	gtt	agg	gag	cca	aag	gag	gaa	aat	gtc	act	ctt		48
Met	Ser	Arg	Arg	Lys <sub>5</sub>	Val	Arg	Glu	Pro	Lys <sub>10</sub>	Glu	Glu	Asn	Val	Thr <sub>15</sub>	Leu		
ggt	cca	gcc	gtt	aga	gac	ggt	gaa	cat	gtt	ttc	ggc	gtg	gct	cgc	atc		96
Gly	Pro	Ala	Val <sub>20</sub>	Arg	Asp	Gly	Glu	His <sub>25</sub>	Val	Phe	Gly	Val	Ala <sub>30</sub>	Arg	Ile		
ttt	gcc	tcc	ttc	aac	gac	acc	ttc	atc	cat	gtc	act	gat	ttg	tct	ggg		144
Phe	Ala	Ser <sub>35</sub>	Phe	Asn	Asp	Thr	Phe <sub>40</sub>	Ile	His	Val	Thr	Asp <sub>45</sub>	Leu	Ser	Gly		
agg	gaa	acc	ctt	gtt	cgc	atc	act	ggt	ggg	atg	aaa	gtt	aaa	gct	gac		192
Arg	Glu <sub>50</sub>	Thr	Leu	Val	Arg	Ile <sub>55</sub>	Thr	Gly	Gly	Met	Lys <sub>60</sub>	Val	Lys	Ala	Asp		
aga	gat	gaa	tca	tct	cca	tat	gct	gct	atg	ctt	gca	gca	cag	gat	gtt		240
Arg	Asp	Glu	Ser	Ser	Pro <sub>70</sub>	Tyr	Ala	Ala	Met	Leu <sub>75</sub>	Ala	Ala	Gln	Asp	Val <sub>80</sub>		
gct	gcc	aga	tgt	aag	gaa	ctg	ggc	ata	act	gct	ctt	cat	atc	agg	ctc		288
Ala	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Arg	Leu		

## PhoenixTemp32470.tmp.txt

<div> <div>85</div> <div>90</div> <div>95</div> </div>																
cgt	gcc	act	ggt	gga	aac	aag	acc	aaa	aca	cct	ggt	cct	ggt	gct	caa	
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	336
<div> <div>100</div> <div>105</div> <div>110</div> </div>																
tca	gct	ctt	cga	gcc	ctt	gca	cgt	tca	gga	atg	aaa	att	ggt	cgt	ata	
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	384
<div> <div>115</div> <div>120</div> <div>125</div> </div>																
gag	gat	gtt	act	ccc	att	cct	tcg	gat	agt	aca	cgt	aga	aag	agt	ggt	
Glu	Asp	Val	Thr	Pro	Ile	Pro	Ser	Asp	Ser	Thr	Arg	Arg	Lys	Ser	Gly	432
<div> <div>130</div> <div>135</div> <div>140</div> </div>																
aga	agg	ggt	aga	aga	ctt	taa										
Arg	Arg	Gly	Arg	Arg	Leu											453
<div> <div>145</div> <div>150</div> </div>																

<210>	950
<211>	150
<212>	PRT
<213>	Glycine max

[illegible]

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<210> 951
<211> 453
<212> DNA
<213> Helianthus annuus
```

<220>  
<221> CDS  
<222> (1)..(453)

<400>																951	
atg	tca	aag	aga	aag	gtc	aga	gag	cca	aag	gaa	gac	aat	gtc	acc	ctc	48	
Met	Ser	Lys	Arg	Lys	Val	Arg	Glu	Pro	Lys	Glu	Asp	Asn	Val	Thr	Leu		
1				5					10					15			
gga	cct	gct	act	cgt	gag	gga	gag	ctt	gtt	ttt	ggt	gtg	gcg	cat	att	96	
Gly	Pro	Ala	Thr	Arg	Glu	Gly	Glu	Leu	Val	Phe	Gly	Val	Ala	His	Ile		
			20					25					30				
ttt	gca	tcc	ttc	aat	gat	act	ttc	att	cat	gtg	act	gat	ctc	tct	gga	144	
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly		
		35					40					45					
aga	gaa	acc	atg	gtt	cgg	att	act	ggt	ggg	atg	aag	gtg	aag	gct	gat	192	
Arg	Glu	Thr	Met	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
	50					55					60						
aga	gat	gaa	tca	tct	ccg	tat	gcg	gct	atg	ctt	gca	gca	caa	gat	gtt	240	
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
65					70				75						80		
tca	acc	aga	tgc	aag	gag	ctt	ggc	atc	aat	gct	ctt	cac	att	aag	ttg	288	
Ser	Thr	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Asn	Ala	Leu	His	Ile	Lys	Leu		
				85					90					95			

## PhoenixTemp32470.tmp.txt

cgg gcc act gga gga aac aag acc aag acc cct ggt cca ggt gct cag	336
Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln	
100 105 110	
tct gca ctc aga gct ctt gct cgt tct ggg atg aaa att ggt cgc att	384
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile	
115 120 125	
gag gat gtg aca cca att cca act gac agc acc cgt cga aag agc ggt	432
Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Ser Gly	
130 135 140	
aga aga gga aga agg ctg tga	453
Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 952

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Helianthus annuus

&lt;400&gt; 952

Met Ser Lys Arg Lys Val Arg Glu Pro Lys Glu Asp Asn Val Thr Leu	
1 5 10 15	
Gly Pro Ala Thr Arg Glu Gly Glu Leu Val Phe Gly Val Ala His Ile	
20 25 30	
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly	
35 40 45	
Arg Glu Thr Met Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp	
50 55 60	
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val	
65 70 75 80	
Ser Thr Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Leu	
85 90 95	
Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln	
100 105 110	
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile	
115 120 125	
Glu Asp Val Thr Pro Ile Pro Thr Asp Ser Thr Arg Arg Lys Ser Gly	
130 135 140	
Arg Arg Gly Arg Arg Leu	
145 150	

&lt;210&gt; 953

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 953

atg tcg aag cga aag gtt agg gag ccc aag gag gag act gtt acc ctg	48
Met Ser Lys Arg Lys Val Arg Glu Pro Lys Glu Glu Thr Val Thr Leu	
1 5 10 15	
ggg cct aat gtt tct gaa gga acc att gtc ttc ggt gtt gct cac atc	96
Gly Pro Asn Val Ser Glu Gly Thr Ile Val Phe Gly Val Ala His Ile	
20 25 30	
ttt gca tca ttt aat gac acc ttc att cat gtc act gat att tct ggc	144
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Ile Ser Gly	
35 40 45	
aga gaa act tta gtt agg atc acc ggt gga atg aag gtg aaa gct gac	192
Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp	
50 55 60	
agg gat gag tcc tct ccc tac gcc gct atg ctt gca gca gat gtt	240
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val	
65 70 75 80	
tct act cga tgc aag gag ctg ggt atc aat gct ctt cac att aag ctc	288
Ser Thr Arg Cys Lys Glu Leu Gly Ile Asn Ala Leu His Ile Lys Leu	
85 90 95	
cga gcc act ggt ggg aac aag acc aag acc cct ggt cct ggc gct cag	336

## PhoenixTemp32470.tmp.txt

Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
tca	gct	ctc	aga	gct	ctt	gct	cgt	tct	ggc	atg	aag	atc	ggc	cgc	att		384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile		
		115					120					125					
gag	gat	gtg	acc	ccg	atc	cca	act	gac	agc	act	cgc	cga	aag	ggg	gga		432
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
		130				135					140						
agg	aga	gga	agg	agg	ctg	tga											453
Arg	Arg	Gly	Arg	Arg	Leu												
145					150												

&lt;210&gt; 954

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 954

Met	Ser	Lys	Arg	Lys	Val	Arg	Glu	Pro	Lys	Glu	Glu	Thr	Val	Thr	Leu		
1				5					10					15			
Gly	Pro	Asn	Val	Ser	Glu	Gly	Thr	Ile	Val	Phe	Gly	Val	Ala	His	Ile		
		20						25					30				
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Ile	Ser	Gly		
		35					40					45					
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
	50					55					60						
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
65					70				75					80			
Ser	Thr	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Asn	Ala	Leu	His	Ile	Lys	Leu		
				85					90					95			
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
			100					105					110				
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile		
		115					120					125					
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly		
	130					135					140						
Arg	Arg	Gly	Arg	Arg	Leu												
145					150												

&lt;210&gt; 955

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 955

atg	tca	ggg	agg	aag	aag	acc	cgc	gag	ccc	aag	gag	gag	aac	gtg	acg		48
Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr		
1				5					10					15			
ctc	ggc	ccc	gcc	gtc	cgc	gag	ggg	gag	cac	gtc	ttc	ggc	gtc	gcg	cac		96
Leu	Gly	Pro	Ala	Val	Arg	Glu	Gly	Glu	His	Val	Phe	Gly	Val	Ala	His		
		20					25						30				
atc	ttc	gcc	tcc	ttc	aac	gac	act	ttc	atc	cat	gtc	acg	gat	ctg	tcc		144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser		
		35				40					45						
ggg	agg	gag	acg	ctc	gtc	cgc	atc	acc	ggg	ggg	atg	aag	ggt	aaa	gct		192
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala		
	50					55			60								
gat	cgt	gat	gaa	tca	tcc	cct	tat	gca	gct	atg	ctt	gca	tca	cag	gat		240
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp		
	65				70				75					80			
gtt	gct	gta	aga	tgc	aag	gag	ctt	gga	att	act	gct	ctg	cac	att	aag		288
Val	Ala	Val	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys		
				85					90					95			
ctc	cgt	gct	act	ggg	gga	aac	aag	aca	act	cca	ggg	cct	ggg	gct			336
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala		



## PhoenixTemp32470.tmp.txt

caa	gct	gcg	100	ctt	aga	gct	ctt	gca	105	tct	ggc	atg	aag	110	att	gga	cgc	384
Gln	Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg		
		115					120						125					
att	gag	gat	ggt	act	cca	gtc	cca	act	gac	agc	act	cgc	ccg	aag	ggt		432	
Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Pro	Lys	Gly			
	130					135					140							
ggt	aga	aga	gga	agg	agg	ctg	taa										456	
Gly	Arg	Arg	Gly	Arg	Arg	Leu												
145					150													

&lt;210&gt; 956

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 956

Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr		
1				5				10					15				
Leu	Gly	Pro	Ala	Val	Arg	Glu	Gly	Glu	His	Val	Phe	Gly	Val	Ala	His		
		20					25						30				
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser		
		35				40						45					
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala		
	50					55					60						
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp		
65				70				75						80			
Val	Ala	Val	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys		
				85				90						95			
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala		
		100					105					110					
Gln	Ala	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg		
	115						120					125					
Ile	Glu	Asp	Val	Thr	Pro	Val	Pro	Thr	Asp	Ser	Thr	Arg	Pro	Lys	Gly		
	130					135					140						
Gly	Arg	Arg	Gly	Arg	Arg	Leu											
145					150												

&lt;210&gt; 957

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(453)

&lt;400&gt; 957

atg	tcg	aag	cga	aag	gtt	aaa	gag	ccc	aag	gag	gag	act	gtt	acc	ttg		48
Met	Ser	Lys	Arg	Lys	Val	Lys	Glu	Pro	Lys	Glu	Glu	Thr	Val	Thr	Leu		
1				5				10					15				
gga	cca	act	ctc	aag	cct	gga	gag	aat	aac	ttt	ggt	gtc	gct	cac	atc		96
Gly	Pro	Thr	Leu	Lys	Pro	Gly	Glu	Asn	Asn	Phe	Gly	Val	Ala	His	Ile		
		20					25						30				
ttc	gca	tca	ttc	aac	gac	acc	ttc	atc	cac	gtt	acc	gac	att	tct	gga		144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Ile	Ser	Gly		
		35				40					45						
aga	gaa	aca	ttg	gtt	cgc	atc	act	ggt	ggg	atg	aag	gtg	aaa	gct	gat		192
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp		
	50				55					60							
agg	gat	gag	tct	tca	ccc	tat	gct	gcc	atg	ctt	gca	gca	cag	gat	gtt		240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val		
	65				70			75					80				
act	gct	cgt	tgc	aag	gag	ctc	gga	gta	act	gct	ctt	cac	att	aag	ctc		288
Thr	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Val	Thr	Ala	Leu	His	Ile	Lys	Leu		
				85				90					95				
aga	gca	acc	ggt	gga	aac	aag	acc	aag	aca	cct	ggt	cca	ggt	gcc	cag		336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln		
			100					105					110				

## PhoenixTemp32470.tmp.txt

tct	gca	ctc	agg	gcg	ctt	gca	cgt	tct	ggg	atg	aag	att	ggc	cgc	atc	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				
gag	gat	gtg	act	cct	att	cct	aca	gac	agc	act	cgc	aga	aag	ggg	gga	432
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
	130					135					140					
agg	aga	gga	aga	agg	ctt	tga										453
Arg	Arg	Gly	Arg	Arg	Leu											
145					150											

&lt;210&gt; 958

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 958

Met	Ser	Lys	Arg	Lys	Val	Lys	Glu	Pro	Lys	Glu	Glu	Thr	Val	Thr	Leu	
1				5					10					15		
Gly	Pro	Thr	Leu	Lys	Pro	Gly	Glu	Asn	Asn	Phe	Gly	Val	Ala	His	Ile	
			20					25					30			
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Ile	Ser	Gly	
		35					40					45				
Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ala	Gln	Asp	Val	
65					70					75					80	
Thr	Ala	Arg	Cys	Lys	Glu	Leu	Gly	Val	Thr	Ala	Leu	His	Ile	Lys	Leu	
			85						90					95		
Arg	Ala	Thr	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Pro	Ala	Gln	
			100				105					110				
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
	115						120					125				
Glu	Asp	Val	Thr	Pro	Ile	Pro	Thr	Asp	Ser	Thr	Arg	Arg	Lys	Gly	Gly	
	130					135					140					
Arg	Arg	Gly	Arg	Arg	Leu											
145					150											

&lt;210&gt; 959

&lt;211&gt; 456

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(456)

&lt;400&gt; 959

atg	tcc	ggg	agg	aag	aag	acg	cga	gag	ccc	aag	gag	gag	aac	gtg	acg	48
Met	Ser	Gly	Arg	Lys	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	
1				5					10					15		
ctc	ggc	ccc	acg	gtc	cgc	gag	ggc	gag	tac	gtc	ttc	ggc	gtc	gcg	cac	96
Leu	Gly	Pro	Thr	Val	Arg	Glu	Gly	Glu	Tyr	Val	Phe	Gly	Val	Ala	His	
			20					25					30			
atc	ttc	gcg	tcg	ttc	aac	gac	acc	ttc	atc	cac	gtg	acg	gat	ctg	tcc	144
Ile	Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	
		35				40					45					
ggc	agg	gag	acg	ctc	gtc	cgc	atc	acc	ggg	ggc	atg	aag	gtg	aaa	gct	192
Gly	Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	
	50					55					60					
gac	cgt	gat	gag	tca	tcc	cct	tat	gct	gcc	atg	ctt	gca	tcc	cag	gat	240
Asp	Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	
	65				70				75					80		
gtt	gca	cag	aga	tgc	aag	gag	ctt	gga	att	act	gct	ctg	cac	att	aag	288
Val	Ala	Gln	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	
			85						90					95		
ctc	cgt	gct	act	ggg	gga	aac	aag	aca	aaa	act	cct	ggg	cct	ggg	gct	336
Leu	Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	
			100					105					110			
caa	tct	gcg	ctt	aaa	gct	ctt	gca	cgt	tct	ggc	atg	aag	att	gga	cgc	384

## PhoenixTemp32470.tmp.txt

Gln Ser Ala Leu Lys Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 att gag gat gtt act cca gtc cca act gac agt acc cgc aga aag ggt 432  
 Ile Glu Asp Val Thr Pro Val Pro Thr Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 ggc aga aga gga agg agg ctg taa 456  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 960  
 <211> 151  
 <212> PRT  
 <213> Oryza sativa

<400> 960  
 Met Ser Gly Arg Lys Lys Thr Arg Glu Pro Lys Glu Glu Asn Val Thr  
 1 5 10 15  
 Leu Gly Pro Thr Val Arg Glu Gly Tyr Val Phe Gly Val Ala His  
 20 25 30  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser  
 35 40 45  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Lys Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Val Pro Thr Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 961  
 <211> 456  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> CDS  
 <222> (1)..(456)

<400> 961  
 atg tcg tcg aag agg aag acc agg gag ccc aag gag gag aat gtc acc 48  
 Met Ser Ser Lys Arg Lys Thr Arg Glu Pro Lys Glu Glu Asn Val Thr  
 1 5 10 15  
 ctt gga ccg gct gtc cgt gaa gga gag cat gtc ttt ggc gtt gct cac 96  
 Leu Gly Pro Ala Val Arg Glu Gly Glu His Val Phe Gly Val Ala His  
 20 25 30  
 atc ttt gca tcc ttc aat gac act ttc atc cat gtg act gac ttg tct 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser  
 35 40 45  
 ggg agg gaa acc ctg gtg cgg atc act ggt gga atg aag gtc aag gct 192  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gat cgt gat gag tct tca ccc tat gct gct atg ctt gca tct cag gat 240  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 gtt gct aca cgt tgc aag gag ctt ggt att acc gca ctg cac att aag 288  
 Val Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctc cgt gcc act gga ggc aac aag acc aag aca cct gga cct gga gct 336  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tct gct ctc agg gct ctt gct cgt tct ggg atg aaa att ggg cgc 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg

PhoenixTemp32470.tmp.txt

[illegible]

```
<210> 962
<211> 151
<212> PRT
<213> Triticum aestivum
```

<400>	962														
Met	Ser	Ser	Lys	Arg <sub>5</sub>	Lys	Thr	Arg	Glu	Pro <sub>10</sub>	Lys	Glu	Glu	Asn <sub>15</sub>	Val	Thr
Leu	Gly	Pro	Ala <sub>20</sub>	Val	Arg	Glu	Gly	Glu <sub>25</sub>	His	Val	Phe	Gly	Val <sub>30</sub>	Ala	His
Ile	Phe	Ala <sub>35</sub>	Ser	Phe	Asn	Asp	Thr <sub>40</sub>	Phe	Ile	His	Val	Thr <sub>45</sub>	Asp	Leu	Ser
Gly	Arg <sub>50</sub>	Glu	Thr	Leu	Val	Arg <sub>55</sub>	Ile	Thr	Gly	Gly	Met <sub>60</sub>	Lys	Val	Lys	Ala
Asp <sub>65</sub>	Arg	Asp	Glu	Ser	Ser <sub>70</sub>	Pro	Tyr	Ala	Ala	Met <sub>75</sub>	Leu	Ala	Ser	Gln	Asp <sub>80</sub>
Val	Ala	Thr	Arg	Cys <sub>85</sub>	Lys	Glu	Leu	Gly	Ile <sub>90</sub>	Thr	Ala	Leu	His	Ile <sub>95</sub>	Lys
Leu	Arg	Ala	Thr <sub>100</sub>	Gly	Gly	Asn	Lys	Thr <sub>105</sub>	Lys	Thr	Pro	Gly	Pro <sub>110</sub>	Gly	Ala
Gln	Ser	Ala <sub>115</sub>	Leu	Arg	Ala	Leu	Ala <sub>120</sub>	Arg	Ser	Gly	Met	Lys <sub>125</sub>	Ile	Gly	Arg
Ile	Glu <sub>130</sub>	Asp	Val	Thr	Pro	Val <sub>135</sub>	Pro	Thr	Asp	Ser	Thr <sub>140</sub>	Arg	Arg	Lys	Gly
Gly <sub>145</sub>	Arg	Arg	Gly	Arg	Arg <sub>150</sub>	Leu									

<210> 963  
<211> 453  
<212> DNA  
<213> Triticum aestivum

<220>  
<221> CDS  
<222> (1)..(453)

<400> 963																
atg	tcg	aag	agg	aaa	acc	agg	gag	cct	aag	gag	gag	aat	gtt	act	ctt	48
Met	Ser	Lys	Arg	Lys	Thr	Arg	Glu	Pro	Lys	Glu	Glu	Asn	Val	Thr	Leu	
1				5					10					15		
gga	cct	gct	gtc	cgt	gaa	ggg	gag	cat	gtc	ttc	gga	gtt	gct	cat	gtc	96
Gly	Pro	Ala	Val	Arg	Glu	Gly	Glu	His	Val	Phe	Gly	Val	Ala	His	Val	
			20					25					30			
ttt	gca	tca	ttc	aat	gac	aca	ttc	atc	cac	gtc	act	gac	ttg	tct	ggg	144
Phe	Ala	Ser	Phe	Asn	Asp	Thr	Phe	Ile	His	Val	Thr	Asp	Leu	Ser	Gly	
		35					40					45				
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Arg	Glu	Thr	Leu	Val	Arg	Ile	Thr	Gly	Gly	Met	Lys	Val	Lys	Ala	Asp	
	50					55					60					
cgt	gat	gag	tca	tca	cca	tat	gca	gct	atg	ctc	gct	tct	caa	gat	gtt	240
Arg	Asp	Glu	Ser	Ser	Pro	Tyr	Ala	Ala	Met	Leu	Ala	Ser	Gln	Asp	Val	
65					70				75						80	
gcg	acg	cgt	tgc	aag	gaa	ctt	ggc	atc	act	gct	ttg	cac	att	aag	ctc	288
Ala	Thr	Arg	Cys	Lys	Glu	Leu	Gly	Ile	Thr	Ala	Leu	His	Ile	Lys	Leu	
				85					90					95		
cgt	gcc	act	gga	ggc	aac	aag	acc	aag	act	cct	gga	cct	ggg	gct	caa	336
Arg	Ala	Thr	Gly	Gly	Asn	Lys	Thr	Lys	Thr	Pro	Gly	Pro	Gly	Ala	Gln	
			100					105					110			
tcc	gct	ctc	agg	gca	ctc	gct	cgt	tct	ggc	atg	aaa	att	gga	cgc	att	384
Ser	Ala	Leu	Arg	Ala	Leu	Ala	Arg	Ser	Gly	Met	Lys	Ile	Gly	Arg	Ile	
		115					120					125				

## PhoenixTemp32470.tmp.txt

gag gac gtg acc cct gtt ccc act gac agc act cgc aga aag ggc ggc 432  
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 <212> PRT  
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 20 25 30  
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 35 40 45  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp Val  
 65 70 75 80  
 Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
 115 120 125  
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 130 135 140  
 Arg Arg Gly Arg Arg Leu  
 145 150

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 Leu Gly Pro Ala Val Arg Glu Gly Glu His Val Phe Gly Val Ala His  
 20 25 30  
 atc ttt gca tcc ttc aat gac acc ttc atc cat gtg act gac ttg tct 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser  
 35 40 45  
 ggg agg gaa acc ctg gtg cgg atc act ggt ggc atg aag gtc aag gct 192  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gat cgt gat gaa tcg cca ccc tat gct gct atg ctt gca tct cag gat 240  
 Asp Arg Asp Glu Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 gtt gct acc cgt tgc aag gag ctt ggt atc acc gca ctg cac att aag 288  
 Val Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctc cgt gcc act gga ggc aac aag acc aag aca cct gga cct gga gcc 336  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tct gct ctc agg gct ctt gct cgt tct ggg atg aaa att ggg cgc 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 att gag gac gtg act cca gtt ccc act gac agc acc cgc cgg aag gga 432

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 gga agg agg gga agg agg ctg tag  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

456

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 20 25 30  
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 35 40 45  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ser Pro Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 Val Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Val Pro Thr Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

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 <212> DNA  
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 <221> CDS  
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 Leu Gly Pro Ala Val Arg Glu Gly Glu His Val Phe Gly Val Ala His  
 20 25 30  
 atc ttt gca tcc ttc aat gac acc ttc agg cat gtg act gac ttg tct  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Arg His Val Thr Asp Leu Ser  
 35 40 45  
 ggg agg gaa acc ctg gtg cgg atc act ggt ggc atg aag gtc aag gct  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gat cgt gat gaa tcg tca ccc tat gct gct atg ctt gca tct cag gat  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 gtt gct acc cgt tgc aag gag ctt ggt atc acc gca ctg cac att aag  
 Val Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctc cgg gcc act gga ggc aac aag acc aag aca cct gga cct gga gcc  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tct gat ctc agg gtt ctt gct cgt gct ggg atg aaa att ggg cgc  
 Gln Ser Asp Leu Arg Val Leu Ala Arg Ala Gly Met Lys Ile Gly Arg  
 115 120 125  
 att gag gac gtg act cca gta ccc act gac agc acc cgc cgg aag gga  
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 130 135 140 145

130 135 140 456  
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 Gly Arg Arg Gly Arg Arg Leu  
 145 150

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 <212> PRT  
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<400> 968  
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 20 25 30  
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 35 40 45  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 Val Ala Thr Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Asp Leu Arg Val Leu Ala Arg Ala Gly Met Lys Ile Gly Arg  
 115 120 125  
 Ile Glu Asp Val Thr Pro Val Pro Thr Asp Ser Thr Arg Arg Lys Gly  
 130 135 140  
 Gly Arg Arg Gly Arg Arg Leu  
 145 150

<210> 969  
 <211> 456  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(456)

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 ctt ggc ccc gct gtc cgc gag gga gaa ctc ttt ggc gtt gcg cac 96  
 Leu Gly Pro Ala Val Arg Glu Gly Glu His Val Phe Gly Val Ala His  
 20 25 30  
 atc ttc gcc tcc ttc aac gac act ttc atc cat gtg acg gat ctg tct 144  
 Ile Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser  
 35 40 45  
 gga agg gag acg ctc gtc cgc atc act ggt ggc atg aag gtt aaa gct 192  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 gat cgt gat gag tcc tcg cct tat gct gct atg ctt gcc tca cag gat 240  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 gtc gcg caa aga tgc aag gag ctt gga att act gca ttg cac att aag 288  
 Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 ctc cgt gct act ggt gga aac aag acc aaa acc cct ggc cct ggt gct 336  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 cag tct gct ctt aga gct ctt gct cga tct ggc atg aag ata ggc cgt 384  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
 115 120 125  
 att gag gat gtt act cca gtc ccc aca gac agc aca cgc aga aag ggt 432  
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 130 135 140

ggt aga aga gga agg agg ctg taa  
 Gly Arg Arg Gly Arg Arg Leu  
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<210> 970  
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 20 25 30  
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 35 40 45  
 Gly Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala  
 50 55 60  
 Asp Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ser Gln Asp  
 65 70 75 80  
 Val Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys  
 85 90 95  
 Leu Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala  
 100 105 110  
 Gln Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg  
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 130 135 140  
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 145 150

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 Gly Pro Thr Val Arg Glu Gly Glu Phe Val Phe Gly Val Ala His Ile 20 25 30  
 ttt gca tcc ttc aat gac acc ttc att cat gtc act gat ttg tct ggg 144  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly 35 40 45  
 agg gaa act ttg gtt cgg atc act ggt ggc atg aag gtt aag gct gat 192  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp 50 55 60  
 cgt gat gag tcg tct cct tat gct gct atg ctt gct gct caa gat gtt 240  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val 65 70 75 80  
 gca cag cgt tgc aag gag ctc ggt atc acc gcg ctg cac att aag ctt 288  
 Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu 85 90 95  
 cgt gca act gga ggc aac aag acc aag acc cct gga cct ggt gct cag 336  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln 100 105 110  
 tct gct ctc agg gct ctt gct cgt tct ggg atg aaa att gga cgc att 384  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile 115 120 125  
 gag gat gtt acc ccg ggt ccc act gac agc act cgc aga aag ggt ggt 432  
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 agg agg gga agg agg ctg tag 453



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145 150

<210> 972  
<211> 150  
<212> PRT  
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20 25 30  
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35 40 45  
Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
50 55 60  
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
65 70 75 80  
Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
85 90 95  
Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
100 105 110  
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
115 120 125  
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130 135 140  
Arg Arg Gly Arg Arg Leu  
145 150

<210> 973  
<211> 453  
<212> DNA  
<213> Zea mays

<220>  
<221> CDS  
<222> (1)..(453)

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1 5 10 15  
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Gly Pro Thr Val Arg Glu Gly Glu Phe Val Phe Gly Val Ala His Ile  
20 25 30  
ttt gca tcc ttc aat gac acc ttc att cat gtc act gat ttg tct ggg 144  
Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
35 40 45  
agg gaa act ttg gtt cgg atc act ggt ggc atg aag gtt aag gct gat 192  
Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
50 55 60  
cgt gat gag tcg tct cct tat gct gct atg ctt gct gct caa gat gtt 240  
Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
65 70 75 80  
gca cag cgt tgc aag gag ctc ggt atc acc gcg ctg cac att aag ctt 288  
Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
85 90 95  
cgt gca act gga ggc aac aag acc aag acc cct gga cct ggt gct cag 336  
Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
100 105 110  
tct gct ctc agg gct ctt gct cgt tct ggg atg aaa att gga cgc att 384  
Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
115 120 125  
gag gat gtt acc ccg gtt ccc act gac agc act cgc aga aag ggt ggt 432  
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130 135 140  
agg agg gga agg agg ctg tag 453  
Arg Arg Gly Arg Arg Leu

145

150

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 20 25 30  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Val Thr Asp Leu Ser Gly  
 35 40 45  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp  
 50 55 60  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
 65 70 75 80  
 Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
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 Arg Arg Gly Arg Arg Leu  
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 <212> DNA  
 <213> Zea mays

<220>  
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 <222> (1)..(453)

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 Gly Pro Thr Val Arg Glu Gly Glu Tyr Val Phe Gly Val Ala His Ile 20 25 30  
 ttt gca tcc ttc aat gac acc ttc att cat atc act gat ttg tct ggg 144  
 Phe Ala Ser Phe Asn Asp Thr Phe Ile His Ile Thr Asp Leu Ser Gly 35 40 45  
 agg gaa act ctg gtt cgg atc acc ggt ggc atg aag gtg aag gct gac 192  
 Arg Glu Thr Leu Val Arg Ile Thr Gly Gly Met Lys Val Lys Ala Asp 50 55 60  
 cgt gac gag tcg tca cct tac gct gct atg ctt gct gct caa gac gtc 240  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val 65 70 75 80  
 gca cag cgc tgc aag gag ctt ggc att act gca ctg cac att aag ctt 288  
 Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu 85 90 95  
 cgt gcc acc gga ggc aac aag acc aag acc ccc gga cct ggt gcc cag 336  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln 100 105 110  
 tct gcc ctc agg gcg ctt gct cgt tct ggg atg aaa atc gga cgc att 384  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile 115 120 125  
 gag gac gtt acc ccg gtc ccc acg gac agc act cgc aga aag ggc ggt 432  
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 agg agg gga agg agg ctg tag 453  
 Arg Arg Gly Arg Arg Leu 145 150

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 35 40 45  
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 50 55 60  
 Arg Asp Glu Ser Ser Pro Tyr Ala Ala Met Leu Ala Ala Gln Asp Val  
 65 70 75 80  
 Ala Gln Arg Cys Lys Glu Leu Gly Ile Thr Ala Leu His Ile Lys Leu  
 85 90 95  
 Arg Ala Thr Gly Gly Asn Lys Thr Lys Thr Pro Gly Pro Gly Ala Gln  
 100 105 110  
 Ser Ala Leu Arg Ala Leu Ala Arg Ser Gly Met Lys Ile Gly Arg Ile  
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 Arg Arg Gly Arg Arg Leu  
 145 150

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<220>  
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<400> 977  
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<210> 978  
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 <212> DNA  
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<220>  
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<400> 978  
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20

<210> 979  
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<220>  
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<220>  
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<220>  
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<220>  
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<220>  
<221> Variant  
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<223> Xaa in position 72 to 75 is any amino acid

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<220>  
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<222> (145)..(153)  
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<222> (155)..(155)
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<220>
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<222> (161)..(161)
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<220>
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<220>
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<222> (168)..(168)
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<220>
<221> Variant
<222> (170)..(170)
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<222> (186)..(186)
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<220>
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<220>
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<220>
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      20      25      30
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      35      40      45
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa His Xaa
      50      55      60
Xaa Xaa Xaa Phe Asn Asn Thr Xaa Xaa Xaa Xaa Thr Asp Xaa Xaa Gly
65      70      75      80
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      85      90      95

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PhoenixTemp32470.tmp.txt

Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Ala	Ala	Xaa	Xaa	Ala	Ala	Xaa	Xaa	Xaa
			100					105					110		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		115					120					125			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa
		130					135				140				
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Arg	Xaa	Xaa	Xaa	Xaa
145						150				155					160
Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				165				170							175
Xaa	Xaa	Xaa	Xaa	Xaa	Asp	Val	Thr	Pro	Xaa	Pro	His	Xaa	Xaa	Xaa	Arg
			180					185					190		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		195					200					205			
Xaa	Xaa	Arg	Arg												
		210													

<210> 980  
 <211> 21  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> protein pattern

<220>  
 <221> Variant  
 <222> (2)..(2)  
 <223> Xaa in position 2 is any amino acid

<220>  
 <221> Variant  
 <222> (3)..(3)  
 <223> Xaa in position 3 is Ala, Ile or Val

<220>  
 <221> Variant  
 <222> (4)..(4)  
 <223> Xaa in position 4 is any amino acid

<220>  
 <221> Variant  
 <222> (5)..(5)  
 <223> Xaa in position 5 is Ile or Val

<220>  
 <221> Variant  
 <222> (6)..(6)  
 <223> Xaa in position 6 is any amino acid

<220>  
 <221> Variant  
 <222> (7)..(7)  
 <223> Xaa in position 7 is Ala, Ser or Thr

<220>  
 <221> Variant  
 <222> (8)..(8)  
 <223> Xaa in position 8 is Gly, Asn, Ser or Thr

<220>  
 <221> Variant  
 <222> (11)..(11)  
 <223> Xaa in position 11 is Asp or Asn

<220>  
 <221> Variant  
 <222> (13)..(16)

<223> Xaa in position 13 to 16 is any amino acid

<220>

<221> Variant

<222> (17)..(17)

<223> Xaa in position 17 is Ala, Ser or Thr

<220>

<221> Variant

<222> (18)..(18)

<223> Xaa in position 18 is Asp, Asn or Thr

<220>

<221> Variant

<222> (19)..(20)

<223> Xaa in position 19 to 20 is any amino acid

<400> 980

Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Asn	Xaa	Thr	Xaa	Xaa	Xaa	Xaa
1			5				10						15	
Xaa	Xaa	Xaa	Xaa	Gly										
			20											

<210> 981

<211> 19

<212> PRT

<213> Artificial sequence

<220>

<223> protein pattern

<220>

<221> Variant

<222> (2)..(3)

<223> Xaa in position 2 to 3 is any amino acid

<220>

<221> Variant

<222> (4)..(4)

<223> Xaa in position 4 is Ile, Leu or Val

<220>

<221> Variant

<222> (5)..(6)

<223> Xaa in position 5 to 6 is any amino acid

<220>

<221> Variant

<222> (7)..(7)

<223> Xaa in position 7 is Ile, Leu or Val

<220>

<221> Variant

<222> (8)..(8)

<223> Xaa in position 8 is any amino acid

<220>

<221> Variant

<222> (10)..(10)

<223> Xaa in position 10 is any amino acid

<220>

<221> Variant

<222> (13)..(13)

<223> Xaa in position 13 is any amino acid

<220>

<221> Variant

&lt;222&gt; (15)..(15)

&lt;223&gt; Xaa in position 15 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (16)..(16)

&lt;223&gt; Xaa in position 16 is Asp or Asn

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (17)..(17)

&lt;223&gt; Xaa in position 17 is Gly or Ser

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (18)..(18)

&lt;223&gt; Xaa in position 18 is any amino acid

&lt;400&gt; 981

Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Thr Pro Xaa Pro Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Arg

&lt;210&gt; 982

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; AZOTOBACTER VINELANDII

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;223&gt; transl\_table=11

&lt;400&gt; 982

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Met His Arg Lys Val Phe Ala Gly Arg Val Phe Glu Arg Gln Val Ala	
1 5 10 15	
ctg atc ggc ggc ggc tgc tcc gac gtc ggc cgg gcg ctg gcg gta cgc	96
Leu Ile Gly Gly Gly Cys Ser Asp Val Gly Arg Ala Leu Ala Val Arg	
20 25 30	
ctg gcg cag gcc ggc gcg agc ctg gcg ctg ctc gac ctc gat gca act	144
Leu Ala Gln Ala Gly Ala Ser Leu Ala Leu Leu Asp Leu Asp Ala Thr	
35 40 45	
gcg ctg gac agc ctg gtc gag cac ctg gcc gac cat cac aac tgc gcg	192
Ala Leu Asp Ser Leu Val Glu His Leu Ala Asp His His Asn Cys Ala	
50 55 60	
gcg ctc gga ttg ccc tgc gac ctg acc gac gcg caa gcg gtg gag cgc	240
Ala Leu Gly Leu Pro Cys Asp Leu Thr Asp Ala Gln Ala Val Glu Arg	
65 70 75 80	
gcc gta acg ctg gtc ggc gag cgt ttc ggc ggc atc gat ctg ctc gcc	288
Ala Val Thr Leu Val Gly Glu Arg Phe Gly Gly Ile Asp Leu Leu Ala	
85 90 95	
tgc tgc gcc gtc gtc cat cac tgc ggc ggc atc tgc gac acc gcg ccg	336
Cys Cys Ala Val Val His His Cys Gly Gly Ile Cys Asp Thr Ala Pro	
100 105 110	
gaa gtg ttc cgg cgg gtc atg gag gtc aac ttt ttc ggc gcc ctg cat	384
Glu Val Phe Arg Arg Val Met Glu Val Asn Phe Phe Gly Ala Leu His	
115 120 125	
tgc gcc cgg gcg gcg cta ccc ggc ctg ctc gcg cgg cgc ggg cag atc	432
Cys Ala Arg Ala Ala Leu Pro Gly Leu Leu Ala Arg Arg Gly Gln Ile	
130 135 140	
gtc gtg gcc ggg gcg ctg ccc gcc ttc ggt ccg cag gcc ggc cgt	480
Val Val Ala Gly Ala Leu Pro Ala Phe Gly Pro Pro Gln Ala Gly Arg	
145 150 155 160	
ggc gcc gag gcc gcc agc cgg cag gcg ctg ctc ggg ttg ttc gag acg	528
Gly Ala Glu Ala Ala Ser Arg Gln Ala Leu Leu Gly Leu Phe Glu Thr	
165 170 175	
ctg cgc ctg gag gtc gcg gcg gac ggt gtc aac gtg atg ctg gtg tgt	576



## PhoenixTemp32470.tmp.txt

Leu	Arg	Leu	Glu	Val	Ala	Ala	Asp	Gly	Val	Asn	Val	Met	Leu	Val	Cys		
ccc	ggc	cgc	gcc	ggc	gat	ccg	gcg	tgc	gac	gac	ccg	tcc	ggc	gcc	gag	624	
Pro	Gly	Arg	Ala	Gly	Asp	Pro	Ala	Cys	Asp	Asp	Pro	Ser	Gly	Ala	Glu		
		195					200					205					
gcg	gcg	ggc	cgc	ttg	ccc	tcg	gcg	cag	gac	atc	gcc	gag	gcg	atc	ttc	672	
Ala	Ala	Gly	Arg	Leu	Pro	Ser	Ala	Gln	Asp	Ile	Ala	Glu	Ala	Ile	Phe		
		210				215					220						
cag	gga	gcg	ttg	cgc	cgc	cgc	cat	ctg	ctg	atg	ctg	ccc	ggc	tac	gac	720	
Gln	Gly	Ala	Leu	Arg	Arg	Arg	His	Leu	Leu	Met	Leu	Pro	Gly	Tyr	Asp		
225					230					235					240		
tgg	cgc	gcc	cgg	ctg	ctg	gcg	cgg	ctc	gcg	caa	tag					756	
Trp	Arg	Ala	Arg	Leu	Leu	Ala	Arg	Leu	Ala	Gln							
				245				250									

&lt;210&gt; 983

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; AZOTOBACTER VINELANDII

&lt;400&gt; 983

Met	His	Arg	Lys	Val	Phe	Ala	Gly	Arg	Val	Phe	Glu	Arg	Gln	Val	Ala		
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Leu	Ile	Gly	Gly	Cys	Ser	Asp	Val	Gly	Arg	Ala	Leu	Ala	Val	Arg			
			20				25						30				
Leu	Ala	Gln	Ala	Gly	Ala	Ser	Leu	Ala	Leu	Leu	Asp	Leu	Asp	Ala	Thr		
		35					40					45					
Ala	Leu	Asp	Ser	Leu	Val	Glu	His	Leu	Ala	Asp	His	His	Asn	Cys	Ala		
	50					55				60							
Ala	Leu	Gly	Leu	Pro	Cys	Asp	Leu	Thr	Asp	Ala	Gln	Ala	Val	Glu	Arg		
65				70					75						80		
Ala	Val	Thr	Leu	Val	Gly	Glu	Arg	Phe	Gly	Gly	Ile	Asp	Leu	Leu	Ala		
			85					90						95			
Cys	Cys	Ala	Val	Val	His	His	Cys	Gly	Gly	Ile	Cys	Asp	Thr	Ala	Pro		
			100					105					110				
Glu	Val	Phe	Arg	Arg	Val	Met	Glu	Val	Asn	Phe	Phe	Gly	Ala	Leu	His		
		115					120					125					
Cys	Ala	Arg	Ala	Ala	Leu	Pro	Gly	Leu	Leu	Ala	Arg	Arg	Gly	Gln	Ile		
	130					135					140						
Val	Val	Ala	Gly	Ala	Leu	Pro	Ala	Phe	Gly	Pro	Pro	Gln	Ala	Gly	Arg		
145					150					155					160		
Gly	Ala	Glu	Ala	Ala	Ser	Arg	Gln	Ala	Leu	Leu	Gly	Leu	Phe	Glu	Thr		
			165					170						175			
Leu	Arg	Leu	Glu	Val	Ala	Ala	Asp	Gly	Val	Asn	Val	Met	Leu	Val	Cys		
		180						185					190				
Pro	Gly	Arg	Ala	Gly	Asp	Pro	Ala	Cys	Asp	Asp	Pro	Ser	Gly	Ala	Glu		
		195					200					205					
Ala	Ala	Gly	Arg	Leu	Pro	Ser	Ala	Gln	Asp	Ile	Ala	Glu	Ala	Ile	Phe		
	210					215					220						
Gln	Gly	Ala	Leu	Arg	Arg	Arg	His	Leu	Leu	Met	Leu	Pro	Gly	Tyr	Asp		
225					230					235					240		
Trp	Arg	Ala	Arg	Leu	Leu	Ala	Arg	Leu	Ala	Gln							
				245				250									

&lt;210&gt; 984

&lt;211&gt; 1042

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (31)..(828)

&lt;400&gt; 984

gtggacacga	aacagctttt	gcattgcatc	atg	tcg	aag	aca	agg	atg	gac	ggc						54	
			Met	Ser	Lys	Thr	Arg	Met	Asp	Gly							
			1				5										
aag	gtg	gcc	atc	gtg	acc	ggc	ggc	gag	ggc	atc	ggc	gag	gag	gag	gag	102	
Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Ala		

## PhoenixTemp32470.tmp.txt

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10      15      20
gcg cgg ctg ttc gcg tcg tgc ggc gcg acg gtg gtc atc gcc gac gtc 150
Ala Arg Leu Phe Ala Ser Cys Gly Ala Thr Val Val Ile Ala Asp Val
25      30      35      40
cag gac gag ctg ggc gag gcg gtg gcg gcg tcg gtg gcg ggg ggc ggg 198
Gln Asp Glu Leu Gly Glu Ala Val Ala Ala Ser Val Ala Gly Gly Gly
45      50      55
tgc cgg tac gtg cgg tgc gac gtg acg gac gag gcg cag gtg gag gcg 246
Cys Arg Tyr Val Arg Cys Asp Val Thr Asp Glu Ala Gln Val Glu Ala
60      65      70
gcg gtg gcc gcc gcg gtg gcg gag cac ggg cgg ctc gac gtg atg gtg 294
Ala Val Ala Ala Ala Val Ala Glu His Gly Arg Leu Asp Val Met Val
75      80      85
agc aac gcc ggc gtg ctg ctc ccg acg ggg ccc gtc gtg gac atg gac 342
Ser Asn Ala Gly Val Leu Leu Pro Thr Gly Pro Val Val Asp Met Asp
90      95      100
ctc gcg gct ctg gac cgg gtg atg tcg gtg aac ttc cgc ggc gcg gcg 390
Leu Ala Ala Leu Asp Arg Val Met Ser Val Asn Phe Arg Gly Ala Ala
105      110      115      120
gcg tgc gtg aag cac gcg gcg cgc gcc atg gtg tcg cgc ggc acc cgc 438
Ala Cys Val Lys His Ala Ala Arg Ala Met Val Ser Arg Gly Thr Arg
125      130      135
ggc gcc atc gtg tgc acg gcg agc gtg gcg tcg tgc cag ggc ggg ttc 486
Gly Ala Ile Val Cys Thr Ala Ser Val Ala Ser Cys Gln Gly Gly Phe
140      145      150
ggg ccg gcg gcg tac acg gcg tcg aag cac gcg gtg ctg ggg ctg gtg 534
Gly Pro Ala Ala Tyr Thr Ala Ser Lys His Ala Val Leu Gly Leu Val
155      160      165
cgc gcg gcg gcc ggc gag ctc ggg cgg cac ggc gtg cgc gtg aac tgc 582
Arg Ala Ala Ala Gly Glu Leu Gly Arg His Gly Val Arg Val Asn Cys
170      175      180
gtg tcc ccc ggc ggc gtg gcg acg ccg ctg agc tgc ggg ctg acg ggg 630
Val Ser Pro Gly Gly Val Ala Thr Pro Leu Ser Cys Gly Leu Thr Gly
185      190      195      200
atg agc ccc gag gag atg gag gcg gcg gcg gag ccc cac aac gtg ctc 678
Met Ser Pro Glu Glu Met Glu Ala Ala Glu Pro His Asn Val Leu
205      210      215
cgc ggg aag gtg ctc aag gcg gcg gac gtc gcg gag gcc atg ctc ttc 726
Arg Gly Lys Val Leu Lys Ala Ala Asp Val Ala Glu Ala Met Leu Phe
220      225      230
ctc gcc tcc gac cag gcc gcc ttc gtc agc ggc cac aac ctc gtc gtc 774
Leu Ala Ser Asp Gln Ala Ala Phe Val Ser Gly His Asn Leu Val Val
235      240      245
gac ggc gcc acc acc gcc gtc aac tac gcc gtg ctc cag tcc gtc ggc 822
Asp Gly Ala Thr Thr Ala Val Asn Tyr Ala Val Leu Gln Ser Val Gly
250      255      260
ctg tgacacggac cgacgccatt aatttaattt aaaagaaaaa catatcttta 875
Leu
265
cgataaattt taccgcgttt tgactggaaa gatgatccct ttttcttatt aggcgatcaa 935

tggtgacgtg gtgtcatagc atgtggtttg taaaattgtg tttgttcggt tgtaatatta 995

tatgttggtt gccattgcat ctcatcatga tgcaaccttt tggaccc 1042

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&lt;210&gt; 985

&lt;211&gt; 265

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa

&lt;400&gt; 985

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Met Ser Lys Thr Arg Met Asp Gly Lys Val Ala Ile Val Thr Gly Gly
1      5      10      15
Ala Ser Gly Ile Gly Glu Ala Ala Ala Arg Leu Phe Ala Ser Cys Gly
20      25      30

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## PhoenixTemp32470.tmp.txt

Ala Thr Val Val Ile Ala Asp Val Gln Asp Glu Leu Gly Glu Ala Val  
 35 40 45  
 Ala Ala Ser Val Ala Gly Gly Gly Cys Arg Tyr Val Arg Cys Asp Val  
 50 55 60  
 Thr Asp Glu Ala Gln Val Glu Ala Ala Val Ala Ala Val Ala Glu  
 65 70 75 80  
 His Gly Arg Leu Asp Val Met Val Ser Asn Ala Gly Val Leu Leu Pro  
 85 90 95  
 Thr Gly Pro Val Val Asp Met Asp Leu Ala Ala Leu Asp Arg Val Met  
 100 105 110  
 Ser Val Asn Phe Arg Gly Ala Ala Ala Cys Val Lys His Ala Ala Arg  
 115 120 125  
 Ala Met Val Ser Arg Gly Thr Arg Gly Ala Ile Val Cys Thr Ala Ser  
 130 135 140  
 Val Ala Ser Cys Gln Gly Gly Phe Gly Pro Ala Ala Tyr Thr Ala Ser  
 145 150 155 160  
 Lys His Ala Val Leu Gly Leu Val Arg Ala Ala Ala Gly Glu Leu Gly  
 165 170 175  
 Arg His Gly Val Arg Val Asn Cys Val Ser Pro Gly Gly Val Ala Thr  
 180 185 190  
 Pro Leu Ser Cys Gly Leu Thr Gly Met Ser Pro Glu Glu Met Glu Ala  
 195 200 205  
 Ala Ala Glu Pro His Asn Val Leu Arg Gly Lys Val Leu Lys Ala Ala  
 210 215 220  
 Asp Val Ala Glu Ala Met Leu Phe Leu Ala Ser Asp Gln Ala Ala Phe  
 225 230 235 240  
 Val Ser Gly His Asn Leu Val Val Asp Gly Ala Thr Thr Ala Val Asn  
 245 250 255  
 Tyr Ala Val Leu Gln Ser Val Gly Leu  
 260 265

&lt;210&gt; 986

&lt;211&gt; 795

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Unidentified

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(795)

&lt;400&gt; 986

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1 5 10 15	
ctg ggc cag gcc ctg gcc ttg gag ctt tta agg cgg ggg gcg agg gtg	96
Leu Gly Gln Ala Leu Ala Leu Glu Leu Leu Arg Arg Gly Ala Arg Val	
20 25 30	
gcg gcg gtg gac cta agg tcg gag ggc ctc caa gaa acc atg gcc aag	144
Ala Ala Val Asp Leu Arg Ser Glu Gly Leu Gln Glu Thr Met Ala Lys	
35 40 45	
gcg gga agc cta ggg gag ggc tta agc ctc cac ccc ctg gac atc acc	192
Ala Gly Ser Leu Gly Glu Gly Leu Ser Leu His Pro Leu Asp Ile Thr	
50 55 60	
gac aag gag aag gtg gcc ggc ctg ccc gag gag gtg gaa cgg gtc cac	240
Asp Lys Glu Lys Val Ala Ala Leu Pro Glu Glu Val Glu Arg Val His	
65 70 75 80	
ggc cag gtg gac ggc ctc atc aac aac gcc ggg atc atc cag ccc ttt	288
Gly Gln Val Asp Gly Leu Ile Asn Asn Ala Gly Ile Ile Gln Pro Phe	
85 90 95	
aag cgc ctc ttg gac ctg gac gag gcg gcc atg gag cgc gtg atg cgg	336
Lys Arg Leu Leu Asp Leu Asp Glu Ala Ala Met Glu Arg Val Met Arg	
100 105 110	
gtg aac ttc tgg ggt acc ctc cac atg acc cgg gct ttt ctg ccc agg	384
Val Asn Phe Trp Gly Thr Leu His Met Thr Arg Ala Phe Leu Pro Arg	
115 120 125	
ctc ctc aag cgc ccc gag gcc cac ctg gtg aac gtc tcc agc atg ggg	432

## PhoenixTemp32470.tmp.txt

Leu	Leu	Lys	Arg	Pro	Glu	Ala	His	Leu	Val	Asn	Val	Ser	Ser	Met	Gly	
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Ala	Phe	Val	Pro	Val	Pro	Gly	Gln	Ala	Leu	Tyr	Gly	Ala	Ser	Lys	Ala	
145					150					155					160	
gcg	gtg	atg	ctc	ctc	acc	gag	gcc	ctc	tgg	gcc	gaa	ctc	cag	ggg	acc	528
Ala	Val	Met	Leu	Leu	Thr	Glu	Ala	Leu	Trp	Ala	Glu	Leu	Gln	Gly	Thr	
				165					170					175		
ccg	gta	cgc	gtc	acc	ctg	gtc	ctg	ccc	ggg	gcc	atg	cgc	acg	ggg	atc	576
Pro	Val	Arg	Val	Thr	Leu	Val	Leu	Pro	Gly	Ala	Met	Arg	Thr	Gly	Ile	
			180					185					190			
gcc	gag	cac	tcg	ggg	gtg	gaa	gcc	ccg	agg	gcg	gaa	ggg	gcg	aag	gtg	624
Ala	Glu	His	Ser	Gly	Val	Glu	Ala	Pro	Arg	Ala	Glu	Gly	Ala	Lys	Val	
		195					200					205				
ccc	gtc	ctc	gag	ccc	gag	gtg	gcg	gcc	aag	cgc	ctc	ctg	gac	gcc	gtg	672
Pro	Val	Leu	Glu	Pro	Glu	Val	Ala	Ala	Lys	Arg	Leu	Leu	Asp	Ala	Val	
	210				215						220					
gaa	cgg	gac	gcc	ttc	cga	gtg	ctc	ctg	ggc	cgg	gac	gcc	cag	acc	atg	720
Glu	Arg	Asp	Ala	Phe	Arg	Val	Leu	Leu	Gly	Arg	Asp	Ala	Gln	Thr	Met	
225					230					235					240	
gac	ctc	ctc	tat	cgc	tta	agc	ccc	gcc	ctc	gcc	gcc	cgg	atc	gtc	cag	768
Asp	Leu	Leu	Tyr	Arg	Leu	Ser	Pro	Ala	Leu	Ala	Ala	Arg	Ile	Val	Gln	
				245					250					255		
cgg	cgc	atg	gcc	cac	ctc	ctc	acc	tga								795
Arg	Arg	Met	Ala	His	Leu	Leu	Thr									
			260													

&lt;210&gt; 987

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Unidentified

&lt;400&gt; 987

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Leu	Gly	Gln	Ala	Leu	Ala	Leu	Glu	Leu	Leu	Arg	Arg	Gly	Ala	Arg	Val	
			20					25					30			
Ala	Ala	Val	Asp	Leu	Arg	Ser	Glu	Gly	Leu	Gln	Glu	Thr	Met	Ala	Lys	
		35					40					45				
Ala	Gly	Ser	Leu	Gly	Glu	Gly	Leu	Ser	Leu	His	Pro	Leu	Asp	Ile	Thr	
	50					55				60						
Asp	Lys	Glu	Lys	Val	Ala	Ala	Leu	Pro	Glu	Glu	Val	Glu	Arg	Val	His	
65					70					75					80	
Gly	Gln	Val	Asp	Gly	Leu	Ile	Asn	Asn	Ala	Gly	Ile	Ile	Gln	Pro	Phe	
				85					90					95		
Lys	Arg	Leu	Leu	Asp	Leu	Asp	Glu	Ala	Ala	Met	Glu	Arg	Val	Met	Arg	
		100						105					110			
Val	Asn	Phe	Trp	Gly	Thr	Leu	His	Met	Thr	Arg	Ala	Phe	Leu	Pro	Arg	
		115					120					125				
Leu	Leu	Lys	Arg	Pro	Glu	Ala	His	Leu	Val	Asn	Val	Ser	Ser	Met	Gly	
	130					135				140						
Ala	Phe	Val	Pro	Val	Pro	Gly	Gln	Ala	Leu	Tyr	Gly	Ala	Ser	Lys	Ala	
145					150					155					160	
Ala	Val	Met	Leu	Leu	Thr	Glu	Ala	Leu	Trp	Ala	Glu	Leu	Gln	Gly	Thr	
				165					170					175		
Pro	Val	Arg	Val	Thr	Leu	Val	Leu	Pro	Gly	Ala	Met	Arg	Thr	Gly	Ile	
			180					185					190			
Ala	Glu	His	Ser	Gly	Val	Glu	Ala	Pro	Arg	Ala	Glu	Gly	Ala	Lys	Val	
		195					200					205				
Pro	Val	Leu	Glu	Pro	Glu	Val	Ala	Ala	Lys	Arg	Leu	Leu	Asp	Ala	Val	
	210					215					220					
Glu	Arg	Asp	Ala	Phe	Arg	Val	Leu	Leu	Gly	Arg	Asp	Ala	Gln	Thr	Met	
225					230					235					240	
Asp	Leu	Leu	Tyr	Arg	Leu	Ser	Pro	Ala	Leu	Ala	Ala	Arg	Ile	Val	Gln	
				245					250					255		
Arg	Arg	Met	Ala	His	Leu	Leu	Thr									

260

<210> 988  
 <211> 9994  
 <212> DNA  
 <213> Streptomyces avermitilis

<220>  
 <221> CDS  
 <222> (508)..(1332)  
 <223> transl\_table=11

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## PhoenixTemp32470.tmp.txt

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Leu Arg Ser Val Ala Arg Asp Ser Ala Val Val Thr Val Thr Ala Glu			
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## PhoenixTemp32470.tmp.txt

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Glu Val Ala Asp Val Ser Asp Gly Ala Ala Met Glu Arg Leu Pro Glu  
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Arg Val Ala Glu Thr Tyr Gly Val Val Asp Leu Leu Val Asn Asn Ala  
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Gln Arg Thr Leu Gly Val Asn Leu Trp Gly Val Ile His Gly Cys Arg  
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## PhoenixTemp32470.tmp.txt

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 Ser Ala Glu Lys Val Ala Ala Ala Val Leu Arg Ser Val Ala Arg Asp  
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Phe Glu Leu Asn Val Phe Ser Leu Trp Arg Met Thr Arg Glu Ala Leu	
115 120 125	
ccg ctg ctg cgc aag cgg cgt ggc gct cag gtg gtc aac gtc agc tcc	432
Pro Leu Leu Arg Lys Arg Arg Gly Ala Gln Val Val Asn Val Ser Ser	
130 135 140	
gtg ctg ggc cac cgg gga ctg ccg ctg ctg ggc ggc tac tgc gcg tcc	480
Val Leu Gly His Arg Gly Leu Pro Leu Leu Gly Gly Tyr Cys Ala Ser	
145 150 155 160	
aag gcc gcg gtg aat gcg atg acg gag tcg ctg cgc gcg gag ctg gcc	528
Lys Ala Ala Val Asn Ala Met Thr Glu Ser Leu Arg Ala Glu Leu Ala	
165 170 175	
gcc gag ggc atc cgg gta ctg ctc gtg cct ggc ttc acc gaa agc	576
Ala Glu Gly Ile Arg Val Leu Leu Val Ser Pro Gly Phe Thr Glu Ser	
180 185 190	
gac ttc cgg gag aac cgc ctt cat gcg gag ggc tgg cga cag gac gcc	624
Asp Phe Arg Glu Asn Arg Leu His Ala Glu Gly Trp Arg Gln Asp Ala	
195 200 205	
att ccg ctg aag gcc atg tcc gcg gaa gaa gtc gcc gac gca atg gtt	672

## PhoenixTemp32470.tmp.txt

Ile	Pro	Leu	Lys	Ala	Met	Ser	Ala	Glu	Glu	Val	Ala	Asp	Ala	Met	Val		
210	210					215					220						
cgt	gcg	agc	cgg	agt	gga	cgg	cgc	gac	acc	gtg	ctc	acg	ctg	ccc	ggc	720	
Arg	Ala	Ser	Arg	Ser	Gly	Arg	Arg	Asp	Thr	Val	Leu	Thr	Leu	Pro	Gly		
225					230					235					240		
cgg	gtg	atg	gtg	gtg	gcc	aac	cgg	tgg	gtg	cct	tcc	ctg	ttc	gac	cgt	768	
Arg	Val	Met	Val	Val	Ala	Asn	Arg	Trp	Val	Pro	Ser	Leu	Phe	Asp	Arg		
				245					250					255			
gtc	gcc	cgc	cgc	atg	gcg	ctt	gct	tcg	aag	aag	aag	gac	gca	tga		813	
Val	Ala	Arg	Arg	Met	Ala	Leu	Ala	Ser	Lys	Lys	Lys	Asp	Ala		270		
			260					265									

&lt;210&gt; 991

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Myxococcus xanthus

&lt;400&gt; 991

Met	Lys	Thr	Gln	Pro	Phe	Lys	Gly	Arg	Val	Val	Leu	Ile	Thr	Gly	Ala		
1				5					10					15			
Ser	Gly	Gly	Ile	Gly	Arg	Thr	Ala	Ala	Arg	Ala	Tyr	Ala	Ala	Ala	Gly		
			20					25					30				
Ala	Asp	Val	Val	Leu	Ala	Ala	Arg	Leu	Pro	Glu	Leu	Glu	Asp	Ala			
		35					40				45						
Ala	Arg	Glu	Val	Ala	Ser	Leu	Gly	Val	Arg	Ala	Leu	Pro	Val	Arg	Cys		
	50					55					60						
Asp	Val	Thr	Val	Gly	Asp	Asp	Val	Thr	Arg	Leu	Val	Arg	Glu	Thr	Asp		
65				70						75				80			
Ala	Ala	Phe	Gly	Gly	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Gln	Gly		
			85					90					95				
Leu	Tyr	Gly	Pro	Leu	Glu	Gly	Val	Gly	Glu	Glu	Gln	Leu	Arg	Gln	Val		
		100					105					110					
Phe	Glu	Leu	Asn	Val	Phe	Ser	Leu	Trp	Arg	Met	Thr	Arg	Glu	Ala	Leu		
	115					120					125						
Pro	Leu	Leu	Arg	Lys	Arg	Arg	Gly	Ala	Gln	Val	Val	Asn	Val	Ser	Ser		
	130					135				140							
Val	Leu	Gly	His	Arg	Gly	Leu	Pro	Leu	Leu	Gly	Gly	Tyr	Cys	Ala	Ser		
145					150					155				160			
Lys	Ala	Ala	Val	Asn	Ala	Met	Thr	Glu	Ser	Leu	Arg	Ala	Glu	Leu	Ala		
			165						170					175			
Ala	Glu	Gly	Ile	Arg	Val	Leu	Leu	Val	Ser	Pro	Gly	Phe	Thr	Glu	Ser		
		180					185						190				
Asp	Phe	Arg	Glu	Asn	Arg	Leu	His	Ala	Glu	Gly	Trp	Arg	Gln	Asp	Ala		
	195					200					205						
Ile	Pro	Leu	Lys	Ala	Met	Ser	Ala	Glu	Glu	Val	Ala	Asp	Ala	Met	Val		
	210					215					220						
Arg	Ala	Ser	Arg	Ser	Gly	Arg	Arg	Asp	Thr	Val	Leu	Thr	Leu	Pro	Gly		
225					230					235					240		
Arg	Val	Met	Val	Val	Ala	Asn	Arg	Trp	Val	Pro	Ser	Leu	Phe	Asp	Arg		
			245						250					255			
Val	Ala	Arg	Arg	Met	Ala	Leu	Ala	Ser	Lys	Lys	Lys	Asp	Ala		270		
			260					265									

&lt;210&gt; 992

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Myxococcus xanthus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;223&gt; transl\_table=11

&lt;400&gt; 992

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Met	Arg	Gly	Lys	Thr	Val	Val	Val	Thr	Gly	Ala	Ser	Ala	Gly	Ile	Gly		
1				5					10					15			
gag	gcg	ctg	gcg	gtg	gtg	ctg	gcc	gga	cgc	ggc	gcc	aac	ctg	gtg	ctg	96	
Glu	Ala	Leu	Ala	Val	Val	Leu	Ala	Gly	Arg	Gly	Ala	Asn	Leu	Val	Leu		

## PhoenixTemp32470.tmp.txt

																20																	25																	30																																		
gcg	gcg	cga	aat	gag	gaa	gcg	ctc	cag	cgg	gtg	aag	gcc	cgg	tgc	gag		144																																																																			
Ala	Ala	Arg	Asn	Glu	Glu	Ala	Leu	Gln	Arg	Val	Lys	Ala	Arg	Cys	Glu																																																																					
																35																	40																	45																																		
tcg	gcc	ggc	ggg	cgc	gcg	gtg	gta	gtg	ccc	acc	gat	gta	ggg	gac	gcg		192																																																																			
Ser	Ala	Gly	Gly	Arg	Ala	Val	Val	Val	Pro	Thr	Asp	Val	Gly	Asp	Ala																																																																					
																50																	55																	60																																		
gag	gcc	tgc	cgc	cac	ctg	gtg	gag	cgg	gcg	gtg	gag	gcc	ttt	ggc	ggc		240																																																																			
Glu	Ala	Cys	Arg	His	Leu	Val	Glu	Arg	Ala	Val	Glu	Ala	Phe	Gly	Gly																																																																					
																65																	70																	75																	80																	
gtc	gac	gtg	ctg	gtc	aac	aac	gcg	ggc	gtg	acg	atg	gac	gcg	cgc	gtg		288																																																																			
Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Thr	Met	Asp	Ala	Arg	Val																																																																					
																85																	90																	95																																		
gac	gag	gtg	aag	gac	ctg	tcc	ctc	ttc	gac	cgg	ctg	atg	cgc	atc	aac		336																																																																			
Asp	Glu	Val	Lys	Asp	Leu	Ser	Leu	Phe	Asp	Arg	Leu	Met	Arg	Ile	Asn																																																																					
																100																	105																	110																																		
tac	ctg	ggc	ggc	gtg	tac	tgc	acc	cac	cac	gcc	ctg	ccc	cac	ctc	aag		384																																																																			
Tyr	Leu	Gly	Ala	Val	Tyr	Cys	Thr	His	His	Ala	Leu	Pro	His	Leu	Lys																																																																					
																115																	120																	125																																		
gcg	cgg	cgc	gga	ctg	gtg	gtg	gcc	gtg	tcg	tcc	ctc	acg	ggc	aag	acg		432																																																																			
Ala	Arg	Arg	Gly	Leu	Val	Val	Ala	Val	Ser	Ser	Leu	Thr	Gly	Lys	Thr																																																																					
																130																	135																	140																																		
ggc	gtg	ccc	aac	cgc	agc	ggc	tac	gcg	gcc	agc	aag	cac	gcc	atg	cac		480																																																																			
Gly	Val	Pro	Asn	Arg	Ser	Gly	Tyr	Ala	Ala	Ser	Lys	His	Ala	Met	His																																																																					
																145																	150																	155																	160																	
ggc	ttc	ttc	gac	tcg	ctg	cgc	atc	gag	ctg	cgc	ggc	acc	ggg	gtg	gac		528																																																																			
Gly	Phe	Phe	Asp	Ser	Leu	Arg	Ile	Glu	Leu	Arg	Gly	Thr	Gly	Val	Asp																																																																					
																165																	170																	175																																		
gtg	acg	gtg	gtg	tgc	ccc	ggc	ttc	gtc	gcc	acc	aac	atc	cgc	gac	agc		576																																																																			
Val	Thr	Val	Val	Cys	Pro	Gly	Phe	Val	Ala	Thr	Asn	Ile	Arg	Asp	Ser																																																																					
																180																	185																	190																																		
gcg	ctg	ggc	gcg	gac	ggc	cag	ccc	gtg	cgg	cag	agc	aag	cac	gac	gag		624																																																																			
Ala	Leu	Gly	Ala	Asp	Gly	Gln	Pro	Val	Arg	Gln	Ser	Lys	His	Asp	Glu																																																																					
																195																	200																	205																																		
agc	gcg	ggc	aac	atg	gac	gtg	gac	acc	tgc	gtg	gcc	atc	atc	ctg	cgc		672																																																																			
Ser	Ala	Gly	Asn	Met	Asp	Val	Asp	Thr	Cys	Val	Ala	Ile	Ile	Leu	Arg																																																																					
																210																	215																	220																																		
gcc	atg	gag	cgc	cgc	gag	cgc	gag	gtg	gtg	atg	acc	acc	aag	gcc	cgc		720																																																																			
Ala	Met	Glu	Arg	Arg	Glu	Arg	Glu	Val	Val	Met	Thr	Thr	Lys	Ala	Arg																																																																					
																225																	230																	235																	240																	
gtc	gcc	cag	ttc	ctc	aag	ctg	gtg	gcc	ccg	ggc	gtg	gtg	gac	cgc																																																																						

<210> 993  
<211> 266  
<212> PRT  
<213> Myxococcus xanthus

<400>	993														
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Glu	Ala	Leu	Ala	Val	Val	Leu	Ala	Gly	Arg	Gly	Ala	Asn	Leu	Val	Leu
			20					25					30		
Ala	Ala	Arg	Asn	Glu	Glu	Ala	Leu	Gln	Arg	Val	Lys	Ala	Arg	Cys	Glu
		35					40					45			
Ser	Ala	Gly	Gly	Arg	Ala	Val	Val	Val	Pro	Thr	Asp	Val	Gly	Asp	Ala
	50					55					60				
Glu	Ala	Cys	Arg	His	Leu	Val	Glu	Arg	Ala	Val	Glu	Ala	Phe	Gly	Gly
65					70					75					80
Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Thr	Met	Asp	Ala	Arg	Val
				85					90					95	
Asp	Glu	Val	Lys	Asp	Leu	Ser	Leu	Phe	Asp	Arg	Leu	Met	Arg	Ile	Asn
			100					105					110		
Tyr	Leu	Gly	Ala	Val	Tyr	Cys	Thr	His	His	Ala	Leu	Pro	His	Leu	Lys
		115					120					125			

## PhoenixTemp32470.tmp.txt

Ala Arg Arg Gly Leu Val Val Ala Val Ser Ser Leu Thr Gly Lys Thr  
 130 135 140  
 Gly Val Pro Asn Arg Ser Gly Tyr Ala Ala Ser Lys His Ala Met His  
 145 150 155 160  
 Gly Phe Phe Asp Ser Leu Arg Ile Glu Leu Arg Gly Thr Gly Val Asp  
 165 170 175  
 Val Thr Val Val Cys Pro Gly Phe Val Ala Thr Asn Ile Arg Asp Ser  
 180 185 190  
 Ala Leu Gly Ala Asp Gly Gln Pro Val Arg Gln Ser Lys His Asp Glu  
 195 200 205  
 Ser Ala Gly Asn Met Asp Val Asp Thr Cys Val Ala Ile Ile Leu Arg  
 210 215 220  
 Ala Met Glu Arg Arg Glu Arg Glu Val Val Met Thr Thr Lys Ala Arg  
 225 230 235 240  
 Val Ala Gln Phe Leu Lys Leu Val Ala Pro Gly Val Val Asp Arg Ile  
 245 250 255  
 Thr Ala Lys Thr Ile Gln Asp Arg Arg Arg

&lt;210&gt; 994

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Micromonospora sp.; strain 046-EC011

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;400&gt; 994

atg gaa ctg acc gga atc gag tcg aag gtc gcc ctg gtc acg ggc gcg	48
Met Glu Leu Thr Gly Ile Glu Ser Lys Val Ala Leu Val Thr Gly Ala	
1 5 10 15	
ggg cag ggc atc ggc gcc gcc gtg gcc ggt gtc ctg gcg agg gcg ggc	96
Gly Gln Gly Ile Gly Ala Ala Val Ala Gly Val Leu Ala Arg Ala Gly	
20 25 30	
gcg cag gtg gcg gcc gtg gac cgc aac gcc gag gcg ctg acc gtc	144
Ala Gln Val Ala Ala Val Asp Arg Asn Ala Glu Ala Leu Thr Thr Val	
35 40 45	
gtg acg aag ctc gcc gcc gag ggc gac tcg gcg cgc gcc tac tgc gtc	192
Val Thr Lys Leu Ala Ala Glu Gly Asp Ser Ala Arg Ala Tyr Cys Val	
50 55 60	
gac gtg tgc gac agc gag gcg gtg gac gcg ctg gtg cgc cgg gtc gag	240
Asp Val Cys Asp Ser Glu Ala Val Asp Ala Leu Val Arg Arg Val Glu	
65 70 75 80	
gac gag atg ggg ccg gtc gcc atc ctg gtc aac gcc gcc ggc gtg ctg	288
Asp Glu Met Gly Pro Val Ala Ile Leu Val Asn Ala Ala Gly Val Leu	
85 90 95	
cac acc gga cgg gtc gtc gag ctg tcg gac cgg cag tgg cgc cgg acc	336
His Thr Gly Arg Val Val Glu Leu Ser Asp Arg Gln Trp Arg Arg Thr	
100 105 110	
ttc tcg gtg aac gcc gac ggc gtg ttc cac gtg tcc cgg gcg gtg gcg	384
Phe Ser Val Asn Ala Asp Gly Val Phe His Val Ser Arg Ala Val Ala	
115 120 125	
cgg cgg atg gtg ggc cgc cgt cgt ggc gcg atc gtc acc gtg gcg tcg	432
Arg Arg Met Val Gly Arg Arg Arg Gly Ala Ile Val Thr Val Ala Ser	
130 135 140	
aac gcc gcc ggg gtg ccg cgt acc gag atg gcc gcg tac gcc gcc tcc	480
Asn Ala Ala Gly Val Pro Arg Thr Glu Met Ala Ala Tyr Ala Ala Ser	
145 150 155 160	
aag gcc gcg tcc gcg cag ttc acc cgc tgc ctg ggg ctt gag ctg tcc	528
Lys Ala Ala Ser Ala Gln Phe Thr Arg Cys Leu Gly Leu Glu Leu Ser	
165 170 175	
ggc tac ggc atc cgg tgc aac gtg gtc ccc ggc tcc acc gac acc	576
Gly Tyr Gly Ile Arg Cys Asn Val Val Ser Pro Gly Ser Thr Asp Thr	
180 185 190	
ccc atg ctg cgg gcc atg ctc ggc gag ggc gcc gac ccg agc gcg gtg	624
Pro Met Leu Arg Ala Met Leu Gly Glu Gly Ala Asp Pro Ser Ala Val	
195 200 205	
atc gag ggc acg ccg ggc gcg tac cgc gtc ggc atc ccg ctg cgc aag	672



## PhoenixTemp32470.tmp.txt

Ile	Glu	Gly	Thr	Pro	Gly	Ala	Tyr	Arg	Val	Gly	Ile	Pro	Leu	Arg	Lys	
210	210					215				220	220					
ctg	gcc	cag	ccg	cgc	gac	gtg	gcc	gag	gcg	gtc	gcc	tat	ctg	gtg	tcc	720
Leu	Ala	Gln	Pro	Arg	Asp	Val	Ala	Glu	Ala	Val	Ala	Tyr	Leu	Val	Ser	
225					230					235					240	
gac	cag	gcg	ggc	cac	gtg	acc	atg	cac	gac	ctg	tac	gtc	gac	ggc	ggc	768
Asp	Gln	Ala	Gly	His	Val	Thr	Met	His	Asp	Leu	Tyr	Val	Asp	Gly	Gly	
				245					250					255		
gcg	gcc	ctg	cac	gtg	tga											786
Ala	Ala	Leu	His	Val												
			260													

&lt;210&gt; 995

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Micromonospora sp.; strain 046-EC011

&lt;400&gt; 995

Met	Glu	Leu	Thr	Gly	Ile	Glu	Ser	Lys	Val	Ala	Leu	Val	Thr	Gly	Ala	
1				5					10					15		
Gly	Gln	Gly	Ile	Gly	Ala	Ala	Val	Ala	Gly	Val	Leu	Ala	Arg	Ala	Gly	
			20					25					30			
Ala	Gln	Val	Ala	Ala	Val	Asp	Arg	Asn	Ala	Glu	Ala	Leu	Thr	Thr	Val	
		35				40						45				
Val	Thr	Lys	Leu	Ala	Ala	Glu	Gly	Asp	Ser	Ala	Arg	Ala	Tyr	Cys	Val	
	50					55					60					
Asp	Val	Cys	Asp	Ser	Glu	Ala	Val	Asp	Ala	Leu	Val	Arg	Arg	Val	Glu	
65					70					75					80	
Asp	Glu	Met	Gly	Pro	Val	Ala	Ile	Leu	Val	Asn	Ala	Ala	Gly	Val	Leu	
			85					90						95		
His	Thr	Gly	Arg	Val	Val	Glu	Leu	Ser	Asp	Arg	Gln	Trp	Arg	Arg	Thr	
		100						105					110			
Phe	Ser	Val	Asn	Ala	Asp	Gly	Val	Phe	His	Val	Ser	Arg	Ala	Val	Ala	
	115					120						125				
Arg	Arg	Met	Val	Gly	Arg	Arg	Gly	Ala	Ile	Val	Thr	Val	Ala	Ser		
	130					135				140						
Asn	Ala	Ala	Gly	Val	Pro	Arg	Thr	Glu	Met	Ala	Ala	Tyr	Ala	Ala	Ser	
145					150					155					160	
Lys	Ala	Ala	Ser	Ala	Gln	Phe	Thr	Arg	Cys	Leu	Gly	Leu	Glu	Leu	Ser	
			165						170					175		
Gly	Tyr	Gly	Ile	Arg	Cys	Asn	Val	Val	Ser	Pro	Gly	Ser	Thr	Asp	Thr	
		180						185					190			
Pro	Met	Leu	Arg	Ala	Met	Leu	Gly	Glu	Gly	Ala	Asp	Pro	Ser	Ala	Val	
	195					200						205				
Ile	Glu	Gly	Thr	Pro	Gly	Ala	Tyr	Arg	Val	Gly	Ile	Pro	Leu	Arg	Lys	
	210					215					220					
Leu	Ala	Gln	Pro	Arg	Asp	Val	Ala	Glu	Ala	Val	Ala	Tyr	Leu	Val	Ser	
225					230					235					240	
Asp	Gln	Ala	Gly	His	Val	Thr	Met	His	Asp	Leu	Tyr	Val	Asp	Gly	Gly	
				245					250					255		
Ala	Ala	Leu	His	Val												
			260													

&lt;210&gt; 996

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Streptomyces cyaneogriseus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 996

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Met	Asp	Arg	Tyr	Ala	Lys	Arg	Phe	Glu	Asp	Arg	Leu	Val	Leu	Val	Thr	
1				5				10					15			
ggg	gcg	ggg	agc	ggc	atc	ggg	cgg	gcg	acc	gcc	tgc	cgg	ttc	ggt	gcc	96
Gly	Ala	Gly	Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Cys	Arg	Phe	Gly	Ala	

## PhoenixTemp32470.tmp.txt

																20																	25																	30																	
gcc Ala	ggg Gly	gcg Ala	cgg Arg	ctg Leu	gtg Val	tgt Cys	gtg Val	gac Asp	cgg Arg	gac Asp	ggg Gly	ccc Pro	ggc Gly	gcg Ala	gag Glu	144																																																			
		35					40					45																																																							
gcg Ala	acc Thr	gcc Ala	gaa Glu	ctg Leu	gcg Ala	cgt Arg	gcg Ala	cgg Arg	ggg Gly	gcg Ala	cgg Arg	gcg Ala	gcg Ala	tgc Cys	gcc Ala	192																																																			
		50					55					60																																																							
gag Glu	gtg Val	gcc Ala	gac Asp	gtc Val	tcg Ser	gac Asp	gag Glu	gtg Val	gcg Ala	atg Met	gag Glu	cgg Arg	ctc Leu	gcc Ala	gcg Ala	240																																																			
		65					70					75																																																							
cgc Arg	gtc Val	acg Thr	gcc Ala	gcg Ala	cac His	ggc Gly	gtg Val	ctg Leu	gac Asp	gtg Val	ctc Leu	gtg Val	aac Asn	aat Asn	gcc Ala	288																																																			
			85					90					95																																																						
ggt Gly	atc Ile	ggc Gly	atg Met	tcg Ser	ggg Gly	cgg Arg	ttt Phe	ctc Leu	gac Asp	acg Thr	tcg Ser	gcc Ala	gag Glu	gac Asp	tgg Trp	336																																																			
		100					105					110																																																							
cgc Arg	cgc Arg	acc Thr	ctg Leu	ggg Gly	gtg Val	aat Asn	ctg Leu	tgg Trp	ggc Gly	gtc Val	atc Ile	cac His	ggg Gly	tgc Cys	cgg Arg	384																																																			
		115					120					125																																																							
ctc Leu	ctc Leu	ggc Gly	cgg Arg	ggc Gly	atg Met	gcc Ala	gag Glu	cgc Arg	cgg Arg	cag Gln	ggc Gly	ggt Gly	cac His	atc Ile	gtg Val	432																																																			
		130					135					140																																																							
acg Thr	gtg Val	gcc Ala	tcg Ser	gcg Ala	gcc Ala	gcg Ala	ttc Phe	cag Gln	ccg Pro	acc Thr	cgg Arg	gtc Val	gtt Val	ccg Pro	gtg Val	480																																																			
		145					150					155																																																							
tac Tyr	gcc Ala	acc Thr	agc Ser	aag Lys	gcc Ala	gcg Ala	gcc Ala	ctg Leu	atg Met	ctg Leu	agc Ser	gag Glu	tgt Cys	ctg Leu	cgc Arg	528																																																			
			165					170					175																																																						
gcg Ala	gag Glu	ttg Leu	gcg Ala	gag Glu	ttc Phe	ggc Gly	atc Ile	ggt Gly	gtg Val	agc Ser	gtg Val	gtc Val	tgc Cys	ccc Pro	ggc Gly	576																																																			
		180					185					190																																																							
ctg Leu	gtc Val	cgt Arg	acg Thr	ccg Pro	ttc Phe	gcg Ala	tcc Ser	gcg Ala	atg Met	tac Tyr	ttc Phe	gcc Ala	ggc Gly	gcg Ala	tcc Ser	624																																																			
		195					200					205																																																							
ccc Pro	gac Asp	gag Glu	cac His	acc Thr	cgg Arg	ctg Leu	cgt Arg	gag Glu	tcc Ser	tcc Ser	gcc Ala	cgc Arg	cgc Arg	ttc Phe	gcg Ala	672																																																			
		210					215					220																																																							
ggc Gly	cgc Arg	ggc Gly	tgc Cys	ccg Pro	ccg Pro	gag Glu	aag Lys	gtc Val	gcg Ala	gac Asp	gcc Ala	gtc Val	ctg Leu	cgc Arg	gcg Ala	720																																																			
		225					230					235																																																							
atc Ile	atg Met	cgg Arg	acg Thr	gcc Ala	ttg Leu	ccg Pro	acg Thr	gtg Val	acc Thr	ggg Gly	tcg Ser	acg Thr	ccg Pro	tag		765																																																			
			245					250																																																											

<210> 997

<211> 254

<212> PRT

<213> Streptomyces cyaneogriseus

<400> 997

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Ala	Gly	Ala	Arg	Leu	Val	Cys	Val	Asp	Arg	Asp	Gly	Pro	Gly	Ala	Glu
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Glu	Val	Ala	Asp	Val	Ser	Asp	Glu	Val	Ala	Met	Glu	Arg	Leu	Ala	Ala
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Arg	Val	Thr	Ala	Ala	His	Gly	Val	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala
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Gly	Ile	Gly	Met	Ser	Gly	Arg	Phe	Leu	Asp	Thr	Ser	Ala	Glu	Asp	Trp
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Arg	Arg	Thr	Leu	Gly	Val	Asn	Leu	Trp	Gly	Val	Ile	His	Gly	Cys	Arg
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Leu	Leu	Gly	Arg	Gly	Met	Ala	Glu	Arg	Arg	Gln	Gly	Gly	His	Ile	Val
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Thr	Val	Ala	Ser	Ala	Ala	Ala	Phe	Gln	Pro	Thr	Arg	Val	Val	Pro	Val

## PhoenixTemp32470.tmp.txt

145 Tyr Ala Thr Ser Lys 150 Ala Ala Ala Leu Met 155 Leu Ser Glu Cys Leu Arg  
 Ala Glu Leu Ala Glu 165 Phe Gly Ile Gly Val Ser Val Val Cys 175 Pro Gly  
 Leu Val Arg Thr 180 Pro Phe Ala Ser 185 Ala Met Tyr Phe Ala Gly Ala Ser  
 Pro Asp 195 Glu His Thr Arg Leu 200 Arg Glu Ser Ser Ala Arg Arg Phe Ala  
 Gly Arg Gly Cys Pro 210 Pro Glu Lys Val Ala Asp 220 Ala Val Leu Arg Ala  
 225 Ile Met Arg Thr Ala 230 Leu Pro Thr Val Thr 235 Gly Ser Thr Pro 240  
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&lt;210&gt; 998

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

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&lt;400&gt; 998

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gct	agc	ggg	att	gga	gcc	gaa	gcg	gtt	agg	ctg	ttc	acg	gac	cac	gga	96
Ala	Ser	Gly	Ile	Gly	Ala	Glu	Ala	Val	Arg	Leu	Phe	Thr	Asp	His	Gly	
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gct	aag	gtg	gtc	atc	gtt	gac	ttt	caa	gaa	gaa	ctt	ggc	caa	aac	gtt	144
Ala	Lys	Val	Val	Ile	Val	Asp	Phe	Gln	Glu	Glu	Leu	Gly	Gln	Asn	Val	
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Ala	Val	Ser	Val	Gly	Lys	Asp	Lys	Ala	Ser	Phe	Tyr	Arg	Cys	Asp	Val	
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Thr	Asn	Glu	Lys	Glu	Val	Glu	Asn	Ala	Val	Lys	Phe	Thr	Val	Glu	Lys	
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tac	ggg	aag	ctt	gac	gtt	ctc	ttt	agt	aac	gcc	ggc	gtt	atg	gaa	cag	288
Tyr	Gly	Lys	Leu	Asp	Val	Leu	Phe	Ser	Asn	Ala	Gly	Val	Met	Glu	Gln	
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ccg	gga	agc	ttt	ctc	gac	ttg	aat	ctg	gaa	cag	ttt	gac	cga	acc	atg	336
Pro	Gly	Ser	Phe	Leu	Asp	Leu	Asn	Leu	Glu	Gln	Phe	Asp	Arg	Thr	Met	
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Ala	Val	Asn	Val	Arg	Gly	Ala	Ala	Ala	Phe	Ile	Lys	His	Ala	Ala	Arg	
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gcc	atg	gtg	gag	aaa	ggc	acg	cgt	ggg	tca	atc	gta	tgt	acg	acc	agc	432
Ala	Met	Val	Glu	Lys	Gly	Thr	Arg	Gly	Ser	Ile	Val	Cys	Thr	Thr	Ser	
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gtc	gcg	tcg	gag	atc	ggt	ggt	cca	gga	cct	cac	gcg	tac	acg	gcg	tct	480
Val	Ala	Ser	Glu	Ile	Gly	Gly	Pro	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	
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Lys	His	Ala	Leu	Leu	Gly	Leu	Val	Lys	Ser	Ala	Cys	Gly	Gly	Leu	Gly	
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Lys	Tyr	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Tyr	Ala	Val	Ala	Thr	
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Ala	Ile	Asn	Ser	Arg	Asp	Glu	Glu	Thr	Val	Arg	Met	Val	Glu	Glu	Tyr	
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agc	gca	gcc	acg	ggg	att	ctc	aaa	ggt	gtg	gtg	ctt	aag	gct	cgc	cat	672
Ser	Ala	Ala	Thr	Gly	Ile	Leu	Lys	Gly	Val	Val	Leu	Lys	Ala	Arg	His	
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Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Ala	Tyr	Val	
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## PhoenixTemp32470.tmp.txt

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 <213> Arabidopsis thaliana

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 Ala Lys Val Val Ile Val Asp Phe Gln Glu Glu Leu Gly Gln Asn Val  
 35 40 45  
 Ala Val Ser Val Gly Lys Asp Lys Ala Ser Phe Tyr Arg Cys Asp Val  
 50 55 60  
 Thr Asn Glu Lys Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu Lys  
 65 70 75 80  
 Tyr Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Met Glu Gln  
 85 90 95  
 Pro Gly Ser Phe Leu Asp Leu Asn Leu Glu Gln Phe Asp Arg Thr Met  
 100 105 110  
 Ala Val Asn Val Arg Gly Ala Ala Ala Phe Ile Lys His Ala Ala Arg  
 115 120 125  
 Ala Met Val Glu Lys Gly Thr Arg Gly Ser Ile Val Cys Thr Thr Ser  
 130 135 140  
 Val Ala Ser Glu Ile Gly Gly Pro Gly Pro His Ala Tyr Thr Ala Ser  
 145 150 155 160  
 Lys His Ala Leu Leu Gly Leu Val Lys Ser Ala Cys Gly Gly Leu Gly  
 165 170 175  
 Lys Tyr Gly Ile Arg Val Asn Gly Val Ala Pro Tyr Ala Val Ala Thr  
 180 185 190  
 Ala Ile Asn Ser Arg Asp Glu Glu Thr Val Arg Met Val Glu Glu Tyr  
 195 200 205  
 Ser Ala Ala Thr Gly Ile Leu Lys Gly Val Val Leu Lys Ala Arg His  
 210 215 220  
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 Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Tyr Ser Val Val Lys Pro  
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 <212> DNA  
 <213> Mycobacterium tuberculosis H37Rv

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 Gly Ile Gly Leu Ala Thr Gly Thr Glu Phe Ala Arg Arg Gly Ala Arg  
 20 25 30  
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 Val Val Leu Gly Asp Val Asp Lys Pro Gly Leu Arg Gln Ala Val Asn  
 35 40 45  
 cac ctg cgt gcc gag ggg ttc gat gtg cac agc gtg atg tgc gac gtc 192  
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## PhoenixTemp32470.tmp.txt

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Arg	His	Arg	Glu	Glu	Val	Thr	His	Leu	Ala	Asp	Glu	Ala	Phe	Arg	Leu		
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ctc	ggc	cac	gtc	gat	gtc	gta	ttc	agc	aac	gcc	ggc	atc	gtt	gtc	ggc		288
Leu	Gly	His	Val	Asp	Val	Val	Phe	Ser	Asn	Ala	Gly	Ile	Val	Val	Gly		
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gtc	gac	ctg	tgg	ggc	tcg	atc	cat	acg	gtc	gaa	gcg	ttc	ctg	ccg	agg		384
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Leu	Leu	Glu	Gln	Gly	Thr	Gly	Gly	His	Val	Val	Phe	Thr	Ala	Ser	Phe		
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gcc	ggg	ctg	gtg	ccc	aat	gcc	gga	ctc	ggc	gca	tac	ggc	gtt	gcc	aag		480
Ala	Gly	Leu	Val	Pro	Asn	Ala	Gly	Leu	Gly	Ala	Tyr	Gly	Val	Ala	Lys		
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Tyr	Gly	Val	Val	Gly	Leu	Ala	Glu	Thr	Leu	Ala	Arg	Glu	Val	Thr	Ala		
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gac	ggc	att	ggg	gtg	tcg	gtg	ctc	tgc	ccg	atg	gtc	gtc	gaa	acc	aat		576
Asp	Gly	Ile	Gly	Val	Ser	Val	Leu	Cys	Pro	Met	Val	Val	Glu	Thr	Asn		
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Leu	Val	Ala	Asn	Ser	Glu	Arg	Ile	Arg	Gly	Ala	Ala	Cys	Ala	Gln	Ser		
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Ser	Thr	Thr	Gly	Ser	Pro	Gly	Pro	Leu	Pro	Leu	Gln	Asp	Asp	Asn	Leu		
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Arg	Phe	Glu	Arg	Ile	Asp	Arg	Thr	Phe	Asp	Glu	Gln	Ala	Ala	Glu	Gly		
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tgg	cgg	cat	tag														828
Trp	Arg	His															
		275															

&lt;210&gt; 1001

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis H37Rv

&lt;400&gt; 1001

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Val	Val	Leu	Gly	Asp	Val	Asp	Lys	Pro	Gly	Leu	Arg	Gln	Ala	Val	Asn		
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Arg	His	Arg	Glu	Glu	Val	Thr	His	Leu	Ala	Asp	Glu	Ala	Phe	Arg	Leu		
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Val	Asp	Leu	Trp	Gly	Ser	Ile	His	Thr	Val	Glu	Ala	Phe	Leu	Pro	Arg		
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Leu	Leu	Glu	Gln	Gly	Thr	Gly	Gly	His	Val	Val	Phe	Thr	Ala	Ser	Phe		
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## PhoenixTemp32470.tmp.txt

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 Tyr Gly Val Val Gly Leu Ala Glu Thr Leu Ala Arg Glu Val Thr Ala  
 165 170 175  
 Asp Gly Ile Gly Val Ser Val Leu Cys Pro Met Val Val Glu Thr Asn  
 180 185 190  
 Leu Val Ala Asn Ser Glu Arg Ile Arg Gly Ala Ala Cys Ala Gln Ser  
 195 200 205  
 Ser Thr Thr Gly Ser Pro Gly Pro Leu Pro Leu Gln Asp Asp Asn Leu  
 210 215 220  
 Gly Val Asp Asp Ile Ala Gln Leu Thr Ala Asp Ala Ile Leu Ala Asn  
 225 230 235 240  
 Arg Leu Tyr Val Leu Pro His Ala Ala Ser Arg Ala Ser Ile Arg Arg  
 245 250 255  
 Arg Phe Glu Arg Ile Asp Arg Thr Phe Asp Glu Gln Ala Ala Glu Gly  
 260 265 270  
 Trp Arg His  
 275

&lt;210&gt; 1002

&lt;211&gt; 882

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium tuberculosis H37Rv

&lt;220&gt;

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Gly	Ile	Gly	Ala	Glu	Val	Ala	Arg	Arg	Leu	His	Asn	Lys	Gly	Ala	Lys	
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Gly	Gly	Ile	Asp	Val	Val	Ala	Asn	Ala	Gly	Ile	Ala	Ser	Tyr	Gly		
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Ser	Val	Leu	Lys	Val	Asp	Pro	Gln	Ala	Phe	Arg	Arg	Val	Leu	Asp	Val	
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Asn	Leu	Leu	Gly	Asn	Phe	His	Thr	Val	Arg	Ala	Thr	Leu	Pro	Ala	Leu	
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Ile	Asp	Arg	Arg	Gly	Tyr	Val	Leu	Ile	Val	Ser	Ser	Leu	Ala	Ala	Phe	
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Ala	Ala	Pro	Pro	Gly	Met	Ala	Pro	Tyr	Asn	Met	Ser	Lys	Ala	Gly	Asn	
	145			150					155						160	
gag	cac	ttc	gcc	aac	gcg	ttg	cga	ctc	gag	gtc	gca	cac	ctg	ggc	gtc	528
Glu	His	Phe	Ala	Asn	Ala	Leu	Arg	Leu	Glu	Val	Ala	His	Leu	Gly	Val	
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agc	gtc	ggc	tcg	gcg	cac	atg	tcg	tgg	atc	gac	acc	gcg	ttg	gtt	cgc	576
Ser	Val	Gly	Ser	Ala	His	Met	Ser	Trp	Ile	Asp	Thr	Ala	Leu	Val	Arg	
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Asp	Thr	Lys	Ala	Asp	Leu	Pro	Ala	Phe	Ala	Glu	Leu	Leu	Ala	Arg	Leu	
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PhoenixTemp32470.tmp.txt

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Trp	Val	Ala	Leu	Phe	Arg	Trp	Leu	Lys	Pro	Leu	Leu	Ser	Thr	Arg	Val	
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Asp	Ala	Glu	Val	Ala	Ala	Leu	Gly	Arg	Phe	Ala	Ser	Ala	Tyr	Thr	Glu	
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<212> PRT

<213> Mycobacterium tuberculosis H37Rv

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Asn	Leu	Leu	Gly	Asn	Phe	His	Thr	Val	Arg	Ala	Thr	Leu	Pro	Ala	Leu	
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145					150				155						160	
Glu	His	Phe	Ala	Asn	Ala	Leu	Arg	Leu	Glu	Val	Ala	His	Leu	Gly	Val	
			165						170					175		
Ser	Val	Gly	Ser	Ala	His	Met	Ser	Trp	Ile	Asp	Thr	Ala	Leu	Val	Arg	
		180					185					190				
Asp	Thr	Lys	Ala	Asp	Leu	Pro	Ala	Phe	Ala	Glu	Leu	Leu	Ala	Arg	Leu	
		195				200						205				
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	210				215					220						
Phe	Val	Asn	Gly	Ile	Glu	Gly	Arg	Lys	Asp	Arg	Val	Tyr	Cys	Pro	Gly	
225					230				235						240	
Trp	Val	Ala	Leu	Phe	Arg	Trp	Leu	Lys	Pro	Leu	Leu	Ser	Thr	Arg	Val	
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Gly	Gln	Arg	Pro	Ile	Arg	Asn	Thr	Val	Ala	Lys	Leu	Met	Pro	Gln	Met	
			260				265						270			
Asp	Ala	Glu	Val	Ala	Ala	Leu	Gly	Arg	Phe	Ala	Ser	Ala	Tyr	Thr	Glu	
		275					280					285				
Ser	Leu	Glu	Asn	Ser												
		290														

<210> 1004

<211> 837

<212> DNA

<213> Pseudomonas aeruginosa PA01

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1004

atg	ccg	cgc	aag	gta	ttc	agc	agc	cag	gcc	tac	cgc	cac	aag	gtg	gtg	48
Met	Pro	Arg	Lys	Val	Phe	Ser	Ser	Gln	Ala	Tyr	Arg	His	Lys	Val	Val	
1				5				10					15			
ctg	gtc	agc	ggc	ggc	tgt	tcc	ggc	atc	ggg	cgc	gcg	ctg	gcg	ctg	cgt	96
Leu	Val	Ser	Gly	Gly	Cys	Ser	Gly	Ile	Gly	Arg	Ala	Leu	Ala	Leu	Arg	
			20					25					30			
ttc	gcc	cgg	gcc	ggg	gag	cga	ctg	gag	atc	ctc	gac	ctc	gac	cag	gag	144
Phe	Ala	Arg	Ala	Gly	Ala	Arg	Leu	Ala	Ile	Leu	Asp	Leu	Asp	Gln	Ala	
			35				40					45				
gcg	ctg	gac	agt	ttg	gtc	cag	cac	ctg	cgc	gac	cat	ctc	ggc	ggc	gag	192
Ala	Leu	Asp	Ser	Leu	Val	Gln	His	Leu	Arg	Asp	His	Leu	Gly	Gly	Glu	
			50			55					60					
gcg	ctc	ggc	ctg	cgc	tgc	gac	gtc	gcc	gac	gcc	gat	gag	gag	cgt		240
Ala	Leu	Gly	Leu	Arg	Cys	Asp	Val	Ala	Asp	Ala	Asp	Ala	Val	Glu	Arg	
			65		70				75					80		
gcc	gtg	gag	ctg	gag	gtg	gag	cgc	ttc	ggc	ggc	atc	gac	gtg	ctg	gtc	288
Ala	Val	Ala	Leu	Ala	Val	Glu	Arg	Phe	Gly	Gly	Ile	Asp	Val	Leu	Val	
			85						90					95		
aac	aac	gcc	ggc	atc	acc	cac	cgc	ggg	acc	ttc	gcc	gaa	acc	ggc	ctg	336
Asn	Asn	Ala	Gly	Ile	Thr	His	Arg	Gly	Thr	Phe	Ala	Glu	Thr	Gly	Leu	
			100					105					110			
ggg	gtt	ttc	cgc	aag	gtc	atg	gag	gtg	aac	ttc	ttc	ggc	ggc	gtg	cat	384
Gly	Val	Phe	Arg	Lys	Val	Met	Ala	Val	Asn	Phe	Phe	Gly	Ala	Val	His	
			115				120					125				
tgc	acc	cgc	gag	gag	ctg	ccg	agc	ctg	ctc	gaa	cgc	cgc	ggg	cag	atc	432
Cys	Thr	Arg	Ala	Ala	Leu	Pro	Ser	Leu	Leu	Glu	Arg	Arg	Gly	Gln	Ile	
			130			135						140				
gtc	gtg	ctc	ggg	tcg	ctg	acc	ggc	ttc	gcc	ccg	ttg	ctc	tac	cgc	agc	480
Val	Val	Leu	Gly	Ser	Leu	Thr	Gly	Phe	Ala	Pro	Leu	Leu	Tyr	Arg	Ser	
			145		150				155						160	
gcc	tac	aac	gcc	agc	aag	cat	gcc	ttg	cac	ggg	ctg	ttc	gat	acc	ctg	528
Ala	Tyr	Asn	Ala	Ser	Lys	His	Ala	Leu	His	Gly	Leu	Phe	Asp	Thr	Leu	
			165				170							175		
cgg	atg	gag	ctg	gaa	ggc	acc	ggc	gtc	agc	gtg	acc	ctg	gcc	tgc	ccg	576
Arg	Met	Glu	Leu	Glu	Gly	Thr	Gly	Val	Ser	Val	Thr	Leu	Ala	Cys	Pro	
			180				185						190			
gga	ttc	acc	gcc	acc	gac	ctg	cgc	aag	aac	gag	ctg	gtc	ggc	gat	ggc	624
Gly	Phe	Thr	Ala	Thr	Asp	Leu	Arg	Lys	Asn	Ala	Leu	Val	Gly	Asp	Gly	
			195				200					205				
tcg	gtg	act	cgc	cag	ccg	gtg	caa	gtg	ctg	ggc	agc	cag	gtg	gca	tcg	672
Ser	Val	Thr	Arg	Gln	Pro	Val	Gln	Val	Leu	Gly	Ser	Gln	Val	Ala	Ser	
			210			215					220					
ccg	gtg	gag	gtc	gcc	gag	gag	atc	ttc	cag	ggc	gcc	gag	cgc	cgc	cgc	720
Pro	Val	Glu	Val	Ala	Glu	Ala	Ile	Phe	Gln	Gly	Ala	Ala	Arg	Arg	Arg	
			225		230					235					240	
cgc	ctg	ctg	gtg	ctg	tcc	aac	gtc	aac	tgg	cgc	cgc	ctg	ctg	gag		768
Arg	Leu	Leu	Val	Leu	Ser	Asn	Val	Asn	Trp	Arg	Ala	Arg	Leu	Leu	Ala	
			245						250					255		
cgc	ttc	ttt	ccg	cgt	ctc	ttc	gaa	aag	ctg	ctg	gtg	ccg	cgc	ctg	tcg	816
Arg	Phe	Phe	Pro	Arg	Leu	Phe	Glu	Lys	Leu	Leu	Val	Pro	Arg	Leu	Ser	
			260					265					270			
gga	ctc	aag	ccg	caa	ccc	tga										837
Gly	Leu	Lys	Pro	Gln	Pro											
			275													

&lt;210&gt; 1005

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas aeruginosa PA01

&lt;400&gt; 1005

Met	Pro	Arg	Lys	Val	Phe	Ser	Ser	Gln	Ala	Tyr	Arg	His	Lys	Val	Val
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## PhoenixTemp32470.tmp.txt

Leu Val Ser Gly Gly Cys Ser Gly Ile Gly Arg Ala Leu Ala Leu Arg  
 20 25 30  
 Phe Ala Arg Ala Gly Ala Arg Leu Ala Ile Leu Asp Leu Asp Gln Ala  
 35 40 45  
 Ala Leu Asp Ser Leu Val Gln His Leu Arg Asp His Leu Gly Gly Glu  
 50 55 60  
 Ala Leu Gly Leu Arg Cys Asp Val Ala Asp Ala Val Glu Arg  
 65 70 75 80  
 Ala Val Ala Leu Ala Val Glu Arg Phe Gly Gly Ile Asp Val Leu Val  
 85 90 95  
 Asn Asn Ala Gly Ile Thr His Arg Gly Thr Phe Ala Glu Thr Gly Leu  
 100 105 110  
 Gly Val Phe Arg Lys Val Met Ala Val Asn Phe Phe Gly Ala Val His  
 115 120 125  
 Cys Thr Arg Ala Ala Leu Pro Ser Leu Leu Glu Arg Arg Gly Gln Ile  
 130 135 140  
 Val Val Leu Gly Ser Leu Thr Gly Phe Ala Pro Leu Leu Tyr Arg Ser  
 145 150 155 160  
 Ala Tyr Asn Ala Ser Lys His Ala Leu His Gly Leu Phe Asp Thr Leu  
 165 170 175  
 Arg Met Glu Leu Glu Gly Thr Gly Val Ser Val Thr Leu Ala Cys Pro  
 180 185 190  
 Gly Phe Thr Ala Thr Asp Leu Arg Lys Asn Ala Leu Val Gly Asp Gly  
 195 200 205  
 Ser Val Thr Arg Gln Pro Val Gln Val Leu Gly Ser Gln Val Ala Ser  
 210 215 220  
 Pro Val Glu Val Ala Glu Ala Ile Phe Gln Gly Ala Ala Arg Arg Arg  
 225 230 235 240  
 Arg Leu Leu Val Leu Ser Asn Val Asn Trp Arg Ala Arg Leu Leu Ala  
 245 250 255  
 Arg Phe Phe Pro Arg Leu Phe Glu Lys Leu Leu Val Pro Arg Leu Ser  
 260 265 270  
 Gly Leu Lys Pro Gln Pro  
 275

&lt;210&gt; 1006

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium tuberculosis CDC1551

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1006

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Met	Arg	Ala	Val	Asp	Gly	Phe	Pro	Gly	Arg	Gly	Ala	Val	Ile	Thr	Gly	
1				5				10					15			
ggt	gcc	agt	ggc	atc	ggg	ttg	gct	acc	ggc	acc	gag	ttc	gcc	cgc	cgc	96
Gly	Ala	Ser	Gly	Ile	Gly	Leu	Ala	Thr	Gly	Thr	Glu	Phe	Ala	Arg	Arg	
			20					25					30			
gga	gcc	aga	gtc	gtg	cta	ggg	gac	gtt	gac	aag	ccg	gga	ctt	cgg	cag	144
Gly	Ala	Arg	Val	Val	Leu	Gly	Asp	Val	Asp	Lys	Pro	Gly	Leu	Arg	Gln	
			35				40					45				
gcg	gtg	aac	cac	ctg	cgt	gcc	gag	ggg	ttc	gat	gtg	cac	agc	gtg	atg	192
Ala	Val	Asn	His	Leu	Arg	Ala	Glu	Gly	Phe	Asp	Val	His	Ser	Val	Met	
			50			55					60					
tgc	gac	gtc	cgg	cat	cga	gaa	gag	gtc	act	cac	ctc	gcg	gac	gag	gct	240
Cys	Asp	Val	Arg	His	Arg	Glu	Glu	Val	Thr	His	Leu	Ala	Asp	Glu	Ala	
			65		70				75					80		
ttc	cgc	ctg	ctc	ggc	cac	gtc	gat	gtc	gta	ttc	agc	aac	gcc	ggc	atc	288
Phe	Arg	Leu	Leu	Gly	His	Val	Asp	Val	Val	Phe	Ser	Asn	Ala	Gly	Ile	
			85					90						95		
gtt	gtc	ggc	ggt	ccg	atc	gtg	gag	atg	acg	cac	gac	gac	tgg	cgt	tgg	336
Val	Val	Gly	Gly	Pro	Ile	Val	Glu	Met	Thr	His	Asp	Asp	Trp	Arg	Trp	
			100					105					110			
gtg	atc	gac	gtc	gac	ctg	tgg	ggc	tcg	atc	cat	acg	gtc	gaa	gcg	ttc	384
Val	Ile	Asp	Val	Asp	Leu	Trp	Gly	Ser	Ile	His	Thr	Val	Glu	Ala	Phe	

## PhoenixTemp32470.tmp.txt

ctg	ccg	agg	ttg	ctt	gag	cag	ggc	ggg	cat	gtg	ttc	acc	
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	130					135				140			
gcg	tcc	ttt	gcc	ggg	ctg	gtg	ccc	aat	gcc	gga	ctc	ggc	gca
Ala	Ser	Phe	Ala	Gly	Leu	Val	Pro	Asn	Ala	Gly	Leu	Gly	Ala
145					150					155			
gtt	gcc	aag	tac	ggg	gtt	gtc	ggg	ctg	gcg	gag	acg	ctg	gcc
Val	Ala	Lys	Tyr	Gly	Val	Val	Gly	Leu	Ala	Glu	Thr	Leu	Ala
				165					170				
gtc	acc	gcc	gac	ggc	att	ggg	gtg	tcg	gtg	ctc	tgc	ccg	atg
Val	Thr	Ala	Asp	Gly	Ile	Gly	Val	Ser	Val	Leu	Cys	Pro	Met
			180					185					190
gaa	acc	aat	ctg	gtt	gcc	aac	tct	gaa	cga	atc	cga	ggc	gcg
Glu	Thr	Asn	Leu	Val	Ala	Asn	Ser	Glu	Arg	Ile	Arg	Gly	Ala
		195					200					205	
gcg	cag	tcc	tca	acg	acg	gga	tcg	ccc	ggg	cca	ctc	ccc	ctg
Ala	Gln	Ser	Ser	Thr	Thr	Gly	Ser	Pro	Gly	Pro	Leu	Pro	Leu
210						215					220		
gac	aac	ctg	ggc	gtc	gac	gat	atc	gcc	cag	cta	aca	gcc	gat
Asp	Asn	Leu	Gly	Val	Asp	Asp	Ile	Ala	Gln	Leu	Thr	Ala	Asp
225					230					235			
ctg	gcc	aac	cg	ctc	tac	gtc	ctt	ccg	cat	gcg	gcc	tcg	cg
Leu	Ala	Asn	Arg	Leu	Tyr	Val	Leu	Pro	His	Ala	Ala	Ser	Arg
				245					250				
atc	cg	cg	agg	ttc	gag	cg	att	gac	cg	acc	ttc	gac	gaa
Ile	Arg	Arg	Arg	Phe	Glu	Arg	Ile	Asp	Arg	Thr	Phe	Asp	Glu
			260					265				270	
gcc	gag	ggg	tgg	cgg	cat	tag							
Ala	Glu	Gly	Trp	Arg	His								
		275											

&lt;210&gt; 1007

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis CDC1551

&lt;400&gt; 1007

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			20					25					30		
Gly	Ala	Arg	Val	Val	Leu	Gly	Asp	Val	Asp	Lys	Pro	Gly	Leu	Arg	Gln
		35					40					45			
Ala	Val	Asn	His	Leu	Arg	Ala	Glu	Gly	Phe	Asp	Val	His	Ser	Val	Met
	50					55					60				
Cys	Asp	Val	Arg	His	Arg	Glu	Glu	Val	Thr	His	Leu	Ala	Asp	Glu	Ala
65					70					75					80
Phe	Arg	Leu	Leu	Gly	His	Val	Asp	Val	Val	Phe	Ser	Asn	Ala	Gly	Ile
			85						90					95	
val	val	Gly	Gly	Pro	Ile	Val	Glu	Met	Thr	His	Asp	Asp	Trp	Arg	Trp
		100						105					110		
Val	Ile	Asp	Val	Asp	Leu	Trp	Gly	Ser	Ile	His	Thr	Val	Glu	Ala	Phe
		115					120					125			
Leu	Pro	Arg	Leu	Leu	Glu	Gln	Gly	Thr	Gly	Gly	His	Val	Val	Phe	Thr
	130					135					140				
Ala	Ser	Phe	Ala	Gly	Leu	Val	Pro	Asn	Ala	Gly	Leu	Gly	Ala	Tyr	Gly
145					150					155					160
Val	Ala	Lys	Tyr	Gly	Val	Val	Gly	Leu	Ala	Glu	Thr	Leu	Ala	Arg	Glu
			165						170					175	
Val	Thr	Ala	Asp	Gly	Ile	Gly	Val	Ser	Val	Leu	Cys	Pro	Met	Val	Val
			180					185					190		
Glu	Thr	Asn	Leu	Val	Ala	Asn	Ser	Glu	Arg	Ile	Arg	Gly	Ala	Ala	Cys
		195					200					205			
Ala	Gln	Ser	Ser	Thr	Thr	Gly	Ser	Pro	Gly	Pro	Leu	Pro	Leu	Gln	Asp
	210					215					220				
Asp	Asn	Leu	Gly	Val	Asp	Asp	Ile	Ala	Gln	Leu	Thr	Ala	Asp	Ala	Ile
225					230					235					240
Leu	Ala	Asn	Arg	Leu	Tyr	Val	Leu	Pro	His	Ala	Ala	Ser	Arg	Ala	Ser

## PhoenixTemp32470.tmp.txt

245  
 Ile Arg Arg Arg Phe Glu Arg Ile Asp Arg Thr Phe Asp Glu Gln Ala  
 260 250 265 270  
 Ala Glu Gly Trp Arg His  
 275

&lt;210&gt; 1008

&lt;211&gt; 933

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium tuberculosis CDC1551

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(933)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1008

atg	ccc	tgc	tcg	ggg	tgg	acc	tgt	agc	cgg	cgc	ggc	ggt	acg	ttt	tcg	48
Met	Pro	Cys	Ser	Gly	Trp	Thr	Cys	Ser	Arg	Arg	Gly	Gly	Thr	Phe	Ser	
1				5					10					15		
gcc	atg	aca	tcg	ctg	caa	ggc	aag	gtc	gtc	ttc	att	acc	ggt	gct	gcc	96
Ala	Met	Thr	Ser	Leu	Gln	Gly	Lys	Val	Val	Phe	Ile	Thr	Gly	Ala	Ala	
			20					25					30			
cgg	gga	atc	ggg	gct	gag	gtc	gcc	cgt	cgg	ctg	cac	aac	aag	ggc	gcc	144
Arg	Gly	Ile	Gly	Ala	Glu	Val	Ala	Arg	Arg	Leu	His	Asn	Lys	Gly	Ala	
		35					40					45				
aaa	ctg	gtg	ctg	acc	gac	ctg	agc	aaa	tca	gag	ctg	gcg	gtg	atg	ggc	192
Lys	Leu	Val	Leu	Thr	Asp	Leu	Ser	Lys	Ser	Glu	Leu	Ala	Val	Met	Gly	
	50					55					60					
gcc	gaa	ctc	ggc	ggc	gac	gac	cgc	cta	ctc	acc	gtg	gta	gcc	gac	gtg	240
Ala	Glu	Leu	Gly	Gly	Asp	Asp	Arg	Leu	Leu	Thr	Val	Val	Ala	Asp	Val	
	65				70					75					80	
cgc	gac	ctg	ccc	gcc	atg	cag	gcc	gca	gcc	gag	acg	gcc	gtc	gaa	cga	288
Arg	Asp	Leu	Pro	Ala	Met	Gln	Ala	Ala	Ala	Glu	Thr	Ala	Val	Glu	Arg	
			85					90						95		
ttc	ggc	ggc	atc	gac	gtc	gtc	gtg	gcc	aac	gcc	ggc	atc	gcc	agc	tac	336
Phe	Gly	Gly	Ile	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Ile	Ala	Ser	Tyr	
			100					105					110			
ggc	tcc	gtg	ctg	aag	gtc	gac	ccg	cag	gcg	ttc	cgg	cgg	gtg	ttg	gac	384
Gly	Ser	Val	Leu	Lys	Val	Asp	Pro	Gln	Ala	Phe	Arg	Arg	Val	Leu	Asp	
		115					120					125				
gtc	aat	ttg	ctg	ggt	aac	ttc	cac	acg	gtg	cgg	gcg	acg	ttg	ccc	gcg	432
Val	Asn	Leu	Leu	Gly	Asn	Phe	His	Thr	Val	Arg	Ala	Thr	Leu	Pro	Ala	
	130				135						140					
ctg	atc	gac	cgc	cgc	ggt	tac	gta	ttg	atc	gtc	tcg	tcg	ctt	gcc	gcg	480
Leu	Ile	Asp	Arg	Arg	Gly	Tyr	Val	Leu	Ile	Val	Ser	Ser	Leu	Ala	Ala	
	145				150					155					160	
ttc	gcg	gcg	ccg	ccc	ggg	atg	gcg	ccc	tac	aac	atg	tcg	aag	gcg	ggt	528
Phe	Ala	Ala	Pro	Pro	Gly	Met	Ala	Pro	Tyr	Asn	Met	Ser	Lys	Ala	Gly	
			165					170						175		
aac	gag	cac	ttc	gcc	aac	gcg	ttg	cga	ctc	gag	gtc	gca	cac	ctg	ggc	576
Asn	Glu	His	Phe	Ala	Asn	Ala	Leu	Arg	Leu	Glu	Val	Ala	His	Leu	Gly	
			180					185					190			
gtc	agc	gtc	ggc	tcg	gcg	cac	atg	tcg	tgg	atc	gac	acc	gcg	ttg	gtt	624
Val	Ser	Val	Gly	Ser	Ala	His	Met	Ser	Trp	Ile	Asp	Thr	Ala	Leu	Val	
	195						200					205				
cgc	gat	acc	aag	gcc	gac	ctg	cct	gcg	ttc	gcc	gaa	ttg	ctg	gcg	cgc	672
Arg	Asp	Thr	Lys	Ala	Asp	Leu	Pro	Ala	Phe	Ala	Glu	Leu	Leu	Ala	Arg	
	210					215					220					
ctc	cct	tgg	ccg	ttg	aac	aag	acc	acg	tcg	gtc	aac	aag	tgt	gcg	gcc	720
Leu	Pro	Trp	Pro	Leu	Asn	Lys	Thr	Thr	Ser	Val	Asn	Lys	Cys	Ala	Ala	
	225				230					235					240	
gca	ttc	gtc	aac	ggc	att	gag	ggc	cga	aaa	gat	cgc	gtg	tac	tgc	ccg	768
Ala	Phe	Val	Asn	Gly	Ile	Glu	Gly	Arg	Lys	Asp	Arg	Val	Tyr	Cys	Pro	
			245					250						255		
ggc	tgg	gtg	gcc	ctg	ttc	cgt	tgg	ctc	aag	ccg	ttg	ttg	tcc	acc	cgg	816
Gly	Trp	Val	Ala	Leu	Phe	Arg	Trp	Leu	Lys	Pro	Leu	Leu	Ser	Thr	Arg	
			260					265					270			
gta	ggc	caa	cgt	ccc	atc	cgc	aac	acc	gtt	gcc	aag	ctg	atg	ccc	cag	864

PhoenixTemp32470.tmp.txt

Val	Gly	Gln	Arg	Pro	Ile	Arg	Asn	Thr	Val	Ala	Lys	Leu	Met	Pro	Gln		
		275					280					285					
atg	gat	gcc	gag	gtc	gcc	gcg	ctc	ggc	cgc	ttt	gcc	agc	gcc	tac	acc		912
Met	Asp	Ala	Glu	Val	Ala	Ala	Leu	Gly	Arg	Phe	Ala	Ser	Ala	Tyr	Thr		
	290					295					300						
gaa	tca	ctc	gag	aat	tcc	tag											933
Glu	Ser	Leu	Glu	Asn	Ser												
305					310												

<210> 1009  
 <211> 310  
 <212> PRT  
 <213> Mycobacterium tuberculosis CDC1551

<400> 1009

Met	Pro	Cys	Ser	Gly	Trp	Thr	Cys	Ser	Arg	Arg	Gly	Gly	Thr	Phe	Ser		
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Ala	Met	Thr	Ser	Leu	Gln	Gly	Lys	Val	Val	Phe	Ile	Thr	Gly	Ala	Ala		
			20					25					30				
Arg	Gly	Ile	Gly	Ala	Glu	Val	Ala	Arg	Arg	Leu	His	Asn	Lys	Gly	Ala		
		35					40					45					
Lys	Leu	Val	Leu	Thr	Asp	Leu	Ser	Lys	Ser	Glu	Leu	Ala	Val	Met	Gly		
	50					55					60						
Ala	Glu	Leu	Gly	Gly	Asp	Asp	Arg	Leu	Leu	Thr	Val	Val	Ala	Asp	Val		
65					70					75					80		
Arg	Asp	Leu	Pro	Ala	Met	Gln	Ala	Ala	Ala	Glu	Thr	Ala	Val	Glu	Arg		
				85				90						95			
Phe	Gly	Gly	Ile	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Ile	Ala	Ser	Tyr		
			100					105					110				
Gly	Ser	Val	Leu	Lys	Val	Asp	Pro	Gln	Ala	Phe	Arg	Arg	Val	Leu	Asp		
		115					120					125					
Val	Asn	Leu	Leu	Gly	Asn	Phe	His	Thr	Val	Arg	Ala	Thr	Leu	Pro	Ala		
	130				135						140						
Leu	Ile	Asp	Arg	Arg	Gly	Tyr	Val	Leu	Ile	Val	Ser	Ser	Leu	Ala	Ala		
145					150					155					160		
Phe	Ala	Ala	Pro	Pro	Gly	Met	Ala	Pro	Tyr	Asn	Met	Ser	Lys	Ala	Gly		
			165					170						175			
Asn	Glu	His	Phe	Ala	Asn	Ala	Leu	Arg	Leu	Glu	Val	Ala	His	Leu	Gly		
			180					185					190				
Val	Ser	Val	Gly	Ser	Ala	His	Met	Ser	Trp	Ile	Asp	Thr	Ala	Leu	Val		
		195					200					205					
Arg	Asp	Thr	Lys	Ala	Asp	Leu	Pro	Ala	Phe	Ala	Glu	Leu	Leu	Ala	Arg		
	210					215					220						
Leu	Pro	Trp	Pro	Leu	Asn	Lys	Thr	Thr	Ser	Val	Asn	Lys	Cys	Ala	Ala		
225					230					235					240		
Ala	Phe	Val	Asn	Gly	Ile	Glu	Gly	Arg	Lys	Asp	Arg	Val	Tyr	Cys	Pro		
			245						250					255			
Gly	Trp	Val	Ala	Leu	Phe	Arg	Trp	Leu	Lys	Pro	Leu	Leu	Ser	Thr	Arg		
			260					265					270				
Val	Gly	Gln	Arg	Pro	Ile	Arg	Asn	Thr	Val	Ala	Lys	Leu	Met	Pro	Gln		
		275					280					285					
Met	Asp	Ala	Glu	Val	Ala	Ala	Leu	Gly	Arg	Phe	Ala	Ser	Ala	Tyr	Thr		
	290					295					300						
Glu	Ser	Leu	Glu	Asn	Ser												
305					310												

<210> 1010  
 <211> 864  
 <212> DNA  
 <213> Mycobacterium tuberculosis CDC1551

<220>  
 <221> CDS  
 <222> (1)..(864)  
 <223> transl\_table=11

<400> 1010

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Met	Leu	Gln	Arg	Gly	Ala	Gly	Gln	Tyr	Phe	Ala	Gly	Lys	Arg	Cys	Phe		

## PhoenixTemp32470.tmp.txt

1	gtc	acc	ggc	gcg	gcc	agt	ggc	atc	ggt	cgc	gcg	acc	gcg	ttg	cgc	ctc	96
	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Arg	Leu	
				20					25					30			
	gcg	gcg	caa	ggt	gcc	gag	ctg	tat	ctg	acc	gac	cgc	gac	cgt	gat	ggc	144
	Ala	Ala	Gln	Gly	Ala	Glu	Leu	Tyr	Leu	Thr	Asp	Arg	Asp	Arg	Asp	Gly	
			35					40					45				
	ttg	gcg	caa	acc	gtg	tgt	gac	gcc	cgt	gca	ctc	ggc	gct	cag	gtg	ccc	192
	Leu	Ala	Gln	Thr	Val	Cys	Asp	Ala	Arg	Ala	Leu	Gly	Ala	Gln	Val	Pro	
		50					55					60					
	gag	cat	cga	gtt	ctg	gac	gtc	tcc	gac	tac	cag	gac	gtg	gcg	gca	ttc	240
	Glu	His	Arg	Val	Leu	Asp	Val	Ser	Asp	Tyr	Gln	Asp	Val	Ala	Ala	Phe	
		65				70					75						
	gcg	gcc	gat	atc	cac	gcc	cgt	cat	ccc	agc	atg	gac	gtg	gta	cta	aac	288
	Ala	Ala	Asp	Ile	His	Ala	Arg	His	Pro	Ser	Met	Asp	Val	Val	Leu	Asn	
				85						90					95		
	atc	gcc	ggt	gtg	tcg	gcc	tgg	ggc	acc	ggt	gac	cag	ctc	acg	cac	gat	336
	Ile	Ala	Gly	Val	Ser	Ala	Trp	Gly	Thr	Val	Asp	Gln	Leu	Thr	His	Asp	
			100						105					110			
	cag	tgg	agc	agg	atg	gtc	gcg	atc	aat	ctc	atg	ggc	cca	atc	cac	gtc	384
	Gln	Trp	Ser	Arg	Met	Val	Ala	Ile	Asn	Leu	Met	Gly	Pro	Ile	His	Val	
			115					120					125				
	atc	gag	acc	ttg	gtc	cca	ccg	atg	gtc	gcc	gcc	ggt	cgg	ggc	ggg	cac	432
	Ile	Glu	Thr	Leu	Val	Pro	Pro	Met	Val	Ala	Ala	Gly	Arg	Gly	Gly	His	
		130					135					140					
	ctg	gtc	aat	gtg	tcc	tcg	gcg	gcc	ggg	ctg	gtt	ggc	ttg	ccg	tgg	cat	480
	Leu	Val	Asn	Val	Ser	Ser	Ala	Ala	Gly	Leu	Val	Gly	Leu	Pro	Trp	His	
		145				150					155					160	
	gcg	gcc	tat	agc	gct	agc	aag	tac	ggg	ttg	cgg	gga	ctt	tct	gag	gtg	528
	Ala	Ala	Tyr	Ser	Ala	Ser	Lys	Tyr	Gly	Leu	Arg	Gly	Leu	Ser	Glu	Val	
				165						170					175		
	ctg	cgc	ttc	gat	ctg	gcc	cgg	cac	ggc	atc	ggg	gtg	tcg	gtc	gtg	gtg	576
	Leu	Arg	Phe	Asp	Leu	Ala	Arg	His	Gly	Ile	Gly	Val	Ser	Val	Val	Val	
			180					185						190			
	cct	ggc	gcc	gtc	aag	acc	ccg	ctg	gtc	aat	acg	gtc	gag	atc	gcc	gga	624
	Pro	Gly	Ala	Val	Lys	Thr	Pro	Leu	Val	Asn	Thr	Val	Glu	Ile	Ala	Gly	
			195					200					205				
	gtg	gat	cgc	gac	gac	ccg	agg	gtc	aac	cgc	tgg	gtc	gaa	cgg	ttc	agt	672
	Val	Asp	Arg	Asp	Asp	Pro	Arg	Val	Asn	Arg	Trp	Val	Glu	Arg	Phe	Ser	
		210				215						220					
	ggt	cac	gcc	gtg	acg	ccg	gag	gag	gcg	gcc	gac	aaa	att	ttg	gcc	ggg	720
	Gly	His	Ala	Val	Thr	Pro	Glu	Lys	Ala	Ala	Asp	Lys	Ile	Leu	Ala	Gly	
		225				230					235					240	
	gtc	aca	agg	aac	aga	tac	ctg	gtc	tat	acg	tcg	gcg	gac	atc	cgg	gcg	768
	Val	Thr	Arg	Asn	Arg	Tyr	Leu	Val	Tyr	Thr	Ser	Ala	Asp	Ile	Arg	Ala	
				245						250					255		
	ctg	tat	gcg	ttc	aag	cga	tat	gcg	tgg	tgg	cca	tac	acc	ctg	gtg	atg	816
	Leu	Tyr	Ala	Phe	Lys	Arg	Tyr	Ala	Trp	Trp	Pro	Tyr	Thr	Leu	Val	Met	
			260					265						270			
	cga	cga	gtc	aac	gtg	ttc	ttc	acg	cgc	gcg	ctt	cgg	ccc	ggg	cca		861
	Arg	Arg	Val	Asn	Val	Phe	Phe	Thr	Arg	Ala	Leu	Arg	Pro	Gly	Pro		
			275					280					285				
	tag																864

&lt;210&gt; 1011

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis CDC1551

&lt;400&gt; 1011

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				20					25					30	
	Ala	Ala	Gln	Gly	Ala	Glu	Leu	Tyr	Leu	Thr	Asp	Arg	Asp	Arg	Gly
			35					40				45			
	Leu	Ala	Gln	Thr	Val	Cys	Asp	Ala	Arg	Ala	Leu	Gly	Ala	Gln	Val
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## PhoenixTemp32470.tmp.txt

50 55 60  
 Glu His Arg Val Leu Asp Val Ser Asp Tyr Gln Asp Val Ala Ala Phe  
 65 70 75 80  
 Ala Ala Asp Ile His Ala Arg His Pro Ser Met Asp Val Val Leu Asn  
 85 90 95  
 Ile Ala Gly Val Ser Ala Trp Gly Thr Val Asp Gln Leu Thr His Asp  
 100 105 110  
 Gln Trp Ser Arg Met Val Ala Ile Asn Leu Met Gly Pro Ile His Val  
 115 120 125  
 Ile Glu Thr Leu Val Pro Pro Met Val Ala Ala Gly Arg Gly Gly His  
 130 135 140  
 Leu Val Asn Val Ser Ser Ala Ala Gly Leu Val Gly Leu Pro Trp His  
 145 150 155 160  
 Ala Ala Tyr Ser Ala Ser Lys Tyr Gly Leu Arg Gly Leu Ser Glu Val  
 165 170 175  
 Leu Arg Phe Asp Leu Ala Arg His Gly Ile Gly Val Ser Val Val Val  
 180 185 190  
 Pro Gly Ala Val Lys Thr Pro Leu Val Asn Thr Val Glu Ile Ala Gly  
 195 200 205  
 Val Asp Arg Asp Asp Pro Arg Val Asn Arg Trp Val Glu Arg Phe Ser  
 210 215 220  
 Gly His Ala Val Thr Pro Glu Lys Ala Ala Asp Lys Ile Leu Ala Gly  
 225 230 235 240  
 Val Thr Arg Asn Arg Tyr Leu Val Tyr Thr Ser Ala Asp Ile Arg Ala  
 245 250 255  
 Leu Tyr Ala Phe Lys Arg Tyr Ala Trp Trp Pro Tyr Thr Leu Val Met  
 260 265 270  
 Arg Arg Val Asn Val Phe Phe Thr Arg Ala Leu Arg Pro Gly Pro  
 275 280 285

&lt;210&gt; 1012

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1012

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ggg	atc	ggg	cgc	gcc	gcc	gcc	ctc	cat	ctg	gcc	gcg	gca	ggc	ttt	tcc	96
Gly	Ile	Gly	Arg	Ala	Ala	Ala	Leu	His	Leu	Ala	Ala	Ala	Gly	Phe	Ser	
			20					25					30			
gtt	ggc	ctg	ctc	ggg	cgc	acc	gaa	tcc	gaa	ttg	cag	acc	gtg	gct	gct	144
Val	Gly	Leu	Leu	Gly	Arg	Thr	Glu	Ser	Glu	Leu	Gln	Thr	Val	Ala	Ala	
			35				40					45				
gag	ata	gag	gcc	gca	tcc	ggc	tct	tcg	aga	ctt	ctt	ctc	gcc	gat	gtc	192
Glu	Ile	Glu	Ala	Ala	Ser	Gly	Ser	Ser	Arg	Leu	Leu	Leu	Ala	Asp	Val	
			50			55				60						
tcg	gat	gag	gcg	gcc	atg	cgt	cat	gcg	gta	gca	acg	ctt	gtg	gac	gat	240
Ser	Asp	Glu	Ala	Ala	Met	Arg	His	Ala	Val	Ala	Thr	Leu	Val	Asp	Asp	
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ttc	ggg	cgg	ctg	gat	gtc	gtg	gtg	gcg	aat	gcc	ggg	gtg	aac	gga	gtc	288
Phe	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	Asn	Gly	Val	
				85				90						95		
tgg	gcg	ccc	atc	gat	gag	ttg	aag	cct	tcc	gac	tgg	gac	gac	acg	atc	336
Trp	Ala	Pro	Ile	Asp	Glu	Leu	Lys	Pro	Ser	Asp	Trp	Asp	Asp	Thr	Ile	
			100					105					110			
cgc	atc	aac	ctg	cgc	ggc	acc	tat	ctc	acc	gtc	cac	gcc	agc	gtg	ccg	384
Arg	Ile	Asn	Leu	Arg	Gly	Thr	Tyr	Leu	Thr	Val	His	Ala	Ser	Val	Pro	
			115				120					125				
cat	ctg	aaa	gcg	gcc	ggc	ggc	ggg	tcc	atc	gtt	atc	gtg	tcg	tcc	atc	432
His	Leu	Lys	Ala	Ala	Gly	Gly	Gly	Ser	Ile	Val	Ile	Val	Ser	Ser	Ile	
			130			135					140					
aac	ggc	acc	cgc	acg	ttt	acc	tcg	ccc	ggg	gcg	acc	gcc	tat	tcc	gtg	480

## PhoenixTemp32470.tmp.txt

Asn	Gly	Thr	Arg	Thr	Phe	Thr	Ser	Pro	Gly	Ala	Thr	Ala	Tyr	Ser	Val		
145					150					155					160		
aca	aag	gcg	gga	cag	ctt	gcc	atg	gcc	cag	caa	ctg	gcg	ctg	gag	ctt		528
Thr	Lys	Ala	Gly	Gln	Leu	Ala	Met	Ala	Gln	Gln	Leu	Ala	Leu	Glu	Leu		
				165					170						175		
ggc	cgc	cac	cgg	atc	cgc	gtc	aat	gcg	gtg	tgc	ccg	ggc	gag	atc	gaa		576
Gly	Arg	His	Arg	Ile	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Glu	Ile	Glu		
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acg	gca	atc	aat	gag	aac	acc	gac	atc	cgc	ggg	agg	gaa	agg	acc	gaa		624
Thr	Ala	Ile	Asn	Glu	Asn	Thr	Asp	Ile	Arg	Gly	Arg	Glu	Arg	Thr	Glu		
		195					200					205					
gtg	ccg	gtt	cgt	ttt	ccg	gcg	ggc	gac	att	ccg	gtg	acg	ggc	ggt	gtc		672
Val	Pro	Val	Arg	Phe	Pro	Ala	Gly	Asp	Ile	Pro	Val	Thr	Gly	Gly	Val		
	210					215					220						
gcc	ggg	acg	agc	gag	gat	gtc	gcc	gaa	ctc	atc	ggt	ttt	ctc	gcc	tcg		720
Ala	Gly	Thr	Ser	Glu	Asp	Val	Ala	Glu	Leu	Ile	Gly	Phe	Leu	Ala	Ser		
225				230					235						240		
gat	gca	tcg	cgt	cac	att	acc	ggc	aca	ccg	gta	tgg	atc	gac	ggc	ggt		768
Asp	Ala	Ser	Arg	His	Ile	Thr	Gly	Thr	Pro	Val	Trp	Ile	Asp	Gly	Gly		
				245				250						255			
cag	ggc	ctt	ctc	cga	taa												786
Gln	Gly	Leu	Leu	Arg													
			260														

&lt;210&gt; 1013

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 1013

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Gly	Ile	Gly	Arg	Ala	Ala	Ala	Leu	His	Leu	Ala	Ala	Ala	Gly	Phe	Ser		
			20					25					30				
Val	Gly	Leu	Gly	Arg	Thr	Glu	Ser	Glu	Leu	Gln	Thr	Val	Ala	Ala			
		35				40					45						
Glu	Ile	Glu	Ala	Ala	Ser	Gly	Ser	Ser	Arg	Leu	Leu	Leu	Ala	Asp	Val		
		50				55					60						
Ser	Asp	Glu	Ala	Ala	Met	Arg	His	Ala	Val	Ala	Thr	Leu	Val	Asp	Asp		
65				70					75					80			
Phe	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	Asn	Gly	Val		
			85						90					95			
Trp	Ala	Pro	Ile	Asp	Glu	Leu	Lys	Pro	Ser	Asp	Trp	Asp	Asp	Thr	Ile		
		100						105					110				
Arg	Ile	Asn	Leu	Arg	Gly	Thr	Tyr	Leu	Thr	Val	His	Ala	Ser	Val	Pro		
		115					120					125					
His	Leu	Lys	Ala	Ala	Gly	Gly	Ser	Ile	Val	Ile	Val	Ser	Ser	Ile			
	130				135					140							
Asn	Gly	Thr	Arg	Thr	Phe	Thr	Ser	Pro	Gly	Ala	Thr	Ala	Tyr	Ser	Val		
145					150					155					160		
Thr	Lys	Ala	Gly	Gln	Leu	Ala	Met	Ala	Gln	Gln	Leu	Ala	Leu	Glu	Leu		
				165					170					175			
Gly	Arg	His	Arg	Ile	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Glu	Ile	Glu		
			180					185					190				
Thr	Ala	Ile	Asn	Glu	Asn	Thr	Asp	Ile	Arg	Gly	Arg	Glu	Arg	Thr	Glu		
		195					200					205					
Val	Pro	Val	Arg	Phe	Pro	Ala	Gly	Asp	Ile	Pro	Val	Thr	Gly	Gly	Val		
	210					215					220						
Ala	Gly	Thr	Ser	Glu	Asp	Val	Ala	Glu	Leu	Ile	Gly	Phe	Leu	Ala	Ser		
225				230					235						240		
Asp	Ala	Ser	Arg	His	Ile	Thr	Gly	Thr	Pro	Val	Trp	Ile	Asp	Gly	Gly		
				245				250						255			
Gln	Gly	Leu	Leu	Arg													
			260														

&lt;210&gt; 1014

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1014

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gcc	gtc	gtc	acg	ggc	ggc	gcg	tgc	ggg	atc	ggg	ctc	gcc	acg	gcc	agg	96
Ala	Val	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Leu	Ala	Thr	Ala	Arg	
			20					25					30			
ctc	ctg	gcc	cgc	cgc	ggc	gcc	cgg	gtc	gcc	gtc	ctc	gac	ctc	gcg	ccg	144
Leu	Leu	Ala	Arg	Arg	Gly	Ala	Arg	Val	Ala	Val	Leu	Asp	Leu	Ala	Pro	
		35					40					45				
gac	gcc	gtg	ccg	gcc	acc	gac	ctc	gag	gcc	ctg	ctg	ccc	gtc	ggg	tgc	192
Asp	Ala	Val	Pro	Ala	Thr	Asp	Leu	Glu	Ala	Leu	Leu	Pro	Val	Gly	Cys	
	50					55					60					
gac	gtc	acc	gac	gac	gcc	tcc	gtc	cgg	gcc	ggc	ctc	gac	cgc	gcg	gtg	240
Asp	Val	Thr	Asp	Asp	Ala	Ser	Val	Arg	Ala	Gly	Leu	Asp	Arg	Ala	Val	
	65				70					75				80		
gac	ctg	ctg	ggc	ggc	ctg	gac	atc	ctg	gtg	aac	aac	gcg	ggc	gtc	ggc	288
Asp	Leu	Leu	Gly	Gly	Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Gly	
			85					90						95		
gcc	cag	ggg	acg	gtc	gcg	gac	aac	gac	gac	gcc	gag	tgg	cac	cgc	gtc	336
Ala	Gln	Gly	Thr	Val	Ala	Asp	Asn	Asp	Asp	Ala	Glu	Trp	His	Arg	Val	
			100				105						110			
ctg	gac	gtc	aac	gtc	ctc	ggc	atc	gtg	cgg	acc	acc	cgg	gcc	gca	ctg	384
Leu	Asp	Val	Asn	Val	Leu	Gly	Ile	Val	Arg	Thr	Thr		Ala	Ala	Leu	
		115					120					125				
ccc	cac	ctg	cgc	gcc	tgc	cgg	cac	gcg	gcg	gtg	gtc	aac	acc	tgc	tgc	432
Pro	His	Leu	Arg	Ala	Ser	Arg	His	Ala	Ala	Val	Val	Asn	Thr	Cys	Ser	
	130				135					140						
gtc	gcg	gcg	acc	gcg	ggg	ctg	ccc	cgg	cgg	gcg	ctg	tac	agc	gcg	agc	480
Val	Ala	Ala	Thr	Ala	Gly	Leu	Pro	Arg	Arg	Ala	Leu	Tyr	Ser	Ala	Ser	
	145				150					155				160		
aag	ggc	gcc	gtg	cag	tcc	ctg	acc	ctc	gcc	atg	gcc	gcc	gac	cac	atc	528
Lys	Gly	Ala	Val	Gln	Ser	Leu	Thr	Leu	Ala	Met	Ala	Ala	Asp	His	Ile	
			165						170				175			
cgt	gag	gga	atc	cgg	gtg	aac	tgc	gtc	aac	ccc	ggg	acg	gcg	gac	acc	576
Arg	Glu	Gly	Ile	Arg	Val	Asn	Cys	Val	Asn	Pro	Gly	Thr	Ala	Asp	Thr	
			180					185					190			
ccg	tgg	ata	gac	cgg	ctg	ctg	tgc	agt	gcc	gac	gac	ccg	gcc	gcc	gag	624
Pro	Trp	Ile	Asp	Arg	Leu	Leu	Ser	Ser	Ala	Asp	Asp	Pro	Ala	Ala	Glu	
		195					200					205				
cgc	acc	gcg	ctc	aac	gcc	cgc	cag	ccg	acc	ggc	cgt	ctg	gtg	agc	gcc	672
Arg	Thr	Ala	Leu	Asn	Ala	Arg	Gln	Pro	Thr	Gly	Arg	Leu	Val	Ser	Ala	
	210				215						220					
gag	gag	gtc	gcc	gcg	gcc	atc	ggc	tac	ctg	gcg	tcc	ccg	gcg	gcg	gcg	720
Glu	Glu	Val	Ala	Ala	Ala	Ile	Gly	Tyr	Leu	Ala	Ser	Pro	Ala	Ala	Ala	
	225				230					235				240		
tcc	gtc	acc	ggc	acg	gcc	ctc	gcc	gtg	gac	ggg	ggc	atg	cag	ggg	ctg	768
Ser	Val	Thr	Gly	Thr	Ala	Leu	Ala	Val	Asp	Gly	Gly	Met	Gln	Gly	Leu	
			245						250				255			
cgg	ctg	cgc	ccc	gac	ggc	ggc	tga									792
Arg	Leu	Arg	Pro	Asp	Gly	Gly										
			260													

&lt;210&gt; 1015

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;400&gt; 1015

Met	Pro	His	Thr	Pro	Thr	Pro	Pro	Ser	Pro	Glu	Leu	Ala	Gly	Leu	Ala	
1				5					10					15		
Ala	Val	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Leu	Ala	Thr	Ala	Arg	
			20					25					30			



## PhoenixTemp32470.tmp.txt

Leu Leu Ala Arg Arg Gly Ala Arg Val Ala Val Leu Asp Leu Ala Pro  
 35 40 45  
 Asp Ala Val Pro Ala Thr Asp Leu Glu Ala Leu Leu Pro Val Gly Cys  
 50 55 60  
 Asp Val Thr Asp Asp Ala Ser Val Arg Ala Gly Leu Asp Arg Ala Val  
 65 70 75 80  
 Asp Leu Leu Gly Gly Leu Asp Ile Leu Val Asn Asn Ala Gly Val Gly  
 85 90 95  
 Ala Gln Gly Thr Val Ala Asp Asn Asp Asp Ala Glu Trp His Arg Val  
 100 105 110  
 Leu Asp Val Asn Val Leu Gly Ile Val Arg Thr Thr Arg Ala Ala Leu  
 115 120 125  
 Pro His Leu Arg Ala Ser Arg His Ala Ala Val Val Asn Thr Cys Ser  
 130 135 140  
 Val Ala Ala Thr Ala Gly Leu Pro Arg Arg Ala Leu Tyr Ser Ala Ser  
 145 150 155 160  
 Lys Gly Ala Val Gln Ser Leu Thr Leu Ala Met Ala Ala Asp His Ile  
 165 170 175  
 Arg Glu Gly Ile Arg Val Asn Cys Val Asn Pro Gly Thr Ala Asp Thr  
 180 185 190  
 Pro Trp Ile Asp Arg Leu Leu Ser Ser Ala Asp Asp Pro Ala Ala Glu  
 195 200 205  
 Arg Thr Ala Leu Asn Ala Arg Gln Pro Thr Gly Arg Leu Val Ser Ala  
 210 215 220  
 Glu Glu Val Ala Ala Ala Ile Gly Tyr Leu Ala Ser Pro Ala Ala Ala  
 225 230 235 240  
 Ser Val Thr Gly Thr Ala Leu Ala Val Asp Gly Gly Met Gln Gly Leu  
 245 250 255  
 Arg Leu Arg Pro Asp Gly Gly  
 260

&lt;210&gt; 1016

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1016

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gcg gcc cgg ggc atc ggc gcg gcc acc gca cgc cgg ctc gcc acg gag	96
Ala Ala Arg Gly Ile Gly Ala Ala Thr Ala Arg Arg Leu Ala Thr Glu	
20 25 30	
gga gcc cgg gta ctg ctg acc gac gtg gac ctc gtg ggg gcg cgg cgg	144
Gly Ala Arg Val Leu Leu Thr Asp Val Asp Leu Val Gly Ala Arg Arg	
35 40 45	
acc gcg gcg gaa ctg gcg gac gac ggg ctc gac gcg acc gcg ttc gcc	192
Thr Ala Ala Glu Leu Ala Asp Asp Gly Leu Asp Ala Thr Ala Phe Ala	
50 55 60	
tgc gac gtg agc gac cgg gag tcc gtg gag acg gcc gtc gcc cat gcc	240
Cys Asp Val Ser Asp Arg Glu Ser Val Glu Thr Ala Val Ala His Ala	
65 70 75 80	
gtg gaa acc ttc ggc ggt ctg gac gta ctg gtc aac aac gcc ttc gcc	288
Val Glu Thr Phe Gly Gly Leu Asp Val Leu Val Asn Asn Ala Phe Ala	
85 90 95	
tgt acg ccg gac gcc ccg ctc ttc gag gac gaa ccg gac gac gtc tgg	336
Cys Thr Pro Asp Ala Pro Leu Phe Glu Asp Glu Pro Asp Asp Val Trp	
100 105 110	
gcc cgc gac ctc gat gtc acc ctc acc ggc gcc caa cgc tgc tgc cgg	384
Ala Arg Asp Leu Asp Val Thr Leu Thr Gly Ala Gln Arg Cys Cys Arg	
115 120 125	
gcc gcg ctg ccc cac ctc gcg gcc tcc ggc cgc ggc gcg atc gtg agc	432
Ala Ala Leu Pro His Leu Ala Ala Ser Gly Arg Ala Ile Val Ser	
130 135 140	

PhoenixTemp32470.tmp.txt

atc	ggt	tcg	gtc	aat	ggg	gtc	cag	gac	ttc	ggc	aac	cac	gcc	tac	agc	480
Ile	Gly	Ser	Val	Asn	Gly	Val	Gln	Asp	Phe	Gly	Asn	His	Ala	Tyr	Ser	
145					150					155					160	
gcg	gca	aag	gcg	ggt	ctc	gcc	tcg	ctg	acc	cgc	acc	ctc	gcc	gga	cac	528
Ala	Ala	Lys	Ala	Gly	Leu	Ala	Ser	Leu	Thr	Arg	Thr	Leu	Ala	Gly	His	
				165					170					175		
gcg	ggc	ccg	cgc	ggc	gtc	cgc	gtc	aac	ctc	gtc	acg	ccg	ggc	acg	gtg	576
Ala	Gly	Pro	Arg	Gly	Val	Arg	Val	Asn	Leu	Val	Thr	Pro	Gly	Thr	Val	
				180				185					190			
cgc	acc	acg	gcc	tgg	gag	ggc	cgg	gac	gag	gaa	ctg	gcc	gcg	gtg	cgg	624
Arg	Thr	Thr	Ala	Trp	Glu	Gly	Arg	Asp	Glu	Glu	Leu	Ala	Ala	Val	Arg	
				195			200					205				
ggg	ctg	tac	ccg	ctg	ggg	cgg	gtc	ggc	gag	ccc	gag	gac	gtc	gcg	gcg	672
Gly	Leu	Tyr	Pro	Leu	Gly	Arg	Val	Gly	Glu	Pro	Glu	Asp	Val	Ala	Ala	
	210					215					220					
gcc	gtc	gcc	ttc	ctc	gcc	tcg	cgc	gac	gcc	gcc	tgg	atc	acc	ggg	acc	720
Ala	Val	Ala	Phe	Leu	Ala	Ser	Arg	Asp	Ala	Ala	Trp	Ile	Thr	Gly	Thr	
					230				235						240	
acc	ctg	gcc	gtc	gac	ggc	ggt	ctg	acc	gcg	gtc	aac	acc	ggc	ttc	cgg	768
Thr	Leu	Ala	Val	Asp	Gly	Gly	Leu	Thr	Ala	Val	Asn	Thr	Gly	Phe	Arg	
				245					250					255		
cag	gcg	atc	gcg	cgg	gcg	gag	ggc	tcg	gac	tga						801
Gln	Ala	Ile	Ala	Arg	Ala	Glu	Gly	Ser	Asp							
				260				265								

<210> 1017  
 <211> 266  
 <212> PRT  
 <213> Streptomyces coelicolor A3(2)

<400> 1017  
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 1 5 10 15  
 Ala Ala Arg Gly Ile Gly Ala Ala Thr Ala Arg Arg Leu Ala Thr Glu  
 20 25 30  
 Gly Ala Arg Val Leu Leu Thr Asp Val Asp Leu Val Gly Ala Arg Arg  
 35 40 45  
 Thr Ala Ala Glu Leu Ala Asp Asp Gly Leu Asp Ala Thr Ala Phe Ala  
 50 55 60  
 Cys Asp Val Ser Asp Arg Glu Ser Val Glu Thr Ala Val Ala His Ala  
 65 70 75 80  
 Val Glu Thr Phe Gly Gly Leu Asp Val Leu Val Asn Asn Ala Phe Ala  
 85 90 95  
 Cys Thr Pro Asp Ala Pro Leu Phe Glu Asp Glu Pro Asp Asp Val Trp  
 100 105 110  
 Ala Arg Asp Leu Asp Val Thr Leu Thr Gly Ala Gln Arg Cys Cys Arg  
 115 120 125  
 Ala Ala Leu Pro His Leu Ala Ala Ser Gly Arg Gly Ala Ile Val Ser  
 130 135 140  
 Ile Gly Ser Val Asn Gly Val Gln Asp Phe Gly Asn His Ala Tyr Ser  
 145 150 155 160  
 Ala Ala Lys Ala Gly Leu Ala Ser Leu Thr Arg Thr Leu Ala Gly His  
 165 170 175  
 Ala Gly Pro Arg Gly Val Arg Val Asn Leu Val Thr Pro Gly Thr Val  
 180 185 190  
 Arg Thr Thr Ala Trp Glu Gly Arg Asp Glu Glu Leu Ala Ala Val Arg  
 195 200 205  
 Gly Leu Tyr Pro Leu Gly Arg Val Gly Glu Pro Glu Asp Val Ala Ala  
 210 215 220  
 Ala Val Ala Phe Leu Ala Ser Arg Asp Ala Ala Trp Ile Thr Gly Thr  
 225 230 235 240  
 Thr Leu Ala Val Asp Gly Gly Leu Thr Ala Val Asn Thr Gly Phe Arg  
 245 250 255  
 Gln Ala Ile Ala Arg Ala Glu Gly Ser Asp  
 260 265

<210> 1018  
 <211> 792  
 <212> DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1018

atg aac acc gtg aga acc acc gac gag gaa agc gcc ggc gcg cgg aag	48
Met Asn Thr Val Arg Thr Thr Asp Glu Glu Ser Ala Gly Ala Arg Lys	
1 5 10 15	
gtc gcc gtc gtc acg ggt gcc gga tcc ggc atc ggc cgg gcg gtc gcc	96
Val Ala Val Val Thr Gly Ala Gly Ser Gly Ile Gly Arg Ala Val Ala	
20 25 30	
gtc gaa ctg ctc acc gcc ggc tgg tcg gtc gcc ctg gcc ggc cgt cgc	144
Val Glu Leu Leu Thr Ala Gly Trp Ser Val Ala Leu Ala Gly Arg Arg	
35 40 45	
ccc gag ccc ctg gcc gag acg gcc gcg gcg gca ccg gcg ggc ggc ggc	192
Pro Glu Pro Leu Ala Glu Thr Ala Ala Ala Pro Ala Gly Gly Gly	
50 55 60	
acg gcg ctc acc gtc cgc gcc gac gtg tcg cgc ccg gag gac gtg gcg	240
Thr Ala Leu Thr Val Arg Ala Asp Val Ser Arg Pro Glu Asp Val Ala	
65 70 75 80	
gct ctg ttc ggc gcg gtg cgc gac cgg ttc ggg cga ctg gac ctg ctg	288
Ala Leu Phe Gly Ala Val Arg Asp Arg Phe Gly Arg Leu Asp Leu Leu	
85 90 95	
ttc aac aac gcg ggg acg ttc ggt ccc ggc ggc gta ccg gtc gag gac	336
Phe Asn Asn Ala Gly Thr Phe Gly Pro Gly Gly Val Pro Val Glu Asp	
100 105 110	
ctt ccc tac gag gcc tgg cgg cac gtg gtg gac acc aac ctc aac ggg	384
Leu Pro Tyr Glu Ala Trp Arg His Val Val Asp Thr Asn Leu Asn Gly	
115 120 125	
gcg ttc ctg tgc gca cag gcg gcg tac cgg cag atg aag gag cag gac	432
Ala Phe Leu Cys Ala Gln Ala Ala Tyr Arg Gln Met Lys Glu Gln Asp	
130 135 140	
ccg cgg ggc ggc cgg atc atc aac aac ggc tcg atc tcg gca cac acg	480
Pro Arg Gly Gly Arg Ile Ile Asn Asn Gly Ser Ile Ser Ala His Thr	
145 150 155 160	
ccg cgt ccg cac tcg gtg gcg tac acc gcg acc aag cac gcg ctg acg	528
Pro Arg Pro His Ser Val Ala Tyr Thr Ala Thr Lys His Ala Leu Thr	
165 170 175	
ggt ctg acc aag tca ctg tcg ctg gac ggc cgc ccc tac ggc atc gcg	576
Gly Leu Thr Lys Ser Leu Ser Leu Asp Gly Arg Pro Tyr Gly Ile Ala	
180 185 190	
gtc ggc cag atc gac atc ggc aac gcg gcg acc gag atg acg gcc ggg	624
Val Gly Gln Ile Asp Ile Gly Asn Ala Ala Thr Glu Met Thr Ala Gly	
195 200 205	
atg cag acc ggc gcg ctc cag gcc aac ggg gag acg gca ccc gag ccc	672
Met Gln Thr Gly Ala Leu Gln Ala Asn Gly Glu Thr Ala Pro Glu Pro	
210 215 220	
gtg atg gac gtc gcc gac gtg gcg cgc acg gtg cgg cac atg gcc gag	720
Val Met Asp Val Ala Asp Val Ala Arg Thr Val Arg His Met Ala Glu	
225 230 235 240	
ctg cct ctg gag gcc aac gtg cag ttc gcg acg gtc atg gcg acg gcg	768
Leu Pro Leu Glu Ala Asn Val Gln Phe Ala Thr Val Met Ala Thr Ala	
245 250 255	
atg ccg tac gtg ggg cgc ggc tga	792
Met Pro Tyr Val Gly Arg Gly	
260	

&lt;210&gt; 1019

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;400&gt; 1019

Met Asn Thr Val Arg Thr Thr Asp Glu Glu Ser Ala Gly Ala Arg Lys
1 5 10 15
Val Ala Val Val Thr Gly Ala Gly Ser Gly Ile Gly Arg Ala Val Ala

## PhoenixTemp32470.tmp.txt

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      20      25      30
Val Glu Leu Thr Ala Gly Trp Ser Val Ala Leu Ala Gly Arg Arg
      35      40      45
Pro Glu Pro Leu Ala Glu Thr Ala Ala Ala Pro Ala Gly Gly Gly
      50      55      60
Thr Ala Leu Thr Val Arg Ala Asp Val Ser Arg Pro Glu Asp Val Ala
65      70      75      80
Ala Leu Phe Gly Ala Val Arg Asp Arg Phe Gly Arg Leu Asp Leu Leu
      85      90      95
Phe Asn Asn Ala Gly Thr Phe Gly Pro Gly Gly Val Pro Val Glu Asp
      100      105      110
Leu Pro Tyr Glu Ala Trp Arg His Val Val Asp Thr Asn Leu Asn Gly
      115      120      125
Ala Phe Leu Cys Ala Gln Ala Tyr Arg Gln Met Lys Glu Gln Asp
      130      135      140
Pro Arg Gly Gly Arg Ile Ile Asn Asn Gly Ser Ile Ser Ala His Thr
145      150      155      160
Pro Arg Pro His Ser Val Ala Tyr Thr Ala Thr Lys His Ala Leu Thr
      165      170      175
Gly Leu Thr Lys Ser Leu Ser Leu Asp Gly Arg Pro Tyr Gly Ile Ala
      180      185      190
Val Gly Gln Ile Asp Ile Gly Asn Ala Ala Thr Glu Met Thr Ala Gly
      195      200      205
Met Gln Thr Gly Ala Leu Gln Ala Asn Gly Glu Thr Ala Pro Glu Pro
      210      215      220
Val Met Asp Val Ala Asp Val Ala Arg Thr Val Arg His Met Ala Glu
225      230      235      240
Leu Pro Leu Glu Ala Asn Val Gln Phe Ala Thr Val Met Ala Thr Ala
      245      250      255
Met Pro Tyr Val Gly Arg Gly
      260

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&lt;210&gt; 1020

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1020

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atg aac aag gtg tgg ctg atc acc ggg gcg agc agc ggc ttc ggg cgg      48
Met Asn Lys Val Trp Leu Ile Thr Gly Ala Ser Ser Gly Phe Gly Arg
      5      10      15
gcg atc gcc gag gcg gcc ctg gcc gac ggc gac gtc gtg gtc ggc gcg      96
Ala Ile Ala Glu Ala Ala Leu Ala Asp Gly Asp Val Val Val Gly Ala
      20      25      30
gct cgg cgc ccc gag gcg ctg gac gac ctc gtg gcc gcg cac ccg gac      144
Ala Arg Arg Pro Glu Ala Leu Asp Asp Leu Val Ala Ala His Pro Asp
      35      40      45
cag atg gag gcg ctg cgc ctg gac gtc gcc gac acg gcc gcc gcc ggg      192
Gln Met Glu Ala Leu Arg Leu Asp Val Ala Asp Thr Ala Ala Ala Gly
      50      55      60
gac gcc gta cgg gac gtg gtg gcg cgg cac ggc agg gtg gac gta ttg      240
Asp Ala Val Arg Asp Val Val Ala Arg His Gly Arg Val Asp Val Leu
65      70      75      80
gtc aac aac gcg ggc cgc aca cac gtc ggt gcc ctc gag gag acc ggc      288
Val Asn Asn Ala Gly Arg Thr His Val Gly Ala Leu Glu Glu Thr Gly
      85      90      95
gag gac gaa ctg cgg gcg ctg ttc gac gtg cac gtc ttc gcc ccg gcc      336
Glu Asp Glu Leu Arg Ala Leu Phe Asp Val His Val Phe Gly Pro Ala
      100      105      110
gcg ctg acg cgc gcg gta ctg ccg tcc atg cgg gag cgg cgt tcg ggc      384
Ala Leu Thr Arg Ala Val Leu Pro Ser Met Arg Glu Arg Arg Ser Gly
      115      120      125
gcg atc gtg cag atg agc agc atg ggc ggg cag atg tcc ttc gcg ggc      432
Ala Ile Val Gln Met Ser Ser Met Gly Gly Gln Met Ser Phe Ala Gly

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## PhoenixTemp32470.tmp.txt

130	135	140		
tcc ggc tac agc ggc	acg thr lys phe ggc	ctg gag ggc atg tcc gag		480
Phe Ser Ala Tyr Ser Gly	Thr Lys Phe Ala Leu	Glu Gly Met Ser Glu		
145	150	155		
ggg ctc ggc gac gag	gtc cgg gac ttc ggc	atc aag gtg ctg atc gtc		528
Gly Leu Ala Asp Glu	Val Arg Asp Phe Gly	Ile Lys Val Leu Ile Val		
165	170	175		
gag ccg ggc tcc ttc	cgc acc ggc ctg gag	gcc ggc aac gcc ggc		576
Glu Pro Gly Ser Phe	Arg Thr Gly Leu Phe	Glu Ala Gly Asn Ala Gly		
180	185	190		
atc agc gcc gac agc	ggc gtg tac gcc aag	gtc ggc gag acc cgc		624
Ile Ser Ala Asp Ser	Gly Val Tyr Ala Lys	Val Gly Glu Thr Arg Gly		
195	200	205		
atg atc gcc ggc ggc	gac agc cag ccc ggc	gac ccc gcc agg gcg		672
Met Ile Ala Ala Gly	Asp Gly Ser Gln Pro	Gly Asp Pro Ala Arg Ala		
210	215	220		
gcc gcg gtc atc cgc	gcg gcc ctc gcg gcc	gag cac act ccg ctg		720
Ala Ala Val Ile Arg	Ala Ala Leu Ala Ala	Glu His Thr Pro Leu Arg		
225	230	235		
ctg ccg ctg ggc gac	gac ggc gtc acc gcg	gtc ctc ggc cac ctc		768
Leu Pro Leu Gly Asp	Asp Gly Val Thr Ala	Val Leu Gly His Leu Asp		
245	250	255		
cgg gtc cgc gag gag	gtc gag acc tgg gag	aag cag acc cgg gcc		816
Arg Val Arg Glu Val	Glu Thr Trp Trp Glu	Lys Gln Thr Arg Ala Thr		
260	265	270		
gcg ttc gac gac tga				831
Ala Phe Asp Asp				
275				

&lt;210&gt; 1021

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;400&gt; 1021

Met Asn Lys Val Trp	Leu Ile Thr Gly Ala	Ser Ser Gly Phe Gly	Arg
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Ala Ile Ala Glu Ala	Ala Leu Ala Asp Gly	Asp Val Val Val	Gly Ala
20	25	30	
Ala Arg Arg Pro Glu	Ala Leu Asp Asp	Leu Val Ala Ala	His Pro Asp
35	40	45	
Gln Met Glu Ala Leu	Arg Leu Asp Val	Ala Asp Thr Ala	Ala Ala Gly
50	55	60	
Asp Ala Val Arg Asp	Val Val Ala Arg	His Gly Arg Val	Asp Val Leu
65	70	75	80
Val Asn Asn Ala Gly	Arg Thr His Val	Gly Ala Leu Glu	Glu Thr Gly
85	90	95	
Glu Asp Glu Leu Arg	Ala Leu Phe Asp	Val His Val Phe	Gly Pro Ala
100	105	110	
Ala Leu Thr Arg Ala	Val Leu Pro Ser	Met Arg Glu Arg	Arg Ser Gly
115	120	125	
Ala Ile Val Gln Met	Ser Ser Met Gly	Gly Gln Met Ser	Phe Ala Gly
130	135	140	
Phe Ser Ala Tyr Ser	Gly Thr Lys Phe	Ala Leu Glu Gly	Met Ser Glu
145	150	155	160
Gly Leu Ala Asp Glu	Val Arg Asp Phe	Gly Ile Lys Val	Leu Ile Val
165	170	175	
Glu Pro Gly Ser Phe	Arg Thr Gly Leu	Phe Glu Ala Gly	Asn Ala Gly
180	185	190	
Ile Ser Ala Asp Ser	Gly Val Tyr Ala	Lys Val Gly Glu	Thr Arg Gly
195	200	205	
Met Ile Ala Ala Gly	Asp Gly Ser Gln	Pro Gly Asp Pro	Ala Arg Ala
210	215	220	
Ala Ala Val Ile Arg	Ala Ala Leu Ala	Glu His Thr Pro	Leu Arg
225	230	235	240
Leu Pro Leu Gly Asp	Asp Gly Val Thr	Ala Val Leu Gly	His Leu Asp
245	250	255	
Arg Val Arg Glu Val	Glu Thr Trp Trp	Glu Lys Gln Thr	Arg Ala Thr
260	265	270	

Ala Phe Asp Asp  
275

<210> 1022  
<211> 783  
<212> DNA  
<213> Streptomyces coelicolor A3(2)

<220>  
<221> CDS  
<222> (1)..(783)  
<223> transl\_table=11

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<400> 1022
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  1      5      10      15
ctc acc gcg ctg gtc acc ggc ggc gcc tcc ggg atc ggc ctg gcc acc      96
Leu Thr Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Leu Ala Thr
      20      25      30
gcc cgg ctg ctc acc gcc cag ggc gcc cgc gtg gcc gtc ctg gac ctg      144
Ala Arg Leu Leu Thr Ala Gln Gly Ala Arg Val Ala Val Leu Asp Leu
      35      40      45
tcc gaa ccg cag ccc gcc ggc ttc gcg gcg gcc ctg cgc gcg gac ata      192
Ser Glu Pro Gln Pro Ala Gly Phe Ala Ala Ala Leu Arg Ala Asp Ile
      50      55      60
cgc gac gac gcc tcg gtg gtg gcc gcc gtc gac gcg gcg gtc tcc cgg      240
Arg Asp Asp Ala Ser Val Val Ala Ala Val Asp Ala Ala Val Ser Arg
      65      70      75      80
ctc ggc gga ctc gac atc gtg gtc aac aac gcg ggg atc ggg gcg cag      288
Leu Gly Gly Leu Asp Ile Val Val Asn Asn Ala Gly Ile Gly Ala Gln
      85      90      95
ggc ggc gtc gag gac aac tcc gac gag gag tgg cac cgc gtc ctg gac      336
Gly Gly Val Glu Asp Asn Ser Asp Glu Glu Trp His Arg Val Leu Asp
      100      105      110
acc aac gtc gtc ggc atg gtc cgg gtc acc cgg gcc gcg ctg ccc gcc      384
Thr Asn Val Val Gly Met Val Arg Val Thr Arg Ala Ala Leu Pro Ala
      115      120      125
ctg cgg gcc tcc cgg cac gcg gcg gtc gtc aac gtc ggt tcc atc gcc      432
Leu Arg Ala Ser Arg His Ala Ala Val Val Asn Val Gly Ser Ile Ala
      130      135      140
gcc acc gcc ggg ctg ccc cag cgg gtg ctg tac tcg gcc ggc aag ggc      480
Ala Thr Ala Gly Leu Pro Gln Arg Val Leu Tyr Ser Ala Gly Lys Gly
      145      150      155      160
gcc gtg gtg gcg atg acc cgg gcc atg gcc gcc gac ctg ctg ccg gag      528
Ala Val Val Ala Met Thr Arg Ala Met Ala Ala Asp Leu Leu Pro Glu
      165      170      175
ggc atc cgg gtc aac gcg gtc aac ccc ggg acc gcg gac acg ccc tgg      576
Gly Ile Arg Val Asn Ala Val Asn Pro Gly Thr Ala Asp Thr Pro Trp
      180      185      190
atc ggc cgg ctg ctg gac cgg gcc gat ccc gcc gcc gag tac acc      624
Ile Gly Arg Leu Leu Asp Arg Ala Asp Pro Ala Ala Glu Tyr Thr
      195      200      205
gcc ctg gcg gcc cgg cag ccg cac ggc cgc ctg gtc gcc gcc gac gag      672
Ala Leu Ala Ala Arg Gln Pro His Gly Arg Leu Val Ala Ala Asp Glu
      210      215      220
gtc gcc gcc gcg atc gcc tac ctc gcc tcg ccg gcc gcc ggg tcc acc      720
Val Ala Ala Ala Ile Ala Tyr Leu Ala Ser Pro Ala Ala Gly Ser Thr
      225      230      235      240
acg ggc acg tgc ctg gcc gtg gac ggc ggc atg gac ggc ctg cgg ctg      768
Thr Gly Thr Cys Leu Ala Val Asp Gly Gly Met Asp Gly Leu Arg Leu
      245      250      255
cgc aag gag ggg tga
Arg Lys Glu Gly
      260

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<210> 1023  
<211> 260  
<212> PRT

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;400&gt; 1023

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Met Thr Thr Thr Gly Ser Ala Leu Ser Gly Ala Leu Pro Phe Ala Gly
1      5      10      15
Leu Thr Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Leu Ala Thr
20      25      30
Ala Arg Leu Thr Ala Gln Gly Ala Arg Val Ala Val Leu Asp Leu
35      40      45
Ser Glu Pro Gln Pro Ala Gly Phe Ala Ala Ala Leu Arg Ala Asp Ile
50      55      60
Arg Asp Asp Ala Ser Val Val Ala Ala Val Asp Ala Ala Val Ser Arg
65      70      75      80
Leu Gly Gly Leu Asp Ile Val Val Asn Asn Ala Gly Ile Gly Ala Gln
85      90      95
Gly Gly Val Glu Asp Asn Ser Asp Glu Glu Trp His Arg Val Leu Asp
100     105     110
Thr Asn Val Gly Met Val Arg Val Thr Arg Ala Ala Leu Pro Ala
115     120     125
Leu Arg Ala Ser Arg His Ala Ala Val Val Asn Val Gly Ser Ile Ala
130     135     140
Ala Thr Ala Gly Leu Pro Gln Arg Val Leu Tyr Ser Ala Gly Lys Gly
145     150     155     160
Ala Val Val Ala Met Thr Arg Ala Met Ala Ala Asp Leu Leu Pro Glu
165     170     175
Gly Ile Arg Val Asn Ala Val Asn Pro Gly Thr Ala Asp Thr Pro Trp
180     185     190
Ile Gly Arg Leu Leu Asp Arg Ala Ala Asp Pro Ala Ala Glu Tyr Thr
195     200     205
Ala Leu Ala Ala Arg Gln Pro His Gly Arg Leu Val Ala Ala Asp Glu
210     215     220
Val Ala Ala Ala Ile Ala Tyr Leu Ala Ser Pro Ala Ala Gly Ser Thr
225     230     235     240
Thr Gly Thr Cys Leu Ala Val Asp Gly Gly Met Asp Gly Leu Arg Leu
245     250     255
Arg Lys Glu Gly
260

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&lt;210&gt; 1024

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1024

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atg agc acc acc gga acc acc ccc gcc acc acc ggg tac gcc gcc gag      48
Met Ser Thr Thr Gly Thr Thr Pro Ala Thr Thr Gly Tyr Ala Ala Glu
1      5      10      15
ttc gcc ggc cgt acc gcc ctc gtc acc ggt gcc gcc tcc ggt atc ggc      96
Phe Ala Gly Arg Thr Ala Leu Val Thr Gly Ala Ala Ser Gly Ile Gly
20      25      30
ctg gcc acc gcc cgc cgg ctc ggc gcc ggc ggc gcc cgg gtc gtc gtc      144
Leu Ala Thr Ala Arg Arg Leu Gly Ala Gly Gly Ala Arg Val Val Val
35      40      45
gcc gac ttc aac gcc gag ggc gcc gag aag gcc gcc gcc gag ctg cgg      192
Ala Asp Phe Asn Ala Glu Gly Ala Glu Lys Ala Ala Ala Glu Leu Arg
50      55      60
gcc ggt ggc gtc gag gcc gcc gcg gtc gag ctg gac gtc acc cgt ccg      240
Ala Gly Gly Val Glu Ala Ala Val Glu Leu Asp Val Thr Arg Pro
65      70      75      80
gag tcc gtc gag gcg gcc gtc ggg ttc gcc gtc gac acg ttc ggc tcg      288
Glu Ser Val Glu Ala Ala Val Gly Phe Ala Val Asp Thr Phe Gly Ser
85      90      95
ctg gac ctc gcc gtc aac aac gcc ggc gcc ggc ggc ccc agc gcc ccg      336
Leu Asp Leu Ala Val Asn Asn Ala Gly Ile Gly Gly Pro Ser Ala Pro

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## PhoenixTemp32470.tmp.txt

[illegible]

<210> 1025

<211> 263

<212> PRT

<213> Streptomyces coelicolor A3(2)

<400> 1025

Met	Ser	Thr	Thr	Gly	Thr	Thr	Pro	Ala	Thr	Thr	Gly	Tyr	Ala	Ala	Glu
1				5					10					15	
Phe	Ala	Gly	Arg	Thr	Ala	Leu	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly
			20					25					30		
Leu	Ala	Thr	Ala	Arg	Arg	Leu	Gly	Ala	Gly	Gly	Ala	Arg	Val	Val	Val
		35					40					45			
Ala	Asp	Phe	Asn	Ala	Glu	Gly	Ala	Glu	Lys	Ala	Ala	Ala	Glu	Leu	Arg
	50					55				60					
Ala	Gly	Gly	Val	Glu	Ala	Ala	Val	Glu	Leu	Asp	Val	Thr	Arg	Pro	
65				70					75					80	
Glu	Ser	Val	Glu	Ala	Ala	Val	Gly	Phe	Ala	Val	Asp	Thr	Phe	Gly	Ser
			85					90						95	
Leu	Asp	Leu	Ala	Val	Asn	Asn	Ala	Gly	Ile	Gly	Gly	Pro	Ser	Ala	Pro
			100					105					110		
Thr	Gly	Glu	Tyr	Asp	Val	Ala	Ala	Tyr	Gln	Arg	Val	Val	Arg	Thr	Asn
		115					120					125			
Leu	Asp	Gly	Val	Phe	Tyr	Ser	Met	Arg	Tyr	Glu	Leu	Pro	Ala	Ile	Glu
	130					135					140				
Ala	Ala	Gly	Lys	Gly	Gly	Ser	Ile	Val	Asn	Val	Ala	Ser	Ile	Leu	Gly
145				150					155					160	
Ser	Val	Gly	Phe	Ala	Gly	Ser	Pro	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly
			165					170					175		
Val	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Ala	Glu	Tyr	Ala	Ala	Arg	Gly
			180					185					190		
Ile	Arg	Ile	Asn	Ala	Val	Gly	Pro	Gly	Phe	Ile	Asp	Thr	Pro	Leu	Leu
		195					200					205			
Lys	Thr	Met	Asp	Glu	Ala	Ala	Tyr	Lys	Gly	Leu	Val	Ala	Leu	His	Pro
	210					215					220				
Ala	Gly	Arg	Leu	Gly	Arg	Ser	Glu	Glu	Val	Ala	Glu	Leu	Ile	Ala	Phe
225				230						235				240	
Leu	Leu	Ser	Asp	Arg	Ala	Ser	Phe	Val	Ala	Gly	Ser	Tyr	His	Leu	Val



245  
Asp Gly Ala Tyr Thr Ala Val  
260

250

255

<210> 1026  
<211> 879  
<212> DNA  
<213> Streptomyces coelicolor A3(2)

<220>  
<221> CDS  
<222> (1)..(879)  
<223> transl\_table=11

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1 5 10 15  
gcg cgc gga ctc ggc gcc gcc ctg gcc cgc gtc gca ctc cgc ggc 96  
Ala Arg Gly Leu Gly Ala Ala Leu Ala Arg Ala Cys Ala Leu Arg Gly  
20 25 30  
gcc cgg atc gcg ctg ctc ggt ctc gag aag ccc cga ctg gac gcc ctc 144  
Ala Arg Ile Ala Leu Leu Gly Leu Glu Lys Pro Arg Leu Asp Ala Leu  
35 40 45  
gcg gcg gac ctg ccg acc ccg gcg ctc gcc gtc gag gcc gac gtc acc 192  
Ala Ala Asp Leu Pro Thr Pro Ala Leu Ala Val Glu Ala Asp Val Thr  
50 55 60  
gac ccc gcc gcg ctg gcc gac gcg gcc ggt gag acg cgc ccg cgc ctg 240  
Asp Pro Ala Ala Leu Ala Asp Ala Ala Gly Glu Thr Arg Arg Arg Leu  
65 70 75 80  
ggg aga ccg tcg gtc gtg gtg gcg aac gcc ggg gtc gcg cac ggc ggt 288  
Gly Arg Pro Ser Val Val Val Ala Asn Ala Gly Val Ala His Gly Gly  
85 90 95  
ccc ttc gcc acg tcg gac ccc gcc gag tgg ggc cgt gtc gtc gac gtg 336  
Pro Phe Ala Thr Ser Asp Pro Ala Glu Trp Gly Arg Val Val Asp Val  
100 105 110  
aac ctg acc ggc agc gcc cac acg gcc cgc gcc ttc ctg ccg gac ctg 384  
Asn Leu Thr Gly Ser Ala His Thr Ala Arg Ala Phe Leu Pro Asp Leu  
115 120 125  
ctc gac acc gcg ggc tac cac ctc cag atc gcc tcg ctg gcc tcg ctg 432  
Leu Asp Thr Ala Gly Tyr His Leu Gln Ile Ala Ser Leu Ala Ser Leu  
130 135 140  
ggt gcc gcg ccc atg atg agc gcc tac tgc gcc tcc aag gcg ggc gtg 480  
Gly Ala Ala Pro Met Met Ser Ala Tyr Cys Ala Ser Lys Ala Gly Val  
145 150 155 160  
gag gcc ttc gcc cac tcg ctg cgc gcc gaa gtg gcc cac cgc ggc gtc 528  
Glu Ala Phe Ala His Ser Leu Arg Ala Glu Val Ala His Arg Gly Val  
165 170 175  
gcc gtg ggc atc gcc tac ctc aac tgg atc gac acc gac atg atc cgc 576  
Ala Val Gly Ile Ala Tyr Leu Asn Trp Ile Asp Thr Asp Met Ile Arg  
180 185 190  
gac gcc gac cgc cat ccg gtc ctg cgc gaa ctg cgc gcc cac atg ccg 624  
Asp Ala Asp Arg His Pro Val Leu Arg Glu Leu Arg Ala His Met Pro  
195 200 205  
ccc ccg gcc cgc cgc acc ttt tcg gcg gac gac gtc gcc gcc ccg ctg 672  
Pro Pro Ala Arg Arg Thr Phe Ser Ala Asp Asp Val Ala Ala Arg Leu  
210 215 220  
gtc cgc gcg ctg gag cgc cgc cgt acc gcc gtg tac gtg ccg ggc tgg 720  
Val Arg Ala Leu Glu Arg Arg Arg Thr Ala Val Tyr Val Pro Gly Trp  
225 230 235 240  
ctg cgc ctg gtg cag ctg ggg cgc gcg tca ctg ccg ccc gtg gtg gca 768  
Leu Arg Leu Val Gln Leu Gly Arg Ala Ser Leu Pro Pro Val Val Ala  
245 250 255  
cgg ctg tcc cgc cgc gaa ctg ccc cgt ctg gag gcc gag gag gaa ctg 816  
Arg Leu Ser Arg Arg Glu Leu Pro Arg Leu Glu Ala Glu Glu Glu Leu  
260 265 270  
gga ccc acc ggt ccg ctc ggc gcg ggc ggc cgg gcc ggc cac gcg gcg 864  
Gly Pro Thr Gly Pro Leu Gly Ala Gly Gly Arg Ala Gly His Ala Ala  
275 280 285

gga aca cgt acg tag  
Gly Thr Arg Thr  
290

<210> 1027  
<211> 292  
<212> PRT  
<213> Streptomyces coelicolor A3(2)

<400> 1027  
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20 25 30  
Ala Arg Ile Ala Leu Leu Gly Leu Glu Lys Pro Arg Leu Asp Ala Leu  
35 40 45  
Ala Ala Asp Leu Pro Thr Pro Ala Leu Ala Val Glu Ala Asp Val Thr  
50 55 60  
Asp Pro Ala Ala Leu Ala Asp Ala Ala Gly Glu Thr Arg Arg Arg Leu  
65 70 75 80  
Gly Arg Pro Ser Val Val Val Ala Asn Ala Gly Val Ala His Gly Gly  
85 90 95  
Pro Phe Ala Thr Ser Asp Pro Ala Glu Trp Gly Arg Val Val Asp Val  
100 105 110  
Asn Leu Thr Gly Ser Ala His Thr Ala Arg Ala Phe Leu Pro Asp Leu  
115 120 125  
Leu Asp Thr Ala Gly Tyr His Leu Gln Ile Ala Ser Leu Ala Ser Leu  
130 135 140  
Gly Ala Ala Pro Met Met Ser Ala Tyr Cys Ala Ser Lys Ala Gly Val  
145 150 155 160  
Glu Ala Phe Ala His Ser Leu Arg Ala Glu Val Ala His Arg Gly Val  
165 170 175  
Ala Val Gly Ile Ala Tyr Leu Asn Trp Ile Asp Thr Asp Met Ile Arg  
180 185 190  
Asp Ala Asp Arg His Pro Val Leu Arg Glu Leu Arg Ala His Met Pro  
195 200 205  
Pro Pro Ala Arg Arg Thr Phe Ser Ala Asp Asp Val Ala Ala Arg Leu  
210 215 220  
Val Arg Ala Leu Glu Arg Arg Arg Thr Ala Val Tyr Val Pro Gly Trp  
225 230 235 240  
Leu Arg Leu Val Gln Leu Gly Arg Ala Ser Leu Pro Pro Val Val Ala  
245 250 255  
Arg Leu Ser Arg Arg Glu Leu Pro Arg Leu Glu Ala Glu Glu Glu Leu  
260 265 270  
Gly Pro Thr Gly Pro Leu Gly Ala Gly Gly Arg Ala Gly His Ala Ala  
275 280 285  
Gly Thr Arg Thr  
290

<210> 1028  
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<212> DNA  
<213> Streptomyces coelicolor A3(2)

<220>  
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<222> (1)..(1032)  
<223> transl\_table=11

<400> 1028  
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Met Ser Gly Ala Arg Gly His Gly Gln Val Val Val Val Thr Gly Ala 15  
1 5 10  
acc ggc ggc gtc ggc cgg gcc gcc gcc cgg gcc ttc ggc gcg cgc ggg 96  
Thr Gly Gly Val Gly Arg Ala Ala Ala Arg Ala Phe Gly Ala Arg Gly 20 25 30  
gcc gcg gtc gcc ctc ctg gcc cgg gcc gag tac gcc ctg gaa cgg gcg 144  
Ala Ala Val Ala Leu Leu Ala Arg Gly Glu Tyr Ala Glu Arg Ala 35 40 45

## PhoenixTemp32470.tmp.txt

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gcc gag gag att cgc gag gcc gcc ggc cgg cgc ctg ccg ctg gtc gtg      192
Ala Glu 50 Glu Ile Arg Glu Ala 55 Gly Gly Arg Ala Leu 60 Pro Leu Val Val
gac gtc gcc gac gcg gag gcc gtg gac gcg gcg gcc ggc cgg gtc gag      240
Asp Val 65 Ala Asp Ala Glu 70 Ala Val Asp Ala Ala 75 Ala Gly Arg Val Glu
gag gaa ctc ggc ccg atc gac gta tgg gtg aac gcc gcg ttc tcg acc      288
Glu Glu Leu Gly 85 Ile Asp Val Trp 90 Asn Ala Ala Phe Ser Thr
gtc ttc gcg ccc gtg ccg gag atc cgg ccc gag gag ctg agg cgg gcc      336
Val Phe Ala Pro Val Pro Glu Ile Arg Pro Glu Glu Leu Arg Arg Ala
acc gag gtc acc tac ttc ggc ttc gtc cac ggc acc cag gcc gcc ctg      384
Thr Glu 115 Val Thr Tyr Phe Gly Phe Val His Gly Thr Gln Ala Ala Leu
cgg cgc atg acg ccg cgc gac cgc ggc acc atc gtc cag gtc ggc tcg      432
Arg Arg Met Thr Pro Arg Asp 135 Arg Gly Thr Ile Val Gln Val Gly Ser
gcc ctg gcc gaa cgc agc gtc ccg ctc cag gcc gtc tac tgc ggg gcc      480
Ala Leu 145 Ala Glu Arg Ser 150 Val Pro Leu Gln Ala Val Tyr Cys Gly Ala
aag cac gcc atc cag ggc ttc acc gag tcg ctg cgc tgc gaa ctg ctg      528
Lys His Ala Ile Gln Gly Phe Thr Glu Ser 170 Leu Arg Cys Glu Leu Leu
cac gac cgc agc ggc gtg cgg gtg acc atg gtg cag atg ccg ggc ctc      576
His Asp Arg Ser 180 Gly Val Arg Val Thr Met Val Gln Met Pro Gly Leu
aac acg ccc cag ttc agc tgg gtc ctc acc cgg ctg ccc cgc cat ccg      624
Asn Thr Pro 195 Gln Phe Ser Trp Val Leu Thr Arg Leu Pro Arg His Pro
cgc ccg gtg gcc ccc gtc tac cag ccc gag gtc gcc gcc cgg gcc gtg      672
Arg Pro Val Ala Pro Val Tyr 215 Gln Pro Glu Val Ala Ala Arg Ala Val
ctg cac gcc gcc gac cat ccc gag cgg cgc atg tac tgg gtc ggc ggc      720
Leu His Ala Ala Asp His 230 Pro Glu Arg Arg Met Tyr Trp Val Gly Gly
tcc acc gtc gcc acc ctg ctc ggc cag aag ctc gcc ccg ggc ctc ctc      768
Ser Thr Val Ala Thr 245 Leu Leu Gly Gln Lys 250 Leu Ala Pro Gly Leu Leu
gac cgc tat ctg gcg cgc acc ggc tac gac ggc cag cag acg gac cgg      816
Asp Arg Tyr 260 Ala Arg Thr Gly Tyr 265 Asp Gly Gln Gln Thr Asp Arg
ccc gtc gat ccg tcg cgg ccg gcc aac ctc tgg aag ccg ccg gac gac      864
Pro Val 275 Asp Pro Ser Arg Pro Ala Asn Leu Trp Lys Pro Pro Asp Asp
acc gca ccg gac gac tac ggc gca cac ggc atc ttc gac gag gcc      912
Thr Ala 290 Pro Asp Asp Tyr Gly Ala His Gly Ile Phe Asp Asp Glu Ala
cat gcg cgc agc gtc cag ttc tgg atc tcc cgc aac cgc cgc cgg ctg      960
His Ala Arg Ser Val Gln Phe Trp Ile Ser Arg 315 Asn Arg Arg Arg Leu
gcc ctg gcc acg gcc gtg acc ggc gcg gtc gcc gcg gcc ctg gcc ggg      1008
Ala Leu Ala Thr Ala Val Thr Gly Ala Val Ala Ala Leu Ala Gly
ggc ctg ggc cga cgc gcg ggc tga
Gly Leu Gly Arg 340 Ala Gly

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&lt;210&gt; 1029

&lt;211&gt; 343

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;400&gt; 1029

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Met Ser Gly Ala Arg Gly His Gly Gln Val Val Val Val Thr Gly Ala
1      5      10      15
Thr Gly Gly Val Gly Arg Ala Ala Ala Arg Ala Phe Gly Ala Arg Gly
20      25      30
Ala Ala Val Ala Leu Leu Ala Arg Gly Glu Tyr Ala Leu Glu Arg Ala

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## PhoenixTemp32470.tmp.txt

35  
 Ala Glu Ile Arg Glu Ala Gly Gly Arg Ala Leu Pro Leu Val Val  
 50 55 60  
 Asp Val Ala Asp Ala Glu Ala Val Asp Ala Ala Gly Arg Val Glu  
 65 70 75 80  
 Glu Glu Leu Gly Pro Ile Asp Val Trp Val Asn Ala Ala Phe Ser Thr  
 85 90 95  
 Val Phe Ala Pro Val Pro Glu Ile Arg Pro Glu Glu Leu Arg Ala  
 100 105 110  
 Thr Glu Val Thr Tyr Phe Gly Phe Val His Gly Thr Gln Ala Ala Leu  
 115 120 125  
 Arg Arg Met Thr Pro Arg Asp Arg Gly Thr Ile Val Gln Val Gly Ser  
 130 135 140  
 Ala Leu Ala Glu Arg Ser Val Pro Leu Gln Ala Val Tyr Cys Gly Ala  
 145 150 155 160  
 Lys His Ala Ile Gln Gly Phe Thr Glu Ser Leu Arg Cys Glu Leu Leu  
 165 170 175  
 His Asp Arg Ser Gly Val Arg Val Thr Met Val Gln Met Pro Gly Leu  
 180 185 190  
 Asn Thr Pro Gln Phe Ser Trp Val Leu Thr Arg Leu Pro Arg His Pro  
 195 200 205  
 Arg Pro Val Ala Pro Val Tyr Gln Pro Glu Val Ala Ala Arg Ala Val  
 210 215 220  
 Leu His Ala Ala Asp His Pro Glu Arg Arg Met Tyr Trp Val Gly Gly  
 225 230 235 240  
 Ser Thr Val Ala Thr Leu Leu Gly Gln Lys Leu Ala Pro Gly Leu Leu  
 245 250 255  
 Asp Arg Tyr Leu Ala Arg Thr Gly Tyr Asp Gly Gln Gln Thr Asp Arg  
 260 265 270  
 Pro Val Asp Pro Ser Arg Pro Ala Asn Leu Trp Lys Pro Pro Asp Asp  
 275 280 285  
 Thr Ala Pro Asp Asp Tyr Gly Ala His Gly Ile Phe Asp Asp Glu Ala  
 290 295 300  
 His Ala Arg Ser Val Gln Phe Trp Ile Ser Arg Asn Arg Arg Arg Leu  
 305 310 315 320  
 Ala Leu Ala Thr Ala Val Thr Gly Ala Val Ala Ala Leu Ala Gly  
 325 330 335  
 Gly Leu Gly Arg Arg Ala Gly  
 340

<210> 1030  
 <211> 795  
 <212> DNA  
 <213> Drosophila melanogaster

<220>  
 <221> CDS  
 <222> (1)..(795)

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 ctt atc acg ggc gca gcc tcc ggg atc ggg gcc gcc gcg gcg gag atg 96  
 Leu Ile Thr Gly Ala Ala Ser Gly Ile Gly Ala Ala Ala Ala Glu Met  
 20 25 30  
 ttc tcg aag ctg ggt gcc tgc ctg gcc ctg gtg gat cgg gag gag gag 144  
 Phe Ser Lys Leu Gly Ala Cys Leu Ala Leu Val Asp Arg Glu Glu Glu  
 35 40 45  
 ggc ctc ata tgt gtg atg aaa cgc tgc atg aag atg ggc cac gag ccg 192  
 Gly Leu Ile Cys Val Met Lys Arg Cys Met Lys Met Gly His Glu Pro  
 50 55 60  
 tac ggc ata gcc gga gat ctg ctc aag cct ccg gag atc gaa tgc att 240  
 Tyr Gly Ile Ala Gly Asp Leu Leu Lys Pro Pro Glu Ile Glu Cys Ile  
 65 70 75 80  
 gcg cgg aag acc acg gag cgc tac gag ggc aag ctg gat gtg ctg gta 288  
 Ala Arg Lys Thr Thr Glu Arg Tyr Glu Gly Lys Leu Asp Val Leu Val  
 85 90 95  
 aat ggg gct ggc atc atg ccc acg gga acg ctg cag agc acg gaa ctg 336

## PhoenixTemp32470.tmp.txt

Asn	Gly	Ala	Gly	Ile	Met	Pro	Thr	Gly	Thr	Leu	Gln	Ser	Thr	Glu	Leu		
gcc	tgc	ttc	acc	cac	gtg	atg	gag	gcc	aat	gtg	cgt	tct	ggg	ttt	tat	384	
Ala	Cys	Phe	Thr	His	Val	Met	Glu	Ala	Asn	Val	Arg	Ser	Gly	Phe	Tyr		
		115					120					125					
ctg	acc	aag	ttg	ctg	ctg	ccc	cag	ttg	ctg	cag	tgt	aag	ggc	agc	att	432	
Leu	Thr	Lys	Leu	Leu	Leu	Pro	Gln	Leu	Leu	Gln	Cys	Lys	Gly	Ser	Ile		
	130					135					140						
gtc	aac	gtg	tcc	agc	gtc	tgc	gga	ctt	cgc	gct	ttt	ccc	aat	ctg	gtg	480	
Val	Asn	Val	Ser	Ser	Val	Cys	Gly	Leu	Arg	Ala	Phe	Pro	Asn	Leu	Val		
145					150					155					160		
gcc	tac	aac	atg	tcc	aag	gcg	gcg	gtg	gac	cag	ttt	acc	cgc	tcc	ctt	528	
Ala	Tyr	Asn	Met	Ser	Lys	Ala	Ala	Val	Asp	Gln	Phe	Thr	Arg	Ser	Leu		
				165					170					175			
gcc	ctg	gat	ctg	ggg	ccc	cag	ggg	gtt	cgg	gtg	aat	gcg	gtc	aat	ccg	576	
Ala	Leu	Asp	Leu	Gly	Pro	Gln	Gly	Val	Arg	Val	Asn	Ala	Val	Asn	Pro		
			180				185						190				
ggg	gtg	att	cgc	acc	aat	ctg	caa	aag	gcg	ggg	ggc	atg	gac	gag	cag	624	
Gly	Val	Ile	Arg	Thr	Asn	Leu	Gln	Lys	Ala	Gly	Gly	Met	Asp	Glu	Gln		
		195					200					205					
agc	tac	gcc	gaa	ttt	ctg	gag	cac	tcg	aag	aag	acc	cac	gcc	ctg	ggc	672	
Ser	Tyr	Ala	Glu	Phe	Leu	Glu	His	Ser	Lys	Lys	Thr	His	Ala	Leu	Gly		
	210					215					220						
cgg	att	ggg	gag	cca	aag	gag	gtg	gcg	gcc	gcc	att	tgc	ttc	ctg	gcc	720	
Arg	Ile	Gly	Glu	Pro	Lys	Glu	Val	Ala	Ala	Ala	Ile	Cys	Phe	Leu	Ala		
225					230				235						240		
agc	gag	ctg	gcc	agc	ttc	gtg	acc	ggc	gtg	acc	ctt	cct	gtg	gac	ggg	768	
Ser	Glu	Leu	Ala	Ser	Phe	Val	Thr	Gly	Val	Thr	Leu	Pro	Val	Asp	Gly		
				245					250					255			
ggc	aag	cag	gtc	tgt	ccg	cgc	tag									795	
Gly	Lys	Gln	Val	Met	Cys	Pro	Arg										
			260														

&lt;210&gt; 1031

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 1031

Met	Gly	Ser	Lys	Gly	Lys	Ala	Gly	Leu	Asp	Phe	Ser	Gly	Lys	Val	Val		
1				5					10					15			
Leu	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Ala	Ala	Ala	Ala	Glu	Met		
			20					25					30				
Phe	Ser	Lys	Leu	Gly	Ala	Cys	Leu	Ala	Leu	Val	Asp	Arg	Glu	Glu	Glu		
		35					40					45					
Gly	Leu	Ile	Cys	Val	Met	Lys	Arg	Cys	Met	Lys	Met	Gly	His	Glu	Pro		
	50					55					60						
Tyr	Gly	Ile	Ala	Gly	Asp	Leu	Leu	Lys	Pro	Pro	Glu	Ile	Glu	Cys	Ile		
65					70					75					80		
Ala	Arg	Lys	Thr	Thr	Glu	Arg	Tyr	Glu	Gly	Lys	Leu	Asp	Val	Leu	Val		
				85					90					95			
Asn	Gly	Ala	Gly	Ile	Met	Pro	Thr	Gly	Thr	Leu	Gln	Ser	Thr	Glu	Leu		
			100					105					110				
Ala	Cys	Phe	Thr	His	Val	Met	Glu	Ala	Asn	Val	Arg	Ser	Gly	Phe	Tyr		
		115					120					125					
Leu	Thr	Lys	Leu	Leu	Leu	Pro	Gln	Leu	Leu	Gln	Cys	Lys	Gly	Ser	Ile		
	130					135					140						
Val	Asn	Val	Ser	Ser	Val	Cys	Gly	Leu	Arg	Ala	Phe	Pro	Asn	Leu	Val		
145					150					155					160		
Ala	Tyr	Asn	Met	Ser	Lys	Ala	Ala	Val	Asp	Gln	Phe	Thr	Arg	Ser	Leu		
				165					170					175			
Ala	Leu	Asp	Leu	Gly	Pro	Gln	Gly	Val	Arg	Val	Asn	Ala	Val	Asn	Pro		
			180					185					190				
Gly	Val	Ile	Arg	Thr	Asn	Leu	Gln	Lys	Ala	Gly	Gly	Met	Asp	Glu	Gln		
	195					200						205					
Ser	Tyr	Ala	Glu	Phe	Leu	Glu	His	Ser	Lys	Lys	Thr	His	Ala	Leu	Gly		
	210					215					220						
Arg	Ile	Gly	Glu	Pro	Lys	Glu	Val	Ala	Ala	Ala	Ile	Cys	Phe	Leu	Ala		
225					230				235						240		

Ser Glu Leu Ala Ser Phe Val Thr Gly Val Thr Leu Pro Val Asp Gly  
 245 250 255  
 Gly Lys Gln Val Met Cys Pro Arg  
 260

<210> 1032  
 <211> 783  
 <212> DNA  
 <213> Pseudomonas putida KT2440

<220>  
 <221> CDS  
 <222> (1)..(783)  
 <223> transl\_table=11

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 gcc ttg gcg gaa gcg ctg gca cgg cgc ggg cgc aat ctg atc ctg gtg 96  
 Ala Leu Ala Glu Ala Leu Ala Arg Arg Gly Arg Asn Leu Ile Leu Val  
 20 25 30  
 gca cgc caa cga gaa acg ctg gag cct gtt gcc atc gag ctg acc cag 144  
 Ala Arg Gln Arg Glu Thr Leu Glu Pro Val Ala Ile Glu Leu Thr Gln  
 35 40 45  
 cgt ttc ggc gtc gag gtg ctg ttc cgc gcc tgc gac ctc agc cag ccg 192  
 Arg Phe Gly Val Glu Val Leu Phe Arg Ala Cys Asp Leu Ser Gln Pro  
 50 55 60  
 ctg cgc ctt tca ggc ttc gtg cta gag ctg gaa gaa ggc gag cgg cgt 240  
 Leu Arg Leu Ser Gly Phe Val Leu Glu Leu Glu Glu Gly Glu Arg Arg  
 65 70 75 80  
 atc gat ttg ctg gtc aac tgc gcg ggc ttg cgc acc tat ggg ccg ttc 288  
 Ile Asp Leu Leu Val Asn Cys Ala Gly Leu Arg Thr Tyr Gly Pro Phe  
 85 90 95  
 ctg gcc cat gaa tgg gcc gac gaa cag gat ctg ctg gaa gtc aac gtg 336  
 Leu Ala His Glu Trp Ala Asp Glu Gln Asp Leu Leu Glu Val Asn Val  
 100 105 110  
 ctg gcc ctg agc cgc ctg tgc cat gcc atc ggt aac ctg atg gct gta 384  
 Leu Ala Leu Ser Arg Leu Cys His Ala Ile Gly Asn Leu Met Ala Val  
 115 120 125  
 cag ggt ggc ggg cag att ctc aac gtc gcc ggc ctg gcc ggg gtg gcg 432  
 Gln Gly Gly Gly Gln Ile Leu Asn Val Ala Gly Leu Ala Gly Val Ala  
 130 135 140  
 cct ggc cca tgg atg gcc gcc tat gcc gcc agc aag gcc tac gtg ttg 480  
 Pro Gly Pro Trp Met Ala Ala Tyr Ala Ala Ser Lys Ala Tyr Val Leu  
 145 150 155 160  
 agc ttt tcc cag gcc ctg cgc gaa gaa ctc aag cgc acc ggc atc aag 528  
 Ser Phe Ser Gln Ala Leu Arg Glu Glu Leu Lys Arg Thr Gly Ile Lys  
 165 170 175  
 gtc tcg gta ctg tgc cct ggc ccg gta cgt tcc gca cgc cgg cgc att 576  
 Val Ser Val Leu Cys Pro Gly Pro Val Arg Ser Ala Arg Arg Arg Ile  
 180 185 190  
 gcg cgg ctc gat ggc aag ccg cgc tgc ctc agc ccc gag gaa gtg gcg 624  
 Ala Arg Leu Asp Gly Lys Pro Arg Cys Leu Ser Pro Glu Glu Val Ala  
 195 200 205  
 ctg tac acc gtg cgg gca ctg gac aag aac cgc gca ctg atc atg ccc 672  
 Leu Tyr Thr Val Arg Ala Leu Asp Lys Asn Arg Ala Leu Ile Met Pro  
 210 215 220  
 ggc cgg cgc aac cgc tgg ctg gcg ttc gca ccg cgg ctg ctg ccg cgc 720  
 Gly Arg Arg Asn Arg Trp Leu Ala Phe Ala Pro Arg Leu Leu Pro Arg  
 225 230 235 240  
 tgg ctg gtg cgc aag ctg gcc ggg gcc atc cac cgc cgc tat tgc ccc 768  
 Trp Leu Val Arg Lys Leu Ala Gly Ala Ile His Arg Arg Tyr Cys Pro  
 245 250 255  
 tca ggc atg gaa tag 783  
 Ser Gly Met Glu  
 260

<210> 1033

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida KT2440

&lt;400&gt; 1033

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Met Thr Arg Tyr Ala Met Ile Thr Gly Ala Ser Ser Gly Leu Gly Leu
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Ala Leu Ala Glu Ala Leu Ala Arg Arg Gly Arg Asn Leu Ile Leu Val
20      25      30
Ala Arg Gln Arg Glu Thr Leu Glu Pro Val Ala Ile Glu Leu Thr Gln
35      40      45
Arg Phe Gly Val Glu Val Leu Phe Arg Ala Cys Asp Leu Ser Gln Pro
50      55      60
Leu Arg Leu Ser Gly Phe Val Leu Glu Leu Glu Glu Gly Glu Arg Arg
65      70      75      80
Ile Asp Leu Leu Val Asn Cys Ala Gly Leu Arg Thr Tyr Gly Pro Phe
85      90      95
Leu Ala His Glu Trp Ala Asp Glu Gln Asp Leu Leu Glu Val Asn Val
100     105     110
Leu Ala Leu Ser Arg Leu Cys His Ala Ile Gly Asn Leu Met Ala Val
115     120     125
Gln Gly Gly Gly Gln Ile Leu Asn Val Ala Gly Leu Ala Gly Val Ala
130     135     140
Pro Gly Pro Trp Met Ala Ala Tyr Ala Ala Ser Lys Ala Tyr Val Leu
145     150     155     160
Ser Phe Ser Gln Ala Leu Arg Glu Glu Leu Lys Arg Thr Gly Ile Lys
165     170     175
Val Ser Val Leu Cys Pro Gly Pro Val Arg Ser Ala Arg Arg Arg Ile
180     185     190
Ala Arg Leu Asp Gly Lys Pro Arg Cys Leu Ser Pro Glu Glu Val Ala
195     200     205
Leu Tyr Thr Val Arg Ala Leu Asp Lys Asn Arg Ala Leu Ile Met Pro
210     215     220
Gly Arg Arg Asn Arg Trp Leu Ala Phe Ala Pro Arg Leu Leu Pro Arg
225     230     235     240
Trp Leu Val Arg Lys Leu Ala Gly Ala Ile His Arg Arg Tyr Cys Pro
245     250     255
Ser Gly Met Glu
260

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&lt;210&gt; 1034

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida KT2440

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1034

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Met His Ile Ala Asn Lys His Phe Ile Val Ser Gly Ala Ala Ser Gly
1      5      10      15
ctg ggt gcc gcg act gca cag atg ctg gtc gag gct ggc gcc aag gtc      96
Leu Gly Ala Ala Thr Ala Gln Met Leu Val Glu Ala Gly Ala Lys Val
20      25      30
atg ctg gtc gac ctc aat gcc cag gct gtc gaa gcc aag gcc cgc gaa      144
Met Leu Val Asp Leu Asn Ala Gln Ala Val Glu Ala Lys Ala Arg Glu
35      40      45
ctg ggc gac aat gcc cgt ttc gcc gtg gct gat atc agt gac gag cag      192
Leu Gly Asp Asn Ala Arg Phe Ala Val Ala Asp Ile Ser Asp Glu Gln
50      55      60
gcg gcc cag tcg gct gtc gat gca gct gtc agc gcc ttt ggc agc ttg      240
Ala Ala Gln Ser Ala Val Asp Ala Ala Val Ser Ala Phe Gly Ser Leu
65      70      75      80
cat ggg ttg gtc aat tgt gcc ggc atc gtc ggt gcc gag aag gtg ctg      288
His Gly Leu Val Asn Cys Ala Gly Ile Val Gly Ala Glu Lys Val Leu
85      90      95

```

## PhoenixTemp32470.tmp.txt

```

ggc aag cag ggc ccg cat ggc ctg gcc agc ttc gcc aag gtc atc aac 336
Gly Lys Gln Gly 100 Pro His Gly Leu 105 Ala Ser Phe Ala Lys Val Ile Asn
gtc aac ctg atc ggc agc ttc aac ctg ttg cgt ctg gct gcg gcg gcc 384
Val Asn Leu Ile Gly Ser Phe Asn 120 Leu Leu Arg Leu Ala Ala Ala Ala
atg gcc gaa ggg gct gcc gat gag agc ggc gag cgt ggg gtc atc atc 432
Met Ala Glu Gly Ala Ala Asp 135 Glu Ser Gly Glu Arg Gly Val Ile Ile
aac acg gcc tcc att gcc gcc tat gac ggc cag att ggc cag gcc gcc 480
Asn Thr Ala Ser Ile Ala Ala Tyr Asp Gly Gln Ile Gly Gln Ala Ala
tac gcc gcc tcc aag ggt gcc att gcc agc ctg acc ttg ccg gcc gcg 528
Tyr Ala Ala Ser Lys 165 Gly Ala Ile Ala Ser 170 Leu Thr Leu Pro Ala Ala
cgc gaa ctg gca cgc ttc ggc atc cgt gtg atg acc atc gct ccg ggt 576
Arg Glu Leu Ala Arg Phe Gly Ile Arg 185 Val Met Thr Ile Ala Pro Gly
atc ttt gaa acc cct atg atg gcc ggc atg agc gat gag gta cgt gct 624
Ile Phe Glu Thr Pro Met Met Ala 200 Gly Met Ser Asp Glu Val Arg Ala
tcg ctg gct gcc ggc gtg ccg ttc ccg ccc cgc ttg ggc cgc ccg cag 672
Ser Leu Ala Ala Gly Val Pro 215 Phe Pro Pro Arg Leu Gly Arg Pro Gln
gaa tac gcc gcg ctg gcc cgc cac atc atc gag aac agc atg ctc aac 720
Glu Tyr Ala Ala Leu Ala Arg His Ile Ile Glu Asn Ser Met Leu Asn
ggt gag gtc atc cgc ctc gac ggt gcg ctg cgc atg gct gcc aag 765
Gly Glu Val Ile Arg 245 Leu Asp Gly Ala Leu 250 Arg Met Ala Ala Lys
taa 768

```

&lt;210&gt; 1035

&lt;211&gt; 255

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida KT2440

&lt;400&gt; 1035

```

Met His Ile Ala Asn Lys His Phe Ile Val Ser Gly Ala Ala Ser Gly
1 5 10
Leu Gly Ala Ala Thr Ala Gln Met Leu Val Glu Ala Gly Ala Lys Val
20 25 30
Met Leu Val Asp Leu Asn Ala Gln Ala Val Glu Ala Lys Ala Arg Glu
35 40 45
Leu Gly Asp Asn Ala Arg Phe Ala Val Ala Asp Ile Ser Asp Glu Gln
50 55 60
Ala Ala Gln Ser Ala Val Asp Ala Ala Val Ser Ala Phe Gly Ser Leu
65 70 75 80
His Gly Leu Val Asn Cys Ala Gly Ile Val Gly Ala Glu Lys Val Leu
85 90 95
Gly Lys Gln Gly Pro His Gly Leu Ala Ser Phe Ala Lys Val Ile Asn
100 105 110
Val Asn Leu Ile Gly Ser Phe Asn Leu Leu Arg Leu Ala Ala Ala Ala
115 120 125
Met Ala Glu Gly Ala Ala Asp Glu Ser Gly Glu Arg Gly Val Ile Ile
130 135 140
Asn Thr Ala Ser Ile Ala Ala Tyr Asp Gly Gln Ile Gly Gln Ala Ala
145 150 155 160
Tyr Ala Ala Ser Lys Gly Ala Ile Ala Ser Leu Thr Leu Pro Ala Ala
165 170 175
Arg Glu Leu Ala Arg Phe Gly Ile Arg Val Met Thr Ile Ala Pro Gly
180 185 190
Ile Phe Glu Thr Pro Met Met Ala Gly Met Ser Asp Glu Val Arg Ala
195 200 205
Ser Leu Ala Ala Gly Val Pro Phe Pro Pro Arg Leu Gly Arg Pro Gln
210 215 220
Glu Tyr Ala Ala Leu Ala Arg His Ile Ile Glu Asn Ser Met Leu Asn

```



PhoenixTemp32470.tmp.txt

225                      230                      235                      240  
Gly Glu Val Ile Arg Leu Asp Gly Ala Leu Arg Met Ala Ala Lys  
                        245                      250                      255

<210> 1036  
<211> 762  
<212> DNA  
<213> Bradyrhizobium japonicum USDA 110

```
<220>
<221> CDS
<222> (1)..(762)
<223> transl_table=11
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[illegible]

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<210> 1037
<211> 253
<212> PRT
<213> Bradyrhizobium japonicum USDA 110
```

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1037

```

Met Ser Gly Leu Pro His Ser Pro His Ala Leu Val Thr Gly Gly Gly
1      5      10      15
Arg Gly Ile Gly Arg Ala Ile Ala Ala Ser Leu Val Gly Ala Gly Ala
20      25      30
Thr Val Thr Val Leu Gly Arg Asn Ala Ala Ile Leu Asp Glu Ala Val
35      40      45
Arg Ala Gly Ala Ala His Phe Ala Ala Val Ala Asp Val Ser Asp Glu
50      55      60
Ala Ala Leu Lys Ala Ala Ile Val Glu Ala His Ala Arg Lys Pro Ile
65      70      75      80
Asp Ile Leu Ile Ala Asn Ala Gly Ser Ala Glu Ser Ala Pro Phe Ser
85      90      95
Lys Ser Asp Ser Ala Leu Phe Ala Arg Met Met Asp Val Asn Phe Met
100     105     110
Gly Val Val His Ala Val Arg Ala Val Leu Pro Gly Met Lys Asp Arg
115     120     125
Pro Tyr Gly Arg Ile Val Ala Val Ala Ser Thr Ala Gly Leu Lys Gly
130     135     140
Tyr Ala Tyr Val Ser Ala Tyr Thr Ala Ala Lys His Ala Val Val Gly
145     150     155     160
Leu Val Arg Ser Leu Ala Leu Glu Met Ala Gly Ser Asn Val Thr Val
165     170     175
Asn Ala Val Cys Pro Gly Phe Thr Asp Thr Asp Leu Val Ala Gly Ser
180     185     190
Ile Glu Asn Ile Met Lys Lys Thr Gly Arg Thr Arg Glu Gln Ala Ile
195     200     205
Ala Glu Leu Ala Lys His Asn Pro Gln Gly Arg Leu Ile Ser Pro Gln
210     215     220
Gln Val Ala Asp Ala Val Leu Trp Leu Cys Gly Glu Gly Ala Gly Ala
225     230     235     240
Ile Thr Gly Gln Ala Ile Ala Val Ala Gly Gly Glu Ile
245     250

```

&lt;210&gt; 1038

&lt;211&gt; 912

&lt;212&gt; DNA

&lt;213&gt; Streptomyces avermitilis MA-4680

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(912)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1038

```

atg gca gca ccg ccc aaa cac ccg aat acg tcc agc cgg aga gac cac      48
Met Ala Ala Pro Pro Lys His Pro Asn Thr Ser Ser Arg Arg Asp His
1      5      10      15
gac aag ctc gcc cgc aca caa ccg ctg acc ggc cga gtg atc gcg gtc      96
Asp Lys Leu Ala Arg Thr Gln Pro Leu Thr Gly Arg Val Ile Ala Val
20      25      30
acc ggg gcg gcc cgc gga atc ggg cgt gcc gtc gca gcc cgg ctc gcc      144
Thr Gly Ala Gly Arg Gly Ile Gly Arg Ala Val Ala Ala Arg Leu Ala
35      40      45
gcg gcc gga gcc gcc gtg gcg atc ggc gat ctc gac acg cgg ctc gcc      192
Ala Ala Gly Ala Ala Val Ala Ile Gly Asp Leu Asp Thr Arg Leu Ala
50      55      60
acg gag gcg gcc ggt gcc ctc agc acg cgt ccc ggt ggc cgg ctg ctc      240
Thr Glu Ala Ala Gly Ala Leu Ser Thr Arg Pro Gly Gly Arg Leu Leu
65      70      75      80
ggg ctg cct ctc gac gtc acc gat aca cct tcc ttc gaa gac ttc ctg      288
Gly Leu Pro Leu Asp Val Thr Asp Thr Pro Ser Phe Glu Asp Phe Leu
85      90      95
cgc acc gtc gag acc cgg ctg gga ccg atc gac gta ctc atc aac aac      336
Arg Thr Val Glu Thr Arg Leu Gly Pro Ile Asp Val Leu Ile Asn Asn
100     105     110
gcc gga atc atg tgg gtg ggc ccc ttc gcg gaa gaa ccg gag gaa gcc      384
Ala Gly Ile Met Trp Val Gly Pro Phe Ala Glu Glu Pro Glu Glu Ala
115     120     125

```

PhoenixTemp32470.tmp.txt

gcc	ctg	cgc	cag	ttc	gac	gtc	aac	gtc	cac	ggc	gta	ctg	cgc	ggg	atg	432
Ala	Leu	Arg	Gln	Phe	Asp	Val	Asn	Val	His	Gly	Val	Leu	Arg	Gly	Met	
	130					135					140					
aaa	ctc	gtg	atc	ccg	gga	atg	cgg	aaa	cgc	ggg	cgc	ggc	cac	gtg	gtg	480
Lys	Leu	Val	Ile	Pro	Gly	Met	Arg	Lys	Arg	Gly	Arg	Gly	His	Val	Val	
	145				150					155					160	
aac	atc	gcc	tcc	gcc	gcc	agc	aag	gtc	gcc	ccg	gcc	ggc	gag	gcg	acc	528
Asn	Ile	Ala	Ser	Ala	Ala	Ser	Lys	Val	Ala	Pro	Ala	Gly	Glu	Ala	Thr	
				165					170					175		
tac	gcg	gcg	acg	aag	cac	gca	ctc	cac	ggc	tac	agc	aca	gcc	gtc	cgc	576
Tyr	Ala	Ala	Thr	Lys	His	Ala	Leu	His	Gly	Tyr	Ser	Thr	Ala	Val	Arg	
			180					185					190			
gcc	gaa	ctg	cgc	ggc	acc	ggc	gtg	cac	atg	tcc	ctg	gtg	atg	ccc	gga	624
Ala	Glu	Leu	Arg	Gly	Thr	Gly	Val	His	Met	Ser	Leu	Val	Met	Pro	Gly	
	195						200				205					
gtc	gtg	gac	acc	gag	ctg	gcc	gtg	ggc	acc	gcg	acc	gga	ccc	acc	cga	672
Val	Val	Asp	Thr	Glu	Leu	Ala	Val	Gly	Thr	Ala	Thr	Gly	Pro	Thr	Arg	
	210					215					220					
cgc	ctg	acg	acg	gat	cag	gtg	gcc	gac	gcg	gtg	ctc	gac	gtc	gtg	ctg	720
Arg	Leu	Thr	Thr	Asp	Gln	Val	Ala	Asp	Ala	Val	Leu	Asp	Val	Val	Leu	
	225				230					235					240	
cgc	ccg	cgc	ttc	gag	gtc	ttc	gtt	ccc	cgc	cag	gta	gcc	gcc	ctg	acc	768
Arg	Pro	Arg	Phe	Glu	Val	Phe	Val	Pro	Arg	Gln	Val	Ala	Ala	Leu	Thr	
				245					250					255		
cgc	ttg	gcc	gcg	ctg	ctg	ccg	ggc	cga	gcc	cgc	gac	gcc	ctg	cat	cac	816
Arg	Leu	Ala	Ala	Leu	Leu	Pro	Gly	Arg	Ala	Arg	Asp	Ala	Leu	His	His	
			260				265						270			
ctc	ctc	gtc	ccc	aac	cag	ctc	gcc	gcc	ctg	tcc	gac	cgg	tcg	gtc	cgc	864
Leu	Leu	Val	Pro	Asn	Gln	Leu	Ala	Ala	Leu	Ser	Asp	Arg	Ser	Val	Arg	
		275					280					285				
gcg	gcc	tac	gag	cag	cgc	acc	cgc	acc	gcc	cgc	cac	ccc	gaa	agt		909
Ala	Ala	Tyr	Glu	Gln	Arg	Thr	Arg	Thr	Ala	Arg	His	Pro	Glu	Ser		
	290					295					300					
tga																912

<210> 1039

<211> 303

<212> PRT

<213> Streptomyces avermitilis MA-4680

<400> 1039

Met	Ala	Ala	Pro	Pro	Lys	His	Pro	Asn	Thr	Ser	Ser	Arg	Arg	Asp	His
1				5					10					15	
Asp	Lys	Leu	Ala	Arg	Thr	Gln	Pro	Leu	Thr	Gly	Arg	Val	Ile	Ala	Val
			20					25					30		
Thr	Gly	Ala	Gly	Arg	Gly	Ile	Gly	Arg	Ala	Val	Ala	Ala	Arg	Leu	Ala
		35					40					45			
Ala	Ala	Gly	Ala	Ala	Val	Ala	Ile	Gly	Asp	Leu	Asp	Thr	Arg	Leu	Ala
	50					55					60				
Thr	Glu	Ala	Ala	Gly	Ala	Leu	Ser	Thr	Arg	Pro	Gly	Gly	Arg	Leu	Leu
				70						75				80	
Gly	Leu	Pro	Leu	Asp	Val	Thr	Asp	Thr	Pro	Ser	Phe	Glu	Asp	Phe	Leu
				85					90					95	
Arg	Thr	Val	Glu	Thr	Arg	Leu	Gly	Pro	Ile	Asp	Val	Leu	Ile	Asn	Asn
			100					105					110		
Ala	Gly	Ile	Met	Trp	Val	Gly	Pro	Phe	Ala	Glu	Glu	Pro	Glu	Glu	Ala
		115					120					125			
Ala	Leu	Arg	Gln	Phe	Asp	Val	Asn	Val	His	Gly	Val	Leu	Arg	Gly	Met
	130				135						140				
Lys	Leu	Val	Ile	Pro	Gly	Met	Arg	Lys	Arg	Gly	Arg	Gly	His	Val	Val
	145				150					155					160
Asn	Ile	Ala	Ser	Ala	Ala	Ser	Lys	Val	Ala	Pro	Ala	Gly	Glu	Ala	Thr
				165					170					175	
Tyr	Ala	Ala	Thr	Lys	His	Ala	Leu	His	Gly	Tyr	Ser	Thr	Ala	Val	Arg
			180					185					190		
Ala	Glu	Leu	Arg	Gly	Thr	Gly	Val	His	Met	Ser	Leu	Val	Met	Pro	Gly
	195						200					205			

## PhoenixTemp32470.tmp.txt

Val	Val	Asp	Thr	Glu	Leu	Ala	Val	Gly	Thr	Ala	Thr	Gly	Pro	Thr	Arg		
Arg	210	Leu	Thr	Thr	Asp	Gln	215	Val	Ala	Asp	Ala	Val	Leu	Asp	Val	Val	Leu
225						230					235						240
Arg	Pro	Arg	Phe	Glu	Val	Phe	Val	Pro	Arg	Gln	Val	Ala	Ala	Leu	Thr		
				245					250					255			
Arg	Leu	Ala	Ala	Leu	Leu	Pro	Gly	Arg	Ala	Arg	Asp	Ala	Leu	His	His		
			260					265					270				
Leu	Leu	Val	Pro	Asn	Gln	Leu	Ala	Ala	Leu	Ser	Asp	Arg	Ser	Val	Arg		
		275					280					285					
Ala	Ala	Tyr	Glu	Gln	Arg	Thr	Arg	Thr	Ala	Arg	His	Pro	Glu	Ser			
	290					295					300						

&lt;210&gt; 1040

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Streptomyces avermitilis MA-4680

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1040

atg	acc	gac	ttc	gag	ggc	ctc	aag	gcg	ctg	gtg	acc	ggc	gga	gcg	tcc		48
Met	Thr	Asp	Phe	Glu	Gly	Leu	Lys	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser		
1				5					10					15			
ggc	atc	ggc	cgc	gcc	acc	gcc	gaa	ctc	ctc	gcc	gcc	cgt	ggc	gcc	cag		96
Gly	Ile	Gly	Arg	Ala	Thr	Ala	Glu	Leu	Leu	Ala	Ala	Arg	Gly	Ala	Gln		
			20					25					30				
gtt	gcc	gtg	ctc	gac	ctc	gac	ccg	agc	ggt	gtc	gac	aag	ccg	ctg	ttc		144
Val	Ala	Val	Leu	Asp	Leu	Asp	Pro	Ser	Gly	Val	Asp	Lys	Pro	Leu	Phe		
		35					40					45					
ggc	cat	cgc	gcc	gac	gtc	acc	gac	gac	agc	tcc	gta	cgc	gag	gcc	gtg		192
Gly	His	Arg	Ala	Asp	Val	Thr	Asp	Asp	Ser	Ser	Val	Arg	Glu	Ala	Val		
	50					55					60						
gcc	gcc	gcc	gtc	agc	gac	ctc	ggc	gga	ctc	gac	gta	ctg	atc	aac	aac		240
Ala	Ala	Ala	Val	Ser	Asp	Leu	Gly	Gly	Leu	Asp	Val	Leu	Ile	Asn	Asn		
	65				70				75					80			
gcg	ggc	atc	gga	gcc	cag	ggc	acg	gtc	gag	gac	aac	gac	gac	gcg	cag		288
Ala	Gly	Ile	Gly	Ala	Gln	Gly	Thr	Val	Glu	Asp	Asn	Asp	Asp	Ala	Gln		
			85					90						95			
tgg	cac	cgg	gtc	ctg	gac	gtc	aac	gtc	ctc	ggc	atc	gtg	cgc	acg	acg		336
Trp	His	Arg	Val	Leu	Asp	Val	Asn	Val	Leu	Gly	Ile	Val	Arg	Thr	Thr		
		100					105					110					
cgt	gcc	gcc	ctg	ccc	ctg	ctg	cgc	gcc	tcc	gca	cac	gcc	gcg	atc	gtc		384
Arg	Ala	Ala	Leu	Pro	Leu	Leu	Arg	Ala	Ser	Ala	His	Ala	Ala	Ile	Val		
		115					120					125					
aac	acc	tgc	tcc	atc	gcc	gcc	acg	gca	ggt	ctg	ccg	cag	cgc	gcc	ctg		432
Asn	Thr	Cys	Ser	Ile	Ala	Ala	Thr	Ala	Gly	Leu	Pro	Gln	Arg	Ala	Leu		
	130				135					140							
tac	tcc	ggc	tcc	aag	ggc	gtt	ctc	gcc	ctc	acc	ctc	gac	atg	gcc			480
Tyr	Ser	Ala	Ser	Lys	Gly	Ala	Val	Leu	Ala	Leu	Thr	Leu	Ala	Met	Ala		
	145				150			155						160			
gcc	gac	cac	gtc	cgc	gag	ggc	atc	cgc	gtc	aac	tgc	gtc	aac	ccc	ggc		528
Ala	Asp	His	Val	Arg	Glu	Gly	Ile	Arg	Val	Asn	Cys	Val	Asn	Pro	Gly		
				165				170						175			
acg	gtg	gac	acc	ccc	tgg	gtc	ggc	cgg	ctc	ctc	gac	gcg	gcg	ccc	gac		576
Thr	Val	Asp	Thr	Pro	Trp	Val	Gly	Arg	Leu	Leu	Asp	Ala	Ala	Pro	Asp		
		180					185					190					
ccc	gcc	gcc	gaa	cgc	gcg	gca	ctg	gag	gcc	cgc	cag	ccc	acc	ggc	cgc		624
Pro	Ala	Ala	Glu	Arg	Ala	Ala	Leu	Glu	Ala	Arg	Gln	Pro	Thr	Gly	Arg		
		195					200					205					
ctc	gtg	agc	gca	gcc	gag	gtc	gcg	ggc	gcc	atc	gcc	tac	ctg	gcc	ggc		672
Leu	Val	Ser	Ala	Ala	Glu	Val	Ala	Gly	Ala	Ile	Ala	Tyr	Leu	Ala	Gly		
	210				215					220							
ccg	ctg	tcc	gac	gcc	acc	acc	ggc	acc	gcg	ctc	gcc	gtg	gac	ggc	ggt		720
Pro	Leu	Ser	Asp	Ala	Thr	Thr	Gly	Thr	Ala	Leu	Ala	Val	Asp	Gly	Gly		
	225				230				235						240		

atg cag ggg ctg cgg ctg cgc ccg gtg gga cag tga  
 Met Gln Gly Leu Arg Leu Arg Pro Val Gly Gln  
 245 250

<210> 1041  
 <211> 251  
 <212> PRT  
 <213> Streptomyces avermitilis MA-4680

<400> 1041  
 Met Thr Asp Phe Glu Gly Leu Lys Ala Leu Val Thr Gly Gly Ala Ser  
 1 5 10 15  
 Gly Ile Gly Arg Ala Thr Ala Glu Leu Ala Ala Arg Gly Ala Gln  
 20 25 30  
 Val Ala Val Leu Asp Leu Asp Pro Ser Gly Val Asp Lys Pro Leu Phe  
 35 40 45  
 Gly His Arg Ala Asp Val Thr Asp Asp Ser Ser Val Arg Glu Ala Val  
 50 55 60  
 Ala Ala Ala Val Ser Asp Leu Gly Gly Leu Asp Val Leu Ile Asn Asn  
 65 70 75 80  
 Ala Gly Ile Gly Ala Gln Gly Thr Val Glu Asp Asn Asp Asp Ala Gln  
 85 90 95  
 Trp His Arg Val Leu Asp Val Asn Val Leu Gly Ile Val Arg Thr Thr  
 100 105 110  
 Arg Ala Ala Leu Pro Leu Leu Arg Ala Ser Ala His Ala Ala Ile Val  
 115 120 125  
 Asn Thr Cys Ser Ile Ala Ala Thr Ala Gly Leu Pro Gln Arg Ala Leu  
 130 135 140  
 Tyr Ser Ala Ser Lys Gly Ala Val Leu Ala Leu Thr Leu Ala Met Ala  
 145 150 155 160  
 Ala Asp His Val Arg Glu Gly Ile Arg Val Asn Cys Val Asn Pro Gly  
 165 170 175  
 Thr Val Asp Thr Pro Trp Val Gly Arg Leu Leu Asp Ala Ala Pro Asp  
 180 185 190  
 Pro Ala Ala Glu Arg Ala Ala Leu Glu Ala Arg Gln Pro Thr Gly Arg  
 195 200 205  
 Leu Val Ser Ala Ala Glu Val Ala Gly Ala Ile Ala Tyr Leu Ala Gly  
 210 215 220  
 Pro Leu Ser Asp Ala Thr Thr Gly Thr Ala Leu Ala Val Asp Gly Gly  
 225 230 235 240  
 Met Gln Gly Leu Arg Leu Arg Pro Val Gly Gln  
 245 250

<210> 1042  
 <211> 828  
 <212> DNA  
 <213> Mycobacterium bovis AF2122/97

<220>  
 <221> CDS  
 <222> (1)..(828)  
 <223> transl\_table=11

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 1 5 10 15  
 ggc atc ggg ttg gct acc ggc acc gag ttc gcc cgc cgc gga gcc aga 96  
 Gly Ile Gly Leu Ala Thr Gly Thr Glu Phe Ala Arg Arg Gly Ala Arg  
 20 25 30  
 gtc gtg cta ggg gac gtt gac aag ccg gga ctt cgg cag gcg gtg aac 144  
 Val Val Leu Gly Asp Val Asp Lys Pro Gly Leu Arg Gln Ala Val Asn  
 35 40 45  
 cac ctg cgt gcc gag ggg ttc gat gtg cac ggc gtg atg tgc gac gtc 192  
 His Leu Arg Ala Glu Gly Phe Asp Val His Gly Val Met Cys Asp Val  
 50 55 60  
 cgg cat cga gaa gag gtc act cac ctc gcg gac gag gct ttc cgc ctg 240  
 Arg His Arg Glu Glu Val Thr His Leu Ala Asp Glu Ala Phe Arg Leu  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

ctc	ggc	cac	ttc	gat	gtc	gta	ttc	agc	aac	gcc	ggc	atc	gtt	gtc	ggc	288
Leu	Gly	His	Phe	Asp	Val	Val	Phe	Ser	Asn	Ala	Gly	Ile	Val	Val	Gly	
				85					90					95		
ggt	ccg	atc	gtg	gag	atg	acg	cac	gac	gac	tgg	cgt	tgg	gtg	atc	gac	336
Gly	Pro	Ile	Val	Glu	Met	Thr	His	Asp	Asp	Trp	Arg	Trp	Val	Ile	Asp	
			100					105					110			
gtc	gac	ctg	tgg	ggc	tcg	atc	cat	acg	gtc	gaa	gcg	ttc	ctg	ccg	agg	384
Val	Asp	Leu	Trp	Gly	Ser	Ile	His	Thr	Val	Glu	Ala	Phe	Leu	Pro	Arg	
		115					120					125				
ttg	ctt	gag	cag	ggc	acg	ggc	ggg	cat	gtg	gtg	ttc	acc	gcg	tcc	ttt	432
Leu	Leu	Glu	Gln	Gly	Thr	Gly	Gly	His	Val	Val	Phe	Thr	Ala	Ser	Phe	
	130					135					140					
gcc	ggg	ctg	gtg	ccc	aat	gcc	gga	ctc	ggc	gca	tac	ggc	gtt	gcc	aag	480
Ala	Gly	Leu	Val	Pro	Asn	Ala	Gly	Leu	Gly	Ala	Tyr	Gly	Val	Ala	Lys	
145					150					155					160	
tac	ggg	gtt	gtc	ggt	ctg	gcg	gag	acg	ctg	gcc	cgc	gag	gtc	acc	gcc	528
Tyr	Gly	Val	Val	Gly	Leu	Ala	Glu	Thr	Leu	Ala	Arg	Glu	Val	Thr	Ala	
				165					170					175		
gac	ggc	att	ggg	gtg	tcg	gtg	ctc	tgc	ccg	atg	gtc	gtc	gaa	acc	aat	576
Asp	Gly	Ile	Gly	Val	Ser	Val	Leu	Cys	Pro	Met	Val	Val	Glu	Thr	Asn	
			180					185					190			
ctg	gtt	gcc	aac	tct	gaa	cga	atc	cga	ggc	gcg	gct	tgc	gcg	cag	tcc	624
Leu	Val	Ala	Asn	Ser	Glu	Arg	Ile	Arg	Gly	Ala	Ala	Cys	Ala	Gln	Ser	
		195					200					205				
tca	acg	acg	gga	tcg	ccc	ggt	cca	ctc	ccc	ctg	cag	gac	aac	ctg		672
Ser	Thr	Thr	Gly	Ser	Pro	Gly	Pro	Leu	Pro	Leu	Gln	Asp	Asp	Asn	Leu	
	210					215				220						
ggc	gtc	gac	gat	atc	gcc	cag	cta	aca	gcc	gat	gcg	att	ctg	gcc	aac	720
Gly	Val	Asp	Asp	Ile	Ala	Gln	Leu	Thr	Ala	Asp	Ala	Ile	Leu	Ala	Asn	
225					230					235					240	
cgc	ctc	tac	gtc	ctt	ccg	cat	gcg	gcc	tcg	cgc	gct	tcg	atc	cgc	cgc	768
Arg	Leu	Tyr	Val	Leu	Pro	His	Ala	Ala	Ser	Arg	Ala	Ser	Ile	Arg	Arg	
				245					250					255		
agg	ttc	gag	cgc	att	gac	cgc	acc	ttc	gac	gaa	cag	gcc	gcc	gag	ggg	816
Arg	Phe	Glu	Arg	Ile	Asp	Arg	Thr	Phe	Asp	Glu	Gln	Ala	Ala	Glu	Gly	
			260					265					270			
tgg	cgg	cat	tag													828
Trp	Arg	His														
		275														

&lt;210&gt; 1043

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium bovis AF2122/97

&lt;400&gt; 1043

Met	Asp	Gly	Phe	Pro	Gly	Arg	Gly	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	
1				5					10					15		
Gly	Ile	Gly	Leu	Ala	Thr	Gly	Thr	Glu	Phe	Ala	Arg	Arg	Gly	Ala	Arg	
			20					25					30			
Val	Val	Leu	Gly	Asp	Val	Asp	Lys	Pro	Gly	Leu	Arg	Gln	Ala	Val	Asn	
		35					40					45				
His	Leu	Arg	Ala	Glu	Gly	Phe	Asp	Val	His	Gly	Val	Met	Cys	Asp	Val	
	50					55				60						
Arg	His	Arg	Glu	Glu	Val	Thr	His	Leu	Ala	Asp	Glu	Ala	Phe	Arg	Leu	
65				70					75					80		
Leu	Gly	His	Phe	Asp	Val	Val	Phe	Ser	Asn	Ala	Gly	Ile	Val	Val	Gly	
			85						90					95		
Gly	Pro	Ile	Val	Glu	Met	Thr	His	Asp	Asp	Trp	Arg	Trp	Val	Ile	Asp	
		100						105					110			
Val	Asp	Leu	Trp	Gly	Ser	Ile	His	Thr	Val	Glu	Ala	Phe	Leu	Pro	Arg	
	115						120					125				
Leu	Leu	Glu	Gln	Gly	Thr	Gly	Gly	His	Val	Val	Phe	Thr	Ala	Ser	Phe	
	130					135					140					
Ala	Gly	Leu	Val	Pro	Asn	Ala	Gly	Leu	Gly	Ala	Tyr	Gly	Val	Ala	Lys	
145					150					155					160	
Tyr	Gly	Val	Val	Gly	Leu	Ala	Glu	Thr	Leu	Ala	Arg	Glu	Val	Thr	Ala	
				165					170					175		
Asp	Gly	Ile	Gly	Val	Ser	Val	Leu	Cys	Pro	Met	Val	Val	Glu	Thr	Asn	

## PhoenixTemp32470.tmp.txt

180  
 Leu Val Ala Asn Ser Glu Arg Ile Arg Gly Ala Ala Cys Ala Gln Ser  
 195  
 Ser Thr Thr Gly Ser Pro Gly Pro Leu Pro Leu Gln Asp Asp Asn Leu  
 210  
 Gly Val Asp Asp Ile Ala Gln Leu Thr Ala Asp Ala Ile Leu Ala Asn  
 225  
 Arg Leu Tyr Val Leu Pro His Ala Ala Ser Arg Ala Ser Ile Arg Arg  
 245  
 Arg Phe Glu Arg Ile Asp Arg Thr Phe Asp Glu Gln Ala Ala Glu Gly  
 260  
 Trp Arg His  
 275

&lt;210&gt; 1044

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium avium subsp. paratuberculosis K-10

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1044

atg	caa	ggg	ttc	gcc	ggc	aag	gtc	gcc	gtg	gtc	acc	ggc	gcc	gga	tcg	48
Met	Gln	Gly	Phe	Ala	Gly	Lys	Val	Ala	Val	Val	Thr	Gly	Ala	Gly	Ser	
1				5				10					15			
ggc	atc	ggg	cag	gcg	ctg	gcg	gtg	gag	ctg	ggc	cgg	gcc	ggg	gcc	aag	96
Gly	Ile	Gly	Gln	Ala	Leu	Ala	Val	Glu	Leu	Gly	Arg	Ala	Gly	Ala	Lys	
			20					25				30				
ctg	gcg	atc	agc	gac	gtg	gac	acc	gcg	ggg	ctg	gcg	cag	acg	gcg	gag	144
Leu	Ala	Ile	Ser	Asp	Val	Asp	Thr	Ala	Gly	Leu	Ala	Gln	Thr	Ala	Glu	
			35				40				45					
cag	ctt	gcc	gcg	atc	ggc	gcg	ccg	gtc	aag	gcg	gat	cgg	ctc	gac	gtg	192
Gln	Leu	Ala	Ala	Ile	Gly	Ala	Pro	Val	Lys	Ala	Asp	Arg	Leu	Asp	Val	
	50					55				60						
acc	gaa	cg	gag	gcg	ttc	ctg	gcc	tac	gcc	gac	gcg	gtc	aac	gag	cat	240
Thr	Glu	Arg	Glu	Ala	Phe	Leu	Ala	Tyr	Ala	Asp	Ala	Val	Asn	Glu	His	
	65				70				75						80	
tac	ggc	cgg	gtc	aac	cag	atc	tac	aac	aac	gcc	ggc	atc	acg	ttc	atc	288
Tyr	Gly	Arg	Val	Asn	Gln	Ile	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Phe	Ile	
				85				90						95		
ggc	tcc	atc	gag	gac	agc	cgg	ttc	aag	gac	atc	gag	cgg	gtg	gtc	gac	336
Gly	Ser	Ile	Glu	Asp	Ser	Arg	Phe	Lys	Asp	Ile	Glu	Arg	Val	Val	Asp	
			100					105					110			
gtc	gac	ttc	tgg	ggc	gtg	gtc	aac	ggc	acc	aag	gcg	ttc	ctg	ccc	cac	384
Val	Asp	Phe	Trp	Gly	Val	Val	Asn	Gly	Thr	Lys	Ala	Phe	Leu	Pro	His	
			115				120					125				
ctg	atc	gcc	tcc	ggc	gac	gga	cac	gtg	atc	aac	atc	tcc	agc	gcg	ctc	432
Leu	Ile	Ala	Ser	Gly	Asp	Gly	His	Val	Ile	Asn	Ile	Ser	Ser	Ala	Leu	
			130			135					140					
ggc	ctg	ttc	tcg	gcg	ccc	ggg	cag	gcg	gcc	tac	gtg	tcg	gcc	aag	ttc	480
Gly	Leu	Phe	Ser	Ala	Pro	Gly	Gln	Ala	Ala	Tyr	Val	Ser	Ala	Lys	Phe	
	145				150					155					160	
gcc	gtc	cg	ggc	ttc	acc	gag	gcg	ctg	cat	caa	gag	atg	ctg	cg	gcc	528
Ala	Val	Arg	Gly	Phe	Thr	Glu	Ala	Leu	His	Gln	Glu	Met	Leu	Arg	Ala	
				165					170					175		
ggt	cac	ccg	gtc	cgg	gtc	acc	acg	gtg	cac	ccc	ggc	ggc	atc	aaa	acc	576
Gly	His	Pro	Val	Arg	Val	Thr	Thr	Val	His	Pro	Gly	Gly	Ile	Lys	Thr	
			180					185					190			
gcg	ttc	gcc	cg	aac	gcc	acc	ggt	gtc	gag	ggc	ctc	gac	cac	gcc	gag	624
Ala	Phe	Ala	Arg	Asn	Ala	Thr	Gly	Val	Glu	Gly	Leu	Asp	His	Ala	Glu	
			195				200					205				
ctg	gcc	agc	ctg	ttc	gag	gaa	cag	cag	gcc	aag	acg	acg	ccg	cag	cg	672
Leu	Ala	Ser	Leu	Phe	Glu	Glu	Gln	Gln	Ala	Lys	Thr	Thr	Pro	Gln	Arg	
	210					215					220					
gcc	gcc	cag	ctc	atc	ctg	gac	ggg	gtg	cg	cg	aac	aag	gcc	cgg	gtg	720
Ala	Ala	Gln	Leu	Ile	Leu	Asp	Gly	Val	Arg	Arg	Asn	Lys	Ala	Arg	Val	

## PhoenixTemp32470.tmp.txt

225	ctg	gtc	gga	ccc	gac	230	gtc	aag	gcc	atg	gac	235	ctg	gtg	cgg	gcg	240	gcc	768
Leu	Val	Gly	Pro	Asp	Val	Lys	Ala	Met	Asp	Leu	Leu	Val	Arg	Ala	Ala				
				245					250						255				
ggc	ccc	aac	tac	gag	cgg	ctg	ctg	gcc	ggt	ccg	gtg	atg	ggc	cgg	gtc	816			
Gly	Pro	Asn	Tyr	Glu	Arg	Leu	Leu	Ala	Gly	Pro	Val	Met	Gly	Arg	Val				
			260					265					270						
aag	gag	ttc	gtg	acc	cgg	ttg	ctg	ccc	aag	cgt	taa					852			
Lys	Glu	Phe	Val	Thr	Arg	Leu	Leu	Pro	Lys	Arg									
		275					280												

&lt;210&gt; 1045

&lt;211&gt; 283

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium avium subsp. paratuberculosis K-10

&lt;400&gt; 1045

Met	Gln	Gly	Phe	Ala	Gly	Lys	Val	Ala	Val	Val	Thr	Gly	Ala	Gly	Ser
1				5				10						15	
Gly	Ile	Gly	Gln	Ala	Leu	Ala	Val	Glu	Leu	Gly	Arg	Ala	Gly	Ala	Lys
			20					25					30		
Leu	Ala	Ile	Ser	Asp	Val	Asp	Thr	Ala	Gly	Leu	Ala	Gln	Thr	Ala	Glu
		35				40						45			
Gln	Leu	Ala	Ala	Ile	Gly	Ala	Pro	Val	Lys	Ala	Asp	Arg	Leu	Asp	Val
	50				55					60					
Thr	Glu	Arg	Glu	Ala	Phe	Leu	Ala	Tyr	Ala	Asp	Ala	Val	Asn	Glu	His
65				70					75					80	
Tyr	Gly	Arg	Val	Asn	Gln	Ile	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Phe	Ile
				85				90					95		
Gly	Ser	Ile	Glu	Asp	Ser	Arg	Phe	Lys	Asp	Ile	Glu	Arg	Val	Val	Asp
			100					105					110		
Val	Asp	Phe	Trp	Gly	Val	Val	Asn	Gly	Thr	Lys	Ala	Phe	Leu	Pro	His
		115					120					125			
Leu	Ile	Ala	Ser	Gly	Asp	Gly	His	Val	Ile	Asn	Ile	Ser	Ser	Ala	Leu
	130					135					140				
Gly	Leu	Phe	Ser	Ala	Pro	Gly	Gln	Ala	Ala	Tyr	Val	Ser	Ala	Lys	Phe
145				150					155						160
Ala	Val	Arg	Gly	Phe	Thr	Glu	Ala	Leu	His	Gln	Glu	Met	Leu	Arg	Ala
				165					170					175	
Gly	His	Pro	Val	Arg	Val	Thr	Thr	Val	His	Pro	Gly	Gly	Ile	Lys	Thr
			180					185					190		
Ala	Phe	Ala	Arg	Asn	Ala	Thr	Gly	Val	Glu	Gly	Leu	Asp	His	Ala	Glu
		195					200					205			
Leu	Ala	Ser	Leu	Phe	Glu	Glu	Gln	Gln	Ala	Lys	Thr	Thr	Pro	Gln	Arg
	210					215					220				
Ala	Ala	Gln	Leu	Ile	Leu	Asp	Gly	Val	Arg	Arg	Asn	Lys	Ala	Arg	Val
225				230					235						240
Leu	Val	Gly	Pro	Asp	Val	Lys	Ala	Met	Asp	Leu	Leu	Val	Arg	Ala	Ala
				245					250					255	
Gly	Pro	Asn	Tyr	Glu	Arg	Leu	Leu	Ala	Gly	Pro	Val	Met	Gly	Arg	Val
			260					265					270		
Lys	Glu	Phe	Val	Thr	Arg	Leu	Leu	Pro	Lys	Arg					
		275					280								

&lt;210&gt; 1046

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 1046

atg	aca	ggc	cgc	ctc	gcc	aac	aaa	gtc	gcc	atc	ata	acc	ggc	gca	tcc	48
Met	Thr	Gly	Arg	Leu	Ala	Asn	Lys	Val	Ala	Ile	Ile	Thr	Gly	Ala	Ser	
1				5				10						15		
tcg	ggc	atc	ggg	cgc	gcg	acg	gcc	ctg	ctg	atg	gcc	cgc	gag	ggc	gcc	96
Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Leu	Met	Ala	Arg	Glu	Gly	Ala	



## PhoenixTemp32470.tmp.txt

																20																	25																	30																																		
gcc	gtc	gtg	tgc	agc	gac	atc	cga	cag	ggc	ccg	ccg	acg	gac	tcc	aac		144																																																																			
Ala	Val	Val	Cys	Ser	Asp	Ile	Arg	Gln	Gly	Pro	Pro	Thr	Asp	Ser	Asn																																																																					
																35																	40																																																			
agc	agc	agc	agc	atc	agc	acg	cac	gag	gag	att	cag	cgc	ctc	ggc	ggg		192																																																																			
Ser	Ser	Ser	Ser	Ile	Ser	Thr	His	Glu	Glu	Ile	Gln	Arg	Leu	Gly	Gly																																																																					
																50																	55																	60																																		
cgg	gcc	act	ttt	gtg	tcg	tgc	gac	acg	tca	gac	tcg	gcg	cag	gtg	cag		240																																																																			
Arg	Ala	Thr	Phe	Val	Ser	Cys	Asp	Thr	Ser	Asp	Ser	Ala	Gln	Val	Gln																																																																					
																65																	70																	75																	80																	
gcg	ctc	gtc	aag	tcg	gcc	gtg	gcc	gag	ttt	ggg	cgc	ctc	gac	atc	atg		288																																																																			
Ala	Leu	Val	Lys	Ser	Ala	Val	Ala	Glu	Phe	Gly	Arg	Leu	Asp	Ile	Met																																																																					
																85																	90																	95																																		
ttc	aac	aac	gcc	ggc	gtc	ggc	aag	gag	ggg	gac	aat	tac	ccc	gac	acc		336																																																																			
Phe	Asn	Asn	Ala	Gly	Val	Gly	Lys	Glu	Gly	Asp	Asn	Tyr	Pro	Asp	Thr																																																																					
																100																	105																	110																																		
atg	att	tgg	cag	tac	gac	gag	gac	gac	ttt	gac	ctc	acc	atg	gcc	gtc		384																																																																			
Met	Ile	Trp	Gln	Tyr	Asp	Glu	Asp	Asp	Phe	Asp	Leu	Thr	Met	Ala	Val																																																																					
																115																	120																	125																																		
aac	gtc	aag	ggg	gtg	ttt	ttg	ggc	tgc	aag	tac	gct	gcc	gcg	cag	atg		432																																																																			
Asn	Val	Lys	Gly	Val	Phe	Leu	Gly	Cys	Lys	Tyr	Ala	Ala	Ala	Gln	Met																																																																					
																130																	135																	140																																		
aag	gac	cag	gag	ccg	ctc	gtc	ccc	ggc	ggc	gat	cgt	ggg	tgg	atc	gtc		480																																																																			
Lys	Asp	Gln	Glu	Pro	Leu	Val	Pro	Gly	Gly	Asp	Arg	Gly	Trp	Ile	Val																																																																					
																145																	150																	155																	160																	
aac	acg	ggg	tcc	ata	ctg	ggg	gtt	aat	gcc	atc	aag	ggc	gtc	acg	gcc		528																																																																			
Asn	Thr	Gly	Ser	Ile	Leu	Gly	Val	Asn	Ala	Ile	Lys	Gly	Val	Thr	Ala																																																																					
																165																	170																	175																																		
tat	gcg	gcg	tcg	aag	cat	gcc	gtc	ttg	ggg	atc	acc	aag	gcg	gcg	gct		576																																																																			
Tyr	Ala	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Ile	Thr	Lys	Ala	Ala	Ala																																																																					
																180																	185																	190																																		
ttg	gat	tgc	gcc	cct	ttt	aat	att	cac	gtc	aac	gcg	gtt	aac	ccc	ggc		624																																																																			
Leu	Asp	Cys	Ala	Pro	Phe	Asn	Ile	His	Val	Asn	Ala	Val	Asn	Pro	Gly																																																																					
																195																	200																	205																																		
ttt	gtc	aag	acg	gta	atg	aca	aag	aat	atg	ttg	gag	gat	agc	gtt	ggc		672																																																																			
Phe	Val	Lys	Thr	Val	Met	Thr	Lys	Asn	Met	Leu	Glu	Asp	Ser	Val	Gly																																																																					
																210																	215																	220																																		
agt	gag	gcc	ttg	gct	gcg	cgg	cat	ccg	ttc	aag	ggg	ata	gga	aac	gtc		720																																																																			
Ser	Glu	Ala	Leu	Ala	Ala	Arg	His	Pro	Phe	Lys	Gly	Ile	Gly	Asn	Val																																																																					
																225																	230																	235																	240																	
gag	gac	ata	gcc	aag	acg	gtg	ctg	ttc	ctt	gtc	agc	gac	gat	gcg	tcc		768																																																																			
Glu																																																																																				

<211> 272

<213> Mag

433 1047

Met Thr Gl

1	Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Leu	Met	Ala	Arg	Glu	Gly	Ala
				20					25					30		
Ala	Val	Val	Cys	Ser	Asp	Ile	Arg	Gln	Gly	Pro	Pro	Thr	Asp	Ser	Asn	
		35					40					45				
Ser	Ser	Ser	Ser	Ile	Ser	Thr	His	Glu	Glu	Ile	Gln	Arg	Leu	Gly	Gly	
	50					55					60					
Arg	Ala	Thr	Phe	Val	Ser	Cys	Asp	Thr	Ser	Asp	Ser	Ala	Gln	Val	Gln	
65					70					75					80	
Ala	Leu	Val	Lys	Ser	Ala	Val	Ala	Glu	Phe	Gly	Arg	Leu	Asp	Ile	Met	
				85					90					95		
Phe	Asn	Asn	Ala	Gly	Val	Gly	Lys	Glu	Gly	Asp	Asn	Tyr	Pro	Asp	Thr	

## PhoenixTemp32470.tmp.txt

100 105 110  
 Met Ile Trp Gln Tyr Asp Glu Asp Phe Asp Leu Thr Met Ala Val  
 115 120 125  
 Asn Val Lys Gly Val Phe Leu Gly Cys Lys Tyr Ala Ala Ala Gln Met  
 130 135 140  
 Lys Asp Gln Glu Pro Leu Val Pro Gly Gly Asp Arg Gly Trp Ile Val  
 145 150 155 160  
 Asn Thr Gly Ser Ile Leu Gly Val Asn Ala Ile Lys Gly Val Thr Ala  
 165 170 175  
 Tyr Ala Ala Ser Lys His Ala Val Leu Gly Ile Thr Lys Ala Ala Ala  
 180 185 190  
 Leu Asp Cys Ala Pro Phe Asn Ile His Val Asn Ala Val Asn Pro Gly  
 195 200 205  
 Phe Val Lys Thr Val Met Thr Lys Asn Met Leu Glu Asp Ser Val Gly  
 210 215 220  
 Ser Glu Ala Leu Ala Ala Arg His Pro Phe Lys Gly Ile Gly Asn Val  
 225 230 235 240  
 Glu Asp Ile Ala Lys Thr Val Leu Phe Leu Val Ser Asp Asp Ala Ser  
 245 250 255  
 Trp Ile Thr Gly Thr Ser Leu Cys Val Asp Gly Gly Tyr Thr Thr Met  
 260 265 270

&lt;210&gt; 1048

&lt;211&gt; 1489

&lt;212&gt; DNA

&lt;213&gt; Aedes aegypti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (254)..(1168)

&lt;400&gt; 1048

cgtgtctaca ttggtgagag caaaggtcaa taactttttt ttggaagtgc ttgaaatggg 60  
  
 accgatgcag gagtgacgca ttacttcgcg tttaattaga ttagggcttg gttcggaaaa 120  
  
 tgtttactgt tatttcgtgt gatgcaagaa ttttttttac cagaatccat tacatcagct 180  
  
 acgacgtaaa tatcaggatt cgcaagcttc atacattccg aactggctcg agtgccatag 240  
  
 gaaaccagtc aca atg atc ctg cgg ttg tac tct agt ata att ctc ctc 289  
                   Met Ile Leu Arg Leu Tyr Ser Ser Ile Ile Leu Leu  
                   1                  5                  10  
 tgg gac ttt tgc atc atc ctg tta tac ttt gcc atg cag ctt ctt cgg 337  
 Trp Asp Phe Cys Ile Ile Leu Leu Tyr Phe Ala Met Gln Leu Leu Arg  
                   15                  20                  25  
 tca ctc tat caa ata gtt cga cct ccg aag cgt aag tcc gta gct ggc 385  
 Ser Leu Tyr Gln Ile Val Arg Pro Pro Lys Arg Lys Ser Val Ala Gly  
                   30                  35                  40  
 gag att gta gcg atc ttc gga aca agt aga gga gta ggc cgt gac cta 433  
 Glu Ile Val Ala Ile Phe Gly Thr Ser Arg Gly Val Gly Arg Asp Leu  
                   45                  50                  55                  60  
 gca att cag atg gcc gaa ttg ggc gcc aaa gta gct tgc gtt gat atc 481  
 Ala Ile Gln Met Ala Glu Leu Gly Ala Lys Val Ala Cys Val Asp Ile  
                   65                  70                  75  
 aac tca tcc gag aac gac atg cta gtg aag agt att aac ggc agt ggc 529  
 Asn Ser Ser Glu Asn Asp Met Leu Val Lys Ser Ile Asn Gly Ser Gly  
                   80                  85                  90  
 tac gtt gcc cat gct ttc gaa tgt gac ctc acg aac aag aac gac att 577  
 Tyr Val Ala His Ala Phe Glu Cys Asp Leu Thr Asn Lys Asn Asp Ile  
                   95                  100                  105  
 att cgc acg ata aat gcc atc gaa aag cga ttc ggc caa att acc atg 625  
 Ile Arg Thr Ile Asn Ala Ile Glu Lys Arg Phe Gly Gln Ile Thr Met  
                   110                  115                  120  
 ttc ttc cac tgc tgt ggc gtc cct agt ccg aga tca ctc atc acc gat 673

## PhoenixTemp32470.tmp.txt

Phe 125	Phe	His	Cys	Cys	Gly 130	Val	Pro	Ser	Pro	Arg 135	Ser	Leu	Ile	Thr	Asp 140			
cca	ccg	cca	att	caa	gcc	act	cta	aat	ctg	agt	gtc	gtc	tcg	cac	ttc	721		
Pro	Pro	Pro	Ile	Gln	Ala	Thr	Leu	Asn	Leu	Ser	Val	Val	Ser	His	Phe			
				145					150					155				
tgg	ctt	ctg	gaa	gcg	atc	ctg	cca	aaa	atg	aaa	cgt	aac	aat	cac	ggc	769		
Trp	Leu	Leu	Glu	Ala	Ile	Leu	Pro	Lys	Met	Lys	Arg	Asn	Asn	His	Gly			
			160					165					170					
cac	atc	gtg	ttc	ctc	act	tcg	gtg	gca	ggc	ctg	agt	gga	gtt	aag	cat	817		
His	Ile	Val	Phe	Leu	Thr	Ser	Val	Ala	Gly	Leu	Ser	Gly	Val	Lys	His			
		175					180					185						
cag	acg	cct	ctc	tcc	gtg	gcg	caa	ttc	gct	gtc	cag	ggc	ctc	ttc	gaa	865		
Gln	Thr	Pro	Leu	Ser	Val	Ala	Gln	Phe	Ala	Val	Gln	Gly	Leu	Phe	Glu			
	190				195						200							
tca	atc	ctc	gat	gaa	ctg	cg	atc	gaa	aag	ttc	ctc	cg	acc	att	ccg	913		
Ser	Ile	Leu	Asp	Glu	Leu	Arg	Ile	Glu	Lys	Phe	Leu	Arg	Thr	Ile	Pro			
205				210						215					220			
atc	tcc	ttg	gtg	cac	ctg	tat	ccg	ttt	gtc	ctg	gcg	gaa	aac	tgc	cgt	961		
Ile	Ser	Leu	Val	His	Leu	Tyr	Pro	Phe	Val	Leu	Ala	Glu	Asn	Cys	Arg			
				225					230					235				
aac	gac	atc	cga	atg	cg	att	ccg	tcc	gca	ttt	ggt	acc	atc	cg	tcg	1009		
Asn	Asp	Ile	Arg	Met	Arg	Ile	Pro	Ser	Ala	Phe	Gly	Thr	Ile	Arg	Ser			
			240					245					250					
gaa	gat	gcc	cg	agg	atc	atc	gat	ggc	gtc	cga	cg	aac	gag	ctg		1057		
Glu	Asp	Ala	Arg	Arg	Ile	Ile	Asp	Gly	Val	Arg	Arg	Asn	Glu	Leu				
		255				260					265							
gag	atc	agt	att	ccc	aag	tat	tgc	cta	gcg	ttg	ggc	cac	gtg	ctc	aag	1105		
Glu	Ile	Ser	Ile	Pro	Lys	Tyr	Cys	Leu	Ala	Leu	Gly	His	Val	Leu	Lys			
	270				275						280							
ttg	cta	ccg	cga	cg	gcg	acg	ttg	ctg	ctt	cg	aat	ctc	ttc	gat	acc	1153		
Leu	Leu	Pro	Arg	Arg	Ala	Thr	Leu	Leu	Leu	Arg	Asn	Leu	Phe	Asp	Thr			
285				290						295					300			
gga	gtg	gat	ttc	tag	tac	cttg	cag	ctcaa	ag	act	gtt	ctcc	gat	gct	gcg	1205		
Gly	Val	Asp	Phe															
ttgat	tatt	tgcc	atag	ag	tgatt	cta	at	cg	ttg	ggt	gt	tttt	gac	at	ctct	atag	1265	
aact	cg	ac	aa	gct	tga	tacc	ta	ag	act	tga	aa	gct	tga	g	tag	ag	ta	1325
gtct	ag	tga	g	ag	ac	gt	cg	g	at	ccc	ct	cta	ag	gg	g	ac	gc	1385
aata	aa	gat	g	at	at	gt	tatt	g	aaa	at	ttt	at	at	tt	aa	ag	tg	1445
ttta	at	gt	t	at	g	t	at	g	t	at	g	t	at	g	t	at	g	1489

&lt;210&gt; 1049

&lt;211&gt; 304

&lt;212&gt; PRT

&lt;213&gt; Aedes aegypti

&lt;400&gt; 1049

Met	Ile	Leu	Arg	Leu	Tyr	Ser	Ser	Ile	Ile	Leu	Leu	Trp	Asp	Phe	Cys	
1				5					10					15		
Ile	Ile	Leu	Leu	Tyr	Phe	Ala	Met	Gln	Leu	Leu	Arg	Ser	Leu	Tyr	Gln	
			20					25					30			
Ile	Val	Arg	Pro	Pro	Lys	Arg	Lys	Ser	Val	Ala	Gly	Glu	Ile	Val	Ala	
		35					40					45				
Ile	Phe	Gly	Thr	Ser	Arg	Gly	Val	Gly	Arg	Asp	Leu	Ala	Ile	Gln	Met	
	50					55					60					
Ala	Glu	Leu	Gly	Ala	Lys	Val	Ala	Cys	Val	Asp	Ile	Asn	Ser	Ser	Glu	
65					70					75					80	
Asn	Asp	Met	Leu	Val	Lys	Ser	Ile	Asn	Gly	Ser	Gly	Tyr	Val	Ala	His	
				85					90					95		

## PhoenixTemp32470.tmp.txt

Ala Phe Glu Cys Asp Leu Thr Asn Lys Asn Asp Ile Ile Arg Thr Ile  
 100 105 110  
 Asn Ala Ile Glu Lys Arg Phe Gly Gln Ile Thr Met Phe Phe His Cys  
 115 120 125  
 Cys Gly Val Pro Ser Pro Arg Ser Leu Ile Thr Asp Pro Pro Pro Ile  
 130 135 140  
 Gln Ala Thr Leu Asn Leu Ser Val Val Ser His Phe Trp Leu Leu Glu  
 145 150 155 160  
 Ala Ile Leu Pro Lys Met Lys Arg Asn Asn His Gly His Ile Val Phe  
 165 170 175  
 Leu Thr Ser Val Ala Gly Leu Ser Gly Val Lys His Gln Thr Pro Leu  
 180 185 190  
 Ser Val Ala Gln Phe Ala Val Gln Gly Leu Phe Glu Ser Ile Leu Asp  
 195 200 205  
 Glu Leu Arg Ile Glu Lys Phe Leu Arg Thr Ile Pro Ile Ser Leu Val  
 210 215 220  
 His Leu Tyr Pro Phe Val Leu Ala Glu Asn Cys Arg Asn Asp Ile Arg  
 225 230 235 240  
 Met Arg Ile Pro Ser Ala Phe Gly Thr Ile Arg Ser Glu Asp Ala Ala  
 245 250 255  
 Arg Arg Ile Ile Asp Gly Val Arg Arg Asn Glu Leu Glu Ile Ser Ile  
 260 265 270  
 Pro Lys Tyr Cys Leu Ala Leu Gly His Val Leu Lys Leu Leu Pro Arg  
 275 280 285  
 Arg Ala Thr Leu Leu Leu Arg Asn Leu Phe Asp Thr Gly Val Asp Phe  
 290 295 300

&lt;210&gt; 1050

&lt;211&gt; 1041

&lt;212&gt; DNA

&lt;213&gt; Aedes aegypti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (53)..(790)

&lt;400&gt; 1050

gagtgctctc gattgagaca gacatcccaa acgtatcagg attgtagcaa at atg gaa 58  
 Met Glu  
 1  
 cgt tgg gct ggt aag gtg gcc gtt ata acc gga gct agt tct ggc att 106  
 Arg Trp Ala Gly Lys Val Ala Val Ile Thr Gly Ala Ser Ser Gly Ile  
 5 10 15  
 ggt gca gct att gca aaa cag ttg gcc aat gcc ggt atg gta gta atc 154  
 Gly Ala Ala Ile Ala Lys Gln Leu Ala Asn Ala Gly Met Val Val Ile  
 20 25 30  
 ggt ttg gct cgc cga gtt gaa cgc gtt gaa gaa ctt aag aag cat cta 202  
 Gly Leu Ala Arg Arg Val Glu Arg Val Glu Glu Leu Lys Lys His Leu  
 35 40 45 50  
 ccg gtt gag gct gct tcg aga ttg cat gcg ctg aaa tgc gac gta tcg 250  
 Pro Val Glu Ala Ala Ser Arg Leu His Ala Leu Lys Cys Asp Val Ser  
 55 60 65  
 aaa gaa gaa tca gtt tct agt gcc ttt gaa gag atc caa cgg aaa ttt 298  
 Lys Glu Glu Ser Val Ser Ser Ala Phe Glu Glu Ile Gln Arg Lys Phe  
 70 75 80  
 tcc gga gta gac gtg ttg gtt aac aat gca gga ata gtt aag cat act 346  
 Ser Gly Val Asp Val Leu Val Asn Asn Ala Gly Ile Val Lys His Thr  
 85 90 95  
 ttg cta cta tgc gat gat gat ttc caa caa tta aga gat ctt atg gat 394  
 Leu Leu Leu Cys Asp Asp Asp Phe Gln Gln Leu Arg Asp Leu Met Asp  
 100 105 110  
 act aat gtg atg gga cta gct cta tgt agt cgt aaa gca ttc aaa tcg 442  
 Thr Asn Val Met Gly Leu Ala Leu Cys Ser Arg Lys Ala Phe Lys Ser  
 115 120 125 130  
 atg aaa gaa cga tgc gtt gcc gga cat ata ata cat att aat agc gtc 490  
 Met Lys Glu Arg Cys Val Ala Gly His Ile Ile His Ile Asn Ser Val  
 135 140 145  
 gct gga cat acg gtt tcc aaa ttt cct cat atg aat atg tat gcg gcg 538  
 Ala Gly His Thr Val Ser Lys Phe Pro His Met Asn Met Tyr Ala Ala

## PhoenixTemp32470.tmp.txt

```

150
agc aaa cat gca gta aca gcc atc act gaa acg atg cga aat gaa ata 586
Ser Lys His Ala Val Thr Ala Ile Thr Glu Thr Met Arg Asn Glu Ile
165
cga gag ctt ggc tcc aaa gtc aaa gtg acc agt atc agt ccc gga gtg 634
Arg Glu Leu Gly Ser Lys Val Lys Val Thr Ser Ile Ser Pro Gly Val
180
gta aaa act gag ata gtg aga ggg ctg cat agt tct gaa gag ttc cct 682
Val Lys Thr Glu Ile Val Arg Gly Leu His Ser Ser Glu Glu Phe Pro
195
atg ttg gaa agc gaa gac att gcc caa gct gtt tta tat gtc ctg gga 730
Met Leu Glu Ser Glu Asp Ile Ala Gln Ala Val Leu Tyr Val Leu Gly
215
act ccc cct cac gtg cag gtt cac gag ctt acc ata aaa cca gtg gga 778
Thr Pro Pro His Val Gln Val His Glu Leu Thr Ile Lys Pro Val Gly
230
gaa aat ttt taaatttttaa tgattcgatg gatggcacat actagtagcac ttcgtttgtta 837
Glu Asn Phe
245
tttcctcaat acatcttata gaaggagggtt aaagctttcc ataaagtgtc attaaatact 897

tcacataatt ttgagaaaga atatctgaaa aaatcctcac ctcatttagt tttttcttct 957

ttctttgaat ctagatatca tgatatgcat gcatactctt aaacttcaat aaatgtaaatt 1017

taataaccat gccaaatttc agct 1041

```

<210> 1051  
 <211> 245  
 <212> PRT  
 <213> Aedes aegypti

```

<400> 1051
Met Glu Arg Trp Ala Gly Lys Val Ala Val Ile Thr Gly Ala Ser Ser
1 5 10 15
Gly Ile Gly Ala Ile Ala Lys Gln Leu Ala Asn Ala Gly Met Val
20 25 30
Val Ile Gly Leu Ala Arg Arg Val Glu Arg Val Glu Glu Leu Lys Lys
35 40 45
His Leu Pro Val Glu Ala Ala Ser Arg Leu His Ala Leu Lys Cys Asp
50 55 60
Val Ser Lys Glu Glu Ser Val Ser Ser Ala Phe Glu Glu Ile Gln Arg
65 70 75 80
Lys Phe Ser Gly Val Asp Val Leu Val Asn Asn Ala Gly Ile Val Lys
85 90 95
His Thr Leu Leu Cys Asp Asp Phe Gln Gln Leu Arg Asp Leu
100 105 110
Met Asp Thr Asn Val Met Gly Leu Ala Leu Cys Ser Arg Lys Ala Phe
115 120 125
Lys Ser Met Lys Glu Arg Cys Val Ala Gly His Ile Ile His Ile Asn
130 135 140
Ser Val Ala Gly His Thr Val Ser Lys Phe Pro His Met Asn Met Tyr
145 150 155 160
Ala Ala Ser Lys His Ala Val Thr Ala Ile Thr Glu Thr Met Arg Asn
165 170 175
Glu Ile Arg Glu Leu Gly Ser Lys Val Lys Val Thr Ser Ile Ser Pro
180 185 190
Gly Val Val Lys Thr Glu Ile Val Arg Gly Leu His Ser Glu Glu
195 200 205
Phe Pro Met Leu Glu Ser Glu Asp Ile Ala Gln Ala Val Leu Tyr Val
210 215 220
Leu Gly Thr Pro Pro His Val Gln Val His Glu Leu Thr Ile Lys Pro
225 230 235 240
Val Gly Glu Asn Phe

```



PhoenixTemp32470.tmp.txt

```

gtt atg ctg gcg ccg att gct ccg cgc gca gcc tac tgg ttg cgc cac      975
Val Met Leu Ala Pro Ile Ala Pro Arg Ala Ala Tyr Trp Leu Arg His
                285                290                295
ctg gcg cct tcc gtt tac ttc tgg ata atg aag aaa cgg gcg gaa aaa      1023
Leu Ala Pro Ser Val Tyr Phe Trp Ile Met Lys Lys Arg Ala Glu Lys
                300                305                310
cta aac tcc acg taaacaaaca ccaaagaacg acaaaccaac ctacacattc      1075
Leu Asn Ser Thr
                315
tttctagttc ctttcatttc aatcgacaac ggggtgtgtga ccatggcagg gcgcattata      1135

tgtttttttt tattgttagt ttacaattat tggtagctat ttaaaactat aacgtttacc      1195

accccggaacc ctcatcca                                              1213

```

<210> 1053  
 <211> 317  
 <212> PRT  
 <213> Anopheles gambiae str. PEST

<400> 1053

```

Met Lys Asn Leu Ala Glu Arg Ser Ala Gly Ser Leu Tyr Trp Trp Leu
1      5      10      15
Leu Ala Thr Leu Phe Leu Pro Ile Ala Ile Pro Gly Leu Val Leu Lys
      20      25
Leu Leu Thr Met Met Lys Glu Gln Arg Asn Ala Arg His Leu Asn Gly
      35      40      45
Lys Val Val Leu Ile Thr Gly Ala Ser Ser Gly Leu Gly Glu Ala Leu
      50      55      60
Ala His Ser Phe Phe Leu Ala Gly Cys Lys Val Val Leu Ala Ala Arg
65      70      75      80
Arg Lys Asp Glu Leu Glu Arg Val Arg Lys Asp Leu Leu Glu Leu His
      85      90      95
Ala Thr Val Pro Thr His Pro Pro Ile Ile Leu Pro Leu Asp Leu Ser
      100      105      110
Asp Leu Asn Ser Ile Gly Gly Lys Val Gln Ser Val Leu Glu Ile His
      115      120      125
Gly Ala Ile Asp Ile Leu Val Asn Asn Gly Gly Ile Ser Val Arg Gly
      130      135      140
Asp Ala Leu Ser Thr Ala Ile Asp Val Asp Ile Arg Ile Met Leu Val
145      150      155      160
Asn Tyr Phe Gly Ser Val Ala Leu Thr Lys Ala Cys Leu Pro Ser Met
      165      170      175
Met Ala Arg Lys Glu Gly Arg Ile Val Ser Ile Ser Ser Val Gln Gly
      180      185      190
Lys Phe Ala Ile Pro His Arg Ser Ala Tyr Ser Ala Ser Lys His Ala
      195      200      205
Met Gln Ala Phe Cys Asp Ser Leu Arg Ala Glu Val Ala Lys Asp Asn
210      215      220
Ile Lys Val Thr Leu Ile Ser Pro Gly Tyr Ile Asn Thr Ala Leu Ser
225      230      235      240
Leu Asn Ala Leu Thr Gly Thr Gly Ala Ser Tyr Gly Lys Met Asp Ala
      245      250      255
Ala Thr Ala Gly Gly Ala Ser Pro Gln Asp Thr Ala Ser Ser Ile Leu
      260      265      270
Lys Ala Ile Ala Arg Asp Glu Lys Asp Val Met Leu Ala Pro Ile Ala
      275      280      285
Pro Arg Ala Ala Tyr Trp Leu Arg His Leu Ala Pro Ser Val Tyr Phe
290      295      300
Trp Ile Met Lys Lys Arg Ala Glu Lys Leu Asn Ser Thr
305      310      315

```

<210> 1054  
 <211> 1196  
 <212> DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (213)..(1196)

&lt;400&gt; 1054

```

tcggaaaagg ccaaatttat gtatgaaaag ctgagccaaa cttccgaaaa gtgcatcata      60

ctcgtgtcca cattcagcag gaagctatcg gagggaaact acgcacacct tcatcgctta      120

tcagcatttt aaacaattct tctgtcagtc agcccaaaag tctgtgagca accccgaaga      180

ggagctgcag gccgtgctgc gaagcgcaca cc atg gag cac tct acc gaa atc      233
                               Met Glu His Ser Thr 5 Glu Ile
att ctc acc att gcc ggc att gtg ctg gtg cac gga ttg ata ttc tac      281
Ile Leu Thr Ile Ala Gly Ile Val Leu Val His Gly Leu Ile Phe Tyr
                               10                               15                               20
ttt ctc acg cgc aaa tcg cgc ctt atc aag ggc aag cat gtg gtc gtt      329
Phe Leu Thr Arg Lys Ser Arg Leu Ile Lys Gly Lys His Val Val Val
                               25                               30                               35
acg ggt ggt tcc agc gga atc ggt ctg tgg gcc gcc ata gag tgc gtc      377
Thr Gly Gly Ser Ser Gly Ile Gly Leu Trp Ala Ala Ile Glu Cys Val
                               40                               45                               50                               55
cgg tta ggg gcg cac gtt acc atc att gca cgc aat gtg tct tta ctg      425
Arg Leu Gly Ala His Val Thr Ile Ile Ala Arg Asn Val Ser Leu Leu
                               60                               65                               70
gaa aaa gcc ata gaa gag ctg gaa aag cga cgc gtc cgt gac acg cag      473
Glu Lys Ala Ile Glu Glu Leu Glu Lys Arg Arg Val Arg Asp Thr Gln
                               75                               80                               85
atg ata cag ttc cgt tcg ttg gat ctt gcc cag agc tac ggc gcg gta      521
Met Ile Gln Phe Arg Ser Leu Asp Leu Ala Gln Ser Tyr Gly Ala Val
                               90                               95                               100
acg agc acg ctg gaa gag ctg gaa cgt acg gtc ggt gcg att tac atg      569
Thr Ser Thr Leu Glu Glu Leu Glu Arg Thr Val Gly Ala Ile Tyr Met
                               105                               110                               115
ctg atc aac tgt gcc ggg atg gcg att tgt ggc acg gtc gag gac aca      617
Leu Ile Asn Cys Ala Gly Met Ala Ile Cys Gly Thr Val Glu Asp Thr
                               120                               125                               130                               135
tcg gtc gag gac gcc cgc aag ctg atg gac gtg aac tat ttc gcc acc      665
Ser Val Glu Asp Ala Arg Lys Leu Met Asp Val Asn Tyr Phe Ala Thr
                               140                               145                               150
tac tac ccc aca cgg cac gtt ttg cca aag atg aag gaa gcg ggc gac      713
Tyr Tyr Pro Thr Arg His Val Leu Pro Lys Met Lys Glu Ala Gly Asp
                               155                               160                               165
ggc att atc gtg att acc gcg tcg cag gcc gcg ctg atg ggc atc tac      761
Gly Ile Ile Val Ile Thr Ala Ser Gln Ala Ala Leu Met Gly Ile Tyr
                               170                               175                               180
ggg tac ggg gcc tac gcc gcc tcc aag ttc gct ctg cgc ggg ctg gcg      809
Gly Tyr Gly Ala Tyr Ala Ala Ser Lys Phe Ala Leu Arg Gly Leu Ala
                               185                               190                               195
gaa acg att gcg atg gaa gcg cga cat cgg ggc gtc agt gtg acg ctt      857
Glu Thr Ile Ala Met Glu Ala Arg His Arg Gly Val Ser Val Thr Leu
                               200                               205                               210                               215
gcc cta ccg gcc gat acc gat acg cct gga ttt gag aac gaa aat cgc      905
Ala Leu Pro Ala Asp Thr Asp Thr Pro Gly Phe Glu Asn Glu Asn Arg
                               220                               225                               230
acc aag ccg gag gaa acg aaa att ata tcc ggc tcg ggc ggg ctc gct      953
Thr Lys Pro Glu Glu Thr Lys Ile Ile Ser Gly Ser Gly Gly Leu Ala
                               235                               240                               245
aaa cct gaa gac gtc gga aag cgg ctc gtg cag gac gcg ctg aag ggt      1001
Lys Pro Glu Asp Val Gly Lys Arg Leu Val Gln Asp Ala Leu Lys Gly
                               250                               255                               260
tcg ttc ttc tcc atc atg ggg ctg gag agc tgg gtg ttg agc atc ctt      1049
Ser Phe Phe Ser Ile Met Gly Leu Glu Ser Trp Val Leu Ser Ile Leu

```



## PhoenixTemp32470.tmp.txt

265	270	275	
tgc gtc ggt atg gca ccg tgg cgc ggt ccg ctg tgc ttc gta cag			1097
Cys Val Gly Met Ala Pro Trp Arg Gly Pro Leu Cys Phe Val Gln			
280	285	290	295
ttt tac ctg ctc gga ccg ctg cgg ttg atc ggg ctg gtg ctg cag tgg			1145
Phe Tyr Leu Leu Gly Pro Leu Arg Leu Ile Gly Leu Val Leu Gln Trp			
300	305	310	
aac ttt cag cgc att ata aag aac tgt gct aag cag cgg caa cgc acg			1193
Asn Phe Gln Arg Ile Ile Lys Asn Cys Ala Lys Gln Arg Gln Arg Thr			
315	320	325	
tag			1196

&lt;210&gt; 1055

&lt;211&gt; 327

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 1055

Met Glu His Ser Thr Glu Ile Ile Leu Thr Ile Ala Gly Ile Val Leu	
1 5 10 15	
Val His Gly Leu Ile Phe Tyr Phe Leu Thr Arg Lys Ser Arg Leu Ile	
20 25 30	
Lys Gly Lys His Val Val Val Thr Gly Gly Ser Ser Gly Ile Gly Leu	
35 40 45	
Trp Ala Ala Ile Glu Cys Val Arg Leu Gly Ala His Val Thr Ile Ile	
50 55 60	
Ala Arg Asn Val Ser Leu Glu Lys Ala Ile Glu Glu Leu Glu Lys	
65 70 75 80	
Arg Arg Val Arg Asp Thr Gln Met Ile Gln Phe Arg Ser Leu Asp Leu	
85 90 95	
Ala Gln Ser Tyr Gly Ala Val Thr Ser Thr Leu Glu Glu Leu Glu Arg	
100 105 110	
Thr Val Gly Ala Ile Tyr Met Leu Ile Asn Cys Ala Gly Met Ala Ile	
115 120 125	
Cys Gly Thr Val Glu Asp Thr Ser Val Glu Asp Ala Arg Lys Leu Met	
130 135 140	
Asp Val Asn Tyr Phe Ala Thr Tyr Tyr Pro Thr Arg His Val Leu Pro	
145 150 155 160	
Lys Met Lys Glu Ala Gly Asp Gly Ile Ile Val Ile Thr Ala Ser Gln	
165 170 175	
Ala Ala Leu Met Gly Ile Tyr Gly Tyr Gly Ala Tyr Ala Ala Ser Lys	
180 185 190	
Phe Ala Leu Arg Gly Leu Ala Glu Thr Ile Ala Met Glu Ala Arg His	
195 200 205	
Arg Gly Val Ser Val Thr Leu Ala Leu Pro Ala Asp Thr Asp Thr Pro	
210 215 220	
Gly Phe Glu Asn Glu Asn Arg Thr Lys Pro Glu Glu Thr Lys Ile Ile	
225 230 235 240	
Ser Gly Ser Gly Gly Leu Ala Lys Pro Glu Asp Val Gly Lys Arg Leu	
245 250 255	
Val Gln Asp Ala Leu Lys Gly Ser Phe Phe Ser Ile Met Gly Leu Glu	
260 265 270	
Ser Trp Val Leu Ser Ile Leu Cys Val Gly Met Ala Pro Trp Arg Gly	
275 280 285	
Pro Leu Cys Phe Val Gln Phe Tyr Leu Leu Gly Pro Leu Arg Leu	
290 295 300	
Ile Gly Leu Val Leu Gln Trp Asn Phe Gln Arg Ile Ile Lys Asn Cys	
305 310 315 320	
Ala Lys Gln Arg Gln Arg Thr	
325	

&lt;210&gt; 1056

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 1056

atg	aac	acc	acg	ggt	tcc	gcg	ttt	gtg	att	gga	gcg	agc	ggt	atc	gga	48
Met	Asn	Thr	Thr	Gly	Ser	Ala	Phe	Val	Ile	Gly	Ala	Ser	Gly	Ile	Gly	
1				5				10					15			
agg	gcg	tgc	gcg	ttg	gca	ttt	gca	cg	ggt	ggt	gtc	agc	ggc	ctg	gtg	96
Arg	Ala	Cys	Ala	Leu	Ala	Phe	Ala	Arg	Arg	Gly	Val	Ser	Gly	Leu	Val	
			20					25					30			
gtg	gct	gac	gtg	gat	ctg	cag	gcc	gcc	gag	tcc	cta	gct	gcc	gaa	tgc	144
Val	Ala	Asp	Val	Asp	Leu	Gln	Ala	Ala	Glu	Ser	Leu	Ala	Ala	Glu	Cys	
			35				40					45				
agg	gct	gag	gcg	ggg	tct	gcc	ggt	act	gcg	gac	gcc	cta	ggg	tgt	gca	192
Arg	Ala	Glu	Ala	Gly	Ser	Ala	Gly	Thr	Ala	Asp	Ala	Leu	Gly	Cys	Ala	
	50			55							60					
gaa	gcc	acg	agg	gtc	gac	gtt	gca	gac	gag	cg	tcc	gtc	gag	ttg	gcc	240
Glu	Ala	Thr	Arg	Val	Asp	Val	Ala	Asp	Glu	Arg	Ser	Val	Glu	Leu	Ala	
	65			70					75						80	
gta	tct	ttc	gca	cg	cg	gtg	ctg	ggt	cg	gtt	gac	tat	tgc	gtc	aac	288
Val	Ser	Phe	Ala	Arg	Arg	Val	Leu	Gly	Arg	Val	Asp	Tyr	Cys	Val	Asn	
			85					90					95			
agc	gcg	ggg	ctg	gcc	aac	gag	atc	gcc	gat	gcc	agc	ccc	gtg	gag	ttc	336
Ser	Ala	Gly	Leu	Ala	Asn	Glu	Ile	Ala	Asp	Ala	Ser	Pro	Val	Glu	Phe	
			100					105					110			
gag	gcc	atg	ttc	caa	gtc	aac	gtc	aaa	ggc	acc	ttt	ctc	gtc	aca	cg	384
Glu	Ala	Met	Phe	Gln	Val	Asn	Val	Lys	Gly	Thr	Phe	Leu	Val	Thr	Arg	
			115				120					125				
gcc	gtg	tcg	gcg	ctc	atg	aag	acg	cag	gat	cct	gtg	cca	gtg	ttg	cg	432
Ala	Val	Ser	Ala	Leu	Met	Lys	Thr	Gln	Asp	Pro	Val	Pro	Val	Leu	Arg	
	130					135					140					
gac	tcg	ccc	ggt	agg	gga	acc	acc	cga	ggt	tgc	atc	gtc	atc	ttg	gga	480
Asp	Ser	Pro	Gly	Arg	Gly	Thr	Thr	Arg	Gly	Cys	Ile	Val	Ile	Leu	Gly	
	145			150						155					160	
tct	gca	gcg	gca	ttt	gct	gcg	acg	ccc	aag	atg	gtc	cag	tac	acg	acg	528
Ser	Ala	Ala	Ala	Phe	Ala	Ala	Thr	Pro	Lys	Met	Val	Gln	Tyr	Thr	Thr	
				165					170					175		
gcc	aag	cat	gcg	gtg	cta	ggc	ctg	acc	aag	agc	gcc	gct	ctt	gat	aac	576
Ala	Lys	His	Ala	Val	Leu	Gly	Leu	Thr	Lys	Ser	Ala	Ala	Leu	Asp	Asn	
			180				185						190			
gcc	gct	cac	ggc	atc	cg	gtc	aac	agc	gtc	tgc	ccg	tct	tgg	gtc	gac	624
Ala	Ala	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Cys	Pro	Ser	Trp	Val	Asp	
			195				200					205				
acc	ccc	atg	gtg	cg	agg	gcg	ctg	cag	gac	gtg	ccc	gag	ctg	gag	cag	672
Thr	Pro	Met	Val	Arg	Arg	Ala	Leu	Gln	Asp	Val	Pro	Glu	Leu	Glu	Gln	
	210					215					220					
acg	att	cg	acc	tcg	gtg	ccg	atg	ggc	agg	att	gca	ctg	gcc	gag	gag	720
Thr	Ile	Arg	Thr	Ser	Val	Pro	Met	Gly	Arg	Ile	Ala	Leu	Ala	Glu	Glu	
	225			230						235					240	
gtg	gcc	gac	gcc	gtc	atg	ttc	ctc	tgc	agc	ccc	ggc	gcg	agc	tat	gcc	768
Val	Ala	Asp	Ala	Val	Met	Phe	Leu	Cys	Ser	Pro	Gly	Ala	Ser	Tyr	Ala	
				245					250					255		
act	ggc	tgc	aac	atg	att	ctg	gat	ggc	ggc	acc	act	ctc	acc	acg	cat	816
Thr	Gly	Cys	Asn	Met	Ile	Leu	Asp	Gly	Gly	Thr	Thr	Leu	Thr	Thr	His	
			260					265					270			
ctg	gga	tga														825
Leu	Gly															

&lt;210&gt; 1057

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1057

Met	Asn	Thr	Thr	Gly	Ser	Ala	Phe	Val	Ile	Gly	Ala	Ser	Gly	Ile	Gly	
1				5				10					15			
Arg	Ala	Cys	Ala	Leu	Ala	Phe	Ala	Arg	Arg	Gly	Val	Ser	Gly	Leu	Val	
			20					25					30			

## PhoenixTemp32470.tmp.txt

Val Ala Asp Val Asp Leu Gln Ala Ala Glu Ser Leu Ala Ala Glu Cys  
 Arg Ala Glu Ala Gly Ser Ala Gly Thr Ala Asp Ala Leu Gly Cys Ala  
 Glu Ala Thr Arg Val Asp Val Ala Asp Glu Arg Ser Val Glu Leu Ala  
 Val Ser Phe Ala Arg Arg Val Leu Gly Arg Val Asp Tyr Cys Val Asn  
 Ser Ala Gly Leu Ala Asn Glu Ile Ala Asp Ala Ser Pro Val Glu Phe  
 Glu Ala Met Phe Gln Val Asn Val Lys Gly Thr Phe Leu Val Thr Arg  
 Ala Val Ser Ala Leu Met Lys Thr Gln Asp Pro Val Pro Val Leu Arg  
 Asp Ser Pro Gly Arg Gly Thr Thr Arg Gly Cys Ile Val Ile Leu Gly  
 Ser Ala Ala Ala Phe Ala Ala Thr Pro Lys Met Val Gln Tyr Thr Thr  
 Ala Lys His Ala Val Leu Gly Leu Thr Lys Ser Ala Ala Leu Asp Asn  
 Ala Ala His Gly Ile Arg Val Asn Ser Val Cys Pro Ser Trp Val Asp  
 Thr Pro Met Val Arg Arg Ala Leu Gln Asp Val Pro Glu Leu Glu Gln  
 Thr Ile Arg Thr Ser Val Pro Met Gly Arg Ile Ala Leu Ala Glu Glu  
 Val Ala Asp Ala Val Met Phe Leu Cys Ser Pro Gly Ala Ser Tyr Ala  
 Thr Gly Cys Asn Met Ile Leu Asp Gly Thr Thr Leu Thr Thr His  
 Leu Gly

&lt;210&gt; 1058

&lt;211&gt; 804

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(804)

&lt;400&gt; 1058

atg acc ggg agg gta ttt agc atc aca ggc ggg gca tcg ggc att gga	48
Met Thr Gly Arg Val Phe Ser Ile Thr Gly Gly Ala Ser Gly Ile Gly	
ctg gcc acg gcc cag ctc ttg gct cgc aac ggc gcc gcc gcc att tgg	96
Leu Ala Thr Ala Gln Leu Leu Ala Arg Asn Gly Ala Ala Ala Ile Trp	
atc gcc gac gtc cag tcg gaa ctt ttc gac aaa gtg cgg aaa aag ctg	144
Ile Ala Asp Val Gln Ser Glu Leu Phe Asp Lys Val Arg Lys Lys Leu	
aat gac att aac caa aac acc aaa atc tat ctc gat aaa gtc gac gtc	192
Asn Asp Ile Asn Gln Asn Thr Lys Ile Tyr Leu Asp Lys Val Asp Val	
ggc aac agc gca gag gtg gac caa tgg gtg cag cgc att gtc gca gaa	240
Gly Asn Ser Ala Glu Val Asp Gln Trp Val Gln Arg Ile Val Ala Glu	
tcc gga ggt ctc cat ggc gca gca aac gtg gcg ggt gtt gcg gcg act	288
Ser Gly Gly Leu His Gly Ala Ala Asn Val Ala Gly Val Ala Ala Thr	
tac agg cac acg gac ggg gag cag cct agc acc ttg gag atg gac gac	336
Tyr Arg His Thr Asp Gly Glu Gln Pro Ser Thr Leu Glu Met Asp Asp	
gat gag tgg cgc cgc gtt ttc cgc gtc aac gcg gac ggc gtt atg tat	384
Asp Glu Trp Arg Arg Val Phe Arg Val Asn Ala Asp Gly Val Met Tyr	
tgc acc agg gcc cag gtc agg gcc atg gtg aaa atg gag ggc agc	432
Cys Thr Arg Ala Gln Val Arg Ala Met Val Lys Met Asp Glu Gly Ser	

## PhoenixTemp32470.tmp.txt

130	aac ccg gcc atc gtc	135	aac gtt tcc agc ctc gcc gcg aca aag gca agc	140	gca agc	480
Asn Pro Ala Ile Val	Asn Val Ser Ser Leu Ala Thr Lys Ala Ser	150	gca agc	155	gca agc	
145	gcc acc ttt ttg gcc tac gcg gcg agc aag gcc gca tgc gct cat ttc	160	gca agc	165	gca agc	528
Ala Thr Phe Leu Ala Tyr	Ala Ala Ser Lys Ala Ala Cys Ala His Phe	170	gca agc	175	gca agc	
165	acc cag tgc gtc gcc aag gat ctt gcc ggt ctg aga atc aac	180	gca agc	185	gca agc	576
Thr Gln Cys Val Ala Lys Asp Leu Ala Gly Arg Gly Leu Arg Ile Asn	185	gca agc	190	gca agc		
180	tct gtt ctg cca ggc ggg gtg tgg acc cct atg gtg atg aag gcg atc	195	gca agc	200	gca agc	624
Ser Val Leu Pro Gly Gly Val Trp Thr Pro Met Val Met Lys Ala Ile	200	gca agc	205	gca agc		
195	ggt ata tcg ccc gat agt gcg gac gac gca gac cca gtg gaa gtg gcg	210	gca agc	215	gca agc	672
Gly Ile Ser Pro Asp Ser Ala Asp Asp Ala Asp Pro Val Glu Val Ala	215	gca agc	220	gca agc		
210	gct caa gct caa aat gcc gga tgc atc ctg cca gaa gaa gcg gcc gag	225	gca agc	230	gca agc	720
Ala Gln Ala Gln Asn Ala Gly Cys Ile Leu Pro Glu Glu Ala Ala Glu	230	gca agc	235	gca agc		
225	gcg att gta tgg ctg ttg agt gag aat tgt ctg cag ctc aac ggt atc	240	gca agc	245	gca agc	768
Ala Ile Val Trp Leu Leu Ser Glu Asn Cys Leu Gln Leu Asn Gly Ile	245	gca agc	250	gca agc		
245	gct gtg ccg atc ggt gag atg gac gtg agc cga tag	255	gca agc	260	gca agc	804
Ala Val Pro Ile Gly Glu Met Asp Val Ser Arg	260	gca agc	265	gca agc		

&lt;210&gt; 1059

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1059

Met Thr Gly Arg Val Phe Ser Ile Thr Gly Gly Ala Ser Gly Ile Gly	1	5	10	15
Leu Ala Thr Ala Gln Leu Leu Ala Arg Asn Gly Ala Ala Ala Ile Trp	20	25	30	35
Ile Ala Asp Val Gln Ser Glu Leu Phe Asp Lys Val Arg Lys Lys Leu	40	45	50	55
Asn Asp Ile Asn Gln Asn Thr Lys Ile Tyr Leu Asp Lys Val Asp Val	60	65	70	75
Gly Asn Ser Ala Glu Val Asp Gln Trp Val Gln Arg Ile Val Ala Glu	80	85	90	95
Ser Gly Gly Leu His Gly Ala Ala Asn Val Ala Gly Val Ala Ala Thr	100	105	110	115
Tyr Arg His Thr Asp Gly Glu Gln Pro Ser Thr Leu Glu Met Asp Asp	120	125	130	135
Asp Glu Trp Arg Arg Val Phe Arg Val Asn Ala Asp Gly Val Met Tyr	140	145	150	155
Cys Thr Arg Ala Gln Val Arg Ala Met Val Lys Met Asp Glu Gly Ser	160	165	170	175
Asn Pro Ala Ile Val Asn Val Ser Ser Leu Ala Thr Lys Ala Ser	180	185	190	195
Ala Thr Phe Leu Ala Tyr Ala Ala Ser Lys Ala Ala Cys Ala His Phe	200	205	210	215
Thr Gln Cys Val Ala Lys Asp Leu Ala Gly Arg Gly Leu Arg Ile Asn	220	225	230	235
Ser Val Leu Pro Gly Gly Val Trp Thr Pro Met Val Met Lys Ala Ile	240	245	250	255
Gly Ile Ser Pro Asp Ser Ala Asp Asp Ala Asp Pro Val Glu Val Ala	260	265	270	275
Ala Gln Ala Gln Asn Ala Gly Cys Ile Leu Pro Glu Glu Ala Ala Glu	280	285	290	295
Ala Ile Val Trp Leu Ser Glu Asn Cys Leu Gln Leu Asn Gly Ile	300	305	310	315
Ala Val Pro Ile Gly Glu Met Asp Val Ser Arg	320	325	330	335

&lt;210&gt; 1060

&lt;211&gt; 807

## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(807)

&lt;400&gt; 1060

atg tca gcc acc gca atg ggg aag cgc ctc gag ggc aag aca atc gtc	48
Met Ser Ala Thr Ala Met Gly Lys Arg Leu Glu Gly Lys Thr Ile Val	
1 5 10 15	
atc acc gga gct tca tcc ggg atc ggg cgc agc tgt gcc ttt gag ttt	96
Ile Thr Gly Ala Ser Ser Gly Ile Gly Arg Ser Cys Ala Phe Glu Phe	
20 25 30	
gct cgc acc agc ccc aag agc ttg aag ctg gtc ctg act gct cgc cgc	144
Ala Arg Thr Ser Pro Lys Ser Leu Lys Leu Val Leu Thr Ala Arg Arg	
35 40 45	
atc gac acg ctc aag gag att gcc aag gag ata aat gct gag gtc ggc	192
Ile Asp Thr Leu Lys Glu Ile Ala Lys Glu Ile Asn Ala Glu Val Gly	
50 55 60	
gag ggc gtc aag gtg ttg cca ttc cag ctc gac gtc agc aaa ccg gat	240
Glu Gly Val Lys Val Leu Pro Phe Gln Leu Asp Val Ser Lys Pro Asp	
65 70 75 80	
gag gtc cgt ggg ttt gtc cag gcg ctg ccc gag gag ttc cgg gat att	288
Glu Val Arg Gly Phe Val Gln Ala Leu Pro Glu Glu Phe Arg Asp Ile	
85 90 95	
aat gtt ctc gtc aac aat gcg ggt ctg gtg aaa gga gtt gca cag gct	336
Asn Val Leu Val Asn Asn Ala Gly Leu Val Lys Gly Val Ala Gln Ala	
100 105 110	
cct gcg atc gcc gag gag gat ata aac atc atg atg gcg acc aat gta	384
Pro Ala Ile Ala Glu Glu Asp Ile Asn Ile Met Met Ala Thr Asn Val	
115 120 125	
acg ggt ctc atc aac atg acg cag gcc gtg ctt gcc gtc tac aaa aag	432
Thr Gly Leu Ile Asn Met Thr Gln Ala Val Leu Ala Val Tyr Lys Lys	
130 135 140	
cga cct gaa gga ggt gct ggc gat att atc aac atc ggt agc att gct	480
Arg Pro Glu Gly Gly Ala Gly Asp Ile Ile Asn Ile Gly Ser Ile Ala	
145 150 155 160	
ggt cgt gag cca tac gcc ggc ggt agc ata tac tgc gca acc aag gct	528
Gly Arg Glu Pro Tyr Ala Gly Gly Ser Ile Tyr Cys Ala Thr Lys Ala	
165 170 175	
gcg gtt cgg agc ttt agt gat tcg ttg cga aag gag ttg gta gcc act	576
Ala Val Arg Ser Phe Ser Asp Ser Leu Arg Lys Glu Leu Val Ala Thr	
180 185 190	
cgg atc cgg gtt atg gag atc gat ccg ggt caa gtt gaa acc gag ttt	624
Arg Ile Arg Val Met Glu Ile Asp Pro Gly Gln Val Glu Thr Glu Phe	
195 200 205	
tct gtt att cgg ttt tat ggt gac aag gca aag gcg gat gca gtc tat	672
Ser Val Ile Arg Phe Tyr Gly Asp Lys Ala Lys Ala Asp Ala Val Tyr	
210 215 220	
gct ggt tgt gac cct ctc acg cca gat gac atc gcc gag gtg gtt gtg	720
Ala Gly Cys Asp Pro Leu Thr Pro Asp Asp Ile Glu Glu Val Val Val	
225 230 235 240	
ttc gtc gca gga cgg aga gat aac gtc gtt gta gcc gat act ctc atc	768
Phe Val Ala Gly Arg Arg Asp Asn Val Val Val Ala Asp Thr Leu Ile	
245 250 255	
ttt cct cag cac cag gca agt tgt aac att atc tga	807
Phe Pro Gln His Gln Ala Ser Cys Asn Leu Ile Ile	
260 265	

&lt;210&gt; 1061

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1061

Met Ser Ala Thr Ala Met Gly Lys Arg Leu Glu Gly Lys Thr Ile Val
1 5 10 15
Ile Thr Gly Ala Ser Ser Gly Ile Gly Arg Ser Cys Ala Phe Glu Phe

## PhoenixTemp32470.tmp.txt

20 25 30  
 Ala Arg Thr Ser Pro Lys Ser Leu Lys Leu Val Leu Thr Ala Arg Arg  
 35 40 45  
 Ile Asp Thr Leu Lys Glu Ile Ala Lys Glu Ile Asn Ala Glu Val Gly  
 50 55 60  
 Glu Gly Val Lys Val Leu Pro Phe Gln Leu Asp Val Ser Lys Pro Asp  
 65 70 75 80  
 Glu Val Arg Gly Phe Val Gln Ala Leu Pro Glu Glu Phe Arg Asp Ile  
 85 90 95  
 Asn Val Leu Val Asn Asn Ala Gly Leu Val Lys Gly Val Ala Gln Ala  
 100 105 110  
 Pro Ala Ile Ala Glu Glu Asp Ile Asn Ile Met Met Ala Thr Asn Val  
 115 120 125  
 Thr Gly Leu Ile Asn Met Thr Gln Ala Val Leu Ala Val Tyr Lys Lys  
 130 135 140  
 Arg Pro Glu Gly Gly Ala Gly Asp Ile Ile Asn Ile Gly Ser Ile Ala  
 145 150 155 160  
 Gly Arg Glu Pro Tyr Ala Gly Gly Ser Ile Tyr Cys Ala Thr Lys Ala  
 165 170 175  
 Ala Val Arg Ser Phe Ser Asp Ser Leu Arg Lys Glu Leu Val Ala Thr  
 180 185 190  
 Arg Ile Arg Val Met Glu Ile Asp Pro Gly Gln Val Glu Thr Glu Phe  
 195 200 205  
 Ser Val Ile Arg Phe Tyr Gly Asp Lys Ala Lys Ala Asp Ala Val Tyr  
 210 215 220  
 Ala Gly Cys Asp Pro Leu Thr Pro Asp Asp Ile Ala Glu Val Val Val  
 225 230 235 240  
 Phe Val Ala Gly Arg Arg Asp Asn Val Val Val Ala Asp Thr Leu Ile  
 245 250 255  
 Phe Pro Gln His Gln Ala Ser Cys Asn Leu Ile Ile  
 260 265

&lt;210&gt; 1062

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(816)

&lt;400&gt; 1062

atg tca tcc gca gtt tct aaa cgc ctc gaa ggc aag act gtt ctc atc	48
Met Ser Ser Ala Val Ser Lys Arg Leu Glu Gly Lys Thr Val Leu Ile	
1 5 10 15	
acc gga gca tct tcc ggc att gga aag aca gcg ttt gaa ttt gcc	96
Thr Gly Ala Ser Gly Ile Gly Lys Ser Thr Ala Phe Glu Phe Ala	
20 25 30	
cgc aca agc ccc aag aac ttg aag ctg gtt ctt aca gct cgt cga atc	144
Arg Thr Ser Pro Lys Asn Leu Lys Leu Val Leu Thr Ala Arg Arg Ile	
35 40 45	
gac agc ctc aaa caa att gct gaa gaa att gtc aaa gaa gtc ggc gat	192
Asp Ser Leu Lys Gln Ile Ala Glu Glu Ile Val Lys Glu Val Gly Asp	
50 55 60	
ggc gtt aag gtg cac cca gtt caa ctt gat gtc agc aag cct gat gaa	240
Gly Val Lys Val His Pro Val Gln Leu Asp Val Ser Lys Pro Asp Glu	
65 70 75 80	
gtg cgc tct ttt gtg agc aag ctt cct gct gag ttc agc gag att gat	288
Val Arg Ser Phe Val Ser Lys Leu Pro Ala Glu Phe Ser Glu Ile Asp	
85 90 95	
gtg ttg gta aac aac gcc ggt ctt gtc aag ggt gtc gac aag gca cct	336
Val Leu Val Asn Asn Ala Gly Leu Val Lys Gly Val Asp Lys Ala Pro	
100 105 110	
gag atc aag gaa gag gat atc aac gtc atg ttc gct act aat gtt acg	384
Glu Ile Lys Glu Glu Asp Ile Asn Val Met Phe Ala Thr Asn Val Thr	
115 120 125	
ggc ttg atc aac atg aca caa gct atc ttg ccc ggt atg ctc aag cgc	432
Gly Leu Ile Asn Met Thr Gln Ala Ile Leu Pro Gly Met Leu Lys Arg	
130 135 140	

## PhoenixTemp32470.tmp.txt

aac	aac	ggc	gaa	ggg	gct	ggc	gac	atc	atc	aac	att	ggt	tcc	att	gct	480
Asn	Asn	Gly	Glu	Gly	Ala	Gly	Asp	Ile	Ile	Asn	Ile	Gly	Ser	Ile	Ala	
145				150						155					160	
ggc	cgc	gag	cct	tat	ccc	ggc	ggc	agc	att	tac	tgc	gct	acc	aag	gcc	528
Gly	Arg	Glu	Pro	Tyr	Pro	Gly	Gly	Ser	Ile	Tyr	Cys	Ala	Thr	Lys	Ala	
			165						170					175		
gct	atc	cat	tcc	ttc	aca	gag	agt	ctg	cgc	aag	gag	ctt	att	tca	aag	576
Ala	Ile	His	Ser	Phe	Thr	Glu	Ser	Leu	Arg	Lys	Glu	Leu	Ile	Ser	Lys	
			180					185					190			
cgt	gtc	cgt	gtg	atc	agg	att	gat	cct	ggt	cag	gta	gag	act	gag	ttc	624
Arg	Val	Arg	Val	Ile	Arg	Ile	Asp	Pro	Gly	Gln	Val	Glu	Thr	Glu	Phe	
		195					200					205				
tcc	gtt	gtg	aga	ttc	tac	ggc	gac	aag	tca	aag	gcc	gat	gcc	gta	tat	672
Ser	Val	Val	Arg	Phe	Tyr	Gly	Asp	Lys	Ser	Lys	Ala	Asp	Ala	Val	Tyr	
	210					215					220					
gcc	ggc	tgt	gag	ccc	ttg	aca	ccg	gat	gat	att	gct	gag	gcc	att	gtc	720
Ala	Gly	Cys	Glu	Pro	Leu	Thr	Pro	Asp	Asp	Ile	Ala	Glu	Ala	Ile	Val	
225				230						235					240	
ttt	gct	gct	ggc	aga	agg	gaa	aat	gtt	gtc	att	gcg	gat	acg	ttg	ata	768
Phe	Ala	Ala	Gly	Arg	Arg	Glu	Asn	Val	Val	Ile	Ala	Asp	Thr	Leu	Ile	
			245					250						255		
ttc	ccc	aac	cat	cag	gct	gcg	gca	acc	gtc	atg	cac	agg	aag	tca		813
Phe	Pro	Asn	His	Gln	Ala	Ala	Ala	Thr	Val	Met	His	Arg	Lys	Ser		
			260					265					270			
tag																816

&lt;210&gt; 1063

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1063

Met	Ser	Ser	Ala	Val	Ser	Lys	Arg	Leu	Glu	Gly	Lys	Thr	Val	Leu	Ile	
1				5					10					15		
Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Lys	Ser	Thr	Ala	Phe	Glu	Phe	Ala	
			20					25					30			
Arg	Thr	Ser	Pro	Lys	Asn	Leu	Lys	Leu	Val	Leu	Thr	Ala	Arg	Arg	Ile	
		35				40					45					
Asp	Ser	Leu	Lys	Gln	Ile	Ala	Glu	Glu	Ile	Val	Lys	Glu	Val	Gly	Asp	
	50					55				60						
Gly	Val	Lys	Val	His	Pro	Val	Gln	Leu	Asp	Val	Ser	Lys	Pro	Asp	Glu	
65				70					75					80		
Val	Arg	Ser	Phe	Val	Ser	Lys	Leu	Pro	Ala	Glu	Phe	Ser	Glu	Ile	Asp	
			85					90						95		
Val	Leu	Val	Asn	Asn	Ala	Gly	Leu	Val	Lys	Gly	Val	Asp	Lys	Ala	Pro	
			100					105					110			
Glu	Ile	Lys	Glu	Glu	Asp	Ile	Asn	Val	Met	Phe	Ala	Thr	Asn	Val	Thr	
		115				120						125				
Gly	Leu	Ile	Asn	Met	Thr	Gln	Ala	Ile	Leu	Pro	Gly	Met	Leu	Lys	Arg	
	130					135				140						
Asn	Asn	Gly	Glu	Gly	Ala	Gly	Asp	Ile	Ile	Asn	Ile	Gly	Ser	Ile	Ala	
145				150					155					160		
Gly	Arg	Glu	Pro	Tyr	Pro	Gly	Gly	Ser	Ile	Tyr	Cys	Ala	Thr	Lys	Ala	
			165					170						175		
Ala	Ile	His	Ser	Phe	Thr	Glu	Ser	Leu	Arg	Lys	Glu	Leu	Ile	Ser	Lys	
			180					185					190			
Arg	Val	Arg	Val	Ile	Arg	Ile	Asp	Pro	Gly	Gln	Val	Glu	Thr	Glu	Phe	
		195					200					205				
Ser	Val	Val	Arg	Phe	Tyr	Gly	Asp	Lys	Ser	Lys	Ala	Asp	Ala	Val	Tyr	
	210					215					220					
Ala	Gly	Cys	Glu	Pro	Leu	Thr	Pro	Asp	Asp	Ile	Ala	Glu	Ala	Ile	Val	
225				230					235						240	
Phe	Ala	Ala	Gly	Arg	Arg	Glu	Asn	Val	Val	Ile	Ala	Asp	Thr	Leu	Ile	
			245					250						255		
Phe	Pro	Asn	His	Gln	Ala	Ala	Ala	Thr	Val	Met	His	Arg	Lys	Ser		
			260					265					270			

<210> 1064  
 <211> 924  
 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (1)..(924)

<400> 1064  
 atg aag ctg acc aag gca cac gtc gtg atc acg gga ggt tcc agt ggt 48  
 Met Lys Leu Thr Lys 5 Ala His Val Val Ile 10 Thr Gly Gly Ser Ser 15 Gly  
 1  
 att ggt aaa gct gtt gct atg gag gtc ctc agg caa gga gct agt gta 96  
 Ile Gly Lys Ala Val Ala Met Glu Val 25 Leu Arg Gln Gly Ala Ser Val  
 20  
 aca ctc ttg gca aga aat cag gaa agg ttg aag cat gcc aag ctt gag 144  
 Thr Leu Leu 35 Ala Arg Asn Gln Glu Arg Leu Lys His Ala Lys Leu Glu  
 40  
 ctt gag aag tac att att gac aaa gga tat cag aaa att ctc tgc ata 192  
 Leu Glu Lys Tyr Ile Ile Asp Lys Gly Tyr Gln Lys Ile Leu Cys Ile  
 50  
 tca gtt gat cta gcg aag gat tat gga tct gtg gaa cag gcc att caa 240  
 Ser Val Asp Leu Ala Lys 70 Asp Tyr Gly Ser Val 75 Glu Gln Ala Ile Gln  
 65  
 aag tca gtg gaa gtg atc ggg cca tgt gat atg ctg att aac agt gca 288  
 Lys Ser Val 85 Glu Val Ile Gly Pro Cys Asp Met Leu Ile Asn Ser Ala  
 90  
 gga aag tct agt gca cta gcc ttt gaa gag ctg gag ata tct gaa ttc 336  
 Gly Lys Ser 100 Ala Leu Ala Phe Glu Glu Leu Glu Ile Ser Glu Phe  
 105  
 aag aaa gac atg gag gtg aat tac ctt ggc tca gtg tat gct aca cga 384  
 Lys Lys Asp Met Glu Val Asn Tyr 120 Leu Gly Ser Val Tyr Ala Thr Arg  
 115  
 gct gtg tta cct tac atg aag aag aga tca cag ggc cgc atc atc ttc 432  
 Ala Val 130 Leu Pro Tyr Met Lys 135 Lys Arg Ser Gln Gly Arg Ile Ile Phe  
 140  
 atc tca tct cag gct ggg cag ctt ggt ctc tat ggt tac tcc tct tac 480  
 Ile Ser Ser Gln Ala Gly 150 Gln Leu Gly Leu Tyr 155 Gly Tyr Ser Ser Tyr  
 145  
 agc gga tca aag ttt gct ctc aga gga ttt gca gaa gct ctt caa atg 528  
 Ser Gly Ser Lys Phe 165 Ala Leu Arg Gly Phe 170 Ala Glu Ala Leu Gln Met  
 175  
 gag gta aag cca tat aac atc tat gtg acc ctc aac ttt cct cct gat 576  
 Glu Val Lys 180 Tyr Asn Ile Tyr Val 185 Thr Leu Asn Phe Pro Pro Asp  
 190  
 acg gac acc cct atg ctt caa gct gag tta gag aca cag cca gaa gaa 624  
 Thr Asp Thr Pro Met Leu Gln Ala Glu Leu Glu Thr Gln Pro Glu Glu  
 195  
 aca aga ttg ata tct gaa aca tca gga ctg tat gct gct cag gat gta 672  
 Thr Arg Leu Ile Ser Glu Thr 215 Ser Gly Leu Tyr Ala Ala Gln Asp Val  
 210  
 gca aga att att gtg caa gat tct ctt aat gca gta ttt ctt agc tat 720  
 Ala Arg Ile Ile Val Gln Asp Ser Leu Asn Ala Val Phe Leu Ser Tyr  
 225  
 gta ggc atg gat ggt tac atg tta tct atc ttg aca tgt ggt atg tca 768  
 Val Gly Met Asp Gly Tyr Met Leu Ser 250 Ile Leu Thr Cys Gly Met Ser  
 245  
 cca gtc aca tct atg atg gtt gga gta caa cag gtt gca ttt atg ggt 816  
 Pro Val Thr Ser Met Met Val Gly Val 265 Gln Gln Val Ala Phe Met Gly  
 260  
 ttg ttc agg ttc att tct cat ctg tat ctt gga agc ttt gat aga atc 864  
 Leu Phe Arg 275 Phe Ile Ser His Leu Tyr 280 Leu Gly Ser Phe Asp Arg Ile  
 285  
 ata agg agg tgc aaa gaa gaa cga gac aca atg gaa gat gag caa tcc 912  
 Ile Arg Arg Cys Lys Glu Glu 295 Arg Asp Thr Met Glu Asp Glu Gln Ser  
 290  
 aaa gac aaa tga 924  
 Lys Asp Lys



305

<210> 1065  
 <211> 307  
 <212> PRT  
 <213> Strongylocentrotus purpuratus

<400> 1065  
 Met Lys Leu Thr Lys<sub>5</sub> Ala His Val Val Ile<sub>10</sub> Thr Gly Gly Ser Ser Gly<sub>15</sub>  
 Ile Gly Lys Ala Val<sub>20</sub> Ala Met Glu Val<sub>25</sub> Leu Arg Gln Gly Ala Ser Val<sub>30</sub>  
 Thr Leu Leu<sub>35</sub> Ala Arg Asn Gln Glu<sub>40</sub> Arg Leu Lys His Ala<sub>45</sub> Lys Leu Glu  
 Leu Glu Lys Tyr Ile Ile Asp<sub>55</sub> Lys Gly Tyr Gln Lys<sub>60</sub> Ile Leu Cys Ile  
 Ser Val Asp Leu Ala Lys<sub>70</sub> Asp Tyr Gly Ser Val<sub>75</sub> Glu Gln Ala Ile Gln<sub>80</sub>  
 Lys Ser Val Glu Val<sub>85</sub> Ile Gly Pro Cys Asp<sub>90</sub> Met Leu Ile Asn Ser Ala<sub>95</sub>  
 Gly Lys Ser Ser Ala Leu Ala Phe Glu<sub>105</sub> Glu Leu Glu Ile Ser Glu Phe  
 Lys Lys Asp<sub>115</sub> Met Glu Val Asn Tyr<sub>120</sub> Leu Gly Ser Val Tyr<sub>125</sub> Ala Thr Arg  
 Ala Val<sub>130</sub> Leu Pro Tyr Met Lys<sub>135</sub> Lys Arg Ser Gln Gly<sub>140</sub> Arg Ile Ile Phe  
 Ile Ser Ser Gln Ala Gly<sub>150</sub> Gln Leu Gly Leu Tyr<sub>155</sub> Gly Tyr Ser Ser Tyr<sub>160</sub>  
 Ser Gly Ser Lys Phe<sub>165</sub> Ala Leu Arg Gly Phe<sub>170</sub> Ala Glu Ala Leu Gln Met<sub>175</sub>  
 Glu Val Lys Pro Tyr Asn Ile Tyr Val<sub>185</sub> Thr Leu Asn Phe Pro<sub>190</sub> Pro Asp  
 Thr Asp Thr<sub>195</sub> Pro Met Leu Gln Ala Glu Leu Glu Thr Gln<sub>205</sub> Pro Glu Glu  
 Thr Arg Leu Ile Ser Glu Thr<sub>215</sub> Ser Gly Leu Tyr Ala<sub>220</sub> Ala Gln Asp Val  
 Ala Arg Ile Ile Val Gln Asp Ser Leu Asn Ala Val<sub>235</sub> Phe Leu Ser Tyr<sub>240</sub>  
 Val Gly Met Asp Gly<sub>245</sub> Tyr Met Leu Ser Ile Leu Thr Cys Gly Met Ser<sub>255</sub>  
 Pro Val Thr Ser<sub>260</sub> Met Met Val Gly Val<sub>265</sub> Gln Gln Val Ala Phe<sub>270</sub> Met Gly  
 Leu Phe Arg Phe Ile Ser His Leu Tyr Leu Gly Ser Phe<sub>285</sub> Asp Arg Ile  
 Ile Arg Arg Cys Lys Glu Glu<sub>295</sub> Arg Asp Thr Met Glu<sub>300</sub> Asp Glu Gln Ser  
 Lys Asp Lys  
 305

<210> 1066  
 <211> 876  
 <212> DNA  
 <213> Mycobacterium sp. JLS

<220>  
 <221> CDS  
 <222> (1)..(876)  
 <223> transl\_table=11

<400> 1066  
 atg act tcc gta cac ggc aag gtc gtg ttg atc acc ggt ggg gcc cga 48  
 Met Thr Ser Val His<sub>5</sub> Gly Lys Val Val Leu<sub>10</sub> Ile Thr Gly Gly Ala Arg<sub>15</sub>  
 ggg gtc ggc gaa gaa ctg gcc cgc cgg tta cat gcc aag ggc gcc aag 96  
 Gly Val Gly Glu Glu Leu Ala Arg Arg Leu His Ala Lys Gly Ala Lys<sub>30</sub>  
 ctg gtg ctc acc gac ctg gat gac ggt ccg ctc tcg gcg ctg gcc gca 144  
 Leu Val Leu<sub>35</sub> Thr Asp Leu Asp Asp Gly Pro Leu Ser Ala<sub>45</sub> Leu Ala Ala

## PhoenixTemp32470.tmp.txt

gac	ctc	ggc	gcc	gag	cgg	gtg	ttg	acg	gtg	gtc	gcc	gac	gtg	tgc	gac	192
Asp	Leu	Gly	Ala	Glu	Arg	Val	Leu	Thr	Val	Val	Ala	Asp	Val	Cys	Asp	
	50					55					60					
ctc	gag	acc	atg	cag	tcc	gct	gcc	gaa	cag	gcc	gtg	agc	cgg	ttc	ggc	240
Leu	Glu	Thr	Met	Gln	Ser	Ala	Ala	Glu	Gln	Ala	Val	Ser	Arg	Phe	Gly	
65					70					75					80	
ggg	atc	gac	atc	gtc	atc	gcg	aac	gcg	ggg	atc	gcc	agc	tac	gga	tcg	288
Gly	Ile	Asp	Ile	Val	Ile	Ala	Asn	Ala	Gly	Ile	Ala	Ser	Tyr	Gly	Ser	
				85					90					95		
gtg	ctg	gtg	gtc	gat	ccc	gac	gcc	ttc	cgg	cgg	gtg	ctc	gac	gtc	aac	336
Val	Leu	Val	Val	Asp	Pro	Asp	Ala	Phe	Arg	Arg	Val	Leu	Asp	Val	Asn	
			100					105					110			
gtg	gtc	ggc	gtg	ttc	aac	acc	gtg	cgc	gcc	gcg	ctc	ccg	tcg	gtc	atc	384
Val	Val	Gly	Val	Phe	Asn	Thr	Val	Arg	Ala	Ala	Leu	Pro	Ser	Val	Ile	
		115					120					125				
gag	cgc	aag	ggc	tac	atc	ctg	gtg	gtg	tcg	tcg	ctg	gcg	gcg	ttc	gcc	432
Glu	Arg	Lys	Gly	Tyr	Ile	Leu	Val	Val	Ser	Ser	Leu	Ala	Ala	Phe	Ala	
130						135					140					
gcc	gcg	ccg	ggg	atg	gcg	ccc	tac	gac	gcg	tcg	aag	gcc	ggt	gtg	gag	480
Ala	Ala	Pro	Gly	Met	Ala	Pro	Tyr	Asp	Ala	Ser	Lys	Ala	Gly	Val	Glu	
145					150					155					160	
cac	ttc	gcc	aac	gcc	ctg	cgc	ctc	gag	gtc	gcc	cac	cac	ggc	gtg	acg	528
His	Phe	Ala	Asn	Ala	Leu	Arg	Leu	Glu	Val	Ala	His	His	Gly	Val	Thr	
				165					170					175		
gtc	ggg	tgc	gcg	cac	atg	tcg	tgg	atc	gac	acc	ccg	ctc	gtg	cag	gac	576
Val	Gly	Cys	Ala	His	Met	Ser	Trp	Ile	Asp	Thr	Pro	Leu	Val	Gln	Asp	
			180					185					190			
acc	aag	gcc	gat	ctg	ccg	agt	ttc	cgc	acc	atg	ctc	gac	tca	ctg	ccc	624
Thr	Lys	Ala	Asp	Leu	Pro	Ser	Phe	Arg	Thr	Met	Leu	Asp	Ser	Leu	Pro	
		195					200					205				
ggc	ccg	ctc	agc	aag	acc	acc	tcg	gtg	cag	aag	tgt	ggc	gag	gtg	ttc	672
Gly	Pro	Leu	Ser	Lys	Thr	Thr	Ser	Val	Gln	Lys	Cys	Gly	Glu	Val	Phe	
210						215					220					
gtc	aag	ggc	atc	gaa	cgc	cgt	agg	gaa	cgc	atc	tac	tgc	ccg	ggt	tgg	720
Val	Lys	Gly	Ile	Glu	Arg	Arg	Arg	Glu	Arg	Ile	Tyr	Cys	Pro	Gly	Trp	
225					230					235					240	
gtc	ggc	ctg	atc	cgc	tgg	gcc	aaa	ccg	ata	ctc	acc	acg	cgg	atc	ggt	768
Val	Gly	Leu	Ile	Arg	Trp	Ala	Lys	Pro	Ile	Leu	Thr	Thr	Arg	Ile	Gly	
				245					250					255		
cag	gcc	tcg	gtg	ctc	aag	acg	gcg	ccg	aag	gtg	ttg	ccc	cag	atg	gac	816
Gln	Ala	Ser	Val	Leu	Lys	Thr	Ala	Pro	Lys	Val	Leu	Pro	Gln	Met	Asp	
			260					265					270			
gcc	gag	gtg	acc	gca	ctg	aag	cgc	tcg	ctg	ggc	gcc	cgc	acc	cac	ggg	864
Ala	Glu	Val	Thr	Ala	Leu	Lys	Arg	Ser	Leu	Gly	Ala	Arg	Thr	His	Gly	
		275					280					285				
ctg	aag	aaa	tga													876
Leu	Lys	Lys														
	290															

&lt;210&gt; 1067

&lt;211&gt; 291

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. JLS

&lt;400&gt; 1067

Met	Thr	Ser	Val	His	Gly	Lys	Val	Val	Leu	Ile	Thr	Gly	Gly	Ala	Arg
1				5					10					15	
Gly	Val	Gly	Glu	Glu	Leu	Ala	Arg	Arg	Leu	His	Ala	Lys	Gly	Ala	Lys
			20					25					30		
Leu	Val	Leu	Thr	Asp	Leu	Asp	Asp	Gly	Pro	Leu	Ser	Ala	Leu	Ala	Ala
			35				40					45			
Asp	Leu	Gly	Ala	Glu	Arg	Val	Leu	Thr	Val	Val	Ala	Asp	Val	Cys	Asp
	50					55					60				
Leu	Glu	Thr	Met	Gln	Ser	Ala	Ala	Glu	Gln	Ala	Val	Ser	Arg	Phe	Gly
65					70					75					80
Gly	Ile	Asp	Ile	Val	Ile	Ala	Asn	Ala	Gly	Ile	Ala	Ser	Tyr	Gly	Ser
				85					90					95	
Val	Leu	Val	Val	Asp	Pro	Asp	Ala	Phe	Arg	Arg	Val	Leu	Asp	Val	Asn
			100					105					110		

## PhoenixTemp32470.tmp.txt

Val Val Gly Val Phe Asn Thr Val Arg Ala Ala Leu Pro Ser Val Ile  
 115 120 125  
 Glu Arg Lys Gly Tyr Ile Leu Val Val Ser Ser Leu Ala Ala Phe Ala  
 130 135 140  
 Ala Ala Pro Gly Met Ala Pro Tyr Asp Ala Ser Lys Ala Gly Val Glu  
 145 150 155 160  
 His Phe Ala Asn Ala Leu Arg Leu Glu Val Ala His His Gly Val Thr  
 165 170 175  
 Val Gly Cys Ala His Met Ser Trp Ile Asp Thr Pro Leu Val Gln Asp  
 180 185 190  
 Thr Lys Ala Asp Leu Pro Ser Phe Arg Thr Met Leu Asp Ser Leu Pro  
 195 200 205  
 Gly Pro Leu Ser Lys Thr Thr Ser Val Gln Lys Cys Gly Glu Val Phe  
 210 215 220  
 Val Lys Gly Ile Glu Arg Arg Arg Glu Arg Ile Tyr Cys Pro Gly Trp  
 225 230 235 240  
 Val Gly Leu Ile Arg Trp Ala Lys Pro Ile Leu Thr Thr Arg Ile Gly  
 245 250 255  
 Gln Ala Ser Val Leu Lys Thr Ala Pro Lys Val Leu Pro Gln Met Asp  
 260 265 270  
 Ala Glu Val Thr Ala Leu Lys Arg Ser Leu Gly Ala Arg Thr His Gly  
 275 280 285  
 Leu Lys Lys  
 290

&lt;210&gt; 1068

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. JLS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1068

atg gac ttc gcg ggc agg cag gcg atc gtc acc ggc gcc ggt tcg ggc	48
Met Asp Phe Ala Gly Arg Gln Ala Ile Val Thr Gly Ala Gly Ser Gly	
1 5 10 15	
atc ggc gcc gca ctg tgc cgg gca ctg gtg gcg gcc ggg gcc gag gtg	96
Ile Gly Ala Ala Leu Cys Arg Ala Leu Val Ala Ala Gly Ala Glu Val	
20 25 30	
ctg tgc acc gac atc gac gcc gac gcc gcc gag gcg acc gcg cgt ggg	144
Leu Cys Thr Asp Ile Asp Ala Asp Ala Ala Glu Ala Thr Ala Arg Gly	
35 40 45	
ctc ggc gcc cgc tgg tca ccc ctg gac gtc acc gac gcc gcc gtc gtg	192
Leu Gly Ala Arg Trp Ser Pro Leu Asp Val Thr Asp Ala Ala Ala Val	
50 55 60	
cag cgg acc gtc gac gag gtg gtg gcg cgc gcc ggt cga ctg gac ctg	240
Gln Arg Thr Val Asp Glu Val Val Ala Arg Ala Gly Arg Leu Asp Leu	
65 70 75 80	
atg ttc aac aac gcg ggt atc tcc tgg ggc ggt gac acc gaa ctg ctg	288
Met Phe Asn Asn Ala Gly Ile Ser Trp Gly Gly Asp Thr Glu Leu Leu	
85 90 95	
acc ctc gac cag tgg aac gcg atc atc gac atc aac atc cgc ggc gtg	336
Thr Leu Asp Gln Trp Asn Ala Ile Ile Asp Ile Asn Ile Arg Gly Val	
100 105 110	
gtg cac gga gtc gcc gcg gcg tac ccc cag atg atc cgc cag ggg cac	384
Val His Gly Val Ala Ala Ala Tyr Pro Gln Met Ile Arg Gln Gly His	
115 120 125	
ggc cac atc gtc aac acc gcc tcg atg gcg ggc ctc acc gcc gcg ggc	432
Gly His Ile Val Asn Thr Ala Ser Met Ala Gly Leu Thr Ala Ala Gly	
130 135 140	
ctg atc acc agc tat gtg atg acc aaa cac gcg gtc gtc ggc ctg tca	480
Leu Ile Thr Ser Tyr Val Met Thr Lys His Ala Val Val Gly Leu Ser	
145 150 155 160	
ctg gcg ctg cgc tcg gag gcc gtc gca cac ggt gtg ggg gtg ctc gcc	528
Leu Ala Leu Arg Ser Glu Ala Val Ala His Gly Val Gly Val Leu Ala	
165 170 175	

## PhoenixTemp32470.tmp.txt

gtc	tgc	ccg	gcc	gcg	gtc	gag	acg	ccg	atc	ctc	gac	aag	ggc	gcc	gtc	576
Val	Cys	Pro	Ala	Ala	Val	Glu	Thr	Pro	Ile	Leu	Asp	Lys	Gly	Ala	Val	
			180					185					190			
ggc	ggg	ttc	gtc	ggt	cgc	gac	tat	tac	ctg	cag	ggc	cag	cgg	gtc	aag	624
Gly	Gly	Phe	Val	Gly	Arg	Asp	Tyr	Tyr	Leu	Gln	Gly	Gln	Arg	Val	Lys	
		195					200					205				
gcc	ccc	tac	gac	gcc	gac	cgg	ctg	gcg	cgt	gac	acc	ctg	cgc	gcc	gtg	672
Ala	Pro	Tyr	Asp	Ala	Asp	Arg	Leu	Ala	Arg	Asp	Thr	Leu	Arg	Ala	Val	
		210				215					220					
cag	cgc	aac	aag	gcc	gtg	ctg	gtc	aaa	ccc	cgg	cag	gcc	cac	gcc	gca	720
Gln	Arg	Asn	Lys	Ala	Val	Leu	Val	Lys	Pro	Arg	Gln	Ala	His	Ala	Ala	
225					230					235					240	
tgg	gtt	ttc	gcg	agg	ctc	gcg	ccc	ggg	ctg	atg	cag	cgg	atg	gcc	gcg	768
Trp	Val	Phe	Ala	Arg	Leu	Ala	Pro	Gly	Leu	Met	Gln	Arg	Met	Ala	Ala	
				245					250					255		
cgg	ttc	gtc	gcc	gaa	cag	cgg	gcc	ggg	cag	cgg	gca	cag	acc	gtc	ggc	816
Arg	Phe	Val	Ala	Glu	Gln	Arg	Ala	Gly	Gln	Arg	Ala	Gln	Thr	Val	Gly	
			260					265					270			
acc	ggg	tag														825
Thr	Gly															

&lt;210&gt; 1069

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. JLS

&lt;400&gt; 1069

Met	Asp	Phe	Ala	Gly	Arg	Gln	Ala	Ile	Val	Thr	Gly	Ala	Gly	Ser	Gly	
1				5					10					15		
Ile	Gly	Ala	Ala	Leu	Cys	Arg	Ala	Leu	Val	Ala	Ala	Gly	Ala	Glu	Val	
			20					25					30			
Leu	Cys	Thr	Asp	Ile	Asp	Ala	Asp	Ala	Ala	Glu	Ala	Thr	Ala	Arg	Gly	
		35					40					45				
Leu	Gly	Ala	Arg	Trp	Ser	Pro	Leu	Asp	Val	Thr	Asp	Ala	Ala	Ala	Val	
	50					55					60					
Gln	Arg	Thr	Val	Asp	Glu	Val	Val	Ala	Arg	Ala	Gly	Arg	Leu	Asp	Leu	
65					70					75					80	
Met	Phe	Asn	Asn	Ala	Gly	Ile	Ser	Trp	Gly	Gly	Asp	Thr	Glu	Leu	Leu	
			85						90					95		
Thr	Leu	Asp	Gln	Trp	Asn	Ala	Ile	Ile	Asp	Ile	Asn	Ile	Arg	Gly	Val	
			100					105					110			
Val	His	Gly	Val	Ala	Ala	Ala	Tyr	Pro	Gln	Met	Ile	Arg	Gln	Gly	His	
		115					120					125				
Gly	His	Ile	Val	Asn	Thr	Ala	Ser	Met	Ala	Gly	Leu	Thr	Ala	Ala	Gly	
	130					135					140					
Leu	Ile	Thr	Ser	Tyr	Val	Met	Thr	Lys	His	Ala	Val	Val	Gly	Leu	Ser	
145					150					155					160	
Leu	Ala	Leu	Arg	Ser	Glu	Ala	Val	Ala	His	Gly	Val	Gly	Val	Leu	Ala	
				165					170					175		
Val	Cys	Pro	Ala	Ala	Val	Glu	Thr	Pro	Ile	Leu	Asp	Lys	Gly	Ala	Val	
			180					185					190			
Gly	Gly	Phe	Val	Gly	Arg	Asp	Tyr	Tyr	Leu	Gln	Gly	Gln	Arg	Val	Lys	
		195					200					205				
Ala	Pro	Tyr	Asp	Ala	Asp	Arg	Leu	Ala	Arg	Asp	Thr	Leu	Arg	Ala	Val	
	210					215					220					
Gln	Arg	Asn	Lys	Ala	Val	Leu	Val	Lys	Pro	Arg	Gln	Ala	His	Ala	Ala	
225					230					235					240	
Trp	Val	Phe	Ala	Arg	Leu	Ala	Pro	Gly	Leu	Met	Gln	Arg	Met	Ala	Ala	
				245					250					255		
Arg	Phe	Val	Ala	Glu	Gln	Arg	Ala	Gly	Gln	Arg	Ala	Gln	Thr	Val	Gly	
			260					265					270			
Thr	Gly															

&lt;210&gt; 1070

&lt;211&gt; 759

&lt;212&gt; DNA

&lt;213&gt; Kineococcus radiotolerans SRS30216

## PhoenixTemp32470.tmp.txt

<220>  
 <221> CDS  
 <222> (1)..(759)  
 <223> transl\_table=11

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<400> 1070
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Met Ala Gly Leu Arg Val Leu Val Thr Gly Gly Ala Ser Gly Ile Gly
  1          5      10      15
gcc gcg acc gtg cgg cgc ttc ctc gcc gag ggc gcc cgg gtg gcg gtc      96
Ala Ala Thr Val Arg Arg Phe Leu Ala Glu Gly Ala Arg Val Ala Val
          20      25      30
ctg gac cgg gtc ttc gag gac tcc ccc gcc gtg ccg ggc gac gcg ctc     144
Leu Asp Arg Val Phe Glu Asp Ser Pro Ala Val Pro Gly Asp Ala Leu
          35      40      45
gcc gtc gtg gcc gac ctc acc gac gac ggc gcc gtg ccg gcc gcg gtg     192
Ala Val Val Ala Asp Leu Thr Asp Asp Gly Ala Val Arg Ala Ala Val
          50      55      60
gcg gcg gcg gtg gag ggc ctc ggc ggc ctc gac gtc ctc gtc aac aac     240
Ala Ala Ala Val Glu Gly Leu Gly Gly Leu Asp Val Leu Val Asn Asn
          65      70      75      80
gcc ggc acc ggg gcg cgg ggc acg gtc gcc gac aac gac gac gcc gag     288
Ala Gly Thr Gly Ala Arg Gly Thr Val Ala Asp Asn Asp Asp Ala Glu
          85      90      95
tgg cac cgg gtg ttc gac gtc aac gtc gtc ggc gcc gtc cgc gcc acc     336
Trp His Arg Val Phe Asp Val Asn Val Val Gly Ala Val Arg Ala Thr
          100      105      110
cgc gcc gcg ctg ccg gcc ctg cgg gcg tcc ccg cac gcc gcg atc gtc     384
Arg Ala Ala Leu Pro Ala Leu Arg Ala Ser Pro His Ala Ala Ile Val
          115      120      125
aac acc tgc tcc atc gcg gcg tgg gcg ggc ctg ccg cag cgg gcg ctg     432
Asn Thr Cys Ser Ile Ala Ala Trp Ala Gly Leu Pro Gln Arg Ala Leu
          130      135      140
tac tcc gcg acg aag ggc gcg gtg cag gcc ctc acc ctg gcc atg gcc     480
Tyr Ser Ala Thr Lys Gly Ala Val Gln Ala Leu Thr Leu Ala Met Ala
          145      150      155      160
gcc gac cac ctc gcc gag ggc atc cgg gtg aac tgc gtg aac ccc ggg     528
Ala Asp His Leu Ala Glu Gly Ile Arg Val Asn Cys Val Asn Pro Gly
          165      170      175
acc gcg cgc acc ccg tgg gtc cag cgc ctc ctc gac gcc gcc gac gac     576
Thr Ala Arg Thr Pro Trp Val Gln Arg Leu Leu Asp Ala Ala Asp Asp
          180      185      190
ccc gcg gcg gag ctc gcc gcg ctg gcc gcg cgc cag ccc ggc ggc cgg     624
Pro Ala Ala Glu Leu Ala Ala Leu Ala Ala Arg Gln Pro Gly Gly Arg
          195      200      205
ctc gtg gag gcc gac gag gtc gcc cac gag atc gtc cac gtc gac gac     672
Leu Val Glu Ala Asp Glu Val Ala His Glu Ile Val His Leu Ala Asp
          210      215      220
cgc cgt tcc ggc gcg gtg acc ggc gcg gtg gtc gcg gtc gac ggc ggc     720
Arg Arg Ser Gly Ala Val Thr Gly Ala Val Val Ala Val Asp Gly Gly
          225      230      235      240
atg cac ggc ctg cgc gtt ccc cct acg gtg cgg gcg tga
Met His Gly Leu Arg Val Pro Pro Thr Val Arg Ala
          245      250

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<210> 1071  
 <211> 252  
 <212> PRT  
 <213> Kineococcus radiotolerans SRS30216

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<400> 1071
Met Ala Gly Leu Arg Val Leu Val Thr Gly Gly Ala Ser Gly Ile Gly
  1          5      10      15
Ala Ala Thr Val Arg Arg Phe Leu Ala Glu Gly Ala Arg Val Ala Val
          20      25      30
Leu Asp Arg Val Phe Glu Asp Ser Pro Ala Val Pro Gly Asp Ala Leu
          35      40      45
Ala Val Val Ala Asp Leu Thr Asp Asp Gly Ala Val Arg Ala Ala Val

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## PhoenixTemp32470.tmp.txt

50 55 60  
 Ala Ala Val Glu Gly Leu Gly Gly Leu Asp Val Leu Val Asn Asn  
 65 70 75 80  
 Ala Gly Thr Gly Ala Arg Gly Thr Val Ala Asp Asn Asp Asp Ala Glu  
 85 90 95  
 Trp His Arg Val Phe Asp Val Asn Val Val Gly Ala Val Arg Ala Thr  
 100 105 110  
 Arg Ala Ala Leu Pro Ala Leu Arg Ala Ser Pro His Ala Ala Ile Val  
 115 120 125  
 Asn Thr Cys Ser Ile Ala Ala Trp Ala Gly Leu Pro Gln Arg Ala Leu  
 130 135 140  
 Tyr Ser Ala Thr Lys Gly Ala Val Gln Ala Leu Thr Leu Ala Met Ala  
 145 150 155 160  
 Ala Asp His Leu Ala Glu Gly Ile Arg Val Asn Cys Val Asn Pro Gly  
 165 170 175  
 Thr Ala Arg Thr Pro Trp Val Gln Arg Leu Leu Asp Ala Ala Asp Asp  
 180 185 190  
 Pro Ala Ala Glu Leu Ala Ala Leu Ala Ala Arg Gln Pro Gly Gly Arg  
 195 200 205  
 Leu Val Glu Ala Asp Glu Val Ala His Glu Ile Val His Leu Ala Asp  
 210 215 220  
 Arg Arg Ser Gly Ala Val Thr Gly Ala Val Val Ala Val Asp Gly Gly  
 225 230 235 240  
 Met His Gly Leu Arg Val Pro Pro Thr Val Arg Ala  
 245 250

&lt;210&gt; 1072

&lt;211&gt; 888

&lt;212&gt; DNA

&lt;213&gt; Xanthobacter autotrophicus Py2

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(888)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1072

atg cag gca gcg cgc ggg ggg ccg aca gcc gat gat ccg tcc ctc gcc	48
Met Gln Ala Ala Arg Gly Gly Pro Thr Ala Asp Asp Pro Ser Leu Ala	
1 5 10 15	
ggc gga ccg gtt gcc cgc gag tcg ctc gcc cgt gaa ccg ctt gcc cgt	96
Gly Gly Pro Val Ala Arg Glu Ser Leu Ala Arg Glu Pro Leu Ala Arg	
20 25 30	
gaa ccg ctt gcc atc gtc acg gga ggt tcg agc ggg atc ggt ctg gcg	144
Glu Pro Leu Ala Ile Val Thr Gly Gly Ser Ser Gly Ile Gly Leu Ala	
35 40 45	
gtc gcc cgc gag ctc ggg cgc agg ggc tgc ccg gtc gca ttg ctc gcg	192
Val Ala Arg Glu Leu Gly Arg Arg Gly Cys Arg Val Ala Leu Leu Ala	
50 55 60	
cgc gat ccc gcc cgc ctc gcc gcc gcc ggg tcg ctg ctg gcg ggg gag	240
Arg Asp Pro Ala Arg Leu Ala Ala Ala Gly Ser Leu Leu Ala Gly Glu	
65 70 75 80	
ggg ctc gcc atc ctc acc cgg ccg ctg gac gtg cgc gac ccg gcg gcc	288
Gly Leu Ala Ile Leu Thr Arg Pro Leu Asp Val Arg Asp Arg Ala Ala	
85 90 95	
tgc gaa gcc gtg gtg gcg gag ctc atc gcc ggc gcg ggt ccc ccg ctg	336
Cys Glu Ala Val Val Ala Glu Leu Ile Ala Gly Ala Gly Pro Pro Leu	
100 105 110	
tgg gtg gtg acg gcg gcg ggg ctc gtc gag cct ggg ttc ttc ctg gac	384
Trp Val Val Thr Ala Ala Gly Leu Val Glu Pro Gly Phe Phe Leu Asp	
115 120 125	
cag gac ccg gcg cgg atg gag gag cag gtc gcc acc aac ctc ctc ggc	432
Gln Asp Pro Ala Arg Met Glu Glu Gln Val Ala Thr Ala Asn Leu Leu Gly	
130 135 140	
acc ttt cac gtg gtg cgc gcg acg gca ccg gcc atg gca gcg gcg ggg	480
Thr Phe His Val Val Arg Ala Thr Ala Pro Ala Met Ala Ala Ala Gly	
145 150 155 160	
cgg ggg cat gtg gtt ctc gtc tcc tcc gga gcc ggg ctg ttc ggt gtc	528
Arg Gly His Val Val Leu Val Ser Ser Gly Ala Gly Leu Phe Gly Val	

## PhoenixTemp32470.tmp.txt

gcc	ggc	tat	tcc	165	ggc	tat	tgc	gcc	agc	170	ttc	gcg	gtg	cgc	175	ggg	ctg	576
Ala	Gly	Tyr	Ser	180	Gly	Tyr	Cys	Ala	Ser	185	Lys	Phe	Ala	Val	Arg	Gly	Leu	
ggc	gag	gtg	ctg	cg	atg	gag	ctg	gcg	cag	gcg	ggg	gtg	cag	gtc	acc	624		
Gly	Glu	Val	Leu	195	Arg	Met	Glu	Leu	Ala	Gln	Ala	Gly	Val	Gln	Val	Thr		
gtc	gcc	gtg	cct	ccg	gac	acg	gac	acg	ccc	cag	ctc	gcc	tac	gag	gcc	672		
Val	Ala	Val	Pro	Pro	Asp	Thr	Asp	Thr	Pro	Gln	Leu	Ala	Tyr	Glu	Ala			
210						215					220							
cgg	cac	cg	ccc	gcc	gcc	atc	gcc	gcc	ttc	gcc	ggg	gcc	ggg	cg	ccc	720		
Arg	His	Arg	Pro	Ala	Ala	Ile	Ala	Ala	Phe	Ala	Gly	Ala	Gly	Arg	Pro			
225				230					235						240			
ctg	tcg	gcg	gaa	gcg	gtg	gcc	cg	cac	atg	atc	cg	agc	gcc	gag	cg	768		
Leu	Ser	Ala	Glu	Ala	Val	Ala	Arg	His	Met	Ile	Arg	Ser	Ala	Glu	Arg			
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ggc	cg	ttc	ctg	tcg	gcg	ccg	ggg	tgg	cg	ctt	ggc	gcc	gtc	gcc	cg	816		
Gly	Arg	Phe	Leu	Ser	Ala	Pro	Gly	Trp	Arg	Leu	Gly	Ala	Val	Ala	Arg			
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ctt	cag	ggc	ttc	gtc	tcc	gag	tgc	ttc	gcc	cg	gtg	cag	atg	cg	ctg	864		
Leu	Gln	Gly	Phe	Val	Ser	Glu	Cys	Phe	Ala	Arg	Val	Gln	Met	Arg	Leu			
		275				280						285						
ctg	cg	cg	gca	tcc	agg	gac	tga									888		
Leu	Arg	Arg	Ala	Ser	Arg	Asp												
290						295												

&lt;210&gt; 1073

&lt;211&gt; 295

&lt;212&gt; PRT

&lt;213&gt; Xanthobacter autotrophicus Py2

&lt;400&gt; 1073

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			20					25					30					
Glu	Pro	Leu	Ala	Ile	Val	Thr	Gly	Gly	Ser	Ser	Gly	Ile	Gly	Leu	Ala			
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Val	Ala	Arg	Glu	Leu	Gly	Arg	Arg	Gly	Cys	Arg	Val	Ala	Leu	Leu	Ala			
	50					55					60							
Arg	Asp	Pro	Ala	Arg	Leu	Ala	Ala	Gly	Ser	Leu	Leu	Ala	Gly	Glu				
65				70					75					80				
Gly	Leu	Ala	Ile	Leu	Thr	Arg	Pro	Leu	Asp	Val	Arg	Asp	Arg	Ala	Ala			
			85						90					95				
Cys	Glu	Ala	Val	Ala	Glu	Leu	Ile	Ala	Gly	Ala	Gly	Pro	Pro	Leu				
			100				105					110						
Trp	Val	Val	Thr	Ala	Ala	Gly	Leu	Val	Glu	Pro	Gly	Phe	Phe	Leu	Asp			
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Gln	Asp	Pro	Ala	Arg	Met	Glu	Glu	Gln	Val	Ala	Thr	Asn	Leu	Leu	Gly			
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Thr	Phe	His	Val	Val	Arg	Ala	Thr	Ala	Pro	Ala	Met	Ala	Ala	Ala	Gly			
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Gly	Glu	Val	Leu	Arg	Met	Glu	Leu	Ala	Gln	Ala	Gly	Val	Gln	Val	Thr			
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Val	Ala	Val	Pro	Pro	Asp	Thr	Asp	Thr	Pro	Gln	Leu	Ala	Tyr	Glu	Ala			
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Arg	His	Arg	Pro	Ala	Ala	Ile	Ala	Ala	Phe	Ala	Gly	Ala	Gly	Arg	Pro			
225				230					235					240				
Leu	Ser	Ala	Glu	Ala	Val	Ala	Arg	His	Met	Ile	Arg	Ser	Ala	Glu	Arg			
				245					250					255				
Gly	Arg	Phe	Leu	Ser	Ala	Pro	Gly	Trp	Arg	Leu	Gly	Ala	Val	Ala	Arg			
			260					265					270					
Leu	Gln	Gly	Phe	Val	Ser	Glu	Cys	Phe	Ala	Arg	Val	Gln	Met	Arg	Leu			
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 <211> 840  
 <212> DNA  
 <213> Desulfococcus olearans Hxd3

<220>  
 <221> CDS  
 <222> (1)..(840)

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 Ser Ser Gly Ile Gly Leu Ala Ala Ala Arg Gln Leu Ala Gly Met Gly  
 20 25 30  
 gct gac ctt gcg ctt ttt gcc agg gac ggc aac aga ctg gaa acg gcc 144  
 Ala Asp Leu Ala Leu Phe Ala Arg Asp Gly Asn Arg Leu Glu Thr Ala  
 35 40 45  
 gga cag gag gtg cgg cat gcc gca acc ggc ccg tca ctg cag gtc cat 192  
 Gly Gln Glu Val Arg His Ala Ala Thr Gly Pro Ser Leu Gln Val His  
 50 55 60  
 gtt ttt ccc gtg gat gtg tgc gac cgg gac cgg gtt ttt gaa gcc gtg 240  
 Val Phe Pro Val Asp Val Ser Asp Arg Asp Arg Val Phe Glu Ala Val  
 65 70 75 80  
 gca aat gcg gtg gat gtc ctg ggg ccg ccg gat atg ctg atc aac tgc 288  
 Ala Asn Ala Val Asp Val Leu Gly Pro Pro Asp Met Leu Ile Asn Cys  
 85 90 95  
 gcc ggc cgg gcc att ccc cgc tgc ttt gcc gac atc ggc gag gac cag 336  
 Ala Gly Arg Ala Ile Pro Arg Cys Phe Ala Asp Ile Gly Glu Asp Gln  
 100 105 110  
 ctt tcc cag acc ctg gcc atc aac ctg tgc ggc acc tgg cac acc ata 384  
 Leu Ser Gln Thr Leu Ala Ile Asn Leu Cys Gly Thr Trp His Thr Ile  
 115 120 125  
 gcc gcg gcc ctt cct tat atg agg ggg cgg ggc ggc cat atc gtc aat 432  
 Ala Ala Ala Leu Pro Tyr Met Arg Gly Arg Gly Gly His Ile Val Asn  
 130 135 140  
 gtc tct tcc atc gcc ggt ttt ctg ggc gtg tac gga tat gcg gat tat 480  
 Val Ser Ser Ile Ala Gly Phe Leu Gly Val Tyr Gly Tyr Ala Asp Tyr  
 145 150 155 160  
 gcg gca tcc aag ttt gcc gtc atg ggg ctc tcc gag gtg ctg cgc agc 528  
 Ala Ala Ser Lys Phe Ala Val Met Gly Leu Ser Glu Val Leu Arg Ser  
 165 170 175  
 gag ttt aag cct ctg ggc atc ggc gtg tcc gtg ctc tgc ccc ccg gat 576  
 Glu Phe Lys Pro Leu Gly Ile Gly Val Ser Val Leu Cys Pro Pro Asp  
 180 185 190  
 acc gac acc ccg gcc ctg gcc gct gaa gcc gcc aca aag ccg gaa gag 624  
 Thr Asp Thr Pro Ala Leu Ala Ala Glu Ala Ala Thr Lys Pro Glu Glu  
 195 200 205  
 aca aag gcc att tcc gcg ggt gcc gca aga gtg ctt tcc gcc gat gcc gtg 672  
 Thr Lys Ala Ile Ser Ala Gly Ala Arg Val Leu Ser Ala Asp Ala Val  
 210 215 220  
 gca aag gcc atg att cgg gga atg aaa aaa aac cgg gcc atg att gtg 720  
 Ala Lys Ala Met Ile Arg Gly Met Lys Lys Asn Arg Ala Met Ile Val  
 225 230 235 240  
 ccg ggt ttt gac ggc cgg ctg atc tgg ctg gcc aaa cgg ctg ttt ccg 768  
 Pro Gly Phe Asp Gly Arg Leu Ile Trp Leu Ala Lys Arg Leu Phe Pro  
 245 250 255  
 ggc ctg gtc tct ttt ttc atg gac cgg acc att cgc cgg acc cgg tgc 816  
 Gly Leu Val Ser Phe Phe Met Asp Arg Thr Ile Arg Arg Thr Arg Cys  
 260 265 270  
 ggg aag ata tct acc gcc tct taa 840  
 Gly Lys Ile Ser Thr Ala Ser  
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<210> 1075  
 <211> 279



&lt;212&gt; PRT

&lt;213&gt; Desulfococcus oleovorans Hxd3

&lt;400&gt; 1075

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20      25      30
Ala Asp Leu Ala Leu Phe Ala Arg Asp Gly Asn Arg Leu Glu Thr Ala
35      40      45
Gly Gln Glu Val Arg His Ala Ala Thr Gly Pro Ser Leu Gln Val His
50      55      60
Val Phe Pro Val Asp Val Ser Asp Arg Asp Arg Val Phe Glu Ala Val
65      70      75      80
Ala Asn Ala Val Asp Val Leu Gly Pro Pro Asp Met Leu Ile Asn Cys
85      90      95
Ala Gly Arg Ala Ile Pro Arg Cys Phe Ala Asp Ile Gly Glu Asp Gln
100     105     110
Leu Ser Gln Thr Leu Ala Ile Asn Leu Cys Gly Thr Trp His Thr Ile
115     120     125
Ala Ala Ala Leu Pro Tyr Met Arg Gly Arg Gly Gly His Ile Val Asn
130     135     140
Val Ser Ser Ile Ala Gly Phe Leu Gly Val Tyr Gly Tyr Ala Asp Tyr
145     150     155     160
Ala Ala Ser Lys Phe Ala Val Met Gly Leu Ser Glu Val Leu Arg Ser
165     170     175
Glu Phe Lys Pro Leu Gly Ile Gly Val Ser Val Leu Cys Pro Pro Asp
180     185     190
Thr Asp Thr Pro Ala Leu Ala Ala Glu Ala Ala Thr Lys Pro Glu Glu
195     200     205
Thr Lys Ala Ile Ser Ala Gly Ala Arg Val Leu Ser Ala Asp Ala Val
210     215     220
Ala Lys Ala Met Ile Arg Gly Met Lys Lys Asn Arg Ala Met Ile Val
225     230     235     240
Pro Gly Phe Asp Gly Arg Leu Ile Trp Leu Ala Lys Arg Leu Phe Pro
245     250     255
Gly Leu Val Ser Phe Phe Met Asp Arg Thr Ile Arg Arg Thr Arg Cys
260     265     270
Gly Lys Ile Ser Thr Ala Ser
275

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&lt;210&gt; 1076

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Desulfococcus oleovorans Hxd3

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;400&gt; 1076

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gcg ggg tcc ggc atc ggc cgg gct gca gcc cat gcc ttt gca aaa gag	96
Ala Gly Ser Gly Ile Gly Arg Ala Ala His Ala Phe Ala Lys Glu	
20      25      30	
ggg gcc tgc gtg gtg atc acc gat att cac gct gaa agg ctg gca gcg	144
Gly Ala Cys Val Val Ile Thr Asp Ile His Ala Glu Arg Leu Ala Ala	
35      40      45	
gtt gaa gac gaa ctt gtg cga atg ggg gca cgg gcc tct tcc aga gtg	192
Val Glu Asp Glu Leu Val Arg Met Gly Ala Arg Ala Ser Ser Arg Val	
50      55      60	
gtg gac gtg gcc gac aag gct caa ctg gaa gat ctg tgc cgg ttt gtc	240
Val Asp Val Ala Asp Lys Ala Gln Leu Glu Asp Leu Cys Arg Phe Val	
65      70      75      80	
atc gat acc cat ggc cgg gtg gat gtg ctg cac gcc aac gcg ggc atc	288
Ile Asp Thr His Gly Arg Val Asp Val Leu His Ala Asn Ala Gly Ile	
85      90      95	

## PhoenixTemp32470.tmp.txt

ggc	tac	ggc	ggt	ccc	ctg	gaa	gtt	ttc	ccc	atg	gcg	gac	ttt	gaa	aag	336
Gly	Tyr	Gly	Gly	Pro	Leu	Glu	Val	Phe	Pro	Met	Ala	Asp	Phe	Glu	Lys	
			100					105					110			
gtg	atg	gcc	gtc	aac	ttc	tgg	cac	gtg	gtt	tac	agt	gtc	ggc	ttt	ttc	384
Val	Met	Ala	Val	Asn	Phe	Trp	His	Val	Val	Tyr	Ser	Val	Gly	Phe	Phe	
		115					120					125				
ctg	ccc	cac	atg	atc	aaa	cag	cat	ttc	ggc	cat	atc	gtg	gtc	acg	gcc	432
Leu	Pro	His	Met	Ile	Lys	Gln	His	Phe	Gly	His	Ile	Val	Val	Thr	Ala	
	130					135					140					
agc	gcg	gcc	agc	tat	ttc	ggc	ctg	ccc	ggc	ctg	ggg	gcc	tac	acc	gcc	480
Ser	Ala	Ala	Ser	Tyr	Phe	Gly	Leu	Pro	Gly	Leu	Gly	Ala	Tyr	Thr	Ala	
145					150				155						160	
tcc	aag	ttc	gcc	gtg	gcc	ggc	tac	ctg	gaa	ctg	cgg	gct	gag	ctg		528
Ser	Lys	Phe	Ala	Val	Ala	Gly	Tyr	Leu	Glu	Leu	Leu	Arg	Ala	Glu	Leu	
				165					170					175		
cgc	cgc	cac	aac	atc	ggc	gtc	acc	acc	atc	tgc	ccc	ggt	ttt	atc	aac	576
Arg	Arg	His	Asn	Ile	Gly	Val	Thr	Thr	Ile	Cys	Pro	Gly	Phe	Ile	Asn	
			180				185						190			
acc	aac	atc	gtg	aaa	gac	ggc	aaa	tcc	acc	ctg	ctg	ccc	ggc	gac	aag	624
Thr	Asn	Ile	Val	Lys	Asp	Gly	Lys	Ser	Thr	Leu	Leu	Pro	Gly	Ala	Lys	
		195					200					205				
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Ala	Asp	Gln	Glu	Lys	Met	Ala	Ala	Phe	Tyr	Lys	Arg	Phe	Gly	Trp	Pro	
	210					215					220					
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Pro	Glu	Arg	Val	Ala	Lys	Ala	Val	Leu	Lys	Gly	Val	Arg	Lys	Asn	Lys	
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gcc	ctg	gtg	ccg	gtg	ggg	ccg	gaa	gca	tgg	gcc	cag	tgg	tat	tta	aag	768
Ala	Leu	Val	Pro	Val	Gly	Pro	Glu	Ala	Trp	Ala	Gln	Trp	Tyr	Leu	Lys	
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cgc	ctc	tcc	ccg	ggc	ctc	tac	aac	ctg	atc	ctg	cgc	att	ggg	gca	aag	816
Arg	Leu	Ser	Pro	Gly	Leu	Tyr	Asn	Leu	Ile	Leu	Arg	Ile	Gly	Ala	Lys	
			260					265					270			
ctg	tca	ctg	tag													828
Leu	Ser	Leu														
		275														

&lt;210&gt; 1077

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Desulfococcus oleovorans Hxd3

&lt;400&gt; 1077

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			20					25					30			
Gly	Ala	Cys	Val	Val	Ile	Thr	Asp	Ile	His	Ala	Glu	Arg	Leu	Ala	Ala	
		35					40					45				
Val	Glu	Asp	Glu	Leu	Val	Arg	Met	Gly	Ala	Arg	Ala	Ser	Ser	Arg	Val	
	50					55				60						
Val	Asp	Val	Ala	Asp	Lys	Ala	Gln	Leu	Glu	Asp	Leu	Cys	Arg	Phe	Val	
65					70				75						80	
Ile	Asp	Thr	His	Gly	Arg	Val	Asp	Val	Leu	His	Ala	Asn	Ala	Gly	Ile	
			85						90					95		
Gly	Tyr	Gly	Gly	Pro	Leu	Glu	Val	Phe	Pro	Met	Ala	Asp	Phe	Glu	Lys	
			100					105					110			
Val	Met	Ala	Val	Asn	Phe	Trp	His	Val	Val	Tyr	Ser	Val	Gly	Phe	Phe	
		115					120					125				
Leu	Pro	His	Met	Ile	Lys	Gln	His	Phe	Gly	His	Ile	Val	Val	Thr	Ala	
	130					135					140					
Ser	Ala	Ala	Ser	Tyr	Phe	Gly	Leu	Pro	Gly	Leu	Gly	Ala	Tyr	Thr	Ala	
145					150				155						160	
Ser	Lys	Phe	Ala	Val	Ala	Gly	Tyr	Leu	Glu	Leu	Leu	Arg	Ala	Glu	Leu	
			165						170					175		
Arg	Arg	His	Asn	Ile	Gly	Val	Thr	Thr	Ile	Cys	Pro	Gly	Phe	Ile	Asn	
			180					185					190			
Thr	Asn	Ile	Val	Lys	Asp	Gly	Lys	Ser	Thr	Leu	Leu	Pro	Gly	Ala	Lys	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Ala Asp Gln Glu Lys Met Ala Ala Phe Tyr Lys Arg Phe Gly Trp Pro  
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 225 230 235 240  
 Ala Leu Val Pro Val Gly Pro Glu Ala Trp Ala Gln Trp Tyr Leu Lys  
 245 250 255  
 Arg Leu Ser Pro Gly Leu Tyr Asn Leu Ile Leu Arg Ile Gly Ala Lys  
 260 265 270  
 Leu Ser Leu  
 275

&lt;210&gt; 1078

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Thermus thermophilus HB27

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

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&lt;400&gt; 1078

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Glu	Leu	Leu	Arg	Arg	Gly	Ala	Arg	Val	Ala	Ala	Val	Asp	Leu	Arg	Ser	
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Glu	Gly	Leu	Gln	Glu	Thr	Met	Ala	Lys	Ala	Gly	Ser	Leu	Gly	Glu	Gly	
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Leu	Ser	Leu	His	Pro	Leu	Asp	Ile	Thr	Asp	Lys	Glu	Lys	Val	Ala	Ala	
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Leu	Pro	Glu	Glu	Val	Glu	Arg	Val	His	Gly	Gln	Val	Asp	Gly	Leu	Ile	
	65				70				75						80	
aac	aac	gcc	ggg	atc	atc	cag	ccc	ttt	aag	cgc	ctc	ttg	gac	ctg	gac	288
Asn	Asn	Ala	Gly	Ile	Ile	Gln	Pro	Phe	Lys	Arg	Leu	Leu	Asp	Leu	Asp	
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Glu	Ala	Ala	Met	Glu	Arg	Val	Met	Arg	Val	Asn	Phe	Trp	Gly	Thr	Leu	
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cac	atg	acc	cgg	gct	ttt	ctg	ccc	agg	ctc	ctc	aag	cgc	ccc	gag	gcc	384
His	Met	Thr	Arg	Ala	Phe	Leu	Pro	Arg	Leu	Leu	Lys	Arg	Pro	Glu	Ala	
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cac	ctg	gtg	aac	gtc	tcc	agc	atg	ggg	gcc	ttt	gtg	ccc	gtg	ccg	ggg	432
His	Leu	Val	Asn	Val	Ser	Ser	Met	Gly	Ala	Phe	Val	Pro	Val	Pro	Gly	
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cag	gcc	ctt	tac	ggg	gcc	tct	aag	gcg	gcg	gtg	atg	ctc	ctc	acc	gag	480
Gln	Ala	Leu	Tyr	Gly	Ala	Ser	Lys	Ala	Ala	Val	Met	Leu	Leu	Thr	Glu	
	145				150					155					160	
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Ala	Leu	Trp	Ala	Glu	Leu	Gln	Gly	Thr	Pro	Val	Arg	Val	Thr	Leu	Val	
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ctg	ccc	ggg	gcc	atg	cgc	acg	ggg	atc	gcc	gag	cac	tcg	ggg	gtg	gaa	576
Leu	Pro	Gly	Ala	Met	Arg	Thr	Gly	Ile	Ala	Glu	His	Ser	Gly	Val	Glu	
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gcc	ccg	agg	gcg	gaa	ggg	gcg	aag	gtg	ccc	gtc	ctc	gag	ccc	gag	gtg	624
Ala	Pro	Arg	Ala	Glu	Gly	Ala	Lys	Val	Pro	Val	Leu	Glu	Pro	Glu	Val	
		195					200					205				
gcg	gcc	aag	cgc	ctc	ctg	gac	gcc	gtg	gaa	cgg	gac	gcc	ttc	cga	gtg	672
Ala	Ala	Lys	Arg	Leu	Leu	Asp	Ala	Val	Glu	Arg	Asp	Ala	Phe	Arg	Val	
	210					215					220					
ctc	ctg	ggc	cgg	gac	gcc	cag	acc	atg	gac	ctc	ctc	tat	cgc	tta	agc	720
Leu	Leu	Gly	Arg	Asp	Ala	Gln	Thr	Met	Asp	Leu	Leu	Tyr	Arg	Leu	Ser	
	225				230				235						240	
ccc	gcc	ctc	gcc	gcc	cgg	atc	gtc	cag	cgg	cgc	atg	gcc	cac	ctc	ctc	768
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245

250

255

774

acc tga  
Thr

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 <211> 257  
 <212> PRT  
 <213> Thermus thermophilus HB27

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 35 40 45  
 Leu Ser Leu His Pro Leu Asp Ile Thr Asp Lys Glu Lys Val Ala Ala  
 50 55 60  
 Leu Pro Glu Glu Val Glu Arg Val His Gly Gln Val Asp Gly Leu Ile  
 65 70 75 80  
 Asn Asn Ala Gly Ile Ile Gln Pro Phe Lys Arg Leu Leu Asp Leu Asp  
 85 90 95  
 Glu Ala Ala Met Glu Arg Val Met Arg Val Asn Phe Trp Gly Thr Leu  
 100 105 110  
 His Met Thr Arg Ala Phe Leu Pro Arg Leu Leu Lys Arg Pro Glu Ala  
 115 120 125  
 His Leu Val Asn Val Ser Ser Met Gly Ala Phe Val Pro Val Pro Gly  
 130 135 140  
 Gln Ala Leu Tyr Gly Ala Ser Lys Ala Ala Val Met Leu Leu Thr Glu  
 145 150 155 160  
 Ala Leu Trp Ala Glu Leu Gln Gly Thr Pro Val Arg Val Thr Leu Val  
 165 170 175  
 Leu Pro Gly Ala Met Arg Thr Gly Ile Ala Glu His Ser Gly Val Glu  
 180 185 190  
 Ala Pro Arg Ala Glu Gly Ala Lys Val Pro Val Leu Glu Pro Glu Val  
 195 200 205  
 Ala Ala Lys Arg Leu Leu Asp Ala Val Glu Arg Asp Ala Phe Arg Val  
 210 215 220  
 Leu Leu Gly Arg Asp Ala Gln Thr Met Asp Leu Leu Tyr Arg Leu Ser  
 225 230 235 240  
 Pro Ala Leu Ala Ala Arg Ile Val Gln Arg Arg Met Ala His Leu Leu  
 245 250 255  
 Thr

<210> 1080  
 <211> 750  
 <212> DNA  
 <213> Ralstonia eutropha JMP134

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 <223> transl\_table=11

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 cgc ggc atc ggc aaa gcc act gcg cgc ggc ctg tcc gcg cag ggc gcc 96  
 Arg Gly Ile Gly Lys Ala Thr Ala Arg Ala Leu Ser Ala Gln Gly Ala  
 20 25 30  
 cat gtc gtg atc ctc gac ctc aag ctc gaa gag gcc cag tct gcc gcc 144  
 His Val Val Ile Leu Asp Leu Lys Leu Glu Glu Ala Gln Ser Ala Ala  
 35 40 45  
 gcc gaa ctc ggc ccg cgc cat ctc ggg ctg gcc tgc gac gtc acg gac 192  
 Ala Glu Leu Gly Pro Arg His Leu Gly Leu Ala Cys Asp Val Thr Asp  
 50 55 60

## PhoenixTemp32470.tmp.txt

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Lys	Ala	Ala	Cys	Glu	Arg	Ala	Ala	Leu	Ala	Val	Val	Glu	Arg	Phe	Gly	
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cgc	atc	gac	ggc	ctc	gtg	aat	aac	gcc	ggc	atc	acg	cag	ccg	cta	cgc	288
Arg	Ile	Asp	Gly	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Gln	Pro	Leu	Arg	
				85					90					95		
acg	ctc	gac	atc	cag	gcg	gcc	aac	ttc	gac	gcc	gtg	gtc	gac	gtc	aac	336
Thr	Leu	Asp	Ile	Gln	Ala	Ala	Asn	Phe	Asp	Ala	Val	Val	Asp	Val	Asn	
			100					105					110			
ctg	cgc	ggc	acg	ctg	tac	atg	tcg	cag	gcg	gtg	ctg	ccg	cag	atg	aag	384
Leu	Arg	Gly	Thr	Leu	Tyr	Met	Ser	Gln	Ala	Val	Leu	Pro	Gln	Met	Lys	
		115					120					125				
gag	cag	aag	cgc	gga	agc	atc	gtc	tgc	atg	tcc	tcg	gtg	tcg	gcc	cag	432
Glu	Gln	Lys	Arg	Gly	Ser	Ile	Val	Cys	Met	Ser	Ser	Val	Ser	Ala	Gln	
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cgc	gga	ggc	ggg	atc	ttc	ggt	ggc	ccg	cac	tac	agc	gcg	gcc	aag	gcg	480
Arg	Gly	Gly	Gly	Ile	Phe	Gly	Gly	Pro	His	Tyr	Ser	Ala	Ala	Lys	Ala	
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gga	gtg	ctg	ggc	ctg	gcg	cgg	gcc	atg	gcg	cgc	gag	ttc	ggc	ggc	gac	528
Gly	Val	Leu	Gly	Leu	Ala	Arg	Ala	Met	Ala	Arg	Glu	Phe	Gly	Gly	Asp	
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ggc	atc	cgc	gtg	aac	tcg	atc	acg	ccg	ggg	ctg	atc	cag	acc	gac	atc	576
Gly	Ile	Arg	Val	Asn	Ser	Ile	Thr	Pro	Gly	Leu	Ile	Gln	Thr	Asp	Ile	
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acc	ggc	gac	aag	ctg	acg	gcg	gac	atg	cgc	gcc	gac	atc	atc	aag	ggc	624
Thr	Gly	Asp	Lys	Leu	Thr	Ala	Asp	Met	Arg	Ala	Asp	Ile	Ile	Lys	Gly	
		195					200					205				
att	ccg	ctg	ggc	cgc	ctt	ggc	gat	gcc	ggc	gat	gtc	gcc	aac	gct	tgc	672
Ile	Pro	Leu	Gly	Arg	Leu	Gly	Asp	Ala	Gly	Asp	Val	Ala	Asn	Ala	Cys	
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ctg	ttc	ctc	gcg	agc	gac	ttg	tcg	agc	tac	ctg	act	ggc	atc	acg	ctc	720
Leu	Phe	Leu	Ala	Ser	Asp	Leu	Ser	Ser	Tyr	Leu	Thr	Gly	Ile	Thr	Leu	
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gat	gtc	aac	ggc	ggc	atg	ctg	atc	cac	taa							750
Asp	Val	Asn	Gly	Gly	Met	Leu	Ile	His								
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&lt;210&gt; 1081

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Ralstonia eutropha JMP134

&lt;400&gt; 1081

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Arg	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Arg	Ala	Leu	Ser	Ala	Gln	Gly	Ala	
			20					25					30			
His	Val	Val	Ile	Leu	Asp	Leu	Lys	Leu	Glu	Glu	Ala	Gln	Ser	Ala	Ala	
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Ala	Glu	Leu	Gly	Pro	Arg	His	Leu	Gly	Leu	Ala	Cys	Asp	Val	Thr	Asp	
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Lys	Ala	Ala	Cys	Glu	Arg	Ala	Ala	Leu	Ala	Val	Val	Glu	Arg	Phe	Gly	
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Arg	Ile	Asp	Gly	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Gln	Pro	Leu	Arg	
				85					90					95		
Thr	Leu	Asp	Ile	Gln	Ala	Ala	Asn	Phe	Asp	Ala	Val	Val	Asp	Val	Asn	
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Leu	Arg	Gly	Thr	Leu	Tyr	Met	Ser	Gln	Ala	Val	Leu	Pro	Gln	Met	Lys	
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Glu	Gln	Lys	Arg	Gly	Ser	Ile	Val	Cys	Met	Ser	Ser	Val	Ser	Ala	Gln	
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Arg	Gly	Gly	Gly	Ile	Phe	Gly	Gly	Pro	His	Tyr	Ser	Ala	Ala	Lys	Ala	
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Gly	Val	Leu	Gly	Leu	Ala	Arg	Ala	Met	Ala	Arg	Glu	Phe	Gly	Gly	Asp	
				165					170					175		
Gly	Ile	Arg	Val	Asn	Ser	Ile	Thr	Pro	Gly	Leu	Ile	Gln	Thr	Asp	Ile	
			180					185					190			
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## PhoenixTemp32470.tmp.txt

Ile Pro Leu Gly Arg Leu Gly Asp Ala Gly Asp Val Ala Asn Ala Cys  
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 Leu Phe Leu Ala Ser Asp Leu Ser Ser Tyr Leu Thr Gly Ile Thr Leu  
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 Asp Val Asn Gly Gly Met Leu Ile His  
 245

&lt;210&gt; 1082

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Anabaena variabilis ATCC 29413

&lt;220&gt;

&lt;221&gt; CDS

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&lt;400&gt; 1082

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att	ggc	cga	acg	ctg	gca	att	tcg	tgt	tcc	caa	cag	gat	gca	aat	tta	96
Ile	Gly	Arg	Thr	Leu	Ala	Ile	Ser	Leu	Ser	Gln	Gln	Asp	Ala	Asn	Leu	
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gtc	tgt	gct	gct	cgc	aat	tcg	gaa	gca	tta	gaa	cag	aca	atg	act	gct	144
Val	Leu	Ala	Ala	Arg	Asn	Ser	Glu	Ala	Leu	Glu	Gln	Thr	Met	Thr	Ala	
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tgc	aca	aac	tat	ccg	ggg	aaa	gtg	att	gca	gta	cct	aca	gat	gta	act	192
Cys	Thr	Asn	Tyr	Pro	Gly	Lys	Val	Ile	Ala	Val	Pro	Thr	Asp	Val	Thr	
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caa	gca	gaa	gct	tgc	caa	cag	tgt	ata	gaa	ata	gcg	atc	gcc	acg	ttt	240
Gln	Ala	Glu	Ala	Cys	Gln	Gln	Leu	Ile	Glu	Ile	Ala	Ile	Ala	Thr	Phe	
				70					75						80	
ggg	caa	att	gat	atc	tta	atc	aat	aat	gcc	gga	att	gga	atg	cta	acc	288
Gly	Gln	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Ile	Gly	Met	Leu	Thr	
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Arg	Phe	Asp	Glu	Val	Thr	Asp	Ile	Ser	Ile	Phe	Glu	Gln	Val	Met	Gln	
			100					105					110			
gtt	aac	tat	ctg	ggg	gca	ggt	tat	tgt	act	cat	tat	gcc	cta	cct	tac	384
Val	Asn	Tyr	Leu	Gly	Ala	Val	Tyr	Cys	Thr	His	Tyr	Ala	Leu	Pro	Tyr	
		115					120					125				
ctg	aaa	gca	agc	caa	gga	caa	tta	gtg	gct	att	tct	tca	att	tgt	ggc	432
Leu	Lys	Ala	Ser	Gln	Gly	Gln	Leu	Val	Ala	Ile	Ser	Ser	Ile	Cys	Gly	
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aaa	aca	ggg	gta	ccc	act	cgt	aca	ggg	tac	ggt	agg	aaa	cac	gct		480
Lys	Thr	Gly	Val	Pro	Thr	Arg	Thr	Gly	Tyr	Val	Gcc	Ala	Ser	Lys	His	
				150					155						160	
atg	caa	ggc	ttt	ttt	gat	aca	tgt	cga	att	gaa	tgt	cac	tca	aca	gga	528
Met	Gln	Gly	Phe	Phe	Asp	Thr	Leu	Arg	Ile	Glu	Leu	His	Ser	Thr	Gly	
				165					170					175		
gta	gat	gta	tgt	gtt	gtc	tca	cca	ggg	ttt	gtg	gca	act	gat	atc	cga	576
Val	Asp	Val	Leu	Val	Val	Ser	Pro	Gly	Phe	Val	Ala	Thr	Asp	Ile	Arg	
			180					185					190			
caa	cga	gca	tgt	gga	gca	gat	gga	aaa	cca	cta	ggc	aaa	agt	ccc	cgt	624
Gln	Arg	Ala	Leu	Gly	Ala	Asp	Gly	Lys	Pro	Leu	Gly	Lys	Ser	Pro	Arg	
			195				200					205				
gat	gaa	act	caa	ggc	aat	atg	tca	gta	gac	gag	tgt	gtg	cgt	caa	att	672
Asp	Glu	Thr	Gln	Gly	Asn	Met	Ser	Val	Asp	Glu	Cys	Val	Arg	Gln	Ile	
		210				215					220					
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Ile	Trp	Ala	Met	Glu	Arg	Arg	Lys	Arg	Glu	His	Ile	Met	Thr	Leu	Lys	
				225		230				235					240	
gga	aag	gca	atc	cct	tgg	gca	aag	ctg	att	gca	cca	gga	ttt	gtt	gat	768
Gly	Lys	Ala	Ile	Pro	Trp	Ala	Lys	Leu	Ile	Ala	Pro	Gly	Phe	Val	Asp	
				245					250					255		
cgt	att	gtt	gct	gcc	acc	att	cgc	aag	aca	act	tcc	acc	tga			810
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 <213> *Anabaena variabilis* ATCC 29413

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 Val Leu Ala Arg Asn Ser Glu Ala Leu Glu Gln Thr Met Thr Ala  
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 Cys Thr Asn Tyr Pro Gly Lys Val Ile Ala Val Pro Thr Asp Val Thr  
 50 55 60  
 Gln Ala Glu Ala Cys Gln Gln Leu Ile Glu Ile Ala Ile Ala Thr Phe  
 65 70 75 80  
 Gly Gln Ile Asp Ile Leu Ile Asn Asn Ala Gly Ile Gly Met Leu Thr  
 85 90 95  
 Arg Phe Asp Glu Val Thr Asp Ile Ser Ile Phe Glu Gln Val Met Gln  
 100 105 110  
 Val Asn Tyr Leu Gly Ala Val Tyr Cys Thr His Tyr Ala Leu Pro Tyr  
 115 120 125  
 Leu Lys Ala Ser Gln Gly Gln Leu Val Ala Ile Ser Ser Ile Cys Gly  
 130 135 140  
 Lys Thr Gly Val Pro Thr Arg Thr Gly Tyr Val Ala Ser Lys His Ala  
 145 150 155 160  
 Met Gln Gly Phe Phe Asp Thr Leu Arg Ile Glu Leu His Ser Thr Gly  
 165 170 175  
 Val Asp Val Leu Val Val Ser Pro Gly Phe Val Ala Thr Asp Ile Arg  
 180 185 190  
 Gln Arg Ala Leu Gly Ala Asp Gly Lys Pro Leu Gly Lys Ser Pro Arg  
 195 200 205  
 Asp Glu Thr Gln Gly Asn Met Ser Val Asp Glu Cys Val Arg Gln Ile  
 210 215 220  
 Ile Trp Ala Met Glu Arg Arg Lys Arg Glu His Ile Met Thr Leu Lys  
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 Gly Lys Ala Ile Pro Trp Ala Lys Leu Ile Ala Pro Gly Phe Val Asp  
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 Arg Ile Val Ala Ala Thr Ile Arg Lys Thr Thr Ser Thr  
 260 265

<210> 1084  
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 <213> *Rhodobacter sphaeroides* 2.4.1

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 <223> transl\_table=11

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 tcg ggc atc ggc cgc gag tcc gcg cgc cag ttc gcg cgc gag ggc gcg 96  
 Ser Gly Ile Arg Glu Ser Ala Arg Gln Phe Ala Arg Glu Gly Ala  
 20 25 30  
 acg ctg gcg ctg atc gac cgc gac gag gcg gcg gcg cag gtg acg gcg 144  
 Thr Leu Ala Leu Ile Asp Arg Asp Glu Ala Ala Ala Gln Val Thr Ala  
 35 40 45  
 gac gag acg ggc ggc cat gtc ttc gcg ctc gac gtg acc gac gag gcg 192  
 Asp Glu Thr Gly Gly His Val Phe Ala Leu Asp Val Thr Asp Glu Ala  
 50 55 60  
 gcg gtc gaa acc gtc gtg ggc cgc gcg gcg gag gcg ctc ggc ggc atc 240  
 Ala Val Glu Thr Val Val Gly Arg Ala Ala Glu Ala Leu Gly Gly Ile  
 65 70 75 80  
 gac ggc ctg ctc aat tcg gcg ggc atc ctg acc atg aag acc gtg gac 288  
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## PhoenixTemp32470.tmp.txt

Asp	Gly	Leu	Leu	Asn 85	Ser	Ala	Gly	Ile	Leu 90	Thr	Met	Lys	Thr	Val 95	Asp		
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Asp	Ile	Gly	Val	Glu	Glu	Phe	Arg	Arg	Val	Val	Asp	Val	Asn	Leu	Thr		
			100					105					110				
ggg	acc	ttc	ctc	gtc	tgt	cag	gcg	gcg	ctg	ccg	tgg	ctg	cgc	aag	gag		384
Gly	Thr	Phe	Leu	Val	Cys	Gln	Ala	Ala	Leu	Pro	Trp	Leu	Arg	Lys	Glu		
			115				120					125					
ccg	aag	gcc	gcc	atc	gtc	aac	atc	gcc	tcg	gcg	cag	gcg	ctg	ctg	ccc		432
Pro	Lys	Ala	Ala	Ile	Val	Asn	Ile	Ala	Ser	Ala	Gln	Ala	Leu	Leu	Pro		
	130					135					140						
tcg	ctg	acc	ggc	tcg	gcc	tat	gcc	gcc	tcg	aag	gcc	gcg	gtg	atg	atg		480
Ser	Leu	Thr	Gly	Ser	Ala	Tyr	Ala	Ala	Ser	Lys	Ala	Ala	Val	Met	Met		
	145				150					155					160		
ttc	tcg	aag	agc	atc	gcc	aag	gaa	ctt	gcc	ccg	gcg	gtg	cgg	gtg	aac		528
Phe	Ser	Lys	Ser	Ile	Ala	Lys	Glu	Leu	Ala	Pro	Ala	Val	Arg	Val	Asn		
				165				170						175			
atc	atc	tgc	ccg	ggg	gcc	acc	gag	acg	ccg	atg	acc	gat	cag	ggc	gtg		576
Ile	Ile	Cys	Pro	Gly	Ala	Thr	Glu	Thr	Pro	Met	Thr	Asp	Gln	Gly	Val		
			180					185					190				
gcg	ccc	gac	gat	gtg	gcg	ggc	cgc	aag	gcg	ctg	gcc	gcg	gtc	tat	gcg		624
Ala	Pro	Asp	Asp	Val	Ala	Gly	Arg	Lys	Ala	Leu	Ala	Ala	Val	Tyr	Ala		
		195					200				205						
atg	aac	cgt	ctg	gcc	cag	ccc	gag	gag	atc	gcg	gcg	ggc	atc	ctg	ttc		672
Met	Asn	Arg	Leu	Ala	Gln	Pro	Glu	Glu	Ile	Ala	Ala	Gly	Ile	Leu	Phe		
	210				215					220							
ctg	atg	tcg	gac	gag	gcc	gcg	gcc	atc	acg	ggc	gtc	gcg	ctg	gcg	atc		720
Leu	Met	Ser	Asp	Glu	Ala	Ala	Ala	Ile	Thr	Gly	Val	Ala	Leu	Ala	Ile		
	225			230					235						240		
gac	aac	ggc	cgc	acc	ttc	cat	tga										744
Asp	Asn	Gly	Arg	Thr	Phe	His											
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&lt;210&gt; 1085

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Rhodobacter sphaeroides 2.4.1

&lt;400&gt; 1085

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			20					25					30				
Thr	Leu	Ala	Leu	Ile	Asp	Arg	Asp	Glu	Ala	Ala	Ala	Gln	Val	Thr	Ala		
		35					40					45					
Asp	Glu	Thr	Gly	Gly	His	Val	Phe	Ala	Leu	Asp	Val	Thr	Asp	Glu	Ala		
	50				55					60							
Ala	Val	Glu	Thr	Val	Val	Gly	Arg	Ala	Ala	Glu	Ala	Leu	Gly	Gly	Ile		
	65			70					75					80			
Asp	Gly	Leu	Leu	Asn 85	Ser	Ala	Gly	Ile	Leu 90	Thr	Met	Lys	Thr	Val 95	Asp		
Asp	Ile	Gly	Val	Glu	Glu	Phe	Arg	Arg	Val	Val	Asp	Val	Asn	Leu	Thr		
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Gly	Thr	Phe	Leu	Val	Cys	Gln	Ala	Ala	Leu	Pro	Trp	Leu	Arg	Lys	Glu		
		115				120						125					
Pro	Lys	Ala	Ala	Ile	Val	Asn	Ile	Ala	Ser	Ala	Gln	Ala	Leu	Leu	Pro		
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Ser	Leu	Thr	Gly	Ser	Ala	Tyr	Ala	Ala	Ser	Lys	Ala	Ala	Val	Met	Met		
	145				150					155					160		
Phe	Ser	Lys	Ser	Ile	Ala	Lys	Glu	Leu	Ala	Pro	Ala	Val	Arg	Val	Asn		
				165				170						175			
Ile	Ile	Cys	Pro	Gly	Ala	Thr	Glu	Thr	Pro	Met	Thr	Asp	Gln	Gly	Val		
			180					185					190				
Ala	Pro	Asp	Asp	Val	Ala	Gly	Arg	Lys	Ala	Leu	Ala	Ala	Val	Tyr	Ala		
		195					200				205						
Met	Asn	Arg	Leu	Ala	Gln	Pro	Glu	Glu	Ile	Ala	Ala	Gly	Ile	Leu	Phe		
	210				215					220							
Leu	Met	Ser	Asp	Glu	Ala	Ala	Ala	Ile	Thr	Gly	Val	Ala	Leu	Ala	Ile		
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Asp Asn Gly Arg Thr Phe His  
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<210> 1086  
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cgt ggt atc ggc cgc gcg aca gct acg acc ttc gct caa cat ggc gcc      96
Arg Gly Ile Gly Arg Ala Thr Ala Thr Phe Ala Gln His Gly Ala
      20      25      30
tgg gtg gtg att ctg gat ctg gac gca tcc gct gcc cgc gat gca gct      144
Trp Val Val Ile Leu Asp Leu Asp Ala Ser Ala Ala Arg Asp Ala Ala
      35      40      45
gcc tct ttg ggc gag ggg cat ctc ggc ctg gct gcc aac gtc gcc gac      192
Ala Ser Leu Gly Glu Gly His Leu Gly Leu Ala Ala Asn Val Ala Asp
      50      55      60
gag tcc cag gtg cag cag gct gtc gcc acc gtc atc gaa cac ttt ggc      240
Glu Ser Gln Val Gln Gln Ala Val Ala Thr Val Ile Glu His Phe Gly
      65      70      75      80
cgg atc gac ata ctg gtc aac aat gcc ggc atc acc caa ccc ctc aag      288
Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Gln Pro Leu Lys
      85      90      95
acc ctc gat atc cgc ccc ggt gat tac gat aag gtg ctg gac gtc agc      336
Thr Leu Asp Ile Arg Pro Gly Asp Tyr Asp Lys Val Leu Asp Val Ser
      100      105      110
ctg cgc ggt acg ttg cag atg tcc cag gcg gta att ccg ctc atg cgc      384
Leu Arg Gly Thr Leu Gln Met Ser Gln Ala Val Ile Pro Leu Met Arg
      115      120      125
cag caa gcc agc ggc agc att gtg tgc atg tct tcg gtt tcc gcg cag      432
Gln Gln Ala Ser Gly Ser Ile Val Cys Met Ser Val Ser Ala Gln
      130      135      140
cgc ggc ggc ggc att ttt ggc ggg cct cat tac agc gcc gcc aag gcc      480
Arg Gly Gly Gly Ile Phe Gly Gly Pro His Tyr Ser Ala Ala Lys Ala
      145      150      155      160
ggt gtg ctg ggc ctg gcc aag gcc atg gcg cgt gag ctg ggg ccg gac      528
Gly Val Leu Gly Leu Ala Lys Ala Met Ala Arg Glu Leu Gly Pro Asp
      165      170      175
aac gtg cgc gtc aac tcc atc gcc ccc ggc ctg att cac acc gac att      576
Asn Val Arg Val Asn Ser Ile Ala Pro Gly Leu Ile His Thr Asp Ile
      180      185      190
act ggc ggc ctg atg cag gac gag cgc cgc cac gcg atc atc gac ggc      624
Thr Gly Gly Leu Met Gln Asp Glu Arg Arg His Ala Ile Ile Asp Gly
      195      200      205
att ccg ttg ggt cgc ctg ggc gag gcg cag gat gtg gcc aat gcg gcg      672
Ile Pro Leu Gly Arg Leu Gly Glu Ala Gln Asp Val Ala Asn Ala Ala
      210      215      220
ctg ttc ctg gcc agc gac ttg tcc tcc tat ctg act ggc atc acc ctg      720
Leu Phe Leu Ala Ser Asp Leu Ser Ser Tyr Leu Thr Gly Ile Thr Leu
      225      230      235      240
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Asp Val Asn Gly Gly Met Leu Ile His
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<213> Pseudomonas fluorescens Pf0-1

<400> 1087

## PhoenixTemp32470.tmp.txt

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 1 Arg Gly Ile Gly Arg Ala Thr Ala Thr Thr Phe Ala Gln His Gly Ala  
 20 Trp Val Val Ile Leu Asp Leu Asp Ala Ser Ala Ala Arg Asp Ala Ala  
 35 Ala Ser Leu Gly Glu Gly His Leu Gly Leu Ala Ala Asn Val Ala Asp  
 50 Glu Ser Gln Val Gln Gln Ala Val Ala Thr Val Ile Glu His Phe Gly  
 65 Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Gln Pro Leu Lys  
 80 Thr Leu Asp Ile Arg Pro Gly Asp Tyr Asp Lys Val Leu Asp Val Ser  
 100 Leu Arg Gly Thr Leu Gln Met Ser Gln Ala Val Ile Pro Leu Met Arg  
 115 Gln Gln Ala Ser Gly Ser Ile Val Cys Met Ser Ser Val Ser Ala Gln  
 130 Arg Gly Gly Gly Ile Phe Gly Gly Pro His Tyr Ser Ala Ala Lys Ala  
 145 Gly Val Leu Gly Leu Ala Lys Ala Met Ala Arg Glu Leu Gly Pro Asp  
 160 Asn Val Arg Val Asn Ser Ile Ala Pro Gly Leu Ile His Thr Asp Ile  
 175 Thr Gly Gly Leu Met Gln Asp Glu Arg Arg His Ala Ile Ile Asp Gly  
 190 Ile Pro Leu Gly Arg Leu Gly Glu Ala Gln Asp Val Ala Asn Ala Ala  
 205 Leu Phe Leu Ala Ser Asp Leu Ser Ser Tyr Leu Thr Gly Ile Thr Leu  
 220 Asp Val Asn Gly Gly Met Leu Ile His  
 245

&lt;210&gt; 1088

&lt;211&gt; 855

&lt;212&gt; DNA

&lt;213&gt; Burkholderia xenovorans LB400

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(855)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1088

atg tcc gag tcc gtc gag acc cca ccc gtc tgg ttg atc acc gga tgt	48
Met Ser Glu Ser Val Glu Thr Pro Pro Val Trp Leu Ile Thr Gly Cys	
1 5 10 15	
tcc acc ggc ttc ggc cgt gaa ctg gct gcc gcc gtg ctc gcg cgc ggc	96
Ser Thr Gly Phe Gly Arg Glu Leu Ala Ala Val Leu Ala Arg Gly	
20 25 30	
tgg cgc acg gtt gtc acg gcg cgc gat ccg gca tcg atc gcg gat ctg	144
Trp Arg Thr Val Val Thr Ala Arg Asp Pro Ala Ser Ile Ala Asp Leu	
35 40 45	
gtc gag ggc cgt gaa acg cac gcg ctt gcc gcg cgg ctc gac gtc acc	192
Val Glu Gly Arg Glu Thr His Ala Leu Ala Ala Arg Leu Asp Val Thr	
50 55 60	
agc gca agc gat atc gaa acg gtc gtg gcc cgg acg ctg gac gcc tac	240
Ser Ala Ser Asp Ile Glu Thr Val Val Ala Arg Thr Leu Asp Ala Tyr	
65 70 75 80	
ggc cag atc gat ttc ctc gtg aac aat gcg ggc tac ggc tat ctc gcc	288
Gly Gln Ile Asp Phe Leu Val Asn Asn Ala Gly Tyr Gly Tyr Leu Ala	
85 90 95	
gca gtc gaa gaa ggt gaa gac gcc gag atg cgc gcc atg ttc gag gtc	336
Ala Val Glu Glu Gly Glu Asp Ala Glu Met Arg Ala Met Phe Glu Val	
100 105 110	
aat ttc ttc ggg gcg gtc aat atg gtc aag gcg gtc ttg ccg tcc atg	384
Asn Phe Phe Gly Ala Val Asn Met Val Lys Ala Val Leu Pro Ser Met	
115 120 125	
cgc gcg cgc cgc tcg ggc cat atc gtc aac gtc acg tcg gtc ggc ggc	432

## PhoenixTemp32470.tmp.txt

Arg	Ala	Arg	Arg	Ser	Gly	His	Ile	Val	Asn	Val	Thr	Ser	Val	Gly	Gly	
130	130					135					140					
ttc	gtc	ggc	aat	ccg	agt	agc	ggg	tac	tat	gct	gct	acc	aaa	ttc	gcg	480
Phe	Val	Gly	Asn	Pro	Ser	Ser	Gly	Tyr	Tyr	Ala	Ala	Thr	Lys	Phe	Ala	
145					150					155					160	
ctc	gaa	gga	ttg	agc	gag	tcg	ctc	gcg	cgc	gaa	acg	gcg	gag	ctc	ggc	528
Leu	Glu	Gly	Leu	Ser	Glu	Ser	Leu	Ala	Arg	Glu	Thr	Ala	Glu	Leu	Gly	
				165					170					175		
atc	cgg	gtg	acg	gcc	gtc	gaa	ccc	ggt	cca	ttc	aga	acc	gac	tgg	gcg	576
Ile	Arg	Val	Thr	Ala	Val	Glu	Pro	Gly	Pro	Phe	Arg	Thr	Asp	Trp	Ala	
			180					185					190			
gga	cga	tcg	ctg	aag	cag	acg	gga	acg	ccg	atc	gac	gac	tac	gcg	tcg	624
Gly	Arg	Ser	Leu	Lys	Gln	Thr	Gly	Thr	Pro	Ile	Asp	Asp	Tyr	Ala	Ser	
		195					200					205				
att	gcc	ggc	aag	cga	cgc	acg	cag	gtg	gtc	gag	cgc	agc	ggc	cgg	caa	672
Ile	Ala	Gly	Lys	Arg	Arg	Thr	Gln	Val	Val	Glu	Arg	Ser	Gly	Arg	Gln	
	210					215					220					
ccg	ggc	agc	ccc	gag	cgc	gcc	gcc	gaa	gcg	atc	atc	gcc	gca	gtc	acc	720
Pro	Gly	Ser	Pro	Glu	Arg	Ala	Ala	Glu	Ala	Ile	Ile	Ala	Ala	Val	Thr	
225					230					235					240	
gac	cgc	gaa	ccg	ccc	gag	cac	ctc	gtg	ctc	ggc	agc	gcc	ggt	ctc	gcg	768
Asp	Arg	Glu	Pro	Pro	Glu	His	Leu	Val	Leu	Gly	Ser	Ala	Gly	Leu	Ala	
				245					250					255		
atg	gtg	cga	agc	aaa	ctg	gcg	cgc	gtg	gca	gcg	gac	ctc	gat	gcg	tgg	816
Met	Val	Arg	Ser	Lys	Leu	Ala	Arg	Val	Ala	Ala	Asp	Leu	Asp	Ala	Trp	
			260					265					270			
gag	agc	acg	acc	gta	tgg	act	gac	gac	ccg	ctt	aca	taa				855
Glu	Ser	Thr	Thr	Val	Trp	Thr	Asp	Asp	Pro	Leu	Thr					
		275					280									

&lt;210&gt; 1089

&lt;211&gt; 284

&lt;212&gt; PRT

&lt;213&gt; Burkholderia xenovorans LB400

&lt;400&gt; 1089

Met	Ser	Glu	Ser	Val	Glu	Thr	Pro	Pro	Val	Trp	Leu	Ile	Thr	Gly	Cys	
1				5					10					15		
Ser	Thr	Gly	Phe	Gly	Arg	Glu	Leu	Ala	Ala	Ala	Val	Leu	Ala	Arg	Gly	
			20					25					30			
Trp	Arg	Thr	Val	Val	Thr	Ala	Arg	Asp	Pro	Ala	Ser	Ile	Ala	Asp	Leu	
		35					40					45				
Val	Glu	Gly	Arg	Glu	Thr	His	Ala	Leu	Ala	Ala	Arg	Leu	Asp	Val	Thr	
		50				55					60					
Ser	Ala	Ser	Asp	Ile	Glu	Thr	Val	Val	Ala	Arg	Thr	Leu	Asp	Ala	Tyr	
65					70					75					80	
Gly	Gln	Ile	Asp	Phe	Leu	Val	Asn	Asn	Ala	Gly	Tyr	Gly	Tyr	Leu	Ala	
				85					90					95		
Ala	Val	Glu	Glu	Gly	Glu	Asp	Ala	Glu	Met	Arg	Ala	Met	Phe	Glu	Val	
			100					105					110			
Asn	Phe	Phe	Gly	Ala	Val	Asn	Met	Val	Lys	Ala	Val	Leu	Pro	Ser	Met	
		115					120					125				
Arg	Ala	Arg	Arg	Ser	Gly	His	Ile	Val	Asn	Val	Thr	Ser	Val	Gly	Gly	
	130					135					140					
Phe	Val	Gly	Asn	Pro	Ser	Ser	Gly	Tyr	Tyr	Ala	Ala	Thr	Lys	Phe	Ala	
145					150					155					160	
Leu	Glu	Gly	Leu	Ser	Glu	Ser	Leu	Ala	Arg	Glu	Thr	Ala	Glu	Leu	Gly	
				165					170					175		
Ile	Arg	Val	Thr	Ala	Val	Glu	Pro	Gly	Pro	Phe	Arg	Thr	Asp	Trp	Ala	
			180					185					190			
Gly	Arg	Ser	Leu	Lys	Gln	Thr	Gly	Thr	Pro	Ile	Asp	Asp	Tyr	Ala	Ser	
		195					200					205				
Ile	Ala	Gly	Lys	Arg	Arg	Thr	Gln	Val	Val	Glu	Arg	Ser	Gly	Arg	Gln	
	210					215					220					
Pro	Gly	Ser	Pro	Glu	Arg	Ala	Ala	Glu	Ala	Ile	Ile	Ala	Ala	Val	Thr	
225					230					235					240	
Asp	Arg	Glu	Pro	Pro	Glu	His	Leu	Val	Leu	Gly	Ser	Ala	Gly	Leu	Ala	
				245					250					255		
Met	Val	Arg	Ser	Lys	Leu	Ala	Arg	Val	Ala	Ala	Asp	Leu	Asp	Ala	Trp	

260  
 Glu Ser Thr Thr Val Trp Thr Asp Asp Pro Leu Thr  
 275 280 270

<210> 1090  
 <211> 861  
 <212> DNA  
 <213> Burkholderia xenovorans LB400

<220>  
 <221> CDS  
 <222> (1)..(861)  
 <223> transl\_table=11

<400> 1090  
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 Met Thr Asn Glu Glu Lys Pro Val Trp Phe Ile Thr Gly Cys Ser Thr  
 1 5 10 15  
 ggc ttc ggc cgc gag ctg gcc gta ctg ttg ctg gaa cag ggg ttc cgt 96  
 Gly Phe Gly Arg Glu Leu Ala Val Leu Leu Leu Glu Gln Gly Phe Arg  
 20 25 30  
 gtc gtc gcc acc gca cgc gat gcg agc aag ctg gct gac ctg gtg gcg 144  
 Val Val Ala Thr Ala Arg Asp Ala Ser Lys Leu Ala Asp Leu Val Ala  
 35 40 45  
 agc cat aag gat cgc gcc ctg gct ttg ccg ctc gat gtg acg gat gcg 192  
 Ser His Lys Asp Arg Ala Leu Ala Leu Pro Leu Asp Val Thr Asp Ala  
 50 55 60  
 gat gcc atc gtg cat gcg gtg aaa cag gcc gag gca cga ttt ggg cag 240  
 Asp Ala Ile Val His Ala Val Lys Gln Ala Glu Ala Arg Phe Gly Gln  
 65 70 75 80  
 atc gat gtg ctg gtg aac aac gcc ggc tat ggc tat ctc gcc gcc atc 288  
 Ile Asp Val Leu Val Asn Asn Ala Gly Tyr Gly Tyr Leu Ala Ala Ile  
 85 90 95  
 gag gaa ggt gaa gag gcg cct gta cgc gag atg ttc gat acc aac gtc 336  
 Glu Glu Gly Glu Glu Ala Pro Val Arg Glu Met Phe Asp Thr Asn Val  
 100 105 110  
 ttt ggt ctc gtt aat gtg aca aag tcc gtg ctg ccg gga atg cgt gcc 384  
 Phe Gly Leu Val Asn Val Thr Lys Ser Val Leu Pro Gly Met Arg Ala  
 115 120 125  
 cgt aag cgc ggc cac atc ata aat cta tcg tcg atc ggt ggg tta gtc 432  
 Arg Lys Arg Gly His Ile Asn Leu Ser Ser Ile Gly Gly Leu Val  
 130 135 140  
 agc ttt gcg gct acg ggt tat tac aat gca acg aag ttc gca gta gag 480  
 Ser Phe Ala Ala Thr Gly Tyr Tyr Asn Ala Thr Lys Phe Ala Val Glu  
 145 150 155 160  
 gga ctg tct gga gcg ctg gcg atc gag ctg gct ccg ctt ggc atc aag 528  
 Gly Leu Ser Gly Ala Leu Ala Ile Glu Leu Ala Pro Leu Gly Ile Lys  
 165 170 175  
 gtt acg gtg gtt gaa cct ggc ccg ttc cgc acg gat ttc tcc ggg cgc 576  
 Val Thr Val Val Glu Pro Gly Pro Phe Arg Thr Asp Phe Ser Gly Arg  
 180 185 190  
 tcg atc ggt aaa tcc aag ata gag atc gac gac tac gct gag acg gct 624  
 Ser Ile Gly Lys Ser Lys Ile Glu Ile Asp Asp Tyr Ala Glu Thr Ala  
 195 200 205  
 ggt gcg cgt cgc aag atg tcg ctt gca ctt tcg ggc aag cag cca ggt 672  
 Gly Ala Arg Arg Lys Met Ser Leu Ala Leu Ser Gly Lys Gln Pro Gly  
 210 215 220  
 gac cca gta cgc gct gcc cag gcg ata att gac gtt gtt gct tcg tcg 720  
 Asp Pro Val Arg Ala Ala Gln Ala Ile Ile Asp Val Val Ala Ser Ser  
 225 230 235 240  
 aat cca ccg ctg cac cta ttg ctt ggc gca atc gcc ctt gac ctc gcg 768  
 Asn Pro Pro Leu His Leu Leu Leu Gly Ala Ile Ala Leu Asp Leu Ala  
 245 250 255  
 cgc aag gat ctg gaa aac aag aag cat gag ttc gac gcc tgg gaa aaa 816  
 Arg Lys Asp Leu Glu Asn Lys Lys His Glu Phe Asp Ala Trp Glu Lys  
 260 265 270  
 aca acg ctc agc gct gat tat ccc gac gct gtc gtt aat tcc tga 861  
 Thr Thr Leu Ser Ala Asp Tyr Pro Asp Ala Val Val Asn Ser  
 275 280 285

<210> 1091  
 <211> 286  
 <212> PRT  
 <213> Burkholderia xenovorans LB400

<400> 1091  
 Met Thr Asn Glu Glu Lys Pro Val Trp Phe Ile Thr Gly Cys Ser Thr  
 1 5 10 15  
 Gly Phe Gly Arg Glu Leu Ala Val Leu Leu Leu Glu Gln Gly Phe Arg  
 20 25 30  
 Val Val Ala Thr Ala Arg Asp Ala Ser Lys Leu Ala Asp Leu Val Ala  
 35 40 45  
 Ser His Lys Asp Arg Ala Leu Ala Leu Pro Leu Asp Val Thr Asp Ala  
 50 55 60  
 Asp Ala Ile Val His Ala Val Lys Gln Ala Glu Ala Arg Phe Gly Gln  
 65 70 75 80  
 Ile Asp Val Leu Val Asn Asn Ala Gly Tyr Gly Tyr Leu Ala Ala Ile  
 85 90 95  
 Glu Glu Gly Glu Glu Ala Pro Val Arg Glu Met Phe Asp Thr Asn Val  
 100 105 110  
 Phe Gly Leu Val Asn Val Thr Lys Ser Val Leu Pro Gly Met Arg Ala  
 115 120 125  
 Arg Lys Arg Gly His Ile Ile Asn Leu Ser Ser Ile Gly Gly Leu Val  
 130 135 140  
 Ser Phe Ala Ala Thr Gly Tyr Tyr Asn Ala Thr Lys Phe Ala Val Glu  
 145 150 155 160  
 Gly Leu Ser Gly Ala Leu Ala Ile Glu Leu Ala Pro Leu Gly Ile Lys  
 165 170 175  
 Val Thr Val Val Glu Pro Gly Pro Phe Arg Thr Asp Phe Ser Gly Arg  
 180 185 190  
 Ser Ile Gly Lys Ser Lys Ile Glu Ile Asp Asp Tyr Ala Glu Thr Ala  
 195 200 205  
 Gly Ala Arg Arg Lys Met Ser Leu Ala Leu Ser Gly Lys Gln Pro Gly  
 210 215 220  
 Asp Pro Val Arg Ala Ala Gln Ala Ile Ile Asp Val Val Ala Ser Ser  
 225 230 235 240  
 Asn Pro Pro Leu His Leu Leu Leu Gly Ala Ile Ala Leu Asp Leu Ala  
 245 250 255  
 Arg Lys Asp Leu Glu Asn Lys Lys His Glu Phe Asp Ala Trp Glu Lys  
 260 265 270  
 Thr Thr Leu Ser Ala Asp Tyr Pro Asp Ala Val Val Asn Ser  
 275 280 285

<210> 1092  
 <211> 810  
 <212> DNA  
 <213> Myxococcus xanthus DK 1622

<220>  
 <221> CDS  
 <222> (1)..(810)  
 <223> transl\_table=11

<400> 1092  
 atg cgc gcc atg cga gga aaa acg gtg gtc gtc acg ggc gcc tcg gcg 48  
 Met Arg Ala Met Arg Gly Lys Thr Val Val Thr Gly Ala Ser Ala  
 1 5 10 15  
 ggc att ggc gag gcg ctg gcg gtg gtg ctg gcc gga cgc ggc gcc aac 96  
 Gly Ile Gly Glu Ala Leu Ala Val Val Leu Ala Gly Arg Gly Ala Asn  
 20 25 30  
 ctg gtg ctg gcg gcg cga aat gag gaa gcg ctc cag cgg gtg aag gcc 144  
 Leu Val Leu Ala Ala Arg Asn Glu Ala Leu Gln Arg Val Lys Ala  
 35 40 45  
 cgg tgc gag tcg gcc gcc ggg cgc gcg gtg gta gtg ccc acc gat gta 192  
 Arg Cys Glu Ser Ala Gly Gly Arg Ala Val Val Val Pro Thr Asp Val  
 50 55 60  
 ggt gac gcg gag gcc tgc cgc cac ctg gtg gag cgg gcg gtg gag gcc 240  
 Gly Asp Ala Glu Ala Cys Arg His Leu Val Glu Arg Ala Val Glu Ala

## PhoenixTemp32470.tmp.txt

65	70	75	80	
ttt ggc ggc gtc gac	gtg ctg gtc aac aac	gcg ggc gtg acg atg	gac	288
Phe Gly Gly Val Asp	Val Leu Val Asn Asn	Ala Gly Val Thr Met	Asp	
	85	90	95	
gcg cgc gtg gac gag	gtg aag gac ctg tcc	ctc ttc gac cgg ctg	atg	336
Ala Arg Val Asp Glu	Val Lys Asp Leu Ser	Leu Phe Asp Arg Leu	Met	
	100	105	110	
cgc atc aac tac ctg	ggc gcg gtg tac	acc cac cac gcc	ctg	384
Arg Ile Asn Tyr Leu	Gly Ala Val Tyr Cys	Thr His His Ala Leu	Pro	
	115	120	125	
cac ctc aag gcg cgg	cgc gga ctg gtg	gtg gcc gtg tcg	tcc	432
His Leu Lys Ala Arg	Arg Gly Leu Val Val	Ala Val Ser Ser	Leu	
	130	135	140	
ggc aag acg ggc gtg	ccc Pro Asn Arg	agc ggc tac	gcg	480
Gly Lys Thr Gly Val	Pro Asn Arg Ser	Gly Tyr Ala Ala	Ser	
	145	150	155	
gcc atg cac ggc ttc	ttc gac tcg ctg	cgc atc gag	ctg	528
Ala Met His Gly Phe	Phe Asp Ser Leu Arg	Ile Glu Leu Arg	ggc	
	165	170	175	
ggt gtg gac gtg acg	gtg gtg tgc ccc	ggc ttc gtc gcc	acc	576
Gly Val Asp Val Thr	Val Val Cys Pro	Gly Phe Val Ala	Thr	
	180	185	190	
cgc gac agc gcg ctg	ggc gcg gac ggc	cag ccc gtg cgg	cag	624
Arg Asp Ser Ala Leu	Gly Ala Asp Gly	Gln Pro Val Arg	Gln	
	195	200	205	
cac gac gag agc gcg	ggc aac atg gac	gtg gac acc tgc	gtg	672
His Asp Glu Ser Ala	Gly Asn Met Asp	Val Asp Thr Cys	Val	
	210	215	220	
atc ctg cgc gcc atg	gag glu cgc cgc	gag glu gtg gtg	atg	720
Ile Leu Arg Ala Met	Glu Arg Arg Glu	Arg Val Val Met	Thr	
	225	230	235	
aag gcc cgc gtc gcc	cag ttc ctc aag	ctg gtg gcc ccg	ggc	768
Lys Ala Arg Val Ala	Gln Phe Leu Lys	Leu Val Ala Pro	Gly	
	245	250	255	
gac cgc atc acc	ggc aag acc atc	cag gac cgg	cgg	810
Asp Arg Ile Thr Ala	Lys Thr Ile Gln	Asp Arg Arg Arg	tga	
	260	265		

&lt;210&gt; 1093

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Myxococcus xanthus DK 1622

&lt;400&gt; 1093

Met Arg Ala Met Arg	Gly Lys Thr Val	Val Val Thr Gly	Ala Ser Ala
1 Gly Ile Gly Glu	Ala Leu Ala Val	Val Leu Ala Gly	Arg Gly Ala Asn
	5	10	15
	20	25	30
Leu Val Leu Ala Ala	Arg Asn Glu Glu	Ala Leu Gln Arg	Val Lys Ala
	35	40	45
Arg Cys Glu Ser Ala	Gly Gly Arg Ala	Val Val Val Pro	Thr Asp Val
	50	55	60
Gly Asp Ala Glu Ala	Cys Arg His Leu	Val Glu Arg Ala	Val Glu Ala
	65	70	75
Phe Gly Gly Val Asp	Val Leu Val Asn	Asn Ala Gly Val	Thr Met Asp
	85	90	95
Ala Arg Val Asp Glu	Val Lys Asp Leu	Ser Leu Phe Asp	Arg Leu Met
	100	105	110
Arg Ile Asn Tyr Leu	Gly Ala Val Tyr	Cys Thr His His	Ala Leu Pro
	115	120	125
His Leu Lys Ala Arg	Arg Gly Leu Val	Val Ala Val Ser	Ser Leu Thr
	130	135	140
Gly Lys Thr Gly Val	Pro Asn Arg Ser	Gly Tyr Ala Ala	Ser Lys His
	145	150	155
Ala Met His Gly Phe	Phe Asp Ser Leu	Arg Ile Glu Leu	Arg Gly Thr
	165	170	175
Gly Val Asp Val Thr	Val Val Cys Pro	Gly Phe Val Ala	Thr Asn Ile
	180	185	190
Arg Asp Ser Ala Leu	Gly Ala Asp Gly	Gln Pro Val Arg	Gln Ser Lys

## PhoenixTemp32470.tmp.txt

195  
 His Asp Glu Ser Ala Gly Asn 200 Met Asp Val Asp Thr 205 Cys Val Ala Ile  
 210 215 220  
 Ile Leu Arg Ala Met Glu Arg Arg Glu Arg Glu Val Val Met Thr Thr  
 225 230 235 240  
 Lys Ala Arg Val Ala Gln Phe Leu Lys Leu Val Ala Pro Gly Val Val  
 245 250 255  
 Asp Arg Ile Thr 260 Ala Lys Thr Ile Gln 265 Asp Arg Arg Arg

&lt;210&gt; 1094

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Myxococcus xanthus DK 1622

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1094

atg aac cct aca tac gac ttc aaa gga cag gta gcg ctc gtc acc ggc	48
Met Asn Pro Thr Tyr 5 Asp Phe Lys Gly Gln 10 Val Ala Leu Val 15 Thr Gly	
gct agc tct ggc atg ggc ctc gcc acc gcg aag gcc ttc gcc gca gcc	96
Ala Ser Ser Gly Met Gly Leu Ala Thr 25 Ala Lys Ala Phe Ala Ala Ala	
ggc gcc tcc gtg gta ctt gca gat gtc aat acg gca gcg ctc acg tcg	144
Gly Ala Ser 35 Val Val Leu Ala Asp 40 Val Asn Thr Ala Ala Leu Thr Ser	
gct gtc gac gcc ctg aca tcg gcc gga cat tcc gcg ctc ggt gtc acc	192
Ala Val Asp Ala Leu Thr Ser 55 Ala Gly His Ser Ala Leu Gly Val Thr	
tgc gac gtg tcc gac gaa gcc cag gtc gcc gcg ctg gtc cgg cga gca	240
Cys Asp Val Ser Asp Glu Ala Gln Val Ala Ala 75 Leu Val Arg Arg Ala	
gtt gag gcc tat ggc cgg ttg gac atg gcc ttc aac aac gcc ggc att	288
Val Glu Ala Tyr Gly 85 Arg Leu Asp Met Ala Phe Asn Asn Ala Gly Ile	
cag gca ccg ccc acc gat gcg gcg gat gag cct tct gac ctg ttc gac	336
Gln Ala Pro 100 Thr Asp Ala Ala Asp 105 Glu Pro Ser Asp 110 Phe Asp	
agg gtc aac gga atc aac ctt cgg ggg gtc tgg gct tgc atg aag cat	384
Arg Val Asn Gly Ile Asn Leu Arg Gly Val Trp Ala Cys Met Lys His	
gaa ctc aag cag atg cgt cag caa gcc agc gcc ggc atc gtg aac tgc	432
Glu Leu Lys Gln Met Arg Gln 135 Gly Ser Gly Ala Ile Val Asn Cys	
tcg tcg ctc ggt ggt ctc gtc gcc ctg cct ggt cga gcg gcc tat cac	480
Ser Ser Leu Gly Gly Leu Val Gly Leu Pro Gly 155 Arg Ala Ala Tyr His	
gcg tcg aag cac gga gtc atc gcc ctg acg aga agc gct gcg ttg gag	528
Ala Ser Lys His Gly 165 Val Ile Gly Leu Thr 170 Arg Ser Ala Ala Leu Glu	
tac gca cct cgt ggc atc cgc atc aat gcc atc tgt cca gga acc att	576
Tyr Ala Pro Arg 180 Gly Ile Arg Ile Asn 185 Ala Ile Cys Pro Gly Thr Ile	
tct acg ccc atg gtc acg gac atg ctc gcc aag ggg gaa ctt gat ctc	624
Ser Thr Pro Met Val Thr Asp Met Leu Ala Lys Gly Glu Leu Asp Leu	
gcc ggg gcg att gcg aat cag ccc atc ggg cgc ctg gga gag gct gag	672
Ala Gly Ala Ile Ala Asn Gln Pro Ile Gly Arg Leu Gly Glu Ala Glu	
gag att gct gcc tcg gtg ctc tgg ctt tgc agc cca gcc gca agt ttc	720
Glu Ile Ala Ala Ser Val Leu Trp Leu Cys Ser 235 Pro Gly Ala Ser Phe	
gtt act ggc gtg gca ctt ccg gtc gac ggt gga tac acg gcg cgc	765
Val Thr Gly Val 245 Ala Leu Pro Val Asp 250 Gly Tyr Thr Ala Arg	

tga

768

<210> 1095  
 <211> 255  
 <212> PRT  
 <213> Myxococcus xanthus DK 1622

<400> 1095  
 Met Asn Pro Thr Tyr Asp Phe Lys Gly Gln Val Ala Leu Val Thr Gly  
 1 5 10 15  
 Ala Ser Ser Gly Met Gly Leu Ala Thr Lys Ala Phe Ala Ala Ala  
 20 25 30  
 Gly Ala Ser Val Val Leu Ala Asp Val Asn Thr Ala Ala Leu Thr Ser  
 35 40 45  
 Ala Val Asp Ala Leu Thr Ser Ala Gly His Ser Ala Leu Gly Val Thr  
 50 55 60  
 Cys Asp Val Ser Asp Glu Ala Gln Val Ala Ala Leu Val Arg Arg Ala  
 65 70 75 80  
 Val Glu Ala Tyr Gly Arg Leu Asp Met Ala Phe Asn Asn Ala Gly Ile  
 85 90 95  
 Gln Ala Pro Pro Thr Asp Ala Ala Asp Glu Pro Ser Asp Leu Phe Asp  
 100 105 110  
 Arg Val Asn Gly Ile Asn Leu Arg Gly Val Trp Ala Cys Met Lys His  
 115 120 125  
 Glu Leu Lys Gln Met Arg Gln Gln Gly Ser Gly Ala Ile Val Asn Cys  
 130 135 140  
 Ser Ser Leu Gly Gly Leu Val Gly Leu Pro Gly Arg Ala Ala Tyr His  
 145 150 155 160  
 Ala Ser Lys His Gly Val Ile Gly Leu Thr Arg Ser Ala Ala Leu Glu  
 165 170 175  
 Tyr Ala Pro Arg Gly Ile Arg Ile Asn Ala Ile Cys Pro Gly Thr Ile  
 180 185 190  
 Ser Thr Pro Met Val Thr Asp Met Leu Ala Lys Gly Glu Leu Asp Leu  
 195 200 205  
 Ala Gly Ala Ile Ala Asn Gln Pro Ile Gly Arg Leu Gly Glu Ala Glu  
 210 215 220  
 Glu Ile Ala Ala Ser Val Leu Trp Leu Cys Ser Pro Gly Ala Ser Phe  
 225 230 235 240  
 Val Thr Gly Val Ala Leu Pro Val Asp Gly Gly Tyr Thr Ala Arg  
 245 250 255

<210> 1096  
 <211> 828  
 <212> DNA  
 <213> Myxococcus xanthus DK 1622

<220>  
 <221> CDS  
 <222> (1)..(828)  
 <223> transl\_table=11

<400> 1096  
 atg gtg cgc gct ggc atg aag acc caa ccc ttc aag ggc cgg gtg gtc 48  
 Met Val Arg Ala Gly Met Lys Thr Gln Pro Phe Lys Gly Arg Val Val 15  
 1 5 10  
 ctc atc acg ggg gct tcc gga ggc att ggc agg acg gcg gcg agg gcc 96  
 Leu Ile Thr Gly Ala Ser Gly Gly Ile Gly Arg Thr Ala Ala Arg Ala 20 25 30  
 tac gcg gcc gcg ggc gcg gat gtc gtc ctg gcc gcg cgc cgg ctc ccc 144  
 Tyr Ala Ala Ala Gly Ala Asp Val Val Leu Ala Ala Arg Arg Leu Pro 35 40 45  
 gag ctc gag gac gcg gcc cgt gaa gtg gcg tca ctg ggc gtg agg gca 192  
 Glu Leu Glu Asp Ala Ala Arg Glu Val Ala Ser Leu Gly Val Arg Ala 50 55 60  
 ctg ccg gtg cgg tgc gac gtc acg gtg ggc gac gac gtg acg cgg ctg 240  
 Leu Pro Val Arg Cys Asp Val Thr Val Gly Asp Asp Val Thr Arg Leu 65 70 75 80



## PhoenixTemp32470.tmp.txt

gtg	cg	gag	acg	gac	gcc	gcc	ttc	ggt	ggg	ctg	gat	gtg	ctc	gtc	aac	288
Val	Arg	Glu	Thr	Asp	Ala	Ala	Phe	Gly	Gly	Leu	Asp	Val	Leu	Val	Asn	
				85					90					95		
aac	gcg	ggc	caa	ggt	ctc	tac	gga	ccg	ctg	gag	ggc	ggt	ggg	gag	gag	336
Asn	Ala	Gly	Gln	Gly	Leu	Tyr	Gly	Pro	Leu	Glu	Gly	Val	Gly	Glu	Glu	
			100					105					110			
caa	ctc	cgg	cag	gtc	ttc	gag	ctg	aac	gtc	ttc	agc	ctg	tgg	cgg	atg	384
Gln	Leu	Arg	Gln	Val	Phe	Glu	Leu	Asn	Val	Phe	Ser	Leu	Trp	Arg	Met	
			115				120					125				
acg	cg	gag	gca	ctg	ccg	ctg	ctg	cg	aag	cgg	cgt	ggc	gct	cag	gtg	432
Thr	Arg	Glu	Ala	Leu	Pro	Leu	Leu	Arg	Lys	Arg	Arg	Gly	Ala	Gln	Val	
				130		135					140					
gtc	aac	gtc	agc	tcc	gtg	ctg	ggc	cac	cgg	gga	ctg	ccg	ctg	ctg	ggc	480
Val	Asn	Val	Ser	Ser	Val	Leu	Gly	His	Arg	Gly	Leu	Pro	Leu	Leu	Gly	
145					150					155					160	
ggc	tac	tgc	gcg	tcc	aag	gcc	gcg	gtg	aat	gcg	atg	acg	gag	tcg	ctg	528
Gly	Tyr	Cys	Ala	Ser	Lys	Ala	Ala	Val	Asn	Ala	Met	Thr	Glu	Ser	Leu	
				165					170					175		
cg	gcg	gag	ctg	gcc	gag	ggc	atc	cgg	gta	ctg	ctc	gtg	tcg	cct		576
Arg	Ala	Glu	Leu	Ala	Ala	Glu	Gly	Ile	Arg	Val	Leu	Leu	Val	Ser	Pro	
			180				185					190				
ggc	ttc	acc	gaa	agc	gac	ttc	cgg	gag	aac	cg	ctt	cat	gcg	gag	ggc	624
Gly	Phe	Thr	Glu	Ser	Asp	Phe	Arg	Glu	Asn	Arg	Leu	His	Ala	Glu	Gly	
			195				200					205				
tgg	cga	cag	gac	gcc	att	ccg	ctg	aag	gcc	atg	tcc	gcg	gaa	gaa	gtc	672
Trp	Arg	Gln	Asp	Ala	Ile	Pro	Leu	Lys	Ala	Met	Ser	Ala	Glu	Glu	Val	
						215					220					
gcc	gac	gca	atg	gtt	cgt	gcg	agc	cgg	agt	gga	cgg	cg	gac	acc	gtg	720
Ala	Asp	Ala	Met	Val	Arg	Ala	Ser	Arg	Ser	Gly	Arg	Arg	Asp	Thr	Val	
225					230					235				240		
ctc	acg	ctg	ccc	ggc	cgg	gtg	atg	gtg	gtg	gcc	aac	cgg	tgg	gtg	cct	768
Leu	Thr	Leu	Pro	Gly	Arg	Val	Met	Val	Val	Ala	Asn	Arg	Trp	Val	Pro	
				245				250						255		
tcc	ctg	ttc	gac	cgt	gtc	gcc	cg	cg	atg	gcg	ctt	gct	tcg	aag	aag	816
Ser	Leu	Phe	Asp	Arg	Val	Ala	Arg	Arg	Met	Ala	Leu	Ala	Ser	Lys	Lys	
			260				265						270			
aag	gac	gca	tga													828
Lys	Asp	Ala														
			275													

&lt;210&gt; 1097

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Myxococcus xanthus DK 1622

&lt;400&gt; 1097

Met	Val	Arg	Ala	Gly	Met	Lys	Thr	Gln	Pro	Phe	Lys	Gly	Arg	Val	Val	
1				5					10					15		
Leu	Ile	Thr	Gly	Ala	Ser	Gly	Gly	Ile	Gly	Arg	Thr	Ala	Ala	Arg	Ala	
			20					25					30			
Tyr	Ala	Ala	Ala	Gly	Ala	Asp	Val	Val	Leu	Ala	Ala	Arg	Arg	Leu	Pro	
			35				40					45				
Glu	Leu	Glu	Asp	Ala	Ala	Arg	Glu	Val	Ala	Ser	Leu	Gly	Val	Arg	Ala	
			50			55					60					
Leu	Pro	Val	Arg	Cys	Asp	Val	Thr	Val	Gly	Asp	Asp	Val	Thr	Arg	Leu	
65					70					75				80		
Val	Arg	Glu	Thr	Asp	Ala	Ala	Phe	Gly	Gly	Leu	Asp	Val	Leu	Val	Asn	
				85					90					95		
Asn	Ala	Gly	Gln	Gly	Leu	Tyr	Gly	Pro	Leu	Glu	Gly	Val	Gly	Glu	Glu	
			100					105					110			
Gln	Leu	Arg	Gln	Val	Phe	Glu	Leu	Asn	Val	Phe	Ser	Leu	Trp	Arg	Met	
			115				120					125				
Thr	Arg	Glu	Ala	Leu	Pro	Leu	Leu	Arg	Lys	Arg	Arg	Gly	Ala	Gln	Val	
					135						140					
Val	Asn	Val	Ser	Ser	Val	Leu	Gly	His	Arg	Gly	Leu	Pro	Leu	Leu	Gly	
145					150					155					160	
Gly	Tyr	Cys	Ala	Ser	Lys	Ala	Ala	Val	Asn	Ala	Met	Thr	Glu	Ser	Leu	
				165					170					175		
Arg	Ala	Glu	Leu	Ala	Ala	Glu	Gly	Ile	Arg	Val	Leu	Leu	Val	Ser	Pro	

## PhoenixTemp32470.tmp.txt

180  
 Gly Phe Thr Glu Ser Asp Phe Arg Glu Asn Arg Leu His Ala Glu Gly  
 195  
 Trp Arg Gln Asp Ala Ile Pro Leu Lys Ala Met Ser Ala Glu Glu Val  
 210  
 Ala Asp Ala Met Val Arg Ala Ser Arg Ser Gly Arg Arg Asp Thr Val  
 225  
 Leu Thr Leu Pro Gly Arg Val Met Val Val Ala Asn Arg Trp Val Pro  
 240  
 Ser Leu Phe Asp Arg Val Ala Arg Arg Met Ala Leu Ala Ser Lys Lys  
 260  
 Lys Asp Ala  
 275

&lt;210&gt; 1098

&lt;211&gt; 861

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(861)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1098

atg aac gcc ggg cag acc ttc ggc ggc ggt gtc gcg gtc atc acg ggg	48
Met Asn Ala Gly Gln Thr Phe Gly Gly Gly Val Ala Val Ile Thr Gly	
1 5 10 15	
gcg ggc gcc ggc atc ggc gcc ggc ctg gcg cgc cac gcc gcc cgc ctg	96
Ala Gly Ala Gly Ile Gly Ala Gly Leu Ala Arg His Ala Ala Arg Leu	
20 25 30	
ggc atg acg gtg gtg ctc gcc gac gtc gac ggc gac gcg atc gcc gcg	144
Gly Met Thr Val Val Leu Ala Asp Val Asp Gly Asp Ala Ile Ala Ala	
35 40 45	
ctg cgc gac gaa ctg tcg gac cag ggc gcc acc gct ttc gac atg gtc	192
Leu Arg Asp Glu Leu Ser Asp Gln Gly Ala Thr Ala Phe Asp Met Val	
50 55 60	
tgc gac gtc agg gat ttc gcg gcc gtc gag gag ctg gcg caa cgc acc	240
Cys Asp Val Arg Asp Phe Ala Ala Val Glu Glu Leu Ala Gln Arg Thr	
65 70 75 80	
tac cgc gac atc ggc ccg gtg cgc ctg ctc gtc aac aac gcc ggc gtc	288
Tyr Arg Asp Ile Gly Pro Val Arg Leu Leu Val Asn Asn Ala Gly Val	
85 90 95	
gaa cag ttc ggc tac ctg tgg gac acc ccg gtc gag aac tgg cag cgt	336
Glu Gln Phe Gly Tyr Leu Trp Asp Thr Pro Val Glu Asn Trp Gln Arg	
100 105 110	
gtc gtc gac atc aac gtc agc ggc gtc ttc cac ggt gtc cgc gca ttc	384
Val Val Asp Ile Asn Val Ser Gly Val Phe His Gly Val Arg Ala Phe	
115 120 125	
ctg ccg atg atg atc gag gcg cgc acc ccg gcg tgg gtg tgg aat ctc	432
Leu Pro Met Met Ile Glu Ala Arg Thr Pro Ala Trp Val Trp Asn Leu	
130 135 140	
agc tcg atc ggc ggc gtc gcc gtc gtc ccc ctg cag gcg ccc tac atc	480
Ser Ser Ile Gly Gly Val Ala Val Val Pro Leu Gln Ala Pro Tyr Ile	
145 150 155 160	
atg agc aaa cac gcc gtg ctc gcc ctg acg gag tgc ctg gcg ctc gaa	528
Met Ser Lys His Ala Val Leu Ala Leu Thr Glu Cys Leu Ala Leu Glu	
165 170 175	
gtc caa ctg gcc gaa cac gac cac atc cac gtg cag gcg gtg ctg ccc	576
Val Gln Leu Ala Glu His Asp His Ile His Val Gln Ala Val Leu Pro	
180 185 190	
ggc gcg gtc acg tcc aac atc ttc gag tcg gcg ggc ggc gtc acg gac	624
Gly Ala Val Thr Ser Asn Ile Phe Glu Ser Ala Gly Gly Val Thr Asp	
195 200 205	
ggg gac gtc ggc gcg gca gag tcc cag ccg ctg gcg atg ctc gac atc	672
Gly Asp Val Gly Ala Ala Glu Ser Gln Arg Leu Ala Met Leu Asp Ile	
210 215 220	
aag gcg gcc gcg atg gac ccc ctg gcc gcg gca gag gtg gtg ttc gac	720
Lys Ala Ala Ala Met Asp Pro Leu Ala Ala Ala Glu Val Val Phe Asp	

## PhoenixTemp32470.tmp.txt

225	cag gcc gcc gac ggc	230	cgg ttc tac ctg ctc	235	acg cag ccc gag tac	240	gtc	768
Gln Ala Ala Asp Gly	Arg Phe Tyr Leu Leu	Thr Gln Pro Glu Tyr	Val					
	245		250		255			
ggc aac gcg atg ggc gaa cgc gcc gat gtg ctg acc acg cag cgg gca	816							
Gly Asn Ala Met Ala Glu Arg Ala Asp Val Leu Thr Thr Gln Arg Ala								
	260		265		270			
ccg ctg ctg cgc acc aaa ccg cgt ttc gac ccc gca cag cac tga	861							
Pro Leu Leu Arg Thr Lys Pro Arg Phe Asp Pro Ala Gln His								
	275		280		285			

&lt;210&gt; 1099

&lt;211&gt; 286

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 1099

Met Asn Ala Gly Gln Thr Phe Gly Gly Gly Val Ala Val Ile Thr Gly	
1 Ala Gly Ala Gly Ile Gly Ala Gly Leu Ala Arg His Ala Ala Arg Leu	
	5
	10
Gly Met Thr Val Val Leu Ala Asp Val Asp Gly Asp Ala Ile Ala Ala	
	20
	25
Leu Arg Asp Glu Leu Ser Asp Gln Gly Ala Thr Ala Phe Asp Met Val	
	30
	35
	40
	45
Cys Asp Val Arg Asp Phe Ala Ala Val Glu Glu Leu Ala Gln Arg Thr	
65 Tyr Arg Asp Ile Gly Pro Val Arg Leu Leu Val Asn Asn Ala Gly Val	
	50
	55
	60
	65
	70
	75
	80
	85
	90
	95
Glu Gln Phe Gly Tyr Leu Trp Asp Thr Pro Val Glu Asn Trp Gln Arg	
	100
	105
Val Val Asp Ile Asn Val Ser Gly Val Phe His Gly Val Arg Ala Phe	
	110
	115
	120
	125
Leu Pro Met Met Ile Glu Ala Arg Thr Pro Ala Trp Val Trp Asn Leu	
	130
	135
	140
Ser Ser Ile Gly Gly Val Ala Val Val Pro Leu Gln Ala Pro Tyr Ile	
145 Met Ser Lys His Ala Val Leu Ala Leu Thr Glu Cys Leu Ala Leu Glu	
	150
	155
	160
	165
	170
	175
Val Gln Leu Ala Glu His Asp His Ile His Val Gln Ala Val Leu Pro	
	180
	185
	190
Gly Ala Val Thr Ser Asn Ile Phe Glu Ser Ala Gly Gly Val Thr Asp	
	195
	200
	205
Gly Asp Val Gly Ala Ala Glu Ser Gln Arg Leu Ala Met Leu Asp Ile	
	210
	215
	220
Lys Ala Ala Ala Met Asp Pro Leu Ala Ala Ala Glu Val Val Phe Asp	
225 Gln Ala Ala Asp Gly Arg Phe Tyr Leu Leu Thr Gln Pro Glu Tyr Val	
	230
	235
	240
	245
	250
	255
Gly Asn Ala Met Ala Glu Arg Ala Asp Val Leu Thr Thr Gln Arg Ala	
	260
	265
	270
Pro Leu Leu Arg Thr Lys Pro Arg Phe Asp Pro Ala Gln His	
	275
	280
	285

&lt;210&gt; 1100

&lt;211&gt; 885

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(885)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1100

ttg cga cgc atg act tcc gta cac ggc aag gtc gtg ttg atc acc ggt	48
Met Arg Arg Met Thr Ser Val His Gly Lys Val Val Leu Ile Thr Gly	
	5
	10
ggg gcc cga ggg gtc ggc gaa gaa ctg gcc cgc cgg tta cat gcc aag	96
	15

## PhoenixTemp32470.tmp.txt

Gly	Ala	Arg	Gly	Val	Gly	Glu	Glu	Leu	Ala	Arg	Arg	Leu	His	Ala	Lys	
ggc	gcc	aag	ctg	gtg	ctc	acc	gac	ctg	gat	gac	ggt	ccg	ctc	tcg	gcg	144
Gly	Ala	Lys	Leu	Val	Leu	Thr	Asp	Leu	Asp	Asp	Gly	Pro	Leu	Ser	Ala	
ctg	gcc	gca	gac	ctc	ggc	gcc	gag	cgg	gtg	ttg	acg	gtg	gtc	gcc	gac	192
Leu	Ala	Ala	Asp	Leu	Gly	Ala	Glu	Arg	Val	Leu	Thr	Val	Val	Ala	Asp	
gtg	tgc	gac	ctc	gag	acc	atg	cag	tcc	gct	gcc	gaa	cag	gcc	gtg	agc	240
Val	Cys	Asp	Leu	Glu	Thr	Met	Gln	Ser	Ala	Ala	Glu	Gln	Ala	Val	Ser	
cg	ttc	ggc	ggg	atc	gac	atc	gtc	atc	gcg	aac	gcg	ggg	atc	gcc	agc	288
Arg	Phe	Gly	Gly	Ile	Asp	Ile	Val	Ile	Ala	Asn	Ala	Gly	Ile	Ala	Ser	
tac	gga	tcg	gtg	ctg	gtg	gtc	gat	ccc	gac	gcc	ttc	cgg	cgg	gtg	ctc	336
Tyr	Gly	Ser	Val	Leu	Val	Val	Asp	Pro	Asp	Ala	Phe	Arg	Arg	Val	Leu	
gac	gtc	aac	gtg	gtc	ggc	gtg	ttc	aac	acc	gtg	cgc	gcc	gcg	ctc	ccg	384
Asp	Val	Asn	Val	Val	Gly	Val	Phe	Asn	Thr	Val	Arg	Ala	Ala	Leu	Pro	
tcg	gtc	atc	gag	cgc	aag	ggc	tac	atc	ctg	gtg	gtg	tcg	tcg	ctg	gcg	432
Ser	Val	Ile	Glu	Arg	Lys	Gly	Tyr	Ile	Leu	Val	Val	Ser	Ser	Leu	Ala	
gcg	ttc	gcc	gcc	gcg	ccg	ggg	atg	gcg	ccc	tac	gac	gcg	tcg	aag	gcc	480
Ala	Phe	Ala	Ala	Ala	Pro	Gly	Met	Ala	Pro	Tyr	Asp	Ala	Ser	Lys	Ala	
ggt	gtg	gag	cac	ttc	gcc	aac	gcc	ctg	cgc	ctc	gag	gtc	gcc	cac	cac	528
Gly	Val	Glu	His	Phe	Ala	Asn	Ala	Leu	Arg	Leu	Glu	Val	Ala	His	His	
ggc	gtg	acg	gtc	tgc	gcg	cac	atg	tcg	tgg	atc	gac	acc	ccg	ctc	ctc	576
Gly	Val	Thr	Val	Gly	Cys	Ala	His	Met	Ser	Trp	Ile	Asp	Thr	Pro	Leu	
gtg	cag	gac	acc	aag	gcc	gat	ctg	ccg	agt	ttc	cgc	acc	atg	ctc	gac	624
Val	Gln	Asp	Thr	Lys	Ala	Asp	Leu	Pro	Ser	Phe	Arg	Thr	Met	Leu	Asp	
tca	ctg	ccc	ggc	ccg	ctc	agc	aag	acc	acc	tcg	gtg	cag	aag	tgt	ggc	672
Ser	Leu	Pro	Gly	Pro	Leu	Ser	Lys	Thr	Thr	Ser	Val	Gln	Lys	Cys	Gly	
gag	gtg	ttc	gtc	aag	ggc	atc	gaa	cgc	cgt	agg	gaa	cgc	atc	tac	tgc	720
Glu	Val	Phe	Val	Lys	Gly	Ile	Glu	Arg	Arg	Arg	Glu	Arg	Ile	Tyr	Cys	
ccg	ggt	tgg	gtc	ggc	ctg	atc	cgc	tgg	gcc	aaa	ccg	ata	ctc	acc	acg	768
Pro	Gly	Trp	Val	Gly	Leu	Ile	Arg	Trp	Ala	Lys	Pro	Ile	Leu	Thr	Thr	
cgg	atc	ggt	cag	gcc	tcg	gtg	ctc	aag	acg	gcg	ccg	aag	gtg	ttg	ccc	816
Arg	Ile	Gly	Gln	Ala	Ser	Val	Leu	Lys	Thr	Ala	Pro	Lys	Val	Leu	Pro	
cag	atg	gac	gcc	gag	gtg	acc	gca	ctg	aag	cgc	tcg	ctg	ggc	gcc	cgc	864
Gln	Met	Asp	Ala	Glu	Val	Thr	Ala	Leu	Lys	Arg	Ser	Leu	Gly	Ala	Arg	
acc	cac	ggg	ctg	aag	aaa	tga										885
Thr	His	Gly	Leu	Lys	Lys											

&lt;210&gt; 1101

&lt;211&gt; 294

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 1101

Met	Arg	Arg	Met	Thr	Ser	Val	His	Gly	Lys	Val	Val	Leu	Ile	Thr	Gly	
1				5					10				15			
Gly	Ala	Arg	Gly	Val	Gly	Glu	Glu	Leu	Ala	Arg	Arg	Leu	His	Ala	Lys	
			20					25					30			
Gly	Ala	Lys	Leu	Val	Leu	Thr	Asp	Leu	Asp	Asp	Gly	Pro	Leu	Ser	Ala	
		35					40					45				
Leu	Ala	Ala	Asp	Leu	Gly	Ala	Glu	Arg	Val	Leu	Thr	Val	Val	Ala	Asp	
	50					55					60					
Val	Cys	Asp	Leu	Glu	Thr	Met	Gln	Ser	Ala	Ala	Glu	Gln	Ala	Val	Ser	

## PhoenixTemp32470.tmp.txt

```

65      70      75      80
Arg Phe Gly Gly Ile Asp Ile Val Ile Ala Asn Ala Gly Ile Ala Ser
      85      90      95
Tyr Gly Ser Val Leu Val Val Asp Pro Asp Ala Phe Arg Arg Val Leu
      100      105      110
Asp Val Asn Val Val Gly Val Phe Asn Thr Val Arg Ala Ala Leu Pro
      115      120      125
Ser Val Ile Glu Arg Lys Gly Tyr Ile Leu Val Val Ser Ser Leu Ala
      130      135      140
Ala Phe Ala Ala Ala Pro Gly Met Ala Pro Tyr Asp Ala Ser Lys Ala
      145      150      155
Gly Val Glu His Phe Ala Asn Ala Leu Arg Leu Glu Val Ala His His
      160      165      170
Gly Val Thr Val Gly Cys Ala His Met Ser Trp Ile Asp Thr Pro Leu
      175      180      185
Val Gln Asp Thr Lys Ala Asp Leu Pro Ser Phe Arg Thr Met Leu Asp
      190      195      200
Ser Leu Pro Gly Pro Leu Ser Lys Thr Thr Ser Val Gln Lys Cys Gly
      205      210      215
Glu Val Phe Val Lys Gly Ile Glu Arg Arg Arg Glu Arg Ile Tyr Cys
      220      225      230
Pro Gly Trp Val Gly Leu Ile Arg Trp Ala Lys Pro Ile Leu Thr Thr
      235      240      245
Arg Ile Gly Gln Ala Ser Val Leu Lys Thr Ala Pro Lys Val Leu Pro
      250      255      260
Gln Met Asp Ala Glu Val Thr Ala Leu Lys Arg Ser Leu Gly Ala Arg
      265      270      275
Thr His Gly Leu Lys Lys
      280      285      290

```

&lt;210&gt; 1102

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1102

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atg gac ttc gcg ggc aga cag gcg atc gtc acc ggc gcc ggt tcg ggc      48
Met Asp Phe Ala Gly Arg Gln Ala Ile Val Thr Gly Ala Gly Ser Gly
      1      5      10      15
atc ggc gcc gct ctg tgc cgg gca ctg gtg gcg gcc ggg gcc gag gtg      96
Ile Gly Ala Ala Leu Cys Arg Ala Leu Val Ala Ala Gly Ala Glu Val
      20      25      30
ttg tgc acc gac atc gac gcc gac gcc gcc gag gcg acc gcg cgt ggg      144
Leu Cys Thr Asp Ile Asp Ala Asp Ala Ala Glu Ala Thr Ala Arg Gly
      35      40      45
ctc ggc gcc cgc tgg tca ccc ctg gac gtc acc gac gcc gcc gcg gtg      192
Leu Gly Ala Arg Trp Ser Pro Leu Asp Val Thr Asp Ala Ala Ala Val
      50      55      60
cag cgg gcc gtc gac gag gtg gtg gcg cgc gcc ggt cga ctg gac ctg      240
Gln Arg Ala Val Asp Glu Val Val Ala Arg Ala Gly Arg Leu Asp Leu
      65      70      75      80
atg ttc aac aac gcg ggc atc tcc tgg ggc ggt gac acc gaa ctg ctg      288
Met Phe Asn Asn Ala Gly Ile Ser Trp Gly Gly Asp Thr Glu Leu Leu
      85      90      95
acc ctc gac cag tgg aac gcg atc atc gac atc aac atc cgc ggt gtg      336
Thr Leu Asp Gln Trp Asn Ala Ile Ile Asp Ile Asn Ile Arg Gly Val
      100      105      110
gtg cac gga gtc gcc gcg gcg tac ccc cag atg atc cgc cag ggg cac      384
Val His Gly Val Ala Ala Ala Tyr Pro Gln Met Ile Arg Gln Gly His
      115      120      125
ggc cac atc gtc aac acc gcc tcg atg gcg ggc ctc acc gcg gcg ggc      432
Gly His Ile Val Asn Thr Ala Ser Met Ala Gly Leu Thr Ala Ala Gly
      130      135      140
ctg atc acc agc tat gtg atg acc aaa cac gcg gtc gtc ggc ctg tcg      480

```

PhoenixTemp32470.tmp.txt

Leu 145	Ile	Thr	Ser	Tyr	Val 150	Met	Thr	Lys	His	Ala 155	Val	Val	Gly	Leu	Ser 160	
ctg	gcg	ctg	cg	tcg	gag	gcc	gtc	gca	cac	ggg	gtg	ggg	gtg	ctc	gcc	528
Leu	Ala	Leu	Arg	Ser 165	Glu	Ala	Val	Ala	His 170	Gly	Val	Gly	Val	Leu 175	Ala	
gtc	tgc	ccg	gcc	gcg	gtc	gag	acg	ccg	atc	ctc	gac	aag	ggc	gcc	gtc	576
Val	Cys	Pro	Ala 180	Ala	Val	Glu	Thr	Pro 185	Ile	Leu	Asp	Lys	Gly 190	Ala	Val	
ggc	ggg	ttc	gtc	ggg	gcg	gat	tat	tac	ctg	cag	ggc	cag	cg	gtc	aag	624
Gly	Gly	Phe 195	Val	Gly	Arg	Asp	Tyr 200	Tyr	Leu	Gln	Gly	Gln	Arg	Val	Lys	
gcc	cct	tac	gac	gcc	gac	cgg	ctg	gcg	cg	gac	acc	ctg	cg	gcc	gtg	672
Ala	Pro 210	Tyr	Asp	Ala	Asp	Arg 215	Leu	Ala	Arg	Asp	Thr 220	Leu	Arg	Ala	Val	
cag	cg	aac	aag	gcc	gtg	ctg	gtc	aaa	ccc	cgg	cag	gcc	cac	gcc	gca	720
Gln	Arg	Asn	Lys	Ala	Val 230	Leu	Val	Lys	Pro	Arg 235	Gln	Ala	His	Ala	Ala 240	
225	tg	gtt	ttc	gcg	cg	ctc	gcg	ccc	ggg	ctg	atg	cag	cg	atg	gcc	768
Trp	Val	Phe	Ala	Arg 245	Leu	Ala	Pro	Gly	Leu 250	Met	Gln	Arg	Met	Gly 255	Ala	
cg	ttc	gtc	gcc	gaa	cag	cg	gcc	ggg	cag	cg	gcg	cag	acc	gtc	ggc	816
Arg	Phe	Val	Ala 260	Glu	Gln	Arg	Ala	Gly 265	Gln	Arg	Ala	Gln	Thr 270	Val	Gly	
acc	ggg	tag														825
Thr	Gly															

<210> 1103  
 <211> 274  
 <212> PRT  
 <213> Mycobacterium sp. MCS

<400> 1103

Met 1	Asp	Phe	Ala	Gly 5	Arg	Gln	Ala	Ile	Val 10	Thr	Gly	Ala	Gly	Ser 15	Gly	
Ile	Gly	Ala	Ala 20	Leu	Cys	Arg	Ala	Leu 25	Val	Ala	Ala	Gly	Ala 30	Glu	Val	
Leu	Cys	Thr 35	Asp	Ile	Asp	Ala	Asp 40	Ala	Ala	Glu	Ala	Thr 45	Ala	Arg	Gly	
Leu	Gly 50	Ala	Arg	Trp	Ser	Pro 55	Leu	Asp	Val	Thr	Asp 60	Ala	Ala	Ala	Val	
Gln	Arg	Ala	Val	Asp	Glu 70	Val	Val	Ala	Arg	Ala 75	Gly	Arg	Leu	Asp	Leu 80	
65	Met	Phe	Asn	Asn	Ala 85	Gly	Ile	Ser	Trp	Gly 90	Gly	Asp	Thr	Glu	Leu 95	Leu
Thr	Leu	Asp	Gln 100	Trp	Asn	Ala	Ile	Ile 105	Asp	Ile	Asn	Ile	Arg	Gly	Val	
Val	His	Gly 115	Val	Ala	Ala	Ala	Tyr 120	Pro	Gln	Met	Ile	Arg	Gln 125	Gly	His	
Gly	His 130	Ile	Val	Asn	Thr	Ala 135	Ser	Met	Ala	Gly	Leu 140	Thr	Ala	Ala	Gly	
Leu 145	Ile	Thr	Ser	Tyr	Val 150	Met	Thr	Lys	His	Ala 155	Val	Val	Gly	Leu	Ser 160	
Leu	Ala	Leu	Arg	Ser 165	Glu	Ala	Val	Ala	His 170	Gly	Val	Gly	Val	Leu 175	Ala	
Val	Cys	Pro	Ala 180	Ala	Val	Glu	Thr	Pro 185	Ile	Leu	Asp	Lys	Gly 190	Ala	Val	
Gly	Gly	Phe 195	Val	Gly	Arg	Asp	Tyr 200	Tyr	Leu	Gln	Gly	Gln 205	Arg	Val	Lys	
Ala	Pro 210	Tyr	Asp	Ala	Asp	Arg 215	Leu	Ala	Arg	Asp	Thr 220	Leu	Arg	Ala	Val	
Gln	Arg	Asn	Lys	Ala	Val 230	Leu	Val	Lys	Pro	Arg	Gln	Ala	His	Ala	Ala 240	
225	Trp	Val	Phe	Ala	Arg 245	Leu	Ala	Pro	Gly	Leu 250	Met	Gln	Arg	Met	Ala 255	Ala
Arg	Phe	Val	Ala 260	Glu	Gln	Arg	Ala	Gly 265	Gln	Arg	Ala	Gln	Thr 270	Val	Gly	
Thr	Gly															

## PhoenixTemp32470.tmp.txt

<210> 1104  
 <211> 798  
 <212> DNA  
 <213> Rubrobacter xylanophilus DSM 9941

<220>  
 <221> CDS  
 <222> (1)..(798)  
 <223> transl\_table=11

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 ggc atc ggc cgg cgg gtg gcc ctg gag ctc gcc gcg agg ggg tac gcc 96  
 Gly Ile Gly Arg Arg Val Ala Leu Glu Leu Ala Ala Arg Gly Tyr Ala  
 20 25 30  
 gta gcg gcc aac gac ctc cgg gct ccg ggg gcg acg ctg gag gag ctg 144  
 Val Ala Ala Asn Asp Leu Arg Ala Pro Gly Ala Thr Leu Glu Glu Leu  
 35 40 45  
 gag ggc gtg ggc gcg agg gcg ctc gcc ctc ccc ggc gac gtc gcc gac 192  
 Glu Gly Val Gly Ala Arg Ala Leu Ala Leu Pro Gly Asp Val Ala Asp  
 50 55 60  
 gag agg gcg gtg cgc gcc atg gtc cgg gcg gtg gag gag gcc ttc ggg 240  
 Glu Arg Ala Val Arg Gly Met Val Arg Ala Val Glu Glu Ala Phe Gly  
 65 70 75 80  
 cgg gtg gac gtg ctc gtg aac aac gcg ggg atc agc ctc atc aaa ccc 288  
 Arg Val Asp Val Leu Val Asn Asn Ala Gly Ile Ser Leu Ile Lys Pro  
 85 90 95  
 gcc gag gag acc acc ccc gcc gag tgg cgg cgc gtc gtg gag gtg aac 336  
 Ala Glu Glu Thr Thr Pro Ala Glu Trp Arg Arg Val Val Glu Val Asn  
 100 105 110  
 ctc acc ggc ccc ttc ctg acg tgc cgc tac ttc ggc ttc ctg atg ctc 384  
 Leu Thr Gly Pro Phe Leu Thr Cys Arg Tyr Phe Gly Phe Leu Met Leu  
 115 120 125  
 cgg cag ggc tcc ggg agc atc gtg aac gtg agc tcg gtc gcc ggg ctg 432  
 Arg Gln Gly Ser Gly Ser Ile Val Asn Val Ser Ser Val Ala Gly Leu  
 130 135 140  
 ctc ggg atc tcc gac cgg gcc gcc tac aac gcc agc aag cac ggc ctc 480  
 Leu Gly Ile Ser Asp Arg Ala Ala Tyr Asn Ala Ser Lys His Gly Leu  
 145 150 155 160  
 gtc ggg ctc acc cgg acc ctg gcc gcc gag tgg ggc ggc cgc ggc gtg 528  
 Val Gly Leu Thr Arg Thr Leu Ala Ala Glu Trp Gly Gly Arg Gly Val  
 165 170 175  
 agg gtc aac gcc gtc tgc ccc ggg tgg aag acc gag atg gac gcc 576  
 Arg Val Asn Ala Val Cys Pro Gly Trp Val Lys Thr Glu Met Asp Ala  
 180 185 190  
 gag gac cag gcc ggg ggc ggc tac acc gac gag gac atc gcc ggc cgc 624  
 Glu Asp Gln Ala Gly Gly Gly Tyr Thr Asp Glu Asp Ile Ala Gly Arg  
 195 200 205  
 acc ccc atg ggg cgc ttc gcc acc ccc gag gac gtg gcc gcc gcc gtg 672  
 Thr Pro Met Gly Arg Phe Ala Thr Pro Glu Asp Val Ala Ala Ala Val  
 210 215 220  
 gcc ttt ctc gcc gat tcc ggg cag agc ggc tac gta aac gga cat gcg 720  
 Ala Phe Leu Ala Asp Ser Gly Gln Ser Gly Tyr Val Asn Gly His Ala  
 225 230 235 240  
 ctc tcg gtg gac ggc ggc tgg tac gcc gac ggg agc tgg gag agc ctc 768  
 Leu Ser Val Asp Gly Gly Trp Tyr Ala Asp Gly Ser Trp Glu Ser Leu  
 245 250 255  
 agg cgc cga aag cag gcc ccc tcc cct tga 798  
 Arg Arg Arg Lys Gln Ala Pro Ser Pro  
 260 265

<210> 1105  
 <211> 265  
 <212> PRT  
 <213> Rubrobacter xylanophilus DSM 9941

## PhoenixTemp32470.tmp.txt

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<400> 1105
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20      25      30
Val Ala Ala Asn Asp Leu Arg Ala Pro Gly Ala Thr Leu Glu Glu Leu
35      40      45
Glu Gly Val Gly Ala Arg Ala Leu Ala Leu Pro Gly Asp Val Ala Asp
50      55      60
Glu Arg Ala Val Arg Gly Met Val Arg Ala Val Glu Glu Ala Phe Gly
65      70      75      80
Arg Val Asp Val Leu Val Asn Asn Ala Gly Ile Ser Leu Ile Lys Pro
85      90      95
Ala Glu Glu Thr Thr Pro Ala Glu Trp Arg Arg Val Val Glu Val Asn
100     105     110
Leu Thr Gly Pro Phe Leu Thr Cys Arg Tyr Phe Gly Phe Leu Met Leu
115     120     125
Arg Gln Gly Ser Gly Ser Ile Val Asn Val Ser Ser Val Ala Gly Leu
130     135     140
Leu Gly Ile Ser Asp Arg Ala Ala Tyr Asn Ala Ser Lys His Gly Leu
145     150     155     160
Val Gly Leu Thr Arg Thr Leu Ala Ala Glu Trp Gly Gly Arg Gly Val
165     170     175
Arg Val Asn Ala Val Cys Pro Gly Trp Val Lys Thr Glu Met Asp Ala
180     185     190
Glu Asp Gln Ala Gly Gly Gly Tyr Thr Asp Glu Asp Ile Ala Gly Arg
195     200     205
Thr Pro Met Gly Arg Phe Ala Thr Pro Glu Asp Val Ala Ala Ala Val
210     215     220
Ala Phe Leu Ala Asp Ser Gly Gln Ser Gly Tyr Val Asn Gly His Ala
225     230     235     240
Leu Ser Val Asp Gly Gly Trp Tyr Ala Asp Gly Ser Trp Glu Ser Leu
245     250     255
Arg Arg Arg Lys Gln Ala Pro Ser Pro
260     265

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<210> 1106
<211> 969
<212> DNA
<213> Rhodococcus sp. RHA1

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<220>
<221> CDS
<222> (1)..(969)
<223> transl_table=11

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1      5      10      15
aaa aaa gca agc acg att gat tgt tat ttg gct gcg gat cgc ccg gcg      96
Lys Lys Ala Ser Thr Ile Asp Cys Tyr Leu Ala Ala Asp Arg Pro Ala
20      25      30
agg tgc cac gct ggt cac gtg ata cga cag ttg ctc acc cat gcc gcg      144
Arg Cys His Ala Gly His Val Ile Arg Gln Leu Leu Thr His Ala Ala
35      40      45
ctc aac cca ctc ccc tcc ccg cgc gca ctg gcc gcc cga gtc gta ccg      192
Leu Asn Pro Leu Pro Ser Pro Arg Ala Leu Ala Arg Val Val Pro
50      55      60
gga acc ggc cac cgc atc acc ggg aaa cgg atc ctc gtc acc ggt ggt      240
Gly Thr Gly His Arg Ile Thr Gly Lys Arg Ile Leu Val Thr Gly Gly
65      70      75      80
tcc tcg gga gtc ggg gaa gcg gcc gca cgc cgg ctc gcc gcg ctc ggc      288
Ser Ser Gly Val Gly Glu Ala Ala Ala Arg Arg Leu Ala Ala Leu Gly
85      90      95
gcg gag gtc gtc ctc gtg gcc cgc ggc tcc gac gcc ctc gag tcg gtg      336
Ala Glu Val Val Leu Val Ala Arg Gly Ser Asp Ala Leu Glu Ser Val
100     105
cgc gac gac atc ctg cgg tcc ggt tgc gac gcg cac gcc gtt ccc tgc      384

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## PhoenixTemp32470.tmp.txt

Arg	Asp	Asp	Ile	Leu	Arg	Ser	Gly	Cys	Asp	Ala	His	Ala	Val	Pro	Cys	
gac	ctc	acg	gac	ccg	gag	tcc	gtc	gac	gcc	ctc	gtc	gct	cag	gtg	ctc	432
Asp	Leu	Thr	Asp	Pro	Glu	Ser	Val	Asp	Ala	Leu	Val	Ala	Gln	Val	Leu	
130						135					140					
ggg	gag	atc	ggc	ccc	gtc	gac	gta	ctc	gtc	aac	aac	gcc	ggg	cgg	tcg	480
Gly	Glu	Ile	Gly	Pro	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Arg	Ser	
145					150					155					160	
atc	cgg	cgg	acg	gtc	gag	gac	tca	ctg	gac	cga	ttc	cac	gat	ttc	gaa	528
Ile	Arg	Arg	Thr	Val	Glu	Asp	Ser	Leu	Asp	Arg	Phe	His	Asp	Phe	Glu	
				165					170					175		
cgc	acc	atg	gcc	gtc	aac	tac	ttc	ggc	tcg	acg	cgg	ctg	acc	ctc	gcg	576
Arg	Thr	Met	Ala	Val	Asn	Tyr	Phe	Gly	Ser	Thr	Arg	Leu	Thr	Leu	Ala	
			180					185					190			
ttg	ctc	ccg	tcg	atg	atc	gag	cgc	cgc	aag	ggc	cac	atc	atc	aat	gtc	624
Leu	Leu	Pro	Ser	Met	Ile	Glu	Arg	Arg	Lys	Gly	His	Ile	Ile	Asn	Val	
		195					200					205				
gcg	acg	tgg	ggc	gtg	cct	gcc	ggg	gtc	atg	ccc	aag	ttc	tcc	gcc	tac	672
Ala	Thr	Trp	Gly	Val	Pro	Ala	Gly	Val	Met	Pro	Lys	Phe	Ser	Ala	Tyr	
	210					215					220					
cac	gcg	tcc	aag	gct	gcc	gtc	ggc	gcg	ttc	ggc	cgg	agc	ctc	ggc	gcc	720
His	Ala	Ser	Lys	Ala	Ala	Val	Gly	Ala	Phe	Gly	Arg	Ser	Leu	Gly	Ala	
225				230						235					240	
gaa	gtg	cgc	gac	cgc	gga	atc	tcc	gtg	acc	acc	ctg	gac	ttt	ccc	ttg	768
Glu	Val	Arg	Asp	Arg	Gly	Ile	Ser	Val	Thr	Thr	Leu	Asp	Phe	Pro	Leu	
				245					250					255		
gtc	cgg	acg	ccg	atg	atc	gcg	ccc	acc	acg	gac	tac	gac	gcg	atg	gcc	816
Val	Arg	Thr	Pro	Met	Ile	Ala	Pro	Thr	Thr	Asp	Tyr	Asp	Ala	Met	Ala	
			260					265					270			
gcc	ctg	act	cca	ggg	cag	gcg	gcg	gaa	tgg	ttc	gtc	acc	gcc	gtg	cgc	864
Ala	Leu	Thr	Pro	Gly	Gln	Ala	Ala	Glu	Trp	Phe	Val	Thr	Ala	Val	Arg	
		275					280					285				
acc	cgg	ccg	atc	gaa	ctg	ctc	ccc	agt	tac	gcc	gaa	ctg	ttc	cgg	ctg	912
Thr	Arg	Pro	Ile	Glu	Leu	Leu	Pro	Ser	Tyr	Ala	Glu	Leu	Phe	Arg	Leu	
	290					295					300					
ctc	ggc	acg	ttc	gcg	ccg	tcc	gcc	acc	gac	gca	ctg	gta	cgg	cgc	acc	960
Leu	Gly	Thr	Phe	Ala	Pro	Ser	Ala	Thr	Asp	Ala	Leu	Val	Arg	Arg	Thr	
305					310					315					320	
ggc	atc	tga														969
Gly	Ile															

&lt;210&gt; 1107

&lt;211&gt; 322

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1107

Met	Asn	Leu	Cys	Ser	Ser	Ala	Met	Arg	Pro	Ala	Ser	His	Arg	Pro	Gln	
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Lys	Lys	Ala	Ser	Thr	Ile	Asp	Cys	Tyr	Leu	Ala	Ala	Asp	Arg	Pro	Ala	
			20					25					30			
Arg	Cys	His	Ala	Gly	His	Val	Ile	Arg	Gln	Leu	Leu	Thr	His	Ala	Ala	
		35					40					45				
Leu	Asn	Pro	Leu	Pro	Ser	Pro	Arg	Ala	Leu	Ala	Ala	Arg	Val	Val	Pro	
	50					55				60						
Gly	Thr	Gly	His	Arg	Ile	Thr	Gly	Lys	Arg	Ile	Leu	Val	Thr	Gly	Gly	
65					70					75					80	
Ser	Ser	Gly	Val	Gly	Glu	Ala	Ala	Ala	Arg	Arg	Leu	Ala	Ala	Leu	Gly	
				85					90					95		
Ala	Glu	Val	Val	Leu	Val	Ala	Arg	Gly	Ser	Asp	Ala	Leu	Glu	Ser	Val	
			100					105					110			
Arg	Asp	Asp	Ile	Leu	Arg	Ser	Gly	Cys	Asp	Ala	His	Ala	Val	Pro	Cys	
		115					120					125				
Asp	Leu	Thr	Asp	Pro	Glu	Ser	Val	Asp	Ala	Leu	Val	Ala	Gln	Val	Leu	
	130					135					140					
Gly	Glu	Ile	Gly	Pro	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Arg	Ser	
145					150					155					160	
Ile	Arg	Arg	Thr	Val	Glu	Asp	Ser	Leu	Asp	Arg	Phe	His	Asp	Phe	Glu	

## PhoenixTemp32470.tmp.txt

165 170 175  
 Arg Thr Met Ala Val Asn Tyr Phe Gly Ser Thr Arg Leu Thr Leu Ala  
 180 185 190  
 Leu Leu Pro Ser Met Ile Glu Arg Arg Lys Gly His Ile Ile Asn Val  
 195 200 205  
 Ala Thr Trp Gly Val Pro Ala Gly Val Met Pro Lys Phe Ser Ala Tyr  
 210 215 220  
 His Ala Ser Lys Ala Ala Val Gly Ala Phe Gly Arg Ser Leu Gly Ala  
 225 230 235 240  
 Glu Val Arg Asp Arg Gly Ile Ser Val Thr Thr Leu Asp Phe Pro Leu  
 245 250 255  
 Val Arg Thr Pro Met Ile Ala Pro Thr Thr Asp Tyr Asp Ala Met Ala  
 260 265 270  
 Ala Leu Thr Pro Gly Gln Ala Ala Glu Trp Phe Val Thr Ala Val Arg  
 275 280 285  
 Thr Arg Pro Ile Glu Leu Leu Pro Ser Tyr Ala Glu Leu Phe Arg Leu  
 290 295 300  
 Leu Gly Thr Phe Ala Pro Ser Ala Thr Asp Ala Leu Val Arg Arg Thr  
 305 310 315 320  
 Gly Ile

<210> 1108  
 <211> 861  
 <212> DNA  
 <213> Rhodococcus sp. RHA1

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 <221> CDS  
 <222> (1)..(861)  
 <223> transl\_table=11

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 1 5 10 15  
 gct gcc gtc gtc gtg acc ggg gga ggg cgg ggc atc ggt cgc gcc acc 96  
 Ala Ala Val Val Val Thr Gly Gly Gly Arg Gly Ile Gly Arg Ala Thr  
 20 25 30  
 gcc gaa ctg ttc gcg gcc agg ggc gca acc gtg tgc atc ggt gac ctc 144  
 Ala Glu Leu Phe Ala Ala Arg Gly Ala Thr Val Cys Ile Gly Asp Leu  
 35 40 45  
 gat cgc gcg gtc gcc gac gag acc gcg gcg gag atc ggt gcc cgc gcg 192  
 Asp Arg Ala Val Ala Asp Glu Thr Ala Ala Glu Ile Gly Ala Arg Ala  
 50 55 60  
 tac aca gtc gat gtc acg tcc gcg gag tcg tgg cgg cgt ttc gtc gat 240  
 Tyr Thr Val Asp Val Thr Ser Ala Glu Ser Trp Arg Arg Phe Val Asp  
 65 70 75 80  
 gcg gtg ctg gcg gac tgc gac cgc atc gac gtg ctg gtc aac aac gcc 288  
 Ala Val Leu Ala Asp Cys Asp Arg Ile Asp Val Leu Val Asn Asn Ala  
 85 90 95  
 ggc gtc atg ccg ctc ggt ggc ttc ctc gag gaa tcc gac gca acc agc 336  
 Gly Val Met Pro Leu Gly Gly Phe Leu Glu Glu Ser Asp Ala Thr Ser  
 100 105 110  
 cgg atg acc atg aac gtc aac gtg tgg ggt ccg ctg cac ggg atg cga 384  
 Arg Met Thr Met Asn Val Asn Val Trp Gly Pro Leu His Gly Met Arg  
 115 120 125  
 atg gtg ttg ccc ggc atg gtc gag cgc ggg cgt ggt cac atc gtc aac 432  
 Met Val Leu Pro Gly Met Val Glu Arg Gly Arg Gly His Ile Val Asn  
 130 135 140  
 gtc gca tcc atg gcc ggc aag ctg ccc gtg ccc ggg atg gcc gtc tac 480  
 Val Ala Ser Met Ala Gly Lys Leu Pro Val Pro Gly Met Ala Val Tyr  
 145 150 155 160  
 aac gcc agc aag ttc ggg gcg gtg gga ctc tcc gcc gcc gtc cgg gcc 528  
 Asn Ala Ser Lys Phe Gly Ala Val Gly Leu Ser Ala Ala Val Arg Ala  
 165 170 175  
 gag ttc gct ccc gcc gga gtc agt gtg agc acc atc ctt ccc agc gcg 576  
 Glu Phe Ala Pro Ala Gly Val Ser Val Ser Thr Ile Leu Pro Ser Ala  
 180 185 190

## PhoenixTemp32470.tmp.txt

gtg	cgc	acc	gga	ctg	tct	tcc	ggt	gtg	ccg	ctg	ggc	ggc	ggg	atg	ccg	624
Val	Arg	Thr	Gly	Leu	Ser	Ser	Gly	Val	Pro	Leu	Gly	Gly	Gly	Met	Pro	
		195					200					205				
acc	gtc	gac	ccg	gag	gat	gtg	gcg	gag	gcc	atc	gtc	cga	acg	ctc	gac	672
Thr	Val	Asp	Pro	Glu	Asp	Val	Ala	Glu	Ala	Ile	Val	Arg	Thr	Leu	Asp	
	210					215					220					
cat	cgt	cgc	gcc	gaa	acc	gct	gtg	ccc	cgt	tac	ctc	gcc	ggg	tgg	gat	720
His	Arg	Arg	Ala	Glu	Thr	Ala	Val	Pro	Arg	Tyr	Leu	Ala	Gly	Trp	Asp	
	225				230					235					240	
ctg	atc	gac	gcc	gtg	gtc	ccg	gag	cgt	ctc	ctc	gat	ctc	ggc	cgc	cgt	768
Leu	Ile	Asp	Ala	Val	Val	Pro	Glu	Arg	Leu	Leu	Asp	Leu	Gly	Arg	Arg	
				245					250					255		
ctg	atc	gac	gac	cgg	cgg	gcg	ctc	act	gcc	gtc	gac	ccc	gtc	ggg	cgg	816
Leu	Ile	Asp	Asp	Arg	Arg	Ala	Leu	Thr	Ala	Val	Asp	Pro	Val	Gly	Arg	
			260					265					270			
gcc	gac	tac	gac	cgc	cgg	ctc	gcc	cgc	cag	tcg	cag	acg	ccg	tag		861
Ala	Asp	Tyr	Asp	Arg	Arg	Leu	Ala	Arg	Gln	Ser	Gln	Thr	Pro			
		275					280					285				

&lt;210&gt; 1109

&lt;211&gt; 286

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1109

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			20					25					30			
Ala	Glu	Leu	Phe	Ala	Ala	Arg	Gly	Ala	Thr	Val	Cys	Ile	Gly	Asp	Leu	
		35					40					45				
Asp	Arg	Ala	Val	Ala	Asp	Glu	Thr	Ala	Ala	Glu	Ile	Gly	Ala	Arg	Ala	
	50					55					60					
Tyr	Thr	Val	Asp	Val	Thr	Ser	Ala	Glu	Ser	Trp	Arg	Arg	Phe	Val	Asp	
65					70					75					80	
Ala	Val	Leu	Ala	Asp	Cys	Asp	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	
				85					90					95		
Gly	Val	Met	Pro	Leu	Gly	Gly	Phe	Leu	Glu	Glu	Ser	Asp	Ala	Thr	Ser	
		100						105					110			
Arg	Met	Thr	Met	Asn	Val	Asn	Val	Trp	Gly	Pro	Leu	His	Gly	Met	Arg	
		115					120					125				
Met	Val	Leu	Pro	Gly	Met	Val	Glu	Arg	Gly	Arg	Gly	His	Ile	Val	Asn	
	130					135					140					
Val	Ala	Ser	Met	Ala	Gly	Lys	Leu	Pro	Val	Pro	Gly	Met	Ala	Val	Tyr	
	145				150					155					160	
Asn	Ala	Ser	Lys	Phe	Gly	Ala	Val	Gly	Leu	Ser	Ala	Ala	Val	Arg	Ala	
				165					170					175		
Glu	Phe	Ala	Pro	Ala	Gly	Val	Ser	Val	Ser	Thr	Ile	Leu	Pro	Ser	Ala	
		180						185					190			
Val	Arg	Thr	Gly	Leu	Ser	Ser	Gly	Val	Pro	Leu	Gly	Gly	Gly	Met	Pro	
		195					200					205				
Thr	Val	Asp	Pro	Glu	Asp	Val	Ala	Glu	Ala	Ile	Val	Arg	Thr	Leu	Asp	
	210					215					220					
His	Arg	Arg	Ala	Glu	Thr	Ala	Val	Pro	Arg	Tyr	Leu	Ala	Gly	Trp	Asp	
	225				230					235					240	
Leu	Ile	Asp	Ala	Val	Val	Pro	Glu	Arg	Leu	Leu	Asp	Leu	Gly	Arg	Arg	
				245					250					255		
Leu	Ile	Asp	Asp	Arg	Arg	Ala	Leu	Thr	Ala	Val	Asp	Pro	Val	Gly	Arg	
			260					265					270			
Ala	Asp	Tyr	Asp	Arg	Arg	Leu	Ala	Arg	Gln	Ser	Gln	Thr	Pro			
		275					280					285				

&lt;210&gt; 1110

&lt;211&gt; 771

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(771)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1110

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Met	Ser	Gly	Thr	Thr	Leu	Val	Val	Gly	Ala	Ala	Gln	Gly	Ile	Gly	Arg	
1				5				10						15		
gca	acg	gcc	gtc	acc	ctg	tcg	cga	tcc	ggg	cac	cgc	ctg	gta	ctg	ctc	96
Ala	Thr	Ala	Val	Thr	Leu	Ser	Arg	Ser	Gly	His	Arg	Leu	Val	Leu	Leu	
			20					25					30			
gat	cgt	gac	gcc	gac	ggc	ctc	gcc	gcc	acc	gcg	gca	ctg	ctc	gac	acc	144
Asp	Arg	Asp	Ala	Asp	Gly	Leu	Ala	Ala	Thr	Ala	Ala	Leu	Leu	Asp	Thr	
			35				40					45				
ccg	ccg	ctc	ggg	acc	gcc	gtc	acc	gac	atc	cgc	gac	acc	gac	gcc	gtc	192
Pro	Pro	Leu	Gly	Thr	Ala	Val	Thr	Asp	Ile	Arg	Asp	Thr	Asp	Ala	Val	
	50					55					60					
acc	gac	acc	gtc	cgc	cgg	atc	gag	gac	gag	cac	ggg	ccc	atc	acc	gca	240
Thr	Asp	Thr	Val	Arg	Arg	Ile	Glu	Asp	Glu	His	Gly	Pro	Ile	Thr	Ala	
	65				70					75					80	
ctc	gca	cac	gtg	gcg	ggg	gtg	ctc	gag	acc	ggc	tcg	gtg	ctc	gac	gcc	288
Leu	Ala	His	Val	Ala	Gly	Val	Leu	Glu	Thr	Gly	Ser	Val	Leu	Asp	Ala	
				85				90						95		
gac	ccc	gag	agc	tgg	cag	cgc	gtg	ttc	gac	gtc	aac	gtc	acc	ggc	ctc	336
Asp	Pro	Glu	Ser	Trp	Gln	Arg	Val	Phe	Asp	Val	Asn	Val	Thr	Gly	Leu	
			100					105					110			
gtc	aac	gtg	ctg	cgg	gcg	gtc	ggc	acc	gga	atg	cgc	gag	cgt	gca	gcc	384
Val	Asn	Val	Leu	Arg	Ala	Val	Gly	Thr	Gly	Met	Arg	Glu	Arg	Ala	Ala	
			115				120					125				
ggg	tcc	atc	gtc	gtg	gtc	ggc	tcc	aac	gcc	gcg	ggc	gtc	ccc	cgc	acc	432
Gly	Ser	Ile	Val	Val	Val	Gly	Ser	Asn	Ala	Ala	Gly	Val	Pro	Arg	Thr	
	130					135					140					
ggc	atg	ggc	gcg	tac	ggc	gcg	tcc	aag	gcc	gcc	gtg	tcg	atg	atc	gtc	480
Gly	Met	Gly	Ala	Tyr	Gly	Ala	Ser	Lys	Ala	Ala	Val	Ser	Met	Ile	Val	
	145				150				155						160	
cgg	gta	ctc	ggc	ctc	gag	ctg	gcc	gaa	tac	ggg	atc	cgc	gcc	aac	atc	528
Arg	Val	Leu	Gly	Leu	Glu	Leu	Ala	Glu	Tyr	Gly	Ile	Arg	Ala	Asn	Ile	
				165				170						175		
gtc	gcc	ccc	ggc	tcg	acg	gac	acc	gcg	atg	cag	cgg	tcg	ctg	tgg	gcg	576
Val	Ala	Pro	Gly	Ser	Thr	Asp	Thr	Ala	Met	Gln	Arg	Ser	Leu	Trp	Ala	
			180					185					190			
gac	ccc	gcc	gac	gac	acc	ggc	gcg	cgc	ggg	gcg	atc	gac	ggc	gac	ctg	624
Asp	Pro	Ala	Asp	Asp	Thr	Gly	Ala	Arg	Gly	Ala	Ile	Asp	Gly	Asp	Leu	
		195					200					205				
ggc	acg	ttc	aag	gtc	gga	atc	ccg	ctg	ggc	cgc	atc	gcc	gac	gcc	gcc	672
Gly	Thr	Phe	Lys	Val	Gly	Ile	Pro	Leu	Gly	Arg	Ile	Ala	Asp	Ala	Ala	
	210					215					220					
gac	atc	gcg	gac	tcc	gtc	gag	ttc	ctc	ttg	tcg	gag	cgg	gcg	cgt	cac	720
Asp	Ile	Ala	Asp	Ser	Val	Glu	Phe	Leu	Leu	Ser	Glu	Arg	Ala	Arg	His	
	225				230					235					240	
atc	acc	atg	cag	gcg	ctc	tac	gtc	gac	ggc	ggc	gct	acc	ctc	cga	gcc	768
Ile	Thr	Met	Gln	Ala	Leu	Tyr	Val	Asp	Gly	Gly	Ala	Thr	Leu	Arg	Ala	
				245					250					255		
tga																771

&lt;210&gt; 1111

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1111

Met	Ser	Gly	Thr	Thr	Leu	Val	Val	Gly	Ala	Ala	Gln	Gly	Ile	Gly	Arg
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Ala	Thr	Ala	Val	Thr	Leu	Ser	Arg	Ser	Gly	His	Arg	Leu	Val	Leu	Leu
			20					25					30		
Asp	Arg	Asp	Ala	Asp	Gly	Leu	Ala	Ala	Thr	Ala	Ala	Leu	Leu	Asp	Thr
		35					40					45			
Pro	Pro	Leu	Gly	Thr	Ala	Val	Thr	Asp	Ile	Arg	Asp	Thr	Asp	Ala	Val

## PhoenixTemp32470.tmp.txt

50 55 60  
 Thr Asp Thr Val Arg Arg Ile Glu Asp Glu His Gly Pro Ile Thr Ala  
 65 70 75 80  
 Leu Ala His Val Ala Gly Val Leu Glu Thr Gly Ser Val Leu Asp Ala  
 85 90 95  
 Asp Pro Glu Ser Trp Gln Arg Val Phe Asp Val Asn Val Thr Gly Leu  
 100 105 110  
 Val Asn Val Leu Arg Ala Val Gly Thr Gly Met Arg Glu Arg Ala Ala  
 115 120 125  
 Gly Ser Ile Val Val Val Gly Ser Asn Ala Ala Gly Val Pro Arg Thr  
 130 135 140  
 Gly Met Gly Ala Tyr Gly Ala Ser Lys Ala Ala Val Ser Met Ile Val  
 145 150 155 160  
 Arg Val Leu Gly Leu Glu Leu Ala Glu Tyr Gly Ile Arg Ala Asn Ile  
 165 170 175  
 Val Ala Pro Gly Ser Thr Asp Thr Ala Met Gln Arg Ser Leu Trp Ala  
 180 185 190  
 Asp Pro Ala Asp Asp Thr Gly Ala Arg Gly Ala Ile Asp Gly Asp Leu  
 195 200 205  
 Gly Thr Phe Lys Val Gly Ile Pro Leu Gly Arg Ile Ala Asp Ala Ala  
 210 215 220  
 Asp Ile Ala Asp Ser Val Glu Phe Leu Leu Ser Glu Arg Ala Arg His  
 225 230 235 240  
 Ile Thr Met Gln Ala Leu Tyr Val Asp Gly Gly Ala Thr Leu Arg Ala  
 245 250 255

&lt;210&gt; 1112

&lt;211&gt; 972

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(972)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1112

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1 5 10	
gac ctg ggc ctc cca ctg ccc ggt cga ggc gag tac aac gtt gcc	96
Asp Leu Gly Leu Pro Leu Pro Gly Arg Gly Ala Glu Tyr Asn Val Ala	
20 25 30	
ggc aag gtg gtc ctg att acc ggc gga ggt gac ggt atc gga ctg gca	144
Gly Lys Val Val Leu Ile Thr Gly Gly Gly Asp Gly Ile Gly Leu Ala	
35 40 45	
tcg gcg cgt gcc ctg cac gcc cgc ggc gca acg gtc gca ctg ctc gat	192
Ser Ala Arg Ala Leu His Ala Arg Gly Ala Thr Val Ala Leu Leu Asp	
50 55 60	
gtc aat caa tcg tcc ctg acg gca gct gaa ttc gcg ctc ggc cga cgg	240
Val Asn Gln Ser Ser Leu Thr Ala Ala Glu Phe Ala Leu Gly Arg Arg	
65 70 75 80	
cgg gtc ctc acc ctg gtc gcc gat gtc cgc gac cgt ccc ggc atg gat	288
Arg Val Leu Thr Leu Val Ala Asp Val Arg Asp Arg Pro Gly Met Asp	
85 90 95	
tca gcc gtg cac gcg gtg atc gag cgg tac ggg cgg atc gat gtg gtg	336
Ser Ala Val His Ala Val Ile Glu Arg Tyr Gly Arg Ile Asp Val Val	
100 105 110	
atc gcg aac gcc gga gtg acc ccg ccc ccg tcc acc ctc cgc cag atc	384
Ile Ala Asn Ala Gly Val Thr Pro Pro Pro Ser Thr Leu Arg Gln Ile	
115 120 125	
gat ccg gcg ggc ttc gac cgc gtg atc gac atc aac ctc acg ggt gtc	432
Asp Pro Ala Gly Phe Asp Arg Val Ile Asp Ile Asn Leu Thr Gly Val	
130 135 140	
ttc aac acc gtc cat cct gcg atc gac gaa gtg att gcg cga cgc ggc	480
Phe Asn Thr Val His Pro Ala Ile Asp Glu Val Ile Ala Arg Arg Gly	
145 150 155 160	
cac atc gtg gtg gtg tct gcg gcg gcc ttc gcg ccc ggt ctc ggt	528
His Ile Val Val Val Ser Ser Ala Ala Phe Ala Pro Gly Leu Gly	

## PhoenixTemp32470.tmp.txt

ggc	gcg	tcc	tac	165	atg	atc	agc	aag	gcc	170	gtc	gaa	caa	ctc	175	ggc	cgg	576
Gly	Ala	Ser	Tyr	Met	Ile	Ser	Lys	Ala	Ala	Ala	Val	Glu	Gln	Leu	Gly	Arg		
			180					185						190				
gca	ctc	cgt	ctc	gaa	ctc	gcc	ggc	tac	ggc	gcc	tcc	gcg	ggg	gtg	gcg	624		
Ala	Leu	Arg	Leu	Glu	Leu	Ala	Gly	Tyr	Gly	Ala	Ser	Ala	Gly	Val	Ala			
		195					200					205						
tac	ttc	ggg	atg	gtc	gac	acc	caa	ctg	gct	cgg	gca	acc	ctc	gac	gac	672		
Tyr	Phe	Gly	Met	Val	Asp	Thr	Gln	Leu	Ala	Arg	Ala	Thr	Leu	Asp	Asp			
	210					215					220							
gac	gag	atc	ggc	aga	agg	ctc	gat	gcg	cgt	ctt	cct	cgt	ccg	ctg	cgc	720		
Asp	Glu	Ile	Gly	Arg	Arg	Leu	Asp	Ala	Arg	Leu	Pro	Arg	Pro	Leu	Arg			
225					230					235					240			
cgc	cgc	atc	agc	cca	gag	gat	gcc	gcg	acg	gtg	atc	gca	gat	gct	atc	768		
Arg	Arg	Ile	Ser	Pro	Glu	Asp	Ala	Ala	Thr	Val	Ile	Ala	Asp	Ala	Ile			
				245					250					255				
gcc	cgc	cgc	gcc	gga	cgc	acc	ctc	gct	ccg	gcg	gca	tg	cac	ccg	tg	816		
Ala	Arg	Arg	Ala	Gly	Arg	Thr	Leu	Ala	Pro	Ala	Ala	Trp	His	Pro	Trp			
			260					265					270					
gcc	ctg	gga	cga	gga	ctg	gtg	aac	gtg	ctc	gcc	gac	ggc	tac	ctc	gcc	864		
Ala	Leu	Gly	Arg	Gly	Leu	Val	Asn	Val	Leu	Ala	Asp	Gly	Tyr	Leu	Ala			
		275					280					285						
gcc	gac	gcc	gaa	tgt	cac	caa	ctg	atc	cgc	gag	ctc	gaa	gaa	cgt	ccc	912		
Ala	Asp	Ala	Glu	Cys	His	Gln	Leu	Ile	Arg	Glu	Leu	Glu	Glu	Arg	Pro			
	290					295					300							
gtc	acc	aca	cac	ccg	agt	ggc	tcc	aca	aca	gcc	ggg	ccc	gaa	ccg	agg	960		
Val	Thr	Thr	His	Pro	Ser	Gly	Ser	Thr	Thr	Ala	Gly	Pro	Glu	Pro	Arg			
305					310					315					320			
aga	acg	cca	tga													972		
Arg	Thr	Pro																

&lt;210&gt; 1113

&lt;211&gt; 323

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1113

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			20					25					30			
Gly	Lys	Val	Val	Leu	Ile	Thr	Gly	Gly	Gly	Asp	Gly	Ile	Gly	Leu	Ala	
		35					40					45				
Ser	Ala	Arg	Ala	Leu	His	Ala	Arg	Gly	Ala	Thr	Val	Ala	Leu	Leu	Asp	
	50					55					60					
Val	Asn	Gln	Ser	Ser	Leu	Thr	Ala	Ala	Glu	Phe	Ala	Leu	Gly	Arg	Arg	
65					70					75					80	
Arg	Val	Leu	Thr	Leu	Val	Ala	Asp	Val	Arg	Asp	Arg	Pro	Gly	Met	Asp	
				85				90						95		
Ser	Ala	Val	His	Ala	Val	Ile	Glu	Arg	Tyr	Gly	Arg	Ile	Asp	Val	Val	
		100						105					110			
Ile	Ala	Asn	Ala	Gly	Val	Thr	Pro	Pro	Pro	Ser	Thr	Leu	Arg	Gln	Ile	
		115					120					125				
Asp	Pro	Ala	Gly	Phe	Asp	Arg	Val	Ile	Asp	Ile	Asn	Leu	Thr	Gly	Val	
	130					135					140					
Phe	Asn	Thr	Val	His	Pro	Ala	Ile	Asp	Glu	Val	Ile	Ala	Arg	Arg	Gly	
145					150					155					160	
His	Ile	Val	Val	Val	Ser	Ser	Ala	Ala	Ala	Phe	Ala	Pro	Gly	Leu	Gly	
			165						170					175		
Gly	Ala	Ser	Tyr	Met	Ile	Ser	Lys	Ala	Ala	Val	Glu	Gln	Leu	Gly	Arg	
		180						185					190			
Ala	Leu	Arg	Leu	Glu	Leu	Ala	Gly	Tyr	Gly	Ala	Ser	Ala	Gly	Val	Ala	
		195					200					205				
Tyr	Phe	Gly	Met	Val	Asp	Thr	Gln	Leu	Ala	Arg	Ala	Thr	Leu	Asp	Asp	
	210					215					220					
Asp	Glu	Ile	Gly	Arg	Arg	Leu	Asp	Ala	Arg	Leu	Pro	Arg	Pro	Leu	Arg	
225					230					235					240	
Arg	Arg	Ile	Ser	Pro	Glu	Asp	Ala	Ala	Thr	Val	Ile	Ala	Asp	Ala	Ile	

## PhoenixTemp32470.tmp.txt

245  
 Ala Arg Arg Ala Gly Arg Thr Leu Ala Pro Ala Ala Trp His Pro Trp  
 260  
 Ala Leu Gly Arg Gly Leu Val Asn Val Leu Ala Asp Gly Tyr Leu Ala  
 275  
 Ala Asp Ala Glu Cys His Gln Leu Ile Arg Glu Leu Glu Glu Arg Pro  
 290  
 Val Thr Thr His Pro Ser Gly Ser Thr Thr Ala Gly Pro Glu Pro Arg  
 305  
 Arg Thr Pro 310 315 320

&lt;210&gt; 1114

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas aeruginosa UCBPP-PA14

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1114

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Met	Pro	Arg	Lys	Val	Phe	Ser	Ser	Gln	Ala	Tyr	Arg	His	Lys	Val	Val	
1				5				10						15		
ctg	gtc	agt	ggg	ggg	tgt	tct	ggc	atc	ggg	cg	gc	ctg	gc	ctg	cgt	96
Leu	Val	Ser	Gly	Gly	Cys	Ser	Gly	Ile	Gly	Arg	Ala	Leu	Ala	Leu	Arg	
			20					25					30			
ttc	gcc	cg	gcc	ggg	gc	cga	ctg	gc	atc	ctc	gac	ctc	gac	cag	gc	144
Phe	Ala	Arg	Ala	Gly	Ala	Arg	Leu	Ala	Ile	Leu	Asp	Leu	Asp	Gln	Ala	
			35				40					45				
gc	ctg	gac	agc	ctg	gtg	cag	cac	ctg	cg	gac	cat	ctc	ggc	ggc	gag	192
Ala	Leu	Asp	Ser	Leu	Val	Gln	His	Leu	Arg	Asp	His	Leu	Gly	Gly	Glu	
			50			55				60						
gc	ctc	ggc	ctg	cg	tgc	gac	gtc	gcc	gac	gcc	gat	gc	gtg	gag	cgt	240
Ala	Leu	Gly	Leu	Arg	Cys	Asp	Val	Ala	Asp	Ala	Asp	Ala	Val	Glu	Arg	
			65		70				75					80		
gcc	gtg	gc	ctg	gc	gtg	gag	cg	ttc	ggc	ggc	atc	gac	gtg	ctg	gtc	288
Ala	Val	Ala	Leu	Ala	Val	Glu	Arg	Phe	Gly	Gly	Ile	Asp	Val	Leu	Val	
			85					90						95		
aac	aac	gcc	ggc	atc	acc	cac	cg	ggg	acc	ttc	gcc	gaa	acc	ggc	ctg	336
Asn	Asn	Ala	Gly	Ile	Thr	His	Arg	Gly	Thr	Phe	Ala	Glu	Thr	Gly	Leu	
			100					105					110			
ggg	gtt	ttc	cg	aag	gtc	atg	gc	gtg	aac	ttc	ttc	ggc	gcc	gtg	cat	384
Gly	Val	Phe	Arg	Lys	Val	Met	Ala	Val	Asn	Phe	Phe	Gly	Ala	Val	His	
			115				120					125				
tgc	acc	cg	gc	gc	ctg	ccg	agc	ctg	ctc	gaa	cg	cg	ggg	cag	atc	432
Cys	Thr	Arg	Ala	Ala	Leu	Pro	Ser	Leu	Leu	Glu	Arg	Arg	Gly	Gln	Ile	
			130			135				140						
gtc	gtg	ctc	agt	tgc	ctg	acc	ggg	ttc	gcc	ccg	ttg	ctc	tac	cg	agc	480
Val	Val	Leu	Ser	Ser	Leu	Thr	Gly	Phe	Ala	Pro	Leu	Leu	Tyr	Arg	Ser	
			145		150				155						160	
gcc	tac	aac	gcc	agc	aag	cat	gcc	ttg	cac	ggg	ctg	ttc	gac	acc	ctg	528
Ala	Tyr	Asn	Ala	Ser	Lys	His	Ala	Leu	His	Gly	Leu	Phe	Asp	Thr	Leu	
			165				170							175		
cg	atg	gag	ctg	gaa	ggc	acc	ggc	gtc	agc	gtg	acc	ctg	gcc	tgc	ccg	576
Arg	Met	Glu	Leu	Glu	Gly	Thr	Gly	Val	Ser	Val	Thr	Leu	Ala	Cys	Pro	
			180				185						190			
gga	ttc	acc	gcc	acc	gac	ctg	cg	aag	aat	gc	ctg	gtc	ggc	gat	ggc	624
Gly	Phe	Thr	Ala	Thr	Asp	Leu	Arg	Lys	Asn	Ala	Leu	Val	Gly	Asp	Gly	
			195			200						205				
tgc	gtg	act	cg	cag	ccg	gtg	caa	gtg	ctg	ggc	agc	cag	gtg	gca	tgc	672
Ser	Val	Thr	Arg	Gln	Pro	Val	Gln	Val	Leu	Gly	Ser	Gln	Val	Ala	Ser	
			210			215					220					
ccg	gtg	gag	gtc	gcc	gag	gc	atc	ttc	cag	ggc	gcc	gc	cg	cg	cg	720
Pro	Val	Glu	Val	Ala	Glu	Ala	Ile	Phe	Gln	Gly	Ala	Ala	Arg	Arg	Arg	
			225		230					235					240	
cg	ctg	ctg	gtg	ctg	tcc	aac	gtc	aac	tgg	cg	gc	cg	ctg	ctg	gc	768

PhoenixTemp32470.tmp.txt

Arg	Leu	Leu	Val	Leu	Ser	Asn	Val	Asn	Trp	Arg	Ala	Arg	Leu	Leu	Ala		
				245					250					255			
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Arg	Phe	Phe	Pro	Arg	Leu	Phe	Glu	Lys	Leu	Leu	Val	Pro	Arg	Leu	Ser		
			260					265					270				
gga	ctc	aag	ccg	caa	ccc	tga											837
Gly	Leu	Lys	Pro	Gln	Pro												
		275															

<210> 1115  
 <211> 278  
 <212> PRT  
 <213> Pseudomonas aeruginosa UCBPP-PA14

<400> 1115

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			20					25					30				
Phe	Ala	Arg	Ala	Gly	Ala	Arg	Leu	Ala	Ile	Leu	Asp	Leu	Asp	Gln	Ala		
		35					40					45					
Ala	Leu	Asp	Ser	Leu	Val	Gln	His	Leu	Arg	Asp	His	Leu	Gly	Gly	Glu		
	50					55				60							
Ala	Leu	Gly	Leu	Arg	Cys	Asp	Val	Ala	Asp	Ala	Asp	Ala	Val	Glu	Arg		
65				70					75					80			
Ala	Val	Ala	Leu	Ala	Val	Glu	Arg	Phe	Gly	Gly	Ile	Asp	Val	Leu	Val		
			85					90					95				
Asn	Asn	Ala	Gly	Ile	Thr	His	Arg	Gly	Thr	Phe	Ala	Glu	Thr	Gly	Leu		
			100					105					110				
Gly	Val	Phe	Arg	Lys	Val	Met	Ala	Val	Asn	Phe	Phe	Gly	Ala	Val	His		
		115					120					125					
Cys	Thr	Arg	Ala	Ala	Leu	Pro	Ser	Leu	Leu	Glu	Arg	Arg	Gly	Gln	Ile		
	130					135					140						
Val	Val	Leu	Ser	Ser	Leu	Thr	Gly	Phe	Ala	Pro	Leu	Leu	Tyr	Arg	Ser		
145				150					155					160			
Ala	Tyr	Asn	Ala	Ser	Lys	His	Ala	Leu	His	Gly	Leu	Phe	Asp	Thr	Leu		
			165					170					175				
Arg	Met	Glu	Leu	Glu	Gly	Thr	Gly	Val	Ser	Val	Thr	Leu	Ala	Cys	Pro		
		180					185					190					
Gly	Phe	Thr	Ala	Thr	Asp	Leu	Arg	Lys	Asn	Ala	Leu	Val	Gly	Asp	Gly		
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Ser	Val	Thr	Arg	Gln	Pro	Val	Gln	Val	Leu	Gly	Ser	Gln	Val	Ala	Ser		
	210				215						220						
Pro	Val	Glu	Val	Ala	Glu	Ala	Ile	Phe	Gln	Gly	Ala	Ala	Arg	Arg	Arg		
225				230					235					240			
Arg	Leu	Leu	Val	Leu	Ser	Asn	Val	Asn	Trp	Arg	Ala	Arg	Leu	Leu	Ala		
			245					250					255				
Arg	Phe	Phe	Pro	Arg	Leu	Phe	Glu	Lys	Leu	Leu	Val	Pro	Arg	Leu	Ser		
			260					265					270				
Gly	Leu	Lys	Pro	Gln	Pro												
		275															

<210> 1116  
 <211> 1041  
 <212> DNA  
 <213> Solibacter usitatus Ellin6076

<220>  
 <221> CDS  
 <222> (1)..(1041)  
 <223> transl\_table=11

<400> 1116

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1				5					10					15			
ggc	atc	gca	gcg	acg	gtc	ctg	cgt	cgc	cgc	gcc	tgc	atg	gat	atg	cgt		96
Gly	Ile	Ala	Ala	Thr	Val	Leu	Arg	Arg	Arg	Ala	Cys	Met	Asp	Met	Arg		
			20					25					30				



## PhoenixTemp32470.tmp.txt

ggc	aag	gtg	gta	ctg	att	acc	ggc	ggc	tca	cat	ggt	ctg	ggt	ctc	gct	144
Gly	Lys	Val	Val	Leu	Ile	Thr	Gly	Gly	Ser	His	Gly	Leu	Gly	Leu	Ala	
		35					40					45				
ctg	gcg	cga	agg	ttc	gcc	cag	gag	ggt	gcg	aag	att	gca	ctc	tgc	gcg	192
Leu	Ala	Arg	Arg	Phe	Ala	Gln	Glu	Gly	Ala	Lys	Ile	Ala	Leu	Cys	Ala	
	50					55					60					
cgc	agc	gag	gaa	gaa	ctc	cgt	cgt	gcg	cga	gaa	gat	ggt	gcc	agc	cgc	240
Arg	Ser	Glu	Glu	Glu	Leu	Arg	Arg	Ala	Arg	Glu	Asp	Val	Ala	Ser	Arg	
	65				70					75					80	
gga	gcg	gaa	gtc	ttc	acc	gcc	acg	tgc	gac	gtc	agc	gac	cgc	ctg	caa	288
Gly	Ala	Glu	Val	Phe	Thr	Ala	Thr	Cys	Asp	Val	Ser	Asp	Arg	Leu	Gln	
			85					90						95		
gtg	gaa	gcg	gtg	gtg	acg	gca	act	ttg	gat	cgc	ttc	cgg	cgc	atc	gat	336
Val	Glu	Ala	Val	Val	Thr	Ala	Thr	Leu	Asp	Arg	Phe	Arg	Arg	Ile	Asp	
			100					105					110			
gtt	ctg	gtg	aat	aat	gcc	ggc	atc	atc	cat	gtg	ggt	ccg	gtc	gat	gca	384
Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Ile	His	Val	Gly	Pro	Val	Asp	Ala	
		115					120					125				
atg	act	atc	gaa	gat	ttt	gaa	cag	gcg	atg	ggc	gtt	atg	ttt	tgg	ggg	432
Met	Thr	Ile	Glu	Asp	Phe	Glu	Gln	Ala	Met	Gly	Val	Met	Phe	Trp	Gly	
	130					135					140					
acg	gtc	tac	gcc	acg	atg	gcc	gtg	ctc	ccg	cac	atg	cgg	ggc	cgc	cgc	480
Thr	Val	Tyr	Ala	Thr	Met	Ala	Val	Leu	Pro	His	Met	Arg	Gly	Arg	Arg	
	145				150					155					160	
gac	caa	cgt	atc	gtg	aac	atc	acc	tcg	atc	ggc	gca	aag	gta	agc	gtt	528
Asp	Gln	Arg	Ile	Val	Asn	Ile	Thr	Ser	Ile	Gly	Ala	Lys	Val	Ser	Val	
			165						170					175		
ccc	cac	ctg	ctg	ccc	tac	agt	tgt	gcg	aaa	ttt	gcc	gcg	gcg	gca	ttt	576
Pro	His	Leu	Leu	Pro	Tyr	Ser	Cys	Ala	Lys	Phe	Ala	Ala	Ala	Ala	Phe	
			180					185					190			
tcc	gaa	ggc	atg	cgc	gct	gaa	ctg	agc	ggc	act	ggt	gtg	aaa	gta	gta	624
Ser	Glu	Gly	Met	Arg	Ala	Glu	Leu	Ser	Gly	Thr	Gly	Val	Lys	Val	Val	
		195					200					205				
acg	att	gca	ccc	gga	ctc	atg	cgt	acc	ggg	tcg	tat	ctc	aac	gcg	ctg	672
Thr	Ile	Ala	Pro	Gly	Leu	Met	Arg	Thr	Gly	Ser	Tyr	Leu	Asn	Ala	Leu	
	210					215					220					
ttc	aag	ggc	gct	gaa	gca	gga	gag	gcg	gga	tgg	ttc	agt	gta	agt	tcc	720
Phe	Lys	Gly	Ala	Glu	Ala	Gly	Glu	Ala	Gly	Trp	Phe	Ser	Val	Ser	Ser	
	225				230					235					240	
agc	ctg	ccc	gga	atc	tcg	atg	agt	gcc	gaa	aag	gca	gcg	gaa	caa	att	768
Ser	Leu	Pro	Gly	Ile	Ser	Met	Ser	Ala	Glu	Lys	Ala	Ala	Glu	Gln	Ile	
			245						250					255		
gtc	tcc	gcc	gcg	cga	agt	ggc	agg	ccg	gag	cgt	gtt	cta	ggc	gta	ccg	816
Val	Ser	Ala	Ala	Arg	Ser	Gly	Arg	Pro	Glu	Arg	Val	Leu	Gly	Val	Pro	
		260						265					270			
gcg	aag	ctt	ctc	gcg	cag	ttt	cac	gag	gag	ctg	ttc	ccg	agc	gct	aca	864
Ala	Lys	Leu	Leu	Ala	Gln	Phe	His	Glu	Glu	Leu	Phe	Pro	Ser	Ala	Thr	
		275					280						285			
ggt	att	ctt	ggt	ctc	gtc	agc	cgg	gct	ttg	ccc	cat	ggc	gga	agg	cgg	912
Gly	Ile	Leu	Gly	Leu	Val	Ser	Arg	Ala	Leu	Pro	His	Gly	Gly	Arg	Arg	
	290					295					300					
tcg	gaa	ctc	gga	tcg	gaa	agt	ccg	ctg	ctc	caa	aaa	gag	tgg	ctg	cga	960
Ser	Glu	Leu	Gly	Ser	Glu	Ser	Pro	Leu	Leu	Gln	Lys	Glu	Trp	Leu	Arg	
	305				310					315					320	
ttc	ctg	acc	acg	ctc	gga	agg	tac	gta	gcg	gaa	gac	ctt	ctg	caa	ccc	1008
Phe	Leu	Thr	Thr	Leu	Gly	Arg	Tyr	Val	Ala	Glu	Asp	Leu	Leu	Gln	Pro	
			325						330					335		
gga	act	ccg	aat	ggg	agt	gcg	ggt	cgc	gcc	tga						1041
Gly	Thr	Pro	Asn	Gly	Ser	Ala	Gly	Arg	Ala							
			340					345								

&lt;210&gt; 1117

&lt;211&gt; 346

&lt;212&gt; PRT

&lt;213&gt; Solibacter usitatus Ellin6076

&lt;400&gt; 1117

Met Ser Arg Lys Thr Trp Leu Ala Thr Ser Ala Ala Leu Ala Thr Ala

1

5

10

15

## PhoenixTemp32470.tmp.txt

Gly Ile Ala Ala Thr Val Leu Arg Arg Arg Ala Cys Met Asp Met Arg  
 20 25 30  
 Gly Lys Val Val Leu Ile Thr Gly Gly Ser His Gly Leu Gly Leu Ala  
 35 40 45  
 Leu Ala Arg Arg Phe Ala Gln Glu Gly Ala Lys Ile Ala Leu Cys Ala  
 50 55 60  
 Arg Ser Glu Glu Glu Leu Arg Arg Ala Arg Glu Asp Val Ala Ser Arg  
 65 70 75 80  
 Gly Ala Glu Val Phe Thr Ala Thr Cys Asp Val Ser Asp Arg Leu Gln  
 85 90 95  
 Val Glu Ala Val Val Thr Ala Thr Leu Asp Arg Phe Arg Arg Ile Asp  
 100 105 110  
 Val Leu Val Asn Asn Ala Gly Ile Ile His Val Gly Pro Val Asp Ala  
 115 120 125  
 Met Thr Ile Glu Asp Phe Glu Gln Ala Met Gly Val Met Phe Trp Gly  
 130 135 140  
 Thr Val Tyr Ala Thr Met Ala Val Leu Pro His Met Arg Gly Arg Arg  
 145 150 155 160  
 Asp Gln Arg Ile Val Asn Ile Thr Ser Ile Gly Ala Lys Val Ser Val  
 165 170 175  
 Pro His Leu Leu Pro Tyr Ser Cys Ala Lys Phe Ala Ala Ala Ala Phe  
 180 185 190  
 Ser Glu Gly Met Arg Ala Glu Leu Ser Gly Thr Gly Val Lys Val Val  
 195 200 205  
 Thr Ile Ala Pro Gly Leu Met Arg Thr Gly Ser Tyr Leu Asn Ala Leu  
 210 215 220  
 Phe Lys Gly Ala Glu Ala Gly Glu Ala Gly Trp Phe Ser Val Ser Ser  
 225 230 235 240  
 Ser Leu Pro Gly Ile Ser Met Ser Ala Glu Lys Ala Ala Glu Gln Ile  
 245 250 255  
 Val Ser Ala Ala Arg Ser Gly Arg Pro Glu Arg Val Leu Gly Val Pro  
 260 265 270  
 Ala Lys Leu Leu Ala Gln Phe His Glu Leu Phe Pro Ser Ala Thr Ala  
 275 280 285  
 Gly Ile Leu Gly Leu Val Ser Arg Ala Leu Pro His Gly Gly Arg Arg  
 290 295 300  
 Ser Glu Leu Gly Ser Glu Ser Pro Leu Leu Gln Lys Glu Trp Leu Arg  
 305 310 315 320  
 Phe Leu Thr Thr Leu Gly Arg Tyr Val Ala Glu Asp Leu Leu Gln Pro  
 325 330 335  
 Gly Thr Pro Asn Gly Ser Ala Gly Arg Ala  
 340 345

&lt;210&gt; 1118

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1118

atg gac ctg ggt ttg aag ggc aag cgg gcg ttg atc tcg ggt gcc agc	48
Met Asp Leu Gly Leu Lys Gly Lys Arg Ala Leu Ile Ser Gly Ala Ser	
1 5 10 15	
gat ggc atc ggc ctc gct gcg gcc gaa cta ctc gca gaa gag ggc gtc	96
Asp Gly Ile Gly Leu Ala Ala Ala Glu Leu Leu Ala Glu Glu Gly Val	
20 25 30	
gat gtg gcc ttg gtg gcc cgc cgc gcg aat gtg ctc aaa gag ggt tgc	144
Asp Val Ala Leu Val Ala Arg Arg Ala Asn Val Leu Lys Glu Gly Cys	
35 40 45	
gac tct atc gcg tcc aag aca ggc gtc aag gcc gta ccg ctt gcc gcc	192
Asp Ser Ile Ala Ser Lys Thr Gly Val Lys Ala Val Pro Leu Ala Ala	
50 55 60	
gac ctc agc gac aaa tcg gtg ttc gat gcg gtg gtg aac gac gcc gtc	240
Asp Leu Ser Asp Lys Ser Val Phe Asp Ala Val Val Asn Asp Ala Val	
65 70 75 80	

## PhoenixTemp32470.tmp.txt

gat	gaa	ctc	ggc	ggc	ctg	gac	atc	ctg	atc	aac	aat	gcc	ggc	gca	tca	288
Asp	Glu	Leu	Gly	Gly	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Ala	Ser	
				85					90					95		
tcc	ttc	ggc	ggc	ttt	ggt	gac	atc	acc	gat	gag	cag	tgg	gtg	gca	gac	336
Ser	Phe	Gly	Gly	Phe	Gly	Asp	Ile	Thr	Asp	Glu	Gln	Trp	Val	Ala	Asp	
			100					105					110			
atc	aat	ctc	aag	ctg	ttc	ggg	ttc	att	cgg	atg	act	cgc	gcg	gct	ctg	384
Ile	Asn	Leu	Lys	Leu	Phe	Gly	Phe	Ile	Arg	Met	Thr	Arg	Ala	Ala	Leu	
			115					120				125				
cca	cat	ctg	tta	aag	aca	ggt	agt	gga	cga	atc	gtc	aac	ggt	gcg	ggc	432
Pro	His	Leu	Leu	Lys	Thr	Gly	Ser	Gly	Arg	Ile	Val	Asn	Val	Ala	Gly	
			130					135			140					
aac	tcc	ggt	aag	cag	gcg	ctg	gaa	tac	cac	atg	ccg	gga	gcc	gcc	gcg	480
Asn	Ser	Gly	Lys	Gln	Ala	Leu	Glu	Tyr	His	Met	Pro	Gly	Ala	Ala	Ala	
					150					155					160	
aac	gcg	gcg	atc	ctg	aat	ttc	agc	aag	tcc	ctg	tca	ctg	cag	gtc	ggg	528
Asn	Ala	Ala	Ile	Leu	Asn	Phe	Ser	Lys	Ser	Leu	Ser	Leu	Gln	Val	Gly	
				165					170					175		
gcc	caa	gga	gtc	atc	atc	aac	acg	gtg	tgc	ccg	gga	ccg	gtc	cgg	aca	576
Ala	Gln	Gly	Val	Ile	Ile	Asn	Thr	Val	Cys	Pro	Gly	Pro	Val	Arg	Thr	
			180					185					190			
gct	cgc	ctg	gtc	aaa	cag	ttc	gcc	gca	aac	gcc	cgg	gac	tgg	aac	tgc	624
Ala	Arg	Leu	Val	Lys	Gln	Phe	Ala	Ala	Asn	Ala	Arg	Asp	Trp	Asn	Cys	
			195				200					205				
act	ccg	gag	gag	gcc	gag	gaa	cgg	ttc	ctg	gcc	ggc	ctc	cct	ttg	ccg	672
Thr	Pro	Glu	Glu	Ala	Glu	Glu	Arg	Phe	Leu	Ala	Gly	Leu	Pro	Leu	Pro	
						215					220					
tac	atc	ccc	agc	gcc	cgc	gac	atc	gcc	tac	tcg	atc	gcg	ttt	ctg	gca	720
Tyr	Ile	Pro	Ser	Ala	Arg	Asp	Ile	Ala	Tyr	Ser	Ile	Ala	Phe	Leu	Ala	
					230					235				240		
tcg	ccg	cgg	gcg	gca	tac	ctc	aac	ggc	acc	acg	atc	acc	aat	gac	ggc	768
Ser	Pro	Arg	Ala	Ala	Tyr	Leu	Asn	Gly	Thr	Thr	Ile	Thr	Asn	Asp	Gly	
				245					250					255		
ggc	atc	acc	cgt	gcg	gtc	tga										789
Gly	Ile	Thr	Arg	Ala	Val											
			260													

&lt;210&gt; 1119

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;400&gt; 1119

Met	Asp	Leu	Gly	Leu	Lys	Gly	Lys	Arg	Ala	Leu	Ile	Ser	Gly	Ala	Ser	
1				5					10					15		
Asp	Gly	Ile	Gly	Leu	Ala	Ala	Ala	Glu	Leu	Leu	Ala	Glu	Glu	Gly	Val	
			20					25					30			
Asp	Val	Ala	Leu	Val	Ala	Arg	Arg	Ala	Asn	Val	Leu	Lys	Glu	Gly	Cys	
			35				40					45				
Asp	Ser	Ile	Ala	Ser	Lys	Thr	Gly	Val	Lys	Ala	Val	Pro	Leu	Ala	Ala	
			50			55					60					
Asp	Leu	Ser	Asp	Lys	Ser	Val	Phe	Asp	Ala	Val	Val	Asn	Asp	Ala	Val	
					70					75					80	
Asp	Glu	Leu	Gly	Gly	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Ala	Ser	
				85					90					95		
Ser	Phe	Gly	Gly	Phe	Gly	Asp	Ile	Thr	Asp	Glu	Gln	Trp	Val	Ala	Asp	
			100					105					110			
Ile	Asn	Leu	Lys	Leu	Phe	Gly	Phe	Ile	Arg	Met	Thr	Arg	Ala	Ala	Leu	
			115				120					125				
Pro	His	Leu	Leu	Lys	Thr	Gly	Ser	Gly	Arg	Ile	Val	Asn	Val	Ala	Gly	
						135					140					
Asn	Ser	Gly	Lys	Gln	Ala	Leu	Glu	Tyr	His	Met	Pro	Gly	Ala	Ala	Ala	
					150					155					160	
Asn	Ala	Ala	Ile	Leu	Asn	Phe	Ser	Lys	Ser	Leu	Ser	Leu	Gln	Val	Gly	
				165					170					175		
Ala	Gln	Gly	Val	Ile	Ile	Asn	Thr	Val	Cys	Pro	Gly	Pro	Val	Arg	Thr	
			180					185					190			
Ala	Arg	Leu	Val	Lys	Gln	Phe	Ala	Ala	Asn	Ala	Arg	Asp	Trp	Asn	Cys	
			195				200					205				

## PhoenixTemp32470.tmp.txt

Thr Pro Glu Glu Ala Glu Glu Arg Phe Leu Ala Gly Leu Pro Leu Pro  
 210 215 220  
 Tyr Ile Pro Ser Ala Arg Asp Ile Ala Tyr Ser Ile Ala Phe Leu Ala  
 225 230 235 240  
 Ser Pro Arg Ala Ala Tyr Leu Asn Gly Thr Thr Ile Thr Asn Asp Gly  
 245 250 255  
 Gly Ile Thr Arg Ala Val  
 260

&lt;210&gt; 1120

&lt;211&gt; 888

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(888)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1120

atg gga tca cgc aca gcc tca ctc ggc ggg aaa gtc gtt ttc atc acg	48
Met Gly Ser Arg Thr Ala Ser Leu Gly Gly Lys Val Val Phe Ile Thr	
1 5 10 15	
ggc ggc gga gcc ggt gtc gga gcc gag gtt tcg cgc cgc ctg tac cgc	96
Gly Gly Gly Ala Gly Val Gly Ala Glu Val Ser Arg Arg Leu Tyr Arg	
20 25 30	
aag ggc gcc aag ctg atg ctc gtc gac gtc gat gcc gac gcc ctg aag	144
Lys Gly Ala Lys Leu Met Leu Val Asp Val Asp Ala Asp Ala Leu Lys	
35 40 45	
gcg cac gcc gac acc ctc ggt gag gac gtc gcg acc gcc gtc gcc gat	192
Ala His Ala Asp Thr Leu Gly Glu Asp Val Ala Thr Ala Val Ala Asp	
50 55 60	
gtg cgt gac ctc gct gcg atg aag gcc gcg gcc gac gcg gcg gtc gaa	240
Val Arg Asp Leu Ala Ala Met Lys Ala Ala Ala Asp Ala Ala Val Glu	
65 70 75 80	
cgg ttc ggc ggt atc gac gtc gtg gtg gcc aac gcc ggt gtc gcc agc	288
Arg Phe Gly Gly Ile Asp Val Val Val Ala Asn Ala Gly Val Ala Ser	
85 90 95	
tac gga tcg gtg cag cag gtc gat ccc gag gcg ttc aag cgt ctg ctc	336
Tyr Gly Ser Val Gln Gln Val Asp Pro Glu Ala Phe Lys Arg Leu Leu	
100 105 110	
gac atc aac gtg ctc gcc gtg ttc cac acg gtg gcg gcg acg ctg ccg	384
Asp Ile Asn Val Leu Gly Val Phe His Thr Val Arg Ala Thr Leu Pro	
115 120 125	
tcg gtg atc gag cgg cgc ggt tac gtg ctg atc gtg tcg tcg ctc gcg	432
Ser Val Ile Glu Arg Arg Gly Tyr Val Leu Ile Val Ser Ser Leu Ala	
130 135 140	
gcg tat gcc gcg tcg ccg gcc ctg gcg ccg tac aac gcg tca aag gcc	480
Ala Tyr Ala Ala Ser Pro Gly Leu Ala Pro Tyr Asn Ala Ser Lys Ala	
145 150 155 160	
gcc gtc gaa cag ttc gcc aac gcg ctg ccg ctc gag gtc gcc cac cgc	528
Ala Val Glu Gln Phe Ala Asn Ala Leu Arg Leu Glu Val Ala His Arg	
165 170 175	
ggc gtc gac gtc gga tcg gcg cac atg agt tgg atc gac acc gcg atg	576
Gly Val Asp Val Gly Ser Ala His Met Ser Trp Ile Asp Thr Ala Met	
180 185 190	
gtc aac gac agc aag gcc gat ctg tcg acg ttc gcc gag atg ctg tcc	624
Val Asn Asp Ser Lys Ala Asp Leu Ser Thr Phe Gly Glu Met Leu Ser	
195 200 205	
aag ctg ccg cct ccg ctg tcg tcc acc acg tct gtt tcg gcc tgc gcc	672
Lys Leu Pro Pro Pro Leu Ser Ser Thr Thr Ser Val Ser Ala Cys Gly	
210 215 220	
gag gcg ttc gtc aag gcc atc gag gcg cgc gcg cgt atc aac tgc	720
Glu Ala Phe Val Lys Gly Ile Glu Arg Arg Ala Arg Arg Ile Asn Cys	
225 230 235 240	
ccg ggt tgg gtc gag gcg ttc cgc tgg ctc aag ccg atc ctg tcg acg	768
Pro Gly Trp Val Glu Ala Phe Arg Trp Leu Lys Pro Ile Leu Ser Thr	
245 250 255	
cgc ctg ggg gag ttg ccg gtg ctg ccg ttc gta ccc gac ctg ctg ccg	816

## PhoenixTemp32470.tmp.txt

Arg Leu Gly Glu Leu Pro Val Leu Arg Phe Val Pro Asp Leu Leu Pro  
 260 265 270  
 cgg atg gac gcc gag gtc gcc gcg ctg ggc aga tcg agc agc gcg cac 864  
 Arg Met Asp Ala Glu Val Ala Ala Leu Gly Arg Ser Ser Ser Ala His  
 275 280 285  
 acc gag tcg atc gag aag cgg tga 888  
 Thr Glu Ser Ile Glu Lys Arg  
 290 295

<210> 1121  
 <211> 295  
 <212> PRT  
 <213> Mycobacterium smegmatis str. MC2 155

<400> 1121  
 Met Gly Ser Arg Thr Ala Ser Leu Gly Gly Lys Val Val Phe Ile Thr  
 1 5 10 15  
 Gly Gly Gly Ala Gly Val Gly Ala Glu Val Ser Arg Arg Leu Tyr Arg  
 20 25 30  
 Lys Gly Ala Lys Leu Met Leu Val Asp Val Asp Ala Asp Ala Leu Lys  
 35 40 45  
 Ala His Ala Asp Thr Leu Gly Glu Asp Val Ala Thr Ala Val Ala Asp  
 50 55 60  
 Val Arg Asp Leu Ala Ala Met Lys Ala Ala Asp Ala Ala Val Glu  
 65 70 75 80  
 Arg Phe Gly Gly Ile Asp Val Val Val Ala Asn Ala Gly Val Ala Ser  
 85 90 95  
 Tyr Gly Ser Val Gln Gln Val Asp Pro Glu Ala Phe Lys Arg Leu Leu  
 100 105 110  
 Asp Ile Asn Val Leu Gly Val Phe His Thr Val Arg Ala Thr Leu Pro  
 115 120 125  
 Ser Val Ile Glu Arg Arg Gly Tyr Val Leu Ile Val Ser Ser Leu Ala  
 130 135 140  
 Ala Tyr Ala Ala Ser Pro Gly Leu Ala Pro Tyr Asn Ala Ser Lys Ala  
 145 150 155 160  
 Ala Val Glu Gln Phe Ala Asn Ala Leu Arg Leu Glu Val Ala His Arg  
 165 170 175  
 Gly Val Asp Val Gly Ser Ala His Met Ser Trp Ile Asp Thr Ala Met  
 180 185 190  
 Val Asn Asp Ser Lys Ala Asp Leu Ser Thr Phe Gly Glu Met Leu Ser  
 195 200 205  
 Lys Leu Pro Pro Pro Leu Ser Ser Thr Thr Ser Val Ser Ala Cys Gly  
 210 215 220  
 Glu Ala Phe Val Lys Gly Ile Glu Arg Arg Ala Arg Arg Ile Asn Cys  
 225 230 235 240  
 Pro Gly Trp Val Glu Ala Phe Arg Trp Leu Lys Pro Ile Leu Ser Thr  
 245 250 255  
 Arg Leu Gly Glu Leu Pro Val Leu Arg Phe Val Pro Asp Leu Leu Pro  
 260 265 270  
 Arg Met Asp Ala Glu Val Ala Ala Leu Gly Arg Ser Ser Ser Ala His  
 275 280 285  
 Thr Glu Ser Ile Glu Lys Arg  
 290 295

<210> 1122  
 <211> 834  
 <212> DNA  
 <213> Mycobacterium smegmatis str. MC2 155

<220>  
 <221> CDS  
 <222> (1)..(834)  
 <223> transl\_table=11

<400> 1122  
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 Met Ser Phe Thr Gly Lys Thr Ala Ile Val Thr Gly Ala Gly Ser Gly  
 1 5 10 15  
 atc ggc gcg acg ctg tgc cgc gcg ctg gtg gat gcc ggt gcc gac gtg 96  
 Page 606

## PhoenixTemp32470.tmp.txt

Ile	Gly	Ala	Thr	Leu	Cys	Arg	Ala	Leu	Val	Asp	Ala	Gly	Ala	Asp	Val		
			20					25					30				
ctg	tgc	acc	gac	gtc	gac	gcc	gac	gcc	gca	cgc	acg	gcc	gcc	gca		144	
Leu	Cys	Thr	Asp	Val	Asp	Ala	Asp	Ala	Ala	Ala	Arg	Thr	Ala	Ala	Ala		
		35					40					45					
cgc	acg	gcc	gcc	gca	ctc	ggc	gcc	cga	tcg	gcg	cgc	ctc	gac	gtc	acc	192	
Arg	Thr	Ala	Ala	Ala	Leu	Gly	Ala	Arg	Ser	Ala	Arg	Leu	Asp	Val	Thr		
		50				55					60						
gac	gcc	gcg	gcc	gtg	cag	acc	acc	gtc	gac	gat	gtg	gtc	gcc	cgc	gcc	240	
Asp	Ala	Ala	Ala	Val	Gln	Thr	Thr	Val	Asp	Asp	Val	Val	Ala	Arg	Ala		
		65			70				75						80		
ggc	cgg	ttg	gac	ctg	atg	ttc	aac	aac	gca	ggc	atc	gtg	tgg	ggc	ggc	288	
Gly	Arg	Leu	Asp	Leu	Met	Phe	Asn	Asn	Ala	Gly	Ile	Val	Trp	Gly	Gly		
				85					90					95			
gac	acc	gaa	ctg	ctc	acg	ctc	gac	cag	tgg	aac	gcg	atc	atc	gac	gtc	336	
Asp	Thr	Glu	Leu	Leu	Thr	Leu	Asp	Gln	Trp	Asn	Ala	Ile	Ile	Asp	Val		
		100					105					110					
aac	atc	cgc	ggc	gtc	gtg	cac	ggc	gtc	gcc	gcg	gcg	tac	ccg	cag	atg	384	
Asn	Ile	Arg	Gly	Val	Val	His	Gly	Val	Ala	Ala	Ala	Tyr	Pro	Gln	Met		
		115					120					125					
atc	cgc	cag	ggc	cac	ggc	cac	atc	gtc	aac	acc	gcg	tcg	atg	gcc	gga	432	
Ile	Arg	Gln	Gly	His	Gly	His	Ile	Val	Asn	Thr	Ala	Ser	Met	Ala	Gly		
		130				135					140						
ctg	gcc	gcg	gcc	ggc	cag	ctc	acc	agc	tac	gtg	atg	agc	aag	cac	gcc	480	
Leu	Ala	Ala	Ala	Gly	Gln	Leu	Thr	Ser	Tyr	Val	Met	Ser	Lys	His	Ala		
		145			150				155						160		
gtc	gtc	ggg	ctg	tcg	ctg	gcg	ctg	cgc	tcg	gag	gcc	gcc	gca	cac	ggc	528	
Val	Val	Gly	Leu	Ser	Leu	Ala	Leu	Arg	Ser	Glu	Ala	Ala	Ala	His	Gly		
				165				170						175			
gtc	ggc	gtg	ctc	gcg	gtg	tgc	ccc	gcg	gcc	gtg	gag	acg	ccg	atc	ctc	576	
Val	Gly	Val	Leu	Ala	Val	Cys	Pro	Ala	Ala	Val	Glu	Thr	Pro	Ile	Leu		
			180					185					190				
gac	aag	ggc	gcg	gtc	ggc	ggg	ttc	gtg	gga	cgg	gat	tac	ttc	ctg	cgc	624	
Asp	Lys	Gly	Ala	Val	Gly	Gly	Phe	Val	Gly	Arg	Asp	Tyr	Phe	Leu	Arg		
		195					200					205					
ggc	cag	ggc	atg	aag	acg	gcg	tac	gac	ccg	gac	cgg	ttg	gcc	gcc	gac	672	
Gly	Gln	Gly	Met	Lys	Thr	Ala	Tyr	Asp	Pro	Asp	Arg	Leu	Ala	Ala	Asp		
		210				215					220						
acc	ctg	cgc	gcg	atc	gag	cgc	aac	aag	gcc	ctg	ctg	gtc	aaa	ccg	cgt	720	
Thr	Leu	Arg	Ala	Ile	Glu	Arg	Asn	Lys	Ala	Leu	Leu	Val	Lys	Pro	Arg		
		225			230					235					240		
cga	gcc	cac	gcg	tcg	tgg	ctg	ttg	gcg	cgt	ctc	gcg	ccc	ggc	ctg	atg	768	
Arg	Ala	His	Ala	Ser	Trp	Leu	Leu	Ala	Arg	Leu	Ala	Pro	Gly	Leu	Met		
				245				250					255				
cag	cgg	ctg	tcg	gtt	cgg	ttc	gtc	gcc	gcc	cag	cgc	gca	tcg	cag	gcc	816	
Gln	Arg	Leu	Ser	Val	Arg	Phe	Val	Ala	Ala	Gln	Arg	Ala	Ser	Gln	Ala		
			260					265					270				
cgc	acg	gca	aac	cac	tag											834	
Arg	Thr	Ala	Asn	His													
		275															

&lt;210&gt; 1123

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;400&gt; 1123

Met	Ser	Phe	Thr	Gly	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ala	Gly	Ser	Gly		
				5					10					15			
Ile	Gly	Ala	Thr	Leu	Cys	Arg	Ala	Leu	Val	Asp	Ala	Gly	Ala	Asp	Val		
			20					25					30				
Leu	Cys	Thr	Asp	Val	Asp	Ala	Asp	Ala	Ala	Ala	Arg	Thr	Ala	Ala	Ala		
		35					40					45					
Arg	Thr	Ala	Ala	Ala	Leu	Gly	Ala	Arg	Ser	Ala	Arg	Leu	Asp	Val	Thr		
		50				55					60						
Asp	Ala	Ala	Ala	Val	Gln	Thr	Thr	Val	Asp	Asp	Val	Val	Ala	Arg	Ala		
		65			70				75						80		
Gly	Arg	Leu	Asp	Leu	Met	Phe	Asn	Asn	Ala	Gly	Ile	Val	Trp	Gly	Gly		
				85					90					95			

## PhoenixTemp32470.tmp.txt

Asp Thr Glu Leu Leu Thr Leu Asp Gln Trp Asn Ala Ile Ile Asp Val  
 100 105 110  
 Asn Ile Arg Gly Val Val His Gly Val Ala Ala Ala Tyr Pro Gln Met  
 115 120 125  
 Ile Arg Gln Gly His Gly His Ile Val Asn Thr Ala Ser Met Ala Gly  
 130 135 140  
 Leu Ala Ala Ala Gly Gln Leu Thr Ser Tyr Val Met Ser Lys His Ala  
 145 150 155 160  
 Val Val Gly Leu Ser Leu Ala Leu Arg Ser Glu Ala Ala Ala His Gly  
 165 170 175  
 Val Gly Val Leu Ala Val Cys Pro Ala Ala Val Glu Thr Pro Ile Leu  
 180 185 190  
 Asp Lys Gly Ala Val Gly Gly Phe Val Gly Arg Asp Tyr Phe Leu Arg  
 195 200 205  
 Gly Gln Gly Met Lys Thr Ala Tyr Asp Pro Asp Arg Leu Ala Ala Asp  
 210 215 220  
 Thr Leu Arg Ala Ile Glu Arg Asn Lys Ala Leu Leu Val Lys Pro Arg  
 225 230 235 240  
 Arg Ala His Ala Ser Trp Leu Leu Ala Arg Leu Ala Pro Gly Leu Met  
 245 250 255  
 Gln Arg Leu Ser Val Arg Phe Val Ala Ala Gln Arg Ala Ser Gln Ala  
 260 265 270  
 Arg Thr Ala Asn His  
 275

&lt;210&gt; 1124

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1124

atg cca gac agg gtg ctg gat gga aac gtc gtt ctg ata agc gga gca	48
Met Pro Asp Arg Val Leu Asp Gly Asn Val Val Leu Ile Ser Gly Ala	
1 5 10 15	
tca agc gga att ggc aac gcc gcc gca cga aag ctg gcc ggc gcg gga	96
Ser Ser Gly Ile Gly Asn Ala Ala Ala Arg Lys Leu Ala Gly Ala Gly	
20 25 30	
gcc aag gtc gct ctc gcc gcg cgg cgg gcc gac aag ctc gag gga ctg	144
Ala Lys Val Ala Leu Ala Ala Arg Arg Ala Asp Lys Leu Glu Gly Leu	
35 40 45	
gcg gaa cgg cta cgg tct caa ggc cat gaa gcc ttg gtg atc gct gct	192
Ala Glu Arg Leu Arg Ser Gln Gly His Glu Ala Leu Val Ile Ala Ala	
50 55 60	
gac ctc act gat gcg ggc aac gcg caa tcg act gtt gac cga acc gtc	240
Asp Leu Thr Asp Ala Gly Asn Ala Gln Ser Thr Val Asp Arg Thr Val	
65 70 75 80	
gac gag ttc ggc cgc ctc gac acc ctg gtg aac gcg gcg ggt gtg atg	288
Asp Glu Phe Gly Arg Leu Asp Thr Leu Val Asn Ala Ala Gly Val Met	
85 90 95	
ctg aac ggc gca tcc gaa gaa tcg ccg ctc gaa gag tgg gac cga atg	336
Leu Asn Gly Ala Ser Glu Glu Ser Pro Leu Glu Glu Trp Asp Arg Met	
100 105 110	
gtc gac atc aac ctg cgc ggc ctc atg tat gtg acg aag gcg ttg	384
Val Asp Ile Asn Leu Arg Gly Leu Met Tyr Val Thr Lys Ala Ala Leu	
115 120 125	
ccg cat ctt ctc gtc gct gca cgg aac agt cca cgc tcg gtg gcc gac	432
Pro His Leu Leu Val Ala Ala Arg Asn Ser Pro Arg Ser Val Ala Asp	
130 135 140	
gtg gtg aac att tcg tcc gtc gcc gga cgg gtc gcg gca ccg acg gtc	480
Val Val Asn Ile Ser Ser Val Ala Gly Arg Val Ala Ala Pro Thr Val	
145 150 155 160	
gcg atc tac aac gcc acg aag ttc gcc gtg acg ggc gca acc gaa gcg	528
Ala Ile Tyr Asn Ala Thr Lys Phe Ala Val Thr Gly Ala Thr Glu Ala	
165 170 175	

## PhoenixTemp32470.tmp.txt

tgg	cgg	cag	gag	ttc	acc	aag	cgc	aac	gtc	cgc	ttc	tcg	gtc	atc	gag	576
Trp	Arg	Gln	Glu	Phe	Thr	Lys	Arg	Asn	Val	Arg	Phe	Ser	Val	Ile	Glu	
			180						185				190			
ccc	ggt	cgc	acc	aaa	acc	gaa	tta	ttc	gac	cag	aag	ggt	aat	tca	gac	624
Pro	Gly	Arg	Thr	Lys	Thr	Glu	Leu	Phe	Asp	Gln	Lys	Gly	Asn	Ser	Asp	
			195				200					205				
gca	gat	ttc	aaa	gcg	gcg	ttc	gga	gca	gtg	gag	caa	ttg	cac	gcg	gag	672
Ala	Asp	Phe	Lys	Ala	Ala	Phe	Gly	Ala	Val	Glu	Gln	Leu	His	Ala	Glu	
			210			215					220					
gac	atc	gcc	gaa	gcg	atc	gcc	tac	atc	gtc	gcg	caa	ccg	cgc	cgc	gtc	720
Asp	Ile	Ala	Glu	Ala	Ile	Ala	Tyr	Ile	Val	Ala	Gln	Pro	Arg	Arg	Val	
			225		230				235						240	
gcc	gtg	aac	gag	atc	gtc	atc	cgg	ccc	acc	gat	cag	ccg	tag			762
Ala	Val	Asn	Glu	Ile	Val	Ile	Arg	Pro	Thr	Asp	Gln	Pro				
			245						250							

&lt;210&gt; 1125

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;400&gt; 1125

Met	Pro	Asp	Arg	Val	Leu	Asp	Gly	Asn	Val	Val	Leu	Ile	Ser	Gly	Ala	
1				5				10						15		
Ser	Ser	Gly	Ile	Gly	Asn	Ala	Ala	Ala	Arg	Lys	Leu	Ala	Gly	Ala	Gly	
			20				25					30				
Ala	Lys	Val	Ala	Leu	Ala	Ala	Arg	Arg	Ala	Asp	Lys	Leu	Glu	Gly	Leu	
		35				40					45					
Ala	Glu	Arg	Leu	Arg	Ser	Gln	Gly	His	Glu	Ala	Leu	Val	Ile	Ala	Ala	
	50					55				60						
Asp	Leu	Thr	Asp	Ala	Gly	Asn	Ala	Gln	Ser	Thr	Val	Asp	Arg	Thr	Val	
65					70				75						80	
Asp	Glu	Phe	Gly	Arg	Leu	Asp	Thr	Leu	Val	Asn	Ala	Ala	Gly	Val	Met	
			85					90						95		
Leu	Asn	Gly	Ala	Ser	Glu	Glu	Ser	Pro	Leu	Glu	Glu	Trp	Asp	Arg	Met	
		100					105					110				
Val	Asp	Ile	Asn	Leu	Arg	Gly	Leu	Met	Tyr	Val	Thr	Lys	Ala	Ala	Leu	
		115				120					125					
Pro	His	Leu	Leu	Val	Ala	Ala	Arg	Asn	Ser	Pro	Arg	Ser	Val	Ala	Asp	
	130				135					140						
Val	Val	Asn	Ile	Ser	Ser	Val	Ala	Gly	Arg	Val	Ala	Ala	Pro	Thr	Val	
145					150					155					160	
Ala	Ile	Tyr	Asn	Ala	Thr	Lys	Phe	Ala	Val	Thr	Gly	Ala	Thr	Glu	Ala	
			165					170						175		
Trp	Arg	Gln	Glu	Phe	Thr	Lys	Arg	Asn	Val	Arg	Phe	Ser	Val	Ile	Glu	
		180						185					190			
Pro	Gly	Arg	Thr	Lys	Thr	Glu	Leu	Phe	Asp	Gln	Lys	Gly	Asn	Ser	Asp	
		195					200				205					
Ala	Asp	Phe	Lys	Ala	Ala	Phe	Gly	Ala	Val	Glu	Gln	Leu	His	Ala	Glu	
	210				215					220						
Asp	Ile	Ala	Glu	Ala	Ile	Ala	Tyr	Ile	Val	Ala	Gln	Pro	Arg	Arg	Val	
225					230					235					240	
Ala	Val	Asn	Glu	Ile	Val	Ile	Arg	Pro	Thr	Asp	Gln	Pro				
			245						250							

&lt;210&gt; 1126

&lt;211&gt; 735

&lt;212&gt; DNA

&lt;213&gt; Nocardioides sp. JS614

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(735)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1126

atg	agt	gtc	aag	gaa	ggt	gaa	gca	gtt	ccc	gtc	gcg	gtc	gtc	acg	ggt	
Met	Ser	Val	Lys	Glu	Gly	Glu	Ala	Val	Pro	Val	Ala	Val	Val	Thr	Gly	
1				5					10					15		

48



## PhoenixTemp32470.tmp.txt

ggt	tgc	tcg	ggg	atc	ggc	cag	atg	acg	gcg	gag	cgc	ctg	gcg	agc	gac	96
Gly	Cys	Ser	Gly	Ile	Gly	Gln	Met	Thr	Ala	Glu	Arg	Leu	Ala	Ser	Asp	
			20					25					30			
ggc	tac	cgt	gtc	gcc	gtc	atc	gac	ctg	ggc	ttc	gca	ccg	gat	gcc	gat	144
Gly	Tyr	Arg	Val	Ala	Val	Ile	Asp	Leu	Gly	Phe	Ala	Pro	Asp	Ala	Asp	
		35					40					45				
ctc	tcg	ctc	gaa	gcc	gac	gtg	acc	gat	ccc	gcc	gga	gtg	gaa	tcc	gcg	192
Leu	Ser	Leu	Glu	Ala	Asp	Val	Thr	Asp	Pro	Ala	Gly	Val	Glu	Ser	Ala	
	50					55					60					
gtc	gag	gcg	atc	ctc	gat	gcc	ttt	ggc	cgg	gtc	gac	ctg	ttg	gtc	aac	240
Val	Glu	Ala	Ile	Leu	Asp	Ala	Phe	Gly	Arg	Val	Asp	Leu	Leu	Val	Asn	
65					70				75						80	
aac	gcc	ggc	atc	acc	ggg	tcc	gca	gag	gcg	act	gtc	tgt	cat	gac	acg	288
Asn	Ala	Gly	Ile	Thr	Gly	Ser	Ala	Glu	Ala	Thr	Val	Cys	His	Asp	Thr	
			85					90					95			
ccg	gtt	gag	caa	tgg	gac	ctg	gtc	cat	gcg	gtc	aat	gtc	agg	ggc	ccg	336
Pro	Val	Glu	Gln	Trp	Asp	Leu	Val	His	Ala	Val	Asn	Val	Arg	Gly	Pro	
			100					105					110			
ttc	ctg	tgt	acc	cgc	gcc	gta	ctg	cca	acg	atg	ctg	atc	cag	aag	tcg	384
Phe	Leu	Cys	Thr	Arg	Ala	Val	Leu	Pro	Thr	Met	Leu	Ile	Gln	Lys	Ser	
		115					120					125				
ggc	cac	gtg	atc	acc	gtg	gct	tcg	gtt	gcc	ggc	cta	gtc	gca	ttt	cca	432
Gly	His	Val	Ile	Thr	Val	Ala	Ser	Val	Ala	Gly	Leu	Val	Ala	Phe	Pro	
	130					135					140					
ggg	cga	tgt	gcc	tac	acc	gcg	tcg	aag	ggg	gcg	atc	gcg	ttc	acc		480
Gly	Arg	Cys	Ala	Tyr	Thr	Ala	Ser	Lys	Gly	Ala	Ala	Ile	Ala	Phe	Thr	
145					150				155						160	
agg	tcg	ctc	gcc	gtc	gac	tac	gca	gca	gcg	ggc	gtc	cgc	gcc	aac	gcc	528
Arg	Ser	Leu	Ala	Val	Asp	Tyr	Ala	Ala	Ala	Gly	Val	Arg	Ala	Asn	Ala	
			165					170						175		
atc	tgc	ccc	ggc	atg	gtc	gag	acc	ccg	atg	acc	caa	tgg	cga	ctt	gat	576
Ile	Cys	Pro	Gly	Met	Val	Glu	Thr	Pro	Met	Thr	Gln	Trp	Arg	Leu	Asp	
			180					185					190			
gtt	cca	gaa	ctt	cgc	gca	caa	gtt	gag	tcg	aag	atc	cca	ctt	ggg	cgt	624
Val	Pro	Glu	Leu	Arg	Ala	Gln	Val	Glu	Ser	Lys	Ile	Pro	Leu	Gly	Arg	
		195					200					205				
gtg	gcg	aaa	cct	gag	gat	atc	gcc	gat	gcg	gtg	gta	gcg	ctt	gcc	tcc	672
Val	Ala	Lys	Pro	Glu	Asp	Ile	Ala	Asp	Ala	Val	Val	Ala	Leu	Ala	Ser	
	210					215					220					
gac	aag	ctg	gcc	tac	atg	aca	ggt	cac	gca	ctc	gtc	gtc	gac	ggt	ggg	720
Asp	Lys	Leu	Ala	Tyr	Met	Thr	Gly	His	Ala	Leu	Val	Val	Val	Asp	Gly	
225					230					235					240	
tgg	atc	gct	ctg	tag												735
Trp	Ile	Ala	Leu													

&lt;210&gt; 1127

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Nocardioides sp. JS614

&lt;400&gt; 1127

Met	Ser	Val	Lys	Glu	Gly	Glu	Ala	Val	Pro	Val	Ala	Val	Val	Thr	Gly	
1				5					10					15		
Gly	Cys	Ser	Gly	Ile	Gly	Gln	Met	Thr	Ala	Glu	Arg	Leu	Ala	Ser	Asp	
			20					25					30			
Gly	Tyr	Arg	Val	Ala	Val	Ile	Asp	Leu	Gly	Phe	Ala	Pro	Asp	Ala	Asp	
		35					40					45				
Leu	Ser	Leu	Glu	Ala	Asp	Val	Thr	Asp	Pro	Ala	Gly	Val	Glu	Ser	Ala	
	50					55					60					
Val	Glu	Ala	Ile	Leu	Asp	Ala	Phe	Gly	Arg	Val	Asp	Leu	Leu	Val	Asn	
65					70				75						80	
Asn	Ala	Gly	Ile	Thr	Gly	Ser	Ala	Glu	Ala	Thr	Val	Cys	His	Asp	Thr	
			85					90					95			
Pro	Val	Glu	Gln	Trp	Asp	Leu	Val	His	Ala	Val	Asn	Val	Arg	Gly	Pro	
			100					105					110			
Phe	Leu	Cys	Thr	Arg	Ala	Val	Leu	Pro	Thr	Met	Leu	Ile	Gln	Lys	Ser	
		115					120					125				
Gly	His	Val	Ile	Thr	Val	Ala	Ser	Val	Ala	Gly	Leu	Val	Ala	Phe	Pro	

## PhoenixTemp32470.tmp.txt

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      130      135      140
Gly Arg Cys Ala Tyr Thr Ala Ser Lys Gly Ala Ala Ile Ala Phe Thr
145      150      155      160
Arg Ser Leu Ala Val Asp Tyr Ala Ala Ala Gly Val Arg Ala Asn Ala
      165      170      175
Ile Cys Pro Gly Met Val Glu Thr Pro Met Thr Gln Trp Arg Leu Asp
      180      185      190
Val Pro Glu Leu Arg Ala Gln Val Glu Ser Lys Ile Pro Leu Gly Arg
      195      200      205
Val Ala Lys Pro Glu Asp Ile Ala Asp Ala Val Val Ala Leu Ala Ser
      210      215      220
Asp Lys Leu Ala Tyr Met Thr Gly His Ala Leu Val Val Asp Gly Gly
225      230      235      240
Trp Ile Ala Leu

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&lt;210&gt; 1128

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Nocardioides sp. JS614

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1128

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atg gcg acc gga tcg gcg ggg gtg gcg atg gtg acc ggc gcg agc ggc      48
Met Ala Thr Gly Ser Ala Gly Val Ala Met Val Thr Gly Ala Ser Gly
1      5      10      15
cgg atc ggc cgg cac gtc gtc gac cgg ctg atc gag cgc ggg tac gcc      96
Arg Ile Gly Arg His Val Val Asp Arg Leu Ile Glu Arg Gly Tyr Ala
      20      25      30
gtg cag ggg ctc gac ctg gca ccc ggt ccg cac acc cgg gtc tgc gac      144
Val Gln Gly Leu Asp Leu Ala Pro Gly Pro His Thr Arg Val Cys Asp
      35      40      45
ctc gcc gac gag gac gcg gtc cgc gcg gcg ctg ggc gac ctg ccg cgg      192
Leu Ala Asp Glu Asp Ala Val Arg Ala Ala Leu Gly Asp Leu Pro Arg
      50      55      60
ctg gac ctg ctc gtg ctc tgc gcc ggc ctg tcc gcg atc ggg acc gtc      240
Leu Asp Leu Leu Val Leu Cys Ala Gly Leu Ser Ala Ile Gly Thr Val
      65      70      75      80
gac gac cac gat ctc gcc acc cac cgg cgg gtc atg gac ggc acc cac      288
Asp Asp His Asp Leu Ala Thr His Arg Arg Val Met Asp Gly Thr His
      85      90      95
ttc tcg gcc gtg ggg ccg ctg ctg gcc gcg ttg ccg gcg ttg cgg cgg      336
Phe Ser Ala Val Gly Pro Leu Leu Ala Ala Leu Pro Ala Leu Arg Arg
      100      105      110
gcc cgg ggc acc gtg gtg ctg gtg ggg tcg gtg gcg ggc ttc gcg ccc      384
Ala Arg Gly Thr Val Val Leu Val Gly Ser Val Ala Gly Phe Ala Pro
      115      120      125
gtg ctc ggc cgc ccg gcg tac gtc gcc gcc aag aac gcg gtc acc ggc      432
Val Leu Gly Arg Pro Ala Tyr Val Ala Ala Lys Asn Ala Val Thr Gly
      130      135      140
ctg ttc acc gcg ctg cgt ccc gag ctg gct gcc caa ggg gtg cgc gtc      480
Leu Phe Thr Ala Leu Arg Pro Glu Leu Ala Ala Gln Gly Val Arg Val
      145      150      155      160
gtg gtc gtg cac ccg acg ttc gtc acc ggc ggc atg ggg gtg gcc gac      528
Val Val Val His Pro Thr Phe Val Thr Gly Gly Met Gly Val Ala Asp
      165      170      175
cag gcc ggg tac gac cgt cgc acg acc gcc ggc gcc gag ctc acg ccg      576
Gln Ala Gly Tyr Asp Arg Arg Thr Thr Ala Gly Ala Glu Thr Pro
      180      185      190
gag cag gtg gcc gac gcc atc gtc gat gcg gcc gag gga cgg cgc gac      624
Glu Gln Val Ala Asp Ala Ile Val Asp Ala Ala Glu Gly Arg Arg Asp
      195      200      205
gtc gtc ctc gtg ggt cgc acg gcc cgc ctg gcc tgg gcg gtg agc agg      672
Val Val Leu Val Gly Arg Ala Arg Leu Ala Trp Ala Val Ser Arg
      210      215      220

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## PhoenixTemp32470.tmp.txt

cac gcc cct cgg acc tac acc cgc ctg atg acc cgt cgg ctg cgc gcc 720  
 His Ala Pro Arg Thr Tyr Thr Arg Leu Met Thr Arg Arg Leu Arg Ala 240  
 225 230 235  
 ggg aca gga gag aac ccg tga 741  
 Gly Thr Gly Glu Asn Pro  
 245

<210> 1129  
 <211> 246  
 <212> PRT  
 <213> Nocardioides sp. JS614

<400> 1129  
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 1 5 10 15  
 Arg Ile Gly Arg His Val Val Asp Arg Leu Ile Glu Arg Gly Tyr Ala  
 20 25 30  
 Val Gln Gly Leu Asp Leu Ala Pro Gly Pro His Thr Arg Val Cys Asp  
 35 40 45  
 Leu Ala Asp Glu Asp Ala Val Arg Ala Ala Leu Gly Asp Leu Pro Arg  
 50 55 60  
 Leu Asp Leu Leu Val Leu Cys Ala Gly Leu Ser Ala Ile Gly Thr Val  
 65 70 75 80  
 Asp Asp His Asp Leu Ala Thr His Arg Arg Val Met Asp Gly Thr His  
 85 90 95  
 Phe Ser Ala Val Gly Pro Leu Leu Ala Ala Leu Pro Ala Leu Arg Arg  
 100 105 110  
 Ala Arg Gly Thr Val Val Leu Val Gly Ser Val Ala Gly Phe Ala Pro  
 115 120 125  
 Val Leu Gly Arg Pro Ala Tyr Val Ala Ala Lys Asn Ala Val Thr Gly  
 130 135 140  
 Leu Phe Thr Ala Leu Arg Pro Glu Leu Ala Ala Gln Gly Val Arg Val  
 145 150 155 160  
 Val Val Val His Pro Thr Phe Val Thr Gly Gly Met Gly Val Ala Asp  
 165 170 175  
 Gln Ala Gly Tyr Asp Arg Arg Thr Thr Ala Gly Ala Glu Leu Thr Pro  
 180 185 190  
 Glu Gln Val Ala Asp Ala Ile Val Asp Ala Ala Glu Gly Arg Arg Asp  
 195 200 205  
 Val Val Leu Val Gly Arg Thr Ala Arg Leu Ala Trp Ala Val Ser Arg  
 210 215 220  
 His Ala Pro Arg Thr Tyr Thr Arg Leu Met Thr Arg Arg Leu Arg Ala  
 225 230 235 240  
 Gly Thr Gly Glu Asn Pro  
 245

<210> 1130  
 <211> 837  
 <212> DNA  
 <213> marine gamma proteobacterium HTCC2080

<220>  
 <221> CDS  
 <222> (1)..(837)  
 <223> transl\_table=11

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 1 5 10  
 agt ggt att ggc gca gcg acg gcc gaa aag tta gtg gca cat ggc gct 96  
 Ser Gly Ile Gly Ala Ala Thr Ala Glu Lys Leu Val Ala His Gly Ala 30  
 20 25 30  
 aag gtc gtg ctg ggg gat att caa gag gat cgc ttg gcg agt ttc gtt 144  
 Lys Val Val Leu Gly Asp Ile Gln Glu Asp Arg Leu Ala Ser Phe Val 45  
 35 40 45  
 gag tcg ctc aat ggt caa gcg atg ggt ttg cgc tgt gat gtc acc cga 192  
 Glu Ser Leu Asn Gly Gln Ala Met Gly Leu Arg Cys Asp Val Thr Arg 60  
 50 55 60

## PhoenixTemp32470.tmp.txt

gag	gag	gat	gtt	aaa	ggt	ttg	gtt	gat	gcg	gcc	att	gcg	aac	cat	ggg	240
Glu	Glu	Asp	Val	Lys	Gly	Leu	Val	Asp	Ala	Ala	Ile	Ala	Asn	His	Gly	
65					70					75					80	
cgc	att	gat	gtg	atg	ttt	aac	aat	gcg	ggc	atc	gtg	ggt	gct	att	ggt	288
Arg	Ile	Asp	Val	Met	Phe	Asn	Asn	Ala	Gly	Ile	Val	Gly	Ala	Ile	Gly	
				85					90					95		
cct	atg	gat	acg	acc	cct	act	gat	gag	tgg	aag	ttc	act	tta	gat	att	336
Pro	Met	Asp	Thr	Thr	Pro	Thr	Asp	Glu	Trp	Lys	Phe	Thr	Leu	Asp	Ile	
			100					105					110			
ctt	tta	aac	ggc	gtg	ttc	tat	ggc	atg	aaa	cac	gcc	tcg	ggt	cac	atg	384
Leu	Leu	Asn	Gly	Val	Phe	Tyr	Gly	Met	Lys	His	Ala	Ser	Gly	His	Met	
		115					120					125				
aag	cgt	gca	gga	cgt	ggc	tct	att	atc	agt	atg	agc	acg	gcg	ggc		432
Lys	Arg	Ala	Gly	Arg	Gly	Ser	Ile	Ile	Ser	Met	Ser	Ser	Thr	Ala	Gly	
	130					135					140					
gtg	atg	ggg	ggg	cta	ggc	cct	cat	gct	tat	gca	gcg	gct	aaa	cat	gcc	480
Val	Met	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Ala	Ala	Ala	Lys	His	Ala	
145					150					155					160	
gta	gta	ggc	ctt	act	aag	aac	ctg	gct	gct	gaa	gct	tgt	gcc	ttt	ggt	528
Val	Val	Gly	Leu	Thr	Lys	Asn	Leu	Ala	Ala	Glu	Ala	Cys	Ala	Phe	Gly	
			165					170						175		
gtg	cgg	gtt	aat	tgt	ttg	gca	cct	ggg	ctt	ata	gcc	aca	ccc	ttg	gcg	576
Val	Arg	Val	Asn	Cys	Leu	Ala	Pro	Gly	Leu	Ile	Ala	Thr	Pro	Leu	Ala	
			180					185					190			
gca	gcg	gct	acc	gtg	ggt	gat	cct	gat	ggg	att	gag	cag	gcg	ctc	cca	624
Ala	Ala	Ala	Thr	Val	Gly	Asp	Pro	Asp	Gly	Ile	Glu	Gln	Ala	Leu	Pro	
		195					200					205				
gca	ttt	gct	gaa	tta	tcg	cct	ttg	cca	ggg	cgt	gca	ggt	atg	ccc	gaa	672
Ala	Phe	Ala	Glu	Leu	Ser	Pro	Leu	Pro	Gly	Arg	Ala	Gly	Met	Pro	Glu	
	210					215					220					
gat	gtc	gct	aat	gca	gta	ctg	tgg	ttg	gca	tca	gac	gag	tcg	ggc	tat	720
Asp	Val	Ala	Asn	Ala	Val	Leu	Trp	Leu	Ala	Ser	Asp	Glu	Ser	Gly	Tyr	
225					230				235					240		
gtg	aat	ggt	caa	acg	atc	gcg	att	gac	gca	ggt	ctt	acg	acg	ggg	tca	768
Val	Asn	Gly	Gln	Thr	Ile	Ala	Ile	Asp	Ala	Gly	Leu	Thr	Thr	Gly	Ser	
			245					250						255		
aag	cct	gga	gat	cct	aac	ttt	gct	gaa	tat	cag	ccc	ata	ctc	cga	gag	816
Lys	Pro	Gly	Asp	Pro	Asn	Phe	Ala	Glu	Tyr	Gln	Pro	Ile	Leu	Arg	Glu	
		260						265					270			
gca	ggt	aag	agt	ggg	ttg	tag										837
Ala	Gly	Lys	Ser	Gly	Leu											
		275														

&lt;210&gt; 1131

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; marine gamma proteobacterium HTCC2080

&lt;400&gt; 1131

Met	Glu	Arg	Arg	Leu	Glu	Gly	Gln	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	
1				5					10					15		
Ser	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Glu	Lys	Leu	Val	Ala	His	Gly	Ala	
			20					25					30			
Lys	Val	Val	Leu	Gly	Asp	Ile	Gln	Glu	Asp	Arg	Leu	Ala	Ser	Phe	Val	
		35					40					45				
Glu	Ser	Leu	Asn	Gly	Gln	Ala	Met	Gly	Leu	Arg	Cys	Asp	Val	Thr	Arg	
	50					55					60					
Glu	Glu	Asp	Val	Lys	Gly	Leu	Val	Asp	Ala	Ala	Ile	Ala	Asn	His	Gly	
65					70				75						80	
Arg	Ile	Asp	Val	Met	Phe	Asn	Asn	Ala	Gly	Ile	Val	Gly	Ala	Ile	Gly	
				85					90					95		
Pro	Met	Asp	Thr	Thr	Pro	Thr	Asp	Glu	Trp	Lys	Phe	Thr	Leu	Asp	Ile	
			100					105					110			
Leu	Leu	Asn	Gly	Val	Phe	Tyr	Gly	Met	Lys	His	Ala	Ser	Gly	His	Met	
		115					120					125				
Lys	Arg	Ala	Gly	Arg	Gly	Ser	Ile	Ile	Ser	Met	Ser	Ser	Thr	Ala	Gly	
	130					135					140					
Val	Met	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Ala	Ala	Ala	Lys	His	Ala	
145					150				155						160	

## PhoenixTemp32470.tmp.txt

Val Val Gly Leu Thr Lys Asn Leu Ala Ala Glu Ala Cys Ala Phe Gly  
 165  
 Val Arg Val Asn Cys Leu Ala Pro Gly Leu Ile Ala Thr Pro Leu Ala  
 180  
 Ala Ala Ala Thr Val Gly Asp Pro Asp Gly Ile Glu Gln Ala Leu Pro  
 195  
 Ala Phe Ala Glu Leu Ser Pro Leu Pro Gly Arg Ala Gly Met Pro Glu  
 210  
 Asp Val Ala Asn Ala Val Leu Trp Leu Ala Ser Asp Glu Ser Gly Tyr  
 225  
 Val Asn Gly Gln Thr Ile Ala Ile Asp Ala Gly Leu Thr Thr Gly Ser  
 245  
 Lys Pro Gly Asp Pro Asn Phe Ala Glu Tyr Gln Pro Ile Leu Arg Glu  
 260  
 Ala Gly Lys Ser Gly Leu  
 275

&lt;210&gt; 1132

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida GB-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1132

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Met Asn Asn Asn Lys Ile Ala Ser Gln Trp Leu Gly Leu Asp Ser Ala	
1 5 10 15	
gta tgc gtg gta acc ggc gcc gcc ggc ggc att ggt gcc gcg ctg gcc	96
Val Cys Val Val Thr Gly Ala Ala Gly Gly Ile Gly Ala Ala Leu Ala	
20 25 30	
gca gcc ttg gtg gag cag cag gcc cac gtg gtg ctg ctg gac cgc gac	144
Ala Ala Leu Val Glu Gln Gln Ala His Val Val Leu Leu Asp Arg Asp	
35 40 45	
ctg gac aaa tgc cgc gaa ctg gcg gcc acc ttg ggt gag cac agc acg	192
Leu Asp Lys Cys Arg Glu Leu Ala Ala Thr Leu Gly Glu His Ser Thr	
50 55 60	
ggc gaa gtc agc gcc ctg gcc tgt gac att gcc gac ccg gcc agc gtg	240
Gly Glu Val Ser Ala Leu Ala Cys Asp Ile Ala Asp Pro Ala Ser Val	
65 70 75 80	
ggg caa gcg gct gcc cag gtg cag gca ctg cat ggg cgc tgc gat gtg	288
Gly Gln Ala Ala Ala Gln Val Gln Ala Leu His Gly Arg Cys Asp Val	
85 90 95	
ctg gtc aac aat gcc agc gtg ctg cgc ccc ggc gcg ctg gac acg ctg	336
Leu Val Asn Asn Ala Ser Val Leu Arg Pro Gly Ala Leu Asp Thr Leu	
100 105 110	
agc ctg gag caa tgg aac cag gtg ctg gcg gtc aac ctc agc ggc tac	384
Ser Leu Glu Gln Trp Asn Gln Val Leu Ala Val Asn Leu Ser Gly Tyr	
115 120 125	
ctg ttg tgt gcc cag gcc ttc ggc cgc tcg atg ctg gct cgc ggc cag	432
Leu Leu Cys Ala Gln Ala Phe Gly Arg Ser Met Leu Ala Arg Gly Gln	
130 135 140	
ggc cgc atc gtg cat gta gcc tcg att gcc gcc cat tac ccg caa ccc	480
Gly Arg Ile Val His Val Ala Ser Ile Ala Ala His Tyr Pro Gln Pro	
145 150 155 160	
aac agc ggt gcc tac agc gcg gcc aag gct ggc gtg agc atg ctg tcg	528
Asn Ser Gly Ala Tyr Ser Ala Ala Lys Ala Gly Val Ser Met Leu Ser	
165 170 175	
cgg cag ctt gcc gtg gag tgg ggg ccg cgg ggt gtg cgc agc aac gcc	576
Arg Gln Leu Ala Val Glu Trp Gly Pro Arg Gly Val Arg Ser Asn Ala	
180 185 190	
gtg tgc ccg ggc ttg atc cgc acg ccc ttg tcg gcg gcg ttc tat gcc	624
Val Cys Pro Gly Leu Ile Arg Thr Pro Leu Ser Ala Ala Phe Tyr Ala	
195 200 205	
gac ccg cag gtg gaa cgc cag cgt agc gcc atg acc gcc aac cgt cgc	672
Asp Pro Gln Val Glu Arg Gln Arg Ser Ala Met Thr Ala Asn Arg Arg	

## PhoenixTemp32470.tmp.txt

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      210      215      220
att ggt gag ccg ctg gat atc gcc gag gcc gtg ttt ctg gcc agc
Ile Gly Glu Pro Leu Asp Ile Ala Glu Ala Val Leu Phe Leu Ala Ser
225      230      235      240
cgc cgc gcc gac tat atc aac ggc gcc gag ctg acc gtg gat ggc ggg
Arg Arg Ala Asp Tyr Ile Asn Gly Ala Glu Leu Thr Val Asp Gly Gly
      245      250      255
ctg gag tgc atg ccc atg gca ttg atc ccg cgc ccg ggc ttc gag ggg
Leu Glu Cys Met Pro Met Ala Leu Ile Pro Arg Pro Gly Phe Glu Gly
      260      265      270
gct ggc caa tga
Ala Gly Gln
      275

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720

768

816

828

<210> 1133  
 <211> 275  
 <212> PRT  
 <213> Pseudomonas putida GB-1

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<400> 1133
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Val Cys Val Val Thr Gly Ala Ala Gly Gly Ile Gly Ala Ala Leu Ala
      20      25      30
Ala Ala Leu Val Glu Gln Gln Ala His Val Val Leu Leu Asp Arg Asp
      35      40      45
Leu Asp Lys Cys Arg Glu Leu Ala Ala Thr Leu Gly Glu His Ser Thr
      50      55      60
Gly Glu Val Ser Ala Leu Ala Cys Asp Ile Ala Asp Pro Ala Ser Val
65      70      75      80
Gly Gln Ala Ala Ala Gln Val Gln Ala Leu His Gly Arg Cys Asp Val
      85      90      95
Leu Val Asn Asn Ala Ser Val Leu Arg Pro Gly Ala Leu Asp Thr Leu
      100      105      110
Ser Leu Glu Gln Trp Asn Gln Val Leu Ala Val Asn Leu Ser Gly Tyr
      115      120      125
Leu Leu Cys Ala Gln Ala Phe Gly Arg Ser Met Leu Ala Arg Gly Gln
      130      135      140
Gly Arg Ile Val His Val Ala Ser Ile Ala Ala His Tyr Pro Gln Pro
145      150      155      160
Asn Ser Gly Ala Tyr Ser Ala Ala Lys Ala Gly Val Ser Met Leu Ser
      165      170      175
Arg Gln Leu Ala Val Glu Trp Gly Pro Arg Gly Val Arg Ser Asn Ala
      180      185      190
Val Cys Pro Gly Leu Ile Arg Thr Pro Leu Ser Ala Ala Phe Tyr Ala
      195      200      205
Asp Pro Gln Val Glu Arg Gln Arg Ser Ala Met Thr Ala Asn Arg Arg
210      215      220
Ile Gly Glu Pro Leu Asp Ile Ala Glu Ala Val Leu Phe Leu Ala Ser
225      230      235      240
Arg Arg Ala Asp Tyr Ile Asn Gly Ala Glu Leu Thr Val Asp Gly Gly
      245      250      255
Leu Glu Cys Met Pro Met Ala Leu Ile Pro Arg Pro Gly Phe Glu Gly
      260      265      270
Ala Gly Gln
      275

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<210> 1134  
 <211> 762  
 <212> DNA  
 <213> Pseudomonas putida GB-1

<220>  
 <221> CDS  
 <222> (1)..(762)  
 <223> transl\_table=11

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<400> 1134
atg agc atg acc ttt tct ggc cag gta gcc ctg gtg act ggc gct gcc

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48

## PhoenixTemp32470.tmp.txt

Met 1	Ser	Met	Thr	Phe 5	Ser	Gly	Gln	Val	Ala 10	Leu	Val	Thr	Gly	Ala 15	Ala	
gcc Ala	ggt Gly	att Ile	ggc Gly 20	cgg Arg	gca Ala	acc Thr	gcc Ala	ctg Leu 25	gct Ala	ttc Phe	gcc Ala	cgc Arg	gag Glu 30	ggc Gly	ctg Leu	96
aag Lys	gtg Val	gtg Val 35	gtg Val	gcc Ala	gac Asp	ctt Leu	gac Asp 40	ccg Pro	gtc Val	ggc Gly	ggc Gly	gaa Glu 45	gcc Ala	acc Thr	gtg Val	144
gcg Ala	ctg Leu 50	atc Ile	cac His	gcg Ala	gtg Val	ggc Gly 55	ggc Gly	gag Glu	gcg Ala	ctt Leu	ttc Phe 60	att Ile	gcc Ala	tgc Cys	gac Asp	192
gtt Val 65	acc Thr	cgc Arg	gac Asp	agc Ser	gag Glu 70	gtg Val	cgc Arg	cag Gln	ttg Leu	cac His 75	gag Glu	cgc Arg	ctg Leu	ata Ile	gcc Ala 80	240
gcc Ala	tat Tyr	ggt Gly	cgg Arg	ctg Leu 85	gac Asp	tat Tyr	gcc Ala	tac Tyr	aac Asn 90	aat Asn	gcc Ala	ggg Gly	atc Ile 95	gaa Glu	atc Ile	288
gag Glu	caa Gln	cac His	cgg Arg 100	ctg Leu	gcc Ala	gaa Glu	ggc Gly	agc Ser 105	gag Glu	gcg Ala	gag Glu	ttc Phe 110	gat Asp 115	gcc Ala	atc Ile	336
atg Met	ggc Gly	gtg Val 115	aac Asn	gtg Val	aag Lys	ggt Gly	gtg Val 120	tgg Trp	ttg Leu	tgc Cys	atg Met	aag Lys 125	tac Tyr	caa Gln	ctg Leu	384
ccc Pro	ttg Leu 130	ctg Leu	ttg Leu	gcc Ala	cag Gln	ggc Gly 135	ggt Gly	ggg Gly	gtg Val	atc Ile	gtc Val 140	aac Asn	acc Thr	gct Ala	tcg Ser	432
gtg Val 145	gcg Ala	ggg Gly	ctg Leu	ggg Gly	gcg Ala 150	gcg Ala	ccg Pro	aag Lys	atg Met	agc Ser 155	atc Ile	tac Tyr	agc Ser	gcc Ala 160	agc Ser 165	480
aag Lys	cat His	gcg Ala	gtg Val 165	atc Ile	ggt Gly	ttg Leu	acc Thr	aag Lys	tcg Ser 170	gcg Ala	gcc Ala	atc Ile	gag Glu 175	tac Tyr 180	gcc Ala 185	528
aag Lys	aag Lys	ggc Gly	gtc Val 180	cgc Arg	gtg Val	aac Asn	gct Ala 185	gtg Val	tgc Cys	ccg Pro	gcg Ala	gtg Val 190	atc Ile	gac Asp	acc Thr	576
gac Asp	atg Met	ttc Phe 195	cgc Arg	cgt Arg	gcc Ala	tac Tyr	gag Glu 200	gcc Ala	gac Asp	ccg Pro	cgc Arg	aag Lys 205	gcc Ala	gag Glu	ttc Phe	624
gcc Ala 210	gcc Ala	gcc Ala	atg Met	cac His	ccg Pro	gtg Val 215	ggg Gly	cgc Arg	att Ile	ggc Gly	aag Lys 220	ggt Val	gag Glu	gaa Glu	atc Ile	672
gcc Ala 225	agc Ser	gcg Ala	gtg Val	ctg Leu 230	tac Tyr	ctg Leu	tgt Cys	agc Ser	gac Asp	ggt Gly 235	gcg Ala	gcg Ala	ttt Phe	acc Thr	acc Thr 240	720
ggg Gly	cat His	tgc Cys	ctg Leu 245	acg Thr	gtc Val	gat Asp	ggt Gly	ggg Gly	gct Ala 250	acg Thr	gcg Ala	atc Ile	tga			762

&lt;210&gt; 1135

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida GB-1

&lt;400&gt; 1135

Met 1	Ser	Met	Thr	Phe 5	Ser	Gly	Gln	Val	Ala 10	Leu	Val	Thr	Gly	Ala 15	Ala	
Ala	Gly	Ile	Gly 20	Arg	Ala	Thr	Ala	Leu 25	Ala	Phe	Ala	Arg	Glu 30	Gly	Leu	
Lys	Val	Val 35	Val	Ala	Asp	Leu	Asp 40	Pro	Val	Gly	Gly	Glu 45	Ala	Thr	Val	
Ala	Leu 50	Ile	His	Ala	Val	Gly 55	Gly	Glu	Ala	Leu	Phe 60	Ile	Ala	Cys	Asp	
Val 65	Thr	Arg	Asp	Ser	Glu 70	Val	Arg	Gln	Leu	His 75	Glu	Arg	Leu	Ile	Ala 80	
Ala	Tyr	Gly	Arg	Leu 85	Asp	Tyr	Ala	Tyr	Asn 90	Asn	Ala	Gly	Ile	Glu 95	Ile	
Glu	Gln	His	Arg 100	Leu	Ala	Glu	Gly	Ser 105	Glu	Ala	Glu	Phe	Asp 110	Ala	Ile	
Met	Gly	Val	Asn	Val	Lys	Gly	Val	Trp	Leu	Cys	Met	Lys	Tyr	Gln	Leu	

## PhoenixTemp32470.tmp.txt

115  
 Pro Leu Leu Ala Gln Gly 120 Gly Gly Val Ile Val 125 Asn Thr Ala Ser  
 130  
 Val Ala Gly Leu Gly Ala 135 Ala Pro Lys Met Ser 140 Ile Tyr Ser Ala Ser  
 145  
 Lys His Ala Val Ile 150 Gly Leu Thr Lys Ser 155 Ala Ala Ile Glu Tyr Ala  
 165  
 Lys Lys Gly Val Arg Val Asn Ala Val 170 Cys Pro Ala Val Ile Asp Thr  
 180  
 Asp Met Phe Arg Arg Ala Tyr Glu 185 Ala Asp Pro Arg Lys 190 Ala Glu Phe  
 195  
 Ala Ala Ala Met His Pro Val 200 Gly Arg Ile Gly Lys 205 Val Glu Glu Ile  
 210  
 Ala Ser Ala Val Leu Tyr 215 Leu Cys Ser Asp Gly 220 Ala Ala Phe Thr Thr  
 225  
 Gly His Cys Leu Thr 230 Val Asp Gly Gly Ala Thr 235 Ala Ile 240  
 245 250

&lt;210&gt; 1136

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Cenarchaeum symbiosum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1136

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Met	Ile	Ile	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Glu	Ala	Ala	Ala	Gly	
1				5					10					15		
gag	ttt	gcc	ggc	aag	ggg	gcc	tct	gta	gtg	ctg	gtg	gct	aga	aac	aag	96
Glu	Phe	Ala	Gly	Lys	Gly	Ala	Ser	Val	Val	Leu	Val	Ala	Arg	Asn	Lys	
			20					25					30			
gat	aag	ctg	tac	agg	gcc	gaa	cag	tcc	atg	cag	gta	agc	gga	gac	agg	144
Asp	Lys	Leu	Tyr	Arg	Ala	Glu	Gln	Ser	Met	Gln	Val	Ser	Gly	Asp	Arg	
			35				40					45				
acg	ctt	gca	gta	caa	tgc	gac	gtc	tcg	aag	aag	aaa	gag	ggt	gca	gag	192
Thr	Leu	Ala	Val	Gln	Cys	Asp	Val	Ser	Lys	Lys	Lys	Glu	Val	Ala	Glu	
			50			55					60					
atg	gcc	cgc	ctg	gta	gag	gag	aaa	ttc	ggc	acg	ccg	gat	ata	ctg	gtg	240
Met	Ala	Arg	Leu	Val	Glu	Glu	Lys	Phe	Gly	Thr	Pro	Asp	Ile	Leu	Val	
				70					75					80		
aat	aac	gcg	ggc	ttt	gcc	gtc	tac	ggg	cgg	gtc	cgg	gat	ctt	tcc	atc	288
Asn	Asn	Ala	Gly	Phe	Ala	Val	Tyr	Gly	Arg	Val	Arg	Asp	Leu	Ser	Ile	
				85				90						95		
gag	gat	atc	gag	gcc	cag	atg	gct	aca	aac	tat	acg	ggc	atg	gta	tac	336
Glu	Asp	Ile	Glu	Ala	Gln	Met	Ala	Thr	Asn	Tyr	Thr	Gly	Met	Val	Tyr	
			100				105					110				
tgt	aca	aag	gcc	ttt	ctc	tcc	ggc	atg	ctg	gac	cgc	ggc	tcg	ggc	cat	384
Cys	Thr	Lys	Ala	Phe	Leu	Ser	Gly	Met	Leu	Asp	Arg	Gly	Ser	Gly	His	
			115				120					125				
atc	gtc	aac	gtg	gca	tct	gct	gct	gca	agc	ttt	ggt	ctg	ccg	ggg	ata	432
Ile	Val	Asn	Val	Ala	Ser	Ala	Ala	Ala	Ser	Phe	Gly	Leu	Pro	Gly	Ile	
			130			135					140					
gcc	gcg	tac	agc	gcg	tca	aag	ttt	gca	atg	cta	ggc	ttc	tcc	gag	ggt	480
Ala	Ala	Tyr	Ser	Ala	Ser	Lys	Phe	Ala	Met	Leu	Gly	Phe	Ser	Glu	Gly	
				145		150				155					160	
ctt	ggg	cac	gag	ctt	gtg	gga	aca	ggc	gtg	ggc	ata	acg	gta	gtc	agc	528
Leu	Gly	His	Glu	Leu	Val	Gly	Thr	Gly	Val	Gly	Ile	Thr	Val	Val	Ser	
				165				170					175			
ccg	ata	ggt	gtc	aag	aca	tcg	ttc	ttt	ggc	ccg	tcg	ttc	tct	aaa		576
Pro	Ile	Gly	Val	Lys	Thr	Ser	Phe	Phe	Asp	Gly	Pro	Ser	Phe	Ser	Lys	
			180				185					190				
atg	cgc	ggc	cgg	ccg	cca	ctc	tca	ctg	agc	cct	aaa	aca	gtc	gct	cgg	624
Met	Arg	Gly	Arg	Pro	Pro	Leu	Ser	Leu	Ser	Pro	Lys	Thr	Val	Ala	Arg	
			195			200						205				
gcg	ata	gtc	ggg	gcg	gca	tcg	tcg	cgc	agg	cgc	gag	atc	atg	gtg	ccg	672



PhoenixTemp32470.tmp.txt

Ala	Ile	Val	Gly	Ala	Ala	Ser	Ser	Arg	Arg	Arg	Glu	Ile	Met	Val	Pro		
210						215					220						
ttt	gca	aca	agg	ggc	gcg	gtg	tgg	gca	aag	cat	aca	atc	ccg	tat	gtg		720
Phe	Ala	Thr	Arg	Gly	Ala	Val	Trp	Ala	Lys	His	Thr	Ile	Pro	Tyr	Val		
225					230					235					240		
gta	aac	ccg	gca	gtc	ggc	tct	atc	ttc	cgc	agg	gcg	ctg	cgg	gac			765
Val	Asn	Pro	Ala	Val	Gly	Ser	Ile	Phe	Arg	Arg	Ala	Leu	Arg	Asp			
				245					250					255			
tag																	768

<210> 1137  
 <211> 255  
 <212> PRT  
 <213> Cenarchaeum symbiosum

<400> 1137

Met	Ile	Ile	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Glu	Ala	Ala	Ala	Gly		
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Glu	Phe	Ala	Gly	Lys	Gly	Ala	Ser	Val	Val	Leu	Val	Ala	Arg	Asn	Lys		
			20					25					30				
Asp	Lys	Leu	Tyr	Arg	Ala	Glu	Gln	Ser	Met	Gln	Val	Ser	Gly	Asp	Arg		
		35					40					45					
Thr	Leu	Ala	Val	Gln	Cys	Asp	Val	Ser	Lys	Lys	Lys	Glu	Val	Ala	Glu		
	50					55					60						
Met	Ala	Arg	Leu	Val	Glu	Glu	Lys	Phe	Gly	Thr	Pro	Asp	Ile	Leu	Val		
65					70					75				80			
Asn	Asn	Ala	Gly	Phe	Ala	Val	Tyr	Gly	Arg	Val	Arg	Asp	Leu	Ser	Ile		
				85					90					95			
Glu	Asp	Ile	Glu	Ala	Gln	Met	Ala	Thr	Asn	Tyr	Thr	Gly	Met	Val	Tyr		
			100					105					110				
Cys	Thr	Lys	Ala	Phe	Leu	Ser	Gly	Met	Leu	Asp	Arg	Gly	Ser	Gly	His		
		115					120					125					
Ile	Val	Asn	Val	Ala	Ser	Ala	Ala	Ala	Ser	Phe	Gly	Leu	Pro	Gly	Ile		
	130					135					140						
Ala	Ala	Tyr	Ser	Ala	Ser	Lys	Phe	Ala	Met	Leu	Gly	Phe	Ser	Glu	Gly		
145					150					155					160		
Leu	Gly	His	Glu	Leu	Val	Gly	Thr	Gly	Val	Gly	Ile	Thr	Val	Val	Ser		
			165						170					175			
Pro	Ile	Gly	Val	Lys	Thr	Ser	Phe	Phe	Asp	Gly	Pro	Ser	Phe	Ser	Lys		
			180					185					190				
Met	Arg	Gly	Arg	Pro	Pro	Leu	Ser	Leu	Ser	Pro	Lys	Thr	Val	Ala	Arg		
		195					200					205					
Ala	Ile	Val	Gly	Ala	Ala	Ser	Ser	Arg	Arg	Arg	Glu	Ile	Met	Val	Pro		
	210					215					220						
Phe	Ala	Thr	Arg	Gly	Ala	Val	Trp	Ala	Lys	His	Thr	Ile	Pro	Tyr	Val		
225					230					235					240		
Val	Asn	Pro	Ala	Val	Gly	Ser	Ile	Phe	Arg	Arg	Ala	Leu	Arg	Asp			
				245					250					255			

<210> 1138  
 <211> 783  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(783)

<400> 1138

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Met	Asp	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly		
				5					10					15			
gag	gcg	gcg	gcg	cgg	ctg	ttc	gcg	tcg	tgc	ggc	gcg	acg	gtg	gtc	atc		96
Glu	Ala	Ala	Ala	Arg	Leu	Phe	Ala	Ser	Cys	Gly	Ala	Thr	Val	Val	Ile		
			20					25					30				
gcc	gac	gtc	cag	gac	gag	ctg	ggc	gag	gcg	gtg	gcg	gcg	tcg	gtg	gcg		144
Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Glu	Ala	Val	Ala	Ala	Ser	Val	Ala		

## PhoenixTemp32470.tmp.txt

35	40	45		
ggg ggc ggg tgc cgg tac gtg cgg tgc gac gtg acg gag gcg cag	192			
Gly Gly Gly Cys Arg Tyr Val Arg Cys Asp Val Thr Asp Glu Ala Gln				
50	55	60		
gtg gag gcg gcg gtg gcc gcc gcg gtg gcg gag cac ggg cgg ctc gac	240			
Val Glu Ala Ala Val Ala Ala Ala Val Ala Glu His Gly Arg Leu Asp				
65	70	75		
gtg atg gtg agc aac gcc ggc gtg ctg ctc ccg acg ggg ccc gtc gtg	288			
Val Met Val Ser Asn Ala Gly Val Leu Leu Pro Thr Gly Pro Val Val				
85	90	95		
gac atg gac ctc gcg gct ctg gac cgg gtg atg tgc gtg aac ttc cgc	336			
Asp Met Asp Leu Ala Ala Leu Asp Arg Val Met Ser Val Asn Phe Arg				
100	105	110		
ggc gcg gcg gcg tgc gtg aag cac gcg gcg gcg acg gtg tgc cgc	384			
Gly Ala Ala Ala Cys Val Lys His Ala Ala Arg Ala Met Val Ser Arg				
115	120	125		
ggc acc cgc ggc gcc atc gtg tgc acg gcg agc gtg gcg tgc tgc cag	432			
Gly Thr Arg Gly Ala Ile Val Cys Thr Ala Ser Val Ala Ser Cys Gln				
130	135	140		
ggc ggg ttc ggg ccg gcg gcg tac acg gcg tgc aag cac gcg gtg ctg	480			
Gly Gly Phe Gly Pro Ala Ala Tyr Thr Ala Ser Lys His Ala Val Leu				
145	150	155		
ggg ctg gtg gcg gcg gcc ggc gag ctg ggg cgg cac ggc gtg cgc	528			
Gly Leu Val Arg Ala Ala Ala Gly Glu Leu Gly Arg His Gly Val Arg				
165	170	175		
gtg aac tgc gtg tcc ccc ggc ggc gtg gcg acg ccg ctg agc tgc ggg	576			
Val Asn Cys Val Ser Pro Gly Gly Val Ala Thr Pro Leu Ser Cys Gly				
180	185	190		
ctg acg ggg atg agc ccc gag gag atg gag gcg gcg gcg gag ccc cac	624			
Leu Thr Gly Met Ser Pro Glu Glu Met Glu Ala Ala Ala Glu Pro His				
195	200	205		
aac gtg ctc cgc ggg aag gtg ctc aag gcg gcg gac gtc gcg gag gcc	672			
Asn Val Leu Arg Gly Lys Val Leu Lys Ala Ala Asp Val Ala Glu Ala				
210	215	220		
atg ctc ttc ctc gcc tcc gac gag gcc gtc gtc agc ggc cac aac	720			
Met Leu Phe Leu Ala Ser Asp Gln Ala Ala Phe Val Ser Gly His Asn				
225	230	235		
ctc gtc gtc gac ggc gcc acc acc gcc gtc aac tac gcc gtg ctc cag	768			
Leu Val Val Asp Gly Ala Thr Thr Ala Val Asn Tyr Ala Val Leu Gln				
245	250	255		
tcc gtc ggc ctg tga	783			
Ser Val Gly Leu				
260				

&lt;210&gt; 1139

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1139

Met Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala Ser Gly Ile Gly	
1	5
Glu Ala Ala Ala Arg Leu Phe Ala Ser Cys Gly Ala Thr Val Val Ile	
20	25
Ala Asp Val Gln Asp Glu Leu Gly Glu Ala Val Ala Ala Ser Val Ala	
35	40
Gly Gly Gly Cys Arg Tyr Val Arg Cys Asp Val Thr Asp Glu Ala Gln	
50	55
Val Glu Ala Ala Val Ala Ala Ala Val Ala Glu His Gly Arg Leu Asp	
65	70
Val Met Val Ser Asn Ala Gly Val Leu Leu Pro Thr Gly Pro Val Val	
85	90
Asp Met Asp Leu Ala Ala Leu Asp Arg Val Met Ser Val Asn Phe Arg	
100	105
Gly Ala Ala Ala Cys Val Lys His Ala Ala Arg Ala Met Val Ser Arg	
115	120
Gly Thr Arg Gly Ala Ile Val Cys Thr Ala Ser Val Ala Ser Cys Gln	
130	135
Gly Gly Phe Gly Pro Ala Ala Tyr Thr Ala Ser Lys His Ala Val Leu	

## PhoenixTemp32470.tmp.txt

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145      150      155      160
Gly Leu Val Arg Ala Ala Gly Glu Leu Gly Arg His Gly Val Arg
165
Val Asn Cys Val Ser Pro Gly Gly Val Ala Thr Pro Leu Ser Cys Gly
180
Leu Thr Gly Met Ser Pro Glu Glu Met Glu Ala Ala Ala Glu Pro His
195
Asn Val Leu Arg Gly Lys Val Leu Lys Ala Ala Asp Val Ala Glu Ala
210
Met Leu Phe Leu Ala Ser Asp Gln Ala Ala Phe Val Ser Gly His Asn
225
Leu Val Val Asp Gly Ala Thr Thr Ala Val Asn Tyr Ala Val Leu Gln
245
Ser Val Gly Leu
260

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&lt;210&gt; 1140

&lt;211&gt; 771

&lt;212&gt; DNA

&lt;213&gt; Streptomyces capreolus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(771)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1140

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gtg acc gcg ccg acg gag ccg gcg ggg ccg gcc gac ccg ccg gtg gcg      48
Met Thr Ala Pro Thr Glu Pro Ala Gly Arg Ala Asp Arg Pro Val Ala
1      5
ctg gtc acc ggc gcc tcc ggc gcg atc ggc acc gcg ata gcc acc gcg      96
Leu Val Thr Gly Ala Ser Gly Ala Ile Gly Thr Ala Ile Ala Thr Ala
20
ctg gcg gcc gcc ggt ttc gat ctg ggg gtc cac cac cac acc gac gcc      144
Leu Ala Ala Ala Gly Phe Asp Leu Gly Val His His His Thr Asp Ala
35
gcc ggc ggg cgc cgc acc gcc gcg gcc gcc gcg gca ctc ggc gcg cgc      192
Ala Gly Gly Arg Arg Thr Ala Ala Ala Ala Ala Ala Leu Gly Ala Arg
50
gcc gtg ccc gtc cag ggc gac ctg gcc ccg gag aag gcg tgc gtc gcg      240
Ala Val Pro Val Gln Gly Asp Leu Ala Arg Glu Lys Ala Cys Val Ala
65
gcg gtg gag cgc gtg gtg gag tcg ttc ggg ccg ctg gac gtc ctg gtc      288
Ala Val Glu Arg Val Val Glu Ser Phe Gly Arg Leu Asp Val Leu Val
85
gcc aac gcc ggc cgc cac cgc gac gcg ctg ctg ctg cgc ctg tcg gag      336
Ala Asn Ala Gly Arg His Arg Asp Ala Leu Leu Leu Arg Leu Ser Glu
100
gac gac tgg gac ccg cac cag gag gcg aac ctc aag agc gcc tac ctg      384
Asp Asp Trp Asp Arg His Gln Glu Ala Asn Leu Lys Ser Ala Tyr Leu
115
tgc gtg cgc gcc gcg ctt ccg tcg atg ctg ccg cag cgt cac ggc cgc      432
Cys Val Arg Ala Ala Leu Pro Ser Met Leu Arg Gln Arg His Gly Arg
130
atc gtg ctg gtc tcc tcc gtg gcg ggc ctg gtc ggc tcg ccc ggc cag      480
Ile Val Leu Val Ser Ser Val Ala Gly Leu Val Gly Ser Pro Gly Gln
145
gcc gcc tac tcc gcc gcc aag gcg ggg ctg gcg ggc ctg gcc cgc acc      528
Ala Ala Tyr Ser Ala Ala Lys Ala Gly Leu Ala Gly Leu Ala Arg Thr
165
gtc gcc cac gag cac ggc cgc tac ggc gtc acc tgc aac tgc gtc gcg      576
Val Ala His Glu His Gly Arg Tyr Gly Val Thr Cys Asn Cys Val Ala
180
ccc ggc ctg atc gcg gac acg ccc tcc cac gac ggg ctg tcc gag gcg      624
Pro Gly Leu Ile Ala Asp Thr Pro Ser His Asp Gly Leu Ser Glu Ala
195
cga cgg cgg cag atc ctc gac cgg act gcg gca cag ccg gcg ggc cgc      672
Arg Arg Arg Gln Ile Leu Asp Arg Thr Ala Ala Gln Arg Ala Gly Arg
210
215
220

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## PhoenixTemp32470.tmp.txt

ccc gag gag gta gcc gcc gcg gtc gcc ttc ctc agc tcc ccg gcc gcg	720
Pro Glu Glu Val Ala Ala Ala Val Ala Phe Leu Ser Ser Pro Ala Ala	
225 230 235 240	
gcc tac gtc acc ggg cag gtg ctc gcg gtc gac ggc ggc atg acc gcc	768
Ala Tyr Val Thr Gly Gln Val Leu Ala Val Asp Gly Gly Met Thr Ala	
245 250 255	
tga	771

<210> 1141  
 <211> 256  
 <212> PRT  
 <213> Streptomyces capreolus

<400> 1141

Met Thr Ala Pro Thr Glu Pro Ala Gly Arg Ala Asp Arg Pro Val Ala	
1 5 10 15	
Leu Val Thr Gly Ala Ser Gly Ala Ile Gly Thr Ala Ile Ala Thr Ala	
20 25 30	
Leu Ala Ala Ala Gly Phe Asp Leu Gly Val His His His Thr Asp Ala	
35 40 45	
Ala Gly Gly Arg Arg Thr Ala Ala Ala Ala Ala Leu Gly Ala Arg	
50 55 60	
Ala Val Pro Val Gln Gly Asp Leu Ala Arg Glu Lys Ala Cys Val Ala	
65 70 75 80	
Ala Val Glu Arg Val Val Glu Ser Phe Gly Arg Leu Asp Val Leu Val	
85 90 95	
Ala Asn Ala Gly Arg His Arg Asp Ala Leu Leu Leu Arg Leu Ser Glu	
100 105 110	
Asp Asp Trp Asp Arg His Gln Glu Ala Asn Leu Lys Ser Ala Tyr Leu	
115 120 125	
Cys Val Arg Ala Ala Leu Pro Ser Met Leu Arg Gln Arg His Gly Arg	
130 135 140	
Ile Val Leu Val Ser Ser Val Ala Gly Leu Val Gly Ser Pro Gly Gln	
145 150 155 160	
Ala Ala Tyr Ser Ala Ala Lys Ala Gly Leu Ala Gly Leu Ala Arg Thr	
165 170 175	
Val Ala His Glu His Gly Arg Tyr Gly Val Thr Cys Asn Cys Val Ala	
180 185 190	
Pro Gly Leu Ile Ala Asp Thr Pro Ser His Asp Gly Leu Ser Glu Ala	
195 200 205	
Arg Arg Arg Gln Ile Leu Asp Arg Thr Ala Ala Gln Arg Ala Gly Arg	
210 215 220	
Pro Glu Glu Val Ala Ala Ala Val Ala Phe Leu Ser Ser Pro Ala Ala	
225 230 235 240	
Ala Tyr Val Thr Gly Gln Val Leu Ala Val Asp Gly Gly Met Thr Ala	
245 250 255	

<210> 1142  
 <211> 1002  
 <212> DNA  
 <213> Pinus taeda

<220>  
 <221> CDS  
 <222> (1)..(1002)

<400> 1142

atg ggt atg tgc tcc ctt gtg aaa aca tgg tgg agg tgg ggt tgg gat	48
Met Gly Met Cys Ser Leu Val Lys Thr Trp Trp Arg Trp Gly Trp Asp	
1 5 10 15	
gtg gcg tta tcg gtc ccc ctg ttg ctc atg ctt cct tca gca att tct	96
Val Ala Leu Ser Val Pro Leu Leu Leu Met Leu Pro Ser Ala Ile Ser	
20 25 30	
ttc tgt aaa ctc ttt cga atg ttt atc atc acc cgc cca gag cgc gta	144
Phe Cys Lys Leu Phe Arg Met Phe Ile Ile Thr Arg Pro Glu Arg Val	
35 40 45	
cgg gga aag gta gtt ctc atc aca gga gcg tct tcg ggt ata ggc cag	192

## PhoenixTemp32470.tmp.txt

Arg	Gly	Lys	Val	Val	Leu	Ile	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Gln		
50						55				60							
cac	atg	gcg	tgg	gag	tac	gcg	aag	aga	ggt	gca	aat	ctg	gtg	gtg	gtg	240	
His	Met	Ala	Trp	Glu	Tyr	Ala	Lys	Arg	Gly	Ala	Asn	Leu	Val	Val	Val		
65				70					75						80		
gca	agg	cgg	cgg	aat	cga	ctg	gag	gaa	gta	gcc	aag	gaa	tgc	aag	gct	288	
Ala	Arg	Arg	Arg	Asn	Arg	Leu	Glu	Glu	Val	Ala	Lys	Glu	Cys	Lys	Ala		
				85					90					95			
tac	ggt	gca	cag	tat	gct	ggt	ggt	tgt	ccg	gct	gat	tta	acc	aaa	ccc	336	
Tyr	Gly	Ala	Gln	Tyr	Ala	Val	Val	Cys	Pro	Ala	Asp	Leu	Thr	Lys	Pro		
			100					105					110				
caa	gat	tgc	aag	agg	att	gtg	gaa	ttc	aca	ggt	tcc	acc	ttt	gga	cgg	384	
Gln	Asp	Cys	Lys	Arg	Ile	Val	Glu	Phe	Thr	Val	Ser	Thr	Phe	Gly	Arg		
		115					120					125					
ttg	gac	gtg	cta	gtc	aac	aat	gct	ggt	act	gct	gga	ggg	tcg	tta	ttt	432	
Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Thr	Ala	Gly	Gly	Ser	Leu	Phe		
		130				135					140						
gaa	gaa	tat	gag	aat	gcc	gcc	gaa	tat	aag	aga	att	gtg	gat	att	gat	480	
Glu	Glu	Tyr	Glu	Asn	Ala	Ala	Glu	Tyr	Lys	Arg	Ile	Val	Asp	Ile	Asp		
					150					155					160		
ttc	tgg	gga	cat	gtc	aac	aca	acc	cat	ttt	gct	ctt	gaa	cac	ctt	cag	528	
Phe	Trp	Gly	His	Val	Asn	Thr	Thr	His	Phe	Ala	Leu	Glu	His	Leu	Gln		
			165					170						175			
cgc	aga	agg	ggc	cag	ata	gtg	gtc	att	agt	tcc	atg	att	gca	ttt	ctt	576	
Arg	Arg	Arg	Gly	Gln	Ile	Val	Val	Ile	Ser	Ser	Met	Ile	Ala	Phe	Leu		
			180					185					190				
ccc	ttc	cca	ttt	aca	aca	ggt	tac	agt	gca	gcc	aaa	gga	gca	ctg	ttg	624	
Pro	Phe	Pro	Phe	Thr	Thr	Val	Tyr	Ser	Ala	Ala	Lys	Gly	Ala	Leu	Leu		
		195				200						205					
aac	ttc	ttc	gag	aca	ctt	agg	att	gag	ctt	atc	agc	aaa	tct	gta	aca	672	
Asn	Phe	Phe	Glu	Thr	Leu	Arg	Ile	Glu	Leu	Ile	Ser	Lys	Ser	Val	Thr		
		210				215					220						
ggt	act	att	gcg	tct	cct	ggt	ttt	ata	cag	tct	gaa	tta	aca	tcc	aga	720	
Val	Thr	Ile	Ala	Ser	Pro	Gly	Phe	Ile	Gln	Ser	Glu	Leu	Thr	Ser	Arg		
					230				235						240		
gaa	gga	ccg	gga	aag	ctg	cca	tgg	tgg	ttc	ccc	atg	gcg	aga	aca	gag	768	
Glu	Gly	Pro	Gly	Lys	Leu	Pro	Trp	Trp	Phe	Pro	Met	Ala	Arg	Thr	Glu		
				245					250					255			
gat	gct	gca	cga	gaa	att	ggt	gaa	gct	gca	ttg	agg	aaa	gag	cga	gac	816	
Asp	Ala	Ala	Arg	Glu	Ile	Val	Glu	Ala	Ala	Leu	Arg	Lys	Glu	Arg	Asp		
			260					265					270				
gtg	ata	act	cct	agg	tgg	tat	tca	tcc	ttg	ctg	tgg	ttc	aga	ata	cta	864	
Val	Ile	Thr	Pro	Arg	Trp	Tyr	Ser	Ser	Leu	Leu	Trp	Phe	Arg	Ile	Leu		
			275				280					285					
tgc	cct	gaa	att	ttg	gaa	tgg	gtg	ccc	aga	gta	ttc	atc	ttg	gga	caa	912	
Cys	Pro	Glu	Ile	Leu	Glu	Trp	Val	Pro	Arg	Val	Phe	Ile	Leu	Gly	Gln		
		290				295					300						
gcc	cct	aca	aga	gga	gta	gag	att	gtc	tgc	aat	tct	ggt	ttt	ggg	aaa	960	
Ala	Pro	Thr	Arg	Gly	Val	Glu	Ile	Val	Cys	Asn	Ser	Val	Phe	Gly	Lys		
				310					315						320		
ttt	aac	aca	cac	aca	ctc	ttt	aga	aca	ttg	aaa	ctt	gcc	tag			1002	
Phe	Asn	Thr	His	Thr	Leu	Phe	Arg	Thr	Leu	Lys	Leu	Ala					
				325					330								

<210> 1143  
 <211> 333  
 <212> PRT  
 <213> Pinus taeda

<400> 1143  
 Met Gly Met Cys Ser Leu Val Lys Thr Trp Trp Arg Trp Gly Trp Asp  
 1 5 10 15  
 Val Ala Leu Ser Val Pro Leu Leu Met Leu Pro Ser Ala Ile Ser  
 20 25 30  
 Phe Cys Lys Leu Phe Arg Met Phe Ile Ile Thr Arg Pro Glu Arg Val  
 35 40 45  
 Arg Gly Lys Val Val Leu Ile Thr Gly Ala Ser Ser Gly Ile Gly Gln  
 50 55 60  
 His Met Ala Trp Glu Tyr Ala Lys Arg Gly Ala Asn Leu Val Val Val

## PhoenixTemp32470.tmp.txt

65 Ala Arg Arg Arg Asn 70 Arg Leu Glu Glu Val 75 Ala Lys Glu Cys Lys 80 Ala  
 Tyr Gly Ala Gln Tyr 85 Ala Val Val Cys 90 Ala Asp Leu Thr Lys Pro  
 Gln Asp Cys 100 Lys Arg Ile Val Glu 105 Phe Thr Val Ser Thr Phe Gly Arg  
 Leu Asp Val 115 Leu Val Asn Asn 120 Ala Gly Thr Ala Gly 125 Ser Leu Phe  
 Glu Glu Tyr Glu Asn 135 Ala Ala Glu Tyr Lys Arg Ile Val Asp Ile Asp  
 145 Phe Trp Gly His Val 150 Asn Thr Thr His Phe 155 Ala Leu Glu His Leu Gln  
 Arg Arg Arg Gly 165 Gln Ile Val Val Ile 170 Ser Ser Met Ile Ala Phe Leu  
 Pro Phe Pro Phe Thr Thr Val Tyr 185 Ser Ala Ala Lys Gly Ala Leu Leu  
 Asn Phe 195 Glu Thr Leu Arg 200 Ile Glu Leu Ile Ser Lys Ser Val Thr  
 Val Thr Ile Ala Ser Pro 215 Gly Phe Ile Gln Ser Glu Leu Thr Ser Arg  
 225 Glu Gly Pro Gly Lys 230 Leu Pro Trp Trp Phe 235 Pro Met Ala Arg Thr Glu  
 Asp Ala Ala Arg 245 Glu Ile Val Glu Ala 250 Ala Leu Arg Lys Glu Arg Asp  
 Val Ile Thr Pro Arg Trp Tyr Ser Ser Leu Leu Trp Phe Arg Ile Leu  
 Cys Pro Glu Ile Leu Glu Trp 265 Val Pro Arg Val Phe Ile Leu Gly Gln  
 275 280 285 300  
 Ala Pro Thr Arg Gly Val Glu Ile Val Cys Asn Ser Val Phe Gly Lys  
 305 Phe Asn Thr His Thr Leu Phe Arg Thr Leu Lys Leu Ala 320  
 325 330

&lt;210&gt; 1144

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Phaeosphaeria nodorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;400&gt; 1144

atg gcc caa cgc ctc aag ggc aag acg att gta atc acg ggc gct tcg	48
Met Ala Gln Arg Leu Lys Gly Lys Thr Ile Val Ile Thr Gly Ala Ser	
1 5 10 15	
agt gga att gga cga tct aca gcc gtc gaa ttc gca aag acg cag cca	96
Ser Gly Ile Gly Arg Ser Thr Ala Val Glu Phe Ala Lys Thr Gln Pro	
20 25 30	
gac gat ctc aag ctc atc ctc act gca cgt cgg gaa gac acg ctc aag	144
Asp Asp Leu Lys Leu Ile Leu Thr Ala Arg Arg Glu Asp Thr Leu Lys	
35 40 45	
gaa gtc gcc aaa gaa att gaa agt ttt gcc aag ggc gtc aag gtc ctg	192
Glu Val Ala Lys Glu Ile Glu Ser Phe Ala Lys Gly Val Lys Val Leu	
50 55 60	
cct gtg aag ctg gat gtc agc aat ata tcc gaa gtt gag gct ttt gtt	240
Pro Val Lys Leu Asp Val Ser Asn Ile Ser Glu Val Glu Ala Phe Val	
65 70 75 80	
ggg aag tta cca gcg gag ttc aag gat gtg gat gtt ctg gta aat aat	288
Gly Lys Leu Pro Ala Glu Phe Lys Asp Val Asp Val Leu Val Asn Asn	
85 90 95	
gct ggc cta gtc aaa ggc gtc gcc caa gcc ccc tcc atc tcc gcc gcc	336
Ala Gly Leu Val Lys Gly Val Ala Gln Ala Pro Ser Ile Ser Pro Ala	
100 105 110	
gac atc aac aca atg ttc tcc aca aac gtc acc ggc cta atc gcc atg	384
Asp Ile Asn Thr Met Phe Ser Thr Asn Val Thr Gly Leu Ile Ala Met	
115 120 125	
acc caa gcc atc ctg ccc atc ctc aaa gcc aaa gac gcc gcc gac atc	432

## PhoenixTemp32470.tmp.txt

Thr	Gln	Ala	Ile	Leu	Pro	Ile	Leu	Lys	Ala	Lys	Asp	Ala	Gly	Asp	Ile		
130	130					135					140						
atc	aat	atc	ggt	agc	atc	gcc	ggc	cgc	gag	ccc	tac	caa	ggc	ggc	tcc		480
Ile	Asn	Ile	Gly	Ser	Ile	Ala	Gly	Arg	Glu	Pro	Tyr	Gln	Gly	Gly	Ser		
145					150					155					160		
atc	tac	tgc	gca	aca	aaa	gcc	gct	gtc	cgg	tcc	ttc	acg	gac	gcc	atg		528
Ile	Tyr	Cys	Ala	Thr	Lys	Ala	Ala	Val	Arg	Ser	Phe	Thr	Asp	Ala	Met		
				165					170					175			
cgc	cgc	gaa	ctc	atc	gcc	acg	cgc	gtc	cgc	gtc	atc	gag	atc	gat	ccg		576
Arg	Arg	Glu	Leu	Ile	Ala	Thr	Arg	Val	Arg	Val	Ile	Glu	Ile	Asp	Pro		
			180					185					190				
ggg	cag	gtg	gag	acg	gag	ttt	agc	gtc	gtg	cgg	ttt	ggc	ggg	gat	aag		624
Gly	Gln	Val	Glu	Thr	Glu	Phe	Ser	Val	Val	Arg	Phe	Gly	Gly	Asp	Lys		
		195					200					205					
gac	aag	gcg	aag	aag	gtg	tat	gag	ggc	gtg	gag	ccg	ctg	acg	ccc	gag		672
Asp	Lys	Ala	Lys	Lys	Val	Tyr	Glu	Gly	Val	Glu	Pro	Leu	Thr	Pro	Glu		
						215					220						
gat	att	gcc	gaa	ata	gtg	gtt	ttt	gcg	gcg	ggc	aga	agg	gac	aat	gtc		720
Asp	Ile	Ala	Glu	Ile	Val	Val	Phe	Ala	Ala	Gly	Arg	Arg	Asp	Asn	Val		
					230					235					240		
gtg	ctc	gcg	gat	acg	ctg	gtg	ttt	ccg	aat	cat	cag	gcg	gcg	gcg	aca		768
Val	Leu	Ala	Asp	Thr	Leu	Val	Phe	Pro	Asn	His	Gln	Ala	Ala	Ala	Thr		
				245					250					255			
gtt	atg	cac	agg	aag	acg	cag	tga										792
Val	Met	His	Arg	Lys	Thr	Gln											
			260														

&lt;210&gt; 1145

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 1145

Met	Ala	Gln	Arg	Leu	Lys	Gly	Lys	Thr	Ile	Val	Ile	Thr	Gly	Ala	Ser		
1				5					10					15			
Ser	Gly	Ile	Gly	Arg	Ser	Thr	Ala	Val	Glu	Phe	Ala	Lys	Thr	Gln	Pro		
			20					25					30				
Asp	Asp	Leu	Lys	Leu	Ile	Leu	Thr	Ala	Arg	Arg	Glu	Asp	Thr	Leu	Lys		
		35					40					45					
Glu	Val	Ala	Lys	Glu	Ile	Glu	Ser	Phe	Ala	Lys	Gly	Val	Lys	Val	Leu		
		50				55					60						
Pro	Val	Lys	Leu	Asp	Val	Ser	Asn	Ile	Ser	Glu	Val	Glu	Ala	Phe	Val		
65					70				75						80		
Gly	Lys	Leu	Pro	Ala	Glu	Phe	Lys	Asp	Val	Asp	Val	Leu	Val	Asn	Asn		
				85					90					95			
Ala	Gly	Leu	Val	Lys	Gly	Val	Ala	Gln	Ala	Pro	Ser	Ile	Ser	Pro	Ala		
			100					105					110				
Asp	Ile	Asn	Thr	Met	Phe	Ser	Thr	Asn	Val	Thr	Gly	Leu	Ile	Ala	Met		
		115					120					125					
Thr	Gln	Ala	Ile	Leu	Pro	Ile	Leu	Lys	Ala	Lys	Asp	Ala	Gly	Asp	Ile		
	130					135					140						
Ile	Asn	Ile	Gly	Ser	Ile	Ala	Gly	Arg	Glu	Pro	Tyr	Gln	Gly	Gly	Ser		
145					150					155					160		
Ile	Tyr	Cys	Ala	Thr	Lys	Ala	Ala	Val	Arg	Ser	Phe	Thr	Asp	Ala	Met		
				165					170					175			
Arg	Arg	Glu	Leu	Ile	Ala	Thr	Arg	Val	Arg	Val	Ile	Glu	Ile	Asp	Pro		
			180					185					190				
Gly	Gln	Val	Glu	Thr	Glu	Phe	Ser	Val	Val	Arg	Phe	Gly	Gly	Asp	Lys		
		195					200					205					
Asp	Lys	Ala	Lys	Lys	Val	Tyr	Glu	Gly	Val	Glu	Pro	Leu	Thr	Pro	Glu		
						215					220						
Asp	Ile	Ala	Glu	Ile	Val	Val	Phe	Ala	Ala	Gly	Arg	Arg	Asp	Asn	Val		
					230					235					240		
Val	Leu	Ala	Asp	Thr	Leu	Val	Phe	Pro	Asn	His	Gln	Ala	Ala	Ala	Thr		
				245					250					255			
Val	Met	His	Arg	Lys	Thr	Gln											
			260														

&lt;210&gt; 1146

<211> 855  
 <212> DNA  
 <213> Phaeosphaeria nodorum

<220>  
 <221> CDS  
 <222> (1)..(855)

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<400> 1146
atg agt tcc gca gaa tca gac gtc cag ctg caa gac ttc ggc aat atc      48
Met Ser Ser Ala Glu Ser Asp Val Gln Leu Gln Asp Phe Gly Asn Ile
1      5      10      15
ttc agc ttg aag ggc aaa gtc gca gtt agc ggt gga tcg cga ggc      96
Phe Ser Leu Lys Gly Lys Val Ala Val Val Ser Gly Gly Ser Arg Gly
20      25      30
tta gga ctg cac gca gcc tct gga ctc ctc caa gca ggc tgc tcc aag      144
Leu Gly Leu His Ala Ala Ser Gly Leu Leu Gln Ala Gly Cys Ser Lys
35      40      45
gtc ttc atc aca tcc cgt aaa gcc agt gca tgc gac gag gct gtc gca      192
Val Phe Ile Thr Ser Arg Lys Ala Ser Ala Cys Asp Glu Ala Val Ala
50      55      60
gcc ctc aac gct cta ccg tgc gaa ggc aaa gcc atc tcg ata cca gcc      240
Ala Leu Asn Ala Leu Pro Cys Glu Gly Lys Ala Ile Ser Ile Pro Ala
65      70      75
gat agc tcc aaa gtc tct gag att gag cga ttg gtg aag gaa gtc gag      288
Asp Ser Ser Lys Val Ser Glu Ile Glu Arg Leu Val Lys Glu Val Glu
85      90      95
aag cac acc gac cac gtt gat atc ctc ttc gca aac gca ggc gca aca      336
Lys His Thr Asp His Val Asp Ile Leu Phe Ala Asn Ala Gly Ala Thr
100      105      110
tgg ggc agc gaa ttc gag aag gta gac gag aag aat ggc tgg gat aag      384
Trp Gly Ser Glu Phe Glu Lys Val Asp Glu Lys Asn Gly Trp Asp Lys
115      120      125
gtc atg gat ttg aac gtc aag ggc gtt ttc ttt acg att cag aaa ttc      432
Val Met Asp Leu Asn Val Lys Gly Val Phe Phe Thr Ile Gln Lys Phe
130      135      140
aca cct ctt ttg tcg aag aac gcc tct gtc gca gag acc tcg cgc gtc      480
Thr Pro Leu Leu Ser Lys Asn Ala Ser Val Ala Glu Thr Ser Arg Val
145      150      155      160
ata att acg ggt tca gtc gcc ggc ata gca aca ggg tcg cta ggc gaa      528
Ile Ile Thr Gly Ser Val Ala Gly Ile Ala Thr Gly Ser Leu Gly Glu
165      170      175
tcg ggc gca tac tcg tac gcg gct tcc aaa gcc gct gtg ctg cat ctc      576
Ser Gly Ala Tyr Ser Tyr Ala Ala Ser Lys Ala Ala Val Leu His Leu
180      185      190
gcc cgc aat ctc gcc atc gaa ctt ggc cca aag cac att cta gtg aac      624
Ala Arg Asn Leu Ala Ile Glu Leu Gly Pro Lys His Ile Leu Val Asn
195      200      205
agc ata gcg ccg gga ttc ttc atg agc aag atg gcg gcg att ttg atg      672
Ser Ile Ala Pro Gly Phe Phe Met Ser Lys Met Ala Ala Ile Leu Met
210      215      220
gag cgg agc ggc ggg cag gac gcg ttg gat aag gcg aac ccg aat ggc      720
Glu Arg Ser Gly Gly Gln Asp Ala Leu Asp Lys Ala Asn Pro Asn Gly
225      230      235      240
cgg gtt gga aga ccg gag gac gta gcg gct gcc gtt gtg ttt tta agt      768
Arg Val Gly Arg Pro Glu Asp Val Ala Ala Val Val Phe Leu Ser
245      250      255
tcg aga gcg ggt ggg cat gtt aat gga gat acg ctt gtg ctg gat ggg      816
Ser Arg Ala Gly Gly His Val Asn Gly Asp Thr Leu Val Leu Asp Gly
260      265      270
ggc aag att tgg gga agc aat agg ctg gag aga ctc tag      855
Gly Lys Ile Trp Gly Ser Asn Arg Leu Glu Arg Leu
275      280

```

<210> 1147  
 <211> 284  
 <212> PRT  
 <213> Phaeosphaeria nodorum



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1147

```

Met Ser Ser Ala Glu Ser Asp Val Gln Leu Gln Asp Phe Gly Asn Ile
1      5      10      15
Phe Ser Leu Lys Gly Lys Val Ala Val Val Ser Gly Gly Ser Arg Gly
20      25      30
Leu Gly Leu His Ala Ala Ser Gly Leu Leu Gln Ala Gly Cys Ser Lys
35      40      45
Val Phe Ile Thr Ser Arg Lys Ala Ser Ala Cys Asp Glu Ala Val Ala
50      55      60
Ala Leu Asn Ala Leu Pro Cys Glu Gly Lys Ala Ile Ser Ile Pro Ala
65      70      75      80
Asp Ser Ser Lys Val Ser Glu Ile Glu Arg Leu Val Lys Glu Val Glu
85      90      95
Lys His Thr Asp His Val Asp Ile Leu Phe Ala Asn Ala Gly Ala Thr
100     105     110
Trp Gly Ser Glu Phe Glu Lys Val Asp Glu Lys Asn Gly Trp Asp Lys
115     120     125
Val Met Asp Leu Asn Val Lys Gly Val Phe Phe Thr Ile Gln Lys Phe
130     135     140
Thr Pro Leu Leu Ser Lys Asn Ala Ser Val Ala Glu Thr Ser Arg Val
145     150     155     160
Ile Ile Thr Gly Ser Val Ala Gly Ile Ala Thr Gly Ser Leu Gly Glu
165     170     175
Ser Gly Ala Tyr Ser Tyr Ala Ala Ser Lys Ala Ala Val Leu His Leu
180     185     190
Ala Arg Asn Leu Ala Ile Glu Leu Gly Pro Lys His Ile Leu Val Asn
195     200     205
Ser Ile Ala Pro Gly Phe Phe Met Ser Lys Met Ala Ala Ile Leu Met
210     215     220
Glu Arg Ser Gly Gly Gln Asp Ala Leu Asp Lys Ala Asn Pro Asn Gly
225     230     235     240
Arg Val Gly Arg Pro Glu Asp Val Ala Ala Ala Val Val Phe Leu Ser
245     250     255
Ser Arg Ala Gly Gly His Val Asn Gly Asp Thr Leu Val Leu Asp Gly
260     265     270
Gly Lys Ile Trp Gly Ser Asn Arg Leu Glu Arg Leu
275     280

```

&lt;210&gt; 1148

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Streptomyces argillaceus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1148

```

atg gac atg gga ctg aca ggc cgc agg gtg ctc gtc acg ggc ggg tcc      48
Met Asp Met Gly Leu Thr Gly Arg Arg Val Leu Val Thr Gly Gly Ser
1      5      10      15
tcc gga atc ggt gcg gcc gtc gcg cgc gcc tac gcg gac gag ggg gcg      96
Ser Gly Ile Gly Ala Ala Val Ala Arg Ala Tyr Ala Asp Glu Gly Ala
20      25      30
cgg gtc gcc ctc acc tac cgc ggc ggc gac gag gcg gcc gaa cgg ctc      144
Arg Val Ala Leu Thr Tyr Arg Gly Gly Asp Glu Ala Ala Glu Arg Leu
35      40      45
gcc cgt gaa ctc ggc gcg gcc cgg cac gcg gca atg gcg gtg cgg tac      192
Ala Arg Glu Leu Gly Ala Gly Arg His Ala Ala Met Ala Val Arg Tyr
50      55      60
tcc ctc ggg gag ccg gac acc gtg gag tcg gcc gtc gcc acg gtg acc      240
Ser Leu Gly Glu Pro Asp Thr Val Glu Ser Ala Val Ala Thr Val Thr
65      70      75      80
gaa cgc tgg ggc ggg gtg gac gtg ctc gtc gcg aac gcg gtg cgc tgg      288
Glu Arg Trp Gly Gly Val Asp Val Leu Val Ala Asn Ala Val Arg Trp
85      90      95
gct ccc cgc cgg gcg ccc gcc acc cgg ttc gag gag gtc gcg tcc ggg      336
Ala Pro Arg Arg Ala Pro Gly Thr Arg Phe Glu Glu Val Ala Ser Gly

```

## PhoenixTemp32470.tmp.txt

gac	tgg	cgg	ggt	ttc	ctc	gac	gac	aac	ctg	gcg	ccg	acc	ctg	cgt	acc	384
Asp	Trp	Arg	Gly	Phe	Leu	Asp	Asp	Asn	Leu	Ala	Pro	Thr	Leu	Arg	Thr	
gtg	cag	ctg	gtg	gtg	gcc	ggg	atg	cgg	gcg	cgg	tcc	tgg	ggc	agg	atc	432
Val	Gln	Leu	Val	Val	Ala	Gly	Met	Arg	Ala	Arg	Ser	Trp	Gly	Arg	Ile	
gtg	ctc	atc	tcc	tcg	cat	gtg	gcc	ctc	gac	ggc	cac	cgc	ggg	cag	gag	480
Val	Leu	Ile	Ser	Ser	His	Val	Ala	Leu	Asp	Gly	His	Arg	Gly	Gln	Glu	
ttc	tac	ggc	gcc	gcc	aag	tcg	gcg	ctg	cac	ggc	ttc	gcc	cgc	agt	ctg	528
Phe	Tyr	Gly	Ala	Ala	Lys	Ser	Ala	Leu	His	Gly	Phe	Ala	Arg	Ser	Leu	
gcc	tgg	gac	gtg	ggc	cgt	gac	ggt	gtc	ctg	gtg	aac	gtc	gtg	tgc	ccg	576
Ala	Trp	Asp	Val	Gly	Arg	Asp	Gly	Val	Leu	Val	Asn	Val	Val	Cys	Pro	
ggg	ctg	acc	acc	acc	gag	cgc	gtg	ctc	acc	ggg	ctg	ccc	gac	gag	atc	624
Gly	Leu	Thr	Thr	Thr	Glu	Arg	Val	Leu	Thr	Gly	Leu	Pro	Asp	Glu	Ile	
cgc	gag	cgt	gag	ctc	ggc	tcg	acc	ccc	acc	ggt	cgg	ctc	agc	agc	ccc	672
Arg	Glu	Arg	Glu	Leu	Gly	Ser	Thr	Pro	Thr	Gly	Arg	Leu	Ser	Ser	Pro	
gag	gac	atc	gcc	ggc	gcg	gtg	ctc	ttc	ctg	ggc	tcg	gcg	gcc	aac	gcc	720
Glu	Asp	Ile	Ala	Gly	Ala	Val	Leu	Phe	Leu	Gly	Ser	Ala	Ala	Asn	Ala	
aac	acg	acg	ggc	cag	acc	ctc	acg	gtc	tcc	ggc	ggc	cgc	tga			762
Asn	Thr	Thr	Gly	Gln	Thr	Leu	Thr	Val	Ser	Gly	Gly	Arg				

<210> 1149

<211> 253

<212> PRT

<213> Streptomyces argillaceus

<400> 1149

Met 1	Asp	Met	Gly	Leu 5	Thr	Gly	Arg	Arg	Val 10	Leu	Val	Thr	Gly	Gly 15	Ser
Ser	Gly	Ile	Gly 20	Ala	Ala	Val	Ala	Arg 25	Ala	Tyr	Ala	Asp	Glu 30	Gly	Ala
Arg	Val	Ala 35	Leu	Thr	Tyr	Arg	Gly 40	Gly	Asp	Glu	Ala	Ala 45	Glu	Arg	Leu
Ala	Arg 50	Glu	Leu	Gly	Ala	Gly 55	Arg	His	Ala	Ala	Met 60	Ala	Val	Arg	Tyr
Ser 65	Leu	Gly	Glu	Pro	Asp 70	Thr	Val	Glu	Ser	Ala 75	Val	Ala	Thr	Val	Thr 80
Glu	Arg	Trp	Gly	Gly 85	Val	Asp	Val	Leu	Val 90	Ala	Asn	Ala	Val	Arg 95	Trp
Ala	Pro	Arg	Arg 100	Ala	Pro	Gly	Thr	Arg 105	Phe	Glu	Glu	Val	Ala 110	Ser	Gly
Asp	Trp	Arg 115	Gly	Phe	Leu	Asp	Asp 120	Asn	Leu	Ala	Pro	Thr 125	Leu	Arg	Thr
Val	Gln 130	Leu	Val	Val	Ala	Gly 135	Met	Arg	Ala	Arg	Ser 140	Trp	Gly	Arg	Ile
Val 145	Leu	Ile	Ser	Ser	His 150	Val	Ala	Leu	Asp	Gly 155	His	Arg	Gly	Gln	Glu 160
Phe	Tyr	Gly	Ala	Ala 165	Lys	Ser	Ala	Leu	His 170	Gly	Phe	Ala	Arg	Ser 175	Leu
Ala	Trp	Asp	Val 180	Gly	Arg	Asp	Gly	Val 185	Leu	Val	Asn	Val	Val 190	Cys	Pro
Gly	Leu	Thr 195	Thr	Thr	Glu	Arg	Val 200	Leu	Thr	Gly	Leu	Pro 205	Asp	Glu	Ile
Arg	Glu 210	Arg	Glu	Leu	Gly	Ser 215	Thr	Pro	Thr	Gly	Arg 220	Leu	Ser	Ser	Pro
Glu 225	Asp	Ile	Ala	Gly	Ala 230	Val	Leu	Phe	Leu	Gly 235	Ser	Ala	Ala	Asn	Ala 240
Asn	Thr	Thr	Gly	Gln 245	Thr	Leu	Thr	Val	Ser 250	Gly	Gly	Arg			

<210> 1150

<211> 801  
 <212> DNA  
 <213> Streptomyces griseus

<220>  
 <221> CDS  
 <222> (1)..(801)  
 <223> transl\_table=11

<400> 1150  
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 Met Leu Thr Pro Gly Arg Ser Gly Ser Pro Gly Arg Val Gly His Gly  
 1 5 10 15  
 agg gag cac gcg atg gag ctg agg cgc agt gcg ctg gtg acg ggt ggt 96  
 Arg Glu His Ala Met Glu Leu Arg Arg Ser Ala Leu Val Thr Gly Gly  
 20 25 30  
 tcg cgc ggc atc ggc cgc gcg gtc gcg gta cgg ctg gca cag gac ggg 144  
 Ser Arg Gly Ile Gly Arg Ala Val Ala Val Arg Leu Ala Gln Asp Gly  
 35 40 45  
 tac gac atc ggc ttc tgc tcg cgt tcc gcc gac gag gcg gcg ctg gag 192  
 Tyr Asp Ile Gly Phe Cys Ser Arg Ser Ala Asp Glu Ala Ala Leu Glu  
 50 55 60  
 acg gcc cgg ctg gtc acc tcg gcc ggt gct cgg gcg cac cac gtg gtg 240  
 Thr Ala Arg Leu Val Thr Ser Ala Gly Ala Arg Ala His His Val Val  
 65 70 75 80  
 tgc gac gtc acc gac gcc gac gcc gtt cgg acc ttc gtc gcg gag gcg 288  
 Cys Asp Val Thr Asp Ala Asp Ala Val Arg Thr Phe Val Ala Glu Ala  
 85 90 95  
 gag gag aag ctc ggc ccg gcg tac gcg gtg gtc aac tcc gcg ggg gtg 336  
 Glu Glu Lys Leu Gly Pro Ala Tyr Ala Val Val Asn Ser Ala Gly Val  
 100 105 110  
 ctg cgg gac cgg ccg atg gcc ctg atg gcg gcc agg gac tgg cag gac 384  
 Leu Arg Asp Arg Pro Met Ala Leu Met Ala Ala Arg Asp Trp Gln Asp  
 115 120 125  
 gtg gtc ggt acg agt ctg gac ggg gcc ttc cac gtc tgc cgg gcg gtc 432  
 Val Val Gly Thr Ser Leu Asp Gly Ala Phe His Val Cys Arg Ala Val  
 130 135 140  
 gtg cgc ggg ctg ctc acc cgc agg gcg ggg gcg ctg gtg aac gtc tcc 480  
 Val Arg Gly Leu Leu Thr Arg Arg Ala Gly Ala Leu Val Asn Val Ser  
 145 150 155 160  
 tcg gtc atc ggg gtg tac ggc aac gcg gga cag acc aac tac gcc gcc 528  
 Ser Val Ile Gly Val Tyr Gly Asn Ala Gly Gln Thr Asn Tyr Ala Ala  
 165 170 175  
 gcc aag ggc gga ctg aac ggc ctg acc cgt gcc ctg gcc aag gag gtc 576  
 Ala Lys Gly Gly Leu Asn Gly Leu Thr Arg Ala Leu Ala Lys Glu Val  
 180 185 190  
 gcc ccg tac ggc gtc cgg gtc aac gcg gtg gcg ccc ggg ttc atc gag 624  
 Ala Pro Tyr Gly Val Arg Val Asn Ala Val Ala Pro Gly Phe Ile Glu  
 195 200 205  
 acg gag atg ctc gac ggc atg acg gcc aag gcg cgc gag gcg gcc ctc 672  
 Thr Glu Met Leu Asp Gly Met Thr Ala Lys Ala Arg Glu Ala Ala Leu  
 210 215 220  
 ggg aag atc gcc atg gcg cgg ttc ggc agc gcc gag tcc gtc gcc gcg 720  
 Gly Lys Ile Ala Met Ala Arg Phe Gly Ser Ala Glu Ser Val Ala Ala  
 225 230 235 240  
 ctc gtc gcg ttc ctc gtc tcc gac gcc gcc gac tac atc acc ggc cag 768  
 Leu Val Ala Phe Leu Val Ser Asp Ala Ala Asp Tyr Ile Thr Gly Gln  
 245 250 255  
 gtg gtg cag atc gac ggc ggg atc gcc ctg tga 801  
 Val Val Gln Ile Asp Gly Gly Ile Ala Leu  
 260 265

<210> 1151  
 <211> 266  
 <212> PRT  
 <213> Streptomyces griseus

<400> 1151  
 Met Leu Thr Pro Gly Arg Ser Gly Ser Pro Gly Arg Val Gly His Gly  
 Page 628

## PhoenixTemp32470.tmp.txt

```

1      5      10      15
Arg Glu His Ala Met Glu Leu Arg Arg Ser Ala Leu Val Thr Gly Gly
20
Ser Arg Gly Ile Gly Arg Ala Val Ala Val Arg Leu Ala Gln Asp Gly
35
Tyr Asp Ile Gly Phe Cys Ser Arg Ser Ala Asp Glu Ala Ala Leu Glu
50
Thr Ala Arg Leu Val Thr Ser Ala Gly Ala Arg Ala His His Val Val
65
Cys Asp Val Thr Asp Ala Asp Ala Val Arg Thr Phe Val Ala Glu Ala
85
Glu Glu Lys Leu Gly Pro Ala Tyr Ala Val Val Asn Ser Ala Gly Val
100
Leu Arg Asp Arg Pro Met Ala Leu Met Ala Ala Arg Asp Trp Gln Asp
115
Val Val Gly Thr Ser Leu Asp Gly Ala Phe His Val Cys Arg Ala Val
130
Val Arg Gly Leu Leu Thr Arg Arg Ala Gly Ala Leu Val Asn Val Ser
145
Ser Val Ile Gly Val Tyr Gly Asn Ala Gly Gln Thr Asn Tyr Ala Ala
165
Ala Lys Gly Gly Leu Asn Gly Leu Thr Arg Ala Leu Ala Lys Glu Val
180
Ala Pro Tyr Gly Val Arg Val Asn Ala Val Ala Pro Gly Phe Ile Glu
195
Thr Glu Met Leu Asp Gly Met Thr Ala Lys Ala Arg Glu Ala Ala Leu
210
Gly Lys Ile Ala Met Ala Arg Phe Gly Ser Ala Glu Ser Val Ala Ala
225
Leu Val Ala Phe Leu Val Ser Asp Ala Ala Asp Tyr Ile Thr Gly Gln
245
Val Val Gln Ile Asp Gly Gly Ile Ala Leu
260

```

&lt;210&gt; 1152

&lt;211&gt; 1023

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1023)

&lt;400&gt; 1152

```

atg cac gtg ggg cta acg ctg gtg ctg ctc gtc tac ctc ccc atc gcc      48
Met His Val Gly Leu Thr Leu Val Leu Leu Val Tyr Leu Pro Ile Ala
1      5      10      15
ttc gcc tgc cgc gcc ctg ggc agg ctg ctc gtc agg ccc ttc gtc tcc      96
Phe Ala Cys Arg Ala Leu Gly Arg Leu Leu Val Arg Pro Phe Val Ser
20      25      30
ggc gag gac ctc cgc ggc aag gtc gtg ctc gtc acc ggc gcc tcc tcc      144
Gly Glu Asp Leu Arg Gly Lys Val Val Leu Val Thr Gly Ala Ser Ser
35      40      45
ggc atc ggc gag cat cta gtg tac gag tac gcg aag aag ggg gcg tgc      192
Gly Ile Gly Glu His Leu Val Tyr Glu Tyr Ala Lys Lys Gly Ala Cys
50      55      60
gtg gcg ctg acg gcg agg acg gag atc gcc ctg cgc gca gtg gcg aag      240
Val Ala Leu Thr Ala Arg Thr Glu Ile Ala Leu Arg Ala Val Ala Lys
65      70      75      80
acg gcg cgc gac ctc ggc gcg ccg gac gtg ctc gtc gtg ccg gcg gac      288
Thr Ala Arg Asp Leu Gly Ala Pro Asp Val Leu Val Val Pro Ala Asp
85      90      95
atc acc aag gtc gac gac gcc aag cgc gcc gtc gag gag acc gtc gcc      336
Ile Thr Lys Val Asp Asp Ala Lys Arg Ala Val Glu Glu Thr Val Ala
100      105      110
cac ttc ggc aaa ttg aat cac ctg gtg gcc aac gca ggg atc tgg tcc      384
His Phe Gly Lys Leu Asn His Leu Val Ala Asn Ala Gly Ile Trp Ser
115      120      125
agt tgc ttc ttc gaa gaa att acc aac ata acc gcc ttc cac aac gtg      432

```

## PhoenixTemp32470.tmp.txt

Ser	Cys	Phe	Phe	Glu	Glu	Ile	Thr	Asn	Ile	Thr	Ala	Phe	His	Asn	Val		
130	130					135					140						
att	gat	ctc	aac	ttc	tgg	ggc	gcc	gtg	tac	ccg	acc	tac	ttc	gcg	ttg	480	
Ile	Asp	Leu	Asn	Phe	Trp	Gly	Ala	Val	Tyr	Pro	Thr	Tyr	Phe	Ala	Leu		
145					150					155					160		
ccg	tac	ctg	aaa	gcc	agc	cgt	ggc	aac	atc	gtc	gtc	acc	tcc	tct	gtc	528	
Pro	Tyr	Leu	Lys	Ala	Ser	Arg	Gly	Asn	Ile	Val	Val	Thr	Ser	Ser	Val		
				165					170					175			
gcc	ggc	agg	gtc	ccg	acg	gcc	agg	atg	agc	ttc	tac	aac	gcg	agt	aag	576	
Ala	Gly	Arg	Val	Pro	Thr	Ala	Arg	Met	Ser	Phe	Tyr	Asn	Ala	Ser	Lys		
			180					185					190				
ggc	gcg	gtg	atc	agg	ttc	tac	gaa	acc	cta	agg	gct	gag	ctg	ggc	tca	624	
Gly	Ala	Val	Ile	Arg	Phe	Tyr	Glu	Thr	Leu	Arg	Ala	Glu	Leu	Gly	Ser		
		195					200					205					
cat	gtc	cgt	gtc	acc	att	ctc	acc	ccg	ggc	tat	gtc	gtc	tcc	aac	ctc	672	
His	Val	Arg	Val	Thr	Ile	Leu	Thr	Pro	Gly	Tyr	Val	Val	Ser	Asn	Leu		
					215						220						
acc	atg	ggc	aaa	ggc	atc	cag	aag	gac	ggc	cat	gtc	ggc	att	gac	gag	720	
Thr	Met	Gly	Lys	Gly	Ile	Gln	Lys	Asp	Gly	His	Val	Gly	Ile	Asp	Glu		
225					230					235					240		
gag	gct	cgc	gac	atc	aat	gtg	ggg	ccg	ctg	ccg	gtg	ggg	aag	acg	gag	768	
Glu	Ala	Arg	Asp	Ile	Asn	Val	Gly	Pro	Leu	Pro	Val	Gly	Lys	Thr	Glu		
				245					250					255			
acg	ctg	gcg	aag	gtg	gtg	gtg	gcg	gcg	gtg	cgg	cgg	ggc	gac	tac	tac	816	
Thr	Leu	Ala	Lys	Val	Val	Val	Ala	Ala	Val	Arg	Arg	Gly	Asp	Tyr	Tyr		
			260					265					270				
gtg	aca	tgg	ccc	ggg	tgg	tac	tgg	ccg	ttc	cac	atg	gtg	atg	tgc	acg	864	
Val	Thr	Trp	Pro	Gly	Trp	Tyr	Trp	Pro	Phe	His	Met	Val	Met	Cys	Thr		
		275					280					285					
gcg	ccg	gag	ctc	gtc	gac	tgg	ttc	tcc	cgg	acc	ttc	tac	gtc	tcc	aag	912	
Ala	Pro	Glu	Leu	Val	Asp	Trp	Phe	Ser	Arg	Thr	Phe	Tyr	Val	Ser	Lys		
						295					300						
tcc	agc	gac	cac	gat	ggc	gac	gcc	ctc	agc	aag	aag	atc	ctc	gag	gcc	960	
Ser	Ser	Asp	His	Asp	Gly	Asp	Ala	Leu	Ser	Lys	Lys	Ile	Leu	Glu	Ala		
305					310					315					320		
gtc	ggc	ggc	aag	aag	ttc	ctc	tac	ccc	aag	acc	atc	cgc	agc	cat	gcc	1008	
Val	Gly	Gly	Lys	Lys	Phe	Leu	Tyr	Pro	Lys	Thr	Ile	Arg	Ser	His	Ala		
				325					330					335			
atc	gcc	gct	agc	taa												1023	
Ile	Ala	Ala	Ser														
			340														

&lt;210&gt; 1153

&lt;211&gt; 340

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1153

Met	His	Val	Gly	Leu	Thr	Leu	Val	Leu	Leu	Val	Tyr	Leu	Pro	Ile	Ala		
1				5				10						15			
Phe	Ala	Cys	Arg	Ala	Leu	Gly	Arg	Leu	Leu	Val	Arg	Pro	Phe	Val	Ser		
			20					25					30				
Gly	Glu	Asp	Leu	Arg	Gly	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser		
		35					40					45					
Gly	Ile	Gly	Glu	His	Leu	Val	Tyr	Glu	Tyr	Ala	Lys	Lys	Gly	Ala	Cys		
		50				55					60						
Val	Ala	Leu	Thr	Ala	Arg	Thr	Glu	Ile	Ala	Leu	Arg	Ala	Val	Ala	Lys		
65					70					75					80		
Thr	Ala	Arg	Asp	Leu	Gly	Ala	Pro	Asp	Val	Leu	Val	Val	Pro	Ala	Asp		
				85					90					95			
Ile	Thr	Lys	Val	Asp	Asp	Ala	Lys	Arg	Ala	Val	Glu	Glu	Thr	Val	Ala		
			100					105					110				
His	Phe	Gly	Lys	Leu	Asn	His	Leu	Val	Ala	Asn	Ala	Gly	Ile	Trp	Ser		
		115					120					125					
Ser	Cys	Phe	Phe	Glu	Glu	Ile	Thr	Asn	Ile	Thr	Ala	Phe	His	Asn	Val		
						135					140						
Ile	Asp	Leu	Asn	Phe	Trp	Gly	Ala	Val	Tyr	Pro	Thr	Tyr	Phe	Ala	Leu		
145					150					155					160		
Pro	Tyr	Leu	Lys	Ala	Ser	Arg	Gly	Asn	Ile	Val	Val	Thr	Ser	Ser	Val		

## PhoenixTemp32470.tmp.txt

165 170 175  
 Ala Gly Arg Val Pro Thr Ala Arg Met Ser Phe Tyr Asn Ala Ser Lys  
 180 185 190  
 Gly Ala Val Ile Arg Phe Tyr Glu Thr Leu Arg Ala Glu Leu Gly Ser  
 195 200 205  
 His Val Arg Val Thr Ile Leu Thr Pro Gly Tyr Val Val Ser Asn Leu  
 210 215 220  
 Thr Met Gly Lys Gly Ile Gln Lys Asp Gly His Val Gly Ile Asp Glu  
 225 230 235 240  
 Glu Ala Arg Asp Ile Asn Val Gly Pro Leu Pro Val Gly Lys Thr Glu  
 245 250 255  
 Thr Leu Ala Lys Val Val Val Ala Ala Val Arg Arg Gly Asp Tyr Tyr  
 260 265 270  
 Val Thr Trp Pro Gly Trp Tyr Trp Phe His Met Val Met Cys Thr  
 275 280 285  
 Ala Pro Glu Leu Val Asp Trp Phe Ser Arg Thr Phe Tyr Val Ser Lys  
 290 295 300  
 Ser Ser Asp His Asp Gly Asp Ala Leu Ser Lys Lys Ile Leu Glu Ala  
 305 310 315 320  
 Val Gly Gly Lys Lys Phe Leu Tyr Pro Lys Thr Ile Arg Ser His Ala  
 325 330 335  
 Ile Ala Ala Ser  
 340

<210> 1154  
 <211> 939  
 <212> DNA  
 <213> Streptomyces griseus

<220>  
 <221> CDS  
 <222> (1)..(939)  
 <223> transl\_table=11

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 ccc ctg cac ggg cgg gtc gcg gtc gtc acc ggt gcc gct cgc ggc gtc 96  
 Pro Leu His Gly Arg Val Ala Val Val Thr Gly Ala Ala Arg Gly Val  
 20 25 30  
 ggc gaa ggc ctc gcc cgc agc ctc tcc gac gcc gga atg cac gtg gcc 144  
 Gly Glu Gly Leu Ala Arg Ser Leu Ser Asp Ala Gly Met His Val Ala  
 35 40 45  
 ctg ctc ggc cgg gaa agg gcg acc ctg cgg gag acc gcc gcg tcc ctc 192  
 Leu Leu Gly Arg Glu Arg Ala Thr Leu Arg Glu Thr Ala Ala Ser Leu  
 50 55 60  
 tcc ggc ccc agc atc tgc gtc gag tgc gac atc acc gac cgc acg gcg 240  
 Ser Gly Pro Ser Ile Cys Val Glu Cys Asp Ile Thr Asp Arg Thr Ala  
 65 70 75 80  
 ctc gcg gac gcg gcc cgc cgc gtg gaa acg ggg ctc ggg ccg gcg agc 288  
 Leu Ala Asp Ala Arg Arg Val Glu Thr Gly Leu Gly Pro Ala Ser  
 85 90 95  
 gtg gtc gtg gcc aac gcc ggg atc gcg gtg agc ggc ccg ttc gac cgc 336  
 Val Val Val Ala Asn Ala Gly Ile Ala Val Ser Gly Pro Phe Asp Arg  
 100 105 110  
 acc gac ggc gag ctc tgg cag cgc gtc atc gac gtc aat ctc acc ggc 384  
 Thr Asp Gly Glu Leu Trp Gln Arg Val Ile Asp Val Asn Leu Thr Gly  
 115 120 125  
 tcc gcg aac acc gcc cgc gcc ttc ctc ccc cag ctc acc gcc acc cgc 432  
 Ser Ala Asn Thr Ala Arg Ala Phe Leu Pro Gln Leu Thr Ala Thr Arg  
 130 135 140  
 ggg tac ttc ctc cag atc gcc tcc acc gcg gcg ttc gga gcc gct ccc 480  
 Gly Tyr Phe Leu Gln Ile Ala Ser Thr Ala Ala Phe Gly Ala Ala Pro  
 145 150 155 160  
 atg atg agc gcc tac tgc gcc tcc aag gcg ggg gcc gag tcg ttc gcc 528  
 Met Met Ser Ala Tyr Cys Ala Ser Lys Ala Gly Ala Glu Ser Phe Ala  
 165 170 175  
 ctg gcg ctg cgc ggt gag gtg gag ccg gac ggc gtc cgg gtc ggc atc 576

## PhoenixTemp32470.tmp.txt

Leu	Ala	Leu	Arg	Gly	Glu	Val	Glu	Pro	Asp	Gly	Val	Arg	Val	Gly	Ile	
gcc	tat	ctg	cac	tgg	acc	ggc	acc	gac	atg	ctc	acc	ggc	atc	gac	gac	624
Ala	Tyr	Leu	His	Trp	Thr	Gly	Thr	Asp	Met	Leu	Thr	Gly	Ile	Asp	Asp	
		195					200					205				
gat	ccc	gtc	ctc	gaa	gcg	ctg	cgc	cgc	aat	cag	ccc	cgc	ccc	gcc	cgc	672
Asp	Pro	Val	Leu	Glu	Ala	Leu	Arg	Arg	Asn	Gln	Pro	Arg	Pro	Ala	Arg	
	210					215					220					
cgc	gtc	cac	agc	tcc	gcc	cag	gtc	gcc	cag	tgg	ctg	acc	cgg	ggc	atc	720
Arg	Val	His	Ser	Ser	Ala	Gln	Val	Ala	Gln	Trp	Leu	Thr	Arg	Gly	Ile	
225					230					235					240	
gcc	cgc	cgc	agc	cgc	aac	atc	tac	gcc	ccg	ccc	tgc	gtc	cgc	tgg	tgc	768
Ala	Arg	Arg	Ser	Arg	Asn	Ile	Tyr	Ala	Pro	Pro	Cys	Val	Arg	Trp	Cys	
				245					250					255		
cag	ccc	ctt	cgg	ccg	ttg	ttc	ccg	gtc	ctc	gtc	gcc	cgg	gcg	gcc	cgc	816
Gln	Pro	Leu	Arg	Pro	Leu	Phe	Pro	Val	Leu	Val	Ala	Arg	Ala	Ala	Arg	
			260				265						270			
cgc	gaa	ctg	cgc	gcc	cgc	ccc	agc	cgg	gaa	ctg	tcc	gcg	ccc	gtc	gag	864
Arg	Glu	Leu	Arg	Ala	Arg	Pro	Ser	Arg	Glu	Leu	Ser	Ala	Pro	Val	Glu	
		275					280					285				
gtc	ctg	ggg	gcc	gga	ggg	cga	gcc	gac	tgg	agc	tcc	tac	cgg	gcc	tcc	912
Val	Leu	Gly	Ala	Gly	Gly	Arg	Ala	Asp	Trp	Ser	Ser	Tyr	Arg	Ala	Ser	
	290					295					300					
cgc	tcc	ggc	cct	ccg	gca	gac	ggg	tag								939
Arg	Ser	Gly	Pro	Pro	Ala	Asp	Gly									
305					310											

&lt;210&gt; 1155

&lt;211&gt; 312

&lt;212&gt; PRT

&lt;213&gt; Streptomyces griseus

&lt;400&gt; 1155

Met	His	His	Ser	Pro	Asp	Gly	Ser	His	Gly	Arg	Arg	Val	Pro	Gly	Gly	
1				5					10					15		
Pro	Leu	His	Gly	Arg	Val	Ala	Val	Val	Thr	Gly	Ala	Ala	Arg	Gly	Val	
			20					25					30			
Gly	Glu	Gly	Leu	Ala	Arg	Ser	Leu	Ser	Asp	Ala	Gly	Met	His	Val	Ala	
		35					40					45				
Leu	Leu	Gly	Arg	Glu	Arg	Ala	Thr	Leu	Arg	Glu	Thr	Ala	Ala	Ser	Leu	
	50					55					60					
Ser	Gly	Pro	Ser	Ile	Cys	Val	Glu	Cys	Asp	Ile	Thr	Asp	Arg	Thr	Ala	
65					70					75					80	
Leu	Ala	Asp	Ala	Ala	Arg	Arg	Val	Glu	Thr	Gly	Leu	Gly	Pro	Ala	Ser	
			85						90					95		
Val	Val	Val	Ala	Asn	Ala	Gly	Ile	Ala	Val	Ser	Gly	Pro	Phe	Asp	Arg	
			100					105					110			
Thr	Asp	Gly	Glu	Leu	Trp	Gln	Arg	Val	Ile	Asp	Val	Asn	Leu	Thr	Gly	
		115					120					125				
Ser	Ala	Asn	Thr	Ala	Arg	Ala	Phe	Leu	Pro	Gln	Leu	Thr	Ala	Thr	Arg	
	130					135					140					
Gly	Tyr	Phe	Leu	Gln	Ile	Ala	Ser	Thr	Ala	Ala	Phe	Gly	Ala	Ala	Pro	
145					150					155					160	
Met	Met	Ser	Ala	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Ala	Glu	Ser	Phe	Ala	
			165						170					175		
Leu	Ala	Leu	Arg	Gly	Glu	Val	Glu	Pro	Asp	Gly	Val	Arg	Val	Gly	Ile	
			180					185					190			
Ala	Tyr	Leu	His	Trp	Thr	Gly	Thr	Asp	Met	Leu	Thr	Gly	Ile	Asp	Asp	
		195					200					205				
Asp	Pro	Val	Leu	Glu	Ala	Leu	Arg	Arg	Asn	Gln	Pro	Arg	Pro	Ala	Arg	
	210					215					220					
Arg	Val	His	Ser	Ser	Ala	Gln	Val	Ala	Gln	Trp	Leu	Thr	Arg	Gly	Ile	
225					230					235					240	
Ala	Arg	Arg	Ser	Arg	Asn	Ile	Tyr	Ala	Pro	Pro	Cys	Val	Arg	Trp	Cys	
			245						250					255		
Gln	Pro	Leu	Arg	Pro	Leu	Phe	Pro	Val	Leu	Val	Ala	Arg	Ala	Ala	Arg	
			260					265					270			
Arg	Glu	Leu	Arg	Ala	Arg	Pro	Ser	Arg	Glu	Leu	Ser	Ala	Pro	Val	Glu	
		275					280					285				

Val Leu Gly Ala Gly Gly Arg Ala Asp Trp Ser Ser Tyr Arg Ala Ser  
 290 300  
 Arg Ser Gly Pro Pro Ala Asp Gly  
 305 310

<210> 1156  
 <211> 804  
 <212> DNA  
 <213> Streptomyces antibioticus

<220>  
 <221> CDS  
 <222> (1)..(804)  
 <223> transl\_table=11

<400> 1156  
 atg act cgt agc gtc tcc gca tcc ggc ccg ctt cag ggc agg atc gcg 48  
 Met Thr Arg Ser Val Ser Ala Ser Gly Pro Leu Gln Gly Arg Ile Ala  
 1 5 10 15  
 ctg gtg aca ggc ggt agc cgg ggg atc ggg gcc gcg acc acc 96  
 Leu Val Thr Gly Gly Ser Arg Gly Ile Gly Ala Ala Thr Ala Thr Thr  
 20 25 30  
 ctc gcc ggg ctc ggg gcc gac gtc gtg ctc aca tac cga agc tcg ctg 144  
 Leu Ala Gly Leu Gly Ala Asp Val Leu Thr Tyr Arg Ser Ser Leu  
 35 40 45  
 gac gag gcc aag gcc gtg gcg gcc gcg tgc gag gaa aaa ggt gta aag 192  
 Asp Glu Ala Lys Ala Val Ala Ala Ala Cys Glu Glu Lys Gly Val Lys  
 50 55 60  
 gcc acg gtg ctc agg gcc gac ctg gac gcg gcc gac ggc gcc gag gaa 240  
 Ala Thr Val Leu Arg Ala Asp Leu Asp Ala Asp Gly Ala Glu Glu  
 65 70 75 80  
 ctg gtc acc gcc gtg cgg gaa cgg gtg gac cac ctc gac gtc gtc gtc 288  
 Leu Val Thr Ala Val Arg Glu Arg Val Asp His Leu Asp Val Val Val  
 85 90 95  
 agc aac gcc tgc gcc tcg tac ccg cgc gtg ccg ctg gcc ggc atg gac 336  
 Ser Asn Ala Cys Ala Ser Tyr Pro Arg Val Pro Leu Ala Gly Met Asp  
 100 105 110  
 ccg acc gcg ctc ggc gac aag gtc cgc aac gac gtc gtc ctg ctg cac 384  
 Pro Thr Ala Leu Gly Asp Lys Val Arg Asn Asp Val Val Leu Leu His  
 115 120 125  
 cgg ctc acc gcc ttc gtg ccc gcg atg cgg gag cgg ggc tac ggc 432  
 Arg Leu Thr Thr Ala Phe Val Pro Ala Met Arg Glu Arg Gly Tyr Gly  
 130 135 140  
 cgg ctc gtc gtc atc tcc agc ggc tcg tcc tgg ggc ccg acc gcg ccc 480  
 Arg Leu Val Val Ile Ser Ser Gly Ser Ser Trp Gly Pro Thr Ala Pro  
 145 150 155 160  
 ggc ctc gcc gcg cac gga gtg acg aag gcc gcg ctg gag ggc tac gtc 528  
 Gly Leu Ala Ala His Gly Val Thr Lys Ala Ala Leu Glu Gly Tyr Val  
 165 170 175  
 cgg tac gcg gcc gac gag ttc ggc gcc ggt ggc gtg acc gtc aac ggc 576  
 Arg Tyr Ala Ala Asp Glu Phe Gly Ala Gly Gly Val Thr Val Asn Gly  
 180 185 190  
 ctc gcc ctg ggc ttc gtc ctc acc gac gcc tcc tcg gtg gtc ccg cag 624  
 Leu Ala Leu Gly Phe Val Leu Thr Asp Ala Ser Ser Val Val Pro Gln  
 195 200 205  
 ccg gcg cgc gac gcg ctg gcc aac gcc acg ccg gcc ggg cgg ctc ggc 672  
 Pro Ala Arg Asp Ala Leu Ala Asn Ala Thr Pro Ala Gly Arg Leu Gly  
 210 215 220  
 acc ccg cag gac atc gcc gac gcc gtg tcc ctg ctg gcg cgc ccc gag 720  
 Thr Pro Gln Asp Ile Ala Asp Ala Val Ser Leu Leu Ala Arg Pro Glu  
 225 230 235 240  
 tcg gag tgg atc aac ggg gcg acc ctc ccc gtg acc ggc ggc ctc aac 768  
 Ser Glu Trp Ile Asn Gly Ala Thr Leu Pro Val Thr Gly Gly Leu Asn  
 245 250 255  
 tac ccg ctg aac ctg tcc cgc gtc cgc ggc cac tga 804  
 Tyr Pro Leu Asn Leu Ser Arg Val Arg Gly His  
 260 265

<210> 1157



&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Streptomyces antibioticus

&lt;400&gt; 1157

```

Met Thr Arg Ser Val Ser Ala Ser Gly Pro Leu Gln Gly Arg Ile Ala
1      5      10      15
Leu Val Thr Gly Gly Ser Arg Gly Ile Gly Ala Ala Thr Ala Thr Thr
20      25      30
Leu Ala Gly Leu Gly Ala Asp Val Val Leu Thr Tyr Arg Ser Ser Leu
35      40      45
Asp Glu Ala Lys Ala Val Ala Ala Cys Glu Glu Lys Gly Val Lys
50      55      60
Ala Thr Val Leu Arg Ala Asp Leu Asp Ala Ala Asp Gly Ala Glu Glu
65      70      75      80
Leu Val Thr Ala Val Arg Glu Arg Val Asp His Leu Asp Val Val Val
85      90      95
Ser Asn Ala Cys Ala Ser Tyr Pro Arg Val Pro Leu Ala Gly Met Asp
100     105     110
Pro Thr Ala Leu Gly Asp Lys Val Arg Asn Asp Val Val Leu Leu His
115     120     125
Arg Leu Thr Thr Ala Phe Val Pro Ala Met Arg Glu Arg Gly Tyr Gly
130     135     140
Arg Leu Val Val Ile Ser Gly Ser Ser Trp Gly Pro Thr Ala Pro
145     150     155     160
Gly Leu Ala Ala His Gly Val Thr Lys Ala Ala Leu Glu Gly Tyr Val
165     170     175
Arg Tyr Ala Ala Asp Glu Phe Gly Ala Gly Gly Val Thr Val Asn Gly
180     185     190
Leu Ala Leu Gly Phe Val Leu Thr Asp Ala Ser Ser Val Val Pro Gln
195     200     205
Pro Ala Arg Asp Ala Leu Ala Asn Ala Thr Pro Ala Gly Arg Leu Gly
210     215     220
Thr Pro Gln Asp Ile Ala Asp Ala Val Ser Leu Leu Ala Arg Pro Glu
225     230     235     240
Ser Glu Trp Ile Asn Gly Ala Thr Leu Pro Val Thr Gly Gly Leu Asn
245     250     255
Tyr Pro Leu Asn Leu Ser Arg Val Arg Gly His
260     265

```

&lt;210&gt; 1158

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Streptomyces griseus subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1158

```

atg gac ttg gga atc gcc gga aag acc gcg ctg atc acc ggc gcc tca      48
Met Asp Leu Gly Ile Ala Gly Lys Thr Ala Leu Ile Thr Gly Ala Ser
1      5      10      15
tcg ggc atc ggt acg gcc acc gcc cgc gcg ctg gcc gcc gag ggc gcc      96
Ser Gly Ile Gly Thr Ala Thr Ala Arg Ala Leu Ala Ala Glu Gly Ala
20      25      30
cgg gtg gtc ctc acc tac cgc aca ggg gag agg cgg gcc cgc gaa ctc      144
Arg Val Val Leu Thr Tyr Arg Thr Gly Glu Arg Arg Ala Arg Glu Leu
35      40      45
gcg gac gag ctg ggc gcg gac cgc gat ctg gcc tgt gcc gtc ccg tac      192
Ala Asp Glu Leu Gly Ala Asp Arg Asp Leu Ala Cys Ala Val Pro Tyr
50      55      60
gac ctg ggc gac ccc tcg tcc gtc gac gcc gcc gtc cgg gcc gcc gag      240
Asp Leu Gly Asp Pro Ser Ser Val Asp Ala Ala Val Arg Ala Ala Glu
65      70      75      80
aac cgt tgg gga ggt gtg gac atc ctc gtc gcc aac gcg gtg cgg cgc      288
Asn Arg Trp Gly Gly Val Asp Ile Leu Val Ala Asn Ala Val Arg Arg
85      90      95

```

## PhoenixTemp32470.tmp.txt

```

ggc ccc cgg caa ccg ccc ggc acc cac atc gag gac gtc ccc gca cag      336
Gly Pro Arg Gln Pro Pro Gly Thr His Ile Glu Asp Val Pro Ala Gln
100 110
cag tgg cgg caa ctt ctc cgg gac aac ctg gaa cag acc ctg cgc acg      384
Gln Trp Arg Gln Leu Leu Arg Asp Asn Leu Glu Gln Thr Leu Arg Thr
115 120 125
gtc cag ctg gtc ctg ccc ggc atg cgc gcc cgt acc tgg ggc cgg gtg      432
Val Gln Leu Val Leu Pro Gly Met Arg Ala Arg Thr Trp Gly Arg Val
130 135 140
gcg ctg ctg tcc tcg cac cgc acc cgc gac ggg gca ccg ggg cag gag      480
Ala Leu Leu Ser Ser His Arg Thr Arg Asp Gly Ala Pro Gly Gln Glu
145 150 155 160
ttc tac gcc gcc ggc aag gcc gcc ctg cac ggc ggc phe gcg cgc agc ctg      528
Phe Tyr Ala Ala Gly Lys Ala Ala Leu His Gly Phe Ala Arg Ser Leu
165 170 175
gcc tgg gac gcg ggg ccc gac ggt gtc ttc gtc aac ctc gtc agc ccg      576
Ala Trp Asp Ala Gly Pro Asp Gly Val Phe Val Asn Leu Val Ser Pro
180 185 190
ggc ctg acc cgc acc gtg gga gtg tcc gac ctg ccg gcg gag gta      624
Gly Leu Thr Arg Thr Val Gly Val Leu Ser Asp Leu Pro Ala Glu Val
195 200 205
cgc gag cgg gag ctg cag cgc acc ccg agc ggg cgg ctg agc aca ccc      672
Arg Glu Arg Glu Leu Gln Arg Thr Pro Ser Gly Arg Leu Ser Thr Pro
210 215 220
gag gac gtg gcg gcg gcg atc gcg ttc ctc tgc gcc gag gcg aac ggc      720
Glu Asp Val Ala Ala Ala Ile Ala Phe Leu Cys Ala Glu Ala Asn Gly
225 230 235 240
aac atc aac ggc gcc gtg atc gac gtc tcg ggc ggc cgc tga      762
Asn Ile Asn Gly Ala Val Ile Asp Val Ser Gly Gly Arg
245 250

```

&lt;210&gt; 1159

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Streptomyces griseus subsp

&lt;400&gt; 1159

```

Met Asp Leu Gly Ile Ala Gly Lys Thr Ala Leu Ile Thr Gly Ala Ser
1 5 10 15
Ser Gly Ile Gly Thr Ala Thr Ala Arg Ala Leu Ala Ala Glu Gly Ala
20 25 30
Arg Val Val Leu Thr Tyr Arg Thr Gly Glu Arg Arg Ala Arg Glu Leu
35 40 45
Ala Asp Glu Leu Gly Ala Asp Arg Asp Leu Ala Cys Ala Val Pro Tyr
50 55 60
Asp Leu Gly Asp Pro Ser Ser Val Asp Ala Ala Val Arg Ala Ala Glu
65 70 75 80
Asn Arg Trp Gly Gly Val Asp Ile Leu Val Ala Asn Ala Val Arg Arg
85 90 95
Gly Pro Arg Gln Pro Pro Gly Thr His Ile Glu Asp Val Pro Ala Gln
100 105 110
Gln Trp Arg Gln Leu Leu Arg Asp Asn Leu Glu Gln Thr Leu Arg Thr
115 120 125
Val Gln Leu Val Leu Pro Gly Met Arg Ala Arg Thr Trp Gly Arg Val
130 135 140
Ala Leu Leu Ser Ser His Arg Thr Arg Asp Gly Ala Pro Gly Gln Glu
145 150 155 160
Phe Tyr Ala Ala Gly Lys Ala Ala Leu His Gly Phe Ala Arg Ser Leu
165 170 175
Ala Trp Asp Ala Gly Pro Asp Gly Val Phe Val Asn Leu Val Ser Pro
180 185 190
Gly Leu Thr Arg Thr Val Gly Val Leu Ser Asp Leu Pro Ala Glu Val
195 200 205
Arg Glu Arg Glu Leu Gln Arg Thr Pro Ser Gly Arg Leu Ser Thr Pro
210 215 220
Glu Asp Val Ala Ala Ala Ile Ala Phe Leu Cys Ala Glu Ala Asn Gly
225 230 235 240
Asn Ile Asn Gly Ala Val Ile Asp Val Ser Gly Gly Arg
245 250

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<210> 1160  
 <211> 774  
 <212> DNA  
 <213> Streptomyces sp

<220>  
 <221> CDS  
 <222> (1)..(774)  
 <223> transl\_table=11

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<400> 1160
atg aag aca gga ctg acg gac aag gcg gtg ctc gtc acc ggc gcc tcg      48
Met Lys Thr Gly Leu Thr Asp Lys Ala Val Leu Val Thr Gly Ala Ser
  1      5      10      15
cgc ggc atc ggg cgg gcc acg gcc ctc gcc tac gcg gcg gag ggc gcc      96
Arg Gly Ile Gly Arg Ala Thr Ala Leu Ala Tyr Ala Ala Glu Gly Ala
  20      25      30
cgg gtc gcg atc acc tac cac tcc gac gag gcc ggg gcg aag gag acg      144
Arg Val Ala Ile Thr Tyr His Ser Asp Glu Ala Gly Ala Lys Glu Thr
  35      40      45
gcc gag cgg gtc gcc gcc gcc ggg ggc acc ccc cac gtc gtc cgc tac      192
Ala Glu Arg Val Ala Ala Ala Gly Gly Thr Pro His Val Val Arg Tyr
  50      55      60
gac ctc ggg gac gag gac tcc gtg cgc tcc gcc gtc gcc tcg gtc ggc      240
Asp Leu Gly Asp Glu Asp Ser Val Arg Ser Ala Val Ala Ser Val Gly
  65      70      75      80
gcg gag tgg ggc ggg gtc gac gtc ctc gtg gcc ggc gcg gtc gag tgg      288
Ala Glu Trp Gly Gly Val Asp Val Leu Val Ala Gly Ala Val Glu Trp
  85      90      95
ggg gag gcg att ccg cgc ccc gga cgg aag atg ccc gcc ttc gag gag      336
Gly Glu Ala Ile Pro Arg Pro Gly Arg Lys Met Pro Ala Phe Glu Glu
  100      105      110
gtg ccg ccc gcg cag tgg caa cgg gtc ctg cgc acc tcg gtg gac ggc      384
Val Pro Ala Gln Trp Gln Arg Val Leu Arg Thr Ser Val Asp Gly
  115      120      125
gtc ttc cac acc gtg cag gcg gtg ctg ccc ctc atg cgc gac cgg gag      432
Val Phe His Thr Val Gln Ala Val Leu Pro Leu Met Arg Asp Arg Glu
  130      135      140
tgg ggc cgc atc gtg gtg ctc ggc gcc ggg ctc gcg gag acc ggt ctg      480
Trp Gly Arg Ile Val Val Leu Gly Ala Gly Leu Ala Glu Thr Gly Leu
  145      150      155      160
ccg ggg gcg tcc gcg tac ggg gcc gcg aag gcc gcc ctg cac ggg ctg      528
Pro Gly Ala Ser Ala Tyr Gly Ala Ala Lys Ala Ala Leu His Gly Leu
  165      170      175
gtg cgc agc ctg gcc tgg gag gtc ggc ccc gcc ggg atc ctg gtc aac      576
Val Arg Ser Leu Ala Trp Glu Val Gly Pro Ala Gly Ile Leu Val Asn
  180      185      190
gag gtc gtg ccc ggc cag acg ctc acc gag aac gtc ctc gca cac gcc      624
Glu Val Val Pro Gly Gln Thr Leu Thr Glu Asn Val Leu Ala His Ala
  195      200      205
tcg ccc gcc ttc ctg gag aac aag gcc gcc tcc ctg ccc tcg ggc cgc      672
Ser Pro Ala Phe Leu Glu Asn Lys Ala Ala Ser Leu Pro Ser Gly Arg
  210      215      220
atg aac acg ccc gag gac gtc gcg cgg gcg atc gtc ttc ctc ggc tcc      720
Met Asn Thr Pro Glu Asp Val Ala Arg Ala Ile Val Phe Leu Gly Ser
  225      230      235      240
gcc gcc aac ggg aac atc cac ggc gag gcc ctg cgc gtc acc ggc ggc      768
Ala Ala Asn Gly Asn Ile His Gly Glu Ala Leu Arg Val Thr Gly Gly
  245      250      255
ctg tga
Leu
  774

```

<210> 1161  
 <211> 257  
 <212> PRT  
 <213> Streptomyces sp

## PhoenixTemp32470.tmp.txt

```

<400> 1161
Met Lys Thr Gly Leu Thr Asp Lys Ala Val Leu Val Thr Gly Ala Ser
1      5      10      15
Arg Gly Ile Gly Arg Ala Thr Ala Leu Ala Tyr Ala Ala Glu Gly Ala
20      25      30
Arg Val Ala Ile Thr Tyr His Ser Asp Glu Ala Gly Ala Lys Glu Thr
35      40      45
Ala Glu Arg Val Ala Ala Ala Gly Gly Thr Pro His Val Val Arg Tyr
50      55      60
Asp Leu Gly Asp Glu Asp Ser Val Arg Ser Ala Val Ala Ser Val Gly
65      70      75      80
Ala Glu Trp Gly Gly Val Asp Val Leu Val Ala Gly Ala Val Glu Trp
85      90      95
Gly Glu Ala Ile Pro Arg Pro Gly Arg Lys Met Pro Ala Phe Glu Glu
100     105     110
Val Pro Pro Ala Gln Trp Gln Arg Val Leu Arg Thr Ser Val Asp Gly
115     120     125
Val Phe His Thr Val Gln Ala Val Leu Pro Leu Met Arg Asp Arg Glu
130     135     140
Trp Gly Arg Ile Val Val Leu Gly Ala Gly Leu Ala Glu Thr Gly Leu
145     150     155     160
Pro Gly Ala Ser Ala Tyr Gly Ala Ala Lys Ala Ala Leu His Gly Leu
165     170     175
Val Arg Ser Leu Ala Trp Glu Val Gly Pro Ala Gly Ile Leu Val Asn
180     185     190
Glu Val Val Pro Gly Gln Thr Leu Thr Glu Asn Val Leu Ala His Ala
195     200     205
Ser Pro Ala Phe Leu Glu Asn Lys Ala Ala Ser Leu Pro Ser Gly Arg
210     215     220
Met Asn Thr Pro Glu Asp Val Ala Arg Ala Ile Val Phe Leu Gly Ser
225     230     235     240
Ala Ala Asn Gly Asn Ile His Gly Glu Ala Leu Arg Val Thr Gly Gly
245     250     255
Leu

```

```

<210> 1162
<211> 1026
<212> DNA
<213> Actinosynnema pretiosum subsp

```

```

<220>
<221> CDS
<222> (1)..(1026)
<223> transl_table=11

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<400> 1162
atg ccc agg agg ttg gcg gag cag gtc gtc gtc gtg gtg ggc gcg tcg      48
Met Pro Arg Arg Leu Ala Glu Gln Val Val Val Val Val Gly Ala Ser
1      5      10      15
tcg ggg atc ggg cgg gtc acc gcg ctg cgg ttc gcg gcg gcg ggg gcg      96
Ser Gly Ile Gly Arg Val Thr Ala Leu Arg Phe Ala Ala Ala Gly Ala
20      25      30
cgc gtg gtg tgc gcg gcg cgc aac acc cgc gcc ctg gac ggg ctg gtc      144
Arg Val Val Cys Ala Ala Arg Asn Thr Arg Ala Leu Asp Gly Leu Val
35      40      45
gag gag gtc cgg ggc gcg ggt ggg cgg gcg gtc gcg gtg acg gcg gac      192
Glu Glu Val Arg Gly Ala Gly Gly Arg Ala Val Ala Val Thr Ala Asp
50      55      60
atc gcc gac gag gcg gcc gtg cgc gcg gtc gcc gac gtg gcg gtg gag      240
Ile Ala Asp Glu Ala Ala Val Arg Ala Val Ala Asp Val Ala Val Glu
65      70      75      80
cgg ttc ggg cgg gtg gac acc tgg gtc aac gcg gcc ggg atc ggg gtg      288
Arg Phe Gly Arg Val Asp Thr Trp Val Asn Ala Ala Gly Ile Gly Val
85      90      95
tac ggg cgg gtg gag gac acg ccc gcc ggg gag ttc gac cgg gtg atg      336
Tyr Gly Arg Val Glu Asp Thr Pro Ala Gly Glu Phe Asp Arg Val Met
100     105
cgg gtc aac tac ctc ggg cac gtg cac ggg gcc aag gcc gcg ctg ccc      384

```

PhoenixTemp32470.tmp.txt

Arg	Val	Asn	Tyr	Leu	Gly	His	Val	His	Gly	Ala	Lys	Ala	Ala	Leu	Pro		
gcg	ctg	cgc	cgg	gcg	ggc	ggg	gga	gtg	ctg	atc	ggg	gtc	gcg	tcc	gtg		432
Ala	Leu	Arg	Arg	Ala	Gly	Gly	Gly	Val	Leu	Ile	Gly	Val	Ala	Ser	Val		
130					135					140							
ctc	ggc	ctg	cgc	tcg	gct	ccg	ctc	cag	gcc	ccg	tac	gcg	gcc	agc	aag		480
Leu	Gly	Leu	Arg	Ser	Ala	Pro	Leu	Gln	Ala	Pro	Tyr	Ala	Ala	Ser	Lys		
145					150					155					160		
gcg	gcg	gtg	cgg	gcg	ttc	tac	gac	gcg	ctg	cgg	gtg	gag	ctg	gcc	cac		528
Ala	Ala	Val	Arg	Ala	Phe	Tyr	Asp	Ala	Leu	Arg	Val	Glu	Leu	Ala	His		
				165				170						175			
gac	ggc	gag	tcg	atc	gcg	gtc	acc	gcc	gtg	ctt	ccc	gcc	gcg	atc	aac		576
Asp	Gly	Glu	Ser	Ile	Ala	Val	Thr	Ala	Val	Leu	Pro	Ala	Ala	Ile	Asn		
			180					185					190				
agc	ccg	ttc	ttc	gag	cac	tgc	cgc	agc	cgc	gtc	ggc	tcg	ctg	ccc	aag		624
Ser	Pro	Phe	Phe	Glu	His	Cys	Arg	Ser	Arg	Val	Gly	Ser	Leu	Pro	Lys		
		195				200					205						
ccg	ccg	ccc	ccg	gtg	tac	gcg	ccg	gag	ctg	gtc	gcc	gag	gcc	gtg	ctg		672
Pro	Pro	Pro	Pro	Val	Tyr	Ala	Pro	Glu	Leu	Val	Ala	Glu	Ala	Val	Leu		
		210				215					220						
cg	gcc	gcc	gag	cg	ccc	cg	cg	gag	gtg	ccg	gtg	ggc	gac	gct	gcg		720
Arg	Ala	Ala	Glu	Arg	Pro	Arg	Arg	Glu	Val	Pro	Val	Gly	Asp	Ala	Ala		
225					230					235					240		
ctc	gcg	ttc	tac	ctg	ggg	cag	cgg	ctg	ttc	ccg	gcg	ctc	acc	gac	gcg		768
Leu	Ala	Phe	Tyr	Leu	Gly	Gln	Arg	Leu	Phe	Pro	Ala	Leu	Thr	Asp	Ala		
				245					250					255			
ctg	atg	tcg	gtg	cg	gcg	gtc	ggc	cgg	tcg	ggg	atg	cgg	tcc	gag	ctg		816
Leu	Met	Ser	Val	Arg	Ala	Val	Gly	Arg	Ser	Gly	Met	Arg	Ser	Glu	Leu		
			260					265					270				
ccg	gac	aac	ggg	gtg	gac	aac	gtg	tcg	ccg	gtg	gac	gag	gac	ggg		864	
Pro	Asp	Asn	Gly	Val	Asp	Asn	Val	Asp	Ser	Pro	Val	Asp	Glu	Asp	Gly		
		275					280					285					
cgg	gtg	cac	ggg	tcc	tac	ccc	ggc	cgg	gtg	ctg	gac	tcc	agc	ccg	gtg		912
Arg	Val	His	Gly	Ser	Tyr	Pro	Gly	Arg	Val	Leu	Asp	Ser	Ser	Pro	Val		
		290				295					300						
acg	gcg	ctg	ctg	gcc	cg	gtg	ccc	agg	ccg	ggg	gag	ctg	gcg	acc	tcg		960
Thr	Ala	Leu	Leu	Ala	Arg	Val	Pro	Arg	Pro	Gly	Glu	Leu	Ala	Thr	Ser		
305					310					315					320		
ctg	gtg	agc	ggg	gcg	cac	cgg	gtg	ggc	ggg	gcg	gtg	cgg	ggc	ggg	ctg		1008
Leu	Val	Ser	Gly	Ala	His	Arg	Val	Gly	Gly	Ala	Val	Arg	Gly	Gly	Leu		
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cg	gcg	gcc	cgg	tcc	tga												1026
Arg	Ala	Ala	Arg	Ser													
			340														

<210> 1163

<211> 341

<212> PRT

<213> Actinosynnema pretiosum subsp

<400> 1163

Met	Pro	Arg	Arg	Leu	Ala	Glu	Gln	Val	Val	Val	Val	Gly	Ala	Ser		
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Ser	Gly	Ile	Gly	Arg	Val	Thr	Ala	Leu	Arg	Phe	Ala	Ala	Ala	Gly	Ala	
			20					25				30				
Arg	Val	Val	Cys	Ala	Ala	Arg	Asn	Thr	Arg	Ala	Leu	Asp	Gly	Leu	Val	
			35				40					45				
Glu	Glu	Val	Arg	Gly	Ala	Gly	Gly	Arg	Ala	Val	Ala	Val	Thr	Ala	Asp	
			50			55					60					
Ile	Ala	Asp	Glu	Ala	Ala	Val	Arg	Ala	Val	Ala	Asp	Val	Ala	Val	Glu	
65					70					75					80	
Arg	Phe	Gly	Arg	Val	Asp	Thr	Trp	Val	Asn	Ala	Ala	Gly	Ile	Gly	Val	
				85					90					95		
Tyr	Gly	Arg	Val	Glu	Asp	Thr	Pro	Ala	Gly	Glu	Phe	Asp	Arg	Val	Met	
			100					105					110			
Arg	Val	Asn	Tyr	Leu	Gly	His	Val	His	Gly	Ala	Lys	Ala	Ala	Leu	Pro	
		115					120					125				
Ala	Leu	Arg	Arg	Ala	Gly	Gly	Gly	Val	Leu	Ile	Gly	Val	Ala	Ser	Val	
					135						140					

## PhoenixTemp32470.tmp.txt

Leu Gly Leu Arg Ser Ala Pro Leu Gln Ala Pro Tyr Ala Ala Ser Lys  
 145 150 155 160  
 Ala Ala Val Arg Ala Phe Tyr Asp Ala Leu Arg Val Glu Leu Ala His  
 165 170 175  
 Asp Gly Glu Ser Ile Ala Val Thr Ala Val Leu Pro Ala Ala Ile Asn  
 180 185 190  
 Ser Pro Phe Phe Glu His Cys Arg Ser Arg Val Gly Ser Leu Pro Lys  
 195 200 205  
 Pro Pro Pro Pro Val Tyr Ala Pro Glu Leu Val Ala Glu Ala Val Leu  
 210 215 220  
 Arg Ala Ala Glu Arg Pro Arg Arg Glu Val Pro Val Gly Asp Ala Ala  
 225 230 235 240  
 Leu Ala Phe Tyr Leu Gly Gln Arg Leu Phe Pro Ala Leu Thr Asp Ala  
 245 250 255  
 Leu Met Ser Val Arg Ala Val Gly Arg Ser Gly Met Arg Ser Glu Leu  
 260 265 270  
 Pro Asp Asn Gly Val Asp Asn Val Asp Ser Pro Val Asp Glu Asp Gly  
 275 280 285  
 Arg Val His Gly Ser Tyr Pro Gly Arg Val Leu Asp Ser Ser Pro Val  
 290 295 300  
 Thr Ala Leu Leu Ala Arg Val Pro Arg Pro Gly Glu Leu Ala Thr Ser  
 305 310 315 320  
 Leu Val Ser Gly Ala His Arg Val Gly Gly Ala Val Arg Gly Gly Leu  
 325 330 335  
 Arg Ala Ala Arg Ser  
 340

&lt;210&gt; 1164

&lt;211&gt; 858

&lt;212&gt; DNA

&lt;213&gt; Streptomyces aureofaciens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(858)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1164

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ggt ctg ggc cgg gcc ata gcc gag gtg gtc ctg gag gcc ggc gac acc	96
Gly Leu Gly Arg Ala Ile Ala Glu Val Val Leu Glu Ala Gly Asp Thr	
20 25 30	
gtg gtg gcc acg gcc cgc agc atc ccg gcc ctg gac ggg ctc gtg gag	144
Val Val Thr Ala Arg Ser Ile Pro Ala Leu Asp Gly Leu Val Glu	
35 40 45	
cgc ttc ggc gag cgg gtc gtc ccc gtg gcg ctc gac gtc acc gac cgc	192
Arg Phe Gly Glu Arg Val Val Pro Val Ala Leu Asp Val Thr Asp Arg	
50 55 60	
gcg gcg gtg ctg gcc gcg gtc gcc gag gcg gcc gag cgg acc ggg cgg	240
Ala Ala Val Leu Ala Ala Val Ala Glu Ala Ala Glu Arg Thr Gly Arg	
65 70 75 80	
atc gac gtg ctc ctc aac aac gcc ggc tac ggt ctg gcc ggc gcc gtg	288
Ile Asp Val Leu Leu Asn Asn Ala Gly Tyr Gly Leu Ala Gly Ala Val	
85 90 95	
gag gag gtg aac gag acc cag gtc cgt gac cag ttc gac gtg aac ttc	336
Glu Glu Val Asn Glu Thr Gln Val Arg Asp Gln Phe Asp Val Asn Phe	
100 105 110	
ttc ggc gcg ctc tgg gtg acc cag gcc gtc ctg ccg gtg atg cgc cgc	384
Phe Gly Ala Leu Trp Val Thr Gln Ala Val Leu Pro Val Met Arg Arg	
115 120 125	
cag ggc agc ggc cac ctg ctg cag atg tcg agc atc gcg ggc gtc acc	432
Gln Gly Ser Gly His Leu Leu Gln Met Ser Ser Ile Ala Gly Val Thr	
130 135 140	
acg tac ccc aac ctc ggc ctg tac tgc gcg agc aag tgg gcc ctg gaa	480
Thr Tyr Pro Asn Leu Gly Leu Tyr Cys Ala Ser Lys Trp Ala Leu Glu	
145 150 155 160	
gcg gtc agc gag acc ctg gcc cag gag gtc gcg ggc ttc ggc gtg aag	528

PhoenixTemp32470.tmp.txt

Ala	Val	Ser	Glu	Thr	Leu	Ala	Gln	Glu	Val	Ala	Gly	Phe	Gly	Val	Lys	
				165					170					175		
gtc	acc	ctg	gtc	gag	gcg	ggg	gag	ttc	cgc	acc	gac	tgg	agt	gcg	ggc	576
Val	Thr	Leu	Val	Glu	Ala	Gly	Glu	Phe	Arg	Thr	Asp	Trp	Ser	Ala	Gly	
			180					185					190			
agc	atg	gtc	cgc	gcc	acg	ccc	aag	ttc	gca	tac	gac	gag	gtc	ctc	gcc	624
Ser	Met	Val	Arg	Ala	Thr	Pro	Lys	Phe	Ala	Tyr	Asp	Glu	Val	Leu	Ala	
		195					200					205				
aag	cgc	cgg	cac	ggt	ctg	tcg	ggg	gcc	tac	gca	cac	ctc	cag	ccg	ggg	672
Lys	Arg	Arg	His	Gly	Leu	Ser	Gly	Ala	Tyr	Ala	His	Leu	Gln	Pro	Gly	
	210					215				220						
gat	ccg	cgg	aag	gcg	ggc	gag	gcc	ctg	ctg	aag	ctg	acc	gac	gag	gcg	720
Asp	Pro	Arg	Lys	Ala	Gly	Glu	Ala	Leu	Leu	Lys	Leu	Thr	Asp	Glu	Ala	
	225				230					235					240	
gag	ccg	cca	ctg	cgc	gtc	ctg	ctc	ggc	gag	ggg	gcc	gcg	gac	ctg	gcg	768
Glu	Pro	Pro	Leu	Arg	Val	Leu	Leu	Gly	Glu	Gly	Ala	Ala	Asp	Leu	Ala	
			245					250						255		
ccg	aac	gtg	ctg	cgg	gcg	cgg	ctg	gcc	ggc	tgg	gag	gaa	tgg	gac	gcc	816
Pro	Asn	Val	Leu	Arg	Ala	Arg	Leu	Ala	Gly	Trp	Glu	Glu	Trp	Asp	Ala	
		260						265					270			
ctg	gcc	cgc	acc	acc	gac	ttc	ccc	gcg	gag	agc	ggg	ccg	tga			858
Leu	Ala	Arg	Thr	Thr	Asp	Phe	Pro	Ala	Glu	Ser	Gly	Pro				
		275					280					285				

<210> 1165

<211> 285

<212> PRT

<213> Streptomyces aureofaciens

<400> 1165

Met	Ser	Asp	Arg	Thr	Glu	Arg	Val	Trp	Leu	Ile	Thr	Gly	Ala	Ser	Arg	
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Gly	Leu	Gly	Arg	Ala	Ile	Ala	Glu	Val	Val	Leu	Glu	Ala	Gly	Asp	Thr	
			20					25					30			
Val	Val	Ala	Thr	Ala	Arg	Ser	Ile	Pro	Ala	Leu	Asp	Gly	Leu	Val	Glu	
		35					40					45				
Arg	Phe	Gly	Glu	Arg	Val	Val	Pro	Val	Ala	Leu	Asp	Val	Thr	Asp	Arg	
	50					55					60					
Ala	Ala	Val	Leu	Ala	Ala	Val	Ala	Glu	Ala	Ala	Glu	Arg	Thr	Gly	Arg	
65				70					75					80		
Ile	Asp	Val	Leu	Leu	Asn	Asn	Ala	Gly	Tyr	Gly	Leu	Ala	Gly	Ala	Val	
			85					90					95			
Glu	Glu	Val	Asn	Glu	Thr	Gln	Val	Arg	Asp	Gln	Phe	Asp	Val	Asn	Phe	
			100					105					110			
Phe	Gly	Ala	Leu	Trp	Val	Thr	Gln	Ala	Val	Leu	Pro	Val	Met	Arg	Arg	
		115					120					125				
Gln	Gly	Ser	Gly	His	Leu	Leu	Gln	Met	Ser	Ser	Ile	Ala	Gly	Val	Thr	
	130					135					140					
Thr	Tyr	Pro	Asn	Leu	Gly	Leu	Tyr	Cys	Ala	Ser	Lys	Trp	Ala	Leu	Glu	
145				150					155					160		
Ala	Val	Ser	Glu	Thr	Leu	Ala	Gln	Glu	Val	Ala	Gly	Phe	Gly	Val	Lys	
			165					170						175		
Val	Thr	Leu	Val	Glu	Ala	Gly	Glu	Phe	Arg	Thr	Asp	Trp	Ser	Ala	Gly	
		180						185					190			
Ser	Met	Val	Arg	Ala	Thr	Pro	Lys	Phe	Ala	Tyr	Asp	Glu	Val	Leu	Ala	
		195					200					205				
Lys	Arg	Arg	His	Gly	Leu	Ser	Gly	Ala	Tyr	Ala	His	Leu	Gln	Pro	Gly	
	210					215					220					
Asp	Pro	Arg	Lys	Ala	Gly	Glu	Ala	Leu	Leu	Lys	Leu	Thr	Asp	Glu	Ala	
225					230					235					240	
Glu	Pro	Pro	Leu	Arg	Val	Leu	Leu	Gly	Glu	Gly	Ala	Ala	Asp	Leu	Ala	
			245					250						255		
Pro	Asn	Val	Leu	Arg	Ala	Arg	Leu	Ala	Gly	Trp	Glu	Glu	Trp	Asp	Ala	
		260						265					270			
Leu	Ala	Arg	Thr	Thr	Asp	Phe	Pro	Ala	Glu	Ser	Gly	Pro				
		275					280					285				

<210> 1166

<211> 753

<212> DNA  
 <213> Escherichia coli

<220>  
 <221> CDS  
 <222> (1)..(753)  
 <223> transl\_table=11

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 1 5 10 15  
 gtt gca gct atc act ggc gct gcg tca ggt att ggc ctg caa tgt gca 96  
 Val Ala Ala Ile Thr Gly Ala Ala Ser Gly Ile Gly Leu Gln Cys Ala  
 20 25 30  
 aaa acg ctg ctc gat gca gga gca aag gta gta ttg att gac cgg gaa 144  
 Lys Thr Leu Leu Asp Ala Gly Ala Lys Val Val Leu Ile Asp Arg Glu  
 35 40 45  
 ggc gac aaa ctg cac aag att gtc gct gag tta ggc gaa aac gcg tac 192  
 Gly Asp Lys Leu His Lys Ile Val Ala Glu Leu Gly Glu Asn Ala Tyr  
 50 55 60  
 gcg ctg caa ctc gat ctc ttc aat aat cag caa gtc gat aac atg ctg 240  
 Ala Leu Gln Leu Asp Leu Phe Asn Asn Gln Gln Val Asp Asn Met Leu  
 65 70 75 80  
 gcg gac att atc gaa ctg gcg ggt ggg ctg gat att ttt cat gcc aat 288  
 Ala Asp Ile Ile Glu Leu Ala Gly Gly Leu Asp Ile Phe His Ala Asn  
 85 90 95  
 gca ggc gct tat att ggc ggc cca gtg gct gaa ggt gat cca gat gtc 336  
 Ala Gly Ala Tyr Ile Gly Gly Pro Val Ala Glu Gly Asp Pro Asp Val  
 100 105 110  
 tgg gat cgt gtg tta aat ctg aat ata aat gcg gcg ttt cgc tgt gtc 384  
 Trp Asp Arg Val Leu Asn Leu Asn Ile Asn Ala Ala Phe Arg Cys Val  
 115 120 125  
 cgt gca gtc ctg ccg cat atg att gcg cag agg tcg ggc gat ata att 432  
 Arg Ala Val Leu Pro His Met Ile Ala Gln Arg Ser Gly Asp Ile Ile  
 130 135 140  
 ttt acc agt tcc atc gcg ggc gtc gtt ccg gtt atc tgg gaa ccg atc 480  
 Phe Thr Ser Ser Ile Ala Gly Val Val Pro Val Ile Trp Glu Pro Ile  
 145 150 155 160  
 tac acc gcg tcc aaa ttt gcc gtt cag gca ttc gta cac act acc cgc 528  
 Tyr Thr Ala Ser Lys Phe Ala Val Gln Ala Phe Val His Thr Thr Arg  
 165 170 175  
 cgc cag gtt tct caa tat ggc gtg cgt gtg ggt gcg gtg ctg cca gga 576  
 Arg Gln Val Ser Gln Tyr Gly Val Arg Val Gly Ala Val Leu Pro Gly  
 180 185 190  
 cca gta gtc act gcc ctg ctt gat gac tgg cca aaa gcc aaa atg gaa 624  
 Pro Val Val Thr Ala Leu Leu Asp Asp Trp Pro Lys Ala Lys Met Glu  
 195 200 205  
 gaa gcc ctg gca aat ggt agc ctg atg caa ccg att gaa gtg gcg gaa 672  
 Glu Ala Leu Ala Asn Gly Ser Leu Met Gln Pro Ile Glu Val Ala Glu  
 210 215 220  
 tca gta ttg ttt atg gtg acc gtc tgc aaa aat gtc acc gtg cga gat 720  
 Ser Val Leu Phe Met Val Thr Arg Ser Lys Asn Val Thr Val Arg Asp  
 225 230 235 240  
 tta gtg atc ctg cct ggc agt gtc gat ctg taa 753  
 Leu Val Ile Leu Pro Gly Ser Val Asp Leu  
 245 250

<210> 1167  
 <211> 250  
 <212> PRT  
 <213> Escherichia coli

<400> 1167  
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 1 5 10 15  
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 20 25 30  
 Lys Thr Leu Leu Asp Ala Gly Ala Lys Val Val Leu Ile Asp Arg Glu  
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## PhoenixTemp32470.tmp.txt

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      35      40      45
Gly Asp Lys Leu His Lys Ile Val Ala Glu Leu Gly Glu Asn Ala Tyr
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Ala Leu Gln Leu Asp Leu Phe Asn Asn Gln Gln Val Asp Asn Met Leu
  65      70      75
Ala Asp Ile Ile Glu Leu Ala Gly Gly Leu Asp Ile Phe His Ala Asn
      85      90      95
Ala Gly Ala Tyr Ile Gly Gly Pro Val Ala Glu Gly Asp Pro Asp Val
  100      105      110
Trp Asp Arg Val Leu Asn Leu Asn Ile Asn Ala Ala Phe Arg Cys Val
  115      120      125
Arg Ala Val Leu Pro His Met Ile Ala Gln Arg Ser Gly Asp Ile Ile
  130      135      140
Phe Thr Ser Ser Ile Ala Gly Val Val Pro Val Ile Trp Glu Pro Ile
  145      150      155
Tyr Thr Ala Ser Lys Phe Ala Val Gln Ala Phe Val His Thr Thr Arg
      165      170      175
Arg Gln Val Ser Gln Tyr Gly Val Arg Val Gly Ala Val Leu Pro Gly
  180      185      190
Pro Val Val Thr Ala Leu Leu Asp Asp Trp Pro Lys Ala Lys Met Glu
  195      200      205
Glu Ala Leu Ala Asn Gly Ser Leu Met Gln Pro Ile Glu Val Ala Glu
  210      215      220
Ser Val Leu Phe Met Val Thr Arg Ser Lys Asn Val Thr Val Arg Asp
  225      230      235
Leu Val Ile Leu Pro Gly Ser Val Asp Leu
      245      250

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&lt;210&gt; 1168

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Streptomyces rishiriensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1168

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Met Thr Gly Pro Ala Ala Ser Ala Val Ala Cys Glu Pro Val Ala Met
  1      5      10      15
gtc acc gga gcc ggc cgg ggc atc ggc gct gcc acg gcc gag cgc ctt      96
Val Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Thr Ala Glu Arg Leu
      20      25      30
gcc gcg gag ggc atg gcg gtg atc gtc gtg gac cgc gtg gaa cag gac      144
Ala Ala Glu Gly Met Ala Val Ile Val Val Asp Arg Val Glu Gln Asp
      35      40      45
acc aca gcc acc gtc tgc gcc atc cgt gcg gcc ggc gga cgg gcc agc      192
Thr Thr Ala Thr Val Ser Ala Ile Arg Ala Ala Gly Gly Arg Ala Ser
  50      55      60
ggg ctc ggc tgt gac gtc tcc gta gct cag gcg gtg acg gcc acc gtc      240
Gly Leu Gly Cys Asp Val Ser Val Ala Gln Ala Val Thr Ala Thr Val
  65      70      75
gcc tgc gcc gtc gag gag ttc ggt cac ctc gac gtg ctg gtg aac tgc      288
Ala Ser Ala Val Glu Glu Phe Gly His Leu Asp Val Leu Val Asn Cys
      85      90      95
gcc ggg atc acc cag gat cgg ctg ctg ctc acc atg agc gac cag gag      336
Ala Gly Ile Thr Gln Asp Arg Leu Leu Leu Thr Met Ser Asp Gln Glu
  100      105      110
tgg gac agg gtc ctg gac gtc aac ctc ggc ggc agc atg cga tgt tcg      384
Trp Asp Arg Val Leu Asp Val Asn Leu Gly Gly Ser Met Arg Cys Ser
  115      120      125
ttc gcg gtc ggg agg cac atg cgc cgg cag ggg cac ggc cgg atc atc      432
Phe Ala Val Gly Arg His Met Arg Arg Gln Gly His Gly Arg Ile Ile
  130      135      140
aac ttc agt tct gtt gcc gcg cgc ggc aat gcc ggt cag acc aac tat      480
Asn Phe Ser Ser Val Ala Ala Arg Gly Asn Ala Gly Gln Thr Asn Tyr
  145      150      155

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## PhoenixTemp32470.tmp.txt

gcg acc gcg aag ggc gcg att gcc ggg ttc acc cgc acg ctc gcg gcc	528
Ala Thr Ala Lys Gly Ala Ile Ala Gly Phe Thr Arg Thr Leu Ala Ala	
165 170 175	
gaa ttc ggt ccg cac ggc gtg acg gtc aac tcg atc gca ccg ggc ttc	576
Glu Phe Gly Pro His Gly Val Thr Val Asn Ser Ile Ala Pro Gly Phe	
180 185 190	
gtg gcc acg ccg atg gtg gca gag ctg acc gaa cgg ctc ggc gtg gat	624
Val Ala Thr Pro Met Val Ala Glu Leu Thr Glu Arg Leu Gly Val Asp	
195 200 205	
cgg gac acc gtc ctg ctg gag gcg gcg atg tcc tcg gcc gtg ggc cgg	672
Arg Asp Thr Val Leu Leu Glu Ala Ala Met Ser Ser Ala Val Gly Arg	
210 215 220	
atc ggg acg ccc gag gaa atc gcc gcg gtg gtg gca ttc gtc acc cgg	720
Ile Gly Thr Pro Glu Glu Ile Ala Ala Val Val Ala Phe Val Thr Arg	
225 230 235 240	
ccg gaa tcg ggc tac ctc acc ggg gag acc atc cac gtc gaa ggt ggt	768
Pro Glu Ser Gly Tyr Leu Thr Gly Glu Thr Ile His Val Glu Gly Gly	
245 250 255	
cgg cga tga	777
Arg Arg	

&lt;210&gt; 1169

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Streptomyces rishiriensis

&lt;400&gt; 1169

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Ala Ala Glu Gly Met Ala Val Ile Val Val Asp Arg Val Glu Gln Asp	35 40 45
Thr Thr Ala Thr Val Ser Ala Ile Arg Ala Ala Gly Gly Arg Ala Ser	50 55 60
Gly Leu Gly Cys Asp Val Ser Val Ala Gln Ala Val Thr Ala Thr Val	65 70 75 80
Ala Ser Ala Val Glu Phe Gly His Leu Asp Val Leu Val Asn Cys	85 90 95
Ala Gly Ile Thr Gln Asp Arg Leu Leu Thr Met Ser Asp Gln Glu	100 105 110
Trp Asp Arg Val Leu Asp Val Asn Leu Gly Gly Ser Met Arg Cys Ser	115 120 125
Phe Ala Val Gly Arg His Met Arg Arg Gln Gly His Gly Arg Ile Ile	130 135 140
Asn Phe Ser Ser Val Ala Ala Arg Gly Asn Ala Gly Gln Thr Asn Tyr	145 150 155 160
Ala Thr Ala Lys Gly Ala Ile Ala Gly Phe Thr Arg Thr Leu Ala Ala	165 170 175
Glu Phe Gly Pro His Gly Val Thr Val Asn Ser Ile Ala Pro Gly Phe	180 185 190
Val Ala Thr Pro Met Val Ala Glu Leu Thr Glu Arg Leu Gly Val Asp	195 200 205
Arg Asp Thr Val Leu Leu Glu Ala Ala Met Ser Ser Ala Val Gly Arg	210 215 220
Ile Gly Thr Pro Glu Glu Ile Ala Ala Val Val Ala Phe Val Thr Arg	225 230 235 240
Pro Glu Ser Gly Tyr Leu Thr Gly Glu Thr Ile His Val Glu Gly Gly	245 250 255
Arg Arg	

&lt;210&gt; 1170

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Streptomyces sphaeroides

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1170

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tcg	gtc	gcc	atg	gtc	acc	gga	gcc	ggc	cgg	ggc	atc	ggc	gcg	gcc	acg	96
Ser	Val	Ala	Met	Val	Thr	Gly	Ala	Gly	Arg	Gly	Ile	Gly	Ala	Ala	Thr	
			20					25					30			
gcc	gag	cgc	ctc	gcc	gcc	gag	ggc	atg	gcg	gtg	atc	gtc	gtg	gac	cgc	144
Ala	Glu	Arg	Leu	Ala	Ala	Glu	Gly	Met	Ala	Val	Ile	Val	Val	Asp	Arg	
			35				40					45				
acc	gaa	cag	gac	acc	cgg	gcc	acg	gtc	gcg	gcc	att	cgc	acg	gcc	ggc	192
Thr	Glu	Gln	Asp	Thr	Arg	Ala	Thr	Val	Ala	Ala	Ile	Arg	Thr	Ala	Gly	
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Gly	Arg	Ala	Arg	Gly	Ile	Gly	Cys	Asp	Val	Ala	Val	Ala	Gln	Ala	Val	
					70					75					80	
acg	gcc	gcg	gtc	gcc	acg	gcc	gtc	gag	gag	ttc	ggc	cgc	atc	gac	gta	288
Thr	Ala	Ala	Val	Ala	Thr	Ala	Val	Glu	Glu	Phe	Gly	Arg	Ile	Asp	Val	
				85				90						95		
ctg	gtg	aac	tgc	gcc	ggg	atc	aac	cgg	gac	cgg	ctg	ctg	ctc	acc	atg	336
Leu	Val	Asn	Cys	Ala	Gly	Ile	Asn	Arg	Asp	Arg	Leu	Leu	Leu	Thr	Met	
			100					105					110			
ggc	gat	cag	gag	tgg	gac	acg	gtc	ctg	gac	gtc	aac	ctc	ggc	ggc	acc	384
Gly	Asp	Gln	Glu	Trp	Asp	Thr	Val	Leu	Asp	Val	Asn	Leu	Gly	Gly	Thr	
			115				120					125				
atg	cga	tgt	tcg	ttc	gcc	gtc	ggc	cgg	cac	atg	cgc	cgg	cag	ggg	cac	432
Met	Arg	Cys	Ser	Phe	Ala	Val	Gly	Arg	His	Met	Arg	Arg	Gln	Gly	His	
			130			135					140					
ggc	cgg	atc	atc	aac	ttc	agc	tcc	gtg	gcc	gcg	cgc	ggc	aat	gcc	ggc	480
Gly	Arg	Ile	Ile	Asn	Phe	Ser	Ser	Val	Ala	Ala	Arg	Gly	Asn	Ala	Gly	
					150					155					160	
cag	acc	aac	tac	gcg	acc	gcc	aaa	ggc	gcg	atc	gcc	ggg	ttc	acc	cgt	528
Gln	Thr	Asn	Tyr	Ala	Thr	Ala	Lys	Gly	Ala	Ile	Ala	Gly	Phe	Thr	Arg	
				165				170						175		
acg	ctc	gcg	gcc	gaa	ctg	ggc	ccg	cac	ggc	gtg	acg	gtc	aac	gcc	atc	576
Thr	Leu	Ala	Ala	Glu	Leu	Gly	Pro	His	Gly	Val	Thr	Val	Asn	Ala	Ile	
				180				185					190			
gca	ccg	ggc	ttc	gtg	gcc	acg	ccg	atg	gtg	gac	gag	ctg	gcc	gaa	cgg	624
Ala	Pro	Gly	Phe	Val	Ala	Thr	Pro	Met	Val	Asp	Glu	Leu	Ala	Glu	Arg	
			195				200					205				
ctc	ggc	ggg	gac	cgg	gac	tcg	gtc	atg	tcg	gag	gcg	gcg	aag	tcc	tcg	672
Leu	Gly	Gly	Asp	Arg	Asp	Ser	Val	Met	Ser	Glu	Ala	Ala	Lys	Ser	Ser	
			210			215					220					
gca	gtg	ggc	cgg	atc	ggg	acg	ccc	gag	gaa	atc	gcc	gcg	acc	gtg	gtc	720
Ala	Val	Gly	Arg	Ile	Gly	Thr	Pro	Glu	Glu	Ile	Ala	Ala	Thr	Val	Val	
				230						235					240	
ttc	gtc	gcc	cgg	ccg	gaa	tcg	ggc	tac	ctc	acc	ggc	gag	acc	gtt	cac	768
Phe	Val	Ala	Arg	Pro	Glu	Ser	Gly	Tyr	Leu	Thr	Gly	Glu	Thr	Val	His	
				245					250					255		
gtc	gac	ggc	ggt	cgg	cca	tga										789
Val	Asp	Gly	Gly	Arg	Pro											
				260												

&lt;210&gt; 1171

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Streptomyces sphaeroides

&lt;400&gt; 1171

Met	Thr	Ser	Pro	Ala	Asp	Ala	Thr	Thr	Glu	Val	Ala	Val	Ser	Gln	Glu	
1				5					10					15		
Ser	Val	Ala	Met	Val	Thr	Gly	Ala	Gly	Arg	Gly	Ile	Gly	Ala	Ala	Thr	
			20					25					30			
Ala	Glu	Arg	Leu	Ala	Ala	Glu	Gly	Met	Ala	Val	Ile	Val	Val	Asp	Arg	
			35				40					45				

## PhoenixTemp32470.tmp.txt

Thr Glu Gln Asp Thr Arg Ala Thr Val Ala Ala Ile Arg Thr Ala Gly  
 50 55 60  
 Gly Arg Ala Arg Gly Ile Gly Cys Asp Val Ala Val Ala Gln Ala Val  
 65 70 75 80  
 Thr Ala Ala Val Ala Thr Ala Val Glu Glu Phe Gly Arg Ile Asp Val  
 85 90 95  
 Leu Val Asn Cys Ala Gly Ile Asn Arg Asp Arg Leu Leu Leu Thr Met  
 100 105 110  
 Gly Asp Gln Glu Trp Asp Thr Val Leu Asp Val Asn Leu Gly Gly Thr  
 115 120 125  
 Met Arg Cys Ser Phe Ala Val Gly Arg His Met Arg Arg Gln Gly His  
 130 135 140  
 Gly Arg Ile Ile Asn Phe Ser Ser Val Ala Ala Arg Gly Asn Ala Gly  
 145 150 155 160  
 Gln Thr Asn Tyr Ala Thr Ala Lys Gly Ala Ile Ala Gly Phe Thr Arg  
 165 170 175  
 Thr Leu Ala Ala Glu Leu Gly Pro His Gly Val Thr Val Asn Ala Ile  
 180 185 190  
 Ala Pro Gly Phe Val Ala Thr Pro Met Val Asp Glu Leu Ala Glu Arg  
 195 200 205  
 Leu Gly Gly Asp Arg Asp Ser Val Met Ser Glu Ala Ala Lys Ser Ser  
 210 215 220  
 Ala Val Gly Arg Ile Gly Thr Pro Glu Glu Ile Ala Ala Thr Val Val  
 225 230 235 240  
 Phe Val Ala Arg Pro Glu Ser Gly Tyr Leu Thr Gly Glu Thr Val His  
 245 250 255  
 Val Asp Gly Gly Arg Pro  
 260

&lt;210&gt; 1172

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1172

atg agc acc acc gga acc acc ccc gcc acc acc ggg tac gcc gcc gag	48
Met Ser Thr Thr Gly Thr Thr Pro Ala Thr Thr Gly Tyr Ala Ala Glu	
1 5 10 15	
ttc gcc ggc cgt acc gcc ctc gtc acc ggt gcc gcc tcc ggt atc ggc	96
Phe Ala Gly Arg Thr Ala Leu Val Thr Gly Ala Ala Ser Gly Ile Gly	
20 25 30	
ctg gcc acc gcc cgc cgg ctc ggc gcc ggc gcc cgg gtc gtc gtc	144
Leu Ala Thr Ala Arg Arg Leu Gly Ala Gly Gly Ala Arg Val Val Val	
35 40 45	
gcc gac ttc aac gcc gag ggc gcc gag aag gcc gcc gcc gag ctg cgg	192
Ala Asp Phe Asn Ala Glu Gly Ala Glu Lys Ala Ala Ala Glu Leu Arg	
50 55 60	
gcc ggt ggc gtc gag gcc gcc gcg gtc gag ctg gac gtc acc cgt ccg	240
Ala Gly Gly Val Glu Ala Ala Ala Val Glu Leu Asp Val Thr Arg Pro	
65 70 75 80	
gag tcc gtc gag gcg gcc gtc ggg ttc gcc gtc gac acg ttc ggc tcg	288
Glu Ser Val Glu Ala Val Gly Phe Ala Val Asp Thr Phe Gly Ser	
85 90 95	
ctg gac ctc gcc gtc aac aac gcc ggc atc ggc ggc ccc agc gcc ccg	336
Leu Asp Leu Ala Val Asn Asn Ala Gly Ile Gly Gly Pro Ser Ala Pro	
100 105 110	
acc ggc gag tac gac gtg gcg gcc tac cag cgc gtc gtg cgc acc aac	384
Thr Gly Glu Tyr Asp Val Ala Tyr Gln Arg Val Val Arg Thr Asn	
115 120 125	
ctc gac ggc gtc ttc tac tcg atg gcg tac gaa ctg ccc gcc atc gag	432
Leu Asp Gly Val Phe Tyr Ser Met Arg Tyr Glu Leu Pro Ala Ile Glu	
130 135 140	
gcg gcc ggc aag gcc gcc tcg atc gtg aac gtc gcc tcc atc ctc ggc	480
Ala Ala Gly Lys Gly Gly Ser Ile Val Asn Val Ala Ser Ile Leu Gly	

## PhoenixTemp32470.tmp.txt

145	tcg	gtc	ggc	ttc	gcc	150	ggc	tcc	ccc	gcc	155	gtc	gcc	gcc	aag	cac	160	ggc	528
Ser	Val	Gly	Phe	Ala	Gly	Gly	Ser	Pro	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly			
				165						170						175			
gtg	gtc	ggg	ctg	acg	aag	gcg	gcc	gcc	gcc	gag	tac	gcc	gcc	cgc	ggc		576		
Val	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Ala	Glu	Tyr	Ala	Ala	Arg	Gly				
			180						185						190				
atc	cgg	atc	aac	gcg	gtc	ggg	ccg	ggc	ttc	atc	gac	acc	ccc	ctg	ctc		624		
Ile	Arg	Ile	Asn	Ala	Val	Gly	Pro	Gly	Phe	Ile	Asp	Thr	Pro	Leu	Leu				
		195					200					205							
aag	acc	atg	gac	gag	gcc	gcc	tac	aag	ggc	tgg	tcg	ccc	tgc	acc	cgg		672		
Lys	Thr	Met	Asp	Glu	Ala	Ala	Tyr	Lys	Gly	Trp	Ser	Pro	Cys	Thr	Arg				
		210					215					220							
ccg	gcc	gcc	tcg	ggc	gct	ccg	agg	agg	tcg	cgg	acg	ctg	atc	gcc	ttc		720		
Pro	Ala	Ala	Ser	Gly	Ala	Pro	Arg	Arg	Ser	Arg	Thr	Leu	Ile	Ala	Phe				
225				230						235					240				
ctg	ctg	tcc	gac	cgc	gcg	tcc	ttc	gtc	gcg	ggc	agc	tat	cac	ctg	gtc		768		
Leu	Leu	Ser	Asp	Arg	Ala	Ser	Phe	Val	Ala	Gly	Ser	Tyr	His	Leu	Val				
			245						250					255					
gac	ggc	gcc	tac	acc	gcc	gtc	tga										792		
Asp	Gly	Ala	Tyr	Thr	Ala	Val													
			260																

&lt;210&gt; 1173

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor

&lt;400&gt; 1173

Met	Ser	Thr	Thr	Gly	Thr	Thr	Pro	Ala	Thr	Thr	Gly	Tyr	Ala	Ala	Glu
1				5					10					15	
Phe	Ala	Gly	Arg	Thr	Ala	Leu	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly
			20					25					30		
Leu	Ala	Thr	Ala	Arg	Arg	Leu	Gly	Ala	Gly	Gly	Ala	Arg	Val	Val	Val
		35					40					45			
Ala	Asp	Phe	Asn	Ala	Glu	Gly	Ala	Glu	Lys	Ala	Ala	Ala	Glu	Leu	Arg
	50					55					60				
Ala	Gly	Gly	Val	Glu	Ala	Ala	Ala	Val	Glu	Leu	Asp	Val	Thr	Arg	Pro
65				70					75					80	
Glu	Ser	Val	Glu	Ala	Val	Gly	Phe	Ala	Val	Asp	Thr	Phe	Gly	Ser	
			85					90					95		
Leu	Asp	Leu	Ala	Val	Asn	Asn	Ala	Gly	Ile	Gly	Gly	Pro	Ser	Ala	Pro
		100						105				110			
Thr	Gly	Glu	Tyr	Asp	Val	Ala	Ala	Tyr	Gln	Arg	Val	Val	Arg	Thr	Asn
	115						120					125			
Leu	Asp	Gly	Val	Phe	Tyr	Ser	Met	Arg	Tyr	Glu	Leu	Pro	Ala	Ile	Glu
	130					135				140					
Ala	Ala	Gly	Lys	Gly	Gly	Ser	Ile	Val	Asn	Val	Ala	Ser	Ile	Leu	Gly
145				150					155					160	
Ser	Val	Gly	Phe	Ala	Gly	Ser	Pro	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly
			165						170					175	
Val	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Glu	Tyr	Ala	Ala	Arg	Gly	
			180					185					190		
Ile	Arg	Ile	Asn	Ala	Val	Gly	Pro	Gly	Phe	Ile	Asp	Thr	Pro	Leu	Leu
	195						200					205			
Lys	Thr	Met	Asp	Glu	Ala	Ala	Tyr	Lys	Gly	Trp	Ser	Pro	Cys	Thr	Arg
	210					215					220				
Pro	Ala	Ala	Ser	Gly	Ala	Pro	Arg	Arg	Ser	Arg	Thr	Leu	Ile	Ala	Phe
225				230					235					240	
Leu	Leu	Ser	Asp	Arg	Ala	Ser	Phe	Val	Ala	Gly	Ser	Tyr	His	Leu	Val
			245						250					255	
Asp	Gly	Ala	Tyr	Thr	Ala	Val									
			260												

&lt;210&gt; 1174

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Streptomyces lividans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1174

atg aac aag gtg tgg ctg atc acc ggg gcg agc agc ggc ttc ggg cgg	48
Met Asn Lys Val Trp Leu Ile Thr Gly Ala Ser Ser Gly Phe Gly Arg	
1 5 10 15	
gcg atc gcc gag gcg gcc ctg gcc gac ggc gac gtc gtg gtc ggc gcg	96
Ala Ile Ala Glu Ala Ala Leu Ala Asp Gly Asp Val Val Val Gly Ala	
20 25 30	
gct cgg cgc ccc gag gcg ctg gac gac ctc gtg gcc gcg cac ccg gac	144
Ala Arg Arg Pro Glu Ala Leu Asp Asp Leu Val Ala Ala His Pro Asp	
35 40 45	
cag atg gag gcg ctg cgc ctg gac gtc gcc gac acg gcc gcc gcc ggg	192
Gln Met Glu Ala Leu Arg Leu Asp Val Ala Asp Thr Ala Ala Ala Gly	
50 55 60	
gac gcc gta cgg gac gtg gtg gcg cgg cac ggc agg gtg gac gta ctg	240
Asp Ala Val Arg Asp Val Val Ala Arg His Gly Arg Val Asp Val Leu	
65 70 75 80	
gtc aac aac gcg ggc cgc aca cac gtc ggt gcc ctc gag gag acc ggc	288
Val Asn Asn Ala Gly Arg Thr His Val Gly Ala Leu Glu Glu Thr Gly	
85 90 95	
gag gac gaa ctg cgg gcg ctg ttc gac gtg cac gtc ttc ggc ccg gcc	336
Glu Asp Glu Leu Arg Ala Leu Phe Asp Val His Val Phe Gly Pro Ala	
100 105 110	
gcg ctg acg cgc gcg gta ctg ccg tcc atg cgg gag cgg cgt tcg ggc	384
Ala Leu Thr Arg Ala Val Leu Pro Ser Met Arg Glu Arg Ser Gly	
115 120 125	
gcg atc gtg cag atg agc agc atg ggc ggg cag atg tcc ttc gcg ggc	432
Ala Ile Val Gln Met Ser Ser Met Gly Gly Gln Met Ser Phe Ala Gly	
130 135 140	
ttc tcc gcg tac agc ggc acg aag ttc gcc ctg gag ggc atg tcc gag	480
Phe Ser Ala Tyr Ser Gly Thr Lys Phe Ala Leu Glu Gly Met Ser Glu	
145 150 155 160	
ggg ctc gcg gac gag gtc cgg gac ttc ggc atc aag gtc gtg atc gtc	528
Gly Leu Ala Asp Glu Val Arg Asp Phe Gly Ile Lys Val Val Ile Val	
165 170 175	
gag ccg ggc tcc ttc cgc acc ggc ctg ttc gag gcc ggg aac gcc ggg	576
Glu Pro Gly Ser Phe Arg Thr Gly Leu Phe Glu Ala Gly Asn Ala Gly	
180 185 190	
atc agc gcc gac agc ggc gtg tac gcc aag gtc ggc gag acc cgc ggg	624
Ile Ser Ala Asp Ser Gly Val Tyr Ala Lys Val Gly Glu Thr Arg Gly	
195 200 205	
atg atc gcc gcg ggc gac ggc agc cag ccc ggc gac ccc gcc agg gcg	672
Met Ile Ala Ala Gly Asp Gly Ser Gln Pro Gly Asp Pro Ala Arg Ala	
210 215 220	
gcc gcg gtc atc cgc gcg gcc ctc gcg gcc gag cac act ccg ctg cgc	720
Ala Ala Val Ile Arg Ala Ala Leu Ala Ala Glu His Thr Pro Leu Arg	
225 230 235 240	
ctg ccg ctg ggc gcc gac ggc gtc acc gcg gtc ctc ggc cac ctc gac	768
Leu Pro Leu Gly Ala Asp Gly Val Thr Ala Val Leu Gly His Leu Asp	
245 250 255	
cgg gtc cgc gag gag gtc gag acc tgg gag aag cag acc ccg gcc acg	816
Arg Val Arg Glu Glu Val Glu Thr Trp Glu Lys Gln Thr Arg Ala Thr	
260 265 270	
gcg ttc gac gac tga	831
Ala Phe Asp Asp	
275	

&lt;210&gt; 1175

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces lividans

&lt;400&gt; 1175

Met Asn Lys Val Trp Leu Ile Thr Gly Ala Ser Ser Gly Phe Gly Arg
1 5 10 15

## PhoenixTemp32470.tmp.txt

Ala Ile Ala Glu Ala Ala Leu Ala Asp Gly Asp Val Val Val Gly Ala  
 20 25 30  
 Ala Arg Arg Pro Glu Ala Leu Asp Asp Leu Val Ala Ala His Pro Asp  
 35 40 45  
 Gln Met Glu Ala Leu Arg Leu Asp Val Ala Asp Thr Ala Ala Ala Gly  
 50 55 60  
 Asp Ala Val Arg Asp Val Val Ala Arg His Gly Arg Val Asp Val Leu  
 65 70 75 80  
 Val Asn Asn Ala Gly Arg Thr His Val Gly Ala Leu Glu Glu Thr Gly  
 85 90 95  
 Glu Asp Glu Leu Arg Ala Leu Phe Asp Val His Val Phe Gly Pro Ala  
 100 105 110  
 Ala Leu Thr Arg Ala Val Leu Pro Ser Met Arg Glu Arg Arg Ser Gly  
 115 120 125  
 Ala Ile Val Gln Met Ser Ser Met Gly Gly Gln Met Ser Phe Ala Gly  
 130 135 140  
 Phe Ser Ala Tyr Ser Gly Thr Lys Phe Ala Leu Glu Gly Met Ser Glu  
 145 150 155 160  
 Gly Leu Ala Asp Glu Val Arg Asp Phe Gly Ile Lys Val Val Ile Val  
 165 170 175  
 Glu Pro Gly Ser Phe Arg Thr Gly Leu Phe Glu Ala Gly Asn Ala Gly  
 180 185 190  
 Ile Ser Ala Asp Ser Gly Val Tyr Ala Lys Val Gly Glu Thr Arg Gly  
 195 200 205  
 Met Ile Ala Ala Gly Asp Gly Ser Gln Pro Gly Asp Pro Ala Arg Ala  
 210 215 220  
 Ala Ala Val Ile Arg Ala Ala Leu Ala Ala Glu His Thr Pro Leu Arg  
 225 230 235 240  
 Leu Pro Leu Gly Ala Asp Gly Val Thr Ala Val Leu Gly His Leu Asp  
 245 250 255  
 Arg Val Arg Glu Glu Val Glu Thr Trp Glu Lys Gln Thr Arg Ala Thr  
 260 265 270  
 Ala Phe Asp Asp  
 275

&lt;210&gt; 1176

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1176

atg aac aag gtg tgg ctg atc acc ggg gcg agc agc ggc ttc ggg cgg	48
Met Asn Lys Val Trp Leu Ile Thr Gly Ala Ser Ser Gly Phe Gly Arg	
1 5 10 15	
gcg atc gcc gag gcg gcc ctg gcc gac ggc gac gtc gtg gtc ggc gcg	96
Ala Ile Ala Glu Ala Ala Leu Ala Asp Gly Asp Val Val Val Gly Ala	
20 25 30 35	
gct cgg cgc ccc gag gcg ctg gac gac ctc gtg gcc gcg cac ccg gac	144
Ala Arg Arg Pro Glu Ala Leu Asp Asp Leu Val Ala Ala His Pro Asp	
40 45 50 55 60	
cag atg gag gcg ctg cgc ctg gac gtc gcc gac acg gcc gcc gcc ggg	192
Gln Met Glu Ala Leu Arg Leu Asp Val Ala Asp Thr Ala Ala Ala Gly	
65 70 75 80	
gac gcc gta cgg gac gtg gtg gcg cgg cac ggc agg gtg gac gta ttg	240
Asp Ala Val Arg Asp Val Val Ala Arg His Gly Arg Val Asp Val Leu	
85 90 95	
gtc aac aac gcg ggc cgc aca cac gtc ggt gcc ctc gag gag acc ggc	288
Val Asn Asn Ala Gly Arg Thr His Val Gly Ala Leu Glu Glu Thr Gly	
100 105 110	
gag gac gaa ctg cgg gcg ctg ttc gac gtg cac gtc ttc ggc ccg gcc	336
Glu Asp Glu Leu Arg Ala Leu Phe Asp Val His Val Phe Gly Pro Ala	
115 120 125	
gcg ctg acg cgc gcg gta ctg ccg tcc atg cgg gag cgg cgt tcg ggc	384
Ala Leu Thr Arg Ala Val Leu Pro Ser Met Arg Glu Arg Arg Ser Gly	

## PhoenixTemp32470.tmp.txt

gcg	atc	115	gtg	cag	atg	agc	agc	120	atg	ggc	ggg	cag	atg	125	tcc	gcg	ggc	432
Ala	Ile	Val	Gln	Met	Ser	Ser	Ser	Met	Gly	Gly	Gln	Met	Ser	Phe	Ala	Gly		
	130						135						140					
ttc	tcc	gcg	tac	agc	ggc	acg	aag	ttc	gcc	ctg	gag	ggc	atg	tcc	gag	480		
Phe	Ser	Ala	Tyr	Ser	Gly	Thr	Lys	Phe	Ala	Leu	Glu	Gly	Met	Ser	Glu			
145					150					155					160			
ggg	ctc	gcg	gac	gag	gtc	cgg	gac	ttc	ggc	atc	aag	gtc	gtg	atc	gtc	528		
Gly	Leu	Ala	Asp	Glu	Val	Arg	Asp	Phe	Gly	Ile	Lys	Val	Val	Ile	Val			
			165						170					175				
gag	ccg	ggc	tcc	ttc	cgc	acc	ggc	ctg	ttc	gag	gcc	ggg	aac	gcc	ggg	576		
Glu	Pro	Gly	Ser	Phe	Arg	Thr	Gly	Leu	Phe	Glu	Ala	Gly	Asn	Ala	Gly			
			180					185					190					
atc	agc	gcc	gac	agc	ggc	gtg	tac	ggc	aag	gtc	ggc	gag	acc	cgc	ggg	624		
Ile	Ser	Ala	Asp	Ser	Gly	Val	Tyr	Ala	Lys	Val	Gly	Glu	Thr	Arg	Gly			
		195					200						205					
atg	atc	gcc	gcg	ggc	gac	ggc	agc	cag	ccc	ggc	gac	ccc	gcc	agg	gcg	672		
Met	Ile	Ala	Ala	Gly	Asp	Gly	Ser	Gln	Pro	Gly	Asp	Pro	Ala	Arg	Ala			
	210					215						220						
gcc	gcg	gtc	atc	cgc	gcg	gcc	ctc	gcg	gcc	gag	cac	act	ccg	ctg	cgc	720		
Ala	Ala	Val	Ile	Arg	Ala	Ala	Leu	Ala	Ala	Glu	His	Thr	Pro	Leu	Arg			
225					230					235				240				
ctg	ccg	ctg	ggc	gac	ggc	gtc	acc	gcg	gtc	ctc	ggc	cac	ctc	gac	768			
Leu	Pro	Leu	Gly	Asp	Asp	Gly	Val	Thr	Ala	Val	Leu	Gly	His	Leu	Asp			
				245				250						255				
cgg	gtc	cgc	gag	gag	gtc	gag	acc	tgg	gag	aag	cag	acc	cgg	gcc	acg	816		
Arg	Val	Arg	Glu	Glu	Val	Glu	Thr	Trp	Glu	Lys	Gln	Thr	Arg	Ala	Thr			
			260					265					270					
gcg	ttc	gac	gac	tga												831		
Ala	Phe	Asp	Asp															
		275																

&lt;210&gt; 1177

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor A3

&lt;400&gt; 1177

Met	Asn	Lys	Val	Trp	Leu	Ile	Thr	Gly	Ala	Ser	Ser	Gly	Phe	Gly	Arg	
1				5					10					15		
Ala	Ile	Ala	Glu	Ala	Ala	Leu	Ala	Asp	Gly	Asp	Val	Val	Val	Gly	Ala	
			20					25					30			
Ala	Arg	Arg	Pro	Glu	Ala	Leu	Asp	Asp	Leu	Val	Ala	Ala	His	Pro	Asp	
		35					40					45				
Gln	Met	Glu	Ala	Leu	Arg	Leu	Asp	Val	Ala	Asp	Thr	Ala	Ala	Ala	Gly	
	50					55					60					
Asp	Ala	Val	Arg	Asp	Val	Ala	Arg	His	Gly	Arg	Val	Asp	Val	Leu		
65					70				75					80		
Val	Asn	Asn	Ala	Gly	Arg	Thr	His	Val	Gly	Ala	Leu	Glu	Glu	Thr	Gly	
				85					90					95		
Glu	Asp	Glu	Leu	Arg	Ala	Leu	Phe	Asp	Val	His	Val	Phe	Gly	Pro	Ala	
			100					105					110			
Ala	Leu	Thr	Arg	Ala	Val	Leu	Pro	Ser	Met	Arg	Glu	Arg	Arg	Ser	Gly	
		115					120					125				
Ala	Ile	Val	Gln	Met	Ser	Ser	Met	Gly	Gly	Gln	Met	Ser	Phe	Ala	Gly	
	130					135					140					
Phe	Ser	Ala	Tyr	Ser	Gly	Thr	Lys	Phe	Ala	Leu	Glu	Gly	Met	Ser	Glu	
145					150					155					160	
Gly	Leu	Ala	Asp	Glu	Val	Arg	Asp	Phe	Gly	Ile	Lys	Val	Val	Ile	Val	
				165					170					175		
Glu	Pro	Gly	Ser	Phe	Arg	Thr	Gly	Leu	Phe	Glu	Ala	Gly	Asn	Ala	Gly	
			180					185					190			
Ile	Ser	Ala	Asp	Ser	Gly	Val	Tyr	Ala	Lys	Val	Gly	Glu	Thr	Arg	Gly	
		195					200					205				
Met	Ile	Ala	Ala	Gly	Asp	Gly	Ser	Gln	Pro	Gly	Asp	Pro	Ala	Arg	Ala	
	210					215					220					
Ala	Ala	Val	Ile	Arg	Ala	Ala	Leu	Ala	Ala	Glu	His	Thr	Pro	Leu	Arg	
225					230					235				240		
Leu	Pro	Leu	Gly	Asp	Asp	Gly	Val	Thr	Ala	Val	Leu	Gly	His	Leu	Asp	



Arg Val Arg Glu 245 Val Glu Thr Trp 250 Glu Lys Gln Thr Arg 255  
 260 265 270  
 Ala Phe Asp Asp

<210> 1178  
 <211> 837  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(837)

<400> 1178  
 atg cag aag gca gac acg aaa cag ctt ttg cat tgc atc atg tcg aag 48  
 Met Gln Lys Ala Asp Thr Lys Gln Leu Leu His Cys Ile Met Ser Lys  
 1 5 10 15  
 aca agg atg gac ggc aag gtg gcc atc gtg acc ggc ggc gcg agc ggc 96  
 Thr Arg Met Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala Ser Gly  
 20 25 30  
 atc ggc gag gcg gcg gcg cgg ctg ttc gcg tcg tgc ggc gcg acg gtg 144  
 Ile Gly Glu Ala Ala Ala Arg Leu Phe Ala Ser Cys Gly Ala Thr Val  
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 gtc atc gcc gac gtc cag gac gag ctg ggc gag gcg gtg gcg gcg tcg 192  
 Val Ile Ala Asp Val Gln Asp Glu Leu Gly Glu Ala Val Ala Ala Ser  
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 gtg gcg ggg ggc ggg tgc cgg tac gtg cgg tgc gac gtg acg gac gag 240  
 Val Ala Gly Gly Gly Cys Arg Tyr Val Arg Cys Asp Val Thr Asp Glu  
 65 70 75 80  
 gcg cag gtg gag gcg gcg gtg gcc gcc gcg gtg gcg gag cac ggg cgg 288  
 Ala Gln Val Glu Ala Ala Val Ala Ala Val Ala Glu His Gly Arg  
 85 90 95  
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 Leu Asp Val Met Val Ser Asn Ala Gly Val Leu Leu Pro Thr Gly Pro  
 100 105 110  
 gtc gtg gac atg gac ctc gcg gct ctg gac cgg gtg atg tcg gtg aac 384  
 Val Val Asp Met Asp Leu Ala Ala Leu Asp Arg Val Met Ser Val Asn  
 115 120 125  
 ttc cgc ggc gcg gcg gcg tgc aag cac gcg gcg ggc atg gtg 432  
 Phe Arg Gly Ala Ala Ala Cys Val Lys His Ala Ala Arg Ala Met Val  
 130 135 140  
 tcg cgc ggc acc cgc ggc gcc atc gtg tgc acg gcg agc gtg gcg tcg 480  
 Ser Arg Gly Thr Arg Gly Ala Ile Val Cys Thr Ala Ser Val Ala Ser  
 145 150 155 160  
 tgc cag ggc ggg ttc ggg ccg gcg gcg tac acg gcg tcg aag cac gcg 528  
 Cys Gln Gly Gly Phe Gly Pro Ala Ala Tyr Thr Ala Ser Lys His Ala  
 165 170 175  
 gtg ctg ggg ctg gtg cgc gcg gcg gcc ggc gag ctc ggg cgg cac ggc 576  
 Val Leu Gly Leu Val Arg Ala Ala Ala Gly Glu Leu Gly Arg His Gly  
 180 185 190  
 gtg cgc gtg aac tgc gtg tcc ccc ggc ggc gtg gcg acg ccg ctg agc 624  
 Val Arg Val Asn Cys Val Ser Pro Gly Gly Val Ala Thr Pro Leu Ser  
 195 200 205  
 tgc ggg ctg acg ggg atg agc ccc gag gag atg gag gcg gcg gcg gag 672  
 Cys Gly Leu Thr Gly Met Ser Pro Glu Glu Met Glu Ala Ala Ala Glu  
 210 215 220  
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 Pro His Asn Val Leu Arg Gly Lys Val Leu Lys Ala Ala Asp Val Ala  
 225 230 235 240  
 gag gcc atg ctc ttc ctc gcc tcc gac cag gcc gcc ttc gtc agc ggc 768  
 Glu Ala Met Leu Phe Leu Ala Ser Asp Gln Ala Ala Phe Val Ser Gly  
 245 250 255  
 cac aac ctc gtc gtc gac ggc gcc acc acc gcc gtc aac tac gcc gtg 816  
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 ctc cag tcc gtc ggc ctg tga 837  
 Leu Gln Ser Val Gly Leu

275

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 <211> 278  
 <212> PRT  
 <213> Oryza sativa

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 35 40 45  
 Val Ile Ala Asp Val Gln Asp Glu Leu Gly Glu Ala Val Ala Ala Ser  
 50 55 60  
 Val Ala Gly Gly Gly Cys Arg Tyr Val Arg Cys Asp Val Thr Asp Glu  
 65 70 75 80  
 Ala Gln Val Glu Ala Val Ala Ala Val Ala Glu His Gly Arg  
 85 90 95  
 Leu Asp Val Met Val Ser Asn Ala Gly Val Leu Leu Pro Thr Gly Pro  
 100 105 110  
 Val Val Asp Met Asp Leu Ala Ala Leu Asp Arg Val Met Ser Val Asn  
 115 120 125  
 Phe Arg Gly Ala Ala Ala Cys Val Lys His Ala Ala Arg Ala Met Val  
 130 135 140  
 Ser Arg Gly Thr Arg Gly Ala Ile Val Cys Thr Ala Ser Val Ala Ser  
 145 150 155 160  
 Cys Gln Gly Gly Phe Gly Pro Ala Ala Tyr Thr Ala Ser Lys His Ala  
 165 170 175  
 Val Leu Gly Leu Val Arg Ala Ala Ala Gly Glu Leu Gly Arg His Gly  
 180 185 190  
 Val Arg Val Asn Cys Val Ser Pro Gly Gly Val Ala Thr Pro Leu Ser  
 195 200 205  
 Cys Gly Leu Thr Gly Met Ser Pro Glu Glu Met Glu Ala Ala Ala Glu  
 210 215 220  
 Pro His Asn Val Leu Arg Gly Lys Val Leu Lys Ala Ala Asp Val Ala  
 225 230 235 240  
 Glu Ala Met Leu Phe Leu Ala Ser Asp Gln Ala Ala Phe Val Ser Gly  
 245 250 255  
 His Asn Leu Val Val Asp Gly Ala Thr Thr Ala Val Asn Tyr Ala Val  
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 Leu Gln Ser Val Gly Leu  
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 <212> DNA  
 <213> Brassica napus

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 ttg ggc aaa gtg gca ttg ata acc gga gga gcc aca ggg ata ggc gaa 96  
 Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu  
 20 25 30  
 agc atc gct cgt ctc ttc cac aag cac ggt gcc aaa gtc tgc atc ttc 144  
 Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Phe  
 35 40 45  
 gac gtc caa gac gat ctc gga gac aaa gta ctc aaa act ctg tta gcc 192  
 Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala  
 50 55 60  
 aac tcg gag gat gat gag tca gct tgt ttc atc cac ggt gac gtc aca 240  
 Asn Ser Glu Asp Asp Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr

## PhoenixTemp32470.tmp.txt

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Gln	Glu	Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Arg	Phe																																		
				85					90					95																																			
ggg	acc	ctc	gac	ata	ctc	atc	aac	aac	gca	gga	gta	agc	gga	gca	ccc		336																																
Gly	Thr	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Val	Ser	Gly	Ala	Pro																																		
			100					105					110																																				
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Cys	Pro	Asp	Ile	Arg	Asn	Asn	Ser	Leu	Thr	Glu	Phe	Glu	Thr	Val	Phe																																		
			115				120					125																																					
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Asn	Val	Asn	Val	Lys	Gly	Ala	Phe	Leu	Gly	Met	Lys	His	Ala	Ala	Arg																																		
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Gly	Gly	Val	Val	Gly	Gly	Val	Gly	Pro	His	Ala	Tyr	Val	Gly	Ser	Lys																																		
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cac	gcg	gtt	cta	ggt	ttg	act	agg	agc	gtt	gcg	gcg	gag	ctg	gga	cag		576																																
His	Ala	Val	Leu	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Glu	Leu	Gly	Gln																																		
			180					185					190																																				
cat	ggg	ata	cgc	gtg	aac	tgc	gtt	tct	cct	tac	gcg	gtt	gcg	act	aac		624																																
His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Asn																																		
			195				200					205																																					
ctc	gcg	ttg	gct	cat	ttg	cct	gag	gac	gag	agg	aat	gaa	ggc	gtg	gtc		672																																
Leu	Ala	Leu	Ala	His	Leu	Pro	Glu	Asp	Glu	Arg	Asn	Glu	Gly	Val	Val																																		
			210			215					220																																						
gct	ggt	ttc	agg	agt	ttc	gcg	gct	gcg	aac	gcg	aat	ctg	aaa	ggt	gtt		720																																
Ala	Gly	Phe	Arg	Ser	Phe	Ala	Ala	Ala	Asn	Ala	Asn	Leu	Lys	Gly	Val																																		
			225		230				235					240																																			
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Glu	Leu	Thr	Val	Asp	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala	Ser																																		
			245						250					255																																			
gat	gag	tcg	cgg	tac	gtg	agt	ggt	gat	aat	ctg	atg	gtt	gat	ggt	ggg		816																																
Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	Asp	Asn	Leu	Met	Val	Asp	Gly	Gly																																		
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<210> 1181  
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<213> Brassica napus

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Ser	Ile	Ala	Arg	Leu	Phe	His	Lys	His	Gly	Ala	Lys	Val	Cys	Ile	Phe	
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Asp	Val	Gln	Asp	Asp	Leu	Gly	Asp	Lys	Val	Leu	Lys	Thr	Leu	Leu	Ala	
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Asn	Ser	Glu	Asp	Asp	Glu	Ser	Ala	Cys	Phe	Ile	His	Gly	Asp	Val	Thr	
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Gln	Glu	Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Arg	Phe	
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Gly	Thr	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Val	Ser	Gly	Ala	Pro	
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Cys	Pro	Asp	Ile	Arg	Asn	Asn	Ser	Leu	Thr	Glu	Phe	Glu	Thr	Val	Phe	
		115					120					125				
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Val	Met	Ile	Pro	Ala	Lys	Lys	Gly	Ser	Ile	Val	Ser	Leu	Cys	Ser	Val	
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## PhoenixTemp32470.tmp.txt

His Ala Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly Gln  
 180 190  
 His Gly Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Ala Thr Asn  
 195 200 205  
 Leu Ala Leu Ala His Leu Pro Glu Asp Glu Arg Asn Glu Gly Val Val  
 210 220  
 Ala Gly Phe Arg Ser Phe Ala Ala Asn Ala Asn Leu Lys Gly Val  
 225 230 235 240  
 Glu Leu Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser  
 245 250 255  
 Asp Glu Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly  
 260 265 270  
 Phe Thr Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

&lt;210&gt; 1182

&lt;211&gt; 903

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(903)

&lt;400&gt; 1182

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Met	Pro	Ala	Gln	Val	Ile	Thr	Glu	Gln	Thr	Phe	Gln	Ser	Leu	His	Asp	
1				5				10						15		
acc	atc	atg	gag	gat	aca	aat	tca	act	tta	ttt	cat	aag	agg	ttg	gaa	96
Thr	Ile	Met	Glu	Asp	Thr	Asn	Ser	Thr	Leu	Phe	His	Lys	Arg	Leu	Glu	
			20				25					30				
gga	aaa	gta	gcc	atc	ata	acc	gga	gga	gca	cat	ggg	atc	ggc	aaa	gct	144
Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	His	Gly	Ile	Gly	Lys	Ala	
		35					40				45					
acc	gtc	aag	ata	ttc	gcg	aga	cac	ggt	gcc	acg	gtg	gtg	atc	gct	gac	192
Thr	Val	Lys	Ile	Phe	Ala	Arg	His	Gly	Ala	Thr	Val	Val	Ile	Ala	Asp	
	50					55					60					
gtg	gac	gcc	aca	gcc	gga	tct	tcc	ctg	gct	aaa	tcg	atc	tca	tca	tcc	240
Val	Asp	Ala	Thr	Ala	Gly	Ser	Ser	Leu	Ala	Lys	Ser	Ile	Ser	Ser	Ser	
	65			70						75					80	
caa	gtc	gcc	ttc	ata	agc	tgc	gat	gtc	tcg	gtc	gaa	gct	gac	gtg	gaa	288
Gln	Val	Ala	Phe	Ile	Ser	Cys	Asp	Val	Ser	Val	Glu	Ala	Asp	Val	Glu	
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aac	cta	gtg	aac	gtg	acc	atc	gca	cgt	tac	ggt	cgg	ctt	gac	gtg	cta	336
Asn	Leu	Val	Asn	Val	Thr	Ile	Ala	Arg	Tyr	Gly	Arg	Leu	Asp	Val	Leu	
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ttc	aac	aac	gca	gga	gtt	ctc	gga	gac	cag	aag	aaa	cac	aaa	agc	ata	384
Phe	Asn	Asn	Ala	Gly	Val	Leu	Gly	Asp	Gln	Lys	Lys	His	Lys	Ser	Ile	
		115					120				125					
tta	gac	ttc	aac	gct	gaa	gag	ttc	gac	caa	gtg	atg	cgt	gtg	aac	gtg	432
Leu	Asp	Phe	Asn	Ala	Glu	Glu	Phe	Asp	Gln	Val	Met	Arg	Val	Asn	Val	
	130					135					140					
cga	ggc	gca	ggg	ctc	ggc	atg	aaa	cac	gcg	gca	cgt	gcc	atg	att	aaa	480
Arg	Gly	Ala	Gly	Leu	Gly	Met	Lys	His	Ala	Ala	Arg	Ala	Met	Ile	Lys	
	145			150					155					160		
aga	ggc	ttt	aaa	ggt	tgc	ata	atc	tcg	acg	gcg	agt	gtg	gcg	ggc	gtt	528
Arg	Gly	Phe	Lys	Gly	Cys	Ile	Ile	Ser	Thr	Ala	Ser	Val	Ala	Gly	Val	
			165					170						175		
atg	ggt	ggt	atg	ggc	cca	cat	gct	tac	acg	gcg	tcg	aag	cat	gcg	atc	576
Met	Gly	Gly	Met	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Ile	
			180				185					190				
gtt	gga	ctg	acc	aag	aac	gca	gct	tgt	gag	ctc	ggg	agg	tat	ggg	att	624
Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	Leu	Gly	Arg	Tyr	Gly	Ile	
		195				200					205					
agg	gtt	aac	tgc	ata	tca	ccg	ttt	gga	gtt	gct	acg	tcg	atg	ctg	gtg	672
Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	Val	Ala	Thr	Ser	Met	Leu	Val	
	210					215					220					
aac	gcg	tgg	agg	aag	acg	agt	gga	tgt	ggg	gac	atg	gaa	gat	ggg	gat	720
Asn	Ala	Trp	Arg	Lys	Thr	Ser	Gly	Cys	Gly	Asp	Met	Glu	Asp	Gly	Asp	

## PhoenixTemp32470.tmp.txt

225	gat	gta	gag	gag	atg	230	gag	gag	ttc	gtg	agg	235	agt	ttg	gct	aat	ttg	aaa	768
Asp	Val	Glu	Glu	Met	245	Glu	Glu	Phe	Val	Arg	250	Ser	Leu	Ala	Asn	Leu	Lys		
gga	gag	aca	ttg	aga	gcg	acg	gat	ata	gct	gaa	gcg	gcg	ttg	tat	ttg			816	
Gly	Glu	Thr	Leu	Arg	Ala	Thr	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Tyr	Leu				
gcg	agt	gat	gag	tca	aag	tat	gtt	aat	gga	cat	aac	ctt	gtt	gac				864	
Ala	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp				
ggg	ggt	gtt	acg	act	gcg	agg	aac	tgt	gtt	ggt	ttg	tga						903	
Gly	Gly	Val	Thr	Thr	Ala	Arg	Asn	Cys	Val	Gly	Leu								
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 <211> 300  
 <212> PRT  
 <213> Brassica napus

<400> 1183

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			20					25					30		
Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	His	Gly	Ile	Gly	Lys	Ala
		35					40					45			
Thr	Val	Lys	Ile	Phe	Ala	Arg	His	Gly	Ala	Thr	Val	Val	Ile	Ala	Asp
	50					55					60				
Val	Asp	Ala	Thr	Ala	Gly	Ser	Ser	Leu	Ala	Lys	Ser	Ile	Ser	Ser	Ser
65					70					75					80
Gln	Val	Ala	Phe	Ile	Ser	Cys	Asp	Val	Ser	Val	Glu	Ala	Asp	Val	Glu
			85					90						95	
Asn	Leu	Val	Asn	Val	Thr	Ile	Ala	Arg	Tyr	Gly	Arg	Leu	Asp	Val	Leu
			100					105					110		
Phe	Asn	Asn	Ala	Gly	Val	Leu	Gly	Asp	Gln	Lys	Lys	His	Lys	Ser	Ile
		115					120					125			
Leu	Asp	Phe	Asn	Ala	Glu	Glu	Phe	Asp	Gln	Val	Met	Arg	Val	Asn	Val
	130					135					140				
Arg	Gly	Ala	Gly	Leu	Gly	Met	Lys	His	Ala	Ala	Arg	Ala	Met	Ile	Lys
145					150					155					160
Arg	Gly	Phe	Lys	Gly	Cys	Ile	Ile	Ser	Thr	Ala	Ser	Val	Ala	Gly	Val
			165						170					175	
Met	Gly	Gly	Met	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Ile
			180					185					190		
Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	Leu	Gly	Arg	Tyr	Gly	Ile
		195					200					205			
Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	Val	Ala	Thr	Ser	Met	Leu	Val
	210					215					220				
Asn	Ala	Trp	Arg	Lys	Thr	Ser	Gly	Cys	Gly	Asp	Met	Glu	Asp	Gly	Asp
225					230					235					240
Asp	Val	Glu	Glu	Met	Glu	Glu	Phe	Val	Arg	Ser	Leu	Ala	Asn	Leu	Lys
			245						250				255		
Gly	Glu	Thr	Leu	Arg	Ala	Thr	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Tyr	Leu
			260					265					270		
Ala	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp
		275					280					285			
Gly	Gly	Val	Thr	Thr	Ala	Arg	Asn	Cys	Val	Gly	Leu				
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 <212> DNA  
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<400> 1184

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1      5
cac gga gga atc ggc aac gcg ctg gct cgt gag ttc tcg tcg aag ggt      96
His Gly Gly Ile Gly Asn Ala Leu Ala 25 Arg Glu Phe Ser Ser Lys Gly
20      25
tgt cgt gtt gtg gcg acg agt cga tcg cag aac acg atg gcc gat ttg      144
Cys Arg Val Val Ala Thr Ser Arg 40 Ser Gln Asn Thr 45 Met Ala Asp Leu
35      40
acg aaa gat ccc aag ttt tta gta caa gag ctc gat gtt cag tca gaa      192
Thr Lys Asp Pro Lys Phe Leu Val Gln Glu Leu Asp Val Gln Ser Glu
50      55
cat aac gtg aat aaa gtc ttt tcg gaa gtt atc gac aag ttc ggt cag      240
His Asn Val Asn Lys Val Phe Ser Glu Val Ile Asp Lys Phe Gly Gln
65      70
att gat gtt ctg gtc aat aac gcc gga gtt caa tgc gtc ggt cca ctc      288
Ile Asp Val Leu Val Asn Asn Ala Gly Val 90 Gln Cys Val Gly Pro Leu
85      95
gct gag att cca att cag acc atg gag cac acc ttt aac acc aat gtg      336
Ala Glu Ile Pro Ile Gln Thr Met Glu His Thr Phe Asn Thr Asn Val
100      105
ttc ggt tcc atg agg atg act caa gct gtt gta cct cac atg gcg tca      384
Phe Gly Ser Met Arg Met Thr Gln Ala Val Val Pro His Met Ala Ser
115      120
aag aag aaa gga aag att gtg ata gga agt atc agc aca atg gca      432
Lys Lys Lys Gly Lys Ile Val Asn Ile Gly Ser Ile Ser Thr Met Ala
130      135
cca gga cca tgg gca ggg gtt tac act gca tca aaa gct gct ctt cat      480
Pro Gly Pro Trp Ala Gly Val Tyr Thr Ala Ser Lys Ala Ala Leu His
145      150
gct ctt aca gac aca tta agg ttg gag ctt agg cca ttt ggg att gat      528
Ala Leu Thr Asp Thr Leu Arg Leu Glu Leu Arg Pro Phe Gly Ile Asp
165      170
gtg atc aac atc gtc cca gga ggt att caa tca aac ata tcc gac tca      576
Val Ile Asn Ile Val Pro Gly Gly Ile Gln Ser Asn Ile Ser Asp Ser
180      185
ggg ata tcg agc ttc gat aag tta cct gag ctg aaa cta tat aag cct      624
Gly Ile Ser Ser Phe Asp Lys Leu Pro Glu Leu Lys Leu Tyr Lys Pro
195      200
ttc caa gaa gct atc cgt gaa agg gcg ttt ttg tcg caa aac gtt aag      672
Phe Gln Glu Ala Ile Arg Glu Arg Ala Phe Leu Ser Gln Asn Val Lys
210      215
cca ata cct gca gag acg ttt gcg aag gag gtg gta tca gtg gtc ctg      720
Pro Ile Pro Ala Glu Thr Phe Ala Lys Glu Val Val Ser Val Val Leu
225      230
aag gaa cac cca ccg gct tgg tat tct aca ggg agg ttg tcc acc gtc      768
Lys Glu His Pro Pro Ala Trp Tyr Ser Thr 250 Gly Arg Leu Ser Thr Val
245      255
gcg gcg atc atg cac cat ttg ccc att tcc gtc aaa gat ttt ctc ctg      816
Ala Ala Ile Met His His Leu Pro Ile Ser Val Lys Asp Phe Leu Leu
260      265
act aag agc ttc atg aaa aaa ggg cca aaa gaa act gtt tga      858
Thr Lys Ser Phe Met Lys Lys Gly Pro Lys Glu Thr Val
275      280

```

&lt;210&gt; 1185

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 1185

```

Met Gly Ser Ser Glu Glu Met Pro Val Val 10 Leu Ile Thr Gly Cys Ser
1      5
His Gly Gly Ile Gly Asn Ala Leu Ala 25 Arg Glu Phe Ser Ser Lys Gly
20      25
Cys Arg Val Val Ala Thr Ser Arg Ser Gln Asn Thr Met Ala Asp Leu
35      40
Thr Lys 50 Asp Pro Lys Phe Leu 55 Val Gln Glu Leu 60 Val Gln Ser Glu

```

## PhoenixTemp32470.tmp.txt

His Asn Val Asn Lys Val Phe Ser Glu Val Ile Asp Lys Phe Gly Gln  
 65 70 75 80  
 Ile Asp Val Leu Val Asn Asn Ala Gly Val Gln Cys Val Gly Pro Leu  
 85 90 95  
 Ala Glu Ile Pro Ile Gln Thr Met Glu His Thr Phe Asn Thr Asn Val  
 100 105 110  
 Phe Gly Ser Met Arg Met Thr Gln Ala Val Val Pro His Met Ala Ser  
 115 120 125  
 Lys Lys Lys Gly Lys Ile Val Asn Ile Gly Ser Ile Ser Thr Met Ala  
 130 135 140  
 Pro Gly Pro Trp Ala Gly Val Tyr Thr Ala Ser Lys Ala Ala Leu His  
 145 150 155 160  
 Ala Leu Thr Asp Thr Leu Arg Leu Glu Leu Arg Pro Phe Gly Ile Asp  
 165 170 175  
 Val Ile Asn Ile Val Pro Gly Gly Ile Gln Ser Asn Ile Ser Asp Ser  
 180 185 190  
 Gly Ile Ser Ser Phe Asp Lys Leu Pro Glu Leu Lys Leu Tyr Lys Pro  
 195 200 205  
 Phe Gln Glu Ala Ile Arg Glu Arg Ala Phe Leu Ser Gln Asn Val Lys  
 210 215 220  
 Pro Ile Pro Ala Glu Thr Phe Ala Lys Glu Val Val Ser Val Val Leu  
 225 230 235 240  
 Lys Glu His Pro Ala Trp Tyr Ser Thr Gly Arg Leu Ser Thr Val  
 245 250 255  
 Ala Ala Ile Met His His Leu Pro Ile Ser Val Lys Asp Phe Leu Leu  
 260 265 270  
 Thr Lys Ser Phe Met Lys Lys Gly Pro Lys Glu Thr Val  
 275 280 285

<210> 1186  
 <211> 828  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(828)

<400> 1186  
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 Met Ala Thr Ser Thr Ser Ala Leu Asn Lys Arg Leu Glu Gly Lys Val  
 1 5 10 15  
 gca ctg atc aca gga gga gct agt ggc atc ggc aaa cgc act gca gaa 96  
 Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Lys Arg Thr Ala Glu  
 20 25 30  
 gtg ttc gct cag caa gga gcc aaa gta gtg atc gct gac atc caa gac 144  
 Val Phe Ala Gln Gln Gly Ala Lys Val Val Ile Ala Asp Ile Gln Asp  
 35 40 45  
 gaa ctg gga cat tcc gtt gct cag tcc ata ggg cca tca aca tgt tgt 192  
 Glu Leu Gly His Ser Val Ala Gln Ser Ile Gly Pro Ser Thr Cys Cys  
 50 55 60  
 tat gtc cat tgc gat gtc acc gat gag aac caa ata aaa aat gcc gtc 240  
 Tyr Val His Cys Asp Val Thr Asp Glu Asn Gln Ile Lys Asn Ala Val  
 65 70 75 80  
 caa aaa gcc gta gat gct tat ggg aag cta gac atc atg ttc aac aac 288  
 Gln Lys Ala Val Asp Ala Tyr Gly Lys Leu Asp Ile Met Phe Asn Asn  
 85 90 95  
 gcc ggc att gtt gat ccc aac aag aac cga atc att gac aac gat aag 336  
 Ala Gly Ile Val Asp Pro Asn Lys Asn Arg Ile Ile Asp Asn Asp Lys  
 100 105 110  
 gca gat ttc gaa cgt gtc cta agc gtc aat gtc acg ggt gtt ttc ctt 384  
 Ala Asp Phe Glu Arg Val Leu Ser Val Asn Val Thr Gly Val Phe Leu  
 115 120 125  
 ggg atg aag cat gcg gcg cag gcg atg atc cca gca cgc agt ggt agc 432  
 Gly Met Lys His Ala Ala Gln Ala Met Ile Pro Ala Arg Ser Gly Ser  
 130 135 140  
 atc atc tct acg gcc agc ata agc tcc tac gtt ggt ggt gca gcc tcg 480  
 Ile Ile Ser Thr Ala Ser Ile Ser Ser Tyr Val Gly Gly Ala Ala Ser  
 145 150 155 160

## PhoenixTemp32470.tmp.txt

cat	gct	tac	tgt	tgt	gct	aag	cat	gct	gtg	gtt	ggt	cta	act	aaa	aat	528
His	Ala	Tyr	Cys	Cys	Ala	Lys	His	Ala	Val	Val	Gly	Leu	Thr	Lys	Asn	
			165						170					175		
gca	gca	gtt	gag	ctt	gga	cag	ttc	gga	ata	agg	gtg	aat	tgt	ttg	tca	576
Ala	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser	
			180					185					190			
cct	tac	gct	ctt	gct	aca	cct	ttg	gcc	acc	aag	ttt	gtt	gga	gct	aat	624
Pro	Tyr	Ala	Leu	Ala	Thr	Pro	Leu	Ala	Thr	Lys	Phe	Val	Gly	Ala	Asn	
		195					200					205				
gat	gag	gag	ctt	gag	act	atc	atg	aac	tca	ctg	gct	aat	ctc	aag	ggt	672
Asp	Glu	Glu	Leu	Glu	Thr	Ile	Met	Asn	Ser	Leu	Ala	Asn	Leu	Lys	Gly	
	210					215					220					
gtc	act	ctt	aaa	gct	gag	gat	gtg	gct	aat	gcc	gca	ctt	tat	ttt	gct	720
Val	Thr	Leu	Lys	Ala	Glu	Asp	Val	Ala	Asn	Ala	Ala	Leu	Tyr	Phe	Ala	
225					230					235					240	
agt	gat	gat	tcc	agg	tac	gtc	agt	ggg	caa	aat	ttg	ctc	ata	gat	gga	768
Ser	Asp	Asp	Ser	Arg	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Leu	Ile	Asp	Gly	
				245				250						255		
ggc	ttc	agc	att	gtt	aat	cct	tcc	ttt	cac	atg	ttt	cag	tac	ccg	gac	816
Gly	Phe	Ser	Ile	Val	Asn	Pro	Ser	Phe	His	Met	Phe	Gln	Tyr	Pro	Asp	
			260					265					270			
tcg	gag	tct	tga													828
Ser	Glu	Ser														
		275														

&lt;210&gt; 1187

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 1187

Met	Ala	Thr	Ser	Thr	Ser	Ala	Leu	Asn	Lys	Arg	Leu	Glu	Gly	Lys	Val	
1				5					10					15		
Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Lys	Arg	Thr	Ala	Glu	
			20					25					30			
Val	Phe	Ala	Gln	Gln	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Ile	Gln	Asp	
		35					40					45				
Glu	Leu	Gly	His	Ser	Val	Ala	Gln	Ser	Ile	Gly	Pro	Ser	Thr	Cys	Cys	
	50					55				60						
Tyr	Val	His	Cys	Asp	Val	Thr	Asp	Glu	Asn	Gln	Ile	Lys	Asn	Ala	Val	
65					70				75						80	
Gln	Lys	Ala	Val	Asp	Ala	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Asn	Asn	
				85					90					95		
Ala	Gly	Ile	Val	Asp	Pro	Asn	Lys	Asn	Arg	Ile	Ile	Asp	Asn	Asp	Lys	
			100					105					110			
Ala	Asp	Phe	Glu	Arg	Val	Leu	Ser	Val	Asn	Val	Thr	Gly	Val	Phe	Leu	
		115					120					125				
Gly	Met	Lys	His	Ala	Ala	Gln	Ala	Met	Ile	Pro	Ala	Arg	Ser	Gly	Ser	
	130					135				140						
Ile	Ile	Ser	Thr	Ala	Ser	Ile	Ser	Ser	Tyr	Val	Gly	Gly	Ala	Ala	Ser	
145					150				155						160	
His	Ala	Tyr	Cys	Cys	Ala	Lys	His	Ala	Val	Val	Gly	Leu	Thr	Lys	Asn	
			165						170					175		
Ala	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser	
			180					185					190			
Pro	Tyr	Ala	Leu	Ala	Thr	Pro	Leu	Ala	Thr	Lys	Phe	Val	Gly	Ala	Asn	
		195					200					205				
Asp	Glu	Glu	Leu	Glu	Thr	Ile	Met	Asn	Ser	Leu	Ala	Asn	Leu	Lys	Gly	
	210					215					220					
Val	Thr	Leu	Lys	Ala	Glu	Asp	Val	Ala	Asn	Ala	Ala	Leu	Tyr	Phe	Ala	
225					230					235					240	
Ser	Asp	Asp	Ser	Arg	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Leu	Ile	Asp	Gly	
				245					250					255		
Gly	Phe	Ser	Ile	Val	Asn	Pro	Ser	Phe	His	Met	Phe	Gln	Tyr	Pro	Asp	
			260					265					270			
Ser	Glu	Ser														
		275														

&lt;210&gt; 1188



<211> 987  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(987)

<400> 1188  
 atg ctg act cta ctc ttc tcc tct ctc gga ctc ctc ctg ctt ctc ggt 48  
 Met Leu Thr Leu Leu Phe Ser Ser Leu Gly Leu Leu Leu Leu Gly  
 1 5 10 15  
 ctt ctc ctc aaa ttc gca ttc gcc gat ggg gat tta acg ctg att tcg 96  
 Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr Leu Ile Ser  
 20 25 30  
 aag aag cat gtg aaa cga gaa gcc ata gaa gga aag gtg gtt tgg atc 144  
 Lys Lys His Val Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile  
 35 40 45  
 aca ggg gct agc cgt gga att gga gaa gtt ctt gct aaa cag ttt gcg 192  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 agt tta ggt gcc aag ctt att ctc tct gct agg aac gaa gct gag ttg 240  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 gtt cgt gtt aag agt gag ctc aaa ggt aag tat gca cca gaa gat gtc 288  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 aag gtt ttg cct tta gat cta gct agc ggc gaa gag ggt ctc aaa ggt 336  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Glu Glu Gly Leu Lys Gly  
 100 105 110  
 gtt gta gag aga gca gtg tcg ctt ttc cct ggg gct ggg gtt gat tat 384  
 Val Val Glu Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125  
 ttg gtt cac aac gct gcc tat gag cgt ccg aaa tca aat gca gtg gat 432  
 Leu Val His Asn Ala Ala Tyr Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 135 140  
 gcg agt gag gaa aat ctt aag act aca ttc gag gtt aat gta ttt ggg 480  
 Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 150 155 160  
 acc ata tct ctc aca aag ttg gta act cct cat atg ctg aaa caa gga 528  
 Thr Ile Ser Leu Thr Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 165 170 175  
 ggc ggt cat ttt gtt gtg att agc agt gcc gca ggg aag gta cca tca 576  
 Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 cct gga cag gct ata tat gct gct tca aag cat gct ctg cag ggc tat 624  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 ttc cac agc tta cgt tct gag ttt ttt cag aag gga atc aag gtt act 672  
 Phe His Ser Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 215 220  
 gtt gtt tgc ccg ggt cca ata gag acc tca aat ggt aca gga aca tca 720  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 act tcg gaa gac aag aag tct cct gag aag cgt gtg tca tct gaa cga 768  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 tgt gca gaa ctg acc ata atc gct gca tct cat aac tta aaa gaa gct 816  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 tgg att tca tat cag cca gta ctg ctc gtg atg tat cta gtg cag tac 864  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 275 280 285  
 atg cct ttc ctt ggc ttc tgg ctt atg gac aag gtt gga gga aaa cgt 912  
 Met Pro Phe Leu Gly Phe Trp Leu Met Asp Lys Val Gly Gly Lys Arg  
 290 295 300  
 gtg gag gtt gct gag aag aaa ggc aac aca tac tca tgg aac ttg ctc 960  
 Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
 305 310 315 320

ttc cag aag aag act aaa aca aac tga  
 Phe Gln Lys Lys Thr Lys Thr Asn  
 325

<210> 1189  
 <211> 328  
 <212> PRT  
 <213> Brassica napus

<400> 1189  
 Met Leu Thr Leu Leu Phe Ser Ser Leu Gly Leu Leu Leu Leu Leu Gly  
 1 5 10 15  
 Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr Leu Ile Ser  
 20 25 30  
 Lys Lys His Val Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile  
 35 40 45  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Glu Glu Gly Leu Lys Gly  
 100 105 110  
 Val Val Glu Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125  
 Leu Val His Asn Ala Ala Tyr Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 135 140  
 Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 150 155 160  
 Thr Ile Ser Leu Thr Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 165 170 175  
 Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 Phe His Ser Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 215 220  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 275 280 285  
 Met Pro Phe Leu Gly Phe Trp Leu Met Asp Lys Val Gly Gly Lys Arg  
 290 295 300  
 Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
 305 310 315 320  
 Phe Gln Lys Lys Thr Lys Thr Asn  
 325

<210> 1190  
 <211> 987  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(987)

<400> 1190  
 atg ctg act cta ctc ttc tcc tct cta gga ctc ctc ctt ctc ctt ggc  
 Met Leu Thr Leu Leu Phe Ser Ser Leu Gly Leu Leu Leu Leu Leu Gly  
 1 5 10 15  
 ctt ctc ctc aaa ttc gca ttc gcc gat ggg gat tta acc ctg att tcg  
 Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr 30  
 20 25

48

96

## PhoenixTemp32470.tmp.txt

aag aag cat gcg aaa cgt gaa gcc ata gaa ggc aag gtg gtt tgg atc 144  
Lys Lys His 35 Ala Lys Arg Glu Ala 40 Ile Glu Gly Lys Val 45 Trp Ile  
aca ggg gct agc cgt gga att ggg gaa gtt ctt gct aaa cag ttt gca 192  
Thr Gly 50 Ala Ser Arg Gly 55 Ile Gly Glu Val Leu Ala 60 Lys Gln Phe Ala  
agt tta ggt gcc aag ctt att ctc tct gct agg aac gaa gct gaa ttg 240  
Ser 65 Leu Gly Ala Lys 70 Ile Leu Ser Ala Arg 75 Asn Glu Ala Glu Leu 80  
gtt cgt gtt aag agt gag ctc aaa ggt aag tat gca cca gaa gat gtc 288  
Val Arg Val Lys Ser 85 Glu Leu Lys Gly Lys 90 Tyr Ala Pro Glu Asp Val 95  
aag gtt ttg cct tta gat cta gct agc ggc gta gag ggg ctc aaa ggt 336  
Lys Val Leu Pro 100 Leu Asp Leu Ala Ser 105 Gly Val Glu Gly Leu Lys Gly 110  
gtt gta gag cgg gca gtg tcg ctt ttc cct ggg gct ggt gtt gat tat 384  
Val Val Glu 115 Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr 125  
ttg gtc cac aac gct gcc tat gag cgt ccg aaa tca aat gca gtg gat 432  
Leu Val 130 His Asn Ala Ala Tyr 135 Glu Arg Pro Lys Ser 140 Asn Ala Val Asp 110  
gcg agt gag gag aat ctt aag act aca ttc gag gtt aat gta ttt ggg 480  
Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly 160  
145  
aca ata tct ctc aca aag ttg gta act cct cat atg ctg aaa caa gga 528  
Thr Ile Ser Leu Thr 165 Lys Leu Val Thr Pro 170 His Met Leu Lys Gln Gly 175  
ggg ggt cat ttt gtt gtg att agc agt gcc gca ggg aag gta cca tca 576  
Gly Gly His Phe 180 Val Val Ile Ser 185 Ala Ala Gly Lys Val Pro Ser 190  
cct gga cag gct ata tat gct gct tca aaa cat gct ctg cag ggc tac 624  
Pro Gly Gln Ala Ile Tyr Ala 200 Ser Lys His Ala Leu Gln Gly Tyr 205  
ttc cac acc tta cgt tct gag ttc ttt cag aag gga atc aag gtt act 672  
Phe His 210 Thr Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr 220  
gtt gtt tgt ccc ggt cca ata gag acc tca aat ggt aca gga aca tca 720  
Val Val Cys Pro Gly 230 Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser 240  
225  
act tcc gaa gac aag aag tct cct gag aag cgc gtg tca tct gaa cga 768  
Thr Ser Glu Asp Lys 245 Lys Ser Pro Glu Lys 250 Arg Val Ser Ser Glu Arg 255  
tgt gca gaa ctg acc ata atc gct gca tct cat aac tta aaa gaa gct 816  
Cys Ala Glu Leu Thr 260 Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala 270  
tgg att tca tat cag cca gta ctg ctc gtg atg tat cta gtg cag tac 864  
Trp Ile 275 Tyr Gln Pro Val Leu 280 Leu Val Met Tyr Leu Val Gln Tyr 285  
atg cct ttc ctt ggc ttc tgg ctc atg gac aag gtt gga gga aaa cgt 912  
Met Pro Phe Leu Gly Phe Trp 295 Leu Met Asp Lys Val Gly Gly Lys Arg 300  
290  
gtg gag gtt gct gag aag aaa ggc aac aca tac tca tgg aac ttg ctc 960  
Val Glu Val Ala Glu Lys 310 Lys Gly Asn Thr Tyr 315 Ser Trp Asn Leu Leu 320  
305  
ttc cag aag aag act aaa aca aac tga 987  
Phe Gln Lys Lys Thr 325 Lys Thr Asn

&lt;210&gt; 1191

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 1191

Met Leu Thr Leu Leu Phe Ser Ser Leu Gly Leu Leu Leu Leu Leu Gly  
1 5 10 15  
Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr Leu Ile Ser  
20 25 30  
Lys Lys His Ala Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile

## PhoenixTemp32470.tmp.txt

35 40 45  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Val Glu Gly Leu Lys Gly  
 100 105 110  
 Val Val Glu Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125  
 Leu Val His Asn Ala Ala Tyr Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 135 140  
 Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 150 155 160  
 Thr Ile Ser Leu Thr Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 165 170 175  
 Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 Phe His Thr Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 215 220  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 275 280 285  
 Met Pro Phe Leu Gly Phe Trp Leu Met Asp Lys Val Gly Gly Lys Arg  
 290 295 300  
 Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
 305 310 315 320  
 Phe Gln Lys Lys Thr Lys Thr Asn  
 325

<210> 1192  
 <211> 816  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(816)

<400> 1192  
 atg gca agt gct tct gcg gtc tca gct cat gtt aga agg ctt gag ggg 48  
 Met Ala Ser Ala Ser Ala Val Ser Ala His Val Arg Arg Leu Glu Gly  
 1 5 10 15  
 aaa gtg gcg att atc act ggt ggt gca agc ggc ata ggt gag gcc act 96  
 Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 gca aga ctc ttc tct aag cac gga gca cac ctt gtc ata gct gac att 144  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Leu Val Ile Ala Asp Ile  
 35 40 45  
 caa gac gat ttg ggc ctc tct ctt tgc aaa cac ttg gaa tcc gct tcc 192  
 Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 tat gtt cac tgc gac gtg aca aag gaa gag gac gtt gaa aac tgc gtg 240  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val  
 65 70 75 80  
 aac aca gcg gtt tcc aag tat gga aaa cta gac atc atg ctt aat aac 288  
 Asn Thr Ala Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 gca ggt ata tgt gat gag atc aaa aca agc ata cta gac aac aac aag 336  
 Ala Gly Ile Cys Asp Glu Ile Lys Thr Thr Ser Ile Leu Asp Asn Asn Lys  
 100 105 110

## PhoenixTemp32470.tmp.txt

tct	gat	ttt	gag	agt	gtc	ata	agc	gtg	aac	ttg	ggt	cct	ttt	ctg	384
Ser	Asp	Phe	Glu	Ser	Val	Ile	Ser	Val	Asn	Leu	Val	Gly	Pro	Phe	Leu
		115					120				125				
gga	aca	aag	cac	gct	gca	aga	gtc	atg	atc	cct	gct	aaa	agg	gga	agc
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Arg	Gly	Ser
	130					135					140				
ata	att	aac	aca	gct	agt	ggt	gct	gga	acc	tta	ggt	gga	gtg	gct	aca
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Thr	Leu	Gly	Gly	Val	Ala	Thr
	145				150					155					160
cat	gcc	tac	aca	agt	tca	aag	cac	gcg	cta	att	gga	ctg	atg	aaa	aac
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Met	Lys	Asn
				165				170						175	
act	gcg	gtg	gag	ctt	gga	cag	ttt	ggt	att	cgg	gtg	aat	tgt	gtg	tcc
Thr	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser
			180					185					190		
cct	tat	gtg	ggt	ccc	aca	ccg	ttg	acc	aag	aaa	cat	gcc	aat	att	gac
Pro	Tyr	Val	Val	Pro	Thr	Pro	Leu	Thr	Lys	Lys	His	Ala	Asn	Ile	Asp
		195					200					205			
gaa	gaa	gga	ggt	cgt	gag	att	tat	tcc	aac	cta	aaa	ggt	ggt	cat	ctt
Glu	Glu	Gly	Val	Arg	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Val	His	Leu
	210					215					220				
gtg	ccg	aac	gat	gtg	gcc	gaa	gct	gct	ctt	tac	ttg	gca	ggt	gat	gag
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu
	225				230				235						240
tct	aag	tat	ggt	agt	ggt	cac	aat	ctc	gtg	tta	gat	ggt	ggg	tac	act
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Leu	Asp	Gly	Gly	Tyr	Thr
				245				250						255	
gat	gta	aat	ata	gga	ttt	tct	gtg	ttt	gat	caa	aat	aaa	ctt	aac	taa
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 <212> PRT  
 <213> Glycine max

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 Ala Arg Leu Phe Ser Lys His Gly Ala His Leu Val Ile Ala Asp Ile  
 35 40 45  
 Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val  
 65 70 75  
 Asn Thr Ala Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 Ala Gly Ile Cys Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Asn Lys  
 100 105 110  
 Ser Asp Phe Glu Ser Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser  
 130 135 140  
 Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Leu Gly Gly Val Ala Thr  
 145 150 155 160  
 His Ala Tyr Thr Ser Lys His Ala Leu Ile Gly Leu Met Lys Asn  
 165 170 175  
 Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Val Ser  
 180 185 190  
 Pro Tyr Val Val Pro Thr Pro Leu Thr Lys Lys His Ala Asn Ile Asp  
 195 200 205  
 Glu Glu Gly Val Arg Glu Ile Tyr Ser Asn Leu Lys Gly Val His Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu  
 225 230 235 240  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Tyr Thr  
 245 250 255

Asp Val Asn Ile Gly Phe Ser Val Phe Asp Gln Asn Lys Leu Asn  
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<212> DNA  
<213> Glycine max

<220>  
<221> CDS  
<222> (1)..(852)

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1 5 10 15  
ggc aag gtg gca cta ata acc ggt gga gcc agt ggc atc ggc gaa gcc 96  
Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala  
20 25 30  
acc gca agg ctt ttc ctt tgc cac ggt gcc aag gtc atc atc gct gac 144  
Thr Ala Arg Leu Phe Leu Cys His Gly Ala Lys Val Ile Ile Ala Asp  
35 40 45  
atc caa gac aac ctc gga cac tcc ctc tgc caa aac ctc aac tcc tcc 192  
Ile Gln Asp Asn Leu Gly His Ser Leu Cys Gln Asn Leu Asn Ser Ser  
50 55 60  
gac aac aac att tcc tac gtt cac tgc gac gtc acc aac gat aac gac 240  
Asp Asn Asn Ile Ser Tyr Val His Cys Asp Val Thr Asn Asp Asn Asp  
65 70 75 80  
gtc caa aac gcc gtc aac gcc gcc gtc tgc cgt cac ggc aag ctc gac 288  
Val Gln Asn Ala Val Asn Ala Ala Val Ser Arg His Gly Lys Leu Asp  
85 90 95  
atc ctg ttc agt aac gcc gcc ggt gtt ggc cgt gtg agc cct tcc atc 336  
Ile Leu Phe Ser Asn Ala Gly Thr Val Gly Arg Val Ser Pro Ser Ile  
100 105 110  
acg gcg ttt gac aac gct gac ttg aag gtt ttc gag gtg aat gtc 384  
Thr Ala Phe Asp Asn Ala Asp Leu Lys Arg Val Phe Glu Val Asn Val  
115 120 125  
ttc ggt gct ttc tac gcc gcc aaa cac gcg gct aag gta atg att cct 432  
Phe Gly Ala Phe Tyr Ala Ala Lys His Ala Ala Lys Val Met Ile Pro  
130 135 140  
gaa aag aga ggg agc att gtg ctc acc tca agt gtt gct tcg gtg act 480  
Glu Lys Arg Gly Ser Ile Val Leu Thr Ser Ser Val Ala Ser Val Thr  
145 150 155 160  
cac gcg gtt tcg ccg cat gca tac act gcg tcg aag cac gcg gtg gtg 528  
His Ala Val Ser Pro His Ala Tyr Thr Ala Ser Lys His Ala Val Val  
165 170 175  
ggt ctg atg aag aac ctg tgc gtg gaa ctg ggg aat cat gga atc aga 576  
Gly Leu Met Lys Asn Leu Cys Val Glu Leu Gly Asn His Gly Ile Arg  
180 185 190  
gtt aac tgt gtt tca ccg tac gcg gtg gcc act cct ctg atg aca cgt 624  
Val Asn Cys Val Ser Pro Tyr Ala Val Ala Thr Pro Leu Met Thr Arg  
195 200 205  
gga acc agg atg aag aag gag atg gta gag aaa gtg tat tct gag gcg 672  
Gly Thr Arg Met Lys Lys Glu Met Val Glu Lys Val Tyr Ser Glu Ala  
210 215 220  
ggg aac ctg aag gga gtg gtt ttg aag gaa gag gat ttg gca gaa gca 720  
Gly Asn Leu Lys Gly Val Val Leu Lys Glu Asp Leu Ala Glu Ala  
225 230 235 240  
gct ctg ttt ctg gct agt gat gag tca aag tac gtg agt ggg gtt aac 768  
Ala Leu Phe Leu Ala Ser Asp Glu Ser Lys Tyr Val Ser Gly Val Asn  
245 250 255  
cta gtt gtg gat gga ggt tac agt gtc acc aat gtt tct gtt aaa gaa 816  
Leu Val Val Asp Gly Gly Tyr Ser Val Thr Asn Val Ser Val Lys Glu  
260 265 270  
gct gtg aga aag ttt tct ggt aag ccc aag ttg taa 852  
Ala Val Arg Lys Phe Ser Gly Lys Pro Lys Leu  
275 280

<210> 1195

<211> 283  
 <212> PRT  
 <213> Glycine max

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 Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala  
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 Thr Ala Arg Leu Phe Leu Cys His Gly Ala Lys Val Ile Ile Ala Asp  
 35 40 45  
 Ile Gln Asp Asn Leu Gly His Ser Leu Cys Gln Asn Leu Asn Ser Ser  
 50 55 60  
 Asp Asn Asn Ile Ser Tyr Val His Cys Asp Val Thr Asn Asp Asn Asp  
 65 70 75 80  
 Val Gln Asn Ala Val Asn Ala Ala Val Ser Arg His Gly Lys Leu Asp  
 85 90 95  
 Ile Leu Phe Ser Asn Ala Gly Thr Val Gly Arg Val Ser Pro Ser Ile  
 100 105 110  
 Thr Ala Phe Asp Asn Ala Asp Leu Lys Arg Val Phe Glu Val Asn Val  
 115 120 125  
 Phe Gly Ala Phe Tyr Ala Ala Lys His Ala Ala Lys Val Met Ile Pro  
 130 135 140  
 Glu Lys Arg Gly Ser Ile Val Leu Thr Ser Ser Val Ala Ser Val Thr  
 145 150 155 160  
 His Ala Val Ser Pro His Ala Tyr Thr Ala Ser Lys His Ala Val Val  
 165 170 175  
 Gly Leu Met Lys Asn Leu Cys Val Glu Leu Gly Asn His Gly Ile Arg  
 180 185 190  
 Val Asn Cys Val Ser Pro Tyr Ala Val Ala Thr Pro Leu Met Thr Arg  
 195 200 205  
 Gly Thr Arg Met Lys Lys Glu Met Val Glu Lys Val Tyr Ser Glu Ala  
 210 215 220  
 Gly Asn Leu Lys Gly Val Val Leu Lys Glu Glu Asp Leu Ala Glu Ala  
 225 230 235 240  
 Ala Leu Phe Leu Ala Ser Asp Glu Ser Lys Tyr Val Ser Gly Val Asn  
 245 250 255  
 Leu Val Val Asp Gly Gly Tyr Ser Val Thr Asn Val Ser Val Lys Glu  
 260 265 270  
 Ala Val Arg Lys Phe Ser Gly Lys Pro Lys Leu  
 275 280

<210> 1196  
 <211> 810  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
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 aaa gtg gct att atc act ggt ggt gca agc ggc ata ggt gag gcc act 96  
 Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 gca aga ctc ttc tct aag cac gga gca cac gtt gtc ata gct gat att 144  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile  
 35 40 45  
 caa gac gat ttg ggt ctc tct att tgc aaa cac ttg gaa tcc gct tcc 192  
 Gln Asp Asp Leu Gly Leu Ser Ile Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 tat gtt cac tgc gac gtg aca aac gaa acc gac gtt gaa aac tgc gtg 240  
 Tyr Val His Cys Asp Val Thr Asn Glu Thr Asp Val Glu Asn Cys Val  
 65 70 75 80  
 aac acc acc gtt tcc aaa cac ggc aaa cta gat atc atg ttc aac aac 288  
 Asn Thr Thr Val Ser Lys His Gly Lys Leu Asp Ile Met Phe Asn Asn

## PhoenixTemp32470.tmp.txt

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Ala	Gly	Ile	Thr	Gly	Val	Asn	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Thr	Lys		Ala	Gly	Ile	Thr	Gly	Val	Asn	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Thr	Lys		Ala	Gly	Ile	Thr	Gly	Val	Asn	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Thr	Lys		Ala	Gly	Ile	Thr	Gly	Val	Asn	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Thr	Lys	
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tca	gag	ttt	gag	gaa	gtg	atc	aac	ggt	aac	cta	gtt	ggt	gtc	ttt	ctg		tca	gag	ttt	gag	gaa	gtg	atc	aac	ggt	aac	cta	gtt	ggt	gtc	ttt	ctg		tca	gag	ttt	gag	gaa	gtg	atc	aac	ggt	aac	cta	gtt	ggt	gtc	ttt	ctg		tca	gag	ttt	gag	gaa	gtg	atc	aac	ggt	aac	cta	gtt	ggt	gtc	ttt	ctg	
Ser	Glu	Phe	Glu	Glu	Val	Ile	Asn	Val	Asn	Leu	Val	Gly	Val	Phe	Leu		Ser	Glu	Phe	Glu	Glu	Val	Ile	Asn	Val	Asn	Leu	Val	Gly	Val	Phe	Leu		Ser	Glu	Phe	Glu	Glu	Val	Ile	Asn	Val	Asn	Leu	Val	Gly	Val	Phe	Leu		Ser	Glu	Phe	Glu	Glu	Val	Ile	Asn	Val	Asn	Leu	Val	Gly	Val	Phe	Leu	
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gga	aca	aag	cac	gcc	gca	agg	gta	atg	atc	cct	gct	aga	aga	gga	agc		gga	aca	aag	cac	gcc	gca	agg	gta	atg	atc	cct	gct	aga	aga	gga	agc		gga	aca	aag	cac	gcc	gca	agg	gta	atg	atc	cct	gct	aga	aga	gga	agc		gga	aca	aag	cac	gcc	gca	agg	gta	atg	atc	cct	gct	aga	aga	gga	agc	
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Arg	Arg	Gly	Ser		Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Arg	Arg	Gly	Ser		Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Arg	Arg	Gly	Ser		Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Arg	Arg	Gly	Ser	
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Ile	Val	Asn	Thr	Ala	Ser	Val	Cys	Gly	Ser	Ile	Gly	Gly	Val	Ala	Ser		Ile	Val	Asn	Thr	Ala	Ser	Val	Cys	Gly	Ser	Ile	Gly	Gly	Val	Ala	Ser		Ile	Val	Asn	Thr	Ala	Ser	Val	Cys	Gly	Ser	Ile	Gly	Gly	Val	Ala	Ser		Ile	Val	Asn	Thr	Ala	Ser	Val	Cys	Gly	Ser	Ile	Gly	Gly	Val	Ala	Ser	
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<213> Glycine max

<400>	1197															
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Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	
			20					25					30			
Ala	Arg	Leu	Phe	Ser	Lys	His	Gly	Ala	His	Val	Val	Ile	Ala	Asp	Ile	
		35					40					45				
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Ile	Cys	Lys	His	Leu	Glu	Ser	Ala	Ser	
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Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Glu	Thr	Asp	Val	Glu	Asn	Cys	Val	
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Asn	Thr	Thr	Val	Ser	Lys	His	Gly	Lys	Leu	Asp	Ile	Met	Phe	Asn	Asn	
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Ala	Gly	Ile	Thr	Gly	Val	Asn	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Thr	Lys	
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Ser	Glu	Phe	Glu	Glu	Val	Ile	Asn	Val	Asn	Leu	Val	Gly	Val	Phe	Leu	
		115					120					125				
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Arg	Arg	Gly	Ser	
	130					135					140					
Ile	Val	Asn	Thr	Ala	Ser	Val	Cys	Gly	Ser	Ile	Gly	Gly	Val	Ala	Ser	
145					150					155					160	
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Val	Val	Gly	Leu	Thr	Lys	Asn	
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Thr	Ala	Val	Glu	Leu	Gly	Ala	Phe	Gly	Val	Arg	Val	Asn	Cys	Val	Ser	
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Pro	Tyr	Val	Val	Ala	Thr	Pro	Leu	Ala	Lys	Asn	Phe	Phe	Lys	Leu	Asp	
		195					200					205				
Asp	Asp	Gly	Val	Gln	Gly	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Thr	Asp	Leu	
	210					215					220					



## PhoenixTemp32470.tmp.txt

Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Val Asp Gly Gly Phe Thr  
 245 250 255  
 Val Val Asn Ser Gly Phe Cys Val Leu Gly Gln Ser Ser  
 260 265

<210> 1198  
 <211> 855  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(855)

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 ctt gtg acg ggg tgc tcg gag ggc ggc atc ggc cac gcg atg gcg cgc 96  
 Leu Val Thr Gly Cys Ser Glu Gly Gly Ile Gly His Ala Met Ala Arg  
 20 25 30  
 gcc ttc gct gcg gcc ggg tgc gcc gtc gtg gcc acg gcg cgg tca cgc 144  
 Ala Phe Ala Ala Gly Cys Ala Val Val Ala Thr Ala Arg Ser Arg  
 35 40 45  
 ggt tcc atg cgc ggt ctc gac ggc gac ccg cgg ttc ctg ctg ctg gag 192  
 Gly Ser Met Arg Gly Leu Asp Gly Asp Pro Arg Phe Leu Leu Leu Glu  
 50 55 60  
 ctc gac gtg cgc tcc gac gag agc gcg cgc gcc gcc gtg gcg ggt gcg 240  
 Leu Asp Val Arg Ser Asp Glu Ser Ala Arg Ala Ala Val Ala Gly Ala  
 65 70 75 80  
 ctg cgg gag cac ggc cgc atc gac gtg ctc gtc aac aac gct ggg gtt 288  
 Leu Arg Glu His Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Val  
 85 90 95  
 cac ctc gtc gca cca ctc gcc gag gtg ccc atg gag tcc ttc cac cag 336  
 His Leu Val Ala Pro Leu Ala Glu Val Pro Met Glu Ser Phe His Gln  
 100 105 110  
 gtt ttc gac acc aat gtc tat ggt gca atg agg ttg att caa gct gtt 384  
 Val Phe Asp Thr Asn Val Tyr Gly Ala Met Arg Leu Ile Gln Ala Val  
 115 120 125  
 att cct cac atg atg gaa aga agg aaa gga aca att gtg aat gtt gga 432  
 Ile Pro His Met Met Glu Arg Arg Lys Gly Thr Ile Val Asn Val Gly  
 130 135 140  
 agt att acc gct ctg gca cct gga cca tgg gct ggt gtg tat tca gca 480  
 Ser Ile Thr Ala Leu Ala Pro Gly Pro Trp Ala Gly Val Tyr Ser Ala  
 145 150 155 160  
 tcc aaa gct gct ctt cat gca ttg agt gac tcg tta agg gtt gaa cta 528  
 Ser Lys Ala Ala Leu His Ala Leu Ser Asp Ser Leu Arg Val Glu Leu  
 165 170 175  
 aga agc ttc ggc ata aac gtg atg act gtc gcc cca gga ggg acg agg 576  
 Arg Ser Phe Gly Ile Asn Val Met Thr Val Ala Pro Gly Gly Thr Arg  
 180 185 190  
 tcg aat ctt ggg aat tct tct gca gcc aag tat gat cag atg cac gag 624  
 Ser Asn Leu Gly Asn Ser Ser Ala Ala Lys Tyr Asp Gln Met His Glu  
 195 200 205  
 tgg aag tac tac aag aaa tac gag gaa ggg ctc cga gcc agg act ggc 672  
 Trp Lys Tyr Tyr Lys Lys Tyr Glu Glu Gly Leu Arg Ala Arg Thr Gly  
 210 215 220  
 att tcc cag ggc ccc agg tcc act cca gca gaa gag ctt gca aag gcg 720  
 Ile Ser Gln Gly Pro Arg Ser Thr Pro Ala Glu Glu Leu Ala Lys Ala  
 225 230 235 240  
 gtg gtt gca tcg gtt cta agg aag aac cct cca gct tgg ttc gct tac 768  
 Val Val Ala Ser Val Leu Arg Lys Asn Pro Pro Ala Trp Phe Ala Tyr  
 245 250 255  
 ggc cag tac tct gcc att ctg tcg att ttg tat tat gca ccg cta tgg 816  
 Gly Gln Tyr Ser Ala Ile Leu Ser Ile Leu Tyr Tyr Ala Pro Leu Trp  
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Phe Arg Asp Tyr Leu Tyr Lys Phe Val Met Lys Cys  
275 280

<210> 1199  
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<212> PRT  
<213> Zea mays

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20 25 30  
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35 40 45  
Gly Ser Met Arg Gly Leu Asp Gly Asp Pro Arg Phe Leu Leu Leu Glu  
50 55 60  
Leu Asp Val Arg Ser Asp Glu Ser Ala Arg Ala Val Ala Gly Ala  
65 70 75 80  
Leu Arg Glu His Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Val  
85 90 95  
His Leu Val Ala Pro Leu Ala Glu Val Pro Met Glu Ser Phe His Gln  
100 105 110  
Val Phe Asp Thr Asn Val Tyr Gly Ala Met Arg Leu Ile Gln Ala Val  
115 120 125  
Ile Pro His Met Met Glu Arg Arg Lys Gly Thr Ile Val Asn Val Gly  
130 135 140  
Ser Ile Thr Ala Leu Ala Pro Gly Pro Trp Ala Gly Val Tyr Ser Ala  
145 150 155 160  
Ser Lys Ala Ala Leu His Ala Leu Ser Asp Ser Leu Arg Val Glu Leu  
165 170 175  
Arg Ser Phe Gly Ile Asn Val Met Thr Val Ala Pro Gly Gly Thr Arg  
180 185 190  
Ser Asn Leu Gly Asn Ser Ser Ala Ala Lys Tyr Asp Gln Met His Glu  
195 200 205  
Trp Lys Tyr Tyr Lys Lys Tyr Tyr Glu Glu Gly Leu Arg Ala Arg Thr Gly  
210 215 220  
Ile Ser Gln Gly Pro Arg Ser Thr Pro Ala Glu Glu Leu Ala Lys Ala  
225 230 235 240  
Val Val Ala Ser Val Leu Arg Lys Asn Pro Pro Ala Trp Phe Ala Tyr  
245 250 255  
Gly Gln Tyr Ser Ala Ile Leu Ser Ile Leu Tyr Tyr Ala Pro Leu Trp  
260 265 270  
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275 280

<210> 1200  
<211> 834  
<212> DNA  
<213> Linum usitatissimum

<220>  
<221> CDS  
<222> (1)..(834)

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aaa gtg gcg ctg atc acc ggc gga gct agc ggg ata gga gaa gcc acg 96  
Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
20 25 30  
gcc aag ctg ttc gtc caa cac ggc gcc aag gtc gtc atc gcc gat gtc 144  
Ala Lys Leu Phe Val Gln His Gly Ala Lys Val Val Ile Ala Asp Val  
35 40 45  
aaa gac caa ctc ggc ggg tca ctc act gag aag ctg ggg ggc cca cac 192  
Lys Asp Gln Leu Gly Gly Ser Leu Thr Glu Lys Leu Gly Gly Pro His  
50 55 60  
gcg gcc acc tac gtc cac tgc gac gtc aca cat cct gcc cac gtc agc 240  
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## PhoenixTemp32470.tmp.txt

Ala 65	Ala	Thr	Tyr	Val	His 70	Cys	Asp	Val	Thr	His 75	Pro	Ala	His	Val	Ser 80	
gat	gcg	gtt	gac	gcg	gca	gtg	tcc	acg	tat	ggc	cag	ctg	gac	atc	atg	288
Asp	Ala	Val	Asp	Ala	Ala	Val	Ser	Thr	Tyr	Gly	Gln	Leu	Asp	Ile	Met	
				85					90					95		
cac	aac	aat	gcc	ggc	atc	gcc	ggc	aac	ttt	gat	cct	cgc	atc	ctc	aac	336
His	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Asn	Phe	Asp	Pro	Arg	Ile	Leu	Asn	
			100					105					110			
tcc	gac	gac	gat	aat	ttt	aag	cga	gtc	atc	gac	att	aac	ctc	ttc	ggc	384
Ser	Asp	Asp	Asp	Asn	Phe	Lys	Arg	Val	Ile	Asp	Ile	Asn	Leu	Phe	Gly	
		115					120					125				
gcc	ttc	cta	ggt	gcc	aag	cat	gcc	gcc	agg	gtg	atg	gta	ccg	gcg	ggg	432
Ala	Phe	Leu	Gly	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Ala	Gly	
	130					135					140					
aga	ggc	ggc	tgc	atc	ctg	ttc	aca	gcc	agt	gca	gtc	tcg	gtg	act	agc	480
Arg	Gly	Gly	Cys	Ile	Leu	Phe	Thr	Ala	Ser	Ala	Val	Ser	Val	Thr	Ser	
145				150					155						160	
ggc	aac	att	tcg	tac	gca	tac	aag	gtg	tcg	aag	aac	ggg	gta	gtg	ggg	528
Gly	Asn	Ile	Ser	Tyr	Ala	Tyr	Lys	Val	Ser	Lys	Asn	Gly	Val	Val	Gly	
			165						170				175			
ctg	gcc	aac	aat	ctg	tgc	gcg	gag	ctg	gga	cag	cat	ggg	att	cga	gtc	576
Leu	Ala	Asn	Asn	Leu	Cys	Ala	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	
			180					185					190			
aac	gcg	ata	tcg	cct	ttc	gcg	ctg	gcg	acg	ccg	tta	ctg	agg	gcg	gcg	624
Asn	Ala	Ile	Ser	Pro	Phe	Ala	Leu	Ala	Thr	Pro	Leu	Leu	Arg	Ala	Ala	
		195					200					205				
ctg	ggc	ggg	atg	gga	aag	gag	gag	ggt	gac	gcg	ttc	gtc	gag	aag	ata	672
Leu	Gly	Gly	Met	Gly	Lys	Glu	Glu	Gly	Asp	Ala	Phe	Val	Glu	Lys	Ile	
	210					215					220					
ggg	aac	ttg	aaa	ggg	act	gtt	ctg	aaa	gag	ggg	gat	att	gca	gcg	gcg	720
Gly	Asn	Leu	Lys	Gly	Thr	Val	Leu	Lys	Glu	Gly	Asp	Ile	Ala	Ala	Ala	
225					230				235						240	
gca	ttg	tac	ctg	gct	agc	gac	gat	gct	aag	tac	gtg	agc	ggg	atg	aat	768
Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Asp	Ala	Lys	Tyr	Val	Ser	Gly	Met	Asn	
				245					250					255		
ttg	gtc	gtg	gat	gga	ggt	cac	agg	cag	aac	aac	ccc	ata	ttt	cct	gct	816
Leu	Val	Val	Asp	Gly	Gly	His	Arg	Gln	Asn	Asn	Pro	Ile	Phe	Pro	Ala	
			260					265					270			
tcg	acg	ttc	act	aag	tag											834
Ser	Thr	Phe	Thr	Lys												
		275														

&lt;210&gt; 1201

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 1201

Met	Ser	Ala	Thr	Asn	Ala	Ala	Ser	Ser	Val	Ile	Arg	Arg	Leu	Glu	Gly
1				5					10					15	
Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr
			20					25					30		
Ala	Lys	Leu	Phe	Val	Gln	His	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Val
		35					40					45			
Lys	Asp	Gln	Leu	Gly	Gly	Ser	Leu	Thr	Glu	Lys	Leu	Gly	Gly	Pro	His
	50					55					60				
Ala	Ala	Thr	Tyr	Val	His	Cys	Asp	Val	Thr	His	Pro	Ala	His	Val	Ser
65					70					75					80
Asp	Ala	Val	Asp	Ala	Ala	Val	Ser	Thr	Tyr	Gly	Gln	Leu	Asp	Ile	Met
				85					90					95	
His	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Asn	Phe	Asp	Pro	Arg	Ile	Leu	Asn
			100					105					110		
Ser	Asp	Asp	Asp	Asn	Phe	Lys	Arg	Val	Ile	Asp	Ile	Asn	Leu	Phe	Gly
		115					120					125			
Ala	Phe	Leu	Gly	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Ala	Gly
	130					135					140				
Arg	Gly	Gly	Cys	Ile	Leu	Phe	Thr	Ala	Ser	Ala	Val	Ser	Val	Thr	Ser
145				150					155						160
Gly	Asn	Ile	Ser	Tyr	Ala	Tyr	Lys	Val	Ser	Lys	Asn	Gly	Val	Val	Gly

## PhoenixTemp32470.tmp.txt

165 170 175  
 Leu Ala Asn Asn Leu Cys Ala Glu Leu Gly Gln His Gly Ile Arg Val  
 180 185 190  
 Asn Ala Ile Ser Pro Phe Ala Leu Ala Thr Pro Leu Leu Arg Ala Ala  
 195 200 205  
 Leu Gly Gly Met Gly Lys Glu Glu Gly Asp Ala Phe Val Glu Lys Ile  
 210 215 220  
 Gly Asn Leu Lys Gly Thr Val Leu Lys Glu Gly Asp Ile Ala Ala Ala  
 225 230 235 240  
 Ala Leu Tyr Leu Ala Ser Asp Asp Ala Lys Tyr Val Ser Gly Met Asn  
 245 250 255  
 Leu Val Val Asp Gly Gly His Arg Gln Asn Asn Pro Ile Phe Pro Ala  
 260 265 270  
 Ser Thr Phe Thr Lys  
 275

&lt;210&gt; 1202

&lt;211&gt; 840

&lt;212&gt; DNA

&lt;213&gt; Helianthus annuus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(840)

&lt;400&gt; 1202

atg	gaa	act	ttt	cac	aaa	cag	gtg	gtg	ctc	gtc	aca	ggg	tgc	tct	tct	48
Met	Glu	Thr	Phe	His	Lys	Gln	Val	Val	Leu	Val	Thr	Gly	Cys	Ser	Ser	
1				5					10					15		
ggc	ggc	atc	ggt	aac	gct	ctc	tcc	cgc	gct	ttt	gcg	gcc	aaa	aac	tgt	96
Gly	Gly	Ile	Gly	Asn	Ala	Leu	Ser	Arg	Ala	Phe	Ala	Ala	Lys	Asn	Cys	
			20					25					30			
ctc	gta	gtc	gcc	acg	gct	cgc	tca	gtt	tca	tct	atg	gct	gaa	ttc	agc	144
Leu	Val	Val	Ala	Thr	Ala	Arg	Ser	Val	Ser	Ser	Met	Ala	Glu	Phe	Ser	
			35				40					45				
gat	aat	cct	gat	ctc	tac	ttt	ctt	cag	gag	ctt	gat	gtg	tta	tcg	gat	192
Asp	Asn	Pro	Asp	Leu	Tyr	Phe	Leu	Gln	Glu	Leu	Asp	Val	Leu	Ser	Asp	
	50				55				60							
cag	agc	gtt	cga	gag	gtt	gtc	tcg	aat	gtt	atc	gat	aag	ttt	gga	cgg	240
Gln	Ser	Val	Arg	Glu	Val	Val	Ser	Asn	Val	Ile	Asp	Lys	Phe	Gly	Arg	
	65				70				75					80		
att	gat	gtt	gtt	gtt	aat	aat	gct	ggt	gtt	cag	tgt	att	ggt	cct	ctt	288
Ile	Asp	Val	Val	Val	Asn	Asn	Ala	Gly	Val	Gln	Cys	Ile	Gly	Pro	Leu	
				85				90						95		
gca	gaa	gtt	ccg	ttt	tct	tcg	att	gag	aat	act	ttc	aac	acg	aat	gtt	336
Ala	Glu	Val	Pro	Phe	Ser	Ser	Ile	Glu	Asn	Thr	Phe	Asn	Thr	Asn	Val	
			100				105						110			
tac	ggt	tcc	atg	agg	ctg	atc	caa	gca	gtt	gtc	cct	cac	atg	gta	tca	384
Tyr	Gly	Ser	Met	Arg	Leu	Ile	Gln	Ala	Val	Val	Pro	His	Met	Val	Ser	
			115				120					125				
aga	aag	aaa	gga	aag	att	gtg	aac	att	gga	agt	gtg	act	gcc	ctg	gca	432
Arg	Lys	Lys	Gly	Lys	Ile	Val	Asn	Ile	Gly	Ser	Val	Thr	Ala	Leu	Ala	
	130				135				140							
cct	gga	cca	tgg	tca	ggt	gtc	tac	gct	gca	tct	aaa	gct	gct	tta	cac	480
Pro	Gly	Pro	Trp	Ser	Gly	Val	Tyr	Ala	Ala	Ser	Lys	Ala	Ala	Leu	His	
	145				150				155					160		
gcg	cta	act	gac	aca	cta	agg	gtg	gaa	ctg	aag	ccg	ttt	ggt	atc	gat	528
Ala	Leu	Thr	Asp	Thr	Leu	Arg	Val	Glu	Leu	Lys	Pro	Phe	Gly	Ile	Asp	
				165				170						175		
gta	att	aac	att	gtg	cct	gga	tcc	gta	aaa	acg	aac	tta	gga	aat	aca	576
Val	Ile	Asn	Ile	Val	Pro	Gly	Ser	Val	Lys	Thr	Asn	Leu	Gly	Asn	Thr	
			180				185						190			
gct	gta	gcc	agc	tac	aac	aag	atg	cca	gaa	tgg	aaa	atg	tac	aag	aaa	624
Ala	Val	Ala	Ser	Tyr	Asn	Lys	Met	Pro	Glu	Trp	Lys	Met	Tyr	Lys	Lys	
		195					200					205				
tac	gaa	ggc	gca	atc	aaa	gag	cgc	gcg	tat	ttt	tca	caa	ggt	tca	aaa	672
Tyr	Glu	Gly	Ala	Ile	Lys	Glu	Arg	Ala	Tyr	Phe	Ser	Gln	Gly	Ser	Lys	
	210					215					220					
gca	att	tcg	cca	gac	gag	ttt	gca	aac	aag	aca	gtg	gct	gca	atc	ctg	720

## PhoenixTemp32470.tmp.txt

Ala	Ile	Ser	Pro	Asp	Glu	Phe	Ala	Asn	Lys	Thr	Val	Ala	Ala	Ile	Leu		
225					230					235					240		
aaa	gaa	gac	ccc	cct	tct	tgg	ttc	tct	ttg	ggg	cag	ttt	tcc	act	ata	768	
Lys	Glu	Asp	Pro	Pro	Ser	Trp	Phe	Ser	Leu	Gly	Gln	Phe	Ser	Thr	Ile		
				245					250					255			
gcg	gct	att	atg	tac	cat	atg	cct	ata	ttt	gtt	aag	gat	ttc	ctt	tac	816	
Ala	Ala	Ile	Met	Tyr	His	Met	Pro	Ile	Phe	Val	Lys	Asp	Phe	Leu	Tyr		
			260					265					270				
aaa	atg	gcc	atg	atg	aaa	tgt	tag									840	
Lys	Met	Ala	Met	Met	Lys	Cys											
		275															

&lt;210&gt; 1203

&lt;211&gt; 279

&lt;212&gt; PRT

&lt;213&gt; Helianthus annuus

&lt;400&gt; 1203

Met	Glu	Thr	Phe	His	Lys	Gln	Val	Val	Leu	Val	Thr	Gly	Cys	Ser	Ser		
1				5					10					15			
Gly	Gly	Ile	Gly	Asn	Ala	Leu	Ser	Arg	Ala	Phe	Ala	Ala	Lys	Asn	Cys		
			20					25					30				
Leu	Val	Val	Ala	Thr	Ala	Arg	Ser	Val	Ser	Ser	Met	Ala	Glu	Phe	Ser		
		35					40					45					
Asp	Asn	Pro	Asp	Leu	Tyr	Phe	Leu	Gln	Glu	Leu	Asp	Val	Leu	Ser	Asp		
	50					55					60						
Gln	Ser	Val	Arg	Glu	Val	Val	Ser	Asn	Val	Ile	Asp	Lys	Phe	Gly	Arg		
65				70					75					80			
Ile	Asp	Val	Val	Asn	Asn	Ala	Gly	Val	Gln	Cys	Ile	Gly	Pro	Leu			
			85				90						95				
Ala	Glu	Val	Pro	Phe	Ser	Ser	Ile	Glu	Asn	Thr	Phe	Asn	Thr	Asn	Val		
			100					105					110				
Tyr	Gly	Ser	Met	Arg	Leu	Ile	Gln	Ala	Val	Val	Pro	His	Met	Val	Ser		
		115					120					125					
Arg	Lys	Lys	Gly	Lys	Ile	Val	Asn	Ile	Gly	Ser	Val	Thr	Ala	Leu	Ala		
	130				135						140						
Pro	Gly	Pro	Trp	Ser	Gly	Val	Tyr	Ala	Ala	Ser	Lys	Ala	Ala	Leu	His		
145					150				155					160			
Ala	Leu	Thr	Asp	Thr	Leu	Arg	Val	Glu	Leu	Lys	Pro	Phe	Gly	Ile	Asp		
			165					170						175			
Val	Ile	Asn	Ile	Val	Pro	Gly	Ser	Val	Lys	Thr	Asn	Leu	Gly	Asn	Thr		
		180					185						190				
Ala	Val	Ala	Ser	Tyr	Asn	Lys	Met	Pro	Glu	Trp	Lys	Met	Tyr	Lys	Lys		
		195					200					205					
Tyr	Glu	Gly	Ala	Ile	Lys	Glu	Arg	Ala	Tyr	Phe	Ser	Gln	Gly	Ser	Lys		
	210				215						220						
Ala	Ile	Ser	Pro	Asp	Glu	Phe	Ala	Asn	Lys	Thr	Val	Ala	Ala	Ile	Leu		
225					230					235					240		
Lys	Glu	Asp	Pro	Pro	Ser	Trp	Phe	Ser	Leu	Gly	Gln	Phe	Ser	Thr	Ile		
			245						250					255			
Ala	Ala	Ile	Met	Tyr	His	Met	Pro	Ile	Phe	Val	Lys	Asp	Phe	Leu	Tyr		
			260					265					270				
Lys	Met	Ala	Met	Met	Lys	Cys											
		275															

&lt;210&gt; 1204

&lt;211&gt; 858

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(858)

&lt;400&gt; 1204

atg	gga	agc	agc	gag	gag	atg	cca	gtg	gtg	ctc	atc	aca	gga	tgc	tca		48
Met	Gly	Ser	Ser	Glu	Glu	Met	Pro	Val	Val	Leu	Ile	Thr	Gly	Cys	Ser		
1				5					10					15			
cac	gga	gga	atc	ggc	aac	gcg	ctg	gct	cgt	gag	ttc	tcg	tcg	aag	ggt		96

## PhoenixTemp32470.tmp.txt

His	Gly	Gly	Ile	Gly	Asn	Ala	Leu	Ala	Arg	Glu	Phe	Ser	Ser	Lys	Gly		
			20					25					30				
tgt	cgt	gtt	gtg	gcg	acg	agt	cga	tcg	cag	aac	acg	atg	gcc	gat	ttg		144
Cys	Arg	Val	Val	Ala	Thr	Ser	Arg	Ser	Gln	Asn	Thr	Met	Ala	Asp	Leu		
		35					40					45					
acg	aaa	gat	ccc	aag	ttt	tta	gta	caa	gag	ctc	gat	gtt	cag	tca	gaa		192
Thr	Lys	Asp	Pro	Lys	Phe	Leu	Val	Gln	Glu	Leu	Asp	Val	Gln	Ser	Glu		
	50					55					60						
cat	aac	gtg	aat	aaa	gtc	ttt	tcg	gaa	gtt	atc	gac	aag	ttc	ggg	cag		240
His	Asn	Val	Asn	Lys	Val	Phe	Ser	Glu	Val	Ile	Asp	Lys	Phe	Gly	Gln		
	65				70					75				80			
atc	gat	gtt	ctg	gtc	aat	aac	gcc	gga	gtt	caa	tgc	atc	ggg	cca	ctc		288
Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Cys	Ile	Gly	Pro	Leu		
				85					90					95			
gct	gag	att	cca	att	cag	acc	atg	gag	cac	acc	ttt	aac	acc	aat	gtg		336
Ala	Glu	Ile	Pro	Ile	Gln	Thr	Met	Glu	His	Thr	Phe	Asn	Thr	Asn	Val		
			100					105					110				
ttc	ggg	tcc	atg	agg	atg	act	caa	gct	gtt	gta	cct	cac	atg	gcg	tca		384
Phe	Gly	Ser	Met	Arg	Met	Thr	Gln	Ala	Val	Val	Pro	His	Met	Ala	Ser		
		115					120					125					
aag	aag	aaa	gga	aag	att	gtg	aac	ata	gga	agt	atc	agc	aca	atg	gca		432
Lys	Lys	Lys	Gly	Lys	Ile	Val	Asn	Ile	Gly	Ser	Ile	Ser	Thr	Met	Ala		
	130					135					140						
cca	gga	cca	tgg	gca	ggg	gtt	tac	act	gca	tca	aaa	gct	gct	ctt	cat		480
Pro	Gly	Pro	Trp	Ala	Gly	Val	Tyr	Thr	Ala	Ser	Lys	Ala	Ala	Leu	His		
	145				150					155					160		
gct	ctt	aca	gac	aca	tta	agg	ttg	gag	ctt	agg	cca	ttt	ggg	att	gat		528
Ala	Leu	Thr	Asp	Thr	Leu	Arg	Leu	Glu	Leu	Arg	Pro	Phe	Gly	Ile	Asp		
			165					170						175			
gtg	atc	aac	att	gtc	cca	gga	ggg	att	caa	tca	aac	ata	tcc	gac	tca		576
Val	Ile	Asn	Ile	Val	Pro	Gly	Gly	Ile	Gln	Ser	Asn	Ile	Ser	Asp	Ser		
			180					185					190				
ggg	ata	tcg	agc	ttc	aac	aag	tta	cct	gag	ctg	aaa	cta	tat	aag	cct		624
Gly	Ile	Ser	Ser	Phe	Asn	Lys	Leu	Pro	Glu	Leu	Lys	Leu	Tyr	Lys	Pro		
		195					200					205					
ttc	caa	gaa	gct	atc	cgt	gaa	agg	gcg	ttt	ttg	tcg	caa	aac	ata	aaa		672
Phe	Gln	Glu	Ala	Ile	Arg	Glu	Arg	Ala	Phe	Leu	Ser	Gln	Asn	Ile	Lys		
	210					215					220						
cca	aca	cct	gca	gag	aca	ttt	gcg	aaa	gag	acg	gta	tca	gtg	gtc	ctg		720
Pro	Thr	Pro	Ala	Glu	Thr	Phe	Ala	Lys	Glu	Thr	Val	Ser	Val	Val	Leu		
	225				230					235				240			
aag	aaa	aac	cca	ccg	gct	tgg	tac	tct	aca	gga	agg	ttg	tcc	acc	gtc		768
Lys	Lys	Asn	Pro	Pro	Ala	Trp	Tyr	Ser	Thr	Gly	Arg	Leu	Ser	Thr	Val		
			245					250					255				
acg	gcg	atc	atg	cac	cat	atg	ccc	att	ttc	gtc	aaa	gat	ttt	ctc	ctg		816
Thr	Ala	Ile	Met	His	His	Met	Pro	Ile	Phe	Val	Lys	Asp	Phe	Leu	Leu		
			260					265					270				
acg	aag	agc	ttc	atg	aaa	aaa	ggg	cca	aaa	gaa	act	gtt	tga				858
Thr	Lys	Ser	Phe	Met	Lys	Lys	Gly	Pro	Lys	Glu	Thr	Val					
		275					280					285					

&lt;210&gt; 1205

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 1205

Met	Gly	Ser	Ser	Glu	Glu	Met	Pro	Val	Val	Leu	Ile	Thr	Gly	Cys	Ser		
				5					10					15			
His	Gly	Gly	Ile	Gly	Asn	Ala	Leu	Ala	Arg	Glu	Phe	Ser	Ser	Lys	Gly		
			20					25					30				
Cys	Arg	Val	Val	Ala	Thr	Ser	Arg	Ser	Gln	Asn	Thr	Met	Ala	Asp	Leu		
		35					40					45					
Thr	Lys	Asp	Pro	Lys	Phe	Leu	Val	Gln	Glu	Leu	Asp	Val	Gln	Ser	Glu		
	50					55					60						
His	Asn	Val	Asn	Lys	Val	Phe	Ser	Glu	Val	Ile	Asp	Lys	Phe	Gly	Gln		
	65				70					75				80			
Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Cys	Ile	Gly	Pro	Leu		
				85					90					95			

## PhoenixTemp32470.tmp.txt

Ala Glu Ile Pro Ile Gln Thr Met Glu His Thr Phe Asn Thr Asn Val  
 100 105 110  
 Phe Gly Ser Met Arg Met Thr Gln Ala Val Val Pro His Met Ala Ser  
 115 120 125  
 Lys Lys Lys Gly Lys Ile Val Asn Ile Gly Ser Ile Ser Thr Met Ala  
 130 135 140  
 Pro Gly Pro Trp Ala Gly Val Tyr Thr Ala Ser Lys Ala Ala Leu His  
 145 150 155 160  
 Ala Leu Thr Asp Thr Leu Arg Leu Glu Leu Arg Pro Phe Gly Ile Asp  
 165 170 175  
 Val Ile Asn Ile Val Pro Gly Gly Ile Gln Ser Asn Ile Ser Asp Ser  
 180 185 190  
 Gly Ile Ser Ser Phe Asn Lys Leu Pro Glu Leu Lys Leu Tyr Lys Pro  
 195 200 205  
 Phe Gln Glu Ala Ile Arg Glu Arg Ala Phe Leu Ser Gln Asn Ile Lys  
 210 215 220  
 Pro Thr Pro Ala Glu Thr Phe Ala Lys Glu Thr Val Ser Val Val Leu  
 225 230 235 240  
 Lys Lys Asn Pro Pro Ala Trp Tyr Ser Thr Gly Arg Leu Ser Thr Val  
 245 250 255  
 Thr Ala Ile Met His His Met Pro Ile Phe Val Lys Asp Phe Leu Leu  
 260 265 270  
 Thr Lys Ser Phe Met Lys Lys Gly Pro Lys Glu Thr Val  
 275 285

&lt;210&gt; 1206

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;400&gt; 1206

atg	ctg	act	cta	ctc	ttc	tcc	tct	ctc	gga	ctc	ctc	ctg	ctt	ctc	ggg	48
Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5				10					15			
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acg	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gtg	aaa	cga	gaa	gcc	ata	gaa	gga	aag	gtg	gtt	tgg	atc	144
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
aca	ggg	gct	agc	cgt	gga	att	gga	gaa	gtt	ctt	gct	aaa	cag	ttt	gcg	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
agt	tta	ggg	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gag	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
					70					75					80	
gtt	cgt	gtt	aag	agt	gag	ctc	aaa	ggg	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
				85					90					95		
aag	gtt	ttg	cct	tta	gat	cta	gct	agc	ggc	gaa	gag	ggg	ctc	aaa	ggg	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
gtt	gta	gag	aga	gca	gtg	tcg	ctt	ttc	cct	ggg	gct	ggg	gtt	gat	tat	384
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
ttg	gtt	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
		130				135					140					
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	gtt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
					150					155					160	
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
				165						170				175		
ggc	ggg	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576

## PhoenixTemp32470.tmp.txt

Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser		
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac		624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr		
		195					200					205					
ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	gtt	act		672
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr		
	210					215					220						
gtg	gtt	tgt	ccg	ggt	cca	ata	gag	acc	tca	aat	ggg	aca	gga	aca	tca		720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser		
225					230					235					240		
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgt	gtg	tca	tct	gaa	cga		768
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg		
				245					250					255			
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct		816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala		
			260				265					270					
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac		864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr		
		275					280					285					
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	ggg	aaa	cgt		912
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg		
	290					295					300						
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ctg	ctc		960
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu		
305					310					315					320		
ttc	cag	aag	aag	act	aaa	aca	aac	tga									987
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn										
				325													

&lt;210&gt; 1207

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 1207

Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly		
1				5					10					15			
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser		
			20					25					30				
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile		
		35					40					45					
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala		
	50				55						60						
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu		
65					70					75					80		
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val		
				85					90					95			
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly		
			100					105					110				
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr		
		115					120					125					
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp		
	130					135					140						
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly		
145					150					155					160		
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly		
				165					170					175			
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser		
			180					185					190				
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr		
		195					200					205					
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr		
	210					215					220						
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser		
225					230					235					240		
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg		
				245					250					255			
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala		



## PhoenixTemp32470.tmp.txt

260  
 Trp Ile Ser Tyr Gln Pro Val Leu 265  
 275  
 Met Pro Phe Leu Gly Phe Trp 280  
 290  
 Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr 300  
 305  
 Phe Gln Lys Lys Thr 310  
 325  
 270  
 Val Gln Tyr  
 285  
 Gly Gly Lys Arg  
 300  
 Trp Asn Leu Leu  
 315  
 320

<210> 1208  
 <211> 849  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 1208  
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 ttg ggt aaa gtg gca ttg ata acc gga gga gcc aca ggg ata ggc gaa 96  
 Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu  
 20 25 30  
 agc atc gct cgt ctg ttc cac aag cac ggt gcc aaa gtc tgc atc gtc 144  
 Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Val  
 35 40 45  
 gac gtc caa gac gat ctc gga gac aaa gtt ctc aaa act ctg tta gcc 192  
 Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala  
 50 55 60  
 aac tcg gag gag tca gct tgt ttc atc cac ggt gac gtc aca caa gaa 240  
 Asn Ser Glu Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr Gln Glu  
 65 70 75 80  
 gac gac atc agt aac gct gtt gac ttc gcc gtc aag cgt ttc ggg aca 288  
 Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Arg Phe Gly Thr  
 85 90 95  
 ctt gac ata ctc atc aac aac gca gga gta agc gaa gca ccg tgt ccg 336  
 Leu Asp Ile Leu Ile Asn Asn Ala Gly Val Ser Glu Ala Pro Cys Pro  
 100 105 110  
 gac atc cgc aac aac agt tta acc gag ttc gag atg gtc ttc aac gtc 384  
 Asp Ile Arg Asn Asn Ser Leu Thr Glu Phe Glu Met Val Phe Asn Val  
 115 120 125  
 aac gtg aaa gga gct ttc cta ggg atg aaa cat gcg gcg cgt gtg atg 432  
 Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg Val Met  
 130 135 140  
 atc ccc gcc aag aaa ggc tcg ata gtc tct tta tgc agc gtt ggc ggc 480  
 Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val Gly Gly  
 145 150 155 160  
 gtt gtc gga ggc gtt ggt ccg cac gct tac gtc ggc tcc aag cac gcg 528  
 Val Val Gly Gly Val Gly Pro His Ala Tyr Val Gly Ser Lys His Ala  
 165 170 175  
 gtt cta ggt ttg act agg agc gtt gcg gcg gag cta gga cag cat ggg 576  
 Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly Gln His Gly  
 180 185 190  
 ata cgc gtg aac tgc gtt tct cct tac gcg gtt ttg act aac ctc gcg 624  
 Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Leu Thr Asn Leu Ala  
 195 200 205  
 ttg gct cat ttg cct gag gat gag agg aag gaa ggc gtg gtc gct ggt 672  
 Leu Ala His Leu Pro Glu Asp Glu Arg Lys Glu Gly Val Val Ala Gly  
 210 215 220  
 ttc agg agt ttc gcc gct gcg aac gcg aat ctg aaa ggt gtt gag ttg 720  
 Phe Arg Ser Phe Ala Ala Asn Ala Asn Leu Lys Gly Val Glu Leu  
 225 230 235 240  
 acg gtt gat gac gtg gcg aac gcg gtt ttg ttt ctg gcg agt gat gag 768  
 Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Glu  
 245 250 255  
 tcg cgg tat gtg agt gga gat aat ctg atg gtt gat ggt ggg ttc act 816

## PhoenixTemp32470.tmp.txt

Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly Phe Thr  
 260 265 270  
 tgc act aac cac tcc ttt aaa gtt ttt aga tga  
 Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

849

<210> 1209  
 <211> 282  
 <212> PRT  
 <213> Brassica napus

<400> 1209  
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 20 25 30  
 Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Val  
 35 40 45  
 Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala  
 50 55 60  
 Asn Ser Glu Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr Gln Glu  
 65 70 75 80  
 Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Arg Phe Gly Thr  
 85 90 95  
 Leu Asp Ile Leu Ile Asn Asn Ala Gly Val Ser Glu Ala Pro Cys Pro  
 100 105 110  
 Asp Ile Arg Asn Asn Ser Leu Thr Glu Phe Glu Met Val Phe Asn Val  
 115 120 125  
 Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg Val Met  
 130 135 140  
 Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val Gly Gly  
 145 150 155 160  
 Val Val Gly Gly Val Gly Pro His Ala Tyr Val Gly Ser Lys His Ala  
 165 170 175  
 Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly Gln His Gly  
 180 185 190  
 Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Leu Thr Asn Leu Ala  
 195 200 205  
 Leu Ala His Leu Pro Glu Asp Glu Arg Lys Glu Gly Val Val Ala Gly  
 210 215 220  
 Phe Arg Ser Phe Ala Ala Asn Ala Asn Leu Lys Gly Val Glu Leu  
 225 230 235 240  
 Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Glu  
 245 250 255  
 Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly Phe Thr  
 260 265 270  
 Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

<210> 1210  
 <211> 855  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(855)

<400> 1210  
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 Met Gly Ser Ser Glu Glu Met Pro Val Val Leu Ile Thr Gly Cys Ser  
 1 5 10 15  
 cac gga gga atc ggc aac gcg ctg gct cgt gag ttc tcg tcg aag ggt  
 His Gly Gly Ile Gly Asn Ala Leu Ala Arg Glu Phe Ser Ser Lys Gly  
 20 25 30  
 tgt cgt gtt gtg gcg acg agt cga tcg cag aac acg atg gcc gat ttg  
 Cys Arg Val Val Ala Thr Ser Arg Ser Gln Asn Thr Met Ala Asp Leu  
 35 40 45  
 acg aaa gat ccc aag ttt tta gta caa gag ctc gat gtt cag tca gaa  
 Page 675

48

96

144

192

## PhoenixTemp32470.tmp.txt

Thr	Lys	Asp	Pro	Lys	Phe	Leu	Val	Gln	Glu	Leu	Asp	Val	Gln	Ser	Glu		
cat	50	aac	gtg	aat	aaa	gtc	ttt	tcg	gaa	ggt	atc	gac	aag	ttc	ggt	cag	240
His	65	Asn	Val	Asn	Lys	Val	Phe	Ser	Glu	Val	Ile	Asp	Lys	Phe	Gly	Gln	
att		gat	gtt	ctg	gtc	aat	aac	gcc	gga	ggt	caa	tgc	gtc	ggt	cca	ctc	288
Ile		Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Cys	Val	Gly	Pro	Leu	
gct		gag	att	cca	att	cag	acc	atg	gag	cac	acc	ttt	aac	acc	aat	gtg	336
Ala		Glu	Ile	Pro	Ile	Gln	Thr	Met	Glu	His	Thr	Phe	Asn	Thr	Asn	Val	
ttc		ggt	tcc	atg	agg	atg	act	caa	gct	ggt	gta	cct	cac	atg	gcg	tca	384
Phe		Gly	Ser	Met	Arg	Met	Thr	Gln	Ala	Val	Val	Pro	His	Met	Ala	Ser	
aag		aag	aaa	gga	aag	att	gtg	aac	ata	gga	agt	atc	agc	aca	atg	gca	432
Lys		Lys	Lys	Gly	Lys	Ile	Val	Asn	Ile	Gly	Ser	Ile	Ser	Thr	Met	Ala	
cct		gga	cca	tgg	gca	ggg	ggt	tac	act	gca	tca	aaa	gct	gct	ctt	cat	480
Pro		Gly	Pro	Trp	Ala	Gly	Val	Tyr	Thr	Ala	Ser	Lys	Ala	Ala	Leu	His	
gct		ctt	aca	gac	aca	tta	agg	ttg	gag	ctt	agg	cca	ttt	ggg	att	gat	528
Ala		Leu	Thr	Asp	Thr	Leu	Arg	Leu	Glu	Leu	Arg	Pro	Phe	Gly	Ile	Asp	
atg		atc	aac	att	gtc	cca	gga	ggt	att	caa	tct	aac	ata	tcc	gat	tca	576
Met		Ile	Asn	Ile	Val	Pro	Gly	Gly	Ile	Gln	Ser	Asn	Ile	Ser	Asp	Ser	
ggg		ata	tct	agc	ttc	aac	aag	tta	cct	gag	ctg	aaa	cta	tac	aaa	ccc	624
Gly		Ile	Ser	Ser	Phe	Asn	Lys	Leu	Pro	Glu	Leu	Lys	Leu	Tyr	Lys	Pro	
ttt		caa	gaa	gct	atc	cgt	caa	agg	gcg	ttt	ttg	tcg	caa	aac	ata	aaa	672
Phe		Gln	Glu	Ala	Ile	Arg	Gln	Arg	Ala	Phe	Leu	Ser	Gln	Asn	Ile	Lys	
cca		aca	cct	gcc	gag	aca	ttt	gct	aaa	gag	acg	gta	tcg	gtg	gtg	ctg	720
Pro		Thr	Pro	Ala	Glu	Thr	Phe	Ala	Lys	Glu	Thr	Val	Ser	Val	Val	Leu	
aag		aaa	aac	cca	ccg	gct	tgg	ttc	tct	aca	gga	cgg	ttg	tcc	acc	gtc	768
Lys		Lys	Asn	Pro	Pro	Ala	Trp	Phe	Ser	Thr	Gly	Arg	Leu	Ser	Thr	Val	
atg		gcg	atc	atg	cac	cat	atg	ccc	att	ttc	gtc	aaa	gat	ttt	ctc	ctg	816
Met		Ala	Ile	Met	His	His	Met	Pro	Ile	Phe	Val	Lys	Asp	Phe	Leu	Leu	
acg		agg	agc	ttt	atg	aaa	atg	gga	gca	aag	act	gag	tag				855
Thr		Arg	Ser	Phe	Met	Lys	Met	Gly	Ala	Lys	Thr	Glu					

&lt;210&gt; 1211

&lt;211&gt; 284

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 1211

Met	Gly	Ser	Ser	Glu	Glu	Met	Pro	Val	Val	Leu	Ile	Thr	Gly	Cys	Ser	
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His	Gly	Gly	Ile	Gly	Asn	Ala	Leu	Ala	Arg	Glu	Phe	Ser	Ser	Lys	Gly	
			20					25					30			
Cys	Arg	Val	Val	Ala	Thr	Ser	Arg	Ser	Gln	Asn	Thr	Met	Ala	Asp	Leu	
		35					40					45				
Thr	Lys	Asp	Pro	Lys	Phe	Leu	Val	Gln	Glu	Leu	Asp	Val	Gln	Ser	Glu	
	50					55					60					
His	Asn	Val	Asn	Lys	Val	Phe	Ser	Glu	Val	Ile	Asp	Lys	Phe	Gly	Gln	
65					70					75					80	
Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Cys	Val	Gly	Pro	Leu	
				85					90					95		
Ala	Glu	Ile	Pro	Ile	Gln	Thr	Met	Glu	His	Thr	Phe	Asn	Thr	Asn	Val	
			100					105					110			
Phe	Gly	Ser	Met	Arg	Met	Thr	Gln	Ala	Val	Val	Pro	His	Met	Ala	Ser	
		115					120					125				
Lys	Lys	Lys	Gly	Lys	Ile	Val	Asn	Ile	Gly	Ser	Ile	Ser	Thr	Met	Ala	
	130					135					140					

## PhoenixTemp32470.tmp.txt

Pro Gly Pro Trp Ala Gly Val Tyr Thr Ala Ser Lys Ala Ala Leu His  
 145 150 155 160  
 Ala Leu Thr Asp Thr Leu Arg Leu Glu Leu Arg Pro Phe Gly Ile Asp  
 165 170 175  
 Met Ile Asn Ile Val Pro Gly Gly Ile Gln Ser Asn Ile Ser Asp Ser  
 180 185 190  
 Gly Ile Ser Ser Phe Asn Lys Leu Pro Glu Leu Lys Leu Tyr Lys Pro  
 195 200 205  
 Phe Gln Glu Ala Ile Arg Gln Arg Ala Phe Leu Ser Gln Asn Ile Lys  
 210 215 220  
 Pro Thr Pro Ala Glu Thr Phe Ala Lys Glu Thr Val Ser Val Val Leu  
 225 230 235 240  
 Lys Lys Asn Pro Pro Ala Trp Phe Ser Thr Gly Arg Leu Ser Thr Val  
 245 250 255  
 Met Ala Ile Met His His Met Pro Ile Phe Val Lys Asp Phe Leu Leu  
 260 265 270  
 Thr Arg Ser Phe Met Lys Met Gly Ala Lys Thr Glu  
 275 280

&lt;210&gt; 1212

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;400&gt; 1212

atg	ctg	act	cta	ctc	ttc	tcc	tct	ctc	gga	ctc	ctc	ctt	ctc	ctt	ggc	48
Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5					10					15		
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acc	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gcg	aaa	cgt	gaa	gcc	ata	gaa	ggc	aag	gtg	gtt	tgg	atc	144
Lys	Lys	His	Ala	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
aca	ggg	tct	agc	cgt	gga	att	gga	gaa	gtt	ctt	gct	aaa	cag	ttt	gca	192
Thr	Gly	Ser	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
agt	tta	ggt	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gag	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
	65				70				75					80		
gtt	cgt	gtt	aag	agt	gag	ctc	aaa	ggt	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
			85					90						95		
aag	gtt	ttg	cct	tta	gat	cta	gct	agc	ggc	gaa	gag	ggg	ctc	aaa	ggt	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100				105						110			
gtt	gta	gag	caa	gca	ttg	tcg	ctt	ttc	cct	ggg	gct	ggt	gtt	gat	tat	384
Val	Val	Glu	Gln	Ala	Leu	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
ttg	gtt	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	gtt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
	145				150					155					160	
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
			165						170					175		
ggc	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180				185						190			
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac	624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195				200						205				
ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	gtt	act	672

## PhoenixTemp32470.tmp.txt

Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr		
210	210					215					220						
gtg	gtt	tgt	ccg	ggt	cca	ata	gag	acc	tca	aat	ggg	aca	gga	aca	tca	720	
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser		
225					230					235					240		
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgt	gtg	tca	tct	gaa	cga	768	
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg		
				245					250					255			
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816	
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala		
			260					265					270				
tgg	att	tca	tat	cag	cca	gta	ctg	ctg	gtg	atg	tat	cta	gtg	cag	tac	864	
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr		
			275				280					285					
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	ggg	aaa	cgt	912	
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg		
	290					295					300						
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ctg	ctc	960	
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu		
305					310					315					320		
ttc	cag	aag	aag	act	aaa	aca	aac	tga								987	
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn										
				325													

&lt;210&gt; 1213

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 1213

Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly		
1				5					10					15			
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser		
			20					25					30				
Lys	Lys	His	Ala	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile		
		35					40					45					
Thr	Gly	Ser	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala		
	50				55						60						
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu		
65				70					75					80			
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val		
			85					90					95				
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly		
			100					105					110				
Val	Val	Glu	Gln	Ala	Leu	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr		
		115					120					125					
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp		
	130					135					140						
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly		
145				150					155					160			
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly		
			165						170					175			
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser		
		180					185						190				
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr		
		195				200						205					
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr		
	210					215					220						
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser		
225					230					235					240		
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg		
				245					250					255			
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala		
			260				265						270				
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr		
		275					280					285					
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg		
	290					295				300							
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu		

305 Phe Gln Lys Lys Thr 310 Lys Thr Asn 315 320  
 325

<210> 1214  
 <211> 810  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(810)

<400> 1214  
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 Met Ala Ser Ile Ser Thr Val Ser Val Leu Asp Arg Arg Leu Glu Gly  
 1 5 10 15  
 aaa gtg gct ctt atc agt ggt ggt gct agc ggt ata ggt gag gcc act 96  
 Lys Val Ala Leu Ile Ser Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 gca aga ctc ttc tct aag cat gga gca cac gtt gtg ata gct gat att 144  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile  
 35 40 45  
 caa gac gat ttg ggt ctc tct tgc aaa cac ttg gaa tcc gct tcc 192  
 Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 tat gtc cat tgc gat gtc aca aac gaa aac gac gtt caa aac gcc gtt 240  
 Tyr Val His Cys Asp Val Thr Asn Glu Asn Asp Val Gln Asn Ala Val  
 65 70 75 80  
 aac aca gcg att tcc aag tat ggc aat cta gat atc atg ttt aat aat 288  
 Asn Thr Ala Ile Ser Lys Tyr Gly Asn Leu Asp Ile Met Phe Asn Asn  
 85 90 95  
 gct ggc ata att gat gag ata aaa aca agc ata ctt gac aac agc aag 336  
 Ala Gly Ile Ile Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Ser Lys  
 100 105 110  
 ttt gat ttt gag aga gtg ata agt gtg aac ttg gtt ggt cct ttt ctg 384  
 Phe Asp Phe Glu Arg Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu  
 115 120 125  
 gga aca aag cac gct gct agg gtt atg att cct gct aaa agg gga agc 432  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser  
 130 135 140  
 ata att aac act gct agt gtt gct gga acc ttt agt gga ggg gct tca 480  
 Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Phe Ser Gly Gly Ala Ser  
 145 150 155 160  
 cat gcc tac aca agt tca aag cac gca cta att gga ctg atg aaa aac 528  
 His Ala Tyr Thr Ser Lys His Ala Leu Ile Gly Leu Met Lys Asn  
 165 170 175  
 act gcg gtg gag ctt gga cag ttt ggt att agg gta aat tgc ttg tcc 576  
 Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Leu Ser  
 180 185 190  
 cct tat gtg gtt gcc aca cca ttg act aag aaa tgt ttc aat ctt gat 624  
 Pro Tyr Val Val Ala Thr Pro Leu Thr Lys Lys Cys Phe Asn Leu Asp  
 195 200 205  
 gaa gac cga aat ggt gag att tat tcc aac cta aaa ggt gtt cat ctt 672  
 Glu Asp Arg Asn Gly Glu Ile Tyr Ser Asn Leu Lys Gly Val His Leu  
 210 215 220  
 gtg cca aac gat gtg gcc gaa gct gct cta tat ttg gca ggt gat gag 720  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu  
 225 230 235 240  
 tca aag tat gtt agt ggt cac aat ctt gtg tta gat gga ggg ttc acc 768  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Thr  
 245 250 255  
 aat cta aat gta ttt tct gtg ttt ggg cag tct gag taa 810  
 Asn Leu Asn Val Gly Phe Ser Val Phe Gly Gln Ser Glu  
 260 265

<210> 1215  
 <211> 269  
 <212> PRT

&lt;213&gt; Glycine max

&lt;400&gt; 1215

```

Met Ala Ser Ile Ser Thr Val Ser Val Leu Asp Arg Arg Leu Glu Gly
1      5      10      15
Lys Val Ala Leu Ile Ser Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr
20      25      30
Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile
35      40      45
Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser
50      55      60
Tyr Val His Cys Asp Val Thr Asn Glu Asn Asp Val Gln Asn Ala Val
65      70      75
Asn Thr Ala Ile Ser Lys Tyr Gly Asn Leu Asp Ile Met Phe Asn Asn
85      90      95
Ala Gly Ile Ile Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Ser Lys
100     105     110
Phe Asp Phe Glu Arg Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu
115     120     125
Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser
130     135     140
Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Phe Ser Gly Gly Ala Ser
145     150     155
His Ala Tyr Thr Ser Lys His Ala Leu Ile Gly Leu Met Lys Asn
165     170     175
Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Leu Ser
180     185     190
Pro Tyr Val Val Ala Thr Pro Leu Thr Lys Lys Cys Phe Asn Leu Asp
195     200     205
Glu Asp Arg Asn Gly Glu Ile Tyr Ser Asn Leu Lys Gly Val His Leu
210     215     220
Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu
225     230     235
Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Thr
245     250     255
Asn Leu Asn Val Gly Phe Ser Val Phe Gly Gln Ser Glu
260     265

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&lt;210&gt; 1216

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 1216

```

atg caa gca tgt tcc tcc tca gac gct cca ctc tcc aag agg tta gat      48
Met Gln Ala Cys Ser Ser Ser Asp Ala Pro Leu Ser Lys Arg Leu Asp
1      5      10      15
ggc aaa gta gca ctc ata atc ggc gga gcc agt ggc atc ggt gaa gcc      96
Gly Lys Val Ala Leu Ile Ile Gly Gly Ala Ser Gly Ile Gly Glu Ala
20      25      30
acc gcc aag ctt ttc ctt cgc tac ggt gcc aag gtc gtc atc gcc gac      144
Thr Ala Lys Leu Phe Leu Arg Tyr Gly Ala Lys Val Val Ile Ala Asp
35      40      45
atc caa gac aac ctc gga cac tcc cta tgc caa agt ctc aat tcc tcc      192
Ile Gln Asp Asn Leu Gly His Ser Leu Cys Gln Ser Leu Asn Ser Ser
50      55      60
gac aaa aac aac aac gac gac att tcc tat gtt cac tgc gac gtc acc      240
Asp Lys Asn Asn Asn Asp Asp Ile Ser Tyr Val His Cys Asp Val Thr
65      70      75
aac gac aaa gac gtc gaa acc gcc gtc aac gct gcc gtc tcg cga cac      288
Asn Asp Lys Asp Val Glu Thr Ala Val Asn Ala Ala Val Ser Arg His
85      90      95
ggc aag ctc gac atc ctc ttc agc aac gcc ggc atc acg ggc cgt tcc      336
Gly Lys Leu Asp Ile Leu Phe Ser Asn Ala Gly Ile Thr Gly Arg Ser
100     105     110

```

## PhoenixTemp32470.tmp.txt

gac	tgt	tct	aac	tcc	atc	acg	gcc	atc	gac	agc	ggt	gac	ctg	aag	agg	384
Asp	Cys	Ser	Asn	Ser	Ile	Thr	Ala	Ile	Asp	Ser	Gly	Asp	Leu	Lys	Arg	
		115					120					125				
gtc	ttc	gag	gtg	aac	gtc	ttc	ggt	gcc	ttc	tac	gcc	gcc	aaa	cac	gcc	432
Val	Phe	Glu	Val	Asn	Val	Phe	Gly	Ala	Phe	Tyr	Ala	Ala	Lys	His	Ala	
	130					135					140					
gct	aag	gtc	atg	att	ccc	aga	aag	aaa	ggg	agc	att	ggt	ttc	act	gct	480
Ala	Lys	Val	Met	Ile	Pro	Arg	Lys	Lys	Gly	Ser	Ile	Val	Phe	Thr	Ala	
145					150					155					160	
agc	atc	gct	tct	gtg	tcg	aat	gcg	ggt	tgg	gcg	cac	ccg	tac	gcg	gcg	528
Ser	Ile	Ala	Ser	Val	Ser	Asn	Ala	Gly	Trp	Ala	His	Pro	Tyr	Ala	Ala	
			165						170					175		
tcg	aag	aac	gca	gtg	gtg	ggt	ttg	atg	aag	aac	ctg	tgc	gtg	gaa	ttg	576
Ser	Lys	Asn	Ala	Val	Val	Gly	Leu	Met	Lys	Asn	Leu	Cys	Val	Glu	Leu	
			180					185					190			
ggg	aaa	cat	gga	atc	aga	gtt	aac	tgt	ggt	tcg	ccc	tat	gcg	gtg	ggg	624
Gly	Lys	His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Gly	
		195				200						205				
act	cca	atg	ctg	aca	cgt	gcg	atg	agg	atg	gag	aag	gag	aaa	gca	gag	672
Thr	Pro	Met	Leu	Thr	Arg	Ala	Met	Arg	Met	Glu	Lys	Glu	Lys	Ala	Glu	
	210					215					220					
gag	ata	tat	ttg	gag	gcg	gcg	aac	ttg	aag	gga	gtg	ggt	tta	aag	gaa	720
Glu	Ile	Tyr	Leu	Glu	Ala	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	Glu	
225					230					235					240	
aag	gat	gtg	gca	gaa	gca	act	ttg	ttt	ttg	gct	agt	gat	gag	tca	aaa	768
Lys	Asp	Val	Ala	Glu	Ala	Thr	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Lys	
			245					250					255			
tac	gtg	agt	gga	gtg	aat	cta	gtt	gtg	gac	gga	ggt	tat	act	acc	acc	816
Tyr	Val	Ser	Gly	Val	Asn	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	Thr	Thr	
			260				265					270				
aat	tct	tct	tcc	aaa	caa	gct	ttc	aca	aag	ttt	tct	ttt	aat	gtt	taa	864
Asn	Ser	Ser	Ser	Lys	Gln	Ala	Phe	Thr	Lys	Phe	Ser	Phe	Asn	Val		
		275					280					285				

&lt;210&gt; 1217

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 1217

Met	Gln	Ala	Cys	Ser	Ser	Ser	Asp	Ala	Pro	Leu	Ser	Lys	Arg	Leu	Asp	
1				5					10					15		
Gly	Lys	Val	Ala	Leu	Ile	Ile	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	
			20					25					30			
Thr	Ala	Lys	Leu	Phe	Leu	Arg	Tyr	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	
		35					40					45				
Ile	Gln	Asp	Asn	Leu	Gly	His	Ser	Leu	Cys	Gln	Ser	Leu	Asn	Ser	Ser	
	50					55					60					
Asp	Lys	Asn	Asn	Asn	Asp	Asp	Ile	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	
65					70					75					80	
Asn	Asp	Lys	Asp	Val	Glu	Thr	Ala	Val	Asn	Ala	Ala	Val	Ser	Arg	His	
				85					90					95		
Gly	Lys	Leu	Asp	Ile	Leu	Phe	Ser	Asn	Ala	Gly	Ile	Thr	Gly	Arg	Ser	
			100					105					110			
Asp	Cys	Ser	Asn	Ser	Ile	Thr	Ala	Ile	Asp	Ser	Gly	Asp	Leu	Lys	Arg	
		115					120					125				
Val	Phe	Glu	Val	Asn	Val	Phe	Gly	Ala	Phe	Tyr	Ala	Ala	Lys	His	Ala	
	130					135					140					
Ala	Lys	Val	Met	Ile	Pro	Arg	Lys	Lys	Gly	Ser	Ile	Val	Phe	Thr	Ala	
145					150					155					160	
Ser	Ile	Ala	Ser	Val	Ser	Asn	Ala	Gly	Trp	Ala	His	Pro	Tyr	Ala	Ala	
			165						170					175		
Ser	Lys	Asn	Ala	Val	Val	Gly	Leu	Met	Lys	Asn	Leu	Cys	Val	Glu	Leu	
			180					185					190			
Gly	Lys	His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Gly	
		195					200					205				
Thr	Pro	Met	Leu	Thr	Arg	Ala	Met	Arg	Met	Glu	Lys	Glu	Lys	Ala	Glu	
	210					215					220					
Glu	Ile	Tyr	Leu	Glu	Ala	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	Glu	



## PhoenixTemp32470.tmp.txt

225 Lys Asp Val Ala Glu 230 Ala Thr Leu Phe Leu 235 Ala Ser Asp Glu Ser 240  
 Tyr Val Ser Gly Val Asn Leu Val Val Asp Gly Gly Tyr Thr Thr Thr  
 Asn Ser Ser Ser Lys Gln Ala Phe Thr Lys Phe Ser Phe Asn Val  
 275 280 285 255 270

<210> 1218  
 <211> 1050  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1050)

<400> 1218  
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 Met Ala Pro Asp Leu Val Asn Gly Val Leu Asn Trp Val Gly Thr Pro  
 1 5 10 15  
 gcc atg gtg gcc agc ctg ctg ctc ttc tac ccg ccc tac tat ctc ttc 96  
 Ala Met Val Ala Ser Leu Leu Leu Phe Tyr Pro Pro Tyr Tyr Leu Phe  
 20 25 30  
 aag aca tgc tac tcc ttc ctt tcc tgg ctc ttc ccc gag gac ctc gcc 144  
 Lys Thr Cys Tyr Ser Phe Leu Ser Trp Leu Phe Pro Glu Asp Leu Ala  
 35 40 45  
 ggc aag gtc gtc ctc atc act ggc gct tcc tcc ggc atc ggc gag caa 192  
 Gly Lys Val Val Leu Ile Thr Gly Ala Ser Ser Gly Ile Gly Glu Gln  
 50 55 60  
 ctg gcc tac cag tac gcg ctg aat cgg gcg tcc ctc gcc ctc gtc gcg 240  
 Leu Ala Tyr Gln Tyr Ala Leu Asn Arg Ala Ser Leu Ala Leu Val Ala  
 65 70 75 80  
 aga agg gag tcg agc ctc cgg cac gtc gcc gac cga gca ctc gag ctc 288  
 Arg Arg Glu Ser Ser Leu Arg His Val Ala Asp Arg Ala Leu Glu Leu  
 85 90 95  
 ggc gcg cgc gac gtc gtc gtc ctc cca ggc gac gtc tcc acc ccc gac 336  
 Gly Ala Arg Asp Val Val Val Leu Pro Gly Asp Val Ser Thr Pro Asp  
 100 105 110  
 gac tgc gac agg ttc gtt cgg acc gcg atc agt cac tac gac cga ttg 384  
 Asp Cys Asp Arg Phe Val Arg Thr Ala Ile Ser His Tyr Asp Arg Leu  
 115 120 125  
 gac cat ctc gtg tgc aat gct ggc gtc gcg agc gtc ggc gcg ttc gag 432  
 Asp His Leu Val Cys Asn Ala Gly Val Ala Ser Val Gly Ala Phe Glu  
 130 135 140  
 gag atc ccg gac gtc acc agc tac agc tcc cag ctt gac gtc aat ttc 480  
 Glu Ile Pro Asp Val Thr Ser Tyr Ser Ser Gln Leu Asp Val Asn Phe  
 145 150 155 160  
 tgg ggt tcc gtt caa aca acc ttc gct gcc ctg cct cac ctg aag agg 528  
 Trp Gly Ser Val Gln Thr Thr Phe Ala Leu Pro His Leu Lys Arg  
 165 170 175  
 agc cga gga aga atc gtg gtg acg gca tct gcg acc gga tgg aac cca 576  
 Ser Arg Gly Arg Ile Val Val Thr Ala Ser Ala Thr Gly Trp Asn Pro  
 180 185 190  
 gtt cct aga atg agc atc tac aac gct gcc aac gct gcg ctc atc aac 624  
 Val Pro Arg Met Ser Ile Tyr Asn Ala Ala Asn Ala Ala Leu Ile Asn  
 195 200 205  
 ttc ttc gag acg ctg cgg acc gag cta ggg aac cag gtg ggg atc acg 672  
 Phe Phe Glu Thr Leu Arg Thr Glu Leu Gly Asn Gln Val Gly Ile Thr  
 210 215 220  
 gtg gtg acg ccc ggg tgg gtg gag tcc gag atg tcc aga ggg aag ttc 720  
 Val Val Thr Pro Gly Trp Val Glu Ser Glu Met Ser Arg Gly Lys Phe  
 225 230 235 240  
 ctc aag gag cac ggc caa gtg gag gtc gat caa aag atg cgc gac gct 768  
 Leu Lys Glu His Gly Gln Val Glu Val Asp Gln Lys Met Arg Asp Ala  
 245 250 255  
 cag atc ggc ctg ttc ccg gtg gag tac gcc aag aac tgc gcc aag gcc 816  
 Gln Ile Gly Leu Phe Pro Val Glu Tyr Ala Lys Asn Cys Ala Lys Ala  
 260 265 270

## PhoenixTemp32470.tmp.txt

atg	gtg	cag	gcg	gcg	cgg	caa	ggc	gag	cgg	tac	ctc	acc	gtg	ccg	gcg	864
Met	Val	Gln	Ala	Ala	Arg	Gln	Gly	Glu	Arg	Tyr	Leu	Thr	Val	Pro	Ala	
		275					280					285				
tgg	ttc	ggg	gcg	atg	tac	ctg	tgg	cgg	ctg	ttc	gcg	ccg	gag	gtg	gtg	912
Trp	Phe	Gly	Ala	Met	Tyr	Leu	Trp	Arg	Leu	Phe	Ala	Pro	Glu	Val	Val	
	290					295				300						
gag	gcc	tgc	tac	cgc	ctc	ctg	tac	atg	cac	ggc	cat	ggc	gcc	agg	cag	960
Glu	Ala	Cys	Tyr	Arg	Leu	Leu	Tyr	Met	His	Gly	His	Gly	Ala	Arg	Gln	
305					310					315					320	
gcc	gac	gcg	ccc	agc	agg	acc	atg	gcc	gag	gcg	ggg	ggc	aag	cag	ctg	1008
Ala	Asp	Ala	Pro	Ser	Arg	Thr	Met	Ala	Glu	Ala	Gly	Gly	Lys	Gln	Leu	
				325					330					335		
ctg	tac	ccg	acc	tcg	ctg	cgc	tct	gac	gag	att	aag	aag	tga			1050
Leu	Tyr	Pro	Thr	Ser	Leu	Arg	Ser	Asp	Glu	Ile	Lys	Lys				
		340						345								

&lt;210&gt; 1219

&lt;211&gt; 349

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 1219

Met	Ala	Pro	Asp	Leu	Val	Asn	Gly	Val	Leu	Asn	Trp	Val	Gly	Thr	Pro	
1				5					10					15		
Ala	Met	Val	Ala	Ser	Leu	Leu	Leu	Phe	Tyr	Pro	Pro	Tyr	Tyr	Leu	Phe	
			20					25					30			
Lys	Thr	Cys	Tyr	Ser	Phe	Leu	Ser	Trp	Leu	Phe	Pro	Glu	Asp	Leu	Ala	
		35					40					45				
Gly	Lys	Val	Val	Leu	Ile	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Glu	Gln	
	50				55						60					
Leu	Ala	Tyr	Gln	Tyr	Ala	Leu	Asn	Arg	Ala	Ser	Leu	Ala	Leu	Val	Ala	
65					70					75					80	
Arg	Arg	Glu	Ser	Ser	Leu	Arg	His	Val	Ala	Asp	Arg	Ala	Leu	Glu	Leu	
			85						90					95		
Gly	Ala	Arg	Asp	Val	Val	Val	Leu	Pro	Gly	Asp	Val	Ser	Thr	Pro	Asp	
			100					105					110			
Asp	Cys	Asp	Arg	Phe	Val	Arg	Thr	Ala	Ile	Ser	His	Tyr	Asp	Arg	Leu	
		115					120					125				
Asp	His	Leu	Val	Cys	Asn	Ala	Gly	Val	Ala	Ser	Val	Gly	Ala	Phe	Glu	
	130				135					140						
Glu	Ile	Pro	Asp	Val	Thr	Ser	Tyr	Ser	Ser	Gln	Leu	Asp	Val	Asn	Phe	
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			165					170						175		
Ser	Arg	Gly	Arg	Ile	Val	Val	Thr	Ala	Ser	Ala	Thr	Gly	Trp	Asn	Pro	
			180					185					190			
Val	Pro	Arg	Met	Ser	Ile	Tyr	Asn	Ala	Ala	Asn	Ala	Ala	Leu	Ile	Asn	
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Phe	Phe	Glu	Thr	Leu	Arg	Thr	Glu	Leu	Gly	Asn	Gln	Val	Gly	Ile	Thr	
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Val	Val	Thr	Pro	Gly	Trp	Val	Glu	Ser	Glu	Met	Ser	Arg	Gly	Lys	Phe	
225					230					235					240	
Leu	Lys	Glu	His	Gly	Gln	Val	Glu	Val	Asp	Gln	Lys	Met	Arg	Asp	Ala	
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Gln	Ile	Gly	Leu	Phe	Pro	Val	Glu	Tyr	Ala	Lys	Asn	Cys	Ala	Lys	Ala	
			260					265					270			
Met	Val	Gln	Ala	Ala	Arg	Gln	Gly	Glu	Arg	Tyr	Leu	Thr	Val	Pro	Ala	
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Trp	Phe	Gly	Ala	Met	Tyr	Leu	Trp	Arg	Leu	Phe	Ala	Pro	Glu	Val	Val	
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Ala	Asp	Ala	Pro	Ser	Arg	Thr	Met	Ala	Glu	Ala	Gly	Gly	Lys	Gln	Leu	
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Leu	Tyr	Pro	Thr	Ser	Leu	Arg	Ser	Asp	Glu	Ile	Lys	Lys				
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&lt;210&gt; 1220

&lt;211&gt; 1077

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1077)

&lt;400&gt; 1220

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1				5					10					15		
cac	gtg	ggc	ctg	gcg	ctg	gtg	ctc	ctc	gtc	tac	ctc	ccc	gcc	gcc	tcc	96
His	Val	Gly	Leu	Ala	Leu	Val	Leu	Leu	Val	Tyr	Leu	Pro	Ala	Ala	Ser	
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Val	Leu	Arg	Leu	Leu	Val	Arg	Pro	Leu	Leu	Ala	Asn	Lys	Gln	Ala	Glu	
		35				40						45				
gac	ctc	cg	ggc	aag	gtc	gtc	ctc	gtc	acc	ggc	gcg	tca	tcc	ggc	atc	192
Asp	Leu	Arg	Gly	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Ile	
	50				55					60						
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Gly	Glu	His	Leu	Val	Tyr	Glu	Tyr	Ala	Arg	Asn	Gly	Ala	Cys	Val	Ala	
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Leu	Val	Ala	Arg	Thr	Glu	Val	Ala	Leu	Arg	Ala	Val	Ala	Lys	Ala	Ala	
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Arg	Asp	Leu	Gly	Ser	Pro	Asp	Val	Leu	Val	Val	Pro	Ala	Asp	Val	Thr	
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Lys	Val	Asp	Asp	Ala	Lys	Arg	Ala	Val	Asp	Glu	Thr	Leu	Ala	His	Phe	
		115					120					125				
ggc	aaa	ctg	aat	cat	ctg	gtg	gcc	aac	gcg	ggg	atc	tgg	tcc	agc	tgc	432
Gly	Lys	Leu	Asn	His	Leu	Val	Ala	Asn	Ala	Gly	Ile	Trp	Ser	Ser	Cys	
	130				135					140						
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Phe	Phe	Glu	Glu	Ile	Thr	Asn	Ile	Thr	Ala	Phe	His	Asn	Val	Met	Asp	
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Leu	Asn	Phe	Trp	Gly	Ala	Val	Tyr	Pro	Thr	Tyr	Phe	Ala	Leu	Pro	Tyr	
				165				170						175		
ctc	aag	gcc	agc	cg	ggc	aac	atc	gtg	gtg	acc	gcc	tcc	gtc	gcc	ggc	576
Leu	Lys	Ala	Ser	Arg	Gly	Asn	Ile	Val	Val	Thr	Ala	Ser	Val	Ala	Gly	
		180						185				190				
agg	gtg	ccg	aca	gcc	agg	atg	agc	ttc	tac	aac	gca	agc	aaa	ggc	gcc	624
Arg	Val	Pro	Thr	Ala	Arg	Met	Ser	Phe	Tyr	Asn	Ala	Ser	Lys	Gly	Ala	
		195				200						205				
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Val	Ile	Arg	Phe	Tyr	Glu	Thr	Leu	Arg	Ala	Glu	Leu	Gly	Ser	His	Val	
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cac	gtc	acc	atc	ctc	acg	ccc	ggc	tac	gtc	gtc	tcc	aac	ctc	acc	aag	720
His	Val	Thr	Ile	Leu	Thr	Pro	Gly	Tyr	Val	Val	Ser	Asn	Leu	Thr	Lys	
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ggc	aag	ggc	ctc	cag	aag	gac	ggc	cat	gtc	ggc	atc	gac	gag	gag	gcc	768
Gly	Lys	Gly	Leu	Gln	Lys	Asp	Gly	His	Val	Gly	Ile	Asp	Glu	Glu	Ala	
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cg	gac	atc	aac	gtg	ggg	ccg	atg	ccg	gtg	ggc	aag	acg	gag	tcg	ctg	816
Arg	Asp	Ile	Asn	Val	Gly	Pro	Met	Pro	Val	Gly	Lys	Thr	Glu	Ser	Leu	
			260					265				270				
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Ala	Glu	Val	Val	Val	Ala	Ser	Val	Arg	Arg	Arg	Asp	Tyr	Tyr	Val	Thr	
		275					280					285				
tgg	ccc	ggc	tgg	tac	tgg	ccc	ttc	cac	atg	gtc	atg	tgc	gcc	gcg	ccg	912
Trp	Pro	Gly	Trp	Tyr	Trp	Pro	Phe	His	Met	Val	Met	Cys	Ala	Ala	Pro	
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gag	ctg	gtg	gac	tgg	ttc	tcc	cg	acc	ttc	tac	gtc	tcc	aag	tcc	ggc	960
Glu	Leu	Val	Asp	Trp	Phe	Ser	Arg	Thr	Phe	Tyr	Val	Ser	Lys	Ser	Gly	
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gac	cag	gac	ggc	ggc	ggc	ggc	gcg	ctc	agc	aag	aag	atc	ctg	gag	gcc	1008

## PhoenixTemp32470.tmp.txt

Asp Gln Asp Gly Gly Gly Ala Leu Ser Lys Lys Ile Leu Glu Ala  
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 gtc ggc ggg aag aag ttc ctc tac ccc cag acc ata cgc tca cag acc  
 Val Gly Gly Lys Lys Phe Leu Tyr Pro Gln Thr Ile Arg Ser Gln Thr  
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1056

1077

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 Val Leu Arg Leu Leu Val Arg Pro Leu Leu Ala Asn Lys Gln Ala Glu  
 35 40 45  
 Asp Leu Arg Gly Lys Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile  
 50 55 60  
 Gly Glu His Leu Val Tyr Glu Tyr Ala Arg Asn Gly Ala Cys Val Ala  
 65 70 75 80  
 Leu Val Ala Arg Thr Glu Val Ala Leu Arg Ala Val Ala Lys Ala Ala  
 85 90 95  
 Arg Asp Leu Gly Ser Pro Asp Val Leu Val Val Pro Ala Asp Val Thr  
 100 105 110  
 Lys Val Asp Ala Lys Arg Ala Val Asp Glu Thr Leu Ala His Phe  
 115 120 125  
 Gly Lys Leu Asn His Leu Val Ala Asn Ala Gly Ile Trp Ser Ser Cys  
 130 135 140  
 Phe Phe Glu Glu Ile Thr Asn Ile Thr Ala Phe His Asn Val Met Asp  
 145 150 155 160  
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 Leu Lys Ala Ser Arg Gly Asn Ile Val Val Thr Ala Ser Val Ala Gly  
 180 185 190  
 Arg Val Pro Thr Ala Arg Met Ser Phe Tyr Asn Ala Ser Lys Gly Ala  
 195 200 205  
 Val Ile Arg Phe Tyr Glu Thr Leu Arg Ala Glu Leu Gly Ser His Val  
 210 215 220  
 His Val Thr Ile Leu Thr Pro Gly Tyr Val Val Ser Asn Leu Thr Lys  
 225 230 235 240  
 Gly Lys Gly Leu Gln Lys Asp Gly His Val Gly Ile Asp Glu Glu Ala  
 245 250 255  
 Arg Asp Ile Asn Val Gly Pro Met Pro Val Gly Lys Thr Glu Ser Leu  
 260 265 270  
 Ala Glu Val Val Val Ala Ser Val Arg Arg Arg Asp Tyr Tyr Val Thr  
 275 280 285  
 Trp Pro Gly Trp Tyr Trp Pro Phe His Met Val Met Cys Ala Ala Pro  
 290 295 300  
 Glu Leu Val Asp Trp Phe Ser Arg Thr Phe Tyr Val Ser Lys Ser Gly  
 305 310 315 320  
 Asp Gln Asp Gly Gly Gly Ala Leu Ser Lys Lys Ile Leu Glu Ala  
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<220>  
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<400> 1223  
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 20 25 30  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
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 50 55 60  
 Asp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 65 70 75 80  
 Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Asp Xaa Xaa Xaa Xaa Asn Ala  
 85 90 95  
 Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 100 105 110  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn  
 115 120 125  
 Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 130 135 140  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser Xaa Xaa Xaa Xaa Xaa Xaa  
 165 170 175  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Lys Xaa  
 180 185 190  
 Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Xaa  
 195 200 205  
 Xaa Xaa Xaa Xaa Xaa Xaa Val Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa  
 210 215 220  
 Thr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 225 230 235 240  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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<220>  
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 aac ctt atc cgt cgc gac cgt ccg tta acc cgt gaa gag ctg ttt cgc 96  
 Asn Leu Ile Arg Arg Asp Arg Pro Leu Thr Arg Glu Glu Leu Phe Arg  
 20 25 30  
 gta gtg ccc agt gta ttc agt gag gac aaa cac gag tcc cgt agt gag 144  
 Val Val Pro Ser Val Phe Ser Glu Asp Lys His Glu Ser Arg Ser Glu  
 35 40 45  
 cgt tat acc tat ata ccc acc atc tcc ctg ctc gac agc cta cag cga 192  
 Arg Tyr Thr Tyr Ile Pro Thr Ile Ser Leu Leu Asp Ser Leu Gln Arg  
 50 55 60  
 gaa ggc ttc cag cca ttc ttt gcc tgt cag acc cgc gtg cgt gac ccg 240  
 Glu Gly Phe Gln Pro Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro  
 65 70 75 80  
 ggt cgt cgt gaa cat aca aag cat atg ctg cgt ctg cgg cgg gaa ggg 288  
 Gly Arg Arg Glu His Thr Lys His Met Leu Arg Leu Arg Arg Glu Gly  
 85 90 95  
 cag atc acc ggt aaa cag gtg ccg gaa att att cta ctc aac tct cac 336  
 Gln Ile Thr Gly Lys Gln Val Pro Glu Ile Ile Leu Leu Asn Ser His  
 100 105 110  
 gat gga acc agt tcg tat cag atg ttg ccg gga cta ttt cgt gcg gtt 384  
 Asp Gly Thr Ser Ser Tyr Gln Met Leu Pro Gly Leu Phe Arg Ala Val  
 115 120 125  
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 Cys Gln Asn Gly Leu Val Cys Gly Glu Ser Phe Gly Glu Val Arg Val  
 130 135 140  
 cca cac aag ggg gac gtg gtg agt cag gtg att gaa ggc gcg tat gag 480  
 Pro His Lys Gly Asp Val Val Ser Gln Val Ile Glu Gly Ala Tyr Glu  
 145 150 155 160  
 gtg ctg ggg att ttt gac cgg gtg gag gag aaa cgg gat gcc atg cag 528  
 Val Leu Gly Ile Phe Asp Arg Val Glu Glu Lys Arg Asp Ala Met Gln  
 165 170 175  
 tcg ttg ctg ttg cca ccc ccg gca cag gca ctg gca aaa gcc gcc 576  
 Ser Leu Leu Leu Pro Pro Pro Ala Gln Gln Ala Leu Ala Lys Ala Ala  
 180 185 190  
 ctc aca tac cgc ttt ggt gaa gac cac cag ccg gtg act gaa tcg cag 624  
 Leu Thr Tyr Arg Phe Gly Glu Asp His Gln Pro Val Thr Glu Ser Gln  
 195 200 205  
 atc ctc tcc cct cgc cgc tgg cag gat gag agc aat gac ctg tgg acc 672  
 Ile Leu Ser Pro Arg Arg Trp Gln Asp Glu Ser Asn Asp Leu Trp Thr  
 210 215 220  
 acg tac cag cgt att cag gag aac ctg att aag ggc ggg ctc agt ggc 720  
 Thr Tyr Gln Arg Ile Gln Glu Asn Leu Ile Lys Gly Gly Leu Ser Gly  
 225 230 235 240  
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 Arg Asn Ala Lys Gly Gly Arg Ser His Thr Arg Ala Val Arg Gly Ile  
 245 250 255  
 gac ggg gac gtg aaa ctt aac cgg gca ctg tgg gtg atg gcg gaa gcc 816  
 Asp Gly Asp Val Lys Leu Asn Arg Ala Leu Trp Val Met Ala Glu Ala  
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<210> 1226  
 <211> 278  
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&lt;213&gt; ESCHERICHIA COLI

&lt;400&gt; 1226

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20      25      30
Val Val Pro Ser Val Phe Ser Glu Asp Lys His Glu Ser Arg Ser Glu
35      40      45
Arg Tyr Thr Tyr Ile Pro Thr Ile Ser Leu Leu Asp Ser Leu Gln Arg
50      55      60
Glu Gly Phe Gln Pro Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro
65      70      75      80
Gly Arg Arg Glu His Thr Lys His Met Leu Arg Leu Arg Arg Glu Gly
85      90      95
Gln Ile Thr Gly Lys Gln Val Pro Glu Ile Ile Leu Leu Asn Ser His
100      105      110
Asp Gly Thr Ser Ser Tyr Gln Met Leu Pro Gly Leu Phe Arg Ala Val
115      120      125
Cys Gln Asn Gly Leu Val Cys Gly Glu Ser Phe Gly Glu Val Arg Val
130      135      140
Pro His Lys Gly Asp Val Val Ser Gln Val Ile Glu Gly Ala Tyr Glu
145      150      155      160
Val Leu Gly Ile Phe Asp Arg Val Glu Glu Lys Arg Asp Ala Met Gln
165      170      175
Ser Leu Leu Leu Pro Pro Pro Ala Gln Gln Ala Leu Ala Lys Ala Ala
180      185      190
Leu Thr Tyr Arg Phe Gly Glu Asp His Gln Pro Val Thr Glu Ser Gln
195      200      205
Ile Leu Ser Pro Arg Arg Trp Gln Asp Glu Ser Asn Asp Leu Trp Thr
210      215      220
Thr Tyr Gln Arg Ile Gln Glu Asn Leu Ile Lys Gly Gly Leu Ser Gly
225      230      235      240
Arg Asn Ala Lys Gly Gly Arg Ser His Thr Arg Ala Val Arg Gly Ile
245      250      255
Asp Gly Asp Val Lys Leu Asn Arg Ala Leu Trp Val Met Ala Glu Ala
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&lt;210&gt; 1227

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Unidentified

&lt;220&gt;

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&lt;222&gt; (1)..(825)

&lt;400&gt; 1227

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Asp Tyr Pro Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile
20      25      30
ttc gcc gac gcc ccg cac gaa agc cgt tcc gag cga tac agc tac atc      144
Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile
35      40      45
ccc acc gcg acc gtc ctg caa gaa ctg cgc gga gaa ggt ttc gag cct      192
Pro Thr Ala Thr Val Leu Gln Glu Leu Arg Gly Glu Gly Phe Glu Pro
50      55      60
ttc atg gtg acg caa acc cgc gtg cgc cac gac gac cgc cgc gac tac      240
Phe Met Val Thr Gln Thr Arg Val Arg His Asp Asp Arg Arg Asp Tyr
65      70      75      80
acc aag cac atg atc cgg ctg cgc cac gcc agc cag atc aac ggc cgc      288

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## PhoenixTemp32470.tmp.txt

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gag	gcc	aac	gaa	atc	atc	ctg	ctg	aac	tcc	cat	gac	ggc	acc	agc	agc	336
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tat	cag	atg	ctg	gcc	ggg	atg	ttc	cgc	ttc	gtt	tgc	agc	aat	ggc	ctt	384
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
		115					120					125				
gtc	tgc	ggc	gac	acc	gtg	gcc	gac	gtg	cgc	gtg	ccg	cac	aag	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
	130					135					140					
gta	gcc	ggg	cac	gtc	atc	gaa	ggc	gct	tac	gaa	gtc	ctg	cac	ggc	ttc	480
Val	Ala	Gly	His	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	His	Gly	Phe	
				145		150				155					160	
gac	cgg	gtg	cag	gaa	tcg	cgc	gat	gcc	atg	cgc	gcc	atc	acg	ctc	gac	528
Asp	Arg	Val	Gln	Glu	Ser	Arg	Asp	Ala	Met	Arg	Ala	Ile	Thr	Leu	Asp	
			165					170						175		
gcc	ggg	gaa	tcg	gaa	gtg	ttc	gcc	cgc	gct	gcg	ctg	gcg	ttg	aag	tac	576
Ala	Gly	Glu	Ser	Glu	Val	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	
			180					185					190			
gac	gag	gac	aag	cca	gcg	ccc	atc	acg	gaa	tcg	caa	atc	ctg	atg	ccg	624
Asp	Glu	Asp	Lys	Pro	Ala	Pro	Ile	Thr	Glu	Ser	Gln	Ile	Leu	Met	Pro	
		195					200				205					
cgc	cgc	cat	gac	gac	gac	cgc	cgc	gac	ctg	tgg	agc	gtg	ttc	aac	cgc	672
Arg	Arg	His	Asp	Asp	Asp	Arg	Arg	Asp	Leu	Trp	Ser	Val	Phe	Asn	Arg	
		210				215					220					
acg	cag	gag	aac	ttg	acc	aaa	ggc	ggc	ctg	tcc	gcc	cgc	gcc	gcg	aat	720
Thr	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	Ser	Ala	Arg	Ala	Ala	Asn	
				225		230			235						240	
ggc	cgc	cgc	cag	acc	cgc	ccc	gtg	cag	ggc	atc	gac	caa	agc	gtg		768
Gly	Arg	Arg	Gln	Thr	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Ser	Val	
				245				250					255			
cgc	ctg	aat	cgc	gcc	ctg	tgg	ctg	ctg	gcc	gat	ggc	ctg	cgc	cag	ttg	816
Arg	Leu	Asn	Arg	Ala	Leu	Trp	Leu	Leu	Ala	Asp	Gly	Leu	Arg	Gln	Leu	
			260					265					270			
aaa	gcc	tga														825
Lys	Ala															

<210> 1228  
 <211> 274  
 <212> PRT  
 <213> Unknown

<220>  
 <223> Unidentified

<400> 1228  
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 1 5 10 15  
 Asp Tyr Pro Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile  
 20 25 30  
 Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile  
 35 40 45  
 Pro Thr Ala Thr Val Leu Gln Glu Leu Arg Gly Glu Gly Phe Glu Pro  
 50 55 60  
 Phe Met Val Thr Gln Thr Arg Val Arg His Asp Arg Arg Asp Tyr  
 65 70 75 80  
 Thr Lys His Met Ile Arg Leu Arg His Ala Ser Gln Ile Asn Gly Arg  
 85 90 95  
 Glu Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu  
 115 120 125  
 Val Cys Gly Asp Thr Val Ala Asp Val Arg Val Pro His Lys Gly Asp  
 130 135 140  
 Val Ala Gly His Val Ile Glu Gly Ala Tyr Glu Val Leu His Gly Phe  
 145 150 155 160  
 Asp Arg Val Gln Glu Ser Arg Asp Ala Met Arg Ala Ile Thr Leu Asp

## PhoenixTemp32470.tmp.txt

165 170 175  
 Ala Gly Glu Ser Glu Val Phe Ala Arg Ala Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 Asp Glu Asp Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met Pro  
 195 200 205  
 Arg Arg His Asp Asp Asp Arg Arg Asp Leu Trp Ser Val Phe Asn Arg  
 210 215 220  
 Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu Ser Ala Arg Ala Ala Asn  
 225 230 235 240  
 Gly Arg Arg Gln Thr Thr Arg Pro Val Gln Gly Ile Asp Gln Ser Val  
 245 250 255  
 Arg Leu Asn Arg Ala Leu Trp Leu Leu Ala Asp Gly Leu Arg Gln Leu  
 260 265 270  
 Lys Ala

<210> 1229  
 <211> 819  
 <212> DNA  
 <213> Unknown

<220>  
 <223> Unidentified

<220>  
 <221> CDS  
 <222> (1)..(819)

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 Met Arg Leu Ala Ser Arg Phe Gly Tyr Ala Asn Gln Ile Arg Arg Asp  
 1 5 10 15  
 cgt ccg ctg aca cac gaa gaa ctg atg cac tat gtg ccg ggg att ttc 96  
 Arg Pro Leu Thr His Glu Glu Leu Met His Tyr Val Pro Gly Ile Phe  
 20 25 30  
 ggg gaa gat aaa cac acg tcc cga agc cag aac tat acg tac atc ccc 144  
 Gly Glu Asp Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile Pro  
 35 40 45  
 acc atc acc gta ctg gaa agc ctg cag cgg gaa ggc ttt cag cca ttc 192  
 Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro Phe  
 50 55 60  
 ttc gcc tgc cag acc cgt gtg cgc gac ccg ggc cgc cgg gga tac aca 240  
 Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Gly Tyr Thr  
 65 70 75 80  
 aaa cac atg ctg cgt ctg cgg cgg gcc gga gag ata aac gga gaa cat 288  
 Lys His Met Leu Arg Leu Arg Arg Ala Gly Glu Ile Asn Gly Glu His  
 85 90 95  
 gtc cct gaa att att ctg ctc aac tct cat gac ggt acc tcc agc tac 336  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr  
 100 105 110  
 cag atg ctg ccg ggt tac ttc agg ttc gtc tgc cag aac ggg tgc gtc 384  
 Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys Val  
 115 120 125  
 tgt ggt cag tct ctg ggg gaa gtg cgt gtt ccg cac cgg gga aat gtg 432  
 Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn Val  
 130 135 140  
 gtg gac aga gtc att gaa ggg gct tac gag gta gtg ggc gtg ttt gac 480  
 Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe Asp  
 145 150 155 160  
 cgg att gag gaa aag cgt gat gcc atg cag tcg ctg att ctg ccg cca 528  
 Arg Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Ile Leu Pro Pro  
 165 170 175  
 ccg gca cgc cag gcg ctg gca cag gcg act tac cgt tat ggt 576  
 Pro Ala Arg Gln Ala Leu Ala Ala Leu Thr Tyr Arg Tyr Gly  
 180 185 190  
 gac gaa cat cag ccc gtc acc acc gcc gac att ctg acg cca cga cgc 624  
 Asp Glu His Gln Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg Arg  
 195 200 205  
 cgg gag gat tac ggt aag gac ctg tgg agt gct tat cag acc att cag 672

## PhoenixTemp32470.tmp.txt

Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile	Gln		
210	210					215					220						
gag	aat	atg	ctg	aaa	ggc	gga	att	tca	ggg	cgc	agc	gct	aaa	gga	aaa	720	
Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly	Lys		
225					230					235					240		
cgt	atc	cat	acc	cgt	gcc	att	cac	agc	att	gac	act	gac	att	aag	ctc	768	
Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys	Leu		
				245					250					255			
aac	cgc	gca	ttg	tgg	gtg	atg	gcg	gaa	acc	ctg	ctg	gag	agc	ctg	cgc	816	
Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Leu	Arg		
			260					265					270				
tga																819	

<210> 1230  
 <211> 272  
 <212> PRT  
 <213> Unknown

<220>  
 <223> Unidentified

<400> 1230

Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Ala	Asn	Gln	Ile	Arg	Arg	Asp		
1				5					10					15			
Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	His	Tyr	Val	Pro	Gly	Ile	Phe		
			20					25					30				
Gly	Glu	Asp	Lys	His	Thr	Ser	Arg	Ser	Gln	Asn	Tyr	Thr	Tyr	Ile	Pro		
		35					40					45					
Thr	Ile	Thr	Val	Leu	Glu	Ser	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro	Phe		
	50					55					60						
Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Pro	Gly	Arg	Arg	Gly	Tyr	Thr		
65					70					75				80			
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Glu	Ile	Asn	Gly	Glu	His		
				85					90					95			
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr		
		100					105						110				
Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Phe	Val	Cys	Gln	Asn	Gly	Cys	Val		
	115						120					125					
Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	Val		
	130					135					140						
Val	Asp	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	Asp		
145					150				155					160			
Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Ile	Leu	Pro	Pro		
				165					170					175			
Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Gly		
		180					185						190				
Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg	Arg		
	195					200						205					
Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile	Gln		
	210					215					220						
Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly	Lys		
225					230					235				240			
Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys	Leu		
				245					250					255			
Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Leu	Arg		
			260					265					270				

<210> 1231  
 <211> 819  
 <212> DNA  
 <213> Unknown

<220>  
 <223> Unidentified

<220>  
 <221> CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 1231

atg	cga	tta	gcc	agc	cgt	ttt	ggg	tat	gta	aat	cag	atc	cgc	cgg	gag	48
Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Val	Asn	Gln	Ile	Arg	Arg	Glu	
1				5					10					15		
cgc	ccg	ctg	aca	cgc	gaa	gaa	ctg	atg	tac	cac	gtc	ccg	agt	att	ttt	96
Arg	Pro	Leu	Thr	Arg	Glu	Glu	Leu	Met	Tyr	His	Val	Pro	Ser	Ile	Phe	
			20					25					30			
gcg	gaa	gac	cgg	cac	acc	tcc	cgc	agt	gaa	cgg	tat	gcg	tac	att	ccc	144
Ala	Glu	Asp	Arg	His	Thr	Ser	Arg	Ser	Glu	Arg	Tyr	Ala	Tyr	Ile	Pro	
			35				40					45				
acc	atc	acc	gtc	ctg	gaa	aat	ctg	cag	cgg	gaa	ggc	ttt	cag	ccg	ttc	192
Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro	Phe	
	50					55					60					
ttc	gcc	tgc	cag	acc	cgt	gtg	cgc	gac	cag	agc	cgc	cgg	gaa	tat	acc	240
Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Gln	Ser	Arg	Arg	Glu	Tyr	Thr	
65					70				75						80	
aaa	cat	atg	ctg	cgt	ctg	cga	cgg	gcc	gga	cag	ata	acc	ggg	cag	cat	288
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Gln	Ile	Thr	Gly	Gln	His	
				85					90					95		
gtg	cct	gaa	att	att	ctg	ctc	aac	tcc	cat	gac	ggg	tca	tcc	agc	tac	336
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr	
			100					105					110			
cag	atg	tta	ccc	gga	tat	ttt	cgt	gcc	atc	tgc	acc	aat	ggc	ctg	gtc	384
Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Ala	Ile	Cys	Thr	Asn	Gly	Leu	Val	
			115				120					125				
tgc	ggg	cag	tgc	ctg	gga	gaa	gtc	cgg	gtg	cca	cac	cgg	gga	aac	gtg	432
Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	Val	
	130					135					140					
gtg	gac	agt	gtg	att	gaa	agt	gct	tac	gag	gtg	gtg	ggg	gtt	ttt	gac	480
Val	Asp	Ser	Val	Ile	Glu	Ser	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	Asp	
145					150				155						160	
cgg	att	gaa	gaa	aag	cgt	gac	gcc	atg	cag	tgc	ctg	gtc	ctg	ccg	cca	528
Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro	Pro	
				165				170						175		
ccg	tca	cgc	cag	gcg	ctg	gca	cag	gcg	gca	ctg	act	tac	cgt	tat	ggg	576
Pro	Ser	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Gly	
			180				185						190			
gac	gaa	cat	cag	ccc	gtc	acc	acc	gcc	gac	att	ctg	acg	cca	cga	cgc	624
Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg	Arg	
			195				200					205				
cgg	gag	gat	tac	ggg	aag	gac	ctg	tgg	agt	gct	tat	cag	acc	atc	cag	672
Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile	Gln	
	210				215						220					
gag	aat	atg	ctg	aaa	ggc	ggg	att	tcc	ggg	cgc	agt	gcc	aga	gga	aaa	720
Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Arg	Gly	Lys	
225					230					235					240	
cgt	atc	cat	acc	cgt	acc	att	cac	agc	atc	gac	acc	gac	att	aag	ctc	768
Arg	Ile	His	Thr	Arg	Thr	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys	Leu	
				245					250					255		
aac	cgg	gcg	ttg	tgg	gtg	atg	gca	gaa	aca	ctg	ctg	gag	agc	atg	cgc	816
Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Met	Arg	
			260					265					270			
tga																819

&lt;210&gt; 1232

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Unidentified

&lt;400&gt; 1232

Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Val	Asn	Gln	Ile	Arg	Arg	Glu
1				5					10					15	

## PhoenixTemp32470.tmp.txt

Arg Pro Leu Thr Arg Glu Glu Leu Met Tyr His Val Pro Ser Ile Phe  
 20 25 30  
 Ala Glu Asp Arg His Thr Ser Arg Ser Glu Arg Tyr Ala Tyr Ile Pro  
 35 40 45  
 Thr Ile Thr Val Leu Glu Asn Leu Gln Arg Glu Gly Phe Gln Pro Phe  
 50 55 60  
 Phe Ala Cys Gln Thr Arg Val Arg Asp Gln Ser Arg Arg Glu Tyr Thr  
 65 70 75 80  
 Lys His Met Leu Arg Leu Arg Arg Ala Gly Gln Ile Thr Gly Gln His  
 85 90 95  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr  
 100 105 110  
 Gln Met Leu Pro Gly Tyr Phe Arg Ala Ile Cys Thr Asn Gly Leu Val  
 115 120 125  
 Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn Val  
 130 135 140  
 Val Asp Ser Val Ile Glu Ser Ala Tyr Glu Val Val Gly Val Phe Asp  
 145 150 155 160  
 Arg Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Val Leu Pro Pro  
 165 170 175  
 Pro Ser Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr Gly  
 180 185 190  
 Asp Glu His Gln Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg Arg  
 195 200 205  
 Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Ala Tyr Gln Thr Ile Gln  
 210 215 220  
 Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Arg Gly Lys  
 225 230 235 240  
 Arg Ile His Thr Arg Thr Ile His Ser Ile Asp Thr Asp Ile Lys Leu  
 245 250 255  
 Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Met Arg  
 260 265 270

&lt;210&gt; 1233

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Unidentified

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 1233

atg	cga	tta	gcc	agt	cgt	ttt	ggt	tat	gcg	aac	cag	gta	cgt	cgt	gat	48
Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Ala	Asn	Gln	Val	Arg	Arg	Asp	
1				5					10					15		
cgt	ccg	ctg	aca	cac	gaa	gaa	ctg	atg	cgc	cat	gta	ccg	agt	att	ttt	96
Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	Arg	His	Val	Pro	Ser	Ile	Phe	
			20					25					30			
ggg	gaa	gac	cga	cat	acc	tcc	cgc	agt	gaa	cac	tat	gcg	tac	att	ccc	144
Gly	Glu	Asp	Arg	His	Thr	Ser	Arg	Ser	Glu	His	Tyr	Ala	Tyr	Ile	Pro	
		35					40				45					
act	atc	acc	gtc	ctg	gaa	aat	ctg	cag	cag	gaa	ggc	ttt	cag	cca	ttc	192
Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Gln	Glu	Gly	Phe	Gln	Pro	Phe	
		50				55					60					
ttc	gcc	tgc	cag	acc	cgc	gta	cgt	gac	ccg	ggc	cgc	cgg	gga	tac	aca	240
Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Pro	Gly	Arg	Arg	Gly	Tyr	Thr	
					70					75					80	
aaa	cac	atg	ctg	cgc	ctg	cgc	cgt	aac	ggg	gag	ata	aac	gga	caa	cat	288
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Asn	Gly	Glu	Ile	Asn	Gly	Gln	His	
				85					90					95		
gtc	cct	gaa	att	att	ctg	ctc	aac	tcc	cat	gac	ggt	acc	tcc	agc	tac	336
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr	
			100					105					110			
cag	atg	ctg	ccg	ggt	tac	ttc	aga	gtc	tgc	cag	aac	ggc	tgc	gtc		384
Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Phe	Val	Cys	Gln	Asn	Gly	Cys	Val	

[illegible]

## PhoenixTemp32470.tmp.txt

Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly Lys  
 225 230 235 240  
 Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys Leu  
 245 250 255  
 Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Met Arg  
 260 265 270

<210> 1235  
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 <212> DNA  
 <213> Unknown

<220>  
 <223> Unidentified

<220>  
 <221> CDS  
 <222> (1)..(819)

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 atg caa tta gcc agt cgt ttt ggt cat gta aat cag atc cgt cgg gag 48  
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 1 5 10 15  
 cgc cca ctg aca cgc gaa gaa ctg atg tac cac gtc ccg agt att ttt 96  
 Arg Pro Leu Thr Arg Glu Glu Leu Met Tyr His Val Pro Ser Ile Phe  
 20 25 30  
 gga gaa gac cgg cac acc tcc cgc agt gaa cgg tat gcg tac att ccc 144  
 Gly Glu Asp Arg His Thr Ser Arg Ser Glu Arg Tyr Ala Tyr Ile Pro  
 35 40 45  
 acc atc acc gtc ctg gaa aat ctg cag cgg gaa ggc ttt cag ccg ttc 192  
 Thr Ile Thr Val Leu Glu Asn Leu Gln Arg Glu Gly Phe Gln Pro Phe  
 50 55 60  
 ttc gcc tgc cag acc cgt gtg cgc gac cag agc cgc cgg gaa tat acc 240  
 Phe Ala Cys Gln Thr Arg Val Arg Asp Gln Ser Arg Arg Glu Tyr Thr  
 65 70 75 80  
 aaa cat atg ctg cgt ctg cgg cgg gcc gga cag ata acc ggt cag cat 288  
 Lys His Met Leu Arg Leu Arg Arg Ala Gly Gln Ile Thr Gly Gln His  
 85 90 95  
 gtg cct gaa att att ctg ctc aac tcc cat gac ggt tca tcc agc tac 336  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Tyr  
 100 105 110  
 cag atg tta ccc gga tat ttt cgt gcc att tgt acc aat ggc ctg gtc 384  
 Gln Met Leu Pro Gly Tyr Phe Arg Ala Ile Cys Thr Asn Gly Leu Val  
 115 120 125  
 tgc ggt cag tcg ctg gga gaa gtc cgg gtg cca cac cgg gga aac gtg 432  
 Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn Val  
 130 135 140  
 gtg gac agg gtc ata gaa ggt gct tac gaa gtg gtg ggc gtg ttt gac 480  
 Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe Asp  
 145 150 155 160  
 ctg att gag gaa aag cgt gat gcc atg cag tcg ctg gtc ctg ccg cca 528  
 Leu Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Val Leu Pro Pro  
 165 170 175  
 ccg gca cgc cag gcg ctg gca cag gcg gcg ctg act tac cgt tat ggt 576  
 Pro Ala Arg Gln Ala Leu Ala Gln Ala Leu Thr Tyr Arg Tyr Gly  
 180 185 190  
 gat gaa cat cag ccc gtc acc act acc gac att ctg acg cca cga cgc 624  
 Asp Glu His Gln Pro Val Thr Thr Thr Asp Ile Leu Thr Pro Arg Arg  
 195 200 205  
 cgg gag gat tac ggt aag gac ctg tgg agt gct tat cag acc atc cag 672  
 Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Ala Tyr Gln Thr Ile Gln  
 210 215 220  
 gag aat atg ctg aaa ggc ggg att tcc gct cgc agt gcc aga gga aaa 720  
 Glu Asn Met Leu Lys Gly Gly Ile Ser Ala Arg Ser Ala Arg Gly Lys  
 225 230 235 240  
 cgt atc cat acc cgg gcc att cac agc atc gat acc gac att aag ctc 768  
 Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys Leu  
 245 250 255  
 aac cgg gcg ttg tgg gtg atg gca gaa acg ctg ctg gag agc ctg cgc 816



Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Leu Arg  
 260 265 270  
 tga

819

<210> 1236  
 <211> 272  
 <212> PRT  
 <213> Unknown

<220>  
 <223> Unidentified

<400> 1236  
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 1 5 10 15  
 Arg Pro Leu Thr Arg Glu Glu Leu Met Tyr His Val Pro Ser Ile Phe  
 20 25 30  
 Gly Glu Asp Arg His Thr Ser Arg Ser Glu Arg Tyr Ala Tyr Ile Pro  
 35 40 45  
 Thr Ile Thr Val Leu Glu Asn Leu Gln Arg Glu Gly Phe Gln Pro Phe  
 50 55 60  
 Phe Ala Cys Gln Thr Arg Val Arg Asp Gln Ser Arg Arg Glu Tyr Thr  
 65 70 75 80  
 Lys His Met Leu Arg Leu Arg Arg Ala Gly Gln Ile Thr Gly Gln His  
 85 90 95  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr  
 100 105 110  
 Gln Met Leu Pro Gly Tyr Phe Arg Ala Ile Cys Thr Asn Gly Leu Val  
 115 120 125  
 Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn Val  
 130 135 140  
 Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe Asp  
 145 150 155 160  
 Leu Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Val Leu Pro Pro  
 165 170 175  
 Pro Ala Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr Gly  
 180 185 190  
 Asp Glu His Gln Pro Val Thr Thr Thr Asp Ile Leu Thr Pro Arg Arg  
 195 200 205  
 Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Ala Tyr Gln Thr Ile Gln  
 210 215 220  
 Glu Asn Met Leu Lys Gly Gly Ile Ser Ala Arg Ser Ala Arg Gly Lys  
 225 230 235 240  
 Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys Leu  
 245 250 255  
 Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Leu Arg  
 260 265 270

<210> 1237  
 <211> 819  
 <212> DNA  
 <213> Salmonella typhimurium

<220>  
 <221> CDS  
 <222> (1)..(819)  
 <223> transl\_table=11

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 1 5 10 15  
 agt cct ttg gct gac gct gaa tta atg cag act gtg cct tca gtt ttt 96  
 Ser Pro Leu Ala Asp Ala Glu Leu Met Gln Thr Val Pro Ser Val Phe 20 25 30  
 20 25 30  
 tcc gga gac aaa cat gaa tcc cgg agc gaa cgt tat act tat att cca 144  
 Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro  
 Page 698

## PhoenixTemp32470.tmp.txt

```

      35      40      45
acc att aat atc atc aac agg tta cgt gag gaa ggt ttt cag tcg ttc 192
Thr Ile Asn Ile Ile Asn Arg Leu Arg Glu Glu Gly Phe Gln Ser Phe
      50      55      60
ttt gcc tgc cag agt cgt gta cgt gat tta agt cgc cgg gaa tac agt 240
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Ser Arg Arg Glu Tyr Ser
      65      70      75      80
aaa cat atg ctg cgt ttt cgt cgt gaa gga cag att aat ggg aaa gag 288
Lys His Met Leu Arg Phe Arg Arg Glu Gly Gln Ile Asn Gly Lys Glu
      85      90      95
gtt ccg gaa att att ttg ctc aat tct cat gac ggt tcg tca agt tat 336
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Tyr
      100      105      110
cag atg gtt ccc ggg ctg ttc aga ttt atc tgt aca aat gga ctg gta 384
Gln Met Val Pro Gly Leu Phe Arg Phe Ile Cys Thr Asn Gly Leu Val
      115      120      125
tgc gga tca ttt ggt gaa ata cgt gtg cca cac aag gga gat att gtt 432
Cys Gly Ser Phe Gly Glu Ile Arg Val Pro His Lys Gly Asp Ile Val
      130      135      140
ggg cag gtg att gag ggg gat tat gag gtt atg ggg atc ttc gat aaa 480
Gly Gln Val Ile Glu Gly Asp Tyr Glu Val Met Gly Ile Phe Asp Lys
      145      150      155      160
gcc acc gaa aat atg gag tca atg aag tca gtg ata ctt aat cag gat 528
Ala Thr Glu Asn Met Glu Ser Met Lys Ser Val Ile Leu Asn Gln Asp
      165      170      175
gag caa tat ctg ttt ggt aaa gcg gca ctg act gtc aga tat gag gac 576
Glu Gln Tyr Leu Phe Gly Lys Ala Ala Leu Thr Val Arg Tyr Glu Asp
      180      185      190
gaa aat aaa atc cct gtt tct cct gaa caa ata att act cca cgt cgt 624
Glu Asn Lys Ile Pro Val Ser Pro Glu Gln Ile Ile Thr Pro Arg Arg
      195      200      205
cgg gaa gat aaa caa aat gac ctg tgg aca aca tat cag cgt gta cag 672
Arg Glu Asp Lys Gln Asn Asp Leu Trp Thr Thr Tyr Gln Arg Val Gln
      210      215      220
aag aat atg atg aag agt ggg tta ccc ggc agg aat gcc tcc gga aaa 720
Lys Asn Met Met Lys Ser Gly Leu Pro Gly Arg Asn Ala Ser Gly Lys
      225      230      235      240
aac acc cgg atc agg gca gtt acc ggt att aat ggt gat atc cgg tta 768
Asn Thr Arg Ile Arg Ala Val Thr Gly Ile Asn Gly Asp Ile Arg Leu
      245      250      255
aac aag gcg ctg tgg atg att gct gaa cag ttt cgt gaa tgt aag tca 816
Asn Lys Ala Leu Trp Met Ile Ala Glu Gln Phe Arg Glu Cys Lys Ser
      260      265      270
taa

```

&lt;210&gt; 1238

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Salmonella typhimurium

&lt;400&gt; 1238

```

Met Arg Leu Ala Ser Arg Phe Gly Arg Gln Asn Ser Ile Arg Arg Glu
1      5      10      15
Ser Pro Leu Ala Asp Ala Glu Leu Met Gln Thr Val Pro Ser Val Phe
      20      25      30
Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro
      35      40      45
Thr Ile Asn Ile Ile Asn Arg Leu Arg Glu Glu Gly Phe Gln Ser Phe
      50      55      60
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Ser Arg Arg Glu Tyr Ser
65      70      75      80
Lys His Met Leu Arg Phe Arg Arg Glu Gly Gln Ile Asn Gly Lys Glu
      85      90      95
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr
      100      105      110
Gln Met Val Pro Gly Leu Phe Arg Phe Ile Cys Thr Asn Gly Leu Val
      115      120      125

```

## PhoenixTemp32470.tmp.txt

Cys Gly Ser Phe Gly Glu Ile Arg Val Pro His Lys Gly Asp Ile Val  
 130 140  
 Gly Gln Val Ile Glu Gly Asp Tyr Glu Val Met Gly Ile Phe Asp Lys  
 145 150 155 160  
 Ala Thr Glu Asn Met Glu Ser Met Lys Ser Val Ile Leu Asn Gln Asp  
 165 170 175  
 Glu Gln Tyr Leu Phe Gly Lys Ala Ala Leu Thr Val Arg Tyr Glu Asp  
 180 185 190  
 Glu Asn Lys Ile Pro Val Ser Pro Glu Gln Ile Ile Thr Pro Arg Arg  
 195 200 205  
 Arg Glu Asp Lys Gln Asn Asp Leu Trp Thr Thr Tyr Gln Arg Val Gln  
 210 215 220  
 Lys Asn Met Met Lys Ser Gly Leu Pro Gly Arg Asn Ala Ser Gly Lys  
 225 230 235 240  
 Asn Thr Arg Ile Arg Ala Val Thr Gly Ile Asn Gly Asp Ile Arg Leu  
 245 250 255  
 Asn Lys Ala Leu Trp Met Ile Ala Glu Gln Phe Arg Glu Cys Lys Ser  
 260 265 270

&lt;210&gt; 1239

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli; 0157:H7

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;400&gt; 1239

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Met Arg Leu Ala Ser Arg Phe Gly Tyr Ala Ala Asn Gln Ile Arg Arg	
1 5 10 15	
gac cgt ccg ctg aca cat gaa gaa ctg ata cgc cat gta ccc agt att	96
Asp Arg Pro Leu Thr His Glu Glu Leu Ile Arg His Val Pro Ser Ile	
20 25 30	
ttt ggg gaa gac cgg cac acc tcc cgc agt gaa cgg tat gcg tac att	144
Phe Gly Glu Asp Arg His Thr Ser Arg Ser Glu Arg Tyr Ala Tyr Ile	
35 40 45	
ccc acc att acc gtc ctg gaa aat ctg cag cgg gaa ggc ttt cag ccg	192
Pro Thr Ile Thr Val Leu Glu Asn Leu Gln Arg Glu Gly Phe Gln Pro	
50 55 60	
ttc ttc gcc tgc cag acc cgt gtg cgc gac ccg ggc cgc cgg gga tac	240
Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Gly Tyr	
65 70 75 80	
aca aaa cac atg ctg cgt ctg cgg cgg gcc gga gag ata aac gga gaa	288
Thr Lys His Met Leu Arg Leu Arg Arg Ala Gly Glu Ile Asn Gly Glu	
85 90 95	
cat gtc cct gaa att att ctg ctc aac tct cat gac ggt acc tcc agc	336
His Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser	
100 105 110	
tac cag atg ctg ccg ggt tac ttc agg ttc gtc tgc cag aac ggg tgc	384
Tyr Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys	
115 120 125	
gtc tgt ggc cag tct ctg ggg gaa gtg cgt gtt cca cac cgg gga aat	432
Val Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn	
130 135 140	
gta gtg gag aaa gtt atc gaa ggg gct tac gag gtg ggc gtg ttt	480
Val Val Glu Lys Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe	
145 150 155 160	
gac cgg ata gag gag aag cgt gat gcc atg cag tcg ctg gtc ctg ccg	528
Asp Arg Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Val Leu Pro	
165 170 175	
caa ccg gca cgc cag gcg ctg gca cag gcg gca ctg act tac cgt tat	576
Gln Pro Ala Arg Gln Ala Leu Ala Gln Ala Leu Thr Tyr Arg Tyr	
180 185 190	
ggg gac gaa cat cag ccc gtc acc acc gcc gac att ctg acg ccg cga	624
Gly Asp Glu His Gln Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg	
195 200 205	
cgc cgg gag gat tac ggt aag gac ctg tgg agc gca tat cag acc atc	672

## PhoenixTemp32470.tmp.txt

Arg	Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile		
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cag	gag	aat	atg	ctg	aaa	ggc	ggg	att	tcc	ggg	cgc	agt	gca	aaa	gga		720
Gln	Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly		
225					230					235					240		
aaa	cgt	atc	cat	acc	cgg	gcc	att	cac	agc	att	gat	acc	gac	att	aag		768
Lys	Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys		
				245					250					255			
ctc	aat	cgc	gca	ttg	tgg	gtg	atg	gca	gaa	acg	atg	ctg	gag	agc	ctg		816
Leu	Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Met	Leu	Glu	Ser	Leu		
			260					265					270				
cgc	tga																822
Arg																	

&lt;210&gt; 1240

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli; 0157:H7

&lt;400&gt; 1240

Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Ala	Ala	Asn	Gln	Ile	Arg	Arg		
1				5					10					15			
Asp	Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Ile	Arg	His	Val	Pro	Ser	Ile		
			20					25					30				
Phe	Gly	Glu	Asp	Arg	His	Thr	Ser	Arg	Ser	Glu	Arg	Tyr	Ala	Tyr	Ile		
		35					40					45					
Pro	Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro		
	50					55					60						
Phe	Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Pro	Gly	Arg	Arg	Gly	Tyr		
65				70					75						80		
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Glu	Ile	Asn	Gly	Glu		
			85						90					95			
His	Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser		
		100						105					110				
Tyr	Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Phe	Val	Cys	Gln	Asn	Gly	Cys		
		115					120					125					
Val	Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn		
	130					135					140						
Val	Val	Glu	Lys	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe		
145				150					155						160		
Asp	Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro		
			165					170						175			
Gln	Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr		
		180						185					190				
Gly	Asp	Glu	His	Gln	Pro	Val	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg			
		195				200					205						
Arg	Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile		
	210					215					220						
Gln	Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly		
225				230						235				240			
Lys	Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys		
			245						250					255			
Leu	Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Met	Leu	Glu	Ser	Leu		
			260					265					270				
Arg																	

&lt;210&gt; 1241

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli 0157:H7 EDL933

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1241

## PhoenixTemp32470.tmp.txt

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Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Ala	Asn	Gln	Ile	Arg	Arg	Asp	
1				5					10					15		
cgt	ccg	ctg	aca	cac	gaa	gaa	ctg	atg	cgc	cat	gta	ccg	agt	att	ttt	96
Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	Arg	His	Val	Pro	Ser	Ile	Phe	
		20					25					30				
ggg	gaa	aac	cga	cat	acc	tct	cgc	agt	gaa	cac	tat	gcg	tac	att	ccc	144
Gly	Glu	Asn	Arg	His	Thr	Ser	Arg	Ser	Glu	His	Tyr	Ala	Tyr	Ile	Pro	
		35					40				45					
act	atc	acc	gtc	ctg	gaa	aat	ctg	cag	cag	gaa	ggc	ttt	cag	ccg	ttc	192
Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Gln	Glu	Gly	Phe	Gln	Pro	Phe	
	50					55					60					
ttt	gcc	tgc	cag	acc	cgc	gtg	cgc	gac	cag	agc	cgc	cgg	gaa	tac	aca	240
Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Gln	Ser	Arg	Arg	Glu	Tyr	Thr	
	65				70					75					80	
aaa	cac	atg	ctg	cgt	ctg	cgg	cgg	gcc	gga	cag	ata	acc	ggt	cag	cat	288
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Gln	Ile	Thr	Gly	Gln	His	
				85					90					95		
gtc	cct	gaa	att	att	ctg	ctc	aac	tcc	cat	gac	ggt	tca	tcc	agc	tac	336
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr	
			100					105					110			
cag	atg	tta	ccc	gga	tat	ttt	cgt	gcc	att	tgt	acc	aat	gga	ctg	gtc	384
Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Ala	Ile	Cys	Thr	Asn	Gly	Leu	Val	
		115					120					125				
tgc	ggt	cag	tct	ctg	gga	gaa	ttg	cgt	ggt	cca	cac	cgg	gga	aat	gtg	432
Cys	Gly	Gln	Ser	Leu	Gly	Glu	Leu	Arg	Val	Pro	His	Arg	Gly	Asn	Val	
	130				135						140					
gtg	gac	aga	gtc	att	gaa	ggg	gct	tac	gag	gtg	gtg	ggc	ggt	ttt	gac	480
Val	Asp	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	Asp	
	145				150					155					160	
cgg	ata	gag	gag	aag	cgt	gat	gcc	atg	cag	tcg	ctg	gtc	ctg	ccg	cca	528
Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro	Pro	
				165				170						175		
ccg	gca	cgc	cag	gcg	ctg	gca	cag	gcg	gca	ctg	act	tac	cgt	tat	ggt	576
Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Gly	
			180					185					190			
gac	gaa	cat	cag	ccc	gtc	acc	acc	gcc	gac	att	ctg	aca	cca	cga	cgc	624
Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg	Arg	
		195					200				205					
cgg	gag	gat	tac	ggt	aag	gac	ctg	tgg	agt	gct	tat	cag	acc	atc	cag	672
Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile	Gln	
	210				215						220					
gag	aat	atg	ctg	aaa	ggc	ggg	att	tcc	ggt	cgc	agt	gca	aaa	gga	aaa	720
Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly	Lys	
	225				230					235					240	
cgt	atc	cat	acc	cgg	gcc	att	cac	agc	att	gat	acc	gac	att	aag	ctc	768
Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys	Leu	
				245					250					255		
aat	cgc	gca	ttg	tgg	gtg	atg	gca	gaa	acg	ctg	ctg	gag	agc	atg	cgc	816
Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Met	Arg	
			260					265					270			
tga																819

&lt;210&gt; 1242

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli O157:H7 EDL933

&lt;400&gt; 1242

Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Ala	Asn	Gln	Ile	Arg	Arg	Asp
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Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	Arg	His	Val	Pro	Ser	Ile	Phe
			20					25					30		
Gly	Glu	Asn	Arg	His	Thr	Ser	Arg	Ser	Glu	His	Tyr	Ala	Tyr	Ile	Pro
		35					40				45				
Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Gln	Glu	Gly	Phe	Gln	Pro	Phe
	50					55					60				

## PhoenixTemp32470.tmp.txt

Phe Ala Cys Gln Thr Arg Val Arg Asp Gln Ser Arg Arg Glu Tyr Thr  
 65 70 75 80  
 Lys His Met Leu Arg Arg Arg Ala Gly Gln Ile Thr Gly Gln His  
 85 90 95  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Tyr  
 100 105 110  
 Gln Met Leu Pro Gly Tyr Phe Arg Ala Ile Cys Thr Asn Gly Leu Val  
 115 120 125  
 Cys Gly Gln Ser Leu Gly Glu Leu Arg Val Pro His Arg Gly Asn Val  
 130 135 140  
 Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe Asp  
 145 150 155 160  
 Arg Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Val Leu Pro Pro  
 165 170 175  
 Pro Ala Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr Gly  
 180 185 190  
 Asp Glu His Gln Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg Arg  
 195 200 205  
 Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Ala Tyr Gln Thr Ile Gln  
 210 215 220  
 Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly Lys  
 225 230 235 240  
 Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys Leu  
 245 250 255  
 Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Met Arg  
 260 265 270

&lt;210&gt; 1243

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Ralstonia solanacearum GMI1000

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1243

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Met	Gln	Leu	Ala	Ser	Arg	Phe	Ala	Ser	Arg	Ser	Pro	Ser	Leu	Arg	Ser	
1				5				10						15		
gat	tac	ccg	ctg	acc	gat	gac	cag	att	cac	cgc	gtg	gct	ccg	tcc	atc	96
Asp	Tyr	Pro	Leu	Thr	Asp	Asp	Gln	Ile	His	Arg	Val	Ala	Pro	Ser	Ile	
			20				25						30			
ttc	gcg	gac	gcg	ccg	cat	gaa	agc	cgt	tcg	cag	cgg	tac	gcc	tac	atc	144
Phe	Ala	Asp	Ala	Pro	His	Glu	Ser	Arg	Ser	Gln	Arg	Tyr	Ala	Tyr	Ile	
		35				40					45					
ccc	acc	gcc	gcc	gtg	ctg	gcc	gaa	ctg	cgc	aag	gag	ggg	ttt	caa	ccc	192
Pro	Thr	Ala	Ala	Val	Leu	Ala	Glu	Leu	Arg	Lys	Glu	Gly	Phe	Gln	Pro	
		50				55				60						
ttc	atg	gtg	acg	caa	acc	cgc	gtg	cgc	gac	gaa	ggc	aag	cgc	gag	cac	240
Phe	Met	Val	Thr	Gln	Thr	Arg	Val	Arg	Asp	Glu	Gly	Lys	Arg	Glu	His	
		65			70				75					80		
acc	aaa	cac	atg	ctg	cgc	ctg	cgc	cac	gca	agc	cag	atc	aac	ggc	gcg	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Ala	
			85					90						95		
gaa	gcc	aat	gaa	atc	gtg	ttg	ctc	aat	tcc	cat	gac	ggg	acg	agc	agt	336
Glu	Ala	Asn	Glu	Ile	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tat	cag	atg	ctg	gcc	gga	atg	ttc	cgg	ttc	gtg	tgc	agc	aat	ggc	ctt	384
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
		115					120					125				
gta	tgc	ggc	gac	acc	gtg	gcc	gat	gtg	cgc	gtg	ccc	cac	aag	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
		130				135					140					
gtt	tcc	ggg	cat	gtc	atc	gaa	ggc	gct	tac	gaa	gtc	ttg	cgc	ggc	ttc	480
Val	Ser	Gly	His	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Arg	Gly	Phe	
				150					155						160	
gac	cgg	gtg	aag	gat	tcc	cgc	gat	gcc	atg	cgc	gct	atc	acg	ctg	gac	528

## PhoenixTemp32470.tmp.txt

Asp	Arg	Val	Lys	Asp 165	Ser	Arg	Asp	Ala	Met 170	Arg	Ala	Ile	Thr	Leu 175	Asp		
gaa	ggc	gaa	gcc	aaa	gtg	ttc	gcc	cgt	tcc	gcg	ctg	gcc	ttg	aag	tac	576	
Glu	Gly	Glu	Ala 180	Lys	Val	Phe	Ala	Arg 185	Ser	Ala	Leu	Ala	Leu 190	Lys	Tyr		
gac	ccc	acc	gac	aac	aga	ccc	gcg	ccc	atc	acg	gaa	agc	caa	atc	ctg	624	
Asp	Pro	Thr 195	Asp	Asn	Arg	Pro	Ala 200	Pro	Ile	Thr	Glu	Ser 205	Gln	Ile	Leu		
atg	ccg	cgc	cgg	ttc	gac	gac	cgt	cgc	ccg	gac	ttg	tgg	agc	gtg	ttc	672	
Met	Pro	Arg	Arg	Phe	Asp	Asp 215	Arg	Arg	Pro	Asp	Leu 220	Trp	Ser	Val	Phe		
aac	cgc	acc	caa	gag	aac	ctg	acc	aaa	ggc	gga	ttg	cat	ggc	cgc	agc	720	
Asn	Arg	Thr	Gln	Glu	Asn 230	Leu	Thr	Lys	Gly	Gly 235	Leu	His	Gly	Arg	Ser 240		
gtc	aac	gga	cgc	cgc	cag	caa	acc	cgc	ccg	gtg	cag	ggc	att	gat	tcc	768	
Val	Asn	Gly	Arg	Arg 245	Gln	Gln	Thr	Arg	Pro 250	Val	Gln	Gly	Ile	Asp 255	Ser		
gat	gtg	cgc	ctc	aat	cgc	gcc	ctc	tgg	atg	ctg	gcc	gat	ggc	ctg	cgc	816	
Asp	Val	Arg	Leu 260	Asn	Arg	Ala	Leu	Trp 265	Met	Leu	Ala	Asp	Gly 270	Leu	Arg		
cag	ttg	aaa	gcc	tga												831	
Gln	Leu	Lys 275	Ala														

&lt;210&gt; 1244

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Ralstonia solanacearum GMI1000

&lt;400&gt; 1244

Met	Gln	Leu	Ala	Ser 5	Arg	Phe	Ala	Ser	Arg 10	Ser	Pro	Ser	Leu	Arg 15	Ser		
Asp	Tyr	Pro	Leu 20	Thr	Asp	Asp	Gln	Ile 25	His	Arg	Val	Ala	Pro 30	Ser	Ile		
Phe	Ala	Asp 35	Ala	Pro	His	Glu	Ser 40	Arg	Ser	Gln	Arg	Tyr 45	Ala	Tyr	Ile		
Pro	Thr	Ala	Ala	Val	Leu	Ala 55	Glu	Leu	Arg	Lys	Glu 60	Gly	Phe	Gln	Pro		
Phe	Met	Val	Thr	Gln	Thr 70	Arg	Val	Arg	Asp 75	Glu	Gly	Lys	Arg	Glu	His 80		
Thr	Lys	His	Met	Leu 85	Arg	Leu	Arg	His 90	Ala	Ser	Gln	Ile	Asn 95	Gly	Ala		
Glu	Ala	Asn 100	Glu	Ile	Val	Leu	Leu	Asn 105	Ser	His	Asp	Gly	Thr 110	Ser	Ser		
Tyr	Gln	Met 115	Leu	Ala	Gly	Met	Phe 120	Arg	Phe	Val	Cys	Ser 125	Asn	Gly	Leu		
Val	Cys 130	Gly	Asp	Thr	Val	Ala 135	Asp	Val	Arg	Val	Pro 140	His	Lys	Gly	Asp		
Val	Ser	Gly	His	Val 150	Ile	Glu	Gly	Ala	Tyr 155	Glu	Val	Leu	Arg	Gly	Phe 160		
Asp	Arg	Val	Lys	Asp 165	Ser	Arg	Asp	Ala	Met 170	Arg	Ala	Ile	Thr	Leu 175	Asp		
Glu	Gly	Glu	Ala 180	Lys	Val	Phe	Ala	Arg 185	Ser	Ala	Leu	Ala	Leu 190	Lys	Tyr		
Asp	Pro	Thr 195	Asp	Asn	Arg	Pro	Ala 200	Pro	Ile	Thr	Glu	Ser 205	Gln	Ile	Leu		
Met	Pro	Arg	Arg	Phe	Asp	Asp 215	Arg	Arg	Pro	Asp	Leu 220	Trp	Ser	Val	Phe		
Asn	Arg	Thr	Gln	Glu	Asn 230	Leu	Thr	Lys	Gly	Gly 235	Leu	His	Gly	Arg	Ser 240		
Val	Asn	Gly	Arg	Arg 245	Gln	Gln	Thr	Arg	Pro 250	Val	Gln	Gly	Ile	Asp 255	Ser		
Asp	Val	Arg	Leu 260	Asn	Arg	Ala	Leu	Trp 265	Met	Leu	Ala	Asp	Gly 270	Leu	Arg		
Gln	Leu	Lys 275	Ala														

&lt;210&gt; 1245

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1245

atg	cgt	cta	tcc	agc	aac	ttc	cgt	aac	cct	tgc	atg	gtc	cgc	agc	gac		48
Met	Arg	Leu	Ser	Ser	Asn	Phe	Arg	Asn	Pro	Cys	Met	Val	Arg	Ser	Asp		
1				5				10					15				
agc	cca	ctg	agc	aat	gac	gag	atc	gcc	cgc	gta	gca	ccc	tcg	atc	ttt		96
Ser	Pro	Leu	Ser	Asn	Asp	Glu	Ile	Ala	Arg	Val	Ala	Pro	Ser	Ile	Phe		
			20					25					30				
gcc	gag	gaa	gcg	cac	gaa	agc	cgc	tcc	gat	cgc	tac	cgc	tac	att	ccc		144
Ala	Glu	Glu	Ala	His	Glu	Ser	Arg	Ser	Asp	Arg	Tyr	Arg	Tyr	Ile	Pro		
		35					40					45					
acc	gtc	gac	gta	ctc	gaa	gcg	ctg	cgc	agt	gag	ggg	ttc	atg	ccg	ttc		192
Thr	Val	Asp	Val	Leu	Glu	Ala	Leu	Arg	Ser	Glu	Gly	Phe	Met	Pro	Phe		
	50				55					60							
atg	gcc	tgc	caa	act	cgc	gtg	cgc	aac	acc	gac	aag	cgc	gaa	cac	acc		240
Met	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asn	Thr	Asp	Lys	Arg	Glu	His	Thr		
65				70					75						80		
aag	cac	atg	atc	cgc	ctg	cgt	cac	gcc	aat	acc	atc	gtg	gcc	aag	gaa		288
Lys	His	Met	Ile	Arg	Leu	Arg	His	Ala	Asn	Thr	Ile	Val	Ala	Lys	Glu		
			85					90						95			
gcc	aac	gaa	atc	atc	ctg	ctg	aac	agc	cac	gac	ggc	acc	agc	agc	tac		336
Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr		
		100						105					110				
caa	atg	atg	ggc	ggt	tgc	ttc	cgt	ttc	gta	tgc	gcc	aac	ggc	ctg	gtg		384
Gln	Met	Met	Gly	Gly	Cys	Phe	Arg	Phe	Val	Cys	Ala	Asn	Gly	Leu	Val		
		115					120					125					
ctg	ggc	gag	gcc	gcg	atg	gac	cag	aaa	gtg	cgc	cac	agc	ggt	cgc	cag		432
Leu	Gly	Glu	Ala	Ala	Met	Asp	Gln	Lys	Val	Arg	His	Ser	Gly	Arg	Gln		
	130				135					140							
gat	gtt	atc	ggg	gat	gtg	atc	gag	ggc	gcg	tat	gaa	gtc	ctg	aat	caa		480
Asp	Val	Ile	Gly	Asp	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Asn	Gln		
145				150				155							160		
ttc	gag	ctg	atc	gag	gat	cag	cgc	gaa	acc	atg	aaa	ggc	atc	cag	ctg		528
Phe	Glu	Leu	Ile	Glu	Asp	Gln	Arg	Glu	Thr	Met	Lys	Gly	Ile	Gln	Leu		
			165					170						175			
ggc	aac	gac	ctg	cag	cac	gct	ttc	gcc	gag	gca	gca	ctt	gcc	tac	cgc		576
Gly	Asn	Asp	Leu	Gln	His	Ala	Phe	Ala	Glu	Ala	Ala	Leu	Ala	Tyr	Arg		
		180						185					190				
tat	gac	cca	gcg	gac	ggc	cca	gcg	ccg	gta	act	gca	agc	cag	ctg	ctg		624
Tyr	Asp	Pro	Ala	Asp	Gly	Pro	Ala	Pro	Val	Thr	Ala	Ser	Gln	Leu	Leu		
		195				200						205					
gca	ccg	cgt	cgc	cgc	gaa	gac	gcc	acc	aat	gac	ctt	tgg	tcg	acc	ttc		672
Ala	Pro	Arg	Arg	Arg	Glu	Asp	Ala	Thr	Asn	Asp	Leu	Trp	Ser	Thr	Phe		
	210				215					220							
aac	cgc	gta	cag	gaa	aac	acc	atc	aaa	gga	ggg	ctg	cga	ggc	cgc	aac		720
Asn	Arg	Val	Gln	Glu	Asn	Thr	Ile	Lys	Gly	Gly	Leu	Arg	Gly	Arg	Asn		
225				230					235						240		
aaa	caa	ggg	cgc	cgt	acc	agc	acc	cgt	gcc	gtt	tcc	ggc	att	gac	cag		768
Lys	Gln	Gly	Arg	Arg	Thr	Ser	Thr	Arg	Ala	Val	Ser	Gly	Ile	Asp	Gln		
			245					250						255			
gac	gtg	aaa	ctc	aat	cgc	gcc	ctg	tgg	gtt	ctg	gcc	cag	cac	ctg	cgc		816
Asp	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Val	Leu	Ala	Gln	His	Leu	Arg		
			260					265					270				
caa	gcc	gcc	taa														828
Gln	Ala	Ala															
		275															

&lt;210&gt; 1246

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida



## PhoenixTemp32470.tmp.txt

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<400> 1246
Met Arg Leu Ser Ser Asn Phe Arg Asn Pro Cys Met Val Arg Ser Asp
1      5      10      15
Ser Pro Leu Ser Asn Asp Glu Ile Ala Arg Val Ala Pro Ser Ile Phe
20      25      30
Ala Glu Glu Ala His Glu Ser Arg Ser Asp Arg Tyr Arg Tyr Ile Pro
35      40      45
Thr Val Asp Val Leu Glu Ala Leu Arg Ser Glu Gly Phe Met Pro Phe
50      55      60
Met Ala Cys Gln Thr Arg Val Arg Asn Thr Asp Lys Arg Glu His Thr
65      70      75      80
Lys His Met Ile Arg Leu Arg His Ala Asn Thr Ile Val Ala Lys Glu
85      90      95
Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr
100     105     110
Gln Met Met Gly Gly Cys Phe Arg Phe Val Cys Ala Asn Gly Leu Val
115     120     125
Leu Gly Glu Ala Ala Met Asp Gln Lys Val Arg His Ser Gly Arg Gln
130     135     140
Asp Val Ile Gly Asp Val Ile Glu Gly Ala Tyr Glu Val Leu Asn Gln
145     150     155     160
Phe Glu Leu Ile Glu Asp Gln Arg Glu Thr Met Lys Gly Ile Gln Leu
165     170     175
Gly Asn Asp Leu Gln His Ala Phe Ala Glu Ala Ala Leu Ala Tyr Arg
180     185     190
Tyr Asp Pro Ala Asp Gly Pro Ala Pro Val Thr Ala Ser Gln Leu Leu
195     200     205
Ala Pro Arg Arg Arg Glu Asp Ala Thr Asn Asp Leu Trp Ser Thr Phe
210     215     220
Asn Arg Val Gln Glu Asn Thr Ile Lys Gly Gly Leu Arg Gly Arg Asn
225     230     235     240
Lys Gln Gly Arg Arg Thr Ser Thr Arg Ala Val Ser Gly Ile Asp Gln
245     250     255
Asp Val Lys Leu Asn Arg Ala Leu Trp Val Leu Ala Gln His Leu Arg
260     265     270
Gln Ala Ala
275

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```

<210> 1247
<211> 819
<212> DNA
<213> Shigella flexneri 2a str. 301

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<220>
<221> CDS
<222> (1)..(819)
<223> transl_table=11

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atg caa tta gtc agt cgt ttt ggt tat gcg aac cag ata cgc cgt gac      48
Met Gln Leu Val Ser Arg Phe Gly Tyr Ala Asn Gln Ile Arg Arg Asp
1      5      10      15
cgt ccg ctg aca cat gaa gag ctg atg cac cat gtg ccg ggg att ttc      96
Arg Pro Leu Thr His Glu Glu Leu Met His His Val Pro Gly Ile Phe
20      25      30
ggg gaa gag aaa cac acg tcc cga agc cag aac tat acg tac atc ccc      144
Gly Glu Glu Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile Pro
35      40      45
acc atc acc gta ctg gaa agt ctg cag cgg gaa ggc ttc cag ccc ttt      192
Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro Phe
50      55      60
ttc gcc tgc cag acc cgt gtg cgc gac ccg ggc cgc cgg gga tac aca      240
Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Gly Tyr Thr
65      70      75      80
aaa cac atg ctg cgt ctg cgg cgg gcc gga gag ata aac gga gaa cat      288
Lys His Met Leu Arg Leu Arg Arg Ala Gly Glu Ile Asn Gly Glu His
85      90      95
gtc cct gaa att att ctg ctc aac tcc cat gac ggt acc tcc agc tac      336
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr

```

## PhoenixTemp32470.tmp.txt

cag	atg	ctg	100	ggg	tac	ttc	aga	ttc	gtc	tgc	cag	aac	110	ggg	tgt	gtc	384
Gln	Met	Leu	ccg	Gly	Tyr	Phe	Arg	Phe	Val	Cys	Gln	Asn	125	Gly	Cys	Val	
		115	Pro				120						125				
tgt	ggg	cag	tct	ctg	ggg	gaa	gtg	cgt	ggt	ccg	cac	cgg	gga	aac	gtg	432	
Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	Val		
	130					135					140						
gtg	gag	aaa	ggt	att	gaa	ggg	gct	tac	gaa	gtg	gtg	ggc	gtg	ttt	gac	480	
Val	Glu	Lys	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	Asp		
145					150					155					160		
cgg	att	gag	gag	aaa	cgt	gat	gcc	atg	cag	tgc	ctg	gtc	ctg	ccg	cca	528	
Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro	Pro		
				165					170					175			
ccg	gca	cgc	cag	gcg	ctg	gca	cag	gcg	gca	ctg	act	tac	cgt	tat	ggg	576	
Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Gly		
			180					185					190				
gac	gaa	cat	cag	ccc	gtc	acc	acc	gcc	gac	att	ctg	acg	cca	cga	cgc	624	
Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg	Arg		
		195					200					205					
cgg	gag	gat	tac	ggg	aag	gac	ctg	tgg	agt	act	tat	cag	acc	atc	cag	672	
Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Thr	Tyr	Gln	Thr	Ile	Gln		
	210					215					220						
gag	aat	atg	ctg	aaa	ggc	ggg	att	tcc	ggc	cgc	agt	gca	aaa	gga	aaa	720	
Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly	Lys		
225					230				235					240			
cgt	atc	cac	acc	cgt	gcc	att	cac	aac	atc	gac	acc	gat	att	aag	ctc	768	
Arg	Ile	His	Thr	Arg	Ala	Ile	His	Asn	Ile	Asp	Thr	Asp	Ile	Lys	Leu		
				245					250					255			
aac	cgc	gca	ttg	tgg	gtg	atg	gca	gaa	acg	ctg	ctg	gag	agc	ctg	cgc	816	
Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Leu	Arg		
			260					265					270				
tga																819	

&lt;210&gt; 1248

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Shigella flexneri 2a str. 301

&lt;400&gt; 1248

Met	Gln	Leu	Val	Ser	Arg	Phe	Gly	Tyr	Ala	Asn	Gln	Ile	Arg	Arg	Asp	
1				5					10					15		
Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	His	His	Val	Pro	Gly	Ile	Phe	
			20					25					30			
Gly	Glu	Glu	Lys	His	Thr	Ser	Arg	Ser	Gln	Asn	Tyr	Thr	Tyr	Ile	Pro	
		35					40					45				
Thr	Ile	Thr	Val	Leu	Glu	Ser	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro	Phe	
		50				55					60					
Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Pro	Gly	Arg	Arg	Gly	Tyr	Thr	
65				70					75					80		
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Glu	Ile	Asn	Gly	Glu	His	
				85					90					95		
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr	
			100					105					110			
Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Phe	Val	Cys	Gln	Asn	Gly	Cys	Val	
		115					120					125				
Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	Val	
	130					135					140					
Val	Glu	Lys	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	Asp	
145					150				155						160	
Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro	Pro	
				165					170					175		
Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Gly	
			180					185					190			
Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg	Arg	
		195					200					205				
Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Thr	Tyr	Gln	Thr	Ile	Gln	
	210					215					220					

## PhoenixTemp32470.tmp.txt

Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly Lys  
 225 230 235 240  
 Arg Ile His Thr Arg Ala Ile His Asn Ile Asp Thr Asp Ile Lys Leu  
 245 250 255  
 Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Leu Arg  
 260 265 270

<210> 1249  
 <211> 822  
 <212> DNA  
 <213> Escherichia coli CFT073

<220>  
 <221> CDS  
 <222> (1)..(822)  
 <223> transl\_table=11

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 Met Arg Leu Ala Ser Cys Phe Gly Tyr Ala Ala Asn Gln Ile Arg Arg  
 1 5 10 15  
 gac cgt cca ctg aca cat gaa gag ctg atg cac cat gtg ccg ggg att 96  
 Asp Arg Pro Leu Thr His Glu Glu Leu Met His His Val Pro Gly Ile  
 20 25 30  
 ttc ggg gaa gag aaa cac acg tcc cga agc cag aac tat acg tac atc 144  
 Phe Gly Glu Glu Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile  
 35 40 45  
 ccc acc atc acc gta ctg gaa agc ctg cag gcg gaa ggc ttt cag cca 192  
 Pro Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro  
 50 55 60  
 ttc ttc gcc tgc cag acc tgt gtg cgc gac ccg ggc cgc cgg gga tac 240  
 Phe Phe Ala Cys Gln Thr Cys Val Arg Asp Pro Gly Arg Arg Gly Tyr  
 65 70 75 80  
 aca aaa cac atg ctg cgc ctg cgc cgt aac gga gag ata aac gga gaa 288  
 Thr Lys His Met Leu Arg Leu Arg Arg Asn Gly Glu Ile Asn Gly Glu  
 85 90 95  
 cat gtc cct gaa att att ctg ctc aac tct cat gac ggt acc tcc agc 336  
 His Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 tac cag atg ctg ccg ggt tac ttc agg ttc gtc tgc cag aac gga tgc 384  
 Tyr Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys  
 115 120 125  
 gtc tgt ggt cag tct ctg ggg gaa gtg cgt gtt ccg cac cgg gga aat 432  
 Val Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn  
 130 135 140  
 gtg gtg gac aga gtc att gaa ggg gct tac gag gtg ggc gtg ttt 480  
 Val Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe  
 145 150 155 160  
 gac cgg ata gag gag atg cgt gat gcc atg cag tcg ctg att ctg ccg 528  
 Asp Arg Ile Glu Glu Met Arg Asp Ala Met Gln Ser Leu Ile Leu Pro  
 165 170 175  
 cca ccg gca cgc cag gcg ctg gca cag gcg gca ctg act tac cgt tat 576  
 Pro Pro Ala Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr  
 180 185 190  
 ggt gac gaa cat cgg ccc gtc acc acc gcc gac att ctg acg cca cga 624  
 Gly Asp Glu His Arg Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg  
 195 200 205  
 cgc cgg gag gat tac ggt aag gac ctg tgg agt act tat cag acc atc 672  
 Arg Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Thr Tyr Gln Thr Ile  
 210 215 220  
 cag gag aat atg ctg aaa ggc ggg att tcc ggt cgc agt gca aaa gga 720  
 Gln Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly  
 225 230 235 240  
 aaa cgt atc cac acc cgt gcc att cac agc atc gac acc gat att aag 768  
 Lys Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys  
 245 250 255  
 ctc aac cgc gca ttg tgg gta atg gca gaa acg ctg ctg gag agc cag 816  
 Leu Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Gln  
 260 265 270

cgc tga  
Arg

<210> 1250  
<211> 273  
<212> PRT  
<213> Escherichia coli CFT073

<400> 1250  
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Asp Arg Pro Leu Thr His Glu Glu Leu Met His His Val Pro Gly Ile  
20 25 30  
Phe Gly Glu Glu Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile  
35 40 45  
Pro Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro  
50 55 60  
Phe Phe Ala Cys Gln Thr Cys Val Arg Asp Pro Gly Arg Arg Gly Tyr  
65 70 75 80  
Thr Lys His Met Leu Arg Leu Arg Arg Asn Gly Glu Ile Asn Gly Glu  
85 90 95  
His Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
100 105 110  
Tyr Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys  
115 120 125  
Val Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn  
130 135 140  
Val Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe  
145 150 155 160  
Asp Arg Ile Glu Glu Met Arg Asp Ala Met Gln Ser Leu Ile Leu Pro  
165 170 175  
Pro Pro Ala Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr  
180 185 190  
Gly Asp Glu His Arg Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg  
195 200 205  
Arg Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Thr Tyr Gln Thr Ile  
210 215 220  
Gln Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly  
225 230 235 240  
Lys Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys  
245 250 255  
Leu Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Gln  
260 265 270  
Arg

<210> 1251  
<211> 822  
<212> DNA  
<213> Escherichia coli CFT073

<220>  
<221> CDS  
<222> (1)..(822)  
<223> transl\_table=11

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Met Arg Leu Ala Ser Arg Phe Gly Tyr Thr Ala Asn Gln Ile Arg Arg  
1 5 10 15  
gac cgt cca ctg aca cat gaa gag ctg atg cac cat gtg ccg ggg att 96  
Asp Arg Pro Leu Thr His Glu Glu Leu Met His His Val Pro Gly Ile  
20 25 30  
ttc ggg gaa gag aaa cac acg tcc cga agc cag aac tat acg tac atc 144  
Phe Gly Glu Glu Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile  
35 40 45  
ccc acc atc acc gta ctg gaa agc ctg cag cgg gaa ggc ttt cag cca 192  
Pro Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro

## PhoenixTemp32470.tmp.txt

50	55	60		
ttc ttc gcc tgc cag acc cgt gtg cgc gac ccg ggc cgc cgg gga tac				240
Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Gly Tyr				
65	70	75	80	
acc aaa cac atg ctg cgt ctg cgg cgg gcc gga gag ata aac gga gag				288
Thr Lys His Met Leu Arg Leu Arg Arg Ala Gly Glu Ile Asn Gly Glu				
85	90	95		
cat gtc cct gaa att att ctg ctc aac tct cat gac ggt acc tcc agc				336
His Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser				
100	105	110		
tac cag atg ctg ccg ggt tac ttc agg ttc gtc tgc cag aac ggc tgc				384
Tyr Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys				
115	120	125		
gtc tgt ggt cag tct ctg ggg gaa gtg cgt gtt cca cac cgg gga gac				432
Val Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asp				
130	135	140		
gta gtg gag aaa gtt att gaa ggg gct tac gag gtg ggc gtg ttt				480
Val Val Glu Lys Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe				
145	150	155	160	
gac cgg ata gag gag aag cgt gat gcc atg cag tcg ctg gtc ctg ccg				528
Asp Arg Ile Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Val Leu Pro				
165	170	175		
cca ccg gca cgc cag gcg ctg gca cag gcg gca ctg act tac cgt tat				576
Pro Pro Ala Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr				
180	185	190		
ggt gac gaa cat cag ccc gtc acc acc gcc gac att ctg acg cca cga				624
Gly Asp Glu His Gln Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg				
195	200	205		
cgc cgg gag gat tac ggt aag gac ctg tgg agt gct tat cag acc atc				672
Arg Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Ala Tyr Gln Thr Ile				
210	215	220		
cag gag aat atg ctg aaa ggc ggg att tcc ggt cgc agt gca aaa gga				720
Gln Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly				
225	230	235	240	
aaa cgt atc cat acc cgg gcc att cac agc att gat acc gac att aag				768
Lys Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys				
245	250	255		
ctc aac cgt gca ttg tgg gtg atg gca gaa acg atg ctg gag agc ctg				816
Leu Asn Arg Ala Leu Trp Val Met Ala Glu Thr Met Leu Glu Ser Leu				
260	265	270		
cgc tga				822
Arg				

&lt;210&gt; 1252

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli CFT073

&lt;400&gt; 1252

Met Arg Leu Ala Ser Arg Phe Gly Tyr Thr Ala Asn Gln Ile Arg Arg	
1	5
Asp Arg Pro Leu Thr His Glu Glu Leu Met His His Val Pro Gly Ile	
20	25
Phe Gly Glu Glu Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile	
35	40
Pro Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro	
50	55
Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Gly Tyr	
65	70
Thr Lys His Met Leu Arg Leu Arg Arg Ala Gly Glu Ile Asn Gly Glu	
85	90
His Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser	
100	105
Tyr Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys	
115	120
Val Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asp	
130	135
Val Val Glu Lys Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe	
140	

## PhoenixTemp32470.tmp.txt

145 Asp Arg Ile Glu 150 Lys Arg Asp Ala Met 155 Gln Ser Leu Val 160 Pro  
 Pro Pro Ala Arg 165 Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr  
 Gly Asp Glu 180 His Gln Pro Val Thr 185 Thr Ala Asp Ile Leu Thr Pro Arg  
 Arg Arg Glu 195 Asp Tyr Gly Lys 200 Asp Leu Trp Ser Ala Tyr Gln Thr Ile  
 Gln Glu Asn Met Leu Lys 215 Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly  
 225 Lys Arg Ile His Thr 230 Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys  
 Leu Asn Arg Ala 245 Leu Trp Val Met Ala 250 Glu Thr Met Leu Glu 255 Ser Leu  
 Arg 260 265 270

&lt;210&gt; 1253

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli CFT073

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1253

atg	cga	tta	gca	agt	cgt	ttt	ggt	tat	gct	gca	aac	cag	ata	cgt	cgt	48
Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Tyr	Ala	Ala	Asn	Gln	Ile	Arg	Arg	
1				5					10					15		
gac	cgt	cca	ctg	aca	cat	gaa	gag	ctg	atg	cac	cat	gtg	ccg	ggg	att	96
Asp	Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	His	His	Val	Pro	Gly	Ile	
			20					25					30			
ttc	ggg	gaa	gag	aaa	cac	acg	tcc	cga	agc	cag	aac	tat	acg	tac	atc	144
Phe	Gly	Glu	Glu	Lys	His	Thr	Ser	Arg	Ser	Gln	Asn	Tyr	Thr	Tyr	Ile	
		35					40					45				
ccc	acc	atc	acc	gta	ctg	gaa	aat	ctg	cag	cgg	gaa	ggc	ttt	cag	ccg	192
Pro	Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro	
		50				55					60					
ttc	ttc	gcc	tgc	cag	acc	cgt	gtg	cgc	gac	cag	agc	cgc	cgg	gaa	tat	240
Phe	Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Gln	Ser	Arg	Arg	Glu	Tyr	
		65			70				75					80		
acc	aaa	cat	atg	ctg	cgt	ctg	cgg	cgg	gcc	gga	cag	ata	acc	ggt	cag	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Gln	Ile	Thr	Gly	Gln	
				85					90					95		
cat	gtg	cct	gaa	att	att	ctg	ctc	aac	tcc	cat	gac	ggt	tca	tcc	agc	336
His	Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	
			100					105					110			
tac	cag	atg	tta	ccc	gga	tat	ttt	cgt	gcc	att	tgt	acc	aat	ggc	ctg	384
Tyr	Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Ala	Ile	Cys	Thr	Asn	Gly	Leu	
		115				120						125				
gtc	tgc	ggt	cag	tcg	ctg	gga	gaa	gtc	cgg	gtg	cca	cac	cgg	gga	aac	432
Val	Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	
		130				135					140					
gtg	gtg	gac	agg	gtc	ata	gaa	ggt	gct	tac	gaa	gtg	gtg	ggc	gtg	ttt	480
Val	Val	Asp	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	
		145			150				155						160	
gac	ctg	att	gag	gaa	aag	cgt	gat	gcc	atg	cag	tcg	ctg	gtc	ctg	ccg	528
Asp	Leu	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro	
				165					170					175		
cca	ccg	gca	cgc	cag	gcg	ctg	gca	cag	gcg	gcg	ctg	act	tac	cgt	tat	576
Pro	Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	
			180					185					190			
ggt	gat	gaa	cat	cag	ccc	gtc	acc	act	acc	gac	att	ctg	acg	cca	cga	624
Gly	Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Thr	Asp	Ile	Leu	Thr	Pro	Arg	
		195				200						205				
cgc	cgg	gag	gat	tac	ggt	aag	gac	ctg	tgg	agt	gct	tat	cag	acc	atc	672

## PhoenixTemp32470.tmp.txt

Arg	Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile		
210						215					220						
cag	gag	aat	atg	ctg	aaa	ggc	ggg	att	tcc	ggg	cgc	agt	gcc	aga	gga		720
Gln	Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Arg	Gly		
225					230					235					240		
aaa	cgt	atc	cat	acc	cgg	gcc	att	cac	agc	atc	gat	acc	gac	att	aag		768
Lys	Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys		
				245					250					255			
ctc	aac	cgg	gcg	ttg	tgg	gtg	atg	gca	gaa	acg	ctg	ctg	gag	agc	ctg		816
Leu	Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Leu		
			260					265					270				
cgc	tga																822
Arg																	

<210> 1254  
 <211> 273  
 <212> PRT  
 <213> Escherichia coli CFT073

<400> 1254

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Asp	Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	His	His	Val	Pro	Gly	Ile		
			20					25					30				
Phe	Gly	Glu	Glu	Lys	His	Thr	Ser	Arg	Ser	Gln	Asn	Tyr	Thr	Tyr	Ile		
		35					40					45					
Pro	Thr	Ile	Thr	Val	Leu	Glu	Asn	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro		
	50					55					60						
Phe	Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Gln	Ser	Arg	Arg	Glu	Tyr		
65				70					75					80			
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Gln	Ile	Thr	Gly	Gln		
			85					90						95			
His	Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser		
		100						105					110				
Tyr	Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Ala	Ile	Cys	Thr	Asn	Gly	Leu		
		115					120					125					
Val	Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn		
	130					135					140						
Val	Val	Asp	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe		
145					150					155					160		
Asp	Leu	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Val	Leu	Pro		
			165					170						175			
Pro	Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr		
		180						185					190				
Gly	Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Asp	Ile	Leu	Thr	Pro	Arg			
	195					200					205						
Arg	Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile		
	210					215					220						
Gln	Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Arg	Gly		
225					230					235				240			
Lys	Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys		
			245						250					255			
Leu	Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Leu		
			260					265					270				
Arg																	

<210> 1255  
 <211> 819  
 <212> DNA  
 <213> Escherichia coli CFT073

<220>  
 <221> CDS  
 <222> (1)..(819)  
 <223> transl\_table=11

<400> 1255

## PhoenixTemp32470.tmp.txt

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1				5					10					15		
cgt	ccg	ctg	aca	cac	gaa	gaa	ctg	atg	cac	tat	gtg	ccg	ggg	att	ttc	96
Arg	Pro	Leu	Thr	His	Glu	Glu	Leu	Met	His	Tyr	Val	Pro	Gly	Ile	Phe	
			20					25					30			
ggg	gaa	gat	aaa	cac	acg	tcc	cga	agc	cag	aac	tat	acg	tac	atc	ccc	144
Gly	Glu	Asp	Lys	His	Thr	Ser	Arg	Ser	Gln	Asn	Tyr	Thr	Tyr	Ile	Pro	
			35				40					45				
acc	atc	acc	gta	ctg	gaa	agc	ctg	cag	cgg	gaa	ggc	ttt	cag	cca	ttc	192
Thr	Ile	Thr	Val	Leu	Glu	Ser	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro	Phe	
			50			55					60					
ttc	gcc	tgc	cag	acc	cgt	gtg	cgc	gac	ccg	ggc	cgc	cgg	gga	tac	aca	240
Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Pro	Gly	Arg	Arg	Gly	Tyr	Thr	
					70					75					80	
aaa	cac	atg	ctg	cgt	ctg	cgg	cgg	gcc	gga	gag	ata	aac	gga	gaa	cat	288
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Ala	Gly	Glu	Ile	Asn	Gly	Glu	His	
				85					90					95		
gtc	cct	gaa	att	att	ctg	ctc	aac	tct	cat	gac	ggg	acc	tcc	agc	tac	336
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr	
			100					105					110			
cag	atg	ctg	ccg	ggg	tac	ttc	agg	ttc	gtc	tgc	cag	aac	ggg	tgc	gtc	384
Gln	Met	Leu	Pro	Gly	Tyr	Phe	Arg	Phe	Val	Cys	Gln	Asn	Gly	Cys	Val	
			115				120					125				
tgt	ggt	cag	tct	ctg	ggg	gaa	gtg	cgt	ggt	ccg	cac	cgg	gga	aat	gtg	432
Cys	Gly	Gln	Ser	Leu	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	Val	
					135						140					
gtg	gac	aga	gtc	att	gaa	ggg	gct	tac	gag	gta	gtg	ggc	gtg	ttt	gac	480
Val	Asp	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Val	Gly	Val	Phe	Asp	
					150				155					160		
cgg	att	gag	gaa	aag	cgt	gat	gcc	ata	cag	tcg	ctg	att	ctg	ccg	cca	528
Arg	Ile	Glu	Glu	Lys	Arg	Asp	Ala	Ile	Gln	Ser	Leu	Ile	Leu	Pro	Pro	
				165				170						175		
ccg	gca	cgc	cag	gcg	ctg	gca	cag	gcg	gca	ctg	act	tac	cgt	tat	ggg	576
Pro	Ala	Arg	Gln	Ala	Leu	Ala	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Gly	
			180				185						190			
gac	gaa	cat	cag	ccc	gtc	acc	acc	gcc	gac	att	ctg	acg	cca	cga	cgc	624
Asp	Glu	His	Gln	Pro	Val	Thr	Thr	Ala	Asp	Ile	Leu	Thr	Pro	Arg	Arg	
			195			200					205					
cgg	gag	gat	tac	ggg	aag	gac	ctg	tgg	agt	gct	tat	cag	acc	att	cag	672
Arg	Glu	Asp	Tyr	Gly	Lys	Asp	Leu	Trp	Ser	Ala	Tyr	Gln	Thr	Ile	Gln	
			210			215					220					
gag	aat	atg	ctg	aaa	ggc	gga	att	tca	ggg	cgc	agc	gct	aaa	gga	aaa	720
Glu	Asn	Met	Leu	Lys	Gly	Gly	Ile	Ser	Gly	Arg	Ser	Ala	Lys	Gly	Lys	
				230					235					240		
cgt	atc	cat	acc	cgt	gcc	att	cac	agc	att	gac	act	gac	att	aag	ctc	768
Arg	Ile	His	Thr	Arg	Ala	Ile	His	Ser	Ile	Asp	Thr	Asp	Ile	Lys	Leu	
				245					250					255		
aac	cgc	gca	ttg	tgg	gtg	atg	gcg	gaa	acc	ctg	ctg	gag	agc	ctg	cgc	816
Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Thr	Leu	Leu	Glu	Ser	Leu	Arg	
			260					265					270			
tga																819

<210> 1256  
 <211> 272  
 <212> PRT  
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<400> 1256  
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 Arg Pro Leu Thr His Glu Glu Leu Met His Tyr Val Pro Gly Ile Phe  
 20 25 30  
 Gly Glu Asp Lys His Thr Ser Arg Ser Gln Asn Tyr Thr Tyr Ile Pro  
 35 40 45  
 Thr Ile Thr Val Leu Glu Ser Leu Gln Arg Glu Gly Phe Gln Pro Phe  
 50 55 60



## PhoenixTemp32470.tmp.txt

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Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Gly Tyr Thr
65      70      75      80
Lys His Met Leu Arg Leu Arg Arg Ala Gly Glu Ile Asn Gly Glu His
      85      90      95
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr
      100      105      110
Gln Met Leu Pro Gly Tyr Phe Arg Phe Val Cys Gln Asn Gly Cys Val
      115      120      125
Cys Gly Gln Ser Leu Gly Glu Val Arg Val Pro His Arg Gly Asn Val
      130      135      140
Val Asp Arg Val Ile Glu Gly Ala Tyr Glu Val Val Gly Val Phe Asp
145      150      155      160
Arg Ile Glu Glu Lys Arg Asp Ala Ile Gln Ser Leu Ile Leu Pro Pro
      165      170      175
Pro Ala Arg Gln Ala Leu Ala Gln Ala Ala Leu Thr Tyr Arg Tyr Gly
      180      185      190
Asp Glu His Gln Pro Val Thr Thr Ala Asp Ile Leu Thr Pro Arg Arg
      195      200      205
Arg Glu Asp Tyr Gly Lys Asp Leu Trp Ser Ala Tyr Gln Thr Ile Gln
210      215      220
Glu Asn Met Leu Lys Gly Gly Ile Ser Gly Arg Ser Ala Lys Gly Lys
225      230      235      240
Arg Ile His Thr Arg Ala Ile His Ser Ile Asp Thr Asp Ile Lys Leu
      245      250      255
Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Glu Ser Leu Arg
      260      265      270

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&lt;210&gt; 1257

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas syringae pv. tomato str. DC3000

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1257

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Met Arg Met Ser Ser Asn Phe Arg Asn Pro Cys Met Ile Arg Ser Asp
1      5      10      15
gtc cca ctg agc aac gat cag atc gcc cac tat gtg cct tcc atc ttc      96
Val Pro Leu Ser Asn Asp Gln Ile Ala His Tyr Val Pro Ser Ile Phe
      20      25      30
gcc gaa gaa gcg cac gac agc agg tcg gca cgt tat ctg tat atc ccg      144
Ala Glu Glu Ala His Asp Ser Arg Ser Ala Arg Tyr Leu Tyr Ile Pro
      35      40      45
acc gtg cag gta ctt gat gcg ctg cgc gcc gaa gga ttt gaa cca ttc      192
Thr Val Gln Val Leu Asp Ala Leu Arg Ala Glu Gly Phe Glu Pro Phe
      50      55      60
atg gcc tgt cag aca cgc gtg cgt gac cag ggc aaa cgt gag cac acc      240
Met Ala Cys Gln Thr Arg Val Arg Asp Gln Gly Lys Arg Glu His Thr
      65      70      75      80
aag cac atg ctg cgc ctg cgc cat gcg agc cag atc ctg gac cag gaa      288
Lys His Met Leu Arg Leu Arg His Ala Ser Gln Ile Leu Asp Gln Glu
      85      90      95
gcc aac gaa gtc atc ctg ctc aac agc cac gat ggc agc agc agc tat      336
Ala Asn Glu Val Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr
      100      105      110
cag atg att gga ggc aaa ttc cgt ttc gtg tgt gca aac gga ctg gta      384
Gln Met Ile Gly Gly Lys Phe Arg Phe Val Cys Ala Asn Gly Leu Val
      115      120      125
ctg ggg gac gtt gct gct gac cag aaa gtg cgc cat agc ggc cgt ggt      432
Leu Gly Asp Val Ala Ala Asp Gln Lys Val Arg His Ser Gly Arg Gly
      130      135      140
gat gtg gtg cat gac gtg atc gaa ggc gcc ttc gaa gtg ttg aag cat      480
Asp Val Val His Asp Val Ile Glu Gly Ala Phe Glu Val Leu Lys His
145      150      155      160
ttc gaa cag atc gac cac atc acc gct gac atg aag cat caa caa tta      528

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## PhoenixTemp32470.tmp.txt

Phe	Glu	Gln	Ile	Asp	His	Ile	Thr	Ala	Asp	Met	Lys	His	Gln	Gln	Leu		
				165					170					175			
gac	cag	gac	gag	caa	gag	gcc	ttt	gca	ttg	gct	gcc	ttg	gcg	tat	cgc	576	
Asp	Gln	Asp	Glu	Gln	Glu	Ala	Phe	Ala	Leu	Ala	Ala	Leu	Ala	Tyr	Arg		
			180					185					190				
tac	gat	ccg	gca	gaa	gga	cct	gcg	cct	gtt	acc	ccg	tcc	cag	ttg	ctc	624	
Tyr	Asp	Pro	Ala	Glu	Gly	Pro	Ala	Pro	Val	Thr	Pro	Ser	Gln	Leu	Leu		
		195					200					205					
atg	cca	cgc	cgt	cgg	gag	gac	cgt	agc	agc	gac	ctt	tgg	acc	acc	ttc	672	
Met	Pro	Arg	Arg	Arg	Glu	Asp	Arg	Ser	Ser	Asp	Leu	Trp	Thr	Thr	Phe		
	210					215				220							
aat	cga	gtc	cag	gaa	aac	acc	atc	aaa	ggc	ggt	ttg	acc	ggg	cgt	aac	720	
Asn	Arg	Val	Gln	Glu	Asn	Thr	Ile	Lys	Gly	Gly	Leu	Thr	Gly	Arg	Asn		
225					230				235					240			
aag	caa	ggc	cga	cgc	acg	acc	acg	cga	gcg	gtc	aat	ggg	att	gat	cag	768	
Lys	Gln	Gly	Arg	Arg	Thr	Thr	Thr	Arg	Ala	Val	Asn	Gly	Ile	Asp	Gln		
			245					250						255			
gac	gtg	aaa	ctg	aac	cgg	gcc	ttg	tgg	gtg	ctt	gcg	cag	gct	atg	ggt	816	
Asp	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Val	Leu	Ala	Gln	Ala	Met	Gly		
			260					265					270				
gag	cac	aga	aaa	gcc	gct	taa										837	
Glu	His	Arg	Lys	Ala	Ala												
		275															

&lt;210&gt; 1258

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas syringae pv. tomato str. DC3000

&lt;400&gt; 1258

Met	Arg	Met	Ser	Ser	Asn	Phe	Arg	Asn	Pro	Cys	Met	Ile	Arg	Ser	Asp		
1				5					10					15			
Val	Pro	Leu	Ser	Asn	Asp	Gln	Ile	Ala	His	Tyr	Val	Pro	Ser	Ile	Phe		
			20					25					30				
Ala	Glu	Glu	Ala	His	Asp	Ser	Arg	Ser	Ala	Arg	Tyr	Leu	Tyr	Ile	Pro		
		35					40					45					
Thr	Val	Gln	Val	Leu	Asp	Ala	Leu	Arg	Ala	Glu	Gly	Phe	Glu	Pro	Phe		
	50				55					60							
Met	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Gln	Gly	Lys	Arg	Glu	His	Thr		
65				70					75					80			
Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Leu	Asp	Gln	Glu		
			85					90					95				
Ala	Asn	Glu	Val	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr		
		100					105					110					
Gln	Met	Ile	Gly	Gly	Lys	Phe	Arg	Phe	Val	Cys	Ala	Asn	Gly	Leu	Val		
	115						120					125					
Leu	Gly	Asp	Val	Ala	Ala	Asp	Gln	Lys	Val	Arg	His	Ser	Gly	Arg	Gly		
	130				135					140							
Asp	Val	Val	His	Asp	Val	Ile	Glu	Gly	Ala	Phe	Glu	Val	Leu	Lys	His		
145				150					155					160			
Phe	Glu	Gln	Ile	Asp	His	Ile	Thr	Ala	Asp	Met	Lys	His	Gln	Gln	Leu		
				165					170					175			
Asp	Gln	Asp	Glu	Gln	Glu	Ala	Phe	Ala	Leu	Ala	Ala	Leu	Ala	Tyr	Arg		
		180					185						190				
Tyr	Asp	Pro	Ala	Glu	Gly	Pro	Ala	Pro	Val	Thr	Pro	Ser	Gln	Leu	Leu		
		195				200						205					
Met	Pro	Arg	Arg	Arg	Glu	Asp	Arg	Ser	Ser	Asp	Leu	Trp	Thr	Thr	Phe		
	210					215				220							
Asn	Arg	Val	Gln	Glu	Asn	Thr	Ile	Lys	Gly	Gly	Leu	Thr	Gly	Arg	Asn		
225					230				235					240			
Lys	Gln	Gly	Arg	Arg	Thr	Thr	Thr	Arg	Ala	Val	Asn	Gly	Ile	Asp	Gln		
			245					250					255				
Asp	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Val	Leu	Ala	Gln	Ala	Met	Gly		
			260					265					270				
Glu	His	Arg	Lys	Ala	Ala												
		275															

&lt;210&gt; 1259

&lt;211&gt; 837

## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas syringae pv. tomato str. DC3000

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1259

atg	cgt	atg	tcc	agc	aac	ttc	cgt	aac	cca	tgc	atg	atc	cgc	agt	gac		48
Met	Arg	Met	Ser	Ser	Asn	Phe	Arg	Asn	Pro	Cys	Met	Ile	Arg	Ser	Asp		
1				5				10						15			
gtc	cca	ctg	agc	aac	gat	cag	atc	gcc	cac	tat	gtg	cct	tcc	atc	ttt		96
Val	Pro	Leu	Ser	Asn	Asp	Gln	Ile	Ala	His	Tyr	Val	Pro	Ser	Ile	Phe		
			20					25					30				
gcc	gaa	gaa	gcg	cac	gac	agc	agg	tcg	gca	cgt	tat	ctg	tat	atc	ccg		144
Ala	Glu	Glu	Ala	His	Asp	Ser	Arg	Ser	Ala	Arg	Tyr	Leu	Tyr	Ile	Pro		
		35					40					45					
acc	gtg	cag	gta	ctt	gat	gcg	ctg	cgc	gcc	gaa	gga	ttt	gaa	cca	ttc		192
Thr	Val	Gln	Val	Leu	Asp	Ala	Leu	Arg	Ala	Glu	Gly	Phe	Glu	Pro	Phe		
	50				55						60						
atg	gcc	tgt	cag	aca	cgc	gtg	cgt	gac	cag	ggc	aaa	cgt	gag	cac	acc		240
Met	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Gln	Gly	Lys	Arg	Glu	His	Thr		
65				70					75						80		
aag	cac	atg	ctg	cgc	ttg	cgc	cat	gcg	agc	cag	atc	ctg	gac	cag	gaa		288
Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Leu	Asp	Gln	Glu		
				85				90						95			
gcc	aac	gaa	atc	atc	ctt	ctc	aac	agc	cac	gat	ggc	agc	agc	agc	tat		336
Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr		
			100					105				110					
caa	atg	att	gga	ggc	aaa	ttc	cgt	ttc	gtg	tgt	gca	aac	gga	ctg	gta		384
Gln	Met	Ile	Gly	Gly	Lys	Phe	Arg	Phe	Val	Cys	Ala	Asn	Gly	Leu	Val		
		115					120				125						
ctg	ggg	gac	gtt	gcc	gct	gac	cag	aaa	gtg	cgc	cat	agc	ggc	cgt	ggt		432
Leu	Gly	Asp	Val	Ala	Ala	Asp	Gln	Lys	Val	Arg	His	Ser	Gly	Arg	Gly		
	130					135					140						
gat	gtg	gta	aat	gac	gtg	atc	gaa	ggc	gcc	ttc	gaa	gtg	ttg	aag	cat		480
Asp	Val	Val	Asn	Asp	Val	Ile	Glu	Gly	Ala	Phe	Glu	Val	Leu	Lys	His		
145				150					155						160		
ttc	gaa	cag	atc	gac	cac	ata	acc	gcc	gac	atg	aag	cat	caa	caa	tta		528
Phe	Glu	Gln	Ile	Asp	His	Ile	Thr	Ala	Asp	Met	Lys	His	Gln	Gln	Leu		
				165				170						175			
gac	cag	gac	gag	caa	gag	gcc	ttt	gca	ttg	gct	gcc	ttg	gcg	tat	cgc		576
Asp	Gln	Asp	Glu	Gln	Glu	Ala	Phe	Ala	Leu	Ala	Ala	Leu	Ala	Tyr	Arg		
			180				185						190				
tac	gat	ccg	gca	gaa	gga	cct	gcg	cct	gtt	acc	ccg	tcc	cag	ttg	ctc		624
Tyr	Asp	Pro	Ala	Glu	Gly	Pro	Ala	Pro	Val	Thr	Pro	Ser	Gln	Leu	Leu		
		195				200						205					
atg	ccc	cgc	cgt	cgt	gag	gac	cgc	agc	agc	gac	ctt	tgg	acc	acg	ttc		672
Met	Pro	Arg	Arg	Arg	Glu	Asp	Arg	Ser	Ser	Asp	Leu	Trp	Thr	Thr	Phe		
	210				215						220						
aat	cga	gtc	cag	gaa	aac	acc	ata	aaa	ggc	ggt	ttg	acc	ggg	cgc	aac		720
Asn	Arg	Val	Gln	Glu	Asn	Thr	Ile	Lys	Gly	Gly	Leu	Thr	Gly	Arg	Asn		
225					230				235						240		
aag	caa	ggc	cga	cgc	acg	aca	acg	agg	gca	gtt	aat	ggc	att	gat	cag		768
Lys	Gln	Gly	Arg	Arg	Thr	Thr	Thr	Arg	Ala	Val	Asn	Gly	Ile	Asp	Gln		
			245					250						255			
gat	gtg	aaa	ttg	aat	cgc	gca	ctg	tgg	gtg	ctc	gca	cag	gct	ctg	caa		816
Asp	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Val	Leu	Ala	Gln	Ala	Leu	Gln		
			260				265						270				
ggc	cgt	cag	ctc	gcc	gcc	taa											837
Gly	Arg	Gln	Leu	Ala	Ala												
		275															

&lt;210&gt; 1260

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas syringae pv. tomato str. DC3000

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1260

```

Met Arg Met Ser Ser Asn Phe Arg Asn Pro Cys Met Ile Arg Ser Asp
1      5      10      15
Val Pro Leu Ser Asn Asp Gln Ile Ala His Tyr Val Pro Ser Ile Phe
      20      25      30
Ala Glu Glu Ala His Asp Ser Arg Ser Ala Arg Tyr Leu Tyr Ile Pro
      35      40      45
Thr Val Gln Val Leu Asp Ala Leu Arg Ala Glu Gly Phe Glu Pro Phe
      50      55      60
Met Ala Cys Gln Thr Arg Val Arg Asp Gln Gly Lys Arg Glu His Thr
65      70      75      80
Lys His Met Leu Arg Leu Arg His Ala Ser Gln Ile Leu Asp Gln Glu
      85      90      95
Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr
      100      105      110
Gln Met Ile Gly Gly Lys Phe Arg Phe Val Cys Ala Asn Gly Leu Val
      115      120      125
Leu Gly Asp Val Ala Ala Asp Gln Lys Val Arg His Ser Gly Arg Gly
130      135      140
Asp Val Val Asn Asp Val Ile Glu Gly Ala Phe Glu Val Leu Lys His
145      150      155      160
Phe Glu Gln Ile Asp His Ile Thr Ala Asp Met Lys His Gln Gln Leu
      165      170      175
Asp Gln Asp Glu Gln Glu Ala Phe Ala Leu Ala Ala Leu Ala Tyr Arg
      180      185      190
Tyr Asp Pro Ala Glu Gly Pro Ala Pro Val Thr Pro Ser Gln Leu Leu
      195      200      205
Met Pro Arg Arg Arg Glu Asp Arg Ser Ser Asp Leu Trp Thr Thr Phe
210      215      220
Asn Arg Val Gln Glu Asn Thr Ile Lys Gly Gly Leu Thr Gly Arg Asn
225      230      235      240
Lys Gln Gly Arg Arg Thr Thr Thr Arg Ala Val Asn Gly Ile Asp Gln
      245      250      255
Asp Val Lys Leu Asn Arg Ala Leu Trp Val Leu Ala Gln Ala Leu Gln
260      265      270
Gly Arg Gln Leu Ala Ala
      275

```

&lt;210&gt; 1261

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1261

```

atg cga tta gct tcc cgt ttt ggt cgg tat aat tcc atc cgc cgt gaa      48
Met Arg Leu Ala Ser Arg Phe Gly Arg Tyr Asn Ser Ile Arg Arg Glu
1      5      10      15
cgt cct tta acg gat gat gaa tta atg cag ttc gtg cct tcg gta ttt      96
Arg Pro Leu Thr Asp Asp Glu Leu Met Gln Phe Val Pro Ser Val Phe
      20      25      30
tcc ggt gat aaa cat gag tcc cgg agt gaa cgt tat acg tat att cca      144
Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro
      35      40      45
aca atc aat atc atc aat aag tta cgt gat gaa ggt ttc cag cca ttc      192
Thr Ile Asn Ile Ile Asn Lys Leu Arg Asp Glu Gly Phe Gln Pro Phe
      50      55      60
ttt gcc tgt cag agt cgg gtt cgt gat ttg gga cgt cgc gaa tac agt      240
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly Arg Arg Glu Tyr Ser
      65      70      75      80
aaa cat atg tta cgt ctt cgc agg gaa ggg cat att aac gga cag gaa      288
Lys His Met Leu Arg Leu Arg Arg Glu Gly His Ile Asn Gly Gln Glu
      85      90      95
gtt cct gaa att atc ctg ctt aat tca cat gat ggt tca tcc agt tat      336
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr

```

PhoenixTemp32470.tmp.txt

[illegible]

```
<210> 1262
<211> 273
<212> PRT
<213> Escherichia coli
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<400>	1262															
Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Arg	Tyr	Asn	Ser	Ile	Arg	Arg	Glu	
1				5					10					15		
Arg	Pro	Leu	Thr	Asp	Asp	Glu	Leu	Met	Gln	Phe	Val	Pro	Ser	Val	Phe	
			20					25					30			
Ser	Gly	Asp	Lys	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile	Pro	
		35					40					45				
Thr	Ile	Asn	Ile	Ile	Asn	Lys	Leu	Arg	Asp	Glu	Gly	Phe	Gln	Pro	Phe	
	50					55					60					
Phe	Ala	Cys	Gln	Ser	Arg	Val	Arg	Asp	Leu	Gly	Arg	Arg	Glu	Tyr	Ser	
65					70					75					80	
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Glu	Gly	His	Ile	Asn	Gly	Gln	Glu	
				85					90					95		
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr	
			100					105					110			
Gln	Met	Ile	Pro	Gly	Ile	Phe	Arg	Phe	Val	Cys	Thr	Asn	Gly	Leu	Val	
		115					120					125				
Cys	Gly	Asn	Asn	Phe	Gly	Glu	Ile	Arg	Val	Pro	His	Lys	Gly	Asp	Ile	
	130					135					140					
Val	Gly	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Gly	Val	Phe	Asp	
145					150					155					160	
Lys	Val	Thr	Asp	Asn	Met	Glu	Ala	Met	Lys	Glu	Ile	His	Leu	Asn	Ser	
				165					170					175		
Asp	Glu	Gln	His	Leu	Phe	Gly	Arg	Ala	Ala	Leu	Met	Val	Arg	Tyr	Glu	
			180					185					190			
Asp	Glu	Asn	Lys	Thr	Pro	Val	Thr	Pro	Glu	Gln	Ile	Ile	Thr	Pro	Arg	
		195					200					205				
Arg	Arg	Glu	Asp	Lys	Gln	Asn	Asp	Leu	Trp	Thr	Thr	Trp	Gln	Arg	Val	
	210					215						220				

## PhoenixTemp32470.tmp.txt

Gln Glu Asn Met Ile Lys Gly Gly Leu Ser Gly Arg Ser Ala Ser Gly  
 225 230 245 250 255 260 265 270  
 Lys Asn Thr Arg Thr Arg Ala Ile Thr Gly Ile Asp Gly Asp Ile Arg  
 Ile Asn Lys Ala Leu Trp Val Ile Ala Glu Gln Phe Arg Lys Trp Lys  
 Ser

<210> 1263  
 <211> 828  
 <212> DNA  
 <213> Pseudomonas putida

<220>  
 <221> CDS  
 <222> (1)..(828)  
 <223> transl\_table=11

<400> 1263  
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 Met Arg Leu Ser Ser Phe Arg Asn Pro Cys Met Val Arg Ser Asn  
 1 5 10 15  
 acc cct ttg act aac gac gaa atc gcg cgt gtc gcg ccg tcc atc ttt 96  
 Thr Pro Leu Thr Asn Asp Glu Ile Ala Arg Val Ala Pro Ser Ile Phe  
 20 25 30  
 gcc gtc gaa gcg cac gac agc cgc tcc gat cgc tac cgc tac atc cca 144  
 Ala Val Glu Ala His Asp Ser Arg Ser Asp Arg Tyr Arg Tyr Ile Pro  
 35 40 45  
 acc gtc gac gtg ctt acc gcg ctg cgc gca gaa ggg ttc gaa ccc ttc 192  
 Thr Val Asp Val Leu Thr Ala Leu Arg Ala Glu Gly Phe Glu Pro Phe  
 50 55 60  
 atg gct tgc caa acc cgc gtg cgt aac tcc gac aag atc cag cac acc 240  
 Met Ala Cys Gln Thr Arg Val Arg Asn Ser Asp Lys Ile Gln His Thr  
 65 70 75 80  
 aaa cac atg atc cgc ctg cgc cat gcg tcc aac atc atg gac aag gaa 288  
 Lys His Met Ile Arg Leu Arg His Ala Ser Asn Ile Met Asp Lys Glu  
 85 90 95  
 gcc aac gaa atc atc ctg ctc aac agc cac gat ggc acc agc agt tat 336  
 Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Tyr  
 100 105 110  
 caa atg atg ggc ggg tgc ttc cgc ttt gtg tgc gcc aac ggc ctt gtc 384  
 Gln Met Met Gly Gly Cys Phe Arg Phe Val Cys Ala Asn Gly Leu Val  
 115 120 125  
 ctg ggc gaa gcc gcg atg gat cag aaa gtc cgt cac agc ggt cga caa 432  
 Leu Gly Glu Ala Ala Met Asp Gln Lys Val Arg His Ser Gly Arg Gln  
 130 135 140  
 gac gta atc ggc gaa gtc atc gag ggg gca tat gag gtg ctg gac caa 480  
 Asp Val Ile Gly Glu Val Ile Glu Gly Ala Tyr Glu Val Leu Asp Gln  
 145 150 155 160  
 ttc gca ctg atc gag gat cag cgc gaa acc atg aag caa atc cag att 528  
 Phe Ala Leu Ile Glu Asp Gln Arg Glu Thr Met Lys Gln Ile Gln Ile  
 165 170 175  
 cgc ccc gag ctg caa cac gct ttc gcc gaa gct gca tta gcg tac cgc 576  
 Arg Pro Glu Leu Gln His Ala Phe Ala Glu Ala Ala Leu Ala Tyr Arg  
 180 185 190  
 tac gac cca gcc gaa ggc ccg gcg cct gtg aca gct tca cag ctg ctc 624  
 Tyr Asp Pro Ala Glu Gly Pro Ala Pro Val Thr Ala Ser Gln Leu Leu  
 195 200 205  
 atg cct cgc cgc cgt gaa gat cgc acc gat gat ctc tgg acc aca ttc 672  
 Met Pro Arg Arg Arg Glu Asp Arg Thr Asp Asp Leu Trp Thr Thr Phe  
 210 215 220  
 aac cgc gta cag gaa aac tcc atc aag gga ggg ctt aca ggt cgc aac 720  
 Asn Arg Val Gln Glu Asn Ser Ile Lys Gly Gly Leu Thr Gly Arg Asn  
 225 230 235 240  
 aag caa ggt cgc cgc acc agt acc cgc gcc gtc acc ggc att gac cag 768  
 Lys Gln Gly Arg Arg Thr Ser Thr Arg Ala Val Thr Gly Ile Asp Gln  
 245 250 255  
 gac gtg aag cta aat cgc gcc ctt tgg gtt ctg gct cag cac att cgc 816

Asp Val Lys Leu Asn Arg Ala Leu Trp Val Leu Ala Gln His Ile Arg  
 260 265 270  
 gaa gcc gcc taa  
 Glu Ala Ala  
 275

828

<210> 1264  
 <211> 275  
 <212> PRT  
 <213> Pseudomonas putida

<400> 1264  
 Met Arg Leu Ser Ser Ser Phe Arg Asn Pro Cys Met Val Arg Ser Asn  
 1 5 10 15  
 Thr Pro Leu Thr Asn Asp Glu Ile Ala Arg Val Ala Pro Ser Ile Phe  
 20 25 30  
 Ala Val Glu Ala His Asp Ser Arg Ser Asp Arg Tyr Arg Tyr Ile Pro  
 35 40 45  
 Thr Val Asp Val Leu Thr Ala Leu Arg Ala Glu Gly Phe Glu Pro Phe  
 50 55 60  
 Met Ala Cys Gln Thr Arg Val Arg Asn Ser Asp Lys Ile Gln His Thr  
 65 70 75 80  
 Lys His Met Ile Arg Leu Arg His Ala Ser Asn Ile Met Asp Lys Glu  
 85 90 95  
 Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr  
 100 105 110  
 Gln Met Met Gly Gly Cys Phe Arg Phe Val Cys Ala Asn Gly Leu Val  
 115 120 125  
 Leu Gly Glu Ala Ala Met Asp Gln Lys Val Arg His Ser Gly Arg Gln  
 130 135 140  
 Asp Val Ile Gly Glu Val Ile Glu Gly Ala Tyr Glu Val Leu Asp Gln  
 145 150 155 160  
 Phe Ala Leu Ile Glu Asp Gln Arg Glu Thr Met Lys Gln Ile Gln Ile  
 165 170 175  
 Arg Pro Glu Leu Gln His Ala Phe Ala Glu Ala Ala Leu Ala Tyr Arg  
 180 185 190  
 Tyr Asp Pro Ala Glu Gly Pro Ala Pro Val Thr Ala Ser Gln Leu Leu  
 195 200 205  
 Met Pro Arg Arg Arg Glu Asp Arg Thr Asp Asp Leu Trp Thr Thr Phe  
 210 215 220  
 Asn Arg Val Gln Glu Asn Ser Ile Lys Gly Gly Leu Thr Gly Arg Asn  
 225 230 235 240  
 Lys Gln Gly Arg Arg Thr Ser Thr Arg Ala Val Thr Gly Ile Asp Gln  
 245 250 255  
 Asp Val Lys Leu Asn Arg Ala Leu Trp Val Leu Ala Gln His Ile Arg  
 260 265 270  
 Glu Ala Ala  
 275

<210> 1265  
 <211> 822  
 <212> DNA  
 <213> Escherichia coli

<220>  
 <221> CDS  
 <222> (1)..(822)  
 <223> transl\_table=11

<400> 1265  
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 1 5 10 15  
 cgc ccg tta acg gat gac gaa tta atg cag ttt gtt cca tct gtc ttt  
 Arg Pro Leu Thr Asp Asp Glu Leu Met Gln Phe Val Pro Ser Val Phe  
 20 25 30  
 tct ggt gat aaa cat gaa tcc cgg agt gag cgt tat aca tat atc cca  
 Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro  
 35 40 45

48

96

144

## PhoenixTemp32470.tmp.txt

```

acc atc aat atc atc aat aag tta cgt gat gaa ggt ttc cag cca ttc 192
Thr Ile Asn Ile Ile Asn Lys 55 Leu Arg Asp Glu Gly 60 Phe Gln Pro Phe
50
ttt gcc tgt cag agt cgg gtt cgt gat ttg gga cgc cgc gaa tac agt 240
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly 75 Arg Arg Glu Tyr Ser
65
aaa cat atg tta cgt ctt cgc agg gaa ggg cat att aac ggg aaa gaa 288
Lys His Met Leu Arg 85 Leu Arg Arg Glu 90 His Ile Asn Gly Lys 95 Glu
gtt cct gaa att atc ctg ctt aat tca cat gat ggt tca tcc agt tat 336
Val Pro Glu Ile Ile Leu Leu Asn Ser 105 His Asp Gly Ser Ser Ser Tyr
cag atg atc cca gga att ttt cgt ttt gtc tgc aca aat ggc ctg gtg 384
Gln Met Ile 115 Pro Gly Ile Phe Arg 120 Phe Val Cys Thr Asn Gly Leu Val
115
tgt ggg aat aat ttt ggc gaa atc cgc gtt cca cat aaa ggt gat att 432
Cys Gly Asn Asn Phe Gly 135 Glu Ile Arg Val Pro His 140 Lys Gly Asp Ile
gtc ggg cag gtt att gag gga gcg tat gaa gtg ctc ggt gtc ttt gat 480
Val Gly Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp
145
aaa gtc act gaa aat atg gag aca atg aaa gag ata cat ctt aac agt 528
Lys Val Thr Glu Asn Met Glu Thr Met Lys 170 Glu Ile His Leu Asn Ser
165
gac gaa caa cat tta ttt ggc aga gct gca ttg atg gcc agg tac gaa 576
Asp Glu Gln His Leu Phe Gly Arg Ala 185 Ala Leu Met Ala Arg Tyr Glu
180
gat gaa aat aaa acg cca gtg acg cca gaa caa ata att act ccc cgc 624
Asp Glu Asn Lys Thr Pro Val Thr 200 Pro Glu Gln Ile Ile Thr Pro Arg
195
cgt tgg gag gat aaa cag aac gat ctc tgg aca acc tgg cag cgg gtt 672
Arg Trp Glu Asp Lys Gln Asn Asp Leu Trp Thr Thr Trp Gln Arg Val
210
cag gag aat atg ata aaa ggt gga tta tcg ggg cga agt gcc tcc ggt 720
Gln Glu Asn Met Ile Lys 230 Gly Gly Leu Ser Gly Arg Ser Ala Ser Gly
225
aaa aat acc aga aca aga gcc att aca ggc att gac ggt gat atc cga 768
Lys Asn Thr Arg Thr Arg Ala Ile Thr Gly 250 Ile Asp Gly Asp Ile Arg
245
atc aac aaa gca tta tgg atg att gcc gaa cag ttc agg gag tgg aag 816
Ile Asn Lys Ala 260 Leu Trp Met Ile Ala 265 Glu Gln Phe Arg Glu Trp Lys
260
tca tga 822
Ser

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&lt;210&gt; 1266

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 1266

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Met Arg Leu Ala Ser Arg Phe Gly Arg Tyr Asn Ser Ile Arg Arg Glu
1 5 10 15
Arg Pro Leu Thr Asp Asp Glu Leu Met Gln Phe Val Pro Ser Val Phe
20 25 30
Ser Gly Asp Lys His Glu Ser Arg Glu Arg Tyr Thr Tyr Ile Pro
35 40 45
Thr Ile Asn Ile Ile Asn Lys Leu Arg Asp Glu Gly Phe Gln Pro Phe
50 55 60
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly Arg Arg Glu Tyr Ser
65 70 75 80
Lys His Met Leu Arg 85 Leu Arg Arg Glu Gly 90 His Ile Asn Gly Lys Glu
95
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr
100 105 110
Gln Met Ile Pro Gly Ile Phe Arg 120 Phe Val Cys Thr Asn Gly Leu Val
115 125
Cys Gly Asn Asn Phe Gly Glu Ile Arg Val Pro His Lys Gly Asp Ile

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## PhoenixTemp32470.tmp.txt

130 135 140  
 Val Gly Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp  
 145 150 155 160  
 Lys Val Thr Glu Asn Met Glu Thr Met Lys Glu Ile His Leu Asn Ser  
 165 170 175  
 Asp Glu Gln His Leu Phe Gly Arg Ala Ala Leu Met Ala Arg Tyr Glu  
 180 185 190  
 Asp Glu Asn Lys Thr Pro Val Thr Pro Glu Gln Ile Ile Thr Pro Arg  
 195 200 205  
 Arg Trp Glu Asp Lys Gln Asn Asp Leu Trp Thr Thr Trp Gln Arg Val  
 210 215 220  
 Gln Glu Asn Met Ile Lys Gly Gly Leu Ser Gly Arg Ser Ala Ser Gly  
 225 230 235 240  
 Lys Asn Thr Arg Thr Arg Ala Ile Thr Gly Ile Asp Gly Asp Ile Arg  
 245 250 255  
 Ile Asn Lys Ala Leu Trp Met Ile Ala Glu Gln Phe Arg Glu Trp Lys  
 260 265 270  
 Ser

&lt;210&gt; 1267

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Rhodobacter sphaeroides 2.4.1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1267

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tac agc cgg ggc gat cag ccg ctg acg aat gac gag ctg atg gcg cgc	96
Tyr Ser Arg Gly Asp Gln Pro Leu Thr Asn Asp Glu Leu Met Ala Arg	
20 25 30	
gtt ccc tcg atc ttt gcg acc gag gct cac gag agc cgc agc gcc cgg	144
Val Pro Ser Ile Phe Ala Thr Glu Ala His Glu Ser Arg Ser Ala Arg	
35 40 45	
ttc gct cct gtc ccc acc gtc acc gtg ctg gat ggc ctg cgc gcg gaa	192
Phe Ala Pro Val Pro Thr Val Thr Val Leu Asp Gly Leu Arg Ala Glu	
50 55 60	
gga ttc gaa ccg ttc ttt gct cag cag gcc cgc acc cga gtc gag ggc	240
Gly Phe Glu Pro Phe Phe Ala Gln Gln Ala Arg Thr Arg Val Glu Gly	
65 70 75 80	
aag gcc gag ttt acg aag cac atg ctg cgc ctg cgt cac cgc ggc atc	288
Lys Ala Glu Phe Thr Lys His Met Leu Arg Leu Arg His Arg Gly Ile	
85 90 95	
gtc aat gcc gag ggc gag gcg ttc gag atc gtg ctg gtc aac gcg aat	336
Val Asn Ala Glu Gly Glu Ala Phe Glu Ile Val Leu Val Asn Ala Asn	
100 105 110	
gac ggc acg agc gcc tat cag atg atc ccg ggg ttc ttt cgg ttt gtc	384
Asp Gly Thr Ser Ala Tyr Gln Met Ile Pro Gly Phe Phe Arg Phe Val	
115 120 125	
tgc gcc aac ggc ctc atg tgc ggc gag acc ttc gac gag gtg aag gtc	432
Cys Ala Asn Gly Leu Met Cys Gly Glu Thr Phe Asp Glu Val Lys Val	
130 135 140	
cgc cat agc ggc aat gcc att ggc gaa gtc atc gag ggc gcc tat cgc	480
Arg His Ser Gly Asn Ala Ile Gly Glu Val Ile Glu Gly Ala Tyr Arg	
145 150 155 160	
gtg ctt gag gag gcc ccc cgc gtg acc gag cag gtg gac cgg ttc aag	528
Val Leu Glu Glu Ala Pro Arg Val Thr Glu Gln Val Asp Arg Phe Lys	
165 170 175	
gct atc cag ctg cag gac cgg gag cgc gag atc ctg gcc gaa gcc gcg	576
Ala Ile Gln Leu Gln Asp Arg Glu Arg Glu Ile Leu Ala Glu Ala Ala	
180 185 190	
cac ggc ctt cgc ttc ccc ggc acc gag ggc aag gaa gcg ccg atc	624
His Gly Leu Arg Phe Pro Gly Thr Ala Glu Gly Lys Glu Ala Pro Ile	

PhoenixTemp32470.tmp.txt

acg	ccg	gcc	gag	ctc	ctg	cgg	ccg	cgg	tcg	acc	gac	cgc	gcc	acc	672	
Thr	Pro	Ala	Glu	Leu	Leu	Arg	Pro	Arg	Ser	Thr	Asp	Arg	Ala	Thr		
	210					215				220						
gac	ctg	tgg	acc	gct	ttc	aac	gtg	gtg	cag	gag	aac	acc	ctg	cgc	gga	720
Asp	Leu	Trp	Thr	Ala	Phe	Asn	Val	Val	Gln	Glu	Asn	Thr	Leu	Arg	Gly	
225					230					235					240	
ggg	atg	cgc	ggc	cgc	acc	cgg	acc	gaa	agc	ggc	cat	ttc	cgc	cgc	cag	768
Gly	Met	Arg	Gly	Arg	Thr	Arg	Thr	Glu	Ser	Gly	His	Phe	Arg	Arg	Gln	
				245				250						255		
acc	gtc	cgc	gag	gtg	gcc	ggc	atc	gac	cag	tcc	cgc	ggc	ctc	aac	cgc	816
Thr	Val	Arg	Glu	Val	Ala	Gly	Ile	Asp	Gln	Ser	Arg	Gly	Leu	Asn	Arg	
			260					265					270			
gcg	ctc	tgg	atg	ctc	acc	gag	cgc	atg	gcc	gag	ctg	aag	gca	ggc		861
Ala	Leu	Trp	Met	Leu	Thr	Glu	Arg	Met	Ala	Glu	Leu	Lys	Ala	Gly		
		275					280					285				
tga																864

<210> 1268  
 <211> 287  
 <212> PRT  
 <213> Rhodobacter sphaeroides 2.4.1

<400> 1268

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Tyr	Ser	Arg	Gly	Asp	Gln	Pro	Leu	Thr	Asn	Asp	Glu	Leu	Met	Ala	Arg	
			20					25					30			
Val	Pro	Ser	Ile	Phe	Ala	Thr	Glu	Ala	His	Glu	Ser	Arg	Ser	Ala	Arg	
		35					40					45				
Phe	Ala	Pro	Val	Pro	Thr	Val	Thr	Val	Leu	Asp	Gly	Leu	Arg	Ala	Glu	
	50					55					60					
Gly	Phe	Glu	Pro	Phe	Phe	Ala	Gln	Gln	Ala	Arg	Thr	Arg	Val	Glu	Gly	
65				70					75					80		
Lys	Ala	Glu	Phe	Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Arg	Gly	Ile	
			85					90					95			
Val	Asn	Ala	Glu	Gly	Glu	Ala	Phe	Glu	Ile	Val	Leu	Val	Asn	Ala	Asn	
		100						105					110			
Asp	Gly	Thr	Ser	Ala	Tyr	Gln	Met	Ile	Pro	Gly	Phe	Phe	Arg	Phe	Val	
	115					120					125					
Cys	Ala	Asn	Gly	Leu	Met	Cys	Gly	Glu	Thr	Phe	Asp	Glu	Val	Lys	Val	
	130					135				140						
Arg	His	Ser	Gly	Asn	Ala	Ile	Gly	Glu	Val	Ile	Glu	Gly	Ala	Tyr	Arg	
145				150					155					160		
Val	Leu	Glu	Glu	Ala	Pro	Arg	Val	Thr	Glu	Gln	Val	Asp	Arg	Phe	Lys	
			165					170						175		
Ala	Ile	Gln	Leu	Gln	Asp	Arg	Glu	Arg	Glu	Ile	Leu	Ala	Glu	Ala	Ala	
		180					185					190				
His	Gly	Leu	Arg	Phe	Pro	Gly	Thr	Ala	Glu	Gly	Lys	Glu	Ala	Pro	Ile	
	195					200						205				
Thr	Pro	Ala	Glu	Leu	Leu	Arg	Pro	Arg	Arg	Ser	Thr	Asp	Arg	Ala	Thr	
	210					215					220					
Asp	Leu	Trp	Thr	Ala	Phe	Asn	Val	Val	Gln	Glu	Asn	Thr	Leu	Arg	Gly	
225					230					235					240	
Gly	Met	Arg	Gly	Arg	Thr	Arg	Thr	Glu	Ser	Gly	His	Phe	Arg	Arg	Gln	
			245					250					255			
Thr	Val	Arg	Glu	Val	Ala	Gly	Ile	Asp	Gln	Ser	Arg	Gly	Leu	Asn	Arg	
		260					265						270			
Ala	Leu	Trp	Met	Leu	Thr	Glu	Arg	Met	Ala	Glu	Leu	Lys	Ala	Gly		
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<210> 1269  
 <211> 828  
 <212> DNA  
 <213> Herminiimonas arsenicoxydans

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;400&gt; 1269

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Met	Ser	Leu	Ala	Ser	Arg	Phe	Ala	Pro	Gln	Ser	Pro	Ile	Leu	Arg	Ser	
1				5				10					15			
gat	cgc	cca	ctc	tcg	gac	gac	cgt	att	cgt	gcc	gtt	gtt	ccc	tcg	atc	96
Asp	Arg	Pro	Leu	Ser	Asp	Asp	Arg	Ile	Arg	Ala	Val	Val	Pro	Ser	Ile	
			20					25					30			
ttt	gcc	gac	gct	ccg	cat	ggg	agc	cgg	tcc	gat	cgg	tat	gcc	tac	ata	144
Phe	Ala	Asp	Ala	Pro	His	Gly	Ser	Arg	Ser	Asp	Arg	Tyr	Ala	Tyr	Ile	
			35				40					45				
ccg	acc	tcg	gtc	gtg	ctg	acc	agg	ttg	cgc	cag	gag	ggg	ttc	gag	ccc	192
Pro	Thr	Ser	Val	Val	Leu	Thr	Arg	Leu	Arg	Gln	Glu	Gly	Phe	Glu	Pro	
	50					55					60					
ttc	atg	gtg	tgc	cag	acg	cgc	gtg	cgc	aac	gag	gat	cgg	cgc	gag	tac	240
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	Asn	Glu	Asp	Arg	Arg	Glu	Tyr	
	65				70					75					80	
acc	aag	cat	ctc	atc	cga	ctt	cgc	cat	gca	agc	cag	atc	aac	ggc	gac	288
Thr	Lys	His	Leu	Ile	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Asp	
			85						90					95		
gag	gcg	aac	gag	atc	atc	ctg	ctc	aac	agc	cac	gac	ggc	acg	agc	agc	336
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tac	cag	atg	ctt	gcc	ggc	atg	ttc	cgg	ttc	gtc	tgc	cac	aac	ggc	ctg	384
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	His	Asn	Gly	Leu	
			115				120					125				
gtc	tgc	ggg	gac	acc	acc	gcc	gac	atc	cgc	gtt	cct	cac	aag	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Thr	Ala	Asp	Ile	Arg	Val	Pro	His	Lys	Gly	Asp	
	130					135					140					
gtg	gca	agc	cag	gtg	atc	gaa	ggg	gcc	tac	gag	gtt	ctc	gaa	ggc	ttc	480
Val	Ala	Ser	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Glu	Gly	Phe	
	145				150					155					160	
gag	cgc	gtg	cag	gac	gcg	cgc	gat	gcg	atg	cgc	acc	atc	acc	ctc	gat	528
Glu	Arg	Val	Gln	Asp	Ala	Arg	Asp	Ala	Met	Arg	Thr	Ile	Thr	Leu	Asp	
				165					170					175		
gag	ggc	gaa	gcg	gaa	atc	ttt	gcg	aat	tcc	gcg	ctc	gca	ctc	aag	tac	576
Glu	Gly	Glu	Ala	Glu	Ile	Phe	Ala	Asn	Ser	Ala	Leu	Ala	Leu	Lys	Tyr	
			180					185					190			
gac	gac	ccg	gcc	aag	tcc	acc	cct	gtc	acg	gag	agc	caa	ctt	ctg	gcg	624
Asp	Asp	Pro	Ala	Lys	Ser	Thr	Pro	Val	Thr	Glu	Ser	Gln	Leu	Leu	Ala	
		195					200					205				
ccc	agg	cgc	tgg	gac	gac	cgc	aag	aac	gac	ctg	tgg	gcc	gtc	ttc	aac	672
Pro	Arg	Arg	Trp	Asp	Asp	Arg	Lys	Asn	Asp	Leu	Trp	Ala	Val	Phe	Asn	
	210					215					220					
cgc	gtc	cag	gag	aac	ctc	gtc	aaa	ggg	gga	ctg	aat	gga	cgc	tcg	gcc	720
Arg	Val	Gln	Glu	Asn	Leu	Val	Lys	Gly	Gly	Leu	Asn	Gly	Arg	Ser	Ala	
	225				230					235					240	
aat	ggc	cgc	aat	caa	cgc	acc	cgt	ccg	gtg	caa	gga	atc	gac	cag	aac	768
Asn	Gly	Arg	Asn	Gln	Arg	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Asn	
				245					250					255		
ctg	cgc	ctg	aac	cgg	gcg	ttg	tgg	ctg	ctg	gcc	gaa	ggc	atg	cgc	cag	816
Leu	Arg	Leu	Asn	Arg	Ala	Leu	Trp	Leu	Leu	Ala	Glu	Gly	Met	Arg	Gln	
			260					265					270			
ctc	aag	gcg	tga													828
Leu	Lys	Ala														
			275													

&lt;210&gt; 1270

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Herminiimonas arsenicoxydans

&lt;400&gt; 1270

Met	Ser	Leu	Ala	Ser	Arg	Phe	Ala	Pro	Gln	Ser	Pro	Ile	Leu	Arg	Ser	
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Asp	Arg	Pro	Leu	Ser	Asp	Asp	Arg	Ile	Arg	Ala	Val	Val	Pro	Ser	Ile	
			20					25					30			

## PhoenixTemp32470.tmp.txt

Phe Ala Asp<sub>35</sub> Ala Pro His Gly Ser<sub>40</sub> Arg Ser Asp Arg Tyr<sub>45</sub> Ala Tyr Ile  
 Pro Thr<sub>50</sub> Ser Val Val Leu Thr<sub>55</sub> Arg Leu Arg Gln Glu<sub>60</sub> Gly Phe Glu Pro  
 Phe Met Val Cys Gln Thr<sub>70</sub> Arg Val Arg Asn Glu<sub>75</sub> Asp Arg Arg Glu Tyr<sub>80</sub>  
 Thr Lys His Leu Ile<sub>85</sub> Arg Leu Arg His Ala<sub>90</sub> Ser Gln Ile Asn Gly<sub>95</sub> Asp  
 Glu Ala Asn Glu<sub>100</sub> Ile Ile Leu Leu Asn<sub>105</sub> Ser His Asp Gly Thr<sub>110</sub> Ser Ser  
 Tyr Gln Met<sub>115</sub> Leu Ala Gly Met Phe<sub>120</sub> Arg Phe Val Cys His<sub>125</sub> Asn Gly Leu  
 Val Cys<sub>130</sub> Gly Asp Thr Thr Ala<sub>135</sub> Asp Ile Arg Val Pro<sub>140</sub> His Lys Gly Asp  
 Val Ala Ser Gln Val Ile<sub>150</sub> Glu Gly Ala Tyr Glu<sub>155</sub> Val Leu Glu Gly Phe<sub>160</sub>  
 Glu Arg Val Gln Asp<sub>165</sub> Ala Arg Asp Ala Met<sub>170</sub> Arg Thr Ile Thr Leu<sub>175</sub> Asp  
 Glu Gly Glu Ala<sub>180</sub> Glu Ile Phe Ala Asn<sub>185</sub> Ser Ala Leu Ala Leu<sub>190</sub> Lys Tyr  
 Asp Asp Pro<sub>195</sub> Ala Lys Ser Thr Pro<sub>200</sub> Val Thr Glu Ser Gln<sub>205</sub> Leu Leu Ala  
 Pro Arg<sub>210</sub> Arg Trp Asp Asp Arg<sub>215</sub> Lys Asn Asp Leu Trp<sub>220</sub> Ala Val Phe Asn  
 Arg Val<sub>225</sub> Gln Glu Asn Leu<sub>230</sub> Val Lys Gly Gly Leu<sub>235</sub> Asn Gly Arg Ser Ala<sub>240</sub>  
 Asn Gly Arg Asn Gln<sub>245</sub> Arg Thr Arg Pro Val<sub>250</sub> Gln Gly Ile Asp Gln<sub>255</sub> Asn  
 Leu Arg Leu Asn<sub>260</sub> Arg Ala Leu Trp Leu<sub>265</sub> Leu Ala Glu Gly Met<sub>270</sub> Arg Gln  
 Leu Lys Ala<sub>275</sub>

&lt;210&gt; 1271

&lt;211&gt; 834

&lt;212&gt; DNA

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(834)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1271

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1				5					10					15		
gac	tcg	ccc	ctc	tcg	gac	gac	cag	atc	cgt	agc	gtc	gcg	ccg	tca	atc	96
Asp	Ser	Pro	Leu	Ser	Asp	Asp	Gln	Ile	Arg	Ser	Val	Ala	Pro	Ser	Ile	
			20					25					30			
ttc	gcg	gac	ggc	aag	cac	gca	agc	cgc	tcc	gaa	cgc	tac	acc	tac	att	144
Phe	Ala	Asp	Gly	Lys	His	Ala	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile	
			35				40					45				
ccc	acc	atc	gat	gtg	ctg	cgc	ggg	ctg	cgc	aat	gaa	ggc	ttc	cag	ccg	192
Pro	Thr	Ile	Asp	Val	Leu	Arg	Gly	Leu	Arg	Asn	Glu	Gly	Phe	Gln	Pro	
			50			55					60					
ttc	atg	gtc	tgc	cag	agc	cgc	gtg	cgt	gat	cca	ggc	aag	cgc	gag	tac	240
Phe	Met	Val	Cys	Gln	Ser	Arg	Val	Arg	Asp	Pro	Gly	Lys	Arg	Glu	Tyr	
					70				75						80	
acg	aaa	cac	atg	ctc	cgg	ctt	cgt	cac	gcc	acc	cag	atc	gtc	ggg	gaa	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Thr	Gln	Ile	Val	Gly	Glu	
				85					90					95		
gaa	gcc	aac	gag	gtc	gtg	ctg	ctg	aac	tcg	cac	gac	ggc	acg	agc	agc	336
Glu	Ala	Asn	Glu	Val	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tac	cag	atg	ctg	gct	ggg	gtg	ctg	cgt	ttc	gtc	tgc	cag	aac	ggc	atg	384
Tyr	Gln	Met	Leu	Ala	Gly	Val	Leu	Arg	Phe	Val	Cys	Gln	Asn	Gly	Met	
			115				120					125				
gtc	gct	ggc	gac	agc	gtg	cgc	gat	atc	cgc	ata	ccg	cac	aaa	ggc	aac	432

## PhoenixTemp32470.tmp.txt

Val	Ala	Gly	Asp	Ser	Val	Arg	Asp	Ile	Arg	Ile	Pro	His	Lys	Gly	Asn	
130	130					135				140						
atc	gca	cgg	aac	gtc	atc	gat	ggc	gcg	ttc	gac	gtg	ctc	gac	acc	ttc	480
Ile	Ala	Arg	Asn	Val	Ile	Asp	Gly	Ala	Phe	Asp	Val	Leu	Asp	Thr	Phe	
145					150					155					160	
gac	ctg	atc	cgc	gag	cag	acc	gac	agc	atg	cgc	ggc	gtc	gaa	ctg	gac	528
Asp	Leu	Ile	Arg	Glu	Gln	Thr	Asp	Ser	Met	Arg	Gly	Val	Glu	Leu	Asp	
				165					170					175		
cgc	gct	gaa	cag	cac	gcg	ttc	gcc	cgt	tcc	gcc	ctt	gca	ctg	cgc	tac	576
Arg	Ala	Glu	Gln	His	Ala	Phe	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Arg	Tyr	
			180				185						190			
gac	ccg	act	gac	acg	gag	gcc	ccc	tcc	cct	gtc	acc	gag	agc	caa	ttg	624
Asp	Pro	Thr	Asp	Thr	Glu	Ala	Pro	Ser	Pro	Val	Thr	Glu	Ser	Gln	Leu	
		195					200					205				
ctt	gcc	ccg	cgc	cgt	ttc	gag	gat	cgc	cgc	gac	gat	ctc	tgg	acg	gtg	672
Leu	Ala	Pro	Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Leu	Trp	Thr	Val	
					215						220					
ttc	aac	cgg	gtg	cag	gag	aac	ctc	acc	aaa	ggc	ggg	ctg	cac	ggg	cgc	720
Phe	Asn	Arg	Val	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	His	Gly	Arg	
225				230						235					240	
tcg	cga	acc	ggc	cgg	gca	atg	tcc	acc	cgc	ccc	gtc	aca	ggc	atc	gat	768
Ser	Arg	Thr	Gly	Arg	Ala	Met	Ser	Thr	Arg	Pro	Val	Thr	Gly	Ile	Asp	
				245					250					255		
cag	aac	gtg	aag	ctc	aat	cgc	gcc	ctc	tgg	atg	ctg	gcc	gac	gcc	atg	816
Gln	Asn	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Met	Leu	Ala	Asp	Ala	Met	
			260					265					270			
cgc	caa	atg	aag	gcg	taa											834
Arg	Gln	Met	Lys	Ala												
		275														

&lt;210&gt; 1272

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;400&gt; 1272

Met	Gln	Leu	Ala	Ser	Ser	Phe	Arg	Tyr	Gly	Ser	Pro	Ile	Leu	Arg	Ala	
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Asp	Ser	Pro	Leu	Ser	Asp	Asp	Gln	Ile	Arg	Ser	Val	Ala	Pro	Ser	Ile	
			20					25					30			
Phe	Ala	Asp	Gly	Lys	His	Ala	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile	
		35					40					45				
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Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Thr	Gln	Ile	Val	Gly	Glu	
				85					90					95		
Glu	Ala	Asn	Glu	Val	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
		100						105					110			
Tyr	Gln	Met	Leu	Ala	Gly	Val	Leu	Arg	Phe	Val	Cys	Gln	Asn	Gly	Met	
		115					120					125				
Val	Ala	Gly	Asp	Ser	Val	Arg	Asp	Ile	Arg	Ile	Pro	His	Lys	Gly	Asn	
		130				135					140					
Ile	Ala	Arg	Asn	Val	Ile	Asp	Gly	Ala	Phe	Asp	Val	Leu	Asp	Thr	Phe	
145				150						155					160	
Asp	Leu	Ile	Arg	Glu	Gln	Thr	Asp	Ser	Met	Arg	Gly	Val	Glu	Leu	Asp	
				165					170					175		
Arg	Ala	Glu	Gln	His	Ala	Phe	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Arg	Tyr	
				180				185					190			
Asp	Pro	Thr	Asp	Thr	Glu	Ala	Pro	Ser	Pro	Val	Thr	Glu	Ser	Gln	Leu	
		195					200					205				
Leu	Ala	Pro	Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Leu	Trp	Thr	Val	
		210				215					220					
Phe	Asn	Arg	Val	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	His	Gly	Arg	
225				230						235					240	
Ser	Arg	Thr	Gly	Arg	Ala	Met	Ser	Thr	Arg	Pro	Val	Thr	Gly	Ile	Asp	
				245					250					255		
Gln	Asn	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Met	Leu	Ala	Asp	Ala	Met	

Arg Gln Met 260  
275 Lys Ala

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<213> Escherichia coli

<220>  
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<223> transl\_table=11

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cgt cct tta acg gat gat gaa tta atg cag ttc gtg cct tcg gta ttt      96
Arg Pro Leu Thr Asp Asp Glu Leu Met Gln Phe Val Pro Ser Val Phe
20      25      30
tcc ggt gat aaa cat gag tcc cgg agt gaa cgt tat acg tat att cca      144
Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro
35      40      45
aca atc aat atc atc aat aag tta cgt gat gaa ggt ttc cag cca ttc      192
Thr Ile Asn Ile Ile Asn Lys Leu Arg Asp Glu Gly Phe Gln Pro Phe
50      55      60
ttt gcc tgt cag agt cgg gtt cgt gat ttg gga cgt cgc gaa tac agt      240
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly Arg Arg Glu Tyr Ser
65      70      75      80
aaa cat atg tta cgt ctt cgc agg gaa ggg cat att aac ggg cag gaa      288
Lys His Met Leu Arg Leu Arg Arg Glu Gly His Ile Asn Gly Gln Glu
85      90      95
gtt cct gaa att atc ctg ctt aat tca cat gat ggt tca tcc agt tat      336
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr
100      105      110
cag atg atc ccc gga att ttt cgt ttt gtc tgc aca aat tgc ctg gtg      384
Gln Met Ile Pro Gly Ile Phe Arg Phe Val Cys Thr Asn Cys Leu Val
115      120      125
tgc gga aat aat ttt ggc gaa atc cgc gtt cca cat aaa ggt gat att      432
Cys Gly Asn Asn Phe Gly Ile Arg Val Pro His Lys Gly Asp Ile
130      135      140
gtc ggg cag gtt ata gag ggc gcg tat gaa gtg ctc ggt gtc ttt gat      480
Val Gly Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp
145      150      155      160
aag gtc act gat aat atg gag gcg atg aaa gaa att cat ctt aac agt      528
Lys Val Thr Asp Asn Met Glu Ala Met Lys Glu Ile His Leu Asn Ser
165      170      175
gac gag caa cat tta ttt ggc aga gct gca ctg atg gtc agg tat gaa      576
Asp Glu Gln His Leu Phe Gly Arg Ala Ala Leu Met Val Arg Tyr Glu
180      185      190
gat gaa aat aaa acg cca gtg acg cct cct gaa caa ata att act ccc cgt      624
Asp Glu Asn Lys Thr Pro Val Thr Pro Glu Gln Ile Ile Thr Pro Arg
195      200      205
cgt tgg gag gat aaa cag aac gat ctc tgg aca acc tgg cag cgg gtt      672
Arg Trp Glu Asp Lys Gln Asn Asp Leu Trp Thr Thr Trp Gln Arg Val
210      215      220
cag gag aat atg ata aaa ggt gga tta tcg ggg cga agt gcc tcc ggg      720
Gln Glu Asn Met Ile Lys Gly Gly Leu Ser Gly Arg Ser Ala Ser Gly
225      230      235      240
aaa aat acc agg aca aga gcc att aca ggt att gat ggt gat ata aga      768
Lys Asn Thr Arg Thr Arg Ala Ile Thr Gly Ile Asp Gly Asp Ile Arg
245      250      255
atc aac aag gcg ttg tgg gtg att gcc gaa cag ttc aga aag tgg aag      816
Ile Asn Lys Ala Leu Trp Val Ile Ala Glu Gln Phe Arg Lys Trp Lys
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Ser
822

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<210> 1274  
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 <213> Escherichia coli

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 Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro  
 35 40 45  
 Thr Ile Asn Ile Ile Asn Lys Leu Arg Asp Glu Gly Phe Gln Pro Phe  
 50 55 60  
 Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly Arg Arg Glu Tyr Ser  
 65 70 75 80  
 Lys His Met Leu Arg Leu Arg Arg Glu Gly His Ile Asn Gly Gln Glu  
 85 90 95  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr  
 100 105 110  
 Gln Met Ile Pro Gly Ile Phe Arg Phe Val Cys Thr Asn Cys Leu Val  
 115 120 125  
 Cys Gly Asn Asn Phe Gly Glu Ile Arg Val Pro His Lys Gly Asp Ile  
 130 135 140  
 Val Gly Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp  
 145 150 155 160  
 Lys Val Thr Asp Asn Met Glu Ala Met Lys Glu Ile His Leu Asn Ser  
 165 170 175  
 Asp Glu Gln His Leu Phe Gly Arg Ala Leu Met Val Arg Tyr Glu  
 180 185 190  
 Asp Glu Asn Lys Thr Pro Val Thr Pro Glu Gln Ile Ile Thr Pro Arg  
 195 200 205  
 Arg Trp Glu Asp Lys Gln Asn Asp Leu Trp Thr Thr Trp Gln Arg Val  
 210 215 220  
 Gln Glu Asn Met Ile Lys Gly Gly Leu Ser Gly Arg Ser Ala Ser Gly  
 225 230 235 240  
 Lys Asn Thr Arg Thr Arg Ala Ile Thr Gly Ile Asp Gly Asp Ile Arg  
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 Ile Asn Lys Ala Leu Trp Val Ile Ala Glu Gln Phe Arg Lys Trp Lys  
 260 265 270  
 Ser

<210> 1275  
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 <213> Klebsiella pneumoniae subsp. pneumoniae MGH 78578

<220>  
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 Arg Pro Leu Thr Asn Asp Glu Leu Val Lys Val Val Pro Ser Val Phe 20 25 30  
 tca gaa gaa aag cat aat tca cgt agt gat cgc tat acc tat att cca 144  
 Ser Glu Glu Lys His Asn Ser Arg Ser Asp Arg Tyr Thr Tyr Ile Pro 35 40 45  
 acc att aca ctg ctg gat aaa tta cgt gaa gaa ggt ttc cag cca ttt 192  
 Thr Ile Thr Leu Leu Asp Lys Leu Arg Glu Glu Gly Phe Gln Pro Phe 50 55 60  
 ttt gcc tgt cag tca cga gta agg gat gag gat aaa cgg ggg cat act 240  
 Phe Ala Cys Gln Ser Arg Val Arg Asp Glu Asp Lys Arg Gly His Thr 65 70 75  
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## PhoenixTemp32470.tmp.txt

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					85							90				95			
	gta	ccc	gaa	atc	att	ctt	ctt	aac	tcg	cat	gat	gga	tcg	tcc	agt	tat			336
	Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr			
				100					105					110					
	caa	atg	atc	ccg	ggg	atg	ttc	cgt	ttt	gta	tgc	aca	aat	ggc	ctt	gtg			384
	Gln	Met	Ile	Pro	Gly	Met	Phe	Arg	Phe	Val	Cys	Thr	Asn	Gly	Leu	Val			
			115					120					125						
	tgc	ggg	acg	tcg	ttt	ggg	gag	att	cgt	gta	cct	cat	aaa	ggg	gat	att			432
	Cys	Gly	Thr	Ser	Phe	Gly	Glu	Ile	Arg	Val	Pro	His	Lys	Gly	Asp	Ile			
		130					135					140							
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	Val	Gly	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Gly	Ile	Phe	Asp			
	145					150					155					160			
	aaa	ata	act	gaa	ggc	gtt	gat	gtc	atg	aag	tct	att	acc	tta	acc	aag			528
	Lys	Ile	Thr	Glu	Gly	Val	Asp	Val	Met	Lys	Ser	Ile	Thr	Leu	Thr	Lys			
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	Glu	Glu	Gln	Ser	Leu	Phe	Gly	Gln	Ala	Ala	Leu	Thr	Tyr	Arg	Tyr	Glu			
				180				185						190					
	gat	gaa	aat	aaa	tct	ccg	gtc	agt	att	gaa	cag	ata	att	cat	ccg	cgc			624
	Asp	Glu	Asn	Lys	Ser	Pro	Val	Ser	Ile	Glu	Gln	Ile	Ile	His	Pro	Arg			
			195					200					205						
	cgt	tat	gaa	gat	aaa	aaa	tat	gac	atc	tgg	act	aca	tat	caa	agg	gtc			672
	Arg	Tyr	Glu	Asp	Lys	Lys	Tyr	Asp	Ile	Trp	Thr	Thr	Tyr	Gln	Arg	Val			
		210					215					220							
	cag	gaa	aat	ctg	att	aaa	ggc	ggg	ttg	cct	ggc	cga	act	gaa	aaa	ggg			720
	Gln	Glu	Asn	Leu	Ile	Lys	Gly	Gly	Leu	Pro	Gly	Arg	Thr	Glu	Lys	Gly			
	225					230					235					240			
	aaa	aga	aca	aca	acc	cgg	cca	gta	aaa	gca	att	gat	ggg	gat	gtc	aaa			768
	Lys	Arg	Thr	Thr	Thr	Arg	Pro	Val	Lys	Ala	Ile	Asp	Gly	Asp	Val	Lys			
				245					250						255				
	ctc	aat	aag	gca	ttg	ttg	tta	att	gca	gag	aaa	ttc	cgc	act	ctt	aaa			816
	Leu	Asn	Lys	Ala	Leu	Trp	Leu	Ile	Ala	Glu	Lys	Phe	Arg	Thr	Leu	Lys			
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	Gly																		

&lt;210&gt; 1276

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Klebsiella pneumoniae subsp. pneumoniae MGH 78578

&lt;400&gt; 1276

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			20				25						30						
Ser	Glu	Glu	Lys	His	Asn	Ser	Arg	Ser	Asp	Arg	Tyr	Thr	Tyr	Ile	Pro				
		35					40					45							
Thr	Ile	Thr	Leu	Leu	Asp	Lys	Leu	Arg	Glu	Glu	Gly	Phe	Gln	Pro	Phe				
		50			55					60									
Phe	Ala	Cys	Gln	Ser	Arg	Val	Arg	Asp	Glu	Asp	Lys	Arg	Gly	His	Thr				
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Lys	His	Met	Val	Arg	Leu	Arg	Arg	Glu	Gly	Ala	Asn	Lys	Gly	Thr	Glu				
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Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr				
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Cys	Gly	Thr	Ser	Phe	Gly	Glu	Ile	Arg	Val	Pro	His	Lys	Gly	Asp	Ile				
	130					135				140									
Val	Gly	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Gly	Ile	Phe	Asp				
145					150				155					160					
Lys	Ile	Thr	Glu	Gly	Val	Asp	Val	Met	Lys	Ser	Ile	Thr	Leu	Thr	Lys				
				165					170					175					



## PhoenixTemp32470.tmp.txt

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 Asp Glu Asn Lys Ser Pro Val Ser Ile Glu Gln Ile Ile His Pro Arg  
 195 200 205  
 Arg Tyr Glu Asp Lys Lys Tyr Asp Ile Trp Thr Thr Tyr Gln Arg Val  
 210 215 220  
 Gln Glu Asn Leu Ile Lys Gly Gly Leu Pro Gly Arg Thr Glu Lys Gly  
 225 230 235 240  
 Lys Arg Thr Thr Thr Arg Pro Val Lys Ala Ile Asp Gly Asp Val Lys  
 245 250 255  
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 260 265 270  
 Gly

&lt;210&gt; 1277

&lt;211&gt; 978

&lt;212&gt; DNA

&lt;213&gt; Klebsiella pneumoniae subsp. pneumoniae MGH 78578

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(978)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1277

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tat atc cag ggg cag gtt cag cag gtc ccc gca caa agt caa aac cgc	96
Tyr Ile Gln Gly Gln Val Gln Gln Val Pro Ala Gln Ser Gln Asn Arg	
20 25 30	
ggc ccc ggc aac tca acg ggt gat ggt tta aaa aat tca gat cta att	144
Gly Pro Gly Asn Ser Thr Gly Asp Gly Leu Lys Asn Ser Asp Leu Ile	
35 40 45	
aag gag aaa aaa atg cgt tta gca tcc cga ttt gga ctt act cat tcc	192
Lys Glu Lys Lys Met Arg Leu Ala Ser Arg Phe Gly Leu Thr His Ser	
50 55 60	
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65 70 75 80	
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Pro Ser Val Phe Ser Glu Glu Lys His Asn Ser Arg Ser Asp Arg Tyr	
85 90 95	
acc tat att cca acc att aca ctg ctg gat aaa tta cgt gaa gaa ggt	336
Thr Tyr Ile Pro Thr Ile Thr Leu Asp Lys Leu Arg Glu Glu Gly	
100 105 110	
ttc cag cca ttt ttt gcc tgt cag tca cga gta agg gat gag gat aaa	384
Phe Gln Pro Phe Phe Ala Cys Gln Ser Arg Val Arg Asp Glu Asp Lys	
115 120 125	
cgg ggg cat act aag cat atg gta aga ctt cgc cgt gaa ggg gcc aat	432
Arg Gly His Thr Lys His Met Val Arg Leu Arg Glu Gly Ala Asn	
130 135 140	
aaa gga aca gaa gta ccc gaa atc att ctt ctt aac tcg cat gat gga	480
Lys Gly Thr Glu Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly	
145 150 155 160	
tcg tcc agt tat caa atg atc ccg ggt atg ttc cgt ttt gta tgc aca	528
Ser Ser Ser Tyr Gln Met Ile Pro Gly Met Phe Arg Phe Val Cys Thr	
165 170 175	
aat ggc ctt gtg tgc ggt acg tcg ttt ggt gag att cgt gta cct cat	576
Asn Gly Leu Val Cys Gly Thr Ser Phe Gly Glu Ile Arg Val Pro His	
180 185 190	
aaa ggt gat att gtg gga agg gtt atc gaa ggt gct tac gaa gtt ctg	624
Lys Gly Asp Ile Val Gly Arg Val Ile Glu Gly Ala Tyr Glu Val Leu	
195 200 205	
gga att ttc gat aaa ata act gaa ggc gtt gat gtc atg aag tct att	672
Gly Ile Phe Asp Lys Ile Thr Glu Gly Val Asp Val Met Lys Ser Ile	
210 215 220	
gcc tta acc aag gaa gaa cag cgt ctg ttt gga caa gct gca tta acc	720

## PhoenixTemp32470.tmp.txt

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Tyr	Arg	Tyr	Glu	Asp	Glu	Asn	Lys	Ser	Pro	Val	Ser	Ile	Glu	Gln	Ile		
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Ile	His	Pro	Arg	Arg	Tyr	Glu	Asp	Lys	Lys	Asp	Asp	Ile	Trp	Thr	Thr		
			260						265				270				
tat	caa	agg	gtc	cag	gaa	aat	ctg	att	aaa	ggc	ggg	ttg	cct	ggc	cga		864
Tyr	Gln	Arg	Val	Gln	Glu	Asn	Leu	Ile	Lys	Gly	Gly	Leu	Pro	Gly	Arg		
			275				280					285					
act	gaa	aaa	ggg	aaa	aga	aca	aca	acc	cgg	cca	gta	aaa	gca	atc	gat		912
Thr	Glu	Lys	Gly	Lys	Arg	Thr	Thr	Thr	Arg	Pro	Val	Lys	Ala	Ile	Asp		
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Gly	Asp	Val	Lys	Leu	Asn	Lys	Ala	Leu	Trp	Leu	Ile	Ala	Glu	Lys	Phe		
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cgc	act	ctt	aaa	ggc	taa												978
Arg	Thr	Leu	Lys	Gly													
				325													

&lt;210&gt; 1278

&lt;211&gt; 325

&lt;212&gt; PRT

&lt;213&gt; Klebsiella pneumoniae subsp. pneumoniae MGH 78578

&lt;400&gt; 1278

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			20					25					30				
Gly	Pro	Gly	Asn	Ser	Thr	Gly	Asp	Gly	Leu	Lys	Asn	Ser	Asp	Leu	Ile		
			35				40					45					
Lys	Glu	Lys	Lys	Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Leu	Thr	His	Ser		
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Pro	Ser	Val	Phe	Ser	Glu	Glu	Lys	His	Asn	Ser	Arg	Ser	Asp	Arg	Tyr		
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Thr	Tyr	Ile	Pro	Thr	Ile	Thr	Leu	Leu	Asp	Lys	Leu	Arg	Glu	Glu	Gly		
			100				105						110				
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			115				120					125					
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			130			135				140							
Lys	Gly	Thr	Glu	Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly		
					150				155						160		
Ser	Ser	Ser	Tyr	Gln	Met	Ile	Pro	Gly	Met	Phe	Arg	Phe	Val	Cys	Thr		
				165				170						175			
Asn	Gly	Leu	Val	Cys	Gly	Thr	Ser	Phe	Gly	Glu	Ile	Arg	Val	Pro	His		
			180					185					190				
Lys	Gly	Asp	Ile	Val	Gly	Arg	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu		
			195				200					205					
Gly	Ile	Phe	Asp	Lys	Ile	Thr	Glu	Gly	Val	Asp	Val	Met	Lys	Ser	Ile		
			210			215				220							
Ala	Leu	Thr	Lys	Glu	Glu	Gln	Arg	Leu	Phe	Gly	Gln	Ala	Ala	Leu	Thr		
225				230						235					240		
Tyr	Arg	Tyr	Glu	Asp	Glu	Asn	Lys	Ser	Pro	Val	Ser	Ile	Glu	Gln	Ile		
				245					250					255			
Ile	His	Pro	Arg	Arg	Tyr	Glu	Asp	Lys	Lys	Asp	Asp	Ile	Trp	Thr	Thr		
			260					265					270				
Tyr	Gln	Arg	Val	Gln	Glu	Asn	Leu	Ile	Lys	Gly	Gly	Leu	Pro	Gly	Arg		
			275				280					285					
Thr	Glu	Lys	Gly	Lys	Arg	Thr	Thr	Thr	Arg	Pro	Val	Lys	Ala	Ile	Asp		
			290			295				300							
Gly	Asp	Val	Lys	Leu	Asn	Lys	Ala	Leu	Trp	Leu	Ile	Ala	Glu	Lys	Phe		
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 <211> 828  
 <212> DNA  
 <213> Azoarcus sp. EbN1

<220>  
 <221> CDS  
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 Asp His Pro Leu Ser Asp Asp Gln Ile Arg Ala Val Ala Pro Ser Ile  
 20 25 30  
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 Phe Ala Glu Ser Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile  
 35 40 45  
 cca acc gcc gcc gtc ctg gcg gag ctg cgc cga gaa ggg ttc gag cca 192  
 Pro Thr Ala Ala Val Leu Ala Glu Leu Arg Arg Glu Gly Phe Glu Pro  
 50 55 60  
 ttc atg gtg tgc cag acc cgc gtg cgc cag gag gat cgc cgc gag tac 240  
 Phe Met Val Cys Gln Thr Arg Val Arg Gln Glu Asp Arg Arg Glu Tyr  
 65 70 75 80  
 acc aag cat atg ctc cgc ctt cgc cat gcg agc cag atc aac ggc gcc 288  
 Thr Lys His Met Leu Arg Leu Arg His Ala Ser Gln Ile Asn Gly Ala  
 85 90 95  
 gag gcg aac gag gtc atc ttg ctg aac tcg cac gac ggc acc agc agc 336  
 Glu Ala Asn Glu Val Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 tac cag atg ctg gcc ggc atg ttc cgc ttc gtc tgc cag aac ggc ctg 384  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Gln Asn Gly Leu  
 115 120 125  
 gtc tgc ggc gat acg ttc ggc gat gtc cgt gtg ccc cac aag ggc aac 432  
 Val Cys Gly Asp Thr Phe Gly Asp Val Arg Val Pro His Lys Gly Asn  
 130 135 140  
 gtc acc gaa cag gtg atc gaa ggc gcc tac gag gtc ctg cag ggc ttc 480  
 Val Thr Glu Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gln Gly Phe  
 145 150 155 160  
 gcg cag gtt cag gac tcc cgc gat gcc atg cgt gtc gtc gcg ctc gac 528  
 Ala Gln Val Gln Asp Ser Arg Asp Ala Met Arg Val Val Ala Leu Asp  
 165 170 175  
 gat ggc gag gcg gag gtt ttc gca cac tcg gcc ctg acg ctc aag tac 576  
 Asp Gly Glu Ala Glu Val Phe Ala His Ser Ala Leu Thr Leu Lys Tyr  
 180 185 190  
 gac agc cag aac aag gcg ctg ccg atc acc gag agc cag gtg ctg gcg 624  
 Asp Ser Gln Asn Lys Ala Leu Pro Ile Thr Glu Ser Gln Val Leu Ala  
 195 200 205  
 cct cgc cgt ttc gac gac aag tac tcg gac ctg tgg tcg gtg ttc aac 672  
 Pro Arg Arg Phe Asp Asp Lys Tyr Ser Asp Leu Trp Ser Val Phe Asn  
 210 215 220  
 cgc gta cag gaa aac ctc gtc aaa ggc ggc ctg tcc ggc cga acg gcc 720  
 Arg Val Gln Glu Asn Leu Val Lys Gly Gly Leu Ser Gly Arg Thr Ala  
 225 230 235 240  
 ctg ggc cgg cat caa cgg acg cga cca gtg caa ggc att gac cag aac 768  
 Leu Gly Arg His Gln Arg Thr Arg Pro Val Gln Gly Ile Asp Gln Asn  
 245 250 255  
 gtc cgg ctc aac cgg gcg ctg tgg atg ctg gca gaa ggc ctg cgg cag 816  
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 Leu Lys Ala  
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<210> 1280  
 <211> 275

&lt;212&gt; PRT

&lt;213&gt; Azoarcus sp. EbN1

&lt;400&gt; 1280

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Asp His Pro Leu Ser Asp Asp Gln Ile Arg Ala Val Ala Pro Ser Ile
20      25      30
Phe Ala Glu Ser Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile
35      40      45
Pro Thr Ala Ala Val Leu Ala Glu Leu Arg Arg Glu Gly Phe Glu Pro
50      55      60
Phe Met Val Cys Gln Thr Arg Val Arg Gln Glu Asp Arg Arg Glu Tyr
65      70      75      80
Thr Lys His Met Leu Arg Leu Arg His Ala Ser Gln Ile Asn Gly Ala
85      90      95
Glu Ala Asn Glu Val Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser
100     105     110
Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Gln Asn Gly Leu
115     120     125
Val Cys Gly Asp Thr Phe Gly Asp Val Arg Val Pro His Lys Gly Asn
130     135     140
Val Thr Glu Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gln Gly Phe
145     150     155     160
Ala Gln Val Gln Asp Ser Arg Asp Ala Met Arg Val Val Ala Leu Asp
165     170     175
Asp Gly Glu Ala Glu Val Phe Ala His Ser Ala Leu Thr Leu Lys Tyr
180     185     190
Asp Ser Gln Asn Lys Ala Leu Pro Ile Thr Glu Ser Gln Val Leu Ala
195     200     205
Pro Arg Arg Phe Asp Asp Lys Tyr Ser Asp Leu Trp Ser Val Phe Asn
210     215     220
Arg Val Gln Glu Asn Leu Val Lys Gly Gly Leu Ser Gly Arg Thr Ala
225     230     235     240
Leu Gly Arg His Gln Arg Thr Arg Pro Val Gln Gly Ile Asp Gln Asn
245     250     255
Val Arg Leu Asn Arg Ala Leu Trp Met Leu Ala Glu Gly Leu Arg Gln
260     265     270
Leu Lys Ala
275

```

&lt;210&gt; 1281

&lt;211&gt; 834

&lt;212&gt; DNA

&lt;213&gt; Burkholderia xenovorans LB400

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(834)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1281

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gac tcg ccg ctg tcg gac gac cag atc cgc cgt gtt gct ccc tcg att      96
Asp Ser Pro Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile
20      25      30
ttc gcg gac ggc aag cac gaa agc cgc tcc gac cgc tac acc tac att      144
Phe Ala Asp Gly Lys His Glu Ser Arg Ser Asp Arg Tyr Thr Tyr Ile
35      40      45
ccc acc atc gac gtg ctg cgc ggt ctg cgc aac gaa ggc ttc cag ccg      192
Pro Thr Ile Asp Val Leu Arg Gly Leu Arg Asn Glu Gly Phe Gln Pro
50      55      60
ttc atg gtg tgc cag acc cgc gtg cgc gcc cag gac aag cgc gaa ttc      240
Phe Met Val Cys Gln Thr Arg Val Arg Ala Gln Asp Lys Arg Glu Phe
65      70      75      80
acc aag cat ctg atc cgc atg cgc ccc gcg agc gaa att acc ggc gag      288
Thr Lys His Leu Ile Arg Met Arg Pro Ala Ser Glu Ile Thr Gly Glu

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## PhoenixTemp32470.tmp.txt

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Asp	Val	Asn	Glu	Val	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Gly	336																																																		
																100																	105																	110																
ttc	cag	ttg	ctc	ggg	ggc	gtc	tat	cgc	ttc	gtc	tgc	cag	aac	ggg	atg																																																			
Phe	Gln	Leu	Leu	Gly	Gly	Val	Tyr	Arg	Phe	Val	Cys	Gln	Asn	Gly	Met	384																																																		
																115																	120																	125																
gtt	gcg	ggc	gaa	acc	atc	ggc	gag	gtc	cg	gtc	ccg	cac	agg	ggc	aac																																																			
Val	Ala	Gly	Glu	Thr	Ile	Gly	Glu	Val	Arg	Val	Pro	His	Arg	Gly	Asn	432																																																		
																130																	135																	140																
atc	gtg	cag	aac	gtc	atc	aac	ggc	gcg	ttc	gat	gtg	ctc	gac	ggc	ttc																																																			
Ile	Val	Gln	Asn	Val	Ile	Asn	Gly	Ala	Phe	Asp	Val	Leu	Asp	Gly	Phe	480																																																		
																145																	150																	155																
gac	ctg	atc	cg	gaa	cag	aag	gac	ggc	atg	aaa	gcc	gtc	acg	ctc	gat																																																			
Asp	Leu	Ile	Arg	Glu	Gln	Lys	Asp	Gly	Met	Lys	Ala	Val	Thr	Leu	Asp	528																																																		
																165																	170																	175																
cg	gac	gaa	cag	tac	gcg	ttc	gcg	cg	tcc	ctc	gcg	ctg	cg	ctc	tac																																																			
Arg	Asp	Glu	Gln	Tyr	Ala	Phe	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Arg	Tyr	576																																																		
																180																	185																	190																
gac	ccg	tcc	gac	acc	gaa	gca	ccc	gcc	ccc	gtc	acc	gaa	agc	cag	tta																																																			
Asp	Pro	Ser	Asp	Thr	Glu	Ala	Pro	Ala	Pro	Val	Thr	Glu	Ser	Gln	Leu	624																																																		
																195																	200																	205																
ctc	gcc	ccg	cg	cg	ttc	gag	gac	cg	cg	gac	gac	ctg	tgg	acg	gta																																																			
Leu	Ala	Pro	Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Leu	Trp	Thr	Val	672																																																		
																210																	215																	220																
ttt	caa	aga	acg	cag	gaa	aac	ctc	acc	aag	ggc	gga	ctg	cat	gga	cg																																																			
Phe	Gln	Arg	Thr	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	His	Gly	Arg	720																																																		
																225																	230																	235																
tcg	cg	agc	gga	cg	tcc	atg	tcc	acg	cg	ccc	atc	acc	ggc	atc	gac																																																			
Ser	Arg	Ser	Gly	Arg	Ser	Met	Ser	Thr	Arg	Pro	Ile	Thr	Gly	Ile	Asp	768																																																		
																245																	250																	255																
cag	aac	gtg	aag	ctc	aac	cg	gcg	ctg	tgg	atg	ctg	gct	gac	gcc	atg																																																			
Gln	Asn	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Met	Leu	Ala	Asp	Ala	Met	816																																																		
																260																	265																	270																
cg	cag	atg	aaa	tcg	taa																																																													
Arg	Gln	Met	Lys	Ser																																																														
																275																																																		

<210> 1282  
<211> 277  
<212> PRT  
<213> Burkholderia xenovorans LB400

<400> 1	1282															
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Asp	Ser	Pro	Leu <sub>20</sub>	Ser	Asp	Asp	Gln	Ile <sub>25</sub>	Arg	Arg	Val	Ala	Pro <sub>30</sub>	Ser	Ile	
Phe	Ala	Asp <sub>35</sub>	Gly	Lys	His	Glu	Ser <sub>40</sub>	Arg	Ser	Asp	Arg	Tyr <sub>45</sub>	Thr	Tyr	Ile	
Pro	Thr <sub>50</sub>	Ile	Asp	Val	Leu	Arg <sub>55</sub>	Gly	Leu	Arg	Asn	Glu <sub>60</sub>	Gly	Phe	Gln	Pro	
Phe <sub>65</sub>	Met	Val	Cys	Gln	Thr <sub>70</sub>	Arg	Val	Arg	Ala	Gln <sub>75</sub>	Asp	Lys	Arg	Glu	Phe <sub>80</sub>	
Thr	Lys	His	Leu <sub>85</sub>	Ile	Arg	Met	Arg	Pro	Ala <sub>90</sub>	Ser	Glu	Ile	Thr	Gly <sub>95</sub>	Glu	
Asp	Val	Asn	Glu <sub>100</sub>	Val	Ile	Leu	Leu	Asn <sub>105</sub>	Ser	His	Asp	Gly	Ser <sub>110</sub>	Ser	Gly	
Phe	Gln	Leu <sub>115</sub>	Leu	Gly	Gly	Val	Tyr <sub>120</sub>	Arg	Phe	Val	Cys	Gln <sub>125</sub>	Asn	Gly	Met	
Val	Ala <sub>130</sub>	Gly	Glu	Thr	Ile	Gly <sub>135</sub>	Glu	Val	Arg	Val	Pro <sub>140</sub>	His	Arg	Gly	Asn	
Ile <sub>145</sub>	Val	Gln	Asn	Val	Ile <sub>150</sub>	Asn	Gly	Ala	Phe	Asp <sub>155</sub>	Val	Leu	Asp	Gly	Phe <sub>160</sub>	
Asp	Leu	Ile	Arg	Glu <sub>165</sub>	Gln	Lys	Asp	Gly	Met <sub>170</sub>	Lys	Ala	Val	Thr	Leu <sub>175</sub>	Asp	
Arg	Asp	Glu	Gln <sub>180</sub>	Tyr	Ala	Phe	Ala	Arg <sub>185</sub>	Ser	Ala	Leu	Ala	Leu <sub>190</sub>	Arg	Tyr	
Asp	Pro	Ser	Asp	Thr	Glu	Ala	Pro	Ala	Pro	Val	Thr	Glu	Ser	Gln	Leu	

## PhoenixTemp32470.tmp.txt

195  
 Leu Ala Pro Arg Arg Phe Glu 200  
 210 Phe Gln Arg Thr Gln Glu 215  
 225 Ser Arg Ser Gly Arg Ser Met Ser Thr Arg 235  
 Gln Asn Val Lys 245 Asn Arg Ala Leu 250  
 Arg Gln Met Lys Ser 265  
 275

&lt;210&gt; 1283

&lt;211&gt; 834

&lt;212&gt; DNA

&lt;213&gt; Burkholderia xenovorans LB400

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(834)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1283

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1				5				10					15			
aat	aca	ccg	ctg	tcg	gac	gat	caa	att	cac	cg	gtc	gcc	ccg	tcg	atc	96
Asn	Thr	Pro	Leu	Ser	Asp	Asp	Gln	Ile	His	Arg	Val	Ala	Pro	Ser	Ile	
			20					25					30			
ttc	gcg	gac	ggc	aag	cac	gaa	agc	cgc	tcc	gaa	cg	tac	acc	tac	atc	144
Phe	Ala	Asp	Gly	Lys	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile	
		35					40					45				
ccg	acc	att	gat	gtg	ctg	cgc	ggc	ctt	cgc	aac	gaa	gg	ttc	caa	ccg	192
Pro	Thr	Ile	Asp	Val	Leu	Arg	Gly	Leu	Arg	Asn	Glu	Gly	Phe	Gln	Pro	
		50				55					60					
ttc	atg	gtc	tgc	cag	acc	cgc	gta	cgc	gac	gag	gcc	aag	cgc	gaa	tac	240
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	Asp	Glu	Ala	Lys	Arg	Glu	Tyr	
		65			70				75						80	
acg	aag	cac	atg	ctc	cgg	ctt	cgc	cat	gct	gac	cag	atc	acc	ggc	gac	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Asp	Gln	Ile	Thr	Gly	Asp	
				85					90					95		
gaa	gct	gag	gaa	gtc	gtg	ctg	ctc	aat	tcg	cac	gac	ggc	acc	agc	agc	336
Glu	Ala	Glu	Glu	Val	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tat	cag	atg	atc	ggc	ggc	gtg	ctg	aga	ttc	gtt	tgc	cag	aac	gg	ctg	384
Tyr	Gln	Met	Ile	Gly	Gly	Val	Leu	Arg	Phe	Val	Cys	Gln	Asn	Gly	Leu	
		115				120						125				
gtc	gcg	ggc	gaa	aac	gtg	gcc	gat	atc	cga	gtg	ccg	cac	cag	ggc	aac	432
Val	Ala	Gly	Glu	Asn	Val	Ala	Asp	Ile	Arg	Val	Pro	His	Gln	Gly	Asn	
		130				135					140					
atc	gtc	cag	aac	gtc	atc	aac	ggc	gca	ttt	gac	gtg	ctc	gac	ggc	ttt	480
Ile	Val	Gln	Asn	Val	Ile	Asn	Gly	Ala	Phe	Asp	Val	Leu	Asp	Gly	Phe	
				150					155						160	
gat	ctg	atc	cgc	gag	cag	aag	gac	ggc	atg	cac	gcc	gtc	gag	ctg	aat	528
Asp	Leu	Ile	Arg	Glu	Gln	Lys	Asp	Gly	Met	His	Ala	Val	Glu	Leu	Asn	
				165				170						175		
cgc	gac	gag	caa	cac	gct	ttc	gcc	cgt	tcc	gcg	ctc	gcg	ctg	cgc	tac	576
Arg	Asp	Glu	Gln	His	Ala	Phe	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Arg	Tyr	
			180					185					190			
aac	ccg	acc	gac	gcc	gag	gca	ccg	gcc	ccc	gtt	act	gaa	agc	cag	cta	624
Asn	Pro	Thr	Asp	Ala	Glu	Ala	Pro	Ala	Pro	Val	Thr	Glu	Ser	Gln	Leu	
		195					200					205				
ctc	gct	ccc	cgc	cgc	ttc	gag	gat	cgc	cgc	gac	gac	ctc	tgg	acg	gta	672
Leu	Ala	Pro	Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Leu	Trp	Thr	Val	
		210				215					220					
ttt	cag	cgg	gtt	cag	gaa	aac	ctc	acc	aaa	ggc	ggc	ctg	cac	gga	cgt	720
Phe	Gln	Arg	Val	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	His	Gly	Arg	
				230						235					240	
tcg	cgc	aac	gga	cgc	gcc	atg	tct	acg	cgt	ccc	atc	acc	ggc	atc	gac	768

## PhoenixTemp32470.tmp.txt

Ser Arg Asn Gly Arg Ala Met Ser Thr Arg Pro Ile Thr Gly Ile Asp  
 245 250 255  
 cag aac gtg aag ctc aac cgt gcg ctg tgg atg ctc gct gac gcc atg 816  
 Gln Asn Val Lys Leu Asn Arg Ala Leu Trp Met Leu Ala Asp Ala Met  
 260 265 270  
 cgc cag atg aag gcg taa 834  
 Arg Gln Met Lys Ala  
 275

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 Phe Ala Asp Gly Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile  
 35 40 45  
 Pro Thr Ile Asp Val Leu Arg Gly Leu Arg Asn Glu Gly Phe Gln Pro  
 50 55 60  
 Phe Met Val Cys Gln Thr Arg Val Arg Asp Glu Ala Lys Arg Glu Tyr  
 65 70 75 80  
 Thr Lys His Met Leu Arg Leu Arg His Ala Asp Gln Ile Thr Gly Asp  
 85 90 95  
 Glu Ala Glu Glu Val Val Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 Tyr Gln Met Ile Gly Gly Val Leu Arg Phe Val Cys Gln Asn Gly Leu  
 115 120 125  
 Val Ala Gly Glu Asn Val Ala Asp Ile Arg Val Pro His Gln Gly Asn  
 130 135 140  
 Ile Val Gln Asn Val Ile Asn Gly Ala Phe Asp Val Leu Asp Gly Phe  
 145 150 155 160  
 Asp Leu Ile Arg Glu Gln Lys Asp Gly Met His Ala Val Glu Leu Asn  
 165 170 175  
 Arg Asp Glu Gln His Ala Phe Ala Arg Ser Ala Leu Ala Leu Arg Tyr  
 180 185 190  
 Asn Pro Thr Asp Ala Glu Ala Pro Ala Pro Val Thr Glu Ser Gln Leu  
 195 200 205  
 Leu Ala Pro Arg Arg Phe Glu Asp Arg Arg Asp Asp Leu Trp Thr Val  
 210 215 220  
 Phe Gln Arg Val Gln Glu Asn Leu Thr Lys Gly Gly Leu His Gly Arg  
 225 230 235 240  
 Ser Arg Asn Gly Arg Ala Met Ser Thr Arg Pro Ile Thr Gly Ile Asp  
 245 250 255  
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 Arg Gln Met Lys Ala  
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 gat tcc ccg ctc tcg gac gag cag atc cgt cgc gtc gcg ccg tcc atc 96  
 Asp Ser Pro Leu Ser Asp Glu Gln Ile 25 Arg Arg Val Ala Pro 30 Ser Ile  
 20

## PhoenixTemp32470.tmp.txt

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Phe	Ala	Asp	Gly	Lys	His	Ala	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile	
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ccc	act	atc	gat	gtg	ctg	cg	ggc	ctg	cg	aac	gaa	ggc	ttc	cag	ccg	192
Pro	Thr	Ile	Asp	Val	Leu	Arg	Gly	Leu	Arg	Asn	Glu	Gly	Phe	Gln	Pro	
	50					55				60						
ttc	atg	gtc	tgc	cag	agc	cg	gtg	cg	gat	ccg	ggc	aag	cg	gag	tac	240
Phe	Met	Val	Cys	Gln	Ser	Arg	Val	Arg	Asp	Pro	Gly	Lys	Arg	Glu	Tyr	
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acg	aaa	cac	atg	ctc	cgg	ctt	cg	cac	gcc	agc	cag	atc	gtc	ggg	gac	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Val	Gly	Asp	
				85					90					95		
gaa	gcc	aac	gag	gtc	gta	ctc	ctg	aac	tgc	cac	gac	ggc	acg	agc	agc	336
Glu	Ala	Asn	Glu	Val	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tac	cag	atg	ctg	gct	ggc	gtg	ctg	cgt	ttc	gtc	tgc	cag	aac	ggc	atg	384
Tyr	Gln	Met	Leu	Ala	Gly	Val	Leu	Arg	Phe	Val	Cys	Gln	Asn	Gly	Met	
		115					120					125				
gtc	gcg	ggc	gac	agc	gtg	cg	gat	atc	cg	ata	ccg	cac	aaa	ggc	aac	432
Val	Ala	Gly	Asp	Ser	Val	Arg	Asp	Ile	Arg	Ile	Pro	His	Lys	Gly	Asn	
	130					135					140					
atc	gca	cgg	aac	gtc	atc	gat	ggc	gcg	ttc	gac	gtg	ctc	gac	ggc	ttc	480
Ile	Ala	Arg	Asn	Val	Ile	Asp	Gly	Ala	Phe	Asp	Val	Leu	Asp	Gly	Phe	
	145				150					155					160	
gac	ctg	atc	cg	gag	cag	aag	gac	agc	atg	cg	ggc	atc	gaa	ctg	gac	528
Asp	Leu	Ile	Arg	Glu	Gln	Lys	Asp	Ser	Met	Arg	Gly	Ile	Glu	Leu	Asp	
				165					170					175		
cg	gat	gaa	cag	cac	gcg	ttt	gcc	cgt	tcc	gcc	ctc	gcg	ctg	cg	tac	576
Arg	Asp	Glu	Gln	His	Ala	Phe	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Arg	Tyr	
			180					185					190			
gac	ccg	act	gac	gcg	gaa	gcc	ccc	gcc	ccc	gtc	acc	gag	agc	cag	tta	624
Asp	Pro	Thr	Asp	Ala	Glu	Ala	Pro	Ala	Pro	Val	Thr	Glu	Ser	Gln	Leu	
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ctc	gcc	cca	cg	cgt	ttc	gag	gat	cg	cg	gac	gat	ctc	tgg	acg	gtg	672
Leu	Ala	Pro	Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Leu	Trp	Thr	Val	
	210					215					220					
ttc	aac	cgg	gtg	cag	gaa	aac	ctc	acc	aaa	ggc	gga	ctg	cac	ggg	cg	720
Phe	Asn	Arg	Val	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	His	Gly	Arg	
	225				230					235					240	
tcg	cgg	acc	ggt	cg	gcg	atc	tcc	acg	cg	cct	gtc	acc	ggc	atc	gac	768
Ser	Arg	Thr	Gly	Arg	Ala	Ile	Ser	Thr	Arg	Pro	Val	Thr	Gly	Ile	Asp	
				245					250					255		
cag	aac	gtg	aaa	ctc	aat	cg	gcc	ctc	tgg	atg	ctg	gcc	gac	gcc	atg	816
Gln	Asn	Val	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Met	Leu	Ala	Asp	Ala	Met	
			260					265					270			
cg	aag	atg	aag	gcg	taa											834
Arg	Lys	Met	Lys	Ala												
		275														

&lt;210&gt; 1286

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Burkholderia xenovorans LB400

&lt;400&gt; 1286

Met	Gln	Leu	Ala	Ser	Ser	Phe	Arg	Tyr	Gly	Ser	Pro	Met	Leu	Arg	Ala
1				5					10					15	
Asp	Ser	Pro	Leu	Ser	Asp	Glu	Gln	Ile	Arg	Arg	Val	Ala	Pro	Ser	Ile
			20					25					30		
Phe	Ala	Asp	Gly	Lys	His	Ala	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile
		35					40					45			
Pro	Thr	Ile	Asp	Val	Leu	Arg	Gly	Leu	Arg	Asn	Glu	Gly	Phe	Gln	Pro
		50				55				60					
Phe	Met	Val	Cys	Gln	Ser	Arg	Val	Arg	Asp	Pro	Gly	Lys	Arg	Glu	Tyr
					70					75					80
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Val	Gly	Asp
				85					90					95	
Glu	Ala	Asn	Glu	Val	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser
			100					105					110		



## PhoenixTemp32470.tmp.txt

Tyr Gln Met Leu Ala Gly Val Leu Arg Phe Val Cys Gln Asn Gly Met  
 115 120 125  
 Val Ala Gly Asp Ser Val Arg Asp Ile Arg Ile Pro His Lys Gly Asn  
 130 135 140  
 Ile Ala Arg Asn Val Ile Asp Gly Ala Phe Asp Val Leu Asp Gly Phe  
 145 150 155 160  
 Asp Leu Ile Arg Glu Gln Lys Asp Ser Met Arg Gly Ile Glu Leu Asp  
 165 170 175  
 Arg Asp Glu Gln His Ala Phe Ala Arg Ser Ala Leu Ala Leu Arg Tyr  
 180 185 190  
 Asp Pro Thr Asp Ala Glu Ala Pro Ala Pro Val Thr Glu Ser Gln Leu  
 195 200 205  
 Leu Ala Pro Arg Arg Phe Glu Asp Arg Arg Asp Asp Leu Trp Thr Val  
 210 215 220  
 Phe Asn Arg Val Gln Glu Asn Leu Thr Lys Gly Gly Leu His Gly Arg  
 225 230 235 240  
 Ser Arg Thr Gly Arg Ala Ile Ser Thr Arg Pro Val Thr Gly Ile Asp  
 245 250 255  
 Gln Asn Val Lys Leu Asn Arg Ala Leu Trp Met Leu Ala Asp Ala Met  
 260 265 270  
 Arg Lys Met Lys Ala  
 275

&lt;210&gt; 1287

&lt;211&gt; 1008

&lt;212&gt; DNA

&lt;213&gt; Ralstonia metallidurans CH34

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1008)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1287

ttg acg gcc ccc gtc cgc gcg ctc ctg acc gtc gcg ggc gat gaa ctc	48
Met Thr Ala Pro Val Arg Ala Leu Leu Thr Val Ala Gly Asp Glu Leu	
1 5 10 15	
agg aaa gac ggt ggc aac agg gcc aac cgg gtt cct cgt gcc gac cgc	96
Arg Lys Asp Gly Gly Asn Arg Ala Asn Arg Val Pro Arg Ala Asp Arg	
20 25 30	
acc gaa cag cca aaa ggc tgg gct tcc gaa tct agg aat ccg gtg tgc	144
Thr Glu Gln Pro Lys Gly Trp Ala Ser Glu Ser Arg Asn Pro Val Cys	
35 40 45	
ggt gtg aac agc aaa cct ctt ttt gtc agg aga aag acc atg caa ctc	192
Gly Val Asn Ser Lys Pro Leu Phe Val Arg Arg Lys Thr Met Gln Leu	
50 55 60	
gca tcc cgt ttc gct tcc cgc tcc ccg gca ctg cgc agc gat tac cca	240
Ala Ser Arg Phe Ala Ser Arg Ser Pro Ala Leu Arg Ser Asp Tyr Pro	
65 70 75 80	
ctg tcc gat gac caa atc cgc agg gtg gcc ccg tcc atc ttc gcc gac	288
Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile Phe Ala Asp	
85 90 95	
gcc ccg cac gaa agc cgt tcc gag cga tac agc tac atc ccc acc gcg	336
Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile Pro Thr Ala	
100 105 110	
acc gtc ctg caa gaa ctg cgc gga gaa ggt ttc gag cct ttc atg gtg	384
Thr Val Leu Gln Glu Leu Arg Gly Glu Gly Phe Glu Pro Phe Met Val	
115 120 125	
acg caa acc cgc gtg cgc cac gac gac cgc cgc gac tac acc aag cac	432
Thr Gln Thr Arg Val Arg His Asp Asp Arg Arg Asp Tyr Thr Lys His	
130 135 140	
atg atc cgg ctg cgc cac gcc agc cag atc aac ggc cgc gag gcc aac	480
Met Ile Arg Leu Arg His Ala Ser Gln Ile Asn Gly Arg Glu Ala Asn	
145 150 155 160	
gaa atc atc ctg ctg aac tcc cat gac ggc acc agc agc tat cag atg	528
Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr Gln Met	
165 170 175	
ctg gcc ggg atg ttc cgc ttc gtt tgc agc aat ggc ctt gtc tgc ggc	576
Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu Val Cys Gly	

## PhoenixTemp32470.tmp.txt

			180					185				190						
gac	acc	gtg	gcc	gac	gtg	cgc	gtg	ccg	cac	aag	ggc	gac	gta	gcc	ggg			624
Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	Val	Ala	Gly			
		195					200					205						
cac	gtc	atc	gaa	ggc	gct	tac	gaa	gtc	ctg	cac	ggc	ttc	gac	cgg	gtg			672
His	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	His	Gly	Phe	Asp	Arg	Val			
	210					215					220							
cag	gaa	tcg	cgc	gat	gcc	atg	cgc	gcc	atc	acg	ctc	gac	gcc	ggg	gaa			720
Gln	Glu	Ser	Arg	Asp	Ala	Met	Arg	Ala	Ile	Thr	Leu	Asp	Ala	Gly	Glu			
	225				230					235					240			
tcg	gaa	gtg	ttc	gcc	cgc	gct	gcg	ctg	gcg	ttg	aag	tac	gac	gag	gac			768
Ser	Glu	Val	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	Asp	Glu	Asp			
				245					250					255				
aag	cca	gcg	ccc	atc	acg	gaa	tcg	caa	atc	ctg	atg	ccg	cgc	cgc	cat			816
Lys	Pro	Ala	Pro	Ile	Thr	Glu	Ser	Gln	Ile	Leu	Met	Pro	Arg	Arg	His			
			260					265					270					
gac	gac	gac	cgc	cgc	gac	ctg	tgg	agc	gtg	ttc	aac	cgc	acg	cag	gag			864
Asp	Asp	Asp	Arg	Arg	Asp	Leu	Trp	Ser	Val	Phe	Asn	Arg	Thr	Gln	Glu			
		275					280					285						
aac	ttg	acc	aaa	ggc	ggc	ctg	tcc	gcc	cgc	gcc	gcg	aat	ggc	cgc	cgc			912
Asn	Leu	Thr	Lys	Gly	Gly	Leu	Ser	Ala	Arg	Ala	Ala	Asn	Gly	Arg	Arg			
	290					295				300								
cag	acc	acc	cgg	ccc	gtg	cag	ggc	atc	gac	caa	agc	gtg	cgc	ctg	aat			960
Gln	Thr	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Ser	Val	Arg	Leu	Asn			
	305				310					315					320			
cgc	gcc	ctg	tgg	ctg	ctg	gcc	gat	ggc	ctg	cgc	cag	ttg	aaa	gcc				1005
Arg	Ala	Leu	Trp	Leu	Leu	Ala	Asp	Gly	Leu	Arg	Gln	Leu	Lys	Ala				
				325					330					335				
tga																		1008

&lt;210&gt; 1288

&lt;211&gt; 335

&lt;212&gt; PRT

&lt;213&gt; Ralstonia metallidurans CH34

&lt;400&gt; 1288

Met	Thr	Ala	Pro	Val	Arg	Ala	Leu	Leu	Thr	Val	Ala	Gly	Asp	Glu	Leu
1				5					10					15	
Arg	Lys	Asp	Gly	Gly	Asn	Arg	Ala	Asn	Arg	Val	Pro	Arg	Ala	Asp	Arg
			20					25					30		
Thr	Glu	Gln	Pro	Lys	Gly	Trp	Ala	Ser	Glu	Ser	Arg	Asn	Pro	Val	Cys
		35					40					45			
Gly	Val	Asn	Ser	Lys	Pro	Leu	Phe	Val	Arg	Arg	Lys	Thr	Met	Gln	Leu
	50					55					60				
Ala	Ser	Arg	Phe	Ala	Ser	Arg	Ser	Pro	Ala	Leu	Arg	Ser	Asp	Tyr	Pro
65					70					75					80
Leu	Ser	Asp	Asp	Gln	Ile	Arg	Arg	Val	Ala	Pro	Ser	Ile	Phe	Ala	Asp
				85					90					95	
Ala	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ser	Tyr	Ile	Pro	Thr	Ala
			100					105					110		
Thr	Val	Leu	Gln	Glu	Leu	Arg	Gly	Glu	Gly	Phe	Glu	Pro	Phe	Met	Val
		115					120					125			
Thr	Gln	Thr	Arg	Val	Arg	His	Asp	Asp	Arg	Arg	Asp	Tyr	Thr	Lys	His
	130					135					140				
Met	Ile	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Arg	Glu	Ala	Asn
145					150					155					160
Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr	Gln	Met
			165						170					175	
Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	Val	Cys	Gly
			180					185					190		
Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	Val	Ala	Gly
		195					200					205			
His	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	His	Gly	Phe	Asp	Arg	Val
	210					215					220				
Gln	Glu	Ser	Arg	Asp	Ala	Met	Arg	Ala	Ile	Thr	Leu	Asp	Ala	Gly	Glu
	225				230					235					240
Ser	Glu	Val	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	Asp	Glu	Asp

## PhoenixTemp32470.tmp.txt

245  
 Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met Pro Arg Arg His  
 260  
 Asp Asp Asp Arg Arg Asp Leu Trp Ser Val Phe Asn Arg Thr Gln Glu  
 275  
 Asn Leu Thr Lys Gly Gly Leu Ser Ala Arg Ala Ala Asn Gly Arg Arg  
 290  
 Gln Thr Thr Arg Pro Val Gln Gly Ile Asp Gln Ser Val Arg Leu Asn  
 305  
 Arg Ala Leu Trp Leu Leu Ala Asp Gly Leu Arg Gln Leu Lys Ala  
 325  
 330  
 335

&lt;210&gt; 1289

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Ralstonia metallidurans CH34

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1289

atg	caa	ctc	gca	tcc	cgt	ttc	gct	tcc	cgt	tcc	ccc	tcg	ctg	cgc	agc	48
Met	Gln	Leu	Ala	Ser	Arg	Phe	Ala	Ser	Arg	Ser	Pro	Ser	Leu	Arg	Ser	
1				5					10					15		
gat	tac	ccg	ctg	tcc	gat	gac	cag	att	cgc	agg	gtg	gcc	ccg	tcc	atc	96
Asp	Tyr	Pro	Leu	Ser	Asp	Asp	Gln	Ile	Arg	Arg	Val	Ala	Pro	Ser	Ile	
			20					25					30			
ttc	gcc	gat	gca	ccg	cat	gag	agc	cgt	tcc	gag	cgg	tac	agc	tat	atc	144
Phe	Ala	Asp	Ala	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ser	Tyr	Ile	
		35				40						45				
ccc	acc	gcc	gcc	gtg	ctg	acc	gag	ctt	cgc	aaa	gaa	ggc	ttc	cag	ccc	192
Pro	Thr	Ala	Ala	Val	Leu	Thr	Glu	Leu	Arg	Lys	Glu	Gly	Phe	Gln	Pro	
	50				55						60					
ttc	atg	gtg	acg	cag	acc	cgc	gtg	cgc	gat	gaa	ggc	aag	cgc	gag	cac	240
Phe	Met	Val	Thr	Gln	Thr	Arg	Val	Arg	Asp	Glu	Gly	Lys	Arg	Glu	His	
	65			70					75						80	
acc	aaa	cac	atg	ctg	cgc	ctg	cgc	cat	gcc	agt	cag	atc	aat	ggc	gca	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Ala	
				85					90					95		
gag	gct	aac	gaa	atc	gtg	ctg	ctg	aac	tcg	cac	gac	ggc	acg	agc	agc	336
Glu	Ala	Asn	Glu	Ile	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
		100						105					110			
tat	cag	atg	ctg	gcc	gga	atg	ttc	cgc	ttc	gtg	tgc	agc	aat	ggc	ctt	384
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
		115					120					125				
gta	tgc	ggc	gac	acc	gtg	gcc	gat	gtg	cgc	gta	ccc	cac	aaa	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
	130					135				140						
gtg	gcc	ggt	tcc	gtc	atc	gaa	ggc	gct	ttc	gag	gtg	ttg	agc	ggc	ttc	480
Val	Ala	Gly	Ser	Val	Ile	Glu	Gly	Ala	Phe	Glu	Val	Leu	Ser	Gly	Phe	
	145			150						155					160	
gag	cgg	gtg	aag	gaa	tct	cgc	gat	gcc	atg	cgc	gcg	atc	acg	ctg	gat	528
Glu	Arg	Val	Lys	Glu	Ser	Arg	Asp	Ala	Met	Arg	Ala	Ile	Thr	Leu	Asp	
			165					170						175		
gaa	ggc	gaa	gcc	gaa	gtg	ttc	gcc	cgt	tcc	gcg	ctg	gcc	ctc	aag	tac	576
Glu	Gly	Glu	Ala	Glu	Val	Phe	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Lys	Tyr	
			180					185					190			
gac	ccc	acg	aac	aac	aag	ccc	gcg	ccc	atc	acc	gaa	tcg	caa	atc	ctg	624
Asp	Pro	Thr	Asn	Asn	Lys	Pro	Ala	Pro	Ile	Thr	Glu	Ser	Gln	Ile	Leu	
		195				200						205				
atg	ccg	cgt	cgg	ttc	gat	gac	agc	cgc	ccc	gac	ctg	tgg	agc	gtg	ttc	672
Met	Pro	Arg	Arg	Phe	Asp	Asp	Ser	Arg	Pro	Asp	Leu	Trp	Ser	Val	Phe	
	210				215						220					
aac	cgc	acg	cag	gag	aac	ttg	acc	aag	ggc	gga	ttg	cat	ggc	cgc	agc	720
Asn	Arg	Thr	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	His	Gly	Arg	Ser	
	225			230					235						240	
gcc	aac	gga	cgt	cgc	cag	cag	acc	cga	ccc	gtg	cag	ggc	att	gat	tcc	768

## PhoenixTemp32470.tmp.txt

Ala Asn Gly Arg Arg Gln Gln Thr Arg Pro Val Gln Gly Ile Asp Ser  
 245 250 255  
 gat gtg cgc ctc aat cgc gcc ctc tgg atg ctg gcc gat ggc ctg cgc 816  
 Asp Val Arg Leu Asn Arg Ala Leu Trp Met Leu Ala Asp Gly Leu Arg  
 260 265 270  
 cag ttg aaa gcc tga 831  
 Gln Leu Lys Ala  
 275

&lt;210&gt; 1290

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Ralstonia metallidurans CH34

&lt;400&gt; 1290

Met Gln Leu Ala Ser Arg Phe Ala Ser Arg Ser Pro Ser Leu Arg Ser  
 1 5 10 15  
 Asp Tyr Pro Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile  
 20 25 30  
 Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile  
 35 40 45  
 Pro Thr Ala Ala Val Leu Thr Glu Leu Arg Lys Glu Gly Phe Gln Pro  
 50 55 60  
 Phe Met Val Thr Gln Thr Arg Val Arg Asp Glu Gly Lys Arg Glu His  
 65 70 75 80  
 Thr Lys His Met Leu Arg Leu Arg His Ala Ser Gln Ile Asn Gly Ala  
 85 90 95  
 Glu Ala Asn Glu Ile Val Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu  
 115 120 125  
 Val Cys Gly Asp Thr Val Ala Asp Val Arg Val Pro His Lys Gly Asp  
 130 135 140  
 Val Ala Gly Ser Val Ile Glu Gly Ala Phe Glu Val Leu Ser Gly Phe  
 145 150 155 160  
 Glu Arg Val Lys Glu Ser Arg Asp Ala Met Arg Ala Ile Thr Leu Asp  
 165 170 175  
 Glu Gly Glu Ala Glu Val Phe Ala Arg Ser Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 Asp Pro Thr Asn Asn Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu  
 195 200 205  
 Met Pro Arg Arg Phe Asp Asp Ser Arg Pro Asp Leu Trp Ser Val Phe  
 210 215 220  
 Asn Arg Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu His Gly Arg Ser  
 225 230 235 240  
 Ala Asn Gly Arg Arg Gln Gln Thr Arg Pro Val Gln Gly Ile Asp Ser  
 245 250 255  
 Asp Val Arg Leu Asn Arg Ala Leu Trp Met Leu Ala Asp Gly Leu Arg  
 260 265 270  
 Gln Leu Lys Ala  
 275

&lt;210&gt; 1291

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Ralstonia metallidurans CH34

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1291

atg tct ctg gta tcc cgc ttt gct ccg caa tcc ccg atc ctg cgc tct 48  
 Met Ser Leu Val Ser Arg Phe Ala Pro Gln Ser Pro Ile Leu Arg Ser  
 1 5 10 15  
 gat cgc cca ctc tcg gac gac cgc att cgt gcc gtc gtt ccg tcg atc 96  
 Asp Arg Pro Leu Ser Asp Asp Arg Ile Arg Ala Val Val Pro Ser Ile  
 20 25 30

## PhoenixTemp32470.tmp.txt

ttc	gcc	gac	gct	cca	cat	ggg	agc	cgg	tcc	gat	cgg	tat	gcc	tac	ata	144
Phe	Ala	Asp	Ala	Pro	His	Gly	Ser	Arg	Ser	Asp	Arg	Tyr	Ala	Tyr	Ile	
		35					40					45				
ccg	acc	tcg	acc	gtg	ctg	acc	aag	ctg	cgc	cag	gag	ggc	ttc	gag	ccc	192
Pro	Thr	Ser	Thr	Val	Leu	Thr	Lys	Leu	Arg	Gln	Glu	Gly	Phe	Glu	Pro	
	50					55					60					
ttc	atg	gtg	tgt	cag	acg	cgc	gtg	cgc	aac	gaa	gac	cgg	cgc	gag	tac	240
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	Asn	Glu	Asp	Arg	Arg	Glu	Tyr	
	65				70					75					80	
acg	aag	cac	ctc	atc	cga	ctt	cgc	cat	gca	agc	cag	atc	aac	ggc	gac	288
Thr	Lys	His	Leu	Ile	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Asp	
			85						90					95		
gag	gcg	aac	gag	atc	ctg	ctc	aac	agc	cat	gac	ggc	acg	agc	agc		336
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tat	cag	atg	ctc	gcc	ggc	atg	ttc	cgg	ttc	gtc	tgc	cac	aac	ggc	ctg	384
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	His	Asn	Gly	Leu	
		115					120					125				
gtt	tgc	ggt	gac	acc	acc	gca	gac	atc	cgc	gtt	ccc	cac	aag	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Thr	Ala	Asp	Ile	Arg	Val	Pro	His	Lys	Gly	Asp	
	130					135					140					
gtg	gcc	agc	cag	gtg	atc	gaa	ggt	gcc	tac	gga	gtc	ctc	gaa	ggt	ttc	480
Val	Ala	Ser	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Gly	Val	Leu	Glu	Gly	Phe	
	145				150					155					160	
gag	cgc	gtg	cat	aac	gcg	cgc	gat	gcg	atg	cgc	acc	atc	acc	ctc	gat	528
Glu	Arg	Val	His	Asn	Ala	Arg	Asp	Ala	Met	Arg	Thr	Ile	Thr	Leu	Asp	
				165				170						175		
gag	ggc	gaa	gcg	gag	gtc	ttt	gcg	aac	tct	gcg	ctc	gca	ctc	aag	tac	576
Glu	Gly	Glu	Ala	Glu	Val	Phe	Ala	Asn	Ser	Ala	Leu	Ala	Leu	Lys	Tyr	
			180					185					190			
gac	gat	ccg	gcc	aag	tcc	acg	cct	gtc	acc	gag	agc	caa	ctg	ctg	gcc	624
Asp	Asp	Pro	Ala	Lys	Ser	Thr	Pro	Val	Thr	Glu	Ser	Gln	Leu	Leu	Ala	
		195					200					205				
cct	cgg	cga	tgg	gac	gac	cgc	aag	aac	gac	ctg	tgg	gcc	gtc	ttc	aac	672
Pro	Arg	Arg	Trp	Asp	Asp	Arg	Lys	Asn	Asp	Leu	Trp	Ala	Val	Phe	Asn	
	210					215					220					
cgc	gtc	cag	gag	aac	cta	gtc	aaa	ggg	ggc	ctg	aac	gga	cgc	acg	gcc	720
Arg	Val	Gln	Glu	Asn	Leu	Val	Lys	Gly	Gly	Leu	Asn	Gly	Arg	Thr	Ala	
	225				230				235						240	
aac	ggc	cgc	aat	cag	cgc	acc	cgt	ccg	gtg	caa	ggc	atc	gac	cag	aac	768
Asn	Gly	Arg	Asn	Gln	Arg	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Asn	
				245					250					255		
ctg	cgc	ctg	aac	cgg	gcg	ttg	tgg	ctg	ctg	gcc	gaa	ggc	atg	cgc	cag	816
Leu	Arg	Leu	Asn	Arg	Ala	Leu	Trp	Leu	Leu	Ala	Glu	Gly	Met	Arg	Gln	
			260					265					270			
ctc	aag	gcg	tga													828
Leu	Lys	Ala														
		275														

&lt;210&gt; 1292

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Ralstonia metallidurans CH34

&lt;400&gt; 1292

Met	Ser	Leu	Val	Ser	Arg	Phe	Ala	Pro	Gln	Ser	Pro	Ile	Leu	Arg	Ser	
1				5					10					15		
Asp	Arg	Pro	Leu	Ser	Asp	Asp	Arg	Ile	Arg	Ala	Val	Val	Pro	Ser	Ile	
			20					25					30			
Phe	Ala	Asp	Ala	Pro	His	Gly	Ser	Arg	Ser	Asp	Arg	Tyr	Ala	Tyr	Ile	
		35					40					45				
Pro	Thr	Ser	Thr	Val	Leu	Thr	Lys	Leu	Arg	Gln	Glu	Gly	Phe	Glu	Pro	
	50					55					60					
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	Asn	Glu	Asp	Arg	Arg	Glu	Tyr	
	65				70					75					80	
Thr	Lys	His	Leu	Ile	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Asp	
				85					90					95		
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys His Asn Gly Leu  
 115 120 125  
 Val Cys Gly Asp Thr Thr Ala Asp Ile Arg Val Pro His Lys Gly Asp  
 130 135 140  
 Val Ala Ser Gln Val Ile Glu Gly Ala Tyr Gly Val Leu Glu Gly Phe  
 145 150 155 160  
 Glu Arg Val His Asn Ala Arg Asp Ala Met Arg Thr Ile Thr Leu Asp  
 165 170 175  
 Glu Gly Glu Ala Glu Val Phe Ala Asn Ser Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 Asp Asp Pro Ala Lys Ser Thr Pro Val Thr Glu Ser Gln Leu Leu Ala  
 195 200 205  
 Pro Arg Arg Trp Asp Asp Arg Lys Asn Asp Leu Trp Ala Val Phe Asn  
 210 215 220  
 Arg Val Gln Glu Asn Leu Val Lys Gly Gly Leu Asn Gly Arg Thr Ala  
 225 230 235 240  
 Asn Gly Arg Asn Gln Arg Thr Arg Pro Val Gln Gly Ile Asp Gln Asn  
 245 250 255  
 Leu Arg Leu Asn Arg Ala Leu Trp Leu Ala Glu Gly Met Arg Gln  
 260 265 270  
 Leu Lys Ala  
 275

<210> 1293  
 <211> 822  
 <212> DNA  
 <213> Escherichia coli

<220>  
 <221> CDS  
 <222> (1)..(822)  
 <223> transl\_table=11

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 atg cga tta gct tcc cgt ttt ggt cgg tat aat tcc atc cgc cgt gaa 48  
 Met Arg Leu Ala Ser Arg Phe Gly Arg Tyr Asn Ser Ile Arg Arg Glu  
 1 5 10 15  
 cgt cct tta acg gat gat gaa tta atg cag ttc gtg cct tcg gta ttt 96  
 Arg Pro Leu Thr Asp Asp Glu Leu Met Gln Phe Val Pro Ser Val Phe  
 20 25 30  
 tcc ggt gat aaa cat gag tcc cgg agt gaa cgt tat acg tat att cca 144  
 Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro  
 35 40 45  
 aca atc aat atc atc aat aag tta cgt gat gaa ggt ttc cag cca ttc 192  
 Thr Ile Asn Ile Ile Asn Lys Leu Arg Asp Glu Gly Phe Gln Pro Phe  
 50 55 60  
 ttt gcc tgt cag agt cgg gtt cgt gat ttg gga cgc cgc gaa tac agt 240  
 Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly Arg Arg Glu Tyr Ser  
 65 70 75 80  
 aaa cat atg tta cgt ctt cgc agg gaa ggg aat att aac ggg cag gaa 288  
 Lys His Met Leu Arg Leu Arg Arg Glu Gly Asn Ile Asn Gly Gln Glu  
 85 90 95  
 gtt cct gaa att atc ctg ctt aat tca cat gat ggt tca tcc agt tat 336  
 Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr  
 100 105 110  
 cag atg atc ccc gga att ttt cgt ttt gtc tgc aca aat ggc ctg gtg 384  
 Gln Met Ile Pro Gly Ile Phe Arg Phe Val Cys Thr Asn Gly Leu Val  
 115 120 125  
 tgc gga aat aat ttt ggc gaa atc cgc gtt cca cat aaa ggt gat att 432  
 Cys Gly Asn Asn Phe Gly Glu Ile Arg Val Pro His Lys Gly Asp Ile  
 130 135 140  
 gtc ggg cag gtt atc gag gga gcg tat gaa gtg ctc ggt gtc ttt gat 480  
 Val Gly Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp  
 145 150 155 160  
 aag gtc act gat aat atg gag gcg atg aaa gaa att cat ctt aac agt 528  
 Lys Val Thr Asp Asn Met Glu Ala Met Lys Glu Ile His Leu Asn Ser  
 165 170 175  
 gac gag caa cat tta ttt ggc aga gct gca ctg atg gtc agg tat gaa 576  
 Asp Glu Gln His Leu Phe Gly Arg Ala Ala Leu Met Val Arg Tyr Glu

## PhoenixTemp32470.tmp.txt

			180				185			190								
gat	gaa	aat	aaa	acg	cca	gtg	acg	cct	gaa	caa	ata	att	act	ccc	cgt			
Asp	Glu	Asn	Lys	Thr	Pro	Val	Thr	Pro	Glu	Gln	Ile	Ile	Thr	Pro	Arg			624
		195					200					205						
cgt	cgg	gaa	gat	aaa	cag	aac	gat	ctc	tgg	aca	acc	tgt	cag	cgg	ggt			672
Arg	Arg	Glu	Asp	Lys	Gln	Asn	Asp	Leu	Trp	Thr	Thr	Cys	Gln	Arg	Val			
	210					215					220							
cag	gag	aat	att	ata	aaa	ggg	gga	ttg	tcg	ggg	cga	agt	gcc	tcc	ggg			720
Gln	Glu	Asn	Ile	Ile	Lys	Gly	Gly	Leu	Ser	Gly	Arg	Ser	Ala	Ser	Gly			
	225				230					235					240			
aaa	aat	acc	agg	aca	aga	gcc	att	aca	ggg	att	gat	ggg	gat	atc	cga			768
Lys	Asn	Thr	Arg	Thr	Arg	Ala	Ile	Thr	Gly	Ile	Asp	Gly	Asp	Ile	Arg			
				245					250					255				
atc	aac	aag	gcg	tta	tgg	gtg	att	gcc	gaa	cag	ttc	aga	aag	tgg	aag			816
Ile	Asn	Lys	Ala	Leu	Trp	Val	Ile	Ala	Glu	Gln	Phe	Arg	Lys	Trp	Lys			
			260					265					270					
tca	tga																	822
Ser																		

&lt;210&gt; 1294

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 1294

Met	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Arg	Tyr	Asn	Ser	Ile	Arg	Arg	Glu			
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			20					25					30					
Ser	Gly	Asp	Lys	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile	Pro			
		35					40					45						
Thr	Ile	Asn	Ile	Ile	Asn	Lys	Leu	Arg	Asp	Glu	Gly	Phe	Gln	Pro	Phe			
	50					55					60							
Phe	Ala	Cys	Gln	Ser	Arg	Val	Arg	Asp	Leu	Gly	Arg	Arg	Glu	Tyr	Ser			
65					70					75					80			
Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Glu	Gly	Asn	Ile	Asn	Gly	Gln	Glu			
			85						90					95				
Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr			
			100					105					110					
Gln	Met	Ile	Pro	Gly	Ile	Phe	Arg	Phe	Val	Cys	Thr	Asn	Gly	Leu	Val			
		115					120					125						
Cys	Gly	Asn	Asn	Phe	Gly	Glu	Ile	Arg	Val	Pro	His	Lys	Gly	Asp	Ile			
	130					135					140							
Val	Gly	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Gly	Val	Phe	Asp			
145					150					155					160			
Lys	Val	Thr	Asp	Asn	Met	Glu	Ala	Met	Lys	Glu	Ile	His	Leu	Asn	Ser			
				165					170					175				
Asp	Glu	Gln	His	Leu	Phe	Gly	Arg	Ala	Ala	Leu	Met	Val	Arg	Tyr	Glu			
			180					185					190					
Asp	Glu	Asn	Lys	Thr	Pro	Val	Thr	Pro	Glu	Gln	Ile	Ile	Thr	Pro	Arg			
		195					200					205						
Arg	Arg	Glu	Asp	Lys	Gln	Asn	Asp	Leu	Trp	Thr	Thr	Cys	Gln	Arg	Val			
	210					215					220							
Gln	Glu	Asn	Ile	Ile	Lys	Gly	Gly	Leu	Ser	Gly	Arg	Ser	Ala	Ser	Gly			
225					230					235					240			
Lys	Asn	Thr	Arg	Thr	Arg	Ala	Ile	Thr	Gly	Ile	Asp	Gly	Asp	Ile	Arg			
				245					250					255				
Ile	Asn	Lys	Ala	Leu	Trp	Val	Ile	Ala	Glu	Gln	Phe	Arg	Lys	Trp	Lys			
			260					265					270					
Ser																		

&lt;210&gt; 1295

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas aeruginosa UCBPP-PA14

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1295

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Met	Gln	Leu	Ala	Ser	Arg	Phe	Ala	Ser	Arg	Ser	Pro	Ala	Leu	Arg	Ser	
1				5					10					15		
gat	tac	ccg	ctg	acc	gat	gac	caa	atc	cgc	agg	gtg	gcc	ccg	tcc	atc	96
Asp	Tyr	Pro	Leu	Thr	Asp	Asp	Gln	Ile	Arg	Arg	Val	Ala	Pro	Ser	Ile	
			20					25					30			
ttc	gcg	gac	gcc	ccg	cac	gaa	agc	cgc	tcc	gag	cgg	tac	gcc	tac	atc	144
Phe	Ala	Asp	Ala	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ala	Tyr	Ile	
		35					40					45				
ccc	acc	gcg	acc	gtg	ttg	cag	gaa	ctg	cgc	ggg	gaa	ggc	ttc	gag	cct	192
Pro	Thr	Ala	Thr	Val	Leu	Gln	Glu	Leu	Arg	Gly	Glu	Gly	Phe	Glu	Pro	
		50				55					60					
ttc	atg	gtg	tgc	cag	acc	cgc	gtg	cgc	cac	gac	gac	cgc	cgc	gac	tac	240
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	His	Asp	Asp	Arg	Arg	Asp	Tyr	
		65			70					75					80	
acc	aag	cac	atg	atc	cgc	ctg	cgc	cac	gcc	agc	cag	atc	aac	ggg	cgc	288
Thr	Lys	His	Met	Ile	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Arg	
				85					90					95		
gag	gcc	aac	gaa	atc	atc	ctg	ctg	aac	tcc	cat	gac	ggc	acc	agc	agt	336
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100					105					110			
tac	cag	atg	ctg	gcc	gga	atg	ttc	cgc	ttc	gtg	tgc	agc	aat	ggc	ctt	384
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
		115					120					125				
gtg	tgc	ggt	gac	acc	gtg	gcc	gac	gtg	cgc	gta	ccc	cac	aag	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
		130				135					140					
gta	gcc	ggg	cac	gtc	atc	gaa	ggc	gct	tac	gaa	gtc	ctg	cac	ggt	ttc	480
Val	Ala	Gly	His	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	His	Gly	Phe	
		145			150					155					160	
gac	cgg	gcg	cag	gaa	tcg	cgc	gat	gcc	atg	cgc	gcc	atc	acc	ctc	gac	528
Asp	Arg	Ala	Gln	Glu	Ser	Arg	Asp	Ala	Met	Arg	Ala	Ile	Thr	Leu	Asp	
				165					170					175		
gcc	ggg	gaa	tcg	gaa	gtg	ttc	gcc	cgc	gcc	gcg	ctg	gcc	ttg	aag	tac	576
Ala	Gly	Glu	Ser	Glu	Val	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	
			180					185					190			
gac	gag	gac	aag	ccc	gca	ccc	atc	acg	gaa	tcg	caa	atc	ctg	atg	ccg	624
Asp	Glu	Asp	Lys	Pro	Ala	Pro	Ile	Thr	Glu	Ser	Gln	Ile	Leu	Met	Pro	
		195					200					205				
cgc	cgt	ggc	gac	gac	gac	cgc	cgc	gac	ctg	tgg	agc	gtg	ttc	aac	cgc	672
Arg	Arg	Gly	Asp	Asp	Asp	Arg	Arg	Asp	Leu	Trp	Ser	Val	Phe	Asn	Arg	
		210				215					220					
acg	caa	gaa	aac	ctc	atc	aaa	ggt	ggc	ctg	tcc	gcc	cgc	gcc	gcc	aat	720
Thr	Gln	Glu	Asn	Leu	Ile	Lys	Gly	Gly	Leu	Ser	Ala	Arg	Ala	Ala	Asn	
		225			230				235						240	
ggc	cgc	cgc	cag	acc	acc	cgg	ccc	gtg	cag	ggc	atc	gac	cag	agc	gtg	768
Gly	Arg	Arg	Gln	Thr	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Ser	Val	
				245					250					255		
cgc	ctg	aat	cgc	gcc	ctg	tgg	ctg	ctg	gcc	gat	ggc	ctg	cgc	cag	ctc	816
Arg	Leu	Asn	Arg	Ala	Leu	Trp	Leu	Leu	Ala	Asp	Gly	Leu	Arg	Gln	Leu	
			260					265					270			
aaa	gcc	tga														825
Lys	Ala															

&lt;210&gt; 1296

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas aeruginosa UCBPP-PA14

&lt;400&gt; 1296

Met	Gln	Leu	Ala	Ser	Arg	Phe	Ala	Ser	Arg	Ser	Pro	Ala	Leu	Arg	Ser	
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Asp	Tyr	Pro	Leu	Thr	Asp	Asp	Gln	Ile	Arg	Arg	Val	Ala	Pro	Ser	Ile	



## PhoenixTemp32470.tmp.txt

20 25 30  
 Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ala Tyr Ile  
 35 40 45  
 Pro Thr Ala Thr Val Leu Gln Glu Leu Arg Gly Glu Gly Phe Glu Pro  
 50 55 60  
 Phe Met Val Cys Gln Thr Arg Val Arg His Asp Asp Arg Arg Asp Tyr  
 65 70 75 80  
 Thr Lys His Met Ile Arg Leu Arg His Ala Ser Gln Ile Asn Gly Arg  
 85 90 95  
 Glu Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu  
 115 120 125  
 Val Cys Gly Asp Thr Val Ala Asp Val Arg Val Pro His Lys Gly Asp  
 130 135 140  
 Val Ala Gly His Val Ile Glu Gly Ala Tyr Glu Val Leu His Gly Phe  
 145 150 155 160  
 Asp Arg Ala Gln Glu Ser Arg Asp Ala Met Arg Ala Ile Thr Leu Asp  
 165 170 175  
 Ala Gly Glu Ser Glu Val Phe Ala Arg Ala Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 Asp Glu Asp Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met Pro  
 195 200 205  
 Arg Arg Gly Asp Asp Asp Arg Arg Asp Leu Trp Ser Val Phe Asn Arg  
 210 215 220  
 Thr Gln Glu Asn Leu Ile Lys Gly Gly Leu Ser Ala Arg Ala Ala Asn  
 225 230 235 240  
 Gly Arg Arg Gln Thr Thr Arg Pro Val Gln Gly Ile Asp Gln Ser Val  
 245 250 255  
 Arg Leu Asn Arg Ala Leu Trp Leu Leu Ala Asp Gly Leu Arg Gln Leu  
 260 265 270  
 Lys Ala

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 <212> DNA  
 <213> Acidovorax sp. JS42

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 1 5 10 15  
 atg ccc ctg tcg gat gac caa atc cgc gcc gtg gct ccc tcg atc ttt 96  
 Met Pro Leu Ser Asp Asp Gln Ile Arg Ala Val Ala Pro Ser Ile Phe  
 20 25 30  
 gcc gag gcc gcc cac gaa agc cgc tcc gcg cgt tac acc tat atc ccg 144  
 Ala Glu Ala Ala His Glu Ser Arg Ser Ala Arg Tyr Thr Tyr Ile Pro  
 35 40 45  
 acc att gac gtt ctg aac ggc ctg cgc aaa gag ggt ttc cag ccc ttc 192  
 Thr Ile Asp Val Leu Asn Gly Leu Arg Lys Glu Gly Phe Gln Pro Phe  
 50 55 60  
 atg gtg tgc cag acc cgc gtg cgc aac gag gaa aag cgc gag cac acc 240  
 Met Val Cys Gln Thr Arg Val Arg Asn Glu Glu Lys Arg Glu His Thr  
 65 70 75 80  
 aag cac atg att cgc ctg cgc cac gcc gac caa atc acc ggc cgc gag 288  
 Lys His Met Ile Arg Leu Arg His Ala Asp Gln Ile Thr Gly Arg Glu  
 85 90 95  
 gcg aac gaa atc atc ctg ctc aac agc cac gac ggc acc agc agc tac 336  
 Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser Tyr  
 100 105 110  
 cag atg ctg gcc ggc atg ttc cgc ttt gtg tgc tct aac ggc atg gtg 384  
 Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Met Val  
 115 120 125

## PhoenixTemp32470.tmp.txt

tgc	ggc	gaa	acg	acc	agc	gac	atc	cgc	gtg	cgc	cat	aac	ggc	gac	gtg	432
Cys	Gly	Glu	Thr	Thr	Ser	Asp	Ile	Arg	Val	Arg	His	Asn	Gly	Asp	Val	
	130					135					140					
gtg	ggc	gag	gtg	atc	gaa	ggc	gct	ttc	aag	gtg	ctg	gac	agc	ttc	gag	480
Val	Gly	Glu	Val	Ile	Glu	Gly	Ala	Phe	Lys	Val	Leu	Asp	Ser	Phe	Glu	
145					150					155					160	
gaa	gcc	acc	gcc	cag	cgc	gag	gcc	atg	cag	gtg	ctc	acg	ctc	aac	cag	528
Glu	Ala	Thr	Ala	Gln	Arg	Glu	Ala	Met	Gln	Val	Leu	Thr	Leu	Asn	Gln	
				165					170					175		
ggc	gaa	cag	gcc	gcc	ttt	gcc	cgc	gcc	gcg	ctg	gcc	ctg	aag	tac	gac	576
Gly	Glu	Gln	Ala	Ala	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	Asp	
			180					185					190			
gag	cag	gac	ggc	gct	gtg	ccc	gtc	acc	gaa	tcc	caa	atc	ctg	gcc	ccg	624
Glu	Gln	Asp	Gly	Ala	Val	Pro	Val	Thr	Glu	Ser	Gln	Ile	Leu	Ala	Pro	
		195					200					205				
cgc	cgc	ttc	gag	gat	cgc	cgc	gac	gac	atg	tgg	acg	acc	ttc	aac	cgc	672
Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Met	Trp	Thr	Thr	Phe	Asn	Arg	
		210				215					220					
gtg	cag	gaa	aac	atg	atg	aag	ggc	gga	ctg	cgc	ggc	aac	cgc	aac		720
Val	Gln	Glu	Asn	Met	Met	Lys	Gly	Gly	Leu	Arg	Gly	Arg	Asn	Arg	Asn	
225					230				235						240	
ggc	cgc	acc	act	acg	acg	cgc	ccg	gtc	aac	ggc	atc	gac	cag	agc	gtt	768
Gly	Arg	Thr	Thr	Thr	Thr	Arg	Pro	Val	Asn	Gly	Ile	Asp	Gln	Ser	Val	
				245					250					255		
aag	ctg	aac	cgt	gct	ttg	tgg	gtg	ctg	gcc	gag	gaa	atg	cgc	cgc	ctg	816
Lys	Leu	Asn	Arg	Ala	Leu	Trp	Val	Leu	Ala	Glu	Glu	Met	Arg	Arg	Leu	
			260					265					270			
aag	ggc	taa														825
Lys	Gly															

&lt;210&gt; 1298

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Acidovorax sp. JS42

&lt;400&gt; 1298

Met	Gln	Leu	Ala	Ser	Arg	Phe	Arg	Asn	Ala	Ser	Gly	Ile	Arg	Ala	Asp	
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Met	Pro	Leu	Ser	Asp	Asp	Gln	Ile	Arg	Ala	Val	Ala	Pro	Ser	Ile	Phe	
			20					25					30			
Ala	Glu	Ala	Ala	His	Glu	Ser	Arg	Ser	Ala	Arg	Tyr	Thr	Tyr	Ile	Pro	
		35					40					45				
Thr	Ile	Asp	Val	Leu	Asn	Gly	Leu	Arg	Lys	Glu	Gly	Phe	Gln	Pro	Phe	
	50					55					60					
Met	Val	Cys	Gln	Thr	Arg	Val	Arg	Asn	Glu	Glu	Lys	Arg	Glu	His	Thr	
65					70					75					80	
Lys	His	Met	Ile	Arg	Leu	Arg	His	Ala	Asp	Gln	Ile	Thr	Gly	Arg	Glu	
				85					90					95		
Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	Tyr	
			100					105					110			
Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Met	Val	
		115					120					125				
Cys	Gly	Glu	Thr	Thr	Ser	Asp	Ile	Arg	Val	Arg	His	Asn	Gly	Asp	Val	
	130					135					140					
Val	Gly	Glu	Val	Ile	Glu	Gly	Ala	Phe	Lys	Val	Leu	Asp	Ser	Phe	Glu	
145					150					155					160	
Glu	Ala	Thr	Ala	Gln	Arg	Glu	Ala	Met	Gln	Val	Leu	Thr	Leu	Asn	Gln	
				165					170					175		
Gly	Glu	Gln	Ala	Ala	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	Asp	
			180					185					190			
Glu	Gln	Asp	Gly	Ala	Val	Pro	Val	Thr	Glu	Ser	Gln	Ile	Leu	Ala	Pro	
		195					200					205				
Arg	Arg	Phe	Glu	Asp	Arg	Arg	Asp	Asp	Met	Trp	Thr	Thr	Phe	Asn	Arg	
	210					215					220					
Val	Gln	Glu	Asn	Met	Met	Lys	Gly	Gly	Leu	Arg	Gly	Arg	Asn	Arg	Asn	
225					230					235					240	
Gly	Arg	Thr	Thr	Thr	Thr	Arg	Pro	Val	Asn	Gly	Ile	Asp	Gln	Ser	Val	
				245					250					255		

Lys Leu Asn Arg Ala Leu Trp Val Leu Ala Glu Glu Met Arg Arg Leu  
 260 265 270  
 Lys Gly

<210> 1299  
 <211> 825  
 <212> DNA  
 <213> Acidovorax sp. JS42

<220>  
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 <222> (1)..(825)  
 <223> transl\_table=11

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 1 5 10 15  
 gaa cgt ccc ttg tcg gat gac caa atc cgg gcc gtg gcc ccg tcc atc 96  
 Glu Arg Pro Leu Ser Asp Asp Gln Ile Arg Ala Val Ala Pro Ser Ile  
 20 25 30  
 ttc gcg gac gcc ccg cac gaa agc cgc tct gag cgg tac agc tac atc 144  
 Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile  
 35 40 45  
 ccc acc gcg acc gtg ctg caa gaa ctg cgc ggg gaa ggc ttc gag ccc 192  
 Pro Thr Ala Thr Val Leu Gln Glu Leu Arg Gly Glu Gly Phe Glu Pro  
 50 55 60  
 ttc atg gtg acg caa acc cgc gtg cgc cac gac gac cgc cgc gac tac 240  
 Phe Met Val Thr Gln Thr Arg Val Arg His Asp Arg Arg Asp Tyr  
 65 70 75 80  
 acc aag cac atg atc cgg ctg cgc cac gcc agc cag atc aac ggc cgc 288  
 Thr Lys His Met Ile Arg Leu Arg His Ala Ser Gln Ile Asn Gly Arg  
 85 90 95  
 gag gcc aac gaa atc atc ctg ctg aac tcc cat gac ggc acc agc agc 336  
 Glu Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 tat cag atg ctg gcc ggg atg ttc cgc ttc gtt tgc agc aat ggc ctt 384  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu  
 115 120 125  
 gtc tgc ggc gac acc gtg gcc gac gtg cgc gtg ccg cac aag ggc gac 432  
 Val Cys Gly Asp Thr Val Ala Asp Val Arg Val Pro His Lys Gly Asp  
 130 135 140  
 gtg gcg gcg cag gtc atc gaa ggc gct tac gaa gtc ctg cac ggc ttc 480  
 Val Ala Ala Gln Val Ile Glu Gly Ala Tyr Glu Val Leu His Gly Phe  
 145 150 155 160  
 gac cgg gcg cag gaa tcg cgc gat gcc atg cgc gcc atc acg ctg gac 528  
 Asp Arg Ala Gln Glu Ser Arg Asp Ala Met Arg Ala Ile Thr Leu Asp  
 165 170 175  
 gca ggg gaa tcg gaa gtg ttc gcc cgc gct gcg ctg gcg ttg aag tac 576  
 Ala Gly Glu Ser Glu Val Phe Ala Arg Ala Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 gac gag gac aag ccc gca ccc atc acg gaa tcg caa atc ctg atg ccg 624  
 Asp Glu Asp Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met Pro  
 195 200 205  
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 Arg Arg His Asp Asp Asp Arg Arg Asp Leu Trp Ser Val Phe Asn Arg  
 210 215 220  
 acg cag gag aac ttg acc aaa ggc ggc ctg tcc gcc cgc gcc gcg aat 720  
 Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu Ser Ala Arg Ala Ala Asn  
 225 230 235 240  
 ggc cgc cgc cag acc cgg ccc gtg cag ggc atc gac caa agc gtg 768  
 Gly Arg Arg Gln Thr Arg Pro Val Gln Gly Ile Asp Gln Ser Val  
 245 250 255  
 cgc ctg aac cgc gcc ctg tgg ctg ctg gcc gat ggc ctg cgc cag ttg 816  
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 Lys Ala

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 <211> 274  
 <212> PRT  
 <213> Acidovorax sp. JS42

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 Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile  
 35 40 45  
 Pro Thr Ala Thr Val Leu Gln Glu Leu Arg Gly Glu Gly Phe Glu Pro  
 50 55 60  
 Phe Met Val Thr Gln Thr Arg Val Arg His Asp Asp Arg Arg Asp Tyr  
 65 70 75 80  
 Thr Lys His Met Ile Arg Leu Arg His Ala Ser Gln Ile Asn Gly Arg  
 85 90 95  
 Glu Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu  
 115 120 125  
 Val Cys Gly Asp Thr Val Ala Asp Val Arg Val Pro His Lys Gly Asp  
 130 135 140  
 Val Ala Ala Gln Val Ile Glu Gly Ala Tyr Glu Val Leu His Gly Phe  
 145 150 155 160  
 Asp Arg Ala Gln Glu Ser Arg Asp Ala Met Arg Ala Ile Thr Leu Asp  
 165 170 175  
 Ala Gly Glu Ser Glu Val Phe Ala Arg Ala Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 Asp Glu Asp Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met Pro  
 195 200 205  
 Arg Arg His Asp Asp Asp Arg Arg Asp Leu Trp Ser Val Phe Asn Arg  
 210 215 220  
 Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu Ser Ala Arg Ala Ala Asn  
 225 230 235 240  
 Gly Arg Arg Gln Thr Thr Arg Pro Val Gln Gly Ile Asp Gln Ser Val  
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 Lys Ala

<210> 1301  
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 gat gcc ccg ctg tcc gat gac cag att cgc agg gtg gcc ccg tcc atc 96  
 Asp Ala Pro Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile 20 25 30  
 ttc gcg gat gcc ccg cat gag agc cgt tcc gag cgg tac agc tac atc 144  
 Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile 35 40 45  
 ccc acg gct gcc gtg ctg acc gag ctt cgg aaa gaa ggg ttc cag cct 192  
 Pro Thr Ala Ala Val Leu Thr Glu Leu Arg Lys Glu Gly Phe Gln Pro 50 55 60  
 ttc atg gtg acg cag acc cgc gtg cgc gat gaa ggc aag cgc gag cac 240  
 65 70 75  
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Phe 65	Met	Val	Thr	Gln	Thr 70	Arg	Val	Arg	Asp	Glu 75	Gly	Lys	Arg	Glu	His 80	
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Thr	Lys	His	Met	Leu 85	Arg	Leu	Arg	His	Ala 90	Ser	Gln	Ile	Asn	Gly 95	Ala	
gag	gct	aac	gaa	atc	gtg	ctg	ctg	aac	tcg	cac	gac	ggc	acg	agc	agc	336
Glu	Ala	Asn	Glu 100	Ile	Val	Leu	Leu	Asn 105	Ser	His	Asp	Gly	Thr 110	Ser	Ser	
tat	cag	atg	ctg	gcc	gga	atg	ttc	cgc	ttc	gtg	tgt	agt	aat	ggc	ctt	384
Tyr	Gln	Met 115	Leu	Ala	Gly	Met	Phe 120	Arg	Phe	Val	Cys	Ser 125	Asn	Gly	Leu	
gtc	tgt	ggt	gac	acc	gtg	gcc	gat	gtg	cgc	gtg	ccc	cac	aaa	ggc	aat	432
Val	Cys 130	Gly	Asp	Thr	Val	Ala 135	Asp	Val	Arg	Val	Pro 140	His	Lys	Gly	Asn	
gtg	gcg	ggc	caa	gtc	att	gaa	ggc	gcg	tac	gag	gtg	ttg	agc	ggc	ttc	480
Val	Ala	Gly	Gln	Val	Ile 150	Glu	Gly	Ala	Tyr	Glu 155	Val	Leu	Ser	Gly	Phe 160	
gag	cgg	gtg	cag	gaa	tcg	cgc	gac	ctg	atg	cgc	ggc	atc	acc	ttg	gac	528
Glu	Arg	Val	Gln 165	Glu	Ser	Arg	Asp	Leu	Met 170	Arg	Gly	Ile	Thr	Leu 175	Asp	
gat	ggc	gaa	tca	gaa	gtg	ttc	gcc	cgc	gcc	gcg	ctg	gcc	ctc	aag	tac	576
Asp	Gly	Glu 180	Ser	Glu	Val	Phe	Ala 185	Arg	Ala	Ala	Leu	Ala	Leu 190	Lys	Tyr	
gac	gac	ccc	gac	aag	ccc	gcg	ccc	atc	acg	gaa	tcg	caa	atc	ctg	atg	624
Asp	Asp	Pro 195	Asp	Lys	Pro	Ala	Pro 200	Ile	Thr	Glu	Ser	Gln 205	Ile	Leu	Met	
ccg	cgc	cgg	ttc	gat	gac	cgc	cgc	ccc	gat	ctg	tgg	agc	gtg	ttc	aac	672
Pro	Arg 210	Arg	Phe	Asp	Asp	Arg 215	Arg	Pro	Asp	Leu	Trp 220	Ser	Val	Phe	Asn	
cgc	acg	cag	gag	aac	ttg	acc	aag	ggc	gga	ttg	cat	ggc	cgc	gcc	gcc	720
Arg	Thr	Gln	Glu	Asn 230	Leu	Thr	Lys	Gly	Gly	Leu 235	His	Gly	Arg	Ala	Ala 240	
aat	ggc	cgc	agg	cag	cag	acc	cgc	ccc	gtg	cag	ggc	att	gat	tcg	gac	768
Asn	Gly	Arg	Arg	Gln 245	Gln	Thr	Arg	Pro	Val 250	Gln	Gly	Ile	Asp	Ser 255	Asp	
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Ile	Arg	Ile	Asn 260	Arg	Ala	Leu	Trp	Leu 265	Leu	Ala	Asp	Gly	Met 270	Arg	Ala	
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Leu	Lys	Ala 275														

&lt;210&gt; 1302

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Acidovorax sp. JS42

&lt;400&gt; 1302

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			20					25					30		
Phe	Ala	Asp	Ala	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ser	Tyr	Ile
		35					40					45			
Pro	Thr	Ala	Ala	Val	Leu	Thr	Glu	Leu	Arg	Lys	Glu	Gly	Phe	Gln	Pro
	50					55					60				
Phe	Met	Val	Thr	Gln	Thr	Arg	Val	Arg	Asp	Glu	Gly	Lys	Arg	Glu	His
65					70					75					80
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Ala
			85						90					95	
Glu	Ala	Asn	Glu	Ile	Val	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser
		100						105					110		
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu
		115					120					125			
Val	Cys	Gly	Asp	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asn
	130					135					140				
Val	Ala	Gly	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Ser	Gly	Phe
145					150				155						160
Glu	Arg	Val	Gln	Glu	Ser	Arg	Asp	Leu	Met	Arg	Gly	Ile	Thr	Leu	Asp

## PhoenixTemp32470.tmp.txt

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      165      170      175
Asp Gly Glu Ser Glu Val Phe Ala Arg Ala Ala Leu Ala Leu Lys Tyr
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Asp Asp Pro Asp Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met
      195      200      205
Pro Arg Arg Phe Asp Asp Arg Arg Pro Asp Leu Trp Ser Val Phe Asn
      210      215      220
Arg Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu His Gly Arg Ala Ala
      225      230      235
Asn Gly Arg Arg Gln Gln Thr Arg Pro Val Gln Gly Ile Asp Ser Asp
      240      245      250
Ile Arg Ile Asn Arg Ala Leu Trp Leu Leu Ala Asp Gly Met Arg Ala
      255      260      265
Leu Lys Ala
      270      275

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&lt;210&gt; 1303

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli B

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1303

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      1      5      10      15
cgc ccc tta acc cat gaa gaa tta atg cag gtt gtt ccc agc gtc ttc      96
Arg Pro Leu Thr His Glu Glu Leu Met Gln Val Val Pro Ser Val Phe
      20      25      30
ggg gaa ggt aag cac gtg tcc cgt tca gac cat tac agc tac ata ccg      144
Gly Glu Gly Lys His Val Ser Arg Ser Asp His Tyr Ser Tyr Ile Pro
      35      40      45
acc att acc ctg ctg gag aac ctg cag cgt gaa gga ttc cag ccg ttc      192
Thr Ile Thr Leu Leu Glu Asn Leu Gln Arg Glu Gly Phe Gln Pro Phe
      50      55      60
ttt gcc tgc cag acc cgc gtc agg gac cag agc cgc cgt gag cat acg      240
Phe Ala Cys Gln Thr Arg Val Arg Asp Gln Ser Arg Arg Glu His Thr
      65      70      75      80
aaa cat atg ctg cgc ctg cgt cgc tcc ggg cag ata acc ggt cag cag      288
Lys His Met Leu Arg Leu Arg Arg Ser Gly Gln Ile Thr Gly Gln Gln
      85      90      95
gtg ccg gaa att atc ctg ctc aat tcg cat gac ggt tcg tcc agt tac      336
Val Pro Glu Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr
      100      105      110
cag atg ttg ccg ggg tat ttc cgt gcc atc tgt acc aac ggt ctc gtc      384
Gln Met Leu Pro Gly Tyr Phe Arg Ala Ile Cys Thr Asn Gly Leu Val
      115      120      125
tgc ggg cag tca ttt ggc gag gtg cga gtg cca cac cgg gga aat gtc      432
Cys Gly Gln Ser Phe Gly Glu Val Arg Val Pro His Arg Gly Asn Val
      130      135      140
gtg gag aaa gtg att gaa ggc gct tac gaa gtc ctc ggt gtg ttc gac      480
Val Glu Lys Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp
      145      150      155      160
cgg gtg gaa gag aag cgt gat gcg atg cag tcg ctt tta ctc ccg cca      528
Arg Val Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Leu Leu Pro Pro
      165      170      175
ccg gca caa cag gct ttt gcc aga gcc gcg ctg acg tac cgc ttc ggg      576
Pro Ala Gln Gln Ala Phe Ala Arg Ala Ala Leu Thr Tyr Arg Phe Gly
      180      185      190
gaa gag cac cag ccg gtg acg gaa gcg cag ata ctg aca ccc cgc cgc      624
Glu Glu His Gln Pro Val Thr Glu Ala Gln Ile Leu Thr Pro Arg Arg
      195      200      205
tat gaa gac cgt cag gat gac ctg tgg tca gtt ttt aat cgg tgc cag      672
Tyr Glu Asp Arg Gln Asp Asp Leu Trp Ser Val Phe Asn Arg Cys Gln
      210      215

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## PhoenixTemp32470.tmp.txt

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225 230 235 240	
cgc agc cat acc cgc gcg gtg aaa ggc atc gac ggc gac gtt aag ctc	768
Arg Ser His Thr Arg Ala Val Lys Gly Ile Asp Gly Asp Val Lys Leu	
245 250 255	
aac cgg gca ctc tgg gtg atg gcg gaa aaa ctg cag cag gcg ctg agc	816
Asn Arg Ala Leu Trp Val Met Ala Glu Lys Leu Gln Gln Ala Leu Ser	
260 265 270	
tga	819

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 <212> PRT  
 <213> Escherichia coli B

<400> 1304

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Gly Glu Gly Lys His Val Ser Arg Ser Asp His Tyr Ser Tyr Ile Pro	
35 40 45	
Thr Ile Thr Leu Leu Glu Asn Leu Gln Arg Glu Gly Phe Gln Pro Phe	
50 55 60	
Phe Ala Cys Gln Thr Arg Val Arg Asp Gln Ser Arg Arg Glu His Thr	
65 70 75 80	
Lys His Met Leu Arg Leu Arg Arg Ser Gly Gln Ile Thr Gly Gln Gln	
85 90 95	
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr	
100 105 110	
Gln Met Leu Pro Gly Tyr Phe Arg Ala Ile Cys Thr Asn Gly Leu Val	
115 120 125	
Cys Gly Gln Ser Phe Gly Glu Val Arg Val Pro His Arg Gly Asn Val	
130 135 140	
Val Glu Lys Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Val Phe Asp	
145 150 155 160	
Arg Val Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Leu Leu Pro Pro	
165 170 175	
Pro Ala Gln Gln Ala Phe Ala Arg Ala Ala Leu Thr Tyr Arg Phe Gly	
180 185 190	
Glu Glu His Gln Pro Val Thr Glu Ala Gln Ile Leu Thr Pro Arg Arg	
195 200 205	
Tyr Glu Asp Arg Gln Asp Asp Leu Trp Ser Val Phe Asn Arg Cys Gln	
210 215 220	
Glu Asn Leu Leu Lys Gly Gly Leu Pro Gly Arg Thr Ala Lys Gly Lys	
225 230 235 240	
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cgt cct tta acg gat gat gaa tta atg cag ttc gtg cct tcg gta ttt	96

## PhoenixTemp32470.tmp.txt

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Ser	Gly	Asp 35	Lys	His	Glu	Ser	Arg 40	Ser	Glu	Arg	Tyr	Thr 45	Tyr	Ile	Pro	
acg	atc	aat	atc	atc	aat	aag	tta	cgt	gat	gaa	ggt	ttc	cag	cca	ttc	192
Thr	Ile 50	Asn	Ile	Ile	Asn	Lys 55	Leu	Arg	Asp	Glu	Gly 60	Phe	Gln	Pro	Phe	
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Phe 65	Ala	Cys	Gln	Ser	Arg 70	Val	Arg	Asp	Leu	Gly 75	Arg	Arg	Glu	Tyr	Ser 80	
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Lys	His	Met	Leu	Arg 85	Leu	Arg	Arg	Glu	Gly 90	His	Ile	Asn	Gly	Gln 95	Glu	
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Val	Pro	Glu	Ile 100	Ile	Leu	Leu	Asn	Ser 105	His	Asp	Gly	Ser	Ser 110	Ser	Tyr	
cag	atg	atc	ccc	gga	att	ttt	cgt	ttt	gtc	tgc	aca	aat	ggc	ctg	gtg	384
Gln	Met	Ile 115	Pro	Gly	Ile	Phe	Arg 120	Phe	Val	Cys	Thr	Asn 125	Gly	Leu	Val	
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Ala 145	Gly	Gln	Val	Ile	Glu 150	Gly	Ala	Tyr	Glu	Val 155	Leu	Gly	Ile	Phe	Asp 160	
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Lys	Val	Thr	Asp	Asn 165	Met	Glu	Ala	Met	Lys 170	Glu	Ile	His	Leu	Asn 175	Ser	
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Asp	Glu	Gln	His 180	Leu	Phe	Gly	Arg	Ala 185	Ala	Leu	Met	Val	Arg 190	Tyr	Glu	
gat	gaa	aat	aaa	acg	cca	gtg	acg	cct	gaa	cag	ata	att	act	ccc	cgt	624
Asp	Glu	Asn 195	Lys	Thr	Pro	Val	Thr 200	Pro	Glu	Gln	Ile	Ile 205	Thr	Pro	Arg	
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Arg	Trp 210	Glu	Asp	Lys	Gln	Asn 215	Asp	Leu	Trp	Thr	Thr 220	Trp	Gln	Arg	Val	
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Gln 225	Glu	Asn	Met	Ile	Lys 230	Gly	Gly	Leu	Ser	Gly 235	Arg	Ser	Ala	Ser	Gly 240	
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Lys	Asn	Thr	Arg 245	Thr	Arg	Ala	Ile	Thr	Gly 250	Ile	Asp	Gly	Asp	Ile 255	Arg	
atc	aac	aag	gcg	tta	tgg	gtg	att	gcc	gaa	cag	ttc	aga	aag	tgg	aag	816
Ile	Asn	Lys	Ala 260	Leu	Trp	Val	Ile	Ala 265	Glu	Gln	Phe	Arg	Lys 270	Trp	Lys	
tca	tga															822
Ser																

&lt;210&gt; 1306

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 1306

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Ser	Gly	Asp 35	Lys	His	Glu	Ser	Arg 40	Ser	Glu	Arg	Tyr	Thr 45	Tyr	Ile	Pro	
Thr	Ile 50	Asn	Ile	Ile	Asn	Lys 55	Leu	Arg	Asp	Glu	Gly 60	Phe	Gln	Pro	Phe	
Phe 65	Ala	Cys	Gln	Ser	Arg 70	Val	Arg	Asp	Leu	Gly 75	Arg	Arg	Glu	Tyr	Ser 80	
Lys	His	Met	Leu	Arg 85	Leu	Arg	Arg	Glu	Gly 90	His	Ile	Asn	Gly	Gln 95	Glu	



PhoenixTemp32470.tmp.txt

Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	Tyr
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Cys	Gly	Asn	115	Asn	Phe	Gly	Glu	120	Ile	Arg	Val	Pro	His	125	Ile
Ala	Gly	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	140	Gly	Ile	Phe	Asp
145	Lys	Val	Thr	Asp	Asn	Met	Glu	Ala	Met	Lys	Glu	Ile	His	Leu	Ser
Asp	Glu	Gln	His	165	Leu	Phe	Gly	Arg	Ala	Ala	Leu	Met	Val	Arg	Glu
Asp	Glu	Asn	180	Lys	Thr	Pro	Val	Thr	Pro	Glu	Gln	Ile	Ile	Thr	Arg
Arg	Trp	Glu	Asp	Lys	Gln	Asn	Asp	Leu	Trp	Thr	Thr	Trp	Gln	Arg	Val
Gln	Glu	Asn	Met	Ile	Lys	Gly	Gly	Leu	Ser	Gly	Arg	Ser	Ala	Ser	Gly
225	Lys	Asn	Thr	Arg	Thr	Arg	Ala	Ile	Thr	Gly	Ile	Asp	Gly	Asp	Arg
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Ser			260				265						270		

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 <213> Alcaligenes faecalis

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ggc gat gaa ctc agg aaa gac ggt ggc aac gag gcc aac cgg gtt cct	96
Gly Asp Glu Leu Arg Lys Asp Gly Gly Asn Glu Ala Asn Arg Val Pro	
20 25 30	
cgt gcc gac tgc acc gaa cag ctg aaa agc cgg gct ccg aat ctt gga	144
Arg Ala Asp Cys Thr Glu Gln Leu Lys Ser Arg Ala Pro Asn Leu Gly	
35 40 45	
atc cgg tgt gca gtg aac agc caa cct ttt tat gtc agg aga ata acc	192
Ile Arg Cys Ala Val Asn Ser Gln Pro Phe Tyr Val Arg Arg Ile Thr	
50 55 60	
atg ctg gta tcc cgt ttc gct ttc cgt tcc ccc gtg ctt cgc agt gag	240
Met Leu Val Ser Arg Phe Ala Phe Arg Ser Pro Val Leu Arg Ser Glu	
65 70 75	
tcc ccg ttg tcg gat gat caa att cgt gcg gtt gtg cca tcc att ttt	288
Ser Pro Leu Ser Asp Asp Gln Ile Arg Ala Val Val Pro Ser Ile Phe	
85 90 95	
gcc gat gcg cct cat gaa agc cgt tct gac cgg tac acc tat att ccc	336
Ala Asp Ala Pro His Glu Ser Arg Ser Asp Arg Tyr Thr Tyr Ile Pro	
100 105 110	
aca gtg gct gtg ttg acc gag ctg cga aaa gaa ggg ttt cag ccg ttt	384
Thr Val Ala Val Leu Thr Glu Leu Arg Lys Glu Gly Phe Gln Pro Phe	
115 120 125	
atg gtg aca caa acc cgt gtg cgt aat acc gag cgc cgc gac ttt aca	432
Met Val Thr Gln Thr Arg Val Arg Asn Thr Glu Arg Asp Phe Thr	
130 135 140	
aaa cat atg atc cgt tta cgc cat gcc ggg cag atc aac aca cgc ggg	480
Lys His Met Ile Arg Leu Arg His Ala Gly Gln Ile Asn Thr Arg Gly	
145 150 155 160	
gaa gcc aat gaa atc att ttg ctt aat tcc cat gac ggt agc agc agt	528
Glu Ala Asn Glu Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser	
165 170 175	

## PhoenixTemp32470.tmp.txt

tat	cag	atg	ctg	gcc	ggt	atg	ttc	cgt	ttt	gtg	tgc	agc	aac	ggg	ctg	576
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
			180					185					190			
gtg	tgc	ggt	gaa	acc	gtc	gca	gat	ggt	cgc	gta	ccg	cat	aag	ggg	gat	624
Val	Cys	Gly	Glu	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
		195					200					205				
ggt	gcc	gga	ctg	gtg	gtc	gag	ggc	gca	tat	cgt	ggt	ctg	ggg	gga	ttt	672
Val	Ala	Gly	Leu	Val	Val	Glu	Gly	Ala	Tyr	Arg	Val	Leu	Gly	Gly	Phe	
		210				215					220					
gat	cgt	gca	agg	gag	tcg	cgg	gag	ttg	atg	cgg	gat	atc	acc	ctg	gag	720
Asp	Arg	Ala	Arg	Glu	Ser	Arg	Glu	Leu	Met	Arg	Asp	Ile	Thr	Leu	Glu	
					230					235					240	
gcg	ggt	gag	act	gag	gta	ttt	gcc	cgt	gcc	gcg	ttg	tcg	ttg	aaa	tat	768
Ala	Gly	Glu	Thr	Glu	Val	Phe	Ala	Arg	Ala	Ala	Leu	Ser	Leu	Lys	Tyr	
				245					250					255		
gat	gat	ccc	gat	aaa	cca	gcc	cct	gta	act	gaa	acc	cag	att	ctt	ttg	816
Asp	Asp	Pro	Asp	Lys	Pro	Ala	Pro	Val	Thr	Glu	Thr	Gln	Ile	Leu	Leu	
			260					265					270			
ccg	cgt	cgt	gcc	gag	gat	cgc	cgt	tct	gat	ttg	tgg	agt	gtg	ttt	aat	864
Pro	Arg	Arg	Ala	Glu	Asp	Arg	Arg	Ser	Asp	Leu	Trp	Ser	Val	Phe	Asn	
		275					280					285				
cgt	acc	cag	gaa	aac	tta	acc	aaa	ggt	ggt	ttg	tcg	ggg	cgt	tca	gcc	912
Arg	Thr	Gln	Glu	Asn	Leu	Thr	Lys	Gly	Gly	Leu	Ser	Gly	Arg	Ser	Ala	
		290				295					300					
aat	ggc	agt	cgt	cag	aaa	acc	aga	ccg	gtg	cag	ggg	ata	gac	cag	aat	960
Asn	Gly	Ser	Arg	Gln	Lys	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Asn	
					310					315					320	
atc	aaa	ctg	aat	cgg	gcc	ttg	tgg	tta	ctg	gct	gac	ggc	atg	cgt	caa	1008
Ile	Lys	Leu	Asn	Arg	Ala	Leu	Trp	Leu	Leu	Ala	Asp	Gly	Met	Arg	Gln	
				325					330					335		
ttg	aag	gca	ggt	tga												1023
Leu	Lys	Ala	Gly													
			340													

&lt;210&gt; 1308

&lt;211&gt; 340

&lt;212&gt; PRT

<213> *Alcaligenes faecalis*

&lt;400&gt; 1308

Met	Leu	Val	Ser	Leu	Thr	Val	His	Val	Arg	Gly	Leu	Leu	Thr	Val	Ala	
1				5					10					15		
Gly	Asp	Glu	Leu	Arg	Lys	Asp	Gly	Gly	Asn	Glu	Ala	Asn	Arg	Val	Pro	
			20					25					30			
Arg	Ala	Asp	Cys	Thr	Glu	Gln	Leu	Lys	Ser	Arg	Ala	Pro	Asn	Leu	Gly	
		35					40					45				
Ile	Arg	Cys	Ala	Val	Asn	Ser	Gln	Pro	Phe	Tyr	Val	Arg	Arg	Ile	Thr	
	50				55						60					
Met	Leu	Val	Ser	Arg	Phe	Ala	Phe	Arg	Ser	Pro	Val	Leu	Arg	Ser	Glu	
65				70					75					80		
Ser	Pro	Leu	Ser	Asp	Gln	Ile	Arg	Ala	Val	Val	Pro	Ser	Ile	Phe		
			85					90					95			
Ala	Asp	Ala	Pro	His	Glu	Ser	Arg	Ser	Asp	Arg	Tyr	Thr	Tyr	Ile	Pro	
			100					105					110			
Thr	Val	Ala	Val	Leu	Thr	Glu	Leu	Arg	Lys	Glu	Gly	Phe	Gln	Pro	Phe	
		115				120						125				
Met	Val	Thr	Gln	Thr	Arg	Val	Arg	Asn	Thr	Glu	Arg	Arg	Asp	Phe	Thr	
	130				135					140						
Lys	His	Met	Ile	Arg	Leu	Arg	His	Ala	Gly	Gln	Ile	Asn	Thr	Arg	Gly	
145				150					155						160	
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Ser	Ser	Ser	
			165					170					175			
Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
			180				185						190			
Val	Cys	Gly	Glu	Thr	Val	Ala	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
		195					200					205				
Val	Ala	Gly	Leu	Val	Val	Glu	Gly	Ala	Tyr	Arg	Val	Leu	Gly	Gly	Phe	
	210				215						220					
Asp	Arg	Ala	Arg	Glu	Ser	Arg	Glu	Leu	Met	Arg	Asp	Ile	Thr	Leu	Glu	

## PhoenixTemp32470.tmp.txt

225 Ala Gly Glu Thr Glu 230 Val Phe Ala Arg Ala 235 Ala Leu Ser Leu Lys 240 Tyr  
 Asp Asp Pro Asp Lys 245 Pro Ala Pro Val Thr Glu Thr Gln Ile Leu Leu  
 Pro Arg Arg Ala Glu 260 Asp Arg Arg Ser Asp Leu Trp Ser Val Phe Asn  
 Arg Thr 275 Gln Glu Asn Leu Thr 280 Lys Gly Gly Leu Ser 285 Gly Arg Ser Ala  
 Asn Gly Ser Arg Gln Lys Thr Arg Pro Val Gln Gly Ile Asp Gln Asn  
 305 Ile Lys Leu Asn Arg 310 Ala Leu Trp Leu Leu 315 Ala Asp Gly Met Arg 320 Gln  
 Leu Lys Ala Gly 325 330 335 340

&lt;210&gt; 1309

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Cupriavidus oxalaticus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1309

atg	caa	ctt	gca	tcc	cgc	ttc	gct	cac	cac	tca	ccc	gca	ttg	cgc	agc	48
Met	Gln	Leu	Ala	Ser	Arg	Phe	Ala	His	His	Ser	Pro	Ala	Leu	Arg	Ser	
1				5				10					15			
gaa	acc	ccg	ctg	tcc	gat	gac	cag	att	cgc	aga	gtg	gcc	ccg	tcc	atc	96
Glu	Thr	Pro	Leu	Ser	Asp	Asp	Gln	Ile	Arg	Arg	Val	Ala	Pro	Ser	Ile	
			20				25					30				
ttc	gcg	gac	gcc	ccg	cac	gaa	agc	cg	tcc	gag	cg	tac	agc	tac	atc	144
Phe	Ala	Asp	Ala	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ser	Tyr	Ile	
		35				40					45					
ccc	acc	gcc	gcc	gtg	ctg	acc	gaa	ctt	cg	aag	gag	ggg	ttc	cag	ccc	192
Pro	Thr	Ala	Ala	Val	Leu	Thr	Glu	Leu	Arg	Lys	Glu	Gly	Phe	Gln	Pro	
	50			55						60						
ttc	atg	gtg	tgc	cag	acc	cg	gtg	cg	aac	gag	ggg	cg	cg	gag	cac	240
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	Asn	Glu	Gly	Arg	Arg	Glu	His	
	65			70					75					80		
acg	aaa	cac	atg	ctg	cg	ctg	cg	cat	gcc	aac	cag	atc	aac	gcc	cg	288
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	His	Ala	Asn	Gln	Ile	Asn	Ala	Arg	
			85					90					95			
gag	gcc	aac	gaa	atc	ctg	ctg	aac	tgc	cac	gac	ggc	acg	agc	agc		336
Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
			100				105					110				
tat	caa	ttg	ctg	ggt	ggc	atg	ttc	cg	ttt	ggt	tgc	agc	aat	ggc	ctt	384
Tyr	Gln	Leu	Leu	Gly	Gly	Met	Phe	Arg	Phe	Val	Cys	Ser	Asn	Gly	Leu	
	115					120					125					
gtc	tgc	ggc	gac	acc	gtg	ggc	gat	gtg	cg	gtg	ccc	cac	aaa	ggc	gac	432
Val	Cys	Gly	Asp	Thr	Val	Gly	Asp	Val	Arg	Val	Pro	His	Lys	Gly	Asp	
	130					135				140						
gtg	gcc	ggg	cat	gtc	atc	gag	ggc	gct	tat	cag	gtg	ctg	ggt	ggc	ttc	480
Val	Ala	Gly	His	Val	Ile	Glu	Gly	Ala	Tyr	Gln	Val	Leu	Gly	Gly	Phe	
	145			150					155						160	
gag	tat	gcg	cag	gca	tgc	cg	gaa	tcc	atg	cag	gcc	atc	acg	ttg	gat	528
Glu	Tyr	Ala	Gln	Ala	Ser	Arg	Glu	Ser	Met	Gln	Ala	Ile	Thr	Leu	Asp	
			165				170							175		
gcc	ggg	gaa	tcc	gaa	gtg	ttc	gcc	cg	gcc	gcg	ttg	gcc	ctc	aag	tac	576
Ala	Gly	Glu	Ser	Glu	Val	Phe	Ala	Arg	Ala	Ala	Leu	Ala	Leu	Lys	Tyr	
			180				185					190				
gac	gac	ccg	gac	aag	ccc	gcg	ccc	atc	acg	gaa	tgc	caa	atc	ctg	atg	624
Asp	Asp	Pro	Asp	Lys	Pro	Ala	Pro	Ile	Thr	Glu	Ser	Gln	Ile	Leu	Met	
		195				200						205				
ccg	cg	cg	ttc	gag	gac	cg	cg	ccc	gac	ctg	tgg	agc	gtg	ttc	aac	672
Pro	Arg	Arg	Phe	Glu	Asp	Arg	Arg	Pro	Asp	Leu	Trp	Ser	Val	Phe	Asn	
	210					215					220					

## PhoenixTemp32470.tmp.txt

```

cgc acg cag gag aac tta acc aag ggc gga ttg cat ggc cgc gcc gcc      720
Arg Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu His Gly Arg Ala Ala
225 230 235 240
aat ggc cgc agg cag cag acc cgc ccc gtg cag ggc atc gat tcg gac      768
Asn Gly Arg Arg Gln Gln Thr Arg Pro Val Gln Gly Ile Asp Ser Asp
245 250 255
att cgc ctg aat cgc gct ctg tgg ctg ctg gcc gat ggc atg cgc caa      816
Ile Arg Leu Asn Arg Ala Leu Trp Leu Leu Ala Asp Gly Met Arg Gln
260 265 270
ctc aaa gcc tga      828
Leu Lys Ala
275

```

<210> 1310  
 <211> 275  
 <212> PRT  
 <213> Cupriavidus oxalaticus

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<400> 1310
Met Gln Leu Ala Ser Arg Phe Ala His His Ser Pro Ala Leu Arg Ser
1 5 10 15
Glu Thr Pro Leu Ser Asp Asp Gln Ile Arg Arg Val Ala Pro Ser Ile
20 25 30
Phe Ala Asp Ala Pro His Glu Ser Arg Ser Glu Arg Tyr Ser Tyr Ile
35 40 45
Pro Thr Ala Ala Val Leu Thr Glu Leu Arg Lys Glu Gly Phe Gln Pro
50 55 60
Phe Met Val Cys Gln Thr Arg Val Arg Asn Glu Gly Arg Arg Glu His
65 70 75 80
Thr Lys His Met Leu Arg Leu Arg His Ala Asn Gln Ile Asn Ala Arg
85 90 95
Glu Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser
100 105 110
Tyr Gln Leu Leu Gly Gly Met Phe Arg Phe Val Cys Ser Asn Gly Leu
115 120 125
Val Cys Gly Asp Thr Val Gly Asp Val Arg Val Pro His Lys Gly Asp
130 135 140
Val Ala Gly His Val Ile Glu Gly Ala Tyr Gln Val Leu Gly Gly Phe
145 150 155 160
Glu Tyr Ala Gln Ala Ser Arg Glu Ser Met Gln Ala Ile Thr Leu Asp
165 170 175
Ala Gly Glu Ser Glu Val Phe Ala Arg Ala Ala Leu Ala Leu Lys Tyr
180 185 190
Asp Asp Pro Asp Lys Pro Ala Pro Ile Thr Glu Ser Gln Ile Leu Met
195 200 205
Pro Arg Arg Phe Glu Asp Arg Arg Pro Asp Leu Trp Ser Val Phe Asn
210 215 220
Arg Thr Gln Glu Asn Leu Thr Lys Gly Gly Leu His Gly Arg Ala Ala
225 230 235 240
Asn Gly Arg Arg Gln Gln Thr Arg Pro Val Gln Gly Ile Asp Ser Asp
245 250 255
Ile Arg Leu Asn Arg Ala Leu Trp Leu Leu Ala Asp Gly Met Arg Gln
260 265 270
Leu Lys Ala
275

```

<210> 1311  
 <211> 828  
 <212> DNA  
 <213> Pseudomonas aeruginosa

<220>  
 <221> CDS  
 <222> (1)..(828)  
 <223> transl\_table=11

```

<400> 1311
atg caa ctc gcc tct cgt ttc gct ccc cgc tcg ccg ata ctg cgc gct
Met Gln Leu Ala Ser Arg Phe Ala Pro Arg Ser Pro Ile Leu Arg Ala

```

48

## PhoenixTemp32470.tmp.txt

1	gat	cat	ccg	ctg	tcc	gat	gag	cag	att	cgc	gcg	gtg	gca	ccg	tcg	atc	96
	Asp	His	Pro	Leu	Ser	Asp	Glu	Gln	Ile	Arg	Ala	Val	Ala	Pro	Ser	Ile	
				20					25					30			
	ttt	gcg	gac	acc	ccg	cat	gag	agc	cgg	tcc	gag	cgc	tac	agc	tac	atc	144
	Phe	Ala	Asp	Thr	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ser	Tyr	Ile	
			35					40					45				
	ccc	acc	gct	tcg	gta	ctt	gcc	gag	ctg	cgc	gga	gaa	ggg	ttc	cag	cct	192
	Pro	Thr	Ala	Ser	Val	Leu	Ala	Glu	Leu	Arg	Gly	Glu	Gly	Phe	Gln	Pro	
		50					55				60						
	ttc	atg	gtg	tgc	cag	acc	cgc	gtg	cgc	cac	gag	gac	cgc	cgc	gaa	ttc	240
	Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	His	Glu	Asp	Arg	Arg	Glu	Phe	
	65					70					75					80	
	acc	aag	cac	atg	atc	cgc	ctt	cgc	cac	gcc	agc	cag	atc	aat	ggc	aac	288
	Thr	Lys	His	Met	Ile	Arg	Leu	Arg	His	Ala	Ser	Gln	Ile	Asn	Gly	Asn	
					85					90					95		
	gaa	gcg	aat	gaa	atc	atc	ctc	ctc	aac	tcg	cac	gac	ggc	acc	agc	agc	336
	Glu	Ala	Asn	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser	
				100					105					110			
	tac	cag	atg	ctc	gcc	ggc	atg	ttc	agg	ttc	gtc	tgc	cac	aac	ggc	ttg	384
	Tyr	Gln	Met	Leu	Ala	Gly	Met	Phe	Arg	Phe	Val	Cys	His	Asn	Gly	Leu	
			115					120					125				
	gtc	tgc	ggg	aac	acc	ctc	gcc	gat	gtc	cgt	gtg	cat	cac	aaa	ggc	aat	432
	Val	Cys	Gly	Asn	Thr	Leu	Ala	Asp	Val	Arg	Val	His	His	Lys	Gly	Asn	
		130					135					140					
	gtc	gcc	gag	cac	gtg	atc	gaa	ggg	gcc	tac	gag	gtc	ctc	cac	ggc	ttc	480
	Val	Ala	Glu	His	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	His	Gly	Phe	
	145					150				155						160	
	gaa	cag	gtg	cag	gcg	tcg	cgc	gac	gcg	atg	cgc	ctg	atc	acc	ctg	gac	528
	Glu	Gln	Val	Gln	Ala	Ser	Arg	Asp	Ala	Met	Arg	Leu	Ile	Thr	Leu	Asp	
					165					170					175		
	gaa	ggc	gag	caa	gaa	gtc	ttg	gcc	cgc	tcg	gca	ctg	gcg	ctc	aag	tac	576
	Glu	Gly	Glu	Gln	Glu	Val	Leu	Ala	Arg	Ser	Ala	Leu	Ala	Leu	Lys	Tyr	
				180					185					190			
	gac	acg	ccc	aac	cag	gta	gtg	ccg	atc	acc	gag	gca	cag	gtg	ctg	atg	624
	Asp	Thr	Pro	Asn	Gln	Val	Val	Pro	Ile	Thr	Glu	Ala	Gln	Val	Leu	Met	
			195					200					205				
	ccc	cga	cgc	gtc	gat	gac	cgg	ggc	agc	gac	ctg	tgg	tcc	acc	ttc	aat	672
	Pro	Arg	Arg	Val	Asp	Asp	Arg	Gly	Ser	Asp	Leu	Trp	Ser	Thr	Phe	Asn	
		210					215				220						
	cgc	att	cag	gag	aac	ctc	gtc	aaa	ggc	ggg	ttg	aac	gga	cgc	agc	gcc	720
	Arg	Ile	Gln	Glu	Asn	Leu	Val	Lys	Gly	Gly	Leu	Asn	Gly	Arg	Ser	Ala	
	225					230					235					240	
	cat	ggc	cgc	cgc	cag	agt	acc	cgg	ccg	gtt	cag	ggg	atc	gac	cag	aac	768
	His	Gly	Arg	Arg	Gln	Ser	Thr	Arg	Pro	Val	Gln	Gly	Ile	Asp	Gln	Asn	
					245					250					255		
	gtg	cgg	ctc	aac	cgc	gca	ctg	tgg	atg	ctg	gcc	gaa	ggc	atg	caa	cag	816
	Val	Arg	Leu	Asn	Arg	Ala	Leu	Trp	Met	Leu	Ala	Glu	Gly	Met	Gln	Gln	
				260					265					270			
	ctg	aag	gcc	tga													828
	Leu	Lys	Ala														
			275														

&lt;210&gt; 1312

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas aeruginosa

&lt;400&gt; 1312

Met	Gln	Leu	Ala	Ser	Arg	Phe	Ala	Pro	Arg	Ser	Pro	Ile	Leu	Arg	Ala
1				5					10					15	
Asp	His	Pro	Leu	Ser	Asp	Glu	Gln	Ile	Arg	Ala	Val	Ala	Pro	Ser	Ile
			20					25					30		
Phe	Ala	Asp	Thr	Pro	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Ser	Tyr	Ile
		35					40					45			
Pro	Thr	Ala	Ser	Val	Leu	Ala	Glu	Leu	Arg	Gly	Glu	Gly	Phe	Gln	Pro
	50					55					60				
Phe	Met	Val	Cys	Gln	Thr	Arg	Val	Arg	His	Glu	Asp	Arg	Arg	Glu	Phe
65					70					75					80

## PhoenixTemp32470.tmp.txt

Thr Lys His Met Ile Arg Leu Arg His Ala Ser Gln Ile Asn Gly Asn  
 85 90 95  
 Glu Ala Asn Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser  
 100 105 110  
 Tyr Gln Met Leu Ala Gly Met Phe Arg Phe Val Cys His Asn Gly Leu  
 115 120 125  
 Val Cys Gly Asn Thr Leu Ala Asp Val Arg Val His Lys Gly Asn  
 130 135 140  
 Val Ala Glu His Val Ile Glu Gly Ala Tyr Glu Val Leu His Gly Phe  
 145 150 155 160  
 Glu Gln Val Gln Ala Ser Arg Asp Ala Met Arg Leu Ile Thr Leu Asp  
 165 170 175  
 Glu Gly Glu Gln Glu Val Leu Ala Arg Ser Ala Leu Ala Leu Lys Tyr  
 180 185 190  
 Asp Thr Pro Asn Gln Val Val Pro Ile Thr Glu Ala Gln Val Leu Met  
 195 200 205  
 Pro Arg Arg Val Asp Asp Arg Gly Ser Asp Leu Trp Ser Thr Phe Asn  
 210 215 220  
 Arg Ile Gln Glu Asn Leu Val Lys Gly Gly Leu Asn Gly Arg Ser Ala  
 225 230 235 240  
 His Gly Arg Arg Gln Ser Thr Arg Pro Val Gln Gly Ile Asp Gln Asn  
 245 250 255  
 Val Arg Leu Asn Arg Ala Leu Trp Met Leu Ala Glu Gly Met Gln Gln  
 260 265 270  
 Leu Lys Ala  
 275

&lt;210&gt; 1313

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1313

atg acc cgt ctg gct tcg cgc ttt ggc gca gca aac ctt atc cgt cgc	48
Met Thr Arg Leu Ala Ser Arg Phe Gly Ala Ala Asn Leu Ile Arg Arg	
1 5	
gac cgt ccg tta acc cgt gaa gag ctg ttt cgc gta gtg ccc agt gta	96
Asp Arg Pro Leu Thr Arg Glu Glu Leu Phe Arg Val Val Pro Ser Val	
20 25 30	
ttc agt gag gac aaa cac gag tcc cgt agt gag cgt tat acc tat ata	144
Phe Ser Glu Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile	
35 40 45	
ccc acc atc tcc ctg ctc gac agc cta cag cga gaa ggc ttc cag cca	192
Pro Thr Ile Ser Leu Leu Asp Ser Leu Gln Arg Glu Gly Phe Gln Pro	
50 55 60	
ttc ttt gcc tgt cag acc cgc gtg cgt gac ccg ggt cgt cgt gaa cat	240
Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Gly Arg Arg Glu His	
65 70 75 80	
aca aag cat atg ctg cgt ctg cgg cgg gaa ggg cag atc acc ggt aaa	288
Thr Lys His Met Leu Arg Leu Arg Arg Glu Gly Gln Ile Thr Gly Lys	
85 90 95	
cag gtg ccg gaa att att cta ctc aac tct cac gat gga acc agt tcg	336
Gln Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser	
100 105 110	
tat cag atg ttg ccg gga cta ttt cgt gcg gtt tgt cag aac ggg ctc	384
Tyr Gln Met Leu Pro Gly Leu Phe Arg Ala Val Cys Gln Asn Gly Leu	
115 120 125	
gtc tgc ggt gag tcg ttt ggc gag gtg cgg gtg cca cac aag ggg gac	432
Val Cys Gly Glu Ser Phe Gly Glu Val Arg Val Pro His Lys Gly Asp	
130 135 140	
gtg gtg agt cag gtg att gaa ggc gcg tat gag gtg ctg ggg att ttt	480
Val Val Ser Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Ile Phe	
145 150 155 160	
gac cgg gtg gag gag aaa cgg gat gcc atg cag tcg ttg ctg ttg cca	528

## PhoenixTemp32470.tmp.txt

Asp	Arg	Val	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Leu	Leu	Pro		
ccc	ccg	gca	cag	cag	gca	ctg	gca	aaa	gcc	gcc	ctc	aca	tac	cgc	ttt		576
Pro	Pro	Ala	Gln	Gln	Ala	Leu	Ala	Lys	Ala	Ala	Leu	Thr	Tyr	Arg	Phe		
			180					185					190				
ggt	gaa	gac	cac	cag	ccg	gtg	act	gaa	tcg	cag	atc	ctc	tcc	cct	cgc		624
Gly	Glu	Asp	His	Gln	Pro	Val	Thr	Glu	Ser	Gln	Ile	Leu	Ser	Pro	Arg		
		195					200					205					
cgc	tgg	cag	gat	gag	agc	aat	gac	ctg	tgg	acc	acg	tac	cag	cgt	att		672
Arg	Trp	Gln	Asp	Glu	Ser	Asn	Asp	Leu	Trp	Thr	Thr	Tyr	Gln	Arg	Ile		
	210					215				220							
cag	gag	aac	ctg	att	aag	ggc	ggg	ctc	agt	ggc	cgt	aat	gcc	aaa	gga		720
Gln	Glu	Asn	Leu	Ile	Lys	Gly	Gly	Leu	Ser	Gly	Arg	Asn	Ala	Lys	Gly		
	225				230					235					240		
gga	cgg	tca	cat	acc	cgt	gcc	gtt	cgc	ggt	atc	gac	ggg	gac	gtg	aaa		768
Gly	Arg	Ser	His	Thr	Arg	Ala	Val	Arg	Gly	Ile	Asp	Gly	Asp	Val	Lys		
			245					250						255			
ctt	aac	cgg	gca	ctg	tgg	gtg	atg	gcg	gaa	gcc	ctg	ctc	acg	caa	ctg		816
Leu	Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Ala	Leu	Leu	Thr	Gln	Leu		
			260					265					270				
cag	tga																822
Gln																	

&lt;210&gt; 1314

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 1314

Met	Thr	Arg	Leu	Ala	Ser	Arg	Phe	Gly	Ala	Ala	Asn	Leu	Ile	Arg	Arg		
1				5					10					15			
Asp	Arg	Pro	Leu	Thr	Arg	Glu	Glu	Leu	Phe	Arg	Val	Val	Pro	Ser	Val		
			20					25					30				
Phe	Ser	Glu	Asp	Lys	His	Glu	Ser	Arg	Ser	Glu	Arg	Tyr	Thr	Tyr	Ile		
		35					40					45					
Pro	Thr	Ile	Ser	Leu	Leu	Asp	Ser	Leu	Gln	Arg	Glu	Gly	Phe	Gln	Pro		
		50				55					60						
Phe	Phe	Ala	Cys	Gln	Thr	Arg	Val	Arg	Asp	Pro	Gly	Arg	Arg	Glu	His		
65				70					75					80			
Thr	Lys	His	Met	Leu	Arg	Leu	Arg	Arg	Glu	Gly	Gln	Ile	Thr	Gly	Lys		
			85						90					95			
Gln	Val	Pro	Glu	Ile	Ile	Leu	Leu	Asn	Ser	His	Asp	Gly	Thr	Ser	Ser		
		100						105					110				
Tyr	Gln	Met	Leu	Pro	Gly	Leu	Phe	Arg	Ala	Val	Cys	Gln	Asn	Gly	Leu		
		115					120					125					
Val	Cys	Gly	Glu	Ser	Phe	Gly	Glu	Val	Arg	Val	Pro	His	Lys	Gly	Asp		
	130					135					140						
Val	Val	Ser	Gln	Val	Ile	Glu	Gly	Ala	Tyr	Glu	Val	Leu	Gly	Ile	Phe		
145					150				155					160			
Asp	Arg	Val	Glu	Glu	Lys	Arg	Asp	Ala	Met	Gln	Ser	Leu	Leu	Leu	Pro		
			165						170					175			
Pro	Pro	Ala	Gln	Gln	Ala	Leu	Ala	Lys	Ala	Ala	Leu	Thr	Tyr	Arg	Phe		
		180						185					190				
Gly	Glu	Asp	His	Gln	Pro	Val	Thr	Glu	Ser	Gln	Ile	Leu	Ser	Pro	Arg		
		195					200					205					
Arg	Trp	Gln	Asp	Glu	Ser	Asn	Asp	Leu	Trp	Thr	Thr	Tyr	Gln	Arg	Ile		
	210					215						220					
Gln	Glu	Asn	Leu	Ile	Lys	Gly	Gly	Leu	Ser	Gly	Arg	Asn	Ala	Lys	Gly		
	225				230					235				240			
Gly	Arg	Ser	His	Thr	Arg	Ala	Val	Arg	Gly	Ile	Asp	Gly	Asp	Val	Lys		
			245						250					255			
Leu	Asn	Arg	Ala	Leu	Trp	Val	Met	Ala	Glu	Ala	Leu	Leu	Thr	Gln	Leu		
			260					265					270				

&lt;210&gt; 1315

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1315

atg acc cgt ctg gct tcg cgc ttt ggc gct gca aat ctt att cgc cgt	48
Met Thr Arg Leu Ala Ser Arg Phe Gly Ala Ala Asn Leu Ile Arg Arg	
1 5 10 15	
gac cgt ccg tta acc cgt gaa gag tta cgc gtg gtg ccc agc gta	96
Asp Arg Pro Leu Thr Arg Glu Glu Leu Phe Arg Val Val Pro Ser Val	
20 25 30	
ttc agt gag gat aaa cac gaa tcc cgc agt gaa cgc tac acg tat ata	144
Phe Ser Glu Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile	
35 40 45	
ccc aca att tcc ctg ctg gac agc ctg cag cgg gaa ggc ttc cag cca	192
Pro Thr Ile Ser Leu Leu Asp Ser Leu Gln Arg Glu Gly Phe Gln Pro	
50 55 60	
ttc ttt gcc tgt cag aca cgg gta cgt gac ccc cgt cgt cgt gag cat	240
Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Arg Arg Arg Glu His	
65 70 75 80	
act aag cat atg ctg cgc cta cgt cgg gag ggg caa att acc ggt aaa	288
Thr Lys His Met Leu Arg Leu Arg Arg Glu Gly Gln Ile Thr Gly Lys	
85 90 95	
cag gtt ccg gaa att atc ctg ctt aac tct cac gat ggc acc agt tcg	336
Gln Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser	
100 105 110	
tac cag atg ctg ccg ggc atg ttc agg gcg gtg tgc cag aac ggt ctg	384
Tyr Gln Met Leu Pro Gly Met Phe Arg Ala Val Cys Gln Asn Gly Leu	
115 120 125	
gtc tgc ggc gag tcg ttt ggc gag gtg cgg gtg cca cac aag ggg gat	432
Val Cys Gly Glu Ser Phe Gly Glu Val Arg Val Pro His Lys Gly Asp	
130 135 140	
gtg gtg agt cag gtt att gag ggg gcg tat gaa gtg ctg ggg att ttt	480
Val Val Ser Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Ile Phe	
145 150 155 160	
gag cgt gtg gaa gaa aag agg gat gcc atg cag tcg ttg ctt tta ccg	528
Glu Arg Val Glu Lys Arg Asp Ala Met Gln Ser Leu Leu Leu Pro	
165 170 175	
cca cct gtg cag cag gca ctg gca aaa gca gcg ctt acg tat cgc ttt	576
Pro Pro Val Gln Gln Ala Leu Ala Lys Ala Ala Leu Thr Tyr Arg Phe	
180 185 190	
ggg gag gac cac cag ccg gtt act gaa tcg cag ata ctc tcc cca cgc	624
Gly Glu Asp His Gln Pro Val Thr Glu Ser Gln Ile Leu Ser Pro Arg	
195 200 205	
cgc tgg cag gat gag agc aat gac ctt tgg acc acc tat cag cgg att	672
Arg Trp Gln Asp Glu Ser Asn Asp Leu Trp Thr Thr Tyr Gln Arg Ile	
210 215 220	
caa gaa aac ctg att aag ggc gga ctc agt ggg cgt aat gct aaa ggc	720
Gln Glu Asn Leu Ile Lys Gly Gly Leu Ser Gly Arg Asn Ala Lys Gly	
225 230 235 240	
gga cga act cat act cgt gcc gtg cgt ggc att gac ggg gat gtg aag	768
Gly Arg Thr His Thr Arg Ala Val Arg Gly Ile Asp Gly Asp Val Lys	
245 250 255	
ctt aac cgt gcg ctg tgg gtg atg gca gaa aca ctg ctc acg caa ctg	816
Leu Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Thr Gln Leu	
260 265 270	
cag tag	822
Gln	

&lt;210&gt; 1316

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1316

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Met Thr Arg Leu Ala Ser Arg Phe Gly Ala Ala Asn Leu Ile Arg Arg
1      5      10      15
Asp Arg Pro Leu Thr Arg Glu Glu Leu Phe Arg Val Val Pro Ser Val
20      25      30
Phe Ser Glu Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile
35      40      45
Pro Thr Ile Ser Leu Leu Asp Ser Leu Gln Arg Glu Gly Phe Gln Pro
50      55      60
Phe Phe Ala Cys Gln Thr Arg Val Arg Asp Pro Arg Arg Arg Glu His
65      70      75      80
Thr Lys His Met Leu Arg Leu Arg Arg Glu Gly Gln Ile Thr Gly Lys
85      90      95
Gln Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Thr Ser Ser
100     105     110
Tyr Gln Met Leu Pro Gly Met Phe Arg Ala Val Cys Gln Asn Gly Leu
115     120     125
Val Cys Gly Glu Ser Phe Gly Glu Val Arg Val Pro His Lys Gly Asp
130     135     140
Val Val Ser Gln Val Ile Glu Gly Ala Tyr Glu Val Leu Gly Ile Phe
145     150     155     160
Glu Arg Val Glu Glu Lys Arg Asp Ala Met Gln Ser Leu Leu Leu Pro
165     170     175
Pro Pro Val Gln Ala Leu Ala Lys Ala Ala Leu Thr Tyr Arg Phe
180     185     190
Gly Glu Asp His Gln Pro Val Thr Glu Ser Gln Ile Leu Ser Pro Arg
195     200     205
Arg Trp Gln Asp Glu Ser Asn Asp Leu Trp Thr Thr Tyr Gln Arg Ile
210     215     220
Gln Glu Asn Leu Ile Lys Gly Gly Leu Ser Gly Arg Asn Ala Lys Gly
225     230     235     240
Gly Arg Thr His Thr Arg Ala Val Arg Gly Ile Asp Gly Asp Val Lys
245     250     255
Leu Asn Arg Ala Leu Trp Val Met Ala Glu Thr Leu Leu Thr Gln Leu
260     265     270
Gln

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&lt;210&gt; 1317

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1317

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atg cga tta gct tcc cgt ttt ggt cgg tat aat tcc atc cac cgt gaa      48
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1      5      10      15
cgt cct tta acg gat gat gaa tta atg cag ttc gtg cct tcg gta ttt      96
Arg Pro Leu Thr Asp Asp Glu Leu Met Gln Phe Val Pro Ser Val Phe
20      25      30
tcc ggt gat aaa cat gag tcc cgg agt gaa cgt tat acg tat att cca      144
Ser Gly Asp Lys His Glu Ser Arg Ser Glu Arg Tyr Thr Tyr Ile Pro
35      40      45
aca atc aat atc atc aat aag tta cgt gat gaa ggt ttc cag cca ttc      192
Thr Ile Asn Ile Ile Asn Lys Leu Arg Asp Glu Gly Phe Gln Pro Phe
50      55      60
ttt gcc tgt cag agt cgg gtt cgt gat ttg gga cgt cgc gaa tac agt      240
Phe Ala Cys Gln Ser Arg Val Arg Asp Leu Gly Arg Arg Glu Tyr Ser
65      70      75      80
aaa cat atg tta cgt ctt cgc agg gaa ggg cat att aac ggg cag gaa      288
Lys His Met Leu Arg Leu Arg Arg Glu Gly His Ile Asn Gly Gln Glu
85      90      95
gtt cct gaa att atc ctg ctt aat tca cat gat ggt tca tcc agt tat      336
Val Pro Glu Ile Ile Leu Leu Asn Ser His Asp Gly Ser Ser Ser Tyr

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## PhoenixTemp32470.tmp.txt

[illegible]

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<210> 1318
<211> 273
<212> PRT
<213> Escherichia coli
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<400> 1318

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Arg	Pro	Leu	Thr 20	Asp	Asp	Glu	Leu	Met 25	Gln	Phe	Val	Pro	Ser 30	Val	Phe
Ser	Gly	Asp 35	Lys	His	Glu	Ser	Arg 40	Ser	Glu	Arg	Tyr	Thr 45	Tyr	Ile	Pro
Thr	Ile 50	Asn	Ile	Ile	Asn	Lys 55	Leu	Arg	Asp	Glu	Gly 60	Phe	Gln	Pro	Phe
Phe 65	Ala	Cys	Gln	Ser	Arg 70	Val	Arg	Asp	Leu	Gly 75	Arg	Arg	Glu	Tyr	Ser 80
Lys	His	Met	Leu	Arg 85	Leu	Arg	Arg	Glu	Gly 90	His	Ile	Asn	Gly	Gln 95	Glu
Val	Pro	Glu	Ile 100	Ile	Leu	Leu	Asn	Ser 105	His	Asp	Gly	Ser	Ser 110	Ser	Tyr
Gln	Met	Ile 115	Pro	Gly	Ile	Phe	Arg 120	Phe	Val	Cys	Thr	Asn 125	Gly	Leu	Val
Cys	Gly 130	Asn	Asn	Phe	Gly	Glu 135	Ile	Arg	Val	Pro	His 140	Lys	Gly	Asp	Ile
Val 145	Gly	Gln	Val	Ile	Glu 150	Gly	Ala	Tyr	Glu	Val 155	Leu	Gly	Val	Phe	Asp 160
Lys	Val	Thr	Asp	Asn 165	Met	Glu	Ala	Met	Lys 170	Glu	Ile	His	Leu	Asn 175	Ser
Asp	Glu	Gln	His 180	Leu	Phe	Gly	Arg	Ala 185	Ala	Leu	Met	Val	Arg 190	Tyr	Glu
Asp	Glu	Asn 195	Lys	Thr	Pro	Val	Thr 200	Pro	Glu	Gln	Ile	Ile 205	Thr	Pro	Arg
Arg	Trp 210	Glu	Asp	Lys	Gln	Asn 215	Asp	Leu	Trp	Thr	Thr 220	Trp	Gln	Arg	Val

Gln Glu Asn Met Ile Lys Gly Gly Leu Ser Gly Arg Ser Ala Ser Gly  
 225 230 235 240  
 Lys Asn Thr Arg Thr Arg Ala Ile Thr Gly Ile Asp Gly Asp Ile Arg  
 245 250 255  
 Ile Asn Lys Ala Leu Trp Val Ile Ala Glu Gln Phe Arg Lys Trp Lys  
 260 265 270  
 Ser

<210> 1319  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 1319  
 atgaggagtc tgcttatgac ccg

23

<210> 1320  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 1320  
 ttactgcagt tgcgtgagca ggg

23

<210> 1321  
 <211> 276  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> consensus sequence

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 <223> Xaa in position 2 is any amino acid

<220>  
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 <222> (6)..(6)  
 <223> Xaa in position 6 is any amino acid

<220>  
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 <222> (8)..(13)  
 <223> Xaa in position 8 to 13 is any amino acid

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 <223> Xaa in position 14 is any or no amino acid

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<222> (39)..(39)  
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<222> (43)..(43)  
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<223> Xaa in position 58 to 59 is any amino acid

<220>  
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<222> (63)..(63)  
<223> Xaa in position 63 is any amino acid

<220>  
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<222> (66)..(67)  
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<223> Xaa in position 70 is any amino acid

<220>  
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<222> (74)..(77)  
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<220>  
<221> Variant  
<222> (79)..(80)  
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<220>  
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<222> (85)..(85)

<223> Xaa in position 85 is any amino acid

<220>  
<221> Variant  
<222> (89)..(92)  
<223> Xaa in position 89 to 92 is any amino acid

<220>  
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<222> (94)..(94)  
<223> Xaa in position 94 is any amino acid

<220>  
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<220>  
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<222> (111)..(111)  
<223> Xaa in position 111 is any amino acid

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<222> (117)..(118)  
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<222> (126)..(126)  
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<222> (129)..(129)  
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<220>  
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<222> (133)..(137)  
<223> Xaa in position 133 to 137 is any amino acid

<220>  
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<222> (138)..(138)  
<223> Xaa in position 138 is any or no amino acid

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<222> (143)..(143)  
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<222> (145)..(149)  
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<222> (150)..(151)  
<223> Xaa in position 150 to 151 is any or no amino acid

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<222> (160)..(162)  
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<222> (164)..(172)  
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<222> (174)..(177)  
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<222> (179)..(186)  
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<220>  
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<223> Xaa in position 192 to 194 is any amino acid

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<223> Xaa in position 201 to 204 is any or no amino acid

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<222> (248)..(251)
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<222> (258)..(261)
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<220>
<221> Variant
<222> (264)..(267)
<223> Xaa in position 264 to 267 is any amino acid

<220>
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<222> (274)..(275)
<223> Xaa in position 274 to 275 is any amino acid

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Xaa Xaa Pro Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro Ser Xaa
20      25      30
Phe Xaa Xaa Xaa Xaa His Xaa Ser Arg Ser Xaa Arg Tyr Xaa Tyr Ile
35      40      45
Pro Thr Xaa Xaa Xaa Leu Xaa Xaa Leu Xaa Xaa Glu Gly Phe Xaa Pro
50      55      60
Phe Xaa Xaa Cys Gln Xaa Arg Val Arg Xaa Xaa Xaa Xaa Arg Xaa Xaa
65      70      75      80
Thr Lys His Met Xaa Arg Leu Arg Xaa Xaa Xaa Xaa Ile Xaa Gly Xaa
85      90      95
Xaa Xaa Xaa Xaa Glu Ile Ile Leu Leu Asn Ser His Asp Gly Xaa Ser
100     105     110
Ser Tyr Gln Met Xaa Xaa Gly Xaa Phe Arg Phe Val Cys Xaa Asn Gly
115     120     125
Xaa Val Cys Gly Xaa Xaa Xaa Xaa Xaa Arg Val Val Pro His Xaa Gly
130     135     140
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val Ile Glu Gly Ala Tyr Glu Val Xaa
145     150     155     160
Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Met Xaa Xaa Xaa
165     170     175
Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Ala Leu Xaa
180     185     190

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PhoenixTemp32470.tmp.txt

Xaa	Xaa	Tyr	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Thr	Xaa
		195					200				205			
Xaa	Xaa	Xaa	Leu	Xaa	Pro	Arg	Arg	Xaa	Xaa	Asp	Xaa	Xaa	Asp	Leu
	210					215					220			
Trp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Gln	Glu	Asn	Xaa	Xaa	Lys	Gly	Xaa
225					230					235				240
Xaa	Gly	Arg	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Thr
			245					250					255	
Arg	Xaa	Xaa	Xaa	Xaa	Ile	Asp	Xaa	Xaa	Xaa	Xaa	Leu	Asn	Arg	Ala
			260				265					270		Leu
Trp	Xaa	Xaa	Ala											
		275												

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 <212> PRT  
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<220>  
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 <223> Xaa in position 8 is Ser or Thr

<220>  
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 <222> (14)..(14)  
 <223> Xaa in position 14 is Ile, Leu or Met

<220>  
 <221> Variant  
 <222> (15)..(15)  
 <223> Xaa in position 15 is Ala, Gly or Pro

<220>  
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 <223> Xaa in position 17 is any amino acid

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<220>  
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 <223> Xaa in position 23 is any amino acid

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 <223> Xaa in position 26 is any amino acid

<220>  
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 <223> Xaa in position 28 is any amino acid

<220>  
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<222> (30)..(30)

<223> Xaa in position 30 is Asp, Glu, Asn, Gln or Thr

<400> 1322

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<220>

<221> Variant

<222> (12)..(12)

<223> Xaa in position 12 is any amino acid

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<223> Xaa in position 14 is any amino acid

<220>

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<222> (19)..(20)

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<223> Xaa in position 21 is Leu or Val

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<223> Xaa in position 26 is Gln or Arg

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<223> Xaa in position 48 is Phe, His or Tyr

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 Pro Thr Xaa Xaa Xaa Leu Xaa Xaa Leu Xaa Xaa Glu Gly Phe Xaa Pro  
 20 25 30  
 Phe Xaa Xaa Xaa Gln Xaa Arg Val Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Thr Lys His Xaa Xaa Arg Xaa Arg  
 50 55

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 <222> (6)..(6)  
 <223> Xaa in position 6 is Asp or Gln

<220>  
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 <223> Xaa in position 7 is Ile, Leu or Val

<220>  
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 <222> (8)..(8)  
 <223> Xaa in position 8 is Ile or Leu

<220>  
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 Xaa Xaa Asp Xaa Trp Xaa Xaa Xaa Xaa Xaa Xaa Gln Glu Asn Xaa Xaa  
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 Lys Gly Gly Xaa Xaa Gly Arg Xaa  
 35 40

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<223> Xaa in position 8 is Asp or Asn

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1      5      10      15
Xaa Xaa Xaa Val Xaa Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa
Page 776

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PhoenixTemp32470.tmp.txt

20 25 30  
 Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Xaa Xaa Ala Leu Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55

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<220>  
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 Gln Ile Ala Arg Gly Glu Leu Lys Pro Gly Asp Ala Leu Pro Thr Glu  
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 Ser Ala Leu Gln Thr Glu Phe Gly Val Ser Arg Val Thr Val Arg Gln  
 35 40 45  
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 Ala Leu Arg Gln Leu Val Glu Gln Gln Ile Leu Glu Ser Ile Gln Gly  
 50 55 60  
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 Ser Gly Thr Tyr Val Lys Glu Glu Arg Val Asn Tyr Asp Ile Phe Gln  
 65 70 75 80  
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 Leu Thr Ser Phe Asp Glu Lys Leu Ser Asp Arg His Val Asp Thr His  
 85 90 95  
 agt gaa gtt ctg ata ttc gaa gtg att ccg gct gac gat ttt ctt cag 336  
 Ser Glu Val Leu Ile Phe Glu Val Ile Pro Ala Asp Asp Phe Leu Gln  
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 Gln Gln Leu Gln Ile Thr Pro Gln Asp Arg Val Trp His Val Lys Arg  
 115 120 125  
 gtg cgc tat cgc aag caa aag cca atg gcg ctg gaa gaa acc tgg atg 432  
 Val Arg Tyr Arg Lys Gln Lys Pro Met Ala Leu Glu Glu Thr Trp Met  
 130 135 140  
 ccg ctt gcg ttg ttc ccg gat ctc acc tgg cag gtc atg gaa aat tcg 480  
 Pro Leu Ala Leu Phe Pro Asp Leu Thr Trp Gln Val Met Glu Asn Ser  
 145 150 155 160  
 aaa tat cac ttt atc gaa gtg aag aaa atg gtt atc gat cgt agc 528  
 Lys Tyr His Phe Ile Glu Glu Val Lys Lys Met Val Ile Asp Arg Ser

## PhoenixTemp32470.tmp.txt

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ctt	aat	atc	agc	180	cag	aca	aag	ccg	185	att	ctt	gaa	aaa	gta	tcg	576
Leu	Asn	Ile	Ser	Ser	Gln	Thr	Lys	Pro	Ile	Leu	Glu	Lys	Val	Ser	Arg	624
tat	tta	ggt	gat	195	ggg	cgg	gtg	ttt	200	gaa	tat	agc	cgc	aac	gct	624
Tyr	Leu	Val	Asp	Asp	Gly	Arg	Val	Phe	Glu	Tyr	Ser	Arg	Asn	Ala	Phe	672
acc	gat	gac	tat	210	aaa	ttt	acc	ctg	215	ata	gcg	cag	cga	aaa	tca	720
Thr	Asp	Asp	Tyr	Lys	Phe	Thr	Leu	Ile	Ala	Gln	Arg	Lys	Ser	Ser	Arg	720
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 35 40 45  
 Ala Leu Arg Gln Leu Val Glu Gln Gln Ile Leu Glu Ser Ile Gln Gly  
 50 55 60  
 Ser Gly Thr Tyr Val Lys Glu Glu Arg Val Asn Tyr Asp Ile Phe Gln  
 65 70 75 80  
 Leu Thr Ser Phe Asp Glu Lys Leu Ser Asp Arg His Val Asp Thr His  
 85 90 95  
 Ser Glu Val Leu Ile Phe Glu Val Ile Pro Ala Asp Asp Phe Leu Gln  
 100 105 110  
 Gln Gln Leu Gln Ile Thr Pro Gln Asp Arg Val Trp His Val Lys Arg  
 115 120 125  
 Val Arg Tyr Arg Lys Gln Lys Pro Met Ala Leu Glu Thr Trp Met  
 130 135 140  
 Pro Leu Ala Leu Phe Pro Asp Leu Thr Trp Gln Val Met Glu Asn Ser  
 145 150 155 160  
 Lys Tyr His Phe Ile Glu Glu Val Lys Lys Met Val Ile Asp Arg Ser  
 165 170 175  
 Glu Gln Glu Ile Ile Pro Leu Met Pro Thr Glu Glu Met Ser Arg Leu  
 180 185 190  
 Leu Asn Ile Ser Gln Thr Lys Pro Ile Leu Glu Lys Val Ser Arg Gly  
 195 200 205  
 Tyr Leu Val Asp Gly Arg Val Phe Glu Tyr Ser Arg Asn Ala Phe Asn  
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 Thr Asp Asp Tyr Lys Phe Thr Leu Ile Ala Gln Arg Lys Ser Ser Arg  
 225 230 235 240

<210> 1329  
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gaa	att	aaa	aag	aaa	atg	gaa	gat	ggg	gtc	tgg	aaa	gtt	ggc	act	tct	96
Glu	Ile	Lys	Lys	Lys	Met	Glu	Asp	Gly	Val	Trp	Lys	Val	Gly	Thr	Ser	

## PhoenixTemp32470.tmp.txt

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Ile	Pro	Ala	Glu	Arg	Gln	Leu	Ala	Glu	Met	Phe	His	Val	Ser	Arg	Met		
		35					40					45					
aca	gta	aga	caa	gcc	att	caa	gga	cta	gtc	gat	gat	aat	att	ttg	caa		192
Thr	Val	Arg	Gln	Ala	Ile	Gln	Gly	Leu	Val	Asp	Asp	Asn	Ile	Leu	Gln		
	50					55					60						
aga	cgc	ggt	ggc	gct	ggg	act	ttt	att	gcg	gaa	aag	aaa	tta	acc	gaa		240
Arg	Arg	Val	Gly	Ala	Gly	Thr	Phe	Ile	Ala	Glu	Lys	Lys	Leu	Thr	Glu		
	65				70					75					80		
cga	cta	gaa	gct	gtc	aca	agt	ttt	acg	aat	ttg	atg	ttg	caa	gaa	ggg		288
Arg	Leu	Glu	Ala	Val	Thr	Ser	Phe	Thr	Asn	Leu	Met	Leu	Gln	Glu	Gly		
			85						90					95			
aaa	ggt	cct	tca	acg	cgt	atc	gta	tcg	tat	ggc	att	cgt	ccg	gca	agt		336
Lys	Val	Pro	Ser	Thr	Arg	Ile	Val	Ser	Tyr	Gly	Ile	Arg	Pro	Ala	Ser		
		100						105					110				
acg	caa	gaa	caa	gaa	gcg	tta	caa	cta	cca	gaa	aac	agc	aat	gta	atg		384
Thr	Gln	Glu	Gln	Glu	Ala	Leu	Gln	Leu	Pro	Glu	Asn	Ser	Asn	Val	Met		
		115					120						125				
aaa	att	gaa	cgg	att	cgt	tac	ggc	gac	cgt	gta	cca	att	ctt	tat	gaa		432
Lys	Ile	Glu	Arg	Ile	Arg	Tyr	Gly	Asp	Arg	Val	Pro	Ile	Leu	Tyr	Glu		
	130					135					140						
ggt	gcc	gcc	att	cca	gaa	aaa	att	gct	tca	ctg	ctt	aca	aag	gaa	gac		480
Val	Ala	Ala	Ile	Pro	Glu	Lys	Ile	Ala	Ser	Leu	Leu	Thr	Lys	Glu	Asp		
					150					155					160		
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Ile	Met	Asp	Ser	Leu	Tyr	Lys	Ala	Ile	Glu	Leu	Lys	Leu	Gly	Gln	Lys		
			165						170					175			
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Ile	Gly	Glu	Ala	Glu	Gln	Thr	Met	Glu	Ala	Ser	Leu	Val	Ser	Glu	Lys		
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Ile	Ala	Pro	Tyr	Leu	Asp	Val	Lys	Leu	Gly	Ser	Pro	Val	Met	Lys	Leu		
		195					200					205					
cgg	cag	att	aca	act	tta	gaa	gat	ggt	cga	cca	ttt	gaa	ttt	aca	cgt		672
Arg	Gln	Ile	Thr	Thr	Leu	Glu	Asp	Gly	Arg	Pro	Phe	Glu	Phe	Thr	Arg		
	210					215					220						
tct	caa	tat	gta	ggt	agt	aga	ttt	caa	ttt	gta	gct	agg	att	aaa	caa		720
Ser	Gln	Tyr	Val	Gly	Ser	Arg	Phe	Gln	Phe	Val	Ala	Arg	Ile	Lys	Gln		
	225				230					235					240		
taa																	723

&lt;210&gt; 1330

&lt;211&gt; 240

&lt;212&gt; PRT

&lt;213&gt; Listeria innocua

&lt;400&gt; 1330

Met	Ile	Asp	Lys	Gln	Ser	Gly	Ile	Pro	Ile	Tyr	Ile	Gln	Ile	Gln	Ser	
1				5				10					15			
Glu	Ile	Lys	Lys	Lys	Met	Glu	Asp	Gly	Val	Trp	Lys	Val	Gly	Thr	Ser	
			20					25				30				
Ile	Pro	Ala	Glu	Arg	Gln	Leu	Ala	Glu	Met	Phe	His	Val	Ser	Arg	Met	
		35					40					45				
Thr	Val	Arg	Gln	Ala	Ile	Gln	Gly	Leu	Val	Asp	Asp	Asn	Ile	Leu	Gln	
	50					55				60						
Arg	Arg	Val	Gly	Ala	Gly	Thr	Phe	Ile	Ala	Glu	Lys	Lys	Leu	Thr	Glu	
	65				70					75				80		
Arg	Leu	Glu	Ala	Val	Thr	Ser	Phe	Thr	Asn	Leu	Met	Leu	Gln	Glu	Gly	
				85					90				95			
Lys	Val	Pro	Ser	Thr	Arg	Ile	Val	Ser	Tyr	Gly	Ile	Arg	Pro	Ala	Ser	
			100					105					110			
Thr	Gln	Glu	Gln	Glu	Ala	Leu	Gln	Leu	Pro	Glu	Asn	Ser	Asn	Val	Met	
		115					120					125				
Lys	Ile	Glu	Arg	Ile	Arg	Tyr	Gly	Asp	Arg	Val	Pro	Ile	Leu	Tyr	Glu	
	130					135					140					
Val	Ala	Ala	Ile	Pro	Glu	Lys	Ile	Ala	Ser	Leu	Leu	Thr	Lys	Glu	Asp	

## PhoenixTemp32470.tmp.txt

145                      150                      155                      160  
 Ile Met Asp Ser Leu Tyr Lys Ala Ile Glu Leu Lys Leu Gly Gln Lys  
                                  165                      170                      175  
 Ile Gly Glu Ala Glu Gln Thr Met Glu Ala Ser Leu Val Ser Glu Lys  
                                  180                      185                      190  
 Ile Ala Pro Tyr Leu Asp Val Lys Leu Gly Ser Pro Val Met Lys Leu  
                                  195                      200                      205  
 Arg Gln Ile Thr Thr Leu Glu Asp Gly Arg Pro Phe Glu Phe Thr Arg  
                                  210                      215                      220  
 Ser Gln Tyr Val Gly Ser Arg Phe Gln Phe Val Ala Arg Ile Lys Gln  
 225                      230                      235                      240

&lt;210&gt; 1331

&lt;211&gt; 798

&lt;212&gt; DNA

&lt;213&gt; Yersinia pestis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(798)

&lt;400&gt; 1331

atg	ccg	ggt	gga	atg	ggt	gga	aag	ggt	gtg	gac	aga	aaa	ttc	atc	gag	48
Met	Pro	Gly	Gly	Met	Gly	Gly	Lys	Gly	Val	Asp	Arg	Lys	Phe	Ile	Glu	
1				5				10					15			
aca	ctg	aaa	aca	tac	tgt	gat	gat	gct	aac	cgg	gga	ggg	ggt	ccg	ctc	96
Thr	Leu	Lys	Thr	Tyr	Cys	Asp	Asp	Ala	Asn	Arg	Gly	Gly	Gly	Pro	Leu	
			20					25					30			
tac	cag	cgt	ctg	gag	aaa	ggt	ttc	cgc	gat	ctg	atc	acc	cgt	ggt	gag	144
Tyr	Gln		Leu	Glu	Lys	Gly	Phe	Arg	Asp	Leu	Ile	Thr	Arg	Gly	Glu	
			35				40					45				
cta	aaa	gcc	gga	tac	gcg	att	ccc	agc	gaa	cgc	gaa	ctt	tcg	gaa	cgc	192
Leu	Lys	Ala	Gly	Tyr	Ala	Ile	Pro	Ser	Glu	Arg	Glu	Leu	Ser	Glu	Arg	
			50			55					60					
ttg	aat	ctg	tcc	aga	gtg	aca	gtc	cgg	cgt	gcg	tta	agt	gaa	ctg	gct	240
Leu	Asn	Leu	Ser	Arg	Val	Thr	Val	Arg	Arg	Ala	Leu	Ser	Glu	Leu	Ala	
					70			75							80	
aac	gcg	cag	gtt	atc	gtg	cag	cgt	cgt	gga	gcg	aga	agt	act	gtg	gcg	288
Asn	Ala	Gln	Val	Ile	Val	Gln	Arg	Arg	Gly	Ala	Arg	Ser	Thr	Val	Ala	
				85				90					95			
gga	agg	gtt	gaa	aag	ccg	ctg	tct	tcg	ctg	acc	agc	ttt	agt	gag	gat	336
Gly	Arg	Val	Glu	Lys	Pro	Leu	Ser	Ser	Leu	Thr	Ser	Phe	Ser	Glu	Asp	
			100					105					110			
atg	att	tca	cgt	ggc	tat	gag	cca	ggc	gca	cgc	tgg	cta	cag	aaa	gag	384
Met	Ile	Ser	Arg	Gly	Tyr	Glu	Pro	Gly	Ala	Arg	Trp	Leu	Gln	Lys	Glu	
			115				120					125				
ctt	act	cac	gct	tct	ccc	tcg	gaa	att	att	gca	ctg	aat	ctg	tct	cca	432
Leu	Thr	His	Ala	Ser	Pro	Ser	Glu	Ile	Ile	Ala	Leu	Asn	Leu	Ser	Pro	
			130			135					140					
ggt	gct	ctg	gtg	tgg	cgt	ctc	aag	cgc	ctg	cgt	acc	gta	gat	gaa	cac	480
Gly	Ala	Leu	Val	Trp	Arg	Leu	Lys	Arg	Leu	Arg	Thr	Val	Asp	Glu	His	
					145			150							160	
ccg	atg	gca	gtg	gag	atc	gcc	gtg	gtg	ccg	cag	atg	ttt	att	cca	gag	528
Pro	Met	Ala	Val	Glu	Ile	Ala	Val	Val	Pro	Gln	Met	Phe	Ile	Pro	Glu	
				165				170						175		
atg	gat	gaa	ctg	agg	gat	tcg	ctt	tat	tca	gta	ctg	cag	ttg	cac	ggg	576
Met	Asp	Glu	Leu	Arg	Asp	Ser	Leu	Tyr	Ser	Val	Leu	Gln	Leu	His	Gly	
			180				185						190			
ttt	atg	ccc	gcc	cgc	gcg	tta	cag	cgt	att	cga	gca	gaa	ccg	ctg	agt	624
Phe	Met	Pro	Ala	Arg	Ala	Leu	Gln	Arg	Ile	Arg	Ala	Glu	Pro	Leu	Ser	
			195				200					205				
cgc	gat	cac	agc	caa	ctg	tta	gat	atg	cct	gct	cac	agc	ccg	gcg	ctg	672
Arg	Asp	His	Ser	Gln	Leu	Asp	Met	Pro	Ala	His	Ser	Pro	Pro	Ala	Leu	
			210			215				220						
cat	gtt	gag	cgc	cat	tgc	tat	ctg	gaa	gat	ggc	cgc	ccg	att	gaa	tac	720
His	Val	Glu	Arg	His	Cys	Tyr	Leu	Glu	Asp	Gly	Arg	Pro	Ile	Glu	Tyr	
					230					235					240	
acc	cat	acc	tgg	tat	cgg	ggc	gac	agt	tac	gat	ttt	ctg	gtt	gaa	ctt	768
Thr	His	Thr	Trp	Tyr	Arg	Gly	Asp	Ser	Tyr	Asp	Phe	Leu	Val	Glu	Leu	

245  
 cag cgc gac atc acc ccc ggt ctg tca tga 255  
 Gln Arg Asp Ile Thr Pro Gly Leu Ser  
 260 265

798

<210> 1332  
 <211> 265  
 <212> PRT  
 <213> Yersinia pestis

<400> 1332  
 Met Pro Gly Gly Met Gly Gly Lys Gly Val Asp Arg Lys Phe Ile Glu  
 1 5 10 15  
 Thr Leu Lys Thr Tyr Cys Asp Asp Ala Asn Arg Gly Gly Pro Leu  
 20 25 30  
 Tyr Gln Arg Leu Glu Lys Gly Phe Arg Asp Leu Ile Thr Arg Gly Glu  
 35 40 45  
 Leu Lys Ala Gly Tyr Ala Ile Pro Ser Glu Arg Glu Leu Ser Glu Arg  
 50 55 60  
 Leu Asn Leu Ser Arg Val Thr Val Arg Arg Ala Leu Ser Glu Leu Ala  
 65 70 75 80  
 Asn Ala Gln Val Ile Val Gln Arg Arg Gly Ala Arg Ser Thr Val Ala  
 85 90 95  
 Gly Arg Val Glu Lys Pro Leu Ser Ser Leu Thr Ser Phe Ser Glu Asp  
 100 105 110  
 Met Ile Ser Arg Gly Tyr Glu Pro Gly Ala Arg Trp Leu Gln Lys Glu  
 115 120 125  
 Leu Thr His Ala Ser Pro Ser Glu Ile Ile Ala Leu Asn Leu Ser Pro  
 130 135 140  
 Gly Ala Leu Val Trp Arg Leu Lys Arg Leu Arg Thr Val Asp Glu His  
 145 150 155 160  
 Pro Met Ala Val Glu Ile Ala Val Val Pro Gln Met Phe Ile Pro Glu  
 165 170 175  
 Met Asp Glu Leu Arg Asp Ser Leu Tyr Ser Val Leu Gln Leu His Gly  
 180 185 190  
 Phe Met Pro Ala Arg Ala Leu Gln Arg Ile Arg Ala Glu Pro Leu Ser  
 195 200 205  
 Arg Asp His Ser Gln Leu Leu Asp Met Pro Ala His Ser Pro Ala Leu  
 210 215 220  
 His Val Glu Arg His Cys Tyr Leu Glu Asp Gly Arg Pro Ile Glu Tyr  
 225 230 235 240  
 Thr His Thr Trp Tyr Arg Gly Asp Ser Tyr Asp Phe Leu Val Glu Leu  
 245 250 255  
 Gln Arg Asp Ile Thr Pro Gly Leu Ser  
 260 265

<210> 1333  
 <211> 744  
 <212> DNA  
 <213> Salmonella enterica subsp. enterica serovar Typhi

<220>  
 <221> CDS  
 <222> (1)..(744)

<400> 1333  
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 1 5 10  
 gtg gag tgg ata agg gaa agt att tat agc gga gaa ttg gtt gag gat 96  
 Val Glu Trp Ile Arg Glu Ser Ile Tyr Ser Gly Glu Leu Val Glu Asp 20 25 30  
 gac cgg ata cct tca gag ttt caa atc atg gat atg ctg gag gtg agt 144  
 Asp Arg Ile Pro Ser Glu Phe Gln Ile Met Asp Met Leu Glu Val Ser 35 40 45  
 cgc ggt acc gtt aaa aaa gcg gtt gac caa ctt gtc cgg gaa ggt gtt 192  
 Arg Gly Thr Val Lys Lys Ala Val Asp Gln Leu Val Arg Glu Gly Val 50 55 60  
 ctt gtg caa gtg cag ggt aaa gga act ttc gta aag aag gaa aat gtt 240  
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## PhoenixTemp32470.tmp.txt

Leu 65	Val	Gln	Val	Gln	Gly 70	Lys	Gly	Thr	Phe	Val 75	Lys	Lys	Glu	Asn	Val 80	
gct	tac	cca	ctg	ggt	gaa	ggt	ttg	ctc	tcc	ttt	gct	gaa	gcc	tta	gcc	288
Ala	Tyr	Pro	Leu	Gly 85	Glu	Gly	Leu	Leu	Ser 90	Phe	Ala	Glu	Ala	Leu 95	Ala	
agc	cag	aag	ata	aac	ttc	aca	acc	agc	gtc	ata	acc	tcc	cga	ctg	gaa	336
Ser	Gln	Lys	Ile 100	Asn	Phe	Thr	Thr	Ser 105	Val	Ile	Thr	Ser	Arg 110	Leu	Glu	
ccc	gct	aac	cgc	ttt	gta	gca	gag	aaa	ctg	agt	atc	aaa	ccg	gga	caa	384
Pro	Ala	Asn 115	Arg	Phe	Val	Ala	Glu 120	Lys	Leu	Ser	Ile	Lys 125	Pro	Gly	Gln	
gat	ggt	tta	ttt	ctt	aaa	cgc	ctt	cgt	tgt	att	ggc	gat	gaa	aaa	gtc	432
Asp	Val 130	Leu	Phe	Leu	Lys	Arg 135	Leu	Arg	Cys	Ile	Gly 140	Asp	Glu	Lys	Val	
atg	ttg	att	gaa	aat	cgt	atc	aac	att	gat	ctc	tgc	ccc	ggt	att	att	480
Met 145	Leu	Ile	Glu	Asn 150	Arg	Ile	Asn	Ile	Asp	Leu 155	Cys	Pro	Gly	Ile	Ile 160	
gat	gta	gat	ttt	acc	agg	gag	aat	tta	ttt	tca	gca	ata	gaa	aga	tta	528
Asp	Val	Asp	Phe 165	Thr	Arg	Glu	Asn	Leu	Phe 170	Ser	Ala	Ile	Glu	Arg 175	Leu	
tct	gat	aag	aaa	ata	agt	ttt	tct	gaa	agc	cgt	tac	gca	gct	aaa	tta	576
Ser	Asp	Lys 180	Lys	Ile	Ser	Phe	Ser	Glu 185	Ser	Arg	Tyr	Ala 190	Ala	Lys	Leu	
att	ggt	aat	gag	cga	ggc	cat	tat	ctt	gat	att	ggt	gaa	gac	gca	cct	624
Ile	Gly 195	Asn	Glu	Arg	Gly	His 200	Tyr	Leu	Asp	Ile	Gly 205	Glu	Asp	Ala	Pro	
gtt	ttg	cat	ttg	gaa	cag	ttg	gta	ttt	ttc	tct	aga	gga	ttg	gcc	att	672
Val 210	Leu	His	Leu	Glu	Gln 215	Leu	Val	Phe	Phe	Ser	Arg 220	Gly	Leu	Ala	Ile	
gat	ttt	ggt	aac	gtc	tgg	tta	aaa	ggt	aat	aaa	tat	tat	ctt	ggc	act	720
Asp 225	Phe	Gly	Asn	Val 230	Trp	Leu	Lys	Gly	Asn	Lys 235	Tyr	Tyr	Leu	Gly 240	Thr	
att	tta	cag	cgc	ctg	gat	gcc	tga									744
Ile	Leu	Gln	Arg	Leu 245	Asp	Ala										

&lt;210&gt; 1334

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Salmonella enterica subsp. enterica serovar Typhi

&lt;400&gt; 1334

Met 1	Lys	Thr	Leu	Ser 5	Lys	Ser	Ser	His	Ile 10	Pro	Leu	Tyr	Gln	Gln 15	Val	
Val	Glu	Trp	Ile 20	Arg	Glu	Ser	Ile	Tyr 25	Ser	Gly	Glu	Leu	Val 30	Glu	Asp	
Asp	Arg	Ile 35	Pro	Ser	Glu	Phe	Gln 40	Ile	Met	Asp	Met	Leu 45	Glu	Val	Ser	
Arg	Gly 50	Thr	Val	Lys	Lys	Ala 55	Val	Asp	Gln	Leu	Val 60	Arg	Glu	Gly	Val	
Leu 65	Val	Gln	Val	Gln	Gly 70	Lys	Gly	Thr	Phe 75	Val	Lys	Lys	Glu	Asn 80	Val	
Ala	Tyr	Pro	Leu	Gly 85	Glu	Gly	Leu	Leu	Ser 90	Phe	Ala	Glu	Ala	Leu 95	Ala	
Ser	Gln	Lys	Ile 100	Asn	Phe	Thr	Thr	Ser 105	Val	Ile	Thr	Ser	Arg 110	Leu	Glu	
Pro	Ala	Asn 115	Arg	Phe	Val	Ala	Glu 120	Lys	Leu	Ser	Ile	Lys 125	Pro	Gly	Gln	
Asp	Val 130	Leu	Phe	Leu	Lys	Arg 135	Leu	Arg	Cys	Ile	Gly 140	Asp	Glu	Lys	Val	
Met 145	Leu	Ile	Glu	Asn 150	Arg	Ile	Asn	Ile	Asp	Leu 155	Cys	Pro	Gly	Ile	Ile 160	
Asp	Val	Asp	Phe 165	Thr	Arg	Glu	Asn	Leu	Phe 170	Ser	Ala	Ile	Glu	Arg 175	Leu	
Ser	Asp	Lys 180	Lys	Ile	Ser	Phe	Ser	Glu 185	Ser	Arg	Tyr	Ala 190	Ala	Lys	Leu	
Ile	Gly 195	Asn	Glu	Arg	Gly	His 200	Tyr	Leu	Asp	Ile	Gly 205	Glu	Asp	Ala	Pro	
Val	Leu	His	Leu	Glu	Gln	Leu	Val	Phe	Phe	Ser	Arg	Gly	Leu	Ala	Ile	

## PhoenixTemp32470.tmp.txt

210  
 Asp Phe Gly Asn Val Trp 215  
 225 230 Lys Gly Asn Lys Tyr Tyr Leu Gly Thr  
 235 240  
 Ile Leu Gln Arg Leu Asp Ala  
 245

<210> 1335  
 <211> 714  
 <212> DNA  
 <213> Listeria innocua

<220>  
 <221> CDS  
 <222> (1)..(714)

<400> 1335  
 atg gtt aag tat gaa ctg att gcc gca gaa atc cgt gaa aaa ata aac 48  
 Met Val Lys Tyr Glu Leu Ile Ala Ala Glu Ile Arg Glu Lys Ile Asn  
 1 5 10 15  
 aac ggt act tat cca cca gaa tcc att ctt cct gat caa gtg agc tta 96  
 Asn Gly Thr Tyr Pro Pro Glu Ser Ile Leu Pro Asp Gln Val Ser Leu  
 20 25 30  
 tct aga gct tat gat tgt agc aga atg aca ata aaa aaa gcc ttt gac 144  
 Ser Arg Ala Tyr Asp Cys Ser Arg Met Thr Ile Lys Lys Ala Phe Asp  
 35 40 45  
 gta ctt gcg ctt gaa gga ctt gtt tac aga caa cgt ggt gca gga act 192  
 Val Leu Ala Leu Glu Gly Leu Val Tyr Arg Gln Arg Gly Ala Gly Thr  
 50 55 60  
 ttt gtg atg aaa aat gcc tta gct aat aaa caa gat gcg agt ttg cga 240  
 Phe Val Met Lys Asn Ala Leu Ala Asn Lys Gln Asp Ala Ser Leu Arg  
 65 70 75 80  
 gat tat gac ggt cta aca aaa atg atg gga gac aat cga atc cga agt 288  
 Asp Tyr Asp Gly Leu Thr Lys Met Met Gly Asp Asn Arg Ile Arg Ser  
 85 90 95  
 aaa atc att gca ttc gat att gct ttc cca gat gaa aaa acg caa gaa 336  
 Lys Ile Ile Ala Phe Asp Ile Ala Phe Pro Asp Glu Lys Thr Gln Glu  
 100 105 110  
 caa ctc ttg att aaa gca gac caa cca gtg tat aaa ttg att cgt ttg 384  
 Gln Leu Leu Ile Lys Ala Asp Gln Pro Val Tyr Lys Leu Ile Arg Leu  
 115 120 125  
 cgc ctg tta gat ggt gag ccg tat gta tta gag cat aca acc atg cca 432  
 Arg Leu Leu Asp Gly Glu Pro Tyr Val Leu Glu His Thr Thr Met Pro  
 130 135 140  
 gca gat tta gtt cca ggt tta acg aga gag att ttg cat cat tct att 480  
 Ala Asp Leu Val Pro Gly Leu Thr Arg Glu Ile Leu His His Ser Ile  
 145 150 155 160  
 tat gca tac tta caa gac aca cta ggg ctc gtt tta agt ggt gca ttt 528  
 Tyr Ala Tyr Leu Gln Asp Thr Leu Gly Leu Val Leu Ser Gly Ala Phe  
 165 170 175  
 cga aaa att aat gcc gat aag cca tct gaa tat gac caa gaa tat tta 576  
 Arg Lys Ile Asn Ala Asp Lys Pro Ser Glu Tyr Asp Gln Glu Tyr Leu  
 180 185 190  
 gcg tgc gga gaa cat gat cca gtt tta gaa gtg gag caa gta gtg tat 624  
 Ala Cys Gly Glu His Asp Pro Val Leu Glu Val Glu Gln Val Val Tyr  
 195 200 205  
 tta aaa gac ggt aga cca gtc gaa tat tcc cgt tca aga cat cgc tat 672  
 Leu Lys Asp Gly Arg Pro Val Glu Tyr Ser Arg Ser Arg His Arg Tyr  
 210 215 220  
 gat acg aga agt ttc att atg gtt gat cac cga gaa aag taa 714  
 Asp Thr Arg Ser Phe Ile Met Val Asp His Arg Glu Lys  
 225 230 235

<210> 1336  
 <211> 237  
 <212> PRT  
 <213> Listeria innocua

<400> 1336  
 Met Val Lys Tyr Glu Leu Ile Ala Ala Glu Ile Arg Glu Lys Ile Asn  
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PhoenixTemp32470.tmp.txt

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1           5           10           15
Asn Gly Thr Tyr Pro Pro Glu Ser Ile Leu Pro Asp Gln Val Ser Leu
20
Ser Arg Ala Tyr Asp Cys Ser Arg Met Thr Ile Lys Lys Ala Phe Asp
35
Val Leu Ala Leu Glu Gly Leu Val Tyr Arg Gln Arg Gly Ala Gly Thr
50
Phe Val Met Lys Asn Ala Leu Ala Asn Lys Gln Asp Ala Ser Leu Arg
65
Asp Tyr Asp Gly Leu Thr Lys Met Met Gly Asp Asn Arg Ile Arg Ser
85
Lys Ile Ile Ala Phe Asp Ile Ala Phe Pro Asp Glu Lys Thr Gln Glu
100
Gln Leu Leu Ile Lys Ala Asp Gln Pro Val Tyr Lys Leu Ile Arg Leu
115
Arg Leu Leu Asp Gly Glu Pro Tyr Val Leu Glu His Thr Thr Met Pro
130
Ala Asp Leu Val Pro Gly Leu Thr Arg Glu Ile Leu His His Ser Ile
145
Tyr Ala Tyr Leu Gln Asp Thr Leu Gly Leu Val Leu Ser Gly Ala Phe
165
Arg Lys Ile Asn Ala Asp Lys Pro Ser Glu Tyr Asp Gln Glu Tyr Leu
180
Ala Cys Gly Glu His Asp Pro Val Leu Glu Val Glu Gln Val Val Tyr
195
Leu Lys Asp Gly Arg Pro Val Glu Tyr Ser Arg Ser Arg His Arg Tyr
210
Asp Thr Arg Ser Phe Ile Met Val Asp His Arg Glu Lys
225
230
235

```

<210> 1337  
 <211> 723  
 <212> DNA  
 <213> Listeria monocytogenes

<220>  
 <221> CDS  
 <222> (1)..(723)

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1           5           10           15
gaa att aaa aag aaa atg gaa gat ggt gtc tgg aaa gtt ggc act tct      96
Glu Ile Lys Lys Lys Met Glu Asp Gly Val Trp Lys Val Gly Thr Ser
20
att cca gct gaa cgt cag ctt gca gaa atg ttc cac gtc agc cga atg      144
Ile Pro Ala Glu Arg Gln Leu Ala Glu Met Phe His Val Ser Arg Met
35
acg gta aga caa gcc att caa ggc ctc gtt gat gat aac att ttg caa      192
Thr Val Arg Gln Ala Ile Gln Gly Leu Val Asp Asp Asn Ile Leu Gln
50
agg cgt gtt ggt gcc ggg act ttt att gcg gaa aag aaa cta acc gaa      240
Arg Arg Val Gly Ala Gly Thr Phe Ile Ala Glu Lys Lys Leu Thr Glu
65
cga ctt gaa gcg gtt acg agt ttt acg aat ttg atg tta caa gag ggg      288
Arg Leu Glu Ala Val Thr Ser Phe Thr Asn Leu Met Leu Gln Glu Gly
85
aaa gtt cct tcg acg cga atc gta tcg tac ggt att cgt ccg gca agt      336
Lys Val Pro Ser Thr Arg Ile Val Ser Tyr Gly Ile Arg Pro Ala Ser
100
acg caa gaa caa gag gcg ttg caa cta cca gaa aac agc aat gta atg      384
Thr Gln Glu Gln Glu Ala Leu Gln Leu Pro Glu Asn Ser Asn Val Met
115
aaa att gag cgg att cgt tat ggc gac cgc gtt cca att ctt tat gaa      432
Lys Ile Glu Arg Ile Arg Tyr Gly Asp Arg Val Pro Ile Leu Tyr Glu
130
gtt gcg gcc att cca gaa aaa att gct tca ctg ctt aca aag gaa gac      480
Val Ala Ala Ile Pro Glu Lys Ile Ala Ser Leu Leu Thr Lys Glu Asp

```



## PhoenixTemp32470.tmp.txt

145	att atg gat tcc ctt	150	tat aaa gcg att gaa	155	tta aaa ctt ggt caa	160	cca	528
Ile Met Asp Ser Leu	Tyr Lys Ala Ile Glu	Leu Lys Leu Gly	Gln Pro					
	165		170		175			
att gga gaa gcg gaa caa atc atg gaa gct tct tta gta tca gaa aaa	576							
Ile Gly Glu Ala Glu Gln Ile Met Glu Ala Ser Leu Val Ser Glu Lys								
	180		185		190			
att gcg cca tat ctt gat gtg aaa ctc gga tca ccg gtt atg aaa ctt	624							
Ile Ala Pro Tyr Leu Asp Val Lys Leu Gly Ser Pro Val Met Lys Leu								
	195		200		205			
agg caa att aca acg tta gaa gac ggt cga cca ttt gaa ttt acg cgt	672							
Arg Gln Ile Thr Thr Leu Glu Asp Gly Arg Pro Phe Glu Phe Thr Arg								
	210		215		220			
tcc cag tat gta ggt agt aga ttt caa ttt gta gct agg att aaa caa	720							
Ser Gln Tyr Val Gly Ser Arg Phe Gln Phe Val Ala Arg Ile Lys Gln								
225	230		235		240			
taa								723

<210> 1338  
 <211> 240  
 <212> PRT  
 <213> *Listeria monocytogenes*

<400> 1338  
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 Glu Ile Lys Lys Met Glu Asp Gly Val Trp Lys Val Gly Thr Ser  
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 Ile Pro Ala Glu Arg Gln Leu Ala Glu Met Phe His Val Ser Arg Met  
 35 40 45  
 Thr Val Arg Gln Ala Ile Gln Gly Leu Val Asp Asp Asn Ile Leu Gln  
 50 55 60  
 Arg Arg Val Gly Ala Gly Thr Phe Ile Ala Glu Lys Lys Leu Thr Glu  
 65 70 75 80  
 Arg Leu Glu Ala Val Thr Ser Phe Thr Asn Leu Met Leu Gln Glu Gly  
 85 90 95  
 Lys Val Pro Ser Thr Arg Ile Val Ser Tyr Gly Ile Arg Pro Ala Ser  
 100 105 110  
 Thr Gln Glu Gln Glu Ala Leu Gln Leu Pro Glu Asn Ser Asn Val Met  
 115 120 125  
 Lys Ile Glu Arg Ile Arg Tyr Gly Asp Arg Val Pro Ile Leu Tyr Glu  
 130 135 140  
 Val Ala Ala Ile Pro Glu Lys Ile Ala Ser Leu Leu Thr Lys Glu Asp  
 145 150 155 160  
 Ile Met Asp Ser Leu Tyr Lys Ala Ile Glu Leu Lys Leu Gly Gln Pro  
 165 170 175  
 Ile Gly Glu Ala Glu Gln Ile Met Glu Ala Ser Leu Val Ser Glu Lys  
 180 185 190  
 Ile Ala Pro Tyr Leu Asp Val Lys Leu Gly Ser Pro Val Met Lys Leu  
 195 200 205  
 Arg Gln Ile Thr Thr Leu Glu Asp Gly Arg Pro Phe Glu Phe Thr Arg  
 210 215 220  
 Ser Gln Tyr Val Gly Ser Arg Phe Gln Phe Val Ala Arg Ile Lys Gln  
 225 230 235 240

<210> 1339  
 <211> 729  
 <212> DNA  
 <213> *Listeria monocytogenes*

<220>  
 <221> CDS  
 <222> (1)..(729)

<400> 1339  
 atg gct cag aac cag aca aaa tat agc ttt att gct gaa gaa atc cgc  
 Met Ala Gln Asn Gln Thr Lys Tyr Ser Phe Ile Ala Glu Glu Ile Arg

48

## PhoenixTemp32470.tmp.txt

1	5	10	15	
aaa aga att atg aat cac gcc tat ccg cta aat caa cct att cct gat	96			
Lys Arg Ile Met Asn His Ala Tyr Pro Leu Asn Gln Pro Ile Pro Asp				
gag ata act ttg gcg aaa gag ttt gat tgt agt cga atg aca atg aaa	144			
Glu Ile Thr Leu Ala Lys Glu Phe Asp Cys Ser Arg Met Thr Met Lys				
aaa gcg ctt gaa gta ctt gta ctt gaa ggc tta cta tac cgg aaa cgt	192			
Lys Ala Leu Glu Val Leu Val Leu Glu Gly Leu Leu Tyr Arg Lys Arg				
gga cat ggt act ttc att atc aaa tcg gcg ctg gac gcg gac cgc ttg	240			
Gly His Gly Thr Phe Ile Ile Lys Ser Ala Leu Asp Ala Asp Arg Leu				
cag att cat aac caa gag gta aac ggc ttc act aaa ctt ttg aat ggt	288			
Gln Ile His Asn Gln Glu Val Asn Gly Phe Thr Lys Leu Leu Asn Gly				
aag aaa gtt att agt aaa gta atc gag ttt aaa gtc att ttt cca acc	336			
Lys Lys Val Ile Ser Lys Val Ile Glu Phe Lys Val Ile Phe Pro Thr				
gaa gaa att gca gag cgc ctt cat atc gaa atg gaa acg cca atc tat	384			
Glu Glu Ile Ala Glu Arg Leu His Ile Glu Met Glu Thr Pro Ile Tyr				
gat att ctt cgt gtt cgg cta gtg aaa gat gaa cca tat gta tta gaa	432			
Asp Ile Leu Arg Val Arg Leu Val Lys Asp Glu Pro Tyr Val Leu Glu				
cac acg tat atg ccg gtt ggg gtt atc cca ggc atc aat cag caa att	480			
His Thr Tyr Met Pro Val Gly Val Ile Pro Gly Ile Asn Gln Gln Ile				
ttg gaa gga tcg att tat tcg tat att caa gat gat ttg aac cta aaa	528			
Leu Glu Gly Ser Ile Tyr Ser Tyr Ile Gln Asp Asp Leu Asn Leu Lys				
atc gct agt tcg tac aaa caa att cgc gcg gat aaa gcg acg ctg ctt	576			
Ile Ala Ser Ser Tyr Lys Gln Ile Arg Ala Asp Lys Ala Thr Leu Leu				
gat cag caa tat ctc gac tgc gct tct gat gac cca gtt gtt gaa gta	624			
Asp Gln Tyr Leu Asp Cys Ala Ser Asp Asp Pro Val Val Glu Val				
gaa caa acc gtg tat tta aac aat ggt ctc gcg ttt gaa ttt tcc aga	672			
Glu Gln Thr Val Tyr Leu Asn Asn Gly Leu Ala Phe Glu Phe Ser Arg				
tcg cgc cac cgt tat gat ttc gtt ttt act acc gtg aat atc gct	720			
Ser Arg His Arg Tyr Asp Lys Phe Val Phe Thr Thr Val Asn Ile Ala				
aga cga taa	729			
Arg Arg				

&lt;210&gt; 1340

&lt;211&gt; 242

&lt;212&gt; PRT

&lt;213&gt; Listeria monocytogenes

&lt;400&gt; 1340

Met Ala Gln Asn Gln Thr Lys Tyr Ser Phe Ile Ala Glu Glu Ile Arg	
Lys Arg Ile Met Asn His Ala Tyr Pro Leu Asn Gln Pro Ile Pro Asp	
Glu Ile Thr Leu Ala Lys Glu Phe Asp Cys Ser Arg Met Thr Met Lys	
Lys Ala Leu Glu Val Leu Val Leu Glu Gly Leu Leu Tyr Arg Lys Arg	
Gly His Gly Thr Phe Ile Ile Lys Ser Ala Leu Asp Ala Asp Arg Leu	
Gln Ile His Asn Gln Glu Val Asn Gly Phe Thr Lys Leu Leu Asn Gly	
Lys Lys Val Ile Ser Lys Val Ile Glu Phe Lys Val Ile Phe Pro Thr	
Glu Glu Ile Ala Glu Arg Leu His Ile Glu Met Glu Thr Pro Ile Tyr	

## PhoenixTemp32470.tmp.txt

```

Asp Ile Leu Arg Val Arg Leu Val Lys Asp Glu Pro Tyr Val Leu Glu
130 135 140
His Thr Tyr Met Pro Val Gly Val Ile Pro Gly Ile Asn Gln Gln Ile
145 150 155 160
Leu Glu Gly Ser Ile Tyr Ser Tyr Ile Gln Asp Asp Leu Asn Leu Lys
165 170 175
Ile Ala Ser Ser Tyr Lys Gln Ile Arg Ala Asp Lys Ala Thr Leu Leu
180 185 190
Asp Gln Gln Tyr Leu Asp Cys Ala Ser Asp Asp Pro Val Val Glu Val
195 200 205
Glu Gln Thr Val Tyr Leu Asn Asn Gly Leu Ala Phe Glu Phe Ser Arg
210 215 220
Ser Arg His Arg Tyr Asp Lys Phe Val Phe Thr Thr Val Asn Ile Ala
225 230 235 240
Arg Arg

```

&lt;210&gt; 1341

&lt;211&gt; 729

&lt;212&gt; DNA

&lt;213&gt; Listeria innocua

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(729)

&lt;400&gt; 1341

```

atg gct cag aac cag aca aaa tat agc ttt att gct gaa gaa atc cgc      48
Met Ala Gln Asn Gln Thr Lys Tyr Ser Phe Ile Ala Glu Glu Ile Arg
1 5 10 15
aaa aga att atg aat cac gcc tat ccg ctt aat caa cct att cct gat      96
Lys Arg Ile Met Asn His Ala Tyr Pro Leu Asn Gln Pro Ile Pro Asp
20 25 30
gag ata act ttg gcg aaa gag ttt gat tgt agt cga atg aca atg aaa      144
Glu Ile Thr Leu Ala Lys Glu Phe Asp Cys Ser Arg Met Thr Met Lys
35 40 45
aag gcg ctt gaa gta ctt gta ctt gaa ggc tta cta tat cgt aaa cgc      192
Lys Ala Leu Glu Val Leu Val Leu Glu Gly Leu Leu Tyr Arg Lys Arg
50 55 60
ggg cat ggt act ttc att atc aaa tcg gcg ctg gac gcg gac cgt ttg      240
Gly His Gly Thr Phe Ile Lys Ser Ala Leu Asp Ala Asp Arg Leu
65 70 75 80
cag att cat aac caa gaa gta aat ggt ttc act aaa ctt tta gac gga      288
Gln Ile His Asn Gln Glu Val Asn Gly Phe Thr Lys Leu Leu Asp Gly
85 90 95
aaa aag gtc att agc aaa gta att gag ttt aaa gtc atc ttt cca aca      336
Lys Lys Val Ile Ser Lys Val Ile Glu Phe Lys Val Ile Phe Pro Thr
100 105 110
gaa gaa att gcg gaa cgt ctt cat atc gaa atg gaa acg cca atc tat      384
Glu Glu Ile Ala Glu Arg Leu His Ile Glu Met Glu Thr Pro Ile Tyr
115 120 125
gat att ctt cgt gtt cgg cta gtg aaa gat gaa ccg tat gtg cta gaa      432
Asp Ile Leu Arg Val Arg Leu Val Lys Asp Glu Pro Tyr Val Leu Glu
130 135 140
cat acg tat atg ccg gtt ggg gtt atc cca ggc att aac cag caa att      480
His Thr Tyr Met Pro Val Gly Val Ile Pro Gly Ile Asn Gln Gln Ile
145 150 155 160
tta gaa ggt tcg att tac tca tat att caa gac gat ttg aac cta aaa      528
Leu Glu Gly Ser Ile Tyr Ser Tyr Ile Gln Asp Asp Leu Asn Leu Lys
165 170 175
att gct agt tcg tac aaa caa att cgc gcg gat aaa gcg aca ctg ctt      576
Ile Ala Ser Ser Tyr Lys Gln Ile Arg Ala Asp Lys Ala Thr Leu Leu
180 185 190
gat cag caa tat ctc gac tgc gct tct gat gac ccc gtt gtc gaa gta      624
Asp Gln Gln Tyr Leu Asp Cys Ala Ser Asp Asp Pro Val Val Glu Val
195 200 205
gaa caa acc gtt tat tta aac aac ggt ctc gcg ttt gag ttt tcc aga      672
Glu Gln Thr Val Tyr Leu Asn Asn Gly Leu Ala Phe Glu Phe Ser Arg
210 215 220

```

[illegible]

<210> 1342  
<211> 242  
<212> PRT  
<213> *Listeria innocua*

[illegible]

```
<210> 1343
<211> 729
<212> DNA
<213> Bacillus subtilis
```

<220>  
<221> CDS  
<222> (1)..(729)

[illegible]

## PhoenixTemp32470.tmp.txt

Arg 65	Gln	Gln	Gly	Lys	Gly 70	Thr	Phe	Val	Lys	Ser 75	Pro	Lys	Leu	Lys	Arg 80	
gag	ctg	atc	gct	gta	aac	ggc	tac	tcg	gaa	ttt	atg	gaa	tca	acc	ggc	288
Glu	Leu	Ile	Ala	Val	Asn	Gly	Tyr	Ser	Glu	Phe	Met	Glu	Ser	Thr	Gly	
				85					90					95		
aaa	aaa	ccg	aag	cat	cat	gtg	ctg	tcc	cat	gac	atc	att	cca	gcg	tca	336
Lys	Lys	Pro	Lys	His	His	Val	Leu	Ser	His	Asp	Ile	Ile	Pro	Ala	Ser	
			100					105					110			
aaa	ccc	atc	gcc	gaa	aag	ctt	caa	atc	caa	ccc	gag	agc	cct	gtg	gtt	384
Lys	Pro	Ile	Ala	Glu	Lys	Leu	Gln	Ile	Gln	Pro	Glu	Ser	Pro	Val	Val	
		115					120					125				
gaa	tta	aaa	cgg	att	tta	tat	aat	gat	gat	cag	cct	ctc	acc	ttt	gaa	432
Glu	Leu	Lys	Arg	Ile	Leu	Tyr	Asn	Asp	Asp	Gln	Pro	Leu	Thr	Phe	Glu	
	130					135					140					
gtg	acg	cat	tat	ccg	ctt	gat	ttg	ttt	ccc	ggc	att	gat	acc	ttt	att	480
Val	Thr	His	Tyr	Pro	Leu	Asp	Leu	Phe	Pro	Gly	Ile	Asp	Thr	Phe	Ile	
145					150					155					160	
gct	gac	ggc	gtc	tcc	atg	cat	gat	att	ttg	aaa	cag	caa	tac	aaa	gtt	528
Ala	Asp	Gly	Val	Ser	Met	His	Asp	Ile	Leu	Lys	Gln	Gln	Tyr	Lys	Val	
				165					170					175		
gta	ccc	acg	cac	aat	acg	aag	cta	tta	aac	ggt	gta	tat	gcc	caa	cag	576
Val	Pro	Thr	His	Asn	Thr	Lys	Leu	Leu	Asn	Val	Val	Tyr	Ala	Gln	Gln	
			180					185					190			
gag	gaa	agc	aaa	tac	ctg	gat	tgt	gat	atc	ggg	gat	gcg	ctg	ttt	gaa	624
Glu	Glu	Ser	Lys	Tyr	Leu	Asp	Cys	Asp	Ile	Gly	Asp	Ala	Leu	Phe	Glu	
		195					200				205					
att	gat	aaa	acg	gct	ttt	aca	tca	aac	gac	cag	cca	atc	tat	tgc	tca	672
Ile	Asp	Lys	Thr	Ala	Phe	Thr	Ser	Asn	Asp	Gln	Pro	Ile	Tyr	Cys	Ser	
	210					215					220					
ttg	ttt	ttg	atg	cac	aca	aac	cg	gtc	act	ttt	acc	atc	aac	agc	ccc	720
Leu	Phe	Leu	Met	His	Thr	Asn	Arg	Val	Thr	Phe	Thr	Ile	Asn	Ser	Pro	
225					230					235					240	
tac	aca	taa														729
Tyr	Thr															

&lt;210&gt; 1344

&lt;211&gt; 242

&lt;212&gt; PRT

&lt;213&gt; Bacillus subtilis

&lt;400&gt; 1344

Met	Leu	Asn	Asn	Gly	Ser	Ser	Thr	Pro	Leu	Tyr	Ile	Gln	Leu	Lys	Gln
1				5					10					15	
Ile	Ile	Thr	Asp	Ile	Lys	Lys	Gly	Val	Tyr	Ser	Pro	Thr	Ala	Lys	
			20				25					30			
Leu	Pro	Thr	Glu	Asn	Glu	Leu	Cys	Thr	Lys	Tyr	Asn	Val	Ser	Arg	Ile
		35					40					45			
Thr	Val	Arg	Lys	Ala	Ile	Leu	Asp	Leu	Val	Glu	Glu	Gly	Tyr	Leu	Ile
		50				55				60					
Arg	Gln	Gln	Gly	Lys	Gly	Thr	Phe	Val	Lys	Ser	Pro	Lys	Leu	Lys	Arg
65				70					75					80	
Glu	Leu	Ile	Ala	Val	Asn	Gly	Tyr	Ser	Glu	Phe	Met	Glu	Ser	Thr	Gly
				85					90					95	
Lys	Lys	Pro	Lys	His	His	Val	Leu	Ser	His	Asp	Ile	Ile	Pro	Ala	Ser
			100					105					110		
Lys	Pro	Ile	Ala	Glu	Lys	Leu	Gln	Ile	Gln	Pro	Glu	Ser	Pro	Val	Val
		115					120					125			
Glu	Leu	Lys	Arg	Ile	Leu	Tyr	Asn	Asp	Asp	Gln	Pro	Leu	Thr	Phe	Glu
	130					135				140					
Val	Thr	His	Tyr	Pro	Leu	Asp	Leu	Phe	Pro	Gly	Ile	Asp	Thr	Phe	Ile
145					150					155					160
Ala	Asp	Gly	Val	Ser	Met	His	Asp	Ile	Leu	Lys	Gln	Gln	Tyr	Lys	Val
				165					170					175	
Val	Pro	Thr	His	Asn	Thr	Lys	Leu	Leu	Asn	Val	Val	Tyr	Ala	Gln	Gln
			180					185					190		
Glu	Glu	Ser	Lys	Tyr	Leu	Asp	Cys	Asp	Ile	Gly	Asp	Ala	Leu	Phe	Glu
		195					200				205				
Ile	Asp	Lys	Thr	Ala	Phe	Thr	Ser	Asn	Asp	Gln	Pro	Ile	Tyr	Cys	Ser

## PhoenixTemp32470.tmp.txt

210 215 220  
 Leu Phe Leu Met His Thr Asn Arg Val Thr Phe Thr Ile Asn Ser Pro  
 225 230 235 240  
 Tyr Thr

<210> 1345  
 <211> 747  
 <212> DNA  
 <213> Bacillus halodurans

<220>  
 <221> CDS  
 <222> (1)..(747)

<400> 1345  
 atg aat aaa aaa aac att gat caa tct cta cac tcc tat gtt aaa aat 48  
 Met Asn Lys Lys Asn Ile Asp Gln Ser Leu His Ser Tyr Val Lys Asn  
 1 5 10 15  
 gag tta gtt aac gcc ata caa caa ggg gtt tat cca gtt aaa tct caa 96  
 Glu Leu Val Asn Ala Ile Gln Gln Gly Val Tyr Pro Val Lys Ser Gln  
 20 25 30  
 ttg ccg aca gag gct gaa cta tgc caa atg tac gac gtt agt cga aca 144  
 Leu Pro Thr Glu Ala Glu Leu Cys Gln Met Tyr Asp Val Ser Arg Thr  
 35 40 45  
 acg att cga aat gca tta caa caa ctc gta atc gat ggc tat gta gag 192  
 Thr Ile Arg Asn Ala Leu Gln Gln Leu Val Ile Asp Gly Tyr Val Glu  
 50 55 60  
 aga att caa gga aaa gga acc ttc gtc gca agc cgc aga gta aag caa 240  
 Arg Ile Gln Gly Lys Gly Thr Phe Val Ala Ser Arg Arg Val Lys Gln  
 65 70 75 80  
 acg tta tct gca acc gaa gga aat tat agt gaa cag cta cgc ctg caa 288  
 Thr Leu Ser Ala Thr Glu Gly Asn Tyr Ser Glu Gln Leu Arg Leu Gln  
 85 90 95  
 ggg aaa aaa ccg aaa ata caa gta att gat tta act gtt gtt cca tct 336  
 Gly Lys Lys Pro Lys Ile Gln Val Ile Asp Leu Thr Val Val Pro Ser  
 100 105 110  
 gat gag ctt ttg tcg gct atg ctg gaa att gac gaa aat gaa cct gtc 384  
 Asp Glu Leu Leu Ser Ala Met Leu Glu Ile Asp Glu Asn Glu Pro Val  
 115 120 125  
 cac cgc ctt gaa cgt att cgt tat gca gac gac gcc cct cta caa tat 432  
 His Arg Leu Glu Arg Ile Arg Tyr Ala Asp Asp Ala Pro Leu Gln Tyr  
 130 135 140  
 gaa att tct tat ttg cct tgg cgc aaa acg act tgg tta acg aaa gaa 480  
 Glu Ile Ser Tyr Leu Pro Trp Arg Lys Thr Thr Trp Leu Thr Lys Glu  
 145 150 155 160  
 ggc tgt gaa cac tct ctc tat caa ttg ctg caa agt cat cct gat cta 528  
 Gly Cys Glu His Ser Leu Tyr Gln Leu Leu Gln Ser His Pro Asp Leu  
 165 170 175  
 tca tta gca aag acg aaa gag cat ttg cat atc gtc ctc gct gat gaa 576  
 Ser Leu Ala Lys Thr Lys Glu His Leu His Ile Val Leu Ala Asp Glu  
 180 185 190  
 gaa gtc gct gaa aag cta tca atc tct att gga gat cct tgt att caa 624  
 Glu Val Ala Glu Lys Leu Ser Ile Ser Ile Gly Asp Pro Cys Ile Gln  
 195 200 205  
 att gaa acc cat gcg tac tta gcg gac gat aca aag atc gag tat tcc 672  
 Ile Glu Thr His Ala Tyr Leu Ala Asp Asp Thr Lys Ile Glu Tyr Ser  
 210 215 220  
 att gct tat ttt cac ggt gaa aag gcg agc ttt acg atc gaa cga aac 720  
 Ile Ala Tyr Phe His Gly Glu Lys Ala Ser Phe Thr Ile Glu Arg Asn  
 225 230 235 240  
 tac caa aaa ccg act cag acg tca taa 747  
 Tyr Gln Lys Pro Thr Gln Thr Ser  
 245

<210> 1346  
 <211> 248  
 <212> PRT  
 <213> Bacillus halodurans

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1346

```

Met Asn Lys Lys Asn Ile Asp Gln Ser Leu His Ser Tyr Val Lys Asn
1      5      10      15
Glu Leu Val Asn Ala Ile Gln Gln Gly Val Tyr Pro Val Lys Ser Gln
      20      25      30
Leu Pro Thr Glu Ala Glu Leu Cys Gln Met Tyr Asp Val Ser Arg Thr
      35      40      45
Thr Ile Arg Asn Ala Leu Gln Gln Leu Val Ile Asp Gly Tyr Val Glu
      50      55      60
Arg Ile Gln Gly Lys Gly Thr Phe Val Ala Ser Arg Arg Val Lys Gln
65      70      75      80
Thr Leu Ser Ala Thr Glu Gly Asn Tyr Ser Glu Gln Leu Arg Leu Gln
      85      90      95
Gly Lys Lys Pro Lys Ile Gln Val Ile Asp Leu Thr Val Val Pro Ser
      100      105      110
Asp Glu Leu Leu Ser Ala Met Leu Glu Ile Asp Glu Asn Glu Pro Val
      115      120      125
His Arg Leu Glu Arg Ile Arg Tyr Ala Asp Asp Ala Pro Leu Gln Tyr
130      135      140
Glu Ile Ser Tyr Leu Pro Trp Arg Lys Thr Thr Trp Leu Thr Lys Glu
145      150      155      160
Gly Cys Glu His Ser Leu Tyr Gln Leu Leu Gln Ser His Pro Asp Leu
      165      170      175
Ser Leu Ala Lys Thr Lys Glu His Leu His Ile Val Leu Ala Asp Glu
      180      185      190
Glu Val Ala Glu Lys Leu Ser Ile Ser Ile Gly Asp Pro Cys Ile Gln
      195      200      205
Ile Glu Thr His Ala Tyr Leu Ala Asp Asp Thr Lys Ile Glu Tyr Ser
210      215      220
Ile Ala Tyr Phe His Gly Glu Lys Ala Ser Phe Thr Ile Glu Arg Asn
225      230      235      240
Tyr Gln Lys Pro Thr Gln Thr Ser
      245

```

&lt;210&gt; 1347

&lt;211&gt; 723

&lt;212&gt; DNA

&lt;213&gt; Bacillus halodurans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(723)

&lt;400&gt; 1347

```

atg att aat aaa aac tct cct tta ccg att tat tat cag att gaa gaa      48
Met Ile Asn Lys Asn Ser Pro Leu Pro Ile Tyr Tyr Gln Ile Glu Glu
1      5      10      15
caa att aag cag caa atc gaa tca ggg gtg ctc aaa ccc ggg gat atg      96
Gln Ile Lys Gln Gln Ile Glu Ser Gly Val Leu Lys Pro Gly Asp Met
      20      25      30
ctc aaa tcc gag cgg gag tat gcg gag tat tat gat gtc agt aga atg      144
Leu Lys Ser Glu Arg Glu Tyr Ala Glu Tyr Tyr Asp Val Ser Arg Met
      35      40      45
acg gta agg caa gcg att aac aac ctt gtg aat caa gga tac ata tat      192
Thr Val Arg Gln Ala Ile Asn Asn Leu Val Asn Gln Gly Tyr Ile Tyr
      50      55      60
aag aaa aaa ggt agc ggt act tat gtt caa gag aaa aaa att gag cag      240
Lys Lys Lys Gly Ser Gly Thr Tyr Val Gln Glu Lys Lys Ile Glu Gln
      65      70      75      80
gcg tta aac ggg ctg acg agt ttt aca gaa gat atg aga aaa aga gga      288
Ala Leu Asn Gly Leu Thr Ser Phe Thr Glu Asp Met Arg Lys Arg Gly
      85      90      95
atg gag cct agc agt cgc ttg ctc aaa ttt gaa ctg att cca gca acg      336
Met Glu Pro Ser Ser Arg Leu Leu Lys Phe Glu Leu Ile Pro Ala Thr
      100      105      110
gca aaa atc gca aag gaa tta aac ttg aaa gag aac acg ccc gtt aca      384
Ala Lys Ile Ala Lys Glu Leu Asn Leu Lys Glu Asn Thr Pro Val Thr
      115      120      125

```

PhoenixTemp32470.tmp.txt

gag att aaa cga atc cgt tat ggt gat ggg gta cca att gcc att gaa	432
Glu Ile Lys Arg Ile Arg Tyr Gly Asp Gly Val Pro Ile Ala Ile Glu	
130 135 140	
cgc aac ctg ttg cct gcg aac tta gtg aag gga tta aat gag gaa atc	480
Arg Asn Leu Leu Pro Ala Asn Leu Val Lys Gly Leu Asn Glu Glu Ile	
145 150 155 160	
ata aac caa tcc tta tat caa tac att gag gaa gag ttg aat ttg cgg	528
Ile Asn Gln Ser Leu Tyr Gln Tyr Ile Glu Glu Leu Asn Leu Arg	
165 170 175	
atc gcc gat gcc cta caa gtg att gaa gcc tcg act gct agc aaa aca	576
Ile Ala Asp Ala Leu Gln Val Ile Glu Ala Ser Thr Ala Ser Lys Thr	
180 185 190	
gaa gcc gat cta tta gag att caa aaa ggt agc ccg att ttg tta att	624
Glu Ala Asp Leu Leu Glu Ile Gln Lys Gly Ser Pro Ile Leu Leu Ile	
195 200 205	
gag cgt aaa acg ttt tta gcc gat ggg act gta tta gag cta gtg aaa	672
Glu Arg Lys Thr Phe Leu Ala Asp Gly Thr Val Leu Glu Leu Val Lys	
210 215 220	
tcc gct tac cga gcc gat cgg tat aaa ttt atg att acg atg caa cga	720
Ser Ala Tyr Arg Ala Asp Arg Tyr Lys Phe Met Ile Thr Met Gln Arg	
225 230 235 240	
taa	723

<210> 1348  
 <211> 240  
 <212> PRT  
 <213> Bacillus halodurans

<400> 1348

Met Ile Asn Lys Asn Ser Pro Leu Pro Ile Tyr Tyr Gln Ile Glu Glu	
1 5 10 15	
Gln Ile Lys Gln Gln Ile Glu Ser Gly Val Leu Lys Pro Gly Asp Met	
20 25 30	
Leu Lys Ser Glu Arg Glu Tyr Ala Glu Tyr Tyr Asp Val Ser Arg Met	
35 40 45	
Thr Val Arg Gln Ala Ile Asn Asn Leu Val Asn Gln Gly Tyr Ile Tyr	
50 55 60	
Lys Lys Lys Gly Ser Gly Thr Tyr Val Gln Glu Lys Lys Ile Glu Gln	
65 70 75 80	
Ala Leu Asn Gly Leu Thr Ser Phe Thr Glu Asp Met Arg Lys Arg Gly	
85 90 95	
Met Glu Pro Ser Ser Arg Leu Leu Lys Phe Glu Leu Ile Pro Ala Thr	
100 105 110	
Ala Lys Ile Ala Lys Glu Leu Asn Leu Lys Glu Asn Thr Pro Val Thr	
115 120 125	
Glu Ile Lys Arg Ile Arg Tyr Gly Asp Gly Val Pro Ile Ala Ile Glu	
130 135 140	
Arg Asn Leu Leu Pro Ala Asn Leu Val Lys Gly Leu Asn Glu Glu Ile	
145 150 155 160	
Ile Asn Gln Ser Leu Tyr Gln Tyr Ile Glu Glu Leu Asn Leu Arg	
165 170 175	
Ile Ala Asp Ala Leu Gln Val Ile Glu Ala Ser Thr Ala Ser Lys Thr	
180 185 190	
Glu Ala Asp Leu Leu Glu Ile Gln Lys Gly Ser Pro Ile Leu Leu Ile	
195 200 205	
Glu Arg Lys Thr Phe Leu Ala Asp Gly Thr Val Leu Glu Leu Val Lys	
210 215 220	
Ser Ala Tyr Arg Ala Asp Arg Tyr Lys Phe Met Ile Thr Met Gln Arg	
225 230 235 240	

<210> 1349  
 <211> 714  
 <212> DNA  
 <213> Bacillus halodurans

<220>  
 <221> CDS



&lt;222&gt; (1)..(714)

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<400> 1349
atg aat gtt aaa aaa aga cct tta tat aaa cag ctt aaa cag gaa tta      48
Met Asn Val Lys Lys 5 Arg Pro Leu Tyr Lys 10 Gln Leu Lys 15 Gln Leu
1      5      10      15
att caa aaa att gaa aga gga gag tta aaa cca ggt gat gta tta cct      96
Ile Gln Lys 20 Glu Arg Gly Glu Leu 25 Lys Pro Gly Asp Val Leu Pro
20      25      30
cct gaa aga gaa ctt gca aag ata ttt aat atg agt cgt atg acg gtt      144
Pro Glu Arg 35 Glu Leu Ala Lys 40 Ile Phe Asn Met Ser Arg Met Thr Val
35      40      45
aga caa gcg att tct gaa ctt gtt aat gaa tac gtt ctt att agg cga      192
Arg Gln Ala Ile Ser Glu Leu 55 Val Asn Glu Tyr Val Leu Ile Arg Arg
50      55      60
cat ggt agt gga aca tat gtg gct gaa cat aaa att cca caa ggg aaa      240
His Gly Ser Gly Thr Tyr Val Ala Glu His Lys 75 Ile Pro Gln Gly Lys
65      70      75      80
aaa tta aaa agc ttt agt gag gag atg cgt tta aga gga atg ttg cct      288
Lys Leu Lys Ser Phe 85 Ser Glu Glu Met Arg Leu Arg Gly Met Leu Pro
85      90      95
ggg tct aaa ctt tgt gag aaa aaa att gtt tta agc cct tca gcg aac      336
Gly Ser Lys 100 Cys Glu Lys Lys 105 Ile Val Leu Ser Pro Ser Ala Asn
100      105      110
atg gcg gct gaa cta aaa tca gag gga aag cta ttc atg tta aaa cgt      384
Met Ala Ala Glu Leu Lys Ser Glu Gly Lys Leu Phe Met Leu Lys Arg
115      120      125
tta cgg tta gca gat ctc gag cct atg gcg ata gag aca agt ttg ctt      432
Leu Arg Leu Ala Asp Leu Glu Pro Met Ala Ile Glu Thr Ser Leu Leu
130      135      140
ccg att aat aga ttc cct agc ctt gaa aat aga aat ttt gaa aat gag      480
Pro Ile Asn Arg Phe 150 Ser Leu Glu Asn Arg Asn Phe Glu Asn Glu
145      150      155      160
tca ctc tat gaa ata tta gag gaa gaa tac aat att aaa atg aca aag      528
Ser Leu Tyr Glu Ile Leu Glu Glu Glu Tyr 170 Asn Ile Lys Met Thr Lys
165      170      175
gct caa caa aaa att gaa gtg aga atg ccg aca cct cag gaa tca gaa      576
Ala Gln Gln Lys 180 Ile Glu Val Arg Met 185 Pro Thr Pro Gln Glu Ser Glu
180      185      190
tta ctt gat ata aat tac acg ata cca gtt ttt cat ttt aaa cag gta      624
Leu Leu Asp 195 Ile Asn Tyr Thr 200 Pro Val Phe His 205 Lys Gln Val
195      200      205
act ttt gat caa aat gat act att ttt gag gtt gcc cat tca gtt tat      672
Thr Phe Asp Gln Asn Asp Thr 215 Ile Phe Glu Val Ala His Ser Val Tyr
210      215      220
agg ggg gac cga tat gaa ata gag acg gaa atc tat cgc tga      714
Arg Gly Asp Arg Tyr Glu Ile Glu Thr Glu Ile Tyr Arg
225      230      235

```

&lt;210&gt; 1350

&lt;211&gt; 237

&lt;212&gt; PRT

&lt;213&gt; Bacillus halodurans

```

<400> 1350
Met Asn Val Lys Lys 5 Arg Pro Leu Tyr Lys 10 Gln Leu Lys 15 Gln Leu
1      5      10      15
Ile Gln Lys 20 Glu Arg Gly Glu Leu 25 Lys Pro Gly Asp Val Leu Pro
20      25      30
Pro Glu Arg Glu Leu Ala Lys 40 Ile Phe Asn Met Ser Arg Met Thr Val
35      40      45
Arg Gln Ala Ile Ser Glu Leu 55 Val Asn Glu Tyr Val Leu Ile Arg Arg
50      55      60
His Gly Ser Gly Thr Tyr Val Ala Glu His Lys 75 Ile Pro Gln Gly Lys
65      70      75      80
Lys Leu Lys Ser Phe 85 Ser Glu Glu Met Arg 90 Leu Arg Gly Met Leu Pro
85      90      95
Gly Ser Lys 100 Cys Glu Lys Lys 105 Val Leu Ser Pro Ser Ala Asn
100      105      110

```

## PhoenixTemp32470.tmp.txt

Met Ala Ala Glu Leu Lys Ser Glu Gly Lys Leu Phe Met Leu Lys Arg  
 115 120 125  
 Leu Arg Leu Ala Asp Leu Glu Pro Met Ala Ile Glu Thr Ser Leu Leu  
 130 135 140  
 Pro Ile Asn Arg Phe Pro Ser Leu Glu Asn Arg Asn Phe Glu Asn Glu  
 145 150 155 160  
 Ser Leu Tyr Glu Ile Leu Glu Glu Glu Tyr Asn Ile Lys Met Thr Lys  
 165 170 175  
 Ala Gln Gln Lys Ile Glu Val Arg Met Pro Thr Pro Gln Glu Ser Glu  
 180 185 190  
 Leu Leu Asp Ile Asn Tyr Thr Ile Pro Val Phe His Phe Lys Gln Val  
 195 200 205  
 Thr Phe Asp Gln Asn Asp Thr Ile Phe Glu Val Ala His Ser Val Tyr  
 210 215 220  
 Arg Gly Asp Arg Tyr Glu Ile Glu Thr Glu Ile Tyr Arg  
 225 230 235

&lt;210&gt; 1351

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Corynebacterium glutamicum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 1351

atg aac acc atg cct gac caa ccg ctc aac cag gac gga ttc cct acc	48
Met Asn Thr Met Pro Asp Gln Pro Leu Asn Gln Asp Gly Phe Pro Thr	
1 5	
gca tcc aaa ggg gtg gaa ccc gac aac ctc ccc gac cgc gtt ctc gtg	96
Ala Ser Lys Gly Val Glu Pro Asp Asn Leu Pro Asp Arg Val Leu Val	
20 25 30	
gac ggc ctt aaa cca aag cat cag cag ctt cgt gaa att ttg gag gaa	144
Asp Gly Leu Lys Pro Lys His Gln Gln Leu Arg Glu Ile Leu Glu Glu	
35 40 45	
atc tgc acc acc cag ctt cag cct ggg gac atg ctg cct ggt gag cgc	192
Ile Cys Thr Thr Gln Leu Gln Pro Gly Asp Met Leu Pro Gly Glu Arg	
50 55 60	
atc ctg gaa gaa aag tat ggc gtc agc cga att acg gtt cgt cgg gcg	240
Ile Leu Glu Glu Lys Tyr Gly Val Ser Arg Ile Thr Val Arg Arg Ala	
65 70 75 80	
att ggt gat ctg gtc gcg tcc ggc agg ttg aag cga gct cgc ggc aaa	288
Ile Gly Asp Leu Val Ala Ser Gly Arg Leu Lys Arg Ala Arg Gly Lys	
85 90 95	
ggt acc ttc gtg gcc cac tcg ccg ttg att tcc cgc ctg cat ttg gcc	336
Gly Thr Phe Val Ala His Ser Pro Leu Ile Ser Arg Leu His Leu Ala	
100 105 110	
tcg ttt tcc gca gag atg gcc gcc cag aag cta tcg gct acc agc agg	384
Ser Phe Ser Ala Glu Met Ala Ala Gln Lys Leu Ser Ala Thr Ser Arg	
115 120 125	
att ttg agt tct tcc cgc ggt ccc gcc cca gat gat att gct gat ttc	432
Ile Leu Ser Ser Ser Arg Gly Pro Ala Pro Asp Asp Ile Ala Asp Phe	
130 135 140	
ttt ggt acc gat cgc gcg gcc cag cac atc acg ttg cgc cgc ctg cgc	480
Phe Gly Thr Asp Arg Ala Ala Gln His Ile Thr Leu Arg Arg Leu Arg	
145 150 155 160	
ttt gga aat ggt cga ccc tat gcc att gac aac ggt tgg tac aac tcc	528
Phe Gly Asn Gly Arg Pro Tyr Ala Ile Asp Asn Gly Trp Tyr Asn Ser	
165 170 175	
gaa ttc gca cct gac ctg ctg gaa aat gat gtg tac aac tcc gtg tac	576
Glu Phe Ala Pro Asp Leu Leu Glu Asn Asp Val Tyr Asn Val Tyr	
180 185 190	
tcc atc ctg gac cgc gtc tat ggc gtc ccc gtc acc cag gcc gag caa	624
Ser Ile Leu Asp Arg Val Tyr Gly Val Pro Val Thr Gln Ala Glu Gln	
195 200 205	
acg gtc acc gcc gta gca gcc gac gaa gac acc gca cgg ctt ctg gac	672
Thr Val Thr Ala Val Ala Asp Glu Asp Thr Ala Arg Leu Leu Asp	
210 215 220	

## PhoenixTemp32470.tmp.txt

gtc	acc	ccc	ggc	gcc	cca	ctc	ctt	cgt	atc	ctt	cga	cag	tca	ctt	tct	720
Val	Thr	Pro	Gly	Ala	Pro	Leu	Leu	Arg	Ile	Leu	Arg	Gln	Ser	Leu	Ser	
225					230					235					240	
ggc	gat	aag	ccc	gtg	gaa	tgg	tgc	gtt	tcc	ttg	tac	cga	acc	gac	cga	768
Gly	Asp	Lys	Pro	Val	Glu	Trp	Cys	Val	Ser	Leu	Tyr	Arg	Thr	Asp	Arg	
				245					250					255		
tat	tct	tta	aaa	aca	ttg	gtt	aca	cgc	tcc	gaa	gat	ctc	tag			810
Tyr	Ser	Leu	Lys	Thr	Leu	Val	Thr	Arg	Ser	Glu	Asp	Leu				
			260					265								

&lt;210&gt; 1352

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Corynebacterium glutamicum

&lt;400&gt; 1352

Met	Asn	Thr	Met	Pro	Asp	Gln	Pro	Leu	Asn	Gln	Asp	Gly	Phe	Pro	Thr	
1				5					10					15		
Ala	Ser	Lys	Gly	Val	Glu	Pro	Asp	Asn	Leu	Pro	Asp	Arg	Val	Leu	Val	
			20					25					30			
Asp	Gly	Leu	Lys	Pro	Lys	His	Gln	Gln	Leu	Arg	Glu	Ile	Leu	Glu	Glu	
		35					40					45				
Ile	Cys	Thr	Thr	Gln	Leu	Gln	Pro	Gly	Asp	Met	Leu	Pro	Gly	Glu	Arg	
	50					55					60					
Ile	Leu	Glu	Glu	Lys	Tyr	Gly	Val	Ser	Arg	Ile	Thr	Val	Arg	Arg	Ala	
65					70					75					80	
Ile	Gly	Asp	Leu	Val	Ala	Ser	Gly	Arg	Leu	Lys	Arg	Ala	Arg	Gly	Lys	
				85					90					95		
Gly	Thr	Phe	Val	Ala	His	Ser	Pro	Leu	Ile	Ser	Arg	Leu	His	Leu	Ala	
			100					105					110			
Ser	Phe	Ser	Ala	Glu	Met	Ala	Ala	Gln	Lys	Leu	Ser	Ala	Thr	Ser	Arg	
		115					120					125				
Ile	Leu	Ser	Ser	Ser	Arg	Gly	Pro	Ala	Pro	Asp	Asp	Ile	Ala	Asp	Phe	
	130					135					140					
Phe	Gly	Thr	Asp	Arg	Ala	Ala	Gln	His	Ile	Thr	Leu	Arg	Arg	Leu	Arg	
145					150					155					160	
Phe	Gly	Asn	Gly	Arg	Pro	Tyr	Ala	Ile	Asp	Asn	Gly	Trp	Tyr	Asn	Ser	
				165					170					175		
Glu	Phe	Ala	Pro	Asp	Leu	Leu	Glu	Asn	Asp	Val	Tyr	Asn	Ser	Val	Tyr	
			180					185					190			
Ser	Ile	Leu	Asp	Arg	Val	Tyr	Gly	Val	Pro	Val	Thr	Gln	Ala	Glu	Gln	
		195					200					205				
Thr	Val	Thr	Ala	Val	Ala	Ala	Asp	Glu	Asp	Thr	Ala	Arg	Leu	Leu	Asp	
	210				215						220					
Val	Thr	Pro	Gly	Ala	Pro	Leu	Leu	Arg	Ile	Leu	Arg	Gln	Ser	Leu	Ser	
225					230					235					240	
Gly	Asp	Lys	Pro	Val	Glu	Trp	Cys	Val	Ser	Leu	Tyr	Arg	Thr	Asp	Arg	
				245					250					255		
Tyr	Ser	Leu	Lys	Thr	Leu	Val	Thr	Arg	Ser	Glu	Asp	Leu				
			260					265								

&lt;210&gt; 1353

&lt;211&gt; 732

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(732)

&lt;400&gt; 1353

atg	aat	atc	aat	aaa	caa	tcg	cct	att	ccg	att	tac	tat	cag	att	atg	48
Met	Asn	Ile	Asn	Lys	Gln	Ser	Pro	Ile	Pro	Ile	Tyr	Tyr	Gln	Ile	Met	
1				5					10					15		
gag	caa	tta	aaa	acc	caa	att	aag	aac	gga	gag	ctg	cag	ccg	gat	atg	96
Glu	Gln	Leu	Lys	Thr	Gln	Ile	Lys	Asn	Gly	Glu	Leu	Gln	Pro	Asp	Met	
			20					25					30			
cct	ctt	cct	tct	gag	cgc	gaa	tat	gcc	gaa	caa	ttc	ggg	atc	agc	cgg	144
Pro	Leu	Pro	Ser	Glu	Arg	Glu	Tyr	Ala	Glu	Gln	Phe	Gly	Ile	Ser	Arg	

## PhoenixTemp32470.tmp.txt

[illegible]

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<210> 1354
<211> 243
<212> PRT
<213> Bacillus subtilis
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<400>	1354															
Met	Asn	Ile	Asn	Lys	Gln	Ser	Pro	Ile	Pro	Ile	Tyr	Tyr	Gln	Ile	Met	
1				5					10					15		
Glu	Gln	Leu	Lys	Thr	Gln	Ile	Lys	Asn	Gly	Glu	Leu	Gln	Pro	Asp	Met	
			20					25					30			
Pro	Leu	Pro	Ser	Glu	Arg	Glu	Tyr	Ala	Glu	Gln	Phe	Gly	Ile	Ser	Arg	
		35					40					45				
Met	Thr	Val	Arg	Gln	Ala	Leu	Ser	Asn	Leu	Val	Asn	Glu	Gly	Leu	Leu	
	50					55					60					
Tyr	Arg	Leu	Lys	Gly	Arg	Gly	Thr	Phe	Val	Ser	Lys	Pro	Lys	Met	Glu	
65					70					75					80	
Gln	Ala	Leu	Gln	Gly	Leu	Thr	Ser	Phe	Thr	Glu	Asp	Met	Lys	Ser	Arg	
				85					90					95		
Gly	Met	Thr	Pro	Gly	Ser	Arg	Leu	Ile	Asp	Tyr	Gln	Leu	Ile	Asp	Ser	
			100					105					110			
Thr	Glu	Glu	Leu	Ala	Ala	Ile	Leu	Gly	Cys	Gly	His	Pro	Ser	Ser	Ile	
		115					120					125				
His	Lys	Ile	Thr	Arg	Val	Arg	Leu	Ala	Asn	Asp	Ile	Pro	Met	Ala	Ile	
	130					135					140					
Glu	Ser	Ser	His	Ile	Pro	Phe	Glu	Leu	Ala	Gly	Glu	Leu	Asn	Glu	Ser	
145					150					155				160		
His	Phe	Gln	Ser	Ser	Ile	Tyr	Asp	His	Ile	Glu	Arg	Tyr	Asn	Ser	Ile	
				165					170					175		

## PhoenixTemp32470.tmp.txt

Pro Ile Ser Arg Ala Lys Gln Glu Leu Glu Pro Ser Ala Ala Thr Thr  
 180 190  
 Glu Glu Ala Asn Ile Leu Gly Ile Gln Lys Gly Ala Pro Val Leu Leu  
 195 200  
 Ile Lys Arg Thr Thr Tyr Leu Gln Asn Gly Thr Ala Phe Glu His Ala  
 210 215  
 Lys Ser Val Tyr Arg Gly Asp Arg Tyr Thr Phe Val His Tyr Met Asp  
 225 230 235 240  
 Arg Leu Ser

<210> 1355  
 <211> 744  
 <212> DNA  
 <213> Caulobacter crescentus

<220>  
 <221> CDS  
 <222> (1)..(744)

<400> 1355  
 atg acg ttt gcg gaa cga atc ggc cgt ctc gac gcc acg ggc gat cac 48  
 Met Thr Phe Ala Glu Arg Ile Gly Arg Leu Asp Ala Thr Gly Asp His 15  
 1  
 gcc ccg ctg tac cgg cag ctg cag cgc gcg ctg cgc gaa gcc atc cag 96  
 Ala Pro Leu Tyr Arg Gln Leu Gln Arg Ala Leu Arg Glu Ala Ile Gln 20 25 30  
 aag aag gtg ctg gct ccg gac gac gcc ctt ccc gcc gag cgg gac atg 144  
 Lys Lys Val Leu Ala Pro Asp Asp Ala Leu Pro Ala Glu Arg Asp Met 35 40 45  
 gcg gac gaa ttc aac atc tcg cgc atc acc gtt cgc aag gcg ctg gac 192  
 Ala Asp Glu Phe Asn Ile Ser Arg Ile Thr Val Arg Lys Ala Leu Asp 50 55 60  
 ggc ctg gtc agc gag ggc ctg ctg acg cgc cgc caa ggc gcc ggg acc 240  
 Gly Leu Val Ser Glu Gly Leu Leu Thr Arg Arg Gln Gly Ala Gly Thr 65 70 75 80  
 ttt gtc gcc gcg cgg gtc gag aag agc ttc tcc aag ctg tcc tcg ttc 288  
 Phe Val Ala Ala Arg Val Glu Lys Ser Phe Ser Lys Leu Ser Ser Phe 85 90 95  
 acc gag gac atg atc tct cgc ggc cgc gtc ccg cgc agc gag tgg atc 336  
 Thr Glu Asp Met Ile Ser Arg Gly Arg Val Pro Arg Ser Glu Trp Ile 100 105 110  
 agc cgc agc gag ggc cag gtg acc ccc gag gag tcg ctg acc ctg ggc 384  
 Ser Arg Ser Glu Gly Gln Val Thr Pro Glu Glu Ser Leu Thr Leu Gly 115 120 125  
 ctg tcg ccc gga acc ccg gtc tat ctg cgg ttc gca cgg atc cgc tat gcg 432  
 Leu Ser Pro Gly Thr Pro Val Tyr Arg Phe Ala Arg Ile Arg Tyr Ala 130 135 140  
 gac ggc gcg ccg atg gcg gtg gaa tac aca acg atc gcg gcc ttc gcc 480  
 Asp Gly Ala Pro Met Ala Val Glu Tyr Thr Thr Ile Ala Ala Phe Ala 145 150 155 160  
 ctg ccc tcc acc gaa gtg gtc ggc aca tcg ctc tat gaa gcg ctg gag 528  
 Leu Pro Ser Thr Glu Val Val Gly Thr Ser Leu Tyr Glu Ala Leu Glu 165 170 175  
 acg acc ggt cac cgc ccg gtg cgc gcg ctc cag cgg ctg cgc gcg gtg 576  
 Thr Thr Gly His Arg Pro Val Arg Ala Leu Gln Arg Leu Arg Ala Val 180 185 190  
 ctg ttc cag gcc gag cag gcg gac ctg ggc gtg ccc gtc aag gac 624  
 Leu Phe Gln Ala Glu Gln Ala Asp Leu Leu Gly Val Pro Val Lys Asp 195 200 205  
 gcc ggc ctg ctg atc gag cgg cga ggc ttc ctg aag gac ggg cgg gcc 672  
 Ala Gly Leu Leu Ile Glu Arg Arg Gly Phe Leu Lys Asp Gly Arg Ala 210 215 220  
 gtc gag gtc acg caa tcc tac tac cgc ggc gac gcc tac gac ttc gtc 720  
 Val Glu Val Thr Gln Ser Tyr Tyr Arg Gly Asp Ala Tyr Asp Phe Val 225 230 235 240  
 gcc gaa ctg aat tcc ctg tcc tga 744  
 Ala Glu Leu Asn Ser Leu Ser 245

## PhoenixTemp32470.tmp.txt

<210> 1356  
 <211> 247  
 <212> PRT  
 <213> *Caulobacter crescentus*

<400> 1356  
 Met Thr Phe Ala Glu Arg Ile Gly Arg Leu Asp Ala Thr Gly Asp His  
 1 5 10 15  
 Ala Pro Leu Tyr Arg Gln Leu Gln Arg Ala Leu Arg Glu Ala Ile Gln  
 20 25 30  
 Lys Lys Val Leu Ala Pro Asp Asp Ala Leu Pro Ala Glu Arg Asp Met  
 35 40 45  
 Ala Asp Glu Phe Asn Ile Ser Arg Ile Thr Val Arg Lys Ala Leu Asp  
 50 55 60  
 Gly Leu Val Ser Glu Gly Leu Leu Thr Arg Arg Gln Gly Ala Gly Thr  
 65 70 75 80  
 Phe Val Ala Ala Arg Val Glu Lys Ser Phe Ser Lys Leu Ser Ser Phe  
 85 90 95  
 Thr Glu Asp Met Ile Ser Arg Gly Arg Val Pro Arg Ser Glu Trp Ile  
 100 105 110  
 Ser Arg Ser Glu Gly Gln Val Thr Pro Glu Glu Ser Leu Thr Leu Gly  
 115 120 125  
 Leu Ser Pro Gly Thr Pro Val Tyr Arg Phe Ala Arg Ile Arg Tyr Ala  
 130 135 140  
 Asp Gly Ala Pro Met Ala Val Glu Tyr Thr Thr Ile Ala Ala Phe Ala  
 145 150 155 160  
 Leu Pro Ser Thr Glu Val Val Gly Thr Ser Leu Tyr Glu Ala Leu Glu  
 165 170 175  
 Thr Thr Gly His Arg Pro Val Arg Ala Leu Gln Arg Leu Arg Ala Val  
 180 185 190  
 Leu Phe Gln Ala Glu Gln Ala Asp Leu Leu Gly Val Pro Val Lys Asp  
 195 200 205  
 Ala Gly Leu Leu Ile Glu Arg Arg Gly Phe Leu Lys Asp Gly Arg Ala  
 210 215 220  
 Val Glu Val Thr Gln Ser Tyr Tyr Arg Gly Asp Ala Tyr Asp Phe Val  
 225 230 235 240  
 Ala Glu Leu Asn Ser Leu Ser  
 245

<210> 1357  
 <211> 711  
 <212> DNA  
 <213> *Streptococcus pneumoniae*

<220>  
 <221> CDS  
 <222> (1)..(711)

<400> 1357  
 atg aag aaa tac caa caa tta ttt aag caa atc caa gaa acc att caa 48  
 Met Lys Lys Tyr Gln Gln Leu Phe Lys Gln Ile Gln Glu Thr Ile Gln 15  
 1 5 10 15  
 aac gag act tac gct gtc gga gat ttc ctt cct agc gag cac gac ctt 96  
 Asn Glu Thr Tyr Ala Val Gly Asp Phe Leu Pro Ser Glu His Asp Leu 20 25 30  
 atg gag caa tat caa gtg agt cgt gat acc gtc cga aag gcc ctg tct 144  
 Met Glu Gln Tyr Gln Val Ser Arg Asp Thr Val Arg Lys Ala Leu Ser 35 40 45  
 ctc ctc caa gag gaa gga ttg atc aaa aag ata aga ggg caa ggt tct 192  
 Leu Leu Gln Glu Glu Gly Leu Ile Lys Lys Ile Arg Gly Gln Gly Ser 50 55 60  
 caa gtc gtc aaa gaa gaa acc gtc aat ttc cct gta tcc aac cta acc 240  
 Gln Val Val Lys Glu Glu Thr Val Asn Phe Pro Val Ser Asn Leu Thr 65 70 75 80  
 agc tac caa gaa cta gtt aaa gaa ctt gga ctg cgc tct aaa acc aac 288  
 Ser Tyr Gln Glu Leu Val Lys Glu Leu Gly Leu Arg Ser Lys Thr Asn 85 90 95  
 gtg gtc agt ctg gac aag att att att gat aaa aaa tcc tca ctg ata 336  
 245

PhoenixTemp32470.tmp.txt

Val	Val	Ser	Leu	Asp	Lys	Ile	Ile	Ile	Asp	Lys	Lys	Ser	Ser	Leu	Ile		
			100					105					110				
acc	ggt	ttc	cca	gag	ttt	cgg	atg	ggt	tgg	aag	gtg	gtc	cgc	cag	cgt	384	
Thr	Gly	Phe	Pro	Glu	Phe	Arg	Met	Val	Trp	Lys	Val	Val	Arg	Gln	Arg		
		115					120					125					
gtg	gtg	gat	gat	ctg	gta	tcc	ggt	ctg	gat	acg	gac	tat	ctg	gat	atg	432	
Val	Val	Asp	Asp	Leu	Val	Ser	Val	Leu	Asp	Thr	Asp	Tyr	Leu	Asp	Met		
	130					135					140						
gaa	ctc	atc	cca	aat	ctc	act	cgc	caa	att	gct	gag	cag	tct	atc	tat	480	
Glu	Leu	Ile	Pro	Asn	Leu	Thr	Arg	Gln	Ile	Ala	Glu	Gln	Ser	Ile	Tyr		
145					150					155					160		
tct	tat	ata	gaa	aat	ggc	ctc	aaa	ctc	ctt	att	gat	tat	gct	cag	aag	528	
Ser	Tyr	Ile	Glu	Asn	Gly	Leu	Lys	Leu	Ile	Asp	Tyr	Ala	Gln	Lys			
				165					170					175			
gaa	atc	acc	att	gac	cac	tca	agc	gac	cga	gac	aag	att	ctc	atg	gac	576	
Glu	Ile	Thr	Ile	Asp	His	Ser	Ser	Asp	Arg	Asp	Lys	Ile	Leu	Met	Asp		
			180					185					190				
att	ggc	aaa	gac	cct	tat	gtc	ggt	tcg	att	aaa	tca	aaa	gtc	tat	ctc	624	
Ile	Gly	Lys	Asp	Pro	Tyr	Val	Val	Ser	Ile	Lys	Ser	Lys	Val	Tyr	Leu		
		195					200					205					
caa	gac	gga	cgc	caa	ttt	cag	ttt	acc	gaa	agt	cgc	cat	aag	tta	gag	672	
Gln	Asp	Gly	Arg	Gln	Phe	Gln	Phe	Thr	Glu	Ser	Arg	His	Lys	Leu	Glu		
	210					215					220						
aaa	ttt	aga	ttt	gta	gat	ttt	gca	aaa	cgc	aag	aaa	tag				711	
Lys	Phe	Arg	Phe	Val	Asp	Phe	Ala	Lys	Arg	Lys	Lys						
225					230					235							

<210> 1358

<211> 236

<212> PRT

<213> Streptococcus pneumoniae

<400> 1358

Met	Lys	Lys	Tyr	Gln	Gln	Leu	Phe	Lys	Gln	Ile	Gln	Glu	Thr	Ile	Gln		
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Asn	Glu	Thr	Tyr	Ala	Val	Gly	Asp	Phe	Leu	Pro	Ser	Glu	His	Asp	Leu		
			20					25					30				
Met	Glu	Gln	Tyr	Gln	Val	Ser	Arg	Asp	Thr	Val	Arg	Lys	Ala	Leu	Ser		
		35					40					45					
Leu	Leu	Gln	Glu	Glu	Gly	Leu	Ile	Lys	Lys	Ile	Arg	Gly	Gln	Gly	Ser		
	50					55					60						
Gln	Val	Val	Lys	Glu	Glu	Thr	Val	Asn	Phe	Pro	Val	Ser	Asn	Leu	Thr		
65				70					75					80			
Ser	Tyr	Gln	Glu	Leu	Val	Lys	Glu	Leu	Gly	Leu	Arg	Ser	Lys	Thr	Asn		
				85					90					95			
Val	Val	Ser	Leu	Asp	Lys	Ile	Ile	Ile	Asp	Lys	Lys	Ser	Ser	Leu	Ile		
			100					105					110				
Thr	Gly	Phe	Pro	Glu	Phe	Arg	Met	Val	Trp	Lys	Val	Val	Arg	Gln	Arg		
		115					120					125					
Val	Val	Asp	Asp	Leu	Val	Ser	Val	Leu	Asp	Thr	Asp	Tyr	Leu	Asp	Met		
	130					135					140						
Glu	Leu	Ile	Pro	Asn	Leu	Thr	Arg	Gln	Ile	Ala	Glu	Gln	Ser	Ile	Tyr		
145					150					155					160		
Ser	Tyr	Ile	Glu	Asn	Gly	Leu	Lys	Leu	Leu	Ile	Asp	Tyr	Ala	Gln	Lys		
				165					170					175			
Glu	Ile	Thr	Ile	Asp	His	Ser	Ser	Asp	Arg	Asp	Lys	Ile	Leu	Met	Asp		
			180					185					190				
Ile	Gly	Lys	Asp	Pro	Tyr	Val	Val	Ser	Ile	Lys	Ser	Lys	Val	Tyr	Leu		
		195					200					205					
Gln	Asp	Gly	Arg	Gln	Phe	Gln	Phe	Thr	Glu	Ser	Arg	His	Lys	Leu	Glu		
	210					215					220						
Lys	Phe	Arg	Phe	Val	Asp	Phe	Ala	Lys	Arg	Lys	Lys						
225					230					235							

<210> 1359

<211> 729

<212> DNA

<213> Streptococcus pneumoniae

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(729)

&lt;400&gt; 1359

atg	agt	aca	aaa	tat	tta	ttt	att	tac	aat	gag	att	cgt	gaa	aag	att	48
Met	Ser	Thr	Lys	Tyr	Leu	Phe	Ile	Tyr	Asn	Glu	Ile	Arg	Glu	Lys	Ile	
1				5					10					15		
ctt	tgt	aat	aaa	tat	acc	atg	aac	gaa	caa	ttg	cct	gat	gaa	atg	aca	96
Leu	Cys	Asn	Lys	Tyr	Thr	Met	Asn	Glu	Gln	Leu	Pro	Asp	Glu	Met	Thr	
			20					25					30			
tta	gct	aaa	cag	ttt	gcc	tgt	agt	cga	atg	acg	atc	aaa	aaa	gct	tta	144
Leu	Ala	Lys	Gln	Phe	Ala	Cys	Ser	Arg	Met	Thr	Ile	Lys	Lys	Ala	Leu	
			35				40					45				
gac	ttg	tta	gtt	tct	gag	ggc	tta	att	ttt	aga	aaa	cgt	ggg	cag	gga	192
Asp	Leu	Leu	Val	Ser	Glu	Gly	Leu	Ile	Phe	Arg	Lys	Arg	Gly	Gln	Gly	
	50					55					60					
acc	ttt	gtt	ctc	tct	cgt	ggc	agc	tca	aaa	aga	aaa	tta	atc	gtt	cca	240
Thr	Phe	Val	Leu	Ser	Arg	Gly	Ser	Ser	Lys	Arg	Lys	Leu	Ile	Val	Pro	
	65				70					75					80	
gaa	aga	gat	atc	cgg	gga	ctg	aca	aaa	ata	tct	gaa	gat	gct	cat	tct	288
Glu	Arg	Asp	Ile	Arg	Gly	Leu	Thr	Lys	Ile	Ser	Glu	Asp	Ala	His	Ser	
				85					90					95		
aca	att	gac	tcg	agg	att	att	cac	ttc	aaa	tta	gaa	ttt	gca	aat	gaa	336
Thr	Ile	Asp	Ser	Arg	Ile	Ile	His	Phe	Lys	Leu	Glu	Phe	Ala	Asn	Glu	
			100					105					110			
ttt	tta	gca	gaa	aaa	cta	cag	gtc	gct	ttg	cag	agt	cca	gtt	tat	aat	384
Phe	Leu	Ala	Glu	Lys	Leu	Gln	Val	Ala	Leu	Gln	Ser	Pro	Val	Tyr	Asn	
		115					120					125				
att	tac	cgc	ctg	cgt	att	att	gac	ggg	aaa	cct	tat	gtt	ctg	gaa	caa	432
Ile	Tyr	Arg	Leu	Arg	Ile	Ile	Asp	Gly	Lys	Pro	Tyr	Val	Leu	Glu	Gln	
	130				135						140					
act	tat	atg	agt	acc	gat	gtt	att	cca	ggg	att	act	gaa	gat	att	tta	480
Thr	Tyr	Met	Ser	Thr	Asp	Val	Ile	Pro	Gly	Ile	Thr	Glu	Asp	Ile	Leu	
	145				150					155					160	
caa	aaa	tcg	att	tac	aat	tac	att	gaa	gga	aag	tta	gga	ttg	cat	att	528
Gln	Lys	Ser	Ile	Tyr	Asn	Tyr	Ile	Glu	Gly	Lys	Leu	Gly	Leu	His	Ile	
				165					170					175		
gcc	agt	gct	aca	aaa	atc	tta	cga	gct	tct	tct	agt	tca	gaa	aat	gag	576
Ala	Ser	Ala	Thr	Lys	Ile	Leu	Arg	Ala	Ser	Ser	Ser	Ser	Glu	Asn	Glu	
			180					185					190			
caa	cat	tac	ttg	cag	ctc	ctt	cca	acg	gaa	ccg	gta	ttt	gaa	gta	gaa	624
Gln	His	Tyr	Leu	Gln	Leu	Leu	Pro	Thr	Glu	Pro	Val	Phe	Glu	Val	Glu	
		195					200					205				
caa	gtg	gct	tat	ttg	gat	aac	gga	act	ccg	ttt	gag	tac	tcg	att	agt	672
Gln	Val	Ala	Tyr	Leu	Asp	Asn	Gly	Thr	Pro	Phe	Glu	Tyr	Ser	Ile	Ser	
	210				215						220					
cgt	cat	cgc	tat	gat	tta	ttt	gaa	ttt	aat	tct	ttt	gca	tta	cga	cat	720
Arg	His	Arg	Tyr	Asp	Leu	Phe	Glu	Phe	Asn	Ser	Phe	Ala	Leu	Arg	His	
	225				230					235					240	
tcc	tcc	tag														729
Ser	Ser															

&lt;210&gt; 1360

&lt;211&gt; 242

&lt;212&gt; PRT

&lt;213&gt; Streptococcus pneumoniae

&lt;400&gt; 1360

Met	Ser	Thr	Lys	Tyr	Leu	Phe	Ile	Tyr	Asn	Glu	Ile	Arg	Glu	Lys	Ile	
1				5					10					15		
Leu	Cys	Asn	Lys	Tyr	Thr	Met	Asn	Glu	Gln	Leu	Pro	Asp	Glu	Met	Thr	
			20					25					30			
Leu	Ala	Lys	Gln	Phe	Ala	Cys	Ser	Arg	Met	Thr	Ile	Lys	Lys	Ala	Leu	
		35					40					45				
Asp	Leu	Leu	Val	Ser	Glu	Gly	Leu	Ile	Phe	Arg	Lys	Arg	Gly	Gln	Gly	
	50					55					60					
Thr	Phe	Val	Leu	Ser	Arg	Gly	Ser	Ser	Lys	Arg	Lys	Leu	Ile	Val	Pro	



## PhoenixTemp32470.tmp.txt

```

65      70      75      80
Glu Arg Asp Ile Arg Gly Leu Thr Lys Ile Ser Glu Asp Ala His Ser
85
Thr Ile Asp Ser Arg Ile Ile His Phe Lys Leu Glu Phe Ala Asn Glu
100
Phe Leu Ala Glu Lys Leu Gln Val Ala Leu Gln Ser Pro Val Tyr Asn
115
Ile Tyr Arg Leu Arg Ile Ile Asp Gly Lys Pro Tyr Val Leu Glu Gln
130
Thr Tyr Met Ser Thr Asp Val Ile Pro Gly Ile Thr Glu Asp Ile Leu
145
Gln Lys Ser Ile Tyr Asn Tyr Ile Glu Gly Lys Leu Gly Leu His Ile
165
Ala Ser Ala Thr Lys Ile Leu Arg Ala Ser Ser Ser Ser Glu Asn Glu
180
Gln His Tyr Leu Gln Leu Leu Pro Thr Glu Pro Val Phe Glu Val Glu
195
Gln Val Ala Tyr Leu Asp Asn Gly Thr Pro Phe Glu Tyr Ser Ile Ser
210
Arg His Arg Tyr Asp Leu Phe Glu Phe Asn Ser Phe Ala Leu Arg His
225
Ser Ser
235
240

```

&lt;210&gt; 1361

&lt;211&gt; 708

&lt;212&gt; DNA

&lt;213&gt; Streptococcus pneumoniae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(708)

&lt;400&gt; 1361

```

atg aaa aat atg cta cct gct tat atg aaa atc cat gat cag ata aaa      48
Met Lys Asn Met Leu Pro Ala Tyr Met Lys Ile His Asp Gln Ile Lys
1      5      10      15
aag gat att gac gag cac cgt tgg gct att ggt gag agg ctt ccc agt      96
Lys Asp Ile Asp Glu His Arg Trp Ala Ile Gly Glu Arg Leu Pro Ser
20      25      30
gaa aga gat tta gct gag cag ttt gcg gtc agt cgc atg acc ctc cgc      144
Glu Arg Asp Leu Ala Glu Gln Phe Ala Val Ser Arg Met Thr Leu Arg
35      40      45
caa gcc gta tct cta tta gtc gaa gaa ggc gtc tta gag cgc cgt gta      192
Gln Ala Val Ser Leu Leu Val Glu Glu Gly Val Leu Glu Arg Arg Val
50      55      60
gga agc ggc acc ttt gtt tcc agt act cga gta caa gaa aag atg cga      240
Gly Ser Gly Thr Phe Val Ser Ser Thr Arg Val Gln Glu Lys Met Arg
65      70      75      80
ggg aca acc agt ttt act gaa att gtc aaa tcc caa ggt aaa gtt ccc      288
Gly Thr Thr Ser Phe Thr Glu Ile Val Lys Ser Gln Gly Lys Val Pro
85      90      95
tct agc cag ctc att tcc tac aaa aaa acc att ccc aat gag caa gaa      336
Ser Ser Gln Leu Ile Ser Tyr Lys Lys Thr Ile Pro Asn Glu Gln Glu
100      105      110
gtt gcc aag cta gga att ttt cca acg gac aat att atc cga atg gag      384
Val Ala Lys Leu Gly Ile Phe Pro Thr Asp Asn Ile Ile Arg Met Glu
115      120      125
cgg gtc cgc tat gcc gac caa gtt ccc cta gtt tat gaa gtt gct tct      432
Arg Val Arg Tyr Ala Asp Gln Val Pro Leu Val Tyr Glu Val Ala Ser
130      135      140
att cct gaa aaa ttc att aag gac ttt aaa aaa gaa gaa atc acc agt      480
Ile Pro Glu Lys Phe Ile Lys Asp Phe Lys Lys Glu Glu Ile Thr Ser
145      150      155      160
cat ttc ttc caa acc ttg caa aaa cat ggc tat cgt atc ggt aaa tcc      528
His Phe Phe Gln Thr Leu Gln Lys His Gly Tyr Arg Ile Gly Lys Ser
165      170      175
caa cag acc atc tat gct cgc ctt gct aaa gaa aag att gcc cac tat      576
Gln Gln Thr Ile Tyr Ala Arg Leu Ala Lys Glu Lys Ile Ala His Tyr

```

## PhoenixTemp32470.tmp.txt

180	185	190	
ttg gaa gtt gaa aaa gga cat gct att ctt gga ttg acc cag att tcc	624		
Leu Glu Val Glu Lys Gly His Ala Ile Leu Gly Leu Thr Gln Ile Ser			
195	200	205	
tac cta gaa gat ggt act gct ttt gaa tac gta aaa agt caa tat gta	672		
Tyr Leu Glu Asp Gly Thr Ala Phe Glu Tyr Val Lys Ser Gln Tyr Val			
210	215	220	
ggc gaa cgc ttt gaa ttt tat ctt gaa aat aat tag	708		
Gly Glu Arg Phe Glu Phe Tyr Leu Glu Asn Asn			
225	230	235	

&lt;210&gt; 1362

&lt;211&gt; 235

&lt;212&gt; PRT

&lt;213&gt; Streptococcus pneumoniae

&lt;400&gt; 1362

Met Lys Asn Met Leu Pro Ala Tyr Met Lys Ile His Asp Gln Ile Lys	
1 5 10 15	
Lys Asp Ile Asp Glu His Arg Trp Ala Ile Gly Glu Arg Leu Pro Ser	
20 25 30	
Glu Arg Asp Leu Ala Glu Gln Phe Ala Val Ser Arg Met Thr Leu Arg	
35 40 45	
Gln Ala Val Ser Leu Leu Val Glu Gly Val Leu Glu Arg Arg Val	
50 55 60	
Gly Ser Gly Thr Phe Val Ser Ser Thr Arg Val Gln Glu Lys Met Arg	
65 70 75 80	
Gly Thr Thr Ser Phe Thr Glu Ile Val Lys Ser Gln Gly Lys Val Pro	
85 90 95	
Ser Ser Gln Leu Ile Ser Tyr Lys Lys Thr Ile Pro Asn Glu Gln Glu	
100 105 110	
Val Ala Lys Leu Gly Ile Phe Pro Thr Asp Asn Ile Ile Arg Met Glu	
115 120 125	
Arg Val Arg Tyr Ala Asp Gln Val Pro Leu Val Tyr Glu Val Ala Ser	
130 135 140	
Ile Pro Glu Lys Phe Ile Lys Asp Phe Lys Lys Glu Glu Ile Thr Ser	
145 150 155 160	
His Phe Phe Gln Thr Leu Gln Lys His Gly Tyr Arg Ile Gly Lys Ser	
165 170 175	
Gln Gln Thr Ile Tyr Ala Arg Leu Ala Lys Glu Lys Ile Ala His Tyr	
180 185 190	
Leu Glu Val Glu Lys Gly His Ala Ile Leu Gly Leu Thr Gln Ile Ser	
195 200 205	
Tyr Leu Glu Asp Gly Thr Ala Phe Glu Tyr Val Lys Ser Gln Tyr Val	
210 215 220	
Gly Glu Arg Phe Glu Phe Tyr Leu Glu Asn Asn	
225 230 235	

&lt;210&gt; 1363

&lt;211&gt; 717

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(717)

&lt;400&gt; 1363

atg atc tac aaa agc att gcg gag cgg tta aga att cga ctt aac tcc	48
Met Ile Tyr Lys Ser Ile Ala Glu Arg Leu Arg Ile Arg Leu Asn Ser	
1 5 10 15	
gca gat ttc acg cta aac agc ctt ctt ccc ggt gaa aaa aag ctg gcg	96
Ala Asp Phe Thr Leu Asn Ser Leu Leu Pro Gly Glu Lys Lys Leu Ala	
20 25 30	
gaa gag ttt gcg gta tcg cgg atg acc atc cgt aaa gcc att gac ctg	144
Glu Glu Phe Ala Val Ser Arg Met Thr Ile Arg Lys Ala Ile Asp Leu	
35 40 45	
ctg gta gcg tgg ggg ctg gtg gtc cgc cgc cac ggt agt ggc act tac	192
Leu Val Ala Trp Gly Leu Val Val Arg Arg His Gly Ser Gly Thr Tyr	

## PhoenixTemp32470.tmp.txt

50	55	60		
ctg	gtg	cg	aaa	gat
Leu	Val	Arg	Lys	Asp
65	70	75	80	
gtg	gag	gtg	tta	aaa
Val	Glu	Val	Leu	Lys
85	90	95		
att	ttt	gaa	atc	atg
Ile	Phe	Glu	Ile	Met
100	105	110		
att	caa	atc	aac	gag
Ile	Gln	Ile	Asn	Glu
115	120	125		
gaa	ggg	aaa	ccg	ctg
Glu	Gly	Lys	Pro	Leu
130	135	140		
ttc	cgt	aat	ctt	tcg
Phe	Arg	Asn	Leu	Ser
145	150	155		
att	gaa	caa	gag	tgc
Ile	Glu	Gln	Glu	Cys
165	170	175		
acg	cca	gtg	ctc	gcc
Thr	Pro	Val	Leu	Ala
180	185	190		
gaa	cac	acg	cca	ctg
Glu	His	Thr	Pro	Leu
195	200	205		
ggg	gag	ttt	ttg	aat
Gly	Glu	Phe	Leu	Asn
210	215	220		
cag	gtg	gag	tac	cat
Gln	Val	Glu	Tyr	His
225	230	235		

240

288

336

384

432

480

528

576

624

672

717

&lt;210&gt; 1364

&lt;211&gt; 238

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 1364

Met	Ile	Tyr	Lys	Ser	Ile	Ala	Glu	Arg	Leu	Arg	Ile	Arg	Leu	Asn	Ser
1				5					10					15	
Ala	Asp	Phe	Thr	Leu	Asn	Ser	Leu	Leu	Pro	Gly	Glu	Lys	Lys	Leu	Ala
			20					25					30		
Glu	Glu	Phe	Ala	Val	Ser	Arg	Met	Thr	Ile	Arg	Lys	Ala	Ile	Asp	Leu
		35					40					45			
Leu	Val	Ala	Trp	Gly	Leu	Val	Val	Arg	Arg	His	Gly	Ser	Gly	Thr	Tyr
		50				55					60				
Leu	Val	Arg	Lys	Asp	Val	Leu	His	Gln	Thr	Ala	Ser	Leu	Thr	Gly	Leu
65					70					75				80	
Val	Glu	Val	Leu	Lys	Arg	Gln	Gly	Lys	Thr	Val	Thr	Ser	Gln	Val	Leu
			85						90				95		
Ile	Phe	Glu	Ile	Met	Pro	Ala	Pro	Pro	Ala	Ile	Ala	Ser	Gln	Leu	Arg
			100				105					110			
Ile	Gln	Ile	Asn	Glu	Gln	Ile	Tyr	Phe	Ser	Arg	Arg	Val	Arg	Phe	Val
		115					120					125			
Glu	Gly	Lys	Pro	Leu	Met	Leu	Glu	Asp	Ser	Tyr	Met	Pro	Val	Lys	Leu
	130					135					140				
Phe	Arg	Asn	Leu	Ser	Leu	Gln	His	Leu	Glu	Gly	Ser	Lys	Phe	Glu	Tyr
145					150					155					160
Ile	Glu	Gln	Glu	Cys	Gly	Ile	Leu	Ile	Gly	Gly	Asn	Tyr	Glu	Ser	Leu
			165						170				175		
Thr	Pro	Val	Leu	Ala	Asp	Arg	Leu	Leu	Ala	Arg	Gln	Met	Lys	Val	Ala
			180				185					190			
Glu	His	Thr	Pro	Leu	Leu	Arg	Ile	Thr	Ser	Leu	Ser	Tyr	Ser	Glu	Ser
		195					200				205				
Gly	Glu	Phe	Leu	Asn	Tyr	Ser	Val	Met	Phe	Arg	Asn	Ala	Ser	Glu	Tyr
	210					215					220				

Gln Val Glu Tyr His Leu Arg Arg Leu His Pro Glu Lys Ser  
 225 230 235

<210> 1365  
 <211> 708  
 <212> DNA  
 <213> Lactococcus lactis subsp. lactis

<220>  
 <221> CDS  
 <222> (1)..(708)

<400> 1365  
 atg gca aga aaa tca gta ccg aat tat gta aaa ata cat gat gcc tta 48  
 Met Ala Arg Lys Ser Val Pro Asn Tyr Val Lys Ile His Asp Ala Leu  
 1 5 10 15  
 aaa gat gaa gtt gaa aaa ggc atc tgg aaa att gga caa cgt ctt cca 96  
 Lys Asp Glu Val Glu Lys Gly Ile Trp Lys Ile Gly Gln Arg Leu Pro  
 20 25 30  
 agc gaa cgt gat ttg gcc gag cgt ttt act gtc agt cga atg aca gca 144  
 Ser Glu Arg Asp Leu Ala Glu Arg Phe Thr Val Ser Arg Met Thr Ala  
 35 40 45  
 aga caa gcg gta aca gct ttg gtt gat gaa gga att ctt gac cgt cgt 192  
 Arg Gln Ala Val Thr Ala Leu Val Asp Glu Gly Ile Leu Asp Arg Arg  
 50 55 60  
 gtg ggt tct gga act tat gtt gct agc cga cgt gtt cgc gaa aaa atg 240  
 Val Gly Ser Gly Thr Tyr Val Ala Ser Arg Arg Val Arg Glu Lys Met  
 65 70 75 80  
 cgt gga aca act tcc ttt aca gaa att atc agc tca caa ggt aaa gtt 288  
 Arg Gly Thr Thr Ser Phe Thr Glu Ile Ile Ser Ser Gln Gly Lys Val  
 85 90 95  
 cct tca aca gaa gtt ttg agt tat att aga acg gcg cca aat gag gtt 336  
 Pro Ser Thr Glu Val Leu Ser Tyr Ile Arg Thr Ala Pro Asn Glu Val  
 100 105 110  
 gaa tgt gaa aaa cta aat atc acc aaa aag gat tcc atc atc cga atg 384  
 Glu Cys Glu Lys Leu Asn Ile Thr Lys Lys Asp Ser Ile Ile Arg Met  
 115 120 125  
 gag cgg att cgt tat gcg gat aat gtt cca att tgt tat gaa gtg gca 432  
 Glu Arg Ile Arg Tyr Ala Asp Asn Val Pro Ile Cys Tyr Glu Val Ala  
 130 135 140  
 agc att cct ttc aaa ttg gtc aaa tct ttt gat aaa gaa att act 480  
 Ser Ile Pro Phe Lys Leu Val Lys Ser Phe Asp Lys Lys Glu Ile Thr  
 145 150 155 160  
 agt aac ttc ttt aaa act tta gaa agt cac gga cat gtg att ggt cgt 528  
 Ser Asn Phe Phe Lys Thr Leu Glu Ser His Gly His Val Ile Gly Arg  
 165 170 175  
 agt gaa cag att gtt tca gct aaa aga gtc agt aca gag gtt tca gag 576  
 Ser Glu Gln Ile Val Ser Ala Lys Arg Val Ser Thr Glu Val Ser Glu  
 180 185 190  
 tat tta aaa aca aga gtt gga gct gct att ctt ggt tta act cag gtt 624  
 Tyr Leu Lys Thr Arg Val Gly Ala Ala Ile Leu Gly Leu Thr Gln Val  
 195 200 205  
 tct tat tta aca gat ggt aca gct ttt gaa tat gtc tta tct caa tat 672  
 Ser Tyr Leu Thr Asp Gly Thr Ala Phe Glu Tyr Val Leu Ser Gln Tyr  
 210 215 220  
 gtt ggt gac cgt ttt gaa ttt tat ttg gaa aga taa 708  
 Val Gly Asp Arg Phe Glu Phe Tyr Leu Glu Arg  
 225 230 235

<210> 1366  
 <211> 235  
 <212> PRT  
 <213> Lactococcus lactis subsp. lactis

<400> 1366  
 Met Ala Arg Lys Ser Val Pro Asn Tyr Val Lys Ile His Asp Ala Leu  
 1 5 10 15  
 Lys Asp Glu Val Glu Lys Gly Ile Trp Lys Ile Gly Gln Arg Leu Pro  
 20 25 30

## PhoenixTemp32470.tmp.txt

Ser Glu Arg<sup>35</sup> Asp Leu Ala Glu Arg<sup>40</sup> Phe Thr Val Ser Arg<sup>45</sup> Met Thr Ala  
 Arg Gln<sup>50</sup> Ala Val Thr Ala Leu<sup>55</sup> Val Asp Glu Gly Ile<sup>60</sup> Leu Asp Arg Arg  
 Val Gly Ser Gly Thr Tyr<sup>70</sup> Val Ala Ser Arg Arg<sup>75</sup> Val Arg Glu Lys Met<sup>80</sup>  
 Arg Gly Thr Thr Ser<sup>85</sup> Phe Thr Glu Ile<sup>90</sup> Ser Ser Gln Gly Lys<sup>95</sup> Val  
 Pro Ser Thr Glu<sup>100</sup> Val Leu Ser Tyr Ile<sup>105</sup> Arg Thr Ala Pro Asn Glu Val  
 Glu Cys Glu<sup>115</sup> Lys Leu Asn Ile Thr Lys Lys Asp Ser Ile<sup>125</sup> Ile Arg Met  
 Glu Arg<sup>130</sup> Ile Arg Tyr Ala Asp<sup>135</sup> Asn Val Pro Ile Cys<sup>140</sup> Tyr Glu Val Ala  
 Ser Ile<sup>145</sup> Pro Phe Lys Leu<sup>150</sup> Val Lys Ser Phe Asp<sup>155</sup> Lys Lys Glu Ile Thr<sup>160</sup>  
 Ser Asn Phe Phe Lys<sup>165</sup> Thr Leu Glu Ser His<sup>170</sup> Gly His Val Ile Gly Arg<sup>175</sup>  
 Ser Glu Gln<sup>180</sup> Ile Val Ser Ala Lys Arg<sup>185</sup> Val Ser Thr Glu Val<sup>190</sup> Ser Glu  
 Tyr Leu Lys<sup>195</sup> Thr Arg Val Gly Ala<sup>200</sup> Ala Ile Leu Gly Leu<sup>205</sup> Thr Gln Val  
 Ser Tyr<sup>210</sup> Leu Thr Asp Gly Thr<sup>215</sup> Ala Phe Glu Tyr Val<sup>220</sup> Leu Ser Gln Tyr  
 Val<sup>225</sup> Gly Asp Arg Phe Glu<sup>230</sup> Phe Tyr Leu Glu Arg<sup>235</sup>

&lt;210&gt; 1367

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;400&gt; 1367

atg cgc gcc atg aaa tca tta agt aag tcg tca caa ata ccg ctc tat	48
Met Arg Ala Met Lys <sup>5</sup> Ser Leu Ser Lys <sup>10</sup> Ser Gln Ile Pro Leu Tyr <sup>15</sup>	
caa caa gtg gtg gag tgg ata aga gaa agt att tat acc gga gat ctg	96
Gln Gln Val Val Glu Trp Ile Arg Glu <sup>25</sup> Ser Ile Tyr Thr Gly <sup>30</sup> Asp Leu	
gtg gaa gac gat cgc att cct tcg gaa tac cag att atg gat atg ctg	144
Val Glu Asp <sup>35</sup> Asp Arg Ile Pro Ser <sup>40</sup> Glu Tyr Gln Ile Met <sup>45</sup> Asp Met Leu	
gac gtg agt cgg gga acc gtt aaa gcg gtc gcc caa ctg gta aaa	192
Asp Val Ser Arg Gly Thr Val Lys Lys Ala Val Ala Gln Leu Val Lys	
gaa ggc gtg tta ata cag gtc cag ggt aag gga aca ttt gtc aaa aaa	240
Glu Gly Val Leu Ile Gln Val Gln Gly Lys Gly <sup>75</sup> Thr Phe Val Lys Lys <sup>80</sup>	
gag aac gtg gca tat ccg tta ggt gaa gga tta ttg tca ttc gcg gaa	288
Glu Asn Val Ala Tyr <sup>85</sup> Pro Leu Gly Glu Gly <sup>90</sup> Leu Leu Ser Phe Ala Glu <sup>95</sup>	
tcg ctg gaa agc cag aaa ata cat ttt acc act gaa gtt att acg tca	336
Ser Leu Glu Ser <sup>100</sup> Gln Lys Ile His <sup>105</sup> Thr Thr Glu Val Ile Thr Ser <sup>110</sup>	
cgg att gaa tcg gct aat cgt tat gtg gca gag aaa tta aga ata acg	384
Arg Ile Glu Ser Ala Asn Arg Tyr <sup>120</sup> Val Ala Glu Lys Leu Arg Ile Thr <sup>125</sup>	
ccc ggt cag gat att ctt tac ctt gaa cgc tta cgc tca att ggt gat	432
Pro Gly Gln Asp Ile Leu Tyr <sup>135</sup> Leu Glu Arg Leu Arg <sup>140</sup> Ser Ile Gly Asp	
gaa aaa gcg atg ctg ata gag aac cgt atc aat att gag cta tgc ccc	480
Glu Lys Ala Met Leu Ile Glu Asn Arg Ile Asn Ile Glu Leu Cys Pro <sup>160</sup>	
ggt att gct gaa atc gat ttt aat caa cac aat tta ttt cca aca ata	528
Gly Ile Ala Glu Ile Asp Phe Asn Gln His Asn Leu Phe Pro Thr Ile	

PhoenixTemp32470.tmp.txt

<div> <div>165</div> <div>170</div> <div>175</div> </div>																
gaa	agt	ttg	tcg	caa	aga	aaa	att	cgt	tac	tcg	gaa	agt	cgc	tat	gcc	576
Glu	Ser	Leu	Ser	Gln	Arg	Lys	Ile	Arg	Tyr	Ser	Glu	Ser	Arg	Tyr	Ala	
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gcg	cga	tta	att	ggt	aat	gaa	cgt	ggt	cat	ttt	tta	gat	atc	agt	gaa	624
Ala	Arg	Leu	Ile	Gly	Asn	Glu	Arg	Gly	His	Phe	Leu	Asp	Ile	Ser	Glu	
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gac	gca	ccc	gtt	ttg	cat	ctg	gag	cag	tta	gtc	ttt	ttc	tcc	cga	gga	672
Asp	Ala	Pro	Val	Leu	His	Leu	Glu	Gln	Leu	Val	Phe	Phe	Ser	Arg	Gly	
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tta	ccc	att	gag	ttt	ggc	aac	gtc	tgg	tta	aaa	gga	aat	aaa	tat	tat	720
Leu	Pro	Ile	Glu	Phe	Gly	Asn	Val	Trp	Leu	Lys	Gly	Asn	Lys	Tyr	Tyr	
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ctt	ggc	acc	gta	ctg	caa	cgg	cgg	gaa	gtg	agt	taa					756
Leu	Gly	Thr	Val	Leu	Gln	Arg	Arg	Glu	Val	Ser						
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<210> 1368
<211> 251
<212> PRT
<213> Escherichia coli
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<400>	1368															
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			20					25					30			
Val	Glu	Asp	Asp	Arg	Ile	Pro	Ser	Glu	Tyr	Gln	Ile	Met	Asp	Met	Leu	
		35					40					45				
Asp	Val	Ser	Arg	Gly	Thr	Val	Lys	Lys	Ala	Val	Ala	Gln	Leu	Val	Lys	
	50					55					60					
Glu	Gly	Val	Leu	Ile	Gln	Val	Gln	Gly	Lys	Gly	Thr	Phe	Val	Lys	Lys	
65					70					75					80	
Glu	Asn	Val	Ala	Tyr	Pro	Leu	Gly	Glu	Gly	Leu	Leu	Ser	Phe	Ala	Glu	
				85					90					95		
Ser	Leu	Glu	Ser	Gln	Lys	Ile	His	Phe	Thr	Thr	Glu	Val	Ile	Thr	Ser	
			100					105					110			
Arg	Ile	Glu	Ser	Ala	Asn	Arg	Tyr	Val	Ala	Glu	Lys	Leu	Arg	Ile	Thr	
		115					120					125				
Pro	Gly	Gln	Asp	Ile	Leu	Tyr	Leu	Glu	Arg	Leu	Arg	Ser	Ile	Gly	Asp	
		130				135					140					
Glu	Lys	Ala	Met	Leu	Ile	Glu	Asn	Arg	Ile	Asn	Ile	Glu	Leu	Cys	Pro	
145					150					155					160	
Gly	Ile	Ala	Glu	Ile	Asp	Phe	Asn	Gln	His	Asn	Leu	Phe	Pro	Thr	Ile	
				165					170					175		
Glu	Ser	Leu	Ser	Gln	Arg	Lys	Ile	Arg	Tyr	Ser	Glu	Ser	Arg	Tyr	Ala	
			180					185					190			
Ala	Arg	Leu	Ile	Gly	Asn	Glu	Arg	Gly	His	Phe	Leu	Asp	Ile	Ser	Glu	
		195					200					205				
Asp	Ala	Pro	Val	Leu	His	Leu	Glu	Gln	Leu	Val	Phe	Phe	Ser	Arg	Gly	
		210				215					220					
Leu	Pro	Ile	Glu	Phe	Gly	Asn	Val	Trp	Leu	Lys	Gly	Asn	Lys	Tyr	Tyr	
225					230					235					240	
Leu	Gly	Thr	Val	Leu	Gln	Arg	Arg	Glu	Val	Ser						
				245					250							

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<210> 1369
<211> 732
<212> DNA
<213> Clostridium acetobutylicum
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<220>  
<221> CDS  
<222> (1)..(732)

<400> 1369  
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Met Lys Ile Val Ser Lys Ser Ser Pro Leu Pro Leu His Tyr Gln Leu  
1 5 10 15

## PhoenixTemp32470.tmp.txt

aag	atg	att	tta	cag	gaa	atg	atc	gaa	aat	gaa	gaa	ttg	ctt	cct	gga	96
Lys	Met	Ile	Leu	Gln	Glu	Met	Ile	Glu	Asn	Glu	Glu	Leu	Leu	Pro	Gly	
			20					25				30				
gat	act	att	cct	act	gaa	aga	gaa	ctt	tgt	gaa	atc	cag	aaa	ata	agt	144
Asp	Thr	Ile	Pro	Thr	Glu	Arg	Glu	Leu	Cys	Glu	Ile	Gln	Lys	Ile	Ser	
		35					40					45				
aga	atg	act	gta	aat	aaa	gca	att	cta	tca	tta	gtg	tct	gaa	ggt	att	192
Arg	Met	Thr	Val	Asn	Lys	Ala	Ile	Leu	Ser	Leu	Val	Ser	Glu	Gly	Ile	
		50				55					60					
ctc	tat	agg	gag	caa	ggt	aag	gga	acc	ttt	gta	gcc	aaa	aaa	aag	gag	240
Leu	Tyr	Arg	Glu	Gln	Gly	Lys	Gly	Thr	Phe	Val	Ala	Lys	Lys	Lys	Glu	
		65			70					75					80	
aaa	caa	caa	ctg	aca	aag	cta	aag	agt	ttt	act	gaa	gaa	atg	agg	gaa	288
Lys	Gln	Gln	Leu	Thr	Lys	Leu	Lys	Ser	Phe	Thr	Glu	Glu	Met	Arg	Glu	
				85					90					95		
aag	ggc	cta	aac	ata	agt	aca	aaa	ata	cta	tcc	ttt	gaa	ata	aaa	act	336
Lys	Gly	Leu	Asn	Ile	Ser	Thr	Lys	Ile	Leu	Ser	Phe	Glu	Ile	Lys	Thr	
			100					105					110			
gcc	aca	aaa	cat	ata	agc	acc	tta	ttg	gaa	ctt	cca	cat	aag	aaa	atg	384
Ala	Thr	Lys	His	Ile	Ser	Thr	Leu	Leu	Glu	Leu	Pro	His	Lys	Lys	Met	
		115					120					125				
aaa	gtt	ata	gaa	ata	ata	cgt	ctt	aga	tta	aca	gat	aat	gat	ccc	tct	432
Lys	Val	Ile	Glu	Ile	Ile	Arg	Leu	Arg	Leu	Thr	Asp	Asn	Asp	Pro	Ser	
		130				135					140					
gca	ata	gaa	act	gtt	gta	ctt	ccc	ttg	tat	tta	ttt	agt	gat	atg	aca	480
Ala	Ile	Glu	Thr	Val	Val	Leu	Pro	Leu	Tyr	Leu	Phe	Ser	Asp	Met	Thr	
		145			150					155					160	
aaa	gaa	gtt	att	gat	ggg	aaa	tct	cta	tac	aat	acc	ttt	aga	gag	aaa	528
Lys	Glu	Val	Ile	Asp	Gly	Lys	Ser	Leu	Tyr	Asn	Thr	Phe	Arg	Glu	Lys	
				165					170					175		
tat	ggc	tat	gag	cct	aca	aag	gca	aaa	caa	act	att	gaa	cct	atc	atg	576
Tyr	Gly	Tyr	Glu	Pro	Thr	Lys	Ala	Lys	Gln	Thr	Ile	Glu	Pro	Ile	Met	
			180					185					190			
cta	aca	gac	tat	gag	gca	aaa	ttc	tta	aat	caa	gta	ggt	aat	tcc	tta	624
Leu	Thr	Asp	Tyr	Glu	Ala	Lys	Phe	Leu	Asn	Gln	Val	Gly	Asn	Ser	Leu	
		195					200					205				
gcc	ctt	ctt	ttt	cga	aga	ctc	acc	tat	aga	aag	gat	gga	ggt	cct	att	672
Ala	Leu	Leu	Phe	Arg	Arg	Leu	Thr	Tyr	Arg	Lys	Asp	Gly	Val	Pro	Ile	
		210				215					220					
gaa	tac	aca	aaa	tca	ata	tat	aga	agt	gaa	aaa	tat	aaa	tat	gaa	gta	720
Glu	Tyr	Thr	Lys	Ser	Ile	Tyr	Arg	Ser	Glu	Lys	Tyr	Lys	Tyr	Glu	Val	
					230					235					240	
ata	tta	act	tag													732
Ile	Leu	Thr														

&lt;210&gt; 1370

&lt;211&gt; 243

&lt;212&gt; PRT

&lt;213&gt; Clostridium acetobutylicum

&lt;400&gt; 1370

Met	Lys	Ile	Val	Ser	Lys	Ser	Ser	Pro	Leu	Pro	Leu	His	Tyr	Gln	Leu	
1				5					10					15		
Lys	Met	Ile	Leu	Gln	Glu	Met	Ile	Glu	Asn	Glu	Glu	Leu	Leu	Pro	Gly	
			20					25				30				
Asp	Thr	Ile	Pro	Thr	Glu	Arg	Glu	Leu	Cys	Glu	Ile	Gln	Lys	Ile	Ser	
		35					40					45				
Arg	Met	Thr	Val	Asn	Lys	Ala	Ile	Leu	Ser	Leu	Val	Ser	Glu	Gly	Ile	
		50				55					60					
Leu	Tyr	Arg	Glu	Gln	Gly	Lys	Gly	Thr	Phe	Val	Ala	Lys	Lys	Lys	Glu	
		65			70					75					80	
Lys	Gln	Gln	Leu	Thr	Lys	Leu	Lys	Ser	Phe	Thr	Glu	Glu	Met	Arg	Glu	
				85					90					95		
Lys	Gly	Leu	Asn	Ile	Ser	Thr	Lys	Ile	Leu	Ser	Phe	Glu	Ile	Lys	Thr	
			100					105					110			
Ala	Thr	Lys	His	Ile	Ser	Thr	Leu	Leu	Glu	Leu	Pro	His	Lys	Lys	Met	
		115					120					125				
Lys	Val	Ile	Glu	Ile	Ile	Arg	Leu	Arg	Leu	Thr	Asp	Asn	Asp	Pro	Ser	

## PhoenixTemp32470.tmp.txt

130 135 140  
 Ala Ile Glu Thr Val Val Leu Pro Leu Tyr Leu Phe Ser Asp Met Thr  
 145 150 155 160  
 Lys Glu Val Ile Asp Gly Lys Ser Leu Tyr Asn Thr Phe Arg Glu Lys  
 165 170 175  
 Tyr Gly Tyr Glu Pro Thr Lys Ala Lys Gln Thr Ile Glu Pro Ile Met  
 180 185 190  
 Leu Thr Asp Tyr Glu Ala Lys Phe Leu Asn Gln Val Gly Asn Ser Leu  
 195 200 205  
 Ala Leu Leu Phe Arg Arg Leu Thr Tyr Arg Lys Asp Gly Val Pro Ile  
 210 215 220  
 Glu Tyr Thr Lys Ser Ile Tyr Arg Ser Glu Lys Tyr Lys Tyr Glu Val  
 225 230 235 240  
 Ile Leu Thr

&lt;210&gt; 1371

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Bordetella parapertussis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;400&gt; 1371

atg	atg	tct	gaa	tcg	aac	cat	gcc	ccg	ctc	tat	gcc	cgg	gtc	gag	gcc	48
Met	Met	Ser	Glu	Ser	Asn	His	Ala	Pro	Leu	Tyr	Ala	Arg	Val	Glu	Ala	
1				5					10					15		
gtg	ctg	gcc	gag	gcg	atc	gcc	gcg	ggc	gaa	ctg	ccg	ccg	ggc	agc	cag	96
Val	Leu	Ala	Glu	Ala	Ile	Ala	Ala	Gly	Glu	Leu	Pro	Pro	Gly	Ser	Gln	
			20					25					30			
ttg	ccc	gcc	gaa	gac	ggc	ctg	atc	gcg	cgc	ttc	cag	gtc	agc	cgc	acc	144
Leu	Pro	Ala	Glu	Asp	Gly	Leu	Ile	Ala	Arg	Phe	Gln	Val	Ser	Arg	Thr	
			35				40					45				
acg	gtg	cgc	aag	gcc	atc	cag	aac	ctg	gcc	gag	cgt	ggg	ctg	gtc	gag	192
Thr	Val	Arg	Lys	Ala	Ile	Gln	Asn	Leu	Ala	Glu	Arg	Gly	Leu	Val	Glu	
			50			55					60					
atc	cgg	cgc	ggc	aag	ggc	acc	ttc	gtg	gcg	cag	ccg	agg	gtg	gtg	cag	240
Ile	Arg	Arg	Gly	Lys	Gly	Thr	Phe	Val	Ala	Gln	Pro	Arg	Val	Val	Gln	
			65		70					75					80	
gag	ctc	acc	gag	ctc	acc	ggc	ttc	gtg	gag	gac	atg	cag	gcc	ttg	ggc	288
Glu	Leu	Thr	Glu	Leu	Thr	Gly	Phe	Val	Glu	Asp	Met	Gln	Ala	Leu	Gly	
			85					90						95		
cgc	gtg	ccc	tcg	gcg	cgc	ctg	ctg	gac	gcc	gag	atc	gtg	gcc	gcc	ggc	336
Arg	Val	Pro	Ser	Ala	Arg	Leu	Leu	Asp	Ala	Glu	Ile	Val	Ala	Ala	Gly	
			100					105					110			
cag	gcc	gtg	gcg	cgc	cag	ctg	gcg	gtg	gcg	ccg	ggc	acg	cag	gtc	atg	384
Gln	Ala	Val	Ala	Arg	Gln	Leu	Ala	Val	Ala	Pro	Gly	Thr	Gln	Val	Met	
			115				120					125				
cgc	atc	cgg	cgc	gtg	cgc	ctg	gcc	gat	ggc	gtg	gcc	atg	tcg	ctg	gac	432
Arg	Ile	Arg	Arg	Val	Arg	Leu	Ala	Asp	Gly	Val	Ala	Met	Ser	Leu	Asp	
			130			135					140					
gaa	acc	tat	ctg	ccg	cgc	gaa	atc	ggc	gaa	cag	gtc	gtc	acg	cac	gac	480
Glu	Thr	Tyr	Leu	Pro	Arg	Glu	Ile	Gly	Glu	Gln	Val	Val	Thr	His	Asp	
			145		150					155					160	
ctg	gag	gcc	gag	ccc	atc	ttc	gcg	ctg	ctg	gaa	cag	aaa	tac	gac	ctg	528
Leu	Glu	Ala	Glu	Pro	Ile	Phe	Ala	Leu	Leu	Glu	Gln	Lys	Tyr	Asp	Leu	
				165					170					175		
ccg	ctg	gtc	gag	gcc	gaa	tac	cgg	ctc	gag	gcc	gcc	atc	gcc	acg	ccc	576
Pro	Leu	Val	Glu	Ala	Glu	Tyr	Arg	Leu	Glu	Ala	Ala	Ile	Ala	Thr	Pro	
			180					185					190			
gaa	gtg	gcg	ggc	ctg	gcg	gtg	ccg	ggc	agg	ccg	gtc	gtc	ttc	ctg		624
Glu	Val	Ala	Arg	Ala	Leu	Ala	Val	Pro	Pro	Gly	Ser	Pro	Val	Phe	Leu	
			195			200						205				
atc	gag	cgc	acc	tcg	tat	tgc	gcg	ggc	cct	cgg	ccc	atc	gac	tac	gaa	672
Ile	Glu	Arg	Thr	Ser	Tyr	Cys	Ala	Gly	Pro	Arg	Pro	Ile	Asp	Tyr	Glu	
			210			215					220					
aag	ctg	tac	tac	cgc	ggc	gac	ctg	atc	cgc	ttc	gtg	acg	cgg	ctg	gcg	720



Lys Leu Tyr Tyr Arg Gly Asp Leu Ile Arg Phe Val Thr Arg Leu Ala  
 225 230 235 240  
 cgg cgc gcg cgg ccc gtg ccg gca tga  
 Arg Arg Ala Arg Pro Val Pro Ala  
 245

747

<210> 1372  
 <211> 248  
 <212> PRT  
 <213> Bordetella parapertussis

<400> 1372  
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 Val Leu Ala Glu Ala Ile Ala Ala Gly Glu Leu Pro Pro Gly Ser Gln  
 20 25 30  
 Leu Pro Ala Glu Asp Gly Leu Ile Ala Arg Phe Gln Val Ser Arg Thr  
 35 40 45  
 Thr Val Arg Lys Ala Ile Gln Asn Leu Ala Glu Arg Gly Leu Val Glu  
 50 55 60  
 Ile Arg Arg Gly Lys Gly Thr Phe Val Ala Gln Pro Arg Val Val Gln  
 65 70 75 80  
 Glu Leu Thr Glu Leu Thr Gly Phe Val Glu Asp Met Gln Ala Leu Gly  
 85 90 95  
 Arg Val Pro Ser Ala Arg Leu Leu Asp Ala Glu Ile Val Ala Ala Gly  
 100 105 110  
 Gln Ala Val Ala Arg Gln Leu Ala Val Ala Pro Gly Thr Gln Val Met  
 115 120 125  
 Arg Ile Arg Arg Val Arg Leu Ala Asp Gly Val Ala Met Ser Leu Asp  
 130 135 140  
 Glu Thr Tyr Leu Pro Arg Glu Ile Gly Glu Gln Val Val Thr His Asp  
 145 150 155 160  
 Leu Glu Ala Glu Pro Ile Phe Ala Leu Leu Glu Gln Lys Tyr Asp Leu  
 165 170 175  
 Pro Leu Val Glu Ala Glu Tyr Arg Leu Glu Ala Ala Ile Ala Thr Pro  
 180 185 190  
 Glu Val Ala Arg Ala Leu Ala Val Pro Pro Gly Ser Pro Val Phe Leu  
 195 200 205  
 Ile Glu Arg Thr Ser Tyr Cys Ala Gly Pro Arg Pro Ile Asp Tyr Glu  
 210 215 220  
 Lys Leu Tyr Tyr Arg Gly Asp Leu Ile Arg Phe Val Thr Arg Leu Ala  
 225 230 235 240  
 Arg Arg Ala Arg Pro Val Pro Ala  
 245

<210> 1373  
 <211> 747  
 <212> DNA  
 <213> Bordetella bronchiseptica

<220>  
 <221> CDS  
 <222> (1)..(747)

<400> 1373  
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 Met Met Ser Lys Ser Asn His Ala Pro Leu Tyr Ala Arg Val Glu Ala 15  
 1 5 10  
 gtg ctg gcc gag gcg atc gcc gcg ggc gaa ctg ccg ccg ggc agc cag 96  
 Val Leu Ala Glu Ala Ile Ala Ala Gly Glu Leu Pro Pro Gly Ser Gln 20 25 30  
 ttg ccc gcc gaa gac ggc ctg atc gcg cgc ttc cag gtc agc cgc acc 144  
 Leu Pro Ala Glu Asp Gly Leu Ile Ala Arg Phe Gln Val Ser Arg Thr 35 40 45  
 acg gtg cgc aag gcc atc cag aac ctg gcc gag cgc ggg ctg gtc gag 192  
 Thr Val Arg Lys Ala Ile Gln Asn Leu Ala Glu Arg Gly Leu Val Glu 50 55 60  
 atc cgg cgc ggc aag ggc acc ttc gtg gcg cag ccg agg gtg gtg cag 240  
 Ile Arg Arg Gly Lys Gly Thr Phe Val Ala Gln Pro Arg Val Val Gln 65 70 75

## PhoenixTemp32470.tmp.txt

65	70	75	80	
gag ctc acc gag ctc acc ggt ttc gtg gag gac atg cag gcc ttg ggc	288			
Glu Leu Thr Glu Leu Thr Gly Phe Val Glu Asp Met Gln Ala Leu Gly				
85	90	95		
cgc gtg ccc tcg gcg cgc ctg ctg gac gcc gag atc gtg gcc gcc ggc	336			
Arg Val Pro Ser Ala Arg Leu Leu Asp Ala Glu Ile Val Ala Ala Gly				
100	105	110		
cag gcc gtg gcg cgc cag ctg gcg gtg gcg ccg ggc acg cag gtc atg	384			
Gln Ala Val Ala Arg Gln Leu Ala Val Ala Pro Gly Thr Gln Val Met				
115	120	125		
cgc atc cgg cgc gtg cgc ctg gcc gat ggc gtg gcc atg tcg ctg gac	432			
Arg Ile Arg Arg Val Arg Leu Ala Asp Gly Val Ala Met Ser Leu Asp				
130	135	140		
gaa acc tat ctg ccg cgc gaa atc ggc gaa cag gtc acg cac gac	480			
Glu Thr Tyr Leu Pro Arg Glu Ile Gly Glu Gln Val Val Thr His Asp				
145	150	155		
ctg gag gcc gag ccc atc ttc gcg ctg ctg gaa cag aaa tac gac ctg	528			
Leu Glu Ala Glu Pro Ile Phe Ala Leu Leu Glu Gln Lys Tyr Asp Leu				
165	170	175		
ccg ctg gtc gag gcc gaa tac cgg ctc gag gcc gcc atc gcc acg ccc	576			
Pro Leu Val Glu Ala Glu Tyr Arg Leu Glu Ala Ala Ile Ala Thr Pro				
180	185	190		
gaa gtg gcg cgg gcc ctg gcg gtg ccg ccc ggc agc ccg gtc ttc ctg	624			
Glu Val Ala Arg Ala Leu Ala Val Pro Pro Gly Ser Pro Val Phe Leu				
195	200	205		
atc gag cgc acc tcg tat tgc gcg ggc ccc cgg ccc atc gac tac gaa	672			
Ile Glu Arg Thr Ser Tyr Cys Ala Gly Pro Arg Pro Ile Asp Tyr Glu				
210	215	220		
aag ctg tac tac cgc ggc gac ctg atc cgc ttc gtg acg cgg ctg gcg	720			
Lys Leu Tyr Tyr Arg Gly Asp Leu Ile Arg Phe Val Thr Arg Leu Ala				
225	230	235		
cgg cgc gcg cgg ccc gtg ccg gca tga	747			
Arg Arg Ala Arg Pro Val Pro Ala				
245				

&lt;210&gt; 1374

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Bordetella bronchiseptica

&lt;400&gt; 1374

Met Met Ser Lys Ser Asn His Ala Pro Leu Tyr Ala Arg Val Glu Ala	
1 5 10 15	
Val Leu Ala Glu Ala Ile Ala Ala Gly Glu Leu Pro Pro Gly Ser Gln	
20 25 30	
Leu Pro Ala Glu Asp Gly Leu Ile Ala Arg Phe Gln Val Ser Arg Thr	
35 40 45	
Thr Val Arg Lys Ala Ile Gln Asn Leu Ala Glu Arg Gly Leu Val Glu	
50 55 60	
Ile Arg Arg Gly Lys Gly Thr Phe Val Ala Gln Pro Arg Val Val Gln	
65 70 75 80	
Glu Leu Thr Glu Leu Thr Gly Phe Val Glu Asp Met Gln Ala Leu Gly	
85 90 95	
Arg Val Pro Ser Ala Arg Leu Leu Asp Ala Glu Ile Val Ala Ala Gly	
100 105 110	
Gln Ala Val Ala Arg Gln Leu Ala Val Ala Pro Gly Thr Gln Val Met	
115 120 125	
Arg Ile Arg Arg Val Arg Leu Ala Asp Gly Val Ala Met Ser Leu Asp	
130 135 140	
Glu Thr Tyr Leu Pro Arg Glu Ile Gly Glu Gln Val Val Thr His Asp	
145 150 155 160	
Leu Glu Ala Glu Pro Ile Phe Ala Leu Leu Glu Gln Lys Tyr Asp Leu	
165 170 175	
Pro Leu Val Glu Ala Glu Tyr Arg Leu Glu Ala Ala Ile Ala Thr Pro	
180 185 190	
Glu Val Ala Arg Ala Leu Ala Val Pro Pro Gly Ser Pro Val Phe Leu	
195 200 205	
Ile Glu Arg Thr Ser Tyr Cys Ala Gly Pro Arg Pro Ile Asp Tyr Glu	
210 215 220	

Lys Leu Tyr Tyr Arg Gly Asp Leu Ile Arg Phe Val Thr Arg Leu Ala  
 225 230 235 240  
 Arg Arg Ala Arg Pro Val Pro Ala  
 245

<210> 1375  
 <211> 738  
 <212> DNA  
 <213> Bacillus cereus

<220>  
 <221> CDS  
 <222> (1)..(738)

<400> 1375  
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 Met Leu Met Asn Ile Asp Lys Tyr Ser Pro Phe Pro Ile Tyr Tyr Gln  
 1 5 10 15  
 att caa gag tgg gtg aaa cag cta att gag gac ggc gaa tgg aag ccg 96  
 Ile Gln Glu Trp Val Lys Gln Leu Ile Glu Asp Gly Glu Trp Lys Pro  
 20 25 30  
 gga gat aaa atc cca tct gag aat gaa ctt tgt gat aag ttc gaa gtg 144  
 Gly Asp Lys Ile Pro Ser Glu Asn Glu Leu Cys Asp Lys Phe Glu Val  
 35 40 45  
 agt cga atg aca atc aga cag gcg att aat aat tta gtg gaa caa ggc 192  
 Ser Arg Met Thr Ile Arg Gln Ala Ile Asn Asn Leu Val Glu Gln Gly  
 50 55 60  
 tat tta tat cgg aag cgt gga att gga aca ttt gtc caa ctt ccg aaa 240  
 Tyr Leu Tyr Arg Lys Arg Gly Ile Gly Thr Phe Val Gln Leu Pro Lys  
 65 70 75 80  
 gtg gaa caa aaa ttg caa gga atg acg gga ttc aca gaa gac atg att 288  
 Val Glu Gln Lys Leu Gln Gly Met Thr Gly Phe Thr Glu Asp Met Ile  
 85 90 95  
 tct cgt ggg atg aac cca agt agt caa tta ctt agt ttc cgc cta gtt 336  
 Ser Arg Gly Met Asn Pro Ser Ser Gln Leu Leu Ser Phe Arg Leu Val  
 100 105 110  
 cca gct act gct aaa ata gca gac cgg ttg aga ata cag gag ggg gaa 384  
 Pro Ala Thr Ala Lys Ile Ala Asp Arg Leu Arg Ile Gln Glu Gly Glu  
 115 120 125  
 tcg gtt tat gaa gtg agg cgt att cgc tta gct gat gat gaa ccg att 432  
 Ser Val Tyr Glu Val Arg Arg Ile Arg Leu Ala Asp Asp Glu Pro Ile  
 130 135 140  
 gct ttt gag acg aca tat ttg tcg cca gct ctt gta aaa gat att aac 480  
 Ala Phe Glu Thr Thr Tyr Leu Ser Pro Ala Leu Val Lys Asp Ile Asn  
 145 150 155 160  
 gaa gag ata ttg caa caa tct tta tat gaa cat tta gag aaa aaa ctg 528  
 Glu Glu Ile Leu Gln Gln Ser Leu Tyr Glu His Leu Glu Lys Lys Leu  
 165 170 175  
 ggc ttt aaa ctt gtt agc gct act cag tca att gaa gct tcc gtt gcg 576  
 Gly Phe Lys Leu Val Ser Ala Thr Gln Ser Ile Glu Ala Ser Val Ala  
 180 185 190  
 acg gaa aat gaa gct gaa cat ctg cat att cct aaa aag gcg cct gta 624  
 Thr Glu Asn Glu Ala Glu His Leu His Ile Pro Lys Lys Ala Pro Val  
 195 200 205  
 ctt gta atg cgt caa tgg tca tat tca gaa ggt gag ata ccg cta gag 672  
 Leu Val Met Arg Gln Trp Ser Tyr Ser Glu Gly Glu Ile Pro Leu Glu  
 210 215 220  
 tac gtg aaa tgt att tat cgt gga gat cgt tat aaa ttt att acg aat 720  
 Tyr Val Lys Cys Ile Tyr Arg Gly Asp Arg Tyr Lys Phe Ile Thr Asn  
 225 230 235 240  
 atc gca cgt aac aaa tag 738  
 Ile Ala Arg Asn Lys  
 245

<210> 1376  
 <211> 245  
 <212> PRT  
 <213> Bacillus cereus

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1376

```

Met Leu Met Asn Ile Asp Lys Tyr Ser Pro Phe Pro Ile Tyr Tyr Gln
1      5      10      15
Ile Gln Glu Trp Val Lys Gln Leu Ile Glu Asp Gly Glu Trp Lys Pro
20      25      30
Gly Asp Lys Ile Pro Ser Glu Asn Glu Leu Cys Asp Lys Phe Glu Val
35      40      45
Ser Arg Met Thr Ile Arg Gln Ala Ile Asn Asn Leu Val Glu Gln Gly
50      55      60
Tyr Leu Tyr Arg Lys Arg Gly Ile Gly Thr Phe Val Gln Leu Pro Lys
65      70      75      80
Val Glu Gln Lys Leu Gln Gly Met Thr Gly Phe Thr Glu Asp Met Ile
85      90      95
Ser Arg Gly Met Asn Pro Ser Ser Gln Leu Leu Ser Phe Arg Leu Val
100      105      110
Pro Ala Thr Ala Lys Ile Ala Asp Arg Leu Arg Ile Gln Glu Gly Glu
115      120      125
Ser Val Tyr Glu Val Arg Arg Ile Arg Leu Ala Asp Glu Pro Ile
130      135      140
Ala Phe Glu Thr Thr Tyr Leu Ser Pro Ala Leu Val Lys Asp Ile Asn
145      150      155      160
Glu Glu Ile Leu Gln Gln Ser Leu Tyr Glu His Leu Glu Lys Lys Leu
165      170      175
Gly Phe Lys Leu Val Ser Ala Thr Gln Ser Ile Glu Ala Ser Val Ala
180      185      190
Thr Glu Asn Glu Ala Glu His Leu His Ile Pro Lys Lys Ala Pro Val
195      200      205
Leu Val Met Arg Gln Trp Ser Tyr Ser Glu Gly Glu Ile Pro Leu Glu
210      215      220
Tyr Val Lys Cys Ile Tyr Arg Gly Asp Arg Tyr Lys Phe Ile Thr Asn
225      230      235      240
Ile Ala Arg Asn Lys
245

```

&lt;210&gt; 1377

&lt;211&gt; 732

&lt;212&gt; DNA

&lt;213&gt; Bacillus anthracis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(732)

&lt;400&gt; 1377

```

atg aac atc gac aag tat tca cca ttt ccg atc tat tat cag att caa      48
Met Asn Ile Asp Lys Tyr Ser Pro Phe Pro Ile Tyr Tyr Gln Ile Gln
1      5      10      15
gag tgg gtg aaa cag cta att gag gac ggc gaa tgg aag ccg gga gat      96
Glu Trp Val Lys Gln Leu Ile Glu Asp Gly Glu Trp Lys Pro Gly Asp
20      25      30
aaa atc cca tct gag aat gaa ctt tgc gat aag ttc gaa gtg agt cgt      144
Lys Ile Pro Ser Glu Asn Glu Leu Cys Asp Lys Phe Glu Val Ser Arg
35      40      45
atg aca atc aga cag gcg att aat aat tta gtg gaa caa ggt tat tta      192
Met Thr Ile Arg Gln Ala Ile Asn Asn Leu Val Glu Gln Gly Tyr Leu
50      55      60
tat cgg aaa cgt gga atc ggt acg ttt gtc caa ctt ccg aaa gtg gaa      240
Tyr Arg Lys Arg Gly Ile Gly Thr Phe Val Gln Leu Pro Lys Val Glu
65      70      75      80
caa aaa ttg caa gga atg aca gga ttc aca gaa gat atg att tct cgt      288
Gln Lys Leu Gln Gly Met Thr Gly Phe Thr Glu Asp Met Ile Ser Arg
85      90      95
ggg atg aac cca agt agc caa tta tta agt ttc cgc ctc gtt cca gct      336
Gly Met Asn Pro Ser Ser Gln Leu Leu Ser Phe Arg Leu Val Pro Ala
100      105      110
act gcg aaa ata gca gac cgg ctg aga ata cag gag gga gag tcg gtt      384
Thr Ala Lys Ile Ala Asp Arg Leu Arg Ile Gln Glu Gly Glu Ser Val
115      120      125
tat gaa gtg agg cgt att cgc tta gct gac gat gaa ccg att gct ttt      432

```

PhoenixTemp32470.tmp.txt

Tyr	Glu	Val	Arg	Arg	Ile	Arg	Leu	Ala	Asp	Asp	Glu	Pro	Ile	Ala	Phe	
130	130					135					140					
gag	acg	aca	tat	ttg	tcg	cca	gct	ctt	gta	aaa	gat	att	aac	gaa	gaa	480
Glu	Thr	Thr	Tyr	Leu	Ser	Pro	Ala	Leu	Val	Lys	Asp	Ile	Asn	Glu	Glu	
145					150					155					160	
ata	ttg	caa	caa	tct	tta	tat	gaa	cat	tta	gag	aaa	aaa	ctg	ggc	ttc	528
Ile	Leu	Gln	Gln	Ser	Leu	Tyr	Glu	His	Leu	Glu	Lys	Lys	Leu	Gly	Phe	
				165					170					175		
aaa	ctt	gtt	agc	gct	act	caa	tca	att	gaa	gct	tca	att	gca	acg	gat	576
Lys	Leu	Val	Ser	Ala	Thr	Gln	Ser	Ile	Glu	Ala	Ser	Ile	Ala	Thr	Asp	
			180					185					190			
aat	gaa	gcg	gaa	cat	ctg	cat	att	cct	aaa	aag	gcg	cca	gtg	ctt	gtc	624
Asn	Glu	Ala	Glu	His	Leu	His	Ile	Pro	Lys	Lys	Ala	Pro	Val	Leu	Val	
			195				200					205				
atg	cgt	caa	tgg	tca	tat	tca	gaa	ggg	gaa	gta	ccg	tta	gag	tat	gtg	672
Met	Arg	Gln	Trp	Ser	Tyr	Ser	Glu	Gly	Glu	Val	Pro	Leu	Glu	Tyr	Val	
	210					215					220					
aaa	tgt	att	tat	cgt	gga	gat	cgt	tat	aag	ttt	att	aca	aac	atc	gca	720
Lys	Cys	Ile	Tyr	Arg	Gly	Asp	Arg	Tyr	Lys	Phe	Ile	Thr	Asn	Ile	Ala	
225					230					235					240	
cgt	aac	aaa	taa													732
Arg	Asn	Lys														

<210> 1378  
 <211> 243  
 <212> PRT  
 <213> Bacillus anthracis

<400> 1378

Met	Asn	Ile	Asp	Lys	Tyr	Ser	Pro	Phe	Pro	Ile	Tyr	Tyr	Gln	Ile	Gln	
1				5					10					15		
Glu	Trp	Val	Lys	Gln	Leu	Ile	Glu	Asp	Gly	Glu	Trp	Lys	Pro	Gly	Asp	
			20					25					30			
Lys	Ile	Pro	Ser	Glu	Asn	Glu	Leu	Cys	Asp	Lys	Phe	Glu	Val	Ser	Arg	
		35					40					45				
Met	Thr	Ile	Arg	Gln	Ala	Ile	Asn	Asn	Leu	Val	Glu	Gln	Gly	Tyr	Leu	
	50					55					60					
Tyr	Arg	Lys	Arg	Gly	Ile	Gly	Thr	Phe	Val	Gln	Leu	Pro	Lys	Val	Glu	
65				70					75					80		
Gln	Lys	Leu	Gln	Gly	Met	Thr	Gly	Phe	Thr	Glu	Asp	Met	Ile	Ser	Arg	
			85					90					95			
Gly	Met	Asn	Pro	Ser	Ser	Gln	Leu	Leu	Ser	Phe	Arg	Leu	Val	Pro	Ala	
		100						105					110			
Thr	Ala	Lys	Ile	Ala	Asp	Arg	Leu	Arg	Ile	Gln	Glu	Gly	Glu	Ser	Val	
		115					120					125				
Tyr	Glu	Val	Arg	Arg	Ile	Arg	Leu	Ala	Asp	Asp	Glu	Pro	Ile	Ala	Phe	
	130					135					140					
Glu	Thr	Thr	Tyr	Leu	Ser	Pro	Ala	Leu	Val	Lys	Asp	Ile	Asn	Glu	Glu	
145					150					155					160	
Ile	Leu	Gln	Gln	Ser	Leu	Tyr	Glu	His	Leu	Glu	Lys	Lys	Leu	Gly	Phe	
				165					170					175		
Lys	Leu	Val	Ser	Ala	Thr	Gln	Ser	Ile	Glu	Ala	Ser	Ile	Ala	Thr	Asp	
			180					185					190			
Asn	Glu	Ala	Glu	His	Leu	His	Ile	Pro	Lys	Lys	Ala	Pro	Val	Leu	Val	
		195					200					205				
Met	Arg	Gln	Trp	Ser	Tyr	Ser	Glu	Gly	Glu	Val	Pro	Leu	Glu	Tyr	Val	
	210					215					220					
Lys	Cys	Ile	Tyr	Arg	Gly	Asp	Arg	Tyr	Lys	Phe	Ile	Thr	Asn	Ile	Ala	
225					230					235					240	
Arg	Asn	Lys														

<210> 1379  
 <211> 738  
 <212> DNA  
 <213> Bacillus anthracis

<220>

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(738)

&lt;400&gt; 1379

atg	gca	agc	gga	tcc	aca	caa	gta	aaa	tac	ctc	ggc	att	tat	caa	aaa		48
Met	Ala	Ser	Gly	Ser	Thr	Gln	Val	Lys	Tyr	Leu	Gly	Ile	Tyr	Gln	Lys		
1				5					10					15			
atg	aaa	cag	caa	att	tta	gac	ggc	gaa	tat	aag	att	aac	gaa	aaa	att		96
Met	Lys	Gln	Gln	Ile	Leu	Asp	Gly	Glu	Tyr	Lys	Ile	Asn	Glu	Lys	Ile		
			20					25					30				
cca	agt	agc	ccc	gtc	ctt	gct	gaa	gaa	ttt	gat	ggt	tct	gtc	ctt	act		144
Pro	Ser	Ser	Pro	Val	Leu	Ala	Glu	Glu	Phe	Asp	Val	Ser	Val	Leu	Thr		
			35				40					45					
ata	aaa	aaa	gcg	ctg	gat	ctg	tta	ggt	aga	gac	ggc	tac	atc	att	cgc		192
Ile	Lys	Lys	Ala	Leu	Asp	Leu	Leu	Val	Arg	Asp	Gly	Tyr	Ile	Ile	Arg		
	50					55					60						
cgg	cgc	gga	agt	gga	aca	gtc	ggt	caa	gat	tgg	cgt	cag	cag	gaa	aaa		240
Arg	Arg	Gly	Ser	Gly	Thr	Val	Val	Gln	Asp	Trp	Arg	Gln	Gln	Glu	Lys		
	65				70					75					80		
gca	cga	atg	att	caa	act	tta	aca	ggt	aca	aaa	gct	ggt	tat	ggc	agc		288
Ala	Arg	Met	Ile	Gln	Thr	Leu	Thr	Gly	Thr	Lys	Ala	Val	Tyr	Gly	Ser		
				85					90					95			
gag	gta	gaa	agt	aaa	att	att	gag	ttt	acg	att	gtc	ggt	gcc	gat	gaa		336
Glu	Val	Glu	Ser	Lys	Ile	Ile	Glu	Phe	Thr	Ile	Val	Gly	Ala	Asp	Glu		
			100					105					110				
att	att	gct	gaa	aaa	ttg	ggc	att	tca	gta	gga	gat	ttt	gta	tat	aaa		384
Ile	Ile	Ala	Glu	Lys	Leu	Gly	Ile	Ser	Val	Gly	Asp	Phe	Val	Tyr	Lys		
			115			120						125					
atc	atc	cgc	ctc	cgc	atc	att	cac	agt	att	cca	acg	att	atg	gag	cat		432
Ile	Ile	Arg	Leu	Arg	Ile	Ile	His	Ser	Ile	Pro	Thr	Ile	Met	Glu	His		
	130					135					140						
aca	tgg	atg	ccg	att	tcg	gtc	att	cca	ggt	ggt	gaa	ggt	tct	ggt	tta		480
Thr	Trp	Met	Pro	Ile	Ser	Val	Ile	Pro	Gly	Val	Glu	Val	Ser	Val	Leu		
	145				150				155						160		
gag	gaa	tca	atc	tac	tcc	cac	att	caa	aat	aaa	cta	ggc	ctt	caa	gtg		528
Glu	Glu	Ser	Ile	Tyr	Ser	His	Ile	Gln	Asn	Lys	Leu	Gly	Leu	Gln	Val		
				165					170					175			
gga	aca	tcc	gtt	gtt	agg	gta	aaa	gga	att	cgc	ccg	gat	gat	aaa	gaa		576
Gly	Thr	Ser	Val	Val	Arg	Val	Lys	Gly	Ile	Arg	Pro	Asp	Asp	Lys	Glu		
			180					185				190					
aag	cag	ttt	atg	aac	tta	aca	aat	caa	gat	ttc	cta	atg	aga	gtg	gaa		624
Lys	Gln	Phe	Met	Asn	Leu	Thr	Asn	Gln	Asp	Phe	Leu	Met	Arg	Val	Glu		
		195					200					205					
cag	gtg	gcc	tac	tta	acg	gat	gga	cgc	act	ttt	gaa	tac	tct	tac	gcc		672
Gln	Val	Ala	Tyr	Leu	Thr	Asp	Gly	Arg	Thr	Phe	Glu	Tyr	Ser	Tyr	Ala		
	210					215					220						
gat	cac	ttg	ccg	gaa	acc	ttt	gaa	ttc	gaa	aca	ggt	att	act	gca	aaa		720
Asp	His	Leu	Pro	Glu	Thr	Phe	Glu	Phe	Glu	Thr	Val	Ile	Thr	Ala	Lys		
	225				230					235					240		
agt	tat	aaa	gag	gca	taa												738
Ser	Tyr	Lys	Glu	Ala													
				245													

&lt;210&gt; 1380

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Bacillus anthracis

&lt;400&gt; 1380

Met	Ala	Ser	Gly	Ser	Thr	Gln	Val	Lys	Tyr	Leu	Gly	Ile	Tyr	Gln	Lys		
1				5					10					15			
Met	Lys	Gln	Gln	Ile	Leu	Asp	Gly	Glu	Tyr	Lys	Ile	Asn	Glu	Lys	Ile		
			20					25					30				
Pro	Ser	Ser	Pro	Val	Leu	Ala	Glu	Glu	Phe	Asp	Val	Ser	Val	Leu	Thr		
			35				40					45					
Ile	Lys	Lys	Ala	Leu	Asp	Leu	Leu	Val	Arg	Asp	Gly	Tyr	Ile	Ile	Arg		
	50					55					60						
Arg	Arg	Gly	Ser	Gly	Thr	Val	Val	Gln	Asp	Trp	Arg	Gln	Gln	Glu	Lys		
	65				70					75					80		

## PhoenixTemp32470.tmp.txt

Ala Arg Met Ile Gln Thr Leu Thr Gly Thr Lys Ala Val Tyr Gly Ser  
 85 90  
 Glu Val Glu Ser Lys Ile Ile Glu Phe Thr Ile Val Gly Ala Asp Glu  
 100 105  
 Ile Ile Ala Glu Lys Leu Gly Ile Ser Val Gly Asp Phe Val Tyr Lys  
 115 120  
 Ile Ile Arg Leu Arg Ile Ile His Ser Ile Pro Thr Ile Met Glu His  
 130 135  
 Thr Trp Met Pro Ile Ser Val Ile Pro Gly Val Glu Val Ser Val Leu  
 145 150 155  
 Glu Glu Ser Ile Tyr Ser His Ile Gln Asn Lys Leu Gly Leu Gln Val  
 165 170 175  
 Gly Thr Ser Val Arg Val Lys Gly Ile Arg Pro Asp Asp Lys Glu  
 180 185  
 Lys Gln Phe Met Asn Leu Thr Asn Gln Asp Phe Leu Met Arg Val Glu  
 195 200 205  
 Gln Val Ala Tyr Leu Thr Asp Gly Arg Thr Phe Glu Tyr Ser Tyr Ala  
 210 215 220  
 Asp His Leu Pro Glu Thr Phe Glu Phe Glu Thr Val Ile Thr Ala Lys  
 225 230 235 240  
 Ser Tyr Lys Glu Ala  
 245

&lt;210&gt; 1381

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Streptomyces avermitilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;400&gt; 1381

atg	agc	acc	gac	gtc	agc	agt	gcg	gag	aac	gag	ggc	ggg	gca	ccc	atc	48
Met	Ser	Thr	Asp	Val	Ser	Ser	Ala	Glu	Asn	Glu	Gly	Gly	Ala	Pro	Ile	
1				5				10					15			
cgt	acc	gcg	cgt	gtg	ccc	aag	tac	tac	cgc	ctg	aag	aag	cac	ctg	ctc	96
Arg	Thr	Ala	Arg	Val	Pro	Lys	Tyr	Tyr	Arg	Leu	Lys	Lys	His	Leu	Leu	
			20				25						30			
gac	atg	acg	gag	acg	ctg	ccg	ccc	ggc	aca	ccc	gtg	ccg	ccc	gag	cgc	144
Asp	Met	Thr	Glu	Thr	Leu	Pro	Pro	Gly	Thr	Pro	Val	Pro	Pro	Glu	Arg	
			35				40				45					
acg	ctg	gcc	gcc	gag	ttc	gac	acc	tcc	cgc	acg	acc	gtc	cgc	cag	gcc	192
Thr	Leu	Ala	Ala	Glu	Phe	Asp	Thr	Ser	Arg	Thr	Thr	Val	Arg	Gln	Ala	
	50				55		60									
ctc	cag	gag	ctg	gtc	gtc	gag	ggc	cgc	ctg	gag	cgc	atc	cag	ggc	aag	240
Leu	Gln	Glu	Leu	Val	Val	Glu	Gly	Arg	Leu	Glu	Arg	Ile	Gln	Gly	Lys	
	65			70			75							80		
ggc	acg	ttc	gtc	gcc	aag	ccg	aag	gtc	tcc	cag	gcg	ctg	caa	ctc	acc	288
Gly	Thr	Phe	Val	Ala	Lys	Pro	Lys	Val	Ser	Gln	Ala	Leu	Gln	Leu	Thr	
			85				90						95			
tcg	tac	acc	gag	gac	atg	cgc	gcc	cag	ggt	ctc	gaa	ccg	acc	tcg	cag	336
Ser	Tyr	Thr	Glu	Asp	Met	Arg	Ala	Gln	Gly	Leu	Glu	Pro	Thr	Ser	Gln	
			100				105						110			
ctc	ctg	gac	atc	ggc	tac	atc	acc	gcg	gac	gac	acc	ctc	gcc	ggg	ctg	384
Leu	Leu	Asp	Ile	Gly	Tyr	Ile	Thr	Ala	Asp	Asp	Thr	Leu	Ala	Gly	Leu	
			115				120					125				
ctc	gac	atc	acc	gcg	ggc	ggc	cgc	gtg	ctg	cgc	atc	gag	cgg	ctg	cgc	432
Leu	Asp	Ile	Thr	Ala	Gly	Gly	Arg	Val	Leu	Arg	Ile	Glu	Arg	Leu	Arg	
	130				135		140									
ctg	gcc	agc	ggc	gag	ccg	atg	gcc	atc	gag	acg	acc	cat	ctg	tcc	gcc	480
Leu	Ala	Ser	Gly	Glu	Pro	Met	Ala	Ile	Glu	Thr	His	Leu	Ser	Ala		
	145				150				155				160			
aag	cgc	ttc	ccc	gcg	ctg	cgc	agg	tcg	ctg	gtc	aag	tac	acg	tcg	ctc	528
Lys	Arg	Phe	Pro	Ala	Leu	Arg	Arg	Ser	Leu	Val	Lys	Tyr	Thr	Ser	Leu	
			165				170						175			
tac	acc	gcg	ctc	gcc	gag	gtc	tac	gac	gtc	cgt	ctc	gcc	gag	gcc	gag	576
Tyr	Thr	Ala	Leu	Ala	Glu	Val	Tyr	Asp	Val	Arg	Leu	Ala	Glu	Ala	Glu	
			180				185						190			

## PhoenixTemp32470.tmp.txt

gag acc atc gag acc tcg ctg gcc acc ccg cgc gag gcc gga ctg ctg	624
Glu Thr Ile Glu Thr Ser Leu Ala Thr Pro Arg Glu Ala Gly Leu Leu	
195 200 205	
ggc acc gac gtc ggc ctg ccc atg ctg atg ctc tcg cgg cac tcg ctg	672
Gly Thr Asp Val Gly Leu Pro Met Leu Met Leu Ser Arg His Ser Leu	
210 215 220	
gac aag gac ggc cgg ccg gtg gag tgg gtg cgg tcg gtg tac cgc ggg	720
Asp Lys Asp Gly Arg Pro Val Glu Trp Val Arg Ser Val Tyr Arg Gly	
225 230 235 240	
gac cgc tac aag ttc gtg gcg aga ctc aag cgc ccc cag gac tga	765
Asp Arg Tyr Lys Phe Val Ala Arg Leu Lys Arg Pro Gln Asp	
245 250	

&lt;210&gt; 1382

&lt;211&gt; 254

&lt;212&gt; PRT

&lt;213&gt; Streptomyces avermitilis

&lt;400&gt; 1382

Met Ser Thr Asp Val Ser Ser Ala Glu Asn Glu Gly Gly Ala Pro Ile	
1 5 10 15	
Arg Thr Ala Arg Val Pro Lys Tyr Tyr Arg Leu Lys Lys His Leu Leu	
20 25 30	
Asp Met Thr Glu Thr Leu Pro Pro Gly Thr Pro Val Pro Glu Arg	
35 40 45	
Thr Leu Ala Ala Glu Phe Asp Thr Ser Arg Thr Thr Val Arg Gln Ala	
50 55 60	
Leu Gln Glu Leu Val Val Glu Gly Arg Leu Glu Arg Ile Gln Gly Lys	
65 70 75 80	
Gly Thr Phe Val Ala Lys Pro Lys Val Ser Gln Ala Leu Gln Leu Thr	
85 90 95	
Ser Tyr Thr Glu Asp Met Arg Ala Gln Gly Leu Glu Pro Thr Ser Gln	
100 105 110	
Leu Leu Asp Ile Gly Tyr Ile Thr Ala Asp Asp Thr Leu Ala Gly Leu	
115 120 125	
Leu Asp Ile Thr Ala Gly Gly Arg Val Leu Arg Ile Glu Arg Leu Arg	
130 135 140	
Leu Ala Ser Gly Glu Pro Met Ala Ile Glu Thr Thr His Leu Ser Ala	
145 150 155 160	
Lys Arg Phe Pro Ala Leu Arg Arg Ser Leu Val Lys Tyr Thr Ser Leu	
165 170 175	
Tyr Thr Ala Leu Ala Glu Val Tyr Asp Val Arg Leu Ala Glu Ala Glu	
180 185 190	
Glu Thr Ile Glu Thr Ser Leu Ala Thr Pro Arg Glu Ala Gly Leu Leu	
195 200 205	
Gly Thr Asp Val Gly Leu Pro Met Leu Met Leu Ser Arg His Ser Leu	
210 215 220	
Asp Lys Asp Gly Arg Pro Val Glu Trp Val Arg Ser Val Tyr Arg Gly	
225 230 235 240	
Asp Arg Tyr Lys Phe Val Ala Arg Leu Lys Arg Pro Gln Asp	
245 250	

&lt;210&gt; 1383

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Enterococcus faecalis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (25)..(756)

&lt;400&gt; 1383

ccagttaggg taaaggagaa agtt atg gaa aat gcc ttt aaa aac aaa gct	51
Met Glu Asn Ala Phe Lys Asn Lys Ala	
1 5	
ttg tat cat caa ctt gtt gat ttg ctg cag gaa cga atc gaa aca tgc	99
Leu Tyr His Gln Leu Val Asp Leu Leu Gln Glu Arg Ile Glu Thr Cys	
10 15 20 25	
atg att cct cat gac aag ttg ccc tct gaa cgt gaa ttg act gca caa	147



## PhoenixTemp32470.tmp.txt

Met	Ile	Pro	His	Asp 30	Lys	Leu	Pro	Ser	Glu 35	Arg	Glu	Leu	Thr	Ala 40	Gln		
tat	gga	gtg	agt	cgg	acg	acg	gtc	cgg	tta	gcg	cta	caa	gaa	cta	gaa	195	
Tyr	Gly	Val	Ser 45	Arg	Thr	Thr	Val	Arg 50	Leu	Ala	Leu	Gln	Glu 55	Leu	Glu		
aat	aga	ggt	tcc	atc	tat	cgt	cgt	cat	ggc	aaa	gga	aca	ttt	gtt	tca	243	
Asn	Arg	Gly 60	Ser	Ile	Tyr	Arg	Arg 65	His	Gly	Lys	Gly	Thr 70	Phe	Val	Ser		
gat	ata	aaa	aaa	gag	gcc	gct	gat	tta	gct	ggc	gca	tat	agt	ttt	aca	291	
Asp	Ile 75	Lys	Lys	Glu	Ala	Ala 80	Asp	Leu	Ala	Gly	Ala 85	Tyr	Ser	Phe	Thr		
gaa	caa	atg	aaa	ggg	ctg	ggt	cga	aaa	cca	cat	acc	cgt	ata	tta	tcc	339	
Glu	Gln	Met	Lys	Gly	Leu 95	Gly	Arg	Lys	Pro	His 100	Thr	Arg	Ile	Leu	Ser 105		
ttc	gaa	aaa	ttg	gaa	gcg	gat	aaa	ttt	att	tgt	cag	cat	ttg	aat	ctt	387	
Phe	Glu	Lys	Leu	Glu 110	Ala	Asp	Lys	Phe	Ile 115	Cys	Gln	His	Leu	Asn 120	Leu		
tcg	tta	gga	gag	gca	gtt	ttt	aaa	tta	agt	cgg	ttg	cgg	att	gct	gat	435	
Ser	Leu	Gly	Glu 125	Ala	Val	Phe	Lys	Leu 130	Ser	Arg	Leu	Arg	Ile 135	Ala	Asp		
aac	gag	cca	tta	atg	gtt	gaa	gac	aca	tac	ttg	cct	gtg	aaa	ttt	ttc	483	
Asn	Glu	Pro 140	Leu	Met	Val	Glu	Asp 145	Thr	Tyr	Leu	Pro	Val 150	Lys	Phe	Phe		
tta	tca	ctc	acg	gat	caa	tta	cta	cgt	agc	aaa	cca	tta	tat	gat	cta	531	
Leu	Ser 155	Leu	Thr	Asp	Gln	Leu 160	Leu	Arg	Ser	Lys	Pro 165	Leu	Tyr	Asp	Leu		
ttt	tcg	gaa	gat	ttt	aag	caa	acc	gtt	cgt	tta	gct	gat	gaa	gaa	tta	579	
Phe	Ser	Glu	Asp	Phe 175	Lys	Gln	Thr	Val	Arg	Leu 180	Ala	Asp	Glu	Glu	Leu 185		
tac	gct	agc	att	gcg	tca	aaa	gaa	gat	gcc	aaa	tta	ttg	atg	att	ccg	627	
Tyr	Ala	Ser	Ile	Ala 190	Ser	Lys	Glu	Asp	Ala 195	Lys	Leu	Leu	Met	Ile 200	Pro		
gaa	gga	gcg	cca	gtc	ctt	cat	tta	gca	cgc	cag	aca	tat	aac	atg	aaa	675	
Glu	Gly	Ala	Pro 205	Val	Leu	His	Leu	Ala 210	Arg	Gln	Thr	Tyr	Asn 215	Met	Lys		
aat	gaa	att	att	gaa	ttt	acg	ttg	agt	gtg	gcg	cga	gca	gat	caa	ttt	723	
Asn	Glu	Ile 220	Ile	Glu	Phe	Thr	Leu 225	Ser	Val	Ala	Arg	Ala 230	Asp	Gln	Phe		
cat	tat	cag	ata	cgc	cat	att	cgg	aat	agt	tag						756	
His	Tyr 235	Gln	Ile	Arg	His	Ile 240	Arg	Asn	Ser								

&lt;210&gt; 1384

&lt;211&gt; 243

&lt;212&gt; PRT

&lt;213&gt; Enterococcus faecalis

&lt;400&gt; 1384

Met	Glu	Asn	Ala	Phe 5	Lys	Asn	Lys	Ala	Leu 10	Tyr	His	Gln	Leu	Val 15	Asp		
Leu	Leu	Gln	Glu	Arg	Ile	Glu	Thr	Cys 25	Met	Ile	Pro	His	Asp 30	Lys	Leu		
Pro	Ser	Glu	Arg	Glu	Leu	Thr	Ala 40	Gln	Tyr	Gly	Val	Ser 45	Arg	Thr	Thr		
Val	Arg 50	Leu	Ala	Leu	Gln	Glu 55	Leu	Glu	Asn	Arg	Gly 60	Ser	Ile	Tyr	Arg		
Arg	His	Gly	Lys	Gly	Thr 70	Phe	Val	Ser	Asp	Ile 75	Lys	Lys	Glu	Ala	Ala 80		
Asp	Leu	Ala	Gly	Ala	Tyr	Ser	Phe	Thr	Glu 90	Gln	Met	Lys	Gly	Leu 95	Gly		
Arg	Lys	Pro	His 100	Thr	Arg	Ile	Leu	Ser 105	Phe	Glu	Lys	Leu	Glu 110	Ala	Asp		
Lys	Phe	Ile 115	Cys	Gln	His	Leu	Asn 120	Leu	Ser	Leu	Gly	Glu 125	Ala	Val	Phe		
Lys	Leu	Ser	Arg	Leu	Arg	Ile 135	Ala	Asp	Asn	Glu	Pro 140	Leu	Met	Val	Glu		
Asp	Thr	Tyr	Leu	Pro	Val 150	Lys	Phe	Phe	Leu	Ser 155	Leu	Thr	Asp	Gln	Leu 160		
Leu	Arg	Ser	Lys	Pro	Leu	Tyr	Asp	Leu	Phe	Ser	Glu	Asp	Phe	Lys	Gln		

## PhoenixTemp32470.tmp.txt

Thr Val Arg Leu 165 Ala Asp Glu Glu 170 Tyr Ala Ser Ile Ala 175 Ser Lys  
 Glu Asp Ala Lys 180 Leu Leu Met Ile 185 Pro Glu Gly Ala 190 Val Leu His  
 Leu Ala Arg Gln Thr Tyr Asn 200 Met Lys Asn Glu 205 Ile Glu Phe Thr  
 Leu 210 Ser Val Ala Arg Ala 215 Asp Gln Phe His Tyr 220 Gln Ile Arg His Ile  
 225 Arg Asn Ser 230 235 240

&lt;210&gt; 1385

&lt;211&gt; 708

&lt;212&gt; DNA

&lt;213&gt; Enterococcus faecalis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(708)

&lt;400&gt; 1385

atg gtt caa aat ata cca att tat att caa att cac gat aaa atc aaa	48
Met Val Gln Asn Ile Pro Ile Tyr Ile Gln Ile His Asp Lys Ile Lys	
1 5 10 15	
gaa gat att gaa aaa ggt gtc tgg agt atc ggg gat cgt ttg ccc tct	96
Glu Asp Ile Glu Lys Gly Val Trp Ser Ile Gly Asp Arg Leu Pro Ser	
20 25 30	
gag cga gaa tta gcc ttg aaa ttt gat gtt agt cga atg acc tta cgc	144
Glu Arg Glu Leu Ala Leu Lys Phe Asp Val Ser Arg Met Thr Leu Arg	
35 40 45	
caa gcc atc cag act tta gca gac gaa ggg att tta gaa cga aaa att	192
Gln Ala Ile Gln Thr Leu Ala Asp Glu Gly Ile Leu Glu Arg Lys Ile	
50 55 60	
ggt tca gga acg tat gta gca cgt aag aaa gtt caa gaa aca atg aca	240
Gly Ser Gly Thr Tyr Val Ala Arg Lys Lys Val Gln Glu Thr Met Thr	
65 70 75 80	
ggt acc act agt ttt aca gaa att acc ttg tct caa aat cgc gtt cct	288
Gly Thr Thr Ser Phe Thr Glu Ile Thr Leu Ser Gln Asn Arg Val Pro	
85 90 95	
tct agt cgg acg gtg tct tat ttt gta gcg aaa cct agt tct agt gag	336
Ser Ser Arg Thr Val Ser Tyr Phe Val Ala Lys Pro Ser Ser Ser Glu	
100 105 110	
atg gaa aaa tta caa cta ggt cca gaa gat tca att tta cga atg gaa	384
Met Glu Lys Leu Gln Leu Gly Pro Glu Asp Ser Ile Leu Arg Met Glu	
115 120 125	
aga att cgt ttt gcg gat gac att ccg att tgt ttt gag gtg gcg agc	432
Arg Ile Arg Phe Ala Asp Asp Ile Pro Ile Cys Phe Glu Val Ala Ser	
130 135 140	
att cct tat tca ttg gtc tcg caa tat ggc aaa tct gaa atc acg aac	480
Ile Pro Tyr Ser Leu Val Ser Gln Tyr Gly Lys Ser Glu Ile Thr Asn	
145 150 155 160	
tct ttt tat aaa aca ctt gaa gcc aaa tct ggc cac aaa att ggc cat	528
Ser Phe Tyr Lys Thr Leu Glu Ala Lys Ser Gly His Lys Ile Gly His	
165 170 175	
tct aac caa aca atc tct gct gtt caa gca tcg gaa cag atc gca gaa	576
Ser Asn Gln Thr Ile Ser Ala Val Gln Ala Ser Glu Gln Ile Ala Glu	
180 185 190	
tat tta gag att aaa cga ggc gat gcg att ctg cgt gtg cgc caa gta	624
Tyr Leu Glu Ile Lys Arg Gly Asp Ala Ile Leu Arg Val Arg Gln Val	
195 200 205	
tcc tat ttt gaa aac gga cta cct ttt gaa tat gtt cgt acg cag tat	672
Ser Tyr Phe Glu Asn Gly Leu Pro Phe Glu Tyr Val Arg Thr Gln Tyr	
210 215 220	
gca gga agt cga ttt gag ttt tat tta gag aag tag	708
Ala Gly Ser Arg Phe Glu Phe Tyr Leu Glu Lys	
225 230 235	

&lt;210&gt; 1386

&lt;211&gt; 235

&lt;212&gt; PRT

&lt;213&gt; Enterococcus faecalis

&lt;400&gt; 1386

```

Met Val Gln Asn Ile Pro Ile Tyr Ile Gln Ile His Asp Lys Ile Lys
1      5      10      15
Glu Asp Ile Glu Lys Gly Val Trp Ser Ile Gly Asp Arg Leu Pro Ser
20      25      30
Glu Arg Glu Leu Ala Leu Lys Phe Asp Val Ser Arg Met Thr Leu Arg
35      40      45
Gln Ala Ile Gln Thr Leu Ala Asp Glu Gly Ile Leu Glu Arg Lys Ile
50      55      60
Gly Ser Gly Thr Tyr Val Ala Arg Lys Lys Val Gln Glu Thr Met Thr
65      70      75      80
Gly Thr Thr Ser Phe Thr Glu Ile Thr Leu Ser Gln Asn Arg Val Pro
85      90      95
Ser Ser Arg Thr Val Ser Tyr Phe Val Ala Lys Pro Ser Ser Ser Glu
100      105      110
Met Glu Lys Leu Gln Leu Gly Pro Glu Asp Ser Ile Leu Arg Met Glu
115      120      125
Arg Ile Arg Phe Ala Asp Asp Ile Pro Ile Cys Phe Glu Val Ala Ser
130      135      140
Ile Pro Tyr Ser Leu Val Ser Gln Tyr Gly Lys Ser Glu Ile Thr Asn
145      150      155      160
Ser Phe Tyr Lys Thr Leu Glu Ala Lys Ser Gly His Lys Ile Gly His
165      170      175
Ser Asn Gln Thr Ile Ser Ala Val Gln Ala Ser Glu Gln Ile Ala Glu
180      185      190
Tyr Leu Glu Ile Lys Arg Gly Asp Ala Ile Leu Arg Val Arg Gln Val
195      200      205
Ser Tyr Phe Glu Asn Gly Leu Pro Phe Glu Tyr Val Arg Thr Gln Tyr
210      215      220
Ala Gly Ser Arg Phe Glu Phe Tyr Leu Glu Lys
225      230      235

```

&lt;210&gt; 1387

&lt;211&gt; 675

&lt;212&gt; DNA

&lt;213&gt; Shigella flexneri

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(675)

&lt;400&gt; 1387

```

atg atc tac aaa agc att gcg gag cgg tta aga att cga ctt aat tcc      48
Met Ile Tyr Lys Ser Ile Ala Glu Arg Leu Arg Ile Arg Leu Asn Ser
1      5      10      15
gcg gat ttc acg cta aac agc ctt ctt ccc ggt gaa aaa aag ctg gcg      96
Ala Asp Phe Thr Leu Asn Ser Leu Leu Pro Gly Glu Lys Lys Leu Ala
20      25      30
gaa gag ttt gcg gta tcg cgg atg act atc cgt aaa gcc att gac ctg      144
Glu Glu Phe Ala Val Ser Arg Met Thr Ile Arg Lys Ala Ile Asp Leu
35      40      45
ctg gta gcg tgg ggg ctg gtg gtc cgc cgc cac ggc agc ggc act tac      192
Leu Val Ala Trp Gly Leu Val Val Arg Arg His Gly Ser Gly Thr Tyr
50      55      60
ctg gtg cgc aaa gat gtg ctg cat caa acc gcc agc ctg acc gga ctg      240
Leu Val Arg Lys Asp Val Leu His Gln Thr Ala Ser Leu Thr Gly Leu
65      70      75      80
gtg gag gtg tta aaa cgg cag gga aaa acg gtc acc agc cag gtg ctg      288
Val Glu Val Leu Lys Arg Gln Gly Lys Thr Val Thr Ser Gln Val Leu
85      90      95
att ttt gaa atc atg cct gcg cct ccg gcc att gcc agc cag tta cgg      336
Ile Phe Glu Ile Met Pro Ala Pro Pro Ala Ile Ala Ser Gln Leu Arg
100      105
att caa atc aac gag cag atc tac tcc cgt cgc gtt ttt gtg      384
Ile Gln Ile Asn Glu Gln Ile Tyr Phe Ser Arg Arg Val Arg Phe Val

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PhoenixTemp32470.tmp.txt																
115							120							125		
gaa	ggg	aaa	ccg	cta	atg	ctg	gaa	gac	agc	tat	atg	ccg	gta	aaa	ctg	432
Glu	Gly	Lys	Pro	Leu	Met	Leu	Glu	Asp	Ser	Tyr	Met	Pro	Val	Lys	Leu	
130							135							140		
ttc	cgt	aac	ctt	tcg	ctg	caa	cat	ctg	gaa	ggg	tcg	aag	ttt	gaa	tat	480
Phe	Arg	Asn	Leu	Ser	Leu	Gln	His	Leu	Glu	Gly	Ser	Lys	Phe	Glu	Tyr	
145							150							155		
att	gaa	caa	gag	tgc	ggg	att	ttg	att	ggc	ggg	aat	tat	gaa	agc	ctg	528
Ile	Glu	Gln	Glu	Cys	Gly	Ile	Leu	Ile	Gly	Gly	Asn	Tyr	Glu	Ser	Leu	
165							170							175		
atg	ccg	gtg	ctc	gcc	gat	aga	ctg	ctg	gcg	cgg	caa	atg	aag	gta	gcg	576
Met	Pro	Val	Leu	Ala	Asp	Arg	Leu	Leu	Ala	Arg	Gln	Met	Lys	Val	Ala	
180							185							190		
gaa	cac	acg	cca	ctg	ctg	cgg	atc	acc	tcg	ttg	tca	tat	agc	gag	agc	624
Glu	His	Thr	Pro	Leu	Leu	Arg	Ile	Thr	Ser	Leu	Ser	Tyr	Ser	Glu	Ser	
195							200							205		
ggg	gag	ttt	ttg	aat	tat	tca	gtg	atg	ttc	aga	aat	gcc	agc	gaa	tac	672
Gly	Glu	Phe	Leu	Asn	Tyr	Ser	Val	Met	Phe	Arg	Asn	Ala	Ser	Glu	Tyr	
210							215							220		
tag																675

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<210> 1388
<211> 224
<212> PRT
<213> Shigella flexneri
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<400>	1388														
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Ala	Asp	Phe	Thr	Leu	Asn	Ser	Leu	Leu	Pro	Gly	Glu	Lys	Lys	Leu	Ala
			20					25					30		
Glu	Glu	Phe	Ala	Val	Ser	Arg	Met	Thr	Ile	Arg	Lys	Ala	Ile	Asp	Leu
		35					40					45			
Leu	Val	Ala	Trp	Gly	Leu	Val	Val	Arg	Arg	His	Gly	Ser	Gly	Thr	Tyr
	50					55					60				
Leu	Val	Arg	Lys	Asp	Val	Leu	His	Gln	Thr	Ala	Ser	Leu	Thr	Gly	Leu
65					70					75					80
Val	Glu	Val	Leu	Lys	Arg	Gln	Gly	Lys	Thr	Val	Thr	Ser	Gln	Val	Leu
				85					90					95	
Ile	Phe	Glu	Ile	Met	Pro	Ala	Pro	Pro	Ala	Ile	Ala	Ser	Gln	Leu	Arg
			100					105					110		
Ile	Gln	Ile	Asn	Glu	Gln	Ile	Tyr	Phe	Ser	Arg	Arg	Val	Arg	Phe	Val
		115					120					125			
Glu	Gly	Lys	Pro	Leu	Met	Leu	Glu	Asp	Ser	Tyr	Met	Pro	Val	Lys	Leu
	130					135					140				
Phe	Arg	Asn	Leu	Ser	Leu	Gln	His	Leu	Glu	Gly	Ser	Lys	Phe	Glu	Tyr
145					150					155				160	
Ile	Glu	Gln	Glu	Cys	Gly	Ile	Leu	Ile	Gly	Gly	Asn	Tyr	Glu	Ser	Leu
				165					170					175	
Met	Pro	Val	Leu	Ala	Asp	Arg	Leu	Leu	Ala	Arg	Gln	Met	Lys	Val	Ala
			180					185					190		
Glu	His	Thr	Pro	Leu	Leu	Arg	Ile	Thr	Ser	Leu	Ser	Tyr	Ser	Glu	Ser
		195					200					205			
Gly	Glu	Phe	Leu	Asn	Tyr	Ser	Val	Met	Phe	Arg	Asn	Ala	Ser	Glu	Tyr
	210					215					220				

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<210> 1389
<211> 723
<212> DNA
<213> Shigella flexneri
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<221> CDS  
<222> (1)..(723)

atg gga cac aaa ccc tta tac cga cag att gct gat cgc att cgt gag  
Page 821

## PhoenixTemp32470.tmp.txt

Met 1	Gly	His	Lys	Pro 5	Leu	Tyr	Arg	Gln	Ile 10	Ala	Asp	Arg	Ile	Arg 15	Glu	
caa Gln	att Ile	gcg Ala	cgt Arg	ggc Gly	gag Glu	ctt Leu	aaa Lys	cct Pro	ggc Gly	gat Asp	gcg Ala	tta Leu	cct Pro	acc Thr	gaa Glu	96
tcg Ser	gca Ala	tta Leu	caa Gln	aca Thr	gag Glu	ttt Phe	ggc Gly	gtc Val	agc Ser	cgg Arg	gtt Val	acg Thr	gtg Val	cgt Arg	cag Gln	144
gct Ala	ttg Leu	cg Arg	cag Gln	tta Leu	gtc Val	gag Glu	caa Gln	cag Gln	atc Ile	ctc Leu	gaa Glu	agc Ser	att Ile	cag Gln	ggc Gly	192
agc Ser	ggg Gly	act Thr	tac Tyr	gtc Val	aaa Lys	gaa Glu	gag Glu	cgg Arg	gtc Val	aat Asn	tac Tyr	gat Asp	att Ile	ttt Phe	cag Gln	240
tta Leu	acc Thr	agt Ser	ttt Phe	gat Asp	gaa Glu	aaa Lys	ctg Leu	tcg Ser	gac Asp	cgt Arg	cac His	gtc Val	gat Asp	aca Thr	cac His	288
agt Ser	gaa Glu	gtt Val	ctg Leu	ata Ile	ttt Phe	gaa Glu	gtg Val	att Ile	ccg Pro	gct Ala	gac Asp	gat Asp	ttt Phe	ctt Leu	cag Gln	336
caa Gln	cag Gln	cta Leu	caa Gln	atc Ile	acc Thr	gtg Val	cag Gln	gat Asp	cgt Arg	gtg Val	tgg Trp	cat His	gtg Val	aag Lys	cgc Arg	384
gtg Val	cg Arg	tat Tyr	cg Arg	aag Lys	caa Gln	aag Lys	cca Pro	atg Met	gcg Ala	ctg Leu	gaa Glu	gaa Glu	acc Thr	tgg Trp	atg Met	432
ccg Pro	ctt Leu	gcg Ala	ttg Leu	ttc Phe	ccg Pro	gat Asp	ctc Leu	acc Thr	tgg Trp	cag Gln	gtc Val	atg Met	gaa Glu	aat Asn	tcg Ser	480
aaa Lys	tat Tyr	cac His	ttt Phe	att Ile	gaa Glu	gaa Glu	gtg Val	aag Lys	aag Lys	atg Met	gtt Val	atc Ile	gat Asp	cgt Arg	agc Ser	528
gaa Glu	cag Gln	gaa Glu	atc Ile	att Ile	cct Pro	ctg Leu	atg Met	cca Pro	acc Thr	gaa Glu	gag Glu	atg Met	agc Ser	cgt Arg	ctg Leu	576
ctt Leu	aat Asn	atc Ile	agc Ser	cag Gln	aca Thr	aag Lys	ccg Pro	att Ile	ctt Leu	gaa Glu	aaa Lys	gta Val	tcg Ser	cgt Arg	gga Gly	624
tat Tyr	tta Leu	gtt Val	gat Asp	ggt Gly	cg Arg	gtg Val	ttt Phe	gaa Glu	tat Tyr	agc Ser	cg Arg	aac Asn	gct Ala	ttt Phe	aat Asn	672
acc Thr	gat Asp	gac Asp	tat Tyr	aaa Lys	ttt Phe	acc Thr	ctg Leu	ata Ile	gcg Ala	cag Gln	cga Arg	aaa Lys	tca Ser	tcg Ser	cga Arg	720
taa																723

&lt;210&gt; 1390

&lt;211&gt; 240

&lt;212&gt; PRT

&lt;213&gt; Shigella flexneri

&lt;400&gt; 1390

Met 1	Gly	His	Lys	Pro 5	Leu	Tyr	Arg	Gln	Ile 10	Ala	Asp	Arg	Ile	Arg 15	Glu	
Gln	Ile	Ala	Arg	Gly	Glu	Leu	Lys	Pro	Gly	Asp	Ala	Leu	Pro	Thr	Glu	
Ser	Ala	Leu	Gln	Thr	Glu	Phe	Gly	Val	Ser	Arg	Val	Thr	Val	Arg	Gln	
Ala	Leu	Arg	Gln	Leu	Val	Glu	Gln	Gln	Ile	Leu	Glu	Ser	Ile	Gln	Gly	
Ser	Gly	Thr	Tyr	Val	Lys	Glu	Glu	Arg	Val	Asn	Tyr	Asp	Ile	Phe	Gln	
Leu	Thr	Ser	Phe	Asp	Glu	Lys	Leu	Ser	Asp	Arg	His	Val	Asp	Thr	His	
Ser	Glu	Val	Leu	Ile	Phe	Glu	Val	Ile	Pro	Ala	Asp	Asp	Phe	Leu	Gln	
Gln	Gln	Leu	Gln	Ile	Thr	Val	Gln	Asp	Arg	Val	Trp	His	Val	Lys	Arg	

## PhoenixTemp32470.tmp.txt

Val	Arg	115	Tyr	Arg	Lys	Gln	Lys	120	Pro	Met	Ala	Leu	Glu	125	Glu	Thr	Trp	Met
Pro	Leu	130	Ala	Leu	Phe	Pro	Asp	135	Leu	Thr	Trp	Gln	Val	140	Met	Glu	Asn	Ser
145	Lys	Tyr	His	Phe	Ile	150	Glu	Glu	Val	Lys	Lys	155	Val	160	Ile	Asp	Arg	Ser
Glu	Gln	Glu	Ile	165	Ile	Pro	Leu	Met	Pro	170	Thr	Glu	Glu	175	Met	Ser	Arg	Leu
Leu	Asn	Ile	Ser	180	Gln	Thr	Lys	Pro	Ile	185	Leu	Glu	Lys	190	Val	Ser	Arg	Gly
Tyr	Leu	195	Val	Asp	Gly	Arg	Val	200	Phe	Glu	Tyr	Ser	Arg	205	Asn	Ala	Phe	Asn
Thr	210	Asp	Asp	Tyr	Lys	Phe	Thr	215	Leu	Ile	Ala	Gln	Arg	220	Lys	Ser	Ser	Arg
225						230						235						240

&lt;210&gt; 1391

&lt;211&gt; 927

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(927)

&lt;400&gt; 1391

atg	gcg	gcg	agc	att	gcc	acg	tcc	ttg	ttg	tgc	ggg	ttt	gcc	gag	cac	
Met	Ala	Ala	Ser	Ile	Ala	Thr	Ser	Leu	Leu	Cys	Gly	Phe	Ala	Glu	His	48
1				5				10				15				
aag	cat	aag	cca	cat	gcg	gtc	ctc	ccg	aca	caa	ggc	tgt	ttc	gcc	tac	96
Lys	His	Lys	Pro	His	Ala	Val	Leu	Pro	Thr	Gln	Gly	Cys	Phe	Ala	Tyr	
			20					25					30			
caa	agg	gcg	aca	ggc	gga	gga	ttg	aca	gcc	tgt	cag	gct	cag	gga	ata	144
Gln	Arg	Ala	Thr	Gly	Gly	Gly	Leu	Thr	Ala	Cys	Gln	Ala	Gln	Gly	Ile	
		35					40					45				
ctc	tcg	aaa	aat	tca	tat	ata	tgt	tta	tat	aac	aag	acg	aga	gcg	aga	192
Leu	Ser	Lys	Asn	Ser	Tyr	Ile	Cys	Leu	Tyr	Asn	Lys	Thr	Arg	Ala	Arg	
		50				55					60					
ccc	atg	cac	cca	ttg	acc	ggt	gat	gct	cga	ctg	ccc	cgc	tac	caa	caa	240
Pro	Met	His	Pro	Leu	Thr	Gly	Asp	Ala	Arg	Leu	Pro	Arg	Tyr	Gln	Gln	
					70					75					80	
ctg	cgc	gat	cac	atg	gtt	gcg	caa	att	gcc	aac	aac	cgc	tgg	cgc	ccg	288
Leu	Arg	Asp	His	Met	Val	Ala	Gln	Ile	Ala	Asn	Asn	Arg	Trp	Arg	Pro	
				85					90					95		
ggg	gaa	gcg	atc	ccg	acc	gag	gca	gcc	ttg	gcc	acc	gag	ttc	gac	ctg	336
Gly	Glu	Ala	Ile	Pro	Thr	Glu	Ala	Ala	Leu	Ala	Thr	Glu	Phe	Asp	Leu	
			100					105					110			
tcg	atc	ggt	acc	gtg	cgc	aag	gcc	gtc	gat	gtc	ctg	gtg	gcc	gaa	ggc	384
Ser	Ile	Gly	Thr	Val	Arg	Lys	Ala	Val	Asp	Val	Leu	Val	Ala	Glu	Gly	
		115					120					125				
gtg	ctg	gag	cgc	cag	cag	ggc	cgc	ggc	acc	ttc	att	cgc	cgc	cca	cag	432
Val	Leu	Glu	Arg	Gln	Gln	Gly	Arg	Gly	Thr	Phe	Ile	Arg	Arg	Pro	Gln	
		130				135					140					
ttc	cag	tcg	tcg	ctg	ttc	cgc	ttc	ttc	cgt	ttc	gag	gcc	gcc	aat	ggc	480
Phe	Gln	Ser	Ser	Leu	Phe	Arg	Phe	Phe	Arg	Phe	Glu	Ala	Ala	Asn	Gly	
					150					155					160	
gag	cgc	ata	gtg	ccg	gaa	agc	cgc	att	ctc	tcc	atc	gag	tcg	ctg	ccg	528
Glu	Arg	Ile	Val	Pro	Glu	Ser	Arg	Ile	Leu	Ser	Ile	Glu	Ser	Leu	Pro	
				165					170					175		
gcg	cct	tcc	gcg	gtg	gcc	gag	gca	ttg	ggc	ctg	gca	ggg	gag	gca	gaa	576
Ala	Pro	Ser	Ala	Val	Ala	Glu	Ala	Leu	Gly	Leu	Ala	Gly	Glu	Ala	Glu	
			180					185					190			
gtg	atc	cgc	atc	att	cgc	aca	cgt	ctg	ggc	gcc	cag	ccg	gtg	ctg		624
Val	Ile	Arg	Ile	Ile	Arg	Thr	Arg	Leu	Gly	Ala	Gln	Pro	Val	Leu		
		195					200				205					
gcc	gaa	gaa	atc	tgg	ctg	ccg	cgc	caa	acc	ttc	cag	ccg	ctg	ctg	gac	672
Ala	Glu	Glu	Ile	Trp	Leu	Pro	Arg	Gln	Thr	Phe	Gln	Pro	Leu	Leu	Asp	
		210				215					220					
gtg	gat	ctg	aac	agc	gag	ggc	ccg	ctg	ctg	tac	ccg	atc	tac	gaa	gcg	720

## PhoenixTemp32470.tmp.txt

Val	Asp	Leu	Asn	Ser	Glu	Gly	Pro	Leu	Leu	Tyr	Pro	Ile	Tyr	Glu	Ala		
225					230					235					240		
ctg	tgc	ggt	cag	gtg	gtc	gcc	tac	gcc	gaa	gaa	acc	ctg	acc	gcc	gaa	768	
Leu	Cys	Gly	Gln	Val	Val	Ala	Tyr	Ala	Glu	Glu	Thr	Leu	Thr	Ala	Glu		
				245					250					255			
gcg	gtc	gac	gcg	gtg	cat	ggc	cgc	tgt	ctg	caa	ctg	ccg	gcc	gac	agc	816	
Ala	Val	Asp	Ala	Val	His	Gly	Arg	Leu	Gln	Leu	Pro	Ala	Asp	Ser			
			260					265				270					
ccg	gtg	gtc	gtg	atc	gag	cgc	ctg	gcc	cgc	gat	tac	gcc	ggc	aaa	cct	864	
Pro	Val	Val	Val	Ile	Glu	Arg	Leu	Ala	Arg	Asp	Tyr	Ala	Gly	Lys	Pro		
			275				280					285					
ctg	gaa	tgg	cgc	cgc	tcg	cgc	ggc	cat	gcg	cag	cac	ttc	cgc	tac	cgc	912	
Leu	Glu	Trp	Arg	Arg	Ser	Arg	Gly	His	Ala	Gln	His	Phe	Arg	Tyr	Arg		
	290					295				300							
atc	gac	att	cgt	tag												927	
Ile	Asp	Ile	Arg														
305																	

&lt;210&gt; 1392

&lt;211&gt; 308

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida

&lt;400&gt; 1392

Met	Ala	Ala	Ser	Ile	Ala	Thr	Ser	Leu	Leu	Cys	Gly	Phe	Ala	Glu	His		
1				5				10						15			
Lys	His	Lys	Pro	His	Ala	Val	Leu	Pro	Thr	Gln	Gly	Cys	Phe	Ala	Tyr		
			20					25					30				
Gln	Arg	Ala	Thr	Gly	Gly	Gly	Leu	Thr	Ala	Cys	Gln	Ala	Gln	Gly	Ile		
		35					40					45					
Leu	Ser	Lys	Asn	Ser	Tyr	Ile	Cys	Leu	Tyr	Asn	Lys	Thr	Arg	Ala	Arg		
	50					55					60						
Pro	Met	His	Pro	Leu	Thr	Gly	Asp	Ala	Arg	Leu	Pro	Arg	Tyr	Gln	Gln		
65				70					75					80			
Leu	Arg	Asp	His	Met	Val	Ala	Gln	Ile	Ala	Asn	Asn	Arg	Trp	Arg	Pro		
			85					90					95				
Gly	Glu	Ala	Ile	Pro	Thr	Glu	Ala	Ala	Leu	Ala	Thr	Glu	Phe	Asp	Leu		
		100					105					110					
Ser	Ile	Gly	Thr	Val	Arg	Lys	Ala	Val	Asp	Val	Leu	Val	Ala	Glu	Gly		
	115					120					125						
Val	Leu	Glu	Arg	Gln	Gln	Gly	Arg	Gly	Thr	Phe	Ile	Arg	Arg	Pro	Gln		
	130				135					140							
Phe	Gln	Ser	Ser	Leu	Phe	Arg	Phe	Phe	Arg	Phe	Glu	Ala	Ala	Asn	Gly		
145				150					155					160			
Glu	Arg	Ile	Val	Pro	Glu	Ser	Arg	Ile	Leu	Ser	Ile	Glu	Ser	Leu	Pro		
			165					170					175				
Ala	Pro	Ser	Ala	Val	Ala	Glu	Ala	Leu	Gly	Leu	Ala	Gly	Glu	Ala	Glu		
		180					185					190					
Val	Ile	Arg	Ile	Ile	Arg	Thr	Arg	Leu	Leu	Gly	Ala	Gln	Pro	Val	Leu		
	195					200					205						
Ala	Glu	Glu	Ile	Trp	Leu	Pro	Arg	Gln	Thr	Phe	Gln	Pro	Leu	Leu	Asp		
	210				215						220						
Val	Asp	Leu	Asn	Ser	Glu	Gly	Pro	Leu	Leu	Tyr	Pro	Ile	Tyr	Glu	Ala		
225				230						235				240			
Leu	Cys	Gly	Gln	Val	Val	Ala	Tyr	Ala	Glu	Glu	Thr	Leu	Thr	Ala	Glu		
			245					250						255			
Ala	Val	Asp	Ala	Val	His	Gly	Arg	Leu	Gln	Leu	Pro	Ala	Asp	Ser			
			260					265				270					
Pro	Val	Val	Val	Ile	Glu	Arg	Leu	Ala	Arg	Asp	Tyr	Ala	Gly	Lys	Pro		
	275					280						285					
Leu	Glu	Trp	Arg	Arg	Ser	Arg	Gly	His	Ala	Gln	His	Phe	Arg	Tyr	Arg		
	290				295			300									
Ile	Asp	Ile	Arg														
305																	

&lt;210&gt; 1393

&lt;211&gt; 711

&lt;212&gt; DNA

&lt;213&gt; Lactobacillus plantarum

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(711)

&lt;400&gt; 1393

atg	agt	acc	atg	agt	tcg	cca	att	tat	att	caa	atc	cac	aac	caa	att	48
Met	Ser	Thr	Met	Ser	Ser	Pro	Ile	Tyr	Ile	Gln	Ile	His	Asn	Gln	Ile	
1				5					10					15		
aag	cag	gcg	att	gaa	gca	ggg	cgg	tgg	gcc	ggt	ggg	gac	cgg	att	ccg	96
Lys	Gln	Ala	Ile	Glu	Ala	Gly	Arg	Trp	Ala	Val	Gly	Asp	Arg	Ile	Pro	
			20					25					30			
tct	gaa	cgg	gag	ctg	gct	aca	cag	ttc	gat	ggt	agt	cgg	atg	acc	ctt	144
Ser	Glu	Arg	Glu	Leu	Ala	Thr	Gln	Phe	Asp	Val	Ser	Arg	Met	Thr	Leu	
			35				40					45				
cga	caa	gca	atc	cag	aca	ttg	ggt	gac	gaa	gga	ata	tta	gag	cgg	cga	192
Arg	Gln	Ala	Ile	Gln	Thr	Leu	Val	Asp	Glu	Gly	Ile	Leu	Glu	Arg	Arg	
			50			55					60					
gtc	ggt	gcc	ggc	acg	ttt	gtc	gcg	aat	cag	aag	gtc	caa	gaa	aaa	atg	240
Val	Gly	Ala	Gly	Thr	Phe	Val	Ala	Asn	Gln	Lys	Val	Gln	Glu	Lys	Met	
					70					75					80	
tcc	ggt	gtc	acc	agt	ttt	act	gat	cta	atg	ctg	gcc	cag	ggg	aag	gtc	288
Ser	Gly	Val	Thr	Ser	Phe	Thr	Asp	Leu	Met	Leu	Ala	Gln	Gly	Lys	Val	
				85					90					95		
cca	tca	agt	aag	acg	att	tca	tat	cac	gtg	acg	agc	ccg	tcg	cta	tct	336
Pro	Ser	Ser	Lys	Thr	Ile	Ser	Tyr	His	Val	Thr	Ser	Pro	Ser	Leu	Ser	
			100					105					110			
gag	agc	gaa	aag	ttg	gcg	tta	ggc	gcc	aac	gaa	caa	ggt	cta	cgg	atg	384
Glu	Ser	Glu	Lys	Leu	Ala	Leu	Gly	Ala	Asn	Glu	Gln	Val	Leu	Arg	Met	
			115				120					125				
gaa	cga	att	cgc	tat	ggt	gat	gat	gtg	cca	att	tgt	ttt	gag	gtc	gca	432
Glu	Arg	Ile	Arg	Tyr	Gly	Asp	Asp	Val	Pro	Ile	Cys	Phe	Glu	Val	Ala	
			130			135					140					
aca	gtt	cca	gaa	cga	ctc	gtc	aag	cag	ttc	acc	aag	gac	gaa	att	acg	480
Thr	Val	Pro	Glu	Arg	Leu	Val	Lys	Gln	Phe	Thr	Lys	Asp	Glu	Ile	Thr	
					150				155						160	
agt	tcg	ttg	tat	cgg	acg	tta	gaa	gag	aag	gca	agt	tta	gtg	cct	ggg	528
Ser	Ser	Leu	Tyr	Arg	Thr	Leu	Glu	Glu	Lys	Ala	Ser	Leu	Val	Pro	Gly	
				165					170					175		
aag	gct	caa	cag	acg	ggt	tcg	gcg	atg	tct	gct	tct	gag	cgt	atc	gcg	576
Lys	Ala	Gln	Thr	Val	Ser	Ser	Ala	Met	Ser	Ala	Ser	Glu	Arg	Ile	Ala	
				180				185					190			
gaa	tac	ttg	tca	gtc	cgg	cgt	ggc	gat	gcg	ttg	cta	cgg	tta	cgg	cag	624
Glu	Tyr	Leu	Ser	Val	Arg	Arg	Gly	Asp	Ala	Leu	Leu	Arg	Leu	Arg	Gln	
			195			200						205				
att	tcg	tat	ttg	caa	acc	ggc	gaa	ccg	ttt	gaa	tac	gtg	cgg	acc	cag	672
Ile	Ser	Tyr	Leu	Gln	Thr	Gly	Glu	Pro	Phe	Glu	Tyr	Val	Arg	Thr	Gln	
			210			215					220					
tac	gtt	ggg	aac	cgg	ttt	gag	ttt	tat	ctt	gaa	aaa	taa				711
Tyr	Val	Gly	Asn	Arg	Phe	Glu	Phe	Tyr	Leu	Glu	Lys					
					230					235						

&lt;210&gt; 1394

&lt;211&gt; 236

&lt;212&gt; PRT

&lt;213&gt; Lactobacillus plantarum

&lt;400&gt; 1394

Met	Ser	Thr	Met	Ser	Ser	Pro	Ile	Tyr	Ile	Gln	Ile	His	Asn	Gln	Ile	
1				5					10					15		
Lys	Gln	Ala	Ile	Glu	Ala	Gly	Arg	Trp	Ala	Val	Gly	Asp	Arg	Ile	Pro	
			20					25					30			
Ser	Glu	Arg	Glu	Leu	Ala	Thr	Gln	Phe	Asp	Val	Ser	Arg	Met	Thr	Leu	
			35				40					45				
Arg	Gln	Ala	Ile	Gln	Thr	Leu	Val	Asp	Glu	Gly	Ile	Leu	Glu	Arg	Arg	
			50			55					60					
Val	Gly	Ala	Gly	Thr	Phe	Val	Ala	Asn	Gln	Lys	Val	Gln	Glu	Lys	Met	
					70					75					80	
Ser	Gly	Val	Thr	Ser	Phe	Thr	Asp	Leu	Met	Leu	Ala	Gln	Gly	Lys	Val	



## PhoenixTemp32470.tmp.txt

85 90 95  
 Pro Ser Ser Lys Thr Ile Ser Tyr His Val Thr Ser Pro Ser Leu Ser  
 100 105 110  
 Glu Ser Glu Lys Leu Ala Leu Gly Ala Asn Glu Gln Val Leu Arg Met  
 115 120 125  
 Glu Arg Ile Arg Tyr Gly Asp Asp Val Pro Ile Cys Phe Glu Val Ala  
 130 135 140  
 Thr Val Pro Glu Arg Leu Val Lys Gln Phe Thr Lys Asp Glu Ile Thr  
 145 150 155 160  
 Ser Ser Leu Tyr Arg Thr Leu Glu Glu Lys Ala Ser Leu Val Pro Gly  
 165 170 175  
 Lys Ala Gln Gln Thr Val Ser Ala Met Ser Ala Ser Glu Arg Ile Ala  
 180 185 190  
 Glu Tyr Leu Ser Val Arg Arg Gly Asp Ala Leu Leu Arg Leu Arg Gln  
 195 200 205  
 Ile Ser Tyr Leu Gln Thr Gly Glu Pro Phe Glu Tyr Val Arg Thr Gln  
 210 215 220  
 Tyr Val Gly Asn Arg Phe Glu Phe Tyr Leu Glu Lys  
 225 230 235

&lt;210&gt; 1395

&lt;211&gt; 699

&lt;212&gt; DNA

&lt;213&gt; Streptococcus mutans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(699)

&lt;400&gt; 1395

atg	tta	ccg	gct	tat	att	cgc	att	cat	gat	caa	atc	aaa	aaa	gaa	atc	48
Met	Leu	Pro	Ala	Tyr	Ile	Arg	Ile	His	Asp	Gln	Ile	Lys	Lys	Glu	Ile	
1				5				10						15		
gat	gaa	ggt	ctt	tgg	aaa	atc	ggc	gat	cgt	ctt	cct	agc	gaa	cgt	gat	96
Asp	Glu	Gly	Leu	Trp	Lys	Ile	Gly	Asp	Arg	Leu	Pro	Ser	Glu	Arg	Asp	
			20					25					30			
ttg	gca	gaa	cga	ttt	gaa	ggt	agc	cga	atg	acg	ctt	cga	cag	gct	ata	144
Leu	Ala	Glu	Arg	Phe	Glu	Val	Ser	Arg	Met	Thr	Leu	Arg	Gln	Ala	Ile	
			35				40					45				
aca	ctc	ctt	ggt	gaa	gaa	ggg	att	tta	gag	cgt	cga	gtg	gga	agc	ggt	192
Thr	Leu	Leu	Val	Glu	Glu	Gly	Ile	Leu	Glu	Arg	Arg	Val	Gly	Ser	Gly	
			50			55					60					
act	tac	atc	gct	agc	agt	cgt	ggt	caa	gaa	aaa	atg	cgt	ggg	aca	act	240
Thr	Tyr	Ile	Ala	Ser	Ser	Arg	Val	Gln	Glu	Lys	Met	Arg	Gly	Thr	Thr	
					70			75						80		
agt	ttt	aca	gaa	att	gta	aaa	tca	caa	ggc	aaa	aca	cct	tcg	acc	aaa	288
Ser	Phe	Thr	Glu	Ile	Val	Lys	Ser	Gln	Gly	Lys	Thr	Pro	Ser	Thr	Lys	
				85				90						95		
tta	att	tct	tac	cgg	cgg	ggt	cat	cca	agc	gaa	caa	gaa	ata	aaa	ttt	336
Leu	Ile	Ser	Tyr	Arg	Arg	Val	His	Pro	Ser	Glu	Gln	Glu	Ile	Lys	Phe	
			100					105					110			
tta	gat	att	aaa	cct	aaa	tct	tat	att	atc	cga	atg	gag	cga	ggt	cgc	384
Leu	Asp	Ile	Lys	Pro	Lys	Ser	Tyr	Ile	Ile	Arg	Met	Glu	Arg	Val	Arg	
			115				120					125				
tat	gca	gat	gat	att	cct	ggt	ggt	ttt	gaa	gtg	aca	gct	att	cct	gaa	432
Tyr	Ala	Asp	Asp	Ile	Pro	Val	Val	Phe	Glu	Val	Thr	Ala	Ile	Pro	Glu	
			130			135					140					
aag	att	att	aag	agt	ttc	aaa	aag	gaa	gct	att	acc	aag	cat	ttc	ttt	480
Lys	Ile	Ile	Lys	Ser	Phe	Lys	Lys	Glu	Ala	Ile	Thr	Lys	His	Phe	Phe	
					150					155				160		
aaa	acg	ttg	aca	gat	cat	ggg	ttt	ggt	atc	gga	aaa	agt	cag	caa	acc	528
Lys	Thr	Leu	Thr	Asp	His	Gly	Phe	Val	Ile	Gly	Lys	Ser	Gln	Gln	Thr	
				165					170					175		
att	tct	gcc	agt	aat	gct	aat	gag	atg	acg	gct	gat	tat	ttg	gcg	atc	576
Ile	Ser	Ala	Ser	Asn	Ala	Asn	Glu	Met	Thr	Ala	Asp	Tyr	Leu	Ala	Ile	
				180				185					190			
tcg	cgt	gga	cat	gca	gta	cta	acc	ttg	gct	caa	ggt	tcc	tat	ttt	gaa	624
Ser	Arg	Gly	His	Ala	Val	Leu	Thr	Leu	Ala	Gln	Val	Ser	Tyr	Phe	Glu	
		195					200					205				

## PhoenixTemp32470.tmp.txt

aat ggt atg cct ttt gaa tat gtc cgc agc caa tat gtc ggt gag cgt 672  
 Asn Gly Met Pro Phe Glu Tyr Val Arg Ser Gln Tyr Val Gly Glu Arg  
 210 215 220  
 ttt gag ttt tat tta gaa aat aag taa 699  
 Phe Glu Phe Tyr Leu Glu Asn Lys  
 225 230

<210> 1396  
 <211> 232  
 <212> PRT  
 <213> Streptococcus mutans

<400> 1396  
 Met Leu Pro Ala Tyr Ile Arg Ile His Asp Gln Ile Lys Lys Glu Ile  
 1 5 10 15  
 Asp Glu Gly Leu Trp Lys Ile Gly Asp Arg Leu Pro Ser Glu Arg Asp  
 20 25 30  
 Leu Ala Glu Arg Phe Glu Val Ser Arg Met Thr Leu Arg Gln Ala Ile  
 35 40 45  
 Thr Leu Leu Val Glu Glu Gly Ile Leu Glu Arg Arg Val Gly Ser Gly  
 50 55 60  
 Thr Tyr Ile Ala Ser Ser Arg Val Gln Glu Lys Met Arg Gly Thr Thr  
 65 70 75 80  
 Ser Phe Thr Glu Ile Val Lys Ser Gln Gly Lys Thr Pro Ser Thr Lys  
 85 90 95  
 Leu Ile Ser Tyr Arg Arg Val His Pro Ser Glu Gln Glu Ile Lys Phe  
 100 105 110  
 Leu Asp Ile Lys Pro Lys Ser Tyr Ile Ile Arg Met Glu Arg Val Arg  
 115 120 125  
 Tyr Ala Asp Asp Ile Pro Val Phe Glu Val Thr Ala Ile Pro Glu  
 130 135 140  
 Lys Ile Ile Lys Ser Phe Lys Lys Glu Ala Ile Thr Lys His Phe Phe  
 145 150 155 160  
 Lys Thr Leu Thr Asp His Gly Phe Val Ile Gly Lys Ser Gln Gln Thr  
 165 170 175  
 Ile Ser Ala Ser Asn Ala Asn Glu Met Thr Ala Asp Tyr Leu Ala Ile  
 180 185 190  
 Ser Arg Gly His Ala Val Leu Thr Leu Ala Gln Val Ser Tyr Phe Glu  
 195 200 205  
 Asn Gly Met Pro Phe Glu Tyr Val Arg Ser Gln Tyr Val Gly Glu Arg  
 210 215 220  
 Phe Glu Phe Tyr Leu Glu Asn Lys  
 225 230

<210> 1397  
 <211> 699  
 <212> DNA  
 <213> Streptococcus agalactiae

<220>  
 <221> CDS  
 <222> (1)..(699)

<400> 1397  
 atg tta cca gca tat att aaa att cac gac gct att aaa aag gaa atc 48  
 Met Leu Pro Ala Tyr Ile Lys Ile His Asp Ala Ile Lys Lys Glu Ile  
 1 5 10 15  
 gat aaa ggg act tgg aag att ggg cag cgg tta cct agc gaa aga gat 96  
 Asp Lys Gly Thr Trp Lys Ile Gly Gln Arg Leu Pro Ser Glu Arg Asp  
 20 25 30  
 tta gcg gat gat tat agt gta agt cgt atg aca ctt cgc caa tca att 144  
 Leu Ala Asp Asp Tyr Ser Val Ser Arg Met Thr Leu Arg Gln Ser Ile  
 35 40 45  
 aca ttg tta gtt gaa gaa ggt att ttg gag aga cga gtt ggt agt ggc 192  
 Thr Leu Leu Val Glu Glu Gly Ile Leu Glu Arg Arg Val Gly Ser Gly  
 50 55 60  
 acc tat gtt gct agt cat cgt gtt caa gaa aaa atg cgg gga aca act 240  
 Thr Tyr Val Ala Ser His Arg Val Gln Glu Lys Met Arg Gly Thr Thr  
 65 70 75 80

PhoenixTemp32470.tmp.txt

agt ttt aca gaa att gtc aat tct caa ggg cgt aag cca tcc agt aaa	288
Ser Phe Thr Glu Ile 85 Val Asn Ser Gln Gly 90 Arg Lys Pro Ser Ser 95 Lys	
cta atc tca ttt caa aga aaa cta gca aat gaa acc gaa att caa aaa	336
Leu Ile Ser Phe Gln Arg Lys Leu Ala Asn Glu Thr Glu Ile Gln Lys	
tta aat tta tca cag tca gat tat gtg gtt cgt atg gaa agg gta cgt	384
Leu Asn 115 Leu Ser Gln Ser Asp Tyr 120 Val Val Arg Met 125 Arg Val Arg	
tat gct gat aag gta ccg ttg gtt tat gag gta gcc tct ata cca gag	432
Tyr Ala Asp Lys Val Pro Leu Val Tyr Glu Val Ala Ser Ile Pro Glu	
aat tta att aaa ggt ttt gaa caa tca gag gtt aca gaa cat ttc ttt	480
Asn Leu Ile Lys Gly Phe 150 Glu Gln Ser Glu Val Thr Glu His Phe Phe 160	
aaa acc tta aca gag aat ggc tac gaa att ggg aaa agc caa caa act	528
Lys Thr Leu Thr Glu 165 Asn Gly Tyr Glu Ile Gly Lys Ser Gln Gln Thr 175	
ata tat gct aga aat gct agt gaa cgt gtt gct tcg cat tta gaa gtt	576
Ile Tyr Ala Arg 180 Asn Ala Ser Glu Arg Val Ala Ser His Leu Glu Val 190	
aac gca ggc cat gct att ttg gca ttg aca caa gtt tca tac ttt act	624
Asn Ala Gly His Ala Ile Leu Ala Leu Thr Gln Val Ser Tyr Phe Thr 205	
gat ggt aag cct ttt gaa tat gtt cat ggg caa tat gtt gga gat cgt	672
Asp Gly Lys Pro Phe Glu Tyr 215 Val His Gly Gln Tyr 220 Val Gly Asp Arg	
ttt gag ttt tat tta gag aat aac tag	699
Phe Glu Phe Tyr Leu Glu 230 Asn Asn	

<210> 1398

<211> 232

<212> PRT

<213> Streptococcus agalactiae

<400> 1398

Met Leu Pro Ala Tyr Ile Lys Ile His Asp Ala Ile Lys Lys Glu Ile	
1 5 10 15	
Asp Lys Gly Thr Trp Lys Ile Gly Gln Arg Leu Pro Ser Glu Arg Asp	
20 25 30	
Leu Ala Asp Asp Tyr Ser Val Ser Arg Met Thr Leu Arg Gln Ser Ile	
35 40 45	
Thr Leu Leu Val Glu Glu Gly Ile Leu Glu Arg Arg Val Gly Ser Gly	
50 55 60	
Thr Tyr Val Ala Ser His Arg Val Gln Glu Lys Met Arg Gly Thr Thr	
65 70 75 80	
Ser Phe Thr Glu Ile Val Asn Ser Gln Gly Arg Lys Pro Ser Ser Lys	
85 90 95	
Leu Ile Ser Phe Gln Arg Lys Leu Ala Asn Glu Thr Glu Ile Gln Lys	
100 105 110	
Leu Asn Leu Ser Gln Ser Asp Tyr Val Val Arg Met Glu Arg Val Arg	
115 120 125	
Tyr Ala Asp Lys Val Pro Leu Val Tyr Glu Val Ala Ser Ile Pro Glu	
130 135 140	
Asn Leu Ile Lys Gly Phe Glu Gln Ser Glu Val Thr Glu His Phe Phe	
145 150 155 160	
Lys Thr Leu Thr Glu Asn Gly Tyr Glu Ile Gly Lys Ser Gln Gln Thr	
165 170 175	
Ile Tyr Ala Arg Asn Ala Ser Glu Arg Val Ala Ser His Leu Glu Val	
180 185 190	
Asn Ala Gly His Ala Ile Leu Ala Leu Thr Gln Val Ser Tyr Phe Thr	
195 200 205	
Asp Gly Lys Pro Phe Glu Tyr Val His Gly Gln Tyr Val Gly Asp Arg	
210 215 220	
Phe Glu Phe Tyr Leu Glu 230 Asn Asn	
225 230	

<210> 1399

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Oceanobacillus iheyensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;400&gt; 1399

```

atg att gat aaa aat tca cct ata cca att tat tac caa tta gaa gaa      48
Met Ile Asp Lys Asn Ser Pro Ile Pro Ile Tyr Tyr Gln Leu Glu Glu
  1          5          10          15
tat ata aaa cat caa att gat aat caa aag tgg ctg ccg gga gag ctt      96
Tyr Ile Lys His Gln Ile Asp Asn Gln Lys Trp Leu Pro Gly Glu Leu
          20          25          30
ctt cca tct gaa aga gaa ttt gca gaa caa tat cat atc agc cgt atg      144
Leu Pro Ser Glu Arg Glu Phe Ala Glu Gln Tyr His Ile Ser Arg Met
          35          40          45
aca gtc cgc cag gct ata aat aat tta gct gct gct ggc ctt ctg tat      192
Thr Val Arg Gln Ala Ile Asn Asn Leu Ala Ala Ala Gly Leu Leu Tyr
          50          55          60
cgt gtg aaa ggg aaa gga acc ttt att gct caa cct aaa ttt gaa cat      240
Arg Val Lys Gly Lys Gly Thr Phe Ile Ala Gln Pro Lys Phe Glu His
          65          70          75
gac ctt tct ggt tta acg agt ttt aca gaa gat atg atg caa cga ggc      288
Asp Leu Ser Gly Leu Thr Ser Phe Thr Glu Asp Met Met Gln Arg Gly
          85          90          95
tta acg ccg tct aat caa ttg tta tat att caa ctg cat aat caa ccg      336
Leu Thr Pro Ser Asn Gln Leu Leu Tyr Ile Gln Leu His Asn Gln Pro
          100          105          110
agt caa att gcg cat aag ctt caa tta caa tca gag gat tct tac tat      384
Ser Gln Ile Ala His Lys Leu Gln Leu Gln Ser Glu Asp Ser Tyr Tyr
          115          120          125
gaa att aaa cga ata cgc ttt gca gat gaa gac ccc ctt gca ttt gaa      432
Glu Ile Lys Arg Ile Arg Phe Ala Asp Glu Asp Pro Leu Ala Phe Glu
          130          135          140
att att tac acc ccg aaa aaa cta att ggt gaa ctg gaa gaa aaa tat      480
Ile Ile Tyr Thr Pro Lys Lys Leu Ile Gly Glu Leu Glu Glu Lys Tyr
          145          150          155
tta caa ggt tct ttt tat caa tat gtt gaa caa aaa ata gga aag cac      528
Leu Gln Gly Ser Phe Tyr Gln Tyr Val Glu Gln Lys Ile Gly Lys His
          165          170          175
att att gtt gga aat caa aca att gaa ggt gct ctt gca act aaa gaa      576
Ile Ile Val Gly Asn Gln Thr Ile Glu Gly Ala Leu Ala Thr Lys Glu
          180          185          190
caa gct aat ttc tta caa att aat gtc ggt gat ccg gta tta att atg      624
Gln Ala Asn Phe Leu Gln Ile Asn Val Gly Asp Pro Val Leu Ile Met
          195          200          205
gaa aga gta agt tat cta gat caa ccg ata gaa gtt cct att gaa ttt      672
Glu Arg Val Ser Tyr Leu Asp Gln Pro Ile Glu Val Pro Ile Glu Phe
          210          215          220
act caa acg ata tat cgt gca gat aaa tat aaa ttt cac ctc acg ctt      720
Thr Gln Thr Ile Tyr Arg Ala Asp Lys Tyr Lys Phe His Leu Thr Leu
          225          230          235
cat aga gat gaa caa acc aag ggc taa
His Arg Asp Glu Gln Thr Lys Gly
          245

```

&lt;210&gt; 1400

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Oceanobacillus iheyensis

&lt;400&gt; 1400

```

Met Ile Asp Lys Asn Ser Pro Ile Pro Ile Tyr Tyr Gln Leu Glu Glu
  1          5          10          15
Tyr Ile Lys His Gln Ile Asp Asn Gln Lys Trp Leu Pro Gly Glu Leu
          20          25          30
Leu Pro Ser Glu Arg Glu Phe Ala Glu Gln Tyr His Ile Ser Arg Met

```

## PhoenixTemp32470.tmp.txt

35  
 Thr Val Arg Gln Ala Ile Asn 40 Asn Leu Ala Ala 45 Gly Leu Leu Tyr  
 50  
 Arg Val Lys Gly Lys Gly 55 Thr Phe Ile Ala Gln 60 Pro Lys Phe Glu His  
 65  
 Asp Leu Ser Gly Leu 70 Thr Ser Phe Thr Glu 75 Asp Met Met Gln Arg Gly  
 85  
 Leu Thr Pro Ser 100 Asn Gln Leu Leu Tyr 105 Ile Gln Leu His Asn Gln Pro  
 110  
 Ser Gln Ile Ala His Lys Leu Gln Leu Gln Ser Glu Asp 125 Ser Tyr Tyr  
 115  
 Glu Ile Lys Arg Ile Arg Phe 120 Ala Asp Glu Asp Pro 140 Leu Ala Phe Glu  
 130  
 Ile Ile Tyr Thr Pro Lys 135 Lys Leu Ile Gly Glu 155 Leu Glu Glu Lys Tyr  
 145  
 Leu Gln Gly Ser Phe 150 Tyr Gln Tyr Val Glu 170 Gln Lys Ile Gly Lys His  
 165  
 Ile Ile Val Gly 180 Asn Gln Thr Ile Glu 185 Gly Ala Leu Ala Thr Lys Glu  
 190  
 Gln Ala Asn Phe Leu Gln Ile Asn 200 Val Gly Asp Pro Val Leu Ile Met  
 195  
 Glu Arg Val Ser Tyr Leu Asp 215 Gln Pro Ile Glu Val Pro Ile Glu Phe  
 210  
 Thr Gln Thr Ile Tyr Arg 230 Ala Asp Lys Tyr Lys 235 Phe His Leu Thr Leu  
 225  
 His Arg Asp Glu Gln Thr Lys Gly 245

&lt;210&gt; 1401

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli 06

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;400&gt; 1401

atg cgc gcc atg aaa tca tta agt aag tcg tca caa ata ccg ctc tat	48
Met Arg Ala Met Lys 5 Ser Leu Ser Lys Ser 10 Ser Gln Ile Pro Leu Tyr	
caa caa gtg gtg gag tgg ata aga gaa agt att tat acc ggg gat ctg	96
Gln Gln Val Val Glu Trp Ile Arg Glu Ser Ile Tyr Thr Gly Asp Leu	
gtg gaa gac gat cgc att cct tcg gaa tac cag att atg gat atg ctg	144
Val Glu Asp 35 Asp Arg Ile Pro Ser 40 Glu Tyr Gln Ile Met 45 Asp Met Leu	
gaa gtg agc cgg gga acc gtt aaa aaa gcg gtc gcc caa ctg gta aaa	192
Glu Val Ser Arg Gly Thr Val Lys Lys Ala Val Ala Gln Leu Val Lys	
gaa ggc gtg ttg ata cag gtc cag ggg aag gga aca ttt gtc aaa aaa	240
Glu Gly Val Leu Ile Gln Val Gln Gly Lys Gly Thr Phe Val Lys Lys	
gag aac gtg gca tat ccg tta ggt gaa gga tta ttg tca ttc gcg gaa	288
Glu Asn Val Ala Tyr Pro Leu Gly Glu Gly Leu Leu Ser Phe Ala Glu	
tcg ctg gaa agc cag aaa ata cac ttt acc act gaa gtt att acg tca	336
Ser Leu Glu Ser 100 Gln Lys Ile His Phe 105 Thr Thr Glu Val Ile Thr Ser	
cgg att gaa ccg gct aat cgt tat gtg gca gag aaa tta aga ata acg	384
Arg Ile Glu Pro Ala Asn Arg Tyr 120 Val Ala Glu Lys Leu Arg Ile Thr	
ccc ggt cag gat att ctt tac ctt gag cgt tta cgt tca att ggt gat	432
Pro Gly Gln Asp Ile Leu Tyr Leu Glu Arg Leu Arg Ser Ile Gly Asp	
gaa aaa gcg atg ctg ata gag aac cgt atc aat att gag cta tgc ccc	480
Glu Lys Ala Met Leu Ile Glu Asn Arg Ile Asn Ile Glu Leu Cys Pro	
ggc atc gtg gaa atc gat ttt aat caa cac aat tta ttt cca aca ata	528

## PhoenixTemp32470.tmp.txt

Gly	Ile	Val	Glu	Ile	Asp	Phe	Asn	Gln	His	Asn	Leu	Phe	Pro	Thr	Ile		
				165					170					175			
gaa	agt	tgt	tcg	aaa	aga	aaa	att	cgt	tac	tcg	gaa	agt	cgc	tat	gcc	576	
Glu	Ser	Leu	Ser	Lys	Arg	Lys	Ile	Arg	Tyr	Ser	Glu	Ser	Arg	Tyr	Ala		
			180					185					190				
gcg	cga	tta	att	ggt	aat	gaa	cgc	ggt	cat	ttt	tta	gat	atc	agt	gaa	624	
Ala	Arg	Leu	Ile	Gly	Asn	Glu	Arg	Gly	His	Phe	Leu	Asp	Ile	Ser	Glu		
			195				200					205					
gat	gca	ccc	ggt	ttg	cat	ctg	gag	caa	tta	gtc	ttt	ttc	tcc	cga	gag	672	
Asp	Ala	Pro	Val	Leu	His	Leu	Glu	Gln	Leu	Val	Phe	Phe	Ser	Arg	Glu		
			210			215				220							
tta	ccc	ggt	gag	ttt	ggc	aac	gtc	tgg	tta	aaa	gga	aat	aaa	tat	tat	720	
Leu	Pro	Val	Glu	Phe	Gly	Asn	Val	Trp	Leu	Lys	Gly	Asn	Lys	Tyr	Tyr		
			225		230					235					240		
ctg	ggc	acc	gtg	ctg	caa	cgg	cgg	gaa	ttg	agt	taa					756	
Leu	Gly	Thr	Val	Leu	Gln	Arg	Arg	Glu	Leu	Ser							
				245					250								

&lt;210&gt; 1402

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli 06

&lt;400&gt; 1402

Met	Arg	Ala	Met	Lys	Ser	Leu	Ser	Lys	Ser	Ser	Gln	Ile	Pro	Leu	Tyr		
1				5					10					15			
Gln	Gln	Val	Val	Glu	Trp	Ile	Arg	Glu	Ser	Ile	Tyr	Thr	Gly	Asp	Leu		
			20					25					30				
Val	Glu	Asp	Asp	Arg	Ile	Pro	Ser	Glu	Tyr	Gln	Ile	Met	Asp	Met	Leu		
			35				40					45					
Glu	Val	Ser	Arg	Gly	Thr	Val	Lys	Lys	Ala	Val	Ala	Gln	Leu	Val	Lys		
			50			55				60							
Glu	Gly	Val	Leu	Ile	Gln	Val	Gln	Gly	Lys	Gly	Thr	Phe	Val	Lys	Lys		
65				70				75						80			
Glu	Asn	Val	Ala	Tyr	Pro	Leu	Gly	Glu	Gly	Leu	Leu	Ser	Phe	Ala	Glu		
				85				90						95			
Ser	Leu	Glu	Ser	Gln	Lys	Ile	His	Phe	Thr	Thr	Glu	Val	Ile	Thr	Ser		
			100					105					110				
Arg	Ile	Glu	Pro	Ala	Asn	Arg	Tyr	Val	Ala	Glu	Lys	Leu	Arg	Ile	Thr		
			115				120					125					
Pro	Gly	Gln	Asp	Ile	Leu	Tyr	Leu	Glu	Arg	Leu	Arg	Ser	Ile	Gly	Asp		
			130			135				140							
Glu	Lys	Ala	Met	Leu	Ile	Glu	Asn	Arg	Ile	Asn	Ile	Glu	Leu	Cys	Pro		
145				150				155						160			
Gly	Ile	Val	Glu	Ile	Asp	Phe	Asn	Gln	His	Asn	Leu	Phe	Pro	Thr	Ile		
				165				170						175			
Glu	Ser	Leu	Ser	Lys	Arg	Lys	Ile	Arg	Tyr	Ser	Glu	Ser	Arg	Tyr	Ala		
			180					185					190				
Ala	Arg	Leu	Ile	Gly	Asn	Glu	Arg	Gly	His	Phe	Leu	Asp	Ile	Ser	Glu		
			195			200					205						
Asp	Ala	Pro	Val	Leu	His	Leu	Glu	Gln	Leu	Val	Phe	Phe	Ser	Arg	Glu		
			210			215					220						
Leu	Pro	Val	Glu	Phe	Gly	Asn	Val	Trp	Leu	Lys	Gly	Asn	Lys	Tyr	Tyr		
225				230						235					240		
Leu	Gly	Thr	Val	Leu	Gln	Arg	Arg	Glu	Leu	Ser							
				245					250								

&lt;210&gt; 1403

&lt;211&gt; 699

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli 06

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(699)

&lt;400&gt; 1403

atg	att	ttt	caa	aag	att	gcc	cgc	tta	ctt	aaa	tcc	gag	atc	aat	ggc		
Met	Ile	Phe	Gln	Lys	Ile	Ala	Arg	Leu	Leu	Lys	Ser	Glu	Ile	Asn	Gly		

48

## PhoenixTemp32470.tmp.txt

1	5	10	15	
aat tca tgg cat gtt ggt gat ttg ttg ccg tca gaa gcg gaa ctc gct	96			
Asn Ser Trp His Val Gly Asp Leu Leu Pro Ser Glu Ala Glu Leu Ala				
gtt cgt tat aat gtt tcg cgt aat acc ctg cgt aag gca tta tcc ctg	144			
Val Arg Tyr Asn Val Ser Arg Asn Thr Leu Arg Lys Ala Leu Ser Leu				
ctg gaa ggc gaa gga att att cac aga aag cat ggt tca gga aca tac	192			
Leu Glu Gly Glu Gly Ile Ile His Arg Lys His Gly Ser Gly Thr Tyr				
att caa aaa aag aat ttt gtt gca cac att gat cac atg aac agt ttc	240			
Ile Gln Lys Lys Asn Phe Val Ala His Ile Asp His Met Asn Ser Phe				
agt gaa att gca cat aaa agc ggc aaa gag gca gga agt cag att atg	288			
Ser Glu Ile Ala His Lys Ser Gly Lys Glu Ala Gly Ser Gln Ile Met				
aaa ttt gaa gtg cag gat gct tct cct act att gcg act gag ctg aat	336			
Lys Phe Glu Val Gln Asp Ala Ser Pro Thr Ile Ala Thr Glu Leu Asn				
tta gtg act ggt gag cag gtt tat tac ata aag aga ctg cga ttc att	384			
Leu Val Thr Gly Glu Gln Val Tyr Tyr Ile Lys Arg Leu Arg Phe Ile				
gag gat aat gca gca caa tta gaa gaa acg tgg atg tca gtg gca cgt	432			
Glu Asp Asn Ala Ala Gln Leu Glu Glu Thr Trp Met Ser Val Ala Arg				
ttt cct gat tta acc gta tcg cat atg caa aaa tcc aaa ttt tcg tat	480			
Phe Pro Asp Leu Thr Val Ser His Met Gln Lys Ser Lys Phe Ser Tyr				
att gag aac gaa tgc ggg atc aaa atc att ggc acc ttt gaa act ttc	528			
Ile Glu Asn Glu Cys Gly Ile Lys Ile Ile Gly Thr Phe Glu Thr Phe				
tcc ccg act ttt cct acc cct gaa atc gcc agt att tta cgg atc agc	576			
Ser Pro Thr Phe Pro Thr Pro Glu Ile Ala Ser Ile Leu Arg Ile Ser				
cca cgg gat ccc ata ctt aaa att cag acc cag gct gtg gat agt aac	624			
Pro Arg Asp Pro Ile Leu Lys Ile Gln Thr Gln Ala Val Asp Ser Asn				
tct att ccg ctg gat tat tcg tta ctt tac agc aat att ttc gag ttc	672			
Ser Ile Pro Leu Asp Tyr Ser Leu Leu Tyr Ser Asn Ile Phe Glu Phe				
cag gta aag tac ttt ttc ccg cga taa	699			
Gln Val Lys Tyr Phe Phe Pro Arg				

&lt;210&gt; 1404

&lt;211&gt; 232

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli 06

&lt;400&gt; 1404

Met Ile Phe Gln Lys Ile Ala Arg Leu Leu Lys Ser Glu Ile Asn Gly
Asn Ser Trp His Val Gly Asp Leu Leu Pro Ser Glu Ala Glu Leu Ala
Val Arg Tyr Asn Val Ser Arg Asn Thr Leu Arg Lys Ala Leu Ser Leu
Leu Glu Gly Glu Gly Ile Ile His Arg Lys His Gly Ser Gly Thr Tyr
Ile Gln Lys Lys Asn Phe Val Ala His Ile Asp His Met Asn Ser Phe
Ser Glu Ile Ala His Lys Ser Gly Lys Glu Ala Gly Ser Gln Ile Met
Lys Phe Glu Val Gln Asp Ala Ser Pro Thr Ile Ala Thr Glu Leu Asn
Leu Val Thr Gly Glu Gln Val Tyr Tyr Ile Lys Arg Leu Arg Phe Ile
Glu Asp Asn Ala Ala Gln Leu Glu Glu Thr Trp Met Ser Val Ala Arg
Phe Pro Asp Leu Thr Val Ser His Met Gln Lys Ser Lys Phe Ser Tyr

## PhoenixTemp32470.tmp.txt

145 Ile Glu Asn Glu Cys 150 Gly Ile Lys Ile Ile 155 Gly Thr Phe Glu Thr 160 Phe  
 Ser Pro Thr Phe Pro Thr Pro Glu Ile Ala Ser Ile Leu Arg Ile Ser  
 Pro Arg Asp Pro Ile Leu Lys Ile Gln Thr Gln Ala Val Asp Ser Asn  
 Ser Ile Pro Leu Asp Tyr Ser Leu Leu Tyr Ser Asn Ile Phe Glu Phe  
 Gln Val Lys Tyr Phe Phe Pro Arg  
 225 230

&lt;210&gt; 1405

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Streptomyces sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;400&gt; 1405

atg	agt	acg	gac	gtc	agc	agc	gcc	ggg	gcc	gac	acg	agg	gcg	ccg	ggc	48
Met	Ser	Thr	Asp	Val	Ser	Ser	Ala	Gly	Ala	Asp	Thr	Arg	Ala	Pro	Gly	
1				5				10						15		
cgc	cgg	gac	cgc	gtg	ccg	aag	tac	tac	ctc	atc	aag	cag	cgg	ctg	ctg	96
Arg	Arg	Asp	Arg	Val	Pro	Lys	Tyr	Tyr	Leu	Ile	Lys	Gln	Arg	Leu	Leu	
			20				25					30				
cag	atg	acc	gac	gag	cgc	gcg	ccg	ggc	tcc	ccg	atg	ccg	gcc	gag	cgg	144
Gln	Met	Thr	Asp	Glu	Arg	Ala	Pro	Gly	Ser	Pro	Met	Pro	Ala	Glu	Arg	
		35				40					45					
ctg	ctc	gcc	gtc	gag	ttc	ggc	acg	tcc	cgc	acc	acc	gtc	cgc	aag	gca	192
Leu	Leu	Ala	Val	Glu	Phe	Gly	Thr	Ser	Arg	Thr	Thr	Val	Arg	Lys	Ala	
	50				55			60								
ctg	ctg	gaa	ctg	gtg	agc	gag	ggc	cgg	ctc	gac	cgc	atc	cag	ggc	aag	240
Leu	Leu	Glu	Leu	Val	Ser	Glu	Gly	Arg	Leu	Asp	Arg	Ile	Gln	Gly	Lys	
	65				70			75							80	
ggc	acc	ttc	gtg	gcc	cgg	ccg	aag	gtg	tat	cgg	aca	ctc	caa	ctg	acc	288
Gly	Thr	Phe	Val	Ala	Arg	Pro	Lys	Val	Tyr	Arg	Thr	Leu	Gln	Leu	Thr	
			85					90						95		
tcg	tac	acc	gag	gac	atg	cgc	gcc	cag	ggg	ctc	agc	ccc	gcc	tcg	cag	336
Ser	Tyr	Thr	Glu	Asp	Met	Arg	Ala	Gln	Gly	Leu	Ser	Pro	Ala	Ser	Gln	
			100					105					110			
gtc	ctg	gac	atc	gga	tac	gtc	ccg	gcg	gac	gcg	gag	ctg	gcg	gcg	ctg	384
Val	Leu	Asp	Ile	Gly	Tyr	Val	Pro	Ala	Asp	Ala	Glu	Leu	Ala	Ala	Leu	
		115					120					125				
ctg	gag	gtg	gaa	ccg	gag	gac	cgg	gtc	ctg	cgg	atc	gag	cgg	ctg	cgg	432
Leu	Glu	Val	Glu	Pro	Glu	Asp	Arg	Val	Leu	Arg	Ile	Glu	Arg	Leu	Arg	
	130					135					140					
ctg	gcc	ggt	ggc	gag	ccg	atg	gcc	atc	gag	gcg	acc	cac	ctc	tcc	gcc	480
Leu	Ala	Gly	Gly	Glu	Pro	Met	Ala	Ile	Glu	Ala	Thr	His	Leu	Ser	Ala	
	145				150				155						160	
cgc	cgc	ttc	ccc	ggc	ctg	cgg	cgc	aac	ctc	acc	cgc	tac	acc	tct	ctc	528
Arg	Arg	Phe	Pro	Gly	Leu	Arg	Arg	Asn	Leu	Thr	Arg	Tyr	Thr	Ser	Leu	
			165					170						175		
tac	acc	acg	ctc	gcc	gag	gtg	tac	ggg	gtc	cgg	ccc	gcg	gag	gcc	gac	576
Tyr	Thr	Thr	Leu	Ala	Glu	Val	Tyr	Gly	Val	Arg	Pro	Ala	Glu	Ala	Asp	
			180					185					190			
gag	acc	atc	gag	acc	tcc	ccg	gcg	aca	ccg	cgt	gag	gcg	ggc	ctc	ctc	624
Glu	Thr	Ile	Glu	Thr	Ser	Pro	Ala	Thr	Pro	Arg	Glu	Ala	Gly	Leu	Leu	
		195				200					205					
ggc	acg	gac	gtg	ggc	ctg	ccg	atg	ctg	ctg	ctg	tcc	cgc	cac	tcg	cgg	672
Gly	Thr	Asp	Val	Gly	Leu	Pro	Met	Leu	Leu	Leu	Ser	Arg	His	Ser	Arg	
	210					215					220					
gac	gag	aac	ggg	gcc	ccg	gtg	gag	tgg	gta	cgg	tcg	gtg	tac	cgc	ggc	720
Asp	Glu	Asn	Gly	Ala	Pro	Val	Glu	Trp	Val	Arg	Ser	Val	Tyr	Arg	Gly	
	225				230				235						240	
tcc	cgc	tac	aag	ttc	acc	gcg	cga	ctg	cgg	cga	ccg	cgg	ggg	tga		765
Ser	Arg	Tyr	Lys	Phe	Thr	Ala	Arg	Leu	Arg	Arg	Pro	Arg	Gly			



245

250

<210> 1406  
 <211> 254  
 <212> PRT  
 <213> Streptomyces sp

<400> 1406  
 Met Ser Thr Asp Val Ser Ser Ala Gly Ala Asp Thr Arg Ala Pro Gly  
 1 5 10 15  
 Arg Arg Asp Arg Val Pro Lys Tyr Tyr Leu Ile Lys Gln Arg Leu Leu  
 20 25 30  
 Gln Met Thr Asp Glu Arg Ala Pro Gly Ser Pro Met Pro Ala Glu Arg  
 35 40 45  
 Leu Leu Ala Val Glu Phe Gly Thr Ser Arg Thr Thr Val Arg Lys Ala  
 50 55 60  
 Leu Leu Glu Leu Val Ser Glu Gly Arg Leu Asp Arg Ile Gln Gly Lys  
 65 70 75 80  
 Gly Thr Phe Val Ala Arg Pro Lys Val Tyr Arg Thr Leu Gln Leu Thr  
 85 90 95  
 Ser Tyr Thr Glu Asp Met Arg Ala Gln Gly Leu Ser Pro Ala Ser Gln  
 100 105 110  
 Val Leu Asp Ile Gly Tyr Val Pro Ala Asp Ala Glu Leu Ala Ala Leu  
 115 120 125  
 Leu Glu Val Glu Pro Glu Asp Arg Val Leu Arg Ile Glu Arg Leu Arg  
 130 135 140  
 Leu Ala Gly Gly Glu Pro Met Ala Ile Glu Ala Thr His Leu Ser Ala  
 145 150 155 160  
 Arg Arg Phe Pro Gly Leu Arg Arg Asn Leu Thr Arg Tyr Thr Ser Leu  
 165 170 175  
 Tyr Thr Thr Leu Ala Glu Val Tyr Gly Val Arg Pro Ala Glu Ala Asp  
 180 185 190  
 Glu Thr Ile Glu Thr Ser Pro Ala Thr Pro Arg Glu Ala Gly Leu Leu  
 195 200 205  
 Gly Thr Asp Val Gly Leu Pro Met Leu Leu Leu Ser Arg His Ser Arg  
 210 215 220  
 Asp Glu Asn Gly Ala Pro Val Glu Trp Val Arg Ser Val Tyr Arg Gly  
 225 230 235 240  
 Ser Arg Tyr Lys Phe Thr Ala Arg Leu Arg Arg Pro Arg Gly  
 245 250

<210> 1407  
 <211> 714  
 <212> DNA  
 <213> Streptococcus mutans

<220>  
 <221> CDS  
 <222> (1)..(714)

<400> 1407  
 atg aaa aaa tat gaa att att ttt aaa aaa cta gaa gaa gat att ctc 48  
 Met Lys Lys Tyr Glu Ile Ile Phe Lys Lys Leu Glu Glu Asp Ile Leu 15  
 1 5 10  
 aaa gga cac tat caa atg ggt gac tat ctt ccc cct gaa atg gaa ctt 96  
 Lys Gly His Tyr Gln Met Gly Asp Tyr Leu Pro Pro Glu Met Glu Leu 20 25 30  
 agc cag acc tat gcc agc agc cga gat act gtt aga aag gct tta cag 144  
 Ser Gln Thr Tyr Ala Ser Ser Arg Asp Thr Val Arg Lys Ala Leu Gln 35 40 45  
 ctc ttg act aag gca ggt ttt att aaa aca gta cag gga agg gga tcc 192  
 Leu Leu Thr Lys Ala Gly Phe Ile Lys Thr Val Gln Gly Arg Gly Ser 50 55 60  
 caa att atc aag cgt gag cgc att aac ttt cct gtt tct caa cta acc 240  
 Gln Ile Ile Lys Arg Glu Arg Ile Asn Phe Pro Val Ser Gln Leu Thr 65 70 75 80  
 agc tat caa gaa ttg gtt aaa caa ttg cag atg aat gtc aag aca aat 288  
 Ser Tyr Gln Glu Leu Val Lys Gln Leu Gln Met Asn Val Lys Thr Asn 85 90 95

PhoenixTemp32470.tmp.txt

gtt att gct att gat aaa ctg att gtt gat gag aaa ctc acc aaa cta	336
Val Ile Ala Ile Asp Lys Leu Ile Val Asp Glu Lys Leu Thr Lys Leu	
100 105 110	
acc ggt ttt gaa aat aaa ggt ctt gtc tgg cgc atc aca aga cag cgc	384
Thr Gly Phe Glu Asn Lys Gly Leu Val Trp Arg Ile Thr Arg Gln Arg	
115 120 125	
gtc ata gac ggc gtt gct tcc att tta gat acg gat tat ttg gat aaa	432
Val Ile Asp Gly Val Ala Ser Ile Leu Asp Thr Asp Tyr Leu Asp Lys	
130 135 140	
gca ttg att cct cat atg acc aga gaa atc gct gaa cat tct atc tat	480
Ala Leu Ile Pro His Met Thr Arg Glu Ile Ala Glu His Ser Ile Tyr	
145 150 155 160	
gat tat ctt gaa aat caa ctt aag ctg gac att gcc tat gct caa aag	528
Asp Tyr Leu Glu Asn Gln Leu Lys Leu Asp Ile Ala Tyr Ala Gln Lys	
165 170 175	
att att acc ata gat caa gta tcg caa aaa gat aaa att ttg ctt gat	576
Ile Ile Thr Ile Asp Gln Val Ser Gln Lys Asp Lys Ile Leu Leu Asp	
180 185 190	
ttg gat tct gaa aat cat gtc gtt tcg gtt aaa tct aaa gtt tat ctc	624
Leu Asp Ser Glu Asn His Val Val Ser Val Lys Ser Lys Val Tyr Leu	
195 200 205	
agt aat cag cag caa ttt caa ttc act gaa agc cgg cac aaa ctg gaa	672
Ser Asn Gln Gln Gln Phe Gln Phe Thr Glu Ser Arg His Lys Leu Glu	
210 215 220	
aag ttc cgt ttt gtt gac ttt gcc aga cgg cat cgt gat tag	714
Lys Phe Arg Phe Val Asp Phe Ala Arg Arg His Arg Asp	
225 230 235	

<210> 1408  
 <211> 237  
 <212> PRT  
 <213> Streptococcus mutans

<400> 1408

Met Lys Lys Tyr Glu Ile Ile Phe Lys Lys Leu Glu Glu Asp Ile Leu	
1 5 10 15	
Lys Gly His Tyr Gln Met Gly Asp Tyr Leu Pro Pro Glu Met Glu Leu	
20 25 30	
Ser Gln Thr Tyr Ala Ser Ser Arg Asp Thr Val Arg Lys Ala Leu Gln	
35 40 45	
Leu Leu Thr Lys Ala Gly Phe Ile Lys Thr Val Gln Gly Arg Gly Ser	
50 55 60	
Gln Ile Ile Lys Arg Glu Arg Ile Asn Phe Pro Val Ser Gln Leu Thr	
65 70 75 80	
Ser Tyr Gln Glu Leu Val Lys Gln Leu Gln Met Asn Val Lys Thr Asn	
85 90 95	
Val Ile Ala Ile Asp Lys Leu Ile Val Asp Glu Lys Leu Thr Lys Leu	
100 105 110	
Thr Gly Phe Glu Asn Lys Gly Leu Val Trp Arg Ile Thr Arg Gln Arg	
115 120 125	
Val Ile Asp Gly Val Ala Ser Ile Leu Asp Thr Asp Tyr Leu Asp Lys	
130 135 140	
Ala Leu Ile Pro His Met Thr Arg Glu Ile Ala Glu His Ser Ile Tyr	
145 150 155 160	
Asp Tyr Leu Glu Asn Gln Leu Lys Leu Asp Ile Ala Tyr Ala Gln Lys	
165 170 175	
Ile Ile Thr Ile Asp Gln Val Ser Gln Lys Asp Lys Ile Leu Leu Asp	
180 185 190	
Leu Asp Ser Glu Asn His Val Val Ser Val Lys Ser Lys Val Tyr Leu	
195 200 205	
Ser Asn Gln Gln Gln Phe Gln Phe Thr Glu Ser Arg His Lys Leu Glu	
210 215 220	
Lys Phe Arg Phe Val Asp Phe Ala Arg Arg His Arg Asp	
225 230 235	

<210> 1409  
 <211> 762  
 <212> DNA  
 <213> Streptomyces griseus

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;400&gt; 1409

atg ggc gcc gaa ggg gca gta cgg ggg gcg aga ccg gta ccg gta cgc	48
Met Gly Ala Glu Gly Ala Val Arg Gly Ala Arg Pro Val Pro Val Arg	
1 5 10 15	
gca cag cgc gta ccg aag tac tac cgg ctc aag cgc cat ctc ctc gac	96
Ala Gln Arg Val Pro Lys Tyr Tyr Arg Leu Lys Arg His Leu Leu Asp	
20 25 30	
atg acg gac acc ctg ccg ccc ggc acc ccc gtg ccg ccc gaa cgc acc	144
Met Thr Asp Thr Leu Pro Pro Gly Thr Pro Val Pro Pro Glu Arg Thr	
35 40 45	
ctg gcg gcc gaa ttc gac acc tcg cgc acc acc gtg ccg cag gcg ctc	192
Leu Ala Ala Glu Phe Asp Thr Ser Arg Thr Thr Val Pro Gln Ala Leu	
50 55 60	
cag gag ctg gtc gtg gag ggc cgg ctg gag cgc atc cag ggc aag ggc	240
Gln Glu Leu Val Val Glu Gly Arg Leu Glu Arg Ile Gln Gly Lys Gly	
65 70 75 80	
acc ttc gtg gcc aag ccg aag gtc tcc cag gcc ctc cag ctc acc tcg	288
Thr Phe Val Ala Lys Pro Lys Val Ser Gln Ala Leu Gln Leu Thr Ser	
85 90 95	
tac acc gag gac atg cgt gcc cag gga ctg gag ccg acg tcc caa ctg	336
Tyr Thr Glu Asp Met Arg Ala Gln Gly Leu Glu Pro Thr Ser Gln Leu	
100 105 110	
ctg gac atc ggc tat gtg acg gcg gac gac acg ctc gcc ggc ctg ctg	384
Leu Asp Ile Gly Tyr Val Thr Ala Asp Asp Thr Leu Ala Gly Leu Leu	
115 120 125	
gac atc tcg acg ggc ggc cgg gtg ctg cgc atc gag cgg ctg cgg ctc	432
Asp Ile Ser Thr Gly Gly Arg Val Leu Arg Ile Glu Arg Leu Arg Leu	
130 135 140	
gcc agc ggg gag ccg atg gcg atc gag acc acg cac ctt tcg gcc aaa	480
Ala Ser Gly Glu Pro Met Ala Ile Glu Thr Thr His Leu Ser Ala Lys	
145 150 155 160	
cgc ttc ccg gcg ctg cgc cgt tcg ctg gtg aag tac acc tcg ctc tac	528
Arg Phe Pro Ala Leu Arg Arg Ser Leu Val Lys Tyr Thr Ser Leu Tyr	
165 170 175	
acc gcg ctc gcc gag gtg tac gac gtg cgc ctc gcc gag gcg gag gag	576
Thr Ala Leu Ala Glu Val Tyr Asp Val Arg Leu Ala Glu Ala Glu Glu	
180 185 190	
acc atc gag acc tcg ctc gcg acg ccg cgc gag gcg gga ctg ctc ggc	624
Thr Ile Glu Thr Ser Leu Ala Thr Pro Arg Glu Ala Gly Leu Leu Gly	
195 200 205	
acc gac gtg ggg ctg ccg atg ctc atg ctg tcc cgc cat tcg gtg gac	672
Thr Asp Val Gly Leu Pro Met Leu Met Leu Ser Arg His Ser Val Asp	
210 215 220	
ggc cag ggc gaa ccc gtg gag tgg gtg cga tcg gtg tac cgg ggc gac	720
Gly Gln Gly Glu Pro Val Glu Trp Val Arg Ser Val Tyr Arg Gly Asp	
225 230 235 240	
cgg tac aag ttc gtg gcc cgc ctg aag cgg ggc acg gac tga	762
Arg Tyr Lys Phe Val Ala Arg Leu Lys Arg Gly Thr Asp	
245 250	

&lt;210&gt; 1410

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Streptomyces griseus

&lt;400&gt; 1410

Met Gly Ala Glu Gly Ala Val Arg Gly Ala Arg Pro Val Pro Val Arg
1 5 10 15
Ala Gln Arg Val Pro Lys Tyr Tyr Arg Leu Lys Arg His Leu Leu Asp
20 25 30
Met Thr Asp Thr Leu Pro Pro Gly Thr Pro Val Pro Pro Glu Arg Thr
35 40 45
Leu Ala Glu Phe Asp Thr Ser Arg Thr Thr Val Pro Gln Ala Leu
50 55 60

## PhoenixTemp32470.tmp.txt

Gln Glu Leu Val Val Glu Gly Arg Leu Glu Arg Ile Gln Gly Lys Gly  
 65 70 75 80  
 Thr Phe Val Ala Lys Pro Lys Val Ser Gln Ala Leu Gln Leu Thr Ser  
 85 90 95  
 Tyr Thr Glu Asp Met Arg Ala Gln Gly Leu Glu Pro Thr Ser Gln Leu  
 100 105 110  
 Leu Asp Ile Gly Tyr Val Thr Ala Asp Asp Thr Leu Ala Gly Leu Leu  
 115 120 125  
 Asp Ile Ser Thr Gly Gly Arg Val Leu Arg Ile Glu Arg Leu Arg Leu  
 130 135 140  
 Ala Ser Gly Glu Pro Met Ala Ile Glu Thr Thr His Leu Ser Ala Lys  
 145 150 155 160  
 Arg Phe Pro Ala Leu Arg Arg Ser Leu Val Lys Tyr Thr Ser Leu Tyr  
 165 170 175  
 Thr Ala Leu Ala Glu Val Tyr Asp Val Arg Leu Ala Glu Ala Glu Glu  
 180 185 190  
 Thr Ile Glu Thr Ser Leu Ala Thr Pro Arg Glu Ala Gly Leu Leu Gly  
 195 200 205  
 Thr Asp Val Gly Leu Pro Met Leu Met Leu Ser Arg His Ser Val Asp  
 210 215 220  
 Gly Gln Gly Glu Pro Val Glu Trp Val Arg Ser Val Tyr Arg Gly Asp  
 225 230 235 240  
 Arg Tyr Lys Phe Val Ala Arg Leu Lys Arg Gly Thr Asp  
 245 250

<210> 1411  
 <211> 726  
 <212> DNA  
 <213> Clostridium perfringens

<220>  
 <221> CDS  
 <222> (1)..(726)

<400> 1411  
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 Met Phe Lys Arg Ser Arg Gly Ile Ala Leu Tyr His Gln Leu Glu Thr  
 1 5 10 15  
 gag cta att gat ctt ata aat agc gga gaa ctt aag gaa aat gat aag 96  
 Glu Leu Ile Asp Leu Ile Asn Ser Gly Glu Leu Lys Glu Asn Asp Lys  
 20 25 30  
 tta cca tct gaa aga gaa tta tgt gag caa tat aat gtt agt aga aca 144  
 Leu Pro Ser Glu Arg Glu Leu Cys Glu Gln Tyr Asn Val Ser Arg Thr  
 35 40 45  
 aca gct agg caa gct att gga gaa tta gaa aga aaa gag tat gta tat 192  
 Thr Ala Arg Gln Ala Ile Gly Glu Leu Glu Arg Lys Glu Tyr Val Tyr  
 50 55 60  
 aag gtc cat gga aag gga act ttt ata tct cct aaa gtg tat aaa caa 240  
 Lys Val His Gly Lys Gly Thr Phe Ile Ser Pro Lys Val Tyr Lys Gln  
 65 70 75 80  
 caa tta tta aaa ttt tat agt ttt act gaa gaa atg aaa aag ctt ggg 288  
 Gln Leu Leu Lys Phe Tyr Ser Phe Thr Glu Glu Met Lys Lys Leu Gly  
 85 90 95  
 aaa aat cca tct tca aaa ata tta tcc ttt gat tta ata aga gct gac 336  
 Lys Asn Pro Ser Ser Lys Ile Leu Ser Phe Asp Leu Ile Arg Ala Asp  
 100 105 110  
 aat aag att tct gaa aaa tta aaa gtg gaa gaa aac tca ctg gta tat 384  
 Asn Lys Ile Ser Glu Lys Leu Lys Val Glu Glu Asn Ser Leu Val Tyr  
 115 120 125  
 aag ata gta aga cta aga ata gca gat gaa gtt cca atg atg gta gag 432  
 Lys Ile Val Arg Leu Arg Ile Ala Asp Glu Val Pro Met Met Val Glu  
 130 135 140  
 tgt act tat tta cct gaa tat aga ttt att gat ttg aaa gaa aag atg 480  
 Cys Thr Tyr Leu Pro Glu Tyr Arg Phe Ile Asp Leu Lys Glu Lys Met  
 145 150 155 160  
 ctt aaa gaa aag cct atg tat gat ata ttt aga gaa gtc tat aat gtt 528  
 Leu Lys Glu Lys Pro Met Tyr Asp Ile Phe Arg Glu Val Tyr Asn Val  
 165 170 175  
 agt cta act aag gct aag gaa agt ttt aaa cca ata tta att tca aag 576

## PhoenixTemp32470.tmp.txt

Ser	Leu	Thr	Lys	Ala	Lys	Glu	Ser	Phe	Lys	Pro	Ile	Leu	Ile	Ser	Lys		
180			180				185					190					
agt	gat	tca	aaa	tta	tta	aat	gtg	gaa	gat	ggg	aca	gct	gca	atg	aga	624	
Ser	Asp	Ser	Lys	Leu	Leu	Asn	Val	Glu	Asp	Gly	Thr	Ala	Ala	Met	Arg		
195			195				200					205					
att	gaa	aga	gtt	acc	ttt	gaa	aat	gaa	aga	gtt	ata	gag	tat	aca	gta	672	
Ile	Glu	Arg	Val	Thr	Phe	Glu	Asn	Glu	Arg	Val	Ile	Glu	Tyr	Thr	Val		
210			210			215					220						
agt	gtt	tca	aga	gga	gat	aaa	ttt	gaa	tat	act	gta	gtt	tta	gaa	gaa	720	
Ser	Val	Ser	Arg	Gly	Asp	Lys	Phe	Glu	Tyr	Thr	Val	Val	Leu	Glu	Glu		
225					230					235					240		
gat	taa															726	
Asp																	

&lt;210&gt; 1412

&lt;211&gt; 241

&lt;212&gt; PRT

&lt;213&gt; Clostridium perfringens

&lt;400&gt; 1412

Met	Phe	Lys	Arg	Ser	Arg	Gly	Ile	Ala	Leu	Tyr	His	Gln	Leu	Glu	Thr		
1				5					10				15				
Glu	Leu	Ile	Asp	Leu	Ile	Asn	Ser	Gly	Glu	Leu	Lys	Glu	Asn	Asp	Lys		
			20					25					30				
Leu	Pro	Ser	Glu	Arg	Glu	Leu	Cys	Glu	Gln	Tyr	Asn	Val	Ser	Arg	Thr		
		35					40					45					
Thr	Ala	Arg	Gln	Ala	Ile	Gly	Glu	Leu	Glu	Arg	Lys	Glu	Tyr	Val	Tyr		
	50					55					60						
Lys	Val	His	Gly	Lys	Gly	Thr	Phe	Ile	Ser	Pro	Lys	Val	Tyr	Lys	Gln		
65					70					75					80		
Gln	Leu	Leu	Lys	Phe	Tyr	Ser	Phe	Thr	Glu	Glu	Met	Lys	Lys	Leu	Gly		
			85						90					95			
Lys	Asn	Pro	Ser	Ser	Lys	Ile	Leu	Ser	Phe	Asp	Leu	Ile	Arg	Ala	Asp		
			100					105					110				
Asn	Lys	Ile	Ser	Glu	Lys	Leu	Lys	Val	Glu	Glu	Asn	Ser	Leu	Val	Tyr		
		115					120					125					
Lys	Ile	Val	Arg	Leu	Arg	Ile	Ala	Asp	Glu	Val	Pro	Met	Met	Val	Glu		
	130					135					140						
Cys	Thr	Tyr	Leu	Pro	Glu	Tyr	Arg	Phe	Ile	Asp	Leu	Lys	Glu	Lys	Met		
145					150					155					160		
Leu	Lys	Glu	Lys	Pro	Met	Tyr	Asp	Ile	Phe	Arg	Glu	Val	Tyr	Asn	Val		
				165					170					175			
Ser	Leu	Thr	Lys	Ala	Lys	Glu	Ser	Phe	Lys	Pro	Ile	Leu	Ile	Ser	Lys		
			180					185					190				
Ser	Asp	Ser	Lys	Leu	Leu	Asn	Val	Glu	Asp	Gly	Thr	Ala	Ala	Met	Arg		
		195					200					205					
Ile	Glu	Arg	Val	Thr	Phe	Glu	Asn	Glu	Arg	Val	Ile	Glu	Tyr	Thr	Val		
	210					215					220						
Ser	Val	Ser	Arg	Gly	Asp	Lys	Phe	Glu	Tyr	Thr	Val	Val	Leu	Glu	Glu		
225					230					235					240		
Asp																	

&lt;210&gt; 1413

&lt;211&gt; 726

&lt;212&gt; DNA

&lt;213&gt; Streptococcus pyogenes

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(726)

&lt;400&gt; 1413

atg	aat	aac	cga	ctt	gag	gag	tgt	ggc	atg	tta	cca	gct	tat	ata	aaa	48	
Met	Asn	Asn	Arg	Leu	Glu	Glu	Cys	Gly	Met	Leu	Pro	Ala	Tyr	Ile	Lys		
1				5					10					15			
att	cat	gat	gca	att	aaa	aaa	gac	att	gat	ctg	ggc	atc	tgg	cca	att	96	
Ile	His	Asp	Ala	Ile	Lys	Lys	Asp	Ile	Asp	Leu	Gly	Ile	Trp	Pro	Ile		

## PhoenixTemp32470.tmp.txt

ggt	agt	cgc	tta	cca	agt	gaa	cga	cat	tta	gcg	gaa	cat	ttc	acc	gtt	144
Gly	Ser	Arg	Leu	Pro	Ser	Glu	Arg	His	Leu	Ala	Glu	His	Phe	Thr	Val	
		35					40					45				192
agt	cga	atg	act	cta	cgg	cag	gct	att	aca	tta	cta	gta	gaa	gaa	ggg	
Ser	Arg	Met	Thr	Leu	Arg	Gln	Ala	Ile	Thr	Leu	Leu	Val	Glu	Glu	Gly	
	50					55					60					240
att	ctt	gaa	agg	cgg	ata	gga	agt	ggt	act	tat	gtt	gcc	agt	cat	cgt	
Ile	Leu	Glu	Arg	Arg	Ile	Gly	Ser	Gly	Thr	Tyr	Val	Ala	Ser	His	Arg	
	65				70					75					80	288
gtt	caa	gaa	aaa	atg	cga	gga	aca	aca	agt	ttc	aca	gaa	att	ata	cgc	
Val	Gln	Glu	Lys	Met	Arg	Gly	Thr	Thr	Ser	Phe	Thr	Glu	Ile	Ile	Arg	
			85						90					95		336
tcc	caa	gga	cga	caa	ccc	tcc	tct	aaa	tta	tta	tcc	tat	caa	aag	caa	
Ser	Gln	Gly	Arg	Gln	Pro	Ser	Ser	Lys	Leu	Leu	Ser	Tyr	Gln	Lys	Gln	
			100					105					110			384
tta	gct	agt	gat	acc	gaa	gtt	aaa	gaa	ttg	aac	tta	gac	aaa	aca	gac	
Leu	Ala	Ser	Asp	Thr	Glu	Val	Lys	Glu	Leu	Asn	Leu	Asp	Lys	Thr	Asp	
		115					120					125				432
ttg	gtc	att	cga	atg	gaa	cgt	atc	cgc	tat	gca	gac	agt	gtc	cct	ttg	
Leu	Val	Ile	Arg	Met	Glu	Arg	Ile	Arg	Tyr	Ala	Asp	Ser	Val	Pro	Leu	
	130					135					140					480
gtg	tac	gaa	att	gct	tca	atc	cca	gaa	aaa	ttt	ata	aaa	acg	gtt	aaa	
Val	Tyr	Glu	Ile	Ala	Ser	Ile	Pro	Glu	Lys	Phe	Ile	Lys	Thr	Val	Lys	
	145				150					155					160	528
cga	gct	gat	att	aca	gaa	cac	ttt	ttt	cac	tca	ttg	ata	gca	aat	ggg	
Arg	Ala	Asp	Ile	Thr	Glu	His	Phe	Phe	His	Ser	Leu	Ile	Ala	Asn	Gly	
			165				170						175			576
tac	gag	att	ggt	aaa	agt	aaa	cag	aca	atc	tac	gct	aag	cta	gca	agt	
Tyr	Glu	Ile	Gly	Lys	Ser	Lys	Gln	Thr	Ile	Tyr	Ala	Lys	Leu	Ala	Ser	
			180				185						190			624
gag	cgt	gta	gcc	tcc	tac	ttg	gaa	gtt	gct	aaa	gga	cat	gcc	att	ttg	
Glu	Arg	Val	Ala	Ser	Tyr	Leu	Glu	Val	Ala	Lys	Gly	His	Ala	Ile	Leu	
		195				200						205				672
gct	cta	act	cag	gtg	tct	tac	ttt	aca	gac	ggc	aaa	cct	ttt	gag	tat	
Ala	Leu	Thr	Gln	Val	Ser	Tyr	Phe	Thr	Asp	Gly	Lys	Pro	Phe	Glu	Tyr	
		210				215					220					720
gtc	cgc	agt	cag	tat	atc	ggg	gac	cgt	ttt	gaa	ttt	tac	tta	gaa	aat	
Val	Arg	Ser	Gln	Tyr	Ile	Gly	Asp	Arg	Phe	Glu	Phe	Tyr	Leu	Glu	Asn	
				230						235				240		726
aat	tag															

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<210> 1414
<211> 241
<212> PRT
<213> Streptococcus pyogenes
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<400> 1414

Met	Asn	Asn	Arg	Leu	Glu	Glu	Cys	Gly	Met	Leu	Pro	Ala	Tyr	Ile	Lys
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Ile	His	Asp	Ala	Ile	Lys	Lys	Asp	Ile	Asp	Leu	Gly	Ile	Trp	Pro	Ile
			20					25					30		
Gly	Ser	Arg	Leu	Pro	Ser	Glu	Arg	His	Leu	Ala	Glu	His	Phe	Thr	Val
		35					40					45			
Ser	Arg	Met	Thr	Leu	Arg	Gln	Ala	Ile	Thr	Leu	Leu	Val	Glu	Glu	Gly
	50					55					60				
Ile	Leu	Glu	Arg	Arg	Ile	Gly	Ser	Gly	Thr	Tyr	Val	Ala	Ser	His	Arg
65				70						75				80	
Val	Gln	Glu	Lys	Met	Arg	Gly	Thr	Thr	Ser	Phe	Thr	Glu	Ile	Ile	Arg
			85						90				95		
Ser	Gln	Gly	Arg	Gln	Pro	Ser	Ser	Lys	Leu	Leu	Ser	Tyr	Gln	Lys	Gln
			100					105					110		
Leu	Ala	Ser	Asp	Thr	Glu	Val	Lys	Glu	Leu	Asn	Leu	Asp	Lys	Thr	Asp
		115					120					125			
Leu	Val	Ile	Arg	Met	Glu	Arg	Ile	Arg	Tyr	Ala	Asp	Ser	Val	Pro	Leu
	130					135					140				
Val	Tyr	Glu	Ile	Ala	Ser	Ile	Pro	Glu	Lys	Phe	Ile	Lys	Thr	Val	Lys

## PhoenixTemp32470.tmp.txt

145                      150                      155                      160  
 Arg Ala Asp Ile Thr Glu His Phe Phe His Ser Leu Ile Ala Asn Gly  
                                  165                      170                      175  
 Tyr Glu Ile Gly Lys Ser Lys Gln Thr Ile Tyr Ala Lys Leu Ala Ser  
                                  180                      185                      190  
 Glu Arg Val Ala Ser Tyr Leu Glu Val Ala Lys Gly His Ala Ile Leu  
                                  195                      200                      205  
 Ala Leu Thr Gln Val Ser Tyr Phe Thr Asp Gly Lys Pro Phe Glu Tyr  
                                  210                      215                      220  
 Val Arg Ser Gln Tyr Ile Gly Asp Arg Phe Glu Phe Tyr Leu Glu Asn  
 225                      230                      235                      240  
 Asn

<210> 1415  
 <211> 705  
 <212> DNA  
 <213> Pseudomonas fluorescens

<220>  
 <221> CDS  
 <222> (1)..(705)

<400> 1415  
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 Met Ser Lys Tyr Asn Gln Ile Tyr Thr Asp Leu Leu Ala Ser Ile Thr  
                                  5                      10                      15  
 acc gaa cgc ctg caa cgc ggc acg cgc ctt ccc tct gaa acc gaa ttg 96  
 Thr Glu Arg Leu Gln Arg Gly Thr Arg Leu Pro Ser Glu Thr Glu Leu  
                                  20                      25                      30  
 atg gac gcc tac cag gcc agc cgt ggc acc gtg cgt cgg gcc atc gag 144  
 Met Asp Ala Tyr Gln Ala Ser Arg Gly Thr Val Arg Arg Ala Ile Glu  
                                  35                      40                      45  
 caa ttg caa gag cgt ggg ttc gcg caa aag atc cat ggc aag ggc acg 192  
 Gln Leu Gln Glu Arg Gly Phe Ala Gln Lys Ile His Gly Lys Gly Thr  
                                  50                      55                      60  
 ttc gtg ctg tcc ccc aac ccg att gag ttc caa ctg ggg ggc att gtc 240  
 Phe Val Leu Ser Pro Asn Pro Ile Glu Phe Gln Leu Gly Gly Ile Val  
                                  65                      70                      75  
 agc ttc cac gaa acc cac gcc gac ctg ggc gat gac gta cgt acc gaa 288  
 Ser Phe His Glu Thr His Ala Asp Leu Gly Asp Asp Val Arg Thr Glu  
                                  80                      85                      90                      95  
 gtg gtc gaa ttc act caa ctg ccc ctg gaa ggc tcc ctg cag cag cat 336  
 Val Val Glu Phe Thr Gln Leu Pro Leu Glu Gly Ser Leu Gln Gln His  
                                  100                      105                      110  
 atc gag gcc gag ccc ggc acc ctg atc acg cgc atc aag cga gtg cgg 384  
 Ile Glu Ala Glu Pro Gly Thr Leu Ile Thr Arg Ile Lys Arg Val Arg  
                                  115                      120                      125  
 cgc atc ggc ggc aaa cgg gtg atc ctc gac atc aac cgc ttc gtc gcc 432  
 Arg Ile Gly Gly Lys Arg Val Ile Leu Asp Ile Asn Arg Phe Val Ala  
                                  130                      135                      140  
 gac ctg atc ccg ggc ctg gac cag acg att gcc gaa cag tcg atc tac 480  
 Asp Leu Ile Pro Gly Leu Asp Gln Thr Ile Ala Glu Gln Ser Ile Tyr  
 145                      150                      155                      160  
 gcg ttt atc gag cag acg ctg caa ctg cag atc agc tac gcc cag cgc 528  
 Ala Phe Ile Glu Gln Thr Leu Gln Leu Gln Ile Ser Tyr Ala Gln Arg  
                                  165                      170                      175  
 acc atc gaa gcc ctg ccc cgc agc aag gac gac cag gcg cac ttg gac 576  
 Thr Ile Glu Ala Leu Pro Arg Ser Lys Asp Asp Gln Ala His Leu Asp  
                                  180                      185                      190  
 ctc gac ggc cag agc cat gtg att gtg gtg agt aac cag acg ttt ttg 624  
 Leu Asp Gly Gln Ser His Val Ile Val Val Ser Asn Gln Thr Phe Leu  
                                  195                      200                      205  
 cag gat ggg cgg cag ttc gag tac acc gag tcg cgg cat aca ttg gat 672  
 Gln Asp Gly Arg Gln Phe Glu Tyr Thr Glu Ser Arg His Thr Leu Asp  
                                  210                      215                      220  
 aag ttt tac ttt tcg gat att gcg cgg cgc taa 705  
 Lys Phe Tyr Phe Ser Asp Ile Ala Arg Arg  
 225                      230

<210> 1416  
 <211> 234  
 <212> PRT  
 <213> Pseudomonas fluorescens

<400> 1416  
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 Thr Glu Arg Leu Gln Arg Gly Thr Arg Leu Pro Ser Glu Thr Glu Leu  
 20 25 30  
 Met Asp Ala Tyr Gln Ala Ser Arg Gly Thr Val Arg Arg Ala Ile Glu  
 35 40 45  
 Gln Leu Gln Glu Arg Gly Phe Ala Gln Lys Ile His Gly Lys Gly Thr  
 50 55 60  
 Phe Val Leu Ser Pro Asn Pro Ile Glu Phe Gln Leu Gly Gly Ile Val  
 65 70 75 80  
 Ser Phe His Glu Thr His Ala Asp Leu Gly Asp Asp Val Arg Thr Glu  
 85 90 95  
 Val Val Glu Phe Thr Gln Leu Pro Leu Glu Gly Ser Leu Gln Gln His  
 100 105 110  
 Ile Glu Ala Glu Pro Gly Thr Leu Ile Thr Arg Ile Lys Arg Val Arg  
 115 120 125  
 Arg Ile Gly Gly Lys Arg Val Ile Leu Asp Ile Asn Arg Phe Val Ala  
 130 135 140  
 Asp Leu Ile Pro Gly Leu Asp Gln Thr Ile Ala Glu Gln Ser Ile Tyr  
 145 150 155 160  
 Ala Phe Ile Glu Gln Thr Leu Gln Leu Gln Ile Ser Tyr Ala Gln Arg  
 165 170 175  
 Thr Ile Glu Ala Leu Pro Arg Ser Lys Asp Asp Gln Ala His Leu Asp  
 180 185 190  
 Leu Asp Gly Gln Ser His Val Ile Val Val Ser Asn Gln Thr Phe Leu  
 195 200 205  
 Gln Asp Gly Arg Gln Phe Glu Tyr Thr Glu Ser Arg His Thr Leu Asp  
 210 215 220  
 Lys Phe Tyr Phe Ser Asp Ile Ala Arg Arg  
 225 230

<210> 1417  
 <211> 765  
 <212> DNA  
 <213> Streptomyces coelicolor

<220>  
 <221> CDS  
 <222> (1)..(765)

<400> 1417  
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 Met Ser Thr Asp Val Ser Ser Ala Glu Asn Glu Gly Gly Ala Thr Val 15  
 1 5 10  
 cgt acc gcg cgc gtg ccc aag tac tac cgt ctg aag aag cat ctg ctc 96  
 Arg Thr Ala Arg Val Pro Lys Tyr Tyr Arg Leu Lys Lys His Leu Leu 20 25 30  
 gac atg acc cgg acc cag acg ccg ggc aca ccg gtc ccg ccg gag cgc 144  
 Asp Met Thr Arg Thr Gln Thr Pro Gly Thr Pro Val Pro Pro Glu Arg 35 40 45  
 acc ctg gcc gcc gag ttc gac acc tcg cgc acg acg gtg cgc cag gcc 192  
 Thr Leu Ala Ala Glu Phe Asp Thr Ser Arg Thr Thr Val Arg Gln Ala 50 55 60  
 ctg cag gag ctg gtg gtc gag ggc cgc ctg gag cgc atc cag ggc aag 240  
 Leu Gln Glu Leu Val Val Glu Gly Arg Leu Glu Arg Ile Gln Gly Lys 65 70 75 80  
 ggc acc ttc gtc gcc aag ccc aag gtg tcg cag gcg ctg caa ctc acc 288  
 Gly Thr Phe Val Ala Lys Pro Lys Val Ser Gln Ala Leu Gln Leu Thr 85 90 95  
 tcg tac acc gag gac atg cgg gcc cag ggc ctc gaa ccg acc tct cag 336  
 Ser Tyr Thr Asp Met Arg Ala Gln Gly Leu Glu Pro Thr Ser Gln 100 105 110



## PhoenixTemp32470.tmp.txt

ctg	ctg	gac	atc	ggc	tac	atc	acc	gcc	gac	gac	cgg	ctc	gcc	ggg	ctg	384
Leu	Leu	Asp	Ile	Gly	Tyr	Ile	Thr	Ala	Asp	Asp	Arg	Leu	Ala	Gly	Leu	
		115					120					125				
ctg	gac	atc	acg	gcc	ggc	ggc	cgg	gtg	ctg	cgc	atc	gag	cgg	ctg	cgc	432
Leu	Asp	Ile	Thr	Ala	Gly	Gly	Arg	Val	Leu	Arg	Ile	Glu	Arg	Leu	Arg	
	130					135					140					
atg	gcc	aac	ggc	gag	ccg	atg	gcc	atc	gag	acc	cac	ctc	agc	gcg		480
Met	Ala	Asn	Gly	Glu	Pro	Met	Ala	Ile	Glu	Thr	His	Leu	Ser	Ala		
	145				150					155				160		
aag	cgc	ttc	ccc	gcc	ctg	cgc	cgc	tcc	ctg	gtg	aag	tac	acg	tcc	ctc	528
Lys	Arg	Phe	Pro	Ala	Leu	Arg	Arg	Ser	Leu	Val	Lys	Tyr	Thr	Ser	Leu	
			165						170					175		
tac	acc	gcg	ctc	gcc	gag	gtg	tac	gac	gtc	cat	ctc	gcc	gag	gcc	gag	576
Tyr	Thr	Ala	Leu	Ala	Glu	Val	Tyr	Asp	Val	His	Leu	Ala	Glu	Ala	Glu	
			180					185					190			
gag	acc	atc	gag	acc	tcc	ctg	gcc	acc	ccg	cgc	gag	gcc	ggg	ctg	ctc	624
Glu	Thr	Ile	Glu	Thr	Ser	Leu	Ala	Thr	Pro	Arg	Glu	Ala	Gly	Leu	Leu	
		195					200					205				
ggc	acc	gac	gtc	ggc	ctg	ccc	atg	ctg	atg	ctc	tcc	cgg	cac	tcc	cag	672
Gly	Thr	Asp	Val	Gly	Leu	Pro	Met	Leu	Met	Leu	Ser	Arg	His	Ser	Gln	
	210					215					220					
gac	cgc	acc	ggc	cag	ccg	gtg	gag	tgg	gtc	cgc	tcg	gtg	tac	cgg	ggc	720
Asp	Arg	Thr	Gly	Gln	Pro	Val	Glu	Trp	Val	Arg	Ser	Val	Tyr	Arg	Gly	
	225				230					235					240	
gac	cgc	tac	aag	ttc	gtg	gcc	cgc	ctc	aag	cgg	ccc	cag	gac	tag		765
Asp	Arg	Tyr	Lys	Phe	Val	Ala	Arg	Leu	Lys	Arg	Pro	Gln	Asp			
				245					250							

&lt;210&gt; 1418

&lt;211&gt; 254

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor

&lt;400&gt; 1418

Met	Ser	Thr	Asp	Val	Ser	Ser	Ala	Glu	Asn	Glu	Gly	Gly	Ala	Thr	Val	
1				5					10					15		
Arg	Thr	Ala	Arg	Val	Pro	Lys	Tyr	Tyr	Arg	Leu	Lys	Lys	His	Leu	Leu	
			20					25					30			
Asp	Met	Thr	Arg	Thr	Gln	Thr	Pro	Gly	Thr	Pro	Val	Pro	Pro	Glu	Arg	
		35					40					45				
Thr	Leu	Ala	Ala	Glu	Phe	Asp	Thr	Ser	Arg	Thr	Thr	Val	Arg	Gln	Ala	
	50					55					60					
Leu	Gln	Glu	Leu	Val	Val	Glu	Gly	Arg	Leu	Glu	Arg	Ile	Gln	Gly	Lys	
65					70					75				80		
Gly	Thr	Phe	Val	Ala	Lys	Pro	Lys	Val	Ser	Gln	Ala	Leu	Gln	Leu	Thr	
			85						90					95		
Ser	Tyr	Thr	Glu	Asp	Met	Arg	Ala	Gln	Gly	Leu	Glu	Pro	Thr	Ser	Gln	
			100					105					110			
Leu	Leu	Asp	Ile	Gly	Tyr	Ile	Thr	Ala	Asp	Asp	Arg	Leu	Ala	Gly	Leu	
		115					120					125				
Leu	Asp	Ile	Thr	Ala	Gly	Gly	Arg	Val	Leu	Arg	Ile	Glu	Arg	Leu	Arg	
	130					135					140					
Met	Ala	Asn	Gly	Glu	Pro	Met	Ala	Ile	Glu	Thr	Thr	His	Leu	Ser	Ala	
	145				150					155					160	
Lys	Arg	Phe	Pro	Ala	Leu	Arg	Arg	Ser	Leu	Val	Lys	Tyr	Thr	Ser	Leu	
			165						170					175		
Tyr	Thr	Ala	Leu	Ala	Glu	Val	Tyr	Asp	Val	His	Leu	Ala	Glu	Ala	Glu	
			180					185					190			
Glu	Thr	Ile	Glu	Thr	Ser	Leu	Ala	Thr	Pro	Arg	Glu	Ala	Gly	Leu	Leu	
		195					200					205				
Gly	Thr	Asp	Val	Gly	Leu	Pro	Met	Leu	Met	Leu	Ser	Arg	His	Ser	Gln	
	210					215					220					
Asp	Arg	Thr	Gly	Gln	Pro	Val	Glu	Trp	Val	Arg	Ser	Val	Tyr	Arg	Gly	
	225				230					235					240	
Asp	Arg	Tyr	Lys	Phe	Val	Ala	Arg	Leu	Lys	Arg	Pro	Gln	Asp			
				245					250							

&lt;210&gt; 1419

&lt;211&gt; 708

&lt;212&gt; DNA

&lt;213&gt; Vibrio sp. Ex25

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(708)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1419

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atg aaa ccc aaa tac ata gac att gcg gaa cga tta gaa aaa aag atc      48
Met Lys Pro Lys Tyr Ile Asp Ile Ala Glu Arg Leu Glu Lys Lys Ile
 1          5          10          15
aaa gat ggg gaa cta caa cct aaa tcg atg ctt cca aaa gag agt gat      96
Lys Asp Gly Glu Leu Gln Pro Lys Ser Met Leu Pro Lys Glu Ser Asp
          20          25          30
ttg caa gaa gag ttt tcc gta agc cgc gta acc atc aga aaa agc tta      144
Leu Gln Glu Glu Phe Ser Val Ser Arg Val Thr Ile Arg Lys Ser Leu
          35          40          45
caa att ctg gtc gac aat aat tta att agt cgg aca aga ggt agt gga      192
Gln Ile Leu Val Asp Asn Asn Leu Ile Ser Arg Thr Arg Gly Ser Gly
          50          55          60
act tat gta aac gat cta aaa gcc caa cat gat gcc tta cat ttg ctg      240
Thr Tyr Val Asn Asp Leu Lys Ala Gln His Asp Ala Leu His Leu Leu
          65          70          75
ggt ttt atc gag gaa gtc agt aaa cag ggg aaa act cct agc tct caa      288
Gly Phe Ile Glu Glu Val Ser Lys Gln Gly Lys Thr Pro Ser Ser Gln
          85          90          95
gtc ata aag ttc gaa ctt aaa aag ccg aat gag cag gtt gct aag cag      336
Val Ile Lys Phe Glu Leu Lys Lys Pro Asn Glu Gln Val Ala Lys Gln
          100          105          110
tta aat ctc tcg ccc aat gat gat aca tat gaa ata cat aga ctc aga      384
Leu Asn Leu Ser Pro Asn Asp Asp Thr Tyr Glu Ile His Arg Leu Arg
          115          120          125
tgt att aat gat gag cct gaa att tac gaa gtc act cat atg cca gca      432
Cys Ile Asn Asp Glu Pro Glu Ile Tyr Glu Val Thr His Met Pro Ala
          130          135          140
gtg tta ttt cca gac ttg agc ata gcc ata atg aat ggt tct aaa tat      480
Val Leu Phe Pro Asp Leu Ser Ile Ala Ile Met Asn Gly Ser Lys Tyr
          145          150          155
gag tac att gaa aat agc aaa gga ttg aaa att gcg aaa agc agt cag      528
Glu Tyr Ile Glu Asn Ser Lys Gly Leu Lys Ile Ala Lys Ser Ser Gln
          165          170          175
tct gtc aaa ccg tat ttg tta gat gca gag acg gcc tca tac ctg aat      576
Ser Val Lys Pro Tyr Leu Leu Asp Ala Glu Thr Ala Ser Tyr Leu Asn
          180          185          190
gaa tca gaa gct tcc cct att cta aaa gtt gag tcc act ggt tac cta      624
Glu Ser Glu Ala Ser Pro Ile Leu Lys Val Glu Ser Thr Gly Tyr Leu
          195          200          205
gaa gat ggt cgt gca ttt gaa tat acc gtc aat tac ttc cga ctt cat      672
Glu Asp Gly Arg Ala Phe Glu Tyr Thr Val Asn Tyr Phe Arg Leu His
          210          215          220
caa tac agc ttc gag ttt att tca act agg acg tag
Gln Tyr Ser Phe Glu Phe Ile Ser Thr Arg Thr
          225          230          235

```

&lt;210&gt; 1420

&lt;211&gt; 235

&lt;212&gt; PRT

&lt;213&gt; Vibrio sp. Ex25

&lt;400&gt; 1420

```

Met Lys Pro Lys Tyr Ile Asp Ile Ala Glu Arg Leu Glu Lys Lys Ile
 1          5          10          15
Lys Asp Gly Glu Leu Gln Pro Lys Ser Met Leu Pro Lys Glu Ser Asp
          20          25          30
Leu Gln Glu Glu Phe Ser Val Ser Arg Val Thr Ile Arg Lys Ser Leu
          35          40          45
Gln Ile Leu Val Asp Asn Asn Leu Ile Ser Arg Thr Arg Gly Ser Gly
          50          55          60

```

## PhoenixTemp32470.tmp.txt

```

Thr Tyr Val Asn Asp Leu Lys Ala Gln His Asp Ala Leu His Leu Leu
65      70      75
Gly Phe Ile Glu Glu Val Ser Lys Gln Gly Lys Thr Pro Ser Ser Gln
      85      90      95
Val Ile Lys Phe Glu Leu Lys Lys Pro Asn Glu Gln Val Ala Lys Gln
      100      105      110
Leu Asn Leu Ser Pro Asn Asp Asp Thr Tyr Glu Ile His Arg Leu Arg
      115      120      125
Cys Ile Asn Asp Glu Pro Glu Ile Tyr Glu Val Thr His Met Pro Ala
      130      135      140
Val Leu Phe Pro Asp Leu Ser Ile Ala Ile Met Asn Gly Ser Lys Tyr
      145      150      155
Glu Tyr Ile Glu Asn Ser Lys Gly Leu Lys Ile Ala Lys Ser Ser Gln
      165      170      175
Ser Val Lys Pro Tyr Leu Leu Asp Ala Glu Thr Ala Ser Tyr Leu Asn
      180      185      190
Glu Ser Glu Ala Ser Pro Ile Leu Lys Val Glu Ser Thr Gly Tyr Leu
      195      200      205
Glu Asp Gly Arg Ala Phe Glu Tyr Thr Val Asn Tyr Phe Arg Leu His
      210      215      220
Gln Tyr Ser Phe Glu Phe Ile Ser Thr Arg Thr
      225      230      235

```

<210> 1421  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 1421  
 atgggacaca agcccttata ccg

23

<210> 1422  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 1422  
 ttatcgcgat gattttcgct gcg

23

<210> 1423  
 <211> 222  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> consensus sequence

<220>  
 <221> Variant  
 <222> (2)..(11)  
 <223> Xaa in position 2 to 11 is any amino acid

<220>  
 <221> Variant  
 <222> (13)..(21)  
 <223> Xaa in position 13 to 21 is any amino acid

<220>  
 <221> Variant  
 <222> (22)..(23)  
 <223> Xaa in position 22 to 23 is any or no amino acid

<220>  
<221> Variant  
<222> (25)..(25)  
<223> Xaa in position 25 is any amino acid

<220>  
<221> Variant  
<222> (27)..(28)  
<223> Xaa in position 27 to 28 is any amino acid

<220>  
<221> Variant  
<222> (30)..(35)  
<223> Xaa in position 30 to 35 is any amino acid

<220>  
<221> Variant  
<222> (38)..(38)  
<223> Xaa in position 38 is any amino acid

<220>  
<221> Variant  
<222> (40)..(42)  
<223> Xaa in position 40 to 42 is any amino acid

<220>  
<221> Variant  
<222> (44)..(46)  
<223> Xaa in position 44 to 46 is any amino acid

<220>  
<221> Variant  
<222> (48)..(50)  
<223> Xaa in position 48 to 50 is any amino acid

<220>  
<221> Variant  
<222> (52)..(57)  
<223> Xaa in position 52 to 57 is any amino acid

<220>  
<221> Variant  
<222> (59)..(59)  
<223> Xaa in position 59 is any amino acid

<220>  
<221> Variant  
<222> (62)..(106)  
<223> Xaa in position 62 to 106 is any amino acid

<220>  
<221> Variant  
<222> (107)..(113)  
<223> Xaa in position 107 to 113 is any or no amino acid

<220>  
<221> Variant  
<222> (115)..(126)  
<223> Xaa in position 115 to 126 is any amino acid

<220>  
<221> Variant  
<222> (127)..(127)  
<223> Xaa in position 127 is any or no amino acid

<220>  
<221> Variant  
<222> (129)..(129)  
<223> Xaa in position 129 is any amino acid

<220>  
 <221> Variant  
 <222> (131)..(135)  
 <223> Xaa in position 131 to 135 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (137)..(139)  
 <223> Xaa in position 137 to 139 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (141)..(189)  
 <223> Xaa in position 141 to 189 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (190)..(195)  
 <223> Xaa in position 190 to 195 is any or no amino acid  
  
 <220>  
 <221> Variant  
 <222> (197)..(218)  
 <223> Xaa in position 197 to 218 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (219)..(221)  
 <223> Xaa in position 219 to 221 is any or no amino acid

<400> 1423  
 Tyr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ile Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Glu Xaa Xaa Leu Xaa Xaa Xaa  
 20 25 30  
 Xaa Xaa Xaa Ser Arg Xaa Thr Xaa Xaa Xaa Ala Xaa Xaa Xaa Leu Xaa  
 35 40 45  
 Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Gly Thr Xaa Xaa Xaa  
 50 55 60  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 65 70 75 80  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 85 90 95  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 100 105 110  
 Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Arg  
 115 120 125  
 Xaa Arg Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa  
 130 135 140  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 145 150 155 160  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 165 170 175  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 180 185 190  
 Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 195 200 205  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu  
 210 215 220

<210> 1424  
 <211> 38  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> protein pattern

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<220>
<221> Variant
<222> (2)..(10)
<223> Xaa in position 2 to 10 is any amino acid

<220>
<221> Variant
<222> (13)..(13)
<223> Xaa in position 13 is any amino acid

<220>
<221> Variant
<222> (15)..(17)
<223> Xaa in position 15 to 17 is any amino acid

<220>
<221> Variant
<222> (19)..(19)
<223> Xaa in position 19 is Ile, Leu or Val

<220>
<221> Variant
<222> (20)..(21)
<223> Xaa in position 20 to 21 is any amino acid

<220>
<221> Variant
<222> (23)..(25)
<223> Xaa in position 23 to 25 is any amino acid

<220>
<221> Variant
<222> (26)..(26)
<223> Xaa in position 26 is Glu, Gly, Asn or Gln

<220>
<221> Variant
<222> (27)..(27)
<223> Xaa in position 27 is any amino acid

<220>
<221> Variant
<222> (28)..(28)
<223> Xaa in position 28 is Ala, Ile, Leu or Val

<220>
<221> Variant
<222> (29)..(32)
<223> Xaa in position 29 to 32 is any amino acid

<220>
<221> Variant
<222> (34)..(34)
<223> Xaa in position 34 is any amino acid

<220>
<221> Variant
<222> (37)..(37)
<223> Xaa in position 37 is Phe or Tyr

<220>
<221> Variant
<222> (38)..(38)
<223> Xaa in position 38 is Ile, Leu or Val

<400> 1424
Glu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser Arg Xaa Thr Xaa Xaa
1          5          10          15

```

## PhoenixTemp32470.tmp.txt

Xaa Ala Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Gly Xaa Gly Thr Xaa Xaa  
 35

<210> 1425  
 <211> 366  
 <212> DNA  
 <213> Escherichia coli  
 <220>  
 <221> CDS  
 <222> (1)..(366)  
 <223> transl\_table=11

<400> 1425  
 atg aac cat gca ccg cat tta tat ttc gcc tgg caa caa ctc gtc gaa 48  
 Met Asn His Ala Pro His Leu Tyr Phe Ala Trp Gln Gln Leu Val Glu  
 1 5 10 15  
 aaa agc cag ctc atg tta cgc ctg gca acg gaa gaa caa tgg gac gaa 96  
 Lys Ser Gln Leu Met Leu Arg Leu Ala Thr Glu Glu Gln Trp Asp Glu  
 20 25 30  
 ctc atc gcc agc gaa atg gcg tat gtg aat gcg gtg cag gag att gca 144  
 Leu Ile Ala Ser Glu Met Ala Tyr Val Asn Ala Val Gln Glu Ile Ala  
 35 40 45  
 cat ttg act gaa gag gtt gac ccg tcc acc acg atg cag gag cag ctc 192  
 His Leu Thr Glu Glu Val Asp Pro Ser Thr Thr Met Gln Glu Gln Leu  
 50 55 60  
 cgc ccg atg ctg cgc ctg att ctc gac aac gaa agc aag gta aag cag 240  
 Arg Pro Met Leu Arg Leu Ile Leu Asp Asn Glu Ser Lys Val Lys Gln  
 65 70 75 80  
 tta tta cag att cgg atg gat gaa ctg gcg aaa ctg gtc ggt cag tca 288  
 Leu Leu Gln Ile Arg Met Asp Glu Leu Ala Lys Leu Val Gly Gln Ser  
 85 90 95  
 tcg gtg caa aaa tcg gtg tta agt gcc tat ggc gat cag ggc ggc ttt 336  
 Ser Val Gln Lys Ser Val Leu Ser Ala Tyr Gly Asp Gln Gly Gly Phe  
 100 105 110  
 gtg ctg gct ccg cag gat aac ctc ttt taa 366  
 Val Leu Ala Pro Gln Asp Asn Leu Phe  
 115 120

<210> 1426  
 <211> 121  
 <212> PRT  
 <213> Escherichia coli

<400> 1426  
 Met Asn His Ala Pro His Leu Tyr Phe Ala Trp Gln Gln Leu Val Glu  
 1 5 10 15  
 Lys Ser Gln Leu Met Leu Arg Leu Ala Thr Glu Glu Gln Trp Asp Glu  
 20 25 30  
 Leu Ile Ala Ser Glu Met Ala Tyr Val Asn Ala Val Gln Glu Ile Ala  
 35 40 45  
 His Leu Thr Glu Glu Val Asp Pro Ser Thr Thr Met Gln Glu Gln Leu  
 50 55 60  
 Arg Pro Met Leu Arg Leu Ile Leu Asp Asn Glu Ser Lys Val Lys Gln  
 65 70 75 80  
 Leu Leu Gln Ile Arg Met Asp Glu Leu Ala Lys Leu Val Gly Gln Ser  
 85 90 95  
 Ser Val Gln Lys Ser Val Leu Ser Ala Tyr Gly Asp Gln Gly Gly Phe  
 100 105 110  
 Val Leu Ala Pro Gln Asp Asn Leu Phe  
 115 120

<210> 1427  
 <211> 363  
 <212> DNA  
 <213> Yersinia pestis C092

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(363)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1427

atg gaa cgt cac cag cat ctt ttg tcc gaa tat caa caa atc cta act	48
Met Glu Arg His Gln His Leu Leu Ser Glu Tyr Gln Gln Ile Leu Thr	
1 5 10 15	
ctc agt gag caa atg ctt atg ttg gct act gtg gaa aac tgg aat gcg	96
Leu Ser Glu Gln Met Leu Met Leu Ala Thr Val Glu Asn Trp Asn Ala	
20 25 30	
ctg gtt gat ctg gaa atg act tat ctc aaa gcc gtt gaa aat aca gct	144
Leu Val Asp Leu Glu Met Thr Tyr Leu Lys Ala Val Glu Asn Thr Ala	
35 40 45	
aat atc act att tcc tct tgt aca tca cca gta ttg caa gaa tta ctg	192
Asn Ile Thr Ile Ser Ser Cys Thr Ser Pro Val Leu Gln Glu Leu Leu	
50 55 60	
cgc caa aaa ttg aga tcc ata ttg gag aat gag ata gaa att aag cgg	240
Arg Gln Lys Leu Arg Ser Ile Leu Glu Asn Glu Ile Glu Ile Lys Arg	
65 70 75 80	
tta ctg caa cgt cgt tta gat aaa tta agt gaa ttg gtg ggg caa tct	288
Leu Leu Gln Arg Arg Leu Asp Lys Leu Ser Glu Leu Val Gly Gln Ser	
85 90 95	
acc cgc caa cag gca gtt aat cgt act tat ggt cag ttc ccc gat cag	336
Thr Arg Gln Gln Ala Val Asn Arg Thr Tyr Gly Gln Phe Pro Asp Gln	
100 105 110	
gca ctg ctg ctg ggt gaa aca caa taa	363
Ala Leu Leu Leu Gly Glu Thr Gln	
115 120	

&lt;210&gt; 1428

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Yersinia pestis C092

&lt;400&gt; 1428

Met Glu Arg His Gln His Leu Leu Ser Glu Tyr Gln Gln Ile Leu Thr	
1 5 10 15	
Leu Ser Glu Gln Met Leu Met Leu Ala Thr Val Glu Asn Trp Asn Ala	
20 25 30	
Leu Val Asp Leu Glu Met Thr Tyr Leu Lys Ala Val Glu Asn Thr Ala	
35 40 45	
Asn Ile Thr Ile Ser Ser Cys Thr Ser Pro Val Leu Gln Glu Leu Leu	
50 55 60	
Arg Gln Lys Leu Arg Ser Ile Leu Glu Asn Glu Ile Glu Ile Lys Arg	
65 70 75 80	
Leu Leu Gln Arg Arg Leu Asp Lys Leu Ser Glu Leu Val Gly Gln Ser	
85 90 95	
Thr Arg Gln Gln Ala Val Asn Arg Thr Tyr Gly Gln Phe Pro Asp Gln	
100 105 110	
Ala Leu Leu Leu Gly Glu Thr Gln	
115 120	

&lt;210&gt; 1429

&lt;211&gt; 414

&lt;212&gt; DNA

&lt;213&gt; Yersinia pestis KIM

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(414)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1429

atg cgt ggc ggc aga tcg gcc cga att atc aac cca att agg acc cat	48
Met Arg Gly Gly Arg Ser Ala Arg Ile Ile Asn Pro Ile Arg Thr His	
1 5 10 15	
tta atg gaa cgt cac cag cat ctt ttg tcc gaa tat caa caa atc cta	96



## PhoenixTemp32470.tmp.txt

```

Leu Met Glu Arg His Gln His Leu Leu Ser Glu Tyr Gln Gln Ile Leu
      20      25      30
act ctc agt gag caa atg ctt atg ttg gct act gtg gaa aac tgg aat      144
Thr Leu Ser Glu Gln Met Leu Met Leu Ala Thr Val Glu Asn Trp Asn
      35      40      45
gcg ctg gtt gat ctg gaa atg act tat ctc aaa gcc gtt gaa aat aca      192
Ala Leu Val Asp Leu Glu Met Thr Tyr Leu Lys Ala Val Glu Asn Thr
      50      55      60
gct aat atc act att tcc tct tgt aca tca cca gta ttg caa gaa tta      240
Ala Asn Ile Thr Ile Ser Ser Cys Thr Ser Pro Val Leu Gln Glu Leu
      65      70      75
ctg cgc caa aaa ttg aga tcc ata ttg gag aat gag ata gaa att aag      288
Leu Arg Gln Lys Leu Arg Ser Ile Leu Glu Asn Glu Ile Glu Ile Lys
      80      85      90
cgg tta ctg caa cgt cgt tta gat aaa tta agt gaa ttg gtg ggg caa      336
Arg Leu Leu Gln Arg Arg Leu Asp Lys Leu Ser Glu Leu Val Gly Gln
      95      100      105
tct acc cgc caa cag gca gtt aat cgt act tat ggt cag ttc ccc gat      384
Ser Thr Arg Gln Gln Ala Val Asn Arg Thr Tyr Gly Gln Phe Pro Asp
      110      115      120
cag gca ctg ctg ctg ggt gaa aca caa taa
Gln Ala Leu Leu Leu Gly Glu Thr Gln
      125      130      135

```

&lt;210&gt; 1430

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Yersinia pestis KIM

&lt;400&gt; 1430

```

Met Arg Gly Gly Arg Ser Ala Arg Ile Ile Asn Pro Ile Arg Thr His
1      5      10      15
Leu Met Glu Arg His Gln His Leu Leu Ser Glu Tyr Gln Gln Ile Leu
      20      25      30
Thr Leu Ser Glu Gln Met Leu Met Leu Ala Thr Val Glu Asn Trp Asn
      35      40      45
Ala Leu Val Asp Leu Glu Met Thr Tyr Leu Lys Ala Val Glu Asn Thr
      50      55      60
Ala Asn Ile Thr Ile Ser Ser Cys Thr Ser Pro Val Leu Gln Glu Leu
      65      70      75
Leu Arg Gln Lys Leu Arg Ser Ile Leu Glu Asn Glu Ile Glu Ile Lys
      80      85      90
Arg Leu Leu Gln Arg Arg Leu Asp Lys Leu Ser Glu Leu Val Gly Gln
      95      100      105
Ser Thr Arg Gln Gln Ala Val Asn Arg Thr Tyr Gly Gln Phe Pro Asp
      110      115      120
Gln Ala Leu Leu Leu Gly Glu Thr Gln
      125      130      135

```

&lt;210&gt; 1431

&lt;211&gt; 366

&lt;212&gt; DNA

&lt;213&gt; Shigella flexneri 2a str. 2457T

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(366)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1431

```

atg aac aat gca ccg cat ttg tat ttc gcc tgg caa caa ctc gtc gaa      48
Met Asn Asn Ala Pro His Leu Tyr Phe Ala Trp Gln Gln Leu Val Glu
1      5      10      15
aaa agc cag ctc atg tta cgc ctg gca acg gaa gaa caa tgg gac gaa      96
Lys Ser Gln Leu Met Leu Arg Leu Ala Thr Glu Glu Gln Trp Asp Glu
      20      25      30
ctc atc gct agc gaa atg gcg tat gtg aat gcg gtg cag gag atc gca      144
Leu Ile Ala Ser Glu Met Ala Tyr Val Asn Ala Val Glu Glu Ile Ala
      35      40      45

```

## PhoenixTemp32470.tmp.txt

cac	ctg	act	gaa	gag	gtt	gcc	ccg	tcc	act	acg	atg	cag	gag	cag	ctc	192
His	Leu	Thr	Glu	Glu	Val	Ala	Pro	Ser	Thr	Thr	Met	Gln	Glu	Gln	Leu	
	50					55					60					
cg	ccg	atg	ctg	cac	ctg	att	ctc	gac	aac	gaa	agc	aag	gta	aag	cag	240
Arg	Pro	Met	Leu	His	Leu	Ile	Leu	Asp	Asn	Glu	Ser	Lys	Val	Lys	Gln	
65					70				75						80	
tta	tta	cag	att	cgg	atg	gat	gaa	ctg	gcg	aaa	ctg	gtc	ggt	cag	tca	288
Leu	Leu	Gln	Ile	Arg	Met	Asp	Glu	Leu	Ala	Lys	Leu	Val	Gly	Gln	Ser	
				85					90					95		
tcg	gtg	caa	aaa	tcg	gtg	tta	agt	gcc	tat	ggc	gat	cag	ggc	ggc	ttt	336
Ser	Val	Gln	Lys	Ser	Val	Leu	Ser	Ala	Tyr	Gly	Asp	Gln	Gly	Gly	Phe	
			100					105					110			
gtg	ctg	gct	ccg	cag	gat	aac	ctc	ttt	tga							366
Val	Leu	Ala	Pro	Gln	Asp	Asn	Leu	Phe								
		115					120									

&lt;210&gt; 1432

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Shigella flexneri 2a str. 2457T

&lt;400&gt; 1432

Met	Asn	Asn	Ala	Pro	His	Leu	Tyr	Phe	Ala	Trp	Gln	Gln	Leu	Val	Glu	
1				5					10					15		
Lys	Ser	Gln	Leu	Met	Leu	Arg	Leu	Ala	Thr	Glu	Glu	Gln	Trp	Asp	Glu	
			20					25					30			
Leu	Ile	Ala	Ser	Glu	Met	Ala	Tyr	Val	Asn	Ala	Val	Gln	Glu	Ile	Ala	
		35				40						45				
His	Leu	Thr	Glu	Glu	Val	Ala	Pro	Ser	Thr	Thr	Met	Gln	Glu	Gln	Leu	
	50					55					60					
Arg	Pro	Met	Leu	His	Leu	Ile	Leu	Asp	Asn	Glu	Ser	Lys	Val	Lys	Gln	
65					70				75						80	
Leu	Leu	Gln	Ile	Arg	Met	Asp	Glu	Leu	Ala	Lys	Leu	Val	Gly	Gln	Ser	
				85					90					95		
Ser	Val	Gln	Lys	Ser	Val	Leu	Ser	Ala	Tyr	Gly	Asp	Gln	Gly	Gly	Phe	
			100					105					110			
Val	Leu	Ala	Pro	Gln	Asp	Asn	Leu	Phe								
		115					120									

&lt;210&gt; 1433

&lt;211&gt; 378

&lt;212&gt; DNA

&lt;213&gt; Photorhabdus luminescens subsp. laumondii TT01

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(378)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1433

atg	gat	aat	aaa	atg	gat	ctt	ttg	tca	gct	tac	caa	cgg	atc	cta	agt	48
Met	Asp	Asn	Lys	Met	Asp	Leu	Leu	Ser	Ala	Tyr	Gln	Arg	Ile	Leu	Ser	
1				5					10					15		
tta	agt	gag	caa	atg	ctt	aat	tta	gct	aaa	aat	gaa	aaa	tgg	gat	gaa	96
Leu	Ser	Glu	Gln	Met	Leu	Asn	Leu	Ala	Lys	Asn	Glu	Lys	Trp	Asp	Glu	
			20					25					30			
ctt	gtt	gat	atg	gaa	atc	acc	tac	ctc	aaa	gca	gta	gaa	gtg	atc	agc	144
Leu	Val	Asp	Met	Glu	Ile	Thr	Tyr	Leu	Lys	Ala	Val	Glu	Val	Ile	Ser	
			35				40					45				
cat	tct	tca	ata	tca	tcg	acg	act	tct	ctt	tcg	tta	cag	caa	aaa	atg	192
His	Ser	Ser	Ile	Ser	Ser	Thr	Thr	Ser	Leu	Ser	Leu	Gln	Gln	Lys	Met	
	50					55					60					
acc	aac	att	ttg	caa	ata	att	tta	gat	aat	gaa	aat	gag	att	aaa	aaa	240
Thr	Asn	Ile	Leu	Gln	Ile	Ile	Leu	Asp	Asn	Glu	Asn	Glu	Ile	Lys	Lys	
65					70				75						80	
cta	cta	cag	aaa	aga	ctt	gat	gaa	tta	agt	aaa	ctc	atc	aaa	caa	gca	288
Leu	Leu	Gln	Lys	Arg	Leu	Asp	Glu	Leu	Ser	Lys	Leu	Ile	Lys	Gln	Ala	
				85					90					95		
agc	caa	cag	caa	tta	tta	aat	gat	agc	tac	ggc	caa	ttc	cct	gtt	gaa	336

## PhoenixTemp32470.tmp.txt

Ser Gln Gln Gln Leu Leu Asn Asp Ser Tyr Gly Gln Phe Pro Val Glu  
 100 105 110  
 ccc tat cat aat acc ctt atg aac tct acg gag caa aag taa  
 Pro Tyr His Asn Thr Leu Met Asn Ser Thr Glu Gln Lys  
 115 120 125

378

&lt;210&gt; 1434

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Photorhabdus luminescens subsp. laumondii TT01

&lt;400&gt; 1434

Met Asp Asn Lys Met Asp Leu Leu Ser Ala Tyr Gln Arg Ile Leu Ser  
 1 5 10 15  
 Leu Ser Glu Gln Met Leu Asn Leu Ala Lys Asn Glu Lys Trp Asp Glu  
 20 25 30  
 Leu Val Asp Met Glu Ile Thr Tyr Leu Lys Ala Val Glu Val Ile Ser  
 35 40 45  
 His Ser Ser Ile Ser Ser Thr Thr Ser Leu Ser Leu Gln Gln Lys Met  
 50 55 60  
 Thr Asn Ile Leu Gln Ile Ile Leu Asp Asn Glu Asn Glu Ile Lys Lys  
 65 70 75 80  
 Leu Leu Gln Lys Arg Leu Asp Glu Leu Ser Lys Leu Ile Lys Gln Ala  
 85 90 95  
 Ser Gln Gln Gln Leu Leu Asn Asp Ser Tyr Gly Gln Phe Pro Val Glu  
 100 105 110  
 Pro Tyr His Asn Thr Leu Met Asn Ser Thr Glu Gln Lys  
 115 120 125

&lt;210&gt; 1435

&lt;211&gt; 381

&lt;212&gt; DNA

&lt;213&gt; Erwinia carotovora subsp. atroseptica SCRI1043

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(381)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1435

atg gtc tcc ccc cat cgg ctt cta aaa gat tac caa caa ctt ttg tct  
 Met Val Ser Pro His Arg Leu Leu Lys Asp Tyr Gln Gln Leu Leu Ser  
 1 5 10 15  
 ctg agt caa aaa att ctt cat ttg gcc atc agc ggc caa tgg gat acg  
 Leu Ser Gln Lys Ile Leu His Leu Ala Ile Ser Gly Gln Trp Asp Thr  
 20 25 30  
 ttg gtt gag caa gag att gtt tat gtt cag tcc gtt gaa ggc tta gtt  
 Leu Val Glu Gln Glu Ile Val Tyr Val Gln Ser Val Glu Gly Leu Val  
 35 40 45  
 aac acg cca att cct gac gaa att gac agc gtg atg cga ctg cat ctg  
 Asn Thr Pro Ile Pro Asp Glu Ile Asp Ser Val Met Arg Leu His Leu  
 50 55 60  
 cga caa att ttg cag gaa gtg atg gat aat gaa gcg aaa gtg aaa caa  
 Arg Gln Ile Leu Gln Glu Val Met Asp Asn Glu Ala Lys Val Lys Gln  
 65 70 75 80  
 ctt ttg cag aag cgg atg gat gag tta agt tcg tta atg ggg caa tca  
 Leu Leu Gln Lys Arg Met Asp Glu Leu Ser Ser Leu Met Gly Gln Ser  
 85 90 95  
 ctg aag caa aag tca att aat gca act tat agc gaa ttt gca ggg cag  
 Leu Lys Gln Lys Ser Ile Asn Ala Thr Tyr Ser Glu Phe Ala Gly Gln  
 100 105 110  
 cga cgg tta ctt gac gac ccc ttg cct gac gaa acg cgc tca taa  
 Arg Arg Leu Leu Asp Asp Pro Leu Pro Asp Glu Thr Arg Ser  
 115 120 125

&lt;210&gt; 1436

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Erwinia carotovora subsp. atroseptica SCRI1043

## PhoenixTemp32470.tmp.txt

```

<400> 1436
Met Val Ser Pro His Arg Leu Leu Lys Asp Tyr Gln Gln Leu Leu Ser
1      5      10      15
Leu Ser Gln Lys Ile Leu His Leu Ala Ile Ser Gly Gln Trp Asp Thr
20      25      30
Leu Val Glu Gln Glu Ile Val Tyr Val Gln Ser Val Glu Gly Leu Val
35      40      45
Asn Thr Pro Ile Pro Asp Glu Ile Asp Ser Val Met Arg Leu His Leu
50      55      60
Arg Gln Ile Leu Gln Glu Val Met Asp Asn Glu Ala Lys Val Lys Gln
65      70      75      80
Leu Leu Gln Lys Arg Met Asp Glu Leu Ser Ser Leu Met Gly Gln Ser
85      90      95
Leu Lys Gln Lys Ser Ile Asn Ala Thr Tyr Ser Glu Phe Ala Gly Gln
100      105      110
Arg Arg Leu Leu Asp Asp Pro Leu Pro Asp Glu Thr Arg Ser
115      120      125

```

```

<210> 1437
<211> 363
<212> DNA
<213> Yersinia pseudotuberculosis IP 32953

```

```

<220>
<221> CDS
<222> (1)..(363)
<223> transl_table=11

```

```

<400> 1437
atg gaa cgt cac cag cat ctt ttg tcc gaa tat caa caa atc cta act      48
Met Glu Arg His Gln His Leu Leu Ser Glu Tyr Gln Gln Ile Leu Thr
1      5      10      15
ctc agt gag caa atg ctt atg ttg gct act gtg gaa aac tgg gat gcg      96
Leu Ser Glu Gln Met Leu Met Leu Ala Thr Val Glu Asn Trp Asp Ala
20      25      30
ctg gtt gat ctg gaa atg gct tat ctc aaa gcc gtt gaa aat aca gct      144
Leu Val Asp Leu Glu Met Ala Tyr Leu Lys Ala Val Glu Asn Thr Ala
35      40      45
aat atc act att tcc tct tgt tca tcg cca gta ttg caa gaa tta ctg      192
Asn Ile Thr Ile Ser Ser Cys Ser Ser Pro Val Leu Gln Glu Leu Leu
50      55      60
cgc caa aaa ttg aga tcc ata ttg gag aat gag ata gaa att aag cgg      240
Arg Gln Lys Leu Arg Ser Ile Leu Glu Asn Glu Ile Glu Ile Lys Arg
65      70      75      80
tta ctg caa cgt cgt tta gat aaa tta agt gaa ttg gtg ggg caa tct      288
Leu Leu Gln Arg Arg Leu Asp Lys Leu Ser Glu Leu Val Gly Gln Ser
85      90      95
acc cgc caa cag gcg gtt aat cgt act tat ggt cag ttc ccc gat cag      336
Thr Arg Gln Gln Ala Val Asn Arg Thr Tyr Gly Gln Phe Pro Asp Gln
100      105      110
gca ctg ctg ctg ggt gaa aca caa taa      363
Ala Leu Leu Leu Gly Glu Thr Gln
115      120

```

```

<210> 1438
<211> 120
<212> PRT
<213> Yersinia pseudotuberculosis IP 32953

```

```

<400> 1438
Met Glu Arg His Gln His Leu Leu Ser Glu Tyr Gln Gln Ile Leu Thr
1      5      10      15
Leu Ser Glu Gln Met Leu Met Leu Ala Thr Val Glu Asn Trp Asp Ala
20      25      30
Leu Val Asp Leu Glu Met Ala Tyr Leu Lys Ala Val Glu Asn Thr Ala
35      40      45
Asn Ile Thr Ile Ser Ser Cys Ser Ser Pro Val Leu Gln Glu Leu Leu
50      55      60

```

## PhoenixTemp32470.tmp.txt

Arg Gln Lys Leu Arg Ser Ile Leu Glu Asn Glu Ile Glu Ile Lys Arg  
 65 70 75 80  
 Leu Leu Gln Arg Arg Leu Asp Lys Leu Ser Glu Leu Val Gly Gln Ser  
 85 90 95  
 Thr Arg Gln Gln Ala Val Asn Arg Thr Tyr Gly Gln Phe Pro Asp Gln  
 100 105 110  
 Ala Leu Leu Leu Gly Glu Thr Gln  
 115 120

&lt;210&gt; 1439

&lt;211&gt; 366

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli B

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(366)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1439

atg aac cac gca ccg cat ttg tat ttc gcc tgg caa caa ctc gtc gaa	48
Met Asn His Ala Pro His Leu Tyr Phe Ala Trp Gln Gln Leu Val Glu	
1 5 10 15	
aaa agc cag ctc atg tta cgc ctg gca acg gaa gaa caa tgg gac gaa	96
Lys Ser Gln Leu Met Leu Arg Leu Ala Thr Glu Glu Gln Trp Asp Glu	
20 25 30	
ctc atc gcc agc gaa atg gcg tat gtg aat gcg gtg cag gag att gca	144
Leu Ile Ala Ser Glu Met Ala Tyr Val Asn Ala Val Gln Glu Ile Ala	
35 40 45	
cat ctg act gaa gag att gac ccg tcc acc acg atg cag gag cag ctc	192
His Leu Thr Glu Glu Ile Asp Pro Ser Thr Thr Met Gln Glu Gln Leu	
50 55 60	
cgc ccg atg ctg cgc ctg att ctc gac aac gaa agc aag gta aag cag	240
Arg Pro Met Leu Arg Leu Ile Leu Asp Asn Glu Ser Lys Val Lys Gln	
65 70 75 80	
tta tta cag att cgg atg gat gaa ctg gcg aaa ctg gtc ggt cag tca	288
Leu Leu Gln Ile Arg Met Asp Glu Leu Ala Lys Leu Val Gly Gln Ser	
85 90 95	
tcg gtg caa aaa tcg gtg tta agt gcc tat ggc gat cag ggc ggc ttt	336
Ser Val Gln Lys Ser Val Leu Ser Ala Tyr Gly Asp Gln Gly Gly Phe	
100 105 110	
gtg ctg gct ccg caa gat aac ttc tcg tga	366
Val Leu Ala Pro Gln Asp Asn Phe Ser	
115 120	

&lt;210&gt; 1440

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli B

&lt;400&gt; 1440

Met Asn His Ala Pro His Leu Tyr Phe Ala Trp Gln Gln Leu Val Glu	
1 5 10 15	
Lys Ser Gln Leu Met Leu Arg Leu Ala Thr Glu Glu Gln Trp Asp Glu	
20 25 30	
Leu Ile Ala Ser Glu Met Ala Tyr Val Asn Ala Val Gln Ile Ala	
35 40 45	
His Leu Thr Glu Glu Ile Asp Pro Ser Thr Thr Met Gln Glu Gln Leu	
50 55 60	
Arg Pro Met Leu Arg Leu Ile Leu Asp Asn Glu Ser Lys Val Lys Gln	
65 70 75 80	
Leu Leu Gln Ile Arg Met Asp Glu Leu Ala Lys Leu Val Gly Gln Ser	
85 90 95	
Ser Val Gln Lys Ser Val Leu Ser Ala Tyr Gly Asp Gln Gly Gly Phe	
100 105 110	
Val Leu Ala Pro Gln Asp Asn Phe Ser	
115 120	

&lt;210&gt; 1441

<211> 363  
 <212> DNA  
 <213> *Erwinia chrysanthemi*

<220>  
 <221> CDS  
 <222> (1)..(363)  
 <223> transl\_table=11

<400> 1441  
 atg gaa aac ctc tct cca tta cta att gag tat cag ggg tta ctc aaa 48  
 Met Glu Asn Leu Ser Pro Leu Leu Ile Glu Tyr Gln Gly Leu Leu Lys  
 1 5 10 15  
 ctc atc cga aat atc aag gcc atg gcg ctt aac gga tta tgg gat gat 96  
 Leu Ile Arg Asn Ile Lys Ala Met Ala Leu Asn Gly Leu Trp Asp Asp  
 20 25 30  
 gtt gtt gaa cag gag ata gtt tat atc cag tca ata gag aga atc agc 144  
 Val Val Glu Gln Glu Ile Val Tyr Ile Gln Ser Ile Glu Arg Ile Ser  
 35 40 45  
 cag att aac gtt cca gcc aat att ccc agc acg gtg caa tta cag ttc 192  
 Gln Ile Asn Val Pro Ala Asn Ile Pro Ser Thr Val Gln Leu Gln Phe  
 50 55 60  
 cgg cag ctt ctt cag gac ata ctg gat acg gaa tca cag gtg aaa gag 240  
 Arg Gln Leu Leu Gln Asp Ile Leu Asp Thr Glu Ser Gln Val Lys Glu  
 65 70 75 80  
 ctg ctg cag aac aga atg cag gag ctg gcg gta ctc atc cag caa tca 288  
 Leu Leu Gln Asn Arg Met Gln Glu Leu Ala Val Leu Ile Gln Gln Ser  
 85 90 95  
 caa aat caa aaa tcg att aac aac act tat gcc gag ttt tcc gac gat 336  
 Gln Asn Gln Lys Ser Ile Asn Asn Thr Tyr Ala Glu Phe Ser Asp Asp  
 100 105 110  
 att ctc ccg gga aaa ccg cag ccc tga 363  
 Ile Leu Pro Gly Lys Pro Gln Pro  
 115 120

<210> 1442  
 <211> 120  
 <212> PRT  
 <213> *Erwinia chrysanthemi*

<400> 1442  
 Met Glu Asn Leu Ser Pro Leu Leu Ile Glu Tyr Gln Gly Leu Leu Lys  
 1 5 10 15  
 Leu Ile Arg Asn Ile Lys Ala Met Ala Leu Asn Gly Leu Trp Asp Asp  
 20 25 30  
 Val Val Glu Gln Glu Ile Val Tyr Ile Gln Ser Ile Glu Arg Ile Ser  
 35 40 45  
 Gln Ile Asn Val Pro Ala Asn Ile Pro Ser Thr Val Gln Leu Gln Phe  
 50 55 60  
 Arg Gln Leu Leu Gln Asp Ile Leu Asp Thr Glu Ser Gln Val Lys Glu  
 65 70 75 80  
 Leu Leu Gln Asn Arg Met Gln Glu Leu Ala Val Leu Ile Gln Gln Ser  
 85 90 95  
 Gln Asn Gln Lys Ser Ile Asn Asn Thr Tyr Ala Glu Phe Ser Asp Asp  
 100 105 110  
 Ile Leu Pro Gly Lys Pro Gln Pro  
 115 120

<210> 1443  
 <211> 25  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 1443  
 atgaaccatg caccgcattt atatt

<210> 1444  
<211> 25  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 1444  
ttaaaagagg ttatcctgcg gagcc

25

<210> 1445  
<211> 106  
<212> PRT  
<213> Artificial sequence

<220>  
<223> consensus sequence

<220>  
<221> Variant  
<222> (2)..(6)  
<223> Xaa in position 2 to 6 is any amino acid

<220>  
<221> Variant  
<222> (8)..(11)  
<223> Xaa in position 8 to 11 is any amino acid

<220>  
<221> Variant  
<222> (13)..(17)  
<223> Xaa in position 13 to 17 is any amino acid

<220>  
<221> Variant  
<222> (19)..(21)  
<223> Xaa in position 19 to 21 is any amino acid

<220>  
<221> Variant  
<222> (23)..(23)  
<223> Xaa in position 23 is any amino acid

<220>  
<221> Variant  
<222> (26)..(29)  
<223> Xaa in position 26 to 29 is any amino acid

<220>  
<221> Variant  
<222> (31)..(32)  
<223> Xaa in position 31 to 32 is any amino acid

<220>  
<221> Variant  
<222> (34)..(36)  
<223> Xaa in position 34 to 36 is any amino acid

<220>  
<221> Variant  
<222> (38)..(39)  
<223> Xaa in position 38 to 39 is any amino acid

<220>  
<221> Variant  
<222> (41)..(43)  
<223> Xaa in position 41 to 43 is any amino acid

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<220>
<221> Variant
<222> (45)..(60)
<223> Xaa in position 45 to 60 is any amino acid

<220>
<221> Variant
<222> (62)..(64)
<223> Xaa in position 62 to 64 is any amino acid

<220>
<221> Variant
<222> (66)..(67)
<223> Xaa in position 66 to 67 is any amino acid

<220>
<221> Variant
<222> (69)..(70)
<223> Xaa in position 69 to 70 is any amino acid

<220>
<221> Variant
<222> (73)..(73)
<223> Xaa in position 73 is any amino acid

<220>
<221> Variant
<222> (76)..(78)
<223> Xaa in position 76 to 78 is any amino acid

<220>
<221> Variant
<222> (80)..(80)
<223> Xaa in position 80 is any amino acid

<220>
<221> Variant
<222> (84)..(84)
<223> Xaa in position 84 is any amino acid

<220>
<221> Variant
<222> (86)..(86)
<223> Xaa in position 86 is any amino acid

<220>
<221> Variant
<222> (88)..(88)
<223> Xaa in position 88 is any amino acid

<220>
<221> Variant
<222> (90)..(91)
<223> Xaa in position 90 to 91 is any amino acid

<220>
<221> Variant
<222> (93)..(94)
<223> Xaa in position 93 to 94 is any amino acid

<220>
<221> Variant
<222> (97)..(98)
<223> Xaa in position 97 to 98 is any amino acid

<220>
<221> Variant
<222> (100)..(105)

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<223> Xaa in position 100 to 105 is any amino acid

<400> 1445

```

Met Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa
1      5      10      15
Xaa Ser Xaa Xaa Xaa Leu Xaa Leu Ala Xaa Xaa Xaa Xaa Trp Xaa Xaa
20      25      30
Leu Xaa Xaa Xaa Glu Xaa Xaa Tyr Xaa Xaa Xaa Val Xaa Xaa Xaa
35      40      45
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa
50      55      60
Arg Xaa Xaa Leu Xaa Xaa Ile Leu Xaa Asn Glu Xaa Xaa Xaa Lys Xaa
65      70      75
Leu Leu Gln Xaa Arg Xaa Asp Xaa Leu Xaa Xaa Leu Xaa Xaa Gln Ser
85      90      95
Xaa Xaa Gln Xaa Xaa Xaa Xaa Xaa Xaa Tyr
100      105

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<210> 1446

<211> 57

<212> PRT

<213> Artificial sequence

<220>

<223> protein pattern

<220>

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<222> (2)..(4)

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<220>

<221> Variant

<222> (6)..(7)

<223> Xaa in position 6 to 7 is any amino acid

<220>

<221> Variant

<222> (9)..(9)

<223> Xaa in position 9 is Leu or Val

<220>

<221> Variant

<222> (10)..(10)

<223> Xaa in position 10 is any amino acid

<220>

<221> Variant

<222> (11)..(11)

<223> Xaa in position 11 is Ala or Ser

<220>

<221> Variant

<222> (13)..(13)

<223> Xaa in position 13 is Glu or Gln

<220>

<221> Variant

<222> (14)..(15)

<223> Xaa in position 14 to 15 is any amino acid

<220>

<221> Variant

<222> (16)..(16)

<223> Xaa in position 16 is Ala, Ser or Val

<220>

<221> Variant

<222> (17)..(18)  
<223> Xaa in position 17 to 18 is any amino acid

<220>  
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<222> (19)..(19)  
<223> Xaa in position 19 is Pro, Ser or Thr

<220>  
<221> Variant  
<222> (20)..(20)  
<223> Xaa in position 20 is any amino acid

<220>  
<221> Variant  
<222> (21)..(21)  
<223> Xaa in position 21 is Glu, Pro or Ser

<220>  
<221> Variant  
<222> (22)..(24)  
<223> Xaa in position 22 to 24 is any amino acid

<220>  
<221> Variant  
<222> (25)..(25)  
<223> Xaa in position 25 is Asp or Ser

<220>  
<221> Variant  
<222> (26)..(26)  
<223> Xaa in position 26 is any amino acid

<220>  
<221> Variant  
<222> (27)..(27)  
<223> Xaa in position 27 is Ser, Thr or Val

<220>  
<221> Variant  
<222> (28)..(28)  
<223> Xaa in position 28 is Leu or Met

<220>  
<221> Variant  
<222> (29)..(29)  
<223> Xaa in position 29 is Gln or Arg

<220>  
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<222> (30)..(31)  
<223> Xaa in position 30 to 31 is any amino acid

<220>  
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<222> (32)..(32)  
<223> Xaa in position 32 is Leu or Met

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<222> (33)..(33)  
<223> Xaa in position 33 is any amino acid

<220>  
<221> Variant  
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<223> Xaa in position 34 is Asn, Pro or Gln

<220>

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<222> (35)..(35)
<223> Xaa in position 35 is any amino acid

<220>
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<222> (37)..(38)
<223> Xaa in position 37 to 38 is any amino acid

<220>
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<222> (39)..(39)
<223> Xaa in position 39 is Ile or Val

<220>
<221> Variant
<222> (40)..(40)
<223> Xaa in position 40 is Leu or Met

<220>
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<222> (41)..(41)
<223> Xaa in position 41 is Asp or Glu

<220>
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<222> (44)..(44)
<223> Xaa in position 44 is any amino acid

<220>
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<222> (45)..(45)
<223> Xaa in position 45 is Glu or Lys

<220>
<221> Variant
<222> (46)..(46)
<223> Xaa in position 46 is Ile or Val

<220>
<221> Variant
<222> (48)..(48)
<223> Xaa in position 48 is any amino acid

<220>
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<222> (52)..(52)
<223> Xaa in position 52 is any amino acid

<220>
<221> Variant
<222> (54)..(54)
<223> Xaa in position 54 is Leu or Met

<220>
<221> Variant
<222> (56)..(56)
<223> Xaa in position 56 is Glu or Lys

<400> 1446
Leu Xaa Xaa Xaa Glu Xaa Xaa Tyr Xaa Xaa Xaa Val Xaa Xaa Xaa Xaa
1      5      10      15
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20      25      30
Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Asn Glu Xaa Xaa Xaa Lys Xaa
35      40      45
Leu Leu Gln Xaa Arg Xaa Asp Xaa Leu
50      55

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<210> 1447  
<211> 22  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein pattern

<220>  
<221> Variant  
<222> (2)..(2)  
<223> Xaa in position 2 is Ala, Ile or Val

<220>  
<221> Variant  
<222> (3)..(3)  
<223> Xaa in position 3 is any amino acid

<220>  
<221> Variant  
<222> (5)..(5)  
<223> Xaa in position 5 is Ala, Asp or Ser

<220>  
<221> Variant  
<222> (6)..(6)  
<223> Xaa in position 6 is Gln, Ser or Thr

<220>  
<221> Variant  
<222> (7)..(7)  
<223> Xaa in position 7 is any amino acid

<220>  
<221> Variant  
<222> (9)..(10)  
<223> Xaa in position 9 to 10 is any amino acid

<220>  
<221> Variant  
<222> (11)..(11)  
<223> Xaa in position 11 is Ile, Leu or Val

<220>  
<221> Variant  
<222> (12)..(12)  
<223> Xaa in position 12 is any amino acid

<220>  
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<222> (13)..(13)  
<223> Xaa in position 13 is Asp, Asn, Arg or Ser

<220>  
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<222> (14)..(14)  
<223> Xaa in position 14 is Ala, Ser or Thr

<220>  
<221> Variant  
<222> (16)..(16)  
<223> Xaa in position 16 is Ala or Gly

<220>  
<221> Variant  
<222> (17)..(17)  
<223> Xaa in position 17 is Asp, Glu or Gln

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<220>
<221> Variant
<222> (18)..(18)
<223> Xaa in position 18 is any amino acid

<220>
<221> Variant
<222> (19)..(19)
<223> Xaa in position 19 is Gly, Pro or Ser

<220>
<221> Variant
<222> (20)..(20)
<223> Xaa in position 20 is Asp, Gly or Val

<220>
<221> Variant
<222> (21)..(21)
<223> Xaa in position 21 is any amino acid

<220>
<221> Variant
<222> (22)..(22)
<223> Xaa in position 22 is Ala, Ile, Pro or Val

<400> 1447
Leu Xaa Xaa Gln Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa Xaa Tyr Xaa
1      5      10      15
Xaa Xaa Xaa Xaa Xaa
      20

<210> 1448
<211> 29
<212> PRT
<213> Artificial sequence

<220>
<223> protein pattern

<220>
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<223> Xaa in position 2 to 5 is any amino acid

<220>
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<222> (6)..(6)
<223> Xaa in position 6 is Asp, His or Arg

<220>
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<222> (8)..(9)
<223> Xaa in position 8 to 9 is any amino acid

<220>
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<222> (10)..(10)
<223> Xaa in position 10 is Ala, Asp or Glu

<220>
<221> Variant
<222> (11)..(11)
<223> Xaa in position 11 is Trp or Tyr

<220>
<221> Variant
<222> (13)..(13)
<223> Xaa in position 13 is Gln or Arg

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<220>
<221> Variant
<222> (14)..(14)
<223> Xaa in position 14 is Ile or Leu

<220>
<221> Variant
<222> (15)..(15)
<223> Xaa in position 15 is Leu or Val

<220>
<221> Variant
<222> (16)..(16)
<223> Xaa in position 16 is Glu, Ser or Thr

<220>
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<222> (17)..(17)
<223> Xaa in position 17 is any amino acid

<220>
<221> Variant
<222> (19)..(19)
<223> Xaa in position 19 is any or no amino acid

<220>
<221> Variant
<222> (21)..(22)
<223> Xaa in position 21 to 22 is any or no amino acid

<220>
<221> Variant
<222> (24)..(24)
<223> Xaa in position 24 is any amino acid

<220>
<221> Variant
<222> (27)..(28)
<223> Xaa in position 27 to 28 is any amino acid

<220>
<221> Variant
<222> (29)..(29)
<223> Xaa in position 29 is Glu or Gly

<400> 1448
Met Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa
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Xaa Ser Xaa Gln Xaa Xaa Leu Xaa Leu Ala Xaa Xaa Xaa
          20          25

<210> 1449
<211> 858
<212> DNA
<213> ESCHERICHIA COLI

<220>
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<222> (1)..(858)
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1          5          10          15
aac aag gag agc att aaa atg ggt aaa ctc acg ggc aag aca gca ctg      96
Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu
          20          25          30

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## PhoenixTemp32470.tmp.txt

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att acg ggc gca ttg cag gga att ggc gaa gga att gcc aga act ttt 144
ile Thr Gly 35 Ala Leu Gln Gly 40 Ile Gly Glu Gly Ile 45 Ala Arg Thr Phe

gca cgt cat ggc gcg aac cta atc ttg ctg gat atc tcc cct gag atc 192
Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile

gaa aag ctg gcg gac gaa ctg tgt ggt cgt ggt cat cgc tgt acg gcg 240
Glu Lys Leu Ala Asp Glu 70 Leu Cys Gly Arg 75 His Arg Cys Thr Ala 80
65

gtt gtc gcc gat gtg cgt gac ccg gcg tcg gta gcc gca gct atc aaa 288
Val Val Ala Asp Val 85 Arg Asp Pro Ala Ser 90 Val Ala Ala Ala Ile Lys 95

cgc gcg aag gaa aaa gaa ggg cgc att gat atc ctg gtg aat aac gca 336
Arg Ala Lys 100 Glu Lys Glu Gly Arg Ile 105 Asp Ile Leu Val 110 Asn Asn Ala

ggc gtt tgt cgt ctg ggc agt ttc ctc gat atg agc gat gac gat cgc 384
Gly Val Cys 115 Arg Leu Gly Ser Phe 120 Leu Asp Met Ser Asp 125 Asp Asp Arg

gat ttc cat att gac atc aat att aaa ggc gta tgg aac gtc acg aag 432
Asp Phe 130 His Ile Asp Ile Asn 135 Ile Lys Gly Val 140 Trp Asn Val Thr Lys

gcg gtg ctg ccg gag atg att gcc gcg aaa gat ggt cgc att gtg atg 480
Ala Val Leu Pro Glu Met 150 Ile Ala Arg Lys Asp Gly Arg Ile Val Met 160
145

atg tct tca gtc act ggt gat atg gtg gcc gat cct ggc gaa acg gcg 528
Met Ser Ser Val Thr 165 Gly Asp Met Val 170 Ala Asp Pro Gly Glu Thr Ala 175

tac gcc tta acg aaa gcg gcg att gtt ggc ctg aca aaa tcg ctg gcg 576
Tyr Ala Leu Thr 180 Lys Ala Ala Ile Val 185 Gly Leu Thr Lys 190 Ser Leu Ala

gtg gag tac gcg cag tct ggt att cgc gtt aac gcc att tgc ccg gga 624
Val Glu Tyr 195 Ala Gln Ser Gly Ile 200 Arg Val Asn Ala Ile Cys Pro Gly 205

tac gtg cgc aca cca atg gcg gaa agc att gcc cgc cag tcg aac ccg 672
Tyr Val Arg Thr Pro Met Ala 215 Glu Ser Ile Ala Arg Gln Ser Asn Pro 220
210

gaa gat cca gag tcg gtg ctg act gaa atg gcg aaa gca atc ccg atg 720
Glu Asp Pro Glu Ser Val 230 Leu Thr Glu Met Ala Lys Ala Ile Pro Met 240
225

cgt cgc ctc gcc gat ccg ctg gaa gtc ggc gaa ctg gcg gcc ttc ctc 768
Arg Arg Leu Ala Asp 245 Pro Leu Glu Val 250 Gly Glu Leu Ala Ala Phe Leu 255

gca tcg gat gaa tcc agc tat tta acc ggt aca cag aat gtg att gat 816
Ala Ser Asp Glu Ser Ser Tyr Leu Thr 265 Gly Thr Gln Asn Val 270 Ile Ile Asp 275

ggc ggc agc aca ctg ccg gag acg gtt agc gtc ggt atc taa 858
Gly Gly Ser 275 Thr Leu Pro Glu Thr 280 Val Ser Val Gly Ile 285

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&lt;210&gt; 1450

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; ESCHERICHIA COLI

&lt;400&gt; 1450

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Met Phe Ile Leu Tyr Phe Gln Arg Glu Trp Ser Val Thr Leu Cys Ile
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Asn Lys Glu Ser Ile Lys Met Gly Lys 20 Thr Gly Lys Thr Ala Leu
25 30
Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe
35 40 45
Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile
50 55 60
Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala
65 70 75 80
Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys
85 90 95
Arg Ala Lys Glu Lys Glu Gly Arg Ile 100 Asp Ile Leu Val Asn Asn Ala
105 110

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## PhoenixTemp32470.tmp.txt

Gly Val Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Asp Asp Arg  
 115 120 125  
 Asp Phe His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys  
 130 135 140  
 Ala Val Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met  
 145 150 155 160  
 Met Ser Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala  
 165 170 175  
 Tyr Ala Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala  
 180 185 190  
 Val Glu Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly  
 195 200 205  
 Tyr Val Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro  
 210 215 220  
 Glu Asp Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met  
 225 230 235 240  
 Arg Arg Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu  
 245 250 255  
 Ala Ser Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp  
 260 265 270  
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<210> 1451  
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 <213> Unknown

<220>  
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<220>  
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 1 5 10 15  
 gga att ggc gaa gga att gcc aga act ttt gca cgt cat ggc gcg aac 96  
 Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe Ala Arg His Gly Ala Asn  
 20 25 30  
 cta atc ttg ctg gat atc tcc cct gag atc gaa aag cta gcg gac gaa 144  
 Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile Glu Lys Leu Ala Asp Glu  
 35 40 45  
 ctg tgt ggt cgt ggt cat cgc tgt acg gcg gtt gtc gcc gat gtg cgt 192  
 Leu Cys Gly Arg Gly His Arg Cys Thr Ala Val Val Ala Asp Val Arg  
 50 55 60  
 gac ccg gcg tcg gta gcc gca gct atc aaa cgc gcg aag gaa aaa gaa 240  
 Asp Pro Ala Ser Val Ala Ala Ala Ile Lys Arg Ala Lys Glu Lys Glu  
 65 70 75 80  
 ggg cgc att gat atc ctg gtg aat aac gca ggc gtt tgt cgt ctg ggc 288  
 Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Val Cys Arg Leu Gly  
 85 90 95  
 agt ttc ctc gat atg agc gat gaa gat cgc gat ttc cat att gat atc 336  
 Ser Phe Leu Asp Met Ser Asp Glu Asp Arg Asp Phe His Ile Asp Ile  
 100 105 110  
 aat att aaa ggc gta tgg aac gtc acg aag gcg gtg ctg ccg gag atg 384  
 Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val Leu Pro Glu Met  
 115 120 125  
 att gcg cgc aaa gat ggt cgc att gtg atg atg tct tca gtc act ggt 432  
 Ile Ala Arg Lys Asp Gly Arg Ile Val Met Met Ser Val Thr Gly  
 130 135 140  
 gat atg gtg gcc gat cct ggc gaa acg gcg tat gcc tta acg aaa gcg 480  
 Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala Leu Thr Lys Ala  
 145 150 155 160  
 gcg att gtt ggc ctg act aaa tcg ctg gcg gtg gag tac gcg caa tcc 528  
 Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu Tyr Ala Gln Ser  
 165 170 175



## PhoenixTemp32470.tmp.txt

ggt att cgc gtt aac gcc atc tgc ccg gga tac gtc cgc acg cca atg	576
Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val Arg Thr Pro Met	
180 185 190	
gcg gaa agc att gcc cgc cag tcg aac ccg gaa gat cca gaa tcg gtg	624
Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp Pro Glu Ser Val	
195 200 205	
ctg act gaa atg gca aaa gca atc ccg ctg tgt cgc ctc gcc gat ccg	672
Leu Thr Glu Met Ala Lys Ala Ile Pro Leu Cys Arg Leu Ala Asp Pro	
210 215 220	
ctg gaa gtc ggc gaa ctg gcg gcc ttc ctc gca tcg gat gaa tcc agc	720
Leu Glu Val Gly Glu Leu Ala Ala Phe Leu Ala Ser Asp Glu Ser Ser	
225 230 235 240	
tat tta acc ggt aca cag aat gtg att gat ggc ggc agc aca ctg ccg	768
Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp Gly Gly Ser Thr Leu Pro	
245 250 255	
gag acg gtt agc gtc ggt atc tga	792
Glu Thr Val Ser Val Gly Ile	
260	

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 <211> 263  
 <212> PRT  
 <213> Unknown

<220>  
 <223> Unidentified

<400> 1452

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Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe Ala Arg His Gly Ala Asn	20 25 30
Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile Glu Lys Leu Ala Asp Glu	35 40 45
Leu Cys Gly Arg Gly His Arg Cys Thr Ala Val Val Ala Asp Val Arg	50 55 60
Asp Pro Ala Ser Val Ala Ala Ala Ile Lys Arg Ala Lys Glu Lys Glu	65 70 75 80
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Val Cys Arg Leu Gly	85 90 95
Ser Phe Leu Asp Met Ser Asp Glu Asp Arg Asp Phe His Ile Asp Ile	100 105 110
Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val Leu Pro Glu Met	115 120 125
Ile Ala Arg Lys Asp Gly Arg Ile Val Met Met Ser Val Thr Gly	130 135 140
Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala Leu Thr Lys Ala	145 150 155 160
Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu Tyr Ala Gln Ser	165 170 175
Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val Arg Thr Pro Met	180 185 190
Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp Pro Glu Ser Val	195 200 205
Leu Thr Glu Met Ala Lys Ala Ile Pro Leu Cys Arg Leu Ala Asp Pro	210 215 220
Leu Glu Val Gly Glu Leu Ala Ala Phe Leu Ala Ser Asp Glu Ser Ser	225 230 235 240
Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp Gly Gly Ser Thr Leu Pro	245 250 255
Glu Thr Val Ser Val Gly Ile	260

<210> 1453  
 <211> 846  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>

## PhoenixTemp32470.tmp.txt

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&lt;222&gt; (1)..(846)

&lt;400&gt; 1453

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1				5				10						15		
gaa	agc	aag	gtt	gcg	ctg	gtt	acc	ggg	ggg	gct	tca	ggg	att	ggg	gaa	96
Glu	Ser	Lys	Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			
gca	att	gtt	cg	ctc	ttt	aga	gag	cat	ggg	gca	aag	gta	tgt	att	gca	144
Ala	Ile	Val	Arg	Leu	Phe	Arg	Glu	His	Gly	Ala	Lys	Val	Cys	Ile	Ala	
			35				40					45				
gat	atc	caa	gat	gaa	gca	ggg	cag	aag	ctc	cgg	gac	tcc	ctt	gga	ggg	192
Asp	Ile	Gln	Asp	Glu	Ala	Gly	Gln	Lys	Leu	Arg	Asp	Ser	Leu	Gly	Gly	
			50			55					60					
gac	caa	gat	gtc	tta	ttt	gtc	cac	tgc	gat	gtt	tgc	gtg	gaa	gag	gat	240
Asp	Gln	Asp	Val	Leu	Phe	Val	His	Cys	Asp	Val	Ser	Val	Glu	Glu	Asp	
					70					75					80	
gta	gcc	cga	gcg	gtc	gat	gca	aca	gct	gaa	aag	ttt	ggg	act	ctt	gac	288
Val	Ala	Arg	Ala	Val	Asp	Ala	Thr	Ala	Glu	Lys	Phe	Gly	Thr	Leu	Asp	
				85					90					95		
atc	atg	gtc	aac	aat	gct	ggc	ttt	aca	ggc	cag	aaa	atc	aca	gat	atc	336
Ile	Met	Val	Asn	Asn	Ala	Gly	Phe	Thr	Gly	Gln	Lys	Ile	Thr	Asp	Ile	
			100				105						110			
cga	aac	atc	gac	ttt	tct	gaa	gtc	agg	aag	gta	atc	gac	atc	aat	tta	384
Arg	Asn	Ile	Asp	Phe	Ser	Glu	Val	Arg	Lys	Val	Ile	Asp	Ile	Asn	Leu	
							120					125				
gtt	ggg	gta	ttc	cac	ggg	atg	aaa	cac	gca	gcg	cg	atc	atg	atc	ccc	432
Val	Gly	Val	Phe	His	Gly	Met	Lys	His	Ala	Ala	Arg	Ile	Met	Ile	Pro	
			130			135					140					
aat	aag	aag	ggg	tcc	atc	atc	tca	ttg	gga	agt	gtt	tct	agt	gtc	att	480
Asn	Lys	Lys	Gly	Ser	Ile	Ile	Ser	Leu	Gly	Ser	Val	Ser	Ser	Val	Ile	
				150					155						160	
gga	ggg	ttg	gga	cct	cat	tca	tac	aca	gca	acc	aag	cat	gct	gtg	gtg	528
Gly	Gly	Leu	Gly	Pro	His	Ser	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Val	
				165					170					175		
ggg	cta	acc	aag	aat	gta	gct	ggg	gaa	ttg	ggg	aag	cat	ggg	ata	cg	576
Gly	Leu	Thr	Lys	Asn	Val	Ala	Gly	Glu	Leu	Gly	Lys	His	Gly	Ile	Arg	
			180					185					190			
gtg	aac	tgc	gta	tct	ccc	tat	gca	gtg	ccc	acg	gct	ctc	tcc	atg	ccg	624
Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Pro	Thr	Ala	Leu	Ser	Met	Pro	
							200					205				
tat	ctg	ccc	cag	ggc	gag	cg	aag	gat	gat	gcc	ctg	aaa	gac	ttt	ttc	672
Tyr	Leu	Pro	Gln	Gly	Glu	Arg	Lys	Asp	Asp	Ala	Leu	Lys	Asp	Phe	Phe	
						215					220					
gcc	ttt	gtt	ggg	ggg	gaa	gca	aac	ctg	aaa	ggg	gtg	gat	ctg	cta	cct	720
Ala	Phe	Val	Gly	Gly	Glu	Ala	Asn	Leu	Lys	Gly	Val	Asp	Leu	Leu	Pro	
					230				235						240	
aag	gat	gtt	gct	caa	gca	gtg	ctc	tac	ttg	gca	agc	gat	gaa	gcg	agg	768
Lys	Asp	Val	Ala	Gln	Ala	Val	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Arg	
				245					250					255		
tac	atc	agc	gcg	ctc	aac	ctc	atg	gtg	gat	ggg	ggc	ttt	acc	tct	gtg	816
Tyr	Ile	Ser	Ala	Leu	Asn	Leu	Met	Val	Asp	Gly	Gly	Phe	Thr	Ser	Val	
				260			265						270			
aat	cac	aat	ttg	aga	gca	ttt	gaa	gat	taa							846
Asn	His	Asn	Leu	Arg	Ala	Phe	Glu	Asp								
			275				280									

&lt;210&gt; 1454

&lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1454

Met	Ser	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ser	Ser	Pro	Ala	Pro	Arg	Leu	
1				5					10					15		
Glu	Ser	Lys	Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			

## PhoenixTemp32470.tmp.txt

Ala Ile Val Arg Leu Phe Arg Glu His Gly Ala Lys Val Cys Ile Ala  
 35 40 45  
 Asp Ile Gln Asp Glu Ala Gly Gln Lys Leu Arg Asp Ser Leu Gly Gly  
 50 55 60  
 Asp Gln Asp Val Leu Phe Val His Cys Asp Val Ser Val Glu Glu Asp  
 65 70 75 80  
 Val Ala Arg Ala Val Asp Ala Thr Ala Glu Lys Phe Gly Thr Leu Asp  
 85 90 95  
 Ile Met Val Asn Asn Ala Gly Phe Thr Gly Gln Lys Ile Thr Asp Ile  
 100 105 110  
 Arg Asn Ile Asp Phe Ser Glu Val Arg Lys Val Ile Asp Ile Asn Leu  
 115 120 125  
 Val Gly Val Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro  
 130 135 140  
 Asn Lys Lys Gly Ser Ile Ile Ser Leu Gly Ser Val Ser Ser Val Ile  
 145 150 155 160  
 Gly Gly Leu Gly Pro His Ser Tyr Thr Ala Thr Lys His Ala Val Val  
 165 170 175  
 Gly Leu Thr Lys Asn Val Ala Gly Glu Leu Gly Lys His Gly Ile Arg  
 180 185 190  
 Val Asn Cys Val Ser Pro Tyr Ala Val Pro Thr Ala Leu Ser Met Pro  
 195 200 205  
 Tyr Leu Pro Gln Gly Glu Arg Lys Asp Asp Ala Leu Lys Asp Phe Phe  
 210 215 220  
 Ala Phe Val Gly Gly Glu Ala Asn Leu Lys Gly Val Asp Leu Leu Pro  
 225 230 235 240  
 Lys Asp Val Ala Gln Ala Val Leu Tyr Leu Ala Ser Asp Glu Ala Arg  
 245 250 255  
 Tyr Ile Ser Ala Leu Asn Leu Met Val Asp Gly Gly Phe Thr Ser Val  
 260 265 270  
 Asn His Asn Leu Arg Ala Phe Glu Asp  
 275 280

&lt;210&gt; 1455

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 1455

atg gca ggc agc tcc cat gtt tct gct gat gca agg aag ctg gtg ggc	48
Met Ala Gly Ser Ser His Val Ser Ala Asp Ala Arg Lys Leu Val Gly	
1 5 10 15	
aag gtg gcg gtg atc acc ggc ggc gcg agc ggc atc ggc gcg tgc acg	96
Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Cys Thr	
20 25 30	
gcg cgg ctg ttc gtg aag cac ggc gcc cgc gtc gtg gtc gcc gac atc	144
Ala Arg Leu Phe Val Lys His Gly Ala Arg Val Val Val Ala Asp Ile	
35 40 45	
cag gac gag ctg gga gct agc ctc gtc gcg gag ctc ggc ccg gac gcc	192
Gln Asp Glu Leu Gly Ala Ser Leu Val Ala Glu Leu Gly Pro Asp Ala	
50 55 60	
tcc agc tac gtg cac tgc gac gtc acg aac gag ggc gac gtc gcc gcc	240
Ser Ser Tyr Val His Cys Asp Val Thr Asn Glu Gly Asp Val Ala Ala	
65 70 75 80	
gcg gtc gac cac gcc gtc gcc acg ttc ggg aag ctc gac gtc atg ttc	288
Ala Val Asp His Ala Val Ala Thr Phe Gly Lys Leu Asp Val Met Phe	
85 90 95	
aac aac gcc ggc gtc acc ggc ccg ccg tgc ttc agg atc acc gag agc	336
Asn Asn Ala Gly Val Thr Gly Pro Pro Cys Phe Arg Ile Thr Glu Ser	
100 105 110	
acc aag gag gac ttc gag cgc gtg ctg gcc gtg aac ctg atc ggc ccg	384
Thr Lys Glu Asp Phe Glu Arg Val Leu Ala Val Asn Leu Ile Gly Pro	
115 120 125	
ttc ctc ggc acc aag cac gcg gcg ccg gtg atg gcg ccg gcg cgc cgt	432
Phe Leu Gly Thr Lys His Ala Ala Arg Val Met Ala Pro Ala Arg Arg	

## PhoenixTemp32470.tmp.txt

130	135	140		
ggc agc atc atc tcg acg ggc agc ctg tcg tcg gtg tcc ggc acg	480			
Gly Ser Ile Ile Ser Thr Ala Ser Leu Ser Ser Val Ser Gly Thr				
145	150	155	160	
gcg tcg cac gcg tac acg acg tcg aag cgc gcc ctg gtg ggg ttc acg	528			
Ala Ser His Ala Tyr Thr Thr Ser Lys Arg Ala Leu Val Gly Phe Thr				
165	170	175		
gag aac gcg gcc ggc gag ttg ggc cgc cac ggg atc cgc gtc aac tgc	576			
Glu Asn Ala Ala Gly Glu Leu Gly Arg His Gly Ile Arg Val Asn Cys				
180	185	190		
gtt tcc ccc gcc gcg gtc gcc acg ccg ctg gct agg gct gcc atg ggt	624			
Val Ser Pro Ala Ala Val Ala Thr Pro Leu Ala Arg Ala Ala Met Gly				
195	200	205		
atg gac atg gac gac gag acc att gag gcg atc atg gag aag tcg gcg	672			
Met Asp Met Asp Asp Glu Thr Ile Glu Ala Ile Met Glu Lys Ser Ala				
210	215	220		
aac cta aag ggc gtt gga ctc aag gtg gac gac atc gcc gcc gcg gcg	720			
Asn Leu Lys Gly Val Gly Leu Lys Val Asp Asp Ile Ala Ala Ala Ala				
225	230	235	240	
ctg ttc ctc gcc agc gac gac ggg cgc tac gtg agc ggc cag aac ctg	768			
Leu Phe Leu Ala Ser Asp Asp Gly Arg Tyr Val Ser Gly Gln Asn Leu				
245	250	255		
cgc gtc gac ggc ggc gtg tcc gtc gtc aac tcg agc ttt ggt ttc ttc	816			
Arg Val Asp Gly Gly Val Ser Val Val Asn Ser Ser Phe Gly Phe Phe				
260	265	270		
agg gac tga	825			
Arg Asp				

&lt;210&gt; 1456

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1456

Met Ala Gly Ser Ser His Val Ser Ala Asp Ala Arg Lys Leu Val Gly				
1	5	10	15	
Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Cys Thr				
20	25	30		
Ala Arg Leu Phe Val Lys His Gly Ala Arg Val Val Val Ala Asp Ile				
35	40	45		
Gln Asp Glu Leu Gly Ala Ser Leu Val Ala Glu Leu Gly Pro Asp Ala				
50	55	60		
Ser Ser Tyr Val His Cys Asp Val Thr Asn Glu Gly Asp Val Ala Ala				
65	70	75	80	
Ala Val Asp His Ala Val Ala Thr Phe Gly Lys Leu Asp Val Met Phe				
85	90	95		
Asn Asn Ala Gly Val Thr Gly Pro Pro Cys Phe Arg Ile Thr Glu Ser				
100	105	110		
Thr Lys Glu Asp Phe Glu Arg Val Leu Ala Val Asn Leu Ile Gly Pro				
115	120	125		
Phe Leu Gly Thr Lys His Ala Ala Arg Val Met Ala Pro Ala Arg Arg				
130	135	140		
Gly Ser Ile Ile Ser Thr Ala Ser Leu Ser Ser Ser Val Ser Gly Thr				
145	150	155	160	
Ala Ser His Ala Tyr Thr Thr Ser Lys Arg Ala Leu Val Gly Phe Thr				
165	170	175		
Glu Asn Ala Ala Gly Glu Leu Gly Arg His Gly Ile Arg Val Asn Cys				
180	185	190		
Val Ser Pro Ala Ala Val Ala Thr Pro Leu Ala Arg Ala Ala Met Gly				
195	200	205		
Met Asp Met Asp Asp Glu Thr Ile Glu Ala Ile Met Glu Lys Ser Ala				
210	215	220		
Asn Leu Lys Gly Val Gly Leu Lys Val Asp Asp Ile Ala Ala Ala Ala				
225	230	235	240	
Leu Phe Leu Ala Ser Asp Asp Gly Arg Tyr Val Ser Gly Gln Asn Leu				
245	250	255		
Arg Val Asp Gly Val Ser Val Val Asn Ser Ser Phe Gly Phe Phe				
260	265	270		

Arg Asp

&lt;210&gt; 1457

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 1457

atg gca gct gga agc tcc cat gtt tct gct gat gca agg aag ctg gtg	48
Met Ala Ala Gly Ser Ser His Val Ser Ala Asp Ala Arg Lys Leu Val	
1 5 10 15	
ggc aag gtg gcg gtg atc acc ggc ggc gcg agc ggc atc ggc gcg tgc	96
Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Cys	
20 25 30	
acg gcg cgg ctg ttc gtg aag cac ggc gcc cgc gtc gtg gtc gcc gac	144
Thr Ala Arg Leu Phe Val Lys His Gly Ala Arg Val Val Val Ala Asp	
35 40 45	
atc cag gac gag ctg gga gct agc ctc gtc gcc gag ctc ggc ccg gac	192
Ile Gln Asp Glu Leu Gly Ala Ser Leu Val Ala Glu Leu Gly Pro Asp	
50 55 60	
gcg tcc agc tac gtg cac tgc gac gtc acg aac gag ggc gac gtc gcc	240
Ala Ser Ser Tyr Val His Cys Asp Val Thr Asn Glu Gly Asp Val Ala	
65 70 75 80	
gcc gcg gtc gac cac gcc gtc gcc agg ttc ggg aag ctc gac gtc atg	288
Ala Ala Val Asp His Ala Val Ala Arg Phe Gly Lys Leu Asp Val Met	
85 90 95	
ttc aac aac gcc ggc gtc agt ggc ccg ccg tgc ttc agg atg agc gag	336
Phe Asn Asn Ala Gly Val Ser Gly Pro Pro Cys Phe Arg Met Ser Glu	
100 105 110	
tgc acc aag gag gac ttc gag cgc gtg ctc gcc gtg aac ctg gtc ggc	384
Cys Thr Lys Glu Asp Phe Glu Arg Val Leu Ala Val Asn Leu Val Gly	
115 120 125	
ccg ttc ctg ggc acc aag cac gcg gcg ccg gtg atg gcg ccg gcg cgc	432
Pro Phe Leu Gly Thr Lys His Ala Ala Arg Val Met Ala Pro Ala Arg	
130 135 140	
cgc ggc agc atc atc tcg acg gcg agc ctg tcg tcg gtg tcc ggc	480
Arg Gly Ser Ile Ile Ser Thr Ala Ser Leu Ser Ser Ser Val Ser Gly	
145 150 155 160	
gcg gcg tcg cac gcg tac acg acg tcg aag cac gcg ctg gtg ggg ttc	528
Ala Ala Ser His Ala Tyr Thr Thr Ser Lys His Ala Leu Val Gly Phe	
165 170 175	
acg gag aac gcg gcc ggc gag ctg ggc ccg cac ggg atc cgc gtc aac	576
Thr Glu Asn Ala Ala Gly Glu Leu Gly Arg His Gly Ile Arg Val Asn	
180 185 190	
tgc gtt tcg ccc gcc ggg gtc gcc acg ccg ctg gcg agg gct gcc atg	624
Cys Val Ser Pro Ala Gly Val Ala Thr Pro Leu Ala Arg Ala Ala Met	
195 200 205	
ggc atg gac gac gag gca atc gag gcg atc atg gcg aac tcg gcg aac	672
Gly Met Asp Asp Glu Ala Ile Glu Ala Ile Met Ala Asn Ser Ala Asn	
210 215 220	
ctg aag ggc gca ggc gca ctc aag gcg gac gac atc gcc gcc gcg gcg	720
Leu Lys Gly Ala Gly Ala Leu Lys Ala Asp Asp Ile Ala Ala Ala Ala	
225 230 235 240	
ctg ttc ctc gcc agc gac gac ggc ccg tac gtg agc ggc cag aac ctg	768
Leu Phe Leu Ala Ser Asp Asp Gly Arg Tyr Val Ser Gly Gln Asn Leu	
245 250 255	
cgc gtc gac ggc ggc ttg tcc gtc gtc aac agc agc ttt ggt ttc ttc	816
Arg Val Asp Gly Gly Leu Ser Val Val Asn Ser Ser Phe Gly Phe Phe	
260 265 270	
agg gac tga	825
Arg Asp	

&lt;210&gt; 1458

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1458

```

Met Ala Ala Gly Ser Ser His Val Ser Ala Asp Ala Arg Lys Leu Val
1      5      10      15
Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Cys
20      25      30
Thr Ala Arg Leu Phe Val Lys His Gly Ala Arg Val Val Val Ala Asp
35      40      45
Ile Gln Asp Glu Leu Gly Ala Ser Leu Val Ala Glu Leu Gly Pro Asp
50      55      60
Ala Ser Ser Tyr Val His Cys Asp Val Thr Asn Glu Gly Asp Val Ala
65      70      75      80
Ala Ala Val Asp His Ala Val Ala Arg Phe Gly Lys Leu Asp Val Met
85      90      95
Phe Asn Asn Ala Gly Val Ser Gly Pro Cys Phe Arg Met Ser Glu
100     105     110
Cys Thr Lys Glu Asp Phe Glu Arg Val Leu Ala Val Asn Leu Val Gly
115     120     125
Pro Phe Leu Gly Thr Lys His Ala Ala Arg Val Met Ala Pro Ala Arg
130     135     140
Arg Gly Ser Ile Ile Ser Thr Ala Ser Leu Ser Ser Val Ser Gly
145     150     155     160
Ala Ala Ser His Ala Tyr Thr Thr Ser Lys His Ala Leu Val Gly Phe
165     170     175
Thr Glu Asn Ala Ala Gly Glu Leu Gly Arg His Gly Ile Arg Val Asn
180     185     190
Cys Val Ser Pro Ala Gly Val Ala Thr Pro Leu Ala Arg Ala Ala Met
195     200     205
Gly Met Asp Asp Glu Ala Ile Glu Ala Ile Met Ala Asn Ser Ala Asn
210     215     220
Leu Lys Gly Ala Gly Ala Leu Lys Ala Asp Asp Ile Ala Ala Ala Ala
225     230     235     240
Leu Phe Leu Ala Ser Asp Asp Gly Arg Tyr Val Ser Gly Gln Asn Leu
245     250     255
Arg Val Asp Gly Gly Leu Ser Val Val Asn Ser Ser Phe Gly Phe Phe
260     265     270
Arg Asp

```

&lt;210&gt; 1459

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;400&gt; 1459

```

atg gcg ggt agc agc tac ggc gac gtt cat gag tct gca aga aag ttg      48
Met Ala Gly Ser Ser Tyr Gly Asp Val His Glu Ser Ala Arg Lys Leu
1      5      10      15
gtg ggc aag gtg gcg ctg atc acc ggc ggc gcg agc ggc atc ggg gag      96
Val Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu
20      25      30
tgc acg gcg cgg ctg ttc gtg aag cac ggg gcg caa gtc gtg gtc gcc      144
Cys Thr Ala Arg Leu Phe Val Lys His Gly Ala Gln Val Val Val Ala
35      40      45
gac atc cag gac gag gcg ggc gcg cgg ctg tgc gcc gag ctc ggg agc      192
Asp Ile Gln Asp Glu Ala Gly Ala Arg Leu Cys Ala Glu Leu Gly Ser
50      55      60
gcc acc gcc agc tac gtg cgg tgc gac gtg acg agc gag gac gac gtc      240
Ala Thr Ala Ser Tyr Val Arg Cys Asp Val Thr Ser Glu Asp Asp Val
65      70      75      80
gcg gcc gcg gtg gac cac gcc gtg gcg agg tac ggg aag ctg gac gtc      288
Ala Ala Ala Val Asp His Ala Val Ala Arg Tyr Gly Lys Leu Asp Val

```

## PhoenixTemp32470.tmp.txt

[illegible]

<210> 1460  
<211> 275  
<212> PRT  
<213> Oryza sativa Japonica Group

<400>	1460															
Met	Ala	Gly	Ser	Ser	Tyr	Gly	Asp	Val	His	Glu	Ser	Ala	Arg	Lys	Leu	
1				5					10					15		
Val	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			
Cys	Thr	Ala	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Gln	Val	Val	Ala		
		35					40					45				
Asp	Ile	Gln	Asp	Glu	Ala	Gly	Ala	Arg	Leu	Cys	Ala	Glu	Leu	Gly	Ser	
	50					55					60					
Ala	Thr	Ala	Ser	Tyr	Val	Arg	Cys	Asp	Val	Thr	Ser	Glu	Asp	Asp	Val	
65				70						75				80		
Ala	Ala	Ala	Val	Asp	His	Ala	Val	Ala	Arg	Tyr	Gly	Lys	Leu	Asp	Val	
				85					90					95		
Met	Phe	Asn	Asn	Ala	Gly	Ile	Gly	Gly	Ala	Ala	Cys	His	Ser	Ile	Leu	
			100					105					110			
Glu	Ser	Thr	Lys	Ala	Asp	Phe	Asp	Arg	Val	Leu	Ala	Val	Asn	Leu	Thr	
		115					120					125				
Gly	Pro	Phe	Leu	Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Val	Ala	Ala	
	130					135					140					
Gly	Arg	Gly	Gly	Cys	Ile	Ile	Gly	Thr	Ala	Ser	Leu	Ala	Ser	Ala	Val	
145					150					155				160		
Ala	Gly	Thr	Ala	Ser	His	Ala	Tyr	Thr	Cys	Ala	Lys	Arg	Ala	Leu	Val	
				165					170					175		
Gly	Leu	Thr	Glu	Asn	Ala	Ala	Ala	Glu	Leu	Gly	Arg	His	Gly	Ile	Arg	
			180					185					190			
Val	Asn	Cys	Val	Ser	Pro	Ala	Ala	Ala	Ala	Thr	Pro	Leu	Ala	Thr	Gly	

## PhoenixTemp32470.tmp.txt

195  
 Tyr Val Gly Leu Glu Gly Glu 200 Ala Phe Glu Ala Ala 205 Met Glu Ala Val  
 210 215  
 Ala Asn Leu Lys Gly Val Arg Leu Arg Val Glu Asp Ile Ala Ala Ala  
 225 230 235  
 Val Leu Phe Leu Ala Ser Asp Asp Ala Arg Tyr Val Ser Gly His Asn  
 245 250 255  
 Leu Leu Ile Asp Gly Gly Cys Ser Ile Val Asn Pro Ser Phe Gly Ile  
 260 265 270  
 Phe Lys Asp 275

&lt;210&gt; 1461

&lt;211&gt; 903

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(903)

&lt;400&gt; 1461

atg	ttg	aga	gca	acg	caa	ctc	gtt	gtc	agg	agg	gag	aag	agc	gga	gct	48
Met	Leu	Arg	Ala	Thr	Gln	Leu	Val	Val	Arg	Arg	Glu	Lys	Ser	Gly	Ala	
1				5					10					15		
atg	gga	gct	ctg	tgt	ggt	ttg	ggc	agc	cac	ttc	tcg	act	gcc	tcg	agt	96
Met	Gly	Ala	Leu	Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	
			20					25					30			
tgc	cag	agg	tta	ccc	ggc	aag	gtc	gcg	gtg	atc	acc	ggc	gcg	gcc	agc	144
Cys	Gln	Arg	Leu	Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	
			35				40					45				
ggc	atc	ggc	aag	gcg	acg	gcc	gcc	gag	ttc	atc	cgc	aac	ggc	gcc	aag	192
Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	
	50					55				60						
gtc	atc	ctg	gcc	gat	ata	cag	gac	gac	ctc	ggc	cgc	gcc	gtc	gcg	gcc	240
Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	
	65				70				75						80	
gag	ctg	ggc	ccg	gac	gcc	gcg	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	288
Glu	Leu	Gly	Pro	Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	
			85						90					95		
gcg	cag	atc	gcc	gcg	gct	gtg	gac	ctc	gcc	gtg	gcg	cgg	cac	ggc	cgc	336
Ala	Gln	Ile	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	
			100					105					110			
ctc	gac	atc	ctc	tac	agc	aac	gcc	ggc	atc	tcg	ggc	tcc	tcg	gcg	ccc	384
Leu	Asp	Ile	Leu	Tyr	Ser	Asn	Ala	Gly	Ile	Ser	Gly	Ser	Ser	Ala	Pro	
		115					120					125				
gcg	ccg	ctc	gcg	tcg	ctc	gac	ctc	gcg	gac	ttc	gac	cgc	gtc	atg	gcg	432
Ala	Pro	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	
	130					135					140					
gcc	aac	gcg	cgg	tcc	gcg	gtg	gcg	gcc	gtc	aag	cac	gcc	gcg	cgc	gtc	480
Ala	Asn	Ala	Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	
	145				150					155					160	
atg	gtg	ccc	cgg	cgc	ggc	ggc	tgc	gtc	ctc	tgc	acg	ggg	agc	acc	acg	528
Met	Val	Pro	Arg	Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	
			165						170					175		
ggc	atg	ctc	ggc	ggg	ctc	gcg	gcg	ctg	ccg	tac	agc	ctc	tcg	aag	gcg	576
Gly	Met	Leu	Gly	Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	
			180					185					190			
gcg	gtg	gtg	ggc	gtg	gtg	cgg	ctg	gcg	gcg	gcc	gag	ctg	gcg	cgc	tcc	624
Ala	Val	Val	Gly	Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	
			195				200					205				
ggc	gtg	cgc	gtg	aac	gcc	atc	tcg	ccg	cac	gcc	atc	gcg	acg	ccg	ctg	672
Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	
	210					215					220					
ctg	gtc	cgg	tcg	ctg	gcg	agg	atg	aac	ccg	ggg	gtc	agc	gac	gag	cag	720
Leu	Val	Arg	Ser	Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	
	225				230					235					240	
ctg	aag	gag	atg	gtg	gag	agg	ggg	atg	agc	gag	ctc	cat	ggc	gcg	gtg	768
Leu	Lys	Glu	Met	Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	



## PhoenixTemp32470.tmp.txt

<div> <div>245</div> <div>250</div> <div>255</div> </div>																
ctg	gag	ctg	gag	gac	gtg	gcg	agg	gcg	gcc	gtc	tac	ctg	gcg	tcc	gac	816
Leu	Glu	Leu	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	
<div> <div>260</div> <div>265</div> <div>270</div> </div>																
gag	gcc	aag	ttc	gtc	acc	ggg	cag	aac	cac	gtc	atc	gac	ggc	ggg	ttc	864
Glu	Ala	Lys	Phe	Val	Thr	Gly	Gln	Asn	His	Val	Ile	Asp	Gly	Gly	Phe	
<div> <div>275</div> <div>280</div> <div>285</div> </div>																
acg	gtc	ggg	aag	ccg	atg	gac	atg	cgg	gtt	cca	cgt	tga				903
Thr	Val	Gly	Lys	Pro	Met	Asp	Met	Arg	Val	Pro	Arg					
<div> <div>290</div> <div>295</div> <div>300</div> </div>																

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<210> 1462
<211> 300
<212> PRT
<213> Oryza sativa Japonica Group
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<div>&lt;400&gt;</div>	<div>1462</div>															
Met	Leu	Arg	Ala	Thr	Gln	Leu	Val	Val	Arg	Arg	Glu	Lys	Ser	Gly	Ala	
1				5					10					15		
Met	Gly	Ala	Leu	Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	
			20					25					30			
Cys	Gln	Arg	Leu	Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	
		35					40					45				
Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	
	50					55					60					
Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	
65					70					75					80	
Glu	Leu	Gly	Pro	Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	
				85					90					95		
Ala	Gln	Ile	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	
			100					105					110			
Leu	Asp	Ile	Leu	Tyr	Ser	Asn	Ala	Gly	Ile	Ser	Gly	Ser	Ser	Ala	Pro	
		115					120					125				
Ala	Pro	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	
	130					135					140					
Ala	Asn	Ala	Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	
145					150					155					160	
Met	Val	Pro	Arg	Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	
				165					170					175		
Gly	Met	Leu	Gly	Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	
			180					185					190			
Ala	Val	Val	Gly	Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	
		195					200					205				
Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	
	210					215					220					
Leu	Val	Arg	Ser	Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	
225					230					235					240	
Leu	Lys	Glu	Met	Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	
				245					250					255		
Leu	Glu	Leu	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	
			260					265					270			
Glu	Ala	Lys	Phe	Val	Thr	Gly	Gln	Asn	His	Val	Ile	Asp	Gly	Gly	Phe	
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Thr	Val	Gly	Lys	Pro	Met	Asp	Met	Arg	Val	Pro	Arg					
	290					295					300					

<210> 1463  
<211> 876  
<212> DNA  
<213> Oryza sativa Japonica Group

<220>  
<221> CDS  
<222> (1)..(876)

<400> 1463  
atg gag aag aag aag cag aag aga cag atc aaa gat caa gat gtt cag  
Met Glu Lys Lys Lys Gln Lys Arg Gln Ile Lys Asp Gln Asp Val Gln  
1 5 10 15

## PhoenixTemp32470.tmp.txt

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agc att gca gat cgt cct cag ggg ttg gct ggg aag gtg gcg gtg atc 96
Ser Ile Ala Asp 20 Arg Pro Gln Gly Leu 25 Ala Gly Lys Val 30 Ala Val Ile
acc ggc gcg gcg agc ggc atc ggc aag gcg acc gcg gcg gag ttc gtc 144
Thr Gly Ala 35 Ala Ser Gly Ile 40 Gly Lys Ala Thr Ala Ala Glu Phe Val
agg aat ggc gcc aag gtc atc ctc gcc gac gtc cag gac gac gtc ggc 192
Arg Asn 50 Gly Ala Lys Val 55 Ile Leu Ala Asp Val 60 Gln Asp Asp Val Gly
cgc gcc gtc gcc tcg gag ctc ggc gcg gac gcg gcg tcg tac acc cgc 240
Arg Ala Val 65 Ala Ser Glu 70 Leu Gly Ala Asp Ala Ala Ser Tyr Thr Arg
tgc gac gtc acc gac gag gcg cag gtc gcg gcc gtg gac ctc gtc 288
Cys Asp Val 85 Thr Asp Glu Ala Gln Val 90 Ala Ala Val Asp Leu Ala
gtg gcg cgg cac ggg cag ctc gac gtc atg gtc aac aac gcc ggc atc 336
Val Ala Arg His 100 Gly Gln Leu Asp Val 105 Met Val Asn Asn Ala Gly Ile
gtg ggc tcc ctg tcg cgc ccc ccg ctc ggc gcc ctc gac ctc gcc gac 384
Val Gly Ser 115 Leu Ser Arg Pro 120 Pro Leu Gly Ala Leu Asp 125 Leu Ala Asp
ttc gac gcc gtc atg gcg gtg aac acg cgc ggc gtc ctc gcg ggc gtc 432
Phe Asp 130 Ala Val Met Ala Val 135 Asn Thr Arg Gly Val 140 Leu Ala Gly Val
aag cac gcc gcg cgc gtc atg gcg ccg cgc cgc ggc agc atc atc 480
Lys His Ala Ala Arg Val 150 Met Ala Pro Arg Arg Arg Gly Ser Ile Ile
tgc gtg gcg agc gtc gcc ggg gtg ctc ggc agc gtg acg ccg cac ccg 528
Cys Val Ala Ser Val 165 Ala Gly Val Leu Gly Ser Val Thr Pro His Pro
tac agc gtg tcc aag gcc gcc gtg ctc ggc gcg gtc cgc gcc gcc gcc 576
Tyr Ser Val 180 Ser Lys Ala Ala Val 185 Leu Gly Ala Val Arg Ala Ala Ala
ggc gag atg gcg cgc tcc ggc gtg cgc gtg aac gcc atc tcc ccc aac 624
Gly Glu Met 195 Ala Arg Ser Gly Val 200 Arg Val Asn Ala Ile Ser Pro Asn
tac atc ccc acg ccg ctg gtg atg cgc atc atg gcg gag tgg tac ccc 672
Tyr Ile Pro Thr Pro Leu Val 215 Met Arg Ile Met Ala Glu Trp Tyr Pro
ggg gcg agc gcc gac gag cac cgc cgc gtc gtg gag cgg gag atc aac 720
Gly Ala Ser Ala Asp 230 Glu His Arg Arg Val 235 Glu Arg Glu Ile Asn
gag atg gag ggc gcg acg ctg gag ccc gag gac atc gcg agg gcg gcg 768
Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg Ala Ala
gtg tac ctg gcc tcc gac gag gcc aag gtg aac ggc cac aac ctc 816
Val Tyr Leu Ala 260 Ser Asp Glu Ala Lys 265 Tyr Val Asn Gly His Asn Leu
gtc gtc gac ggc ggg tac acc gtc ggc aag gcg ccc aac ctg ccg gcg 864
Val Val Asp 275 Gly Gly Tyr Thr Val 280 Gly Lys Ala Pro Asn 285 Leu Pro Ala
ccg ccg caa taa 876
Pro Pro Gln 290

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&lt;210&gt; 1464

&lt;211&gt; 291

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1464

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Met Glu Lys Lys Lys 5 Gln Lys Arg Gln Ile Lys Asp Gln Asp Val Gln
1 Ser Ile Ala Asp Arg Pro Gln Gly Leu 10 Ala Gly Lys Val Ala Val Ile
Thr Gly Ala 20 Ala Ser Gly Ile Gly 25 Lys Ala Thr Ala Ala Glu Phe Val
Arg Asn 35 Ala Lys Val Ile 40 Leu Ala Asp Val Gln 45 Asp Asp Val Gly
50 55 60

```

## PhoenixTemp32470.tmp.txt

Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ala Ser Tyr Thr Arg  
 65 70 75 80  
 Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala  
 85 90 95  
 Val Ala Arg His Gly Gln Leu Asp Val Met Val Asn Asn Ala Gly Ile  
 100 105 110  
 Val Gly Ser Leu Ser Arg Pro Pro Leu Gly Ala Leu Asp Leu Ala Asp  
 115 120 125  
 Phe Asp Ala Val Met Ala Val Asn Thr Arg Gly Val Leu Ala Gly Val  
 130 135 140  
 Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Arg Gly Ser Ile Ile  
 145 150 155 160  
 Cys Val Ala Ser Val Ala Gly Val Leu Gly Ser Val Thr Pro His Pro  
 165 170 175  
 Tyr Ser Val Ser Lys Ala Ala Val Leu Gly Ala Val Arg Ala Ala Ala  
 180 185 190  
 Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser Pro Asn  
 195 200 205  
 Tyr Ile Pro Thr Pro Leu Val Met Arg Ile Met Ala Glu Trp Tyr Pro  
 210 215 220  
 Gly Ala Ser Ala Asp Glu His Arg Arg Val Val Glu Arg Glu Ile Asn  
 225 230 235 240  
 Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg Ala Ala  
 245 250 255  
 Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu  
 260 265 270  
 Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu Pro Ala  
 275 280 285  
 Pro Pro Gln  
 290

&lt;210&gt; 1465

&lt;211&gt; 909

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(909)

&lt;400&gt; 1465

atg ttc aca gcg atg cat cgc atc ctc agc agg ggg agg agg aca cct	48
Met Phe Thr Ala Met His Arg Ile Leu Ser Arg Gly Arg Arg Thr Pro	
1 5 10 15	
gca gct tcg tct tcc tcc gtc act gcc ttc gcc acc gcc tcc gat tca	96
Ala Ala Ser Ser Ser Ser Val Thr Ala Phe Ala Thr Ala Ser Asp Ser	
20 25 30	
cag agg ttg gcc ggg aag gtc gcc gtc atc acc ggc ggc gcc agc ggc	144
Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly	
35 40 45	
atc ggc agg gcg acg gcg gag gag ttc gtc agg aat ggc gcc aag gtc	192
Ile Gly Arg Ala Thr Ala Glu Phe Val Arg Asn Gly Ala Lys Val	
50 55 60	
atc ctc gcc gat gtg cag gac gac ctg gga cac gcc gtc gcc gcg gag	240
Ile Leu Ala Asp Val Gln Asp Asp Leu Gly His Ala Val Ala Ala Glu	
65 70 75 80	
ctc ggc gcg gac gcg gcg tcg tac gcg cgc tgc gac gtc acc gac gag	288
Leu Gly Ala Asp Ala Ser Tyr Ala Arg Cys Asp Val Thr Asp Glu	
85 90 95	
gcg cag gtc gcg gcc gcc gtg gac ctc gcc gtg gca cgg cac ggg cgt	336
Ala Gln Val Ala Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg	
100 105 110	
ctc gac gtc ttc aac aac gcc ggc atc ccc ggt gac ctc acg ccg	384
Leu Asp Val Val Phe Asn Asn Ala Gly Ile Pro Gly Asp Leu Thr Pro	
115 120 125	
acc ccc gtg ggc gcg ctg gac ctc gct gac ttc gac cgc gtg atg gcg	432
Thr Pro Val Gly Ala Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala	
130 135 140	
gtg aac acc agg gcg gtg gtg gcg ggc gtc aag cac gcc gcg cgc gtc	480

## PhoenixTemp32470.tmp.txt

Val 145	Asn	Thr	Arg	Ala	Val 150	Val	Ala	Gly	Val	Lys 155	His	Ala	Ala	Arg	Val 160	
atg	gtg	ccg	cgc	cgc	cgc	ggc	agc	atc	atc	tgc	acg	gcg	agc	acg	gcg	528
Met	Val	Pro	Arg	Arg	Arg	Gly	Ser	Ile	Ile	Cys	Thr	Ala	Ser	Thr	Ala	
				165					170					175		
ggg	gtg	atc	ggt	ggc	gtg	gcg	gtc	ccg	cac	tac	agc	gtg	tcc	aag	gcc	576
Gly	Val	Ile	Gly	Gly	Val	Ala	Val	Pro	His	Tyr	Ser	Val	Ser	Lys	Ala	
			180					185					190			
gcg	gtg	ctc	ggg	ctg	gtg	cgc	gcc	gtg	gcg	ggc	gag	atg	gcg	cgc	tcc	624
Ala	Val	Leu	Gly	Leu	Val	Arg	Ala	Val	Ala	Gly	Glu	Met	Ala	Arg	Ser	
		195					200				205					
ggc	gtg	cgc	gtg	aac	gcc	atc	tcc	ccc	aac	tac	atc	tgg	acg	ccc	atg	672
Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	Asn	Tyr	Ile	Trp	Thr	Pro	Met	
	210					215				220						
gcg	gcg	gtc	gcc	ttc	gca	agg	tgg	tac	ccc	agc	cgg	agc	gcc	gac	gac	720
Ala	Ala	Val	Ala	Phe	Ala	Arg	Trp	Tyr	Pro	Ser	Arg	Ser	Ala	Asp	Asp	
225				230					235					240		
cac	cgc	cgg	atc	gtg	gag	aac	gac	ata	aac	gag	atg	gat	ggc	gtg	aca	768
His	Arg	Arg	Ile	Val	Glu	Asn	Asp	Ile	Asn	Glu	Met	Asp	Gly	Val	Thr	
				245					250					255		
ctg	gag	gcc	gag	gac	gtg	gca	agg	gcg	gcg	gtg	ttc	ctc	gcc	tcc	gac	816
Leu	Glu	Ala	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	
			260					265					270			
gag	gct	aag	tac	gtg	aac	ggg	cac	aac	ctc	gtt	gtc	gac	ggc	ggg	tac	864
Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Tyr	
		275					280					285				
acc	gtc	ggc	aag	gtg	ccc	aac	atg	ccg	gtc	cca	gat	ggc	cat	tga		909
Thr	Val	Gly	Lys	Val	Pro	Asn	Met	Pro	Val	Pro	Asp	Gly	His			
	290					295					300					

&lt;210&gt; 1466

&lt;211&gt; 302

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1466

Met	Phe	Thr	Ala	Met	His	Arg	Ile	Leu	Ser	Arg	Gly	Arg	Arg	Thr	Pro	
1				5					10					15		
Ala	Ala	Ser	Ser	Ser	Ser	Val	Thr	Ala	Phe	Ala	Thr	Ala	Ser	Asp	Ser	
			20					25					30			
Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	
		35					40					45				
Ile	Gly	Arg	Ala	Thr	Ala	Glu	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	
		50				55					60					
Ile	Leu	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Ala	Val	Ala	Ala	Glu	
65					70					75					80	
Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Ala	Arg	Cys	Asp	Val	Thr	Asp	Glu	
				85					90					95		
Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	
			100					105					110			
Leu	Asp	Val	Val	Phe	Asn	Asn	Ala	Gly	Ile	Pro	Gly	Asp	Leu	Thr	Pro	
		115					120					125				
Thr	Pro	Val	Gly	Ala	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	
		130				135					140					
Val	Asn	Thr	Arg	Ala	Val	Val	Ala	Gly	Val	Lys	His	Ala	Ala	Arg	Val	
145					150					155					160	
Met	Val	Pro	Arg	Arg	Arg	Gly	Ser	Ile	Ile	Cys	Thr	Ala	Ser	Thr	Ala	
				165					170					175		
Gly	Val	Ile	Gly	Gly	Val	Ala	Val	Pro	His	Tyr	Ser	Val	Ser	Lys	Ala	
			180					185					190			
Ala	Val	Leu	Gly	Leu	Val	Arg	Ala	Val	Ala	Gly	Glu	Met	Ala	Arg	Ser	
		195					200					205				
Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	Asn	Tyr	Ile	Trp	Thr	Pro	Met	
	210					215					220					
Ala	Ala	Val	Ala	Phe	Ala	Arg	Trp	Tyr	Pro	Ser	Arg	Ser	Ala	Asp	Asp	
225					230					235				240		
His	Arg	Arg	Ile	Val	Glu	Asn	Asp	Ile	Asn	Glu	Met	Asp	Gly	Val	Thr	
				245					250					255		
Leu	Glu	Ala	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	

## PhoenixTemp32470.tmp.txt

260  
 Glu Ala Lys Tyr Val Asn Gly His Asn Leu Val Val Asp Gly Gly Tyr  
 275  
 Thr Val Gly Lys Val Pro Asn Met Pro Val Pro Asp Gly His  
 290 295 300

&lt;210&gt; 1467

&lt;211&gt; 903

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(903)

&lt;400&gt; 1467

atg	ttc	aga	gct	gcg	cag	ctc	ctc	ctc	agg	gag	acg	aac	aga	gct	ctt	48
Met	Phe	Arg	Ala	Ala	Gln	Leu	Leu	Leu	Arg	Glu	Thr	Asn	Arg	Ala	Leu	
1				5					10					15		
ggg	gca	gca	act	tcg	cct	gca	ggc	ttc	gtc	agt	ggc	ttc	tcc	acg	gct	96
Gly	Ala	Ala	Thr	Ser	Pro	Ala	Gly	Phe	Val	Ser	Gly	Phe	Ser	Thr	Ala	
			20					25					30			
tcc	aac	tct	gcg	cag	agg	ttg	gct	ggc	aag	gtg	gct	gtc	ata	acc	ggt	144
Ser	Asn	Ser	Ala	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	
			35				40					45				
gga	gct	agc	ggc	atc	ggc	aaa	gcg	aca	gcc	aag	gag	ttc	atc	gag	aat	192
Gly	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Glu	Asn	
			50			55					60					
ggc	gcc	aag	gtc	atc	atg	gcc	gat	gtc	cag	gat	gac	ctc	ggc	cac	tcc	240
Gly	Ala	Lys	Val	Ile	Met	Ala	Asp	Val	Gln	Asp	Leu	Gly	His	Ser		
					70					75				80		
acc	gca	gcg	gag	ctc	ggc	ccg	gac	gcc	tcg	tac	acg	cgc	tgc	gac	gtc	288
Thr	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Ser	Tyr	Thr	Arg	Cys	Asp	Val	
				85					90					95		
acc	gac	gag	gca	cag	gtc	gcg	gcg	gcc	gtc	gac	ctc	gcc	gtg	aag	cgg	336
Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Lys	Arg	
			100					105					110			
cac	ggc	cac	ctc	gac	atc	ctc	tac	aac	aac	gcc	ggt	gtc	atg	ggc	gcc	384
His	Gly	His	Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Val	Met	Gly	Ala	
			115			120						125				
atg	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ctc	gcc	aac	ttc	gac	cgc	432
Met	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asn	Phe	Asp	Arg	
						135					140					
atg	atg	gcg	atc	aac	gcc	cgg	gcg	gcg	ctt	gtc	ggc	atc	aag	cac	gcc	480
Met	Met	Ala	Ile	Asn	Ala	Arg	Ala	Ala	Leu	Val	Gly	Ile	Lys	His	Ala	
					150					155					160	
gcg	cgc	gtc	atg	tcg	ccc	cgc	cgc	agc	ggc	gtc	atc	ctc	tgc	acg	gcc	528
Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ser	Gly	Val	Ile	Leu	Cys	Thr	Ala	
				165					170					175		
agc	gac	acg	ggc	gtc	atg	ccc	atg	ccc	aac	atc	gcc	ttg	tac	gcc	gtc	576
Ser	Asp	Thr	Gly	Val	Met	Pro	Met	Pro	Asn	Ile	Ala	Leu	Tyr	Ala	Val	
			180					185					190			
tcc	aag	gca	acc	acc	atc	gcc	atc	gtg	cgc	gcc	gcg	gcg	gag	ccg	ctg	624
Ser	Lys	Ala	Thr	Thr	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	Leu	
			195			200						205				
tcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	cac	ggc	acc	agg	672
Ser	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Gly	Thr	Arg	
			210			215					220					
acg	ccg	atg	gcg	atg	cac	gtg	tta	tct	cag	atg	tac	ccc	ggc	gta	agc	720
Thr	Pro	Met	Ala	Met	His	Val	Leu	Ser	Gln	Met	Tyr	Pro	Gly	Val	Ser	
					230					235					240	
aaa	gat	gat	ttg	gag	aag	atg	gcg	gac	gcc	gcc	atg	gac	gcc	gga	gag	768
Lys	Asp	Asp	Leu	Glu	Lys	Met	Ala	Asp	Ala	Ala	Met	Asp	Ala	Gly	Glu	
				245					250					255		
gtg	atg	gaa	cct	aag	tac	gtc	gct	agg	gcg	gcg	ctg	tat	ttg	gct	tcg	816
Val	Met	Glu	Pro	Lys	Tyr	Val	Ala	Arg	Ala	Ala	Leu	Tyr	Leu	Ala	Ser	
			260					265					270			
gac	gag	gct	aag	tat	gtc	aac	ggg	cac	aac	ctc	gtc	gtt	gac	ggc	ggc	864
Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	

275  
 ttc acg tcg cac aaa gga tcc 280 285  
 Phe Thr Ser His Lys Gly Ser Asp Thr Arg Leu Asn tag  
 290 295 300

903

<210> 1468  
 <211> 300  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 1468  
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 1 5 10 15  
 Gly Ala Ala Thr Ser Pro Ala Gly Phe Val Ser Gly Phe Ser Thr Ala  
 20 25 30  
 Ser Asn Ser Ala Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly  
 35 40 45  
 Gly Ala Ser Gly Ile Gly Lys Ala Thr Ala Lys Glu Phe Ile Glu Asn  
 50 55 60  
 Gly Ala Lys Val Ile Met Ala Asp Val Gln Asp Asp Leu Gly His Ser  
 65 70 75 80  
 Thr Ala Ala Glu Leu Gly Pro Asp Ala Ser Tyr Thr Arg Cys Asp Val  
 85 90 95  
 Thr Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala Val Lys Arg  
 100 105 110  
 His Gly His Leu Asp Ile Leu Tyr Asn Asn Ala Gly Val Met Gly Ala  
 115 120 125  
 Met Pro Gln Asp Asp Met Ala Ser Val Asp Leu Ala Asn Phe Asp Arg  
 130 135 140  
 Met Met Ala Ile Asn Ala Arg Ala Ala Leu Val Gly Ile Lys His Ala  
 145 150 155 160  
 Ala Arg Val Met Ser Pro Arg Arg Ser Gly Val Ile Leu Cys Thr Ala  
 165 170 175  
 Ser Asp Thr Gly Val Met Pro Met Pro Asn Ile Ala Leu Tyr Ala Val  
 180 185 190  
 Ser Lys Ala Thr Thr Ile Ala Ile Val Arg Ala Ala Ala Glu Pro Leu  
 195 200 205  
 Ser Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro His Gly Thr Arg  
 210 215 220  
 Thr Pro Met Ala Met His Val Leu Ser Gln Met Tyr Pro Gly Val Ser  
 225 230 235 240  
 Lys Asp Asp Leu Glu Lys Met Ala Asp Ala Ala Met Asp Ala Gly Glu  
 245 250 255  
 Val Met Glu Pro Lys Tyr Val Ala Arg Ala Ala Leu Tyr Leu Ala Ser  
 260 265 270  
 Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu Val Val Asp Gly Gly  
 275 280 285  
 Phe Thr Ser His Lys Gly Ser Asp Thr Arg Leu Asn  
 290 295 300

<210> 1469  
 <211> 813  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(813)

<400> 1469  
 atg gat tcc aac tcc atc cag cgt ttg gct ggc aag gtg gct atc att 48  
 Met Asp Ser Asn Ser Ile Gln Arg Leu Ala Gly Lys Val Ala Ile Ile 15  
 1 5  
 acc ggt gga gcc agt ggc atc gga aag gtt aca gca aag gag ttc atc 96  
 Thr Gly Gly Ala Ser Gly Ile Gly Lys Val Thr Ala Lys Glu Phe Ile 20 25 30  
 aag aat ggt gcc aag gtc atc atc gcc gat gtc cag gac gag ctc ggc 144  
 Lys Asn Gly Ala Lys Val Ile Ile Ala Asp Val Gln Asp Glu Leu Gly 35 40 45

## PhoenixTemp32470.tmp.txt

cac	tct	gcg	gcg	gcc	aag	ctc	ggc	ccg	gac	gcc	tcg	tac	acg	cac	tgc	192
His	Ser	Ala	Ala	Ala	Lys	Leu	Gly	Pro	Asp	Ala	Ser	Tyr	Thr	His	Cys	
	50					55					60					
gat	gtc	acc	gac	gag	gcg	cag	gtc	gag	gcg	gcc	gtg	gac	ctc	gct	gtg	240
Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Glu	Ala	Ala	Val	Asp	Leu	Ala	Val	
65				70					75						80	
agg	ctc	cac	ggc	cac	ctc	gac	atc	ctc	tac	aac	aac	gct	ggc	atc	atc	288
Arg	Leu	His	Gly	His	Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Ile	
				85					90					95		
ggc	gcc	atg	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ctc	ggc	aac	ttc	336
Gly	Ala	Met	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asn	Phe	
			100					105					110			
gac	cgc	atg	atg	gcg	atc	aac	gcc	cgg	gcg	gcg	ctc	gtc	ggc	atc	aag	384
Asp	Arg	Met	Met	Ala	Ile	Asn	Ala	Arg	Ala	Ala	Leu	Val	Gly	Ile	Lys	
		115					120					125				
cac	gcc	gcg	cgc	gtc	atg	gcg	ccg	cgc	cgc	agc	ggc	gtc	atc	ctc	tgc	432
His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ser	Gly	Val	Ile	Leu	Cys	
	130					135					140					
acg	gcg	agc	gac	gcg	ggc	gtc	atg	ccc	atc	ccg	aac	atc	gcc	atg	tac	480
Thr	Ala	Ser	Asp	Ala	Gly	Val	Met	Pro	Ile	Pro	Asn	Ile	Ala	Met	Tyr	
145					150					155					160	
tcc	gtc	tcc	aag	gcg	acc	acc	atc	gcc	atc	gtg	cgc	gcc	gcg	gcg	gag	528
Ser	Val	Ser	Lys	Ala	Thr	Thr	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	
				165					170						175	
ccg	ctg	tcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	acg	ggc	576
Pro	Leu	Ser	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Thr	Gly	
			180					185					190			
acc	agg	acg	ccg	atg	atg	atg	cat	atc	atc	tcc	cag	atg	acc	ccc	ggc	624
Thr	Arg	Thr	Pro	Met	Met	Met	His	Ile	Ile	Ser	Gln	Met	Thr	Pro	Gly	
		195					200					205				
gtg	ggc	gag	gac	gac	ctg	gag	cgg	atg	gcg	gac	gcc	gcc	atc	agc	gcc	672
Val	Gly	Glu	Asp	Asp	Leu	Glu	Arg	Met	Ala	Asp	Ala	Ala	Ile	Ser	Ala	
	210				215						220					
ggc	gtg	gcc	atc	gag	ccg	gag	tac	gtc	gcg	agg	gcg	gcg	gtg	tac	ctc	720
Gly	Val	Ala	Ile	Glu	Pro	Glu	Tyr	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	
225					230					235					240	
gcc	tcc	gac	gag	gcc	aag	tac	gtc	aac	ggg	cat	aac	ctc	gtc	gtc	gac	768
Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	
				245					250					255		
ggc	ggc	ttc	aca	acg	cat	aaa	gga	gac	aac	cgc	atg	aac	taa			813
Gly	Gly	Phe	Thr	Thr	His	Lys	Gly	Asp	Asn	Arg	Met	Asn				
			260					265				270				

&lt;210&gt; 1470

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1470

Met	Asp	Ser	Asn	Ser	Ile	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ile	Ile	
1				5					10					15		
Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Lys	Val	Thr	Ala	Lys	Glu	Phe	Ile	
			20					25					30			
Lys	Asn	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	
		35						40				45				
His	Ser	Ala	Ala	Ala	Lys	Leu	Gly	Pro	Asp	Ala	Ser	Tyr	Thr	His	Cys	
	50					55					60					
Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Glu	Ala	Ala	Val	Asp	Leu	Ala	Val	
65					70				75						80	
Arg	Leu	His	Gly	His	Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Ile	
				85					90					95		
Gly	Ala	Met	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asn	Phe	
			100					105					110			
Asp	Arg	Met	Met	Ala	Ile	Asn	Ala	Arg	Ala	Ala	Leu	Val	Gly	Ile	Lys	
		115					120					125				
His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ser	Gly	Val	Ile	Leu	Cys	
	130					135					140					
Thr	Ala	Ser	Asp	Ala	Gly	Val	Met	Pro	Ile	Pro	Asn	Ile	Ala	Met	Tyr	
145					150					155					160	

## PhoenixTemp32470.tmp.txt

Ser Val Ser Lys Ala Thr Thr Ile Ala Ile Val Arg Ala Ala Ala Glu  
 165 170 175  
 Pro Leu Ser Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Thr Gly  
 180 185 190  
 Thr Arg Thr Pro Met Met Met His Ile Ile Ser Gln Met Thr Pro Gly  
 195 200 205  
 Val Gly Glu Asp Asp Leu Glu Arg Met Ala Asp Ala Ile Ser Ala  
 210 215 220  
 Gly Val Ala Ile Glu Pro Glu Tyr Val Ala Arg Ala Ala Val Tyr Leu  
 225 230 235 240  
 Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu Val Val Asp  
 245 250 255  
 Gly Gly Phe Thr His Lys Gly Asp Asn Arg Met Asn  
 260 265 270

&lt;210&gt; 1471

&lt;211&gt; 906

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(906)

&lt;400&gt; 1471

atg tgg gag acg aag aga gtg gtt ggc cca agg atg acg acg atg acg	48
Met Trp Glu Thr Lys Arg Val Val Gly Pro Arg Met Thr Thr Met Thr	
1 5 10 15	
tcg act tcg cct gaa agt cta atc gcc ggt gga ttc tcc acg gcg gcg	96
Ser Thr Ser Pro Glu Ser Leu Ile Ala Gly Gly Phe Ser Thr Ala Ala	
20 25 30	
agc tcc cac cag agg ttg gcc ggc aag gtg gcc gtc atc acc ggc gcc	144
Ser Ser His Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Ala	
35 40 45	
gcc agc ggc atc ggc aag gcg acc gcc gcg gag ttc atc agg aac ggc	192
Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Ile Arg Asn Gly	
50 55 60	
gcc aag gtg atc atc acc gac gtc aac gac gac ctc ggc cac gcc gcg	240
Ala Lys Val Ile Ile Thr Asp Val Asn Asp Asp Leu Gly His Ala Ala	
65 70 75 80	
gcg gcg gag ctc ggc ccg gac gcc acg tac gcg cgc tgc gac gtc gcc	288
Ala Ala Glu Leu Gly Pro Asp Ala Thr Tyr Ala Arg Cys Asp Val Ala	
85 90 95	
gac gag gcg cag gtc gcc gcc gcc gtc gac ctc gcc gtg gcg cgc cac	336
Asp Glu Ala Gln Val Ala Ala Ala Val Asp Leu Ala Val Ala Arg His	
100 105 110	
ggc cgc ctc gac gtc atg cac aac aac gcc gcc atc ccg ggg agg ttc	384
Gly Arg Leu Asp Val Met His Asn Asn Ala Ala Ile Pro Gly Arg Phe	
115 120 125	
ccg cag gac gac atg gcg tcc gtc gac ctc gcc gac ttc gac gcc atg	432
Pro Gln Asp Asp Met Ala Ser Val Asp Leu Ala Asp Phe Asp Ala Met	
130 135 140	
atg gcg gtg aac gcc cgc gcg tcg ctc gcc ggc atc aag cac gcc gcg	480
Met Ala Val Asn Ala Arg Ala Ser Leu Ala Gly Ile Lys His Ala Ala	
145 150 155 160	
cgc gtc atg gcg ccc cgc cgc gcc ggc gtc atc ctc tgc acg gcc agc	528
Arg Val Met Ala Pro Arg Arg Ala Gly Val Ile Leu Cys Thr Ala Ser	
165 170 175	
gcc gtc ggc gtc ctc ccg ctc ccg gcg gtc gcc acg cac tcc atc acc	576
Ala Val Gly Val Leu Pro Leu Pro Ala Val Ala Thr His Ser Ile Thr	
180 185 190	
aag gcc acc atc atc gcc atc gtg cgc gca gcg gcg gag ccc ctg gcg	624
Lys Ala Thr Ile Ile Ala Ile Val Arg Ala Ala Ala 205	
195 200 205	
cgc cac ggc ctg ccg gtg aac gcc atc tcg ccg ggc gcc gtc agg acg	672
Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Gly Ala Val Arg Thr	
210 215 220	
ccg gtc ctg cag ggc aag gtg tcg gtg atg tcg gcg tcg tct cct acc	720
Pro Val Leu Gln Gly Lys Val Ser Val Met Ser Ala Ser Ser Pro Thr	



PhoenixTemp32470.tmp.txt

225									230							240
atg	agc	gac	gag	ctg	aag	cag	atg	atc	gac	gtc	gac	gcg	aac	gac	atg	768
Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	Asp	Met	
				245					250					255		
atg	atg	ggg	ccg	gag	gag	gtg	gcc	atg	gcg	gcg	gtg	tac	ctc	gcc	tcc	816
Met	Met	Gly	Pro	Glu	Glu	Val	Ala	Met	Ala	Ala	Val	Tyr	Leu	Ala	Ser	
			260					265					270			
gac	gag	gcc	agg	tac	gtg	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggg	864
Asp	Glu	Ala	Arg	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	
		275					280					285				
tac	acc	gtg	cac	aaa	gga	gct	gac	aca	ccg	gcg	gcg	cgt	tga			906
Tyr	Thr	Val	His	Lys	Gly	Ala	Asp	Thr	Pro	Ala	Ala	Arg				
	290					295					300					

<210> 1472  
<211> 301  
<212> PRT  
<213> Oryza sativa Japonica Group

<400>	1472															
Met	Trp	Glu	Thr	Lys	Arg	Val	Val	Gly	Pro	Arg	Met	Thr	Thr	Met	Thr	
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Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	Ala	Ala	
			20					25					30			
Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	
		35					40					45				
Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	
	50					55					60					
Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	Ala	Ala	
65					70					75					80	
Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	Val	Ala	
				85					90					95		
Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	
			100					105					110			
Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	Arg	Phe	
		115					120					125				
Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asp	Phe	Asp	Ala	Met	
						135					140					
Met	Ala	Val	Asn	Ala	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	
145					150					155				160		
Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	Ala	Ser	
				165				170						175		
Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	Ile	Thr	
			180					185					190			
Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	Leu	Ala	
		195					200					205				
Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	Arg	Thr	
	210					215					220					
Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	Pro	Thr	
225					230					235				240		
Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	Asp	Met	
				245					250					255		
Met	Met	Gly	Pro	Glu	Glu	Val	Ala	Met	Ala	Ala	Val	Tyr	Leu	Ala	Ser	
			260					265					270			
Asp	Glu	Ala	Arg	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	
		275					280					285				
Tyr	Thr	Val	His	Lys	Gly	Ala	Asp	Thr	Pro	Ala	Ala	Arg				
	290					295					300					

<210> 1473  
<211> 888  
<212> DNA  
<213> Oryza sativa Japonica Group

<220>  
<221> CDS  
<222> (1)..(888)

<400> 1473

## PhoenixTemp32470.tmp.txt

atg	atg	cag	aga	aca	atg	cag	ctc	gtt	ctc	agg	gtg	aag	aga	tcg	tcg	48
Met	Met	Gln	Arg	Thr	Met	Gln	Leu	Val	Leu	Arg	Val	Lys	Arg	Ser	Ser	
1				5					10					15		
ggt	tta	cta	cac	caa	ttc	tcc	act	gcg	gcg	aac	tcg	cag	agg	ttg	gcc	96
Gly	Leu	Leu	His	Gln	Phe	Ser	Thr	Ala	Ala	Asn	Ser	Gln	Arg	Leu	Ala	
			20					25					30			
ggg	aag	gtg	gcc	gtc	atc	acc	ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	144
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	
		35					40					45				
tcg	gcg	aag	gag	ttc	atc	ggc	aat	ggc	gcc	aag	gtt	ata	ctc	gcc	gac	192
Ser	Ala	Lys	Glu	Phe	Ile	Gly	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	
	50					55					60					
gtc	cag	gac	gac	ctc	ggc	cgc	gcc	gtc	gcc	gcc	gag	ctc	ggc	cct	ggc	240
Val	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Gly	
	65				70				75						80	
gcg	acg	tac	acg	cgg	tgc	gac	gtc	acg	gac	gag	gcg	cag	gtc	gcc	gcg	288
Ala	Thr	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	
				85					90					95		
gcg	gtg	gac	ctc	gcc	gtg	gcg	cgc	cac	ggg	gcg	ctc	gac	gtg	ttc	tac	336
Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Ala	Leu	Asp	Val	Phe	Tyr	
			100					105					110			
agc	aac	gcc	ggc	gtc	ctg	ggc	tcc	atc	gcg	ccg	gcg	ccg	ctc	gcc	tcc	384
Ser	Asn	Ala	Gly	Val	Leu	Gly	Ser	Ile	Ala	Pro	Ala	Pro	Leu	Ala	Ser	
		115					120					125				
ctg	gac	ctg	ggc	gag	ttc	gac	cgc	gtc	atg	gcc	gtg	aac	gcc	cgc	gcc	432
Leu	Asp	Leu	Gly	Glu	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	
	130					135					140					
gcc	gtc	gcc	gcc	gcc	aag	cac	gcg	gcg	cgc	gcc	atg	gtg	ccg	cgc	cgg	480
Ala	Val	Ala	Ala	Ala	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	
	145				150					155					160	
agc	ggg	tgc	gtc	ctc	ttc	acg	ggg	agc	gtg	tcg	ggc	gtg	gtg	ggc	ggc	528
Ser	Gly	Cys	Val	Leu	Phe	Thr	Gly	Ser	Val	Ser	Gly	Val	Val	Gly	Gly	
				165					170					175		
acg	ggg	ccg	acg	tcg	tac	ggc	gtg	tcg	aag	gcg	gcc	gtg	ctg	ggc	gtg	576
Thr	Gly	Pro	Thr	Ser	Tyr	Gly	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Val	
			180					185					190			
gtg	cgc	gcc	gtg	gcc	ggg	gag	ctg	gcg	cgc	cac	ggc	gtg	cgg	gcg	aac	624
Val	Arg	Ala	Val	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Ala	Asn	
		195					200					205				
gcc	gtc	tcg	ccg	tgc	ggc	gtc	gcg	acg	ccg	ctg	tcc	atg	gtg	cag	gtc	672
Ala	Val	Ser	Pro	Cys	Gly	Val	Ala	Thr	Pro	Leu	Ser	Met	Val	Gln	Val	
	210					215					220					
ctt	gag	gcc	tac	ccc	ggg	atg	agc	ttc	gag	gag	ctc	aag	aac	gcc	atg	720
Leu	Glu	Ala	Tyr	Pro	Gly	Met	Ser	Phe	Glu	Glu	Leu	Lys	Asn	Ala	Met	
	225				230				235						240	
gcg	gcg	tcc	atg	gag	cag	atg	gaa	gct	ggc	ccg	ttg	atc	gac	ccc	gag	768
Ala	Ala	Ser	Met	Glu	Gln	Met	Glu	Ala	Gly	Pro	Leu	Ile	Asp	Pro	Glu	
				245					250					255		
gac	gtg	gcg	agg	gcg	gcc	gtc	ttc	ctg	gcg	tcc	gac	gag	gcc	agg	tac	816
Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	
			260					265					270			
atc	aac	ggc	cat	aac	ctc	gtc	gtc	gac	ggc	ggc	ttc	acg	gtg	ggg	aag	864
Ile	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	
		275					280					285				
ctg	ctc	aaa	atc	ccc	aag	gag	tag									888
Leu	Leu	Lys	Ile	Pro	Lys	Glu										
	290					295										

&lt;210&gt; 1474

&lt;211&gt; 295

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1474

Met	Met	Gln	Arg	Thr	Met	Gln	Leu	Val	Leu	Arg	Val	Lys	Arg	Ser	Ser
1				5					10					15	
Gly	Leu	Leu	His	Gln	Phe	Ser	Thr	Ala	Ala	Asn	Ser	Gln	Arg	Leu	Ala
			20					25				30			
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala

PhoenixTemp32470.tmp.txt

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      35      40      45
Ser Ala Lys Glu Phe Ile Gly Asn Gly Ala Lys Val Ile Leu Ala Asp
  50      55      60
Val Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Pro Gly
  65      70      75      80
Ala Thr Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala
      85      90      95
Ala Val Asp Leu Ala Val Ala Arg His Gly Ala Leu Asp Val Phe Tyr
  100      105      110
Ser Asn Ala Gly Val Leu Gly Ser Ile Ala Pro Ala Pro Leu Ala Ser
  115      120      125
Leu Asp Leu Gly Glu Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala
  130      135      140
Ala Val Ala Ala Ala Lys His Ala Ala Arg Ala Met Val Pro Arg Arg
  145      150      155      160
Ser Gly Cys Val Leu Phe Thr Gly Ser Val Ser Gly Val Val Gly Gly
  165      170      175
Thr Gly Pro Thr Ser Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val
  180      185      190
Val Arg Ala Val Ala Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn
  195      200      205
Ala Val Ser Pro Cys Gly Val Ala Thr Pro Leu Ser Met Val Gln Val
  210      215      220
Leu Glu Ala Tyr Pro Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met
  225      230      235      240
Ala Ala Ser Met Glu Gln Met Glu Ala Gly Pro Leu Ile Asp Pro Glu
  245      250      255
Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr
  260      265      270
Ile Asn Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys
  275      280      285
Leu Leu Lys Ile Pro Lys Glu
  290      295

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<210> 1475

<211> 1026

<212> DNA

<213> Oryza sativa Japonica Group

<220>

<221> CDS

<222> (1)..(1026)

<400> 1475

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Met Ala Asn Val Val Phe Phe Leu Pro Ala Pro Ser Pro Gln Pro Cys
  1      5      10      15
cga gct acc gtg ctt ctg ggc ctg att gaa cga gga ctg gag acc gga      96
Arg Ala Thr Val Leu Leu Gly Leu Ile Glu Arg Gly Leu Glu Thr Gly
      20      25      30
aaa tgg gcg ctg tcg tca gat gct gga aga aac ggc gat tct gcg ttc      144
Lys Trp Ala Leu Ser Ser Asp Ala Gly Arg Asn Gly Asp Ser Ala Phe
      35      40      45
tac ttc gct atg acg ggc aag agc aga gca ggg ttg acg atg ttg act      192
Tyr Phe Ala Met Thr Gly Lys Ser Arg Ala Gly Leu Thr Met Leu Thr
      50      55      60
gga ttc gtc aac cgc ttc tct tcc gtg tca aga ccc gaa agg ttg gct      240
Gly Phe Val Asn Arg Phe Ser Ser Val Ser Arg Pro Glu Arg Leu Ala
      65      70      75      80
gga aag gtg gcc gtg atc acc ggc ggc gca agc ggc atc ggc gag gcg      288
Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala
      85      90      95
acg gcc aag gag ttc atc cgc aat ggc gcc aaa gtc atc atc gcc gac      336
Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Ile Ala Asp
      100      105      110
gta caa gac gat ctc ggc cac gcc gtc gcc gcc gag ctc ggc cca gat      384
Val Gln Asp Asp Leu Gly His Ala Val Ala Ala Glu Leu Gly Pro Asp
      115      120      125
gcg gcc tac acc cgc tgc gat gtc acc gac gag gcg cag atc gcg gcg      432

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## PhoenixTemp32470.tmp.txt

Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	Ala	
130	130					135				140	140					
gcc	gtg	gac	ctc	gcc	gtg	gcg	tgc	cac	ggc	cgc	ctc	gac	gtc	ctg	cac	480
Ala	Val	Asp	Leu	Ala	Val	Ala	Cys	His	Gly	Arg	Leu	Asp	Val	Leu	His	
145					150					155					160	
aac	aac	gcc	ggg	gtc	acg	tgc	tcc	tac	gtg	ggg	ccc	ctc	gcc	tcc	cta	528
Asn	Asn	Ala	Gly	Val	Thr	Cys	Ser	Tyr	Val	Gly	Pro	Leu	Ala	Ser	Leu	
				165					170					175		
gac	ctc	gcc	gac	ttc	gac	cgc	gtc	atg	gcg	gtg	aac	gcc	cgg	gcg	gtg	576
Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	Val	
			180					185					190			
ctc	gcc	ggc	atc	aag	cac	gcg	gcg	cgc	gtg	atg	gcg	cca	cgg	cgc	gcc	624
Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	
		195				200						205				
ggc	tcc	atc	ctc	tgc	acg	gcc	agc	gtg	gcg	ggc	gtg	atc	ggc	agc	gat	672
Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	Val	Ile	Gly	Ser	Asp	
	210				215					220						
gtc	ccc	cac	gcg	tac	agc	gtc	tcc	aag	gcg	gca	gcc	atc	ggc	gtg	gtg	720
Val	Pro	His	Ala	Tyr	Ser	Val	Ser	Lys	Ala	Ala	Ala	Ile	Gly	Val	Val	
225					230					235					240	
agg	tcc	gcc	gcc	ggc	gag	ctg	gcg	cgc	cac	ggc	gtg	cgg	ctg	aac	gcc	768
Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Leu	Asn	Ala	
				245					250					255		
atc	tcg	ccg	cac	ggc	atc	gcg	acg	ccg	ctg	gcg	atg	cgc	ggg	ttc	ggc	816
Ile	Ser	Pro	His	Gly	Ile	Ala	Thr	Pro	Leu	Ala	Met	Arg	Gly	Phe	Gly	
			260					265					270			
gac	gtg	ctg	gcg	tgg	gcg	gac	gcc	gag	aga	ttg	aag	cgg	gtc	atc	gag	864
Asp	Val	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Leu	Lys	Arg	Val	Ile	Glu	
		275					280					285				
gag	gac	atg	aac	gag	ctg	gag	ggc	gca	aag	ctg	gag	gcg	gag	gac	atc	912
Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Lys	Leu	Glu	Ala	Glu	Asp	Ile	
	290					295					300					
gcg	agg	gcg	gcg	gtg	tac	ctc	gcc	tcc	gac	gag	gcc	aag	tac	atc	act	960
Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Ile	Thr	
				310						315					320	
ggg	cat	aac	ctc	gtc	gtc	gat	ggc	ggg	ttc	acc	gtc	ggc	aag	cgc	ctc	1008
Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Arg	Leu	
				325					330					335		
aac	ttc	gcg	cat	gct	tga											1026
Asn	Phe	Ala	His	Ala												
				340												

&lt;210&gt; 1476

&lt;211&gt; 341

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1476

Met	Ala	Asn	Val	Val	Phe	Phe	Leu	Pro	Ala	Pro	Ser	Pro	Gln	Pro	Cys	
1				5					10					15		
Arg	Ala	Thr	Val	Leu	Leu	Gly	Leu	Ile	Glu	Arg	Gly	Leu	Glu	Thr	Gly	
			20					25					30			
Lys	Trp	Ala	Leu	Ser	Ser	Asp	Ala	Gly	Arg	Asn	Gly	Asp	Ser	Ala	Phe	
		35					40					45				
Tyr	Phe	Ala	Met	Thr	Gly	Lys	Ser	Arg	Ala	Gly	Leu	Thr	Met	Leu	Thr	
	50					55					60					
Gly	Phe	Val	Asn	Arg	Phe	Ser	Ser	Val	Ser	Arg	Pro	Glu	Arg	Leu	Ala	
65					70					75					80	
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	
				85					90					95		
Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	
			100					105					110			
Val	Gln	Asp	Leu	Gly	His	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Asp		
		115				120						125				
Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	Ala	
					135						140					
Ala	Val	Asp	Leu	Ala	Val	Ala	Cys	His	Gly	Arg	Leu	Asp	Val	Leu	His	
145					150					155					160	
Asn	Asn	Ala	Gly	Val	Thr	Cys	Ser	Tyr	Val	Gly	Pro	Leu	Ala	Ser	Leu	

## PhoenixTemp32470.tmp.txt

165  
 Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala Val  
 170  
 180  
 185  
 190  
 195  
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 205  
 210  
 215  
 220  
 225  
 230  
 235  
 240  
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 255  
 260  
 265  
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 300  
 305  
 310  
 315  
 320  
 325  
 330  
 335  
 340

&lt;210&gt; 1477

&lt;211&gt; 897

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(897)

&lt;400&gt; 1477

atg	tac	agc	gcc	att	cac	ctc	gtt	cag	agg	ggc	aag	aac	aga	gca	ggg	48
Met	Tyr	Ser	Ala	Ile	His	Leu	Val	Gln	Arg	Gly	Lys	Asn	Arg	Ala	Gly	
1				5				10						15		
ttg	acg	atg	ttg	act	gga	ttc	gtc	aac	agt	ttc	tcc	tct	gtg	tca	aga	96
Leu	Thr	Met	Leu	Thr	Gly	Phe	Val	Asn	Ser	Phe	Ser	Ser	Val	Ser	Arg	
			20					25					30			
ccc	gaa	agg	ttg	gct	gga	aag	gtg	gcc	gtg	atc	acc	ggg	ggc	gca	agc	144
Pro	Glu	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	
			35				40					45				
ggc	atc	ggc	gag	gcg	acg	gcc	aag	gag	ttc	atc	cg	aat	ggc	gcc	aag	192
Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	
	50					55					60					
gtc	atc	atc	gcc	gac	gta	caa	gac	gat	ctc	ggc	cac	acc	gtc	gct	gcc	240
Val	Ile	Ile	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Ala	
	65				70					75					80	
gag	ctc	ggc	ccg	ggc	tcg	gcc	tac	acc	cg	tgc	gac	gtc	acc	gac	gag	288
Glu	Leu	Gly	Pro	Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	
				85					90					95		
gcg	cag	atc	gcg	gcg	acc	gtg	gac	ctt	gcc	gtg	gcg	cg	cac	ggc	cac	336
Ala	Gln	Ile	Ala	Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	
			100				105						110			
ctt	gac	atc	ctg	tac	aac	aac	gcc	ggg	atc	aca	agc	tcc	tct	gtg	ggg	384
Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	
			115				120					125				
cac	ctt	gcc	tcc	ctc	gac	ctc	gcc	gac	ttc	gac	cg	gtc	atg	gcg	gtg	432
His	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	
			130			135					140					
aac	gcc	cgg	gcg	gtg	ctc	gcc	ggc	atc	aag	cac	gcc	gcg	cg	gtg	atg	480
Asn	Ala	Arg	Ala	Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	
					150					155					160	
gca	cca	cga	cg	acc	ggc	tcc	atc	ctc	tgc	acg	gcc	agc	gtg	gcg	ggc	528
Ala	Pro	Arg	Arg	Thr	Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	
				165					170					175		
atg	atg	ggc	ggc	gag	atg	ccc	cac	gcg	tac	aac	gtc	tcc	aag	gcg	gcg	576
Met	Met	Gly	Gly	Glu	Met	Pro	His	Ala	Tyr	Asn	Val	Ser	Lys	Ala	Ala	

## PhoenixTemp32470.tmp.txt

			180					185				190						
gtc	ata	ggt	gtg	gtg	cgg	tcc	gcc	gcc	ggc	gag	ctg	gca	cgc	cac	ggc			624
Val	Ile	Gly	Val	Val	Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly			
		195					200					205						
gtg	cgg	ctg	aac	gcg	atc	tcc	ccg	ctc	ggc	atc	gcg	acg	cca	ctg	gcg			672
Val	Arg	Leu	Asn	Ala	Ile	Ser	Pro	Leu	Gly	Ile	Ala	Thr	Pro	Leu	Ala			
	210					215					220							
atg	cgc	ggg	ttc	ggc	gac	atg	ctg	gcg	tgg	gcg	gac	gcc	gag	cgg	gtg			720
Met	Arg	Gly	Phe	Gly	Asp	Met	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Val			
225					230					235					240			
agg	cgg	ctc	atc	gag	gag	gac	atg	aac	gag	cta	gag	ggc	gcg	acg	ctg			768
Arg	Arg	Leu	Ile	Glu	Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Thr	Leu			
			245						250					255				
gag	gcg	gag	gac	atc	gcg	agg	gcg	gcg	gtg	tac	ctc	gcc	tcc	gac	gag			816
Glu	Ala	Glu	Asp	Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu			
			260				265						270					
gcc	aag	tac	gtc	acc	ggg	cat	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acc			864
Ala	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr			
		275					280					285						
gtc	ggg	aag	cgg	ctc	aac	gtg	gcg	cgt	gct	tga								897
Val	Gly	Lys	Arg	Leu	Asn	Val	Ala	Arg	Ala									
	290					295												

&lt;210&gt; 1478

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1478

Met	Tyr	Ser	Ala	Ile	His	Leu	Val	Gln	Arg	Gly	Lys	Asn	Arg	Ala	Gly			
1				5				10						15				
Leu	Thr	Met	Leu	Thr	Gly	Phe	Val	Asn	Ser	Phe	Ser	Ser	Val	Ser	Arg			
			20					25					30					
Pro	Glu	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser			
		35					40					45						
Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys			
	50					55					60							
Val	Ile	Ile	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Ala			
65				70				75						80				
Glu	Leu	Gly	Pro	Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu			
			85					90					95					
Ala	Gln	Ile	Ala	Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His			
			100				105						110					
Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly			
	115					120					125							
His	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val			
	130					135					140							
Asn	Ala	Arg	Ala	Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met			
145				150				155						160				
Ala	Pro	Arg	Arg	Thr	Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly			
			165					170					175					
Met	Met	Gly	Gly	Glu	Met	Pro	His	Ala	Tyr	Asn	Val	Ser	Lys	Ala	Ala			
		180					185					190						
Val	Ile	Gly	Val	Val	Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly			
	195						200					205						
Val	Arg	Leu	Asn	Ala	Ile	Ser	Pro	Leu	Gly	Ile	Ala	Thr	Pro	Leu	Ala			
	210					215					220							
Met	Arg	Gly	Phe	Gly	Asp	Met	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Val			
225					230				235					240				
Arg	Arg	Leu	Ile	Glu	Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Thr	Leu			
			245						250				255					
Glu	Ala	Glu	Asp	Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu			
			260					265					270					
Ala	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr			
		275					280					285						
Val	Gly	Lys	Arg	Leu	Asn	Val	Ala	Arg	Ala									
	290				295													

&lt;210&gt; 1479

&lt;211&gt; 924

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(924)

&lt;400&gt; 1479

atg	atg	agc	gta	gca	gcc	aac	aaa	att	ctc	agg	ggg	agg	agc	aga	ggc	48
Met	Met	Ser	Val	Ala	Ala	Asn	Lys	Ile	Leu	Arg	Gly	Arg	Ser	Arg	Gly	
1				5				10						15		
ggt	cgt	ccg	atg	ttc	tct	tcc	ggc	ttg	gcc	gat	cgc	ctc	ttc	tcc	tcg	96
Val	Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	
			20					25					30			
tcg	gcg	tca	agc	tcc	aaa	agg	ttg	gaa	ggg	aaa	gtg	gcc	gtg	atc	acc	144
Ser	Ala	Ser	Ser	Ser	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	
			35				40					45				
ggc	gcg	gtg	ggc	ggc	atc	ggc	gag	gcc	acg	gcg	aag	gag	ttc	gtc	agg	192
Gly	Ala	Val	Gly	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	
	50				55						60					
aat	ggc	gcc	aag	gtc	atc	ctc	gcc	gat	atc	cag	gac	gac	ctt	ggc	cgc	240
Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	
	65				70					75					80	
gcc	atg	gcc	gcc	gag	ctc	ggc	gcg	gac	gcc	gcg	tcg	tac	acg	cac	tgc	288
Ala	Met	Ala	Ala	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	
				85				90						95		
gac	gtc	acc	gtc	gag	gcg	gac	gtc	gcc	gcg	gcc	gtc	gac	ctc	gcc	gtg	336
Asp	Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	
			100					105					110			
gcg	cgc	cac	ggc	cgc	ctc	gac	gtc	gtc	tac	agc	aac	gcc	ggc	atc	gcc	384
Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala	
		115					120					125				
ggc	gcc	gcg	gcc	ccg	ccc	acg	ctc	tcg	gcg	ctc	gac	ctc	gac	gac	tac	432
Gly	Ala	Ala	Ala	Pro	Pro	Thr	Leu	Ser	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	
	130					135					140					
gac	cgc	gtc	atg	gcc	gtc	aac	gcc	cgg	tcc	atg	gtg	gcc	tgc	ctc	aag	480
Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	
	145				150					155					160	
cac	gcg	gcg	cgc	gtc	atg	tcc	ccg	cgc	cgc	gcc	ggc	tgc	atc	ctc	tgc	528
His	Ala	Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	
				165				170						175		
acg	gcg	agc	tcc	acg	gcg	ctg	atc	ggc	gac	ctg	gcg	gcg	ccg	gcg	tac	576
Thr	Ala	Ser	Ser	Thr	Ala	Leu	Ile	Gly	Asp	Leu	Ala	Ala	Pro	Ala	Tyr	
			180					185					190			
tgc	atc	tcg	aag	gcg	gcc	gtc	gtc	gga	atg	gtg	cgg	acg	gtg	gca	agg	624
Cys	Ile	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	
		195				200						205				
cag	ctg	gcg	cgc	gac	ggc	gtg	cgc	gtg	aac	gcc	atc	tcg	ccg	cac	atc	672
Gln	Leu	Ala	Arg	Asp	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ile	
	210				215						220					
atc	ccg	acg	gcg	ctg	gtg	acg	cgc	gtc	atc	tcc	gag	acg	ttc	ccg	gcg	720
Ile	Pro	Thr	Ala	Leu	Val	Thr	Arg	Val	Ile	Ser	Glu	Thr	Phe	Pro	Ala	
	225				230					235					240	
gcc	acc	gcg	gag	gag	gtg	agg	agg	atg	gtg	acg	agg	gac	atg	cag	gag	768
Ala	Thr	Ala	Glu	Glu	Val	Arg	Arg	Met	Val	Thr	Arg	Asp	Met	Gln	Glu	
				245					250					255		
ctg	gaa	ggg	gcg	tcg	ctg	gag	gtg	gag	gac	gtg	gcg	agg	gcg	gcc	gtc	816
Leu	Glu	Gly	Ala	Ser	Leu	Glu	Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	
			260					265					270			
ttc	ttg	gcg	tcc	gac	gag	gcc	aag	ttc	gtc	acc	ggc	cac	aac	ctc	gtc	864
Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	
		275					280					285				
gtc	gat	ggc	ggc	ttc	acg	gtc	ggc	aag	gac	ctc	ctc	cgg	aat	cca	ccg	912
Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	
	290					295					300					
agc	ttt	gct	tga													924
Ser	Phe	Ala														
305																

PhoenixTemp32470.tmp.txt

<210> 1480  
 <211> 307  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 1480  
 Met Met Ser Val Ala Ala Asn Lys Ile Leu Arg Gly Arg Ser Arg Gly  
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 Val Arg Pro Met Phe Ser Ser Gly Leu Ala Asp Arg Leu Phe Ser Ser  
 20 25 30  
 Ser Ala Ser Ser Lys Arg Leu Glu Gly Lys Val Ala Val Ile Thr  
 35 40 45  
 Gly Ala Val Gly Gly Ile Gly Glu Ala Thr Ala Lys Glu Phe Val Arg  
 50 55 60  
 Asn Gly Ala Lys Val Ile Leu Ala Asp Ile Gln Asp Asp Leu Gly Arg  
 65 70 75 80  
 Ala Met Ala Ala Glu Leu Gly Ala Asp Ala Ser Tyr Thr His Cys  
 85 90 95  
 Asp Val Thr Val Glu Ala Asp Val Ala Ala Val Asp Leu Ala Val  
 100 105 110  
 Ala Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala Gly Ile Ala  
 115 120 125  
 Gly Ala Ala Pro Pro Thr Leu Ser Ala Leu Asp Leu Asp Asp Tyr  
 130 135 140  
 Asp Arg Val Met Ala Val Asn Ala Arg Ser Met Val Ala Cys Leu Lys  
 145 150 155 160  
 His Ala Ala Arg Val Met Ser Pro Arg Arg Ala Gly Cys Ile Leu Cys  
 165 170 175  
 Thr Ala Ser Ser Thr Ala Leu Ile Gly Asp Leu Ala Ala Pro Ala Tyr  
 180 185 190  
 Cys Ile Ser Lys Ala Ala Val Val Gly Met Val Arg Thr Val Ala Arg  
 195 200 205  
 Gln Leu Ala Arg Asp Gly Val Arg Val Asn Ala Ile Ser Pro His Ile  
 210 215 220  
 Ile Pro Thr Ala Leu Val Thr Arg Val Ile Ser Glu Thr Phe Pro Ala  
 225 230 235 240  
 Ala Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Asp Met Gln Glu  
 245 250 255  
 Leu Glu Gly Ala Ser Leu Glu Val Glu Asp Val Ala Arg Ala Val  
 260 265 270  
 Phe Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His Asn Leu Val  
 275 280 285  
 Val Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg Asn Pro Pro  
 290 295 300  
 Ser Phe Ala  
 305

<210> 1481  
 <211> 933  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(933)

<400> 1481	
atg gcc aaa tgg gcc gcg cag cct ggc acg gcc tgc tca acg gcc ggg	48
Met Ala Lys Trp Ala Ala Gln Pro Gly Thr Ala Cys Ser Thr Ala Gly	
1 5 10 15	
ggg aag agc ata gct gct cag gtg ttc tcc aac ggc ttg gcc gat cgc	96
Gly Lys Ser Ile Ala Ala Gln Val Phe Ser Asn Gly Leu Ala Asp Arg	
20 25 30	
ctc ttc tcc tcg tcg tca agc tcc aga aag ttg gat ggc aaa gtg gcc	144
Leu Phe Ser Ser Ser Ser Ser Ser Arg Lys Leu Asp Gly Lys Val Ala	
35 40 45	
gtg atc acc ggc gcg gcg agc ggc atc ggc gag gcc acg gcg aag gag	192
Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala Thr Ala Lys Glu	



## PhoenixTemp32470.tmp.txt

50	55	60		
ttc gtc agg aac ggc gcc aag gtt atc att gcc gat atc cag gac gac	240			
Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp Ile Gln Asp Asp				
65	70	75	80	
ctc ggc cgc gcc gtg gcc gcc gag ctc ggc gcc gac gcc gcg tcg tac	288			
Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Ala Asp Ala Ala Ser Tyr				
85	90	95		
acg cac tgc gac gtc acc gtc gag aag gat gtc gcc gcg gcc gtc gac	336			
Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala Ala Ala Val Asp				
100	105	110		
ctc gcc gtg gcg cgc cac ggc cgc ctc gac gtc gtc tac agc aac gcc	384			
Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala				
115	120	125		
ggc gtc ata gga gca ccg gct ccg gcc tcg ctc gcg gcg ctc gac ctc	432			
Gly Val Ile Gly Ala Pro Ala Pro Ala Ser Leu Ala Ala Leu Asp Leu				
130	135	140		
gac gag tac gac cgc gtc atg gcc gtc aac gcc cgg tcg atg ttg gcg	480			
Asp Glu Tyr Asp Arg Val Met Ala Val Asn Ala Arg Ser Met Leu Ala				
145	150	155	160	
tgc gtc aag cac gcg gcg cgc gtc atg gcg ccg cgc cgc gcc ggc tgc	528			
Cys Val Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Cys				
165	170	175		
atc ctc tgc acg gcc agc tcg gcg gcg gtg ctc ggc ggc gtg gcg tcg	576			
Ile Leu Cys Thr Ala Ser Ser Ala Val Leu Gly Gly Val Ala Ser				
180	185	190		
ccg gtg tac tcc atg tcg aag gcg gcc atc gtc ggc atg gtg cgc gcg	624			
Pro Val Tyr Ser Met Ser Lys Ala Ala Ile Val Gly Met Val Arg Ala				
195	200	205		
gtg gcg agg cag ctg gcg cgc gac ggc gtg cgg gtg aac gcc atc tcg	672			
Val Ala Arg Gln Leu Ala Ala Asp Gly Val Arg Val Asn Ala Ile Ser				
210	215	220		
ccg cac gcc atc ccg acg ccg atg gcg cta ggc atc atc gcc gag acg	720			
Pro His Ala Ile Pro Thr Pro Met Ala Leu Gly Ile Ile Ala Glu Thr				
225	230	235	240	
ttc ccg gcg gcc acc gcg gag gag gtg agg agg atg gtg acg agg gag	768			
Phe Pro Ala Ala Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Glu				
245	250	255		
atg cag gag ctg gaa ggg aca tcg ctg gag gtg gaa gac gtg gcg agg	816			
Met Gln Glu Leu Glu Gly Thr Ser Leu Glu Val Glu Asp Val Ala Arg				
260	265	270		
gcg gcc gtg ttg gcg tcc gac gag gtc aag ttc gtc acc ggc cac	864			
Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His				
275	280	285		
aac ctc gtc gtc gac ggc ggc ttc acg gtg ggc aaa gac ctc ctc cga	912			
Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg				
290	295	300		
aat cca ccg agc tct act tga	933			
Asn Pro Pro Ser Ser Thr				
305	310			

&lt;210&gt; 1482

&lt;211&gt; 310

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1482

Met Ala Lys Trp Ala Ala Gln Pro Gly Thr Ala Cys Ser Thr Ala Gly	
1	5
Gly Lys Ser Ile Ala Ala Gln Val Phe Ser Asn Gly Leu Ala Asp Arg	
20	25
Leu Phe Ser Ser Ser Ser Ser Arg Lys Leu Asp Gly Lys Val Ala	
35	40
Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala Thr Ala Lys Glu	
50	55
Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp Ile Gln Asp Asp	
65	70
Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Ala Asp Ala Ala Ser Tyr	
85	90
Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala Ala Ala Val Asp	

PhoenixTemp32470.tmp.txt

```

100
Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala
115
Gly Val Ile Gly Ala Pro Ala Pro Ala Ser Leu Ala Ala Leu Asp Leu
130
Asp Glu Tyr Asp Arg Val Met Ala Val Asn Ala Arg Ser Met Leu Ala
145
Cys Val Lys His Ala Arg Val Met Ala Pro Arg Arg Ala Gly Cys
165
Ile Leu Cys Thr Ala Ser Ser Ala Ala Val Leu Gly Gly Val Ala Ser
180
Pro Val Tyr Ser Met Ser Lys Ala Ala Ile Val Gly Met Val Arg Ala
195
Val Ala Arg Gln Leu Ala Arg Asp Gly Val Arg Val Asn Ala Ile Ser
210
Pro His Ala Ile Pro Thr Pro Met Ala Leu Gly Ile Ile Ala Glu Thr
225
Phe Pro Ala Ala Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Glu
245
Met Gln Glu Leu Glu Gly Thr Ser Leu Glu Val Glu Asp Val Ala Arg
260
Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His
275
Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg
290
Asn Pro Pro Ser Ser Thr
305
310

```

<210> 1483

<211> 795

<212> DNA

<213> Oryza sativa Japonica Group

<220>

<221> CDS

<222> (1)..(795)

<400> 1483

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atg gcg gcc gcc gca gct cgc agc atc ccg gac cgg tgg acc ctc gcc      48
Met Ala Ala Ala Ala Ala Arg Ser Ile Pro Asp Arg Trp Thr Leu Ala
1
5
ggc gcg acg gcg ctc gtc acc ggc ggc agc aaa ggc atc ggg cat gcg      96
Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala
20
25
ata gtg gag gag ctc gcc gga ttc ggg gcg cgc gtg cac acg tgc gcc      144
Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala
35
40
cgg aac gcg gcg gag ctg gag gcg agc cgg cgg cgg tgg gag gag cgg      192
Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg
50
55
ggg ctc cgc gtc acc gcc acc gtc tgc gac gtc tcc gcg cgc ggc gac      240
Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp
65
70
cgg gag agg ctg gtc gcc gcc gcg gcg ggg gag ttc ggc ggc agg ctg      288
Arg Glu Arg Leu Val Ala Ala Ala Ala Gly Glu Phe Gly Gly Arg Leu
85
90
gac atc ctc gtc aac aac gtc ggc cgg acc atg ttc cgg gcg gcg gcg      336
Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala
100
105
gcg tgc tcc ggc gag gac ttc gcc ctg ctc gtg gcc acc aac ctc gag      384
Ala Cys Ser Gly Glu Asp Phe Ala Leu Leu Val Ala Thr Asn Leu Glu
115
120
tcc tgc ttc cac ctc tcc cag ctc gcg cac ccg ctc ctg ctc gcc gcc      432
Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Ala Ala
130
135
ggc ggc gga ggc ggc tgc gtg gtg aac atc tcc tcc gtc gcc ggc acc      480
Gly Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser Val Ala Gly Thr
145
150
gtc ggc ata ccg gcg ctg gcc gtg tac tcc atg acc aag ggc ggc atg      528

```

## PhoenixTemp32470.tmp.txt

Val	Gly	Ile	Pro	Ala	Leu	Ala	Val	Tyr	Ser	Met	Thr	Lys	Gly	Gly	Met		
				165					170					175			
aac	cag	ctc	acc	cgg	agc	ctc	gcc	gcc	gag	tgg	gcc	ggc	gac	ggc	ata	576	
Asn	Gln	Leu	Thr	Arg	Ser	Leu	Ala	Ala	Glu	Trp	Ala	Gly	Asp	Gly	Ile		
			180					185					190				
cgt	gtc	aac	tgc	gtc	gcg	ccg	gga	ggc	gtc	aag	act	gac	atc	tgc	caa	624	
Arg	Val	Asn	Cys	Val	Ala	Pro	Gly	Gly	Val	Lys	Thr	Asp	Ile	Cys	Gln		
		195					200					205					
gac	gag	acg	ata	gac	ccg	gag	ctg	atc	aag	agc	gag	atg	gac	cgg	ctg	672	
Asp	Glu	Thr	Ile	Asp	Pro	Glu	Leu	Ile	Lys	Ser	Glu	Met	Asp	Arg	Leu		
	210					215					220						
ccg	atg	cgg	cgg	ctg	gcg	gag	ccg	gag	gag	gtg	gcg	gcg	acg	gtg	gcg	720	
Pro	Met	Arg	Arg	Leu	Ala	Glu	Pro	Glu	Glu	Val	Ala	Ala	Thr	Val	Ala		
	225				230					235					240		
ttc	ctc	tgc	atg	ccg	gcg	gcc	tcc	tac	atc	acc	ggc	cag	gtc	gtc	ggc	768	
Phe	Leu	Cys	Met	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Val	Gly		
				245					250					255			
gtc	gac	ggc	gga	cgc	acc	att	acc	tag								795	
Val	Asp	Gly	Gly	Arg	Thr	Ile	Thr										
			260														

&lt;210&gt; 1484

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 1484

Met	Ala	Ala	Ala	Ala	Ala	Arg	Ser	Ile	Pro	Asp	Arg	Trp	Thr	Leu	Ala		
1				5					10					15			
Gly	Ala	Thr	Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	His	Ala		
			20					25					30				
Ile	Val	Glu	Glu	Leu	Ala	Gly	Phe	Gly	Ala	Arg	Val	His	Thr	Cys	Ala		
		35					40					45					
Arg	Asn	Ala	Ala	Glu	Leu	Glu	Ala	Ser	Arg	Arg	Arg	Trp	Glu	Glu	Arg		
	50					55					60						
Gly	Leu	Arg	Val	Thr	Ala	Thr	Val	Cys	Asp	Val	Ser	Ala	Arg	Gly	Asp		
65					70				75					80			
Arg	Glu	Arg	Leu	Val	Ala	Ala	Ala	Ala	Gly	Glu	Phe	Gly	Gly	Arg	Leu		
			85						90					95			
Asp	Ile	Leu	Val	Asn	Asn	Val	Gly	Arg	Thr	Met	Phe	Arg	Ala	Ala	Ala		
			100					105					110				
Ala	Cys	Ser	Gly	Glu	Asp	Phe	Ala	Leu	Leu	Val	Ala	Thr	Asn	Leu	Glu		
		115					120					125					
Ser	Cys	Phe	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Leu	Ala	Ala		
	130					135					140						
Gly	Gly	Gly	Gly	Gly	Cys	Val	Val	Asn	Ile	Ser	Ser	Val	Ala	Gly	Thr		
145					150					155				160			
Val	Gly	Ile	Pro	Ala	Leu	Ala	Val	Tyr	Ser	Met	Thr	Lys	Gly	Gly	Met		
			165					170						175			
Asn	Gln	Leu	Thr	Arg	Ser	Leu	Ala	Ala	Glu	Trp	Ala	Gly	Asp	Gly	Ile		
			180					185					190				
Arg	Val	Asn	Cys	Val	Ala	Pro	Gly	Val	Lys	Thr	Asp	Ile	Cys	Gln			
		195					200				205						
Asp	Glu	Thr	Ile	Asp	Pro	Glu	Leu	Ile	Lys	Ser	Glu	Met	Asp	Arg	Leu		
	210					215					220						
Pro	Met	Arg	Arg	Leu	Ala	Glu	Pro	Glu	Glu	Val	Ala	Ala	Thr	Val	Ala		
	225				230					235					240		
Phe	Leu	Cys	Met	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Val	Gly		
				245					250					255			
Val	Asp	Gly	Gly	Arg	Thr	Ile	Thr										
			260														

&lt;210&gt; 1485

&lt;211&gt; 807

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(807)

```

<400> 1485
atg gcg gcc gcc gca gct cgc agc atc ccc tac cgg tgg acc ctc gcc      48
Met Ala Ala Ala Ala Ala Arg Ser Ile Pro Tyr Arg Trp Thr Leu Ala
  1          5          10          15
ggc gcg acg gcg ctc gtc acc ggc ggc agc aaa ggc atc ggg cat gcg      96
Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala
          20          25          30
ata gtg gag gag ctc gcc gga ttc ggg gcg cgc gtg cac acg tgc gcc      144
Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala
          35          40          45
cgg aac gcg gcg gag ctg gag gcg agc cgg cgg cgg tgg gag gag cgg      192
Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg
          50          55          60
ggg ctc cgc gtc acc gcc acc gtc tgc gac gtc tcc gcg cgc ggc gac      240
Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp
  65          70          75          80
cgg gag agg ctg gtc gcc gcg gcg gcg gcg gag ttc ggc ggc agg ctg      288
Arg Glu Arg Leu Val Ala Ala Ala Ala Glu Phe Gly Gly Arg Leu
          85          90          95
gac atc ctc gtc aac aac gtc ggc cgg acc atg ttc cgg gcg gcg gcg      336
Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala
          100          105          110
gcg tgc tcc ggc gag gac ttc gcc gtg ctc gtg gcc acc aac ctc gag      384
Ala Cys Ser Gly Glu Asp Phe Ala Val Leu Val Ala Thr Asn Leu Glu
          115          120          125
tcc tgc ttc cac ctc tcc cag ctc gcg cac ccg ctc ctg ctc gcc gcc      432
Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Ala Ala
          130          135          140
ggc ggc gcc cgc ggc ggc gga ggc ggc tgc gtg gtg aac atc tcc tcc      480
Gly Gly Ala Arg Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser
          145          150          155          160
gtc gcc ggc agc gtc ggc atg ccg gcg ctg gcc gtg tac tcc atg acc      528
Val Ala Gly Ser Val Gly Met Pro Ala Leu Ala Val Tyr Ser Met Thr
          165          170          175
aag ggc ggc atg aac cag ctc acg cgg agc ctc gcc gcc gag tgg gcc      576
Lys Gly Gly Met Asn Gln Leu Thr Arg Ser Leu Ala Ala Glu Trp Ala
          180          185          190
ggc gac ggc att cgt gtc aac tgc gtc gcg ccg gga ggc gtc aag act      624
Gly Asp Gly Ile Arg Val Asn Cys Val Ala Pro Gly Gly Val Lys Thr
          195          200          205
gat atc tgc caa gac gag acg ata gac ccg gag ctg atc aag agc gag      672
Asp Ile Cys Gln Asp Glu Thr Ile Asp Pro Glu Leu Ile Lys Ser Glu
          210          215          220
atg gac cgg ctg ccg atg cgg cgg ctg gcg gag ccg gag gag gtg gcg      720
Met Asp Arg Leu Pro Met Arg Arg Leu Ala Glu Pro Glu Glu Val Ala
          225          230          235          240
gcc acg gtg gcg ttc ctc tgc atg ccg gcg gcc tcc tac atc acc ggc      768
Ala Thr Val Ala Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly
          245          250          255
cag gtc gtc ggc gtc gac ggc gga cgc acc att tcc tag
Gln Val Val Gly Val Asp Gly Gly Arg Thr Ile Ser
          260          265

```

&lt;210&gt; 1486

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

```

<400> 1486
Met Ala Ala Ala Ala Ala Arg Ser Ile Pro Tyr Arg Trp Thr Leu Ala
  1          5          10          15
Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala
          20          25          30
Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala
          35          40          45
Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg
          50          55          60

```

## PhoenixTemp32470.tmp.txt

Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp  
 65 70 75 80  
 Arg Glu Arg Leu Val Ala Ala Ala Ala Glu Phe Gly Gly Arg Leu  
 85 90 95  
 Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala  
 100 105 110  
 Ala Cys Ser Gly Glu Asp Phe Ala Val Leu Val Ala Thr Asn Leu Glu  
 115 120 125  
 Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Ala Ala  
 130 135 140  
 Gly Gly Ala Arg Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser  
 145 150 155 160  
 Val Ala Gly Ser Val Gly Met Pro Ala Leu Ala Val Tyr Ser Met Thr  
 165 170 175  
 Lys Gly Gly Met Asn Gln Leu Thr Arg Ser Leu Ala Ala Glu Trp Ala  
 180 185 190  
 Gly Asp Gly Ile Arg Val Asn Cys Val Ala Pro Gly Gly Val Lys Thr  
 195 200 205  
 Asp Ile Cys Gln Asp Glu Thr Ile Asp Pro Glu Leu Ile Lys Ser Glu  
 210 215 220  
 Met Asp Arg Leu Pro Met Arg Arg Leu Ala Glu Pro Glu Glu Val Ala  
 225 230 235 240  
 Ala Thr Val Ala Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly  
 245 250 255  
 Gln Val Val Gly Val Asp Gly Gly Arg Thr Ile Ser  
 260 265

&lt;210&gt; 1487

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1487

atg ggc cgc ttt gac gga gca acc gtg ctg atc aca ggt gcc gcc ggg	48
Met Gly Arg Phe Asp Gly Ala Thr Val Leu Ile Thr Gly Ala Ala Gly	
1 5 10 15	
ggg ctc ggc cgg ggt gcc gcg aaa ggc ttt gcc agc gag ggc gcg cgg	96
Gly Leu Gly Arg Gly Ala Ala Lys Gly Phe Ala Ser Glu Gly Ala Arg	
20 25 30	
ctg gtg ctg tcg gac atc gac gaa aag gcg ctc gcc gat ctt gcc gca	144
Leu Val Ser Asp Ile Asp Glu Lys Ala Leu Ala Asp Leu Ala Ala	
35 40 45	
acg ctg ccg gcc gaa acg gcg atc ctg gcc ggc aac gta gcc gac gaa	192
Thr Leu Pro Ala Glu Thr Ala Ile Leu Ala Gly Asn Val Ala Asp Glu	
50 55 60	
aaa ctg tcc gag gat ctg gtc agg ctg gcg gtc gaa aaa ttc ggc cgg	240
Lys Leu Ser Glu Asp Leu Val Arg Leu Ala Val Glu Lys Phe Gly Arg	
65 70 75 80	
ctg gat gtc acc gtc aac aat gcc ggc atc gtc cag agt ttc gtg cgc	288
Leu Asp Val Thr Val Asn Asn Ala Gly Ile Val Gln Ser Phe Val Arg	
85 90 95	
ctg ccg cag gtt cct tcg gac gag gcg cgc gtg ctt gag atc gac	336
Leu Pro Gln Val Pro Ser Asp Glu Ala Arg Arg Val Leu Glu Ile Asp	
100 105 110	
ctg ctt ggc gtc ttc tat gcc atg aag cac cag atc ccg cag atg gag	384
Leu Leu Gly Val Phe Tyr Ala Met Lys His Gln Ile Pro Gln Met Glu	
115 120 125	
cgg cag ttc agg gct acg gcc aag ggc ggc gcc atc gtc aac atc gcc	432
Arg Gln Phe Arg Ala Thr Ala Lys Gly Gly Ala Ile Val Asn Ile Ala	
130 135 140	
tcg gtt gcc gga ctg gtc ggc gcg ccg aaa ctc tcg gtt tat gcc gcc	480
Ser Val Ala Gly Leu Val Gly Ala Pro Lys Leu Ser Val Tyr Ala Ala	
145 150 155 160	
gcc aag cat ggc gtc gtc ggg ctg acc aaa tcg gcg gcc gcc gaa tat	528

## PhoenixTemp32470.tmp.txt

Ala	Lys	His	Gly	Val	Val	Gly	Leu	Thr	Lys	Ser	Ala	Ala	Ala	Glu	Tyr		
				165					170					175			
gca	acc	aag	ggt	gtg	cgc	atc	aac	gcc	atc	tgt	ccg	gct	cac	acc	agg		576
Ala	Thr	Lys	Gly	Val	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Ala	His	Thr	Arg		
			180					185					190				
acg	gca	atg	gtg	gac	agt	ttc	gtg	cgc	gcc	tcc	ggt	gcg	ccg	gag	gca		624
Thr	Ala	Met	Val	Asp	Ser	Phe	Val	Arg	Ala	Ser	Gly	Ala	Pro	Glu	Ala		
		195					200					205					
gag	gcg	ttg	gcc	gaa	ctg	aca	cgc	ggt	gtg	ccg	atg	aaa	cgc	gtg	gcg		672
Glu	Ala	Leu	Ala	Glu	Leu	Thr	Arg	Gly	Val	Pro	Met	Lys	Arg	Val	Ala		
	210					215				220							
gaa	gtc	gac	gaa	atc	acc	acc	gcc	atc	ctg	ttc	gcc	gcc	gac	ccg	gcc		720
Glu	Val	Asp	Glu	Ile	Thr	Thr	Ala	Ile	Leu	Phe	Ala	Ala	Asp	Pro	Ala		
	225				230					235					240		
aac	tcc	ttc	atg	acc	ggc	cat	gcg	ctg	gcc	gtc	gac	ggc	ggc	gtc	ggc		768
Asn	Ser	Phe	Met	Thr	Gly	His	Ala	Leu	Ala	Val	Asp	Gly	Gly	Val	Gly		
				245					250					255			
gcc	atc	tga															777
Ala	Ile																

&lt;210&gt; 1488

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;400&gt; 1488

Met	Gly	Arg	Phe	Asp	Gly	Ala	Thr	Val	Leu	Ile	Thr	Gly	Ala	Ala	Gly		
1				5					10					15			
Gly	Leu	Gly	Arg	Gly	Ala	Ala	Lys	Gly	Phe	Ala	Ser	Glu	Gly	Ala	Arg		
			20					25					30				
Leu	Val	Leu	Ser	Asp	Ile	Asp	Glu	Lys	Ala	Leu	Ala	Asp	Leu	Ala	Ala		
		35					40					45					
Thr	Leu	Pro	Ala	Glu	Thr	Ala	Ile	Leu	Ala	Gly	Asn	Val	Ala	Asp	Glu		
	50					55					60						
Lys	Leu	Ser	Glu	Asp	Leu	Val	Arg	Leu	Ala	Val	Glu	Lys	Phe	Gly	Arg		
65					70					75					80		
Leu	Asp	Val	Thr	Val	Asn	Asn	Ala	Gly	Ile	Val	Gln	Ser	Phe	Val	Arg		
				85					90					95			
Leu	Pro	Gln	Val	Pro	Ser	Asp	Glu	Ala	Arg	Arg	Val	Leu	Glu	Ile	Asp		
		100						105					110				
Leu	Leu	Gly	Val	Phe	Tyr	Ala	Met	Lys	His	Gln	Ile	Pro	Gln	Met	Glu		
		115					120					125					
Arg	Gln	Phe	Arg	Ala	Thr	Ala	Lys	Gly	Gly	Ala	Ile	Val	Asn	Ile	Ala		
	130					135					140						
Ser	Val	Ala	Gly	Leu	Val	Gly	Ala	Pro	Lys	Leu	Ser	Val	Tyr	Ala	Ala		
145					150					155					160		
Ala	Lys	His	Gly	Val	Val	Gly	Leu	Thr	Lys	Ser	Ala	Ala	Ala	Glu	Tyr		
			165						170					175			
Ala	Thr	Lys	Gly	Val	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Ala	His	Thr	Arg		
			180					185					190				
Thr	Ala	Met	Val	Asp	Ser	Phe	Val	Arg	Ala	Ser	Gly	Ala	Pro	Glu	Ala		
		195					200					205					
Glu	Ala	Leu	Ala	Glu	Leu	Thr	Arg	Gly	Val	Pro	Met	Lys	Arg	Val	Ala		
	210					215				220							
Glu	Val	Asp	Glu	Ile	Thr	Thr	Ala	Ile	Leu	Phe	Ala	Ala	Asp	Pro	Ala		
225					230					235					240		
Asn	Ser	Phe	Met	Thr	Gly	His	Ala	Leu	Ala	Val	Asp	Gly	Gly	Val	Gly		
				245					250					255			
Ala	Ile																

&lt;210&gt; 1489

&lt;211&gt; 732

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(732)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1489

atg gcg gat ctg gca ggc aag gtc gtt gtc atc acg gcg gcg gcg caa	48
Met Ala Asp Leu Ala Gly Lys Val Val Val Ile Thr Ala Ala Ala Gln	
1 5 10 15	
ggc atc ggc aag gcg agc gcg ctg gcc ttc gcc aag act gga gcc acc	96
Gly Ile Gly Lys Ala Ser Ala Leu Ala Phe Ala Lys Thr Gly Ala Thr	
20 25 30	
gtc cac gcc acc gac atc aac gag acg ctt ctc gcc gaa ctc gcc aag	144
Val His Ala Thr Asp Ile Asn Glu Thr Leu Leu Ala Glu Leu Ala Lys	
35 40 45	
acg cca ggg atc aag acc cgc aag ctg gat gtg ctc aac gac gag gcc	192
Thr Pro Gly Ile Lys Thr Arg Lys Leu Asp Val Leu Asn Asp Glu Ala	
50 55 60	
gtc aac acc acc ttc gcc gag atc ggc cgc gtc gac gtg ctg ttc aac	240
Val Asn Thr Thr Phe Ala Glu Ile Gly Arg Val Asp Val Leu Phe Asn	
65 70 75 80	
tgc gcc ggc ttc gtc cat tcc ggc tcg atc ctg gag atg aag gat ggc	288
Cys Ala Gly Phe Val His Ser Gly Ser Ile Leu Glu Met Lys Asp Gly	
85 90 95	
gat ctc gat ttc gcc ttc aac ctc aat gtc cgc gcc atg atc cgc acc	336
Asp Leu Asp Phe Ala Phe Asn Leu Asn Val Arg Ala Met Ile Arg Thr	
100 105 110	
atc agg gcc gtg ctg ccc ggc atg ctg gaa cga ggc gac gga tcg atc	384
Ile Arg Ala Val Leu Pro Gly Met Leu Glu Arg Gly Asp Gly Ser Ile	
115 120 125	
gtc aac atg tct tcc gtc gcc ggc gcc ggc aaa ggc gtg ccg aac cgc	432
Val Asn Met Ser Ser Val Ala Gly Ala Gly Lys Val Pro Asn Arg	
130 135 140	
ttc gcc tat ggc gtc acc aag gcc gcc gtc atc ggc ctg acc aag gcg	480
Phe Ala Tyr Gly Val Thr Lys Ala Ala Val Ile Gly Leu Thr Lys Ala	
145 150 155 160	
att gcc gcc gac tat gtc ggc aag ggc ata cgc tgc aac gcc atc tgc	528
Ile Ala Ala Asp Tyr Val Gly Lys Gly Ile Arg Cys Asn Ala Ile Cys	
165 170 175	
ccc ggc acg gtc gaa agc ccg tcg ctg cag gac cgc atg cat gcg caa	576
Pro Gly Thr Val Glu Ser Pro Ser Leu Gln Asp Arg Met His Ala Gln	
180 185 190	
ggc gac tac gaa gcc gcc cgc gcc ttc atc gcc cgc cag cca atg	624
Gly Asp Tyr Glu Ala Ala Arg Ala Phe Ile Ala Arg Gln Pro Met	
195 200 205	
ggc cgg ctc ggc acg cct gag gaa atc gcc gat ctc gcg gtc tat ctg	672
Gly Arg Leu Gly Thr Pro Glu Glu Ile Ala Asp Leu Ala Val Tyr Leu	
210 215 220	
gcc ggc gcg acc tac acg tcc ggg cag gcc tat aat atc gac ggc ggc	720
Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala Tyr Asn Ile Asp Gly Gly	
225 230 235 240	
tggtcgatctgtga	732
Trp Ser Ile	

&lt;210&gt; 1490

&lt;211&gt; 243

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;400&gt; 1490

Met Ala Asp Leu Ala Gly Lys Val Val Val Ile Thr Ala Ala Ala Gln
1 5 10 15
Gly Ile Gly Lys Ala Ser Ala Leu Ala Phe Ala Lys Thr Gly Ala Thr
20 25 30
Val His Ala Thr Asp Ile Asn Glu Thr Leu Leu Ala Glu Leu Ala Lys
35 40 45
Thr Pro Gly Ile Lys Thr Arg Lys Leu Asp Val Leu Asn Asp Glu Ala
50 55 60
Val Asn Thr Thr Phe Ala Glu Ile Gly Arg Val Asp Val Leu Phe Asn
65 70 75 80

## PhoenixTemp32470.tmp.txt

Cys Ala Gly Phe Val<sup>85</sup> His Ser Gly Ser Ile<sup>90</sup> Leu Glu Met Lys Asp<sup>95</sup> Gly  
 Asp Leu Asp Phe<sup>100</sup> Ala Phe Asn Leu Asn<sup>105</sup> Val Arg Ala Met Ile<sup>110</sup> Arg Thr  
 Ile Arg Ala<sup>115</sup> Val Leu Pro Gly Met<sup>120</sup> Leu Glu Arg Gly Asp<sup>125</sup> Gly Ser Ile  
 Val Asn<sup>130</sup> Met Ser Ser Val Ala<sup>135</sup> Gly Ala Gly Lys Gly<sup>140</sup> Val Pro Asn Arg  
 Phe<sup>145</sup> Ala Tyr Gly Val Thr<sup>150</sup> Lys Ala Ala Val Ile<sup>155</sup> Gly Leu Thr Lys Ala<sup>160</sup>  
 Ile Ala Ala Asp Tyr<sup>165</sup> Val Gly Lys Gly Ile<sup>170</sup> Arg Cys Asn Ala Ile<sup>175</sup> Cys  
 Pro Gly Thr Val<sup>180</sup> Glu Ser Pro Ser Leu<sup>185</sup> Gln Asp Arg Met His<sup>190</sup> Ala Gln  
 Gly Asp Tyr<sup>195</sup> Glu Ala Ala Arg Ala<sup>200</sup> Phe Ile Ala Arg Gln Pro Met  
 Gly Arg<sup>210</sup> Leu Gly Thr Pro Glu<sup>215</sup> Glu Ile Ala Asp Leu<sup>220</sup> Ala Val Tyr Leu  
 Ala<sup>225</sup> Gly Ala Thr Tyr Thr<sup>230</sup> Ser Gly Gln Ala Tyr<sup>235</sup> Asn Ile Asp Gly Gly<sup>240</sup>  
 Trp Ser Ile

&lt;210&gt; 1491

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1491

atg	aca	ggc	agg	ctt	cag	ggg	aag	atc	gca	atc	gtc	acc	ggc	gcc	ggc	48
Met	Thr	Gly	Arg	Leu	Gln	Gly	Lys	Ile	Ala	Ile	Val	Thr	Gly	Ala	Gly	
1				5				10						15		
cag	ggc	att	ggt	gca	gcc	act	gcc	cgg	gcc	ttt	gcg	atg	cag	gga	gca	96
Gln	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	Ala	Phe	Ala	Met	Gln	Gly	Ala	
			20				25						30			
aag	acc	gtg	att	gcc	gag	ctc	aat	gcg	gca	acc	ggc	aag	gcg	gcc	gcc	144
Lys	Thr	Val	Ile	Ala	Glu	Leu	Asn	Ala	Ala	Thr	Gly	Lys	Ala	Ala	Ala	
		35					40					45				
gac	gaa	tgt	cgt	gcc	aac	ggc	gcc	gac	gcc	ctt	ttc	gtc	gaa	acc	gat	192
Asp	Glu	Leu	Arg	Ala	Asn	Gly	Ala	Asp	Ala	Leu	Phe	Val	Glu	Thr	Asp	
	50					55					60					
gtc	acc	gac	aca	gcg	gca	gtg	gcc	gac	atg	gtg	gcg	aag	acg	atc	gcg	240
Val	Thr	Asp	Thr	Ala	Ala	Val	Ala	Asp	Met	Val	Ala	Lys	Thr	Ile	Ala	
	65				70				75					80		
gcc	tat	ggc	ggc	gtc	aac	gtg	ctc	gtc	aac	aat	gca	ggc	gcc	aac	gtc	288
Ala	Tyr	Gly	Gly	Val	Asn	Val	Leu	Val	Asn	Asn	Ala	Gly	Ala	Asn	Val	
				85					90					95		
ttt	tac	gag	ccc	ttg	tct	atg	ccg	gac	gcg	gaa	tgg	gac	cgt	tgc	ctc	336
Phe	Tyr	Glu	Pro	Leu	Ser	Met	Pro	Asp	Ala	Glu	Trp	Asp	Arg	Cys	Leu	
			100					105					110			
agg	ctc	gac	ctc	cag	gcc	gcg	tgg	tcc	tgt	gcc	aag	gcg	gtg	ttg	ccg	384
Arg	Leu	Asp	Leu	Gln	Ala	Ala	Trp	Ser	Cys	Ala	Lys	Ala	Val	Leu	Pro	
		115					120					125				
acg	atg	ctg	gcg	aac	ggt	tcg	gga	tcg	atc	gtc	aac	ata	gcc	agc	tgc	432
Thr	Met	Leu	Ala	Asn	Gly	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Cys	
	130				135						140					
cac	gcc	ttc	aag	atc	att	ccc	cac	aca	ttt	ccc	tat	ccg	gtc	gcc	aag	480
His	Ala	Phe	Lys	Ile	Ile	Pro	His	Thr	Phe	Pro	Tyr	Pro	Val	Ala	Lys	
	145				150				155					160		
cat	gcg	ctt	gtc	ggc	ctg	acc	cgc	tcg	ctc	ggc	atc	gaa	tat	gcg	gcg	528
His	Ala	Leu	Val	Gly	Leu	Thr	Arg	Ser	Leu	Gly	Ile	Glu	Tyr	Ala	Ala	
			165						170					175		
cgc	ggc	atc	cgc	gtg	aat	gcg	atc	gcc	ccc	ggc	tac	atc	gag	acg	ccg	576
Arg	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Pro	



## PhoenixTemp32470.tmp.txt

			180				185				190							
atc	gcg	gaa	gcc	tat	tgg	aac	acg	ttt	ccg	gac	ccg	gcc	gag	aag				
Ile	Ala	Glu	Ala	Tyr	Trp	Asn	Thr	Phe	Pro	Asp	Pro	Ala	Glu	Glu	Lys			624
		195					200					205						
cgg	cgg	gcc	tac	gac	ctt	cat	ccg	ccc	aag	cgc	att	ggc	cgg	ccg	gac			672
Arg	Arg	Ala	Tyr	Asp	Leu	His	Pro	Pro	Lys	Arg	Ile	Gly	Arg	Pro	Asp			
	210					215					220							
gaa	gtt	gca	atg	acg	gcg	gtt	ttc	ctc	gct	tcg	gac	gaa	gcg	ccg	ttc			720
Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe			
	225				230					235					240			
atc	aat	gcc	gag	acg	atc	acc	atc	gat	ggt	gga	cgc	tcg	gtt	ctc	tac			768
Ile	Asn	Ala	Glu	Thr	Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Leu	Tyr			
				245					250					255				
cat	gac	tga																777
His	Asp																	

&lt;210&gt; 1492

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;400&gt; 1492

Met	Thr	Gly	Arg	Leu	Gln	Gly	Lys	Ile	Ala	Ile	Val	Thr	Gly	Ala	Gly
1				5					10					15	
Gln	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	Ala	Phe	Ala	Met	Gln	Gly	Ala
			20					25					30		
Lys	Thr	Val	Ile	Ala	Glu	Leu	Asn	Ala	Ala	Thr	Gly	Lys	Ala	Ala	Ala
		35					40					45			
Asp	Glu	Leu	Arg	Ala	Asn	Gly	Ala	Asp	Ala	Leu	Phe	Val	Glu	Thr	Asp
	50					55					60				
Val	Thr	Asp	Thr	Ala	Ala	Val	Ala	Asp	Met	Val	Ala	Lys	Thr	Ile	Ala
65					70					75				80	
Ala	Tyr	Gly	Gly	Val	Asn	Val	Leu	Val	Asn	Asn	Ala	Gly	Ala	Asn	Val
				85					90					95	
Phe	Tyr	Glu	Pro	Leu	Ser	Met	Pro	Asp	Ala	Glu	Trp	Asp	Arg	Cys	Leu
			100					105					110		
Arg	Leu	Asp	Leu	Gln	Ala	Ala	Trp	Ser	Cys	Ala	Lys	Ala	Val	Leu	Pro
		115					120					125			
Thr	Met	Leu	Ala	Asn	Gly	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Cys
	130					135					140				
His	Ala	Phe	Lys	Ile	Ile	Pro	His	Thr	Phe	Pro	Tyr	Pro	Val	Ala	Lys
145					150					155					160
His	Ala	Leu	Val	Gly	Leu	Thr	Arg	Ser	Leu	Gly	Ile	Glu	Tyr	Ala	Ala
				165					170					175	
Arg	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Pro
			180					185					190		
Ile	Ala	Glu	Ala	Tyr	Trp	Asn	Thr	Phe	Pro	Asp	Pro	Ala	Glu	Glu	Lys
		195					200					205			
Arg	Arg	Ala	Tyr	Asp	Leu	His	Pro	Pro	Lys	Arg	Ile	Gly	Arg	Pro	Asp
	210					215					220				
Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe
225					230					235					240
Ile	Asn	Ala	Glu	Thr	Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Leu	Tyr
				245					250					255	
His	Asp														

&lt;210&gt; 1493

&lt;211&gt; 912

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(912)

&lt;400&gt; 1493

atg	cct	gcc	caa	gtg	atc	gct	gag	cag	acc	acc	ttt	cac	tcc	gtc	cac
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48

## PhoenixTemp32470.tmp.txt

Met 1	Pro	Ala	Gln	Val 5	Ile	Ala	Glu	Gln	Thr 10	Thr	Phe	His	Ser	Val 15	His	
gac Asp	acc Thr	att Ile	atg Met 20	gag Glu	gag Glu	acg Thr	aat Asn	aca Thr 25	act Thr	tta Leu	tat Tyr	cct Pro	aag Lys 30	agg Arg	ttg Leu	96
gaa Glu	gga Gly	aaa Lys 35	gta Val	gcc Ala	atc Ile	ata Ile	acc Thr 40	gga Gly	ggc Gly	gca Ala	cat His	gga Gly 45	ata Ile	ggc Gly	aaa Lys	144
gca Ala	acc Thr 50	gtc Val	atg Met	tta Leu	ttc Phe	gct Ala 55	aga Arg	cac His	ggt Gly	gcc Ala	aca Thr 60	gtg Val	gtg Val	att Ile	gct Ala	192
gac Asp 65	gtg Val	gac Asp	aac Asn	gta Val	gct Ala 70	ggc Gly	tct Ser	tcc Ser	ctg Leu 75	gct Ala	aag Lys	tca Ser	ctc Leu	tca Ser	tcc Ser 80	240
cac His	aaa Lys	acc Thr	tcc Ser 85	ccg Pro	atg Met	gtg Val	gca Ala	ttc Phe	att Ile 90	agc Ser	tgc Cys	gat Asp	gtc Val	tcc Ser 95	gta Val	288
gaa Glu	gcc Ala	gac Asp	gtg Val 100	gaa Glu	aac Asn	ctt Leu	gtg Val	aac Asn 105	gta Val	acc Thr	gtt Val	gca Ala	cgg Arg 110	tac Tyr	ggt Gly	336
agg Arg	ctt Leu	gac Asp 115	att Ile	cta Leu	ttc Phe	aac Asn	aac Asn 120	gcg Ala	gga Gly	gtt Val	ctc Leu	gga Gly 125	gat Asp	cag Gln	aag Lys	384
aaa Lys 130	cac His	aaa Lys	agc Ser	ata Ile	tta Leu	gac Asp 135	ttc Phe	gac Asp	gcg Ala	gac Asp	gag Glu 140	ttt Phe	gac Asp	cac His	gtg Val	432
atg Met 145	cgt Arg	gtg Val	aac Asn	gta Val	cgt Arg 150	ggc Gly	gta Val	gga Gly	ctc Leu	ggc Gly 155	atg Met	aaa Lys	cac His	ggg Gly	gca Ala 160	480
cgc Arg	gct Ala	atg Met	atc Ile 165	aag Lys	aga Arg	gga Gly	ttc Phe	aaa Lys	ggc Gly 170	tgc Cys	ata Ile	atc Ile	tcc Ser 175	acg Thr	gcg Ala	528
agt Ser	gta Val	gcc Ala	ggt Gly 180	gtg Val	atg Met	ggt Gly	gga Gly	atg Met 185	gga Gly	cca Pro	cac His	gct Ala	tac Tyr 190	aca Thr	gcc Ala	576
tcg Ser	aaa Lys	cat His 195	gcg Ala	atc Ile	gtt Val	ggt Gly	ttg Leu 200	aag Thr	aac Lys	gca Ala	gcg Ala 205	tgt Cys	gag Glu	cta Leu		624
ggc Gly	aag Lys 210	tat Tyr	ggg Gly	att Ile	agg Arg	gtt Val 215	aat Asn	tgt Cys	ata Ile	tca Ser	ccg Pro 220	ttt Phe	gga Gly	gtt Val	gcc Ala	672
acg Thr 225	tcg Ser	atg Met	ctg Leu	gtt Val	aac Asn 230	gcg Ala	tgg Trp	cga Arg	aag Lys	acg Thr 235	agt Ser	ggt Gly	ggt Gly	gac Asp	gtg Val 240	720
gaa Glu	gat Asp	gat Asp	gac Asp	gtg Val 245	gag Glu	gag Glu	atg Met	gag Glu	gag Glu 250	ttt Phe	gtg Val	agg Arg	agt Ser	ttg Leu 255	gct Ala	768
aat Asn	ttg Leu	aaa Lys	gga Gly 260	gag Glu	aca Thr	ttg Leu	aga Arg	gcg Ala 265	aat Asn	gat Asp	ata Ile	gct Ala 270	gaa Glu	gca Ala	gcg Ala	816
tta Leu	tat Tyr	ttg Leu 275	gcg Ala	agt Ser	gat Asp	gag Glu	tct Ser 280	aag Lys	tat Tyr	gtg Val	aac Asn 285	gga Gly	cat His	aat Asn	ctt Leu	864
gtc Val	gtt Val 290	gac Asp	ggt Gly	ggt Gly	gtt Val	acg Thr 295	act Thr	gca Ala	aga Arg	aac Asn	tgt Cys 300	gtt Val	ggt Gly	ttg Leu		909
tga																912

&lt;210&gt; 1494

&lt;211&gt; 303

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 1494

Met 1	Pro	Ala	Gln	Val 5	Ile	Ala	Glu	Gln	Thr 10	Thr	Phe	His	Ser	Val 15	His	
Asp Thr	Ile	Met	Glu	Glu	Thr	Asn	Thr	Thr	Leu	Tyr	Pro	Lys	Arg	Leu		

## PhoenixTemp32470.tmp.txt

Glu Gly Lys Val Ala Ile Ile Thr Gly Gly Ala His Gly Ile Gly Lys  
 Ala Thr Val Met Leu Phe Ala Arg His Gly Ala Thr Val Val Ile Ala  
 Asp Val Asp Asn Val Ala Gly Ser Ser Leu Ala Lys Ser Leu Ser Ser  
 His Lys Thr Ser Pro Met Val Ala Phe Ile Ser Cys Asp Val Ser Val  
 Glu Ala Asp Val Glu Asn Leu Val Asn Val Thr Val Ala Arg Tyr Gly  
 Arg Leu Asp Ile Leu Phe Asn Asn Ala Gly Val Leu Gly Asp Gln Lys  
 Lys His Lys Ser Ile Leu Asp Phe Asp Ala Asp Glu Phe Asp His Val  
 Met Arg Val Asn Val Arg Gly Val Gly Leu Gly Met Lys His Gly Ala  
 Arg Ala Met Ile Lys Arg Gly Phe Lys Gly Cys Ile Ile Ser Thr Ala  
 Ser Val Ala Gly Val Met Gly Gly Met Gly Pro His Ala Tyr Thr Ala  
 Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu  
 Gly Lys Tyr Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala  
 Thr Ser Met Leu Val Asn Ala Trp Arg Lys Thr Ser Gly Gly Asp Val  
 Glu Asp Asp Asp Val Glu Glu Met Glu Glu Phe Val Arg Ser Leu Ala  
 Asn Leu Lys Gly Glu Thr Leu Arg Ala Asn Asp Ile Ala Glu Ala Ala  
 Leu Tyr Leu Ala Ser Asp Glu Ser Lys Tyr Val Asn Gly His Asn Leu  
 Val Val Asp Gly Gly Val Thr Thr Ala Arg Asn Cys Val Gly Leu

&lt;210&gt; 1495

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Thermotoga maritima MSB8

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1495

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Met Asn Ile Leu Glu Lys Leu Phe Ser Leu Lys Arg Lys Val Ala Leu	
gtg act ggt gga gga cag ggc atc ggg aag gcc atc gcc cag gcg ctg	96
Val Thr Gly Gly Gly Gln Gly Ile Gly Lys Ala Ile Ala Gln Ala Leu	
gca gcg gcg ggt gca gct gtt ttg atc atg gac ata aac gaa gaa aca	144
Ala Ala Ala Gly Ala Ala Val Leu Ile Met Asp Ile Asn Glu Glu Thr	
gcc aga aga acg gtc gaa gag ata aaa gag aaa ggt ggc gaa gca gat	192
Ala Arg Arg Thr Val Glu Glu Ile Lys Glu Lys Gly Gly Glu Ala Asp	
ttc tat gtt ggg gat gtg acg aaa gaa gaa gat tgt ttt gga gcg gtc	240
Phe Tyr Val Gly Asp Val Thr Lys Glu Glu Asp Cys Phe Gly Ala Val	
aaa aag gcg ctg gat agg tgg ggg aaa ctc gac ata gga gtc aac aac	288
Lys Lys Ala Leu Asp Arg Trp Gly Lys Leu Asp Ile Gly Val Asn Asn	
gcg gga ata gga gac tgg tgt gaa gcg gag aat tat ccg gtt gag aag	336
Ala Gly Ile Gly Asp Trp Cys Glu Ala Glu Asn Tyr Pro Val Glu Lys	
tgg aaa aag gtc ata gac gtg aat ctg gtt ggg gtg ttt ctt tcc gca	384

PhoenixTemp32470.tmp.txt

Trp	Lys	Lys	Val	Ile	Asp	Val	Asn	Leu	Val	Gly	Val	Phe	Leu	Ser	Ala		
aaa	gcg	gag	ttc	cac	gct	atg	aag	gaa	aga	aaa	tac	gga	aag	atc	ata		432
Lys	Ala	Glu	Phe	His	Ala	Met	Lys	Glu	Arg	Lys	Tyr	Gly	Lys	Ile	Ile		
	130					135					140						
aac	atc	gcg	tcc	atg	tcc	gga	cac	atc	gtg	aac	aaa	cct	cag	aag	cag		480
Asn	Ile	Ala	Ser	Met	Ser	Gly	His	Ile	Val	Asn	Lys	Pro	Gln	Lys	Gln		
145					150					155					160		
aca	gct	tac	aac	gct	tcg	aaa	gcg	ggt	gtg	atc	cat	ctc	acc	aga	tct		528
Thr	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Gly	Val	Ile	His	Leu	Thr	Arg	Ser		
				165					170					175			
ctg	gcc	gcc	gag	tgg	gcc	ccg	tac	gga	atc	agg	gtg	aac	agc	ata	agc		576
Leu	Ala	Ala	Glu	Trp	Ala	Pro	Tyr	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser		
			180					185					190				
ccc	gga	tac	atc	aga	aca	cct	ctc	ata	gaa	tct	cca	aac	gtg	aaa	gat		624
Pro	Gly	Tyr	Ile	Arg	Thr	Pro	Leu	Ile	Glu	Ser	Pro	Asn	Val	Lys	Asp		
	195						200					205					
ctt	gtt	ccc	ctc	tgg	ctc	gac	atg	atc	cct	ctt	gga	aga	ctg	gga	gag		672
Leu	Val	Pro	Leu	Trp	Leu	Asp	Met	Ile	Pro	Leu	Gly	Arg	Leu	Gly	Glu		
	210					215					220						
gtg	gac	gat	ctg	ata	gga	gct	gct	atc	ttc	ctt	gca	agt	ccc	gcc	tca		720
Val	Asp	Asp	Leu	Ile	Gly	Ala	Ala	Ile	Phe	Leu	Ala	Ser	Pro	Ala	Ser		
225					230					235					240		
gat	tac	atg	aca	ggg	cac	gat	ctt	gtg	ata	gac	gga	ggc	tac	acc	gtc		768
Asp	Tyr	Met	Thr	Gly	His	Asp	Leu	Val	Ile	Asp	Gly	Gly	Tyr	Thr	Val		
				245					250					255			
tgg	tga																774
Trp																	

<210> 1496  
 <211> 257  
 <212> PRT  
 <213> Thermotoga maritima MSB8

<400> 1496

Met	Asn	Ile	Leu	Glu	Lys	Leu	Phe	Ser	Leu	Lys	Arg	Lys	Val	Ala	Leu		
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Val	Thr	Gly	Gly	Gly	Gln	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Gln	Ala	Leu		
		20						25					30				
Ala	Ala	Ala	Gly	Ala	Ala	Val	Leu	Ile	Met	Asp	Ile	Asn	Glu	Glu	Thr		
		35					40					45					
Ala	Arg	Arg	Thr	Val	Glu	Glu	Ile	Lys	Glu	Lys	Gly	Gly	Glu	Ala	Asp		
	50				55					60							
Phe	Tyr	Val	Gly	Asp	Val	Thr	Lys	Glu	Glu	Asp	Cys	Phe	Gly	Ala	Val		
65				70					75					80			
Lys	Lys	Ala	Leu	Asp	Arg	Trp	Gly	Lys	Leu	Asp	Ile	Gly	Val	Asn	Asn		
				85					90					95			
Ala	Gly	Ile	Gly	Asp	Trp	Cys	Glu	Ala	Glu	Asn	Tyr	Pro	Val	Glu	Lys		
		100					105					110					
Trp	Lys	Lys	Val	Ile	Asp	Val	Asn	Leu	Val	Gly	Val	Phe	Leu	Ser	Ala		
		115					120					125					
Lys	Ala	Glu	Phe	His	Ala	Met	Lys	Glu	Arg	Lys	Tyr	Gly	Lys	Ile	Ile		
	130					135					140						
Asn	Ile	Ala	Ser	Met	Ser	Gly	His	Ile	Val	Asn	Lys	Pro	Gln	Lys	Gln		
145					150					155					160		
Thr	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Gly	Val	Ile	His	Leu	Thr	Arg	Ser		
			165						170					175			
Leu	Ala	Ala	Glu	Trp	Ala	Pro	Tyr	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser		
		180						185					190				
Pro	Gly	Tyr	Ile	Arg	Thr	Pro	Leu	Ile	Glu	Ser	Pro	Asn	Val	Lys	Asp		
		195					200					205					
Leu	Val	Pro	Leu	Trp	Leu	Asp	Met	Ile	Pro	Leu	Gly	Arg	Leu	Gly	Glu		
	210					215					220						
Val	Asp	Asp	Leu	Ile	Gly	Ala	Ala	Ile	Phe	Leu	Ala	Ser	Pro	Ala	Ser		
225					230					235					240		
Asp	Tyr	Met	Thr	Gly	His	Asp	Leu	Val	Ile	Asp	Gly	Gly	Tyr	Thr	Val		
				245					250					255			
Trp																	

<210> 1497  
 <211> 741  
 <212> DNA  
 <213> Bacillus halodurans C-125

<220>  
 <221> CDS  
 <222> (1)..(741)  
 <223> transl\_table=11

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 1 5 10 15  
 ggc cga gca aca gcg atg gaa ctg gca cgt cat gga gcg aat gtc gtg 96  
 Gly Arg Ala Thr Ala Met Glu Leu Ala Arg His Gly Ala Asn Val Val  
 20 25 30  
 gtc aat tat gca ggg aat aag gag aaa gcg gaa aaa gtc gtt gct gag 144  
 Val Asn Tyr Ala Gly Asn Lys Glu Lys Ala Glu Lys Val Val Ala Glu  
 35 40 45  
 att aaa gaa ctc gga gtg gag gca att gcg atc caa gcc gat gta gct 192  
 Ile Lys Glu Leu Gly Val Glu Ala Ile Ala Ile Gln Ala Asp Val Ala  
 50 55 60  
 gac agt gag tcg gtc caa gca atg gtc aaa gag acg atc gat act ttc 240  
 Asp Ser Glu Ser Val Gln Ala Met Val Lys Glu Thr Ile Asp Thr Phe  
 65 70 75 80  
 ggt gca gtc gat att ctc gtc aac aac gca ggg att aca aga gac aac 288  
 Gly Ala Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn  
 85 90 95  
 cta ttt atg cgc atg aaa gaa gaa gat tgg gat gcg gtg atc gat acg 336  
 Leu Phe Met Arg Met Lys Glu Glu Asp Trp Asp Ala Val Ile Asp Thr  
 100 105 110  
 aat tta aaa gga gtt ttc cac tgt tcg aaa gct gtt aca cga ccg atg 384  
 Asn Leu Lys Gly Val Phe His Cys Ser Lys Ala Val Thr Arg Pro Met  
 115 120 125  
 atg aag cag cgg ttt ggg cga atc att aac gta tcg tct gtt gtt ggt 432  
 Met Lys Gln Arg Phe Gly Arg Ile Ile Asn Val Ser Ser Val Val Gly  
 130 135 140  
 gcc att ggg aat gct gga caa gcg aac tat gtt gcg gcc aaa gca ggt 480  
 Ala Ile Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ala Gly  
 145 150 155 160  
 gtc att ggc tta acg aaa aca ctt gcc cgt gag ctt gct aac cgt aat 528  
 Val Ile Gly Leu Thr Lys Thr Leu Ala Arg Glu Leu Ala Asn Arg Asn  
 165 170 175  
 att acg gta aat gcg gtc gct cca ggg ttt atc gaa aca gat atg acc 576  
 Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Asp Met Thr  
 180 185 190  
 ggt gaa ttg ccg gaa gat gtc aaa gca caa atg cta ggg caa atc ccc 624  
 Gly Glu Leu Pro Glu Asp Val Lys Ala Gln Met Leu Gly Gln Ile Pro  
 195 200 205  
 ctt gct cgt cta gga cag cct gag gaa gtg gca aaa gcg gtt cgt ttc 672  
 Leu Ala Arg Leu Gly Gln Pro Glu Glu Val Ala Lys Ala Val Arg Phe  
 210 215 220  
 tta gcg tcc gac gat gct tct tac tta aca gga cag acg atc cat gta 720  
 Leu Ala Ser Asp Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile His Val  
 225 230 235 240  
 aat ggc gga atg gtc atg taa 741  
 Asn Gly Gly Met Val Met  
 245

<210> 1498  
 <211> 246  
 <212> PRT  
 <213> Bacillus halodurans C-125

<400> 1498  
 Met Leu Gln Gly Lys Thr Ala Ile Val Thr Gly Ala Ser Arg Gly Ile  
 Page 902

## PhoenixTemp32470.tmp.txt

```

1          5          10          15
Gly Arg Ala Thr Ala Met Glu Leu Ala Arg His Gly Ala Asn Val Val
20
Val Asn Tyr Ala Gly Asn Lys Glu Lys Ala Glu Lys Val Val Ala Glu
35
Ile Lys Glu Leu Gly Val Glu Ala Ile Ala Ile Gln Ala Asp Val Ala
50
Asp Ser Glu Ser Val Gln Ala Met Val Lys Glu Thr Ile Asp Thr Phe
65
Gly Ala Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn
80
Leu Phe Met Arg Met Lys Glu Glu Asp Trp Asp Ala Val Ile Asp Thr
100
Asn Leu Lys Gly Val Phe His Cys Ser Lys Ala Val Thr Arg Pro Met
115
Met Lys Gln Arg Phe Gly Arg Ile Ile Asn Val Ser Ser Val Val Gly
130
Ala Ile Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ala Gly
145
Val Ile Gly Leu Thr Lys Thr Leu Ala Arg Glu Leu Ala Asn Arg Asn
160
Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Asp Met Thr
180
Gly Glu Leu Pro Glu Asp Val Lys Ala Gln Met Leu Gly Gln Ile Pro
200
Leu Ala Arg Leu Gly Gln Pro Glu Glu Val Ala Lys Ala Val Arg Phe
215
Leu Ala Ser Asp Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile His Val
235
Asn Gly Gly Met Val Met
245

```

&lt;210&gt; 1499

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Bacillus halodurans C-125

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1499

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atg cga ctt aac gga aag gta gca atg att aca gga gct ggc cga ggg      48
Met Arg Leu Asn Gly Lys Val Ala Met Ile Thr Gly Ala Gly Arg Gly
1
ata ggg gca gca acg gct aaa aaa ttt gct aga gaa ggg gca aaa gtg      96
Ile Gly Ala Ala Thr Ala Lys Lys Phe Ala Arg Glu Gly Ala Lys Val
20
atc gtt tgt gat gtg cgg gaa gaa gag gtg gca aag acg gtg gcc gaa      144
Ile Val Cys Asp Val Arg Glu Glu Glu Val Ala Lys Thr Val Ala Glu
35
att caa gac gga ggt ggt gag gcg tta gga tgc gtt gat gtt acg      192
Ile Gln Asp Gly Gly Gly Glu Ala Leu Gly Ser Val Val Asp Val Thr
50
caa cgc aag gat gtg aaa aac gtt ata aat caa gtg att gag cga ttt      240
Gln Arg Lys Asp Val Lys Asn Val Ile Asn Gln Val Ile Glu Arg Phe
65
gag acg cta gat gtg gtc gtg aac aat gcg gga atc aca gcc gat gcc      288
Glu Thr Leu Asp Val Val Val Asn Asn Ala Gly Ile Thr Ala Asp Ala
85
cag tta acg aac atg act gat gct cag tgg gac gat gtg atc gat gtt      336
Gln Leu Thr Asn Met Thr Asp Ala Gln Trp Asp Asp Val Ile Asp Val
100
aac tta aag ggg gtg ttt att gtt aca caa gag gtg acg acc att atg      384
Asn Leu Lys Gly Val Phe Ile Val Thr Gln Glu Val Thr Thr Ile Met
115
aaa gag cag aaa cga ggg gtc att tta aac gcc tca tcc gtt gta ggc      432
Lys Glu Gln Lys Arg Gly Val Ile Leu Asn Ala Ser Ser Val Val Gly

```

## PhoenixTemp32470.tmp.txt

130	tct	tac	gga	aac	ttt	ggc	135	cag	acg	aat	tat	gcc	140	gct	tcc	aaa	tgg	gga	480
	Ser	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ala	Ser	Lys	Trp	Gly		
145	gtg	aat	ggg	atg	acg	aaa	150	acg	tgg	gcg	aaa	155	gag	ctc	ggc	cgt	tat	aac	528
	Val	Asn	Gly	Met	Thr	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Gly	Arg	Tyr	Asn			
	att	cgt	gtc	aat	gct	gtg	165	gca	cca	gga	ttc	att	ctc	aca	ccg	atg	aca	576	
	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Leu	Thr	Pro	Met	Thr			
	gaa	aag	atg	cca	gaa	aaa	180	gta	tta	aag	gtg	atg	gaa	gaa	aaa	gcg	gta	624	
	Glu	Lys	Met	Pro	Glu	Lys	Val	Leu	Lys	Val	Met	Glu	Glu	Lys	Ala	Val			
	ctc	aac	cga	cta	ggc	aca	200	gag	gaa	gtg	gcg	aac	ggc	tat	gcc	ttt	672		
	Leu	Asn	Arg	Leu	Gly	Thr	Val	Glu	Glu	Val	Ala	Asn	Gly	Tyr	Ala	Phe			
	ctt	gca	tcc	gat	gaa	gcg	215	tcg	ttt	att	aca	gga	acg	att	ttg	gcc	atc	720	
	Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe	Ile	Thr	Gly	Thr	Ile	Leu	Ala	Ile	240		
	gat	ggc	ggt	gtc	gtt	ata	tag										741		
	Asp	Gly	Gly	Val	Val	Ile													
					245														

&lt;210&gt; 1500

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Bacillus halodurans C-125

&lt;400&gt; 1500

Met	Arg	Leu	Asn	Gly	Lys	Val	Ala	Met	Ile	Thr	Gly	Ala	Gly	Arg	Gly
1	Ile	Gly	Ala	Ala	Thr	Ala	Lys	Lys	Phe	Ala	Arg	Glu	Gly	Ala	Lys
			20						25				30		
Ile	Val	Cys	Asp	Val	Arg	Glu	Glu	Glu	Val	Ala	Lys	Thr	Val	Ala	Glu
		35					40					45			
Ile	Gln	Asp	Gly	Gly	Gly	Glu	Ala	Leu	Gly	Ser	Val	Val	Asp	Val	Thr
	50					55				60					
Gln	Arg	Lys	Asp	Val	Lys	Asn	Val	Ile	Asn	Gln	Val	Ile	Glu	Arg	Phe
65					70				75					80	
Glu	Thr	Leu	Asp	Val	Val	Asn	Asn	Ala	Gly	Ile	Thr	Ala	Asp	Ala	
			85					90					95		
Gln	Leu	Thr	Asn	Met	Thr	Asp	Ala	Gln	Trp	Asp	Asp	Val	Ile	Asp	Val
			100				105					110			
Asn	Leu	Lys	Gly	Val	Phe	Ile	Val	Thr	Gln	Glu	Val	Thr	Thr	Ile	Met
		115					120					125			
Lys	Glu	Gln	Lys	Arg	Gly	Val	Ile	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly
	130					135					140				
Ser	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Trp	Gly
145					150				155					160	
Val	Asn	Gly	Met	Thr	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Gly	Arg	Tyr	Asn
			165					170					175		
Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Leu	Thr	Pro	Met	Thr
			180				185					190			
Glu	Lys	Met	Pro	Glu	Lys	Val	Leu	Lys	Val	Met	Glu	Glu	Lys	Ala	Val
		195					200				205				
Leu	Asn	Arg	Leu	Gly	Thr	Val	Glu	Glu	Val	Ala	Asn	Gly	Tyr	Ala	Phe
	210					215					220				
Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe	Ile	Thr	Gly	Thr	Ile	Leu	Ala	Ile
225					230					235					240
Asp	Gly	Gly	Val	Val	Ile										
				245											

&lt;210&gt; 1501

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas aeruginosa PA01

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1501

atg	aat	gac	ttt	tcg	aag	tgg	aca	ggt	cag	gtc	gcg	ctc	atc	agc	ggc		48
Met	Asn	Asp	Phe	Ser	Lys	Trp	Thr	Gly	Gln	Val	Ala	Leu	Ile	Ser	Gly		
1				5					10					15			
gcc	ggc	agc	gaa	ctc	ggc	atc	ggt	ttc	gcc	att	gcc	cgg	cgg	ctg	gcc		96
Ala	Gly	Ser	Glu	Leu	Gly	Ile	Gly	Phe	Ala	Ile	Ala	Arg	Arg	Leu	Ala		
			20					25					30				
cgc	gaa	ggc	gtg	cgc	ctg	ctg	atc	acc	gcc	agc	agc	gag	cgg	att	agg		144
Arg	Glu	Gly	Val	Arg	Leu	Leu	Ile	Thr	Ala	Ser	Ser	Glu	Arg	Ile	Arg		
			35				40					45					
caa	cga	gcg	gag	gaa	ctg	agc	gca	tgt	ggt	cac	gac	gtg	cgc	gcc	gcg		192
Gln	Arg	Ala	Glu	Glu	Leu	Ser	Ala	Cys	Gly	His	Asp	Val	Arg	Ala	Ala		
	50				55					60							
agc	gcc	gac	ctg	acc	gac	gaa	gcc	cag	gtg	cag	ggc	ctg	ctg	gac	tgg		240
Ser	Ala	Asp	Leu	Thr	Asp	Glu	Ala	Gln	Val	Gln	Gly	Leu	Leu	Asp	Trp		
	65				70					75					80		
gcc	gaa	gcc	cag	tgg	gga	cgg	gtc	gac	atc	ctg	gtg	aac	aat	gcc	ggc		288
Ala	Glu	Ala	Gln	Trp	Gly	Arg	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly		
				85					90					95			
atg	gcc	cag	tgt	gac	agc	gcg	gag	ccc	ttc	agc	gca	gtg	gaa	gcg	acc		336
Met	Ala	Gln	Leu	Asp	Ser	Ala	Glu	Pro	Phe	Ser	Ala	Val	Glu	Ala	Thr		
			100					105					110				
tcg	ctg	cgg	gat	tgg	caa	ctg	tcc	ctg	tcg	cgc	aac	ctg	acc	agc	gct		384
Ser	Leu	Arg	Asp	Trp	Gln	Leu	Ser	Leu	Ser	Arg	Asn	Leu	Thr	Ser	Ala		
			115				120					125					
ttc	ctg	ctc	acc	cgc	ggc	ctg	ctg	ccg	ggc	atg	cgc	gag	cgc	ggc	tac		432
Phe	Leu	Leu	Thr	Arg	Gly	Leu	Leu	Pro	Gly	Met	Arg	Glu	Arg	Gly	Tyr		
			130			135				140							
ggg	cgg	atc	gtc	aac	gtc	gcc	tcc	acc	acc	gga	acc	cgc	ggc	agc	aac		480
Gly	Arg	Ile	Val	Asn	Val	Ala	Ser	Thr	Thr	Gly	Thr	Arg	Gly	Ser	Asn		
				150					155						160		
ccg	ggc	gaa	gcc	gcg	tat	agc	gcg	gcc	aag	gcc	ggt	ctg	gtc	ggc	tgg		528
Pro	Gly	Glu	Ala	Ala	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Leu	Val	Gly	Trp		
				165					170					175			
agc	atg	ggc	ctc	gcg	ctg	gag	gtg	gcg	aag	agc	ggc	atc	acg	gtg	aac		576
Ser	Met	Gly	Leu	Ala	Leu	Glu	Val	Ala	Lys	Ser	Gly	Ile	Thr	Val	Asn		
			180					185					190				
agc	gtc	gcg	ccg	ggc	tgg	atc	gcc	acc	gcc	tcg	agc	acc	gcc	gaa	gaa		624
Ser	Val	Ala	Pro	Gly	Trp	Ile	Ala	Thr	Ala	Ser	Ser	Thr	Ala	Glu	Glu		
			195				200					205					
cgc	cag	gcc	gcc	ctg	gcc	agc	ccc	agc	gga	cgt	gcc	ggc	cgg	ccc	gaa		672
Arg	Gln	Ala	Ala	Leu	Ala	Ser	Pro	Ser	Gly	Arg	Ala	Gly	Arg	Pro	Glu		
			210			215					220						
gag	gtg	gcc	gcc	gcg	gtg	gcc	ttc	ctc	gcc	tcg	ccc	gaa	gcc	agc	ttc		720
Glu	Val	Ala	Ala	Ala	Val	Ala	Phe	Leu	Ala	Ser	Pro	Glu	Ala	Ser	Phe		
					230				235						240		
gtc	aac	ggc	gaa	ctg	ctg	gtg	gtg	gat	ggc	ggc	aac	tgc	ctg	atc	gaa		768
Val	Asn	Gly	Glu	Leu	Leu	Val	Val	Asp	Gly	Gly	Asn	Cys	Leu	Ile	Glu		
				245					250					255			
aac	aaa	cgg	agc	tga													783
Asn	Lys	Arg	Ser														
			260														

&lt;210&gt; 1502

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas aeruginosa PA01

&lt;400&gt; 1502

Met	Asn	Asp	Phe	Ser	Lys	Trp	Thr	Gly	Gln	Val	Ala	Leu	Ile	Ser	Gly		
1				5					10					15			
Ala	Gly	Ser	Glu	Leu	Gly	Ile	Gly	Phe	Ala	Ile	Ala	Arg	Arg	Leu	Ala		
			20					25					30				
Arg	Glu	Gly	Val	Arg	Leu	Leu	Ile	Thr	Ala	Ser	Ser	Glu	Arg	Ile	Arg		
			35				40					45					
Gln	Arg	Ala	Glu	Glu	Leu	Ser	Ala	Cys	Gly	His	Asp	Val	Arg	Ala	Ala		



## PhoenixTemp32470.tmp.txt

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      50      55      60
Ser  Ala  Asp  Leu  Thr  Asp  Glu  Ala  Gln  Val  Gln  Gly  Leu  Leu  Asp  Trp
65      70      75      80
Ala  Glu  Ala  Gln  Trp  Gly  Arg  Val  Asp  Ile  Leu  Val  Asn  Asn  Ala  Gly
      85      90      95
Met  Ala  Gln  Leu  Asp  Ser  Ala  Glu  Pro  Phe  Ser  Ala  Val  Glu  Ala  Thr
      100      110
Ser  Leu  Arg  Asp  Trp  Gln  Leu  Ser  Leu  Ser  Arg  Asn  Leu  Thr  Ser  Ala
      115      120      125
Phe  Leu  Leu  Thr  Arg  Gly  Leu  Leu  Pro  Gly  Met  Arg  Glu  Arg  Gly  Tyr
      130      135      140
Gly  Arg  Ile  Val  Asn  Val  Ala  Ser  Thr  Thr  Gly  Thr  Arg  Gly  Ser  Asn
145      150      155      160
Pro  Gly  Glu  Ala  Ala  Tyr  Ser  Ala  Ala  Lys  Ala  Gly  Leu  Val  Gly  Trp
      165      170      175
Ser  Met  Gly  Leu  Ala  Leu  Glu  Val  Ala  Lys  Ser  Gly  Ile  Thr  Val  Asn
      180      185      190
Ser  Val  Ala  Pro  Gly  Trp  Ile  Ala  Thr  Ala  Ser  Ser  Thr  Ala  Glu  Glu
      195      200      205
Arg  Gln  Ala  Ala  Leu  Ala  Ser  Pro  Ser  Gly  Arg  Ala  Gly  Arg  Pro  Glu
      210      215      220
Glu  Val  Ala  Ala  Ala  Val  Ala  Phe  Leu  Ala  Ser  Pro  Glu  Ala  Ser  Phe
225      230      235      240
Val  Asn  Gly  Glu  Leu  Leu  Val  Val  Asp  Gly  Gly  Asn  Cys  Leu  Ile  Glu
      245      250      255
Asn  Lys  Arg  Ser
      260

```

&lt;210&gt; 1503

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1503

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Met  Arg  Arg  Phe  Glu  Gly  Gln  Ser  Val  Phe  Val  Thr  Gly  Gly  Asn  Lys
      1      5      10      15
ggc  atc  ggt  tac  ggc  atc  gcc  cgc  cgt  ttt  gcc  gaa  gaa  ggc  gcg  aaa      96
Gly  Ile  Gly  Tyr  Gly  Ile  Ala  Arg  Arg  Phe  Ala  Glu  Glu  Gly  Ala  Lys
      20      25      30
gtc  gcc  atc  gcc  tct  gtc  gac  aaa  gac  aca  cat  gac  gcc  gct  aaa  aaa      144
Val  Ala  Ile  Ala  Ser  Val  Asp  Lys  Asp  Thr  His  Asp  Ala  Ala  Lys  Lys
      35      40      45
ctg  gcg  gac  gaa  acc  ggc  acc  gtc  acc  cat  ggc  gtc  atc  ctc  gac  gtt      192
Leu  Ala  Asp  Glu  Thr  Gly  Thr  Val  Thr  His  Gly  Val  Ile  Leu  Asp  Val
      50      55      60
agg  gat  gcg  gcg  gcg  gtg  cgt  gac  gcc  tat  ggc  gct  gcg  gaa  gac  gcg      240
Arg  Asp  Ala  Ala  Ala  Val  Arg  Asp  Ala  Tyr  Gly  Ala  Ala  Glu  Asp  Ala
      65      70      75      80
atc  ggc  gcg  ctt  tcc  atc  tcc  gtc  cag  aac  gcc  ggc  gtc  atc  act  atc      288
Ile  Gly  Ala  Leu  Ser  Ile  Ser  Val  Gln  Asn  Ala  Gly  Val  Ile  Thr  Ile
      85      90      95
tca  aag  atc  gag  gat  ctg  acg  caa  gaa  cag  tgg  gat  ttg  aac  ctc  gac      336
Ser  Lys  Ile  Glu  Asp  Leu  Thr  Gln  Glu  Gln  Trp  Asp  Leu  Asn  Leu  Asp
      100      105      110
gtc  aac  acc  aag  ggc  gcg  ttc  ctc  tgc  tgc  cag  gag  gca  atc  cgt  cgc      384
Val  Asn  Thr  Lys  Gly  Ala  Phe  Leu  Cys  Cys  Gln  Glu  Ala  Ile  Arg  Arg
      115      120      125
ttc  cgc  gca  agc  ggc  acc  aag  ggc  cgc  ctc  gtc  aac  acc  gcc  tcc  ggc      432
Phe  Arg  Ala  Ser  Gly  Thr  Lys  Gly  Arg  Leu  Val  Asn  Thr  Ala  Ser  Gly
      130      135      140
caa  gcg  cgt  cag  ggc  ttc  atc  tac  acg  ccg  cat  tat  gct  gcg  tcc  aaa      480
Gln  Ala  Arg  Gln  Gly  Phe  Ile  Tyr  Thr  Pro  His  Tyr  Ala  Ala  Ser  Lys
145      150      155      160

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## PhoenixTemp32470.tmp.txt

ttc ggc gtt atc ggc ctg acg caa agc ctc gcc aag gaa ctt gca cct	528
Phe Gly Val Ile Gly 165 Leu Thr Gln Ser Leu 170 Ala Lys Glu Leu 175 Ala Pro	
gag ggc atc acc gtc aac gcc atc tgc ccc ggc atc atc cac acc gaa	576
Glu Gly Ile Thr Val Asn Ala Ile Cys 185 Pro Gly Ile Ile His 190 Thr Glu	
atg tgg gat tac aac gac cgc gtc tgg ggc cag atg ctg ggc gaa tac	624
Met Trp Asp 195 Tyr Asn Asp Arg Val 200 Trp Gly Gln Met 205 Gly Glu Tyr	
aag ccc ggc gag ttg atg gcc gaa tgg gtg cgc aac atc ccc atg cgt	672
Lys Pro Gly Glu Leu Met Ala 215 Glu Trp Val Arg Asn 220 Ile Pro Met Arg	
cgc gcc gga acg ccc gcc gaa gtg gcg gcg ctg gtg gca ttt ctg gca	720
Arg Ala Gly Thr Pro Ala 230 Glu Val Ala Ala Leu 235 Val Ala Phe Leu 240 Ala	
tca gag gat gcg gcc tat atc acg gcc cag acg atc aac gtc gat ggc	768
Ser Glu Asp Ala Ala 245 Tyr Ile Thr Ala Gln 250 Thr Ile Asn Val 255 Asp Gly	
ggg ttg atc atg tct tga	786
Gly Leu Ile Met Ser 260	

&lt;210&gt; 1504

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 1504

Met Arg Arg Phe Glu Gly Gln Ser Val Phe Val Thr Gly Gly Asn Lys	1 5 10 15
Gly Ile Gly Tyr Gly Ile Ala Arg Arg Phe Ala Glu Glu Gly Ala Lys	20 25 30
Val Ala Ile Ala Ser Val Asp Lys Asp Thr His Asp Ala Ala Lys Lys	35 40 45
Leu Ala Asp Glu Thr Gly Thr Val Thr His Gly Val Ile Leu Asp Val	50 55 60
Arg Asp Ala Ala Ala Val Arg Asp Ala Tyr Gly Ala Ala Glu Asp Ala	65 70 75 80
Ile Gly Ala Leu Ser Ile Ser Val Gln Asn Ala Gly Val Ile Thr Ile	85 90 95
Ser Lys Ile Glu Asp Leu Thr Gln Glu 105 Gln Trp Asp Leu Asn Leu Asp	100 110
Val Asn Thr Lys Gly Ala Phe Leu Cys Cys Gln Glu Ala Ile Arg Arg	115 120 125
Phe Arg Ala Ser Gly Thr Lys Gly Arg Leu Val Asn Thr Ala Ser Gly	130 135 140
Gln Ala Arg Gln Gly Phe Ile Tyr Thr Pro His Tyr Ala Ala Ser Lys	145 150 155 160
Phe Gly Val Ile Gly Leu Thr Gln Ser Leu Ala Lys Glu Leu Ala Pro	165 170 175
Glu Gly Ile Thr Val Asn Ala Ile Cys 185 Pro Gly Ile Ile His 190 Thr Glu	
Met Trp Asp 195 Tyr Asn Asp Arg Val 200 Trp Gly Gln Met 205 Gly Glu Tyr	
Lys Pro Gly Glu Leu Met Ala 215 Glu Trp Val Arg Asn 220 Ile Pro Met Arg	
Arg Ala Gly Thr Pro Ala 230 Glu Val Ala Ala Leu 235 Val Ala Phe Leu Ala	225 230 235 240
Ser Glu Asp Ala Ala Tyr Ile Thr Ala Gln 250 Thr Ile Asn Val 255 Asp Gly	
Gly Leu Ile Met Ser 260	

&lt;210&gt; 1505

&lt;211&gt; 918

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(918)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1505

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Met Gly Ala Ala Gly Phe Thr Thr Pro Pro Phe Pro Glu Val Ala	
1 5 10 15	
ccc gaa atc acg ccc gaa atc acg att gcc agc ccg ccc cct ttg ggc	96
Pro Glu Ile Thr Pro Glu Ile Thr Ile Ala Ser Pro Pro Pro Leu Gly	
20 25 30	
ata acc tgc tta aat atg tgc gaa gta atg caa aaa ggg gaa agc atg	144
Ile Thr Cys Leu Asn Met Cys Glu Val Met Gln Lys Gly Glu Ser Met	
35 40 45	
cat cgg aca gtt atc gtg aca ggc tcc aca agc ggc atc ggc ctt ggc	192
His Arg Thr Val Ile Val Thr Gly Ser Thr Ser Gly Ile Gly Leu Gly	
50 55 60	
att gcg caa aga ttt gcg cgg gag ggc gcc aat atc gtg ctg aac ggt	240
Ile Ala Gln Arg Phe Ala Arg Glu Gly Ala Asn Ile Val Leu Asn Gly	
65 70 75 80	
ttt ggc gac gac gac gag atc gaa aaa ctg cgc ctt ctg ctg gaa gcc	288
Phe Gly Asp Asp Asp Glu Ile Glu Lys Leu Arg Leu Leu Leu Glu Ala	
85 90 95	
gaa agc ggc ggg cgg gtg ctt tac cat ccc gcc gat atg acg aaa ccg	336
Glu Ser Gly Arg Val Leu Tyr His Pro Ala Asp Met Thr Lys Pro	
100 105 110	
gac gag atc gcc gat ctc atc cag tcc tca cac gaa aaa ctc ggc tcg	384
Asp Glu Ile Ala Asp Leu Ile Gln Ser Ser His Glu Lys Leu Gly Ser	
115 120 125	
gtg gat gtg ctc atc aac aat gcc ggt att cag cac atc gcg ccc atc	432
Val Asp Val Leu Ile Asn Asn Ala Gly Ile Gln His Ile Ala Pro Ile	
130 135 140	
gag gag ttc ccg acg gaa aaa tgg gac tgg atc atc gcc atc aat ctg	480
Glu Glu Phe Pro Thr Glu Lys Trp Asp Trp Ile Ile Ala Ile Asn Leu	
145 150 155 160	
acc agt tct ttt cac acc atg cgt gcc gcg ata ccg ctg atg aaa aag	528
Thr Ser Ser Phe His Thr Met Arg Ala Ala Ile Pro Leu Met Lys Lys	
165 170 175	
gca ggc aaa ggc cgc atc atc aac att tcc tca gcc cac ggc ctt gtc	576
Ala Gly Lys Gly Arg Ile Ile Asn Ile Ser Ser Ala His Gly Leu Val	
180 185 190 195	
gcc tcg ccg ttc aaa tcg gcc tat gtg gcg gcc aaa cac ggc atc atg	624
Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Ala Lys His Gly Ile Met	
200 205 210 215	
ggc ttg acg aaa acg gca gcg ctc gaa ctt gcg caa acg ggc gtc acc	672
Gly Leu Thr Lys Thr Ala Ala Leu Glu Leu Ala Thr Gly Val Thr	
220 225 230 235	
gtc aac gcc atc tgt ccc ggt tac gtg ctg acg ccg ctg gtg gaa aag	720
Val Asn Ala Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu Lys	
240 245 250 255	
cag ata ccg gaa atg gcc aag gtg cgc ggc atc agc gaa gcg gcg gtg	768
Gln Ile Pro Glu Met Ala Lys Val Arg Gly Ile Ser Glu Ala Ala Val	
260 265 270 275	
aag aac gac gtg atg ctg gaa ttg cag gcg acc aaa caa ttc gtc acc	816
Lys Asn Asp Val Met Leu Glu Leu Gln Ala Thr Lys Gln Phe Val Thr	
280 285 290 295	
gtc gat gac gtc gcc gcc gct gcg ata ttt ctg gca agc gac gcc gca	864
Val Asp Asp Val Ala Ala Ala Ala Ile Phe Leu Ala Ser Asp Ala Ala	
300 305	
agc aac atc acc ggc acc cat att tcc gta gac ggc ggc tgg acg gca	912
Ser Asn Ile Thr Gly Thr His Ile Ser Val Asp Gly Gly Trp Thr Ala	
310 315 320 325	
caa taa	918
Gln	
305	

&lt;210&gt; 1506

&lt;211&gt; 305

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 1506

Met Gly Ala Ala Gly Phe Thr Thr Pro Pro Pro Phe Pro Glu Val Ala  
 1 5 10 15  
 Pro Glu Ile Thr Pro Glu Ile Thr Ile Ala Ser Pro Pro Pro Leu Gly  
 20 25 30  
 Ile Thr Cys Leu Asn Met Cys Glu Val Met Gln Lys Gly Glu Ser Met  
 35 40 45  
 His Arg Thr Val Ile Val Thr Gly Ser Thr Ser Gly Ile Gly Leu Gly  
 50 55 60  
 Ile Ala Gln Arg Phe Ala Arg Glu Gly Ala Asn Ile Val Leu Asn Gly  
 65 70 75 80  
 Phe Gly Asp Asp Asp Glu Ile Glu Lys Leu Arg Leu Leu Leu Glu Ala  
 85 90 95  
 Glu Ser Gly Gly Arg Val Leu Tyr His Pro Ala Asp Met Thr Lys Pro  
 100 105 110  
 Asp Glu Ile Ala Asp Leu Ile Gln Ser Ser His Glu Lys Leu Gly Ser  
 115 120 125  
 Val Asp Val Leu Ile Asn Asn Ala Gly Ile Gln His Ile Ala Pro Ile  
 130 135 140  
 Glu Glu Phe Pro Thr Glu Lys Trp Asp Trp Ile Ile Ala Ile Asn Leu  
 145 150 155 160  
 Thr Ser Ser Phe His Thr Met Arg Ala Ala Ile Pro Leu Met Lys Lys  
 165 170 175  
 Ala Gly Lys Gly Arg Ile Ile Asn Ile Ser Ser Ala His Gly Leu Val  
 180 185 190  
 Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Ala Lys His Gly Ile Met  
 195 200 205  
 Gly Leu Thr Lys Thr Ala Ala Leu Glu Leu Ala Gln Thr Gly Val Thr  
 210 215 220  
 Val Asn Ala Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu Lys  
 225 230 235 240  
 Gln Ile Pro Glu Met Ala Lys Val Arg Gly Ile Ser Glu Ala Ala Val  
 245 250 255  
 Lys Asn Asp Val Met Leu Glu Leu Gln Ala Thr Lys Gln Phe Val Thr  
 260 265 270  
 Val Asp Asp Val Ala Ala Ala Ala Ile Phe Leu Ala Ser Asp Ala Ala  
 275 280 285  
 Ser Asn Ile Thr Gly Thr His Ile Ser Val Asp Gly Trp Thr Ala  
 290 295 300  
 Gln  
 305

&lt;210&gt; 1507

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(816)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1507

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Met Glu Thr Ala Leu Thr Gly Arg Leu Thr Gly Lys Arg Ala Leu Val	
1 5 10 15	
ttt ggc gca gga tca tcg ggg ccg gga ttt ggc aac ggc aag gct gcg	96
Phe Gly Ala Gly Ser Ser Gly Pro Gly Phe Gly Asn Gly Lys Ala Ala	
20 25 30	
gcc gtg caa ttt gcc cgc gaa ggc gcg cgc gta gcc tgt gtc gat ctc	144
Ala Val Gln Phe Ala Arg Glu Gly Ala Arg Val Ala Cys Val Asp Leu	
35 40 45	
tgc gct gac gca gcc gaa gag acg gct gag atc att cgc gga gaa ggc	192
Cys Ala Asp Ala Ala Glu Glu Thr Ala Glu Ile Ile Arg Gly Glu Gly	
50 55 60	
ttg gag gcg att gcg gct gcc gcc gat gtc act gaa cta cag tcc gta	240
Leu Glu Ala Ile Ala Ala Ala Asp Val Thr Glu Leu Gln Ser Val	

## PhoenixTemp32470.tmp.txt

65	tcg	gcc	acc	gtt	gac	70	acc	tgc	gag	gcc	75	ggt	ggc	atc	gat	80		
	Ser	Ala	Thr	Val	Asp		Arg	Thr	Cys	Glu		Phe	Gly	Gly	Ile	Asp	Ile	288
					85					90					95			
	ctg	cac	aat	aat	gtc	ggc	gtg	acc	cat	atg	ggc	ggg	ccg	ggt	gag	ctg		336
	Leu	His	Asn	Asn	Val	Gly	Val	Thr	His	Met	Gly	Gly	Pro	Val	Glu	Leu		
				100					105					110				
	gat	gag	gaa	agc	ttt	cgc	gcc	tgc	gat	ctc	aat	atc	ggc	tcc	ggt			384
	Asp	Glu	Glu	Ser	Phe	Arg	Ala	Ser	Val	Leu	Asn	Ile	Gly	Ser	Val			
			115					120				125						
	tat	cgc	acc	tcc	aag	gct	gtg	ttg	ccg	gtg	atg	ttg	gcg	cag	ggc	ggc		432
	Tyr	Arg	Thr	Ser	Lys	Ala	Val	Leu	Pro	Val	Met	Leu	Ala	Gln	Gly	Gly		
							135											
	ggg	gcc	att	gtc	aat	atc	tcg	tcg	ctc	gcc	tcc	att	cgc	tgg	acc	ggc		480
	Gly	Ala	Ile	Val	Asn	Ile	Ser	Ser	Leu	Ala	Ser	Ile	Arg	Trp	Thr	Gly		
	145				150					155						160		
	tat	cca	tat	ttt	gcc	tat	tac	gcc	atg	aag	gca	gct	gta	aat	cag	gcg		528
	Tyr	Pro	Tyr	Phe	Ala	Tyr	Tyr	Ala	Met	Lys	Ala	Ala	Val	Asn	Gln	Ala		
					165					170					175			
	act	gtg	gcg	ctg	gcc	atg	caa	tat	gcc	cgg	cag	ggc	att	cgc	gcc	aat		576
	Thr	Val	Ala	Leu	Ala	Met	Gln	Tyr	Ala	Arg	Gln	Gly	Ile	Arg	Ala	Asn		
				180					185					190				
	tgc	att	ctt	ccg	gga	atg	atc	gac	acc	cca	ctg	atc	tac	aag	cag	atc		624
	Cys	Ile	Leu	Pro	Gly	Met	Ile	Asp	Thr	Pro	Leu	Ile	Tyr	Lys	Gln	Ile		
			195					200					205					
	agc	aat	caa	tat	gcg	tct	gtc	gag	gaa	atg	gtg	gcg	gcg	cgc	aat	gcg		672
	Ser	Asn	Gln	Tyr	Ala	Ser	Val	Glu	Glu	Met	Val	Ala	Ala	Arg	Asn	Ala		
							215					220						
	gct	gtc	ccg	gtg	ggt	cgc	atg	ggc	gat	gcc	ttt	gat	att	gcc	cgc	gcc		720
	Ala	Val	Pro	Val	Gly	Arg	Met	Gly	Asp	Ala	Phe	Asp	Ile	Ala	Arg	Ala		
	225				230						235					240		
	gcc	gtt	ttt	ctc	gca	tct	gat	gag	gct	aag	ttc	atc	acc	ggc	gtc	tgt		768
	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Ile	Thr	Gly	Val	Cys		
					245					250					255			
	ttg	ccg	gtc	gat	ggc	ggg	caa	agc	tgt	gcg	gtg	ggg	gcg	ttt	tcc			813
	Leu	Pro	Val	Asp	Gly	Gly	Gln	Ser	Cys	Ala	Val	Gly	Ala	Phe	Ser			
				260					265					270				
	taa																	816

&lt;210&gt; 1508

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 1508

Met	Glu	Thr	Ala	Leu	Thr	Gly	Arg	Leu	Thr	Gly	Lys	Arg	Ala	Leu	Val
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Phe	Gly	Ala	Gly	Ser	Ser	Gly	Pro	Gly	Phe	Gly	Asn	Gly	Lys	Ala	Ala
			20					25					30		
Ala	Val	Gln	Phe	Ala	Arg	Glu	Gly	Ala	Arg	Val	Ala	Cys	Val	Asp	Leu
			35				40					45			
Cys	Ala	Asp	Ala	Ala	Glu	Glu	Thr	Ala	Glu	Ile	Ile	Arg	Gly	Glu	Gly
	50				55					60					
Leu	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Asp	Val	Thr	Glu	Leu	Gln	Ser	Val
65				70						75				80	
Ser	Ala	Thr	Val	Asp	Arg	Thr	Cys	Glu	Ala	Phe	Gly	Gly	Ile	Asp	Ile
				85					90					95	
Leu	His	Asn	Asn	Val	Gly	Val	Thr	His	Met	Gly	Gly	Pro	Val	Glu	Leu
			100					105					110		
Asp	Glu	Glu	Ser	Phe	Arg	Ala	Ser	Val	Asp	Leu	Asn	Ile	Gly	Ser	Val
			115				120					125			
Tyr	Arg	Thr	Ser	Lys	Ala	Val	Leu	Pro	Val	Met	Leu	Ala	Gln	Gly	Gly
	130				135						140				
Gly	Ala	Ile	Val	Asn	Ile	Ser	Ser	Leu	Ala	Ser	Ile	Arg	Trp	Thr	Gly
145				150					155						160
Tyr	Pro	Tyr	Phe	Ala	Tyr	Tyr	Ala	Met	Lys	Ala	Ala	Val	Asn	Gln	Ala
				165					170					175	

## PhoenixTemp32470.tmp.txt

Thr Val Ala Leu Ala Met Gln Tyr Ala Arg Gln Gly Ile Arg Ala Asn  
 180 185 190  
 Cys Ile Leu Pro Gly Met Ile Asp Thr Pro Leu Ile Tyr Lys Gln Ile  
 195 200 205  
 Ser Asn Gln Tyr Ala Ser Val Glu Glu Met Val Ala Ala Arg Asn Ala  
 210 215 220  
 Ala Val Pro Val Gly Arg Met Gly Asp Ala Phe Asp Ile Ala Arg Ala  
 225 230 235 240  
 Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe Ile Thr Gly Val Cys  
 245 250 255  
 Leu Pro Val Asp Gly Gly Gln Ser Cys Ala Val Gly Ala Phe Ser  
 260 265 270

&lt;210&gt; 1509

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1509

atg	acg	gag	atc	gac	atg	aga	ttg	aac	aac	aag	gtc	gcg	ctg	atc	acc	48
Met	Thr	Glu	Ile	Asp	Met	Arg	Leu	Asn	Asn	Lys	Val	Ala	Leu	Ile	Thr	
1				5				10						15		
ggc	gcc	gcc	cgc	ggc	atc	ggc	ctt	ggt	ttc	gcc	cag	gct	ttc	gct	gct	96
Gly	Ala	Ala	Arg	Gly	Ile	Gly	Leu	Gly	Phe	Ala	Gln	Ala	Phe	Ala	Ala	
			20					25					30			
gag	ggc	gca	aag	gtc	atc	atc	gcc	gac	atc	gat	atc	gcc	cgc	gca	act	144
Glu	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	Ile	Asp	Ile	Ala	Arg	Ala	Thr	
			35				40					45				
acc	tcg	gct	gcg	gcc	atc	ggc	ccc	gca	gcc	aag	gcc	gtg	aag	ctg	gat	192
Thr	Ser	Ala	Ala	Ala	Ile	Gly	Pro	Ala	Ala	Lys	Ala	Val	Lys	Leu	Asp	
	50					55				60						
gtg	acc	gac	ctt	gcc	cag	atc	gac	gcg	gtg	gta	aag	gcg	gtg	gat	gag	240
Val	Thr	Asp	Leu	Ala	Gln	Ile	Asp	Ala	Val	Val	Lys	Ala	Val	Asp	Glu	
	65				70				75					80		
gaa	ttc	ggc	ggc	atc	gac	att	ctc	gtc	aac	aat	gcg	gcg	atc	ttc	gat	288
Glu	Phe	Gly	Gly	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Ala	Ile	Phe	Asp	
				85					90					95		
atg	gcg	ccg	atc	aac	ggc	att	acc	gaa	gag	agc	tat	gag	cgg	gtg	ttc	336
Met	Ala	Pro	Ile	Asn	Gly	Ile	Thr	Glu	Glu	Ser	Tyr	Glu	Arg	Val	Phe	
			100					105					110			
gac	atc	aat	ctc	aag	ggg	ccg	atg	ttc	atg	atg	aag	gcc	gtc	tcc	aat	384
Asp	Ile	Asn	Leu	Lys	Gly	Pro	Met	Phe	Met	Met	Lys	Ala	Val	Ser	Asn	
		115				120						125				
gtc	atg	atc	gcc	cgc	gca	cgc	ggc	ggc	aag	atc	atc	aat	atg	gct	agc	432
Val	Met	Ile	Ala	Arg	Ala	Arg	Gly	Gly	Lys	Ile	Ile	Asn	Met	Ala	Ser	
	130					135					140					
cag	gcc	ggc	cgg	cgc	ggc	gag	gag	ctg	gtg	acg	ctt	tat	tgc	gcc	tcc	480
Gln	Ala	Gly	Arg	Arg	Gly	Glu	Ala	Leu	Val	Thr	Leu	Tyr	Cys	Ala	Ser	
	145				150					155					160	
aag	gcg	gcg	atc	att	tcc	gcc	acg	caa	tcg	gcg	gcg	ctg	gcg	ctc	gtc	528
Lys	Ala	Ala	Ile	Ile	Ser	Ala	Thr	Gln	Ser	Ala	Ala	Leu	Ala	Leu	Val	
				165					170					175		
aag	cat	ggc	atc	aat	gtc	aac	gcc	ata	gcg	ccg	ggg	gtg	gtg	gat	ggc	576
Lys	His	Gly	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	Val	Val	Asp	Gly	
			180					185					190			
gag	cat	tgg	gaa	gtg	gtc	gat	gcg	cat	ttc	gcc	aag	tgg	gaa	ggg	ttg	624
Glu	His	Trp	Glu	Val	Val	Asp	Ala	His	Phe	Ala	Lys	Trp	Glu	Gly	Leu	
		195					200					205				
aag	ccg	ggg	gag	aaa	aag	gcc	gcg	gtg	gcc	aaa	tcc	gtg	ccg	atc	ggc	672
Lys	Pro	Gly	Glu	Lys	Lys	Ala	Ala	Val	Ala	Lys	Ser	Val	Pro	Ile	Gly	
	210					215					220					
cgt	ttt	gcg	acg	cca	gac	gac	atc	aag	gga	ctg	gcg	gtg	ttc	ctc	gcc	720
Arg	Phe	Ala	Thr	Pro	Asp	Asp	Ile	Lys	Gly	Leu	Ala	Val	Phe	Leu	Ala	
	225				230				235						240	

## PhoenixTemp32470.tmp.txt

tcc gcc gac agc gac tat att ctc gcc cag aca tat aat gtc gac ggc 768  
 Ser Ala Asp Ser Asp Tyr Ile Leu Ala Gln Thr Tyr Asn Val Asp Gly 255  
 ggc aac tgg atg agc tga 786  
 Gly Asn Trp Met Ser 260

<210> 1510  
 <211> 261  
 <212> PRT  
 <213> Agrobacterium tumefaciens str. C58

<400> 1510  
 Met Thr Glu Ile Asp Met Arg Leu Asn Asn Lys Val Ala Leu Ile Thr  
 1 5 10 15  
 Gly Ala Ala Arg Gly Ile Gly Leu Gly Phe Ala Gln Ala Phe Ala Ala  
 20 25 30  
 Glu Gly Ala Lys Val Ile Ile Ala Asp Ile Asp Ile Ala Arg Ala Thr  
 35 40 45  
 Thr Ser Ala Ala Ala Ile Gly Pro Ala Ala Lys Ala Val Lys Leu Asp  
 50 55 60  
 Val Thr Asp Leu Ala Gln Ile Asp Ala Val Val Lys Ala Val Asp Glu  
 65 70 75 80  
 Glu Phe Gly Gly Ile Asp Ile Leu Val Asn Asn Ala Ala Ile Phe Asp  
 85 90 95  
 Met Ala Pro Ile Asn Gly Ile Thr Glu Glu Ser Tyr Glu Arg Val Phe  
 100 105 110  
 Asp Ile Asn Leu Lys Gly Pro Met Phe Met Met Lys Ala Val Ser Asn  
 115 120 125  
 Val Met Ile Ala Arg Ala Arg Gly Gly Lys Ile Ile Asn Met Ala Ser  
 130 135 140  
 Gln Ala Gly Arg Arg Gly Glu Ala Leu Val Thr Leu Tyr Cys Ala Ser  
 145 150 155 160  
 Lys Ala Ala Ile Ile Ser Ala Thr Gln Ser Ala Ala Leu Ala Leu Val  
 165 170 175  
 Lys His Gly Ile Asn Val Asn Ala Ile Ala Pro Gly Val Val Asp Gly  
 180 185 190  
 Glu His Trp Glu Val Val Asp Ala His Phe Ala Lys Trp Glu Gly Leu  
 195 200 205  
 Lys Pro Gly Glu Lys Lys Ala Ala Val Ala Lys Ser Val Pro Ile Gly  
 210 215 220  
 Arg Phe Ala Thr Pro Asp Asp Ile Lys Gly Leu Ala Val Phe Leu Ala  
 225 230 235 240  
 Ser Ala Asp Ser Asp Tyr Ile Leu Ala Gln Thr Tyr Asn Val Asp Gly  
 245 255  
 Gly Asn Trp Met Ser 260

<210> 1511  
 <211> 735  
 <212> DNA  
 <213> Sinorhizobium meliloti 1021

<220>  
 <221> CDS  
 <222> (1)..(735)  
 <223> transl\_table=11

<400> 1511  
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 cag ggc ata gga cgc gca acc gca ctt gcc ttc gcc aag gcc ggt gcc 96  
 Gln Gly Ile Gly Arg Ala Thr Ala Leu Ala Phe Ala Lys Ala Gly Ala 20 25 30  
 aag gtc cat gcg acc gat atc aac gcg gac gcc gtt ggt agc ctt gaa 144  
 Lys Val His Ala Thr Asp Ile Asn Ala Asp Ala Val Gly Ser Leu Glu 35 40 45  
 ggt gag gcg ggc atc agc acc cac cgg ctg gac gtc ctc gac acc gct 192  
 Page 912

## PhoenixTemp32470.tmp.txt

Gly	Glu	Ala	Gly	Ile	Ser	Thr	His	Arg	Leu	Asp	Val	Leu	Asp	Thr	Ala		
	50					55					60						
gcg	gtc	gaa	gcg	ctg	gtc	gcg	gag	atc	ggg	gcc	gtg	gac	gtg	ctt	ttc		240
Ala	Val	Glu	Ala	Leu	Val	Ala	Glu	Ile	Gly	Ala	Val	Asp	Val	Leu	Phe		
65				70					75						80		
aac	tgc	gcc	ggt	ttc	gtc	cat	gca	ggc	tcg	gtg	ctc	acg	atg	aag	gac		288
Asn	Cys	Ala	Gly	Phe	Val	His	Ala	Gly	Ser	Val	Leu	Thr	Met	Lys	Asp		
				85					90					95			
gag	gac	ctc	gat	ttc	gcc	ttc	gat	ctg	aac	gtg	aag	tcg	atg	atc	cgc		336
Glu	Asp	Leu	Asp	Phe	Ala	Phe	Asp	Leu	Asn	Val	Lys	Ser	Met	Ile	Arg		
			100					105					110				
acc	atc	cgt	gcg	gtg	ctg	ccc	ggc	atg	atc	gca	cgc	aag	gac	ggg	tcg		384
Thr	Ile	Arg	Ala	Val	Leu	Pro	Gly	Met	Ile	Ala	Arg	Lys	Asp	Gly	Ser		
		115					120					125					
atc	gtc	aat	atg	gcc	tcg	gtg	gcc	tcc	agc	att	aaa	ggc	gtg	ccg	aac		432
Ile	Val	Asn	Met	Ala	Ser	Val	Ala	Ser	Ser	Ile	Lys	Gly	Val	Pro	Asn		
130					135						140						
cgc	ttc	gcc	tat	ggc	gtg	acc	aaa	gca	gcc	gtc	atc	ggg	ctg	acg	aaa		480
Arg	Phe	Ala	Tyr	Gly	Val	Thr	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	Lys		
145				150						155					160		
gcc	gtt	gcg	gcg	gat	tat	gta	gga	gac	ggc	att	cgc	tgc	aat	gcg	atc		528
Ala	Val	Ala	Ala	Asp	Tyr	Val	Gly	Asp	Gly	Ile	Arg	Cys	Asn	Ala	Ile		
				165					170					175			
tgc	ccg	gga	acg	gtc	gaa	agc	ccg	tcg	ctc	gaa	agc	cgc	atg	cgg	gca		576
Cys	Pro	Gly	Thr	Val	Glu	Ser	Pro	Ser	Leu	Glu	Ser	Arg	Met	Arg	Ala		
			180					185					190				
cag	gga	gac	tac	gaa	acg	gcg	cgt	gcg	gcc	ttt	atc	tcc	cgc	cag	ccg		624
Gln	Gly	Asp	Tyr	Glu	Thr	Ala	Arg	Ala	Ala	Phe	Ile	Ser	Arg	Gln	Pro		
		195					200					205					
atg	ggc	cgc	ctc	ggc	acg	ccc	gaa	gag	atc	gcc	gac	ctt	gcc	gtc	tat		672
Met	Gly	Arg	Leu	Gly	Thr	Pro	Glu	Glu	Ile	Ala	Asp	Leu	Ala	Val	Tyr		
	210					215					220						
ctc	gcc	ggc	gcc	acc	tac	acc	tcc	ggc	cag	gcc	tac	gcc	atc	gac	ggc		720
Leu	Ala	Gly	Ala	Thr	Tyr	Thr	Ser	Gly	Gln	Ala	Tyr	Ala	Ile	Asp	Gly		
225				230					235						240		
ggc	tgg	acc	att	tga													735
Gly	Trp	Thr	Ile														

&lt;210&gt; 1512

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Sinorhizobium meliloti 1021

&lt;400&gt; 1512

Met	Thr	Ala	Asn	Leu	Ala	Gly	Lys	Val	Val	Leu	Val	Thr	Ala	Ala	Ala		
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Gln	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Ala	Phe	Ala	Lys	Ala	Gly	Ala		
			20					25					30				
Lys	Val	His	Ala	Thr	Asp	Ile	Asn	Ala	Asp	Ala	Val	Gly	Ser	Leu	Glu		
		35					40					45					
Gly	Glu	Ala	Gly	Ile	Ser	Thr	His	Arg	Leu	Asp	Val	Leu	Asp	Thr	Ala		
	50					55					60						
Ala	Val	Glu	Ala	Leu	Val	Ala	Glu	Ile	Gly	Ala	Val	Asp	Val	Leu	Phe		
65				70					75						80		
Asn	Cys	Ala	Gly	Phe	Val	His	Ala	Gly	Ser	Val	Leu	Thr	Met	Lys	Asp		
				85					90					95			
Glu	Asp	Leu	Asp	Phe	Ala	Phe	Asp	Leu	Asn	Val	Lys	Ser	Met	Ile	Arg		
			100					105					110				
Thr	Ile	Arg	Ala	Val	Leu	Pro	Gly	Met	Ile	Ala	Arg	Lys	Asp	Gly	Ser		
		115					120					125					
Ile	Val	Asn	Met	Ala	Ser	Val	Ala	Ser	Ser	Ile	Lys	Gly	Val	Pro	Asn		
	130					135					140						
Arg	Phe	Ala	Tyr	Gly	Val	Thr	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	Lys		
145				150						155					160		
Ala	Val	Ala	Ala	Asp	Tyr	Val	Gly	Asp	Gly	Ile	Arg	Cys	Asn	Ala	Ile		
				165					170					175			
Cys	Pro	Gly	Thr	Val	Glu	Ser	Pro	Ser	Leu	Glu	Ser	Arg	Met	Arg	Ala		
			180					185					190				



## PhoenixTemp32470.tmp.txt

Gln Gly Asp Tyr Glu Thr Ala Arg Ala Ala Phe Ile Ser Arg Gln Pro  
 195 200 205  
 Met Gly Arg Leu Gly Thr Pro Glu Glu Ile Ala Asp Leu Ala Val Tyr  
 210 215 220  
 Leu Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala Tyr Ala Ile Asp Gly  
 225 230 235 240  
 Gly Trp Thr Ile

&lt;210&gt; 1513

&lt;211&gt; 798

&lt;212&gt; DNA

&lt;213&gt; Ralstonia solanacearum GMI1000

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(798)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1513

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Met	Thr	Ala	Pro	Pro	Thr	Ser	Phe	Pro	Pro	Arg	Leu	Ala	Gly	Lys	Val	
1				5				10						15		
gcg	ctg	gtg	acc	ggc	gcc	acg	cag	ggc	atc	ggc	gcc	gcc	acc	gcg	cgg	96
Ala	Leu	Val	Thr	Gly	Ala	Thr	Gln	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	
			20					25					30			
ctg	ttc	gcg	cgg	cac	ggc	gcg	cgc	gtg	atc	gtc	aat	gcg	ctg	gtg	cgc	144
Leu	Phe	Ala	Arg	His	Gly	Ala	Arg	Val	Ile	Val	Asn	Ala	Leu	Val	Arg	
		35					40					45				
gac	gcc	gcc	gag	gcc	ttc	gcc	gcg	tcc	atc	ggc	cac	gac	ggc	aac		192
Asp	Ala	Ala	Ala	Glu	Ala	Phe	Ala	Ala	Ser	Ile	Gly	His	Asp	Gly	Asn	
	50				55					60						
gtg	ctg	ctg	gtg	cag	gcc	gac	gtg	cgc	tat	cgc	gac	cag	gcc	gat	gcc	240
Val	Leu	Leu	Val	Gln	Ala	Asp	Val	Arg	Tyr	Arg	Asp	Gln	Ala	Asp	Ala	
65				70					75					80		
atg	gtc	gcg	gcg	ggc	gtc	gcg	cgc	ttc	ggc	ggc	atc	gac	gtg	ctg	gtc	288
Met	Val	Ala	Ala	Gly	Val	Ala	Arg	Phe	Gly	Gly	Ile	Asp	Val	Leu	Val	
				85					90					95		
aac	aat	gcc	ggc	atc	aat	gtc	ttc	tcc	gat	ccg	ctc	gcg	ctg	tcc	gag	336
Asn	Asn	Ala	Gly	Ile	Asn	Val	Phe	Ser	Asp	Pro	Leu	Ala	Leu	Ser	Glu	
			100					105					110			
gcg	gat	tgg	gcg	cgc	tgc	ctg	tcg	gtc	gac	ctg	gaa	ggc	gca	tgg	cat	384
Ala	Asp	Trp	Ala	Arg	Cys	Leu	Ser	Val	Asp	Leu	Glu	Gly	Ala	Trp	His	
		115					120					125				
tgc	gcg	cgc	gcc	gtg	ctg	ccg	cac	atg	ctg	gcg	cgc	ggc	gcc	ggc	agc	432
Cys	Ala	Arg	Ala	Val	Leu	Pro	His	Met	Leu	Ala	Arg	Gly	Ala	Gly	Ser	
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atc	gtc	aac	atc	gct	tcg	gtg	cac	ggg	cat	aag	atc	atc	ccg	ggg	gcg	480
Ile	Val	Asn	Ile	Ala	Ser	Val	His	Gly	His	Lys	Ile	Ile	Pro	Gly	Ala	
145				150					155					160		
ttt	ccg	tat	ccg	gtg	gcc	aag	cat	ggc	ctg	atc	ggg	ctc	acg	cgg	gcg	528
Phe	Pro	Tyr	Pro	Val	Ala	Lys	His	Gly	Leu	Ile	Gly	Leu	Thr	Arg	Ala	
				165					170					175		
ctg	ggc	atc	gag	tac	gcg	gcg	cgc	ggc	atc	cgT	gtc	aat	tcg	atc	tcg	576
Leu	Gly	Ile	Glu	Tyr	Ala	Ala	Arg	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser	
			180					185					190			
ccg	ggg	ctg	atc	ctc	acg	ccg	atc	gcc	gag	gcc	ggc	ttt	gcc	gcc	gcg	624
Pro	Gly	Leu	Ile	Leu	Thr	Pro	Ile	Ala	Glu	Ala	Gly	Phe	Ala	Ala	Ala	
		195					200					205				
ccc	gac	ccc	gag	gcc	gaa	cgC	cgC	cgC	cag	gcc	gac	ctg	ctg	ccg	tgc	672
Pro	Asp	Pro	Glu	Ala	Glu	Arg	Arg	Arg	Gln	Ala	Asp	Leu	Leu	Pro	Cys	
	210					215					220					
aag	cgC	atc	ggc	gag	ccg	gag	gag	gtg	gcc	tac	acc	gcg	ctg	ttc	ctc	720
Lys	Arg	Ile	Gly	Glu	Pro	Glu	Glu	Val	Ala	Tyr	Thr	Ala	Leu	Phe	Leu	
225					230				235						240	
gcc	tcc	gac	gag	gcg	cgC	ttc	atc	aac	gcc	gcc	gac	atc	ctg	atc	gat	768
Ala	Ser	Asp	Glu	Ala	Arg	Phe	Ile	Asn	Ala	Ala	Asp	Ile	Leu	Ile	Asp	
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ggc	gct	cgC	tcg	cag	ctg	tat	cac	gaa	tga							798

Gly Ala Arg Ser Gln Leu Tyr His Glu  
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<211> 265  
<212> PRT  
<213> Ralstonia solanacearum GMI1000

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35 40 45  
Asp Ala Ala Ala Glu Ala Phe Ala Ala Ser Ile Gly His Asp Gly Asn  
50 55 60  
Val Leu Leu Val Gln Ala Asp Val Arg Tyr Arg Asp Gln Ala Asp Ala  
65 70 75 80  
Met Val Ala Ala Gly Val Ala Arg Phe Gly Gly Ile Asp Val Leu Val  
85 90 95  
Asn Asn Ala Gly Ile Asn Val Phe Ser Asp Pro Leu Ala Leu Ser Glu  
100 105 110  
Ala Asp Trp Ala Arg Cys Leu Ser Val Asp Leu Glu Gly Ala Trp His  
115 120 125  
Cys Ala Arg Ala Val Leu Pro His Met Leu Ala Arg Gly Ala Gly Ser  
130 135 140  
Ile Val Asn Ile Ala Ser Val His Gly His Lys Ile Ile Pro Gly Ala  
145 150 155 160  
Phe Pro Tyr Pro Val Ala Lys His Gly Leu Ile Gly Leu Thr Arg Ala  
165 170 175  
Leu Gly Ile Glu Tyr Ala Ala Arg Gly Ile Arg Val Asn Ser Ile Ser  
180 185 190  
Pro Gly Leu Ile Leu Thr Pro Ile Ala Glu Ala Gly Phe Ala Ala Ala  
195 200 205  
Pro Asp Pro Glu Ala Glu Arg Arg Gln Ala Asp Leu Leu Pro Cys  
210 215 220  
Lys Arg Ile Gly Glu Pro Glu Glu Val Ala Tyr Thr Ala Leu Phe Leu  
225 230 235 240  
Ala Ser Asp Glu Ala Arg Phe Ile Asn Ala Ala Asp Ile Leu Ile Asp  
245 250 255  
Gly Ala Arg Ser Gln Leu Tyr His Glu  
260 265

<210> 1515  
<211> 921  
<212> DNA  
<213> Arabidopsis thaliana

<220>  
<221> CDS  
<222> (1)..(921)

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1 5 10 15  
cca gcc acc gca gcc tca gcc gct tac tcg aca ggt ggt ggt ggc 96  
Pro Ala Thr Ala Ala Ser Ala Ala Tyr Ser Thr Gly Gly Gly Gly  
20 25 30  
ggt tgt act tgt acg agt aaa aag cta gaa ggc aaa gta gct ctc ata 144  
Gly Cys Thr Cys Thr Ser Lys Lys Leu Glu Gly Lys Val Ala Leu Ile  
35 40 45  
act ggt ggt gct agc ggg ctc ggt aag gcc acg gcc agc gag ttt ctc 192  
Thr Gly Gly Ala Ser Gly Leu Gly Lys Ala Thr Ala Ser Glu Phe Leu  
50 55 60  
cgc cat ggt gcc cga gtc gtg atc gcc gac tta gac gcg gaa acc ggg 240  
Arg His Gly Ala Arg Val Val Ile Ala Asp Leu Asp Ala Glu Thr Gly  
65 70 75 80

## PhoenixTemp32470.tmp.txt

aca	aaa	acc	gct	aaa	gaa	cta	ggc	tcg	gag	gca	gag	ttt	gtg	cgg	tgt		288
Thr	Lys	Thr	Ala	Lys	Glu	Leu	Gly	Ser	Glu	Ala	Glu	Phe	Val	Arg	Cys		
				85					90					95			
gat	gtc	acg	gtg	gag	gct	gat	atc	gct	gga	gcc	gtg	gaa	atg	acg	gtg		336
Asp	Val	Thr	Val	Glu	Ala	Asp	Ile	Ala	Gly	Ala	Val	Glu	Met	Thr	Val		
			100					105					110				
gag	cgg	tat	ggg	aag	cta	gac	gtg	atg	tac	aat	aac	gct	ggg	att	gtt		384
Glu	Arg	Tyr	Gly	Lys	Leu	Asp	Val	Met	Tyr	Asn	Asn	Ala	Gly	Ile	Val		
		115					120					125					
gga	cct	atg	act	cca	gcg	agc	ata	tcg	cag	ctt	gat	atg	aca	gaa	ttc		432
Gly	Pro	Met	Thr	Pro	Ala	Ser	Ile	Ser	Gln	Leu	Asp	Met	Thr	Glu	Phe		
	130					135					140						
gag	aga	gta	atg	agg	att	aat	gtt	ttt	ggg	gtt	gtc	tcc	ggc	atc	aaa		480
Glu	Arg	Val	Met	Arg	Ile	Asn	Val	Phe	Gly	Val	Val	Ser	Gly	Ile	Lys		
					150				155						160		
cac	gcc	gct	aag	ttt	atg	att	ccg	gct	agg	tct	gga	tgc	att	ttg	tgc		528
His	Ala	Ala	Lys	Phe	Met	Ile	Pro	Ala	Arg	Ser	Gly	Cys	Ile	Leu	Cys		
				165					170					175			
aca	tca	agc	gtt	gca	ggc	gtg	act	gga	ggg	ttg	gct	cca	cat	tca	tac		576
Thr	Ser	Ser	Val	Ala	Gly	Val	Thr	Gly	Gly	Leu	Ala	Pro	His	Ser	Tyr		
			180					185					190				
aca	atc	tca	aag	ttc	aca	act	ccc	gga	ata	gtc	aag	tcg	gca	gca	agc		624
Thr	Ile	Ser	Lys	Phe	Thr	Thr	Pro	Gly	Ile	Val	Lys	Ser	Ala	Ala	Ser		
		195					200					205					
gag	ctc	tgc	gaa	cac	ggc	gtg	cgt	ata	aac	tgt	atc	tca	ccg	ggg	acg		672
Glu	Leu	Cys	Glu	His	Gly	Val	Arg	Ile	Asn	Cys	Ile	Ser	Pro	Gly	Thr		
			210			215					220						
gtg	gct	aca	ccg	ctc	act	ctc	agt	tac	ctt	cag	aaa	gtg	ttt	ccg	aag		720
Val	Ala	Thr	Pro	Leu	Thr	Leu	Ser	Tyr	Leu	Gln	Lys	Val	Phe	Pro	Lys		
					230					235					240		
gta	tcg	gag	gag	aag	cta	cgc	gaa	aca	gtg	aaa	gga	atg	ggg	gag	tta		768
Val	Ser	Glu	Glu	Lys	Leu	Arg	Glu	Thr	Val	Lys	Gly	Met	Gly	Glu	Leu		
				245				250						255			
aaa	gga	gct	gag	tgt	gaa	gaa	gct	gac	gtg	gct	aag	gct	gct	ttg	tat		816
Lys	Gly	Ala	Glu	Cys	Glu	Glu	Ala	Asp	Val	Ala	Lys	Ala	Ala	Leu	Tyr		
			260					265					270				
ttg	gct	tcc	aac	gac	ggg	aaa	tac	gtt	act	ggc	cat	aac	ttg	gtc	gtg		864
Leu	Ala	Ser	Asn	Asp	Gly	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val		
		275					280					285					
gat	ggg	ggc	atg	act	gct	ttc	aaa	ata	gct	ggg	ttt	cct	ttt	cct	tcg		912
Asp	Gly	Gly	Met	Thr	Ala	Phe	Lys	Ile	Ala	Gly	Phe	Pro	Phe	Pro	Ser		
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gat	tca	tga															921
Asp	Ser																
305																	

&lt;210&gt; 1516

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 1516

Met	Ala	Ala	Ile	Val	Leu	Ile	Arg	Ser	Ile	Val	Arg	Asn	Phe	Lys	Arg		
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Pro	Ala	Thr	Ala	Ala	Ser	Ala	Ala	Tyr	Ser	Thr	Gly	Gly	Gly	Gly	Gly		
			20					25					30				
Gly	Cys	Thr	Cys	Thr	Ser	Lys	Lys	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile		
			35				40					45					
Thr	Gly	Gly	Ala	Ser	Gly	Leu	Gly	Lys	Ala	Thr	Ala	Ser	Glu	Phe	Leu		
			50			55					60						
Arg	His	Gly	Ala	Arg	Val	Val	Ile	Ala	Asp	Leu	Asp	Ala	Glu	Thr	Gly		
65					70				75					80			
Thr	Lys	Thr	Ala	Lys	Glu	Leu	Gly	Ser	Glu	Ala	Glu	Phe	Val	Arg	Cys		
				85					90					95			
Asp	Val	Thr	Val	Glu	Ala	Asp	Ile	Ala	Gly	Ala	Val	Glu	Met	Thr	Val		
			100					105					110				
Glu	Arg	Tyr	Gly	Lys	Leu	Asp	Val	Met	Tyr	Asn	Asn	Ala	Gly	Ile	Val		
		115					120					125					
Gly	Pro	Met	Thr	Pro	Ala	Ser	Ile	Ser	Gln	Leu	Asp	Met	Thr	Glu	Phe		

## PhoenixTemp32470.tmp.txt

130 135 140  
 Glu Arg Val Met Arg Ile Asn Val Phe Gly Val Val Ser Gly Ile Lys  
 145 150 155 160  
 His Ala Ala Lys Phe Met Ile Pro Ala Arg Ser Gly Cys Ile Leu Cys  
 165 170 175  
 Thr Ser Ser Val Ala Gly Val Thr Gly Gly Leu Ala Pro His Ser Tyr  
 180 185 190  
 Thr Ile Ser Lys Phe Thr Thr Pro Gly Ile Val Lys Ser Ala Ala Ser  
 195 200 205  
 Glu Leu Cys Glu His Gly Val Arg Ile Asn Cys Ile Ser Pro Gly Thr  
 210 215 220  
 Val Ala Thr Pro Leu Thr Leu Ser Tyr Leu Gln Lys Val Phe Pro Lys  
 225 230 235 240  
 Val Ser Glu Glu Lys Leu Arg Glu Thr Val Lys Gly Met Gly Glu Leu  
 245 250 255  
 Lys Gly Ala Glu Cys Glu Glu Ala Asp Val Ala Lys Ala Ala Leu Tyr  
 260 265 270  
 Leu Ala Ser Asn Asp Gly Lys Tyr Val Thr Gly His Asn Leu Val Val  
 275 280 285  
 Asp Gly Gly Met Thr Ala Phe Lys Ile Ala Gly Phe Pro Phe Pro Ser  
 290 295 300  
 Asp Ser  
 305

&lt;210&gt; 1517

&lt;211&gt; 1282

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (71)..(1102)

&lt;400&gt; 1517

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ccacaccttt atg ttc cct cta tat cta tat aag acg caa aca cag gga 109  
 Met Phe Pro Leu Tyr Leu Tyr Lys Thr Gln Thr Gln Gly

cca ttc tct tca aag acg aga aat tat aag tta gga aac gac aaa gac 157  
 Pro Phe Ser Ser Lys Thr Arg Asn Tyr Lys Leu Gly Asn Asp Lys Asp  
 15 20 25

cga tct ata tat ata tct cgg agc aat ata gct agc aca aac atg ttt 205  
 Arg Ser Ile Tyr Ile Ser Arg Ser Asn Ile Ala Ser Thr Asn Met Phe  
 30 35 40 45

cag att gga aaa aac gca tta ttc aag aat gtg agc aag aac ttc ctt 253  
 Gln Ile Gly Lys Asn Ala Leu Phe Lys Asn Val Ser Lys Asn Phe Leu  
 50 55 60

atc aag gga ata tcc tca tcc tca tca tct cat tca act tca agg aag 301  
 Ile Lys Gly Ile Ser Ser Ser Ser Ser Ser His Ser Thr Ser Arg Lys  
 65 70 75

cta gaa ggt aaa gta gca ctc atc act gga gga gca agt ggg att ggc 349  
 Leu Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly  
 80 85 90

aaa gca aca gcc gga aaa ttc atc agt cat gga gcc aaa gtt atc att 397  
 Lys Ala Thr Ala Gly Lys Phe Ile Ser His Gly Ala Lys Val Ile Ile  
 95 100 105

gcc gat atc caa ccg cag att ggg cga gaa acc gag caa gaa ctc ggt 445  
 Ala Asp Ile Gln Pro Gln Ile Gly Arg Glu Thr Glu Gln Glu Leu Gly  
 110 115 120 125

ccc agt tgt gct tac ttc cca tgc gat gtg acc aaa gaa tca gac att 493  
 Pro Ser Cys Ala Tyr Phe Pro Cys Asp Val Thr Lys Glu Ser Asp Ile  
 130 135 140

gct aac gca gtt gac ttc gct gtc tcg ctc cat aca aag ctc gac att 541  
 Ala Asn Ala Val Asp Phe Ala Val Ser Leu His Thr Lys Leu Asp Ile  
 145 150 155

atg tac aac aat gct ggt att ccc tgc aaa acg cct cct agt atc gtt 589  
 Met Tyr Asn Asn Ala Gly Ile Pro Cys Lys Thr Pro Pro Ser Ile Val

## PhoenixTemp32470.tmp.txt

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Asp	Leu	175	Asp	Leu	Asn	Val	Phe	180	Asp	Lys	Val	Ile	Asn	185	Thr	Asn	Val	Arg	
gga	gtc	atg	gca	gga	atc	aaa	cat	gct	gct	cgt	gtg	atg	atc	ccg	cgt			685	
Gly	Val	Met	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Arg				
190					195					200					205				
aac	tct	gga	tcc	atc	att	tgt	gca	ggg	agt	gtc	acg	ggg	atg	atg	ggc			733	
Asn	Ser	Gly	Ser	Ile	Ile	Cys	Ala	Gly	Ser	Val	Thr	Gly	Met	Met	Gly				
				210					215					220					
ggt	tta	gcc	caa	cat	act	tac	agc	gtc	tca	aaa	tcc	gct	gtt	atc	gga			781	
Gly	Leu	Ala	Gln	His	Thr	Tyr	Ser	Val	Ser	Lys	Ser	Ala	Val	Ile	Gly				
			225					230					235						
att	gta	aga	tca	aca	gct	tca	gaa	cta	tgc	aag	cac	agg	atc	cgg	gtc			829	
Ile	Val	Arg	Ser	Thr	Ala	Ser	Glu	Leu	Cys	Lys	His	Arg	Ile	Arg	Val				
		240					245					250							
aac	tgc	att	tct	cct	ttt	gcg	atc	aca	aca	tca	ttc	gtg	atg	gat	gag			877	
Asn	Cys	Ile	Ser	Pro	Phe	Ala	Ile	Thr	Thr	Ser	Phe	Val	Met	Asp	Glu				
		255				260					265								
atg	cga	cag	att	tac	ccc	ggt	gtt	gat	gac	tca	agg	ctg	atc	cag	ata			925	
Met	Arg	Gln	Ile	Tyr	Pro	Gly	Val	Asp	Asp	Ser	Arg	Leu	Ile	Gln	Ile				
270					275				280					285					
gtg	cag	agt	aca	gga	gtg	tta	aat	gga	gag	gtt	tgt	gaa	cca	acc	gat			973	
Val	Gln	Ser	Thr	Gly	Val	Leu	Asn	Gly	Glu	Val	Cys	Glu	Pro	Thr	Asp				
				290				295					300						
gta	gct	aat	gca	gcg	gtg	tat	ctc	gct	tcc	gat	gat	tca	aag	tat	gta			1021	
Val	Ala	Asn	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Asp	Ser	Lys	Tyr	Val				
			305				310					315							
aat	ggg	cat	aat	ctg	gtg	gta	gat	gga	gga	ttc	aca	act	gta	aag	acg			1069	
Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Thr	Val	Lys	Thr				
		320				325					330								
tta	gat	ttc	cct	gca	cct	gac	caa	gtg	aag	taacaaaact	cataatatac							1119	
Leu	Asp	Phe	Pro	Ala	Pro	Asp	Gln	Val	Lys										
	335				340														
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gccggtttct	attctgtcaa	caatcaaatt	tatagctgca	ttagcggatg	tgaaagctcc													1239	
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&lt;210&gt; 1518

&lt;211&gt; 343

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 1518

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Ser	Lys	Thr	Arg	Asn	Tyr	Lys	Leu	Gly	Asn	Asp	Lys	Asp	Arg	Ser	Ile			
			20					25					30					
Tyr	Ile	Ser	Arg	Ser	Asn	Ile	Ala	Ser	Thr	Asn	Met	Phe	Gln	Ile	Gly			
			35				40					45						
Lys	Asn	Ala	Leu	Phe	Lys	Asn	Val	Ser	Lys	Asn	Phe	Leu	Ile	Lys	Gly			
	50					55					60							
Ile	Ser	Ser	Ser	Ser	Ser	Ser	His	Ser	Thr	Ser	Arg	Lys	Leu	Glu	Gly			
65					70				75					80				
Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr			
				85				90						95				
Ala	Gly	Lys	Phe	Ile	Ser	His	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	Ile			
			100				105						110					
Gln	Pro	Gln	Ile	Gly	Arg	Glu	Thr	Glu	Gln	Glu	Leu	Gly	Pro	Ser	Cys			
		115					120					125						
Ala	Tyr	Phe	Pro	Cys	Asp	Val	Thr	Lys	Glu	Ser	Asp	Ile	Ala	Asn	Ala			
	130					135					140							
Val	Asp	Phe	Ala	Val	Ser	Leu	His	Thr	Lys	Leu	Asp	Ile	Met	Tyr	Asn			

## PhoenixTemp32470.tmp.txt

145 Asn Ala Gly Ile Pro 150 Cys Lys Thr Pro Pro 155 Ser Ile Val Asp Leu 160  
 165 Asp Lys Val Ile Asn Thr Asn Val Arg Gly Val Met  
 180 His Ala Ala Arg Val Met Ile Pro Arg Asn Ser Gly  
 195 Cys Ala Gly Ser Val Thr Gly Met Met Gly Gly Leu Ala  
 210 Ile Thr Tyr Ser Val Ser Lys Ser Ala Val Ile Gly Ile Val Arg  
 225 Thr Ala Ser Glu Leu Cys Lys His Arg Ile Arg Val Asn Cys Ile  
 245 Ile Thr Thr Ser Phe Val Met Asp Glu Met Arg Gln  
 260 Gly Val Asp Asp Ser Arg Leu Ile Gln Ile Val Gln Ser  
 275 Thr Gly Val Leu Asn Gly Glu Val Cys Glu Pro Thr Asp Val Ala Asn  
 290 Ala Ala Val Tyr Leu Ala Ser Asp Asp Ser Lys Tyr Val Asn Gly His  
 305 Asn Leu Val Val Asp Gly Gly Phe Thr Thr Val Lys Thr Leu Asp Phe  
 325 Gln Val Lys  
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 <211> 756  
 <212> DNA  
 <213> Drosophila melanogaster

<220>  
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 <222> (1)..(756)

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 1 5 10 15  
 att ggt gcc gcc atc gcc caa gtt ctt gct cgc gaa ggt gcc act ttg 96  
 Ile Gly Ala Ala Ile Ala Gln Val Leu Ala Arg Glu Gly Ala Thr Leu  
 20 25 30  
 gcg ctg gtg ggt cgc aat gtg gcc aat ctg gag gcc acg aag aag agc 144  
 Ala Leu Val Gly Arg Asn Val Ala Asn Leu Glu Ala Thr Lys Lys Ser  
 35 40 45  
 ctg aag ggc acg cag gca gaa atc gtg gtg gcc gat gtg acc aag gat 192  
 Leu Lys Gly Thr Gln Ala Glu Ile Val Val Ala Asp Val Thr Lys Asp  
 50 55 60  
 gcg gac gcg att gtc cag caa acg ttg gcc aag ttc gga cgc atc gac 240  
 Ala Asp Ala Ile Val Gln Gln Thr Leu Ala Lys Phe Gly Arg Ile Asp  
 65 70 75 80  
 gtg ctt gtc aac aat gcc ggc att ctg ggc aag ggt ggc ctc atc gat 288  
 Val Leu Val Asn Asn Ala Gly Ile Leu Gly Lys Gly Gly Leu Ile Asp  
 85 90 95  
 ctg gac atc gag gaa ttc gac gcg gtg ctc aat acc aat ctg cgt ggt 336  
 Leu Asp Ile Glu Glu Phe Asp Ala Val Leu Asn Thr Asn Leu Arg Gly  
 100 105 110  
 gtc att ctg ttg acc aag gcg gtg ctc ccg cac ctc ctg aag acc aag 384  
 Val Ile Leu Leu Thr Lys Ala Val Leu Pro His Leu Leu Lys Thr Lys  
 115 120 125  
 gga gcc gtg gtc aac gtg agc agc tgt gcc ggc att cgt ccc ttc gcc 432  
 Gly Ala Val Val Asn Val Ser Ser Cys Ala Gly Ile Arg Pro Phe Ala  
 130 135 140  
 gga gca ctg agc tat gga gtt tcg aag gcc gcc ctc gat cag ttc acc 480  
 Gly Ala Leu Ser Tyr Gly Val Ser Lys Ala Ala Leu Asp Gln Phe Thr  
 145 150 155 160  
 aag att gtg gcc ctc gaa atg gcg cct cag ggt gtg cgc gtg aac tcg 528  
 Lys Ile Val Ala Leu Glu Met Ala Pro Gln Gly Val Arg Val Asn Ser  
 165 170 175

## PhoenixTemp32470.tmp.txt

gtg	aat	ccc	ggc	ttc	gtg	gtg	acc	aac	atc	cat	cgg	aac	att	ggc	atc	576
Val	Asn	Pro	Gly	Phe	Val	Val	Thr	Asn	Ile	His	Arg	Asn	Ile	Gly	Ile	
			180					185					190			
gtc	gac	gag	gag	tac	aac	gga	atg	ctc	cag	cgg	gcc	atc	aat	tcg	cat	624
Val	Asp	Glu	Glu	Tyr	Asn	Gly	Met	Leu	Gln	Arg	Ala	Ile	Asn	Ser	His	
		195					200					205				
ccc	atg	ggc	cgt	gta	ggc	gac	gtc	acc	gaa	gtg	gcc	gag	gca	gtg	gcc	672
Pro	Met	Gly	Arg	Val	Gly	Asp	Val	Thr	Glu	Val		Glu	Ala	Val	Ala	
	210					215					220					
ttt	ttg	gcc	agc	tcc	aag	gca	agt	ttc	acc	acc	ggc	gcc	ctc	ttc	ccc	720
Phe	Leu	Ala	Ser	Ser	Lys	Ala	Ser	Phe	Thr	Thr	Gly	Ala	Leu	Phe	Pro	
225					230					235					240	
atc	gat	ggg	ggc	aag	cac	aat	ctg	acg	cct	cgt	taa					756
Ile	Asp	Gly	Gly	Lys	His	Asn	Leu	Thr	Pro	Arg						
				245					250							

<210> 1520  
 <211> 251  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 1520  
 Met Ser Leu Ser Asn Lys Val Val Ile Val Thr Gly Ala Ser Ser Gly  
 1 5 10 15  
 Ile Gly Ala Ala Ile Ala Gln Val Leu Ala Arg Glu Gly Ala Thr Leu  
 20 25 30  
 Ala Leu Val Gly Arg Asn Val Ala Asn Leu Glu Ala Thr Lys Lys Ser  
 35 40 45  
 Leu Lys Gly Thr Gln Ala Glu Ile Val Val Ala Asp Val Thr Lys Asp  
 50 55 60  
 Ala Asp Ala Ile Val Gln Gln Thr Leu Ala Lys Phe Gly Arg Ile Asp  
 65 70 75 80  
 Val Leu Val Asn Asn Ala Gly Ile Leu Gly Lys Gly Gly Leu Ile Asp  
 85 90 95  
 Leu Asp Ile Glu Phe Asp Ala Val Leu Asn Thr Asn Leu Arg Gly  
 100 105 110  
 Val Ile Leu Leu Thr Lys Ala Val Leu Pro His Leu Leu Lys Thr Lys  
 115 120 125  
 Gly Ala Val Val Asn Val Ser Ser Cys Ala Gly Ile Arg Pro Phe Ala  
 130 135 140  
 Gly Ala Leu Ser Tyr Gly Val Ser Lys Ala Ala Leu Asp Gln Phe Thr  
 145 150 155 160  
 Lys Ile Val Ala Leu Glu Met Ala Pro Gln Gly Val Arg Val Asn Ser  
 165 170 175  
 Val Asn Pro Gly Phe Val Val Thr Asn Ile His Arg Asn Ile Gly Ile  
 180 185 190  
 Val Asp Glu Tyr Asn Gly Met Leu Gln Arg Ala Ile Asn Ser His  
 195 200 205  
 Pro Met Gly Arg Val Gly Asp Val Thr Glu Val Ala Glu Ala Val Ala  
 210 215 220  
 Phe Leu Ala Ser Ser Lys Ala Ser Phe Thr Thr Gly Ala Leu Phe Pro  
 225 230 235 240  
 Ile Asp Gly Gly Lys His Asn Leu Thr Pro Arg  
 245 250

<210> 1521  
 <211> 750  
 <212> DNA  
 <213> Drosophila melanogaster

<220>  
 <221> CDS  
 <222> (1)..(750)

atg	tca	gtg	gga	gta	cta	gct	gga	aaa	gta	gcc	ctg	gta	aca	ggg	gcc	48
Met	Ser	Val	Gly	Val	Leu	Ala	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Ala	
1				5					10					15		
gga	tca	gga	att	ggg	cgt	gcc	acc	tgc	cgc	ctt	ttg	gcc	aga	gat	ggg	96

## PhoenixTemp32470.tmp.txt

Gly	Ser	Gly	Ile	Gly	Arg	Ala	Thr	Cys	Arg	Leu	Leu	Ala	Arg	Asp	Gly		
gcc	aaa	gtg	atc	gcc	gtt	gac	cgc	aat	cta	aag	gcg	gcc	caa	gaa	acc		144
Ala	Lys	Val	Ile	Ala	Val	Asp	Arg	Asn	Leu	Lys	Ala	Ala	Gln	Glu	Thr		
		35					40					45					
gta	cag	gaa	ttg	ggc	tct	gag	cga	tct	gcc	gcc	ctg	gag	gtg	gac	gtt		192
Val	Gln	Glu	Leu	Gly	Ser	Glu	Arg	Ser	Ala	Ala	Leu	Glu	Val	Asp	Val		
	50					55					60						
tcc	tct	gcc	cag	agt	gtt	caa	ttc	tcg	gtg	gcc	gag	gcc	cta	aag	aaa		240
Ser	Ser	Ala	Gln	Ser	Val	Gln	Phe	Ser	Val	Ala	Glu	Ala	Leu	Lys	Lys		
	65				70				75						80		
ttc	cag	cag	gca	ccc	act	att	gtg	gtc	aat	tcg	gct	gga	ata	acc	cga		288
Phe	Gln	Gln	Ala	Pro	Thr	Ile	Val	Val	Asn	Ser	Ala	Gly	Ile	Thr	Arg		
				85					90					95			
gat	ggt	tat	ctg	ctc	aag	atg	ccc	gaa	cgg	gac	tac	gat	gac	gta	tac		336
Asp	Gly	Tyr	Leu	Leu	Lys	Met	Pro	Glu	Arg	Asp	Tyr	Asp	Asp	Val	Tyr		
			100				105					110					
ggg	gtc	aat	ctg	aag	ggc	acc	ttt	ctg	gtt	acc	cag	gcc	tat	gcc	aag		384
Gly	Val	Asn	Leu	Lys	Gly	Thr	Phe	Leu	Val	Thr	Gln	Ala	Tyr	Ala	Lys		
		115					120					125					
gcc	atg	atc	gag	cag	aaa	ctg	gaa	aac	ggc	acc	att	gtg	aac	ctc	tca		432
Ala	Met	Ile	Glu	Gln	Lys	Leu	Glu	Asn	Gly	Thr	Ile	Val	Asn	Leu	Ser		
	130					135					140						
agc	atc	gtg	gcc	aag	atg	aac	gtg	ggc	cag	gcc	aac	tat	gcg	gcc			480
Ser	Ile	Val	Ala	Lys	Met	Asn	Asn	Val	Gly	Gln	Ala	Asn	Tyr	Ala	Ala		
	145				150				155					160			
acc	aag	gcg	ggc	gtg	atc	tcc	ttc	acg	gag	gtg	gcc	tcc	aag	gag	ttc		528
Thr	Lys	Ala	Gly	Val	Ile	Ser	Phe	Thr	Glu	Val	Ala	Ser	Lys	Glu	Phe		
			165						170					175			
gga	aag	ttt	ggc	atc	cgt	gtg	aac	tgc	atc	ctg	cca	ggc	tac	ata	gac		576
Gly	Lys	Phe	Gly	Ile	Arg	Val	Asn	Cys	Ile	Leu	Pro	Gly	Tyr	Ile	Asp		
			180					185					190				
acg	ccc	atg	gta	gcg	gtt	gtg	ccc	gat	tct	gta	aag	cag	gag	gtg	gta		624
Thr	Pro	Met	Val	Ala	Val	Val	Pro	Asp	Ser	Val	Lys	Gln	Glu	Val	Val		
			195				200					205					
caa	cga	tgc	ccc	ttg	ggc	cga	ttg	ggt	cag	ccg	gag	gag	atc	gcc	gag		672
Gln	Arg	Cys	Pro	Leu	Gly	Arg	Leu	Gly	Gln	Pro	Glu	Glu	Ile	Ala	Glu		
	210					215					220						
gtc	att	gcc	ttt	ttg	gcc	tcc	ccg	caa	tcg	tca	tac	gtc	aat	ggg	gct		720
Val	Ile	Ala	Phe	Leu	Ala	Ser	Pro	Gln	Ser	Ser	Tyr	Val	Asn	Gly	Ala		
	225				230					235					240		
gcc	atc	gag	gtc	acc	ggg	ggc	ctt	aaa	taa								750
Ala	Ile	Glu	Val	Thr	Gly	Gly	Leu	Lys									
				245													

&lt;210&gt; 1522

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 1522

Met	Ser	Val	Gly	Val	Leu	Ala	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Ala		
1				5					10					15			
Gly	Ser	Gly	Ile	Gly	Arg	Ala	Thr	Cys	Arg	Leu	Leu	Ala	Arg	Asp	Gly		
			20					25					30				
Ala	Lys	Val	Ile	Ala	Val	Asp	Arg	Asn	Leu	Lys	Ala	Ala	Gln	Glu	Thr		
		35					40					45					
Val	Gln	Glu	Leu	Gly	Ser	Glu	Arg	Ser	Ala	Ala	Leu	Glu	Val	Asp	Val		
	50					55					60						
Ser	Ser	Ala	Gln	Ser	Val	Gln	Phe	Ser	Val	Ala	Glu	Ala	Leu	Lys	Lys		
	65				70				75					80			
Phe	Gln	Gln	Ala	Pro	Thr	Ile	Val	Val	Asn	Ser	Ala	Gly	Ile	Thr	Arg		
				85					90					95			
Asp	Gly	Tyr	Leu	Leu	Lys	Met	Pro	Glu	Arg	Asp	Tyr	Asp	Asp	Val	Tyr		
			100				105					110					
Gly	Val	Asn	Leu	Lys	Gly	Thr	Phe	Leu	Val	Thr	Gln	Ala	Tyr	Ala	Lys		
		115					120					125					
Ala	Met	Ile	Glu	Gln	Lys	Leu	Glu	Asn	Gly	Thr	Ile	Val	Asn	Leu	Ser		
	130					135					140						



## PhoenixTemp32470.tmp.txt

Ser Ile Val Ala Lys Met Asn Asn Val Gly Gln Ala Asn Tyr Ala Ala  
 145 150 155 160  
 Thr Lys Ala Gly Val Ile Ser Phe Thr Glu Val Ala Ser Lys Glu Phe  
 165 170 175  
 Gly Lys Phe Gly Ile Arg Val Asn Cys Ile Leu Pro Gly Tyr Ile Asp  
 180 185 190  
 Thr Pro Met Val Ala Val Val Pro Asp Ser Val Lys Gln Glu Val Val  
 195 200 205  
 Gln Arg Cys Pro Leu Gly Arg Leu Gly Gln Pro Glu Glu Ile Ala Glu  
 210 215 220  
 Val Ile Ala Phe Leu Ala Ser Pro Gln Ser Ser Tyr Val Asn Gly Ala  
 225 230 235 240  
 Ala Ile Glu Val Thr Gly Gly Leu Lys  
 245

&lt;210&gt; 1523

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Methanosarcina acetivorans C2A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1523

atg agc caa gca ttt aaa ata ata gaa aac gaa ttc gaa gga aaa gtt	48
Met Ser Gln Ala Phe Lys Ile Ile Glu Asn Glu Phe Glu Gly Lys Val	
1 5 10 15	
gct att gta acc gga gca gga aca ggc aat ggc gag tct att gct gag	96
Ala Ile Val Thr Gly Ala Gly Thr Gly Asn Gly Glu Ser Ile Ala Glu	
20 25 30	
aga ctt tat gca ggg gga gct tct gtt gcg ctt gtt agt cgt cat atc	144
Arg Leu Tyr Ala Gly Gly Ala Ser Val Ala Leu Val Ser Arg His Ile	
35 40 45	
gca cca ctt gat gac ata tgt aat aga att gat tcg tca gga aaa cgc	192
Ala Pro Leu Asp Asp Ile Cys Asn Arg Ile Asp Ser Ser Gly Lys Arg	
50 55 60	
act ttt ccc ata gaa gtt gac gtt cga gat cca cac agt gtt caa ata	240
Thr Phe Pro Ile Glu Val Asp Val Arg Asp Pro His Ser Val Gln Ile	
65 70 75 80	
gca gtg agc tcc ata atc gaa aga ttc gga aag att gat att gct gtc	288
Ala Val Ser Ser Ile Ile Glu Arg Phe Gly Lys Ile Asp Ile Ala Val	
85 90 95	
aac aat gcc gga att aca gga cca gca aac act cca ctt caa gat ctt	336
Asn Asn Ala Gly Ile Thr Gly Pro Ala Asn Thr Pro Leu Gln Asp Leu	
100 105 110	
gat atc gaa ata tgg cga gat gtt ata gaa acc gat cta act ggt gtt	384
Asp Ile Glu Ile Trp Arg Asp Val Ile Glu Thr Asp Leu Thr Gly Val	
115 120 125	
ttc tat tgc atg aaa tac gaa ata cca gca atg ctt aag aat ggc tct	432
Phe Tyr Cys Met Lys Tyr Glu Ile Pro Ala Met Leu Lys Asn Gly Ser	
130 135 140	
ggc gct att gtg aac atg tca tct gcc aat gga ctt gtc ggc ttg gct	480
Gly Ala Ile Val Asn Met Ser Ser Ala Asn Gly Leu Val Gly Leu Ala	
145 150 155 160	
ggc atg gca gct tat aca gca aaa cat ggc gta atc ggg tta acc	528
Gly Met Ala Ala Tyr Thr Thr Ala Lys His Gly Val Ile Gly Leu Thr	
165 170 175	
cgt tca gca gct ttg gaa tta gca gaa tcc aat att cga gta tgt gca	576
Arg Ser Ala Ala Leu Glu Leu Ala Glu Ser Asn Ile Arg Val Cys Ala	
180 185 190	
gtt gcc ccg ggt tat gtt gca act ccc aga atc ata gat tct gga aag	624
Val Ala Pro Gly Tyr Val Ala Thr Pro Arg Ile Ile Asp Ser Gly Lys	
195 200 205	
gaa gct atg gat tac atg gca gct gca cac ccc atg aaa cgt ctt gct	672
Glu Ala Met Asp Tyr Met Ala Ala Ala His Pro Met Lys Arg Leu Ala	
210 215 220	
aca aga gaa gaa gta gct gac ttg gtc gcc tat tta ctt agt gag aga	720

## PhoenixTemp32470.tmp.txt

Thr Arg Glu Glu Val Ala Asp Leu Val Ala Tyr Leu Leu Ser Glu Arg  
 225 230 235 240  
 gct gca ttc ata acg ggc agt gtt cat tgc ata gat gga ggg tac aca  
 Ala Ala Phe Ile Thr Gly Ser Val His Cys Ile Asp Gly Gly Tyr Thr  
 245 250 255  
 gcc gaa taa  
 Ala Glu

768  
777

<210> 1524  
 <211> 258  
 <212> PRT  
 <213> Methanosarcina acetivorans C2A

<400> 1524  
 Met Ser Gln Ala Phe Lys Ile Ile Glu Asn Glu Phe Glu Gly Lys Val  
 1 5 10 15  
 Ala Ile Val Thr Gly Ala Gly Thr Gly Asn Gly Glu Ser Ile Ala Glu  
 20 25 30  
 Arg Leu Tyr Ala Gly Gly Ala Ser Val Ala Leu Val Ser Arg His Ile  
 35 40 45  
 Ala Pro Leu Asp Asp Ile Cys Asn Arg Ile Asp Ser Ser Gly Lys Arg  
 50 55 60  
 Thr Phe Pro Ile Glu Val Asp Val Arg Asp Pro His Ser Val Gln Ile  
 65 70 75 80  
 Ala Val Ser Ser Ile Ile Glu Arg Phe Gly Lys Ile Asp Ile Ala Val  
 85 90 95  
 Asn Asn Ala Gly Ile Thr Gly Pro Ala Asn Thr Pro Leu Gln Asp Leu  
 100 105 110  
 Asp Ile Glu Ile Trp Arg Asp Val Ile Glu Thr Asp Leu Thr Gly Val  
 115 120 125  
 Phe Tyr Cys Met Lys Tyr Glu Ile Pro Ala Met Leu Lys Asn Gly Ser  
 130 135 140  
 Gly Ala Ile Val Asn Met Ser Ser Ala Asn Gly Leu Val Gly Leu Ala  
 145 150 155 160  
 Gly Met Ala Ala Tyr Thr Thr Ala Lys His Gly Val Ile Gly Leu Thr  
 165 170 175  
 Arg Ser Ala Ala Leu Glu Leu Ala Glu Ser Asn Ile Arg Val Cys Ala  
 180 185 190  
 Val Ala Pro Gly Tyr Val Ala Thr Pro Arg Ile Ile Asp Ser Gly Lys  
 195 200 205  
 Glu Ala Met Asp Tyr Met Ala Ala Ala His Pro Met Lys Arg Leu Ala  
 210 215 220  
 Thr Arg Glu Glu Val Ala Asp Leu Val Ala Tyr Leu Leu Ser Glu Arg  
 225 230 235 240  
 Ala Ala Phe Ile Thr Gly Ser Val His Cys Ile Asp Gly Gly Tyr Thr  
 245 250 255  
 Ala Glu

<210> 1525  
 <211> 801  
 <212> DNA  
 <213> Streptomyces coelicolor A3(2)

<220>  
 <221> CDS  
 <222> (1)..(801)  
 <223> transl\_table=11

<400> 1525  
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 Met Thr Asp Thr Arg Arg Phe Thr Asp Tyr Ala Ala Leu Val Thr Gly  
 1 5 10 15  
 gcg gcc cgg ggc atc ggc gcg gcc acc gca cgc cgg ctc gcc acg gag  
 Ala Ala Arg Gly Ile Gly Ala Ala Thr Ala Arg Arg Leu Ala Thr Glu  
 20 25 30  
 gga gcc cgg gta ctg ctg acc gac gtg gac ctc gtg ggg gcg cgg cgg  
 Gly Ala Arg Val Leu Leu Thr Asp Val Asp Leu Val Gly Ala Arg Arg  
 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995

48  
96  
144



## PhoenixTemp32470.tmp.txt

145 Ala Ala Lys Ala Gly 150 Leu Ala Ser Leu Thr 155 Arg Thr Leu Ala Gly 160 His  
 Ala Gly Pro Arg Gly 165 Val Arg Val Asn Leu Val Thr Pro Gly 175 Thr Val  
 Arg Thr Thr 180 Ala Trp Glu Gly Arg 185 Asp Glu Glu Leu Ala 190 Ala Val Arg  
 Gly Leu Tyr Pro Leu Gly Arg 200 Val Gly Glu Pro Glu 205 Asp Val Ala Ala  
 Ala Val Ala Phe Leu Ala Ser Arg Asp Ala 210 Ala Trp Ile Thr Gly Thr  
 225 Thr Leu Ala Val Asp 230 Gly Gly Leu Thr Ala 235 Val Asn Thr Gly Phe 240 Arg  
 Gln Ala Ile Ala 245 Arg Ala Glu Gly Ser 250 Asp 255

&lt;210&gt; 1527

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1527

atg acc acc cag cgc ttc acc ggc aaa acc gcc ctc gtc acc ggc gcg	48
Met Thr Thr Gln Arg 5 Phe Thr Gly Lys Thr 10 Ala Leu Val Thr Gly 15 Ala	
ggc tcc ggc atc gga cgg gcc gtc gcc ctc gcc ctg gcc gcc gag ggc	96
Gly Ser Gly Ile Gly Arg Ala Val Ala Leu Ala Leu Ala Ala Glu Gly	
gcg cac gtc gtc gcc ggg cgc gcg agg gga ccg ctc gac gag acg	144
Ala His Val Val Val Ala Gly Arg 40 Ala Arg Gly Pro 45 Asp Glu Thr	
gcg gcc ctg gtc gag cag cgc ggc ggc aag gca ctg gcc gtc acc gcg	192
Ala Ala Leu Val Glu Gln Ala Gly Gly Lys Ala Leu Ala Val Thr Ala	
gac gtc acc cgg cgc gaa gac gtg gac gcc ctg gtg tcc gcc gcg gtg	240
Asp Val Thr Arg Arg Glu 70 Asp Val Asp Ala Leu 75 Val Ser Ala Ala Val	
gag cac ttc ggc tcc ctc gac gtg gcg gtg aac aac gcg ggc gtc ttc	288
Glu His Phe Gly Ser 85 Leu Asp Val Ala Val 90 Asn Asn Ala Gly Val Phe	
cgc ggc ggg gta ccc gtc gcg gac ctg tcc gag gag gac tgg cac acg	336
Arg Gly Gly Val 100 Pro Val Ala Asp Leu 105 Ser Glu Glu Asp Trp His Thr	
cag ctc gac atc aac gtc acc ggc gtg ttc ctc gcc ctg cgc gcc gag	384
Gln Leu Asp 115 Ile Asn Val Thr Gly Val 120 Phe Leu Ala Leu Arg Ala Glu	
gtc cgg cac atg cgc gcc cag ccg ggc ggc ggc acg atc gtg aac atc	432
Val Arg 130 His Met Arg Ala Gln 135 Pro Gly Gly Gly Thr 140 Ile Val Asn Ile	
gcc tcc acc ttc ggc gca cac aag cgc agc ccc ggc gcc acg gcc tac	480
Ala Ser Thr Phe Gly Ala 150 His Lys Arg Ser Pro 155 Gly Ala Thr Ala Tyr	
gcg gcg acc aag gcg gcc gtc tcg gcc ctc acc cgg ggc gcc gcc ctg	528
Ala Ala Thr Lys Ala 165 Ala Val Ser Ala Leu Thr Arg Gly Ala Ala Leu	
gac cac atc ggg gac ggg gtc cgc atc aac gcc gtc agc ccc ggc gcc	576
Asp His Ile Gly Asp Gly Val Arg 185 Ile Asn Ala Val Ser 190 Pro Gly Ala	
acg gcg acc tcc atg tcc ctg cga ccg ggc gag acg gag gcc ggg cgg	624
Thr Ala Thr Ser Met Ser Leu Arg 200 Pro Gly Glu Thr Glu 205 Ala Gly Arg	
gcc gag cgg atg cgg cag gag acg ccg ctc ggc cgg gtc tcg gcg gtg	672
Ala Glu Arg Met Arg Gln 215 Thr Pro Leu Gly Arg 220 Val Ser Ala Val	

## PhoenixTemp32470.tmp.txt

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gcg gag gtc gcg gcg gcc gtg ctg tac ctg gcg tcc gac gac gcg gcg      720
Ala Glu Val Ala Ala Ala Val Leu Tyr Leu Ala Ser Asp Asp Ala Ala
225      230      235      240
tcg gtg gtg ggg acc gac ctc gtg gtg gac ggc ggc cag acg gcc      765
Ser Val Val Gly Thr Asp Leu Val Val Asp Gly Gly Gln Thr Ala
      245      250      255
tga      768

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<210> 1528
<211> 255
<212> PRT
<213> Streptomyces coelicolor A3(2)

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<400> 1528
Met Thr Thr Gln Arg Phe Thr Gly Lys Thr Ala Leu Val Thr Gly Ala
1      5      10      15
Gly Ser Gly Ile Gly Arg Ala Val Ala Leu Ala Ala Glu Gly
      20      25      30
Ala His Val Val Val Ala Gly Arg Ala Arg Gly Pro Leu Asp Glu Thr
      35      40      45
Ala Ala Leu Val Glu Gln Ala Gly Gly Lys Ala Leu Ala Val Thr Ala
      50      55      60
Asp Val Thr Arg Arg Glu Asp Val Asp Ala Leu Val Ser Ala Ala Val
65      70      75      80
Glu His Phe Gly Ser Leu Asp Val Ala Val Asn Asn Ala Gly Val Phe
      85      90      95
Arg Gly Gly Val Pro Val Ala Asp Leu Ser Glu Glu Asp Trp His Thr
      100      105      110
Gln Leu Asp Ile Asn Val Thr Gly Val Phe Leu Ala Leu Arg Ala Glu
      115      120      125
Val Arg His Met Arg Ala Gln Pro Gly Gly Gly Thr Ile Val Asn Ile
      130      135      140
Ala Ser Thr Phe Gly Ala His Lys Arg Ser Pro Gly Ala Thr Ala Tyr
145      150      155      160
Ala Ala Thr Lys Ala Ala Val Ser Ala Leu Thr Arg Gly Ala Ala Leu
      165      170      175
Asp His Ile Gly Asp Gly Val Arg Ile Asn Ala Val Ser Pro Gly Ala
180      185      190
Thr Ala Thr Ser Met Ser Leu Arg Pro Gly Glu Thr Glu Ala Gly Arg
195      200      205
Ala Glu Arg Met Arg Gln Glu Thr Pro Leu Gly Arg Val Ser Ala Val
210      215      220
Ala Glu Val Ala Ala Ala Val Leu Tyr Leu Ala Ser Asp Asp Ala Ala
225      230      235      240
Ser Val Val Gly Thr Asp Leu Val Val Asp Gly Gly Gln Thr Ala
      245      250      255

```

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<210> 1529
<211> 795
<212> DNA
<213> Streptomyces coelicolor A3(2)

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<220>
<221> CDS
<222> (1)..(795)
<223> transl_table=11

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<400> 1529
atg acg ccc gcg ccc cgt tcc gcc gcc tcc aca cac ctg ctc gac gga      48
Met Thr Pro Ala Pro Arg Ser Ala Ala Ser Thr His Leu Leu Asp Gly
1      5      10      15
cgg atc gcc ctg gtc acc ggc gcg ggc ggc ggc atc ggc cgg ggg atc      96
Arg Ile Ala Leu Val Thr Gly Ala Gly Gly Gly Ile Gly Arg Gly Ile
      20      25      30
gca ctg cgc ttc gcc gag gag ggc gcg gcg gtg gcg gtg cac tgc cgt      144
Ala Leu Arg Phe Ala Glu Glu Gly Ala Ala Val Ala Val His Cys Arg
      35      40      45

```

## PhoenixTemp32470.tmp.txt

acg	acg	gtg	gag	tcg	gcg	cgg	gag	gtg	gcg	gaa	cgc	atc	cgc	ggc	cgg	192
Thr	Thr	Val	Glu	Ser	Ala	Arg	Glu	Val	Ala	Glu	Arg	Ile	Arg	Gly	Arg	
	50					55					60					
ggc	gga	cgc	gcc	acc	gtc	ctg	cgc	gcc	gac	ctc	acc	gac	gag	gac	gcc	240
Gly	Gly	Arg	Ala	Thr	Val	Leu	Arg	Ala	Asp	Leu	Thr	Asp	Glu	Asp	Ala	
65					70					75					80	
tgc	cgt	cgc	ctg	gtc	ggg	gag	gcc	gcc	gag	tgg	ggc	ggc	gga	cgg	ctc	288
Cys	Arg	Arg	Leu	Val	Gly	Glu	Ala	Ala	Glu	Trp	Gly	Gly	Gly	Arg	Leu	
				85					90					95		
gac	gcg	ctg	gtc	aac	aac	gcg	ggc	gtg	cag	ccg	ctg	cgg	gaa	ctg	ccc	336
Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Pro	Leu	Arg	Glu	Leu	Pro	
			100					105					110			
ggc	atg	acg	gcg	acc	gag	tgg	cgg	gcg	gtg	gtg	gac	acc	aac	ctg	acc	384
Gly	Met	Thr	Ala	Thr	Glu	Trp	Arg	Ala	Val	Val	Asp	Thr	Asn	Leu	Thr	
		115					120					125				
ggc	gtc	ttc	gcg	tgc	acg	cag	gcc	gcg	gcc	gcc	gtc	atg	cgc	gcc	cag	432
Gly	Val	Phe	Ala	Cys	Thr	Gln	Ala	Ala	Ala	Ala	Val	Met	Arg	Ala	Gln	
130					135						140					
gac	ggc	ggc	ggc	acg	gtc	acc	cac	atc	gcc	tcc	atc	gag	gcc	cgc	gcc	480
Asp	Gly	Gly	Gly	Thr	Val	Thr	His	Ile	Ala	Ser	Ile	Glu	Ala	Arg	Ala	
145					150					155					160	
ccc	gct	ccc	gcg	cac	gcg	cac	tac	agc	gcc	tcg	aag	gcg	gcg	gtg	gtg	528
Pro	Ala	Pro	Ala	His	Ala	His	Tyr	Ser	Ala	Ser	Lys	Ala	Ala	Val	Val	
				165					170					175		
atg	cac	gcc	cgg	tcg	gcg	gcg	ctg	gag	tac	ggc	ccg	tgg	ggc	gtg	cgg	576
Met	His	Ala	Arg	Ser	Ala	Ala	Leu	Glu	Tyr	Gly	Pro	Trp	Gly	Val	Arg	
			180					185					190			
gtg	aac	tcc	gtc	tcc	ccc	ggc	ctc	gtc	gac	cgc	gag	gga	ctc	gcc	gag	624
Val	Asn	Ser	Val	Ser	Pro	Gly	Leu	Val	Asp	Arg	Glu	Gly	Leu	Ala	Glu	
		195					200					205				
gcc	tgg	ccg	gag	ggc	gta	cgg	cgg	tgg	cgg	cgg	gcg	gca	ccg	acg	gga	672
Ala	Trp	Pro	Glu	Gly	Val	Arg	Arg	Trp	Arg	Arg	Ala	Ala	Pro	Thr	Gly	
	210				215						220					
cgg	ctc	gga	cgc	ccg	gag	gac	gtg	ggc	gac	gcg	tgc	gtg	ttc	ctg	gcc	720
Arg	Leu	Gly	Arg	Pro	Glu	Asp	Val	Gly	Asp	Ala	Cys	Val	Phe	Leu	Ala	
225					230				235						240	
tcg	cgg	ctg	gcg	tcc	tgg	gtg	acg	ggt	cac	gac	ctc	gtg	gtg	gac	ggc	768
Ser	Arg	Leu	Ala	Ser	Trp	Val	Thr	Gly	His	Asp	Leu	Val	Val	Asp	Gly	
				245					250					255		
ggg	gtg	acg	gcc	cgc	ccg	tcg	tgg	tga								795
Gly	Val	Thr	Ala	Arg	Pro	Ser	Trp									
			260													

&lt;210&gt; 1530

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;400&gt; 1530

Met	Thr	Pro	Ala	Pro	Arg	Ser	Ala	Ala	Ser	Thr	His	Leu	Leu	Asp	Gly	
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			20					25					30			
Ala	Leu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	Ala	Val	Ala	Val	His	Cys	Arg	
		35					40					45				
Thr	Thr	Val	Glu	Ser	Ala	Arg	Glu	Val	Ala	Glu	Arg	Ile	Arg	Gly	Arg	
	50					55					60					
Gly	Gly	Arg	Ala	Thr	Val	Leu	Arg	Ala	Asp	Leu	Thr	Asp	Glu	Asp	Ala	
65					70					75					80	
Cys	Arg	Arg	Leu	Val	Gly	Glu	Ala	Ala	Glu	Trp	Gly	Gly	Gly	Arg	Leu	
				85					90					95		
Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Pro	Leu	Arg	Glu	Leu	Pro	
			100					105					110			
Gly	Met	Thr	Ala	Thr	Glu	Trp	Arg	Ala	Val	Val	Asp	Thr	Asn	Leu	Thr	
		115					120					125				
Gly	Val	Phe	Ala	Cys	Thr	Gln	Ala	Ala	Ala	Ala	Val	Met	Arg	Ala	Gln	
	130					135					140					
Asp	Gly	Gly	Gly	Thr	Val	Thr	His	Ile	Ala	Ser	Ile	Glu	Ala	Arg	Ala	
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## PhoenixTemp32470.tmp.txt

Pro Ala Pro Ala His Ala His Tyr Ser Ala Ser Lys Ala Ala Val Val  
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 Met His Ala Arg Ser Ala Ala Leu Glu Tyr Gly Pro Trp Gly Val Arg  
 180 185 190  
 Val Asn Ser Val Ser Pro Gly Leu Val Asp Arg Glu Gly Leu Ala Glu  
 195 200 205  
 Ala Trp Pro Glu Gly Val Arg Trp Arg Arg Ala Pro Thr Gly  
 210 215 220  
 Arg Leu Gly Arg Pro Glu Asp Val Gly Asp Ala Cys Val Phe Leu Ala  
 225 230 235 240  
 Ser Arg Leu Ala Ser Trp Val Thr Gly His Asp Leu Val Val Asp Gly  
 245 250 255  
 Gly Val Thr Ala Arg Pro Ser Trp  
 260

&lt;210&gt; 1531

&lt;211&gt; 774

&lt;212&gt; DNA

<213> *Drosophila melanogaster*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;400&gt; 1531

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Met	Pro	Ser	Phe	Lys	Asp	Lys	Val	Ile	Ile	Val	Thr	Gly	Ala	Ser	Ser	
1				5				10						15		
gga	att	gga	gcg	ggt	act	tcg	gtg	ctc	ttg	gct	aaa	ctg	gga	ggc	ctg	96
Gly	Ile	Gly	Ala	Gly	Thr	Ser	Val	Leu	Leu	Ala	Lys	Leu	Gly	Gly	Leu	
			20					25					30			
ctc	acc	atc	gtg	ggc	agg	aat	ttg	gat	aag	ctc	aac	gag	acc	gcg	gag	144
Leu	Thr	Ile	Val	Gly	Arg	Asn	Leu	Asp	Lys	Leu	Asn	Glu	Thr	Ala	Glu	
			35				40					45				
cag	ata	gtg	gca	gct	gga	gga	gcg	cca	gca	ctc	cag	gtg	gcg	gcg	gac	192
Gln	Ile	Val	Ala	Ala	Gly	Gly	Ala	Pro	Ala	Leu	Gln	Val	Ala	Ala	Asp	
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ata	aac	agc	gag	tcc	gac	gtc	cag	ggc	atc	gtc	tcc	gcc	aca	ttg	gcc	240
Ile	Asn	Ser	Glu	Ser	Asp	Val	Gln	Gly	Ile	Val	Ser	Ala	Thr	Leu	Ala	
			65		70			75						80		
aag	cac	ggt	cgc	atc	gac	gtg	ctg	gtg	aac	aac	gcc	gga	atc	ttg	gag	288
Lys	His	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Leu	Glu	
				85					90					95		
cta	ggc	agc	atc	gag	aac	acc	agt	ctg	gag	cag	ttt	gac	cgc	gtt	atg	336
Leu	Gly	Ser	Ile	Glu	Asn	Thr	Ser	Leu	Glu	Gln	Phe	Asp	Arg	Val	Met	
			100					105					110			
aac	acc	aac	gtc	cgg	tcg	ctc	tac	cag	ctg	acc	cac	ctg	gtc	aca	ccg	384
Asn	Thr	Asn	Val	Arg	Ser	Leu	Tyr	Gln	Leu	Thr	His	Leu	Val	Thr	Pro	
			115				120					125				
gag	cta	atc	aag	acc	aag	ggc	aac	att	gta	aac	gtg	tct	agt	gtg	aac	432
Glu	Leu	Ile	Lys	Thr	Lys	Gly	Asn	Ile	Val	Asn	Val	Ser	Ser	Val	Asn	
			130			135					140					
ggc	atc	cgt	tcc	ttt	ccc	gga	gtc	tta	gca	tac	aat	gtt	tcc	aag	gct	480
Gly	Ile	Arg	Ser	Phe	Pro	Gly	Val	Leu	Ala	Tyr	Asn	Val	Ser	Lys	Ala	
					150				155					160		
gcc	gtg	gat	cag	ttc	acc	agg	tgc	gtg	gct	ctg	gag	cta	gct	ccc	aag	528
Ala	Val	Asp	Gln	Phe	Thr	Arg	Cys	Val	Ala	Leu	Glu	Leu	Ala	Pro	Lys	
				165				170						175		
ggt	gtg	cgt	gtg	aac	tcc	gtg	aat	ccc	ggc	gta	atc	atc	acc	gag	ctg	576
Gly	Val	Arg	Val	Asn	Ser	Val	Asn	Pro	Gly	Val	Ile	Ile	Thr	Glu	Leu	
				180			185						190			
cag	cgt	cgt	ggt	gga	ctg	gac	cag	gaa	gcc	tac	gtc	aag	ttc	ctc	gag	624
Gln	Arg	Arg	Gly	Gly	Leu	Asp	Gln	Glu	Ala	Tyr	Val	Lys	Phe	Leu	Glu	
			195				200					205				
cac	gcc	aag	gtc	acc	cat	gcc	ctg	ggt	cga	ccc	ggc	gaa	gtc	aag	gag	672
His	Ala	Lys	Val	Thr	His	Ala	Leu	Gly	Arg	Pro	Gly	Glu	Val	Lys	Glu	
			210			215					220					
gtg	gct	gcg	gcc	att	gca	ttc	ctg	gcc	agc	gac	gag	gcc	agc	ttc	agc	720
Val	Ala	Ala	Ala	Ile	Ala	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe	Ser	

## PhoenixTemp32470.tmp.txt

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 aga taa  
 Arg 774

<210> 1532  
 <211> 257  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 1532  
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 1 Gly Ile Gly Ala Gly Thr Ser Val Leu Leu Ala Lys Leu Gly Gly Leu  
 20 Leu Thr Ile Val Gly Arg Asn Leu Asp Lys Leu Asn Glu Thr Ala Glu  
 35 Gln Ile Val Ala Ala Gly Gly Ala Pro Ala Leu Gln Val Ala Ala Asp  
 50 Ile Asn Ser Glu Ser Asp Val Gln Gly Ile Val Ser Ala Thr Leu Ala  
 65 Lys His Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Leu Glu  
 85 Leu Gly Ser Ile Glu Asn Thr Ser Leu Glu Gln Phe Asp Arg Val Met  
 100 Asn Thr Asn Val Arg Ser Leu Tyr Gln Leu Thr His Leu Val Thr Pro  
 115 Glu Leu Ile Lys Thr Lys Gly Asn Ile Val Asn Val Ser Ser Val Asn  
 130 Gly Ile Arg Ser Phe Pro Gly Val Leu Ala Tyr Asn Val Ser Lys Ala  
 145 Ala Val Asp Gln Phe Thr Arg Cys Val Ala Leu Glu Leu Ala Pro Lys  
 165 Gly Val Arg Val Asn Ser Val Asn Pro Gly Val Ile Ile Thr Glu Leu  
 180 Gln Arg Arg Gly Gly Leu Asp Gln Glu Ala Tyr Val Lys Phe Leu Glu  
 195 His Ala Lys Val Thr His Ala Leu Gly Arg Pro Gly Glu Val Lys Glu  
 210 Val Ala Ala Ala Ile Ala Phe Leu Ala Ser Asp Glu Ala Ser Phe Ser  
 225 Thr Gly Ile Ser Leu Pro Val Asp Gly Gly Arg His Ala Met Cys Pro  
 245 250 255

<210> 1533  
 <211> 741  
 <212> DNA  
 <213> Yersinia pestis KIM

<220>  
 <221> CDS  
 <222> (1)..(741)  
 <223> transl\_table=11

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 1 5 10 15  
 atc ggc ttc aat aca gcc acg ttg ttt gcc cgc aaa ggc gca gaa gtg 96  
 Ile Gly Phe Asn Thr Ala Thr Leu Phe Ala Arg Lys Gly Ala Glu Val  
 20 25 30  
 atc gct agc gat atc aat atc gct gcg ttg tcc aac ata ccg ggt ata 144  
 Ile Ala Ser Asp Ile Asn Ile Ala Ala Leu Ser Asn Ile Pro Gly Ile  
 35 40 45



## PhoenixTemp32470.tmp.txt

acg	gca	gtg	tca	ttg	gat	gtg	act	gac	acg	ttg	gct	atc	aat	gat	gtg	192
Thr	Ala	Val	Ser	Leu	Asp	Val	Thr	Asp	Thr	Leu	Ala	Ile	Asn	Asp	Val	
	50					55					60					
gcg	cag	gca	atc	ggc	ccg	ata	gac	gtg	ctg	ttt	aac	tgt	gcg	ggc	gtg	240
Ala	Gln	Ala	Ile	Gly	Pro	Ile	Asp	Val	Leu	Phe	Asn	Cys	Ala	Gly	Val	
65					70					75					80	
gta	cac	agc	ggc	gat	att	ctc	acc	tgt	agc	gag	cag	gag	tgg	cag	ttc	288
Val	His	Ser	Gly	Asp	Ile	Leu	Thr	Cys	Ser	Glu	Gln	Glu	Trp	Gln	Phe	
				85					90					95		
gcg	cta	gac	ctc	aac	gtc	acc	gct	atg	ttc	cat	atg	atc	cgt	gcc	ttt	336
Ala	Leu	Asp	Leu	Asn	Val	Thr	Ala	Met	Phe	His	Met	Ile	Arg	Ala	Phe	
			100					105					110			
cta	cct	ggg	atg	atc	gcg	tgc	caa	cag	ggg	tct	atc	atc	aat	atg	tct	384
Leu	Pro	Gly	Met	Ile	Ala	Cys	Gln	Gln	Gly	Ser	Ile	Ile	Asn	Met	Ser	
		115					120					125				
tcg	gtg	gct	tca	agt	att	aaa	ggg	gta	ccg	aat	cgt	ttt	gcc	tat	agc	432
Ser	Val	Ala	Ser	Ser	Ile	Lys	Gly	Val	Pro	Asn	Arg	Phe	Ala	Tyr	Ser	
130						135					140					
act	tct	aaa	gcc	gcg	gtc	att	ggc	ctg	acg	cgt	tct	ggt	gct	gcg	gat	480
Thr	Ser	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Asp	
145					150					155					160	
tat	gtc	acg	cag	ggc	atc	cgc	tgt	aat	gcc	atc	tgc	ccc	gga	aca	ggt	528
Tyr	Val	Thr	Gln	Gly	Ile	Arg	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Thr	Val	
				165					170					175		
gaa	tct	cct	tct	ctg	cgt	cag	cgg	att	gcc	gta	cag	gca	cac	gcc	gaa	576
Glu	Ser	Pro	Ser	Leu	Arg	Gln	Arg	Ile	Ala	Val	Gln	Ala	His	Ala	Glu	
			180					185					190			
ggg	cgc	agc	gaa	gct	gat	gtc	ttt	cag	gca	ttc	gct	gca	cgt	caa	ccg	624
Gly	Arg	Ser	Glu	Ala	Asp	Val	Phe	Gln	Ala	Phe	Ala	Ala	Arg	Gln	Pro	
		195					200					205				
att	ggc	cgt	atc	ggc	aaa	gca	gaa	gag	ata	gcg	caa	ttg	gca	ctg	tat	672
Ile	Gly	Arg	Ile	Gly	Lys	Ala	Glu	Glu	Ile	Ala	Gln	Leu	Ala	Leu	Tyr	
210					215					220						
ctg	gcc	tcg	gat	gcc	agc	gct	tac	acc	acc	ggc	acg	ata	cat	att	atc	720
Leu	Ala	Ser	Asp	Ala	Ser	Ala	Tyr	Thr	Thr	Gly	Thr	Ile	His	Ile	Ile	
225					230					235					240	
gac	gga	ggc	tgg	agc	aat	taa										741
Asp	Gly	Gly	Trp	Ser	Asn											
				245												

&lt;210&gt; 1534

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Yersinia pestis KIM

&lt;400&gt; 1534

Met	Asn	Leu	Lys	Gly	Lys	Lys	Ala	Leu	Val	Thr	Ala	Ala	Gly	Gln	Gly	
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Ile	Ala	Ser	Asp	Ile	Asn	Ile	Ala	Ala	Leu	Ser	Asn	Ile	Pro	Gly	Ile	
		35					40					45				
Thr	Ala	Val	Ser	Leu	Asp	Val	Thr	Asp	Thr	Leu	Ala	Ile	Asn	Asp	Val	
		50				55					60					
Ala	Gln	Ala	Ile	Gly	Pro	Ile	Asp	Val	Leu	Phe	Asn	Cys	Ala	Gly	Val	
65					70					75					80	
Val	His	Ser	Gly	Asp	Ile	Leu	Thr	Cys	Ser	Glu	Gln	Glu	Trp	Gln	Phe	
				85					90					95		
Ala	Leu	Asp	Leu	Asn	Val	Thr	Ala	Met	Phe	His	Met	Ile	Arg	Ala	Phe	
			100					105					110			
Leu	Pro	Gly	Met	Ile	Ala	Cys	Gln	Gln	Gly	Ser	Ile	Ile	Asn	Met	Ser	
		115					120					125				
Ser	Val	Ala	Ser	Ser	Ile	Lys	Gly	Val	Pro	Asn	Arg	Phe	Ala	Tyr	Ser	
	130					135					140					
Thr	Ser	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Asp	
145					150					155					160	
Tyr	Val	Thr	Gln	Gly	Ile	Arg	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Thr	Val	
				165					170					175		
Glu	Ser	Pro	Ser	Leu	Arg	Gln	Arg	Ile	Ala	Val	Gln	Ala	His	Ala	Glu	

## PhoenixTemp32470.tmp.txt

180  
 Gly Arg Ser Glu Ala Asp Val Phe Gln Ala Phe Ala Ala Arg Gln Pro  
 195  
 Ile Gly Arg Ile Gly Lys Ala Glu Glu Ile Ala Gln Leu Ala Leu Tyr  
 210  
 Leu Ala Ser Asp Ala Ser Ala Tyr Thr Thr Gly Thr Ile His Ile Ile  
 225  
 Asp Gly Gly Trp Ser Asn  
 245

&lt;210&gt; 1535

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Leptospira interrogans serovar Lai str. 56601

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1535

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1				5					10					15		
acc	gga	gcg	gcg	tct	cct	cg	ggt	ctc	gga	aga	g	atc	gca	a	aca	96
Thr	Gly	Ala	Ala	Ser	Pro	Arg	Gly	Leu	Gly	Arg	Ala	Ile	Ala	Asn	Thr	
			20					25					30			
atc	gct	aaa	gaa	gga	ggc	gac	ata	gta	cta	gtc	gac	ctt	aac	aaa	gaa	144
Ile	Ala	Lys	Glu	Gly	Gly	Asp	Ile	Val	Leu	Val	Asp	Leu	Asn	Lys	Glu	
			35				40					45				
cag	ata	gaa	caa	g	g	gct	gat	gta	gcc	aaa	gaa	ttt	gga	gta	aaa	192
Gln	Ile	Glu	Gln	Ala	Ala	Ala	Asp	Val	Ala	Lys	Glu	Phe	Gly	Val	Lys	
			50			55					60					
act	tta	gga	ctt	tct	tgt	aac	gtc	act	aaa	ccg	gag	gac	tgc	gat	tct	240
Thr	Leu	Gly	Leu	Ser	Cys	Asn	Val	Thr	Lys	Pro	Glu	Asp	Cys	Asp	Ser	
					70					75					80	
gtc	att	gcc	gga	gta	aaa	gaa	aaa	ttt	gga	aaa	cta	gac	ttc	ctc	gtt	288
Val	Ile	Ala	Gly	Val	Lys	Glu	Lys	Phe	Gly	Lys	Leu	Asp	Phe	Leu	Val	
				85					90					95		
aac	aat	gcc	gga	gtt	ctc	aag	gat	aat	ctt	ttt	ata	cgt	atg	tcc	gaa	336
Asn	Asn	Ala	Gly	Val	Leu	Lys	Asp	Asn	Leu	Phe	Ile	Arg	Met	Ser	Glu	
			100					105					110			
caa	gaa	ttt	gat	ttt	gtt	tta	gac	gta	aac	ttg	aaa	ggc	gtt	ttt	ttg	384
Gln	Glu	Phe	Asp	Phe	Val	Leu	Asp	Val	Asn	Leu	Lys	Gly	Val	Phe	Leu	
			115				120					125				
atg	act	aag	tat	gct	tct	aaa	ctt	ctt	aaa	gca	gag	tct	gga	agg		432
Met	Thr	Lys	Tyr	Ala	Ser	Lys	Leu	Leu	Lys	Ala	Glu	Ser	Gly	Arg		
			130			135				140						
att	gta	aac	atc	tct	tcc	gtt	tcc	ggt	ctt	act	gga	caa	ccg	gga	caa	480
Ile	Val	Asn	Ile	Ser	Ser	Val	Ser	Gly	Leu	Thr	Gly	Gln	Pro	Gly	Gln	
					150					155					160	
gca	aac	tat	tct	tcc	tca	aag	g	gga	gtg	att	gca	ttg	aca	aaa	gtt	528
Ala	Asn	Tyr	Ser	Ser	Ser	Lys	Ala	Gly	Val	Ile	Ala	Leu	Thr	Lys	Val	
				165					170					175		
g	g	aga	gaa	ttt	gca	gga	aga	a	gtt	cta	gtc	a	gca	gtt	tgt	576
Ala	Ala	Arg	Glu	Phe	Ala	Gly	Arg	Asn	Val	Leu	Val	Asn	Ala	Val	Cys	
			180					185					190			
ccc	ggt	tac	gtt	caa	acc	gat	atg	act	gca	tct	ttg	cca	gaa	gaa	gtt	624
Pro	Gly	Tyr	Val	Gln	Thr	Asp	Met	Thr	Ala	Ser	Leu	Pro	Glu	Glu	Val	
			195				200					205				
caa	aag	aaa	ctg	acc	gat	cct	gct	ttt	att	cct	ctt	aga	aga	ccg	ggg	672
Gln	Lys	Lys	Leu	Thr	Asp	Pro	Ala	Phe	Ile	Pro	Leu	Arg	Arg	Pro	Gly	
			210			215					220					
aca	caa	caa	gag	att	gca	a	gcc	gtg	aag	ttt	ttc	tta	agc	gat	caa	720
Thr	Gln	Gln	Glu	Ile	Ala	Asn	Ala	Val	Lys	Phe	Phe	Leu	Ser	Asp	Gln	
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Ser	Asn	Tyr	Ile	Thr	Gly	Thr	Tyr	Leu	Arg	Val	Asp	Gly	Gly	Ala	Ala	
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atc ggt atg taa  
ile gly met

<210> 1536  
<211> 259  
<212> PRT  
<213> *Leptospira interrogans* serovar Lai str. 56601

<400> 1536  
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Ile Ala Lys Glu Gly Gly Asp Ile Val Leu Val Asp Leu Asn Lys Glu  
35 40 45  
Gln Ile Glu Gln Ala Ala Ala Asp Val Ala Lys Glu Phe Gly Val Lys  
50 55 60  
Thr Leu Gly Leu Ser Cys Asn Val Thr Lys Pro Glu Asp Cys Asp Ser  
65 70 75 80  
Val Ile Ala Gly Val Lys Glu Lys Phe Gly Lys Leu Asp Phe Leu Val  
85 90 95  
Asn Asn Ala Gly Val Leu Lys Asp Asn Leu Phe Ile Arg Met Ser Glu  
100 105 110  
Gln Glu Phe Asp Phe Val Leu Asp Val Asn Leu Lys Gly Val Phe Leu  
115 120 125  
Met Thr Lys Tyr Ala Ser Lys Leu Leu Leu Lys Ala Glu Ser Gly Arg  
130 135 140  
Ile Val Asn Ile Ser Ser Val Ser Gly Leu Thr Gly Gln Pro Gly Gln  
145 150 155 160  
Ala Asn Tyr Ser Ser Ser Lys Ala Gly Val Ile Ala Leu Thr Lys Val  
165 170 175  
Ala Ala Arg Glu Phe Ala Gly Arg Asn Val Leu Val Asn Ala Val Cys  
180 185 190  
Pro Gly Tyr Val Gln Thr Asp Met Thr Ala Ser Leu Pro Glu Glu Val  
195 200 205  
Gln Lys Lys Leu Thr Asp Pro Ala Phe Ile Pro Leu Arg Arg Pro Gly  
210 215 220  
Thr Gln Gln Glu Ile Ala Asn Ala Val Lys Phe Phe Leu Ser Asp Gln  
225 230 235 240  
Ser Asn Tyr Ile Thr Gly Thr Tyr Leu Arg Val Asp Gly Gly Ala Ala  
245 250 255  
Ile Gly Met

<210> 1537  
<211> 948  
<212> DNA  
<213> *Escherichia coli* CFT073

<220>  
<221> CDS  
<222> (1)..(948)  
<223> transl\_table=11

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1 5 10 15  
ttg aga ttt tcc tta att agt gag ctg atc cgc agc aat att ttg ttt 96  
Leu Arg Phe Ser Leu Ile Ser Glu Leu Ile Arg Ser Asn Ile Leu Phe  
20 25 30  
atc ctg tat ttt cag agg gaa tgg agt gta acg ctc tgt att aac aag 144  
Ile Leu Tyr Phe Gln Arg Glu Trp Ser Val Thr Leu Cys Ile Asn Lys  
35 40 45  
gag agc att aaa atg ggt aaa ctc acg ggc aag aca gca ctg att acg 192  
Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu Ile Thr  
50 55 60  
ggc gca ttg cag gga att ggc gaa gga att gcc aga act ttt gcg cgt 240  
Page 932

## PhoenixTemp32470.tmp.txt

Gly 65	Ala	Leu	Gln	Gly	Ile 70	Gly	Glu	Gly	Ile	Ala 75	Arg	Thr	Phe	Ala	Arg 80	
cat	ggc	gca	aac	cta	atc	ttg	ctg	gat	atc	tcc	cct	gag	atc	gaa	aag	288
His	Gly	Ala	Asn	Leu	Ile	Leu	Leu	Asp	Ile	Ser	Pro	Glu	Ile	Glu	Lys	
				85					90					95		
ctg	gcg	gac	gaa	ctg	tgt	ggc	cgt	ggt	cat	cgc	tgt	acg	gcg	ggt	gtc	336
Leu	Ala	Asp	Glu	Leu	Cys	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Val	
			100					105					110			
gcc	gat	gtg	cgt	gac	ccg	gcg	tcg	gta	gcc	gca	gct	att	aag	cgc	gct	384
Ala	Asp	Val	Arg	Asp	Pro	Ala	Ser	Val	Ala	Ala	Ala	Ile	Lys	Arg	Ala	
			115				120					125				
aag	gaa	aaa	gaa	ggg	cgc	att	gat	att	ctg	gtg	aat	aac	gca	ggc	ggt	432
Lys	Glu	Lys	Glu	Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	
	130					135					140					
tgt	cgt	ctg	ggc	agt	ttc	ctt	gat	atg	agc	gat	gaa	gat	cgc	gat	ttc	480
Cys	Arg	Leu	Gly	Ser	Phe	Leu	Asp	Met	Ser	Asp	Glu	Asp	Arg	Asp	Phe	
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cat	att	gat	atc	aat	ata	aaa	ggc	gta	tgg	aac	gtc	acg	aag	gcg	gtg	528
His	Ile	Asp	Ile	Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	Ala	Val	
				165					170					175		
ctg	ccg	gag	atg	att	gcc	cgc	aaa	gat	ggc	cgg	att	gtg	atg	atg	tct	576
Leu	Pro	Glu	Met	Ile	Ala	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met	Met	Ser	
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tca	gtc	act	ggc	gat	atg	gtg	gca	gac	ccg	ggc	gaa	acg	gcg	tac	gcc	624
Ser	Val	Thr	Gly	Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	Tyr	Ala	
			195				200					205				
tta	acg	aaa	gcg	gcg	att	gtt	ggc	ctg	act	aaa	tcg	ctg	gcg	gtg	gag	672
Leu	Thr	Lys	Ala	Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Val	Glu	
	210					215					220					
tac	gcg	cag	tct	ggt	att	cgc	gtt	aac	gcc	atc	tgc	cct	gga	tac	gtt	720
Tyr	Ala	Gln	Ser	Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	
				230						235					240	
cgc	acg	cca	atg	gcg	gaa	agc	att	gcc	cgc	cag	tcg	aac	ccg	gaa	gat	768
Arg	Thr	Pro	Met	Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	Glu	Asp	
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cca	gaa	tcg	gtg	ctg	act	gaa	atg	gcg	aaa	gca	atc	ccg	atg	cgt	cgc	816
Pro	Glu	Ser	Val	Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met	Arg	Arg	
			260					265					270			
ctc	gcc	gat	ccg	ctg	gaa	gtc	ggc	gaa	ctg	gcg	gcc	ttc	ctc	gca	tcg	864
Leu	Ala	Asp	Pro	Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	Ala	Ser	
			275				280					285				
gat	gaa	tcc	agc	tat	tta	acc	ggt	aca	cag	aat	gtg	att	gat	ggc	ggc	912
Asp	Glu	Ser	Ser	Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	Gly	Gly	
	290					295					300					
agc	aca	ctg	ccg	gag	acg	gtt	agc	gtc	ggc	atc	tga					948
Ser	Thr	Leu	Pro	Glu	Thr	Val	Ser	Val	Gly	Ile						
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&lt;210&gt; 1538

&lt;211&gt; 315

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli CFT073

&lt;400&gt; 1538

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Leu	Arg	Phe	Ser	Leu	Ile	Ser	Glu	Leu	Ile	Arg	Ser	Asn	Ile	Leu	Phe
			20					25					30		
Ile	Leu	Tyr	Phe	Gln	Arg	Glu	Trp	Ser	Val	Thr	Leu	Cys	Ile	Asn	Lys
		35					40					45			
Glu	Ser	Ile	Lys	Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	Ile	Thr
	50					55					60				
Gly	Ala	Leu	Gln	Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Thr	Phe	Ala	Arg
65				70					75						80
His	Gly	Ala	Asn	Leu	Ile	Leu	Leu	Asp	Ile	Ser	Pro	Glu	Ile	Glu	Lys
			85					90					95		
Leu	Ala	Asp	Glu	Leu	Cys	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Val
			100					105					110		
Ala	Asp	Val	Arg	Asp	Pro	Ala	Ser	Val	Ala	Ala	Ala	Ile	Lys	Arg	Ala

## PhoenixTemp32470.tmp.txt

115  
 Lys Glu Lys Glu Gly Arg Ile 120  
 130 135 125  
 Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Glu Asp Arg Asp Phe  
 145 150 155 160  
 His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val  
 165 170 175  
 Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met Ser  
 180 185 190  
 Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala  
 195 200 205  
 Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu  
 210 215 220  
 Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val  
 225 230 235 240  
 Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp  
 245 250 255  
 Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met Arg Arg  
 260 265 270  
 Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu Ala Ser  
 275 280 285  
 Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp Gly Gly  
 290 295 300  
 Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile 315  
 305 310

&lt;210&gt; 1539

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Bradyrhizobium japonicum USDA 110

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1539

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Met	Val	Leu	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Gly	Ser	
1				5				10					15			
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Gly	Ile	Gly	Ala	Ala	Ile	Ala	Arg	Leu	Phe	Ala	Val	Glu	Gly	Ala	Lys	
			20					25					30			
gtc	ttg	ctc	ggt	gat	ctc	gcc	gaa	ggc	gga	gcc	gcg	ctt	gcg	gcc	ggg	144
Val	Leu	Leu	Gly	Asp	Leu	Ala	Glu	Gly	Gly	Ala	Ala	Leu	Ala	Ala	Gly	
			35				40					45				
ctt	gcc	gcc	gat	ggt	cac	gcg	gcg	ggc	ttc	cag	cat	gtc	gac	gtc	acc	192
Leu	Ala	Ala	Asp	Gly	His	Ala	Ala	Gly	Phe	Gln	His	Val	Asp	Val	Thr	
			50			55					60					
gat	gag	gcc	tca	gtt	gcc	gag	ctg	atg	cag	gca	gcc	gtc	acg	ctg	ttc	240
Asp	Glu	Ala	Ser	Val	Ala	Glu	Leu	Met	Gln	Ala	Ala	Val	Thr	Leu	Phe	
						70				75					80	
ggc	cgg	ctc	gac	atc	ctc	gtc	gcc	aat	gcc	ggc	att	ccc	gag	cgc	aag	288
Gly	Arg	Leu	Asp	Ile	Leu	Val	Ala	Asn	Ala	Gly	Ile	Pro	Glu	Arg	Lys	
				85					90					95		
tcg	cca	atc	cac	gag	ctc	gat	ctc	gtc	gac	tgg	cgc	cgc	gtg	atc	gac	336
Ser	Pro	Ile	His	Glu	Leu	Asp	Leu	Val	Asp	Trp	Arg	Arg	Val	Ile	Asp	
			100					105					110			
gtc	gat	ctc	acc	ggg	gtg	gcg	atc	tgc	aac	aag	ttc	gcc	gca	ggc	atc	384
Val	Asp	Leu	Thr	Gly	Val	Ala	Ile	Cys	Asn	Lys	Phe	Ala	Ala	Gly	Ile	
			115				120					125				
atg	cgt	gcg	acc	ggt	ggt	ggc	gcg	atc	gtc	aac	atg	gcg	tcg	atc	ctt	432
Met	Arg	Ala	Thr	Gly	Gly	Gly	Ala	Ile	Val	Asn	Met	Ala	Ser	Ile	Leu	
						135					140					
gct	cac	gtc	ggt	cag	gag	aac	agc	aac	gcc	tat	tcg	gcc	gcg	aaa	gcc	480
Ala	His	Val	Gly	Gln	Glu	Asn	Ser	Asn	Ala	Tyr	Ser	Ala	Ala	Lys	Ala	
					150					155					160	
gcg	gtg	gtc	aat	ctc	acg	cgc	tca	gtt	gcg	ttg	acc	tat	gcg	ctc	cag	528
Ala	Val	Val	Asn	Leu	Thr	Arg	Ser	Val	Ala	Leu	Thr	Tyr	Ala	Leu	Gln	

## PhoenixTemp32470.tmp.txt

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      165      170      175
ggt att cgc gcg aac tgc gtt tct ccg ggc tat gtc gat acg ccg ttg      576
Gly Ile Arg Ala Asn Cys Val Ser Pro Gly Tyr Val Asp Thr Pro Leu
      180      185      190
ctg gcc aag ttg ccg gag gcg acc cgc cag gcg atg ctg gtg ccg cag      624
Leu Ala Lys Leu Pro Glu Ala Thr Arg Gln Ala Met Leu Val Arg Gln
      195      200      205
ccg atc ggg cgc ttg gcg ccg cct ggg gag att gct gag gtt gtg gcc      672
Pro Ile Gly Arg Leu Ala Arg Pro Gly Glu Ile Ala Glu Val Val Ala
      210      215      220
ttt ctt gcg agc gac aag gcc tcg atc atc acg ggc gcg tgt gtc aat      720
Phe Leu Ala Ser Asp Lys Ala Ser Ile Ile Thr Gly Ala Cys Val Asn
      225      230      235
gcc gac ggc ggc tac acg gca atc taa
Ala Asp Gly Gly Tyr Thr Ala Ile
      245

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&lt;210&gt; 1540

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium japonicum USDA 110

&lt;400&gt; 1540

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Met Val Leu Leu Glu Gly Lys Val Ala Val Ile Thr Gly Ala Gly Ser
1      5      10      15
Gly Ile Gly Ala Ala Ile Ala Arg Leu Phe Ala Val Glu Gly Ala Lys
      20      25      30
Val Leu Leu Gly Asp Leu Ala Glu Gly Gly Ala Ala Leu Ala Ala Gly
      35      40      45
Leu Ala Ala Asp Gly His Ala Gly Phe Gln His Val Asp Val Thr
      50      55      60
Asp Glu Ala Ser Val Ala Glu Leu Met Gln Ala Ala Val Thr Leu Phe
65      70      75      80
Gly Arg Leu Asp Ile Leu Val Ala Asn Ala Gly Ile Pro Glu Arg Lys
      85      90      95
Ser Pro Ile His Glu Leu Asp Leu Val Asp Trp Arg Arg Val Ile Asp
      100      105      110
Val Asp Leu Thr Gly Val Ala Ile Cys Asn Lys Phe Ala Ala Gly Ile
      115      120      125
Met Arg Ala Thr Gly Gly Gly Ala Ile Val Asn Met Ala Ser Ile Leu
130      135      140
Ala His Val Gly Gln Glu Asn Ser Asn Ala Tyr Ser Ala Ala Lys Ala
145      150      155      160
Ala Val Val Asn Leu Thr Arg Ser Val Ala Leu Thr Tyr Ala Leu Gln
      165      170      175
Gly Ile Arg Ala Asn Cys Val Ser Pro Gly Tyr Val Asp Thr Pro Leu
      180      185      190
Leu Ala Lys Leu Pro Glu Ala Thr Arg Gln Ala Met Leu Val Arg Gln
      195      200      205
Pro Ile Gly Arg Leu Ala Arg Pro Gly Glu Ile Ala Glu Val Val Ala
      210      215      220
Phe Leu Ala Ser Asp Lys Ala Ser Ile Ile Thr Gly Ala Cys Val Asn
225      230      235
Ala Asp Gly Gly Tyr Thr Ala Ile
      245

```

&lt;210&gt; 1541

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Bradyrhizobium japonicum USDA 110

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1541

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Met Ala Arg Trp Ile Pro Gly Ser Arg Lys Glu Ala Arg Pro Gly Met

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48

## PhoenixTemp32470.tmp.txt

1	5	10	15	
acg	aca	aaa	aat	tca
Thr	Thr	Lys	Asn	Ser
			20	
				25
				30
				35
				40
				45
				50
				55
				60
				65
				70
				75
				80
				85
				90
				95
				100
				105
				110
				115
				120
				125
				130
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				170
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				185
				190
				195
				200
				205
				210
				215
				220
				225
				230
				235
				240
				245
				250
				255
				260
				265

&lt;210&gt; 1542

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium japonicum USDA 110

&lt;400&gt; 1542

Met	Ala	Arg	Trp	Ile	Pro	Gly	Ser	Arg	Lys	Glu	Ala	Arg	Pro	Gly	Met
1	Thr	Thr	Lys	Asn	Ser	Lys	Glu	Asn	Lys	Lys	Met	Ala	Asp	Arg	Leu
				20					25					30	
															35
															40
															45
															50
															55
															60
															65
															70
															75
															80
															85
															90
															95

## PhoenixTemp32470.tmp.txt

100  
 His His Gly Thr Ile Leu Glu Cys Ser Glu Glu Asp Phe Asp Phe Ser  
 115  
 Phe Asp Leu Asn Val Lys Ser Met His Arg Thr Ile Arg Ala Phe Leu  
 130  
 Pro Asp Met Leu Ala Gly Gly Gly Ser Ile Val Asn Ile Ser Ser  
 145  
 Cys Ala Ala Leu Arg Pro Pro Ala Asn Arg Tyr Val Tyr Ser Ala Ser  
 165  
 Lys Ala Ala Val Ser Leu Leu Thr Arg Ala Val Ala Leu Asp Phe Ile  
 180  
 Thr Lys Gly Ile Arg Cys Asn Ser Ile Cys Pro Gly Thr Val Glu Thr  
 195  
 Pro Ser Met Leu Asp Arg Ala Ala Ala Gln Gly Pro Gln Gly Lys Glu  
 210  
 Met Phe Ile Ser Arg Gln Lys Met Gly Arg Leu Gly Thr Ala Asp Glu  
 225  
 Ile Ala Ser Met Ala Val Tyr Leu Gly Ser Asp Glu Ser Ala Phe Thr  
 245  
 Thr Gly Val Asp Leu Val Val Asp Gly Gly Tyr Met Leu  
 260  
 265

&lt;210&gt; 1543

&lt;211&gt; 750

&lt;212&gt; DNA

&lt;213&gt; Clostridium tetani E88

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(750)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1543

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Met	Lys	Asn	Lys	Phe	Leu	Asn	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	
1				5					10					15		
tct	aga	ggt	att	gga	aga	gga	att	gca	att	gaa	tta	gca	gat	aag	gga	96
Ser	Arg	Gly	Ile	Gly	Arg	Gly	Ile	Ala	Ile	Glu	Leu	Ala	Asp	Lys	Gly	
			20					25					30			
gct	tgt	gtt	att	gta	aat	tat	aga	aaa	gat	tta	aaa	gga	gca	gaa	gaa	144
Ala	Cys	Val	Ile	Val	Asn	Tyr	Arg	Lys	Asp	Leu	Lys	Gly	Ala	Glu	Glu	
			35				40					45				
aca	aaa	aag	aca	ata	gaa	gaa	aga	ggt	gga	tat	tgt	aga	ata	att	aaa	192
Thr	Lys	Lys	Thr	Ile	Glu	Glu	Arg	Gly	Gly	Tyr	Cys	Arg	Ile	Ile	Lys	
			50			55					60					
tgt	gat	gta	agt	tca	tat	gaa	gat	act	aaa	cta	atg	att	gaa	aag	ata	240
Cys	Asp	Val	Ser	Ser	Tyr	Glu	Asp	Thr	Lys	Leu	Met	Ile	Glu	Lys	Ile	
					70					75					80	
att	aga	gat	ttt	ggg	aaa	ata	gac	att	ctt	ata	aat	aat	gct	ggt	ata	288
Ile	Arg	Asp	Phe	Gly	Lys	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Ile	
			85						90					95		
tcc	aag	att	gga	ttg	ttt	ata	gat	atg	gag	gaa	gag	gat	tgg	gat	aat	336
Ser	Lys	Ile	Gly	Leu	Phe	Ile	Asp	Met	Glu	Glu	Glu	Asp	Trp	Asp	Asn	
			100					105					110			
ata	ata	aat	aca	aat	tta	aag	ggt	gtt	ttt	aat	tgt	tct	aga	aat	gtt	384
Ile	Ile	Asn	Thr	Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Ser	Arg	Asn	Val	
			115				120					125				
cta	cct	tat	atg	att	ggt	gaa	aaa	aat	gga	gtt	ata	ata	aat	ata	tct	432
Leu	Pro	Tyr	Met	Ile	Gly	Glu	Lys	Asn	Gly	Val	Ile	Ile	Asn	Ile	Ser	
			130			135					140					
tct	atg	tgg	gga	agc	gtt	gga	gct	tct	tgc	gag	gta	att	tat	tcc	gct	480
Ser	Met	Trp	Gly	Ser	Val	Gly	Ala	Ser	Cys	Glu	Val	Ile	Tyr	Ser	Ala	
			145		150					155					160	
tca	aag	gga	gga	gta	gat	tcc	ttt	act	aaa	gct	tta	gca	aaa	gaa	gta	528
Ser	Lys	Gly	Gly	Val	Asp	Ser	Phe	Thr	Lys	Ala	Leu	Ala	Lys	Glu	Val	
				165					170					175		
ggg	cca	tcc	aac	ata	aga	gta	aat	gca	att	tca	cca	gga	gtt	ata	aac	576
Gly	Pro	Ser	Asn	Ile	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Val	Ile	Asn	
			180					185					190			



PhoenixTemp32470.tmp.txt

act tca atg aat gag tgg atg agt tgt gag gaa aag gat agc tta aaa	624
Thr Ser Met Asn Glu Trp Met Ser Cys Glu Glu Lys Asp Ser Leu Lys	
195 200 205	
gat gaa att cca tta tgt aga ttt ggt gaa tgt gaa gat ata ggt aag	672
Asp Glu Ile Pro Leu Cys Arg Phe Gly Glu Cys Glu Asp Ile Gly Lys	
210 215 220	
gct gta gta ttt tta tgt agc gat aac gca aag tac ata aca ggt caa	720
Ala Val Val Phe Leu Cys Ser Asp Asn Ala Lys Tyr Ile Thr Gly Gln	
225 230 235 240	
atc tta aca ata gac ggt ggg atg ata taa	750
Ile Leu Thr Ile Asp Gly Gly Met Ile	
245	

<210> 1544  
 <211> 249  
 <212> PRT  
 <213> Clostridium tetani E88

<400> 1544

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Ala Cys Val Ile Val Asn Tyr Arg Lys Asp Leu Lys Gly Ala Glu Glu	
35 40 45	
Thr Lys Lys Thr Ile Glu Glu Arg Gly Gly Tyr Cys Arg Ile Ile Lys	
50 55 60	
Cys Asp Val Ser Ser Tyr Glu Asp Thr Lys Leu Met Ile Glu Lys Ile	
65 70 75 80	
Ile Arg Asp Phe Gly Lys Ile Asp Ile Leu Ile Asn Asn Ala Gly Ile	
85 90 95	
Ser Lys Ile Gly Leu Phe Ile Asp Met Glu Glu Glu Asp Trp Asp Asn	
100 105 110	
Ile Ile Asn Thr Asn Leu Lys Gly Val Phe Asn Cys Ser Arg Asn Val	
115 120 125	
Leu Pro Tyr Met Ile Gly Glu Lys Asn Gly Val Ile Ile Asn Ile Ser	
130 135 140	
Ser Met Trp Gly Ser Val Gly Ala Ser Cys Glu Val Ile Tyr Ser Ala	
145 150 155 160	
Ser Lys Gly Gly Val Asp Ser Phe Thr Lys Ala Leu Ala Lys Glu Val	
165 170 175	
Gly Pro Ser Asn Ile Arg Val Asn Ala Ile Ser Pro Gly Val Ile Asn	
180 185 190	
Thr Ser Met Asn Glu Trp Met Ser Cys Glu Glu Lys Asp Ser Leu Lys	
195 200 205	
Asp Glu Ile Pro Leu Cys Arg Phe Gly Glu Cys Glu Asp Ile Gly Lys	
210 215 220	
Ala Val Val Phe Leu Cys Ser Asp Asn Ala Lys Tyr Ile Thr Gly Gln	
225 230 235 240	
Ile Leu Thr Ile Asp Gly Gly Met Ile	
245	

<210> 1545  
 <211> 747  
 <212> DNA  
 <213> Bacteroides thetaiotaomicron VPI-5482

<220>  
 <221> CDS  
 <222> (1)..(747)  
 <223> transl\_table=11

<400> 1545

atg gga tta tta gac gga aaa aca gcc att gta acc ggt gcc gcc cgt	48
Met Gly Leu Leu Asp Gly Lys Thr Ala Ile Val Thr Gly Ala Ala Arg	
1 5 10 15	
ggt att ggc aag gct atc gct ctg aag ttt gct gcc gaa ggt gca aac	96
Gly Ile Gly Lys Ala Ile Ala Leu Lys Phe Ala Ala Glu Gly Ala Asn	
20 25 30	

## PhoenixTemp32470.tmp.txt

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att gca ttt act gac ctg gtc att gac gaa aat gca gaa aaa aca agg 144
ile Ala Phe 35 Thr Asp Leu Val 40 ile Asp Glu Asn Ala Glu Lys Thr Arg
gta gaa ctg gaa gca atg ggt gtg aaa gcc aaa ggt tat gct tct aac 192
Val Glu Leu Glu Ala Met Gly Val Lys Ala Lys Gly Tyr Ala Ser Asn
50 55 60
gct gct aac ttt gaa gat act gca aag gtc gta gaa gaa atc cat aag 240
Ala Ala Asn Phe Glu Asp 70 Thr Ala Lys Val Val Glu Glu Ile His Lys
65 75 80
gac ttc gga cgt atc gat att ctg gtg aac aat gcc ggt atc act cgt 288
Asp Phe Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg
85 90 95
gac ggt ctg atg atg cgt atg agc gaa caa caa tgg gat atg gta atc 336
Asp Gly Leu Met Met Arg Met Ser Glu Gln Gln Trp Asp Met Val Ile
100 105 110
aat gtg aac ctg aag tct gca ttt aac ttc atc cac gct tgt aca cct 384
Asn Val Asn 115 Leu Lys Ser Ala Phe Asn Phe Ile His Ala Cys Thr Pro
120 125
gtt atg atg cgt cag aaa gct ggt agc att atc aac atg gca tct gta 432
Val Met Met Arg Gln Lys Ala Gly Ser Ile Ile Asn Met Ala Ser Val
130 135 140
gtg ggt gtt cac ggt aat gcg gga cag gct aac tat gct gct tcc aaa 480
Val Gly Val His Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ser Lys
145 150 155 160
gcc ggc atg att gca ttg gcc aag tct atc gca caa gaa ctg ggc tct 528
Ala Gly Met Ile Ala Leu Ala Lys Ser Ile Ala Gln Glu Leu Gly Ser
165 170 175
cgt ggc atc cgt gcc aac gcc att gct ccg gga ttc atc ctg aca gat 576
Arg Gly Ile Arg 180 Ala Asn Ala Ile Ala Pro Gly Phe Ile Thr Asp
185 190
atg act gct gct ctt tct gac gaa gtg aga gct gaa tgg gca aag aaa 624
Met Thr Ala Ala Leu Ser Asp Glu Val Arg Ala Glu Trp Ala Lys Lys
195 200 205
att cct ttg cgt cgt ggc ggt act cct gaa gat gtg gca aac atc gct 672
ile Pro 210 Leu Arg Arg Gly Thr Pro Glu Asp Val Ala Asn Ile Ala
215 220
acc ttc ctg gca tca gat atg tct tct tac gta tca ggt cag gtg att 720
Thr Phe Leu Ala Ser Asp Met Ser Ser Tyr Val Ser Gly Gln Val Ile
225 230 235 240
cag gta gat ggt ggt atg aat atg taa 747
Gln Val Asp Gly Met Met Asn Met
245

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&lt;210&gt; 1546

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Bacteroides thetaiotaomicron VPI-5482

&lt;400&gt; 1546

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Met Gly Leu Leu Asp Gly Lys Thr Ala Ile Val Thr Gly Ala Ala Arg
1 5 10 15
Gly Ile Gly Lys 20 Ala Ile Ala Leu Lys 25 Phe Ala Ala Glu Gly 30 Ala Asn
ile Ala Phe Thr Asp Leu Val ile Asp Glu Asn Ala Glu Lys Thr Arg
35 40 45
Val Glu Leu Glu Ala Met Gly Val Lys Ala Lys Gly Tyr Ala Ser Asn
50 55 60
Ala Ala Asn Phe Glu Asp Thr Ala Lys Val Val Glu Glu Ile His Lys
65 70 75 80
Asp Phe Gly Arg Ile Asp ile Leu Val Asn Asn Ala Gly Ile Thr Arg
85 90 95
Asp Gly Leu Met Met Arg Met Ser Glu Gln Gln Trp Asp Met Val Ile
100 105 110
Asn Val Asn Leu Lys Ser Ala Phe Asn Phe Ile His Ala Cys Thr Pro
115 120 125
Val Met Met Arg Gln Lys Ala Gly Ser Ile Ile Asn Met Ala Ser Val
130 135 140
Val Gly Val His Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ser Lys
145 150 155 160

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## PhoenixTemp32470.tmp.txt

Ala Gly Met Ile Ala Leu Ala Lys Ser Ile Ala Gln Glu Leu Gly Ser  
 165 170 175  
 Arg Gly Ile Arg Ala Asn Ala Ile Ala Pro Gly Phe Ile Leu Thr Asp  
 180 185 190  
 Met Thr Ala Ala Leu Ser Asp Glu Val Arg Ala Glu Trp Ala Lys Lys  
 195 200 205  
 Ile Pro Leu Arg Arg Gly Gly Thr Pro Glu Asp Val Ala Asn Ile Ala  
 210 215 220  
 Thr Phe Leu Ala Ser Asp Met Ser Ser Tyr Val Ser Gly Gln Val Ile  
 225 230 235 240  
 Gln Val Asp Gly Gly Met Asn Met  
 245

&lt;210&gt; 1547

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Enterococcus faecalis V583

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1547

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Met	Pro	Lys	Glu	Phe	Glu	Thr	Lys	Arg	Val	Leu	Val	Thr	Gly	Ala	Ala	
1				5					10					15		
tca	ggg	att	ggc	caa	gca	caa	gca	att	gcc	ttt	gct	gag	caa	ggg	gct	96
Ser	Gly	Ile	Gly	Gln	Ala	Gln	Ala	Ile	Ala	Phe	Ala	Glu	Gln	Gly	Ala	
			20					25					30			
gaa	gtt	att	ggc	atc	gac	cta	gac	gaa	acg	ggg	tta	aag	cag	aca	gcc	144
Glu	Val	Ile	Gly	Ile	Asp	Leu	Asp	Glu	Thr	Gly	Leu	Lys	Gln	Thr	Ala	
			35				40					45				
gca	ctg	gtt	gac	cca	gat	tct	gct	aag	tcg	ttt	act	tat	ttt	gtc	ggg	192
Ala	Leu	Val	Asp	Pro	Asp	Ser	Ala	Lys	Ser	Phe	Thr	Tyr	Phe	Val	Gly	
			50			55				60						
gat	gtg	tct	tct	ccc	tca	ttt	gtg	caa	gcc	acg	atg	aaa	caa	att	gtg	240
Asp	Val	Ser	Ser	Pro	Ser	Phe	Val	Gln	Ala	Thr	Met	Lys	Gln	Ile	Val	
				70				75						80		
aaa	aac	aac	ggc	caa	att	gat	att	tta	tta	aat	acg	gca	ggg	att	tta	288
Lys	Asn	Asn	Gly	Gln	Ile	Asp	Ile	Leu	Leu	Asn	Thr	Ala	Gly	Ile	Leu	
				85				90						95		
gat	gat	tat	cgc	cct	tct	cta	gaa	act	tca	gaa	gct	tta	tgg	gat	caa	336
Asp	Asp	Tyr	Arg	Pro	Ser	Leu	Glu	Thr	Ser	Glu	Ala	Leu	Trp	Asp	Gln	
			100					105					110			
att	tta	gca	acc	aat	tta	aaa	agt	gtc	ttt	tta	gtg	acc	aat	gcc	ata	384
Ile	Leu	Ala	Thr	Asn	Leu	Lys	Ser	Val	Phe	Leu	Val	Thr	Asn	Ala	Ile	
			115				120					125				
tta	cct	tat	ttc	ctc	caa	caa	aaa	aaa	gga	gta	atc	gtt	aat	atg	gca	432
Leu	Pro	Tyr	Phe	Leu	Gln	Gln	Lys	Lys	Gly	Val	Ile	Val	Asn	Met	Ala	
			130			135					140					
tct	atc	gct	ggc	tta	gta	gct	ggg	ggc	ggc	ggc	gca	gcg	tac	act	gcc	480
Ser	Ile	Ala	Gly	Leu	Val	Ala	Gly	Gly	Gly	Gly	Ala	Ala	Tyr	Thr	Ala	
				150				155							160	
tcc	aaa	cac	gca	atc	atc	ggg	tat	aca	aaa	caa	ctt	tcc	tac	gat	tat	528
Ser	Lys	His	Ala	Ile	Ile	Gly	Tyr	Thr	Lys	Gln	Leu	Ser	Tyr	Asp	Tyr	
				165					170					175		
gcc	aaa	tta	ggc	att	cga	gca	aat	gcg	att	gcg	cca	ggg	gcc	atc	caa	576
Ala	Lys	Leu	Gly	Ile	Arg	Ala	Asn	Ala	Ile	Ala	Pro	Gly	Ala	Ile	Gln	
			180					185					190			
aca	ccc	atg	aac	gca	gct	gat	ttt	gca	gga	gaa	ggg	gaa	atg	gct	gct	624
Thr	Pro	Met	Asn	Ala	Ala	Asp	Phe	Ala	Gly	Glu	Gly	Glu	Met	Ala	Ala	
			195				200					205				
tgg	gta	gca	cgt	gaa	aca	ccc	gcg	ggc	cgt	tgg	gca	cag	cca	caa	gag	672
Trp	Val	Ala	Arg	Glu	Thr	Pro	Ala	Gly	Arg	Trp	Ala	Gln	Pro	Gln	Glu	
			210			215					220					
gta	gca	aaa	ctt	tca	tta	ttt	cta	gct	agt	gat	gac	gct	gat	tat	atc	720
Val	Ala	Lys	Leu	Ser	Leu	Phe	Leu	Ala	Ser	Asp	Ala	Ala	Asp	Tyr	Ile	
					230				235						240	

cat ggc aca gtt atg acc att gat ggt ggt tgg acc atg aaa taa  
 His Gly Thr Val Met Thr Ile Asp Gly Gly Trp Thr Met Lys  
 245 250

765

<210> 1548  
 <211> 254  
 <212> PRT  
 <213> Enterococcus faecalis V583

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 Ser Gly Ile Gly Gln Ala Gln Ala Ile Ala Phe Ala Glu Gln Gly Ala  
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 Glu Val Ile Gly Ile Asp Leu Asp Glu Thr Gly Leu Lys Gln Thr Ala  
 35 40 45  
 Ala Leu Val Asp Pro Asp Ser Ala Lys Ser Phe Thr Tyr Phe Val Gly  
 50 55 60  
 Asp Val Ser Ser Pro Ser Phe Val Gln Ala Thr Met Lys Gln Ile Val  
 65 70 75 80  
 Lys Asn Asn Gly Gln Ile Asp Ile Leu Leu Asn Thr Ala Gly Ile Leu  
 85 90 95  
 Asp Asp Tyr Arg Pro Ser Leu Glu Thr Ser Glu Ala Leu Trp Asp Gln  
 100 105 110  
 Ile Leu Ala Thr Asn Leu Lys Ser Val Phe Leu Val Thr Asn Ala Ile  
 115 120 125  
 Leu Pro Tyr Phe Leu Gln Gln Lys Lys Gly Val Ile Val Asn Met Ala  
 130 135 140  
 Ser Ile Ala Gly Leu Val Ala Gly Gly Gly Gly Ala Ala Tyr Thr Ala  
 145 150 155 160  
 Ser Lys His Ala Ile Ile Gly Tyr Thr Lys Gln Leu Ser Tyr Asp Tyr  
 165 170 175  
 Ala Lys Leu Gly Ile Arg Ala Asn Ala Ile Ala Pro Gly Ala Ile Gln  
 180 185 190  
 Thr Pro Met Asn Ala Ala Asp Phe Ala Gly Glu Gly Glu Met Ala Ala  
 195 200 205  
 Trp Val Ala Arg Glu Thr Pro Ala Gly Arg Trp Ala Gln Pro Gln Glu  
 210 215 220  
 Val Ala Lys Leu Ser Leu Phe Leu Ala Ser Asp Asp Ala Asp Tyr Ile  
 225 230 235 240  
 His Gly Thr Val Met Thr Ile Asp Gly Gly Trp Thr Met Lys  
 245 250

<210> 1549  
 <211> 831  
 <212> DNA  
 <213> Streptomyces avermitilis MA-4680

<220>  
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 <222> (1)..(831)  
 <223> transl\_table=11

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 1 5 10 15  
 cgc ggt ctg gga cgc gcc acc gcg gtg gcg ttc gcc cgc gag ggt gcc 96  
 Arg Gly Leu Gly Arg Ala Thr Ala Val Ala Phe Ala Arg Glu Gly Ala  
 20 25 30  
 gac ctg atg ctg ctc gac ctg gcg gcg gac ctg ccg ggc gtc ccc tac 144  
 Asp Leu Met Leu Leu Asp Leu Ala Ala Asp Leu Pro Gly Val Pro Tyr  
 35 40 45  
 ccg ctg ggc tcc gag agc cag ctg gcc cac acc gcc gag ttg tgc cgc 192  
 Pro Leu Gly Ser Glu Ser Gln Leu Ala His Thr Ala Glu Leu Cys Arg  
 50 55 60  
 gag caa ggc gtc gcc gcc tcg acg gcc cgg ctc gac gtg cgt gac ctc 240  
 Glu Gln Gly Val Ala Ala Ser Thr Ala Arg Leu Asp Val Arg Asp Leu  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

gac	gcg	gtg	gag	gcc	gcg	atg	gcc	acc	acc	cgc	gag	cgg	ttc	gga	cgg	288
Asp	Ala	Val	Glu	Ala	Ala	Met	Ala	Thr	Thr	Arg	Glu	Arg	Phe	Gly	Arg	
				85					90					95		
atc	gac	gta	ctc	gtc	aac	aac	gcc	ggg	atc	gcc	gcc	cct	tcg	ggc	aag	336
Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Ala	Ala	Pro	Ser	Gly	Lys	
			100					105					110			
gcc	gcc	cat	gag	atc	gac	gag	cgt	gag	tgg	cag	ctg	atg	atc	gac	gtc	384
Ala	Ala	His	Glu	Ile	Asp	Glu	Arg	Glu	Trp	Gln	Leu	Met	Ile	Asp	Val	
		115					120					125				
gac	ctc	tcc	gga	gcc	tgg	cgg	acc	atc	cgc	gcg	gta	ggc	ggg	cac	atg	432
Asp	Leu	Ser	Gly	Ala	Trp	Arg	Thr	Ile	Arg	Ala	Val	Gly	Gly	His	Met	
		130				135					140					
gcc	gag	cag	cgc	tcg	ggc	agc	atc	atc	aac	atc	gcc	tcc	acc	gcg	ggc	480
Ala	Glu	Gln	Arg	Ser	Gly	Ser	Ile	Ile	Asn	Ile	Ala	Ser	Thr	Ala	Gly	
145					150				155						160	
ctg	gtg	ggc	tac	cgc	cac	ttc	gcc	ggc	tac	gtg	gcc	gcc	aag	cac	ggc	528
Leu	Val	Gly	Tyr	Arg	His	Phe	Ala	Gly	Tyr	Val	Ala	Ala	Lys	His	Gly	
				165					170					175		
ctg	gtc	ggg	ctg	acc	aag	gcc	gtc	gcg	ctc	gac	tac	gca	ccg	ctc	aag	576
Leu	Val	Gly	Leu	Thr	Lys	Ala	Val	Ala	Leu	Asp	Tyr	Ala	Pro	Leu	Lys	
			180					185					190			
gtg	cgg	gtg	aac	gcc	ctc	tgc	ccc	ggc	tcg	gtc	cgg	gac	gac	tcg	cag	624
Val	Arg	Val	Asn	Ala	Leu	Cys	Pro	Gly	Ser	Val	Arg	Asp	Asp	Ser	Gln	
			195				200					205				
gtc	gag	ggc	cgg	atg	ctg	tcc	gaa	atc	gcg	cgt	tgc	ctg	gac	gtg	ccg	672
Val	Glu	Gly	Arg	Met	Leu	Ser	Glu	Ile	Ala	Arg	Cys	Leu	Asp	Val	Pro	
		210				215					220					
gtg	gcc	gag	cac	gag	gag	acc	ttc	gtg	cag	gcc	cag	ccg	atg	aac	tcc	720
Val	Ala	Glu	His	Glu	Glu	Thr	Phe	Val	Gln	Ala	Gln	Pro	Met	Asn	Ser	
225					230				235						240	
ctg	atc	gag	ccc	gag	gac	atc	gcg	tcg	gca	gcc	gtg	tgg	ctg	gcc	tcc	768
Leu	Ile	Glu	Pro	Glu	Asp	Ile	Ala	Ser	Ala	Ala	Val	Trp	Leu	Ala	Ser	
				245					250					255		
gac	gag	tcc	cgc	cag	gtc	acc	ggc	agc	gtc	ctc	gcg	gtg	gac	ggc	ggc	816
Asp	Glu	Ser	Arg	Gln	Val	Thr	Gly	Ser	Val	Leu	Ala	Val	Asp	Gly	Gly	
			260					265					270			
ttc	acc	gcc	cgt	tag												831
Phe	Thr	Ala	Arg													
		275														

&lt;210&gt; 1550

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces avermitilis MA-4680

&lt;400&gt; 1550

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Arg	Gly	Leu	Gly	Arg	Ala	Thr	Ala	Val	Ala	Phe	Ala	Arg	Glu	Gly	Ala	
			20					25					30			
Asp	Leu	Met	Leu	Leu	Asp	Leu	Ala	Ala	Asp	Leu	Pro	Gly	Val	Pro	Tyr	
		35					40					45				
Pro	Leu	Gly	Ser	Glu	Ser	Gln	Leu	Ala	His	Thr	Ala	Glu	Leu	Cys	Arg	
		50				55					60					
Glu	Gln	Gly	Val	Ala	Ala	Ser	Thr	Ala	Arg	Leu	Asp	Val	Arg	Asp	Leu	
65					70					75				80		
Asp	Ala	Val	Glu	Ala	Ala	Met	Ala	Thr	Thr	Arg	Glu	Arg	Phe	Gly	Arg	
				85					90					95		
Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Ala	Ala	Pro	Ser	Gly	Lys	
			100					105					110			
Ala	Ala	His	Glu	Ile	Asp	Glu	Arg	Glu	Trp	Gln	Leu	Met	Ile	Asp	Val	
		115					120					125				
Asp	Leu	Ser	Gly	Ala	Trp	Arg	Thr	Ile	Arg	Ala	Val	Gly	Gly	His	Met	
		130				135					140					
Ala	Glu	Gln	Arg	Ser	Gly	Ser	Ile	Ile	Asn	Ile	Ala	Ser	Thr	Ala	Gly	
145					150				155						160	
Leu	Val	Gly	Tyr	Arg	His	Phe	Ala	Gly	Tyr	Val	Ala	Ala	Lys	His	Gly	
				165					170					175		
Leu	Val	Gly	Leu	Thr	Lys	Ala	Val	Ala	Leu	Asp	Tyr	Ala	Pro	Leu	Lys	

## PhoenixTemp32470.tmp.txt

Val Arg Val 180 Asn Ala Leu Cys Pro 185 Gly Ser Val Arg Asp 190 Asp Ser Gln  
 Val Glu Gly 195 Arg Met Leu Ser 200 Glu Ile Ala Arg Cys 205 Leu Asp Val Pro  
 Val Ala Glu 210 His Glu Glu Thr Phe Val Gln Ala Gln Pro Met Asn Ser  
 225 Ile Glu Pro Glu 230 Asp Ile Ala Ser Ala 235 Val Trp Leu Ala Ser  
 Asp Glu Ser Arg Gln Val Thr Gly Ser 250 Val Leu Ala Val Asp 255 Gly Gly  
 Phe Thr Ala Arg 260  
 275

<210> 1551  
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 <212> DNA  
 <213> Streptomyces rochei

<220>  
 <221> CDS  
 <222> (1)..(765)  
 <223> transl\_table=11

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 ggc ata ggc cgg ggc atc gcc cgt cgc ctg gcg gcg gac ggc gcg ctg 96  
 Gly Ile Gly Arg Gly Ile Ala Arg Arg Leu Ala Ala Asp Gly Ala Leu  
 20 25 30  
 gtc gcc gtc cac tac cgg gcc gac gag acc gcg gca cgc agc acc gtc 144  
 Val Ala Val His Tyr Arg Ala Asp Glu Thr Ala Ala Arg Ser Thr Val  
 35 40 45  
 gcg atg atc acg gac agc ggt ggt cgc gcc gtc atg gtg cac gcc ccg 192  
 Ala Met Ile Thr Asp Ser Gly Gly Arg Ala Val Met Val His Ala Pro  
 50 55 60  
 ctc ggc gtg ccc gac gac gcg cgg cac ctg tac gag cga ttc gac gcg 240  
 Leu Gly Val Pro Asp Asp Ala Arg His Leu Tyr Glu Arg Phe Asp Ala  
 65 70 75 80  
 gcg ctg agg gag cag ggc gcg gaa ccg gcc ctc gac atc ctg gtc aac 288  
 Ala Leu Arg Glu Gln Gly Ala Glu Pro Ala Leu Asp Ile Leu Val Asn  
 85 90 95  
 aac gcg ggg acc aac aca cgg ggc tcg gtg tcc gat gtg acg ccg ccg 336  
 Asn Ala Gly Thr Asn Thr Arg Gly Ser Val Ser Asp Val Thr Pro Pro  
 100 105 110  
 gac ttc gac gag ctg atg gcc ctg cac gcc aag gcg ccg ctt ttc ctc 384  
 Asp Phe Asp Glu Leu Met Ala Leu His Ala Lys Ala Pro Leu Phe Leu  
 115 120 125  
 gtc cag cac gcg ctg ggc cgg ctg cgc gac ggc gga cgg atc gtc aac 432  
 Val Gln His Ala Leu Gly Arg Leu Arg Asp Gly Arg Ile Val Asn  
 130 135 140  
 atc agt tcc gcc gcg acc agg gtg gcc ctt ccc gag tcc atc gcc tac 480  
 Ile Ser Ser Ala Ala Thr Arg Val Ala Leu Pro Glu Ser Ile Ala Tyr  
 145 150 155 160  
 tgc atg gcg aag gcg gcc gtc gag gcc atg act cgc gcg ctg gcc aag 528  
 Cys Met Ala Lys Ala Val Glu Ala Met Thr Arg Ala Leu Ala Lys  
 165 170 175  
 gac ctg ggc cgg cgc ggc atc acg gtg aac gcc gtg gcg ccc gga ttc 576  
 Asp Leu Gly Arg Arg Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe  
 180 185 190  
 gtg aag acg gac atg aac gcc gga cgc tgg gcc aca ccc gag ggc gag 624  
 Val Lys Thr Asp Met Asn Ala Gly Arg Trp Ala Thr Pro Glu Gly Glu  
 195 200 205  
 gcc gcg cac gcg gcc ctc tcg gtc ttc cgg cgc atg gga gag acc gcg 672  
 Ala Ala His Ala Ala Leu Ser Val Phe Arg Arg Met Gly Glu Thr Ala  
 210 215 220  
 gac atc gcc gac atc gtc ttc ctc gcc tcg gac gac tcc cgg tgg 720  
 Asp Ile Ala Asp Ile Val Ala Phe Leu Ala Ser Asp Asp Ser Arg Trp

PhoenixTemp32470.tmp.txt

225                      230                      235                      240  
atc acc ggt cag tgc ctg gac gcc tcg ggc ggc ggg ggc ctg tag                      765  
Ile Thr Gly Gln Cys Leu Asp Ala Ser Gly Gly Gly Gly Leu

245                      250

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<210> 1552
<211> 254
<212> PRT
<213> Streptomyces rochei
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1				5					10					15		
Gly	Ile	Gly	Arg	Gly	Ile	Ala	Arg	Arg	Leu	Ala	Ala	Asp	Gly	Ala	Leu	
			20					25					30			
Val	Ala	Val	His	Tyr	Arg	Ala	Asp	Glu	Thr	Ala	Ala	Arg	Ser	Thr	Val	
		35					40					45				
Ala	Met	Ile	Thr	Asp	Ser	Gly	Gly	Arg	Ala	Val	Met	Val	His	Ala	Pro	
	50					55					60					
Leu	Gly	Val	Pro	Asp	Asp	Ala	Arg	His	Leu	Tyr	Glu	Arg	Phe	Asp	Ala	
65					70					75					80	
Ala	Leu	Arg	Glu	Gln	Gly	Ala	Glu	Pro	Ala	Leu	Asp	Ile	Leu	Val	Asn	
				85					90					95		
Asn	Ala	Gly	Thr	Asn	Thr	Arg	Gly	Ser	Val	Ser	Asp	Val	Thr	Pro	Pro	
			100					105					110			
Asp	Phe	Asp	Glu	Leu	Met	Ala	Leu	His	Ala	Lys	Ala	Pro	Leu	Phe	Leu	
		115					120					125				
Val	Gln	His	Ala	Leu	Gly	Arg	Leu	Arg	Asp	Gly	Gly	Arg	Ile	Val	Asn	
	130					135					140					
Ile	Ser	Ser	Ala	Ala	Thr	Arg	Val	Ala	Leu	Pro	Glu	Ser	Ile	Ala	Tyr	
145					150					155					160	
Cys	Met	Ala	Lys	Ala	Ala	Val	Glu	Ala	Met	Thr	Arg	Ala	Leu	Ala	Lys	
				165					170					175		
Asp	Leu	Gly	Arg	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	
			180					185					190			
Val	Lys	Thr	Asp	Met	Asn	Ala	Gly	Arg	Trp	Ala	Thr	Pro	Glu	Gly	Glu	
		195					200					205				
Ala	Ala	His	Ala	Ala	Leu	Ser	Val	Phe	Arg	Arg	Met	Gly	Glu	Thr	Ala	
	210					215					220					
Asp	Ile	Ala	Asp	Ile	Val	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Arg	Trp	
225					230					235					240	
Ile	Thr	Gly	Gln	Cys	Leu	Asp	Ala	Ser	Gly	Gly	Gly	Gly	Leu			
				245					250							

<210> 1553  
<211> 753  
<212> DNA  
<213> Bordetella parapertussis 12822

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<220>
<221> CDS
<222> (1)..(753)
<223> transl_table=11
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1				5					10					15			
ggc	atc	ggc	cag	aat	gtc	gcg	ctg	tgc	ctg	gcg	cag	gcg	ggc	gcg	aac		
Gly	Ile	Gly	Gln	Asn	Val	Ala	Leu	Cys	Leu	Ala	Gln	Ala	Gly	Ala	Asn	96	
			20					25					30				
gtc	gtg	ctg	tgg	gga	cgc	gac	cag	gcg	gaa	ctg	gaa	cag	acg	cgc	gta		
Val	Val	Leu	Trp	Gly	Arg	Asp	Gln	Ala	Glu	Leu	Glu	Gln	Thr	Arg	Val	144	
			35				40					45					
cgg	atc	gac	gaa	tac	ggc	gtc	cag	tcc	acc	atc	gac	gcc	ttc	gac	att		
Arg	Ile	Asp	Glu	Tyr	Gly	Val	Gln	Ser	Thr	Ile	Asp	Ala	Phe	Asp	Ile	192	
	50					55					60						
acc	gag	gcc	gaa	tcg	gtg	cgg	cgc	gcc	acg	gcc	cag	gcc	atc	gag	cgt		
Thr	Glu	Ala	Glu	Ser	Val	Arg	Arg	Ala	Thr	Ala	Gln	Ala	Ile	Glu	Arg	240	

## PhoenixTemp32470.tmp.txt

65	70	75	80	
ttc ggc cac ctg gac	gtg ctg gtc gtc aac	gcc ggc gtc aat gtg	ctg	288
Phe Gly His Leu Asp	Val Leu Val Val Asn	Ala Gly Val Asn Val	Leu	
	85	90	95	
cgc ccc ttc ctg gac	tgg acc ccg cag	caa tgg gac cac atg	atc ggc	336
Arg Pro Phe Leu Asp	Trp Thr Pro Gln	Trp Asp His Met Ile	Gly	
	100	105	110	
gtg aac ctg gtc ggc	gcg atg cac acg	ctg cag gcc gtc ggc	cgg cac	384
Val Asn Leu Val Gly	Ala Met His Thr	Gln Leu Ala Val Gly	Arg His	
	115	120	125	
atg acc gag cgc aag	cag ggc agc atc atc	acc atg tgc tcc atc	tac	432
Met Thr Glu Arg Lys	Gln Gly Ser Ile Ile	Thr Met Ser Ser Ile	Tyr	
	130	135	140	
agc cat gtg ggc gcg	ccc gac aac agc ttc	tat tgc ctc acc aag	ggc	480
Ser His Val Gly Ala	Pro Asp Asn Ser Phe	Tyr Cys Leu Thr Lys	Gly	
	145	150	155	
ggc ttg ctg caa ctg	acg aaa agc ctg	gcg atg gaa tgg gcc	cgc cac	528
Gly Leu Leu Gln Leu	Thr Lys Ser Leu Ala	Met Glu Trp Ala Arg	His	
	160	165	170	
aag gtg cgc gtc aac	gcg atc tgc ccg	ggc tgg atc gag acc	gac ctg	576
Lys Val Arg Val Asn	Ala Ile Cys Pro Gly	Trp Ile Glu Thr Asp	Leu	
	175	180	185	
acc gcg ccg tac atg	cag gac gca cag	gtg cgc gcg gcc ggg	ctg aaa	624
Thr Ala Pro Tyr Met	Gln Asp Ala Gln Val	Arg Ala Ala Gly Leu	Lys	
	190	195	200	
cag att ccc ttg cgc	gcg ttc ggc cag	ccc gcc gat atc ggt	ccg atc	672
Gln Ile Pro Leu Arg	Arg Phe Gly Gln Pro	Ala Asp Ile Gly Pro	Ile	
	205	210	215	
gcc gtc tac ctg gcc	tcg gac gag gcg	caa tgg acg acc ggc	cag agt	720
Ala Val Tyr Leu Ala	Ser Asp Glu Ala Gln	Trp Thr Thr Gly Gln	Ser	
	220	225	230	
ttc gtg gtc gac ggc	ggg cag atc gcc	cgc tga		753
Phe Val Val Asp Gly	Gly Gln Ile Ala Arg			
	235	240	245	
	245	250		

&lt;210&gt; 1554

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Bordetella parapertussis 12822

&lt;400&gt; 1554

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Gly Ile Gly Gln Asn	Val Ala Leu Cys	Leu Ala Gln Ala Gly	Ala Asn
	20	25	30
Val Val Leu Trp Gly	Arg Asp Gln Ala Glu	Leu Glu Gln Thr	Arg Val
	35	40	45
Arg Ile Asp Glu Tyr	Gly Val Gln Ser Thr	Ile Asp Ala Phe	Asp Ile
	50	55	60
Thr Glu Ala Glu Ser	Val Arg Arg Ala Thr	Ala Gln Ala Ile Glu	Arg
	65	70	75
Phe Gly His Leu Asp	Val Leu Val Val Asn	Ala Gly Val Asn	Val Leu
	80	85	90
Arg Pro Phe Leu Asp	Trp Thr Pro Gln	Gln Trp Asp His	Met Ile Gly
	95	100	105
Val Asn Leu Val Gly	Ala Met His Thr	Leu Gln Ala Val	Gly Arg His
	110	115	120
Met Thr Glu Arg Lys	Gln Gly Ser Ile Ile	Thr Met Ser Ser	Ile Tyr
	125	130	135
Ser His Val Gly Ala	Pro Asp Asn Ser Phe	Tyr Cys Leu Thr	Lys Gly
	140	145	150
Gly Leu Leu Gln Leu	Thr Lys Ser Leu Ala	Met Glu Trp Ala	Arg His
	155	160	165
Lys Val Arg Val Asn	Ala Ile Cys Pro Gly	Trp Ile Glu Thr	Asp Leu
	170	175	180
Thr Ala Pro Tyr Met	Gln Asp Ala Gln	Val Arg Ala Ala	Gly Leu Lys
	185	190	195
Gln Ile Pro Leu Arg	Arg Phe Gly Gln	Pro Ala Asp Ile	Gly Pro Ile
	200	205	210
	215	220	



Ala Val Tyr Leu Ala Ser Asp Glu Ala Gln Trp Thr Thr Gly Gln Ser  
 225 230 235 240  
 Phe Val Val Asp Gly Gln Ile Ala Arg  
 245 250

<210> 1555

<211> 789

<212> DNA

<213> Bordetella parapertussis 12822

<220>

<221> CDS

<222> (1)..(789)

<223> transl\_table=11

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cgg gtc gcc ctg atc acc ggc gcg gcc ggc ggc ata ggc agc gcc gcc	96
Arg Val Ala Leu Ile Thr Gly Ala Ala Gly Gly Ile Gly Ser Ala Ala	
20 25 30	
gcg ctg cgc ttc gcg gcc gaa ggc gcc gcg ctg gcg ctg ctg gat cgg	144
Ala Leu Arg Phe Ala Ala Glu Gly Ala Ala Leu Ala Leu Leu Asp Arg	
35 40 45	
cgc ccc gac gcc atc gag caa ctg gcc ggc cgg atc tgc ggc cag ggc	192
Arg Pro Asp Ala Ile Glu Gln Leu Ala Gly Arg Ile Cys Gly Gln Gly	
50 55 60	
ggg cag gcg atc ggc gtg gcc gcc gac gtg acc gac gac agc gtg	240
Gly Gln Ala Ile Gly Val Ala Ala Asp Val Thr Asp Asp Asp Ser Val	
65 70 75 80	
cgc cag gcc gta cgg cgg gca gtc gag cat ttc ggc agg atc gat acg	288
Arg Gln Ala Val Arg Arg Ala Val Glu His Phe Gly Arg Ile Asp Thr	
85 90 95	
ctg ttc aac tgc gcc ggc gga tcg gtg gcg ggc gat acg gcg gtg gac	336
Leu Phe Asn Cys Ala Gly Gly Ser Val Ala Gly Asp Thr Ala Val Asp	
100 105 110	
aag gtg gac ctg gcg ctg tgg aac cgc acc ctg cgc ctg gac ctg gac	384
Lys Val Asp Leu Ala Leu Trp Asn Arg Thr Leu Arg Leu Asp Leu Asp	
115 120 125	
agc acc atg ctg tgc tgc cgc cac gcc gtg ccg gcg att gtg cgc gcc	432
Ser Thr Met Leu Cys Cys Arg His Ala Val Pro Ala Ile Val Arg Ala	
130 135 140	
ggc ggc ggc gcg gtc gtc aac atg tcg tcc ggc gcc ggc ctg gcg ggc	480
Gly Gly Gly Ala Val Val Asn Met Ser Ser Gly Ala Gly Leu Arg Gly	
145 150 155 160	
agc ttc ggc ggc cat gcc tac acg gcc gcc aag ggc gcg gtg att gcc	528
Ser Phe Gly Gly His Ala Tyr Thr Ala Ala Lys Gly Ala Val Ile Ala	
165 170 175	
ctg acc cgc gcg ctg gcc gcc gaa tac gcg ccg cat gga gtg cgg gtc	576
Leu Thr Arg Ala Leu Ala Ala Glu Tyr Thr Ala Pro His Gly Val Arg Val	
180 185 190	
aac gcc atc tgc gcg ggc cgc atc cgc acc gaa cgc ata ctg gcg aac	624
Asn Ala Ile Cys Ala Gly Arg Ile Arg Thr Glu Arg Ile Leu Arg Asn	
195 200 205	
ctg gac gcc ggc gca ccg gcg caa gcc ggc gcg gcg caa cgc tat ccg	672
Leu Asp Ala Gly Ala Pro Ala Gln Ala Gly Ala Ala Gln Arg Tyr Pro	
210 215 220	
tgc cgc gag ggc gac ccg atc gac att gcc cac atc gcg ctg ttc ctg	720
Cys Arg Glu Gly Asp Pro Ile Asp Ile Ala His Ile Ala Leu Phe Leu	
225 230 235 240	
gcc agc cac gag tcg cgc atg atc acc ggc gag gcc atc gcc gcc aat	768
Ala Ser His Glu Ser Arg Met Ile Thr Gly Glu Ala Ile Ala Ala Asn	
245 250 255	
ggc ggc tac tcg gcg ttc tga	789
Gly Gly Tyr Ser Ala Phe	
260	

<210> 1555

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Bordetella parapertussis 12822

&lt;400&gt; 1556

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Met Ala Gly Arg Thr Asp Cys Ala Pro Ala Ala Gly Arg Leu Ala Gly
1      5      10      15
Arg Val Ala Leu Ile Thr Gly Ala Ala Gly Gly Ile Gly Ser Ala Ala
20      25      30
Ala Leu Arg Phe Ala Ala Glu Gly Ala Ala Leu Ala Leu Leu Asp Arg
35      40      45
Arg Pro Asp Ala Ile Glu Gln Leu Ala Gly Arg Ile Cys Gly Gln Gly
50      55      60
Gly Gln Ala Ile Gly Val Ala Ala Asp Val Thr Asp Asp Ser Val
65      70      75      80
Arg Gln Ala Val Arg Arg Ala Val Glu His Phe Gly Arg Ile Asp Thr
85      90      95
Leu Phe Asn Cys Ala Gly Gly Ser Val Ala Gly Asp Thr Ala Val Asp
100     105     110
Lys Val Asp Leu Ala Leu Trp Asn Arg Thr Leu Arg Leu Asp Leu Asp
115     120     125
Ser Thr Met Leu Cys Cys Arg His Ala Val Pro Ala Ile Val Arg Ala
130     135     140
Gly Gly Gly Ala Val Val Asn Met Ser Ser Gly Ala Gly Leu Arg Gly
145     150     155     160
Ser Phe Gly Gly His Ala Tyr Thr Ala Ala Lys Gly Ala Val Ile Ala
165     170     175
Leu Thr Arg Ala Leu Ala Ala Glu Tyr Ala Pro His Gly Val Arg Val
180     185     190
Asn Ala Ile Cys Ala Gly Arg Ile Arg Thr Glu Arg Ile Leu Arg Asn
195     200     205
Leu Asp Ala Gly Ala Pro Ala Gln Ala Gly Ala Ala Gln Arg Tyr Pro
210     215     220
Cys Arg Glu Gly Asp Pro Ile Asp Ile Ala His Ile Ala Leu Phe Leu
225     230     235     240
Ala Ser His Glu Ser Arg Met Ile Thr Gly Glu Ala Ile Ala Ala Asn
245     250     255
Gly Gly Tyr Ser Ala Phe
260

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&lt;210&gt; 1557

&lt;211&gt; 753

&lt;212&gt; DNA

&lt;213&gt; Bordetella bronchiseptica RB50

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1557

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1      5      10      15	
ggc atc ggc cag aat gtc gcg ctg tgc ctg gcg cag gcg ggc gcg aac	96
Gly Ile Gly Gln Asn Val Ala Leu Cys Leu Ala Gln Ala Gly Ala Asn	
20      25      30	
gtc gtg ctg tgg gga cgc gac cag gcg gaa ctg gaa cag act cgc gta	144
Val Val Leu Trp Gly Arg Asp Gln Ala Glu Leu Glu Gln Thr Arg Val	
35      40      45	
cgg atc gac gaa tac ggc gtc cag tcc acc atc gac gcc ttc gac att	192
Arg Ile Asp Glu Tyr Gly Val Gln Ser Thr Ile Asp Ala Phe Asp Ile	
50      55      60	
acc gag gcc gaa tcg gtg cgg cgc gcc acg gcc cag gcc atc gag cgt	240
Thr Glu Ala Glu Ser Val Arg Arg Ala Thr Ala Gln Ala Ile Glu Arg	
65      70      75      80	
ttc ggc cac ctg gac gtg ctg gtc gtc aac gcc ggc gtc aat gtg ctg	288
Phe Gly His Leu Asp Val Leu Val Val Asn Ala Gly Val Asn Val Leu	
85      90      95	

## PhoenixTemp32470.tmp.txt

cgc	ccc	ttc	ctg	gac	tgg	acc	ccg	cag	caa	tgg	gac	cac	atg	atc	ggc	336
Arg	Pro	Phe	Leu	Asp	Trp	Thr	Pro	Gln	Gln	Trp	Asp	His	Met	Ile	Gly	
			100					105					110			
gtg	aac	ctg	gtc	ggc	gcg	atg	cac	acg	ctg	cag	gcc	gtc	ggc	cgg	cac	384
Val	Asn	Leu	Val	Gly	Ala	Met	His	Thr	Leu	Gln	Ala	Val	Gly	Arg	His	
		115					120					125				
atg	acc	gag	cgc	aag	cag	ggc	agc	atc	atc	acc	atg	tgc	tcc	atc	tac	432
Met	Thr	Glu	Arg	Lys	Gln	Gly	Ser	Ile	Ile	Thr	Met	Ser	Ser	Ile	Tyr	
	130					135					140					
agc	cat	gtg	ggc	gcg	ccc	gac	aac	agc	gtc	tat	tgc	ctc	acc	aag	ggc	480
Ser	His	Val	Gly	Ala	Pro	Asp	Asn	Ser	Val	Tyr	Cys	Leu	Thr	Lys	Gly	
					150					155					160	
ggc	ttg	ctg	caa	ctg	acg	aaa	agc	ctg	gcg	atg	gaa	tgg	gcc	cgc	cac	528
Gly	Leu	Leu	Gln	Leu	Thr	Lys	Ser	Leu	Ala	Met	Glu	Trp	Ala	Arg	His	
				165					170					175		
aag	gtg	cgc	gtc	aac	gcg	atc	tgc	ccg	ggc	tgg	atc	gag	acc	gac	ctg	576
Lys	Val	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Ile	Glu	Thr	Asp	Leu	
			180					185					190			
acc	gcg	ccg	atg	cag	gac	gaa	cag	gtg	cgc	gcg	gcc	ggg	ctg	aaa		624
Thr	Ala	Pro	Tyr	Met	Gln	Asp	Glu	Gln	Val	Arg	Ala	Ala	Gly	Leu	Lys	
		195				200					205					
cag	att	ccc	ttg	cgc	cgc	ttc	ggc	cag	ccc	gcc	gat	atc	ggt	ccg	atc	672
Gln	Ile	Pro	Leu	Arg	Arg	Phe	Gly	Gln	Pro	Ala	Asp	Ile	Gly	Pro	Ile	
		210				215					220					
gcc	gtc	tac	ctg	gcc	tcg	gac	gag	gcg	caa	tgg	acg	acc	ggc	cag	agt	720
Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Gln	Trp	Thr	Thr	Gly	Gln	Ser	
					230					235					240	
ttc	gtg	gtc	gac	ggc	ggg	cag	atc	gcc	cgc	tga						753
Phe	Val	Val	Asp	Gly	Gly	Gln	Ile	Ala	Arg							
				245					250							

&lt;210&gt; 1558

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Bordetella bronchiseptica RB50

&lt;400&gt; 1558

Met	Phe	Asp	Leu	Ser	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ala	Ser	Arg	
1				5					10					15		
Gly	Ile	Gly	Gln	Asn	Val	Ala	Leu	Cys	Leu	Ala	Gln	Ala	Gly	Ala	Asn	
			20					25					30			
Val	Val	Leu	Trp	Gly	Arg	Asp	Gln	Ala	Glu	Leu	Glu	Gln	Thr	Arg	Val	
		35					40					45				
Arg	Ile	Asp	Glu	Tyr	Gly	Val	Gln	Ser	Thr	Ile	Asp	Ala	Phe	Asp	Ile	
	50					55					60					
Thr	Glu	Ala	Glu	Ser	Val	Arg	Arg	Ala	Thr	Ala	Gln	Ala	Ile	Glu	Arg	
	65				70					75					80	
Phe	Gly	His	Leu	Asp	Val	Leu	Val	Val	Asn	Ala	Gly	Val	Asn	Val	Leu	
			85						90				95			
Arg	Pro	Phe	Leu	Asp	Trp	Thr	Pro	Gln	Gln	Trp	Asp	His	Met	Ile	Gly	
			100					105					110			
Val	Asn	Leu	Val	Gly	Ala	Met	His	Thr	Leu	Gln	Ala	Val	Gly	Arg	His	
		115					120					125				
Met	Thr	Glu	Arg	Lys	Gln	Gly	Ser	Ile	Ile	Thr	Met	Ser	Ser	Ile	Tyr	
	130					135					140					
Ser	His	Val	Gly	Ala	Pro	Asp	Asn	Ser	Val	Tyr	Cys	Leu	Thr	Lys	Gly	
	145				150					155					160	
Gly	Leu	Leu	Gln	Leu	Thr	Lys	Ser	Leu	Ala	Met	Glu	Trp	Ala	Arg	His	
			165						170					175		
Lys	Val	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Ile	Glu	Thr	Asp	Leu	
			180					185					190			
Thr	Ala	Pro	Tyr	Met	Gln	Asp	Glu	Gln	Val	Arg	Ala	Ala	Gly	Leu	Lys	
		195				200					205					
Gln	Ile	Pro	Leu	Arg	Arg	Phe	Gly	Gln	Pro	Ala	Asp	Ile	Gly	Pro	Ile	
	210					215					220					
Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Gln	Trp	Thr	Thr	Gly	Gln	Ser	
	225				230					235					240	
Phe	Val	Val	Asp	Gly	Gly	Gln	Ile	Ala	Arg							
				245					250							

<210> 1559  
 <211> 789  
 <212> DNA  
 <213> Bordetella bronchiseptica RB50

<220>  
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 cgg gtc gcc ctg atc acc ggc gcg gcc ggc ggc ata ggc agc gcc gcc 96  
 Arg Val Ala Leu Ile Thr Gly Ala Ala Gly Gly Ile Gly Ser Ala Ala  
 20 25 30  
 gcg ctg cgc ttc gcg gcc gaa ggc gcc gcg ctg gcg ctg gat cgg 144  
 Ala Leu Arg Phe Ala Ala Glu Gly Ala Ala Leu Ala Leu Leu Asp Arg  
 35 40 45  
 cgc ccc gac gcc atc gag caa ctg gcc ggc cgg atc tgc ggc cag gcc 192  
 Arg Pro Asp Ala Ile Glu Gln Leu Ala Gly Arg Ile Cys Gly Gln Gly  
 50 55 60  
 ggg cag gcg ata ggc gtg gcc gac gtg acc gac gac gac agc gtg 240  
 Gly Gln Ala Ile Gly Val Ala Ala Asp Val Thr Asp Asp Asp Ser Val  
 65 70 75 80  
 cgc cag gcc gta cgg cgg gca gtc gag cat ttc ggc agg atc gat acg 288  
 Arg Gln Ala Val Arg Arg Ala Val Glu His Phe Gly Arg Ile Asp Thr  
 85 90 95  
 ctg ttc aac tgc gcc ggc gga tgc gtg gcg ggc gat acg gcg gtg gac 336  
 Leu Phe Asn Cys Ala Gly Gly Ser Val Ala Gly Asp Thr Ala Val Asp  
 100 105 110  
 aag gtg gag ctg gcg ctg tgg aac cgc acc ctg cgc ctg gac ctg gac 384  
 Lys Val Glu Leu Ala Leu Trp Asn Arg Thr Leu Arg Leu Asp Leu Asp  
 115 120 125  
 ggc acc atg ctg tgc tgc cgc cac gcc gtg ccg gcg att gtg cgc gcc 432  
 Gly Thr Met Leu Cys Cys Arg His Ala Val Pro Ala Ile Val Arg Ala  
 130 135 140  
 ggc ggc ggc gcg gtc gtc aac atg tgc tcc ggc gcc ggc ctg cgc ggc 480  
 Gly Gly Gly Ala Val Val Asn Met Ser Ser Gly Ala Gly Leu Arg Gly  
 145 150 155 160  
 agc ttc ggc ggc cat gcc tac acg gcc gcc aag ggc gcg gtg att gcc 528  
 Ser Phe Gly Gly His Ala Tyr Thr Ala Ala Lys Gly Ala Val Ile Ala  
 165 170 175  
 ctg acc cgc gcg ctg gcc gcc gaa tac gcg ccg cat gga gtg cgg gtc 576  
 Leu Thr Arg Ala Leu Ala Ala Glu Tyr Ala Pro His Gly Val Arg Val  
 180 185 190  
 aac gcc atc tgc gcg ggc cgc atc cgc acc gaa cgc ata ctg cgc aac 624  
 Asn Ala Ile Cys Ala Gly Arg Ile Arg Thr Glu Arg Ile Leu Arg Asn  
 195 200 205  
 ctg gac gcc ggc gca ccg gcg caa gcc ggc gcg gcg caa cgc tat cca 672  
 Leu Asp Ala Gly Ala Pro Ala Gln Ala Gly Ala Ala Gln Arg Tyr Pro  
 210 215 220  
 tgc cgc gag ggc gac ccg atc gac atc gcc cac atc gcg ctg ttc ctg 720  
 Cys Arg Glu Gly Asp Pro Ile Asp Ile Ala His Ile Ala Leu Phe Leu  
 225 230 235 240  
 gcc agc cac gag tgc cgc atg atc acc ggc gag gcc atc gcc gcc aat 768  
 Ala Ser His Glu Ser Arg Met Ile Thr Gly Glu Ala Ile Ala Ala Asn  
 245 250 255  
 ggc ggc tac tgc gcg ttc tga 789  
 Gly Gly Tyr Ser Ala Phe  
 260

<210> 1560  
 <211> 262  
 <212> PRT  
 <213> Bordetella bronchiseptica RB50

## PhoenixTemp32470.tmp.txt

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1 5 10 15
Arg Val Ala Leu Ile Thr Gly Ala Ala Gly Gly Ile Gly Ser Ala Ala
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Ala Leu Arg Phe Ala Ala Glu Gly Ala Ala Leu Ala Leu Asp Arg
35 40 45
Arg Pro Asp Ala Ile Glu Gln Leu Ala Gly Arg Ile Cys Gly Gln Gly
50 55 60
Gly Gln Ala Ile Gly Val Ala Ala Asp Val Thr Asp Asp Ser Val
65 70 75 80
Arg Gln Ala Val Arg Ala Val Glu His Phe Gly Arg Ile Asp Thr
85 90 95
Leu Phe Asn Cys Ala Gly Gly Ser Val Ala Gly Asp Thr Ala Val Asp
100 105 110
Lys Val Glu Leu Ala Leu Trp Asn Arg Thr Leu Arg Leu Asp Leu Asp
115 120 125
Gly Thr Met Leu Cys Cys Arg His Ala Val Pro Ala Ile Val Arg Ala
130 135 140
Gly Gly Gly Ala Val Val Asn Met Ser Ser Gly Ala Gly Leu Arg Gly
145 150 155 160
Ser Phe Gly Gly His Ala Tyr Thr Ala Ala Lys Gly Ala Val Ile Ala
165 170 175
Leu Thr Arg Ala Leu Ala Ala Glu Tyr Ala Pro His Gly Val Arg Val
180 185 190
Asn Ala Ile Cys Ala Gly Arg Ile Arg Thr Glu Arg Ile Leu Arg Asn
195 200 205
Leu Asp Ala Gly Ala Pro Ala Gln Ala Gly Ala Ala Gln Arg Tyr Pro
210 215 220
Cys Arg Glu Gly Asp Pro Ile Asp Ile Ala His Ile Ala Leu Phe Leu
225 230 235 240
Ala Ser His Glu Ser Arg Met Ile Thr Gly Glu Ala Ile Ala Ala Asn
245 250 255
Gly Gly Tyr Ser Ala Phe
260

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<210> 1561
<211> 738
<212> DNA
<213> Bordetella bronchiseptica RB50

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<220>
<221> CDS
<222> (1)..(738)
<223> transl_table=11

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1 5 10 15
acc gcg atc tgc cag cgg ttg gcc aag gac ggc ttc cgg gtg gtg gcg      96
Thr Ala Ile Cys Gln Arg Leu Ala Lys Asp Gly Phe Arg Val Val Ala
20 25 30
ggg tgc ggc ccc agc cgc aac tat cag cag tgg ctc gac gag cag gcg      144
Gly Cys Gly Pro Ser Arg Asn Tyr Gln Gln Trp Leu Asp Glu Gln Ala
35 40 45
gcc cag ggc tat acg ttc tac gca tcg gtg ggc aac gtg tcc gac tgg      192
Ala Gln Gly Tyr Thr Phe Tyr Ala Ser Val Gly Asn Val Ser Asp Trp
50 55 60
gag tcc acc gtc aag gct ttc gag cgc gtc acg gcc gac ctg ggc cag      240
Glu Ser Thr Val Lys Ala Phe Glu Arg Val Thr Ala Asp Leu Gly Gln
65 70 75 80
gtc gac gtg ctg gtc aac aac gcc ggc atc acg cgt gac ggc ctg ttc      288
Val Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Phe
85 90 95
cgc aag atg tcg gtg gac gac tgg cgc gcg gtg atc gac acc aac ctg      336
Arg Lys Met Ser Val Asp Asp Trp Arg Ala Val Ile Asp Thr Asn Leu
100 105 110
aac agc ctg ttc aac gtg acc aag cag gtg ctc gac ggg atg gtg gag      384

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PhoenixTemp32470.tmp.txt

Asn	Ser	Leu	Phe	Asn	Val	Thr	Lys	Gln	Val	Leu	Asp	Gly	Met	Val	Glu		
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Arg	Gln	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ser	Ser	Val	Asn	Gly	Gln	Lys		
130						135					140						
ggg	cag	ttc	ggc	cag	acc	aac	tac	tcg	acc	gcc	aag	gcg	ggc	atc	cat	480	
Gly	Gln	Phe	Gly	Gln	Thr	Asn	Tyr	Ser	Thr	Ala	Lys	Ala	Gly	Ile	His		
145					150					155					160		
ggt	ttc	acc	atg	gcc	ctg	gcc	cag	gag	gtc	gcc	agc	aag	ggc	att	acc	528	
Gly	Phe	Thr	Met	Ala	Leu	Ala	Gln	Glu	Val	Ala	Ser	Lys	Gly	Ile	Thr		
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gtc	aac	acc	att	tcg	ccg	ggc	tac	atc	ggg	acc	gac	atg	gtg	cgg	gcc	576	
Val	Asn	Thr	Ile	Ser	Pro	Gly	Tyr	Ile	Gly	Thr	Asp	Met	Val	Arg	Ala		
			180					185					190				
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Ile	Arg	Pro	Asp	Val	Leu	Glu	Lys	Ile	Val	Ala	Thr	Ile	Pro	Val	Arg		
		195					200					205					
cgg	ctg	ggt	acg	ccc	gag	gaa	atc	gcg	tcc	atg	acg	tcc	tgg	ctg	gcg	672	
Arg	Leu	Gly	Thr	Pro	Glu	Glu	Ile	Ala	Ser	Met	Thr	Ser	Trp	Leu	Ala		
	210					215					220						
tcg	gac	gag	tcg	ggt	ttt	gcc	acg	ggc	gcg	gat	ttc	tcg	ctc	aat	ggc	720	
Ser	Asp	Glu	Ser	Gly	Phe	Ala	Thr	Gly	Ala	Asp	Phe	Ser	Leu	Asn	Gly		
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Gly	Leu	His	Met	Gly													
				245													

<210> 1562  
 <211> 245  
 <212> PRT  
 <213> Bordetella bronchiseptica RB50

<400> 1562

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			20					25					30				
Gly	Cys	Gly	Pro	Ser	Arg	Asn	Tyr	Gln	Gln	Trp	Leu	Asp	Glu	Gln	Ala		
		35				40						45					
Ala	Gln	Gly	Tyr	Thr	Phe	Tyr	Ala	Ser	Val	Gly	Asn	Val	Ser	Asp	Trp		
	50					55					60						
Glu	Ser	Thr	Val	Lys	Ala	Phe	Glu	Arg	Val	Thr	Ala	Asp	Leu	Gly	Gln		
65				70						75				80			
Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Phe		
			85					90					95				
Arg	Lys	Met	Ser	Val	Asp	Asp	Trp	Arg	Ala	Val	Ile	Asp	Thr	Asn	Leu		
		100					105					110					
Asn	Ser	Leu	Phe	Asn	Val	Thr	Lys	Gln	Val	Leu	Asp	Gly	Met	Val	Glu		
		115					120					125					
Arg	Gln	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ser	Ser	Val	Asn	Gly	Gln	Lys		
	130					135					140						
Gly	Gln	Phe	Gly	Gln	Thr	Asn	Tyr	Ser	Thr	Ala	Lys	Ala	Gly	Ile	His		
145				150						155				160			
Gly	Phe	Thr	Met	Ala	Leu	Ala	Gln	Glu	Val	Ala	Ser	Lys	Gly	Ile	Thr		
				165					170					175			
Val	Asn	Thr	Ile	Ser	Pro	Gly	Tyr	Ile	Gly	Thr	Asp	Met	Val	Arg	Ala		
			180					185					190				
Ile	Arg	Pro	Asp	Val	Leu	Glu	Lys	Ile	Val	Ala	Thr	Ile	Pro	Val	Arg		
		195					200					205					
Arg	Leu	Gly	Thr	Pro	Glu	Glu	Ile	Ala	Ser	Met	Thr	Ser	Trp	Leu	Ala		
	210					215					220						
Ser	Asp	Glu	Ser	Gly	Phe	Ala	Thr	Gly	Ala	Asp	Phe	Ser	Leu	Asn	Gly		
225				230						235					240		
Gly	Leu	His	Met	Gly													
				245													

<210> 1563  
 <211> 741  
 <212> DNA

&lt;213&gt; Chromobacterium violaceum ATCC 12472

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1563

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1				5				10					15				
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Ile	Gly	Lys	Ala	Thr	Ala	Glu	Lys	Phe	Val	Lys	Glu	Gly	Ala	Ile	Val		
			20					25					30				
gcg	gtg	tgc	gac	ctg	aac	ccg	gac	gcg	gtc	aaa	acc	gtc	gtc	gac	gaa		144
Ala	Val	Cys	Asp	Leu	Asn	Pro	Asp	Ala	Val	Lys	Thr	Val	Val	Asp	Glu		
		35					40					45					
ctg	aaa	gcc	ctg	ggc	gga	gaa	gct	tac	ggc	tac	aag	gtg	gat	gtg	act		192
Leu	Lys	Ala	Leu	Gly	Gly	Glu	Ala	Tyr	Gly	Tyr	Lys	Val	Asp	Val	Thr		
	50					55					60						
gac	aag	ggc	cag	atc	gcc	gag	atg	gtg	gcc	gac	ctg	aag	aac	cgt	tgc		240
Asp	Lys	Gly	Gln	Ile	Ala	Glu	Met	Val	Ala	Asp	Leu	Lys	Asn	Arg	Cys		
	65				70				75						80		
ggc	cgc	atc	gac	gtg	ctg	gtc	aac	aac	gcc	ggc	atc	gtc	cag	gat	gcc		288
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Val	Gln	Asp	Ala		
			85						90					95			
cag	ctg	atc	aag	atg	agc	gaa	gac	cag	ttc	gac	aag	gtg	atc	gac	atc		336
Gln	Leu	Ile	Lys	Met	Ser	Glu	Asp	Gln	Phe	Asp	Lys	Val	Ile	Asp	Ile		
			100					105					110				
aac	ctg	aag	ggc	gtt	tac	aac	tgt	gac	gcc	gtg	gtg	gat	act	atg			384
Asn	Leu	Lys	Gly	Val	Tyr	Asn	Cys	Ala	Arg	Ala	Val	Val	Asp	Thr	Met		
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gtg	gag	cag	ggc	ggc	ggc	gtg	atc	ctc	aac	gcc	tcg	tcg	gtg	gtg	ggc		432
Val	Glu	Gln	Gly	Gly	Gly	Val	Ile	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly		
	130					135					140						
gtt	tac	ggc	aat	ttc	ggc	cag	acc	aac	tac	gcg	gac	gac	aag	ttc	ggc		480
Val	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ala	Lys	Phe	Gly		
	145				150					155					160		
gtg	atc	ggc	ttc	gtc	aag	acc	tgg	gcc	aag	gaa	ttg	ggc	aag	aag	ggc		528
Val	Ile	Gly	Phe	Val	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Gly	Lys	Lys	Gly		
				165					170					175			
atc	cgc	gcc	aac	gcg	gtg	tgt	ccg	ggc	ttc	gtc	gcc	acc	ccc	atc	ctg		576
Ile	Arg	Ala	Asn	Ala	Val	Cys	Pro	Gly	Phe	Val	Ala	Thr	Pro	Ile	Leu		
			180					185					190				
aag	gcc	atg	ccg	gaa	aaa	gtg	ctg	cag	gcg	atg	gaa	gac	aag	gtg	ccg		624
Lys	Ala	Met	Pro	Glu	Lys	Val	Leu	Gln	Ala	Met	Glu	Asp	Lys	Val	Pro		
		195					200					205					
atg	cgc	cgg	atg	gcc	gat	ccg	gcc	gag	atc	gcc	aac	gtc	tac	gcc	ttc		672
Met	Arg	Arg	Met	Ala	Asp	Pro	Ala	Glu	Ile	Ala	Asn	Val	Tyr	Ala	Phe		
		210				215					220						
ctg	gcg	tcg	gac	gag	gcc	agc	tac	atc	aac	ggc	gcc	gcc	atc	gag	gtg		720
Leu	Ala	Ser	Asp	Glu	Ala	Ser	Tyr	Ile	Asn	Gly	Ala	Ala	Ile	Glu	Val		
				225		230				235					240		
acc	ggc	ggt	ttg	acg	ctg	taa											741
Thr	Gly	Gly	Leu	Thr	Leu												
				245													

&lt;210&gt; 1564

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Chromobacterium violaceum ATCC 12472

&lt;400&gt; 1564

Met	Arg	Leu	Lys	Gly	Lys	Val	Ser	Ile	Ile	Thr	Gly	Ser	Ala	Ser	Gly		
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Ile	Gly	Lys	Ala	Thr	Ala	Glu	Lys	Phe	Val	Lys	Glu	Gly	Ala	Ile	Val		
			20					25					30				
Ala	Val	Cys	Asp	Leu	Asn	Pro	Asp	Ala	Val	Lys	Thr	Val	Val	Asp	Glu		
		35					40					45					

## PhoenixTemp32470.tmp.txt

Leu Lys Ala Leu Gly Gly Glu Ala Tyr Gly Tyr Lys Val Asp Val Thr  
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 Asp Lys Gly Gln Ile Ala Glu Met Val Ala Asp Leu Lys Asn Arg Cys  
 65 70 75 80  
 Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Val Gln Asp Ala  
 85 90 95  
 Gln Leu Ile Lys Met Ser Glu Asp Gln Phe Asp Lys Val Ile Asp Ile  
 100 105 110  
 Asn Leu Lys Gly Val Tyr Asn Cys Ala Arg Ala Val Val Asp Thr Met  
 115 120 125  
 Val Glu Gln Gly Gly Gly Val Ile Leu Asn Ala Ser Ser Val Val Gly  
 130 135 140  
 Val Tyr Gly Asn Phe Gly Gln Thr Asn Tyr Ala Ala Lys Phe Gly  
 145 150 155 160  
 Val Ile Gly Phe Val Lys Thr Trp Ala Lys Glu Leu Gly Lys Lys Gly  
 165 170 175  
 Ile Arg Ala Asn Ala Val Cys Pro Gly Phe Val Ala Thr Pro Ile Leu  
 180 185 190  
 Lys Ala Met Pro Glu Lys Val Leu Gln Ala Met Glu Asp Lys Val Pro  
 195 200 205  
 Met Arg Arg Met Ala Asp Pro Ala Glu Ile Ala Asn Val Tyr Ala Phe  
 210 215 220  
 Leu Ala Ser Asp Glu Ala Ser Tyr Ile Asn Gly Ala Ala Ile Glu Val  
 225 230 235 240  
 Thr Gly Gly Leu Thr  
 245

&lt;210&gt; 1565

&lt;211&gt; 735

&lt;212&gt; DNA

&lt;213&gt; Rhodopseudomonas palustris CGA009

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(735)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1565

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Ala Gly Ile Gly Arg Ala Ser Ala Ile Ala Phe Ala Arg Glu Gly Ala	
20 25 30	
gaa gta ttc gcc acc gat atc gat gag gcc ggg ctt gcc tcg ctc gcc	144
Glu Val Phe Ala Thr Asp Ile Asp Glu Ala Gly Leu Ala Ser Leu Ala	
35 40 45	
gag cac ggc att gcg cgg acc gcc aag ctc gac gtc cgc gac acc gcc	192
Glu His Gly Ile Ala Arg Thr Ala Lys Leu Asp Val Arg Asp Thr Ala	
50 55 60	
gcg gtc gaa gcg atc gcc cgc gag gcc ggc acc gtc gac atc ctg ctc	240
Ala Val Glu Ala Ile Ala Arg Glu Ala Gly Thr Val Asp Ile Leu Leu	
65 70 75 80	
aac gct gcc ggc ttc gtg cat cat ggc acg gtg ctc gac tgc tcg gat	288
Asn Ala Ala Gly Phe Val His His Gly Thr Val Leu Asp Cys Ser Asp	
85 90 95	
acg gat tgg gac ttt tcg ttc gac ctc aac gtc aag tcg atg cac cgc	336
Thr Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg	
100 105 110	
acc atc cgc gcg ttt ctt cct gca atg ctg gaa gcc ggc cgc ggc tcg	384
Thr Ile Arg Ala Phe Leu Pro Ala Met Leu Glu Ala Gly Arg Gly Ser	
115 120 125	
atc gtc aac atc tcg tcg gcc ggc gtg ttc aag gcg gca ccg aac	432
Ile Val Asn Ile Ser Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn	
130 135 140	
cgc tac gtc tat ggc gcc acc aaa gcc gca gtg gcg gcg ctg acc cgc	480
Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg	
145 150 155 160	
gcg gtc gcg gtg gac ttc atc act cgc ggc atc cgc tgc aac gcg atc	528



PhoenixTemp32470.tmp.txt

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				165					170					175			
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Cys	Pro	Gly	Thr	Ile	Glu	Thr	Pro	Ser	Met	Leu	Gly	Arg	Ala	Ala	Ala		
			180					185					190				
ctc	ggg	ccg	cag	ggc	cgc	gag	atg	ttc	gtg	tca	cgc	cag	ccg	atg	ggc	624	
Leu	Gly	Pro	Gln	Gly	Arg	Glu	Met	Phe	Val	Ser	Arg	Gln	Pro	Met	Gly		
		195					200					205					
cgt	ctc	ggc	aac	gcc	gag	gag	atc	gcc	gcg	ctg	gcg	gtg	tac	ctc	gcc	672	
Arg	Leu	Gly	Asn	Ala	Glu	Glu	Ile	Ala	Ala	Leu	Ala	Val	Tyr	Leu	Ala		
	210				215				220								
tcc	gac	gaa	agc	gcc	ttc	acc	acc	ggc	gtc	gcg	cac	atc	atc	gac	ggc	720	
Ser	Asp	Glu	Ser	Ala	Phe	Thr	Thr	Gly	Val	Ala	His	Ile	Ile	Asp	Gly		
	225				230				235						240		
ggc	tgg	acg	ttg	taa												735	
Gly	Trp	Thr	Leu														

<210> 1566  
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 <213> Rhodopseudomonas palustris CGA009

<400> 1566

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			20					25					30				
Glu	Val	Phe	Ala	Thr	Asp	Ile	Asp	Glu	Ala	Gly	Leu	Ala	Ser	Leu	Ala		
		35					40					45					
Glu	His	Gly	Ile	Ala	Arg	Thr	Ala	Lys	Leu	Asp	Val	Arg	Asp	Thr	Ala		
	50					55					60						
Ala	Val	Glu	Ala	Ile	Ala	Arg	Glu	Ala	Gly	Thr	Val	Asp	Ile	Leu	Leu		
65				70					75					80			
Asn	Ala	Ala	Gly	Phe	Val	His	His	Gly	Thr	Val	Leu	Asp	Cys	Ser	Asp		
			85					90						95			
Thr	Asp	Trp	Asp	Phe	Ser	Phe	Asp	Leu	Asn	Val	Lys	Ser	Met	His	Arg		
		100					105					110					
Thr	Ile	Arg	Ala	Phe	Leu	Pro	Ala	Met	Leu	Glu	Ala	Gly	Arg	Gly	Ser		
		115					120					125					
Ile	Val	Asn	Ile	Ser	Ser	Ala	Gly	Val	Phe	Lys	Ala	Ala	Pro	Asn			
	130					135				140							
Arg	Tyr	Val	Tyr	Gly	Ala	Thr	Lys	Ala	Ala	Val	Ala	Ala	Leu	Thr	Arg		
145				150					155					160			
Ala	Val	Ala	Val	Asp	Phe	Ile	Thr	Arg	Gly	Ile	Arg	Cys	Asn	Ala	Ile		
			165					170						175			
Cys	Pro	Gly	Thr	Ile	Glu	Thr	Pro	Ser	Met	Leu	Gly	Arg	Ala	Ala	Ala		
		180						185					190				
Leu	Gly	Pro	Gln	Gly	Arg	Glu	Met	Phe	Val	Ser	Arg	Gln	Pro	Met	Gly		
		195					200					205					
Arg	Leu	Gly	Asn	Ala	Glu	Glu	Ile	Ala	Ala	Leu	Ala	Val	Tyr	Leu	Ala		
	210				215					220							
Ser	Asp	Glu	Ser	Ala	Phe	Thr	Thr	Gly	Val	Ala	His	Ile	Ile	Asp	Gly		
225					230				235					240			
Gly	Trp	Thr	Leu														

<210> 1567  
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 <212> DNA  
 <213> Mycobacterium avium subsp. paratuberculosis K-10

<220>  
 <221> CDS  
 <222> (1)..(750)  
 <223> transl\_table=11

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 Page 954

## PhoenixTemp32470.tmp.txt

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ggg Gly	gcg Ala	cgg Arg 35	gtc Val	gtc Val	ctc Leu	ggc Gly	gac Asp 40	gtc Val	aat Asn	ctg Leu	gag Glu	gcg Ala 45	acg Thr	caa Gln	acc Thr	144
gcg Ala	gcc Ala 50	aaa Lys	cag Gln	ctg Leu	ggc Gly	ggt Gly 55	gac Asp	cag Gln	gtg Val	gcg Ala 60	ctg Leu	gcc Ala	gtg Val	cgc Arg	tgc Cys	192
gac Asp 65	gtc Val	acc Thr	aag Lys	tcg Ser	tcc Ser 70	gag Glu	gtc Val	gaa Glu	acg Thr	ctg Leu 75	atc Ile	cag Gln	acc Thr	gcc Ala	gtc Val 80	240
gag Glu	cgg Arg	ttc Phe	ggc Gly 85	ggc Gly	ctg Leu	gac Asp	atc Ile	atg Met	gtc Val 90	aac Asn	aac Asn	gcc Ala	ggg Gly	atc Ile 95	acc Thr	288
cgg Arg	gac Asp	gcc Ala 100	acc Thr	atg Met	cgc Arg	aag Lys	atg Met	acc Thr 105	gag Glu	gag Glu	cag Gln	ttc Phe 110	gat Asp 110	cag Gln	gtc Val	336
atc Ile	gcc Ala 115	gtg Val	cac His	ttg Leu	aag Lys	ggc Gly	acc Thr 120	tgg Trp	aac Asn	ggc Gly	acc Thr 125	cga Arg 125	ttg Leu	gcg Ala	gcg Ala	384
gcg Ala 130	atc Ile	atg Met	cgg Arg	gaa Glu	aac Asn	aag Lys 135	cgc Arg	ggc Gly	gcc Ala	atc Ile 140	atc Ile	aac Asn	atg Met	tcg Ser	tcg Ser	432
gtg Val 145	tcg Ser	ggc Gly	aag Lys	gtc Val	ggc Gly 150	atg Met	gtc Val	ggc Gly	cag Gln	acc Thr 155	aac Asn	tac Tyr	tcg Ser	gcg Ala	gcc Ala 160	480
aag Lys	gcc Ala	ggc Gly	atc Ile 165	gtg Val	ggc Gly	atg Met	acc Thr	aag Lys 170	gcg Ala	gcc Ala	aag Lys	gag Glu	ctg Leu 175	gcc Ala		528
tac Tyr	ctg Leu	ggt Gly 180	gtg Val	cgg Arg	gtg Val	aac Asn	gcg Ala	atc Ile 185	gcc Ala	ccc Pro	ggt Gly	ttg Leu 190	atc Ile	cgc Arg	tcg Ser	576
gcg Ala	atg Met 195	aca Thr	gag Glu	gcc Ala	atg Met	ccg Pro	caa Gln 200	cgc Arg	att Ile	tgg Trp	gac Asp	tcc Ser 205	aag Lys	gtg Val	gcc Ala	624
gag Glu 210	gtg Val	tcg Ser	atg Met	ggc Gly	cgg Arg	gcc Ala 215	ggc Gly	gag Glu	ccc Pro	agc Ser	gag Glu 220	gtc Val	gcc Ala	agc Ser	gtg Val	672
gcg Ala 225	ctg Leu	ttt Phe	ttg Leu	gcc Ala 230	tcc Ser	gac Asp	atg Met	tcg Ser	tcg Ser 235	tac Tyr	atg Met	acc Thr	ggc Gly	acc Thr	gtc Val 240	720
atg Met	gag Glu	atc Ile	acg Thr	ggc Gly 245	ggc Gly	cgg Arg	cac His	ctg Leu	tga							750

&lt;210&gt; 1568

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium avium subsp. paratuberculosis K-10

&lt;400&gt; 1568

Met 1	Val	Gln	Val	Ser 5	Leu	Leu	Ser	Gly	Gln 10	Thr	Ala	Val	Ile	Thr 15	Gly	
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Gly Ala	Ala Ala	Arg Arg 35	Val Val	Val Val	Leu Leu	Gly Gly	Asp Asp 40	Val Val	Asn Asn	Leu Leu	Glu Glu	Ala Ala 45	Thr Thr	Gln Gln	Thr Thr	
Ala Asp 65	Ala Val	Lys Thr	Gln Lys	Leu Ser	Gly Ser 70	Gly Glu	Asp Val	Gln Glu	Val Thr	Ala Leu 75	Ala Ile	Ala Gln	Val Thr	Arg Ala	Cys Val 80	
Glu Glu	Arg Arg	Phe Phe	Gly Gly 85	Gly Leu	Leu Asp	Asp Ile	Ile Met	Met Val	Val Asn	Asn Asn	Ala Ala	Gly Gly	Ile Ile 95	Thr Thr	Val Val	
Arg Ile	Asp Ala	Ala Val	Thr His	Met Leu	Arg Lys	Lys Gly	Met Thr	Thr Trp	Glu Asn	Glu Gly	Gln Thr	Phe Arg	Asp Leu	Gln Ala	Val Ala	

## PhoenixTemp32470.tmp.txt

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115
Ala Ile Met Arg Glu Asn Lys 120 Arg Gly Ala Ile Ile 125 Asn Met Ser Ser
130
Val Ser Gly Lys Val Gly Met 135 Val Gly Gln Thr Asn Tyr Ser Ala Ala
145
Lys Ala Gly Ile Val Gly Met Thr Lys Ala 155 Ala Ala Lys Glu Leu Ala
160
Tyr Leu Gly Val Arg Val Asn Ala Ile 170 Ala Pro Gly Leu Ile Arg Ser
180
Ala Met Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Ser Lys Val Ala
195
Glu Val Ser Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val
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ggg aac gga gct gga att gct cat gta ttt gca gag cta ggg gcg aaa      96
Gly Asn Gly Ala Gly Ile Ala His Val Phe Ala Glu Leu Gly Ala Lys
20
gta tta ctt gtt gat att tca gag aca gtt cat gag aca gcc aaa aat      144
Val Leu Leu Val Asp Ile Ser Glu Thr Val His Glu Thr Ala Lys Asn
35
att gta agt aaa ggg tta gat gct gca agt tat gta gtc gat gta gct      192
Ile Val Ser Lys Gly Leu Asp Ala Ala Ser Tyr Val Val Asp Val Ala
50
gat atg gat gct gtt aaa gaa gta gcg aaa gat gca tat gag aag tac      240
Asp Met Asp Ala Val Lys Glu Val Ala Lys Asp Ala Tyr Glu Lys Tyr
65
gga aag att gat gtg tta gta aat aac gcc ggt gtt att cga ctt gca      288
Gly Lys Ile Asp Val Leu Val Asn Asn Ala Gly Val Ile Arg Leu Ala
85
aat ttt tta gat atg tca gat gaa atg cgt gat ttt caa ttt caa gta      336
Asn Phe Leu Asp Met Ser Asp Glu Met Arg Asp Phe Gln Phe Gln Val
100
aat att aat ggg gta tgg aat ttt tct aaa gcg gta ttg cca tat atg      384
Asn Ile Asn Gly Val Trp Asn Phe Ser Lys Ala Val Leu Pro Tyr Met
115
gtt gag aaa aat tac gga aag att gtg aat atg tct tct gta aca gga      432
Val Glu Lys Asn Tyr Gly Lys Ile Val Asn Met Ser Ser Val Thr Gly
130
aca ttg gtt gct gat gaa ggt gaa act gca tat gca acg acg aaa gca      480
Thr Leu Val Ala Asp Glu Gly Glu Thr Ala Tyr Ala Thr Thr Lys Ala
145
gca att tgg gga ttt aca aaa gcg tta gca cga gaa gtt gca aaa cat      528
Ala Ile Trp Gly Phe Thr Lys Ala Leu Ala Arg Glu Val Ala Lys His
165
cat att acc gta aat gca att tgt cca ggt tac att atg aca cca atg      576
His Ile Thr Val Asn Ala Ile Cys Pro Gly Tyr Ile Met Thr Pro Met
180
gca gag caa ata gca aat gaa tct gat cca aat gag ccg agt aat gta      624
Ala Glu Gln Ile Ala Asn Glu Ser Asp Pro Asn Glu Pro Ser Asn Val
195
atc gat gga att gct tca ggt gtt cct tta gga cgt tta ggg aaa att      672

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PhoenixTemp32470.tmp.txt

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Glu	Glu	Val	Gly	Gln	Leu	Ala	Gly	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser		
225					230					235					240		
tac	ata	aca	ggt	aca	cac	att	gtc	att	gat	ggt	ggt	agt	aca	ttg	cca		768
Tyr	Ile	Thr	Gly	Thr	His	Ile	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro		
				245					250					255			
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Glu	Thr	Val	Ser	Val	Gly	Val	Lys										
			260														

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 <212> PRT  
 <213> Bacillus cereus ATCC 10987

<400> 1570

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			20					25					30				
Val	Leu	Leu	Val	Asp	Ile	Ser	Glu	Thr	Val	His	Glu	Thr	Ala	Lys	Asn		
		35					40					45					
Ile	Val	Ser	Lys	Gly	Leu	Asp	Ala	Ala	Ser	Tyr	Val	Val	Asp	Val	Ala		
	50					55					60						
Asp	Met	Asp	Ala	Val	Lys	Glu	Val	Ala	Lys	Asp	Ala	Tyr	Glu	Lys	Tyr		
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Gly	Lys	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Ile	Arg	Leu	Ala		
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		115					120					125					
Val	Glu	Lys	Asn	Tyr	Gly	Lys	Ile	Val	Asn	Met	Ser	Ser	Val	Thr	Gly		
	130					135					140						
Thr	Leu	Val	Ala	Asp	Glu	Gly	Glu	Thr	Ala	Tyr	Ala	Thr	Thr	Lys	Ala		
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Ala	Ile	Trp	Gly	Phe	Thr	Lys	Ala	Leu	Ala	Arg	Glu	Val	Ala	Lys	His		
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His	Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Ile	Met	Thr	Pro	Met		
			180					185					190				
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		195					200					205					
Ile	Asp	Gly	Ile	Ala	Ser	Gly	Val	Pro	Leu	Gly	Arg	Leu	Gly	Lys	Ile		
	210					215					220						
Glu	Glu	Val	Gly	Gln	Leu	Ala	Gly	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser		
225					230					235					240		
Tyr	Ile	Thr	Gly	Thr	His	Ile	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro		
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 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (119)..(871)

<400> 1571

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## PhoenixTemp32470.tmp.txt

atg	gaa	gga	aaa	gtt	gct	ctc	att	aca	gga	tcc	agt	tcg	ggt	ata	ggt	166
Met	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ser	Ser	Ser	Gly	Ile	Gly	
1				5					10					15		
gct	ggt	atc	gca	gag	cgt	ttc	gct	gag	att	ggt	tgc	cgc	ctt	gct	ctc	214
Ala	Gly	Ile	Ala	Glu	Arg	Phe	Ala	Glu	Ile	Gly	Cys	Arg	Leu	Ala	Leu	
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act	gga	aga	gac	gca	gaa	aaa	ctg	aaa	gat	gtc	ggg	aaa	tca	tgc	tgt	262
Thr	Gly	Arg	Asp	Ala	Glu	Lys	Leu	Lys	Asp	Val	Gly	Lys	Ser	Cys	Cys	
			35				40					45				
gaa	cgt	ggg	ctc	agc	gaa	aaa	gag	atc	tta	gtt	att	gct	gcc	gat	ttg	310
Glu	Arg	Gly	Leu	Ser	Glu	Lys	Glu	Ile	Leu	Val	Ile	Ala	Ala	Asp	Leu	
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Thr	Glu	Asp	Glu	Asp	Leu	Glu	Arg	Ile	Phe	Ser	Lys	Thr	Ile	Glu	Lys	
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ttt	gga	cgc	ctc	gat	atc	ctt	ata	aat	aac	gca	ggt	cgt	cca	gct	aaa	406
Phe	Gly	Arg	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Arg	Pro	Ala	Lys	
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gga	aga	ttc	cat	gac	ctg	cag	atg	aca	ttc	ttt	gat	gac	gtc	atg	agg	454
Gly	Arg	Phe	His	Asp	Leu	Gln	Met	Thr	Phe	Phe	Asp	Asp	Val	Met	Arg	
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Leu	Asn	Leu	Arg	Ser	Ala	Ile	Tyr	Leu	Ser	Lys	Leu	Ala	Ile	Pro	Tyr	
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Leu	Lys	Glu	Ser	Lys	Gly	Cys	Val	Val	Asn	Met	Ser	Ser	Val	Ala	Ser	
	130				135						140					
aaa	act	aca	tgc	gat	tac	aac	cct	aca	tat	tca	ata	tcg	aag	gtc	gct	598
Lys	Thr	Thr	Cys	Asp	Tyr	Asn	Pro	Thr	Tyr	Ser	Ile	Ser	Lys	Val	Ala	
	145				150					155					160	
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Leu	Asp	Gln	Phe	Thr	Lys	Ser	Leu	Ala	Val	Glu	Leu	Gly	Pro	Tyr	Gly	
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gta	aga	gtt	aat	tct	ctc	aat	cct	ggc	gtc	atc	ttg	act	cct	ctc	tat	694
Val	Arg	Val	Asn	Ser	Leu	Asn	Pro	Gly	Val	Ile	Leu	Thr	Pro	Leu	Tyr	
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cga	aac	ctc	ggg	aag	agc	gac	gct	caa	gtg	atc	acg	tgg	tcc	aag	tca	742
Arg	Asn	Leu	Gly	Lys	Ser	Asp	Ala	Gln	Val	Ile	Thr	Trp	Ser	Lys	Ser	
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Met	His	Pro	Ile	Gly	Arg	His	Gly	Thr	Val	Asp	Glu	Val	Val	Lys	Ala	
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Thr	Glu	Tyr	Leu	Val	Ser	Asp	Ala	Ser	Arg	Cys	Val	Thr	Gly	Thr	Leu	
	225				230					235					240	
ctt	tct	att	gat	gga	gga	cgc	ttt	cta	atg	tga						871
Leu	Ser	Ile	Asp	Gly	Gly	Arg	Phe	Leu	Met							
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&lt;210&gt; 1572

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Strongylocentrotus purpuratus

&lt;400&gt; 1572

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Thr	Gly	Arg	Asp	Ala	Glu	Lys	Leu	Lys	Asp	Val	Gly	Lys	Ser	Cys	Cys	
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Glu	Arg	Gly	Leu	Ser	Glu	Lys	Glu	Ile	Leu	Val	Ile	Ala	Ala	Asp	Leu	
	50					55					60					
Thr	Glu	Asp	Glu	Asp	Leu	Glu	Arg	Ile	Phe	Ser	Lys	Thr	Ile	Glu	Lys	
	65				70					75					80	
Phe	Gly	Arg	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Arg	Pro	Ala	Lys	
				85					90					95		
Gly	Arg	Phe	His	Asp	Leu	Gln	Met	Thr	Phe	Phe	Asp	Asp	Val	Met	Arg	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Leu Asn Leu Arg Ser Ala Ile Tyr Leu Ser Lys Leu Ala Ile Pro Tyr  
 115 120 125  
 Leu Lys Glu Ser Lys Gly Cys Val Val Asn Met Ser Ser Val Ala Ser  
 130 135 140  
 Lys Thr Thr Cys Asp Tyr Asn Pro Thr Tyr Ser Ile Ser Lys Val Ala  
 145 150 155 160  
 Leu Asp Gln Phe Thr Lys Ser Leu Ala Val Glu Leu Gly Pro Tyr Gly  
 165 170 175  
 Val Arg Val Asn Ser Leu Asn Pro Gly Val Ile Leu Thr Pro Leu Tyr  
 180 185 190  
 Arg Asn Leu Gly Lys Ser Asp Ala Gln Val Ile Thr Trp Ser Lys Ser  
 195 200 205  
 Met His Pro Ile Gly Arg His Gly Thr Val Asp Glu Val Val Lys Ala  
 210 215 220  
 Thr Glu Tyr Leu Val Ser Asp Ala Ser Arg Cys Val Thr Gly Thr Leu  
 225 230 235 240  
 Leu Ser Ile Asp Gly Gly Arg Phe Leu Met  
 245 250

&lt;210&gt; 1573

&lt;211&gt; 833

&lt;212&gt; DNA

&lt;213&gt; Strongylocentrotus purpuratus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (81)..(833)

&lt;400&gt; 1573

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aaaggagtat catattcata atg gaa gga aaa gtt gct ctc att aca gga tcc 113

 Met Glu Gly Lys Val Ala Leu Ile Thr Gly Ser  
 1 5 10

agt tcg ggt ata ggt gct ggt atc gca gag cgt ttc gct gag ctt ggc 161

 Ser Ser Gly Ile Gly Ala Gly Ile Ala Glu Arg Phe Ala Glu Leu Gly  
 15 20 25

tgc cgt ctt gct ctc acc gga agg gac gca gaa aaa ctg aaa gat gtc 209

 Cys Arg Leu Ala Leu Thr Gly Arg Asp Ala Glu Lys Leu Lys Asp Val  
 30 35 40

ggg aaa tca tgc tgt gaa cgt ggg ctc agc gaa aaa gag att tta ctt 257

 Gly Lys Ser Cys Cys Glu Arg Gly Leu Ser Glu Lys Glu Ile Leu Leu  
 45 50 55

att gct gcc gat ttg act gaa gat gaa gac tta gaa agg ata ttt tca 305

 Ile Ala Ala Asp Leu Thr Glu Asp Glu Asp Leu Glu Arg Ile Phe Ser  
 60 65 70 75

aag aca ata gaa aag ttt gga cgc ctt gat atc ctt ata aat aac gca 353

 Lys Thr Ile Glu Lys Phe Gly Arg Leu Asp Ile Leu Ile Asn Asn Ala  
 80 85 90

ggt cgt cca gct aaa gga aga ttt cat gac ctg cag atg acc ttc ttt 401

 Gly Arg Pro Ala Lys Gly Arg Phe His Asp Leu Gln Met Thr Phe Phe  
 95 100 105

gat gac gtc atg agg ctg aat ctg aga tca gct att tac ctt tcc aag 449

 Asp Asp Val Met Arg Leu Asn Leu Arg Ser Ala Ile Tyr Leu Ser Lys  
 110 115 120

ctg gcc atc cca tat ttg aaa gaa tca aaa ggc tgc gtc gtg aac atg 497

 Leu Ala Ile Pro Tyr Leu Lys Glu Ser Lys Gly Cys Val Val Asn Met  
 125 130 135

tcg agt gtt gct tcc aaa act aca tgc gac tac aac cct aca tat tca 545

 Ser Ser Val Ala Ser Lys Thr Thr Cys Asp Tyr Asn Pro Thr Tyr Ser  
 140 145 150 155

ata tcg aag gtc gct ctt gat cag ttc aca aaa agc ctt gca gtt gaa 593

 Ile Ser Lys Val Ala Leu Asp Gln Phe Thr Lys Ser Leu Ala Val Glu  
 160 165 170

ctg gga ccc tac ggc gtc aga gtt aat tct ctc aat cct ggc gtc atc 641

 Leu Gly Pro Tyr Gly Val Arg Val Asn Ser Leu Asn Pro Gly Val Ile  
 175 180 185

tta act cct ctc tac cga aac ctc ggg aag agc gac gcc caa gtg atc 689

## PhoenixTemp32470.tmp.txt

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Thr	Trp	Ser	Lys	Ser	Met	His	Pro	Ile	Gly	Arg	His	Gly	Thr	Val	Asp		
	205					210					215						
gag	gtc	gtc	aag	gca	acc	gaa	tat	ttg	gtg	tgc	gat	act	tca	aga	tgt		785
Glu	Val	Val	Lys	Ala	Thr	Glu	Tyr	Leu	Val	Ser	Asp	Thr	Ser	Arg	Cys		
220					225					230					235		
gtg	act	ggg	acg	ctg	ctt	tct	att	gac	gga	gga	cgc	ttt	cta	atg			830
Val	Thr	Gly	Thr	Leu	Leu	Ser	Ile	Asp	Gly	Gly	Arg	Phe	Leu	Met			
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tga																	833

&lt;210&gt; 1574

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Strongylocentrotus purpuratus

&lt;400&gt; 1574

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			20					25					30				
Thr	Gly	Arg	Asp	Ala	Glu	Lys	Leu	Lys	Asp	Val	Gly	Lys	Ser	Cys	Cys		
		35					40					45					
Glu	Arg	Gly	Leu	Ser	Glu	Lys	Glu	Ile	Leu	Leu	Ile	Ala	Ala	Asp	Leu		
	50					55					60						
Thr	Glu	Asp	Glu	Asp	Leu	Glu	Arg	Ile	Phe	Ser	Lys	Thr	Ile	Glu	Lys		
65					70					75					80		
Phe	Gly	Arg	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Arg	Pro	Ala	Lys		
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Gly	Arg	Phe	His	Asp	Leu	Gln	Met	Thr	Phe	Phe	Asp	Asp	Val	Met	Arg		
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Leu	Asn	Leu	Arg	Ser	Ala	Ile	Tyr	Leu	Ser	Lys	Leu	Ala	Ile	Pro	Tyr		
		115					120					125					
Leu	Lys	Glu	Ser	Lys	Gly	Cys	Val	Val	Asn	Met	Ser	Ser	Val	Ala	Ser		
	130					135					140						
Lys	Thr	Thr	Cys	Asp	Tyr	Asn	Pro	Thr	Tyr	Ser	Ile	Ser	Lys	Val	Ala		
145					150					155					160		
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Val	Arg	Val	Asn	Ser	Leu	Asn	Pro	Gly	Val	Ile	Leu	Thr	Pro	Leu	Tyr		
			180					185					190				
Arg	Asn	Leu	Gly	Lys	Ser	Asp	Ala	Gln	Val	Ile	Thr	Trp	Ser	Lys	Ser		
		195					200					205					
Met	His	Pro	Ile	Gly	Arg	His	Gly	Thr	Val	Asp	Glu	Val	Val	Lys	Ala		
	210					215					220						
Thr	Glu	Tyr	Leu	Val	Ser	Asp	Thr	Ser	Arg	Cys	Val	Thr	Gly	Thr	Leu		
225					230					235					240		
Leu	Ser	Ile	Asp	Gly	Gly	Arg	Phe	Leu	Met								
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&lt;210&gt; 1575

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Drosophila pseudoobscura

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;400&gt; 1575

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att	ggg	gca	gcc	att	gcc	cag	gtt	ttg	gcc	cgc	gag	gga	gcc	ctt	ctg		96
Ile	Gly	Ala	Ala	Ile	Ala	Gln	Val	Leu	Ala	Arg	Glu	Gly	Ala	Leu	Leu		

## PhoenixTemp32470.tmp.txt

gcg	ctg	gtg	ggg	ctg	aac	gta	gct	aac	ctg	gag	gcc	acc	cgg	aag	acc	144
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		35					40					45				
cta	cag	cag	cag	gtg	aag	ggc	att	cgg	gcg	gag	atc	ata	gcc	gcg	gac	192
Leu	Gln	Gln	Gln	Val	Lys	Gly	Ile	Arg	Ala	Glu	Ile	Ile	Ala	Ala	Asp	
	50					55					60					
gtg	acc	aag	gat	gca	gcg	gcc	att	gtc	cag	cag	acg	atc	act	cag	ttc	240
Val	Thr	Lys	Asp	Ala	Ala	Ala	Ile	Val	Gln	Gln	Thr	Ile	Thr	Gln	Phe	
	65				70					75					80	
ggc	cg	atc	gat	gtg	ctg	gta	aac	aac	gcc	gga	atc	ctg	ggc	aag	ggc	288
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Leu	Gly	Lys	Gly	
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ggc	ctc	att	gac	ctg	gac	atc	gag	gaa	ttc	gac	tcg	gtg	cta	aac	acg	336
Gly	Leu	Ile	Asp	Leu	Asp	Ile	Glu	Glu	Phe	Asp	Ser	Val	Leu	Asn	Thr	
			100				105						110			
aac	ctg	cg	ggc	gtc	gtc	ctc	ctc	acc	aag	g	gtg	ctg	cca	cat	ctc	384
Asn	Leu	Arg	Gly	Val	Val	Leu	Leu	Thr	Lys	Ala	Val	Leu	Pro	His	Leu	
		115					120					125				
ctg	cag	acc	aag	gga	gcc	gtg	gtc	aat	gtg	agc	agc	tgt	gcc	ggt	ctg	432
Leu	Gln	Thr	Lys	Gly	Ala	Val	Val	Asn	Val	Ser	Ser	Cys	Ala	Gly	Leu	
	130					135					140					
cga	ccc	ttt	gcg	ggc	gct	ctc	agc	tac	ggt	gta	tcc	aag	gcg	gcc	ctc	480
Arg	Pro	Phe	Ala	Gly	Ala	Leu	Ser	Tyr	Gly	Val	Ser	Lys	Ala	Ala	Leu	
	145				150					155					160	
gac	cag	ttc	acc	cgg	atc	gtg	gcc	ctc	gag	atg	gcc	cca	cag	gga	gtg	528
Asp	Gln	Phe	Thr	Arg	Ile	Val	Ala	Leu	Glu	Met	Ala	Pro	Gln	Gly	Val	
				165					170					175		
cg	gtc	aac	tcg	gtg	aat	ccc	ggc	ttt	gtg	gtg	acc	aac	atc	cac	cag	576
Arg	Val	Asn	Ser	Val	Asn	Pro	Gly	Phe	Val	Val	Thr	Asn	Ile	His	Gln	
			180					185					190			
cg	att	ggc	atc	gtc	gat	gag	gaa	tac	aac	ggc	atg	ctg	cag	cg	gct	624
Arg	Ile	Gly	Ile	Val	Asp	Glu	Glu	Tyr	Asn	Gly	Met	Leu	Gln	Arg	Ala	
	195					200						205				
atc	gcc	tcc	cat	ccc	atg	ggc	cgt	gtt	ggg	gac	gtg	ttc	gag	gtg	gcc	672
Ile	Ala	Ser	His	Pro	Met	Gly	Arg	Val	Gly	Asp	Val	Phe	Glu	Val	Ala	
	210					215					220					
gag	gcc	gta	gcc	ttc	ctg	gcc	agc	tcc	aag	gcc	agc	ttc	acc	acc	ggc	720
Glu	Ala	Val	Ala	Phe	Leu	Ala	Ser	Ser	Lys	Ala	Ser	Phe	Thr	Thr	Gly	
	225				230					235					240	
gct	ctc	ttc	ccc	atc	gac	ggc	ggc	aag	cac	aat	ctg	acg	cct	cgt		765
Ala	Leu	Phe	Pro	Ile	Asp	Gly	Gly	Lys	His	Asn	Leu	Thr	Pro	Arg		
				245					250					255		
taa																768

&lt;210&gt; 1576

&lt;211&gt; 255

&lt;212&gt; PRT

&lt;213&gt; Drosophila pseudoobscura

&lt;400&gt; 1576

Met	Ser	Leu	Ser	Glu	Lys	Val	Val	Ile	Val	Thr	Gly	Ala	Ser	Ser	Gly	
1				5				10						15		
Ile	Gly	Ala	Ala	Ile	Ala	Gln	Val	Leu	Ala	Arg	Glu	Gly	Ala	Leu	Leu	
			20					25					30			
Ala	Leu	Val	Gly	Arg	Asn	Val	Ala	Asn	Leu	Glu	Ala	Thr	Arg	Lys	Thr	
		35					40					45				
Leu	Gln	Gln	Gln	Val	Lys	Gly	Ile	Arg	Ala	Glu	Ile	Ile	Ala	Ala	Asp	
	50					55					60					
Val	Thr	Lys	Asp	Ala	Ala	Ala	Ile	Val	Gln	Gln	Thr	Ile	Thr	Gln	Phe	
	65				70					75					80	
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Leu	Gly	Lys	Gly	
				85					90					95		
Gly	Leu	Ile	Asp	Leu	Asp	Ile	Glu	Glu	Phe	Asp	Ser	Val	Leu	Asn	Thr	
			100				105						110			
Asn	Leu	Arg	Gly	Val	Val	Leu	Leu	Thr	Lys	Ala	Val	Leu	Pro	His	Leu	
		115					120					125				



## PhoenixTemp32470.tmp.txt

Leu Gln Thr Lys Gly Ala Val Val Asn Val Ser Ser Cys Ala Gly Leu  
 130 135 140  
 Arg Pro Phe Ala Gly Ala Leu Ser Tyr Gly Val Ser Lys Ala Ala Leu  
 145 150 155 160  
 Asp Gln Phe Thr Arg Ile Val Ala Leu Glu Met Ala Pro Gln Gly Val  
 165 170 175  
 Arg Val Asn Ser Val Asn Pro Gly Phe Val Val Thr Asn Ile His Gln  
 180 185 190  
 Arg Ile Gly Ile Val Asp Glu Glu Tyr Asn Gly Met Leu Gln Arg Ala  
 195 200 205  
 Ile Ala Ser His Pro Met Gly Arg Val Gly Asp Val Phe Glu Val Ala  
 210 215 220  
 Glu Ala Val Ala Phe Leu Ala Ser Ser Lys Ala Ser Phe Thr Thr Gly  
 225 230 235 240  
 Ala Leu Phe Pro Ile Asp Gly Gly Lys His Asn Leu Thr Pro Arg  
 245 250 255

&lt;210&gt; 1577

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 1577

atg	aca	ggc	cgc	ctc	gcc	aac	aaa	gtc	gcc	atc	ata	acc	ggc	gca	tcc	48
Met	Thr	Gly	Arg	Leu	Ala	Asn	Lys	Val	Ala	Ile	Ile	Thr	Gly	Ala	Ser	
1				5				10						15		
tcg	ggc	atc	ggg	cgc	gcg	acg	gcc	ctg	ctg	atg	gcc	cgc	gag	ggc	gcc	96
Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Leu	Met	Ala	Arg	Glu	Gly	Ala	
			20					25					30			
gcc	gtc	gtg	tgc	agc	gac	atc	cga	cag	ggc	ccg	ccg	acg	gac	tcc	aac	144
Ala	Val	Val	Cys	Ser	Asp	Ile	Arg	Gln	Gly	Pro	Pro	Thr	Asp	Ser	Asn	
			35				40					45				
agc	agc	agc	agc	atc	agc	acg	cac	gag	gag	att	cag	cgc	ctc	ggc	ggg	192
Ser	Ser	Ser	Ser	Ile	Ser	Thr	His	Glu	Glu	Ile	Gln	Arg	Leu	Gly	Gly	
			50			55				60						
cgg	gcc	act	ttt	gtg	tcg	tgc	gac	acg	tca	gac	tcg	gcg	cag	gtg	cag	240
Arg	Ala	Thr	Phe	Val	Ser	Cys	Asp	Thr	Ser	Asp	Ser	Ala	Gln	Val	Gln	
			65			70				75					80	
gcg	ctc	gtc	aag	tcg	gcc	gtg	gcc	gag	ttt	ggg	cgc	ctc	gac	atc	atg	288
Ala	Leu	Val	Lys	Ser	Ala	Val	Ala	Glu	Phe	Gly	Arg	Leu	Asp	Ile	Met	
			85					90						95		
ttc	aac	aac	gcc	ggc	gtc	ggc	aag	gag	ggg	gac	aat	tac	ccc	gac	acc	336
Phe	Asn	Asn	Ala	Gly	Val	Gly	Lys	Glu	Gly	Asp	Asn	Tyr	Pro	Asp	Thr	
			100					105					110			
atg	att	tgg	cag	tac	gac	gag	gac	gac	ttt	gac	ctc	acc	atg	gcc	gtc	384
Met	Ile	Trp	Gln	Tyr	Asp	Glu	Asp	Asp	Phe	Asp	Leu	Thr	Met	Ala	Val	
			115				120					125				
aac	gtc	aag	ggg	gtg	ttt	ttg	ggc	tgc	aag	tac	gct	gcc	gcg	cag	atg	432
Asn	Val	Lys	Gly	Val	Phe	Leu	Gly	Cys	Lys	Tyr	Ala	Ala	Ala	Gln	Met	
			130			135					140					
aag	gac	cag	gag	ccg	ctc	gtc	ccc	ggc	ggc	gat	cgt	ggt	tgg	atc	gtc	480
Lys	Asp	Gln	Glu	Pro	Leu	Val	Pro	Gly	Gly	Asp	Arg	Gly	Trp	Ile	Val	
					150					155					160	
aac	acg	ggg	tcc	ata	ctg	ggg	ggt	aat	gcc	atc	aag	ggc	gtc	acg	gcc	528
Asn	Thr	Gly	Ser	Ile	Leu	Gly	Val	Asn	Ala	Ile	Lys	Gly	Val	Thr	Ala	
				165					170					175		
tat	gcg	gcg	tcg	aag	cat	gcc	gtc	ttg	ggt	atc	acc	aag	gcg	gcg	gct	576
Tyr	Ala	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Ile	Thr	Lys	Ala	Ala	Ala	
				180				185					190			
ttg	gat	tgc	gcc	cct	ttt	aat	att	cac	gtc	aac	gcg	ggt	aac	ccc	ggc	624
Leu	Asp	Cys	Ala	Pro	Phe	Asn	Ile	His	Val	Asn	Ala	Val	Asn	Pro	Gly	
			195				200					205				
ttt	gtc	aag	acg	gta	atg	aca	aag	aat	atg	ttg	gag	gat	agc	ggt	ggc	672
Phe	Val	Lys	Thr	Val	Met	Thr	Lys	Asn	Met	Leu	Glu	Asp	Ser	Val	Gly	
			210			215					220					

## PhoenixTemp32470.tmp.txt

```

agt gag gcc ttg gct gcg cgg cat ccg ttc aag ggg ata gga aac gtc      720
Ser Glu Ala Leu Ala Ala Arg His Pro Phe Lys Gly Ile Gly Asn Val      240
225                               230                               235
gag gac ata gcc aag acg gtg ctg ttc ctt gtc agc gac gat gcg tcc      768
Glu Asp Ile Ala Lys Thr Val Leu Phe Leu Val Ser Asp Asp Ala Ser      255
245                               250                               255
tgg atc acg ggt acg agc ctt tgt gtc gat ggt gga tac act aca atg      816
Trp Ile Thr Gly Thr Ser Leu Cys Val Asp Gly Gly Tyr Thr Thr Met      260
265                               270
tga                                                                    819

```

<210> 1578  
 <211> 272  
 <212> PRT  
 <213> Magnaporthe grisea 70-15

```

<400> 1578
Met Thr Gly Arg Leu Ala Asn Lys Val Ala Ile Ile Thr Gly Ala Ser
1      5      10      15
Ser Gly Ile Gly Arg Ala Thr Ala Leu Leu Met Ala Arg Glu Gly Ala
20      25      30
Ala Val Val Cys Ser Asp Ile Arg Gln Gly Pro Pro Thr Asp Ser Asn
35      40      45
Ser Ser Ser Ser Ile Ser Thr His Glu Glu Ile Gln Arg Leu Gly Gly
50      55      60
Arg Ala Thr Phe Val Ser Cys Asp Thr Ser Asp Ser Ala Gln Val Gln
65      70      75      80
Ala Leu Val Lys Ser Ala Val Ala Glu Phe Gly Arg Leu Asp Ile Met
85      90      95
Phe Asn Asn Ala Gly Val Gly Lys Glu Gly Asp Asn Tyr Pro Asp Thr
100     105     110
Met Ile Trp Gln Tyr Asp Glu Asp Asp Phe Asp Leu Thr Met Ala Val
115     120     125
Asn Val Lys Gly Val Phe Leu Gly Cys Lys Tyr Ala Ala Ala Gln Met
130     135     140
Lys Asp Gln Glu Pro Leu Val Pro Gly Gly Asp Arg Gly Trp Ile Val
145     150     155     160
Asn Thr Gly Ser Ile Leu Gly Val Asn Ala Ile Lys Gly Val Thr Ala
165     170     175
Tyr Ala Ala Ser Lys His Ala Val Leu Gly Ile Thr Lys Ala Ala Ala
180     185     190
Leu Asp Cys Ala Pro Phe Asn Ile His Val Asn Ala Val Asn Pro Gly
195     200     205
Phe Val Lys Thr Val Met Thr Lys Asn Met Leu Glu Asp Ser Val Gly
210     215     220
Ser Glu Ala Leu Ala Ala Arg His Pro Phe Lys Gly Ile Gly Asn Val
225     230     235     240
Glu Asp Ile Ala Lys Thr Val Leu Phe Leu Val Ser Asp Asp Ala Ser
245     250     255
Trp Ile Thr Gly Thr Ser Leu Cys Val Asp Gly Gly Tyr Thr Thr Met
260     265     270

```

<210> 1579  
 <211> 1119  
 <212> DNA  
 <213> Nasonia vitripennis

<220>  
 <221> CDS  
 <222> (234)..(968)

```

<400> 1579
cgcgactcgg gcagaatcct tggctttatt gttataatag tcttatcttg cggtagaaaa      60

```

```

ataatttatc tcgcttacaa gtgatgctag tcacatattt gcaaatgcgc tggggatcag      120

```

## PhoenixTemp32470.tmp.txt

aatttacagc agcttagaac gctacatttg ctgcgagata attgttcaat tgaagtcgta 180  
  
gagacttgaa gacgacttgt tcattacctg ttctgcaagc acacggcgca gtc atg 236  
Met  
1  
aac atc act ttt gaa gga aag cgg att ctc gtt acc ggt gct ggt caa 284  
Asn Ile Thr Phe 5 Glu Gly Lys Arg Ile 10 Leu Val Thr Gly Ala Gly Gln  
15  
ggc atc ggt aga gaa aca gct ctg cgt cta tcc aaa ttt ggc ggc aca 332  
Gly Ile Gly 20 Arg Glu Thr Ala Leu 25 Arg Leu Ser Lys Phe 30 Gly Gly Thr  
gtt ata gcc ctc tcg aaa acc aaa gcc aat ctc gac tcc ctg gta aag 380  
Val Ile Ala Leu Ser Lys Thr 40 Lys Ala Asn Leu Asp 45 Ser Leu Val Lys  
gaa gat ccg aaa atc caa act gtc tgc gct gac ctg cag gac tgg aat 428  
Glu Asp Pro Lys Ile Gln 55 Thr Val Cys Ala Asp 60 Leu Gln Asp Trp Asn  
50 65  
aaa gcg cga gca gct gtt aag agc gtt ttg ccc ata gat ttg ctt gtc 476  
Lys Ala Arg Ala Ala Val Lys Ser Val Leu 75 Pro Ile Asp Leu 80 Leu Val  
aat aat gcc ggg att gcg ata ctg gat cct ttt ctc tct ctc aaa ccc 524  
Asn Asn Ala Gly 85 Ile Ala Ile Leu Asp 90 Pro Phe Leu Ser 95 Lys Pro  
gag gac ttt gat caa gtc ttc aat gta aat tta aaa tcg atc atc aac 572  
Glu Asp Phe Asp Gln Val Phe 105 Asn Val Asn Leu Lys Ser 110 Ile Ile Asn  
gtc tct caa gtt gtg gcg gag aat atg atc caa aga aaa gtt gct gga 620  
Val Ser Gln Val Val Ala 120 Glu Asn Met Ile Gln Arg Lys Val Ala Gly  
115 125  
agc atc gtc aat cta tcg tcg gtg gcc agt ttg gta gct gtc aaa gat 668  
Ser Ile Val Asn Leu Ser 135 Val Ala Ser Leu Val Ala Val Lys Asp  
130 145  
cac gct att tat tgc tcg gcg aaa gca gct ttg gac atg ctg aca aag 716  
His Ala Ile Tyr Cys 150 Ser Ala Lys Ala 155 Leu Asp Met Leu 160 Thr Lys  
gtc atg gct ttg gaa ctg gga cca cat aac att cgc gtc aac acc gtc 764  
Val Met Ala Leu 165 Glu Leu Gly Pro His 170 Asn Ile Arg Val 175 Asn Thr Val  
aac ccg acc ctt gtc atg acg gcc atg ggc aag gcc aat tgg agc gac 812  
Asn Pro Thr Leu Val Met Thr 185 Ala Met Gly Lys Ala Asn Trp Ser Asp  
180 190  
ccg gca aag gcg gcc acg ttg cga gaa aaa att cca ctg gac cgt ttt 860  
Pro Ala Lys Ala Ala Thr 200 Leu Arg Glu Lys Ile Pro Leu Asp Arg Phe  
195 205  
gca gag cct caa gaa gtg gtg gat tcc att tgc ttc ctt ctt agt gac 908  
Ala Glu Pro Gln Glu Val Val Asp Ser Ile Cys Phe Leu Leu Ser Asp  
210 215 220 225  
aag agc gca atg acc acc ggt gtt ggg ctt acg atc gac gga gga tac 956  
Lys Ser Ala Met Thr 230 Gly Val Gly 235 Leu Thr Ile Asp Gly Gly Tyr  
240  
acc act cat taaaaatact tgtatacgta tttcaagctt tacaaaatat aagcttactc 1015  
Thr Thr His  
  
tgcctttgta tattataatc acgcaaacag aatgaataaa aaaagctttt taataattgt 1075  
  
acagctagtg attcgaataa aattattgaa tccaccgaca gcta 1119

&lt;210&gt; 1580

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Nasonia vitripennis

&lt;400&gt; 1580

Met Asn Ile Thr Phe Glu Gly Lys Arg Ile Leu Val Thr Gly Ala Gly

## PhoenixTemp32470.tmp.txt

```

1      5      10      15
Gln Gly Ile Gly Arg Glu Thr Ala Leu Arg Leu Ser Lys Phe Gly Gly
20      25      30
Thr Val Ile Ala Leu Ser Lys Thr Lys Ala Asn Leu Asp Ser Leu Val
35      40      45
Lys Glu Asp Pro Lys Ile Gln Thr Val Cys Ala Asp Leu Gln Asp Trp
50      55      60
Asn Lys Ala Arg Ala Ala Val Lys Ser Val Leu Pro Ile Asp Leu Leu
65      70      75
Val Asn Asn Ala Gly Ile Ala Ile Leu Asp Pro Phe Leu Ser Leu Lys
85      90      95
Pro Glu Asp Phe Asp Gln Val Phe Asn Val Asn Leu Lys Ser Ile Ile
100      105
Asn Val Ser Gln Val Val Ala Glu Asn Met Ile Gln Arg Lys Val Ala
115      120      125
Gly Ser Ile Val Asn Leu Ser Ser Val Ala Ser Leu Val Ala Val Lys
130      135      140
Asp His Ala Ile Tyr Cys Ser Ala Lys Ala Ala Leu Asp Met Leu Thr
145      150      155
Lys Val Met Ala Leu Glu Leu Gly Pro His Asn Ile Arg Val Asn Thr
165      170      175
Val Asn Pro Thr Leu Val Met Thr Ala Met Gly Lys Ala Asn Trp Ser
180      185      190
Asp Pro Ala Lys Ala Ala Thr Leu Arg Glu Lys Ile Pro Leu Asp Arg
195      200      205
Phe Ala Glu Pro Gln Glu Val Val Asp Ser Ile Cys Phe Leu Leu Ser
210      215      220
Asp Lys Ser Ala Met Thr Thr Gly Val Gly Leu Thr Ile Asp Gly Gly
225      230      235      240
Tyr Thr Thr His

```

&lt;210&gt; 1581

&lt;211&gt; 815

&lt;212&gt; DNA

<213> *Nasonia vitripennis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;400&gt; 1581

```

atg acg ccg ggt ctt tta gct gga aaa ctc gct atc gta acg ggc gcg      48
Met Thr Pro Gly Leu Leu Ala Gly Lys Leu Ala Ile Val Thr Gly Ala
1      5      10      15
ggc agt ggc atc ggc agg gca gtc tgc aga ctc ttc gcg cgc gaa ggt      96
Gly Ser Gly Ile Gly Arg Ala Val Cys Arg Leu Phe Ala Arg Glu Gly
20      25      30
gcc aag gtc ata gcc gct gat caa aat gtc aag gcc gcc gag gaa aca      144
Ala Lys Val Ile Ala Ala Asp Gln Asn Val Lys Ala Ala Glu Glu Thr
35      40      45
gcc gac aca ctc gaa gga tcg gaa cac gtg ccg gtg gaa atc gac gtg      192
Ala Asp Thr Leu Glu Gly Ser Glu His Val Pro Val Glu Ile Asp Val
50      55      60
aag agc ccg gag agc atc gag aat gcc ttc acc cac gcg aaa aag cac      240
Lys Ser Pro Glu Ser Ile Glu Asn Ala Phe Thr His Ala Lys Lys His
65      70      75      80
ttc ttg gta ccg ccg acc atc gtc gtc aac tcg gct ggt atc acc aga      288
Phe Leu Val Pro Pro Thr Ile Val Val Asn Ser Ala Gly Ile Thr Arg
85      90      95
gac aac ttt ttg ctg aag ctc agc gag gag gac ttc gat gct gta ctc      336
Asp Asn Phe Leu Leu Lys Leu Ser Glu Glu Asp Phe Asp Ala Val Leu
100      105      110
aat gtc aat ctc aaa ggg acg ttc ctc ata acg cag tat gct gcc aag      384
Asn Val Asn Leu Lys Gly Thr Phe Leu Ile Thr Gln Tyr Ala Ala Lys
115      120      125
gta atg ata aac tcc gga ata tcg gag ggc ggc tcg gtg atc aac gta      432
Val Met Ile Asn Ser Gly Ile Ser Glu Gly Gly Ser Val Ile Asn Val
130      135      140

```

PhoenixTemp32470.tmp.txt

gct tcg atc att gga aaa act gga aac atc ggc cag agt aac tat gcg	480
Ala Ser Ile Ile Gly Lys Thr Gly Asn Ile Gly Gln Ser Asn Tyr Ala	
145 150 155 160	
gcg tcc aag gct ggt gtc gag gct ttc acg aaa act gcg gcg atg gag	528
Ala Ser Lys Ala Gly Val Glu Ala Phe Thr Lys Thr Ala Ala Met Glu	
165 170 175	
ttt gga cag ttt ggc att cga gtg aac gct gtg cta cct ggc ttc ata	576
Phe Gly Gln Phe Gly Ile Arg Val Asn Ala Val Leu Pro Gly Phe Ile	
180 185 190	
gaa aca cca atg act gac atg gtt cct gac aaa gtg aag caa atg ttt	624
Glu Thr Pro Met Thr Asp Met Val Pro Asp Lys Val Lys Gln Met Phe	
195 200 205	
gtt gag agg atc cca ttg aga cgt atg gga aaa cca atc gaa gtg gca	672
Val Glu Arg Ile Pro Leu Arg Arg Met Gly Lys Pro Ile Glu Val Ala	
210 215 220	
gaa ttg att ctg ttt ttg gcc tcg gta aag agc tcc tac atc aat ggg	720
Glu Leu Ile Leu Phe Leu Ala Ser Val Lys Ser Ser Tyr Ile Asn Gly	
225 230 235 240	
gct tcc atc gat gtc act ggt ggt ttg cac taagcgaata cttttttcat	770
Ala Ser Ile Asp Val Thr Gly Gly Leu His	
245 250	
ttttgtactt acgaactttt aataaacaata tttctttacgt tactt	815

<210> 1582  
 <211> 250  
 <212> PRT  
 <213> *Nasonia vitripennis*

<400> 1582

Met Thr Pro Gly Leu Leu Ala Gly Lys Leu Ala Ile Val Thr Gly Ala	
1 5 10 15	
Gly Ser Gly Ile Gly Arg Ala Val Cys Arg Leu Phe Ala Arg Glu Gly	
20 25 30	
Ala Lys Val Ile Ala Ala Asp Gln Asn Val Lys Ala Ala Glu Thr	
35 40 45	
Ala Asp Thr Leu Glu Gly Ser Glu His Val Pro Val Glu Ile Asp Val	
50 55 60	
Lys Ser Pro Glu Ser Ile Glu Asn Ala Phe Thr His Ala Lys Lys His	
65 70 75 80	
Phe Leu Val Pro Pro Thr Ile Val Val Asn Ser Ala Gly Ile Thr Arg	
85 90 95	
Asp Asn Phe Leu Leu Lys Leu Ser Glu Glu Asp Phe Asp Ala Val Leu	
100 105 110	
Asn Val Asn Leu Lys Gly Thr Phe Leu Ile Thr Gln Tyr Ala Ala Lys	
115 120 125	
Val Met Ile Asn Ser Gly Ile Ser Glu Gly Gly Ser Val Ile Asn Val	
130 135 140	
Ala Ser Ile Ile Gly Lys Thr Gly Asn Ile Gly Gln Ser Asn Tyr Ala	
145 150 155 160	
Ala Ser Lys Ala Gly Val Glu Ala Phe Thr Lys Thr Ala Ala Met Glu	
165 170 175	
Phe Gly Gln Phe Gly Ile Arg Val Asn Ala Val Leu Pro Gly Phe Ile	
180 185 190	
Glu Thr Pro Met Thr Asp Met Val Pro Asp Lys Val Lys Gln Met Phe	
195 200 205	
Val Glu Arg Ile Pro Leu Arg Arg Met Gly Lys Pro Ile Glu Val Ala	
210 215 220	
Glu Leu Ile Leu Phe Leu Ala Ser Val Lys Ser Ser Tyr Ile Asn Gly	
225 230 235 240	
Ala Ser Ile Asp Val Thr Gly Gly Leu His	
245 250	

<210> 1583  
 <211> 1152  
 <212> DNA  
 <213> *Aedes aegypti*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (59)..(787)

&lt;400&gt; 1583

```

gttgaggatt aaaacaaaaa tctcggata agtagttagt accttggtag cttttaac      58

atg gaa ttg tgt ctc gcg gat aaa aag att gta gtt act ggt gca ggc      106
Met Glu Leu Cys Leu Ala Asp Lys Lys Ile Val Val Thr Gly Ala Gly
  1          5          10          15
cag ggt atc ggc aat gag ttg tgc aaa acg ttg gtc aaa ttg ggc gct      154
Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala
          20          25          30
aag gtg att gcg gtt tcc cga tca cca ggt cca ctg gaa acg ctg aag      202
Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Thr Leu Lys
          35          40          45
acg gaa tgt ccc tcc gtg caa att att caa gtg gat ttg agt gat tgg      250
Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp
          50          55          60
agt gcc act aga act gca ctg gag aag atc gac cgc gtt gat ggc ctt      298
Ser Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu
          65          70          75          80
gtt aat aat gct gga atc gct atc atc aaa ccg tat gac gaa ctg acc      346
Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr
          85          90          95
gag aag gac ttt gat gac aca ttc aat atc aat atc aaa gct gcg ttc      394
Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe
          100          105          110
aac gtg tgt caa atc ctg atc ccg aag atg ggc ccg ggt gca agc att      442
Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile
          115          120          125
gtt aac ttg tcc tcc ttg gcg gga ttg aag tcc ttc caa ggg cat agc      490
Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser
          130          135          140
gta tat tcg atg acg aaa gct gcc atc gac tcc atg acg aaa agc tta      538
Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu
          145          150          155          160
gct ctg gaa ttg ggc gag ccg cga att cga gtg aac agc gtc aac cca      586
Ala Leu Glu Leu Gly Glu Arg Arg Ile Arg Val Asn Ser Val Asn Pro
          165          170          175          180
acg gtc atc cta acc ccg atg ggg cgc gac aac tgg agc gat ccg gct      634
Thr Val Ile Leu Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala
          185          190          195
aag gcc ggt cca ctg ata gcg aaa ata ccg gct gga cgt ttc ggc gag      682
Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu
          200          205          210
gtc aac gaa gtg gtg gag ccg att ata ttc cta ctg agt gac aag tct      730
Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser
          215          220          225
gcg tac atc aat ggc cac tgc atg cca ctg gag ggt ggt tat ttg gca      778
Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Gly Tyr Leu Ala
          230          235          240
gga aat tgatgggcat tgcatatgga caatagaagc gttgtgttcg gatgagcatc      834
Gly Asn

tatttttttc caaagaagta taaagctcgt agctattgag tgtcttgaaa aaaggaactt      894

tgggacctca caggaaccag aaagagatta aataggtacc aaactatcag gaatcaaaat      954

aaaagatatt tattccctaa aaaatcgtgc cagacatttc tataacaata tttttaggcc      1014

ttttttcgag aattatattc gtatttctgt ttgcattttg tcattatttt ctttaagtat      1074

taattcagat atttccttta gatgtaactc caaggatttc ttcaaaagtt catttagcaa      1134

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ttttttacgg acttccta

1152

<210> 1584  
 <211> 242  
 <212> PRT  
 <213> Aedes aegypti

<400> 1584  
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 1 5 10 15  
 Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala  
 20 25 30  
 Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Thr Leu Lys  
 35 40 45  
 Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp  
 50 55 60  
 Ser Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu  
 65 70 75 80  
 Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr  
 85 90 95  
 Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe  
 100 105 110  
 Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile  
 115 120 125  
 Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser  
 130 135 140  
 Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu  
 145 150 155 160  
 Ala Leu Glu Leu Gly Glu Arg Arg Ile Arg Val Asn Ser Val Asn Pro  
 165 170 175  
 Thr Val Ile Leu Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala  
 180 185 190  
 Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu  
 195 200 205  
 Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser  
 210 215 220  
 Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Tyr Leu Ala  
 225 230 235 240  
 Gly Asn

<210> 1585  
 <211> 1014  
 <212> DNA  
 <213> Aedes aegypti

<220>  
 <221> CDS  
 <222> (112)..(951)

<400> 1585  
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cggctaataaa gttgatttaa ttttgaaaat ttgcatctgc gacggcggag a atg ttc 117  
 Met Phe  
 1

ctt cgt gca cta gct cgg caa tcg aac act gtc gtt ggg atg tcc ggt 165  
 Leu Arg Ala Leu Ala Arg Gln Ser Asn Thr Val Val Gly Met Ser Gly  
 5 10 15

cag aga aat ttg tgc agc cag att agt tcc tcc cga ctg cag ggg aaa 213  
 Gln Arg Asn Leu Cys Ser Gln Ile Ser Ser Ser Arg Leu Gln Gly Lys  
 20 25 30

gtc gca gtg gtc aca gca tcc acc gat ggc atc ggt tat gcc atc gcg 261  
 Val Ala Val Val Thr Ala Ser Thr Asp Gly Ile Gly Tyr Ala Ile Ala

## PhoenixTemp32470.tmp.txt

35	gaa	cgt	ctg	ggc	cag	gac	gga	gcc	aaa	gtg	gtc	atc	agc	agt	cgc	aaa	309
	Glu	Arg	Leu	Gly	Gln	Asp	Gly	Ala	Lys	Val	Val	Ile	Ser	Ser	Arg	Lys	
					55					60					65		
	gaa	cag	aac	gta	gcc	aag	gcg	gtg	agt	caa	ctg	acc	aag	agt	ggc	ctg	357
	Glu	Gln	Asn	Val	Ala	Lys	Ala	Val	Ser	Gln	Leu	Thr	Lys	Ser	Gly	Leu	
				70				75						80			
	gac	gtc	gtt	gga	gtc	aag	tgt	cac	gtg	gcc	aat	gcc	gat	gat	cgg	aag	405
	Asp	Val	Val	Gly	Val	Lys	Cys	His	Val	Ala	Asn	Ala	Asp	Asp	Arg	Lys	
			85					90					95				
	gca	ctg	ttc	gaa	aag	gct	gtg	gaa	aag	tac	ggc	gga	atc	gac	att	ctg	453
	Ala	Leu	Phe	Glu	Lys	Ala	Val	Glu	Lys	Tyr	Gly	Gly	Ile	Asp	Ile	Leu	
			100				105					110					
	gtc	tcg	aac	gcg	gcg	gtc	aat	cct	gag	gtt	ggt	ggc	gtg	ctg	gac	gcc	501
	Val	Ser	Asn	Ala	Ala	Val	Asn	Pro	Glu	Val	Gly	Gly	Val	Leu	Asp	Ala	
	115					120					125					130	
	agc	gaa	gca	gct	tgg	gat	aaa	att	ttc	gag	gtg	aac	gtc	aaa	tgt	tcg	549
	Ser	Glu	Ala	Ala	Trp	Asp	Lys	Ile	Phe	Glu	Val	Asn	Val	Lys	Cys	Ser	
					135					140					145		
	ttc	ctg	ctg	gcc	aag	gaa	gtt	cta	ccg	tac	att	cgt	cag	aga	aag	aat	597
	Phe	Leu	Leu	Ala	Lys	Glu	Val	Leu	Pro	Tyr	Ile	Arg	Gln	Arg	Lys	Asn	
				150				155					160				
	gga	agt	att	gta	ttt	gtg	tct	tcg	atc	gcc	gga	ttc	caa	ccg	ttt	tca	645
	Gly	Ser	Ile	Val	Phe	Val	Ser	Ser	Ile	Ala	Gly	Phe	Gln	Pro	Phe	Ser	
			165					170				175					
	ttg	ttg	gga	gct	tac	tcg	gtg	agc	aag	acg	gcg	ctt	ttc	gga	ttg	acc	693
	Leu	Leu	Gly	Ala	Tyr	Ser	Val	Ser	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	
			180				185					190					
	aaa	gcc	gcc	agt	caa	gat	ttg	gcc	gct	gaa	ggc	att	cgg	gtg	aat	tgt	741
	Lys	Ala	Ala	Ser	Gln	Asp	Leu	Ala	Ala	Glu	Gly	Ile	Arg	Val	Asn	Cys	
	195					200					205					210	
	atc	gca	cca	ggc	atc	gtg	cga	acc	aag	ttt	gct	gct	gcc	ctt	cat	gaa	789
	Ile	Ala	Pro	Gly	Ile	Val	Arg	Thr	Lys	Phe	Ala	Ala	Ala	Leu	His	Glu	
				215						220					225		
	tcg	gaa	tcg	gct	cgg	gac	acc	gct	ctg	gct	caa	ata	ccc	atg	gga	cga	837
	Ser	Glu	Ser	Ala	Arg	Asp	Thr	Ala	Leu	Ala	Gln	Ile	Pro	Met	Gly	Arg	
				230					235				240				
	ttt	gct	cag	cct	ccg	gag	att	gca	ggt	gtt	tgt	gcc	ttc	ctg	gta	tcc	885
	Phe	Ala	Gln	Pro	Pro	Glu	Ile	Ala	Gly	Val	Cys	Ala	Phe	Leu	Val	Ser	
			245					250				255					
	gac	gat	gcc	agc	tat	att	acg	gga	act	att	gtg	gca	tcc	ggt	gga		933
	Asp	Asp	Ala	Ser	Tyr	Ile	Thr	Gly	Glu	Thr	Ile	Val	Ala	Ser	Gly	Gly	
			260			265					270						
	atg	cct	tcc	cgt	ctc	tga	act	tctt	ttat	tttt	gtg	gtat	ggg	gaca	tgga	attacg	988
	Met	Pro	Ser	Arg	Leu												
	275																
	aaataa	agtt	attg	gttt	gtg	tagata											1014

<210> 1586  
 <211> 279  
 <212> PRT  
 <213> Aedes aegypti

<400> 1586  
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 Ser Gly Gln Arg Asn Leu Cys Ser Gln Ile Ser Ser Ser Arg Leu Gln  
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 Gly Lys Val Ala Val Val Thr Ala Ser Thr Asp Gly Ile Gly Tyr Ala  
 35 40 45  
 Ile Ala Glu Arg Leu Gly Gln Asp Gly Ala Lys Val Val Ile Ser Ser  
 50 55 60  
 Arg Lys Glu Gln Asn Val Ala Lys Ala Val Ser Gln Leu Thr Lys Ser  
 65 70 75 80  
 Gly Leu Asp Val Val Gly Val Lys Cys His Val Ala Asn Ala Asp Asp  
 85 90 95  
 Arg Lys Ala Leu Phe Glu Lys Ala Val Glu Lys Tyr Gly Gly Ile Asp



## PhoenixTemp32470.tmp.txt

Ile	Leu	Val	100	Asn	Ala	Ala	Val	105	Asn	Pro	Glu	Val	Gly	110	Gly	Val	Leu	
Asp	Ala	Ser	115	Glu	Ala	Ala	Trp	120	Asp	Lys	Ile	Phe	Glu	125	Val	Asn	Val	Lys
Cys	Ser	Phe	130	Leu	Leu	Ala	Lys	135	Glu	Val	Leu	Pro	Tyr	140	Ile	Arg	Gln	Arg
Lys	Asn	Gly	145	Ser	Ile	Val	Phe	150	Val	Ser	Ser	Ile	Ala	155	Gly	Phe	Gln	Pro
Phe	Ser	Leu	160	Leu	Gly	Ala	Tyr	165	Val	Ser	Lys	Thr	Ala	170	Leu	Phe	Gly	
Leu	Thr	Lys	175	Ala	Ala	Ser	Gln	180	Asp	Leu	Ala	Ala	Glu	185	Gly	Ile	Arg	Val
Asn	Cys	Ile	190	Ala	Pro	Gly	Ile	195	Val	Arg	Thr	Lys	Phe	200	Ala	Ala	Ala	Leu
His	Glu	Ser	205	Glu	Ser	Ala	Arg	210	Asp	Thr	Ala	Leu	Ala	215	Gln	Ile	Pro	Met
Gly	Arg	Phe	220	Ala	Gln	Pro	Pro	225	Glu	Ile	Ala	Gly	Val	230	Cys	Ala	Phe	Leu
Val	Ser	Asp	235	Ala	Ser	Tyr	Ile	240	Thr	Gly	Glu	Thr	Ile	245	Val	Ala	Ser	
Gly	Gly	Met	250	Pro	Ser	Arg	Leu	255						260				
			265					270										

<210> 1587  
 <211> 787  
 <212> DNA  
 <213> Aedes aegypti

<220>  
 <221> CDS  
 <222> (59)..(787)

<400> 1587  
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58

atg	gaa	ttg	tgt	ctc	gcg	gat	aaa	aag	att	gta	gtt	act	ggg	gca	ggc				106
Met	Glu	Leu	Cys	Leu	Ala	Asp	Lys	Lys	Ile	Val	Val	Thr	Gly	Ala	Gly				
1				5					10					15					
cag	ggg	att	ggc	aat	gag	ttg	tgc	aaa	acg	ctg	gtc	aaa	ttg	ggc	gct				154
Gln	Gly	Ile	Gly	Asn	Glu	Leu	Cys	Lys	Thr	Leu	Val	Lys	Leu	Gly	Ala				
			20					25					30						
aag	gtg	att	gcg	gtc	tcc	cga	tca	cca	ggg	cca	ctt	gaa	gcg	ctg	aag				202
Lys	Val	Ile	Ala	Val	Ser	Arg	Ser	Pro	Gly	Pro	Leu	Glu	Ala	Leu	Lys				
			35				40					45							
acg	gaa	tgt	ccc	tcc	gtg	caa	att	att	caa	gtg	gat	ttg	agt	gat	tgg				250
Thr	Glu	Cys	Pro	Ser	Val	Gln	Ile	Ile	Gln	Val	Asp	Leu	Ser	Asp	Trp				
			50			55					60								
ggc	gcc	acc	aga	act	gca	ctg	gag	aag	atc	gat	cgc	gtt	gat	ggg	ctt				298
Gly	Ala	Thr	Arg	Thr	Ala	Leu	Glu	Lys	Ile	Asp	Arg	Val	Asp	Gly	Leu				
			65		70				75						80				
gtg	aat	aat	gcc	gga	atc	gct	att	atc	aaa	ccg	tat	gat	gaa	ctg	acc				346
Val	Asn	Asn	Ala	Gly	Ile	Ala	Ile	Ile	Lys	Pro	Tyr	Asp	Glu	Leu	Thr				
			85						90					95					
gag	aag	gac	ttc	gat	gac	aca	ttc	aac	atc	aat	atc	aag	gct	gcg	ttc				394
Glu	Lys	Asp	Phe	Asp	Asp	Thr	Phe	Asn	Ile	Asn	Ile	Lys	Ala	Ala	Phe				
			100					105					110						
aac	gtg	tgt	caa	atc	ctg	atc	ccg	aag	atg	ggc	cca	ggg	gca	agc	att				442
Asn	Val	Cys	Gln	Ile	Leu	Ile	Pro	Lys	Met	Gly	Pro	Gly	Ala	Ser	Ile				
			115				120					125							
gtt	aac	ttg	tcc	tcc	ttg	gca	ggg	ttg	aag	tcc	ttc	caa	ggg	cat	agc				490
Val	Asn	Leu	Ser	Ser	Leu	Ala	Gly	Leu	Lys	Ser	Phe	Gln	Gly	His	Ser				
			130			135					140								
gta	tat	tcg	atg	acg	aaa	gct	gcc	atc	gac	tcc	atg	acg	aaa	agc	tta				538
Val	Tyr	Ser	Met	Thr	Lys	Ala	Ala	Ile	Asp	Ser	Met	Thr	Lys	Ser	Leu				
			145		150				155						160				
gct	ctg	gaa	ttg	ggc	gag	cgg	caa	att	cga	gtg	aac	agc	gtc	aac	cca				586
Ala	Leu	Glu	Leu	Gly	Glu	Arg	Gln	Ile	Arg	Val	Asn	Ser	Val	Asn	Pro				

## PhoenixTemp32470.tmp.txt

acg	gtc	atc	cta	165	acg	cgg	atg	ggg	170	cgc	gac	aac	tgg	agc	gat	cca	gct	634
Thr	Val	Ile	Leu	Thr	Arg	Met	Gly	Arg	Asp	Asn	Trp	Ser	Asp	Pro	Ala			
			180						185					190				
aag	gcc	ggt	cca	ctg	ata	gcg	aaa	ata	ccg	gct	gga	cgt	ttc	ggc	gag			682
Lys	Ala	Gly	Pro	Leu	Ile	Ala	Lys	Ile	Pro	Ala	Gly	Arg	Phe	Gly	Glu			
		195					200					205						
gtc	aac	gaa	gtg	gtg	gag	cct	att	ata	ttc	cta	ctg	agt	gac	aag	tct			730
Val	Asn	Glu	Val	Val	Glu	Pro	Ile	Ile	Phe	Leu	Leu	Ser	Asp	Lys	Ser			
	210					215					220							
gcg	tac	atc	aat	ggc	cac	tgc	atg	cca	ctg	gag	ggg	ggg	tat	ttg	gca			778
Ala	Tyr	Ile	Asn	Gly	His	Cys	Met	Pro	Leu	Glu	Gly	Gly	Tyr	Leu	Ala			
225					230					235					240			
gga	aat	tga																787
Gly	Asn																	

<210> 1588  
 <211> 242  
 <212> PRT  
 <213> Aedes aegypti

<400> 1588  
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 Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala  
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 Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Ala Leu Lys  
 35 40 45  
 Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp  
 50 55 60  
 Gly Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu  
 65 70 75 80  
 Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr  
 85 90 95  
 Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe  
 100 105 110  
 Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile  
 115 120 125  
 Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser  
 130 135 140  
 Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu  
 145 150 155 160  
 Ala Leu Glu Leu Gly Glu Arg Gln Ile Arg Val Asn Ser Val Asn Pro  
 165 170 175  
 Thr Val Ile Leu Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala  
 180 185 190  
 Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu  
 195 200 205  
 Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser  
 210 215 220  
 Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Tyr Leu Ala  
 225 230 235 240  
 Gly Asn

<210> 1589  
 <211> 849  
 <212> DNA  
 <213> Anopheles gambiae str. PEST

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 1589  
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 Met Phe Arg Ser Ile Ala Gly Ser Ala Thr Leu Thr Gln Thr Ile Arg  
 1 5 10 15  
 48

## PhoenixTemp32470.tmp.txt

aag acg atg gag cgc aat ctt tgc agc ggt tcc gcc att gca gcc aag 96  
Lys Thr Met Glu Arg Asn Leu Cys Ser Gly Ser Ala Ile Ala Lys  
20 25 30  
cgt ctg acg ggc aaa gtg gcc gtc gta acc gcc tct aca gag ggt atc 144  
Arg Leu Thr Gly Lys Val Ala Val Val Thr Ala Ser Thr Glu Gly Ile  
35 40 45  
ggt tac gcc atc gcg gaa cgg ttg ggc cag gaa gga gcc aaa gtg gtt 192  
Gly Tyr Ala Ile Ala Glu Arg Leu Gly Gln Glu Ala Lys Val Val  
50 55 60  
gtc agc agc cga aag cag caa aat gtt gac cgc gcc gtg aac gac ctg 240  
Val Ser Ser Arg Lys Gln Gln Asn Val Asp Arg Ala Val Asn Asp Leu  
65 70 75 80  
cga acc gcc ggg ctc gag gtg tcc ggg atc aag tgt cac gtt gcc aac 288  
Arg Thr Ala Gly Leu Glu Val Ser Gly Ile Lys Cys His Val Ala Asn  
85 90 95  
gcc acc gac cgg aag gcg ctg ttc gag cat gcg gcc caa aag ttc ggt 336  
Ala Thr Asp Arg Lys Ala Leu Phe Glu His Ala Ala Gln Lys Phe Gly  
100 105  
ggc atc gac att ctc gtg tgc aac gcg gtc aat ccg gag gtg ggc 384  
Gly Ile Asp Ile Leu Val Ser Asn Ala Ala Val Asn Pro Glu Val Gly  
115 120 125  
ggt gtg ctg gaa tgt agt gaa tgc gcc tgg gat aag att ttc gac gtg 432  
Gly Val Leu Glu Cys Ser Glu Ser Ala Trp Asp Lys Ile Phe Asp Val  
130 135 140  
aac gta aag tgt tgc tat ctg ctg gcc aag gaa gtg ttg ccg ttc ata 480  
Asn Val Lys Cys Ser Tyr Leu Leu Ala Lys Glu Val Leu Pro Phe Ile  
145 150 155 160  
cgg gag cgc aag ggt ggc agc att gtg ttc att tgc tcc att gcc ggc 528  
Arg Glu Arg Lys Gly Gly Ser Ile Val Phe Ile Ser Ser Ile Ala Gly  
165 170 175  
ttt caa ccg ttc tgc ctg ttg ggc gca tac tcc gtc agc aag acg gca 576  
Phe Gln Pro Phe Ser Leu Leu Gly Ala Tyr Ser Val Ser Lys Thr Ala  
180 185 190  
ctg ttc gga ttg acg aag gca gcc agc caa gag ttg gcg gcg gag aac 624  
Leu Phe Gly Leu Thr Lys Ala Ala Ser Gln Glu Leu Ala Ala Glu Asn  
195 200 205  
atc cgc gtg aac tgc att gct ccg ggt gtg gtg cag acg aaa ttt gcc 672  
Ile Arg Val Asn Cys Ile Ala Pro Gly Val Val Gln Thr Lys Phe Ala  
210 215 220  
gga gcg cta caa gaa tcc gat gcc gcc aaa gag gaa aca ctg tcc cga 720  
Gly Ala Leu Gln Glu Ser Asp Ala Ala Lys Glu Glu Thr Leu Ser Arg  
225 230 235 240  
att ccg atg gga cgg att gca caa ccg aag gaa att tcc ggc gtg tgt 768  
Ile Pro Met Gly Arg Ile Ala Gln Pro Lys Glu Ile Ser Gly Val Cys  
245 250 255  
gcg ttc ctc gtt tgc gac gac gcg agc tac att acc ggt gaa acg att 816  
Ala Phe Leu Val Ser Asp Asp Ala Ser Tyr Ile Thr Gly Glu Thr Ile  
260 265 270  
gta gct tcc gga ggc atg gct tcc cgg tta taa 849  
Val Ala Ser Gly Gly Met Ala Ser Arg Leu  
275 280

&lt;210&gt; 1590

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 1590

Met Phe Arg Ser Ile Ala Gly Ser Ala Thr Leu Thr Gln Thr Ile Arg  
1 5 10 15  
Lys Thr Met Glu Arg Asn Leu Cys Ser Gly Ser Ala Ile Ala Ala Lys  
20 25 30  
Arg Leu Thr Gly Lys Val Ala Val Thr Ala Ser Thr Glu Gly Ile  
35 40 45  
Gly Tyr Ala Ile Ala Glu Arg Leu Gly Gln Glu Gly Ala Lys Val Val  
50 55 60  
Val Ser Ser Arg Lys Gln Gln Asn Val Asp Arg Ala Val Asn Asp Leu  
65 70 75 80  
Arg Thr Ala Gly Leu Glu Val Ser Gly Ile Lys Cys His Val Ala Asn

## PhoenixTemp32470.tmp.txt

85 90 95  
 Ala Thr Asp Arg Lys Ala Leu Phe Glu His Ala Ala Gln Lys Phe Gly  
 100 105 110  
 Gly Ile Asp Ile Leu Val Ser Asn Ala Ala Val Asn Pro Glu Val Gly  
 115 120 125  
 Gly Val Leu Glu Cys Ser Glu Ser Ala Trp Asp Lys Ile Phe Asp Val  
 130 135 140  
 Asn Val Lys Cys Ser Tyr Leu Leu Ala Lys Glu Val Leu Pro Phe Ile  
 145 150 155 160  
 Arg Glu Arg Lys Gly Gly Ser Ile Val Phe Ile Ser Ser Ile Ala Gly  
 165 170 175  
 Phe Gln Pro Phe Ser Leu Leu Gly Ala Tyr Ser Val Ser Lys Thr Ala  
 180 185 190  
 Leu Phe Gly Leu Thr Lys Ala Ala Ser Gln Glu Leu Ala Glu Asn  
 195 200 205  
 Ile Arg Val Asn Cys Ile Ala Pro Gly Val Val Gln Thr Lys Phe Ala  
 210 215 220  
 Gly Ala Leu Gln Glu Ser Asp Ala Ala Lys Glu Glu Thr Leu Ser Arg  
 225 230 235 240  
 Ile Pro Met Gly Arg Ile Ala Gln Pro Lys Glu Ile Ser Gly Val Cys  
 245 250 255  
 Ala Phe Leu Val Ser Asp Asp Ala Ser Tyr Ile Thr Gly Glu Thr Ile  
 260 265 270  
 Val Ala Ser Gly Gly Met Ala Ser Arg Leu  
 275 280

&lt;210&gt; 1591

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 1591

atg aac acc acg ggt tcc gcg ttt gtg att gga gcg agc ggt atc gga	48
Met Asn Thr Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly	
1 5 10 15	
agg gcg tgc gcg ttg gca ttt gca cgc cgt ggc gtc agc ggc ctg gtg	96
Arg Ala Cys Ala Leu Ala Phe Ala Arg Gly Val Ser Gly Leu Val	
20 25 30	
gtg gct gac gtg gat ctg cag gcc gcc gag tcc cta gct gcc gaa tgc	144
Val Ala Asp Val Asp Leu Gln Ala Ala Glu Ser Leu Ala Ala Glu Cys	
35 40 45	
agg gct gag gcg ggg tct gcc ggt act gcg gac gcc cta ggg tgt gca	192
Arg Ala Glu Ala Gly Ser Ala Gly Thr Ala Asp Ala Leu Gly Cys Ala	
50 55 60	
gaa gcc acg agg gtc gac gtt gca gac gag cgt tcc gtc gag ttg gcc	240
Glu Ala Thr Arg Val Asp Val Ala Asp Glu Arg Ser Val Glu Leu Ala	
65 70 75 80	
gta tct ttc gca cgg cgt gtg ctg ggt cgg gtt gac tat tgc gtc aac	288
Val Ser Phe Ala Arg Arg Val Leu Gly Arg Val Asp Tyr Cys Val Asn	
85 90 95	
agc gcg ggg ctg gcc aac gag atc gcc gat gcc agc ccc gtg gag ttc	336
Ser Ala Gly Leu Ala Asn Glu Ile Ala Asp Ala Ser Pro Val Glu Phe	
100 105 110	
gag gcc atg ttc caa gtc aac gtc aaa ggc acc ttt ctc gtc aca cgg	384
Glu Ala Met Phe Gln Val Asn Val Lys Gly Thr Phe Leu Val Thr Arg	
115 120 125	
gcc gtg tcg gcg ctc atg aag acg cag gat cct gtg cca gtg ttg cgc	432
Ala Val Ser Ala Leu Met Lys Thr Gln Asp Pro Val Pro Val Leu Arg	
130 135 140	
gac tcg ccc ggt agg gga acc acc cga ggt tgc atc gtc atc ttg gga	480
Asp Ser Pro Gly Arg Gly Thr Thr Arg Gly Cys Ile Val Ile Leu Gly	
145 150 155 160	
tct gca gcg gca ttt gct gcg acg ccc aag atg gtc cag tac acg acg	528
Ser Ala Ala Ala Phe Ala Ala Thr Pro Lys Met Val Gln Tyr Thr Thr	
165 170 175	

## PhoenixTemp32470.tmp.txt

gcc aag cat gcg gtg cta ggc ctg acc aag agc gcc gct ctt gat aac	576
Ala Lys His Ala Val Leu Gly Leu Thr Lys Ser Ala Ala Leu Asp Asn	
180 185 190	
gcc gct cac ggc atc cgt gtc aac agc gtc tgc ccg tct tgg gtc gac	624
Ala Ala His Gly Ile Arg Val Asn Ser Val Cys Pro Ser Trp Val Asp	
195 200 205	
acc ccc atg gtg cgc agg gcg ctg cag gac gtg ccc gag ctg gag cag	672
Thr Pro Met Val Arg Arg Ala Leu Gln Asp Val Pro Glu Leu Glu Gln	
210 215 220	
acg att cgt acc tcg gtg ccg atg ggc agg att gca ctg gcc gag gag	720
Thr Ile Arg Thr Ser Val Pro Met Gly Arg Ile Ala Leu Ala Glu Glu	
225 230 235 240	
gtg gcc gac gcc gtc atg ttc ctc tgc agc ccc gcc gcg agc tat gcc	768
Val Ala Asp Ala Val Met Phe Leu Cys Ser Pro Gly Ala Ser Tyr gcc	
245 250 255	
act ggc tgc aac atg att ctg gat ggc ggc acc act ctc acc acg cat	816
Thr Gly Cys Asn Met Ile Leu Asp Gly Gly Thr Thr Leu Thr Thr His	
260 265 270	
ctg gga tga	825
Leu Gly	

&lt;210&gt; 1592

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1592

Met Asn Thr Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly	1 5 10 15
Arg Ala Cys Ala Leu Ala Phe Ala Arg Arg Gly Val Ser Gly Leu Val	20 25 30
Val Ala Asp Val Asp Leu Gln Ala Ala Glu Ser Leu Ala Ala Glu Cys	35 40 45
Arg Ala Glu Ala Gly Ser Ala Gly Thr Ala Asp Ala Leu Gly Cys Ala	50 55 60
Glu Ala Thr Arg Val Asp Val Ala Asp Glu Arg Ser Val Glu Leu Ala	65 70 75 80
Val Ser Phe Ala Arg Arg Val Leu Gly Arg Val Asp Tyr Cys Val Asn	85 90 95
Ser Ala Gly Leu Ala Asn Glu Ile Ala Asp Ala Ser Pro Val Glu Phe	100 105 110
Glu Ala Met Phe Gln Val Asn Val Lys Gly Thr Phe Leu Val Thr Arg	115 120 125
Ala Val Ser Ala Leu Met Lys Thr Gln Asp Pro Val Pro Val Leu Arg	130 135 140
Asp Ser Pro Gly Arg Gly Thr Thr Arg Gly Cys Ile Val Ile Leu Gly	145 150 155 160
Ser Ala Ala Ala Phe Ala Ala Thr Pro Lys Met Val Gln Tyr Thr Thr	165 170 175
Ala Lys His Ala Val Leu Gly Leu Thr Lys Ser Ala Ala Leu Asp Asn	180 185 190
Ala Ala His Gly Ile Arg Val Asn Ser Val Cys Pro Ser Trp Val Asp	195 200 205
Thr Pro Met Val Arg Arg Ala Leu Gln Asp Val Pro Glu Leu Glu Gln	210 215 220
Thr Ile Arg Thr Ser Val Pro Met Gly Arg Ile Ala Leu Ala Glu Glu	225 230 235 240
Val Ala Asp Ala Val Met Phe Leu Cys Ser Pro Gly Ala Ser Tyr Ala	245 250 255
Thr Gly Cys Asn Met Ile Leu Asp Gly Gly Thr Thr Leu Thr Thr His	260 265 270
Leu Gly	

&lt;210&gt; 1593

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(816)

&lt;400&gt; 1593

atg	cct	cca	aca	aac	ctc	ctc	gca	ggc	aag	acg	gcc	atc	atc	acc	ggc	48
Met	Pro	Pro	Thr	Asn	Leu	Leu	Ala	Gly	Lys	Thr	Ala	Ile	Ile	Thr	Gly	
1				5					10					15		
ggc	aca	aca	ggc	atc	ggc	cg	tcc	atc	gcc	ctc	gag	ttc	ctc	cgg	cag	96
Gly	Thr	Thr	Gly	Ile	Gly	Arg	Ser	Ile	Ala	Leu	Glu	Phe	Leu	Arg	Gln	
			20					25					30			
ggc	tgc	agc	gtc	gcc	gtg	aac	cac	ctg	ggg	ctg	gag	agc	gac	cgc	gca	144
Gly	Cys	Ser	Val	Ala	Val	Asn	His	Leu	Gly	Leu	Glu	Ser	Asp	Arg	Ala	
		35					40					45				
cac	ctc	gag	tcc	ctc	gtc	gcc	gag	gcc	gag	gcc	atc	tcg	tcc	tcc	tcc	192
His	Leu	Glu	Ser	Leu	Val	Ala	Glu	Ala	Glu	Ala	Ile	Ser	Ser	Ser	Ser	
		50				55					60					
gcc	acg	ggc	ggg	cg	cta	acg	cac	ctg	ccg	ggc	gac	gtg	cg	gag	ccc	240
Ala	Thr	Ala	Gly	Arg	Leu	Thr	His	Leu	Pro	Gly	Asp	Val	Arg	Glu	Pro	
		65			70					75					80	
gcg	acc	ggc	acg	gcg	ctg	gtg	tcg	cac	gcg	ctg	acg	gcc	ttg	agc	tcg	288
Ala	Thr	Gly	Thr	Ala	Leu	Val	Ser	His	Ala	Leu	Thr	Ala	Leu	Ser	Ser	
				85					90					95		
tcg	cgg	ctc	gac	ata	tgc	gtc	agc	aac	gcg	ggc	atc	tgc	acg	ttt	gcc	336
Ser	Arg	Leu	Asp	Ile	Cys	Val	Ser	Asn	Ala	Gly	Ile	Cys	Thr	Phe	Ala	
			100					105					110			
gag	ttc	ctg	gac	ctg	gac	gcg	gcg	ctg	tac	gac	aag	acg	gcg	cgc	acc	384
Glu	Phe	Leu	Asp	Leu	Asp	Ala	Ala	Leu	Tyr	Asp	Lys	Thr	Ala	Arg	Thr	
		115						120				125				
aac	ctc	gac	ggg	tgc	ttc	tac	gtg	gtg	cag	gcg	gcg	gcg	cgg	cag	atg	432
Asn	Leu	Asp	Gly	Cys	Phe	Tyr	Val	Val	Gln	Ala	Ala	Ala	Arg	Gln	Met	
		130				135					140					
gcg	agg	ggc	cag	acg	ccg	ccg	gga	ggg	tcc	atc	atc	ggc	gtc	tcg	tcc	480
Ala	Arg	Gly	Gln	Thr	Pro	Pro	Gly	Gly	Ser	Ile	Ile	Gly	Val	Ser	Ser	
		145			150					155					160	
atc	tcg	gcc	ctc	gtc	ggc	ggc	ggg	ctg	cag	acc	cac	tac	acg	ccc	acc	528
Ile	Ser	Ala	Leu	Val	Gly	Gly	Gly	Leu	Gln	Thr	His	Tyr	Thr	Pro	Thr	
			165					170						175		
aag	gcc	ggc	gtg	ctg	tcg	ctg	atg	cag	tcc	acc	gcc	gtc	gcg	ctg	ggc	576
Lys	Ala	Gly	Val	Leu	Ser	Leu	Met	Gln	Ser	Thr	Ala	Val	Ala	Leu	Gly	
			180					185					190			
agg	tac	ggc	atc	agg	tgc	aac	tcc	ctg	ctg	ccg	ggc	acc	gtg	cgg	acg	624
Arg	Tyr	Gly	Ile	Arg	Cys	Asn	Ser	Leu	Leu	Pro	Gly	Thr	Val	Arg	Thr	
		195					200					205				
cag	ctc	aac	gag	gag	gac	ctg	cg	gac	gac	aag	aag	agg	gag	tac	atg	672
Gln	Leu	Asn	Glu	Glu	Asp	Leu	Arg	Asp	Asp	Lys	Lys	Arg	Glu	Tyr	Met	
		210				215					220					
gag	ggc	agg	ata	ccg	ctc	ggg	agg	acc	ggg	gag	cca	aag	gac	ctg	gcg	720
Glu	Gly	Arg	Ile	Pro	Leu	Gly	Arg	Thr	Gly	Glu	Pro	Lys	Asp	Leu	Ala	
		225			230				235						240	
ggc	ccg	gcg	gtg	ttt	ttg	gct	tgt	gaa	gag	ctc	agt	ggc	tac	gtc	acg	768
Gly	Pro	Ala	Val	Phe	Leu	Ala	Cys	Glu	Glu	Leu	Ser	Gly	Tyr	Val	Thr	
			245					250						255		
ggc	gcg	cag	ctg	ctt	gtc	gat	gga	ggg	ttg	ttt	gtg	aat	ctt	caa		813
Gly	Ala	Gln	Leu	Leu	Val	Asp	Gly	Gly	Leu	Phe	Val	Asn	Leu	Gln		
			260					265					270			
tga																816

&lt;210&gt; 1594

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1594

Met	Pro	Pro	Thr	Asn	Leu	Leu	Ala	Gly	Lys	Thr	Ala	Ile	Ile	Thr	Gly	
1				5					10					15		

## PhoenixTemp32470.tmp.txt

Gly Thr Thr Gly Ile Gly Arg Ser Ile Ala Leu Glu Phe Leu Arg Gln  
 20 25 30  
 Gly Cys Ser Val Ala Val Asn His Leu Gly Leu Glu Ser Asp Arg Ala  
 35 40 45  
 His Leu Glu Ser Leu Val Ala Glu Ala Glu Ile Ser Ser Ser Ser  
 50 55 60  
 Ala Thr Ala Gly Arg Leu Thr His Leu Pro Gly Asp Val Arg Glu Pro  
 65 70 75 80  
 Ala Thr Gly Thr Ala Leu Val Ser His Ala Leu Thr Ala Leu Ser Ser  
 85 90 95  
 Ser Arg Leu Asp Ile Cys Val Ser Asn Ala Gly Ile Cys Thr Phe Ala  
 100 105 110  
 Glu Phe Leu Asp Leu Asp Ala Ala Leu Tyr Asp Lys Thr Ala Arg Thr  
 115 120 125  
 Asn Leu Asp Gly Cys Phe Tyr Val Val Gln Ala Ala Ala Arg Gln Met  
 130 135 140  
 Ala Arg Gly Gln Thr Pro Pro Gly Gly Ser Ile Ile Gly Val Ser Ser  
 145 150 155 160  
 Ile Ser Ala Leu Val Gly Gly Gly Leu Gln Thr His Tyr Thr Pro Thr  
 165 170 175  
 Lys Ala Gly Val Leu Ser Leu Met Gln Ser Thr Ala Val Ala Leu Gly  
 180 185 190  
 Arg Tyr Gly Ile Arg Cys Asn Ser Leu Leu Pro Gly Thr Val Arg Thr  
 195 200 205  
 Gln Leu Asn Glu Glu Asp Leu Arg Asp Asp Lys Lys Arg Glu Tyr Met  
 210 215 220  
 Glu Gly Arg Ile Pro Leu Gly Arg Thr Gly Glu Pro Lys Asp Leu Ala  
 225 230 235 240  
 Gly Pro Ala Val Phe Leu Ala Cys Glu Glu Leu Ser Gly Tyr Val Thr  
 245 250 255  
 Gly Ala Gln Leu Leu Val Asp Gly Gly Leu Phe Val Asn Leu Gln  
 260 265 270

&lt;210&gt; 1595

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 1595

atg	aca	tcc	act	aac	gga	gat	ccc	tca	gag	ggt	ccc	aaa	acc	atc	tcg	48
Met	Thr	Ser	Thr	Asn	Gly	Asp	Pro	Ser	Glu	Gly	Pro	Lys	Thr	Ile	Ser	
1				5					10					15		
aca	ctg	ccc	gga	cct	gac	cat	gac	tat	aag	atc	acg	ctc	aag	gac	aag	96
Thr	Leu	Pro	Gly	Pro	Asp	His	Asp	Tyr	Lys	Ile	Thr	Leu	Lys	Asp	Lys	
			20					25					30			
gtc	atc	gcc	atc	tct	ggc	gca	aac	caa	ggt	atc	ggc	cta	ggc	atc	gcc	144
Val	Ile	Ala	Ile	Ser	Gly	Ala	Asn	Gln	Gly	Ile	Gly	Leu	Gly	Ile	Ala	
			35				40					45				
gag	gtc	tgc	cta	gcg	aat	gat	gcc	gct	tgc	ata	tac	tcc	ctc	gac	att	192
Glu	Val	Cys	Leu	Ala	Asn	Asp	Ala	Ala	Cys	Ile	Tyr	Ser	Leu	Asp	Ile	
			50			55				60						
tca	gaa	cct	ggc	cct	gcc	ttt	gcc	gag	tta	tcc	aaa	aag	tac	ccc	ggc	240
Ser	Glu	Pro	Gly	Pro	Ala	Phe	Ala	Glu	Leu	Ser	Lys	Lys	Tyr	Pro	Gly	
65				70					75					80		
cgt	ttc	gcc	ttt	cac	cac	tgc	gac	gtg	acg	gcg	tac	gaa	tcc	gtc	gac	288
Arg	Phe	Ala	Phe	His	His	Cys	Asp	Val	Thr	Ala	Tyr	Glu	Ser	Val	Asp	
				85				90						95		
aag	gcc	ctg	gac	gcc	atc	atc	gag	gcc	agg	ggc	cgg	ctc	gac	ggc	atg	336
Lys	Ala	Leu	Asp	Ala	Ile	Ile	Glu	Ala	Arg	Gly	Arg	Leu	Asp	Gly	Met	
			100				105					110				
gtg	gca	aac	gcg	ggc	gcc	acc	aaa	cac	aaa	gca	gcg	ctc	gat	ttt	acc	384
Val	Ala	Asn	Ala	Gly	Ala	Thr	Lys	His	Lys	Ala	Ala	Leu	Asp	Phe	Thr	
			115				120					125				
ccc	gag	gag	ttt	gac	ttt	ttg	ttc	aag	ctc	aac	gta	gtc	ggc	ggc	tgg	432
Pro	Glu	Glu	Phe	Asp	Phe	Leu	Phe	Lys	Leu	Asn	Val	Val	Gly	Gly	Trp	

## PhoenixTemp32470.tmp.txt

130	135	140		
aac tgc gcg acg gcg gcg gct aga aag ttt atc aag ctg ggc tgc aag	480			
Asn Cys Ala Thr Ala Ala Ala Arg Lys Phe Ile Lys Leu Gly Cys Lys				
145	150	155	160	
ggc agc atc gtc ttt acc gcc agc atg acc tcg tac agg ccg aac cgc	528			
Gly Ser Ile Val Phe Thr Ala Ser Met Thr Ser Tyr Arg Pro Asn Arg				
165	170	175		
gcc gcc ccc agc gcg ccg tac ggt gcc acc aag gcc gcc atc cgc aat	576			
Ala Ala Pro Ser Ala Pro Tyr Gly Ala Thr Lys Ala Ala Ile Arg Asn				
180	185	190		
tat acc cac acg ttg gcc atg gag tgg tcg cag tac ggc atc cgc gtc	624			
Tyr Thr His Thr Leu Ala Met Glu Trp Ser Gln Tyr Gly Ile Arg Val				
195	200	205		
aac agc atc agc cct ggg ttt gtc aag acg gcg ctg acg tac tat gtc	672			
Asn Ser Ile Ser Pro Gly Phe Val Lys Thr Ala Leu Thr Tyr Tyr Val				
210	215	220		
gag acg agc ccg gat tgg gac acc aag atg aag tac tat ggg ggc atg	720			
Glu Thr Ser Pro Asp Trp Asp Thr Lys Met Lys Tyr Tyr Gly Gly Met				
225	230	235	240	
ccg agg ttg gcg ctg ccg caa gag ctg ggt ggc gca tat gtg tac ctg	768			
Pro Arg Leu Ala Leu Pro Gln Glu Leu Gly Gly Ala Tyr Val Tyr Leu				
245	250	255		
ttg agt gag cag gcg acg tac acg aca ggt att gat atc cct att gcg	816			
Leu Ser Glu Gln Ala Thr Tyr Thr Thr Gly Ile Asp Ile Pro Ile Ala				
260	265	270		
ggt att gtt ggt gct tgg tag	837			
Gly Ile Val Gly Ala Trp				
275				

&lt;210&gt; 1596

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1596

Met Thr Ser Thr Asn Gly Asp Pro Ser Glu Gly Pro Lys Thr Ile Ser	
1	5
Thr Leu Pro Gly Pro Asp His Asp Tyr Lys Ile Thr Leu Lys Asp Lys	
20	25
Val Ile Ala Ile Ser Gly Ala Asn Gln Gly Ile Gly Leu Gly Ile Ala	
35	40
Glu Val Cys Leu Ala Asn Asp Ala Ala Cys Ile Tyr Ser Leu Asp Ile	
50	55
Ser Glu Pro Gly Pro Ala Phe Ala Glu Leu Ser Lys Lys Tyr Pro Gly	
65	70
Arg Phe Ala Phe His His Cys Asp Val Thr Ala Tyr Glu Ser Val Asp	
85	90
Lys Ala Leu Asp Ala Ile Ile Glu Ala Arg Gly Arg Leu Asp Gly Met	
100	105
Val Ala Asn Ala Gly Ala Thr Lys His Lys Ala Ala Leu Asp Phe Thr	
115	120
Pro Glu Glu Phe Asp Phe Leu Phe Lys Leu Asn Val Val Gly Gly Trp	
130	135
Asn Cys Ala Thr Ala Ala Ala Arg Lys Phe Ile Lys Leu Gly Cys Lys	
145	150
Gly Ser Ile Val Phe Thr Ala Ser Met Thr Ser Tyr Arg Pro Asn Arg	
165	170
Ala Ala Pro Ser Ala Pro Tyr Gly Ala Thr Lys Ala Ala Ile Arg Asn	
180	185
Tyr Thr His Thr Leu Ala Met Glu Trp Ser Gln Tyr Gly Ile Arg Val	
195	200
Asn Ser Ile Ser Pro Gly Phe Val Lys Thr Ala Leu Thr Tyr Tyr Val	
210	215
Glu Thr Ser Pro Asp Trp Asp Thr Lys Met Lys Tyr Tyr Gly Gly Met	
225	230
Pro Arg Leu Ala Leu Pro Gln Glu Leu Gly Gly Ala Tyr Val Tyr Leu	
245	250
Leu Ser Glu Gln Ala Thr Tyr Thr Thr Gly Ile Asp Ile Pro Ile Ala	
260	265
	270



Gly Ile Val Gly Ala Trp  
275

<210> 1597

<211> 861

<212> DNA

<213> Magnaporthe grisea 70-15

<220>

<221> CDS

<222> (1)..(861)

<400> 1597

atg	tcc	tcc	gat	atc	cca	gac	caa	ccg	ccc	tcc	cgc	tcc	cta	cgc	ggt	48
Met	Ser	Ser	Asp	Ile	Pro	Asp	Gln	Pro	Pro	Ser	Arg	Ser	Leu	Arg	Gly	
1				5				10					15			
cgc	gtc	gcc	atc	gtc	acg	gga	gcc	gga	tgt	gca	ggt	tcc	gga	atc	ggc	96
Arg	Val	Ala	Ile	Val	Thr	Gly	Ala	Gly	Cys	Ala	Gly	Ser	Gly	Ile	Gly	
			20					25					30			
aac	gga	cga	gcc	atc	tct	att	ctc	cta	gcc	gac	gac	ggc	tgc	aat	gtc	144
Asn	Gly	Arg	Ala	Ile	Ser	Ile	Leu	Leu	Ala	Asp	Asp	Gly	Cys	Asn	Val	
			35				40					45				
gtg	tgc	ctc	gac	atg	aac	ctc	gac	tgg	gcg	aac	aag	acc	gtg	gac	atg	192
Val	Cys	Leu	Asp	Met	Asn	Leu	Asp	Trp	Ala	Asn	Lys	Thr	Val	Asp	Met	
			50			55					60					
gtc	aac	gcc	aag	ccc	ggt	cgc	ggc	aca	gcc	atc	gcc	atg	cag	gga	gac	240
Val	Asn	Ala	Lys	Pro	Gly	Arg	Gly	Thr	Ala	Ile	Ala	Met	Gln	Gly	Asp	
				70				75						80		
gtc	acg	aag	cag	gcc	gac	tgc	gac	gcc	gcc	gtg	cag	ctc	gcc	ctg	gac	288
Val	Thr	Lys	Gln	Ala	Asp	Cys	Asp	Ala	Ala	Val	Gln	Leu	Ala	Leu	Asp	
				85				90						95		
aag	ttc	ggc	cgg	ctg	gac	gtc	ctg	gtc	aac	aac	gtc	ggc	gtg	ggc	ggc	336
Lys	Phe	Gly	Arg	Leu	Asp	Val	Leu	Val	Asn	Asn	Val	Gly	Val	Gly	Gly	
			100					105					110			
gcg	ccg	ggc	acg	gcg	gtc	gag	gtg	gac	ttg	gaa	aag	ttt	gcg	cag	agc	384
Ala	Pro	Gly	Thr	Ala	Val	Glu	Val	Asp	Leu	Glu	Lys	Phe	Ala	Gln	Ser	
			115				120					125				
ctc	gag	gtc	aac	gtg	tcg	agc	atg	gtg	cgc	atg	gcc	aag	gct	gcc	atc	432
Leu	Glu	Val	Asn	Val	Ser	Ser	Met	Val	Arg	Met	Ala	Lys	Ala	Ala	Ile	
			130			135					140					
cct	gcc	atg	gtg	cgc	gac	aag	gac	ggc	gtg	gag	atc	aag	ggc	agc	ata	480
Pro	Ala	Met	Val	Arg	Asp	Lys	Asp	Gly	Val	Glu	Ile	Lys	Gly	Ser	Ile	
				150				155							160	
gtc	aac	atg	ggc	tcg	gtc	gcg	ggc	atg	ctc	ggg	ggc	act	ccg	cac	ctt	528
Val	Asn	Met	Gly	Ser	Val	Ala	Gly	Met	Leu	Gly	Gly	Thr	Pro	His	Leu	
				165					170					175		
ttg	tac	cct	acc	agc	aaa	ggt	gcc	gtc	gtc	aac	atg	acg	agg	gct	atg	576
Leu	Tyr	Pro	Thr	Ser	Lys	Gly	Ala	Val	Val	Asn	Met	Thr	Arg	Ala	Met	
			180					185					190			
gcg	gct	cat	cat	gcc	aag	gat	ggt	att	cgc	gtg	aac	tgc	gtg	tgt	cca	624
Ala	Ala	His	His	Ala	Lys	Asp	Gly	Ile	Arg	Val	Asn	Cys	Val	Cys	Pro	
			195				200					205				
ggg	atg	cta	tat	act	ccg	atg	atg	tac	gct	ggt	ggg	atg	agt	gag	gag	672
Gly	Met	Leu	Tyr	Thr	Pro	Met	Met	Tyr	Ala	Gly	Gly	Met	Ser	Glu	Glu	
			210			215						220				
gtc	aga	gag	gcc	cgc	aag	ggc	agg	agt	ctg	ctg	ggt	act	gag	ggt	agc	720
Val	Arg	Glu	Ala	Arg	Lys	Gly	Arg	Ser	Leu	Leu	Gly	Thr	Glu	Gly	Ser	
				230						235					240	
ggt	tgg	gat	gca	gca	tgc	gca	gtc	gtg	ttt	ctt	gct	tcg	gat	cat	tcc	768
Gly	Trp	Asp	Ala	Ala	Cys	Ala	Val	Val	Phe	Leu	Ala	Ser	Asp	His	Ser	
				245					250					255		
aga	tgg	atc	acg	ggt	gcc	att	ttg	cct	gtg	gac	gca	ggg	acc	gct		816
Arg	Trp	Ile	Thr	Gly	Ala	Ile	Leu	Pro	Val	Asp	Ala	Gly	Thr	Thr	Ala	
			260				265						270			
gcg	act	tct	ata	acg	ctg	ccc	aaa	gga	gcg	agc	gtc	aat	ggt	tga		861
Ala	Thr	Ser	Ile	Thr	Leu	Pro	Lys	Gly	Ala	Ser	Val	Asn	Gly			
			275				280					285				

<210> 1598

&lt;211&gt; 286

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1598

```

Met Ser Ser Asp Ile Pro Asp Gln Pro Pro Ser Arg Ser Leu Arg Gly
1 5 10 15
Arg Val Ala Ile Val Thr Gly Ala Gly Cys Ala Gly Ser Gly Ile Gly
20 25 30
Asn Gly Arg Ala Ile Ser Ile Leu Leu Ala Asp Asp Gly Cys Asn Val
35 40 45
Val Cys Leu Asp Met Asn Leu Asp Trp Ala Asn Lys Thr Val Asp Met
50 55 60
Val Asn Ala Lys Pro Gly Arg Gly Thr Ala Ile Ala Met Gln Gly Asp
65 70 75 80
Val Thr Lys Gln Ala Asp Cys Asp Ala Ala Val Gln Leu Ala Leu Asp
85 90 95
Lys Phe Gly Arg Leu Asp Val Leu Val Asn Asn Val Gly Val Gly Gly
100 105 110
Ala Pro Gly Thr Ala Val Glu Val Asp Leu Glu Lys Phe Ala Gln Ser
115 120 125
Leu Glu Val Asn Val Ser Ser Met Val Arg Met Ala Lys Ala Ala Ile
130 135 140
Pro Ala Met Val Arg Asp Lys Asp Gly Val Glu Ile Lys Gly Ser Ile
145 150 155 160
Val Asn Met Gly Ser Val Ala Gly Met Leu Gly Gly Thr Pro His Leu
165 170 175
Leu Tyr Pro Thr Ser Lys Gly Ala Val Val Asn Met Thr Arg Ala Met
180 185 190
Ala Ala His His Ala Lys Asp Gly Ile Arg Val Asn Cys Val Cys Pro
195 200 205
Gly Met Leu Tyr Thr Pro Met Met Tyr Ala Gly Gly Met Ser Glu Glu
210 215 220
Val Arg Glu Ala Arg Lys Gly Arg Ser Leu Leu Gly Thr Glu Gly Ser
225 230 235 240
Gly Trp Asp Ala Ala Cys Ala Val Val Phe Leu Ala Ser Asp His Ser
245 250 255
Arg Trp Ile Thr Gly Ala Ile Leu Pro Val Asp Ala Gly Thr Thr Ala
260 265 270
Ala Thr Ser Ile Thr Leu Pro Lys Gly Ala Ser Val Asn Gly
275 280 285

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&lt;210&gt; 1599

&lt;211&gt; 1110

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1110)

&lt;400&gt; 1599

atg gtt gct gca cgc tcc gtc atg cgc ctg gca ggt att ccc tgc cgt	48
Met Val Ala Ala Arg Ser Val Met Arg Leu Ala Gly Ile Pro Cys Arg	
1 5 10 15	
gct gcc gcc tcg atg ccc atg cca gca gct cgc ttc gct ccc gtt gcc	96
Ala Ala Ala Ser Met Pro Met Pro Ala Ala Arg Phe Ala Pro Val Ala	
20 25 30	
aag aga gct ttc agc aac tcg atg caa cag ccc aag aag tcg gag gtc	144
Lys Arg Ala Phe Ser Asn Ser Met Gln Gln Pro Lys Lys Ser Glu Val	
35 40 45	
atc aag gag acc gag gtg ccc gtc tcg gtg tat aca cct gac tct aag	192
Ile Lys Glu Thr Glu Val Pro Val Ser Val Tyr Thr Pro Asp Ser Lys	
50 55 60	
gga gtt gct tct ggc aac tcg gac cac ttc agc att ccc gtc aag ggc	240
Gly Val Ala Ser Gly Asn Ser Asp His Phe Ser Ile Pro Val Lys Gly	
65 70 75 80	
agc agc aga gcc gct gtt gct caa cca ccg acc ccg gag gag gat gag	288
Ser Ser Arg Ala Ala Val Ala Gln Pro Pro Thr Pro Glu Glu Asp Glu	

## PhoenixTemp32470.tmp.txt

				85				90					95				
ccg	gtc	gtc	cct	cta	tcc	tcc	aag	gtg	tac	tcg	caa	atg	cct	ggc	acc		
Pro	Val	Val	Pro	Leu	Ser	Ser	Lys	Val	Tyr	Ser	Gln	Met	Pro	Gly	Thr		336
			100					105					110				
atg	cag	aag	atg	tcg	gtt	tac	ggc	aag	acc	atc	atc	att	acc	gga	ggc		384
Met	Gln	Lys	Met	Ser	Val	Tyr	Gly	Lys	Thr	Ile	Ile	Ile	Thr	Gly	Gly		
		115					120					125					
gca	cga	gga	ctg	ggc	aac	tac	atg	gct	cgt	gcc	tgt	gct	gag	gcc	ggc		432
Ala	Arg	Gly	Leu	Gly	Asn	Tyr	Met	Ala	Arg	Ala	Cys	Ala	Glu	Ala	Gly		
	130					135					140						
gcc	aaa	gcc	att	atc	atc	ttc	gat	gcc	aac	cag	gag	ctt	gga	gac	gag		480
Ala	Lys	Ala	Ile	Ile	Ile	Phe	Asp	Ala	Asn	Gln	Glu	Leu	Gly	Asp	Glu		
	145				150					155					160		
tct	gct	gct	gag	ctg	cat	cag	aag	acc	ggt	ctt	cct	gtc	acc	ttc	ttc		528
Ser	Ala	Ala	Glu	Leu	His	Gln	Lys	Thr	Gly	Leu	Pro	Val	Thr	Phe	Phe		
			165					170						175			
aag	gtc	gat	gtg	cgt	gac	gga	gca	gcc	atc	aac	gcc	gcc	gta	gat	cgg		576
Lys	Val	Asp	Val	Arg	Asp	Gly	Ala	Ala	Ile	Asn	Ala	Ala	Val	Asp	Arg		
			180					185					190				
gtc	gtt	gag	ctg	ttc	ggc	gct	cct	gac	gtc	ttg	gtc	aac	tcg	gcc	ggt		624
Val	Val	Glu	Leu	Phe	Gly	Ala	Pro	Asp	Val	Leu	Val	Asn	Ser	Ala	Gly		
		195					200					205					
att	gcc	gac	tcg	aac	atc	aag	gcc	gag	acc	tac	gat	ccc	gcc	atg	ttc		672
Ile	Ala	Asp	Ser	Asn	Ile	Lys	Ala	Glu	Thr	Tyr	Asp	Pro	Ala	Met	Phe		
	210					215					220						
cgt	cgc	ctg	atc	gac	atc	aac	ctc	aca	ggc	tca	ttc	ctg	atg	tcc	cag		720
Arg	Arg	Leu	Ile	Asp	Ile	Asn	Leu	Thr	Gly	Ser	Phe	Leu	Met	Ser	Gln		
	225				230				235						240		
gct	gtc	ggc	cgc	gcc	atg	atg	gca	gct	ggc	aag	cct	ggt	tcc	atc	gtc		768
Ala	Val	Gly	Arg	Ala	Met	Met	Ala	Ala	Gly	Lys	Pro	Gly	Ser	Ile	Val		
			245					250						255			
ctg	gtg	gct	tcc	atg	tcg	ggc	agc	atc	gtc	aac	tac	ccg	cag	gag	cag		816
Leu	Val	Ala	Ser	Met	Ser	Gly	Ser	Ile	Val	Asn	Tyr	Pro	Gln	Glu	Gln		
			260				265						270				
tca	tgc	tac	aac	gca	tcc	aag	gct	ggc	gtc	atc	cag	ctc	ggc	aag	tct		864
Ser	Cys	Tyr	Asn	Ala	Ser	Lys	Ala	Gly	Val	Ile	Gln	Leu	Gly	Lys	Ser		
		275					280					285					
ctc	gcc	gct	gag	tgg	gcc	aag	tac	gac	att	cgt	gtc	aac	tgc	atc	tcc		912
Leu	Ala	Ala	Glu	Trp	Ala	Lys	Tyr	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ser		
	290					295					300						
cct	ggg	tac	atg	gac	acc	ctc	aac	aag	gtt	ccc	gcg	ctc	gac	gct			960
Pro	Gly	Tyr	Met	Asp	Thr	Ala	Leu	Asn	Val	Pro	Ala	Leu	Asp	Ala			
				310					315					320			
cag	aag	aag	atc	tgg	aag	tcg	ctc	act	ccc	caa	cag	cga	ctg	ggc	aac		1008
Gln	Lys	Lys	Ile	Trp	Lys	Ser	Leu	Thr	Pro	Gln	Gln	Arg	Leu	Gly	Asn		
				325					330					335			
gtc	gat	gac	ctc	aat	ggt	ctc	tgc	atc	ttc	ctc	gct	tcg	gac	tca	agc		1056
Val	Asp	Asp	Leu	Asn	Gly	Leu	Cys	Ile	Phe	Leu	Ala	Ser	Asp	Ser	Ser		
			340				345					350					
ggt	ttc	atg	acc	ggc	tcc	aac	gtc	atc	att	gac	ggt	ggc	tac	aca	tgc		1104
Gly	Phe	Met	Thr	Gly	Ser	Asn	Val	Ile	Ile	Asp	Gly	Gly	Tyr	Thr	Cys		
		355					360					365					
tac	taa																1110
Tyr																	

&lt;210&gt; 1600

&lt;211&gt; 369

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 1600

Met	Val	Ala	Ala	Arg	Ser	Val	Met	Arg	Leu	Ala	Gly	Ile	Pro	Cys	Arg	
1				5					10					15		
Ala	Ala	Ala	Ser	Met	Pro	Met	Pro	Ala	Ala	Arg	Phe	Ala	Pro	Val	Ala	
			20					25					30			
Lys	Arg	Ala	Phe	Ser	Asn	Ser	Met	Gln	Gln	Pro	Lys	Lys	Ser	Glu	Val	
		35					40					45				
Ile	Lys	Glu	Thr	Glu	Val	Pro	Val	Ser	Val	Tyr	Thr	Pro	Asp	Ser	Lys	

## PhoenixTemp32470.tmp.txt

50 55 60  
 Gly Val Ala Ser Gly Asn Ser Asp His Phe Ser Ile Pro Val Lys Gly  
 65 70 75 80  
 Ser Ser Arg Ala Ala Val Ala Gln Pro Pro Thr Pro Glu Glu Asp Glu  
 85 90 95  
 Pro Val Val Pro Leu Ser Ser Lys Val Tyr Ser Gln Met Pro Gly Thr  
 100 105 110  
 Met Gln Lys Met Ser Val Tyr Gly Lys Thr Ile Ile Ile Thr Gly Gly  
 115 120 125  
 Ala Arg Gly Leu Gly Asn Tyr Met Ala Arg Ala Cys Ala Glu Ala Gly  
 130 135 140  
 Ala Lys Ala Ile Ile Ile Phe Asp Ala Asn Gln Glu Leu Gly Asp Glu  
 145 150 155 160  
 Ser Ala Ala Glu Leu His Gln Lys Thr Gly Leu Pro Val Thr Phe Phe  
 165 170 175  
 Lys Val Asp Val Arg Asp Gly Ala Ala Ile Asn Ala Ala Val Asp Arg  
 180 185 190  
 Val Val Glu Leu Phe Gly Ala Pro Asp Val Leu Val Asn Ser Ala Gly  
 195 200 205  
 Ile Ala Asp Ser Asn Ile Lys Ala Glu Thr Tyr Asp Pro Ala Met Phe  
 210 215 220  
 Arg Arg Leu Ile Asp Ile Asn Leu Thr Gly Ser Phe Leu Met Ser Gln  
 225 230 235 240  
 Ala Val Gly Arg Ala Met Met Ala Ala Gly Lys Pro Gly Ser Ile Val  
 245 250 255  
 Leu Val Ala Ser Met Ser Gly Ser Ile Val Asn Tyr Pro Gln Glu Gln  
 260 265 270  
 Ser Cys Tyr Asn Ala Ser Lys Ala Gly Val Ile Gln Leu Gly Lys Ser  
 275 280 285  
 Leu Ala Ala Glu Trp Ala Lys Tyr Asp Ile Arg Val Asn Cys Ile Ser  
 290 295 300  
 Pro Gly Tyr Met Asp Thr Ala Leu Asn Lys Val Pro Ala Leu Asp Ala  
 305 310 315 320  
 Gln Lys Lys Ile Trp Lys Ser Leu Thr Pro Gln Gln Arg Leu Gly Asn  
 325 330 335  
 Val Asp Asp Leu Asn Gly Leu Cys Ile Phe Leu Ala Ser Asp Ser Ser  
 340 345 350  
 Gly Phe Met Thr Gly Ser Asn Val Ile Ile Asp Gly Gly Tyr Thr Cys  
 355 360 365  
 Tyr

&lt;210&gt; 1601

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(816)

&lt;400&gt; 1601

atg	tcg	tcc	acg	tcc	aga	ttc	agc	ctc	gcc	ggc	aaa	acc	gtc	gcc	atc	48
Met	Ser	Ser	Thr	Ser	Arg	Phe	Ser	Leu	Ala	Gly	Lys	Thr	Val	Ala	Ile	
1				5				10					15			
aca	ggt	ggc	gga	cga	ggc	ctg	ggt	atc	aca	ctt	gcg	ctc	gcc	gtg	gtc	96
Thr	Gly	Gly	Gly	Arg	Gly	Leu	Gly	Ile	Thr	Leu	Ala	Leu	Ala	Val	Val	
			20					25					30			
gaa	gcc	ggc	ggc	cac	gtc	gcc	tgt	ctc	gac	atc	ctc	cca	gag	ccc	gcc	144
Glu	Ala	Gly	Gly	His	Val	Ala	Cys	Leu	Asp	Ile	Leu	Pro	Glu	Pro	Ala	
			35				40					45				
gca	gac	gag	tgg	gag	gcc	ctc	cag	aag	acg	gca	gcc	tcc	gca	cgg	ggc	192
Ala	Asp	Glu	Trp	Glu	Ala	Leu	Gln	Lys	Thr	Ala	Ala	Ser	Ala	Arg	Gly	
			50			55					60					
ggg	ccg	ctc	ggc	tgc	tca	tac	cac	cgg	tgc	gac	gtg	aca	tcc	gag	gcc	240
Gly	Pro	Leu	Gly	Cys	Ser	Tyr	His	Arg	Cys	Asp	Val	Thr	Ser	Glu	Ala	
					70					75					80	
gag	atg	gaa	aag	atg	atc	gac	tcc	atc	gcg	gag	gag	gca	gca	ggc	cgg	288
Glu	Met	Glu	Lys	Met	Ile	Asp	Ser	Ile	Ala	Glu	Glu	Ala	Ala	Gly	Arg	

## PhoenixTemp32470.tmp.txt

																85																	90																	95																
ggc Gly	gcc Ala	gag Glu	ctg Leu 100	gcg Ala	ggg Gly	tgc Cys	gtg Val	gcc Ala 105	tgc Cys	gcg Ala	ggg Gly	ata Ile	caa Gln 110	caa Gln	aag Lys	336																																																		
acg Thr	ccg Pro	gcg Ala 115	ctc Leu	gac Asp	tac Tyr	ccg Pro	gcc Ala 120	gac Asp	ttt Phe	gag Glu	cgg Arg 125	ctc Ile	cgg Leu	384																																																				
gtc Val	aac Asn 130	gtg Val	acg Thr	ggg Gly	gtg Val	ttc Phe 135	atc Ile	acg Thr	gcc Ala	aag Lys	tac Tyr 140	gcg Ala	gcg Ala	cgg Arg	gtc Val	432																																																		
atg Met 145	gtc Val	cgg Arg	cga Arg	ggg Gly	gtc Val 150	aag Lys	ggt Gly	agc Ser	atc Ile	gtg Val 155	ctg Leu	atc Ile	ggc Gly	agc Ser	atg Met 160	480																																																		
agc Ser	ggc Gly	gag Glu	att Ile	gcc Ala 165	aat Asn	cgc Arg	ggg Gly	ctc Leu	acg Thr 170	tgc Cys	acc Thr	gcc Ala	tac Tyr	aac Asn 175	agc Ser	528																																																		
agc Ser	aag Lys	gcg Ala 180	gcg Ala	gtc Val	cag Gln	cag Gln	atg Met	tgc Cys 185	aga Arg	tct Ser	ctg Leu	gct Ala 190	caa Gln	gaa Glu	tgg Trp	576																																																		
gga Gly	aag Lys	cat His 195	ggc Gly	atc Ile	agg Arg	gtt Val	aac Asn 200	acg Thr	tta Leu	tct Ser	ccc Pro	ggg Gly 205	tac Tyr	atc Ile	cga Arg	624																																																		
acc Thr	gcc Ala 210	atg Met	acg Thr	gac Asp	gaa Glu	ctg Leu 215	ttg Leu	gca Ala	gca Ala	gaa Glu	ccc Pro 220	tcg Ser	ttg Leu	gag Glu	gag Glu	672																																																		
aca Thr 225	tgg Trp	atg Met	gcg Ala	ggc Gly 230	gcc Ala	ctt Leu	ctg Leu	gga Gly	agg Arg	tta Leu 235	gga Gly	acg Thr	ccc Pro	gag Glu	gat Asp 240	720																																																		
ttc Phe	atg Met	agc Ser	ccc Pro	gcc Ala 245	gtg Val	ttt Phe	ttg Leu	ctg Leu	gcg Ala 250	gac Asp	ggc Gly	agc Ser	tct Ser	ttc Phe 255	atg Met	768																																																		
acg Thr	ggt Gly	agc Ser	gac Asp 260	ctg Leu	cgc Arg	gtt Val	gat Asp	gga Gly 265	ggg Gly	cat His	tgc Cys	gcg Ala	tcg Ser 270	gct Ala	813																																																			
tag																816																																																		

<210> 1602

<211> 271

<212> PRT

<213> Magnaporthe grisea 70-15

<400> 1602

Met 1	Ser	Ser	Thr	Ser 5	Arg	Phe	Ser	Leu	Ala 10	Gly	Lys	Thr	Val	Ala 15	Ile
Thr	Gly	Gly	Gly 20	Arg	Gly	Leu	Gly	Ile 25	Thr	Leu	Ala	Leu	Ala 30	Val	Val
Glu	Ala	Gly 35	Gly	His	Val	Ala	Cys 40	Leu	Asp	Ile	Leu	Pro 45	Glu	Pro	Ala
Ala	Asp 50	Glu	Trp	Glu	Ala	Leu 55	Gln	Lys	Thr	Ala	Ala 60	Ser	Ala	Arg	Gly
Gly 65	Pro	Leu	Gly	Cys	Ser 70	Tyr	His	Arg	Cys	Asp 75	Val	Thr	Ser	Glu	Ala 80
Glu	Met	Glu	Lys	Met 85	Ile	Asp	Ser	Ile	Ala 90	Glu	Glu	Ala	Ala	Gly 95	Arg
Gly	Ala	Glu	Leu 100	Ala	Gly	Cys	Val	Ala 105	Cys	Ala	Gly	Ile	Gln 110	Gln	Lys
Thr	Pro	Ala 115	Leu	Asp	Tyr	Pro	Ala 120	Ala	Asp	Phe	Glu	Arg 125	Ile	Leu	Arg
Val	Asn 130	Val	Thr	Gly	Val	Phe 135	Ile	Thr	Ala	Lys	Tyr 140	Ala	Ala	Arg	Val
Met 145	Val	Arg	Arg	Gly	Val 150	Lys	Gly	Ser	Ile	Val 155	Leu	Ile	Gly	Ser	Met 160
Ser	Gly	Glu	Ile	Ala 165	Asn	Arg	Gly	Leu	Thr 170	Cys	Thr	Ala	Tyr	Asn 175	Ser
Ser	Lys	Ala	Ala 180	Val	Gln	Gln	Met	Cys 185	Arg	Ser	Leu	Ala	Gln 190	Glu	Trp
Gly	Lys	His	Gly	Ile	Arg	Val	Asn	Thr	Leu	Ser	Pro	Gly	Tyr	Ile	Arg

## PhoenixTemp32470.tmp.txt

195  
 Thr Ala Met Thr Asp Glu Leu 200  
 210 Thr Trp Met Ala Gly Ala Leu 215  
 225 Phe Met Ser Pro Ala Val Phe Leu Leu Ala 235  
 Thr Gly Ser Asp 245 Arg Val Asp Gly 250 His Cys Ala Ser 255  
 260 270

&lt;210&gt; 1603

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 1603

atg tct gct cct cgt ggt cgt ctc gct ggc aaa aac gcc gtc atc acc	48
Met Ser Ala Pro Arg Gly Arg Leu Ala Gly Lys Asn Ala Val Ile Thr	
1 5 10 15	
ggc gct ggt ggt ggc att ggt ctt gag acc tcc atc ctc ttc gca aag	96
Gly Ala Gly Gly Ile Gly Leu Glu Thr Ser Ile Leu Phe Ala Lys	
20 25 30	
gag ggc gct tca atc ctc atg tcc gac atc tcc cag cct gct ctc gaa	144
Glu Gly Ala Ser Ile Leu Met Ser Asp Ile Ser Gln Pro Ala Leu Glu	
35 40 45	
aag gcc gcc gca aag gtc aag cag ctc gtc ccc gat gca ccc cgc gtt	192
Lys Ala Ala Ala Lys Val Lys Gln Leu Val Pro Asp Ala Pro Arg Val	
50 55 60	
gag atc ctg aaa gtc gac gtc tcc aag gaa tca gag gtc cag gcc atg	240
Glu Ile Leu Lys Val Asp Val Ser Lys Glu Ser Glu Val Gln Ala Met	
65 70 75 80	
atc gag tca ctc gac tct tgg ggc ggc atc gac gtc ctc ttc aac aac	288
Ile Glu Ser Leu Asp Ser Trp Gly Gly Ile Asp Val Leu Phe Asn Asn	
85 90 95	
gcc ggt atc atg cac gcc cag gat gac gac gcc gtc aac acc ccc gag	336
Ala Gly Ile Met His Ala Gln Asp Asp Ala Val Asn Thr Pro Glu	
100 105 110	
aac atc tgg gat ctc acc caa aac atc aac gtc aag ggt gtg tgg ttc	384
Asn Ile Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe	
115 120 125	
ggc tgc aag cac gcc gtt ctt tct ctg cgc cgc aac aaa aag tca aag	432
Gly Cys Lys His Ala Val Leu Ser Leu Arg Arg Asn Lys Lys Ser Lys	
130 135 140 145	
gct tcc atc atc aac acc gct tcc gtc gtc gct ctt gtc gga gct gcc	480
Ala Ser Ile Ile Asn Thr Ala Ser Val Val Ala Leu Val Gly Ala Ala	
150 155 160	
aca ccc cag ctt gcc tac act gcc tcc aag ggt gct gtc ctc gct ctc	528
Thr Pro Gln Leu Ala Tyr Thr Ala Ser Lys Gly Ala Val Leu Ala Leu	
165 170 175	
acc cgt gag ctc gcc atg gtt cac gcc aga gag ggc ttc cgc ttc aac	576
Thr Arg Glu Leu Ala Met Val His Ala Arg Glu Gly Phe Arg Phe Asn	
180 185 190	
aac ctc tgc cct gcg ccg ctc aac aca cct ctt ctg cag gac tgg ctt	624
Asn Leu Cys Pro Ala Pro Leu Asn Thr Pro Leu Leu Gln Asp Trp Leu	
195 200 205	
ggt gat gac cag gct aag cga cac cga cgt gag gtc cac ttc ccc atg	672
Gly Asp Asp Gln Ala Lys Arg His Arg Arg Glu Val His Phe Pro Met	
210 215 220	
gga cga ttc ggc gag gct att gag cag gct cac gcc gtt gtc ttc ctg	720
Gly Arg Phe Gly Glu Ala Ile Glu Gln Ala His Ala Val Val Phe Leu	
225 230 235 240	
gct agt gat gag tct agc ttt gtc aac ggt cat gac ttt gcc gtc gac	768
Ala Ser Asp Glu Ser Ser Phe Val Asn Gly His Asp Phe Ala Val Asp	
245 250 255	
ggt ggt atg acc aag ggt tac gtt act gcc gag gga gct gcg cct cct	816

Gly Gly Met Thr Lys Gly Tyr Val Thr Ala Glu Gly Ala Ala Pro Pro  
 260 265 270  
 cct ccc cag aac aac gcc agc aag gat tca ttg taa  
 Pro Pro Gln Asn Asn Ala Ser Lys Asp Ser Leu  
 275 280

852

<210> 1604  
 <211> 283  
 <212> PRT  
 <213> Gibberella zeae PH-1

<400> 1604  
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 Gly Ala Gly Gly Gly Ile Gly Leu Glu Thr Ser Ile Leu Phe Ala Lys  
 20 25 30  
 Glu Gly Ala Ser Ile Leu Met Ser Asp Ile Ser Gln Pro Ala Leu Glu  
 35 40 45  
 Lys Ala Ala Ala Lys Val Lys Gln Leu Val Pro Asp Ala Pro Arg Val  
 50 55 60  
 Glu Ile Leu Lys Val Asp Val Ser Lys Glu Ser Glu Val Gln Ala Met  
 65 70 75 80  
 Ile Glu Ser Leu Asp Ser Trp Gly Gly Ile Asp Val Leu Phe Asn Asn  
 85 90 95  
 Ala Gly Ile Met His Ala Gln Asp Asp Ala Val Asn Thr Pro Glu  
 100 105 110  
 Asn Ile Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe  
 115 120 125  
 Gly Cys Lys His Ala Val Leu Ser Leu Arg Arg Asn Lys Lys Ser Lys  
 130 135 140  
 Ala Ser Ile Ile Asn Thr Ala Ser Val Val Ala Leu Val Gly Ala Ala  
 145 150 155 160  
 Thr Pro Gln Leu Ala Tyr Thr Ala Ser Lys Gly Ala Val Leu Ala Leu  
 165 170 175  
 Thr Arg Glu Leu Ala Met Val His Ala Arg Glu Gly Phe Arg Phe Asn  
 180 185 190  
 Asn Leu Cys Pro Ala Pro Leu Asn Thr Pro Leu Leu Gln Asp Trp Leu  
 195 200 205  
 Gly Asp Asp Gln Ala Lys Arg His Arg Arg Glu Val His Phe Pro Met  
 210 215 220  
 Gly Arg Phe Gly Glu Ala Ile Glu Gln Ala His Ala Val Val Phe Leu  
 225 230 235 240  
 Ala Ser Asp Glu Ser Ser Phe Val Asn Gly His Asp Phe Ala Val Asp  
 245 250 255  
 Gly Gly Met Thr Lys Gly Tyr Val Thr Ala Glu Gly Ala Ala Pro Pro  
 260 265 270  
 Pro Pro Gln Asn Asn Ala Ser Lys Asp Ser Leu  
 275 280

<210> 1605  
 <211> 936  
 <212> DNA  
 <213> Gibberella zeae PH-1

<220>  
 <221> CDS  
 <222> (1)..(936)

<400> 1605  
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 1 10 15  
 gcc gtc cgc gtc gag tac ccc gag cat cat gaa ctt ccc gct agc aag  
 Ala Val Arg Val Glu Tyr Pro Glu His His Glu Leu Pro Ala Ser Lys  
 20 25 30  
 ccc tta att ggt caa ggt gga cag ttc tcc aag ccc act cta gct tcc  
 Pro Leu Ile Gly Gln Gly Gly Gln Phe Ser Lys Pro Thr Leu Ala Ser  
 35 40 45  
 ctt tca ctc gaa ggc aag aca att gtc atc act ggg ggt gca aga ggt  
 48 96 144 192  
 Page 984

## PhoenixTemp32470.tmp.txt

Leu	Ser	Leu	Glu	Gly	Lys	Thr	Ile	Val	Ile	Thr	Gly	Gly	Ala	Arg	Gly		
50						55					60						
ctt	ggt	ctt	gtc	atg	ggt	cag	gga	gta	gtc	tat	tcg	ggt	gct	gat	cta	240	
Leu	Gly	Leu	Val	Met	Gly	Gln	Gly	Val	Val	Tyr	Ser	Gly	Ala	Asp	Leu		
65					70					75					80		
gcc	atc	gtc	gat	ttg	aac	aag	gac	gaa	gca	cag	tct	caa	gta	ggc	caa	288	
Ala	Ile	Val	Asp	Leu	Asn	Lys	Asp	Glu	Ala	Gln	Ser	Gln	Val	Gly	Gln		
				85					90					95			
ttg	aca	gat	gct	ttc	aag	aga	gag	aac	cca	aac	agc	gag	aaa	atc	ccg	336	
Leu	Thr	Asp	Ala	Phe	Lys	Arg	Glu	Asn	Pro	Asn	Ser	Glu	Lys	Ile	Pro		
			100					105					110				
aga	ggt	act	gct	cac	tat	gca	gat	gtc	tct	gat	cca	gac	tcg	gta	acg	384	
Arg	Val	Thr	Ala	His	Tyr	Ala	Asp	Val	Ser	Asp	Pro	Asp	Ser	Val	Thr		
			115				120					125					
aat	tgt	atc	acc	gag	att	ctc	aag	att	cat	cat	aag	atc	gat	ggt	tta	432	
Asn	Cys	Ile	Thr	Glu	Ile	Leu	Lys	Ile	His	His	Lys	Ile	Asp	Gly	Leu		
	130					135					140						
gtt	aca	tcg	gct	gga	ttc	aca	gag	aat	ttc	gag	gca	atc	aac	tat	cct	480	
Val	Thr	Ser	Ala	Gly	Phe	Thr	Glu	Asn	Phe	Glu	Ala	Ile	Asn	Tyr	Pro		
				150						155					160		
atc	gat	cgt	atg	cga	aag	tta	tgg	ggc	gtc	aat	ggt	gac	ggc	act	tat	528	
Ile	Asp	Arg	Met	Arg	Lys	Leu	Trp	Gly	Val	Asn	Val	Asp	Gly	Thr	Tyr		
				165				170						175			
ctc	ttt	gca	gtt	gct	gta	gcc	aag	cat	ctc	atg	gag	cgt	cag	gtg	ccc	576	
Leu	Phe	Ala	Val	Ala	Val	Ala	Lys	His	Leu	Met	Glu	Arg	Gln	Val	Pro		
				180				185					190				
ggt	agt	att	gtg	gtt	att	gga	agc	atg	tct	ggt	gcc	att	gtc	aat	gtc	624	
Gly	Ser	Ile	Val	Val	Ile	Gly	Ser	Met	Ser	Gly	Ala	Ile	Val	Asn	Val		
		195					200					205					
cca	cag	cca	caa	gcc	cca	tat	aac	gcg	gca	aaa	gca	gct	gtt	cga	cac	672	
Pro	Gln	Pro	Gln	Ala	Pro	Tyr	Asn	Ala	Ala	Lys	Ala	Ala	Val	Arg	His		
						215					220						
ctg	gct	gct	tcc	ctt	gca	gtg	gag	tgg	gct	cac	gct	gga	atc	cgt	gtc	720	
Leu	Ala	Ala	Ser	Leu	Ala	Val	Glu	Trp	Ala	His	Ala	Gly	Ile	Arg	Val		
					230					235					240		
aac	tgc	atc	tct	cct	ggc	tat	atg	ttg	act	gct	ttg	aca	cag	aag	atc	768	
Asn	Cys	Ile	Ser	Pro	Gly	Tyr	Met	Leu	Thr	Ala	Leu	Thr	Gln	Lys	Ile		
				245					250					255			
ctc	gac	gac	aac	cct	gat	tta	gag	aga	acc	tgg	aca	tcc	ctc	att	cct	816	
Leu	Asp	Asp	Asn	Pro	Asp	Leu	Glu	Arg	Thr	Trp	Thr	Ser	Leu	Ile	Pro		
				260				265					270				
cag	ggt	cgc	atg	gga	ctg	cct	caa	gat	ttg	atg	gga	ccc	gta	acc	ttt	864	
Gln	Gly	Arg	Met	Gly	Leu	Pro	Gln	Asp	Leu	Met	Gly	Pro	Val	Thr	Phe		
				275			280					285					
ctg	cta	tca	gat	gcg	tca	tct	tat	atg	act	ggg	gca	gat	gtt	cga	gtt	912	
Leu	Leu	Ser	Asp	Ala	Ser	Ser	Tyr	Met	Thr	Gly	Ala	Asp	Val	Arg	Val		
				290		295					300						
gat	gga	gga	tac	act	gtg	acc	tag									936	
Asp	Gly	Gly	Tyr	Thr	Val	Thr											
305					310												

&lt;210&gt; 1606

&lt;211&gt; 311

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1606

Met	Pro	Ala	Gly	Phe	Pro	Pro	Lys	Arg	Ser	Tyr	Ser	Arg	Thr	Asp	Ala		
1				5					10					15			
Ala	Val	Arg	Val	Glu	Tyr	Pro	Glu	His	His	Glu	Leu	Pro	Ala	Ser	Lys		
				20				25					30				
Pro	Leu	Ile	Gly	Gln	Gly	Gly	Gln	Phe	Ser	Lys	Pro	Thr	Leu	Ala	Ser		
		35					40					45					
Leu	Ser	Leu	Glu	Gly	Lys	Thr	Ile	Val	Ile	Thr	Gly	Gly	Ala	Arg	Gly		
						55					60						
Leu	Gly	Leu	Val	Met	Gly	Gln	Gly	Val	Val	Tyr	Ser	Gly	Ala	Asp	Leu		
65					70					75					80		
Ala	Ile	Val	Asp	Leu	Asn	Lys	Asp	Glu	Ala	Gln	Ser	Gln	Val	Gly	Gln		
				85					90					95			



## PhoenixTemp32470.tmp.txt

Leu Thr Asp Ala Phe Lys Arg Glu Asn Pro Asn Ser Glu Lys Ile Pro  
 100 105 110  
 Arg Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Asp Ser Val Thr  
 115 120 125  
 Asn Cys Ile Thr Glu Ile Leu Lys Ile His His Lys Ile Asp Gly Leu  
 130 135 140  
 Val Thr Ser Ala Gly Phe Thr Glu Asn Phe Glu Ala Ile Asn Tyr Pro  
 145 150 155 160  
 Ile Asp Arg Met Arg Lys Leu Trp Gly Val Asn Val Asp Gly Thr Tyr  
 165 170 175  
 Leu Phe Ala Val Ala Val Ala Lys His Leu Met Glu Arg Gln Val Pro  
 180 185 190  
 Gly Ser Ile Val Val Ile Gly Ser Met Ser Gly Ala Ile Val Asn Val  
 195 200 205  
 Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Ala Val Arg His  
 210 215 220  
 Leu Ala Ala Ser Leu Ala Val Glu Trp Ala His Ala Gly Ile Arg Val  
 225 230 235 240  
 Asn Cys Ile Ser Pro Gly Tyr Met Leu Thr Ala Leu Thr Gln Lys Ile  
 245 250 255  
 Leu Asp Asp Asn Pro Asp Leu Glu Arg Thr Trp Thr Ser Leu Ile Pro  
 260 265 270  
 Gln Gly Arg Met Gly Leu Pro Gln Asp Leu Met Gly Pro Val Thr Phe  
 275 280 285  
 Leu Leu Ser Asp Ala Ser Ser Tyr Met Thr Gly Ala Asp Val Arg Val  
 290 295 300  
 Asp Gly Gly Tyr Thr Val Thr  
 305 310

&lt;210&gt; 1607

&lt;211&gt; 882

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(882)

&lt;400&gt; 1607

atg gct ccc gct atc gtc tca gac atc gag ctc ccg gct aat gtg ccc	48
Met Ala Pro Ala Ile Val Ser Asp Ile Glu Leu Pro Ala Asn Val Pro	
1 5 10 15	
gag tcc caa gag aca ccc gcc tca aaa gca tca acc tac aag ctc ttc	96
Glu Ser Gln Glu Thr Pro Ala Ser Lys Ala Ser Thr Tyr Lys Leu Phe	
20 25 30	
tca ctc gag aac aag acc atc gcc atc aca gga gga gcc cgt ggt ctg	144
Ser Leu Glu Asn Lys Thr Ile Ala Ile Thr Gly Gly Ala Arg Gly Leu	
35 40 45	
ggt att acc cta gcc ctc gcc gtt gtt gaa gct ggt ggc agc gta gcc	192
Gly Ile Thr Leu Ala Leu Ala Val Val Glu Ala Gly Gly Ser Val Ala	
50 55 60	
tgt cta gac att ctc gaa gag cca tcg caa gca gag tgg gca cag ctc	240
Cys Leu Asp Ile Leu Glu Glu Pro Ser Gln Ala Glu Trp Ala Gln Leu	
65 70 75 80	
aac aag atc gcc aca gcc aac aaa gtg tcc gtg tct tac cgg aaa tgc	288
Asn Lys Ile Ala Thr Ala Asn Lys Val Ser Val Ser Tyr Arg Lys Cys	
85 90 95	
gat gtc aca gaa gag caa tct gtc gag aca gcg atg aag gag att gca	336
Asp Val Thr Glu Glu Gln Ser Val Glu Thr Ala Met Lys Glu Ile Ala	
100 105 110	
gcc gaa gcc gat aag ttt gaa gcg ccg ttc tgg ggg acc att gct tgc	384
Ala Glu Ala Asp Lys Phe Glu Ala Pro Phe Trp Gly Thr Ile Ala Cys	
115 120 125	
gcc ggt atc cag cag caa att gca gcg ctt gac tat cct gct gcc gac	432
Ala Gly Ile Gln Gln Gln Ile Ala Ala Leu Asp Tyr Pro Ala Ala Asp	
130 135 140	
ttt gac cga att cta cga gtc aat gtg act ggt gtc ttt aat act tgc	480
Phe Asp Arg Ile Leu Arg Val Asn Val Thr Gly Val Phe Asn Thr Cys	
145 150 155 160	

## PhoenixTemp32470.tmp.txt

aag	tat	gct	gcg	aga	gta	cta	cga	gaa	aac	aac	agc	cct	ggt	agc	att	528
Lys	Tyr	Ala	Ala	Arg	Val	Leu	Arg	Glu	Asn	Asn	Ser	Pro	Gly	Ser	Ile	
				165					170					175		
gtg	att	att	ggc	agc	atg	tcg	ggc	aac	att	gcc	aat	cga	ggc	ctt	tca	576
Val	Ile	Ile	Gly	Ser	Met	Ser	Gly	Asn	Ile	Ala	Asn	Arg	Gly	Leu	Ser	
			180					185					190			
tgc	acg	gca	tac	aac	tcc	agt	aaa	gct	gca	gtc	cag	caa	atg	tgc	cga	624
Cys	Thr	Ala	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	Gln	Gln	Met	Cys	Arg	
		195					200					205				
tcg	gtc	gct	cag	gaa	tgg	ggt	caa	tac	ggt	atc	cga	gtc	aac	aca	ttg	672
Ser	Val	Ala	Gln	Glu	Trp	Gly	Gln	Tyr	Gly	Ile	Arg	Val	Asn	Thr	Leu	
	210					215					220					
tct	ccc	ggc	tac	att	cga	act	gcc	atg	aca	gac	cag	ttg	ctc	caa	gag	720
Ser	Pro	Gly	Tyr	Ile	Arg	Thr	Ala	Met	Thr	Asp	Gln	Leu	Leu	Gln	Glu	
225					230					235					240	
aac	ccc	gag	gtc	gag	aag	acg	tgg	atg	gct	ggt	gct	ctg	ctg	gga	cgt	768
Asn	Pro	Glu	Val	Glu	Lys	Thr	Trp	Met	Ala	Gly	Ala	Leu	Leu	Gly	Arg	
				245					250					255		
ttg	ggc	gcc	ccc	gag	gac	ttc	aaa	gca	cca	gct	gtg	ttc	tta	cta	tct	816
Leu	Gly	Ala	Pro	Glu	Asp	Phe	Lys	Ala	Pro	Ala	Val	Phe	Leu	Leu	Ser	
			260					265					270			
gag	ggt	gct	tct	ttt	gtg	aca	gga	acc	gac	ctg	cgg	gta	gat	gga	ggt	864
Glu	Gly	Ala	Ser	Phe	Val	Thr	Gly	Thr	Asp	Leu	Arg	Val	Asp	Gly	Gly	
		275					280					285				
cac	tgc	gca	tct	gca	tag											882
His	Cys	Ala	Ser	Ala												
	290															

&lt;210&gt; 1608

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1608

Met	Ala	Pro	Ala	Ile	Val	Ser	Asp	Ile	Glu	Leu	Pro	Ala	Asn	Val	Pro	
1				5					10					15		
Glu	Ser	Gln	Glu	Thr	Pro	Ala	Ser	Lys	Ala	Ser	Thr	Tyr	Lys	Leu	Phe	
			20					25					30			
Ser	Leu	Glu	Asn	Lys	Thr	Ile	Ala	Ile	Thr	Gly	Gly	Ala	Arg	Gly	Leu	
		35					40					45				
Gly	Ile	Thr	Leu	Ala	Leu	Ala	Val	Val	Glu	Ala	Gly	Gly	Ser	Val	Ala	
	50					55				60						
Cys	Leu	Asp	Ile	Leu	Glu	Glu	Pro	Ser	Gln	Ala	Glu	Trp	Ala	Gln	Leu	
65					70				75					80		
Asn	Lys	Ile	Ala	Thr	Ala	Asn	Lys	Val	Ser	Val	Ser	Tyr	Arg	Lys	Cys	
			85					90						95		
Asp	Val	Thr	Glu	Gln	Ser	Val	Glu	Thr	Ala	Met	Lys	Glu	Ile	Ala		
		100					105					110				
Ala	Glu	Ala	Asp	Lys	Phe	Glu	Ala	Pro	Phe	Trp	Gly	Thr	Ile	Ala	Cys	
		115					120					125				
Ala	Gly	Ile	Gln	Gln	Gln	Ile	Ala	Ala	Leu	Asp	Tyr	Pro	Ala	Ala	Asp	
	130					135					140					
Phe	Asp	Arg	Ile	Leu	Arg	Val	Asn	Val	Thr	Gly	Val	Phe	Asn	Thr	Cys	
145					150					155					160	
Lys	Tyr	Ala	Ala	Arg	Val	Leu	Arg	Glu	Asn	Asn	Ser	Pro	Gly	Ser	Ile	
			165						170					175		
Val	Ile	Ile	Gly	Ser	Met	Ser	Gly	Asn	Ile	Ala	Asn	Arg	Gly	Leu	Ser	
		180						185					190			
Cys	Thr	Ala	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	Gln	Gln	Met	Cys	Arg	
		195					200					205				
Ser	Val	Ala	Gln	Glu	Trp	Gly	Gln	Tyr	Gly	Ile	Arg	Val	Asn	Thr	Leu	
	210					215					220					
Ser	Pro	Gly	Tyr	Ile	Arg	Thr	Ala	Met	Thr	Asp	Gln	Leu	Leu	Gln	Glu	
225					230					235					240	
Asn	Pro	Glu	Val	Glu	Lys	Thr	Trp	Met	Ala	Gly	Ala	Leu	Leu	Gly	Arg	
				245					250					255		
Leu	Gly	Ala	Pro	Glu	Asp	Phe	Lys	Ala	Pro	Ala	Val	Phe	Leu	Leu	Ser	
		260						265					270			
Glu	Gly	Ala	Ser	Phe	Val	Thr	Gly	Thr	Asp	Leu	Arg	Val	Asp	Gly	Gly	

His Cys 275  
Ala Ser Ala  
290

<210> 1609  
<211> 807  
<212> DNA  
<213> Gibberella zeae PH-1

<220>  
<221> CDS  
<222> (1)..(807)

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<400> 1609
atg ctc aac ctc aag aac aaa gta gct ctc gtc atc ggc ctc ggt caa      48
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1
aca aac acc gaa ggt tgg ggt atc ggt gca gca agc gcc gta acc ctt      96
Thr Asn Thr Glu Gly Trp Gly Ile Gly 25 Ala Ala Ser Ala 30 Thr Leu
20
gca cga caa gga gcc atc atc ttt ggc ggc aac aga aca atc gct tca      144
Ala Arg Gln Gly Ala Ile Ile Phe Gly Gly Asn Arg Thr Ile Ala Ser
35
act aca aag aca aaa gaa acc atc caa caa caa ggc ggc caa tgt gat      192
Thr Thr Lys Thr Lys Glu Thr 55 Ile Gln Gln Gln 60 Gly Gly Gln Cys Asp
50
gtc gtc gcc aca aac gct aca gac tct gca tcc gtc aag gct gtc gtc      240
Val Val Ala Thr Asn Ala Thr Asp Ser Ala Ser Val Lys Ala Val Val 80
65
gac gct tgc atg gaa aaa cat gga agg att gat atc ctg tta aca agc      288
Asp Ala Cys Met Glu Lys His Gly Arg Ile Asp Ile Leu Leu Thr Ser
85
gtt ggt caa tct caa cca ggg gat cct gca tcc atg aca gaa gac gta      336
Val Gly Gln Ser Gln Pro Gly Asp Pro Ala Ser Met Thr Glu Asp Val
100
tgg gat tcg cag atg gat att aat ctc aaa agt gtg tat ctt gca tgt      384
Trp Asp Ser Gln Met Asp Ile Asn Leu Lys Ser Val Tyr Leu Ala Cys
115
cac cat gtt ctt ccc att atg gag tcc caa gga agt ggt tca att att      432
His His Val Leu Pro Ile Met Glu Ser Gln Gly 140 Gly Ser Ile Ile
130
tgc atc tcc agc atc gcc ggt ctt cgg tac att ggc aag ccg cag ata      480
Cys Ile Ser Ser Ile Ala Gly Leu Arg Tyr Ile Gly Lys Pro Gln Ile
145
gcg tac aac acg agc aaa gcg gcg ata ctc cag ttc gtc aaa gct acg      528
Ala Tyr Asn Thr Ser Lys Ala Ala Ile Leu Gln Phe Val Lys Ala Thr
165
gca gtt ata tac gcg cca aag ggt ata cgg ctc aac act gtt gtt ccg      576
Ala Val Ile Tyr Ala Pro Lys Gly Ile Arg Leu Asn Thr Val Val Pro
180
gga ctc atg gat acg cct tac aca aag agt ctg gcg cag aga ttt gct      624
Gly Leu Met Asp Thr Pro Tyr Thr Lys Ser Leu Ala Gln Arg Phe Ala
195
acg cca ggg ggt tat gat gag ttt tgt agc atg agg gag gga cag gtt      672
Thr Pro Gly Gly Tyr Asp Glu Phe Cys Ser Met Arg Glu Gly Gln Val
210
cct atg ggg agg atg gga gat gcg tgg gat gtt gct aat acg gtt gtg      720
Pro Met Gly Arg Met Gly Asp Ala Trp Asp Val Ala Asn Thr Val Val
225
ttt ttg gcg gcg gat gag acg agg tat atc acg gga caa aag att gtt      768
Phe Leu Ala Ala Asp Glu Thr Arg Tyr Ile Thr Gly Gln Lys Ile Val
245
gtt gat ggg ggg atc act tca tct acg ggg cgg act tga      807
Val Asp Gly Gly Ile Thr Ser Ser Thr Gly Arg Thr
260
265

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<210> 1610  
<211> 268  
<212> PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1610

```

Met Leu Asn Leu Lys Asn Lys Val Ala Leu Val Ile Gly Leu Gly Gln
1      5      10      15
Thr Asn Thr Glu Gly Trp Gly Ile Gly Ala Ala Ser Ala Val Thr Leu
20      25      30
Ala Arg Gln Gly Ala Ile Ile Phe Gly Gly Asn Arg Thr Ile Ala Ser
35      40      45
Thr Thr Lys Thr Lys Glu Thr Ile Gln Gln Gln Gly Gly Gln Cys Asp
50      55      60
Val Val Ala Thr Asn Ala Thr Asp Ser Ala Ser Val Lys Ala Val Val
65      70      75      80
Asp Ala Cys Met Glu Lys His Gly Arg Ile Asp Ile Leu Leu Thr Ser
85      90      95
Val Gly Gln Ser Gln Pro Gly Asp Pro Ala Ser Met Thr Glu Asp Val
100      105      110
Trp Asp Ser Gln Met Asp Ile Asn Leu Lys Ser Val Tyr Leu Ala Cys
115      120      125
His His Val Leu Pro Ile Met Glu Ser Gln Gly Ser Gly Ser Ile Ile
130      135      140
Cys Ile Ser Ser Ile Ala Gly Leu Arg Tyr Ile Gly Lys Pro Gln Ile
145      150      155      160
Ala Tyr Asn Thr Ser Lys Ala Ala Ile Leu Gln Phe Val Lys Ala Thr
165      170      175
Ala Val Ile Tyr Ala Pro Lys Gly Ile Arg Leu Asn Thr Val Val Pro
180      185      190
Gly Leu Met Asp Thr Pro Tyr Thr Lys Ser Leu Ala Gln Arg Phe Ala
195      200      205
Thr Pro Gly Gly Tyr Asp Glu Phe Cys Ser Met Arg Glu Gly Gln Val
210      215      220
Pro Met Gly Arg Met Gly Asp Ala Trp Asp Val Ala Asn Thr Val Val
225      230      235      240
Phe Leu Ala Ala Asp Glu Thr Arg Tyr Ile Thr Gly Gln Lys Ile Val
245      250      255
Val Asp Gly Gly Ile Thr Ser Ser Thr Gly Arg Thr
260      265

```

&lt;210&gt; 1611

&lt;211&gt; 1038

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1038)

&lt;400&gt; 1611

```

atg tct ttt gca cct tct ttg cgt ctc tgt gtg cgg cgt gtt gct gct      48
Met Ser Phe Ala Pro Ser Leu Arg Leu Cys Val Arg Arg Val Ala Ala
1      5      10      15
tca cct gct att cgc ccc tgt ttc act ttt act gct gcg cga aag ctt      96
Ser Pro Ala Ile Arg Pro Cys Phe Thr Phe Thr Ala Ala Arg Lys Leu
20      25      30
cac aat gtc cct ccc cga cag gac aaa cca gga aaa tat gcc cag acc      144
His Asn Val Pro Pro Arg Gln Asp Lys Pro Gly Lys Tyr Ala Gln Thr
35      40      45
gat ccc cag atc gag gtt gag tac cca gaa gat cat gag ctc cct agc      192
Asp Pro Gln Ile Glu Val Glu Tyr Pro Glu Asp His Glu Leu Pro Ser
50      55      60
agt gag cct gtc tct ggc gct ggt ggc cag tat gtg aag cca act ctg      240
Ser Glu Pro Val Ser Gly Ala Gly Gly Gln Tyr Val Lys Pro Thr Leu
65      70      75      80
ccc acc ttt aca ctc gac ggt cat gtt ggc atc gtc acc ggt ggt gca      288
Pro Thr Phe Thr Leu Asp Gly His Val Gly Ile Val Thr Gly Gly Ala
85      90      95
cgt ggg ttg ggt ctt gtt atg ggt caa gga atg gta ttc tct gga tcc      336
Arg Gly Leu Gly Leu Val Met Gly Gln Gly Met Val Phe Ser Gly Ser
100      105      110

```

## PhoenixTemp32470.tmp.txt

aac	ctt	gct	ctt	gtt	gat	atg	aat	aag	gaa	gaa	gca	gag	aag	cag	act	384
Asn	Leu	Ala	Leu	Val	Asp	Met	Asn	Lys	Glu	Glu	Ala	Glu	Lys	Gln	Thr	
		115					120					125				
agc	ttg	atc	att	gaa	gag	ttc	aaa	aag	gag	aac	cct	cga	gcc	cga	cga	432
Ser	Leu	Ile	Ile	Glu	Glu	Phe	Lys	Lys	Glu	Asn	Pro	Arg	Ala	Arg	Arg	
	130					135					140					
atc	cca	aag	gtc	act	gcc	cat	tat	gct	gat	gta	tct	gat	cct	gaa	tct	480
Ile	Pro	Lys	Val	Thr	Ala	His	Tyr	Ala	Asp	Val	Ser	Asp	Pro	Glu	Ser	
	145				150					155					160	
gtc	gag	gct	tgt	gta	gcc	gag	gtt	gtt	aag	gag	cac	gga	aag	atc	gac	528
Val	Glu	Ala	Cys	Val	Ala	Glu	Val	Val	Lys	Glu	His	Gly	Lys	Ile	Asp	
				165					170					175		
aac	ctg	gtc	acc	tca	gct	ggc	ttc	acg	gag	aac	ttc	gaa	gcc	gtt	aac	576
Asn	Leu	Val	Thr	Ser	Ala	Gly	Phe	Thr	Glu	Asn	Phe	Glu	Ala	Val	Asn	
			180					185					190			
tac	ccc	atc	gac	cgt	ctc	cgt	aag	ctt	tgg	gct	gtt	aac	gtt	gac	ggg	624
Tyr	Pro	Ile	Asp	Arg	Leu	Arg	Lys	Leu	Trp	Ala	Val	Asn	Val	Asp	Gly	
		195					200					205				
aca	tat	ctc	ttt	gca	aca	tca	gtc	agg	cac	ttg	atg	caa	aga	aag		672
Thr	Tyr	Leu	Phe	Ala	Thr	Ser	Val	Ala	Arg	His	Leu	Met	Gln	Arg	Lys	
	210					215					220					
gct	cct	ggg	agc	atc	gtc	atg	att	ggg	agc	atg	tcc	gga	tcc	att	gtc	720
Ala	Pro	Gly	Ser	Ile	Val	Met	Ile	Gly	Ser	Met	Ser	Gly	Ser	Ile	Val	
	225				230				235						240	
aac	gtt	cct	cag	cct	cag	gct	ccc	tat	aat	gcc	gcc	aaa	gcc	ggg	gtg	768
Asn	Val	Pro	Gln	Pro	Gln	Ala	Pro	Tyr	Asn	Ala	Ala	Lys	Ala	Gly	Val	
				245					250					255		
cgc	cat	ctc	gct	gct	tcc	ttg	gcc	gtc	gaa	tgg	gct	cag	gca	aac	atc	816
Arg	His	Leu	Ala	Ala	Ser	Leu	Ala	Val	Glu	Trp	Ala	Gln	Ala	Asn	Ile	
			260					265					270			
cga	gtc	aac	tgc	atc	tct	ccc	ggg	tac	atg	ttg	act	gca	ctc	act	cag	864
Arg	Val	Asn	Cys	Ile	Ser	Pro	Gly	Tyr	Met	Leu	Thr	Ala	Leu	Thr	Gln	
		275					280					285				
aag	att	ctt	gac	gac	aac	ccg	gat	ctc	aag	gcc	aag	tgg	act	tcc	ctt	912
Lys	Ile	Leu	Asp	Asp	Asn	Pro	Asp	Leu	Lys	Ala	Lys	Trp	Thr	Ser	Leu	
	290					295					300					
atc	ccc	cag	ggc	aaa	atg	gga	caa	cca	cag	gac	ctc	atg	ggg	ccc	gtg	960
Ile	Pro	Gln	Gly	Lys	Met	Gly	Gln	Pro	Gln	Asp	Leu	Met	Gly	Pro	Val	
	305				310					315					320	
gca	ttc	ctc	cta	tca	gat	gct	tct	tcg	tat	gtg	act	ggg	gcc	gac	atc	1008
Ala	Phe	Leu	Leu	Ser	Asp	Ala	Ser	Ser	Tyr	Val	Thr	Gly	Ala	Asp	Ile	
				325					330					335		
cga	gtc	gat	ggc	ggc	tac	acc	gtt	acc	tag							1038
Arg	Val	Asp	Gly	Gly	Tyr	Thr	Val	Thr								
			340					345								

&lt;210&gt; 1612

&lt;211&gt; 345

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1612

Met	Ser	Phe	Ala	Pro	Ser	Leu	Arg	Leu	Cys	Val	Arg	Arg	Val	Ala	Ala	
1				5					10					15		
Ser	Pro	Ala	Ile	Arg	Pro	Cys	Phe	Thr	Phe	Thr	Ala	Ala	Arg	Lys	Leu	
			20					25					30			
His	Asn	Val	Pro	Pro	Arg	Gln	Asp	Lys	Pro	Gly	Lys	Tyr	Ala	Gln	Thr	
		35					40					45				
Asp	Pro	Gln	Ile	Glu	Val	Glu	Tyr	Pro	Glu	Asp	His	Glu	Leu	Pro	Ser	
	50					55					60					
Ser	Glu	Pro	Val	Ser	Gly	Ala	Gly	Gly	Gln	Tyr	Val	Lys	Pro	Thr	Leu	
65				70					75					80		
Pro	Thr	Phe	Thr	Leu	Asp	Gly	His	Val	Gly	Ile	Val	Thr	Gly	Gly	Ala	
				85					90					95		
Arg	Gly	Leu	Gly	Leu	Val	Met	Gly	Gln	Gly	Met	Val	Phe	Ser	Gly	Ser	
		100						105				110				
Asn	Leu	Ala	Leu	Val	Asp	Met	Asn	Lys	Glu	Glu	Ala	Glu	Lys	Gln	Thr	
		115					120					125				
Ser	Leu	Ile	Ile	Glu	Glu	Phe	Lys	Lys	Glu	Asn	Pro	Arg	Ala	Arg	Arg	

## PhoenixTemp32470.tmp.txt

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130      135      140
Ile Pro Lys Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Glu Ser
145 Val Glu Ala Cys Val Ala Glu Val Val Lys Glu His Gly Lys Ile Asp
165      170      175
Asn Leu Val Thr Ser Ala Gly Phe Thr Glu Asn Phe Glu Ala Val Asn
180      185      190
Tyr Pro Ile Asp Arg Leu Arg Lys Leu Trp Ala Val Asn Val Asp Gly
195      200      205
Thr Tyr Leu Phe Ala Thr Ser Val Ala Arg His Leu Met Gln Arg Lys
210      215      220
Ala Pro Gly Ser Ile Val Met Ile Gly Ser Met Ser Gly Ser Ile Val
225      230      235
Asn Val Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Gly Val
245      250      255
Arg His Leu Ala Ala Ser Leu Ala Val Glu Trp Ala Gln Ala Asn Ile
260      265      270
Arg Val Asn Cys Ile Ser Pro Gly Tyr Met Leu Thr Ala Leu Thr Gln
275      280      285
Lys Ile Leu Asp Asp Asn Pro Asp Leu Lys Ala Lys Trp Thr Ser Leu
290      295      300
Ile Pro Gln Gly Lys Met Gly Gln Pro Gln Asp Leu Met Gly Pro Val
305      310      315
Ala Phe Leu Leu Ser Asp Ala Ser Ser Tyr Val Thr Gly Ala Asp Ile
325      330      335
Arg Val Asp Gly Gly Tyr Thr Val Thr
340      345

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<210> 1613  
 <211> 1086  
 <212> DNA  
 <213> Gibberella zeae PH-1

<220>  
 <221> CDS  
 <222> (1)..(1086)

```

<400> 1613
atg tct ttc gca gct cgc aat gcc ctc cgt ctg act cgg gct gcc gcc      48
Met Ser Phe Ala Ala Arg Asn Ala Leu Arg Leu Thr Arg Ala Ala Ala
1      5
cct gct ctc ccc aga aac gct gct cga tgc ttc tca gcc act cgt att      96
Pro Ala Leu Pro Arg Asn Ala Ala Arg Cys Phe Ser Ala Thr Arg Ile
20      25      30
cag cgt gtc aat gac aca aac atg aag aag aac gtg gtt cgt gag aag      144
Gln Arg Val Asn Asp Thr Asn Met Lys Lys Asn Val Val Arg Glu Lys
35      40      45
gag att cct gtc act gtc tac gct gca ggt cag ggt acc ggc gat aag      192
Glu Ile Pro Val Thr Val Tyr Ala Ala Gly Gln Gly Thr Gly Asp Lys
50      55      60
cac aca gtc aac gta tcc gag gct gct gct cgc att ccc agt gag act      240
His Thr Val Asn Val Ser Glu Ala Ala Ala Arg Ile Pro Ser Glu Thr
65      70      75
cct gtt cct act cct gac agc gat gtg gtt cag ccc ctc acc cgc aag      288
Pro Val Pro Thr Pro Asp Ser Asp Val Val Gln Pro Leu Thr Arg Lys
85      90      95
acc ttc gag caa ctc cct cag act atg cgc aac atg agt gtc tac ggc      336
Thr Phe Glu Gln Leu Pro Gln Thr Met Arg Asn Met Ser Val Tyr Gly
100      105      110
aag act atc tta ctc act ggt gct gcc cgt ggt ctc gga aac tac atg      384
Lys Thr Ile Leu Leu Thr Gly Ala Ala Arg Gly Leu Gly Asn Tyr Met
115      120      125
gct cgc gcc tgt gct gag gcc ggt gcc aag aac atc gtc ctc ttt gat      432
Ala Arg Ala Cys Ala Glu Ala Gly Ala Lys Asn Ile Val Leu Phe Asp
130      135      140
gcc aac cag gag ctt ggt gac caa gca gct gct gag ctt cat gac aag      480
Ala Asn Gln Glu Leu Gly Asp Gln Ala Ala Ala Glu Leu His Asp Lys
145      150      155
act ggc cta ccc gtc tca ttc ttc aag gtc gac gtc cgt gac ggt gct      528

```

## PhoenixTemp32470.tmp.txt

Thr	Gly	Leu	Pro	Val 165	Ser	Phe	Phe	Lys	Val 170	Asp	Val	Arg	Asp	Gly 175	Ala		
gca	atc	aac	gct	gct	gtc	gac	gag	gtt	gtt	gag	cac	tat	ggc	gcc	cct	576	
Ala	Ile	Asn	Ala 180	Ala	Val	Asp	Glu	Val 185	Val	Glu	His	Tyr	Gly 190	Ala	Pro		
gat	gtt	ctt	gtc	aac	tcg	gcc	ggt	atc	gcc	gat	tca	aac	atc	aag	gct	624	
Asp	Val	Leu 195	Val	Asn	Ser	Ala	Gly 200	Ile	Ala	Asp	Ser	Asn 205	Ile	Lys	Ala		
gag	aca	tac	gac	cct	gcc	atg	ttt	cgc	cgt	ctc	att	gac	att	aac	ctc	672	
Glu	Thr 210	Tyr	Asp	Pro	Ala	Met 215	Phe	Arg	Arg	Leu	Ile 220	Asp	Ile	Asn	Leu		
acg	gga	tct	ttc	ctc	atg	tcc	cag	gcc	gtc	ggt	cgt	gct	atg	atg	gcc	720	
Thr 225	Gly	Ser	Phe	Leu	Met 230	Ser	Gln	Ala	Val	Gly 235	Arg	Ala	Met	Met	Ala 240		
gct	gga	aag	cct	ggc	agc	atc	atc	ctg	gtt	gct	tct	atg	tct	ggc	tca	768	
Ala	Gly	Lys	Pro	Gly 245	Ser	Ile	Ile	Leu	Val 250	Ala	Ser	Met	Ser	Gly 255	Ser		
gtt	gtc	aac	ttc	cct	cag	gag	cag	agc	tgc	tac	aac	gcc	tcc	aag	gcg	816	
Val	Val	Asn 260	Phe	Pro	Gln	Glu	Gln	Ser 265	Cys	Tyr	Asn	Ala 270	Ser	Lys	Ala		
ggt	gtc	atc	caa	ctc	ggc	aag	tcc	ctc	gct	gct	gag	tgg	gct	aag	ttc	864	
Gly	Val 275	Ile	Gln	Leu	Gly	Lys	Ser 280	Leu	Ala	Ala	Glu	Trp 285	Ala	Lys	Phe		
gac	atc	cga	gtc	aac	tgt	atc	tcc	cct	gga	tat	atg	gac	act	gct	ctc	912	
Asp	Ile 290	Arg	Val	Asn	Cys	Ile 295	Ser	Pro	Gly	Tyr	Met 300	Asp	Thr	Ala	Leu		
aac	cgt	gta	ccc	gct	ctc	gac	gca	cag	aag	aag	atc	tgg	aag	tct	ctt	960	
Asn	Arg	Val	Pro	Ala 310	Leu	Asp	Ala	Gln	Lys	Lys 315	Ile	Trp	Lys	Ser	Leu 320		
act	ccc	cag	aat	cgc	ctt	ggt	aac	gtt	gac	gag	ctc	aac	ggt	ctc	tgc	1008	
Thr	Pro	Gln	Asn 325	Arg	Leu	Gly	Asn	Val 330	Asp	Glu	Leu	Asn	Gly 335	Leu	Cys		
atc	ttc	ctt	gcc	tcc	gac	tct	tcc	aag	ttc	atg	act	ggt	tcc	aac	tgc	1056	
Ile	Phe	Leu 340	Ala	Ser	Asp	Ser	Ser	Lys 345	Phe	Met	Thr	Gly 350	Ser	Asn	Cys		
atc	atc	gac	ggt	ggc	tac	aca	tgc	tac	taa							1086	
Ile	Ile	Asp 355	Gly	Gly	Tyr	Thr	Cys 360	Tyr									

&lt;210&gt; 1614

&lt;211&gt; 361

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1614

Met	Ser	Phe	Ala	Ala 5	Arg	Asn	Ala	Leu	Arg 10	Leu	Thr	Arg	Ala	Ala 15	Ala		
Pro	Ala	Leu	Pro 20	Arg	Asn	Ala	Ala	Arg 25	Cys	Phe	Ser	Ala	Thr 30	Arg	Ile		
Gln	Arg	Val 35	Asn	Asp	Thr	Asn	Met 40	Lys	Lys	Asn	Val	Val 45	Arg	Glu	Lys		
Glu	Ile 50	Pro	Val	Thr	Val	Tyr 55	Ala	Ala	Gly	Gln	Gly 60	Thr	Gly	Asp	Lys		
His	Thr	Val	Asn	Val	Ser 70	Glu	Ala	Ala	Ala	Arg 75	Ile	Pro	Ser	Glu	Thr 80		
Pro	Val	Pro	Thr 85	Pro	Asp	Ser	Asp	Val	Val 90	Gln	Pro	Leu	Thr	Arg 95	Lys		
Thr	Phe	Glu	Gln 100	Leu	Pro	Gln	Thr	Met 105	Arg	Asn	Met	Ser	Val	Tyr	Gly		
Lys	Thr	Ile 115	Leu	Leu	Thr	Gly	Ala 120	Ala	Arg	Gly	Leu	Gly 125	Asn	Tyr	Met		
Ala	Arg	Ala	Cys	Ala	Glu	Ala	Gly 135	Ala	Lys	Asn	Ile 140	Val	Leu	Phe	Asp		
Ala	Asn	Gln	Glu	Leu	Gly 150	Asp	Gln	Ala	Ala	Ala 155	Glu	Leu	His	Asp	Lys 160		
Thr	Gly	Leu	Pro	Val 165	Ser	Phe	Phe	Lys	Val 170	Asp	Val	Arg	Asp	Gly 175	Ala		
Ala	Ile	Asn 180	Ala	Val	Asp	Glu	Val 185	Val	Glu	His	Tyr	Gly 190	Ala	Pro			

## PhoenixTemp32470.tmp.txt

Asp Val Leu Val Asn Ser Ala Gly Ile Ala Asp Ser Asn Ile Lys Ala  
 195 200 205  
 Glu Thr Tyr Asp Pro Ala Met Phe Arg Arg Leu Ile Asp Ile Asn Leu  
 210 215  
 Thr Gly Ser Phe Leu Met Ser Gln Ala Val Gly Arg Ala Met Met Ala  
 225 230 235 240  
 Ala Gly Lys Pro Gly Ser Ile Ile Leu Val Ala Ser Met Ser Gly Ser  
 245 250 255  
 Val Val Asn Phe Pro Gln Glu Gln Ser Cys Tyr Asn Ala Ser Lys Ala  
 260 265 270  
 Gly Val Ile Gln Leu Gly Lys Ser Leu Ala Ala Glu Trp Ala Lys Phe  
 275 280 285  
 Asp Ile Arg Val Asn Cys Ile Ser Pro Gly Tyr Met Asp Thr Ala Leu  
 290 295 300  
 Asn Arg Val Pro Ala Leu Asp Ala Gln Lys Lys Ile Trp Lys Ser Leu  
 305 310 315 320  
 Thr Pro Gln Asn Arg Leu Gly Asn Val Asp Glu Leu Asn Gly Leu Cys  
 325 330 335  
 Ile Phe Leu Ala Ser Asp Ser Ser Lys Phe Met Thr Gly Ser Asn Cys  
 340 345 350  
 Ile Ile Asp Gly Gly Tyr Thr Cys Tyr  
 355 360

&lt;210&gt; 1615

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 1615

atg	ttg	atg	cca	gca	ggt	ctt	ctc	gcc	aac	aag	act	gcc	atc	att	acc	48
Met	Leu	Met	Pro	Ala	Gly	Leu	Leu	Ala	Asn	Lys	Thr	Ala	Ile	Ile	Thr	
1				5				10						15		
ggc	ggc	acg	acg	ggt	att	ggt	cgt	gct	atc	tgc	ctc	gag	ttt	cta	cgg	96
Gly	Gly	Thr	Thr	Gly	Ile	Gly	Arg	Ala	Ile	Cys	Leu	Glu	Phe	Leu	Arg	
			20					25					30			
caa	ggc	gcc	aat	gtc	gtg	gta	aac	cac	ttg	ggc	ctt	gaa	aaa	gac	cag	144
Gln	Gly	Ala	Asn	Val	Val	Val	Asn	His	Leu	Gly	Leu	Glu	Lys	Asp	Gln	
			35				40					45				
act	cac	ctc	gac	tca	ctc	atc	gtc	gag	gcc	gac	gaa	atc	cga	aaa	gca	192
Thr	His	Leu	Asp	Ser	Leu	Ile	Val	Glu	Ala	Asp	Glu	Ile	Arg	Lys	Ala	
	50				55			60								
tca	ccc	act	gct	ggg	cac	ctc	gat	cac	caa	gcg	ggc	gac	gtt	cgt	gac	240
Ser	Pro	Thr	Ala	Gly	His	Leu	Asp	His	Gln	Ala	Gly	Asp	Val	Arg	Asp	
	65				70			75						80		
cca	gcg	aca	gcg	aca	gaa	tta	gtc	aaa	aag	gcc	gtc	gag	cac	tcc	ccc	288
Pro	Ala	Thr	Ala	Thr	Glu	Leu	Val	Lys	Lys	Ala	Val	Glu	His	Ser	Pro	
			85					90						95		
aag	aag	cg	ctt	gac	atc	tgc	gtg	tct	aat	gcc	ggt	atc	tgc	aca	ttc	336
Lys	Lys	Arg	Leu	Asp	Ile	Cys	Val	Ser	Asn	Ala	Gly	Ile	Cys	Thr	Phe	
			100					105					110			
gct	gat	ttc	ctc	acg	ctc	gag	ccg	gat	ttg	ctt	cac	tca	acg	gtg	cga	384
Ala	Asp	Phe	Leu	Thr	Leu	Glu	Pro	Asp	Leu	Leu	His	Ser	Thr	Val	Arg	
			115				120					125				
aca	aac	ctg	gat	ggt	gcc	ttc	tac	gtg	act	cag	gct	gct	gca	cga	caa	432
Thr	Asn	Leu	Asp	Gly	Ala	Phe	Tyr	Val	Thr	Gln	Ala	Ala	Ala	Arg	Gln	
	130				135						140					
atg	gct	ctt	cac	caa	gag	ccc	aag	gga	gga	agt	atc	atc	ggc	gtc	tcg	480
Met	Ala	Leu	His	Gln	Glu	Pro	Lys	Gly	Gly	Ser	Ile	Ile	Gly	Val	Ser	
	145				150			155						160		
tcc	atc	tca	gcc	ctt	gtc	ggt	ggt	ggc	caa	cag	aca	cac	tat	aca	ccc	528
Ser	Ile	Ser	Ala	Leu	Val	Gly	Gly	Gly	Gln	Gln	Thr	His	Tyr	Thr	Pro	
			165					170						175		
acc	aag	gca	ggc	gtc	ttg	agc	ttg	atg	cag	agc	aca	gcg	tgc	gcc	ctg	576
Thr	Lys	Ala	Gly	Val	Leu	Ser	Leu	Met	Gln	Ser	Thr	Ala	Cys	Ala	Leu	
			180					185					190			



PhoenixTemp32470.tmp.txt

gga gaa cac ggt atc cgg tgc aat gcg ctt ctc cca ggc acg atc cgc	624
Gly Glu His 195 Gly Ile Arg Cys 200 Asn Ala Leu Leu Pro 205 Gly Thr Ile Arg	
acg cag ctt aac gac gca gac ctg gct gat gat aca aag aga gct tat	672
Thr Gln Leu Asn Asp Ala Asp 215 Leu Ala Asp Asp Thr 220 Lys Arg Ala Tyr	
atg gaa ggt cgc atc cct tta gga cgt act ggt tcg ccc tcc gat atg	720
Met Glu Gly Arg Ile Pro 230 Leu Gly Arg Thr 235 Ser Pro Ser Asp Met 240	
gct ggc ccg gcc gtc ttt ctg gcg tgt cca gag ctg agc gga tac gtg	768
Ala Gly Pro Ala Val Phe Leu Ala Cys Pro 250 Glu Leu Ser Gly Tyr Val 255	
acg ggt gcg cag ctt ctc gtc gat ggt ggt ctg ttc gtc aat ctt cag	816
Thr Gly Ala 260 Leu Leu Val Asp Gly 265 Gly Leu Phe Val 270 Asn Leu Gln	
tga	819

<210> 1616  
 <211> 272  
 <212> PRT  
 <213> Gibberella zeae PH-1

<400> 1616

Met Leu Met Pro Ala Gly Leu Leu Ala Asn Lys Thr Ala Ile Ile Thr	
1 Gly Gly Thr Thr 5 Gly Ile Gly Arg Ala Ile Cys Leu Glu Phe Leu Arg	
Gln Gly Ala 20 Asn Val Val Val Asn 25 His Leu Gly Leu Glu Lys Asp Gln	
Thr His Leu Asp Ser Leu Ile Val Glu Ala Asp Glu Ile Arg Lys Ala	
Ser 50 Pro Thr Ala Gly His 55 Leu Asp His Gln Ala Gly Asp Val Arg Asp	
65 Pro Ala Thr Ala Thr 70 Glu Leu Val Lys Lys 75 Ala Val Glu His Ser Pro	
Lys Lys Arg Leu 85 Asp Ile Cys Val Ser 90 Asn Ala Gly Ile Cys Thr Phe	
Ala Asp Phe 100 Leu Thr Leu Glu Pro 105 Asp Leu Leu His Ser Thr Val Arg	
Thr Asn Leu Asp Gly Ala Phe 115 Tyr Val Thr Gln Ala Ala Ala Arg Gln	
Met 130 Ala Leu His Gln Glu 135 Pro Lys Gly Gly Ser 140 Ile Ile Gly Val Ser	
145 Ser Ile Ser Ala Leu 150 Val Gly Gly Gly Gln 155 Thr His Tyr Thr Pro	
Thr Lys Ala Gly Val Leu Ser Leu Met 165 Gln Ser Thr Ala Cys Ala Leu	
Gly Glu His 180 Gly Ile Arg Cys Asn 185 Ala Leu Leu Pro Gly Thr Ile Arg	
Thr Gln Leu Asn Asp Ala Asp 200 Leu Ala Asp Asp Thr 205 Lys Arg Ala Tyr	
Met 210 Glu Gly Arg Ile Pro 215 Leu Gly Arg Thr Gly Ser Pro Ser Asp Met	
225 Ala Gly Pro Ala Val Phe Leu Ala Cys Pro 235 Glu Leu Ser Gly Tyr Val	
Thr Gly Ala Gln 245 Leu Leu Val Asp Gly 250 Gly Leu Phe Val 255 Asn Leu Gln	
260 265 270	

<210> 1617  
 <211> 885  
 <212> DNA  
 <213> Gibberella zeae PH-1

<220>  
 <221> CDS  
 <222> (1)..(885)

## PhoenixTemp32470.tmp.txt

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<400> 1617
atg tct gat ctt cac cct ctc aac aga ggt aac ttc gtc cac gat aac      48
Met Ser Asp Leu His Pro Leu Asn Arg Gly Asn Phe Val His Asp Asn
1      5      10      15
aac cgc tta gtc gat ggc ggt tct atc ctc aag cgt ttc tct ctc tca      96
Asn Arg Leu Val Asp Gly Gly Ser Ile Leu Lys Arg Phe Ser Leu Ser
20      25      30
ggc aag acc gca att atc act ggc gct gct gcc ggt att ggc ttc tct      144
Gly Lys Thr Ala Ile Ile Thr Gly Ala Ala Ala Gly Ile Gly Phe Ser
35      40      45
att gct gaa gca tat gcc gag act ggt gcc aat att gct att tgg tac      192
Ile Ala Glu Ala Tyr Ala Glu Thr Gly Ala Asn Ile Ala Ile Trp Tyr
50      55      60
cgt acc agc aac aag gct cag gag cgt gcc gaa gag ctc tcc aac aag      240
Arg Thr Ser Asn Lys Ala Gln Glu Arg Ala Glu Glu Leu Ser Asn Lys
65      70      75      80
tac aat gtc act gtc aag gcg tat cag gtt gat atg cga gac gcc gaa      288
Tyr Asn Val Thr Val Lys Ala Tyr Gln Val Asp Met Arg Asp Ala Glu
85      90      95
gcc gtt gaa cag gcc gtc gac caa tca gtc aaa gac ctc aac ggt cgg      336
Ala Val Glu Gln Ala Val Asp Gln Ser Val Lys Asp Leu Asn Gly Arg
100      105      110
cta gat atc ttt gtt gcc aat gct ggt att ccc tgg acc aaa ggc cct      384
Leu Asp Ile Phe Val Ala Asn Ala Gly Ile Pro Trp Thr Lys Gly Pro
115      120      125
atg gta gat ggc ccc att gac cac tat cgc gat gtt gtc cag acc aac      432
Met Val Asp Gly Pro Ile Asp His Tyr Arg Asp Val Val Gln Thr Asn
130      135      140
cta gat ggc acc tac tac tgt gca aag tcc gca gcg aag cac tgg cgt      480
Leu Asp Gly Thr Tyr Cys Ala Lys Ser Ala Ala Lys His Trp Arg
145      150      155      160
cgt cag aag ctt gag ggt act gac ctc aac ggc caa cct cta agc aac      528
Arg Gln Lys Leu Glu Gly Thr Asp Leu Asn Gly Gln Pro Leu Ser Asn
165      170      175
tac aca tca ggc agt ttc att gcc acc gct tcc atg agc gga ggt atc      576
Tyr Thr Ser Gly Ser Phe Ile Ala Thr Ala Ser Met Ser Gly Gly Ile
180      185      190
gtg aat att cca caa ctt cag gct gct tat aat gcc gcc aag gca gga      624
Val Asn Ile Pro Gln Leu Gln Ala Ala Tyr Asn Ala Ala Lys Ala Gly
195      200      205
gtt att cat ctc atc aag agt ttg gct gtt gaa tgg gct cgg ttt gct      672
Val Ile His Leu Ile Lys Ser Leu Ala Val Glu Trp Ala Arg Phe Ala
210      215      220
cga gcc aac gcc atc tct cct ggt tac atc atc act gag atc tcc aac      720
Arg Ala Asn Ala Ile Ser Pro Gly Tyr Ile Ile Thr Glu Ile Ser Asn
225      230      235      240
ttt gtc aac cag gag acc aaa gac atg tgg aag gat aag att ccc gta      768
Phe Val Asn Gln Glu Thr Lys Asp Met Trp Lys Asp Lys Ile Pro Val
245      250      255
ggc cgc gaa ggc gag cct cat gag ctt caa ggt gca tat cta ttc ctg      816
Gly Arg Glu Gly Glu Pro His Glu Leu Gln Gly Ala Tyr Leu Phe Leu
260      265      270
gca tca gac gct tcc acg tat gcc act ggt gcc aat ttt gtt atc gat      864
Ala Ser Asp Ala Ser Thr Tyr Ala Thr Gly Ala Asn Phe Val Ile Asp
275      280      285
ggc ggt tac agc gct cct tag
Gly Gly Tyr Ser Ala Pro
290

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<210> 1618
<211> 294
<212> PRT
<213> Gibberella zeae PH-1

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<400> 1618
Met Ser Asp Leu His Pro Leu Asn Arg Gly Asn Phe Val His Asp Asn
1      5      10      15
Asn Arg Leu Val Asp Gly Gly Ser Ile Leu Lys Arg Phe Ser Leu Ser
20      25      30

```

## PhoenixTemp32470.tmp.txt

Gly Lys Thr 35 Ala Ile Ile Thr Gly 40 Ala Ala Ala Gly 45 Ile Gly Phe Ser  
 Ile Ala 50 Glu Ala Tyr Ala Glu 55 Thr Gly Ala Asn Ile 60 Ala Ile Trp Tyr  
 Arg Thr Ser Asn Lys Ala 70 Gln Glu Arg Ala Glu 75 Glu Leu Ser Asn Lys  
 65 Tyr Asn Val Thr 85 Lys Ala Tyr Gln Val 90 Asp Met Arg Asp Ala Glu  
 Ala Val Glu Gln 100 Ala Val Asp Gln Ser 105 Val Lys Asp Leu Asn Gly Arg  
 Leu Asp Ile 115 Phe Val Ala Asn Ala 120 Gly Ile Pro Trp Thr 125 Lys Gly Pro  
 Met Val 130 Asp Gly Pro Ile Asp 135 His Tyr Arg Asp Val 140 Val Gln Thr Asn  
 Leu Asp Gly Thr Tyr Tyr Cys Ala Lys Ser Ala 155 Ala Lys His Trp Arg  
 145 Arg Gln Lys Leu 165 Glu Gly Thr Asp Leu Asn 170 Gly Gln Pro Leu Ser Asn  
 Tyr Thr Ser Gly 180 Ser Phe Ile Ala Thr 185 Ala Ser Met Ser Gly 190 Gly Ile  
 Val Asn Ile 195 Pro Gln Leu Gln Ala 200 Ala Tyr Asn Ala 205 Ala Lys Ala Gly  
 Val Ile 210 His Leu Ile Lys Ser 215 Leu Ala Val Glu Trp 220 Ala Arg Phe Ala  
 Arg 225 Ala Asn Ala Ile Ser 230 Pro Gly Tyr Ile Ile 235 Thr Glu Ile Ser Asn  
 Phe Val Asn Gln 245 Glu Thr Lys Asp Met Trp 250 Lys Asp Lys Ile Pro Val  
 Gly Arg Glu Gly 260 Glu Pro His Glu Leu 265 Gln Gly Ala Tyr Leu Phe Leu  
 Ala Ser Asp 275 Ala Ser Thr Tyr Ala 280 Thr Gly Ala Asn Phe 285 Val Ile Asp  
 Gly Gly Tyr Ser Ala Pro  
 290

&lt;210&gt; 1619

&lt;211&gt; 813

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(813)

&lt;400&gt; 1619

atg gac gtc cca ggc ttt gct ttg att aca gga ggc gcc tct gga atc	48
Met Asp Val Pro Gly 5 Phe Ala Leu Ile Thr 10 Gly Gly Ala Ser Gly 15 Ile	
ggc cgt gcg tgt gct agg gct ttc gca aga gac ggg tct gct ggt atc	96
Gly Arg Ala Cys 20 Ala Arg Ala Phe 25 Ala Arg Asp Gly Ser 30 Ala Gly Ile	
gcc ctc ata gat ctc aat ctc gaa gcg cta caa gct gtc aag tcc gag	144
Ala Leu Ile 35 Asp Leu Asn Leu Glu 40 Ala Leu Gln Ala Val 45 Lys Ser Glu	
ata gaa caa gag aag cta tca cca aac aac aat ttt cgg att gag ctt	192
Ile Glu 50 Gln Glu Lys Leu Ser 55 Pro Asn Asn Asn Phe 60 Arg Ile Glu Leu	
tac cct gca gat gtt aca gac gag acc aga atc aat gaa atc gtc aac	240
Tyr Pro Ala Asp Val Thr 70 Asp Glu Thr Arg Ile Asn 75 Glu Ile Val Asn 80	
gac atg gtg cag aaa ttt ggt cgc ata gac tac gtc gtc aat gca gct	288
Asp Met Val Gln Lys 85 Phe Gly Arg Ile Asp 90 Tyr Val Val Asn 95 Ala Ala	
ggc atc gcc atc aaa cat caa ggt gga gca gca ttc gct caa aca gct	336
Gly Ile Ala Ile Lys His Gln Gly 105 Glu Ala Ala Phe 110 Ala Gln Thr Ala	
gac tgg aac cgt gtc ctc aac att aac ctc aac gga act ttc ttc gtt	384
Asp Trp Asn Arg Val Leu Asn 120 Asn Leu Asn Gly Thr 125 Phe Phe Val	

## PhoenixTemp32470.tmp.txt

ctt	aga	gct	gct	gca	aga	gtc	atg	ctc	aag	caa	gac	cca	atc	aag	tca	432
Leu	Arg	Ala	Ala	Ala	Arg	Val	Met	Leu	Lys	Gln	Asp	Pro	Ile	Lys	Ser	
	130					135					140					
tca	atc	aac	gga	agg	gat	cta	cag	cgt	ggc	tcc	atc	atc	aac	ttt	tct	480
Ser	Ile	Asn	Gly	Arg	Asp	Leu	Gln	Arg	Gly	Ser	Ile	Ile	Asn	Phe	Ser	
	145				150					155					160	
tcc	atc	cag	ggt	gtt	gtc	ggt	atc	cca	tta	tcc	acg	tcg	tac	act	gct	528
Ser	Ile	Gln	Gly	Val	Val	Gly	Ile	Pro	Leu	Ser	Thr	Ser	Tyr	Thr	Ala	
				165					170					175		
gca	aag	cac	gcc	atc	atc	ggt	ctc	aca	cgt	tct	gcc	tcg	gag	gat	tat	576
Ala	Lys	His	Ala	Ile	Ile	Gly	Leu	Thr	Arg	Ser	Ala	Ser	Glu	Asp	Tyr	
			180					185					190			
gca	aag	gac	ggt	ctg	cgc	atc	aat	gcc	atc	tgt	cct	ggg	tat	acg	gaa	624
Ala	Lys	Asp	Gly	Leu	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Thr	Glu	
		195					200					205				
acg	cca	atg	aca	acg	aag	aat	ccg	gac	gta	ctc	aag	gcg	atg	caa	gag	672
Thr	Pro	Met	Thr	Thr	Lys	Asn	Pro	Asp	Val	Leu	Lys	Ala	Met	Gln	Glu	
	210					215					220					
agg	ata	tct	acg	gcg	gtt	cct	atg	cat	agg	atg	gga	cag	cct	gag	gag	720
Arg	Ile	Ser	Thr	Ala	Val	Pro	Met	His	Arg	Met	Gly	Gln	Pro	Glu	Glu	
	225				230					235				240		
att	gca	gat	ggt	gtg	ttg	tat	ttg	gct	gga	gga	aga	agc	tcg	ttt	gtc	768
Ile	Ala	Asp	Gly	Val	Leu	Tyr	Leu	Ala	Gly	Gly	Arg	Ser	Ser	Phe	Val	
				245					250					255		
act	ggg	tca	gcc	ttg	gct	gtt	gat	gga	ggc	tac	act	cag	agg	tga		813
Thr	Gly	Ser	Ala	Leu	Ala	Val	Asp	Gly	Gly	Tyr	Thr	Gln	Arg			
			260					265					270			

&lt;210&gt; 1620

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 1620

Met	Asp	Val	Pro	Gly	Phe	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	
1				5				10						15		
Gly	Arg	Ala	Cys	Ala	Arg	Ala	Phe	Ala	Arg	Asp	Gly	Ser	Ala	Gly	Ile	
			20					25					30			
Ala	Leu	Ile	Asp	Leu	Asn	Leu	Glu	Ala	Leu	Gln	Ala	Val	Lys	Ser	Glu	
		35					40					45				
Ile	Glu	Gln	Glu	Lys	Leu	Ser	Pro	Asn	Asn	Asn	Phe	Arg	Ile	Glu	Leu	
	50					55					60					
Tyr	Pro	Ala	Asp	Val	Thr	Asp	Glu	Thr	Arg	Ile	Asn	Glu	Ile	Val	Asn	
65					70					75					80	
Asp	Met	Val	Gln	Lys	Phe	Gly	Arg	Ile	Asp	Tyr	Val	Val	Asn	Ala	Ala	
				85					90					95		
Gly	Ile	Ala	Ile	Lys	His	Gln	Gly	Gly	Ala	Ala	Phe	Ala	Gln	Thr	Ala	
			100					105					110			
Asp	Trp	Asn	Arg	Val	Leu	Asn	Ile	Asn	Leu	Asn	Gly	Thr	Phe	Phe	Val	
	115					120						125				
Leu	Arg	Ala	Ala	Ala	Arg	Val	Met	Leu	Lys	Gln	Asp	Pro	Ile	Lys	Ser	
	130					135					140					
Ser	Ile	Asn	Gly	Arg	Asp	Leu	Gln	Arg	Gly	Ser	Ile	Ile	Asn	Phe	Ser	
145					150					155					160	
Ser	Ile	Gln	Gly	Val	Val	Gly	Ile	Pro	Leu	Ser	Thr	Ser	Tyr	Thr	Ala	
				165					170					175		
Ala	Lys	His	Ala	Ile	Ile	Gly	Leu	Thr	Arg	Ser	Ala	Ser	Glu	Asp	Tyr	
			180					185					190			
Ala	Lys	Asp	Gly	Leu	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Thr	Glu	
		195					200					205				
Thr	Pro	Met	Thr	Thr	Lys	Asn	Pro	Asp	Val	Leu	Lys	Ala	Met	Gln	Glu	
	210					215					220					
Arg	Ile	Ser	Thr	Ala	Val	Pro	Met	His	Arg	Met	Gly	Gln	Pro	Glu	Glu	
225					230					235					240	
Ile	Ala	Asp	Gly	Val	Leu	Tyr	Leu	Ala	Gly	Gly	Arg	Ser	Ser	Phe	Val	
				245					250					255		
Thr	Gly	Ser	Ala	Leu	Ala	Val	Asp	Gly	Gly	Tyr	Thr	Gln	Arg			
			260					265					270			

<210> 1621  
 <211> 729  
 <212> DNA  
 <213> Gibberella zeae PH-1

<220>  
 <221> CDS  
 <222> (1)..(729)

```

<400> 1621
atg act tct ttc gac ggc aaa gtg att gcc gtg act ggc gct gca tcc      48
Met Thr Ser Phe Asp Gly Lys Val Ile Ala Val Thr Gly Ala Ala Ser
  1          5          10          15
ggc atg ggt cta gcc act gcc caa ctc ctc gcg tcg aga gga gca ata      96
Gly Met Gly Leu Ala Thr Ala Gln Leu Leu Ala Ser Arg Gly Ala Ile
          20          25          30
atc tct ctc gca gat atc aac gaa gaa gtc cta aag tcc gtc ctc gat      144
Ile Ser Leu Ala Asp Ile Asn Glu Glu Val Leu Lys Ser Val Leu Asp
          35          40          45
tcg ctt cca ggt aat ggg cat att tat cag gta gtc gac gtc agt caa      192
Ser Leu Pro Gly Asn Gly His Ile Tyr Gln Val Val Asp Val Ser Gln
          50          55          60
agt gaa tca gtg aat gca tgg atc aaa cag acc atc gac aag ttt ggc      240
Ser Glu Ser Val Asn Ala Trp Ile Lys Gln Thr Ile Asp Lys Phe Gly
          65          70          75
aag cta gat ggt gct gtt aat atg gct ggt atc ata gct gaa ccg aca      288
Lys Leu Asp Gly Ala Val Asn Met Ala Gly Ile Ile Ala Glu Pro Thr
          80          85          90
cca ctc act gag tac acc gat gaa gtc tgg gat agg atg ttt gca gtt      336
Pro Leu Thr Glu Tyr Thr Asp Glu Val Trp Asp Arg Met Phe Ala Val
          100          105          110
aat aca cgg gga gta ttc aat tgt tta cgc gca gag ttg aag acc ata      384
Asn Thr Arg Gly Val Phe Asn Cys Leu Arg Ala Glu Leu Lys Thr Ile
          115          120          125
acg gct ggt gga agt att gta tct gct gca agc gtc ttt ggt cag ttc      432
Thr Ala Gly Gly Ser Ile Val Ser Ala Ala Ser Val Phe Gly Gln Phe
          130          135          140
gga gca ccc ggc cac gtc gct tac tgt gcc agc aaa gca gcc gtt att      480
Gly Ala Pro Gly His Val Ala Tyr Cys Ala Ser Lys Ala Ala Val Ile
          145          150          155
gga ctg tcc agg acg gct aag gag aat gaa cat att cga gtg aac      528
Gly Leu Ser Arg Thr Ala Ala Lys Glu Asn Glu His Ile Arg Val Asn
          160          165          170
tgt gtc tcg cca ggc tct gtg agc acc gct atg aat caa cac gat gac      576
Cys Val Ser Pro Gly Ser Val Ser Thr Ala Met Asn Gln His Asp Asp
          175          180          185
ccc gag cat gtg aag cgt agt ctt gca ggg act gtg caa aaa agg agg      624
Pro Glu His Val Lys Arg Ser Leu Ala Gly Thr Val Gln Lys Arg Arg
          190          195          200
gcg gaa cca att gaa gtc gct cgt gtt atc gct ttc ctt ctt agc gat      672
Ala Glu Pro Ile Glu Val Ala Arg Val Ile Ala Phe Leu Leu Ser Asp
          205          210          215
gag gca tct ttc gtg aca ggt gct gtg tac aac gtg gat ggc ggt tgg      720
Glu Ala Ser Phe Val Thr Gly Ala Val Tyr Asn Val Asp Gly Gly Trp
          220          225          230
gta tgc taa
Val Cys
          235          240

```

<210> 1622  
 <211> 242  
 <212> PRT  
 <213> Gibberella zeae PH-1

```

<400> 1622
Met Thr Ser Phe Asp Gly Lys Val Ile Ala Val Thr Gly Ala Ala Ser
  1          5          10          15
Gly Met Gly Leu Ala Thr Ala Gln Leu Leu Ala Ser Arg Gly Ala Ile
          20          25          30

```

## PhoenixTemp32470.tmp.txt

```

Ile Ser Leu Ala Asp Ile Asn Glu Glu Val Leu Lys Ser Val Leu Asp
      35      40      45
Ser Leu Pro Gly Asn Gly His Ile Tyr Gln Val Val Asp Val Ser Gln
      50      55      60
Ser Glu Ser Val Asn Ala Trp Ile Lys Gln Thr Ile Asp Lys Phe Gly
      65      70      75      80
Lys Leu Asp Gly Ala Val Asn Met Ala Gly Ile Ile Ala Glu Pro Thr
      85      90      95
Pro Leu Thr Glu Tyr Thr Asp Glu Val Trp Asp Arg Met Phe Ala Val
      100      105      110
Asn Thr Arg Gly Val Phe Asn Cys Leu Arg Ala Glu Leu Lys Thr Ile
      115      120      125
Thr Ala Gly Gly Ser Ile Val Ser Ala Ala Ser Val Phe Gly Gln Phe
      130      135      140
Gly Ala Pro Gly His Val Ala Tyr Cys Ala Ser Lys Ala Ala Val Ile
      145      150      155      160
Gly Leu Ser Arg Thr Ala Ala Lys Glu Asn Glu His Ile Arg Val Asn
      165      170      175
Cys Val Ser Pro Gly Ser Val Ser Thr Ala Met Asn Gln His Asp Asp
      180      185      190
Pro Glu His Val Lys Arg Ser Leu Ala Gly Thr Val Gln Lys Arg Arg
      195      200      205
Ala Glu Pro Ile Glu Val Ala Arg Val Ile Ala Phe Leu Leu Ser Asp
      210      215      220
Glu Ala Ser Phe Val Thr Gly Ala Val Tyr Asn Val Asp Gly Gly Trp
      225      230      235      240
Val Cys

```

&lt;210&gt; 1623

&lt;211&gt; 771

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(771)

&lt;400&gt; 1623

```

atg tca gaa tat tcg ttt gct gga aaa ata gcc ttg gtt aca gga gcc      48
Met Ser Glu Tyr Ser Phe Ala Gly Lys Ile Ala Leu Val Thr Gly Ala
      1      5      10      15
tcc aca ggg gtt gga gag ggc att gct cgt gca ctt ttt gta aga gga      96
Ser Thr Gly Val Gly Glu Gly Ile Ala Arg Ala Leu Phe Val Arg Gly
      20      25      30
gct act gtg gtc att act tcg aga cac tta tcc gaa gtg caa gag aca      144
Ala Thr Val Val Ile Thr Ser Arg His Leu Ser Glu Val Gln Glu Thr
      35      40      45
gcg ggc aat att gat ccc agt ggg agc aga gtg att ggg aaa gaa gtg      192
Ala Gly Asn Ile Asp Pro Ser Gly Ser Arg Val Ile Gly Lys Glu Val
      50      55      60
gat gta act gtt gca aaa gcg gtg gaa gac tta atc caa gag ata aga      240
Asp Val Thr Val Ala Lys Ala Val Glu Asp Leu Ile Gln Glu Ile Arg
      65      70      75      80
gaa gaa ttt gga gca tta cac tat tta gta aat aat gca gga att aca      288
Glu Glu Phe Gly Ala Leu His Tyr Leu Val Asn Asn Ala Gly Ile Thr
      85      90      95
ggc cct cat cag aca gga att gaa gat tac gat att gat tcc tgg agg      336
Gly Pro His Gln Thr Gly Ile Glu Asp Tyr Asp Ile Asp Ser Trp Arg
      100      105      110
caa gtc att gat acg aac att aat ggt acc ttc tac aca cta aaa tat      384
Gln Val Ile Asp Thr Asn Ile Asn Gly Thr Phe Tyr Thr Leu Lys Tyr
      115      120      125
gcg cta cca ttg atg gaa agc tct tcg agt cca gac tct gag gca gcg      432
Ala Leu Pro Leu Met Glu Ser Ser Ser Ser Pro Asp Ser Glu Ala Ala
      130      135      140
gtg gtg aat ctc tct gca gtt aat ggt ctt gtt ggt att ccc ggt att      480
Val Val Asn Leu Ser Ala Val Asn Gly Leu Val Gly Ile Pro Gly Ile
      145      150      155      160

```

## PhoenixTemp32470.tmp.txt

tcc	ccg	tat	aca	gca	acg	aag	cat	gca	gta	ata	ggg	ata	act	cag	agt	528
Ser	Pro	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Ile	Gly	Ile	Thr	Gln	Ser	
				165					170					175		
gtt	gca	tta	gaa	tac	gca	gaa	aga	aat	gtt	aga	gtg	aac	gca	gtt	gcg	576
Val	Ala	Leu	Glu	Tyr	Ala	Glu	Arg	Asn	Val	Arg	Val	Asn	Ala	Val	Ala	
			180					185					190			
cca	gga	tat	gtt	tcc	aca	ccc	aag	att	caa	gct	ttg	cca	aag	gaa	acg	624
Pro	Gly	Tyr	Val	Ser	Thr	Pro	Lys	Ile	Gln	Ala	Leu	Pro	Lys	Glu	Thr	
		195					200					205				
caa	caa	tgg	atg	tcg	agt	cag	cac	ccg	atg	aag	cgt	atg	gca	aca	atg	672
Gln	Gln	Trp	Met	Ser	Ser	Gln	His	Pro	Met	Lys	Arg	Met	Ala	Thr	Met	
		210				215					220					
aca	gaa	gtt	tcg	aac	act	gtc	tta	ttc	tta	ctt	tcc	cca	ctg	acc	ggg	720
Thr	Glu	Val	Ser	Asn	Thr	Val	Leu	Phe	Leu	Leu	Ser	Pro	Leu	Thr	Gly	
225					230					235					240	
ttc	act	aca	ggg	tca	gtg	tat	cca	atc	gat	ggg	gga	ttt	ttg	gct	cag	768
Phe	Thr	Thr	Gly	Ser	Val	Tyr	Pro	Ile	Asp	Gly	Gly	Phe	Leu	Ala	Gln	
				245					250					255		
tga																771

&lt;210&gt; 1624

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;400&gt; 1624

Met	Ser	Glu	Tyr	Ser	Phe	Ala	Gly	Lys	Ile	Ala	Leu	Val	Thr	Gly	Ala	
1				5				10						15		
Ser	Thr	Gly	Val	Gly	Glu	Gly	Ile	Ala	Arg	Ala	Leu	Phe	Val	Arg	Gly	
			20					25					30			
Ala	Thr	Val	Val	Ile	Thr	Ser	Arg	His	Leu	Ser	Glu	Val	Gln	Glu	Thr	
			35				40					45				
Ala	Gly	Asn	Ile	Asp	Pro	Ser	Gly	Ser	Arg	Val	Ile	Gly	Lys	Glu	Val	
		50				55					60					
Asp	Val	Thr	Val	Ala	Lys	Ala	Val	Glu	Asp	Leu	Ile	Gln	Glu	Ile	Arg	
65					70					75					80	
Glu	Glu	Phe	Gly	Ala	Leu	His	Tyr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	
				85					90					95		
Gly	Pro	His	Gln	Thr	Gly	Ile	Glu	Asp	Tyr	Asp	Ile	Asp	Ser	Trp	Arg	
			100					105					110			
Gln	Val	Ile	Asp	Thr	Asn	Ile	Asn	Gly	Thr	Phe	Tyr	Thr	Leu	Lys	Tyr	
		115					120					125				
Ala	Leu	Pro	Leu	Met	Glu	Ser	Ser	Ser	Pro	Asp	Ser	Glu	Ala	Ala		
		130				135					140					
Val	Val	Asn	Leu	Ser	Ala	Val	Asn	Gly	Leu	Val	Gly	Ile	Pro	Gly	Ile	
145					150					155					160	
Ser	Pro	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Ile	Gly	Ile	Thr	Gln	Ser	
				165					170					175		
Val	Ala	Leu	Glu	Tyr	Ala	Glu	Arg	Asn	Val	Arg	Val	Asn	Ala	Val	Ala	
			180					185					190			
Pro	Gly	Tyr	Val	Ser	Thr	Pro	Lys	Ile	Gln	Ala	Leu	Pro	Lys	Glu	Thr	
		195					200					205				
Gln	Gln	Trp	Met	Ser	Ser	Gln	His	Pro	Met	Lys	Arg	Met	Ala	Thr	Met	
		210				215					220					
Thr	Glu	Val	Ser	Asn	Thr	Val	Leu	Phe	Leu	Leu	Ser	Pro	Leu	Thr	Gly	
225					230					235					240	
Phe	Thr	Thr	Gly	Ser	Val	Tyr	Pro	Ile	Asp	Gly	Gly	Phe	Leu	Ala	Gln	
				245					250					255		

&lt;210&gt; 1625

&lt;211&gt; 870

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(870)

## PhoenixTemp32470.tmp.txt

```

<400> 1625
atg aca ctc ccc gat aag aga gaa aca gac att act gtg gtt tca tac      48
Met Thr Leu Pro Asp Lys Arg Glu Thr Asp Ile Thr Val Val Ser Tyr
1      5      10      15
att tcc aac gaa ttc acg gat gag ctc cct aga gca tcg cca cca aaa      96
Ile Ser Asn Glu Phe Thr Asp Glu Leu Pro Arg Ala Ser Pro Pro Lys
20      25      30
aga cac ata atg gac ttg ttg tct tta aaa ggt aaa gta gca gtt gtc      144
Arg His Ile Met Asp Leu Leu Ser Leu Lys Gly Lys Val Ala Val Val
35      40      45
acc ggt gct gcg aga ggt att ggc ctt gcg att gcg gaa acg ttt gct      192
Thr Gly Ala Ala Arg Gly Ile Gly Leu Ala Ile Ala Glu Thr Phe Ala
50      55      60
gaa gca ggt gct gct gtc gcc ctt gta gat tac acc gac tgc tca gag      240
Glu Ala Gly Ala Ala Val Ala Leu Val Asp Tyr Thr Asp Cys Ser Glu
65      70      75      80
caa gct ctc aag tta gca acc agg ctc aag gtg tgt acc aag gca ttc      288
Gln Ala Leu Lys Ala Thr Arg Leu Lys Val Cys Thr Lys Ala Phe
85      90      95
caa tgt gac gtt gcc gat tta aaa cga gtc gaa gga aca gtt cag gcc      336
Gln Cys Asp Val Ala Asp Leu Lys Arg Val Glu Gly Thr Val Gln Ala
100      105      110
atc gaa aag gaa ttt ggt acc att gat gtt ttt gtc gct aat gct ggt      384
Ile Glu Lys Glu Phe Gly Thr Ile Asp Val Phe Val Ala Asn Ala Gly
115      120      125
ata gta tgg aaa act ggt aac atc ata gac gaa gtc aac cga gat ggt      432
Ile Val Trp Lys Thr Gly Asn Ile Ile Asp Glu Val Asn Arg Asp Gly
130      135      140
aag act tgg caa act att atg gat gtt aac ttg aac ggt gct tac tac      480
Lys Thr Trp Gln Thr Ile Met Asp Val Asn Leu Asn Gly Ala Tyr Tyr
145      150      155      160
tgt gcc cag gcg gtt ggc aga ata ttt aag aaa aat ggt aaa ggc tct      528
Cys Ala Gln Ala Val Gly Arg Ile Phe Lys Lys Asn Gly Lys Gly Ser
165      170      175
ttc att gtt act tcc tcc atg tct gct tct att gtc aat att cct atg      576
Phe Ile Val Thr Ser Ser Met Ser Ala Ser Ile Val Asn Ile Pro Met
180      185      190
aac ttg acc cca tat aac gtc agc aaa gct ggt gtt aaa cat ctt gcc      624
Asn Leu Thr Pro Tyr Asn Val Ser Lys Ala Gly Val Lys His Leu Ala
195      200      205
aaa tcc tta gct atc gaa tgg gct ggt ttt gct aga gca aac tcc att      672
Lys Ser Leu Ala Ile Glu Trp Ala Gly Phe Ala Arg Ala Asn Ser Ile
210      215      220
tct cca ggt tat tgc gac act ggt ctt aac gat cat tta cca aga gaa      720
Ser Pro Gly Tyr Cys Asp Thr Gly Leu Asn Asp His Leu Pro Arg Glu
225      230      235      240
tcc cgt ggt aag atg tgg gct cta atc cca gct ggc aga gaa gct tta      768
Ser Arg Gly Lys Met Trp Ala Leu Ile Pro Ala Gly Arg Glu Ala Leu
245      250      255
cca tac gaa atc gcc agt gct tat tta tac ttg gct tct gac gct gct      816
Pro Tyr Glu Ile Ala Ser Ala Tyr Leu Tyr Leu Ala Ser Asp Ala Ala
260      265      270
tct tat att acc ggt tct gac ata gcc att gat ggt ggc tac aca tcc      864
Ser Tyr Ile Thr Gly Ser Asp Ile Ala Ile Asp Gly Gly Tyr Thr Ser
275      280      285
atc taa
Ile
870

```

<210> 1626

<211> 289

<212> PRT

<213> Debaryomyces hansenii CBS767

<400> 1626

```

Met Thr Leu Pro Asp Lys Arg Glu Thr Asp Ile Thr Val Val Ser Tyr
1      5      10      15
Ile Ser Asn Glu Phe Thr Asp Glu Leu Pro Arg Ala Ser Pro Pro Lys

```



## PhoenixTemp32470.tmp.txt

20 25 30  
 Arg His Ile Met Asp Leu Leu Ser Leu Lys Gly Lys Val Ala Val Val  
 35 40 45  
 Thr Gly Ala Ala Arg Gly Ile Gly Leu Ala Ile Ala Glu Thr Phe Ala  
 50 55 60  
 Glu Ala Gly Ala Ala Val Ala Leu Val Asp Tyr Thr Asp Cys Ser Glu  
 65 70 75 80  
 Gln Ala Leu Lys Leu Ala Thr Arg Leu Lys Val Cys Thr Lys Ala Phe  
 85 90 95  
 Gln Cys Asp Val Ala Asp Leu Lys Arg Val Glu Gly Thr Val Gln Ala  
 100 105 110  
 Ile Glu Lys Glu Phe Gly Thr Ile Asp Val Phe Val Ala Asn Ala Gly  
 115 120 125  
 Ile Val Trp Lys Thr Gly Asn Ile Ile Asp Glu Val Asn Arg Asp Gly  
 130 135 140  
 Lys Thr Trp Gln Thr Ile Met Asp Val Asn Leu Asn Gly Ala Tyr Tyr  
 145 150 155 160  
 Cys Ala Gln Ala Val Gly Arg Ile Phe Lys Lys Asn Gly Lys Gly Ser  
 165 170 175  
 Phe Ile Val Thr Ser Ser Met Ser Ala Ser Ile Val Asn Ile Pro Met  
 180 185 190  
 Asn Leu Thr Pro Tyr Asn Val Ser Lys Ala Gly Val Lys His Leu Ala  
 195 200 205  
 Lys Ser Leu Ala Ile Glu Trp Ala Gly Phe Ala Arg Ala Asn Ser Ile  
 210 215 220  
 Ser Pro Gly Tyr Cys Asp Thr Gly Leu Asn Asp His Leu Pro Arg Glu  
 225 230 235 240  
 Ser Arg Gly Lys Met Trp Ala Leu Ile Pro Ala Gly Arg Glu Ala Leu  
 245 250 255  
 Pro Tyr Glu Ile Ala Ser Ala Tyr Leu Tyr Leu Ala Ser Asp Ala Ala  
 260 265 270  
 Ser Tyr Ile Thr Gly Ser Asp Ile Ala Ile Asp Gly Gly Tyr Thr Ser  
 275 280 285  
 Ile

&lt;210&gt; 1627

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 1627

atg ttc ttg aga ccg cta cag aac tcc cag aga gtg ata aac cca ctc	48
Met Phe Leu Arg Pro Leu Gln Asn Ser Gln Arg Val Ile Asn Pro Leu	
1 5 10 15	
gtt cga aag tac tca ata tcc gcg tct tct ctc tct gga aaa acc gct	96
Val Arg Lys Tyr Ser Ile Ser Ala Ser Ser Leu Ser Gly Lys Thr Ala	
20 25 30 35	
ctg gtg acc ggc ggt tcg gga gga atc ggg cta gtc att gct aag aag	144
Leu Val Thr Gly Gly Ser Gly Gly Ile Gly Leu Val Ile Ala Lys Lys	
40 45 50 55	
ctg gca gca aac gga gct cga gtg atc ctg ctt gct aga gat gaa acc	192
Leu Ala Ala Asn Gly Ala Arg Val Ile Leu Leu Ala Arg Asp Glu Thr	
60 65 70 75	
aag ttg aat gga gct ctg gag gag ctg aca cac act ctt aag gat gag	240
Lys Leu Asn Gly Ala Leu Glu Glu Leu Thr His Thr Leu Lys Asp Glu	
80 85 90 95	
cag aca caa agg gat atc aca cag acc gcc cac agc acg ata tct tac	288
Gln Thr Gln Arg Asp Ile Thr Gln Thr Ala His Ser Thr Ile Ser Tyr	
100 105 110 115	
gac att gct aaa gca acg aca cca cca gaa atc gac ttc aag atg gta	336
Asp Ile Ala Lys Ala Thr Thr Pro Pro Glu Ile Asp Phe Lys Met Val	
120 125 130 135	
gat ctg ctc gtc aac tgt gcc gga gtc acg caa aca tcg ctg ctt atg	384
Asp Leu Leu Val Asn Cys Ala Gly Val Thr Gln Thr Ser Leu Leu Met	

[illegible]

```
<210> 1628
<211> 274
<212> PRT
<213> Yarrowia lipolytica CLIB122
```

<400>	1628														
Met	Phe	Leu	Arg	Pro	Leu	Gln	Asn	Ser	Gln	Arg	Val	Ile	Asn	Pro	Leu
1				5					10					15	
Val	Arg	Lys	Tyr	Ser	Ile	Ser	Ala	Ser	Ser	Leu	Ser	Gly	Lys	Thr	Ala
			20					25					30		
Leu	Val	Thr	Gly	Gly	Ser	Gly	Gly	Ile	Gly	Leu	Val	Ile	Ala	Lys	Lys
		35					40					45			
Leu	Ala	Ala	Asn	Gly	Ala	Arg	Val	Ile	Leu	Leu	Ala	Arg	Asp	Glu	Thr
	50					55					60				
Lys	Leu	Asn	Gly	Ala	Leu	Glu	Glu	Leu	Thr	His	Thr	Leu	Lys	Asp	Glu
65					70					75					80
Gln	Thr	Gln	Arg	Asp	Ile	Thr	Gln	Thr	Ala	His	Ser	Thr	Ile	Ser	Tyr
				85					90					95	
Asp	Ile	Ala	Lys	Ala	Thr	Thr	Pro	Pro	Glu	Ile	Asp	Phe	Lys	Met	Val
			100					105					110		
Asp	Leu	Leu	Val	Asn	Cys	Ala	Gly	Val	Thr	Gln	Thr	Ser	Leu	Leu	Met
		115					120					125			
Thr	Thr	Lys	Asn	Ile	Asp	Gln	Ile	Ile	Gly	Thr	Asn	Leu	Ala	Gly	Ala
	130					135					140				
Ile	Lys	Met	Ser	Gln	Tyr	Ala	Met	Arg	Pro	Trp	Met	Lys	Arg	Lys	Ser
145					150					155					160
Gly	Cys	Ile	Val	Asn	Ile	Ser	Ser	Val	Leu	Gly	Leu	Arg	Gly	Leu	Thr
				165					170					175	
Gly	Gly	Ser	Thr	Val	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Leu	Val	Gly	Phe
			180					185					190		
Thr	Lys	Ala	Leu	Ala	Val	Glu	Val	Gly	Ala	Arg	Gly	Ile	Arg	Val	Asn
		195					200					205			
Cys	Val	Cys	Pro	Gly	Leu	Val	Glu	Thr	Glu	Met	Thr	Gln	Asn	Val	Thr
	210					215					220				
Val	Gln	Asn	Gly	Phe	Ala	Thr	Pro	Leu	Gln	Gly	Met	Gly	Lys	Asp	Asn
225					230					235					240
Tyr	Val	Ser	Ala	Asp	Ser	Val	Ala	Asp	Ala	Val	Leu	Tyr	Leu	Ala	Ala

245  
 Ser Glu Glu Gln Thr Gly Ser Ile Leu Thr Ile Asp Lys Gly Leu Ser  
 260 265 270 255  
 Ala Val

<210> 1629  
 <211> 876  
 <212> DNA  
 <213> Yarrowia lipolytica CLIB122

<220>  
 <221> CDS  
 <222> (1)..(876)

<400> 1629  
 atg tcc aac tcc gcc aaa gcc gct gtc gtg ccc ccc gcc ccc acc gcc 48  
 Met Ser Asn Ser Ala Lys Ala Ala Val Val Pro Pro Ala Pro Thr Ala  
 1 5 10 15  
 gaa gat atc gcc cga gcc aac gcc gga tcc aag gaa gag ccc gtt ttc 96  
 Glu Asp Ile Ala Arg Ala Asn Ala Gly Ser Lys Glu Glu Pro Val Phe  
 20 25 30  
 cag gct aag aac ttt ctg tcc aag ttc cga ctc gat ggc aag gta gcc 144  
 Gln Ala Lys Asn Phe Leu Ser Lys Phe Arg Leu Asp Gly Lys Val Ala  
 35 40 45  
 att gtg act ggt gga gct cga gga ctc gga ttc tcc atg gcc gag ggt 192  
 Ile Val Thr Gly Gly Ala Arg Gly Leu Gly Phe Ser Met Ala Glu Gly  
 50 55 60  
 ctg tgt tcg gtc ggc ctc aag ggc att gcc att ctg gat gtg cag cag 240  
 Leu Cys Ser Val Gly Leu Lys Gly Ile Ala Ile Leu Asp Val Gln Gln  
 65 70 75 80  
 gac ctg ggt ctg gat gcc att gag aag ctg cac aag gcc tac gga gtg 288  
 Asp Leu Gly Leu Asp Ala Ile Glu Lys Leu His Lys Ala Tyr Gly Val  
 85 90 95  
 cag gcc cag ttc tac aag gcc gac gtc cga gac gag gag tcc gtc aac 336  
 Gln Ala Gln Phe Tyr Lys Ala Asp Val Arg Asp Glu Glu Ser Val Asn  
 100 105 110  
 gag atc atc gac cga gtt gtg cac gat ctc ggg tcc gtc gac gtt gtg 384  
 Glu Ile Ile Asp Arg Val Val His Asp Leu Gly Ser Val Asp Val Val  
 115 120 125  
 gtc aac tcc gcc ggt gtt gct gac ctt gtt cac gca gct gag tac ccc 432  
 Val Asn Ser Ala Gly Val Ala Asp Leu Val His Ala Ala Glu Tyr Pro  
 130 135 140  
 gca gac aag ttc cga cga gtc atc gac atc aac ctt aac gga tcc ttc 480  
 Ala Asp Lys Phe Arg Arg Val Ile Asp Ile Asn Leu Asn Gly Ser Phe  
 145 150 155 160  
 ttg gtg acc cag gcc gcc gcc cga cac atg atc aag cag ggc acc ggc 528  
 Leu Val Thr Gln Ala Ala Ala Arg His Met Ile Lys Gln Gly Thr Gly  
 165 170 175  
 gga acc gtg gtg ttc atc gcc tcc atg tcc gga tcc att gtc aac tgg 576  
 Gly Thr Val Val Phe Ile Ala Ser Met Ser Gly Ser Ile Val Asn Trp  
 180 185 190  
 ccc cag cct cag agc gct tac aac gcc tcc aag gct gcc gtc aag cac 624  
 Pro Gln Pro Gln Ser Ala Tyr Asn Ala Ser Lys Ala Ala Val Lys His  
 195 200 205  
 ctg tct aag tcg ctg gcc gcc gag tgg gcc gtc cac aac atc cga tgc 672  
 Leu Ser Lys Ser Leu Ala Ala Glu Trp Ala Val His Asn Ile Arg Cys  
 210 215 220  
 aac tcc atc tcg cct gga tac atg gat acc gct ctt aac cga gcc tac 720  
 Asn Ser Ile Ser Pro Gly Tyr Met Asp Thr Ala Leu Asn Arg Ala Tyr  
 225 230 235 240  
 aac act ctg ttt gag gag tgg aag gac cga acc ccc ctc ggc cga ctc 768  
 Asn Thr Leu Phe Glu Glu Trp Lys Asp Arg Thr Pro Leu Gly Arg Leu  
 245 250 255  
 gga gac ccc gac gag ctc acc ggc gcc tgc atc tac ctg gct tcc gat 816  
 Gly Asp Pro Asp Glu Leu Thr Gly Ala Cys Ile Tyr Leu Ala Ser Asp  
 260 265 270  
 gcc tct tcg tac gtg acc gga tcc att atc att gat ggt ggt tac 864  
 Ala Ser Ser Tyr Val Thr Gly Ser Asp Ile Ile Ile Asp Gly Gly Tyr

275  
act att att taa  
Thr Ile Ile  
290

280 285

876

<210> 1630  
<211> 291  
<212> PRT  
<213> Yarrowia lipolytica CLIB122

<400> 1630  
Met Ser Asn Ser Ala Lys Ala Ala Val Val Pro Pro Ala Pro Thr Ala  
1 5 10 15  
Glu Asp Ile Ala Arg Ala Asn Ala Gly Ser Lys Glu Glu Pro Val Phe  
20 25 30  
Gln Ala Lys Asn Phe Leu Ser Lys Phe Arg Leu Asp Gly Lys Val Ala  
35 40 45  
Ile Val Thr Gly Gly Ala Arg Gly Leu Gly Phe Ser Met Ala Glu Gly  
50 55 60  
Leu Cys Ser Val Gly Leu Lys Gly Ile Ala Ile Leu Asp Val Gln Gln  
65 70 75 80  
Asp Leu Gly Leu Asp Ala Ile Glu Lys Leu His Lys Ala Tyr Gly Val  
85 90 95  
Gln Ala Gln Phe Tyr Lys Ala Asp Val Arg Asp Glu Glu Ser Val Asn  
100 105 110  
Glu Ile Ile Asp Arg Val Val His Asp Leu Gly Ser Val Asp Val Val  
115 120 125  
Val Asn Ser Ala Gly Val Ala Asp Leu Val His Ala Ala Glu Tyr Pro  
130 135 140  
Ala Asp Lys Phe Arg Arg Val Ile Asp Ile Asn Leu Asn Gly Ser Phe  
145 150 155 160  
Leu Val Thr Gln Ala Ala Ala Arg His Met Ile Lys Gln Gly Thr Gly  
165 170 175  
Gly Thr Val Val Phe Ile Ala Ser Met Ser Gly Ser Ile Val Asn Trp  
180 185 190  
Pro Gln Pro Gln Ser Ala Tyr Asn Ala Ser Lys Ala Ala Val Lys His  
195 200 205  
Leu Ser Lys Ser Leu Ala Ala Glu Trp Ala Val His Asn Ile Arg Cys  
210 215 220  
Asn Ser Ile Ser Pro Gly Tyr Met Asp Thr Ala Leu Asn Arg Ala Tyr  
225 230 235 240  
Asn Thr Leu Phe Glu Glu Trp Lys Asp Arg Thr Pro Leu Gly Arg Leu  
245 250 255  
Gly Asp Pro Asp Glu Leu Thr Gly Ala Cys Ile Tyr Leu Ala Ser Asp  
260 265 270  
Ala Ser Ser Tyr Val Thr Gly Ser Asp Ile Ile Ile Asp Gly Gly Tyr  
275 280 285  
Thr Ile Ile  
290

<210> 1631  
<211> 942  
<212> DNA  
<213> Yarrowia lipolytica CLIB122

<220>  
<221> CDS  
<222> (1)..(942)

<400> 1631  
atg gtt tct tca gcc gct act tct gct ctg ccc atc tcg gca ccc tac 48  
Met Val Ser Ser Ala Ala Thr Ser Ala Leu Pro Ile Ser Ala Pro Tyr  
1 5 10 15  
acc ttc tac cct cag gct cga gtt cct gcc ccc aag aag ctc gtt gga 96  
Thr Phe Tyr Pro Gln Ala Arg Val Pro Ala Pro Lys Lys Leu Val Gly  
20 25 30  
ctc aat gct gct ctg gag gcc cag aag aac ccc gag ttc gag gtg aag 144  
Leu Asn Ala Ala Leu Glu Ala Gln Lys Asn Pro Glu Phe Glu Val Lys  
35 40 45

## PhoenixTemp32470.tmp.txt

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ccc gag atc ttt aag gag ttc tct ctg ccc gac ggt gtt gcc att gtc      192
Pro Glu 50 Ile Phe Lys Glu 55 Ser Leu Pro Asp Gly 60 Val Ala Ile Val
acc ggt gga aac tcc ggt att ggt ctt gag tac tca gtc tgc ctc gcc      240
Thr Gly Gly Asn Ser Gly 70 Ile Gly Leu Glu Tyr 75 Ser Val Cys Leu Ala 80
gag ctc ggt gcc act gtc tac tgt ctt gac atg ccc gag act ccc tct      288
Glu Leu Gly Ala Thr 85 Val Tyr Cys Leu Asp 90 Met Pro Glu Thr 95 Ser
gag gag ttc ctg gct tgc cag tcc tac gtt aag cga atg ccc ggc aac      336
Glu Glu Phe Leu 100 Ala Cys Gln Ser Tyr 105 Val Lys Arg Met Pro Gly Asn
gcc tct ctg gtc ttc aag cga gcc gac gtc act gac gag gag act atg      384
Ala Ser 115 Val Phe Lys Arg Ala 120 Asp Val Thr Asp Glu Glu Thr Met
aac tcc ctc ttc cag aac att gcc gag acc cac ggc aag att gac gtt      432
Asn Ser 130 Leu Phe Gln Asn Ile 135 Ala Glu Thr His Gly 140 Lys Ile Asp Val
gtc atc gct aac gcc ggt gtt ctt gga cct cga gcc tct tgc aac gag      480
Val Ile Ala Asn Ala Gly 150 Val Leu Gly Pro Arg 155 Ala Ser Cys Asn Glu 160
tac ccc gct gac tgg ttc cga aag gtc atg gac gtc aac gtc acc ggt      528
Tyr Pro Ala Asp Trp 165 Phe Arg Lys Val Met Asp Val Asn Val Thr Gly 175
gtc ttt atc acc gcc cag gcc gcc tct cga cag atg att gcc acc aag      576
Val Phe Ile Thr 180 Ala Gln Ala Ala Ser 185 Arg Gln Met Ile Ala Thr Lys
act tct ggt tct atc att gtc acc gcc tcc atg tcc ggc tcc att gtc      624
Thr Ser Gly Ser Ile Ile Val Thr 200 Ala Ser Met Ser Gly 205 Ser Ile Val
aac cga gac atg ccc tgg tgc gcc tac aac gcc tcc aag gcc gct gct      672
Asn Arg Asp Met Pro Trp 215 Cys Ala Tyr Asn Ala Ser Lys Ala Ala Ala
gct cat ctt gtc aag tcc atg gct gct gag ctc ggc cag ttt gag att      720
Ala His Leu Val Lys Ser 230 Met Ala Ala Glu 235 Gly Gln Phe Glu Ile 240
cga gtc aac tcc atc tcc ccc ggt cac atc cag act gct atg act gac      768
Arg Val Asn Ser Ile Ser Pro Gly His 250 Ile Gln Thr Ala Met Thr Asp 255
gtc tgt ctt gac gct gag ccc ggt ctt ggt aac cag tgg gcc ttc cag      816
Val Cys Leu Asp 260 Ala Glu Pro Gly 265 Gly Asn Gln Trp Ala Phe Gln 270
aac ccc atg ggc cga ctt gga ggt gtc tcc gag ctt cga gga gtc tgc      864
Asn Pro Met Gly Arg Leu Gly 280 Val Ser Glu Leu Arg 285 Gly Val Cys
gcc tac ctt gca tct tcc gcc tcc tcc tac acc acc ggc tct gac att      912
Ala Tyr 290 Leu Ala Ser Ser Ala 295 Ser Ser Tyr Thr Thr Gly Ser Asp Ile
ctt gtc tgc ggt ggc cac cac gtc tgg taa      942
Leu Val Cys Gly Gly His 310 His Val Trp

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&lt;210&gt; 1632

&lt;211&gt; 313

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;400&gt; 1632

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Met Val Ser Ser Ala Ala Thr Ser Ala Leu Pro Ile Ser Ala Pro Tyr
1 5 10 15
Thr Phe Tyr Pro Gln Ala Arg Val Pro Ala Pro Lys Lys Leu Val Gly
20 25 30
Leu Asn Ala Ala Leu Glu Ala Gln Lys Asn Pro Glu Phe Glu Val Lys
35 40 45
Pro Glu Ile Phe Lys Glu Phe Ser Leu Pro Asp Gly Val Ala Ile Val
50 55 60
Thr Gly Gly Asn Ser Gly Ile Gly Leu Glu Tyr Ser Val Cys Leu Ala
65 70 75 80
Glu Leu Gly Ala Thr Val Tyr Cys Leu Asp Met Pro Glu Thr Pro Ser

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## PhoenixTemp32470.tmp.txt

Glu	Glu	Phe	Leu	Ala	Cys	Gln	Ser	Tyr	Val	Lys	Arg	Met	Pro	Gly	Asn
Ala	Ser	Leu	Val	Phe	Lys	Arg	Ala	Asp	Val	Thr	Asp	Glu	Glu	Thr	Met
Asn	Ser	Leu	Phe	Gln	Asn	Ile	Ala	Glu	Thr	His	Gly	Lys	Ile	Asp	Val
Val	Ile	Ala	Asn	Ala	Gly	Val	Leu	Gly	Pro	Arg	Ala	Ser	Cys	Asn	Glu
Tyr	Pro	Ala	Asp	Trp	Phe	Arg	Lys	Val	Met	Asp	Val	Asn	Val	Thr	Gly
Val	Phe	Ile	Thr	Ala	Gln	Ala	Ala	Ser	Arg	Gln	Met	Ile	Ala	Thr	Lys
Thr	Ser	Gly	Ser	Ile	Ile	Val	Thr	Ala	Ser	Met	Ser	Gly	Ser	Ile	Val
Asn	Arg	Asp	Met	Pro	Trp	Cys	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Ala
Ala	His	Leu	Val	Lys	Ser	Met	Ala	Ala	Glu	Leu	Gly	Gln	Phe	Glu	Ile
Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	His	Ile	Gln	Thr	Ala	Met	Thr	Asp
Val	Cys	Leu	Asp	Ala	Glu	Pro	Gly	Leu	Gly	Asn	Gln	Trp	Ala	Phe	Gln
Asn	Pro	Met	Gly	Arg	Leu	Gly	Gly	Val	Ser	Glu	Leu	Arg	Gly	Val	Cys
Ala	Tyr	Leu	Ala	Ser	Ser	Ala	Ser	Ser	Tyr	Thr	Thr	Gly	Ser	Asp	Ile
Leu	Val	Cys	Gly	Gly	His	His	Val	Trp							

<210> 1633

<211> 864

## <212> DNA

<213> *Aspergillus nidulans* FGSC A4

$\langle 220 \rangle$

<221> CDS

<222> (1) .. (864)

<400> 1633

atg Met 1	tct Ser	gtc Val	tct Ser	att Ile 5	gaa Glu	acc Thr	act Thr	tcg Ser	act Thr 10	ccc Pro	gtc Val	gtg Val	cct Pro	ctc Leu 15	aag Lys	48
cag Gln	gag Glu	gca Ala	ccc Pro 20	gca Ala	gtt Val	gct Ala	acc Thr	acc Thr 25	aat Asn	aga Arg	ctg Leu	ccc Pro	gag Glu 30	ttc Phe	agt Ser	96
ctg Leu	gcc Ala	gga Gly 35	aag Lys	gtc Val	gtt Val	tgc Cys	gtt Val 40	tcc Ser	ggg Gly	ggg Gly	gct Ala	cgt Arg 45	ggc Gly	ctt Leu	gga Gly	144
ttg Leu 50	acc Thr	cag Gln	gca Ala	gag Glu	gct Ala	ctg Leu 55	ctt Leu	gaa Glu	gcc Ala	ggg Gly 60	gct Ala	cgc Arg	gtc Val	tac Tyr	gct Ala	192
ctt Leu 65	gac Asp	cgt Arg	ctc Leu	gag Glu	gag Glu 70	cct Pro	tct Ser	ccc Pro	gat Asp	ttc Phe 75	tac Tyr	act Thr	att Ile	cag Gln	aag Lys 80	240
cgt Arg	gcc Ala	aga Arg	gag Glu	gaa Glu 85	ctc Leu	ggc Gly	act Thr	gag Glu 90	ctc Leu	cag Gln	tac Tyr	cgc Arg	cgc Arg	atc Ile 95	gat Asp	288
gtt Val	cgt Arg	gac Asp	aca Thr 100	gag Glu	ctc Leu	ttg Leu	cac His	agc Ser 105	act Thr	atc Ile	gaa Glu	gca Ala	atc Ile 110	gcc Ala	aac Asn	336
gcc Ala	gag Glu	ggg Gly 115	cgc Arg	atg Met	gat Asp	ggc Gly	ttg Leu 120	gtg Val	gct Ala	gct Ala	gct Ala	gga Gly 125	att Ile	cag Gln	cag Gln	384
gag Glu	acc Thr 130	cct Pro	gcc Ala	ctg Leu	gag Glu	tac Tyr 135	aca Thr	gcc Ala	caa Gln	gac Asp	gcc Ala 140	aac Asn	agg Arg	atg Met	ttc Phe	432
gaa Glu	gtc Val	aat Asn	atc Ile	acc Thr	ggg Gly	gtc Val	atg Met	atg Met	acc Thr	gcg Ala	caa Gln	gcg Ala	gtt Val	gct Ala	aaa Lys	480

## PhoenixTemp32470.tmp.txt

145	cag	atg	att	cg	ttt	150	gga	gga	agc	155	gca	ctg	att	gcc	160		
	Gln	Met	Ile	Arg	Phe	Gly	Asn	Gly	Ser	Ile	Ala	Leu	Ile	Ala	agt		528
					165												
	atg	agc	ggc	act	att	gcc	aat	cg	ggt	ctc	atc	tgc	tct	gcc	tac	aac	576
	Met	Ser	Gly	Thr	Ile	Ala	Asn	Arg	Gly	Leu	Ile	Cys	Ser	Ala	Tyr	Asn	
				180					185					190			
	gct	agc	aaa	gcg	gcc	gtc	atc	caa	ctc	gcc	cg	aac	ctt	gcc	tcc	gag	624
	Ala	Ser	Lys	Ala	Ala	Val	Ile	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Ser	Glu	
			195					200					205				
	tgg	ggc	cag	tac	aac	atc	cg	gtc	aac	act	atc	tct	ccc	ggt	tat	atc	672
	Trp	Gly	Gln	Tyr	Asn	Ile	Arg	Val	Asn	Thr	Ile	Ser	Pro	Gly	Tyr	Ile	
							215					220					
	gtc	acc	gct	atg	gtt	gag	cag	ctc	ttc	gtc	cag	tac	ccc	gag	cg	cg	720
	Val	Thr	Ala	Met	Val	Glu	Gln	Leu	Phe	Val	Gln	Tyr	Pro	Glu	Arg	Arg	
	225					230					235						
	gac	gag	tgg	ccc	aag	cac	aac	atg	ctt	gga	cg	ctg	tcc	tct	ccg	cag	768
	Asp	Glu	Trp	Pro	Lys	His	Asn	Met	Leu	Gly	Arg	Leu	Ser	Ser	Pro	Gln	
					245					250					255		
	gag	tac	cg	gga	gca	gct	gtc	ttc	ctt	ctc	agc	gat	gct	agc	agt	ttc	816
	Glu	Tyr	Arg	Gly	Ala	Ala	Val	Phe	Leu	Leu	Ser	Asp	Ala	Ser	Ser	Phe	
				260					265				270				
	atg	acc	gga	agc	gac	ctg	cg	atc	gat	gga	ggc	cac	gcc	gcg	tgg		861
	Met	Thr	Gly	Ser	Asp	Leu	Arg	Ile	Asp	Gly	Gly	His	Ala	Ala	Trp		
			275					280					285				
	tag																864

&lt;210&gt; 1634

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 1634

Met	Ser	Val	Ser	Ile	Glu	Thr	Thr	Ser	Thr	Pro	Val	Val	Pro	Leu	Lys
1				5					10					15	
Gln	Glu	Ala	Pro	Ala	Val	Ala	Thr	Thr	Asn	Arg	Leu	Pro	Glu	Phe	Ser
			20					25					30		
Leu	Ala	Gly	Lys	Val	Val	Cys	Val	Ser	Gly	Gly	Ala	Arg	Gly	Leu	Gly
		35					40					45			
Leu	Thr	Gln	Ala	Glu	Ala	Leu	Leu	Glu	Ala	Gly	Ala	Arg	Val	Tyr	Ala
		50				55					60				
Leu	Asp	Arg	Leu	Glu	Glu	Pro	Ser	Pro	Asp	Phe	Tyr	Thr	Ile	Gln	Lys
65				70					75					80	
Arg	Ala	Arg	Glu	Glu	Leu	Gly	Thr	Glu	Leu	Gln	Tyr	Arg	Arg	Ile	Asp
				85					90					95	
Val	Arg	Asp	Thr	Glu	Leu	Leu	His	Ser	Thr	Ile	Glu	Ala	Ile	Ala	Asn
			100					105					110		
Ala	Glu	Gly	Arg	Met	Asp	Gly	Leu	Val	Ala	Ala	Ala	Gly	Ile	Gln	Gln
		115					120					125			
Glu	Thr	Pro	Ala	Leu	Glu	Tyr	Thr	Ala	Gln	Asp	Ala	Asn	Arg	Met	Phe
		130				135				140					
Glu	Val	Asn	Ile	Thr	Gly	Val	Met	Met	Thr	Ala	Gln	Ala	Val	Ala	Lys
145					150				155						160
Gln	Met	Ile	Arg	Phe	Gly	Asn	Gly	Gly	Ser	Ile	Ala	Leu	Ile	Ala	Ser
				165					170					175	
Met	Ser	Gly	Thr	Ile	Ala	Asn	Arg	Gly	Leu	Ile	Cys	Ser	Ala	Tyr	Asn
			180					185					190		
Ala	Ser	Lys	Ala	Ala	Val	Ile	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Ser	Glu
		195					200					205			
Trp	Gly	Gln	Tyr	Asn	Ile	Arg	Val	Asn	Thr	Ile	Ser	Pro	Gly	Tyr	Ile
		210				215					220				
Val	Thr	Ala	Met	Val	Glu	Gln	Leu	Phe	Val	Gln	Tyr	Pro	Glu	Arg	Arg
225					230				235						240
Asp	Glu	Trp	Pro	Lys	His	Asn	Met	Leu	Gly	Arg	Leu	Ser	Ser	Pro	Gln
				245					250					255	
Glu	Tyr	Arg	Gly	Ala	Ala	Val	Phe	Leu	Leu	Ser	Asp	Ala	Ser	Ser	Phe
			260					265				270			

Met Thr Gly Ser Asp Leu Arg Ile Asp Gly Gly His Ala Ala Trp  
 275 280 285

<210> 1635

<211> 837

<212> DNA

<213> Aspergillus nidulans FGSC A4

<220>

<221> CDS

<222> (1)..(837)

<400> 1635

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Met Ala Thr Asn Gly Ser Ser Ser Ser Glu Ala Thr Pro Val Val Ser	
1 5 10 15	
acg ctt ccc ggt cct gac cat aac tgg cag gtt acg ctt gct gga aag	96
Thr Leu Pro Gly Pro Asp His Asn Trp Gln Val Thr Leu Ala Gly Lys	
20 25 30	
gtc att gcc atc acc ggt gca aac caa ggc att ggg ctc ggg atc gca	144
Val Ile Ala Ile Thr Gly Ala Asn Gln Gly Ile Gly Leu Gly Ile Ala	
35 40 45	
gaa gtc att ctg gcc aac tct gca gcg cac gtc tac tct ctc gac atc	192
Glu Val Ile Leu Ala Asn Ser Ala Ala His Val Tyr Ser Leu Asp Ile	
50 55 60	
tcc acg ccc ggc gac ccc ttt aac gag ctc gcg cag aag aac ccg aag	240
Ser Thr Pro Gly Asp Pro Phe Asn Glu Leu Ala Gln Lys Asn Pro Lys	
65 70 75 80	
cgc ttc tcc ttc atc cag aca gac gtg acc tct gaa gaa tcc gtc cag	288
Arg Phe Ser Phe Ile Gln Thr Asp Val Thr Ser Glu Glu Ser Val Gln	
85 90 95	
gct gct ctc gac cag atc gtc tct gaa caa ggc cgg ttg gac ggg atg	336
Ala Ala Leu Asp Gln Ile Val Ser Glu Gln Gly Arg Leu Asp Gly Met	
100 105 110	
att gcc aat gcc ggc gca aca aag cac cag ccc gcg ttg gac ttc acc	384
Ile Ala Asn Ala Gly Ala Thr Lys His Gln Pro Ala Leu Asp Phe Thr	
115 120 125	
atg gat cag gtc aag cgc ctc ttc gag ctc aac gtc ttc ggt gcc tgg	432
Met Asp Gln Val Lys Arg Leu Phe Glu Leu Asn Val Phe Gly Ala Trp	
130 135 140	
aac tgc gca act gcg gcg aag aca ttc atc aaa ctc ggc atc aag	480
Asn Cys Ala Thr Ala Ala Lys Thr Phe Ile Lys Leu Gly Ile Lys	
145 150 155 160	
ggc tca att gtc ttt act gct agc atg aca tct tac aga ccg aac cgc	528
Gly Ser Ile Val Phe Thr Ala Ser Met Thr Ser Tyr Arg Pro Asn Arg	
165 170 175	
gcg gcg ccg agc gcg cca tat gga ggc acg aaa gcg gcg gta cgg aac	576
Ala Ala Pro Ser Ala Pro Tyr Gly Gly Thr Lys Ala Ala Val Arg Asn	
180 185 190	
atg acg cat acc ttg gcg atg gag tgg gcg aag cat gga atc cgg gtg	624
Met Thr His Thr Leu Ala Met Glu Trp Ala Lys His Gly Ile Arg Val	
195 200 205	
aac agt atc tcg ccc ggg ttt gtg aag act gca ttg acg tat tat gtt	672
Asn Ser Ile Ser Pro Gly Phe Val Lys Thr Ala Leu Thr Tyr Tyr Val	
210 215 220	
gag aca agt ccc gac tgg gat acc aag atg aag tac tat ggg ggg atg	720
Glu Thr Ser Pro Asp Trp Asp Thr Lys Met Tyr Tyr Gly Gly Met	
225 230 235 240	
ccg aga ctg gcg att ccg cag gag ttg ggt ggc gcg tat gtt tac ctg	768
Pro Arg Leu Ala Ile Pro Gln Glu Leu Gly Gly Ala Tyr Val Tyr Leu	
245 250 255	
ctt agt gac act gcg acg tat acg acg gga atc gat att cca att gcg	816
Leu Ser Asp Thr Ala Thr Tyr Thr Gly Ile Asp Ile Pro Ile Ala	
260 265 270	
ggg atc gtg ggg gct tgg tag	837
Gly Ile Val Gly Ala Trp	
275	

<210> 1636



&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 1636

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Met Ala Thr Asn Gly Ser Ser Ser Ser Glu Ala Thr Pro Val Val Ser
1      5      10      15
Thr Leu Pro Gly Pro Asp His Asn Trp Gln Val Thr Leu Ala Gly Lys
20      25      30
Val Ile Ala Ile Thr Gly Ala Asn Gln Gly Ile Gly Leu Gly Ile Ala
35      40      45
Glu Val Ile Leu Ala Asn Ser Ala Ala His Val Tyr Ser Leu Asp Ile
50      55      60
Ser Thr Pro Gly Asp Pro Phe Asn Glu Leu Ala Gln Lys Asn Pro Lys
65      70      75      80
Arg Phe Ser Phe Ile Gln Thr Asp Val Thr Ser Glu Glu Ser Val Gln
85      90      95
Ala Ala Leu Asp Gln Ile Val Ser Glu Gln Gly Arg Leu Asp Gly Met
100      105      110
Ile Ala Asn Ala Gly Ala Thr Lys His Gln Pro Ala Leu Asp Phe Thr
115      120      125
Met Asp Gln Val Lys Arg Leu Phe Glu Leu Asn Val Phe Gly Ala Trp
130      135      140
Asn Cys Ala Thr Ala Ala Lys Thr Phe Ile Lys Leu Gly Ile Lys
145      150      155      160
Gly Ser Ile Val Phe Thr Ala Ser Met Thr Ser Tyr Arg Pro Asn Arg
165      170      175
Ala Ala Pro Ser Ala Pro Tyr Gly Gly Thr Lys Ala Ala Val Arg Asn
180      185      190
Met Thr His Thr Leu Ala Met Glu Trp Ala Lys His Gly Ile Arg Val
195      200      205
Asn Ser Ile Ser Pro Gly Phe Val Lys Thr Ala Leu Thr Tyr Tyr Val
210      215      220
Glu Thr Ser Pro Asp Trp Asp Thr Lys Met Lys Tyr Tyr Gly Gly Met
225      230      235      240
Pro Arg Leu Ala Ile Pro Gln Glu Leu Gly Gly Ala Tyr Val Tyr Leu
245      250      255
Leu Ser Asp Thr Ala Thr Tyr Thr Thr Gly Ile Asp Ile Pro Ile Ala
260      265      270
Gly Ile Val Gly Ala Trp
275

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&lt;210&gt; 1637

&lt;211&gt; 885

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(885)

&lt;400&gt; 1637

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atg gct tcc cgt ctc tcc caa cta aac gct cac ctc aac tac ccg cgc      48
Met Ala Ser Arg Leu Ser Gln Leu Asn Ala His Leu Asn Tyr Pro Arg
1      5      10      15
ggc ctc cta gcc gac caa gtc gcc atc acc ggc gca ggc caa ggc      96
Gly Leu Leu Ala Asp Gln Val Ala Ile Thr Gly Ala Gly Gln Gly
20      25      30
att ggt gca gaa gca gcg cgc cta ttc gca aac gag ggc gca aag gtc      144
Ile Gly Ala Glu Ala Ala Arg Leu Phe Ala Asn Glu Gly Ala Lys Val
35      40      45
gtg att gct gat atc gac ggc gaa aag gcc aac gct gtc gcc aac gcc      192
Val Ile Ala Asp Ile Asp Gly Glu Lys Ala Asn Ala Val Ala Asn Ala
50      55      60
atc aac tcc gcc tca cct aat cgc gct att gcc gtc gtt ggc gac atc      240
Ile Asn Ser Ala Ser Pro Asn Arg Ala Ile Ala Val Val Gly Asp Ile
65      70      75      80
ctt aac gac aag tac acg act ctt gtt gaa aag gcc gcc gaa ttc      288
Leu Asn Asp Lys Tyr Ile Thr Thr Leu Val Glu Lys Ala Ala Glu Phe

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## PhoenixTemp32470.tmp.txt

																85																	90																	95																
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gat Asp	gga Gly	gtt Val 115	att Ile	cac His	aag Lys	atc Ile	aca Thr 120	gat Asp	aaa Lys	caa Gln	tgg Trp	gac Asp 125	acc Thr	atg Met	att Ile																	384																																		
gcg Ala	gtg Val 130	cac His	aac Asn	aca Thr	gcg Ala	ccg Pro 135	ttc Phe	aaa Lys	ctc Leu	att Ile	cgc Arg 140	gca Ala	gca Ala	aag Lys																	432																																			
tac Tyr 145	ttc Phe	cgc Arg	gtc Val	aag Lys	gac Asp 150	ggg Gly	gag Glu	cca Pro	cgt Arg	gtg Val 155	att Ile	atc Ile	aac Asn	atc Ile	tcg Ser 160																	480																																		
agt Ser	acg Thr	agc Ser	ggg Gly 165	att Ile	cac His	ggg Gly	aat Asn	gcc Ala	ggg Gly 170	caa Gln	gca Ala	aac Asn	tac Tyr	gcc Ala 175	ctt Leu																	528																																		
gcc Ala	aaa Lys	gcg Ala	ggc Gly 180	gtt Val	gtg Val	ggc Gly	ctg Leu	aca Thr 185	cgt Arg	aca Thr	atc Ile	gca Ala	aag Lys 190	gaa Glu	tgg Trp																	576																																		
ggt Gly	ccg Pro	caa Gln 195	ttc Phe	ggc Gly	gtc Val	cgc Arg	tcg Ser 200	aat Asn	acc Thr	att Ile	gcg Ala	ttc Phe 205	ggg Gly	ttc Phe	gtg Val																	624																																		
cag Gln 210	aca Thr	cgt Arg	ctg Leu	acc Thr	gct Ala 215	gcg Ala	aag Lys	gag Glu	aag Lys	ggg Gly	gcg Ala 220	ttc Phe	att Ile	acc Thr	acg Thr																	672																																		
ccc Pro 225	gac Asp	gga Gly	acg Thr	aag Lys	gtt Val 230	gcc Ala	ctt Leu	ggt Gly	ata Ile	ccc Pro 235	ggg Gly	cag Gln	cag Gln	ctt Leu	ggg Gly 240																	720																																		
gcg Ala	aag Lys	gag Glu	ggc Gly 245	gcg Ala	aag Lys	gat Asp	ggg Gly	aag Lys	ccg Pro 250	gcg Ala	tat Tyr	ccg Pro	gat Asp	att Ile 255	ccg Pro																	768																																		
tta Leu	ggc Gly	agg Arg	ccg Pro 260	gcg Ala	agt Ser	cct Pro	gag Glu	gag Glu 265	gcg Ala	gcg Ala	agg Arg	agt Ser	gtg Val 270	ctt Leu	gct Ala																	816																																		
gtg Val	gcc Ala	agt Ser 275	ccg Pro	ttg Leu	ttt Phe	agt Ser	tat Tyr 280	gtt Val	aac Asn	gga Gly	gag Glu	aca Thr 285	att Ile	cgg Arg	gtt Val																	864																																		
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<210> 1638

<211> 294

<212> PRT

<213> *Aspergillus nidulans* FGSC A4

<400> 1638

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Gly	Leu	Leu	Ala 20	Asp	Gln	Val	Ala	Ile 25	Ile	Thr	Gly	Ala	Gly 30	Gln	Gly
Ile	Gly	Ala 35	Glu	Ala	Ala	Arg	Leu 40	Phe	Ala	Asn	Glu	Gly 45	Ala	Lys	Val
Val	Ile 50	Ala	Asp	Ile	Asp	Gly 55	Glu	Lys	Ala	Asn	Ala 60	Val	Ala	Asn	Ala
Ile 65	Asn	Ser	Ala	Ser	Pro 70	Asn	Arg	Ala	Ile 75	Ala	Val	Val	Gly	Asp	Ile 80
Leu	Asn	Asp	Lys	Tyr 85	Ile	Thr	Thr	Leu	Val 90	Glu	Lys	Ala	Ala	Glu 95	Phe
Gly	Asn	Gly	Lys 100	Ile	His	Ile	Ile	Val 105	Asn	Asn	Ala	Gly	Phe 110	Thr	Trp
Asp	Gly	Val 115	Ile	His	Lys	Ile	Thr 120	Asp	Lys	Gln	Trp	Asp 125	Thr	Met	Ile
Ala	Val 130	His	Asn	Thr	Ala	Pro 135	Phe	Lys	Leu	Ile	Arg 140	Ala	Ala	Ala	Lys
Tyr 145	Phe	Arg	Val	Lys	Asp 150	Gly	Glu	Pro	Arg	Val 155	Ile	Ile	Asn	Ile	Ser 160
Ser	Thr	Ser	Gly	Ile 165	His	Gly	Asn	Ala	Gly 170	Gln	Ala	Asn	Tyr	Ala 175	Leu

## PhoenixTemp32470.tmp.txt

Ala Lys Ala Gly Val Val Gly Leu Thr Arg Thr Ile Ala Lys Glu Trp  
 180 190  
 Gly Pro Gln Phe Gly Val Arg Ser Asn Thr Ile Ala Phe Gly Phe Val  
 195 200 205  
 Gln Thr Arg Leu Thr Ala Ala Lys Glu Lys Gly Ala Phe Ile Thr Thr  
 210 215 220  
 Pro Asp Gly Thr Lys Val Ala Leu Gly Ile Pro Gly Gln Gln Leu Gly  
 225 230 235 240  
 Ala Lys Glu Gly Ala Lys Asp Gly Lys Pro Ala Tyr Pro Asp Ile Pro  
 245 250 255  
 Leu Gly Arg Pro Ala Ser Pro Glu Glu Ala Ala Arg Ser Val Leu Ala  
 260 265 270  
 Val Ala Ser Pro Leu Phe Ser Tyr Val Asn Gly Glu Thr Ile Arg Val  
 275 280 285  
 Thr Gly Gly Arg Asn Met  
 290

&lt;210&gt; 1639

&lt;211&gt; 993

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(993)

&lt;400&gt; 1639

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Met	Leu	Ser	Arg	Arg	Phe	Gly	Val	Ser	Leu	Leu	Gln	Ser	Ser	Val	Pro	
1				5					10					15		
aag	ctg	gcg	cgg	tcc	agc	tgc	agg	gcg	caa	tac	aac	aga	gtt	ggt	ttt	96
Lys	Leu	Ala	Arg	Ser	Ser	Cys	Arg	Ala	Gln	Tyr	Asn	Arg	Val	Gly	Phe	
			20					25					30			
atc	aag	ccg	ccg	acg	ccg	gtc	gtc	tgg	gcg	gcc	agg	acg	atg	gct	ggt	144
Ile	Lys	Pro	Pro	Thr	Pro	Val	Val	Trp	Ala	Ala	Arg	Thr	Met	Ala	Gly	
			35			40					45					
cca	gcg	aat	ctg	aaa	gag	aaa	ctg	ccc	gag	aag	gat	ggg	aat	cag	cga	192
Pro	Ala	Asn	Leu	Lys	Glu	Lys	Leu	Pro	Glu	Lys	Asp	Gly	Asn	Gln	Arg	
			50			55					60					
ttc	cgg	gag	ttc	atg	ctg	gag	ggg	aaa	gtt	ttc	gca	gtg	act	gga	ggg	240
Phe	Arg	Glu	Phe	Met	Leu	Glu	Gly	Lys	Val	Phe	Ala	Val	Thr	Gly	Gly	
					70					75					80	
gca	cgg	gga	ctg	ggc	ttg	acg	atg	gcg	gag	gct	ctg	gtt	gaa	gct	gga	288
Ala	Arg	Gly	Leu	Gly	Leu	Thr	Met	Ala	Glu	Ala	Leu	Val	Glu	Ala	Gly	
				85					90					95		
gga	gag	gtg	tac	tgc	ctc	gac	aga	cta	ccc	gaa	cca	gac	gac	gag	ttt	336
Gly	Glu	Val	Tyr	Cys	Leu	Asp	Arg	Leu	Pro	Glu	Pro	Asp	Asp	Glu	Phe	
			100					105					110			
tac	gcc	gca	caa	aag	cgc	gcg	aat	cct	gac	ttc	ggg	ggc	gcc	ctc	cac	384
Tyr	Ala	Ala	Gln	Lys	Arg	Ala	Asn	Pro	Asp	Phe	Gly	Gly	Ala	Leu	His	
			115				120					125				
tac	cgc	cgc	atg	gac	gtc	act	gac	gct	aac	acc	gaa	gct	atc	ttg		432
Tyr	Arg	Arg	Met	Asp	Val	Thr	Asp	Asp	Ala	Asn	Thr	Glu	Ala	Ile	Leu	
			130			135					140					
gat	gat	att	gcg	agc	aag	aag	gac	cgc	ctc	gat	gga	ctg	atc	gca	gcc	480
Asp	Asp	Ile	Ala	Ser	Lys	Lys	Asp	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	
					150					155					160	
gcg	ggc	gtc	aac	cac	gtc	aaa	gat	gca	ttc	gac	ctg	acg	cct	gag	atg	528
Ala	Gly	Val	Asn	His	Val	Lys	Asp	Ala	Phe	Asp	Leu	Thr	Pro	Glu	Met	
				165					170					175		
gtc	gat	aag	ctc	atc	cac	atc	aac	tat	acc	ggc	gtc	ttc	agg	agc	gcg	576
Val	Asp	Lys	Leu	Ile	His	Ile	Asn	Tyr	Thr	Gly	Val	Phe	Arg	Ser	Ala	
			180					185					190			
gta	gca	gcc	gcg	cgc	gca	atg	acg	gct	cga	aaa	tgc	ccc	ggc	tca	atc	624
Val	Ala	Ala	Ala	Arg	Ala	Met	Thr	Ala	Arg	Lys	Cys	Pro	Gly	Ser	Ile	
			195				200					205				
ctc	ctt	gtg	gct	agc	atg	agc	ggc	ctg	atc	gcg	aac	aag	gga	atg	gcg	672
Leu	Leu	Val	Ala	Ser	Met	Ser	Gly	Leu	Ile	Ala	Asn	Lys	Gly	Met	Ala	
						215					220					

## PhoenixTemp32470.tmp.txt

tcg	gcg	atc	tac	aac	tcc	tcc	aag	gca	gca	gtt	gtc	caa	ttg	agc	cgc	720
Ser	Ala	Ile	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	Val	Gln	Leu	Ser	Arg	
225					230					235					240	
agc	ctt	gca	atg	gaa	tgg	tca	gaa	tct	cgc	aag	gac	gga	acg	gga	ggg	768
Ser	Leu	Ala	Met	Glu	Trp	Ser	Glu	Ser	Arg	Lys	Asp	Gly	Thr	Gly	Gly	
				245					250					255		
atc	cgc	gtg	aac	gct	ctg	tgt	ccg	gga	cat	att	gag	acg	tcg	atg	gcg	816
Ile	Arg	Val	Asn	Ala	Leu	Cys	Pro	Gly	His	Ile	Glu	Thr	Ser	Met	Ala	
			260					265					270			
cag	atg	gtg	atg	gag	aag	gat	ccg	gag	acg	agg	gtc	atc	tgg	gaa	agc	864
Gln	Met	Val	Met	Glu	Lys	Asp	Pro	Glu	Thr	Arg	Val	Ile	Trp	Glu	Ser	
		275					280					285				
gag	aat	atg	atg	aag	agg	ctg	gca	agg	cca	gag	gag	ttt	agg	ggg	att	912
Glu	Asn	Met	Met	Lys	Arg	Leu	Ala	Arg	Pro	Glu	Glu	Phe	Arg	Gly	Ile	
	290					295				300						
acg	ctg	cta	ctg	atg	agt	gat	gcg	agc	agc	ttc	atg	act	ggc	agt	acg	960
Thr	Leu	Leu	Leu	Met	Ser	Asp	Ala	Ser	Ser	Phe	Met	Thr	Gly	Ser	Thr	
305					310					315					320	
gtt	gtt	gtg	gat	gga	ggg	cat	aca	gct	tgg	tag						993
Val	Val	Val	Asp	Gly	Gly	His	Thr	Ala	Trp							
				325					330							

&lt;210&gt; 1640

&lt;211&gt; 330

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 1640

Met	Leu	Ser	Arg	Arg	Phe	Gly	Val	Ser	Leu	Leu	Gln	Ser	Ser	Val	Pro	
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Lys	Leu	Ala	Arg	Ser	Ser	Cys	Arg	Ala	Gln	Tyr	Asn	Arg	Val	Gly	Phe	
			20					25					30			
Ile	Lys	Pro	Pro	Thr	Pro	Val	Val	Trp	Ala	Ala	Arg	Thr	Met	Ala	Gly	
		35				40					45					
Pro	Ala	Asn	Leu	Lys	Glu	Lys	Leu	Pro	Glu	Lys	Asp	Gly	Asn	Gln	Arg	
	50				55					60						
Phe	Arg	Glu	Phe	Met	Leu	Glu	Gly	Lys	Val	Phe	Ala	Val	Thr	Gly	Gly	
65				70					75					80		
Ala	Arg	Gly	Leu	Gly	Leu	Thr	Met	Ala	Glu	Ala	Leu	Val	Glu	Ala	Gly	
			85					90					95			
Gly	Glu	Val	Tyr	Cys	Leu	Asp	Arg	Leu	Pro	Glu	Pro	Asp	Asp	Glu	Phe	
		100						105				110				
Tyr	Ala	Ala	Gln	Lys	Arg	Ala	Asn	Pro	Asp	Phe	Gly	Gly	Ala	Leu	His	
	115					120					125					
Tyr	Arg	Arg	Met	Asp	Val	Thr	Asp	Asp	Ala	Asn	Thr	Glu	Ala	Ile	Leu	
	130				135						140					
Asp	Asp	Ile	Ala	Ser	Lys	Lys	Asp	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	
145				150					155					160		
Ala	Gly	Val	Asn	His	Val	Lys	Asp	Ala	Phe	Asp	Leu	Thr	Pro	Glu	Met	
			165					170					175			
Val	Asp	Lys	Leu	Ile	His	Ile	Asn	Tyr	Thr	Gly	Val	Phe	Arg	Ser	Ala	
		180					185					190				
Val	Ala	Ala	Ala	Arg	Ala	Met	Thr	Ala	Arg	Lys	Cys	Pro	Gly	Ser	Ile	
	195					200					205					
Leu	Leu	Val	Ala	Ser	Met	Ser	Gly	Leu	Ile	Ala	Asn	Lys	Gly	Met	Ala	
	210				215						220					
Ser	Ala	Ile	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	Val	Gln	Leu	Ser	Arg	
225				230					235						240	
Ser	Leu	Ala	Met	Glu	Trp	Ser	Glu	Ser	Arg	Lys	Asp	Gly	Thr	Gly	Gly	
			245						250					255		
Ile	Arg	Val	Asn	Ala	Leu	Cys	Pro	Gly	His	Ile	Glu	Thr	Ser	Met	Ala	
			260					265					270			
Gln	Met	Val	Met	Glu	Lys	Asp	Pro	Glu	Thr	Arg	Val	Ile	Trp	Glu	Ser	
	275						280					285				
Glu	Asn	Met	Met	Lys	Arg	Leu	Ala	Arg	Pro	Glu	Glu	Phe	Arg	Gly	Ile	
	290					295				300						
Thr	Leu	Leu	Leu	Met	Ser	Asp	Ala	Ser	Ser	Phe	Met	Thr	Gly	Ser	Thr	
305					310					315					320	
Val	Val	Val	Asp	Gly	Gly	His	Thr	Ala	Trp							

<210> 1641  
 <211> 840  
 <212> DNA  
 <213> Aspergillus nidulans FGSC A4

<220>  
 <221> CDS  
 <222> (1)..(840)

<400> 1641  
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 ggt gcc gca ggc ggt att gga ctc gaa act agc atc tta ttc gcc cgc 96  
 Gly Ala Ala Gly Gly Ile Gly Leu Glu Thr Ser Ile Leu Phe Ala Arg  
 20 25 30  
 gaa ggc gcc aat gtc ctg atg gca gac atc tcc gcg tcg gct ctc gaa 144  
 Glu Gly Ala Asn Val Leu Met Ala Asp Ile Ser Ala Ser Ala Leu Glu  
 35 40 45  
 aaa gcc ctc gcg aag gtc aga gag ctc gtc cct gac gcg ccc cgt gtt 192  
 Lys Ala Leu Ala Lys Val Arg Glu Leu Val Pro Asp Ala Pro Arg Val  
 50 55 60  
 gag acc atc aag tgc gac gtc tcc aag gaa tcc gag gtt cag gct atg 240  
 Glu Thr Ile Lys Cys Asp Val Ser Lys Glu Ser Glu Val Gln Ala Met  
 65 70 75 80  
 gtc gag tcc cag gac tcc tgg ggc ggc aca gat gtg atc ttc aac aat 288  
 Val Glu Ser Gln Asp Ser Trp Gly Gly Thr Asp Val Ile Phe Asn Asn  
 85 90 95  
 gcc gga atc atg cac gcg gac gac gcc gat gcc atc gac act cct gag 336  
 Ala Gly Ile Met His Ala Asp Asp Ala Asp Ala Ile Asp Thr Pro Glu  
 100 105 110  
 aaa att tgg gac ttg acg cag aac atc aac gtc aag ggc gtg tgg ttt 384  
 Lys Ile Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe  
 115 120 125  
 gga tgt aaa cat gcg gta ctg agc atg cgg aga cac aag aag agc aag 432  
 Gly Cys Lys His Ala Val Leu Ser Met Arg Arg His Lys Lys Ser Lys  
 130 135 140  
 ggc agt atc atc aac acg gcg agt gtt gtt gcg ctg gtc ggg agt gcc 480  
 Gly Ser Ile Ile Asn Thr Ala Ser Val Val Ala Leu Val Gly Ser Ala  
 145 150 155 160  
 acg ccg cag ctg gcg tac acg gcg tcc aag ggt gct gtg ctg gcg ctg 528  
 Thr Pro Gln Leu Ala Tyr Thr Ala Ser Lys Gly Ala Val Leu Ala Leu  
 165 170 175  
 acg agg gag ctg gcg atc gtg cat gct cgg gag gga atc cgg ttc aat 576  
 Thr Arg Glu Leu Ala Ile Val His Ala Arg Glu Gly Ile Arg Phe Asn  
 180 185 190  
 gca ctg tgc ccg gca cca ttg aac act cca ctc ttg caa gac tgg ctg 624  
 Ala Leu Cys Pro Ala Pro Leu Asn Thr Pro Leu Leu Gln Asp Trp Leu  
 195 200 205  
 ggt gac gac cag gcc aag cgt cac cgc cgc gaa gtg cat ttc ccc atg 672  
 Gly Asp Asp Gln Ala Lys Arg His Arg Arg Glu Val His Phe Pro Met  
 210 215 220  
 gga cgg ttc gga gag gcc att gag cag gct cat gcg gtg gtc ttc ctg 720  
 Gly Arg Phe Gly Glu Ala Ile Glu Gln Ala His Ala Val Val Phe Leu  
 225 230 235 240  
 gcc agt gac gag agc agc ttt gtc aat gga gcc gac ttt gtt gtt gac 768  
 Ala Ser Asp Glu Ser Ser Phe Val Asn Gly Ala Asp Phe Val Val Asp  
 245 250 255  
 ggt ggc atg agc aag gcg tac gtt acc cct gag gga ccg gct cct ccg 816  
 Gly Gly Met Ser Lys Ala Tyr Val Thr Pro Glu Gly Pro Ala Pro Pro  
 260 265 270  
 gct cct aag aac cag gct caa tag 840  
 Ala Pro Lys Asn Gln Ala Gln  
 275

<210> 1642  
 <211> 279

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 1642

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Met Ala Thr Pro Arg Gly Arg Leu Gln Gly Lys Asn Ala Ile Ile Thr
1      5      10      15
Gly Ala Ala Gly Ile Gly Leu Glu Thr Ser Ile Leu Phe Ala Arg
20      25      30
Glu Gly Ala Asn Val Leu Met Ala Asp Ile Ser Ala Ser Ala Leu Glu
35      40      45
Lys Ala Leu Ala Lys Val Arg Glu Leu Val Pro Asp Ala Pro Arg Val
50      55      60
Glu Thr Ile Lys Cys Asp Val Ser Lys Glu Ser Glu Val Gln Ala Met
65      70      75      80
Val Glu Ser Gln Asp Ser Trp Gly Gly Thr Asp Val Ile Phe Asn Asn
85      90      95
Ala Gly Ile Met His Ala Asp Asp Ala Ile Asp Thr Pro Glu
100     105     110
Lys Ile Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe
115     120     125
Gly Cys Lys His Ala Val Leu Ser Met Arg Arg His Lys Lys Ser Lys
130     135     140
Gly Ser Ile Ile Asn Thr Ala Ser Val Val Ala Leu Val Gly Ser Ala
145     150     155     160
Thr Pro Gln Leu Ala Tyr Thr Ala Ser Lys Gly Ala Val Leu Ala Leu
165     170     175
Thr Arg Glu Leu Ala Ile Val His Ala Arg Glu Gly Ile Arg Phe Asn
180     185     190
Ala Leu Cys Pro Ala Pro Leu Asn Thr Pro Leu Leu Gln Asp Trp Leu
195     200     205
Gly Asp Asp Gln Ala Lys Arg His Arg Arg Glu Val His Phe Pro Met
210     215     220
Gly Arg Phe Gly Glu Ala Ile Glu Gln Ala His Ala Val Val Phe Leu
225     230     235     240
Ala Ser Asp Glu Ser Phe Val Asn Gly Ala Asp Phe Val Val Asp
245     250     255
Gly Gly Met Ser Lys Ala Tyr Val Thr Pro Glu Gly Pro Ala Pro Pro
260     265     270
Ala Pro Lys Asn Gln Ala Gln
275

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&lt;210&gt; 1643

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;400&gt; 1643

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Met Pro Gln Gln Val Pro Thr Ala Ser His Leu Ser Asp Leu Phe Ser
1      5      10      15
cta aag ggc aaa gtc gtc gta att acc ggc gct tcc ggc ccc cga ggc      96
Leu Lys Gly Lys Val Val Val Ile Thr Gly Ala Ser Gly Pro Arg Gly
20      25      30
atg ggc atc gaa gca gcg cgc ggg tgc gct gag atg ggc gcc aat gtc      144
Met Gly Ile Glu Ala Ala Arg Gly Cys Ala Glu Met Gly Ala Asn Val
35      40      45
gca att acc tac gcc tca cgc cca gaa gga ggc gag aag aac gcc gcc      192
Ala Ile Thr Tyr Ala Ser Arg Pro Glu Gly Gly Glu Lys Asn Ala Ala
50      55      60
gag cta gcg cgc gac tac ggc gtc aaa gcc aag gct tat aag tgc gac      240
Glu Leu Ala Arg Asp Tyr Gly Val Lys Ala Lys Ala Tyr Lys Cys Asp
65      70      75      80
gtc ggc gac ttc aag agc gtt gag aag cta gta cag gac gtg att gcc      288
Val Gly Asp Phe Lys Ser Val Glu Lys Leu Val Gln Asp Val Ile Ala
85      90      95

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## PhoenixTemp32470.tmp.txt

gag	ttc	ggg	caa	atc	gat	gct	ttc	att	gca	aat	gcc	ggc	cgg	act	gcg	336
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			100					105					110			
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Ser	Ala	Gly	Val	Leu	Asp	Gly	Ser	Val	Lys	Asp	Trp	Glu	Glu	Val	Val	
		115					120					125				
cag	acg	gat	ttg	aac	ggg	aca	ttc	cac	tgc	gcg	aag	gcg	gta	gga	ccg	432
Gln	Thr	Asp	Leu	Asn	Gly	Thr	Phe	His	Cys	Ala	Lys	Ala	Val	Gly	Pro	
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His	Phe	Lys	Gln	Arg	Gly	Lys	Gly	Ser	Leu	Val	Ile	Thr	Ala	Ser	Met	
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agc	ggg	cac	att	gcc	aac	tac	ccg	caa	gag	cag	act	agc	tac	aat	gtt	528
Ser	Gly	His	Ile	Ala	Asn	Tyr	Pro	Gln	Glu	Gln	Thr	Ser	Tyr	Asn	Val	
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Ala	Lys	Ala	Gly	Cys	Ile	His	Met	Ala	Arg	Ser	Leu	Ala	Asn	Glu	Trp	
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agg	gac	ttt	gcg	cgc	gtc	aac	tct	att	tcg	ccc	ggt	tat	att	gat	acc	624
Arg	Asp	Phe	Ala	Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Tyr	Ile	Asp	Thr	
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Tyr	Val	Tyr	Leu	Val	Ser	Asp	Ala	Ser	Thr	Tyr	Thr	Thr	Gly	Ala	Asp	
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ctg	gtt	att	gat	ggc	ggt	tac	acc	tgc	cga	taa						801
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&lt;210&gt; 1644

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 1644

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Met	Gly	Ile	Glu	Ala	Ala	Arg	Gly	Cys	Ala	Glu	Met	Gly	Ala	Asn	Val	
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Ala	Ile	Thr	Tyr	Ala	Ser	Arg	Pro	Glu	Gly	Gly	Glu	Lys	Asn	Ala	Ala	
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Glu	Leu	Ala	Arg	Asp	Tyr	Gly	Val	Lys	Ala	Lys	Ala	Tyr	Lys	Cys	Asp	
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Glu	Phe	Gly	Gln	Ile	Asp	Ala	Phe	Ile	Ala	Asn	Ala	Gly	Arg	Thr	Ala	
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Ser	Ala	Gly	Val	Leu	Asp	Gly	Ser	Val	Lys	Asp	Trp	Glu	Glu	Val	Val	
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Gln	Thr	Asp	Leu	Asn	Gly	Thr	Phe	His	Cys	Ala	Lys	Ala	Val	Gly	Pro	
	130					135					140					
His	Phe	Lys	Gln	Arg	Gly	Lys	Gly	Ser	Leu	Val	Ile	Thr	Ala	Ser	Met	
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Ser	Gly	His	Ile	Ala	Asn	Tyr	Pro	Gln	Glu	Gln	Thr	Ser	Tyr	Asn	Val	
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Ala	Lys	Ala	Gly	Cys	Ile	His	Met	Ala	Arg	Ser	Leu	Ala	Asn	Glu	Trp	
			180					185					190			
Arg	Asp	Phe	Ala	Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Tyr	Ile	Asp	Thr	
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Gly	Leu	Ser	Asp	Phe	Val	Asp	Lys	Lys	Thr	Gln	Asp	Leu	Trp	Leu	Ser	
	210					215					220					
Met	Ile	Pro	Met	Gly	Arg	His	Gly	Asp	Ala	Lys	Glu	Leu	Lys	Gly	Ala	

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245 Gly Tyr Thr Cys 250 Arg 255  
Leu Val Ile Asp 260

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<222> (1) .. (897)

Page 1017



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 Ala Leu Val Val Asp Gly Gly Tyr Thr Ala  
 290 295 285

897

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 <211> 298  
 <212> PRT  
 <213> Aspergillus nidulans FGSC A4

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 Leu Trp Tyr Tyr Ile Phe Leu Pro Ser Ser Val Glu Ala Thr Leu Thr  
 35 40 45  
 Tyr Pro Gly Ile Gly Arg Ser Ile Ala His Thr Tyr Ala Gln Asn Gly  
 50 55 60  
 Ile Ser Ala Leu Ala Leu Ala Asp Ile Ser Leu Pro Ala Leu Glu Ala  
 65 70 75 80  
 Thr Gln Ala Glu Leu Leu Gln Ser His Pro His Leu Ala Asp Arg Ile  
 85 90 95  
 Ala Ile Tyr Thr Val Asn Val Thr Lys Glu Glu Glu Ile Ser Ala Ala  
 100 105 110  
 Val Gln Cys Ala Ala His Arg Phe Gly Arg Ile Asp Ile Ser Ile His  
 115 120 125  
 Gly Ala Gly Ile Thr Gly Thr Gly Ala His Thr His Glu Leu Asp Leu  
 130 135 140  
 Lys Glu Trp Gln Arg Val Ile Asp Val Asn Gln Thr Gly Val Met Leu  
 145 150 155 160  
 Cys Asp Lys Trp Met Val Lys Gln Met Leu Ser Gln Glu Leu Ile Thr  
 165 170 175  
 Gly Tyr Arg Gly Arg Gly Ile Ile Val Asn Ile Ser Ser Ile Tyr Gly  
 180 185 190  
 Val Val Ala Pro Asp Gly Arg Leu Gly Ala Ala Ala Tyr Ala Ala Ser  
 195 200 205  
 Lys His Ala Val Ile Gly Leu Thr Lys Leu Asp Ala Lys Asn Tyr Ala  
 210 215 220  
 Lys Asp Gly Val Arg Ile Asn Ala Val Cys Pro Gly Phe Val Asp Thr  
 225 230 235 240  
 Pro Leu Thr His Arg Asn Leu Glu Glu Gly Val Leu Ser Pro Glu Ile  
 245 250 255  
 Glu Asn Thr Val Leu Lys Arg Pro Ala Arg Pro Glu Glu Ile Ala Asp  
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<220>  
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 <222> (1)..(891)

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 cag aca caa aat aca ccg ggc ctg gaa agc aaa atg caa ccc gcc agc  
 Gln Thr Gln Asn Thr Pro Gly Leu Glu Ser Lys Met Gln Pro Ala Ser  
 20 25 30  
 gaa gca acc aag ctc gag act tcc gac gga att aaa gat tac aag ggc  
 Glu Ala Thr Lys Leu Glu Thr Ser Asp Gly Ile Lys Asp Tyr Lys Gly  
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48

96

144

## PhoenixTemp32470.tmp.txt

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Gly	Ile	Gly	Arg	Ser	Val	Ala	Ala	Leu	Tyr	Ala	Lys	Glu	Gly	Ala	Asp	
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ata	aca	atc	gtc	tac	ctc	cct	ggt	gaa	gaa	gaa	gac	gcg	caa	gag	aca	288
Ile	Thr	Ile	Val	Tyr	Leu	Pro	Val	Glu	Glu	Glu	Asp	Ala	Gln	Glu	Thr	
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aaa	aga	ctc	ggt	gag	gcc	gaa	gga	cgc	caa	tgc	ctg	ctg	ctg	agc	ggg	336
Lys	Arg	Leu	Val	Glu	Ala	Glu	Gly	Arg	Gln	Cys	Leu	Leu	Leu	Ser	Gly	
			100					105					110			
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Asp	Leu	Arg	Asp	Arg	Gly	Phe	Cys	Lys	Gln	Ala	Val	Asp	Ser	His	Val	
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Gln	Lys	Tyr	Gly	His	Ile	Asn	Ile	Leu	Val	Asn	Asn	Ala	Ser	Gln	Gln	
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Phe	Ser	Cys	Pro	Asp	Leu	Ala	Gln	Ile	Asn	Leu	Asp	Thr	Val	Thr	Asp	
145					150					155					160	
gtc	ttt	cag	aca	aat	atc	atc	cag	atg	ttt	gcg	atg	acg	aag	ttt	tcc	528
Val	Phe	Gln	Thr	Asn	Ile	Ile	Gln	Met	Phe	Ala	Met	Thr	Lys	Phe	Ser	
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Leu	Pro	His	Met	Ser	Lys	Gly	Asp	Ser	Ile	Ile	Asn	Asn	Thr	Ser	Val	
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Thr	Ala	Phe	Arg	Gly	Thr	Gly	Ser	Met	Val	Asp	Tyr	Ala	Ser	Thr	Lys	
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ggg	gcg	att	gta	ggt	ttc	acg	cgg	tct	gct	gct	ctc	caa	ctt	att	ccc	672
Gly	Ala	Ile	Val	Gly	Phe	Thr	Arg	Ser	Ala	Ala	Leu	Gln	Leu	Ile	Pro	
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atc	caa	gtc	gat	acg	cgc	gat	gca	gag	cag	atg	cag	ggg	tgg	gcg	agt	768
Ile	Gln	Val	Asp	Thr	Arg	Asp	Ala	Glu	Gln	Met	Gln	Gly	Trp	Ala	Ser	
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Ser	Lys	Pro	Leu	Gly	Arg	Pro	Gly	Gln	Pro	Ser	Glu	Val	Ala	Thr	Ser	
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Phe	Val	Phe	Leu	Ala	Ser	Ser	Asp	Ala	Ser	Leu	Phe	Tyr	Gly	Gln	Ile	
			275				280					285				
ctg	cat	ccg	tat	ccg	ctg	ggt	gag	tga								891
Leu	His	Pro	Tyr	Pro	Leu	Gly	Glu									
	290					295										

&lt;210&gt; 1648

&lt;211&gt; 296

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 1648

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Glu	Ala	Thr	Lys	Leu	Glu	Thr	Ser	Asp	Gly	Ile	Lys	Asp	Tyr	Lys	Gly	
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Gly	Ile	Gly	Arg	Ser	Val	Ala	Ala	Leu	Tyr	Ala	Lys	Glu	Gly	Ala	Asp	
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Ile	Thr	Ile	Val	Tyr	Leu	Pro	Val	Glu	Glu	Glu	Asp	Ala	Gln	Glu	Thr	
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Lys	Arg	Leu	Val	Glu	Ala	Glu	Gly	Arg	Gln	Cys	Leu	Leu	Leu	Ser	Gly	
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## PhoenixTemp32470.tmp.txt

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 Gln Lys Tyr Gly His Ile Asn Ile Leu Val Asn Asn Ala Ser Gln Gln  
 130 135 140  
 Phe Ser Cys Pro Asp Leu Ala Gln Ile Asn Leu Asp Thr Val Thr Asp  
 145 150 155 160  
 Val Phe Gln Thr Asn Ile Ile Gln Met Phe Ala Met Thr Lys Phe Ser  
 165 170 175  
 Leu Pro His Met Ser Lys Gly Asp Ser Ile Ile Asn Asn Thr Ser Val  
 180 185 190  
 Thr Ala Phe Arg Gly Thr Gly Ser Met Val Asp Tyr Ala Ser Thr Lys  
 195 200 205  
 Gly Ala Ile Val Gly Phe Thr Arg Ser Ala Ala Leu Gln Leu Ile Pro  
 210 215 220  
 Lys Gly Ile Arg Val Asn Ala Val Ala Pro Gly Ser Thr Tyr Thr Pro  
 225 230 235 240  
 Ile Gln Val Asp Thr Arg Asp Ala Glu Gln Met Gln Gly Trp Ala Ser  
 245 250 255  
 Ser Lys Pro Leu Gly Arg Pro Gly Gln Pro Ser Glu Val Ala Thr Ser  
 260 265 270  
 Phe Val Phe Leu Ala Ser Ser Asp Ala Ser Leu Phe Tyr Gly Gln Ile  
 275 280 285  
 Leu His Pro Tyr Pro Leu Gly Glu  
 290 295

&lt;210&gt; 1649

&lt;211&gt; 1122

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1122)

&lt;400&gt; 1649

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Arg	His	Pro	Arg	Asp	Val	Gly	His	Asn	Thr	Thr	Thr	Gly	Gly	Arg	Val	
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gga	cgt	cac	aca	caa	cga	act	ctc	gca	agc	ttc	tcg	atg	gaa	ggc	aag	336
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Arg	Thr	Phe	Val	Glu	Ser	Gly	Ala	Asn	His	Val	Ala	Ile	Val	Asp	Leu	
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Ile	His	Gln	Arg	Phe	Gly	Lys	Ile	Asn	Val	Ala	Val	Asn	Ser	Ala	Gly	
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atc	gtg	gaa	aac	ttc	ccg	gct	acc	gaa	tac	ccc	acc	gcc	aag	ctc	aaa	672
Ile	Val	Glu	Asn	Phe	Pro	Ala	Thr	Glu	Tyr	Pro	Thr	Ala	Lys	Leu	Lys	
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Lys	Leu	Phe	Asp	Ile	Asn	Ile	Asn	Gly	Ser	Tyr	Phe	Val	Ala	Arg	Glu	
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gtg	gcc	aag	cg	atg	atg	caa	gac	aag	gtg	caa	ggc	tcg	att	gtc	atg	768
Val	Ala	Lys	Arg	Met	Met	Gln	Asp	Lys	Val	Gln	Gly	Ser	Ile	Val	Met	
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Ile	Ala	Ser	Met	Ser	Ala	Ser	Val	Val	Asn	Val	Pro	Gln	Ala	Gln	Ala	
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ccg	tac	aat	gca	tcc	aag	gca	gcc	gtc	aag	cat	ctt	gcc	aag	tcg	atg	864
Pro	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Lys	His	Leu	Ala	Lys	Ser	Met	
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Gly	Tyr	Met	Leu	Thr	Ser	Leu	Ser	Arg	Ala	Val	Leu	Glu	Asn	Ser	Pro	
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Asn	Gly	Lys	Glu	Leu	Arg	Thr	Asn	Trp	Glu	Asn	Met	Thr	Pro	Met	Gly	
			325					330						335		
cgt	cta	ggc	aat	cct	gag	gat	ctc	aag	ggc	gct	gtc	gtg	tac	ctc	tct	1056
Arg	Leu	Gly	Asn	Pro	Glu	Asp	Leu	Lys	Gly	Ala	Val	Val	Tyr	Leu	Ser	
			340					345					350			
agt	gac	gct	tcc	gcc	ttt	acc	act	ggc	gcc	gat	ctt	ata	gtc	gac	ggc	1104
Ser	Asp	Ala	Ser	Ala	Phe	Thr	Thr	Gly	Ala	Asp	Leu	Ile	Val	Asp	Gly	
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ggc	tac	acg	tct	gtg	taa											1122
Gly	Tyr	Thr	Ser	Val												
		370														

&lt;210&gt; 1650

&lt;211&gt; 373

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 1650

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			20					25					30			
Ser	Asn	Thr	Leu	Ala	His	Thr	Ser	Pro	Ser	Ser	Ser	Arg	Ala	Leu	Ser	
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Val	Cys	Val	Val	Thr	Gly	Ala	Ala	Arg	Gly	Ile	Gly	Asn	Leu	Ile	Ala	
		115					120					125				
Arg	Thr	Phe	Val	Glu	Ser	Gly	Ala	Asn	His	Val	Ala	Ile	Val	Asp	Leu	
		130				135					140					
Asp	Glu	Gly	Glu	Ser	Gln	His	Ala	Ala	Lys	Glu	Val	Asp	Glu	Trp	Phe	
145					150					155					160	
Thr	Asn	His	Gly	Gly	Val	Lys	Pro	Gly	Glu	Leu	Asp	Ile	Gln	Gly	Tyr	
			165						170					175		
Gly	Cys	Asp	Ile	Ser	Asp	Glu	Val	Gln	Val	Gln	Asp	Val	Ile	Asn	Arg	
			180					185					190			

## PhoenixTemp32470.tmp.txt

Ile His Gln Arg Phe Gly Lys Ile Asn Val Ala Val Asn Ser Ala Gly  
 195 200 205  
 Ile Val Glu Asn Phe Pro Ala Thr Glu Tyr Pro Thr Ala Lys Leu Lys  
 210 215 220  
 Lys Leu Phe Asp Ile Asn Ile Asn Gly Ser Tyr Phe Val Ala Arg Glu  
 225 230 235 240  
 Val Ala Lys Arg Met Met Gln Asp Lys Val Gln Gly Ser Ile Val Met  
 245 250 255  
 Ile Ala Ser Met Ser Ala Ser Val Val Asn Val Pro Gln Ala Gln Ala  
 260 265 270  
 Pro Tyr Asn Ala Ser Lys Ala Ala Val Lys His Leu Ala Lys Ser Met  
 275 280 285  
 Ala Val Glu Trp Ala Lys Ala Gly Ile Arg Val Asn Ser Leu Ser Pro  
 290 295 300  
 Gly Tyr Met Leu Thr Ser Leu Ser Arg Ala Val Leu Glu Asn Ser Pro  
 305 310 315 320  
 Asn Gly Lys Glu Leu Arg Thr Asn Trp Glu Asn Met Thr Pro Met Gly  
 325 330 335  
 Arg Leu Gly Asn Pro Glu Asp Leu Lys Gly Ala Val Val Tyr Leu Ser  
 340 345 350  
 Ser Asp Ala Ser Ala Phe Thr Thr Gly Ala Asp Leu Ile Val Asp Gly  
 355 360 365  
 Gly Tyr Thr Ser Val  
 370

&lt;210&gt; 1651

&lt;211&gt; 879

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(879)

&lt;400&gt; 1651

atg	ccc	aag	gac	gca	gct	ccc	gaa	gtg	atg	cct	gag	ctt	ggg	gct	cag	48
Met	Pro	Lys	Asp	Ala	Ala	Pro	Glu	Val	Met	Pro	Glu	Leu	Gly	Ala	Gln	
1				5				10					15			
cgc	ctc	ttc	tcg	ctt	gat	gga	aag	atc	gcc	ctt	gtc	acc	ggg	ggg	ggc	96
Arg	Leu	Phe	Ser	Leu	Asp	Gly	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Gly	
			20					25					30			
acg	ggg	att	ggc	aag	atg	atc	gcc	gcc	acc	tat	atc	cgc	aac	ggg	gcc	144
Thr	Gly	Ile	Gly	Lys	Met	Ile	Ala	Ala	Thr	Tyr	Ile	Arg	Asn	Gly	Ala	
		35					40					45				
aag	gtc	tac	att	gcc	agt	cgc	aag	ctc	tct	gat	ctg	cag	aac	gtg	gcc	192
Lys	Val	Tyr	Ile	Ala	Ser	Arg	Lys	Leu	Ser	Asp	Leu	Gln	Asn	Val	Ala	
	50					55				60						
aag	cag	ctc	agt	aag	ctc	gct	ccc	agc	gat	ccc	gag	ggg	aaa	aaa	ggg	240
Lys	Gln	Leu	Ser	Lys	Leu	Ala	Pro	Ser	Asp	Pro	Glu	Gly	Lys	Lys	Gly	
	65			70			75			80						
ctc	tgt	gta	gcg	ctt	cag	gcc	gat	gtg	ggc	agc	aag	gca	ggg	tgt	gat	288
Leu	Cys	Val	Ala	Leu	Gln	Ala	Asp	Val	Gly	Ser	Lys	Ala	Gly	Cys	Asp	
			85				90						95			
gcg	ctc	gct	gac	cag	gtc	aaa	aag	gcc	gag	tcc	aga	ctc	gac	atc	ctg	336
Ala	Leu	Ala	Asp	Gln	Val	Lys	Lys	Ala	Glu	Ser	Arg	Leu	Asp	Ile	Leu	
			100				105						110			
gtc	aac	aac	tcg	ggg	ctc	act	tgg	ggc	gca	ccc	atg	gac	aat	ttc	cca	384
Val	Asn	Asn	Ser	Gly	Leu	Thr	Trp	Gly	Ala	Pro	Met	Asp	Asn	Phe	Pro	
		115					120					125				
gag	gac	aag	ggg	tgg	aat	aag	gta	ttc	gac	ctc	aac	gtc	aag	agt	cag	432
Glu	Asp	Lys	Gly	Trp	Asn	Lys	Val	Phe	Asp	Leu	Asn	Val	Lys	Ser	Gln	
	130					135					140					
ttc	tac	ctc	aca	gtg	gcg	ctg	ccg	ttg	ctc	gaa	aag	ggc	aag	agc		480
Phe	Tyr	Leu	Thr	Val	Ala	Leu	Pro	Leu	Leu	Glu	Lys	Gly	Lys	Ser		
				150			155									
aat	acc	gag	cat	gcc	acc	gtg	ctc	aac	att	gcc	tct	acc	gct	gct	atc	528
Asn	Thr	Glu	His	Ala	Thr	Val	Leu	Asn	Ile	Ala	Ser	Thr	Ala	Ala	Ile	
				165					170					175		
gtt	cct	ctc	gcc	gaa	gct	ggg	ctg	tct	gcc	ccc	ggg	cac	ggg	acc	tac	576

PhoenixTemp32470.tmp.txt

Val	Pro	Leu	Ala	Glu	Ala	Gly	Leu	Ser	Ala	Pro	Gly	His	Gly	Thr	Tyr	
			180					185					190			
tcc	tac	caa	ccg	tca	aag	gcc	gca	tcg	ctg	cac	ctt	acc	aaa	gtg	ctc	624
Ser	Tyr	Gln	Pro	Ser	Lys	Ala	Ala	Ser	Leu	His	Leu	Thr	Lys	Val	Leu	
		195					200					205				
gcc	aac	tcg	ctc	gct	gac	aaa	ttc	atc	atg	gtc	aac	gcc	atc	tgc	ccc	672
Ala	Asn	Ser	Leu	Ala	Asp	Lys	Phe	Ile	Met	Val	Asn	Ala	Ile	Cys	Pro	
		210				215					220					
ggc	gtc	ttc	cct	tcg	cgc	atg	act	gca	tac	ggc	ctc	gag	gag	aac	cgc	720
Gly	Val	Phe	Pro	Ser	Arg	Met	Thr	Ala	Tyr	Gly	Leu	Glu	Glu	Asn	Arg	
225					230					235					240	
gac	ctg	ctc	gaa	ggc	gtc	caa	ccc	acc	ggc	cgt	att	ggc	acg	ccc	gag	768
Asp	Leu	Leu	Glu	Gly	Val	Gln	Pro	Thr	Gly	Arg	Ile	Gly	Thr	Pro	Glu	
				245					250					255		
gac	att	ggc	ggc	gtc	gcc	atg	ttc	ttc	gct	tct	cgt	gca	ggc	gct	cac	816
Asp	Ile	Gly	Gly	Val	Ala	Met	Phe	Phe	Ala	Ser	Arg	Ala	Gly	Ala	His	
			260				265						270			
tgc	acc	ggc	acc	ggc	atc	gtt	gtc	gat	ggc	ggc	cag	agc	atc	cag	ttc	864
Cys	Thr	Gly	Thr	Gly	Ile	Val	Val	Asp	Gly	Gly	Gln	Ser	Ile	Gln	Phe	
		275					280					285				
cag	cct	cgt	ctg	taa												879
Gln	Pro	Arg	Leu													
		290														

<210> 1652  
 <211> 292  
 <212> PRT  
 <213> Ustilago maydis 521

<400> 1652

Met	Pro	Lys	Asp	Ala	Ala	Pro	Glu	Val	Met	Pro	Glu	Leu	Gly	Ala	Gln	
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Arg	Leu	Phe	Ser	Leu	Asp	Gly	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Gly	
			20					25					30			
Thr	Gly	Ile	Gly	Lys	Met	Ile	Ala	Ala	Thr	Tyr	Ile	Arg	Asn	Gly	Ala	
		35					40					45				
Lys	Val	Tyr	Ile	Ala	Ser	Arg	Lys	Leu	Ser	Asp	Leu	Gln	Asn	Val	Ala	
		50				55					60					
Lys	Gln	Leu	Ser	Lys	Leu	Ala	Pro	Ser	Asp	Pro	Glu	Gly	Lys	Lys	Gly	
65					70				75						80	
Leu	Cys	Val	Ala	Leu	Gln	Ala	Asp	Val	Gly	Ser	Lys	Ala	Gly	Cys	Asp	
				85					90					95		
Ala	Leu	Ala	Asp	Gln	Val	Lys	Lys	Ala	Glu	Ser	Arg	Leu	Asp	Ile	Leu	
			100					105					110			
Val	Asn	Asn	Ser	Gly	Leu	Thr	Trp	Gly	Ala	Pro	Met	Asp	Asn	Phe	Pro	
		115					120					125				
Glu	Asp	Lys	Gly	Trp	Asn	Lys	Val	Phe	Asp	Leu	Asn	Val	Lys	Ser	Gln	
		130				135					140					
Phe	Tyr	Leu	Thr	Val	Ala	Leu	Leu	Pro	Leu	Leu	Glu	Lys	Gly	Lys	Ser	
145					150				155						160	
Asn	Thr	Glu	His	Ala	Thr	Val	Leu	Asn	Ile	Ala	Ser	Thr	Ala	Ala	Ile	
				165					170					175		
Val	Pro	Leu	Ala	Glu	Ala	Gly	Leu	Ser	Ala	Pro	Gly	His	Gly	Thr	Tyr	
			180					185					190			
Ser	Tyr	Gln	Pro	Ser	Lys	Ala	Ala	Ser	Leu	His	Leu	Thr	Lys	Val	Leu	
		195					200					205				
Ala	Asn	Ser	Leu	Ala	Asp	Lys	Phe	Ile	Met	Val	Asn	Ala	Ile	Cys	Pro	
		210				215					220					
Gly	Val	Phe	Pro	Ser	Arg	Met	Thr	Ala	Tyr	Gly	Leu	Glu	Glu	Asn	Arg	
225					230					235					240	
Asp	Leu	Leu	Glu	Gly	Val	Gln	Pro	Thr	Gly	Arg	Ile	Gly	Thr	Pro	Glu	
				245					250					255		
Asp	Ile	Gly	Gly	Val	Ala	Met	Phe	Phe	Ala	Ser	Arg	Ala	Gly	Ala	His	
			260				265						270			
Cys	Thr	Gly	Thr	Gly	Ile	Val	Val	Asp	Gly	Gly	Gln	Ser	Ile	Gln	Phe	
		275					280					285				
Gln	Pro	Arg	Leu													
		290														

<210> 1653  
 <211> 837  
 <212> DNA  
 <213> Ustilago maydis 521

<220>  
 <221> CDS  
 <222> (1)..(837)

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<400> 1653
atg gcg acc aca gac gca gct tgc gaa aag aca cct tcg acg tcg tcg      48
Met Ala Thr Thr Asp Ala Ala Cys Glu Lys Thr Pro Ser Thr Ser Ser
  1                    5          10          15
ttg gga ttg ttc aac ctc tct ggt aaa acg gct ctg ctc act ggt ggc      96
Leu Gly Leu Phe Asn Leu Ser Gly Lys Thr Ala Leu Leu Thr Gly Gly
                20          25          30
act cgc ggc atc ggc caa gca tgt gct gtg gct ctt gtc gag gca ggg      144
Thr Arg Gly Ile Gly Gln Ala Cys Ala Val Ala Leu Val Glu Ala Gly
          35          40          45
gct tcg gtg att ctc gcg gtt cgc cct ggc acc gcc act tct ggc gct      192
Ala Ser Val Ile Leu Ala Val Arg Pro Gly Thr Ala Thr Ser Gly Ala
          50          55          60
cat cca gct ctt gcg cct ctc act gcg gtt gcc aac caa tct tgc tcg      240
His Pro Ala Leu Ala Pro Leu Thr Ala Val Ala Asn Gln Ser Cys Ser
  65          70          75          80
caa aaa cac tct acc gtc gat gct gat ctt tcc gac ctc tcc caa gtc      288
Gln Lys His Ser Thr Val Asp Ala Asp Leu Ser Asp Leu Ser Gln Val
          85          90          95
aag acg ctc ttc gac cga gct ctc tcg cag tcg cct act tct gcg att      336
Lys Thr Leu Phe Asp Arg Ala Leu Ser Gln Ser Pro Thr Ser Ala Ile
          100          105          110
gac att ttg gtc aac tgc ggc gga att caa cgt cga cac cca tcg gtc      384
Asp Ile Leu Val Asn Cys Gly Gly Ile Gln Arg Arg His Pro Ser Val
          115          120          125
gac ttt ccc gag tcc gac tgg gac gaa gtg ctc aac gtc aac ctg aaa      432
Asp Phe Pro Glu Ser Asp Trp Asp Glu Val Leu Asn Val Asn Leu Lys
          130          135          140
gct gtt tgg ctt gtc tcg caa gca gcg ggt cgc cac atg gtc gca cgt      480
Ala Val Trp Leu Val Ser Gln Ala Ala Gly Arg His Met Val Ala Arg
          145          150          155          160
cgt tcc gga aaa atc aac ttt ggc tct ctg ctt acc ttc caa ggt      528
Arg Ser Gly Lys Ile Ile Asn Phe Gly Ser Leu Leu Thr Phe Gln Gly
          165          170          175
ggg ctt aca gtg cct gcg tac gct tcg gca aag gga gca gtg gga cag      576
Gly Leu Thr Val Pro Ala Tyr Ala Ser Ala Lys Gly Ala Val Gly Gln
          180          185          190
ctg acc aaa gca ctc agc aac gag tgg gca aaa cat aac gtc cag gtc      624
Leu Thr Lys Ala Leu Ser Asn Glu Trp Ala Lys His Asn Val Gln Val
          195          200          205
aac ggt att gct cct ggt tac att gct acg gat atg aac gaa aag ctg      672
Asn Gly Ile Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Lys Leu
          210          215          220
ctc gcc gac ccg acc agg ctg agg cag atc agc gaa agg att ccc gcg      720
Leu Ala Asp Pro Thr Arg Leu Arg Gln Ile Ser Glu Arg Ile Pro Ala
          225          230          235          240
ggc aga tgg ggt gat ccg gcc gac ttc aaa ggg cca ttg ctg ttc ttg      768
Gly Arg Trp Gly Asp Pro Ala Asp Phe Lys Gly Pro Leu Leu Phe Leu
          245          250          255
gcc agc cag gca agc cag tac gtg agc ggt gag atg ttg gtt gtt gat      816
Ala Ser Gln Ala Ser Gln Tyr Val Ser Gly Glu Met Leu Val Val Asp
          260          265          270
ggt ggt tgg atg ggt cgt tga
Gly Gly Trp Met Gly Arg
          275

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<210> 1654  
 <211> 278  
 <212> PRT  
 <213> Ustilago maydis 521

## PhoenixTemp32470.tmp.txt

<400> 1654  
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 1 Leu Gly Leu Phe Asn Leu Ser Gly Lys Thr Ala Leu Leu Thr Gly Gly  
 20 Thr Arg Gly Ile Gly Gln Ala Cys Ala Val Ala Leu Val Glu Ala Gly  
 35 Ala Ser Val Ile Leu Ala Val Arg Pro Gly Thr Ala Thr Ser Gly Ala  
 50 His Pro Ala Leu Ala Pro Leu Thr Ala Val Ala Asn Gln Ser Cys Ser  
 65 Gln Lys His Ser Thr Val Asp Ala Asp Leu Ser Asp Leu Ser Gln Val  
 85 Lys Thr Leu Phe Asp Arg Ala Leu Ser Gln Ser Pro Thr Ser Ala Ile  
 100 Asp Ile Leu Val Asn Cys Gly Gly Ile Gln Arg Arg His Pro Ser Val  
 115 Asp Phe Pro Glu Ser Asp Trp Asp Glu Val Leu Asn Val Asn Leu Lys  
 130 Ala Val Trp Leu Val Ser Gln Ala Ala Gly Arg His Met Val Ala Arg  
 145 Arg Ser Gly Lys Ile Ile Asn Phe Gly Ser Leu Leu Thr Phe Gln Gly  
 165 Gly Leu Thr Val Pro Ala Tyr Ala Ser Ala Lys Gly Ala Val Gly Gln  
 180 Leu Thr Lys Ala Leu Ser Asn Glu Trp Ala Lys His Asn Val Gln Val  
 195 Asn Gly Ile Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Lys Leu  
 210 Leu Ala Asp Pro Thr Arg Leu Arg Gln Ile Ser Glu Arg Ile Pro Ala  
 225 Gly Arg Trp Gly Asp Pro Ala Asp Phe Lys Gly Pro Leu Leu Phe Leu  
 245 Ala Ser Gln Ala Ser Gln Tyr Val Ser Gly Glu Met Leu Val Val Asp  
 260 Gly Gly Trp Met Gly Arg  
 275

<210> 1655  
 <211> 1068  
 <212> DNA  
 <213> Cryptococcus neoformans var. neoformans B-3501A

<220>  
 <221> CDS  
 <222> (1)..(1068)

<400> 1655  
 atg tcc ttc atc cgc tct agc ctt ttc aag gcc act gcc aat ccc atc 48  
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 1 5 10 15  
 agg cga tct gcc ttt gct acc act cca ctt cga gcc ttc acc agg tcc 96  
 Arg Arg Ser Ala Phe Ala Thr Thr Pro Leu Arg Ala Phe Thr Arg Ser  
 20 25 30  
 gct ctt gtc agc aac aac aag aag gac gat ggt tac gag gag cat cga 144  
 Ala Leu Val Ser Asn Asn Lys Lys Asp Asp Gly Tyr Glu Glu His Arg  
 35 40 45  
 gtc gag att gag ccc aag atc gct gct gtc gac gag agt ttc acg ttt 192  
 Val Glu Ile Glu Pro Lys Ile Ala Ala Val Asp Glu Ser Phe Thr Phe  
 50 55 60  
 gaa cac cct gag aaa tgg gta gac aag cat cct ggt cat gat atg cag 240  
 Glu His Pro Glu Lys Trp Val Asp Lys His Gly His Asp Met Gln  
 65 70 75 80  
 cga ggt gat ttt ggt cga cac acc aag cga act ctt gca tct ttc tct 288  
 Arg Gly Asp Phe Gly Arg His Thr Lys Arg Thr Leu Ala Ser Phe Ser  
 85 90 95  
 atg gac ggc aag gtc tgc ctt gtc act ggt gca gct cga ggt ctt ggt 336  
 Met Asp Gly Lys Val Cys Leu Val Thr Gly Ala Ala Arg Gly Leu Gly



## PhoenixTemp32470.tmp.txt

			100				105				110					
aac Asn	atg Met	atg Met	gcc Ala	agg Arg	act Thr	ttt Phe	gtt Val	gaa Glu	tcc Ser	ggc Gly	gcg Ala	aac Asn	gcc Ala	att Ile	gtc Val	384
			115				120				125					
ctt Leu	gtc Val	gat Asp	ctc Leu	aag Lys	aag Lys	gag Glu	gat Asp	gcc Ala	gag Glu	cgt Arg	gca Ala	gcc Ala	aag Lys	gag Glu	ctc Leu	432
			130				135				140					
gtt Val	gac Asp	tgg Trp	ttt Phe	gtc Val	gag Glu	aac Asn	ggg Gly	caa Gln	gcc Ala	gag Glu	aag Lys	ggg Gly	gaa Glu	att Ile	gag Glu	480
			145				150				155					
gct Ala	att Ile	ggg Gly	ctc Leu	ggg Gly	tgc Cys	gac Asp	gtt Val	tcc Ser	gac Asp	gag Glu	gcc Ala	tct Ser	gtc Val	aag Lys	cag Gln	528
			165				170				175					
gtc Val	ttt Phe	agc Ser	acc Thr	gtc Val	aag Lys	gag Glu	aga Arg	ttc Phe	ggc Gly	cgg Arg	ctt Leu	gac Asp	gct Ala	gtc Val	gtc Val	576
			180				185				190					
act Thr	gct Ala	gcc Ala	ggg Gly	att Ile	gtc Val	gaa Glu	aac Asn	ttt Phe	gtc Val	gct Ala	cac His	gag Glu	tac Tyr	ccc Pro	atc Ile	624
			195				200				205					
gat Asp	aag Lys	atc Ile	aag Lys	aag Lys	ctg Leu	ttg Leu	gac Asp	atc Ile	aac Asn	att Ile	atg Met	ggg Gly	act Thr	tgg Trp	tat Tyr	672
			210				215				220					
tgc Cys	gca Ala	ctt Leu	gag Glu	gct Ala	gcc Ala	aag Lys	ctt Leu	atg Met	cct Pro	gaa Glu	ggg Gly	ggg Gly	tcc Ser	att Ile	acc Thr	720
			225				230				235					
ctc Leu	gtc Val	gca Ala	tct Ser	atg Met	agc Ser	ggg Gly	agc Ser	att Ile	gtc Val	aac Asn	gtt Val	cct Pro	caa Gln	cct Pro	caa Gln	768
			245				250				255					
acc Thr	cct Pro	tac Tyr	aac Asn	ttt Phe	tcc Ser	aag Lys	gct Ala	gct Ala	gtg Val	cga Arg	cac His	atg Met	gct Ala	cga Arg	tcc Ser	816
			260				265				270					
ctc Leu	gcc Ala	gtc Val	gaa Glu	tgg Trp	gct Ala	ctc Leu	aag Lys	ggg Gly	atc Ile	cgt Arg	gtc Val	aac Asn	gct Ala	ctt Leu	agt Ser	864
			275				280				285					
ccg Pro	ggg Gly	tac Tyr	gtc Val	ctc Leu	acc Thr	aac Asn	ttg Leu	act Thr	aag Lys	gtc Val	att Ile	ctc Leu	gac Asp	gcc Ala	aac Asn	912
			290				295				300					
ccc Pro	gtt Val	ctc Leu	cgt Arg	gac Asp	gag Glu	tgg Trp	ctc Leu	aac Asn	cgt Arg	atc Ile	ccc Pro	atg Met	ggg Gly	cga Arg	atg Met	960
			305				310				315					
gcc Ala	gac Asp	cct Pro	tct Ser	gat Asp	ctc Leu	aag Lys	ggg Gly	gcc Ala	gtc Val	att Ile	tac Tyr	ctt Leu	gct Ala	tct Ser	gac Asp	1008
			325				330				335					
agc Ser	tcc Ser	aag Lys	tac Tyr	acc Thr	act Thr	ggg Gly	gct Ala	gag Glu	atc Ile	atg Met	att Ile	gac Asp	ggg Gly	ggg Gly	tac Tyr	1056
			340				345				350					
act Thr	tgc Cys	ttg Leu	taa													1068
			355													

<211> 355

<213> Cry

Met Ser Ph

1	Arg	Arg	Ser	Ala	Phe	Ala	Thr	Thr	Pro	Leu	Arg	Ala	Phe	Thr	Arg	Ser
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	Ala	Leu	Val	Ser	Asn	Asn	Lys	Lys	Asp	Asp	Gly	Tyr	Glu	Glu	His	Arg
			35					40					45			
	Val	Glu	Ile	Glu	Pro	Lys	Ile	Ala	Ala	Val	Asp	Glu	Ser	Phe	Thr	Phe
		50					55					60				
	Glu	His	Pro	Glu	Lys	Trp	Val	Asp	Lys	His	Pro	Gly	His	Asp	Met	Gln
					70						75				80	
	Arg	Gly	Asp	Phe	Gly	Arg	His	Thr	Lys	Arg	Thr	Leu	Ala	Ser	Phe	Ser
				85						90					95	
	Met	Asp	Gly	Lys	Val	Cys	Leu	Val	Thr	Gly	Ala	Ala	Arg	Gly	Leu	Gly

## PhoenixTemp32470.tmp.txt

100  
 Asn Met Met Ala Arg Thr Phe Val Glu Ser Gly Ala Asn Ala Ile Val  
 115  
 Leu Val Asp Leu Lys Lys Glu Asp Ala Glu Arg Ala Ala Lys Glu Leu  
 130  
 Val Asp Trp Phe Val Glu Asn Gly Gln Ala Glu Lys Gly Glu Ile Glu  
 145  
 Ala Ile Gly Leu Gly Cys Asp Val Ser Asp Glu Ala Ser Val Lys Gln  
 165  
 Val Phe Ser Thr Val Lys Glu Arg Phe Gly Arg Leu Asp Ala Val Val  
 180  
 Thr Ala Ala Gly Ile Val Glu Asn Phe Val Ala His Glu Tyr Pro Ile  
 195  
 Asp Lys Ile Lys Lys Leu Leu Asp Ile Asn Ile Met Gly Thr Trp Tyr  
 210  
 Cys Ala Leu Glu Ala Ala Lys Leu Met Pro Glu Gly Gly Ser Ile Thr  
 225  
 Leu Val Ala Ser Met Ser Gly Ser Ile Val Asn Val Pro Gln Pro Gln  
 245  
 Thr Pro Tyr Asn Phe Ser Lys Ala Ala Val Arg His Met Ala Arg Ser  
 260  
 Leu Ala Val Glu Trp Ala Leu Lys Gly Ile Arg Val Asn Ala Leu Ser  
 275  
 Pro Gly Tyr Val Leu Thr Asn Leu Thr Lys Val Ile Leu Asp Ala Asn  
 290  
 Pro Val Leu Arg Asp Glu Trp Leu Asn Arg Ile Pro Met Gly Arg Met  
 305  
 Ala Asp Pro Ser Asp Leu Lys Gly Ala Val Ile Tyr Leu Ala Ser Asp  
 325  
 Ser Ser Lys Tyr Thr Thr Gly Ala Glu Ile Met Ile Asp Gly Gly Tyr  
 340  
 Thr Cys Leu  
 355

&lt;210&gt; 1657

&lt;211&gt; 879

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(879)

&lt;400&gt; 1657

atg	ccc	gct	gcc	aga	ctc	cga	ctc	gaa	cac	aag	gtt	gcc	atc	atc	act	48
Met	Pro	Ala	Ala	Arg	Leu	Arg	Leu	Glu	His	Lys	Val	Ala	Ile	Ile	Thr	
1				5				10					15			
ggt	gcc	ggc	tcc	ggt	atc	ggt	ctt	gag	acc	gcc	ctc	caa	ttt	gcc	gct	96
Gly	Ala	Gly	Ser	Gly	Ile	Gly	Leu	Glu	Thr	Ala	Leu	Gln	Phe	Ala	Ala	
			20					25					30			
gag	ggc	gcc	cga	ctc	gtc	att	tct	gac	atc	aac	ctc	cgc	aat	gtc	gag	144
Glu	Gly	Ala	Arg	Leu	Val	Ile	Ser	Asp	Ile	Asn	Leu	Arg	Asn	Val	Glu	
			35				40					45				
gct	gct	gcc	cag	ctc	atc	aac	act	cat	ttc	cca	gaa	tgc	ggt	gct	gtc	192
Ala	Ala	Ala	Gln	Leu	Ile	Asn	Thr	His	Phe	Pro	Glu	Cys	Gly	Ala	Val	
			50			55		60								
gcc	atc	aag	tgt	gat	gtg	agc	aag	gag	gag	gag	gtg	aag	gcc	atg	gtc	240
Ala	Ile	Lys	Cys	Asp	Val	Ser	Lys	Glu	Glu	Glu	Val	Lys	Ala	Met	Val	
					70			75							80	
gat	aag	gcc	gtg	gag	gtg	ttt	gga	agg	ttg	gat	gtg	ctc	ttc	aac	aac	288
Asp	Lys	Ala	Val	Glu	Val	Phe	Gly	Arg	Leu	Asp	Val	Leu	Phe	Asn	Asn	
				85				90						95		
gcc	ggt	atc	atg	cac	ccc	gct	gat	gac	aat	gcc	atc	act	acc	gag	gag	336
Ala	Gly	Ile	Met	His	Pro	Ala	Asp	Asp	Asn	Ala	Ile	Thr	Thr	Glu	Glu	
			100				105					110				
aag	gtc	tgg	gac	ctt	act	cag	aat	att	aac	gtc	aag	ggt	gtc	tgg	ttt	384
Lys	Val	Trp	Asp	Leu	Thr	Gln	Asn	Ile	Asn	Val	Lys	Gly	Val	Trp	Phe	
		115					120					125				
gga	tgc	aag	tat	ggt	atc	ttg	gcc	atg	aag	aaa	aac	aag	ccc	gat	cct	432

## PhoenixTemp32470.tmp.txt

Gly	Cys	Lys	Tyr	Gly	Ile	Leu	Ala	Met	Lys	Lys	Asn	Lys	Pro	Asp	Pro	
130	130					135					140					
tcc	aag	ggc	ctc	ggc	att	ggg	ggg	tct	atc	atc	aac	gtc	gct	tcc	ttc	480
Ser	Lys	Gly	Leu	Gly	Ile	Gly	Gly	Ser	Ile	Ile	Asn	Val	Ala	Ser	Phe	
145					150					155					160	
gtc	gcc	atc	ttg	ggg	gct	gcc	acc	cct	caa	ctt	gct	tac	acc	gcc	tcc	528
Val	Ala	Ile	Leu	Gly	Ala	Ala	Thr	Pro	Gln	Leu	Ala	Tyr	Thr	Ala	Ser	
				165					170					175		
aag	ggg	gct	gtc	ctc	gcc	atg	act	cgc	gaa	ctt	gca	atg	gtc	cac	gcc	576
Lys	Gly	Ala	Val	Leu	Ala	Met	Thr	Arg	Glu	Leu	Ala	Met	Val	His	Ala	
			180					185					190			
cgt	gaa	ggg	atc	cga	ttt	aac	tct	ctc	tgt	ccc	ggg	cct	atc	cga	acc	624
Arg	Glu	Gly	Ile	Arg	Phe	Asn	Ser	Leu	Cys	Pro	Gly	Pro	Ile	Arg	Thr	
		195					200					205				
cct	ctc	ttg	atg	gat	ttc	ctc	aac	acc	cct	gaa	aag	ttg	aac	agg	cga	672
Pro	Leu	Leu	Met	Asp	Phe	Leu	Asn	Thr	Pro	Glu	Lys	Leu	Asn	Arg	Arg	
						215					220					
atg	gtg	cat	gta	ccc	atg	ggc	agg	ttc	ggg	gag	gct	gta	gag	cag	gcc	720
Met	Val	His	Val	Pro	Met	Gly	Arg	Phe	Gly	Glu	Ala	Val	Glu	Gln	Ala	
225					230					235					240	
aag	gct	gtt	gtc	ttc	ttg	gct	tcc	gat	gac	tct	tcc	ttc	att	aac	ggg	768
Lys	Ala	Val	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Ser	Phe	Ile	Asn	Gly	
				245					250					255		
acc	gac	ttc	ttg	gta	gat	ggg	ggg	ctt	cac	aag	tgt	tat	gtt	act	ccc	816
Thr	Asp	Phe	Leu	Val	Asp	Gly	Gly	Leu	His	Lys	Cys	Tyr	Val	Thr	Pro	
			260					265					270			
gaa	ggc	gag	cct	gcc	cag	ccc	ggc	cct	acc	gga	ttg	ctc	gcc	acc	ctg	864
Glu	Gly	Glu	Pro	Ala	Gln	Pro	Gly	Pro	Thr	Gly	Leu	Leu	Ala	Thr	Leu	
		275					280					285				
tcc	aaa	act	gct	taa												879
Ser	Lys	Thr	Ala													
	290															

&lt;210&gt; 1658

&lt;211&gt; 292

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 1658

Met	Pro	Ala	Ala	Arg	Leu	Arg	Leu	Glu	His	Lys	Val	Ala	Ile	Ile	Thr	
1				5					10					15		
Gly	Ala	Gly	Ser	Gly	Ile	Gly	Leu	Glu	Thr	Ala	Leu	Gln	Phe	Ala	Ala	
			20					25					30			
Glu	Gly	Ala	Arg	Leu	Val	Ile	Ser	Asp	Ile	Asn	Leu	Arg	Asn	Val	Glu	
		35					40					45				
Ala	Ala	Ala	Gln	Leu	Ile	Asn	Thr	His	Phe	Pro	Glu	Cys	Gly	Ala	Val	
		50				55					60					
Ala	Ile	Lys	Cys	Asp	Val	Ser	Lys	Glu	Glu	Glu	Val	Lys	Ala	Met	Val	
65				70					75						80	
Asp	Lys	Ala	Val	Glu	Val	Phe	Gly	Arg	Leu	Asp	Val	Leu	Phe	Asn	Asn	
				85				90						95		
Ala	Gly	Ile	Met	His	Pro	Ala	Asp	Asp	Asn	Ala	Ile	Thr	Thr	Glu	Glu	
			100				105						110			
Lys	Val	Trp	Asp	Leu	Thr	Gln	Asn	Ile	Asn	Val	Lys	Gly	Val	Trp	Phe	
		115					120					125				
Gly	Cys	Lys	Tyr	Gly	Ile	Leu	Ala	Met	Lys	Lys	Asn	Lys	Pro	Asp	Pro	
	130					135					140					
Ser	Lys	Gly	Leu	Gly	Ile	Gly	Gly	Ser	Ile	Ile	Asn	Val	Ala	Ser	Phe	
145					150					155					160	
Val	Ala	Ile	Leu	Gly	Ala	Ala	Thr	Pro	Gln	Leu	Ala	Tyr	Thr	Ala	Ser	
				165					170					175		
Lys	Gly	Ala	Val	Leu	Ala	Met	Thr	Arg	Glu	Leu	Ala	Met	Val	His	Ala	
			180					185					190			
Arg	Glu	Gly	Ile	Arg	Phe	Asn	Ser	Leu	Cys	Pro	Gly	Pro	Ile	Arg	Thr	
		195					200					205				
Pro	Leu	Leu	Met	Asp	Phe	Leu	Asn	Thr	Pro	Glu	Lys	Leu	Asn	Arg	Arg	
	210					215					220					
Met	Val	His	Val	Pro	Met	Gly	Arg	Phe	Gly	Glu	Ala	Val	Glu	Gln	Ala	
225					230					235					240	

## PhoenixTemp32470.tmp.txt

Lys Ala Val Val Phe Leu Ala Ser Asp Asp Ser Ser Phe Ile Asn Gly  
 Thr Asp Phe Leu Val Asp Gly Gly Leu His Lys Cys Tyr Val Thr Pro  
 Glu Gly Glu Pro Ala Gln Pro Gly Pro Thr Gly Leu Leu Ala Thr Leu  
 Ser Lys Thr Ala  
 245 250 255 260 265 270 275 280 285 290

&lt;210&gt; 1659

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 1659

atg	tcc	tac	tta	caa	aac	ctc	ttt	ggc	ctt	aca	gga	aaa	act	gct	ttg	48
Met	Ser	Tyr	Leu	Gln	Asn	Leu	Phe	Gly	Leu	Thr	Gly	Lys	Thr	Ala	Leu	
1				5				10						15		
atc	act	ggc	gcc	acc	cgg	ggt	att	ggg	gct	cga	atg	gcc	ctt	gct	ctc	96
Ile	Thr	Gly	Ala	Thr	Arg	Gly	Ile	Gly	Ala	Arg	Met	Ala	Leu	Ala	Leu	
			20					25					30			
gcc	aaa	gcc	ggt	gcc	gac	atc	atc	ctt	gtc	cag	cgt	aac	acc	agc	aac	144
Ala	Lys	Ala	Gly	Ala	Asp	Ile	Ile	Leu	Val	Gln	Arg	Asn	Thr	Ser	Asn	
			35				40					45				
acc	gcg	acc	cga	gac	gat	att	att	gct	gcg	ggg	ggc	aag	gct	gac	att	192
Thr	Ala	Thr	Arg	Asp	Asp	Ile	Ile	Ala	Ala	Gly	Gly	Lys	Ala	Asp	Ile	
	50					55				60						
gtt	gtt	tgc	gac	ctc	ggt	gat	gcg	gcc	tct	gtt	gcc	aag	ctc	att	ccc	240
Val	Val	Cys	Asp	Leu	Gly	Asp	Ala	Ala	Ser	Val	Ala	Lys	Leu	Ile	Pro	
	65				70				75					80		
cac	gtt	acc	aag	gag	ctt	gga	cga	act	ctt	gac	att	gtc	gtc	aac	tgt	288
His	Val	Thr	Lys	Glu	Leu	Gly	Arg	Thr	Leu	Asp	Ile	Val	Val	Asn	Cys	
				85					90					95		
ggg	ggt	atc	cag	cgt	cga	cac	ccc	gtt	gag	aac	ttc	cct	gag	aat	gat	336
Gly	Gly	Ile	Gln	Arg	Arg	His	Pro	Val	Glu	Asn	Phe	Pro	Glu	Asn	Asp	
			100					105					110			
tgg	aac	gac	gtt	ctc	cag	gtc	aac	ttg	aac	act	gtc	ttc	act	atc	act	384
Trp	Asn	Asp	Val	Leu	Gln	Val	Asn	Leu	Asn	Thr	Val	Phe	Thr	Ile	Thr	
		115					120					125				
cga	gat	gct	ggt	agg	cac	atg	ctc	gaa	tct	cga	ggt	ggt	gtc	gct	ggt	432
Arg	Asp	Ala	Gly	Arg	His	Met	Leu	Glu	Ser	Arg	Gly	Gly	Val	Ala	Gly	
	130					135					140					
gag	ccc	gtc	ccc	gaa	ggc	ggc	gct	gct	ggc	aac	ccc	aga	ggc	ttc	ggc	480
Glu	Pro	Val	Pro	Glu	Gly	Gly	Ala	Ala	Gly	Asn	Pro	Arg	Gly	Phe	Gly	
	145				150				155					160		
aag	atc	atc	aac	atc	tcc	agc	cta	gtg	gcc	tac	cag	ggt	ggt	ttg	aac	528
Lys	Ile	Ile	Asn	Ile	Ser	Ser	Leu	Val	Ala	Tyr	Gln	Gly	Gly	Leu	Asn	
				165					170					175		
gtt	gtg	gct	tac	gcc	gct	gcc	aag	cac	ggt	gtc	caa	ggc	att	gtc	aag	576
Val	Val	Ala	Tyr	Ala	Ala	Ala	Lys	His	Gly	Val	Gln	Gly	Ile	Val	Lys	
			180					185					190			
tcc	ttc	tct	aac	ggt	tgg	gct	tct	aaa	ggc	gtc	tgt	gtc	aat	gcc	att	624
Ser	Phe	Ser	Asn	Gly	Trp	Ala	Ser	Lys	Gly	Val	Cys	Val	Asn	Ala	Ile	
		195				200						205				
gcc	ccc	ggt	tac	atc	gct	acc	gac	atg	aac	gaa	gct	ctc	ata	gca	gac	672
Ala	Pro	Gly	Tyr	Ile	Ala	Thr	Asp	Met	Asn	Glu	Ala	Leu	Ile	Ala	Asp	
	210				215					220						
aag	gac	cga	gct	cgt	caa	atc	ctc	gaa	cgt	att	cct	gcc	ggc	cga	tgg	720
Lys	Asp	Arg	Ala	Arg	Gln	Ile	Leu	Glu	Arg	Ile	Pro	Ala	Gly	Arg	Trp	
	225				230				235						240	
gga	tct	cct	gaa	gac	ttt	gag	ggt	gcc	att	gtc	ttc	ctt	gct	tct	cga	768
Gly	Ser	Pro	Glu	Asp	Phe	Glu	Gly	Ala	Ile	Val	Phe	Leu	Ala	Ser	Arg	
				245					250					255		
gcg	agt	gac	tac	gtc	acc	ggt	gaa	tgt	ctg	gtt	gtt	gac	ggc	gga	tgg	816
Ala	Ser	Asp	Tyr	Val	Thr	Gly	Glu	Cys	Leu	Val	Val	Asp	Gly	Gly	Trp	

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atg gct cgt gag tgt gtt taa  
Met Ala Arg Glu Cys Val  
275

265 270

837

<210> 1660  
<211> 278  
<212> PRT  
<213> *Cryptococcus neoformans* var. *neoformans* B-3501A

<400> 1660  
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20 25 30  
Ala Lys Ala Gly Ala Asp Ile Ile Leu Val Gln Arg Asn Thr Ser Asn  
35 40 45  
Thr Ala Thr Arg Asp Asp Ile Ala Ala Gly Gly Lys Ala Asp Ile  
50 55 60  
Val Val Cys Asp Leu Gly Asp Ala Ala Ser Val Ala Lys Leu Ile Pro  
65 70 75 80  
His Val Thr Lys Glu Leu Gly Arg Thr Leu Asp Ile Val Val Asn Cys  
85 90 95  
Gly Gly Ile Gln Arg Arg His Pro Val Glu Asn Phe Pro Glu Asn Asp  
100 105 110  
Trp Asn Asp Val Leu Gln Val Asn Leu Asn Thr Val Phe Thr Ile Thr  
115 120 125  
Arg Asp Ala Gly Arg His Met Leu Glu Ser Arg Gly Gly Val Ala Gly  
130 135 140  
Glu Pro Val Pro Glu Gly Gly Ala Ala Gly Asn Pro Arg Gly Phe Gly  
145 150 155 160  
Lys Ile Ile Asn Ile Ser Ser Leu Val Ala Tyr Gln Gly Gly Leu Asn  
165 170 175  
Val Val Ala Tyr Ala Ala Ala Lys His Gly Val Gln Gly Ile Val Lys  
180 185 190  
Ser Phe Ser Asn Gly Trp Ala Ser Lys Gly Val Cys Val Asn Ala Ile  
195 200 205  
Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Ala Leu Ile Ala Asp  
210 215 220  
Lys Asp Arg Ala Arg Gln Ile Leu Glu Arg Ile Pro Ala Gly Arg Trp  
225 230 235 240  
Gly Ser Pro Glu Asp Phe Glu Gly Ala Ile Val Phe Leu Ala Ser Arg  
245 250 255  
Ala Ser Asp Tyr Val Thr Gly Glu Cys Leu Val Val Asp Gly Gly Trp  
260 265 270  
Met Ala Arg Glu Cys Val  
275

<210> 1661  
<211> 819  
<212> DNA  
<213> *Strongylocentrotus purpuratus*

<220>  
<221> CDS  
<222> (1)..(819)

<400> 1661  
atg gcg tca tca gct cca gca ttg ctc ggg ggt tcg ttg aag gga aaa 48  
Met Ala Ser Ser Ala Pro Ala Leu Leu Gly Gly Ser Leu Lys Gly Lys  
1 5 10 15  
gtt gcc ctc atc aca gga gcc agc tca gga ata gga gcc gag act gct 96  
Val Ala Leu Ile Thr Gly Ala Ser Ser Gly Ile Gly Ala Glu Thr Ala  
20 25 30  
cgt cat ttt gct tcc ctt gga tgc cga ttg gcg ttg aca gga cgt aac 144  
Arg His Phe Ala Ser Leu Gly Cys Arg Leu Ala Leu Thr Gly Arg Asn  
35 40 45  
atg gaa acg ctt gag gaa gta acc aat gaa tgt att agg aga ggg ctc 192  
Met Glu Thr Leu Glu Glu Val Thr Asn Glu Cys Ile Arg Arg Gly Leu

## PhoenixTemp32470.tmp.txt

50	55	60		
gac	aaa	gac	aag	att
Asp	Lys	Asp	Lys	Ile
65				
gat	gtg	aag	aga	act
Asp	Val	Lys	Arg	Thr
85				
gat	gtg	cta	gtc	aat
Asp	Val	Leu	Val	Asn
100				
acc	gtt	act	tta	gaa
Thr	Val	Thr	Leu	Glu
115				
gcg	ccc	ctc	cag	ctc
Ala	Pro	Leu	Gln	Leu
130				
aaa	ggg	act	gtg	gta
Lys	Gly	Thr	Val	Val
145				
act	gac	aac	tta	gcc
Thr	Asp	Asn	Leu	Ala
165				
aca	agg	tct	ata	gct
Thr	Arg	Ser	Ile	Ala
180				
gca	gtg	aac	cct	ggt
Ala	Val	Asn	Pro	Gly
195				
ggg	gtg	act	gat	gag
Gly	Val	Thr	Asp	Glu
210				
cat	cat	gcc	atg	cga
His	His	Ala	Met	Arg
225				
ata	gca	ttc	ctc	gca
Ile	Ala	Phe	Leu	Ala
245				
gtt	ggg	act	gaa	gga
Val	Gly	Thr	Glu	Gly
260				
tag				

240  
288  
336  
384  
432  
480  
528  
576  
624  
672  
720  
768  
816  
819

<210> 1662  
<211> 272  
<212> PRT  
<213> Strongylocentrotus purpuratus

<400> 1662	
Met	Ala
1	Ser
Val	Ala
20	Leu
Arg	His
35	Phe
Met	Glu
50	Thr
Asp	Lys
65	Val
Asp	Val
85	Leu
Asp	Val
100	Leu
Thr	Val
115	Thr
Ala	Pro
130	Leu
Lys	Gly
5	Ser
10	Ala
20	Leu
30	Ala
40	Leu
50	Ala
60	Leu
70	Ala
80	Leu
90	Ala
100	Leu
110	Ala
120	Leu
130	Ala
140	Leu
150	Ala
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190	Ala
200	Leu
210	Ala
220	Leu
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250	Ala
260	Leu
270	Ala
280	Leu
290	Ala
300	Leu
310	Ala
320	Leu
330	Ala
340	Leu
350	Ala
360	Leu
370	Ala
380	Leu
390	Ala
400	Leu

## PhoenixTemp32470.tmp.txt

145 Thr Asp Asn Leu 150 Tyr Ser Met Ser Lys 155 Thr Ala Leu Asp His 160 Met  
 Thr Arg Ser Ile 165 Ala Glu Glu Leu Ala 170 Pro His Gly Val Arg Val Asn  
 Ala Val Asn 180 Pro Gly Ile Ile Thr 185 Thr Pro Leu Phe Lys 190 Arg Ser Phe  
 Gly Val Thr Asp Glu Ala Val 200 Ala Gln Phe Leu Glu 205 Glu Met Lys Lys  
 His 210 Thr 215 Thr Gly Thr Val Asp Glu Val Ser Arg Thr  
 225 Ile Ala Phe Leu 230 Ser Asn Asp Ser Ser Phe Thr Thr Gly Glu Thr  
 Val Gly Thr Glu 245 Gly Gly Leu His Leu 250 Val Thr Lys Val Gln Ile  
 260 270

&lt;210&gt; 1663

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Tribolium castaneum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;400&gt; 1663

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Met	Pro	Pro	Thr	Lys	Ile	Leu	Thr	Leu	Phe	Arg	Thr	Met	Ser	Ser	Ala	
1				5					10					15		
tcc	tca	cag	cgt	ctt	tgt	ggc	aga	aca	gca	ata	gtt	acg	gca	tcg	acc	96
Ser	Ser	Gln	Arg	Leu	Cys	Gly	Arg	Thr	Ala	Ile	Val	Thr	Ala	Ser	Thr	
			20					25					30			
gaa	gga	atc	ggt	ttt	gcg	att	gcc	caa	cgt	ttt	gca	caa	gaa	gga	gca	144
Glu	Gly	Ile	Gly	Phe	Ala	Ile	Ala	Gln	Arg	Phe	Ala	Gln	Glu	Gly	Ala	
			35				40					45				
aag	gtg	ata	atc	agc	agc	cgc	aag	gaa	aag	aat	gtc	gaa	gcg	gcg	gtt	192
Lys	Val	Ile	Ile	Ser	Ser	Arg	Lys	Glu	Lys	Asn	Val	Glu	Ala	Ala	Val	
			50			55				60						
tct	aaa	tta	aaa	tcg	gaa	ggt	ttg	gac	gtt	tgt	ggg	ctc	gta	tgt	cat	240
Ser	Lys	Leu	Lys	Ser	Glu	Gly	Leu	Asp	Val	Cys	Gly	Leu	Val	Cys	His	
			65		70				75					80		
gtc	tcc	aat	tca	gaa	cac	cgt	aaa	aaa	ttg	ttc	gaa	aag	gca	aca	ggg	288
Val	Ser	Asn	Ser	Glu	His	Arg	Lys	Lys	Leu	Phe	Glu	Lys	Ala	Thr	Gly	
			85					90						95		
ggt	tta	gat	att	ttg	gtc	tcc	aat	gct	gct	gta	aac	ccc	tcg	gca	acg	336
Gly	Leu	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala	Val	Asn	Pro	Ser	Ala	Thr	
			100				105						110			
gcg	gtc	ttg	gac	tgt	gac	gaa	aaa	gcg	tgg	gac	aaa	att	ttc	gat	gta	384
Ala	Val	Leu	Asp	Cys	Asp	Glu	Lys	Ala	Trp	Asp	Lys	Ile	Phe	Asp	Val	
			115				120					125				
aac	gtg	aaa	gct	gct	ttc	atg	tta	gcg	aaa	gaa	gct	tta	ccg	tta	ctt	432
Asn	Val	Lys	Ala	Ala	Phe	Met	Leu	Ala	Lys	Glu	Ala	Leu	Pro	Leu	Leu	
			130			135				140						
cgc	aaa	agt	agc	tgc	ggt	cga	att	att	ttc	atc	tcg	tcc	att	ggt	ggt	480
Arg	Lys	Ser	Ser	Cys	Gly	Arg	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Gly	Gly	
				150					155					160		
ttc	cag	cct	ttg	gat	ttg	att	ggg	gct	tac	tgt	gtg	agc	aag	tgt	gca	528
Phe	Gln	Pro	Leu	Asp	Leu	Ile	Gly	Ala	Tyr	Cys	Val	Ser	Lys	Cys	Ala	
				165					170					175		
ctc	ttt	gga	ctc	act	aaa	aca	gca	gca	gcc	cag	tta	gct	aaa	gaa	aat	576
Leu	Phe	Gly	Leu	Thr	Lys	Thr	Ala	Ala	Ala	Gln	Leu	Ala	Lys	Glu	Asn	
			180				185						190			
atc	acc	gtt	aat	tgc	ata	gcc	ccg	ggt	tta	ata	aaa	acc	aag	ttt	tcg	624
Ile	Thr	Val	Asn	Cys	Ile	Ala	Pro	Gly	Leu	Ile	Lys	Thr	Lys	Phe	Ser	
			195				200					205				
cac	ttt	ctg	gtc	gag	aaa	gag	gaa	gac	aaa	aag	aaa	gtt	tta	tca	atg	672
His	Phe	Leu	Val	Glu	Lys	Glu	Glu	Asp	Lys	Lys	Lys	Val	Leu	Ser	Met	
			210			215					220					
att	ccg	atg	gga	aga	atg	gga	atg	cca	cat	gaa	ata	gct	ggc	gca	gct	720

## PhoenixTemp32470.tmp.txt

Ile Pro Met Gly Arg Met Gly Met Pro His Glu Ile Ala Gly Ala Ala  
 225 230 235 240  
 gca ttt tta gca tca gac gac gcc agt tac atg act ggg gaa aca att  
 Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Met Thr Gly Glu Thr Ile  
 245 250 255  
 gta gta gca ggt ggc atg cta tca aga tta taa  
 Val Val Ala Gly Gly Met Leu Ser Arg Leu  
 260 265

768

801

<210> 1664  
 <211> 266  
 <212> PRT  
 <213> Tribolium castaneum

<400> 1664  
 Met Pro Pro Thr Lys Ile Leu Thr Leu Phe Arg Thr Met Ser Ser Ala  
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 Ser Ser Gln Arg Leu Cys Gly Arg Thr Ala Ile Val Thr Ala Ser Thr  
 20 25 30  
 Glu Gly Ile Gly Phe Ala Ile Ala Gln Arg Phe Ala Gln Glu Gly Ala  
 35 40 45  
 Lys Val Ile Ile Ser Ser Arg Lys Glu Lys Asn Val Glu Ala Ala Val  
 50 55 60  
 Ser Lys Leu Lys Ser Glu Gly Leu Asp Val Cys Gly Leu Val Cys His  
 65 70 75 80  
 Val Ser Asn Ser Glu His Arg Lys Lys Leu Phe Glu Lys Ala Thr Gly  
 85 90 95  
 Gly Leu Asp Ile Leu Val Ser Asn Ala Ala Val Asn Pro Ser Ala Thr  
 100 105 110  
 Ala Val Leu Asp Cys Asp Glu Lys Ala Trp Asp Lys Ile Phe Asp Val  
 115 120 125  
 Asn Val Lys Ala Ala Phe Met Leu Ala Lys Glu Ala Leu Pro Leu Leu  
 130 135 140  
 Arg Lys Ser Ser Cys Gly Arg Ile Ile Phe Ile Ser Ser Ile Gly Gly  
 145 150 155 160  
 Phe Gln Pro Leu Asp Leu Ile Gly Ala Tyr Cys Val Ser Lys Cys Ala  
 165 170 175  
 Leu Phe Gly Leu Thr Lys Thr Ala Ala Ala Gln Leu Ala Lys Glu Asn  
 180 185 190  
 Ile Thr Val Asn Cys Ile Ala Pro Gly Leu Ile Lys Thr Lys Phe Ser  
 195 200 205  
 His Phe Leu Val Glu Lys Glu Glu Asp Lys Lys Lys Val Leu Ser Met  
 210 215 220  
 Ile Pro Met Gly Arg Met Gly Met Pro His Glu Ile Ala Gly Ala Ala  
 225 230 235 240  
 Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Met Thr Gly Glu Thr Ile  
 245 250 255  
 Val Val Ala Gly Gly Met Leu Ser Arg Leu  
 260 265

<210> 1665  
 <211> 753  
 <212> DNA  
 <213> Prochlorococcus marinus str. NATL1A

<220>  
 <221> CDS  
 <222> (1)..(753)  
 <223> transl\_table=11

<400> 1665  
 atg aca tta tca aaa tta ctt gaa gga cag act gca att gta act ggc  
 Met Thr Leu Ser Lys Leu Leu Glu Gly Gln Thr Ala Ile Val Thr Gly  
 1 5 10 15  
 gca agc aga ggt att ggt aaa gct att gca att ttt cta gcg aag gaa  
 Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Ile Phe Leu Ala Lys Glu  
 20 25 30  
 gga gca gaa gta atc atc aat tat tct tca tct ttg gaa aat gca aat  
 Gly Ala Glu Val Ile Ile Asn Tyr Ser Ser Ser Leu Glu Asn Ala Asn  
 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265

48

96

144



## PhoenixTemp32470.tmp.txt

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      35      40      45
aaa gtc gta tca gaa ata aac ttt gga ggg aag gca tac cct ctt 192
Lys Val Val Ser Glu Ile Asn Ser Phe Gly Gly Lys Ala Tyr Pro Leu
      50      55      60
caa gct gat att tct aat gaa aac tcg gta aat gac tta ata aaa aca 240
Gln Ala Asp Ile Ser Asn Glu Asn Ser Val Asn Asp Leu Ile Lys Thr
      65      70      75      80
gta ttg gag aaa aat aat aaa att gat gtt ctc gtc aat aac gct ggg 288
Val Leu Glu Lys Asn Asn Lys Ile Asp Val Leu Val Asn Asn Ala Gly
      85      90      95
ata act aaa gat ggc ctt tta atg aga atg aaa acg gac gat tgg cag 336
Ile Thr Lys Asp Gly Leu Leu Met Arg Met Lys Thr Asp Asp Trp Gln
      100      105      110
aaa gtt tta gat ctt aac ttg agt ggt gtt ttt tat tgc aca aga gcg 384
Lys Val Leu Asp Leu Asn Leu Ser Gly Val Phe Tyr Cys Thr Arg Ala
      115      120      125
gta tct agg cag atg ttg aag caa aaa aaa gga aga att atc aac ata 432
Val Ser Arg Gln Met Leu Lys Gln Lys Lys Gly Arg Ile Ile Asn Ile
      130      135      140
act tct gta gtt ggg ttg atg ggc aac cca ggg caa gca aat tat tct 480
Thr Ser Val Val Gly Leu Met Gly Asn Pro Gly Gln Ala Asn Tyr Ser
      145      150      155      160
gcg gcc aag gca gga gta gta ggt ctc aca caa agc gct gca aaa gaa 528
Ala Ala Lys Ala Gly Val Val Gly Leu Thr Thr Gln Ser Ala Lys Glu
      165      170      175
ttt gcc agc aga gga att act gta aat gca gtt gct cct ggt ttt att 576
Phe Ala Ser Arg Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile
      180      185      190
tca act gat atg acc aaa gat ctg gat agt gaa tca atc ctt tct gct 624
Ser Thr Asp Met Thr Lys Asp Leu Asp Ser Glu Ser Ile Leu Ser Ala
      195      200      205
atc ccg ctt gga cga ttc ggc aac cct gaa gat gtt gca ggg gca gtg 672
Ile Pro Leu Gly Arg Phe Gly Asn Pro Glu Asp Val Ala Gly Ala Val
      210      215      220
agg ttt tta gca gcg gat cct tcg gcg tct tac ata aca ggt cag gta 720
Arg Phe Leu Ala Ala Asp Pro Ser Ala Ser Tyr Ile Thr Gly Gln Val
      225      230      235      240
att caa gtt gat ggt ggg atg gtt atg agt taa 753
Ile Gln Val Asp Gly Gly Met Val Met Ser
      245      250

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&lt;210&gt; 1666

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus str. NATL1A

&lt;400&gt; 1666

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Met Thr Leu Ser Lys Leu Leu Glu Gly Gln Thr Ala Ile Val Thr Gly
1      5      10      15
Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Ile Phe Leu Ala Lys Glu
      20      25      30
Gly Ala Glu Val Ile Ile Asn Tyr Ser Ser Ser Leu Glu Asn Ala Asn
      35      40      45
Lys Val Val Ser Glu Ile Asn Ser Phe Gly Gly Lys Ala Tyr Pro Leu
      50      55      60
Gln Ala Asp Ile Ser Asn Glu Asn Ser Val Asn Asp Leu Ile Lys Thr
      65      70      75      80
Val Leu Glu Lys Asn Asn Lys Ile Asp Val Leu Val Asn Asn Ala Gly
      85      90      95
Ile Thr Lys Asp Gly Leu Leu Met Arg Met Lys Thr Asp Asp Trp Gln
      100      105      110
Lys Val Leu Asp Leu Asn Leu Ser Gly Val Phe Tyr Cys Thr Arg Ala
      115      120      125
Val Ser Arg Gln Met Leu Lys Gln Lys Lys Gly Arg Ile Ile Asn Ile
      130      135      140
Thr Ser Val Val Gly Leu Met Gly Asn Pro Gly Gln Ala Asn Tyr Ser
      145      150      155      160
Ala Ala Lys Ala Gly Val Val Gly Leu Thr Gln Ser Ala Ala Lys Glu
      165      170      175

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## PhoenixTemp32470.tmp.txt

Phe Ala Ser Arg Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile  
 180 185 190  
 Ser Thr Asp Met Thr Lys Asp Leu Asp Ser Glu Ser Ile Leu Ser Ala  
 195 200 205  
 Ile Pro Leu Gly Arg Phe Gly Asn Pro Glu Asp Val Ala Gly Ala Val  
 210 215 220  
 Arg Phe Leu Ala Ala Asp Pro Ser Ala Ser Tyr Ile Thr Gly Gln Val  
 225 230 235 240  
 Ile Gln Val Asp Gly Gly Met Val Met Ser  
 245 250

&lt;210&gt; 1667

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. JLS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; trans1\_table=11

&lt;400&gt; 1667

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Met Thr Arg Glu His Gly Arg Leu His Gly Lys Ser Ala Val Ile Thr	
1 5 10 15	
ggg gcg gcg ttc ggc atc ggc cgg gcc acc gcc gtg ctc ttc gca cga	96
Gly Ala Ala Phe Gly Ile Gly Arg Ala Thr Ala Val Leu Phe Ala Arg	
20 25 30	
gag ggc gcg cgg ctg gtc gtg acc gat att cag agc gag ccg ctg ctg	144
Glu Gly Ala Arg Leu Val Val Thr Asp Ile Gln Ser Glu Pro Leu Leu	
35 40 45	
gcg ctt gcc gat gaa ctg cgg cac gcc gga gcg gac gtc gag ccc gtc	192
Ala Leu Ala Asp Glu Leu Arg His Ala Gly Ala Asp Val Glu Pro Val	
50 55 60	
gtc ggc gac gtc tcg gtg gag tat gac gcg ggc atg atc ggc gcg	240
Val Gly Asp Val Ser Val Glu Tyr Asp Ala Gly Arg Met Ile Gly Ala	
65 70 75 80	
gcg gtc gac cgc ttc gga cgg ctc gat gtg ctg gtc gcc aac gca ggc	288
Ala Val Asp Arg Phe Gly Arg Leu Asp Val Leu Val Ala Asn Ala Gly	
85 90 95	
atc atc ccg ctc ggc gac gcg ctg gaa atg acc gcc gcc ggc tgg gac	336
Ile Ile Pro Leu Gly Asp Ala Leu Glu Met Thr Ala Ala Gly Trp Asp	
100 105 110	
gaa gtg atg gcc atc gac ggg cgc ggc atg ttc ctg tgc tgc aaa ttc	384
Glu Val Met Ala Ile Asp Gly Arg Gly Met Phe Leu Cys Cys Lys Phe	
115 120 125	
gcg atc gag gcg atg ttg ccg acc ggg ggt ggc gcc atc gtc tgc ctc	432
Ala Ile Glu Ala Met Leu Pro Thr Gly Gly Gly Ala Ile Val Cys Leu	
130 135 140	
tcc tcg atc tcc gga ctg gcg ggg cag aag cgg cag gcg gcc tac ggt	480
Ser Ser Ile Ser Gly Leu Ala Gly Gln Lys Arg Gln Ala Ala Tyr Gly	
145 150 155 160	
ccc gcc aag ttc atc gcc acc ggc ttg acc aag cac ctg gca gtc gag	528
Pro Ala Lys Phe Ile Ala Thr Gly Leu Thr Lys His Leu Ala Val Glu	
165 170 175	
tgg gcc gac cgg ggt atc aga gtc aac gcc gtc gcc ccc ggg acg att	576
Trp Ala Asp Arg Gly Ile Arg Val Asn Ala Val Ala Pro Gly Thr Ile	
180 185 190	
cga acc gag cgg gtc aag cgg ttc ccg gag gag ccg ggt ggc tcg gag	624
Arg Thr Glu Arg Val Lys Arg Phe Pro Glu Glu Pro Gly Gly Ser Glu	
195 200 205	
tac ctg gcg gcg gtc gag cgt atg cac ccg atg ggc gcg atc ggc gaa	672
Tyr Leu Ala Ala Val Glu Arg Met His Pro Met Gly Arg Ile Gly Glu	
210 215 220	
cca gcc gaa gtc gcc agc gcc atc gtc ttt ctc gcc tcc gac gac gcc	720
Pro Ala Glu Val Ala Ser Ala Ile Val Phe Leu Ala Ser Asp Asp Ala	
225 230 235 240	
tcc ttc atc acc ggc gtc gtg ctg ccg gtc gac ggc gga tat cta gcg	768
Ser Phe Ile Thr Gly Ala Val Leu Pro Val Asp Gly Gly Tyr Leu Ala	

245

250

255

774

cag tag  
Gln

<210> 1668  
 <211> 257  
 <212> PRT  
 <213> Mycobacterium sp. JLS

<400> 1668  
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 1 5 10 15  
 Gly Ala Ala Phe Gly Ile Gly Arg Ala Thr Ala Val Leu Phe Ala Arg  
 20 25 30  
 Glu Gly Ala Arg Leu Val Val Thr Asp Ile Gln Ser Glu Pro Leu Leu  
 35 40 45  
 Ala Leu Ala Asp Glu Leu Arg His Ala Gly Ala Asp Val Glu Pro Val  
 50 55 60  
 Val Gly Asp Val Ser Val Glu Tyr Asp Ala Gly Arg Met Ile Gly Ala  
 65 70 75 80  
 Ala Val Asp Arg Phe Gly Arg Leu Asp Val Leu Val Ala Asn Ala Gly  
 85 90 95  
 Ile Ile Pro Leu Gly Asp Ala Leu Glu Met Thr Ala Ala Gly Trp Asp  
 100 105 110  
 Glu Val Met Ala Ile Asp Gly Arg Gly Met Phe Leu Cys Cys Lys Phe  
 115 120 125  
 Ala Ile Glu Ala Met Leu Pro Thr Gly Gly Gly Ala Ile Val Cys Leu  
 130 135 140  
 Ser Ser Ile Ser Gly Leu Ala Gly Gln Lys Arg Gln Ala Ala Tyr Gly  
 145 150 155 160  
 Pro Ala Lys Phe Ile Ala Thr Gly Leu Thr Lys His Leu Ala Val Glu  
 165 170 175  
 Trp Ala Asp Arg Gly Ile Arg Val Asn Ala Val Ala Pro Gly Thr Ile  
 180 185 190  
 Arg Thr Glu Arg Val Lys Arg Phe Pro Glu Glu Pro Gly Gly Ser Glu  
 195 200 205  
 Tyr Leu Ala Ala Val Glu Arg Met His Pro Met Gly Arg Ile Gly Glu  
 210 215 220  
 Pro Ala Glu Val Ala Ser Ala Ile Val Phe Leu Ala Ser Asp Asp Ala  
 225 230 235 240  
 Ser Phe Ile Thr Gly Ala Val Leu Pro Val Asp Gly Gly Tyr Leu Ala  
 245 250 255  
 Gln

<210> 1669  
 <211> 750  
 <212> DNA  
 <213> Clostridium difficile 630

<220>  
 <221> CDS  
 <222> (1)..(750)  
 <223> transl\_table=11

<400> 1669  
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 1 5 10 15  
 ggt ata gga aaa gaa ata gca aaa aaa cta gca tct ttt ggg gct gat 96  
 Gly Ile Gly Lys Glu Ile Ala Lys Lys Leu Ala Ser Phe Gly Ala Asp  
 20 25 30  
 gta gta atc aat tat act tct aaa gaa gat gaa gca cta aaa act aaa 144  
 Val Val Ile Asn Tyr Thr Ser Lys Glu Asp Glu Ala Leu Lys Thr Lys  
 35 40 45  
 aat gaa ata gaa agt atg ggg gta aag tgt acc tct ata aaa tgt gat 192  
 Asn Glu Ile Glu Ser Met Gly Val Lys Cys Thr Ser Ile Lys Cys Asp  
 50 55 60

## PhoenixTemp32470.tmp.txt

gtg	tct	aaa	ttt	gat	gaa	gtg	aat	caa	atg	ata	gat	tct	ggt	gta	agc	240
Val	Ser	Lys	Phe	Asp	Glu	Val	Asn	Gln	Met	Ile	Asp	Ser	Val	Val	Ser	
65					70					75					80	
gaa	ttt	gga	aaa	att	gat	ata	ttg	ggt	aat	aat	gca	ggc	ata	act	aaa	288
Glu	Phe	Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	
			85						90					95		
gat	ggt	ctg	ctt	atg	aga	atg	aaa	gaa	gaa	gat	ttt	gat	aga	ggt	ata	336
Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Glu	Glu	Asp	Phe	Asp	Arg	Val	Ile	
			100					105					110			
gat	ata	aac	tta	aaa	ggt	gtc	ttt	aat	tgt	aca	aaa	gca	ggt	act	aaa	384
Asp	Ile	Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Lys	Ala	Val	Thr	Lys	
		115				120						125				
cct	atg	atg	aaa	aag	aag	tat	gga	aga	ata	ata	aat	atg	act	tca	gta	432
Pro	Met	Met	Lys	Lys	Lys	Tyr	Gly	Arg	Ile	Ile	Asn	Met	Thr	Ser	Val	
	130					135					140					
ggt	gga	att	atg	ggt	aat	gca	ggg	caa	act	aat	tat	tgt	gca	tca	aaa	480
Val	Gly	Ile	Met	Gly	Asn	Ala	Gly	Gln	Thr	Asn	Tyr	Cys	Ala	Ser	Lys	
145					150					155					160	
gca	ggt	gta	att	gga	ttt	aca	aaa	gct	tct	gca	aga	gag	tta	gca	tca	528
Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Ala	Ser	Ala	Arg	Glu	Leu	Ala	Ser	
			165					170					175			
aga	aac	ata	aat	ata	aat	gca	gta	gca	cct	gga	ttt	ata	gaa	aca	gat	576
Arg	Asn	Ile	Asn	Ile	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Asp	
			180					185					190			
atg	act	aaa	gta	cta	agt	gat	gat	gta	aaa	gaa	tca	aca	cta	gca	aac	624
Met	Thr	Lys	Val	Leu	Ser	Asp	Asp	Val	Lys	Glu	Ser	Thr	Leu	Ala	Asn	
		195				200						205				
ata	cca	aag	aaa	tct	tat	ggt	aaa	cca	gaa	gat	gta	gcc	aat	gcc	gta	672
Ile	Pro	Lys	Lys	Ser	Tyr	Gly	Lys	Pro	Glu	Asp	Val	Ala	Asn	Ala	Val	
	210					215					220					
gca	ttt	tta	ggt	agt	gac	atg	tca	agt	tat	ata	aca	gga	caa	gta	ata	720
Ala	Phe	Leu	Val	Ser	Asp	Met	Ser	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	
225					230					235					240	
aat	gta	gat	ggt	gga	atg	gta	atg	caa	taa							750
Asn	Val	Asp	Gly	Gly	Met	Val	Met	Gln								
			245													

&lt;210&gt; 1670

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Clostridium difficile 630

&lt;400&gt; 1670

Met	Ile	Asn	Leu	Thr	Gly	Gln	Val	Ala	Val	Val	Thr	Gly	Gly	Ser	Arg	
1				5					10					15		
Gly	Ile	Gly	Lys	Glu	Ile	Ala	Lys	Lys	Leu	Ala	Ser	Phe	Gly	Ala	Asp	
			20					25					30			
Val	Val	Ile	Asn	Tyr	Thr	Ser	Lys	Glu	Asp	Glu	Ala	Leu	Lys	Thr	Lys	
			35				40					45				
Asn	Glu	Ile	Glu	Ser	Met	Gly	Val	Lys	Cys	Thr	Ser	Ile	Lys	Cys	Asp	
	50					55					60					
Val	Ser	Lys	Phe	Asp	Glu	Val	Asn	Gln	Met	Ile	Asp	Ser	Val	Val	Ser	
65					70					75					80	
Glu	Phe	Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	
			85						90					95		
Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Glu	Asp	Phe	Asp	Arg	Val	Ile		
			100					105				110				
Asp	Ile	Asn	Lys	Gly	Val	Phe	Asn	Cys	Thr	Lys	Ala	Val	Thr	Lys		
		115				120					125					
Pro	Met	Met	Lys	Lys	Lys	Tyr	Gly	Arg	Ile	Ile	Asn	Met	Thr	Ser	Val	
	130					135					140					
Val	Gly	Ile	Met	Gly	Asn	Ala	Gly	Gln	Thr	Asn	Tyr	Cys	Ala	Ser	Lys	
145					150					155					160	
Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Ala	Ser	Ala	Arg	Glu	Leu	Ala	Ser	
			165					170					175			
Arg	Asn	Ile	Asn	Ile	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Asp	
			180					185					190			
Met	Thr	Lys	Val	Leu	Ser	Asp	Asp	Val	Lys	Glu	Ser	Thr	Leu	Ala	Asn	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Ile Pro Lys Lys Ser Tyr Gly Lys Pro Glu Asp Val Ala Asn Ala Val  
 210 220  
 Ala Phe Leu Val Ser Asp Met Ser Ser Tyr Ile Thr Gly Gln Val Ile  
 225 230 235 240  
 Asn Val Asp Gly Gly Met Val Met Gln  
 245

<210> 1671  
 <211> 765  
 <212> DNA  
 <213> Burkholderia vietnamiensis G4

<220>  
 <221> CDS  
 <222> (1)..(765)  
 <223> transl\_table=11

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 Met Arg Leu Gln Gly Lys Arg Ala Leu Val Thr Ala Ala Gly Gln Gly  
 1 5 10 15  
 atc ggc cgc gcg acc gcg ctg cgg ttc gca agc gag ggc gcc gac gtg 96  
 Ile Gly Arg Ala Thr Ala Leu Arg Phe Ala Ser Glu Gly Ala Asp Val  
 20 25 30  
 ctg gcg acc gac atc aac gac acc gcg ctc gag cag ctc gca gcc gat 144  
 Leu Ala Thr Asp Ile Asn Asp Thr Ala Leu Glu Gln Leu Ala Ala Asp  
 35 40 45  
 gcg caa cgt gcg ggc ggc cgg ctg tcc acg cgc cgg ctc gac gtg acc 192  
 Ala Gln Arg Ala Gly Gly Arg Leu Ser Thr Arg Arg Leu Asp Val Thr  
 50 55 60  
 gct gcg gcc gac gtg gcg gcg ctg gca gcg cgg gaa cgc gcg ttc gac 240  
 Ala Ala Ala Asp Val Ala Ala Leu Ala Ala Arg Glu Arg Ala Phe Asp  
 65 70 75 80  
 gtg ctg ttc aac tgc gcg ggc ttc gtg cat cac ggc tcg atc ctc gac 288  
 Val Leu Phe Asn Cys Ala Gly Phe Val His His Gly Ser Ile Leu Asp  
 85 90 95  
 tgc gac gag cgc gcg tgg gcg ttt tcg ttc gat ctg aac gtc acg tcg 336  
 Cys Asp Glu Arg Ala Trp Ala Phe Ser Phe Asp Leu Asn Val Thr Ser  
 100 105 110  
 atg tac cgg ctg atc cgc gcg ctg ctg ccg gcg atg ctg gag gcg ggc 384  
 Met Tyr Arg Leu Ile Arg Ala Leu Leu Pro Ala Met Leu Glu Ala Gly  
 115 120 125  
 ggc gcg tcg atc gtc aac atg gcg tcc gcc gcg tcg agc gtg aag ggc 432  
 Gly Ala Ser Ile Val Asn Met Ala Ser Ala Ala Ser Ser Val Lys Gly  
 130 135 140  
 gtg ccg aac cgt ttc gtc tac ggc acg acc aag gcg gcc gtg atc ggc 480  
 Val Pro Asn Arg Phe Val Tyr Gly Thr Thr Lys Ala Ala Val Ile Gly  
 145 150 155 160  
 ctc acc aag tcg gtc gcc gcc gat ttc gtc gaa cgg cgc att cgc tgc 528  
 Leu Thr Lys Ser Val Ala Ala Asp Phe Val Glu Arg Arg Ile Arg Cys  
 165 170 175  
 aac gcg atc tgt ccc ggc acg atc gcg tcg ccg tcg ctc gaa cag cgc 576  
 Asn Ala Ile Cys Pro Gly Thr Ile Ala Ser Pro Ser Leu Glu Gln Arg  
 180 185 190  
 atc gcc gag cag gcg cgc gca cgc gag gtg tcg acc gac agc gtg cgc 624  
 Ile Ala Glu Gln Ala Arg Ala Arg Glu Val Ser Thr Asp Ser Val Arg  
 195 200 205  
 gcg gcc ttc gtc gcg cgc cag ccg atg ggc cgc atc ggc acc gcc gac 672  
 Ala Ala Phe Val Ala Arg Gln Pro Met Gly Arg Ile Gly Thr Ala Asp  
 210 215 220  
 gaa gtg gcc gcg ctc gcc gcg tat ctc gcg tcc gac gaa gcg tcg ttc 720  
 Glu Val Ala Ala Leu Ala Ala Tyr Leu Ala Ser Asp Glu Ala Ser Phe  
 225 230 235 240  
 acc acc ggc acg att cac gtg atc gac ggc ggc tgg tcg aac tga 765  
 Thr Thr Gly Thr Ile His Val Ile Asp Gly Gly Trp Ser Asn  
 245 250

<210> 1672  
 <211> 254

&lt;212&gt; PRT

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;400&gt; 1672

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Met Arg Leu Gln Gly Lys Arg Ala Leu Val Thr Ala Ala Gly Gln Gly
1      5      10      15
Ile Gly Arg Ala Thr Ala Leu Arg Phe Ala Ser Glu Gly Ala Asp Val
20      25      30
Leu Ala Thr Asp Ile Asn Asp Thr Ala Leu Glu Gln Leu Ala Ala Asp
35      40      45
Ala Gln Arg Ala Gly Gly Arg Leu Ser Thr Arg Arg Leu Asp Val Thr
50      55      60
Ala Ala Ala Asp Val Ala Ala Leu Ala Ala Arg Glu Arg Ala Phe Asp
65      70      75      80
Val Leu Phe Asn Cys Ala Gly Phe Val His His Gly Ser Ile Leu Asp
85      90      95
Cys Asp Glu Arg Ala Trp Ala Phe Ser Phe Asp Leu Asn Val Thr Ser
100     105     110
Met Tyr Arg Leu Ile Arg Ala Leu Leu Pro Ala Met Leu Glu Ala Gly
115     120     125
Gly Ala Ser Ile Val Asn Met Ala Ser Ala Ala Ser Ser Val Lys Gly
130     135     140
Val Pro Asn Arg Phe Val Tyr Gly Thr Thr Lys Ala Ala Val Ile Gly
145     150     155     160
Leu Thr Lys Ser Val Ala Ala Asp Phe Val Glu Arg Arg Ile Arg Cys
165     170     175
Asn Ala Ile Cys Pro Gly Thr Ile Ala Ser Pro Ser Leu Glu Gln Arg
180     185     190
Ile Ala Glu Gln Ala Arg Ala Arg Glu Val Ser Thr Asp Ser Val Arg
195     200     205
Ala Ala Phe Val Ala Arg Gln Pro Met Gly Arg Ile Gly Thr Ala Asp
210     215     220
Glu Val Ala Ala Leu Ala Ala Tyr Leu Ala Ser Asp Glu Ala Ser Phe
225     230     235     240
Thr Thr Gly Thr Ile His Val Ile Asp Gly Gly Trp Ser Asn
245     250

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&lt;210&gt; 1673

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1673

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atg gcg cgg ctg gcc ggc aag gtc gcc gcg gtg acg ggc gcg gca cgc      48
Met Ala Arg Leu Ala Gly Lys Val Ala Ala Val Thr Gly Ala Ala Arg
1      5      10      15
ggc atc ggc gcg ggc atc gcg cat gcg ttc gcg cgc gag ggc gcg tgc      96
Gly Ile Gly Ala Ala Ile Ala His Ala Phe Ala Arg Glu Gly Ala Cys
20      25      30
gtc gcg ctg ctc gac gtc gac gtc gag cac gcg cag cgc acc gcc gcc      144
Val Ala Leu Leu Asp Val Asp Val Glu His Ala Gln Arg Thr Ala Ala
35      40      45
gcg atc gcc gcc gag gtc gac ggc gcg cgc gtg ctc gca ctg cat gcg      192
Ala Ile Ala Ala Glu Val Asp Gly Ala Arg Val Leu Ala Leu His Ala
50      55      60
gac gtc acg cgc cag gac tcg gtg cgc gct gcg ctg gcg cgc acc gaa      240
Asp Val Thr Arg Gln Asp Ser Val Arg Ala Ala Leu Ala Arg Thr Glu
65      70      75      80
gcc gaa ttc ggc ccg ctc gac gtg ctg gtg aac aac gcg ggc atc aac      288
Ala Glu Phe Gly Pro Leu Asp Val Leu Val Asn Asn Ala Gly Ile Asn
85      90      95
gtg ttc gcc gat ccg ctg acg atg agc gac gac gac tgg cgc cgc tgc      336
Val Phe Ala Asp Pro Leu Thr Met Ser Asp Asp Asp Trp Arg Arg Cys
100

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## PhoenixTemp32470.tmp.txt

ttc	gcg	gtc	gac	ctc	gac	ggc	gtg	tgg	cac	ggc	tgc	cgc	gcg	gcg	ctg	384
Phe	Ala	Val	Asp	Leu	Asp	Gly	Val	Trp	His	Gly	Cys	Arg	Ala	Ala	Leu	
		115					120					125				
ccg	ggc	atg	gtc	gaa	cgt	ggc	cgc	ggc	tgc	atc	gtg	aac	atc	gcg	tcg	432
Pro	Gly	Met	Val	Glu	Arg	Gly	Arg	Gly	Cys	Ile	Val	Asn	Ile	Ala	Ser	
	130					135					140					
acg	cat	gcg	ttc	agc	atc	att	ccg	ggc	tgc	ttt	ccg	tac	ccg	gtc	gcg	480
Thr	His	Ala	Phe	Ser	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	
145					150					155					160	
aaa	cac	ggc	gtg	ctc	ggg	ctc	acg	cgt	gcg	ctc	ggc	atc	gaa	tac	gcg	528
Lys	His	Gly	Val	Leu	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala	
			165						170					175		
gcg	cac	aac	gtg	cgg	gtg	aac	gcg	atc	gcg	ccc	ggc	tac	atc	gac	acg	576
Ala	His	Asn	Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Asp	Thr	
			180					185					190			
cag	ctc	acc	cgc	gac	tgg	tgg	gag	gcg	cag	gac	gac	ccg	gcg	gcg	gca	624
Gln	Leu	Thr	Arg	Asp	Trp	Trp	Glu	Ala	Gln	Asp	Asp	Pro	Ala	Ala	Ala	
		195					200					205				
cgc	gcg	cag	acg	ctc	gcg	ctg	cag	ccg	atg	aag	cgc	atc	ggc	cag	ccg	672
Arg	Ala	Gln	Thr	Leu	Ala	Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Gln	Pro	
	210					215					220					
gac	gaa	gtc	gcg	atg	acg	gcc	gtg	ttc	ctc	gcg	tcc	gac	gag	gcg	ccg	720
Asp	Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	
225					230					235					240	
ttc	atc	aat	gcc	acg	tgc	atc	acc	gtc	gac	ggc	ggg	cgc	gcg	gcg	ctg	768
Phe	Ile	Asn	Ala	Thr	Cys	Ile	Thr	Val	Asp	Gly	Gly	Arg	Ala	Ala	Leu	
				245					250					255		
tac	cac	gac	tga													780
Tyr	His	Asp														

&lt;210&gt; 1674

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;400&gt; 1674

Met	Ala	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ala	Val	Thr	Gly	Ala	Ala	Arg	
1				5				10						15		
Gly	Ile	Gly	Ala	Ala	Ile	Ala	His	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Cys	
			20					25					30			
Val	Ala	Leu	Leu	Asp	Val	Asp	Val	Glu	His	Ala	Gln	Arg	Thr	Ala	Ala	
		35				40						45				
Ala	Ile	Ala	Ala	Glu	Val	Asp	Gly	Ala	Arg	Val	Leu	Ala	Leu	His	Ala	
	50					55					60					
Asp	Val	Thr	Arg	Gln	Asp	Ser	Val	Arg	Ala	Ala	Leu	Ala	Arg	Thr	Glu	
65				70					75						80	
Ala	Glu	Phe	Gly	Pro	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Asn	
			85					90						95		
Val	Phe	Ala	Asp	Pro	Leu	Thr	Met	Ser	Asp	Asp	Asp	Trp	Arg	Arg	Cys	
			100					105					110			
Phe	Ala	Val	Asp	Leu	Asp	Gly	Val	Trp	His	Gly	Cys	Arg	Ala	Ala	Leu	
		115				120						125				
Pro	Gly	Met	Val	Glu	Arg	Gly	Arg	Gly	Cys	Ile	Val	Asn	Ile	Ala	Ser	
	130					135					140					
Thr	His	Ala	Phe	Ser	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	
145					150					155					160	
Lys	His	Gly	Val	Leu	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala	
			165						170					175		
Ala	His	Asn	Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Asp	Thr	
			180					185					190			
Gln	Leu	Thr	Arg	Asp	Trp	Trp	Glu	Ala	Gln	Asp	Asp	Pro	Ala	Ala	Ala	
		195					200					205				
Arg	Ala	Gln	Thr	Leu	Ala	Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Gln	Pro	
	210					215					220					
Asp	Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	
225					230					235					240	
Phe	Ile	Asn	Ala	Thr	Cys	Ile	Thr	Val	Asp	Gly	Gly	Arg	Ala	Ala	Leu	
				245					250					255		

Tyr His Asp

<210> 1675  
 <211> 780  
 <212> DNA  
 <213> Streptococcus pyogenes str. Manfredo

<220>  
 <221> CDS  
 <222> (1)..(780)

<400> 1675  
 atg aca cat act aaa gaa gtt gca ttt atc act ggt gct gca agc gga 48  
 Met Thr His Thr Lys Glu Val Ala Phe Ile Thr Gly Ala Ala Ser Gly  
 1 5 10 15  
 att gga aaa caa atc ggg gaa acc ttc tta aaa gaa ggt aaa acg gtt 96  
 Ile Gly Lys Gln Ile Gly Glu Thr Phe Leu Lys Glu Gly Lys Thr Val  
 20 25 30  
 gtc ttc tca gat att aat aaa gaa aag cta gat gag gtt gtt gct gac 144  
 Val Phe Ser Asp Ile Asn Lys Glu Lys Leu Asp Glu Val Val Ala Asp  
 35 40 45  
 tat act aaa gaa ggc tat gac gct ttt agt gtt gtg tgc gat gtc acc 192  
 Tyr Thr Lys Glu Gly Tyr Asp Ala Phe Ser Val Cys Asp Val Thr  
 50 55 60  
 aaa gaa gaa gcc atc aat gct gct att gat acg gtt gtt gaa aaa tat 240  
 Lys Glu Glu Ala Ile Asn Ala Ala Ile Asp Thr Val Val Glu Lys Tyr  
 65 70 75 80  
 ggt cgt att gat att ttg gtt aac aac gca ggc ctt caa cat gtt gcc 288  
 Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Leu Gln His Val Ala  
 85 90 95  
 atg att gaa gat ttt cca act gaa aaa ttt gaa ttc atg att aaa atc 336  
 Met Ile Glu Asp Phe Pro Thr Glu Lys Phe Glu Phe Met Ile Lys Ile  
 100 105 110  
 atg ttg aca gca cca ttt att gcc att aaa cgt gct ttt cct aca atg 384  
 Met Leu Thr Ala Pro Phe Ile Ala Ile Lys Arg Ala Phe Pro Thr Met  
 115 120 125  
 aaa gct caa aaa cac ggt cgt att att aat atg gct tct atc aat ggt 432  
 Lys Ala Gln Lys His Gly Arg Ile Ile Asn Met Ala Ser Ile Asn Gly  
 130 135 140  
 gtc att ggt ttt gct ggc aaa tcc gcc tac aat tca gct aaa cac ggc 480  
 Val Ile Gly Phe Ala Gly Lys Ser Ala Tyr Asn Ser Ala Lys His Gly  
 145 150 155 160  
 ttg atc ggt ctg acc aaa gta act gcc tta gaa gct gct gat tca ggc 528  
 Leu Ile Gly Leu Thr Lys Val Thr Ala Leu Glu Ala Ala Asp Ser Gly  
 165 170 175  
 att acg gtc aat gcc att tgt cct gga tat gtt gac aca cca ctg gtt 576  
 Ile Thr Val Asn Ala Ile Cys Pro Gly Tyr Val Asp Thr Pro Leu Val  
 180 185 190  
 cgt ggc cag ttt gaa gac ctt tcc aaa aca aga ggt att ccc ctt gaa 624  
 Arg Gly Gln Phe Glu Asp Leu Ser Lys Thr Arg Gly Ile Pro Leu Glu  
 195 200 205  
 aat gtt ctt gaa gaa gtg cta tac cca ctt gtt cct caa aaa cgc ctc 672  
 Asn Val Leu Glu Glu Val Leu Tyr Pro Leu Val Pro Gln Lys Arg Leu  
 210 215 220  
 att gac gtt caa gaa att gca gac tat gtg tct ttc ctt gcc agt gat 720  
 Ile Asp Val Gln Glu Ile Ala Asp Tyr Val Ser Phe Leu Ala Ser Asp  
 225 230 235 240  
 aag gca aaa ggt gtt aca ggt caa gcc tgt atc tta gac ggt ggc tac 768  
 Lys Ala Lys Gly Val Thr Gly Gln Ala Cys Ile Leu Asp Gly Gly Tyr  
 245 250 255  
 act gct caa taa 780  
 Thr Ala Gln

<210> 1676  
 <211> 259  
 <212> PRT  
 <213> Streptococcus pyogenes str. Manfredo



## PhoenixTemp32470.tmp.txt

```

<400> 1676
Met Thr His Thr Lys Glu Val Ala Phe Ile Thr Gly Ala Ala Ser Gly
1      5      10      15
Ile Gly Lys Gln Ile Gly Glu Thr Phe Leu Lys Glu Gly Lys Thr Val
20      25      30
Val Phe Ser Asp Ile Asn Lys Glu Lys Leu Asp Glu Val Val Ala Asp
35      40      45
Tyr Thr Lys Glu Gly Tyr Asp Ala Phe Ser Val Val Cys Asp Val Thr
50      55      60
Lys Glu Glu Ala Ile Asn Ala Ala Ile Asp Thr Val Val Glu Lys Tyr
65      70      75
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Leu Gln His Val Ala
85      90      95
Met Ile Glu Asp Phe Pro Thr Glu Lys Phe Glu Phe Met Ile Lys Ile
100     105     110
Met Leu Thr Ala Pro Phe Ile Ala Ile Lys Arg Ala Phe Pro Thr Met
115     120     125
Lys Ala Gln Lys His Gly Arg Ile Ile Asn Met Ala Ser Ile Asn Gly
130     135     140
Val Ile Gly Phe Ala Gly Lys Ser Ala Tyr Asn Ser Ala Lys His Gly
145     150     155
Leu Ile Gly Leu Thr Lys Val Thr Ala Leu Glu Ala Ala Asp Ser Gly
165     170     175
Ile Thr Val Asn Ala Ile Cys Pro Gly Tyr Val Asp Thr Pro Leu Val
180     185     190
Arg Gly Gln Phe Glu Asp Leu Ser Lys Thr Arg Gly Ile Pro Leu Glu
195     200     205
Asn Val Leu Glu Glu Val Leu Tyr Pro Leu Val Pro Gln Lys Arg Leu
210     215     220
Ile Asp Val Gln Glu Ile Ala Asp Tyr Val Ser Phe Leu Ala Ser Asp
225     230     235
Lys Ala Lys Gly Val Thr Gly Gln Ala Cys Ile Leu Asp Gly Gly Tyr
245     250     255
Thr Ala Gln

```

```

<210> 1677
<211> 801
<212> DNA
<213> Bradyrhizobium sp. ORS278

```

```

<220>
<221> CDS
<222> (1)..(801)
<223> transl_table=11

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```

<400> 1677
atg gcc gtg acg gaa tca cct gag ctc acc gac aag gtc gcc ttg atc      48
Met Ala Val Thr Glu Ser Pro Glu Leu Thr Asp Lys Val Ala Leu Ile
1      5      10      15
acc ggc gcc gca cgc ggc atc ggg ctc gcg acc gcc aag cgg ttg ttg      96
Thr Gly Ala Ala Arg Gly Ile Gly Leu Ala Thr Ala Lys Arg Phe Leu
20      25      30
cac gaa ggc tgg cgg gtg gcg ctg ctc gac ata gag gcc aag ctg ctc      144
His Glu Gly Trp Arg Val Ala Leu Leu Asp Ile Glu Ala Lys Leu Leu
35      40      45
gcg gat tcg gcc gct gcg ctc aaa tgt ccc gat cgc acg ctg gcg ctg      192
Ala Asp Ser Ala Ala Ala Leu Lys Cys Pro Asp Arg Thr Leu Ala Leu
50      55      60
cat tgc gac gtt gca gat gca gcc atg gtc gcc gac gcg ctg gag cgt      240
His Cys Asp Val Ala Asp Ala Ala Met Val Ala Asp Ala Leu Glu Arg
65      70      75
atc gcc acg cga ttc ggc cgg ctc gat gcg ctc gtc aac aat gcc ggg      288
Ile Ala Thr Arg Phe Gly Arg Leu Asp Ala Leu Val Asn Asn Ala Gly
85      90      95
gtc gcg cgg ttc gcg tcg gtg atg gaa acc agc gag acc gat tgg cag      336
Val Ala Arg Phe Ala Ser Val Met Glu Thr Ser Glu Thr Asp Trp Gln
100

```

## PhoenixTemp32470.tmp.txt

cg	at	ct	ga	gt	aa	tt	ac	gg	cc	tt	ct	tg	ac	cg	gc	384
Arg	Ile	Leu	Asp	Val	Asn	Leu	Thr	Gly	Pro	Phe	Leu	Cys	Thr	Arg	Ala	
		115					120					125				
gc	gt	cc	ct	at	cg	ga	ca	gg	gg	gc	at	gt	aa	at	ac	432
Ala	Val	Pro	Leu	Met	Arg	Glu	His	Gly	Gly	Ala	Ile	Val	Asn	Ile	Thr	
	130					135					140					
tc	at	tc	gc	gt	cg	gc	tc	ac	ct	cg	tc	gc	ta	gg	ac	480
Ser	Ile	Ser	Ala	Val	Arg	Ala	Ser	Thr	Leu	Arg	Ser	Ala	Tyr	Gly	Thr	
145					150					155					160	
ag	aa	gc	gc	ct	cg	ca	ct	ac	aa	ca	ct	gc	gt	ga	ct	528
Ser	Lys	Ala	Ala	Leu	Ala	His	Leu	Thr	Lys	Gln	Leu	Ala	Val	Glu	Leu	
				165					170					175		
gc	tc	gc	gg	at	cg	gt	aa	gc	gt	gc	cc	gg	cc	gt	ga	576
Ala	Ser	Ala	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Glu	
			180					185					190			
ac	gc	at	gc	cg	gc	gt	ca	ac	cc	ga	at	cg	gc	ga	ta	624
Thr	Ala	Met	Ala	Arg	Ala	Val	His	Thr	Pro	Glu	Ile	Arg	Ala	Asp	Tyr	
		195					200					205				
ca	ga	gc	at	cc	ct	aa	cg	ta	gg	ct	ga	ga	ga	ct	gc	672
His	Asp	Ala	Ile	Pro	Leu	Asn	Arg	Tyr	Gly	Leu	Glu	Glu	Glu	Leu	Ala	
	210					215					220					
ga	gc	at	tt	tt	ct	ag	tc	ga	cg	tc	ag	ta	at	ac	gg	720
Glu	Ala	Ile	Phe	Phe	Leu	Ser	Ser	Glu	Arg	Ser	Ser	Tyr	Ile	Thr	Gly	
225					230					235					240	
ca	gt	ct	gc	gt	ga	gg	gg	tt	ga	gc	gc	ga	at	gg	ct	768
Gln	Val	Leu	Ala	Val	Asp	Gly	Gly	Phe	Asp	Ala	Ala	Gly	Ile	Gly	Leu	
				245					250					255		
cc	ac	tt	cg	gg	ca	cg	cg	aa	gc	tga						801
Pro	Thr	Leu	Arg	Gly	Gln	Arg	Arg	Asn	Ala							
			260					265								

&lt;210&gt; 1678

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium sp. ORS278

&lt;400&gt; 1678

Met	Ala	Val	Thr	Glu	Ser	Pro	Glu	Leu	Thr	Asp	Lys	Val	Ala	Leu	Ile	
1				5					10					15		
Thr	Gly	Ala	Ala	Arg	Gly	Ile	Gly	Leu	Ala	Thr	Ala	Lys	Arg	Phe	Leu	
			20					25					30			
His	Glu	Gly	Trp	Arg	Val	Ala	Leu	Leu	Asp	Ile	Glu	Ala	Lys	Leu	Leu	
		35					40					45				
Ala	Asp	Ser	Ala	Ala	Ala	Leu	Lys	Cys	Pro	Asp	Arg	Thr	Leu	Ala	Leu	
	50					55				60						
His	Cys	Asp	Val	Ala	Asp	Ala	Ala	Met	Val	Ala	Asp	Ala	Leu	Glu	Arg	
65					70				75						80	
Ile	Ala	Thr	Arg	Phe	Gly	Arg	Leu	Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	
			85					90					95			
Val	Ala	Arg	Phe	Ala	Ser	Val	Met	Glu	Thr	Ser	Glu	Thr	Asp	Trp	Gln	
		100						105				110				
Arg	Ile	Leu	Asp	Val	Asn	Leu	Thr	Gly	Pro	Phe	Leu	Cys	Thr	Arg	Ala	
		115					120					125				
Ala	Val	Pro	Leu	Met	Arg	Glu	His	Gly	Gly	Ala	Ile	Val	Asn	Ile	Thr	
	130					135				140						
Ser	Ile	Ser	Ala	Val	Arg	Ala	Ser	Thr	Leu	Arg	Ser	Ala	Tyr	Gly	Thr	
145					150					155					160	
Ser	Lys	Ala	Ala	Leu	Ala	His	Leu	Thr	Lys	Gln	Leu	Ala	Val	Glu	Leu	
				165					170					175		
Ala	Ser	Ala	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Glu	
			180					185					190			
Thr	Ala	Met	Ala	Arg	Ala	Val	His	Thr	Pro	Glu	Ile	Arg	Ala	Asp	Tyr	
		195					200					205				
His	Asp	Ala	Ile	Pro	Leu	Asn	Arg	Tyr	Gly	Leu	Glu	Glu	Glu	Leu	Ala	
	210					215					220					
Glu	Ala	Ile	Phe	Phe	Leu	Ser	Ser	Glu	Arg	Ser	Ser	Tyr	Ile	Thr	Gly	
225					230					235					240	
Gln	Val	Leu	Ala	Val	Asp	Gly	Gly	Phe	Asp	Ala	Ala	Gly	Ile	Gly	Leu	
				245					250					255		

## PhoenixTemp32470.tmp.txt

Pro Thr Leu Arg Gly Gln Arg Arg Asn Ala  
260 265

<210> 1679  
<211> 735  
<212> DNA  
<213> Bradyrhizobium sp. ORS278

<220>  
<221> CDS  
<222> (1)..(735)  
<223> transl\_table=11

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<400> 1679
atg tcc gac cgc ctc aag ggc aag cgc gcc ttt gtc acc gcc gcc gct      48
Met Ser Asp Arg Leu Lys Gly Lys Arg Ala Phe Val Thr Ala Ala Ala
1      5      10      15
gcc ggc atc ggc cgc gcc tgc gcc atc gcc ttc gcg cgc cag gcc gcc      96
Ala Gly Ile Gly Arg Ala Cys Ala Ile Ala Phe Ala Arg Gln Gly Ala
20      25      30
acc gtg ttt gcc acc gac atc gat gag aag ggc ctg gcg acg ctg aag      144
Thr Val Phe Ala Thr Asp Ile Asp Glu Lys Gly Leu Ala Thr Leu Lys
35      40      45
agc gag ggc atc gcc gag gtt acc acg ctc gac gtg cgc aac aca gcc      192
Ser Glu Gly Ile Ala Glu Val Thr Thr Leu Asp Val Arg Asn Thr Ala
50      55      60
gcc gtg aac gcg atg gcc gaa cgg gtc gcc aag gtc gag atc ctg ctc      240
Ala Val Asn Ala Met Ala Glu Arg Val Gly Lys Val Glu Ile Leu Leu
65      70      75      80
aat gct gcc ggc ttc gtg cac aac ggc acc atc ctc gac tgc tcg gac      288
Asn Ala Ala Gly Phe Val His Asn Gly Thr Ile Leu Asp Cys Ser Asp
85      90      95
ggc gat tgg gac ttc tcg ttc gac ctg aac gtc aaa tcg atg cac cgc      336
Gly Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg
100      105      110
acg atc cgc gcc ttc ctg ccg aaa atg ctc gat cag gcc gcc gcc gcc      384
Thr Ile Arg Ala Phe Leu Pro Lys Met Leu Asp Gln Gly Gly Gly Ala
115      120      125
atc gtc aac atc gcc tcc gcc gcc gcc gtc ttc aag gcg gcg ccg aac      432
Ile Val Asn Ile Ala Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn
130      135      140
cgc tac gtc tat ggc gcc acc aaa gcc gct gtc gcg gcg ctg acg cgc      480
Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg
145      150      155      160
tcg gtc gcg gcc gac ttc gtg gcc agg aag atc cgc tgc aac tgc atc      528
Ser Val Ala Ala Asp Phe Val Ala Arg Lys Ile Arg Cys Asn Cys Ile
165      170      175
tgc cca ggc acg atc gaa acg ccg tcg atg ctg gga cgc gcg gca tcg      576
Cys Pro Gly Thr Ile Glu Thr Pro Ser Met Leu Gly Arg Ala Ala Ser
180      185      190
gcc ggt ccg aac ggc ctc gag atg ttc atc tcg cgc cag ccg atg gcc      624
Ala Gly Pro Asn Gly Leu Glu Met Phe Ile Ser Arg Gln Pro Met Gly
195      200      205
cgg ctc ggc acc gcc gaa gag atc gcg cat ctc gcc gtg tat ctc gcc      672
Arg Leu Gly Thr Ala Glu Glu Ile Ala His Leu Ala Val Tyr Leu Ala
210      215      220
agc gac gag agc gcg ttc acc acc ggc gtc gcg cac acg atc gac gcc      720
Ser Asp Glu Ser Ala Phe Thr Thr Gly Val Ala His Thr Ile Asp Gly
225      230      235      240
ggc tgg acg ctg tag
Gly Trp Thr Leu
735

```

<210> 1680  
<211> 244  
<212> PRT  
<213> Bradyrhizobium sp. ORS278

<400> 1680

## PhoenixTemp32470.tmp.txt

Met Ser Asp Arg Leu Lys Gly Lys Arg Ala Phe Val Thr Ala Ala Ala  
 1 5 10 15  
 Ala Gly Ile Gly Arg Ala Cys Ala Ile Ala Phe Ala Arg Gln Gly Ala  
 20 25 30  
 Thr Val Phe Ala Thr Asp Ile Asp Glu Lys Gly Leu Ala Thr Leu Lys  
 35 40 45  
 Ser Glu Gly Ile Ala Glu Val Thr Thr Leu Asp Val Arg Asn Thr Ala  
 50 55 60  
 Ala Val Asn Ala Met Ala Glu Arg Val Gly Lys Val Glu Ile Leu Leu  
 65 70 75 80  
 Asn Ala Ala Gly Phe Val His Asn Gly Thr Ile Leu Asp Cys Ser Asp  
 85 90 95  
 Gly Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg  
 100 105 110  
 Thr Ile Arg Ala Phe Leu Pro Lys Met Leu Asp Gln Gly Gly Gly Ala  
 115 120 125  
 Ile Val Asn Ile Ala Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn  
 130 135 140  
 Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg  
 145 150 155 160  
 Ser Val Ala Ala Asp Phe Val Ala Arg Lys Ile Arg Cys Asn Cys Ile  
 165 170 175  
 Cys Pro Gly Thr Ile Glu Thr Pro Ser Met Leu Gly Arg Ala Ala Ser  
 180 185 190  
 Ala Gly Pro Asn Gly Leu Glu Met Phe Ile Ser Arg Gln Pro Met Gly  
 195 200 205  
 Arg Leu Gly Thr Ala Glu Glu Ile Ala His Leu Ala Val Tyr Leu Ala  
 210 215 220  
 Ser Asp Glu Ser Ala Phe Thr Thr Gly Val Ala His Thr Ile Asp Gly  
 225 230 235 240  
 Gly Trp Thr Leu

&lt;210&gt; 1681

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Xanthobacter autotrophicus Py2

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1681

atg gct gga cga ctt cag ggt aag acc gcg ctg gtg acg gcg gcg gga	48
Met Ala Gly Arg Leu Gln Gly Lys Thr Ala Leu Val Thr Ala Ala Gly	
1 5 10 15	
cag ggc atc ggc cgg gcc atc gcc gag gcc ttc gtg cgc gag ggc gcg	96
Gln Gly Ile Gly Arg Ala Ile Ala Glu Ala Phe Val Arg Glu Gly Ala	
20 25 30	
agc gtg atc gcc acc gac ctc gac acc gcc aag ctc gaa ggc ttt ccc	144
Ser Val Ile Ala Thr Asp Leu Asp Thr Ala Lys Leu Glu Gly Phe Pro	
35 40 45	
ggc acc gcc cgc aag ctc gac gtg cgc tcc agc gag gcc gtc gcc gcg	192
Gly Thr Ala Arg Lys Leu Asp Val Arg Ser Ser Glu Ala Val Ala Ala	
50 55 60	
ctg gcg aag gag atc ggc ccg gtg gac gtg ctg aat gcc gct ggc	240
Leu Ala Lys Glu Ile Gly Pro Val Asp Val Leu Val Asn Ala Ala Gly	
65 70 75 80	
tac gtc cac cag ggc aat atc ttc gac act tcg gag aag gac tgg gac	288
Tyr Val His Gln Gly Asn Ile Phe Asp Thr Ser Glu Lys Asp Trp Asp	
85 90 95	
ttc tcc ttc gac ctc aat gtg aag gcc atg cac cgc acc atc tcg gcc	336
Phe Ser Phe Asp Leu Asn Val Lys Ala Met His Arg Thr Ile Ser Ala	
100 105 110	
ttc ctg ccg ggc atg ctg gag aag ggc aaa ggc tcc atc gtc aac atc	384
Phe Leu Pro Gly Met Leu Glu Lys Gly Lys Gly Ser Ile Val Asn Ile	
115 120 125	
gcc tcg gcg gcg tcc tcc atc cgc ggc gtg ccg aac cgc tat gtc tac	432

PhoenixTemp32470.tmp.txt

Ala	Ser	Ala	Ala	Ser	Ser	Ile	Arg	Gly	Val	Pro	Asn	Arg	Tyr	Val	Tyr		
130	130					135					140						
ggc	gcc	tcc	aag	gcg	gcg	gtc	atc	ggc	ctc	acc	aag	gca	gtg	gcg	gcg	480	
Gly	Ala	Ser	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	Lys	Ala	Val	Ala	Ala		
145				150						155					160		
gac	ttc	atc	ctg	aag	ggc	gtt	cgc	gcc	aac	gtc	atc	tgc	ccc	ggc	acc	528	
Asp	Phe	Ile	Leu	Lys	Gly	Val	Arg	Ala	Asn	Val	Ile	Cys	Pro	Gly	Thr		
				165					170					175			
atc	cag	tcg	ccc	tcg	ctg	gac	gag	cgc	atc	gcc	gcc	gtc	tcg	gcc	cag	576	
Ile	Gln	Ser	Pro	Ser	Leu	Asp	Glu	Arg	Ile	Ala	Ala	Val	Ser	Ala	Gln		
			180					185					190				
acc	ggc	cgc	tcg	ctg	gac	gac	gtg	cgg	gcc	gat	ttc	gtc	ggc	cgc	cag	624	
Thr	Gly	Arg	Ser	Leu	Asp	Asp	Val	Arg	Ala	Asp	Phe	Val	Gly	Arg	Gln		
			195				200					205					
ccc	atg	ggc	cgg	ctc	ggc	acg	ccg	gag	gag	atc	gcg	gcg	ctc	gcg	ctc	672	
Pro	Met	Gly	Arg	Leu	Gly	Thr	Pro	Glu	Glu	Ile	Ala	Ala	Leu	Ala	Leu		
	210				215					220							
tat	ctc	gcc	tcc	gac	gag	agc	gcc	ttc	acc	acc	ggg	cag	atc	cac	atc	720	
Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Ala	Phe	Thr	Thr	Gly	Gln	Ile	His	Ile		
225					230					235					240		
atc	gac	ggc	ggc	tgg	gcg	ctc	tag									744	
Ile	Asp	Gly	Gly	Trp	Ala	Leu											
				245													

<210> 1682  
 <211> 247  
 <212> PRT  
 <213> Xanthobacter autotrophicus Py2

<400> 1682

Met	Ala	Gly	Arg	Leu	Gln	Gly	Lys	Thr	Ala	Leu	Val	Thr	Ala	Ala	Gly		
1				5					10					15			
Gln	Gly	Ile	Gly	Arg	Ala	Ile	Ala	Glu	Ala	Phe	Val	Arg	Glu	Gly	Ala		
			20					25					30				
Ser	Val	Ile	Ala	Thr	Asp	Leu	Asp	Thr	Ala	Lys	Leu	Glu	Gly	Phe	Pro		
			35				40					45					
Gly	Thr	Ala	Arg	Lys	Leu	Asp	Val	Arg	Ser	Ser	Glu	Ala	Val	Ala	Ala		
			50			55					60						
Leu	Ala	Lys	Glu	Ile	Gly	Pro	Val	Asp	Val	Leu	Val	Asn	Ala	Ala	Gly		
65					70				75						80		
Tyr	Val	His	Gln	Gly	Asn	Ile	Phe	Asp	Thr	Ser	Glu	Lys	Asp	Trp	Asp		
			85						90					95			
Phe	Ser	Phe	Asp	Leu	Asn	Val	Lys	Ala	Met	His	Arg	Thr	Ile	Ser	Ala		
			100					105					110				
Phe	Leu	Pro	Gly	Met	Leu	Glu	Lys	Gly	Lys	Gly	Ser	Ile	Val	Asn	Ile		
		115					120					125					
Ala	Ser	Ala	Ala	Ser	Ser	Ile	Arg	Gly	Val	Pro	Asn	Arg	Tyr	Val	Tyr		
						135					140						
Gly	Ala	Ser	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	Lys	Ala	Val	Ala	Ala		
145				150						155					160		
Asp	Phe	Ile	Leu	Lys	Gly	Val	Arg	Ala	Asn	Val	Ile	Cys	Pro	Gly	Thr		
				165					170					175			
Ile	Gln	Ser	Pro	Ser	Leu	Asp	Glu	Arg	Ile	Ala	Ala	Val	Ser	Ala	Gln		
			180					185					190				
Thr	Gly	Arg	Ser	Leu	Asp	Asp	Val	Arg	Ala	Asp	Phe	Val	Gly	Arg	Gln		
		195					200					205					
Pro	Met	Gly	Arg	Leu	Gly	Thr	Pro	Glu	Glu	Ile	Ala	Ala	Leu	Ala	Leu		
	210					215					220						
Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Ala	Phe	Thr	Thr	Gly	Gln	Ile	His	Ile		
225					230					235					240		
Ile	Asp	Gly	Gly	Trp	Ala	Leu											
				245													

<210> 1683  
 <211> 765  
 <212> DNA  
 <213> Symbiobacterium thermophilum IAM 14863

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1683

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Met	Gln	Leu	Phe	Ser	Leu	Glu	Gly	Arg	Val	Ala	Leu	Val	Thr	Gly	Ala	
1				5					10					15		
ggg	cgg	ggg	atc	ggc	cgg	gcc	ctg	gcg	ctg	ggc	ctg	gcg	gac	ggc	ggg	96
Gly	Arg	Gly	Ile	Gly	Arg	Ala	Leu	Ala	Leu	Gly	Leu	Ala	Asp	Ala	Gly	
			20					25					30			
gcg	gac	gtg	gtt	tgc	ctg	gcc	agg	acc	ggc	tcc	gag	gtg	gag	gcc	gcg	144
Ala	Asp	Val	Val	Cys	Leu	Ala	Arg	Thr	Gly	Ser	Glu	Val	Glu	Ala	Ala	
			35					40				45				
gcg	gag	gag	gtc	cgg	gcc	agg	ggc	cgc	cgg	gcg	ctg	gcg	gtg	acc	gca	192
Ala	Glu	Glu	Val	Arg	Ala	Arg	Gly	Arg	Arg	Ala	Leu	Ala	Val	Thr	Ala	
			50				55				60					
gac	gtg	acg	agc	cag	gcg	cag	gtg	acg	gag	gcc	gtc	gag	gcg	gcc	ctg	240
Asp	Val	Thr	Ser	Gln	Ala	Gln	Val	Thr	Glu	Ala	Val	Glu	Ala	Ala	Leu	
							70				75				80	
gac	cgg	ttc	ggc	aag	atc	gac	atc	ctg	gtg	aac	aac	gcg	ggc	atc	aac	288
Asp	Arg	Phe	Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Asn	
				85					90					95		
atc	cgc	aag	ccg	gcg	ctg	gag	gtg	gcg	gag	gcg	gac	tgg	gac	cgg	gtg	336
Ile	Arg	Lys	Pro	Ala	Leu	Glu	Val	Ala	Glu	Ala	Asp	Trp	Asp	Arg	Val	
			100					105					110			
gtg	cag	acc	aat	ctg	aag	ggt	ccc	ttc	ctg	gtc	gcc	cag	acg	gtg	ggc	384
Val	Gln	Thr	Asn	Leu	Lys	Gly	Pro	Phe	Leu	Val	Ala	Gln	Thr	Val	Gly	
			115				120					125				
cgg	cac	atg	tgc	gag	cgg	ggc	tac	ggc	cgg	atc	atc	aac	gtc	gca	tcg	432
Arg	His	Met	Cys	Glu	Arg	Gly	Tyr	Gly	Arg	Ile	Ile	Asn	Val	Ala	Ser	
			130			135					140					
gta	ggc	gga	gcg	gtg	gcg	ctg	cgc	acc	ggg	gtt	gcc	tac	ggc	gcc	agc	480
Val	Gly	Gly	Ala	Val	Ala	Leu	Arg	Thr	Gly	Val	Ala	Tyr	Gly	Ala	Ser	
						150				155					160	
aag	gcg	ggg	ctg	atg	cac	atg	acc	cgt	atc	ctg	gcc	atg	gag	tgg	gcc	528
Lys	Ala	Gly	Leu	Met	His	Met	Thr	Arg	Ile	Leu	Ala	Met	Glu	Trp	Ala	
				165					170					175		
cgg	tac	ggg	gtg	acg	gtg	aac	ggc	atc	ggc	ccc	tgg	tac	ttc	cgc	acg	576
Arg	Tyr	Gly	Val	Thr	Val	Asn	Gly	Ile	Gly	Pro	Trp	Tyr	Phe	Arg	Thr	
			180					185					190			
ccg	ctg	acg	gag	aag	ctg	ctg	cag	gac	gaa	cag	tac	gtg	gcg	gag	att	624
Pro	Leu	Thr	Glu	Lys	Leu	Leu	Gln	Asp	Glu	Gln	Tyr	Val	Ala	Glu	Ile	
			195				200					205				
ctg	gcc	cgc	acg	ccg	atg	cgg	cgc	atc	ggc	gac	ctg	gcg	gag	ctg	gtg	672
Leu	Ala	Arg	Thr	Pro	Met	Arg	Arg	Ile	Gly	Asp	Leu	Ala	Glu	Leu	Val	
						215					220					
ggg	ccg	gtg	gtg	ttc	ctc	gcg	tcg	gac	gcg	tcc	agc	tac	gtc	acc	ggg	720
Gly	Pro	Val	Val	Phe	Leu	Ala	Ser	Asp	Ala	Ser	Ser	Tyr	Val	Thr	Gly	
					230					235					240	
cag	gtg	ctg	atg	gtg	gac	ggg	ggc	atg	tct	gtc	tac	ggg	ttc	tga		765
Gln	Val	Leu	Met	Val	Asp	Gly	Gly	Met	Ser	Val	Tyr	Gly	Phe			
				245					250							

&lt;210&gt; 1684

&lt;211&gt; 254

&lt;212&gt; PRT

&lt;213&gt; Symbiobacterium thermophilum IAM 14863

&lt;400&gt; 1684

Met	Gln	Leu	Phe	Ser	Leu	Glu	Gly	Arg	Val	Ala	Leu	Val	Thr	Gly	Ala	
1				5					10					15		
Gly	Arg	Gly	Ile	Gly	Arg	Ala	Leu	Ala	Leu	Gly	Leu	Ala	Asp	Ala	Gly	
			20					25					30			
Ala	Asp	Val	Val	Cys	Leu	Ala	Arg	Thr	Gly	Ser	Glu	Val	Glu	Ala	Ala	
			35					40				45				
Ala	Glu	Glu	Val	Arg	Ala	Arg	Gly	Arg	Arg	Ala	Leu	Ala	Val	Thr	Ala	
			50				55				60					
Asp	Val	Thr	Ser	Gln	Ala	Gln	Val	Thr	Glu	Ala	Val	Glu	Ala	Ala	Leu	

## PhoenixTemp32470.tmp.txt

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65      70      75      80
Asp Arg Phe Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Asn
85      90      95
Ile Arg Lys Pro Ala Leu Glu Val Ala Glu Ala Asp Trp Asp Arg Val
100      105      110
Val Gln Thr Asn Leu Lys Gly Pro Phe Leu Val Ala Gln Thr Val Gly
115      120      125
Arg His Met Cys Glu Arg Gly Tyr Gly Arg Ile Ile Asn Val Ala Ser
130      135      140
Val Gly Gly Ala Val Ala Leu Arg Thr Gly Val Ala Tyr Gly Ala Ser
145      150      155
Lys Ala Gly Leu Met His Met Thr Arg Ile Leu Ala Met Glu Trp Ala
160      165      170      175
Arg Tyr Gly Val Thr Val Asn Gly Ile Gly Pro Trp Tyr Phe Arg Thr
180      185      190
Pro Leu Thr Glu Lys Leu Leu Gln Asp Glu Gln Tyr Val Ala Glu Ile
195      200      205
Leu Ala Arg Thr Pro Met Arg Arg Ile Gly Asp Leu Ala Glu Leu Val
210      215      220
Gly Pro Val Val Phe Leu Ala Ser Asp Ala Ser Ser Tyr Val Thr Gly
225      230      235      240
Gln Val Leu Met Val Asp Gly Gly Met Ser Val Tyr Gly Phe
245      250

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&lt;210&gt; 1685

&lt;211&gt; 729

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(729)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1685

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Met Thr Arg Lys Thr Ala Phe Val Leu Gly Gly Ser Lys Gly Ile Gly
1      5      10      15
gct gaa atc gtt cgc acc ttg gca gtg gcc ggc cac gat gtg gct ttc      96
Ala Glu Ile Val Arg Thr Leu Ala Val Ala Gly His Asp Val Ala Phe
20      25      30
acc tac aac tca tcg acg gac cta gcc gca gcc tta tgc gat gag ctg      144
Thr Tyr Asn Ser Ser Thr Asp Leu Ala Ala Ala Leu Cys Asp Glu Leu
35      40      45
aga gct gca ggg ctt act tgt ttt tgt ttt aga gcg gat gtt cga gat      192
Arg Ala Ala Gly Leu Thr Cys Phe Cys Phe Arg Ala Asp Val Arg Asp
50      55      60
ctt tct agc gtg ccg caa gcg ata gcg aag gcg gca tcg caa cta ggg      240
Leu Ser Ser Val Pro Gln Ala Ile Ala Lys Ala Ala Ser Gln Leu Gly
65      70      75      80
cat atc aac atc ctc ata aac aat gcc gga att tta aaa cgt ggc aaa      288
His Ile Asn Ile Leu Ile Asn Asn Ala Gly Ile Leu Lys Arg Gly Lys
85      90      95
ctg caa gaa ttc gat ctt ctg gcg ttc gac gaa att ttc aat gta aat      336
Leu Gln Glu Phe Asp Leu Leu Ala Phe Asp Glu Ile Phe Asn Val Asn
100      105      110
gtg agg ggg cct ttc att gct tcg caa gct gtc ctg cca ttc atg cca      384
Val Arg Gly Pro Phe Ile Ala Ser Gln Ala Val Leu Pro Phe Met Pro
115      120      125
aac ggc gga aga ata ctt atg atg gga agt gtt gca gca gac aga tcg      432
Asn Gly Gly Arg Ile Leu Met Met Gly Ser Val Ala Ala Asp Arg Ser
130      135      140
gcg atc gaa ggt tca gca ttc tat gca gcc acc aag gca gca ctg tct      480
Ala Ile Glu Gly Ser Ala Phe Tyr Ala Ala Thr Lys Ala Ala Leu Ser
145      150      155
tct atg gct cgc ggg ttt gcc cgg gac gtt gcg ccc ttg ggg atc aca      528
Ser Met Ala Arg Gly Phe Ala Arg Asp Val Ala Pro Leu Gly Ile Thr
160      165      170      175
gtc aat acc atc caa cca ggt gtt atc gaa aca aac atg gta tcg ccc      576

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## PhoenixTemp32470.tmp.txt

Val	Asn	Thr	Ile	Gln	Pro	Gly	Val	Ile	Glu	Thr	Asn	Met	Val	Ser	Pro		
			180					185					190				
ggt	gct	ctc	agt	cga	gac	gcg	tat	cat	gca	att	ccg	gcc	ggg	cga	aaa		624
Gly	Ala	Leu	Ser	Arg	Asp	Ala	Tyr	His	Ala	Ile	Pro	Ala	Gly	Arg	Lys		
			195				200					205					
ggt	ctg	ccg	agc	gat	gtg	gcg	aac	ctc	gtc	agg	ttt	tta	gtc	agt	gac		672
Gly	Leu	Pro	Ser	Asp	Val	Ala	Asn	Leu	Val	Arg	Phe	Leu	Val	Ser	Asp		
			210			215					220						
gaa	tct	tct	tat	ata	acc	gga	aca	agt	ctc	aac	ata	gat	ggc	ggg	tat		720
Glu	Ser	Ser	Tyr	Ile	Thr	Gly	Thr	Ser	Leu	Asn	Ile	Asp	Gly	Gly	Tyr		
					230					235					240		
ttg	gcc	tag															729
Leu	Ala																

&lt;210&gt; 1686

&lt;211&gt; 242

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens

&lt;400&gt; 1686

Met	Thr	Arg	Lys	Thr	Ala	Phe	Val	Leu	Gly	Gly	Ser	Lys	Gly	Ile	Gly		
1				5					10					15			
Ala	Glu	Ile	Val	Arg	Thr	Leu	Ala	Val	Ala	Gly	His	Asp	Val	Ala	Phe		
			20					25					30				
Thr	Tyr	Asn	Ser	Ser	Thr	Asp	Leu	Ala	Ala	Ala	Leu	Cys	Asp	Glu	Leu		
		35					40					45					
Arg	Ala	Ala	Gly	Leu	Thr	Cys	Phe	Cys	Phe	Arg	Ala	Asp	Val	Arg	Asp		
	50					55					60						
Leu	Ser	Ser	Val	Pro	Gln	Ala	Ile	Ala	Lys	Ala	Ala	Ser	Gln	Leu	Gly		
65				70					75					80			
His	Ile	Asn	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Ile	Leu	Lys	Arg	Gly	Lys		
			85						90					95			
Leu	Gln	Glu	Phe	Asp	Leu	Leu	Ala	Phe	Asp	Glu	Ile	Phe	Asn	Val	Asn		
			100					105					110				
Val	Arg	Gly	Pro	Phe	Ile	Ala	Ser	Gln	Ala	Val	Leu	Pro	Phe	Met	Pro		
		115					120					125					
Asn	Gly	Gly	Arg	Ile	Leu	Met	Met	Gly	Ser	Val	Ala	Ala	Asp	Arg	Ser		
	130					135					140						
Ala	Ile	Glu	Gly	Ser	Ala	Phe	Tyr	Ala	Ala	Thr	Lys	Ala	Ala	Leu	Ser		
145					150					155				160			
Ser	Met	Ala	Arg	Gly	Phe	Ala	Arg	Asp	Val	Ala	Pro	Leu	Gly	Ile	Thr		
			165					170						175			
Val	Asn	Thr	Ile	Gln	Pro	Gly	Val	Ile	Glu	Thr	Asn	Met	Val	Ser	Pro		
			180					185					190				
Gly	Ala	Leu	Ser	Arg	Asp	Ala	Tyr	His	Ala	Ile	Pro	Ala	Gly	Arg	Lys		
		195					200					205					
Gly	Leu	Pro	Ser	Asp	Val	Ala	Asn	Leu	Val	Arg	Phe	Leu	Val	Ser	Asp		
	210					215					220						
Glu	Ser	Ser	Tyr	Ile	Thr	Gly	Thr	Ser	Leu	Asn	Ile	Asp	Gly	Gly	Tyr		
225					230					235					240		
Leu	Ala																

&lt;210&gt; 1687

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Bacillus licheniformis ATCC 14580

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1687

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Met	Leu	Glu	Asn	Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile		
	1			5					10					15			
ggc	cgc	gcg	atc	gcc	ctg	gac	ctg	gcg	aaa	aac	gga	gca	aat	gtc	gtc		96



## PhoenixTemp32470.tmp.txt

Gly	Arg	Ala	Ile	Ala	Leu	Asp	Leu	Ala	Lys	Asn	Gly	Ala	Asn	Val	Val	
			20					25					30			
gtc	aac	tac	gcg	gga	aat	gaa	gcg	aaa	gcg	aac	gaa	gtc	gta	gac	gaa	144
Val	Asn	Tyr	Ala	Gly	Asn	Glu	Ala	Lys	Ala	Asn	Glu	Val	Val	Asp	Glu	
		35					40					45				
atc	aaa	gcg	ctc	ggc	cgc	gat	gcg	ttt	gct	ttt	aaa	gcg	gac	gtt	tcc	192
Ile	Lys	Ala	Leu	Gly	Arg	Asp	Ala	Phe	Ala	Phe	Lys	Ala	Asp	Val	Ser	
		50				55					60					
aat	gcg	gat	gag	gtt	cag	gcg	atg	atg	aag	gaa	gcg	gtc	gga	cgc	ttc	240
Asn	Ala	Asp	Glu	Val	Gln	Ala	Met	Met	Lys	Glu	Ala	Val	Gly	Arg	Phe	
		65			70					75					80	
ggc	acg	ctt	gac	atc	ctt	gtc	aac	aat	gcg	ggc	att	act	aaa	gac	aat	288
Gly	Thr	Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	Asp	Asn	
				85					90					95		
ctg	ttc	atg	aga	atg	aaa	gaa	gat	gaa	tgg	gac	gac	gtc	att	aac	ata	336
Leu	Phe	Met	Arg	Met	Lys	Glu	Asp	Glu	Trp	Asp	Asp	Val	Ile	Asn	Ile	
			100					105					110			
aac	tta	aaa	ggt	gtg	ttc	aat	tgt	tca	aaa	gct	gtg	aca	aga	cag	atg	384
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Ser	Lys	Ala	Val	Thr	Arg	Gln	Met	
		115					120					125				
atg	aaa	caa	aga	agc	ggc	cgg	atc	atc	aat	atc	acc	tcg	gtt	gta	ggc	432
Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Ile	Thr	Ser	Val	Val	Gly	
		130				135					140					
gtc	gtc	ggt	aac	gcc	ggg	cag	gcc	aac	tat	gtc	gcg	gct	aaa	tca	ggc	480
Val	Val	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ser	Gly	
		145			150					155					160	
gtg	atc	ggc	ttg	acg	aaa	acg	ctg	gca	aaa	gaa	ctg	gcg	tca	aga	aac	528
Val	Ile	Gly	Leu	Thr	Lys	Thr	Leu	Ala	Lys	Glu	Leu	Ala	Ser	Arg	Asn	
				165					170					175		
atc	act	gtg	aat	gcg	atc	gct	ccg	gga	ttc	att	tcg	acg	gaa	atg	acg	576
Ile	Thr	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Glu	Met	Thr	
			180					185					190			
gac	aag	ctg	aca	aaa	gac	att	caa	gac	gaa	atg	ctg	aag	cag	att	ccg	624
Asp	Lys	Leu	Thr	Lys	Asp	Ile	Gln	Asp	Glu	Met	Leu	Lys	Gln	Ile	Pro	
		195					200					205				
ctt	gcg	cgg	ttc	ggc	gag	ccg	tct	gac	atc	agc	agc	gcc	gtt	gtt	ttc	672
Leu	Ala	Arg	Phe	Gly	Glu	Pro	Ser	Asp	Ile	Ser	Ser	Ala	Val	Val	Phe	
		210				215					220					
ctc	gca	tct	gac	cat	gcg	agc	tac	atg	acc	ggc	cag	acg	ctg	aac	atc	720
Leu	Ala	Ser	Asp	His	Ala	Ser	Tyr	Met	Thr	Gly	Gln	Thr	Leu	Asn	Ile	
		225			230					235					240	
aac	ggc	gga	atg	gct	atg	gtt	taa									744
Asn	Gly	Gly	Met	Ala	Met	Val										
				245												

&lt;210&gt; 1688

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Bacillus licheniformis ATCC 14580

&lt;400&gt; 1688

Met	Leu	Glu	Asn	Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	
				5					10					15		
Gly	Arg	Ala	Ile	Ala	Leu	Asp	Leu	Ala	Lys	Asn	Gly	Ala	Asn	Val	Val	
			20					25					30			
Val	Asn	Tyr	Ala	Gly	Asn	Glu	Ala	Lys	Ala	Asn	Glu	Val	Val	Asp	Glu	
		35					40					45				
Ile	Lys	Ala	Leu	Gly	Arg	Asp	Ala	Phe	Ala	Phe	Lys	Ala	Asp	Val	Ser	
		50				55					60					
Asn	Ala	Asp	Glu	Val	Gln	Ala	Met	Met	Lys	Glu	Ala	Val	Gly	Arg	Phe	
		65			70					75					80	
Gly	Thr	Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	Asp	Asn	
				85					90					95		
Leu	Phe	Met	Arg	Met	Lys	Glu	Asp	Glu	Trp	Asp	Asp	Val	Ile	Asn	Ile	
			100					105					110			
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Ser	Lys	Ala	Val	Thr	Arg	Gln	Met	
		115					120					125				
Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Ile	Thr	Ser	Val	Val	Gly	
		130				135					140					

## PhoenixTemp32470.tmp.txt

Val Val Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ser Gly  
 145 150 155 160  
 Val Ile Gly Leu Thr Lys Thr Leu Ala Lys Glu Leu Ala Ser Arg Asn  
 165 170 175  
 Ile Thr Val Asn Ala Ile Ala Pro Gly Phe Ile Ser Thr Glu Met Thr  
 180 185 190  
 Asp Lys Leu Thr Lys Asp Ile Gln Asp Glu Met Leu Lys Gln Ile Pro  
 195 200 205  
 Leu Ala Arg Phe Gly Glu Pro Ser Asp Ile Ser Ser Ala Val Val Phe  
 210 215 220  
 Leu Ala Ser Asp His Ala Ser Tyr Met Thr Gly Gln Thr Leu Asn Ile  
 225 230 235 240  
 Asn Gly Gly Met Ala Met Val  
 245

&lt;210&gt; 1689

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Burkholderia pseudomallei K96243

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1689

atg aac cgg ctc gcg ggc aag gtc gcg atc gtg acg ggc gcg ggg cgc	48
Met Asn Arg Leu Ala Gly Lys Val Ala Ile Val Thr Gly Ala Gly Arg	
1 5 10 15	
ggc atc ggc gcg gcg atc gcg cgc gcg ttc gtg cgc gaa ggc gcg gcc	96
Gly Ile Gly Ala Ala Ile Ala Arg Ala Phe Val Arg Glu Gly Ala Ala	
20 25 30	
gtc gcg atc gcg gag ctc gac gcg gcg ctc gcc gaa gag agc gcc gac	144
Val Ala Ile Ala Glu Leu Asp Ala Ala Leu Ala Glu Glu Ser Ala Asp	
35 40 45	
gcg atc gcg cgc gac acg gcc ggc gcg cgg gtg ctc gcg gtg ccg acg	192
Ala Ile Ala Arg Asp Thr Ala Gly Ala Arg Val Leu Ala Val Pro Thr	
50 55 60	
gac gtc gcg cag gcc gag tcg gtc gcg gcg gcg ctc gcg cgc acg gag	240
Asp Val Ala Gln Ala Glu Ser Val Ala Ala Ala Leu Ala Arg Thr Glu	
65 70 75 80	
cgc gca ttc ggc ccg ctc gac gtg ctc gtg aac aac gcc ggc gtc aac	288
Arg Ala Phe Gly Pro Leu Asp Val Leu Val Asn Asn Ala Gly Val Asn	
85 90 95	
gtg ttc ggc gat ccg ctc gcg ctc acc gac gaa gac tgg cgg cgc tgc	336
Val Phe Gly Asp Pro Leu Ala Leu Thr Asp Glu Asp Trp Arg Arg Cys	
100 105 110	
ttc gcg atc gat ctc gac ggc gtc tgg aac ggc tgc cgc gcg gcg ctg	384
Phe Ala Ile Asp Leu Asp Gly Val Trp Asn Gly Cys Arg Ala Ala Leu	
115 120 125	
ccc ggc atg gtc gag cgc ggg cgc ggc agc atc gtg aac atc gcg tcg	432
Pro Gly Met Val Glu Arg Gly Arg Gly Ser Ile Val Asn Ile Ala Ser	
130 135 140	
acg cat gcg ttc aag atc att ccg ggc tgt ttc ccg tac ccg gtc gcg	480
Thr His Ala Phe Lys Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala	
145 150 155 160	
aag cat ggc gtg ctg ggc ctc acg cgc gcg ctc ggc atc gaa tac gcg	528
Lys His Gly Val Leu Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala	
165 170 175	
ccg cgc aac gtg cgc gtg aac gcg atc gcg ccc ggc tac atc gag acg	576
Pro Arg Asn Val Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr	
180 185 190	
cag ttg acg cat gac tgg tgg agc gcg cag ccc gat ccg gcc gcg	624
Gln Leu Thr His Asp Trp Trp Ser Ala Gln Pro Asp Pro Gln Ala Ala	
195 200 205	
cgc cgc gag acg ctc gcg ctg cag ccg atg aag cgg atc ggg cgt ccc	672
Arg Arg Glu Thr Leu Ala Leu Gln Pro Met Lys Arg Ile Gly Arg Pro	
210 215 220	
gac gaa gtc gcg atg acc gcg gta ttc ctc gcg tcg gac gaa gcg ccg	720

## PhoenixTemp32470.tmp.txt

Asp Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro  
 225 230 235 240  
 ttc atc aac gcg agc tgc atc acg atc gac ggc ggc cgc tcg gtg ctg 768  
 Phe Ile Asn Ala Ser Cys Ile Thr Ile Asp Gly Gly Arg Ser Val Leu  
 245 250 255  
 tac cac gac tga 780  
 Tyr His Asp

<210> 1690  
 <211> 259  
 <212> PRT  
 <213> Burkholderia pseudomallei K96243

<400> 1690  
 Met Asn Arg Leu Ala Gly Lys Val Ala Ile Val Thr Gly Ala Gly Arg  
 1 5 10 15  
 Gly Ile Gly Ala Ile Ala Arg Ala Phe Val Arg Glu Gly Ala Ala  
 20 25 30  
 Val Ala Ile Ala Glu Leu Asp Ala Ala Leu Ala Glu Glu Ser Ala Asp  
 35 40 45  
 Ala Ile Ala Arg Asp Thr Ala Gly Ala Arg Val Leu Ala Val Pro Thr  
 50 55 60  
 Asp Val Ala Gln Ala Glu Ser Val Ala Ala Ala Leu Ala Arg Thr Glu  
 65 70 75 80  
 Arg Ala Phe Gly Pro Leu Asp Val Leu Val Asn Asn Ala Gly Val Asn  
 85 90 95  
 Val Phe Gly Asp Pro Leu Ala Leu Thr Asp Glu Asp Trp Arg Arg Cys  
 100 105 110  
 Phe Ala Ile Asp Leu Asp Gly Val Trp Asn Gly Cys Arg Ala Ala Leu  
 115 120 125  
 Pro Gly Met Val Glu Arg Gly Arg Gly Ser Ile Val Asn Ile Ala Ser  
 130 135 140  
 Thr His Ala Phe Lys Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala  
 145 150 155 160  
 Lys His Gly Val Leu Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala  
 165 170 175  
 Pro Arg Asn Val Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr  
 180 185 190  
 Gln Leu Thr His Asp Trp Trp Ser Ala Gln Pro Asp Pro Gln Ala Ala  
 195 200 205  
 Arg Arg Glu Thr Leu Ala Leu Gln Pro Met Lys Arg Ile Gly Arg Pro  
 210 215 220  
 Asp Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro  
 225 230 235 240  
 Phe Ile Asn Ala Ser Cys Ile Thr Ile Asp Gly Gly Arg Ser Val Leu  
 245 250 255  
 Tyr His Asp

<210> 1691  
 <211> 738  
 <212> DNA  
 <213> Silicibacter pomeroyi DSS-3

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

<400> 1691  
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 1 5 10 15  
 ggc atc ggg ggc gcc atc gcg cgc gcg ctg cat gct gcc ggc gcc tcg 96  
 Gly Ile Gly Gly Ala Ile Ala Arg Ala Leu His Ala Ala Gly Ala Ser  
 20 25 30  
 gtg gtg ctg tcg ggc acc cgg gtc gag ccg ctt cag gcg ctg gcc gac 144  
 Val Val Leu Ser Gly Thr Arg Val Glu Pro Leu Gln Ala Leu Ala Asp

## PhoenixTemp32470.tmp.txt

																35																	40																	45																																		
gag	ctg	ggc	gaa	cgc	gcc	cat	gtg	ctg	acc	tgc	aat	ctg	agc	gat	atg		192																																																																			
Glu	Leu	Gly	Glu	Arg	Ala	His	Val	Leu	Thr	Cys	Asn	Leu	Ser	Asp	Met																																																																					
																50																	55																	60																																		
gcg	gcc	gtc	gag	gcg	ctg	ccg	aaa	cag	gcc	gcc	gac	ctg	ttg	ggc	tcg		240																																																																			
Ala	Ala	Val	Glu	Ala	Leu	Pro	Lys	Gln	Ala	Ala	Asp	Leu	Leu	Gly	Ser																																																																					
																65																	70																	75																	80																	
gtc	gat	atc	ctg	gtg	aac	aat	gcc	ggc	atc	acg	cgc	gac	aac	ctg	ttc		288																																																																			
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn	Leu	Phe																																																																					
																85																	90																																																			
atg	cgt	atg	tcg	gat	gac	gaa	tgg	caa	agc	gtg	atc	gac	gtc	aac	ctg		336																																																																			
Met	Arg	Met	Ser	Asp	Asp	Glu	Trp	Gln	Ser	Val	Ile	Asp	Val	Asn	Leu																																																																					
																100																	105																	110																																		
acc	gcc	acc	atg	aaa	ctg	tgc	aag	ggc	gtg	ctg	cgc	ggc	atg	atg	aag		384																																																																			
Thr	Ala	Thr	Met	Lys	Leu	Cys	Lys	Gly	Val	Leu	Arg	Gly	Met	Met	Lys																																																																					
																115																	120																	125																																		
gcg	cgc	tgg	ggc	cgg	atc	gtg	aat	atc	tcg	tct	gtg	gtg	ggc	gcc	atc		432																																																																			
Ala	Arg	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ser	Ser	Val	Val	Gly	Ala	Ile																																																																					
																130																	135																	140																																		
ggc	aac	ccg	ggg	cag	ggc	aat	tat	gcc	gcc	tcc	aag	gcg	ggc	gtc	gtc		480																																																																			
Gly	Asn	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	Val	Val																																																																					
																145																	150																	155																	160																	
ggc	atg	tcc	aag	gcg	ctg	gcc	tat	gag	gtc	gcc	agc	cgg	gga	atc	acc		528																																																																			
Gly	Met	Ser	Lys	Ala	Leu	Ala	Tyr	Glu	Val	Ala	Ser	Arg	Gly	Ile	Thr																																																																					
																165																	170																	175																																		
gtc	aac	gcg	gtg	gca	ccg	ggc	ttt	atc	acc	acg	gca	atg	acc	gac	aag		576																																																																			
Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Thr	Thr	Ala	Met	Thr	Asp	Lys																																																																					
																180																	185																	190																																		
ctg	acg	gat	gag	cag	aaa	tcg	ggc	ctg	acg	cag	gtt	ccc	gct	ggc		624																																																																				
Leu	Thr	Asp	Glu	Gln	Lys	Ser	Gly	Leu	Leu	Gln	Val	Pro	Ala	Gly																																																																						
																195																	200																	205																																		
cgc	atg	ggt	tcg	ccc	gag	gaa	atc	gcg	gcg	gcg	gtc	ctg	tat	ctt	gcc		672																																																																			
Arg	Met	Gly	Ser	Pro	Glu	Glu	Ile	Ala	Ala	Ala	Val	Leu	Tyr	Leu	Ala																																																																					
																210																	215																	220																																		
agt	ccc	gag	gcc	gct	tat	gtg	acc	ggt	gcc	acc	ttg	cat	gtg	aac	ggc		720																																																																			
Ser	Pro	Glu	Ala	Ala	Tyr	Val	Thr	Gly	Ala	Thr	Leu	His	Val	Asn	Gly																																																																					
																225																	230																	235																	240																	
ggt	atg	gcc	atg	ttg	tga																		738																																																													
Gly	Met	Ala	Met	Leu																																																																																
																245																																																																				

<210> 1692

<211> 245

<212> PRT

<213> silicibacter pomeroyi DSS-3

<400> 1692

Met	Phe	Asp	Leu	Thr	Gly	Lys	Asn	Ala	Leu	Ile	Thr	Gly	Ala	Ser	Gly
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Gly	Ile	Gly	Gly	Ala	Ile	Ala	Arg	Ala	Leu	His	Ala	Ala	Gly	Ala	Ser
			20					25					30		
Val	Val	Leu	Ser	Gly	Thr	Arg	Val	Glu	Pro	Leu	Gln	Ala	Leu	Ala	Asp
		35					40					45			
Glu	Leu	Gly	Glu	Arg	Ala	His	Val	Leu	Thr	Cys	Asn	Leu	Ser	Asp	Met
	50					55					60				
Ala	Ala	Val	Glu	Ala	Leu	Pro	Lys	Gln	Ala	Ala	Asp	Leu	Leu	Gly	Ser
65					70				75						80
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn	Leu	Phe
			85						90				95		
Met	Arg	Met	Ser	Asp	Asp	Glu	Trp	Gln	Ser	Val	Ile	Asp	Val	Asn	Leu
			100					105					110		
Thr	Ala	Thr	Met	Lys	Leu	Cys	Lys	Gly	Val	Leu	Arg	Gly	Met	Met	Lys
		115					120					125			
Ala	Arg	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ser	Ser	Val	Val	Gly	Ala	Ile
	130					135					140				
Gly	Asn	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	Val	Val
145					150					155				160	
Gly	Met	Ser	Lys	Ala	Leu	Ala	Tyr	Glu	Val	Ala	Ser	Arg	Gly	Ile	Thr
				165					170					175	

## PhoenixTemp32470.tmp.txt

Val Asn Ala Val Ala Pro Gly Phe Ile Thr Thr Ala Met Thr Asp Lys  
 180 185 190  
 Leu Thr Asp Glu Gln Lys Ser Gly Leu Leu Thr Gln Val Pro Ala Gly  
 195 200 205  
 Arg Met Gly Ser Pro Glu Glu Ile Ala Ala Ala Val Leu Tyr Leu Ala  
 210 215 220  
 Ser Pro Glu Ala Ala Tyr Val Thr Gly Ala Thr Leu His Val Asn Gly  
 225 230 235 240  
 Gly Met Ala Met Leu  
 245

&lt;210&gt; 1693

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Bacillus clausii KSM-K16

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1693

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Met	Leu	Thr	Gly	Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	
1				5				10						15		
ggc	aaa	gcg	atc	gcc	ctt	gaa	ctt	gct	gcc	aaa	ggg	gcg	aat	atc	gtc	96
Gly	Lys	Ala	Ile	Ala	Leu	Glu	Leu	Ala	Ala	Lys	Gly	Ala	Asn	Ile	Val	
			20					25					30			
gtc	aat	tat	gca	gga	aat	cga	gac	cgt	gct	gaa	gaa	gta	gtg	gcc	aac	144
Val	Asn	Tyr	Ala	Gly	Asn	Arg	Asp	Arg	Ala	Glu	Glu	Val	Val	Ala	Asn	
		35					40					45				
att	aaa	gcg	ctt	ggc	caa	gag	gcg	ttt	gcg	tat	cag	gca	gac	gtt	gcc	192
Ile	Lys	Ala	Leu	Gly	Gln	Glu	Ala	Phe	Ala	Tyr	Gln	Ala	Asp	Val	Ala	
	50				55			60								
tcc	gaa	ggg	gaa	gtg	gca	gcg	atg	atg	aaa	gaa	gcg	atc	ggc	cgc	ttt	240
Ser	Glu	Gly	Glu	Val	Ala	Ala	Met	Met	Lys	Glu	Ala	Ile	Gly	Arg	Phe	
	65				70				75						80	
caa	tca	att	gat	att	tta	gta	aac	aat	gca	ggc	att	acg	cgc	gat	aac	288
Gln	Ser	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn	
				85				90						95		
ttg	cta	atg	aga	atg	aaa	gaa	gac	gat	tgg	gat	gcc	gtc	atc	aat	acg	336
Leu	Leu	Met	Arg	Met	Lys	Glu	Asp	Asp	Trp	Asp	Ala	Val	Ile	Asn	Thr	
			100					105					110			
aac	tta	aaa	ggg	gtg	ttc	cac	tgc	gcg	aaa	gca	gtc	agc	cgg	caa	atg	384
Asn	Leu	Lys	Gly	Val	Phe	His	Cys	Ala	Lys	Ala	Val	Ser	Arg	Gln	Met	
		115					120					125				
atg	aaa	caa	cgt	gct	ggc	aga	atc	atc	aat	gtc	tcg	tct	gtc	gtt	ggc	432
Met	Lys	Gln	Arg	Ala	Gly	Arg	Ile	Ile	Asn	Val	Ser	Ser	Val	Val	Gly	
	130				135						140					
gta	atg	ggt	aac	gct	ggg	caa	gcg	aat	tat	gtt	gcc	gcc	aaa	gca	ggc	480
Val	Met	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly	
	145				150					155					160	
gtc	att	ggc	ttg	act	aag	tct	ttg	gcg	cgg	gaa	ttg	gca	ggg	cga	ggc	528
Val	Ile	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Arg	Glu	Leu	Ala	Gly	Arg	Gly	
				165				170						175		
att	ctt	gtc	aat	gcg	gtg	gcg	cca	ggc	ttt	att	acg	aca	gat	atg	aca	576
Ile	Leu	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Thr	Thr	Asp	Met	Thr	
			180					185					190			
gat	gag	cta	gca	agc	gaa	aca	aag	gaa	cag	ctg	ctt	caa	caa	atc	cca	624
Asp	Glu	Leu	Ala	Ser	Glu	Thr	Lys	Glu	Gln	Leu	Leu	Gln	Gln	Ile	Pro	
		195					200					205				
ttg	gcg	aag	ctt	ggc	gaa	cca	gag	gat	atc	gcc	cgt	gtt	gtt	cgg	ttt	672
Leu	Ala	Lys	Leu	Gly	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Val	Val	Arg	Phe	
	210					215					220					
ttg	gca	agc	gat	gac	gcc	gct	tac	tta	acc	ggt	caa	acg	atc	cac	gtt	720
Leu	Ala	Ser	Asp	Asp	Ala	Ala	Tyr	Leu	Thr	Gly	Gln	Thr	Ile	His	Val	
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gac	ggc	ggc	atg	gtc	cct	taa										744
Asp	Gly	Gly	Met	Val	Met	Pro										

245

<210> 1694  
 <211> 247  
 <212> PRT  
 <213> Bacillus clausii KSM-K16

<400> 1694  
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 20 25 30  
 Val Asn Tyr Ala Gly Asn Arg Asp Arg Ala Glu Glu Val Val Ala Asn  
 35 40 45  
 Ile Lys Ala Leu Gly Gln Glu Ala Phe Ala Tyr Gln Ala Asp Val Ala  
 50 55 60  
 Ser Glu Gly Glu Val Ala Ala Met Met Lys Glu Ala Ile Gly Arg Phe  
 65 70 75 80  
 Gln Ser Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn  
 85 90 95  
 Leu Leu Met Arg Met Lys Glu Asp Asp Trp Asp Ala Val Ile Asn Thr  
 100 105 110  
 Asn Leu Lys Gly Val Phe His Cys Ala Lys Ala Val Ser Arg Gln Met  
 115 120 125  
 Met Lys Gln Arg Ala Gly Arg Ile Ile Asn Val Ser Ser Val Val Gly  
 130 135 140  
 Val Met Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ala Gly  
 145 150 155 160  
 Val Ile Gly Leu Thr Lys Ser Leu Ala Arg Glu Leu Ala Gly Arg Gly  
 165 170 175  
 Ile Leu Val Asn Ala Val Ala Pro Gly Phe Ile Thr Thr Asp Met Thr  
 180 185 190  
 Asp Glu Leu Ala Ser Glu Thr Lys Glu Gln Leu Leu Gln Gln Ile Pro  
 195 200 205  
 Leu Ala Lys Leu Gly Glu Pro Glu Asp Ile Ala Arg Val Val Arg Phe  
 210 215 220  
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 225 230 235 240  
 Asp Gly Gly Met Val Met Pro  
 245

<210> 1695  
 <211> 804  
 <212> DNA  
 <213> Thermobifida fusca YX

<220>  
 <221> CDS  
 <222> (1)..(804)  
 <223> transl\_table=11

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 1 5 10 15  
 gcc gga tcg gga ttc gga cgc gcc agc gcc ctg cgt ttc gca gct gaa 96  
 Ala Gly Ser Gly Phe Gly Arg Ala Ser Ala Leu Arg Phe Ala Ala Glu 20 25 30  
 gga gcc tcc gtg gtc tgc gtc gac cgc aac gcc gac gct gcc cac agc 144  
 Gly Ala Ser Val Val Cys Val Asp Arg Asn Ala Asp Ala Ala His Ser 35 40 45  
 gcc gct gac gac atc gcc gcc gca ggc ggc acc gcc ctc gca ctc acc 192  
 Ala Ala Asp Asp Ile Ala Ala Ala Gly Gly Thr Ala Leu Ala Leu Thr 50 55 60  
 gcc gac gtg tcc tcc gct gcc gac gcg gaa cga atg act acc acc acg 240  
 Ala Asp Val Ser Ser Ala Ala Asp Ala Glu Arg Met Thr Thr Thr Thr 65 70 75 80  
 ctg gaa cac ttc ggc cgc atc gac atc gtc ttc gcc aac gcg gcc ggc atc 288  
 Leu Glu His Phe Gly Arg Ile Asp Ile Val Phe Ala Asn Ala Gly Ile 85 90 95 100

## PhoenixTemp32470.tmp.txt

															85																90																95															
ccc Pro	ggc Gly	tcc Ser	ggc Gly 100	gac Asp	gcc Ala	cac His	acc Thr	acc Thr 105	acc Thr	gaa Glu	gaa Glu	gaa Glu	tgg Trp 110	gac Asp	cgg Arg																336																															
gtc Val	atc Ile	gcc Ala 115	atc Ile	aac Asn	ctc Leu	aaa Lys	ggc Gly 120	gtc Val	tgg Trp	ctg Leu	acc Thr	tcc Ser 125	aaa Lys	tac Tyr	cgc Ala																384																															
ctg Leu	ccg Pro 130	cac His	atg Met	gtc Val	gaa Glu	cgc Arg 135	cgc Arg	agc Ser	ggg Gly	gtc Val	atc Ile 140	acc Thr	aac Asn	cag Gln	gcc Ala																432																															
agc Ser 145	gtc Val	ggc Gly	ggg Gly	ctc Leu	atc Ile 150	ggc Gly	atc Ile	ccc Pro	ggc Gly	atc Ile 155	ttc Phe	ccc Pro	tac Tyr	gcc Ala	gca Ala 160																480																															
gcc Ala	aaa Lys	ggc Gly	ggc Gly	gtg Val 165	atc Ile	tcc Ser	atg Met	acc Thr	cgg Arg 170	caa Gln	atg Met	gcc Ala	gcc Ala	gcc Ala 175	tac Tyr																528																															
gca Ala	ccc Pro	cac His	aac Asn 180	atc Ile	cgg Arg	gtc Val	aat Asn	gcg Ala 185	atc Ile	tgc Cys	ccg Pro	ggc Gly	ggg Gly 190	gtc Val	tac Tyr																576																															
acc Thr	ccg Pro	ctg Leu 195	gtg Val	gaa Glu	ctg Leu	tcc Ser	cgt Arg 200	caa Gln	aag Lys	cgc Arg	ggc Gly	ctg Leu 205	acc Thr	gcc Ala	agc Ser																624																															
agc Ser 210	gtc Val	gag Glu	gaa Glu	gcc Ala	aac Asn	gct Ala 215	atc Ile	gcc Ala	gca Ala	cgc Arg	aac Asn 220	tac Tyr	ccc Pro	ctg Leu	ggc Gly																672																															
cgt Arg 225	ctc Leu	ggc Gly	aca Thr	gtg Val 230	gag Glu	gag Glu	atc Ile	gcc Ala	tcc Ser	ctc Leu 235	gcc Ala	ctc Leu	ttc Phe	ctc Leu	gcc Ala 240																720																															
agc Ser	gac Asp	gaa Glu	gcc Ala 245	gcc Ala	tgg Trp	atc Ile	acc Thr	ggg Gly	ggc Gly 250	atc Ile	tac Tyr	ccc Pro	gtt Val	gac Asp 255	ggc Gly																768																															
gga Gly	cgc Arg	ggc Gly	gcg Ala 260	gta Val	ggg Gly	acc Thr	att Ile	ccc Pro 265	acc Thr	gac Asp	tga																804																																			

<210> 1696  
<211> 267  
<212> PRT  
<213> Thermobifida fusca YX

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Ala	Gly	Ser	Gly	Phe	Gly	Arg	Ala	Ser	Ala	Leu	Arg	Phe	Ala	Ala	Glu	
			20					25					30			
Gly	Ala	Ser	Val	Val	Cys	Val	Asp	Arg	Asn	Ala	Asp	Ala	Ala	His	Ser	
		35					40					45				
Ala	Ala	Asp	Asp	Ile	Ala	Ala	Ala	Gly	Gly	Thr	Ala	Leu	Ala	Leu	Thr	
	50				55						60					
Ala	Asp	Val	Ser	Ser	Ala	Ala	Asp	Ala	Glu	Arg	Met	Thr	Thr	Thr	Thr	
65					70					75						
Leu	Glu	His	Phe	Gly	Arg	Ile	Asp	Ile	Val	Phe	Ala	Asn	Ala	Gly	Ile	
				85					90					95		
Pro	Gly	Ser	Gly	Asp	Ala	His	Thr	Thr	Thr	Glu	Glu	Glu	Trp	Asp	Arg	
			100					105					110			
Val	Ile	Ala	Ile	Asn	Leu	Lys	Gly	Val	Trp	Leu	Thr	Ser	Lys	Tyr	Ala	
		115					120					125				
Leu	Pro	His	Met	Val	Glu	Arg	Arg	Ser	Gly	Val	Ile	Thr	Asn	Gln	Ala	
	130					135					140					
Ser	Val	Gly	Gly	Leu	Ile	Gly	Ile	Pro	Gly	Ile	Phe	Pro	Tyr	Ala	Ala	
145				150						155				160		
Ala	Lys	Gly	Gly	Val	Ile	Ser	Met	Thr	Arg	Gln	Met	Ala	Ala	Ala	Tyr	
				165					170					175		
Ala	Pro	His	Asn	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Gly	Val	Tyr	
			180					185					190			
Thr	Pro	Leu	Val	Glu	Leu	Ser	Arg	Gln	Lys	Arg	Gly	Leu	Thr	Ala	Ser	
		195					200					205				
Ser	Val	Glu	Glu	Ala	Asn	Ala	Ile	Ala	Ala	Arg	Asn	Tyr	Pro	Leu	Gly	
	210					215					220					

## PhoenixTemp32470.tmp.txt

Arg Leu Gly Thr Val Glu Glu Ile Ala Ser Leu Ala Leu Phe Leu Ala  
 225 230 235 240  
 Ser Asp Glu Ala Ala Trp Ile Thr Gly Gly Ile Tyr Pro Val Asp Gly  
 245 250 255  
 Gly Arg Gly Ala Val Gly Thr Ile Pro Thr Asp  
 260 265

&lt;210&gt; 1697

&lt;211&gt; 753

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus str. NATL2A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1697

atg	aca	tta	tca	aaa	tta	ctt	gaa	gga	cag	act	gca	att	gta	act	ggc	48
Met	Thr	Leu	Ser	Lys	Leu	Leu	Glu	Gly	Gln	Thr	Ala	Ile	Val	Thr	Gly	
1				5				10					15			
gca	agc	aga	ggt	att	ggt	aaa	gct	att	gca	att	ttt	cta	gcg	aag	gaa	96
Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Ile	Phe	Leu	Ala	Lys	Glu	
			20				25					30				
gga	gca	gaa	gta	atc	atc	aat	tat	tct	tca	tct	ttg	gag	aat	gca	aat	144
Gly	Ala	Glu	Val	Ile	Ile	Asn	Tyr	Ser	Ser	Ser	Leu	Glu	Asn	Ala	Asn	
		35				40					45					
aaa	gtc	gta	tca	gaa	ata	aac	tcc	ttt	gga	ggc	aaa	gca	tac	cct	ctt	192
Lys	Val	Val	Ser	Glu	Ile	Asn	Ser	Phe	Gly	Gly	Lys	Ala	Tyr	Pro	Leu	
	50					55					60					
caa	gct	gat	att	tct	aat	gaa	aac	tcg	gta	aat	gaa	tta	ata	aaa	aca	240
Gln	Ala	Asp	Ile	Ser	Asn	Glu	Asn	Ser	Val	Asn	Glu	Leu	Ile	Lys	Thr	
	65				70				75						80	
gta	ctg	gag	aaa	aat	aat	aaa	att	gat	gtc	ctc	gtc	aat	aac	gct	ggc	288
Val	Leu	Glu	Lys	Asn	Asn	Lys	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	
			85					90						95		
ata	act	aaa	gat	ggc	ctt	tta	atg	aga	atg	aaa	acg	gac	gat	tgg	cag	336
Ile	Thr	Lys	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Thr	Asp	Asp	Trp	Gln	
		100					105					110				
aaa	gtt	tta	gat	ctt	aac	ttg	agt	ggc	gtt	ttt	tat	tgc	aca	aga	gcg	384
Lys	Val	Leu	Asp	Leu	Asn	Leu	Ser	Gly	Val	Phe	Tyr	Cys	Thr	Arg	Ala	
	115					120					125					
gta	tca	agg	cag	atg	ttg	aag	caa	aaa	aaa	gga	aga	att	atc	aac	ata	432
Val	Ser	Arg	Gln	Met	Leu	Lys	Gln	Lys	Lys	Gly	Arg	Ile	Ile	Asn	Ile	
	130				135					140						
act	tct	gtc	gtt	ggg	ttg	atg	ggc	aac	cca	ggg	caa	gca	aat	tat	tct	480
Thr	Ser	Val	Val	Gly	Leu	Met	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Ser	
	145				150				155						160	
gca	gcc	aag	gca	gga	gta	gta	ggt	ctc	aca	caa	agt	gct	gca	aaa	gaa	528
Ala	Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Gln	Ser	Ala	Ala	Lys	Glu	
			165					170						175		
ttt	gcc	agc	aga	gga	att	act	gta	aat	gca	gtt	gcc	cct	ggc	ttt	att	576
Phe	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	
		180					185					190				
tca	act	gat	atg	aca	aaa	gat	ctg	aat	agt	gaa	tca	atc	ctt	tct	gct	624
Ser	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asn	Ser	Glu	Ser	Ile	Leu	Ser	Ala	
		195				200					205					
atc	ccg	ctt	gga	cga	ttc	ggc	aac	cct	gaa	gat	gtt	gca	ggg	gca	gtg	672
Ile	Pro	Leu	Gly	Arg	Phe	Gly	Asn	Pro	Glu	Asp	Val	Ala	Gly	Ala	Val	
	210				215						220					
aag	ttt	tta	gca	gcg	gat	cct	tcg	gct	tct	tac	ata	aca	ggc	cag	gta	720
Lys	Phe	Leu	Ala	Ala	Asp	Pro	Ser	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	
	225				230					235					240	
att	caa	gtt	gat	gga	ggg	atg	gtt	atg	agt	taa						753
Ile	Gln	Val	Asp	Gly	Gly	Met	Val	Met	Ser							
				245					250							

&lt;210&gt; 1698

&lt;211&gt; 250



&lt;212&gt; PRT

<213> *Prochlorococcus marinus* str. NATL2A

&lt;400&gt; 1698

```

Met Thr Leu Ser Lys Leu Leu Glu Gly Gln Thr Ala Ile Val Thr Gly
1      5      10      15
Ala Ser Arg Gly Ile Gly Lys Ala Ile Phe Leu Ala Lys Glu
20      25      30
Gly Ala Glu Val Ile Ile Asn Tyr Ser Ser Ser Leu Glu Asn Ala Asn
35      40      45
Lys Val Val Ser Glu Ile Asn Ser Phe Gly Gly Lys Ala Tyr Pro Leu
50      55      60
Gln Ala Asp Ile Ser Asn Glu Asn Ser Val Asn Glu Leu Ile Lys Thr
65      70      75      80
Val Leu Glu Lys Asn Asn Lys Ile Asp Val Leu Val Asn Asn Ala Gly
85      90      95
Ile Thr Lys Asp Gly Leu Leu Met Arg Met Lys Thr Asp Asp Trp Gln
100     105     110
Lys Val Leu Asp Leu Asn Leu Ser Gly Val Phe Tyr Cys Thr Arg Ala
115     120     125
Val Ser Arg Gln Met Leu Lys Gln Lys Lys Gly Arg Ile Ile Asn Ile
130     135     140
Thr Ser Val Val Gly Leu Met Gly Asn Pro Gly Gln Ala Asn Tyr Ser
145     150     155     160
Ala Ala Lys Ala Gly Val Val Gly Leu Thr Gln Ser Ala Ala Lys Glu
165     170     175
Phe Ala Ser Arg Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile
180     185     190
Ser Thr Asp Met Thr Lys Asp Leu Asn Ser Glu Ser Ile Leu Ser Ala
195     200     205
Ile Pro Leu Gly Arg Phe Gly Asn Pro Glu Asp Val Ala Gly Ala Val
210     215     220     225
Lys Phe Leu Ala Ala Asp Pro Ser Ala Ser Tyr Ile Thr Gly Gln Val
225     230     235     240
Ile Gln Val Asp Gly Gly Met Val Met Ser
245     250

```

&lt;210&gt; 1699

&lt;211&gt; 741

&lt;212&gt; DNA

<213> *Ralstonia eutropha* JMP134

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1699

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atg aag ctg aaa gac aag gtg gcc gtg atc acg ggc gcg gct gca ggc      48
Met Lys Leu Lys Asp Lys Val Ala Val Ile Thr Gly Ala Ala Ala Gly
1      5      10      15
att ggg cag gcg act gcg cgg aag ttc gca ggt gaa ggc gct acg gtg      96
Ile Gly Gln Ala Thr Ala Arg Lys Phe Ala Gly Glu Gly Ala Thr Val
20      25      30
att ctc tgc gac cga gcg gca gat gca gta cag caa gag gcc aaa agc      144
Ile Leu Cys Asp Arg Ala Ala Asp Ala Val Gln Gln Glu Ala Lys Ser
35      40      45
ctg agg tcg gag ggc tat agg gtc gct gcc tat tcg ttg gac gtc acc      192
Leu Arg Ser Glu Gly Tyr Arg Val Ala Ala Tyr Ser Leu Asp Val Thr
50      55      60
gac cgc gcg ggc gtg gac gct ttg gcc gcg gat atc ctg ggg aat ttt      240
Asp Arg Ala Gly Val Asp Ala Leu Ala Ala Asp Ile Leu Gly Asn Phe
65      70      75      80
ggg cgc atc gac ata ctg gtc aac aac gcg ggc atc acg ctg gat gca      288
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Leu Asp Ala
85      90      95
aag gtc acc cgc atg aca gaa gag cag ttt gac cgg gtg atc gat gtc      336
Lys Val Thr Arg Met Thr Glu Glu Gln Phe Asp Arg Val Ile Asp Val
100     105     110

```

PhoenixTemp32470.tmp.txt

aac ctc aag ggt gtg ttc aac tgc acg cag gcg gta atc ggc gca atg	384
Asn Leu Lys Gly Val Phe Asn Cys Thr Gln Ala Val Ile Gly Ala Met	
115 120 125	
ctc gag cag cag tcc ggg gtc att ctg aac gcg tcg agc gtg gtt gga	432
Leu Glu Gln Gln Ser Gly Val Ile Leu Asn Ala Ser Ser Val Val Gly	
130 135 140	
ctc tac ggc aac ttc ggt cag tcg aat tat gcg gct agc aag ttc ggt	480
Leu Tyr Gly Asn Phe Gly Gln Ser Asn Tyr Ala Ala Ser Lys Phe Gly	
145 150 155 160	
gtc atc gga ttt acc aag acc tgg gcg aga gag ctc ggg ccg aaa ggg	528
Val Ile Gly Phe Thr Lys Thr Trp Ala Arg Glu Leu Gly Pro Lys Gly	
165 170 175	
att cgc gtg aat gcc gtg tgc cct ggc ttt atc gag acc gac att ctg	576
Ile Arg Val Asn Ala Val Cys Pro Gly Phe Ile Glu Thr Asp Ile Leu	
180 185 190	
aag acg atg cct gag aag gtg ctt gac gga ttt cgt tcc aat tgc tgg	624
Lys Thr Met Pro Glu Lys Val Leu Asp Gly Phe Arg Ser Asn Cys Trp	
195 200 205	
cag cga cgc ctc ggc tct ccg aaa gag att gcg aac gtc tat gcg ttt	672
Gln Arg Arg Leu Gly Ser Pro Lys Glu Ile Ala Asn Val Tyr Ala Phe	
210 215 220	
ctt gcg tct gat gac gcc agc ttt gtt aac gga gaa gcg att gag gtt	720
Leu Ala Ser Asp Asp Ala Ser Phe Val Asn Gly Glu Ala Ile Glu Val	
225 230 235 240	
tcg gga ggg ctt tcg atc tga	741
Ser Gly Gly Leu Ser Ile	
245	

<210> 1700

<211> 246

<212> PRT

<213> Ralstonia eutropha JMP134

<400> 1700

Met Lys Leu Lys Asp Lys Val Ala Val Ile Thr Gly Ala Ala Ala Gly	
1 5 10 15	
Ile Gly Gln Ala Thr Ala Arg Lys Phe Ala Gly Glu Gly Ala Thr Val	
20 25 30	
Ile Leu Cys Asp Arg Ala Ala Asp Ala Val Gln Gln Glu Ala Lys Ser	
35 40 45	
Leu Arg Ser Glu Gly Tyr Arg Val Ala Ala Tyr Ser Leu Asp Val Thr	
50 55 60	
Asp Arg Ala Gly Val Asp Ala Leu Ala Ala Asp Ile Leu Gly Asn Phe	
65 70 75 80	
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Leu Asp Ala	
85 90 95	
Lys Val Thr Arg Met Thr Glu Glu Gln Phe Asp Arg Val Ile Asp Val	
100 105 110	
Asn Leu Lys Gly Val Phe Asn Cys Thr Gln Ala Val Ile Gly Ala Met	
115 120 125	
Leu Glu Gln Gln Ser Gly Val Ile Leu Asn Ala Ser Val Val Gly	
130 135 140	
Leu Tyr Gly Asn Phe Gly Gln Ser Asn Tyr Ala Ala Ser Lys Phe Gly	
145 150 155 160	
Val Ile Gly Phe Thr Lys Thr Trp Ala Arg Glu Leu Gly Pro Lys Gly	
165 170 175	
Ile Arg Val Asn Ala Val Cys Pro Gly Phe Ile Glu Thr Asp Ile Leu	
180 185 190	
Lys Thr Met Pro Glu Lys Val Leu Asp Gly Phe Arg Ser Asn Cys Trp	
195 200 205	
Gln Arg Arg Leu Gly Ser Pro Lys Glu Ile Ala Asn Val Tyr Ala Phe	
210 215 220	
Leu Ala Ser Asp Asp Ala Ser Phe Val Asn Gly Glu Ala Ile Glu Val	
225 230 235 240	
Ser Gly Gly Leu Ser Ile	
245	

<210> 1701

<211> 756

## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

&lt;213&gt; Ralstonia eutropha JMP134

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1701

atg	cga	ctg	caa	ggc	aag	gtt	gcg	att	ctc	acc	ggg	gct	gcg	ggc	ggg		48
Met	Arg	Leu	Gln	Gly	Lys	Val	Ala	Ile	Leu	Thr	Gly	Ala	Ala	Gly	Gly		
1				5				10					15				
atc	ggc	cgc	gct	acc	gcg	ctt	ggg	ttc	gcg	cgc	gaa	ggc	gcg	agc	att		96
Ile	Gly	Arg	Ala	Thr	Ala	Leu	Gly	Phe	Ala	Arg	Glu	Gly	Ala	Ser	Ile		
			20					25					30				
gtg	gtg	acc	gac	atc	aac	cgc	gac	ggc	gcg	cag	gaa	gtc	gcc	gac	acg		144
Val	Val	Thr	Asp	Ile	Asn	Arg	Asp	Gly	Ala	Gln	Glu	Val	Ala	Asp	Thr		
			35				40					45					
atc	aac	gca	ggc	ggc	ggg	cgt	gcc	atg	gca	ctg	gcg	cac	gac	gtg	ggc		192
Ile	Asn	Ala	Ala	Gly	Gly	Arg	Ala	Met	Ala	Leu	Ala	His	Asp	Val	Gly		
	50					55					60						
tgc	gaa	acg	cag	tgg	acg	cga	gtt	gtc	gac	gct	gcg	gtc	gag	gca	ttc		240
Cys	Glu	Thr	Gln	Trp	Thr	Arg	Val	Val	Asp	Ala	Ala	Val	Glu	Ala	Phe		
	65				70					75					80		
ggc	acg	gtc	gac	gtt	ctt	ttc	aac	aat	gcg	ggc	atc	ttc	gtg	ctc	aag		288
Gly	Thr	Val	Asp	Val	Leu	Phe	Asn	Asn	Ala	Gly	Ile	Phe	Val	Leu	Lys		
				85					90					95			
ccg	ctt	gcc	gaa	acg	acg	ctg	gac	gag	tgg	aac	cgc	ctc	atg	gcg	atc		336
Pro	Leu	Ala	Glu	Thr	Thr	Leu	Asp	Glu	Trp	Asn	Arg	Leu	Met	Ala	Ile		
			100					105					110				
aac	gtc	acg	ggc	gtg	ttc	ctt	ggc	atg	aag	cac	gtg	atg	ccg	ctg	atg		384
Asn	Val	Thr	Gly	Val	Phe	Leu	Gly	Met	Lys	His	Val	Met	Pro	Leu	Met		
			115				120					125					
gcg	cgc	gcc	ggg	aag	ggc	tcg	gtc	atc	aac	gtg	tct	tcg	gtc	gcc	ggc		432
Ala	Arg	Ala	Gly	Lys	Gly	Ser	Val	Ile	Asn	Val	Ser	Val	Ala	Gly			
	130					135					140						
ctg	gtc	ggc	tcg	ccg	cgg	tcc	acg	atg	tac	agc	gcc	agc	aag	ggg	gcc		480
Leu	Val	Gly	Ser	Pro	Arg	Ser	Thr	Met	Tyr	Ser	Ala	Ser	Lys	Gly	Ala		
	145				150					155				160			
gtg	cgt	gcc	atg	acg	aag	ggc	gca	gca	ctg	gag	tat	gcg	gcg	aag	ggc		528
Val	Arg	Ala	Met	Thr	Lys	Gly	Ala	Ala	Leu	Glu	Tyr	Ala	Ala	Lys	Gly		
				165					170					175			
gtg	agg	gtc	aat	tcg	atc	cat	ccc	ggc	ctt	atc	gat	acg	gcc	atg	gcc		576
Val	Arg	Val	Asn	Ser	Ile	His	Pro	Gly	Leu	Ile	Asp	Thr	Ala	Met	Ala		
			180					185					190				
gac	tac	gct	tcg	ggc	acg	gcg	gga	cgc	agc	aag	cag	gat	ctg	ggc	cag		624
Asp	Tyr	Ala	Ser	Gly	Thr	Ala	Gly	Arg	Ser	Lys	Gln	Asp	Leu	Gly	Gln		
		195					200					205					
gtc	atg	tcg	ccg	atg	ggc	cga	ctg	ggc	acg	gcc	gat	gaa	gtc	ggc	ggc		672
Val	Met	Ser	Pro	Met	Gly	Arg	Leu	Gly	Thr	Ala	Asp	Glu	Val	Gly	Gly		
	210				215						220						
ctc	gct	ctg	ttc	ctc	gct	tcg	gac	gag	tcg	tcc	tac	atg	aac	ggc	gcg		720
Leu	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Met	Asn	Gly	Ala		
	225				230					235					240		
gag	ttg	gtg	ctg	gac	ggc	gga	ttc	acg	gcg	gcc	tag						756
Glu	Leu	Val	Leu	Asp	Gly	Gly	Phe	Thr	Ala	Ala							
				245					250								

&lt;210&gt; 1702

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; Ralstonia eutropha JMP134

&lt;400&gt; 1702

Met	Arg	Leu	Gln	Gly	Lys	Val	Ala	Ile	Leu	Thr	Gly	Ala	Ala	Gly	Gly		
1				5				10					15				
Ile	Gly	Arg	Ala	Thr	Ala	Leu	Gly	Phe	Ala	Arg	Glu	Gly	Ala	Ser	Ile		
			20					25					30				
Val	Val	Thr	Asp	Ile	Asn	Arg	Asp	Gly	Ala	Gln	Glu	Val	Ala	Asp	Thr		

## PhoenixTemp32470.tmp.txt

```

      35      40      45
Ile Asn Ala Ala Gly Gly Arg Ala Met Ala Leu Ala His Asp Val Gly
   50      55      60
Cys Glu Thr Gln Trp Thr Arg Val Val Asp Ala Ala Val Glu Ala Phe
   65      70      75      80
Gly Thr Val Asp Val Leu Phe Asn Asn Ala Gly Ile Phe Val Leu Lys
      85      90      95
Pro Leu Ala Glu Thr Thr Leu Asp Glu Trp Asn Arg Leu Met Ala Ile
      100      105      110
Asn Val Thr Gly Val Phe Leu Gly Met Lys His Val Met Pro Leu Met
      115      120      125
Ala Arg Ala Gly Lys Gly Ser Val Ile Asn Val Ser Val Ala Gly
      130      135      140
Leu Val Gly Ser Pro Arg Ser Thr Met Tyr Ser Ala Ser Lys Gly Ala
      145      150      155      160
Val Arg Ala Met Thr Lys Gly Ala Ala Leu Glu Tyr Ala Ala Lys Gly
      165      170      175
Val Arg Val Asn Ser Ile His Pro Gly Arg Ser Lys Gln Asp Thr Ala Met Ala
      180      185      190
Asp Tyr Ala Ser Gly Thr Ala Gly Arg Ser Lys Gln Asp Leu Gly Gln
      195      200      205
Val Met Ser Pro Met Gly Arg Leu Gly Thr Ala Asp Glu Val Gly Gly
      210      215      220
Leu Ala Leu Phe Leu Ala Ser Asp Glu Ser Ser Tyr Met Asn Gly Ala
      225      230      235      240
Glu Leu Val Leu Asp Gly Gly Phe Thr Ala Ala
      245      250

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&lt;210&gt; 1703

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas fluorescens Pf0-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1703

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atg acg act ctt tct ggc aag acc gca ctg gtt acc ggc tcc acc agc      48
Met Thr Thr Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser
   1      5      10      15
gga atc ggg ctg ggc atc gcc ctg acg ctg gcc aag gct ggc gcc aac      96
Gly Ile Gly Leu Gly Ile Ala Leu Thr Leu Ala Lys Ala Gly Ala Asn
      20      25      30
ctg atc cta aac ggc ttt ggc gac gcc tcc aag gtg atc gcc gaa gtc      144
Leu Ile Leu Asn Gly Phe Gly Asp Ala Ser Lys Val Ile Ala Glu Val
      35      40      45
gag cag ttc ggc ggc aag gtc ggc cat cac ccg gcg gac gtc agc gat      192
Glu Gln Phe Gly Gly Lys Val Gly His His Pro Ala Asp Val Ser Asp
      50      55      60
ccc gcc cag atc gcc gac atg att gcc tac gcc gaa cgc gag ttc ggc      240
Pro Ala Gln Ile Ala Asp Met Ile Ala Tyr Ala Glu Arg Glu Phe Gly
      65      70      75      80
ggc gtg gac att ctg gtc aac aac gcc ggc atc cag cac gtc gcg gcg      288
Gly Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Ala
      85      90      95
gtg gaa gaa ttt ccg gtg gag cgc tgg gat tcg atc atc gcg atc aac      336
Val Glu Glu Phe Pro Val Glu Arg Trp Asp Ser Ile Ile Ala Ile Asn
      100      105      110
ctg tcg tcg gtg ttt cac agc act cgc ctg agt ttg ccg ggc atg cgc      384
Leu Ser Ser Val Phe His Ser Thr Arg Leu Ser Leu Pro Gly Met Arg
      115      120      125
gcc aag ggc tgg ggg cga atc gtc aac atc gcc tcg gtg cat ggt ctg      432
Ala Lys Gly Trp Gly Arg Ile Val Asn Ile Ala Ser Val His Gly Leu
      130      135      140
gtc ggt tcc acc ggc aaa gcc gcg tac gtg gca gcc aag cat ggg gtg      480
Val Gly Ser Thr Gly Lys Ala Ala Tyr Val Ala Ala Lys His Gly Val
      145      150      155      160

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## PhoenixTemp32470.tmp.txt

atc	ggc	ttg	acc	aaa	gtg	gtc	ggc	ctg	gaa	acc	gcc	gcc	agc	aac	gtc	528
Ile	Gly	Leu	Thr	Lys	Val	Val	Gly	Leu	Glu	Thr	Ala	Ala	Ser	Asn	Val	
				165					170					175		
acc	tgc	aac	gcc	atc	tgc	ccg	ggc	tgg	gtg	ctg	acg	ccg	ctg	gtg	cag	576
Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln	
			180					185					190			
aag	cag	atc	gat	gat	cgc	gca	gcc	aag	ggg	gtc	gac	ccg	cag	cag	gcg	624
Lys	Gln	Ile	Asp	Asp	Arg	Ala	Ala	Lys	Gly	Val	Asp	Pro	Gln	Gln	Ala	
		195					200					205				
caa	cac	gat	ctg	ctg	gcc	gaa	aag	cag	ccg	tgc	ctg	gag	ttc	gtc	acg	672
Gln	His	Asp	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Leu	Glu	Phe	Val	Thr	
		210				215					220					
ccg	gcg	cat	ctg	ggg	gaa	ctg	gtg	ctg	ttc	ctg	tgc	agc	gag	gcc	ggc	720
Pro	Ala	His	Leu	Gly	Glu	Leu	Val	Leu	Phe	Leu	Cys	Ser	Glu	Ala	Gly	
225					230					235					240	
agc	cag	gtg	cgt	ggc	gcc	gcg	tgg	aat	atc	gat	ggc	ggg	tgg	ctc	gcg	768
Ser	Gln	Val	Arg	Gly	Ala	Ala	Trp	Asn	Ile	Asp	Gly	Gly	Trp	Leu	Ala	
				245					250					255		
cag	taa															774
Gln																

&lt;210&gt; 1704

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas fluorescens Pf0-1

&lt;400&gt; 1704

Met	Thr	Thr	Leu	Ser	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	
1				5					10					15		
Gly	Ile	Gly	Leu	Gly	Ile	Ala	Leu	Thr	Leu	Ala	Lys	Ala	Gly	Ala	Asn	
			20					25					30			
Leu	Ile	Leu	Asn	Gly	Phe	Gly	Asp	Ala	Ser	Lys	Val	Ile	Ala	Glu	Val	
		35				40						45				
Glu	Gln	Phe	Gly	Gly	Lys	Val	Gly	His	His	Pro	Ala	Asp	Val	Ser	Asp	
	50				55					60						
Pro	Ala	Gln	Ile	Ala	Asp	Met	Ile	Ala	Tyr	Ala	Glu	Arg	Glu	Phe	Gly	
65				70					75						80	
Gly	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Ala	
			85						90					95		
Val	Glu	Glu	Phe	Pro	Val	Glu	Arg	Trp	Asp	Ser	Ile	Ile	Ala	Ile	Asn	
		100						105					110			
Leu	Ser	Ser	Val	Phe	His	Ser	Thr	Arg	Leu	Ser	Leu	Pro	Gly	Met	Arg	
		115					120					125				
Ala	Lys	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Val	His	Gly	Leu	
	130					135					140					
Val	Gly	Ser	Thr	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	
145				150					155						160	
Ile	Gly	Leu	Thr	Lys	Val	Val	Gly	Leu	Glu	Thr	Ala	Ala	Ser	Asn	Val	
			165					170						175		
Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln	
		180						185					190			
Lys	Gln	Ile	Asp	Asp	Arg	Ala	Ala	Lys	Gly	Val	Asp	Pro	Gln	Gln	Ala	
		195				200						205				
Gln	His	Asp	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Leu	Glu	Phe	Val	Thr	
	210					215					220					
Pro	Ala	His	Leu	Gly	Glu	Leu	Val	Leu	Phe	Leu	Cys	Ser	Glu	Ala	Gly	
225					230				235						240	
Ser	Gln	Val	Arg	Gly	Ala	Ala	Trp	Asn	Ile	Asp	Gly	Gly	Trp	Leu	Ala	
				245					250					255		
Gln																

&lt;210&gt; 1705

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas fluorescens Pf0-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1705

atg gct gaa cct ctg tcc ctg cca ccg gtg ccc gag cca cca aaa ggc	48
Met Ala Glu Pro Leu Ser Leu Pro Pro Val Pro Glu Pro Pro Lys Gly	
1 5 10 15	
gag cgt ctg aaa aac aag gtt gtg ttg ctg acc ggc gcc gcc caa ggc	96
Glu Arg Leu Lys Asn Lys Val Val Leu Leu Thr Gly Ala Ala Gln Gly	
20 25 30	
atc ggc gaa gca atc gtc gcg acc ttc gcc tcc cag cag gcc aaa ctg	144
Ile Gly Glu Ala Ile Val Ala Thr Phe Ala Ser Gln Ala Lys Leu	
35 40 45	
gtg atc agc gat atc cag gcc gaa aag gtc gag aaa gtc gcc gcc cac	192
Val Ile Ser Asp Ile Gln Ala Glu Lys Val Glu Lys Val Ala Ala His	
50 55 60	
tgg cgc gag cag ggc gcc gat gtg caa gcg atc aag gcc gac gta tcg	240
Trp Arg Glu Gln Gly Ala Asp Val Gln Ala Ile Lys Ala Asp Val Ser	
65 70 75 80	
cgt cag cag gat ctg cac gcc atg gcc aaa ctg gcc atc gaa ctg cac	288
Arg Gln Gln Asp Leu His Ala Met Ala Lys Leu Ala Ile Glu Leu His	
85 90 95	
ggg cgc atc gac gtg ctg gtc aat tgc gcc ggc gtc aac gtg ttc cgt	336
Gly Arg Ile Asp Val Leu Val Asn Cys Ala Gly Val Asn Val Phe Arg	
100 105 110	
gat ccg ctg gaa atg acc gaa gaa gac tgg aaa cgc tgc ttc gcg atc	384
Asp Pro Leu Glu Met Thr Glu Glu Asp Trp Lys Arg Cys Phe Ala Ile	
115 120 125	
gac ctc gac ggc gcc tgg tat ggc tgc aag gcc gta ttg ccg cag atg	432
Asp Leu Asp Gly Ala Trp Tyr Gly Cys Lys Ala Val Leu Pro Gln Met	
130 135 140	
atc gag cag ggc atc ggc agc atc atc aac att gcc tcg acc cat tcc	480
Ile Glu Gln Gly Ile Gly Ser Ile Ile Asn Ile Ala Ser Thr His Ser	
145 150 155 160	
acg aac atc att ccc ggc tgc ttc ccg tac ccg gtg gcc aag cat ggc	528
Thr Asn Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala Lys His Gly	
165 170 175	
ctg ctc ggc ctg acc cgc gcg ctg ggc atc gag tac gcg ccg aag ggt	576
Leu Leu Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala Pro Lys Gly	
180 185 190	
att cgg gtc aac gcg att gca ccg ggc tac atc gaa acc cag ctc aac	624
Ile Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln Leu Asn	
195 200 205	
gtc gat tac tgg aac ggt ttc gcc gac ccg cac gcc gaa cgt cag cgc	672
Val Asp Tyr Trp Asn Gly Phe Ala Asp Pro His Ala Glu Arg Gln Arg	
210 215 220	
gct ttc gat ctg cac cca ccg aaa cgc atc ggc caa ccg atc gaa gtg	720
Ala Phe Asp Leu His Pro Pro Lys Arg Ile Gly Gln Pro Ile Glu Val	
225 230 235 240	
gca atg act gct gta ttc ctg gcc agt gat gaa gcg ccg ttc atc aac	768
Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe Ile Asn	
245 250 255	
gcc tcg tgc atc act atc gat ggt ggt cgc tcg gtc atg tac cac gac	816
Ala Ser Cys Ile Thr Ile Asp Gly Gly Arg Ser Val Met Tyr His Asp	
260 265 270	
tga	819

&lt;210&gt; 1706

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas fluorescens Pf0-1

&lt;400&gt; 1706

Met Ala Glu Pro Leu Ser Leu Pro Pro Val Pro Glu Pro Pro Lys Gly
1 5 10 15
Glu Arg Leu Lys Asn Lys Val Val Leu Leu Thr Gly Ala Ala Gln Gly

## PhoenixTemp32470.tmp.txt

20 25 30  
 Ile Gly Glu Ala Ile Val Ala Thr Phe Ala Ser Gln Gln Ala Lys Leu  
 35 40 45  
 Val Ile Ser Asp Ile Gln Ala Glu Lys Val Glu Lys Val Ala Ala His  
 50 55 60  
 Trp Arg Glu Gln Gly Ala Asp Val Gln Ala Ile Lys Ala Asp Val Ser  
 65 70 75 80  
 Arg Gln Gln Asp Leu His Ala Met Ala Lys Leu Ala Ile Glu Leu His  
 85 90 95  
 Gly Arg Ile Asp Val Leu Val Asn Cys Ala Gly Val Asn Val Phe Arg  
 100 105 110  
 Asp Pro Leu Glu Met Thr Glu Glu Asp Trp Lys Arg Cys Phe Ala Ile  
 115 120 125  
 Asp Leu Asp Gly Ala Trp Tyr Gly Cys Lys Ala Val Leu Pro Gln Met  
 130 135 140  
 Ile Glu Gln Gly Ile Gly Ser Ile Ile Asn Ile Ala Ser Thr His Ser  
 145 150 155 160  
 Thr Asn Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala Lys His Gly  
 165 170 175  
 Leu Leu Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala Pro Lys Gly  
 180 185 190  
 Ile Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln Leu Asn  
 195 200 205  
 Val Asp Tyr Trp Asn Gly Phe Ala Asp Pro His Ala Glu Arg Gln Arg  
 210 215 220  
 Ala Phe Asp Leu His Pro Pro Lys Arg Ile Gly Gln Pro Ile Glu Val  
 225 230 235 240  
 Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe Ile Asn  
 245 250 255  
 Ala Ser Cys Ile Thr Ile Asp Gly Gly Arg Ser Val Met Tyr His Asp  
 260 265 270

&lt;210&gt; 1707

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Rhodobacter sphaeroides 2.4.1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1707

atg gcc ggt cgg ctg gag ggc aag cgc gcg ctg gtg acg gcg gca ggg	48
Met Ala Gly Arg Leu Glu Gly Lys Arg Ala Leu Val Thr Ala Ala Gly	
1 5 10 15	
cag ggg atc ggg cgc gcc tct gcg ctg gcc atg gcg cgc gag ggc gcg	96
Gln Gly Ile Gly Arg Ala Ser Ala Leu Ala Met Ala Arg Glu Gly Ala	
20 25 30	
cgt gtg ctg gcg acc gac ctg aat gcg gca gcg ctc gaa ggg ctt gcg	144
Arg Val Leu Ala Thr Asp Leu Asn Ala Ala Ala Leu Glu Gly Leu Ala	
35 40 45	
gcc gaa ggg ctc gag gtg cag ccg ctc gat gtg cgc gat ccg gcc tcg	192
Ala Glu Gly Leu Glu Val Gln Pro Leu Asp Val Arg Asp Pro Ala Ser	
50 55 60	
atc gcg gcc gct gtc gcg gcg gca ggg ccg ctc gac gtg ctc ttc aac	240
Ile Ala Ala Ala Val Ala Ala Gly Pro Leu Asp Val Leu Phe Asn	
65 70 75 80	
tgc gcg ggc ttc gtg gcc tcg ggc acg atc ctc gac tgc gac gag gag	288
Cys Ala Gly Phe Val Ala Ser Gly Thr Ile Leu Asp Cys Asp Glu Glu	
85 90 95	
gac tgg gcc ttc tcc gtc ggg ctg aac ctc acc ggc atg tat cgg atg	336
Asp Trp Ala Phe Ser Val Gly Leu Asn Leu Thr Gly Met Tyr Arg Met	
100 105 110	
tgc cgc gcc ttc ctg ccg ggc atg atc gcg ggc ggc ggc ggc tcg atc	384
Cys Arg Ala Phe Leu Pro Gly Met Ile Ala Gly Gly Gly Gly Ser Ile	
115 120 125	
atc aac atg gcc tcg gtc gtg tcc gcg gcc atc gcg gcg ccc aac cgc	432
Ile Asn Met Ala Ser Val Val Ser Ala Ala Ile Ala Pro Asn Arg	

## PhoenixTemp32470.tmp.txt

130	ttc gtc tac ggc acc acc	135	aag gcg ggg gtc gtg ggg	140	ctc acc aaa tcc	480
Phe Val Tyr Gly Thr Thr	Lys Ala Gly Val Val Gly	Leu Thr Lys Ser				
145	atc gcc gcc gat ttc atc ggg	150	cag ggc atc cgc tgc aac gcg	155	atc tgc	528
Ile Ala Ala Asp Phe Ile	Gly Gln Gly Ile Arg Cys Asn Ala Ile Cys	160				
165	ccc ggc acc gtc gaa agc ccc	170	tcg ctc gag gac cgg ctc	175	gcc acc	576
Pro Gly Thr Val Glu Ser	Pro Ser Leu Glu Asp Arg Leu Arg Ala Thr	185				
180	ggc gat tac gag gcc gcg cgg	190	cgc gcc ttc gtg gcc cgc	195	cag ccc atc	624
Gly Asp Tyr Glu Ala Ala Arg	Arg Ala Phe Val Ala Arg Gln Pro Ile	200				
195	ggc cgc atc ggc cgc ccg gag	205	gag atc gcg gcg ctt gtc	210	tat ctc	672
Gly Arg Ile Gly Arg Pro	Glu Glu Ile Ala Ala Leu Val Val Tyr Leu	215				
210	gct tcg gac gaa tcc gcc	220	tac acc acc ggg gtc gcc	225	cat gtc atc gac	720
Ala Ser Asp Glu Ser Ala Tyr	Thr Thr Gly Val Ala His Val Ile Asp	235				
225	ggg ggc tgg tcc aat atc	240	tga			741
Gly Gly Trp Ser Asn Ile		245				

&lt;210&gt; 1708

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Rhodobacter sphaeroides 2.4.1

&lt;400&gt; 1708

Met Ala Gly Arg Leu Glu Gly Lys Arg Ala Leu Val Thr Ala Ala Gly	1	5	10	15
Gln Gly Ile Gly Arg Ala Ser Ala Leu Ala Met Ala Arg Glu Gly Ala	20	25	30	35
Arg Val Leu Ala Thr Asp Leu Asn Ala Ala Leu Glu Gly Leu Ala	40	45	50	55
Ala Glu Gly Leu Glu Val Gln Pro Leu Asp Val Arg Asp Pro Ala Ser	60	65	70	75
Ile Ala Ala Ala Val Ala Ala Ala Gly Pro Leu Asp Val Leu Phe Asn	80	85	90	95
Cys Ala Gly Phe Val Ala Ser Gly Thr Ile Leu Asp Cys Asp Glu Glu	100	105	110	115
Asp Trp Ala Phe Ser Val Gly Leu Asn Leu Thr Gly Met Tyr Arg Met	120	125	130	135
Cys Arg Ala Phe Leu Pro Gly Met Ile Ala Gly Gly Gly Ser Ile	140	145	150	155
Ile Asn Met Ala Ser Val Val Ser Ala Ala Ile Ala Ala Pro Asn Arg	160	165	170	175
Phe Val Tyr Gly Thr Thr Lys Ala Gly Val Val Gly Leu Thr Lys Ser	180	185	190	195
Ile Ala Ala Asp Phe Ile Gly Gln Gly Ile Arg Cys Asn Ala Ile Cys	200	205	210	215
Pro Gly Thr Val Glu Ser Pro Ser Leu Glu Asp Arg Leu Arg Ala Thr	220	225	230	235
Gly Asp Tyr Glu Ala Ala Arg Arg Ala Phe Val Ala Arg Gln Pro Ile	240	245	250	255
Gly Arg Ile Gly Arg Pro Glu Glu Ile Ala Ala Leu Val Val Tyr Leu	260	265	270	275
Ala Ser Asp Glu Ser Ala Tyr Thr Thr Gly Val Ala His Val Ile Asp	280	285	290	295
225	Gly Gly Trp Ser Asn Ile	240		
245				

&lt;210&gt; 1709

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Burkholderia sp. 383

&lt;220&gt;

&lt;221&gt; CDS



&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1709

atg	aat	cgt	ctc	gca	ggc	aaa	gtt	gcc	atc	gtc	acc	ggc	gcc	ggt	agc	48
Met	Asn	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Ala	Gly	Ser	
1				5				10						15		
ggt	acc	ggc	atg	ggc	gcc	gtc	atc	gcg	cgc	gtg	ttc	gcc	gcg	gaa	ggc	96
Gly	Thr	Gly	Met	Gly	Ala	Val	Ile	Ala	Arg	Val	Phe	Ala	Ala	Glu	Gly	
			20					25					30			
gcc	acg	gtg	gtc	gtg	acg	gcc	aac	gcc	aat	cgc	cag	gac	aac	atg	gac	144
Ala	Thr	Val	Val	Val	Thr	Ala	Asn	Ala	Asn	Arg	Gln	Asp	Asn	Met	Asp	
			35				40					45				
acg	ctg	gtt	cgg	gag	atc	acc	gac	ctc	ggc	cag	agc	gcg	tcg	tcg	gcg	192
Thr	Leu	Val	Arg	Glu	Ile	Thr	Asp	Leu	Gly	Gln	Ser	Ala	Ser	Ser	Ala	
	50				55						60					
gtg	ctc	gac	gtg	acc	cgt	cag	gac	cag	tgg	gcg	tcg	gtc	gtg	gcg	gat	240
Val	Leu	Asp	Val	Thr	Arg	Gln	Asp	Gln	Trp	Ala	Ser	Val	Val	Ala	Asp	
	65				70					75					80	
acg	gtg	cag	cgc	cat	ggc	cgc	atc	gac	atc	ctg	atc	aac	aac	gca	ggc	288
Thr	Val	Gln	Arg	His	Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	
				85				90						95		
acg	ccg	ggc	ccg	cgc	gac	ggc	agc	tgg	gac	aag	gcg	acg	gcc	gaa	gat	336
Thr	Pro	Gly	Pro	Arg	Asp	Gly	Ser	Trp	Asp	Lys	Ala	Thr	Ala	Glu	Asp	
			100					105					110			
ttc	cat	cat	gtg	atc	gac	gtg	aac	ctg	aac	agc	cag	ttc	tac	gga	atc	384
Phe	His	His	Val	Ile	Asp	Val	Asn	Leu	Asn	Ser	Gln	Phe	Tyr	Gly	Ile	
			115				120					125				
aag	gcc	gtc	acg	ccg	cat	atg	gag	cgc	cag	ggc	aac	ggc	gcg	atc	gtc	432
Lys	Ala	Val	Thr	Pro	His	Met	Glu	Arg	Gln	Gly	Asn	Gly	Ala	Ile	Val	
	130					135					140					
aat	atc	tcg	tcg	gcg	gcg	ggc	atc	atc	gtg	ttc	ccc	gac	gtg	ccc	ccg	480
Asn	Ile	Ser	Ser	Ala	Ala	Gly	Ile	Ile	Val	Phe	Pro	Asp	Val	Pro	Pro	
	145			150					155						160	
ggt	tac	agc	gcc	tcc	aag	ggc	gcc	agc	cgt	cat	ctg	acc	aag	gcg	gcc	528
Gly	Tyr	Ser	Ala	Ser	Lys	Gly	Ala	Ser	Arg	His	Leu	Thr	Lys	Ala	Ala	
				165					170					175		
gcc	gtg	gat	ttc	gcc	cgc	cga	ggc	atc	cgc	gtc	aac	gga	atc	tat	ccc	576
Ala	Val	Asp	Phe	Ala	Arg	Arg	Gly	Ile	Arg	Val	Asn	Gly	Ile	Tyr	Pro	
			180				185						190			
ggg	ctg	atc	gaa	acg	ccg	atg	gcc	gct	cat	ttc	acc	gag	aat	ccg	gag	624
Gly	Leu	Ile	Glu	Thr	Pro	Met	Ala	Ala	His	Phe	Thr	Glu	Asn	Pro	Glu	
		195					200					205				
atg	ctg	gcg	ggc	ctg	ctc	aag	ggc	att	ccg	atc	ggc	cgg	gtc	ggg	acg	672
Met	Leu	Ala	Gly	Leu	Leu	Lys	Gly	Ile	Pro	Ile	Gly	Arg	Val	Gly	Thr	
	210					215					220					
tcc	gag	gaa	atc	gcc	aag	ggc	gcg	ctg	ttc	ctg	gcc	agc	gac	gat	gcg	720
Ser	Glu	Glu	Ile	Ala	Lys	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	
	225			230					235						240	
tcc	tac	gtc	atc	ggt	gcc	gag	ctg	gtg	gtc	gat	ggc	ggc	ttg	acg	agc	768
Ser	Tyr	Val	Ile	Gly	Ala	Glu	Leu	Val	Val	Asp	Gly	Gly	Leu	Thr	Ser	
				245					250					255		
att	tga															774
Ile																

&lt;210&gt; 1710

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Burkholderia sp. 383

&lt;400&gt; 1710

Met	Asn	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Ala	Gly	Ser	
1				5				10						15		
Gly	Thr	Gly	Met	Gly	Ala	Val	Ile	Ala	Arg	Val	Phe	Ala	Ala	Glu	Gly	
			20					25					30			
Ala	Thr	Val	Val	Val	Thr	Ala	Asn	Ala	Asn	Arg	Gln	Asp	Asn	Met	Asp	
		35					40					45				
Thr	Leu	Val	Arg	Glu	Ile	Thr	Asp	Leu	Gly	Gln	Ser	Ala	Ser	Ser	Ala	

## PhoenixTemp32470.tmp.txt

```

      50      55      60
Val Leu Asp Val Thr Arg Gln Asp Gln Trp Ala Ser Val Val Ala Asp
65 Thr Val Gln Arg His Gly Arg Ile Asp Ile Leu Ile Asn Asn Ala Gly
      85      90      95
Thr Pro Gly Pro Arg Asp Gly Ser Trp Asp Lys Ala Thr Ala Glu Asp
100 Phe His His Val Ile Asp Val Asn Leu Asn Ser Gln Phe Tyr Gly Ile
115 Lys Ala Val Thr Pro His Met Glu Arg Gln Gly Asn Gly Ala Ile Val
130 Asn Ile Ser Ser Ala Ala Gly Ile Ile Val Phe Pro Asp Val Pro Pro
145 Gly Tyr Ser Ala Ser Lys Gly Ala Ser Arg His Leu Thr Lys Ala Ala
165 Ala Val Asp Phe Ala Arg Arg Gly Ile Arg Val Asn Gly Ile Tyr Pro
180 Gly Leu Ile Glu Thr Pro Met Ala Ala His Phe Thr Glu Asn Pro Glu
195 Met Leu Ala Gly Leu Leu Lys Gly Ile Pro Ile Gly Arg Val Gly Thr
210 Ser Glu Glu Ile Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ala
225 Ser Tyr Val Ile Gly Ala Glu Leu Val Val Asp Gly Gly Leu Thr Ser
245
Ile

```

&lt;210&gt; 1711

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Burkholderia sp. 383

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1711

```

atg aat gtc aag att gac ggc cga ctg gcc ggc aag gtc gcc gtc gtg      48
Met Asn Val Lys Ile Asp Gly Arg Leu Ala Gly Lys Val Ala Val Val
1      5      10      15
agc ggc ggc gcc ggt ggc tgt ggc ggc gcg gcg tcc gaa ctg ttc gcc      96
Ser Gly Gly Ala Gly Gly Cys Gly Gly Ala Ala Ser Glu Leu Phe Ala
20      25      30
gca cag ggc gcg aag gtc gcg atc atc gac cgc gac ggc gac gcc gct      144
Ala Gln Gly Ala Lys Val Ala Ile Ile Asp Arg Asp Gly Asp Ala Ala
35      40      45
gaa aca ctc gca tcc cgg ctg cgc gac gcg ggc ctg cag gcg atc ggc      192
Glu Thr Leu Ala Ser Arg Leu Arg Asp Ala Gly Leu Gln Ala Ile Gly
50      55      60
ttc ggc gcc gac gtg tgc aaa cag gcc gaa gtc cag cag gcc gtg aac      240
Phe Gly Ala Asp Val Ser Lys Gln Ala Glu Val Gln Gln Ala Val Asn
65      70      75      80
gcc gcg cgg gag cag tac ggc aac gcg gac atc ctg ttc aat cac gcc      288
Ala Ala Arg Glu Gln Tyr Gly Asn Ala Asp Ile Leu Phe Asn His Ala
85      90      95
ggc acg ctg atc gtc aaa ccg ttc ctc gac atc gag gag tcg gaa tgg      336
Gly Thr Leu Ile Val Lys Pro Phe Leu Asp Ile Glu Glu Ser Glu Trp
100      105      110
gac tgg ctg atg ggc gtg aac gtg aag agc atg ttc ctg atg acg aaa      384
Asp Trp Leu Met Gly Val Asn Val Lys Ser Met Phe Leu Met Thr Lys
115      120      125
gcg gtg ctg ccg cag atg ctg gag aag ggg ccg ggc agc atc gtc tgc      432
Ala Val Leu Pro Gln Met Leu Glu Lys Gly Arg Gly Ser Ile Val Cys
130      135      140
acg tcg tcg att tcc gcg gta tgc gcg acg ccg ggc gag gtg ctg tat      480
Thr Ser Ser Ile Ser Ala Val Cys Ala Thr Pro Gly Glu Val Leu Tyr
145      150      155      160

```

## PhoenixTemp32470.tmp.txt

gac	gcg	acc	aag	ggc	gcg	tgc	cac	atg	ttc	gcg	cgg	gcg	att	gcg	gtc	528
Asp	Ala	Thr	Lys	Gly	Ala	Cys	His	Met	Phe	Ala	Arg	Ala	Ile	Ala	Val	
				165					170					175		
gag	tac	cgc	gac	cgc	ggc	att	cgg	tgc	aac	gcg	ctc	gca	ccg	ggg	ttc	576
Glu	Tyr	Arg	Asp	Arg	Gly	Ile	Arg	Cys	Asn	Ala	Leu	Ala	Pro	Gly	Phe	
			180					185					190			
atc	cgc	acg	ccg	cac	ggg	atg	cgc	gaa	ctg	aag	gac	ctg	cag	gcg	atg	624
Ile	Arg	Thr	Pro	His	Gly	Met	Arg	Glu	Leu	Lys	Asp	Leu	Gln	Ala	Met	
		195					200					205				
ggt	gtc	gac	gcg	acc	gag	gcg	gcg	atc	gcg	gtt	cag	caa	ggc	cgc	ctg	672
Gly	Val	Asp	Ala	Thr	Glu	Ala	Ala	Ile	Ala	Val	Gln	Gln	Gly	Arg	Leu	
	210					215					220					
tgc	gag	ccg	tcg	gaa	gtc	gcg	gcg	gca	ctg	ttc	ctc	gct	tcc	gac		720
Cys	Glu	Pro	Ser	Glu	Val	Ala	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp		
225					230				235					240		
gag	tcg	agt	ttc	gtc	aac	ggc	acc	cac	ctg	ttc	gtc	gac	aac	tgc	ttc	768
Glu	Ser	Ser	Phe	Val	Asn	Gly	Thr	His	Leu	Phe	Val	Asp	Asn	Cys	Phe	
				245					250					255		
tcc	gcc	gtc	tga													780
Ser	Ala	Val														

&lt;210&gt; 1712

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Burkholderia sp. 383

&lt;400&gt; 1712

Met	Asn	Val	Lys	Ile	Asp	Gly	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Val	
1				5					10					15		
Ser	Gly	Gly	Ala	Gly	Gly	Cys	Gly	Gly	Ala	Ala	Ser	Glu	Leu	Phe	Ala	
			20					25					30			
Ala	Gln	Gly	Ala	Lys	Val	Ala	Ile	Ile	Asp	Arg	Asp	Gly	Asp	Ala	Ala	
		35					40					45				
Glu	Thr	Leu	Ala	Ser	Arg	Leu	Arg	Asp	Ala	Gly	Leu	Gln	Ala	Ile	Gly	
	50					55					60					
Phe	Gly	Ala	Asp	Val	Ser	Lys	Gln	Ala	Glu	Val	Gln	Gln	Ala	Val	Asn	
65					70				75						80	
Ala	Ala	Arg	Glu	Gln	Tyr	Gly	Asn	Ala	Asp	Ile	Leu	Phe	Asn	His	Ala	
				85					90					95		
Gly	Thr	Leu	Ile	Val	Lys	Pro	Phe	Leu	Asp	Ile	Glu	Glu	Ser	Glu	Trp	
		100						105					110			
Asp	Trp	Leu	Met	Gly	Val	Asn	Val	Lys	Ser	Met	Phe	Leu	Met	Thr	Lys	
		115					120					125				
Ala	Val	Leu	Pro	Gln	Met	Leu	Glu	Lys	Gly	Arg	Gly	Ser	Ile	Val	Cys	
	130					135					140					
Thr	Ser	Ser	Ile	Ser	Ala	Val	Cys	Ala	Thr	Pro	Gly	Glu	Val	Leu	Tyr	
145					150					155					160	
Asp	Ala	Thr	Lys	Gly	Ala	Cys	His	Met	Phe	Ala	Arg	Ala	Ile	Ala	Val	
			165						170					175		
Glu	Tyr	Arg	Asp	Arg	Gly	Ile	Arg	Cys	Asn	Ala	Leu	Ala	Pro	Gly	Phe	
			180					185					190			
Ile	Arg	Thr	Pro	His	Gly	Met	Arg	Glu	Leu	Lys	Asp	Leu	Gln	Ala	Met	
		195					200					205				
Gly	Val	Asp	Ala	Thr	Glu	Ala	Ala	Ile	Ala	Val	Gln	Gln	Gly	Arg	Leu	
	210					215					220					
Cys	Glu	Pro	Ser	Glu	Val	Ala	Ala	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	
225					230					235					240	
Glu	Ser	Ser	Phe	Val	Asn	Gly	Thr	His	Leu	Phe	Val	Asp	Asn	Cys	Phe	
				245					250					255		
Ser	Ala	Val														

&lt;210&gt; 1713

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Burkholderia sp. 383

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1713

atg	aaa	ctc	aag	gac	aag	gtg	gcg	atc	atc	acg	ggc	gcc	gcg	gcg	ggg	48
Met	Lys	Leu	Lys	Asp	Lys	Val	Ala	Ile	Ile	Thr	Gly	Ala	Ala	Ala	Gly	
1				5				10					15			
atc	ggg	cag	gca	acg	gcc	agg	acc	ttc	gcg	agc	gaa	ggg	gcg	atc	gtc	96
Ile	Gly	Gln	Ala	Thr	Ala	Arg	Thr	Phe	Ala	Ser	Glu	Gly	Ala	Ile	Val	
			20					25					30			
gtg	ttg	tgc	gac	cgt	tcc	gca	gac	gcg	gtg	cga	cac	gag	gcg	cgg	cac	144
Val	Leu	Cys	Asp	Arg	Ser	Ala	Asp	Ala	Val	Arg	His	Glu	Ala	Arg	His	
			35				40					45				
ctg	aac	gag	cgc	ggc	cat	tcg	gcg	gtc	gcg	cat	acg	ctc	gac	gtg	acc	192
Leu	Asn	Glu	Arg	Gly	His	Ser	Ala	Val	Ala	His	Thr	Leu	Asp	Val	Thr	
	50					55					60					
gac	cgg	gcc	ggc	atc	gac	gcg	gta	atc	gcg	aac	gtg	aag	gcg	cag	ttc	240
Asp	Arg	Ala	Gly	Ile	Asp	Ala	Val	Ile	Ala	Asn	Val	Lys	Ala	Gln	Phe	
	65				70					75					80	
ggc	cgg	atc	gac	att	ctc	gtc	aac	aac	gcg	ggc	att	acg	cag	gat	gcg	288
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Gln	Asp	Ala	
				85					90					95		
cgg	ctc	gtg	aac	atg	agc	gag	gaa	cag	ttc	gac	aag	gtc	atc	gac	gtc	336
Arg	Leu	Val	Asn	Met	Ser	Glu	Glu	Gln	Phe	Asp	Lys	Val	Ile	Asp	Val	
			100					105					110			
aac	ctg	aag	ggc	gtg	ttc	aac	tgc	acg	cag	gcg	gtc	gtc	gac	acg	atg	384
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Gln	Ala	Val	Val	Asp	Thr	Met	
		115					120					125				
atc	gag	cag	aag	cgc	ggc	gtg	gtg	ctc	aac	gcg	tcg	agc	gtc	gtc	ggc	432
Ile	Glu	Gln	Lys	Arg	Gly	Val	Val	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly	
	130					135					140					
atc	tac	ggg	aat	ttc	ggc	cag	acg	aac	tac	gcg	gcc	agc	aaa	ttc	ggc	480
Ile	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Phe	Gly	
	145				150					155					160	
gtg	atc	ggt	ttc	acc	aag	acg	tgg	gcc	agg	gag	ctc	ggc	cct	aaa	ggc	528
Val	Ile	Gly	Phe	Thr	Lys	Thr	Trp	Ala	Arg	Glu	Leu	Gly	Pro	Lys	Gly	
				165				170						175		
att	cgc	gtc	aat	gcg	gtg	tgc	ccg	ggc	ttc	atc	gag	acg	gac	atc	ctc	576
Ile	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Phe	Ile	Glu	Thr	Asp	Ile	Leu	
			180					185					190			
aag	aca	atg	ccg	gac	aaa	gtg	ctc	gac	ggg	ttt	cgg	gac	gca	tgc	tgg	624
Lys	Thr	Met	Pro	Asp	Lys	Val	Leu	Asp	Gly	Phe	Arg	Asp	Ala	Cys	Trp	
		195					200					205				
cag	cgg	cgg	ttg	ggt	acg	ccg	agc	gaa	att	gcg	agc	ggt	tac	gcg	ttc	672
Gln	Arg	Arg	Leu	Gly	Thr	Pro	Ser	Glu	Ile	Ala	Ser	Val	Tyr	Ala	Phe	
	210					215					220					
ctc	gcg	tcg	gac	gaa	gcc	agt	ttc	gtg	aac	ggg	acg	gcg	atc	gag	gtg	720
Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe	Val	Asn	Gly	Thr	Ala	Ile	Glu	Val	
	225				230					235					240	
tcg	ggc	ggg	ttg	tcg	gtg	tag										741
Ser	Gly	Gly	Leu	Ser	Val											
				245												

&lt;210&gt; 1714

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Burkholderia sp. 383

&lt;400&gt; 1714

Met	Lys	Leu	Lys	Asp	Lys	Val	Ala	Ile	Ile	Thr	Gly	Ala	Ala	Ala	Gly	
1				5				10						15		
Ile	Gly	Gln	Ala	Thr	Ala	Arg	Thr	Phe	Ala	Ser	Glu	Gly	Ala	Ile	Val	
			20					25					30			
Val	Leu	Cys	Asp	Arg	Ser	Ala	Asp	Ala	Val	Arg	His	Glu	Ala	Arg	His	
		35					40					45				
Leu	Asn	Glu	Arg	Gly	His	Ser	Ala	Val	Ala	His	Thr	Leu	Asp	Val	Thr	
	50					55					60					
Asp	Arg	Ala	Gly	Ile	Asp	Ala	Val	Ile	Ala	Asn	Val	Lys	Ala	Gln	Phe	

## PhoenixTemp32470.tmp.txt

65 Gly Arg Ile Asp Ile 70 Leu Val Asn Asn Ala 75 Gly Ile Thr Gln Asp 80 Ala  
 Arg Leu Val Asn Met Ser Glu Glu Gln Phe Asp Lys Val Ile Asp Val  
 Asn Leu Lys Gly Val Phe Asn Cys Thr Gln Ala Val Val Asp Thr Met  
 Ile Glu Gln Lys Arg Gly Val Val Leu Asn Ala Ser Val Val Gly  
 Ile Tyr Gly Asn Phe Gly Gln Thr Asn Tyr Ala Ala Ser Lys Phe Gly  
 Val Ile Gly Phe Thr Lys Thr Trp Ala Arg Glu Leu Gly Pro Lys Gly  
 Ile Arg Val Asn Ala Val Cys Pro Gly Phe Ile Glu Thr Asp Ile Leu  
 Lys Thr Met Pro Asp Lys Val Leu Asp Gly Phe Arg Asp Ala Cys Trp  
 Gln Arg Arg Leu Gly Thr Pro Ser Glu Ile Ala Ser Val Tyr Ala Phe  
 Leu Ala Ser Asp Glu Ala Ser Phe Val Asn Gly Thr Ala Ile Glu Val  
 Ser Gly Gly Leu Ser Val

&lt;210&gt; 1715

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Burkholderia thailandensis E264

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1715

atg	acg	aag	aat	ctg	gcg	ccg	cgt	ctt	gcc	ggc	aag	cgc	gca	ttc	atc	48
Met	Thr	Lys	Asn	Leu	Ala	Pro	Arg	Leu	Ala	Gly	Lys	Arg	Ala	Phe	Ile	
1				5					10					15		
acc	ggc	gcg	gcg	ggc	ggc	ctt	ggg	cgc	gcg	atc	gcg	cgt	cgg	atg	gcg	96
Thr	Gly	Ala	Ala	Gly	Gly	Leu	Gly	Arg	Ala	Ile	Ala	Arg	Arg	Met	Ala	
			20					25					30			
gaa	cag	ggc	gcg	aag	gtg	ttc	ttg	acc	gac	atc	gtc	gac	gcg	gcc	gtg	144
Glu	Gln	Gly	Ala	Lys	Val	Phe	Leu	Thr	Asp	Ile	Val	Asp	Ala	Ala	Val	
		35				40						45				
ctc	gac	gcg	ttc	gcg	gcc	gag	ctc	aac	gat	gcg	gcg	ggt	gag	cgc	gtc	192
Leu	Asp	Ala	Phe	Ala	Ala	Glu	Leu	Asn	Asp	Ala	Ala	Gly	Glu	Arg	Val	
	50					55						60				
gcg	tgg	gcg	gcc	gtg	cat	gac	gtc	acc	gac	gaa	gcg	cag	tgg	gcg	tcg	240
Ala	Trp	Ala	Ala	Val	His	Asp	Val	Thr	Asp	Glu	Ala	Gln	Trp	Ala	Ser	
	65				70					75					80	
cgg	ctt	tcg	cag	gcg	aac	gac	gcg	atg	ggc	ggg	ctg	tcg	gtg	ctc	gtg	288
Arg	Leu	Ser	Gln	Ala	Asn	Asp	Ala	Met	Gly	Gly	Leu	Ser	Val	Leu	Val	
				85					90					95		
cac	aac	gcg	ggc	atc	ggc	tcg	ttc	ggc	gcc	gtc	ggg	cag	atc	gag	cgc	336
His	Asn	Ala	Gly	Ile	Gly	Ser	Phe	Gly	Ala	Val	Gly	Gln	Ile	Glu	Arg	
			100					105					110			
gac	gaa	tgg	cgg	cgc	gtg	atg	gcg	atc	aac	gtc	gag	agc	atc	gtg	ctc	384
Asp	Glu	Trp	Arg	Arg	Val	Met	Ala	Ile	Asn	Val	Glu	Ser	Ile	Val	Leu	
		115					120					125				
ggc	acg	aag	cgc	gcg	ctg	ccg	tat	ctg	gag	gcg	ggc	gcg	ccc	gcg	tcg	432
Gly	Thr	Lys	Arg	Ala	Leu	Pro	Tyr	Leu	Glu	Ala	Gly	Ala	Pro	Ala	Ser	
	130					135					140					
atc	gtc	aac	atc	tcg	tcg	gcc	gcg	ttc	aag	cag	gag	ccc	gac	tac		480
Ile	Val	Asn	Ile	Ser	Ser	Val	Ala	Ala	Phe	Lys	Gln	Glu	Pro	Asp	Tyr	
	145				150					155					160	
acc	gcg	tac	aac	gcg	tcg	aag	gcg	gcg	gtc	gct	tcg	ctg	acg	aag	tcg	528
Thr	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Ala	Ser	Leu	Thr	Lys	Ser	
				165					170					175		
atc	gcg	gtc	gac	tgc	gcg	cgc	cgg	cag	acc	gag	gtg	cgc	tgc	aac	tcg	576

PhoenixTemp32470.tmp.txt

Ile	Ala	Val	Asp	Cys	Ala	Arg	Arg	Gln	Thr	Glu	Val	Arg	Cys	Asn	Ser		
atc	cat	ccg	tcg	ttc	atc	atg	acg	ggc	atc	gtc	gcg	ccg	atc	gtc	cg		
Ile	His	Pro	Ser	Phe	Ile	Met	Thr	Gly	Ile	Val	Ala	Pro	Ile	Val	Arg		624
		195					200					205					
cag	gtc	ggc	gag	aag	gag	gcg	gcg	cgc	aag	ctc	gcg	cgc	ggc	gtg	ccg		672
Gln	Val	Gly	Glu	Lys	Glu	Ala	Ala	Arg	Lys	Leu	Ala	Arg	Gly	Val	Pro		
	210					215					220						
atg	cgc	cgg	ctc	ggc	gag	ccg	gac	gat	gtc	gcg	tat	gcg	gcc	gtc	tat		720
Met	Arg	Arg	Leu	Gly	Glu	Pro	Asp	Asp	Val	Ala	Tyr	Ala	Ala	Val	Tyr		
225					230					235					240		
ctc	gca	tcc	gac	gag	agc	cgt	tac	gtg	acg	ggc	gcg	gag	ctc	gtg	atc		768
Leu	Ala	Ser	Asp	Glu	Ser	Arg	Tyr	Val	Thr	Gly	Ala	Glu	Leu	Val	Ile		
				245					250					255			
gac	ggc	ggg	atg	tgc	gcg	gtc	tga										792
Asp	Gly	Gly	Met	Cys	Ala	Val											
			260														

<210> 1716

<211> 263

<212> PRT

<213> Burkholderia thailandensis E264

<400> 1716

Met	Thr	Lys	Asn	Leu	Ala	Pro	Arg	Leu	Ala	Gly	Lys	Arg	Ala	Phe	Ile		
1				5					10					15			
Thr	Gly	Ala	Ala	Gly	Gly	Leu	Gly	Arg	Ala	Ile	Ala	Arg	Arg	Met	Ala		
		20						25					30				
Glu	Gln	Gly	Ala	Lys	Val	Phe	Leu	Thr	Asp	Ile	Val	Asp	Ala	Ala	Val		
		35					40					45					
Leu	Asp	Ala	Phe	Ala	Ala	Glu	Leu	Asn	Asp	Ala	Ala	Gly	Glu	Arg	Val		
	50					55					60						
Ala	Trp	Ala	Ala	Val	His	Asp	Val	Thr	Asp	Glu	Ala	Gln	Trp	Ala	Ser		
65					70				75						80		
Arg	Leu	Ser	Gln	Ala	Asn	Asp	Ala	Met	Gly	Gly	Leu	Ser	Val	Leu	Val		
			85					90						95			
His	Asn	Ala	Gly	Ile	Gly	Ser	Phe	Gly	Ala	Val	Gly	Gln	Ile	Glu	Arg		
			100					105					110				
Asp	Glu	Trp	Arg	Arg	Val	Met	Ala	Ile	Asn	Val	Glu	Ser	Ile	Val	Leu		
	115						120					125					
Gly	Thr	Lys	Arg	Ala	Leu	Pro	Tyr	Leu	Glu	Ala	Gly	Ala	Pro	Ala	Ser		
	130					135					140						
Ile	Val	Asn	Ile	Ser	Ser	Val	Ala	Ala	Phe	Lys	Gln	Glu	Pro	Asp	Tyr		
145				150					155						160		
Thr	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Ala	Ser	Leu	Thr	Lys	Ser		
			165						170					175			
Ile	Ala	Val	Asp	Cys	Ala	Arg	Arg	Gln	Thr	Glu	Val	Arg	Cys	Asn	Ser		
			180					185					190				
Ile	His	Pro	Ser	Phe	Ile	Met	Thr	Gly	Ile	Val	Ala	Pro	Ile	Val	Arg		
		195					200					205					
Gln	Val	Gly	Glu	Lys	Glu	Ala	Ala	Arg	Lys	Leu	Ala	Arg	Gly	Val	Pro		
	210					215					220						
Met	Arg	Arg	Leu	Gly	Glu	Pro	Asp	Asp	Val	Ala	Tyr	Ala	Ala	Val	Tyr		
225					230					235					240		
Leu	Ala	Ser	Asp	Glu	Ser	Arg	Tyr	Val	Thr	Gly	Ala	Glu	Leu	Val	Ile		
				245					250					255			
Asp	Gly	Gly	Met	Cys	Ala	Val											
			260														

<210> 1717

<211> 744

<212> DNA

<213> Burkholderia thailandensis E264

<220>

<221> CDS

<222> (1)..(744)

<223> transl\_table=11

## PhoenixTemp32470.tmp.txt

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<400> 1717
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Met Gly Asp Arg Leu Ala Gly Lys Thr Ala Leu Val Thr Ala Ala Ala
1      5      10      15
cag ggc atc ggc cgc gcg ggc gcc gag cgg ctc gcg cgc gaa ggc gcg      96
Gln Gly Ile Gly Arg Ala Ala Ala Glu Arg Leu Ala Arg Glu Gly Ala
20      25      30
cgc gtg atc gcg acg gat ctg cgc atc gac gcg ttg cgc gac ggc ccg      144
Arg Val Ile Ala Thr Asp Leu Arg Ile Asp Ala Leu Arg Asp Gly Pro
35      40      45
ttc gac gcg cgc gtg ctc gac gtg cgc gac ggc gcg gcg atc ggc gcg      192
Phe Asp Ala Arg Val Leu Asp Val Arg Asp Gly Ala Ala Ile Gly Ala
50      55      60
ctc gcc gac gcg atc ggc ccc gtc gac gcg ctc ttc aac tgc gcg ggc      240
Leu Ala Asp Ala Ile Gly Pro Val Asp Ala Leu Phe Asn Cys Ala Gly
65      70      75      80
ttc gtc cac gcg ggc tcg gtg ctc gac gcg acc gag gac gaa tgg gac      288
Phe Val His Ala Gly Ser Val Leu Asp Ala Thr Glu Asp Glu Trp Asp
85      90      95
ttc ggc ttc gat ctg aac gtg aag tcg atg tac cgg acg atc cgc gcg      336
Phe Gly Phe Asp Leu Asn Val Lys Ser Met Tyr Arg Thr Ile Arg Ala
100      105      110
ttc ctg ccc gcg atg ctc gcg cgc gag cgc ggc tcg atc atc aac atg      384
Phe Leu Pro Ala Met Leu Ala Arg Glu Arg Gly Ser Ile Ile Asn Met
115      120      125
gcg tcc gcc gcg tcg agc gtg aag ggc gtg ccg gac cgg ttc gtc tac      432
Ala Ser Ala Ala Ser Ser Val Lys Gly Val Pro Asp Arg Phe Val Tyr
130      135      140
ggt gcg acg aag gcg gcc gtg atc ggc ctg acg aag tcg gtc gcc gcc      480
Gly Ala Thr Lys Ala Ala Val Ile Gly Leu Thr Lys Ser Val Ala Ala
145      150      155      160
gat ttc gtc acg cac ggg att cgc tgc aat gcg atc tgc ccg ggc acc      528
Asp Phe Val Thr His Gly Ile Arg Cys Asn Ala Ile Cys Pro Gly Thr
165      170      175
gtc gaa tcg ccg tcg ctc gat gcg cgc atc gtc gag cag gcg cgc gcg      576
Val Glu Ser Pro Ser Leu Asp Ala Arg Ile Val Glu Gln Ala Arg Ala
180      185      190
cgc ggc gaa tcg gtc gac gcg gtg cgc gcg gcg ttc gtc gcg cgc cag      624
Arg Gly Glu Ser Val Asp Ala Val Arg Ala Ala Phe Val Ala Arg Gln
195      200      205
ccg atg ggg cgc atc ggc aag ccg cag gaa atc gcg gcg ctc gtc gca      672
Pro Met Gly Arg Ile Gly Lys Pro Gln Glu Ile Ala Ala Leu Val Ala
210      215      220
tat ctc gcg tcc gac gaa tcg tcg ttc acg acg ggc gcg atc cat ctg      720
Tyr Leu Ala Ser Asp Glu Ser Ser Phe Thr Thr Gly Ala Ile His Leu
225      230      235      240
atc gac ggc ggc tgg tcg aac tga
Ile Asp Gly Gly Trp Ser Asn
245

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<210> 1718
<211> 247
<212> PRT
<213> Burkholderia thailandensis E264

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<400> 1718
Met Gly Asp Arg Leu Ala Gly Lys Thr Ala Leu Val Thr Ala Ala Ala
1      5      10      15
Gln Gly Ile Gly Arg Ala Ala Ala Glu Arg Leu Ala Arg Glu Gly Ala
20      25      30
Arg Val Ile Ala Thr Asp Leu Arg Ile Asp Ala Leu Arg Asp Gly Pro
35      40      45
Phe Asp Ala Arg Val Leu Asp Val Arg Asp Gly Ala Ala Ile Gly Ala
50      55      60
Leu Ala Asp Ala Ile Gly Pro Val Asp Ala Leu Phe Asn Cys Ala Gly
65      70      75      80
Phe Val His Ala Gly Ser Val Leu Asp Ala Thr Glu Asp Glu Trp Asp
85      90      95
Phe Gly Phe Asp Leu Asn Val Lys Ser Met Tyr Arg Thr Ile Arg Ala

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## PhoenixTemp32470.tmp.txt

100 105 110  
 Phe Leu Pro Ala Met Leu Ala Arg Glu Arg Gly Ser Ile Ile Asn Met  
 115 120 125  
 Ala Ser Ala Ala Ser Ser Val Lys Gly Val Pro Asp Arg Phe Val Tyr  
 130 135 140  
 Gly Ala Thr Lys Ala Ala Val Ile Gly Leu Thr Lys Ser Val Ala Ala  
 145 150 155  
 Asp Phe Val Thr His Gly Ile Arg Cys Asn Ala Ile Cys Pro Gly Thr  
 165 170 175  
 Val Glu Ser Pro Ser Leu Asp Ala Arg Ile Val Glu Gln Ala Arg Ala  
 180 185 190  
 Arg Gly Glu Ser Val Asp Ala Val Arg Ala Ala Phe Val Ala Arg Gln  
 195 200 205  
 Pro Met Gly Arg Ile Gly Lys Pro Gln Glu Ile Ala Ala Leu Val Ala  
 210 215 220  
 Tyr Leu Ala Ser Asp Glu Ser Ser Phe Thr Thr Gly Ala Ile His Leu  
 225 230 235 240  
 Ile Asp Gly Gly Trp Ser Asn  
 245

&lt;210&gt; 1719

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Burkholderia thailandensis E264

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1719

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Met Ala Asp Arg Pro Lys Gly Ser Gly Ala Val Asn Arg Leu Ala Gly	
1 5 10 15	
aag gtc gcc ctc gtg acg ggc gcg gga cgc ggc atc ggc gcg ggc atc	96
Lys Val Ala Leu Val Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Ile	
20 25 30	
gcg cgt gcg ttc gcg cgc gaa ggc gcg gcc gtc gcg att gcg gag ctc	144
Ala Arg Ala Phe Ala Arg Glu Gly Ala Ala Val Ala Ile Ala Glu Leu	
35 40 45	
gac gcg gcg ctc gcc gac gaa acc gtc gac gcg atc gcg cgc gac gtg	192
Asp Ala Ala Leu Ala Asp Glu Thr Val Asp Ala Ile Ala Arg Asp Val	
50 55 60	
gcc gat gcg cgc gtg ctc gcg gtg cca gcg gac gtc gcg caa gcc gag	240
Ala Asp Ala Arg Val Leu Ala Val Pro Ala Asp Val Ala Gln Ala Glu	
65 70 75 80	
tcg gtc gcg gcg gcg ctc gcg tgc acg gag cgc gcg ttc ggc ccg ctc	288
Ser Val Ala Ala Ala Leu Ala Cys Thr Glu Arg Ala Phe Gly Pro Leu	
85 90 95	
gac gtg ctc gtc aac aac gca ggc gtc aac gtg ttc ggc gat ccg ctc	336
Asp Val Leu Val Asn Asn Ala Gly Val Asn Val Phe Gly Asp Pro Leu	
100 105 110	
gcg ctt gcc gaa gaa gac tgg cgg cgc tgc ttc gcg atc gat ctc gac	384
Ala Leu Ala Glu Glu Asp Trp Arg Arg Cys Phe Ala Ile Asp Leu Asp	
115 120 125	
ggc gtc tgg cac ggc tgc cgc gcg gcg ctg ccg ggc atg gtc gag cgc	432
Gly Val Trp His Gly Cys Arg Ala Ala Leu Pro Gly Met Val Glu Arg	
130 135 140	
ggt cgg ggc agc atc gtg aac atc gcg tcg acg cac gcg ttc aag atc	480
Gly Arg Gly Ser Ile Val Asn Ile Ala Ser Thr His Ala Phe Lys Ile	
145 150 155 160	
atc ccg ggc tgc ttt ccg tac ccg gtc gcg aag cac ggc gtg ctg ggc	528
Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala Lys His Gly Val Leu Gly	
165 170 175	
ctc acg cgc gcg ctc ggc gtc gaa tat gcg ccg cgc aac gtg cgc gtg	576
Leu Thr Arg Ala Leu Gly Val Glu Tyr Ala Pro Arg Asn Val Arg Val	
180 185 190	
aac gcg atc gcg ccc ggc tac atc gag acg caa tcg aca cat gac tgg	624
Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln Ser Thr His Asp Trp	



## PhoenixTemp32470.tmp.txt

195	200	205		
tgg aac gcg cag ccc gac ccc gag gcc gcg cgc gaa acg ctc gca	672			
Trp Asn Ala Gln Pro Asp Pro Glu Ala Ala Arg Arg Glu Thr Leu Ala				
210	215	220		
ctg cag ccg atg aag cgg atc ggg cgt gcg gac gaa gtc gcg atg acc	720			
Leu Gln Pro Met Lys Arg Ile Gly Arg Ala Asp Glu Val Ala Met Thr				
225	230	235		
gcg gtg ttt ctc gca tcg gac gag gcg ccg ttc atc aac gcg agc tgc	768			
Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe Ile Asn Ala Ser Cys				
245	250	255		
atc acg atc gac ggc ggc cga tcg gtg ctg tac cac gac tga	810			
Ile Thr Ile Asp Gly Gly Arg Ser Val Leu Tyr His Asp				
260	265			

&lt;210&gt; 1720

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Burkholderia thailandensis E264

&lt;400&gt; 1720

Met Ala Asp Arg Pro Lys Gly Ser Gly Ala Val Asn Arg Leu Ala Gly	
1 5 10 15	
Lys Val Ala Leu Val Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Ile	
20 25 30	
Ala Arg Ala Phe Ala Arg Glu Gly Ala Val Ala Ile Ala Glu Leu	
35 40 45	
Asp Ala Ala Leu Ala Asp Glu Thr Val Asp Ala Ile Ala Arg Asp Val	
50 55 60	
Ala Asp Ala Arg Val Leu Ala Val Pro Ala Asp Val Ala Gln Ala Glu	
65 70 75 80	
Ser Val Ala Ala Ala Leu Ala Cys Thr Glu Arg Ala Phe Gly Pro Leu	
85 90 95	
Asp Val Leu Val Asn Asn Ala Gly Val Asn Val Phe Gly Asp Pro Leu	
100 105 110	
Ala Leu Ala Glu Glu Asp Trp Arg Cys Phe Ala Ile Asp Leu Asp	
115 120 125	
Gly Val Trp His Gly Cys Arg Ala Ala Leu Pro Gly Met Val Glu Arg	
130 135 140	
Gly Arg Gly Ser Ile Val Asn Ile Ala Ser Thr His Ala Phe Lys Ile	
145 150 155 160	
Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala Lys His Gly Val Leu Gly	
165 170 175	
Leu Thr Arg Ala Leu Gly Val Glu Tyr Ala Pro Arg Asn Val Arg Val	
180 185 190	
Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln Ser Thr His Asp Trp	
195 200 205	
Trp Asn Ala Gln Pro Asp Pro Glu Ala Ala Arg Arg Glu Thr Leu Ala	
210 215 220	
Leu Gln Pro Met Lys Arg Ile Gly Arg Ala Asp Glu Val Ala Met Thr	
225 230 235 240	
Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe Ile Asn Ala Ser Cys	
245 250 255	
Ile Thr Ile Asp Gly Gly Arg Ser Val Leu Tyr His Asp	
260 265	

&lt;210&gt; 1721

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Novosphingobium aromaticivorans DSM 12444

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1721

atg gga cgc ttg aat ggc aag gtc gcg atc atc acc ggc gcg gca cgc	
Met Gly Arg Leu Asn Gly Lys Val Ala Ile Ile Thr Gly Ala Ala Arg	48
1 5 10 15	

## PhoenixTemp32470.tmp.txt

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ggg atg ggc gaa tcc cat gcg cgc acc ttt gtc cgg gaa ggc gcc cgg      96
Gly Met Gly Glu 20 Ser His Ala Arg Thr 25 Phe Val Arg Glu Gly 30 Ala Arg
gtc gtg ctg acc gat ctc agc gag gag gcc gga aag gcc ctc gtc gca      144
Val Val Leu Thr Asp Leu Ser Glu Glu Ala Gly Lys Ala Leu Val Ala
35
gaa ctg ggc gac aac gca gtg ttc ctg aag cag gac gtc acg gac cca      192
Glu Leu Gly Asp Asn Ala Val 55 Phe Leu Lys Gln Asp Val Thr Asp Pro
50
caa tcc tgg aat gcc gtc gtc gaa acc gca gtt cga gag ttt ggg acg      240
Gln Ser Trp Asn Ala Val 70 Glu Thr Ala Val 75 Arg Glu Phe Gly Thr 80
65
atc gat atc ctc gtc aac aac gcg ggc atc ctt ggc ccc atg gcg ccg      288
Ile Asp Ile Leu Val 85 Asn Asn Ala Gly 90 Ile Leu Gly Pro Met Ala Pro
95
acg gac agc ctc gac gac gaa gga tat cgc aag gtc tgc gcg gta aac      336
Thr Asp Ser Leu 100 Asp Asp Glu Gly Tyr 105 Arg Lys Val Cys Ala Val Asn
110
cag gac tcg gtc ttc ttc ggc atg cgc gcc gtc ctg ccc gtg atg gta      384
Gln Asp Ser Val Phe Phe Gly Met 120 Arg Ala Val Leu Pro Val Met Val
115
aag gcc cgc agg ggt tcc atc gtg aac atc tcc tcg atc gcc ggc atg      432
Lys Ala Arg Arg Gly Ser Ile 135 Val Asn Ile Ser Ser Ile Ala Gly Met
130
gcc gca aac tac ggc ttc cca agc ctc gcc tat gtt gcc agc aag ttt      480
Ala Ala Asn Tyr Gly Phe Pro Ser Leu Ala Tyr 155 Val Ala Ser Lys Phe 160
145
gcg gtc cgc ggc atg acc aag gca act gcg gtc gag ttc ggc aag cac      528
Ala Val Arg Gly Met Thr Lys Ala Thr Ala Val Glu Phe Gly Lys His 175
165
aac atc cgc gtc aac tcg gtg cac ccg ggc ttc atc cag acc ccc atg      576
Asn Ile Arg Val Asn Ser Val His Pro Gly Phe Ile Gln Thr Pro Met 190
180
atg gtc gag gca acc gac gag gta ggc ggc gaa gcg ctc gca cag atc      624
Met Val Glu Ala Thr Asp Glu Val Gly Gly Glu Ala Leu Ala Gln Ile 205
195
ccc ctg ggc cgc atc gcc gat ccg tcc gag gtt tcg aac ctc gtg ctc      672
Pro Leu Gly Arg Ile Ala Asp 215 Pro Ser Glu Val Ser 220 Asn Leu Val Leu
210
ttt ctg gcc tcg gac gag tcc tcc tac atc acc ggc tca gag cat ctg      720
Phe Leu Ala Ser Asp Glu 230 Ser Ser Tyr Ile Thr 235 Gly Ser Glu His 240
225
gtc gat gcc ggc atg ctg gcc cac tga
Val Asp Ala Gly Met 245 Leu Ala His
245

```

&lt;210&gt; 1722

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Novosphingobium aromaticivorans DSM 12444

&lt;400&gt; 1722

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Met Gly Arg Leu Asn Gly Lys Val Ala Ile Ile Thr Gly Ala Ala Arg
1 5 10 15
Gly Met Gly Glu Ser His Ala Arg Thr Phe Val Arg Glu Gly Ala Arg
20 25 30
Val Val Leu Thr Asp Leu Ser Glu Ala Gly Lys Ala Leu Val Ala
35 40 45
Glu Leu Gly Asp Asn Ala Val Phe Leu Lys Gln Asp Val Thr Asp Pro
50 55 60
Gln Ser Trp Asn Ala Val Val Glu Thr Ala Val Arg Glu Phe Gly Thr
65 70 75 80
Ile Asp Ile Leu Val 85 Asn Ala Gly Ile Leu Gly Pro Met Ala Pro
95
Thr Asp Ser Leu Asp Asp Glu Gly Tyr Arg Lys Val Cys Ala Val Asn
100 105 110
Gln Asp Ser Val Phe Phe Gly Met Arg Ala Val Leu Pro Val Met Val
115 120 125
Lys Ala Arg Arg Gly Ser Ile Val Asn Ile Ser Ser Ile Ala Gly Met

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## PhoenixTemp32470.tmp.txt

130 135 140  
 Ala Ala Asn Tyr Gly Phe Pro Ser Leu Ala Tyr Val Ala Ser Lys Phe  
 145 150 155 160  
 Ala Val Arg Gly Met Thr Lys Ala Thr Ala Val Glu Phe Gly Lys His  
 165 170 175  
 Asn Ile Arg Val Asn Ser Val His Pro Gly Phe Ile Gln Thr Pro Met  
 180 185 190  
 Met Val Glu Ala Thr Asp Glu Val Gly Gly Glu Ala Leu Ala Gln Ile  
 195 200 205  
 Pro Leu Gly Arg Ile Ala Asp Pro Ser Glu Val Ser Asn Leu Val Leu  
 210 215 220  
 Phe Leu Ala Ser Asp Glu Ser Ser Tyr Ile Thr Gly Ser Glu His Leu  
 225 230 235 240  
 Val Asp Ala Gly Met Leu Ala His  
 245

&lt;210&gt; 1723

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Desulfitobacterium hafniense Y51

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;400&gt; 1723

atg ttg ctg aat aat agc gta gcc att gtc acc gga gga agt cgc ggc	48
Met Leu Leu Asn Asn Ser Val Ala Ile Val Thr Gly Gly Ser Arg Gly	
1 5 10 15	
att gga cgt gcc att gcc ttg gaa ctg gcc cgt gca ggg gct aaa gtg	96
Ile Gly Arg Ala Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val	
20 25 30	
gtg gtg aac tat gcc gga cat ggg gaa aag gcg gaa gag act ctg agc	144
Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Glu Thr Leu Ser	
35 40 45	
ctg att cag gaa gcg gcc gga gag gct ttg gca gtt cag gct gat gtc	192
Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val	
50 55 60	
agc cag gtt gaa gat gtg gaa cgg ctg att cag acc acc ctt aaa acc	240
Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr	
65 70 75 80	
tat ggc aag atc gat att ctg gtc aat aat gcc gga att acc cgt gac	288
Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp	
85 90 95	
acc ttg ctg ctg cgg atg aag gaa aca gat tgg gat gcg gtg ctg gat	336
Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp	
100 105 110	
acc aat ctc aaa ggg gtt ttc tta tgc acg aag gcg gtc agc aag tcc	384
Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser	
115 120 125	
atg atg aag caa cgc tcc gga gtt att atc aat atc tcc tct gtg gtc	432
Met Met Lys Gln Arg Ser Gly Val Ile Ile Asn Ile Ser Ser Val Val	
130 135 140	
ggt att acc ggc aat gcg gga caa gcg aat tac gcg gcg gcc aaa gcg	480
Gly Ile Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ala Lys Ala	
145 150 155 160	
gga atc atc ggc ttt acc aaa tcc atc gcc aaa gag ctg ggc tcc cgt	528
Gly Ile Ile Gly Phe Thr Lys Ser Ile Ala Lys Glu Leu Gly Ser Arg	
165 170 175	
ggc atc cgg gtc aat gca gtg gct ccg ggg tat att tct aca gat atg	576
Gly Ile Arg Val Asn Ala Val Ala Pro Gly Tyr Ile Ser Thr Asp Met	
180 185 190	
acg gaa tcc tta gga gaa gag gtc cgg gag cag gtc atg acc cag att	624
Thr Glu Ser Leu Gly Glu Glu Val Arg Glu Gln Val Met Thr Gln Ile	
195 200 205	
ccg ctg ggc aga atg ggt cag cct gaa gat ata gcc aag acg gtt gtc	672
Pro Leu Gly Arg Met Gly Gln Pro Glu Asp Ile Ala Lys Thr Val Val	
210 215 220	
ttt ttg gct tca ccg gcc gct tcc tac atc acc ggg caa aca tta gcc	720

Phe Leu Ala Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Leu Ala  
 225 230 235 240  
 gta gac ggc ggc atg gct atg taa  
 Val Asp Gly Gly Met Ala Met  
 245

744

<210> 1724  
 <211> 247  
 <212> PRT  
 <213> Desulfitobacterium hafniense Y51

<400> 1724  
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 1 5 10 15  
 Ile Gly Arg Ala Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val  
 20 25 30  
 Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Glu Thr Leu Ser  
 35 40 45  
 Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val  
 50 55 60  
 Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr  
 65 70 75 80  
 Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp  
 85 90 95  
 Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp  
 100 105 110  
 Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser  
 115 120 125  
 Met Met Lys Gln Arg Ser Gly Val Ile Ile Asn Ile Ser Ser Val Val  
 130 135 140  
 Gly Ile Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ala Lys Ala  
 145 150 155 160  
 Gly Ile Ile Gly Phe Thr Lys Ser Ile Ala Lys Glu Leu Gly Ser Arg  
 165 170 175  
 Gly Ile Arg Val Asn Ala Val Ala Pro Gly Tyr Ile Ser Thr Asp Met  
 180 185 190  
 Thr Glu Ser Leu Gly Glu Glu Val Arg Glu Gln Val Met Thr Gln Ile  
 195 200 205  
 Pro Leu Gly Arg Met Gly Gln Pro Glu Asp Ile Ala Lys Thr Val Val  
 210 215 220  
 Phe Leu Ala Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Leu Ala  
 225 230 235 240  
 Val Asp Gly Gly Met Ala Met  
 245

<210> 1725  
 <211> 744  
 <212> DNA  
 <213> Burkholderia xenovorans LB400

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

<400> 1725  
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 1 5 10 15  
 caa ggc atc gga ctc gcc acc gcc gaa ctc ttc gcc cgc gaa ggc gcg  
 Gln Gly Ile Gly Leu Ala Thr Ala Glu Leu Phe Ala Arg Glu Gly Ala  
 20 25 30  
 cgc gtg atc gcc acg gac atc cgc atc gac gga ctc gcc ggc aag ccg  
 Arg Val Ile Ala Thr Asp Ile Arg Ile Asp Gly Leu Ala Gly Lys Pro  
 35 40 45  
 gtc gac gcg cgc aaa ctc gac gtg cgc gac aac gcg gcg atc aac gcg  
 Val Asp Ala Arg Lys Leu Asp Val Arg Asp Asn Ala Ala Ile Asn Ala  
 50 55 60  
 ctg gcc gcc gaa ctc ggc gcg atc gac gtg ctg ttc aac tgc gcg ggt  
 240  
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## PhoenixTemp32470.tmp.txt

Leu 65	Ala	Ala	Glu	Leu	Gly 70	Ala	Ile	Asp	Val	Leu 75	Phe	Asn	Cys	Ala	Gly 80	
ttc	gtg	cat	gcg	ggc	aac	att	ctc	gaa	tgc	agc	gaa	gaa	gat	tgg	gac	288
Phe	Val	His	Ala	Gly 85	Asn	Ile	Leu	Glu	Cys 90	Ser	Glu	Glu	Asp	Trp 95	Asp	
ttt	gcg	ttc	gac	ctg	aac	gcg	aag	gcg	atg	tac	cgc	acg	atc	cgc	gcg	336
Phe	Ala	Phe	Asp 100	Leu	Asn	Ala	Lys	Ala 105	Met	Tyr	Arg	Thr	Ile 110	Arg	Ala	
ttt	ctg	cct	gcc	atg	ctg	gac	aac	ggc	ggc	ggg	tcg	atc	atc	aat	atg	384
Phe	Leu	Pro 115	Ala	Met	Leu	Asp	Asn 120	Gly	Gly	Gly	Ser	Ile 125	Ile	Asn	Met	
tcg	tcg	gcg	gcg	tcg	agt	gtg	aag	ggg	gtg	ccg	aac	cgc	ttt	gcc	tat	432
Ser	Ser	Ala	Ala	Ser	Ser	Val 135	Lys	Gly	Val	Pro	Asn 140	Arg	Phe	Ala	Tyr	
agc	gcc	tcc	aag	gcg	gcg	gtg	atc	ggg	ctg	acc	aag	tcc	ggt	gct	gcg	480
Ser	Ala	Ser	Lys	Ala	Ala 150	Val	Ile	Gly	Leu	Thr 155	Lys	Ser	Val	Ala	Ala 160	
gac	ttc	atc	acg	cgt	ggg	gta	cgc	tgt	aac	gcg	atc	tgc	ccg	ggc	acg	528
Asp	Phe	Ile	Thr 165	Arg	Gly	Val	Arg	Cys 170	Asn	Ala	Ile	Cys	Pro	Gly 175	Thr	
gtg	gct	tcg	ccg	tcg	ctc	gaa	cag	cgg	atc	gtc	gcg	cag	gct	cag	gcg	576
Val	Ala	Ser 180	Pro	Ser	Leu	Glu	Gln 185	Arg	Ile	Val	Ala	Gln 190	Ala	Gln	Ala	
cag	ggc	gcg	acg	ctc	gac	gcc	gtg	cag	gct	gcc	ttc	gtg	gcg	cgg	cag	624
Gln	Gly 195	Ala	Thr	Leu	Asp	Ala 200	Val	Gln	Ala	Ala	Phe 205	Val	Ala	Arg	Gln	
cca	atg	ggc	cgc	atc	ggc	aag	ccg	gaa	gag	atc	gcc	gcg	ttg	gcg	ctg	672
Pro	Met 210	Gly	Arg	Ile	Gly 215	Lys	Pro	Glu	Glu	Ile 220	Ala	Ala	Leu	Ala	Leu	
tat	ctc	gcg	tcc	gac	gaa	tcg	ttc	acc	acg	ggc	cat	gcg	cat	gtg		720
Tyr	Leu	Ala	Ser	Asp 225	Glu 230	Ser	Ser	Phe	Thr 235	Thr	Gly	His	Ala	His 240	Val	
atc	gac	ggc	ggc	tgg	tcg	aac	tga									744
Ile	Asp	Gly	Gly	Trp 245	Ser	Asn										

&lt;210&gt; 1726

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Burkholderia xenovorans LB400

&lt;400&gt; 1726

Met	Thr	Gln	Arg	Leu	Ala	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Ala	Ala	Gly	
1				5					10					15		
Gln	Gly	Ile	Gly	Leu	Ala	Thr	Ala	Glu	Leu	Phe	Ala	Arg	Glu	Gly	Ala	
			20					25					30			
Arg	Val	Ile	Ala	Thr	Asp	Ile	Arg	Ile	Asp	Gly	Leu	Ala	Gly	Lys	Pro	
		35					40					45				
Val	Asp	Ala	Arg	Lys	Leu	Asp	Val	Arg	Asp	Asn	Ala	Ala	Ile	Asn	Ala	
	50					55				60						
Leu	Ala	Ala	Glu	Leu	Gly	Ala	Ile	Asp	Val	Leu	Phe	Asn	Cys	Ala	Gly	
65					70				75						80	
Phe	Val	His	Ala	Gly	Asn	Ile	Leu	Glu	Cys 90	Ser	Glu	Glu	Asp	Trp 95	Asp	
			85													
Phe	Ala	Phe	Asp 100	Leu	Asn	Ala	Lys	Ala 105	Met	Tyr	Arg	Thr	Ile 110	Arg	Ala	
Phe	Leu	Pro 115	Ala	Met	Leu	Asp	Asn 120	Gly	Gly	Gly	Ser	Ile 125	Ile	Asn	Met	
Ser	Ser	Ala	Ala	Ser	Ser	Val	Lys	Gly	Val	Pro	Asn	Arg	Phe	Ala	Tyr	
	130					135				140						
Ser	Ala	Ser	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr 155	Lys	Ser	Val	Ala	Ala	
145					150										160	
Asp	Phe	Ile	Thr	Arg 165	Gly	Val	Arg	Cys	Asn 170	Ala	Ile	Cys	Pro	Gly 175	Thr	
Val	Ala	Ser	Pro 180	Ser	Leu	Glu	Gln 185	Arg	Ile	Val	Ala	Gln 190	Ala	Gln	Ala	
Gln	Gly	Ala	Thr	Leu	Asp	Ala	Val	Gln	Ala	Ala	Phe	Val 205	Ala	Arg	Gln	
		195				200										
Pro	Met	Gly	Arg	Ile	Gly	Lys	Pro	Glu	Glu	Ile	Ala	Ala	Leu	Ala	Leu	

## PhoenixTemp32470.tmp.txt

210  
 Tyr Leu Ala Ser Asp Glu 215  
 225 Ser Ser Phe Thr Thr Gly His Ala His Val  
 235  
 Ile Asp Gly Gly Trp Ser Asn  
 245

&lt;210&gt; 1727

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Burkholderia xenovorans LB400

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1727

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Met	Lys	Arg	Leu	Ala	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Ala	Gly	Arg	
1				5				10					15			
ggc	atc	ggc	gcg	gcg	atc	gcg	tac	gcg	ttc	gcg	cgc	gag	ggt	gcg	gcg	96
Gly	Ile	Gly	Ala	Ala	Ile	Ala	Tyr	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Ala	
			20					25					30			
gtg	gtg	ctg	gcg	gaa	ctg	gat	atc	gaa	acc	gcg	cag	cag	aca	gcg	gag	144
Val	Val	Leu	Ala	Glu	Leu	Asp	Ile	Glu	Thr	Ala	Gln	Gln	Thr	Ala	Glu	
			35					40					45			
cac	atc	agg	tcg	cag	acc	ggc	gcg	cgc	gtg	ctc	gcg	gta	cac	acc	gac	192
His	Ile	Arg	Ser	Gln	Thr	Gly	Ala	Arg	Val	Leu	Ala	Val	His	Thr	Asp	
			50					55				60				
gtg	acg	cag	gcg	gcc	tcg	gtt	caa	cac	gcg	gtg	agc	gag	gcc	gaa	cgc	240
Val	Thr	Gln	Ala	Ala	Ser	Val	Gln	His	Ala	Val	Ser	Glu	Ala	Glu	Arg	
					70										80	
gca	ttc	ggc	gcg	ctg	gac	gtg	ctg	gtg	aac	aac	gcc	ggc	atc	aac	gtg	288
Ala	Phe	Gly	Ala	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Asn	Val	
				85					90					95		
ttc	tgc	gac	ccg	ttg	acc	atg	acc	gac	gac	gac	tgg	cgc	cgc	tgc	ttc	336
Phe	Cys	Asp	Pro	Leu	Thr	Met	Thr	Asp	Asp	Asp	Trp	Arg	Arg	Cys	Phe	
			100					105					110			
gcg	gtc	gat	ctc	gac	ggc	gtc	tgg	aac	ggt	tgc	cgc	gcg	gtg	ttg	ccg	384
Ala	Val	Asp	Leu	Asp	Gly	Val	Trp	Asn	Gly	Cys	Arg	Ala	Val	Leu	Pro	
			115				120					125				
cgc	atg	gtg	gag	cgc	ggc	gcg	ggg	agc	atc	gtg	aat	atc	gcg	tcg	acg	432
Arg	Met	Val	Glu	Arg	Gly	Ala	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	
			130			135					140					
cac	tcg	ttc	aag	atc	att	ccg	ggc	tgc	ttt	ccg	tac	ccc	gtg	gcc	aag	480
His	Ser	Phe	Lys	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	Lys	
					150					155					160	
cac	ggc	gtg	atc	ggc	ctg	acg	cgc	gcg	ctc	ggc	atc	gaa	tac	gcg	ccg	528
His	Gly	Val	Ile	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala	Pro	
				165					170					175		
cgc	aat	gtg	cgg	gtc	aac	gcg	atc	gcg	ccg	ggt	tac	atc	gaa	acg	caa	576
Arg	Asn	Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Gln	
			180					185					190			
ttg	acg	cac	gac	tgg	tgg	aac	gaa	cag	gcc	gat	ccg	gcc	gcc	gcg	cag	624
Leu	Thr	His	Asp	Trp	Trp	Asn	Glu	Gln	Ala	Asp	Pro	Ala	Ala	Ala	Gln	
			195				200					205				
cag	gcg	acg	ctg	gat	ctg	cag	ccg	atg	aag	cgc	atc	ggc	cgc	ccg	gaa	672
Gln	Ala	Thr	Leu	Asp	Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Arg	Pro	Glu	
			210			215					220					
gaa	gtg	gcg	atg	acg	gcg	gta	ttc	ctc	gcc	tcg	gac	gaa	gcg	ccg	ttc	720
Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe	
					230					235					240	
atc	aac	gcc	acc	tgc	atc	acg	gtg	gat	ggc	cgc	tcg	gcg	ctg	tat		768
Ile	Asn	Ala	Thr	Cys	Ile	Thr	Val	Asp	Gly	Gly	Arg	Ser	Ala	Leu	Tyr	
				245					250					255		
cac	gac	tga														777
His	Asp															

<210> 1728  
 <211> 258  
 <212> PRT  
 <213> Burkholderia xenovorans LB400

<400> 1728  
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 1 5 10 15  
 Gly Ile Gly Ala Ala Ile Ala Tyr Ala Phe Ala Arg Glu Gly Ala Ala  
 20 25 30  
 Val Val Leu Ala Glu Leu Asp Ile Glu Thr Ala Gln Gln Thr Ala Glu  
 35 40 45  
 His Ile Arg Ser Gln Thr Gly Ala Arg Val Leu Ala Val His Thr Asp  
 50 55 60  
 Val Thr Gln Ala Ala Ser Val Gln His Ala Val Ser Glu Ala Glu Arg  
 65 70 75 80  
 Ala Phe Gly Ala Leu Asp Val Leu Val Asn Asn Ala Gly Ile Asn Val  
 85 90 95  
 Phe Cys Asp Pro Leu Thr Met Thr Asp Asp Trp Arg Arg Cys Phe  
 100 105 110  
 Ala Val Asp Leu Asp Gly Val Trp Asn Gly Cys Arg Ala Val Leu Pro  
 115 120 125  
 Arg Met Val Glu Arg Gly Ala Gly Ser Ile Val Asn Ile Ala Ser Thr  
 130 135 140  
 His Ser Phe Lys Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala Lys  
 145 150 155 160  
 His Gly Val Ile Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala Pro  
 165 170 175  
 Arg Asn Val Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln  
 180 185 190  
 Leu Thr His Asp Trp Trp Asn Glu Gln Ala Asp Pro Ala Ala Ala Gln  
 195 200 205  
 Gln Ala Thr Leu Asp Leu Gln Pro Met Lys Arg Ile Gly Arg Pro Glu  
 210 215 220  
 Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe  
 225 230 235 240  
 Ile Asn Ala Thr Cys Ile Thr Val Asp Gly Gly Arg Ser Ala Leu Tyr  
 245 250 255  
 His Asp

<210> 1729  
 <211> 741  
 <212> DNA  
 <213> Ralstonia metallidurans CH34

<220>  
 <221> CDS  
 <222> (1)..(741)  
 <223> transl\_table=11

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 1 5 10 15  
 atc ggt ttt gcc acc gcc gaa cgt ttc gcc gcc gaa ggc gcg aag ctc 96  
 Ile Gly Phe Ala Thr Ala Glu Arg Phe Ala Ala Glu Gly Ala Lys Leu  
 20 25 30  
 atc atg tgc gat gtg cag gag gcc cgc gtg gcg gag gcc gcc gag cgg 144  
 Ile Met Cys Asp Val Gln Glu Ala Arg Val Arg Glu Ala Ala Glu Arg  
 35 40 45  
 ctg gcc gcc aag ggc gcg cag gtc gag gcg cac aag gtc gac gtc acg 192  
 Leu Ala Ala Lys Gly Ala Gln Val Glu Ala His Lys Val Asp Val Thr  
 50 55 60  
 cgc cgc gac gag gtc gat gcc atg gtg gca gcc acg ctg gcc cgc cac 240  
 Arg Arg Asp Glu Val Asp Ala Met Val Ala Ala Thr Leu Ala Arg His  
 65 70 75 80  
 ggt cgc atc gat gtt ctc gtc aac aac gcc ggc atc acc aag gac gcg 288  
 Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Ala

## PhoenixTemp32470.tmp.txt

[illegible]

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<210> 1730
<211> 246
<212> PRT
<213> Ralstonia metallidurans CH34
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[illegible]



245

<210> 1731  
 <211> 759  
 <212> DNA  
 <213> Silicibacter sp. TM1040

<220>  
 <221> CDS  
 <222> (1)..(759)  
 <223> transl\_table=11

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 1 5 10 15  
 ttg att act gct gcg ggg cag ggg atc ggt cgc gcc agc gcg gaa ctc 96  
 Leu Ile Thr Ala Ala Gly Gln Gly Ile Gly Arg Ala Ser Ala Glu Leu  
 20 25 30  
 ttt gcg gct gag ggc gcc aag gtg atc gcc tgc gac atc aat gca gag 144  
 Phe Ala Ala Glu Gly Ala Lys Val Ile Ala Cys Asp Ile Asn Ala Glu  
 35 40 45  
 tca ttg gca gaa ctc gcg gag gtc gat ggg atc acg gcc ctt gcg ctt 192  
 Ser Leu Ala Glu Leu Ala Glu Val Asp Gly Ile Thr Ala Leu Ala Leu  
 50 55 60  
 gat gtc acg gat gca tcc gca gtt gcg cgc gca atc caa gat gca ggg 240  
 Asp Val Thr Asp Ala Ser Ala Val Ala Arg Ala Ile Gln Asp Ala Gly  
 65 70 75 80  
 cca ttg aat gtg ttg ttc aac tgc gcg gga tat gtc gca agt ggc agc 288  
 Pro Leu Asn Val Leu Phe Asn Cys Ala Gly Tyr Val Ala Ser Gly Ser  
 85 90 95  
 att ttg gac tgc gat gag aac gac tgg gac ttc agt ttc gac ctc aac 336  
 Ile Leu Asp Cys Asp Glu Asn Asp Trp Asp Phe Ser Phe Asp Leu Asn  
 100 105 110  
 gtc aaa gcc atg tat cgc ctc acg aaa ctg gtt ttg ccc ggc atg ctg 384  
 Val Lys Ala Met Tyr Arg Leu Thr Lys Leu Val Leu Pro Gly Met Leu  
 115 120 125  
 gaa aac ggc ggt ggc tct atc atc aac atg tgc tgc gtg gcc tcc tcc 432  
 Glu Asn Gly Gly Gly Ser Ile Ile Asn Met Ser Ser Val Ala Ser Ser  
 130 135 140  
 ctg aaa ggc gtg cca aat cgc ggc tat tgc gcg tca aag gcg gcg 480  
 Leu Lys Gly Val Pro Asn Arg Phe Ala Tyr Cys Ala Ser Lys Ala Ala  
 145 150 155 160  
 gtg atc ggc atg acc aaa tcc att gcc gca gat ttt gtg acc caa ggt 528  
 Val Ile Gly Met Thr Lys Ser Ile Ala Ala Asp Phe Val Thr Gln Gly  
 165 170 175  
 atc cgt tgc aac gcg att tgc ccc ggc acg gtg gac agt ccc agc ctg 576  
 Ile Arg Cys Asn Ala Ile Cys Pro Gly Thr Val Asp Ser Pro Ser Leu  
 180 185 190  
 cat gat cgg ctg cgc gct acg ggc gat tat gag cag gcc cgc aag gat 624  
 His Asp Arg Leu Arg Ala Thr Gly Asp Tyr Glu Gln Ala Arg Lys Asp  
 195 200 205  
 ttc atc gca cgt cag ccc atg ggg cgc att ggc aag gct gaa gag att 672  
 Phe Ile Ala Arg Gln Pro Met Gly Arg Ile Gly Lys Ala Glu Glu Ile  
 210 215 220  
 gcg gcg ctc gcg ctc tat ctc gcc agc gat gag agc ggc ttt acc act 720  
 Ala Ala Leu Ala Leu Tyr Leu Ala Ser Asp Glu Ser Gly Phe Thr Thr  
 225 230 235 240  
 gga cag acc cac gcc atc gac ggc ggc tgg gcg att tga 759  
 Gly Gln Thr His Ala Ile Asp Gly Gly Trp Ala Ile  
 245 250

<210> 1732  
 <211> 252  
 <212> PRT  
 <213> Silicibacter sp. TM1040

<400> 1732  
 Met Asn Thr Met Thr Gln Asn Thr Gly Arg Leu Ala Glu Lys Thr Ala  
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1      5      10      15
Leu Ile Thr Ala Gly Gln Gly Ile Gly Arg Ala Ser Ala Glu Leu
20      25      30
Phe Ala Ala Glu Gly Ala Lys Val Ile Ala Cys Asp Ile Asn Ala Glu
35      40      45
Ser Leu Ala Glu Leu Ala Glu Val Asp Gly Ile Thr Ala Leu Ala Leu
50      55      60
Asp Val Thr Asp Ala Ser Ala Val Ala Arg Ala Ile Gln Asp Ala Gly
65      70      75      80
Pro Leu Asn Val Leu Phe Asn Cys Ala Gly Tyr Val Ala Ser Gly Ser
85      90      95
Ile Leu Asp Cys Asp Glu Asn Asp Trp Asp Phe Ser Phe Asp Leu Asn
100     105
Val Lys Ala Met Tyr Arg Leu Thr Lys Leu Val Leu Pro Gly Met Leu
115     120     125
Glu Asn Gly Gly Gly Ser Ile Ile Asn Met Ser Ser Val Ala Ser Ser
130     135     140
Leu Lys Gly Val Pro Asn Arg Phe Ala Tyr Cys Ala Ser Lys Ala Ala
145     150     155     160
Val Ile Gly Met Thr Lys Ser Ile Ala Ala Asp Phe Val Thr Gln Gly
165     170     175
Ile Arg Cys Asn Ala Ile Cys Pro Gly Thr Val Asp Ser Pro Ser Leu
180     185     190
His Asp Arg Leu Arg Ala Thr Gly Asp Tyr Glu Gln Ala Arg Lys Asp
195     200     205
Phe Ile Ala Arg Gln Pro Met Gly Arg Ile Gly Lys Ala Glu Glu Ile
210     215     220
Ala Ala Leu Ala Leu Tyr Leu Ala Ser Asp Glu Ser Gly Phe Thr Thr
225     230     235     240
Gly Gln Thr His Ala Ile Asp Gly Gly Trp Ala Ile
245     250

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<210> 1733  
 <211> 738  
 <212> DNA  
 <213> Silicibacter sp. TM1040

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

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1      5      10      15
ggc atc ggt ggc gac att gcg cgc gcg ctc cac gca gcg ggg gcg act      96
Gly Ile Gly Gly Asp Ile Ala Arg Ala Leu His Ala Ala Gly Ala Thr
20      25      30
gtt gcg ctc tcc ggc acc cgg cca gac ccg ctg cac gcc ttg gcc gag      144
Val Ala Leu Ser Gly Thr Arg Pro Asp Pro Leu His Ala Leu Ala Glu
35      40      45
gag ctt ggc gag cgg gct cat gtt gtg acc tgc aac ctc tcc gac gcc      192
Glu Leu Gly Glu Arg Ala His Val Val Thr Cys Asn Leu Ser Asp Ala
50      55      60
gag gcc gtc gag gcg ctg ccg aaa cag gcc gca gag gcg atg ggc tct      240
Glu Ala Val Glu Ala Leu Pro Lys Gln Ala Ala Glu Ala Met Gly Ser
65      70      75      80
gtt gac atc ctg gtc aac aac gcc ggg atc acc aag gac aac ctc ttt      288
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Asn Leu Phe
85      90      95
atg cgg atg aag gat gaa gag tgg cag agc gtt ctc gat gtg aac ctc      336
Met Arg Met Lys Asp Glu Glu Trp Gln Ser Val Leu Asp Val Asn Leu
100     105     110
acc tcc acc atg cgc ctg tgc cgc ggt gtg ctg cgc ggc atg atg aag      384
Thr Ser Thr Met Arg Leu Cys Arg Gly Val Leu Arg Gly Met Met Lys
115     120     125
gca cgc tgg ggc cgg atc gtg aat atc tcc tcc gtt gtg ggc gcc acc      432
Ala Arg Trp Gly Arg Ile Val Asn Ile Ser Ser Val Val Gly Ala Thr
245     250

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## PhoenixTemp32470.tmp.txt

130	135	140	
ggc aac ccc ggt cag ggc aac tat gcg gcc tcc aag gcg ggc atg gtc			480
Gly Asn Pro Gly Gln Gly Asn Tyr Ala Ala Ser Lys Ala Gly Met Val			
145	150	155	160
ggc atg tcc aag tcg ctg gcc tat gag gtt gca aac cgt ggc atc acc			528
Gly Met Ser Lys Ser Leu Ala Tyr Glu Val Ala Asn Arg Gly Ile Thr			
165	170	175	180
gtg aac gcc gtg gcg ccg ggc ttc atc gcg acc gcc atg acc gac aaa			576
Val Asn Ala Val Ala Pro Gly Phe Ile Ala Thr Ala Met Thr Asp Lys			
185	190	195	200
ctc aac gac acc cag aaa gag gcg atc ctc agc cag atc ccc gca ggc			624
Leu Asn Asp Thr Gln Lys Glu Ala Ile Leu Ser Gln Ile Pro Ala Gly			
205	210	215	220
cgt atg ggg gat tcg aaa gaa atc gcc gcc gca gtg ctt tat ctg gcg			672
Arg Met Gly Asp Ser Lys Glu Ile Ala Ala Ala Val Leu Tyr Leu Ala			
225	230	235	240
tcg caa gaa gcc gcc tat gtc acc ggc acc acg ctg cat gtg aat ggc			720
Ser Gln Glu Ala Ala Tyr Val Thr Gly Thr Thr Leu His Val Asn Gly			
245			738
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Gly Met Ala Met Leu			

<210> 1734  
 <211> 245  
 <212> PRT  
 <213> Silicibacter sp. TM1040

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35	40
Glu Leu Gly Glu Arg Ala His Val Val Thr Cys Asn Leu Ser Asp Ala	
50	55
Glu Ala Val Glu Ala Leu Pro Lys Gln Ala Ala Glu Ala Met Gly Ser	
65	70
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Asn Leu Phe	
85	90
Met Arg Met Lys Asp Glu Glu Trp Gln Ser Val Leu Asp Val Asn Leu	
100	105
Thr Ser Thr Met Arg Leu Cys Arg Gly Val Leu Arg Gly Met Met Lys	
115	120
Ala Arg Trp Gly Arg Ile Val Asn Ile Ser Ser Val Val Gly Ala Thr	
130	135
Gly Asn Pro Gly Gln Gly Asn Tyr Ala Ala Ser Lys Ala Gly Met Val	
145	150
Gly Met Ser Lys Ser Leu Ala Tyr Glu Val Ala Asn Arg Gly Ile Thr	
165	170
Val Asn Ala Val Ala Pro Gly Phe Ile Ala Thr Ala Met Thr Asp Lys	
180	185
Leu Asn Asp Thr Gln Lys Glu Ala Ile Leu Ser Gln Ile Pro Ala Gly	
195	200
Arg Met Gly Asp Ser Lys Glu Ile Ala Ala Ala Val Leu Tyr Leu Ala	
210	215
Ser Gln Glu Ala Ala Tyr Val Thr Gly Thr Thr Leu His Val Asn Gly	
225	230
Gly Met Ala Met Leu	240
245	

<210> 1735  
 <211> 804  
 <212> DNA  
 <213> Mycobacterium sp. MCS

<220>  
 <221> CDS

&lt;222&gt; (1)..(804)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1735

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1				5				10					15			
cg	gg	acc	gg	cg	gt	cac	tgc	gag	cg	ttc	gcc	gag	gaa	gg	gcc	96
Arg	Gly	Thr	Gly	Arg	Val	His	Cys	Glu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	
			20					25					30			
gac	gtc	atc	gc	ctc	gac	gtc	gc	gc	gtg	gcc	gac	gag	ctg	tcg	gga	144
Asp	Val	Ile	Ala	Leu	Asp	Val	Ala	Ala	Val	Ala	Asp	Glu	Leu	Ser	Gly	
			35				40					45				
acg	gc	gcc	gca	gtg	gca	cga	cac	ggc	cga	cg	tgt	gtg	acg	gga	gag	192
Thr	Ala	Ala	Ala	Val	Ala	Arg	His	Gly	Arg	Arg	Cys	Val	Thr	Gly	Glu	
	50					55					60					
gcc	gac	gtg	cgt	gac	ttc	gcc	gcc	ttg	acg	gcc	gc	atc	gat	cg	gg	240
Ala	Asp	Val	Arg	Asp	Phe	Ala	Ala	Leu	Thr	Ala	Ala	Ile	Asp	Arg	Gly	
	65				70					75					80	
gtc	gag	gag	ctc	ggt	cg	ctc	gac	gtc	gtc	gtg	gc	aat	gc	gg	gtc	288
Val	Glu	Glu	Leu	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	
			85					90						95		
cac	ccg	gct	ggt	gc	ccg	gcc	tgg	gaa	ctg	acg	ggc	gag	gcc	tgg	cg	336
His	Pro	Ala	Gly	Ala	Pro	Ala	Trp	Glu	Leu	Thr	Gly	Glu	Ala	Trp	Arg	
			100					105					110			
caa	gca	ctc	gac	gtc	aac	gtg	acc	ggt	gta	tgg	cat	acg	gtc	aaa	gca	384
Gln	Ala	Leu	Asp	Val	Asn	Val	Thr	Gly	Val	Trp	His	Thr	Val	Lys	Ala	
			115				120					125				
gct	gc	cg	cac	atg	gat	tca	ggt	ggt	ggg	gc	gtg	atc	gtc	atc	agc	432
Ala	Ala	Arg	His	Met	Asp	Ser	Gly	Gly	Gly	Ala	Val	Ile	Val	Ile	Ser	
	130					135					140					
tcc	acg	aat	gg	ctg	cg	gg	acc	ccg	aac	tcc	gc	cac	tac	acc	acg	480
Ser	Thr	Asn	Gly	Leu	Arg	Gly	Thr	Pro	Asn	Ser	Ala	His	Tyr	Thr	Thr	
	145			150					155						160	
agc	aag	cac	gcc	gtg	gtc	gg	ttg	gcc	cg	acc	ctg	gcc	aac	gaa	ctg	528
Ser	Lys	His	Ala	Val	Val	Gly	Leu	Ala	Arg	Thr	Leu	Ala	Asn	Glu	Leu	
				165				170						175		
ggt	ccc	cg	ag	atc	cg	gtc	aac	aca	gtc	cac	ccg	ggc	gcc	gtc	gc	576
Gly	Pro	Arg	Ser	Ile	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Val	Ala	
			180					185					190			
acg	ccg	atg	gtg	ctc	aac	gaa	gcc	acc	ttc	aga	cg	tta	cg	ccg	gac	624
Thr	Pro	Met	Val	Leu	Asn	Glu	Ala	Thr	Phe	Arg	Arg	Leu	Arg	Pro	Asp	
			195			200						205				
ctc	gaa	gaa	ccc	acc	gcc	gac	gac	gcc	gc	gag	gtg	ctc	cga	gc	cg	672
Leu	Glu	Glu	Pro	Thr	Ala	Asp	Asp	Ala	Ala	Glu	Val	Leu	Arg	Ala	Arg	
	210					215					220					
aac	ctc	ctt	ccg	gtg	ccg	tgg	gtc	gat	ccg	gtc	gac	gtc	gcc	aac	gc	720
Asn	Leu	Leu	Pro	Val	Pro	Trp	Val	Asp	Pro	Val	Asp	Val	Ala	Asn	Ala	
	225				230				235						240	
gtg	gtg	ttc	ctc	gcc	tca	gac	gag	gc	cg	tac	atc	acc	ggc	tca	cag	768
Val	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Thr	Gly	Ser	Gln	
			245					250						255		
ctc	gtc	gtc	gac	gc	ggc	ctg	acg	cag	aag	gta	tga					804
Leu	Val	Val	Asp	Ala	Gly	Leu	Thr	Gln	Lys	Val						
			260					265								

&lt;210&gt; 1736

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 1736

Met	Met	Pro	Arg	Leu	Leu	Asp	Lys	Val	Val	Val	Val	Thr	Gly	Ala	Ala	
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Arg	Gly	Thr	Gly	Arg	Val	His	Cys	Glu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	
			20					25					30			
Asp	Val	Ile	Ala	Leu	Asp	Val	Ala	Ala	Val	Ala	Asp	Glu	Leu	Ser	Gly	
			35				40					45				
Thr	Ala	Ala	Ala	Val	Ala	Arg	His	Gly	Arg	Arg	Cys	Val	Thr	Gly	Glu	

## PhoenixTemp32470.tmp.txt

50 55 60  
 Ala Asp Val Arg Asp Phe Ala Ala Leu Thr Ala Ala Ile Asp Arg Gly  
 65 70 75 80  
 Val Glu Glu Leu Gly Arg Leu Asp Val Val Val Ala Asn Ala Gly Val  
 85 90 95  
 His Pro Ala Gly Ala Pro Ala Trp Glu Leu Thr Gly Glu Ala Trp Arg  
 100 105 110  
 Gln Ala Leu Asp Val Asn Val Thr Gly Val Trp His Thr Val Lys Ala  
 115 120 125  
 Ala Ala Arg His Met Asp Ser Gly Gly Gly Ala Val Ile Val Ile Ser  
 130 135 140  
 Ser Thr Asn Gly Leu Arg Gly Thr Pro Asn Ser Ala His Tyr Thr Thr  
 145 150 155 160  
 Ser Lys His Ala Val Val Gly Leu Ala Arg Thr Leu Ala Asn Glu Leu  
 165 170 175  
 Gly Pro Arg Ser Ile Arg Val Asn Thr Val His Pro Gly Ala Val Ala  
 180 185 190  
 Thr Pro Met Val Leu Asn Glu Ala Thr Phe Arg Arg Leu Arg Pro Asp  
 195 200 205  
 Leu Glu Glu Pro Thr Ala Asp Asp Ala Ala Glu Val Leu Arg Ala Arg  
 210 215 220  
 Asn Leu Leu Pro Val Pro Trp Val Asp Pro Val Asp Val Ala Asn Ala  
 225 230 235 240  
 Val Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Thr Gly Ser Gln  
 245 250 255  
 Leu Val Val Asp Ala Gly Leu Thr Gln Lys Val  
 260 265

&lt;210&gt; 1737

&lt;211&gt; 840

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(840)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1737

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1				5				10						15		
gca	cgc	ggc	atc	ggc	cga	gcg	cag	gcc	gtg	cgc	ttc	gcg	caa	gag	ggg	96
Ala	Arg	Gly	Ile	Gly	Arg	Ala	Gln	Ala	Val	Arg	Phe	Ala	Gln	Glu	Gly	
			20				25						30			
gcg	gac	atc	atc	gcc	ctg	gac	atc	tgc	ggg	ccc	gtc	gac	gac	acc	gtg	144
Ala	Asp	Ile	Ile	Ala	Leu	Asp	Ile	Cys	Gly	Pro	Val	Asp	Asp	Thr	Val	
		35					40					45				
gtg	gtt	cct	tct	gcg	acc	cgg	cgg	gac	ctc	gac	gag	acc	gct	tgc	ctg	192
Val	Val	Pro	Ser	Ala	Thr	Arg	Arg	Asp	Leu	Asp	Glu	Thr	Ala	Cys	Leu	
	50					55					60					
gtc	gcc	gag	gtc	ggc	gtc	cgc	gtc	gtc	acc	gag	gtc	gtc	gac	gtg	cgc	240
Val	Ala	Glu	Val	Gly	Val	Arg	Val	Val	Thr	Glu	Val	Val	Asp	Val	Arg	
	65				70					75					80	
gac	ccc	gat	gcg	ctg	caa	gcg	gcc	acc	gac	gcg	gcg	gtg	acg	gat	ctg	288
Asp	Pro	Asp	Ala	Leu	Gln	Ala	Ala	Thr	Asp	Ala	Ala	Val	Thr	Asp	Leu	
				85					90					95		
ggt	ggt	atc	gac	atc	gtg	tgc	gcc	acc	gca	ggc	atc	acc	tcc	agg	ggt	336
Gly	Gly	Ile	Asp	Ile	Val	Cys	Ala	Thr	Ala	Gly	Ile	Thr	Ser	Arg	Gly	
			100				105						110			
gcg	gcg	acg	cag	atg	ccg	gag	gac	acc	tgg	cag	acc	atg	ctc	gat	gtg	384
Ala	Ala	Thr	Gln	Met	Pro	Glu	Asp	Thr	Trp	Gln	Thr	Met	Leu	Asp	Val	
		115					120					125				
aac	ctc	acc	ggt	gtc	tgg	cac	acg	tgc	aag	gtg	tcc	gcc	ccg	cac	ctg	432
Asn	Leu	Thr	Gly	Val	Trp	His	Thr	Cys	Lys	Val	Ser	Ala	Pro	His	Leu	
	130					135					140					
atc	gcg	cgg	ggc	gcc	gga	tgc	gtg	atc	ctg	gtc	agt	tcg	atc	gcc	ggc	480
Ile	Ala	Arg	Gly	Ala	Gly	Ser	Val	Ile	Leu	Val	Ser	Ser	Ile	Ala	Gly	
145				150						155					160	

PhoenixTemp32470.tmp.txt

ctg	cg	gg	ctg	gtc	ggc	ggt	gcc	cac	tac	acc	gcg	gcc	aaa	cac	ggt	528
Leu	Arg	Gly	Leu	Val	Gly	Val	Ala	His	Tyr	Thr	Ala	Ala	Lys	His	Gly	
				165					170					175		
gtg	gtc	ggc	ctc	atg	cg	agc	ctc	gcc	cac	gac	ctg	gca	ccg	cac	ggc	576
Val	Val	Gly	Leu	Met	Arg	Ser	Leu	Ala	His	Asp	Leu	Ala	Pro	His	Gly	
			180					185					190			
att	cg	gtc	aac	tcc	gtg	cat	ccg	acg	aac	gtc	gac	aca	cca	ttg	atc	624
Ile	Arg	Val	Asn	Ser	Val	His	Pro	Thr	Asn	Val	Asp	Thr	Pro	Leu	Ile	
		195					200					205				
cag	aac	acg	gcc	gtc	agc	agc	gct	ttc	cg	cca	gac	ctg	gac	cgt	cca	672
Gln	Asn	Thr	Ala	Val	Ser	Ser	Ala	Phe	Arg	Pro	Asp	Leu	Asp	Arg	Pro	
	210					215					220					
cct	aca	agg	gcg	gag	ttc	gcg	gcc	gcg	agg	ccg	atg	aac	ctg	ctc		720
Pro	Thr	Arg	Ala	Glu	Phe	Ala	Ala	Ala	Arg	Pro	Met	Asn	Leu	Leu		
225					230				235					240		
gcg	atc	ccc	tgg	atc	gac	ccc	gtc	gac	gtg	gcc	aac	gcc	tcg	ctg	ttc	768
Ala	Ile	Pro	Trp	Ile	Asp	Pro	Val	Asp	Val	Ala	Asn	Ala	Ser	Leu	Phe	
				245				250						255		
ctg	gcg	tcc	gac	gaa	gct	cg	tac	atc	acg	gcg	gtg	tcg	cta	ccc	ggt	816
Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Thr	Ala	Val	Ser	Leu	Pro	Val	
			260					265					270			
gac	gcg	ggc	agc	acg	caa	cg	tga									840
Asp	Ala	Gly	Ser	Thr	Gln	Arg										
		275														

<210> 1738  
 <211> 279  
 <212> PRT  
 <213> Mycobacterium sp. MCS

<400> 1738

Met	Thr	Val	Gly	Arg	Leu	Ala	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	
1				5				10						15		
Ala	Arg	Gly	Ile	Gly	Arg	Ala	Gln	Ala	Val	Arg	Phe	Ala	Gln	Glu	Gly	
			20					25					30			
Ala	Asp	Ile	Ile	Ala	Leu	Asp	Ile	Cys	Gly	Pro	Val	Asp	Asp	Thr	Val	
		35					40					45				
Val	Val	Pro	Ser	Ala	Thr	Arg	Arg	Asp	Leu	Asp	Glu	Thr	Ala	Cys	Leu	
		50				55					60					
Val	Ala	Glu	Val	Gly	Val	Arg	Val	Val	Thr	Glu	Val	Val	Asp	Val	Arg	
65					70					75					80	
Asp	Pro	Asp	Ala	Leu	Gln	Ala	Ala	Thr	Asp	Ala	Ala	Val	Thr	Asp	Leu	
				85					90					95		
Gly	Gly	Ile	Asp	Ile	Val	Cys	Ala	Thr	Ala	Gly	Ile	Thr	Ser	Arg	Gly	
		100						105					110			
Ala	Ala	Thr	Gln	Met	Pro	Glu	Asp	Thr	Trp	Gln	Thr	Met	Leu	Asp	Val	
		115					120					125				
Asn	Leu	Thr	Gly	Val	Trp	His	Thr	Cys	Lys	Val	Ser	Ala	Pro	His	Leu	
		130				135					140					
Ile	Ala	Arg	Gly	Ala	Gly	Ser	Val	Ile	Leu	Val	Ser	Ser	Ile	Ala	Gly	
145				150					155						160	
Leu	Arg	Gly	Leu	Val	Gly	Val	Ala	His	Tyr	Thr	Ala	Ala	Lys	His	Gly	
			165						170					175		
Val	Val	Gly	Leu	Met	Arg	Ser	Leu	Ala	His	Asp	Leu	Ala	Pro	His	Gly	
			180					185					190			
Ile	Arg	Val	Asn	Ser	Val	His	Pro	Thr	Asn	Val	Asp	Thr	Pro	Leu	Ile	
		195					200					205				
Gln	Asn	Thr	Ala	Val	Ser	Ser	Ala	Phe	Arg	Pro	Asp	Leu	Asp	Arg	Pro	
	210					215					220					
Pro	Thr	Arg	Ala	Glu	Phe	Ala	Ala	Ala	Ala	Arg	Pro	Met	Asn	Leu	Leu	
225					230					235					240	
Ala	Ile	Pro	Trp	Ile	Asp	Pro	Val	Asp	Val	Ala	Asn	Ala	Ser	Leu	Phe	
				245					250					255		
Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Thr	Ala	Val	Ser	Leu	Pro	Val	
			260					265					270			
Asp	Ala	Gly	Ser	Thr	Gln	Arg										
		275														

<210> 1739

## PhoenixTemp32470.tmp.txt

<211> 801  
 <212> DNA  
 <213> Mycobacterium sp. MCS

<220>  
 <221> CDS  
 <222> (1)..(801)  
 <223> transl\_table=11

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<400> 1739
ttg tcg acc gag acg acg agc aat gcc gtg acc cgg gaa cat ggg cgc      48
Met Ser Thr Glu Thr Thr Ser Asn Ala Val Thr Arg Glu His Gly Arg
1      5      10      15
ctc cac ggc aag tcc gcg gtg atc acc ggg gcg gcg ttc ggc atc ggc      96
Leu His Gly Lys Ser Ala Val Ile Thr Gly Ala Ala Phe Gly Ile Gly
20      25      30
cgg gcc acc gcc gtg ctc ttc gca cga gag ggc gcg cgg ctg gtc gtg      144
Arg Ala Thr Ala Val Leu Phe Ala Arg Glu Gly Ala Arg Leu Val Val
35      40      45
acc gat att cag agc gag ccg ctg ctg gcg ctt gcc gat gaa ctg cgg      192
Thr Asp Ile Gln Ser Glu Pro Leu Leu Ala Leu Ala Asp Glu Leu Arg
50      55      60
cac gcc gga gcg gac gtc gag ccc gtc gtc ggc gac gtc tcg gtg gag      240
His Ala Gly Ala Asp Val Glu Pro Val Val Gly Asp Val Ser Val Glu
65      70      75
tat gac gcg ggg cgg atg atc ggg gcg gcg gtc gac cgc ttc gga cgg      288
Tyr Asp Ala Gly Arg Met Ile Gly Ala Ala Val Asp Arg Phe Gly Arg
85      90      95
ctc gat gtg ctg gtc gcc aac gca ggc atc atc ccg ctc ggc gac gcg      336
Leu Asp Val Leu Val Ala Asn Ala Gly Ile Ile Pro Leu Gly Asp Ala
100      105      110
ctg gaa atg acc gcc gcc ggc tgg gac gaa gtg atg gcc atc gac ggg      384
Leu Glu Met Thr Ala Ala Gly Trp Asp Glu Val Met Ala Ile Asp Gly
115      120      125
cgc ggc atg ttc ctg tgc tgc aaa ttc gcg atc gag gcg atg ttg ccg      432
Arg Gly Met Phe Leu Cys Cys Lys Phe Ala Ile Glu Ala Met Leu Pro
130      135      140
acc ggg ggt ggc gcc atc gtc tgc ctc tcc tcg atc tcc gga ctg gcg      480
Thr Gly Gly Gly Ala Ile Val Cys Leu Ser Ser Ile Ser Gly Leu Ala
145      150      155
ggg cag aag cgg cag gcg gcc tac ggt ccc gcc aag ttc atc gcc acc      528
Gly Gln Lys Arg Gln Ala Ala Tyr Gly Pro Ala Lys Phe Ile Ala Thr
165      170      175
ggc ttg acc aag cac ctg gca gtc gag tgg gcc gac cgg ggt atc aga      576
Gly Leu Thr Lys His Leu Ala Val Glu Trp Ala Asp Arg Gly Ile Arg
180      185      190
gtc aac gcc gtc gcc ccc ggg acg att cga acc gag cgg gtc aag cgg      624
Val Asn Ala Val Ala Pro Gly Thr Ile Arg Thr Glu Arg Val Lys Arg
195      200      205
ttc ccg gag gag ccg ggt ggc tcg gag tac ctg gcg gcg gtc gag cgt      672
Phe Pro Glu Glu Pro Gly Gly Ser Glu Tyr Leu Ala Ala Val Glu Arg
210      215      220
atg cac ccg atg ggc cgc atc ggc gaa cca gcc gaa gtc gcc agc gcc      720
Met His Pro Met Gly Arg Ile Gly Glu Pro Ala Glu Val Ala Ser Ala
225      230      235
atc gtc ttt ctc gcc tcc gac gac gcc tcc ttc atc acc ggc gcc gtg      768
Ile Val Phe Leu Ala Ser Asp Asp Ala Ser Phe Ile Thr Gly Ala Val
245      250      255
ctg ccg gtc gac ggg gga tat cta gcg cag tag      801
Leu Pro Val Asp Gly Gly Tyr Leu Ala Gln
260      265

```

<210> 1740  
 <211> 266  
 <212> PRT  
 <213> Mycobacterium sp. MCS

<400> 1740  
 Met Ser Thr Glu Thr Thr Ser Asn Ala Val Thr Arg Glu His Gly Arg  
 Page 1088

## PhoenixTemp32470.tmp.txt

```

1          5          10          15
Leu His Gly Lys Ser Ala Val Ile Thr Gly Ala Ala Phe Gly Ile Gly
20
Arg Ala Thr Ala Val Leu Phe Ala Arg Glu Gly Ala Arg Leu Val Val
35
Thr Asp Ile Gln Ser Glu Pro Leu Leu Ala Leu Ala Asp Glu Leu Arg
50
His Ala Gly Ala Asp Val Glu Pro Val Val Gly Asp Val Ser Val Glu
65
Tyr Asp Ala Gly Arg Met Ile Gly Ala Ala Val Asp Arg Phe Gly Arg
85
Leu Asp Val Leu Val Ala Asn Ala Gly Ile Ile Pro Leu Gly Asp Ala
100
Leu Glu Met Thr Ala Ala Gly Trp Asp Glu Val Met Ala Ile Asp Gly
115
Arg Gly Met Phe Leu Cys Cys Lys Phe Ala Ile Glu Ala Met Leu Pro
130
Thr Gly Gly Gly Ala Ile Val Cys Leu Ser Ser Ile Ser Gly Leu Ala
145
Gly Gln Lys Arg Gln Ala Ala Tyr Gly Pro Ala Lys Phe Ile Ala Thr
165
Gly Leu Thr Lys His Leu Ala Val Glu Trp Ala Asp Arg Gly Ile Arg
180
Val Asn Ala Val Ala Pro Gly Thr Ile Arg Thr Glu Arg Val Lys Arg
195
Phe Pro Glu Glu Pro Gly Gly Ser Glu Tyr Leu Ala Ala Val Glu Arg
210
Met His Pro Met Gly Arg Ile Gly Glu Pro Ala Glu Val Ala Ser Ala
225
Ile Val Phe Leu Ala Ser Asp Asp Ala Ser Phe Ile Thr Gly Ala Val
245
Leu Pro Val Asp Gly Gly Tyr Leu Ala Gln
260

```

<210> 1741  
 <211> 795  
 <212> DNA  
 <213> Mycobacterium sp. MCS

<220>  
 <221> CDS  
 <222> (1)..(795)  
 <223> transl\_table=11

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<400> 1741
atg tat gcc gac cgg gcc cct cgg agg ccc ccg acg agt cag gta ggt      48
Met Tyr Ala Asp Arg Ala Pro Arg Arg Pro Pro Thr Ser Gln Val Gly
1          5          10          15
gat cga gtg tcg ttg ctg agc gga cag acc gcg gtc gtc acg ggc ggt      96
Asp Arg Val Ser Leu Leu Ser Gly Gln Thr Ala Val Val Thr Gly Gly
20
gcg cag gga ctg gga tac gcg atc gcg gaa cgc ttc gtg tcc gag ggg      144
Ala Gln Gly Leu Gly Tyr Ala Ile Ala Glu Arg Phe Val Ser Glu Gly
35
gcg cgg gtc gtg ctc ggc gac ctc gac ctc gac gcc acc gag gcg gcg      192
Ala Arg Val Val Leu Gly Asp Leu Asp Leu Asp Ala Thr Glu Ala Ala
50
gcc aaa cgc ctc ggt gga ccg gac gtg gcc acc gcg gtc cgg tgc gac      240
Ala Lys Arg Leu Gly Gly Pro Asp Val Ala Thr Ala Val Arg Cys Asp
65
gtc acc cgg gcc gac gag gtg gat gcg ctc gtg gcc gcg gcg gtg gag      288
Val Thr Arg Ala Asp Glu Val Asp Ala Leu Val Ala Ala Val Glu
85
cgc ttc ggc ggc ctc gac gtc atg gtg aac aac gcg ggg atc acc cgc      336
Arg Phe Gly Gly Leu Asp Val Met Val Asn Asn Ala Gly Ile Thr Arg
100
gac gcc acc ctg cgc aag atg acc gag gaa cag ttc gac cag gtg atc      384
Asp Ala Thr Leu Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val Ile
115

```



## PhoenixTemp32470.tmp.txt

gcc	gtc	cac	ctc	aag	ggc	acc	tgg	aac	ggg	ctg	aag	tcg	gcg	gcg	gcg		432
Ala	Val	His	Leu	Lys	Gly	Thr	Trp	Asn	Gly	Leu	Lys	Ser	Ala	Ala	Ala		
	130					135					140						
atc	atg	cgc	gag	aac	aag	cgc	ggt	gcc	atg	gtc	aac	atg	tcg	tcg	atc		480
Ile	Met	Arg	Glu	Asn	Lys	Arg	Gly	Ala	Met	Val	Asn	Met	Ser	Ser	Ile		
145					150					155					160		
tcg	ggc	aag	gtc	ggg	ctc	gtc	gga	cag	acc	aac	tac	tcg	gcg	gcc	aag		528
Ser	Gly	Lys	Val	Gly	Leu	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys		
				165					170					175			
gcc	ggg	atc	gtc	ggg	atg	acg	aag	gcc	gcg	gcc	aag	gaa	ctg	gct	cac		576
Ala	Gly	Ile	Val	Gly	Met	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Leu	Ala	His		
			180					185					190				
ctc	ggg	gtg	cgc	gtg	aac	gcg	atc	cag	ccc	ggc	ctc	atc	cgg	tcg	gcg		624
Leu	Gly	Val	Arg	Val	Asn	Ala	Ile	Gln	Pro	Gly	Leu	Ile	Arg	Ser	Ala		
		195					200					205					
atg	acc	gag	gcg	atg	ccg	cag	cac	atc	tgg	gac	cag	aag	ctc	gcc	gag		672
Met	Thr	Glu	Ala	Met	Pro	Gln	His	Ile	Trp	Asp	Gln	Lys	Leu	Ala	Glu		
210					215						220						
ata	ccg	atg	ggc	cgg	gcc	ggc	gaa	ccg	gcc	gag	gtg	gcc	aag	gtc	gcc		720
Ile	Pro	Met	Gly	Arg	Ala	Gly	Glu	Pro	Ala	Glu	Val	Ala	Lys	Val	Ala		
225					230					235					240		
ctc	ttc	ctc	gcc	tcg	gac	ctc	tcc	tcg	tac	atg	acc	ggc	acc	gtg	ctg		768
Leu	Phe	Leu	Ala	Ser	Asp	Leu	Ser	Ser	Tyr	Met	Thr	Gly	Thr	Val	Leu		
				245					250					255			
gaa	gtc	acg	ggc	ggg	agg	cac	atc	tga									795
Glu	Val	Thr	Gly	Gly	Arg	His	Ile										
			260														

&lt;210&gt; 1742

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 1742

Met	Tyr	Ala	Asp	Arg	Ala	Pro	Arg	Arg	Pro	Pro	Thr	Ser	Gln	Val	Gly		
1				5					10					15			
Asp	Arg	Val	Ser	Leu	Leu	Ser	Gly	Gln	Thr	Ala	Val	Val	Thr	Gly	Gly		
			20					25					30				
Ala	Gln	Gly	Leu	Gly	Tyr	Ala	Ile	Ala	Glu	Arg	Phe	Val	Ser	Glu	Gly		
		35					40					45					
Ala	Arg	Val	Val	Leu	Gly	Asp	Leu	Asp	Leu	Asp	Ala	Thr	Glu	Ala	Ala		
		50				55					60						
Ala	Lys	Arg	Leu	Gly	Gly	Pro	Asp	Val	Ala	Thr	Ala	Val	Arg	Cys	Asp		
65				70					75					80			
Val	Thr	Arg	Ala	Glu	Val	Asp	Ala	Leu	Val	Ala	Ala	Ala	Val	Glu			
				85				90						95			
Arg	Phe	Gly	Gly	Leu	Asp	Val	Met	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg		
		100					105						110				
Asp	Ala	Thr	Leu	Arg	Lys	Met	Thr	Glu	Glu	Gln	Phe	Asp	Gln	Val	Ile		
		115					120					125					
Ala	Val	His	Leu	Lys	Gly	Thr	Trp	Asn	Gly	Leu	Lys	Ser	Ala	Ala	Ala		
	130					135					140						
Ile	Met	Arg	Glu	Asn	Lys	Arg	Gly	Ala	Met	Val	Asn	Met	Ser	Ser	Ile		
145				150						155					160		
Ser	Gly	Lys	Val	Gly	Leu	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys		
				165					170					175			
Ala	Gly	Ile	Val	Gly	Met	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Leu	Ala	His		
		180						185					190				
Leu	Gly	Val	Arg	Val	Asn	Ala	Ile	Gln	Pro	Gly	Leu	Ile	Arg	Ser	Ala		
		195					200					205					
Met	Thr	Glu	Ala	Met	Pro	Gln	His	Ile	Trp	Asp	Gln	Lys	Leu	Ala	Glu		
	210				215						220						
Ile	Pro	Met	Gly	Arg	Ala	Gly	Glu	Pro	Ala	Glu	Val	Ala	Lys	Val	Ala		
225					230					235					240		
Leu	Phe	Leu	Ala	Ser	Asp	Leu	Ser	Ser	Tyr	Met	Thr	Gly	Thr	Val	Leu		
				245					250					255			
Glu	Val	Thr	Gly	Gly	Arg	His	Ile										
			260														

## PhoenixTemp32470.tmp.txt

<210> 1743  
 <211> 771  
 <212> DNA  
 <213> Mycobacterium sp. MCS

<220>  
 <221> CDS  
 <222> (1)..(771)  
 <223> transl\_table=11

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<400> 1743
atg acc gac gcc gaa atg acc gtg gat ctc gac ttc tca ctg acc ggg      48
Met Thr Asp Ala Glu Met Thr Val Asp Leu Asp Phe Ser Leu Thr Gly
1      5      10      15
aag gtc gca ctg gtc acc ggc ggc gca tcg ggc atc ggt gcg gcg atc      96
Lys Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Ala Ala Ile
20      25      30
gca tcg gcg ttc gcc gcc aag ggc gcc cgc gtg gcc gtg gcc gac ctc      144
Ala Ser Ala Phe Ala Ala Lys Gly Ala Arg Val Ala Val Ala Asp Leu
35      40      45
aac gaa ccc ggt gca cag gcg cac gcc gcg gcg ttg gcc acc gag agt      192
Asn Glu Pro Gly Ala Gln Ala His Ala Ala Ala Leu Ala Thr Glu Ser
50      55      60
tcg gga ttc cgt tgc gat gtc agc gat ccc gcg tcc gtc gcg gcg acc      240
Ser Gly Phe Arg Cys Asp Val Ser Asp Pro Ala Ser Val Ala Ala Thr
65      70      75      80
gtc gac gcc gtg gcc ggc acc ttc ggc agg atc gac atc ctg gtc aac      288
Val Asp Ala Val Ala Gly Thr Phe Gly Arg Ile Asp Ile Leu Val Asn
85      90      95
agt gcc ggg gtg gcc cgg ctg gcg ccc gcc gag gac ctc acg ctc acc      336
Ser Ala Gly Val Ala Arg Leu Ala Pro Ala Glu Asp Leu Thr Leu Thr
100      105      110
gac tgg gag tcg acg atc gac atc aac ctc aag ggc acg ttc ctg atg      384
Asp Trp Glu Ser Thr Ile Asp Ile Asn Leu Lys Gly Thr Phe Leu Met
115      120      125
tgc cag gcg gtg ggc cgc cgc atg ctg gcc gac ggt ggc ggc agc atc      432
Cys Gln Ala Val Gly Arg Arg Met Leu Ala Asp Gly Gly Gly Ser Ile
130      135      140
gtc aac ctg gcg tct cag gcc gcc tcc gtg gca ctc gac cag cac gtg      480
Val Asn Leu Ala Ser Gln Ala Ala Ser Val Ala Leu Asp Gln His Val
145      150      155      160
gcg tac tgc gcg tcg aag ttc ggg gtg gtc ggg gtg tcg aag gtc ctg      528
Ala Tyr Cys Ala Ser Lys Phe Gly Val Val Gly Val Ser Lys Val Leu
165      170      175
gcc gcc gaa tgg ggc ggc cgg ggc atc cgg gtc aac acg atc tcg ccc      576
Ala Ala Glu Trp Gly Gly Arg Gly Ile Arg Val Asn Thr Ile Ser Pro
180      185      190
acg gtg gtc ctc acc gaa ctg ggc cac aag gcc tgg gac gga ccg cgc      624
Thr Val Val Leu Thr Glu Leu Gly His Lys Ala Trp Asp Gly Pro Arg
195      200      205
ggc gat gcc ctc aag aag ctg atc ccc atc ggc cgg ttc gcc tac ccg      672
Gly Asp Ala Leu Lys Lys Leu Ile Pro Ile Gly Arg Phe Ala Tyr Pro
210      215      220
ccc gag atc gcc gcc gcc gcg gtc tac ctc gcc tcc gac gcg gcc gcg      720
Pro Glu Ile Ala Ala Ala Ala Val Tyr Leu Ala Ser Asp Ala Ala Ala
225      230      235      240
atg gtc acc ggc gcc gac ctg gtc gtc gac ggc tac acc gtc aaa      768
Met Val Thr Gly Ala Asp Leu Val Val Asp Gly Gly Tyr Thr Val Lys
245      250      255
tag                                                                 771

```

<210> 1744  
 <211> 256  
 <212> PRT  
 <213> Mycobacterium sp. MCS

<400> 1744

## PhoenixTemp32470.tmp.txt

```

Met Thr Asp Ala Glu Met Thr Val Asp Leu Asp Phe Ser Leu Thr Gly
1 5 10 15
Lys Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Ala Ala Ile
20 25 30
Ala Ser Ala Phe Ala Ala Lys Gly Ala Arg Val Ala Val Ala Asp Leu
35 40 45
Asn Glu Pro Gly Ala Gln Ala His Ala Ala Ala Leu Ala Thr Glu Ser
50 55 60
Ser Gly Phe Arg Cys Asp Val Ser Asp Pro Ala Ser Val Ala Ala Thr
65 70 75 80
Val Asp Ala Val Ala Gly Thr Phe Gly Arg Ile Asp Ile Leu Val Asn
85 90 95
Ser Ala Gly Val Ala Arg Leu Ala Pro Ala Glu Asp Leu Thr Leu Thr
100 105 110
Asp Trp Glu Ser Thr Ile Asp Ile Asn Leu Lys Gly Thr Phe Leu Met
115 120 125
Cys Gln Ala Val Gly Arg Arg Met Leu Ala Asp Gly Gly Gly Ser Ile
130 135 140
Val Asn Leu Ala Ser Gln Ala Ala Ser Val Ala Leu Asp Gln His Val
145 150 155 160
Ala Tyr Cys Ala Ser Lys Phe Gly Val Val Gly Val Ser Lys Val Leu
165 170 175
Ala Ala Glu Trp Gly Gly Arg Gly Ile Arg Val Asn Thr Ile Ser Pro
180 185 190
Thr Val Val Leu Thr Glu Leu Gly His Lys Ala Trp Asp Gly Pro Arg
195 200 205
Gly Asp Ala Leu Lys Lys Leu Ile Pro Ile Gly Arg Phe Ala Tyr Pro
210 215 220
Pro Glu Ile Ala Ala Ala Val Tyr Leu Ala Ser Asp Ala Ala Ala
225 230 235 240
Met Val Thr Gly Ala Asp Leu Val Val Asp Gly Gly Tyr Thr Val Lys
245 250 255

```

&lt;210&gt; 1745

&lt;211&gt; 738

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(738)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1745

```

atg ttt gat ctc aat ggc cgc aag gct ctc gtc acg gga gca acc ggg      48
Met Phe Asp Leu Asn Gly Arg Lys Ala Leu Val Thr Gly Ala Thr Gly
1 5 10 15
ggc atc ggc gag gcg atc gcc agg gcg ctt cac aag cag ggc gcg att      96
Gly Ile Gly Glu Ala Ile Ala Arg Ala Leu His Lys Gln Gly Ala Ile
20 25 30
gtg ggc ctg cac ggg acg cgg gtg gaa aaa ctc gaa gcg ctt gca ggc      144
Val Gly Leu His Gly Thr Arg Val Glu Lys Leu Glu Ala Leu Ala Gly
35 40 45
gaa ctt ggc gaa agg gca aag ata ttt gcc gcg aat ctt tcg gac cgc      192
Glu Leu Gly Glu Arg Ala Lys Ile Phe Ala Ala Asn Leu Ser Asp Arg
50 55 60
gat gac gtg aag gct ttc gcc gag cgc gcc gaa tca gag ctc gaa ggg      240
Asp Asp Val Lys Ala Phe Ala Glu Arg Ala Glu Ser Glu Leu Glu Gly
65 70 75 80
atc gac att ctc gtc aac aat gca ggg atc acc cgc gac ggg ctt ttc      288
Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Phe
85 90 95
gtg cgc atg agc gag gag gac tgg gac gcg gtg atc gaa acc aat ctg      336
Val Arg Met Ser Asp Glu Asp Trp Asp Ala Val Ile Glu Thr Asn Leu
100 105 110
act gcc gcc ttc agg ctc acc cgc gcg ctg acg cat ccc atg atg cgc      384
Thr Ala Ala Phe Arg Leu Thr Arg Ala Leu Thr His Pro Met Met Arg
115 120 125
cgc cgc tgg ggc cgc atc atc aac att tcc tcc gtg gtg ggc gtg gcc      432

```

## PhoenixTemp32470.tmp.txt

Arg	Arg	Trp	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Val	Val	Gly	Val	Ala		
130	130					135					140						
ggc	aat	cca	ggg	cag	gcg	aat	tat	tgc	gct	tcc	aag	gcc	ggt	ctc	atc		480
Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Leu	Ile		
145				150						155					160		
ggg	ttt	tcc	aag	tcg	ctc	gcc	cag	gag	gtc	gcc	agc	cgc	aac	atc	acg		528
Gly	Phe	Ser	Lys	Ser	Leu	Ala	Gln	Glu	Val	Ala	Ser	Arg	Asn	Ile	Thr		
				165					170					175			
gtc	aat	tgc	gtg	gcg	ccg	ggt	ttc	att	gag	acg	gcg	atg	acg	gac	aag		576
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Ala	Met	Thr	Asp	Lys		
			180					185					190				
ctg	aac	gag	aag	cag	cgc	gaa	tcc	atc	atg	ggc	gcc	att	ccc	atg	agg		624
Leu	Asn	Glu	Lys	Gln	Arg	Glu	Ser	Ile	Met	Gly	Ala	Ile	Pro	Met	Arg		
			195				200					205					
cgc	atg	ggc	tca	gga	gag	gag	att	gcc	acg	gct	gtg	gtc	tat	ctt	gcc		672
Arg	Met	Gly	Ser	Gly	Glu	Glu	Ile	Ala	Thr	Ala	Val	Val	Tyr	Leu	Ala		
						215				220							
tcc	gag	gag	gcg	gcc	tat	gtt	acc	ggc	cag	acc	att	cac	gtg	aat	ggc		720
Ser	Glu	Glu	Ala	Ala	Tyr	Val	Thr	Gly	Gln	Thr	Ile	His	Val	Asn	Gly		
225					230					235					240		
ggg	atg	ctg	atg	gtc	taa												738
Gly	Met	Leu	Met	Val													
				245													

&lt;210&gt; 1746

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;400&gt; 1746

Met	Phe	Asp	Leu	Asn	Gly	Arg	Lys	Ala	Leu	Val	Thr	Gly	Ala	Thr	Gly		
1				5					10					15			
Gly	Ile	Gly	Glu	Ala	Ile	Ala	Arg	Ala	Leu	His	Lys	Gln	Gly	Ala	Ile		
			20					25					30				
Val	Gly	Leu	His	Gly	Thr	Arg	Val	Glu	Lys	Leu	Glu	Ala	Leu	Ala	Gly		
			35				40					45					
Glu	Leu	Gly	Glu	Arg	Ala	Lys	Ile	Phe	Ala	Ala	Asn	Leu	Ser	Asp	Arg		
			50			55					60						
Asp	Asp	Val	Lys	Ala	Phe	Ala	Glu	Arg	Ala	Glu	Ser	Glu	Leu	Glu	Gly		
65				70						75					80		
Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Phe		
			85						90					95			
Val	Arg	Met	Ser	Asp	Glu	Asp	Trp	Asp	Ala	Val	Ile	Glu	Thr	Asn	Leu		
			100					105					110				
Thr	Ala	Ala	Phe	Arg	Leu	Thr	Arg	Ala	Leu	Thr	His	Pro	Met	Met	Arg		
			115				120					125					
Arg	Arg	Trp	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Val	Val	Gly	Val	Ala		
					135						140						
Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Leu	Ile		
145				150						155					160		
Gly	Phe	Ser	Lys	Ser	Leu	Ala	Gln	Glu	Val	Ala	Ser	Arg	Asn	Ile	Thr		
				165					170					175			
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Ala	Met	Thr	Asp	Lys		
			180					185					190				
Leu	Asn	Glu	Lys	Gln	Arg	Glu	Ser	Ile	Met	Gly	Ala	Ile	Pro	Met	Arg		
			195				200					205					
Arg	Met	Gly	Ser	Gly	Glu	Glu	Ile	Ala	Thr	Ala	Val	Val	Tyr	Leu	Ala		
						215				220							
Ser	Glu	Glu	Ala	Ala	Tyr	Val	Thr	Gly	Gln	Thr	Ile	His	Val	Asn	Gly		
225					230					235					240		
Gly	Met	Leu	Met	Val													
				245													

&lt;210&gt; 1747

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1747

atg	tgg	tgc	tat	ctt	gcg	gcc	aca	tcc	tgc	ttg	tcg	aat	gga	agg	ctc	48
Met	Trp	Cys	Tyr	Leu	Ala	Ala	Thr	Ser	Cys	Leu	Ser	Asn	Gly	Arg	Leu	
1				5					10					15		
aag	atg	acg	ata	cga	ttt	gac	ggg	aaa	acc	gcg	ctg	atc	aca	gcc	gca	96
Lys	Met	Thr	Ile	Arg	Phe	Asp	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Ala	Ala	
			20					25					30			
gct	caa	ggg	atc	ggc	cgt	gca	agc	gcg	ctg	gct	ttc	gcg	gaa	gcc	ggc	144
Ala	Gln	Gly	Ile	Gly	Arg	Ala	Ser	Ala	Leu	Ala	Phe	Ala	Glu	Ala	Gly	
			35				40					45				
gca	aaa	gtc	tat	gca	acc	gac	atc	aac	atg	ggc	gcg	ctg	aag	gag	atc	192
Ala	Lys	Val	Tyr	Ala	Thr	Asp	Ile	Asn	Met	Gly	Ala	Leu	Lys	Glu	Ile	
			50			55				60						
gaa	ggc	gtt	tcg	gga	atc	atc	acg	cgc	aag	ctc	aac	gtt	ctc	gac	gag	240
Glu	Gly	Val	Ser	Gly	Ile	Ile	Thr	Arg	Lys	Leu	Asn	Val	Leu	Asp	Glu	
					70					75					80	
acg	gaa	gtc	aag	gca	atc	gtc	gct	gaa	atc	ggg	cag	gtc	gac	att	ctg	288
Thr	Glu	Val	Lys	Ala	Ile	Val	Ala	Glu	Ile	Gly	Gln	Val	Asp	Ile	Leu	
					85				90					95		
ttc	aac	tgt	gcg	ggc	gtc	gtt	cac	ggc	ggc	aca	att	ctt	gag	atg	aag	336
Phe	Asn	Cys	Ala	Gly	Val	Val	His	Gly	Gly	Thr	Ile	Leu	Glu	Met	Lys	
			100					105					110			
gac	gaa	gat	ctc	gat	ttc	gca	gtt	aat	ctc	aat	gtc	aag	gag	atg	att	384
Asp	Glu	Asp	Leu	Asp	Phe	Ala	Val	Asn	Leu	Asn	Val	Lys	Ala	Met	Ile	
			115				120					125				
cgc	acc	atc	cgt	gca	ata	ttg	ccg	ggc	atg	ttg	gaa	cgc	aag	gac	ggc	432
Arg	Thr	Ile	Arg	Ala	Ile	Leu	Pro	Gly	Met	Leu	Glu	Arg	Lys	Asp	Gly	
						135					140					
gct	atc	atc	aat	atg	gcc	tcc	gtt	gca	tcg	agc	gtt	aag	ggt	gtg	ccg	480
Ala	Ile	Ile	Asn	Met	Ala	Ser	Val	Ala	Ser	Ser	Val	Lys	Gly	Val	Pro	
					150					155					160	
aac	cgc	ttt	gcc	tat	agc	gtc	acg	aag	gct	gcg	gtc	atc	ggg	ctg	acc	528
Asn	Arg	Phe	Ala	Tyr	Ser	Val	Thr	Lys	Ala	Ala	Val	Ile	Gly	Leu	Thr	
				165					170					175		
aag	gcc	gtt	gct	gcc	gat	tat	gtc	acc	aaa	ggc	atc	cgc	tgt	aac	gcg	576
Lys	Ala	Val	Ala	Ala	Asp	Tyr	Val	Thr	Lys	Gly	Ile	Arg	Cys	Asn	Ala	
				180				185					190			
atc	tgc	ccc	ggc	acg	gtc	gaa	agc	ccg	tcg	ctg	cag	gat	cgt	ctc	cgc	624
Ile	Cys	Pro	Gly	Thr	Val	Glu	Ser	Pro	Ser	Leu	Gln	Asp	Arg	Leu	Arg	
							200					205				
gca	cag	ggg	aat	tat	gaa	gag	cag	cgt	gcg	gcc	ttt	att	gct	cgt	caa	672
Ala	Gln	Gly	Asn	Tyr	Glu	Gln	Gln	Arg	Ala	Ala	Phe	Ile	Ala	Arg	Gln	
					215						220					
ccg	att	ggc	cgt	ata	ggc	cag	cct	gaa	gag	atc	gcc	gat	ctc	gtc	gtc	720
Pro	Ile	Gly	Arg	Ile	Gly	Gln	Pro	Glu	Glu	Ile	Ala	Asp	Leu	Val	Val	
					230					235					240	
tac	ctc	gct	ggc	gcc	act	tat	acg	acc	ggc	caa	gcg	tac	aat	atc	gac	768
Tyr	Leu	Ala	Gly	Ala	Thr	Tyr	Thr	Thr	Gly	Gln	Ala	Tyr	Asn	Ile	Asp	
					245				250					255		
ggc	ggc	tgg	acg	att	taa											786
Gly	Gly	Trp	Thr	Ile												
				260												

&lt;210&gt; 1748

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;400&gt; 1748

Met	Trp	Cys	Tyr	Leu	Ala	Ala	Thr	Ser	Cys	Leu	Ser	Asn	Gly	Arg	Leu	
1				5					10					15		
Lys	Met	Thr	Ile	Arg	Phe	Asp	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Ala	Ala	
			20					25					30			
Ala	Gln	Gly	Ile	Gly	Arg	Ala	Ser	Ala	Leu	Ala	Phe	Ala	Glu	Ala	Gly	
			35				40					45				

## PhoenixTemp32470.tmp.txt

Ala Lys Val Tyr Ala Thr Asp Ile Asn Met Gly Ala Leu Lys Glu Ile  
 50 55 60  
 Glu Gly Val Ser Gly Ile Ile Thr Arg Lys Leu Asn Val Leu Asp Glu  
 65 70 75 80  
 Thr Glu Val Lys Ala Ile Val Ala Glu Ile Gly Gln Val Asp Ile Leu  
 85 90 95  
 Phe Asn Cys Ala Gly Val Val His Gly Gly Thr Ile Leu Glu Met Lys  
 100 105 110  
 Asp Glu Asp Leu Asp Phe Ala Val Asn Leu Asn Val Lys Ala Met Ile  
 115 120 125  
 Arg Thr Ile Arg Ala Ile Leu Pro Gly Met Leu Glu Arg Lys Asp Gly  
 130 135 140  
 Ala Ile Ile Asn Met Ala Ser Val Ala Ser Ser Val Lys Gly Val Pro  
 145 150 155 160  
 Asn Arg Phe Ala Tyr Ser Val Thr Lys Ala Ala Val Ile Gly Leu Thr  
 165 170 175  
 Lys Ala Val Ala Ala Asp Tyr Val Thr Lys Gly Ile Arg Cys Asn Ala  
 180 185 190  
 Ile Cys Pro Gly Thr Val Glu Ser Pro Ser Leu Gln Asp Arg Leu Arg  
 195 200 205  
 Ala Gln Gly Asn Tyr Glu Glu Gln Arg Ala Ala Phe Ile Ala Arg Gln  
 210 215 220  
 Pro Ile Gly Arg Ile Gly Gln Pro Glu Glu Ile Ala Asp Leu Val Val  
 225 230 235 240  
 Tyr Leu Ala Gly Ala Thr Tyr Thr Thr Gly Gln Ala Tyr Asn Ile Asp  
 245 250 255  
 Gly Gly Trp Thr Ile  
 260

&lt;210&gt; 1749

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1749

atg tat ttg gaa aaa ctg agg ctt gac ggg cgg gtt gcc gta atc acc	48
Met Tyr Leu Glu Lys Leu Arg Leu Asp Gly Arg Val Ala Val Ile Thr	
1 5 10 15	
ggc ggc ggc cag ggc ata ggt gct gcc tgc gcg cgg gcc ctc ggc gag	96
Gly Gly Gly Gln Gly Ile Gly Ala Ala Cys Ala Arg Ala Leu Gly Glu	
20 25 30	
gcc ggt gcc acg gtg atc gtg gcg gac ctc ctg gcc gaa cgg gcc gag	144
Ala Gly Ala Thr Val Ile Val Ala Asp Leu Leu Ala Glu Arg Ala Glu	
35 40 45	
gcc acc gcc aag gag ctc tcc acc gcc ggg atc aag gcg cag ggc att	192
Ala Thr Ala Lys Glu Leu Ser Thr Ala Gly Ile Lys Ala Gln Gly Ile	
50 55 60	
gga ctc gac gtc acg aaa tcc gcc gat gta gat gcc gcg gcg gac gaa	240
Gly Leu Asp Val Thr Lys Ser Ala Asp Val Asp Ala Ala Ala Asp Glu	
65 70 75 80	
atc gcg cgc cag cac ggc agg atc gat atc ctc gtc aac aat gcg ggc	288
Ile Ala Arg Gln His Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly	
85 90 95	
gtg gcc aag agc gac gtg cgg gcg gaa gat acc agc gac gaa cac tgg	336
Val Ala Lys Ser Asp Val Arg Ala Glu Asp Thr Ser Asp Glu His Trp	
100 105 110	
cgc ttc cat atg gac gtc aat ttg gac ggt gtg ttc tgg tgt tgc cgc	384
Arg Phe His Met Asp Val Asn Leu Asp Gly Val Phe Trp Cys Cys Arg	
115 120 125	
gcg ttc ggc cgg cac atg ctg gag aag gaa cgc ggc gcg atc gtg aat	432
Ala Phe Gly Arg His Met Leu Glu Lys Glu Arg Gly Ala Ile Val Asn	
130 135 140	
atc ggc tcc atg tcg ggc ttc atc gtc aac aag ccg cag ccg cag agc	480
Ile Gly Ser Met Ser Gly Phe Ile Val Asn Lys Pro Gln Pro Gln Ser	

## PhoenixTemp32470.tmp.txt

145	ttc	tac	aat	gcc	tcg	150	aag	gcg	gcc	gtg	cat	155	cac	ctc	acg	aag	tcg	160	ctt	528
	Phe	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	His	His	Leu	Thr	Lys	Ser	Leu				
					165					170										
	gct	gcc	gaa	tgg	ggc	cgg	cgc	ggc	gtg	cgc	gtc	aat	gcc	gtg	gcg	ccc	576			
	Ala	Ala	Glu	Trp	Gly	Arg	Arg	Gly	Val	Arg	Val	Asn	Ala	Val	Ala	Pro				
				180					185											
	acc	tat	atc	gag	acg	ccg	ctg	acg	gcc	ttc	ggc	atc	aaa	gaa	agc	ccg	624			
	Thr	Tyr	Ile	Glu	Thr	Pro	Leu	Thr	Ala	Phe	Gly	Ile	Lys	Glu	Ser	Pro				
			195					200					205							
	gag	atg	tac	aag	gta	tgg	ctc	gag	atg	acg	ccg	atg	ggg	cgc	gtt	ggc	672			
	Glu	Met	Tyr	Lys	Val	Trp	Leu	Glu	Met	Thr	Pro	Met	Gly	Arg	Val	Gly				
							215					220								
	cag	ccg	gac	gag	atc	gct	tcc	gtc	gtg	cat	ttc	ctg	gca	tcc	gac	gcc	720			
	Gln	Pro	Asp	Glu	Ile	Ala	Ser	Val	Val	His	Phe	Leu	Ala	Ser	Asp	Ala				
	225					230					235									
	tcc	agc	ctg	atg	act	ggc	tcg	atc	gtg	ctg	gcc	gac	gcc	ggc	tat	acc	768			
	Ser	Ser	Leu	Met	Thr	Gly	Ser	Ile	Val	Leu	Ala	Asp	Ala	Gly	Tyr	Thr				
					245					250					255					
	tgc	tgg	tga														777			
	Cys	Trp																		

<210> 1750  
 <211> 258  
 <212> PRT  
 <213> Mesorhizobium sp. BNC1

<400> 1750  
 Met Tyr Leu Glu Lys Leu Arg Leu Asp Gly Arg Val Ala Val Ile Thr  
 1 5 10 15  
 Gly Gly Gly Gln Gly Ile Gly Ala Ala Cys Ala Arg Ala Leu Gly Glu  
 20 25 30  
 Ala Gly Ala Thr Val Ile Val Ala Asp Leu Leu Ala Glu Arg Ala Glu  
 35 40 45  
 Ala Thr Ala Lys Glu Leu Ser Thr Ala Gly Ile Lys Ala Gln Gly Ile  
 50 55 60  
 Gly Leu Asp Val Thr Lys Ser Ala Asp Val Asp Ala Ala Asp Glu  
 65 70 75 80  
 Ile Ala Arg Gln His Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly  
 85 90 95  
 Val Ala Lys Ser Asp Val Arg Ala Glu Asp Thr Ser Asp Glu His Trp  
 100 105 110  
 Arg Phe His Met Asp Val Asn Leu Asp Gly Val Phe Trp Cys Cys Arg  
 115 120 125  
 Ala Phe Gly Arg His Met Leu Glu Lys Glu Arg Gly Ala Ile Val Asn  
 130 135 140  
 Ile Gly Ser Met Ser Gly Phe Ile Val Asn Lys Pro Gln Pro Gln Ser  
 145 150 155 160  
 Phe Tyr Asn Ala Ser Lys Ala Ala Val His His Leu Thr Lys Ser Leu  
 165 170 175  
 Ala Ala Glu Trp Gly Arg Arg Gly Val Arg Val Asn Ala Val Ala Pro  
 180 185 190  
 Thr Tyr Ile Glu Thr Pro Leu Thr Ala Phe Gly Ile Lys Glu Ser Pro  
 195 200 205  
 Glu Met Tyr Lys Val Trp Leu Glu Met Thr Pro Met Gly Arg Val Gly  
 210 215 220  
 Gln Pro Asp Glu Ile Ala Ser Val Val His Phe Leu Ala Ser Asp Ala  
 225 230 235 240  
 Ser Ser Leu Met Thr Gly Ser Ile Val Leu Ala Asp Ala Gly Tyr Thr  
 245 250 255  
 Cys Trp

<210> 1751  
 <211> 747  
 <212> DNA  
 <213> Cytophaga hutchinsonii ATCC 33406

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1751

atg ggc tta ctt agt gga aaa act gct ctg gta aca gga gca tca aaa	48
Met Gly Leu Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Lys	
1 5 10 15	
ggc ata gga aaa tcg atc gcg atg cgt tac gca cag gaa ggt gct aat	96
Gly Ile Gly Lys Ser Ile Ala Met Arg Tyr Ala Gln Glu Gly Ala Asn	
20 25 30	
gtg gcg ttc acc tat ctt tca agc gtt gaa aaa ggt cag gca tta gaa	144
Val Ala Phe Thr Tyr Leu Ser Ser Val Glu Lys Gly Gln Ala Leu Glu	
35 40 45	
aaa gaa tta cag gca ttg ggt atc aaa gca aaa gga tac cgc tca gat	192
Lys Glu Leu Gln Ala Leu Gly Ile Lys Ala Lys Gly Tyr Arg Ser Asp	
50 55 60	
gca tct aaa tat aca gaa gca gaa gaa tta gta act tcc gta tta gca	240
Ala Ser Lys Tyr Thr Glu Ala Glu Glu Leu Val Thr Ser Val Leu Ala	
65 70 75 80	
gac ttt gga cag ctt gat att gtt gta aac aat gca ggt att aca aaa	288
Asp Phe Gly Gln Leu Asp Ile Val Val Asn Asn Ala Gly Ile Thr Lys	
85 90 95	
gat ggc tta tta atg cgt atg aca gaa gaa caa tgg gat tct gtt atg	336
Asp Gly Leu Leu Met Arg Met Thr Glu Glu Gln Trp Asp Ser Val Met	
100 105 110	
gaa gta aat tta aaa tcg gta ttt aac ctg aca aaa gcg gca tta aaa	384
Glu Val Asn Leu Lys Ser Val Phe Asn Leu Thr Lys Ala Ala Leu Lys	
115 120 125	
cca atg atg aaa gcg aaa gca ggt tct att ata aat atg act tct gtt	432
Pro Met Met Lys Ala Lys Ala Gly Ser Ile Ile Asn Met Thr Ser Val	
130 135 140	
gtg ggc atc agc ggt aac gcc ggc cag aca aac tac gct gcc tct aaa	480
Val Gly Ile Ser Gly Asn Ala Gly Gln Thr Asn Tyr Ala Ala Ser Lys	
145 150 155 160	
gca ggt atc att ggt ttc aca aaa tca gta gcg cag gaa ttg ggt tca	528
Ala Gly Ile Ile Gly Phe Thr Lys Ser Val Ala Gln Glu Leu Gly Ser	
165 170 175	
cgc aac atc cgc tca aac gca att gcc ccg ggt ttt att gaa aca gaa	576
Arg Asn Ile Arg Ser Asn Ala Ile Ala Pro Gly Phe Ile Glu Thr Glu	
180 185 190	
atg acg gaa gta ctg gac ccg aaa gtg aaa gct gaa tgg gaa aac gga	624
Met Thr Glu Val Leu Asp Pro Lys Val Lys Ala Glu Trp Glu Asn Gly	
195 200 205	
att ccg ttg aaa cgt gcc gga aaa agt gaa gat gta gcg aat gcc tgt	672
Ile Pro Leu Lys Arg Ala Gly Lys Ser Glu Asp Val Ala Asn Ala Cys	
210 215 220	
gta ttc ctt gca tca gat ctt tca aca tac att acc gga cag gta tta	720
Val Phe Leu Ala Ser Asp Leu Ser Thr Tyr Ile Thr Gly Gln Val Leu	
225 230 235 240	
cag gtt gat ggc gga atg ctg acc tag	747
Gln Val Asp Gly Gly Met Leu Thr	
245	

&lt;210&gt; 1752

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Cytophaga hutchinsonii ATCC 33406

&lt;400&gt; 1752

Met Gly Leu Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Lys
1 5 10 15
Gly Ile Gly Lys Ser Ile Ala Met Arg Tyr Ala Gln Glu Gly Ala Asn
20 25 30
Val Ala Phe Thr Tyr Leu Ser Ser Val Glu Lys Gly Gln Ala Leu Glu
35 40 45
Lys Glu Leu Gln Ala Leu Gly Ile Lys Ala Lys Gly Tyr Arg Ser Asp
50 55 60



## PhoenixTemp32470.tmp.txt

Ala Ser Lys Tyr Thr Glu Ala Glu Glu Leu Val Thr Ser Val Leu Ala  
65 70 80  
Asp Phe Gly Gln Leu Asp Ile Val Val Asn Asn Ala Gly Ile Thr Lys  
85 90 95  
Asp Gly Leu Leu Met Arg Met Thr Glu Glu Gln Trp Asp Ser Val Met  
100 105 110  
Glu Val Asn Leu Lys Ser Val Phe Asn Leu Thr Lys Ala Leu Lys  
115 120 125  
Pro Met Met Lys Ala Lys Ala Gly Ser Ile Ile Asn Met Thr Ser Val  
130 135 140  
Val Gly Ile Ser Gly Asn Ala Gly Gln Thr Asn Tyr Ala Ala Ser Lys  
145 150 160  
Ala Gly Ile Ile Gly Phe Thr Lys Ser Val Ala Gln Glu Leu Gly Ser  
165 170 175  
Arg Asn Ile Arg Ser Asn Ala Ile Ala Pro Gly Phe Ile Glu Thr Glu  
180 185 190  
Met Thr Glu Val Leu Asp Pro Lys Val Lys Ala Glu Trp Glu Asn Gly  
195 200 205  
Ile Pro Leu Lys Arg Ala Gly Lys Ser Glu Asp Val Ala Asn Ala Cys  
210 215 220  
Val Phe Leu Ala Ser Asp Leu Ser Thr Tyr Ile Thr Gly Gln Val Leu  
225 230 235 240  
Gln Val Asp Gly Gly Met Leu Thr  
245

&lt;210&gt; 1753

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Clostridium perfringens ATCC 13124

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1753

atg tta aaa gat aaa gta gca ata gta act ggt gga aca aga gga att	48
Met Leu Lys Asp Lys Val Ala Ile Val Thr Gly Gly Thr Arg Gly Ile	
1 5 10 15	
gga aga gca atc gct tta aaa tta gca gat cat gga gct aat att gtt	96
Gly Arg Ala Ile Ala Leu Lys Leu Ala Asp His Gly Ala Asn Ile Val	
20 25 30	
ata aat tat aga aat tct gat aaa gag gca gaa gaa tta aaa gcc att	144
Ile Asn Tyr Arg Asn Ser Asp Lys Glu Ala Glu Glu Leu Lys Ala Ile	
35 40 45	
tta gaa gga aaa ggg gta aaa gtt act gta aaa tgt gat ata agt	192
Leu Glu Gly Lys Gly Val Lys Val Leu Thr Val Lys Cys Asp Ile Ser	
50 55 60	
aat ttt gaa gat tct aaa aat ctt atg gat aaa tgt aag gaa gta ttt	240
Asn Phe Glu Asp Ser Lys Asn Leu Met Asp Lys Cys Lys Glu Val Phe	
65 70 75 80	
ggg aaa ata gat ata ctt gta aat aat gca ggt ata aca aag gat acc	288
Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Thr	
85 90 95	
tta att atg aga atg aag gaa gaa gac ttt gat aat gta ata gat gta	336
Leu Ile Met Arg Met Lys Glu Glu Asp Phe Asp Asn Val Ile Asp Val	
100 105 110	
aac tta aaa ggt aca ttt aat tgt gca aag cat gct tct gcc ata atg	384
Asn Leu Lys Gly Thr Phe Asn Cys Ala Lys His Ala Ser Ala Ile Met	
115 120 125	
ttg aaa caa agg ttt ggt aaa att ata aac atg act tct gtt gta ggt	432
Leu Lys Gln Arg Phe Gly Lys Ile Ile Asn Met Thr Ser Val Val Gly	
130 135 140	
ata gct ggg aat gct ggt caa gta aat tat gca gca tca aag gct ggt	480
Ile Ala Gly Asn Ala Gly Gln Val Asn Tyr Ala Ala Ser Lys Ala Gly	
145 150 155 160	
gtt ata gga tta act aaa tct tta gct aaa gaa tta gga agt aga gga	528
Val Ile Gly Leu Thr Lys Ser Leu Ala Lys Glu Leu Gly Ser Arg Gly	
165 170 175	

## PhoenixTemp32470.tmp.txt

ata	act	gta	aat	gct	gta	gca	cct	gga	ttt	ata	aat	act	gat	atg	aca	576
Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Asn	Thr	Asp	Met	Thr	
			180					185					190			
gct	tct	tta	tct	gaa	aaa	gtt	aaa	gag	gaa	gct	tct	aaa	aat	att	cct	624
Ala	Ser	Leu	Ser	Glu	Lys	Val	Lys	Glu	Glu	Ala	Ser	Lys	Asn	Ile	Pro	
		195					200					205				
tta	aaa	aga	tta	gga	gac	cct	gaa	gac	gtt	gct	aac	tta	gta	gga	ttc	672
Leu	Lys	Arg	Leu	Gly	Asp	Pro	Glu	Asp	Val	Ala	Asn	Leu	Val	Gly	Phe	
		210				215					220					
tta	gca	tca	gat	gca	gca	aat	tat	ata	aca	ggc	caa	gtc	ata	aat	gta	720
Leu	Ala	Ser	Asp	Ala	Ala	Asn	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Asn	Val	
225					230					235					240	
gat	ggc	gga	atg	gta	atg	tag										741
Asp	Gly	Gly	Met	Val	Met											
				245												

&lt;210&gt; 1754

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Clostridium perfringens ATCC 13124

&lt;400&gt; 1754

Met	Leu	Lys	Asp	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile	
1				5					10					15		
Gly	Arg	Ala	Ile	Ala	Leu	Lys	Leu	Ala	Asp	His	Gly	Ala	Asn	Ile	Val	
			20					25					30			
Ile	Asn	Tyr	Arg	Asn	Ser	Asp	Lys	Glu	Ala	Glu	Glu	Leu	Lys	Ala	Ile	
		35					40					45				
Leu	Glu	Gly	Lys	Gly	Val	Lys	Val	Leu	Thr	Val	Lys	Cys	Asp	Ile	Ser	
	50					55					60					
Asn	Phe	Glu	Asp	Ser	Lys	Asn	Leu	Met	Asp	Lys	Cys	Lys	Glu	Val	Phe	
65					70					75					80	
Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	Asp	Thr	
			85						90					95		
Leu	Ile	Met	Arg	Met	Lys	Glu	Glu	Asp	Phe	Asp	Asn	Val	Ile	Asp	Val	
		100						105					110			
Asn	Leu	Lys	Gly	Thr	Phe	Asn	Cys	Ala	Lys	His	Ala	Ser	Ala	Ile	Met	
		115					120					125				
Leu	Lys	Gln	Arg	Phe	Gly	Lys	Ile	Ile	Asn	Met	Thr	Ser	Val	Val	Gly	
	130					135					140					
Ile	Ala	Gly	Asn	Ala	Gly	Gln	Val	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	
145					150					155					160	
Val	Ile	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Leu	Gly	Ser	Arg	Gly	
			165						170					175		
Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Asn	Thr	Asp	Met	Thr	
		180						185					190			
Ala	Ser	Leu	Ser	Glu	Lys	Val	Lys	Glu	Glu	Ala	Ser	Lys	Asn	Ile	Pro	
		195					200					205				
Leu	Lys	Arg	Leu	Gly	Asp	Pro	Glu	Asp	Val	Ala	Asn	Leu	Val	Gly	Phe	
	210					215					220					
Leu	Ala	Ser	Asp	Ala	Ala	Asn	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Asn	Val	
225					230					235					240	
Asp	Gly	Gly	Met	Val	Met											
				245												

&lt;210&gt; 1755

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; trans1\_table=11

&lt;400&gt; 1755

atg	agc	gcc	gac	ctc	gcc	gga	aag	acg	gcc	ttc	gtg	acc	ggc	gcg	gcg	
Met	Ser	Ala	Asp	Leu	Ala	Gly	Lys	Thr	Ala	Phe	Val	Thr	Gly	Ala	Ala	
1				5					10					15		

48

## PhoenixTemp32470.tmp.txt

cgg	ggg	atc	ggc	cgt	gcc	tgc	gcc	gtc	gag	ttc	gcg	gcg	gct	ggg	gcc	96
Arg	Gly	Ile	Gly	Arg	Ala	Cys	Ala	Val	Glu	Phe	Ala	Ala	Ala	Gly	Ala	
			20					25					30			
gac	ctc	atg	ctc	gtc	gac	atc	acc	cga	aac	ctg	cca	ggg	gtg	ccg	tac	144
Asp	Leu	Met	Leu	Val	Asp	Ile	Thr	Arg	Asn	Leu	Pro	Gly	Val	Pro	Tyr	
		35					40					45				
cca	ctc	ggt	tcg	cag	agt	cag	ctc	gac	tac	acc	gcg	gag	ttg	tgc	cgc	192
Pro	Leu	Gly	Ser	Gln	Ser	Gln	Leu	Asp	Tyr	Thr	Ala	Glu	Leu	Cys	Arg	
	50					55					60					
gag	cac	ggt	gcg	acg	gtt	ctg	acc	cag	gcg	gtg	gat	gtc	cgc	gag	ctc	240
Glu	His	Gly	Ala	Thr	Val	Leu	Thr	Gln	Ala	Val	Asp	Val	Arg	Glu	Leu	
	65				70				75						80	
gca	gag	atc	acg	gca	gcg	gtg	cag	gtc	gcc	cac	gaa	cga	ttc	ggt	cgc	288
Ala	Glu	Ile	Thr	Ala	Ala	Val	Gln	Val	Ala	His	Glu	Arg	Phe	Gly	Arg	
				85					90					95		
ctc	gac	gtg	ctc	ctc	aac	aat	gcg	gga	atc	gcc	gca	ccg	tcc	gga	aag	336
Leu	Asp	Val	Leu	Leu	Asn	Asn	Ala	Gly	Ile	Ala	Ala	Pro	Ser	Gly	Lys	
			100					105					110			
gcc	gct	cac	gac	atc	gcc	gaa	tcc	gag	tgg	cgt	ctg	atg	atc	gac	gtc	384
Ala	Ala	His	Asp	Ile	Ala	Glu	Ser	Glu	Trp	Arg	Leu	Met	Ile	Asp	Val	
		115					120					125				
gac	ctc	tcc	ggg	gcg	tgg	cgg	acg	atc	gcg	acg	gcc	gga	cgg	atc	atg	432
Asp	Leu	Ser	Gly	Ala	Trp	Arg	Thr	Ile	Ala	Thr	Ala	Gly	Arg	Ile	Met	
		130				135					140					
gtc	acc	cag	cgc	agc	gga	agc	atc	atc	aat	atc	gcc	tcg	acg	gcc	ggg	480
Val	Thr	Gln	Arg	Ser	Gly	Ser	Ile	Ile	Asn	Ile	Ala	Ser	Thr	Ala	Gly	
					150				155						160	
ctc	gtc	ggg	tac	cgc	cac	ttc	gcc	ggg	tac	gtt	gcg	gct	aag	cac	ggc	528
Leu	Val	Gly	Tyr	Arg	His	Phe	Ala	Gly	Tyr	Val	Ala	Ala	Lys	His	Gly	
				165					170					175		
ctg	gtc	ggc	ctc	acc	aag	gcc	gtc	gcc	ctc	gac	tac	gcg	ccg	agc	ggg	576
Leu	Val	Gly	Leu	Thr	Lys	Ala	Val	Ala	Leu	Asp	Tyr	Ala	Pro	Ser	Gly	
			180					185					190			
gtc	cgg	gtg	aat	gcg	ctg	tgc	ccg	gga	tcg	gtg	cgg	gac	agc	agt	gag	624
Val	Arg	Val	Asn	Ala	Leu	Cys	Pro	Gly	Ser	Val	Arg	Asp	Ser	Ser	Glu	
		195					200					205				
tac	gaa	ggg	cgg	atg	ctg	gcg	gag	atc	gca	cgc	tcc	ctg	ggt	gtc	ggc	672
Tyr	Glu	Gly	Arg	Met	Leu	Ala	Glu	Ile	Ala	Arg	Ser	Leu	Gly	Val	Gly	
		210				215					220					
gtc	gat	gag	cac	gag	tcg	gtt	ttc	gtg	cag	gcc	cag	ccg	acc	aac	aag	720
Val	Asp	Glu	His	Glu	Ser	Val	Phe	Val	Gln	Ala	Gln	Pro	Thr	Asn	Lys	
					230				235						240	
ctc	gtc	gaa	ccc	ggc	gag	gtc	gcg	gca	gcg	gcg	cgg	tgg	ctc	gcg	tcc	768
Leu	Val	Glu	Pro	Gly	Glu	Val	Ala	Ala	Ala	Ala	Arg	Trp	Leu	Ala	Ser	
				245				250						255		
gac	gat	gcg	cgt	gga	gtc	acg	ggt	tcc	gtg	gtg	acg	gtg	gac	ggc	ggt	816
Asp	Asp	Ala	Arg	Gly	Val	Thr	Gly	Ser	Val	Val	Thr	Val	Asp	Gly	Gly	
			260					265					270			
ttc	acg	gcc	cgg	tga												831
Phe	Thr	Ala	Arg													
		275														

&lt;210&gt; 1756

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1756

Met	Ser	Ala	Asp	Leu	Ala	Gly	Lys	Thr	Ala	Phe	Val	Thr	Gly	Ala	Ala	
1				5					10					15		
Arg	Gly	Ile	Gly	Arg	Ala	Cys	Ala	Val	Glu	Phe	Ala	Ala	Ala	Gly	Ala	
			20					25					30			
Asp	Leu	Met	Leu	Val	Asp	Ile	Thr	Arg	Asn	Leu	Pro	Gly	Val	Pro	Tyr	
		35					40					45				
Pro	Leu	Gly	Ser	Gln	Ser	Gln	Leu	Asp	Tyr	Thr	Ala	Glu	Leu	Cys	Arg	
	50					55					60					
Glu	His	Gly	Ala	Thr	Val	Leu	Thr	Gln	Ala	Val	Asp	Val	Arg	Glu	Leu	
	65				70				75						80	
Ala	Glu	Ile	Thr	Ala	Ala	Val	Gln	Val	Ala	His	Glu	Arg	Phe	Gly	Arg	

## PhoenixTemp32470.tmp.txt

85 90 95  
 Leu Asp Val Leu Asn Asn Ala Gly Ile Ala Ala Pro Ser Gly Lys  
 100 105 110  
 Ala Ala His Asp Ile Ala Glu Ser Glu Trp Arg Leu Met Ile Asp Val  
 115 120 125  
 Asp Leu Ser Gly Ala Trp Arg Thr Ile Ala Thr Ala Gly Arg Ile Met  
 130 135 140  
 Val Thr Gln Arg Ser Gly Ser Ile Ile Asn Ile Ala Ser Thr Ala Gly  
 145 150 155 160  
 Leu Val Gly Tyr Arg His Phe Ala Gly Tyr Val Ala Ala Lys His Gly  
 165 170 175  
 Leu Val Gly Leu Thr Lys Ala Val Ala Leu Asp Tyr Ala Pro Ser Gly  
 180 185 190  
 Val Arg Val Asn Ala Leu Cys Pro Gly Ser Val Arg Asp Ser Ser Glu  
 195 200 205  
 Tyr Glu Gly Arg Met Leu Ala Glu Ile Ala Arg Ser Leu Gly Val Gly  
 210 215 220  
 Val Asp Glu His Glu Ser Val Phe Val Gln Ala Gln Pro Thr Asn Lys  
 225 230 235 240  
 Leu Val Glu Pro Gly Glu Val Ala Ala Ala Ala Arg Trp Leu Ala Ser  
 245 250 255  
 Asp Asp Ala Arg Gly Val Thr Gly Ser Val Val Thr Val Asp Gly Gly  
 260 265 270  
 Phe Thr Ala Arg  
 275

&lt;210&gt; 1757

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1757

atg	aca	ctt	ctc	gag	gga	cgg	gtc	gcc	gtc	gtc	acg	ggc	gcg	gcc	cag	48
Met	Thr	Leu	Leu	Glu	Gly	Arg	Val	Ala	Val	Val	Thr	Gly	Ala	Ala	Gln	
1				5				10						15		
ggc	atc	ggt	ttc	gag	atg	gcc	cgg	aag	ttc	gcg	agc	gag	ggc	gcg	tcg	96
Gly	Ile	Gly	Phe	Glu	Met	Ala	Arg	Lys	Phe	Ala	Ser	Glu	Gly	Ala	Ser	
			20					25					30			
gtg	gtc	ctc	ggt	gac	atg	cat	gcc	gag	aac	gtc	aag	gcc	gcc	gcc	gga	144
Val	Val	Leu	Gly	Asp	Met	His	Ala	Glu	Asn	Val	Lys	Ala	Ala	Ala	Gly	
			35				40					45				
aag	ctg	gag	gcc	gac	ggc	ttc	cag	gcc	gtc	gcc	gtc	gcc	tgc	gac	gtg	192
Lys	Leu	Glu	Ala	Asp	Gly	Phe	Gln	Ala	Val	Ala	Val	Ala	Cys	Asp	Val	
			50			55					60					
acc	gat	ccg	gat	caa	atg	cag	aac	ctg	gga	aag	acg	gcg	atc	gac	gcg	240
Thr	Asp	Pro	Asp	Gln	Met	Gln	Asn	Leu	Gly	Lys	Thr	Ala	Ile	Asp	Ala	
			65			70				75					80	
ttc	ggc	gcg	atg	gac	gtg	tgg	gtc	aac	aac	gcc	ggc	atc	acc	cgc	gac	288
Phe	Gly	Ala	Met	Asp	Val	Trp	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
			85					90						95		
gcg	acg	ctg	cgc	aag	atg	tcg	ctc	gcc	gat	ttc	cga	tcc	gtc	atc	gac	336
Ala	Thr	Leu	Arg	Lys	Met	Ser	Leu	Ala	Asp	Phe	Arg	Ser	Val	Ile	Asp	
			100					105					110			
gtg	cac	ctg	cag	ggc	gcg	tgg	ctg	ggc	acc	cag	atc	gcg	tcg	atc	gcg	384
Val	His	Leu	Gln	Gly	Ala	Trp	Leu	Gly	Thr	Gln	Ile	Ala	Ser	Ile	Ala	
			115				120					125				
atg	cgg	gag	gca	ggc	aag	ggt	tcg	atc	gtg	aac	atg	tcg	tcg	atc	tcc	432
Met	Arg	Glu	Ala	Gly	Lys	Gly	Ser	Ile	Val	Asn	Met	Ser	Ser	Ile	Ser	
			130			135					140					
ggc	aag	gtc	ggc	atg	gtc	ggg	cag	acc	aac	tac	agc	gcc	gcg	aag	gca	480
Gly	Lys	Val	Gly	Met	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	
			145			150				155					160	
ggc	atg	gtg	ggc	ctg	acc	aag	gcg	gcc	gcg	aag	gag	gtc	gcc	cac	ctc	528
Gly	Met	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Val	Ala	His	Leu	

## PhoenixTemp32470.tmp.txt

```

      165      170      175
ggg gtg cgg gtc aac gcg atc cag ccc ggc gtg gtg aac acc gac atg
Gly Val Arg Val Asn Ala Ile Gln Pro Gly Val Val Asn Thr Asp Met 576
      180      185      190
atc cgc gcc ctg cgc gcc gac atc atc gag gcg aag ctc aag gag gtc
Ile Arg Ala Leu Arg Ala Asp Ile Ile Glu Ala Lys Leu Lys Glu Val 624
      195      200      205
ccg atg ggc cgc ggt gcc gag ccc gaa gag atc gcg aac gtc gca ctg
Pro Met Gly Arg Gly Ala Glu Pro Glu Glu Ile Ala Asn Val Ala Leu 672
      210      215      220
ttc ctc gcg tcc gat ctg tcc agc tac atg acg ggc acc gtt ctc gaa
Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Glu 720
      225      230      235
gtc acc ggc gga cgt cac atc tga
Val Thr Gly Gly Arg His Ile 744
      245

```

&lt;210&gt; 1758

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1758

```

Met Thr Leu Leu Glu Gly Arg Val Ala Val Val Thr Gly Ala Ala Gln
1 5 10 15
Gly Ile Gly Phe Glu Met Ala Arg Lys Phe Ala Ser Glu Gly Ala Ser
20 25 30
Val Val Leu Gly Asp Met His Ala Glu Asn Val Lys Ala Ala Gly
35 40 45
Lys Leu Glu Ala Asp Gly Phe Gln Ala Val Ala Val Ala Cys Asp Val
50 55 60
Thr Asp Pro Asp Gln Met Gln Asn Leu Gly Lys Thr Ala Ile Asp Ala
65 70 75 80
Phe Gly Ala Met Asp Val Trp Val Asn Asn Ala Gly Ile Thr Arg Asp
85 90 95
Ala Thr Leu Arg Lys Met Ser Leu Ala Asp Phe Arg Ser Val Ile Asp
100 105 110
Val His Leu Gln Gly Ala Trp Leu Gly Thr Gln Ile Ala Ser Ile Ala
115 120 125
Met Arg Glu Ala Gly Lys Gly Ser Ile Val Asn Met Ser Ser Ile Ser
130 135 140
Gly Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala
145 150 155 160
Gly Met Val Gly Leu Thr Lys Ala Ala Ala Lys Glu Val Ala His Leu
165 170 175
Gly Val Arg Val Asn Ala Ile Gln Pro Gly Val Val Asn Thr Asp Met
180 185 190
Ile Arg Ala Leu Arg Ala Asp Ile Ile Glu Ala Lys Leu Lys Glu Val
195 200 205
Pro Met Gly Arg Gly Ala Glu Pro Glu Glu Ile Ala Asn Val Ala Leu
210 215 220
Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Glu
225 230 235 240
Val Thr Gly Gly Arg His Ile
245

```

&lt;210&gt; 1759

&lt;211&gt; 849

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(849)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1759

```

atg ggc cgc ctc gcg gga aag gtc gcg ttc atc acc ggc ggt gcc cgc
Met Gly Arg Leu Ala Gly Lys Val Ala Phe Ile Thr Gly Gly Ala Arg

```

48

## PhoenixTemp32470.tmp.txt

1	5	10	15	
ggg cag ggg cgg gcg cat gcg gtg cgt ttc gcc gag gaa ggc gcc gac	20	25	30	96
Gly Gln Gly Arg Ala His Ala Val Arg Phe Ala Glu Glu Gly Ala Asp				
atc gtg gtc gtc gat cat tgc gcg gac atc gat tcc gtt ccc tac gcc	35	40	45	144
Ile Val Val Val Asp His Cys Ala Asp Ile Asp Ser Val Pro Tyr Ala				
ttg gcg acc acc gat gat ctg gat gag acc gtg cgt ctc gtg aaa gac	50	55	60	192
Leu Ala Thr Thr Asp Asp Leu Asp Glu Thr Val Arg Leu Val Lys Asp				
cgc gga gtg tct gtc ctg agt gtt cag gcg gat gtt cgc gac ctc gcc	65	70	75	240
Arg Gly Val Ser Val Leu Ser Val Gln Ala Asp Val Arg Asp Leu Ala				
tca ctc gag cat gcg cac cga ctg gcg atc gac gag ttc ggc aag atc	85	90	95	288
Ser Leu Glu His Ala His Arg Leu Ala Ile Asp Glu Phe Gly Lys Ile				
gac gtg ctc gtc gcc aat gcc ggt gtc gga agt ttc ggt ccc gct ctg	100	105	110	336
Asp Val Leu Val Ala Asn Ala Gly Val Gly Ser Phe Gly Pro Ala Leu				
gag atc agc gag cag caa tgg cag gac gtc atc gac atc gac ctg acc	115	120	125	384
Glu Ile Ser Glu Gln Gln Trp Gln Asp Val Ile Asp Ile Asp Leu Thr				
ggt gtc tgg aag acc gtg cgc gcg gtg gcc ccg gcg atg gtg gag cga	130	135	140	432
Gly Val Trp Lys Thr Val Arg Ala Val Ala Pro Ala Met Val Glu Arg				
ggc gag ggc ggt tgc gtg atc ttg acg agt tgc gtt gcc ggt ctc gtc	145	150	155	480
Gly Glu Gly Gly Ser Val Ile Leu Thr Ser Ser Val Ala Gly Leu Val				
gcc ttc ctc aat ttg gcc cac tac acc gcg gcc aaa cac ggc gtg gtc	165	170	175	528
Ala Phe Leu Asn Leu Ala His Tyr Thr Ala Lys His Gly Val Val				
ggg ctc atg cgc gct ctg gcg gcc gaa ctt gcc ccc cac cgc atc cgc	180	185	190	576
Gly Leu Met Arg Ala Leu Ala Ala Glu Leu Ala Pro His Arg Ile Arg				
gtc aat tgc att cac ccc acg acc gtg gac acc ccc atg gtc gac aac	195	200	205	624
Val Asn Ser Ile His Pro Thr Thr Val Asp Thr Pro Met Val Asp Asn				
gcc gag aca cgc gag ctg ttc ctc ccg gga gtg gag agt ccg aac cgc	210	215	220	672
Ala Glu Thr Arg Glu Leu Phe Leu Pro Gly Val Glu Ser Pro Asn Arg				
gag gta gcg gcg gag ctg atg aag aac ctg aat gcg ttg ccc gtg ccg	225	230	235	720
Glu Val Ala Ala Glu Leu Met Lys Asn Leu Asn Ala Leu Pro Val Pro				
tgg atc gag gac gtc gat gtc agc aac gcg gcg cta tgg ctc gcc tcc	245	250	255	768
Trp Ile Glu Asp Val Asp Val Ser Asn Ala Ala Leu Trp Leu Ala Ser				
gag gaa gcc cgc tac gtc acc ggt gtc gcc cta ccg atc gac gcc ggc	260	265	270	816
Glu Glu Ala Arg Tyr Val Thr Gly Val Ala Leu Pro Ile Asp Ala Gly				
gcg acc gca cca ttc aag atg ccc cac cag tag	275	280		849
Ala Thr Ala Pro Phe Lys Met Pro His Gln				

&lt;210&gt; 1760

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1760

Met Gly Arg Leu Ala Gly Lys Val Ala Phe Ile Thr Gly Gly Ala Arg	5	10	15
Gly Gln Gly Arg Ala His Ala Val Arg Phe Ala Glu Glu Gly Ala Asp	20	25	30
Ile Val Val Val Asp His Cys Ala Asp Ile Asp Ser Val Pro Tyr Ala	35	40	45
Leu Ala Thr Thr Asp Asp Leu Asp Glu Thr Val Arg Leu Val Lys Asp	50	55	60
Arg Gly Val Ser Val Leu Ser Val Gln Ala Asp Val Arg Asp Leu Ala	65	70	80

## PhoenixTemp32470.tmp.txt

Ser Leu Glu His Ala His Arg Leu Ala Ile Asp Glu Phe Gly Lys Ile  
 85 90  
 Asp Val Leu Val Ala Asn Ala Gly Val Gly Ser Phe Gly Pro Ala Leu  
 100 105  
 Glu Ile Ser Glu Gln Gln Trp Gln Asp Val Ile Asp Ile Asp Leu Thr  
 115 120  
 Gly Val Trp Lys Thr Val Arg Ala Val Ala Pro Ala Met Val Glu Arg  
 130 135  
 Gly Glu Gly Gly Ser Val Ile Leu Thr Ser Ser Val Ala Gly Leu Val  
 145 150  
 Ala Phe Leu Asn Leu Ala His Tyr Thr Ala Ala Lys His Gly Val Val  
 165 170  
 Gly Leu Met Arg Ala Leu Ala Ala Glu Leu Ala Pro His Arg Ile Arg  
 180 185  
 Val Asn Ser Ile His Pro Thr Thr Val Asp Thr Pro Met Val Asp Asn  
 195 200  
 Ala Glu Thr Arg Glu Leu Phe Leu Pro Gly Val Glu Ser Pro Asn Arg  
 210 215  
 Glu Val Ala Ala Glu Leu Met Lys Asn Leu Asn Ala Leu Pro Val Pro  
 225 230  
 Trp Ile Glu Asp Val Asp Val Ser Asn Ala Ala Leu Trp Leu Ala Ser  
 245 250  
 Glu Glu Ala Arg Tyr Val Thr Gly Val Ala Leu Pro Ile Asp Ala Gly  
 260 270  
 Ala Thr Ala Pro Phe Lys Met Pro His Gln  
 275 280

&lt;210&gt; 1761

&lt;211&gt; 750

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(750)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1761

atg	aca	aag	cgg	ttg	gag	ggc	aaa	gtg	gcc	ctc	atc	acc	ggc	gca	tct	48
Met	Thr	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ser	
1				5					10					15		
cgt	ggc	atg	ggt	gag	tcg	cac	gcg	aag	gca	ttc	gtc	gag	cac	ggg	gcg	96
Arg	Gly	Met	Gly	Glu	Ser	His	Ala	Lys	Ala	Phe	Val	Glu	His	Gly	Ala	
			20					25					30			
aag	gtc	gta	ctg	gcg	gac	atc	acg	gac	gac	gca	ggg	gag	ctg	ctt	gcc	144
Lys	Val	Val	Leu	Ala	Asp	Ile	Thr	Asp	Asp	Ala	Gly	Glu	Leu	Leu	Ala	
			35				40					45				
aag	gag	ctg	ggg	gag	aat	gca	gtc	ttc	gtg	cat	cac	gac	gtc	acg	caa	192
Lys	Glu	Leu	Gly	Glu	Asn	Ala	Val	Phe	Val	His	His	Asp	Val	Thr	Gln	
			50			55				60						
ctc	gat	tca	tgg	acc	aat	gtc	gtc	gaa	cgg	agt	gtg	aac	gcg	ttc	ggc	240
Leu	Asp	Ser	Trp	Thr	Asn	Val	Val	Glu	Arg	Ser	Val	Asn	Ala	Phe	Gly	
					70				75						80	
gag	atc	aat	gtg	ctg	gtg	aac	aat	gca	ggg	gtt	ctc	ggc	ccg	ctg	gcc	288
Glu	Ile	Asn	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Leu	Gly	Pro	Leu	Ala	
				85					90					95		
acg	acg	gca	gag	ctt	acc	gag	ggc	gac	tac	cgg	aag	gtg	tgc	agt	atc	336
Thr	Thr	Ala	Glu	Leu	Thr	Glu	Gly	Asp	Tyr	Arg	Lys	Val	Cys	Ser	Ile	
			100					105					110			
aac	cag	gac	ggt	gtg	ttc	ttc	ggg	atg	aaa	gct	gtt	ctg	ccc	tcc	atg	384
Asn	Gln	Asp	Gly	Val	Phe	Phe	Gly	Met	Lys	Ala	Val	Leu	Pro	Ser	Met	
			115				120					125				
gaa	cga	gcc	ggt	atc	ggc	tcc	atc	gtc	aac	atc	tcg	tcg	atc	gcc	ggc	432
Glu	Arg	Ala	Gly	Ile	Gly	Ser	Ile	Val	Asn	Ile	Ser	Ser	Ile	Ala	Gly	
			130			135					140					
atg	gcc	gcg	aac	tac	ggg	ttc	ccc	agt	ttg	gcg	tac	gtc	gca	agc	aag	480
Met	Ala	Ala	Asn	Tyr	Gly	Phe	Pro	Ser	Leu	Ala	Tyr	Val	Ala	Ser	Lys	
					150					155					160	
ttc	gca	gtc	cgc	ggc	atg	acg	aaa	gcg	aca	gcc	gtc	gaa	tac	gga	ccc	528

## PhoenixTemp32470.tmp.txt

Phe	Ala	Val	Arg	Gly	Met	Thr	Lys	Ala	Thr	Ala	Val	Glu	Tyr	Gly	Pro		
				165					170					175			
aag	aac	att	cgc	gtc	aat	tcc	gtg	cac	cct	ggg	ttc	atc	cag	act	ccg	576	
Lys	Asn	Ile	Arg	Val	Asn	Ser	Val	His	Pro	Gly	Phe	Ile	Gln	Thr	Pro		
			180					185					190				
atg	atg	gtg	gag	gcc	acc	aac	gaa	gag	ggc	ggc	gac	gcc	ttg	gct	cag	624	
Met	Met	Val	Glu	Ala	Thr	Asn	Glu	Glu	Gly	Gly	Asp	Ala	Leu	Ala	Gln		
		195					200					205					
att	ccc	ctc	ggt	cgc	atc	gca	gat	ccg	cag	gag	gtg	tcc	aac	ctc	gtt	672	
Ile	Pro	Leu	Gly	Arg	Ile	Ala	Asp	Pro	Gln	Glu	Val	Ser	Asn	Leu	Val		
	210					215					220						
ctg	ttc	ctc	gcg	tcg	gac	gaa	tcc	tcc	tac	atc	acc	gga	tcg	gag	cat	720	
Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Ile	Thr	Gly	Ser	Glu	His		
	225				230					235					240		
ctg	gtc	gac	gcg	ggc	atg	ctc	gcg	cag	tag							750	
Leu	Val	Asp	Ala	Gly	Met	Leu	Ala	Gln									
				245													

&lt;210&gt; 1762

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1762

Met	Thr	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ser		
1				5					10					15			
Arg	Gly	Met	Gly	Glu	Ser	His	Ala	Lys	Ala	Phe	Val	Glu	His	Gly	Ala		
			20					25					30				
Lys	Val	Val	Leu	Ala	Asp	Ile	Thr	Asp	Asp	Ala	Gly	Glu	Leu	Leu	Ala		
		35					40					45					
Lys	Glu	Leu	Gly	Glu	Asn	Ala	Val	Phe	Val	His	His	Asp	Val	Thr	Gln		
	50				55					60							
Leu	Asp	Ser	Trp	Thr	Asn	Val	Val	Glu	Arg	Ser	Val	Asn	Ala	Phe	Gly		
65					70				75						80		
Glu	Ile	Asn	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Leu	Gly	Pro	Leu	Ala		
			85						90				95				
Thr	Thr	Ala	Glu	Leu	Thr	Glu	Gly	Asp	Tyr	Arg	Lys	Val	Cys	Ser	Ile		
		100					105						110				
Asn	Gln	Asp	Gly	Val	Phe	Phe	Gly	Met	Lys	Ala	Val	Leu	Pro	Ser	Met		
		115					120					125					
Glu	Arg	Ala	Gly	Ile	Gly	Ser	Ile	Val	Asn	Ile	Ser	Ser	Ile	Ala	Gly		
	130				135						140						
Met	Ala	Ala	Asn	Tyr	Gly	Phe	Pro	Ser	Leu	Ala	Tyr	Val	Ala	Ser	Lys		
145					150				155					160			
Phe	Ala	Val	Arg	Gly	Met	Thr	Lys	Ala	Thr	Ala	Val	Glu	Tyr	Gly	Pro		
			165						170					175			
Lys	Asn	Ile	Arg	Val	Asn	Ser	Val	His	Pro	Gly	Phe	Ile	Gln	Thr	Pro		
			180					185					190				
Met	Met	Val	Glu	Ala	Thr	Asn	Glu	Glu	Gly	Gly	Asp	Ala	Leu	Ala	Gln		
		195					200					205					
Ile	Pro	Leu	Gly	Arg	Ile	Ala	Asp	Pro	Gln	Glu	Val	Ser	Asn	Leu	Val		
	210					215					220						
Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Ile	Thr	Gly	Ser	Glu	His		
	225				230					235					240		
Leu	Val	Asp	Ala	Gly	Met	Leu	Ala	Gln									
				245													

&lt;210&gt; 1763

&lt;211&gt; 807

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus sp. RHA1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(807)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1763

atg	gcc	ggc	cag	cta	gag	aac	aga	agt	gtc	gtc	atc	acg	ggg	gtc	gcc		
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--	--

48



## PhoenixTemp32470.tmp.txt

Met 1	Ala	Gly	Gln	Leu 5	Glu	Asn	Arg	Ser	Val 10	Val	Ile	Thr	Gly	Val 15	Ala		
gat	cct	cag	ggc	atc	ggc	ttc	ggg	agc	gcc	cgg	gtg	ctg	gcg	cag	aaa		96
Asp	Pro	Gln	Gly 20	Ile	Gly	Phe	Gly	Ser 25	Ala	Arg	Val	Leu	Ala 30	Gln	Lys		
ggt	gca	tgt	ctc	act	ctg	gtg	gac	att	tcc	gag	cag	gtc	cac	gag	cga		144
Gly	Ala	Leu 35	Leu	Thr	Leu	Val	Asp 40	Ile	Ser	Glu	Gln	Val 45	His	Glu	Arg		
cga	gat	gat	ctc	gcg	cgg	gaa	ggg	ttc	gac	gtc	cga	tcc	cac	acc	gtg		192
Arg	Asp 50	Asp	Leu	Ala	Arg	Glu 55	Gly	Phe	Asp	Val	Arg 60	Ser	His	Thr	Val		
gat	ctg	acg	aat	cat	tcg	gat	gtc	gtc	gac	ctg	atc	gac	cac	gta	gtc		240
Asp 65	Leu	Thr	Asn	His	Ser 70	Asp	Val	Val	Asp	Leu 75	Ile	Asp	His	Val	Val 80		
aaa	ggc	gcc	ggt	gtc	atc	gac	ggc	ctg	gtg	aat	ctc	gca	gga	atc	gca		288
Lys	Gly	Ala	Gly 85	Val	Ile	Asp	Gly	Leu	Val 90	Asn	Leu	Ala	Gly 95	Ile	Ala		
gcg	cgc	gca	aag	ggt	gac	gat	gtc	gat	ttc	gag	gta	ccg	atc	ctt			336
Ala	Arg	Ala	Lys 100	Lys	Gly	Asp	Asp 105	Val	Asp	Phe	Glu	Val 110	Pro	Ile	Leu		
gcc	acg	act	tcg	atc	gaa	tca	tgg	gag	cgc	act	ctc	gcc	att	aac	ctc		384
Ala	Thr	Thr 115	Ser	Ile	Glu	Ser	Trp 120	Glu	Arg	Thr	Leu	Ala 125	Ile	Asn	Leu		
acc	act	caa	ttc	aat	tgt	gtg	cga	gcg	gtg	tta	ccg	cac	atg	att	gaa		432
Thr	Thr 130	Gln	Phe	Asn	Cys	Val 135	Arg	Ala	Val	Leu	Pro 140	His	Met	Ile	Glu		
cag	cgg	tac	ggc	cgc	atc	gtc	aac	ttc	tcc	tct	gtg	acc	ggg	ccg	gtc		480
Gln	Arg	Tyr	Gly	Arg	Ile 150	Val	Asn	Phe	Ser	Ser 155	Val	Thr	Gly	Pro	Val 160		
ggc	gcg	atc	gct	ggg	ttg	ggc	gcc	tac	gcg	gca	gcc	aaa	gca	ggt	gtt		528
Gly	Ala	Ile	Ala 165	Gly	Leu	Gly	Ala	Tyr	Ala 170	Ala	Ala	Lys	Ala 175	Gly	Val		
gtc	ggt	ctc	acc	aag	tcc	atc	gca	ctg	gag	aac	ggc	cag	ttc	gga	atc		576
Val	Gly	Leu 180	Thr	Lys	Ser	Ile	Ala	Leu 185	Glu	Asn	Gly	Gln	Phe 190	Gly	Ile		
aca	gcg	aac	gcg	atc	gcg	ccc	gga	tac	gtc	aac	act	gca	gcg	ttg	act		624
Thr	Ala	Asn 195	Ala	Ile	Ala	Pro	Gly 200	Tyr	Val	Asn	Thr	Ala 205	Ala	Leu	Thr		
ccc	gga	atg	cat	atc	ggt	ggc	gaa	aac	aca	cca	ctc	aag	cga	agc	ggt		672
Pro	Gly 210	Met	His	Ile	Gly	Gly 215	Glu	Asn	Thr	Pro	Leu 220	Lys	Arg	Ser	Gly		
gaa	ccc	cgt	gaa	att	ggt	gct	ctc	gtt	ggc	ttt	ctc	gca	tcg	gaa	gag		720
Glu	Pro	Arg	Glu	Ile 230	Gly	Ala	Leu	Val	Gly	Phe 235	Leu	Ala	Ser	Glu	Glu 240		
tct	tcg	tac	gta	acg	ggt	caa	ctc	atc	acc	atc	gat	ggc	gga	aac	atg		768
Ser	Ser	Tyr	Val 245	Thr	Gly	Gln	Leu	Ile	Thr 250	Ile	Asp	Gly	Gly	Asn 255	Met		
att	cag	gaa	tac	aag	ggc	ccg	ggt	gaa	ctg	gtt	ctc	taa					807
Ile	Gln	Glu	Tyr 260	Lys	Gly	Pro	Gly 265	Glu	Leu	Val	Leu						

&lt;210&gt; 1764

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 1764

Met 1	Ala	Gly	Gln	Leu 5	Glu	Asn	Arg	Ser	Val 10	Val	Ile	Thr	Gly	Val 15	Ala		
Asp	Pro	Gln	Gly 20	Ile	Gly	Phe	Gly	Ser 25	Ala	Arg	Val	Leu	Ala 30	Gln	Lys		
Gly	Ala	Leu 35	Leu	Thr	Leu	Val	Asp 40	Ile	Ser	Glu	Gln	Val 45	His	Glu	Arg		
Arg	Asp 50	Asp	Leu	Ala	Arg	Glu 55	Gly	Phe	Asp	Val	Arg 60	Ser	His	Thr	Val		
Asp 65	Leu	Thr	Asn	His	Ser 70	Asp	Val	Val	Asp	Leu 75	Ile	Asp	His	Val	Val 80		
Lys	Gly	Ala	Gly 85	Val	Ile	Asp	Gly	Leu	Val 90	Asn	Leu	Ala	Gly 95	Ile	Ala		

## PhoenixTemp32470.tmp.txt

Ala Arg Ala Lys Lys Gly Asp Asp Val Asp Phe Glu Val Pro Ile Leu  
 100 110  
 Ala Thr Thr Ser Ile Glu Ser Trp Glu Arg Thr Leu Ala Ile Asn Leu  
 115 125  
 Thr Thr Gln Phe Asn Cys Val Arg Ala Val Leu Pro His Met Ile Glu  
 130 140  
 Gln Arg Tyr Gly Arg Ile Val Asn Phe Ser Ser Val Thr Gly Pro Val  
 145 155 160  
 Gly Ala Ile Ala Gly Leu Gly Ala Tyr Ala Ala Lys Ala Gly Val  
 165 175  
 Val Gly Leu Thr Lys Ser Ile Ala Leu Glu Asn Gly Gln Phe Gly Ile  
 180 190  
 Thr Ala Asn Ala Ile Ala Pro Gly Tyr Val Asn Thr Ala Ala Leu Thr  
 195 205  
 Pro Gly Met His Ile Gly Gly Glu Asn Thr Pro Leu Lys Arg Ser Gly  
 210 220  
 Glu Pro Arg Glu Ile Gly Ala Leu Val Gly Phe Leu Ala Ser Glu Glu  
 225 235 240  
 Ser Ser Tyr Val Thr Gly Gln Leu Ile Thr Ile Asp Gly Gly Asn Met  
 245 255  
 Ile Gln Glu Tyr Lys Gly Pro Gly Glu Leu Val Leu  
 260 265

&lt;210&gt; 1765

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Alkalilimnicola ehrlichei MLHE-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1765

atg	caa	aaa	ctc	gac	gac	aaa	atc	gca	ctg	gtc	acc	ggc	ggc	tct	cgc	48
Met	Gln	Lys	Leu	Asp	Asp	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Ser	Arg	
1				5					10					15		
ggt	atc	ggc	aaa	tcc	atc	gcg	ctg	gag	ctg	gcc	aag	ctg	ggc	gcc	aaa	96
Gly	Ile	Gly	Lys	Ser	Ile	Ala	Leu	Glu	Leu	Ala	Lys	Leu	Gly	Ala	Lys	
			20					25					30			
gtg	gct	att	aac	tac	cac	ggc	agc	aag	gac	aag	gcc	gag	gcc	gtc	gcc	144
Val	Ala	Ile	Asn	Tyr	His	Gly	Ser	Lys	Asp	Lys	Ala	Glu	Ala	Val	Ala	
			35				40					45				
gac	gag	att	cgt	ggc	ctg	ggg	acc	gag	gcc	ctg	gtg	ctg	cag	gcc	gat	192
Asp	Glu	Ile	Arg	Gly	Leu	Gly	Thr	Glu	Ala	Leu	Val	Leu	Gln	Ala	Asp	
			50			55					60					
gtg	ggc	gat	gcg	gac	tct	gca	cg	aat	ctg	gtc	aag	cag	ggt	atc	gac	240
Val	Gly	Asp	Ala	Asp	Ser	Ala	Arg	Asn	Leu	Val	Lys	Gln	Val	Ile	Asp	
					70				75						80	
cag	tgg	ggg	cg	gtg	gat	gta	ctg	gtc	aac	aac	gcc	ggt	atc	acc	cgg	288
Gln	Trp	Gly	Arg	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	
				85					90					95		
gac	acc	acc	ttc	aag	aag	atg	acc	gac	gag	gcc	tgg	cac	gag	gtc	atc	336
Asp	Thr	Thr	Phe	Lys	Lys	Met	Thr	Asp	Glu	Ala	Trp	His	Glu	Val	Ile	
			100					105					110			
aac	acc	aac	ctg	aac	agc	gta	ttt	tac	gtc	acc	agc	gcc	gcc	ctg	ccc	384
Asn	Thr	Asn	Leu	Asn	Ser	Val	Phe	Tyr	Val	Thr	Ser	Ala	Ala	Leu	Pro	
			115				120					125				
tcc	atg	ctg	gag	aac	aag	ttc	ggg	cg	atc	atc	aac	atc	agc	tcc	ttc	432
Ser	Met	Leu	Glu	Asn	Lys	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Phe	
			130			135					140					
gtg	ggt	cag	gcc	ggc	aac	ttc	ggt	cag	acc	aac	tac	gcc	gcc	agc	aag	480
Val	Gly	Gln	Ala	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	
					150				155						160	
ggc	gcg	gtg	atc	gcg	ttc	acc	aag	agc	ctg	gcg	aag	gaa	gtg	gcc	cgc	528
Gly	Ala	Val	Ile	Ala	Phe	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Val	Ala	Arg	
				165					170					175		
aat	aac	atc	acc	gtg	aac	gcg	gtg	gcg	ggc	ttt	acc	gcc	acc	gag		576
Asn	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Thr	Ala	Thr	Glu	

## PhoenixTemp32470.tmp.txt

			180				185			190								
atg	gtc	gcc	gcc	atc	ccg	gag	aag	gtg	cag	gag	aag	atc	ctg	tcc	acg			
Met	Val	Ala	Ala	Ile	Pro	Glu	Lys	Val	Gln	Glu	Lys	Ile	Leu	Ser	Thr			624
		195					200					205						
gtg	ccg	cag	aac	cgt	ttc	ggc	gag	ccg	gag	gaa	gtc	gcg	cgc	ggc	gtc			672
Val	Pro	Gln	Asn	Arg	Phe	Gly	Glu	Pro	Glu	Glu	Val	Ala	Arg	Gly	Val			
	210					215					220							
gcc	tac	ctg	gct	tcg	gac	ggc	gac	tac	atc	acc	ggg	cag	cag	ctc	aac			720
Ala	Tyr	Leu	Ala	Ser	Asp	Gly	Asp	Tyr	Ile	Thr	Gly	Gln	Gln	Leu	Asn			
225					230					235					240			
att	aac	ggg	ggg	gtt	tac	atg	taa											744
Ile	Asn	Gly	Gly	Val	Tyr	Met												
				245														

&lt;210&gt; 1766

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Alkalilimnicola ehrlichei MLHE-1

&lt;400&gt; 1766

Met	Gln	Lys	Leu	Asp	Asp	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Ser	Arg			
1				5				10						15				
Gly	Ile	Gly	Lys	Ser	Ile	Ala	Leu	Glu	Leu	Ala	Lys	Leu	Gly	Ala	Lys			
			20					25					30					
Val	Ala	Ile	Asn	Tyr	His	Gly	Ser	Lys	Asp	Lys	Ala	Glu	Ala	Val	Ala			
		35					40					45						
Asp	Glu	Ile	Arg	Gly	Leu	Gly	Thr	Glu	Ala	Leu	Val	Leu	Gln	Ala	Asp			
	50					55					60							
Val	Gly	Asp	Ala	Asp	Ser	Ala	Arg	Asn	Leu	Val	Lys	Gln	Val	Ile	Asp			
65					70					75					80			
Gln	Trp	Gly	Arg	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg			
				85					90					95				
Asp	Thr	Thr	Phe	Lys	Lys	Met	Thr	Asp	Glu	Ala	Trp	His	Glu	Val	Ile			
			100					105					110					
Asn	Thr	Asn	Leu	Asn	Ser	Val	Phe	Tyr	Val	Thr	Ser	Ala	Ala	Leu	Pro			
		115					120					125						
Ser	Met	Leu	Glu	Asn	Lys	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Phe			
	130					135					140							
Val	Gly	Gln	Ala	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys			
145					150					155					160			
Gly	Ala	Val	Ile	Ala	Phe	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Val	Ala	Arg			
				165					170					175				
Asn	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Thr	Ala	Thr	Glu			
			180					185					190					
Met	Val	Ala	Ala	Ile	Pro	Glu	Lys	Val	Gln	Glu	Lys	Ile	Leu	Ser	Thr			
		195					200					205						
Val	Pro	Gln	Asn	Arg	Phe	Gly	Glu	Pro	Glu	Glu	Val	Ala	Arg	Gly	Val			
	210					215					220							
Ala	Tyr	Leu	Ala	Ser	Asp	Gly	Asp	Tyr	Ile	Thr	Gly	Gln	Gln	Leu	Asn			
225					230					235					240			
Ile	Asn	Gly	Gly	Val	Tyr	Met												
				245														

&lt;210&gt; 1767

&lt;211&gt; 738

&lt;212&gt; DNA

&lt;213&gt; Hyphomonas neptunium ATCC 15444

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(738)

&lt;400&gt; 1767

atg	ggc	cgg	cta	gca	ggc	aaa	aaa	gca	ctg	att	acc	gcc	gcg	ggc	gcc			48
Met	Gly	Arg	Leu	Ala	Gly	Lys	Lys	Ala	Leu	Ile	Thr	Ala	Ala	Gly	Ala			
	1			5				10						15				
ggc	att	ggc	cgc	gcc	tcc	gcc	gag	gca	ttt	gcc	cgc	gaa	ggc	gcg	cgc			96
Gly	Ile	Gly	Arg	Ala	Ser	Ala	Glu	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Arg			
			20					25					30					

## PhoenixTemp32470.tmp.txt

atc	atc	gcc	aca	gac	atc	agc	gcc	gag	gcg	ctc	gcc	gcc	ctc	aag	ggc	144
Ile	Ile	Ala	Thr	Asp	Ile	Ser	Ala	Glu	Ala	Leu	Ala	Ala	Leu	Lys	Gly	
		35					40				45					
aca	gcc	aac	atc	gaa	aca	cag	ctt	ctg	gac	gtg	acc	gat	ccc	gcc	gcc	192
Thr	Ala	Asn	Ile	Glu	Thr	Gln	Leu	Leu	Asp	Val	Thr	Asp	Pro	Ala	Ala	
	50					55					60					
atc	gcg	gcc	ctc	ttc	acg	acc	cat	ccc	gat	ctc	gac	att	ctg	ttc	aat	240
Ile	Ala	Ala	Leu	Phe	Thr	His	Pro	Asp	Leu	Asp	Ile	Leu	Phe	Asn		
	65				70					75				80		
gtc	gca	ggc	tgg	gtc	cat	cat	gga	acg	atc	gag	acc	tgc	ggc	cgg	gat	288
Val	Ala	Gly	Trp	Val	His	His	Gly	Thr	Ile	Glu	Thr	Cys	Gly	Arg	Asp	
			85						90				95			
gac	tgg	gac	cg	tcg	ctc	ctg	gtc	aac	ctc	acc	tcc	atg	tat	gaa	acc	336
Asp	Trp	Asp	Arg	Ser	Leu	Leu	Val	Asn	Leu	Thr	Ser	Met	Tyr	Glu	Thr	
			100					105					110			
tcc	cg	gca	gcc	ctg	cca	aac	atg	ctg	gca	cat	ggc	ggc	ggc	gtg	atc	384
Ser	Arg	Ala	Ala	Leu	Pro	Asn	Met	Leu	Ala	His	Gly	Gly	Gly	Val	Ile	
		115					120					125				
ctc	aat	atg	agt	tcc	gtc	gcc	tcc	agc	gtc	gtc	ggc	gcg	ccc	aac	cg	432
Leu	Asn	Met	Ser	Ser	Val	Ala	Ser	Ser	Val	Val	Gly	Ala	Pro	Asn	Arg	
	130					135					140					
ttt	gct	tac	ggc	gcc	acc	aag	gcc	ggc	gtg	atc	ggg	ctc	acg	aaa	gcc	480
Phe	Ala	Tyr	Gly	Ala	Thr	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Ala	
	145				150					155					160	
atc	gct	gcg	gat	tat	gcg	ggc	cg	aac	att	cg	tgc	aat	gcc	atc	tgt	528
Ile	Ala	Ala	Asp	Tyr	Ala	Gly	Arg	Asn	Ile	Arg	Cys	Asn	Ala	Ile	Cys	
				165					170					175		
ccg	ggc	acg	gtt	gat	aca	ccc	tcg	cta	cag	ggc	cg	atg	tcg	gcg	cag	576
Pro	Gly	Thr	Val	Asp	Thr	Pro	Ser	Leu	Gln	Gly	Arg	Met	Ser	Ala	Gln	
			180					185					190			
ggc	gac	tat	gac	agc	gcg	cg	cag	atg	ttc	atc	gcg	cg	cag	ccc	atg	624
Gly	Asp	Tyr	Asp	Ser	Ala	Arg	Gln	Met	Phe	Ile	Ala	Arg	Gln	Pro	Met	
		195					200					205				
ggc	cg	ctc	ggc	acc	gcc	gaa	gag	atc	gca	cac	ctc	gcc	gtc	tat	ctc	672
Gly	Arg	Leu	Gly	Thr	Ala	Glu	Glu	Ile	Ala	His	Leu	Ala	Val	Tyr	Leu	
	210					215					220					
gcc	tca	gat	gag	gca	tcc	ttc	acg	acg	ggc	gcg	att	cac	gtc	gtt	gac	720
Ala	Ser	Asp	Glu	Ala	Ser	Phe	Thr	Thr	Gly	Ala	Ile	His	Val	Val	Asp	
	225				230					235					240	
ggc	ggc	tgg	aca	aat	tag											738
Gly	Gly	Trp	Thr	Asn												
				245												

&lt;210&gt; 1768

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Hyphomonas neptunium ATCC 15444

&lt;400&gt; 1768

Met	Gly	Arg	Leu	Ala	Gly	Lys	Lys	Ala	Leu	Ile	Thr	Ala	Ala	Gly	Ala	
1				5					10					15		
Gly	Ile	Gly	Arg	Ala	Ser	Ala	Glu	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Arg	
			20					25					30			
Ile	Ile	Ala	Thr	Asp	Ile	Ser	Ala	Glu	Ala	Leu	Ala	Ala	Leu	Lys	Gly	
		35					40					45				
Thr	Ala	Asn	Ile	Glu	Thr	Gln	Leu	Leu	Asp	Val	Thr	Asp	Pro	Ala	Ala	
	50					55					60					
Ile	Ala	Ala	Leu	Phe	Thr	Thr	His	Pro	Asp	Leu	Asp	Ile	Leu	Phe	Asn	
	65				70					75				80		
Val	Ala	Gly	Trp	Val	His	His	Gly	Thr	Ile	Glu	Thr	Cys	Gly	Arg	Asp	
			85						90				95			
Asp	Trp	Asp	Arg	Ser	Leu	Leu	Val	Asn	Leu	Thr	Ser	Met	Tyr	Glu	Thr	
			100					105					110			
Ser	Arg	Ala	Ala	Leu	Pro	Asn	Met	Leu	Ala	His	Gly	Gly	Gly	Val	Ile	
		115					120					125				
Leu	Asn	Met	Ser	Ser	Val	Ala	Ser	Ser	Val	Val	Gly	Ala	Pro	Asn	Arg	
	130					135					140					
Phe	Ala	Tyr	Gly	Ala	Thr	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Ala	
	145				150					155					160	

## PhoenixTemp32470.tmp.txt

Ile Ala Ala Asp Tyr Ala Gly Arg Asn Ile Arg Cys Asn Ala Ile Cys  
 165 170 175  
 Pro Gly Thr Val Asp Thr Pro Ser Leu Gln Gly Arg Met Ser Ala Gln  
 180 185 190  
 Gly Asp Tyr Asp Ser Ala Arg Gln Met Phe Ile Ala Arg Gln Pro Met  
 195 200 205  
 Gly Arg Leu Gly Thr Ala Glu Ile Ala His Leu Ala Val Tyr Leu  
 210 215 220  
 Ala Ser Asp Glu Ala Ser Phe Thr Thr Gly Ala Ile His Val Val Asp  
 225 230 235 240  
 Gly Gly Trp Thr Asn  
 245

&lt;210&gt; 1769

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Rhizobium leguminosarum bv. viciae 3841

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1769

atg ggc ggc cgc ctg cag ggc aag aac atc ctg ata aca ggt gct gcg	48
Met Gly Gly Arg Leu Gln Gly Lys Asn Ile Leu Ile Thr Gly Ala Ala	
1 5 10 15	
cag ggt atc ggc ctt gcg atc gcg aag gct ttc ctg cgg gag gat gcc	96
Gln Gly Ile Gly Leu Ala Ile Ala Lys Ala Phe Leu Arg Glu Asp Ala	
20 25 30	
gcc gtc ttt ctc gtc gat cgc gat gcg gcg ctg ctg gcg cag gcg gcg	144
Ala Val Phe Leu Val Asp Arg Asp Ala Ala Leu Leu Ala Gln Ala Ala	
35 40 45	
aaa gag ctc cag agc agt ggc ggc cag ctt ggt tat ctg ccg gcc gat	192
Lys Glu Leu Gln Ser Ser Gly Gly Gln Leu Gly Tyr Leu Pro Ala Asp	
50 55 60	
att acc gat gcc ggc acg atc acg aca ttg gtc gct cag gcg aat gaa	240
Ile Thr Asp Ala Gly Thr Ile Thr Thr Leu Val Ala Gln Ala Asn Glu	
65 70 75 80	
gaa atc ggg cag ctg aat gcg ctc gtc aac aat gcc ggg gtg aat gtc	288
Glu Ile Gly Gln Asn Ala Leu Val Asn Asn Ala Gly Val Asn Val	
85 90 95	
ttc gcc gaa ccg ctc gag acg acg gac gag gaa tgg aac cgc tgc ttc	336
Phe Ala Glu Pro Leu Glu Thr Thr Asp Glu Glu Trp Asn Arg Cys Phe	
100 105 110	
gac atc aat ctg aag ggc gca tgg aac tgc tgc aag gcg gtg ctg ccg	384
Asp Ile Asn Leu Lys Gly Ala Trp Asn Cys Cys Lys Ala Val Leu Pro	
115 120 125	
ggc ctg atc gaa cag ggc ggc ggc gtt atc ctc aac atc gcc tcg acg	432
Gly Leu Ile Glu Gln Gly Gly Gly Val Ile Leu Asn Ile Ala Ser Thr	
130 135 140	
cac gct ttc acc atc atc ccg cac aca ttt ccc tat ccg ctg gca aaa	480
His Ala Phe Thr Ile Ile Pro His Thr Phe Pro Tyr Pro Leu Ala Lys	
145 150 155 160	
cac gcc ctg ctc gga atg acg aaa tcc ttg ggc ctc gaa tat gcc gcc	528
His Ala Leu Leu Gly Met Thr Lys Ser Leu Gly Leu Glu Tyr Ala Ala	
165 170 175	
cgc aat atc cgc gtg aac gcg ctg gcg ccg ggc tat gtc tcg acg cag	576
Arg Asn Ile Arg Val Asn Ala Leu Ala Pro Gly Tyr Val Ser Thr Gln	
180 185 190	
aag gtg atc gat tac tgg aac ggc ttt cct gat ccg gag gcg gca aag	624
Lys Val Ile Asp Tyr Trp Asn Gly Phe Pro Asp Pro Glu Ala Ala Lys	
195 200 205	
gcc gaa acg atg aaa ctg cat cct ggc ggg cgc atc gcg acg ccg gag	672
Ala Glu Thr Met Lys Leu His Pro Gly Gly Arg Ile Ala Thr Pro Glu	
210 215 220	
gag att gcc atg gcg gcc gtg ttc atg atc tcc gac gag tgc ccg ttc	720
Glu Ile Ala Met Ala Ala Val Phe Met Ile Ser Asp Glu Cys Pro Phe	
225 230 235 240	

## PhoenixTemp32470.tmp.txt

atc aat gcc acc tgc ctg acg atc gat ggc ggc ctc agc gtg ctg cag 768  
 ile Asn Ala Thr Cys Leu Thr ile Asp Gly Gly Leu Ser Val Leu Gln 255  
 cat ccc gcc tga 780  
 His Pro Ala

<210> 1770  
 <211> 259  
 <212> PRT  
 <213> Rhizobium leguminosarum bv. viciae 3841

<400> 1770  
 Met Gly Gly Arg Leu Gln Gly Lys Asn Ile Leu Ile Thr Gly Ala Ala  
 1 5 10 15  
 Gln Gly Ile Gly Leu Ala Ile Ala Lys Ala Phe Leu Arg Glu Asp Ala  
 20 25 30  
 Ala Val Phe Leu Val Asp Arg Asp Ala Leu Leu Ala Gln Ala Ala  
 35 40 45  
 Lys Glu Leu Gln Ser Ser Gly Gly Gln Leu Gly Tyr Leu Pro Ala Asp  
 50 55 60  
 ile Thr Asp Ala Gly Thr Ile Thr Thr Leu Val Ala Gln Ala Asn Glu  
 65 70 75 80  
 Glu ile Gly Gln Leu Asn Ala Leu Val Asn Asn Ala Gly Val Asn Val  
 85 90 95  
 Phe Ala Glu Pro Leu Glu Thr Thr Asp Glu Glu Trp Asn Arg Cys Phe  
 100 105 110  
 Asp ile Asn Leu Lys Gly Ala Trp Asn Cys Cys Lys Ala Val Leu Pro  
 115 120 125  
 Gly Leu ile Glu Gln Gly Gly Val ile Leu Asn ile Ala Ser Thr  
 130 135 140  
 His Ala Phe Thr ile ile Pro His Thr Phe Pro Tyr Pro Leu Ala Lys  
 145 150 155 160  
 His Ala Leu Leu Gly Met Thr Lys Ser Leu Gly Leu Glu Tyr Ala Ala  
 165 170 175  
 Arg Asn ile Arg Val Asn Ala Leu Ala Pro Gly Tyr Val Ser Thr Gln  
 180 185 190  
 Lys Val ile Asp Tyr Trp Asn Gly Phe Pro Asp Pro Glu Ala Ala Lys  
 195 200 205  
 Ala Glu Thr Met Lys Leu His Pro Gly Gly Arg ile Ala Thr Pro Glu  
 210 215 220  
 Glu ile Ala Met Ala Ala Val Phe Met ile Ser Asp Glu Cys Pro Phe  
 225 230 235 240  
 ile Asn Ala Thr Cys Leu Thr ile Asp Gly Gly Leu Ser Val Leu Gln  
 245 250 255  
 His Pro Ala

<210> 1771  
 <211> 750  
 <212> DNA  
 <213> Rhizobium leguminosarum bv. viciae 3841

<220>  
 <221> CDS  
 <222> (1)..(750)  
 <223> transl\_table=11

<400> 1771  
 atg aca acc ccc gat ttg aca agc aga ctt gcc ggc aag acc gtt ctc 48  
 Met Thr Thr Pro Asp Leu Thr Ser Arg Leu Ala Gly Lys Thr Val Leu 5 10 15  
 atc acc gcc gcc ggc cag ggc atc ggc cgg gca acg gcg gcc gtt ttt 96  
 ile Thr Ala Ala Gly Gln Gly ile Gly Arg Ala Thr Ala Ala Phe 20 25 30  
 gcc gcg atc ggc gcc aag gtc cac gcg acc gat atc aac acc gag gcc 144  
 Ala Ala ile Gly Ala Lys Val His Ala Thr Asp ile Asn Thr Glu Ala 35 40 45  
 ttg gcg acg ctt gcc gcc gaa acc ggc gtc tcc acc cat aag ctg aac 192  
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## PhoenixTemp32470.tmp.txt

Leu	Ala	Thr	Leu	Ala	Ala	Glu	Thr	Gly	Val	Ser	Thr	His	Lys	Leu	Asn	
gtg	ctc	gaa	gag	gat	gcg	gtc	aag	gcc	ctg	gtc	gcc	gag	atc	ggc	gcc	240
Val	Leu	Glu	Glu	Asp	Ala	Val	Lys	Ala	Leu	Val	Ala	Glu	Ile	Gly	Ala	
65					70					75					80	
gtc	gac	gtg	ctg	ttc	aac	tgc	gcc	ggt	ttc	gtc	cat	gcc	ggc	tcg	atc	288
Val	Asp	Val	Leu	Phe	Asn	Cys	Ala	Gly	Phe	Val	His	Ala	Gly	Ser	Ile	
				85					90					95		
ctg	gag	atg	acg	gat	tcc	gat	ctc	gaa	ttc	gcc	ttc	gac	ctc	aac	gtc	336
Leu	Glu	Met	Thr	Asp	Ser	Asp	Leu	Glu	Phe	Ala	Phe	Asp	Leu	Asn	Val	
			100					105					110			
aag	gcg	atg	atc	cgc	acc	atc	cgc	gcc	gtg	ctg	ccg	ggc	atg	atc	gag	384
Lys	Ala	Met	Ile	Arg	Thr	Ile	Arg	Ala	Val	Leu	Pro	Gly	Met	Ile	Glu	
		115					120					125				
cgc	aag	gac	gga	gcg	atc	atc	aac	atg	gcc	tcc	gtc	gcc	tcc	agc	atc	432
Arg	Lys	Asp	Gly	Ala	Ile	Ile	Asn	Met	Ala	Ser	Val	Ala	Ser	Ser	Ile	
	130				135						140					
aag	ggc	gtg	ccg	aac	cgc	ttc	gcc	tat	ggc	gtc	acc	aag	gcg	gcg	gtg	480
Lys	Gly	Val	Pro	Asn	Arg	Phe	Ala	Tyr	Gly	Val	Thr	Lys	Ala	Ala	Val	
145				150						155					160	
atc	ggg	ctc	acc	aag	gcc	gtc	gcc	gcc	gat	tac	gtc	ggc	cag	ggc	atc	528
Ile	Gly	Leu	Thr	Lys	Ala	Val	Ala	Ala	Asp	Tyr	Val	Gly	Gln	Gly	Ile	
				165					170					175		
cgc	tgc	aac	gcc	atc	tgc	ccc	ggc	acg	gtg	gaa	agc	ccg	tcg	ctg	cag	576
Arg	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Thr	Val	Glu	Ser	Pro	Ser	Leu	Gln	
			180					185					190			
gac	cgc	atg	cgg	gcg	cag	ggc	gac	tac	gac	gcg	gcg	cgt	gcc	gcc	ttc	624
Asp	Arg	Met	Arg	Ala	Gln	Gly	Asp	Tyr	Asp	Ala	Ala	Arg	Ala	Ala	Phe	
		195					200					205				
atc	gcc	cgc	cag	ccg	atg	ggc	cgg	ctg	ggc	tca	ccg	gaa	gag	atc	gcc	672
Ile	Ala	Arg	Gln	Pro	Met	Gly	Arg	Leu	Gly	Ser	Pro	Glu	Glu	Ile	Ala	
	210					215					220					
gat	ctc	gcc	gtc	tat	ctc	gcc	ggc	gcg	acc	tac	acg	tcg	ggc	cag	gcg	720
Asp	Leu	Ala	Val	Tyr	Leu	Ala	Gly	Ala	Thr	Tyr	Thr	Ser	Gly	Gln	Ala	
225				230						235					240	
atc	gcc	atc	gac	ggc	ggc	tgg	acg	atc	tga							750
Ile	Ala	Ile	Asp	Gly	Gly	Trp	Thr	Ile								
				245												

&lt;210&gt; 1772

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Rhizobium leguminosarum bv. viciae 3841

&lt;400&gt; 1772

Met	Thr	Thr	Pro	Asp	Leu	Thr	Ser	Arg	Leu	Ala	Gly	Lys	Thr	Val	Leu	
1				5					10					15		
Ile	Thr	Ala	Ala	Gly	Gln	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Ala	Ala	Phe	
			20					25					30			
Ala	Ala	Ile	Gly	Ala	Lys	Val	His	Ala	Thr	Asp	Ile	Asn	Thr	Glu	Ala	
		35					40					45				
Leu	Ala	Thr	Leu	Ala	Ala	Glu	Thr	Gly	Val	Ser	Thr	His	Lys	Leu	Asn	
	50					55					60					
Val	Leu	Glu	Glu	Asp	Ala	Val	Lys	Ala	Leu	Val	Ala	Glu	Ile	Gly	Ala	
65				70						75					80	
Val	Asp	Val	Leu	Phe	Asn	Cys	Ala	Gly	Phe	Val	His	Ala	Gly	Ser	Ile	
				85					90					95		
Leu	Glu	Met	Thr	Asp	Ser	Asp	Leu	Glu	Phe	Ala	Phe	Asp	Leu	Asn	Val	
			100					105					110			
Lys	Ala	Met	Ile	Arg	Thr	Ile	Arg	Ala	Val	Leu	Pro	Gly	Met	Ile	Glu	
		115					120					125				
Arg	Lys	Asp	Gly	Ala	Ile	Ile	Asn	Met	Ala	Ser	Val	Ala	Ser	Ser	Ile	
	130					135					140					
Lys	Gly	Val	Pro	Asn	Arg	Phe	Ala	Tyr	Gly	Val	Thr	Lys	Ala	Ala	Val	
145				150						155					160	
Ile	Gly	Leu	Thr	Lys	Ala	Val	Ala	Ala	Asp	Tyr	Val	Gly	Gln	Gly	Ile	
				165					170					175		
Arg	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Thr	Val	Glu	Ser	Pro	Ser	Leu	Gln	
			180					185					190			

## PhoenixTemp32470.tmp.txt

Asp Arg Met Arg Ala Gln Gly Asp Tyr Asp Ala Ala Arg Ala Ala Phe  
 195 200 205  
 Ile Ala Arg Gln Pro Met Gly Arg Leu Gly Ser Pro Glu Glu Ile Ala  
 210 215 220  
 Asp Leu Ala Val Tyr Leu Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala  
 225 230 235 240  
 Ile Ala Ile Asp Gly Gly Trp Thr Ile  
 245

&lt;210&gt; 1773

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas aeruginosa UCBPP-PA14

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1773

atg aac gat ttt ccg aag tgg aca ggc cag gtc gcg ctc atc agc ggc	48
Met Asn Asp Phe Pro Lys Trp Thr Gly Gln Val Ala Leu Ile Ser Gly	
1 5 10 15	
gcc ggc agc gaa ctc ggc atc ggt ttc gcc att gcc cgg cgg ctg gcc	96
Ala Gly Ser Glu Leu Gly Ile Gly Phe Ala Ile Ala Arg Arg Leu Ala	
20 25 30	
cgc gaa ggc gtg cgc ctg ctg atc acc gcc agc agc gag cgg att agg	144
Arg Glu Gly Val Arg Leu Leu Ile Thr Ala Ser Ser Glu Arg Ile Arg	
35 40 45	
caa cga gcg gag gaa ctg agc gca tgt ggt cac gac gtg cgc gcc gcg	192
Gln Arg Ala Glu Glu Leu Ser Ala Cys Gly His Asp Val Arg Ala Ala	
50 55 60	
agc gcc gac ctg acc gac gaa gcc cag gtg cag ggt ctg ctg gac tgg	240
Ser Ala Asp Leu Thr Asp Glu Ala Gln Val Gln Gly Leu Leu Asp Trp	
65 70 75 80	
gcc gaa gcc cag tgg gga cgg gtc gac atc ctg gtg aac aat gcc ggc	288
Ala Glu Ala Gln Trp Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly	
85 90 95	
atg gcc cag ttg gac agc gcg gag ccc ttc agc gca gtg gaa gcg acc	336
Met Ala Gln Leu Asp Ser Ala Glu Pro Phe Ser Ala Val Glu Ala Thr	
100 105 110	
tcg ctg cgg gat tgg caa ctg tcc ctg tcg cgc aac ctg acc agt gct	384
Ser Leu Arg Asp Trp Gln Leu Ser Leu Ser Arg Asn Leu Thr Ser Ala	
115 120 125	
ttc ctg ctc acc cgc ggc ctg ctg ccg ggc atg cgc gag cgc ggc tac	432
Phe Leu Leu Thr Arg Gly Leu Leu Pro Gly Met Arg Glu Arg Gly Tyr	
130 135 140	
ggg cgg atc gtc aac gtc gcc tcc acc acc gga acc cgc ggc agc aac	480
Gly Arg Ile Val Asn Val Ala Ser Thr Thr Gly Thr Arg Gly Ser Asn	
145 150 155 160	
ccg ggc gaa gcc gcg tat agc gcg gcc aag gcc ggt ctg gtc ggc tgg	528
Pro Gly Glu Ala Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Trp	
165 170 175	
agc atg ggc ctg gcg ctg gag gtg gcg aag agc ggc atc acg gtg aac	576
Ser Met Gly Leu Ala Leu Glu Val Ala Lys Ser Gly Ile Thr Val Asn	
180 185 190	
agc gtc gcg ccg ggc tgg atc gcc acc gcc tcg agc acc gcc gaa gaa	624
Ser Val Ala Pro Gly Trp Ile Ala Thr Ala Ser Ser Thr Ala Glu Glu	
195 200 205	
cgc cag gcc gcc ctg gcc agc ccc agc gga cgt gcc ggc cgg ccc gaa	672
Arg Gln Ala Ala Leu Ala Ser Pro Ser Gly Arg Ala Gly Arg Pro Glu	
210 215 220	
gag gtg gcc gcc gcg gtt gcc ttc ctc gcc tcg ccc gaa gcc agc ttc	720
Glu Val Ala Ala Ala Val Ala Phe Leu Ala Ser Pro Glu Ala Ser Phe	
225 230 235 240	
gtc aac ggc gaa ctg ctg gtg gtg gac ggc ggc aac tgc ctg atc gaa	768
Val Asn Gly Glu Leu Leu Val Val Asp Gly Gly Asn Cys Leu Ile Glu	
245 250 255	
aac aaa cgg agc tga	783



Asn Lys Arg Ser  
260

<210> 1774  
<211> 260  
<212> PRT  
<213> Pseudomonas aeruginosa UCBPP-PA14

<400> 1774  
Met Asn Asp Phe Pro Lys Trp Thr Gly Gln Val Ala Leu Ile Ser Gly  
1 5 10 15  
Ala Gly Ser Glu Leu Gly Ile Gly Phe Ala Ile Ala Arg Arg Leu Ala  
20 25 30  
Arg Glu Gly Val Arg Leu Leu Ile Thr Ala Ser Ser Glu Arg Ile Arg  
35 40 45  
Gln Arg Ala Glu Glu Leu Ser Ala Cys Gly His Asp Val Arg Ala Ala  
50 55 60  
Ser Ala Asp Leu Thr Asp Glu Ala Gln Val Gln Gly Leu Leu Asp Trp  
65 70 75 80  
Ala Glu Ala Gln Trp Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly  
85 90 95  
Met Ala Gln Leu Asp Ser Ala Glu Pro Phe Ser Ala Val Glu Ala Thr  
100 105 110  
Ser Leu Arg Asp Trp Gln Leu Ser Leu Ser Arg Asn Leu Thr Ser Ala  
115 120 125  
Phe Leu Leu Thr Arg Gly Leu Leu Pro Gly Met Arg Glu Arg Gly Tyr  
130 135 140  
Gly Arg Ile Val Asn Val Ala Ser Thr Thr Gly Thr Arg Gly Ser Asn  
145 150 155 160  
Pro Gly Glu Ala Ala Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Trp  
165 170 175  
Ser Met Gly Leu Ala Leu Glu Val Ala Lys Ser Gly Ile Thr Val Asn  
180 185 190  
Ser Val Ala Pro Gly Trp Ile Ala Thr Ala Ser Ser Thr Ala Glu Glu  
195 200 205  
Arg Gln Ala Ala Leu Ala Ser Pro Ser Gly Arg Ala Gly Arg Pro Glu  
210 215 220  
Glu Val Ala Ala Ala Val Ala Phe Leu Ala Ser Pro Glu Ala Ser Phe  
225 230 235 240  
Val Asn Gly Glu Leu Leu Val Val Asp Gly Gly Asn Cys Leu Ile Glu  
245 250 255  
Asn Lys Arg Ser  
260

<210> 1775  
<211> 741  
<212> DNA  
<213> Mycobacterium avium 104

<220>  
<221> CDS  
<222> (1)..(741)  
<223> transl\_table=11

<400> 1775  
atg tcc ttg ctc agt ggt cag acc gcg gtc atc aca ggt ggc gca caa 48  
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1 5 10 15  
ggt ttg ggg ttc gcg atc gcc gaa cgg ttc gtc gcc gaa ggg gcg cgg 96  
Gly Leu Gly Phe Ala Ile Ala Glu Arg Phe Val Ala Glu Gly Ala Arg  
20 25 30  
gtc gtc ctc ggc gac gtc aat ctg gag gcg acg caa acc gcg gcc aaa 144  
Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Gln Thr Ala Ala Lys  
35 40 45  
cag ctg ggc ggt gac cag gtg gcg ctg gcc gtg cgc tgc gac gtc acc 192  
Gln Leu Gly Gly Asp Gln Val Ala Leu Ala Val Arg Cys Asp Val Thr  
50 55 60  
aag tcg tcc gag gtc gaa acg ctg atc cag acc gcc gtc gag cgg ttc 240  
Lys Ser Ser Glu Val Glu Thr Leu Ile Gln Thr Ala Val Glu Arg Phe

## PhoenixTemp32470.tmp.txt

65	ggc	ctg	gac	atc	atg	gtc	aac	aac	gcc	ggg	atc	acc	cgg	gac	80	
Gly	Gly	Leu	Asp	Ile	Met	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Ala	288
				85					90					95		
acc	atg	cgc	aag	atg	acc	gag	gag	cag	ttc	gat	cag	gtc	atc	gcc	gtg	336
Thr	Met	Arg	Lys	Met	Thr	Glu	Glu	Gln	Phe	Asp	Gln	Val	Ile	Ala	Val	
			100					105					110			
cac	ttg	aag	ggc	acc	tgg	aac	ggc	acc	cgg	ttg	gcg	gcg	gcg	atc	atg	384
His	Leu	Lys	Gly	Thr	Trp	Asn	Gly	Thr	Arg	Leu	Ala	Ala	Ala	Ile	Met	
		115					120					125				
cgg	gaa	aac	aag	cgc	ggc	gcc	atc	atc	aac	atg	tcc	tcg	gtg	tcg	ggc	432
Arg	Glu	Asn	Lys	Arg	Gly	Ala	Ile	Ile	Asn	Met	Ser	Ser	Val	Ser	Gly	
	130					135					140					
aag	gtc	ggc	atg	gtc	ggc	cag	acc	aac	tac	tcg	gcg	gcc	aag	gcc	ggc	480
Lys	Val	Gly	Met	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	
	145				150					155					160	
atc	gtg	ggc	atg	acc	aag	gcg	gcc	gcc	aag	gag	ctg	gcc	tac	ctg	ggt	528
Ile	Val	Gly	Met	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Leu	Ala	Tyr	Leu	Gly	
				165					170					175		
gtg	cgg	gtg	aac	gcg	atc	gcc	ccc	ggt	ttg	atc	cgc	tcg	gcg	atg	aca	576
Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Leu	Ile	Arg	Ser	Ala	Met	Thr	
			180					185					190			
gag	gcc	atg	ccg	caa	cgc	att	tgg	gac	tcc	aag	gtg	gcc	gag	gtg	ccg	624
Glu	Ala	Met	Pro	Gln	Arg	Ile	Trp	Asp	Ser	Lys	Val	Ala	Glu	Val	Pro	
		195					200					205				
atg	ggc	cgg	gcc	ggc	gag	ccc	agc	gag	gtc	gcc	agc	gtg	gcg	ctg	ttt	672
Met	Gly	Arg	Ala	Gly	Glu	Pro	Ser	Glu	Val	Ala	Ser	Val	Ala	Leu	Phe	
	210					215				220						
ttg	gcc	tcc	gac	atg	tcg	tcg	tac	atg	acc	ggc	acc	gtc	atg	gag	atc	720
Leu	Ala	Ser	Asp	Met	Ser	Ser	Tyr	Met	Thr	Gly	Thr	Val	Met	Glu	Ile	
	225				230					235					240	
acg	ggc	ggc	cgg	cac	ctg	tga										741
Thr	Gly	Gly	Arg	His	Leu											
				245												

&lt;210&gt; 1776

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium avium 104

&lt;400&gt; 1776

Met	Ser	Leu	Leu	Ser	Gly	Gln	Thr	Ala	Val	Ile	Thr	Gly	Gly	Ala	Gln
1				5					10					15	
Gly	Leu	Gly	Phe	Ala	Ile	Ala	Glu	Arg	Phe	Val	Ala	Glu	Gly	Ala	Arg
			20					25					30		
Val	Val	Leu	Gly	Asp	Val	Asn	Leu	Glu	Ala	Thr	Gln	Thr	Ala	Ala	Lys
		35					40					45			
Gln	Leu	Gly	Gly	Asp	Gln	Val	Ala	Leu	Ala	Val	Arg	Cys	Asp	Val	Thr
	50				55					60					
Lys	Ser	Ser	Glu	Val	Glu	Thr	Leu	Ile	Gln	Thr	Ala	Val	Glu	Arg	Phe
65					70				75					80	
Gly	Gly	Leu	Asp	Ile	Met	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Ala
				85					90					95	
Thr	Met	Arg	Lys	Met	Thr	Glu	Glu	Gln	Phe	Asp	Gln	Val	Ile	Ala	Val
			100					105				110			
His	Leu	Lys	Gly	Thr	Trp	Asn	Gly	Thr	Arg	Leu	Ala	Ala	Ala	Ile	Met
		115					120					125			
Arg	Glu	Asn	Lys	Arg	Gly	Ala	Ile	Ile	Asn	Met	Ser	Ser	Val	Ser	Gly
	130					135				140					
Lys	Val	Gly	Met	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly
	145				150				155					160	
Ile	Val	Gly	Met	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Leu	Ala	Tyr	Leu	Gly
				165				170					175		
Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Leu	Ile	Arg	Ser	Ala	Met	Thr
			180					185					190		
Glu	Ala	Met	Pro	Gln	Arg	Ile	Trp	Asp	Ser	Lys	Val	Ala	Glu	Val	Pro
		195					200					205			
Met	Gly	Arg	Ala	Gly	Glu	Pro	Ser	Glu	Val	Ala	Ser	Val	Ala	Leu	Phe
	210					215					220				

Leu Ala Ser Asp Met Ser Ser Tyr Met Thr Gly Thr Val Met Glu Ile  
 225 230 240  
 Thr Gly Gly Arg His  
 245

<210> 1777  
 <211> 750  
 <212> DNA  
 <213> Mycobacterium avium 104  
 <220>  
 <221> CDS  
 <222> (1)..(750)  
 <223> transl\_table=11

<400> 1777  
 atg gcg gag tcg cta ctg ctt ggc aaa gtc gcg gtg gtg acg ggc gcg 48  
 Met Ala Glu Ser Leu Leu Leu Gly Lys Val Ala Val Val Thr Gly Ala  
 1 5 10 15  
 ggg caa ggt atc ggt cgt gag att gcc cgg gcg ctg cac cgc cac ggc 96  
 Gly Gln Gly Ile Gly Arg Glu Ile Ala Arg Ala Leu His Arg His Gly  
 20 25 30  
 gcg cgg gtc gtg ctg gca gac ctc gac ggc agc gcc gcc cga tcc gcg 144  
 Ala Arg Val Val Leu Ala Asp Leu Asp Gly Ser Ala Ala Arg Ser Ala  
 35 40 45  
 gcg gca cag atc gac gac agc ggc gca aac tgc act gga ttg gcg tgc 192  
 Ala Ala Gln Ile Asp Asp Ser Gly Ala Asn Cys Thr Gly Leu Ala Cys  
 50 55 60  
 gat gtg acg tcg gag gag cag gtg ggc gct ctg gtg gct ggc acg gtg 240  
 Asp Val Thr Ser Glu Glu Gln Val Gly Ala Val Val Ala Gly Thr Val  
 65 70 75 80  
 cgt gag cat ggt ggg ctg gac gtg ttc gtc aac aac gcc ggc atc aca 288  
 Arg Glu His Gly Gly Leu Asp Val Phe Val Asn Asn Ala Gly Ile Thr  
 85 90 95  
 cgc gac gca tcg ctg aaa agg atg acg gta gcc gac ttc gac gcg gtc 336  
 Arg Asp Ala Ser Leu Lys Arg Met Thr Val Ala Asp Phe Asp Ala Val  
 100 105 110  
 atc gcc gtc cac ctt cgc ggc acc tgg ctc ggc gta cgg gaa gcc gcc 384  
 Ile Ala Val His Leu Arg Gly Thr Trp Leu Gly Val Arg Glu Ala Ala  
 115 120 125  
 gcg gtg atg cgt gag cgc aag acg ggc agc atc gtc aac atg tcg tcc 432  
 Ala Val Met Arg Glu Arg Lys Thr Gly Ser Ile Val Asn Met Ser Ser  
 130 135 140  
 ctt tcg ggc aaa gcc ggt aat ccg ggt cag acg aat tac agc gcc gcc 480  
 Leu Ser Gly Lys Ala Gly Asn Pro Gly Gln Thr Asn Tyr Ser Ala Ala  
 145 150 155 160  
 aaa gcc ggc atc gtc ggg ctc acg aaa gcg gcc gca aaa gag ttg gcg 528  
 Lys Ala Gly Ile Val Gly Leu Thr Lys Ala Ala Ala Lys Glu Leu Ala  
 165 170 175  
 cat cac aat gtt cgt gtc aac gcg atc cag ccg ggc ttg atc cgc acg 576  
 His His Asn Val Arg Val Asn Ala Ile Gln Pro Gly Leu Ile Arg Thr  
 180 185 190  
 ccc atg aca gcg gcg atg ccg ccg gac gtc ttt gcc gag cga gag gct 624  
 Pro Met Thr Ala Ala Met Pro Pro Asp Val Phe Ala Glu Arg Glu Ala  
 195 200 205  
 gcg gta ccg atg aaa cgt gcg ggc gaa ccc gag gag gtc gcg ggg gca 672  
 Ala Val Pro Met Lys Arg Ala Gly Glu Pro Glu Val Ala Gly Ala  
 210 215 220  
 gtg gtg ttc ctg gct tcc gaa ctc tct agc tac atc acc ggt acg gtc 720  
 Val Val Phe Leu Ala Ser Glu Leu Ser Ser Tyr Ile Thr Gly Thr Val  
 225 230 235 240  
 ctc gga gtc ggt ggc ggg agg tat atg tga 750  
 Leu Gly Val Gly Gly Arg Tyr Met  
 245

<210> 1778  
 <211> 249  
 <212> PRT  
 <213> Mycobacterium avium 104

## PhoenixTemp32470.tmp.txt

```

<400> 1778
Met Ala Glu Ser Leu Leu Leu Gly Lys Val Ala Val Val Thr Gly Ala
1      5      10      15
Gly Gln Gly Ile Gly Arg Glu Ile Ala Arg Ala Leu His Arg His Gly
20      25      30
Ala Arg Val Val Leu Ala Asp Leu Asp Gly Ser Ala Ala Arg Ser Ala
35      40      45
Ala Ala Gln Ile Asp Asp Ser Gly Ala Asn Cys Thr Gly Leu Ala Cys
50      55      60
Asp Val Thr Ser Glu Glu Gln Val Gly Ala Leu Val Ala Gly Thr Val
65      70      75
Arg Glu His Gly Gly Leu Asp Val Phe Val Asn Asn Ala Gly Ile Thr
85      90      95
Arg Asp Ala Ser Leu Lys Arg Met Thr Val Ala Asp Phe Asp Ala Val
100     105     110
Ile Ala Val His Leu Arg Gly Thr Trp Leu Gly Val Arg Glu Ala Ala
115     120     125
Ala Val Met Arg Glu Arg Lys Thr Gly Ser Ile Val Asn Met Ser Ser
130     135     140
Leu Ser Gly Lys Ala Gly Asn Pro Gly Gln Thr Asn Tyr Ser Ala Ala
145     150     155
Lys Ala Gly Ile Val Gly Leu Thr Lys Ala Ala Lys Glu Leu Ala
165     170     175
His His Asn Val Arg Val Asn Ala Ile Gln Pro Gly Leu Ile Arg Thr
180     185     190
Pro Met Thr Ala Ala Met Pro Pro Asp Val Phe Ala Glu Arg Glu Ala
195     200     205
Ala Val Pro Met Lys Arg Ala Gly Glu Pro Glu Glu Val Ala Gly Ala
210     215     220
Val Val Phe Leu Ala Ser Glu Leu Ser Ser Tyr Ile Thr Gly Thr Val
225     230     235
Leu Gly Val Gly Gly Gly Arg Tyr Met
245

```

```

<210> 1779
<211> 735
<212> DNA
<213> Mycobacterium smegmatis str. MC2 155

```

```

<220>
<221> CDS
<222> (1)..(735)
<223> transl_table=11

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```

<400> 1779
ttg ctg acc gga cag act gcg gtg gtc acg ggc gga gcc cag ggg ctc      48
Met Leu Thr Gly Gln Thr Ala Val Val Thr Gly Gly Ala Gln Gly Leu
1      5      10      15
ggt ctc gcc atc gcg aag cgc ttc atc tcc gaa ggc gcc cgc gtg gtg      96
Gly Leu Ala Ile Ala Lys Arg Phe Ile Ser Glu Gly Ala Arg Val Val
20      25      30
ctg ggc gac ctc aac tcc gag gcc acc gag gcc gcg gtg gag gag ctc      144
Leu Gly Asp Leu Asn Ser Glu Ala Thr Glu Ala Ala Val Glu Glu Leu
35      40      45
ggc gga tcc gag gtg gcc gcg gcc gtg cgc tgc gac gtg acg tcg tcg      192
Gly Gly Ser Glu Val Ala Ala Val Arg Cys Asp Val Thr Ser Ser
50      55      60
gcc gac gtc gac gct ttg gtg caa gcc gcg gtc gag cgg ttc ggc ggt      240
Ala Asp Val Asp Ala Leu Val Gln Ala Ala Val Glu Arg Phe Gly Gly
65      70      75
ctg gac atc atg gtc aac aac gcg ggc atc aca cgt gat gcg aca ttg      288
Leu Asp Ile Met Val Asn Asn Ala Gly Ile Thr Arg Asp Ala Thr Leu
85      90      95
cgc aag atg acc gag gag cag ttc gac cag gtc atc gcg gtc cat ctg      336
Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala Val His Leu
100     105     110
aag ggc acg tgg aac ggc acc aag gcg gcc gcg gcg atc atg cgg gag      384
Lys Gly Thr Trp Asn Gly Thr Lys Ala Ala Ala Ile Met Arg Glu

```

## PhoenixTemp32470.tmp.txt

aac	aag	115	gag	gag	atc	gtg	120	aac	atg	tcc	tcc	atc	125	ggc	aag	gtc	432
Asn	Lys	Arg	Gly	Ala	Ile	Val	Asn	Met	Ser	Ser	Ile	Ser	Gly	Lys	Val		
gga	ctg	atc	gga	cag	acc	aac	130	tac	tcc	gag	gcc	aag	140	ggc	atc	gtc	480
Gly	Leu	Ile	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Ile	Val		
145	ggc	atg	acc	aag	gcc	gag	150	aag	gaa	ctc	gag	tac	155	ctc	ggg	gtg	528
Gly	Met	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Leu	Ala	Tyr	Leu	Gly	Val	Arg		
gtg	aac	gag	atc	cag	ccc	ggg	165	atc	cgt	tcc	gcc	atg	170	acc	gag	gcc	576
Val	Asn	Ala	Ile	Gln	Pro	Gly	Leu	Ile	Arg	Ser	Ala	Met	175	Thr	Glu	Ala	
atg	ccg	caa	cag	atc	tgg	gac	180	aag	gag	ctc	gcc	gag	185	ccg	atg	ggg	624
Met	Pro	Gln	Arg	Ile	Trp	Asp	Glu	Lys	Leu	Ala	Glu	Ile	190	Pro	Met	Gly	
cgt	gcc	ggt	gaa	ccc	gac	gag	195	gtg	gcc	aag	gtg	gag	200	ctc	ctc	gag	672
Arg	Ala	Gly	Glu	Pro	Asp	Glu	Val	Ala	Lys	Val	Ala	Leu	205	Phe	Leu	Ala	
agc	gat	ctg	tcc	tcc	tac	atg	210	acc	ggc	acc	gtg	ctc	215	gag	gtc	acc	720
Ser	Asp	Leu	Ser	Ser	Tyr	Met	Thr	Gly	Thr	Val	Leu	Glu	220	Val	Thr	Gly	
225	ggt	cgg	cac	gta	tga		230						235			240	
Gly	Arg	His	Val														735

&lt;210&gt; 1780

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;400&gt; 1780

Met	Leu	Thr	Gly	Gln	Thr	Ala	Val	Val	Thr	Gly	Gly	Ala	Gln	Gly	Leu		
1	Gly	Leu	Ala	Ile	5	Lys	Arg	Phe	Ile	10	Ser	Glu	Gly	Ala	Arg	Val	
20	Leu	Gly	Asp	Leu	Asn	Ser	Glu	Ala	Thr	25	Glu	Ala	Ala	Val	Glu	Glu	Leu
35	Gly	Gly	Ser	Glu	Val	Ala	Ala	Ala	Val	40	Arg	Cys	Asp	Val	Thr	Ser	Ser
50	Ala	Asp	Val	Asp	Ala	Leu	Val	Gln	Ala	55	Ala	Val	60	Glu	Arg	Phe	Gly
65	Leu	Asp	Ile	Met	Val	Asn	Asn	Ala	Gly	70	Ile	Thr	75	Arg	Asp	Ala	Thr
85	Arg	Lys	Met	Thr	Glu	Glu	Gln	Phe	Asp	90	Gln	Val	Ile	Ala	Val	His	Leu
100	Lys	Gly	Thr	Trp	Asn	Gly	Thr	Lys	105	Ala	Ala	Ala	Ile	110	Met	Arg	Glu
115	Asn	Lys	Arg	Gly	Ala	Ile	Val	Asn	Met	120	Ser	Ser	Ile	125	Ser	Gly	Lys
130	Gly	Leu	Ile	Gly	Gln	Thr	Asn	Tyr	Ser	135	Ala	Ala	Lys	140	Ala	Gly	Ile
145	Gly	Met	Thr	Lys	Ala	Ala	Ala	Lys	Glu	150	Leu	Ala	Tyr	155	Leu	Gly	Val
165	Val	Asn	Ala	Ile	Gln	Pro	Gly	Leu	Ile	170	Arg	Ser	Ala	175	Met	Thr	Glu
180	Met	Pro	Gln	Arg	Ile	Trp	Asp	Glu	Lys	185	Leu	Ala	Glu	190	Ile	Pro	Met
195	Arg	Ala	Gly	Glu	Pro	Asp	Glu	Val	Ala	200	Lys	Val	Ala	205	Leu	Phe	Leu
210	Ser	Asp	Leu	Ser	Ser	Tyr	Met	Thr	Gly	215	Thr	Val	Leu	220	Glu	Val	Thr
225	Gly	Arg	His	Val						230				235			240

&lt;210&gt; 1781

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

<220>  
 <221> CDS  
 <222> (1)..(768)  
 <223> transl\_table=11

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<400> 1781
atg gat gtg cgt tcg gca ttc gat ctg agc ggg cgc act gcg ctg gtg      48
Met Asp Val Arg Ser Ala Phe Asp Leu Ser Gly Arg Thr Ala Leu Val
  1      5      10      15
acc ggc gga aac cag ggc ctg ggc aag gct ttc gcg atc gca ctc gca      96
Thr Gly Gly Asn Gln Gly Leu Gly Lys Ala Phe Ala Ile Ala Leu Ala
      20      25      30
cag gcc ggt gcc cgt gtg tcc ttc tcg ggc cgc aac gcc gaa cgc aac      144
Gln Ala Gly Ala Arg Val Ser Phe Ser Gly Arg Asn Ala Glu Arg Asn
      35      40      45
gag aag acc gcg gcc gag gcc gcc gcg gca gga cac caa ctg cac gcg      192
Glu Lys Thr Ala Ala Glu Ala Ala Ala Gly His Gln Leu His Ala
      50      55      60
atc acg gcc gac atc acc agg gcc gag gac gtc gag cgc atg acg gcc      240
Ile Thr Ala Asp Ile Thr Arg Ala Glu Asp Val Glu Arg Met Thr Ala
      65      70      75      80
gag gcc atc gaa gcg ctc ggt cac atc gac atc ctg gtc aac aac gcg      288
Glu Ala Ile Glu Ala Leu Gly His Ile Asp Ile Leu Val Asn Asn Ala
      85      90      95
ggc acg tgc cac cac ggt gag tcc tgg acg gtc acc gaa gag cag tgg      336
Gly Thr Cys His His Gly Glu Ser Trp Thr Val Thr Glu Glu Gln Trp
      100      105      110
gac gac gtg ttc gac ctc aac gtc aag gcg ctg tgg gcg tgt tcg ctc      384
Asp Asp Val Phe Asp Leu Asn Val Lys Ala Leu Trp Ala Cys Ser Leu
      115      120      125
gcc gtc ggt gcg cac atg cgc gag cgc ggc agc ggt tcg gtg gtc aac      432
Ala Val Gly Ala His Met Arg Glu Arg Gly Ser Gly Ser Val Val Asn
      130      135      140
atc ggc tcg atg tcg ggc atc atc gtc aac cgc ccc cag atg cag ccc      480
Ile Gly Ser Met Ser Gly Ile Ile Val Asn Arg Pro Gln Met Gln Pro
      145      150      155      160
gcg tac aac gcc tcc aag gcc gcg gtg cac cac ctc acg aaa tcc ctt      528
Ala Tyr Asn Ala Ser Lys Ala Ala Val His His Leu Thr Lys Ser Leu
      165      170      175
gcc gcc gag tgg gcc ccg ttg gga atc cgg gtc aac gcg ctg gct ccc      576
Ala Ala Glu Trp Ala Pro Leu Gly Ile Arg Val Asn Ala Leu Ala Pro
      180      185      190
gga tac gtg aag acc gac atg gcc ccg gtt gac cgg ccg gag ttc aag      624
Gly Tyr Val Lys Thr Asp Met Ala Pro Val Asp Arg Pro Glu Phe Lys
      195      200      205
cgg tac tgg atc gac gac acc ccg cag ctg cgc tac gcg gtg ccc gag      672
Arg Tyr Trp Ile Asp Asp Thr Pro Gln Leu Arg Tyr Ala Val Pro Glu
      210      215      220
gag atc gcg ccc agc gtg gtg ttc ctg gcc agc gac gcg gcc tcc ttc      720
Glu Ile Ala Pro Ser Val Val Phe Leu Ala Ser Asp Ala Ala Ser Phe
      225      230      235      240
atc acc ggc tcg gtg ctc gtc gcg gac ggc gga tac acc gca tgg      765
Ile Thr Gly Ser Val Leu Val Ala Asp Gly Gly Tyr Thr Ala Trp
      245      250      255
tag                                                                 768

```

<210> 1782  
 <211> 255  
 <212> PRT  
 <213> Mycobacterium smegmatis str. MC2 155

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<400> 1782
Met Asp Val Arg Ser Ala Phe Asp Leu Ser Gly Arg Thr Ala Leu Val
  1      5      10      15
Thr Gly Gly Asn Gln Gly Leu Gly Lys Ala Phe Ala Ile Ala Leu Ala
      20      25      30

```

## PhoenixTemp32470.tmp.txt

Gln Ala Gly Ala Arg Val Ser Phe Ser Gly Arg Asn Ala Glu Arg Asn  
 35 40 45  
 Glu Lys Thr Ala Ala Glu Ala Ala Ala Gly His Gln Leu His Ala  
 50 55 60  
 Ile Thr Ala Asp Ile Thr Arg Ala Glu Asp Val Glu Arg Met Thr Ala  
 65 70 75 80  
 Glu Ala Ile Glu Ala Leu Gly His Ile Asp Ile Leu Val Asn Asn Ala  
 85 90 95  
 Gly Thr Cys His His Gly Glu Ser Trp Thr Val Thr Glu Glu Gln Trp  
 100 105 110  
 Asp Asp Val Phe Asp Leu Asn Val Lys Ala Leu Trp Ala Cys Ser Leu  
 115 120 125  
 Ala Val Gly Ala His Met Arg Glu Arg Gly Ser Gly Ser Val Val Asn  
 130 135 140  
 Ile Gly Ser Met Ser Gly Ile Ile Val Asn Arg Pro Gln Met Gln Pro  
 145 150 155 160  
 Ala Tyr Asn Ala Ser Lys Ala Ala Val His His Leu Thr Lys Ser Leu  
 165 170 175  
 Ala Ala Glu Trp Ala Pro Leu Gly Ile Arg Val Asn Ala Leu Ala Pro  
 180 185 190  
 Gly Tyr Val Lys Thr Asp Met Ala Pro Val Asp Arg Pro Glu Phe Lys  
 195 200 205  
 Arg Tyr Trp Ile Asp Asp Thr Pro Gln Leu Arg Tyr Ala Val Pro Glu  
 210 215 220  
 Glu Ile Ala Pro Ser Val Val Phe Leu Ala Ser Asp Ala Ala Ser Phe  
 225 230 235 240  
 Ile Thr Gly Ser Val Leu Val Ala Asp Gly Gly Tyr Thr Ala Trp  
 245 250 255

&lt;210&gt; 1783

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Nocardioides sp. JS614

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1783

atg agc aca agg ttc gaa ggc aag gtc gcg atc gtc act ggg gca ggc	48
Met Ser Thr Arg Phe Glu Gly Lys Val Ala Ile Val Thr Gly Ala Gly	
1 5 10 15	
tcc ggg atc gga cgg gcg acc gcc gaa ctg ctc gcc acc gaa ggc ggc	96
Ser Gly Ile Gly Arg Ala Thr Ala Glu Leu Leu Ala Thr Glu Gly Gly	
20 25 30 35	
gcc ata ggc gta ctt gac ctg cgc atc gag gcc gcg gag gag act gtc	144
Ala Ile Gly Val Leu Asp Leu Arg Ile Glu Ala Ala Glu Glu Thr Val	
35 40 45 50	
gcg gcc atc acc gcc gct gga ggc cgt gca att gcc ctc gcc gcc aac	192
Ala Ala Ile Thr Ala Ala Gly Gly Arg Ala Ile Ala Leu Ala Ala Asn	
50 55 60 65	
gtg gcc gac acc gct gaa gtc gaa gcg gcc gtc gcc aag gtc gtg gcg	240
Val Ala Asp Thr Ala Glu Val Glu Ala Ala Val Ala Lys Val Val Ala	
65 70 75 80	
gag tac ggc ggt ttg cac gtg ctc tat aac aac gcc ggc tgc gac tcc	288
Glu Tyr Gly Gly Leu His Val Leu Tyr Asn Asn Ala Gly Cys Asp Ser	
85 90 95 100	
aag ggg tcg gtc gcg gac gcc agc gat gcc gac tgg gag cgc gcg atg	336
Lys Gly Ser Val Ala Asp Ala Ser Asp Ala Asp Trp Glu Arg Ala Met	
100 105 110 115	
gcg gtc aac gcc aag ggc act ttc gtc tgc tcg cgc gcg gca gtc ccc	384
Ala Val Asn Ala Lys Gly Thr Phe Val Cys Ser Arg Ala Ala Val Pro	
115 120 125 130	
cac atg gcc gcc tcg gga ggc ggt gcc atc gtc aac cag gga tcg gtg	432
His Met Ala Ala Ser Gly Gly Gly Ala Ile Val Asn Gln Gly Ser Val	
130 135 140 145	
gcc gcc ctc gta ggc gtg ccc aac ttc gcc gcg tac tgc gcc gcc aag	480
Ala Ala Leu Val Gly Val Pro Asn Phe Ala Ala Tyr Cys Ala Ala Lys	
145 150 155 160	

## PhoenixTemp32470.tmp.txt

145	gga gct gtc gtt gcg	150	ctc act cgg tcg atg gcc gtc gac ttg gcg cca	160	528
Gly Ala Val Val Ala	155	Leu Thr Arg Ser Met Ala Val Asp Leu Ala Pro	170	175	
gtc aag atc cgg gtc aac gtg atc tgc ccg ggg acc gtc ttt acc ccg	175	Val Lys Ile Arg Val Asn Val Ile Cys Pro Gly Thr Val Phe Thr Pro	185	190	576
ctg atg gag ccg atg ctt cgg gca cga ggc gat ggt gat ctc gag gcc	180	Leu Met Glu Pro Met Leu Arg Ala Arg Gly Asp Gly Asp Leu Glu Ala	195	200	624
ggt ctg gcc aag aca ctc gtg aag tac ccc atc gga cgg ctg ggc act	195	Gly Leu Ala Lys Thr Leu Val Lys Tyr Pro Ile Gly Arg Leu Gly Thr	205	210	672
ccc gag gaa atc gct cgg gtt gca gcg ttc ctc gcg tcc gac gat tcc	210	Pro Glu Glu Ile Ala Arg Val Ala Ala Phe Leu Ala Ser Asp Asp Ser	215	220	720
225 tcc ttc ctg acc ggt tcc gtc atc gcc gcc gat ggc gga atg aca gcg	225	Ser Phe Leu Thr Gly Ser Val Ile Ala Ala Asp Gly Gly Met Thr Ala	230	235	768
cag tag	245		240	250	774
Gln					

<210> 1784  
 <211> 257  
 <212> PRT  
 <213> Nocardioides sp. JS614

<400> 1784  
 Met Ser Thr Arg Phe Glu Gly Lys Val Ala Ile Val Thr Gly Ala Gly  
 1 Ser Gly Ile Gly Arg Ala Thr Ala Glu Leu Leu Ala Thr Glu Gly Gly  
 20 Ala Ile Gly Val Leu Asp Leu Arg Ile Glu Ala Ala Glu Thr Val  
 35 Ala Ala Ile Thr Ala Ala Gly Gly Arg Ala Ile Ala Leu Ala Ala Asn  
 50 Val Ala Asp Thr Ala Glu Val Glu Ala Ala Val Ala Lys Val Val Ala  
 65 Glu Tyr Gly Gly Leu His Val Leu Tyr Asn Asn Ala Gly Cys Asp Ser  
 80 Lys Gly Ser Val Ala Asp Ala Ser Asp Ala Asp Trp Glu Arg Ala Met  
 100 Ala Val Asn Ala Lys Gly Thr Phe Val Cys Ser Arg Ala Ala Val Pro  
 115 His Met Ala Ala Ser Gly Gly Gly Ala Ile Val Asn Gln Gly Ser Val  
 130 Ala Ala Leu Val Gly Val Pro Asn Phe Ala Ala Tyr Cys Ala Ala Lys  
 145 Gly Ala Val Val Ala Leu Thr Arg Ser Met Ala Val Asp Leu Ala Pro  
 160 Val Lys Ile Arg Val Asn Val Ile Cys Pro Gly Thr Val Phe Thr Pro  
 175 Leu Met Glu Pro Met Leu Arg Ala Arg Gly Asp Gly Asp Leu Glu Ala  
 190 Gly Leu Ala Lys Thr Leu Val Lys Tyr Pro Ile Gly Arg Leu Gly Thr  
 205 Pro Glu Glu Ile Ala Arg Val Ala Ala Phe Leu Ala Ser Asp Asp Ser  
 220 Ser Phe Leu Thr Gly Ser Val Ile Ala Ala Asp Gly Gly Met Thr Ala  
 245 Gln

<210> 1785  
 <211> 777  
 <212> DNA  
 <213> Nocardioides sp. JS614



## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1785

atg	aaa	agc	acg	agg	ttc	gac	aac	aag	gtg	gcc	gtc	atc	acc	ggc	gcc	48
Met	Lys	Ser	Thr	Arg	Phe	Asp	Asn	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	
1				5					10					15		
gga	tcc	ggg	atc	ggc	cgc	gcc	gcg	gcc	gag	ctc	ctc	gcc	tcc	gag	ggt	96
Gly	Ser	Gly	Ile	Gly	Arg	Ala	Ala	Ala	Glu	Leu	Leu	Ala	Ser	Glu	Gly	
			20					25					30			
gcc	gcc	gtc	ggc	gta	ctc	gac	ctg	cgc	gca	gaa	tcc	gca	gag	gag	acc	144
Ala	Ala	Val	Gly	Val	Leu	Asp	Leu	Arg	Ala	Glu	Ser	Ala	Glu	Glu	Thr	
			35				40					45				
gtc	gcg	gcg	atc	gtc	gac	tca	gga	gga	cgc	gcc	atc	gcc	ctg	gcc	gcg	192
Val	Ala	Ala	Ile	Val	Asp	Ser	Gly	Gly	Arg	Ala	Ile	Ala	Leu	Ala	Ala	
			50			55					60					
aac	gtc	gcg	gat	tcc	gcc	gag	gtc	gag	gca	gcc	att	gcc	aag	gtc	gtc	240
Asn	Val	Ala	Asp	Ser	Ala	Glu	Val	Glu	Ala	Ala	Ile	Ala	Lys	Val	Val	
					70				75						80	
gcc	gag	tac	ggc	ggc	ctg	aac	gtg	ctc	tac	aac	aac	gct	ggc	tgc	gac	288
Ala	Glu	Tyr	Gly	Gly	Leu	Asn	Val	Leu	Tyr	Asn	Asn	Ala	Gly	Cys	Asp	
				85					90					95		
tct	cgc	ggg	tcg	gtc	gcc	gac	gcc	acc	gat	gag	gac	tgg	gaa	cgg	gcc	336
Ser	Arg	Gly	Ser	Val	Ala	Asp	Ala	Thr	Asp	Glu	Asp	Trp	Glu	Arg	Ala	
			100					105					110			
ttc	tcg	gtc	aac	gcc	aag	ggc	act	ttt	gtc	tgc	tcc	cgt	gcg	gcc	gtc	384
Phe	Ser	Val	Asn	Ala	Lys	Gly	Thr	Phe	Val	Cys	Ser	Arg	Ala	Ala	Val	
			115				120					125				
ccc	cat	ctg	acc	gca	tcc	ggc	gga	gga	gcc	atc	gtc	aac	caa	gga	tcg	432
Pro	His	Leu	Thr	Ala	Ser	Gly	Gly	Gly	Ala	Ile	Val	Asn	Gln	Gly	Ser	
			130			135					140					
gtt	gct	gcg	ctt	gtc	gga	gtg	ccc	aac	ttc	gcc	gcc	tac	tgc	gcc	gcg	480
Val	Ala	Ala	Leu	Val	Gly	Val	Pro	Asn	Phe	Ala	Ala	Tyr	Cys	Ala	Ala	
				145		150				155					160	
aag	ggt	gcc	gtg	gtc	gcg	ctg	acc	agg	tca	atg	gcg	atc	gac	cta	gcg	528
Lys	Gly	Ala	Val	Val	Ala	Leu	Thr	Arg	Ser	Met	Ala	Ile	Asp	Leu	Ala	
				165					170					175		
ccg	cgc	aag	atc	cgg	gtg	aac	gtg	atc	tgc	ccc	ggc	acc	gtg	ttc	acc	576
Pro	Arg	Lys	Ile	Arg	Val	Asn	Val	Ile	Cys	Pro	Gly	Thr	Val	Phe	Thr	
			180					185					190			
ccc	ttg	atg	gag	ccg	atg	ctg	cga	gcc	cgc	ggc	gac	gga	gac	ctt	gag	624
Pro	Leu	Met	Glu	Pro	Met	Leu	Arg	Ala	Arg	Gly	Asp	Gly	Asp	Leu	Glu	
			195				200					205				
gcc	ggt	ctg	gcc	aag	acc	ctg	gtg	aag	tac	ccc	atc	gga	cgg	ctc	ggc	672
Ala	Gly	Leu	Ala	Lys	Thr	Leu	Val	Lys	Tyr	Pro	Ile	Gly	Arg	Leu	Gly	
			210			215					220					
acc	ccc	gag	gag	atc	gcc	cgc	gtg	gcc	gcc	ttc	cta	gcc	tcg	gac	gac	720
Thr	Pro	Glu	Glu	Ile	Ala	Arg	Val	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	
				225		230				235					240	
tcc	tcg	ttc	ctc	acc	ggc	tcg	gtg	atc	gcc	gac	ggc	ggc	atg	acg		768
Ser	Ser	Phe	Leu	Thr	Gly	Ser	Val	Ile	Ala	Ala	Asp	Gly	Gly	Met	Thr	
				245					250					255		
gct	cag	tga														777
Ala	Gln															

&lt;210&gt; 1786

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Nocardioides sp. JS614

&lt;400&gt; 1786

Met	Lys	Ser	Thr	Arg	Phe	Asp	Asn	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	
1				5					10					15		
Gly	Ser	Gly	Ile	Gly	Arg	Ala	Ala	Ala	Glu	Leu	Leu	Ala	Ser	Glu	Gly	
			20					25					30			
Ala	Ala	Val	Gly	Val	Leu	Asp	Leu	Arg	Ala	Glu	Ser	Ala	Glu	Glu	Thr	

## PhoenixTemp32470.tmp.txt

Val Ala 35 Ile Val Asp Ser 40 Gly Gly Arg Ala Ile 45 Leu Ala Ala  
 50 Asn Val Ala Asp Ser 55 Ala Glu Val Glu Ala Ala Ile 60 Ala Lys Val Val  
 65 Ala Glu Tyr Gly Gly 70 Leu Asn Val Leu Tyr 75 Asn Asn Ala Gly Cys Asp  
 85 Ser Arg Gly Ser 100 Val Ala Asp Ala Thr 105 Asp Glu Asp Trp Glu Arg Ala  
 Phe Ser Val Asn Ala Lys Gly Thr Phe Val Cys Ser Arg Ala Ala Val  
 115 Pro His Leu Thr Ala Ser Gly Gly Gly Ala Ile Val Asn Gln Gly Ser  
 130 Val Ala Ala Leu Val Gly 135 Val Pro Asn Phe Ala Ala Tyr Cys Ala Ala  
 145 Lys Gly Ala Val Val 150 Ala Leu Thr Arg Ser 155 Met Ala Ile Asp Leu Ala  
 165 Pro Arg Lys Ile Arg Val Asn Val Ile 170 Cys Pro Gly Thr Val Phe Thr  
 180 Pro Leu Met Glu Pro Met Leu Arg 200 Ala Arg Gly Asp Gly Asp Leu Glu  
 195 Ala Gly Leu Ala Lys Thr Leu 215 Val Lys Tyr Pro Ile Gly Arg Leu Gly  
 210 Thr Pro Glu Glu Ile Ala 230 Arg Val Ala Ala Phe 235 Leu Ala Ser Asp Asp  
 225 Ser Ser Phe Leu Thr 245 Gly Ser Val Ile Ala 250 Ala Asp Gly Gly Met Thr  
 Ala Gln 255

&lt;210&gt; 1787

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. KMS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1787

atg	ccg	cgc	ctc	ctc	gac	aag	gtg	gtc	gtg	gtg	acc	ggg	gcg	gcc	cgg	48
Met	Pro	Arg	Leu	Leu	Asp	Lys	Val	Val	Val	Val	Thr	Gly	Ala	Ala	Arg	
1				5				10						15		
ggg	acc	ggc	cgg	gtg	cac	tgc	gag	cgg	ttc	gcc	gag	gaa	ggc	gcc	gac	96
Gly	Thr	Gly	Arg	Val	His	Cys	Glu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	Asp	
			20					25					30			
gtc	atc	gcg	ctc	gac	gtc	gcg	gcg	gtg	gcc	gac	gag	ctg	tcg	gga	acg	144
Val	Ile	Ala	Leu	Asp	Val	Ala	Ala	Val	Ala	Asp	Glu	Leu	Ser	Gly	Thr	
			35				40					45				
gcg	gcc	gca	gtg	gca	cga	cac	ggc	cga	cgg	tgt	gtg	acg	gga	gag	gcc	192
Ala	Ala	Ala	Val	Ala	Arg	His	Gly	Arg	Arg	Cys	Val	Thr	Gly	Glu	Ala	
			50			55					60					
gac	gtg	cgt	gac	ttc	gcc	gcc	ttg	acg	gcc	gcg	atc	gat	cgc	ggg	gtc	240
Asp	Val	Arg	Asp	Phe	Ala	Ala	Leu	Thr	Ala	Ala	Ile	Asp	Arg	Gly	Val	
				70					75						80	
gag	gag	ctc	ggt	cgg	ctc	gac	gtc	gtc	gtg	gcg	aat	gcg	ggc	gtc	cac	288
Glu	Glu	Leu	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	His	
				85					90					95		
ccg	gct	ggt	gcg	ccg	gcc	tgg	gaa	ctg	acg	ggc	gag	gcc	tgg	cgg	caa	336
Pro	Ala	Gly	Ala	Pro	Ala	Trp	Glu	Leu	Thr	Gly	Glu	Ala	Trp	Arg	Gln	
			100					105					110			
gca	ctc	gac	gtc	aac	gtg	acc	ggt	gta	tgg	cat	acg	gtc	aaa	gca	gct	384
Ala	Leu	Asp	Val	Asn	Val	Thr	Gly	Val	Trp	His	Thr	Val	Lys	Ala	Ala	
			115				120					125				
gcg	cgg	cac	atg	gat	tca	ggt	ggt	ggg	gcg	gtg	atc	gtc	atc	agc	tcc	432
Ala	Arg	His	Met	Asp	Ser	Gly	Gly	Gly	Ala	Val	Ile	Val	Ile	Ser	Ser	
			130			135					140					
acg	aat	ggc	ctg	cgc	ggg	acc	ccg	aac	tcc	gcg	cac	tac	acc	acg	agc	480

## PhoenixTemp32470.tmp.txt

Thr	Asn	Gly	Leu	Arg	Gly	Thr	Pro	Asn	Ser	Ala	His	Tyr	Thr	Thr	Ser		
145					150					155					160		
aag	cac	gcc	gtg	gtc	ggg	ttg	gcc	cgg	acc	ctg	gcc	aac	gaa	ctg	ggg		528
Lys	His	Ala	Val	Val	Gly	Leu	Ala	Arg	Thr	Leu	Ala	Asn	Glu	Leu	Gly		
				165					170					175			
ccc	cgc	agc	atc	cgg	gtc	aac	aca	gtc	cac	ccg	ggc	gcc	gtc	gcg	acg		576
Pro	Arg	Ser	Ile	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Val	Ala	Thr		
			180					185					190				
ccg	atg	gtg	ctc	aac	gaa	gcc	acc	ttc	aga	cgg	tta	cgc	ccg	gac	ctc		624
Pro	Met	Val	Leu	Asn	Glu	Ala	Thr	Phe	Arg	Arg	Leu	Arg	Pro	Asp	Leu		
		195				200					205						
gaa	gaa	ccc	acc	gcc	gac	gac	gcc	gcg	gag	gtg	ctc	cga	gcg	cgg	aac		672
Glu	Glu	Pro	Thr	Ala	Asp	Asp	Ala	Ala	Glu	Val	Leu	Arg	Ala	Arg	Asn		
	210					215				220							
ctc	ctt	ccg	gtg	ccg	tgg	gtc	gat	ccg	gtc	gac	gtc	gcc	aac	gcg	gtg		720
Leu	Leu	Pro	Val	Pro	Trp	Val	Asp	Pro	Val	Asp	Val	Ala	Asn	Ala	Val		
225					230					235					240		
gtg	ttc	ctc	gcc	tca	gac	gag	gcg	cgc	tac	atc	acc	ggc	tca	cag	ctc		768
Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Thr	Gly	Ser	Gln	Leu		
				245					250					255			
gtc	gtc	gac	gcg	ggc	ctg	acg	cag	aag	gta	tga							801
Val	Val	Asp	Ala	Gly	Leu	Thr	Gln	Lys	Val								
			260					265									

&lt;210&gt; 1788

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. KMS

&lt;400&gt; 1788

Met	Pro	Arg	Leu	Leu	Asp	Lys	Val	Val	Val	Val	Thr	Gly	Ala	Ala	Arg		
1				5					10					15			
Gly	Thr	Gly	Arg	Val	His	Cys	Glu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	Asp		
			20					25					30				
Val	Ile	Ala	Leu	Asp	Val	Ala	Ala	Val	Ala	Asp	Glu	Leu	Ser	Gly	Thr		
		35				40						45					
Ala	Ala	Ala	Val	Ala	Arg	His	Gly	Arg	Arg	Cys	Val	Thr	Gly	Glu	Ala		
		50			55					60							
Asp	Val	Arg	Asp	Phe	Ala	Ala	Leu	Thr	Ala	Ala	Ile	Asp	Arg	Gly	Val		
65				70					75					80			
Glu	Glu	Leu	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	His		
			85					90					95				
Pro	Ala	Gly	Ala	Pro	Ala	Trp	Glu	Leu	Thr	Gly	Glu	Ala	Trp	Arg	Gln		
		100					105					110					
Ala	Leu	Asp	Val	Asn	Val	Thr	Gly	Val	Trp	His	Thr	Val	Lys	Ala	Ala		
		115					120					125					
Ala	Arg	His	Met	Asp	Ser	Gly	Gly	Gly	Ala	Val	Ile	Val	Ile	Ser	Ser		
		130				135					140						
Thr	Asn	Gly	Leu	Arg	Gly	Thr	Pro	Asn	Ser	Ala	His	Tyr	Thr	Thr	Ser		
145					150					155					160		
Lys	His	Ala	Val	Val	Gly	Leu	Ala	Arg	Thr	Leu	Ala	Asn	Glu	Leu	Gly		
			165						170					175			
Pro	Arg	Ser	Ile	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Val	Ala	Thr		
			180					185					190				
Pro	Met	Val	Leu	Asn	Glu	Ala	Thr	Phe	Arg	Arg	Leu	Arg	Pro	Asp	Leu		
		195				200					205						
Glu	Glu	Pro	Thr	Ala	Asp	Asp	Ala	Ala	Glu	Val	Leu	Arg	Ala	Arg	Asn		
	210					215				220							
Leu	Leu	Pro	Val	Pro	Trp	Val	Asp	Pro	Val	Asp	Val	Ala	Asn	Ala	Val		
225					230					235					240		
Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Thr	Gly	Ser	Gln	Leu		
				245					250					255			
Val	Val	Asp	Ala	Gly	Leu	Thr	Gln	Lys	Val								
			260					265									

&lt;210&gt; 1789

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Acidovorax sp. JS42

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1789

atg	ctg	aac	ggc	aaa	acc	gcc	ctc	gtc	acc	ggc	tcc	acc	agc	ggc	atc	48
Met	Leu	Asn	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	Gly	Ile	
1				5				10						15		
ggc	ctg	ggc	atc	gcc	aag	gcg	ctc	gcg	cgc	cag	ggg	gcg	aac	atc	gtg	96
Gly	Leu	Gly	Ile	Ala	Lys	Ala	Leu	Ala	Arg	Gln	Gly	Ala	Asn	Ile	Val	
			20					25					30			
ctc	aac	ggc	ttt	ggc	gac	gtg	gac	ggt	ccg	cgc	gcc	gag	gtg	ctg	gcc	144
Leu	Asn	Gly	Phe	Gly	Asp	Val	Asp	Gly	Pro	Arg	Ala	Glu	Val	Leu	Ala	
			35				40					45				
gcc	ggc	gag	gcc	gca	ggc	gcc	cgc	gtg	gcc	tac	cac	ggc	gcg	gac	atg	192
Ala	Gly	Glu	Ala	Ala	Gly	Ala	Arg	Val	Ala	Tyr	His	Gly	Ala	Asp	Met	
			50			55					60					
agc	cgc	ccc	gcg	gag	atc	gag	gac	atg	ctc	aag	tac	gcc	gca	tcc	cag	240
Ser	Arg	Pro	Ala	Glu	Ile	Glu	Asp	Met	Leu	Lys	Tyr	Ala	Ala	Ser	Gln	
					70					75					80	
ttc	ggc	cgc	gtg	gac	atc	ctg	gtc	aac	aac	gcc	ggc	atc	cag	cac	gtg	288
Phe	Gly	Arg	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	
				85				90						95		
gcc	agc	gtg	cag	gac	ttc	ccc	gtg	gag	aag	tgg	gac	gcc	atc	atc	gcc	336
Ala	Ser	Val	Gln	Asp	Phe	Pro	Val	Glu	Lys	Trp	Asp	Ala	Ile	Ile	Ala	
			100				105					110				
atc	aac	ttg	acc	agc	gcc	ttc	cac	acc	acg	cgc	ctg	gcg	ctg	ccc	ggc	384
Ile	Asn	Leu	Thr	Ser	Ala	Phe	His	Thr	Thr	Arg	Leu	Ala	Leu	Pro	Gly	
			115				120					125				
atg	ctg	gcc	aat	gac	tgg	ggc	cgc	atc	atc	aat	gtg	gcg	tcg	gtg	cac	432
Met	Leu	Ala	Asn	Asp	Trp	Gly	Arg	Ile	Ile	Asn	Val	Ala	Ser	Val	His	
			130			135					140					
ggc	ctg	gtg	ggc	tcg	gcg	cag	aag	tcg	gcc	tac	gtg	gcg	gcc	aag	cac	480
Gly	Leu	Val	Gly	Ser	Ala	Gln	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys	His	
			145		150					155					160	
ggc	atc	gtg	ggc	ctg	acc	aag	gtg	acg	gcg	ctg	gag	acc	gcc	ccg	acg	528
Gly	Ile	Val	Gly	Leu	Thr	Lys	Val	Thr	Ala	Leu	Glu	Thr	Ala	Pro	Thr	
				165				170						175		
ggc	gtg	acc	tgc	aac	gcg	atc	tgc	ccc	ggc	tgg	gtg	ctc	acg	ccg	ctg	576
Gly	Val	Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	
			180					185				190				
gtg	caa	aag	cag	gtg	gac	gcc	aag	gcc	gcc	gcg	ctg	ggc	atc	tcc	aat	624
Val	Gln	Lys	Gln	Val	Asp	Ala	Lys	Ala	Ala	Ala	Leu	Gly	Ile	Ser	Asn	
			195				200					205				
gaa	gaa	gcc	aag	aaa	gtg	ctg	ctg	ggc	gag	aag	gag	ccc	tcc	atg	cag	672
Glu	Glu	Ala	Lys	Lys	Val	Leu	Leu	Gly	Glu	Lys	Glu	Pro	Ser	Met	Gln	
			210			215					220					
ttc	acc	aca	ccc	gaa	gag	ctg	ggt	gaa	ctg	gcc	gtg	ttc	ttc	tgc	tcg	720
Phe	Thr	Thr	Pro	Glu	Glu	Leu	Gly	Glu	Leu	Ala	Val	Phe	Phe	Cys	Ser	
			225		230					235					240	
gcc	gcc	gcc	aac	aac	gtg	cgc	ggc	gtg	gca	tgg	aat	atg	gac	ggc	ggc	768
Ala	Ala	Ala	Asn	Asn	Val	Arg	Gly	Val	Ala	Trp	Asn	Met	Asp	Gly	Gly	
				245					250					255		
tgg	gtg	gcg	cag	taa												783
Trp	Val	Ala	Gln													
			260													

&lt;210&gt; 1790

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Acidovorax sp. JS42

&lt;400&gt; 1790

Met	Leu	Asn	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	Gly	Ile
1				5				10						15	
Gly	Leu	Gly	Ile	Ala	Lys	Ala	Leu	Ala	Arg	Gln	Gly	Ala	Asn	Ile	Val
			20					25					30		

## PhoenixTemp32470.tmp.txt

Leu Asn Gly Phe Gly Asp Val Asp Gly Pro Arg Ala Glu Val Leu Ala  
 35 40 45  
 Ala Gly Glu Ala Ala Gly Ala Arg Val Ala Tyr His Gly Ala Asp Met  
 50 55 60  
 Ser Arg Pro Ala Glu Ile Glu Asp Met Leu Lys Tyr Ala Ala Ser Gln  
 65 70 75 80  
 Phe Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val  
 85 90 95  
 Ala Ser Val Gln Asp Phe Pro Val Glu Lys Trp Asp Ala Ile Ile Ala  
 100 105 110  
 Ile Asn Leu Thr Ser Ala Phe His Thr Thr Arg Leu Ala Leu Pro Gly  
 115 120 125  
 Met Leu Ala Asn Asp Trp Gly Arg Ile Ile Asn Val Ala Ser Val His  
 130 135 140  
 Gly Leu Val Gly Ser Ala Gln Lys Ser Ala Tyr Val Ala Ala Lys His  
 145 150 155 160  
 Gly Ile Val Gly Leu Thr Lys Val Thr Ala Leu Glu Thr Ala Pro Thr  
 165 170 175  
 Gly Val Thr Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu  
 180 185 190  
 Val Gln Lys Gln Val Asp Ala Lys Ala Ala Ala Leu Gly Ile Ser Asn  
 195 200 205  
 Glu Glu Ala Lys Lys Val Leu Leu Gly Glu Lys Glu Pro Ser Met Gln  
 210 215 220  
 Phe Thr Thr Pro Glu Glu Leu Gly Glu Leu Ala Val Phe Phe Cys Ser  
 225 230 235 240  
 Ala Ala Ala Asn Asn Val Arg Gly Val Ala Trp Asn Met Asp Gly Gly  
 245 250 255  
 Trp Val Ala Gln  
 260

&lt;210&gt; 1791

&lt;211&gt; 783

&lt;212&gt; DNA

<213> *Exiguobacterium sibiricum* 255-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;400&gt; 1791

atg	aaa	caa	ctt	gaa	gga	aaa	gtc	gca	ttg	att	acc	gga	gca	gca	agc	48
Met	Lys	Gln	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Ser	
1				5				10					15			
gga	atc	ggt	ctc	gaa	att	gcg	gaa	gaa	ttt	gca	cag	gaa	ggt	gca	aaa	96
Gly	Ile	Gly	Leu	Glu	Ile	Ala	Glu	Glu	Phe	Ala	Gln	Glu	Gly	Ala	Lys	
			20				25					30				
gtc	gtc	atc	gtt	gat	tta	cag	gag	aat	gca	gcc	aaa	cag	gcg	gcg	gaa	144
Val	Val	Ile	Val	Asp	Leu	Gln	Glu	Asn	Ala	Ala	Lys	Gln	Ala	Ala	Glu	
			35			40						45				
aca	ctt	caa	agt	aaa	gga	ttc	gaa	gcc	ttt	gct	gtc	gca	ggg	gac	gtc	192
Thr	Leu	Gln	Ser	Lys	Gly	Phe	Glu	Ala	Phe	Ala	Val	Ala	Gly	Asp	Val	
	50				55					60						
aca	agt	gaa	acg	gcg	att	cag	tca	agc	att	gaa	caa	acg	atg	aat	cac	240
Thr	Ser	Glu	Thr	Ala	Ile	Gln	Ser	Ser	Ile	Glu	Gln	Thr	Met	Asn	His	
	65			70					75						80	
tac	gga	cgg	atc	gat	atc	gtc	atc	aac	aat	gcc	ggc	atg	caa	cat	gtt	288
Tyr	Gly	Arg	Ile	Asp	Ile	Val	Ile	Asn	Asn	Ala	Gly	Met	Gln	His	Val	
				85				90						95		
tca	cca	atc	gaa	gag	ttc	tcg	act	gaa	aaa	ttt	gat	tta	ctt	caa	agc	336
Ser	Pro	Ile	Glu	Glu	Phe	Ser	Thr	Glu	Lys	Phe	Asp	Leu	Leu	Gln	Ser	
			100				105					110				
atc	atg	tta	cgg	gca	ccg	ttc	ctc	tat	acg	aaa	tac	gtg	ttc	ccg	atc	384
Ile	Met	Leu	Arg	Ala	Pro	Phe	Leu	Tyr	Thr	Lys	Tyr	Val	Phe	Pro	Ile	
		115				120						125				
atg	aaa	aaa	caa	gga	ttc	ggt	cgt	atc	ctg	aac	atg	tca	tcc	att	aac	432
Met	Lys	Lys	Gln	Gly	Phe	Gly	Arg	Ile	Leu	Asn	Met	Ser	Ser	Ile	Asn	
	130					135				140						
ggt	ttg	atc	gga	ttt	gcc	ggt	aaa	gcc	gct	tac	aac	agt	gcg	aaa	cac	480

## PhoenixTemp32470.tmp.txt

Gly	Leu	Ile	Gly	Phe	Ala	Gly	Lys	Ala	Ala	Tyr	Asn	Ser	Ala	Lys	His	
145					150					155					160	
ggt	gtc	atc	ggt	ttg	acg	aaa	ggt	gcc	gca	cta	gaa	ggg	gca	acg	tcc	528
Gly	Val	Ile	Gly	Leu	Thr	Lys	Val	Ala	Ala	Leu	Glu	Gly	Ala	Thr	Ser	
				165					170						175	
ggt	att	acc	gtc	aat	gcg	att	tgt	ccg	ggt	tat	ggt	gat	aca	ccg	ctc	576
Gly	Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Pro	Leu	
				180				185						190		
gtc	caa	aaa	caa	ttg	tct	tcg	ctt	gcc	gaa	aca	cgg	aat	gtg	ccg	ctc	624
Val	Gln	Lys	Gln	Leu	Ser	Ser	Leu	Ala	Glu	Thr	Arg	Asn	Val	Pro	Leu	
		195					200					205				
gac	cgg	gta	ctt	gaa	gaa	gtc	atc	tac	ccg	ctc	ggt	ccg	caa	cat	cgc	672
Asp	Arg	Val	Leu	Glu	Glu	Val	Ile	Tyr	Pro	Leu	Val	Pro	Gln	His	Arg	
		210				215					220					
tta	ctg	caa	gtc	aaa	gag	att	gcc	gac	tac	gcg	atc	ttc	ctc	gca	agt	720
Leu	Leu	Gln	Val	Lys	Glu	Ile	Ala	Asp	Tyr	Ala	Ile	Phe	Leu	Ala	Ser	
225					230					235					240	
gac	aaa	gca	gcc	ggt	gtc	acc	ggt	caa	gct	gtc	ggt	ctt	gac	ggc	gga	768
Asp	Lys	Ala	Ala	Gly	Val	Thr	Gly	Gln	Ala	Val	Val	Leu	Asp	Gly	Gly	
				245				250						255		
tat	acc	gct	caa	taa												783
Tyr	Thr	Ala	Gln													
			260													

&lt;210&gt; 1792

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Exiguobacterium sibiricum 255-15

&lt;400&gt; 1792

Met	Lys	Gln	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Ser	
1				5					10					15		
Gly	Ile	Gly	Leu	Glu	Ile	Ala	Glu	Glu	Phe	Ala	Gln	Glu	Gly	Ala	Lys	
			20					25					30			
Val	Val	Ile	Val	Asp	Leu	Gln	Glu	Asn	Ala	Ala	Lys	Gln	Ala	Ala	Glu	
			35				40					45				
Thr	Leu	Gln	Ser	Lys	Gly	Phe	Glu	Ala	Phe	Ala	Val	Ala	Gly	Asp	Val	
			50			55					60					
Thr	Ser	Glu	Thr	Ala	Ile	Gln	Ser	Ser	Ile	Glu	Gln	Thr	Met	Asn	His	
65				70					75					80		
Tyr	Gly	Arg	Ile	Asp	Ile	Val	Ile	Asn	Asn	Ala	Gly	Met	Gln	His	Val	
				85				90						95		
Ser	Pro	Ile	Glu	Glu	Phe	Ser	Thr	Glu	Lys	Phe	Asp	Leu	Leu	Gln	Ser	
			100					105				110				
Ile	Met	Leu	Arg	Ala	Pro	Phe	Leu	Tyr	Thr	Lys	Tyr	Val	Phe	Pro	Ile	
		115					120					125				
Met	Lys	Lys	Gln	Gly	Phe	Gly	Arg	Ile	Leu	Asn	Met	Ser	Ser	Ile	Asn	
						135					140					
Gly	Leu	Ile	Gly	Phe	Ala	Gly	Lys	Ala	Ala	Tyr	Asn	Ser	Ala	Lys	His	
145				150						155					160	
Gly	Val	Ile	Gly	Leu	Thr	Lys	Val	Ala	Ala	Leu	Glu	Gly	Ala	Thr	Ser	
				165				170						175		
Gly	Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Pro	Leu	
			180					185					190			
Val	Gln	Lys	Gln	Leu	Ser	Ser	Leu	Ala	Glu	Thr	Arg	Asn	Val	Pro	Leu	
		195					200					205				
Asp	Arg	Val	Leu	Glu	Glu	Val	Ile	Tyr	Pro	Leu	Val	Pro	Gln	His	Arg	
		210				215					220					
Leu	Leu	Gln	Val	Lys	Glu	Ile	Ala	Asp	Tyr	Ala	Ile	Phe	Leu	Ala	Ser	
225					230					235					240	
Asp	Lys	Ala	Ala	Gly	Val	Thr	Gly	Gln	Ala	Val	Val	Leu	Asp	Gly	Gly	
				245				250						255		
Tyr	Thr	Ala	Gln													
			260													

&lt;210&gt; 1793

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Roseovarius nubinihibens ISM

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1793

```

atg cgg ctc gcg ggg aaa cgg gcg gtc gtc acc ggc gga cgg cag ggc      48
Met Arg Leu Ala Gly Lys Arg Ala Val Val Thr Gly Gly Arg Gln Gly
  1          5          10          15
atc ggg cgc ggc atc gtc gac ggc ttt ctc gac cat ggc gca gag gtc      96
Ile Gly Arg Gly Ile Val Asp Gly Phe Leu Asp His Gly Ala Glu Val
          20          25          30
atc acc tgt ggc cgg ggg gcg cgg ccc gaa ggg ctg ccc gag ggc tgc      144
Ile Thr Cys Gly Arg Gly Ala Arg Pro Glu Gly Leu Pro Glu Gly Cys
          35          40          45
ggc tgg gtg acg gcg gat gtg tgc gac gcg gcg cag gtg gcg cag ctg      192
Gly Trp Val Thr Ala Asp Val Ser Asp Ala Ala Gln Val Ala Gln Leu
          50          55          60
gtc tct gag gcc ggc gcc atc gac att ctg gtc aac aac gcg ggc gtg      240
Val Ser Glu Ala Gly Ala Ile Asp Ile Leu Val Asn Asn Ala Gly Val
          65          70          75          80
cag gtg gaa aag acc gtg gcc gac agc acg gat gcc gat tgg gat ctg      288
Gln Val Glu Lys Thr Val Ala Asp Ser Thr Asp Ala Asp Trp Asp Leu
          85          90          95
gtg atc ggg gcc aat tgc cag ggc gtg ttc aac gcc tgc cgg ggc ttt      336
Val Ile Gly Ala Asn Cys Gln Gly Val Phe Asn Ala Cys Arg Gly Phe
          100          105          110
atc ccg gtg ctg cgc gac ggc ggt gtg atc ctc aac atg ggg tcg atc      384
Ile Pro Val Leu Arg Asp Gly Gly Val Ile Leu Asn Met Gly Ser Ile
          115          120          125
tcg gcc aat cac gcc gat ccc tcc atg gcg ctc tat aac gcg tcc aag      432
Ser Ala Asn His Ala Asp Pro Ser Met Ala Leu Tyr Asn Ala Ser Lys
          130          135          140
ggg ttc gtg cat ggg ctc acc cgc tcg atc gcg gtc gat cac ggg ccg      480
Gly Phe Val His Gly Leu Thr Arg Ser Ile Ala Val Asp His Gly Pro
          145          150          155          160
cgg ctg cgc tgc aat gcg atc tgc ccg ggc tgg atc aac acc ggc atg      528
Arg Leu Arg Cys Asn Ala Ile Cys Pro Gly Trp Ile Asn Thr Gly Met
          165          170          175
ctc gag gcg ggg ttc gac ctc gcc caa aac ccg gag gcg gcg gcc gcc      576
Leu Glu Ala Gly Phe Asp Leu Ala Gln Asn Pro Glu Ala Ala Arg Ala
          180          185          190
gat gcg atc cgc cgc cac ccg gcg cgg cgc ttt ggc gaa ccg gcg gat      624
Asp Ala Ile Arg Arg His Pro Ala Arg Arg Phe Gly Glu Pro Ala Asp
          195          200          205
att gcc gcc atg gcg gtc tgg ctg gcg tcg gac gag gcg cgg ttc gtc      672
Ile Ala Ala Met Ala Val Trp Leu Ala Ser Asp Glu Ala Arg Phe Val
          210          215          220
tcg ggg cag ttt ttc acc gtg gat ggc ggc ctg acg gcg gcc tcc cct      720
Ser Gly Gln Phe Phe Thr Val Asp Gly Gly Leu Thr Ala Ala Ser Pro
          225          230          235          240
ttg caa ccg ggg tta ttt tga
Leu Gln Pro Gly Leu Phe
          245

```

&lt;210&gt; 1794

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Roseovarius nubinhibens ISM

&lt;400&gt; 1794

```

Met Arg Leu Ala Gly Lys Arg Ala Val Val Thr Gly Gly Arg Gln Gly
  1          5          10          15
Ile Gly Arg Gly Ile Val Asp Gly Phe Leu Asp His Gly Ala Glu Val
          20          25          30
Ile Thr Cys Gly Arg Gly Ala Arg Pro Glu Gly Leu Pro Glu Gly Cys
          35          40          45
Gly Trp Val Thr Ala Asp Val Ser Asp Ala Ala Gln Val Ala Gln Leu

```

## PhoenixTemp32470.tmp.txt

50 55 60  
 Val Ser Glu Ala Gly Ala Ile Asp Ile Leu Val Asn Asn Ala Gly Val  
 65 70 75 80  
 Gln Val Glu Lys Thr Val Ala Asp Ser Thr Asp Ala Asp Trp Asp Leu  
 85 90 95  
 Val Ile Gly Ala Asn Cys Gln Gly Val Phe Asn Ala Cys Arg Gly Phe  
 100 105 110  
 Ile Pro Val Leu Arg Asp Gly Gly Val Ile Leu Asn Met Gly Ser Ile  
 115 120 125  
 Ser Ala Asn His Ala Asp Pro Ser Met Ala Leu Tyr Asn Ala Ser Lys  
 130 135 140  
 Gly Phe Val His Gly Leu Thr Arg Ser Ile Ala Val Asp His Gly Pro  
 145 150 155 160  
 Arg Leu Arg Cys Asn Ala Ile Cys Pro Gly Trp Ile Asn Thr Gly Met  
 165 170 175  
 Leu Glu Ala Gly Phe Asp Leu Ala Gln Asn Pro Glu Ala Ala Arg Ala  
 180 185 190  
 Asp Ala Ile Arg Arg His Pro Ala Arg Arg Phe Gly Glu Pro Ala Asp  
 195 200 205  
 Ile Ala Ala Met Ala Val Trp Leu Ala Ser Asp Glu Ala Arg Phe Val  
 210 215 220  
 Ser Gly Gln Phe Phe Thr Val Asp Gly Gly Leu Thr Ala Ala Ser Pro  
 225 230 235 240  
 Leu Gln Pro Gly Leu Phe  
 245

&lt;210&gt; 1795

&lt;211&gt; 753

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. WH 7805

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1795

atg aac cca acc cgg acc ctc gat ggt caa acc gcc ctt gtg acc ggt	48
Met Asn Pro Thr Arg Thr Leu Asp Gly Gln Thr Ala Leu Val Thr Gly	
1 5 10 15	
gcc agc cgg gga atc ggg cgt gcc gtg gct ctg gcc ctg gct gaa tgc	96
Ala Ser Arg Gly Ile Gly Arg Ala Val Ala Leu Ala Leu Ala Glu Cys	
20 25 30 35	
ggc gcg gaa gtg gtg gtg aat tac gcc agc tcc ccg gat gcg gcc gaa	144
Gly Ala Glu Val Val Val Asn Tyr Ala Ser Ser Pro Asp Ala Ala Glu	
40 45 50 55	
gcc gtg gtg aag gag atc gaa agc atg ggg caa aag ggc tat gcc ctt	192
Ala Val Val Lys Glu Ile Glu Ser Met Gly Gln Lys Gly Tyr Ala Leu	
60 65 70 75	
cag gcc gac gtg ggc gat gaa gac gcc gtg gac gca ctg atc aaa acg	240
Gln Ala Asp Val Gly Asp Glu Asp Ala Val Asp Ala Leu Ile Lys Thr	
80 85 90 95	
gtg ctt gag cgc agc ggt cgc atc gat gta cta gtc aat aac gcg ggc	288
Val Leu Glu Arg Ser Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly	
100 105 110 115	
atc acg cgc gat ggg ctg ctg atg cgg atg aaa tcc acc gac tgg aac	336
Ile Thr Arg Asp Gly Leu Leu Met Arg Met Lys Ser Thr Asp Trp Asn	
120 125 130 135	
gcg gtg atc aat ctc aat ctc acc ggg gtg ttt ctc tgc acc cgc gct	384
Ala Val Ile Asn Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Arg Ala	
140 145 150 155	
gtg acc cgg ccg atg ctc aag caa aaa agc ggt cgg atc atc aac atc	432
Val Thr Arg Pro Met Leu Lys Gln Lys Ser Gly Arg Ile Ile Asn Ile	
160 165 170 175	
acc tca gtc gtt gga ctg atg ggc aat gca ggg cag gct aat tac gcc	480
Thr Ser Val Val Gly Leu Met Gly Asn Ala Gly Gln Ala Asn Tyr Ala	
180 185 190 195	
gct gcc aag gcc ggt gtc gtg ggc ctg acc cgc agt gct gcg aag gaa	528
Ala Ala Lys Ala Gly Val Val Gly Leu Thr Arg Ser Ala Ala Lys Glu	



## PhoenixTemp32470.tmp.txt

atg	gca	agc	cga	165	atc	acg	gtg	aat	170	gta	gcc	ccg	gga	175	ttc	atc	576
Met	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile		
			180					185					190				
gcc	acc	gac	atg	acc	aag	gac	ctt	gac	agc	gag	ggc	att	ctc	acg	gct	624	
Ala	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asp	Ser	Glu	Gly	Ile	Leu	Thr	Ala		
		195					200					205					
atc	ccg	ctt	ggg	acg	ttc	ggg	acc	ccg	gag	cag	gtg	gca	ggg	gcg	gtg	672	
Ile	Pro	Leu	Gly	Thr	Phe	Gly	Thr	Pro	Glu	Gln	Val	Ala	Gly	Ala	Val		
	210					215					220						
cgc	ttc	ctt	gcc	gca	gat	tcg	gcc	gcg	gct	tac	atc	acc	ggg	cag	gtt	720	
Arg	Phe	Leu	Ala	Ala	Asp	Ser	Ala	Ala	Ala	Tyr	Ile	Thr	Gly	Gln	Val		
225					230					235					240		
ctt	cag	gtg	gat	ggc	ggc	atg	gtg	atg	ggt	tga						753	
Leu	Gln	Val	Asp	Gly	Gly	Met	Val	Met	Gly								
				245					250								

&lt;210&gt; 1796

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 7805

&lt;400&gt; 1796

Met	Asn	Pro	Thr	Arg	Thr	Leu	Asp	Gly	Gln	Thr	Ala	Leu	Val	Thr	Gly		
1				5					10					15			
Ala	Ser	Arg	Gly	Ile	Gly	Arg	Ala	Val	Ala	Leu	Ala	Leu	Ala	Glu	Cys		
			20					25					30				
Gly	Ala	Glu	Val	Val	Val	Asn	Tyr	Ala	Ser	Ser	Pro	Asp	Ala	Ala	Glu		
		35					40					45					
Ala	Val	Val	Lys	Glu	Ile	Glu	Ser	Met	Gly	Gln	Lys	Gly	Tyr	Ala	Leu		
	50					55				60							
Gln	Ala	Asp	Val	Gly	Asp	Glu	Asp	Ala	Val	Asp	Ala	Leu	Ile	Lys	Thr		
65					70				75					80			
Val	Leu	Glu	Arg	Ser	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly		
			85						90					95			
Ile	Thr	Arg	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Ser	Thr	Asp	Trp	Asn		
		100						105					110				
Ala	Val	Ile	Asn	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Arg	Ala		
		115					120					125					
Val	Thr	Arg	Pro	Met	Leu	Lys	Gln	Lys	Ser	Gly	Arg	Ile	Ile	Asn	Ile		
	130					135					140						
Thr	Ser	Val	Val	Gly	Leu	Met	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala		
145					150				155						160		
Ala	Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Arg	Ser	Ala	Ala	Lys	Glu		
			165					170					175				
Met	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile		
		180						185					190				
Ala	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asp	Ser	Glu	Gly	Ile	Leu	Thr	Ala		
		195					200					205					
Ile	Pro	Leu	Gly	Thr	Phe	Gly	Thr	Pro	Glu	Gln	Val	Ala	Gly	Ala	Val		
	210					215					220						
Arg	Phe	Leu	Ala	Ala	Asp	Ser	Ala	Ala	Ala	Tyr	Ile	Thr	Gly	Gln	Val		
225					230					235					240		
Leu	Gln	Val	Asp	Gly	Gly	Met	Val	Met	Gly								
				245					250								

&lt;210&gt; 1797

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Desulfitobacterium hafniense DCB-2

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1797

atg	ttg	ctg	aat	aat	agc	gta	gcc	att	gtc	acc	gga	gga	agt	cgc	ggc		
Met	Leu	Leu	Asn	Asn	Ser	Val	Ala	Ile	Val	Thr	Gly	Gly	Ser	Arg	Gly		

48

## PhoenixTemp32470.tmp.txt

1	att gga cgt gcc att	5	gcc ttg gaa ctg gcc cgt gcc ggg gct	10	aaa gtg	15		
Ile Gly Arg Ala	Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val	20		25		30		96
gtg gtg aac tat gcc gga cat ggg gaa aag gcg gaa gag act ctg agc	144							
Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Thr Leu Ser		35		40		45		
ctc att cag gaa gcg ggc gga gag gct ttg gca gtt cag gct gat gtc	192							
Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val		50		55		60		
agc cag gtt gaa gat gtg gaa cgg ctg att cag acc acc ctt aaa acc	240							
Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr		65		70		75		
tat ggc aag atc gat att ctg gtc aat aat gcc gga att acc cgc gac	288							
Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp		85		90		95		
acc ctg ctg ctg cgt atg aag gaa acg gat tgg gat gcg gta ctg gat	336							
Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp		100		105		110		
acc aat ctc aaa ggg gtt ttc tta tgc acg aag gcg gtc agc aag tcc	384							
Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser		115		120		125		
atg atg aag caa cgc tcc gga gtg att atc aat atc tcc tct gtg gtc	432							
Met Met Lys Gln Arg Ser Gly Val Ile Ile Asn Ile Ser Ser Val Val		130		135		140		
ggg att acc ggc aat gca gga caa gca aat tac tca gcg gcc aaa gcg	480							
Gly Ile Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ser Ala Ala Lys Ala		145		150		155		160
gga atc att ggc ttt acc aaa tcc att gcc aag gag ctg ggc tcc cgt	528							
Gly Ile Ile Gly Phe Thr Lys Ser Ile Ala Lys Glu Leu Gly Ser Arg		165		170		175		
ggc atc cgg gtc aat gca gtg gct ccg ggg tat att tct aca gat atg	576							
Gly Ile Arg Val Asn Ala Val Ala Pro Gly Tyr Ile Ser Thr Asp Met		180		185		190		
acg gaa tcc tta gga gaa gag gtc ccg gag cag gtc atg acc cag att	624							
Thr Glu Ser Leu Gly Glu Glu Val Arg Glu Gln Val Met Thr Gln Ile		195		200		205		
cct ctg ggc aga atg ggt cag cct gag gat ata gcc agg acg gtc gtc	672							
Pro Leu Gly Arg Met Gly Gln Pro Glu Asp Ile Ala Arg Thr Val Val		210		215		220		
ttt ttg gct tca ccg gcc gct tcc tac atc act ggg caa act tta gcc	720							
Phe Leu Ala Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Leu Ala		225		230		235		240
gta gac ggc ggc atg gct atg taa	744							
Val Asp Gly Gly Met Ala Met		245						

&lt;210&gt; 1798

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Desulfitobacterium hafniense DCB-2

&lt;400&gt; 1798

Met Leu Leu Asn Asn Ser Val Ala Ile Val Thr Gly Gly Ser Arg Gly	
1	5
Ile Gly Arg Ala Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val	10
	20
Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Glu Thr Leu Ser	25
	30
Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val	35
	40
Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr	45
65	50
Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp	55
	60
Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp	65
	70
Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser	75
	80
	85
	90
	95
	100
	105
	110
	115
	120
	125

## PhoenixTemp32470.tmp.txt

```

Met Met Lys Gln Arg Ser Gly Val Ile Ile Asn Ile Ser Ser Val Val
 130 135
Gly Ile Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ser Ala Ala Lys Ala
145 150
Gly Ile Ile Gly Phe Thr Lys Ser Ile Ala Lys Glu Leu Gly Ser Arg
165 170
Gly Ile Arg Val Asn Ala Val Ala Pro Gly Tyr Ile Ser Thr Asp Met
180 185 190
Thr Glu Ser Leu Gly Glu Glu Val Arg Glu Gln Val Met Thr Gln Ile
195 200 205
Pro Leu Gly Arg Met Gly Gln Pro Glu Asp Ile Ala Arg Thr Val Val
210 215
Phe Leu Ala Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Leu Ala
225 230 235 240
Val Asp Gly Gly Met Ala Met
245

```

&lt;210&gt; 1799

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; marine gamma proteobacterium HTCC2080

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1799

```

atg ttt tca gag ttg aaa gga aaa gtt gct gtt gtt acg ggt ggc ggt      48
Met Phe Ser Glu Leu Lys Gly Lys Val Ala Val Val Thr Gly Gly Gly
 1   5 10 15
gct ggc atc ggc ctt gct tgc gcg gca cgg ctt gca gaa gct ggt gtc      96
Ala Gly Ile Gly Leu Ala Cys Ala Ala Arg Leu Ala Glu Ala Gly Val
20 25 30
gca gtg ggc gtc gca gac att gat agc gct gcg gcg cat caa gcc gct      144
Ala Val Gly Val Ala Asp Ile Asp Ser Ala Ala Ala His Gln Ala Ala
35 40 45
gca gac tta acg tcc caa ggt cat cgt tgc gtg gcg ata gtt acc gat      192
Ala Asp Leu Thr Ser Gln Gly His Arg Cys Val Ala Ile Val Thr Asp
50 55 60
gtc agc aag gcc aaa gag gtt gaa aag tta ttt caa ata acc aac gaa      240
Val Ser Lys Ala Lys Glu Val Glu Lys Leu Phe Gln Ile Thr Asn Glu
65 70 75 80
gct ttt ggc cct atc aac att gct gtc aac aat gca ggg gtt ggc gcg      288
Ala Phe Gly Pro Ile Asn Ile Ala Val Asn Asn Ala Gly Val Gly Ala
85 90 95
cca cta aca ccg ctt ggt gat act gag gag gaa gat ttt gac cga gtc      336
Pro Leu Thr Pro Leu Gly Asp Thr Glu Glu Glu Asp Phe Asp Arg Val
100 105 110
atg gct gtc aat ttg aaa ggg gta tgg ctg tgc atg agg gca gca ttg      384
Met Ala Val Asn Leu Lys Gly Val Trp Leu Cys Met Arg Ala Ala Leu
115 120 125
cgt cac atg gca ccg caa aaa tca ggc tcc att atc aac atg gcg tcg      432
Arg His Met Ala Pro Gln Lys Ser Gly Ser Ile Ile Asn Met Ala Ser
130 135 140
gca ctg agt acc acc aca ttt cca ggc agc ggc ctt tac aca gca agt      480
Ala Leu Ser Thr Thr Phe Pro Gly Ser Gly Leu Tyr Thr Ala Ser
145 150 155 160
aag cac ggt gtc gcg gga ctg act cga agc gct gcc gtc gag tat ggc      528
Lys His Gly Val Ala Gly Leu Thr Arg Ser Ala Ala Val Glu Tyr Gly
165 170 175
gag agt ggt atc cgt ata aat gct atc tgc ccc ggc ttc att tcc acg      576
Glu Ser Gly Ile Arg Ile Asn Ala Ile Cys Pro Gly Phe Ile Ser Thr
180 185 190
cca ctg ctg cac agc aca gtt acc gag gag gcg gcc aaa tcg atg gcg      624
Pro Leu Leu His Ser Thr Val Thr Glu Glu Ala Ala Lys Ser Met Ala
195 200 205
gca agg cac cct atg aac cgc tta ggc acc cca gca gaa atc gct gac      672
Ala Arg His Pro Met Asn Arg Leu Gly Thr Pro Ala Glu Ile Ala Asp

```

## PhoenixTemp32470.tmp.txt

210 215 220  
 gcg gtt act tac ttg gca tca gat gcc tcg tca ttc gtc act ggc agc 720  
 Ala Val Thr Tyr Leu Ala Ser Asp Ala Ser Ser Phe Val Thr Gly Ser  
 225 230 235 240  
 cta ttc tca att gat ggc ggc tgg aca gcg acc taa 756  
 Leu Phe Ser Ile Asp Gly Gly Trp Thr Ala Thr

<210> 1800  
 <211> 251  
 <212> PRT  
 <213> marine gamma proteobacterium HTCC2080

<400> 1800  
 Met Phe Ser Glu Leu Lys Gly Lys Val Ala Val Val Thr Gly Gly Gly  
 1 5 10 15  
 Ala Gly Ile Gly Leu Ala Cys Ala Ala Arg Leu Ala Glu Ala Gly Val  
 20 25 30  
 Ala Val Gly Val Ala Asp Ile Asp Ser Ala Ala Ala His Gln Ala Ala  
 35 40 45  
 Ala Asp Leu Thr Ser Gln Gly His Arg Cys Val Ala Ile Val Thr Asp  
 50 55 60  
 Val Ser Lys Ala Lys Glu Val Glu Lys Leu Phe Gln Ile Thr Asn Glu  
 65 70 75 80  
 Ala Phe Gly Pro Ile Asn Ile Ala Val Asn Asn Ala Gly Val Gly Ala  
 85 90 95  
 Pro Leu Thr Pro Leu Gly Asp Thr Glu Glu Glu Asp Phe Asp Arg Val  
 100 105 110  
 Met Ala Val Asn Leu Lys Gly Val Trp Leu Cys Met Arg Ala Ala Leu  
 115 120 125  
 Arg His Met Ala Pro Gln Lys Ser Gly Ser Ile Ile Asn Met Ala Ser  
 130 135 140  
 Ala Leu Ser Thr Thr Thr Phe Pro Gly Ser Gly Leu Tyr Thr Ala Ser  
 145 150 155 160  
 Lys His Gly Val Ala Gly Leu Thr Arg Ser Ala Ala Val Glu Tyr Gly  
 165 170 175  
 Glu Ser Gly Ile Arg Ile Asn Ala Ile Cys Pro Gly Phe Ile Ser Thr  
 180 185 190  
 Pro Leu Leu His Ser Thr Val Thr Glu Glu Ala Ala Lys Ser Met Ala  
 195 200 205  
 Ala Arg His Pro Met Asn Arg Leu Gly Thr Pro Ala Glu Ile Ala Asp  
 210 215 220  
 Ala Val Thr Tyr Leu Ala Ser Asp Ala Ser Ser Phe Val Thr Gly Ser  
 225 230 235 240  
 Leu Phe Ser Ile Asp Gly Gly Trp Thr Ala Thr

<210> 1801  
 <211> 771  
 <212> DNA  
 <213> Pseudomonas putida GB-1

<220>  
 <221> CDS  
 <222> (1)..(771)  
 <223> transl\_table=11

<400> 1801  
 atg acc ctc aac ggc aag act gca ctc gtc acc ggt tcc acc agc ggc 48  
 Met Thr Leu Asn Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser Gly  
 1 5 10 15  
 atc ggc ctg ggc atc gcc cag gtg ttg gcc cgc gcg ggt gcc aac atc 96  
 Ile Gly Leu Gly Ile Ala Gln Val Leu Ala Arg Ala Gly Ala Asn Ile  
 20 25 30  
 gtg ctc aac ggc ttt ggc gac ccg gca ccg gcc atg gcc gag att gcc 144  
 Val Leu Asn Gly Phe Gly Asp Pro Ala Pro Ala Met Ala Glu Ile Ala  
 35 40 45  
 cgg cac ggg gtg aag gtg gtc cat cac ccg gca gac ctg tcg gac gtg 192  
 Arg His Gly Val Lys Val Val His Pro Ala Asp Leu Ser Asp Val

## PhoenixTemp32470.tmp.txt

50	55	60		
gcc cag atc gag gcc ttg ttc aac ctg gca gaa ggc caa ttt ggc ggc	240			
Ala Gln Ile Glu Ala Leu Phe Asn Leu Ala Glu Gly Gln Phe Gly Gly				
65	70	75	80	
gtc gac att ctg gtc aac aac gcc ggt att cag cat gtg gcg ccg gtc	288			
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Val				
85	90	95		
gag cag ttc ccc acc gaa agc tgg gac aag atc att gcc ctg aac ctg	336			
Glu Gln Phe Pro Thr Glu Ser Trp Asp Lys Ile Ile Ala Leu Asn Leu				
100	105	110		
tcg gct gta ttc cat ggc acc cgt ttg gcg ctg ccg ggc atg cgc acg	384			
Ser Ala Val Phe His Gly Thr Arg Leu Ala Leu Pro Gly Met Arg Thr				
115	120	125		
cgc aac tgg ggg cgg atc atc aac atc gct tcg gtg cat ggt ttg gtc	432			
Arg Asn Trp Gly Arg Ile Ile Asn Ile Ala Ser Val His Gly Leu Val				
130	135	140		
ggt tcg acc ggc aag gca gcc tac gtg gcg gcc aag cac ggt gta gtc	480			
Gly Ser Thr Gly Lys Ala Ala Tyr Val Ala Lys His Gly Val Val				
145	150	155	160	
ggg ctg acc aag gtg gta ggc ctg gaa acc gcc acc agc aag gtc acc	528			
Gly Leu Thr Lys Val Val Gly Leu Glu Thr Ala Thr Ser Lys Val Thr				
165	170	175		
tgc aac gcg atc tgc cca ggt tgg gta ttg acc ccg ctg gta cag aaa	576			
Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu Val Gln Lys				
180	185	190		
cag atc gac gat cgt gcc gcc aac ggt ggc gat cca ctg caa gcg caa	624			
Gln Ile Asp Asp Arg Ala Ala Asn Gly Gly Asp Pro Leu Gln Ala Gln				
195	200	205		
cac gat cta ttg gca gaa aag caa ccg tcc ttg gcc ttc gtt acc ccc	672			
His Asp Leu Leu Ala Glu Lys Gln Pro Ser Leu Ala Phe Val Thr Pro				
210	215	220		
gag cac ttg ggt gaa ctg gta cta ttc ttg tgc agc gag gcc ggt agc	720			
Glu His Leu Gly Glu Leu Val Leu Phe Leu Cys Ser Glu Ala Gly Ser				
225	230	235	240	
cag gtt cgc ggc gcc gcc tgg aac gtc gat ggt ggc tgg ttg gcc cag	768			
Gln Val Arg Gly Ala Ala Trp Asn Val Asp Gly Gly Trp Leu Ala Gln				
245	250	255		
tga	771			

&lt;210&gt; 1802

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida GB-1

&lt;400&gt; 1802

Met Thr Leu Asn Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser Gly	
1	5
Ile Gly Leu Gly Ile Ala Gln Val Leu Ala Arg Ala Gly Ala Asn Ile	
20	25
Val Leu Asn Gly Phe Gly Asp Pro Ala Pro Ala Met Ala Glu Ile Ala	
35	40
Arg His Gly Val Lys Val Val His His Pro Ala Asp Leu Ser Asp Val	
50	55
Ala Gln Ile Glu Ala Leu Phe Asn Leu Ala Glu Gly Gln Phe Gly Gly	
65	70
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Val	
85	90
Glu Gln Phe Pro Thr Glu Ser Trp Asp Lys Ile Ile Ala Leu Asn Leu	
100	105
Ser Ala Val Phe His Gly Thr Arg Leu Ala Leu Pro Gly Met Arg Thr	
115	120
Arg Asn Trp Gly Arg Ile Ile Asn Ile Ala Ser Val His Gly Leu Val	
130	135
Gly Ser Thr Gly Lys Ala Ala Tyr Val Ala Ala Lys His Gly Val Val	
145	150
Gly Leu Thr Lys Val Val Gly Leu Glu Thr Ala Thr Ser Lys Val Thr	
165	170
	175

## PhoenixTemp32470.tmp.txt

Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu Val Gln Lys  
 180 185 190  
 Gln Ile Asp Arg Ala Ala Asn Gly Gly Asp Pro Leu Gln Ala Gln  
 195 200 205  
 His Asp Leu Leu Ala Glu Lys Gln Pro Ser Leu Ala Phe Val Thr Pro  
 210 215 220  
 Glu His Leu Gly Glu Leu Val Leu Phe Leu Cys Ser Glu Ala Gly Ser  
 225 230 235 240  
 Gln Val Arg Gly Ala Ala Trp Asn Val Asp Gly Gly Trp Leu Ala Gln  
 245 250 255

&lt;210&gt; 1803

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida GB-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1803

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Met	Leu	Thr	Ser	Leu	Gln	Gly	Lys	Ser	Val	Leu	Val	Thr	Gly	Gly	Thr	
1				5					10					15		
agc	ggt	atc	ggc	ctg	ggc	atc	gcc	gtc	ggc	ttc	gcc	cgc	cag	ggc	gcc	96
Ser	Gly	Ile	Gly	Leu	Gly	Ile	Ala	Val	Gly	Phe	Ala	Arg	Gln	Gly	Ala	
			20					25					30			
aag	gtg	gcg	atc	agt	ggc	cgg	cac	cgg	gac	aag	gtt	gag	gct	gtc	gcc	144
Lys	Val	Ala	Ile	Ser	Gly	Arg	His	Arg	Asp	Lys	Val	Glu	Ala	Val	Ala	
		35					40					45				
agc	cgc	ttg	cgt	gat	caa	ggc	ctg	gcc	gtc	atc	ggc	ctg	gtg	gcc	gat	192
Ser	Arg	Leu	Arg	Asp	Gln	Gly	Leu	Ala	Val	Ile	Gly	Leu	Val	Ala	Asp	
	50					55				60						
gtg	ggt	gac	cgc	gcg	cag	gtg	ctg	cgg	atg	atc	gaa	gag	gtg	gcg	cag	240
Val	Gly	Asp	Arg	Ala	Gln	Val	Leu	Arg	Met	Ile	Glu	Glu	Val	Ala	Gln	
	65				70				75						80	
gcc	cag	ggc	ggg	ctc	gat	gta	ctg	tgc	gcc	aat	gcc	ggg	gtc	ttc	ccc	288
Ala	Gln	Gly	Gly	Leu	Asp	Val	Leu	Cys	Ala	Asn	Ala	Gly	Val	Phe	Pro	
			85						90					95		
tct	gcc	gca	ctg	gcc	gag	atg	agc	gat	acc	gac	tgg	gac	aag	gtg	ctc	336
Ser	Ala	Ala	Leu	Ala	Glu	Met	Ser	Asp	Thr	Asp	Trp	Asp	Lys	Val	Leu	
			100					105					110			
ggc	acc	aat	gcc	aaa	ggc	acc	ttc	ctc	tgc	gtg	cag	gcg	gcg	ctg	ccg	384
Gly	Thr	Asn	Ala	Lys	Gly	Thr	Phe	Leu	Cys	Val	Gln	Ala	Ala	Leu	Pro	
		115					120				125					
tat	ttg	cgc	agg	gcc	gag	tac	ggc	cgg	gtg	atc	ctg	acc	tcg	tcc	atc	432
Tyr	Leu	Arg	Arg	Ala	Glu	Tyr	Gly	Arg	Val	Ile	Leu	Thr	Ser	Ser	Ile	
	130				135					140						
acc	ggg	cca	gtc	acc	ggc	ttt	cca	ggc	tgg	gcg	cac	tac	ggc	gcg	agc	480
Thr	Gly	Pro	Val	Thr	Gly	Phe	Pro	Gly	Trp	Ala	His	Tyr	Gly	Ala	Ser	
	145				150				155						160	
aag	gca	gcg	cag	ctg	ggt	ttc	atg	cgt	acc	gca	gcg	atc	gag	ctg	gcc	528
Lys	Ala	Ala	Gln	Leu	Gly	Phe	Met	Arg	Thr	Ala	Ala	Ile	Glu	Leu	Ala	
			165					170						175		
cgc	gat	ggc	atc	acc	atc	aat	gcc	ctg	cca	ggc	aac	atc	ggt	acc		576
Arg	Asp	Gly	Ile	Thr	Ile	Asn	Ala	Leu	Pro	Gly	Asn	Ile	Val	Thr		
			180					185					190			
gaa	ggc	ttg	cag	ggc	atg	ggc	gag	gac	tac	cag	gcc	agc	atg	gcc	gcg	624
Glu	Gly	Leu	Gln	Gly	Met	Gly	Glu	Asp	Tyr	Gln	Ala	Ser	Met	Ala	Ala	
	195					200					205					
tcc	att	ccg	ctc	aag	cgc	ctc	ggc	cag	gtc	gag	gac	att	gcc	aat	gcc	672
Ser	Ile	Pro	Leu	Lys	Arg	Leu	Gly	Gln	Val	Glu	Asp	Ile	Ala	Asn	Ala	
	210				215					220						
gcg	ttg	ttc	ttt	gct	tcc	aga	gag	gcc	ggc	tac	atc	act	ggg	caa	agc	720
Ala	Leu	Phe	Phe	Ala	Ser	Arg	Glu	Ala	Gly	Tyr	Ile	Thr	Gly	Gln	Ser	
	225				230				235						240	
ctg	atc	atc	gat	ggt	ggg	cag	atc	ctg	ccc	gag	tcc	ctg	caa	gca	ctg	768
Leu	Ile	Ile	Asp	Gly	Gly	Gln	Ile	Leu	Pro	Glu	Ser	Leu	Gln	Ala	Leu	

245

250

255

774

gcc tga  
Ala

<210> 1804  
 <211> 257  
 <212> PRT  
 <213> Pseudomonas putida GB-1

<400> 1804  
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 1 5 10 15  
 Ser Gly Ile Gly Leu Gly Ile Ala Val Gly Phe Ala Arg Gln Gly Ala  
 20 25 30  
 Lys Val Ala Ile Ser Gly Arg His Arg Asp Lys Val Glu Ala Val Ala  
 35 40 45  
 Ser Arg Leu Arg Asp Gln Gly Leu Ala Val Ile Gly Leu Val Ala Asp  
 50 55 60  
 Val Gly Asp Arg Ala Gln Val Leu Arg Met Ile Glu Glu Val Ala Gln  
 65 70 75 80  
 Ala Gln Gly Gly Leu Asp Val Leu Cys Ala Asn Ala Gly Val Phe Pro  
 85 90 95  
 Ser Ala Ala Leu Ala Glu Met Ser Asp Thr Asp Trp Asp Lys Val Leu  
 100 105 110  
 Gly Thr Asn Ala Lys Gly Thr Phe Leu Cys Val Gln Ala Ala Leu Pro  
 115 120 125  
 Tyr Leu Arg Arg Ala Glu Tyr Gly Arg Val Ile Leu Thr Ser Ser Ile  
 130 135 140  
 Thr Gly Pro Val Thr Gly Phe Pro Gly Trp Ala His Tyr Gly Ala Ser  
 145 150 155 160  
 Lys Ala Ala Gln Leu Gly Phe Met Arg Thr Ala Ala Ile Glu Leu Ala  
 165 170 175  
 Arg Asp Gly Ile Thr Ile Asn Ala Leu Leu Pro Gly Asn Ile Val Thr  
 180 185 190  
 Glu Gly Leu Gln Gly Met Gly Glu Asp Tyr Gln Ala Ser Met Ala Ala  
 195 200 205  
 Ser Ile Pro Leu Lys Arg Leu Gly Gln Val Glu Asp Ile Ala Asn Ala  
 210 215 220  
 Ala Leu Phe Phe Ala Ser Arg Glu Ala Gly Tyr Ile Thr Gly Gln Ser  
 225 230 235 240  
 Leu Ile Ile Asp Gly Gly Gln Ile Leu Pro Glu Ser Leu Gln Ala Leu  
 245 250 255  
 Ala

<210> 1805  
 <211> 744  
 <212> DNA  
 <213> Bacillus sp. SG-1

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

<400> 1805  
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 1 5 10 15  
 atc gga aga gag ata gca ctt gag ctt gca cgc cag ggt gcc aat gta 96  
 Ile Gly Arg Glu Ile Ala Leu Glu Leu Ala Arg Gln Gly Ala Asn Val  
 20 25 30  
 gct gtt aat tat gca gga agt gaa gcg aaa gcc aat gaa gtg aca gaa 144  
 Ala Val Asn Tyr Ala Gly Ser Glu Ala Lys Ala Asn Glu Val Thr Glu  
 35 40 45  
 gaa atc aag gca atg ggg aga gaa gca ttt gcc att caa tgc aac gtc 192  
 Glu Ile Lys Ala Met Gly Arg Glu Ala Phe Ala Ile Gln Cys Asn Val  
 50 55 60

## PhoenixTemp32470.tmp.txt

gct	gat	gga	gaa	tct	gtc	caa	gcc	atg	gtc	aag	gaa	tcc	atc	tcc	cgg	240
Ala	Asp	Gly	Glu	Ser	Val	Gln	Ala	Met	Val	Lys	Glu	Ser	Ile	Ser	Arg	
65					70					75					80	
ttt	ggt	tct	ctc	gat	att	ctt	ggt	aat	aac	gct	ggg	att	acc	agg	gac	288
Phe	Gly	Ser	Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
				85					90					95		
aac	ctg	ttg	atg	aga	atg	aag	gaa	agt	gaa	tgg	gat	gaa	ggt	att	gat	336
Asn	Leu	Leu	Met	Arg	Met	Lys	Glu	Ser	Glu	Trp	Asp	Glu	Val	Ile	Asp	
			100					105					110			
aca	aac	tta	aaa	ggt	gta	ttc	ctc	tgc	aca	aag	gca	gtc	agc	cgc	caa	384
Thr	Asn	Leu	Lys	Gly	Val	Phe	Leu	Cys	Thr	Lys	Ala	Val	Ser	Arg	Gln	
		115					120				125					
atg	atg	aaa	cag	cga	agc	ggt	aga	atc	att	aac	att	tct	tcc	att	gtc	432
Met	Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Ile	Val	
		130				135					140					
ggg	gta	agc	gga	aac	cct	gga	caa	gca	aat	tac	ggt	gcg	gct	aag	tca	480
Gly	Val	Ser	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ser	
145					150					155					160	
ggt	gta	atc	gga	ttg	aca	aag	aca	tca	gca	aga	gag	ctt	gct	gca	aga	528
Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr	Ser	Ala	Arg	Glu	Leu	Ala	Ala	Arg	
				165					170					175		
gga	att	aca	gta	aat	gct	gtc	gca	cct	ggc	ttc	atc	tcg	act	gac	atg	576
Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Asp	Met	
			180					185					190			
acc	gac	gag	ctg	agt	gaa	gaa	gtc	aag	act	gaa	atg	ctt	aaa	ggg	atc	624
Thr	Asp	Glu	Leu	Ser	Glu	Glu	Val	Lys	Thr	Glu	Met	Leu	Lys	Gly	Ile	
		195					200					205				
cct	ctt	agt	cgt	ttt	ggc	gaa	gca	aaa	gat	atc	gcg	aga	gtc	gtc	agc	672
Pro	Leu	Ser	Arg	Phe	Gly	Glu	Ala	Lys	Asp	Ile	Ala	Arg	Val	Val	Ser	
		210				215					220					
ttc	ctt	gct	tcg	gaa	gac	tct	tcc	tac	atg	aca	ggg	caa	acc	ctt	cac	720
Phe	Leu	Ala	Ser	Glu	Asp	Ser	Ser	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	
225				230						235					240	
ggt	gac	ggc	gga	atg	ggt	atg	taa									744
Val	Asp	Gly	Gly	Met	Val	Met										
				245												

&lt;210&gt; 1806

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Bacillus sp. SG-1

&lt;400&gt; 1806

Met	Asn	Leu	Glu	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ala	Ser	Arg	Gly	
1				5					10					15		
Ile	Gly	Arg	Glu	Ile	Ala	Leu	Glu	Leu	Ala	Arg	Gln	Gly	Ala	Asn	Val	
			20					25					30			
Ala	Val	Asn	Tyr	Ala	Gly	Ser	Glu	Ala	Lys	Ala	Asn	Glu	Val	Thr	Glu	
		35					40					45				
Glu	Ile	Lys	Ala	Met	Gly	Arg	Glu	Ala	Phe	Ala	Ile	Gln	Cys	Asn	Val	
	50				55					60						
Ala	Asp	Gly	Glu	Ser	Val	Gln	Ala	Met	Val	Lys	Glu	Ser	Ile	Ser	Arg	
65				70						75					80	
Phe	Gly	Ser	Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
				85				90						95		
Asn	Leu	Leu	Met	Arg	Met	Lys	Glu	Ser	Glu	Trp	Asp	Glu	Val	Ile	Asp	
			100					105					110			
Thr	Asn	Leu	Lys	Gly	Val	Phe	Leu	Cys	Thr	Lys	Ala	Val	Ser	Arg	Gln	
		115					120					125				
Met	Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Ile	Val	
	130					135					140					
Gly	Val	Ser	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ser	
145					150					155					160	
Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr	Ser	Ala	Arg	Glu	Leu	Ala	Ala	Arg	
				165					170					175		
Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Asp	Met	
			180					185					190			
Thr	Asp	Glu	Leu	Ser	Glu	Glu	Val	Lys	Thr	Glu	Met	Leu	Lys	Gly	Ile	
		195					200					205				



## PhoenixTemp32470.tmp.txt

Pro Leu Ser Arg Phe Gly Glu Ala Lys Asp Ile Ala Arg Val Val Ser  
 210 215 220  
 Phe Leu Ala Ser Glu Asp Ser Ser Tyr Met Thr Gly Gln Thr Leu His  
 225 230 235 240  
 Val Asp Gly Gly Met Val Met  
 245

<210> 1807  
 <211> 786  
 <212> DNA  
 <213> Streptomyces echinatus

<220>  
 <221> CDS  
 <222> (1)..(786)  
 <223> transl\_table=11

<400> 1807  
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 Met Val Asn Asp Asp Arg Arg Val Ala Leu Val Thr Gly Ala Thr Ser  
 1 5 10 15  
 ggc atc ggg ctg tcc gtc gcc cgg gac ctg gcc cgc gcg ggc ctg gcg 96  
 Gly Ile Gly Leu Ser Val Ala Arg Asp Leu Ala Arg Ala Gly Leu Ala  
 20 25 30  
 gtg ttc ctc tgc gcc cgg gac acg gac gtc aag cgg acg gtg gag 144  
 Val Phe Leu Cys Ala Arg Asp Thr Asp Ala Val Lys Arg Thr Val Glu  
 35 40 45  
 gaa ctg cgg gcc gtc ggt cac gag gcc gac ggc acg tcg tgc gac gta 192  
 Glu Leu Arg Ala Val Gly His Glu Ala Asp Gly Thr Ser Cys Asp Val  
 50 55 60  
 cgg gac aag acc tcg gtc cgg gcc ctg gtg gac tcc gcc ctc ggg gcg 240  
 Arg Asp Lys Thr Ser Val Arg Ala Leu Val Asp Ser Ala Leu Gly Ala  
 65 70 75 80  
 tac ggc cgg gtc gac gtc ctg gtg aac aac gcc ggc cgc aac ggc ggc 288  
 Tyr Gly Arg Val Asp Val Leu Val Asn Asn Ala Gly Arg Asn Gly Gly  
 85 90 95  
 ggg gtc acc gcc gat ctc ccc gac gag acc tgg tac gac gtc atc gac 336  
 Gly Val Thr Ala Asp Leu Pro Asp Glu Thr Trp Tyr Asp Val Ile Asp  
 100 105 110  
 acc aac ctc aac agc gtc ttc ctg gtc acc cgt gag gtg ctc aag cgc 384  
 Thr Asn Leu Asn Ser Val Phe Leu Val Thr Arg Glu Val Leu Lys Arg  
 115 120 125  
 tcc ggt atg cgg gag cgc ggc tgg ggc cgg gtc atc agc atc gcc tcc 432  
 Ser Gly Met Arg Glu Arg Gly Trp Gly Arg Val Ile Ser Ile Ala Ser  
 130 135 140  
 acc ggc ggc aaa cag ggc gtg gtc ctc gcg gcg ccc tac tcg gcg tcc 480  
 Thr Gly Gly Lys Gln Gly Val Val Leu Ala Ala Pro Tyr Ser Ala Ser  
 145 150 155 160  
 aag cac ggg gtg atc ggc ttc tcc aaa gcg ctc ggc aag gag ctc gcg 528  
 Lys His Gly Val Ile Gly Phe Ser Lys Ala Leu Gly Lys Glu Leu Ala  
 165 170 175  
 ccg acc ggc gtc acc gtc aac gcg gtg tgc ccg ggc tac gtc gag acc 576  
 Pro Thr Gly Val Thr Val Asn Ala Val Cys Pro Gly Tyr Val Glu Thr  
 180 185 190  
 ccg atg gcc cag cgg gtg cgg gcc ggc tac gcc gcc gcc tgg gag acc 624  
 Pro Met Ala Gln Arg Val Arg Ala Gly Tyr Ala Ala Ala Trp Glu Thr  
 195 200 205  
 acc gag gag gac gta ctg gag cag ttc cag gcc aag atc ccg ctg ggg 672  
 Thr Glu Glu Asp Val Leu Glu Gln Phe Gln Ala Lys Ile Pro Leu Gly  
 210 215 220  
 cgc tac tcc acg ccg gag gag gtg gcc ggc ctc gtc ggc tat ctg gtg 720  
 Arg Tyr Ser Thr Pro Glu Glu Val Ala Gly Leu Val Gly Tyr Leu Val  
 225 230 235 240  
 agc gac acg gcg gcg tcc atc acg gcc cag gcg ctg aac gtc tgc ggc 768  
 Ser Asp Thr Ala Ala Ser Ile Thr Ala Gln Ala Leu Asn Val Cys Gly  
 245 250 255  
 ggc ctg ggc aac tac tga 786  
 Gly Leu Gly Asn Tyr  
 260

<210> 1808  
 <211> 261  
 <212> PRT  
 <213> Streptomyces echinatus

<400> 1808  
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 1 5 10 15  
 Gly Ile Gly Leu Ser Val Ala Arg Asp Leu Ala Arg Ala Gly Leu Ala  
 20 25 30  
 Val Phe Leu Cys Ala Arg Asp Thr Asp Ala Val Lys Arg Thr Val Glu  
 35 40 45  
 Glu Leu Arg Ala Val Gly His Glu Ala Asp Gly Thr Ser Cys Asp Val  
 50 55 60  
 Arg Asp Lys Thr Ser Val Arg Ala Leu Val Asp Ser Ala Leu Gly Ala  
 65 70 75 80  
 Tyr Gly Arg Val Asp Val Leu Val Asn Asn Ala Gly Arg Asn Gly Gly  
 85 90 95  
 Gly Val Thr Ala Asp Leu Pro Asp Glu Thr Trp Tyr Asp Val Ile Asp  
 100 105 110  
 Thr Asn Leu Asn Ser Val Phe Leu Val Thr Arg Glu Val Leu Lys Arg  
 115 120 125  
 Ser Gly Met Arg Glu Arg Gly Trp Gly Arg Val Ile Ser Ile Ala Ser  
 130 135 140  
 Thr Gly Gly Lys Gln Gly Val Val Leu Ala Ala Pro Tyr Ser Ala Ser  
 145 150 155 160  
 Lys His Gly Val Ile Gly Phe Ser Lys Ala Leu Gly Lys Glu Leu Ala  
 165 170 175  
 Pro Thr Gly Val Thr Val Asn Ala Val Cys Pro Gly Tyr Val Glu Thr  
 180 185 190  
 Pro Met Ala Gln Arg Val Arg Ala Gly Tyr Ala Ala Ala Trp Glu Thr  
 195 200 205  
 Thr Glu Glu Asp Val Leu Glu Gln Phe Gln Ala Lys Ile Pro Leu Gly  
 210 215 220  
 Arg Tyr Ser Thr Pro Glu Glu Val Ala Gly Leu Val Gly Tyr Leu Val  
 225 230 235 240  
 Ser Asp Thr Ala Ala Ser Ile Thr Ala Gln Ala Leu Asn Val Cys Gly  
 245 250 255  
 Gly Leu Gly Asn Tyr  
 260

<210> 1809  
 <211> 846  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(846)

<400> 1809  
 atg gca gcg tcg acg ccg gcg gcg agc aga gag cgg cgg tgg agc cgc 48  
 Met Ala Ala Ser Thr Pro Ala Ala Ser Arg Glu Arg Arg Trp Ser Arg  
 1 5 10 15  
 gcc ggc aag acg gcg ctc gtc acc ggc ggc acc aaa ggc atc ggg cgc 96  
 Ala Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly Arg  
 20 25 30  
 gcg atc gtg gag gag ctc gcc ggg ttc ggg gtg agg gtg cac acg tgt 144  
 Ala Ile Val Glu Glu Leu Ala Gly Phe Gly Val Arg Val His Thr Cys  
 35 40 45  
 tca cgc cac gac gcc gac ctg cag gac tgc ctc cgc cgg tgg aac gcc 192  
 Ser Arg His Asp Ala Asp Leu Gln Asp Cys Leu Arg Arg Trp Asn Ala  
 50 55 60  
 gcc gac ggt ggc ggc ctc ggc ggc ggc gcg gcg gcg ccc gtc acg gcg 240  
 Ala Asp Gly Gly Gly Leu Gly Gly Gly Ala Ala Ala Pro Val Thr Ala  
 65 70 75 80  
 tcc gtc tgc gac gtg tcg gtg cgc ggc gac agg gag gcg ctg gtg gcg 288  
 Ser Val Cys Asp Val Ser Val Arg Gly Asp Arg Glu Ala Leu Val Ala

## PhoenixTemp32470.tmp.txt

															85																90																95	
gcg	gcg	cgc	gcc	gcg	ctc	ggc	ggg	agg	ctg	gac	ata	ctc	gtc	aac		336																																
Ala	Ala	Arg	Ala	Ala	Leu	Gly	Gly	Arg	Leu	Asp	Ile	Leu	Val	Asn	Asn																																	
															100																105																110	
gtc	ggc	cag	acg	ctg	ttc	ggc	gcg	gcc	gcg	gac	tgc	gcg	gag	gac		384																																
Val	Gly	Gln	Thr	Leu	Phe	Gly	Ala	Ala	Ala	Ala	Cys	Ala	Ala	Glu	Asp																																	
															115																120																125	
tac	gcg	cgc	atc	atg	gcg	acc	aac	ctc	gag	tcc	tgc	ttc	cac	ctc	gcc																																	
Tyr	Ala	Arg	Ile	Met	Ala	Thr	Asn	Leu	Glu	Ser	Cys	Phe	His	Leu	Ala																																	
															130																135																140	
cag	ctc	gcg	cac	cct	ctc	ctc	ctc	ggc	gcc	ggc	ggc	gcc	gcc	gag	agc																																	
Gln	Leu	Ala	His	Pro	Leu	Leu	Leu	Gly	Ala	Gly	Gly	Ala	Ala	Ala	Ser																																	
															145																150																155	
gtg	gtg	aac	atc	tcc	tcc	gtc	gca	ggg	ttc	atc	gac	tac	ccg	gag	ctg																																	
Val	Val	Asn	Ile	Ser	Ser	Val	Ala	Gly	Phe	Ile	Ala	Tyr	Pro	Ala	Leu																																	
															165																170																175	
tcc	gtc	tac	tcg	gag	acg	aag	ggc	gcc	atg	aac	cag	ctc	acg	cgg	agc																																	
Ser	Val	Tyr	Ser	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	Leu	Thr	Arg	Ser																																	
															180																185																190	
ctc	gcc	gcc	gag	tgg	gag	cgc	gac	ggc	atc	cgc	gtc	aac	tgc	gtc	gag																																	
Leu	Ala	Ala	Glu	Trp	Ala	Arg	Asp	Gly	Ile	Arg	Val	Asn	Cys	Val	Ala																																	
															195																200																205	
ccg	ggc	ggc	gtc	cgg	acc	gac	atc	gcc	ggc	agc	agc	ggc	gtg	gag	ctg																																	
Pro	Gly	Gly	Val	Arg	Thr	Asp	Ile	Ala	Gly	Ser	Ser	Gly	Val	Ala	Leu																																	
															210																215																220	
gag	ccg	ggg	gag	gag	cgg	gag	atg	gag	gag	agg	gag	gag	gag	cgg	gtc																																	
Glu	Pro	Gly	Ala	Ala	Arg	Ala	Met	Glu	Glu	Arg	Glu	Ala	Ala	Arg	Val																																	
															225																230																235	
gcc	atg	ggc	cgc	atc	ggc	gag	ccc	gag	gag	gtg	gag	tcg	ctc	gtc	gag																																	
Ala	Met	Gly	Arg	Ile	Gly	Glu	Pro	Glu	Glu	Val	Ala	Ser	Leu	Val	Ala																																	
															245																250																255	
ttc	ctc	tgc	atg	ccg	gag	gag	tcg	tac	atc	acc	ggg	cag	gtc	atc	tgc																																	
Phe	Leu	Cys	Met	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Cys																																	
															260																265																270	
gtc	gac	ggt	ggc	cgc	acc	atc	acc	tag																																								
Val	Asp	Gly	Gly	Arg	Thr	Ile	Thr	Ala																																								
															275																280																	

&lt;210&gt; 1810

&lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1810

Met	Ala	Ala	Ser	Thr	Pro	Ala	Ala	Ser	Arg	Glu	Arg	Arg	Trp	Ser	Arg	
1				5				10					15			
Ala	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Gly	Thr	Lys	Gly	Ile	Gly	Arg	
			20					25					30			
Ala	Ile	Val	Glu	Glu	Leu	Ala	Gly	Phe	Gly	Val	Arg	Val	His	Thr	Cys	
			35				40					45				
Ser	Arg	His	Asp	Ala	Asp	Leu	Gln	Asp	Cys	Leu	Arg	Arg	Trp	Asn	Ala	
			50			55				60						
Ala	Asp	Gly	Gly	Gly	Leu	Gly	Gly	Gly	Ala	Ala	Ala	Pro	Val	Thr	Ala	
65					70				75					80		
Ser	Val	Cys	Asp	Val	Ser	Val	Arg	Gly	Asp	Arg	Glu	Ala	Leu	Val	Ala	
				85					90					95		
Ala	Ala	Arg	Ala	Ala	Leu	Gly	Gly	Arg	Leu	Asp	Ile	Leu	Val	Asn	Asn	
			100					105					110			
Val	Gly	Gln	Thr	Leu	Phe	Gly	Ala	Ala	Ala	Ala	Cys	Ala	Ala	Glu	Asp	
			115				120					125				
Tyr	Ala	Arg	Ile	Met	Ala	Thr	Asn	Leu	Glu	Ser	Cys	Phe	His	Leu	Ala	
	130					135				140						
Gln	Leu	Ala	His	Pro	Leu	Leu	Gly	Ala	Gly	Gly	Ala	Ala	Ala	Ala	Ser	
145					150				155						160	
Val	Val	Asn	Ile	Ser	Ser	Val	Ala	Gly	Phe	Ile	Ala	Tyr	Pro	Ala	Leu	
			165					170					175			
Ser	Val	Tyr	Ser	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	Leu	Thr	Arg	Ser	
			180					185					190			
Leu	Ala	Ala	Glu	Trp	Ala	Arg	Asp	Gly	Ile	Arg	Val	Asn	Cys	Val	Ala	

## PhoenixTemp32470.tmp.txt

195  
 Pro Gly Val Arg Thr Asp 200  
 210 Gly Val Ala Leu  
 225 Glu Pro Gly Ala Ala Arg 215  
 230 Glu Glu Arg 220  
 235 Val Ala Ser Leu Val 240  
 245 Phe Leu Cys Met Pro Ala Ala Ser Tyr 250  
 260 Val Asp Gly Gly Arg Thr Ile Thr 265  
 275 280

<210> 1811  
 <211> 963  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(963)

<400> 1811  
 atg cct gcc gcc gca ctc gac ctc ctc cct gac aag gcg cac cag ccg 48  
 Met Pro Ala Ala Ala Leu Asp Leu Leu Pro Asp Lys Ala His Gln Pro  
 1 5 10 15  
 tcc atg gcg ccg tcg ctc cac gcc tgg gac tcc ccc aat ggc gcc ccc 96  
 Ser Met Ala Pro Ser Leu His Ala Trp Asp Ser Pro Asn Gly Ala Pro  
 20 25 30  
 act ccc atg ccc aag agg ctg gaa ggg aag gtg gcc att gtc acc ggc 144  
 Thr Pro Met Pro Lys Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly  
 35 40 45  
 ggg gcg agg ggg atc ggg gag gcg atc gtg agg ctg ttc gtt aag cac 192  
 Gly Ala Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Lys His  
 50 55 60  
 ggg gcc aag gtg gtg atc gcg gac atc gac gac gcg ggc gag gcg 240  
 Gly Ala Lys Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala  
 65 70 75 80  
 ctg gcg gcg gcg ctg ggg ccg cac gtc ggg ttc gtg cgg tgc gac gtg 288  
 Leu Ala Ala Ala Leu Gly Pro His Val Gly Phe Val Arg Cys Asp Val  
 85 90 95  
 tcg gtg gag gag gac gtg gag cgc gcc gtc gag cgc gcc gtg gcg cgg 336  
 Ser Val Glu Glu Asp Val Glu Arg Ala Val Glu Arg Ala Val Ala Arg  
 100 105 110  
 tac ggg cgg ctg gac gtg ctg tgc aac aac gcc ggg gtg ctg ggc cgc 384  
 Tyr Gly Arg Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly Arg  
 115 120 125  
 cag acg cgc gcc gcc aag agc atc ctg tcg ttc gac gcc ggg gag ttc 432  
 Gln Thr Arg Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe  
 130 135 140  
 gac cgc gtg ctc cgc gtc aac gcg ctg ggc gcc gcg ctc ggc atg aag 480  
 Asp Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys  
 145 150 155 160  
 cac gcg gcg ctc gcc atg acc cag cgc cgc gcc ggc agc atc atc tcc 528  
 His Ala Ala Leu Ala Met Thr Gln Arg Arg Ala Gly Ser Ile Ile Ser  
 165 170 175  
 gtc gcc agc gtc gcc ggc gtg ctc ggc ggc ctc ggc ccg cac gcc tac 576  
 Val Ala Ser Val Ala Gly Val Leu Gly Leu Gly Pro His Ala Tyr  
 180 185 190  
 acc gcc tcc aag cac gcc atc gtg ggg ctc acc aag aac gcc gcc tgc 624  
 Thr Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys  
 195 200 205  
 gag ctc ggc gcc cac ggc atc cgc gtc aac tgc atc tcc ccc ttc ggc 672  
 Glu Leu Gly Ala His Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly  
 210 215 220  
 gtc gcc acc ccg atg ctc atc aac gcc tgg cgc cag ggc cac gac gcc 720  
 Val Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Ala  
 225 230 235 240  
 tcc acc gcc gac gac gcc gac gcc gac atc gac ctc gac atc gcc gtg 768  
 Ser Thr Ala Asp Asp Ala Asp Ala Asp Ile Asp Leu Asp Ile Ala Val

## PhoenixTemp32470.tmp.txt

ccc	agc	gac	cag	245	gag	gtg	gag	aag	atg	250	gag	gtg	gtc	agg	255	ggc	ctc	816
Pro	Ser	Asp	Gln	260	Glu	Val	Glu	Lys	Met	265	Glu	Glu	Val	Val	Arg	Gly	Leu	
gcc	acg	ctc	aag	ggc	gcg	acg	ctg	aga	ccc	agg	gac	atc	gcc	gag	gcg	864		
Ala	Thr	Leu	Lys	275	Gly	Ala	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala		
gcg	ctc	ttc	ctc	gcc	agc	gac	gac	tcc	aga	tac	att	tcc	ggc	cac	aac	912		
Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Arg	Tyr	Ile	Ser	Gly	His	Asn			
ctc	gtc	gtc	gac	ggc	ggc	gtc	acc	acc	tcc	aga	aac	cta	att	ggc	ctt	960		
Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu			
305				310						315					320		963	
tga																		

&lt;210&gt; 1812

&lt;211&gt; 320

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1812

Met	Pro	Ala	Ala	Ala	Leu	Asp	Leu	Leu	Pro	Asp	Lys	Ala	His	Gln	Pro	
1				5					10					15		
Ser	Met	Ala	Pro	Ser	Leu	His	Ala	Trp	Asp	Ser	Pro	Asn	Gly	Ala	Pro	
			20					25					30			
Thr	Pro	Met	Pro	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	
		35					40					45				
Gly	Ala	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Leu	Phe	Val	Lys	His	
	50					55				60						
Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Ile	Asp	Asp	Ala	Ala	Gly	Glu	Ala	
65					70				75					80		
Leu	Ala	Ala	Ala	Leu	Gly	Pro	His	Val	Gly	Phe	Val	Arg	Cys	Asp	Val	
				85				90					95			
Ser	Val	Glu	Glu	Asp	Val	Glu	Arg	Ala	Val	Glu	Arg	Ala	Val	Ala	Arg	
		100						105					110			
Tyr	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	Ala	Gly	Val	Leu	Gly	Arg	
	115						120					125				
Gln	Thr	Arg	Ala	Ala	Lys	Ser	Ile	Leu	Ser	Phe	Asp	Ala	Gly	Glu	Phe	
	130					135					140					
Asp	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	Lys	
145					150					155					160	
His	Ala	Ala	Leu	Ala	Met	Thr	Gln	Arg	Arg	Ala	Gly	Ser	Ile	Ile	Ser	
				165					170					175		
Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	
		180						185					190			
Thr	Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	
		195					200					205				
Glu	Leu	Gly	Ala	His	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	
	210					215					220					
Val	Ala	Thr	Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Ala	
225					230					235					240	
Ser	Thr	Ala	Asp	Asp	Ala	Asp	Ala	Asp	Ile	Asp	Leu	Asp	Ile	Ala	Val	
			245						250					255		
Pro	Ser	Asp	Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	
			260					265					270			
Ala	Thr	Leu	Lys	Gly	Ala	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	
		275					280					285				
Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Arg	Tyr	Ile	Ser	Gly	His	Asn	
	290					295					300					
Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu	
305				310						315					320	

&lt;210&gt; 1813

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 1813

atg	tcc	gcc	gcc	gcc	gca	tcc	tcc	ccc	gct	ccc	cgg	ttg	gaa	agc	aag	48
Met	Ser	Ala	Ala	Ala	Ala	Ser	Ser	Pro	Ala	Pro	Arg	Leu	Glu	Ser	Lys	
1				5					10					15		
ggt	gcg	ctg	ggt	acc	ggt	ggt	gct	tca	ggt	att	ggt	gaa	gca	att	ggt	96
Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Ile	Val	
			20					25					30			
cgc	ctc	ttt	aga	gag	cat	ggt	gca	aag	gta	tgt	att	gca	gat	atc	caa	144
Arg	Leu	Phe	Arg	Glu	His	Gly	Ala	Lys	Val	Cys	Ile	Ala	Asp	Ile	Gln	
			35				40					45				
gat	gaa	gca	ggt	cag	aag	ctc	cgg	gac	tcc	ctt	gga	ggt	gac	caa	gat	192
Asp	Glu	Ala	Gly	Gln	Lys	Leu	Arg	Asp	Ser	Leu	Gly	Gly	Asp	Gln	Asp	
	50					55					60					
gtc	tta	ttt	gtc	cac	tgc	gat	ggt	tcg	gtg	gaa	gag	gat	gta	gcc	cga	240
Val	Leu	Phe	Val	His	Cys	Asp	Val	Ser	Val	Glu	Glu	Asp	Val	Ala	Arg	
	65				70					75					80	
gcg	gtc	gat	gca	aca	gct	gaa	aag	ttt	ggt	act	ctt	gac	atc	atg	gtc	288
Ala	Val	Asp	Ala	Thr	Ala	Glu	Lys	Phe	Gly	Thr	Leu	Asp	Ile	Met	Val	
				85					90					95		
aac	aat	gct	ggc	ttt	aca	ggc	cag	aaa	atc	aca	gat	atc	cga	aac	atc	336
Asn	Asn	Ala	Gly	Phe	Thr	Gly	Gln	Lys	Ile	Thr	Asp	Ile	Arg	Asn	Ile	
			100					105					110			
gac	ttt	tct	gaa	gtc	agg	aag	gta	atc	gac	atc	aat	tta	ggt	ggt	gta	384
Asp	Phe	Ser	Glu	Val	Arg	Lys	Val	Ile	Asp	Ile	Asn	Leu	Val	Gly	Val	
			115				120					125				
ttc	cac	ggg	atg	aaa	cac	gca	gcc	cgc	atc	atg	atc	ccc	aat	aag	aag	432
Phe	His	Gly	Met	Lys	His	Ala	Ala	Arg	Ile	Met	Ile	Pro	Asn	Lys	Lys	
	130					135					140					
ggg	tcc	atc	atc	tca	ttg	gga	agt	ggt	tct	agt	gtc	att	gga	ggg	ttg	480
Gly	Ser	Ile	Ile	Ser	Leu	Gly	Ser	Val	Ser	Ser	Val	Ile	Gly	Gly	Leu	
	145				150					155					160	
gga	cct	cat	tca	tac	aca	gca	acc	aag	cat	gct	gtg	gtg	ggt	cta	acc	528
Gly	Pro	His	Ser	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Val	Gly	Leu	Thr	
				165					170					175		
aag	aat	gta	gct	ggg	gaa	ttg	ggg	aag	cat	ggg	ata	cgc	gtg	aac	tgc	576
Lys	Asn	Val	Ala	Gly	Glu	Leu	Gly	Lys	His	Gly	Ile	Arg	Val	Asn	Cys	
			180					185					190			
gta	tct	ccc	tat	gca	gtg	ccc	acg	gct	ctc	tcc	atg	ccg	tat	ctg	ccc	624
Val	Ser	Pro	Tyr	Ala	Val	Pro	Thr	Ala	Leu	Ser	Met	Pro	Tyr	Leu	Pro	
			195				200					205				
cag	ggc	gag	cgc	aag	gat	gat	gcc	ctg	aaa	gac	ttt	ttc	gcc	ttt	ggt	672
Gln	Gly	Glu	Arg	Lys	Asp	Asp	Ala	Leu	Lys	Asp	Phe	Phe	Ala	Phe	Val	
	210					215					220					
ggt	ggt	gaa	gca	aac	ctg	aaa	ggt	gtg	gat	ctg	cta	cct	aag	gat	ggt	720
Gly	Gly	Glu	Ala	Asn	Leu	Lys	Gly	Val	Asp	Leu	Leu	Pro	Lys	Asp	Val	
	225				230					235					240	
gct	caa	gca	gtg	ctc	tac	ttg	gca	agc	gat	gaa	gcg	agg	tac	atc	agc	768
Ala	Gln	Ala	Val	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Ser	
				245					250					255		
gcg	ctc	aac	ctc	atg	gtg	gat	ggt	ggc	ttt	acc	tct	gtg	aat	cac	aat	816
Ala	Leu	Asn	Leu	Met	Val	Asp	Gly	Gly	Phe	Thr	Ser	Val	Asn	His	Asn	
			260					265					270			
ttg	aga	gca	ttt	gaa	gat	taa										837
Leu	Arg	Ala	Phe	Glu	Asp											
			275													

&lt;210&gt; 1814

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1814

Met	Ser	Ala	Ala	Ala	Ala	Ser	Ser	Pro	Ala	Pro	Arg	Leu	Glu	Ser	Lys	
1				5					10					15		
Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Ile	Val	

## PhoenixTemp32470.tmp.txt

20 25 30  
 Arg Leu Phe Arg Glu His Gly Ala Lys Val Cys Ile Ala Asp Ile Gln  
 35 40 45  
 Asp Glu Ala Gly Gln Lys Leu Arg Asp Ser Leu Gly Gly Asp Gln Asp  
 50 55 60  
 Val Leu Phe Val His Cys Asp Val Ser Val Glu Glu Asp Val Ala Arg  
 65 70 75 80  
 Ala Val Asp Ala Thr Ala Glu Lys Phe Gly Thr Leu Asp Ile Met Val  
 85 90 95  
 Asn Asn Ala Gly Phe Thr Gly Gln Lys Ile Thr Asp Ile Arg Asn Ile  
 100 105 110  
 Asp Phe Ser Glu Val Arg Lys Val Ile Asp Ile Asn Leu Val Gly Val  
 115 120 125  
 Phe His Gly Met Lys His Ala Arg Ile Met Ile Pro Asn Lys Lys  
 130 135 140  
 Gly Ser Ile Ile Ser Leu Gly Ser Val Ser Ser Val Ile Gly Gly Leu  
 145 150 155 160  
 Gly Pro His Ser Tyr Thr Ala Thr Lys His Ala Val Val Gly Leu Thr  
 165 170 175  
 Lys Asn Val Ala Gly Glu Leu Gly Lys His Gly Ile Arg Val Asn Cys  
 180 185 190  
 Val Ser Pro Tyr Ala Val Pro Thr Ala Leu Ser Met Pro Tyr Leu Pro  
 195 200 205  
 Gln Gly Glu Arg Lys Asp Asp Ala Leu Lys Asp Phe Phe Ala Phe Val  
 210 215 220  
 Gly Gly Glu Ala Asn Leu Lys Gly Val Asp Leu Leu Pro Lys Asp Val  
 225 230 235 240  
 Ala Gln Ala Val Leu Tyr Leu Ala Ser Asp Glu Ala Arg Tyr Ile Ser  
 245 250 255  
 Ala Leu Asn Leu Met Val Asp Gly Gly Phe Thr Ser Val Asn His Asn  
 260 265 270  
 Leu Arg Ala Phe Glu Asp  
 275

&lt;210&gt; 1815

&lt;211&gt; 1179

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1179)

&lt;400&gt; 1815

atg	agg	gtt	ctt	cct	ctt	cgt	gcc	acc	acg	gct	ctc	ctg	gcc	acc	ctc	48
Met	Arg	Val	Leu	Pro	Leu	Arg	Ala	Thr	Thr	Ala	Leu	Leu	Ala	Thr	Leu	
1				5				10						15		
ctg	gtc	gcc	gcc	tcg	ttc	cag	gat	ctc	acc	gtc	gct	gca	gac	ggc	ggc	96
Leu	Val	Ala	Ala	Ser	Phe	Gln	Asp	Leu	Thr	Val	Ala	Ala	Asp	Gly	Gly	
			20					25					30			
ggc	ggc	gtg	gtt	ccg	gtc	ccg	gat	agc	gtg	tgc	gac	gcc	aag	tgc	cag	144
Gly	Gly	Val	Val	Pro	Val	Pro	Asp	Ser	Val	Cys	Asp	Ala	Lys	Cys	Gln	
		35					40					45				
aag	cgg	tgc	tcg	ctg	aag	gtg	gcc	ggg	cgg	tgc	atg	ggg	ctg	tgc	aag	192
Lys	Arg	Cys	Ser	Leu	Lys	Val	Ala	Gly	Arg	Cys	Met	Gly	Leu	Cys	Lys	
	50					55					60					
atg	tgc	tgc	cac	gac	tgc	ggc	tgc	gtg	ccg	tcg	ggg	ccg	tac	gcc		240
Met	Cys	Cys	His	Asp	Cys	Gly	Gly	Cys	Val	Pro	Thr	Gly	Pro	Tyr	Ala	
	65				70				75						80	
agc	aag	gac	gag	tgc	ccc	tgc	tac	cgc	gac	atg	gtc	tcc	ccc	aag	agc	288
Ser	Lys	Asp	Glu	Cys	Pro	Cys	Tyr	Arg	Asp	Met	Val	Ser	Pro	Lys	Ser	
			85					90					95			
cga	cgc	ccc	aag	tgc	ccg	agg	gag	aag	agc	gga	gct	atg	gga	gct	ctg	336
Arg	Arg	Pro	Lys	Cys	Pro	Arg	Glu	Lys	Ser	Gly	Ala	Met	Gly	Ala	Leu	
			100					105					110			
tgt	ggt	tgg	ggc	agc	cac	ttc	tcg	aca	gcc	tcg	agt	tgc	cag	agg	tta	384
Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	Cys	Gln	Arg	Leu	
		115					120					125				
ccc	ggc	aag	gtc	gcg	gtg	atc	acc	ggc	gcg	gcc	agc	ggc	atc	ggc	aag	432

## PhoenixTemp32470.tmp.txt

Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	
130	130					135					140					
gcg	acg	gcc	gcc	gag	ttc	atc	cgc	aac	ggc	gcc	aag	gtc	atc	ctg	gcc	480
Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	
145					150					155					160	
gat	ata	cag	gac	gac	ctc	ggc	cgc	gcc	gtc	gcc	gcc	gag	ctg	ggc	ccg	528
Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	
				165					170					175		
gac	gcc	gcg	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	atc	gcc	576
Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	
			180					185					190			
gcg	gcg	gtg	gac	ctc	gcc	gtg	gcg	cgg	cac	ggc	cgc	ctc	gac	atc	ctc	624
Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Ile	Leu	
		195					200					205				
tac	agc	aac	gcc	ggc	atc	tcg	ggc	tcc	tcg	gcg	ccc	gcg	ccg	ctc	gcg	672
Tyr	Ser	Asn	Ala	Gly	Ile	Ser	Gly	Ser	Ser	Ala	Pro	Ala	Pro	Leu	Ala	
	210				215					220						
tcg	ctc	gac	ctc	gcg	gac	ttc	gac	cgc	gtc	atg	gcg	gcc	aac	gcg	cgg	720
Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Ala	Asn	Ala	Arg	
	225				230					235					240	
tcc	gcg	gtg	gcg	gcc	gtc	aag	cac	gcc	gcg	cgc	gtc	atg	gtg	ccc	cgg	768
Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Arg	
				245				250						255		
cgc	ggc	ggc	tgc	gtc	ctc	tgc	acg	ggg	agc	acc	acg	ggc	atg	ctc	ggc	816
Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	Gly	Met	Leu	Gly	
			260					265					270			
ggg	ctc	gcg	gcg	ctg	ccg	tac	agc	ctc	tcg	aag	gcg	gcg	gtg	gtg	ggc	864
Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	Ala	Val	Val	Gly	
		275					280					285				
gtg	gtg	cgg	ctg	gcg	gcg	gcc	gag	ctg	gcg	cgc	tcc	ggc	gtg	cgc	gtg	912
Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	Gly	Val	Arg	Val	
		290				295					300					
aac	gcc	atc	tcg	ccg	cac	gcc	atc	gcg	acg	ccg	ctg	ctg	gtc	cgg	tcg	960
Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	Leu	Val	Arg	Ser	
					310					315					320	
ctg	gcg	agg	atg	aac	ccg	ggg	gtc	agc	gac	gag	cag	ctg	aag	gag	atg	1008
Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	Leu	Lys	Glu	Met	
				325					330					335		
gtg	gag	agg	ggg	atg	agc	gag	ctc	cat	ggc	gcg	gtg	ctg	gag	ctg	gag	1056
Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	Leu	Glu	Leu	Glu	
			340					345					350			
gac	gtg	gcg	agg	gcg	gcc	gtc	tac	ctg	gcg	tcc	gac	gag	gcc	aag	ttc	1104
Asp	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	
			355				360					365				
gtc	acc	ggg	cag	aac	cac	gtc	atc	gac	ggc	ggg	ttc	acg	gtc	ggg	aag	1152
Val	Thr	Gly	Gln	Asn	His	Val	Ile	Asp	Gly	Gly	Thr	Thr	Val	Gly	Lys	
		370				375					380					
ccg	atg	gac	atg	cgg	gtt	cca	cgt	tga								1179
Pro	Met	Asp	Met	Arg	Val	Pro	Arg									
385					390											

&lt;210&gt; 1816

&lt;211&gt; 392

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1816

Met	Arg	Val	Leu	Pro	Leu	Arg	Ala	Thr	Thr	Ala	Leu	Leu	Ala	Thr	Leu	
1				5					10					15		
Leu	Val	Ala	Ala	Ser	Phe	Gln	Asp	Leu	Thr	Val	Ala	Ala	Asp	Gly	Gly	
			20					25					30			
Gly	Gly	Val	Val	Pro	Val	Pro	Asp	Ser	Val	Cys	Asp	Ala	Lys	Cys	Gln	
		35					40					45				
Lys	Arg	Cys	Ser	Leu	Lys	Val	Ala	Gly	Arg	Cys	Met	Gly	Leu	Cys	Lys	
	50					55					60					
Met	Cys	Cys	His	Asp	Cys	Gly	Gly	Cys	Val	Pro	Ser	Gly	Pro	Tyr	Ala	
65					70					75					80	
Ser	Lys	Asp	Glu	Cys	Pro	Cys	Tyr	Arg	Asp	Met	Val	Ser	Pro	Lys	Ser	
				85					90					95		



## PhoenixTemp32470.tmp.txt

Arg Arg Pro Lys Cys Pro Arg Glu Lys Ser Gly Ala Met Gly Ala Leu  
 100 105 110  
 Cys Gly Leu Gly Ser His Phe Ser Thr Ala Ser Ser Cys Gln Arg Leu  
 115 120 125  
 Pro Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys  
 130 135 140  
 Ala Thr Ala Ala Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Leu Ala  
 145 150 155 160  
 Asp Ile Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Pro  
 165 170 175  
 Asp Ala Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Ile Ala  
 180 185 190  
 Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp Ile Leu  
 195 200 205  
 Tyr Ser Asn Ala Gly Ile Ser Gly Ser Ser Ala Pro Ala Pro Leu Ala  
 210 215 220  
 Ser Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Ala Asn Ala Arg  
 225 230 235 240  
 Ser Ala Val Ala Ala Val Lys His Ala Ala Arg Val Met Val Pro Arg  
 245 250 255  
 Arg Gly Gly Cys Val Leu Cys Thr Gly Ser Thr Thr Gly Met Leu Gly  
 260 265 270  
 Gly Leu Ala Ala Leu Pro Tyr Ser Leu Ser Lys Ala Ala Val Val Gly  
 275 280 285  
 Val Val Arg Leu Ala Ala Ala Glu Leu Ala Arg Ser Gly Val Arg Val  
 290 295 300  
 Asn Ala Ile Ser Pro His Ala Ile Ala Thr Pro Leu Leu Val Arg Ser  
 305 310 315 320  
 Leu Ala Arg Met Asn Pro Gly Val Ser Asp Glu Gln Leu Lys Glu Met  
 325 330 335  
 Val Glu Arg Gly Met Ser Glu Leu His Gly Ala Val Leu Glu Leu Glu  
 340 345 350  
 Asp Val Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Phe  
 355 360 365  
 Val Thr Gly Gln Asn His Val Ile Asp Gly Gly Phe Thr Val Gly Lys  
 370 375 380  
 Pro Met Asp Met Arg Val Pro Arg  
 385 390

&lt;210&gt; 1817

&lt;211&gt; 897

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(897)

&lt;400&gt; 1817

atg	cat	cgc	atc	ctc	agc	agg	ggg	agg	agg	aca	cct	gca	gct	tcg	tct	48
Met	His	Arg	Ile	Leu	Ser	Arg	Gly	Arg	Arg	Thr	Pro	Ala	Ala	Ser	Ser	
1				5				10						15		
tcc	tcc	gtc	act	gcc	ttc	gcc	acc	gcc	tcc	gat	tca	cag	agg	ttg	gcc	96
Ser	Ser	Val	Thr	Ala	Phe	Ala	Thr	Ala	Ser	Asp	Ser	Gln	Arg	Leu	Ala	
			20				25					30				
ggg	aag	gtc	gcc	gtc	atc	acc	ggc	ggc	gcc	agc	ggc	atc	ggc	agg	gcg	144
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Arg	Ala	
		35					40					45				
acg	gcg	gag	gag	ttc	gtc	agg	aat	ggc	gcc	aag	gtc	atc	ctc	gcc	gat	192
Thr	Ala	Glu	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	
		50				55					60					
gtg	cag	gac	gac	ctg	gga	cac	gcc	gtc	gcc	gcg	gag	ctc	ggc	gcg	gac	240
Val	Gln	Asp	Asp	Leu	Gly	His	Ala	Val	Ala	Ala	Glu	Leu	Gly	Ala	Asp	
		65			70				75					80		
gcg	gcg	tcg	tac	gcg	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	gtc	gcg	288
Ala	Ala	Ser	Tyr	Ala	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	
				85					90					95		
gcc	gcc	gtg	gac	ctc	gcc	gtg	gca	cgg	ggg	cgt	ctc	gac	gtc	gtc		336
Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Val	

## PhoenixTemp32470.tmp.txt

100	105	110	
ttc aac aac ggc ggc atc ccc ggt gac ctc acg ccg acc ccc gtg ggc	105	110	384
Phe Asn Asn Ala Gly Ile Pro Gly Asp Leu Thr Pro Thr Pro Val Gly	120	125	
gcg ctg gac ctc gct gac ttc gac cgc gtg atg gcg gtg aac acc agg	125	130	432
Ala Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Thr Arg	135	140	
gcg gtg gtg gcg ggc gtc aag cac gcc gcg cgc gtc atg gtg ccg cgc	140	145	480
Ala Val Val Ala Gly Val Lys His Ala Ala Arg Val Met Val Pro Arg	150	155	
cgc cgc ggc agc atc atc tgc acg gcg agc acg gcg ggg gtg atc ggt	155	160	528
Arg Arg Gly Ser Ile Ile Cys Thr Ala Ser Thr Ala Gly Val Ile Gly	165	170	
ggc gtg gcg gtc ccg cac tac agc gtg tcc aag gcc gcg gtg ctc ggg	170	175	576
Gly Val Ala Val Pro His Tyr Ser Val Ser Lys Ala Ala Val Leu Gly	180	185	
ctg gtg cgc gcc gtg gcg ggc gag atg gcg cgc tcc ggc gtg cgc gtg	185	190	624
Leu Val Arg Ala Val Ala Gly Glu Met Ala Arg Ser Gly Val Arg Val	195	200	
aac gcc atc tcc ccc aac tac atc tgg acg ccc atg gcg gcg gtc gcc	200	205	672
Asn Ala Ile Ser Pro Asn Tyr Ile Trp Thr Pro Met Ala Ala Val Ala	210	215	
ttc gca agg tgg tac ccc agc cgg agc gcc gac gac cac cgc cgg atc	215	220	720
Phe Ala Arg Trp Tyr Pro Ser Arg Ser Ala Asp His Arg Arg Ile	225	230	
gtg gag aat gac ata aac gag atg gat ggc gtg aca ctg gag gcc gag	230	235	768
Val Glu Asn Asp Ile Asn Glu Met Asp Gly Val Thr Leu Glu Ala Glu	245	250	
gac gtg gca agg gcg gcg gtg ttc ctc gcc tcc gac gag gct aag tac	250	255	816
Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Tyr	260	265	
gtg aac ggg cac aac ctc gtt gtc gac ggc ggg tac acc gtc ggc aag	265	270	864
Val Asn Gly His Asn Leu Val Val Asp Gly Gly Tyr Thr Val Gly Lys	275	280	
gtg ccc aac atg ccg gtc cca gat ggc cat tga	285	290	897
Val Pro Asn Met Pro Val Pro Asp Gly His	295		

&lt;210&gt; 1818

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1818

Met His Arg Ile Leu Ser Arg Gly Arg Arg Thr Pro Ala Ala Ser Ser	5	10	15
1 Ser Ser Val Thr Ala Phe Ala Thr Ala Ser Asp Ser Gln Arg Leu Ala	20	25	30
Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Arg Ala	35	40	45
Thr Ala Glu Glu Phe Val Arg Asn Gly Ala Lys Val Ile Leu Ala Asp	50	55	60
Val Gln Asp Asp Leu Gly His Ala Val Ala Ala Glu Leu Gly Ala Asp	65	70	75
Ala Ala Ser Tyr Ala Arg Cys Asp Val Thr Asp Glu Ala Gln Val Ala	80	85	90
Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val	95	100	105
Phe Asn Asn Ala Gly Ile Pro Gly Asp Leu Thr Pro Thr Pro Val Gly	110	115	120
Ala Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Thr Arg	125	130	135
Ala Val Val Ala Gly Val Lys His Ala Ala Arg Val Met Val Pro Arg	140	145	150
Arg Arg Gly Ser Ile Ile Cys Thr Ala Ser Thr Ala Gly Val Ile Gly	155	160	165
Gly Val Ala Val Pro His Tyr Ser Val Ser Lys Ala Ala Val Leu Gly	170	175	180
Leu Val Arg Ala Val Ala Gly Glu Met Ala Arg Ser Gly Val Arg Val	185	190	

## PhoenixTemp32470.tmp.txt

195  
 Asn Ala Ile Ser Pro Asn Tyr 200 Ile Trp Thr Pro Met 205 Ala Ala Val Ala  
 210 Phe Ala Arg Trp Tyr Pro 215 Ser Arg Ser Ala Asp 220 Asp His Arg Arg Ile  
 225 Val Glu Asn Asp Ile 230 Asn Glu Met Asp Gly 235 Val Thr Leu Glu Ala Glu  
 245 Asp Val Ala Arg 250 Ala Ala Val Phe Leu 255 Ser Asp Glu Ala Lys Tyr  
 260 Val Asn Gly His Asn Leu Val Val Asp Gly Gly Tyr Thr 270 Val Gly Lys  
 275 Val Pro Asn Met Pro Val Pro 280 Asp Gly His 285

&lt;210&gt; 1819

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 1819

atg	acg	tcg	act	tcg	cct	gaa	agt	cta	atc	gcc	ggt	gga	ttc	tcc	acg	48
Met	Thr	Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	
1				5				10					15			
gcg	gcg	agc	tcc	cac	cag	agg	ttg	gcc	ggc	aag	gtg	gcc	gtc	atc	acc	96
Ala	Ala	Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	
			20					25					30			
ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	acc	gcc	gcg	gag	ttc	atc	agg	144
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	
			35				40					45				
aac	ggc	gcc	aag	gtg	atc	atc	acc	gac	gtc	aac	gac	gac	ctc	ggc	cac	192
Asn	Gly	Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	
	50					55				60						
gcc	gcg	gcg	gcg	gag	ctc	ggc	ccg	gac	gcc	acg	tac	gcg	cgc	tgc	gac	240
Ala	Ala	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	
				70						75				80		
gtc	gcc	gac	gag	gcg	cag	gtc	gcc	gcc	gcc	gtc	gac	ctc	gcc	gtg	gcg	288
Val	Ala	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
				85						90				95		
cgc	cac	ggc	cgc	ctc	gac	gtc	atg	cac	aac	aac	gcc	gcc	atc	ccg	ggg	336
Arg	His	Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	
			100					105					110			
agg	ttc	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ctc	gcc	gac	ttc	gac	384
Arg	Phe	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asp	Phe	Asp	
		115					120					125				
gcc	atg	atg	gcg	gtg	aac	gcc	cgc	gcg	tcg	ctc	gcc	ggc	atc	aag	cac	432
Ala	Met	Met	Ala	Val	Asn	Ala	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	His	
			130			135						140				
gcc	gcg	cgc	gtc	atg	gcg	ccc	cgc	cgc	gcc	ggc	gtc	atc	ctc	tgc	acg	480
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	
				145		150				155				160		
gcc	agc	gcc	gtc	ggc	gtc	ctc	ccg	ctc	ccg	gcg	gtc	gcc	acg	cac	tcc	528
Ala	Ser	Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	
				165					170					175		
atc	acc	aag	gcc	acc	atc	atc	gcc	atc	gtg	cgc	gca	gcg	gcg	gag	ccc	576
Ile	Thr	Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	
			180					185						190		
ctg	gcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	ggc	gcc	gtc	624
Leu	Ala	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	
			195				200					205				
agg	acg	ccg	gtc	ctg	cag	ggc	aag	gtg	tcg	gtg	atg	tcg	gcg	tcg	tct	672
Arg	Thr	Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	
			210			215					220					
cct	acc	atg	agc	gac	gag	ctg	aag	cag	atg	atc	gac	gtc	gac	gcg	aac	720
Pro	Thr	Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	
				225		230				235					240	

## PhoenixTemp32470.tmp.txt

```

gac atg atg atg ggg ccg gag gag gtg gcc atg gcg gcg gtg tac ctc      768
Asp Met Met Met Gly Pro Glu Glu Val Ala Met Ala Ala Val Tyr Leu
245 250 255

gcc tcc gac gag gcc agg tac gtg acc ggc cac aac ctc gtc gtc gac      816
Ala Ser Asp Glu Ala Arg Tyr Val Thr Gly His Asn Leu Val Val Asp
260 265 270

ggc ggg tac acc gtg cac aaa gga gct gac aca ccg gcg gcg cgt      861
Gly Gly Tyr Thr Val His Lys Gly Ala Asp Thr Pro Ala Ala Arg
275 280 285

tga                                                                    864

```

<210> 1820  
 <211> 287  
 <212> PRT  
 <213> Oryza sativa subsp

```

<400> 1820
Met Thr Ser Thr Ser Pro Glu Ser Leu Ile Ala Gly Gly Phe Ser Thr
1 5 10 15
Ala Ala Ser Ser His Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr
20 25 30
Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Ile Arg
35 40 45
Asn Gly Ala Lys Val Ile Ile Thr Asp Val Asn Asp Asp Leu Gly His
50 55 60
Ala Ala Ala Ala Glu Leu Gly Pro Asp Ala Thr Tyr Ala Arg Cys Asp
65 70 75 80
Val Ala Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala Val Ala
85 90 95
Arg His Gly Arg Leu Asp Val Met His Asn Asn Ala Ala Ile Pro Gly
100 105 110
Arg Phe Pro Gln Asp Asp Met Ala Ser Val Asp Leu Ala Asp Phe Asp
115 120 125
Ala Met Met Ala Val Asn Ala Arg Ala Ser Leu Ala Gly Ile Lys His
130 135 140
Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Val Ile Leu Cys Thr
145 150 155 160
Ala Ser Ala Val Gly Val Leu Pro Leu Pro Ala Val Ala Thr His Ser
165 170 175 180
Ile Thr Lys Ala Thr Ile Ile Ala Ile Val Arg Ala Ala Ala Glu Pro
185 190 195
Leu Ala Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Gly Ala Val
200 205 210
Arg Thr Pro Val Leu Gln Gly Lys Val Ser Val Met Ser Ala Ser Ser
215 220 225
Pro Thr Met Ser Asp Glu Leu Lys Gln Met Ile Asp Val Asp Ala Asn
230 235 240
Asp Met Met Met Gly Pro Glu Glu Val Ala Met Ala Ala Val Tyr Leu
245 250 255
Ala Ser Asp Glu Ala Arg Tyr Val Thr Gly His Asn Leu Val Val Asp
260 265 270
Gly Gly Tyr Thr Val His Lys Gly Ala Asp Thr Pro Ala Ala Arg
275 280 285

```

<210> 1821  
 <211> 873  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(873)

```

<400> 1821
atg cag ctc gtt ctc agg gtg aag aga tcg tcg ggt tta cta cac caa      48
Met Gln Leu Val Leu Arg Val Lys Arg Ser Ser Gly Leu Leu His Gln
1 5 10 15

```

## PhoenixTemp32470.tmp.txt

```

ttc tcc act gcg gcg aac tcg cag agg ttg gcc ggg aag gtg gcc gtc 96
Phe Ser Thr Ala Ala Asn Ser Gln Arg 25 Leu Ala Gly Lys 30 Val Ala Val
atc acc ggc gcc gcc agc ggc atc ggc aag gcg tcg gcg aag gag ttc 144
Ile Thr Gly 35 Ala Ala Ser Gly 40 Ile Gly Lys Ala Ser Ala Lys Glu Phe
atc ggc aat ggc gcc aag gtt ata ctc gcc gac gtc cag gac gac ctc 192
Ile 50 Asn Gly Ala Lys 55 Val 60 Ile Leu Ala Asp Val 60 Gln Asp Asp Leu
ggc cgc gcc gtc gcc gcc gag ctc ggc cct ggc gcg acg tac acg cgg 240
Gly 65 Arg Ala Val Ala Ala Glu Leu Gly Pro Gly 75 Ala Thr Tyr Thr Arg
tgc gac gtc acg gac gag gcg cag gtc gcc gcg gcg gtg gac ctc gcc 288
Cys Asp Val Thr 85 Glu Ala Gln Val 90 Ala Ala Val Asp 95 Leu Ala
gtg gcg cgc cac ggc gcg ctc gac gtg ttc tac agc aac gcc ggc gtc 336
Val Ala Arg His 100 Gly Ala Leu Asp Val 105 Phe Tyr Ser Asn Ala Gly Val
ctg ggc tcc atc gcg ccg gcg ccg ctc ctc gcc tcc ctg gac ctg ggc gag 384
Leu Gly Ser 115 Ile Ala Pro Ala Pro 120 Leu Ala Ser Leu Asp 125 Leu Gly Glu
ttc gac cgc gtc atg gcc gtg aac gcc cgc gcc gcc gtc gcc gcc gcc 432
Phe Asp Arg Val Met Ala Val 135 Asn Ala Arg Ala Ala Val Ala Ala Ala
aag cac gcg gcg cgc gcc atg gtg ccg cgc cgg agc ggc tgc gtc ctc 480
Lys His Ala Ala Arg Ala Met Val Pro Arg Arg Ser Gly Cys Val Leu
145 150 155 160
ttc acg ggc agc gtg tcg ggc gtg gtg ggc ggc acg ggc ccg acg tcg 528
Phe Thr Gly Ser Val Ser Gly Val Val Gly Gly Thr Gly Pro Thr Ser
165 175
tac ggc gtg tcg aag gcg gcc gtg ctg ggc gtg gtg cgc gcc gtg gcc 576
Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val Val Arg Ala Val Ala
180 185 190
ggg gag ctg gcg cgc cac ggc gtg ccg gcg aac gcc gtc tcg ccg tgc 624
Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn Ala Val Ser Pro Cys
195 200 205
ggc gtc gcg acg ccg ctg tcc atg gtg cag gtc ctt gag gcc tac ccc 672
Gly Val Ala Thr Pro Leu Ser Met Val Gln Val Leu Glu Ala Tyr Pro
210 215 220
ggg atg agc ttc gag gag ctc aag aac gcc atg gcg gcg tcc atg gag 720
Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met 235 Ala Ala Ser Met Glu
225 230 240
cag atg gaa gct ggc ccg ttg atc gac ccc gag gac gtg gcg agg gcg 768
Gln Met Glu Ala Gly Pro Leu Ile Asp Pro 250 Glu Asp Val Ala Arg Ala
245 255
gcc gtc ttc ctg gcg tcc gac gag gcc agg tac atc aac ggc cat aac 816
Ala Val Phe Leu Ala Ser Asp Glu Ala 265 Arg Tyr Ile Asn Gly His Asn
260 270
ctc gtc gtc gac ggc ggc ttc acg gtg ggc aag ctg ctc aaa atc ccc 864
Leu Val Val Asp Gly Gly Phe Thr 280 Val Gly Lys Leu Leu Lys Ile Pro
275 285
aag gag tag 873
Lys Glu 290

```

&lt;210&gt; 1822

&lt;211&gt; 290

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1822

```

Met Gln Leu Val Leu Arg Val Lys Arg Ser Ser Gly Leu Leu His Gln
1 5 10 15
Phe Ser Thr Ala Ala Asn Ser Gln Arg 25 Leu Ala Gly Lys Val Ala Val
20 25 30
Ile Thr Gly 35 Ala Ala Ser Gly Ile Gly Lys Ala Ser Ala Lys Glu Phe
40 45
Ile Gly 50 Asn Gly Ala Lys Val 55 Ile Leu Ala Asp Val 60 Gln Asp Asp Leu

```

## PhoenixTemp32470.tmp.txt

Gly Arg Ala Val Ala Ala Glu Leu Gly Pro Gly Ala Thr Tyr Thr Arg  
 65 70 75 80  
 Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala  
 85 90 95  
 Val Ala Arg His Gly Ala Leu Asp Val Phe Tyr Ser Asn Ala Gly Val  
 100 105 110  
 Leu Gly Ser Ile Ala Pro Ala Pro Leu Ala Ser Leu Asp Leu Gly Glu  
 115 120 125  
 Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala Ala Val Ala Ala Ala  
 130 135 140  
 Lys His Ala Ala Arg Ala Met Val Pro Arg Arg Ser Gly Cys Val Leu  
 145 150 155 160  
 Phe Thr Gly Ser Val Ser Gly Val Val Gly Thr Gly Pro Thr Ser  
 165 170 175  
 Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val Val Arg Ala Val Ala  
 180 185 190  
 Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn Ala Val Ser Pro Cys  
 195 200 205  
 Gly Val Ala Thr Pro Leu Ser Met Val Gln Val Leu Glu Ala Tyr Pro  
 210 215 220  
 Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met Ala Ala Ser Met Glu  
 225 230 235 240  
 Gln Met Glu Ala Gly Pro Leu Ile Asp Pro Glu Asp Val Ala Arg Ala  
 245 250 255  
 Ala Val Phe Leu Ala Ser Asp Glu Ala Tyr Ile Asn Gly His Asn  
 260 265 270  
 Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Leu Leu Lys Ile Pro  
 275 280 285  
 Lys Glu  
 290

&lt;210&gt; 1823

&lt;211&gt; 843

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(843)

&lt;400&gt; 1823

atg ttg act gga ttc gtc aac agt ttc tcc tct gtg tca aga ccc gaa	48
Met Leu Thr Gly Phe Val Asn Ser Phe Ser Ser Val Ser Arg Pro Glu	
1 5 10 15	
agg ttg gct gga aag gtg gcc gtg atc acc ggt ggc gca agc ggc atc	96
Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile	
20 25 30	
ggc gag gcg acg gcc aag gag ttc atc cgc aat ggc gcc aag gtc atc	144
Gly Glu Ala Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys Val Ile	
35 40 45	
atc gcc gac gta caa gac gat ctc ggc cac acc gtc gct gcc gag ctc	192
Ile Ala Asp Val Gln Asp Leu Gly His Thr Val Ala Ala Glu Leu	
50 55 60	
ggc ccg ggc tcg gcc tac acc cgc tgc gac gtc acc gac gag gcg cag	240
Gly Pro Gly Ser Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln	
65 70 75 80	
atc gcg gcg acc gtg gac ctt gcc gtg gcg cac ggc cac ctt gac	288
Ile Ala Ala Thr Val Asp Leu Ala Val Ala Arg His Gly His Leu Asp	
85 90 95	
atc ctg tac aac aac gcc ggg atc aca agc tcc tct gtg ggg cac ctt	336
Ile Leu Tyr Asn Asn Ala Gly Ile Thr Ser Ser Ser Val Gly His Leu	
100 105 110	
gcc tcc ctc gac ctc gcc gac ttc gac cgc gtc atg gcg gtg aac gcc	384
Ala Ser Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Ala	
115 120 125	
cgg gcg gtg ctc gcc ggc atc aag cac gcc gcg cgc gtg atg gca cca	432
Arg Ala Val Leu Ala Gly Ile Lys His Ala Ala Arg Val Met Ala Pro	
130 135 140	
cga cgc acc ggc tcc atc ctc tgc acg gcc agc gtg gcg ggc atg atg	480

## PhoenixTemp32470.tmp.txt

Arg 145	Arg	Thr	Gly	Ser	Ile 150	Leu	Cys	Thr	Ala	Ser 155	Val	Ala	Gly	Met	Met 160	
ggc	ggc	gag	atg	ccc	cac	gcg	tac	aac	gtc	tcc	aag	gcg	gcg	gtc	ata	528
Gly	Gly	Glu	Met	Pro 165	His	Ala	Tyr	Asn	Val 170	Ser	Lys	Ala	Ala	Val 175	Ile	
ggt	gtg	gtg	cgg	tcc	gcc	gcc	ggc	gag	ctg	gca	cgc	cac	ggc	gtg	cgg	576
Gly	Val	Val	Arg 180	Ser	Ala	Ala	Gly	Glu 185	Leu	Ala	Arg	His	Gly 190	Val	Arg	
ctg	aac	gcg	atc	tcg	ccg	ctc	ggc	atc	gcg	acg	cca	ctg	gcg	atg	cgc	624
Leu	Asn	Ala 195	Ile	Ser	Pro	Leu	Gly 200	Ile	Ala	Thr	Pro	Leu	Ala	Met	Arg	
ggg	ttc	ggc	gac	atg	ctg	gcg	tgg	gcg	gac	gcc	gag	cgg	gtg	agg	cgg	672
Gly	Phe 210	Gly	Asp	Met	Leu	Ala 215	Trp	Ala	Asp	Ala	Glu 220	Arg	Val	Arg	Arg	
ctc	atc	gag	gag	gac	atg	aac	gag	cta	gag	ggc	gcg	acg	ctg	gag	gcg	720
Leu	Ile	Glu	Glu	Asp	Met 230	Asn	Glu	Leu	Glu	Gly 235	Ala	Thr	Leu	Glu	Ala 240	
gag	gac	atc	gcg	agg	gcg	gcg	gtg	tac	ctc	gcc	tcc	gac	gag	gcc	aag	768
Glu	Asp	Ile	Ala	Arg 245	Ala	Ala	Val	Tyr	Leu 250	Ala	Ser	Asp	Glu	Ala 255	Lys	
tac	gtc	acc	ggg	cat	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acc	gtc	ggg	816
Tyr	Val	Thr	Gly 260	His	Asn	Leu	Val	Val 265	Asp	Gly	Gly	Phe	Thr 270	Val	Gly	
aag	cgg	ctc	aac	gtg	gcg	cgt	gct	tga								843
Lys	Arg	Leu 275	Asn	Val	Ala	Arg	Ala 280									

&lt;210&gt; 1824

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1824

Met 1	Leu	Thr	Gly	Phe 5	Val	Asn	Ser	Phe 10	Ser	Val	Ser	Arg	Pro 15	Glu	
Arg	Leu	Ala	Gly 20	Lys	Val	Ala	Val	Ile 25	Thr	Gly	Gly	Ala	Ser 30	Gly	Ile
Gly	Glu	Ala	Thr 35	Ala	Lys	Glu	Phe 40	Ile	Arg	Asn	Gly	Ala 45	Lys	Val	Ile
Ile	Ala	Asp	Val 50	Gln	Asp	Asp 55	Leu	Gly	His	Thr	Val 60	Ala	Ala	Glu	Leu
Gly 65	Pro	Gly	Ser	Ala	Tyr 70	Thr	Arg	Cys	Asp	Val 75	Thr	Asp	Glu	Ala	Gln 80
Ile	Ala	Ala	Thr	Val 85	Asp	Leu	Ala	Val	Ala 90	Arg	His	Gly	His	Leu 95	Asp
Ile	Leu	Tyr	Asn 100	Ala	Gly	Ile	Thr 105	Ser	Ser	Ser	Val 110	Gly	His	Leu	
Ala	Ser	Leu	Asp 115	Leu	Ala	Asp	Phe 120	Arg	Val	Met	Ala 125	Val	Asn	Ala	
Arg	Ala 130	Val	Leu	Ala	Gly 135	Ile	Lys	His	Ala	Ala	Arg 140	Val	Met	Ala	Pro
Arg 145	Arg	Thr	Gly	Ser	Ile 150	Leu	Cys	Thr	Ala	Ser 155	Val	Ala	Gly	Met	Met 160
Gly	Gly	Glu	Met	Pro 165	His	Ala	Tyr	Asn	Val 170	Ser	Lys	Ala	Ala	Val 175	Ile
Gly	Val	Val	Arg 180	Ser	Ala	Ala	Gly	Glu 185	Leu	Ala	Arg	His	Gly 190	Val	Arg
Leu	Asn	Ala 195	Ile	Ser	Pro	Leu	Gly 200	Ile	Ala	Thr	Pro	Leu 205	Ala	Met	Arg
Gly	Phe 210	Gly	Asp	Met	Leu	Ala 215	Trp	Ala	Asp	Ala	Glu 220	Arg	Val	Arg	Arg
Leu	Ile	Glu	Glu	Asp	Met 230	Asn	Glu	Leu	Glu	Gly 235	Ala	Thr	Leu	Glu	Ala 240
Glu	Asp	Ile	Ala	Arg 245	Ala	Ala	Val	Tyr	Leu 250	Ala	Ser	Asp	Glu	Ala 255	Lys
Tyr	Val	Thr	Gly 260	His	Asn	Leu	Val	Val 265	Asp	Gly	Gly	Phe	Thr 270	Val	Gly
Lys	Arg	Leu 275	Asn	Val	Ala	Arg	Ala 280								

<210> 1825  
 <211> 924  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(924)

<400> 1825

atg	aaa	ggc	gcc	gag	tgc	tct	cat	cgc	agg	ggg	agg	agc	aga	ggt	gtt	48
Met	Lys	Gly	Ala	Glu	Cys	Ser	His	Arg	Arg	Gly	Arg	Ser	Arg	Gly	Val	
1				5					10					15		
cgt	ccg	atg	ttc	tct	tcc	ggc	ctg	gcc	gat	cgc	tcc	ttc	tcc	tcg	tcg	96
Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Ser	Phe	Ser	Ser	Ser	
			20					25					30			
gcg	tca	agc	tcc	aga	aag	ttg	gat	ggg	aaa	gtg	gcc	gtg	atc	acc	ggc	144
Ala	Ser	Ser	Ser	Arg	Lys	Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	
		35					40					45				
gcg	gcg	agc	ggc	atc	ggc	gag	gcc	acg	gcg	aag	gag	ttc	gtc	agg	aac	192
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	
	50				55				60							
ggc	gcc	aag	gtc	atc	ctt	gcc	gat	atc	cag	gac	gac	ctc	ggc	cgc	gcg	240
Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	
	65				70				75						80	
gtg	gcc	ggc	gag	ctc	ggc	gcc	gac	gcc	gcg	tcg	tac	acg	cac	tgc	gac	288
Val	Ala	Gly	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	
				85					90					95		
gtc	acg	gtg	gag	gcg	gat	gtc	gcc	gcg	gcc	gtc	gac	ctc	gcc	gtg	gcg	336
Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
			100					105					110			
cgc	cac	ggt	cgt	ctc	gac	gtc	gtg	tac	agc	aac	gcc	ggc	atc	gcc	ggc	384
Arg	His	Gly	Arg	Leu	Asp	Val	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala	Gly	
		115					120					125				
ggc	gca	cct	ccg	gcc	acg	ctc	gcg	gcg	ctc	gac	ctc	gac	tac	gac		432
Gly	Ala	Pro	Pro	Ala	Thr	Leu	Ala	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	Asp	
	130				135						140					
cgc	gtc	atg	gcc	gtc	aac	gcc	agg	tcc	atg	gtg	gcg	tgc	ctc	aag	cac	480
Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	His	
	145				150				155					160		
gcg	gcg	cgc	gtc	atg	gcg	ccg	cgc	cgc	gcc	ggc	tgc	atc	ctc	tgc	acg	528
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	
				165					170					175		
gcg	agc	tcc	acg	gcg	gtg	ctc	ggc	aac	atc	ggg	ccc	ctc	gcg	tac	tcc	576
Ala	Ser	Ser	Thr	Ala	Val	Leu	Gly	Asn	Ile	Gly	Pro	Leu	Ala	Tyr	Ser	
			180					185					190			
atg	tcg	aag	gcg	gcc	gtc	gtc	ggc	atg	gtg	cag	acg	acg	gtg	gcg	agg	624
Met	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Gln	Thr	Thr	Val	Ala	Arg	
		195					200					205				
cag	ctg	gcg	cgc	gac	ggc	gtg	cgg	gtg	aac	acc	atc	tcg	ccg	cac	gcc	672
Gln	Leu	Ala	Arg	Asp	Gly	Val	Arg	Val	Asn	Thr	Ile	Ser	Pro	His	Ala	
	210				215						220					
atc	ccg	acg	gct	atg	gcg	ctg	ggc	atc	atc	gcc	gag	acg	ttc	ccg	gcg	720
Ile	Pro	Thr	Ala	Met	Ala	Leu	Gly	Ile	Ile	Ala	Glu	Thr	Phe	Pro	Ala	
	225				230				235						240	
gcc	acc	gcg	gag	gag	gtg	agg	agg	atg	gtg	acg	agg	gag	atg	cag	gag	768
Ala	Thr	Ala	Glu	Glu	Val	Arg	Arg	Met	Val	Thr	Arg	Glu	Met	Gln	Glu	
				245					250					255		
ctg	gaa	ggg	gcg	tcg	ctg	gag	gtg	gaa	gac	gtg	gcg	agg	gcg	gcc	gtc	816
Leu	Glu	Gly	Ala	Ser	Leu	Glu	Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	
			260					265					270			
ttc	ttg	gcg	tcc	gac	gag	gcc	aag	ttc	acc	ggc	cac	aac	ctc	gtc		864
Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Ile	Thr	Gly	His	Asn	Leu	Val	
		275					280					285				
gtc	gac	ggc	ggc	ttc	act	gta	ggc	aag	gtg	ctc	gtc	cgg	gat	cct	cct	912
Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Val	Leu	Val	Arg	Asp	Pro	Pro	
	290					295					300					
ggc	tca	gct	tga													924



Gly Ser Ala  
305

<210> 1826  
<211> 307  
<212> PRT  
<213> Oryza sativa subsp

<400> 1826  
Met Lys Gly Ala Glu Cys Ser His Arg Arg Gly Arg Ser Arg Gly Val  
1 5 10 15  
Arg Pro Met Phe Ser Ser Gly Leu Ala Asp Arg Ser Phe Ser Ser  
20 25 30  
Ala Ser Ser Ser Arg Lys Leu Asp Gly Lys Val Ala Val Ile Thr Gly  
35 40 45  
Ala Ala Ser Gly Ile Gly Glu Ala Thr Ala Lys Glu Phe Val Arg Asn  
50 55 60  
Gly Ala Lys Val Ile Leu Ala Asp Ile Gln Asp Asp Leu Gly Arg Ala  
65 70 75 80  
Val Ala Gly Glu Leu Gly Ala Asp Ala Ala Ser Tyr Thr His Cys Asp  
85 90 95  
Val Thr Val Glu Ala Asp Val Ala Ala Val Asp Leu Ala Val Ala  
100 105 110  
Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala Gly Ile Ala Gly  
115 120 125  
Gly Ala Pro Pro Ala Thr Leu Ala Ala Leu Asp Leu Asp Asp Tyr Asp  
130 135 140  
Arg Val Met Ala Val Asn Ala Arg Ser Met Val Ala Cys Leu Lys His  
145 150 155 160  
Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr  
165 170 175  
Ala Ser Ser Thr Ala Val Leu Gly Asn Ile Gly Pro Leu Ala Tyr Ser  
180 185 190  
Met Ser Lys Ala Ala Val Val Gly Met Val Gln Thr Thr Val Ala Arg  
195 200 205  
Gln Leu Ala Arg Asp Gly Val Arg Val Asn Thr Ile Ser Pro His Ala  
210 215 220  
Ile Pro Thr Ala Met Ala Leu Gly Ile Ile Ala Glu Thr Phe Pro Ala  
225 230 235 240  
Ala Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Glu Met Gln Glu  
245 250 255  
Leu Glu Gly Ala Ser Leu Glu Val Glu Asp Val Ala Arg Ala Ala Val  
260 265 270  
Phe Leu Ala Ser Asp Glu Ala Lys Phe Ile Thr Gly His Asn Leu Val  
275 280 285  
Val Asp Gly Gly Phe Thr Val Gly Lys Val Leu Val Arg Asp Pro Pro  
290 295 300  
Gly Ser Ala  
305

<210> 1827  
<211> 954  
<212> DNA  
<213> Oryza sativa subsp

<220>  
<221> CDS  
<222> (1)..(954)

<400> 1827  
atg ggg tca ctt cac aaa tat gcc gta caa gca tca atc cat aat gga 48  
Met Gly Ser Leu His Lys Tyr Ala Val Gln Ala Ser Ile His Asn Gly 15  
1 5 10  
att tac aaa tgt tta ctg ctg ttc ttg aca cca caa aac aca tgg ggg 96  
Ile Tyr Lys Cys Leu Leu Leu Phe Leu Thr Pro Gln Asn Thr Trp Gly 20 25 30  
aag agc ata gct gct cac gta ttc ttc tcc tcg tcg tca aga tcc aga 144  
Lys Ser Ile Ala Ala His Val Phe Phe Ser Ser Ser Ser Arg Ser Arg 35 40 45

## PhoenixTemp32470.tmp.txt

```

aag ttg gat ggc aaa gtg gcc gtg ata acc ggc gca gcg agc ggc atc      192
Lys Leu 50 Asp Gly Lys Val Ala 55 Val Ile Thr Gly Ala 60 Ser Gly Ile
ggc gag gcc acg gcg aag gag ttc gtc agg aat ggc gcc aag gtt atc      240
Gly Glu Ala Thr Ala Lys 70 Glu Phe Val Arg Asn 75 Gly Ala Lys Val Ile 80
att gcc gat atc aag gat gat ctc ggc cgc gcc gtg gcc ggc gag ctc      288
Ile Ala Asp Ile Lys 85 Asp Asp Leu Gly Arg 90 Ala Val Ala Gly Glu Leu 95
ggc gcc gac gcc gcg tgc tac acg cac tgc gac gtc acc gtc gag aag      336
Gly Ala Asp Ala Ala Ser Tyr Thr His 105 Cys Asp Val Thr Val Glu Lys 110
gat gtc gcc tcg gcc gtc gac ctc gcc gtg gcg cga cac ggc cgc ctc      384
Asp Val 115 Ser Ala Val Asp Leu 120 Ala Val Ala Arg His 125 Gly Arg Leu
gac gtc gtg tac agc aac gcc gcc atc gcg ggt ggc gcg cct ccg gcc      432
Asp Val 130 Val Tyr Ser Asn Ala 135 Ala Ile Ala Gly Gly Ala Pro Pro Ala
acg ctc gcg gcg ctc gac ctc gac gag tac gac cgc gtc atg gcc gtc      480
Thr Leu Ala Ala Leu Asp 150 Leu Asp Glu Tyr Asp 155 Arg Val Met Ala Val 160
aac gcc agg tcc atg ttg gcg tgc gtc aag cac gcg gcg cgc gtc atg      528
Asn Ala Arg Ser Met 165 Leu Ala Cys Val Lys 170 His Ala Ala Arg Val Met 175
gcg ccc cgc cgc gcc ggt tgc atc ctc tgc acg gcc agc acg gcg gcg      576
Ala Pro Arg Arg Ala Gly Cys Ile Leu 185 Cys Thr Ala Ser Thr Ala Ala 190
gtg ctc ggc ggc atg gcg gcg ccg gcg tac tcc atg tcg aag gcg gcc      624
Val Leu Gly Gly Met Ala Ala Pro 200 Ala Tyr Ser Met 205 Lys Ala Ala
gtc gtc ggc atg gtg cgg acg gtg gcg agg cag ctg gcg cgc gac ggc      672
Val Val Gly Met Val Arg Thr 215 Val Ala Arg Gln Leu Ala Arg Asp Gly 220
gtg cgg gtg aac gcc atc tgc ccg cac gca gtc ccg acg ccg atg gcg      720
Val Arg Val Asn Ala Ile 230 Ser Pro His Ala Val 235 Pro Thr Pro Met Ala 240
ata ggt ctc ttc tcc gag acg ttc ccg gcg gcg acc gcg gag gag gtg      768
Ile Gly Leu Phe Ser 245 Glu Thr Phe Pro Ala 250 Ala Thr Ala Glu Glu Val 255
agg agg atg gtg acg agg gag atg cag gag ctg gaa ggg gcg tcg ctg      816
Arg Arg Met Val Thr Arg Glu Met 265 Gln Glu Leu Glu Gly Ala Ser Leu 270
gag gtg gaa gac gtg gcg agg gcg gcc gtc ttc ttg gcg tcc gac gag      864
Glu Val 275 Glu Asp Val Ala Arg Ala 280 Ala Val Phe Leu Ala Ser Asp Glu 285
gcc aag ttc atc acc ggc cac aac ctc gtc gtc gac ggc ggg ttc acg      912
Ala Lys 290 Phe Ile Thr Gly His 295 Asn Leu Val Val Asp Gly Gly Phe Thr 300
gca ggc aag gtg ctc gtc cgg gat cct ccg ggc tct gct tga      954
Ala Gly Lys Val Leu Val Arg Asp Pro Pro Gly Ser Ala
305 310 315

```

&lt;210&gt; 1828

&lt;211&gt; 317

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1828

```

Met Gly Ser Leu His Lys Tyr Ala Val Gln Ala Ser Ile His Asn Gly
1 5 10 15
Ile Tyr Lys Cys Leu Leu Leu Phe Leu Thr Pro Gln Asn Thr Trp Gly
20 25 30
Lys Ser Ile Ala Ala His Val Phe Ser Ser Ser Ser Arg Ser Arg
35 40 45
Lys Leu Asp Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile
50 55 60
Gly Glu Ala Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile
65 70 75 80
Ile Ala Asp Ile Lys Asp Leu Gly Arg Ala Val Ala Gly Glu Leu

```

## PhoenixTemp32470.tmp.txt

85 90 95  
 Gly Ala Asp Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys  
 100 105 110  
 Asp Val Ala Ser Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu  
 115 120 125  
 Asp Val Val Tyr Ser Asn Ala Ala Ile Ala Gly Gly Ala Pro Pro Ala  
 130 135 140  
 Thr Leu Ala Ala Leu Asp Leu Asp Glu Tyr Asp Arg Val Met Ala Val  
 145 150 155  
 Asn Ala Arg Ser Met Leu Ala Cys Val Lys His Ala Ala Arg Val Met  
 165 170 175  
 Ala Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr Ala Ser Thr Ala Ala  
 180 185 190  
 Val Leu Gly Gly Met Ala Ala Pro Ala Tyr Ser Met Ser Lys Ala Ala  
 195 200 205  
 Val Val Gly Met Val Arg Thr Val Ala Arg Gln Leu Ala Arg Asp Gly  
 210 215 220  
 Val Arg Val Asn Ala Ile Ser Pro His Ala Val Pro Thr Pro Met Ala  
 225 230 235 240  
 Ile Gly Leu Phe Ser Glu Thr Phe Pro Ala Ala Thr Ala Glu Glu Val  
 245 250 255  
 Arg Arg Met Val Thr Arg Glu Met Gln Glu Leu Glu Gly Ala Ser Leu  
 260 265 270  
 Glu Val Glu Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu  
 275 280 285  
 Ala Lys Phe Ile Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr  
 290 295 300  
 Ala Gly Lys Val Leu Val Arg Asp Pro Pro Gly Ser Ala  
 305 310 315

&lt;210&gt; 1829

&lt;211&gt; 1044

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1044)

&lt;400&gt; 1829

atg acc gcc gtc gac ttg atg cct gca gct gac gac gac aac aac aag	48
Met Thr Ala Val Asp Leu Met Pro Ala Ala Asp Asp Asp Asn Asn Lys	
1 5 10 15	
cag tca tcc acc ggc ctc ctc cac ccc cac cag ctc ccc gcc gcc gcc	96
Gln Ser Ser Thr Gly Leu Leu His Pro His Gln Leu Pro Ala Ala Ala	
20 25 30	
gac aac gcc ata cta cac aat acc agg cat cca ttc att tct act act	144
Asp Asn Ala Ile Leu His Asn Thr Arg His Pro Phe Ile Ser Thr Thr	
35 40 45	
cta gct aat tca ttc ttc aat cga tcg atc agc gcg cga gta att cat	192
Leu Ala Asn Ser Phe Phe Asn Arg Ser Ile Ser Ala Arg Val Ile His	
50 55 60	
tct tcg att tgc agg cgg ctg gag ggg aag gtg gcc atc gtc acc gcc	240
Ser Ser Ile Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly	
65 70 75 80	
ggc tcg cgt ggc atc ggc gaa gcc atc gta agg gcc ttc gtt cac cac	288
Gly Ser Arg Gly Ile Gly Glu Ala Ile Val Arg Ala Phe Val His His	
85 90 95	
ggc gct ctc gtc gtc gtc gcc gac atc gac gac gcc ggg gcc cac gcg	336
Gly Ala Leu Val Val Val Ala Asp Ile Asp Asp Ala Gly Gly His Ala	
100 105 110	
ctg gcc gcc gcg ctc ggc ccg cac gcc tgc acc tac gtc cac tgc gac	384
Leu Ala Ala Leu Gly Pro His Ala Cys Thr Tyr Val His Cys Asp	
115 120 125	
gtg gcc gag gag gcc gac gtg gaa cgc gcc gtc gcc acc acg ctg gag	432
Val Ala Glu Glu Ala Asp Val Glu Arg Ala Val Ala Thr Thr Leu Glu	
130 135 140	
cag cac ggc cgc ctg gac gtg ctg tgc aac aac gcc ggg gtg ctg gcc	480
Gln His Gly Arg Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly	
145 150 155	

## PhoenixTemp32470.tmp.txt

145	cg	cg	ac	cg	gg	150	aa	ag	at	cg	155	ct	ga	gc	gc	160		
Arg	Gln	Thr	Arg	Gly	Ala	Lys	Ser	Ile	Ala	Leu	Ser	Leu	Asp	Ala	Ala	Glu		528
				165					170							175		
ttc	gcc	cg	gtg	ctg	cg	gtc	aac	cg	ctg	ggc	gcc	gcc	ctc	ggc	atg			576
Phe	Ala	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met			
			180					185					190					
aag	cac	cg	gcg	cgt	gcc	atg	gtg	ccc	cg	cg	tcc	ggg	agc	atc	gtg			624
Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	Ser	Gly	Ser	Ile	Val			
			195				200					205						
tcg	gtg	gcg	agc	gtg	gcg	ggc	gtg	atg	ggc	ggc	ctc	ggc	ccg	cac	gcg			672
Ser	Val	Ala	Ser	Val	Ala	Gly	Val	Met	Gly	Gly	Leu	Gly	Pro	His	Ala			
			210			215					220							
tac	acg	gcc	tcc	aag	cac	gcc	cta	gtg	ggg	ctc	acc	aag	aac	gcc	gcc			720
Tyr	Thr	Ala	Ser	Lys	His	Ala	Leu	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala			
				230					235						240			
tgc	gag	ctc	ggg	gag	cac	ggc	atc	cg	gtc	aac	tgc	atc	tcc	ccc	ttc			768
Cys	Glu	Leu	Gly	Glu	His	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe			
			245						250					255				
ggc	gtg	gcg	acg	ccg	atg	ctg	gtg	aac	cg	tgg	cg	cag	ggg	cag	gga			816
Gly	Val	Ala	Thr	Pro	Met	Leu	Val	Asn	Ala	Trp	Arg	Gln	Gly	Gln	Gly			
			260					265					270					
gga	gat	cac	gcg	gat	gag	gat	cag	gcg	gcg	gcg	agc	gag	gag	gag	gag			864
Gly	Asp	His	Ala	Asp	Glu	Asp	Gln	Ala	Ala	Ala	Ser	Glu	Glu	Glu	Glu			
			275				280					285						
gtg	gag	aag	atg	gag	gag	atg	gtg	cg	agg	ctg	gcg	acg	ctc	aag	ggg			912
Val	Glu	Lys	Met	Glu	Glu	Met	Val	Arg	Arg	Leu	Ala	Thr	Leu	Lys	Gly			
			290			295				300								
ccg	acg	ctg	cg	gca	ggc	gac	atc	gcg	gag	gcg	gcg	gtg	ttc	ctg	gcc			960
Pro	Thr	Leu	Arg	Ala	Gly	Asp	Ile	Ala	Glu	Ala	Ala	Val	Phe	Leu	Ala			
				310					315						320			
agc	gac	gag	tcc	agg	tac	gtg	tcc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc			1008
Ser	Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly			
				325					330					335				
ggc	gtc	acc	acc	tcc	aga	aac	gtc	atc	ggc	ctc	tga							1044
Gly	Val	Thr	Thr	Ser	Arg	Asn	Val	Ile	Gly	Leu								
			340					345										

&lt;210&gt; 1830

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1830

Met	Thr	Ala	Val	Asp	Leu	Met	Pro	Ala	Ala	Asp	Asp	Asp	Asn	Asn	Lys
1				5					10					15	
Gln	Ser	Ser	Thr	Gly	Leu	Leu	His	Pro	His	Gln	Leu	Pro	Ala	Ala	Ala
			20					25					30		
Asp	Asn	Ala	Ile	Leu	His	Asn	Thr	Arg	His	Pro	Phe	Ile	Ser	Thr	Thr
		35					40				45				
Leu	Ala	Asn	Ser	Phe	Phe	Asn	Arg	Ser	Ile	Ser	Ala	Arg	Val	Ile	His
		50				55					60				
Ser	Ser	Ile	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly
65					70					75				80	
Gly	Ser	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Ala	Phe	Val	His	His
			85						90					95	
Gly	Ala	Leu	Val	Val	Ala	Asp	Ile	Asp	Asp	Ala	Gly	Gly	His	Ala	
		100					105					110			
Leu	Ala	Ala	Ala	Leu	Gly	Pro	His	Ala	Cys	Thr	Tyr	Val	His	Cys	Asp
		115				120					125				
Val	Ala	Glu	Glu	Ala	Asp	Val	Glu	Arg	Ala	Val	Ala	Thr	Thr	Leu	Glu
	130				135					140					
Gln	His	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	Ala	Gly	Val	Leu	Gly
145				150					155					160	
Arg	Gln	Thr	Arg	Gly	Ala	Lys	Ser	Ile	Ala	Ser	Leu	Asp	Ala	Ala	Glu
			165						170					175	
Phe	Ala	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met
			180					185					190		
Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	Ser	Gly	Ser	Ile	Val

## PhoenixTemp32470.tmp.txt

195  
 Ser Val Ala Ser Val Ala Gly 200 Val Met Gly Gly Leu 205 Gly Pro His Ala  
 210 Tyr Thr Ala Ser Lys His 215 Ala Leu Val Gly Leu 220 Thr Lys Asn Ala Ala  
 225 Cys Glu Leu Gly Glu 230 His Gly Ile Arg Val 235 Asn Cys Ile Ser Pro Phe  
 Gly Val Ala Thr 245 Pro Met Leu Val Asn 250 Ala Trp Arg Gln Gly 255 Gln Gly  
 Gly Asp His Ala Asp Glu Asp Gln 265 Ala Ala Ala Ser Glu 270 Glu Glu Glu  
 Val Glu Lys Met Glu Glu Met Val Arg Arg Leu Ala 285 Thr Leu Lys Gly  
 290 Pro Thr Leu Arg Ala Gly 295 Asp Ile Ala Glu Ala 300 Val Phe Leu Ala  
 305 Ser Asp Glu Ser Arg Tyr Val Ser Gly His 315 Asn Leu Val Val Asp 320 Gly  
 Gly Val Thr Thr 325 Ser Arg Asn Val Ile 330 Gly Leu 335

&lt;210&gt; 1831

&lt;211&gt; 1134

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1134)

&lt;400&gt; 1831

atg	agg	gtt	cct	cct	ctt	cgt	gcc	acc	acg	gct	ctc	ctg	gcc	acc	ctc	48
Met	Arg	Val	Pro	Pro	Leu	Arg	Ala	Thr	Thr	Ala	Leu	Leu	Ala	Thr	Leu	
1				5					10					15		
ctg	gtc	gcc	gcc	tgc	ttc	cag	gat	ctc	acc	gtc	gct	gca	gac	ggc	ggc	96
Leu	Val	Ala	Ala	Ser	Phe	Gln	Asp	Leu	Thr	Val	Ala	Ala	Asp	Gly	Gly	
			20					25					30			
ggc	ggc	gtg	gtt	ccg	gtc	ccg	gat	agc	gtg	tgc	gac	gcc	aag	tgc	cag	144
Gly	Gly	Val	Val	Pro	Val	Pro	Asp	Ser	Val	Cys	Asp	Ala	Lys	Cys	Gln	
		35				40					45					
aag	cgg	tgc	tcg	ctg	aag	gtg	gcc	ggg	cgg	tgc	atg	ggg	ctg	tgc	aag	192
Lys	Arg	Cys	Ser	Leu	Lys	Val	Ala	Gly	Arg	Cys	Met	Gly	Leu	Cys	Lys	
	50					55					60					
atg	tgc	tgc	cac	gac	tgc	ggc	ggc	tgc	gtg	ccg	tcg	ggg	ccg	tac	gcc	240
Met	Cys	Cys	His	Asp	Cys	Gly	Gly	Cys	Val	Pro	Ser	Gly	Pro	Tyr	Ala	
	65				70				75					80		
agc	aag	gac	gag	tgc	ccc	tgc	tac	cgc	gac	atg	gtc	tcc	ccc	aag	agc	288
Ser	Lys	Asp	Glu	Cys	Pro	Cys	Tyr	Arg	Asp	Met	Val	Ser	Pro	Lys	Ser	
			85					90						95		
cga	cgg	ccc	aag	tgc	ccg	agg	gag	aag	agc	gga	gct	atg	gga	gct	ctg	336
Arg	Arg	Pro	Lys	Cys	Pro	Arg	Glu	Lys	Ser	Gly	Ala	Met	Gly	Ala	Leu	
			100					105					110			
tgt	ggt	ttg	ggc	agc	cac	ttc	tcg	act	gcc	tcg	agt	tgc	cag	agg	tta	384
Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	Cys	Gln	Arg	Leu	
		115					120					125				
ccc	ggc	aag	gtc	gcg	gtg	atc	acc	ggc	gcg	gcc	agc	ggc	atc	ggc	aag	432
Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	
	130					135					140					
gcg	acg	gcc	gcc	gag	ttc	atc	cgc	aac	ggc	gcc	aag	gtc	atc	ctg	gcc	480
Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	
	145				150				155					160		
gat	ata	cag	gac	gac	ctc	ggc	cgc	gcc	gtc	gcg	gcc	gag	ctg	ggc	ccg	528
Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	
			165						170					175		
gac	gcc	gcg	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	atc	gcc	576
Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	
			180					185					190			
gcg	gcg	gca	acg	ccg	gca	tct	cgg	ggc	tcc	tcg	gcg	ccc	gcg	ccg	ctc	624
Ala	Ala	Ala	Thr	Pro	Ala	Ser	Arg	Gly	Ser	Ser	Ala	Pro	Ala	Pro	Leu	
		195					200					205				

## PhoenixTemp32470.tmp.txt

gcg	tcg	ctc	gac	ctc	gcg	gac	ttc	gac	cgc	gtc	atg	gcg	gcc	aac	gcg	672
Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Ala	Asn	Ala	
	210					215					220					
cgg	tcc	gcg	gtg	gcg	gcc	gtc	aag	cac	gcc	gcg	cgc	gtc	atg	gtg	ccc	720
Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	
225					230					235					240	
cgg	cgc	ggc	ggc	tgc	gtc	ctc	tgc	acg	ggg	agg	acc	acg	ggc	atg	ctc	768
Arg	Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	Gly	Met	Leu	
				245					250					255		
ggc	ggg	ctc	gcg	gcg	ctg	ccg	tac	agc	ctc	tcg	aag	gcg	gcg	gtg	gtg	816
Gly	Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	Ala	Val	Val	
			260					265					270			
ggc	gtg	gtg	cgg	ctg	gcg	gcg	gcc	gag	ctg	gcg	cgc	tcc	ggc	gtg	cgc	864
Gly	Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	Gly	Val	Arg	
		275					280					285				
gtg	aac	gcc	atc	tcg	ccg	cac	gcc	atc	gcg	acg	ccg	ctg	ctg	gtc	cgg	912
Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	Leu	Val	Arg	
	290					295					300					
tcg	ctg	gcg	agg	atg	aac	ccg	ggg	gtc	agc	gac	gag	cag	ctg	aag	gag	960
Ser	Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	Leu	Lys	Glu	
305					310					315					320	
atg	gtg	gag	agg	ggg	atg	agc	gag	ctc	cat	ggc	gcg	gtg	ctg	gag	ctg	1008
Met	Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	Leu	Glu	Leu	
				325					330					335		
gag	gac	gtg	gcg	agg	gcg	gcc	gtc	tac	ctg	gcg	tcc	gac	gag	gcc	aag	1056
Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	
			340				345					350				
ttc	gtc	acc	ggg	cag	aac	cac	gtc	atc	gac	ggc	ggg	ttc	acg	gtc	ggg	1104
Phe	Val	Thr	Gly	Gln	Asn	His	Val	Ile	Asp	Gly	Gly	Phe	Thr	Val	Gly	
		355					360					365				
aag	ccg	atg	gac	atg	cgg	gtt	cca	cgt	tga							1134
Lys	Pro	Met	Asp	Met	Arg	Val	Pro	Arg								
	370					375										

&lt;210&gt; 1832

&lt;211&gt; 377

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1832

Met	Arg	Val	Pro	Pro	Leu	Arg	Ala	Thr	Thr	Ala	Leu	Leu	Ala	Thr	Leu	
1				5					10					15		
Leu	Val	Ala	Ala	Ser	Phe	Gln	Asp	Leu	Thr	Val	Ala	Ala	Asp	Gly	Gly	
		20					25						30			
Gly	Gly	Val	Val	Pro	Val	Pro	Asp	Ser	Val	Cys	Asp	Ala	Lys	Cys	Gln	
		35					40					45				
Lys	Arg	Cys	Ser	Leu	Lys	Val	Ala	Gly	Arg	Cys	Met	Gly	Leu	Cys	Lys	
	50					55				60						
Met	Cys	Cys	His	Asp	Cys	Gly	Gly	Cys	Val	Pro	Ser	Gly	Pro	Tyr	Ala	
65				70					75					80		
Ser	Lys	Asp	Glu	Cys	Pro	Cys	Tyr	Arg	Asp	Met	Val	Ser	Pro	Lys	Ser	
			85					90					95			
Arg	Arg	Pro	Lys	Cys	Pro	Arg	Glu	Lys	Ser	Gly	Ala	Met	Gly	Ala	Leu	
		100					105					110				
Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	Cys	Gln	Arg	Leu	
		115					120					125				
Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	
	130					135					140					
Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	
145				150					155					160		
Asp	Ile	Gln	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro		
			165				170					175				
Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	
		180					185					190				
Ala	Ala	Ala	Thr	Pro	Ala	Ser	Arg	Gly	Ser	Ser	Ala	Pro	Ala	Pro	Leu	
		195					200				205					
Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Ala	Asn	Ala	
	210					215					220					
Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	

## PhoenixTemp32470.tmp.txt

225 Arg Arg Gly Gly Cys 230 Val Leu Cys Thr Gly 235 Ser Thr Thr Gly Met 240  
 Gly Gly Leu Ala Ala Leu Pro Tyr Ser Leu Ser Lys Ala Ala Val Val  
 Gly Val Val Arg Leu Ala Ala Ala Glu Leu Ala Arg Ser Gly Val Arg  
 Val Asn Ala Ile Ser Pro His Ile Ala Thr Pro Leu Leu Val Arg  
 Ser Leu Ala Arg Met Asn Pro Gly Val Ser Asp Glu Gln Leu Lys Glu  
 305 Met Val Glu Arg Gly Met Ser Glu Leu His Gly Ala Val Leu Glu Leu  
 Glu Asp Val Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys  
 Phe Val Thr Gly Gln Asn His Val Ile Asp Gly Gly Phe Thr Val Gly  
 Lys Pro Met Asp Met Arg Val Pro Arg  
 370 375

&lt;210&gt; 1833

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;400&gt; 1833

atg gag aag aag aag cag aag aga cag atc aaa gat caa gat gtt cag	48
Met Glu Lys Lys Lys Gln Lys Arg Gln Ile Lys Asp Gln Asp Val Gln	
1 5 10 15	
agc att gca gat cgt cct cag ggg ttg cct ggg aag gtg gcg gtg atc	96
Ser Ile Ala Asp Arg Pro Gln Gly Leu Pro Gly Lys Val Ala Val Ile	
20 25 30	
acc ggc gcg gca acc ggc atc ggc aag gcg acc gcg gcg gag ttc gtc	144
Thr Gly Ala Ala Thr Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Val	
35 40 45	
agg aat ggc gcc aag gtc atc ctc gcc gac gtc cag gac gac gtc ggc	192
Arg Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp Val Gly	
50 55 60	
cgc gcc gtc gcc tcg gag ctc ggc gcg gac gcg gcg tcg tac aac cgc	240
Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ala Ser Tyr Asn Arg	
65 70 75 80	
tgc gac gtc acc gac gag gcg cag gtc gcg gcc cgt gga ctc gcc	288
Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Arg Gly Leu Ala	
85 90 95	
gtt gcc cgg aag ggg caa ctc gac gtc atg gtc aac aac gcc ggc atc	336
Val Ala Arg Lys Gly Gln Leu Asp Val Met Val Asn Asn Ala Gly Ile	
100 105 110	
gtg ggc tcc ctg tcg cgc ccc ccg ggc gcc ctc gac ctc gcc gac	384
Val Gly Ser Leu Ser Arg Pro Pro Leu Gly Ala Leu Asp Leu Ala Asp	
115 120 125	
ttc gac gcc gtc atg gcg gtg aac acg cgc ggc gtc ctc gcg ggc gtc	432
Phe Asp Ala Val Met Ala Val Asn Thr Arg Gly Val Leu Ala Gly Val	
130 135 140	
aag cac gcc gcg cgc gtc atg gcg ccg cgc cgc gcc acc atc atc	480
Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Arg Gly Thr Ile Ile	
145 150 155 160	
tgc gtg gcg agc gtc gcc ggg gtg ctc ggc agc gtg acg ccg cac ccg	528
Cys Val Ala Ser Val Ala Gly Val Leu Gly Ser Val Thr Pro His Pro	
165 170 175	
tac agc gtg tcc aag gcc gcc gtg ctc ggc gcg gtc cgc gcc gcc gcc	576
Tyr Ser Val Ser Lys Ala Ala Val Leu Gly Ala Val Arg Ala Ala Ala	
180 185 190	
ggc gag atg gcg cgc tcc ggc gtg cgc gtg aac gcc atc tcc ccc aac	624
Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser Pro Asn	
195 200 205	

## PhoenixTemp32470.tmp.txt

tac	atc	ccc	acg	ccg	ctg	gtg	atg	cgc	atc	atg	gcg	gag	tgg	tac	ccc	672
Tyr	Ile	Pro	Thr	Pro	Leu	Val	Met	Arg	Ile	Met	Ala	Glu	Trp	Tyr	Pro	
210						215					220					
ggg	gcg	agc	gcc	gac	gag	cac	cgc	cgc	gtc	gtg	gag	cgg	gag	atc	aac	720
Gly	Ala	Ser	Ala	Asp	Glu	His	Arg	Arg	Val	Val	Glu	Arg	Glu	Ile	Asn	
225					230					235					240	
gag	atg	gag	ggc	gcg	acg	ctg	gag	ccc	gag	gac	atc	gcg	agg	gcg	gcg	768
Glu	Met	Glu	Gly	Ala	Thr	Leu	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Ala	Ala	
				245					250					255		
gtg	tac	ctg	gcc	tcc	gac	gag	gcc	aag	tac	gtg	aac	ggc	cac	aac	ctc	816
Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	
			260					265					270			
gtc	gtc	gac	ggc	ggg	tac	acc	gtc	ggc	aag	gcg	ccc	aac	ctg	ccg	gcg	864
Val	Val	Asp	Gly	Gly	Tyr	Thr	Val	Gly	Lys	Ala	Pro	Asn	Leu	Pro	Ala	
		275					280					285				
ccg	ccg	caa	taa													876
Pro	Pro	Gln														
290																

&lt;210&gt; 1834

&lt;211&gt; 291

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1834

Met	Glu	Lys	Lys	Lys	Gln	Lys	Arg	Gln	Ile	Lys	Asp	Gln	Asp	Val	Gln	
1				5					10					15		
Ser	Ile	Ala	Asp	Arg	Pro	Gln	Gly	Leu	Pro	Gly	Lys	Val	Ala	Val	Ile	
			20					25					30			
Thr	Gly	Ala	Ala	Thr	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Val	
		35					40					45				
Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Val	Gln	Asp	Asp	Val	Gly	
	50					55					60					
Arg	Ala	Val	Ala	Ser	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Asn	Arg	
65					70				75					80		
Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Arg	Gly	Leu	Ala	
				85					90					95		
Val	Ala	Arg	Lys	Gly	Gln	Leu	Asp	Val	Met	Val	Asn	Asn	Ala	Gly	Ile	
			100					105					110			
Val	Gly	Ser	Leu	Ser	Arg	Pro	Pro	Leu	Gly	Ala	Leu	Asp	Leu	Ala	Asp	
		115					120					125				
Phe	Asp	Ala	Val	Met	Ala	Val	Asn	Thr	Arg	Gly	Val	Leu	Ala	Gly	Val	
	130					135					140					
Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Arg	Gly	Thr	Ile	Ile	
145					150				155					160		
Cys	Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Ser	Val	Thr	Pro	His	Pro	
			165						170					175		
Tyr	Ser	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Ala	Val	Arg	Ala	Ala	Ala	
			180					185					190			
Gly	Glu	Met	Ala	Arg	Ser	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	Asn	
		195					200					205				
Tyr	Ile	Pro	Thr	Pro	Leu	Val	Met	Arg	Ile	Met	Ala	Glu	Trp	Tyr	Pro	
	210					215					220					
Gly	Ala	Ser	Ala	Asp	Glu	His	Arg	Arg	Val	Val	Glu	Arg	Glu	Ile	Asn	
225					230					235					240	
Glu	Met	Glu	Gly	Ala	Thr	Leu	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Ala	Ala	
			245						250					255		
Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	
			260					265					270			
Val	Val	Asp	Gly	Gly	Tyr	Thr	Val	Gly	Lys	Ala	Pro	Asn	Leu	Pro	Ala	
		275					280					285				
Pro	Pro	Gln														
290																

&lt;210&gt; 1835

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp



## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 1835

atg	acg	tcg	act	tcg	cct	gaa	agt	cta	atc	gcc	ggt	gga	ttc	tcc	acg	48
Met	Thr	Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	
1				5					10					15		
gcg	gcg	agc	tcc	cac	cag	agg	ttg	gcc	ggc	aag	gtg	gcc	gtc	atc	acc	96
Ala	Ala	Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	
			20					25					30			
ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	acc	gcc	gcg	gag	ttc	atc	agg	144
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	
			35				40					45				
aac	ggc	gcc	aag	gtg	atc	atc	acc	gac	gtc	aac	gac	gac	ctc	ggc	cac	192
Asn	Gly	Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	
	50				55					60						
gcc	gcg	gcg	gcg	gag	ctc	ggc	ccg	gac	gcc	acg	tac	gcg	cgc	tgc	gac	240
Ala	Ala	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	
	65				70					75				80		
gtc	gcc	gac	gag	gcg	cag	gtc	gcc	gcc	gcc	gtc	gac	ctc	gcc	gtg	gcg	288
Val	Ala	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
				85			90							95		
cgc	cac	ggc	cgc	ctc	gac	gtc	atg	cac	aac	gcc	gcc	atc	ccg	ggg		336
Arg	His	Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	
			100					105					110			
agg	ttc	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ttc	gcc	gat	ttc	gac	384
Arg	Phe	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Phe	Ala	Asp	Phe	Asp	
			115				120					125				
gcc	atg	atg	gcc	gtg	aac	ccc	cgc	gcg	tcg	ctc	gcc	ggc	atc	aag	caa	432
Ala	Met	Met	Ala	Val	Asn	Pro	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	Gln	
	130					135					140					
gcc	gcg	cgc	gtc	atg	gcg	ccc	cgc	cgc	gcc	ggc	gtc	atc	ctc	tgc	acg	480
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	
	145				150					155				160		
gcc	agc	gcc	gtc	ggc	gtc	ctc	ccg	ctc	ccg	gcg	gtc	gcc	acg	cac	tcc	528
Ala	Ser	Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	
				165			170							175		
atc	acc	aag	gcc	acc	atc	atc	gcc	atc	gtg	cgc	gca	gcg	gcg	gag	ccc	576
Ile	Thr	Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	
			180					185						190		
ctg	gcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	ggc	gcc	gtc	624
Leu	Ala	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	
			195				200					205				
agg	acg	ccg	gtc	ctg	cag	ggc	aag	gtg	tcg	gtg	atg	tcg	gcg	tcg	tct	672
Arg	Thr	Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	
			210			215					220					
cct	acc	atg	agc	gac	gag	ctg	aag	cag	atg	atc	gac	gtc	gac	gcg	aac	720
Pro	Thr	Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	
				230						235				240		
gac	atg	atg	atg	ggg	ccg	gag	gag	gtg	gcc	atg	gcg	gcg	gtg	tac	ctc	768
Asp	Met	Met	Met	Gly	Pro	Glu	Glu	Val	Ala	Met	Ala	Ala	Val	Tyr	Leu	
				245					250					255		
gcc	tcc	gac	gag	gcc	agg	tac	gtg	acc	ggc	cac	aac	ctc	gtc	gtc	gac	816
Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	
			260				265						270			
ggc	ggg	tac	acc	gtg	cac	aaa	gga	gct	gac	aca	ccg	gcg	gcg	cgt		861
Gly	Gly	Tyr	Thr	Val	His	Lys	Gly	Ala	Asp	Thr	Pro	Ala	Ala	Arg		
		275					280					285				
tga																864

&lt;210&gt; 1836

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1836

## PhoenixTemp32470.tmp.txt

```

Met Thr Ser Thr Ser Pro Glu Ser Leu Ile Ala Gly Gly Phe Ser Thr
1      5      10      15      20      25      30      35      40      45      50      55      60      65      70      75      80      85      90      95
Ala Ala Ser Ser His Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr
Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Ile Arg
Asn Gly Ala Lys Val Ile Ile Thr Asp Val Asn Asp Asp Leu Gly His
Ala Ala Ala Ala Glu Leu Gly Pro Asp Ala Thr Tyr Ala Arg Cys Asp
65      70      75      80      85      90      95      100      105      110      115      120      125      130      135      140      145      150      155      160
Val Ala Asp Glu Ala Gln Val Ala Ala Ala Val Asp Leu Ala Val Ala
Arg His Gly Arg Leu Asp Val Met His Asn Asn Ala Ala Ile Pro Gly
Arg Phe Pro Gln Asp Asp Met Ala Ser Val Asp Phe Ala Asp Phe Asp
Ala Met Met Ala Val Asn Pro Arg Ala Ser Leu Ala Gly Ile Lys Gln
Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Val Ile Leu Cys Thr
145      150      155      160      165      170      175      180      185      190      195      200      205      210      215      220      225      230      235      240
Ala Ser Ala Val Gly Val Leu Pro Leu Pro Ala Val Ala Thr His Ser
Ile Thr Lys Ala Thr Ile Ile Ala Ile Val Arg Ala Ala Ala Glu Pro
Leu Ala Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Gly Ala Val
Arg Thr Pro Val Leu Gln Gly Lys Val Ser Val Met Ser Ala Ser Ser
Pro Thr Met Ser Asp Glu Leu Lys Gln Met Ile Asp Val Asp Ala Asn
225      230      235      240      245      250      255      260      265      270      275      280      285
Asp Met Met Met Gly Pro Glu Glu Val Ala Met Ala Ala Val Tyr Leu
Ala Ser Asp Glu Ala Arg Tyr Val Thr Gly His Asn Leu Val Val Asp
Gly Gly Tyr Thr Val His Lys Gly Ala Asp Thr Pro Ala Ala Arg

```

```

<210> 1837
<211> 1167
<212> DNA
<213> Vitis vinifera

```

```

<220>
<221> CDS
<222> (1)..(1167)

```

```

<220>
<221> misc_feature
<222> (202)..(202)
<223> y is t or c

```

```

<220>
<221> misc_feature
<222> (250)..(250)
<223> s is g or c

```

```

<220>
<221> misc_feature
<222> (431)..(431)
<223> k is g or t

```

```

<220>
<221> misc_feature
<222> (576)..(576)
<223> r is g or a

```

```

<400> 1837
atg gcc ttg tgg aat aat gtt gaa att gag att gat ttg gag gtt gca
Met Ala Leu Trp Asn Asn Val Glu Ile Glu Ile Asp Leu Glu Val Ala

```

## PhoenixTemp32470.tmp.txt

1	5	10	15													
tgt Cys	gag Glu	gtt Val	gta Val	gtg Val	gag Glu	atg Met	gcc Ala	aat Asn	gtt Val	gaa Glu	gtt Val	gtt Val	gtg Val	gct Ala	gaa Glu	96
gag Glu	atg Met	atg Met	aaa Lys	act Thr	gtt Val	gat Asp	tat Tyr	gtg Val	cat His	gtg Val	gtg Val	gag Glu	att Ile	gga Gly	aat Asn	144
aca Thr	tat Tyr	caa Gln	aac Asn	agt Ser	gga Gly	aac Asn	act Thr	tta Leu	ttg Leu	ggc Gly	atc Ile	caa Gln	att Ile	cat His	ggc Gly	192
ttc Phe	aca Thr	tgc Cys	yat Xaa	tcg Ser	cgg Arg	ttt Phe	gga Gly	caa Gln	gga Gly	gaa Glu	cca Pro	ctg Leu	ttg Leu	ccg Pro	aaa Lys	240
gtg Val	ctc Leu	gga Gly	sac Xaa	ttt Phe	cgt Arg	gaa Glu	gga Gly	gtt Val	ttg Leu	agt Ser	aag Lys	att Ile	ctt Leu	att Ile	ttg Leu	288
gcg Ala	gtt Val	cgc Arg	tcc Ser	cta Leu	gga Gly	gtg Val	cga Arg	gac Asp	aat Asn	gtt Val	gaa Glu	gat Asp	ggg Gly	agc Ser	aaa Lys	336
gcc Ala	atg Met	gca Ala	gcc Ala	tcg Ser	tca Ser	ttt Phe	ctt Leu	tct Ser	gta Val	ttc Phe	aca Thr	aga Arg	agg Arg	cta Leu	gag Glu	384
ggc Gly	aag Lys	gtg Val	gca Ala	ctc Leu	ata Ile	acc Thr	gga Gly	ggg Gly	gcc Ala	agc Ser	ggc Gly	atc Ile	ggc Gly	aaa Lys	tkc Xaa	432
act Thr	gct Ala	gaa Glu	acc Thr	ttc Phe	acc Thr	caa Gln	cac His	gga Gly	gcc Ala	aaa Lys	gtg Val	gtc Val	att Ile	gct Ala	gac Asp	480
atc Ile	caa Gln	gac Asp	gaa Glu	ctg Leu	ggg Gly	cac His	tcc Ser	gtg Val	att Ile	gaa Glu	gct Ala	cta Leu	ggc Gly	caa Gln	acc Thr	528
aat Asn	gca Ala	tca Ser	tac Tyr	gtc Val	cac His	tgt Cys	gat Asp	gtc Val	act Thr	gat Asp	gaa Glu	tcc Ser	caa Gln	atc Ile	aar Lys	576
gct Ala	gcc Ala	gtt Val	gac Asp	aag Lys	act Thr	gca Ala	gca Ala	acc Thr	cac His	gga Gly	aag Lys	ctg Leu	gac Asp	atc Ile	atg Met	624
ttc Phe	aac Asn	aat Asn	gcg Ala	gga Gly	ata Ile	gtt Val	aac Asn	aac Asn	tac Tyr	aag Lys	ccc Pro	cgc Arg	att Ile	atg Met	gat Asp	672
aac Asn	gag Glu	aag Lys	gca Ala	gac Asp	ttt Phe	cgt Glu	gtc Arg	ctt Leu	agc Ser	atc Ile	aac Asn	gtc Val	acc Thr	ggg Gly	ggt Gly	720
gtt Val	ttc Phe	ctg Leu	ggc Gly	atg Met	aag Lys	cac His	gct Ala	gcc Ala	agg Arg	gtc Val	atg Met	gtt Val	ccg Pro	gca Ala	aaa Lys	768
agt Ser	ggg Gly	agc Ser	ata Ile	atc Ile	tca Ser	acc Thr	gcc Ala	agt Ser	gta Val	agc Ser	tcg Ser	aat Asn	gta Val	ggg Gly	gct Ala	816
gcg Ala	gct Ala	aca Thr	cat His	gct Ala	tac Tyr	tgc Cys	tgc Cys	tct Ser	aag Lys	cat His	gct Ala	gta Val	tta Leu	ggg Gly	ctc Leu	864
acc Thr	aga Arg	aat Asn	gct Ala	gca Ala	atc Ile	gag Glu	ctt Leu	gga Gly	caa Gln	ttt Phe	gga Gly	att Ile	agg Arg	gtt Val	aat Asn	912
tgc Cys	tta Leu	tca Ser	ccc Pro	tat Tyr	gca Ala	ctt Leu	gca Ala	acg Thr	cct Pro	tta Leu	gct Ala	acc Thr	aat Asn	ttt Phe	ctt Leu	960
aat Asn	ctt Leu	act Thr	gct Ala	gaa Glu	gag Glu	ctg Leu	gag Glu	act Thr	gcc Ala	atg Met	aat Asn	gcg Ala	acc Thr	gcc Ala	aac Asn	1008
ctt Leu	aag Lys	ggc Gly	gtg Val	aca Thr	ctt Leu	aag Lys	gca Ala	caa Gln	gat Asp	gtg Val	gcc Ala	aac Asn	gct Ala	gcg Ala	ctt Leu	1056
tat Tyr	tta Leu	gcg Ala	agt Ser	gat Asp	gag Glu	tcc Ser	aga Arg	tat Tyr	gtg Val	agt Ser	ggg Gly	cac His	aac Asn	ctt Leu	ttc Phe	1104
ata Ile	gat Asp	ggg Gly	ggg Gly	ttc Phe	act Thr	gtc Val	gct Ala	aat Asn	ccc Pro	tca Ser	ttc Phe	ctg Leu	ttc Phe	cag Gln		1152

370  
tat cca gac tct tga  
Tyr Pro Asp Ser  
385

375 380

1167

<210> 1838  
<211> 388  
<212> PRT  
<213> Vitis vinifera

<220>  
<221> misc\_feature  
<222> (68)..(68)  
<223> The Xaa at location 68 stands for His, or Tyr.

<220>  
<221> misc\_feature  
<222> (84)..(84)  
<223> The Xaa at location 84 stands for Asp, or His.

<220>  
<221> misc\_feature  
<222> (144)..(144)  
<223> The Xaa at location 144 stands for Cys, or Phe.

<400> 1838  
Met Ala Leu Trp Asn Asn Val Glu Ile Glu Ile Asp Leu Glu Val Ala  
1 5 10 15  
Cys Glu Val Val Glu Met Ala Asn Val Glu Val Val Val Ala Glu  
20 25 30  
Glu Met Met Lys Thr Val Asp Tyr Val His Val Val Glu Ile Gly Asn  
35 40 45  
Thr Tyr Gln Asn Ser Gly Asn Thr Leu Leu Gly Ile Gln Ile His Gly  
50 55 60  
Phe Thr Cys Xaa Ser Arg Phe Gly Gln Gly Glu Pro Leu Leu Pro Lys  
65 70 75 80  
Val Leu Gly Xaa Phe Arg Glu Gly Val Leu Ser Lys Ile Leu Ile Leu  
85 90 95  
Ala Val Arg Ser Leu Gly Val Arg Asp Asn Val Glu Asp Gly Ser Lys  
100 105 110  
Ala Met Ala Ala Ser Ser Phe Leu Ser Val Phe Thr Arg Arg Leu Glu  
115 120 125  
Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Lys Xaa  
130 135 140  
Thr Ala Glu Thr Phe Thr Gln His Gly Ala Lys Val Val Ile Ala Asp  
145 150 155 160  
Ile Gln Asp Glu Leu Gly His Ser Val Ile Glu Ala Leu Gly Gln Thr  
165 170 175  
Asn Ala Ser Tyr Val His Cys Asp Val Thr Asp Glu Ser Gln Ile Lys  
180 185 190  
Ala Ala Val Asp Lys Thr Ala Ala Thr His Gly Lys Leu Asp Ile Met  
195 200 205  
Phe Asn Asn Ala Gly Ile Val Asn Asn Tyr Lys Pro Arg Ile Met Asp  
210 215 220  
Asn Glu Lys Ala Asp Phe Glu Arg Val Leu Ser Ile Asn Val Thr Gly  
225 230 235 240  
Val Phe Leu Gly Met Lys His Ala Ala Arg Val Met Val Pro Ala Lys  
245 250 255  
Ser Gly Ser Ile Ile Ser Thr Ala Ser Val Ser Ser Asn Val Gly Ala  
260 265 270  
Ala Ala Thr His Ala Tyr Cys Cys Ser Lys His Ala Val Leu Gly Leu  
275 280 285  
Thr Arg Asn Ala Ala Ile Glu Leu Gly Gln Phe Gly Ile Arg Val Asn  
290 295 300  
Cys Leu Ser Pro Tyr Ala Leu Ala Thr Pro Leu Ala Thr Asn Phe Leu  
305 310 315 320  
Asn Leu Thr Ala Glu Glu Leu Glu Thr Ala Met Asn Ala Thr Ala Asn  
325 330 335  
Leu Lys Gly Val Thr Leu Lys Ala Gln Asp Val Ala Asn Ala Ala Leu

## PhoenixTemp32470.tmp.txt

Tyr Leu Ala 340 Ser Asp Glu Ser Arg 345 Tyr Val Ser Gly His 350 Asn Leu Phe  
 Ile Asp Gly 355 Gly Phe Thr Val 360 Ala Asn Pro Ser Phe 365 His Leu Phe Gln  
 Tyr 370 Pro Asp Ser 375 380  
 Tyr 385

<210> 1839  
 <211> 777  
 <212> DNA  
 <213> Agrobacterium tumefaciens

<220>  
 <221> CDS  
 <222> (1)..(777)  
 <223> transl\_table=11

<400> 1839  
 atg act tat gaa agc ttg ctg aaa agg ttc cgc ttg gac aag aaa gtt 48  
 Met Thr Tyr Glu Ser Leu Leu Lys Arg Phe Arg Leu Asp Lys Lys Val  
 1 5 10 15  
 gct ttg atc acc ggc ggg acg cgc ggc att ggt cta gcg acg gct cac 96  
 Ala Leu Ile Thr Gly Gly Thr Arg Gly Ile Gly Leu Ala Thr Ala His  
 20 25 30  
 gca ttc ggg gag gct ggt gcc agg ctc tac ctg agt gct cgc cgc gag 144  
 Ala Phe Gly Glu Ala Gly Ala Arg Leu Tyr Leu Ser Ala Arg Arg Glu  
 35 40 45  
 gaa ttt gaa gat ggc ggc gcc ata ctc agg gcg ggc tac gac gtg acc 192  
 Glu Phe Glu Asp Gly Gly Ala Ile Leu Arg Ala Gly Tyr Asp Val Thr  
 50 55 60  
 ttc tat ccc gcg gac ctg gcg acg cgc gct gcg gcg agc gcg ctt gtg 240  
 Phe Tyr Pro Ala Asp Leu Ala Thr Arg Ala Ala Ala Ser Ala Leu Val  
 65 70 75 80  
 aat agg gtg ata cgt gac gca ggg aga ata gat atc ctt atc aac aat 288  
 Asn Arg Val Ile Arg Asp Ala Gly Arg Ile Asp Ile Leu Ile Asn Asn  
 85 90 95  
 gct ggt ctt gcc aac ggc ggc gac acg cct cgc ttc act gaa gaa cag 336  
 Ala Gly Leu Ala Asn Gly Gly Asp Thr Pro Arg Phe Thr Glu Glu Gln  
 100 105 110  
 tgg cgc gac gtt atg gcg ttg aac gtc gac tcg gtg ttt tgg tgc tcg 384  
 Trp Arg Asp Val Met Ala Leu Asn Val Asp Ser Val Phe Trp Cys Ser  
 115 120 125  
 caa gct gtc atc gct tcg atg cgc gat acg gga ggc ggt aag att gtc 432  
 Gln Ala Val Ile Ala Ser Met Arg Asp Thr Gly Gly Gly Lys Ile Val  
 130 135 140  
 aac gtc gga tcg atg tcc ggg att gtc tcc aac att ccg caa aat cag 480  
 Asn Val Gly Ser Met Ser Gly Ile Val Ser Asn Ile Pro Gln Asn Gln  
 145 150 155 160  
 gtc gcc tat aat agt tcc aag gca gcg gtg cac atg atg acc aag agc 528  
 Val Ala Tyr Asn Ser Ser Lys Ala Ala Val His Met Met Thr Lys Ser  
 165 170 175  
 ctc gcc agc gag ttg gcg cta gac aac atc agg gtc aac gct gtc gca 576  
 Leu Ala Ser Glu Leu Ala Leu Asp Asn Ile Arg Val Asn Ala Val Ala  
 180 185 190  
 ccc ggc tac atc gac act gaa atg tcg cga gag ggt atg gtc cat cct 624  
 Pro Gly Tyr Ile Asp Thr Glu Met Ser Arg Glu Gly Met Val His Pro  
 195 200 205  
 atc agg ggg ccc atc tgg cgc gaa atg acc cct atg cag cgc ttt gga 672  
 Ile Arg Gly Pro Ile Trp Arg Glu Met Thr Pro Met Gln Arg Phe Gly  
 210 215 220  
 aaa ccc gac gag gtt gca gcg gca ata ctt ttc cta gcc tcg gat gcc 720  
 Lys Pro Asp Glu Val Ala Ala Ala Ile Leu Phe Leu Ala Ser Asp Ala  
 225 230 235 240  
 tca agt tat gtc acg gga gat att ctc gtt gtc gat ggc ggc tac acg 768  
 Ser Ser Tyr Val Thr Gly Asp Ile Leu Val Val Asp Gly Gly Tyr Thr  
 245 250 255  
 acc cgt tag 777  
 Thr Arg

<210> 1840  
 <211> 258  
 <212> PRT  
 <213> Agrobacterium tumefaciens

<400> 1840  
 Met Thr Tyr Glu Ser Leu Leu Lys Arg Phe Arg Leu Asp Lys Lys Val  
 1 5 10 15  
 Ala Leu Ile Thr Gly Gly Thr Arg Gly Ile Gly Leu Ala Thr Ala His  
 20 25 30  
 Ala Phe Gly Glu Ala Gly Ala Arg Leu Tyr Leu Ser Ala Arg Arg Glu  
 35 40 45  
 Glu Phe Glu Asp Gly Gly Ala Ile Leu Arg Ala Gly Tyr Asp Val Thr  
 50 55 60  
 Phe Tyr Pro Ala Asp Leu Ala Thr Arg Ala Ala Ser Ala Leu Val  
 65 70 75 80  
 Asn Arg Val Ile Arg Asp Ala Gly Arg Ile Asp Ile Leu Ile Asn Asn  
 85 90 95  
 Ala Gly Leu Ala Asn Gly Gly Asp Thr Pro Arg Phe Thr Glu Glu Gln  
 100 105 110  
 Trp Arg Asp Val Met Ala Leu Asn Val Asp Ser Val Phe Trp Cys Ser  
 115 120 125  
 Gln Ala Val Ile Ala Ser Met Arg Asp Thr Gly Gly Lys Ile Val  
 130 135 140  
 Asn Val Gly Ser Met Ser Gly Ile Val Ser Asn Ile Pro Gln Asn Gln  
 145 150 155 160  
 Val Ala Tyr Asn Ser Lys Ala Ala Val His Met Met Thr Lys Ser  
 165 170 175  
 Leu Ala Ser Glu Leu Ala Leu Asp Asn Ile Arg Val Asn Ala Val Ala  
 180 185 190  
 Pro Gly Tyr Ile Asp Thr Glu Met Ser Arg Glu Gly Met Val His Pro  
 195 200 205  
 Ile Arg Gly Pro Ile Trp Arg Glu Met Thr Pro Met Gln Arg Phe Gly  
 210 215 220  
 Lys Pro Asp Glu Val Ala Ala Ala Ile Leu Phe Leu Ala Ser Asp Ala  
 225 230 235 240  
 Ser Ser Tyr Val Thr Gly Asp Ile Leu Val Val Asp Gly Gly Tyr Thr  
 245 250 255  
 Thr Arg

<210> 1841  
 <211> 858  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(858)

<400> 1841  
 atg caa gct caa gtc atg aca gag aaa acc ctt caa gga gaa aac atc 48  
 Met Gln Ala Gln Val Met Thr Glu Lys Thr Leu Gln Gly Glu Asn Ile 15  
 1 5 10  
 tct tcc tca cct aaa agg ttg gaa gga aaa gtt gcc ctt gtg acc ggc 96  
 Ser Ser Ser Pro Lys Arg Leu Glu Gly Lys Val Ala Leu Val Thr Gly 20 25 30  
 ggt gct aga gga att ggt gag gca ata gtg aga ctc ttc gtt cga cat 144  
 Gly Ala Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Arg His 35 40 45  
 gga gcc aag gtc att atc gcc gac att gat gat gct act ggc ctt cct 192  
 Gly Ala Lys Val Ile Ile Ala Asp Ile Asp Asp Ala Thr Gly Leu Pro 50 55 60  
 cta gct aac ctg tta cac ccc tcc aca gtg tac gcg cac tgt gac gtg 240  
 Leu Ala Asn Leu Leu His Pro Ser Thr Val Tyr Ala His Cys Asp Val 65 70 75 80  
 acc gta gaa ggg gac atc gaa aat tca atc aat cta gca gtt tcc cag 288  
 250 255

## PhoenixTemp32470.tmp.txt

Thr	Val	Glu	Gly	Asp 85	Ile	Glu	Asn	Ser	Ile 90	Asn	Leu	Ala	Val	Ser 95	Gln		
tac	gga	aaa	ctc	gac	att	ctc	ttc	aat	aat	gct	ggg	gtc	ctc	gga	aat	336	
Tyr	Gly	Lys	Leu 100	Asp	Ile	Leu	Phe	Asn 105	Asn	Ala	Gly	Val	Leu 110	Gly	Asn		
caa	tcc	aag	aac	aag	atc	tgc	ata	gcc	aat	ttc	gat	gcc	gat	gag	ttt	384	
Gln	Ser	Lys 115	Asn	Lys	Ile	Cys	Ile 120	Ala	Asn	Phe	Asp	Ala 125	Asp	Glu	Phe		
gat	cat	atc	atg	cgc	gtc	aac	gtg	aga	gga	ggt	gcc	tta	gga	atg	aag	432	
Asp	His 130	Ile	Met	Arg	Val	Asn 135	Val	Arg	Gly	Val	Ala 140	Leu	Gly	Met	Lys		
cat	gca	gcg	aga	gta	atg	gtg	cct	aag	aga	agt	ggc	tgc	atc	ata	tcc	480	
His	Ala	Ala	Arg	Val	Met 150	Val	Pro	Lys	Arg	Ser 155	Gly	Cys	Ile	Ile	Ser 160		
acc	gcc	agt	gta	gct	ggc	ctc	atg	gga	ggc	ctt	ggc	ccg	cat	gca	tac	528	
Thr	Ala	Ser	Val 165	Ala	Gly	Leu	Met	Gly	Gly 170	Leu	Gly	Pro	His	Ala 175	Tyr		
aca	gct	tca	aag	cac	gcc	att	gta	ggg	ctt	aca	aaa	aac	aca	gct	tgt	576	
Thr	Ala	Ser 180	Lys	His	Ala	Ile	Val	Gly 185	Leu	Thr	Lys	Asn	Thr 190	Ala	Cys		
gag	ctg	ggc	agg	tat	ggg	att	agg	ggt	aac	tgc	atc	tcc	cca	ttc	gga	624	
Glu	Leu	Gly 195	Arg	Tyr	Gly	Ile	Arg 200	Val	Asn	Cys	Ile	Ser 205	Pro	Phe	Gly		
gtg	gcc	act	tcc	atg	ctt	gta	aac	gca	tgg	agg	aag	tct	gag	gaa	gaa	672	
Val	Ala 210	Thr	Ser	Met	Leu	Val 215	Asn	Ala	Trp	Arg	Lys 220	Ser	Glu	Glu	Glu		
gat	gat	gta	gag	gaa	atg	gaa	gag	ttt	gta	ggt	ggg	ata	gcc	aat	ttg	720	
Asp	Asp	Val	Glu	Glu	Met 230	Glu	Glu	Phe	Val	Gly 235	Gly	Ile	Ala	Asn	Leu 240		
aag	ggt	gtt	aag	ctc	agg	gct	gaa	tgt	ata	gct	gag	gct	gca	gtc	tat	768	
Lys	Gly	Val	Lys	Leu 245	Arg	Ala	Glu	Cys	Ile 250	Ala	Glu	Ala	Ala	Val 255	Tyr		
ctt	gct	agt	gat	gaa	tca	gag	tat	gta	agt	ggc	cat	aac	ctt	gtt	gtg	816	
Leu	Ala	Ser	Asp 260	Glu	Ser	Glu	Tyr	Val 265	Ser	Gly	His	Asn	Leu 270	Val	Val		
gat	ggt	gga	gtt	acc	acc	tca	aaa	aac	ttt	gtg	ggc	ttg	tag			858	
Asp	Gly 275	Gly	Val	Thr	Thr	Ser	Lys 280	Asn	Phe	Val	Gly	Leu 285					

&lt;210&gt; 1842

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 1842

Met	Gln	Ala	Gln	Val 5	Met	Thr	Glu	Lys	Thr 10	Leu	Gln	Gly	Glu	Asn 15	Ile		
Ser	Ser	Ser	Pro 20	Lys	Arg	Leu	Glu	Gly 25	Lys	Val	Ala	Leu	Val 30	Thr	Gly		
Gly	Ala	Arg 35	Gly	Ile	Gly	Glu	Ala 40	Ile	Val	Arg	Leu	Phe 45	Val	Arg	His		
Gly	Ala	Lys 50	Val	Ile	Ile	Ala 55	Asp	Ile	Asp	Asp	Ala 60	Thr	Gly	Leu	Pro		
Leu	Ala	Asn	Leu	Leu	His 70	Pro	Ser	Thr	Val	Tyr 75	Ala	His	Cys	Asp	Val 80		
Thr	Val	Glu	Gly	Asp 85	Ile	Glu	Asn	Ser	Ile 90	Asn	Leu	Ala	Val	Ser 95	Gln		
Tyr	Gly	Lys	Leu 100	Asp	Ile	Leu	Phe	Asn 105	Asn	Ala	Gly	Val	Leu 110	Gly	Asn		
Gln	Ser	Lys 115	Asn	Lys	Ile	Cys	Ile 120	Ala	Asn	Phe	Asp	Ala 125	Asp	Glu	Phe		
Asp	His 130	Ile	Met	Arg	Val	Asn 135	Val	Arg	Gly	Val	Ala 140	Leu	Gly	Met	Lys		
His	Ala	Ala	Arg	Val	Met 150	Val	Pro	Lys	Arg	Ser 155	Gly	Cys	Ile	Ile	Ser 160		
Thr	Ala	Ser	Val	Ala 165	Gly	Leu	Met	Gly	Gly 170	Leu	Gly	Pro	His	Ala 175	Tyr		
Thr	Ala	Ser 180	Lys	His	Ala	Ile	Val	Gly 185	Leu	Thr	Lys	Asn	Thr 190	Ala	Cys		

## PhoenixTemp32470.tmp.txt

Glu Leu Gly Arg Tyr Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly  
 195 200 205  
 Val Ala Thr Ser Met Leu Val Asn Ala Trp Arg Lys Ser Glu Glu Glu  
 210 215 220  
 Asp Asp Val Glu Glu Met Glu Glu Phe Val Gly Gly Ile Ala Asn Leu  
 225 230 235 240  
 Lys Gly Val Lys Leu Arg Ala Glu Cys Ile Ala Glu Ala Ala Val Tyr  
 245 250 255  
 Leu Ala Ser Asp Glu Ser Glu Tyr Val Ser Gly His Asn Leu Val Val  
 260 265 270  
 Asp Gly Gly Val Thr Thr Ser Lys Asn Phe Val Gly Leu  
 275 280 285

&lt;210&gt; 1843

&lt;211&gt; 849

&lt;212&gt; DNA

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(849)

&lt;400&gt; 1843

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cta	ata	act	ggt	gga	gcc	agt	ggc	ata	ggc	gcc	tgc	act	gcc	aag	tta	96
Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Cys	Thr	Ala	Lys	Leu	
			20					25					30			
ttt	gtg	aaa	cat	ggt	gcc	aag	gtc	ata	gtg	gca	gat	gtc	caa	gac	caa	144
Phe	Val	Lys	His	Gly	Ala	Lys	Val	Ile	Val	Ala	Asp	Val	Gln	Asp	Gln	
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ctt	ggg	cgc	tcc	ctt	tgc	caa	gaa	att	ggt	ccc	gca	gaa	acc	gtt	ttc	192
Leu	Gly	Arg	Ser	Leu	Cys	Gln	Glu	Ile	Gly	Pro	Ala	Glu	Thr	Val	Phe	
	50					55				60						
cat	gtc	cac	tgc	gat	gta	aca	tgt	gac	tcc	gac	gtc	caa	aac	gcc	gtc	240
His	Val	His	Cys	Asp	Val	Thr	Cys	Asp	Ser	Asp	Val	Gln	Asn	Ala	Val	
	65				70			75							80	
gac	act	gcc	ata	tcc	aaa	tat	ggg	aaa	ctc	gac	atc	atg	ttc	agc	aac	288
Asp	Thr	Ala	Ile	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Ser	Asn	
				85				90						95		
gcc	ggc	gtc	cat	ggc	gaa	atg	gag	tca	aga	atc	ata	ctc	tct	gat	aac	336
Ala	Gly	Val	His	Gly	Glu	Met	Glu	Ser	Arg	Ile	Ile	Leu	Ser	Asp	Asn	
			100				105					110				
aca	aac	ttt	aaa	agg	gtt	ttc	gat	gtg	aat	gtg	tat	ggg	gcc	ttc	ttg	384
Thr	Asn	Phe	Lys	Arg	Val	Phe	Asp	Val	Asn	Val	Tyr	Gly	Ala	Phe	Leu	
			115				120					125				
gcc	gct	aag	cat	gcc	gct	aga	gtt	atg	att	cca	gct	aag	aca	gga	tgc	432
Ala	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Thr	Gly	Cys	
	130					135				140						
att	ata	ttt	acg	tca	agt	gtg	gct	tca	gtt	gtt	tcg	gag	gag	atc	tca	480
Ile	Ile	Phe	Thr	Ser	Ser	Val	Ala	Ser	Val	Val	Ser	Glu	Glu	Ile	Ser	
	145				150					155					160	
cat	gca	tat	gtg	gca	tcg	aag	cat	gct	gtg	gtg	gga	ctt	gcc	aac	aac	528
His	Ala	Tyr	Val	Ala	Ser	Lys	His	Ala	Val	Val	Gly	Leu	Ala	Asn	Asn	
				165				170						175		
tta	tgt	gtg	gag	ttg	gga	caa	tat	ggg	ata	aga	gtt	aat	tgc	ata	tct	576
Leu	Cys	Val	Glu	Leu	Gly	Gln	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	
			180					185					190			
ccg	ttc	gga	gtg	gca	aca	cct	atg	tta	cag	aaa	gga	ttg	gga	ata	atg	624
Pro	Phe	Gly	Val	Ala	Thr	Pro	Met	Leu	Gln	Lys	Gly	Leu	Gly	Ile	Met	
		195				200					205					
gag	aag	agg	aag	gtt	gaa	gag	tta	gtt	tcc	tct	gcg	gcc	aac	cta	aaa	672
Glu	Lys	Arg	Lys	Val	Glu	Glu	Leu	Val	Ser	Ser	Ala	Ala	Asn	Leu	Lys	
	210					215					220					
ggt	gcg	gtg	tta	gag	gcg	gaa	gac	atc	gca	gag	gca	gcc	ttg	tat	ctg	720
Gly	Ala	Val	Leu	Glu	Ala	Glu	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	
	225				230					235					240	
ggg	agc	gat	gac	tcc	aag	tac	gtt	agc	ggg	atc	aac	ttg	gtg	gtg	gat	768



## PhoenixTemp32470.tmp.txt

Gly Ser Asp Asp Ser Lys Tyr Val Ser Gly Ile Asn Leu Val Val Asp  
 245 250 255  
 ggc ggt tac agc att act aat ccc tct gct gga atg gta ttt aaa tct 816  
 Gly Gly Tyr Ser Ile Thr Asn Pro Ser Ala Gly Met Val Phe Lys Ser  
 260 265 270  
 cac ttg tca tca acc cat cca tcc caa aac taa 849  
 His Leu Ser Ser Thr His Pro Ser Gln Asn  
 275 280

<210> 1844  
 <211> 282  
 <212> PRT  
 <213> Vitis vinifera

<400> 1844  
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 Leu Ile Thr Gly Ala Ser Gly Ile Gly Ala Cys Thr Ala Lys Leu  
 20 25 30  
 Phe Val Lys His Gly Ala Lys Val Ile Val Ala Asp Val Gln Asp Gln  
 35 40 45  
 Leu Gly Arg Ser Leu Cys Gln Glu Ile Gly Pro Ala Glu Thr Val Phe  
 50 55 60  
 His Val His Cys Asp Val Thr Cys Asp Ser Asp Val Gln Asn Ala Val  
 65 70 75 80  
 Asp Thr Ala Ile Ser Lys Tyr Gly Lys Leu Asp Ile Met Phe Ser Asn  
 85 90 95  
 Ala Gly Val His Gly Glu Met Glu Ser Arg Ile Ile Leu Ser Asp Asn  
 100 105 110  
 Thr Asn Phe Lys Arg Val Phe Asp Val Asn Val Tyr Gly Ala Phe Leu  
 115 120 125  
 Ala Ala Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Thr Gly Cys  
 130 135 140  
 Ile Ile Phe Thr Ser Ser Val Ala Ser Val Val Ser Glu Glu Ile Ser  
 145 150 155 160  
 His Ala Tyr Val Ala Ser Lys His Ala Val Val Gly Leu Ala Asn Asn  
 165 170 175  
 Leu Cys Val Glu Leu Gly Gln Tyr Gly Ile Arg Val Asn Cys Ile Ser  
 180 185 190  
 Pro Phe Gly Val Ala Thr Pro Met Leu Gln Lys Gly Leu Gly Ile Met  
 195 200 205  
 Glu Lys Arg Lys Val Glu Glu Leu Val Ser Ser Ala Ala Asn Leu Lys  
 210 215 220  
 Gly Ala Val Leu Glu Ala Glu Asp Ile Ala Glu Ala Ala Leu Tyr Leu  
 225 230 235 240  
 Gly Ser Asp Asp Ser Lys Tyr Val Ser Gly Ile Asn Leu Val Val Asp  
 245 250 255  
 Gly Gly Tyr Ser Ile Thr Asn Pro Ser Ala Gly Met Val Phe Lys Ser  
 260 265 270  
 His Leu Ser Ser Thr His Pro Ser Gln Asn  
 275 280

<210> 1845  
 <211> 777  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(777)

<400> 1845  
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 1 5 10 15  
 ttg gag ggg aaa att gca gtt gtc acc ggt ggc gct aga ggg att gga 96  
 Leu Glu Gly Lys Ile Ala Val Val Thr Gly Gly Ala Arg Gly Ile Gly  
 20 25 30  
 gag gcg acg gtg aga ctc ttt gca aga cac ggt gcc aag gtg gtc ata 144  
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PhoenixTemp32470.tmp.txt

Glu	Ala	Thr	Val	Arg	Leu	Phe	Ala	Arg	His	Gly	Ala	Lys	Val	Val	Ile	
		35					40					45				
gct	gat	gtt	gaa	gac	aca	ctc	gga	gct	gca	ctt	gct	agc	tca	tta	gct	192
Ala	Asp	Val	Glu	Asp	Thr	Leu	Gly	Ala	Ala	Leu	Ala	Ser	Ser	Leu	Ala	
	50					55					60					
ccc	tca	gtt	acc	ttt	gtt	cac	tgt	gat	gtt	agc	ttg	gaa	gag	gat	att	240
Pro	Ser	Val	Thr	Phe	Val	His	Cys	Asp	Val	Ser	Leu	Glu	Glu	Asp	Ile	
	65				70					75					80	
gag	aac	gta	atc	aat	tct	acg	gtg	tcc	cgg	tac	gga	cgc	ctc	gat	atc	288
Glu	Asn	Val	Ile	Asn	Ser	Thr	Val	Ser	Arg	Tyr	Gly	Arg	Leu	Asp	Ile	
				85					90					95		
ctt	ttc	aac	aat	gct	ggg	gtg	ctg	gga	aat	caa	tca	aag	cac	aag	agc	336
Leu	Phe	Asn	Asn	Ala	Gly	Val	Leu	Gly	Asn	Gln	Ser	Lys	His	Lys	Ser	
			100					105					110			
ata	att	gac	ttt	gat	ata	gat	gaa	ttc	gat	cag	gtg	atg	cgt	gtg	aat	384
Ile	Ile	Asp	Phe	Asp	Ile	Asp	Glu	Phe	Asp	Gln	Val	Met	Arg	Val	Asn	
		115					120					125				
gta	aga	ggg	atg	gct	cta	gga	atc	aag	cac	gcg	gcg	aga	gtc	atg	gtc	432
Val	Arg	Gly	Met	Ala	Leu	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Val	
	130					135					140					
cca	aga	gga	atg	gga	tgt	ata	atc	tcc	acg	gct	agt	gta	gca	gga	gtg	480
Pro	Arg	Gly	Met	Gly	Cys	Ile	Ile	Ser	Thr	Ala	Ser	Val	Ala	Gly	Val	
	145				150					155					160	
atg	gga	ggg	ctt	ggt	cct	cat	gct	tac	aca	gct	tca	aag	cat	gca	att	528
Met	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Ile	
				165					170					175		
gtg	ggg	ctg	acg	aag	aac	act	gcc	tgc	gag	ctt	ggg	cgg	tat	ggg	att	576
Val	Gly	Leu	Thr	Lys	Asn	Thr	Ala	Cys	Glu	Leu	Gly	Arg	Tyr	Gly	Ile	
			180					185					190			
aga	gta	aac	tgc	att	tct	cca	ttt	ggg	gtg	gct	act	tcc	atg	ctt	gtg	624
Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	Val	Ala	Thr	Ser	Met	Leu	Val	
		195					200					205				
aat	gca	tgg	agg	agc	atg	gag	aag	atg	gag	gag	gct	aaa	gat	ata	gcc	672
Asn	Ala	Trp	Arg	Ser	Met	Glu	Lys	Met	Glu	Glu	Ala	Lys	Asp	Ile	Ala	
	210					215					220					
gag	gct	gct	ctt	tat	ctt	gct	agt	gat	gag	tcc	aaa	tat	gta	agt	gga	720
Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	
	225				230					235					240	
cat	aac	ctt	gta	gta	gat	ggt	ggg	att	acc	act	tcg	aga	aat	tgt	gtt	768
His	Asn	Leu	Val	Val	Asp	Gly	Gly	Ile	Thr	Thr	Ser	Arg	Asn	Cys	Val	
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ggc	ttg	tag														777
Gly	Leu															

<210> 1846  
 <211> 258  
 <212> PRT  
 <213> Vitis vinifera

<400> 1846

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			20					25					30			
Glu	Ala	Thr	Val	Arg	Leu	Phe	Ala	Arg	His	Gly	Ala	Lys	Val	Val	Ile	
		35					40					45				
Ala	Asp	Val	Glu	Asp	Thr	Leu	Gly	Ala	Ala	Leu	Ala	Ser	Ser	Leu	Ala	
	50					55					60					
Pro	Ser	Val	Thr	Phe	Val	His	Cys	Asp	Val	Ser	Leu	Glu	Glu	Asp	Ile	
	65				70					75				80		
Glu	Asn	Val	Ile	Asn	Ser	Thr	Val	Ser	Arg	Tyr	Gly	Arg	Leu	Asp	Ile	
				85					90					95		
Leu	Phe	Asn	Asn	Ala	Gly	Val	Leu	Gly	Asn	Gln	Ser	Lys	His	Lys	Ser	
			100					105					110			
Ile	Ile	Asp	Phe	Asp	Ile	Asp	Glu	Phe	Asp	Gln	Val	Met	Arg	Val	Asn	
		115					120					125				
Val	Arg	Gly	Met	Ala	Leu	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Val	
	130					135					140					

## PhoenixTemp32470.tmp.txt

Pro Arg Gly Met Gly Cys Ile Ile Ser Thr Ala Ser Val Ala Gly Val  
 145 150 155 160  
 Met Gly Gly Leu Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile  
 165 170 175  
 Val Gly Leu Thr Lys Asn Thr Ala Cys Glu Leu Gly Arg Tyr Gly Ile  
 180 185 190  
 Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr Ser Met Leu Val  
 195 200 205  
 Asn Ala Trp Arg Ser Met Glu Lys Met Glu Glu Ala Lys Asp Ile Ala  
 210 215 220  
 Glu Ala Ala Leu Tyr Leu Ala Ser Asp Glu Ser Lys Tyr Val Ser Gly  
 225 230 235 240  
 His Asn Leu Val Val Asp Gly Gly Ile Thr Thr Ser Arg Asn Cys Val  
 245 250 255  
 Gly Leu

&lt;210&gt; 1847

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;400&gt; 1847

atg	aca	gac	cct	aca	cct	ttt	aac	aag	aag	cta	caa	ggt	aaa	gtg	gct	48
Met	Thr	Asp	Pro	Thr	Pro	Phe	Asn	Lys	Lys	Leu	Gln	Gly	Lys	Val	Ala	
1				5				10						15		
atc	atc	acc	ggc	ggc	gca	agc	ggc	atc	ggc	gag	gct	acg	gca	cgt	ctc	96
Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Arg	Leu	
			20					25					30			
ttc	gcc	gat	cac	ggc	gca	cga	gcc	gtc	gtt	gta	gcc	gac	atc	caa	gac	144
Phe	Ala	Asp	His	Gly	Ala	Arg	Ala	Val	Val	Val	Ala	Asp	Ile	Gln	Asp	
		35					40					45				
gag	ctg	ggc	cgt	ggc	gtc	gcc	gag	tca	atc	ggc	tta	cac	cgc	tgc	agg	192
Glu	Leu	Gly	Arg	Gly	Val	Ala	Glu	Ser	Ile	Gly	Leu	His	Arg	Cys	Arg	
	50					55					60					
tac	att	cac	tgt	gat	gta	acc	gat	gag	cag	cag	atc	aaa	gcg	atg	gtg	240
Tyr	Ile	His	Cys	Asp	Val	Thr	Asp	Glu	Gln	Gln	Ile	Lys	Ala	Met	Val	
	65				70					75					80	
gaa	tcg	acg	gtg	aag	atg	ttc	gga	caa	ctc	gac	atc	atg	ttc	agc	aac	288
Glu	Ser	Thr	Val	Lys	Met	Phe	Gly	Gln	Leu	Asp	Ile	Met	Phe	Ser	Asn	
				85					90					95		
gct	ggg	gtt	atg	agt	atg	ggc	gac	cag	acc	ata	ctg	gag	ctg	gat	cta	336
Ala	Gly	Val	Met	Ser	Met	Gly	Asp	Gln	Thr	Ile	Leu	Glu	Leu	Asp	Leu	
			100					105					110			
tca	gct	tcc	gac	aag	gtg	ttt	gca	gta	aac	gca	cgc	ggc	atg	gcg	gcg	384
Ser	Ala	Ser	Asp	Lys	Val	Phe	Ala	Val	Asn	Ala	Arg	Gly	Met	Ala	Ala	
		115					120					125				
tgt	gtg	aag	cac	gcg	gcg	cgt	gcg	atg	gtg	gag	ggt	ggt	gtt	aaa	ggg	432
Cys	Val	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Gly	Val	Lys	Gly	
	130					135					140					
agc	ata	gtg	tgc	acg	gcg	agc	gtg	gct	gcg	acg	gtg	ggg	aat	gac	aag	480
Ser	Ile	Val	Cys	Thr	Ala	Ser	Val	Ala	Ala	Thr	Val	Gly	Asn	Asp	Lys	
					150					155					160	
ttc	act	gac	tac	ata	atg	tcg	aag	cac	gcg	gtg	ttg	ggg	cta	gtg	aga	528
Phe	Thr	Asp	Tyr	Ile	Met	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Arg	
				165						170					175	
tcg	gcg	agt	aag	cag	ctg	ggc	gcg	tac	gga	ata	agg	gtg	aat	tgc	gtg	576
Ser	Ala	Ser	Lys	Gln	Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Val	
			180					185					190			
tca	ccg	acg	gca	gtg	gcg	acg	cca	atg	ctt	tgc	agc	gca	ttt	aag	atg	624
Ser	Pro	Thr	Ala	Val	Ala	Thr	Pro	Met	Leu	Cys	Ser	Ala	Phe	Lys	Met	
		195					200					205				
ggc	gtg	gag	gag	gcg	gag	aaa	ttt	ttt	gta	gag	gac	atg	gat	tta	aaa	672
Gly	Val	Glu	Glu	Ala	Glu	Lys	Phe	Phe	Val	Glu	Asp	Met	Asp	Leu	Lys	
	210					215					220					

## PhoenixTemp32470.tmp.txt

ggg	aga	ggg	gca	gtg	caa	gtg	aga	cac	gtg	ggg	gat	gca	gcg	ttg	ttt	720
Gly	Arg	Gly	Ala	Val	Gln	Val	Arg	His	Val	Gly	Asp	Ala	Ala	Leu	Phe	
225					230					235					240	
ctt	gct	tcc	gac	gat	tct	gag	ttt	ata	acg	gga	cat	aac	ttg	gcc	atc	768
Leu	Ala	Ser	Asp	Asp	Ser	Glu	Phe	Ile	Thr	Gly	His	Asn	Leu	Ala	Ile	
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gac	ggg	ggc	ttc	cgc	cgg	tga										789
Asp	Gly	Gly	Phe	Arg	Arg											
			260													

<210> 1848  
 <211> 262  
 <212> PRT  
 <213> Vitis vinifera

<400> 1848															
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			20					25					30		
Phe	Ala	Asp	His	Gly	Ala	Arg	Ala	Val	Val	Val	Ala	Asp	Ile	Gln	Asp
		35					40					45			
Glu	Leu	Gly	Arg	Gly	Val	Ala	Glu	Ser	Ile	Gly	Leu	His	Arg	Cys	Arg
	50					55					60				
Tyr	Ile	His	Cys	Asp	Val	Thr	Asp	Glu	Gln	Gln	Ile	Lys	Ala	Met	Val
65					70				75						80
Glu	Ser	Thr	Val	Lys	Met	Phe	Gly	Gln	Leu	Asp	Ile	Met	Phe	Ser	Asn
				85					90					95	
Ala	Gly	Val	Met	Ser	Met	Gly	Asp	Gln	Thr	Ile	Leu	Glu	Leu	Asp	Leu
			100					105					110		
Ser	Ala	Ser	Asp	Lys	Val	Phe	Ala	Val	Asn	Ala	Arg	Gly	Met	Ala	Ala
		115					120					125			
Cys	Val	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Gly	Val	Lys	Gly
	130					135					140				
Ser	Ile	Val	Cys	Thr	Ala	Ser	Val	Ala	Ala	Thr	Val	Gly	Asn	Asp	Lys
145					150					155					160
Phe	Thr	Asp	Tyr	Ile	Met	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Arg
				165					170					175	
Ser	Ala	Ser	Lys	Gln	Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Val
			180					185					190		
Ser	Pro	Thr	Ala	Val	Ala	Thr	Pro	Met	Leu	Cys	Ser	Ala	Phe	Lys	Met
		195					200					205			
Gly	Val	Glu	Glu	Ala	Glu	Lys	Phe	Phe	Val	Glu	Asp	Met	Asp	Leu	Lys
	210					215					220				
Gly	Arg	Gly	Ala	Val	Gln	Val	Arg	His	Val	Gly	Asp	Ala	Ala	Leu	Phe
225					230					235					240
Leu	Ala	Ser	Asp	Asp	Ser	Glu	Phe	Ile	Thr	Gly	His	Asn	Leu	Ala	Ile
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Asp	Gly	Gly	Phe	Arg	Arg										
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<210> 1849  
 <211> 996  
 <212> DNA  
 <213> Tripsacum dactyloides

<220>  
 <221> CDS  
 <222> (1)..(996)

<400> 1849															
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Met	His	Ala	Ser	Leu	Ala	Ser	Tyr	Ala	Ala	Ala	Ala	Met	Pro	Ala	Leu
1				5				10						15	
gac	ctc	cgc	ccc	gag	ata	gcg	cac	gcg	cac	cag	ccc	gtc	atg	tcg	ccc
Asp	Leu	Arg	Pro	Glu	Ile	Ala	His	Ala	His	Gln	Pro	Val	Met	Ser	Pro
			20					25				30			
tcg	cac	cac	ggc	tgg	gac	ggc	aat	ggc	gca	gcc	gtg	ccc	aca	cct	
Ser	His	His	Gly	Trp	Asp	Gly	Asn	Gly	Ala	Ala	Ala	Val	Pro	Thr	Pro



## PhoenixTemp32470.tmp.txt

50 55 60  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala  
 85 90 95  
 Ala Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 Glu Glu Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 Thr Arg Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe Asp  
 145 150 155 160  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190  
 Ala Ser Val Ala Gly Val Leu Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 Leu Gly Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Gly Ala  
 245 250 255  
 Ala Asp Ala Glu Leu Asp Leu Asp Ile Asn Val Pro Ser Asp Gln Glu  
 260 265 270  
 Val Glu Lys Met Glu Glu Val Val Arg Gly Leu Ala Thr Leu Lys Gly  
 275 280 285  
 Pro Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala Val Leu Phe Leu Ala  
 290 295 300  
 Ser Asp Glu Ala Arg Tyr Ile Ser Gly His Asn Leu Val Val Asp Gly  
 305 310 315 320  
 Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330

<210> 1851  
 <211> 825  
 <212> DNA  
 <213> Streptomyces fungicidicus

<220>  
 <221> CDS  
 <222> (1)..(825)  
 <223> transl\_table=11

<400> 1851  
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 Met Gln Leu Ala Gly Lys Thr Ala Ile Val Thr Gly Ala Ala Arg Gly  
 1 5 10 15  
 ctg ggg cgc gcc tgc gcg gtc gcc ttc gcc cgt gag ggc gcc gac ctc 96  
 Leu Gly Arg Ala Cys Ala Val Ala Phe Ala Arg Glu Gly Ala Asp Leu  
 20 25 30  
 gtc ctc ctc gac ctc tgc gcg gac ctg ccc ggc gtt ccg tac ccg ctc 144  
 Val Leu Leu Asp Leu Cys Ala Asp Leu Pro Gly Val Pro Tyr Pro Leu  
 35 40 45  
 ggc ggc ccc ggc cag ctc gcc cac acc gcc gac ctg tgc cgc ggg cac 192  
 Gly Gly Pro Gly Gln Leu Ala His Thr Ala Asp Leu Cys Arg Gly His  
 50 55 60  
 ggc gcg gcc gtc ctc gtc cgg cag gcc gac gta cgg gac ctc ggc gcg 240  
 Gly Ala Ala Val Leu Val Arg Gln Ala Asp Val Arg Asp Leu Gly Ala  
 65 70 75 80  
 ctg cgg cac gcc gtg gac gac gcc cac ggc cgg ttc gga cgc atc gac 288  
 Leu Arg His Ala Val Asp Asp Ala His Gly Arg Phe Gly Arg Ile Asp  
 85 90 95  
 gtg ctg ctc aac aac gcc ggg atc gcc gcg ccc tcc ggc aaa ccc gtc 336  
 Val Leu Leu Asn Asn Ala Gly Ile Ala Ala Pro Ser Gly Lys Pro Val  
 100 105 110  
 gac gag atc gac gag gac gag tgg cag ctg atg atc gac gtg gac ctg 384

## PhoenixTemp32470.tmp.txt

Asp	Glu	Ile	Asp	Glu	Asp	Glu	Trp	Gln	Leu	Met	Ile	Asp	Val	Asp	Leu	
tcc	ggc	gcg	tgg	cgc	gcg	acg	aag	gcg	gtc	ggc	aag	atc	atg	acc	gcc	432
Ser	Gly	Ala	Trp	Arg	Ala	Thr	Lys	Ala	Val	Gly	Lys	Ile	Met	Thr	Ala	
130						135					140					
cag	cgg	gcc	ggc	agc	atc	atc	aac	gtc	gcc	tcc	acc	gcc	ggg	cag	gtc	480
Gln	Arg	Ala	Gly	Ser	Ile	Ile	Asn	Val	Ala	Ser	Thr	Ala	Gly	Gln	Val	
145					150					155					160	
gga	tac	cgc	aac	ttc	gcg	ggc	tac	gtg	gcg	gcc	aaa	cac	ggg	gtc	atc	528
Gly	Tyr	Arg	Asn	Phe	Ala	Gly	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Ile	
				165					170					175		
ggg	ctc	acc	agg	gcc	acg	gcg	ctc	gac	ttc	gcg	ccg	atg	agg	gtc	cgc	576
Gly	Leu	Thr	Arg	Ala	Thr	Ala	Leu	Asp	Phe	Ala	Pro	Met	Arg	Val	Arg	
			180					185					190			
gcc	aac	gcc	ctg	tgc	ccg	ggc	tcg	gtc	cgg	gac	gac	cct	gcc	gtc	gag	624
Ala	Asn	Ala	Leu	Cys	Pro	Gly	Ser	Val	Arg	Asp	Asp	Pro	Ala	Val	Glu	
			195			200						205				
ggc	cgg	atg	ctc	tcc	gag	atc	gcc	agg	tcc	ctc	cag	gtg	ccg	gtc	gcc	672
Gly	Arg	Met	Leu	Ser	Glu	Ile	Ala	Arg	Ser	Leu	Gln	Val	Pro	Val	Ala	
210					215						220					
gaa	cac	gag	gag	gcc	ttc	gtc	cag	tcg	cag	ccc	atg	aac	gcc	ctg	atc	720
Glu	His	Glu	Glu	Ala	Phe	Val	Gln	Ser	Gln	Pro	Met	Asn	Ala	Leu	Ile	
225					230					235					240	
gag	ccc	gat	gac	gtc	gcc	tcg	gcc	gcc	gtc	tgg	ctc	gcc	tcc	gac	gga	768
Glu	Pro	Asp	Asp	Val	Ala	Ser	Ala	Ala	Val	Trp	Leu	Ala	Ser	Asp	Gly	
				245					250					255		
tcc	cgg	cag	gtc	acg	ggg	tcg	gtc	atc	acc	gtc	gac	ggc	ggg	ttc	acc	816
Ser	Arg	Gln	Val	Thr	Gly	Ser	Val	Ile	Thr	Val	Asp	Gly	Gly	Phe	Thr	
			260					265					270			
act	cgc	tga														825
Thr	Arg															

&lt;210&gt; 1852

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Streptomyces fungicidicus

&lt;400&gt; 1852

Met	Gln	Leu	Ala	Gly	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ala	Arg	Gly	
1				5				10						15		
Leu	Gly	Arg	Ala	Cys	Ala	Val	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Asp	Leu	
			20					25					30			
Val	Leu	Leu	Asp	Leu	Cys	Ala	Asp	Leu	Pro	Gly	Val	Pro	Tyr	Pro	Leu	
		35					40					45				
Gly	Gly	Pro	Gly	Gln	Leu	Ala	His	Thr	Ala	Asp	Leu	Cys	Arg	Gly	His	
	50					55					60					
Gly	Ala	Ala	Val	Leu	Val	Arg	Gln	Ala	Asp	Val	Arg	Asp	Leu	Gly	Ala	
65					70					75					80	
Leu	Arg	His	Ala	Val	Asp	Asp	Ala	His	Gly	Arg	Phe	Gly	Arg	Ile	Asp	
				85					90					95		
Val	Leu	Leu	Asn	Ala	Gly	Ile	Ala	Ala	Pro	Ser	Gly	Lys	Pro	Val		
			100				105					110				
Asp	Glu	Ile	Asp	Glu	Asp	Glu	Trp	Gln	Leu	Met	Ile	Asp	Val	Asp	Leu	
		115					120					125				
Ser	Gly	Ala	Trp	Arg	Ala	Thr	Lys	Ala	Val	Gly	Lys	Ile	Met	Thr	Ala	
	130					135					140					
Gln	Arg	Ala	Gly	Ser	Ile	Ile	Asn	Val	Ala	Ser	Thr	Ala	Gly	Gln	Val	
145					150					155					160	
Gly	Tyr	Arg	Asn	Phe	Ala	Gly	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Ile	
				165					170					175		
Gly	Leu	Thr	Arg	Ala	Thr	Ala	Leu	Asp	Phe	Ala	Pro	Met	Arg	Val	Arg	
			180					185					190			
Ala	Asn	Ala	Leu	Cys	Pro	Gly	Ser	Val	Arg	Asp	Asp	Pro	Ala	Val	Glu	
		195				200						205				
Gly	Arg	Met	Leu	Ser	Glu	Ile	Ala	Arg	Ser	Leu	Gln	Val	Pro	Val	Ala	
	210					215					220					
Glu	His	Glu	Glu	Ala	Phe	Val	Gln	Ser	Gln	Pro	Met	Asn	Ala	Leu	Ile	
225					230				235						240	

## PhoenixTemp32470.tmp.txt

Glu Pro Asp Asp Val Ala Ser Ala Ala Val Trp Leu Ala Ser Asp Gly  
 Ser Arg Gln Val Thr Gly Ser Val Ile Thr Val Asp Gly Gly Phe Thr  
 Thr Arg

&lt;210&gt; 1853

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Phaeosphaeria nodorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 1853

atg gca gat ata cca tcc gaa cct cca tcg cga ggt ctt agg ggg aaa	48
Met Ala Asp Ile Pro Ser Glu Pro Pro Ser Arg Gly Leu Arg Gly Lys	
1 5 10 15	
gcg gcc atc gtg aca ggt gct ggt tgt gca gga gaa gga att ggt aat	96
Ala Ala Ile Val Thr Gly Ala Gly Cys Ala Gly Glu Gly Ile Gly Asn	
20 25 30	
ggt cgc gca att tct atc atg ctc gca gac gag ggg tgt aac ata ctc	144
Gly Arg Ala Ile Ser Ile Met Leu Ala Asp Glu Gly Cys Asn Ile Leu	
35 40 45	
tgc tta gac atg aat ctg gaa tgg gca caa aag aca gtg gca att tcg	192
Cys Leu Asp Met Asn Leu Glu Trp Ala Gln Lys Thr Val Ala Ile Ser	
50 55 60	
tca tcg aag cca ggt cga gga aga gca ata gcg ttc aag gct gat gtt	240
Ser Ser Lys Pro Gly Arg Gly Arg Ala Ile Ala Phe Lys Ala Asp Val	
65 70 75 80	
acg aaa gcc aca gac tgc gaa gca gcc gtg cag ttg gcc ctg aat gag	288
Thr Lys Ala Thr Asp Cys Glu Ala Ala Val Gln Leu Ala Leu Asn Glu	
85 90 95	
ttt gga aga ctg gac gtg ttg atc aac aat gtt ggt att ggt gga gca	336
Phe Gly Arg Leu Asp Val Leu Ile Asn Asn Val Gly Ile Gly Gly Ala	
100 105 110	
gct ggc aca gct gtc gac gtc gat atg gaa gcc ttg acc aaa ggc cta	384
Ala Gly Thr Ala Val Asp Val Asp Met Glu Ala Trp Thr Lys Gly Leu	
115 120 125	
gag atc aat gtc agc agt atg gta cag atg gca aag tac gct ata cca	432
Glu Ile Asn Val Ser Ser Met Val Gln Met Ala Lys Tyr Ala Ile Pro	
130 135 140	
gcg atg ctg aag aat gag ggt gaa acg aga ggc agt att atc aat atg	480
Ala Met Leu Lys Asn Glu Gly Glu Thr Arg Gly Ser Ile Ile Asn Met	
145 150 155 160	
ggg tcg gtt gcc ggt ctc aaa ggt gga acg cct cac ttg ctg tat ccg	528
Gly Ser Val Ala Gly Leu Lys Gly Gly Thr Pro His Leu Leu Tyr Pro	
165 170 175	
aca agc aaa ggc gct gtt gtc aac atg aca aga gcg atg tcc gca cat	576
Thr Ser Lys Gly Ala Val Val Asn Met Thr Arg Ala Met Ser Ala His	
180 185 190	
cac gcc gca gac ggc att cga gta aat tgt gtc tgt cct ggg atg ctg	624
His Ala Ala Asp Gly Ile Arg Val Asn Cys Val Cys Pro Gly Met Leu	
195 200 205	
tac acc ccg atg ttg tac gct ggt atg agt gaa gag gcg cgc gaa	672
Tyr Thr Pro Met Leu Tyr Ala Gly Gly Met Ser Glu Glu Ala Arg Glu	
210 215 220	
gcg agg cgg aaa cga agt cta cta ggc acc gag gga aca gcg tgg gac	720
Ala Arg Arg Lys Arg Ser Leu Leu Gly Thr Glu Gly Thr Ala Trp Asp	
225 230 235 240	
gca gct tgt gcg gtg ttc tta gca agc gac cat gca cgg tgg att	768
Ala Ala Cys Ala Val Ala Phe Leu Ala Ser Asp His Ala Arg Trp Ile	
245 250 255	
aca gga gct atc ctt ccg gtg gac gcg ggt acg act gct gct gtt ggg	816
Thr Gly Ala Ile Leu Pro Val Asp Ala Gly Thr Thr Ala Ala Val Gly	
260 265 270	
att ggg atg ccc aaa agt gcc agc gtc aac gga tga	852



Ile Gly Met Pro Lys Ser Ala Ser Val Asn Gly  
275 280

<210> 1854  
<211> 283  
<212> PRT  
<213> Phaeosphaeria nodorum

<400> 1854  
Met Ala Asp Ile Pro Ser Glu Pro Pro Ser Arg Gly Leu Arg Gly Lys  
1 5 10 15  
Ala Ala Ile Val Thr Gly Ala Gly Cys Ala Gly Glu Gly Ile Gly Asn  
20 25 30  
Gly Arg Ala Ile Ser Ile Met Leu Ala Asp Glu Gly Cys Asn Ile Leu  
35 40 45  
Cys Leu Asp Met Asn Leu Glu Trp Ala Gln Lys Thr Val Ala Ile Ser  
50 55 60  
Ser Ser Lys Pro Gly Arg Gly Arg Ala Ile Ala Phe Lys Ala Asp Val  
65 70 75 80  
Thr Lys Ala Thr Asp Cys Glu Ala Ala Val Gln Leu Ala Leu Asn Glu  
85 90 95  
Phe Gly Arg Leu Asp Val Leu Ile Asn Asn Val Gly Ile Gly Gly Ala  
100 105 110  
Ala Gly Thr Ala Val Asp Val Asp Met Glu Ala Trp Thr Lys Gly Leu  
115 120 125  
Glu Ile Asn Val Ser Ser Met Val Gln Met Ala Lys Tyr Ala Ile Pro  
130 135 140  
Ala Met Leu Lys Asn Glu Gly Glu Thr Arg Gly Ser Ile Ile Asn Met  
145 150 155 160  
Gly Ser Val Ala Gly Leu Lys Gly Gly Thr Pro His Leu Leu Tyr Pro  
165 170 175  
Thr Ser Lys Gly Ala Val Val Asn Met Thr Arg Ala Met Ser Ala His  
180 185 190  
His Ala Ala Asp Gly Ile Arg Val Asn Cys Val Cys Pro Gly Met Leu  
195 200 205  
Tyr Thr Pro Met Leu Tyr Ala Gly Gly Met Ser Glu Glu Ala Arg Glu  
210 215 220  
Ala Arg Arg Lys Arg Ser Leu Leu Gly Thr Glu Gly Thr Ala Trp Asp  
225 230 235 240  
Ala Ala Cys Ala Val Ala Phe Leu Ala Ser Asp His Ala Arg Trp Ile  
245 250 255  
Thr Gly Ala Ile Leu Pro Val Asp Ala Gly Thr Thr Ala Ala Val Gly  
260 265 270  
Ile Gly Met Pro Lys Ser Ala Ser Val Asn Gly  
275 280

<210> 1855  
<211> 759  
<212> DNA  
<213> Phaeosphaeria nodorum

<220>  
<221> CDS  
<222> (1)..(759)

<400> 1855  
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1 5 10 15  
agt ggc ata ggg cgc gca aca gcg ctc aaa atg gcc acc ctc ggc gcc 96  
Ser Gly Ile Gly Arg Ala Thr Ala Leu Lys Met Ala Thr Leu Gly Ala  
20 25 30  
tct atc gcc ctc tgc gac atc aac acg ctc gca ctc gca gcc gtc gca 144  
Ser Ile Ala Leu Cys Asp Ile Asn Thr Leu Ala Leu Ala Ala Val Ala  
35 40 45  
tct gaa ctc tcc aca ccc aca cac acg caa caa gtc gac gtt ggt agc 192  
Ser Glu Leu Ser Thr Pro Thr His Thr Gln Gln Val Asp Val Gly Ser  
50 55 60  
acc tcc caa gtg caa tcc ttc gta cga tcc acg atc gaa aag ttc ggt 240  
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## PhoenixTemp32470.tmp.txt

Thr 65	Ser	Gln	Val	Gln	Ser 70	Phe	Val	Arg	Ser	Thr 75	Ile	Glu	Lys	Phe	Gly 80	
cga	atc	gat	cac	gtc	ttc	aac	tgc	gcc	ggc	gta	aat	ccc	aca	tcc	atc	288
Arg	Ile	Asp	His	Val 85	Phe	Asn	Cys	Ala	Gly 90	Val	Asn	Pro	Thr	Ser 95	Ile	
cct	ctt	gag	gat	acg	cac	gac	gag	tac	tgg	gac	aga	ctg	gtc	aac	acg	336
Pro	Leu	Glu	Asp	Thr	His	Asp	Glu	Tyr 105	Trp	Asp	Arg	Leu	Val 110	Asn	Thr	
aat	ctc	aag	ggc	gtg	ttc	ttg	gtt	acg	agg	gag	tgt	ctg	ccg	cac	ctg	384
Asn	Leu	Lys 115	Gly	Val	Phe	Leu	Val 120	Thr	Arg	Glu	Cys	Leu	Pro	His	Leu	
agg	cgc	ggc	gcg	agt	atc	gtc	aac	gtg	tcg	tcg	ata	tct	gga	att	cgt	432
Arg	Arg	Gly	Ala	Ser	Ile	Val 135	Asn	Val	Ser	Ser	Ile 140	Ser	Gly	Ile	Arg	
ggg	tcc	gcg	atg	caa	tct	gtg	tac	tgc	acg	acc	aag	ttt	ggg	ctg	att	480
Gly	Ser	Ala	Met	Gln 150	Ser	Val	Tyr	Cys	Thr	Thr 155	Lys	Phe	Gly	Leu	Ile 160	
ggc	atg	tcc	aag	tct	ctt	gcg	ctg	gaa	ctt	ggg	ccc	aag	gga	att	cgc	528
Gly	Met	Ser	Lys	Ser 165	Leu	Ala	Leu	Glu	Leu 170	Gly	Pro	Lys	Gly	Ile 175	Arg	
gtc	aac	tgc	gtg	gca	ccg	ggg	tac	atc	gat	acg	ccg	tca	aat	gcg	ggc	576
Val	Asn	Cys	Val 180	Ala	Pro	Gly	Tyr	Ile 185	Asp	Thr	Pro	Ser	Asn 190	Ala	Gly	
ata	gtg	aag	ggt	ggg	gag	gcg	atc	gag	cgc	atg	aga	ttg	ggt	aat	gcg	624
Ile	Val	Lys 195	Gly	Gly	Glu	Ala	Ile 200	Glu	Arg	Met	Arg	Leu 205	Gly	Asn	Ala	
ctg	gaa	agg	ctg	ggc	acc	ccg	gag	gag	gta	gcg	gat	gtt	gtg	gcg	ttc	672
Leu	Glu	Arg	Leu	Gly	Thr 215	Pro	Glu	Glu	Val	Ala	Asp 220	Val	Val	Ala	Phe	
ttg	ttt	ggg	gag	gag	agt	agg	tat	gtg	aac	ggt	gca	gtg	ctg	gag	att	720
Leu	Phe	Gly	Glu	Glu	Ser 230	Arg	Tyr	Val	Asn 235	Gly	Ala	Val	Leu	Glu	Ile 240	
gat	ggc	gcg	gtt	aaa	atg	agt	agc	aca	acg	agt	aag	tag				759
Asp	Gly	Ala	Val 245	Lys	Met	Ser	Ser	Thr	Thr 250	Ser	Lys					

&lt;210&gt; 1856

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 1856

Met	Ser	Lys	Leu	Phe 5	Gln	Asp	Lys	Val	Val 10	Leu	Val	Thr	Gly	Gly 15	Ala	
Ser	Gly	Ile	Gly 20	Arg	Ala	Thr	Ala	Leu 25	Lys	Met	Ala	Thr	Leu 30	Gly	Ala	
Ser	Ile	Ala 35	Leu	Cys	Asp	Ile	Asn 40	Thr	Leu	Ala	Leu	Ala 45	Ala	Val	Ala	
Ser	Glu	Leu	Ser	Thr	Pro	Thr 55	His	Thr	Gln	Gln	Val 60	Asp	Val	Gly	Ser	
Thr	Ser	Gln	Val	Gln	Ser 70	Phe	Val	Arg	Ser	Thr 75	Ile	Glu	Lys	Phe 80	Gly	
Arg	Ile	Asp	His	Val 85	Phe	Asn	Cys	Ala	Gly 90	Val	Asn	Pro	Thr	Ser 95	Ile	
Pro	Leu	Glu	Asp 100	Thr	His	Asp	Glu	Tyr 105	Trp	Asp	Arg	Leu	Val 110	Asn	Thr	
Asn	Leu	Lys 115	Gly	Val	Phe	Leu	Val 120	Thr	Arg	Glu	Cys	Leu	Pro	His	Leu	
Arg	Arg	Gly	Ala	Ser	Ile	Val 135	Asn	Val	Ser	Ser	Ile 140	Ser	Gly	Ile	Arg	
Gly	Ser	Ala	Met	Gln 150	Ser	Val	Tyr	Cys	Thr	Thr 155	Lys	Phe	Gly	Leu	Ile 160	
Gly	Met	Ser	Lys	Ser 165	Leu	Ala	Leu	Glu	Leu 170	Gly	Pro	Lys	Gly	Ile 175	Arg	
Val	Asn	Cys	Val 180	Ala	Pro	Gly	Tyr	Ile 185	Asp	Thr	Pro	Ser	Asn 190	Ala	Gly	
Ile	Val	Lys 195	Gly	Gly	Glu	Ala	Ile 200	Glu	Arg	Met	Arg	Leu 205	Gly	Asn	Ala	
Leu	Glu	Arg	Leu	Gly	Thr	Pro	Glu	Val	Ala	Asp	Val	Val	Ala	Phe		

## PhoenixTemp32470.tmp.txt

210  
 Leu Phe Gly Glu Glu Ser 215  
 225 Asp Gly Ala Val Lys Met Ser Ser Thr Thr Ser Lys  
 230 235 240  
 245 250

<210> 1857  
 <211> 900  
 <212> DNA  
 <213> Phaeosphaeria nodorum

<220>  
 <221> CDS  
 <222> (1)..(900)

<400> 1857  
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 Met Ser Ser Ser Lys Gly Gln Phe Glu Gln Gly His Gln Pro Glu Val  
 1 5 10 15  
 cag cac cag aag gtc cca gga tgg cag aca gta atg gac cct cca ccc 96  
 Gln His Gln Lys Val Pro Gly Trp Gln Thr Val Met Asp Pro Pro Pro  
 20 25 30  
 caa gtc gac cat ctt ccc acc gcc gaa ggc ggc cgc gaa ctc tac aaa 144  
 Gln Val Asp His Leu Pro Thr Ala Glu Gly Gly Arg Glu Leu Tyr Lys  
 35 40 45  
 gcc gcc ggg aag ctc aag ggc aag aaa gca ctc atc acc ggc ggc gac 192  
 Ala Ala Gly Lys Leu Lys Gly Lys Lys Ala Leu Ile Thr Gly Gly Asp  
 50 55 60  
 tct gga atc ggc cgc tca atc gcc gtc ctt tac gcc atg gag ggt gcc 240  
 Ser Gly Ile Gly Arg Ser Ile Ala Val Leu Tyr Ala Met Glu Gly Ala  
 65 70 75 80  
 gac agc ttc atc gcc tac ctg ccc gaa gaa gaa gaa gac gac gcg aaa 288  
 Asp Ser Phe Ile Ala Tyr Leu Pro Glu Glu Glu Glu Asp Asp Ala Lys  
 85 90 95  
 gag aca gtc aag ctc gtg gaa gag aaa gga gca aga tgc tac aca tac 336  
 Glu Thr Val Lys Leu Val Glu Glu Lys Gly Ala Arg Cys Tyr Thr Tyr  
 100 105 110  
 ccc act gac ctc acc agc cgt gac aac tgc aag aag gtt gtc gag gcg 384  
 Pro Thr Asp Leu Thr Ser Arg Asp Asn Cys Lys Lys Val Val Glu Ala  
 115 120 125  
 gcg gtc aag cag atg ggc ggc att gac atc ctc gta aac cac gcg 432  
 Ala Val Lys Gln Met Gly Gly Ile Asp Ile Leu Val Asn Asn His Ala  
 130 135 140  
 tat cag atg atg gtt gag gat atc aag gat ctt tct gag gac cag tgg 480  
 Tyr Gln Met Met Val Glu Asp Ile Lys Asp Leu Ser Glu Asp Gln Trp  
 145 150 155 160  
 gag cgc acg ttc aac acc aac atc cac ccg ttc ttc tac ttg tca aag 528  
 Glu Arg Thr Phe Asn Thr Asn Ile His Pro Phe Phe Tyr Leu Ser Lys  
 165 170 175  
 tat acc ctg cca cat atg aag aag gga tcg acg atc atc aac aac gct 576  
 Tyr Thr Leu Pro His Met Lys Lys Gly Ser Thr Ile Ile Asn Asn Ala  
 180 185 190  
 tcc atc aac gcg tac att ggt cgt ccg gat ctt ctc gac tac acc tcg 624  
 Ser Ile Asn Ala Tyr Ile Gly Arg Pro Asp Leu Leu Asp Tyr Thr Ser  
 195 200 205  
 acc aag ggt gcg att gtt tcg ttt acc cgt ggt ctg tcg aat cag tat 672  
 Thr Lys Gly Ala Ile Val Ser Phe Thr Arg Gly Leu Ser Asn Gln Tyr  
 210 215 220  
 gtt ggt cga ggt att cgt gtc aat gct gtt gcg ccc ggg cca gtt tgg 720  
 Val Gly Arg Gly Ile Arg Val Asn Ala Val Ala Pro Gly Pro Val Trp  
 225 230 235 240  
 aca cct ctt att cca gcg acg atg aac gat gag gcg atc aag cag ttc 768  
 Thr Pro Leu Ile Pro Ala Thr Met Asn Asp Glu Ala Ile Lys Gln Phe  
 245 250 255  
 act tcg ccg atg ggc agg ccg gct cag cca agt gag atc gcg act tgc 816  
 Thr Ser Pro Met Gly Arg Pro Ala Gln Pro Ser Glu Ile Ala Thr Cys  
 260 265 270  
 ttt gtc ttc ttg gct agc agt gac agc tgc atc agt gga cag acc 864  
 Phe Val Phe Leu Ala Ser Ser Asp Ser Ser Cys Ile Ser Gly Gln Thr

275  
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 290 295

900

<210> 1858  
 <211> 299  
 <212> PRT  
 <213> Phaeosphaeria nodorum

<400> 1858  
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 Gln His Gln Lys Val Pro Gly Trp Gln Thr Val Met Asp Pro Pro  
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 Gln Val Asp His Leu Pro Thr Ala Glu Gly Gly Arg Glu Leu Tyr Lys  
 35 40 45  
 Ala Ala Gly Lys Leu Lys Gly Lys Lys Ala Leu Ile Thr Gly Gly Asp  
 50 55 60  
 Ser Gly Ile Gly Arg Ser Ile Ala Val Leu Tyr Ala Met Glu Gly Ala  
 65 70 75 80  
 Asp Ser Phe Ile Ala Tyr Leu Pro Glu Glu Glu Glu Asp Asp Ala Lys  
 85 90 95  
 Glu Thr Val Lys Leu Val Glu Glu Lys Gly Ala Arg Cys Tyr Thr Tyr  
 100 105 110  
 Pro Thr Asp Leu Thr Ser Arg Asp Asn Cys Lys Lys Val Val Glu Ala  
 115 120 125  
 Ala Val Lys Gln Met Gly Gly Ile Asp Ile Leu Val Asn Asn His Ala  
 130 135 140  
 Tyr Gln Met Met Val Glu Asp Ile Lys Asp Leu Ser Glu Asp Gln Trp  
 145 150 155 160  
 Glu Arg Thr Phe Asn Thr Asn Ile His Pro Phe Phe Tyr Leu Ser Lys  
 165 170 175  
 Tyr Thr Leu Pro His Met Lys Lys Gly Ser Thr Ile Ile Asn Asn Ala  
 180 185 190  
 Ser Ile Asn Ala Tyr Ile Gly Arg Pro Asp Leu Leu Asp Tyr Thr Ser  
 195 200 205  
 Thr Lys Gly Ala Ile Val Ser Phe Thr Arg Gly Leu Ser Asn Gln Tyr  
 210 215 220  
 Val Gly Arg Gly Ile Arg Val Asn Ala Val Ala Pro Gly Pro Val Trp  
 225 230 235 240  
 Thr Pro Leu Ile Pro Ala Thr Met Asn Asp Glu Ala Ile Lys Gln Phe  
 245 250 255  
 Thr Ser Pro Met Gly Arg Pro Ala Gln Pro Ser Glu Ile Ala Thr Cys  
 260 265 270  
 Phe Val Phe Leu Ala Ser Ser Asp Ser Ser Cys Ile Ser Gly Gln Thr  
 275 280 285  
 Ile His Ala Asn Gly Gly Thr Ile Val Asn Gly  
 290 295

<210> 1859  
 <211> 744  
 <212> DNA  
 <213> Phaeosphaeria nodorum

<220>  
 <221> CDS  
 <222> (1)..(744)

<400> 1859  
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 ctc gag acc gcg cga ctt ctc gca agc aaa ggc gcc aaa ctt tct ctc 96  
 Leu Glu Thr Ala Arg Leu Leu Ala Ser Lys Gly Ala Lys Leu Ser Leu  
 20 25 30  
 gcg gat gtg cag gaa gat tta ttg aaa gag ttg gaa gct gaa ctc aaa 144  
 Ala Asp Val Gln Glu Asp Leu Leu Lys Glu Leu Glu Ala Glu Leu Lys  
 35 40 45

## PhoenixTemp32470.tmp.txt

caa	tca	gga	gct	gat	gtt	gta	acc	cac	gtg	gtg	gat	atc	agg	gac	cgc	192
Gln	Ser	Gly	Ala	Asp	Val	Val	Thr	His	Val	Val	Asp	Ile	Arg	Asp	Arg	
	50					55					60					
aag	gct	gtc	gaa	gct	tgg	atc	gct	gca	acg	gtc	gaa	aag	ttt	ggc	aag	240
Lys	Ala	Val	Glu	Ala	Trp	Ile	Ala	Ala	Thr	Val	Glu	Lys	Phe	Gly	Lys	
65					70					75					80	
ctg	gat	ggt	gcc	gcc	aat	ctt	gca	ggt	gtc	aca	gga	aag	caa	tcc	aac	288
Leu	Asp	Gly	Ala	Ala	Asn	Leu	Ala	Gly	Val	Thr	Gly	Lys	Gln	Ser	Asn	
				85					90					95		
gcc	gtt	gag	att	gag	gat	att	gac	gac	gat	gat	tgg	gac	ttg	gtc	atg	336
Ala	Val	Glu	Ile	Glu	Asp	Ile	Asp	Asp	Asp	Asp	Trp	Asp	Leu	Val	Met	
			100					105					110			
gac	gtg	aac	gtc	acc	ggc	ctt	cgc	aac	tgt	ctc	cga	gct	cag	gtg	acg	384
Asp	Val	Asn	Val	Thr	Gly	Leu	Arg	Asn	Cys	Leu	Arg	Ala	Gln	Val	Thr	
		115					120					125				
cag	ttc	aac	gaa	gga	gct	gcg	att	gtg	aat	gct	tcc	agt	atc	ctc	ggc	432
Gln	Phe	Asn	Glu	Gly	Ala	Ala	Ile	Val	Asn	Ala	Ser	Ser	Ile	Leu	Gly	
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gtg	ata	ggc	gca	ccc	aag	ttg	gcg	tat	tgt	gcg	tca	aaa	cat	gct		480
Val	Ile	Gly	Ala	Pro	Lys	Asn	Leu	Ala	Tyr	Cys	Ala	Ser	Lys	His	Ala	
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gtt	gtt	ggt	atg	acc	aga	gtt	gcg	gcg	aag	gag	ctt	ggg	cca	aaa	aag	528
Val	Val	Gly	Met	Thr	Arg	Val	Ala	Ala	Lys	Glu	Leu	Gly	Pro	Lys	Lys	
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Ile	Arg	Val	Asn	Cys	Ile	Cys	Pro	Gly	Pro	Ile	Asp	Thr	Pro	Met	Leu	
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cga	aac	gcg	tct	gcg	att	caa	ggc	cat	gcg	aca	gac	ttc	agt	ttc	ctt	624
Arg	Asn	Ala	Ser	Ala	Ile	Gln	Gly	His	Ala	Thr	Asp	Phe	Ser	Phe	Leu	
		195					200					205				
cca	ctt	gga	cga	aag	gcg	cac	cag	aaa	gaa	gtg	ccg	cca	ctc	atc	gag	672
Pro	Leu	Gly	Arg	Lys	Ala	His	Gln	Lys	Glu	Val	Pro	Pro	Leu	Ile	Glu	
210					215						220					
ttc	ttg	ttg	tcc	gat	gcg	tcg	tcc	ttt	ata	aca	gga	aat	gcg	atg	cag	720
Phe	Leu	Leu	Ser	Asp	Ala	Ser	Ser	Phe	Ile	Thr	Gly	Asn	Ala	Met	Gln	
225					230					235					240	
att	gat	gga	gga	tgg	ttt	tgc	tag									744
Ile	Asp	Gly	Gly	Trp	Phe	Cys										
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&lt;210&gt; 1860

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 1860

Met	Lys	Asp	Lys	Val	Val	Val	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	
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			20					25					30			
Ala	Asp	Val	Gln	Glu	Asp	Leu	Leu	Lys	Glu	Leu	Glu	Ala	Glu	Leu	Lys	
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Gln	Ser	Gly	Ala	Asp	Val	Val	Thr	His	Val	Val	Asp	Ile	Arg	Asp	Arg	
	50					55					60					
Lys	Ala	Val	Glu	Ala	Trp	Ile	Ala	Ala	Thr	Val	Glu	Lys	Phe	Gly	Lys	80
65					70					75						
Leu	Asp	Gly	Ala	Ala	Asn	Leu	Ala	Gly	Val	Thr	Gly	Lys	Gln	Ser	Asn	
				85					90					95		
Ala	Val	Glu	Ile	Glu	Asp	Ile	Asp	Asp	Asp	Asp	Trp	Asp	Leu	Val	Met	
			100					105					110			
Asp	Val	Asn	Val	Thr	Gly	Leu	Arg	Asn	Cys	Leu	Arg	Ala	Gln	Val	Thr	
		115					120					125				
Gln	Phe	Asn	Glu	Gly	Ala	Ala	Ile	Val	Asn	Ala	Ser	Ile	Leu	Gly		
130					135						140					
Val	Ile	Gly	Ala	Pro	Lys	Asn	Leu	Ala	Tyr	Cys	Ala	Ser	Lys	His	Ala	
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Val	Val	Gly	Met	Thr	Arg	Val	Ala	Ala	Lys	Glu	Leu	Gly	Pro	Lys	Lys	
				165					170					175		
Ile	Arg	Val	Asn	Cys	Ile	Cys	Pro	Gly	Pro	Ile	Asp	Thr	Pro	Met	Leu	

## PhoenixTemp32470.tmp.txt

180  
 Arg Asn Ala Ser Ala Ile Gln Gly His Ala Thr Asp Phe Ser Phe Leu  
 195  
 Pro Leu Gly Arg Lys Ala His Gln Lys Glu Val Pro Pro Leu Ile Glu  
 210  
 Phe Leu Leu Ser Asp Ala Ser Ser Phe Ile Thr Gly Asn Ala Met Gln  
 225  
 Ile Asp Gly Gly Trp Phe Cys  
 245

&lt;210&gt; 1861

&lt;211&gt; 975

&lt;212&gt; DNA

&lt;213&gt; Buchloe dactyloides

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(975)

&lt;400&gt; 1861

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cac	gcg	cac	cag	acc	ccg	cac	cac	ggc	tgg	gag	agc	aat	ggc	ggc	gca	96
His	Ala	His	Gln	Thr	Pro	His	His	Gly	Trp	Glu	Ser	Asn	Gly	Gly	Ala	
			20					25					30			
gcc	gcc	gtc	gtc	gcg	ccc	acg	ccc	gcg	ccc	cgg	aag	ctg	gac	ggg	aag	144
Ala	Ala	Val	Val	Ala	Pro	Thr	Pro	Ala	Pro	Arg	Lys	Leu	Asp	Gly	Lys	
		35					40					45				
gtg	gcc	att	gtg	acg	ggc	ggc	gcg	cgc	ggg	atc	ggc	gag	gcc	atc	gtg	192
Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	
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cgg	ctg	ttc	gcg	aag	cac	ggc	gcg	cgg	gtg	gtg	atc	gcg	gac	atc	gac	240
Arg	Leu	Phe	Ala	Lys	His	Gly	Ala	Arg	Val	Val	Ile	Ala	Asp	Ile	Asp	
65				70				75						80		
gcg	gcc	gcg	ggg	gac	gcg	ctg	gcg	gcg	gcg	ctg	ggc	ccg	cag	gtc	agc	288
Ala	Ala	Ala	Gly	Asp	Ala	Leu	Ala	Ala	Ala	Leu	Gly	Pro	Gln	Val	Ser	
			85				90							95		
tgc	gtg	cgg	tgc	gac	gtg	tcc	gtg	gag	gac	gac	gtg	ggg	cgc	gcc	gtg	336
Cys	Val	Arg	Cys	Asp	Val	Ser	Val	Glu	Asp	Asp	Val	Gly	Arg	Ala	Val	
			100					105					110			
gag	tgg	gcg	gtg	gcg	cgg	cac	ggc	cgg	ctg	gac	gtg	ctg	tgc	aac	aac	384
Glu	Trp	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	
		115					120					125				
gcg	ggg	gtg	ctg	ggc	cgg	cag	acg	cgc	gcg	gcc	aag	agc	atc	ctg	tcc	432
Ala	Gly	Val	Leu	Gly	Arg	Gln	Thr	Arg	Ala	Ala	Lys	Ser	Ile	Leu	Ser	
	130					135					140					
ttc	gac	gcg	gcc	gag	ttc	gac	gcc	gtg	ctc	cgc	gtc	aac	gcg	ctg	ggc	480
Phe	Asp	Ala	Ala	Glu	Phe	Asp	Ala	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	
145				150				155						160		
gcc	gcg	ctc	ggg	atg	aag	cac	gcc	gcg	ctc	gcc	atg	gcg	ccg	cgc	cgc	528
Ala	Ala	Leu	Gly	Met	Lys	His	Ala	Ala	Leu	Ala	Met	Ala	Pro	Arg	Arg	
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gcg	ggc	agc	atc	gtc	tcc	gtc	tcc	agc	gtc	gcc	ggc	gtg	ctc	ggc	ggg	576
Ala	Gly	Ser	Ile	Val	Ser	Val	Ser	Ser	Val	Ala	Gly	Val	Leu	Gly	Gly	
			180				185						190			
ctg	ggc	ccg	cac	gcg	tac	acc	gcc	tcc	aag	cac	gcc	atc	gtc	ggg	ctc	624
Leu	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	
		195					200					205				
acc	aag	aac	gcc	gcc	tgc	gag	ctc	ggc	gcg	cac	ggc	atc	cgc	gtc	aac	672
Thr	Lys	Asn	Ala	Ala	Cys	Glu	Leu	Gly	Ala	His	Gly	Ile	Arg	Val	Asn	
	210				215			220								
tgc	gtc	tcg	ccc	ttc	ggc	gtc	gcc	acg	aac	atg	ctc	atc	aac	gcg	tgg	720
Cys	Val	Ser	Pro	Phe	Gly	Val	Ala	Thr	Asn	Met	Leu	Ile	Asn	Ala	Trp	
225				230				235						240		
cgc	cag	ggc	cac	gcc	gac	ggc	ggc	ggc	ggc	gac	gac	gac	gtc	gac	atc	768
Arg	Gln	Gly	His	Ala	Asp	Gly	Gly	Gly	Gly	Asp	Asp	Asp	Val	Asp	Ile	
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gac	atc	gcc	gtg	ccc	agc	gac	gag	gag	gtg	gag	aag	atg	gag	gag	gtg	816

PhoenixTemp32470.tmp.txt

Asp	Ile	Ala	Val	Pro	Ser	Asp	Glu	Glu	Val	Glu	Lys	Met	Glu	Glu	Val		
gtc	agg	ggg	ttc	gcc	acg	ctc	aag	gga	ccc	acg	ctc	agg	ccc	agg	gac		864
Val	Arg	Gly	Phe	Ala	Thr	Leu	Lys	Gly	Pro	Thr	Leu	Arg	Pro	Arg	Asp		
		275					280					285					
atc	gca	gag	gcc	gtg	ctc	ttc	ctg	gcc	agc	gac	gag	tcc	aga	tac	gtc		912
Ile	Ala	Glu	Ala	Val	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Arg	Tyr	Val		
		290				295					300						
tcc	ggc	cac	aac	ctc	gtc	gtg	gac	ggc	ggc	gtc	acg	acc	tcc	aga	aac		960
Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn		
305					310					315					320		
ctc	atc	ggc	ttg	tga													975
Leu	Ile	Gly	Leu														

<210> 1862  
 <211> 324  
 <212> PRT  
 <213> Buchloe dactyloides

<400> 1862

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His	Ala	His	Gln	Thr	Pro	His	His	Gly	Trp	Glu	Ser	Asn	Gly	Gly	Ala		
			20					25					30				
Ala	Ala	Val	Val	Ala	Pro	Thr	Pro	Ala	Pro	Arg	Lys	Leu	Asp	Gly	Lys		
		35					40					45					
Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val		
	50				55					60							
Arg	Leu	Phe	Ala	Lys	His	Gly	Ala	Arg	Val	Val	Ile	Ala	Asp	Ile	Asp		
65					70					75					80		
Ala	Ala	Ala	Gly	Asp	Ala	Leu	Ala	Ala	Ala	Leu	Gly	Pro	Gln	Val	Ser		
			85					90						95			
Cys	Val	Arg	Cys	Asp	Val	Ser	Val	Glu	Asp	Asp	Val	Gly	Arg	Ala	Val		
			100					105					110				
Glu	Trp	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn		
	115						120					125					
Ala	Gly	Val	Leu	Gly	Arg	Gln	Thr	Arg	Ala	Ala	Lys	Ser	Ile	Leu	Ser		
	130					135					140						
Phe	Asp	Ala	Ala	Glu	Phe	Asp	Ala	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly		
145					150					155					160		
Ala	Ala	Leu	Gly	Met	Lys	His	Ala	Ala	Leu	Ala	Met	Ala	Pro	Arg	Arg		
			165						170					175			
Ala	Gly	Ser	Ile	Val	Ser	Val	Ser	Ser	Val	Ala	Gly	Val	Leu	Gly	Gly		
			180					185					190				
Leu	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu		
		195					200					205					
Thr	Lys	Asn	Ala	Ala	Cys	Glu	Leu	Gly	Ala	His	Gly	Ile	Arg	Val	Asn		
	210					215					220						
Cys	Val	Ser	Pro	Phe	Gly	Val	Ala	Thr	Asn	Met	Leu	Ile	Asn	Ala	Trp		
225					230					235					240		
Arg	Gln	Gly	His	Ala	Asp	Gly	Gly	Gly	Gly	Asp	Asp	Asp	Val	Asp	Ile		
			245						250					255			
Asp	Ile	Ala	Val	Pro	Ser	Asp	Glu	Glu	Val	Glu	Lys	Met	Glu	Glu	Val		
			260					265					270				
Val	Arg	Gly	Phe	Ala	Thr	Leu	Lys	Gly	Pro	Thr	Leu	Arg	Pro	Arg	Asp		
		275					280					285					
Ile	Ala	Glu	Ala	Val	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Arg	Tyr	Val		
	290					295					300						
Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn		
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<210> 1863  
 <211> 810  
 <212> DNA  
 <213> Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 1863

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acc	agt	gaa	gat	gga	tgg	gga	att	ggg	gca	gcg	att	gca	atg	caa	ctg	96
Thr	Ser	Glu	Asp	Gly	Trp	Gly	Ile	Gly	Ala	Ala	Ile	Ala	Met	Gln	Leu	
			20					25					30			
tct	caa	cag	ggg	gca	gtg	atc	tac	ggt	ggc	aat	cgc	tcg	ttg	gcc	tcg	144
Ser	Gln	Gln	Gly	Ala	Val	Ile	Tyr	Gly	Gly	Asn	Arg	Ser	Leu	Ala	Ser	
			35				40					45				
gct	gaa	aga	acg	aaa	gcg	cgg	atc	gaa	cga	gag	gga	ggc	gtg	tgt	gac	192
Ala	Glu	Arg	Thr	Lys	Ala	Arg	Ile	Glu	Arg	Glu	Gly	Gly	Val	Cys	Asp	
			50			55					60					
gtc	cag	gaa	acc	gac	gtg	acc	gat	tca	gca	tcc	gtg	aag	gct	ctg	gtc	240
Val	Gln	Glu	Thr	Asp	Val	Thr	Asp	Ser	Ala	Ser	Val	Lys	Ala	Leu	Val	
					70					75					80	
gac	ggc	tgc	atc	caa	cga	cat	ggt	cgc	att	gat	att	ctg	atc	aat	aat	288
Asp	Gly	Cys	Ile	Gln	Arg	His	Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	
				85				90						95		
gtc	ggc	aag	tcc	gag	cct	gga	tgt	ccg	gcg	gag	atg	agg	gaa	gaa	atc	336
Val	Gly	Lys	Ser	Glu	Pro	Gly	Cys	Pro	Ala	Glu	Met	Arg	Glu	Glu	Ile	
			100					105					110			
tgg	gat	caa	cag	gtc	gat	ttg	aat	ctg	aaa	agc	ata	tac	ttg	acg	tgt	384
Trp	Asp	Gln	Gln	Val	Asp	Leu	Asn	Leu	Lys	Ser	Ile	Tyr	Leu	Thr	Cys	
			115				120					125				
cac	tac	gtt	cta	ccc	att	atg	gag	aaa	caa	gag	acg	ggc	gga	tca	gtt	432
His	Tyr	Val	Leu	Pro	Ile	Met	Glu	Lys	Gln	Glu	Thr	Gly	Gly	Ser	Val	
			130			135					140					
gtc	aat	gtt	tcc	agc	att	gca	gga	cta	cga	tat	atc	gga	aag	ccc	caa	480
Val	Asn	Val	Ser	Ser	Ile	Ala	Gly	Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	
					150					155					160	
gtg	gct	tac	tcg	gct	aca	aag	gct	gcg	att	atg	cag	ttc	acc	aag	gcc	528
Val	Ala	Tyr	Ser	Ala	Thr	Lys	Ala	Ala	Ile	Met	Gln	Phe	Thr	Lys	Ala	
				165				170						175		
acg	gcc	gtg	atc	tat	gcg	cca	aag	aat	gtc	cga	ctg	aac	acg	ata	gta	576
Thr	Ala	Val	Ile	Tyr	Ala	Pro	Lys	Asn	Val	Arg	Leu	Asn	Thr	Ile	Val	
				180				185					190			
cct	ggg	ttg	atc	tat	acg	ccg	tat	act	caa	gcg	ctc	gcc	aag	cga	tat	624
Pro	Gly	Leu	Ile	Tyr	Thr	Pro	Tyr	Thr	Gln	Ala	Leu	Ala	Lys	Arg	Tyr	
				195			200					205				
gct	ccg	gga	ggt	aat	gag	gag	gag	tat	atg	aag	atg	cgt	gat	gcc	cag	672
Ala	Pro	Gly	Gly	Asn	Glu	Glu	Glu	Tyr	Met	Lys	Met	Arg	Asp	Ala	Gln	
						215					220					
gtt	cct	atg	gga	cgg	atg	gga	gac	gct	tgg	gat	gtg	gcc	cac	gcc	gcc	720
Val	Pro	Met	Gly	Arg	Met	Gly	Asp	Ala	Trp	Asp	Val	Ala	His	Ala	Ala	
					230					235					240	
ctt	ttc	ctt	gtc	tct	gat	gcg	gca	cag	tat	ata	acg	ggg	cag	gag	ctg	768
Leu	Phe	Leu	Val	Ser	Asp	Ala	Ala	Gln	Tyr	Ile	Thr	Gly	Gln	Glu	Leu	
				245					250					255		
gtg	gtg	gat	ggt	gga	atc	aca	tcg	tct	aca	ggg	aga	aca	taa			810
Val	Val	Asp	Gly	Gly	Ile	Thr	Ser	Ser	Thr	Gly	Arg	Thr				
				260				265								

&lt;210&gt; 1864

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1864

Met	Leu	Arg	Leu	Asp	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Leu	Gly	Gln	
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Thr	Ser	Glu	Asp	Gly	Trp	Gly	Ile	Gly	Ala	Ala	Ile	Ala	Met	Gln	Leu	
			20					25					30			
ser	Gln	Gln	Gly	Ala	Val	Ile	Tyr	Gly	Gly	Asn	Arg	Ser	Leu	Ala	Ser	
				35			40					45				



## PhoenixTemp32470.tmp.txt

Ala Glu Arg Thr Lys Ala Arg Ile Glu Arg Glu Gly Val Cys Asp  
 50 55 60  
 Val Gln Glu Thr Asp Val Thr Asp Ser Ala Ser Val Lys Ala Leu Val  
 65 70 75 80  
 Asp Gly Cys Ile Gln Arg His Gly Arg Ile Asp Ile Leu Ile Asn Asn  
 85 90 95  
 Val Gly Lys Ser Glu Pro Gly Cys Pro Ala Glu Met Arg Glu Ile  
 100 105 110  
 Trp Asp Gln Gln Val Asp Leu Asn Leu Lys Ser Ile Tyr Leu Thr Cys  
 115 120 125  
 His Tyr Val Leu Pro Ile Met Glu Lys Gln Glu Thr Gly Gly Ser Val  
 130 135 140  
 Val Asn Val Ser Ser Ile Ala Gly Leu Arg Tyr Ile Gly Lys Pro Gln  
 145 150 155 160  
 Val Ala Tyr Ser Ala Thr Lys Ala Ala Ile Met Gln Phe Thr Lys Ala  
 165 170 175  
 Thr Ala Val Ile Tyr Ala Pro Lys Asn Val Arg Leu Asn Thr Ile Val  
 180 185 190  
 Pro Gly Leu Ile Tyr Thr Pro Tyr Thr Gln Ala Leu Ala Lys Arg Tyr  
 195 200 205  
 Ala Pro Gly Gly Asn Glu Glu Glu Tyr Met Lys Met Arg Asp Ala Gln  
 210 215 220  
 Val Pro Met Gly Arg Met Gly Asp Ala Trp Asp Val Ala His Ala Ala  
 225 230 235 240  
 Leu Phe Leu Val Ser Asp Ala Ala Gln Tyr Ile Thr Gly Gln Glu Leu  
 245 250 255  
 Val Val Asp Gly Gly Ile Thr Ser Ser Thr Gly Arg Thr  
 260 265

&lt;210&gt; 1865

&lt;211&gt; 882

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(882)

&lt;400&gt; 1865

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Met	Pro	Glu	Gly	Pro	Val	Val	Asn	Gly	Leu	Phe	Arg	His	Asn	Asn	Thr	
1				5				10					15			
acc	cct	cca	gcg	cag	gag	agt	gtt	atg	gct	ctc	ttc	tcg	ctc	aag	ggg	96
Thr	Pro	Pro	Ala	Gln	Glu	Ser	Val	Met	Ala	Leu	Phe	Ser	Leu	Lys	Gly	
			20					25					30			
aaa	act	gcc	gtc	gtc	acc	ggc	gca	gca	tcg	ggg	atc	ggg	ttg	agc	gtc	144
Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Leu	Ser	Val	
			35				40					45				
gca	cat	gca	ctc	gcg	gag	gct	ggc	gcc	aac	gtt	gcc	atc	tgg	tat	aac	192
Ala	His	Ala	Leu	Ala	Glu	Ala	Gly	Ala	Asn	Val	Ala	Ile	Trp	Tyr	Asn	
			50			55					60					
aga	aac	agt	aaa	gcc	gtt	gag	gag	gct	gca	aac	atc	gag	tct	aaa	tat	240
Arg	Asn	Ser	Lys	Ala	Val	Glu	Glu	Ala	Ala	Asn	Ile	Glu	Ser	Lys	Tyr	
					70					75					80	
ggc	gtt	aag	tgc	cgt	gca	tac	caa	ata	aac	atc	cgc	gaa	agc	gaa	aag	288
Gly	Val	Lys	Cys	Arg	Ala	Tyr	Gln	Ile	Asn	Ile	Arg	Glu	Ser	Glu	Lys	
				85					90					95		
gtt	gaa	gag	ctg	ttg	aat	aca	tgc	gtc	cgc	gaa	ttg	aac	ggg	cgc	ctg	336
Val	Glu	Glu	Leu	Leu	Asn	Thr	Cys	Val	Arg	Glu	Leu	Asn	Gly	Arg	Leu	
			100					105					110			
gac	att	ttc	atc	gcc	aac	tcc	ggg	att	ccg	tgg	act	caa	gga	ccc	atg	384
Asp	Ile	Phe	Ile	Ala	Asn	Ser	Gly	Ile	Pro	Trp	Thr	Gln	Gly	Pro	Met	
							120					125				
atc	gat	gct	ccg	ctt	gac	cac	tac	aga	gac	gtg	aca	caa	acc	gat	cta	432
Ile	Asp	Ala	Pro	Leu	Asp	His	Tyr	Arg	Asp	Val	Thr	Gln	Thr	Asp	Leu	
						135					140					
gat	gga	aca	ttc	tat	tgt	gcc	aga	gcc	gct	ggc	gct	cat	tgg	aga	agg	480
Asp	Gly	Thr	Phe	Tyr	Cys	Ala	Arg	Ala	Ala	Gly	Ala	His	Trp	Arg	Arg	
					150					155					160	

## PhoenixTemp32470.tmp.txt

cag	aag	acc	gag	ggt	aca	gat	att	ttt	ggc	aat	cct	cta	caa	ggc	ttc	528
Gln	Lys	Thr	Glu	Gly	Thr	Asp	Ile	Phe	Gly	Asn	Pro	Leu	Gln	Gly	Phe	
				165					170					175		
aca	tac	ggt	agt	ttc	ggt	gcg	act	gct	tcc	atg	agt	gga	cac	att	gtc	576
Thr	Tyr	Gly	Ser	Phe	Val	Ala	Thr	Ala	Ser	Met	Ser	Gly	His	Ile	Val	
			180					185					190			
aat	ata	cca	cag	ctc	caa	gct	gcg	tat	aat	gcg	gct	aag	gcc	gga	gtg	624
Asn	Ile	Pro	Gln	Leu	Gln	Ala	Ala	Tyr	Asn	Ala	Ala	Lys	Ala	Gly	Val	
		195				200						205				
atc	cat	ttg	tgt	aaa	tca	ctt	gcc	gtg	gaa	tgg	gtt	cag	ttt	gcg	cgc	672
Ile	His	Leu	Cys	Lys	Ser	Leu	Ala	Val	Glu	Trp	Val	Gln	Phe	Ala	Arg	
	210					215					220					
gcg	aat	aca	gtc	tcg	cct	gga	tac	att	att	act	gat	att	tcc	acg	ttt	720
Ala	Asn	Thr	Val	Ser	Pro	Gly	Tyr	Ile	Ile	Thr	Asp	Ile	Ser	Thr	Phe	
225					230					235					240	
gtt	cct	gac	gag	aca	aag	gat	att	tgg	aaa	ggg	aaa	att	ccg	atg	ggg	768
Val	Pro	Asp	Glu	Thr	Lys	Asp	Ile	Trp	Lys	Gly	Lys	Ile	Pro	Met	Gly	
				245					250					255		
cgg	gaa	gct	ctg	cca	cat	gag	ctc	aaa	ggg	gcc	tat	ctg	tat	ctg	gct	816
Arg	Glu	Ala	Leu	Pro	His	Glu	Leu	Lys	Gly	Ala	Tyr	Leu	Tyr	Leu	Ala	
			260					265				270				
tcg	gat	gcg	tca	agt	tat	act	acc	ggg	gcg	gat	ctt	gtt	gtg	gat	gga	864
Ser	Asp	Ala	Ser	Ser	Tyr	Thr	Thr	Gly	Ala	Asp	Leu	Val	Val	Asp	Gly	
		275					280					285				
ggt	tat	act	cta	ccc	tga											882
Gly	Tyr	Thr	Leu	Pro												
	290															

&lt;210&gt; 1866

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1866

Met	Pro	Glu	Gly	Pro	Val	Val	Asn	Gly	Leu	Phe	Arg	His	Asn	Asn	Thr	
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Thr	Pro	Pro	Ala	Gln	Glu	Ser	Val	Met	Ala	Leu	Phe	Ser	Leu	Lys	Gly	
			20					25					30			
Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Leu	Ser	Val	
		35					40					45				
Ala	His	Ala	Leu	Ala	Glu	Ala	Gly	Ala	Asn	Val	Ala	Ile	Trp	Tyr	Asn	
	50					55					60					
Arg	Asn	Ser	Lys	Ala	Val	Glu	Glu	Ala	Ala	Asn	Ile	Glu	Ser	Lys	Tyr	
65				70						75					80	
Gly	Val	Lys	Cys	Arg	Ala	Tyr	Gln	Ile	Asn	Ile	Arg	Glu	Ser	Glu	Lys	
				85					90					95		
Val	Glu	Glu	Leu	Leu	Asn	Thr	Cys	Val	Arg	Glu	Leu	Asn	Gly	Arg	Leu	
			100					105					110			
Asp	Ile	Phe	Ile	Ala	Asn	Ser	Gly	Ile	Pro	Trp	Thr	Gln	Gly	Pro	Met	
		115					120					125				
Ile	Asp	Ala	Pro	Leu	Asp	His	Tyr	Arg	Asp	Val	Thr	Gln	Thr	Asp	Leu	
	130					135					140					
Asp	Gly	Thr	Phe	Tyr	Cys	Ala	Arg	Ala	Ala	Gly	Ala	His	Trp	Arg	Arg	
145				150						155					160	
Gln	Lys	Thr	Glu	Gly	Thr	Asp	Ile	Phe	Gly	Asn	Pro	Leu	Gln	Gly	Phe	
			165						170					175		
Thr	Tyr	Gly	Ser	Phe	Val	Ala	Thr	Ala	Ser	Met	Ser	Gly	His	Ile	Val	
			180					185					190			
Asn	Ile	Pro	Gln	Leu	Gln	Ala	Ala	Tyr	Asn	Ala	Ala	Lys	Ala	Gly	Val	
		195				200						205				
Ile	His	Leu	Cys	Lys	Ser	Leu	Ala	Val	Glu	Trp	Val	Gln	Phe	Ala	Arg	
	210					215					220					
Ala	Asn	Thr	Val	Ser	Pro	Gly	Tyr	Ile	Ile	Thr	Asp	Ile	Ser	Thr	Phe	
225					230					235					240	
Val	Pro	Asp	Glu	Thr	Lys	Asp	Ile	Trp	Lys	Gly	Lys	Ile	Pro	Met	Gly	
			245						250					255		
Arg	Glu	Ala	Leu	Pro	His	Glu	Leu	Lys	Gly	Ala	Tyr	Leu	Tyr	Leu	Ala	
			260					265					270			
Ser	Asp	Ala	Ser	Ser	Tyr	Thr	Thr	Gly	Ala	Asp	Leu	Val	Val	Asp	Gly	

275  
Gly Tyr Thr Leu Pro  
290

<210> 1867  
<211> 816  
<212> DNA  
<213> Aspergillus oryzae

<220>  
<221> CDS  
<222> (1)..(816)

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Met Asp Val Pro Gly Ile Ala Leu Ile Thr Gly Ala Ala Ser Gly Ile
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ggc cgc gcc tgc gcc cat aca ttc cgc cgc gat ggc gca agc ggc atc      96
Gly Arg Ala Cys Ala His Thr Phe Ala Arg Asp Gly Ala Ser Gly Ile
20      25      30
gcc ctc ctc gac ctg gac aaa aca gcc cta gag acc gtg caa gcc gag      144
Ala Leu Leu Asp Leu Asp Lys Thr Ala Leu Glu Thr Val Gln Ala Glu
35      40      45
atc aac tcc caa tca agc caa gac aaa aca gcc cgc tgc cgc gta gaa      192
Ile Asn Ser Gln Ser Ser Gln Asp Lys Thr Ala Arg Cys Arg Val Glu
50      55      60
atc tac ccg gtc aac gta acc gac gaa aac cgg gta gac gaa gtc atc      240
Ile Tyr Pro Val Asn Val Thr Asp Glu Asn Arg Val Asp Glu Val Ile
65      70      75      80
aac agc gca gcg caa acc ttc agc cga tta gac tac gtg gtc aac gcg      288
Asn Ser Ala Ala Gln Thr Phe Ser Arg Leu Asp Tyr Val Val Asn Ala
85      90      95
gcc gga ata gca atg aag cac caa ggc gga gcg gca ttc gcc gaa acc      336
Ala Gly Ile Ala Met Lys His Gln Gly Gly Ala Ala Phe Ala Glu Thr
100      105      110
tcc gac tgg caa cgc atc ctt gac gtc aat ctc acg ggg acg ttc ttc      384
Ser Asp Trp Gln Arg Ile Leu Asp Val Asn Leu Thr Gly Thr Phe Phe
115      120      125
gtc ctg cgg gct gcg gct cgg att atg ttg agc cag gag ccg atc cgg      432
Val Leu Arg Ala Ala Ala Arg Ile Met Leu Ser Gln Glu Pro Ile Arg
130      135      140
tcg agt att gat gga cgg ccg ttg cag cgg ggg tcg att gtg aat ttc      480
Ser Ser Ile Asp Gly Arg Pro Leu Gln Arg Gly Ser Ile Val Asn Phe
145      150      155      160
tcg agt att cag gga gtc gca ggg att ccg ttg tcg act gct tat acc      528
Ser Ser Ile Gln Val Ala Gly Ile Pro Leu Ser Thr Ala Tyr Thr
165      170      175
gcg acg aag cat gcg gtt att ggg ttg acg agg acg gcg tcg gag gac      576
Ala Thr Lys His Ala Val Ile Gly Leu Thr Arg Thr Ala Ser Glu Asp
180      185      190
tat gcc aag gac ggg ttg agg att aat gcg att tgt cct ggg tat aca      624
Tyr Ala Lys Asp Gly Leu Arg Ile Asn Ala Ile Cys Pro Gly Tyr Thr
195      200      205
gag acg ccg atg acg aca aag tca ccg ttg gtt ttg cag gcc atg cag      672
Glu Thr Pro Met Thr Thr Lys Ser Pro Leu Val Leu Gln Ala Met Gln
210      215      220
gag agg gtg gcg act gct gtc cca atg cag cgg atg gga gag ccg cga      720
Glu Arg Val Ala Thr Val Pro Met Gln Arg Met Gly Glu Pro Arg
225      230      235      240
gag att gcg gat gga gtg gtt tat ctt tct ggg ggg agg agt tcg ttt      768
Glu Ile Ala Asp Gly Val Val Tyr Leu Ser Gly Gly Arg Ser Ser Phe
245      250      255
gtt acg ggg acg cgt ctt ttc gtg gat ggg ggg tac acg cag cgt      813
Val Thr Gly Thr Ala Leu Phe Val Asp Gly Gly Tyr Thr Gln Arg
260      265      270
tag
816

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<210> 1868  
 <211> 271  
 <212> PRT  
 <213> Aspergillus oryzae

<400> 1868  
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 Gly Arg Ala Cys Ala His Thr Phe Ala Arg Asp Gly Ala Ser Gly Ile  
 20 25 30  
 Ala Leu Leu Asp Leu Asp Lys Thr Ala Leu Glu Thr Val Gln Ala Glu  
 35 40 45  
 Ile Asn Ser Gln Ser Ser Gln Asp Lys Thr Ala Arg Cys Arg Val Glu  
 50 55 60  
 Ile Tyr Pro Val Asn Val Thr Asp Glu Asn Arg Val Asp Glu Val Ile  
 65 70 75 80  
 Asn Ser Ala Ala Gln Thr Phe Ser Arg Leu Asp Tyr Val Val Asn Ala  
 85 90 95  
 Ala Gly Ile Ala Met Lys His Gln Gly Ala Ala Phe Ala Glu Thr  
 100 105 110  
 Ser Asp Trp Gln Arg Ile Leu Asp Val Asn Leu Thr Gly Thr Phe Phe  
 115 120 125  
 Val Leu Arg Ala Ala Ala Arg Ile Met Leu Ser Gln Glu Pro Ile Arg  
 130 135 140  
 Ser Ser Ile Asp Gly Arg Pro Leu Gln Arg Gly Ser Ile Val Asn Phe  
 145 150 155 160  
 Ser Ser Ile Gln Gly Val Ala Gly Ile Pro Leu Ser Thr Ala Tyr Thr  
 165 170 175  
 Ala Thr Lys His Ala Val Ile Gly Leu Thr Arg Thr Ala Ser Glu Asp  
 180 185 190  
 Tyr Ala Lys Asp Gly Leu Arg Ile Asn Ala Ile Cys Pro Gly Tyr Thr  
 195 200 205  
 Glu Thr Pro Met Thr Thr Lys Ser Pro Leu Val Leu Gln Ala Met Gln  
 210 215 220  
 Glu Arg Val Ala Thr Ala Val Pro Met Gln Arg Met Gly Glu Pro Arg  
 225 230 235 240  
 Glu Ile Ala Asp Gly Val Val Tyr Leu Ser Gly Gly Arg Ser Ser Phe  
 245 250 255  
 Val Thr Gly Thr Ala Leu Phe Val Asp Gly Gly Tyr Thr Gln Arg  
 260 265 270

<210> 1869  
 <211> 732  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(732)

<400> 1869  
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 Met Ala Ser Phe Glu Gly Lys Val Ile Ala Ile Thr Gly Ala Ala Ser 15  
 1 5 10  
 ggc atg gga ctt gca aca gca aag ttg ctc gca tcc cgt gga gca att 96  
 Gly Met Gly Leu Ala Thr Ala Lys Leu Leu Ala Ser Arg Gly Ala Ile 20 25 30  
 atc tcg ctc gcc gat ata aac gaa gcg gca gtc aag gag gca aca gcg 144  
 Ile Ser Leu Ala Asp Ile Asn Glu Ala Ala Val Lys Glu Ala Thr Ala 35 40 45  
 tca ttg acc gga agc gat aag cac atg tac acc gtg gtc gat gtg cgt 192  
 Ser Leu Thr Gly Ser Asp Lys His Met Tyr Thr Val Val Asp Val Arg 50 55 60  
 agc agc cag tca gtt gac tca tgg atc aaa tca aca gtg gaa agg ttg 240  
 Ser Ser Gln Ser Val Asp Ser Trp Ile Lys Ser Thr Val Glu Arg Leu 65 70 75 80  
 ggc aaa ctc gac ggc gcg gtc aat atg gct ggg gtc atc aca cct acc 288  
 Gly Lys Leu Asp Gly Ala Val Asn Met Ala Gly Val Ile Thr Pro Thr 85 90 95

## PhoenixTemp32470.tmp.txt

aaa	cca	att	acc	gaa	gaa	acc	gac	gat	act	tgg	gac	ttc	aat	ttt	gct	336
Lys	Pro	Ile	Thr	Glu	Glu	Thr	Asp	Asp	Thr	Trp	Asp	Phe	Asn	Phe	Ala	
			100					105					110			
gtg	aat	aca	cga	ggg	gtc	ttc	ttc	tgc	ctg	agg	gcc	cag	ttg	aag	gcc	384
Val	Asn	Thr	Arg	Gly	Val	Phe	Phe	Cys	Leu	Arg	Ala	Gln	Leu	Lys	Ala	
		115					120					125				
atg	aca	gct	ggg	ggg	agc	att	gtt	tct	gcg	gct	agt	gca	ttt	ggc	cag	432
Met	Thr	Ala	Gly	Gly	Ser	Ile	Val	Ser	Ala	Ala	Ser	Ala	Phe	Gly	Gln	
		130				135					140					
atg	ggc	tcg	cct	ggg	gtt	gcg	ccg	tac	tgc	gcc	agt	aaa	gca	gct	gtg	480
Met	Gly	Ser	Pro	Gly	Val	Ala	Pro	Tyr	Cys	Ala	Ser	Lys	Ala	Ala	Val	
					150					155					160	
atc	gga	ttg	acg	aga	aca	gcg	gcg	aaa	gaa	aac	cag	cat	ata	agg	gtc	528
Ile	Gly	Leu	Thr	Arg	Thr	Ala	Ala	Lys	Glu	Asn	Gln	His	Ile	Arg	Val	
				165					170					175		
aac	tgc	gtt	gca	cca	ggg	tcc	gtt	aac	acc	ccc	atg	tct	cag	ggg	gag	576
Asn	Cys	Val	Ala	Pro	Gly	Ser	Val	Asn	Thr	Pro	Met	Ser	Gln	Gly	Glu	
			180					185					190			
aac	ccc	gag	gat	gtg	aag	cg	ggc	ctg	caa	gca	acg	gtg	caa	aag	cga	624
Asn	Pro	Glu	Asp	Val	Lys	Arg	Gly	Leu	Gln	Ala	Thr	Val	Gln	Lys	Arg	
		195					200					205				
agg	gct	gag	gct	agt	gag	ata	gct	act	gtg	att	gtg	cat	ttg	ttg	agc	672
Arg	Ala	Glu	Ala	Ser	Glu	Ile	Ala	Thr	Val	Ile	Val	His	Leu	Leu	Ser	
		210				215					220					
gac	gag	gca	tct	ttc	gtg	acg	ggg	acc	gtt	tat	aat	gtt	gat	ggc	ggg	720
Asp	Glu	Ala	Ser	Phe	Val	Thr	Gly	Thr	Val	Tyr	Asn	Val	Asp	Gly	Gly	
					230					235					240	
tg	ctt	tgc	tga													732
Trp	Leu	Cys														

&lt;210&gt; 1870

&lt;211&gt; 243

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1870

Met	Ala	Ser	Phe	Glu	Gly	Lys	Val	Ile	Ala	Ile	Thr	Gly	Ala	Ala	Ser	
1				5					10					15		
Gly	Met	Gly	Leu	Ala	Thr	Ala	Lys	Leu	Leu	Ala	Ser	Arg	Gly	Ala	Ile	
			20					25					30			
Ile	Ser	Leu	Ala	Asp	Ile	Asn	Glu	Ala	Ala	Val	Lys	Glu	Ala	Thr	Ala	
		35					40					45				
Ser	Leu	Thr	Gly	Ser	Asp	Lys	His	Met	Tyr	Thr	Val	Val	Asp	Val	Arg	
		50				55					60					
Ser	Ser	Gln	Ser	Val	Asp	Ser	Trp	Ile	Lys	Ser	Thr	Val	Glu	Arg	Leu	
					70					75					80	
Gly	Lys	Leu	Asp	Gly	Ala	Val	Asn	Met	Ala	Gly	Val	Ile	Thr	Pro	Thr	
			85						90					95		
Lys	Pro	Ile	Thr	Glu	Glu	Thr	Asp	Asp	Thr	Trp	Asp	Phe	Asn	Phe	Ala	
			100					105					110			
Val	Asn	Thr	Arg	Gly	Val	Phe	Phe	Cys	Leu	Arg	Ala	Gln	Leu	Lys	Ala	
		115					120					125				
Met	Thr	Ala	Gly	Gly	Ser	Ile	Val	Ser	Ala	Ala	Ser	Ala	Phe	Gly	Gln	
		130				135					140					
Met	Gly	Ser	Pro	Gly	Val	Ala	Pro	Tyr	Cys	Ala	Ser	Lys	Ala	Ala	Val	
				150						155					160	
Ile	Gly	Leu	Thr	Arg	Thr	Ala	Ala	Lys	Glu	Asn	Gln	His	Ile	Arg	Val	
				165					170					175		
Asn	Cys	Val	Ala	Pro	Gly	Ser	Val	Asn	Thr	Pro	Met	Ser	Gln	Gly	Glu	
			180					185					190			
Asn	Pro	Glu	Asp	Val	Lys	Arg	Gly	Leu	Gln	Ala	Thr	Val	Gln	Lys	Arg	
		195					200					205				
Arg	Ala	Glu	Ala	Ser	Glu	Ile	Ala	Thr	Val	Ile	Val	His	Leu	Leu	Ser	
		210				215					220					
Asp	Glu	Ala	Ser	Phe	Val	Thr	Gly	Thr	Val	Tyr	Asn	Val	Asp	Gly	Gly	
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Trp	Leu	Cys														

<210> 1871  
 <211> 1131  
 <212> DNA  
 <213> *Aspergillus oryzae*

<220>  
 <221> CDS  
 <222> (1)..(1131)

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 Met Phe Lys Ser Pro Ala Ala Arg Gln Ala Val Lys Ala Leu Ser Ile  
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 aac aca cgc cct gct gca gta aca gca gca tcc cga cca gcg gtg gcc 96  
 Asn Thr Arg Pro Ala Ala Val Thr Ala Ala Ser Arg Pro Ala Val Ala  
 20 25 30  
 aat act ttc ttc cga ggt ctc tca tcg aca gct ccc cgt gcc aac gat 144  
 Asn Thr Phe Phe Arg Gly Leu Ser Thr Ala Pro Arg Ala Asn Asp  
 35 40 45  
 gag aag tcg aag gca gca aag gac ccc atc ttg gct gcc acc aac aaa 192  
 Glu Lys Ser Lys Ala Ala Lys Asp Pro Ile Leu Ala Ala Thr Asn Lys  
 50 55 60  
 gct cct gag ggt gcc ttg gac tca gag ggc cgt ttc gcc cgt gtc gac 240  
 Ala Pro Glu Gly Ala Leu Asp Ser Glu Gly Arg Phe Ala Arg Val Asp  
 65 70 75 80  
 gag agt ttg cag atc gaa tac ccc gat gat gag aac atg cct cgt agt 288  
 Glu Ser Leu Gln Ile Glu Tyr Pro Asp Asp Glu Asn Met Pro Arg Ser  
 85 90 95  
 cct atc gtc cag ggc cgc gga gga atg cac ttc aaa cgt acc ctg gct 336  
 Pro Ile Val Gln Gly Arg Gly Gly Met His Phe Lys Arg Thr Leu Ala  
 100 105 110  
 caa ttc tcc cta gag aac aag gtc acc ctg gtt acc gga ggt gcc cgt 384  
 Gln Phe Ser Leu Glu Asn Lys Val Thr Leu Val Thr Gly Gly Ala Arg  
 115 120 125  
 ggt ctc ggt ttg gtc atg gct cag gcg atc gtt gca tcg gga tcg gac 432  
 Gly Leu Gly Leu Val Met Ala Gln Ala Ile Val Ala Ser Gly Ser Asp  
 130 135 140  
 ctt gca att gtc gat ctt aac aag gcg gaa gct gag gag caa gcc cag 480  
 Leu Ala Ile Val Asp Leu Asn Lys Ala Glu Ala Glu Glu Gln Ala Gln  
 145 150 155 160  
 aag ttg gtg gaa cag ttt agg aag gag aac ccc ggt ttg gaa caa atg 528  
 Lys Leu Val Glu Gln Phe Arg Lys Glu Asn Pro Gly Leu Glu Gln Met  
 165 170 175  
 ccc aac gtc acc gcc cac tac gct gat gtt tcc gac cct aac tcc gtc 576  
 Pro Asn Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Asn Ser Val  
 180 185 190  
 aac gat gcc ctc tcc gat att atc tcc aag cac ggc aag atc gac aac 624  
 Asn Asp Ala Leu Ser Asp Ile Ile Ser Lys His Gly Lys Ile Asp Asn  
 195 200 205  
 ctg gtc acc tcc gcc gga ttc acg gaa aac ttc gat gcc atc tcc tac 672  
 Leu Val Thr Ser Ala Gly Phe Thr Glu Asn Phe Asp Ala Ile Ser Tyr  
 210 215 220  
 cct cac gac cgt ctg caa aag ctt tgg ggc gtt aat gtc gat gga aca 720  
 Pro His Asp Arg Leu Gln Lys Leu Trp Gly Val Asn Val Asp Gly Thr  
 225 230 235 240  
 tac ctt ttc gcc acc ggt gtc gcc aag cac ctc atg gag cgc aag gtt 768  
 Tyr Leu Phe Ala Thr Gly Val Ala Lys His Leu Met Glu Arg Lys Val  
 245 250 255  
 ccg ggc agc att gtc atg att ggt agc atg tct ggt gct atc gtc aac 816  
 Pro Gly Ser Ile Val Met Ile Gly Ser Met Ser Gly Ala Ile Val Asn  
 260 265 270  
 gtg ccg cag ccc cag gct cct tac aac gcc gcc aag gcc gct gtt cgt 864  
 Val Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Ala Val Arg  
 275 280 285  
 caa ctt gcc gcg tcc ttc gcc gtc gaa tgg gcc ggt cac gac atc cgg 912  
 Gln Leu Ala Ala Ser Phe Ala Val Glu Trp Ala Gly His Asp Ile Arg  
 290 295 300  
 gtg aac tgc atc agc cct gga tac atg ctt act gcc ctg acc cgc aag 960

## PhoenixTemp32470.tmp.txt

Val 305	Asn	Cys	Ile	Ser	Pro 310	Gly	Tyr	Met	Leu	Thr 315	Ala	Leu	Thr	Arg	Lys 320	
att	tgt	gat	gag	aac	ccc	gaa	tgt	cgg	gac	aag	tgg	atc	tcg	ctc	atc	1008
Ile	Leu	Asp	Glu	Asn 325	Pro	Glu	Leu	Arg	Asp 330	Lys	Trp	Ile	Ser	Leu 335	Ile	
ccc	acc	ggc	aag	atg	ggg	act	ccc	gag	gac	ctg	atg	ggg	ccc	ggt	acc	1056
Pro	Thr	Gly	Lys 340	Met	Gly	Thr	Pro	Glu 345	Asp	Leu	Met	Gly	Pro 350	Val	Thr	
ttc	ctg	ctc	agt	gat	gcc	tcc	aag	tac	atg	act	ggg	gcc	gat	atc	cgc	1104
Phe	Leu	Leu	Ser	Asp	Ala	Ser	Lys 360	Tyr	Met	Thr	Gly	Ala 365	Asp	Ile	Arg	
ggt	gac	ggg	ggc	tac	acc	ctc	acc	tag								1131
Val	Asp 370	Gly	Gly	Tyr	Thr	Leu 375	Thr									

&lt;210&gt; 1872

&lt;211&gt; 376

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1872

Met	Phe	Lys	Ser	Pro	Ala	Ala	Arg	Gln	Ala	Val	Lys	Ala	Leu	Ser	Ile	
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Asn	Thr	Arg	Pro	Ala	Ala	Val	Thr	Ala	Ala	Ser	Arg	Pro	Ala	Val	Ala	
			20					25					30			
Asn	Thr	Phe	Phe	Arg	Gly	Leu	Ser	Ser	Thr	Ala	Pro	Arg	Ala	Asn	Asp	
		35					40					45				
Glu	Lys	Ser	Lys	Ala	Ala	Lys	Asp	Pro	Ile	Leu	Ala	Ala	Thr	Asn	Lys	
	50					55					60					
Ala	Pro	Glu	Gly	Ala	Leu	Asp	Ser	Glu	Gly	Arg	Phe	Ala	Arg	Val	Asp	
65					70					75					80	
Glu	Ser	Leu	Gln	Ile	Glu	Tyr	Pro	Asp	Asp	Glu	Asn	Met	Pro	Arg	Ser	
				85					90					95		
Pro	Ile	Val	Gln	Gly	Arg	Gly	Gly	Met	His	Phe	Lys	Arg	Thr	Leu	Ala	
			100					105					110			
Gln	Phe	Ser	Leu	Glu	Asn	Lys	Val	Thr	Leu	Val	Thr	Gly	Gly	Ala	Arg	
		115					120					125				
Gly	Leu	Gly	Leu	Val	Met	Ala	Gln	Ala	Ile	Val	Ala	Ser	Gly	Ser	Asp	
	130					135					140					
Leu	Ala	Ile	Val	Asp	Leu	Asn	Lys	Ala	Glu	Ala	Glu	Glu	Gln	Ala	Gln	
145					150					155					160	
Lys	Leu	Val	Glu	Gln	Phe	Arg	Lys	Glu	Asn	Pro	Gly	Leu	Glu	Gln	Met	
				165					170					175		
Pro	Asn	Val	Thr	Ala	His	Tyr	Ala	Asp	Val	Ser	Asp	Pro	Asn	Ser	Val	
			180					185					190			
Asn	Asp	Ala	Leu	Ser	Asp	Ile	Ile	Ser	Lys	His	Gly	Lys	Ile	Asp	Asn	
		195					200					205				
Leu	Val	Thr	Ser	Ala	Gly	Phe	Thr	Glu	Asn	Phe	Asp	Ala	Ile	Ser	Tyr	
	210					215					220					
Pro	His	Asp	Arg	Leu	Gln	Lys	Leu	Trp	Gly	Val	Asn	Val	Asp	Gly	Thr	
225					230					235					240	
Tyr	Leu	Phe	Ala	Thr	Gly	Val	Ala	Lys	His	Leu	Met	Glu	Arg	Lys	Val	
				245					250					255		
Pro	Gly	Ser	Ile	Val	Met	Ile	Gly	Ser	Met	Ser	Gly	Ala	Ile	Val	Asn	
			260					265					270			
Val	Pro	Gln	Pro	Gln	Ala	Pro	Tyr	Asn	Ala	Ala	Lys	Ala	Ala	Val	Arg	
		275					280					285				
Gln	Leu	Ala	Ala	Ser	Phe	Ala	Val	Glu	Trp	Ala	Gly	His	Asp	Ile	Arg	
	290					295					300					
Val	Asn	Cys	Ile	Ser	Pro	Gly	Tyr	Met	Leu	Thr	Ala	Leu	Thr	Arg	Lys	
305					310					315					320	
Ile	Leu	Asp	Glu	Asn	Pro	Glu	Leu	Arg	Asp	Lys	Trp	Ile	Ser	Leu	Ile	
				325					330					335		
Pro	Thr	Gly	Lys	Met	Gly	Thr	Pro	Glu	Asp	Leu	Met	Gly	Pro	Val	Thr	
			340					345					350			
Phe	Leu	Leu	Ser	Asp	Ala	Ser	Lys	Tyr	Met	Thr	Gly	Ala	Asp	Ile	Arg	
		355					360					365				
Val	Asp	Gly	Gly	Tyr	Thr	Leu	Thr									
370						375										

<210> 1873  
 <211> 780  
 <212> DNA  
 <213> *Aspergillus oryzae*

<220>  
 <221> CDS  
 <222> (1)..(780)

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<400> 1873
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Met Val Ala Asp Pro Arg Pro Gln Thr Leu Ala Gly Lys Val Ala Ile
1      5      10      15
gtg aca ggc gca acg aga gga atc ggc gcc ggg ctg gct gaa gaa tta      96
Val Thr Gly Ala Thr Arg Gly Ile Gly Ala Gly Leu Ala Glu Glu Leu
20      25      30
gcc cgt cga gga gcc aaa gtc ttg atc aca tac aca tca gcg agc agc      144
Ala Arg Arg Gly Ala Lys Val Leu Ile Thr Tyr Thr Ser Ala Ser Ser
35      40      45
gaa ccc atc gct gat aaa cta atc gag aaa atc aaa aac ttc aac aac      192
Glu Pro Ile Ala Asp Lys Leu Ile Glu Lys Ile Lys Asn Phe Asn Asn
50      55      60
ggc tcc aag gca gcc aaa gtc cgc gcc gat ctc cgc gat cta tca gct      240
Gly Ser Lys Ala Ala Lys Val Arg Ala Asp Leu Arg Asp Leu Ser Ala
65      70      75      80
gga gaa acg atc gtc gaa gcc tca atc caa gca ttc ggc ccc aac atc      288
Gly Glu Thr Ile Val Glu Ala Ser Ile Gln Ala Phe Gly Pro Asn Ile
85      90      95
gat atc ctg gtt aac aac gcc ggc gtg gaa gta gtg aag ccc ctt tca      336
Asp Ile Leu Val Asn Asn Ala Gly Val Glu Val Val Lys Pro Leu Ser
100      105      110
gat ctc acg gtg gaa gac tac aac ctc gtt tac gac ctg aac gtc cgc      384
Asp Leu Thr Val Glu Asp Tyr Asn Leu Val Tyr Asp Leu Asn Val Arg
115      120      125
ggg gct atc ttt ctg acg cag gct gtt ctc ccg cat cta cgt gca ccc      432
Gly Ala Ile Phe Leu Thr Gln Ala Val Leu Pro His Leu Arg Ala Pro
130      135      140
ggt cgg atc atc aat atc agt tca gtt ggt gca cgg gcg gga ttc gct      480
Gly Arg Ile Ile Asn Ile Ser Ser Val Gly Ala Arg Ala Gly Phe Ala
145      150      160
aat ttg tcg att tat tgc tcg tcc aag gcg gcc ttg gag ggc ttg acg      528
Asn Leu Ser Ile Tyr Cys Ser Ser Lys Ala Ala Leu Glu Gly Leu Thr
165      170      175
cga tgc tgg gct gcg gag ttg ggt gat gct ggg cat acg gtg aat gct      576
Arg Cys Trp Ala Ala Glu Leu Gly Asp Ala Gly His Thr Val Asn Ala
180      185      190
gtt aat ccg ggg cca gtg cag acg gct ttg ctg gag aat att ccg aag      624
Val Asn Pro Gly Pro Val Gln Thr Ala Leu Leu Glu Asn Ile Pro Lys
195      200      205
gag ttg gtg gag atg cag aag tct gct acg ccg gtt gag cat cgg gtg      672
Glu Leu Val Glu Met Gln Lys Ser Ala Thr Pro Val Glu His Arg Val
210      215      220
ggg acg att gat gat gtt gcg cag gtg gtg gcg tgg ctt gct tct gag      720
Gly Thr Ile Asp Asp Val Ala Gln Val Val Ala Trp Leu Ala Ser Glu
225      230      235
gag agt cgg tgg gtt tct ggg cag gcg att gct gct tct ggg ggg ttt      768
Glu Ser Arg Trp Val Ser Gly Gln Ala Ile Ala Ala Ser Gly Gly Phe
245      250      255
gcg atg tat tga
Ala Met Tyr
780

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<210> 1874  
 <211> 259  
 <212> PRT  
 <213> *Aspergillus oryzae*

<400> 1874



## PhoenixTemp32470.tmp.txt

Met Val Ala Asp Pro Arg Pro Gln Thr Leu Ala Gly Lys Val Ala Ile  
 1 Val Thr Gly Ala Thr Arg Gly Ile Gly Ala Gly Leu Ala Glu Glu Leu  
 20 Ala Arg Arg Gly Ala Lys Val Leu Ile Thr Tyr Thr Ser Ala Ser Ser  
 35 Glu Pro Ile Ala Asp Lys Leu Ile Glu Lys Ile Lys Asn Phe Asn Asn  
 50 Gly Ser Lys Ala Ala Lys Val Arg Ala Asp Leu Arg Asp Leu Ser Ala  
 65 Gly Glu Thr Ile Val Glu Ala Ser Ile Gln Ala Phe Gly Pro Asn Ile  
 80 Asp Ile Leu Val Asn Asn Ala Gly Val Glu Val Val Lys Pro Leu Ser  
 100 Asp Leu Thr Val Glu Asp Tyr Asn Leu Val Tyr Asp Leu Asn Val Arg  
 115 Gly Ala Ile Phe Leu Thr Gln Ala Val Leu Pro His Leu Arg Ala Pro  
 130 Gly Arg Ile Ile Asn Ile Ser Ser Val Gly Ala Arg Ala Gly Phe Ala  
 145 Asn Leu Ser Ile Tyr Cys Ser Ser Lys Ala Ala Leu Glu Gly Leu Thr  
 160 Arg Cys Trp Ala Ala Glu Leu Gly Asp Ala Gly His Thr Val Asn Ala  
 175 Val Asn Pro Gly Pro Val Gln Thr Ala Leu Leu Glu Asn Ile Pro Lys  
 190 Glu Leu Val Glu Met Gln Lys Ser Ala Thr Pro Val Glu His Arg Val  
 210 Gly Thr Ile Asp Asp Val Ala Gln Val Val Ala Trp Leu Ala Ser Glu  
 225 Glu Ser Arg Trp Val Ser Gly Gln Ala Ile Ala Ala Ser Gly Gly Phe  
 240 Ala Met Tyr 255

&lt;210&gt; 1875

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;400&gt; 1875

atg	aca	gat	cac	att	ggt	aca	ttc	ccc	gag	ctc	aag	ggc	aag	ggt	gcc	48
Met	Thr	Asp	His	Ile	Gly	Thr	Phe	Pro	Glu	Leu	Lys	Gly	Lys	Val	Ala	
1				5				10						15		
ctc	gtc	act	ggc	att	ggc	caa	atg	ggc	gat	cct	caa	atg	tgg	gga	aat	96
Leu	Val	Thr	Gly	Ile	Gly	Gln	Met	Gly	Asp	Pro	Gln	Met	Trp	Gly	Asn	
			20					25					30			
ggt	gct	gca	aca	gca	cga	gtg	tta	agt	cgc	aac	ggt	gcc	aaa	ata	ttt	144
Gly	Ala	Ala	Thr	Ala	Arg	Val	Leu	Ser	Arg	Asn	Gly	Ala	Lys	Ile	Phe	
			35				40					45				
ggt	tgc	gat	cta	caa	ctc	gag	tct	gcc	ttg	cac	act	aaa	aag	cgt	ctt	192
Gly	Cys	Asp	Leu	Gln	Leu	Glu	Ser	Ala	Leu	His	Thr	Lys	Lys	Arg	Leu	
			50			55					60					
gag	gcc	gag	ggc	ggc	gtg	tgt	gag	gta	aca	aca	gcg	aat	ggt	aca	tct	240
Glu	Ala	Glu	Gly	Gly	Val	Cys	Glu	Val	Thr	Thr	Ala	Asn	Val	Thr	Ser	
			65			70			75						80	
tct	gaa	gat	gtg	aag	cgc	atg	gtc	gag	gtg	tgt	gtc	gcg	aag	ttt	ggt	288
Ser	Glu	Asp	Val	Lys	Arg	Met	Val	Glu	Val	Cys	Val	Ala	Lys	Phe	Gly	
				85				90						95		
cgt	atc	gat	atc	ctg	atc	aac	aat	gtt	ggc	cgc	tca	gag	cca	ggt	ggg	336
Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Val	Gly	Arg	Ser	Glu	Pro	Gly	Gly	
			100					105					110			
cct	gcc	gag	atg	aca	gag	aaa	gtc	tgg	gat	gcc	cag	act	gat	ata	aat	384
Pro	Ala	Glu	Met	Thr	Glu	Lys	Val	Trp	Asp	Ala	Gln	Thr	Asp	Ile	Asn	
			115				120					125				

## PhoenixTemp32470.tmp.txt

ctg	aaa	tct	gtc	tat	ctt	tcc	tgc	cac	gaa	gtc	ctc	ccg	atc	atg	gaa	432
Leu	Lys	Ser	Val	Tyr	Leu	Ser	Cys	His	Glu	Val	Leu	Pro	Ile	Met	Glu	
	130					135					140					
aag	cag	ggc	ggg	ggg	gcc	att	ggt	aat	gtg	gcc	tcg	att	gcc	gga	att	480
Lys	Gln	Gly	Gly	Gly	Ala	Ile	Val	Asn	Val	Ala	Ser	Ile	Ala	Gly	Ile	
145					150					155					160	
cgt	tat	att	ggc	aaa	ccc	cag	ggt	gca	tac	tcc	gcc	gcc	aag	tcc	gct	528
Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Val	Ala	Tyr	Ser	Ala	Ala	Lys	Ser	Ala	
				165					170					175		
ggt	atc	cag	ttc	acc	aaa	gct	acc	gct	gtc	atc	tac	gct	aat	cgt	aac	576
Val	Ile	Gln	Phe	Thr	Lys	Ala	Thr	Ala	Val	Ile	Tyr	Ala	Asn	Arg	Asn	
			180					185					190			
att	cgg	ctt	aac	gtg	ggt	gtg	cca	ggg	ctg	atg	cac	acg	cca	ttg	gtc	624
Ile	Arg	Leu	Asn	Val	Val	Val	Pro	Gly	Leu	Met	His	Thr	Pro	Leu	Val	
		195					200					205				
agt	tat	ctt	gca	gac	aag	tac	gca	ggt	ggg	gat	cta	gaa	gga	ttc	atc	672
Ser	Tyr	Leu	Ala	Asp	Lys	Tyr	Ala	Gly	Gly	Asp	Leu	Glu	Gly	Phe	Ile	
	210					215					220					
gcg	aaa	agg	aac	aag	gca	gtg	cca	atg	ggt	cg	atg	ggg	gac	tcc	ttc	720
Ala	Lys	Arg	Asn	Lys	Ala	Val	Pro	Met	Gly	Arg	Met	Gly	Asp	Ser	Phe	
225					230					235					240	
gac	ggt	gct	aac	tgt	gct	gct	ttc	ctg	ctc	tcg	gac	tct	gct	cg	tac	768
Asp	Val	Ala	Asn	Cys	Ala	Ala	Phe	Leu	Leu	Ser	Asp	Ser	Ala	Arg	Tyr	
				245					250					255		
atc	acc	ggg	cag	aag	att	ggt	ggt	gat	gga	ggt	att	acc	tct	tct	act	816
Ile	Thr	Gly	Gln	Lys	Ile	Val	Val	Asp	Gly	Gly	Ile	Thr	Ser	Ser	Thr	
			260					265					270			
ggt	tga															822
Gly																

&lt;210&gt; 1876

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1876

Met	Thr	Asp	His	Ile	Gly	Thr	Phe	Pro	Glu	Leu	Lys	Gly	Lys	Val	Ala	
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Leu	Val	Thr	Gly	Ile	Gly	Gln	Met	Gly	Asp	Pro	Gln	Met	Trp	Gly	Asn	
			20					25					30			
Gly	Ala	Ala	Thr	Ala	Arg	Val	Leu	Ser	Arg	Asn	Gly	Ala	Lys	Ile	Phe	
		35					40					45				
Gly	Cys	Asp	Leu	Gln	Leu	Glu	Ser	Ala	Leu	His	Thr	Lys	Lys	Arg	Leu	
	50					55				60						
Glu	Ala	Glu	Gly	Gly	Val	Cys	Glu	Val	Thr	Thr	Ala	Asn	Val	Thr	Ser	
65					70					75					80	
Ser	Glu	Asp	Val	Lys	Arg	Met	Val	Glu	Val	Cys	Val	Ala	Lys	Phe	Gly	
				85					90					95		
Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Val	Gly	Arg	Ser	Glu	Pro	Gly	Gly	
			100					105					110			
Pro	Ala	Glu	Met	Thr	Glu	Lys	Val	Trp	Asp	Ala	Gln	Thr	Asp	Ile	Asn	
		115					120					125				
Leu	Lys	Ser	Val	Tyr	Leu	Ser	Cys	His	Glu	Val	Leu	Pro	Ile	Met	Glu	
	130					135					140					
Lys	Gln	Gly	Gly	Gly	Ala	Ile	Val	Asn	Val	Ala	Ser	Ile	Ala	Gly	Ile	
145					150					155					160	
Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Val	Ala	Tyr	Ser	Ala	Ala	Lys	Ser	Ala	
				165					170					175		
Val	Ile	Gln	Phe	Thr	Lys	Ala	Thr	Ala	Val	Ile	Tyr	Ala	Asn	Arg	Asn	
			180					185					190			
Ile	Arg	Leu	Asn	Val	Val	Val	Pro	Gly	Leu	Met	His	Thr	Pro	Leu	Val	
		195					200					205				
Ser	Tyr	Leu	Ala	Asp	Lys	Tyr	Ala	Gly	Gly	Asp	Leu	Glu	Gly	Phe	Ile	
	210					215					220					
Ala	Lys	Arg	Asn	Lys	Ala	Val	Pro	Met	Gly	Arg	Met	Gly	Asp	Ser	Phe	
225					230					235					240	
Asp	Val	Ala	Asn	Cys	Ala	Ala	Phe	Leu	Leu	Ser	Asp	Ser	Ala	Arg	Tyr	
				245					250					255		

Ile Thr Gly Gln Lys Ile Val Val Asp Gly Gly Ile Thr Ser Ser Thr  
 260 265 270  
 Gly

<210> 1877  
 <211> 954  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(954)

<400> 1877  
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 Met Arg Ser Ala Leu Ser Gln Met Leu Phe Gln Ala Ser Arg Ser Trp  
 1 5 10 15  
 caa cca agc aca acc ctc cgc cca ctc aca cga ctc tca tat tcc aca 96  
 Gln Pro Ser Thr Thr Leu Arg Pro Leu Thr Arg Leu Ser Tyr Ser Thr  
 20 25 30  
 act act act acc cat gga gcg cat cac att caa acg cgg atg cct cca 144  
 Thr Thr Thr Thr His Gly Ala His His Ile Gln Thr Arg Met Pro Pro  
 35 40 45  
 aag gaa tca atc aag aac ggg cat cgt ttt aag gag ttc gac ctc aat 192  
 Lys Glu Ser Ile Lys Asn Gly His Arg Phe Lys Glu Phe Asp Leu Asn  
 50 55 60  
 gac cgc gtc tac gcc atc acc ggc ggt gga aga gga ctt ggt tta gcc 240  
 Asp Arg Val Tyr Ala Ile Thr Gly Gly Gly Arg Gly Leu Gly Leu Ala  
 65 70 75 80  
 atg gcc gaa gcc cta atg gaa gcc ggc gcc aaa gtc tac tgc ctc gac 288  
 Met Ala Glu Ala Leu Met Glu Ala Gly Ala Lys Val Tyr Cys Leu Asp  
 85 90 95  
 cgc ctc gaa aac ccc cac cca gac ttc atg gcc gca aaa gag cac tcg 336  
 Arg Leu Glu Asn Pro His Pro Asp Phe Met Ala Ala Lys Glu His Ser  
 100 105 110  
 gaa acc aac tac ggc ggc agc ctg gag tac tac cga atc gac gtc cgc 384  
 Glu Thr Asn Tyr Gly Gly Ser Leu Glu Tyr Tyr Arg Ile Asp Val Arg  
 115 120 125  
 gat gat gca gaa gta aac aac gtg ttc gcc gaa att gcc ggc cag aac 432  
 Asp Asp Ala Glu Val Asn Asn Val Phe Ala Glu Ile Ala Gly Gln Asn  
 130 135 140  
 aag cgt ctt gat ggt ctg atc gcc gcc gcc gga atc aac cat ctc cag 480  
 Lys Arg Leu Asp Gly Leu Ile Ala Ala Ala Gly Ile Asn His Leu Gln  
 145 150 155 160  
 agc gcc ctc gag cac tcc caa acc gcc atg aac gaa gtc atg cag atc 528  
 Ser Ala Leu Glu His Ser Gln Thr Ala Met Asn Glu Val Met Gln Ile  
 165 170 175  
 aac tac aac gga gtg ttc aac tcc gcc acc gct gcc gcc cgc cag atg 576  
 Asn Tyr Asn Gly Val Phe Asn Ser Ala Thr Ala Ala Ala Arg Gln Met  
 180 185 190  
 ttc aac tac cag cag aag ggc tcc atc ctg ctt atc gcg agc atg agc 624  
 Phe Asn Tyr Gln Gln Lys Gly Ser Ile Leu Leu Ile Ala Ser Met Ser  
 195 200 205  
 ggt ctc atc gcc aac aag ggc atg act tcc cct gtc tac aac tcc tcc 672  
 Gly Leu Ile Ala Asn Lys Gly Met Thr Ser Pro Val Tyr Asn Ser Ser  
 210 215 220  
 aaa gcg gcc gtc att cag ctg gct cgc tcg ctc gca atg gaa tgg ggc 720  
 Lys Ala Ala Val Ile Gln Leu Ala Arg Ser Leu Ala Met Glu Trp Gly  
 225 230 235 240  
 cgc cac ggt atc cgt gtg aac agt ctc tgc cct ggt cac atc atc acc 768  
 Arg His Gly Ile Arg Val Asn Ser Leu Cys Pro Gly His Ile Ile Thr  
 245 250 255  
 ccc atg gtc gag cag gtg ttt cag cag aac ccg gcc tct cgg gct gtc 816  
 Pro Met Val Glu Gln Val Phe Gln Gln Asn Pro Ala Ser Arg Ala Val  
 260 265 270  
 tgg gag gca gag aac atg ctt ggg cgg ttg gcg tac cct gag gaa ttc 864  
 Trp Glu Ala Glu Asn Met Leu Gly Arg Leu Ala Tyr Pro Glu Glu Phe  
 275 280 285

## PhoenixTemp32470.tmp.txt

aga ggt gct gcc ctc ttc gct ctc agt gat gct agc agc ttc atg acg 912  
 Arg Gly Ala Ala Leu Phe Ala Leu Ser Asp Ala Ser Ser Phe Met Thr  
 290 295 300  
 ggc agc acg atg ctc att gat ggt ggc cac acc gcg tgg taa 954  
 Gly Ser Thr Met Leu Ile Asp Gly Gly His Thr Ala Trp  
 305 310 315

<210> 1878  
 <211> 317  
 <212> PRT  
 <213> Aspergillus oryzae

<400> 1878  
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 20 25 30  
 Thr Thr Thr Thr His Gly Ala His Ile Gln Thr Arg Met Pro Pro  
 35 40 45  
 Lys Glu Ser Ile Lys Asn Gly His Arg Phe Lys Glu Phe Asp Leu Asn  
 50 55 60  
 Asp Arg Val Tyr Ala Ile Thr Gly Gly Gly Arg Gly Leu Gly Leu Ala  
 65 70 75 80  
 Met Ala Glu Ala Leu Met Glu Ala Gly Ala Lys Val Tyr Cys Leu Asp  
 85 90 95  
 Arg Leu Glu Asn Pro His Pro Asp Phe Met Ala Ala Lys Glu His Ser  
 100 105 110  
 Glu Thr Asn Tyr Gly Gly Ser Leu Glu Tyr Tyr Arg Ile Asp Val Arg  
 115 120 125  
 Asp Asp Ala Glu Val Asn Asn Val Phe Ala Glu Ile Ala Gly Gln Asn  
 130 135 140  
 Lys Arg Leu Asp Gly Leu Ile Ala Ala Ala Gly Ile Asn His Leu Gln  
 145 150 155 160  
 Ser Ala Leu Glu His Ser Gln Thr Ala Met Asn Glu Val Met Gln Ile  
 165 170 175  
 Asn Tyr Asn Gly Val Phe Asn Ser Ala Thr Ala Ala Ala Arg Gln Met  
 180 185 190  
 Phe Asn Tyr Gln Gln Lys Gly Ser Ile Leu Leu Ile Ala Ser Met Ser  
 195 200 205  
 Gly Leu Ile Ala Asn Lys Gly Met Thr Ser Pro Val Tyr Asn Ser Ser  
 210 215 220  
 Lys Ala Ala Val Ile Gln Leu Ala Arg Ser Leu Ala Met Glu Trp Gly  
 225 230 235 240  
 Arg His Gly Ile Arg Val Asn Ser Leu Cys Pro Gly His Ile Ile Thr  
 245 250 255  
 Pro Met Val Glu Gln Val Phe Gln Gln Asn Pro Ala Ser Arg Ala Val  
 260 265 270  
 Trp Glu Ala Glu Asn Met Leu Gly Arg Leu Ala Tyr Pro Glu Glu Phe  
 275 280 285  
 Arg Gly Ala Ala Leu Phe Ala Leu Ser Asp Ala Ser Ser Phe Met Thr  
 290 295 300  
 Gly Ser Thr Met Leu Ile Asp Gly Gly His Thr Ala Trp  
 305 310 315

<210> 1879  
 <211> 786  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(786)

<400> 1879  
 atg acg gga aac gag cag aaa ttc tcg ctc cag ggc aag gtt gcc att 48  
 Met Thr Gly Asn Glu Gln Lys Phe Ser Leu Gln Gly Lys Val Ala Ile  
 1 5 10 15  
 gtg acc ggt gct ggg tcc gga att gga aga gaa acg gca ttg tgt ctc 96  
 Val Thr Gly Ala Gly Ser Gly Ile Gly Arg Glu Thr Ala Leu Cys Leu  
 Page 1197

## PhoenixTemp32470.tmp.txt

```

      20      25      30
gcc aat gct ggg gca aat gta gtc gtg gct gaa gct aat gaa acg acg      144
Ala Asn Ala Gly Ala Asn Val Val Val Ala Glu Ala Asn Glu Thr Thr
      35      40      45
ggc aag gag act gcg gcc aag gtt tcc gca caa aca ggc agt cga ggc      192
Gly Lys Glu Thr Ala Ala Lys Val Ser Ala Gln Thr Gly Ser Arg Gly
      50      55      60
ctg ttt atc ctg acc gat gtg tct cgg agc gaa agc gtc cag gcc atg      240
Leu Phe Ile Leu Thr Asp Val Ser Arg Ser Glu Ser Val Gln Ala Met
      65      70      75      80
gtc atc gcc acc atc gag gcc ttt ggg cgt ctc gat att gca gtg aac      288
Val Ile Ala Thr Ile Glu Ala Phe Gly Arg Leu Asp Ile Ala Val Asn
      85      90      95
aac gcc gcc ctg cac cca gac gca tcc cct atc gca gaa ctc cac gag      336
Asn Ala Ala Leu His Pro Asp Ala Ser Pro Ile Ala Glu Leu His Glu
      100      105      110
gat cac tgg cag aag atc atc ggg gtg aac ctt gtg ggc gtc gca ttc      384
Asp His Trp Gln Lys Ile Ile Gly Val Asn Leu Val Gly Val Ala Phe
      115      120      125
tgt ctc aag tgg gaa ctt cag cag atg atc cag caa ggg ggt ggt ggc      432
Cys Leu Lys Trp Glu Leu Gln Gln Met Ile Gln Gln Gly Gly Gly Gly
      130      135      140
tcc att atc aac atc agc tct gcc aca atc aac cgg ccc caa gaa aaa      480
Ser Ile Ile Asn Ile Ser Ala Thr Ile Asn Arg Pro Gln Glu Lys
      145      150      155      160
atg tca gcg tac atc gcc gcg aag cac ggt atc act ggt ttg act cag      528
Met Ser Ala Tyr Ile Ala Ala Lys His Gly Ile Thr Gly Leu Thr Gln
      165      170      175
acg gct gct gtc gag aat gga cga cac gga att cgg gtt aat gcg ctc      576
Thr Ala Ala Val Glu Asn Gly Arg His Gly Ile Arg Val Asn Ala Leu
      180      185      190
gcc cca ggg ggg gtg gcc act gat ctg acg atg gcg acc atg cag gaa      624
Ala Pro Gly Gly Val Ala Thr Asp Leu Thr Met Ala Thr Met Gln Glu
      195      200      205
tta ggg ctc acc gag gaa aac gag gcg gcc cgg agt agc ctc ttc aaa      672
Leu Gly Leu Thr Glu Glu Asn Glu Ala Ala Arg Ser Ser Leu Phe Lys
      210      215      220
cga ttc gcg aag ccc gaa gaa atc gcg caa tcg gta ctt tgg cta gca      720
Arg Phe Ala Lys Pro Glu Glu Ile Ala Gln Ser Val Leu Trp Leu Ala
      225      230      235      240
tca gat gct gct tcg gtt act ggg gcc act att gcc gtg gat tca      768
Ser Asp Ala Ala Ser Tyr Val Thr Gly Ala Thr Ile Ala Val Asp Ser
      245      250      255
gga ctg tcg ttg att tga
Gly Leu Ser Leu Ile
      260

```

&lt;210&gt; 1880

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1880

```

Met Thr Gly Asn Glu Gln Lys Phe Ser Leu Gln Gly Lys Val Ala Ile
1      5      10      15
Val Thr Gly Ala Gly Ser Gly Ile Gly Arg Glu Thr Ala Leu Cys Leu
20      25      30
Ala Asn Ala Gly Ala Asn Val Val Val Ala Glu Ala Asn Glu Thr Thr
35      40      45
Gly Lys Glu Thr Ala Ala Lys Val Ser Ala Gln Thr Gly Ser Arg Gly
50      55      60
Leu Phe Ile Leu Thr Asp Val Ser Arg Ser Glu Ser Val Gln Ala Met
65      70      75      80
Val Ile Ala Thr Ile Glu Ala Phe Gly Arg Leu Asp Ile Ala Val Asn
85      90      95
Asn Ala Ala Leu His Pro Asp Ala Ser Pro Ile Ala Glu Leu His Glu
100      105      110
Asp His Trp Gln Lys Ile Ile Gly Val Asn Leu Val Gly Val Ala Phe
115      120      125

```

## PhoenixTemp32470.tmp.txt

Cys Leu Lys Trp Glu Leu Gln Gln Met Ile Gln Gln Gly Gly Gly Gly  
 130 135 140  
 Ser Ile Ile Asn Ile Ser Ser Ala Thr Ile Asn Arg Pro Gln Glu Lys  
 145 150 155 160  
 Met Ser Ala Tyr Ile Ala Ala Lys His Gly Ile Thr Gly Leu Thr Gln  
 165 170 175  
 Thr Ala Ala Val Glu Asn Gly Arg His Gly Ile Arg Val Asn Ala Leu  
 180 185 190  
 Ala Pro Gly Gly Val Ala Thr Asp Leu Thr Met Ala Thr Met Gln Glu  
 195 200 205  
 Leu Gly Leu Thr Glu Glu Asn Glu Ala Ala Arg Ser Ser Leu Phe Lys  
 210 215 220  
 Arg Phe Ala Lys Pro Glu Ile Ala Gln Ser Val Leu Trp Leu Ala  
 225 230 235 240  
 Ser Asp Ala Ala Ser Tyr Val Thr Gly Ala Thr Ile Ala Val Asp Ser  
 245 250 255  
 Gly Leu Ser Leu Ile  
 260

&lt;210&gt; 1881

&lt;211&gt; 927

&lt;212&gt; DNA

<213> *Aspergillus oryzae*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(927)

&lt;400&gt; 1881

atg	caa	gat	tac	aca	gaa	aga	gcc	gct	cg	ggt	act	gaa	tcc	cag	ttt	48
Met	Gln	Asp	Tyr	Thr	Glu	Arg	Ala	Ala	Arg	Gly	Thr	Glu	Ser	Gln	Phe	
1				5				10						15		
caa	aca	ggc	cat	caa	att	ccc	gtt	caa	cat	cag	aag	aaa	ccc	ggg	cta	96
Gln	Thr	Gly	His	Gln	Ile	Pro	Val	Gln	His	Gln	Lys	Lys	Pro	Gly	Leu	
			20				25						30			
caa	gaa	gag	ctg	gag	gac	cca	aag	cca	gta	tca	acc	tac	ata	ccg	acc	144
Gln	Glu	Glu	Leu	Glu	Asp	Pro	Lys	Pro	Val	Ser	Thr	Tyr	Ile	Pro	Thr	
		35				40					45					
gaa	gaa	ggc	ggt	tat	acg	aca	tat	aag	gca	gcg	gga	aag	ctt	ggt	ggg	192
Glu	Glu	Gly	Gly	Tyr	Thr	Thr	Tyr	Lys	Ala	Ala	Gly	Lys	Leu	Val	Gly	
	50					55					60					
aaa	aga	gcc	atc	atc	aca	ggt	ggt	gac	tct	ggc	atc	ggc	cg	gcc	ggt	240
Lys	Arg	Ala	Ile	Ile	Thr	Gly	Gly	Asp	Ser	Gly	Ile	Gly	Arg	Ala	Val	
	65				70			75						80		
gcc	tta	ttg	ttt	gca	atg	gaa	gga	gca	tct	agc	ttg	atc	gtc	tac	tta	288
Ala	Leu	Leu	Phe	Ala	Met	Glu	Gly	Ala	Ser	Ser	Leu	Ile	Val	Tyr	Leu	
			85					90						95		
ccc	gaa	gaa	gaa	aaa	gac	gca	caa	gag	aca	aaa	aga	agg	gtc	caa	ggc	336
Pro	Glu	Glu	Glu	Lys	Asp	Ala	Gln	Glu	Thr	Lys	Arg	Arg	Val	Gln	Gly	
		100				105						110				
aca	gga	cat	gac	tgt	cac	tgc	ttg	gct	gtg	gat	gtg	cg	aag	aag	gag	384
Thr	Gly	His	Asp	Cys	His	Cys	Leu	Ala	Val	Asp	Val	Arg	Lys	Lys	Glu	
		115				120						125				
aat	tgt	cga	aaa	gtg	ggt	gat	acc	gcc	gtg	caa	tgt	atg	ggt	ggc	ata	432
Asn	Cys	Arg	Lys	Val	Val	Asp	Thr	Ala	Val	Gln	Cys	Met	Gly	Gly	Ile	
	130					135					140					
gac	atc	ctg	gtg	aat	aat	gcg	gga	ttc	cag	aac	atg	att	ggg	gac	att	480
Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Phe	Gln	Asn	Met	Ile	Gly	Asp	Ile	
145				150				155							160	
agt	ggc	ctt	gaa	gag	gat	caa	tgg	gag	cgt	aca	ttc	gat	acc	aac	atc	528
Ser	Gly	Leu	Glu	Glu	Asp	Gln	Trp	Glu	Arg	Thr	Phe	Asp	Thr	Asn	Ile	
		165						170						175		
cat	cca	ttc	ttc	tat	ctt	tcg	aag	tac	cg	ctt	ccg	cac	atg	aag	agt	576
His	Pro	Phe	Phe	Tyr	Leu	Ser	Lys	Tyr	Ala	Leu	Pro	His	Met	Lys	Ser	
		180						185					190			
ggc	tca	act	ata	ata	aac	tgt	ggg	tct	gtc	aat	gca	tac	atc	ggt	cga	624
Gly	Ser	Thr	Ile	Ile	Asn	Cys	Gly	Ser	Val	Asn	Ala	Tyr	Ile	Gly	Arg	
		195				200						205				
cct	gac	ctc	ctt	gac	tac	act	gca	acc	aag	ggt	gca	atc	ggt	gca	ttc	672

## PhoenixTemp32470.tmp.txt

Pro	Asp	Leu	Leu	Asp	Tyr	Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	
210	210					215					220					
acc	agg	ggc	ttg	tct	aat	caa	caa	gtt	gga	aga	ggg	ata	cgg	gtg	aat	720
Thr	Arg	Gly	Leu	Ser	Asn	Gln	Gln	Val	Gly	Arg	Gly	Ile	Arg	Val	Asn	
225					230					235					240	
tgt	gtt	tgt	cct	ggc	cca	att	tgg	aca	cct	ctg	atc	cca	tca	act	atg	768
Cys	Val	Cys	Pro	Gly	Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ser	Thr	Met	
				245					250					255		
act	agc	tct	gca	atg	gac	caa	ttc	agc	agt	gtg	cca	atg	ggc	cgt	ccg	816
Thr	Ser	Ser	Ala	Met	Asp	Gln	Phe	Ser	Ser	Val	Pro	Met	Gly	Arg	Pro	
			260					265					270			
gga	caa	ccc	agt	gaa	gtg	gcg	act	tgt	ttc	gtc	ttc	cta	gcg	agc	caa	864
Gly	Gln	Pro	Ser	Glu	Val	Ala	Thr	Cys	Phe	Val	Phe	Leu	Ala	Ser	Gln	
		275					280					285				
gac	agc	agc	tat	atc	tcg	gga	caa	tca	ttg	cat	ccc	aat	gga	ggg	gtt	912
Asp	Ser	Ser	Tyr	Ile	Ser	Gly	Gln	Ser	Leu	His	Pro	Asn	Gly	Gly	Val	
	290					295					300					
gtt	gtt	aat	ggg	tag												927
Val	Val	Asn	Gly													
305																

&lt;210&gt; 1882

&lt;211&gt; 308

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1882

Met	Gln	Asp	Tyr	Thr	Glu	Arg	Ala	Ala	Arg	Gly	Thr	Glu	Ser	Gln	Phe	
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Gln	Thr	Gly	His	Gln	Ile	Pro	Val	Gln	His	Gln	Lys	Lys	Pro	Gly	Leu	
			20					25					30			
Gln	Glu	Glu	Leu	Glu	Asp	Pro	Lys	Pro	Val	Ser	Thr	Tyr	Ile	Pro	Thr	
		35					40					45				
Glu	Glu	Gly	Gly	Tyr	Thr	Thr	Tyr	Lys	Ala	Ala	Gly	Lys	Leu	Val	Gly	
	50					55					60					
Lys	Arg	Ala	Ile	Ile	Thr	Gly	Gly	Asp	Ser	Gly	Ile	Gly	Arg	Ala	Val	
65					70					75					80	
Ala	Leu	Leu	Phe	Ala	Met	Glu	Gly	Ala	Ser	Ser	Leu	Ile	Val	Tyr	Leu	
			85						90					95		
Pro	Glu	Glu	Glu	Lys	Asp	Ala	Gln	Glu	Thr	Lys	Arg	Arg	Val	Gln	Gly	
			100					105					110			
Thr	Gly	His	Asp	Cys	His	Cys	Leu	Ala	Val	Asp	Val	Arg	Lys	Lys	Glu	
		115					120					125				
Asn	Cys	Arg	Lys	Val	Val	Asp	Thr	Ala	Val	Gln	Cys	Met	Gly	Gly	Ile	
	130					135					140					
Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Phe	Gln	Asn	Met	Ile	Gly	Asp	Ile	
145					150					155					160	
Ser	Gly	Leu	Glu	Glu	Asp	Gln	Trp	Glu	Arg	Thr	Phe	Asp	Thr	Asn	Ile	
			165						170					175		
His	Pro	Phe	Phe	Tyr	Leu	Ser	Lys	Tyr	Ala	Leu	Pro	His	Met	Lys	Ser	
		180						185					190			
Gly	Ser	Thr	Ile	Ile	Asn	Cys	Gly	Ser	Val	Asn	Ala	Tyr	Ile	Gly	Arg	
		195					200					205				
Pro	Asp	Leu	Leu	Asp	Tyr	Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	
	210					215					220					
Thr	Arg	Gly	Leu	Ser	Asn	Gln	Gln	Val	Gly	Arg	Gly	Ile	Arg	Val	Asn	
225					230					235					240	
Cys	Val	Cys	Pro	Gly	Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ser	Thr	Met	
				245					250					255		
Thr	Ser	Ser	Ala	Met	Asp	Gln	Phe	Ser	Ser	Val	Pro	Met	Gly	Arg	Pro	
			260					265					270			
Gly	Gln	Pro	Ser	Glu	Val	Ala	Thr	Cys	Phe	Val	Phe	Leu	Ala	Ser	Gln	
		275					280					285				
Asp	Ser	Ser	Tyr	Ile	Ser	Gly	Gln	Ser	Leu	His	Pro	Asn	Gly	Gly	Val	
	290					295					300					
Val	Val	Asn	Gly													
305																

&lt;210&gt; 1883

<211> 867  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(867)

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<400> 1883
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Met Ser Val Ser Ile Glu Thr His Asp Ile Ala Pro Ala Ala Pro Thr
1      5      10      15
aca cag gcg gcc ccc tgc ctc gga ttt aag aac aga atg cct gag ttc      96
Thr Gln Ala Ala Pro Cys Leu Gly Phe Lys Asn Arg Met Pro Glu Phe
20      25      30
agc ttg gct gga aag gtc gtc tgt gtt tct ggt gct gcc cgt ggt ctt      144
Ser Leu Ala Gly Lys Val Val Cys Val Ser Gly Ala Ala Arg Gly Leu
35      40      45
ggt cta act cag gct gaa gcg ctt ttg gag gcc ggg gcc aag gta tat      192
Gly Leu Thr Gln Ala Glu Ala Leu Leu Glu Ala Gly Ala Lys Val Tyr
50      55      60
gct ttg gac cgc ctg gag gaa ccc tcc cct gaa ttc ttc gaa atc caa      240
Ala Leu Asp Arg Leu Glu Glu Pro Ser Pro Glu Phe Phe Glu Ile Gln
65      70      75
aaa cgt gcc aag gaa gag ctg gga acg gag ctg caa tac cgt cgc att      288
Lys Arg Ala Lys Glu Glu Leu Gly Thr Glu Leu Gln Tyr Arg Arg Ile
85      90      95
gat gtc cgt gac acc gaa ctt ctc gac agt act atc gaa gcc atc gcc      336
Asp Val Arg Asp Thr Glu Leu Leu Asp Ser Thr Ile Glu Ala Ile Ala
100      105      110
gat tcc gag ggt cgc ttg gat ggc ttg att gct gcg gca ggc att caa      384
Asp Ser Glu Gly Arg Leu Asp Gly Leu Ile Ala Ala Ala Gly Ile Gln
115      120      125
cag gaa act cca gcc ctc gag tat acg gcc cag gac gcc aac acg atg      432
Gln Glu Thr Pro Ala Leu Tyr Thr Ala Gln Asp Ala Asn Thr Met
130      135      140
ttc gaa gtc aac gtc act ggt gtg ttc atg act tcc aag gcc gtt gct      480
Phe Glu Val Asn Val Thr Gly Val Phe Met Thr Ser Lys Ala Val Ala
145      150      155
aag caa atg att cgc ttc ggc aat gga ggt agc atc gca cta att gcg      528
Lys Gln Met Ile Arg Phe Gly Asn Gly Ser Ile Ala Leu Ile Ala
165      170      175
agc atg agt ggt act att gcc aat cgg ggt ctt atc tgc cct gct tac      576
Ser Met Ser Gly Thr Ile Ala Asn Arg Gly Leu Ile Cys Pro Ala Tyr
180      185      190
aat gct agc aag gct gca gtg ctt caa gln ctt gcc cgt aac ctc gcc atg      624
Asn Ala Ser Lys Ala Ala Val Leu Gln Leu Ala Arg Asn Leu Ala Met
195      200      205
gag tgg ggc ccg tac aac att cga gtc aac acc atc tcg ccc ggc tac      672
Glu Trp Gly Pro Tyr Asn Ile Arg Val Asn Thr Ile Ser Pro Gly Tyr
210      215      220
att gtt act gcc atg gtt gag aag ctc ttc gtt gag ttc cct gag cgt      720
Ile Val Thr Ala Met Val Glu Lys Leu Phe Val Glu Phe Pro Glu Arg
225      230      235
cgc gag gaa tgg ccc aaa cat aac atg ctg gga cgt ctg tct acc cct      768
Arg Glu Glu Trp Pro Lys His Asn Met Leu Gly Arg Leu Ser Thr Pro
245      250      255
aac gag tac cgt ggc gct gcc gtc ttc ctt ctc agt gac gcc agc agc      816
Asn Glu Tyr Arg Gly Ala Ala Val Phe Leu Leu Ser Asp Ala Ser Ser
260      265      270
ttc atg act gga agc gat cta cgt atg gac gga ggt cac gcc gct tgg      864
Phe Met Thr Gly Ser Asp Leu Arg Met Asp Gly Gly His Ala Ala Trp
275      280      285
tag
867

```

<210> 1884  
 <211> 288



&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1884

```

Met Ser Val Ser Ile Glu Thr His Asp Ile Ala Pro Ala Ala Pro Thr
1      5      10      15
Thr Gln Ala Ala Pro Cys Leu Gly Phe Lys Asn Arg Met Pro Glu Phe
20      25      30
Ser Leu Ala Gly Lys Val Val Cys Val Ser Gly Ala Ala Arg Gly Leu
35      40      45
Gly Leu Thr Gln Ala Glu Ala Leu Leu Glu Ala Gly Ala Lys Val Tyr
50      55      60
Ala Leu Asp Arg Leu Glu Glu Pro Ser Pro Glu Phe Phe Glu Ile Gln
65      70      75
Lys Arg Ala Lys Glu Glu Leu Gly Thr Glu Leu Gln Tyr Arg Arg Ile
85      90      95
Asp Val Arg Asp Thr Glu Leu Leu Asp Ser Thr Ile Glu Ala Ile Ala
100     105     110
Asp Ser Glu Gly Arg Leu Asp Gly Leu Ile Ala Ala Ala Gly Ile Gln
115     120     125
Gln Glu Thr Pro Ala Leu Glu Tyr Thr Ala Gln Asp Ala Asn Thr Met
130     135     140
Phe Glu Val Asn Val Thr Gly Val Phe Met Thr Ser Lys Ala Val Ala
145     150     155
Lys Gln Met Ile Arg Phe Gly Asn Gly Gly Ser Ile Ala Leu Ile Ala
165     170     175
Ser Met Ser Gly Thr Ile Ala Asn Arg Gly Leu Ile Cys Pro Ala Tyr
180     185     190
Asn Ala Ser Lys Ala Ala Val Leu Gln Leu Ala Arg Asn Leu Ala Met
195     200     205
Glu Trp Gly Pro Tyr Asn Ile Arg Val Asn Thr Ile Ser Pro Gly Tyr
210     215     220
Ile Val Thr Ala Met Val Glu Lys Leu Phe Val Glu Phe Pro Glu Arg
225     230     235
Arg Glu Glu Trp Pro Lys His Asn Met Leu Gly Arg Leu Ser Thr Pro
245     250     255
Asn Glu Tyr Arg Gly Ala Ala Val Phe Leu Leu Ser Asp Ala Ser Ser
260     265     270
Phe Met Thr Gly Ser Asp Leu Arg Met Asp Gly Gly His Ala Ala Trp
275     280     285

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&lt;210&gt; 1885

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;400&gt; 1885

```

atg gcc aac ttc cca aaa tac cct gac ctt caa ggc aaa gtc gcc ctg      48
Met Ala Asn Phe Pro Lys Tyr Pro Asp Leu Gln Gly Lys Val Ala Leu
1      5      10      15
ata atg ggt gcc ggc caa aca cat gta cca ggc tcc gaa gca cgg ggt      96
Ile Met Gly Ala Gly Gln Thr His Val Pro Gly Ser Glu Ala Arg Gly
20      25      30
aac gga gca gcc atc gct caa tgc ctc gcc caa aac ggt gtc caa gta      144
Asn Gly Ala Ala Ile Ala Gln Cys Leu Ala Gln Asn Gly Val Gln Val
35      40      45
ttc ggc tgc gac gtg aat ctc cag gct gca gag ctt act gct tca agg      192
Phe Gly Cys Asp Val Asn Leu Gln Ala Ala Glu Leu Thr Ala Ser Arg
50      55      60
atc caa gca gaa ggc ggg aaa tgc gac att gcc caa gcc gat gtg acc      240
Ile Gln Ala Glu Gly Gly Lys Cys Asp Ile Ala Gln Ala Asp Val Thr
65      70      75
tcg gaa aag gac gtg agg aga gtc gtg gac gcc gtg atg tca aag tat      288
Ser Glu Lys Asp Val Arg Arg Val Val Asp Ala Val Met Ser Lys Tyr
85      90      95

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## PhoenixTemp32470.tmp.txt

ggc	cga	att	gat	atc	tta	atc	aac	aac	gta	ggc	gcc	aca	gtg	gcc	ggt	336
Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Val	Gly	Ala	Thr	Val	Ala	Gly	
			100					105					110			
gat	cca	gcc	agc	atg	cct	tcc	gac	gta	tgg	gac	aaa	caa	atc	gat	ctc	384
Asp	Pro	Ala	Ser	Met	Pro	Ser	Asp	Val	Trp	Asp	Lys	Gln	Ile	Asp	Leu	
		115					120					125				
aat	tta	aaa	agc	gtc	tac	ctc	gcc	tgc	cat	gtg	gtg	ctt	ccg	ata	atg	432
Asn	Leu	Lys	Ser	Val	Tyr	Leu	Ala	Cys	His	Val	Val	Leu	Pro	Ile	Met	
	130					135					140					
gaa	aag	caa	ggg	tcg	ggg	tgc	gtc	gtc	aac	aat	gcg	tct	att	gcg	ggc	480
Glu	Lys	Gln	Gly	Ser	Gly	Cys	Val	Val	Asn	Asn	Ala	Ser	Ile	Ala	Gly	
145					150					155					160	
ttg	agg	tat	att	gga	aag	cca	cag	gtt	gcg	tat	tct	gcg	gca	aag	gct	528
Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Val	Ala	Tyr	Ser	Ala	Ala	Lys	Ala	
				165					170					175		
gcg	gtg	att	cag	ttt	acg	aag	gtt	aca	gcg	gtc	atg	tac	gcg	cca	aaa	576
Ala	Val	Ile	Gln	Phe	Thr	Lys	Val	Thr	Ala	Val	Met	Tyr	Ala	Pro	Lys	
			180					185					190			
ggt	gtt	cga	ttg	aat	acg	gta	gta	ccg	ggc	ttc	att	cac	acg	cct	ttg	624
Gly	Val	Arg	Leu	Asn	Thr	Val	Val	Pro	Gly	Phe	Ile	His	Thr	Pro	Leu	
		195					200					205				
gtg	gat	aac	ttc	aaa	ttc	aac	ggt	cag	aaa	gaa	gtt	tat	gat	aag	att	672
Val	Asp	Asn	Phe	Lys	Phe	Asn	Gly	Gln	Lys	Glu	Val	Tyr	Asp	Lys	Ile	
	210					215					220					
aca	cga	cag	cct	gtc	ccc	ttg	ggg	cgc	atg	gga	gat	gcg	ttt	gat	gta	720
Thr	Arg	Gln	Pro	Val	Pro	Leu	Gly	Arg	Met	Gly	Asp	Ala	Phe	Asp	Val	
225					230					235					240	
gct	aat	tct	acg	gtg	ttt	ttg	gct	agc	gat	gcg	gcc	aag	tat	atc	act	768
Ala	Asn	Ser	Thr	Val	Phe	Leu	Ala	Ser	Asp	Ala	Ala	Lys	Tyr	Ile	Thr	
				245					250					255		
ggg	cag	att	ttg	gtg	gtg	gat	ggt	gga	ttt	aca	agt	tcc	gct	gcg	tct	816
Gly	Gln	Ile	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ser	Ser	Ala	Ala	Ser	
			260					265					270			
cta	tag															822
Leu																

&lt;210&gt; 1886

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1886

Met	Ala	Asn	Phe	Pro	Lys	Tyr	Pro	Asp	Leu	Gln	Gly	Lys	Val	Ala	Leu	
1				5					10					15		
Ile	Met	Gly	Ala	Gly	Gln	Thr	His	Val	Pro	Gly	Ser	Glu	Ala	Arg	Gly	
			20					25					30			
Asn	Gly	Ala	Ala	Ile	Ala	Gln	Cys	Leu	Ala	Gln	Asn	Gly	Val	Gln	Val	
		35					40					45				
Phe	Gly	Cys	Asp	Val	Asn	Leu	Gln	Ala	Ala	Glu	Leu	Thr	Ala	Ser	Arg	
	50					55					60					
Ile	Gln	Ala	Glu	Gly	Gly	Lys	Cys	Asp	Ile	Ala	Gln	Ala	Asp	Val	Thr	
65				70					75						80	
Ser	Glu	Lys	Asp	Val	Arg	Arg	Val	Val	Asp	Ala	Val	Met	Ser	Lys	Tyr	
			85						90				95			
Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Val	Gly	Ala	Thr	Val	Ala	Gly	
			100					105					110			
Asp	Pro	Ala	Ser	Met	Pro	Ser	Asp	Val	Trp	Asp	Lys	Gln	Ile	Asp	Leu	
		115					120					125				
Asn	Leu	Lys	Ser	Val	Tyr	Leu	Ala	Cys	His	Val	Val	Leu	Pro	Ile	Met	
	130					135					140					
Glu	Lys	Gln	Gly	Ser	Gly	Cys	Val	Val	Asn	Asn	Ala	Ser	Ile	Ala	Gly	
145					150					155					160	
Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Val	Ala	Tyr	Ser	Ala	Ala	Lys	Ala	
			165						170					175		
Ala	Val	Ile	Gln	Phe	Thr	Lys	Val	Thr	Ala	Val	Met	Tyr	Ala	Pro	Lys	
			180					185					190			
Gly	Val	Arg	Leu	Asn	Thr	Val	Val	Pro	Gly	Phe	Ile	His	Thr	Pro	Leu	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Val Asp Asn Phe Lys Phe Asn Gly Gln Lys Glu Val Tyr Asp Lys Ile  
 210 215 220  
 Thr Arg Gln Pro Val Pro Leu Gly Arg Met Gly Asp Ala Phe Asp Val  
 225 230 235 240  
 Ala Asn Ser Thr Val Phe Leu Ala Ser Asp Ala Ala Lys Tyr Ile Thr  
 245 250 255  
 Gly Gln Ile Leu Val Val Asp Gly Gly Phe Thr Ser Ser Ala Ala Ser  
 260 265 270  
 Leu

&lt;210&gt; 1887

&lt;211&gt; 873

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(873)

&lt;400&gt; 1887

atg cct cct gcc gcg acc gag aat gtt cca gct ccg gct cca gct gca	48
Met Pro Pro Ala Ala Thr Glu Asn Val Pro Ala Pro Ala Pro Ala Ala	
1 5 10 15	
gct gca gct cct aag cct gaa gca cag cca tat ctc agc acg atg cct	96
Ala Ala Ala Pro Lys Pro Glu Ala Gln Pro Tyr Leu Ser Thr Met Pro	
20 25 30	
tct tcg gac ttc agc tgg cag att acc ctc gcg aac aaa gta atc gca	144
Ser Ser Asp Phe Ser Trp Gln Ile Thr Leu Ala Asn Lys Val Ile Ala	
35 40 45	
att acg ggc gcc aac cgc gga atc ggt ttg gga atc gcg gag gtc tgt	192
Ile Thr Gly Ala Asn Arg Gly Ile Gly Leu Gly Ile Ala Glu Val Cys	
50 55 60	
ctc gcg aac tcg gcc aag ttc gta tac tct ttc gac ctg atg gag cct	240
Leu Ala Asn Ser Ala Lys Phe Val Tyr Ser Phe Asp Leu Met Glu Pro	
65 70 75 80	
gga gag gac ttt gcg gag ctc cag aag aga tac agc aac ttc cgc tat	288
Gly Glu Asp Phe Ala Glu Leu Gln Lys Arg Tyr Ser Asn Phe Arg Tyr	
85 90 95	
att caa act gat gtg acg agc gaa gaa agt att gag aat gct atc aac	336
Ile Gln Thr Asp Val Thr Ser Glu Glu Ser Ile Glu Asn Ala Ile Asn	
100 105 110	
aaa gtg att gag gaa acg ggt cgg atc gat ggc ttg gtg gcc aac gct	384
Lys Val Ile Glu Glu Thr Gly Arg Ile Asp Gly Leu Val Ala Asn Ala	
115 120 125	
gga atg acc aag cat cag cct gca ctc aag ttt gac cgt gaa caa ttg	432
Gly Met Thr Lys His Gln Pro Ala Leu Lys Phe Asp Arg Glu Gln Leu	
130 135 140	
gat aaa ctc ttc aat ctc aat gtt ttt ggt gca tac ttc tgc gct caa	480
Asp Lys Leu Phe Asn Leu Asn Val Phe Gly Ala Tyr Phe Cys Ala Gln	
145 150 155 160	
att gtc gca cgc aaa ttc att gag ctt ggc atc aag ggg tct atc gtc	528
Ile Val Ala Arg Lys Phe Ile Glu Leu Gly Ile Lys Gly Ser Ile Val	
165 170 175	
atg act tcc agt atg act tct tat cga cca aat agg gct gcc cct tct	576
Met Thr Ser Ser Met Thr Ser Tyr Arg Pro Asn Arg Ala Ala Pro Ser	
180 185 190	
gcc cct tac ggt gcg acc aag gcc gca gtc cgg aat atg tgt cac aca	624
Ala Pro Tyr Gly Ala Thr Lys Ala Ala Val Arg Asn Met Cys His Thr	
195 200 205	
ctg gcc atg gag tgg agc caa cat ggc atc cgc gtc aac agc att tct	672
Leu Ala Met Glu Trp Ser Gln His Gly Ile Arg Val Asn Ser Ile Ser	
210 215 220	
ccc ggc ttc gtt cgt acc gca atg aca tac tac gtt gag aag tct ccg	720
Pro Gly Phe Val Arg Thr Ala Met Thr Tyr Tyr Val Glu Lys Ser Pro	
225 230 235 240	
gac tgg gat ctc aag atg caa tac tac ggt ggt atg cct cgt ctg gcc	768
Asp Trp Asp Leu Lys Met Gln Tyr Tyr Gly Gly Met Pro Arg Leu Ala	
245 250 255	

## PhoenixTemp32470.tmp.txt

gac cca cgg gag ctt ggt gga gcg tac gtg tac ctc ctc agc gac gcg	816
Asp Pro Arg Glu Leu Gly Gly Ala Tyr Val Tyr Leu Leu Ser Asp Ala	
260 265 270	
agc tcc tac aca act ggt att gat atc cca atc gct gga att gtg ggt	864
Ser Ser Tyr Thr Thr Gly Ile Asp Ile Pro Ile Ala Gly Ile Val Gly	
275 280 285	
gcg tgg taa	873
Ala Trp	
290	

<210> 1888  
 <211> 290  
 <212> PRT  
 <213> Aspergillus oryzae

<400> 1888

Met Pro Pro Ala Ala Thr Glu Asn Val Pro Ala Pro Ala Pro Ala Ala	
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Ala Ala Ala Pro Lys Pro Glu Ala Gln Pro Tyr Leu Ser Thr Met Pro	
20 25 30	
Ser Ser Asp Phe Ser Trp Gln Ile Thr Leu Ala Asn Lys Val Ile Ala	
35 40 45	
Ile Thr Gly Ala Asn Arg Gly Ile Gly Leu Gly Ile Ala Glu Val Cys	
50 55 60	
Leu Ala Asn Ser Ala Lys Phe Val Tyr Ser Phe Asp Leu Met Glu Pro	
65 70 75 80	
Gly Glu Asp Phe Ala Glu Leu Gln Lys Arg Tyr Ser Asn Phe Arg Tyr	
85 90 95	
Ile Gln Thr Asp Val Thr Ser Glu Glu Ser Ile Glu Asn Ala Ile Asn	
100 105 110	
Lys Val Ile Glu Glu Thr Gly Arg Ile Asp Gly Leu Val Ala Asn Ala	
115 120 125	
Gly Met Thr Lys His Gln Pro Ala Leu Lys Phe Asp Arg Glu Gln Leu	
130 135 140	
Asp Lys Leu Phe Asn Leu Asn Val Phe Gly Ala Tyr Phe Cys Ala Gln	
145 150 155 160	
Ile Val Ala Arg Lys Phe Ile Glu Leu Gly Ile Lys Gly Ser Ile Val	
165 170 175	
Met Thr Ser Ser Met Thr Ser Tyr Arg Pro Asn Arg Ala Ala Pro Ser	
180 185 190	
Ala Pro Tyr Gly Ala Thr Lys Ala Ala Val Arg Asn Met Cys His Thr	
195 200 205	
Leu Ala Met Glu Trp Ser Gln His Gly Ile Arg Val Asn Ser Ile Ser	
210 215 220	
Pro Gly Phe Val Arg Thr Ala Met Thr Tyr Tyr Val Glu Lys Ser Pro	
225 230 235 240	
Asp Trp Asp Leu Lys Met Gln Tyr Tyr Gly Gly Met Pro Arg Leu Ala	
245 250 255	
Asp Pro Arg Glu Leu Gly Gly Ala Tyr Val Tyr Leu Leu Ser Asp Ala	
260 265 270	
Ser Ser Tyr Thr Thr Gly Ile Asp Ile Pro Ile Ala Gly Ile Val Gly	
275 280 285	
Ala Trp	
290	

<210> 1889  
 <211> 816  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(816)

<400> 1889

atg acg tca tcg acc cgt caa gac gaa caa ggt gga tgc aag gtt ttt	48
Met Thr Ser Ser Thr Arg Gln Asp Glu Gln Gly Gly Cys Lys Val Phe	
1 5 10 15	
gct gtg acg ggc gga gca cgg ggg ctg ggg ttg tct atg gcc gag gcc	96

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## PhoenixTemp32470.tmp.txt

Ala	Val	Thr	Gly 20	Gly	Ala	Arg	Gly	Leu 25	Gly	Leu	Ser	Met	Ala 30	Glu	Ala		
ttg	gtc	gaa	gcg	ggt	gga	caa	gtc	tac	tgc	ctg	gac	aga	cta	cct	gaa		144
Leu	Val	Glu 35	Ala	Gly	Gly	Gln	Val 40	Tyr	Cys	Leu	Asp	Arg	Leu	Pro	Glu		
cca	gac	ggg	gaa	ttc	cgc	gcg	gcc	gaa	gca	cgc	gcc	aac	ccg	gac	ttc		192
Pro	Asp 50	Gly	Glu	Phe	Arg	Ala 55	Ala	Glu	Ala	Arg	Ala 60	Asn	Pro	Asp	Phe		
ggg	ggc	tca	cta	cac	tac	cgc	tgc	atg	gac	gtg	acg	gac	gat	gca	aac		240
Gly 65	Gly	Ser	Leu	His	Tyr 70	Arg	Cys	Met	Asp	Val 75	Thr	Asp	Asp	Ala	Asn 80		
acc	gaa	gct	gtc	atc	gcc	gac	att	gga	gcg	cag	cag	aac	cgt	ctc	gac		288
Thr	Glu	Ala	Val	Ile 85	Ala	Asp	Ile	Gly	Ala 90	Gln	Gln	Asn	Arg	Leu 95	Asp		
ggc	ctg	att	gca	gcc	gcg	ggt	ata	aac	cac	gtc	gct	agc	gca	att	gac		336
Gly	Leu	Ile 100	Ala	Ala	Ala	Gly	Ile	Asn 105	His	Val	Ala	Ser	Ala 110	Ile	Asp		
cac	cga	ccc	aag	aac	ggt	gac	gac	gtc	atc	cac	atc	aac	tac	acg	ggc		384
His	Arg	Pro 115	Lys	Asn	Val	Asp	Asp 120	Val	Ile	His	Ile	Asn	Tyr 125	Thr	Gly		
gtc	ttt	cgc	agt	gcg	ggt	tca	gcc	gcg	aag	gta	atg	cta	gac	cgg	aaa		432
Val	Phe 130	Arg	Ser	Ala	Val	Ser 135	Ala	Ala	Lys	Val	Met 140	Leu	Asp	Arg	Lys		
tgc	cac	ggc	tcg	att	ctc	gtg	gca	agt	atg	agc	ggc	atc	ggt	gcc			480
Cys 145	His	Gly	Ser	Ile 150	Leu	Val	Ala	Ser	Met 155	Ser	Gly	Ile	Val 160	Ala			
aac	aag	ggc	atg	gcg	tct	gct	atc	tat	aat	tcg	tca	aaa	gcg	gca	gtc		528
Asn	Lys	Gly	Met 165	Ala	Ser	Ala	Ile	Tyr	Asn 170	Ser	Ser	Lys	Ala 175	Ala	Val		
atc	cag	ttg	acg	cgt	agt	ctg	gcc	atg	gag	tgg	tct	gaa	gcc	aaa	gaa		576
Ile	Gln	Leu 180	Thr	Arg	Ser	Leu	Ala 185	Met	Glu	Trp	Ser	Glu	Ala 190	Lys	Glu		
gat	ggc	aca	ggg	gga	atc	cgt	gta	aac	tgt	ctt	tgt	ccc	ggg	cat	att		624
Asp	Gly 195	Thr	Gly	Gly	Ile	Arg	Val 200	Asn	Cys	Leu	Cys	Pro 205	Gly	His	Ile		
gaa	aca	ccg	atg	gca	aag	atg	gtg	atg	gag	aag	gat	cca	gat	aca	cgg		672
Glu	Thr 210	Pro	Met	Ala	Lys	Met 215	Val	Met	Glu	Lys	Asp 220	Pro	Asp	Thr	Arg		
gcg	ctt	tgg	gag	tcc	gaa	aac	atg	atg	aag	agg	tta	gca	agg	ccg	gag		720
Ala 225	Leu	Trp	Glu	Ser	Glu 230	Asn	Met	Met	Lys	Arg 235	Leu	Ala	Arg	Pro	Glu 240		
gag	ttt	aga	ggc	atc	act	ttg	tta	ctt	atg	agc	gat	gct	tcg	agc	ttc		768
Glu	Phe	Arg	Gly 245	Ile	Thr	Leu	Leu	Leu	Met 250	Ser	Asp	Ala	Ser	Ser 255	Phe		
atg	act	ggc	agc	act	gtg	gtg	ggt	gat	ggg	ggt	cat	acg	gcc	tgg			813
Met	Thr	Gly 260	Ser	Thr	Val	Val	Val	Asp 265	Gly	Gly	His	Thr 270	Ala	Trp			
tag																	816

&lt;210&gt; 1890

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 1890

Met	Thr	Ser	Ser	Thr 5	Arg	Gln	Asp	Glu	Gln 10	Gly	Gly	Cys	Lys	Val 15	Phe		
Ala	Val	Thr	Gly 20	Gly	Ala	Arg	Gly	Leu 25	Gly	Leu	Ser	Met	Ala 30	Glu	Ala		
Leu	Val	Glu 35	Ala	Gly	Gly	Gln	Val 40	Tyr	Cys	Leu	Asp	Arg	Leu 45	Pro	Glu		
Pro	Asp 50	Gly	Glu	Phe	Arg	Ala 55	Ala	Glu	Ala	Arg	Ala 60	Asn	Pro	Asp	Phe		
Gly 65	Gly	Ser	Leu	His	Tyr 70	Arg	Cys	Met	Asp	Val 75	Thr	Asp	Asp	Ala	Asn 80		
Thr	Glu	Ala	Val	Ile 85	Ala	Asp	Ile	Gly	Ala 90	Gln	Gln	Asn	Arg	Leu 95	Asp		

## PhoenixTemp32470.tmp.txt

Gly Leu Ile Ala Ala Ala Gly Ile Asn His Val Ala Ser Ala Ile Asp  
 100 110  
 His Arg Pro Lys Asn Val Asp Asp Val Ile His Ile Asn Tyr Thr Gly  
 115 125  
 Val Phe Arg Ser Ala Val Ser Ala Ala Lys Val Met Leu Asp Arg Lys  
 130 140  
 Cys His Gly Ser Ile Leu Leu Val Ala Ser Met Ser Gly Ile Val Ala  
 145 155  
 Asn Lys Gly Met Ala Ser Ala Ile Tyr Asn Ser Ser Lys Ala Ala Val  
 165 175  
 Ile Gln Leu Thr Arg Ser Leu Ala Met Glu Trp Ser Glu Ala Lys Glu  
 180 190  
 Asp Gly Thr Gly Gly Ile Arg Val Asn Cys Leu Cys Pro Gly His Ile  
 195 205  
 Glu Thr Pro Met Ala Lys Met Val Met Glu Lys Asp Pro Asp Thr Arg  
 210 220  
 Ala Leu Trp Glu Ser Glu Asn Met Met Lys Arg Leu Ala Arg Pro Glu  
 225 235  
 Glu Phe Arg Gly Ile Thr Leu Leu Leu Met Ser Asp Ala Ser Ser Phe  
 245 255  
 Met Thr Gly Ser Thr Val Val Val Asp Gly Gly His Thr Ala Trp  
 260 270

&lt;210&gt; 1891

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Streptomyces natalensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1891

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Met	Thr	His	Gln	His	Gly	Leu	Leu	Ser	Gly	Lys	Val	Ser	Leu	Ile	Thr	
1				5					10					15		
gga	gcc	agt	agt	ggg	att	ggc	gcg	gca	acc	gcg	agg	ctt	ttt	gcg	cga	96
Gly	Ala	Ser	Ser	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	Leu	Phe	Ala	Arg	
			20				25						30			
gaa	ggt	gcg	gcg	gtg	gtg	ctt	gcg	gcc	cg	cg	gtg	gac	cg	ctc	cg	144
Glu	Gly	Ala	Ala	Val	Val	Leu	Ala	Ala	Arg	Arg	Val	Asp	Arg	Leu	Arg	
			35				40					45				
gct	ctt	gtg	tcg	gag	ata	cgt	cgg	acc	gga	gcc	gag	gcg	gcg	tac	atc	192
Ala	Leu	Val	Ser	Glu	Ile	Arg	Arg	Thr	Gly	Ala	Glu	Ala	Ala	Tyr	Ile	
			50			55					60					
gcg	acg	gat	gtg	tct	cag	gag	gag	gac	gtg	aga	cgt	gcc	gtg	gaa	ttc	240
Ala	Thr	Asp	Val	Ser	Gln	Glu	Glu	Asp	Val	Arg	Arg	Ala	Val	Glu	Phe	
					70				75					80		
act	gtg	gag	aag	tac	ggg	cg	ctg	gat	ctg	gca	ttc	aac	aac	gcg	ggc	288
Thr	Val	Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Leu	Ala	Phe	Asn	Asn	Ala	Gly	
				85					90					95		
gtc	ggc	tgt	gat	cac	gag	tcc	atg	cac	ttg	atg	caa	cag	gat	acg	tac	336
Val	Gly	Cys	Asp	His	Glu	Ser	Met	His	Leu	Met	Gln	Gln	Asp	Thr	Tyr	
			100					105					110			
gac	gac	gtg	atg	gga	acc	aat	gtc	cgt	ggt	gtg	tgg	cat	tgc	ctg	caa	384
Asp	Asp	Val	Met	Gly	Thr	Asn	Val	Arg	Gly	Val	Trp	His	Cys	Leu	Gln	
			115				120					125				
cac	gag	att	tcc	gcg	atg	ctg	cac	aac	ggc	gtg	ggc	ggt	tcc	atc	gtc	432
His	Glu	Ile	Ser	Ala	Met	Leu	His	Asn	Gly	Val	Gly	Gly	Ser	Ile	Val	
			130			135					140					
aac	aac	agc	agt	gtc	gcc	gga	ctg	cag	gcg	atc	cct	gcc	ggg	gcg	cct	480
Asn	Asn	Ser	Ser	Val	Ala	Gly	Leu	Gln	Ala	Ile	Pro	Ala	Gly	Ala	Pro	
145					150				155					160		
tac	atc	gcc	tcc	aag	cac	gcc	gtc	atc	ggg	ctg	acc	aag	gcg	gct	gcg	528
Tyr	Ile	Ala	Ser	Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Lys	Ala	Ala	Ala	
				165					170					175		
gcc	gaa	tac	gcg	ccg	cag	ggc	atc	cg	gtc	aac	tcc	gtg	gcg	ccc	ggg	576
Ala	Glu	Tyr	Ala	Pro	Gln	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Gly	

## PhoenixTemp32470.tmp.txt

acg	acc	cgt	180	acc	gag	atc	att	gcc	185	ggg	tgg	ttc	gat	cgg	190	aac	ccc	ggg	
Thr	Thr	Arg	Thr	Glu	Ile	Ile	Ile	Ala	Gly	Trp	Phe	Asp	Arg	Arg	Asn	Pro	Gly		624
			195					200						205					
ctg	gag	gag	cag	ttg	cac	cgt	gcg	acg	ccg	cag	gcc	cgt	acc	gcc	gaa				672
Leu	Glu	Glu	Gln	Leu	His	Arg	Ala	Thr	Pro	Gln	Ala	Arg	Thr	Ala	Glu				
			210				215					220							
ccc	gag	gag	ata	gcc	cag	gcc	gtc	gcc	tgg	ttg	tgc	agc	gac	cgg	tct				720
Pro	Glu	Glu	Ile	Ala	Gln	Ala	Val	Ala	Trp	Leu	Cys	Ser	Asp	Arg	Ser				
225					230					235					240				
tcc	ttc	gtc	acg	ggg	gag	gtg	ctg	ccc	gtg	gac	ggc	ggg	tac	acc	ctg				768
Ser	Phe	Val	Thr	Gly	Ala	Val	Leu	Pro	Val	Asp	Gly	Gly	Tyr	Thr	Leu				
				245					250					255					
gtg	tga																		774
Val																			

&lt;210&gt; 1892

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Streptomyces natalensis

&lt;400&gt; 1892

Met	Thr	His	Gln	His	Gly	Leu	Leu	Ser	Gly	Lys	Val	Ser	Leu	Ile	Thr				
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Gly	Ala	Ser	Ser	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	Leu	Phe	Ala	Arg				
			20					25					30						
Glu	Gly	Ala	Ala	Val	Val	Leu	Ala	Ala	Arg	Arg	Val	Asp	Arg	Leu	Arg				
		35					40					45							
Ala	Leu	Val	Ser	Glu	Ile	Arg	Arg	Thr	Gly	Ala	Glu	Ala	Ala	Tyr	Ile				
	50					55				60									
Ala	Thr	Asp	Val	Ser	Gln	Glu	Glu	Asp	Val	Arg	Arg	Ala	Val	Glu	Phe				
65					70				75					80					
Thr	Val	Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Leu	Ala	Phe	Asn	Asn	Ala	Gly				
			85					90					95						
Val	Gly	Cys	Asp	His	Glu	Ser	Met	His	Leu	Met	Gln	Gln	Asp	Thr	Tyr				
		100						105					110						
Asp	Asp	Val	Met	Gly	Thr	Asn	Val	Arg	Gly	Val	Trp	His	Cys	Leu	Gln				
		115				120						125							
His	Glu	Ile	Ser	Ala	Met	Leu	His	Asn	Gly	Val	Gly	Gly	Ser	Ile	Val				
	130					135				140									
Asn	Asn	Ser	Ser	Val	Ala	Gly	Leu	Gln	Ala	Ile	Pro	Ala	Gly	Ala	Pro				
145					150				155					160					
Tyr	Ile	Ala	Ser	Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Lys	Ala	Ala	Ala				
			165					170					175						
Ala	Glu	Tyr	Ala	Pro	Gln	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Gly				
		180						185					190						
Thr	Thr	Arg	Thr	Glu	Ile	Ile	Ala	Gly	Trp	Phe	Asp	Arg	Asn	Pro	Gly				
		195					200					205							
Leu	Glu	Glu	Gln	Leu	His	Arg	Ala	Thr	Pro	Gln	Ala	Arg	Thr	Ala	Glu				
	210					215				220									
Pro	Glu	Glu	Ile	Ala	Gln	Ala	Val	Ala	Trp	Leu	Cys	Ser	Asp	Arg	Ser				
225					230					235					240				
Ser	Phe	Val	Thr	Gly	Ala	Val	Leu	Pro	Val	Asp	Gly	Gly	Tyr	Thr	Leu				
				245					250					255					
Val																			

&lt;210&gt; 1893

&lt;211&gt; 939

&lt;212&gt; DNA

&lt;213&gt; Ixodes scapularis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(939)

&lt;400&gt; 1893

atg	tta	aag	att	cgc	caa	tgt	gtt	ttc	tcg	ctt	ctc	ctt	tgc	tgc	ata				
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--	--	--	--

48

## PhoenixTemp32470.tmp.txt

Met 1	Leu	Lys	Ile	Arg 5	Gln	Cys	Val	Phe	Ser 10	Leu	Leu	Leu	Cys	Cys 15	Ile	
att Ile	acg Thr	gga Gly	cgt Arg	gcg Ala	tcg Ser	aat Asn	gct Ala	gat Asp	gat Asp	tct Ser	gct Ala	gat Asp	tca Ser	cct Pro	ccg Pro	96
tcg Ser	gag Glu	tca Ser	cg Arg	gcg Ala	aaa Lys	agt Ser	gga Gly	aat Asn	gaa Glu	aaa Lys	agt Ser	gag Glu	tca Ser	agc Ser	aaa Lys	144
aag Lys	tca Ser	caa Gln	tac Tyr	gat Asp	cct Pro	gga Gly	acc Thr	tcc Ser	tcc Ser	ctg Leu	gaa Glu	ctg Leu	caa Gln	ggg Gly	cgg Arg	192
ctg Leu	gca Ala	ctt Leu	gtg Val	act Thr	ggg Gly	gga Gly	gct Ala	agc Ser	ggc Gly	att Ile	ggc Gly	cgt Arg	agc Ser	gtc Val	gcc Ala	240
atg Met	gtc Val	ctc Leu	gca Ala	cgt Arg	gag Glu	aac Asn	gtc Val	acc Thr	gtc Val	att Ile	gta Val	gct Ala	gac Asp	atc Ile	aat Asn	288
cag Gln	acc Thr	gga Gly	gga Gly	gcg Ala	caa Gln	act Thr	atc Ile	aaa Lys	tat Tyr	cta Leu	aac Asn	ctg Leu	tta Leu	agc Ser	agt Ser	336
cac His	ctc Leu	aaa Lys	cac His	aag Lys	gcg Ala	atc Ile	tac Tyr	gtg Val	gat Asp	ggt Val	cga Arg	aat Asn	tca Ser	act Thr	tcg Ser	384
gta Val	gaa Glu	ttt Phe	ctc Leu	atc Ile	aaa Lys	tgc Cys	ata Ile	gag Glu	ctg Leu	gag Glu	tac Tyr	agc Ser	aat Asn	atg Met	acc Thr	432
atc Ile	agc Ser	att Ile	gta Val	gtg Val	aac Asn	agc Ser	gct Ala	ggc Gly	att Ile	ttg Leu	cat His	gag Glu	att Ile	aca Thr	cca Pro	480
gtc Val	gtc Val	aat Asn	cta Leu	gct Ala	gac Asp	gaa Glu	aca Thr	ttc Phe	aat Asn	gac Asp	gtc Val	atc Ile	agc Ser	acc Thr	aat Asn	528
ctt Leu	aag Lys	ggt Gly	act Thr	ttt Phe	ctg Leu	gtg Val	acc Thr	aaa Lys	gaa Glu	gcg Ala	gtg Val	aag Lys	cac His	atg Met	cta Leu	576
gct Ala	cg Arg	aat Asn	gtc Val	acc Thr	gga Gly	gca Ala	gct Ala	atc Ile	gtg Val	aac Asn	att Ile	gcg Ala	agc Ser	ata Ile	ctc Leu	624
ggc Gly	aag Lys	ggt Gly	ggc Gly	ttt Phe	cca Pro	gga Gly	ctc Leu	tcc Ser	gcc Ala	tac Tyr	aca Thr	gcc Ala	tcc Ser	aag Lys	ggg Gly	672
ggt Gly	gtc Val	gtt Val	gcg Ala	ttc Phe	acc Thr	aag Lys	gcc Ala	gtc Val	gcc Ala	gtt Val	gaa Glu	ctg Leu	gct Ala	aca Thr	agg Arg	720
ggt Gly	atc Ile	cg Arg	gtt Val	aat Asn	gcg Ala	att Ile	ctg Leu	ccc Pro	ggc Gly	ctt Leu	acc Thr	aac Asn	act Thr	ccc Pro	atg Met	768
att Ile	cga Arg	aag Lys	tac Tyr	gga Gly	aac Asn	gat Asp	act Thr	ata Ile	agg Arg	gag Glu	agg Arg	ctg Leu	gcg Ala	aag Lys	atg Met	816
att Ile	cct Pro	ctg Leu	cag Gln	cgt Arg	att Ile	gcg Ala	gag Glu	cca Pro	ctc Leu	gaa Glu	atc Ile	tcg Ser	gaa Glu	aca Thr	att Ile	864
gtg Val	ttc Phe	atg Met	tgc Cys	agc Ser	gtg Val	aaa Lys	gca Ala	tcc Ser	tac Tyr	atg Met	act Thr	gga Gly	tct Ser	aca Thr	gtg Val	912
gat Asp	gtt Val	gcg Ala	gga Gly	gga Gly	agc Ser	atg Met	cta Leu	tga								939

&lt;210&gt; 1894

&lt;211&gt; 312

&lt;212&gt; PRT

&lt;213&gt; Ixodes scapularis

&lt;400&gt; 1894

Met 1	Leu	Lys	Ile	Arg 5	Gln	Cys	Val	Phe	Ser 10	Leu	Leu	Leu	Cys	Cys 15	Ile	
Ile	Thr	Gly	Arg	Ala	Ser	Asn	Ala	Asp	Asp	Ser	Ala	Asp	Ser	Pro	Pro	



## PhoenixTemp32470.tmp.txt

20 25 30  
 Ser Glu Ser Arg Ala Lys Ser Gly Asn Glu Lys Ser Glu Ser Ser Lys  
 35 40 45  
 Lys Ser Gln Tyr Asp Pro Gly Thr Ser Ser Leu Glu Leu Gln Gly Arg  
 50 55 60  
 Leu Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Arg Ser Val Ala  
 65 70 75 80  
 Met Val Leu Ala Arg Glu Asn Val Thr Val Ile Val Ala Asp Ile Asn  
 85 90 95  
 Gln Thr Gly Gly Ala Gln Thr Ile Lys Tyr Leu Asn Leu Leu Ser Ser  
 100 105 110  
 His Leu Lys His Lys Ala Ile Tyr Val Asp Val Arg Asn Ser Thr Ser  
 115 120 125  
 Val Glu Phe Leu Ile Lys Cys Ile Glu Leu Glu Tyr Ser Asn Met Thr  
 130 135 140  
 Ile Ser Ile Val Val Asn Ser Ala Gly Ile Leu His Glu Ile Thr Pro  
 145 150 155 160  
 Val Val Asn Leu Ala Asp Glu Thr Phe Asn Asp Val Ile Ser Thr Asn  
 165 170 175  
 Leu Lys Gly Thr Phe Leu Val Thr Lys Glu Ala Val Lys His Met Leu  
 180 185 190  
 Ala Arg Asn Val Thr Gly Ala Ala Ile Val Asn Ile Ala Ser Ile Leu  
 195 200 205  
 Gly Lys Gly Gly Phe Pro Gly Leu Ser Ala Tyr Thr Ala Ser Lys Gly  
 210 215 220  
 Gly Val Val Ala Phe Thr Lys Ala Val Ala Val Glu Leu Ala Thr Arg  
 225 230 235 240  
 Gly Ile Arg Val Asn Ala Ile Leu Pro Gly Leu Thr Asn Thr Pro Met  
 245 250 255  
 Ile Arg Lys Tyr Gly Asn Asp Thr Ile Arg Glu Arg Leu Ala Lys Met  
 260 265 270  
 Ile Pro Leu Gln Arg Ile Ala Glu Pro Leu Glu Ile Ser Glu Thr Ile  
 275 280 285  
 Val Phe Met Cys Ser Val Lys Ala Ser Tyr Met Thr Gly Ser Thr Val  
 290 300  
 Asp Val Ala Gly Gly Ser Met Leu  
 305 310

&lt;210&gt; 1895

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Streptomyces chartreusis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1895

atg	acg	gac	aac	att	gag	cgg	aca	gcc	atc	gtc	acc	ggc	gcg	agc	aat	48
Met	Thr	Asp	Asn	Ile	Glu	Arg	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Asn	
1				5				10						15		
ggg	atc	ggc	cgg	gcg	atc	gcc	gcc	aca	ctg	gcg	gcg	gaa	ggc	gta	cgc	96
Gly	Ile	Gly	Arg	Ala	Ile	Ala	Ala	Thr	Leu	Ala	Ala	Glu	Gly	Val	Arg	
			20				25						30			
gta	cat	atc	tgc	ggc	agg	gac	gcc	gaa	acc	gtc	gag	aag	acg	gtg	acc	144
Val	His	Ile	Cys	Gly	Arg	Asp	Ala	Glu	Thr	Val	Glu	Lys	Thr	Val	Thr	
			35				40					45				
gaa	ctg	cgg	gcg	gac	aga	ggc	cag	gtc	agt	ggc	cag	gcg	tgc	gac	gtc	192
Glu	Leu	Arg	Ala	Asp	Arg	Gly	Gln	Val	Ser	Gly	Gln	Ala	Cys	Asp	Val	
			50			55				60						
acc	aag	ccc	gac	cag	gtg	acc	gcg	ttg	gtg	gcg	gac	tgc	gtc	gca	cgg	240
Thr	Lys	Pro	Asp	Gln	Val	Thr	Ala	Leu	Val	Ala	Asp	Cys	Val	Ala	Arg	
					70					75					80	
tac	gga	ccg	gtg	gac	atc	ctg	gtg	aac	aac	gcc	ggc	cgg	ccc	ggc	gga	288
Tyr	Gly	Pro	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Arg	Pro	Gly	Gly	
				85				90						95		
gga	atc	acc	gcg	aac	atc	gac	aac	gaa	ttg	tgg	tac	gcc	acc	atc	gac	336
Gly	Ile	Thr	Ala	Asn	Ile	Asp	Asn	Glu	Leu	Trp	Tyr	Ala	Thr	Ile	Asp	

## PhoenixTemp32470.tmp.txt

100																105																110																384
acc	aat	ctc	aac	ggt	ggt	ttc	ctg	atg	tcc	aaa	tcc	gtg	ctg	aac	gaa	acc	aat	ctc	aac	ggt	ggt	ttc	ctg	atg	tcc	aaa	tcc	gtg	ctg	aac	gaa																	
Thr	Asn	Leu	Asn	Gly	Val	Phe	Leu	Met	Ser	Lys	Ser	Val	Leu	Asn	Glu	Thr	Asn	Leu	Asn	Gly	Val	Phe	Leu	Met	Ser	Lys	Ser	Val	Leu	Asn	Glu	432																
115	130	145	165	180	195	210	225	240	255	270	285	300	315	330	345	115	130	145	165	180	195	210	225	240	255	270	285	300	315	330	345																	
ggg	cgc	atg	acg	gag	cgg	cag	gac	ggc	cgc	atc	atc	aac	atc	gcc	tcg	ggg	cgc	atg	acg	gag	cgg	cag	gac	ggc	cgc	atc	atc	aac	atc	gcc	tcg	480																
Gly	Arg	Met	Thr	Glu	Arg	Gln	Asn	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Gly	Arg	Met	Thr	Glu	Arg	Gln	Asn	Gly	Arg	Ile	Ile	Asn	Ala	Ser																		
130	145	160	175	190	205	220	235	250	265	280	295	310	325	340	355	130	145	160	175	190	205	220	235	250	265	280	295	310	325	340	355	528																
gtg	tgg	gga	aaa	cag	gga	acg	atc	gga	ggc	gcg	ccc	tac	gcg	gcc	gcc	gtg	tgg	gga	aaa	cag	gga	acg	atc	gga	ggc	gcg	ccc	tac	gcg	gcc	gcc																	
Val	Trp	Gly	Lys	Gln	Gly	Thr	Ile	Gly	Gly	Ala	Pro	Tyr	Ala	Ala	Ala	Val	Trp	Gly	Lys	Gln	Gly	Thr	Ile	Gly	Gly	Ala	Pro	Tyr	Ala	Ala	Ala																	
145	160	175	190	205	220	235	250	265	280	295	310	325	340	355	370	145	160	175	190	205	220	235	250	265	280	295	310	325	340	355	370	576																
aaa	cac	ggc	gtc	atc	gga	ttc	agc	cgc	tgc	ctc	gcg	ctg	gaa	ctc	gcg	aaa	cac	ggc	gtc	atc	gga	ttc	agc	cgc	tgc	ctc	gcg	ctg	gaa	ctc	gcg																	
Lys	His	Gly	Val	Ile	Gly	Phe	Ser	Arg	Cys	Leu	Ala	Leu	Glu	Leu	Ala	Lys	His	Gly	Val	Ile	Gly	Phe	Ser	Arg	Cys	Leu	Ala	Leu	Glu	Leu	Ala																	
165	180	195	210	225	240	255	270	285	300	315	330	345	360	375	390	165	180	195	210	225	240	255	270	285	300	315	330	345	360	375	390	624																
aag	acc	ggg	atc	acg	gtc	aat	gct	gtg	tgc	ccc	gga	tat	gtc	gag	acc	aag	acc	ggg	atc	acg	gtc	aat	gct	gtg	tgc	ccc	gga	tat	gtc	gag	acc																	
Lys	Thr	Gly	Ile	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr	Lys	Thr	Gly	Ile	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr																	
180	195	210	225	240	255	270	285	300	315	330	345	360	375	390	405	180	195	210	225	240	255	270	285	300	315	330	345	360	375	390	405	672																
ccg	atg	tcg	gtc	aac	gta	cgc	gcc	tgc	cag	gcg	ggc	atc	tgg	cag	gtg	ccg	atg	tcg	gtc	aac	gta	cgc	gcc	tgc	cag	gcg	ggc	atc	tgg	cag	gtg																	
Pro	Met	Ser	Val	Asn	Val	Arg	Ala	Cys	Gln	Ala	Gly	Ile	Trp	Gln	Val	Pro	Met	Ser	Val	Asn	Val	Arg	Ala	Cys	Gln	Ala	Gly	Ile	Trp	Gln	Val																	
195	210	225	240	255	270	285	300																																									

<210> 1896

<211> 261

<212> PRT

<213> Streptomyces chartreusis

<400> 1896

Met	Thr	Asp	Asn	Ile	Glu	Arg	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Asn
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Gly	Ile	Gly	Arg	Ala	Ile	Ala	Ala	Thr	Leu	Ala	Ala	Glu	Gly	Val	Arg
			20				25						30		
Val	His	Ile	Cys	Gly	Arg	Asp	Ala	Glu	Thr	Val	Glu	Lys	Thr	Val	Thr
		35					40					45			
Glu	Leu	Arg	Ala	Asp	Arg	Gly	Gln	Val	Ser	Gly	Gln	Ala	Cys	Asp	Val
	50					55					60				
Thr	Lys	Pro	Asp	Gln	Val	Thr	Ala	Leu	Val	Ala	Asp	Cys	Val	Ala	Arg
65				70						75					80
Tyr	Gly	Pro	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Arg	Pro	Gly	Gly
				85				90						95	
Gly	Ile	Thr	Ala	Asn	Ile	Asp	Asn	Glu	Leu	Trp	Tyr	Ala	Thr	Ile	Asp
			100					105					110		
Thr	Asn	Leu	Asn	Gly	Val	Phe	Leu	Met	Ser	Lys	Ser	Val	Leu	Asn	Glu
		115					120					125			
Gly	Arg	Met	Thr	Glu	Arg	Gln	Asn	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser
	130					135					140				
Val	Trp	Gly	Lys	Gln	Gly	Thr	Ile	Gly	Gly	Ala	Pro	Tyr	Ala	Ala	Ala
145				150						155				160	
Lys	His	Gly	Val	Ile	Gly	Phe	Ser	Arg	Cys	Leu	Ala	Leu	Glu	Leu	Ala
				165					170					175	
Lys	Thr	Gly	Ile	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr
			180					185					190		
Pro	Met	Ser	Val	Asn	Val	Arg	Ala	Cys	Gln	Ala	Gly	Ile	Trp	Gln	Val
		195					200					205			
Asp	Glu	Glu	Glu	Ala	Leu	Arg	Arg	Leu	Ala	Ser	Asp	Ile	Pro	Ile	Gly
	210					215					220				
Arg	Tyr	Ser	Glu	Pro	Glu	Glu	Val	Ala	Trp	Met	Val	Ser	Tyr	Leu	Ala
225				230						235				240	
Ser	Ser	Lys	Ala	Ala	Ser	Val	Thr	Gly	Gln	Ala	Leu	Asn	Val	Cys	Gly

Gly Phe Gly Val 245  
 260 His 250 255

<210> 1897  
 <211> 780  
 <212> DNA  
 <213> Digitalis purpurea

<220>  
 <221> CDS  
 <222> (1)..(780)

<400> 1897

atg	tcg	tca	aag	cca	agg	ttg	gat	ggt	aaa	gtg	gca	atc	atc	acc	gga	48
Met	Ser	Ser	Lys	Pro	Arg	Leu	Asp	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
1				5				10						15		
gct	gct	agc	ggc	atc	ggc	gag	gag	gcg	gca	aga	ttg	ttc	gtg	gag	cat	96
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Ala	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
ggc	gct	tca	gtg	gtg	gtg	gcg	gac	gtc	cag	gac	gaa	ttg	ggt	cgc	cag	144
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40				45					
gtc	gtc	gct	tcc	gta	aac	tct	gac	gac	aag	ata	agt	tac	cac	cac	tgc	192
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	His	His	Cys	
	50				55						60					
gac	gtc	aga	gat	gaa	aaa	caa	gtg	gag	gcc	acc	gtc	cgc	tac	gcg	gtg	240
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Glu	Ala	Thr	Val	Arg	Tyr	Ala	Val	
65				70					75					80		
gag	aaa	tac	ggg	cgc	ctc	gac	gtc	atg	gtg	agc	aac	gcc	gga	gtc	ttc	288
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Val	Met	Val	Ser	Asn	Ala	Gly	Val	Phe	
				85				90						95		
ggg	gcc	ttg	atg	acg	acc	gta	atc	gat	ctc	gac	atg	gtt	gac	ttt	gaa	336
Gly	Ala	Leu	Met	Thr	Thr	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			
aat	gta	ttg	gcg	act	aac	gtg	cgc	ggg	gtt	gcc	aat	act	ata	aag	cac	384
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
			115				120					125				
gcg	gca	cgc	gcc	atg	gtg	gag	ggg	aat	gtc	aag	ggg	tcc	atc	att	tgc	432
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Asn	Val	Lys	Gly	Ser	Ile	Ile	Cys	
	130					135					140					
acc	gcc	agc	gtg	tcg	gcg	agt	ctt	gga	ggc	atg	ggc	ccg	ccc	gct	tac	480
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
145				150					155					160		
acg	gct	tcc	aaa	cac	gcc	gtt	ctg	ggc	ctg	gtc	aag	gcg	gct	tgc	gcc	528
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Ala	Ala	Cys	Ala	
				165				170						175		
gag	ttg	ggg	gtg	cac	ggg	atc	cga	gtc	aac	tcg	gtg	gcg	ccg	tac	ggt	576
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
		180					185						190			
gtg	gcg	acc	ccg	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	624
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
		195				200						205				
atg	gag	gac	gcc	aac	tgc	tcc	agg	gct	aat	ttg	aag	ggg	gtg	gtt	ttg	672
Met	Glu	Asp	Ala	Asn	Cys	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
	210				215						220					
aag	gct	aag	cat	gta	gct	gag	gcg	gct	ctc	ttc	gct	tcc	gat	gag		720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
225				230						235				240		
tcg	gct	tat	gtc	agt	ggg	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
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gtc	gtg	cgt	tag													780
Val	Val	Arg														

<210> 1898  
 <211> 259  
 <212> PRT

&lt;213&gt; Digitalis purpurea

&lt;400&gt; 1898

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Met Ser Ser Lys Pro Arg Leu Asp Gly Lys Val Ala Ile Ile Thr Gly
1      5      10      15
Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His
20      25      30
Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly Arg Gln
35      40      45
Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr His His Cys
50      55      60
Asp Val Arg Asp Glu Lys Gln Val Glu Ala Thr Val Arg Tyr Ala Val
65      70      75      80
Glu Lys Tyr Gly Arg Leu Asp Val Met Val Ser Asn Ala Gly Val Phe
85      90      95
Gly Ala Leu Met Thr Thr Val Ile Asp Leu Asp Met Val Asp Phe Glu
100     105     110
Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His
115     120     125
Ala Ala Arg Ala Met Val Glu Gly Asn Val Lys Gly Ser Ile Ile Cys
130     135     140
Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr
145     150     155     160
Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Ala Ala Cys Ala
165     170     175
Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly
180     185     190
Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln
195     200     205
Met Glu Asp Ala Asn Cys Ser Arg Ala Asn Leu Lys Gly Val Val Leu
210     215     220
Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu
225     230     235     240
Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr
245     250     255
Val Val Arg

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&lt;210&gt; 1899

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Digitalis thapsi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 1899

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atg tcg tca aag cca agg ttg gag ggt aaa gtg gca atc atc acc ggg      48
Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Ala Ile Ile Thr Gly
1      5      10      15
gcc gct agc ggc atc ggc gag gag gcg gca aga ttg ttc gtg gag cat      96
Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His
20      25      30
ggc gcc tca gtg gtg gtg gcg gac gtc cag gac gaa ttg ggg cgc cag      144
Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly Arg Gln
35      40      45
gtc gtc gct tcc gta aac tct gac gac aag ata agt tac tac cac tgc      192
Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr Tyr His Cys
50      55      60
gac gtc aga gat gaa aaa caa gtg gcg gcc acc gtc cgc tac gcg gtg      240
Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val
65      70      75      80
gag aaa tac ggg cgc ctc gac gtc atg atg agc aac gcc gga gtc ttc      288
Glu Lys Tyr Gly Arg Leu Asp Val Met Met Ser Asn Ala Gly Val Phe
85      90      95
ggt gcc ttg atg acg aat gta atc gat ctc gac atg gtt gac ttt gaa      336
Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Phe Glu
100

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## PhoenixTemp32470.tmp.txt

aat	gta	ttg	gcg	act	aac	gtg	cgc	gga	gtt	gcc	aac	act	ata	aag	cac	384
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
		115					120					125				
gcg	gca	cga	gcc	atg	gtg	gag	ggg	aag	gtc	aag	ggg	tcc	atc	att	tgc	432
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
		130				135					140					
acc	gcc	agc	gtg	tcg	gcg	agc	ctt	gga	ggc	atg	ggc	ccg	ccc	gct	tac	480
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
					150					155					160	
acg	gct	tcc	aaa	cac	gcc	gtc	ctg	ggc	cta	gtc	aag	ggc	gct	tgc	gcc	528
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Gly	Ala	Cys	Ala	
				165					170					175		
gag	ttg	ggg	gtg	cac	ggg	atc	cga	gtc	aac	tcg	gtg	gcg	ccg	tac	ggg	576
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
gtg	gcg	acc	ccg	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	624
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
			195				200					205				
atg	gag	gag	gcc	aat	aac	tcc	agg	gct	aac	ttg	aag	ggg	gtg	gtt	ttg	672
Met	Glu	Glu	Ala	Asn	Asn	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
			210			215					220					
aag	gct	aag	cat	gta	gct	gag	gcg	gct	ctc	ttc	ttg	gct	tcc	gat	gag	720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
				225		230				235					240	
tcg	gct	tat	gtc	agt	ggg	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
gtc	gtg	cgt	tag													780
Val	Val	Arg														

&lt;210&gt; 1900

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis thapsi

&lt;400&gt; 1900

Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
1				5					10					15		
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Ala	Arg	Leu	Phe	Val	Val	Glu	His	
			20					25					30			
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40					45				
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	Tyr	His	Cys	
		50				55					60					
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Ala	Ala	Thr	Val	Arg	Tyr	Ala	Val	
				70						75					80	
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Val	Met	Met	Ser	Asn	Ala	Gly	Val	Phe	
			85						90					95		
Gly	Ala	Leu	Met	Thr	Asn	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
		115					120					125				
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
		130				135					140					
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
					150					155					160	
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Gly	Ala	Cys	Ala	
				165					170					175		
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
		195					200					205				
Met	Glu	Glu	Ala	Asn	Asn	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
		210				215					220					
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
				225		230				235					240	
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		

Val Val Arg

<210> 1901  
 <211> 780  
 <212> DNA  
 <213> Digitalis parviflora

<220>  
 <221> CDS  
 <222> (1)..(780)

<400> 1901  
 atg tcg tca aag cca agg ttg gag ggt aaa gtg gca atc atc acc ggg 48  
 Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Ala Ile Ile Thr Gly  
 1 5 10 15  
 gcc gct agc ggc atc ggc gag gag gcg gca aga ttg ttc gtg gag cat 96  
 Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His  
 20 25 30  
 ggc gcc tca gtg gtg gtg gcg gac gtc cag gac gaa ttg ggg cgc cag 144  
 Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly Arg Gln  
 35 40 45  
 gtc gtc gct tcc gta aac tct gac gac aag ata agt tac tac cac tgc 192  
 Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr Tyr His Cys  
 50 55 60  
 gac gtc aga gat gaa aaa caa gtg gcg gcc acc gtc cgc tac gcg gtg 240  
 Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val  
 65 70 75 80  
 gag aaa tac ggg cgc ctc gac gtc atg atg agc aac gcc gga gtc ttc 288  
 Glu Lys Tyr Gly Arg Leu Asp Val Met Ser Asn Ala Gly Val Phe  
 85 90 95  
 ggt gcc ttg atg acg aat gta atc gat ctc gac atg gtt gac ttt gaa 336  
 Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu  
 100 105 110  
 aat gta ttg gcg act aac gtg cgc gga gtt gcc aac act ata aag cac 384  
 Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His  
 115 120 125  
 gcg gca cga gcc atg gtg gag ggg aag gtc aag ggg tcc atc att tgc 432  
 Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys  
 130 135 140  
 acc gcc agc gtg tcg gcg agc ctt gga ggc atg ggc ccg ccc gct tac 480  
 Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr  
 145 150 155 160  
 acg gct tcc aaa cac gcc gtc ctg ggc ctg gtc aag gcg gct tgc gcc 528  
 Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Ala Ala Cys Ala  
 165 170 175  
 gag ttg ggg gtg cac ggg atc cga gtc aac tcg gtg gcg ccg tac ggt 576  
 Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly  
 180 185 190  
 gtg gcg acc ccg atg ccg tgc agt gct tac gga atg aca ccg agt cag 624  
 Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln  
 195 200 205  
 atg gag gac gcc aat aac tcc agg gct aac ttg aag ggg gtg gtt ttg 672  
 Met Glu Asp Ala Asn Asn Ser Arg Ala Asn Leu Lys Gly Val Val Leu  
 210 215 220  
 aag gct aag cat gtg gct gag gcg gct ctc ttc ttg gct tcc gat gag 720  
 Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu  
 225 230 235 240  
 tcg gct tat gtc agt ggg caa aac ttg gct gtc gac ggc ggc ttc acc 768  
 Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr  
 245 250 255  
 gtc gtg cgt tag 780  
 Val Val Arg

<210> 1902  
 <211> 259  
 <212> PRT  
 <213> Digitalis parviflora

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1902

Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Ala Ile Ile Thr Gly  
 1 5 10 15  
 Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His  
 20 25 30  
 Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly Arg Gln  
 35 40 45  
 Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr Tyr His Cys  
 50 55 60  
 Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val  
 65 70 75 80  
 Glu Lys Tyr Gly Arg Leu Asp Val Met Met Ser Asn Ala Gly Val Phe  
 85 90 95  
 Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu  
 100 105 110  
 Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His  
 115 120 125  
 Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys  
 130 135 140  
 Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr  
 145 150 155 160  
 Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Ala Ala Cys Ala  
 165 170 175  
 Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly  
 180 185 190  
 Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln  
 195 200 205  
 Met Glu Asp Ala Asn Asn Ser Arg Ala Asn Leu Lys Gly Val Val Leu  
 210 215 220  
 Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr  
 245 250 255  
 Val Val Arg

&lt;210&gt; 1903

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Digitalis grandiflora

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 1903

atg tcg tca aag cca agg ttg gag ggt aaa gtg gta atc atc acc gga	48
Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Val Ile Ile Thr Gly	
1 5 10 15	
gcc gct agc ggc atc ggc gag gag gcg gca aga ttg ttc gtg gag cat	96
Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His	
20 25 30	
ggc gcc tcg gtg gtg gtg gcg gac gtc cag gac gaa ttg ggg cac cag	144
Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly His Gln	
35 40 45	
gtc gtc gct tcc gta aac tct gac gac aag ata agt tac cac cac tgc	192
Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr His His Cys	
50 55 60	
gac gtc aga gat gaa aaa caa gtg gcg gcc acc gtc cgc tac gcg gtg	240
Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val	
65 70 75 80	
gag aaa tac ggg cgc ctc gac gtc atg atg agc aac gcc gga gtc ttc	288
Glu Lys Tyr Gly Arg Leu Asp Val Met Met Ser Asn Ala Gly Val Phe	
85 90 95	
ggg gcc ttg atg acg aac gta atc gat ctc gac atg gtt gac ttt gaa	336
Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu	
100 105 110	
aat gta ttg gcg act aac gtg cgc gga gtt gcc aac act ata aag cac	384

## PhoenixTemp32470.tmp.txt

Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
gcg	gca	cga	gcc	atg	gtg	gag	ggg	aag	gtc	aag	ggg	tcc	atc	att	tgc	432
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
130						135					140					
acc	gcc	agc	gtg	tcg	gcg	agc	ctt	gga	ggc	atg	ggc	ccg	ccc	gct	tac	480
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
145					150					155					160	
acg	gct	tcc	aaa	cac	gcc	gtc	ctg	ggc	ctg	gtc	aag	gct	gct	tgc	gcc	528
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Ala	Ala	Cys	Ala	
				165				170						175		
gag	ttg	ggg	gtg	cac	ggg	atc	cga	gtc	aac	tcg	gtg	gcg	ccg	tac	ggt	576
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
gtg	gcg	acc	ccg	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	624
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
			195				200					205				
atg	gag	gac	gcc	aat	agc	tcc	agg	gct	aac	ttg	aag	ggc	gtg	gtt	ttg	672
Met	Glu	Asp	Ala	Asn	Ser	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
	210					215					220					
aag	gct	aag	cat	gta	gct	gag	gcg	gct	ctc	ttc	ttg	gct	tcc	gat	gag	720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
225				230						235					240	
tcg	gct	tat	gtc	agt	ggg	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245				250						255		
gtc	gtg	cgt	tag													780
Val	Val	Arg														

&lt;210&gt; 1904

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis grandiflora

&lt;400&gt; 1904

Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Val	Ile	Ile	Thr	Gly	
1				5					10					15		
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Ala	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	His	Gln	
		35					40					45				
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	His	His	Cys	
		50			55						60					
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Ala	Ala	Thr	Val	Arg	Tyr	Ala	Val	
65				70						75					80	
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Val	Met	Met	Ser	Asn	Ala	Gly	Val	Phe	
				85					90					95		
Gly	Ala	Leu	Met	Thr	Asn	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
		100						105				110				
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
		115					120					125				
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
		130				135					140					
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
145					150					155					160	
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Ala	Ala	Cys	Ala	
				165					170					175		
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
		195					200					205				
Met	Glu	Asp	Ala	Asn	Ser	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
	210					215					220					
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
225				230						235					240	
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245				250						255		
Val	Val	Arg														



<210> 1905  
 <211> 783  
 <212> DNA  
 <213> uncultured bacterium

<220>  
 <221> CDS  
 <222> (1)..(783)  
 <223> transl\_table=11

<400> 1905  
 atg ctg aag aac aag acc gcc atc gtg acc ggc tcg acc agc ggg atc 48  
 Met Leu Lys Asn Lys Thr Ala Ile Val Thr Gly Ser Thr Ser Gly Ile  
 1 5 10 15  
 ggc ctg ggt atc gcc cgc gcg ctc ggc ggt gcg ggc gcc aac ctg atg 96  
 Gly Leu Gly Ile Ala Arg Ala Leu Gly Gly Ala Gly Ala Asn Leu Met  
 20 25 30  
 ctc aac ggc ttc ggc gag gcg cag gag atc gaa cgc ctg cgt gcg gcg 144  
 Leu Asn Gly Phe Gly Glu Ala Gln Glu Ile Glu Arg Leu Arg Ala Ala  
 35 40 45  
 ctg gcg gcc gaa ttc aaa gtg aac gtc gcc tac agc ggc gcc gac atg 192  
 Leu Ala Ala Glu Phe Lys Val Asn Val Ala Tyr Ser Gly Ala Asp Met  
 50 55 60  
 tcc aag ccg gcg cag att cag gac atg gtg cgc atg gcg acg aag gaa 240  
 Ser Lys Pro Ala Gln Ile Gln Asp Met Val Arg Met Ala Thr Lys Glu  
 65 70 75 80  
 ctg ggg tcg gtc gac att ctc gtc aac aac gcc ggc atc cag cac acg 288  
 Leu Gly Ser Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Thr  
 85 90 95  
 gcg tcg gtc gaa gag ttt ccg gac gat cgc tgg gat gcc gtg atc gcc 336  
 Ala Ser Val Glu Glu Phe Pro Asp Asp Arg Trp Asp Ala Val Ile Ala  
 100 105 110  
 atc aac ctg tcg tcc aac ttt cat gcg atc aag gcg gtg ctg ccg cag 384  
 Ile Asn Leu Ser Ser Asn Phe His Ala Ile Lys Ala Val Leu Pro Gln  
 115 120 125  
 atg aag agc cgc aac tgg ggc cgg atc gtc aac atc gct tcg gtg cac 432  
 Met Lys Ser Arg Asn Trp Gly Arg Ile Val Asn Ile Ala Ser Val His  
 130 135 140  
 gga ctg gtc gcc tcg aca cac aag gcc gcc tac gtc gct gcc aag cac 480  
 Gly Leu Val Ala Ser Thr His Lys Ala Ala Tyr Val Ala Ala Lys His  
 145 150 155 160  
 ggt gtg gtt ggg ttg acc aag gta gtg gcc ctg gaa atg gcc agg aca 528  
 Gly Val Val Gly Leu Thr Lys Val Val Ala Leu Glu Met Ala Arg Thr  
 165 170 175  
 ggc atc acc tgc aac gcc atc tgc ccc ggc tgg gtg ctg acg ccg ctc 576  
 Gly Ile Thr Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu  
 180 185 190  
 gtg caa aag cag atc gac gac cgg gcc aag gcc gaa agc att gcg gcc 624  
 Val Gln Lys Gln Ile Asp Asp Arg Ala Lys Ala Glu Ser Ile Ala Ala  
 195 200 205  
 gac aag gcg aag gcg gaa ctg ctg gcc gaa aag cag cct tcc ggc gaa 672  
 Asp Lys Ala Lys Ala Glu Leu Leu Ala Glu Lys Gln Pro Ser Gly Glu  
 210 215 220  
 ttc gcc acg ccc gag cag atg ggc gcc ctg tgc gtg ttc ctg tgc tcg 720  
 Phe Ala Thr Pro Glu Gln Met Gly Ala Leu Cys Val Phe Leu Cys Ser  
 225 230 235 240  
 gag gcc gcg gcg cag atg cgc ggc gtg gcg ctg ccg gtc gac ggc ggc 768  
 Glu Ala Ala Ala Gln Met Arg Gly Val Ala Leu Pro Val Asp Gly Gly  
 245 250 255  
 tgg ctg gcg caa tag 783  
 Trp Leu Ala Gln  
 260

<210> 1906  
 <211> 260  
 <212> PRT  
 <213> uncultured bacterium

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1906

```

Met Leu Lys Asn Lys Thr Ala Ile Val Thr Gly Ser Thr Ser Gly Ile
1      5      10      15
Gly Leu Gly Ile Ala Arg Ala Leu Gly Gly Ala Gly Ala Asn Leu Met
20      25      30
Leu Asn Gly Phe Gly Glu Ala Gln Glu Ile Glu Arg Leu Arg Ala Ala
35      40      45
Leu Ala Ala Glu Phe Lys Val Asn Val Ala Tyr Ser Gly Ala Asp Met
50      55      60
Ser Lys Pro Ala Gln Ile Gln Asp Met Val Arg Met Ala Thr Lys Glu
65      70      75      80
Leu Gly Ser Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Thr
85      90      95
Ala Ser Val Glu Glu Phe Pro Asp Asp Arg Trp Asp Ala Val Ile Ala
100     105     110
Ile Asn Leu Ser Ser Asn Phe His Ala Ile Lys Ala Val Leu Pro Gln
115     120     125
Met Lys Ser Arg Asn Trp Gly Arg Ile Val Asn Ile Ala Ser Val His
130     135     140
Gly Leu Val Ala Ser Thr His Lys Ala Ala Tyr Val Ala Ala Lys His
145     150     155     160
Gly Val Val Gly Leu Thr Lys Val Val Ala Leu Glu Met Ala Arg Thr
165     170     175
Gly Ile Thr Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu
180     185     190
Val Gln Lys Gln Ile Asp Asp Arg Ala Lys Ala Glu Ser Ile Ala Ala
195     200     205
Asp Lys Ala Lys Ala Glu Leu Leu Ala Glu Lys Gln Pro Ser Gly Glu
210     215     220
Phe Ala Thr Pro Glu Gln Met Gly Ala Leu Cys Val Phe Leu Cys Ser
225     230     235     240
Glu Ala Ala Ala Gln Met Arg Gly Val Ala Leu Pro Val Asp Gly Gly
245     250     255
Trp Leu Ala Gln
260

```

&lt;210&gt; 1907

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Streptomyces griseoruber

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1907

```

atg tcc cgt ccc cag acc gcc ttc gtc acc ggg gtc agc agc gga atc      48
Met Ser Arg Pro Gln Thr Ala Phe Val Thr Gly Val Ser Ser Gly Ile
1      5      10      15
ggc ctg gcg gtc gcc cgc acc ctc gcc gcc cgg ggg atc gcc gtc tac      96
Gly Leu Ala Val Ala Arg Thr Leu Ala Ala Arg Gly Ile Ala Val Tyr
20      25      30
gga tgc gcc cgg gac gcc aag aac gtc tgc gcc gcg gtc gac ggc ctg      144
Gly Cys Ala Arg Asp Ala Lys Asn Val Ser Ala Ala Val Asp Gly Leu
35      40      45
cgc gcc gcc ggt cac gac gtc gac ggg tcc tcc tgc gac gtc acg tcg      192
Arg Ala Ala Gly His Asp Val Asp Gly Ser Ser Cys Asp Val Thr Ser
50      55      60
acc gac gag gtg cat gcc gcc gtc gcg gcc gcc gtt gag cgc ttc ggc      240
Thr Asp Glu Val His Ala Ala Val Ala Ala Ala Val Glu Arg Phe Gly
65      70      75      80
ccc atc ggc att ctg gtc aac agc gcc ggc cgc aac ggc ggc ggg gag      288
Pro Ile Gly Ile Leu Val Asn Ser Ala Gly Arg Asn Gly Gly Gly Glu
85      90      95
acc gcc gac ctc gac gac gcc ctc tgg gcg gac gtc ctc gac acc aac      336
Thr Ala Asp Leu Asp Asp Ala Leu Trp Ala Asp Val Leu Asp Thr Asn
100     105     110

```

## PhoenixTemp32470.tmp.txt

ctg	acc	ggt	gtc	ttc	cgg	gtc	acc	cgg	gag	gtg	ctg	cgg	gcc	ggg	ggc	384
Leu	Thr	Gly	Val	Phe	Arg	Val	Thr	Arg	Glu	Val	Leu	Arg	Ala	Gly	Gly	
		115					120					125				
atg	cgc	gag	gcg	ggc	tgg	ggc	agg	atc	gtc	aac	atc	gcc	tcc	acc	ggg	432
Met	Arg	Glu	Ala	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Thr	Gly	
	130					135					140					
ggc	aag	cag	gga	gtg	atg	tac	gcc	gcc	ccc	tac	acg	gcc	tcg	aag	cac	480
Gly	Lys	Gln	Gly	Val	Met	Tyr	Ala	Ala	Pro	Tyr	Thr	Ala	Ser	Lys	His	
145					150					155					160	
ggt	gtc	gtc	ggc	ttc	acc	aag	tcc	gtc	ggc	ttc	gaa	ctg	gcc	aag	acg	528
Gly	Val	Val	Gly	Phe	Thr	Lys	Ser	Val	Gly	Phe	Glu	Leu	Ala	Lys	Thr	
				165					170					175		
ggc	atc	acc	gtc	aac	gcc	gtc	tgc	ccc	ggt	tac	gtg	gag	acg	ccg	atg	576
Gly	Ile	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr	Pro	Met	
			180					185					190			
gcg	gag	cgg	gtc	cgc	gag	ggc	tac	gca	cgg	cac	tgg	ggc	gtg	acc	gag	624
Ala	Glu	Arg	Val	Arg	Glu	Gly	Tyr	Ala	Arg	His	Trp	Gly	Val	Thr	Glu	
		195					200					205				
cag	gag	gtc	cat	gag	cgc	ttc	aac	gcc	aag	atc	ccg	ttg	ggc	cgt	tac	672
Gln	Glu	Val	His	Glu	Arg	Phe	Asn	Ala	Lys	Ile	Pro	Leu	Gly	Arg	Tyr	
		210				215					220					
tcc	acc	cct	gag	gag	gtg	gcg	ggc	ctc	gtg	ggc	tac	ctg	gtc	acg	gac	720
Ser	Thr	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Gly	Tyr	Leu	Val	Thr	Asp	
225					230					235					240	
gcc	gcc	gcc	tcc	atc	acg	gcg	cag	gcc	ctg	aac	gtc	tgc	ggc	ggc	ctg	768
Ala	Ala	Ala	Ser	Ile	Thr	Ala	Gln	Ala	Leu	Asn	Val	Cys	Gly	Gly	Leu	
				245					250					255		
ggc	aac	tac	tga													780
Gly	Asn	Tyr														

&lt;210&gt; 1908

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Streptomyces griseoruber

&lt;400&gt; 1908

Met	Ser	Arg	Pro	Gln	Thr	Ala	Phe	Val	Thr	Gly	Val	Ser	Ser	Gly	Ile	
1				5					10					15		
Gly	Leu	Ala	Val	Ala	Arg	Thr	Leu	Ala	Ala	Arg	Gly	Ile	Ala	Val	Tyr	
			20					25					30			
Gly	Cys	Ala	Arg	Asp	Ala	Lys	Asn	Val	Ser	Ala	Ala	Val	Asp	Gly	Leu	
		35					40					45				
Arg	Ala	Ala	Gly	His	Asp	Val	Asp	Gly	Ser	Ser	Cys	Asp	Val	Thr	Ser	
		50				55					60					
Thr	Asp	Glu	Val	His	Ala	Ala	Val	Ala	Ala	Ala	Val	Glu	Arg	Phe	Gly	
65					70					75					80	
Pro	Ile	Gly	Ile	Leu	Val	Asn	Ser	Ala	Gly	Arg	Asn	Gly	Gly	Gly	Glu	
				85					90					95		
Thr	Ala	Asp	Leu	Asp	Asp	Ala	Leu	Trp	Ala	Asp	Val	Leu	Asp	Thr	Asn	
			100					105					110			
Leu	Thr	Gly	Val	Phe	Arg	Val	Thr	Arg	Glu	Val	Leu	Arg	Ala	Gly	Gly	
		115					120					125				
Met	Arg	Glu	Ala	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Thr	Gly	
		130				135					140					
Gly	Lys	Gln	Gly	Val	Met	Tyr	Ala	Ala	Pro	Tyr	Thr	Ala	Ser	Lys	His	
145					150					155					160	
Gly	Val	Val	Gly	Phe	Thr	Lys	Ser	Val	Gly	Phe	Glu	Leu	Ala	Lys	Thr	
				165					170					175		
Gly	Ile	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr	Pro	Met	
			180					185					190			
Ala	Glu	Arg	Val	Arg	Glu	Gly	Tyr	Ala	Arg	His	Trp	Gly	Val	Thr	Glu	
		195					200					205				
Gln	Glu	Val	His	Glu	Arg	Phe	Asn	Ala	Lys	Ile	Pro	Leu	Gly	Arg	Tyr	
		210				215					220					
Ser	Thr	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Gly	Tyr	Leu	Val	Thr	Asp	
225					230					235					240	
Ala	Ala	Ala	Ser	Ile	Thr	Ala	Gln	Ala	Leu	Asn	Val	Cys	Gly	Gly	Leu	
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Gly Asn Tyr

<210> 1909  
 <211> 885  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(885)

<400> 1909  
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 Met Val Met Gly Gln Glu Gln Ser Arg Val Asp Asp Val Asp Trp Ile  
 1 5 10 15  
 cgt caa cag ttt ctc ctc tgt gtc aag acc cga aag gtt tac acg ttg 96  
 Arg Gln Gln Phe Leu Leu Cys Val Lys Thr Arg Lys Val Tyr Thr Leu  
 20 25 30  
 gct gga aag gtg gcc gtg atc acc ggt ggc gca agc ggc atc ggc gag 144  
 Ala Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu  
 35 40 45  
 gcg acg gcc aag gag ttc atc cgc aat ggc gcc aag gtc atc atc gcc 192  
 Ala Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Ile Ala  
 50 55 60  
 gac gta caa gac gat ctc ggc cac acc gtc gct gcc gag ctc ggc ccg 240  
 Asp Val Gln Asp Asp Leu Gly His Thr Val Ala Ala Glu Leu Gly Pro  
 65 70 75 80  
 ggc tcg gcc tac acc cgc tgc gac gtc acc gac gag gcg cag atc gcg 288  
 Gly Ser Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Ile Ala  
 85 90 95  
 gcg acc gtg gac ctt gcc gtg gcg cgc cac ggc cac ctt gac atc ctg 336  
 Ala Thr Val Asp Leu Ala Val Ala Arg His Gly His Leu Asp Ile Leu  
 100 105 110  
 tac aac aac gcc ggg atc aca agc tcc tct gtg ggg cac ctt gcc tcc 384  
 Tyr Asn Asn Ala Gly Ile Thr Ser Ser Val Gly His Leu Ala Ser  
 115 120 125  
 ctc gac ctc gcc gac ttc gac cgc gtc atg gcg gtg aac gcc ccg gcg 432  
 Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala  
 130 135 140  
 gtg ctc gcc ggc atc aag cac gcc gcg cgc gtg atg gca cca cga cgc 480  
 Val Leu Ala Gly Ile Lys His Ala Ala Arg Val Met Ala Pro Arg Arg  
 145 150 155 160  
 acc ggc tcc atc ctc tgc acg gcc agc gtg gcg ggc atg atg ggc ggc 528  
 Thr Gly Ser Ile Leu Cys Thr Ala Ser Val Ala Gly Met Met Gly Gly  
 165 170 175  
 gag atg ccc cac gcg tac aac gtc tcc aag gcg gcg gtc ata ggt gtg 576  
 Glu Met Pro His Ala Tyr Asn Val Ser Lys Ala Ala Val Ile Gly Val  
 180 185 190  
 gtg cgg tcc gcc gcc ggc gag ctg gca cgc cac ggc gtg cgg ctg aac 624  
 Val Arg Ser Ala Ala Gly Glu Leu Ala Arg His Gly Val Arg Leu Asn  
 195 200 205  
 gcg atc tcg ccg ctc ggc atc gcg acg cca ctg gcg atg cgc ggg ttc 672  
 Ala Ile Ser Pro Leu Gly Ile Ala Thr Pro Leu Ala Met Arg Gly Phe  
 210 215 220  
 ggc gac atg ctg gcg tgg gcg gac gcc gag cgg gtg agg cgg ctc atc 720  
 Gly Asp Met Leu Ala Trp Ala Asp Ala Glu Arg Val Arg Arg Leu Ile  
 225 230 235 240  
 gag gag gac atg aac gag cta gag ggc gcg acg ctg gag gcg gag gac 768  
 Glu Glu Asp Met Asn Glu Leu Glu Gly Ala Thr Leu Glu Ala Glu Asp  
 245 250 255  
 atc gcg agg gcg gcg gtg tac ctc gcc tcc gac gag gcc aag tac gtc 816  
 Ile Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val  
 260 265 270  
 acc ggg cat aac ctc gtc gtc gac ggc ggg ttc acc gtc ggg aag ccg 864  
 Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Arg  
 275 280 285  
 ctc aac gtg gcg cgt gct tga 885  
 Leu Asn Val Ala Arg Ala

290

<210> 1910  
 <211> 294  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 1910  
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 1 5 10 15  
 Arg Gln Gln Phe Leu Leu Cys Val Lys Thr Arg Lys Val Tyr Thr Leu  
 20 25 30  
 Ala Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu  
 35 40 45  
 Ala Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Ile Ala  
 50 55 60  
 Asp Val Gln Asp Asp Leu Gly His Thr Val Ala Ala Glu Leu Gly Pro  
 65 70 75 80  
 Gly Ser Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Ile Ala  
 85 90 95  
 Ala Thr Val Asp Leu Ala Val Ala Arg His Gly His Leu Asp Ile Leu  
 100 105 110  
 Tyr Asn Asn Ala Gly Ile Thr Ser Ser Val Gly His Leu Ala Ser  
 115 120 125  
 Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala  
 130 135 140  
 Val Leu Ala Gly Ile Lys His Ala Ala Arg Val Met Ala Pro Arg Arg  
 145 150 155 160  
 Thr Gly Ser Ile Leu Cys Thr Ala Ser Val Ala Gly Met Met Gly Gly  
 165 170 175  
 Glu Met Pro His Ala Tyr Asn Val Ser Lys Ala Ala Val Ile Gly Val  
 180 185 190  
 Val Arg Ser Ala Ala Gly Glu Leu Ala Arg His Gly Val Arg Leu Asn  
 195 200 205  
 Ala Ile Ser Pro Leu Gly Ile Ala Thr Pro Leu Ala Met Arg Gly Phe  
 210 215 220  
 Gly Asp Met Leu Ala Trp Ala Asp Ala Glu Arg Val Arg Arg Leu Ile  
 225 230 235 240  
 Glu Glu Asp Met Asn Glu Leu Glu Gly Ala Thr Leu Glu Ala Glu Asp  
 245 250 255  
 Ile Ala Arg Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val  
 260 265 270  
 Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Arg  
 275 280 285  
 Leu Asn Val Ala Arg Ala  
 290

<210> 1911  
 <211> 738  
 <212> DNA  
 <213> Neurospora crassa

<220>  
 <221> CDS  
 <222> (1)..(738)

<400> 1911  
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 Met Asp Leu Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly  
 1 5 10 15  
 aag gca tgc gcg ttg gcc ttt gcc cgg tat ggc gtt cga ggc atc gtc 96  
 Lys Ala Cys Ala Leu Ala Phe Ala Arg Tyr Gly Val Arg Gly Ile Val  
 20 25 30  
 ata gca gat ctc acg ctc gaa gct gct tct gcg gtg gca gca gag tca 144  
 Ile Ala Asp Leu Thr Leu Glu Ala Ala Ser Ala Val Ala Ala Glu Ser  
 35 40 45  
 att gca tac gca cat cag gtc ctc ggt cgg atc gac tac gca gtg aac 192  
 Ile Ala Tyr Ala His Gln Val Leu Gly Arg Ile Asp Tyr Ala Val Asn  
 50 55 60

## PhoenixTemp32470.tmp.txt

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agc gct ggt gtc gga gtc caa ttg gcc aat gaa atc gcc gaa gcc agc      240
Ser Ala Gly Val Gly Val Gln Leu Ala Asn Glu Ile Ala Glu Ala Ser
65 70 75 80
gtc tcc gag ttt gaa aag atg ttc aag gtc aac gta act ggc acc ttc      288
Val Ser Glu Phe Glu Lys Met Phe Lys Val Asn Val Thr Gly Thr Phe
85 90 95
atc gtc acc cgc gct ctc tcc gcc ctc atg aag acc caa gac ccc gtt      336
Ile Val Thr Arg Ala Leu Ser Ala Leu Met Lys Thr Gln Asp Pro Val
100 105 110
ccc gtt gac gaa gcc gtt ccc gcg cgg ggt gtc tca cgg ggt agc att      384
Pro Val Asp Glu Ala Val Pro Ala Arg Gly Val Ser Arg Gly Ser Ile
115 120 125
gtc aac gtg ggg tca gct tcg ggg ggt gtc acc cca ggc atg gtt      432
Val Asn Val Gly Ser Ala Ser Gly Phe Val Ala Thr Pro Gly Met Val
130 135 140
caa tac aca gcc gcc aag cat gca gtc gtt gga atc acc aag aat gct      480
Gln Tyr Thr Ala Ala Lys His Ala Val Val Gly Ile Thr Lys Asn Ala
145 150 155 160
gca ctt gat aac gcc aaa cat ggt atc cgg gtc aat agt gtg tgt cca      528
Ala Leu Asp Asn Ala Lys His Gly Ile Arg Val Asn Ser Val Cys Pro
165 170 175
tcc tgg gtc gat aca ccc atg atc cgc aag gcc atg gat gac atc cct      576
Ser Trp Val Asp Thr Pro Met Ile Arg Lys Ala Met Asp Asp Ile Pro
180 185 190
gaa ctc gga gag atg atc cag aaa gcc gtt ccg ctc gga agg att gcg      624
Glu Leu Gly Glu Met Ile Gln Lys Ala Val Pro Leu Gly Arg Ile Ala
195 200 205
cta gcc gag gaa gtt gcc gat gcg gtc atg ttc ctc tct agt ccg aaa      672
Leu Ala Glu Glu Val Ala Asp Ala Val Met Phe Leu Ser Ser Pro Lys
210 215 220
gcg agt tat gct acg ggg tgc aac atg atc ttg gat ggg ggt aca acg      720
Ala Ser Tyr Ala Thr Gly Cys Asn Met Ile Leu Asp Gly Gly Thr Thr
225 230 235 240
ctt gct gct cat gtc tga
Leu Ala Ala His Val
245

```

&lt;210&gt; 1912

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 1912

```

Met Asp Leu Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly
1 5 10 15
Lys Ala Cys Ala Leu Ala Phe Ala Arg Tyr Gly Val Arg Gly Ile Val
20 25 30
Ile Ala Asp Leu Thr Leu Glu Ala Ala Ser Ala Val Ala Ala Glu Ser
35 40 45
Ile Ala Tyr Ala His Gln Val Leu Gly Arg Ile Asp Tyr Ala Val Asn
50 55 60
Ser Ala Gly Val Gly Val Gln Leu Ala Asn Glu Ile Ala Glu Ala Ser
65 70 75 80
Val Ser Glu Phe Glu Lys Met Phe Lys Val Asn Val Thr Gly Thr Phe
85 90 95
Ile Val Thr Arg Ala Leu Ser Ala Leu Met Lys Thr Gln Asp Pro Val
100 105 110
Pro Val Asp Glu Ala Val Pro Ala Arg Gly Val Ser Arg Gly Ser Ile
115 120 125
Val Asn Val Gly Ser Ala Ser Gly Phe Val Ala Thr Pro Gly Met Val
130 135 140
Gln Tyr Thr Ala Ala Lys His Ala Val Val Gly Ile Thr Lys Asn Ala
145 150 155 160
Ala Leu Asp Asn Ala Lys His Gly Ile Arg Val Asn Ser Val Cys Pro
165 170 175
Ser Trp Val Asp Thr Pro Met Ile Arg Lys Ala Met Asp Asp Ile Pro
180 185 190
Glu Leu Gly Glu Met Ile Gln Lys Ala Val Pro Leu Gly Arg Ile Ala
195 200 205

```

## PhoenixTemp32470.tmp.txt

Leu Ala Glu Glu Val Ala Asp Ala Val Met Phe Leu Ser Ser Pro Lys  
 210 220  
 Ala Ser Tyr Ala Thr Gly Cys Asn Met Ile Leu Asp Gly Gly Thr Thr  
 225 230 235 240  
 Leu Ala Ala His Val  
 245

<210> 1913  
 <211> 777  
 <212> DNA  
 <213> Sinorhizobium sp

<220>  
 <221> CDS  
 <222> (1)..(777)  
 <223> transl\_table=11

<400> 1913  
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 1 5 10 15  
 gca atc gcc aag gca ttt gcg aag acc ggg gcc aat atc gtg ctg aat 96  
 Ala Ile Ala Lys Ala Phe Ala Lys Thr Gly Ala Asn Ile Val Leu Asn  
 20 25 30  
 ggt ttc ggt tcg gcc gac gag atc agg acg gtg acg gac gag gtg gcg 144  
 Gly Phe Gly Ser Ala Asp Glu Ile Arg Thr Val Thr Asp Glu Val Ala  
 35 40 45  
 ggt ctc ggc gcc ggc acg gtg ctg cac cat ccg gcc gac atg acg aag 192  
 Gly Leu Gly Ala Gly Thr Val Leu His His Pro Ala Asp Met Thr Lys  
 50 55 60  
 ccg gcc gag atc gcc gac ctg atg gcg acc gcc gtc gcg cgc ttc ggc 240  
 Pro Ala Glu Ile Ala Asp Leu Met Ala Thr Ala Val Ala Arg Phe Gly  
 65 70 75 80  
 ggt gcc gat atc ctc gtc aac aat gcc ggc gta cag ttc gtc gaa aag 288  
 Gly Ala Asp Ile Leu Val Asn Asn Ala Gly Val Gln Phe Val Glu Lys  
 85 90 95  
 atc gag gat ttt ccg gtc gag caa tgg gac cgg atc atc gcc atc aac 336  
 Ile Glu Asp Phe Pro Val Glu Gln Trp Asp Arg Ile Ile Ala Ile Asn  
 100 105 110  
 ctc tcc tcc ttc cac acg atc cgg gcg gcg att ccc gcc atg aaa 384  
 Leu Ser Ser Phe His Thr Ile Arg Ala Ala Ile Pro Ala Met Lys  
 115 120 125  
 cag aag ggc tgg ggc cgc atc gtc aac atc gcc tcg gcg cat ggc ctg 432  
 Gln Lys Gly Trp Gly Arg Ile Val Asn Ile Ala Ser Ala His Gly Leu  
 130 135 140  
 gtc gcc tca ccc ttc aaa tcc gcc tat gtg gcg gcc aag cat ggt atc 480  
 Val Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Lys His Gly Ile  
 145 150 155 160  
 atg ggc ctc acg aag acc gtg gcg ctc gag gtg gcg gaa aac ggc atc 528  
 Met Gly Leu Thr Lys Thr Val Ala Leu Glu Val Ala Glu Asn Gly Ile  
 165 170 175  
 acc gtg aac tcg atc tgc ccc ggc tat gtg ctg acg ccg ctt gtc gaa 576  
 Thr Val Asn Ser Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu  
 180 185 190  
 aag cag ata ccg gac cag gcg agg acg cgc ggc atc acc gag gaa cag 624  
 Lys Gln Ile Pro Asp Gln Ala Arg Thr Arg Gly Ile Thr Glu Glu Gln  
 195 200 205  
 gtg atc aac gag gtg atg ctc aag ggt cag ccg acc aag aaa ttc ata 672  
 Val Ile Asn Glu Val Met Leu Lys Gly Gln Pro Thr Lys Lys Phe Ile  
 210 215 220  
 acc gtc gag cag gtc gcc tcg ctg gcg ctc tat ctc gcc agc gac gag 720  
 Thr Val Glu Gln Val Ala Ser Leu Ala Leu Tyr Leu Ala Ser Asp Glu  
 225 230 235 240  
 gcg gcg caa atc acc ggc acg cat gtc tcg atg gac ggc ggc tgg acg 768  
 Ala Ala Gln Ile Thr Gly Thr His Val Ser Met Asp Gly Gly Trp Thr  
 245 250 255  
 gcg caa tag 777  
 Ala Gln

<210> 1914  
 <211> 258  
 <212> PRT  
 <213> Sinorhizobium sp

<400> 1914  
 Met Thr Lys Thr Ala Val Ile Thr Gly Ser Thr Ser Gly Ile Gly Leu  
 1 5 10 15  
 Ala Ile Ala Lys Ala Phe Ala Lys Thr Gly Ala Asn Ile Val Leu Asn  
 20 25 30  
 Gly Phe Gly Ser Ala Asp Glu Ile Arg Thr Val Thr Asp Glu Val Ala  
 35 40 45  
 Gly Leu Gly Ala Gly Thr Val Leu His His Pro Ala Asp Met Thr Lys  
 50 55 60  
 Pro Ala Glu Ile Ala Asp Leu Met Ala Thr Ala Val Ala Arg Phe Gly  
 65 70 75 80  
 Gly Ala Asp Ile Leu Val Asn Asn Ala Gly Val Gln Phe Val Glu Lys  
 85 90 95  
 Ile Glu Asp Phe Pro Val Glu Gln Trp Asp Arg Ile Ile Ala Ile Asn  
 100 105 110  
 Leu Ser Ser Ser Phe His Thr Ile Arg Ala Ala Ile Pro Ala Met Lys  
 115 120 125  
 Gln Lys Gly Trp Gly Arg Ile Val Asn Ile Ala Ser Ala His Gly Leu  
 130 135 140  
 Val Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Ala Lys His Gly Ile  
 145 150 155 160  
 Met Gly Leu Thr Lys Thr Val Ala Leu Glu Val Ala Glu Asn Gly Ile  
 165 170 175  
 Thr Val Asn Ser Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu  
 180 185 190  
 Lys Gln Ile Pro Asp Gln Ala Arg Thr Arg Gly Ile Thr Glu Glu Gln  
 195 200 205  
 Val Ile Asn Glu Val Met Leu Lys Gly Gln Pro Thr Lys Lys Phe Ile  
 210 215 220  
 Thr Val Glu Gln Val Ala Ser Leu Ala Leu Tyr Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ala Ala Gln Ile Thr Gly Thr His Val Ser Met Asp Gly Gly Trp Thr  
 245 250 255  
 Ala Gln

<210> 1915  
 <211> 936  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(936)

<400> 1915  
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 1 5 10 15  
 tgg tct ctt caa ggg aag acg gcg ctc gtc acc ggc ggc acc cgc gga 96  
 Trp Ser Leu Gln Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg Gly  
 20 25 30  
 atc ggg cgt gcg gtg gtg gag gag ctg gcg gcg ctg ggg gcc acc gtg 144  
 Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Thr Val  
 35 40 45  
 cac aca tgc tcc cgg aag gag gag ctg agc gag cgc ctc aag gag 192  
 His Thr Cys Ser Arg Lys Glu Glu Leu Ser Glu Arg Leu Lys Glu  
 50 55 60  
 tgg gag gcc cgg gga ttc cgc gtc acc acc tcc gtc tgc gat ctc tcg 240  
 Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu Ser  
 65 70 75 80  
 gtt cgg gac cag cgt gag cgc ctc ctc cgc caa gtc gct gac ctc ttc 288  
 Val Arg Asp Gln Arg Glu Arg Leu Leu Arg Gln Val Ala Asp Leu Phe



## PhoenixTemp32470.tmp.txt

															85						90						95	
ggc	ggc	aag	ctc	gat	atc	ctc	gta	aac	aat	gtg	ggg	aca	aac	ata	agg	336												
Gly	Gly	Lys	Leu	Asp	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Ile	Arg													
															100						105						110	
aag	cca	acc	act	gaa	ttt	tct	gcc	gag	gaa	tac	tct	ttt	atg	atg	gcg	384												
Lys	Pro	Thr	Thr	Glu	Phe	Ser	Ala	Glu	Glu	Tyr	Ser	Phe	Met	Met	Ala													
															115						120						125	
act	aat	ctt	gaa	tct	gcg	tat	cat	ctg	tgc	caa	ctt	tcg	cat	cct	ctt	432												
Thr	Asn	Leu	Glu	Ser	Ala	Tyr	His	Leu	Cys	Gln	Leu	Ser	His	Pro	Leu													
															130						135						140	
ctg	aaa	gca	tct	ggg	tca	ggg	agc	att	gtt	ttc	ata	tca	tca	gtc	tgt	480												
Leu	Lys	Ala	Ser	Gly	Ser	Gly	Ser	Ile	Val	Phe	Ile	Ser	Ser	Val	Cys													
															145						150						155	
gga	ttg	gta	gct	gta	ttt	agt	ggt	tct	ctc	tat	gct	atg	aca	aaa	ggg	528												
Gly	Leu	Val	Ala	Val	Phe	Ser	Gly	Ser	Leu	Tyr	Ala	Met	Thr	Lys	Gly													
															165						170						175	
gca	atc	aac	caa	tta	acc	aag	aac	cta	gca	tgc	gaa	tgg	gcg	aga	gac	576												
Ala	Ile	Asn	Gln	Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Arg	Asp													
															180						185						190	
aac	ata	cga	tcc	aac	tct	att	gcc	ccg	tgg	tat	atc	agg	act	tca	ctt	624												
Asn	Ile	Arg	Ser	Asn	Ser	Ile	Ala	Pro	Trp	Tyr	Ile	Arg	Thr	Ser	Leu													
															195						200						205	
acc	gaa	gga	gta	aag	ctt	ttg	ctt	atc	aac	cat	cct	gat	tta	tca	tgt	672												
Thr	Glu	Gly	Val	Lys	Leu	Leu	Ile	Asn	His	Pro	Asp	Leu	Ser	Cys														
															210						215						220	
ttg	gat	act	tgt	cat	ttt	aag	tca	gaa	cat	gta	gtc	aag	tat	tca	act	720												
Leu	Asp	Thr	Cys	His	Phe	Lys	Ser	Glu	His	Val	Val	Lys	Tyr	Ser	Thr													
															225						230						235	
aat	tgt	cag	gat	acg	ctt	ttg	gca	aat	aag	gac	ttt	gaa	ggg	gct	gtg	768												
Asn	Cys	Gln	Asp	Thr	Leu	Leu	Ala	Asn	Lys	Asp	Phe	Glu	Gly	Ala	Val													
															245						250						255	
gtg	agc	cga	act	cca	ctt	agg	cgt	gtt	gga	gaa	cct	gaa	gaa	gta	tca	816												
Val	Ser	Arg	Thr	Pro	Leu	Arg	Arg	Val	Gly	Glu	Pro	Glu	Glu	Val	Ser													
															260						265						270	
tcg	ctg	gtt	gct	ttt	ctt	tgc	atg	cct	ggg	tcc	agt	tac	att	act	ggc	864												
Ser	Leu	Val	Ala	Phe	Leu	Cys	Met	Pro	Gly	Ser	Ser	Tyr	Ile	Thr	Gly													
															275						280						285	
cag	acg	atc	tcg	gtt	gat	gga	ggc	aac	cgg	tac	aag	tcg	agc	gta	agc	912												
Gln	Thr	Ile	Ser	Val	Asp	Gly	Gly	Asn	Arg	Tyr	Lys	Ser	Ser	Val	Ser													
															290						300							
atg	atg	gtt	ctc	gca	gag	caa	taa									936												
Met	Met	Val	Leu	Ala	Glu	Gln																						
															305						310							

&lt;210&gt; 1916

&lt;211&gt; 311

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1916

Met	Ala	Ala	Ala	Ala	Glu	Thr	Ser	Ala	Lys	Val	Gly	Ala	Pro	Arg	Arg
1				5					10					15	
Trp	Ser	Leu	Gln	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Gly	Thr	Arg	Gly
			20					25					30		
Ile	Gly	Arg	Ala	Val	Val	Glu	Glu	Leu	Ala	Ala	Leu	Gly	Ala	Thr	Val
		35					40				45				
His	Thr	Cys	Ser	Arg	Lys	Glu	Glu	Glu	Leu	Ser	Glu	Arg	Leu	Lys	Glu
	50					55					60				
Trp	Glu	Ala	Arg	Gly	Phe	Arg	Val	Thr	Thr	Ser	Val	Cys	Asp	Leu	Ser
65					70				75					80	
Val	Arg	Asp	Gln	Arg	Glu	Arg	Leu	Leu	Arg	Gln	Val	Ala	Asp	Leu	Phe
			85						90					95	
Gly	Gly	Lys	Leu	Asp	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Ile	Arg
			100					105					110		
Lys	Pro	Thr	Thr	Glu	Phe	Ser	Ala	Glu	Glu	Tyr	Ser	Phe	Met	Met	Ala
		115					120					125			
Thr	Asn	Leu	Glu	Ser	Ala	Tyr	His	Leu	Cys	Gln	Leu	Ser	His	Pro	Leu
	130					135					140				
Leu	Lys	Ala	Ser	Gly	Ser	Gly	Ser	Ile	Val	Phe	Ile	Ser	Ser	Val	Cys

## PhoenixTemp32470.tmp.txt

145 Gly Leu Val Ala Val 150 Phe Ser Gly Ser Leu 155 Tyr Ala Met Thr Lys 160 Gly  
 Ala Ile Asn Gln Leu Thr Lys Asn Leu 170 Ala Cys Glu Trp Ala Arg Asp  
 Asn Ile Arg Ser Asn Ser Ile Ala 185 Pro Trp Tyr Ile Arg Thr Ser Leu  
 Thr Glu Gly Val Lys Leu 200 Leu Ile Asn His Pro 205 Asp Leu Ser Cys  
 Leu Asp Thr Cys His Phe 215 Lys Ser Glu His Val Val Lys Tyr Ser Thr  
 225 Asn Cys Gln Asp Thr 230 Leu Leu Ala Asn Lys 235 Asp Phe Glu Gly Ala Val  
 Val Ser Arg Thr 245 Pro Leu Arg Arg Val 250 Gly Glu Pro Glu Glu Val Ser  
 Ser Leu Val Ala Phe Leu Cys Met 265 Pro Gly Ser Ser Tyr Ile Thr Gly  
 Gln Thr Ile Ser Val Asp Gly 280 Asn Arg Tyr Lys 285 Ser Ser Val Ser  
 Met Met Val Leu Ala Glu Gln 300  
 305 310

&lt;210&gt; 1917

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Streptomyces atroolivaceus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1917

atg agc gga cgg ctc acg ggc cgg acc gcg atc gtc acc ggc gcc ggg	48
Met Ser Gly Arg Leu Thr Gly Arg Thr Ala Ile Val Thr Gly Ala Gly	
1 5 10 15	
cgg ggc gtc ggg cgt gcc tgc gcc acg gcg ttc gcc gcg cag ggc gcc	96
Arg Gly Val Gly Arg Ala Cys Ala Thr Ala Phe Ala Ala Gln Gly Ala	
20 25 30	
gac ctg gtc ctc gtc gac atc gcc gac ctc ccg cac gtc ccc tac	144
Asp Leu Val Leu Val Asp Ile Ala Asp Leu Pro His Val Pro Tyr	
35 40 45	
ccc gcg gcc acc ccg agc cag ctc gat cac acc gcc cgg ctg tgc cgc	192
Pro Ala Ala Thr Pro Ser Gln Leu Asp His Thr Ala Arg Leu Cys Arg	
50 55 60	
gag cag ggg gcc gcc gtg ctc acc gca cgc gcg gac gtg cgg gac gcg	240
Glu Gln Gly Ala Ala Val Leu Thr Ala Arg Ala Asp Val Arg Asp Ala	
65 70 75 80	
gcg gcc tgc gag cgg gtg gtg gcc gat gcc gtg gac cgc ttc ggt tcg	288
Ala Ala Cys Glu Arg Val Val Ala Asp Ala Val Asp Arg Phe Gly Ser	
85 90 95	
ctg gac gtg ctg gtc aac aac gcg ggg atc gcg ggt cct tcg ggc cgg	336
Leu Asp Val Leu Val Asn Asn Ala Gly Ile Ala Gly Pro Ser Gly Arg	
100 105 110	
atc gtg cac gag gtc acc gag gac gag tgg gcg gtg atg atc gac gtc	384
Ile Val His Glu Val Thr Glu Asp Glu Trp Ala Val Met Ile Asp Val	
115 120 125	
aac ctc aac ggc gcc tgg cgg atg ctg aag gcc gcg ggg gcg tcg atg	432
Asn Leu Asn Gly Ala Trp Arg Met Leu Lys Ala Ala Gly Ala Ser Met	
130 135 140	
gtg gcg gcc cgc tcc ggc tcc atc gtc aac atc gcc tcc acc gcc gga	480
Val Ala Ala Arg Ser Gly Ser Ile Val Asn Ile Ala Ser Thr Ala Gly	
145 150 155 160	
ctg gtg gga tac cgc aac ttc gcc ggc tac gtg gcg tcc aag cac ggc	528
Leu Val Gly Tyr Arg Asn Phe Ala Gly Tyr Val Ala Ser Lys His Gly	
165 170 175	
ctg gtc ggc ctg acg aag gcc gcc gcc ctc gac tac gcg ccc tac cgg	576
Leu Val Gly Leu Thr Lys Ala Ala Ala Leu Asp Tyr Ala Pro Tyr Arg	
180 185 190	

## PhoenixTemp32470.tmp.txt

gtg	cgg	gtg	aac	gcg	gtc	tgc	ccc	ggc	tcg	gtg	cgc	gac	ggc	gag	gcg	624
Val	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Ser	Val	Arg	Asp	Gly	Glu	Ala	
		195					200					205				
tgg	gag	ggc	cgg	atg	ctg	gtg	gag	atc	ggc	cgc	agc	atc	ggg	atc	gaa	672
Trp	Glu	Gly	Arg	Met	Leu	Val	Glu	Ile	Gly	Arg	Ser	Ile	Gly	Ile	Glu	
	210					215					220					
ccg	gcc	gac	cac	gaa	gcc	gag	ttc	atc	acg	cag	atg	ccc	atg	aac	acg	720
Pro	Ala	Asp	His	Glu	Ala	Glu	Phe	Ile	Thr	Gln	Met	Pro	Met	Asn	Thr	
	225				230					235					240	
ctg	gtg	gag	gcg	gac	gat	gtg	gcg	ggg	gcc	gcc	ctg	tgg	ctc	gcc	tcc	768
Leu	Val	Glu	Ala	Asp	Asp	Val	Ala	Gly	Ala	Ala	Leu	Trp	Leu	Ala	Ser	
			245					250						255		
gag	gag	tcc	cgt	cac	tcc	acc	ggc	ggt	gtg	atc	acc	gtc	gac	gcc	ggc	816
Glu	Glu	Ser	Arg	His	Ser	Thr	Gly	Gly	Val	Ile	Thr	Val	Asp	Ala	Gly	
			260					265					270			
tac	agc	gcc	cgt	tga												831
Tyr	Ser	Ala	Arg													
		275														

&lt;210&gt; 1918

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces atroolivaceus

&lt;400&gt; 1918

Met	Ser	Gly	Arg	Leu	Thr	Gly	Arg	Thr	Ala	Ile	Val	Thr	Gly	Ala	Gly	
1				5					10					15		
Arg	Gly	Val	Gly	Arg	Ala	Cys	Ala	Thr	Ala	Phe	Ala	Ala	Gln	Gly	Ala	
			20					25					30			
Asp	Leu	Val	Leu	Val	Asp	Ile	Ala	Ala	Asp	Leu	Pro	His	Val	Pro	Tyr	
		35					40					45				
Pro	Ala	Ala	Thr	Pro	Ser	Gln	Leu	Asp	His	Thr	Ala	Arg	Leu	Cys	Arg	
	50					55					60					
Glu	Gln	Gly	Ala	Ala	Val	Leu	Thr	Ala	Arg	Ala	Asp	Val	Arg	Asp	Ala	
65					70					75					80	
Ala	Ala	Cys	Glu	Arg	Val	Val	Ala	Asp	Ala	Val	Asp	Arg	Phe	Gly	Ser	
				85					90					95		
Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Pro	Ser	Gly	Arg	
			100					105					110			
Ile	Val	His	Glu	Val	Thr	Glu	Asp	Glu	Trp	Ala	Val	Met	Ile	Asp	Val	
		115					120					125				
Asn	Leu	Asn	Gly	Ala	Trp	Arg	Met	Leu	Lys	Ala	Ala	Gly	Ala	Ser	Met	
	130					135					140					
Val	Ala	Ala	Arg	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	Ala	Gly	
145					150					155					160	
Leu	Val	Gly	Tyr	Arg	Asn	Phe	Ala	Gly	Tyr	Val	Ala	Ser	Lys	His	Gly	
				165					170					175		
Leu	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Leu	Asp	Tyr	Ala	Pro	Tyr	Arg	
			180					185					190			
Val	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Ser	Val	Arg	Asp	Gly	Glu	Ala	
		195					200					205				
Trp	Glu	Gly	Arg	Met	Leu	Val	Glu	Ile	Gly	Arg	Ser	Ile	Gly	Ile	Glu	
	210					215					220					
Pro	Ala	Asp	His	Glu	Ala	Glu	Phe	Ile	Thr	Gln	Met	Pro	Met	Asn	Thr	
225					230					235					240	
Leu	Val	Glu	Ala	Asp	Asp	Val	Ala	Gly	Ala	Ala	Leu	Trp	Leu	Ala	Ser	
				245					250					255		
Glu	Glu	Ser	Arg	His	Ser	Thr	Gly	Gly	Val	Ile	Thr	Val	Asp	Ala	Gly	
			260					265					270			
Tyr	Ser	Ala	Arg													
		275														

&lt;210&gt; 1919

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Phaseolus lunatus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 1919

atg	gca	cat	gtt	tct	gct	gtc	tca	gct	gct	gtt	aaa	agg	ctt	gag	ggg	48
Met	Ala	His	Val	Ser	Ala	Val	Ser	Ala	Ala	Val	Lys	Arg	Leu	Glu	Gly	
1				5				10						15		
aaa	gtg	gcc	att	atc	act	ggg	ggg	gcc	agc	ggg	att	ggg	gcg	gcc	act	96
Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Ala	Thr	
			20					25					30			
gca	aga	ctc	ttc	tct	gag	cat	gga	gct	cat	gtg	gtg	ata	gct	gat	att	144
Ala	Arg	Leu	Phe	Ser	Glu	His	Gly	Ala	His	Val	Val	Ile	Ala	Asp	Ile	
			35				40					45				
caa	gac	gat	ttg	ggg	ctt	tct	gtt	tgc	aat	gaa	ttg	aaa	tct	gct	gtg	192
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Val	Cys	Asn	Glu	Leu	Lys	Ser	Ala	Val	
	50					55					60					
tat	gtt	cat	tgt	gat	gtg	aca	aag	gaa	gaa	gac	gtt	gaa	aag	tgc	gtg	240
Tyr	Val	His	Cys	Asp	Val	Thr	Lys	Glu	Glu	Asp	Val	Glu	Lys	Cys	Val	
	65				70					75				80		
aac	gta	aca	gtt	tcc	aag	tat	ggg	aag	ctg	gac	atc	atg	ctt	aat	aac	288
Asn	Val	Thr	Val	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Leu	Asn	Asn	
				85					90					95		
gct	ggg	aca	tgc	cat	gag	ctc	aaa	gat	agc	ata	gtg	gac	aac	atc	acg	336
Ala	Gly	Thr	Cys	His	Glu	Leu	Lys	Asp	Ser	Ile	Val	Asp	Asn	Ile	Thr	
			100					105					110			
tct	gag	ttt	gag	aga	gtg	atc	agt	gtg	aac	gtg	gtt	ggg	cca	ttt	ctg	384
Ser	Glu	Phe	Glu	Arg	Val	Ile	Ser	Val	Asn	Val	Val	Gly	Pro	Phe	Leu	
		115					120					125				
gga	aca	aag	cac	gca	gca	agg	gta	atg	att	cct	gct	aaa	agg	ggg	tgc	432
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Arg	Gly	Cys	
			130			135					140					
ata	att	aac	aca	tct	agt	att	gct	gga	tgc	agg	ggg	aca	ggg	tct	cca	480
Ile	Ile	Asn	Thr	Ser	Ser	Ile	Ala	Gly	Cys	Arg	Gly	Thr	Gly	Ser	Pro	
				150					155						160	
cat	gag	tac	gtc	gtc	tca	aag	cat	gga	cta	gag	gga	ctg	acg	aaa	aac	528
His	Ala	Tyr	Val	Val	Ser	Lys	His	Gly	Leu	Glu	Gly	Leu	Thr	Lys	Asn	
				165					170					175		
aca	gag	gtg	gag	ctt	gga	caa	ttc	ggg	att	cgg	gtg	aac	tgt	gtg	tct	576
Thr	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	
			180					185					190			
cct	tat	ttg	gtt	gcc	aca	ccg	atg	ttg	aag	aag	tat	ttc	aat	ctt	gat	624
Pro	Tyr	Leu	Val	Ala	Thr	Pro	Met	Leu	Lys	Lys	Tyr	Phe	Asn	Leu	Asp	
		195				200						205				
gaa	gaa	gga	gtt	cgt	gag	gct	tat	tcc	aac	cta	aaa	ggg	tct	tat	cta	672
Glu	Glu	Gly	Val	Arg	Glu	Ala	Tyr	Ser	Asn	Leu	Lys	Gly	Ser	Tyr	Leu	
	210					215					220					
gtg	ccc	aac	gat	gtg	gcc	gaa	gct	gct	ctt	ttc	ttg	gca	ggg	gat	gag	720
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Gly	Asp	Glu	
	225				230					235					240	
tct	aat	tat	gtt	agt	ggg	cac	agt	ctt	ctg	tta	gat	gga	ggc	tac	acc	768
Ser	Asn	Tyr	Val	Ser	Gly	His	Ser	Leu	Leu	Leu	Asp	Gly	Gly	Tyr	Thr	
				245					250					255		
att	aca	aat	gca	ggc	ttt	tct	cca	aat	gca	ggc	ttt	tct	cct	ggc	cag	816
Ile	Thr	Asn	Ala	Gly	Phe	Ser	Pro	Asn	Ala	Gly	Phe	Ser	Pro	Gly	Gln	
			260					265					270			
tct	gag	taa														825
Ser	Glu															

&lt;210&gt; 1920

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Phaseolus lunatus

&lt;400&gt; 1920

Met	Ala	His	Val	Ser	Ala	Val	Ser	Ala	Ala	Val	Lys	Arg	Leu	Glu	Gly
1				5				10						15	
Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Ala	Thr
			20					25					30		
Ala	Arg	Leu	Phe	Ser	Glu	His	Gly	Ala	His	Val	Val	Ile	Ala	Asp	Ile

## PhoenixTemp32470.tmp.txt

35 40 45  
 Gln Asp Leu Gly Leu Ser Val Cys Asn Glu Leu Lys Ser Ala Val  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Lys Cys Val  
 65 70 75 80  
 Asn Val Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 Ala Gly Thr Cys His Glu Leu Lys Asp Ser Ile Val Asp Asn Ile Thr  
 100 105 110  
 Ser Glu Phe Glu Arg Val Ile Ser Val Asn Val Val Gly Pro Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Cys  
 130 135 140  
 Ile Ile Asn Thr Ser Ser Ile Ala Gly Cys Arg Gly Thr Gly Ser Pro  
 145 150 155 160  
 His Ala Tyr Val Val Ser Lys His Gly Leu Glu Gly Leu Thr Lys Asn  
 165 170 175  
 Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Val Ser  
 180 185 190  
 Pro Tyr Leu Val Ala Thr Pro Met Leu Lys Lys Tyr Phe Asn Leu Asp  
 195 200 205  
 Glu Glu Gly Val Arg Glu Ala Tyr Ser Asn Leu Lys Gly Ser Tyr Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Phe Leu Ala Gly Asp Glu  
 225 230 235 240  
 Ser Asn Tyr Val Ser Gly His Ser Leu Leu Leu Asp Gly Gly Tyr Thr  
 245 250 255  
 Ile Thr Asn Ala Gly Phe Ser Pro Asn Ala Gly Phe Ser Pro Gly Gln  
 260 265 270  
 Ser Glu

&lt;210&gt; 1921

&lt;211&gt; 951

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(951)

&lt;400&gt; 1921

atg ggc cgc gca gcc tgg cac ggc ctg ctc aac ggc cgg gtc gag caa	48
Met Gly Arg Ala Ala Trp His Gly Leu Leu Asn Gly Arg Val Glu Gln	
1 5 10	
cgc cag ccc act tgc agg ggg aag agc ata gct gct cag gtg ttc tcc	96
Arg Gln Pro Thr Cys Arg Gly Lys Ser Ile Ala Ala Gln Val Phe Ser	
20 25 30	
aac ggc ttg gcc gat cgc ctc ttc tcc tcg tcg tca agc tcc aga aag	144
Asn Gly Leu Ala Asp Arg Leu Phe Ser Ser Ser Ser Ser Arg Lys	
35 40 45	
ttg gat ggc aaa gtg gcc gtg atc acc ggc gcg gcg agc ggc atc ggc	192
Leu Asp Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly	
50 55 60	
gag gcc acg gcg aag gag ttc gtc agg aac ggc gcc aag gtt atc att	240
Glu Ala Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile Ile	
65 70 75 80	
gcc gat atc cag gac gac ctc ggc cgc gcc gtg gcc gcc gag ctc ggc	288
Ala Asp Ile Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly	
85 90 95	
gcc gac gcc gcg tcg tac acg cac tgc gac gtc acc gtc gag aag gat	336
Ala Asp Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Lys Asp	
100 105 110	
gtc gcc gcg gcc gtc gac ctc gcc gtg gcg cgc cac ggc cgc ctc gac	384
Val Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp	
115 120 125	
gtc gtc tac agc aac gcc ggc gtc ata gga gca ccg gct ccg gcc tcg	432
Val Val Tyr Ser Asn Ala Gly Val Ile Gly Ala Pro Ala Ser	
130 135 140	

## PhoenixTemp32470.tmp.txt

ctc	gcg	gcg	ctc	gac	ctc	gac	gag	tac	gac	cg	g	atg	gcc	g	aac	480
Leu	Ala	Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn	
145					150				155						160	
gcc	cgg	tcg	atg	ttg	g	tgc	gtc	aag	cac	g	g	cg	atg	g	528	
Ala	Arg	Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala	
				165					170						175	
ccg	cg	cg	gcc	ggc	tgc	atc	ctc	tgc	acg	gcc	agc	tcg	g	g	gtg	576
Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Ser	Ala	Ala	Val	
			180					185					190			
ctc	ggc	ggc	gtg	g	tgc	ccg	gtg	tac	tcc	atg	tcg	aag	g	g	atc	624
Leu	Gly	Gly	Val	Ala	Ser	Pro	Val	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Ile	
			195				200					205				
gtc	ggc	atg	gtg	cg	g	gtg	g	agg	cag	ctg	g	cg	gac	ggc	gtg	672
Val	Gly	Met	Val	Arg	Ala	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val	
	210					215				220						
cg	gtg	aac	gcc	atc	tcg	ccg	cac	gcc	atc	ccg	acg	ccg	atg	g	cta	720
Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Pro	Thr	Pro	Met	Ala	Leu	
225					230					235					240	
ggc	atc	atc	gcc	gag	acg	ttc	ccg	g	gcc	acc	g	gag	gag	gtg	agg	768
Gly	Ile	Ile	Ala	Glu	Thr	Phe	Pro	Ala	Ala	Thr	Ala	Glu	Glu	Val	Arg	
				245					250					255		
agg	atg	gtg	acg	agg	gag	atg	cag	gag	ctg	gaa	ggg	aca	tcg	ctg	gag	816
Arg	Met	Val	Thr	Arg	Glu	Met	Gln	Glu	Leu	Glu	Gly	Thr	Ser	Leu	Glu	
			260					265					270			
gtg	gaa	gac	gtg	g	agg	g	gcc	gtg	ttc	ttg	g	tcc	gac	gag	gcc	864
Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	
			275				280					285				
aag	ttc	gtc	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggc	ttc	acg	gtg	912
Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	
	290					295				300						
ggc	aaa	gac	ctc	ctc	cga	aat	cca	ccg	agc	tct	act	tga				951
Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	Ser	Ser	Thr					
305					310					315						

&lt;210&gt; 1922

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1922

Met	Gly	Arg	Ala	Ala	Trp	His	Gly	Leu	Leu	Asn	Gly	Arg	Val	Glu	Gln	
1				5				10						15		
Arg	Gln	Pro	Thr	Cys	Arg	Gly	Lys	Ser	Ile	Ala	Ala	Gln	Val	Phe	Ser	
			20					25					30			
Asn	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	Ser	Ser	Ser	Ser	Arg	Lys	
		35					40					45				
Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	
	50					55				60						
Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	
65					70				75					80		
Ala	Asp	Ile	Gln	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly		
				85				90					95			
Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	Val	Thr	Val	Glu	Lys	Asp	
			100					105					110			
Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	
		115					120					125				
Val	Val	Tyr	Ser	Asn	Ala	Gly	Val	Ile	Gly	Ala	Pro	Ala	Pro	Ala	Ser	
	130					135				140						
Leu	Ala	Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn	
145					150					155					160	
Ala	Arg	Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala	
			165						170					175		
Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Ser	Ala	Ala	Val	
			180					185					190			
Leu	Gly	Gly	Val	Ala	Ser	Pro	Val	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Ile	
		195					200					205				
Val	Gly	Met	Val	Arg	Ala	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val	
	210					215				220						
Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Pro	Thr	Pro	Met	Ala	Leu	

## PhoenixTemp32470.tmp.txt

225 Gly Ile Ile Ala Glu 230 Thr Phe Pro Ala Ala 235 Thr Ala Glu Glu Val 240 Arg  
 Arg Met Val Thr 245 Arg Glu Met Gln Glu 250 Leu Glu Gly Thr Ser 255 Leu Glu  
 Val Glu Asp 260 Val Ala Arg Ala 265 Val Phe Leu Ala Ser 270 Asp Glu Ala  
 Lys Phe 275 Val Thr Gly His Asn 280 Leu Val Val Asp Gly 285 Gly Phe Thr Val  
 Gly Lys Asp 290 Leu Leu Arg Asn 295 Pro Pro Ser Ser 300 Thr  
 305 310 315

&lt;210&gt; 1923

&lt;211&gt; 951

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(951)

&lt;400&gt; 1923

atg ggg tca ctt cac aaa tat gcc gta caa gca tca atc cat aat gga	48
Met Gly Ser Leu His 5 Lys Tyr Ala Val Gln 10 Ala Ser Ile His Asn 15 Gly	
att tac aaa tgt tta ctg ctg ttc ttg aca cca caa aac aca ggg aag	96
Ile Tyr Lys Cys 20 Leu Leu Leu Phe Leu 25 Thr Pro Gln Asn 30 Thr Gly Lys	
agc ata gct gct cac gta ttc ttc tcc tcg tcg tca aga tcc aga aag	144
Ser Ile 35 Ala Ala His Val Phe 40 Ser Ser Ser Ser 45 Arg Ser Arg Lys	
ttg gat ggc aaa gtg gcc gtg ata acc ggc gca gcg agc ggc atc ggc	192
Leu Asp 50 Gly Lys Val 55 Ala Val 55 Ile Thr Gly Ala Ala Ser Gly Ile Gly	
gag gcc acg gcg aag gag ttc gtc agg aat ggc gcc aag gtt atc att	240
Glu Ala Thr Ala Lys 70 Phe Val Arg Asn 75 Gly Ala Lys Val Ile Ile 80	
gcc gat atc aag gat gat ctc ggc cgc gcc gtg gcc ggc gag ctc ggc	288
Ala Asp Ile Lys Asp 85 Asp Leu Gly Arg Ala Val Ala Gly Glu Leu Gly 95	
gcc gac gcc gcg tcg tac acg cac tgc gac gtc acc gtc gag aag gat	336
Ala Asp Ala Ala Ser Tyr Thr His Cys 105 Asp Val Thr Val Glu Lys Asp	
gtc gcc tcg gcc gtc gac ctc gcc gtg gcg cga cac ggc cgc ctc gac	384
Val Ala Ser 115 Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp	
gtc gtg tac agc aac gcc gcc atc gcg ggt ggc gcg cct ccg gcc acg	432
Val Val Tyr Ser Asn Ala Ala Ile Ala Gly Gly Ala Pro Pro Ala Thr	
ctc gcg gcg ctc gac ctc gac gag tac gac cgc gtc atg gcc gtc aac	480
Leu Ala Ala Leu Asp 145 Leu Asp Glu Tyr Asp Arg 155 Val Met Ala Val Asn 160	
gcc agg tcc atg ttg gcg tgc gtc aag cac gcg gcg cgc gtc atg gcg	528
Ala Arg Ser Met Leu 165 Ala Cys Val Lys His Ala Ala Arg Val Met Ala	
ccc cgc cgc gcc ggt tgc atc ctc tgc acg gcc agc acg gcg gcg gtg	576
Pro Arg Arg Ala 180 Gly Cys Ile Leu 185 Thr Ala Ser Thr 190 Ala Val	
ctc ggc ggc atg gcg gcg ccg gcg tac tcc atg tcg aag gcg gcc gtc	624
Leu Gly Gly Met Ala Ala Pro Ala Tyr Ser Met Ser Lys Ala Ala Val	
gtc ggc atg gtg cgg acg gtg gcg agg cag ctg gcg cgc gac ggc gtg	672
Val Gly Met Val Arg Thr 210 Val 215 Ala Arg Gln Leu 220 Ala Arg Asp Gly Val	
cgg gtg aac gcc atc tcg ccg cac gca gtc ccg acg ccg atg gcg ata	720
Arg Val Asn Ala Ile Ser 225 Pro His Ala Val Pro Thr Pro Met Ala Ile	
225 ggt ctc ttc tcc gag acg ttc ccg gcg gcg acc gcg gag gag gtg agg	768
Gly Leu Phe Ser Glu Thr Phe Pro Ala Ala Thr Ala Glu Glu Val Arg	

## PhoenixTemp32470.tmp.txt

agg	atg	gtg	acg	245	agg	gag	atg	cag	gag	250	gaa	ggg	gcg	tcg	255	ctg	gag	816
Arg	Met	Val	Thr	Arg	Glu	Met	Gln	Gln	Glu	Leu	Glu	Gly	Ala	Ser	Leu	Glu		
			260						265					270				
gtg	gaa	gac	gtg	gcg	agg	gcg	gcc	gtc	ttc	ttg	gcg	tcc	gac	gag	gcc	864		
Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala			
		275					280					285						
aag	ttc	atc	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acg	gca	912		
Lys	Phe	Ile	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ala			
	290					295					300							
ggc	aag	gtg	ctc	gtc	cgg	gat	cct	ccg	ggc	tct	gct	tga				951		
Gly	Lys	Val	Leu	Val	Arg	Asp	Pro	Pro	Gly	Ser	Ala							
305					310					315								

&lt;210&gt; 1924

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1924

Met	Gly	Ser	Leu	His	Lys	Tyr	Ala	Val	Gln	Ala	Ser	Ile	His	Asn	Gly
1				5					10					15	
Ile	Tyr	Lys	Cys	Leu	Leu	Leu	Phe	Leu	Thr	Pro	Gln	Asn	Thr	Gly	Lys
			20					25					30		
Ser	Ile	Ala	Ala	His	Val	Phe	Phe	Ser	Ser	Ser	Ser	Arg	Ser	Arg	Lys
		35					40					45			
Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly
	50					55				60					
Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile
65					70					75				80	
Ala	Asp	Ile	Lys	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Gly	Glu	Leu	Gly
			85					90						95	
Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	Val	Thr	Val	Glu	Lys	Asp
		100						105					110		
Val	Ala	Ser	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp
		115					120					125			
Val	Val	Tyr	Ser	Asn	Ala	Ala	Ile	Ala	Gly	Gly	Ala	Pro	Pro	Ala	Thr
	130				135					140					
Leu	Ala	Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn
145					150					155					160
Ala	Arg	Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala
			165						170					175	
Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Thr	Ala	Ala	Val
			180					185					190		
Leu	Gly	Gly	Met	Ala	Ala	Pro	Ala	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Val
		195					200					205			
Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val
	210					215					220				
Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Val	Pro	Thr	Pro	Met	Ala	Ile
225					230					235					240
Gly	Leu	Phe	Ser	Glu	Thr	Phe	Pro	Ala	Ala	Thr	Ala	Glu	Glu	Val	Arg
			245						250					255	
Arg	Met	Val	Thr	Arg	Glu	Met	Gln	Glu	Leu	Glu	Gly	Ala	Ser	Leu	Glu
			260					265					270		
Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala
		275					280					285			
Lys	Phe	Ile	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ala
	290					295					300				
Gly	Lys	Val	Leu	Val	Arg	Asp	Pro	Pro	Gly	Ser	Ala				
305					310					315					

&lt;210&gt; 1925

&lt;211&gt; 921

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(921)



## PhoenixTemp32470.tmp.txt

```

<400> 1925
atg atg agc gta gca gcc aac aaa att ctc ggg agg agc aga ggt gtt      48
Met Met Ser Val Ala Ala Asn Lys Ile Leu Gly Arg Ser Arg Gly Val
1      5      10      15
cgt ccg atg ttc tct tcc ggc ttg gcc gat cgc ctc ttc tcc tcg tcg      96
Arg Pro Met Phe Ser Ser Gly Leu Ala Asp Arg Leu Phe Ser Ser Ser
20      25      30
gcg tca agc tcc aaa agg ttg gaa ggg aaa gtg gcc gtg atc acc ggc      144
Ala Ser Ser Ser Lys Arg Leu Glu Gly Lys Val Ala Val Ile Thr Gly
35      40      45
gcg gtg ggc ggc atc ggc gag gcc acg gcg aag gag ttc gtc agg aat      192
Ala Val Gly Gly Ile Gly Glu Ala Thr Ala Lys Glu Phe Val Arg Asn
50      55      60
ggc gcc aag gtc atc ctc gcc gat atc cag gac gac ctt ggc cgc gcc      240
Gly Ala Lys Val Ile Leu Ala Asp Ile Gln Asp Asp Leu Gly Arg Ala
65      70      75      80
atg gcc gcc gag ctc ggc gcg gac gcc gcg tcg tac acg cac tgc gac      288
Met Ala Ala Glu Leu Gly Ala Asp Ala Ser Tyr Thr His Cys Asp
85      90      95
gtc acc gtc gag gcg gac gtc gcc gcg gcc gtc gac ctc gcc gtg gcg      336
Val Thr Val Glu Ala Asp Val Ala Ala Val Asp Leu Ala Val Ala
100      105      110
cgc cac ggc cgc ctc gac gtc gtc tac agc aac gcc ggc atc gcc ggc      384
Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala Gly Ile Ala Gly
115      120      125
gcc gcg gcc ccg ccc acg ctc tcg gcg ctc gac ctc gac gac tac gac      432
Ala Ala Ala Pro Pro Thr Leu Ser Ala Leu Asp Leu Asp Asp Tyr Asp
130      135      140
cgc gtc atg gcc gtc aac gcc gcg tcc atg gtg gcc tgc ctc aag cac      480
Arg Val Met Ala Val Asn Ala Arg Ser Met Val Ala Cys Leu Lys His
145      150      155      160
gcg gcg cgc gtc atg tcc ccg gcg gcg gcc ggc tgc atc ctc tgc acg      528
Ala Ala Arg Val Met Ser Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr
165      170      175
gcg agc tcc acg gcg ctg atc ggc gac ctg gcg gcg ccg gcg tac tgc      576
Ala Ser Ser Thr Ala Leu Ile Gly Asp Leu Ala Ala Pro Ala Tyr Cys
180      185      190
atc tcg aag gcg gcc gtc gtc gga atg gtg cgg acg gtg gca agg cag      624
Ile Ser Lys Ala Ala Val Val Gly Met Val Arg Thr Val Ala Arg Gln
195      200      205
ctg gcg cgc gac ggc gtg cgc gtg aac gcc atc tcg ccg cac atc atc      672
Leu Ala Arg Asp Gly Val Arg Val Asn Ala Ile Ser Pro His Ile Ile
210      215      220
ccg acg gcg ctg gtg acg gcg gtc atc tcc gag acg ttc ccg gcg gcc      720
Pro Thr Ala Leu Val Thr Arg Val Ile Ser Glu Thr Phe Pro Ala Ala
225      230      235      240
acc gcg gag gag gtg agg agg atg gtg acg agg gac atg cag gag ctg      768
Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Asp Met Gln Glu Leu
245      250      255
gaa ggg gcg tcg ctg gag gtg gag gac gtg gcg agg gcg gcc gtc ttc      816
Glu Gly Ala Ser Leu Glu Val Glu Asp Val Ala Arg Ala Ala Val Phe
260      265      270
ttg gcg tcc gac gag gcc aag ttc gtc acc ggc cac aac ctc gtc gtc      864
Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His Asn Leu Val Val
275      280      285
gat ggc ggc ttc acg gtc ggc aag gac ctc ctc cgg aat cca ccg agc      912
Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg Asn Pro Pro Ser
290      295      300
ttt gct tga
Phe Ala
305

```

```

<210> 1926
<211> 306
<212> PRT
<213> Oryza sativa subsp

```

```
<400> 1926
```

## PhoenixTemp32470.tmp.txt

Met Met Ser Val Ala Ala Asn Lys Ile Leu Gly Arg Ser Arg Gly Val  
 1 5 10 15  
 Arg Pro Met Phe Ser Ser Gly Leu Ala Asp Arg Leu Phe Ser Ser  
 20 25 30  
 Ala Ser Ser Ser Lys Arg Leu Glu Gly Lys Val Ala Val Ile Thr Gly  
 35 40 45  
 Ala Val Gly Gly Ile Gly Glu Ala Thr Ala Lys Glu Phe Val Arg Asn  
 50 55 60  
 Gly Ala Lys Val Ile Leu Ala Asp Ile Gln Asp Asp Leu Gly Arg Ala  
 65 70 75 80  
 Met Ala Ala Glu Leu Gly Ala Asp Ala Ala Ser Tyr Thr His Cys Asp  
 85 90 95  
 Val Thr Val Glu Ala Asp Val Ala Ala Val Asp Leu Ala Val Ala  
 100 105 110  
 Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala Gly Ile Ala Gly  
 115 120 125  
 Ala Ala Ala Pro Pro Thr Leu Ser Ala Leu Asp Leu Asp Asp Tyr Asp  
 130 135 140  
 Arg Val Met Ala Val Asn Ala Arg Ser Met Val Ala Cys Leu Lys His  
 145 150 155 160  
 Ala Ala Arg Val Met Ser Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr  
 165 170 175  
 Ala Ser Ser Thr Ala Leu Ile Gly Asp Leu Ala Ala Pro Ala Tyr Cys  
 180 185 190  
 Ile Ser Lys Ala Ala Val Val Gly Met Val Arg Thr Val Ala Arg Gln  
 195 200 205  
 Leu Ala Arg Asp Gly Val Arg Val Asn Ala Ile Ser Pro His Ile Ile  
 210 215 220  
 Pro Thr Ala Leu Val Thr Arg Val Ile Ser Glu Thr Phe Pro Ala Ala  
 225 230 235 240  
 Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Asp Met Gln Glu Leu  
 245 250 255  
 Glu Gly Ala Ser Leu Glu Val Glu Asp Val Ala Arg Ala Ala Val Phe  
 260 265 270  
 Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His Asn Leu Val Val  
 275 280 285  
 Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg Asn Pro Pro Ser  
 290 295 300  
 Phe Ala  
 305

&lt;210&gt; 1927

&lt;211&gt; 930

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(930)

&lt;400&gt; 1927

atg gag ata aga agc aga aga gac aga tca aag atc aag atg ttc aga	48
Met Glu Ile Arg Ser Arg Arg Asp Arg Ser Lys Ile Lys Met Phe Arg	
1 5 10 15	
gca ttg cag atc gtc ctc agg ggt aag agc cga gga ttt gtc agt cac	96
Ala Leu Gln Ile Val Leu Arg Gly Lys Ser Arg Gly Phe Val Ser His	
20 25 30	
ttc tcc tcc acg gct tca aat tct gaa agg ttg gct ggg aag gtg gcg	144
Phe Ser Ser Thr Ala Ser Asn Ser Glu Arg Leu Ala Gly Lys Val Ala	
35 40 45	
gtg atc acc ggc gcg gcg agc ggc atc ggc aag gcg acc gcg gcg gag	192
Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu	
50 55 60	
ttc gtc agg aat ggc gcc aag gtc atc ctc gcc gac gtc cag gac gac	240
Phe Val Arg Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp	
65 70 75 80	
gtc ggc cgc gcc gtc gcc tcg gag ctc ggc gcg gac gcg gcg tcg tac	288
Val Gly Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ala Ser Tyr	
85 90 95	

## PhoenixTemp32470.tmp.txt

acc	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	gtc	gcg	gcg	gcc	gtg	gac	336
Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	
			100					105					110			
ctc	gcc	gtg	gcg	cgg	cac	ggg	cag	ctc	gac	gtc	atg	gtc	aac	aac	gcc	384
Leu	Ala	Val	Ala	Arg	His	Gly	Gln	Leu	Asp	Val	Met	Val	Asn	Asn	Ala	
		115					120					125				
ggc	atc	gtg	ggc	tcc	ctg	tcg	cgc	ccc	ccg	ctc	ggc	gcc	ctc	gac	ctc	432
Gly	Ile	Val	Gly	Ser	Leu	Ser	Arg	Pro	Pro	Leu	Gly	Ala	Leu	Asp	Leu	
	130					135					140					
gcc	gac	ttc	gac	gcc	gtc	atg	gcg	gtg	aac	acg	cgc	ggc	gtc	ctc	gcg	480
Ala	Asp	Phe	Asp	Ala	Val	Met	Ala	Val	Asn	Thr	Arg	Gly	Val	Leu	Ala	
145					150					155					160	
ggc	gtc	aag	cac	gcc	gcg	cgc	gtc	atg	gcg	ccg	cgc	cgc	cgc	ggc	agc	528
Gly	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Arg	Gly	Ser	
				165					170					175		
atc	atc	tgc	gtg	gcg	agc	gtc	gcc	ggg	gtg	ctc	ggc	agc	gtg	acg	ccg	576
Ile	Ile	Cys	Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Ser	Val	Thr	Pro	
			180					185					190			
cac	ccg	tac	agc	gtg	tcc	aag	gcc	gcc	gtg	ctc	ggc	gcg	gtc	cgc	gcc	624
His	Pro	Tyr	Ser	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Ala	Val	Arg	Ala	
		195					200				205					
gcc	gcc	ggc	gag	atg	gcg	cgc	tcc	ggc	gtg	cgc	gtg	aac	gcc	atc	tcc	672
Ala	Ala	Gly	Glu	Met	Ala	Arg	Ser	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	
210						215					220					
ccc	aac	tac	atc	ccc	acg	ccg	ctg	gtg	atg	cgc	atc	atg	gcg	gag	tgg	720
Pro	Asn	Tyr	Ile	Pro	Thr	Pro	Leu	Val	Met	Arg	Ile	Met	Ala	Glu	Trp	
225					230					235					240	
tac	ccc	ggg	gcg	agc	gcc	gac	gag	cac	cgc	cgc	gtc	gtg	gag	cgg	gag	768
Tyr	Pro	Gly	Ala	Ser	Ala	Asp	Glu	His	Arg	Arg	Val	Val	Glu	Arg	Glu	
				245					250					255		
atc	aac	gag	atg	gag	ggc	gcg	acg	ctg	gag	ccc	gag	gac	atc	gcg	agg	816
Ile	Asn	Glu	Met	Glu	Gly	Ala	Thr	Leu	Glu	Pro	Glu	Asp	Ile	Ala	Arg	
			260				265						270			
gcg	gcg	gtg	tac	ctg	gcc	tcc	gac	gag	gcc	aag	tac	gtg	aac	ggc	cac	864
Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	
		275					280					285				
aac	ctc	gtc	gtc	gac	ggc	ggg	tac	acc	gtc	ggc	aag	gcg	ccc	aac	ctg	912
Asn	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	Val	Gly	Lys	Ala	Pro	Asn	Leu	
	290					295					300					
ccg	gcg	ccg	ccg	caa	taa											930
Pro	Ala	Pro	Pro	Gln												
305																

&lt;210&gt; 1928

&lt;211&gt; 309

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 1928

Met	Glu	Ile	Arg	Ser	Arg	Arg	Asp	Arg	Ser	Lys	Ile	Lys	Met	Phe	Arg
1				5					10					15	
Ala	Leu	Gln	Ile	Val	Leu	Arg	Gly	Lys	Ser	Arg	Gly	Phe	Val	Ser	His
			20					25					30		
Phe	Ser	Ser	Thr	Ala	Ser	Asn	Ser	Glu	Arg	Leu	Ala	Gly	Lys	Val	Ala
		35					40					45			
Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu
	50					55					60				
Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Val	Gln	Asp	Asp
65				70					75					80	
Val	Gly	Arg	Ala	Val	Ala	Ser	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr
			85						90					95	
Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp
			100					105					110		
Leu	Ala	Val	Ala	Arg	His	Gly	Gln	Leu	Asp	Val	Met	Val	Asn	Asn	Ala
		115					120					125			
Gly	Ile	Val	Gly	Ser	Leu	Ser	Arg	Pro	Pro	Leu	Gly	Ala	Leu	Asp	Leu
	130					135					140				
Ala	Asp	Phe	Asp	Ala	Val	Met	Ala	Val	Asn	Thr	Arg	Gly	Val	Leu	Ala
145					150					155					160

## PhoenixTemp32470.tmp.txt

Gly Val Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Arg Gly Ser  
 165 170 175  
 Ile Ile Cys Val Ala Ser Val Ala Gly Val Leu Gly Ser Val Thr Pro  
 180 185 190  
 His Pro Tyr Ser Val Ser Lys Ala Ala Val Leu Gly Ala Val Arg Ala  
 195 200 205  
 Ala Ala Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser  
 210 215 220  
 Pro Asn Tyr Ile Pro Thr Pro Leu Val Met Arg Ile Met Ala Glu Trp  
 225 230 235 240  
 Tyr Pro Gly Ala Ser Ala Asp Glu His Arg Arg Val Val Glu Arg Glu  
 245 250 255  
 Ile Asn Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg  
 260 265 270  
 Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His  
 275 280 285  
 Asn Leu Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu  
 290 300  
 Pro Ala Pro Pro Gln  
 305

&lt;210&gt; 1929

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Azospirillum brasilense

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1929

atg acc ttg act cag aag gtc gcg gtg gtc acc ggc tcg acc agc ggg	48
Met Thr Leu Thr Gln Lys Val Ala Val Val Thr Gly Ser Thr Ser Gly	
1 5 10 15	
atc ggc ttg ggc atc gcg cgg gcg ttg gcc gga gcc ggg gcg gac gtg	96
Ile Gly Leu Gly Ile Ala Arg Ala Leu Ala Gly Ala Gly Ala Asp Val	
20 25 30	
gtg ctg aac ggt ttc ggc gac gcg gcc gcc atc gag gag ctg cgc gcc	144
Val Leu Asn Gly Phe Gly Asp Ala Ala Ala Ile Glu Glu Leu Arg Ala	
35 40 45	
ggt ctg gcg gcg gag ttc ggc gtg cgc gtc ggc tat cac ggc gcc gac	192
Gly Leu Ala Ala Glu Phe Gly Val Arg Val Gly Tyr His Gly Ala Asp	
50 55 60	
ctg tcc aag ccg gcg gag atc gcc gcg ctg atc ggc cac gcg gag gag	240
Leu Ser Lys Pro Ala Glu Ile Ala Ala Leu Ile Gly His Ala Glu Glu	
65 70 75 80	
acg ttc ggt tcg gtc gat gtg ctg gtg aac aac gcc ggc atc cag cac	288
Thr Phe Gly Ser Val Asp Val Leu Val Asn Asn Ala Gly Ile Gln His	
85 90 95	
gtc gcc ccg gtg gag gac ttc ccg gcc gac cgc tgg gac gcg gtg atc	336
Val Ala Pro Val Glu Asp Phe Pro Ala Asp Arg Trp Asp Ala Val Ile	
100 105 110	
gcg ctc aac ctg tcc gcc gtc ttc cac ggc acc cac cac gct ctg ccg	384
Ala Leu Asn Leu Ser Ala Val Phe His Gly Thr His His Ala Leu Pro	
115 120 125	
ggt atg aag cgg cgc ggc tgg ggg cgc atc ctc aac atc gcc tcc gtg	432
Gly Met Lys Arg Arg Gly Trp Gly Arg Ile Leu Asn Ile Ala Ser Val	
130 135 140	
cac ggc cat gtc gcg tcg gtc aat aag tcg gcc tac gtc gcg gcc aag	480
His Gly His Val Ala Ser Val Asn Lys Ser Ala Tyr Val Ala Ala Lys	
145 150 155 160	
cac ggc gtg gtc ggg ctg acc aag acg gtg gcg ctg gaa acg gcg agc	528
His Gly Val Val Gly Leu Thr Lys Thr Val Ala Leu Glu Thr Ala Ser	
165 170 175	
acc ggc gtc acc tgc aac gcc atc tgt ccg ggc tgg gtg ctg acc ccg	576
Thr Gly Val Thr Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro	
180 185 190	
ctg gtg cag aag cag atc gac gcg atc gcc tcg acc aag aac atc ccg	624

PhoenixTemp32470.tmp.txt

Leu	Val	Gln	Lys	Gln	Ile	Asp	Ala	Ile	Ala	Ser	Thr	Lys	Asn	Ile	Pro		
		195					200					205					
gag	ccg	cag	gcg	aag	gcg	gaa	ctg	ctc	ggc	gcc	aag	cag	ccc	tcc	ggc	672	
Glu	Pro	Gln	Ala	Lys	Ala	Glu	Leu	Leu	Gly	Ala	Lys	Gln	Pro	Ser	Gly		
	210					215					220						
gcc	ttc	gtg	acg	ccg	gac	gag	ctg	ggc	ggg	ctg	gcg	gtt	ttc	ctg	tgc	720	
Ala	Phe	Val	Thr	Pro	Asp	Glu	Leu	Gly	Gly	Leu	Ala	Val	Phe	Leu	Cys		
	225				230					235					240		
tcc	gat	tca	gcg	gcg	cag	atg	acc	ggc	gcc	agc	ctg	ctg	atg	gac	ggc	768	
Ser	Asp	Ser	Ala	Ala	Gln	Met	Thr	Gly	Ala	Ser	Leu	Leu	Met	Asp	Gly		
				245					250					255			
ggc	tgg	acc	gcg	cag	taa											786	
Gly	Trp	Thr	Ala	Gln													
			260														

<210> 1930  
 <211> 261  
 <212> PRT  
 <213> Azospirillum brasilense

<400> 1930

Met	Thr	Leu	Thr	Gln	Lys	Val	Ala	Val	Val	Thr	Gly	Ser	Thr	Ser	Gly		
1				5					10					15			
Ile	Gly	Leu	Gly	Ile	Ala	Arg	Ala	Leu	Ala	Gly	Ala	Gly	Ala	Asp	Val		
			20					25					30				
Val	Leu	Asn	Gly	Phe	Gly	Asp	Ala	Ala	Ala	Ile	Glu	Glu	Leu	Arg	Ala		
		35					40					45					
Gly	Leu	Ala	Ala	Glu	Phe	Gly	Val	Arg	Val	Gly	Tyr	His	Gly	Ala	Asp		
	50					55					60						
Leu	Ser	Lys	Pro	Ala	Glu	Ile	Ala	Ala	Leu	Ile	Gly	His	Ala	Glu	Glu		
65					70					75					80		
Thr	Phe	Gly	Ser	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His		
				85					90					95			
Val	Ala	Pro	Val	Glu	Asp	Phe	Pro	Ala	Asp	Arg	Trp	Asp	Ala	Val	Ile		
			100					105					110				
Ala	Leu	Asn	Leu	Ser	Ala	Val	Phe	His	Gly	Thr	His	His	Ala	Leu	Pro		
		115					120					125					
Gly	Met	Lys	Arg	Arg	Gly	Trp	Gly	Arg	Ile	Leu	Asn	Ile	Ala	Ser	Val		
	130					135					140						
His	Gly	His	Val	Ala	Ser	Val	Asn	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys		
145					150					155					160		
His	Gly	Val	Val	Gly	Leu	Thr	Lys	Thr	Val	Ala	Leu	Glu	Thr	Ala	Ser		
			165						170					175			
Thr	Gly	Val	Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro		
			180					185					190				
Leu	Val	Gln	Lys	Gln	Ile	Asp	Ala	Ile	Ala	Ser	Thr	Lys	Asn	Ile	Pro		
		195					200					205					
Glu	Pro	Gln	Ala	Lys	Ala	Glu	Leu	Leu	Gly	Ala	Lys	Gln	Pro	Ser	Gly		
	210					215					220						
Ala	Phe	Val	Thr	Pro	Asp	Glu	Leu	Gly	Gly	Leu	Ala	Val	Phe	Leu	Cys		
225					230					235					240		
Ser	Asp	Ser	Ala	Ala	Gln	Met	Thr	Gly	Ala	Ser	Leu	Leu	Met	Asp	Gly		
				245					250					255			
Gly	Trp	Thr	Ala	Gln													
			260														

<210> 1931  
 <211> 780  
 <212> DNA  
 <213> Digitalis lanata

<220>  
 <221> CDS  
 <222> (1)..(780)

<400> 1931

atg	tcg	tca	aag	cca	agg	ttg	gag	ggt	aaa	gtg	gca	atc	atc	acc	gga	48	
Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly		
1				5					10					15			

## PhoenixTemp32470.tmp.txt

gcc	gct	agc	ggc	atc	ggc	gag	gag	acg	gca	aga	ttg	ttc	gtg	gag	cat	96
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Thr	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
ggc	gcc	tca	gtg	gtg	gtg	gcg	gac	gtc	cag	gac	gaa	ttg	ggg	cgc	cag	144
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40					45				
gtc	gtc	gct	tcc	gta	aac	tct	gac	gac	aag	ata	agt	tac	tac	cac	tgc	192
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	Tyr	His	Cys	
		50				55					60					
gac	gtc	aga	gat	gaa	aaa	caa	gtg	gcg	gcc	acc	gtc	cgc	tac	gcg	gtg	240
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Ala	Ala	Thr	Val	Arg	Tyr	Ala	Val	
		65			70				75						80	
gag	aaa	tac	ggg	cgc	ctc	gac	atc	atg	ctg	agc	aac	gcc	gga	gtc	ttc	288
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Ile	Met	Leu	Ser	Asn	Ala	Gly	Val	Phe	
				85					90					95		
ggg	gcc	ttg	atg	acg	aac	gta	atc	gat	ctc	gac	atg	gtt	gac	ttt	gaa	336
Gly	Ala	Leu	Met	Thr	Asn	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			
aat	gta	ttg	gcg	act	aac	gtg	cg	gga	ggt	gcc	aac	act	ata	aag	cac	384
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
		115					120					125				
gcg	gca	cga	gcc	atg	gtg	gag	ggg	aag	gtc	aag	ggg	tcc	atc	att	tgc	432
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
		130					135					140				
acc	gcc	agc	gtg	tcg	gcg	agc	ctt	gga	ggc	atg	ggc	ccg	ccc	gct	tac	480
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
					150					155					160	
acg	gct	tcc	aaa	cac	gcc	gtc	ctg	ggc	cta	gtc	aag	ggc	gct	tgc	gcc	528
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Val	Val	Lys	Gly	Ala	Cys	Ala	
				165					170					175		
gaa	ttg	ggg	gtg	cac	ggg	atc	cga	gtc	aac	tcg	gtg	gcg	ccg	tac	ggt	576
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
gtg	gcg	acc	ccg	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	624
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
		195					200					205				
atg	gag	gag	gcc	aat	aac	tcc	agg	gct	aac	ttg	aag	ggg	gtg	gtt	ttg	672
Met	Glu	Glu	Ala	Asn	Asn	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
		210				215					220					
aag	gct	aag	cat	gta	gct	gag	gcg	gct	ctc	ttc	ttg	gct	tcc	gat	gag	720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
		225			230					235					240	
tcg	gct	tat	gtc	agt	gga	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
gtc	gtg	cgt	tag													780
Val	Val	Arg														

&lt;210&gt; 1932

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis lanata

&lt;400&gt; 1932

Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
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Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Thr	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40					45				
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	Tyr	His	Cys	
		50				55					60					
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Ala	Ala	Thr	Val	Arg	Tyr	Ala	Val	
		65			70				75						80	
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Ile	Met	Leu	Ser	Asn	Ala	Gly	Val	Phe	
				85					90					95		
Gly	Ala	Leu	Met	Thr	Asn	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His  
 115 120 125  
 Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys  
 130 135 140  
 Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr  
 145 150 155 160  
 Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Gly Ala Cys Ala  
 165 170 175  
 Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly  
 180 185 190  
 Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln  
 195 200 205  
 Met Glu Glu Ala Asn Asn Ser Arg Ala Asn Leu Lys Gly Val Val Leu  
 210 215 220  
 Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr  
 245 250 255  
 Val Val Arg

&lt;210&gt; 1933

&lt;211&gt; 921

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(921)

&lt;400&gt; 1933

atg gcg gcc ata gta ctg atc aga tct atc gtc aga aac ttt aaa cgg	48
Met Ala Ala Ile Val Leu Ile Arg Ser Ile Val Arg Asn Phe Lys Arg	
1 5 10 15	
cca gcc acc gca gcc tca gcc gct tac tcg aca ggt ggt ggt ggc ggc	96
Pro Ala Thr Ala Ser Ala Ala Tyr Ser Thr Gly Gly Gly Gly Gly	
20 25 30	
ggt tgt act tgt acg agt aaa aag cta gaa ggc aaa gta gct ctc ata	144
Gly Cys Thr Cys Thr Ser Lys Lys Leu Glu Gly Lys Val Ala Leu Ile	
35 40 45	
act ggt ggt gct agc ggg ctc ggt aag gcc acg gcc agc gag ttt ctc	192
Thr Gly Gly Ala Ser Gly Leu Gly Lys Ala Thr Ala Ser Glu Phe Leu	
50 55 60	
cgc cat ggt gcc cga gtc gtg atc gcc gac tta gac gcg gaa acc ggg	240
Arg His Gly Ala Arg Val Val Ile Ala Asp Leu Asp Ala Glu Thr Gly	
65 70 75 80	
aca aaa acc gct aaa gaa cta ggc tcg gag gca gag ttt gtg cgg tgt	288
Thr Lys Thr Ala Lys Glu Leu Gly Ser Glu Ala Glu Phe Val Arg Cys	
85 90 95	
gat gtc acg gtg gag gct gat atc gct ggg acg gtg gaa ata acg gtg	336
Asp Val Thr Val Glu Ala Asp Ile Ala Gly Thr Val Glu Ile Thr Val	
100 105 110	
gag cgg tat ggg aag cta gac gtg atg tac aat aac gct ggg att gtt	384
Glu Arg Tyr Gly Lys Leu Asp Val Met Tyr Asn Asn Ala Gly Ile Val	
115 120 125	
gga cct atg act cca gcg agc ata tcg cag ctt gat atg aca gaa ttc	432
Gly Pro Met Thr Pro Ala Ser Ile Ser Gln Leu Asp Met Thr Glu Phe	
130 135 140	
gag aga gta atg agg att aat gtt ttt ggt gtt gtc tcc ggc atc aaa	480
Glu Arg Val Met Arg Ile Asn Val Phe Gly Val Val Ser Gly Ile Lys	
145 150 155 160	
cac gcc gct aag ttt atg att ccg gct agg tct gga tgc att ttg tgc	528
His Ala Ala Lys Phe Met Ile Pro Ala Arg Ser Gly Cys Ile Leu Cys	
165 170 175	
aca tca agc gtt gca ggc gtg act gga ggg ttg gct cca cat tca tac	576
Thr Ser Ser Val Ala Gly Val Thr Gly Gly Leu Ala Pro His Ser Tyr	
180 185 190	
aca atc tca aag ttc aca act ccc gga ggc ata gtc aag tcg gca agc	624
Thr Ile Ser Lys Phe Thr Thr Pro Gly Ile Val Lys Ser Ala Ala Ser	

PhoenixTemp32470.tmp.txt

gag	ctc	195	gaa	cac	ggc	gtg	200	ata	aac	tgt	atc	205	tca	ccg	ggt	acg	672
Glu	Leu	Cys	Glu	His	Gly	Val	Arg	Ile	Asn	Cys	Ile	Ser	Pro	Gly	Thr		
	210					215					220						
gtg	gct	aca	ccg	ctc	act	ctc	agt	tac	ctt	cag	aaa	gtg	ttt	ccg	aag	720	
Val	Ala	Thr	Pro	Leu	Thr	Leu	Ser	Tyr	Leu	Gln	Lys	Val	Phe	Pro	Lys		
225					230					235					240		
gta	tcg	gag	gag	aag	cta	cgc	gaa	aca	gtg	aaa	gga	atg	ggt	gag	tta	768	
Val	Ser	Glu	Glu	Lys	Leu	Arg	Glu	Thr	Val	Lys	Gly	Met	Gly	Glu	Leu		
				245					250					255			
aaa	gga	gct	gag	tgt	gaa	gaa	gct	gac	gtg	gct	aag	gct	gct	ttg	tat	816	
Lys	Gly	Ala	Glu	Cys	Glu	Glu	Ala	Asp	Val	Ala	Lys	Ala	Ala	Leu	Tyr		
		260					265					270					
ttg	gct	tcc	aac	gac	ggt	aaa	tac	gtt	act	ggc	cat	aac	ttg	gtc	gtg	864	
Leu	Ala	Ser	Asn	Asp	Gly	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val		
		275					280					285					
gat	ggt	ggc	atg	act	gct	ttc	aaa	ata	gct	ggt	ttt	cct	ttt	cct	tcg	912	
Asp	Gly	Gly	Met	Thr	Ala	Phe	Lys	Ile	Ala	Gly	Phe	Pro	Phe	Pro	Ser		
	290					295					300						
gat	tca	tga														921	
Asp	Ser																
305																	

<210> 1934

<211> 306

<212> PRT

<213> Arabidopsis thaliana

<400> 1934

Met	Ala	Ala	Ile	Val	Leu	Ile	Arg	Ser	Ile	Val	Arg	Asn	Phe	Lys	Arg	
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Pro	Ala	Thr	Ala	Ala	Ser	Ala	Ala	Tyr	Ser	Thr	Gly	Gly	Gly	Gly	Gly	
			20					25					30			
Gly	Cys	Thr	Cys	Thr	Ser	Lys	Lys	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	
		35					40					45				
Thr	Gly	Gly	Ala	Ser	Gly	Leu	Gly	Lys	Ala	Thr	Ala	Ser	Glu	Phe	Leu	
	50					55					60					
Arg	His	Gly	Ala	Arg	Val	Val	Ile	Ala	Asp	Leu	Asp	Ala	Glu	Thr	Gly	
65					70				75						80	
Thr	Lys	Thr	Ala	Lys	Glu	Leu	Gly	Ser	Glu	Ala	Glu	Phe	Val	Arg	Cys	
				85					90					95		
Asp	Val	Thr	Val	Glu	Ala	Asp	Ile	Ala	Gly	Thr	Val	Glu	Ile	Thr	Val	
		100						105					110			
Glu	Arg	Tyr	Gly	Lys	Leu	Asp	Val	Met	Tyr	Asn	Asn	Ala	Gly	Ile	Val	
		115					120					125				
Gly	Pro	Met	Thr	Pro	Ala	Ser	Ile	Ser	Gln	Leu	Asp	Met	Thr	Glu	Phe	
	130					135					140					
Glu	Arg	Val	Met	Arg	Ile	Asn	Val	Phe	Gly	Val	Val	Ser	Gly	Ile	Lys	
145					150				155						160	
His	Ala	Ala	Lys	Phe	Met	Ile	Pro	Ala	Arg	Ser	Gly	Cys	Ile	Leu	Cys	
			165						170					175		
Thr	Ser	Ser	Val	Ala	Gly	Val	Thr	Gly	Gly	Leu	Ala	Pro	His	Ser	Tyr	
		180						185					190			
Thr	Ile	Ser	Lys	Phe	Thr	Thr	Pro	Gly	Ile	Val	Lys	Ser	Ala	Ala	Ser	
		195					200					205				
Glu	Leu	Cys	Glu	His	Gly	Val	Arg	Ile	Asn	Cys	Ile	Ser	Pro	Gly	Thr	
	210					215					220					
Val	Ala	Thr	Pro	Leu	Thr	Leu	Ser	Tyr	Leu	Gln	Lys	Val	Phe	Pro	Lys	
225					230					235					240	
Val	Ser	Glu	Glu	Lys	Leu	Arg	Glu	Thr	Val	Lys	Gly	Met	Gly	Glu	Leu	
				245					250					255		
Lys	Gly	Ala	Glu	Cys	Glu	Glu	Ala	Asp	Val	Ala	Lys	Ala	Ala	Leu	Tyr	
		260						265				270				
Leu	Ala	Ser	Asn	Asp	Gly	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	
		275					280					285				
Asp	Gly	Gly	Met	Thr	Ala	Phe	Lys	Ile	Ala	Gly	Phe	Pro	Phe	Pro	Ser	
	290					295					300					
Asp	Ser															
305																



## PhoenixTemp32470.tmp.txt

<210> 1935  
 <211> 810  
 <212> DNA  
 <213> Ophiostoma floccosum

<220>  
 <221> CDS  
 <222> (1)..(810)

<400> 1935  
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 Met Ser Pro Ala Thr Val Lys Asp Ala Ala Arg Pro Leu Ala Gly Lys  
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 gtt gcc atc atc act ggt gct ggc cgt ggt att ggt cgc ggt att gcc 96  
 Val Ala Ile Ile Thr Gly Ala Gly Arg Gly Ile Gly Arg Gly Ile Ala  
 20 25 30  
 acc gag ctt ggc cgt cgt ggc gca aat gtt att gtc aac tac ggt agc 144  
 Thr Glu Leu Gly Arg Arg Gly Ala Asn Val Ile Val Asn Tyr Gly Ser  
 35 40 45  
 agc agt gcc gct gct gag gaa gtt gtt gcc gac ctc aaa gct ctt ggc 192  
 Ser Ser Ala Ala Ala Glu Glu Val Val Ala Asp Leu Lys Ala Leu Gly  
 50 55 60  
 act gac gct gtc gcc atg cag gcc gat atc agc aag ccc gat gaa gtt 240  
 Thr Asp Ala Val Ala Met Gln Ala Asp Ile Ser Lys Pro Asp Glu Val  
 65 70 75 80  
 gtc aag ctg ttc gac cgt gca gtt gcc cac ttt ggc gga att gac att 288  
 Val Lys Leu Phe Asp Arg Ala Val Ala His Phe Gly Gly Ile Asp Ile  
 85 90 95  
 gtc gtc tcc aac tct ggc atg gag gtc tgg tcc tcg gag ctt gac gtc 336  
 Val Val Ser Asn Ser Gly Met Glu Val Trp Ser Ser Glu Leu Asp Val  
 100 105 110  
 acc cag gag ctt ttt gac aag gtc ttc aac ctg aac tgc cgg ggc cag 384  
 Thr Gln Glu Leu Phe Asp Lys Val Phe Asn Leu Asn Cys Arg Gly Gln  
 115 120 125  
 ttc ttt gtt gcc cag caa ggc ctc aag cac tgc cgt cgt ggt ggc agc 432  
 Phe Phe Val Ala Gln Gln Gly Leu Lys His Cys Arg Arg Gly Gly Ser  
 130 135 140  
 atc atc ctg acc tca tca gtc gct gcg tgc ctc agc ggt atc ccc aac 480  
 Ile Ile Leu Thr Ser Ser Val Ala Ala Ser Leu Ser Gly Ile Pro Asn  
 145 150 155 160  
 cac gct cta tac gca ggc tca aag gct gct gtc gag ggc ttc acg cgt 528  
 His Ala Leu Tyr Ala Gly Ser Lys Ala Ala Val Glu Gly Phe Thr Arg  
 165 170 175  
 gcc ttc tcc gtt gac tgc ggc gag aag ggc gtc act gtc aat gcc att 576  
 Ala Phe Ser Val Asp Cys Gly Glu Lys Gly Val Thr Val Asn Ala Ile  
 180 185 190  
 gcc ccg ggc ggt gtc aag acg gac atg tac gac gag aac tcg tgg cac 624  
 Ala Pro Gly Gly Val Lys Thr Asp Met Tyr Asp Glu Asn Ser Trp His  
 195 200 205  
 tac gtt ccc ggt ggc tac aag ggc atg tgc caa gat gtc atc gac gag 672  
 Tyr Val Pro Gly Gly Tyr Lys Gly Met Ser Gln Asp Val Ile Asp Glu  
 210 215 220  
 ggc att ctc aag gct tgc ccg ctc aag cgc gtc ggt acc ccg agc gac 720  
 Gly Ile Leu Lys Ala Cys Pro Leu Lys Arg Val Gly Thr Pro Ser Asp  
 225 230 235 240  
 atc ggc aag gct gtt gct ctg ctt gtt agc gag gag gga gaa tgg atc 768  
 Ile Gly Lys Ala Val Ala Leu Leu Val Ser Glu Glu Gly Glu Trp Ile  
 245 250 255  
 aac ggc cag att atc aag ctg tct ggc ggt tct gcc gtt tga 810  
 Asn Gly Gln Ile Ile Lys Leu Ser Gly Gly Ser Ala Val

<210> 1936  
 <211> 269  
 <212> PRT  
 <213> Ophiostoma floccosum

<400> 1936

## PhoenixTemp32470.tmp.txt

Met Ser Pro Ala Thr Val Lys Asp Ala Ala Arg Pro Leu Ala Gly Lys  
 1 Val Ala Ile Ile Thr 5 Gly Ala Gly Arg Gly Ile Gly Arg Gly Ile Ala  
 Thr Glu Leu Gly Arg Arg Gly Ala Asn Val Ile Val Asn Tyr Gly Ser  
 35 Ser Ser Ala Ala Ala Glu Glu Val Val Ala Asp Leu Lys Ala Leu Gly  
 50 Thr Asp Ala Val Ala Met Gln Ala Asp Ile Ser Lys Pro Asp Glu Val  
 65 Val Lys Leu Phe Asp Arg Ala Val Ala His Phe Gly Gly Ile Asp Ile  
 85 Val Val Ser Asn Ser Gly Met Glu Val Trp Ser Ser Glu Leu Asp Val  
 100 Thr Gln Glu Leu Phe Asp Lys Val Phe Asn Leu Asn Cys Arg Gly Gln  
 115 Phe Phe Val Ala Gln Gln Gly Leu Lys His Cys Arg Arg Gly Gly Ser  
 130 Ile Ile Leu Thr Ser Ser Val Ala Ala Ser Leu Ser Gly Ile Pro Asn  
 145 His Ala Leu Tyr Ala Gly Ser Lys Ala Ala Val Glu Gly Phe Thr Arg  
 165 Ala Phe Ser Val Asp Cys Gly Glu Lys Gly Val Thr Val Asn Ala Ile  
 180 Ala Pro Gly Gly Val Lys Thr Asp Met Tyr Asp Glu Asn Ser Trp His  
 195 Tyr Val Pro Gly Gly Tyr Lys Gly Met Ser Gln Asp Val Ile Asp Glu  
 210 Gly Ile Leu Lys Ala Cys Pro Leu Lys Arg Val Gly Thr Pro Ser Asp  
 225 Ile Gly Lys Ala Val Ala Leu Leu Val Ser Glu Glu Gly Glu Trp Ile  
 245 Asn Gly Gln Ile Ile Lys Leu Ser Gly Gly Ser Ala Val  
 260 265

&lt;210&gt; 1937

&lt;211&gt; 771

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(771)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1937

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Met Thr Leu Lys Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser Gly	
1 5 10 15	
atc ggc ctg ggc att gcc cag gtg ctg gcc cgc gca ggc gcc aac atc	96
Ile Gly Leu Gly Ile Ala Gln Val Leu Ala Arg Ala Gly Ala Asn Ile	
20 25 30	
gtg ctc aac ggc ttc ggc gac cct gcc ccg gcg ctg gcc gag ata gcc	144
Val Leu Asn Gly Phe Gly Asp Pro Ala Pro Ala Leu Ala Glu Ile Ala	
35 40 45	
cgg cac ggg gta aag gca gtc cat cac ccg gcc gac ctg tcg gac gtg	192
Arg His Gly Val Lys Ala Val His His Pro Ala Asp Leu Ser Asp Val	
50 55 60	
gcc cag atc gaa gcg ctg ttc gcc ctg gcc gag cgc gag ttc ggc ggc	240
Ala Gln Ile Glu Ala Leu Phe Ala Leu Ala Glu Arg Glu Phe Gly Gly	
65 70 75 80	
gtc gac atc ctg gtc aac aac gcc ggt atc cag cac gtg gcg ccg gtg	288
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Val	
85 90 95	
gag cag ttc ccg ctg gaa agc tgg gac aag atc atc gcc ctc aac ctg	336
Glu Gln Phe Pro Leu Glu Ser Trp Asp Lys Ile Ile Ala Leu Asn Leu	
100 105 110	
tcg gcc gtg ttc cat ggt acg cgc ctg gcc ctg ccc ggc atg cga gcg	384
Ser Ala Val Phe His Gly Thr Arg Leu Ala Leu Pro Gly Met Arg Ala	

PhoenixTemp32470.tmp.txt

[illegible]

<210> 1938  
<211> 256  
<212> PRT  
<213> Pseudomonas putida

<400>	1938														
Met	Thr	Leu	Lys	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	Gly
1				5					10					15	
Ile	Gly	Leu	Gly	Ile	Ala	Gln	Val	Leu	Ala	Arg	Ala	Gly	Ala	Asn	Ile
			20					25					30		
Val	Leu	Asn	Gly	Phe	Gly	Asp	Pro	Ala	Pro	Ala	Leu	Ala	Glu	Ile	Ala
		35					40					45			
Arg	His	Gly	Val	Lys	Ala	Val	His	His	Pro	Ala	Asp	Leu	Ser	Asp	Val
	50					55					60				
Ala	Gln	Ile	Glu	Ala	Leu	Phe	Ala	Leu	Ala	Glu	Arg	Glu	Phe	Gly	Gly
65					70					75					80
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Val
				85					90					95	
Glu	Gln	Phe	Pro	Leu	Glu	Ser	Trp	Asp	Lys	Ile	Ile	Ala	Leu	Asn	Leu
			100					105					110		
Ser	Ala	Val	Phe	His	Gly	Thr	Arg	Leu	Ala	Leu	Pro	Gly	Met	Arg	Ala
		115					120					125			
Arg	Asn	Trp	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	His	Gly	Leu	Val
	130					135					140				
Gly	Ser	Thr	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Val
145					150					155					160
Gly	Leu	Thr	Lys	Val	Val	Gly	Leu	Glu	Thr	Ala	Thr	Ser	Asn	Val	Thr
				165					170					175	
Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln	Lys
			180					185					190		
Gln	Ile	Asp	Asp	Arg	Ala	Ala	Asn	Gly	Gly	Asp	Pro	Leu	Gln	Ala	Gln
		195					200					205			
His	Asp	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Leu	Ala	Phe	Val	Thr	Pro
	210					215					220				
Glu	His	Leu	Gly	Glu	Leu	Val	Leu	Phe	Leu	Cys	Ser	Glu	Ala	Gly	Ser
225					230					235					240
Gln	Val	Arg	Gly	Ala	Ala	Trp	Asn	Val	Asp	Gly	Gly	Trp	Leu	Ala	Gln
				245					250					255	

<210> 1939

<211> 852  
 <212> DNA  
 <213> Candida magnoliae

<220>  
 <221> CDS  
 <222> (1)..(852)

<400> 1939  
 atg gct aag aac ttc tcc aac gtc gag tac ccc gcc ccg cct ccg gcc 48  
 Met Ala Lys Asn Phe Ser Asn Val Glu Tyr Pro Ala Pro Pro Pro Ala  
 1 5 10 15  
 cac acc aag aac gag tcg ctg cag gtc gac ctg ttc aag ctg aat 96  
 His Thr Lys Asn Glu Ser Leu Gln Val Leu Asp Leu Phe Lys Leu Asn  
 20 25 30  
 ggc aag gtt gcc agc atc act ggc tcg tcc agc ggt att ggc tac gct 144  
 Gly Lys Val Ala Ser Ile Thr Gly Ser Ser Ser Gly Ile Gly Tyr Ala  
 35 40 45  
 ctg gct gag gcc ttc gcg cag gtc ggc gct gac gtc gcc atc tgg tac 192  
 Leu Ala Glu Ala Phe Ala Gln Val Gly Ala Asp Val Ala Ile Trp Tyr  
 50 55 60  
 aac agc cac gac gct act ggc aag gct gag gcc ctc gcc aag aag tac 240  
 Asn Ser His Asp Ala Thr Gly Lys Ala Glu Ala Leu Ala Lys Lys Tyr  
 65 70 75 80  
 ggc gtc aag gtc aag gcc tac aag gcg aac gtg agc agc tct gac gcc 288  
 Gly Val Lys Val Lys Ala Tyr Lys Ala Asn Val Ser Ser Ser Asp Ala  
 85 90 95  
 gtg aag cag acg atc gag cag cag atc aag gac ttc ggc cac ctc gac 336  
 Val Lys Gln Thr Ile Glu Gln Gln Ile Lys Asp Phe Gly His Leu Asp  
 100 105 110  
 att gtc gtg gcg aac gcc ggc att ccc tgg acg aag ggt gcc tac atc 384  
 Ile Val Val Ala Asn Ala Gly Ile Pro Trp Thr Lys Gly Ala Tyr Ile  
 115 120 125  
 gac cag gac gac gac aag cac ttc gac cag gtc gtt gac gtc gat ctg 432  
 Asp Gln Asp Asp Asp Lys His Phe Asp Gln Val Val Asp Val Asp Leu  
 130 135 140  
 aag ggt gtt gga tac gtc gcg aag cac gct ggc cgt cac ttc cgc gag 480  
 Lys Gly Val Gly Tyr Val Ala Lys His Ala Gly Arg His Phe Arg Glu  
 145 150 155 160  
 cgc ttc gag aag gag ggc aag aag ggc gcc ctt gtg ttc acg gcc tcc 528  
 Arg Phe Glu Lys Glu Gly Lys Lys Gly Ala Leu Val Phe Thr Ala Ser  
 165 170 175  
 atg tct ggc cac att gtg aac gtg ccc cag ttc cag gcc acg tac aac 576  
 Met Ser Gly His Ile Val Asn Val Pro Gln Phe Gln Ala Thr Tyr Asn  
 180 185 190  
 gcg gcc aag gct ggc gtg cgc cac ttc ggc aag tcg ctg gcc gtc gag 624  
 Ala Ala Lys Ala Gly Val Arg His Phe Ala Lys Ser Leu Ala Val Glu  
 195 200 205  
 ttc gcg ccg ttc gcg cgc gtg aac tct gtg tcg ccg ggc tac atc aac 672  
 Phe Ala Pro Phe Ala Arg Val Asn Ser Val Ser Pro Gly Tyr Ile Asn  
 210 215 220  
 acg gag atc tcg gac ttc gtc ccc cag gag acg cag aac aag tgg tgg 720  
 Thr Glu Ile Ser Asp Phe Val Pro Gln Glu Thr Gln Asn Lys Trp Trp  
 225 230 235 240  
 tcg ctc gtg ccc ctt ggc cgc ggc gga gag acg gcc gag ctc gtt ggc 768  
 Ser Leu Val Pro Leu Gly Arg Gly Gly Glu Thr Ala Glu Leu Val Gly  
 245 250 255  
 gcc tac ctg ttc ctt gca tct gac gcc ggc tcg tac gcc act ggt acg 816  
 Ala Tyr Leu Phe Leu Ala Ser Asp Ala Gly Ser Tyr Ala Thr Gly Thr  
 260 265 270  
 gac atc att gtt gac ggt ggc tac acg ctt ccc taa 852  
 Asp Ile Ile Val Asp Gly Gly Tyr Thr Leu Pro  
 275 280

<210> 1940  
 <211> 283  
 <212> PRT  
 <213> Candida magnoliae

## PhoenixTemp32470.tmp.txt

```

<400> 1940
Met Ala Lys Asn Phe Ser Asn Val Glu Tyr Pro Ala Pro Pro Pro Ala
1 5 10 15
His Thr Lys Asn Glu Ser Leu Gln Val Leu Asp Leu Phe Lys Leu Asn
20 25 30
Gly Lys Val Ala Ser Ile Thr Gly Ser Ser Ser Gly Ile Gly Tyr Ala
35 40 45
Leu Ala Glu Ala Phe Ala Gln Val Gly Ala Asp Val Ala Ile Trp Tyr
50 55 60
Asn Ser His Asp Ala Thr Gly Lys Ala Glu Ala Leu Ala Lys Lys Tyr
65 70 75 80
Gly Val Lys Val Lys Ala Tyr Lys Ala Asn Val Ser Ser Ser Asp Ala
85 90 95
Val Lys Gln Thr Ile Glu Gln Gln Ile Lys Asp Phe Gly His Leu Asp
100 105 110
Ile Val Val Ala Asn Ala Gly Ile Pro Trp Thr Lys Gly Ala Tyr Ile
115 120 125
Asp Gln Asp Asp Asp Lys His Phe Asp Gln Val Val Asp Val Asp Leu
130 135 140
Lys Gly Val Gly Tyr Val Ala Lys His Ala Gly Arg His Phe Arg Glu
145 150 155 160
Arg Phe Glu Lys Glu Gly Lys Lys Gly Ala Leu Val Phe Thr Ala Ser
165 170 175
Met Ser Gly His Ile Val Asn Val Pro Gln Phe Gln Ala Thr Tyr Asn
180 185 190
Ala Ala Lys Ala Gly Val Arg His Phe Ala Lys Ser Leu Ala Val Glu
195 200 205
Phe Ala Pro Phe Ala Arg Val Asn Ser Val Ser Pro Gly Tyr Ile Asn
210 215 220
Thr Glu Ile Ser Asp Phe Val Pro Gln Glu Thr Gln Asn Lys Trp Trp
225 230 235 240
Ser Leu Val Pro Leu Gly Arg Gly Gly Glu Thr Ala Glu Leu Val Gly
245 250 255
Ala Tyr Leu Phe Leu Ala Ser Asp Ala Gly Ser Tyr Ala Thr Gly Thr
260 265 270
Asp Ile Ile Val Asp Gly Gly Tyr Thr Leu Pro
275 280

```

```

<210> 1941
<211> 741
<212> DNA
<213> Rhodococcus erythropolis

```

```

<220>
<221> CDS
<222> (1)..(741)
<223> transl_table=11

```

```

<400> 1941
gtg agt tac gca ctc gag ggc aag gtt gct gtg gtt acc ggt ggc gga      48
Met Ser Tyr Ala Leu Glu Gly Lys Val Ala Val Val Thr Gly Gly Gly
1 5 10 15
tcc ggt atc ggc gca gca tgt gtg cgc cag ctt tgt gcg ctc ggc gcc      96
Ser Gly Ile Gly Ala Ala Cys Val Arg Gln Leu Cys Ala Leu Gly Ala
20 25 30
agc gtt gtc gtt gcc gac atc gtc ttc gac aac gcc act ttg gtg gcg      144
Ser Val Val Val Ala Asp Ile Val Phe Asp Asn Ala Thr Leu Val Ala
35 40 45
aag gaa ttc ggc gac cga gct gta gct gtc gaa gtg gac gtg gcg cgt      192
Lys Glu Phe Gly Asp Arg Ala Val Ala Val Glu Val Asp Val Ala Arg
50 55 60
gtc gag gac gcc gaa cgg atg gtt gag acg gcg gtg gcg cac ttc ggt      240
Val Glu Asp Ala Glu Arg Met Val Glu Thr Ala Val Ala His Phe Gly
65 70 75 80
gga ctc gac atc gct gtc aac aat gcc ggt gtg gga gta ccg gtc aag      288
Gly Leu Asp Ile Ala Val Asn Asn Ala Gly Val Gly Val Pro Val Lys
85 90 95
gcc tcc gtg gga gat aca ggg ttc gaa tgg cga cgt gtg ctc gac      336
Ala Ser Val Gly Asp Thr Gly Phe Glu Glu Trp Arg Arg Val Leu Asp

```

## PhoenixTemp32470.tmp.txt

[illegible]

<210> 1942

<211> 246

<212> PRT

<213> Rhodococcus erythropolis

<400> 1942

[illegible]

<210> 1943

<211> 822  
 <212> DNA  
 <213> Streptomyces antibioticus

<220>  
 <221> CDS  
 <222> (1)..(822)  
 <223> transl\_table=11

<400> 1943  
 gtg aat cag ccc tgg ccc gcg acc cgg gca gac cga ccg aac att tgc 48  
 Met Asn Gln Pro Trp Pro Ala Thr Arg Ala Asp Arg Pro Asn Ile Cys  
 1 5 10 15  
 agg gaa gga gca cga atg agc ctc ggg gcc gac acc gtc gcg atc gtc 96  
 Arg Glu Gly Ala Arg Met Ser Leu Gly Ala Asp Thr Val Ala Ile Val  
 20 25 30  
 acc gga gcc gga cgg ggc atc ggc gcc gcc acc gcg cag ccg ctc gcc 144  
 Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Thr Ala Gln Arg Leu Ala  
 35 40 45  
 gcg gag ggc gcg acc gtg gca gtc gtc gac cgg acc gag gcg gac acg 192  
 Ala Glu Gly Ala Thr Val Ala Val Val Asp Arg Thr Glu Ala Asp Thr  
 50 55 60  
 gcc gac acc gtg gcg tcg atc cgg gcg gcc ggt ggc cgc gcc ctc ggc 240  
 Ala Asp Thr Val Ala Ser Ile Arg Ala Ala Gly Gly Arg Ala Leu Gly  
 65 70 75 80  
 atc ggg tgc gac gtg aca gtc acc gac ctg gtc gag gcg gcg gtc gac 288  
 Ile Gly Cys Asp Val Thr Val Thr Asp Leu Val Glu Ala Ala Val Asp  
 85 90 95  
 cgc acg gtc gcg gag ttc ggt cgt ctg gac gtc ctc gtc aac aac gcc 336  
 Arg Thr Val Ala Glu Phe Gly Arg Leu Asp Val Leu Val Asn Asn Ala  
 100 105 110  
 ggg gta acc cgg gac agc ctc gtc ttc atg atg ggc gac gag gac tgg 384  
 Gly Val Thr Arg Asp Ser Leu Val Phe Met Met Gly Asp Glu Asp Trp  
 115 120 125  
 gat acg gtc atc gac gtg cac ctg aac ggc gcc gcc cgg acc gtc cgc 432  
 Asp Thr Val Ile Asp Val His Leu Asn Gly Ala Ala Arg Thr Val Arg  
 130 135 140  
 gcg gca cgg cgc cag atg gtg cgt caa ggt tcc ggg cgg ata gtg aac 480  
 Ala Ala Arg Arg Gln Met Val Arg Gln Gly Ser Gly Arg Ile Val Asn  
 145 150 155 160  
 ttg agc tcg atc gcg gct ctg ggc aac cag ggg cag gcc aac tac gcc 528  
 Leu Ser Ser Ile Ala Ala Leu Gly Asn Gln Gly Gln Ala Asn Tyr Ala  
 165 170 175  
 act gcc aag gcc gcg atc cag ggc tac acc cgc acc ctg gcc gtg gaa 576  
 Thr Ala Lys Ala Ala Ile Gln Gly Tyr Thr Arg Thr Leu Ala Val Glu  
 180 185 190  
 ctt ggc ccg cac ggt att acg gtc aat gcg atc gcg cct ggg ttc atc 624  
 Leu Gly Pro His Gly Ile Thr Val Asn Ala Ile Ala Pro Gly Phe Ile  
 195 200 205  
 gcc acg acc atg acg gac gac acg gct cgc cgg atg ggc tcc gat ccg 672  
 Ala Thr Thr Met Thr Asp Asp Thr Ala Arg Arg Met Gly Ser Asp Pro  
 210 215 220  
 gtg gcg ctg cgg aag gcg gtg gcg tcg cgg gtg ccg atg cgc agg gtt 720  
 Val Ala Leu Arg Lys Ala Val Ala Ser Arg Val Pro Met Arg Arg Val  
 225 230 235 240  
 ggc agg ccg gag gac atc gcc ggc ctg gtg gcc ttc ctg gcc ggg cct 768  
 Gly Arg Pro Glu Asp Ile Ala Gly Leu Val Ala Phe Leu Ala Gly Pro  
 245 250 255  
 gat gcg agc tat ctc aca ggg cag acg atc tac gtc gac ggc gga ccg 816  
 Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile Tyr Val Asp Gly Gly Pro  
 260 265 270  
 cag tga 822  
 Gln

<210> 1944  
 <211> 273  
 <212> PRT  
 <213> Streptomyces antibioticus

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 1944

```

Met Asn Gln Pro Trp Pro Ala Thr Arg Ala Asp Arg Pro Asn Ile Cys
1      5      10      15
Arg Glu Gly Ala Arg Met Ser Leu Gly Ala Asp Thr Val Ala Ile Val
      20      25      30
Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Thr Ala Gln Arg Leu Ala
      35      40      45
Ala Glu Gly Ala Thr Val Ala Val Val Asp Arg Thr Glu Ala Asp Thr
      50      55      60
Ala Asp Thr Val Ala Ser Ile Arg Ala Ala Gly Gly Arg Ala Leu Gly
65      70      75      80
Ile Gly Cys Asp Val Thr Val Thr Asp Leu Val Glu Ala Ala Val Asp
      85      90      95
Arg Thr Val Ala Glu Phe Gly Arg Leu Asp Val Leu Val Asn Asn Ala
      100      105      110
Gly Val Thr Arg Asp Ser Leu Val Phe Met Met Gly Asp Glu Asp Trp
      115      120      125
Asp Thr Val Ile Asp Val His Leu Asn Gly Ala Ala Arg Thr Val Arg
      130      135      140
Ala Ala Arg Arg Gln Met Val Arg Gln Gly Ser Gly Arg Ile Val Asn
145      150      155      160
Leu Ser Ser Ile Ala Ala Leu Gly Asn Gln Gly Gln Ala Asn Tyr Ala
      165      170      175
Thr Ala Lys Ala Ile Gln Gly Tyr Thr Arg Thr Leu Ala Val Glu
      180      185      190
Leu Gly Pro His Gly Ile Thr Val Asn Ala Ile Ala Pro Gly Phe Ile
      195      200      205
Ala Thr Thr Met Thr Asp Asp Thr Ala Arg Arg Met Gly Ser Asp Pro
      210      215      220
Val Ala Leu Arg Lys Ala Val Ala Ser Arg Val Pro Met Arg Arg Val
225      230      235      240
Gly Arg Pro Glu Asp Ile Ala Gly Leu Val Ala Phe Leu Ala Gly Pro
      245      250      255
Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile Tyr Val Asp Gly Gly Pro
      260      265      270
Gln

```

&lt;210&gt; 1945

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1945

```

atg ctc aat gga aag acc gct ctg atc acc ggc tcg acc agc ggg atc      48
Met Leu Asn Gly Lys Thr Ala Leu Ile Thr Gly Ser Thr Ser Gly Ile
1      5      10      15
ggc ctc ggc atc gcc gag gtg ctg gcg cgc aac ggc gcc agc gtc att      96
Gly Leu Gly Ile Ala Glu Val Leu Ala Arg Asn Gly Ala Ser Val Ile
      20      25      30
ctc aac ggt ttc ggc gac tgg cag gcc gcg gcc gaa cag ctg gcg cgc      144
Leu Asn Gly Phe Gly Asp Trp Gln Ala Ala Ala Glu Gln Leu Ala Arg
      35      40      45
cac gag gga cgc gtc ggc tac cac gcc gcc gac ctc gcc gac ccg gcg      192
His Glu Gly Arg Val Gly Tyr His Ala Ala Asp Leu Ala Asp Pro Ala
      50      55      60
cag atc gag gcg ctg ttc gac tac gcc cgg cgc gag ttc ggc cgc gtc      240
Gln Ile Glu Ala Leu Phe Asp Tyr Ala Arg Arg Glu Phe Gly Arg Val
      65      70      75      80
gat atc ctg gtc aac aat gcc ggc atc cag cat gtc gcg ccg ctg cag      288
Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Leu Gln
      85      90      95
gac ttc ccg gcc gaa cgc tgg gac gcc atc ctc gcg ctc aac ctc agc      336

```



## PhoenixTemp32470.tmp.txt

Asp	Phe	Pro	Ala	Glu	Arg	Trp	Asp	Ala	Ile	Leu	Ala	Leu	Asn	Leu	Ser		
gcg	gta	ttc	cat	tgc	acg	cg	ctg	gcc	ctg	ccg	gac	atg	cg	gcg	cag	384	
Ala	Val	Phe	His	Cys	Thr	Arg	Leu	Ala	Leu	Pro	Asp	Met	Arg	Ala	Gln		
		115					120					125					
gac	tgg	ggg	cg	atc	atc	aac	atc	gcc	tcg	gtg	cac	ggc	agc	atc	ggc	432	
Asp	Trp	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	His	Gly	Ser	Ile	Gly		
		130				135					140						
tcg	ctc	ggc	aag	gcg	gcc	tat	gtc	gcg	gcc	aag	cac	ggc	gtg	ctc	ggc	480	
Ser	Leu	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Leu	Gly		
145					150					155					160		
ctg	acc	aag	gtg	gtg	gcg	ctg	gaa	acc	gcc	ctg	agc	ggg	gtt	acc	tgc	528	
Leu	Thr	Lys	Val	Val	Ala	Leu	Glu	Thr	Ala	Leu	Ser	Gly	Val	Thr	Cys		
				165					170					175			
aat	gcc	atc	tgt	ccc	ggc	tgg	gtg	ctc	acg	ccc	ctg	gtg	cag	cg	cag	576	
Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln	Arg	Gln		
			180					185					190				
atc	gac	gcg	cg	atc	gcc	gca	ggc	gaa	tcg	ccc	gag	cag	gcg	cg	acg	624	
Ile	Asp	Ala	Arg	Ile	Ala	Ala	Gly	Glu	Ser	Pro	Glu	Gln	Ala	Arg	Thr		
		195					200					205					
gcg	ctg	ctg	gcg	gag	aag	cag	cca	tcg	cag	gcc	ttc	gtc	acc	ccg	cag	672	
Ala	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Gln	Ala	Phe	Val	Thr	Pro	Gln		
210					215						220						
cag	ctc	ggc	gag	ctg	gcg	ctg	ttt	ctg	tgc	agt	tcg	gcg	gcg	cag	cag	720	
Gln	Leu	Gly	Glu	Leu	Ala	Leu	Phe	Leu	Cys	Ser	Ser	Ala	Ala	Gln	Gln		
225					230					235					240		
gtg	cgt	ggc	gca	gca	tgg	aac	atc	gat	ggt	ggc	tgg	ctg	gcg	cag			
Val	Arg	Gly	Ala	Ala	Trp	Asn	Ile	Asp	Gly	Gly	Trp	Leu	Ala	Gln	255	765	
				245					250								
tga																768	

&lt;210&gt; 1946

&lt;211&gt; 255

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas sp

&lt;400&gt; 1946

Met	Leu	Asn	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Gly	Ser	Thr	Ser	Gly	Ile		
1				5				10						15			
Gly	Leu	Gly	Ile	Ala	Glu	Val	Leu	Ala	Arg	Asn	Gly	Ala	Ser	Val	Ile		
			20					25					30				
Leu	Asn	Gly	Phe	Gly	Asp	Trp	Gln	Ala	Ala	Ala	Glu	Gln	Leu	Ala	Arg		
		35					40					45					
His	Glu	Gly	Arg	Val	Gly	Tyr	His	Ala	Ala	Asp	Leu	Ala	Asp	Pro	Ala		
		50				55					60						
Gln	Ile	Glu	Ala	Leu	Phe	Asp	Tyr	Ala	Arg	Arg	Glu	Phe	Gly	Arg	Val		
65				70						75					80		
Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Leu	Gln		
				85				90					95				
Asp	Phe	Pro	Ala	Glu	Arg	Trp	Asp	Ala	Ile	Leu	Ala	Leu	Asn	Leu	Ser		
			100					105					110				
Ala	Val	Phe	His	Cys	Thr	Arg	Leu	Ala	Leu	Pro	Asp	Met	Arg	Ala	Gln		
		115					120					125					
Asp	Trp	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	His	Gly	Ser	Ile	Gly		
		130				135					140						
Ser	Leu	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Leu	Gly		
145				150						155					160		
Leu	Thr	Lys	Val	Val	Ala	Leu	Glu	Thr	Ala	Leu	Ser	Gly	Val	Thr	Cys		
				165					170					175			
Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln	Arg	Gln		
			180					185					190				
Ile	Asp	Ala	Arg	Ile	Ala	Ala	Gly	Glu	Ser	Pro	Glu	Gln	Ala	Arg	Thr		
		195					200					205					
Ala	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Gln	Ala	Phe	Val	Thr	Pro	Gln		
		210				215					220						
Gln	Leu	Gly	Glu	Leu	Ala	Leu	Phe	Leu	Cys	Ser	Ser	Ala	Ala	Gln	Gln		
225					230				235						240		

Val Arg Gly Ala Ala Trp Asn Ile Asp Gly Gly Trp Leu Ala Gln  
 245 250 255

<210> 1947

<211> 825

<212> DNA

<213> Streptomyces griseus subsp

<220>

<221> CDS

<222> (1)..(825)

<223> transl\_table=11

<400> 1947

atg acc agc ggc ttc gca ccc acc ctg ctc cag ggc agg acc acc ttt	48
Met Thr Ser Gly Phe Ala Pro Thr Leu Leu Gln Gly Arg Thr Thr Phe	
1 5 10 15	
ctg acc ggc gcc agc agc ggg atc ggc gcg gtc ctg gcg acg atg ctc	96
Leu Thr Gly Ala Ser Ser Gly Ile Gly Ala Val Leu Ala Thr Met Leu	
20 25 30	
gcc gcc cac ggc tcc agc gtg gcg ctc atg gcc cgc agc gag aag gag	144
Ala Ala His Gly Ser Ser Val Ala Leu Met Ala Arg Ser Glu Lys Glu	
35 40 45	
ctc cgg ctg ctg gcc gag cgg atc gag gcg gac ggc ggg cgg gcg gtg	192
Leu Arg Leu Leu Ala Glu Arg Ile Glu Ala Asp Gly Gly Arg Ala Val	
50 55 60	
gcg gtc ccc ggt gac ctc acc gac ggc gac agt gtg cgc gcc gcc gtc	240
Ala Val Pro Gly Asp Leu Thr Asp Gly Asp Ser Val Arg Ala Ala Val	
65 70 75 80	
cgc gag gcc gag gaa cag ctc ggc ccg atc gac cgg ctg gtg cac tgc	288
Arg Glu Ala Glu Glu Gln Leu Gly Pro Ile Asp Arg Leu Val His Cys	
85 90 95	
gcg ggc gag gcc cgc aac cag gcg ttc ctg tgc gac cag gac gag gag	336
Ala Gly Glu Ala Arg Asn Gln Ala Phe Leu Cys Asp Gln Asp Glu Glu	
100 105 110	
cag tgg acg gcc acc ctc gac atc aac ctg ctg ggg gcc ttc cgg gtc	384
Gln Trp Thr Ala Thr Leu Asp Ile Asn Leu Leu Gly Ala Phe Arg Val	
115 120 125	
gcc cgt gcg gtg gtg ccg ggg atg atg gag cgc cgc gag ggc aac atc	432
Ala Arg Ala Val Val Pro Gly Met Met Glu Arg Glu Gly Asn Ile	
130 135 140	
gtg atg gtc tcc tcc atc gcc ggg aag cgc ggg ctg ccc gcc aac acc	480
Val Met Val Ser Ser Ile Ala Gly Lys Arg Gly Leu Pro Ala Asn Thr	
145 150 155 160	
tcg tac tgc gcc tcg aag ttc ggg ctc aac ggc atg acg cag gcg ctc	528
Ser Tyr Cys Ala Ser Lys Phe Gly Leu Asn Gly Met Thr Gln Ala Leu	
165 170 175	
gcc tcc gag ctg ggc tcc ttc ggc gtg cgg gtc aac gcg gtc tgc ccc	576
Ala Ser Glu Leu Gly Ser Phe Gly Val Arg Val Asn Ala Val Cys Pro	
180 185 190	
ggg ctc acc gac agc ccc gcc gcc acg gac ggc gga cgg tac ggc gac	624
Gly Leu Thr Asp Ser Pro Ala Ala Thr Asp Gly Gly Arg Tyr Gly Asp	
195 200 205	
gcc ttc atg gcc gcc atc gcc aag cac cac ggc ccc ccg gac ctg acc	672
Ala Phe Met Ala Ala Ile Ala Lys His His Gly Pro Pro Asp Leu Thr	
210 215 220	
tgg gag cgg tac ctc agg cgc gcg gtc aac agc acc atc ctg cgg cgc	720
Trp Glu Arg Tyr Leu Arg Arg Ala Val Asn Ser Thr Ile Leu Arg Arg	
225 230 235 240	
ctg gtg cgc ccc gag gag atc gcc gcc cag gtc ctg ttc ctg ctc tcc	768
Leu Val Arg Pro Glu Glu Ile Ala Ala Gln Val Leu Phe Leu Leu Ser	
245 250 255	
gac ctc tcc ggc ggg atg acc gga cag gcc gtc aac gtg gac gcg ggg	816
Asp Leu Ser Gly Gly Met Thr Gly Gln Val Asn Val Asp Ala Gly	
260 265 270	
gct ctg tga	825
Ala Leu	

<210> 1948  
 <211> 274  
 <212> PRT  
 <213> Streptomyces griseus subsp

<400> 1948  
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 1 5 10 15  
 Leu Thr Gly Ala Ser Ser Gly Ile Gly Ala Val Leu Ala Thr Met Leu  
 20 25 30  
 Ala Ala His Gly Ser Ser Val Ala Leu Met Ala Arg Ser Glu Lys Glu  
 35 40 45  
 Leu Arg Leu Leu Ala Glu Arg Ile Glu Ala Asp Gly Gly Arg Ala Val  
 50 55 60  
 Ala Val Pro Gly Asp Leu Thr Asp Gly Asp Ser Val Arg Ala Ala Val  
 65 70 75 80  
 Arg Glu Ala Glu Glu Gln Leu Gly Pro Ile Asp Arg Leu Val His Cys  
 85 90 95  
 Ala Gly Glu Ala Arg Asn Gln Ala Phe Leu Cys Asp Gln Asp Glu Glu  
 100 105 110  
 Gln Trp Thr Ala Thr Leu Asp Ile Asn Leu Leu Gly Ala Phe Arg Val  
 115 120 125  
 Ala Arg Ala Val Val Pro Gly Met Met Glu Arg Arg Glu Gly Asn Ile  
 130 135 140  
 Val Met Val Ser Ser Ile Ala Gly Lys Arg Gly Leu Pro Ala Asn Thr  
 145 150 155 160  
 Ser Tyr Cys Ala Ser Lys Phe Gly Leu Asn Gly Met Thr Gln Ala Leu  
 165 170 175  
 Ala Ser Glu Leu Gly Ser Phe Gly Val Arg Val Asn Ala Val Cys Pro  
 180 185 190  
 Gly Leu Thr Asp Ser Pro Ala Ala Thr Asp Gly Gly Arg Tyr Gly Asp  
 195 200 205  
 Ala Phe Met Ala Ala Ile Ala Lys His His Gly Pro Pro Asp Leu Thr  
 210 215 220  
 Trp Glu Arg Tyr Leu Arg Arg Ala Val Asn Ser Thr Ile Leu Arg Arg  
 225 230 235 240  
 Leu Val Arg Pro Glu Glu Ile Ala Ala Gln Val Leu Phe Leu Leu Ser  
 245 250 255  
 Asp Leu Ser Gly Gly Met Thr Gly Gln Ala Val Asn Val Asp Ala Gly  
 260 265 270  
 Ala Leu

<210> 1949  
 <211> 738  
 <212> DNA  
 <213> Rhizobium leguminosarum

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

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 1 5 10 15  
 ggt atc ggc gag gaa atc gcc cgc ctt ctt cat agg cag ggc gcc atc 96  
 Gly Ile Gly Glu Glu Ile Ala Arg Leu Leu His Arg Gln Gly Ala Ile  
 20 25 30  
 gtc ggc ctg cat ggc acc cgc gtc gag aaa ctg gaa gcg ctg gcc gcc 144  
 Val Gly Leu His Gly Thr Arg Val Glu Lys Leu Glu Ala Leu Ala Ala  
 35 40 45  
 gat ctc ggc gag cgc gtc aag atc ttc ccg gcg aac ctt tca gac cgc 192  
 Asp Leu Gly Glu Arg Val Lys Ile Phe Pro Ala Asn Leu Ser Asp Arg  
 50 55 60  
 gat gag gtc aag gcg ctc ggc cag aag gcc gag gcc gat ctc gaa ggc 240  
 Asp Glu Val Lys Ala Leu Gly Gln Lys Ala Glu Ala Asp Leu Glu Gly  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

gtc	gac	atc	ctc	gtc	aac	aat	gcc	ggc	atc	acc	cgc	gac	ggc	ctg	ttc	288
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Phe	
				85					90					95		
gtg	cgc	atg	agc	gac	gag	gac	tgg	gac	agc	gtc	atc	gaa	gtg	aac	ctg	336
Val	Arg	Met	Ser	Asp	Glu	Asp	Trp	Asp	Ser	Val	Ile	Glu	Val	Asn	Leu	
			100					105					110			
acg	gcg	acc	ttc	cgc	ctg	acg	cgc	gaa	ttg	acg	cat	ccg	atg	atg	cgt	384
Thr	Ala	Thr	Phe	Arg	Leu	Thr	Arg	Glu	Leu	Thr	His	Pro	Met	Met	Arg	
			115				120					125				
cgc	cgc	tat	ggc	cgc	atc	atc	aat	atc	acc	tcg	gtc	gtc	ggc	gtc	acc	432
Arg	Arg	Tyr	Gly	Arg	Ile	Ile	Asn	Ile	Thr	Ser	Val	Val	Gly	Val	Thr	
			130				135				140					
ggc	aat	ccg	ggc	cag	gcc	aat	tac	tgc	gcc	tcc	aag	gcc	ggc	atg	atc	480
Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Met	Ile	
145					150				155						160	
ggc	ttc	acc	aag	tcc	ctg	gcg	cag	gaa	att	gcc	acc	cgc	aac	gtg	acg	528
Gly	Phe	Thr	Lys	Ser	Leu	Ala	Gln	Glu	Ile	Ala	Thr	Arg	Asn	Val	Thr	
				165				170						175		
gtc	aat	tgc	gtg	gcg	ccc	ggt	ttc	atc	gaa	agc	gcc	atg	acc	ggc	aag	576
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Ser	Ala	Met	Thr	Gly	Lys	
			180					185					190			
ctg	aac	gac	aag	cag	aag	gaa	gcg	atc	atg	gga	gcg	att	ccg	atg	aag	624
Leu	Asn	Asp	Lys	Gln	Lys	Glu	Ala	Ile	Met	Gly	Ala	Ile	Pro	Met	Lys	
			195				200					205				
cgc	atg	ggc	aca	ggc	ggc	gag	gtc	gct	tcg	gcg	gtc	gct	tac	ctt	gcg	672
Arg	Met	Gly	Thr	Gly	Gly	Glu	Val	Ala	Ser	Ala	Val	Ala	Tyr	Leu	Ala	
			210			215					220					
tcc	tcc	gag	gct	gct	tat	atg	acg	ggc	cag	acg	ctg	cac	gta	aac	ggc	720
Ser	Ser	Glu	Ala	Ala	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Val	Asn	Gly	
225					230				235						240	
ggc	atg	gcg	atg	atc	tga											738
Gly	Met	Ala	Met	Ile												
				245												

&lt;210&gt; 1950

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Rhizobium leguminosarum

&lt;400&gt; 1950

Met	Leu	Asp	Leu	Ser	Gly	Arg	Lys	Ala	Leu	Val	Thr	Gly	Ala	Ser	Gly	
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Gly	Ile	Gly	Glu	Glu	Ile	Ala	Arg	Leu	Leu	His	Arg	Gln	Gly	Ala	Ile	
			20					25					30			
Val	Gly	Leu	His	Gly	Thr	Arg	Val	Glu	Lys	Leu	Glu	Ala	Leu	Ala	Ala	
			35				40					45				
Asp	Leu	Gly	Glu	Arg	Val	Lys	Ile	Phe	Pro	Ala	Asn	Leu	Ser	Asp	Arg	
			50			55					60					
Asp	Glu	Val	Lys	Ala	Leu	Gly	Gln	Lys	Ala	Glu	Ala	Asp	Leu	Glu	Gly	
65				70					75					80		
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Phe	
				85				90						95		
Val	Arg	Met	Ser	Asp	Glu	Asp	Trp	Asp	Ser	Val	Ile	Glu	Val	Asn	Leu	
			100					105					110			
Thr	Ala	Thr	Phe	Arg	Leu	Thr	Arg	Glu	Leu	Thr	His	Pro	Met	Met	Arg	
			115				120					125				
Arg	Arg	Tyr	Gly	Arg	Ile	Ile	Asn	Ile	Thr	Ser	Val	Val	Gly	Val	Thr	
			130			135					140					
Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Met	Ile	
145				150					155						160	
Gly	Phe	Thr	Lys	Ser	Leu	Ala	Gln	Glu	Ile	Ala	Thr	Arg	Asn	Val	Thr	
				165				170						175		
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Ser	Ala	Met	Thr	Gly	Lys	
			180					185					190			
Leu	Asn	Asp	Lys	Gln	Lys	Glu	Ala	Ile	Met	Gly	Ala	Ile	Pro	Met	Lys	
			195				200					205				
Arg	Met	Gly	Thr	Gly	Gly	Glu	Val	Ala	Ser	Ala	Val	Ala	Tyr	Leu	Ala	
			210			215					220					
Ser	Ser	Glu	Ala	Ala	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Val	Asn	Gly	

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<220>
<221> CDS
<222> (1)..(774)
<223> transl_table=11
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<210>	1952
<211>	257

&lt;212&gt; PRT

&lt;213&gt; Streptomyces virginiae

&lt;400&gt; 1952

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1      5      10      15
Gly Ala Ser Ser Gly Ile Gly Ala Ala Gln Arg Gly Leu Phe Ala Arg
20      25      30
Glu Gly Ala Ala Val Val Val Thr Ala Arg Arg Glu Glu Arg Leu Ala
35      40      45
Gly Leu Val Asp Glu Leu Arg Ala Gln Gly Ala Arg Ala Ala Tyr Val
50      55      60
Val Ala Asp Val Thr Arg Ser Glu Asp Ala Val Arg Ala Val Glu Phe
65      70      75      80
Thr Val Glu Arg Phe Gly Arg Leu Asp Ala Ala Phe Asn Lys Arg Arg
85      90      95
His Gly Ala Gly Arg Thr Pro Leu His Leu Met Asp Asp Pro Val Tyr
100     105
Asp Asp Ile Met Asp Thr Asn Val Arg Gly Val Phe Asn Cys Leu Arg
115     120     125
Pro Glu Ile Ala Ala Met Leu Ala Ser Gly Ala Gly Gly Ser Ile Val
130     135     140
Asn Thr Ser Ser Thr Gly Gly Leu Val Ala Thr Pro Val Ala Ala Pro
145     150     155     160
Tyr Val Val Ser Lys His Ala Val Leu Gly Leu Thr Lys Gly Pro Ala
165     170     175
Ala Glu Tyr Gly Ala His Gly Ile Arg Val Asn Ala Ile Ala Pro Gly
180     185     190
Thr Thr Arg Ser Glu Met Val Ala Asp Trp Phe Ala Gln Asn Pro Asp
195     200     205
Ala Glu Glu Leu Leu His Arg Ala Thr Pro Gln Pro Arg Thr Ala Glu
210     215     220
Pro Gln Glu Ile Ala Glu Ala Ala Ala Trp Leu Cys Ser Glu Arg Ala
225     230     235     240
Ser Phe Val Thr Gly Ser Thr Leu Val Val Asp Gly Gly Phe Thr Ile
245     250     255
Leu

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&lt;210&gt; 1953

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus erythropolis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1953

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atg aca cag ggt tca gtt cgt tcg ctc gaa ggt cgc gtt gct ttc atc      48
Met Thr Gln Gly Ser Val Arg Ser Leu Glu Gly Arg Val Ala Phe Ile
1      5      10      15
acc ggc gca gcg cgc ggt caa gga cgt gcg cac gcg gtc aag atg gcg      96
Thr Gly Ala Ala Arg Gly Gln Gly Arg Ala His Ala Val Lys Met Ala
20      25      30
cgc gag gga gca gcg atc atc gca gtc gac gtg tgc gcg tcg gtg gcg      144
Arg Glu Gly Ala Ala Ile Ile Ala Val Asp Val Cys Ala Ser Val Ala
35      40      45
tcg gac aat tct tac gac gca gca act tcc gag gac ttt gcc gag acg      192
Ser Asp Asn Ser Tyr Asp Ala Ala Thr Ser Glu Asp Phe Ala Glu Thr
50      55      60
ata cgt ctg gtc gaa gcg gag ggt ggg aag atc ctc gcc cgc gag gta      240
Ile Arg Leu Val Glu Ala Glu Gly Gly Lys Ile Leu Ala Arg Glu Val
65      70      75      80
gat gtc cgt gac ggc gca cgg ctc acc gcg gtg gtc aag gac ggt gtc      288
Asp Val Arg Asp Gly Ala Arg Leu Thr Ala Val Val Lys Asp Gly Val
85      90      95
gag cag ttc gga cgc ctt gac atc gtg gtc gcc aat gcc ggg gtc tgt      336

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## PhoenixTemp32470.tmp.txt

Glu	Gln	Phe	Gly	Arg	Leu	Asp	Ile	Val	Val	Ala	Asn	Ala	Gly	Val	Cys	
aac	tgg	aat	cga	ttc	tgg	gaa	atg	tcg	gac	gag	cag	tgg	gaa	acc	ctg	384
Asn	Trp	Asn	Arg	Phe	Trp	Glu	Met	Ser	Asp	Glu	Gln	Trp	Glu	Thr	Leu	
		115					120					125				
atc	gac	atc	aac	ctg	acc	gga	gtc	tgg	aaa	acc	ctc	aag	gca	tcg	gtg	432
Ile	Asp	Ile	Asn	Leu	Thr	Gly	Val	Trp	Lys	Thr	Leu	Lys	Ala	Ser	Val	
		130					135					140				
ccg	gcg	atc	atc	gaa	ggt	ggg	cgc	ggt	gga	tcg	atc	atc	gtg	gtc	agt	480
Pro	Ala	Ile	Ile	Glu	Gly	Gly	Arg	Gly	Gly	Ser	Ile	Ile	Val	Val	Ser	
145					150					155					160	
tcg	gtg	gcc	gga	ctc	aag	gcg	ctg	ccc	gga	cag	gcg	cac	tac	gcg	agc	528
Ser	Val	Ala	Gly	Leu	Lys	Ala	Leu	Pro	Gly	Gln	Ala	His	Tyr	Ala	Ser	
				165					170					175		
gcc	aag	ttc	ggt	ctc	gtc	ggt	ctg	acg	cag	gcc	gcg	gca	aag	gaa	ctg	576
Ala	Lys	Phe	Gly	Leu	Val	Gly	Leu	Thr	Gln	Ala	Ala	Ala	Lys	Glu	Leu	
			180					185					190			
ggg	gag	tac	aag	atc	agg	gtc	aac	tcg	atc	cac	cct	tac	gga	gta	aat	624
Gly	Glu	Tyr	Lys	Ile	Arg	Val	Asn	Ser	Ile	His	Pro	Tyr	Gly	Val	Asn	
		195					200					205				
acg	ccg	atg	ggg	gtc	gac	cag	ggc	gcg	ctc	gag	gta	ttt	gca	aag	ttt	672
Thr	Pro	Met	Gly	Val	Asp	Gln	Gly	Ala	Leu	Glu	Val	Phe	Ala	Lys	Phe	
		210					215				220					
ccg	cag	tac	ctt	ccc	aac	ttc	act	ccg	atc	ctc	tcg	gac	atc	gcg	ttc	720
Pro	Gln	Tyr	Leu	Pro	Asn	Phe	Thr	Pro	Ile	Leu	Ser	Asp	Ile	Ala	Phe	
225					230					235					240	
gcc	gaa	ccc	gac	gag	atc	gcc	gat	acc	gtt	ctg	tgg	ctc	gcg	ggt	gac	768
Ala	Glu	Pro	Asp	Glu	Ile	Ala	Asp	Thr	Val	Leu	Trp	Leu	Ala	Gly	Asp	
				245					250					255		
ggt	tca	cg	acc	gtc	acg	gca	agt	cat	atc	gct	ctc	gat	cag	gga	aac	816
Gly	Ser	Arg	Thr	Val	Thr	Ala	Ser	His	Ile	Ala	Leu	Asp	Gln	Gly	Asn	
			260					265					270			
tcc	aag	gtc	tga													828
Ser	Lys	Val														
		275														

&lt;210&gt; 1954

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus erythropolis

&lt;400&gt; 1954

Met	Thr	Gln	Gly	Ser	Val	Arg	Ser	Leu	Glu	Gly	Arg	Val	Ala	Phe	Ile	
1				5					10					15		
Thr	Gly	Ala	Ala	Arg	Gly	Gln	Gly	Arg	Ala	His	Ala	Val	Lys	Met	Ala	
			20					25					30			
Arg	Glu	Gly	Ala	Ala	Ile	Ile	Ala	Val	Asp	Val	Cys	Ala	Ser	Val	Ala	
		35					40					45				
Ser	Asp	Asn	Ser	Tyr	Asp	Ala	Ala	Thr	Ser	Glu	Asp	Phe	Ala	Glu	Thr	
		50				55				60						
Ile	Arg	Leu	Val	Glu	Ala	Glu	Gly	Gly	Lys	Ile	Leu	Ala	Arg	Glu	Val	
65					70					75				80		
Asp	Val	Arg	Asp	Gly	Ala	Arg	Leu	Thr	Ala	Val	Val	Lys	Asp	Gly	Val	
				85					90					95		
Glu	Gln	Phe	Gly	Arg	Leu	Asp	Ile	Val	Val	Ala	Asn	Ala	Gly	Val	Cys	
			100					105					110			
Asn	Trp	Asn	Arg	Phe	Trp	Glu	Met	Ser	Asp	Glu	Gln	Trp	Glu	Thr	Leu	
		115					120					125				
Ile	Asp	Ile	Asn	Leu	Thr	Gly	Val	Trp	Lys	Thr	Leu	Lys	Ala	Ser	Val	
		130				135					140					
Pro	Ala	Ile	Ile	Glu	Gly	Gly	Arg	Gly	Gly	Ser	Ile	Ile	Val	Val	Ser	
145					150					155					160	
Ser	Val	Ala	Gly	Leu	Lys	Ala	Leu	Pro	Gly	Gln	Ala	His	Tyr	Ala	Ser	
				165					170					175		
Ala	Lys	Phe	Gly	Leu	Val	Gly	Leu	Thr	Gln	Ala	Ala	Ala	Lys	Glu	Leu	
			180					185					190			
Gly	Glu	Tyr	Lys	Ile	Arg	Val	Asn	Ser	Ile	His	Pro	Tyr	Gly	Val	Asn	
		195					200					205				
Thr	Pro	Met	Gly	Val	Asp	Gln	Gly	Ala	Leu	Glu	Val	Phe	Ala	Lys	Phe	

## PhoenixTemp32470.tmp.txt

210 215 220  
 Pro Gln Tyr Leu Pro Asn Phe Thr Pro Ile Leu Ser Asp Ile Ala Phe  
 225 230 235 240  
 Ala Glu Pro Asp Glu Ile Ala Asp Thr Val Leu Trp Leu Ala Gly Asp  
 245 250 255  
 Gly Ser Arg Thr Val Thr Ala Ser His Ile Ala Leu Asp Gln Gly Asn  
 260 265 270  
 Ser Lys Val  
 275

&lt;210&gt; 1955

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 1955

atg	tta	att	gtt	agc	ttt	ctg	tcg	ggg	tat	gaa	gat	ggg	att	ggg	agg	48
Met	Leu	Ile	Val	Ser	Phe	Leu	Ser	Gly	Tyr	Glu	Asp	Gly	Ile	Gly	Arg	
1				5				10					15			
aag	cta	gaa	ggg	aaa	gta	gca	ctc	atc	act	gga	gga	gca	agt	ggg	att	96
Lys	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	
			20					25					30			
ggc	aaa	gca	aca	gcc	gga	aaa	ttc	atc	agt	cat	gga	gcc	aaa	gtt	atc	144
Gly	Lys	Ala	Thr	Ala	Gly	Lys	Phe	Ile	Ser	His	Gly	Ala	Lys	Val	Ile	
		35					40					45				
att	gcc	gat	atc	caa	ccg	cag	att	ggg	cga	gaa	acc	gag	caa	gaa	ctc	192
Ile	Ala	Asp	Ile	Gln	Pro	Gln	Ile	Gly	Arg	Glu	Thr	Glu	Gln	Glu	Leu	
	50					55					60					
ggg	ccc	agt	tgt	gct	tac	ttc	cca	tgc	gat	gtg	acc	aaa	gaa	tca	gac	240
Gly	Pro	Ser	Cys	Ala	Tyr	Phe	Pro	Cys	Asp	Val	Thr	Lys	Glu	Ser	Asp	
65				70					75						80	
att	gct	aac	gca	gtt	gac	ttc	gct	gtc	tcg	ctc	cat	aca	aag	ctc	gac	288
Ile	Ala	Asn	Ala	Val	Asp	Phe	Ala	Val	Ser	Leu	His	Thr	Lys	Leu	Asp	
				85					90					95		
att	atg	tac	aac	aat	gct	ggg	att	ccc	tgc	aaa	acg	cct	cct	agt	atc	336
Ile	Met	Tyr	Asn	Asn	Ala	Gly	Ile	Pro	Cys	Lys	Thr	Pro	Pro	Ser	Ile	
			100					105				110				
gtt	gat	ctt	gat	ctc	aat	gtt	ttc	gac	aag	gta	atc	aac	aca	aat	gtc	384
Val	Asp	Leu	Asp	Leu	Asn	Val	Phe	Asp	Lys	Val	Ile	Asn	Thr	Asn	Val	
		115					120					125				
cgt	gga	gtc	atg	gca	gga	atc	aaa	cat	gct	gct	cgt	gtg	atg	atc	ccg	432
Arg	Gly	Val	Met	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	
	130					135					140					
cgt	aac	tct	gga	tcc	atc	att	tgt	gca	ggg	agt	gtc	acg	ggg	atg	atg	480
Arg	Asn	Ser	Gly	Ser	Ile	Ile	Cys	Ala	Gly	Ser	Val	Thr	Gly	Met	Met	
145				150					155					160		
ggc	ggg	tta	gcc	caa	cat	act	tac	agc	gtc	tca	aaa	tcc	gct	gtt	atc	528
Gly	Gly	Leu	Ala	Gln	His	Thr	Tyr	Ser	Val	Ser	Lys	Ser	Ala	Val	Ile	
				165					170					175		
gga	att	gta	aga	tca	aca	gct	tca	gaa	cta	tgc	aag	cac	agg	atc	cgg	576
Gly	Ile	Val	Arg	Ser	Thr	Ala	Ser	Glu	Leu	Cys	Lys	His	Arg	Ile	Arg	
		180						185					190			
gtc	aac	tgc	att	tct	cct	ttt	gcg	atc	aca	aca	tca	ttc	gtg	atg	gat	624
Val	Asn	Cys	Ile	Ser	Pro	Phe	Ala	Ile	Thr	Thr	Ser	Phe	Val	Met	Asp	
		195					200					205				
gag	atg	cga	cag	att	tac	ccc	ggg	gtt	gat	gac	tca	agg	ctg	atc	cag	672
Glu	Met	Arg	Gln	Ile	Tyr	Pro	Gly	Val	Asp	Asp	Ser	Arg	Leu	Ile	Gln	
	210					215					220					
ata	gtg	cag	agt	aca	gga	gtg	tta	aat	gga	gag	gtt	tgt	gaa	cca	acc	720
Ile	Val	Gln	Ser	Thr	Gly	Val	Leu	Asn	Gly	Glu	Val	Cys	Glu	Pro	Thr	
225					230					235					240	
gat	gta	gct	aat	gca	gcg	gtg	tat	ctc	gct	tcc	gat	gat	tca	aag	tat	768
Asp	Val	Ala	Asn	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Asp	Ser	Lys	Tyr	
				245					250					255		
gta	aat	ggg	cat	aat	ctg	gtg	gta	gat	gga	gga	ttc	aca	act	gta	aag	816



Val Asn Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Thr Val Lys  
 260 265 270  
 acg tta gat ttc cct gca cct gac caa gtg aag taa  
 Thr Leu Asp Phe Pro Ala Pro Asp Gln Val Lys  
 275 280

852

<210> 1956  
 <211> 283  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 1956  
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 Lys Leu Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile  
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 Gly Lys Ala Thr Ala Gly Lys Phe Ile Ser His Gly Ala Lys Val Ile  
 35 40 45  
 Ile Ala Asp Ile Gln Pro Gln Ile Gly Arg Glu Thr Glu Gln Glu Leu  
 50 55 60  
 Gly Pro Ser Cys Ala Tyr Phe Pro Cys Asp Val Thr Lys Glu Ser Asp  
 65 70 75 80  
 Ile Ala Asn Ala Val Asp Phe Ala Val Ser Leu His Thr Lys Leu Asp  
 85 90 95  
 Ile Met Tyr Asn Asn Ala Gly Ile Pro Cys Lys Thr Pro Pro Ser Ile  
 100 105 110  
 Val Asp Leu Asp Leu Asn Val Phe Asp Lys Val Ile Asn Thr Asn Val  
 115 120 125  
 Arg Gly Val Met Ala Gly Ile Lys His Ala Ala Arg Val Met Ile Pro  
 130 135 140  
 Arg Asn Ser Gly Ser Ile Ile Cys Ala Gly Ser Val Thr Gly Met Met  
 145 150 155 160  
 Gly Gly Leu Ala Gln His Thr Tyr Ser Val Ser Lys Ser Ala Val Ile  
 165 170 175  
 Gly Ile Val Arg Ser Thr Ala Ser Glu Leu Cys Lys His Arg Ile Arg  
 180 185 190  
 Val Asn Cys Ile Ser Pro Phe Ala Ile Thr Thr Ser Phe Val Met Asp  
 195 200 205  
 Glu Met Arg Gln Ile Tyr Pro Gly Val Asp Asp Ser Arg Leu Ile Gln  
 210 215 220  
 Ile Val Gln Ser Thr Gly Val Leu Asn Gly Glu Val Cys Glu Pro Thr  
 225 230 235 240  
 Asp Val Ala Asn Ala Ala Val Tyr Leu Ala Ser Asp Asp Ser Lys Tyr  
 245 250 255  
 Val Asn Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Thr Val Lys  
 260 265 270  
 Thr Leu Asp Phe Pro Ala Pro Asp Gln Val Lys  
 275 280

<210> 1957  
 <211> 858  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(858)

<400> 1957  
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 agg ctt ttg ggt aaa gtg gca ttg atc act gga gga gcc aca ggg ata  
 Arg Leu Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile  
 20 25 30  
 ggt gag agc att gtt cgt ctg ttc cac aag cac ggt gcc aaa gtc tgc  
 Gly Glu Ser Ile Val Arg Leu Phe His Lys His Gly Ala Lys Val Cys  
 35 40 45  
 att gtt gat ctg caa gat gat ctc gga ggt gag gtg tgt aaa agt ctg  
 1258

48

96

144

192

## PhoenixTemp32470.tmp.txt

Ile	Val	Asp	Leu	Gln	Asp	Asp	Leu	Gly	Gly	Glu	Val	Cys	Lys	Ser	Leu		
50						55					60						
ctt	cgt	ggt	gag	tcc	aag	gag	acg	gct	ttt	ttc	atc	cat	ggc	gat	ggt	240	
Leu	Arg	Gly	Glu	Ser	Lys	Glu	Thr	Ala	Phe	Phe	Ile	His	Gly	Asp	Val		
65					70					75					80		
aga	gtg	gaa	gat	gac	att	agc	aat	gcg	ggt	gac	ttt	gca	gtc	aaa	aat	288	
Arg	Val	Glu	Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Asn		
				85					90					95			
ttt	ggg	acg	ctt	gat	ata	ctt	atc	aac	aat	gca	gga	tta	tgt	gga	gca	336	
Phe	Gly	Thr	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Leu	Cys	Gly	Ala		
			100					105					110				
ccg	tgc	cct	gat	att	cgt	aat	tat	agt	ttg	agt	gag	ttc	gag	atg	acc	384	
Pro	Cys	Pro	Asp	Ile	Arg	Asn	Tyr	Ser	Leu	Ser	Glu	Phe	Glu	Met	Thr		
		115					120					125					
ttt	gat	gtg	aat	gtg	aaa	gga	gct	ttt	cta	agc	atg	aaa	cat	gca	gct	432	
Phe	Asp	Val	Asn	Val	Lys	Gly	Ala	Phe	Leu	Ser	Met	Lys	His	Ala	Ala		
						135					140						
cgt	gta	atg	ata	ccg	gag	aag	aaa	ggg	tcg	ata	ggt	tcc	tta	tgt	agt	480	
Arg	Val	Met	Ile	Pro	Glu	Lys	Lys	Gly	Ser	Ile	Val	Ser	Leu	Cys	Ser		
					150					155					160		
gtg	gga	ggt	ggt	gtg	gga	ggc	ggt	ggt	cca	cat	tct	tat	ggt	ggg	tcc	528	
Val	Gly	Gly	Val	Val	Gly	Gly	Val	Gly	Pro	His	Ser	Tyr	Val	Gly	Ser		
				165					170					175			
aag	cat	gct	ggt	cta	ggc	ttg	act	agg	agt	ggt	gca	gcg	gag	ctt	gga	576	
Lys	His	Ala	Val	Leu	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Glu	Leu	Gly		
				180				185					190				
cag	cac	ggg	ata	cgt	gtg	aac	tgt	ggt	tcg	cct	tac	gcg	ggt	gca	act	624	
Gln	His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr		
							200					205					
aaa	ctc	gct	ttg	gct	cat	ttg	ccg	gag	gaa	gaa	aga	acg	gag	gat	gca	672	
Lys	Leu	Ala	Leu	Ala	His	Leu	Pro	Glu	Glu	Glu	Arg	Thr	Glu	Asp	Ala		
						215					220						
ttt	ggt	ggt	ttc	agg	aat	ttt	gct	gct	gca	aac	gcg	aat	cta	aaa	ggg	720	
Phe	Val	Gly	Phe	Arg	Asn	Phe	Ala	Ala	Ala	Asn	Ala	Asn	Leu	Lys	Gly		
					230					235					240		
gtg	gaa	ctg	acg	ggt	gat	gat	gta	gcg	aac	gct	ggt	ctg	ttt	ttg	gct	768	
Val	Glu	Leu	Thr	Val	Asp	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala		
				245					250					255			
agc	gat	gac	tcg	cgg	tac	ata	agc	gga	gat	aat	ttg	atg	att	gat	gga	816	
Ser	Asp	Asp	Ser	Arg	Tyr	Ile	Ser	Gly	Asp	Asn	Leu	Met	Ile	Asp	Gly		
				260				265					270				
gga	ttc	act	tgc	act	aac	cac	tcc	ttt	aaa	gtc	ttc	aga	tga			858	
Gly	Phe	Thr	Cys	Thr	Asn	His	Ser	Phe	Lys	Val	Phe	Arg					
		275					280					285					

&lt;210&gt; 1958

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 1958

Met	Ser	Thr	Asn	Thr	Glu	Ser	Ser	Ser	Tyr	Ser	Ser	Leu	Pro	Ser	Gln		
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Arg	Leu	Leu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Thr	Gly	Ile		
			20					25					30				
Gly	Glu	Ser	Ile	Val	Arg	Leu	Phe	His	Lys	His	Gly	Ala	Lys	Val	Cys		
		35					40					45					
Ile	Val	Asp	Leu	Gln	Asp	Asp	Leu	Gly	Gly	Glu	Val	Cys	Lys	Ser	Leu		
		50				55					60						
Leu	Arg	Gly	Glu	Ser	Lys	Glu	Thr	Ala	Phe	Phe	Ile	His	Gly	Asp	Val		
					70					75					80		
Arg	Val	Glu	Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Asn		
				85					90					95			
Phe	Gly	Thr	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Leu	Cys	Gly	Ala		
			100					105					110				
Pro	Cys	Pro	Asp	Ile	Arg	Asn	Tyr	Ser	Leu	Ser	Glu	Phe	Glu	Met	Thr		
		115					120					125					
Phe	Asp	Val	Asn	Val	Lys	Gly	Ala	Phe	Leu	Ser	Met	Lys	His	Ala	Ala		
		130				135					140						

PhoenixTemp32470.tmp.txt

Arg 145	Val	Met	Ile	Pro	Glu 150	Lys	Lys	Gly	Ser	Ile 155	Val	Ser	Leu	Cys	Ser 160
Val	Gly	Gly	Val	Val 165	Gly	Gly	Val	Gly	Pro 170	His	Ser	Tyr	Val	Gly 175	Ser
Lys	His	Ala	Val 180	Leu	Gly	Leu	Thr	Arg 185	Ser	Val	Ala	Ala	Glu 190	Leu	Gly
Gln	His	Gly 195	Ile	Arg	Val	Asn	Cys 200	Val	Ser	Pro	Tyr	Ala 205	Val	Ala	Thr
Lys	Leu 210	Ala	Leu	Ala	His	Leu 215	Pro	Glu	Glu	Glu	Arg 220	Thr	Glu	Asp	Ala
Phe 225	Val	Gly	Phe	Arg	Asn 230	Phe	Ala	Ala	Ala	Asn 235	Ala	Asn	Leu	Lys	Gly 240
Val	Glu	Leu	Thr	Val 245	Asp	Asp	Val	Ala	Asn 250	Ala	Val	Leu	Phe	Leu 255	Ala
Ser	Asp	Asp	Ser 260	Arg	Tyr	Ile	Ser	Gly 265	Asp	Asn	Leu	Met	Ile 270	Asp	Gly
Gly	Phe	Thr 275	Cys	Thr	Asn	His	Ser 280	Phe	Lys	Val	Phe	Arg 285			

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<210> 1959
<211> 768
<212> DNA
<213> Bacillus subtilis
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<220>
<221> CDS
<222> (7)..(768)
<223> transl_table=11
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<400>	atg	aac	ctc	acc	gat	aaa	acc	gtc	ctc	atc	aca	gga	ggc	gca	
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	1				5					10					
tca	ggt	att	ggt	tat	gct	ggt	cag	gct	ttt	ttg	ggc	cag	cag	gcc	96
Ser	Gly	Ile	Gly	Tyr	Ala	Ala	Val	Gln	Ala	Phe	Leu	Gly	Gln	Ala	
15					20				25					30	
aat	gtg	ggt	gtg	gcg	gat	att	gat	gaa	gcg	caa	gga	gaa	gca	atg	gta
Asn	Val	Val	Val	Ala	Asp	Ile	Asp	Glu	Ala	Gln	Gly	Glu	Ala	Met	Val
				35					40					45	
cga	aaa	gaa	aat	aat	gac	agg	ctg	cac	ttt	gtg	caa	acg	gac	atc	aca
Arg	Lys	Glu	Asn	Asn	Asp	Arg	Leu	His	Phe	Val	Gln	Thr	Asp	Ile	Thr
			50					55					60		
gac	gaa	gct	gcc	tgc	cag	cac	gca	ggt	gaa	tcg	gcg	ggt	cat	aca	ttt
Asp	Glu	Ala	Ala	Cys	Gln	His	Ala	Val	Glu	Ser	Ala	Val	His	Thr	Phe
		65					70					75			
ggc	ggg	ctc	gat	gtc	ttg	att	aat	aat	gca	ggc	atc	gaa	atc	gtg	gcg
Gly	Gly	Leu	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	Ile	Glu	Ile	Val	Ala
	80					85					90				
cct	att	cac	gag	atg	gag	ctc	agc	gat	tgg	aac	aag	gtg	ctg	caa	gtc
Pro	Ile	His	Glu	Met	Glu	Leu	Ser	Asp	Trp	Asn	Lys	Val	Leu	Gln	Val
95					100					105					110
aat	ttg	acc	ggc	atg	ttt	tta	atg	agc	aaa	cat	gca	ctc	aag	cat	atg
Asn	Leu	Thr	Gly	Met	Phe	Leu	Met	Ser	Lys	His	Ala	Leu	Lys	His	Met
				115					120					125	
ctg	gcc	gcc	ggc	aag	ggc	aac	atc	att	aat	acg	tgc	tct	gtc	ggc	gga
Leu	Ala	Ala	Gly	Lys	Gly	Asn	Ile	Ile	Asn	Thr	Cys	Ser	Val	Gly	Gly
			130				135						140		
ctc	gtg	gca	tgg	cct	gat	att	cct	gct	tat	aac	gcc	agc	aaa	ggc	ggg
Leu	Val	Ala	Trp	Pro	Asp	Ile	Pro	Ala	Tyr	Asn	Ala	Ser	Lys	Gly	Gly
		145					150					155			
gtt	ttg	cag	ctg	act	aaa	tca	atg	gcc	gtt	gat	tat	gcg	aaa	cat	caa
Val	Leu	Gln	Leu	Thr	Lys	Ser	Met	Ala	Val	Asp	Tyr	Ala	Lys	His	Gln
	160					165					170				
att	cgg	gtg	aac	tgc	gta	tgc	ccg	ggg	atc	atc	gac	aca	ccg	ctg	aat
Ile	Arg	Val	Asn	Cys	Val	Cys	Pro	Gly	Ile	Ile	Asp	Thr	Pro	Leu	Asn
175					180				185					190	
gaa	aaa	tca	ttc	ctt	gaa	aat	aat	gaa	ggc	aca	ctt	gaa	gag	att	aaa
Glu	Lys	Ser	Phe	Leu	Glu	Asn	Asn	Glu	Gly	Thr	Leu	Glu	Glu	Ile	Lys
				195					200					205	

## PhoenixTemp32470.tmp.txt

aaa gaa aaa gcg aag gta aat ccg ctg ctg agg ctt ggg aaa cct gaa	672
Lys Glu Lys Ala Lys Val Asn Pro Leu Leu Arg Leu Gly Lys Pro Glu	
210 215 220	
gaa atc gca aat gtg atg ctg ttt tta gcc tcg gat tta tca agc tat	720
Glu Ile Ala Asn Val Met Leu Phe Leu Ala Ser Asp Leu Ser Ser Tyr	
225 230 235	
atg acc gga agc gcc atc acc gca gac gga gga tac acc gca caa	765
Met Thr Gly Ser Ala Ile Thr Ala Asp Gly Gly Tyr Thr Ala Gln	
240 245 250	
tag	768

<210> 1960  
 <211> 253  
 <212> PRT  
 <213> Bacillus subtilis

<400> 1960

Met Asn Leu Thr Asp Lys Thr Val Leu Ile Thr Gly Gly Ala Ser Gly	
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Ile Gly Tyr Ala Ala Val Gln Ala Phe Leu Gly Gln Gln Ala Asn Val	
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Val Val Ala Asp Ile Asp Glu Ala Gln Gly Glu Ala Met Val Arg Lys	
35 40 45	
Glu Asn Asn Asp Arg Leu His Phe Val Gln Thr Asp Ile Thr Asp Glu	
50 55 60	
Ala Ala Cys Gln His Ala Val Glu Ser Ala Val His Thr Phe Gly Gly	
65 70 75 80	
Leu Asp Val Leu Ile Asn Asn Ala Gly Ile Glu Ile Val Ala Pro Ile	
85 90 95	
His Glu Met Glu Leu Ser Asp Trp Asn Lys Val Leu Gln Val Asn Leu	
100 105 110	
Thr Gly Met Phe Leu Met Ser Lys His Ala Leu Lys His Met Leu Ala	
115 120 125	
Ala Gly Lys Gly Asn Ile Ile Asn Thr Cys Ser Val Gly Gly Leu Val	
130 135 140	
Ala Trp Pro Asp Ile Pro Ala Tyr Asn Ala Ser Lys Gly Gly Val Leu	
145 150 155 160	
Gln Leu Thr Lys Ser Met Ala Val Asp Tyr Ala Lys His Gln Ile Arg	
165 170 175	
Val Asn Cys Val Cys Pro Gly Ile Ile Asp Thr Pro Leu Asn Glu Lys	
180 185 190	
Ser Phe Leu Glu Asn Asn Glu Gly Thr Leu Glu Glu Ile Lys Lys Glu	
195 200 205	
Lys Ala Lys Val Asn Pro Leu Leu Arg Leu Gly Lys Pro Glu Glu Ile	
210 215 220	
Ala Asn Val Met Leu Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr	
225 230 235 240	
Gly Ser Ala Ile Thr Ala Asp Gly Gly Tyr Thr Ala Gln	
245 250	

<210> 1961  
 <211> 777  
 <212> DNA  
 <213> Rhizobium meliloti

<220>  
 <221> CDS  
 <222> (1)..(777)  
 <223> transl\_table=11

atg acc aag act gcg gtg ata acg ggt tcc acg agc ggc atc gga ttg	48
Met Thr Lys Thr Ala Val Ile Thr Gly Ser Thr Ser Gly Ile Gly Leu	
1 5 10 15	
gcg atc gcc cgg acc ctg gcg aag gcc ggt gcc aat atc gtc ctg aac	96
Ala Ile Ala Arg Thr Leu Ala Lys Ala Gly Ala Asn Ile Val Leu Asn	
20 25 30	

## PhoenixTemp32470.tmp.txt

```

ggc ttc ggt gcg ccg gac gag atc agg acc gtc acg gat gaa gtc gca 144
Gly Phe Gly 35 Ala Pro Asp Glu Ile Arg Thr Val Thr Asp 45 Glu Val Ala
ggc ctg agc tcc ggt acg gtg ctt cat cac ccg gcc gac atg acc aag 192
Gly Leu Ser Ser Gly Thr Val 55 Leu His His Pro Ala Asp Met Thr Lys
50
ccc tcc gaa atc gcc gac atg atg gcg atg gtt gcc gat cgc ttc ggc 240
Pro Ser Glu Ile Ala Asp Met Met Ala Met Val 75 Ala Asp Arg Phe Gly
65
ggc gcc gat atc ctc gtc aac aat gcc ggc gtg cag ttc gtt gaa aag 288
Gly Ala Asp Ile Leu Val Asn Asn Ala Gly Val Gln Phe Val Glu Lys
85
atc gag gat ttt ccg gtc gag caa tgg gag ccg atc atc gcc gtc aat 336
Ile Glu Asp Phe 100 Pro Val Glu Gln Trp 105 Asp Arg Ile Ile Ala Val Asn
110
ctc tcc tcc tcc ttt cac acc att cgt ggc gcc att ccg ccg atg aag 384
Leu Ser Ser Ser Phe His Thr Ile Arg Gly Ala Ile Pro Pro Met Lys
115
aag aag ggc tgg ggc ccg atc atc aat atc gcg tcc gct cat ggc ctc 432
Lys Lys 130 Gly Trp Gly Arg Ile 135 Ile Asn Ile Ala Ser 140 Ala His Gly Leu
145
gtg gcc tcc ccc ttc aag tcc gcc tat gtc gcc gcc aag cat ggt atc 480
Val Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Ala Lys His Gly Ile
160
atg ggg ttg acg aag act gtg gcg ctg gag gtg gcg gag agc ggt gtc 528
Met Gly Leu Thr Lys 165 Thr Val Ala Leu Glu Val Ala Glu Ser Gly Val
175
acc gtg aac tcg atc tgc ccc ggc tac gtt ctg acg ccg ctc gtc gaa 576
Thr Val Asn Ser 180 Ile Cys Pro Gly Tyr 185 Val Leu Thr Pro Leu Val Glu
190
aag cag ata ccg gat cag gcg aga acg cgc ggc atc acc gag gaa cag 624
Lys Gln Ile Pro Asp Gln Ala Arg Thr Arg Gly Ile Thr 205 Glu Glu Gln
195
gtg atc aac gag gtg atg ctc aag gga cag ccg acg aaa aag ttc atc 672
Val Ile Asn Glu Val Met Leu Lys Gly Gln Pro Thr 220 Lys Lys Phe Ile
210
acc gtc gaa cag gtt gcc tcc ctg gcg ctc tat ctt gca ggc gac gat 720
Thr Val Glu Gln Val Ala Ser Leu Ala Leu Tyr 235 Leu Ala Gly Asp Asp
225
gcc gcc cag atc acc ggc acg cat gtt tcg atg gat ggc ggc tgg acg 768
Ala Ala Gln Ile Thr 245 Gly Thr His Val Ser 250 Met Asp Gly Gly Trp Thr
255
gcg cag tag 777
Ala Gln

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&lt;210&gt; 1962

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Rhizobium meliloti

&lt;400&gt; 1962

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Met Thr Lys Thr Ala Val Ile Thr Gly Ser Thr Ser Gly Ile Gly Leu
1 5 10 15
Ala Ile Ala Arg Thr Leu Ala Lys Ala Gly Ala Asn Ile Val Leu Asn
20 25 30
Gly Phe Gly 35 Ala Pro Asp Glu Ile Arg Thr Val Thr Asp 45 Glu Val Ala
35
Gly Leu Ser Ser Gly Thr Val Leu His His Pro Ala Asp Met Thr Lys
50
Pro Ser Glu Ile Ala Asp Met Met Ala Met Val Ala Asp Arg Phe Gly
65
Gly Ala Asp Ile Leu Val Asn Asn Ala Gly Val Gln Phe Val Glu Lys
80
Ile Glu Asp Phe Pro Val Glu Gln Trp Asp Arg Ile Ile Ala Val Asn
100
Leu Ser Ser Phe His Thr Ile Arg Gly Ala Ile Pro Met Lys
115
Lys Lys Gly Trp Gly Arg Ile Ile Asn Ile Ala Ser 125 His Gly Leu
125

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## PhoenixTemp32470.tmp.txt

130 135 140  
 Val Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Lys His Gly Ile  
 145 150 155 160  
 Met Gly Leu Thr Lys Thr Val Ala Leu Glu Val Ala Glu Ser Gly Val  
 165 170 175  
 Thr Val Asn Ser Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu  
 180 185 190  
 Lys Gln Ile Pro Asp Gln Ala Arg Thr Arg Gly Ile Thr Glu Gln  
 195 200 205  
 Val Ile Asn Glu Val Met Leu Lys Gly Gln Pro Thr Lys Lys Phe Ile  
 210 215 220  
 Thr Val Glu Gln Val Ala Ser Leu Ala Leu Tyr Leu Ala Gly Asp Asp  
 225 230 235 240  
 Ala Ala Gln Ile Thr Gly Thr His Val Ser Met Asp Gly Gly Trp Thr  
 245 250 255  
 Ala Gln

<210> 1963  
 <211> 777  
 <212> DNA  
 <213> Bacillus subtilis

<220>  
 <221> CDS  
 <222> (1)..(777)  
 <223> transl\_table=11

<400> 1963  
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 1 5 10 15  
 aaa gga atc ggg aaa gcc att gcg gaa cgg ttc gga aag gag aaa atg 96  
 Lys Gly Ile Gly Lys Ala Ile Ala Glu Arg Phe Gly Lys Glu Lys Met  
 20 25 30  
 aat gtt gtt gta aat tac cac agc gac ccg tct gga gca gat gaa act 144  
 Asn Val Val Val Asn Tyr His Ser Asp Pro Ser Gly Ala Asp Glu Thr  
 35 40 45  
 ctg gaa atc att aag cag aac gga ggg aaa gcc gtc tca gtt gag gcg 192  
 Leu Glu Ile Ile Lys Gln Asn Gly Gly Lys Ala Val Ser Val Glu Ala  
 50 55 60  
 gac gtg tca aaa gaa gag ggg att cag gcg ctc ttg gac aca gct tta 240  
 Asp Val Ser Lys Glu Glu Gly Ile Gln Ala Leu Leu Asp Thr Ala Leu  
 65 70 75 80  
 gag cat ttc ggc acg ctc gat gtg atg gta aac aac tcc ggt ttt aac 288  
 Glu His Phe Gly Thr Leu Asp Val Met Val Asn Asn Ser Gly Phe Asn  
 85 90 95  
 ggc gtt gag gcg atg ccg cat gag atg agt ctt gaa gat tgg cag aga 336  
 Gly Val Glu Ala Met Pro His Glu Met Ser Leu Glu Asp Trp Gln Arg  
 100 105 110  
 gtg att gat gtc aat gtt acc gga acc ttt ctg gga gcg aaa gca gca 384  
 Val Ile Asp Val Asn Val Thr Gly Thr Phe Leu Gly Ala Lys Ala Ala  
 115 120 125  
 ctt aac cac atg atg aaa aac aat atc aag ggc aat gtg ctg aat atc 432  
 Leu Asn His Met Met Lys Asn Asn Ile Lys Gly Asn Val Leu Asn Ile  
 130 135 140  
 tca agt gtt cat cag cag att ccg cgc cct gta aac gtt cag tat tcc 480  
 Ser Ser Val His Gln Gln Ile Pro Arg Pro Val Asn Val Gln Tyr Ser  
 145 150 155 160  
 aca tcc aaa ggc ggc atc aag atg atg acg gaa acg ctg gcg ctc aat 528  
 Thr Ser Lys Gly Gly Ile Lys Met Met Thr Glu Thr Leu Ala Leu Asn  
 165 170 175  
 tat gcg gat aag gga atc cgc gtc aat gcg ata gcg ccc ggc acc att 576  
 Tyr Ala Asp Lys Gly Ile Arg Val Asn Ala Ile Ala Pro Gly Thr Ile  
 180 185 190  
 gcc aca gaa tca aat gtt gat acg aaa aag gaa gag agc agg caa aaa 624  
 Ala Thr Glu Ser Asn Val Asp Thr Lys Lys Glu Glu Ser Arg Gln Lys  
 195 200 205  
 caa ttg aaa aaa atc ccg atg aaa gcc ttc gga aag cct gaa gaa gtg 672

## PhoenixTemp32470.tmp.txt

Gln	Leu	Lys	Lys	Ile	Pro	Met	Lys	Ala	Phe	Gly	Lys	Pro	Glu	Glu	Val		
210						215					220						
gcg	gca	gca	gca	gct	tgg	ctc	gta	tct	gag	gaa	gca	agc	tat	gtg	acc		720
Ala	Ala	Ala	Ala	Ala	Trp	Leu	Val	Ser	Glu	Glu	Ala	Ser	Tyr	Val	Thr		
225					230					235					240		
ggc	gca	aca	ctt	ttc	gtc	gac	ggc	gga	atg	aca	ctt	tat	cca	tct	cag		768
Gly	Ala	Thr	Leu	Phe	Val	Asp	Gly	Gly	Met	Thr	Leu	Tyr	Pro	Ser	Gln		
				245					250					255			
ctt	gaa	tag															777
Leu	Glu																

<210> 1964  
 <211> 258  
 <212> PRT  
 <213> Bacillus subtilis

<400> 1964

Met	Tyr	Lys	Asp	Leu	Thr	Gly	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ser	Ser		
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Lys	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Glu	Arg	Phe	Gly	Lys	Glu	Lys	Met		
			20					25					30				
Asn	Val	Val	Val	Asn	Tyr	His	Ser	Asp	Pro	Ser	Gly	Ala	Asp	Glu	Thr		
		35					40					45					
Leu	Glu	Ile	Ile	Lys	Gln	Asn	Gly	Gly	Lys	Ala	Val	Ser	Val	Glu	Ala		
	50					55					60						
Asp	Val	Ser	Lys	Glu	Glu	Gly	Ile	Gln	Ala	Leu	Leu	Asp	Thr	Ala	Leu		
65				70					75					80			
Glu	His	Phe	Gly	Thr	Leu	Asp	Val	Met	Val	Asn	Asn	Ser	Gly	Phe	Asn		
				85					90					95			
Gly	Val	Glu	Ala	Met	Pro	His	Glu	Met	Ser	Leu	Glu	Asp	Trp	Gln	Arg		
			100				105						110				
Val	Ile	Asp	Val	Asn	Val	Thr	Gly	Thr	Phe	Leu	Gly	Ala	Lys	Ala	Ala		
		115					120					125					
Leu	Asn	His	Met	Met	Lys	Asn	Asn	Ile	Lys	Gly	Asn	Val	Leu	Asn	Ile		
	130					135					140						
Ser	Ser	Val	His	Gln	Gln	Ile	Pro	Arg	Pro	Val	Asn	Val	Gln	Tyr	Ser		
145				150					155					160			
Thr	Ser	Lys	Gly	Gly	Ile	Lys	Met	Met	Thr	Glu	Thr	Leu	Ala	Leu	Asn		
			165					170						175			
Tyr	Ala	Asp	Lys	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Thr	Ile		
			180					185					190				
Ala	Thr	Glu	Ser	Asn	Val	Asp	Thr	Lys	Lys	Glu	Glu	Ser	Arg	Gln	Lys		
		195					200					205					
Gln	Leu	Lys	Lys	Ile	Pro	Met	Lys	Ala	Phe	Gly	Lys	Pro	Glu	Glu	Val		
	210					215					220						
Ala	Ala	Ala	Ala	Ala	Trp	Leu	Val	Ser	Glu	Glu	Ala	Ser	Tyr	Val	Thr		
225					230					235					240		
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Leu Glu

<210> 1965  
 <211> 786  
 <212> DNA  
 <213> Streptomyces cinnamonensis

<220>  
 <221> CDS  
 <222> (1)..(786)  
 <223> transl\_table=11

<400> 1965

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				5				10						15			
ggc	atc	ggc	ctg	gcc	acc	gcc	cgg	ctg	gcc	gcc	cag	ggc	cac	ctg			96
Gly	Ile	Gly	Leu	Ala	Thr	Ala	Arg	Leu	Leu	Ala	Ala	Gln	Gly	His	Leu		

## PhoenixTemp32470.tmp.txt

[illegible]

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<210> 1966
<211> 261
<212> PRT
<213> Streptomyces cinnamonensis
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			20					25					30			
Val	Phe	Leu	Gly	Ala	Arg	Thr	Glu	Ser	Asp	Val	Ile	Ala	Thr	Val	Lys	
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Ala	Leu	Arg	Asn	Asp	Gly	Leu	Glu	Ala	Glu	Gly	Gln	Val	Leu	Asp	Val	
	50				55						60					
Arg	Asp	Gly	Ala	Ser	Val	Thr	Ala	Phe	Val	Gln	Ala	Ala	Val	Asp	Arg	
65				70						75					80	
Tyr	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Arg	Ser	Gly	Gly	
				85					90					95		
Gly	Val	Thr	Ala	Asp	Leu	Thr	Asp	Glu	Leu	Trp	Asp	Asp	Val	Ile	Asp	
			100					105					110			
Thr	Asn	Leu	Asn	Ser	Val	Phe	Arg	Met	Thr	Arg	Ala	Val	Leu	Thr	Thr	
		115					120					125				



## PhoenixTemp32470.tmp.txt

Gly 130 Met Arg Thr Arg Glu 135 Arg Gly Arg Ile Ile Asn Val Ala Ser  
 Thr 145 Ala Gly Lys Gln Gly 150 Val Val Leu Gly Ala Pro Tyr Ser Ala Ser  
 Lys His Gly Val Val 165 Gly Phe Thr Lys Ala 170 Leu Gly Asn Glu Leu Ala  
 Pro Thr Gly Ile Thr Val Asn Ala Val 185 Cys Pro Gly Tyr Val Glu Thr  
 Pro Met Ala Gln Arg Val Arg Gln Gly Tyr Ala Ala 205 Tyr Asp Thr  
 Thr 210 Glu Glu Ala Ile Leu Thr 215 Lys Phe Gln Ala Lys 220 Ile Pro Leu Gly  
 Arg 225 Tyr Ser Thr Pro Glu 230 Val Ala Gly Leu 235 Ile Gly Tyr Leu Ala  
 Ser Asp Thr Ala Ala Ser Ile Thr Ser Gln 250 Ala Leu Asn Val Cys 255 Gly  
 Gly Leu Gly Asn Phe 260

&lt;210&gt; 1967

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1967

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Met	Leu	Asn	Asp	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	
1				5				10						15		
ggc	cgc	tca	atc	gcc	ctt	gat	ctg	gca	aaa	agc	gga	gca	aat	gtt	gtc	96
Gly	Arg	Ser	Ile	Ala	Leu	Asp	Leu	Ala	Lys	Ser	Gly	Ala	Asn	Val	Val	
			20					25					30			
gtg	aac	tac	tcc	ggc	aat	gaa	gcg	aaa	gca	aat	gaa	gtg	gta	gat	gaa	144
Val	Asn	Tyr	Ser	Gly	Asn	Glu	Ala	Lys	Ala	Asn	Glu	Val	Val	Asp	Glu	
			35				40					45				
atc	aaa	tca	atg	ggc	aga	aaa	gca	att	gct	gta	aaa	gcg	gat	gta	tca	192
Ile	Lys	Ser	Met	Gly	Arg	Lys	Ala	Ile	Ala	Val	Lys	Ala	Asp	Val	Ser	
			50			55					60					
aat	ccc	gaa	gat	gta	caa	aac	atg	ata	aaa	gaa	aca	ttg	tct	gtt	ttt	240
Asn	Pro	Glu	Asp	Val	Gln	Asn	Met	Ile	Lys	Glu	Thr	Leu	Ser	Val	Phe	
			65		70				75						80	
tct	acg	att	gac	att	ctg	gtt	aat	aat	gcg	gga	att	aca	aga	gac	aat	288
Ser	Thr	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn	
				85					90					95		
ctc	atc	atg	aga	atg	aaa	gaa	gac	gaa	tgg	gat	gac	gtc	att	aac	att	336
Leu	Ile	Met	Arg	Met	Lys	Glu	Asp	Glu	Trp	Asp	Asp	Val	Ile	Asn	Ile	
			100					105					110			
aac	ctg	aag	ggt	gtt	ttc	aac	tgc	aca	gct	gtt	aca	aga	caa	atg		384
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Lys	Ala	Val	Thr	Arg	Gln	Met	
			115				120					125				
atg	aaa	cag	cgt	tca	ggc	cgc	att	att	aac	gta	tgc	tct	atc	gtc	ggc	432
Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Val	Ser	Ser	Ile	Val	Gly	
			130			135						140				
gtc	agc	gga	aac	cct	gga	caa	gcc	aac	tac	gtg	gct	gca	aaa	gcc	ggc	480
Val	Ser	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly	
					150					155					160	
gtc	atc	ggt	tta	acc	aaa	tct	tct	gct	aaa	gag	ctc	gcc	agc	cga	aat	528
Val	Ile	Gly	Leu	Thr	Lys	Ser	Ser	Ala	Lys	Glu	Leu	Ala	Ser	Arg	Asn	
				165					170					175		
att	acg	gta	aac	gca	ata	gcg	cca	gga	ttt	atc	tca	act	gat	atg	aca	576
Ile	Thr	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Asp	Met	Thr	
				180				185					190			
gat	aaa	ctt	gca	aaa	gac	gtt	caa	gac	gaa	atg	ctg	aaa	caa	att	ccg	624
Asp	Lys	Leu	Ala	Lys	Asp	Val	Gln	Asp	Glu	Met	Leu	Lys	Gln	Ile	Pro	
			195				200					205				

## PhoenixTemp32470.tmp.txt

ctc	gcg	cgc	ttt	ggt	gaa	cct	agc	gat	gtc	agc	agt	ggt	gtc	acg	ttc	672
Leu	Ala	Arg	Phe	Gly	Glu	Pro	Ser	Asp	Val	Ser	Ser	Val	Val	Thr	Phe	
	210					215					220					
cta	gct	tca	gag	gga	gct	cgt	tat	atg	aca	ggc	caa	acg	ctt	cat	att	720
Leu	Ala	Ser	Glu	Gly	Ala	Arg	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Ile	
	225				230					235					240	
gac	ggc	gga	atg	gtg	atg	taa										741
Asp	Gly	Gly	Met	Val	Met											
				245												

&lt;210&gt; 1968

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Bacillus subtilis

&lt;400&gt; 1968

Met	Leu	Asn	Asp	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	
1				5					10					15		
Gly	Arg	Ser	Ile	Ala	Leu	Asp	Leu	Ala	Lys	Ser	Gly	Ala	Asn	Val	Val	
			20					25					30			
Val	Asn	Tyr	Ser	Gly	Asn	Glu	Ala	Lys	Ala	Asn	Glu	Val	Val	Asp	Glu	
		35					40					45				
Ile	Lys	Ser	Met	Gly	Arg	Lys	Ala	Ile	Ala	Val	Lys	Ala	Asp	Val	Ser	
	50					55					60					
Asn	Pro	Glu	Asp	Val	Gln	Asn	Met	Ile	Lys	Glu	Thr	Leu	Ser	Val	Phe	
65					70					75					80	
Ser	Thr	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn	
			85						90					95		
Leu	Ile	Met	Arg	Met	Lys	Glu	Asp	Glu	Trp	Asp	Asp	Val	Ile	Asn	Ile	
			100					105					110			
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Lys	Ala	Val	Thr	Arg	Gln	Met	
	115						120					125				
Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Val	Ser	Ser	Ile	Val	Gly	
	130					135					140					
Val	Ser	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly	
145					150					155					160	
Val	Ile	Gly	Leu	Thr	Lys	Ser	Ser	Ala	Lys	Glu	Leu	Ala	Ser	Arg	Asn	
			165					170						175		
Ile	Thr	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Asp	Met	Thr	
			180					185					190			
Asp	Lys	Leu	Ala	Lys	Asp	Val	Gln	Asp	Glu	Met	Leu	Lys	Gln	Ile	Pro	
	195						200					205				
Leu	Ala	Arg	Phe	Gly	Glu	Pro	Ser	Asp	Val	Ser	Ser	Val	Val	Thr	Phe	
	210					215					220					
Leu	Ala	Ser	Glu	Gly	Ala	Arg	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Ile	
	225				230					235					240	
Asp	Gly	Gly	Met	Val	Met											
				245												

&lt;210&gt; 1969

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Thermotoga maritima

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1969

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Met	Arg	Leu	Glu	Gly	Lys	Val	Cys	Leu	Ile	Thr	Gly	Ala	Ala	Ser	Gly	
	1			5					10					15		
ata	ggg	aaa	gcc	acc	acg	ctt	ctt	ttc	gca	cag	gaa	gga	gct	acg	gtg	96
Ile	Gly	Lys	Ala	Thr	Thr	Leu	Leu	Phe	Ala	Gln	Glu	Gly	Ala	Thr	Val	
			20					25					30			
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Ile	Ala	Gly	Asp	Ile	Ser	Lys	Glu	Asn	Leu	Asp	Ser	Leu	Val	Lys	Glu	
		35					40					45				

## PhoenixTemp32470.tmp.txt

gca	gaa	gga	ctt	ccg	ggg	aag	ggt	gat	ccc	tac	ggt	ttg	aac	gtg	acc	192
Ala	Glu	Gly	Leu	Pro	Gly	Lys	Val	Asp	Pro	Tyr	Val	Leu	Asn	Val	Thr	
	50					55					60					
gac	agg	gat	cag	ata	aag	gaa	ggt	gtg	gaa	aaa	gtc	ggt	caa	aag	tac	240
Asp	Arg	Asp	Gln	Ile	Lys	Glu	Val	Val	Glu	Lys	Val	Val	Gln	Lys	Tyr	
65					70					75					80	
ggt	cga	atc	gat	ggt	ctg	gtg	aac	aac	gcg	gga	ata	aca	agg	gat	gcg	288
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Ala	
				85					90					95		
ctt	ctt	gtg	agg	atg	aaa	gaa	gaa	gac	tgg	gat	gcg	gta	ata	aac	gtg	336
Leu	Leu	Val	Arg	Met	Lys	Glu	Glu	Asp	Trp	Asp	Ala	Val	Ile	Asn	Val	
			100					105					110			
aat	ctg	aag	ggt	ggt	ttc	aac	gtg	act	cag	atg	gtg	gtg	ccc	tac	atg	384
Asn	Leu	Lys	Gly	Val	Phe	Asn	Val	Thr	Gln	Met	Val	Val	Pro	Tyr	Met	
		115					120					125				
atc	aaa	cag	agg	aac	ggt	tcg	atc	gtg	aac	gtc	tcc	tct	gtc	ggt	gga	432
Ile	Lys	Gln	Arg	Asn	Gly	Ser	Ile	Val	Asn	Val	Ser	Ser	Val	Val	Gly	
	130					135					140					
ata	tac	ggg	aat	cct	ggt	cag	acg	aat	tac	gcg	gcg	tcg	aag	gcg	gga	480
Ile	Tyr	Gly	Asn	Pro	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	
145					150					155					160	
gtc	ata	gga	atg	acc	aag	acg	tgg	gcg	aag	gaa	ctc	gct	gga	aga	aac	528
Val	Ile	Gly	Met	Thr	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Ala	Gly	Arg	Asn	
				165					170					175		
atc	agg	gtg	aac	gct	gtg	gca	ccc	gga	ttc	ata	gaa	acc	ccc	atg	acc	576
Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Pro	Met	Thr	
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gaa	aaa	ctt	cca	gaa	aaa	gcc	cgt	gaa	acg	gcc	ctt	tcc	aga	ata	ccg	624
Glu	Lys	Leu	Pro	Glu	Lys	Ala	Arg	Glu	Thr	Ala	Leu	Ser	Arg	Ile	Pro	
		195					200					205				
ctg	gga	agg	ttt	ggg	aag	cca	gaa	gag	gtg	gcg	cag	ggt	ata	ctc	ttc	672
Leu	Gly	Arg	Phe	Gly	Lys	Pro	Glu	Glu	Val	Ala	Gln	Val	Ile	Leu	Phe	
	210					215				220						
ctc	gca	tcg	gac	gag	tcg	agt	tac	gtc	acc	gga	cag	gtg	ata	gga	ata	720
Leu	Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Val	Thr	Gly	Gln	Val	Ile	Gly	Ile	
225					230					235					240	
gat	ggg	ggc	ctc	gtg	atc	tga										741
Asp	Gly	Gly	Leu	Val	Ile											
				245												

&lt;210&gt; 1970

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Thermotoga maritima

&lt;400&gt; 1970

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Ile	Gly	Lys	Ala	Thr	Thr	Leu	Leu	Phe	Ala	Gln	Glu	Gly	Ala	Thr	Val	
			20					25					30			
Ile	Ala	Gly	Asp	Ile	Ser	Lys	Glu	Asn	Leu	Asp	Ser	Leu	Val	Lys	Glu	
		35					40					45				
Ala	Glu	Gly	Leu	Pro	Gly	Lys	Val	Asp	Pro	Tyr	Val	Leu	Asn	Val	Thr	
	50					55					60					
Asp	Arg	Asp	Gln	Ile	Lys	Glu	Val	Val	Glu	Lys	Val	Val	Gln	Lys	Tyr	
65					70					75					80	
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Ala	
				85					90					95		
Leu	Leu	Val	Arg	Met	Lys	Glu	Glu	Asp	Trp	Asp	Ala	Val	Ile	Asn	Val	
			100					105					110			
Asn	Leu	Lys	Gly	Val	Phe	Asn	Val	Thr	Gln	Met	Val	Val	Pro	Tyr	Met	
		115					120					125				
Ile	Lys	Gln	Arg	Asn	Gly	Ser	Ile	Val	Asn	Val	Ser	Val	Val	Gly		
	130					135					140					
Ile	Tyr	Gly	Asn	Pro	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	
145					150					155					160	
Val	Ile	Gly	Met	Thr	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Ala	Gly	Arg	Asn	
				165					170					175		
Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Pro	Met	Thr	

## PhoenixTemp32470.tmp.txt

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 Glu Lys Leu Pro Glu Lys Ala Arg Glu Thr Ala Leu Ser Arg Ile Pro  
 195  
 Leu Gly Arg Phe Gly Lys Pro Glu Glu Val Ala Gln Val Ile Leu Phe  
 210  
 Leu Ala Ser Asp Glu Ser Ser Tyr Val Thr Gly Gln Val Ile Gly Ile  
 225  
 Asp Gly Gly Leu Val Ile  
 245

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 <211> 738  
 <212> DNA  
 <213> Rhizobium meliloti

<220>  
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 <223> transl\_table=11

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 gcc ata gga ggg gct atc gcc cgc gtg ctg cat gct cag ggc gct atc 96  
 Ala Ile Gly Gly Ala Ile Ala Arg Val Leu His Ala Gln Gly Ala Ile  
 20 25 30  
 gtc gga ctg cac ggc acc caa att gaa aaa ctg gag aca ctg gca act 144  
 Val Gly Leu His Gly Thr Gln Ile Glu Lys Leu Glu Thr Leu Ala Thr  
 35 40 45  
 gag ctt gga gac cgg gtc aag ctg ttc ccg gct aat ctg gcc aat cga 192  
 Glu Leu Gly Asp Arg Val Lys Leu Phe Pro Ala Asn Leu Ala Asn Arg  
 50 55 60  
 gac gaa gtc aag gcg ctt ggt cag aga gcg gaa gcc gat ctt gaa ggc 240  
 Asp Glu Val Lys Ala Leu Gly Gln Arg Ala Glu Ala Asp Leu Glu Gly  
 65 70 75 80  
 gtc gac atc ctg gtc aac aat gct ggc atc acc aag gat gga ttg ttc 288  
 Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Gly Leu Phe  
 85 90 95  
 ttg cac atg gca gac ccc gac tgg gac att gtg ctg gag gtc aac ctc 336  
 Leu His Met Ala Asp Pro Asp Trp Asp Ile Val Leu Glu Val Asn Leu  
 100 105 110  
 acc gcc atg ttc cga ctg acc cgc gag atc acc cag cag atg ata cgc 384  
 Thr Ala Met Phe Arg Leu Thr Arg Glu Ile Thr Gln Gln Met Ile Arg  
 115 120 125  
 cgt cga aat ggc cgc atc atc aat gtc act tcg gtc gcc ggc gcc atc 432  
 Arg Arg Asn Gly Arg Ile Ile Asn Val Thr Ser Val Ala Gly Ala Ile  
 130 135 140  
 ggc aat cca ggc cag acc aat tac tgc gcc tcc aag gcc ggt atg atc 480  
 Gly Asn Pro Gly Gln Thr Asn Tyr Cys Ala Ser Lys Ala Gly Met Ile  
 145 150 155 160  
 ggc ttt tcc aag tcg gcg cag gag atc gct acg cga aac atc act 528  
 Gly Phe Ser Lys Ser Leu Ala Gln Glu Ile Ala Thr Arg Asn Ile Thr  
 165 170 175  
 gtc aac tgc gtc gcc ccg ggc ttc atc gaa tcg gca atg acc gat aag 576  
 Val Asn Cys Val Ala Pro Gly Phe Ile Glu Ser Ala Met Thr Asp Lys  
 180 185 190  
 ctc aat cac aaa cag aag gag aaa atc atg gtg gcg atc ccg atc cac 624  
 Leu Asn His Lys Gln Lys Glu Lys Ile Met Val Ala Ile Pro Ile His  
 195 200 205  
 cgc atg ggc acc ggt acc gaa gtc gcg tcc gcc gtt gcg tat ctc gct 672  
 Arg Met Gly Thr Gly Thr Glu Val Ala Ser Ala Val Ala Tyr Leu Ala  
 210 215 220  
 tcc gat cac gcc gcc tat gtc acc gga cag acc att cac gtg aac ggc 720  
 Ser Asp His Ala Ala Tyr Val Thr Gly Gln Thr Ile His Val Asn Gly  
 225 230 235 240  
 ggt atg gca atg att tga 738  
 Gly Met Ala Met Ile 245

<210> 1972  
 <211> 245  
 <212> PRT  
 <213> Rhizobium meliloti

<400> 1972  
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 20 25 30  
 Val Gly Leu His Gly Thr Gln Ile Glu Lys Leu Glu Thr Leu Ala Thr  
 35 40 45  
 Glu Leu Gly Asp Arg Val Lys Leu Phe Pro Ala Asn Leu Ala Asn Arg  
 50 55 60  
 Asp Glu Val Lys Ala Leu Gly Gln Arg Ala Glu Ala Asp Leu Glu Gly  
 65 70 75 80  
 Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Gly Leu Phe  
 85 90 95  
 Leu His Met Ala Asp Pro Asp Trp Asp Ile Val Leu Glu Val Asn Leu  
 100 105 110  
 Thr Ala Met Phe Arg Leu Thr Arg Glu Ile Thr Gln Gln Met Ile Arg  
 115 120 125  
 Arg Arg Asn Gly Arg Ile Ile Asn Val Thr Ser Val Ala Gly Ala Ile  
 130 135 140  
 Gly Asn Pro Gly Gln Thr Asn Tyr Cys Ala Ser Lys Ala Gly Met Ile  
 145 150 155 160  
 Gly Phe Ser Lys Ser Leu Ala Gln Glu Ile Ala Thr Arg Asn Ile Thr  
 165 170 175  
 Val Asn Cys Val Ala Pro Gly Phe Ile Glu Ser Ala Met Thr Asp Lys  
 180 185 190  
 Leu Asn His Lys Gln Lys Glu Lys Ile Met Val Ala Ile Pro Ile His  
 195 200 205  
 Arg Met Gly Thr Gly Thr Glu Val Ala Ser Ala Val Ala Tyr Leu Ala  
 210 215 220  
 Ser Asp His Ala Ala Tyr Val Thr Gly Gln Thr Ile His Val Asn Gly  
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 Gly Met Ala Met Ile  
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 <211> 846  
 <212> DNA  
 <213> Candida albicans

<220>  
 <221> CDS  
 <222> (1)..(846)  
 <223> transl\_table=12

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 1 5 10 15  
 cca aca aaa gct cca caa tta cca tca aat gtt ctt gat ttg ttt tct 96  
 Pro Thr Lys Ala Pro Gln Leu Pro Ser Asn Val Leu Asp Leu Phe Ser  
 20 25 30  
 tta aaa ggt aaa gtc gct tcc gtg acg gga tca tct gga gga att ggt 144  
 Leu Lys Gly Lys Val Ala Ser Val Thr Gly Ser Ser Gly Gly Ile Gly  
 35 40 45  
 tgg gct gtc gcc gaa gca ttt gct caa gct ggt gct gat gtt gcc atc 192  
 Trp Ala Val Ala Glu Ala Phe Ala Gln Ala Gly Ala Asp Val Ala Ile  
 50 55 60  
 tgg tat aat tcg aaa cca gca gat gcc aaa gct gaa tat tta act gaa 240  
 Trp Tyr Asn Ser Lys Pro Ala Asp Ala Lys Ala Glu Tyr Leu Thr Glu  
 65 70 75 80  
 aaa tat ggt gtc aaa gcc aaa gct tat aaa tgt aat gta act gat cct 288  
 Lys Tyr Gly Val Lys Ala Lys Ala Tyr Lys Cys Asn Val Thr Asp Pro  
 85 90 95

## PhoenixTemp32470.tmp.txt

aat	gat	gtt	tct	aaa	gtg	att	aat	gaa	att	gaa	aaa	gat	ttc	ggg	act	336
Asn	Asp	Val	Ser	Lys	Val	Ile	Asn	Glu	Ile	Glu	Lys	Asp	Phe	Gly	Thr	
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Ile	Asp	Ile	Phe	Val	Ala	Asn	Ala	Gly	Val	Ala	Trp	Thr	Asp	Gly	Pro	
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gaa	att	gat	gtt	caa	ggc	tat	gat	caa	tgg	aaa	aag	atc	gtt	gat	tgt	432
Glu	Ile	Asp	Val	Gln	Gly	Tyr	Asp	Gln	Trp	Lys	Lys	Ile	Val	Asp	Cys	
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gat	tta	aat	gga	gtt	tat	tat	tgt	gct	cat	acc	gtg	gga	caa	atc	ttt	480
Asp	Leu	Asn	Gly	Val	Tyr	Tyr	Cys	Ala	His	Thr	Val	Gly	Gln	Ile	Phe	
	145				150					155					160	
aaa	aag	aat	aaa	tct	ggg	tca	tta	att	att	act	tca	tca	atg	tca	ggg	528
Lys	Lys	Asn	Lys	Ser	Gly	Ser	Leu	Ile	Ile	Thr	Ser	Ser	Met	Ser	Gly	
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Thr	Ile	Val	Asn	Ile	Pro	Gln	Leu	Gln	Ala	Pro	Tyr	Asn	Ala	Ala	Lys	
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Ala	Ala	Cys	Thr	His	Leu	Ala	Lys	Ser	Leu	Ser	Val	Glu	Trp	Ala	Ser	
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Phe	Gly	Ala	Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Tyr	Ile	Leu	Thr	Asp	
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aca	cct	ttg	gga	aga	gaa	gga	tta	cca	caa	gaa	tta	gtg	ggg	gca	tat	768
Thr	Pro	Leu	Gly	Arg	Glu	Gly	Leu	Pro	Gln	Glu	Leu	Val	Gly	Ala	Tyr	
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Leu	Tyr	Leu	Ala	Ser	Asn	Ala	Ser	Thr	Tyr	Thr	Thr	Gly	Ser	Asn	Ile	
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gct	gtt	gat	ggg	ggg	tat	aca	tgt	cca	taa							846
Ala	Val	Asp	Gly	Gly	Tyr	Thr	Cys	Pro								
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&lt;210&gt; 1974

&lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Candida albicans

&lt;400&gt; 1974

Met	Ser	Glu	Glu	Ile	Ile	Ser	Phe	Thr	Asn	Pro	Ala	Leu	Gly	Pro	Leu
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Leu	Lys	Gly	Lys	Val	Ala	Ser	Val	Thr	Gly	Ser	Ser	Gly	Gly	Ile	Gly
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Trp	Ala	Val	Ala	Glu	Ala	Phe	Ala	Gln	Ala	Gly	Ala	Asp	Val	Ala	Ile
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Trp	Tyr	Asn	Ser	Lys	Pro	Ala	Asp	Ala	Lys	Ala	Glu	Tyr	Leu	Thr	Glu
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Lys	Tyr	Gly	Val	Lys	Ala	Lys	Ala	Tyr	Lys	Cys	Asn	Val	Thr	Asp	Pro
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Asn	Asp	Val	Ser	Lys	Val	Ile	Asn	Glu	Ile	Glu	Lys	Asp	Phe	Gly	Thr
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	130					135					140				
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Lys	Lys	Asn	Lys	Ser	Gly	Ser	Leu	Ile	Ile	Thr	Ser	Ser	Met	Ser	Gly
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Thr	Ile	Val	Asn	Ile	Pro	Gln	Leu	Gln	Ala	Pro	Tyr	Asn	Ala	Ala	Lys
			180					185					190		
Ala	Ala	Cys	Thr	His	Leu	Ala	Lys	Ser	Leu	Ser	Val	Glu	Trp	Ala	Ser
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## PhoenixTemp32470.tmp.txt

Phe Gly Ala Arg Val Asn Ser Ile Ser Pro Gly Tyr Ile Leu Thr Asp  
 210 220  
 Ile Ala Asp Phe Ala Asp Pro Glu Met Lys Lys Lys Trp Trp Gln Leu  
 225 235 240  
 Thr Pro Leu Gly Arg Glu Gly Leu Pro Gln Glu Leu Val Gly Ala Tyr  
 245 255  
 Leu Tyr Leu Ala Ser Asn Ala Ser Thr Tyr Thr Thr Gly Ser Asn Ile  
 260 270  
 Ala Val Asp Gly Gly Tyr Thr Cys Pro  
 275 280

&lt;210&gt; 1975

&lt;211&gt; 1011

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1011)

&lt;400&gt; 1975

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Met	His	Ala	Ser	Leu	Ala	Ser	Tyr	Ala	Ala	Ala	Ala	Met	Pro	Ala	Leu	
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Asp	Leu	Arg	Pro	Glu	Ile	Ala	His	Ala	His	Gln	Pro	Val	Met	Ser	Pro	
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Ser	His	His	Gly	Trp	Asp	Gly	Asn	Gly	Ala	Thr	Ala	Val	Pro	Thr	Pro	
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Met	Pro	Lys	Arg	Leu	Asp	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	
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Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Leu	Phe	Ala	Lys	His	Gly	Ala	
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Arg	Val	Val	Ile	Ala	Asp	Ile	Asp	Asp	Ala	Ala	Gly	Glu	Ala	Leu	Ala	
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tcg	g	ctg	ggc	ccg	cag	gtc	agc	ttc	gtg	cgc	tgc	gac	gtg	tcc	gtg	336
Ser	Ala	Leu	Gly	Pro	Gln	Val	Ser	Phe	Val	Arg	Cys	Asp	Val	Ser	Val	
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Glu	Asp	Asp	Val	Arg	Arg	Ala	Val	Asp	Trp	Ala	Leu	Ser	Arg	His	Gly	
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Gly	Arg	Leu	Asp	Val	Tyr	Cys	Asn	Asn	Ala	Gly	Val	Leu	Gly	Arg	Gln	
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cgc	gtg	ctc	cgc	gtc	aac	g	ctg	ggc	gcc	cgc	ctc	ggg	atg	aag	cac	528
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Ala	Ala	Arg	Ala	Met	Ala	Pro	Arg	Arg	Ala	Gly	Ser	Ile	Val	Ser	Val	
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gcc	agc	gtc	g	gcc	gtg	ctg	ggc	ggc	ctc	ggc	ccg	cac	gcc	tac	acc	624
Ala	Ser	Val	Ala	Ala	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Thr	
			195				200					205				
gcc	tcc	aag	cac	gcc	atc	gtc	ggg	ctc	acc	aag	aac	gcc	gcc	tgc	gag	672
Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	
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ctg	cgc	g	cac	ggg	gtc	cgc	gtc	aac	tgc	gtc	tcg	ccc	ttc	ggc	gtc	720
Leu	Arg	Ala	His	Gly	Val	Arg	Val	Asn	Cys	Val	Ser	Pro	Phe	Gly	Val	
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Ala	Thr	Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Asp	Ala	
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## PhoenixTemp32470.tmp.txt

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ccc	agc	gac	cag	gag	gtg	gag	aag	atg	gag	gag	gtg	gtc	agg	ggc	ctg	864
Pro	Ser	Asp	Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	
		275					280					285				
gcc	acg	ctc	aag	ggc	ccc	acg	ctc	agg	ccc	agg	gac	atc	gcc	gag	gcg	912
Ala	Thr	Leu	Lys	Gly	Pro	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	
	290					295					300					
gtg	ctc	ttc	ctg	gcc	agc	gac	gag	gcc	agg	tat	ata	tcg	ggc	cac	aac	960
Val	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Ser	Gly	His	Asn	
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ctt	gtc	gtg	gac	ggc	ggc	gtc	acc	aca	tcc	agg	aac	ctc	atc	ggc	ttg	1008
Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu	
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tga																1011

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 <211> 336  
 <212> PRT  
 <213> Zea mays

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 35 40 45  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala  
 85 90 95  
 Ser Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 Glu Asp Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 Thr Arg Ala Ala Arg Ser Ile Leu Ser Phe Asp Ala Ala Glu Phe Asp  
 145 150 155 160  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190  
 Ala Ser Val Ala Ala Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 Leu Arg Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Asp Ala  
 245 250 255  
 Thr Ala Asp Ala Asp Arg Asp Leu Asp Leu Asp Val Thr Val  
 260 265 270  
 Pro Ser Asp Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu  
 275 280 285  
 Ala Thr Leu Lys Gly Pro Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala  
 290 295 300  
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<210> 1977



<211> 792  
 <212> DNA  
 <213> Escherichia coli

<220>  
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 Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe Ala Arg His Gly Ala Asn  
 20 25 30  
 cta atc ttg ctg gat atc tcc cct gag atc gaa aag ctg gcg gac gaa 144  
 Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile Glu Lys Ala Asp Glu  
 35 40 45  
 ctg tgt ggt cgt ggt cat cgc tgt acg gcg gtt gtc gcc gat gtg cgt 192  
 Leu Cys Gly Arg Gly His Arg Cys Thr Ala Val Val Ala Asp Val Arg  
 50 55 60  
 gac ccg gcg tcg gta gcc gca gct atc aaa cgc gcg aag gaa aaa gaa 240  
 Asp Pro Ala Ser Val Ala Ala Ile Lys Arg Ala Lys Glu Lys Glu  
 65 70 75 80  
 ggg cgc att gat atc ctg gtg aat aac gca ggc gtt tgt cgt ctg ggc 288  
 Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Val Cys Arg Leu Gly  
 85 90 95  
 agt ttc ctc gat atg agc gat gac gat cgc gat ttc cat att gac atc 336  
 Ser Phe Leu Asp Met Ser Asp Asp Arg Asp Phe His Ile Asp Ile  
 100 105 110  
 aat att aaa ggc gta tgg aac gtc acg aag gcg gtg ctg ccg gag atg 384  
 Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val Leu Pro Glu Met  
 115 120 125  
 att gcc cgc aaa gat ggt cgc att gtg atg atg tct tca gtc act ggt 432  
 Ile Ala Arg Lys Asp Gly Arg Ile Val Met Met Ser Val Thr Gly  
 130 135 140  
 gat atg gtg gcc gat cct ggc gaa acg gcg tac gcc tta acg aaa gcg 480  
 Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala Leu Thr Lys Ala  
 145 150 155 160  
 gcg att gtt ggc ctg aca aaa tcg ctg gcg gtg gag tac gcg cag tct 528  
 Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu Tyr Ala Gln Ser  
 165 170 175  
 ggt att cgc gtt aac gcc att tgc ccg gga tac gtg cgc aca cca atg 576  
 Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val Arg Thr Pro Met  
 180 185 190  
 gcg gaa agc att gcc cgc cag tcg aac ccg gaa gat cca gag tcg gtg 624  
 Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp Pro Glu Ser Val  
 195 200 205  
 ctg act gaa atg gcg aaa gca atc ccg atg cgt cgc ctc gcc gat ccg 672  
 Leu Thr Glu Met Ala Lys Ala Ile Pro Met Arg Arg Leu Ala Asp Pro  
 210 215 220  
 ctg gaa gtc ggc gaa ctg gcg gcc ttc ctc gca tcg gat gaa tcc agc 720  
 Leu Glu Val Gly Glu Leu Ala Ala Phe Leu Ala Ser Asp Glu Ser Ser  
 225 230 235 240  
 tat tta acc ggt aca cag aat gtg att gat ggc ggc agc aca ctg ccg 768  
 Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp Gly Gly Ser Thr Leu Pro  
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<210> 1978  
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 <212> PRT  
 <213> Escherichia coli

<400> 1978  
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## PhoenixTemp32470.tmp.txt

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Ser Phe Leu Asp Met Ser Asp Asp Arg Asp Phe His Ile Asp Ile
100
Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val Leu Pro Glu Met
115
Ile Ala Arg Lys Asp Gly Arg Ile Val Met Met Ser Ser Val Thr Gly
130
Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala Leu Thr Lys Ala
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Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu Tyr Ala Gln Ser
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Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val Arg Thr Pro Met
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Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp Pro Glu Ser Val
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Leu Thr Glu Met Ala Lys Ala Ile Pro Met Arg Arg Leu Ala Asp Pro
210
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240
Glu Thr Val Ser Val Gly Ile
260

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&lt;210&gt; 1979

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Salmonella typhi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1979

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Gly Ile Gly Glu Gly Ile Ala Arg Val Phe Ala Arg His Gly Ala Asn
20
tta atc ttg ctg gat atc tcc gat gag att gaa aag ctg gcg gat gag      144
Leu Ile Leu Leu Asp Ile Ser Asp Glu Ile Glu Lys Leu Ala Asp Glu
35
ctg ggc ggg cgc ggg cat cgc tgt act gcc gtt aaa gcc gac gtc aga      192
Leu Gly Gly Arg Gly His Arg Cys Thr Ala Val Lys Ala Asp Val Arg
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gat ttt gct tcg gtg cag gcg gcg gtt gcg cgc gcc aaa gag act gaa      240
Asp Phe Ala Ser Val Gln Ala Ala Val Ala Arg Ala Lys Glu Thr Glu
65
ggt aga att gat att ttg gtg aat aac gct ggc gtg tgc cgt ctg ggc      288
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Val Cys Arg Leu Gly
80
aac ttc ctc gat atg agt gaa gaa gat cgc gat ttc cac att gat att      336
Asn Phe Leu Asp Met Ser Glu Glu Asp Arg Asp Phe His Ile Asp Ile
100
aat att aaa ggt gtc tgg aac gtc acc aaa gcc gtc ctg ccg gag atg      384
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115
120

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## PhoenixTemp32470.tmp.txt

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	130					135					140					
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Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	Tyr	Ala	Leu	Ser	Lys	Ala	
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gcc	att	gtc	ggg	tta	acc	aaa	tcg	ctg	gcg	gta	gag	tac	gcg	cag	tcc	528
Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Val	Glu	Tyr	Ala	Gln	Ser	
				165					170					175		
ggg	att	cgt	gtg	aat	gcc	att	tgc	ccc	ggg	tat	gta	aga	acg	ccg	atg	576
Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Arg	Thr	Pro	Met	
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gcg	gaa	agc	att	gcc	cgt	cag	tct	aac	cct	gac	gat	ccg	gaa	tcg	gta	624
Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	Asp	Asp	Pro	Glu	Ser	Val	
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tta	acg	gaa	atg	gca	aaa	gcc	att	ccg	cta	cgc	cgt	ctt	gcc	gat	ccg	672
Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Leu	Arg	Arg	Leu	Ala	Asp	Pro	
210						215					220					
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Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	
225					230					235					240	
tat	ctt	acc	gga	acg	caa	aac	gtc	att	gat	ggc	ggc	agt	acc	ctg	cct	768
Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro	
				245					250					255		
gaa	agc	gta	agc	gta	ggc	gtc	tga									792
Glu	Ser	Val	Ser	Val	Gly	Val										
			260													

&lt;210&gt; 1980

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Salmonella typhi

&lt;400&gt; 1980

Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Gly	Ala	Ser	Gln	
1				5					10					15		
Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Val	Phe	Ala	Arg	His	Gly	Ala	Asn	
			20					25					30			
Leu	Ile	Leu	Leu	Asp	Ile	Ser	Asp	Glu	Ile	Glu	Lys	Leu	Ala	Asp	Glu	
		35					40					45				
Leu	Gly	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Lys	Ala	Asp	Val	Arg	
	50					55					60					
Asp	Phe	Ala	Ser	Val	Gln	Ala	Ala	Val	Ala	Arg	Ala	Lys	Glu	Thr	Glu	
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Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Cys	Arg	Leu	Gly	
				85				90						95		
Asn	Phe	Leu	Asp	Met	Ser	Glu	Glu	Asp	Arg	Asp	Phe	His	Ile	Asp	Ile	
			100					105					110			
Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	Ala	Val	Leu	Pro	Glu	Met	
		115					120					125				
Ile	Lys	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met	Met	Ser	Val	Thr	Gly		
	130					135					140					
Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	Tyr	Ala	Leu	Ser	Lys	Ala	
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Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Val	Glu	Tyr	Ala	Gln	Ser	
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Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Arg	Thr	Pro	Met	
			180					185					190			
Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	Asp	Asp	Pro	Glu	Ser	Val	
		195					200					205				
Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Leu	Arg	Arg	Leu	Ala	Asp	Pro	
	210					215					220					
Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	
225					230					235					240	
Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro	
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Glu	Ser	Val	Ser	Val	Gly	Val										
			260													

<210> 1981  
 <211> 744  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

<400> 1981  
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 caa ggg ctg ggg tta gct atc ggc cag cga ttc gtt gcc gag ggt gca 96  
 Gln Gly Leu Gly Leu Ala Ile Gly Gln Arg Phe Val Ala Glu Gly Ala  
 20 25 30  
 cgg gtt gtg ctt ggt gat gtg aat ctc gaa gcg acc gag gtc gca gcc 144  
 Arg Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Glu Val Ala Ala  
 35 40 45  
 aag cgg ctg ggc ggc gat gac gtt gct ctg gcg gtg cgg tgc gat gtg 192  
 Lys Arg Leu Gly Gly Asp Asp Val Ala Leu Ala Val Arg Cys Asp Val  
 50 55 60  
 act caa gcc gac gac gtc gac atc ctc atc cgg acc gct gtc gag cgt 240  
 Thr Gln Ala Asp Asp Val Asp Ile Leu Ile Arg Thr Ala Val Glu Arg  
 65 70 75 80  
 ttc ggc ggt ctg gat gtc atg gtc aac aac gcc ggg atc acc cgc gac 288  
 Phe Gly Gly Leu Asp Val Met Val Asn Asn Ala Gly Ile Thr Arg Asp  
 85 90 95  
 gca acg atg cgc acg atg acc gaa gag cag ttc gat cag gtc atc gcg 336  
 Ala Thr Met Arg Thr Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala  
 100 105 110  
 gtg cat ctg aag gga aca tgg aac ggt acc cgg ctg gcg gcg gca atc 384  
 Val His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala Ala Ile  
 115 120 125  
 atg cgg gaa cgc aag cgg ggc gcc att gtg aac atg tct tcg gtg tca 432  
 Met Arg Glu Arg Lys Arg Gly Ala Ile Val Asn Met Ser Ser Val Ser  
 130 135 140  
 ggc aag gtc ggt atg gtc ggc caa acc aac tac tca gcg gcc aag gcc 480  
 Gly Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala  
 145 150 155 160  
 ggc atc gta gga atg acc aag gcg gcc gcc aaa gaa ctt gca cac ctc 528  
 Gly Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala His Leu  
 165 170 175  
 ggc att cgg gta aac gca ata gct ccg ggg ttg atc cgt tca gcg atg 576  
 Gly Ile Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser Ala Met  
 180 185 190  
 aca gaa gct atg ccg caa cgc att tgg gac cag aag ctt gcc gaa gtt 624  
 Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Gln Lys Leu Ala Glu Val  
 195 200 205  
 ccg atg ggt cgc gcc ggc gag ccc agc gaa gtc gct agc gtg gcc gtg 672  
 Pro Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val Ala Val  
 210 215 220  
 ttc ttg gct tcg gat cta tcc tcg tac atg acc ggc acc gtg ttg gac 720  
 Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Asp  
 225 230 235 240  
 gtg act ggc ggc cgg ttc ata tga 744  
 Val Thr Gly Gly Arg Phe Ile  
 245

<210> 1982  
 <211> 247  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 1982  
 Met Ala Ser Leu Leu Asn Ala Arg Thr Ala Val Ile Thr Gly Gly Ala  
 1 5 10 15  
 Gln Gly Leu Gly Leu Ala Ile Gly Gln Arg Phe Val Ala Glu Gly Ala  
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```

      20      25      30
Arg Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Glu Val Ala Ala
      35      40      45
Lys Arg Leu Gly Gly Asp Asp Val Ala Leu Ala Val Arg Cys Asp Val
      50      55      60
Thr Gln Ala Asp Asp Val Asp Ile Leu Ile Arg Thr Ala Val Glu Arg
65      70      75      80
Phe Gly Gly Leu Asp Val Met Val Asn Asn Ala Gly Ile Thr Arg Asp
      85      90      95
Ala Thr Met Arg Thr Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala
      100      105      110
Val His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala Ala Ile
      115      120      125
Met Arg Glu Arg Lys Arg Gly Ala Ile Val Asn Met Ser Ser Val Ser
      130      135      140
Gly Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala
145      150      155      160
Gly Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala His Leu
      165      170      175
Gly Ile Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser Ala Met
      180      185      190
Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Gln Lys Leu Ala Glu Val
      195      200      205
Pro Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val Ala Val
210      215      220
Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Asp
225      230      235      240
Val Thr Gly Gly Arg Phe Ile
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<210> 1983  
 <211> 756  
 <212> DNA  
 <213> Thermotoga maritima

<220>  
 <221> CDS  
 <222> (1)..(756)  
 <223> transl\_table=11

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att gga aag aaa gca gcc gtt atg ttc gca gaa aga ggg gca aaa gta      96
Ile Gly Lys Lys Ala Ala Val Met Phe Ala Glu Arg Gly Ala Lys Val
      20      25      30
gcg atc aac gat atc tct gaa gaa aaa gga aaa gaa act gtg gag ctg      144
Ala Ile Asn Asp Ile Ser Glu Glu Lys Gly Lys Glu Thr Val Glu Leu
      35      40      45
ata aag agc atg gga gga gaa gct gcg ttt atc ttc gga gat gta gcg      192
Ile Lys Ser Met Gly Gly Glu Ala Ala Phe Ile Phe Gly Asp Val Ala
      50      55      60
aaa gat gca gaa cag ata gtg aag aaa acg gtg gaa acg ttc gga agg      240
Lys Asp Ala Glu Gln Ile Val Lys Lys Thr Val Glu Thr Phe Gly Arg
      65      70      75      80
ctc gac atc ctg gtg aac aac gct ggc atc gta cct tat gga aac ata      288
Leu Asp Ile Leu Val Asn Asn Ala Gly Ile Val Pro Tyr Gly Asn Ile
      85      90      95
gaa gag act tcg gag gaa gat ttt gat aaa aca atg gct gtg aat gtc      336
Glu Glu Thr Ser Glu Glu Asp Phe Asp Lys Thr Met Ala Val Asn Val
      100      105      110
aaa ggg cct ttt ctt ctc tca aaa tat gcc gtt gag cag atg aaa aag      384
Lys Gly Pro Phe Leu Leu Ser Lys Tyr Ala Val Glu Gln Met Lys Lys
      115      120      125
cag ggc gga gga gtc att gta aac gtt tcc tcc gaa gca gga ctc ata      432
Gln Gly Gly Gly Val Ile Val Asn Val Ser Ser Glu Ala Gly Leu Ile
      130      135      140
gga att cca aga agg tgt gtc tac agt gtt tca aaa gct gca ctc ctg      480

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PhoenixTemp32470.tmp.txt

Gly 145	Ile	Pro	Arg	Arg	Cys 150	Val	Tyr	Ser	Val	Ser 155	Lys	Ala	Ala	Leu	Leu 160	
gga	ctt	aca	aga	tct	ctt	gcc	gtc	gat	tac	gtc	gat	tat	gga	atc	agg	528
Gly	Leu	Thr	Arg	Ser 165	Leu	Ala	Val	Asp	Tyr 170	Val	Asp	Tyr	Gly	Ile 175	Arg	
gtc	aac	gcg	gtg	tgc	ccg	ggt	acc	act	cag	tct	gag	gga	ctc	atg	gcg	576
Val	Asn	Ala	Val 180	Cys	Pro	Gly	Thr	Thr 185	Gln	Ser	Glu	Gly	Leu 190	Met	Ala	
agg	gtg	aag	gct	tct	cca	aat	cca	gaa	gaa	ctc	ctg	aaa	aaa	atg	acc	624
Arg	Val	Lys 195	Ala	Ser	Pro	Asn	Pro 200	Glu	Glu	Leu	Leu	Lys 205	Lys	Met	Thr	
tcc	agg	atc	cct	atg	aag	aga	ctg	gga	aaa	gag	gag	gaa	atc	gcc	ttc	672
Ser	Arg	Ile	Pro	Met	Lys	Arg 215	Leu	Gly	Lys	Glu	Glu	Glu	Ile	Ala	Phe	
gcg	atc	ctc	ttt	gca	gcg	tgt	gac	gaa	gcc	gga	ttt	atg	acg	ggc	agt	720
Ala	Ile	Leu	Phe	Ala	Ala	Cys	Asp	Glu	Ala	Gly	Phe	Met	Thr	Gly	Ser 240	
225					230					235						
atc	ata	aac	ata	gat	gga	ggt	tct	acc	gct	gta	tga					756
Ile	Ile	Asn	Ile	Asp 245	Gly	Gly	Ser	Thr	Ala 250	Val						

<210> 1984  
 <211> 251  
 <212> PRT  
 <213> Thermotoga maritima

<400> 1984

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Ile	Gly	Lys	Lys 20	Ala	Ala	Val	Met	Phe 25	Ala	Glu	Arg	Gly	Ala 30	Lys	Val	
Ala	Ile	Asn	Asp 35	Ile	Ser	Glu	Glu 40	Lys	Gly	Lys	Glu	Thr 45	Val	Glu	Leu	
Ile	Lys 50	Ser	Met	Gly	Gly	Glu 55	Ala	Ala	Phe	Ile	Phe 60	Gly	Asp	Val	Ala	
Lys	Asp	Ala	Glu	Gln	Ile 70	Val	Lys	Lys	Thr	Val 75	Glu	Thr	Phe	Gly	Arg 80	
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Leu	Asp	Ile	Leu	Val 85	Asn	Asn	Ala	Gly	Ile 90	Val	Pro	Tyr	Gly	Asn 95	Ile	
Glu	Glu	Thr	Ser 100	Glu	Glu	Asp	Phe	Asp 105	Lys	Thr	Met	Ala	Val	Asn	Val	
Lys	Gly	Pro	Phe 115	Leu	Leu	Ser	Lys 120	Tyr	Ala	Val	Glu	Gln 125	Met	Lys	Lys	
Gln	Gly 130	Gly	Gly	Val	Ile	Val 135	Asn	Val	Ser	Ser	Glu 140	Ala	Gly	Leu	Ile	
Gly	Ile	Pro	Arg	Arg	Cys 150	Val	Tyr	Ser	Val	Ser 155	Lys	Ala	Ala	Leu	Leu 160	
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Gly	Leu	Thr	Arg	Ser 165	Leu	Ala	Val	Asp	Tyr 170	Val	Asp	Tyr	Gly	Ile 175	Arg	
Val	Asn	Ala	Val 180	Cys	Pro	Gly	Thr	Thr 185	Gln	Ser	Glu	Gly	Leu 190	Met	Ala	
Arg	Val 195	Lys	Ala	Ser	Pro	Asn	Pro 200	Glu	Glu	Leu	Leu	Lys 205	Lys	Met	Thr	
Ser	Arg	Ile	Pro	Met	Lys	Arg 215	Leu	Gly	Lys	Glu	Glu	Glu	Ile	Ala	Phe	
Ala	Ile	Leu	Phe	Ala	Ala 230	Cys	Asp	Glu	Ala	Gly 235	Phe	Met	Thr	Gly	Ser 240	
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<210> 1985  
 <211> 822  
 <212> DNA  
 <213> Bacillus subtilis

<220>  
 <221> CDS  
 <222> (1)..(822)  
 <223> transl\_table=11

## PhoenixTemp32470.tmp.txt

<400> 1985  
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 ggc att ggt caa gcg acg gcg gag gtt ttt gcc aat gaa ggc gcg cgt 96  
 Gly Ile Gly Gln Ala Thr Ala Glu Val Phe Ala Asn Glu Gly Ala Arg  
 20 25 30  
 gtg atc atc gga gat atc aat aaa gat caa atg gaa gaa aca gtt gac 144  
 Val Ile Ile Gly Asp Ile Asn Lys Asp Gln Met Glu Glu Thr Val Asp  
 35 40 45  
 gca atc aga aaa aac gga gga cag gcc gaa tcc ttt cac ctc gat gtg 192  
 Ala Ile Arg Lys Asn Gly Gly Gln Ala Glu Ser Phe His Leu Asp Val  
 50 55 60  
 tca gat gaa aac agt gtg aaa gca ttt gct gat caa atc aag gat gca 240  
 Ser Asp Glu Asn Ser Val Lys Ala Phe Ala Asp Gln Ile Lys Asp Ala  
 65 70 75 80  
 tgc gga acg att gat att ctg ttt aat aat gcc ggc gtt gat cag gaa 288  
 Cys Gly Thr Ile Asp Ile Leu Phe Asn Asn Ala Gly Val Asp Gln Glu  
 85 90 95  
 ggc gga aag gtg cac gaa tat ccg gtt gac ctg ttt gac cgc att atc 336  
 Gly Gly Lys Val His Glu Tyr Pro Val Asp Leu Phe Asp Arg Ile Ile  
 100 105 110  
 gcc gtc gac ctg cgc ggc aca ttc ctt tgc agc aaa tat ttg att ccg 384  
 Ala Val Asp Leu Arg Gly Thr Phe Leu Cys Ser Lys Tyr Leu Ile Pro  
 115 120 125  
 ctc atg ctc gaa aat gga ggc tcc atc atc aac acc tcc tcc atg tca 432  
 Leu Met Leu Glu Asn Gly Gly Ser Ile Ile Asn Thr Ser Ser Met Ser  
 130 135 140  
 ggc cgt gcc gcg gac ctt gac cgc tcc ggc tac aac gcc gca aaa ggc 480  
 Gly Arg Ala Ala Asp Leu Asp Arg Ser Gly Tyr Asn Ala Ala Lys Gly  
 145 150 155 160  
 ggt atc acc aac ctg aca aag gca atg gca atc gac tac gca cga aac 528  
 Gly Ile Thr Asn Leu Thr Lys Ala Met Ala Ile Asp Tyr Ala Arg Asn  
 165 170 175  
 ggc atc cgc gtc aat tcc att tca ccg ggc acg atc gaa aca ccg ctg 576  
 Gly Ile Arg Val Asn Ser Ile Ser Pro Gly Thr Ile Glu Thr Pro Leu  
 180 185 190  
 att gac aaa tta gca ggc aca aaa gaa cag gaa atg ggc gaa caa ttc 624  
 Ile Asp Lys Leu Ala Gly Thr Lys Glu Gln Glu Met Gly Glu Gln Phe  
 195 200 205  
 cgc gaa gcc aac aaa tgg atc acg ccg ctc gga cgt ctt ggc cag ccc 672  
 Arg Glu Ala Asn Lys Trp Ile Thr Pro Leu Gly Arg Leu Gly Gln Pro  
 210 215 220  
 aaa gaa atg gca aca gtg gca ctg ttc ctc gca tca gac gac agc tca 720  
 Lys Glu Met Ala Thr Val Ala Leu Phe Leu Ala Ser Asp Asp Ser Ser  
 225 230 235 240  
 tac gtc aca gga gaa gac atc acc gca gac ggc ggc atc atg gcg tac 768  
 Tyr Val Thr Gly Glu Asp Ile Thr Ala Asp Gly Gly Ile Met Ala Tyr  
 245 250 255  
 aca tgg cct ggg aag atg ctg att gag gag aaa tgg aag gaa gaa acg 816  
 Thr Trp Pro Gly Lys Met Leu Ile Glu Glu Lys Trp Lys Glu Glu Thr  
 260 265 270  
 aaa taa 822  
 Lys

<210> 1986  
 <211> 273  
 <212> PRT  
 <213> Bacillus subtilis

<400> 1986  
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 Val Ile Ile Gly Asp Ile Asn Lys Asp Gln Met Glu Glu Thr Val Asp  
 35 40 45

## PhoenixTemp32470.tmp.txt

Ala Ile Arg Lys Asn Gly Gly Gln Ala Glu Ser Phe His Leu Asp Val  
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 Ser Asp Glu Asn Ser Val Lys Ala Phe Ala Asp Gln Ile Lys Asp Ala  
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 Cys Gly Thr Ile Asp Ile Leu Phe Asn Asn Ala Gly Val Asp Gln Glu  
 85 90 95  
 Gly Gly Lys Val His Glu Tyr Pro Val Asp Leu Phe Asp Arg Ile Ile  
 100 105 110  
 Ala Val Asp Leu Arg Gly Thr Phe Leu Cys Ser Lys Tyr Leu Ile Pro  
 115 120 125  
 Leu Met Leu Glu Asn Gly Gly Ser Ile Ile Asn Thr Ser Ser Met Ser  
 130 135 140  
 Gly Arg Ala Ala Asp Leu Asp Arg Ser Gly Tyr Asn Ala Ala Lys Gly  
 145 150 155 160  
 Gly Ile Thr Asn Leu Thr Lys Ala Met Ala Ile Asp Tyr Ala Arg Asn  
 165 170 175  
 Gly Ile Arg Val Asn Ser Ile Ser Pro Gly Thr Ile Glu Thr Pro Leu  
 180 185 190  
 Ile Asp Lys Leu Ala Gly Thr Lys Glu Gln Glu Met Gly Glu Gln Phe  
 195 200 205  
 Arg Glu Ala Asn Lys Trp Ile Thr Pro Leu Gly Arg Leu Gly Gln Pro  
 210 215 220  
 Lys Glu Met Ala Thr Val Ala Leu Phe Leu Ala Ser Asp Asp Ser Ser  
 225 230 235 240  
 Tyr Val Thr Gly Glu Asp Ile Thr Ala Asp Gly Gly Ile Met Ala Tyr  
 245 250 255  
 Thr Trp Pro Gly Lys Met Leu Ile Glu Glu Lys Trp Lys Glu Glu Thr  
 260 265 270  
 Lys

&lt;210&gt; 1987

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 1987

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ttc gaa atc gca aga gaa ttc gcc cgg gaa ggt gcc agc gtc atc gtt	96
Phe Glu Ile Ala Arg Glu Phe Ala Arg Gly Ala Ser Val Ile Val	
20 25 30	
tca gac ctc cgt ccg gaa gca tgt gaa aaa gca gcc tcc aag ctt gca	144
Ser Asp Leu Arg Pro Glu Ala Cys Glu Lys Ala Ala Ser Lys Leu Ala	
35 40 45	
gaa gaa ggc ttt gac gcg gcg gcc att ccg tat gat gtg aca aag gaa	192
Glu Glu Gly Phe Asp Ala Ala Ile Pro Tyr Asp Val Thr Lys Glu	
50 55 60	
gcg caa gtt gct gat acg gtg aac gtc atc caa aaa caa tac ggc cgc	240
Ala Gln Val Ala Asp Thr Val Asn Val Ile Gln Lys Gln Tyr Gly Arg	
65 70 75 80	
ttg gat att ctg gtg aac aat gcc ggt att cag cac gtc gct ccg att	288
Leu Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Ile	
85 90 95	
gaa gag ttt ccg aca gac acc ttt gaa cag ctg atc aag gtc atg ctg	336
Glu Glu Phe Pro Thr Asp Thr Phe Glu Gln Leu Ile Lys Val Met Leu	
100 105 110	
acg gct ccc ttt att gca atg aag cat gtt ttt ccg atc atg aaa aaa	384
Thr Ala Pro Phe Ile Ala Met Lys His Val Phe Pro Ile Met Lys Lys	
115 120 125	
cag cag ttt ggc aga atc att aat att gcg tct gtt aat gga tta gtg	432
Gln Gln Phe Gly Arg Ile Ile Asn Ile Ala Ser Val Asn Gly Leu Val	
130 135 140	



## PhoenixTemp32470.tmp.txt

ggc	ttt	gca	ggg	aaa	tcc	gct	tat	aat	agc	gcc	aag	cac	ggc	gtc	att	480
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gga	ctc	aca	aaa	gta	ggg	gcg	ctg	gaa	ggc	gcg	ccc	cac	ggc	ata	aca	528
Gly	Leu	Thr	Lys	Val	Gly	Ala	Leu	Glu	Gly	Ala	Pro	His	Gly	Ile	Thr	
				165					170					175		
gtc	aat	gcg	ctc	tgt	ccg	ggt	tat	gtc	gat	acc	cag	ctt	gta	cgc	aat	576
Val	Asn	Ala	Leu	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Gln	Leu	Val	Arg	Asn	
			180					185					190			
cag	ctt	agc	gat	cta	tcg	aaa	act	aga	aat	gtc	cct	tac	gac	tct	gta	624
Gln	Leu	Ser	Asp	Leu	Ser	Lys	Thr	Arg	Asn	Val	Pro	Tyr	Asp	Ser	Val	
		195					200					205				
ctt	gaa	caa	gtc	att	ttt	ccg	ctt	gtg	ccg	caa	aag	cga	ctg	ctt	tcc	672
Leu	Glu	Gln	Val	Ile	Phe	Pro	Leu	Val	Pro	Gln	Lys	Arg	Leu	Leu	Ser	
	210					215					220					
gtc	aag	gaa	att	gcg	gat	tat	gcc	gtg	ttt	ttg	gca	agc	gag	aag	gcg	720
Val	Lys	Glu	Ile	Ala	Asp	Tyr	Ala	Val	Phe	Leu	Ala	Ser	Glu	Lys	Ala	
225					230					235					240	
aag	ggc	gtc	act	ggg	cag	gct	gtc	gtc	ctt	gat	ggg	ggc	tac	acc	gca	768
Lys	Gly	Val	Thr	Gly	Gln	Ala	Val	Val	Leu	Asp	Gly	Gly	Tyr	Thr	Ala	
				245					250					255		
caa	tga															774
Gln																

&lt;210&gt; 1988

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Bacillus subtilis

&lt;400&gt; 1988

Met	Arg	Lys	Gln	Val	Ala	Leu	Val	Thr	Gly	Ala	Ala	Gly	Gly	Ile	Arg	
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Phe	Glu	Ile	Ala	Arg	Glu	Phe	Ala	Arg	Glu	Gly	Ala	Ser	Val	Ile	Val	
			20					25					30			
Ser	Asp	Leu	Arg	Pro	Glu	Ala	Cys	Glu	Lys	Ala	Ala	Ser	Lys	Leu	Ala	
		35					40					45				
Glu	Glu	Gly	Phe	Asp	Ala	Ala	Ala	Ile	Pro	Tyr	Asp	Val	Thr	Lys	Glu	
	50				55					60						
Ala	Gln	Val	Ala	Asp	Thr	Val	Asn	Val	Ile	Gln	Lys	Gln	Tyr	Gly	Arg	
65				70					75						80	
Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Ile	
			85					90					95			
Glu	Glu	Phe	Pro	Thr	Asp	Thr	Phe	Glu	Gln	Leu	Ile	Lys	Val	Met	Leu	
		100					105					110				
Thr	Ala	Pro	Phe	Ile	Ala	Met	Lys	His	Val	Phe	Pro	Ile	Met	Lys	Lys	
		115					120					125				
Gln	Gln	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Asn	Gly	Leu	Val	
	130				135					140						
Gly	Phe	Ala	Gly	Lys	Ser	Ala	Tyr	Asn	Ser	Ala	Lys	His	Gly	Val	Ile	
145				150					155						160	
Gly	Leu	Thr	Lys	Val	Gly	Ala	Leu	Glu	Gly	Ala	Pro	His	Gly	Ile	Thr	
			165					170						175		
Val	Asn	Ala	Leu	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Gln	Leu	Val	Arg	Asn	
		180					185					190				
Gln	Leu	Ser	Asp	Leu	Ser	Lys	Thr	Arg	Asn	Val	Pro	Tyr	Asp	Ser	Val	
	195					200					205					
Leu	Glu	Gln	Val	Ile	Phe	Pro	Leu	Val	Pro	Gln	Lys	Arg	Leu	Leu	Ser	
	210				215					220						
Val	Lys	Glu	Ile	Ala	Asp	Tyr	Ala	Val	Phe	Leu	Ala	Ser	Glu	Lys	Ala	
225					230					235					240	
Lys	Gly	Val	Thr	Gly	Gln	Ala	Val	Val	Leu	Asp	Gly	Gly	Tyr	Thr	Ala	
				245					250					255		
Gln																

&lt;210&gt; 1989

&lt;211&gt; 1002

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1002)

&lt;400&gt; 1989

atg	cac	act	acc	ctc	gcc	tcc	tac	gcc	cag	gat	ctc	gcc	atg	cct	gcc	48
Met	His	Thr	Thr	Leu	Ala	Ser	Tyr	Ala	Gln	Asp	Leu	Ala	Met	Pro	Ala	
1				5					10					15		
gcc	gca	ctc	gac	ctc	ctc	cct	gac	aag	gcg	cac	cag	ccg	tcc	atg	gcg	96
Ala	Ala	Leu	Asp	Leu	Leu	Pro	Asp	Lys	Ala	His	Gln	Pro	Ser	Met	Ala	
			20					25					30			
ccg	tcg	ctc	cac	gcc	tgg	gac	tcc	ccc	aat	ggc	gcc	ccc	act	ccc	atg	144
Pro	Ser	Leu	His	Ala	Trp	Asp	Ser	Pro	Asn	Gly	Ala	Pro	Thr	Pro	Met	
		35				40						45				
ccc	aag	agg	ctg	gaa	ggg	aag	gtg	gcc	att	gtc	acc	ggc	ggg	gcg	agg	192
Pro	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	Arg	
	50					55					60					
ggg	atc	ggg	gag	gcg	atc	gtg	agg	ctg	ttc	gtg	aag	cac	ggg	gcc	aag	240
Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Lys	
	65				70					75					80	
gtg	gtg	atc	gcg	gac	atc	gac	gac	gcg	gcg	ggc	gag	gcg	ctg	gcg	gcg	288
Val	Val	Ile	Ala	Asp	Ile	Asp	Asp	Ala	Ala	Gly	Glu	Ala	Leu	Ala	Ala	
				85					90					95		
gcg	ctg	ggg	ccg	cac	gtc	ggg	ttc	gtg	cgg	tgc	gac	gtg	tcg	gtg	gag	336
Ala	Leu	Gly	Pro	His	Val	Gly	Phe	Val	Arg	Cys	Asp	Val	Ser	Val	Glu	
			100					105					110			
gag	gac	gtg	gag	cgc	gcc	gtc	gag	cgc	gcc	gtg	gcg	cgg	tac	ggg	cgg	384
Glu	Asp	Val	Glu	Arg	Ala	Val	Glu	Arg	Ala	Val	Ala	Arg	Tyr	Gly	Arg	
		115					120					125				
ttg	gac	gtg	ctg	tgc	aac	aac	gcc	ggg	gtg	ctg	ggc	cgc	cag	acg	cgc	432
Leu	Asp	Val	Leu	Cys	Asn	Asn	Ala	Gly	Val	Leu	Gly	Arg	Gln	Thr	Arg	
	130				135						140					
gcc	gcc	aag	agc	atc	ctg	tcg	ttc	gac	gcc	ggg	gag	ttc	gac	cgc	gtg	480
Ala	Ala	Lys	Ser	Ile	Leu	Ser	Phe	Asp	Ala	Gly	Glu	Phe	Asp	Arg	Val	
	145				150					155					160	
ctc	cgc	gtc	aac	gcg	ctg	ggc	gcc	gcg	ctc	ggc	atg	aag	cac	gcg	gcg	528
Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	Lys	His	Ala	Ala	
				165					170					175		
ctc	gcc	atg	acc	cag	cgc	cgc	gcc	ggc	agg	atc	atc	tcc	gtc	gcc	agc	576
Leu	Ala	Met	Thr	Gln	Arg	Arg	Ala	Gly	Ser	Ile	Ile	Ser	Val	Ala	Ser	
			180					185					190			
gtc	gcc	ggc	gtg	ctc	ggc	ggc	ctc	ggc	ccg	cac	gcc	tac	acc	gcc	tcc	624
Val	Ala	Gly	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	
		195					200					205				
aag	cac	gcc	atc	gtg	ggg	ctc	acc	aag	aac	gcc	gcc	tgc	gag	ctc	ggc	672
Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	Leu	Gly	
	210				215						220					
gcc	cac	ggc	atc	cgc	gtc	aac	tgc	atc	tcc	ccc	ttc	ggc	gtc	gcc	acc	720
Ala	His	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	Val	Ala	Thr	
	225				230					235					240	
ccg	atg	ctc	atc	aac	gcc	tgg	cgc	cag	ggc	cac	gac	gcc	tcc	acc	gcc	768
Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Ala	Ser	Thr	Ala	
				245					250					255		
gac	gac	gcc	gac	gcc	gac	atc	gac	ctc	gac	atc	gcc	gtg	ccc	agc	gac	816
Asp	Asp	Ala	Asp	Ala	Asp	Ile	Asp	Leu	Asp	Ile	Ala	Val	Pro	Ser	Asp	
			260					265					270			
cag	gag	gtg	gag	aag	atg	gag	gag	gtg	gtc	agg	ggc	ctc	gcc	acg	ctc	864
Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	Ala	Thr	Leu	
		275					280					285				
aag	ggc	gcg	acg	ctg	aga	ccc	agg	gac	atc	gcc	gag	gcg	gcg	ctc	ttc	912
Lys	Gly	Ala	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Phe	
	290				295						300					
ctc	gcc	agc	gac	gac	tcc	aga	tac	att	tcc	ggc	cac	aac	ctc	gtc	gtc	960
Leu	Ala	Ser	Asp	Asp	Ser	Arg	Tyr	Ile	Ser	Gly	His	Asn	Leu	Val	Val	
	305				310					315					320	
gac	ggc	ggc	gtc	acc	tcc	aga	aac	cta	att	ggc	ctt	tga				1002
Asp	Gly	Gly	Val	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu					

325

330

<210> 1990  
 <211> 333  
 <212> PRT  
 <213> Oryza sativa

<400> 1990  
 Met His Thr Thr Leu Ala Ser Tyr Ala Gln Asp Leu Ala Met Pro Ala  
 1 5 10 15  
 Ala Ala Leu Asp Leu Leu Pro Asp Lys Ala His Gln Pro Ser Met Ala  
 20 25 30  
 Pro Ser Leu His Ala Trp Asp Ser Pro Asn Gly Ala Pro Thr Pro Met  
 35 40 45  
 Pro Lys Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly Gly Ala Arg  
 50 55 60  
 Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Lys His Gly Ala Lys  
 65 70 75 80  
 Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala Ala  
 85 90 95  
 Ala Leu Gly Pro His Val Gly Phe Val Arg Cys Asp Val Ser Val Glu  
 100 105 110  
 Glu Asp Val Glu Arg Ala Val Glu Arg Ala Val Ala Arg Tyr Gly Arg  
 115 120 125  
 Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly Arg Gln Thr Arg  
 130 135 140  
 Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe Asp Arg Val  
 145 150 155 160  
 Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His Ala Ala  
 165 170 175  
 Leu Ala Met Thr Gln Arg Arg Ala Gly Ser Ile Ile Ser Val Ala Ser  
 180 185 190  
 Val Ala Gly Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr Ala Ser  
 195 200 205  
 Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu Gly  
 210 215 220  
 Ala His Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr  
 225 230 235 240  
 Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Ala Ser Thr Ala  
 245 250 255  
 Asp Asp Ala Asp Ala Asp Ile Asp Leu Asp Ile Ala Val Pro Ser Asp  
 260 265 270  
 Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu Ala Thr Leu  
 275 280 285  
 Lys Gly Ala Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala Ala Leu Phe  
 290 295 300  
 Leu Ala Ser Asp Asp Ser Arg Tyr Ile Ser Gly His Asn Leu Val Val  
 305 310 315 320  
 Asp Gly Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330

<210> 1991  
 <211> 960  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(960)

<400> 1991  
 atg acc gcc gtc gac ttg atg cct gca gct gac gac gac aac aac aag 48  
 Met Thr Ala Val Asp Leu Met Pro Ala Ala Asp Asp Asp Asn Asn Lys  
 1 5 10 15  
 cag tca tcc acc ggc ctc ctc cac cac cac cag ctc ccc gcc gcc gcc 96  
 Gln Ser Ser Thr Gly Leu Leu His His His Gln Leu Pro Ala Ala Ala  
 20 25 30  
 gac aac gcc ata cta cac aat acc agg cgg ctg gag ggg aag gtg gcc 144  
 Asp Asn Ala Ile Leu His Asn Thr Arg Arg Leu Glu Gly Lys Val Ala  
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## PhoenixTemp32470.tmp.txt

		35				40			45									
atc	gtc	acc	ggc	ggc	tcg	cgt	ggc	atc	ggc	gaa	gcc	atc	gta	agg	gcc			192
Ile	Val	Thr	Gly	Gly	Ser	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Ala			
	50					55					60							
ttc	gtt	cac	cac	ggc	gct	ctc	gtc	gtc	gtc	gcc	gac	atc	gac	gac	gcc			240
Phe	Val	His	His	Gly	Ala	Leu	Val	Val	Val	Ala	Asp	Ile	Asp	Asp	Ala			
65				70					75						80			
ggg	ggc	cac	gcg	ctg	gcc	gcc	gcg	ctc	ggc	ccg	cac	gcc	tgc	acc	tac			288
Gly	Gly	His	Ala	Leu	Ala	Ala	Ala	Leu	Gly	Pro	His	Ala	Cys	Thr	Tyr			
				85					90					95				
gtc	cac	tgc	gac	gtg	gcc	gag	gag	gcc	gac	gtg	gaa	cgc	gcc	gtc	gcc			336
Val	His	Cys	Asp	Val	Ala	Glu	Glu	Ala	Asp	Val	Glu	Arg	Ala	Val	Ala			
			100					105					110					
acc	acg	ctg	gag	cag	cac	ggc	cgc	ctg	gac	gtg	ctg	tgc	aac	aac	gcc			384
Thr	Thr	Leu	Glu	Gln	His	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	Ala			
							120					125						
ggg	gtg	ctg	ggc	cgc	cag	acg	cgc	ggc	gcc	aag	agc	atc	gcg	tcc	ctc			432
Gly	Val	Leu	Gly	Arg	Gln	Thr	Arg	Gly	Ala	Lys	Ser	Ile	Ala	Ser	Leu			
	130					135					140							
gac	gcc	gcc	gag	ttc	gcc	cgc	gtg	ctg	cgc	gtc	aac	gcg	ctg	ggc	gcc			480
Asp	Ala	Ala	Glu	Phe	Ala	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala			
145					150				155					160				
gcc	ctc	gga	atg	aag	cac	gcg	gcg	cgt	gcc	atg	gtg	ccc	cgc	cgc	tcc			528
Ala	Leu	Gly	Met	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	Ser			
				165				170						175				
ggg	agc	atc	gtg	tcg	gtg	gcg	agc	gtg	gcg	ggc	gtg	ctg	ggc	ggc	ctc			576
Gly	Ser	Ile	Val	Ser	Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Gly	Leu			
			180					185					190					
ggc	ccg	cac	gcg	tac	acg	gcc	tcc	aag	cac	gcc	cta	gtg	ggg	ctc	acc			624
Gly	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Leu	Val	Gly	Leu	Thr			
		195					200					205						
aag	aac	gcc	gcc	tgc	gag	ctc	ggg	gag	cac	ggc	atc	cgc	gtc	aac	tgc			672
Lys	Asn	Ala	Ala	Cys	Glu	Leu	Gly	Glu	His	Gly	Ile	Arg	Val	Asn	Cys			
	210					215				220								
atc	tcc	ccc	ttc	ggc	gtg	gcg	acg	ccg	atg	ctg	aac	gcg	tgg	cgg				720
Ile	Ser	Pro	Phe	Gly	Val	Ala	Thr	Pro	Met	Leu	Val	Asn	Ala	Trp	Arg			
225					230					235				240				
cag	ggg	cag	gga	gga	gat	cac	gcg	gat	gag	gat	cag	gcg	gcg	gcg	agc			768
Gln	Gly	Gln	Gly	Gly	Asp	His	Ala	Asp	Glu	Asp	Gln	Ala	Ala	Ala	Ser			
				245				250						255				
gag	gag	gag	gag	gtg	gag	aag	atg	gag	gag	atg	gtg	cgg	agg	ctg	gcg			816
Glu	Glu	Glu	Glu	Val	Glu	Lys	Met	Glu	Glu	Met	Val	Arg	Arg	Leu	Ala			
				260				265				270						
acg	ctc	aag	ggg	ccg	acg	ctg	cgg	gca	ggc	gac	atc	gcg	gag	gcg	gcg			864
Thr	Leu	Lys	Gly	Pro	Thr	Leu	Arg	Ala	Gly	Asp	Ile	Ala	Glu	Ala	Ala			
		275					280				285							
gtg	ttc	ctg	gcc	agc	gac	gag	tcc	agg	tac	gtg	tcc	ggc	cac	aac	ctc			912
Val	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	His	Asn	Leu			
	290				295					300								
gtc	gtc	gac	ggc	ggc	gtc	acc	acc	tcc	aga	aac	gtc	atc	ggc	ctc				957
Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Val	Ile	Gly	Leu				
305					310					315								
tga																		960

<210> 1992  
 <211> 319  
 <212> PRT  
 <213> Oryza sativa

<400> 1992  
 Met Thr Ala Val Asp Leu Met Pro Ala Ala Asp Asp Asp Asn Asn Lys  
 1 Gln Ser Ser Thr Gly Leu Leu His His His Gln Leu Pro Ala Ala Ala  
 Asp Asn Ala Ile Leu His Asn Thr Arg Arg Leu Glu Gly Lys Val Ala  
 Ile Val Thr Gly Gly Ser Arg Gly Ile Gly Glu Ala Ile Val Arg Ala  
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## PhoenixTemp32470.tmp.txt

50 55 60  
 Phe Val His His Gly Ala Leu Val Val Val Ala Asp Ile Asp Asp Ala  
 65 70 75 80  
 Gly Gly His Ala Leu Ala Ala Leu Gly Pro His Ala Cys Thr Tyr  
 85 90 95  
 Val His Cys Asp Val Ala Glu Glu Ala Asp Val Glu Arg Ala Val Ala  
 100 105 110  
 Thr Thr Leu Glu Gln His Gly Arg Leu Asp Val Leu Cys Asn Asn Ala  
 115 120 125  
 Gly Val Leu Gly Arg Gln Thr Arg Gly Ala Lys Ser Ile Ala Ser Leu  
 130 135 140  
 Asp Ala Ala Glu Phe Ala Arg Val Leu Arg Val Asn Ala Leu Gly Ala  
 145 150 155 160  
 Ala Leu Gly Met Lys His Ala Ala Arg Ala Met Val Pro Arg Arg Ser  
 165 170 175  
 Gly Ser Ile Val Ser Val Ala Ser Val Ala Gly Val Leu Gly Gly Leu  
 180 185 190  
 Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Leu Val Gly Leu Thr  
 195 200 205  
 Lys Asn Ala Ala Cys Glu Leu Gly Glu His Gly Ile Arg Val Asn Cys  
 210 215 220  
 Ile Ser Pro Phe Gly Val Ala Thr Pro Met Leu Val Asn Ala Trp Arg  
 225 230 235 240  
 Gln Gly Gln Gly Gly Asp His Ala Asp Glu Asp Gln Ala Ala Ala Ser  
 245 250 255  
 Glu Glu Glu Glu Val Glu Lys Met Glu Glu Met Val Arg Arg Leu Ala  
 260 265 270  
 Thr Leu Lys Gly Pro Thr Leu Arg Ala Gly Asp Ile Ala Glu Ala Ala  
 275 280 285  
 Val Phe Leu Ala Ser Asp Glu Ser Arg Tyr Val Ser Gly His Asn Leu  
 290 295 300  
 Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn Val Ile Gly Leu  
 305 310 315

<210> 1993  
 <211> 897  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(897)

<400> 1993  
 atg atg ctt aac gca gca gcc aaa aaa ctt gtc agg ggg aag agc ata 48  
 Met Met Leu Asn Ala Ala Ala Lys Lys Leu Val Arg Gly Lys Ser Ile  
 1 5 10 15  
 gct gct cac gta ttc ttc tcc tcg tcg tca aga tcc aga aag ttg gat 96  
 Ala Ala His Val Phe Phe Ser Ser Ser Ser Arg Ser Arg Lys Leu Asp  
 20 25 30  
 ggc aaa gtg gcc gtg ata acc ggc gca gcg agc ggc atc ggc gag gcc 144  
 Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala  
 35 40 45  
 acg gcg aag gag ttc gtc agg aat ggc gcc aag gtt atc att gcc gat 192  
 Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp  
 50 55 60  
 atc aag gat gat ctc ggc cgc gcc gtg gcc ggc gag ctc ggc gcc gac 240  
 Ile Lys Asp Asp Leu Gly Arg Ala Val Ala Gly Glu Leu Gly Ala Asp  
 65 70 75 80  
 gcc gcg tcg tac acg cac tgc gac gtc acc gtc gag aag gat gtc gcc 288  
 Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala  
 85 90 95  
 tcg gcc gtc gac ctc gcc gtg gcg cga cac ggc cgc ctc gac gtc gtg 336  
 Ser Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val  
 100 105 110  
 tac agc aac gcc gcc atc gcg ggt ggc gcg cct ccg gcc acg ctc gcg 384  
 Tyr Ser Asn Ala Ala Ile Ala Gly Gly Ala Pro Pro Ala Thr Leu Ala  
 115 120 125  
 gcg ctc gac ctc gac gag tac gac cgc gtc atg gcc gtc aac gcc agg 432

## PhoenixTemp32470.tmp.txt

Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg		
130						135					140						
tcc	atg	tgt	gcg	tgc	gtc	aag	cac	gcg	gcg	cgc	gtc	atg	gcg	ccc	cgc	480	
Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg		
145					150					155					160		
cgc	gcc	ggt	tgc	atc	ctc	tgc	acg	gcc	agc	acg	gcg	gcg	gtg	ctc	ggc	528	
Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Thr	Ala	Ala	Val	Leu	Gly		
				165					170					175			
ggc	atg	gcg	gcg	ccg	gcg	tac	tcc	atg	tcg	aag	gcg	gcc	gtc	gtc	ggc	576	
Gly	Met	Ala	Ala	Pro	Ala	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Val	Val	Gly		
			180					185					190				
atg	gtg	cgg	acg	gtg	gcg	agg	cag	ctg	gcg	cgc	gac	ggc	gtg	cgg	gtg	624	
Met	Val	Arg	Thr	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val	Arg	Val		
		195					200					205					
aac	gcc	atc	tcg	ccg	cac	gca	gtc	ccg	acg	ccg	atg	gcg	ata	ggt	ctc	672	
Asn	Ala	Ile	Ser	Pro	His	Ala	Val	Pro	Thr	Pro	Met	Ala	Ile	Gly	Leu		
	210					215					220						
ttc	tcc	gag	acg	ttc	ccg	gcg	gcg	acc	gcg	gag	gag	gtg	agg	agg	atg	720	
Phe	Ser	Glu	Thr	Phe	Pro	Ala	Ala	Thr	Ala	Glu	Glu	Val	Arg	Arg	Met		
225					230					235					240		
gtg	acg	agg	gag	atg	cag	gag	ctg	gaa	ggg	gcg	tcg	ctg	gag	gtg	gaa	768	
Val	Thr	Arg	Glu	Met	Gln	Glu	Leu	Glu	Gly	Ala	Ser	Leu	Glu	Val	Glu		
				245				250					255				
gac	gtg	gcg	agg	gcg	gcc	gtc	ttc	ttg	gcg	tcc	gac	gag	gcc	aag	ttc	816	
Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe		
			260					265					270				
atc	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acg	gca	ggc	aag	864	
Ile	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ala	Gly	Lys		
		275				280						285					
gtg	ctc	gtc	cgg	gat	cct	ccg	tct	gct	tga							897	
Val	Leu	Val	Arg	Asp	Pro	Pro	Gly	Ser	Ala								
	290					295											

&lt;210&gt; 1994

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa

&lt;400&gt; 1994

Met	Met	Leu	Asn	Ala	Ala	Ala	Lys	Lys	Leu	Val	Arg	Gly	Lys	Ser	Ile		
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Ala	Ala	His	Val	Phe	Phe	Ser	Ser	Ser	Ser	Arg	Ser	Arg	Lys	Leu	Asp		
			20					25					30				
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Glu	Ala		
		35					40					45					
Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp		
		50				55					60						
Ile	Lys	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Gly	Glu	Leu	Gly	Ala	Asp		
65				70					75					80			
Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	Val	Thr	Val	Glu	Lys	Asp	Val	Ala		
			85					90					95				
Ser	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Val		
			100					105					110				
Tyr	Ser	Asn	Ala	Ala	Ile	Ala	Gly	Gly	Ala	Pro	Pro	Ala	Thr	Leu	Ala		
		115					120					125					
Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg		
	130					135					140						
Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg		
145				150						155					160		
Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Thr	Ala	Ala	Val	Leu	Gly		
			165						170					175			
Gly	Met	Ala	Ala	Pro	Ala	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Val	Val	Gly		
		180						185					190				
Met	Val	Arg	Thr	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val	Arg	Val		
		195					200					205					
Asn	Ala	Ile	Ser	Pro	His	Ala	Val	Pro	Thr	Pro	Met	Ala	Ile	Gly	Leu		
	210					215					220						
Phe	Ser	Glu	Thr	Phe	Pro	Ala	Ala	Thr	Ala	Glu	Glu	Val	Arg	Arg	Met		
225					230					235					240		

## PhoenixTemp32470.tmp.txt

Val Thr Arg Glu Met Gln Glu Leu Glu Gly Ala Ser Leu Glu Val Glu  
 245 250 255  
 Asp Val Ala Arg Ala Val Phe Leu Ser Asp Glu Ala Lys Phe  
 260 265 270  
 Ile Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Ala Gly Lys  
 275 280 285  
 Val Leu Val Arg Asp Pro Pro Gly Ser Ala  
 290 295

&lt;210&gt; 1995

&lt;211&gt; 855

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(855)

&lt;400&gt; 1995

atg	tca	act	gaa	aac	att	caa	cat	tct	tcc	ctc	cct	tct	caa	agg	ctt	48
Met	Ser	Thr	Glu	Asn	Ile	Gln	His	Ser	Ser	Leu	Pro	Ser	Gln	Arg	Leu	
1				5				10					15			
ttg	ggc	aaa	gtg	gca	ttg	ata	acc	gga	gga	gcc	aca	ggg	ata	ggc	gaa	96
Leu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Thr	Gly	Ile	Gly	Glu	
			20					25					30			
agc	atc	gct	cgt	ctc	ttc	cac	aag	cac	ggt	gcc	aaa	gtc	tgc	atc	ttc	144
Ser	Ile	Ala	Arg	Leu	Phe	His	Lys	His	Gly	Ala	Lys	Val	Cys	Ile	Phe	
			35				40					45				
gac	gtc	caa	gac	gat	ctc	gga	gac	aaa	gta	ctc	aaa	act	ctg	tta	gcc	192
Asp	Val	Gln	Asp	Asp	Leu	Gly	Asp	Lys	Val	Leu	Lys	Thr	Leu	Leu	Ala	
	50					55				60						
aac	tcg	gag	gat	gat	gag	tca	gct	tgt	ttc	atc	cac	ggt	gac	gtc	aca	240
Asn	Ser	Glu	Asp	Asp	Glu	Ser	Ala	Cys	Phe	Ile	His	Gly	Asp	Val	Thr	
	65				70			75							80	
caa	gaa	gac	gac	atc	agc	aac	gct	ggt	gac	ttc	gcc	gtc	aaa	cgt	ttc	288
Gln	Glu	Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Arg	Phe	
				85				90						95		
ggg	acc	ctc	gac	ata	ctc	atc	aac	aac	gca	gga	gta	agc	gga	gca	ccc	336
Gly	Thr	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Val	Ser	Gly	Ala	Pro	
			100					105					110			
tgc	ccc	gac	atc	cgc	aac	aac	agt	tta	acc	gag	ttc	gaa	acc	gtc	ttc	384
Cys	Pro	Asp	Ile	Arg	Asn	Asn	Ser	Leu	Thr	Glu	Phe	Glu	Thr	Val	Phe	
		115					120					125				
aac	gtc	aac	gtg	aaa	gga	gct	ttc	cta	ggg	atg	aaa	cac	gcg	gcg	cgt	432
Asn	Val	Asn	Val	Lys	Gly	Ala	Phe	Leu	Gly	Met	Lys	His	Ala	Ala	Arg	
	130					135					140					
gtg	atg	atc	ccc	gcc	aag	aaa	ggc	tcc	ata	gtc	tct	tta	tgc	agc	gtt	480
Val	Met	Ile	Pro	Ala	Lys	Lys	Gly	Ser	Ile	Val	Ser	Leu	Cys	Ser	Val	
	145				150				155						160	
ggt	ggt	gtt	gtc	gga	ggc	gtc	ggt	ccg	cac	gct	tac	gtc	ggt	tcc	aag	528
Gly	Gly	Val	Val	Gly	Gly	Val	Gly	Pro	His	Ala	Tyr	Val	Gly	Ser	Lys	
				165				170						175		
cac	gcg	gtt	cta	ggt	ttg	act	agg	agc	ggt	gcg	gcg	gag	ctg	gga	cag	576
His	Ala	Val	Leu	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Glu	Leu	Gly	Gln	
			180					185					190			
cat	ggg	ata	cgc	gtg	aac	tgc	gtt	tct	cct	tac	gcg	gtt	gcg	act	aac	624
His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Asn	
		195					200					205				
ctc	gcg	ttg	gct	cat	ttg	cct	gag	gac	gag	agg	aat	gaa	ggc	gtg	gtc	672
Leu	Ala	Leu	Ala	His	Leu	Pro	Glu	Asp	Glu	Arg	Asn	Glu	Gly	Val	Val	
	210					215					220					
gct	ggt	ttc	agg	agt	ttc	gcg	gct	gcg	aac	gcg	aat	ctg	aaa	ggt	gtt	720
Ala	Gly	Phe	Arg	Ser	Phe	Ala	Ala	Ala	Asn	Ala	Asn	Leu	Lys	Gly	Val	
	225				230				235						240	
gag	ttg	acg	gtt	gat	gac	gtg	gcc	aac	gcg	gtt	ttg	ttt	ctt	gcg	agt	768
Glu	Leu	Thr	Val	Asp	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala	Ser	
				245					250					255		
gat	gag	tcg	cgg	tac	gtg	agt	ggt	gat	aat	ctg	atg	gtt	gat	ggt	ggg	816
Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	Asp	Asn	Leu	Met	Val	Asp	Gly	Gly	

260  
 ttt act tgc act aac cac tcc ttt 265 ttt agg tga 270  
 Phe Thr Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

855

<210> 1996  
 <211> 284  
 <212> PRT  
 <213> Brassica napus

<400> 1996  
 Met Ser Thr Glu Asn Ile Gln His Ser Ser Leu Pro Ser Gln Arg Leu  
 1 5 10 15  
 Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu  
 20 25 30  
 Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Phe  
 35 40 45  
 Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala  
 50 55 60  
 Asn Ser Glu Asp Asp Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr  
 65 70 75 80  
 Gln Glu Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Arg Phe  
 85 90 95  
 Gly Thr Leu Asp Ile Leu Ile Asn Asn Ala Gly Val Ser Gly Ala Pro  
 100 105 110  
 Cys Pro Asp Ile Arg Asn Asn Ser Leu Thr Glu Phe Glu Thr Val Phe  
 115 120 125  
 Asn Val Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg  
 130 135 140  
 Val Met Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val  
 145 150 155 160  
 Gly Gly Val Val Gly Gly Val Gly Pro His Ala Tyr Val Gly Ser Lys  
 165 170 175  
 His Ala Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly Gln  
 180 185 190  
 His Gly Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Ala Thr Asn  
 195 200 205  
 Leu Ala Leu Ala His Leu Pro Glu Asp Glu Arg Asn Glu Gly Val Val  
 210 215 220  
 Ala Gly Phe Arg Ser Phe Ala Ala Ala Asn Ala Asn Leu Lys Gly Val  
 225 230 235 240  
 Glu Leu Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser  
 245 250 255  
 Asp Glu Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly  
 260 265 270  
 Phe Thr Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

<210> 1997  
 <211> 903  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(903)

<400> 1997  
 atg ccg gct caa gtg atc act gag cag acc ttt caa tcc ctc cac gac 48  
 Met Pro Ala Gln Val Ile Thr Glu Gln Thr Phe Gln Ser Leu His Asp 15  
 1 5 10  
 acc atc atg gag gat aca aat tca act tta ttt cat aag agg ttg gaa 96  
 Thr Ile Met Glu Asp Thr Asn Ser Thr Leu Phe His Lys Arg Leu Glu 20 25 30  
 gga aaa gta gcc atc ata acc gga gga gca cat ggg atc ggc aaa gct 144  
 Gly Lys Val Ala Ile Ile Thr Gly Gly Ala His Gly Ile Gly Lys Ala 35 40 45  
 acc gtc aag ata ttc gcg aga cac ggt gcc acg gtg gtg atc gct gac 192  
 Thr Val Lys Ile Phe Ala Arg His Gly Ala Thr Val Val Ile Ala Asp 260 265 270



## PhoenixTemp32470.tmp.txt

50	55	60	
gtg Val 65	gac Asp	gcc Ala	aca Thr
55	55	60	
gga Gly 70	tct Ser	tcc Ser	ctg Leu
65	70	75	80
caa Gln	gtc Val	gcc Ala	ttc Phe
75	80	85	90
ata Ile	agc Ser	tgc Cys	gat Asp
85	90	95	100
gtg Val	acc Thr	atc Ile	gca Ala
90	95	100	105
cgt Tyr	ggg Gly	cgg Arg	ctt Leu
100	105	110	115
gac Val	gtg Val	gaa Glu	gct Ala
110	115	120	125
gac Val	gtg Val	gaa Glu	gct Ala
120	125	130	135
gac Val	gtg Val	gaa Glu	gct Ala
130	135	140	145
gac Val	gtg Val	gaa Glu	gct Ala
140	145	150	155
gac Val	gtg Val	gaa Glu	gct Ala
150	155	160	165
gac Val	gtg Val	gaa Glu	gct Ala
160	165	170	175
gac Val	gtg Val	gaa Glu	gct Ala
170	175	180	185
gac Val	gtg Val	gaa Glu	gct Ala
180	185	190	195
gac Val	gtg Val	gaa Glu	gct Ala
190	195	200	205
gac Val	gtg Val	gaa Glu	gct Ala
200	205	210	215
gac Val	gtg Val	gaa Glu	gct Ala
210	215	220	225
gac Val	gtg Val	gaa Glu	gct Ala
220	225	230	235
gac Val	gtg Val	gaa Glu	gct Ala
230	235	240	245
gac Val	gtg Val	gaa Glu	gct Ala
240	245	250	255
gac Val	gtg Val	gaa Glu	gct Ala
250	255	260	265
gac Val	gtg Val	gaa Glu	gct Ala
260	265	270	275
gac Val	gtg Val	gaa Glu	gct Ala
270	275	280	285
gac Val	gtg Val	gaa Glu	gct Ala
280	285	290	295
gac Val	gtg Val	gaa Glu	gct Ala
290	295	300	

<210> 1998  
 <211> 300  
 <212> PRT  
 <213> Brassica napus

<400> 1998  
 Met Pro Ala Gln Val Ile Thr Glu Gln Thr Phe Gln Ser Leu His Asp  
 1 5 10 15  
 Thr Ile Met Glu Asp Thr Asn Ser Thr Leu Phe His Lys Arg Leu Glu  
 20 25 30  
 Gly Lys Val Ala Ile Ile Thr Gly Gly Ala His Gly Ile Gly Lys Ala  
 35 40 45  
 Thr Val Lys Ile Phe Ala Arg His Gly Ala Thr Val Val Ile Ala Asp  
 50 55 60  
 Val Asp Ala Thr Ala Gly Ser Ser Leu Ala Lys Ser Ile Ser Ser Ser  
 65 70 75 80  
 Gln Val Ala Phe Ile Ser Cys Asp Val Ser Val Glu Ala Asp Val Glu  
 85 90 95  
 Asn Leu Val Asn Val Thr Ile Ala Arg Tyr Gly Arg Leu Asp Val Leu  
 100 105 110  
 Phe Asn Asn Ala Gly Val Leu Gly Asp Gln Lys Lys His Lys Ser Ile  
 115 120 125

## PhoenixTemp32470.tmp.txt

Leu Asp Phe Asn Ala Glu Glu Phe Asp Gln Val Met Arg Val Asn Val  
 130 135 140  
 Arg Gly Ala Gly Leu Gly Met Lys His Ala Ala Arg Ala Met Ile Lys  
 145 150 155 160  
 Arg Gly Phe Lys Gly Cys Ile Ile Ser Thr Ala Ser Val Ala Gly Val  
 165 170 175  
 Met Gly Gly Met Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile  
 180 185 190  
 Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu Gly Arg Tyr Gly Ile  
 195 200 205  
 Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr Ser Met Leu Val  
 210 215 220  
 Asn Ala Trp Arg Lys Thr Ser Gly Cys Gly Asp Met Glu Asp Gly Asp  
 225 230 235 240  
 Asp Val Glu Glu Met Glu Glu Phe Val Arg Ser Leu Ala Asn Leu Lys  
 245 250 255  
 Gly Glu Thr Leu Arg Ala Thr Asp Ile Ala Glu Ala Ala Leu Tyr Leu  
 260 265 270  
 Ala Ser Asp Glu Ser Lys Tyr Val Asn Gly His Asn Leu Val Val Asp  
 275 280 285  
 Gly Gly Val Thr Thr Ala Arg Asn Cys Val Gly Leu  
 290 295 300

&lt;210&gt; 1999

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;400&gt; 1999

atg	gat	agc	cgg	tgg	agt	ctt	cga	ggt	atg	aca	ggt	ctt	gta	acc	ggt	48
Met	Asp	Ser	Arg	Trp	Ser	Leu	Arg	Gly	Met	Thr	Gly	Leu	Val	Thr	Gly	
1				5				10					15			
gga	acc	aag	gga	att	ggg	tat	gcg	ata	gtg	gag	gaa	ctt	gct	ggt	ttt	96
Gly	Thr	Lys	Gly	Ile	Gly	Tyr	Ala	Ile	Val	Glu	Glu	Leu	Ala	Gly	Phe	
			20				25						30			
ggt	gca	aga	gtt	cac	acg	tgt	gcc	aga	gac	caa	act	ctg	ctt	gat	gaa	144
Gly	Ala	Arg	Val	His	Thr	Cys	Ala	Arg	Asp	Gln	Thr	Leu	Leu	Asp	Glu	
			35				40					45				
tgc	tta	aat	gaa	tgg	aaa	gcc	aaa	ggg	tat	caa	gtc	act	ggc	tca	gtc	192
Cys	Leu	Asn	Glu	Trp	Lys	Ala	Lys	Gly	Tyr	Gln	Val	Thr	Gly	Ser	Val	
			50			55					60					
tgt	gat	gtt	tcc	tct	cga	cct	cag	aga	gat	gag	ttg	atg	aag	act	gtc	240
Cys	Asp	Val	Ser	Ser	Arg	Pro	Gln	Arg	Asp	Glu	Leu	Met	Lys	Thr	Val	
					70					75					80	
tct	tct	cta	ttc	agt	ggc	aaa	ctc	aac	atc	ctt	atc	aac	aat	gtt	ggt	288
Ser	Ser	Leu	Phe	Ser	Gly	Lys	Leu	Asn	Ile	Leu	Ile	Asn	Asn	Val	Gly	
				85					90					95		
acc	ctt	acg	tca	aag	ccg	gct	aca	gag	ttt	aca	gca	caa	gat	ttc	tca	336
Thr	Leu	Thr	Ser	Lys	Pro	Ala	Thr	Glu	Phe	Thr	Ala	Gln	Asp	Phe	Ser	
			100					105					110			
agt	caa	ata	gct	acc	aat	ttg	gag	tct	gct	tat	cat	tta	tct	caa	ttg	384
Ser	Gln	Ile	Ala	Thr	Asn	Leu	Glu	Ser	Ala	Tyr	His	Leu	Ser	Gln	Leu	
			115				120					125				
gcc	cat	cct	tta	ctt	aag	gca	tct	gga	ttt	ggt	agc	att	gtg	ttc	atg	432
Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Phe	Gly	Ser	Ile	Val	Phe	Met	
			130			135					140					
tct	tca	gta	tgt	ggg	gtt	gta	tca	gcc	ggt	acc	gta	tcc	ata	tac	agc	480
Ser	Ser	Val	Cys	Gly	Val	Val	Ser	Ala	Gly	Thr	Val	Ser	Ile	Tyr	Ser	
					150					155					160	
tta	aca	aaa	gga	ggc	atg	aat	caa	ttg	gca	aga	aac	ttg	gca	tgt	gaa	528
Leu	Thr	Lys	Gly	Gly	Met	Asn	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Cys	Glu	
				165					170					175		
tgg	gca	agt	gat	ggc	ata	agg	gct	aac	tct	gta	gct	cct	tgg	gtg	act	576
Trp	Ala	Ser	Asp	Gly	Ile	Arg	Ala	Asn	Ser	Val	Ala	Pro	Trp	Val	Thr	
			180					185					190			

## PhoenixTemp32470.tmp.txt

aga	act	cct	ctt	gcc	caa	gat	cgt	ctt	gat	gac	aag	aaa	tat	gct	gaa	624
Arg	Thr	Pro	Leu	Ala	Gln	Asp	Arg	Leu	Asp	Asp	Lys	Lys	Tyr	Ala	Glu	
		195					200					205				
gct	atc	tgc	tca	aga	acc	cca	tta	ggc	cgt	acg	tgt	gag	ccg	agt	gag	672
Ala	Ile	Cys	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Thr	Cys	Glu	Pro	Ser	Glu	
	210					215					220					
gtt	gcc	tcg	ctg	gtt	acg	ttt	ctt	tgt	ctc	cct	gca	gct	tct	tat	ata	720
Val	Ala	Ser	Leu	Val	Thr	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	
	225				230					235					240	
aca	gga	caa	acc	att	ttt	att	gat	ggg	ggg	ctc	act	ggt	aat	ggc	ttc	768
Thr	Gly	Gln	Thr	Ile	Phe	Ile	Asp	Gly	Gly	Leu	Thr	Val	Asn	Gly	Phe	
				245					250					255		
tcc	tac	aag	cca	gaa	ggt	taa										789
Ser	Tyr	Lys	Pro	Glu	Val											
			260													

&lt;210&gt; 2000

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2000

Met	Asp	Ser	Arg	Trp	Ser	Leu	Arg	Gly	Met	Thr	Gly	Leu	Val	Thr	Gly	
1				5					10					15		
Gly	Thr	Lys	Gly	Ile	Gly	Tyr	Ala	Ile	Val	Glu	Glu	Leu	Ala	Gly	Phe	
			20					25					30			
Gly	Ala	Arg	Val	His	Thr	Cys	Ala	Arg	Asp	Gln	Thr	Leu	Leu	Asp	Glu	
		35					40					45				
Cys	Leu	Asn	Glu	Trp	Lys	Ala	Lys	Gly	Tyr	Gln	Val	Thr	Gly	Ser	Val	
	50					55					60					
Cys	Asp	Val	Ser	Ser	Arg	Pro	Gln	Arg	Asp	Glu	Leu	Met	Lys	Thr	Val	
65					70					75					80	
Ser	Ser	Leu	Phe	Ser	Gly	Lys	Leu	Asn	Ile	Leu	Ile	Asn	Asn	Val	Gly	
				85					90					95		
Thr	Leu	Thr	Ser	Lys	Pro	Ala	Thr	Glu	Phe	Thr	Ala	Gln	Asp	Phe	Ser	
			100					105					110			
Ser	Gln	Ile	Ala	Thr	Asn	Leu	Glu	Ser	Ala	Tyr	His	Leu	Ser	Gln	Leu	
		115					120					125				
Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Phe	Gly	Ser	Ile	Val	Phe	Met	
	130					135					140					
Ser	Ser	Val	Cys	Gly	Val	Val	Ser	Ala	Gly	Thr	Val	Ser	Ile	Tyr	Ser	
145					150					155					160	
Leu	Thr	Lys	Gly	Gly	Met	Asn	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Cys	Glu	
			165						170					175		
Trp	Ala	Ser	Asp	Gly	Ile	Arg	Ala	Asn	Ser	Val	Ala	Pro	Trp	Val	Thr	
			180					185					190			
Arg	Thr	Pro	Leu	Ala	Gln	Asp	Arg	Leu	Asp	Asp	Lys	Lys	Tyr	Ala	Glu	
		195					200					205				
Ala	Ile	Cys	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Thr	Cys	Glu	Pro	Ser	Glu	
	210					215					220					
Val	Ala	Ser	Leu	Val	Thr	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	
225					230					235					240	
Thr	Gly	Gln	Thr	Ile	Phe	Ile	Asp	Gly	Gly	Leu	Thr	Val	Asn	Gly	Phe	
				245					250					255		
Ser	Tyr	Lys	Pro	Glu	Val											
			260													

&lt;210&gt; 2001

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;400&gt; 2001

atg	tcg	gaa	cta	aga	ctg	gat	ggc	aag	atc	gta	att	ata	aca	ggc	gga	
Met	Ser	Glu	Leu	Arg	Leu	Asp	Gly	Lys	Ile	Val	Ile	Ile	Thr	Gly	Gly	

48

## PhoenixTemp32470.tmp.txt

1	5	10	15	
gcc agc ggt atc gga gcc gag gcg gct agg cta ttc acc gac cac gga				96
Ala Ser Gly Ile Gly Ala Glu Ala Ala Arg Leu Phe Thr Asp His Gly				
gct aaa gtg gtc ata gtc gat ata caa gag gag cta ggc caa aac gtc				144
Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn Val				
gcc gtt tcc atc ggg aaa gag aga gcc agt ttc tac cgt tgc gac gta				192
Ala Val Ser Ile Gly Lys Glu Arg Ala Ser Phe Tyr Arg Cys Asp Val				
aca gag gag aca gaa gtg gag aac gcc gtc aag ttc acc gtc gag aag				240
Thr Glu Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu Lys				
cac gga aag ctc gac gtt ctt ttc agc aac gcc ggc gtc ttg gac ccg				288
His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp Pro				
cgg gga agc atc ctc gac ttg gat ctt gac cgg ttc gac cgc ata atg				336
Arg Gly Ser Ile Leu Asp Leu Asp Leu Asp Arg Phe Asp Ile Met				
gcg gtt aac gtg cgc ggc gcg gct gcg ttt atc aaa cac gcg gca cgt				384
Ala Val Asn Val Arg Gly Ala Ala Ala Phe Ile Lys His Ala Ala Arg				
gcg atg gtg gag aaa ggc acg cgt ggg tct atc gtg tgt acc acg agc				432
Ala Met Val Glu Lys Gly Thr Arg Gly Ser Ile Val Cys Thr Thr Ser				
gtg tcg tcg gag att ggt ggt ggg aga cgt cac ggg tac acg gcg tct				480
Val Ser Ser Glu Ile Gly Gly Gly Arg Arg His Gly Tyr Thr Ala Ser				
aaa cat gga ctg ctc ggg ctg atc aga acg gcg tgt ggg gag ctg ggg				528
Lys His Gly Leu Leu Gly Leu Ile Arg Thr Ala Cys Gly Glu Leu Gly				
aag tat ggg att aga gtc aac ggt gtg gca ccg tac gcg ctc gcg acg				576
Lys Tyr Gly Ile Arg Val Asn Gly Val Ala Pro Tyr Ala Leu Ala Thr				
ccg ttg act agc cac gac gag gaa acg gcg agg cag gtg gag gaa gaa				624
Pro Leu Thr Ser His Asp Glu Glu Thr Ala Arg Gln Val Glu Glu Glu				
ttt gcg gcc aag ggg gtg ctc aag ggt gtg gtg ctt aac gct cgc cac				672
Phe Ala Ala Lys Gly Val Leu Lys Gly Val Val Leu Asn Ala Arg His				
gtg gcg caa gtg gct ctg ttg gct tct gat gag tcg gtt tat gtc				720
Val Ala Gln Val Ala Leu Phe Leu Ala Ser Asp Glu Ser Val Tyr Val				
agt ggt cag aat ttg gcg gtg gat gga ggt tat agt atg tgt cgt tca				768
Ser Gly Gln Asn Leu Ala Val Asp Gly Tyr Ser Met Cys Arg Ser				
ggc aat gtt caa att tag				786
Gly Asn Val Gln Ile				

&lt;210&gt; 2002

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2002

Met Ser Glu Leu Arg Leu Asp Gly Lys Ile Val Ile Ile Thr Gly Gly	
Ala Ser Gly Ile Gly Ala Glu Ala Ala Arg Leu Phe Thr Asp His Gly	
Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn Val	
Ala Val Ser Ile Gly Lys Glu Arg Ala Ser Phe Tyr Arg Cys Asp Val	
Thr Glu Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu Lys	
His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp Pro	
Arg Gly Ser Ile Leu Asp Leu Asp Leu Asp Arg Phe Asp Arg Ile Met	

## PhoenixTemp32470.tmp.txt

Ala	Val	Asn	100	Val	Arg	Gly	Ala	Ala	105	Phe	Ile	Lys	His	110	Ala	Ala	Arg
Ala	Met	Val	115	Glu	Lys	Gly	Thr	Arg	120	Gly	Ser	Ile	Val	125	Cys	Thr	Ser
Val	Ser	Ser	130	Glu	Ile	Gly	135	Gly	140	Arg	Arg	His	Gly	145	Tyr	Thr	Ala
Lys	His	Gly	150	Leu	Leu	Gly	155	Ile	160	Arg	Thr	Ala	Cys	165	Gly	Glu	Leu
Lys	Tyr	Gly	170	Ile	Arg	Val	175	Asn	180	Gly	Val	Ala	Pro	185	Tyr	Ala	Leu
Pro	Leu	Thr	190	Ser	His	Asp	195	Glu	200	Thr	Ala	Arg	Gln	205	Val	Glu	Glu
Phe	Ala	Ala	210	Lys	Gly	Val	215	Leu	220	Lys	Gly	Val	Val	225	Leu	Asn	Ala
Val	Ala	Gln	230	Val	Ala	Leu	235	Phe	240	Leu	Ala	Ser	Asp	245	Glu	Ser	Val
Ser	Gly	Gln	250	Asn	Ala	Val	255	Asp	260	Gly	Gly	Tyr	Ser	Met	Cys	Arg	Ser
Gly	Asn	Val	260	Gln	Ile												

&lt;210&gt; 2003

&lt;211&gt; 1044

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1044)

&lt;400&gt; 2003

atg	gct	act	tcg	agt	ggt	ttc	cat	atc	tct	tcc	tct	cct	ttt	ctc	agg		48
Met	Ala	Thr	Ser	Ser	Gly	Phe	His	Ile	Ser	Ser	Ser	Pro	Phe	Leu	Arg		
1				5					10					15			
ctt	cgc	tct	tcc	tcc	gtc	gca	tac	gcc	gct	caa	cct	ccg	ttt	ctc	tcc		96
Leu	Arg	Ser	Ser	Ser	Val	Ala	Tyr	Ala	Ala	Gln	Pro	Pro	Phe	Leu	Ser		
			20					25					30				
cct	tgt	aac	ggt	cgt	tca	cta	gca	gaa	agc	ttc	ggt	ctc	gca	act	gta		144
Pro	Cys	Asn	Gly	Arg	Ser	Leu	Ala	Glu	Ser	Phe	Gly	Leu	Ala	Thr	Val		
			35				40					45					
act	gtt	tcg	cgc	caa	aac	ctc	tcg	gtt	tct	ccg	ccg	tct	gcg	gtg	gtg		192
Thr	Val	Ser	Arg	Gln	Asn	Leu	Ser	Val	Ser	Pro	Pro	Ser	Ala	Val	Val		
			50			55				60							
gaa	gct	cgc	att	tcg	ggg	aca	aga	gag	ccg	atg	acg	cct	ccc	tat	aac		240
Glu	Ala	Arg	Ile	Ser	Gly	Thr	Arg	Glu	Pro	Met	Thr	Pro	Pro	Tyr	Asn		
			65		70				75					80			
gtc	ttg	atc	act	ggc	tcg	acc	aaa	ggt	ata	gga	cat	gcg	tta	gct	aga		288
Val	Leu	Ile	Thr	Gly	Ser	Thr	Lys	Gly	Ile	Gly	His	Ala	Leu	Ala	Arg		
			85					90					95				
gag	ttt	ctg	aaa	gca	gga	gac	aac	gtt	gtc	ata	tgt	tcc	aga	tca	gct		336
Glu	Phe	Leu	Lys	Ala	Gly	Asp	Asn	Val	Val	Ile	Cys	Ser	Arg	Ser	Ala		
			100				105					110					
gaa	cga	gtt	gag	tct	gtt	gtt	aag	agt	ctt	aag	gaa	gaa	tat	ggg	gag		384
Glu	Arg	Val	Glu	Ser	Val	Val	Lys	Ser	Leu	Lys	Glu	Glu	Tyr	Gly	Glu		
			115				120					125					
cat	gtg	tgg	gga	act	aag	tgt	gat	gtt	aga	gaa	ggg	aag	gat	gtg	aag		432
His	Val	Trp	Gly	Thr	Lys	Cys	Asp	Val	Arg	Glu	Gly	Lys	Asp	Val	Lys		
			130			135					140						
gat	ctt	gta	tct	tat	tgt	cag	aag	aat	ctt	aaa	tac	att	gat	att	tgg		480
Asp	Leu	Val	Ser	Tyr	Cys	Gln	Lys	Asn	Leu	Lys	Tyr	Ile	Asp	Ile	Trp		
			145		150				155						160		
att	aat	aat	gct	gga	tct	aat	gca	tac	agc	ttt	aaa	cct	ttg	tct	gag		528
Ile	Asn	Asn	Ala	Gly	Ser	Asn	Ala	Tyr	Ser	Phe	Lys	Pro	Leu	Ser	Glu		
			165					170					175				
gcc	tct	gat	gag	gat	ctt	att	gaa	gtt	gtg	aaa	aca	aac	act	ctt	ggg		576
Ala	Ser	Asp	Glu	Asp	Leu	Ile	Glu	Val	Val	Lys	Thr	Asn	Thr	Leu	Gly		
			180					185					190				
ctg	atg	tta	tgt	tgc	cga	gag	gca	atg	aat	atg	atg	ctg	acc	caa	tct		624

## PhoenixTemp32470.tmp.txt

Leu	Met	Leu	Cys	Cys	Arg	Glu	Ala	Met	Asn	Met	Met	Leu	Thr	Gln	Ser		
cgg	ggt	ggt	cat	atc	ttc	aat	att	gat	gga	gct	ggc	tca	gat	ggg	aga	672	
Arg	Gly	Gly	His	Ile	Phe	Asn	Ile	Asp	Gly	Ala	Gly	Ser	Asp	Gly	Arg		
cca	aca	ccc	agg	ttt	gct	gca	tat	ggt	gca	aca	aaa	cgg	agt	gtt	gtt	720	
Pro	Thr	Pro	Arg	Phe	Ala	Ala	Tyr	Gly	Ala	Thr	Lys	Arg	Ser	Val	Val		
225					230					235					240		
cac	ctg	aca	aag	tca	tta	caa	gca	gag	ttg	cag	atg	caa	gat	gtc	aaa	768	
His	Leu	Thr	Lys	Ser	Leu	Gln	Ala	Glu	Leu	Gln	Met	Gln	Asp	Val	Lys		
				245					250					255			
aat	gtt	gtg	gta	cac	aat	cta	tcg	cct	gga	atg	gtc	aca	act	gat	cta	816	
Asn	Val	Val	Val	His	Asn	Leu	Ser	Pro	Gly	Met	Val	Thr	Thr	Asp	Leu		
				260				265					270				
ctc	atg	tct	gga	gct	aca	act	aaa	caa	gcc	aaa	ttc	ttc	atc	aat	gtt	864	
Leu	Met	Ser	Gly	Ala	Thr	Thr	Lys	Gln	Ala	Lys	Phe	Phe	Ile	Asn	Val		
		275					280					285					
ttg	gct	gag	cca	gct	gaa	gtg	gtt	gct	gag	tat	ctt	gtc	ccg	aac	att	912	
Leu	Ala	Glu	Pro	Ala	Glu	Val	Val	Ala	Glu	Tyr	Leu	Val	Pro	Asn	Ile		
		290				295					300						
aga	gca	ata	cca	gct	agt	gga	tct	atg	aag	ccg	act	tac	atc	cgt	ttc	960	
Arg	Ala	Ile	Pro	Ala	Ser	Gly	Ser	Met	Lys	Pro	Thr	Tyr	Ile	Arg	Phe		
305					310					315					320		
cta	acc	gga	atc	aaa	gcc	tat	acc	aaa	ata	ttc	tca	aga	gtt	gca	ttg	1008	
Leu	Thr	Gly	Ile	Lys	Ala	Tyr	Thr	Lys	Ile	Phe	Ser	Arg	Val	Ala	Leu		
				325					330					335			
gga	gca	agg	aag	aat	aga	tac	gtg	act	gaa	gag	tag					1044	
Gly	Ala	Arg	Lys	Asn	Arg	Tyr	Val	Thr	Glu	Glu							
			340					345									

&lt;210&gt; 2004

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2004

Met	Ala	Thr	Ser	Ser	Gly	Phe	His	Ile	Ser	Ser	Ser	Pro	Phe	Leu	Arg		
1				5					10					15			
Leu	Arg	Ser	Ser	Ser	Val	Ala	Tyr	Ala	Ala	Gln	Pro	Pro	Phe	Leu	Ser		
			20					25					30				
Pro	Cys	Asn	Gly	Arg	Ser	Leu	Ala	Glu	Ser	Phe	Gly	Leu	Ala	Thr	Val		
		35					40					45					
Thr	Val	Ser	Arg	Gln	Asn	Leu	Ser	Val	Ser	Pro	Pro	Ser	Ala	Val	Val		
		50			55					60							
Glu	Ala	Arg	Ile	Ser	Gly	Thr	Arg	Glu	Pro	Met	Thr	Pro	Pro	Tyr	Asn		
65				70					75						80		
Val	Leu	Ile	Thr	Gly	Ser	Thr	Lys	Gly	Ile	Gly	His	Ala	Leu	Ala	Arg		
				85					90					95			
Glu	Phe	Leu	Lys	Ala	Gly	Asp	Asn	Val	Val	Ile	Cys	Ser	Arg	Ser	Ala		
			100					105					110				
Glu	Arg	Val	Glu	Ser	Val	Val	Lys	Ser	Leu	Lys	Glu	Glu	Tyr	Gly	Glu		
		115					120					125					
His	Val	Trp	Gly	Thr	Lys	Cys	Asp	Val	Arg	Glu	Gly	Lys	Asp	Val	Lys		
		130				135					140						
Asp	Leu	Val	Ser	Tyr	Cys	Gln	Lys	Asn	Leu	Lys	Tyr	Ile	Asp	Ile	Trp		
145				150					155						160		
Ile	Asn	Asn	Ala	Gly	Ser	Asn	Ala	Tyr	Ser	Phe	Lys	Pro	Leu	Ser	Glu		
			165						170					175			
Ala	Ser	Asp	Glu	Asp	Leu	Ile	Glu	Val	Val	Lys	Thr	Asn	Thr	Leu	Gly		
			180				185						190				
Leu	Met	Leu	Cys	Cys	Arg	Glu	Ala	Met	Asn	Met	Met	Leu	Thr	Gln	Ser		
		195					200					205					
Arg	Gly	Gly	His	Ile	Phe	Asn	Ile	Asp	Gly	Ala	Gly	Ser	Asp	Gly	Arg		
	210					215					220						
Pro	Thr	Pro	Arg	Phe	Ala	Ala	Tyr	Gly	Ala	Thr	Lys	Arg	Ser	Val	Val		
225					230					235					240		
His	Leu	Thr	Lys	Ser	Leu	Gln	Ala	Glu	Leu	Gln	Met	Gln	Asp	Val	Lys		
				245					250					255			
Asn	Val	Val	Val	His	Asn	Leu	Ser	Pro	Gly	Met	Val	Thr	Thr	Asp	Leu		

## PhoenixTemp32470.tmp.txt

260  
 Leu Met Ser Gly Ala Thr Thr Lys 265 Gln Ala Lys Phe Phe 270 Ile Asn Val  
 275  
 Leu Ala Glu Pro Ala Glu Val Val Ala Glu Tyr Leu Val Pro Asn Ile  
 290  
 Arg Ala Ile Pro Ala Ser 295 Gly Ser Met Lys Pro 300 Thr Tyr Ile Arg Phe  
 305  
 Leu Thr Gly Ile Lys 310 Ala Tyr Thr Lys Ile 315 Phe Ser Arg Val Ala Leu  
 325  
 Gly Ala Arg Lys Asn Arg Tyr Val Thr 330 Glu Glu 335

&lt;210&gt; 2005

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;400&gt; 2005

atg	tca	gga	agc	aga	aga	ttg	gat	ggc	aaa	gtc	gtg	att	ata	aca	ggc	48
Met	Ser	Gly	Ser	Arg	Arg	Leu	Asp	Gly	Lys	Val	Val	Ile	Ile	Thr	Gly	
1				5				10						15		
gga	gcc	agc	ggg	att	gga	gca	gaa	tct	gct	agg	cta	ttc	act	gac	cac	96
Gly	Ala	Ser	Gly	Ile	Gly	Ala	Glu	Ser	Ala	Arg	Leu	Phe	Thr	Asp	His	
			20					25					30			
gga	gct	aaa	gtg	gtt	att	gtt	gac	ata	caa	gag	gag	tta	ggc	cag	aac	144
Gly	Ala	Lys	Val	Val	Ile	Val	Asp	Ile	Gln	Glu	Glu	Leu	Gly	Gln	Asn	
			35				40					45				
gtt	gcc	gtt	tca	ata	ggt	aaa	gac	aaa	gca	agt	tat	tac	aaa	tgc	gat	192
Val	Ala	Val	Ser	Ile	Gly	Lys	Asp	Lys	Ala	Ser	Tyr	Tyr	Lys	Cys	Asp	
			50			55					60					
atc	aca	aac	gaa	aca	gag	gta	gag	aat	gct	gtt	aag	ttc	acc	gtc	gaa	240
Ile	Thr	Asn	Glu	Thr	Glu	Val	Glu	Asn	Ala	Val	Lys	Phe	Thr	Val	Glu	
					70					75					80	
atg	cat	gga	aaa	ctc	gac	gtt	ctg	ttc	agc	aac	gcc	ggc	gtc	tta	gat	288
Met	His	Gly	Lys	Leu	Asp	Val	Leu	Phe	Ser	Asn	Ala	Gly	Val	Leu	Asp	
				85					90					95		
acg	ccg	gga	agc	atc	ctc	gac	ttg	aat	ctc	gaa	cat	ttt	gac	cgt	gta	336
Thr	Pro	Gly	Ser	Ile	Leu	Asp	Leu	Asn	Leu	Glu	His	Phe	Asp	Arg	Val	
			100					105					110			
atg	ggg	gtt	aac	gtt	cg	ggt	gca	gct	gcg	ttt	atc	aaa	cat	gca	gca	384
Met	Gly	Val	Asn	Val	Arg	Gly	Ala	Ala	Ala	Phe	Ile	Lys	His	Ala	Ala	
			115				120					125				
cgt	gcc	atg	gtg	ggt	agt	ggc	aca	cgt	ggt	tcc	att	gtt	tgt	acg	act	432
Arg	Ala	Met	Val	Gly	Ser	Gly	Thr	Arg	Gly	Ser	Ile	Val	Cys	Thr	Thr	
			130			135					140					
agc	gtt	acg	gcg	gag	att	ggt	ggt	cag	gga	cct	cat	gga	tac	aca	gcg	480
Ser	Val	Thr	Ala	Glu	Ile	Gly	Gly	Gln	Gly	Pro	His	Gly	Tyr	Thr	Ala	
					150					155					160	
tcg	aag	cat	gcc	ctc	ctg	ggg	ctg	att	aag	tca	gct	tgt	ggt	gag	ttg	528
Ser	Lys	His	Ala	Leu	Leu	Gly	Leu	Ile	Lys	Ser	Ala	Cys	Gly	Glu	Leu	
				165					170					175		
ggg	aaa	cat	ggc	att	aga	gta	aac	ggc	gtg	gcg	ccg	ttt	gcg	gtg	gcg	576
Gly	Lys	His	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Phe	Ala	Val	Ala	
			180				185						190			
acg	agt	atg	act	agc	cgt	gat	gag	gag	acg	gcg	aag	cag	gtg	gag	gga	624
Thr	Ser	Met	Thr	Ser	Arg	Asp	Glu	Glu	Thr	Ala	Lys	Gln	Val	Glu	Gly	
						200						205				
tat	tgt	gaa	gcc	gtg	gga	att	ctg	aag	ggt	gtt	gcg	ttg	aaa	ccc	aat	672
Tyr	Cys	Glu	Ala	Val	Gly	Ile	Leu	Lys	Gly	Val	Ala	Leu	Lys	Pro	Asn	
			210			215					220					
cac	gtg	gcg	aag	gct	gct	ttg	ttt	cta	gct	tct	gat	gat	tct	att	tat	720
His	Val	Ala	Lys	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Ile	Tyr	
					230				235						240	
att	agt	ggg	cat	aat	cta	gtt	ttg	gac	ggt	gga	ttt	agc	gtc	gtt	aag	768
Ile	Ser	Gly	His	Asn	Leu	Val	Leu	Asp	Gly	Gly	Phe	Ser	Val	Val	Lys	

245

250

255

777

cct ctt taa  
Pro Leu

<210> 2006  
<211> 258  
<212> PRT  
<213> Brassica napus

<400> 2006  
Met Ser Gly Ser Arg Arg Leu Asp Gly Lys Val Val Ile Ile Thr Gly  
1 5 10 15  
Gly Ala Ser Gly Ile Gly Ala Glu Ser Ala Arg Leu Phe Thr Asp His  
20 25 30  
Gly Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn  
35 40 45  
Val Ala Val Ser Ile Gly Lys Asp Lys Ala Ser Tyr Tyr Lys Cys Asp  
50 55 60  
Ile Thr Asn Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu  
65 70 75 80  
Met His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp  
85 90 95  
Thr Pro Gly Ser Ile Leu Asp Leu Asn Leu Glu His Phe Asp Arg Val  
100 105 110  
Met Gly Val Asn Val Arg Gly Ala Ala Ala Phe Ile Lys His Ala Ala  
115 120 125  
Arg Ala Met Val Gly Ser Gly Thr Arg Gly Ser Ile Val Cys Thr Thr  
130 135 140  
Ser Val Thr Ala Glu Ile Gly Gly Gln Gly Pro His Gly Tyr Thr Ala  
145 150 155 160  
Ser Lys His Ala Leu Leu Gly Leu Ile Lys Ser Ala Cys Gly Glu Leu  
165 170 175  
Gly Lys His Gly Ile Arg Val Asn Gly Val Ala Pro Phe Ala Val Ala  
180 185 190  
Thr Ser Met Thr Ser Arg Asp Glu Thr Ala Lys Gln Val Glu Gly  
195 200 205  
Tyr Cys Glu Ala Val Gly Ile Leu Lys Gly Val Ala Leu Lys Pro Asn  
210 215 220  
His Val Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ser Ile Tyr  
225 230 235 240  
Ile Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Ser Val Val Lys  
245 250 255  
Pro Leu

<210> 2007  
<211> 828  
<212> DNA  
<213> Glycine max

<220>  
<221> CDS  
<222> (1)..(828)

<400> 2007  
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Met Ala Thr Ser Thr Ser Ala Leu Asn Lys Arg Leu Glu Gly Lys Val 15  
1 5 10  
gca ctg atc aca gga gga gct agt ggc atc ggc aaa cgc act gca gaa 96  
Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Lys Arg Thr Ala Glu 20 25 30  
gtg ttc gct cag caa gga gcc aaa gta gtg atc gct gac atc caa gac 144  
Val Phe Ala Gln Gln Gly Ala Lys Val Val Ile Ala Asp Ile Gln Asp 35 40 45  
gaa ctg gga cat tcc gtt gct cag tcc ata ggg cca tca aca tgt tgt 192  
Glu Leu Gly His Ser Val Ala Gln Ser Ile Gly Pro Ser Thr Cys Cys 50 55 60  
tat gtc cat tgc gat gtc acc gat gag aac caa ata aaa aat gcc gtc 240  
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## PhoenixTemp32470.tmp.txt

Tyr 65	Val	His	Cys	Asp	Val 70	Thr	Asp	Glu	Asn	Gln 75	Ile	Lys	Asn	Ala	Val 80	
caa Gln	aaa Lys	gcc Ala	gta Val	gat Asp 85	gct Ala	tat Tyr	ggg Gly	aag Lys	cta Leu 90	gac Asp	atc Ile	atg Met	ttc Phe 95	aac Asn	aac Asn	288
gcc Ala	ggc Gly	att Ile	gtt Val 100	gat Asp	ccc Pro	aac Asn	aag Lys	aac Asn 105	cga Arg	atc Ile	att Ile	gac Asp 110	aac Asn	gat Asp	aag Lys	336
gca Ala	gat Asp	ttc Phe 115	gaa Glu	cgt Arg	gtc Val	cta Leu	agc Ser 120	gtc Val	aat Asn	gtc Val	acg Thr	ggg Gly 125	gtt Val	ttc Phe	ctt Leu	384
ggg Gly 130	atg Met	aag Lys	cat His	gcg Ala	gcg Ala	cag Gln 135	gcg Ala	atg Met	atc Ile	cca Pro	gca Ala 140	cgc Arg	agt Ser	ggg Gly	agc Ser	432
atc Ile 145	atc Ile	tct Ser	acg Thr	gcc Ala 150	agc Ser	ata Ile	agc Ser	tcc Ser	tac Tyr	gtt Val 155	ggg Gly	ggg Gly	gca Ala	gcc Ala	tcg Ser 160	480
cat His	gct Ala	tac Tyr	tgt Cys 165	tgt Ala	gct Ala	aag Lys	cat His	gct Ala 170	gtg Val	gtt Val	ggg Gly	cta Leu	act Thr	aaa Lys 175	aat Asn	528
gca Ala	gca Ala	gtt Val	gag Glu 180	ctt Leu	gga Gly	cag Gln	ttc Phe	gga Gly 185	ata Ile	agg Arg	gtg Val	aat Asn	tgt Cys 190	ttg Leu	tca Ser	576
cct Pro	tac Tyr	gct Ala 195	ctt Leu	gct Ala	aca Thr	cct Pro	ttg Leu 200	gcc Ala	acc Thr	aag Lys	ttt Phe 205	gtt Val	gga Gly	gct Ala	aat Asn	624
gat Asp 210	gag Glu	gag Glu	ctt Leu	gag Glu	act Thr	atc Ile 215	atg Met	aac Asn	tca Ser	ctg Leu	gct Ala 220	aat Asn	ctc Leu	aag Lys	ggg Gly	672
gtc Val 225	act Thr	ctt Leu	aaa Lys	gct Ala	gag Glu 230	gat Asp	gtg Val	gct Ala	aat Asn	gcc Ala 235	gca Ala	ctt Leu	tat Tyr	ttt Phe	gct Ala 240	720
agt Ser	gat Asp	gat Asp	tcc Ser	agg Arg 245	tac Tyr	gtc Val	agt Ser	ggg Gly	caa Gln 250	aat Asn	ttg Leu	ctc Leu	ata Ile	gat Asp 255	gga Gly	768
ggc Gly	ttc Phe	agc Ser	att Ile 260	gtt Val	aat Asn	cct Pro	tcc Ser	ttt Phe 265	cac His	atg Met	ttt Phe	cag Gln 270	tac Tyr	ccg Pro	gac Asp	816
tcg Ser	gag Glu	tct Ser 275	tga													828

<210> 2008  
 <211> 275  
 <212> PRT  
 <213> Glycine max

<400> 2008  
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 20 25 30  
 Val Phe Ala Gln Gln Gly Ala Lys Val Val Ile Ala Asp Ile Gln Asp  
 35 40 45  
 Glu Leu Gly His Ser Val Ala Gln Ser Ile Gly Pro Ser Thr Cys Cys  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Asp Glu Asn Gln Ile Lys Asn Ala Val  
 65 70 75 80  
 Gln Lys Ala Val Asp Ala Tyr Gly Lys Leu Asp Ile Met Phe Asn Asn  
 85 90 95  
 Ala Gly Ile Val Asp Pro Asn Lys Asn Arg Ile Ile Asp Asn Asp Lys  
 100 105 110  
 Ala Asp Phe Glu Arg Val Leu Ser Val Asn Val Thr Gly Val Phe Leu  
 115 120 125  
 Gly Met Lys His Ala Ala Gln Ala Met Ile Pro Ala Arg Ser Gly Ser  
 130 135 140  
 Ile Ile Ser Thr Ala Ser Ile Ser Ser Tyr Val Gly Gly Ala Ala Ser  
 145 150 155 160  
 His Ala Tyr Cys Cys Ala Lys His Ala Val Val Gly Leu Thr Lys Asn

## PhoenixTemp32470.tmp.txt

Ala Ala Val Glu 165 Leu Gly Gln Phe Gly 170 Ile Arg Val Asn Cys 175 Ser  
 Pro Tyr Ala Leu 180 Ala Thr Pro Leu 185 Ala Thr Lys Phe Val Gly Ala Asn  
 Asp Glu Glu Leu 195 Glu Thr Ile Met Asn Ser Leu Ala 205 Asn Leu Lys Gly  
 Val Thr Leu Lys Ala Glu 210 Asp Val Ala Asn Ala 220 Ala Leu Tyr Phe Ala  
 Ser Asp Asp Ser Arg Tyr Val Ser Gly Gln Asn Leu Leu Ile Asp Gly  
 Gly Phe Ser Ile Val Asn Pro Ser Phe 250 His Met Phe Gln Tyr 255 Pro Asp  
 Ser Glu Ser 260 275

&lt;210&gt; 2009

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;400&gt; 2009

atg	ctg	act	cta	ctc	ttc	tcc	tct	ctc	gga	ctc	ctc	ctg	ctt	ctc	ggt	48
Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5				10						15		
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acg	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gtg	aaa	cga	gaa	gcc	ata	gaa	gga	aag	gtg	ggt	tgg	atc	144
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
			35				40					45				
aca	ggg	gct	agc	cgt	gga	att	gga	gaa	ggt	ctt	gct	aaa	cag	ttt	gcg	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
agt	tta	ggt	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gag	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
	65				70					75					80	
gtt	cgt	ggt	aag	agt	gag	ctc	aaa	ggt	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
			85					90						95		
aag	ggt	ttg	cct	tta	gat	cta	gct	agc	ggc	gaa	gag	ggt	ctc	aaa	ggt	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
gtt	gta	gag	aga	gca	gtg	tcg	ctt	ttc	cct	ggg	gct	ggg	ggt	gat	tat	384
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
			115				120					125				
ttg	ggt	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	ggt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
	145				150				155						160	
acc	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
			165						170					175		
ggc	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180				185						190			
cct	gga	cag	gct	ata	tat	gct	gct	tca	aag	cat	gct	ctg	cag	ggc	tat	624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195				200						205				
ttc	cac	agc	tta	cgt	tct	gag	ttt	ttt	cag	aag	gga	atc	aag	ggt	act	672
Phe	His	Ser	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					
gtt	gtt	tgc	ccg	ggt	cca	ata	gag	acc	tca	aat	ggt	aca	gga	aca	tca	720

## PhoenixTemp32470.tmp.txt

Val 225	Val	Cys	Pro	Gly	Pro 230	Ile	Glu	Thr	Ser	Asn 235	Gly	Thr	Gly	Thr	Ser 240	
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Thr	Ser	Glu	Asp	Lys 245	Lys	Ser	Pro	Glu	Lys 250	Arg	Val	Ser	Ser	Glu 255	Arg	
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys 270	Glu	Ala	
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
atg	cct	ttc	ctt	ggc	ttc	tgg	ctt	atg	gac	aag	gtt	gga	gga	aaa	cgt	912
Met	Pro	Phe	Leu	Gly	Phe	Trp 295	Leu	Met	Asp	Lys	Val 300	Gly	Gly	Lys	Arg	
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ttg	ctc	960
Val	Glu	Val	Ala	Glu	Lys 310	Lys	Gly	Asn	Thr	Tyr 315	Ser	Trp	Asn	Leu	Leu 320	
305	ttc	cag	aag	aag	act	aaa	aca	aac	tga							987
Phe	Gln	Lys	Lys	Thr 325	Lys	Thr	Asn									

&lt;210&gt; 2010

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2010

Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
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Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
65				70						75					80	
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
			85					90						95		
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
145				150						155					160	
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
			165						170					175		
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
		180					185						190			
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195				200						205				
Phe	His	Ser	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					
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225				230						235					240	
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg	
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Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala	
		260					265						270			
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
		275					280					285				
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg	
	290					295					300					
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu	
305				310						315					320	
Phe	Gln	Lys	Lys	Thr 325	Lys	Thr	Asn									

<210> 2011  
 <211> 987  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(987)

<400> 2011

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ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acc	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gcg	aaa	cgt	gaa	gcc	ata	gaa	ggc	aag	gtg	gtt	tgg	atc	144
Lys	Lys	His	Ala	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
aca	ggg	gct	agc	cgt	gga	att	ggg	gaa	gtt	ctt	gct	aaa	cag	ttt	gca	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50				55					60						
agt	tta	ggt	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gaa	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
	65				70				75						80	
gtt	cgt	gtt	aag	agt	gag	ctc	aaa	ggt	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
			85					90						95		
aag	gtt	ttg	cct	tta	gat	cta	gct	agc	ggc	gta	gag	ggg	ctc	aaa	ggt	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Val	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
gtt	gta	gag	cgg	gca	gtg	tcg	ctt	ttc	cct	ggg	gct	ggt	gtt	gat	tat	384
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
ttg	gtc	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135				140						
gcg	agt	gag	gag	aat	ctt	aag	act	aca	ttc	gag	gtt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
	145				150					155					160	
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
			165						170					175		
ggt	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180				185						190			
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac	624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195				200						205				
ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	gtt	act	672
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					
gtt	gtt	tgt	ccc	ggt	cca	ata	gag	acc	tca	aat	ggt	aca	gga	aca	tca	720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser	
	225				230				235						240	
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgc	gtg	tca	tct	gaa	cga	768
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg	
				245					250					255		
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala	
			260				265						270			
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
		275					280					285				
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	gga	aaa	cgt	912
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg	
	290					295					300					
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ttg	ctc	960

Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
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 Phe Gln Lys Lys Thr Lys Thr Asn  
 325

987

<210> 2012  
 <211> 328  
 <212> PRT  
 <213> Brassica napus

<400> 2012  
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 20 25 30  
 Lys Lys His Ala Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile  
 35 40 45  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Val Glu Gly Leu Lys Gly  
 100 105 110  
 Val Val Glu Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125  
 Leu Val His Asn Ala Ala Tyr Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 135 140  
 Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 150 155 160  
 Thr Ile Ser Leu Thr Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 165 170 175  
 Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 Phe His Thr Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 215 220  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 275 280 285  
 Met Pro Phe Leu Gly Phe Trp Leu Met Asp Lys Val Gly Gly Lys Arg  
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<210> 2013  
 <211> 897  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(897)

<400> 2013  
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 atc acc ggt gga gcc tcc gga atc gga ttc gaa att tcc acc caa ttc  
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## PhoenixTemp32470.tmp.txt

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Gly	Lys	His <sub>35</sub>	Gly	Ala	Ser	Val	Ala <sub>40</sub>	Leu	Met	Gly	Arg	Arg <sub>45</sub>	Lys	Gln	Val	
ctt	cag	tcc	gct	gtc	tcc	gtt	ctc	caa	tcc	ctc	gcc	att	ccc	gcg	gtt	192
Leu	Gln <sub>50</sub>	Ser	Ala	Val	Ser	Val <sub>55</sub>	Leu	Gln	Ser	Leu	Ala <sub>60</sub>	Ile	Pro	Ala	Val	
ggg	ttt	gag	ggg	gat	gtg	cgg	aag	caa	gag	gat	gcg	gtg	agg	gtg	gtg	240
Gly <sub>65</sub>	Phe	Glu	Gly	Asp	Val <sub>70</sub>	Arg	Lys	Gln	Glu	Asp <sub>75</sub>	Ala	Val	Arg	Val <sub>80</sub>	Val <sub>80</sub>	
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Glu	Ser	Thr	Phe <sub>85</sub>	Lys	His	Phe	Gly	Arg <sub>90</sub>	Ile	Asp	Ile	Leu	Val <sub>95</sub>	Asn <sub>95</sub>	Ala	
gca	gct	ggg	aac	ttt	ctc	gtt	tct	gca	gag	gat	ttg	tcc	cca	aat	ggc	336
Ala	Ala	Gly <sub>100</sub>	Asn	Phe	Leu	Val	Ser <sub>105</sub>	Ala <sub>105</sub>	Glu	Asp	Leu	Ser <sub>110</sub>	Pro <sub>110</sub>	Asn	Gly	
ttt	cgg	aca	gtt	ctg	gac	att	gat	tct	gtt	ggc	aca	ttc	aca	atg	tgc	384
Phe	Arg <sub>115</sub>	Thr	Val	Leu	Asp	Ile <sub>120</sub>	Asp <sub>120</sub>	Ser	Val	Gly	Thr <sub>125</sub>	Phe <sub>125</sub>	Thr	Met	Cys	
cat	gaa	gca	cta	aaa	tat	ctc	aaa	aag	ggg	gga	gaa	gga	agg	agc	aac	432
His <sub>130</sub>	Glu	Ala	Leu	Lys	Tyr	Leu <sub>135</sub>	Lys	Lys	Gly	Gly <sub>140</sub>	Glu	Gly <sub>140</sub>	Arg	Ser	Asn	
tct	tct	agt	ggg	gga	tca	ata	ata	aac	att	agt	gct	acc	ttg	cat	tac	480
Ser <sub>145</sub>	Ser	Ser	Gly	Gly <sub>150</sub>	Ser <sub>150</sub>	Ile	Ile	Asn	Ile	Ser <sub>155</sub>	Ala	Thr	Leu	His <sub>160</sub>	Tyr <sub>160</sub>	
aca	gct	tct	tgg	tat	caa	att	cac	gtg	tct	gca	gca	aag	gct	gca	gtt	528
Thr	Ala	Ser	Trp <sub>165</sub>	Tyr	Gln	Ile	His	Val <sub>170</sub>	Ser <sub>170</sub>	Ala	Ala	Lys	Ala <sub>175</sub>	Ala <sub>175</sub>	Val	
gat	gcc	act	acg	aga	aac	ttg	gca	cta	gaa	tgg	gga	aca	gac	tat	gat	576
Asp	Ala	Thr <sub>180</sub>	Thr	Arg	Asn	Leu	Ala <sub>185</sub>	Leu <sub>185</sub>	Glu	Trp	Gly	Thr <sub>190</sub>	Asp <sub>190</sub>	Tyr	Asp	
att	aga	gtc	aat	ggg	att	gca	cca	ggt	cca	ata	agt	gac	acc	cct	ggc	624
Ile	Arg <sub>195</sub>	Val <sub>195</sub>	Asn	Gly	Ile	Ala	Pro <sub>200</sub>	Gly <sub>200</sub>	Pro	Ile	Ser	Asp <sub>205</sub>	Thr <sub>205</sub>	Pro	Gly	
atg	agt	aaa	ctg	gct	cct	gat	gaa	ata	agt	agc	aaa	gcc	aga	gat	tac	672
Met <sub>210</sub>	Ser	Lys	Leu	Ala	Pro	Asp <sub>215</sub>	Glu	Ile	Ser	Ser	Lys <sub>220</sub>	Ala <sub>220</sub>	Arg	Asp	Tyr	
atg	ccg	ctg	tat	aaa	ctt	ggg	gag	aag	tgg	gat	att	gcc	atg	gct	gca	720
Met <sub>225</sub>	Pro	Leu	Tyr	Lys	Leu <sub>230</sub>	Gly <sub>230</sub>	Glu	Lys	Trp	Asp <sub>235</sub>	Ile	Ala	Met	Ala <sub>240</sub>	Ala <sub>240</sub>	
ctt	ttc	cta	gta	tca	gat	gca	gga	aaa	ttc	att	aat	ggc	gac	att	atg	768
Leu	Phe	Leu	Val <sub>245</sub>	Ser <sub>245</sub>	Asp	Ala	Gly	Lys	Phe <sub>250</sub>	Ile <sub>250</sub>	Asn	Gly <sub>255</sub>	Asp <sub>255</sub>	Ile <sub>255</sub>	Met <sub>255</sub>	
att	gtt	gac	gga	gga	ctt	tgg	ctg	agt	cgg	cct	cgc	cat	tta	gca	aaa	816
Ile	Val	Asp <sub>260</sub>	Gly <sub>260</sub>	Gly	Leu	Trp	Leu <sub>265</sub>	Ser <sub>265</sub>	Arg	Pro	Arg	His <sub>270</sub>	Leu <sub>270</sub>	Ala	Lys	
gag	gct	gtg	aag	cag	gta	tct	cga	tca	gta	gaa	aac	aga	tcc	aga	aat	864
Glu	Ala <sub>275</sub>	Val <sub>275</sub>	Lys	Gln	Val	Ser	Arg <sub>280</sub>	Ser <sub>280</sub>	Val	Glu	Asn <sub>285</sub>	Arg <sub>285</sub>	Ser	Arg	Asn	
gca	tct	gtc	agt	gtt	cca	aaa	agc	aag	ctg	tga						897
Ala	Ser <sub>290</sub>	Val <sub>290</sub>	Ser	Val	Pro	Lys <sub>295</sub>	Ser	Lys	Leu							

&lt;210&gt; 2014

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2014

Met <sub>1</sub>	Glu	Ser	Pro	Phe <sub>5</sub>	Arg	Pro	Glu	Ile	Leu <sub>10</sub>	Lys	Gly	Lys	Val	Ala <sub>15</sub>	Leu	
Ile	Thr	Gly	Gly <sub>20</sub>	Ala	Ser	Gly	Ile	Gly <sub>25</sub>	Phe	Glu	Ile	Ser	Thr <sub>30</sub>	Gln	Phe	
Gly	Lys	His <sub>35</sub>	Gly	Ala	Ser	Val	Ala <sub>40</sub>	Leu	Met	Gly	Arg	Arg <sub>45</sub>	Lys	Gln	Val	
Leu	Gln <sub>50</sub>	Ser	Ala	Val	Ser	Val <sub>55</sub>	Leu	Gln	Ser	Leu	Ala <sub>60</sub>	Ile	Pro	Ala	Val	
Gly	Phe	Glu	Gly	Asp	Val	Arg	Lys	Gln	Glu	Asp	Ala	Val	Arg	Val	Val	

## PhoenixTemp32470.tmp.txt

65 70 75 80  
 Glu Ser Thr Phe Lys His Phe Gly Arg Ile Asp Ile Leu Val Asn Ala  
 85 90 95  
 Ala Ala Gly Asn Phe Leu Val Ser Ala Glu Asp Leu Ser Pro Asn Gly  
 100 105 110  
 Phe Arg Thr Val Leu Asp Ile Asp Ser Val Gly Thr Phe Thr Met Cys  
 115 120 125  
 His Glu Ala Leu Lys Tyr Leu Lys Lys Gly Gly Glu Gly Arg Ser Asn  
 130 135 140  
 Ser Ser Ser Gly Gly Ser Ile Ile Asn Ile Ser Ala Thr Leu His Tyr  
 145 150 155 160  
 Thr Ala Ser Trp Tyr Gln Ile His Val Ser Ala Ala Lys Ala Ala Val  
 165 170 175  
 Asp Ala Thr Thr Arg Asn Leu Ala Leu Glu Trp Gly Thr Asp Tyr Asp  
 180 185 190  
 Ile Arg Val Asn Gly Ile Ala Pro Gly Pro Ile Ser Asp Thr Pro Gly  
 195 200 205  
 Met Ser Lys Leu Ala Pro Asp Glu Ile Ser Ser Lys Ala Arg Asp Tyr  
 210 215 220  
 Met Pro Leu Tyr Lys Leu Gly Glu Lys Trp Asp Ile Ala Met Ala Ala  
 225 230 235 240  
 Leu Phe Leu Val Ser Asp Ala Gly Lys Phe Ile Asn Gly Asp Ile Met  
 245 250 255  
 Ile Val Asp Gly Leu Trp Leu Ser Arg Pro Arg His Leu Ala Lys  
 260 265 270  
 Glu Ala Val Lys Gln Val Ser Arg Ser Val Glu Asn Arg Ser Arg Asn  
 275 280 285  
 Ala Ser Val Ser Val Pro Lys Ser Lys Leu  
 290 295

<210> 2015  
 <211> 816  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(816)

<400> 2015  
 atg gca agt gct tct gcg gtc tca gct cat gtt aga agg ctt gag ggg 48  
 Met Ala Ser Ala Ser Ala Val Ser Ala His Val Arg Arg Leu Glu Gly  
 1 5 10 15  
 aaa gtg gcg att atc act ggt ggt gca agc ggc ata ggt gag gcc act 96  
 Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 gca aga ctc ttc tct aag cac gga gca cac ctt gtc ata gct gac att 144  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Leu Val Ile Ala Asp Ile  
 35 40 45  
 caa gac gat ttg ggc ctc tct ctt tgc aaa cac ttg gaa tcc gct tcc 192  
 Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 tat gtt cac tgc gac gtg aca aag gaa gag gac gtt gaa aac tgc gtg 240  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val  
 65 70 75 80  
 aac aca gcg gtt tcc aag tat gga aaa cta gac atc atg ctt aat aac 288  
 Asn Thr Ala Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 gca ggt ata tgt gat gag atc aaa aca agc ata cta gac aac aac aag 336  
 Ala Gly Ile Cys Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Asn Lys  
 100 105 110  
 tct gat ttt gag agt gtc ata agc gtg aac ttg gtt ggt cct ttt ctg 384  
 Ser Asp Phe Glu Ser Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu  
 115 120 125  
 gga aca aag cac gct gca aga gtc atg atc cct gct aaa agg gga agc 432  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser  
 130 135 140  
 ata att aac aca gct agt gtt gct gga acc tta ggt gga gtg gct aca 480  
 Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Leu Gly Gly Val Ala Thr

## PhoenixTemp32470.tmp.txt

145	cat	gcc	tac	aca	agt	150	tca	aag	cac	gcg	cta	155	att	gga	ctg	atg	aaa	160	aac		528
	His	Ala	Tyr	Thr	Ser	165	Ser	Lys	His	Ala	Leu	170	Ile	Gly	Leu	Met	Lys	175	Asn		
	act	gcg	gtg	gag	ctt	180	gga	cag	ttt	ggt	att	185	cgg	gtg	aat	tgt	gtg	190	tcc		576
	Thr	Ala	Val	Glu	Leu	195	Gly	Gln	Phe	Gly	Ile	190	Arg	Val	Asn	Cys	Val	200	Ser		
	cct	tat	gtg	gtt	ccc	205	aca	ccg	ttg	acc	aag	210	aaa	cat	gcc	aat	att	215	gac		624
	Pro	Tyr	Val	Val	Pro	220	Thr	Pro	Leu	Thr	Lys	225	Lys	His	Ala	Asn	Ile	230	Asp		
	gaa	gaa	gga	gtt	cgt	235	gag	att	tat	tcc	aac	240	cta	aaa	ggt	gtt	cat	245	ctt		672
	Glu	Glu	Gly	Val	Arg	250	Glu	Ile	Tyr	Ser	Asn	255	Leu	Lys	Gly	Val	His	260	Leu		
	gtg	ccg	aac	gat	gtg	265	gaa	gct	gct	ctt	tac	270	ttg	gca	ggt	gat	gag	275	gag		720
	Val	Pro	Asn	Asp	Val	280	Ala	Ala	Ala	Leu	Tyr	285	Leu	Ala	Gly	Asp	Glu	290	Glu		
	225	tct	aag	tat	gtt	230	ggt	cac	aat	ctc	gtg	235	tta	gat	ggt	ggg	tac	240	act		768
	Ser	Lys	Tyr	Val	Ser	245	Gly	His	Asn	Leu	Val	250	Leu	Asp	Gly	Gly	Tyr	255	Thr		
	gat	gta	aat	ata	gga	260	ttt	tct	gtg	ttt	gat	265	caa	aat	aaa	ctt	aac	270	taa		816
	Asp	Val	Asn	Ile	Gly	265	Phe	Ser	Val	Phe	Asp	270	Gln	Asn	Lys	Leu	Asn	275			

<210> 2016  
 <211> 271  
 <212> PRT  
 <213> Glycine max

<400> 2016  
 Met Ala Ser Ala Ser Ala Val Ser Ala His Val Arg Arg Leu Glu Gly  
 1 5 10 15  
 Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Leu Val Ile Ala Asp Ile  
 35 40 45  
 Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val  
 65 70 75 80  
 Asn Thr Ala Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 Ala Gly Ile Cys Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Asn Lys  
 100 105 110  
 Ser Asp Phe Glu Ser Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser  
 130 135 140  
 Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Leu Gly Gly Val Ala Thr  
 145 150 155 160  
 His Ala Tyr Thr Ser Ser Lys His Ala Leu Ile Gly Leu Met Lys Asn  
 165 170 175  
 Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Val Ser  
 180 185 190  
 Pro Tyr Val Val Pro Thr Pro Leu Thr Lys Lys His Ala Asn Ile Asp  
 195 200 205  
 Glu Glu Gly Val Arg Glu Ile Tyr Ser Asn Leu Lys Gly Val His Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu  
 225 230 235 240  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Tyr Thr  
 245 250 255  
 Asp Val Asn Ile Gly Phe Ser Val Phe Asp Gln Asn Lys Leu Asn  
 260 265 270

<210> 2017  
 <211> 795  
 <212> DNA  
 <213> Glycine max



&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(795)

&lt;400&gt; 2017

atg gct gaa aca aag ttg agc ttt aag gac aaa aga tgg tca ctc cat	48
Met Ala Glu Thr Lys <sub>5</sub> Leu Ser Phe Lys <sub>10</sub> Asp <sub>10</sub> Lys Arg Trp Ser Leu <sub>15</sub> His	
ggg atg act gct cta gtc aca gga gcc acc cgc ggc ata ggg cat gcc	96
Gly Met Thr Ala Leu Val Thr Gly Ala Thr Arg Gly Ile Gly His Ala	
att gtt gaa gaa ttg gca gaa ttt ggg gca gct gtt cat att tgt gca	144
Ile Val Glu <sub>35</sub> Glu Leu Ala Glu <sub>40</sub> Phe <sub>40</sub> Gly Ala Ala Val His <sub>45</sub> Ile Cys Ala	
cgg aac caa gat gat att gat aaa tgt ttg gaa gag tgg aaa agc aag	192
Arg Asn Gln Asp Asp Ile Asp <sub>55</sub> Lys Cys Leu Glu Glu <sub>60</sub> Trp Lys Ser Lys	
gga ctt act gtg acg agt tca gta tgt gat tta caa tgt tct gac caa	240
Gly Leu Thr Val Thr <sub>70</sub> Ser Val Cys Asp Leu <sub>75</sub> Gln Cys Ser Asp Gln <sub>80</sub>	
cgt ata aga tta atg gaa att ctt tcc tcc atc ttc cac gga aag ctc	288
Arg Ile Arg Leu Met <sub>85</sub> Glu Ile Leu Ser Ser <sub>90</sub> Ile Phe His Gly Lys <sub>95</sub> Leu	
aat att tta gtg aac aat gct gcg aca act ata aca aag aaa ata ata	336
Asn Ile Leu Val <sub>100</sub> Asn Asn Ala Ala Thr <sub>105</sub> Thr Ile Thr Lys Lys <sub>110</sub> Ile Ile	
gat tac act gca gaa gat ata tca acc ata atg ggt act aat ttt gag	384
Asp Tyr Thr Ala Glu Asp Ile Ser Thr Ile Met Gly Thr <sub>125</sub> Asn Phe Glu	
tcc gtt tat cat ttg act caa ctt gca cac ccg ctt cta aaa gaa tct	432
Ser Val Tyr His Leu Thr Gln <sub>135</sub> Leu Ala His Pro Leu <sub>140</sub> Leu Lys Glu Ser	
gga caa gga agc ata gta tct att tcg tcc att gca ggt tta aaa gcc	480
Gly Gln Gly Ser Ile Val Ser Ile Ser Ile Ala Gly Leu Lys Ala <sub>160</sub>	
ctt ccc gtt ttc tct gtt tat gca gct tcc aaa gga gcc atg aat caa	528
Leu Pro Val Phe Ser <sub>165</sub> Val Tyr Ala Ala Ser Lys Gly Ala Met Asn Gln <sub>175</sub>	
ttc acc aaa aac tta gca ttg gaa tgg gca aag gat aat att cgt gca	576
Phe Thr Lys Asn <sub>180</sub> Leu Ala Leu Glu Trp <sub>185</sub> Ala Lys Asp Asn Ile Arg Ala	
aat gct gtg gca cct gga cct gtt atg aca aaa ctt ttg gac tct atc	624
Asn Ala Val Ala Pro Gly Pro Val Met Thr Lys Leu Leu Asp Ser Ile	
atg aat tct tct gga ggg gat gag tct gtg gat gga ata gtg tct caa	672
Met Asn Ser Ser Gly Gly Asp <sub>215</sub> Glu Ser Val Asp Gly Ile Val Ser Gln	
aca ctt gtt ggt cgc atg gga gaa gct aaa gag ata tca gca tta gtt	720
Thr Leu Val Gly Arg Met Gly Glu Ala Lys Glu Ile Ser Ala Leu Val <sub>240</sub>	
gcc ttt ctt tgc ctt cca gct gca tca tac atc act gga cag gtt ata	768
Ala Phe Leu Cys Leu <sub>245</sub> Pro Ala Ala Ser Tyr <sub>250</sub> Ile Thr Gly Gln Val <sub>255</sub> Ile	
tgt gct gat ggg ggt ttc aca act tag	795
Cys Ala Asp Gly <sub>260</sub> Gly Phe Thr Thr	

&lt;210&gt; 2018

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2018

Met Ala Glu Thr Lys <sub>5</sub> Leu Ser Phe Lys <sub>10</sub> Asp <sub>10</sub> Lys Arg Trp Ser Leu <sub>15</sub> His
Gly Met Thr Ala Leu Val Thr Gly Ala Thr Arg Gly Ile Gly His Ala
Ile Val Glu <sub>20</sub> Glu Leu Ala Glu Phe <sub>25</sub> Gly Ala Ala Val His <sub>30</sub> Ile Cys Ala
35 40 45

## PhoenixTemp32470.tmp.txt

Arg Asn Gln Asp Asp Ile Asp Lys Cys Leu Glu Glu Trp Lys Ser Lys  
 50 55 60  
 Gly Leu Thr Val Thr Ser Ser Val Cys Asp Leu Gln Cys Ser Asp Gln  
 65 70 75 80  
 Arg Ile Arg Leu Met Glu Ile Leu Ser Ser Ile Phe His Gly Lys Leu  
 85 90 95  
 Asn Ile Leu Val Asn Asn Ala Ala Thr Ile Thr Lys Lys Ile Ile  
 100 105 110  
 Asp Tyr Thr Ala Glu Asp Ile Ser Thr Ile Met Gly Thr Asn Phe Glu  
 115 120 125  
 Ser Val Tyr His Leu Thr Gln Leu Ala His Pro Leu Leu Lys Glu Ser  
 130 135 140  
 Gly Gln Gly Ser Ile Val Ser Ile Ser Ser Ile Ala Gly Leu Lys Ala  
 145 150 155 160  
 Leu Pro Val Phe Ser Val Tyr Ala Ala Ser Lys Gly Ala Met Asn Gln  
 165 170 175  
 Phe Thr Lys Asn Leu Ala Leu Glu Trp Ala Lys Asp Asn Ile Arg Ala  
 180 185 190  
 Asn Ala Val Ala Pro Gly Pro Val Met Thr Lys Leu Leu Asp Ser Ile  
 195 200 205  
 Met Asn Ser Ser Gly Gly Asp Glu Ser Val Asp Gly Ile Val Ser Gln  
 210 215 220  
 Thr Leu Val Gly Arg Met Gly Glu Ala Lys Glu Ile Ser Ala Leu Val  
 225 230 235 240  
 Ala Phe Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile  
 245 250 255  
 Cys Ala Asp Gly Gly Phe Thr Thr  
 260

<210> 2019  
 <211> 852  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(852)

<400> 2019  
 atg act ata ttt ttg gag cac tta cct ttc caa gca tgc agg tta gaa 48  
 Met Thr Ile Phe Leu Glu His Leu Pro Phe Gln Ala Cys Arg Leu Glu  
 1 5 10 15  
 ggc aag gtg gca cta ata acc ggt gga gcc agt ggc atc ggc gaa gcc 96  
 Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala  
 20 25 30  
 acc gca agg ctt ttc ctt tgc cac ggt gcc aag gtc atc atc gct gac 144  
 Thr Ala Arg Leu Phe Leu Cys His Gly Ala Lys Val Ile Ile Ala Asp  
 35 40 45  
 atc caa gac aac ctc gga cac tcc ctc tgc caa aac ctc aac tcc tcc 192  
 Ile Gln Asp Asn Leu Gly His Ser Leu Cys Gln Asn Leu Asn Ser Ser  
 50 55 60  
 gac aac aac att tcc tac gtt cac tgc gac gtc acc aac gat aac gac 240  
 Asp Asn Asn Ile Ser Tyr Val His Cys Asp Val Thr Asn Asp Asn Asp  
 65 70 75 80  
 gtc caa aac gcc gtc aac gcc gcc gtc tcg cgt cac ggc aag ctc gac 288  
 Val Gln Asn Ala Val Asn Ala Ala Val Ser Arg His Gly Lys Leu Asp  
 85 90 95  
 atc ctg ttc agt aac gcc ggc act gtt ggc cgt gtg agc cct tcc atc 336  
 Ile Leu Phe Ser Asn Ala Gly Thr Val Gly Arg Val Ser Pro Ser Ile  
 100 105 110  
 acg gcg ttt gac aac gct gac ttg aag agg gtt ttc gag gtg aat gtc 384  
 Thr Ala Phe Asp Asn Ala Asp Leu Lys Arg Val Phe Glu Val Asn Val  
 115 120 125  
 ttc ggt gct ttc tac gcc gcc aaa cac gcg gct aag gta atg att cct 432  
 Phe Gly Ala Phe Tyr Ala Ala Lys His Ala Ala Lys Val Met Ile Pro  
 130 135 140  
 gaa aag aga ggg agc att gtg ctc acc tca agt gtt gct tcg gtg act 480  
 Glu Lys Arg Gly Ser Ile Val Leu Thr Ser Val Ala Ser Val Thr  
 145 150 155 160

## PhoenixTemp32470.tmp.txt

cac	gcg	gtt	tcg	ccg	cat	gca	tac	act	gcg	tcg	aag	cac	gcg	gtg	gtg	528
His	Ala	Val	Ser	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Val	Val	
				165					170					175		
ggt	ctg	atg	aag	aac	ctg	tgc	gtg	gaa	ctg	ggg	aat	cat	gga	atc	aga	576
Gly	Leu	Met	Lys	Asn	Leu	Cys	Val	Glu	Leu	Gly	Asn	His	Gly	Ile	Arg	
			180					185					190			
gtt	aac	tgt	gtt	tca	ccg	tac	gcg	gtg	gcc	act	cct	ctg	atg	aca	cgt	624
Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Pro	Leu	Met	Thr	Arg	
		195					200					205				
gga	acc	agg	atg	aag	aag	gag	atg	gta	gag	aaa	gtg	tat	tct	gag	gcg	672
Gly	Thr	Arg	Met	Lys	Lys	Glu	Met	Val	Glu	Lys	Val	Tyr	Ser	Glu	Ala	
	210					215					220					
ggg	aac	ctg	aag	gga	gtg	gtt	ttg	aag	gaa	gag	gat	ttg	gca	gaa	gca	720
Gly	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	Glu	Glu	Asp	Leu	Ala	Glu	Ala	
225					230				235						240	
gct	ctg	ttt	ctg	gct	agt	gat	gag	tca	aag	tac	gtg	agt	ggg	gtt	aac	768
Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	Val	Asn	
				245					250					255		
cta	gtt	gtg	gat	gga	ggg	tac	agt	gtc	acc	aat	gtt	tct	gtt	aaa	gaa	816
Leu	Val	Val	Asp	Gly	Gly	Tyr	Ser	Val	Thr	Asn	Val	Ser	Val	Lys	Glu	
			260					265					270			
gct	gtg	aga	aag	ttt	tct	ggt	aag	ccc	aag	ttg	taa					852
Ala	Val	Arg	Lys	Phe	Ser	Gly	Lys	Pro	Lys	Leu						
		275					280									

&lt;210&gt; 2020

&lt;211&gt; 283

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2020

Met	Thr	Ile	Phe	Leu	Glu	His	Leu	Pro	Phe	Gln	Ala	Cys	Arg	Leu	Glu	
1				5					10					15		
Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	
			20					25					30			
Thr	Ala	Arg	Leu	Phe	Leu	Cys	His	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	
		35					40					45				
Ile	Gln	Asp	Asn	Leu	Gly	His	Ser	Leu	Cys	Gln	Asn	Leu	Asn	Ser	Ser	
		50				55					60					
Asp	Asn	Asn	Ile	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Asp	Asn	Asp	
65				70						75					80	
Val	Gln	Asn	Ala	Val	Asn	Ala	Ala	Val	Ser	Arg	His	Gly	Lys	Leu	Asp	
			85						90					95		
Ile	Leu	Phe	Ser	Asn	Ala	Gly	Thr	Val	Gly	Arg	Val	Ser	Pro	Ser	Ile	
			100					105					110			
Thr	Ala	Phe	Asp	Asn	Ala	Asp	Leu	Lys	Arg	Val	Phe	Glu	Val	Asn	Val	
		115					120					125				
Phe	Gly	Ala	Phe	Tyr	Ala	Ala	Lys	His	Ala	Ala	Lys	Val	Met	Ile	Pro	
	130				135						140					
Glu	Lys	Arg	Gly	Ser	Ile	Val	Leu	Thr	Ser	Ser	Val	Ala	Ser	Val	Thr	
145				150					155						160	
His	Ala	Val	Ser	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Val	Val	
				165					170					175		
Gly	Leu	Met	Lys	Asn	Leu	Cys	Val	Glu	Leu	Gly	Asn	His	Gly	Ile	Arg	
			180					185					190			
Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Pro	Leu	Met	Thr	Arg	
		195					200					205				
Gly	Thr	Arg	Met	Lys	Lys	Glu	Met	Val	Glu	Lys	Val	Tyr	Ser	Glu	Ala	
	210					215					220					
Gly	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	Glu	Glu	Asp	Leu	Ala	Glu	Ala	
225				230					235						240	
Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	Val	Asn	
				245					250					255		
Leu	Val	Val	Asp	Gly	Gly	Tyr	Ser	Val	Thr	Asn	Val	Ser	Val	Lys	Glu	
			260					265					270			
Ala	Val	Arg	Lys	Phe	Ser	Gly	Lys	Pro	Lys	Leu						
		275					280									

&lt;210&gt; 2021

<211> 810  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(810)

```

<400> 2021
atg gca agt gtc tca ctg gtc tca gct act gga aga agg ctt gag ggg      48
Met Ala Ser Val Ser Leu Val Ser Ala Thr Gly Arg Arg Leu Glu Gly
1      5      10      15
aaa gtg gct att atc act ggt ggt gca agc ggc ata ggt gag gcc act      96
Lys Val Ala Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr
20      25      30
gca aga ctc ttc tct aag cac gga gca cac gtt gtc ata gct gat att      144
Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile
35      40      45
caa gac gat ttg ggt ctc tct att tgc aaa cac ttg gaa tcc gct tcc      192
Gln Asp Asp Leu Gly Leu Ser Ile Cys Lys His Leu Glu Ser Ala Ser
50      55      60
tat gtt cac tgc gac gtg aca aac gaa acc gac gtt gaa aac tgc gtg      240
Tyr Val His Cys Asp Val Thr Asn Glu Thr Asp Val Glu Asn Cys Val
65      70      75
aac acc acc gtt tcc aaa cac ggc aaa cta gat atc atg ttc aac aac      288
Asn Thr Thr Val Ser Lys His Gly Lys Leu Asp Ile Met Phe Asn Asn
85      90      95
gct ggc ata acc ggt gtg aac aaa acc agc atc ctc gac aac aca aag      336
Ala Gly Ile Thr Gly Val Asn Lys Thr Ser Ile Leu Asp Asn Thr Lys
100      105      110
tca gag ttt gag gaa gtg atc aac gtt aac cta gtt ggt gtc ttt ctg      384
Ser Glu Phe Glu Glu Val Ile Asn Val Asn Leu Val Gly Val Phe Leu
115      120      125
gga aca aag cac gcc gca agg gta atg atc cct gct aga aga gga agc      432
Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Arg Arg Gly Ser
130      135      140
ata gtt aac act gca agt gtt tgt gga agc ata ggt ggt gta gca tca      480
Ile Val Asn Thr Ala Ser Val Cys Gly Ser Ile Gly Gly Val Ala Ser
145      150      155
cat gca tac aca agt tcc aaa cac gcc gtg gtg ggg ctc aca aag aac      528
His Ala Tyr Thr Ser Lys His Ala Val Val Gly Leu Thr Lys Asn
165      170      175
act gcg gtg gag ctt gga gca ttt ggt gtt agg gtt aac tgc gtg tca      576
Thr Ala Val Glu Leu Gly Ala Phe Gly Val Arg Val Asn Cys Val Ser
180      185      190
ccc tac gtg gtt gcc acg ccc ttg gct aag aat ttt ttt aag ctt gat      624
Pro Tyr Val Val Ala Thr Pro Leu Ala Lys Asn Phe Phe Lys Leu Asp
195      200      205
gat gac gga gtt cag ggg att tat tca aac ctt aag ggt act gat ctt      672
Asp Asp Gly Val Gln Gly Ile Tyr Ser Asn Leu Lys Gly Thr Asp Leu
210      215      220
gtg cct aat gat gta gcc gaa gct gct ttg tac ctg gca agt gat gag      720
Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Ser Asp Glu
225      230      235
tcc aag tat gtt agt ggg cac aat ctt gtg gtt gat gga ggc ttc act      768
Ser Lys Tyr Val Ser Gly His Asn Leu Val Val Asp Gly Gly Phe Thr
245      250      255
gtg gtc aat agt ggg ttt tgt gtc ctt ggg caa tct tcg tga      810
Val Val Asn Ser Gly Phe Cys Val Leu Gly Gln Ser Ser
260      265

```

<210> 2022  
 <211> 269  
 <212> PRT  
 <213> Glycine max

```

<400> 2022
Met Ala Ser Val Ser Leu Val Ser Ala Thr Gly Arg Arg Leu Glu Gly
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile  
 35 40 45  
 Gln Asp Asp Leu Gly Leu Ser Ile Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Asn Glu Thr Asp Val Glu Asn Cys Val  
 65 70 75 80  
 Asn Thr Thr Val Ser Lys His Gly Lys Leu Asp Ile Met Phe Asn Asn  
 85 90 95  
 Ala Gly Ile Thr Gly Val Asn Lys Thr Ser Ile Leu Asp Asn Thr Lys  
 100 105 110  
 Ser Glu Phe Glu Glu Val Ile Asn Val Asn Leu Val Gly Val Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Arg Arg Gly Ser  
 130 135 140  
 Ile Val Asn Thr Ala Ser Val Cys Gly Ser Ile Gly Gly Val Ala Ser  
 145 150 155 160  
 His Ala Tyr Thr Ser Lys His Ala Val Val Gly Leu Thr Lys Asn  
 165 170 175  
 Thr Ala Val Glu Leu Gly Ala Phe Gly Val Arg Val Asn Cys Val Ser  
 180 185 190  
 Pro Tyr Val Val Ala Thr Pro Leu Ala Lys Asn Phe Phe Lys Leu Asp  
 195 200 205  
 Asp Asp Gly Val Gln Gly Ile Tyr Ser Asn Leu Lys Gly Thr Asp Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Val Asp Gly Gly Phe Thr  
 245 250 255  
 Val Val Asn Ser Gly Phe Cys Val Leu Gly Gln Ser Ser  
 260 265

&lt;210&gt; 2023

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 2023

atg gct agt gtt tct tcg gtt tta gct cca ttt aga agg ctt gat ggg	48
Met Ala Ser Val Ser Ser Val Leu Ala Pro Phe Arg Arg Leu Asp Gly	
1 5 10 15	
aag gtg gcg att atc act ggt ggt gcg agt ggt cta ggt gca gcc act	96
Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Leu Gly Ala Ala Thr	
20 25 30	
gca aga ctc ttc tct aag cat gga gca tat gta gtc ata gct gat att	144
Ala Arg Leu Phe Ser Lys His Gly Ala Tyr Val Val Ile Ala Asp Ile	
35 40 45	
caa gac gac ttg ggt ctc tct gtt gcc aaa gag tta gaa tct gct tcc	192
Gln Asp Asp Leu Gly Leu Ser Val Ala Lys Glu Leu Glu Ser Ala Ser	
50 55 60	
tat gtc cat tgc gat gtg aca aag gaa gag gac gtt gaa aac tgc gtg	240
Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val	
65 70 75 80	
aac aca acg gtt tcc aag tat ggc aaa tta gat atc atg ttt aac aat	288
Asn Thr Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Phe Asn Asn	
85 90 95	
gca ggt gta tct gat gag atc aaa aca agc att ctt gac aac aac aag	336
Ala Gly Val Ser Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Asn Lys	
100 105 110	
tct gat ttt gag aga gtg ata agt gtt aac ttg gtt ggt cct ttt ctg	384
Ser Asp Phe Glu Arg Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu	
115 120 125	
gga aca aag cat gct gca agg gtc atg att cct gct aaa aag gga tgc	432
Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Lys Gly Cys	

## PhoenixTemp32470.tmp.txt

130	ata	atc	aac	aca	gct	agt	135	ggt	gga	tgc	140	gga	ggt	gct	aca	480
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Cys	Ile	Gly	Gly	Gly	Ala	Thr	
145	cat	gcc	tac	aca	agt	tca	aag	cac	gca	cta	att	gga	ctg	aca	aaa	528
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Thr	Lys	Asn	
				165	ctt	gga	caa	cat	ggt	att	agg	gta	aat	tgt	ttg	576
Thr	Ala	Val	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser	
			180					185					190			
cct	tat	ctt	gtt	gtc	aca	ccg	tta	agt	aag	aaa	tat	ttc	aat	att	gat	624
Pro	Tyr	Leu	Val	Val	Thr	Pro	Leu	Ser	Lys	Lys	Tyr	Phe	Asn	Ile	Asp	
			195				200					205				
gaa	gac	aaa	att	cgt	gag	ata	tat	tca	aac	cta	aaa	ggt	gct	cat	ctt	672
Glu	Asp	Lys	Ile	Arg	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Ala	His	Leu	
						215					220					
gtg	cct	aac	gat	gtg	gcc	gaa	gct	gct	ctt	tac	ttg	gca	ggt	gat	gag	720
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu	
						230				235					240	
tcc	aag	tat	gtt	agt	ggt	cac	aat	ctt	gtg	ata	gat	gga	ggg	tac	act	768
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Ile	Asp	Gly	Gly	Tyr	Thr	
				245					250					255		
gat	gta	aat	gca	gga	ttt	acc	gtg	ttt	ggg	cag	tct	cag	taa			810
Asp	Val	Asn	Ala	Gly	Phe	Thr	Val	Phe	Gly	Gln	Ser	Gln				
			260					265								

&lt;210&gt; 2024

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2024

Met	Ala	Ser	Val	Ser	Ser	Val	Leu	Ala	Pro	Phe	Arg	Arg	Leu	Asp	Gly
1				5					10					15	
Lys	Val	Ala	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Leu	Gly	Ala	Ala	Thr	
			20				25					30			
Ala	Arg	Leu	Phe	Ser	Lys	His	Gly	Ala	Tyr	Val	Val	Ile	Ala	Asp	Ile
			35				40					45			
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Val	Ala	Lys	Glu	Leu	Glu	Ser	Ala	Ser
			50			55					60				
Tyr	Val	His	Cys	Asp	Val	Thr	Lys	Glu	Glu	Asp	Val	Glu	Asn	Cys	Val
65					70					75					80
Asn	Thr	Thr	Val	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Asn	Asn
				85					90					95	
Ala	Gly	Val	Ser	Asp	Glu	Ile	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Asn	Lys
			100					105					110		
Ser	Asp	Phe	Glu	Arg	Val	Ile	Ser	Val	Asn	Leu	Val	Gly	Pro	Phe	Leu
		115					120					125			
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Lys	Gly	Cys
						135					140				
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Cys	Ile	Gly	Gly	Gly	Ala	Thr
145					150					155					160
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Thr	Lys	Asn
				165					170					175	
Thr	Ala	Val	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser
			180					185					190		
Pro	Tyr	Leu	Val	Val	Thr	Pro	Leu	Ser	Lys	Lys	Tyr	Phe	Asn	Ile	Asp
			195				200					205			
Glu	Asp	Lys	Ile	Arg	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Ala	His	Leu
						215					220				
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu
225					230					235					240
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Ile	Asp	Gly	Gly	Tyr	Thr
				245					250					255	
Asp	Val	Asn	Ala	Gly	Phe	Thr	Val	Phe	Gly	Gln	Ser	Gln			
			260					265							

&lt;210&gt; 2025

&lt;211&gt; 915

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(915)

&lt;400&gt; 2025

atg gca tca acc atg ccg ttc tcc gct ggc ctc gtt tct ctt ggg tct	48
Met Ala Ser Thr Met Pro Phe Ser Ala Gly Leu Val Ser Leu Gly Ser	
1 5 10 15	
ccg ccg ccg cag cgc cac agc tgc agg ttc cag cga tat cat cga ccg	96
Pro Pro Pro Gln Arg His Ser Cys Arg Phe Gln Arg Tyr His Arg Pro	
20 25 30	
ggc act ctc att tca tca gct ata agg cat ggt cag gtt aaa gct atg	144
Gly Thr Leu Ile Ser Ser Ala Ile Arg His Gly Gln Val Lys Ala Met	
35 40 45	
gct gga gtg agc atg gat ggc ttg gca cag cct caa gcc cca gtt gca	192
Ala Gly Val Ser Met Asp Gly Leu Ala Gln Pro Gln Ala Pro Val Ala	
50 55 60	
gtg gtt acc gga gca tcg agg ggg att ggg cga gcg ata gct gtg gct	240
Val Val Thr Gly Ala Ser Arg Gly Ile Gly Arg Ala Ile Ala Val Ala	
65 70 75 80	
ctt ggc aaa gca ggg tgc aag gta gtt gtg aac tat gcc aag tca ggc	288
Leu Gly Lys Ala Gly Cys Lys Val Val Val Asn Tyr Ala Lys Ser Gly	
85 90 95	
atg gaa gct gaa gaa gtg tgc aga gag atc atg gag tcc ggt ggc act	336
Met Glu Ala Glu Glu Val Cys Arg Glu Ile Met Glu Ser Gly Gly Thr	
100 105 110	
gcc atc tcc ttt tca gcc gat gtc tcc att gaa gcc gag gtt gaa acc	384
Ala Ile Ser Phe Ser Ala Asp Val Ser Ile Glu Ala Glu Val Glu Thr	
115 120 125	
atg atg aga gcg gta att gat act tgg gga acg ctg gac gtg atg gtg	432
Met Met Arg Ala Val Ile Asp Thr Trp Gly Thr Leu Asp Val Met Val	
130 135 140	
aac aat gca ggg atc acg cga gat gct ctg cta atg cgg atg aag aag	480
Asn Asn Ala Gly Ile Thr Arg Asp Ala Leu Leu Met Arg Met Lys Lys	
145 150 155 160	
gcg cag tgg cag gaa gta gtg gac gta aac ctt acc ggt gtt tac ctc	528
Ala Gln Trp Gln Glu Val Val Asp Val Asn Leu Thr Gly Val Tyr Leu	
165 170 175	
tgc gcc cag gct gcg gcg gca gtg atg atg aag agg aag aag gga aga	576
Cys Ala Gln Ala Ala Ala Ala Val Met Met Lys Arg Lys Lys Gly Arg	
180 185 190	
atc atc aac atc gcc tca gtt gcc ggg atg atc ggc aac att ggc cag	624
Ile Ile Asn Ile Ala Ser Val Ala Gly Met Ile Gly Asn Ile Gly Gln	
195 200 205	
gcc aac tac tgc gcc gcc aag gcc ggg gtg att gga ttg acc aag gcc	672
Ala Asn Tyr Cys Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Ala	
210 215 220	
atg gcc cgg gaa tac ggt ggc aga aac ata aat gtg aat gca gtt tcc	720
Met Ala Arg Glu Tyr Gly Gly Arg Asn Ile Asn Val Asn Ala Val Ser	
225 230 235 240	
ccg ggc tgg gtc gcg tct gac atg acc gca aaa cta ggc gac gac atc	768
Pro Gly Trp Val Ala Ser Asp Met Thr Ala Lys Leu Gly Asp Asp Ile	
245 250 255	
gaa cga aag gcg ctc gag aca ata cca cta gga cga ttc ggc aag cca	816
Glu Arg Lys Ala Leu Glu Thr Ile Pro Leu Gly Arg Phe Gly Lys Pro	
260 265 270	
gag gag att gct gga ctg gtg gag ttc ttg gct gtt cat ccg gct gca	864
Glu Glu Ile Ala Gly Leu Val Glu Phe Leu Ala Val His Pro Ala Ala	
275 280 285	
agc tac atg acc ggg cag gtg ctc cca gtt gat ggt ggc ctg tcc att	912
Ser Tyr Met Thr Gly Gln Val Leu Pro Val Asp Gly Gly Leu Ser Ile	
290 295 300	
tga	915

<210> 2026  
 <211> 304  
 <212> PRT  
 <213> Triticum aestivum

<400> 2026  
 Met Ala Ser Thr Met<sub>5</sub> Pro Phe Ser Ala Gly<sub>10</sub> Leu Val Ser Leu Gly<sub>15</sub> Ser  
 1 Pro Pro Pro Gln<sub>20</sub> Arg His Ser Cys Arg<sub>25</sub> Phe Gln Arg Tyr His<sub>30</sub> Arg Pro  
 Gly Thr Leu<sub>35</sub> Ile Ser Ser Ala Ile<sub>40</sub> Arg His Gly Gln Val<sub>45</sub> Lys Ala Met  
 Ala Gly<sub>50</sub> Val Ser Met Asp Gly<sub>55</sub> Leu Ala Gln Pro Gln<sub>60</sub> Ala Pro Val Ala  
 Val Val Thr Gly<sub>65</sub> Ala Ser Arg Gly Ile Gly<sub>70</sub> Arg Ala Ile Ala Val Ala<sub>75</sub>  
 Leu Gly Lys Ala<sub>80</sub> Gly<sub>85</sub> Cys Lys Val Val Val<sub>90</sub> Asn Tyr Ala Lys Ser<sub>95</sub> Gly  
 Met Glu Ala Glu<sub>100</sub> Glu Val Cys Arg Glu<sub>105</sub> Ile Met Glu Ser Gly<sub>110</sub> Gly Thr  
 Ala Ile Ser Phe<sub>115</sub> Ser Ala Asp Val Ser Ile Glu Ala Glu<sub>120</sub> Val Glu Thr  
 Met Met Arg Ala Val Ile Asp<sub>125</sub> Thr Trp Gly Thr Leu<sub>130</sub> Asp Val Met Val  
 135 Asn Ala Gly Ile Thr<sub>140</sub> Arg Asp Ala Leu Leu<sub>145</sub> Met Arg Met Lys Lys<sub>150</sub>  
 Ala Gln Trp Gln<sub>155</sub> Glu Val Val Asp Val Asn<sub>160</sub> Leu Thr Gly Val Tyr Leu  
 165 Cys Ala Gln Ala<sub>170</sub> Ala Ala Val Met<sub>175</sub> Lys Arg Lys Lys<sub>180</sub> Gly Arg  
 Ile Ile Asn<sub>185</sub> Ile Ala Ser Val Ala Gly Met Ile Gly<sub>190</sub> Asn Ile Gly Gln  
 195 Ala Asn Tyr Cys Ala Ala Lys<sub>200</sub> Ala Gly Val Ile Gly<sub>205</sub> Leu Thr Lys Ala  
 210 Met Ala Arg Glu Tyr Gly<sub>215</sub> Gly Arg Asn Ile Asn<sub>220</sub> Val Asn Ala Val Ser  
 225 Pro Gly Trp Val<sub>225</sub> Ala Ser Asp Met Thr Ala<sub>230</sub> Lys Leu Gly Asp Asp<sub>235</sub> Ile  
 Glu Arg Lys Ala<sub>240</sub> Leu Glu Thr Ile Pro<sub>245</sub> Leu Gly Arg Phe Gly<sub>250</sub> Lys Pro  
 Glu Glu Ile<sub>255</sub> Ala Gly Leu Val Glu<sub>260</sub> Phe Leu Ala Val His<sub>265</sub> Pro Ala Ala  
 270 Ser Tyr Met Thr Gly Gln Val<sub>275</sub> Leu Pro Val Asp Gly<sub>280</sub> Gly Leu Ser Ile  
 285 290 295 300

<210> 2027  
 <211> 804  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(804)

<400> 2027  
 atg gct gag gca agc att ggc agc aaa agc agc aga tgg tct tta cag 48  
 Met Ala Glu Ala Ser<sub>5</sub> Ile Gly Ser Lys<sub>10</sub> Ser Arg Trp Ser<sub>15</sub> Leu Gln  
 gga atg aca gct ctc gtc acc ggt gga tcc aaa gga atc gga tat gct 96  
 Gly Met Thr Ala<sub>20</sub> Leu Val Thr Gly<sub>25</sub> Gly Ser Lys Gly Ile Gly Tyr Ala  
 atc gtg gag gag ttg gca cag ctt gga gcc act gtg cac act tgc gct 144  
 Ile Val Glu<sub>35</sub> Leu Ala Gln<sub>40</sub> Gly Ala Thr Val<sub>45</sub> His Thr Cys Ala  
 cgg aac gaa gct gaa ctc aat gaa tcc tta aat gaa tgg aac aca aaa 192  
 Arg Asn Glu Ala Glu Leu Asn<sub>55</sub> Glu Ser Leu Asn Glu<sub>60</sub> Trp Asn Thr Lys  
 gga tac aga gta act ggt tcc gtc tgt gac gtg gcg tct cgt gca gaa 240  
 Gly Tyr Arg Val Thr Gly Ser Val Cys Asp Val Ala Ser Arg Ala Glu



## PhoenixTemp32470.tmp.txt

65	aga	caa	gac	ctc	att	gct	aga	ctc	tcc	aat	gag	ttt	aat	ggc	aaa	ctc	288
	Arg	Gln	Asp	Leu	Ile	Ala	Arg	Leu	Ser	Asn	Glu	Phe	Asn	Gly	Lys	Leu	
					85					90					95		
	aat	atc	ctt	gta	aac	aac	gtg	gga	aca	aac	gta	ccg	aaa	cat	acc	ctt	336
	Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Val	Pro	Lys	His	Thr	Leu	
				100					105					110			
	gat	gtt	acg	gag	gaa	gac	ttc	tca	ttt	ctg	ata	aat	acg	aat	ctt	gaa	384
	Asp	Val	Thr	Glu	Glu	Asp	Phe	Ser	Phe	Leu	Ile	Asn	Thr	Asn	Leu	Glu	
			115					120					125				
	tct	gct	tac	cac	cta	agc	cag	ctt	gca	cat	cct	ctc	ctg	aaa	gct	tca	432
	Ser	Ala	Tyr	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	
							135					140					
	gag	gct	gca	aac	atc	att	ttt	ata	tcc	tcc	att	gct	ggg	gtg	cta	tca	480
	Glu	Ala	Ala	Asn	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Ala	Gly	Val	Leu	Ser	
	145				150						155					160	
	ata	gga	gta	gga	tcc	act	tat	ggg	gca	aca	aaa	gga	gca	atg	aac	caa	528
	Ile	Gly	Val	Gly	Ser	Thr	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	
					165					170					175		
	ctg	act	aaa	aat	ttg	gca	tgt	gag	tgg	gcc	aaa	gac	aat	ata	agg	act	576
	Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Thr	
				180				185						190			
	aat	tgc	gtt	gca	cca	ggg	cca	atc	aaa	acc	cct	ctc	ggg	gac	aag	cat	624
	Asn	Cys	Val	Ala	Pro	Gly	Pro	Ile	Lys	Thr	Pro	Leu	Gly	Asp	Lys	His	
			195					200					205				
	ttt	aaa	aat	gaa	aaa	ctt	ctt	aat	gct	ttc	att	tcg	caa	acc	ccc	ctt	672
	Phe	Lys	Asn	Glu	Lys	Leu	Leu	Asn	Ala	Phe	Ile	Ser	Gln	Thr	Pro	Leu	
	210					215					220						
	gga	cgg	att	gga	gaa	gca	gag	gaa	gtg	tct	tca	ttg	gtg	gca	ttc	ctc	720
	Gly	Arg	Ile	Gly	Glu	Ala	Glu	Glu	Val	Ser	Ser	Leu	Val	Ala	Phe	Leu	
	225				230						235					240	
	tgc	tta	cct	gca	gcc	tct	tac	ata	aca	gga	cag	acc	att	tgt	gtt	gat	768
	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	
				245					250						255		
	ggg	gga	tta	aca	gtg	aat	ggg	ctc	tat	ata	aat	tag					804
	Gly	Gly	Leu	Thr	Val	Asn	Gly	Leu	Tyr	Ile	Asn						
				260				265									

&lt;210&gt; 2028

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2028

Met	Ala	Glu	Ala	Ser	Ile	Gly	Ser	Lys	Ser	Ser	Arg	Trp	Ser	Leu	Gln	
1				5					10					15		
Gly	Met	Thr	Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Tyr	Ala	
			20					25					30			
Ile	Val	Glu	Glu	Leu	Ala	Gln	Leu	Gly	Ala	Thr	Val	His	Thr	Cys	Ala	
			35				40					45				
Arg	Asn	Glu	Ala	Glu	Leu	Asn	Glu	Ser	Leu	Asn	Glu	Trp	Asn	Thr	Lys	
	50					55				60						
Gly	Tyr	Arg	Val	Thr	Gly	Ser	Val	Cys	Asp	Val	Ala	Ser	Arg	Ala	Glu	
65					70					75					80	
Arg	Gln	Asp	Leu	Ile	Ala	Arg	Leu	Ser	Asn	Glu	Phe	Asn	Gly	Lys	Leu	
				85					90					95		
Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Val	Pro	Lys	His	Thr	Leu	
			100					105					110			
Asp	Val	Thr	Glu	Glu	Asp	Phe	Ser	Phe	Leu	Ile	Asn	Thr	Asn	Leu	Glu	
			115				120					125				
Ser	Ala	Tyr	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	
	130					135					140					
Glu	Ala	Ala	Asn	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Ala	Gly	Val	Leu	Ser	
145				150						155					160	
Ile	Gly	Val	Gly	Ser	Thr	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	
				165					170					175		
Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Thr	
			180					185					190			
Asn	Cys	Val	Ala	Pro	Gly	Pro	Ile	Lys	Thr	Pro	Leu	Gly	Asp	Lys	His	

## PhoenixTemp32470.tmp.txt

195  
 Phe Lys Asn Glu Lys Leu Leu 200 Asn Ala Phe Ile Ser 205 Gln Thr Pro Leu  
 210  
 Gly Arg Ile Gly Glu Ala Glu Glu Val Ser Ser 220 Leu Val Ala Phe Leu  
 225  
 Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly 235 Gln Thr Ile Cys Val Asp  
 245  
 Gly Gly Leu Thr Val Asn Gly Leu Tyr Ile Asn 265  
 260

<210> 2029  
 <211> 951  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(951)

<400> 2029  
 atg gcc acc gcc gcc gcc acc gca gca gca gta gtc tcc tcc ccg gct 48  
 Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Val Val Ser Ser Pro Ala  
 1 5 10 15  
 gcc cca cgc gcc gcc gcc gcc gcc gcc tcc cgc cgg ggg ttc gtc acg 96  
 Ala Pro Arg Gly Ala Ala Ala Ala Ser Arg Arg Gly Phe Val Thr  
 20 25 30  
 ttt ggt gga gcc gcc gcc cgc ttc tct ccc acg ctg cgg tcc ggc cgt 144  
 Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser Gly Arg  
 35 40 45  
 ggg ttc tct ggt gtg caa acc cat gtt gcc gct gtt gaa caa gca att 192  
 Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln Ala Ile  
 50 55 60  
 gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt aca ggt 240  
 Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Thr Gly  
 65 70 75 80  
 gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga aaa gca 288  
 Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly Lys Ala  
 85 90 95  
 gga tgc aag gtt ctg gta aac tat gcc cgg tcc tcg aaa gag gct gaa 336  
 Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu Ala Glu  
 100 105 110  
 gag gtc tcc aaa gag att gaa gca tct ggt ggt gag gct atc acc ttc 384  
 Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile Thr Phe  
 115 120 125  
 gga gga gat gtt tca aaa gaa gct gat gta gag tct atg atg aaa gca 432  
 Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met Lys Ala  
 130 135 140  
 gct cta gat aaa tgg gga aca ata gat gtg ctg gta aat aat gca ggg 480  
 Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly  
 145 150 155 160  
 att aca cga gac aca ttg ttg atg agg atg aag aaa tct cag tgg caa 528  
 Ile Thr Arg Asp Thr Leu Leu Met Arg Lys Lys Ser Gln Trp Gln  
 165 170 175  
 gac gta att gat ctg aat ctt act ggt gtc ttc ctt tgt aca cag gct 576  
 Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Gln Ala  
 180 185 190  
 gca aca aaa gta atg atg aaa aag aga aag gga aaa att atc aac att 624  
 Ala Thr Lys Val Met Met Lys Lys Arg Lys Gly Lys Ile Ile Asn Ile  
 195 200 205  
 gca tct gta gtt ggt ctt act ggc aat gtt ggc caa gct aat tat agc 672  
 Ala Ser Val Val Gly Leu Thr Gly Asn Val Gly Gln Ala Asn Tyr Ser  
 210 215 220  
 gca gcc aag gct gga gtg att ggt ttc aca aaa gtt gcc agg gag 720  
 Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala Arg Glu  
 225 230 235 240  
 tat gca agc aga aat atc aat gtg aat gct att gca cca ggg ttc att 768  
 Tyr Ala Ser Arg Asn Ile Asn Val Asn Ala Ile Ala Pro Gly Phe Ile  
 245 250 255  
 gca tct gat atg act gcc gaa ctt gga gaa gag ctt gag aag aaa atc 816

## PhoenixTemp32470.tmp.txt

Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	Lys	Ile		
ttg	tca	acc	att	ccg	tta	ggg	aga	tat	ggc	caa	cca	gag	gaa	gtt	gca	864	
Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu	Glu	Val	Ala		
		275					280					285					
ggg	ttg	gtc	gag	ttc	ctg	gcc	ctt	aac	ccc	gca	gct	agc	tat	atg	act	912	
Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	Ala	Ala	Ser	Tyr	Met	Thr		
	290					295				300							
gga	cag	gtg	ctt	aca	att	gac	gga	ggg	atg	gta	atg	taa				951	
Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met						
305					310					315							

&lt;210&gt; 2030

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2030

Met	Ala	Thr	Ala	Ala	Ala	Thr	Ala	Ala	Ala	Val	Val	Ser	Ser	Pro	Ala		
1				5					10					15			
Ala	Pro	Arg	Ala	Gly	Ala	Ala	Ala	Ala	Ser	Arg	Arg	Gly	Phe	Val	Thr		
			20					25					30				
Phe	Gly	Gly	Gly	Ala	Ala	Arg	Phe	Ser	Pro	Thr	Leu	Arg	Ser	Gly	Arg		
		35					40					45					
Gly	Phe	Ser	Gly	Val	Gln	Thr	His	Val	Ala	Ala	Val	Glu	Gln	Ala	Ile		
	50					55					60						
Val	Lys	Asp	Ala	Thr	Lys	Leu	Glu	Ala	Pro	Val	Val	Val	Val	Thr	Gly		
65					70					75					80		
Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Leu	Ala	Leu	Gly	Lys	Ala		
				85					90					95			
Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	Lys	Glu	Ala	Glu		
		100						105				110					
Glu	Val	Ser	Lys	Glu	Ile	Glu	Ala	Ser	Gly	Gly	Glu	Ala	Ile	Thr	Phe		
		115					120					125					
Gly	Gly	Asp	Val	Ser	Lys	Glu	Ala	Asp	Val	Glu	Ser	Met	Met	Lys	Ala		
	130					135				140							
Ala	Leu	Asp	Lys	Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly		
145					150					155					160		
Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	Trp	Gln		
			165					170						175			
Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Gln	Ala		
		180						185					190				
Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Arg	Lys	Gly	Lys	Ile	Ile	Asn	Ile		
		195				200						205					
Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Val	Gly	Gln	Ala	Asn	Tyr	Ser		
	210					215					220						
Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	Arg	Glu		
225					230					235					240		
Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile		
			245					250						255			
Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	Lys	Ile		
		260						265					270				
Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu	Glu	Val	Ala		
		275				280						285					
Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	Ala	Ala	Ser	Tyr	Met	Thr		
	290					295					300						
Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met						
305					310					315							

&lt;210&gt; 2031

&lt;211&gt; 969

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(969)

&lt;400&gt; 2031

## PhoenixTemp32470.tmp.txt

atg	gct	gct	agt	acc	gga	tcc	acc	gcc	gtc	gta	ttc	aaa	tcc	gcc	ggc	48
Met	Ala	Ala	Ser	Thr	Gly	Ser	Thr	Ala	Val	Val	Phe	Lys	Ser	Ala	Gly	
1				5					10					15		
ttc	gcc	acc	tcc	tcc	ggc	gaa	agg	agc	att	aac	cag	ttc	cgc	cac	tgg	96
Phe	Ala	Thr	Ser	Ser	Gly	Glu	Arg	Ser	Ile	Asn	Gln	Phe	Arg	His	Trp	
			20					25					30			
tct	ccg	gtt	ccc	gcc	agc	ctc	cac	tcc	tcc	cgc	gct	ggc	ctc	cgc	tgt	144
Ser	Pro	Val	Pro	Ala	Ser	Leu	His	Ser	Ser	Arg	Ala	Gly	Leu	Arg	Cys	
		35					40					45				
aga	tcg	aga	agc	tcg	gta	tcc	tct	tcc	ggt	gtg	aga	gct	cag	gtt	gct	192
Arg	Ser	Arg	Ser	Ser	Val	Ser	Ser	Ser	Gly	Val	Arg	Ala	Gln	Val	Ala	
	50					55				60						
gca	gtt	gaa	cca	gtc	agc	agt	gag	tca	gtt	aag	gtg	gaa	tct	cca		240
Ala	Val	Glu	Pro	Val	Ser	Ser	Glu	Ser	Val	Lys	Lys	Val	Glu	Ser	Pro	
	65				70				75					80		
gta	gtt	att	gta	act	gga	gct	tcc	aga	gga	atc	ggg	aaa	gcg	att	gca	288
Val	Val	Ile	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	
				85					90					95		
ttg	tcg	ttg	ggg	aaa	gca	ggt	tgc	aag	gtt	ctg	gtt	aac	tat	gca	agg	336
Leu	Ser	Leu	Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	
			100					105					110			
tca	tct	aag	gag	gct	gag	gaa	gtc	tcc	aaa	gag	att	gaa	gct	tcc	ggt	384
Ser	Ser	Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Ala	Ser	Gly	
		115					120					125				
ggt	caa	gct	gta	acc	ttt	ggt	ggt	gat	gtc	tct	aaa	gaa	gag	gat	gtg	432
Gly	Gln	Ala	Val	Thr	Phe	Gly	Gly	Asp	Val	Ser	Lys	Glu	Glu	Asp	Val	
	130					135					140					
gag	gcc	atg	atg	aaa	act	gct	att	gat	gct	ttt	gga	aca	gtt	gac	ata	480
Glu	Ala	Met	Met	Lys	Thr	Ala	Ile	Asp	Ala	Phe	Gly	Thr	Val	Asp	Ile	
	145				150					155					160	
ctg	ata	aac	aat	gca	ggg	atc	aca	agg	gac	act	ttg	ttg	atg	cgg	atg	528
Leu	Ile	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met	
				165				170						175		
aag	aaa	cag	cag	tgg	cag	gat	gtt	att	gac	ctc	aat	ctt	act	ggt	gtc	576
Lys	Lys	Gln	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	
			180					185					190			
ttc	ctt	tgt	aca	cag	gct	gca	gcc	aag	atc	atg	atg	aag	aaa	aga	aag	624
Phe	Leu	Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys	
		195					200					205				
gga	agg	att	atc	aat	atc	gct	tca	gtt	gtt	ggt	ttg	gtt	ggt	aac	gtt	672
Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Gly	Asn	Val	
	210					215					220					
ggg	caa	gct	aac	tac	agt	gct	gca	aag	gca	gga	gtc	att	gga	ttc	aca	720
Gly	Gln	Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	
	225				230				235						240	
aag	agt	gtc	gca	aag	gaa	tat	tca	agc	aga	aat	atc	aac	gtc	aat	gct	768
Lys	Ser	Val	Ala	Lys	Glu	Tyr	Ser	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	
				245					250					255		
gtt	gct	cct	gga	ttc	att	gca	tct	gac	atg	act	gcc	aag	ctt	ggg	gat	816
Val	Ala	Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Asp	
			260					265					270			
gac	att	gaa	aag	aaa	atc	ttg	gag	acg	att	cct	tta	ggg	cgg	tac	ggt	864
Asp	Ile	Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	
		275					280					285				
cag	ccg	gaa	gag	gtg	gcc	gga	ttg	gtg	gaa	ttc	ctc	gct	ctg	aac	cca	912
Gln	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	
	290					295					300					
gct	gct	ggc	tac	atg	acc	ggg	cag	gtg	ctt	acc	atc	gac	gga	gga	atg	960
Ala	Ala	Gly	Tyr	Met	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	
	305				310					315					320	
gtg	atg	taa														969
Val	Met															

&lt;210&gt; 2032

&lt;211&gt; 322

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2032

```

Met Ala Ala Ser Thr Gly Ser Thr Ala Val Val Phe Lys Ser Ala Gly
1      5      10      15
Phe Ala Thr Ser Ser Gly Glu Arg Ser Ile Asn Gln Phe Arg His Trp
      20      25      30
Ser Pro Val Pro Ala Ser Leu His Ser Ser Arg Ala Gly Leu Arg Cys
      35      40      45
Arg Ser Arg Ser Ser Val Ser Ser Gly Val Arg Ala Gln Val Ala
      50      55      60
Ala Val Glu Pro Val Ser Ser Glu Ser Val Lys Lys Val Glu Ser Pro
65      70      75      80
Val Val Ile Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala
      85      90      95
Leu Ser Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg
      100      105      110
Ser Ser Lys Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly
      115      120      125
Gly Gln Ala Val Thr Phe Gly Gly Asp Val Ser Lys Glu Glu Asp Val
      130      135      140
Glu Ala Met Met Lys Thr Ala Ile Asp Ala Phe Gly Thr Val Asp Ile
145      150      155      160
Leu Ile Asn Asn Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met
      165      170      175
Lys Lys Gln Gln Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val
      180      185      190
Phe Leu Cys Thr Gln Ala Ala Ala Lys Ile Met Met Lys Lys Arg Lys
      195      200      205
Gly Arg Ile Ile Asn Ile Ala Ser Val Val Gly Leu Val Gly Asn Val
      210      215      220
Gly Gln Ala Asn Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Phe Thr
225      230      235      240
Lys Ser Val Ala Lys Glu Tyr Ser Ser Arg Asn Ile Asn Val Asn Ala
      245      250      255
Val Ala Pro Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Asp
      260      265      270
Asp Ile Glu Lys Lys Ile Leu Glu Thr Ile Pro Leu Gly Arg Tyr Gly
      275      280      285
Gln Pro Glu Glu Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Pro
      290      295      300
Ala Ala Gly Tyr Met Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met
305      310      315      320
Val Met

```

&lt;210&gt; 2033

&lt;211&gt; 834

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(834)

&lt;400&gt; 2033

```

atg agt gcc act aac gcc gct agt tcc gtc att aga agg ctg gaa ggc      48
Met Ser Ala Thr Asn Ala Ala Ser Ser Val Ile Arg Arg Leu Glu Gly
1      5      10      15
aaa gtg gcg ctg atc acc ggc gga gct agc ggg ata gga gaa gcc acg      96
Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr
      20      25      30
gcc aag ctg ttc gtc caa cac ggc gcc aag gtc gtc atc gcc gat gtc      144
Ala Lys Leu Phe Val Gln His Gly Ala Lys Val Val Ile Ala Asp Val
      35      40      45
aaa gac caa ctc ggc ggg tca ctc act gag aag ctg ggg ggc cca cac      192
Lys Asp Gln Leu Gly Gly Ser Leu Thr Glu Lys Leu Gly Gly Pro His
      50      55      60
gcg gcc acc tac gtc cac tgc gac gtc aca cat cct gcc cac gtc agc      240
Ala Ala Thr Tyr Val His Cys Asp Val Thr Pro Ala His Val Ser
      65      70      75      80

```

## PhoenixTemp32470.tmp.txt

gat	gcg	gtt	gac	gcg	gca	gtg	tcc	acg	tat	ggc	cag	ctg	gac	atc	atg	288
Asp	Ala	Val	Asp	Ala	Ala	Val	Ser	Thr	Tyr	Gly	Gln	Leu	Asp	Ile	Met	
				85					90					95		
cac	aac	aat	gcc	ggc	atc	gcc	ggc	aac	ttt	gat	cct	cgc	atc	ctc	aac	336
His	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Asn	Phe	Asp	Pro	Arg	Ile	Leu	Asn	
			100					105					110			
tcc	gac	gac	gat	aat	ttt	aag	cga	gtc	atc	gac	att	aac	ctc	ttc	ggc	384
Ser	Asp	Asp	Asp	Asn	Phe	Lys	Arg	Val	Ile	Asp	Ile	Asn	Leu	Phe	Gly	
			115				120					125				
gcc	ttc	cta	ggt	gcc	aag	cat	gcc	gcc	agg	gtg	atg	gta	ccg	gcg	ggg	432
Ala	Phe	Leu	Gly	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Ala	Gly	
	130					135					140					
aga	ggc	ggc	tgc	atc	ctg	ttc	aca	gcc	agt	gca	gtc	tcg	gtg	act	agc	480
Arg	Gly	Gly	Cys	Ile	Leu	Phe	Thr	Ala	Ser	Ala	Val	Ser	Val	Thr	Ser	
	145				150					155					160	
ggc	aac	att	tcg	tac	gca	tac	aag	gtg	tcg	aag	aac	ggg	gta	gtg	ggg	528
Gly	Asn	Ile	Ser	Tyr	Ala	Tyr	Lys	Val	Ser	Lys	Asn	Gly	Val	Val	Gly	
				165					170					175		
ctg	gcc	aac	aat	ctg	tgc	gcg	gag	ctg	gga	cag	cat	ggg	att	cga	gtc	576
Leu	Ala	Asn	Asn	Leu	Cys	Ala	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	
			180					185					190			
aac	gcg	ata	tcg	cct	ttc	gcg	ctg	gcg	acg	ccg	tta	ctg	agg	gcg	gcg	624
Asn	Ala	Ile	Ser	Pro	Phe	Ala	Leu	Ala	Thr	Pro	Leu	Leu	Arg	Ala	Ala	
		195					200					205				
ctg	ggc	ggg	atg	gga	aag	gag	gag	ggt	gac	gcg	ttc	gtc	gag	aag	ata	672
Leu	Gly	Gly	Met	Gly	Lys	Glu	Glu	Gly	Asp	Ala	Phe	Val	Glu	Lys	Ile	
	210					215					220					
ggg	aac	ttg	aaa	ggg	act	gtt	ctg	aaa	gag	ggg	gat	att	gca	gcg	gcg	720
Gly	Asn	Leu	Lys	Gly	Thr	Val	Leu	Lys	Glu	Gly	Asp	Ile	Ala	Ala	Ala	
	225				230				235					240		
gca	ttg	tac	ctg	gct	agc	gac	gat	gct	aag	tac	gtg	agc	ggg	atg	aat	768
Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Asp	Ala	Lys	Tyr	Val	Ser	Gly	Met	Asn	
				245					250					255		
ttg	gtc	gtg	gat	gga	ggt	cac	agg	cag	aac	aac	ccc	ata	ttt	cct	gct	816
Leu	Val	Val	Asp	Gly	Gly	His	Arg	Gln	Asn	Asn	Pro	Ile	Phe	Pro	Ala	
			260					265					270			
tcg	acg	ttc	act	aag	tag											834
Ser	Thr	Phe	Thr	Lys												
				275												

&lt;210&gt; 2034

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 2034

Met	Ser	Ala	Thr	Asn	Ala	Ala	Ser	Ser	Val	Ile	Arg	Arg	Leu	Glu	Gly	
1				5					10					15		
Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	
			20					25					30			
Ala	Lys	Leu	Phe	Val	Gln	His	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Val	
			35				40					45				
Lys	Asp	Gln	Leu	Gly	Gly	Ser	Leu	Thr	Glu	Lys	Leu	Gly	Gly	Pro	His	
	50					55					60					
Ala	Ala	Thr	Tyr	Val	His	Cys	Asp	Val	Thr	His	Pro	Ala	His	Val	Ser	
65					70					75				80		
Asp	Ala	Val	Asp	Ala	Val	Ser	Thr	Tyr	Gly	Gln	Leu	Asp	Ile	Met		
				85				90					95			
His	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Asn	Phe	Asp	Pro	Arg	Ile	Leu	Asn	
			100					105					110			
Ser	Asp	Asp	Asp	Asn	Phe	Lys	Arg	Val	Ile	Asp	Ile	Asn	Leu	Phe	Gly	
		115					120					125				
Ala	Phe	Leu	Gly	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Ala	Gly	
	130					135					140					
Arg	Gly	Gly	Cys	Ile	Leu	Phe	Thr	Ala	Ser	Ala	Val	Ser	Val	Thr	Ser	
	145				150					155					160	
Gly	Asn	Ile	Ser	Tyr	Ala	Tyr	Lys	Val	Ser	Lys	Asn	Gly	Val	Val	Gly	
				165					170					175		
Leu	Ala	Asn	Asn	Leu	Cys	Ala	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	

## PhoenixTemp32470.tmp.txt

180  
 Asn Ala Ile Ser Pro Phe Ala Leu Ala Thr Pro Leu Leu Arg Ala Ala  
 195  
 Leu Gly Gly Met Gly Lys Glu Glu Gly Asp Ala Phe Val Glu Lys Ile  
 210  
 Gly Asn Leu Lys Gly Thr Val Leu Lys Glu Gly Asp Ile Ala Ala Ala  
 225  
 Ala Leu Tyr Leu Ala Ser Asp Asp Ala Lys Tyr Val Ser Gly Met Asn  
 245  
 Leu Val Val Asp Gly Gly His Arg Gln Asn Asn Pro Ile Phe Pro Ala  
 260  
 Ser Thr Phe Thr Lys  
 275

&lt;210&gt; 2035

&lt;211&gt; 870

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(870)

&lt;400&gt; 2035

atg	gct	agc	gag	gtg	tca	gcc	cag	ctg	gag	cca	cgg	tgc	aac	tta	cca	48
Met	Ala	Ser	Glu	Val	Ser	Ala	Gln	Leu	Glu	Pro	Arg	Cys	Asn	Leu	Pro	
1				5				10						15		
gac	aaa	gta	gtc	ctt	gta	acc	ggt	gct	tct	tca	ggt	ata	ggc	cga	gag	96
Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Arg	Glu	
			20					25					30			
ttc	tgc	ctt	gac	cta	gcc	aaa	gct	ggg	tgc	aag	att	gtg	gcg	gct	gct	144
Phe	Cys	Leu	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Lys	Ile	Val	Ala	Ala	Ala	
		35					40				45					
agg	cgt	att	gac	cgc	cta	caa	tct	ttg	tgc	aaa	gag	atc	aat	atg	att	192
Arg	Arg	Ile	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Lys	Glu	Ile	Asn	Met	Ile	
	50					55					60					
cag	ttt	ccg	acc	agt	gct	tct	tca	tct	gcc	gga	gag	cta	agt	ggc	aca	240
Gln	Phe	Pro	Thr	Ser	Ala	Ser	Ser	Ser	Ala	Gly	Glu	Leu	Ser	Gly	Thr	
	65			70				75						80		
cgt	gct	gtg	gcc	gtg	gag	ctg	gat	gtg	tcc	gca	gac	ggg	ggt	gca	att	288
Arg	Ala	Val	Ala	Val	Glu	Leu	Asp	Val	Ser	Ala	Asp	Gly	Val	Ala	Ile	
			85					90					95			
gat	aag	gct	gtg	cag	agc	tct	tgg	gaa	gca	ttt	gga	agg	ata	gat	gtg	336
Asp	Lys	Ala	Val	Gln	Ser	Ser	Trp	Glu	Ala	Phe	Gly	Arg	Ile	Asp	Val	
		100					105					110				
ttg	atc	aac	aat	gct	ggc	att	agt	ggt	aac	tcg	aag	aac	tcg	tta	gat	384
Leu	Ile	Asn	Asn	Ala	Gly	Ile	Ser	Gly	Asn	Ser	Lys	Asn	Ser	Leu	Asp	
		115					120					125				
ttg	tct	gaa	gag	gaa	tgg	aat	cat	ttg	atc	aag	aca	aat	ttg	aaa	gga	432
Leu	Ser	Glu	Glu	Glu	Trp	Asn	His	Leu	Ile	Lys	Thr	Asn	Leu	Lys	Gly	
	130				135						140					
act	tgg	ttg	gtt	tcc	aag	ggt	ggg	ata	cgg	atg	cgt	gat	gca	aag		480
Thr	Trp	Leu	Val	Ser	Lys	Ser	Val	Gly	Ile	Arg	Met	Arg	Asp	Ala	Lys	
	145			150					155					160		
ctt	gga	ggt	tcc	ata	atc	aat	atc	tca	tcg	atc	ttt	ggt	ctt	aat	cgt	528
Leu	Gly	Gly	Ser	Ile	Ile	Asn	Ile	Ser	Ser	Ile	Phe	Gly	Leu	Asn	Arg	
			165						170				175			
ggc	tat	gca	ccc	gga	gtt	gtc	ggt	tat	gct	tct	tcg	aag	acc	ggt	gta	576
Gly	Tyr	Ala	Pro	Gly	Val	Val	Gly	Tyr	Ala	Ser	Ser	Lys	Thr	Gly	Val	
		180					185						190			
aat	tcc	atg	acg	aag	gtg	atg	gct	ttg	gag	ttg	ggg	ggt	tac	aag	atc	624
Asn	Ser	Met	Thr	Lys	Val	Met	Ala	Leu	Glu	Leu	Gly	Val	Tyr	Lys	Ile	
		195					200					205				
aga	gtt	aac	tct	ata	tca	cct	gga	ctg	ttc	aaa	tcc	gag	atc	aca	gaa	672
Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	
	210					215					220					
agt	ctc	atg	aat	aaa	ccc	tgg	atg	act	acc	gtt	gct	gag	aag	acg	gtc	720
Ser	Leu	Met	Asn	Lys	Pro	Trp	Met	Thr	Thr	Val	Ala	Glu	Lys	Thr	Val	
	225				230				235						240	

## PhoenixTemp32470.tmp.txt

cca	cta	cga	aca	ttt	gga	act	gta	gat	cca	gca	ttg	aca	tca	ctc	gtt	768
Pro	Leu	Arg	Thr	Phe	Gly	Thr	Val	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Val	
				245				250						255		
cga	tac	ctc	atc	cat	gat	tca	acc	cag	tat	gtg	acg	ggc	aat	att	ttc	816
Arg	Tyr	Leu	Ile	His	Asp	Ser	Thr	Gln	Tyr	Val	Thr	Gly	Asn	Ile	Phe	
			260					265					270			
att	gta	gat	gcc	gga	aca	acc	tta	tca	ggg	gtc	cct	att	ttc	tca	tca	864
Ile	Val	Asp	Ala	Gly	Thr	Thr	Leu	Ser	Gly	Val	Pro	Ile	Phe	Ser	Ser	
		275					280					285				
ctc	tga															870
Leu																

&lt;210&gt; 2036

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 2036

Met	Ala	Ser	Glu	Val	Ser	Ala	Gln	Leu	Glu	Pro	Arg	Cys	Asn	Leu	Pro	
1				5					10					15		
Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Arg	Glu	
			20					25					30			
Phe	Cys	Leu	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Lys	Ile	Val	Ala	Ala	Ala	
		35					40					45				
Arg	Arg	Ile	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Lys	Glu	Ile	Asn	Met	Ile	
		50				55					60					
Gln	Phe	Pro	Thr	Ser	Ala	Ser	Ser	Ser	Ala	Gly	Glu	Leu	Ser	Gly	Thr	
65				70					75					80		
Arg	Ala	Val	Ala	Val	Glu	Leu	Asp	Val	Ser	Ala	Asp	Gly	Val	Ala	Ile	
				85					90					95		
Asp	Lys	Ala	Val	Gln	Ser	Ser	Trp	Glu	Ala	Phe	Gly	Arg	Ile	Asp	Val	
			100					105					110			
Leu	Ile	Asn	Asn	Ala	Gly	Ile	Ser	Gly	Asn	Ser	Lys	Asn	Ser	Leu	Asp	
		115					120					125				
Leu	Ser	Glu	Glu	Glu	Trp	Asn	His	Leu	Ile	Lys	Thr	Asn	Leu	Lys	Gly	
	130					135					140					
Thr	Trp	Leu	Val	Ser	Lys	Ser	Val	Gly	Ile	Arg	Met	Arg	Asp	Ala	Lys	
145					150					155					160	
Leu	Gly	Gly	Ser	Ile	Asn	Ile	Ser	Ser	Ile	Phe	Gly	Leu	Asn	Arg		
				165				170					175			
Gly	Tyr	Ala	Pro	Gly	Val	Val	Gly	Tyr	Ala	Ser	Ser	Lys	Thr	Gly	Val	
			180					185					190			
Asn	Ser	Met	Thr	Lys	Val	Met	Ala	Leu	Glu	Leu	Gly	Val	Tyr	Lys	Ile	
		195					200					205				
Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	
	210					215					220					
Ser	Leu	Met	Asn	Lys	Pro	Trp	Met	Thr	Thr	Val	Ala	Glu	Lys	Thr	Val	
225					230					235					240	
Pro	Leu	Arg	Thr	Phe	Gly	Thr	Val	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Val	
				245				250						255		
Arg	Tyr	Leu	Ile	His	Asp	Ser	Thr	Gln	Tyr	Val	Thr	Gly	Asn	Ile	Phe	
			260					265					270			
Ile	Val	Asp	Ala	Gly	Thr	Thr	Leu	Ser	Gly	Val	Pro	Ile	Phe	Ser	Ser	
		275					280					285				
Leu																

&lt;210&gt; 2037

&lt;211&gt; 843

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(843)

&lt;400&gt; 2037

atg	gct	agc	gag	gtg	tca	gcc	cag	ctg	gag	cca	tgg	tat	aac	ttg	gaa	48
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----



## PhoenixTemp32470.tmp.txt

Met	Ala	Ser	Glu	Val	Ser	Ala	Gln	Leu	Glu	Pro	Trp	Tyr	Asn	Leu	Glu	
1				5					10					15		
gac	aaa	gtg	gtc	ttt	gta	act	ggg	gct	tct	tca	ggg	ttg	ggc	aga	gat	96
Asp	Lys	Val	Val	Phe	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg	Asp	
			20					25					30			
ttc	tgc	ctc	gac	ctg	gcg	aaa	gct	ggg	tgc	aag	att	gtg	gct	gct	gct	144
Phe	Cys	Leu	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Lys	Ile	Val	Ala	Ala	Ala	
		35					40					45				
agg	cgt	att	gac	cg	cta	caa	tct	ttg	tgc	gat	gaa	atc	aat	ctg	act	192
Arg	Arg	Ile	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Asp	Glu	Ile	Asn	Leu	Thr	
	50					55				60						
gct	gga	gag	cca	agt	ggg	tta	cgt	gct	gcc	gct	gtg	gag	ctg	gat	gtg	240
Ala	Gly	Glu	Pro	Ser	Gly	Leu	Arg	Ala	Ala	Ala	Val	Glu	Leu	Asp	Val	
	65				70				75						80	
tcg	gca	gac	ggg	gct	tcg	atc	gac	aag	gct	gta	cag	acc	gct	tgg	gaa	288
Ser	Ala	Asp	Gly	Ala	Ser	Ile	Asp	Lys	Ala	Val	Gln	Thr	Ala	Trp	Glu	
			85					90						95		
gcc	ttt	gga	aag	ata	gat	gcg	ttg	atc	aac	aat	gct	gga	gtt	aga	ggg	336
Ala	Phe	Gly	Lys	Ile	Asp	Ala	Leu	Ile	Asn	Asn	Ala	Gly	Val	Arg	Gly	
			100					105					110			
agt	gtg	aag	acc	cca	ttg	gat	ttt	tct	gaa	gaa	gag	tgg	aat	cac	acg	384
Ser	Val	Lys	Thr	Pro	Leu	Asp	Phe	Ser	Glu	Glu	Glu	Trp	Asn	His	Thr	
		115					120					125				
atc	aag	acg	aat	ctg	aca	gga	ggt	tgg	ttg	gtt	tcc	aag	tca	gtt	ggg	432
Ile	Lys	Thr	Asn	Leu	Thr	Gly	Val	Trp	Leu	Val	Ser	Lys	Ser	Val	Gly	
	130					135					140					
att	cgg	atg	cgt	gat	gcg	aag	ctg	gga	ggg	tcc	ata	atc	aat	att	tca	480
Ile	Arg	Met	Arg	Asp	Ala	Lys	Leu	Gly	Gly	Ser	Ile	Ile	Asn	Ile	Ser	
	145				150					155					160	
tcg	ata	gct	ggg	ctg	aat	cgt	ggg	cta	tta	cct	gga	gct	gtt	ggc	tat	528
Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	Leu	Leu	Pro	Gly	Ala	Val	Gly	Tyr	
			165					170						175		
gct	tct	tcg	aag	act	gga	gta	aac	gcc	atg	aca	aag	gtg	atg	gca	ctg	576
Ala	Ser	Ser	Lys	Thr	Gly	Val	Asn	Ala	Met	Thr	Lys	Val	Met	Ala	Leu	
			180					185					190			
gag	ttg	ggg	gtt	cac	aag	atc	aga	gtt	aac	tct	ata	tca	cct	gga	ctt	624
Glu	Leu	Gly	Val	His	Lys	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Leu	
		195					200					205				
ttc	aaa	tct	gag	atc	acg	caa	ggg	ctt	atg	cag	aaa	gac	tgg	ctc	agt	672
Phe	Lys	Ser	Glu	Ile	Thr	Gln	Gly	Leu	Met	Gln	Lys	Asp	Trp	Leu	Ser	
	210					215					220					
aac	gtt	gct	gag	aag	acg	gtt	cct	cta	cta	aca	tat	gga	act	gca	gac	720
Asn	Val	Ala	Glu	Lys	Thr	Val	Pro	Leu	Leu	Thr	Tyr	Gly	Thr	Ala	Asp	
	225				230					235				240		
cca	gca	ttg	aca	tca	atc	gcc	cga	tac	ctc	atc	cac	gat	tca	tcc	cag	768
Pro	Ala	Leu	Thr	Ser	Ile	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser	Ser	Gln	
			245					250						255		
tat	gtg	acg	ggg	aat	atc	ttc	att	gtg	gac	gct	gga	gcc	acc	tta	cct	816
Tyr	Val	Thr	Gly	Asn	Ile	Phe	Ile	Val	Asp	Ala	Gly	Ala	Thr	Leu	Pro	
		260					265						270			
ggg	gtc	cct	att	ttc	tca	tcg	ctc	tga								843
Gly	Val	Pro	Ile	Phe	Ser	Ser	Leu									
		275					280									

&lt;210&gt; 2038

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 2038

Met	Ala	Ser	Glu	Val	Ser	Ala	Gln	Leu	Glu	Pro	Trp	Tyr	Asn	Leu	Glu	
1				5					10					15		
Asp	Lys	Val	Val	Phe	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg	Asp	
			20					25					30			
Phe	Cys	Leu	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Lys	Ile	Val	Ala	Ala	Ala	
		35					40					45				
Arg	Arg	Ile	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Asp	Glu	Ile	Asn	Leu	Thr	
	50					55				60						
Ala	Gly	Glu	Pro	Ser	Gly	Leu	Arg	Ala	Ala	Ala	Val	Glu	Leu	Asp	Val	

## PhoenixTemp32470.tmp.txt

65 70 75 80  
 Ser Ala Asp Gly Ala Ser Ile Asp Lys Ala Val Gln Thr Ala Trp Glu  
 85 90 95  
 Ala Phe Gly Lys Ile Asp Ala Leu Ile Asn Asn Ala Gly Val Arg Gly  
 100 105 110  
 Ser Val Lys Thr Pro Leu Asp Phe Ser Glu Glu Glu Trp Asn His Thr  
 115 120 125  
 Ile Lys Thr Asn Leu Thr Gly Val Trp Leu Val Ser Lys Ser Val Gly  
 130 135 140  
 Ile Arg Met Arg Asp Ala Lys Leu Gly Gly Ser Ile Ile Asn Ile Ser  
 145 150 155 160  
 Ser Ile Ala Gly Leu Asn Arg Gly Leu Leu Pro Gly Ala Val Gly Tyr  
 165 170 175  
 Ala Ser Ser Lys Thr Gly Val Asn Ala Met Thr Lys Val Met Ala Leu  
 180 185 190  
 Glu Leu Gly Val His Lys Ile Arg Val Asn Ser Ile Ser Pro Gly Leu  
 195 200 205  
 Phe Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Asp Trp Leu Ser  
 210 215 220  
 Asn Val Ala Glu Lys Thr Val Pro Leu Leu Thr Tyr Gly Thr Ala Asp  
 225 230 235 240  
 Pro Ala Leu Thr Ser Ile Ala Arg Tyr Leu Ile His Asp Ser Ser Gln  
 245 250 255  
 Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ala Gly Ala Thr Leu Pro  
 260 265 270  
 Gly Val Pro Ile Phe Ser Ser Leu  
 275 280

&lt;210&gt; 2039

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 2039

atg gct gcg gcg gag acg tcg gga tcg agc cag ccg ggc gct cca gga	48
Met Ala Ala Ala Glu Thr Ser Gly Ser Ser Gln Pro Gly Ala Pro Gly	
1 5 10 15	
cgg tgg tct ctt cac ggc aaa acg gct ctc gtc acc gga ggc acc cgc	96
Arg Trp Ser Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg	
20 25 30	
ggg atc ggg cgt gcg gtg gtg gag gag ctt gcc gcg ctg ggg gcg gcc	144
Gly Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala	
35 40 45	
gtg cac acc tgc tcc cgg aag gag gcg gag ctt ggc gag cgc ctc aag	192
Val His Thr Cys Ser Arg Lys Glu Ala Glu Leu Gly Glu Arg Leu Lys	
50 55 60	
gag tgg gag gcc agg ggc ttc cgc gtc aca acc tcc gtc tgc gac ctc	240
Glu Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu	
65 70 75 80	
tcc gtc cgg gag cag cgg gag cgc ctg att ggc gag gtc gcc gaa cgc	288
Ser Val Arg Glu Gln Arg Glu Arg Leu Ile Gly Glu Val Ala Glu Arg	
85 90 95	
ttc gga ggc aag ctc aac atc ctc gta aat aat gtg ggg aca aac ata	336
Phe Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile	
100 105 110	
agg aaa cca act act gaa ttt tct gct gaa gat tac tct ttt ttg atg	384
Arg Lys Pro Thr Thr Glu Phe Ser Ala Glu Asp Tyr Ser Phe Leu Met	
115 120 125	
gcc act aac ctt gaa tct gca tat cat ctg tgc caa ctt gca cat cct	432
Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro	
130 135 140	
ctt cta aaa gca tct ggt ttg ggc agc att gtt ttt gta tca tct gtc	480
Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Val Ser Ser Val	
145 150 155 160	
tgt gga tta gta gcc gta ttt agc ggc tct ata tat gct atg acc aaa	528

## PhoenixTemp32470.tmp.txt

Cys	Gly	Leu	Val	Ala	Val	Phe	Ser	Gly	Ser	Ile	Tyr	Ala	Met	Thr	Lys	
				165					170					175		
ggt	gcc	atc	aac	caa	tta	acc	aag	aac	cta	gca	tgt	gaa	tgg	gcg	aaa	576
Gly	Ala	Ile	Asn	Gln	Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Lys	
			180					185					190			
gat	ggc	ata	aga	aca	aac	tct	gtt	gct	cca	tgg	tac	ata	aca	acg	tca	624
Asp	Gly	Ile	Arg	Thr	Asn	Ser	Val	Ala	Pro	Trp	Tyr	Ile	Thr	Thr	Ser	
		195					200					205				
ctt	aca	gaa	gga	ctt	ttg	gct	aac	aag	gaa	ttt	gag	gcc	tcc	ggt	gtg	672
Leu	Thr	Glu	Gly	Leu	Leu	Ala	Asn	Lys	Glu	Phe	Glu	Ala	Ser	Val	Val	
	210					215					220					
agt	cga	aca	cca	ctt	ggg	cgt	gtc	gga	gaa	cca	gga	gaa	gta	tca	tcg	720
Ser	Arg	Thr	Pro	Leu	Gly	Arg	Val	Gly	Glu	Pro	Gly	Glu	Val	Ser	Ser	
	225				230					235					240	
ctg	ggt	gct	ttt	ctt	tgc	atg	cct	ggt	gcc	act	tac	ata	aca	ggc	cag	768
Leu	Val	Ala	Phe	Leu	Cys	Met	Pro	Gly	Ala	Thr	Tyr	Ile	Thr	Gly	Gln	
			245						250					255		
acg	atc	tca	gtg	gat	gga	ggt	atg	act	gtc	aat	ggg	atg	tat	cca	gca	816
Thr	Ile	Ser	Val	Asp	Gly	Gly	Met	Thr	Val	Asn	Gly	Met	Tyr	Pro	Ala	
			260					265					270			
taa																819

&lt;210&gt; 2040

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 2040

Met	Ala	Ala	Ala	Glu	Thr	Ser	Gly	Ser	Ser	Gln	Pro	Gly	Ala	Pro	Gly	
1				5				10					15			
Arg	Trp	Ser	Leu	His	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Gly	Thr	Arg	
			20					25				30				
Gly	Ile	Gly	Arg	Ala	Val	Val	Glu	Leu	Ala	Ala	Leu	Gly	Ala	Ala		
		35					40				45					
Val	His	Thr	Cys	Ser	Arg	Lys	Glu	Ala	Glu	Leu	Gly	Glu	Arg	Leu	Lys	
	50					55					60					
Glu	Trp	Glu	Ala	Arg	Gly	Phe	Arg	Val	Thr	Thr	Ser	Val	Cys	Asp	Leu	
65				70					75					80		
Ser	Val	Arg	Glu	Gln	Arg	Glu	Arg	Leu	Ile	Gly	Glu	Val	Ala	Glu	Arg	
			85					90					95			
Phe	Gly	Gly	Lys	Leu	Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Ile	
			100					105				110				
Arg	Lys	Pro	Thr	Thr	Glu	Phe	Ser	Ala	Glu	Asp	Tyr	Ser	Phe	Leu	Met	
		115					120					125				
Ala	Thr	Asn	Leu	Glu	Ser	Ala	Tyr	His	Leu	Cys	Gln	Leu	Ala	His	Pro	
	130					135					140					
Leu	Leu	Lys	Ala	Ser	Gly	Leu	Gly	Ser	Ile	Val	Phe	Val	Ser	Ser	Val	
145				150					155					160		
Cys	Gly	Leu	Val	Ala	Val	Phe	Ser	Gly	Ser	Ile	Tyr	Ala	Met	Thr	Lys	
			165					170					175			
Gly	Ala	Ile	Asn	Gln	Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Lys	
			180					185					190			
Asp	Gly	Ile	Arg	Thr	Asn	Ser	Val	Ala	Pro	Trp	Tyr	Ile	Thr	Thr	Ser	
		195					200					205				
Leu	Thr	Glu	Gly	Leu	Leu	Ala	Asn	Lys	Glu	Phe	Glu	Ala	Ser	Val	Val	
	210					215					220					
Ser	Arg	Thr	Pro	Leu	Gly	Arg	Val	Gly	Glu	Pro	Gly	Glu	Val	Ser	Ser	
225				230					235					240		
Leu	Val	Ala	Phe	Leu	Cys	Met	Pro	Gly	Ala	Thr	Tyr	Ile	Thr	Gly	Gln	
			245					250					255			
Thr	Ile	Ser	Val	Asp	Gly	Gly	Met	Thr	Val	Asn	Gly	Met	Tyr	Pro	Ala	
			260					265					270			

&lt;210&gt; 2041

&lt;211&gt; 984

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(984)

&lt;400&gt; 2041

atg	ctc	ctc	ctc	ctc	gct	ttc	ctc	gcc	gcc	gcc	gcc	gcc	gcc	gcc	ttc	48
Met	Leu	Leu	Leu	Leu	Ala	Phe	Leu	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Phe	
1				5				10						15		
ttc	ctc	ttc	aag	ttc	gtc	acc	gcc	gat	ggg	gat	ttc	acc	ctc	ttg	tcg	96
Phe	Leu	Phe	Lys	Phe	Val	Thr	Ala	Asp	Gly	Asp	Phe	Thr	Leu	Leu	Ser	
			20					25					30			
tgc	ggc	cgg	ccg	cgg	cgg	gac	aaa	gtg	gac	ggc	aag	gtt	gtg	tgg	ata	144
Cys	Gly	Arg	Pro	Arg	Arg	Asp	Lys	Val	Asp	Gly	Lys	Val	Val	Trp	Ile	
			35				40					45				
acg	gga	gcg	agc	cgt	ggg	att	ggg	gag	gtt	ctt	tcg	atg	cag	ttt	gcg	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ser	Met	Gln	Phe	Ala	
	50				55				60							
agt	tta	gga	gca	aag	ctc	ata	cta	tct	gca	cgt	aac	aag	gag	gag	ctt	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Lys	Glu	Glu	Leu	
	65				70				75						80	
gag	aga	gtg	aaa	cat	aac	atc	atg	agc	aag	cat	cca	gat	agc	aaa	gtt	288
Glu	Arg	Val	Lys	His	Asn	Ile	Met	Ser	Lys	His	Pro	Asp	Ser	Lys	Val	
				85					90					95		
gaa	gtg	tta	ccc	atg	gat	tta	tca	tct	gat	gaa	aaa	tct	ctg	aaa	gaa	336
Glu	Val	Leu	Pro	Met	Asp	Leu	Ser	Ser	Asp	Glu	Lys	Ser	Leu	Lys	Glu	
			100					105					110			
gtt	gta	cat	tca	gcg	gaa	tct	ctc	ttt	tcc	agt	gct	ggc	att	gac	tat	384
Val	Val	His	Ser	Ala	Glu	Ser	Leu	Phe	Ser	Ser	Ala	Gly	Ile	Asp	Tyr	
			115				120					125				
atg	atg	cac	aat	gca	gcc	ttt	gag	cgt	cca	aaa	agg	gga	gcc	ctg	gaa	432
Met	Met	His	Asn	Ala	Ala	Phe	Glu	Arg	Pro	Lys	Arg	Gly	Ala	Leu	Glu	
	130				135					140						
gaa	acc	gag	gaa	ggt	ctt	aag	gct	act	ttt	aag	gtc	aat	gtc	ttt	gga	480
Glu	Thr	Glu	Glu	Gly	Leu	Lys	Ala	Thr	Phe	Lys	Val	Asn	Val	Phe	Gly	
	145				150					155					160	
aca	att	act	ttg	act	cgc	ctt	ctt	gca	ccc	ttc	atg	ttg	gat	aga	ggg	528
Thr	Ile	Thr	Leu	Thr	Arg	Leu	Leu	Ala	Pro	Phe	Met	Leu	Asp	Arg	Gly	
				165					170					175		
atg	ggt	cat	ttt	gtt	gtg	atg	agt	agt	gca	gct	gga	aag	gtg	ccc	aca	576
Met	Gly	His	Phe	Val	Val	Met	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Thr	
			180				185						190			
cct	ggt	cag	gct	ctt	tac	tct	gct	tcc	aaa	cat	gct	ctc	aat	ggg	tac	624
Pro	Gly	Gln	Ala	Leu	Tyr	Ser	Ala	Ser	Lys	His	Ala	Leu	Asn	Gly	Tyr	
			195				200					205				
ttt	gct	tct	ctg	cgt	tct	gag	tta	tgt	acg	aaa	ggc	att	aag	gtc	act	672
Phe	Ala	Ser	Leu	Arg	Ser	Glu	Leu	Cys	Thr	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					
gtt	gtc	tgt	cct	gga	cct	att	gaa	aca	cca	gaa	tct	tct	ggt	gca	act	720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Pro	Glu	Ser	Ser	Gly	Ala	Thr	
	225				230					235					240	
tct	tca	tca	caa	agg	cat	tcg	tcc	gag	aaa	cgt	gtt	tca	gtg	gaa	aga	768
Ser	Ser	Ser	Gln	Arg	His	Ser	Ser	Glu	Lys	Arg	Val	Ser	Val	Glu	Arg	
				245					250					255		
tgt	gct	gaa	ctg	aca	ata	gtt	gcc	gca	act	cat	gga	cta	aaa	gaa	gca	816
Cys	Ala	Glu	Leu	Thr	Ile	Val	Ala	Ala	Thr	His	Gly	Leu	Lys	Glu	Ala	
			260				265						270			
tgg	ata	tca	tat	cag	cct	gtg	ctg	gct	gtt	atg	tac	gtg	gtg	caa	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Ala	Val	Met	Tyr	Val	Val	Gln	Tyr	
			275				280					285				
atg	cca	aca	att	gga	tgc	tgg	ctt	atg	gat	aag	gtt	ggt	gcg	aag	cga	912
Met	Pro	Thr	Ile	Gly	Cys	Trp	Leu	Met	Asp	Lys	Val	Gly	Ala	Lys	Arg	
	290					295					300					
gtt	gat	gcc	gct	gca	aag	aaa	ggc	aac	gcc	tac	agc	tgg	aat	ctc	ctc	960
Val	Asp	Ala	Ala	Ala	Lys	Lys	Gly	Asn	Ala	Tyr	Ser	Trp	Asn	Leu	Leu	
	305				310				315						320	
ttc	ggt	ggc	aaa	aag	tcg	gct	tga									984
Phe	Gly	Gly	Lys	Lys	Ser	Ala										
				325												

<210> 2042  
 <211> 327  
 <212> PRT  
 <213> Hordeum vulgare

<400> 2042  
 Met Leu Leu Leu Leu Ala Phe Leu Ala Ala Ala Ala Ala Ala Phe  
 1 5 10 15  
 Phe Leu Phe Lys Phe Val Thr Ala Asp Gly Asp Phe Thr Leu Leu Ser  
 20 25 30  
 Cys Gly Arg Pro Arg Arg Asp Lys Val Asp Gly Lys Val Val Trp Ile  
 35 40 45  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ser Met Gln Phe Ala  
 50 55 60  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Lys Glu Glu Leu  
 65 70 75 80  
 Glu Arg Val Lys His Asn Ile Met Ser Lys His Pro Asp Ser Lys Val  
 85 90 95  
 Glu Val Leu Pro Met Asp Leu Ser Ser Asp Glu Lys Ser Leu Lys Glu  
 100 105 110  
 Val Val His Ser Ala Glu Ser Leu Phe Ser Ser Ala Gly Ile Asp Tyr  
 115 120 125  
 Met Met His Asn Ala Ala Phe Glu Arg Pro Lys Arg Gly Ala Leu Glu  
 130 135 140  
 Glu Thr Glu Glu Gly Leu Lys Ala Thr Phe Lys Val Asn Val Phe Gly  
 145 150 155 160  
 Thr Ile Thr Leu Thr Arg Leu Leu Ala Pro Phe Met Leu Asp Arg Gly  
 165 170 175  
 Met Gly His Phe Val Val Met Ser Ser Ala Ala Gly Lys Val Pro Thr  
 180 185 190  
 Pro Gly Gln Ala Leu Tyr Ser Ala Ser Lys His Ala Leu Asn Gly Tyr  
 195 200 205  
 Phe Ala Ser Leu Arg Ser Glu Leu Cys Thr Lys Gly Ile Lys Val Thr  
 210 215 220  
 Val Val Cys Pro Gly Pro Ile Glu Thr Pro Glu Ser Ser Gly Ala Thr  
 225 230 235 240  
 Ser Ser Ser Gln Arg His Ser Ser Glu Lys Arg Val Ser Val Glu Arg  
 245 250 255  
 Cys Ala Glu Leu Thr Ile Val Ala Ala Thr His Gly Leu Lys Glu Ala  
 260 265 270  
 Trp Ile Ser Tyr Gln Pro Val Leu Ala Val Met Tyr Val Val Gln Tyr  
 275 280 285  
 Met Pro Thr Ile Gly Cys Trp Leu Met Asp Lys Val Gly Ala Lys Arg  
 290 295 300  
 Val Asp Ala Ala Ala Lys Lys Gly Asn Ala Tyr Ser Trp Asn Leu Leu  
 305 310 315 320  
 Phe Gly Gly Lys Lys Ser Ala  
 325

<210> 2043  
 <211> 789  
 <212> DNA  
 <213> Hordeum vulgare

<220>  
 <221> CDS  
 <222> (1)..(789)

<400> 2043  
 atg gcg gcc ggc ggc atg agc agg gag gag agg tgg agc ctg gcc ggc 48  
 Met Ala Ala Gly Gly Met Ser Arg Glu Glu Arg Trp Ser Leu Ala Gly 15  
 1 5 10  
 gcg acg gcg ctc gtc acc ggc ggc agc aaa ggc atc ggc cag gcg atc 96  
 Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Gln Ala Ile 20 25 30  
 gtg gag gag ctg gcg ggg cac ggg gcg cgg gtg cac acg tgc gcc agg 144  
 Val Glu Glu Leu Ala Gly His Gly Ala Arg Val His Thr Cys Ala Arg 35 40 45

## PhoenixTemp32470.tmp.txt

agc	gcg	gag	ctg	gag	gag	tgc	cg	cg	cg	tgg	gag	gcc	aag	ggg	192	
Ser	Ala	Ala	Glu	Leu	Glu	Cys	Arg	Arg	Arg	Trp	Glu	Ala	Lys	Gly		
	50				55					60						
ctc	ccg	gtc	acc	gtc	tcc	gtc	tgc	gac	gtc	tcc	ctg	cg	gcc	agc	agg	240
Leu	Pro	Val	Thr	Val	Ser	Val	Cys	Asp	Val	Ser	Leu	Arg	Ala	Ser	Arg	
65					70					75					80	
gag	cag	ctc	gtg	gag	acg	gtc	aag	caa	gtc	ttc	ggc	ggc	aag	ctc	gac	288
Glu	Gln	Leu	Val	Glu	Thr	Val	Lys	Gln	Val	Phe	Gly	Gly	Lys	Leu	Asp	
				85					90					95		
ata	ctg	gtg	aac	aac	gag	gca	cag	att	ctt	gcc	aag	gag	gcc	gtg	gag	336
Ile	Leu	Val	Asn	Asn	Ala	Ala	Gln	Ile	Leu	Ala	Lys	Ala	Ala	Val	Glu	
			100					105					110			
tgg	aca	tcg	gag	gag	tac	tcg	cac	ctc	atg	gag	acc	aat	cta	gag	tcg	384
Trp	Thr	Ser	Glu	Glu	Tyr	Ser	His	Leu	Met	Ala	Thr	Asn	Leu	Glu	Ser	
		115					120					125				
tgc	ttc	cac	ctc	agc	cag	ctc	gag	cac	ccc	ttg	ctc	ctc	aac	gcc	tcc	432
Cys	Phe	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Leu	Asn	Ala	Ser	
130					135					140						
atc	gct	gga	ggg	agc	atc	gag	aac	ata	tcc	tcc	ctt	ggg	ggc	aca	ctt	480
Ile	Ala	Gly	Gly	Ser	Ile	Val	Asn	Ile	Ser	Ser	Leu	Gly	Gly	Thr	Leu	
145					150					155					160	
ggt	ttc	acg	ggc	ctt	gag	ctt	tac	agt	atg	aca	aaa	gga	gga	ata	aac	528
Gly	Phe	Thr	Gly	Leu	Ala	Leu	Tyr	Ser	Met	Thr	Lys	Gly	Gly	Ile	Asn	
				165					170					175		
cag	ctt	aca	agg	agc	ctt	gct	act	gaa	tgg	gcc	cag	aac	aag	atc	cgg	576
Gln	Leu	Thr	Arg	Ser	Leu	Ala	Thr	Glu	Trp	Ala	Gln	Asn	Lys	Ile	Arg	
			180					185					190			
gtg	aat	tgc	gtc	gcc	ccg	ggc	gag	acc	aag	agt	gac	atg	tta	agc	agt	624
Val	Asn	Cys	Val	Ala	Pro	Gly	Ala	Thr	Lys	Ser	Asp	Met	Leu	Ser	Ser	
		195					200					205				
ctc	cca	ctg	gag	att	aga	gag	aac	gag	ttg	gag	agg	act	cca	atg	cgg	672
Leu	Pro	Leu	Glu	Ile	Arg	Glu	Asn	Glu	Leu	Ala	Arg	Thr	Pro	Met	Arg	
210					215					220						
cgg	gca	ggc	gag	cca	gag	gag	gtg	gct	gca	atg	gtg	tcg	ttc	ctc	tgc	720
Arg	Ala	Gly	Glu	Pro	Ala	Glu	Val	Ala	Ala	Met	Val	Ser	Phe	Leu	Cys	
225					230					235					240	
atg	ccg	gag	gca	tcc	ttc	gtc	acc	ggc	cag	gtc	atc	gcc	gtc	gac	ggg	768
Met	Pro	Ala	Ala	Ser	Phe	Val	Thr	Gly	Gln	Val	Ile	Ala	Val	Asp	Gly	
				245					250					255		
ggt	cgg	aca	att	agt	gct	tag										789
Gly	Arg	Thr	Ile	Ser	Ala											
			260													

&lt;210&gt; 2044

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 2044

Met	Ala	Ala	Gly	Gly	Met	Ser	Arg	Glu	Glu	Arg	Trp	Ser	Leu	Ala	Gly	
1				5					10					15		
Ala	Thr	Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Gln	Ala	Ile	
			20					25					30			
Val	Glu	Glu	Leu	Ala	Gly	His	Gly	Ala	Arg	Val	His	Thr	Cys	Ala	Arg	
		35					40					45				
Ser	Ala	Ala	Glu	Leu	Glu	Glu	Cys	Arg	Arg	Arg	Trp	Glu	Ala	Lys	Gly	
	50					55					60					
Leu	Pro	Val	Thr	Val	Ser	Val	Cys	Asp	Val	Ser	Leu	Arg	Ala	Ser	Arg	
65					70					75					80	
Glu	Gln	Leu	Val	Glu	Thr	Val	Lys	Gln	Val	Phe	Gly	Gly	Lys	Leu	Asp	
				85					90					95		
Ile	Leu	Val	Asn	Asn	Ala	Ala	Gln	Ile	Leu	Ala	Lys	Ala	Ala	Val	Glu	
			100					105					110			
Trp	Thr	Ser	Glu	Glu	Tyr	Ser	His	Leu	Met	Ala	Thr	Asn	Leu	Glu	Ser	
		115					120					125				
Cys	Phe	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Leu	Asn	Ala	Ser	
	130					135					140					
Ile	Ala	Gly	Gly	Ser	Ile	Val	Asn	Ile	Ser	Ser	Leu	Gly	Gly	Thr	Leu	
145					150					155					160	

## PhoenixTemp32470.tmp.txt

Gly Phe Thr Gly Leu Ala Leu Tyr Ser Met Thr Lys Gly Gly Ile Asn  
 165 170 175  
 Gln Leu Thr Arg Ser Leu Ala Thr Glu Trp Ala Gln Asn Lys Ile Arg  
 180 185 190  
 Val Asn Cys Val Ala Pro Gly Ala Thr Lys Ser Asp Met Leu Ser Ser  
 195 200 205  
 Leu Pro Leu Glu Ile Arg Glu Asn Glu Leu Ala Arg Thr Pro Met Arg  
 210 215 220  
 Arg Ala Gly Glu Pro Ala Glu Val Ala Met Val Ser Phe Leu Cys  
 225 230 235 240  
 Met Pro Ala Ala Ser Phe Val Thr Gly Gln Val Ile Ala Val Asp Gly  
 245 250 255  
 Gly Arg Thr Ile Ser Ala

&lt;210&gt; 2045

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;400&gt; 2045

atg gat gtc aag tgc cgg cgt ctg gag ggg aag gtg gcc atc gtg acg	48
Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr	
1 5 10 15	
gcg tcc acg atg ggg atc ggc ctc gcc atc gcc gag cgc ctc ggt ctg	96
Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu	
20 25 30	
gag ggc gcc gcc gtg gtc atc tcc tcc cgc aag cag aag aac gtt aac	144
Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn	
35 40 45	
gag gcg gtg gag ggg ctc agg gcc aag ggt atc acc gcg gtt ggt gcc	192
Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala	
50 55 60	
ctc tgc cac gtc tcc gac gca cag cag cgc aag agc ctc atc gag acg	240
Leu Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr	
65 70 75 80	
gcc gtc aag agc ttt ggg cac ata gat atc ctt gtc tcc aat gct gcc	288
Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala	
85 90 95	
gca aat cct tct gta gat agc ata ctt gaa atg aaa gag tct gtt ctc	336
Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu	
100 105 110	
gat aag ctg tgg gat att aac gtc aag gct tct atc ctt ctt att cag	384
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln	
115 120 125	
gat gct gct cct cac cta cgg aag ggg tca tct gtg att att att tct	432
Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser	
130 135 140	
tca att gct ggt tac aat cca gaa caa gga ttg aca atg tat ggt gtc	480
Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val	
145 150 155 160	
aca aag act gct ctc ttt ggt ctc acg aag gct ctt gct ggt gag atg	528
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met	
165 170 175	
gga ccc gat act cgt gtt aac tgt gta gcc cct ggt ttt gtt cct aca	576
Gly Pro Asp Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr	
180 185 190	
cgg ttt gct agt ttc ctc aca gaa aat gag acc att agg aaa gag ctt	624
Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu	
195 200 205	
aac gag agg acc aag ctt aag aga ttg ggt act gtg gaa gac atg gct	672
Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala	
210 215 220	
gcg gct gcg gct ttt ctg gcg tct gac gac gca tca tac att acg gct	720
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala	

## PhoenixTemp32470.tmp.txt

225 230 235 240 762  
gaa acc att gtt gtt gct gga ggg gtg cag tct agg ctg taa  
Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu

<210> 2046  
<211> 253  
<212> PRT  
<213> Zea mays

<400> 2046  
Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr  
1 5 10 15  
Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
20 25 30  
Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn  
35 40 45  
Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala  
50 55 60  
Leu Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr  
65 70 75 80  
Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
85 90 95  
Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
100 105 110  
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln  
115 120 125  
Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
130 135 140  
Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
145 150 155 160  
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
165 170 175  
Gly Pro Asp Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr  
180 185 190  
Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
195 200 205  
Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
210 215 220  
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
225 230 235 240  
Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
245 250

<210> 2047  
<211> 792  
<212> DNA  
<213> Brassica napus

<220>  
<221> CDS  
<222> (1)..(792)

<400> 2047  
atg gag aat aat gac aag aga tgg tcc ctc gcc gga aaa acc gct ctg  
Met Glu Asn Asn Asp Lys Arg Trp Ser Leu Ala Gly Lys Thr Ala Leu  
1 5 10 15  
gta acc ggt ggt act cgc gga atc ggg cga gcg gtc gtg gag gag cta  
Val Thr Gly Gly Thr Arg Gly Ile Gly Arg Ala Val Val Glu Glu Leu  
20 25 30  
gcg aga ttc ggg gca acg gtt cat aca tgt tca agg agc cag gag gag  
Ala Arg Phe Gly Ala Thr Val His Thr Cys Ser Arg Ser Gln Glu Glu  
35 40 45  
ctc aaa tca tgc ttg gat gat tgg aag tcc aat ggt tta gtg gta acc  
Leu Lys Ser Cys Leu Asp Asp Trp Lys Ser Asn Gly Leu Val Val Thr  
50 55 60  
ggt tcg gtt tgc gat gct tcg gat agg gat cag agg gag aag ttg att  
Gly Ser Val Cys Asp Ala Ser Asp Arg Asp Gln Arg Glu Lys Leu Ile  
65 70 75 80



## PhoenixTemp32470.tmp.txt

cag	gag	gtt	tcg	tct	gcc	ttt	agc	ggc	aag	att	aac	atc	ctt	gta	aac	288
Gln	Glu	Val	Ser	Ser	Ala	Phe	Ser	Gly	Lys	Ile	Asn	Ile	Leu	Val	Asn	
				85					90					95		
aat	gtt	gga	act	aat	tta	agg	aag	cca	acg	gtc	gag	tat	tcg	agt	gag	336
Asn	Val	Gly	Thr	Asn	Leu	Arg	Lys	Pro	Thr	Val	Glu	Tyr	Ser	Ser	Glu	
			100					105					110			
gat	tat	gct	aaa	atc	atg	tcg	acc	aat	ttg	gaa	tcc	gct	ttc	cat	ttt	384
Asp	Tyr	Ala	Lys	Ile	Met	Ser	Thr	Asn	Leu	Glu	Ser	Ala	Phe	His	Phe	
		115					120					125				
tcc	caa	att	gca	cat	cct	ctt	tta	aaa	gca	tct	ggg	gtt	ggg	agc	att	432
Ser	Gln	Ile	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Val	Gly	Ser	Ile	
	130					135					140					
gtg	ttc	atc	tcc	tct	gta	gct	ggc	ctg	gtg	cat	ctt	agt	agt	gga	tct	480
Val	Phe	Ile	Ser	Ser	Val	Ala	Gly	Leu	Val	His	Leu	Ser	Ser	Gly	Ser	
	145				150					155					160	
gtc	tat	ggt	gca	act	aaa	gga	gca	ctt	aat	cag	ctt	aca	agg	aat	cta	528
Val	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Leu	Asn	Gln	Leu	Thr	Arg	Asn	Leu	
				165					170					175		
gct	tgc	gag	tgg	gca	gga	gac	aac	att	aga	acc	aat	tgt	gtg	gcg	cca	576
Ala	Cys	Glu	Trp	Ala	Gly	Asp	Asn	Ile	Arg	Thr	Asn	Cys	Val	Ala	Pro	
			180					185					190			
tgg	tac	atc	aag	acc	tca	ctt	gtg	aaa	ccg	cta	ctc	gag	aag	aaa	ggt	624
Trp	Tyr	Ile	Lys	Thr	Ser	Leu	Val	Lys	Pro	Leu	Leu	Glu	Lys	Lys	Gly	
		195					200					205				
ttt	gag	gag	gcg	ata	gtt	tcg	cgt	acc	cca	ctt	ggg	cgc	gtt	gga	gaa	672
Phe	Glu	Glu	Ala	Ile	Val	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Val	Gly	Glu	
	210					215					220					
cca	gag	gaa	gtc	tcg	tcg	cta	gtg	gct	ttc	ctc	tgc	ctt	ccc	gca	gcg	720
Pro	Glu	Glu	Val	Ser	Ser	Leu	Val	Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	
	225				230					235				240		
tct	tac	atc	acc	ggt	cag	gtc	att	tct	gtt	gat	gga	gga	ttc	aca	gtc	768
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Ser	Val	Asp	Gly	Gly	Phe	Thr	Val	
				245					250					255		
aac	ggc	ttc	agt	tac	acc	atg	taa									792
Asn	Gly	Phe	Ser	Tyr	Thr	Met										
			260													

&lt;210&gt; 2048

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2048

Met	Glu	Asn	Asn	Asp	Lys	Arg	Trp	Ser	Leu	Ala	Gly	Lys	Thr	Ala	Leu	
1				5					10					15		
Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	Arg	Ala	Val	Val	Glu	Glu	Leu	
			20					25					30			
Ala	Arg	Phe	Gly	Ala	Thr	Val	His	Thr	Cys	Ser	Arg	Ser	Gln	Glu	Glu	
		35					40					45				
Leu	Lys	Ser	Cys	Leu	Asp	Asp	Trp	Lys	Ser	Asn	Gly	Leu	Val	Val	Thr	
	50				55					60						
Gly	Ser	Val	Cys	Asp	Ala	Ser	Asp	Arg	Asp	Gln	Arg	Glu	Lys	Leu	Ile	
65				70					75					80		
Gln	Glu	Val	Ser	Ser	Ala	Phe	Ser	Gly	Lys	Ile	Asn	Ile	Leu	Val	Asn	
			85					90					95			
Asn	Val	Gly	Thr	Asn	Leu	Arg	Lys	Pro	Thr	Val	Glu	Tyr	Ser	Ser	Glu	
		100						105					110			
Asp	Tyr	Ala	Lys	Ile	Met	Ser	Thr	Asn	Leu	Glu	Ser	Ala	Phe	His	Phe	
		115					120					125				
Ser	Gln	Ile	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Val	Gly	Ser	Ile	
	130					135					140					
Val	Phe	Ile	Ser	Ser	Val	Ala	Gly	Leu	Val	His	Leu	Ser	Ser	Gly	Ser	
	145				150					155					160	
Val	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Leu	Asn	Gln	Leu	Thr	Arg	Asn	Leu	
				165				170						175		
Ala	Cys	Glu	Trp	Ala	Gly	Asp	Asn	Ile	Arg	Thr	Asn	Cys	Val	Ala	Pro	
			180					185					190			
Trp	Tyr	Ile	Lys	Thr	Ser	Leu	Val	Lys	Pro	Leu	Leu	Glu	Lys	Lys	Gly	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Phe Glu Glu Ala Ile Val Ser Arg Thr Pro Leu Gly Arg Val Gly Glu  
 210 220  
 Pro Glu Glu Val Ser Ser Leu Val Ala Phe Leu Cys Leu Pro Ala Ala  
 225 230 240  
 Ser Tyr Ile Thr Gly Gln Val Ile Ser Val Asp Gly Gly Phe Thr Val  
 245 250 255  
 Asn Gly Phe Ser Tyr Thr Met  
 260

<210> 2049  
 <211> 849  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 2049  
 atg agc aat cat caa acc acg gtg ttg aaa caa cta gag cca tgg tgt 48  
 Met Ser Asn His Gln Thr Thr Val Leu Lys Gln Leu Glu Pro Trp Cys  
 1 5 10 15  
 gag cta aac ggc aaa gtg gtt ctt ctg acc gga gct tct tct ggt ata 96  
 Glu Leu Asn Gly Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile  
 20 25 30  
 gga agt gag gtc tgt ctc gat ctg ggc aaa gct ggc tgt aag att atc 144  
 Gly Ser Glu Val Cys Leu Asp Leu Gly Lys Ala Gly Cys Lys Ile Ile  
 35 40 45  
 gca gca gct cgt cgc gtc cac cgt ctc gaa tct ctc tgc tcc gaa atc 192  
 Ala Ala Ala Arg Arg Val His Arg Leu Glu Ser Leu Cys Ser Glu Ile  
 50 55 60  
 aac agc tta agc tca acc ggg atc caa tta gcc gca ccg ctc gag cta 240  
 Asn Ser Leu Ser Ser Thr Gly Ile Gln Leu Ala Ala Pro Leu Glu Leu  
 65 70 75 80  
 gac gtt tca tca gac gca gcc acc att caa aaa gct gtc aaa caa gct 288  
 Asp Val Ser Ser Asp Ala Ala Thr Ile Gln Lys Ala Val Lys Gln Ala  
 85 90 95  
 tgg gac atc tac gga aag ata gat gtg ttg atc aac aac gct gga atc 336  
 Trp Asp Ile Tyr Gly Lys Ile Asp Val Leu Ile Asn Asn Ala Gly Ile  
 100 105 110  
 aga ggc aat gtc aag acg agt tta gat ctg act gaa gac gag tgg aac 384  
 Arg Gly Asn Val Lys Thr Ser Leu Asp Leu Thr Glu Asp Glu Trp Asn  
 115 120 125  
 aca gtg ttc aga acc aac tta acc gga cct tgg tta gta tcc aaa tac 432  
 Thr Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys Tyr  
 130 135 140  
 gtc tgc agt cta atg cgt gac gca aaa cgc ggc ggc tca gta ata aac 480  
 Val Cys Ser Leu Met Arg Asp Ala Lys Arg Gly Gly Ser Val Ile Asn  
 145 150 155 160  
 gtc tcc tcc atc gcc ggt ctc cac cga ggt ttg tta ccc ggt gga gtc 528  
 Val Ser Ser Ile Ala Gly Leu His Arg Gly Leu Leu Pro Gly Gly Val  
 165 170 175  
 gcc tat gct tgt tcc aaa ggt ggt gtt gac acc atg acg agg atg atg 576  
 Ala Tyr Ala Cys Ser Lys Gly Gly Val Asp Thr Met Thr Arg Met Met  
 180 185 190  
 gct att gag tta ggt gta tac aac atc aga gtg aac tcg atc gca ccg 624  
 Ala Ile Glu Leu Gly Val Tyr Asn Ile Arg Val Asn Ser Ile Ala Pro  
 195 200 205  
 ggg ctt ctc aag tca gag atc acg caa ggt ctt atg caa aaa gag tgg 672  
 Gly Leu Leu Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Glu Trp  
 210 215 220  
 ctc aag aac gtg acc gag agg act atc ccg tta aag gtg caa cag acc 720  
 Leu Lys Asn Val Thr Glu Arg Thr Ile Pro Leu Lys Val Gln Gln Thr  
 225 230 235 240  
 gtg gat ccg ggg ctt acc tcg ctc gtt cgc tat ctc agt cat gac tct 768  
 Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ser His Asp Ser  
 245 250 255  
 tct caa tat gtc tcc ggc aac aca tac ctt gac tcc gga gct aca 816  
 Ser Gln Tyr Val Ser Gly Asn Thr Tyr Ile Leu Asp Ser Gly Ala Thr

260  
 ata cct ggc ctg cct att ttt tct tct ctt tga  
 Ile Pro Gly Leu Pro Ile Phe Ser Ser Leu  
 275 280 270

849

<210> 2050  
 <211> 282  
 <212> PRT  
 <213> Brassica napus

<400> 2050  
 Met Ser Asn His Gln Thr Thr Val Leu Lys Gln Leu Glu Pro Trp Cys  
 1 5 10 15  
 Glu Leu Asn Gly Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile  
 20 25 30  
 Gly Ser Glu Val Cys Leu Asp Leu Gly Lys Ala Gly Cys Lys Ile Ile  
 35 40 45  
 Ala Ala Ala Arg Arg Val His Arg Leu Glu Ser Leu Cys Ser Glu Ile  
 50 55 60  
 Asn Ser Leu Ser Ser Thr Gly Ile Gln Leu Ala Ala Pro Leu Glu Leu  
 65 70 75 80  
 Asp Val Ser Ser Asp Ala Ala Thr Ile Gln Lys Ala Val Lys Gln Ala  
 85 90 95  
 Trp Asp Ile Tyr Gly Lys Ile Asp Val Leu Ile Asn Asn Ala Gly Ile  
 100 105 110  
 Arg Gly Asn Val Lys Thr Ser Leu Asp Leu Thr Glu Asp Glu Trp Asn  
 115 120 125  
 Thr Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys Tyr  
 130 135 140  
 Val Cys Ser Leu Met Arg Asp Ala Lys Arg Gly Gly Ser Val Ile Asn  
 145 150 155 160  
 Val Ser Ser Ile Ala Gly Leu His Arg Gly Leu Leu Pro Gly Gly Val  
 165 170 175  
 Ala Tyr Ala Cys Ser Lys Gly Gly Val Asp Thr Met Thr Arg Met Met  
 180 185 190  
 Ala Ile Glu Leu Gly Val Tyr Asn Ile Arg Val Asn Ser Ile Ala Pro  
 195 200 205  
 Gly Leu Leu Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Glu Trp  
 210 215 220  
 Leu Lys Asn Val Thr Glu Arg Thr Ile Pro Leu Lys Val Gln Gln Thr  
 225 230 235 240  
 Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ser His Asp Ser  
 245 250 255  
 Ser Gln Tyr Val Ser Gly Asn Thr Tyr Ile Leu Asp Ser Gly Ala Thr  
 260 265 270  
 Ile Pro Gly Leu Pro Ile Phe Ser Ser Leu  
 275 280

<210> 2051  
 <211> 960  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(960)

<400> 2051  
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 Met Ala Thr Thr Val Ala Ala Thr Lys Leu Thr Ser Leu Lys Ala Thr  
 1 5 10 15  
 gcc ggg aag ctc ggt tac cgt gag atc tgc cag gtc cgg caa tgg gct  
 Ala Gly Lys Leu Gly Tyr Arg Glu Ile Cys Gln Val Arg Gln Trp Ala  
 20 25 30  
 ccg ctt aag tct gcg atg cct cat ttc ggt atg ctg cga tgt gcg aca  
 Pro Leu Lys Ser Ala Met Pro His Phe Gly Met Leu Arg Cys Ala Thr  
 35 40 45  
 tcc act gtt gtg aaa gct caa gct caa gct caa gcc acg gct act gag  
 Ser Thr Val Val Lys Ala Gln Ala Gln Ala Gln Ala Thr Glu  
 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960

48

96

144

192

## PhoenixTemp32470.tmp.txt

50	55	60	
caa	aca	aca	gaa
Gln	Thr	Thr	Glu
65			
gtg	act	ggt	gcc
Val	Thr	Gly	Ala
ggt	aaa	gct	ggt
Gly	Lys	Ala	Gly
gaa	gct	gaa	gaa
Glu	Ala	Glu	Glu
att	act	ttt	ggg
Ile	Thr	Phe	Gly
atg	aaa	acc	gct
Met	Lys	Thr	Ala
aat	gca	gga	att
Asn	Ala	Gly	Ile
caa	tgg	gat	gaa
Gln	Trp	Asp	Glu
acc	cag	gca	gca
Thr	Gln	Ala	Ala
atc	aac	att	gcg
Ile	Asn	Ile	Ala
aac	tac	gct	gct
Asn	Tyr	Ala	Ala
gcc	aga	gag	ggt
Ala	Arg	Glu	Gly
ggg	ttc	att	gca
Gly	Phe	Ile	Ala
aag	aaa	atc	ttg
Lys	Lys	Ile	Leu
gat	gtg	gct	ggc
Asp	Val	Ala	Gly
tac	atc	aca	gga
Tyr	Ile	Thr	Gly

&lt;210&gt; 2052

&lt;211&gt; 319

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2052

Met	Ala	Thr	Thr	Val	Ala	Ala	Thr	Lys	Leu	Thr	Ser	Leu	Lys	Ala	Thr
1				5				10					15		
Ala	Gly	Lys	Leu	Gly	Tyr	Arg	Glu	Ile	Cys	Gln	Val	Arg	Gln	Trp	Ala
				20				25					30		
Pro	Leu	Lys	Ser	Ala	Met	Pro	His	Phe	Gly	Met	Leu	Arg	Cys	Ala	Thr
				35			40					45			
Ser	Thr	Val	Val	Lys	Ala	Gln	Ala	Gln	Ala	Gln	Ala	Thr	Ala	Thr	Glu
				50			55				60				
Gln	Thr	Thr	Glu	Glu	Ala	Val	Pro	Lys	Val	Glu	Ser	Pro	Val	Val	Val
65					70					75					80
Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Leu	Ser	Leu
				85					90				95		
Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ala	Lys

## PhoenixTemp32470.tmp.txt

100 105 110  
 Glu Ala Glu Val Ser Lys Gln Ile Glu Ala Tyr Gly Gln Ala  
 115 120 125  
 Ile Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Asp Ala Met  
 130 135 140  
 Met Lys Thr Ala Val Asp Ala Trp Gly Thr Ile Asp Val Val Val Asn  
 145 150 155 160  
 Asn Ala Gly Ile Thr Arg Asp Thr Leu Leu Ile Arg Met Lys Lys Ser  
 165 170 175  
 Gln Trp Asp Glu Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys  
 180 185 190  
 Thr Gln Ala Ala Thr Lys Ile Met Met Lys Lys Arg Lys Gly Arg Ile  
 195 200 205  
 Ile Asn Ile Ala Ser Val Val Gly Leu Ile Gly Asn Ile Gly Gln Ala  
 210 215 220  
 Asn Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Ser Lys Thr Ala  
 225 230 235 240  
 Ala Arg Glu Gly Ala Ser Arg Asn Ile Asn Val Asn Val Val Cys Pro  
 245 250 255  
 Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Glu Asp Met Glu  
 260 265 270  
 Lys Lys Ile Leu Gly Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu  
 275 280 285  
 Asp Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser  
 290 295 300  
 Tyr Ile Thr Gly Gln Ala Phe Thr Ile Asp Gly Gly Ile Ala Ile  
 305 310 315

&lt;210&gt; 2053

&lt;211&gt; 849

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(849)

&lt;400&gt; 2053

atg	agc	aat	cat	caa	acc	acg	gtg	ttg	aaa	caa	cta	gag	cca	tgg	tgt	48
Met	Ser	Asn	His	Gln	Thr	Thr	Val	Leu	Lys	Gln	Leu	Glu	Pro	Trp	Cys	
1				5					10					15		
gag	cta	aac	ggc	aaa	gtg	ggt	ctt	ctg	acc	gga	gct	tct	tct	ggt	ata	96
Glu	Leu	Asn	Gly	Lys	Val	Val	Leu	Leu	Thr	Gly	Ala	Ser	Ser	Gly	Ile	
			20					25					30			
gga	agt	gag	gtc	tgt	ctc	gat	ctg	ggc	aaa	gct	ggc	tgt	aag	att	atc	144
Gly	Ser	Glu	Val	Cys	Leu	Asp	Leu	Gly	Lys	Ala	Gly	Cys	Lys	Ile	Ile	
			35				40					45				
gca	gca	gct	cgt	cgc	gtc	cac	cgt	ctc	gaa	tct	ctc	tgc	tcc	gaa	atc	192
Ala	Ala	Ala	Arg	Arg	Val	His	Arg	Leu	Glu	Ser	Leu	Cys	Ser	Glu	Ile	
			50			55					60					
aac	agc	tta	agc	tca	acc	ggg	atc	caa	tta	gcc	gca	ccg	ctc	gag	cta	240
Asn	Ser	Leu	Ser	Ser	Thr	Gly	Ile	Gln	Leu	Ala	Ala	Pro	Leu	Glu	Leu	
					70				75					80		
gac	gtt	tca	tca	gac	gca	gcc	acc	att	caa	aaa	gct	gtc	aaa	caa	gct	288
Asp	Val	Ser	Ser	Asp	Ala	Ala	Thr	Ile	Gln	Lys	Ala	Val	Lys	Gln	Ala	
				85					90					95		
tgg	gac	atc	tac	gga	aag	ata	gat	gtg	ttg	atc	aac	aac	gct	gga	atc	336
Trp	Asp	Ile	Tyr	Gly	Lys	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	Ile	
			100					105					110			
aga	ggc	aat	gtc	aag	acg	agt	tta	gat	ctg	act	gaa	gac	gag	tgg	aac	384
Arg	Gly	Asn	Val	Lys	Thr	Ser	Leu	Asp	Leu	Thr	Glu	Asp	Glu	Trp	Asn	
			115				120					125				
aca	gtg	ttc	aga	acc	aac	tta	acc	gga	cct	tgg	tta	gta	tcc	aaa	tac	432
Thr	Val	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Pro	Trp	Leu	Val	Ser	Lys	Tyr	
			130			135					140					
gtc	tgc	agt	cta	atg	cgt	gac	gca	aaa	cgc	ggc	ggc	tca	gta	ata	aac	480
Val	Cys	Ser	Leu	Met	Arg	Asp	Ala	Lys	Arg	Gly	Gly	Ser	Val	Ile	Asn	
					150					155				160		
gtc	tcc	tcc	atc	gcc	ggt	ctc	cac	cga	ggt	ttg	tta	ccc	ggt	gga	gtc	528

## PhoenixTemp32470.tmp.txt

Val	Ser	Ser	Ile	Ala	Gly	Leu	His	Arg	Gly	Leu	Leu	Pro	Gly	Gly	Val		
165				165					170					175			
gcc	tat	gct	tgt	tcc	aaa	ggt	ggt	ggt	gac	acc	atg	acg	agg	atg	atg	576	
Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Val	Asp	Thr	Met	Thr	Arg	Met	Met		
			180					185					190				
gct	att	gag	tta	ggt	gta	tac	aac	atc	aga	gtg	aac	tcg	atc	gca	cca	624	
Ala	Ile	Glu	Leu	Gly	Val	Tyr	Asn	Ile	Arg	Val	Asn	Ser	Ile	Ala	Pro		
		195					200					205					
ggg	ctt	ctc	aag	tca	gag	atc	acg	caa	ggt	ctt	atg	caa	aaa	gag	tgg	672	
Gly	Leu	Leu	Lys	Ser	Glu	Ile	Thr	Gln	Gly	Leu	Met	Gln	Lys	Glu	Trp		
	210					215					220						
ctt	aag	aac	gtg	acc	gag	agg	act	atc	ccg	tta	aag	gtg	caa	cag	acc	720	
Leu	Lys	Asn	Val	Thr	Glu	Arg	Thr	Ile	Pro	Leu	Lys	Val	Gln	Gln	Thr		
	225					230				235					240		
gtg	gat	ccg	gga	ctt	acc	tcg	ctg	ggt	cgc	tat	ctc	att	cat	gac	tct	768	
Val	Asp	Pro	Gly	Leu	Thr	Ser	Leu	Val	Arg	Tyr	Leu	Ile	His	Asp	Ser		
			245					250						255			
tcc	caa	tat	gtc	tca	ggc	aac	aca	tac	att	ctc	gac	tcc	gga	gct	aca	816	
Ser	Gln	Tyr	Val	Ser	Gly	Asn	Thr	Tyr	Ile	Leu	Asp	Ser	Gly	Ala	Thr		
			260					265					270				
ata	cct	ggc	ctg	cct	att	ttt	tct	tct	ctt	tga						849	
Ile	Pro	Gly	Leu	Pro	Ile	Phe	Ser	Ser	Leu								
		275					280										

&lt;210&gt; 2054

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2054

Met	Ser	Asn	His	Gln	Thr	Thr	Val	Leu	Lys	Gln	Leu	Glu	Pro	Trp	Cys		
1				5					10					15			
Glu	Leu	Asn	Gly	Lys	Val	Val	Leu	Leu	Thr	Gly	Ala	Ser	Ser	Gly	Ile		
			20					25					30				
Gly	Ser	Glu	Val	Cys	Leu	Asp	Leu	Gly	Lys	Ala	Gly	Cys	Lys	Ile	Ile		
		35					40					45					
Ala	Ala	Ala	Arg	Arg	Val	His	Arg	Leu	Glu	Ser	Leu	Cys	Ser	Glu	Ile		
		50				55					60						
Asn	Ser	Leu	Ser	Ser	Thr	Gly	Ile	Gln	Leu	Ala	Ala	Pro	Leu	Glu	Leu		
65					70			75						80			
Asp	Val	Ser	Ser	Asp	Ala	Ala	Thr	Ile	Gln	Lys	Ala	Val	Lys	Gln	Ala		
				85				90						95			
Trp	Asp	Ile	Tyr	Gly	Lys	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	Ile		
		100					105						110				
Arg	Gly	Asn	Val	Lys	Thr	Ser	Leu	Asp	Leu	Thr	Glu	Asp	Glu	Trp	Asn		
		115					120					125					
Thr	Val	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Pro	Trp	Leu	Val	Ser	Lys	Tyr		
	130					135					140						
Val	Cys	Ser	Leu	Met	Arg	Asp	Ala	Lys	Arg	Gly	Gly	Ser	Val	Ile	Asn		
145					150					155					160		
Val	Ser	Ser	Ile	Ala	Gly	Leu	His	Arg	Gly	Leu	Leu	Pro	Gly	Gly	Val		
				165					170					175			
Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Val	Asp	Thr	Met	Thr	Arg	Met	Met		
			180					185					190				
Ala	Ile	Glu	Leu	Gly	Val	Tyr	Asn	Ile	Arg	Val	Asn	Ser	Ile	Ala	Pro		
		195					200					205					
Gly	Leu	Leu	Lys	Ser	Glu	Ile	Thr	Gln	Gly	Leu	Met	Gln	Lys	Glu	Trp		
	210					215					220						
Leu	Lys	Asn	Val	Thr	Glu	Arg	Thr	Ile	Pro	Leu	Lys	Val	Gln	Gln	Thr		
225					230					235					240		
Val	Asp	Pro	Gly	Leu	Thr	Ser	Leu	Val	Arg	Tyr	Leu	Ile	His	Asp	Ser		
				245					250					255			
Ser	Gln	Tyr	Val	Ser	Gly	Asn	Thr	Tyr	Ile	Leu	Asp	Ser	Gly	Ala	Thr		
			260					265					270				
Ile	Pro	Gly	Leu	Pro	Ile	Phe	Ser	Ser	Leu								
		275					280										

&lt;210&gt; 2055

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;400&gt; 2055

atg gct gga gaa gag caa aga cga aga tgg agc ctt caa ggc aaa acc	48
Met Ala Gly Glu Glu Gln Arg Arg Arg Trp Ser Leu Gln Gly Lys Thr	
1 5 10 15	
gca ctt gtc acc ggt gga acc aaa ggc att ggg cat gct ata gta gag	96
Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly His Ala Ile Val Glu	
20 25 30	
gaa ctt gca gga ttt gga gca ata ata cat aca tgt gct cga gac gaa	144
Glu Leu Ala Gly Phe Gly Ala Ile Ile His Thr Cys Ala Arg Asp Glu	
35 40 45	
gca cat ctc aac gag tgt tta agc aac tgg aaa aat aaa ggg ttt caa	192
Ala His Leu Asn Glu Cys Leu Ser Asn Trp Lys Asn Lys Gly Phe Gln	
50 55 60	
gtc act ggt tca gtc tgt gac gca tcg tcc tgg acc gaa aga gag aag	240
Val Thr Gly Ser Val Cys Asp Ala Ser Ser Trp Thr Glu Arg Glu Lys	
65 70 75 80	
ctg atg caa act gtg tac act ttg ttt gat gcc aag ctc agt atc ctc	288
Leu Met Gln Thr Val Tyr Thr Leu Phe Asp Ala Lys Leu Ser Ile Leu	
85 90 95	
atc aac aac gtt ggc gca atc cgg tca aag cca aca att gaa aat acg	336
Ile Asn Asn Val Gly Ala Ile Arg Ser Lys Pro Thr Ile Glu Asn Thr	
100 105 110	
gca gag gat ttc tcg ttc cac att tcc acc aac ttg gaa tct gca tac	384
Ala Glu Asp Phe Ser Phe His Ile Ser Thr Asn Leu Glu Ser Ala Tyr	
115 120 125	
cat ttt agc cag ctt gca cat cct ctg ctc aag tct tca ggg tgt ggt	432
His Phe Ser Gln Leu Ala His Pro Leu Leu Lys Ser Ser Gly Cys Gly	
130 135 140	
aat atc gtc ttc ata tcc tcc att act ggg gtc gtc tca cgt agc atc	480
Asn Ile Val Phe Ile Ser Ser Ile Thr Gly Val Val Ser Arg Ser Ile	
145 150 155 160	
agc tcc atc tac agt gcc aca aaa ggg gca atg aat cag cta gca agg	528
Ser Ser Ile Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Ala Arg	
165 170 175 180	
aat ttg gca tgc gag tgg gcg agc gac agc ata aga gct aat tct gta	576
Asn Leu Ala Cys Glu Trp Ala Ser Asp Ser Ile Arg Ala Asn Ser Val	
185 190 195	
gct cct aca ttc att gcc act cca ctg gtt gat aat gcg ttt gat gat	624
Ala Pro Thr Phe Ile Ala Thr Pro Leu Val Asp Asn Ala Phe Asp Asp	
200 205 210	
gaa ttt aaa aaa gtg gta gaa tca aca aat ccc ttg ggg cgc ata gga	672
Glu Phe Lys Lys Val Val Glu Ser Thr Asn Pro Leu Gly Arg Ile Gly	
215 220 225	
aaa cca gag gag gta gca tcg gtg gtg gca ttt ctt tgt atg cct gca	720
Lys Pro Glu Glu Val Ala Ser Val Val Ala Phe Leu Cys Met Pro Ala	
230 235 240	
gct tct tac ata acg ggt cag acc att tgc gtt gat gga ggt ctt tcg	768
Ala Ser Tyr Ile Thr Gly Gln Thr Ile Cys Val Asp Gly Gly Leu Ser	
245 250 255	
gtc aat ggc ttc tcg tat cag cca cac gct taa	801
Val Asn Gly Phe Ser Tyr Gln Pro His Ala	
260 265	

&lt;210&gt; 2056

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2056

Met Ala Gly Glu Glu Gln Arg Arg Arg Trp Ser Leu Gln Gly Lys Thr
1 5 10 15
Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly His Ala Ile Val Glu

## PhoenixTemp32470.tmp.txt

20 25 30  
 Glu Leu Ala Gly Phe Gly Ala Ile Ile His Thr Cys Ala Arg Asp Glu  
 35 40 45  
 Ala His Leu Asn Glu Cys Leu Ser Asn Trp Lys Asn Lys Gly Phe Gln  
 50 55 60  
 Val Thr Gly Ser Val Cys Asp Ala Ser Ser Trp Thr Glu Arg Glu Lys  
 65 70 75 80  
 Leu Met Gln Thr Val Tyr Thr Leu Phe Asp Ala Lys Leu Ser Ile Leu  
 85 90 95  
 Ile Asn Asn Val Gly Ala Ile Arg Ser Lys Pro Thr Ile Glu Asn Thr  
 100 105 110  
 Ala Glu Asp Phe Ser Phe His Ile Ser Thr Asn Leu Glu Ser Ala Tyr  
 115 120 125  
 His Phe Ser Gln Leu Ala His Pro Leu Leu Lys Ser Ser Gly Cys Gly  
 130 135 140  
 Asn Ile Val Phe Ile Ser Ser Ile Thr Gly Val Val Ser Arg Ser Ile  
 145 150 155 160  
 Ser Ser Ile Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Ala Arg  
 165 170 175  
 Asn Leu Ala Cys Glu Trp Ala Ser Asp Ser Ile Arg Ala Asn Ser Val  
 180 185 190  
 Ala Pro Thr Phe Ile Ala Thr Pro Leu Val Asp Asn Ala Phe Asp Asp  
 195 200 205  
 Glu Phe Lys Lys Val Val Glu Ser Thr Asn Pro Leu Gly Arg Ile Gly  
 210 215 220  
 Lys Pro Glu Glu Val Ala Ser Val Val Ala Phe Leu Cys Met Pro Ala  
 225 230 235 240  
 Ala Ser Tyr Ile Thr Gly Gln Thr Ile Cys Val Asp Gly Gly Leu Ser  
 245 250 255  
 Val Asn Gly Phe Ser Tyr Gln Pro His Ala  
 260 265

&lt;210&gt; 2057

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;400&gt; 2057

atg gat aaa aga tgg agc ctt caa ggg atg acc gcc ctt gta aac ggt	48
Met Asp Lys Arg Trp Ser Leu Gln Gly Met Thr Ala Leu Val Asn Gly	
1 5 10 15	
gga gcc agc gga atc ggg tat gcc ata gaa gag tta gct agt ttt	96
Gly Ala Ser Gly Ile Gly Tyr Ala Ile Val Glu Glu Leu Ala Ser Phe	
20 25 30	
gga gct aga atc cac gta tgc gac atc tct gaa aca ttt ctc aat caa	144
Gly Ala Arg Ile His Val Cys Asp Ile Ser Glu Thr Phe Leu Asn Gln	
35 40 45	
agc tta agc gaa tgg gaa aag aaa ggg ttt caa gtg agt ggc tca atc	192
Ser Leu Ser Glu Trp Glu Lys Lys Gly Phe Gln Val Ser Gly Ser Ile	
50 55 60	
tgt gat gta acc tct cgt ccc cag aga gaa aca tta ata caa aaa gtc	240
Cys Asp Val Thr Ser Arg Pro Gln Arg Glu Thr Leu Ile Gln Lys Val	
65 70 75 80	
tcc gcg cta ttc gat ggc aaa ctc aac att ctt gtg aac aat gtg gga	288
Ser Ala Leu Phe Asp Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly	
85 90 95	
gta ctt cgt gga aag cca aca aca gaa tat gcg aaa gag gat ttc aat	336
Val Leu Arg Gly Lys Pro Thr Thr Glu Tyr Ala Lys Glu Asp Phe Asn	
100 105 110	
ttc cac atc tca aca aac tta gaa cct gct ttc aat ttt tcc cag ctt	384
Phe His Ile Ser Thr Asn Leu Glu Pro Ala Phe Asn Phe Ser Gln Leu	
115 120 125	
tca cat cct cta cta aag gct tca ggc tat gga agc atc atc ttc att	432
Ser His Pro Leu Leu Lys Ala Ser Gly Tyr Gly Ser Ile Ile Phe Ile	
130 135 140	



## PhoenixTemp32470.tmp.txt

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Ser	Ser	Val	Ala	Gly	Ile	Val	Ser	Phe	Asp	Cys	Gly	Ser	Ile	Tyr	Ser	
145					150					155					160	
cta	gca	aaa	gga	gct	ctg	aat	cag	cta	gca	aga	aat	ttg	gca	tgt	gaa	528
Leu	Ala	Lys	Gly	Ala	Leu	Asn	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Cys	Glu	
			165						170					175		
tgg	gca	aaa	gac	ggc	ata	aga	gcc	aac	gct	gtt	gcc	cct	aat	gct	atc	576
Trp	Ala	Lys	Asp	Gly	Ile	Arg	Ala	Asn	Ala	Val	Ala	Pro	Asn	Ala	Ile	
			180					185					190			
agg	act	cct	ctg	tct	caa	caa	tat	ctt	gat	gac	gtc	agt	ttc	aag	gag	624
Arg	Thr	Pro	Leu	Ser	Gln	Gln	Tyr	Leu	Asp	Asp	Val	Ser	Phe	Lys	Glu	
		195					200					205				
gaa	ttg	ttc	agt	aga	act	cca	ctt	ggg	cgc	gct	gga	gag	cca	aat	gaa	672
Glu	Leu	Phe	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Ala	Gly	Glu	Pro	Asn	Glu	
	210					215					220					
gtt	gca	tca	cta	gtg	gca	ttc	ttg	tgt	cta	cct	gcg	gct	tct	tat	ata	720
Val	Ala	Ser	Leu	Val	Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	
	225				230					235					240	
act	ggg	caa	acc	att	tgt	gtt	gat	gga	ggc	ctc	act	gtt	aac	ggg	ttc	768
Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	Gly	Gly	Leu	Thr	Val	Asn	Gly	Phe	
				245					250					255		
tcc	tat	caa	cca	cat	gct	tga										789
Ser	Tyr	Gln	Pro	His	Ala											
			260													

&lt;210&gt; 2058

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2058

Met	Asp	Lys	Arg	Trp	Ser	Leu	Gln	Gly	Met	Thr	Ala	Leu	Val	Asn	Gly	
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Gly	Ala	Ser	Gly	Ile	Gly	Tyr	Ala	Ile	Val	Glu	Glu	Leu	Ala	Ser	Phe	
			20					25					30			
Gly	Ala	Arg	Ile	His	Val	Cys	Asp	Ile	Ser	Glu	Thr	Phe	Leu	Asn	Gln	
		35					40					45				
Ser	Leu	Ser	Glu	Trp	Glu	Lys	Lys	Gly	Phe	Gln	Val	Ser	Gly	Ser	Ile	
		50				55					60					
Cys	Asp	Val	Thr	Ser	Arg	Pro	Gln	Arg	Glu	Thr	Leu	Ile	Gln	Lys	Val	
65					70					75				80		
Ser	Ala	Leu	Phe	Asp	Gly	Lys	Leu	Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	
			85					90					95			
Val	Leu	Arg	Gly	Lys	Pro	Thr	Thr	Glu	Tyr	Ala	Lys	Glu	Asp	Phe	Asn	
			100					105					110			
Phe	His	Ile	Ser	Thr	Asn	Leu	Glu	Pro	Ala	Phe	Asn	Phe	Ser	Gln	Leu	
		115					120					125				
Ser	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Tyr	Gly	Ser	Ile	Ile	Phe	Ile	
		130				135					140					
Ser	Ser	Val	Ala	Gly	Ile	Val	Ser	Phe	Asp	Cys	Gly	Ser	Ile	Tyr	Ser	
145					150					155					160	
Leu	Ala	Lys	Gly	Ala	Leu	Asn	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Cys	Glu	
			165						170					175		
Trp	Ala	Lys	Asp	Gly	Ile	Arg	Ala	Asn	Ala	Val	Ala	Pro	Asn	Ala	Ile	
			180					185					190			
Arg	Thr	Pro	Leu	Ser	Gln	Gln	Tyr	Leu	Asp	Asp	Val	Ser	Phe	Lys	Glu	
		195					200					205				
Glu	Leu	Phe	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Ala	Gly	Glu	Pro	Asn	Glu	
	210					215					220					
Val	Ala	Ser	Leu	Val	Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	
	225				230					235					240	
Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	Gly	Gly	Leu	Thr	Val	Asn	Gly	Phe	
				245				250						255		
Ser	Tyr	Gln	Pro	His	Ala											
			260													

&lt;210&gt; 2059

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;400&gt; 2059

atg	ctg	act	cta	ctc	ttc	tcc	tct	ctc	gga	ctc	ctc	ctg	ctt	ctc	ggg	48
Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5					10					15		
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acg	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gtg	aaa	cga	gaa	gcc	ata	gaa	gga	aag	gtg	ggt	tgg	atc	144
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
aca	ggg	gct	agc	cgt	gga	att	gga	gaa	ggt	ctt	gct	aaa	cag	ttt	gcg	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
agt	tta	ggg	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gag	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
					70				75						80	
gtt	cgt	gtt	aag	agt	gag	ctc	aaa	ggg	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
				85					90					95		
aag	gtt	ttg	cct	tta	gat	cta	gct	agc	ggc	gaa	gag	ggg	ctc	aaa	ggg	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
gtt	gta	gag	aga	gca	gtg	tcg	ctt	ttc	cct	ggg	gct	ggg	ggt	gat	tat	384
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
ttg	gtt	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
		130				135					140					
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	gtt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
					150					155					160	
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
				165					170					175		
ggc	ggg	cat	ttt	gtt	gtg	att	agc	agt	ggc	gca	ggg	aag	gta	cca	tca	576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180					185					190			
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac	624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195					200					205				
ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	gtt	act	672
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
		210				215					220					
gtg	gtt	tgt	ccg	ggg	cca	ata	gag	acc	tca	aat	ggg	aca	gga	aca	tca	720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser	
					230					235					240	
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgt	gtg	tca	tct	gaa	cga	768
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg	
				245					250					255		
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala	
			260				265						270			
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
			275				280					285				
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	ggg	aaa	cgt	912
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg	
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gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ctg	ctc	960
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu	
					310					315					320	
ttc	cag	aag	aag	act	aaa	aca	aac	tga								987
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn									

325

<210> 2060  
 <211> 328  
 <212> PRT  
 <213> Brassica napus

<400> 2060  
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 Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr Leu Ile Ser  
 20 25 30  
 Lys Lys His Val Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile  
 35 40 45  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Glu Glu Gly Leu Lys Gly  
 100 105 110  
 Val Val Glu Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125  
 Leu Val His Asn Ala Ala Tyr Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 135 140  
 Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 150 155 160  
 Thr Ile Ser Leu Thr Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 165 170 175  
 Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 Phe His Thr Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 215 220  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 275 280 285  
 Met Pro Phe Leu Gly Phe Trp Leu Met Asp Lys Val Gly Gly Lys Arg  
 290 295 300  
 Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
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 Phe Gln Lys Lys Thr Lys Thr Asn  
 325

<210> 2061  
 <211> 849  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 2061  
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 ttg ggt aaa gtg gca ttg ata acc gga gga gcc aca ggg ata ggc gaa 96  
 Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu 20 25 30  
 agc atc gct cgt ctg ttc cac aag cac ggt gcc aaa gtc tgc atc gtc 144  
 Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Val 305 310 315 320

## PhoenixTemp32470.tmp.txt

																35																	40																	45																																		
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Asp	Val	Gln	Asp	Asp	Leu	Gly	Asp	Lys	Val	Leu	Lys	Thr	Leu	Leu	Ala																																																																					
																50																	55																	60																																		
aac	tcg	gag	gag	tca	gct	tgt	ttc	atc	cac	ggt	gac	gtc	aca	caa	gaa	240																																																																				
Asn	Ser	Glu	Glu	Ser	Ala	Cys	Phe	Ile	His	Gly	Asp	Val	Thr	Gln	Glu																																																																					
																65																	70																	75																	80																	
gac	gac	atc	agt	aac	gct	gtt	gac	ttc	gcc	gtc	aag	cgt	ttc	ggg	aca	288																																																																				
Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Arg	Phe	Gly	Thr																																																																					
																85																	90																	95																																		
ctt	gac	ata	ctc	atc	aac	aac	gca	gga	gta	agc	gaa	gca	ccg	tgt	ccg	336																																																																				
Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Val	Ser	Glu	Ala	Pro	Cys	Pro																																																																					
																100																	105																	110																																		
gac	atc	cgc	aac	aac	agt	tta	acc	gag	ttc	gag	atg	gtc	ttc	aac	gtc	384																																																																				
Asp	Ile	Arg	Asn	Asn	Ser	Leu	Thr	Glu	Phe	Glu	Met	Val	Phe	Asn	Val																																																																					
																115																	120																	125																																		
aac	gtg	aaa	gga	gct	ttc	cta	ggg	atg	aaa	cat	gcg	gcg	cgt	gtg	atg	432																																																																				
Asn	Val	Lys	Gly	Ala	Phe	Leu	Gly	Met	Lys	His	Ala	Ala	Arg	Val	Met																																																																					
																130																	135																	140																																		
atc	ccc	gcc	aag	aaa	ggc	tcg	ata	gtc	tct	tta	tcg	agc	gtt	ggc	ggc	480																																																																				
Ile	Pro	Ala	Lys	Lys	Gly	Ser	Ile	Val	Ser	Leu	Cys	Ser	Val	Gly	Gly																																																																					
																145																	150																	155																	160																	
gtt	gtc	gga	ggc	gtt	ggt	ccg	cac	gct	tac	gtc	ggc	tcc	aag	cac	gcg	528																																																																				
Val	Val	Gly	Gly	Val	Gly	Pro	His	Ala	Tyr	Val	Gly	Ser	Lys	His	Ala																																																																					
																165																	170																	175																																		
gtt	cta	ggt	ttg	act	agg	agc	gtt	gcg	gcg	gag	cta	gga	cag	cat	ggg	576																																																																				
Val	Leu	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Glu	Leu	Gly	Gln	His	Gly																																																																					
																180																	185																	190																																		
ata	cgc	gtg	aac	tgc	gtt	tct	cct	tac	gcg	gtt	ttg	act	aac	ctc	gcg	624																																																																				
Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Leu	Thr	Asn	Leu	Ala																																																																					
																195																	200																	205																																		
ttg	gct	cat	ttg	cct	gag	gat	gag	agg	aag	gaa	ggc	gtg	gtc	gct	ggt	672																																																																				
Leu	Ala	His	Leu	Pro	Glu	Asp	Glu	Arg	Lys	Glu	Gly	Val	Val	Ala	Gly																																																																					
																210																	215																	220																																		
ttc	agg	agt	ttc	gcc	gct	gcg	aac	gcg	aat	ctg	aaa	ggt	gtt	gag	ttg	720																																																																				
Phe	Arg	Ser	Phe	Ala	Ala	Ala	Asn	Ala	Asn	Leu	Lys	Gly	Val	Glu	Leu																																																																					
																225																	230																	235																	240																	
acg	gtt	gat	gac	gtg	gcg	aac	gcg	gtt	ttg	ttt	ctg	gcg	agt	gat	gag	768																																																																				
Thr	Val	Asp	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala	Ser	Asp	Glu																																																																					
																245																	250																	255																																		
tcg	cgg	tat	gtg	agt	gga	gat	aat	ctg	atg	gtt	gat	ggt	ggg	ttc	act	816																																																																				
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<210> 2062
<211> 282
<212> PRT
<213> Brassica napus
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<400>	2062														
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			20					25					30		
Ser	Ile	Ala	Arg	Leu	Phe	His	Lys	His	Gly	Ala	Lys	Val	Cys	Ile	Val
		35					40					45			
Asp	Val	Gln	Asp	Asp	Leu	Gly	Asp	Lys	Val	Leu	Lys	Thr	Leu	Leu	Ala
	50					55					60				
Asn	Ser	Glu	Glu	Ser	Ala	Cys	Phe	Ile	His	Gly	Asp	Val	Thr	Gln	Glu
65					70					75					80
Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Arg	Phe	Gly	Thr
				85					90					95	
Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Val	Ser	Glu	Ala	Pro	Cys	Pro
			100					105					110		
Asp	Ile	Arg	Asn	Asn	Ser	Leu	Thr	Glu	Phe	Glu	Met	Val	Phe	Asn	Val
		115					120					125			

## PhoenixTemp32470.tmp.txt

Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg Val Met  
 130 140  
 Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val Gly Gly  
 145 150 160  
 Val Val Gly Gly Val Gly Pro His Ala Tyr Val Gly Ser Lys His Ala  
 165 175  
 Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly Gln His Gly  
 180 190  
 Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Leu Thr Asn Leu Ala  
 195 200 205  
 Leu Ala His Leu Pro Glu Asp Glu Arg Lys Glu Gly Val Val Ala Gly  
 210 215 220  
 Phe Arg Ser Phe Ala Ala Asn Ala Asn Leu Lys Gly Val Glu Leu  
 225 230 235 240  
 Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Glu  
 245 250 255  
 Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly Phe Thr  
 260 270  
 Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

&lt;210&gt; 2063

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;400&gt; 2063

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Met Ala Gly Glu Glu Gln Arg Arg Arg Trp Ser Leu Gln Gly Lys Thr	
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gca ctt gtc acc ggt gga acc aaa ggc att ggg cat gct ata gta gag	96
Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly His Ala Ile Val Glu	
20 25 30	
gaa ctt gca gga ttt ggg gtg ata ata cat aca tgt gct cga gac gaa	144
Glu Leu Ala Gly Phe Gly Val Ile Ile His Thr Cys Ala Arg Asp Glu	
35 40 45	
gca cat ctc aac gag tgt tta agc aag tgg aag aat aaa ggg ttt caa	192
Ala His Leu Asn Glu Cys Leu Ser Lys Trp Lys Asn Lys Gly Phe Gln	
50 55 60	
gtc act ggt tca gtc tgt gac gta tcg tcc tgg acc gaa aga gag aag	240
Val Thr Gly Ser Val Cys Asp Val Ser Ser Trp Thr Glu Arg Glu Lys	
65 70 75 80	
cta atg caa act gtg tac tct ttg ttt gat gcc aag ctc agt atc ctt	288
Leu Met Gln Thr Val Tyr Ser Leu Phe Asp Ala Lys Leu Ser Ile Leu	
85 90 95	
atc aac aat gct ggc gca atc cgg tca aag cca aca ata gag cat acg	336
Ile Asn Asn Ala Gly Ala Ile Arg Ser Lys Pro Thr Ile Glu His Thr	
100 105 110	
gct gag gat ttc tcg ttc cac att tcg acc aac ttg gaa tct gcg tat	384
Ala Glu Asp Phe Ser Phe His Ile Ser Thr Asn Leu Glu Ser Ala Tyr	
115 120 125	
cat ttt agc cag ctt gca cat cct ctg ctc aaa gct tca gga tgt ggt	432
His Phe Ser Gln Leu Ala His Pro Leu Leu Lys Ala Ser Gly Cys Gly	
130 135 140	
aac atc gtg ttc ata tcc tcc att tct ggg gtc gtc tca ctt agc atc	480
Asn Ile Val Phe Ile Ser Ser Ile Ser Gly Val Val Ser Leu Ser Ile	
145 150 155 160	
agc tcc atc tac agt gcc aca aaa ggg gca atg aat cag cta gca agg	528
Ser Ser Ile Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Ala Arg	
165 170 175	
aat ttg gca tgc gag tgg gcg agc gac agc ata aga gct aat tct gta	576
Asn Leu Ala Cys Glu Trp Ala Ser Asp Ser Ile Arg Ala Asn Ser Val	
180 185 190	
gct cct aca ttc att gcc act cca ctg gtt gat aat gcg ttt gat gat	624
Ala Pro Thr Phe Ile Ala Thr Pro Leu Val Asp Asn Ala Phe Asp Asp	

PhoenixTemp32470.tmp.txt

<div> <div>195</div> <div>200</div> <div>205</div> </div>																
gaa	ttt	aaa	aaa	gtg	gta	gaa	tca	aca	aat	ccc	ttg	ggg	cgc	ata	gga	672
Glu	Phe	Lys	Lys	Val	Val	Glu	Ser	Thr	Asn	Pro	Leu	Gly	Arg	Ile	Gly	
<div> <div>210</div> <div>215</div> <div>220</div> </div>																
aaa	cca	gag	gag	gta	gca	tcg	gtg	gtg	gca	ttt	ctt	tgt	atg	cct	gca	720
Lys	Pro	Glu	Glu	Val	Ala	Ser	Val	Val	Ala	Phe	Leu	Cys	Met	Pro	Ala	
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gct	tct	tac	ata	acg	ggt	cag	acc	att	tgc	ggt	gat	gga	ggg	ctt	tcg	768
Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	Gly	Gly	Leu	Ser	
<div> <div>245</div> <div>250</div> <div>255</div> </div>																
gtc	aat	ggc	ttc	tcg	tat	cag	cca	cac	gct	taa						801
Val	Asn	Gly	Phe	Ser	Tyr	Gln	Pro	His	Ala							
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<210> 2064
<211> 266
<212> PRT
<213> Brassica napus
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<400>	2064														
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Ala	Leu	Val	Thr	Gly	Gly	Thr	Lys	Gly	Ile	Gly	His	Ala	Ile	Val	Glu
			20					25					30		
Glu	Leu	Ala	Gly	Phe	Gly	Val	Ile	His	Thr	Cys	Ala	Arg	Asp	Glu	
		35					40				45				
Ala	His	Leu	Asn	Glu	Cys	Leu	Ser	Lys	Trp	Lys	Asn	Lys	Gly	Phe	Gln
	50					55					60				
Val	Thr	Gly	Ser	Val	Cys	Asp	Val	Ser	Ser	Trp	Thr	Glu	Arg	Glu	Lys
65					70					75					80
Leu	Met	Gln	Thr	Val	Tyr	Ser	Leu	Phe	Asp	Ala	Lys	Leu	Ser	Ile	Leu
				85					90					95	
Ile	Asn	Asn	Ala	Gly	Ala	Ile	Arg	Ser	Lys	Pro	Thr	Ile	Glu	His	Thr
			100					105					110		
Ala	Glu	Asp	Phe	Ser	Phe	His	Ile	Ser	Thr	Asn	Leu	Glu	Ser	Ala	Tyr
		115					120					125			
His	Phe	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Cys	Gly
	130					135					140				
Asn	Ile	Val	Phe	Ile	Ser	Ser	Ile	Ser	Gly	Val	Val	Ser	Leu	Ser	Ile
145					150					155					160
Ser	Ser	Ile	Tyr	Ser	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	Leu	Ala	Arg
				165					170					175	
Asn	Leu	Ala	Cys	Glu	Trp	Ala	Ser	Asp	Ser	Ile	Arg	Ala	Asn	Ser	Val
			180					185					190		
Ala	Pro	Thr	Phe	Ile	Ala	Thr	Pro	Leu	Val	Asp	Asn	Ala	Phe	Asp	Asp
		195					200					205			
Glu	Phe	Lys	Lys	Val	Val	Glu	Ser	Thr	Asn	Pro	Leu	Gly	Arg	Ile	Gly
	210					215					220				
Lys	Pro	Glu	Glu	Val	Ala	Ser	Val	Val	Ala	Phe	Leu	Cys	Met	Pro	Ala
225					230					235					240
Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	Gly	Gly	Leu	Ser
				245					250					255	
Val	Asn	Gly	Phe	Ser	Tyr	Gln	Pro	His	Ala						
			260					265							

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<210> 2065
<211> 987
<212> DNA
<213> Brassica napus
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<220>  
<221> CDS  
<222> (1)..(987)

<400> 2065																
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Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5					10					15		
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acc	ctg	att	tcg	96
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## PhoenixTemp32470.tmp.txt

Leu	Leu	Leu	Lys 20	Phe	Ala	Phe	Ala	Asp 25	Gly	Asp	Leu	Thr	Leu 30	Ile	Ser		
aag	aag	cat	gcg	aaa	cgt	gaa	gcc	ata	gaa	ggc	aag	gtg	ggt	tgg	atc	144	
Lys	Lys	His 35	Ala	Lys	Arg	Glu	Ala 40	Ile	Glu	Gly	Lys	Val 45	Val	Trp	Ile		
aca	ggg	tct	agc	cgt	gga	att	gga	gaa	ggt	ctt	gct	aaa	cag	ttt	gca	192	
Thr	Gly 50	Ser	Ser	Arg	Gly	Ile 55	Gly	Glu	Val	Leu	Ala 60	Lys	Gln	Phe	Ala		
agt	tta	ggt	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gag	ttg	240	
Ser 65	Leu	Gly	Ala	Lys	Leu 70	Ile	Leu	Ser	Ala	Arg 75	Asn	Glu	Ala	Glu	Leu 80		
ggt	cgt	ggt	aag	agt	gag	ctc	aaa	ggt	aag	tat	gca	cca	gaa	gat	gtc	288	
Val	Arg	Val	Lys	Ser 85	Glu	Leu	Lys	Gly	Lys 90	Tyr	Ala	Pro	Glu	Asp 95	Val		
aag	ggt	ttg	cct	tta	gat	cta	gct	agc	ggc	gaa	gag	ggg	ctc	aaa	ggt	336	
Lys	Val	Leu	Pro 100	Leu	Asp	Leu	Ala	Ser 105	Gly	Glu	Glu	Gly	Leu 110	Lys	Gly		
ggt	gta	gag	caa	gca	ttg	tcg	ctt	ttc	cct	ggg	gct	ggt	ggt	gat	tat	384	
Val	Val	Glu 115	Gln	Ala	Leu	Ser	Leu 120	Phe	Pro	Gly	Ala	Gly 125	Val	Asp	Tyr		
ttg	ggt	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432	
Leu	Val 130	His	Asn	Ala	Ala	Tyr 135	Glu	Arg	Pro	Lys	Ser 140	Asn	Ala	Val	Asp		
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	ggt	aat	gta	ttt	ggg	480	
Ala 145	Ser	Glu	Glu	Asn	Leu 150	Lys	Thr	Thr	Phe	Glu 155	Val	Asn	Val	Phe	Gly 160		
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528	
Thr	Ile	Ser	Leu 165	Thr	Lys	Leu	Val	Thr	Pro 170	His	Met	Leu	Lys	Gln 175	Gly		
ggc	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576	
Gly	Gly	His 180	Phe	Val	Val	Ile	Ser	Ser 185	Ala	Ala	Gly	Lys	Val 190	Pro	Ser		
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac	624	
Pro	Gly 195	Gln	Ala	Ile	Tyr	Ala	Ala 200	Ser	Lys	His	Ala	Leu 205	Gln	Gly	Tyr		
ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	ggt	act	672	
Phe	His 210	Thr	Leu	Arg	Ser	Glu 215	Phe	Phe	Gln	Lys	Gly 220	Ile	Lys	Val	Thr		
gtg	ggt	tgt	ccg	ggt	cca	ata	gag	acc	tca	aat	ggt	aca	gga	aca	tca	720	
Val 225	Val	Cys	Pro	Gly	Pro 230	Ile	Glu	Thr	Ser	Asn 235	Gly	Thr	Gly	Thr	Ser 240		
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgt	gtg	tca	tct	gaa	cga	768	
Thr	Ser	Glu	Asp 245	Lys	Lys	Ser	Pro	Glu	Lys 250	Arg	Val	Ser	Ser	Glu 255	Arg		
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816	
Cys	Ala	Glu	Leu 260	Thr	Ile	Ile	Ala	Ala 265	Ser	His	Asn	Leu 270	Lys	Glu	Ala		
tgg	att	tca	tat	cag	cca	gta	ctg	ctg	gtg	atg	tat	cta	gtg	cag	tac	864	
Trp	Ile 275	Ser	Tyr	Gln	Pro	Val	Leu 280	Leu	Val	Met	Tyr	Leu 285	Val	Gln	Tyr		
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	ggt	gga	ggg	aaa	cgt	912	
Met	Pro 290	Phe	Leu	Gly	Phe	Trp 295	Leu	Met	Asp	Lys	Val 300	Gly	Gly	Lys	Arg		
gtg	gag	ggt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ctg	ctc	960	
Val 305	Glu	Val	Ala	Glu	Lys 310	Lys	Gly	Asn	Thr	Tyr 315	Ser	Trp	Asn	Leu	Leu 320		
ttc	cag	aag	aag	act	aaa	aca	aac	tga								987	
Phe	Gln	Lys	Lys 325	Thr	Lys	Thr	Asn										

&lt;210&gt; 2066

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2066

Met	Leu	Thr	Leu	Leu 5	Phe	Ser	Ser	Leu	Gly 10	Leu	Leu	Leu	Leu	Leu 15	Gly		
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser		

## PhoenixTemp32470.tmp.txt

Lys Lys His 20 Ala Lys Arg Glu 25 Ile Glu Gly Lys Val 30 Trp Ile  
 Thr Gly Ser 35 Ser Arg Gly Ile 40 Gly Glu Val Leu Ala Lys Gln Phe Ala  
 Ser Leu Gly Ala Lys Leu 55 Ile Leu Ser Ala Arg 60 Asn Glu Ala Glu Leu  
 65 Val Arg Val Lys Ser 70 Glu Leu Lys Gly Lys 75 Tyr Ala Pro Glu Asp Val  
 Lys Val Leu 85 Pro Leu Asp Leu Ala Ser Gly Glu Glu Gly Leu Lys Gly  
 Val Val Glu 100 Gln Ala Leu Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 Leu Val 115 His Asn Ala Ala Tyr 120 Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 Ala Ser Glu Glu Asn Leu 135 Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 Thr Ile Ser Leu Thr 150 Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 Gly Gly His Phe Val Val Ile Ser Ser 165 Ala Ala Gly Lys Val Pro Ser  
 Pro Gly Gln 180 Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 Phe His 195 Thr Leu Arg Ser Glu 200 Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 Val Val Cys Pro Gly Pro 215 Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 Thr Ser Glu Asp Lys 230 Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 Cys Ala Glu Leu 245 Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 260 Met Pro Phe Leu Gly Phe Trp 265 Leu Met Asp Lys Val Gly Gly Lys Arg  
 275 Val Glu Val Ala Glu Lys 280 Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
 305 Phe Gln Lys Lys Thr 310 Lys Thr Asn 315

<210> 2067  
 <211> 858  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(858)

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 gag ctc aaa gac aaa gtg gtt ctc cta aca gga gct tca tcc ggc atc 96  
 Glu Leu Lys Asp Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile 20  
 gga aga gag atc tgc ctc gat cta gcc aaa tcc ggc tgc aag atc atc 144  
 Gly Arg Glu Ile Cys Leu Asp Leu Ala Lys Ser Gly Cys Lys Ile Ile 25  
 gca gca gct cgt cgt ctc gac cgt ctc caa tcc ctc tgc tcc gag atc 192  
 Ala Ala Ala Arg Arg Leu Asp Arg Leu Gln Ser Leu Cys Ser Glu Ile 30  
 aac gcc tta ttc tcc cca aca aaa acc aaa caa gcc gca cct ctc gag 240  
 Asn Ala Leu Phe Ser Pro Thr Lys Thr Lys Gln Ala Ala Pro Leu Glu 35  
 cta gac gtc tcc tca gac tca tcc acc atc cga aac gca gtc aaa caa 288  
 Leu Asp Val Ser Ser 85 Asp Ser Ser Thr Ile Arg Asn Ala Val Lys Gln 40  
 gct tgg gac atc ttc gga aac atc gac gtc ttg atc aac aac gca ggc 336  
 315



## PhoenixTemp32470.tmp.txt

Ala	Trp	Asp	Ile	Phe	Gly	Asn	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly		
atc	aga	ggc	aac	gtc	aag	tcg	agt	ctg	gac	cta	tcc	gaa	gaa	gaa	tgg	384	
Ile	Arg	Gly	Asn	Val	Lys	Ser	Ser	Leu	Asp	Leu	Ser	Glu	Glu	Glu	Trp		
		115					120					125					
gaa	aga	gtc	ttc	aga	aca	aac	cta	acc	gga	cct	tgg	cta	gta	tca	aaa	432	
Glu	Arg	Val	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Pro	Trp	Leu	Val	Ser	Lys		
		130				135					140						
cac	gtc	tgc	gtt	ctg	atg	cgc	gac	gcc	aaa	cgc	cgc	ggc	gga	gga	tcg	480	
His	Val	Cys	Val	Leu	Met	Arg	Asp	Ala	Lys	Arg	Arg	Gly	Gly	Gly	Ser		
				150						155					160		
gtg	ata	aac	gtt	tcc	tcc	atc	gcg	ggg	ctt	cag	cgc	ggg	aag	cta	ccc	528	
Val	Ile	Asn	Val	Ser	Ser	Ile	Ala	Gly	Leu	Gln	Arg	Gly	Lys	Leu	Pro		
				165					170					175			
ggc	gcg	ttg	gcg	tac	gcg	tgt	tcg	aaa	gga	ggt	ctt	gat	att	atg	acg	576	
Gly	Ala	Leu	Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Leu	Asp	Ile	Met	Thr		
			180					185					190				
aag	atg	atg	gcg	gtt	gag	ctg	ggt	gag	tat	ggt	ata	aga	gtg	aac	tcg	624	
Lys	Met	Met	Ala	Val	Glu	Leu	Gly	Glu	Tyr	Gly	Ile	Arg	Val	Asn	Ser		
			195				200					205					
ata	gct	ccg	ggg	ctg	ttt	aag	tcg	gag	atc	acg	gaa	ggt	ctg	gtg	agg	672	
Ile	Ala	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Gly	Leu	Val	Arg		
			210			215				220							
aaa	gag	tgg	atg	aag	aat	gtg	agg	aag	agg	att	gtt	ccg	ttg	aag	gtg	720	
Lys	Glu	Trp	Met	Lys	Asn	Val	Arg	Lys	Arg	Ile	Val	Pro	Leu	Lys	Val		
					230					235					240		
cag	cag	act	gtg	gac	ccg	ggg	ctt	acc	tcg	ctg	ggt	agg	tat	ctg	att	768	
Gln	Gln	Thr	Val	Asp	Pro	Gly	Leu	Thr	Ser	Leu	Val	Arg	Tyr	Leu	Ile		
				245				250						255			
ccc	cac	tct	tcc	agg	tat	gtc	tct	cgc	aat	ggt	tac	att	gtt	gac	gcg	816	
Pro	His	Ser	Ser	Arg	Tyr	Val	Ser	Arg	Asn	Val	Tyr	Ile	Val	Asp	Ala		
			260					265					270				
ggt	gct	aca	ttg	tct	ggt	cta	acg	att	ttt	tct	tca	ctt	tga			858	
Gly	Ala	Thr	Leu	Ser	Gly	Leu	Thr	Ile	Phe	Ser	Ser	Leu					
		275					280					285					

&lt;210&gt; 2068

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2068

Met	Ser	Ser	Asn	His	Gln	Thr	Val	Met	Lys	Gln	Leu	Glu	Pro	Trp	Cys		
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Glu	Leu	Lys	Asp	Lys	Val	Val	Leu	Leu	Thr	Gly	Ala	Ser	Ser	Gly	Ile		
			20					25					30				
Gly	Arg	Glu	Ile	Cys	Leu	Asp	Leu	Ala	Lys	Ser	Gly	Cys	Lys	Ile	Ile		
		35					40					45					
Ala	Ala	Ala	Arg	Arg	Leu	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Ser	Glu	Ile		
					55						60						
Asn	Ala	Leu	Phe	Ser	Pro	Thr	Lys	Thr	Lys	Gln	Ala	Ala	Pro	Leu	Glu		
65					70					75					80		
Leu	Asp	Val	Ser	Ser	Asp	Ser	Ser	Thr	Ile	Arg	Asn	Ala	Val	Lys	Gln		
				85					90					95			
Ala	Trp	Asp	Ile	Phe	Gly	Asn	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly		
			100					105					110				
Ile	Arg	Gly	Asn	Val	Lys	Ser	Ser	Leu	Asp	Leu	Ser	Glu	Glu	Glu	Trp		
		115					120					125					
Glu	Arg	Val	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Pro	Trp	Leu	Val	Ser	Lys		
		130				135					140						
His	Val	Cys	Val	Leu	Met	Arg	Asp	Ala	Lys	Arg	Arg	Gly	Gly	Gly	Ser		
145					150					155					160		
Val	Ile	Asn	Val	Ser	Ser	Ile	Ala	Gly	Leu	Gln	Arg	Gly	Lys	Leu	Pro		
				165					170					175			
Gly	Ala	Leu	Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Leu	Asp	Ile	Met	Thr		
			180					185					190				
Lys	Met	Met	Ala	Val	Glu	Leu	Gly	Glu	Tyr	Gly	Ile	Arg	Val	Asn	Ser		
		195					200					205					
Ile	Ala	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Gly	Leu	Val	Arg		

## PhoenixTemp32470.tmp.txt

210  
 Lys Glu Trp Met Lys Asn 215  
 225 Gln Gln Thr Val Asp Pro Gly Leu Thr Ser Ile 220  
 235 Val Pro Leu Lys Val  
 240  
 Pro His Ser Ser Arg Tyr Val Ser Arg Asn Val Tyr Ile Val Asp Ala  
 255  
 260  
 270  
 Gly Ala Thr 275  
 Leu Ser Gly Leu Thr 280  
 Ile Phe Ser Ser Leu 285

&lt;210&gt; 2069

&lt;211&gt; 798

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(798)

&lt;400&gt; 2069

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Met Ala Ser Ser Ser Glu Ser Gln Ser Gln Ser Lys Pro Leu Gln Asp	
1 5 10 15	
cga gtt gca atc gtc acc ggc tcg tcc cgc gga atc ggc cga gaa atc	96
Arg Val Ala Ile Val Thr Gly Ser Ser Arg Gly Ile Gly Arg Glu Ile	
20 25 30	
gcg ctt cac ctc gcc tca ctc ggc gcg cga ctc gtc gtc aac tac acc	144
Ala Leu His Leu Ala Ser Leu Gly Ala Arg Leu Val Val Asn Tyr Thr	
35 40 45	
tcc aac tcg gcc caa gcc gac tca gtc gcg gcg cag atc aac gcc ggt	192
Ser Asn Ser Ala Gln Ala Asp Ser Val Ala Ala Gln Ile Asn Ala Gly	
50 55 60	
tcc gcc acc acg aca ccg cgc gcc gtc gtg gtc caa gcc gac gtg tcc	240
Ser Ala Thr Thr Thr Pro Arg Ala Val Val Val Gln Ala Asp Val Ser	
65 70 75 80	
gat ccg gct cag gtg aag tcg ctc ttc gac tcg gcc gag cgc gcc ttc	288
Asp Pro Ala Gln Val Lys Ser Leu Phe Asp Ser Ala Glu Arg Ala Phe	
85 90 95	
gac tcg ccg atc cac atc ctt gtc aac tcg gcg ggc gtg atc gac ggc	336
Asp Ser Pro Ile His Ile Leu Val Asn Ser Ala Gly Val Ile Asp Gly	
100 105 110	
acg tat ccc tcc gtc gcc gac acc acc gtg gag tcc ttc gac cgc act	384
Thr Tyr Pro Ser Val Ala Asp Thr Thr Val Glu Ser Phe Asp Arg Thr	
115 120 125	
ttc gcg gtg aac gcg cgt ggc gcc ttc gcg tgc gcc agg gag gcc gcg	432
Phe Ala Val Asn Ala Arg Gly Ala Phe Ala Cys Ala Arg Glu Ala Ala	
130 135 140	
aac cgc ctc aag cgc ggc ggc gga ggg ccg atc att cta ctg acg aca	480
Asn Arg Leu Lys Arg Gly Gly Gly Arg Ile Ile Leu Leu Thr Thr	
145 150 155 160	
tcg cag gtg gtg gcg ctg agg ccg ggg tac ggg gcg tac gcg gcg tcg	528
Ser Gln Val Val Ala Leu Arg Pro Gly Tyr Gly Ala Tyr Ala Ala Ser	
165 170 175	
aag gcg gcg gtg gag gca atg gtg aag atc ctg gcg aag gaa ctg aaa	576
Lys Ala Ala Val Glu Ala Met Val Lys Ile Leu Ala Lys Glu Leu Lys	
180 185 190	
ggg acg cag ata acg gcg aat tgc gtt gcg ccg gga ccg att gcg acg	624
Gly Thr Gln Ile Thr Ala Asn Cys Val Ala Pro Gly Pro Ile Ala Thr	
195 200 205	
gag atg ttc ttc gag ggt aag acg gag gag gtg gtg aat ccg atc gtg	672
Glu Met Phe Phe Glu Gly Lys Thr Glu Glu Val Val Asn Arg Ile Val	
210 215 220	
caa gag agt ccc ttg ggg agg ctc ggt gag acc aaa gac gtg gca ccc	720
Gln Glu Ser Pro Leu Gly Arg Leu Gly Glu Thr Lys Asp Val Ala Pro	
225 230 235 240	
gtt gtg gga ttc ttg gcc act gat gct tct gaa tgg gtc aac ggt caa	768
Val Val Gly Phe Leu Ala Thr Asp Ala Ser Glu Trp Val Asn Gly Gln	
245 250 255	
att gtt cgt gtc aac ggt ggc tat att tag	798

Ile Val Arg Val Asn Gly Gly Tyr Ile  
260 265

<210> 2070  
<211> 265  
<212> PRT  
<213> Glycine max

<400> 2070  
Met Ala Ser Ser Ser Glu Ser Gln Ser Gln Ser Lys Pro Leu Gln Asp  
1 5 10 15  
Arg Val Ala Ile Val Thr Gly Ser Ser Arg Gly Ile Gly Arg Glu Ile  
20 25 30  
Ala Leu His Leu Ala Ser Leu Gly Ala Arg Leu Val Val Asn Tyr Thr  
35 40 45  
Ser Asn Ser Ala Gln Ala Asp Ser Val Ala Ala Gln Ile Asn Ala Gly  
50 55 60  
Ser Ala Thr Thr Thr Pro Arg Ala Val Val Val Gln Ala Asp Val Ser  
65 70 75 80  
Asp Pro Ala Gln Val Lys Ser Leu Phe Asp Ser Ala Glu Arg Ala Phe  
85 90 95  
Asp Ser Pro Ile His Ile Leu Val Asn Ser Ala Gly Val Ile Asp Gly  
100 105 110  
Thr Tyr Pro Ser Val Ala Asp Thr Val Glu Ser Phe Asp Arg Thr  
115 120 125  
Phe Ala Val Asn Ala Arg Gly Ala Phe Ala Cys Ala Arg Glu Ala Ala  
130 135 140  
Asn Arg Leu Lys Arg Gly Gly Gly Arg Ile Ile Leu Leu Thr Thr  
145 150 155 160  
Ser Gln Val Val Ala Leu Arg Pro Gly Tyr Gly Ala Tyr Ala Ala Ser  
165 170 175  
Lys Ala Ala Val Glu Ala Met Val Lys Ile Leu Ala Lys Glu Leu Lys  
180 185 190  
Gly Thr Gln Ile Thr Ala Asn Cys Val Ala Pro Gly Pro Ile Ala Thr  
195 200 205  
Glu Met Phe Phe Glu Gly Lys Thr Glu Glu Val Val Asn Arg Ile Val  
210 215 220  
Gln Glu Ser Pro Leu Gly Arg Leu Gly Glu Thr Lys Asp Val Ala Pro  
225 230 235 240  
Val Val Gly Phe Leu Ala Thr Asp Ala Ser Glu Trp Val Asn Gly Gln  
245 250 255  
Ile Val Arg Val Asn Gly Gly Tyr Ile  
260 265

<210> 2071  
<211> 882  
<212> DNA  
<213> Glycine max

<220>  
<221> CDS  
<222> (1)..(882)

<400> 2071  
atg gct tcg ggt gaa aag aaa ttc cca cct caa caa caa caa aca cag 48  
Met Ala Ser Gly Glu Lys Lys Phe Pro Pro Gln Gln Gln Gln Thr Gln 15  
1 5 10  
cct ggg aag gag cat gct atg aat cca gta ccc caa ttc act agc cct 96  
Pro Gly Lys Glu His Ala Met Asn Pro Val Pro Gln Phe Thr Ser Pro 20 25 30  
gac tac aag cct tca aat aaa ctt caa gga aag ata gca tta gtg act 144  
Asp Tyr Lys Pro Ser Asn Lys Leu Gln Gly Lys Ile Ala Leu Val Thr 35 40 45  
ggg ggt gac tct ggg att gga cga gcg gtg tgt aac ttg ttt gcc tta 192  
Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Asn Leu Phe Ala Leu 50 55 60  
gaa ggt gct acc gtg ggc ttc aca tat gtg aag ggg cat gag gac aag 240  
Glu Gly Ala Thr Val Gly Phe Thr Tyr Val Lys Gly His Glu Asp Lys 65 70 75 80

## PhoenixTemp32470.tmp.txt

gac	gcg	agg	gac	acg	ttg	gaa	atg	atc	aag	agg	gca	aag	act	tcg	gat	288
Asp	Ala	Arg	Asp	Thr	Leu	Glu	Met	Ile	Lys	Arg	Ala	Lys	Thr	Ser	Asp	
				85					90					95		
gct	aaa	gat	cca	atg	gcg	gta	cca	gct	gat	ttg	ggg	tac	gac	gag	aat	336
Ala	Lys	Asp	Pro	Met	Ala	Val	Pro	Ala	Asp	Leu	Gly	Tyr	Asp	Glu	Asn	
			100					105					110			
tgc	aag	aga	gtg	gtt	gat	gag	gtc	gtg	aat	gct	tat	ggg	tgt	att	gac	384
Cys	Lys	Arg	Val	Val	Asp	Glu	Val	Val	Asn	Ala	Tyr	Gly	Cys	Ile	Asp	
		115					120					125				
att	ctg	gtc	aac	aat	gca	gct	gag	caa	tac	gag	tgt	gga	aca	gtg	gag	432
Ile	Leu	Val	Asn	Asn	Ala	Ala	Glu	Gln	Tyr	Glu	Cys	Gly	Thr	Val	Glu	
	130				135					140						
gac	att	gat	gag	cct	agg	ctt	gag	agg	gtc	ttt	cgt	aca	aat	atc	ttc	480
Asp	Ile	Asp	Glu	Pro	Arg	Leu	Glu	Arg	Val	Phe	Arg	Thr	Asn	Ile	Phe	
145				150						155					160	
tcc	tat	ttc	ttc	atg	acc	agg	cat	gcc	ttg	aag	cac	atg	aag	gaa	gga	528
Ser	Tyr	Phe	Phe	Met	Thr	Arg	His	Ala	Leu	Lys	His	Met	Lys	Glu	Gly	
				165					170					175		
agc	agc	att	atc	aac	acg	aca	tcg	gtg	aat	gca	tac	aag	gga	aat	gcg	576
Ser	Ser	Ile	Ile	Asn	Thr	Thr	Ser	Val	Asn	Ala	Tyr	Lys	Gly	Asn	Ala	
			180					185					190			
aaa	cta	ttg	gac	tac	acg	tcc	acg	aag	gga	gca	att	gtg	gcc	tat	aca	624
Lys	Leu	Leu	Asp	Tyr	Thr	Ser	Thr	Lys	Gly	Ala	Ile	Val	Ala	Tyr	Thr	
		195					200					205				
agg	gga	ctt	gct	ctt	cag	ttg	gtg	agt	aag	gga	att	cgg	gtt	aat	ggg	672
Arg	Gly	Leu	Ala	Leu	Gln	Leu	Val	Ser	Lys	Gly	Ile	Arg	Val	Asn	Gly	
	210				215						220					
gtg	gct	cct	ggg	cct	att	tgg	acc	cca	ttg	ata	ccc	tcc	tct	ttc	aag	720
Val	Ala	Pro	Gly	Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ser	Ser	Phe	Lys	
225					230					235					240	
gag	gaa	gaa	acg	gct	caa	ttt	ggg	gcc	cag	gtg	cca	atg	aag	aga	gct	768
Glu	Glu	Glu	Thr	Ala	Gln	Phe	Gly	Ala	Gln	Val	Pro	Met	Lys	Arg	Ala	
			245					250						255		
ggc	cag	cct	att	gag	gtt	gct	ccg	tct	tat	gtt	ttt	ctt	gct	tgc	aac	816
Gly	Gln	Pro	Ile	Glu	Val	Ala	Pro	Ser	Tyr	Val	Phe	Leu	Ala	Cys	Asn	
			260					265					270			
caa	tgc	tcc	tct	tac	ata	act	gga	caa	gtc	ctt	cac	ccc	aat	ggg	gga	864
Gln	Cys	Ser	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Leu	His	Pro	Asn	Gly	Gly	
		275					280					285				
acc	gtt	gtc	aat	ggg	taa											882
Thr	Val	Val	Asn	Gly												
	290															

&lt;210&gt; 2072

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2072

Met	Ala	Ser	Gly	Glu	Lys	Lys	Phe	Pro	Pro	Gln	Gln	Gln	Gln	Thr	Gln	
1				5					10					15		
Pro	Gly	Lys	Glu	His	Ala	Met	Asn	Pro	Val	Pro	Gln	Phe	Thr	Ser	Pro	
			20					25					30			
Asp	Tyr	Lys	Pro	Ser	Asn	Lys	Leu	Gln	Gly	Lys	Ile	Ala	Leu	Val	Thr	
		35					40					45				
Gly	Gly	Asp	Ser	Gly	Ile	Gly	Arg	Ala	Val	Cys	Asn	Leu	Phe	Ala	Leu	
	50					55					60					
Glu	Gly	Ala	Thr	Val	Gly	Phe	Thr	Tyr	Val	Lys	Gly	His	Glu	Asp	Lys	
65					70					75					80	
Asp	Ala	Arg	Asp	Thr	Leu	Glu	Met	Ile	Lys	Arg	Ala	Lys	Thr	Ser	Asp	
			85						90					95		
Ala	Lys	Asp	Pro	Met	Ala	Val	Pro	Ala	Asp	Leu	Gly	Tyr	Asp	Glu	Asn	
			100					105					110			
Cys	Lys	Arg	Val	Val	Asp	Glu	Val	Val	Asn	Ala	Tyr	Gly	Cys	Ile	Asp	
		115					120					125				
Ile	Leu	Val	Asn	Asn	Ala	Ala	Glu	Gln	Tyr	Glu	Cys	Gly	Thr	Val	Glu	
	130				135						140					
Asp	Ile	Asp	Glu	Pro	Arg	Leu	Glu	Arg	Val	Phe	Arg	Thr	Asn	Ile	Phe	
145					150					155					160	

## PhoenixTemp32470.tmp.txt

Ser Tyr Phe Phe Met Thr Arg His Ala Leu Lys His Met Lys Glu Gly  
 165 170 175  
 Ser Ser Ile Ile Asn Thr Thr Ser Val Asn Ala Tyr Lys Gly Asn Ala  
 180 185 190  
 Lys Leu Leu Asp Tyr Thr Ser Thr Lys Gly Ala Ile Val Ala Tyr Thr  
 195 200 205  
 Arg Gly Leu Ala Leu Gln Leu Val Ser Lys Gly Ile Arg Val Asn Gly  
 210 215 220  
 Val Ala Pro Gly Pro Ile Trp Thr Pro Leu Ile Pro Ser Ser Phe Lys  
 225 230 235 240  
 Glu Glu Glu Thr Ala Gln Phe Gly Ala Gln Val Pro Met Lys Arg Ala  
 245 250 255  
 Gly Gln Pro Ile Glu Val Ala Pro Ser Tyr Val Phe Leu Ala Cys Asn  
 260 265 270  
 Gln Cys Ser Ser Tyr Ile Thr Gly Gln Val Leu His Pro Asn Gly Gly  
 275 280 285  
 Thr Val Val Asn Gly  
 290

&lt;210&gt; 2073

&lt;211&gt; 882

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(882)

&lt;400&gt; 2073

atg gct tcc ggt gaa cag aaa ttc cct cct caa caa caa caa aca cag	48
Met Ala Ser Gly Glu Gln Lys Phe Pro Pro Gln Gln Gln Gln Thr Gln	
1 5 10 15	
cct ggg aag gag cat gct atg act cca gta ccc caa ttc act agc cct	96
Pro Gly Lys Glu His Ala Met Thr Pro Val Pro Gln Phe Thr Ser Pro	
20 25 30 35	
gac tac aag cct tca aat aaa ctt caa ggg aag att gca tta gtc act	144
Asp Tyr Lys Pro Ser Asn Lys Leu Gln Gly Lys Ile Ala Leu Val Thr	
40 45 50 55	
ggg ggt gat tct ggg att gga cga gcg gtg tgt aac ttg ttt gcc tta	192
Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Asn Leu Phe Ala Leu	
60 65 70 75	
gaa ggt gct acc gtg gcc ttc acg tat gtg aag ggg cat gag gac aag	240
Glu Gly Ala Thr Val Ala Phe Thr Tyr Val Lys Gly His Glu Asp Lys	
80 85 90 95	
gac gcg agg gac aca ttg gaa atg atc aag aga gca aag act tcg gat	288
Asp Ala Arg Asp Thr Leu Glu Met Ile Lys Arg Ala Lys Thr Ser Asp	
100 105 110 115	
gcc aag gat cca atg gca ata cca tct gat ttg ggt tac gat gag aac	336
Ala Lys Asp Pro Met Ala Ile Pro Ser Asp Leu Gly Tyr Asp Glu Asn	
120 125 130 135	
tgc aag agg gtg gtt gat gag gtc gtg agt gct tat ggt cgt att gac	384
Cys Lys Arg Val Val Asp Glu Val Ser Ala Tyr Gly Arg Ile Asp	
140 145 150 155	
att ctg gtc aac aat gca gct gag cag tac gag tgt gga acc gtg gag	432
Ile Leu Val Asn Asn Ala Ala Glu Gln Tyr Glu Cys Gly Thr Val Glu	
160 165 170 175	
gac ata gac gag cct agg ctt gag agg gtc ttt cgt aca aat atc ttc	480
Asp Ile Asp Glu Pro Arg Leu Glu Arg Val Phe Arg Thr Asn Ile Phe	
180 185 190 195	
tcc tat ttc ttc atg gcg agg cat gcc ttg aag cac atg aag gaa gga	528
Ser Tyr Phe Phe Met Ala Arg His Ala Leu Lys His Met Lys Glu Gly	
200 205 210 215	
agc agc att atc aac acg aca tca gtg aat gca tac aag gga cat gcg	576
Ser Ser Ile Ile Asn Thr Thr Ser Val Asn Ala Tyr Lys Gly His Ala	
220 225 230 235	
aaa cta ttg gac tac acg tcc acc aag ggg gca att gtg gcc tat aca	624
Lys Leu Leu Asp Tyr Thr Ser Thr Lys Gly Ala Ile Val Ala Tyr Thr	
240 245 250 255	
agg ggt ctt gcc ctt cag ctg gtg agt aag gga att cgg gtt aat ggg	672

## PhoenixTemp32470.tmp.txt

Arg	Gly	Leu	Ala	Leu	Gln	Leu	Val	Ser	Lys	Gly	Ile	Arg	Val	Asn	Gly	
210	210					215					220					
gtg	gct	cca	ggg	ccc	att	tgg	acc	cct	ttg	ata	cca	gcc	tct	ttc	aag	720
Val	Ala	Pro	Gly	Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ala	Ser	Phe	Lys	
225					230					235					240	
gag	gaa	gaa	acg	gcc	caa	ttt	gga	gcg	cag	gtc	cca	atg	aag	aga	gct	768
Glu	Glu	Glu	Thr	Ala	Gln	Phe	Gly	Ala	Gln	Val	Pro	Met	Lys	Arg	Ala	
				245					250					255		
ggt	caa	cct	att	gag	gtt	gct	cct	tcc	tat	gtt	ttt	ctt	gct	tcc	aac	816
Gly	Gln	Pro	Ile	Glu	Val	Ala	Pro	Ser	Tyr	Val	Phe	Leu	Ala	Ser	Asn	
			260					265					270			
caa	tgc	tcc	tct	tac	ata	act	gga	caa	gtc	ctt	cac	ccc	aat	ggt	gga	864
Gln	Cys	Ser	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Leu	His	Pro	Asn	Gly	Gly	
		275					280					285				
acc	gtt	gtg	aat	ggt	taa											882
Thr	Val	Val	Asn	Gly												
290																

&lt;210&gt; 2074

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2074

Met	Ala	Ser	Gly	Glu	Gln	Lys	Phe	Pro	Pro	Gln	Gln	Gln	Gln	Thr	Gln	
1				5					10					15		
Pro	Gly	Lys	Glu	His	Ala	Met	Thr	Pro	Val	Pro	Gln	Phe	Thr	Ser	Pro	
			20					25					30			
Asp	Tyr	Lys	Pro	Ser	Asn	Lys	Leu	Gln	Gly	Lys	Ile	Ala	Leu	Val	Thr	
		35					40					45				
Gly	Gly	Asp	Ser	Gly	Ile	Gly	Arg	Ala	Val	Cys	Asn	Leu	Phe	Ala	Leu	
	50				55						60					
Glu	Gly	Ala	Thr	Val	Ala	Phe	Thr	Tyr	Val	Lys	Gly	His	Glu	Asp	Lys	
65					70					75					80	
Asp	Ala	Arg	Asp	Thr	Leu	Glu	Met	Ile	Lys	Arg	Ala	Lys	Thr	Ser	Asp	
				85					90					95		
Ala	Lys	Asp	Pro	Met	Ala	Ile	Pro	Ser	Asp	Leu	Gly	Tyr	Asp	Glu	Asn	
			100					105					110			
Cys	Lys	Arg	Val	Val	Asp	Glu	Val	Val	Ser	Ala	Tyr	Gly	Arg	Ile	Asp	
		115					120					125				
Ile	Leu	Val	Asn	Asn	Ala	Ala	Glu	Gln	Tyr	Glu	Cys	Gly	Thr	Val	Glu	
	130				135						140					
Asp	Ile	Asp	Glu	Pro	Arg	Leu	Glu	Arg	Val	Phe	Arg	Thr	Asn	Ile	Phe	
145					150					155					160	
Ser	Tyr	Phe	Phe	Met	Ala	Arg	His	Ala	Leu	Lys	His	Met	Lys	Glu	Gly	
				165					170					175		
Ser	Ser	Ile	Ile	Asn	Thr	Thr	Ser	Val	Asn	Ala	Tyr	Lys	Gly	His	Ala	
			180					185					190			
Lys	Leu	Leu	Asp	Tyr	Thr	Ser	Thr	Lys	Gly	Ala	Ile	Val	Ala	Tyr	Thr	
		195					200					205				
Arg	Gly	Leu	Ala	Leu	Gln	Leu	Val	Ser	Lys	Gly	Ile	Arg	Val	Asn	Gly	
	210				215						220					
Val	Ala	Pro	Gly	Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ala	Ser	Phe	Lys	
225					230					235					240	
Glu	Glu	Glu	Thr	Ala	Gln	Phe	Gly	Ala	Gln	Val	Pro	Met	Lys	Arg	Ala	
				245					250					255		
Gly	Gln	Pro	Ile	Glu	Val	Ala	Pro	Ser	Tyr	Val	Phe	Leu	Ala	Ser	Asn	
			260					265					270			
Gln	Cys	Ser	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Leu	His	Pro	Asn	Gly	Gly	
		275					280					285				
Thr	Val	Val	Asn	Gly												
290																

&lt;210&gt; 2075

&lt;211&gt; 849

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(849)

&lt;400&gt; 2075

atg	gct	acg	caa	ctt	tcc	gac	cg	ctc	gag	cca	tgg	cac	acc	ctc	gcc	48
Met	Ala	Thr	Gln	Leu	Ser	Asp	Arg	Leu	Glu	Pro	Trp	His	Thr	Leu	Ala	
1				5				10					15			
gga	aaa	gtc	gta	atg	gtc	acc	ggc	gcc	tcc	ggc	ctc	ggc	cg	gac	96	
Gly	Lys	Val	Val	Met	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg	Asp	
			20					25				30				
ttc	tgc	ctc	gac	ctc	ggt	cgg	gct	ggc	tgt	cgg	gtc	gtc	gtg	gcg	gcc	144
Phe	Cys	Leu	Asp	Leu	Gly	Arg	Ala	Gly	Cys	Arg	Val	Val	Val	Ala	Ala	
			35				40					45				
cg	aga	gtc	gac	cg	ctc	gag	tcc	ctg	tgc	gac	gaa	att	aac	agc	atg	192
Arg	Arg	Val	Asp	Arg	Leu	Glu	Ser	Leu	Cys	Asp	Glu	Ile	Asn	Ser	Met	
	50					55				60						
gcc	gcc	gga	gac	ggt	ggc	cga	agc	cg	cg	gcc	gtc	gcc	ggt	gaa	ctc	240
Ala	Ala	Gly	Asp	Gly	Gly	Arg	Ser	Arg	Arg	Ala	Val	Ala	Val	Glu	Leu	
	65				70					75					80	
gat	gtc	gct	gcc	gat	gac	ccc	gcc	gtc	gac	aaa	tac	gtg	cag	aag	gcg	288
Asp	Val	Ala	Ala	Asp	Asp	Pro	Ala	Val	Asp	Lys	Tyr	Val	Gln	Lys	Ala	
				85					90					95		
tgg	gag	gcg	ttt	ggt	cac	att	gat	gct	ctt	atc	aac	aac	gct	ggt	gtc	336
Trp	Glu	Ala	Phe	Gly	His	Ile	Asp	Ala	Leu	Ile	Asn	Asn	Ala	Gly	Val	
			100					105					110			
aga	ggg	aat	gtc	aaa	tca	cct	ttg	gaa	ttg	tct	gag	gag	gaa	tgg	aac	384
Arg	Gly	Asn	Val	Lys	Ser	Pro	Leu	Glu	Leu	Ser	Glu	Glu	Glu	Trp	Asn	
		115				120					125					
cat	gcg	ttc	aga	aca	aac	tta	act	ggg	aca	tgg	ttg	gtc	tca	aaa	tat	432
His	Ala	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Thr	Trp	Leu	Val	Ser	Lys	Tyr	
	130					135					140					
gta	tgc	aaa	cg	atg	cgt	gat	gca	caa	aga	aaa	gga	tca	atc	att	aat	480
Val	Cys	Lys	Arg	Met	Arg	Asp	Ala	Gln	Arg	Lys	Gly	Ser	Ile	Ile	Asn	
	145				150					155					160	
att	gct	tca	att	gct	ggt	ttg	aac	cgt	ggt	caa	ttg	cct	gga	ggt	gct	528
Ile	Ala	Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	Gln	Leu	Pro	Gly	Gly	Ala	
				165					170					175		
gca	tat	tca	tcc	tca	aaa	gca	ggc	gtc	aat	atg	cta	aca	agg	gtc	atg	576
Ala	Tyr	Ser	Ser	Ser	Lys	Ala	Gly	Val	Asn	Met	Leu	Thr	Arg	Val	Met	
			180					185					190			
gca	tta	gaa	ttg	ggg	gca	cac	aaa	atc	aga	gtg	aat	tcc	ata	tca	cct	624
Ala	Leu	Glu	Leu	Gly	Ala	His	Lys	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	
		195					200					205				
gga	ctt	ttc	aaa	tct	gaa	atc	act	gaa	aaa	cta	atg	gag	aaa	aat	tgg	672
Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Lys	Leu	Met	Glu	Lys	Asn	Trp	
	210					215					220					
ttg	aat	aat	gtg	gcc	atg	aaa	aca	gta	ccc	ttg	aga	aaa	ttt	ggc	act	720
Leu	Asn	Asn	Val	Ala	Met	Lys	Thr	Val	Pro	Leu	Arg	Lys	Phe	Gly	Thr	
	225				230				235						240	
tct	gat	cca	gca	tta	aca	tcg	ctg	gct	cgt	tat	tta	att	cac	gat	tct	768
Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser	
				245					250					255		
tct	gag	tat	gtg	tca	ggc	aac	aat	ttt	gtt	gtg	gat	gct	gga	gcc	acc	816
Ser	Glu	Tyr	Val	Ser	Gly	Asn	Asn	Phe	Val	Val	Asp	Ala	Gly	Ala	Thr	
			260					265					270			
tta	cca	ggt	gtg	cct	att	tat	tcc	tcc	cta	taa						849
Leu	Pro	Gly	Val	Pro	Ile	Tyr	Ser	Ser	Leu							
		275					280									

&lt;210&gt; 2076

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2076

Met	Ala	Thr	Gln	Leu	Ser	Asp	Arg	Leu	Glu	Pro	Trp	His	Thr	Leu	Ala
1				5				10					15		
Gly	Lys	Val	Val	Met	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg	Asp
			20					25				30			

## PhoenixTemp32470.tmp.txt

Phe Cys Leu<sub>35</sub> Asp Leu Gly Arg Ala<sub>40</sub> Gly Cys Arg Val<sub>45</sub> Val Val Ala Ala  
 Arg Arg Val<sub>50</sub> Asp Arg Leu Glu<sub>55</sub> Ser Leu Cys Asp Glu<sub>60</sub> Ile Asn Ser Met  
 Ala Ala Gly Asp Gly Gly<sub>70</sub> Arg Ser Arg Arg Ala<sub>75</sub> Val Ala Val Glu Leu<sub>80</sub>  
 Asp Val Ala Ala Asp<sub>85</sub> Asp Pro Ala Val Asp<sub>90</sub> Lys Tyr Val Gln Lys<sub>95</sub> Ala  
 Trp Glu Ala Phe<sub>100</sub> Gly His Ile Asp Ala<sub>105</sub> Leu Ile Asn Asn Ala Gly Val  
 Arg Gly Asn<sub>115</sub> Val Lys Ser Pro Leu<sub>120</sub> Glu Leu Ser Glu Glu<sub>125</sub> Glu Trp Asn  
 His Ala Phe<sub>130</sub> Arg Thr Asn Leu<sub>135</sub> Thr Gly Thr Trp Leu<sub>140</sub> Val Ser Lys Tyr  
 Val Cys Lys Arg Met Arg<sub>150</sub> Asp Ala Gln Arg Lys<sub>155</sub> Gly Ser Ile Ile Asn<sub>160</sub>  
 Ile Ala Ser Ile Ala<sub>165</sub> Gly Leu Asn Arg Gly<sub>170</sub> Gln Leu Pro Gly Gly<sub>175</sub> Ala  
 Ala Tyr Ser Ser<sub>180</sub> Ser Lys Ala Gly Val<sub>185</sub> Asn Met Leu Thr Arg<sub>190</sub> Val Met  
 Ala Leu Glu Leu Gly Ala His Lys<sub>200</sub> Ile Arg Val Asn Ser<sub>205</sub> Ile Ser Pro  
 Gly Leu Phe Lys Ser Glu Ile<sub>215</sub> Thr Glu Lys Leu Met<sub>220</sub> Glu Lys Asn Trp  
 Leu<sub>225</sub> Asn Asn Val Ala Met<sub>230</sub> Lys Thr Val Pro Leu<sub>235</sub> Arg Lys Phe Gly Thr<sub>240</sub>  
 Ser Asp Pro Ala Leu<sub>245</sub> Thr Ser Leu Ala Arg<sub>250</sub> Tyr Leu Ile His Asp<sub>255</sub> Ser  
 Ser Glu Tyr Val<sub>260</sub> Ser Gly Asn Asn Phe<sub>265</sub> Val Val Asp Ala Gly<sub>270</sub> Ala Thr  
 Leu Pro Gly<sub>275</sub> Val Pro Ile Tyr Ser<sub>280</sub> Ser Leu

&lt;210&gt; 2077

&lt;211&gt; 963

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(963)

&lt;400&gt; 2077

atg gct tcc att gcc gga tcc aac tgc gtc gct ctc cga acc gcc aac	48
Met Ala Ser Ile Ala <sub>5</sub> Gly Ser Asn Cys Val <sub>10</sub> Ala Leu Arg Thr Ala <sub>15</sub> Asn	
ttc ggc gcc tcc ggt aac cgg aaa atc ggc cag atc cgc caa tgg tct	96
Phe Gly Ala Ser Gly <sub>20</sub> Asn Arg Lys Ile <sub>25</sub> Gly Gln Ile Arg Gln Trp Ser	
ccg att ctc acg aat ctc cgt ccc gtt tcc ggt ctt cgt cac cga tcg	144
Pro Ile Leu Thr <sub>35</sub> Asn Leu Arg Pro <sub>40</sub> Val Ser Gly Leu <sub>45</sub> Arg His Arg Ser	
aat act ccg ttt agc tcc tcc ggt gtg aga gca cag gtt gct act ctg	192
Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu	
gag gaa gca gga acc gga gca act cag aaa gtg gaa gcg ccg gtt gca	240
Glu Glu Ala Gly Thr Gly <sub>70</sub> Ala Thr Gln Lys Val <sub>75</sub> Glu Ala Pro Val Ala <sub>80</sub>	
gtg gtg acc gga gct tcc aga ggc att gga aaa gcg att gca ctg tca	288
Val Val Thr Gly <sub>85</sub> Ala Ser Arg Gly Ile Gly <sub>90</sub> Lys Ala Ile Ala Leu Ser	
tta ggt aaa gca ggt tgc aag gtt ctg gtc aac tat gca agg tca tcc	336
Leu Gly Lys Ala <sub>100</sub> Gly Cys Lys Val <sub>105</sub> Leu Val Asn Tyr Ala <sub>110</sub> Ser Ser	
aag gaa gct gag gag gtt tcc aag gag att gag gag ttt ggt ggt caa	384
Lys Glu Ala Glu Glu Val Ser Lys <sub>120</sub> Glu Ile Glu Glu Phe <sub>125</sub> Gly Gly Gln	
gct ctt aca ttt ggt gga gat gtt tct aac gag gct gat gtg gag tct	432
Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Ala Asp Val Glu Ser	



## PhoenixTemp32470.tmp.txt

130	atg att aaa act gca gtt	135	gat tgg gga aca gtt gat gta tta ata	140	gat gta tta ata	480
Met Ile Lys Thr Ala Val	Asp Ala Trp Gly Thr Val	Asp Val	Leu Ile			
145	aac aat gca gga ata aca	150	aga gat ggt tta tta atg aga atg aag aaa	155	atg aga atg aag aaa	528
Asn Asn Ala Gly Ile Thr	Arg Asp Gly Leu Leu Met	Arg Asp Gly Leu Leu Met	Lys Lys			
165	tct caa tgg cag gat gtt	170	att gat cta aat act ggt gtt ttt ctt	175	ggt gtt ttt ctt	576
Ser Gln Trp Gln Asp Val	Ile Asp Leu Asn Leu Thr	Ile Asp Leu Asn Leu Thr	Gly Val Phe Leu			
180	tgc aca cag gct gct gct	185	aag att atg atg aag aaa aag aag gga agg	190	aag aag gga agg	624
Cys Thr Gln Ala Ala Ala	Lys Ile Met Met Lys Lys Lys	Lys Ile Met Met Lys Lys Lys	Gly Arg			
195	atc gtc aat att gca tca gtt	200	ggt ttg gtt ggc aat gtt gga caa	205	ggt gtt gga caa	672
Ile Val Asn Ile Ala Ser	Val Val Gly Leu Val Gly	Val Val Gly Leu Val Gly	Asn Val Gly Gln			
210	gcc aat tat agt gct gca aaa	215	gca gga gta att ggc ctg aca aaa act	220	ctg aca aaa act	720
Ala Asn Tyr Ser Ala Ala	Lys Ala Gly Val Ile Gly	Lys Ala Gly Val Ile Gly	Thr Thr			
225	gtt gcg aag gaa tat gct agt	230	aga aac atc act gtt aat gca gtt gct	235	gtt aat gca gtt gct	768
Val Ala Lys Glu Tyr Ala	Ser Arg Asn Ile Thr Val	Ser Arg Asn Ile Thr Val	Asn Ala Val Ala			
245	cca ggg ttt att gca tct gac	250	atg act gcc aag cta gga caa gac att	255	gga caa gac att	816
Pro Gly Phe Ile Ala Ser	Asp Met Thr Ala Lys Leu	Asp Met Thr Ala Lys Leu	Gly Gln Asp Ile			
260	gag aaa aag att ttg gag	265	aca atc cca tta gga aga tat ggc cag cca	270	gga aga tat ggc cag cca	864
Glu Lys Lys Ile Leu Glu	Thr Ile Pro Leu Gly Arg	Thr Ile Pro Leu Gly Arg	Tyr Gly Gln Pro			
275	gag gaa gtt gct gga ctg gtt	280	gaa ttc ttg gct ctt aat caa gct gcc	285	gaa ttc ttg gct ctt aat caa gct gcc	912
Glu Glu Val Ala Gly Leu	Val Glu Phe Leu Ala	Val Glu Phe Leu Ala	Asn Gln Ala Ala			
290	agt tac atc act ggg cag gtt	295	ttc acc att gat gga ggt atg gtg atg	300	gga ggt atg gtg atg	960
Ser Tyr Ile Thr Gly Gln	Val Phe Thr Ile Asp	Val Phe Thr Ile Asp	Gly Gly Met Val Met			
305	taa	310		315		963

&lt;210&gt; 2078

&lt;211&gt; 320

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2078

Met Ala Ser Ile Ala Gly	Ser Asn Cys Val Ala Leu Arg Thr Ala Asn	1	5	10	15
Phe Gly Ala Ser Gly	Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser	20	25	30	
Pro Ile Leu Thr Asn Leu Arg	Pro Val Ser Gly Leu Arg His Arg Ser	35	40	45	
Asn Thr Pro Phe Ser Ser	Ser Gly Val Arg Ala Gln Val Ala Thr Leu	50	55	60	
Glu Glu Ala Gly Thr Gly	Ala Thr Gln Lys Val Glu Ala Pro Val Ala	65	70	75	80
Val Val Thr Gly Ala Ser	Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser	85	90	95	
Leu Gly Lys Ala Gly Cys	Lys Val Leu Val Asn Tyr Ala Arg Ser Ser	100	105	110	
Lys Glu Ala Glu Glu Val	Ser Lys Glu Ile Glu Glu Phe Gly Gly Gln	115	120	125	
Ala Leu Thr Phe Gly Gly	Asp Val Ser Asn Glu Ala Asp Val Glu Ser	130	135	140	
Met Ile Lys Thr Ala Val	Asp Ala Trp Gly Thr Val Asp Val Leu Ile	145	150	155	160
Asn Asn Ala Gly Ile Thr	Arg Asp Gly Leu Leu Met Arg Met Lys Lys	165	170	175	
Ser Gln Trp Gln Asp Val	Ile Asp Leu Asn Leu Thr Gly Val Phe Leu	180	185	190	
Cys Thr Gln Ala Ala Ala	Lys Ile Met Met Lys Lys Lys Lys Gly Arg				

## PhoenixTemp32470.tmp.txt

```

195
Ile Val Asn Ile Ala Ser Val 200 Val Gly Leu Val Gly 205 Asn Val Gly Gln
210
Ala Asn Tyr Ser Ala Ala Lys 215 Ala Gly Val Ile Gly 220 Leu Thr Lys Thr
225
Val Ala Lys Glu Tyr 230 Ala Ser Arg Asn 235 Thr Val Asn Ala Val Ala
245
Pro Gly Phe Ile 250 Ala Ser Asp Met Thr 255 Ala Lys Leu Gly Gln Asp Ile
260
Glu Lys Lys Ile Leu Glu Thr 265 Ile Pro Leu Gly Arg Tyr Gly Gln Pro
275
Glu Glu Val Ala Gly Leu Val 280 Glu Phe Leu Ala Leu 285 Asn Gln Ala Ala
290
Ser Tyr Ile Thr Gly Gln 295 Val Phe Thr Ile Asp 300 Gly Gly Met Val Met
305
310
315
320

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&lt;210&gt; 2079

&lt;211&gt; 861

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(861)

&lt;400&gt; 2079

```

atg tgt atg gag aag cac ggc cat gat gag gag gag caa ccc aaa cct      48
Met Cys Met Glu Lys 5 His Gly His Asp Glu Glu Glu Gln Pro Lys Pro
1
gtg gtt cta atc aca gga tgt tcc acg gga ggg ata ggc cac gcg ctt      96
Val Val Leu Ile Thr Gly Cys Ser Thr Thr Gly Gly Ile Gly His Ala Leu
20
gca cga tcc ttc gca gcg aac agg tgc agg gtg gtg gcc acc agc agg      144
Ala Arg Ser 35 Phe Ala Ala Asn Arg 40 Cys Arg Val Val Ala Thr Ser Arg
45
tcg cgg tgg agc atg gcg gat ctg gaa cac gac cac agg ttc ttc ttg      192
Ser Arg Trp Ser Met Ala Asp 55 Leu Glu His Asp His Arg Phe Phe Leu
50
caa gaa ttg gat gtt cag tcc gat gag agc gtg cgt aag gtg gtc gat      240
Gln Glu Leu Asp Val Gln 70 Ser Asp Glu Ser Val 75 Arg Lys Val Val Asp
65
gct gtt gtc aac aag ttc ggt cgc atc gac gtg ctt gtt aac aac gct      288
Ala Val Val Asn Lys 85 Phe Gly Arg Ile Asp 90 Val Leu Val Asn Asn Ala
95
ggt gtt cag tgt gtg ggc ccc ctt gcc gag gtt cct ctc tct gcc att      336
Gly Val Gln 100 Val Gly Pro Leu 105 Ala Glu Val Pro Leu 110 Ser Ala Ile
115
caa aac act ttc gat acc aat gtc ttc ggt tcg ttg aga atg att cag      384
Gln Asn Thr Phe Asp Thr Asn Val Phe Gly Ser Leu Arg Met Ile Gln
125
gcc gtt gtt cct cat atg gct gtt agg aaa cag ggg aag ata gtc aac      432
Ala Val Val Pro His Met Ala 135 Val Arg Lys Gln Lys Ile Val Asn
140
gtt ggt agc gtt gct gcc ttg gcc tct gga cct tgg tca ggc act tac      480
Val Gly Ser Val Ala Ala Leu Ala Ser Gly Pro Trp Ser Gly Thr Tyr
145
aat gct tcc aaa gct gct ctt cat gct ttc act gat aca tta aga ttg      528
Asn Ala Ser Lys Ala 165 Leu His Ala Phe 170 Thr Asp Thr Leu Arg Leu
175
gaa ctt gga cac ttt gga atc gac gtt gtg aat gta gtt cct gga gcc      576
Glu Leu Gly His 180 Phe Gly Ile Asp Val Val Asn Val Val Pro Gly Ala
185
atc act tcc aat att gca aat aat gcc ctt gcc aat tac aat cga atg      624
Ile Thr Ser Asn Ile Ala Asn Asn 200 Ala Leu Ala Asn Tyr 205 Asn Arg Met
195
cct gaa tgg aag tta ttc aag cct ttt gaa gca gca atc cga gac aga      672
Pro Glu Trp Lys Leu Phe Lys 215 Pro Phe Glu Ala Ala Ile Arg Asp Arg
210
gct tct ttg tct cag ggg tcc aag tcg acc cct tcg gag gag ttt gct      720
215

```

## PhoenixTemp32470.tmp.txt

Ala	Ser	Leu	Ser	Gln	Gly	Ser	Lys	Ser	Thr	Pro	Ser	Glu	Glu	Phe	Ala		
225					230					235					240		
aaa	aac	aca	gta	gca	gct	gtt	ctt	aag	aag	aat	cca	cct	gca	tg	ttc	768	
Lys	Asn	Thr	Val	Ala	Ala	Val	Leu	Lys	Lys	Asn	Pro	Pro	Ala	Trp	Phe		
				245					250					255			
tcc	tat	ggc	cat	tac	tct	acc	ttc	atg	gct	atc	atg	tat	cat	tta	cca	816	
Ser	Tyr	Gly	His	Tyr	Ser	Thr	Phe	Met	Ala	Ile	Met	Tyr	His	Leu	Pro		
				260					265					270			
ctc	ttt	ctt	aga	gac	ttt	ttt	ttg	aag	aaa	ttg	atg	aaa	tgc	tga		861	
Leu	Phe	Leu	Arg	Asp	Phe	Phe	Leu	Lys	Lys	Leu	Met	Lys	Cys				
				275				280					285				

&lt;210&gt; 2080

&lt;211&gt; 286

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2080

Met	Cys	Met	Glu	Lys	His	Gly	His	Asp	Glu	Glu	Glu	Gln	Pro	Lys	Pro		
1				5					10					15			
Val	Val	Leu	Ile	Thr	Gly	Cys	Ser	Thr	Gly	Gly	Ile	Gly	His	Ala	Leu		
				20					25					30			
Ala	Arg	Ser	Phe	Ala	Ala	Asn	Arg	Cys	Arg	Val	Val	Ala	Thr	Ser	Arg		
				35				40					45				
Ser	Arg	Trp	Ser	Met	Ala	Asp	Leu	Glu	His	Asp	His	Arg	Phe	Phe	Leu		
				50								60					
Gln	Glu	Leu	Asp	Val	Gln	Ser	Asp	Glu	Ser	Val	Arg	Lys	Val	Val	Asp		
65					70					75					80		
Ala	Val	Val	Asn	Lys	Phe	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala		
				85					90					95			
Gly	Val	Gln	Cys	Val	Gly	Pro	Leu	Ala	Glu	Val	Pro	Leu	Ser	Ala	Ile		
				100				105					110				
Gln	Asn	Thr	Phe	Asp	Thr	Asn	Val	Phe	Gly	Ser	Leu	Arg	Met	Ile	Gln		
				115				120					125				
Ala	Val	Val	Pro	His	Met	Ala	Val	Arg	Lys	Gln	Gly	Lys	Ile	Val	Asn		
				130				135				140					
Val	Gly	Ser	Val	Ala	Ala	Leu	Ala	Ser	Gly	Pro	Trp	Ser	Gly	Thr	Tyr		
145					150					155					160		
Asn	Ala	Ser	Lys	Ala	Ala	Leu	His	Ala	Phe	Thr	Asp	Thr	Leu	Arg	Leu		
				165					170					175			
Glu	Leu	Gly	His	Phe	Gly	Ile	Asp	Val	Val	Asn	Val	Val	Pro	Gly	Ala		
				180				185					190				
Ile	Thr	Ser	Asn	Ile	Ala	Asn	Asn	Ala	Leu	Ala	Asn	Tyr	Asn	Arg	Met		
				195				200				205					
Pro	Glu	Trp	Lys	Leu	Phe	Lys	Pro	Phe	Glu	Ala	Ala	Ile	Arg	Asp	Arg		
				210				215				220					
Ala	Ser	Leu	Ser	Gln	Gly	Ser	Lys	Ser	Thr	Pro	Ser	Glu	Glu	Phe	Ala		
225					230					235					240		
Lys	Asn	Thr	Val	Ala	Ala	Val	Leu	Lys	Lys	Asn	Pro	Pro	Ala	Trp	Phe		
				245					250					255			
Ser	Tyr	Gly	His	Tyr	Ser	Thr	Phe	Met	Ala	Ile	Met	Tyr	His	Leu	Pro		
				260				265					270				
Leu	Phe	Leu	Arg	Asp	Phe	Phe	Leu	Lys	Lys	Leu	Met	Lys	Cys				
				275				280					285				

&lt;210&gt; 2081

&lt;211&gt; 759

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(759)

&lt;400&gt; 2081

atg	gaa	acg	ccg	aag	aga	ttt	gaa	ggt	aag	gta	gcc	atc	gtg	act	gct	48	
Met	Glu	Thr	Pro	Lys	Arg	Phe	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Ala		
				5					10					15			
tcc	aca	cag	gga	atc	ggc	tta	gca	ata	gcc	gag	agg	ctt	ggc	ctc	gag	96	

## PhoenixTemp32470.tmp.txt

Ser	Thr	Gln	Gly 20	Ile	Gly	Leu	Ala	Ile 25	Ala	Glu	Arg	Leu	Gly 30	Leu	Glu		
ggt	gca	tct	gtc	gtc	atc	tct	tct	cgc	aaa	cag	caa	aat	ggt	gat	gcg		144
Gly	Ala	Ser 35	Val	Val	Ile	Ser	Ser 40	Arg	Lys	Gln	Gln	Asn 45	Val	Asp	Ala		
gcc	gcg	gaa	caa	ctg	agg	gcc	aaa	gga	att	caa	gtg	ttg	ggg	ggt	ggt		192
Ala	Ala	Glu 50	Gln	Leu	Arg	Ala 55	Lys	Gly	Ile	Gln	Val 60	Leu	Gly	Val	Val		
tgc	cat	ggt	tca	agt	gct	cag	caa	agg	aag	aat	ttg	atc	gac	aaa	act		240
Cys 65	His	Val	Ser	Ser	Ala 70	Gln	Gln	Arg	Lys	Asn 75	Leu	Ile	Asp	Lys	Thr 80		
gtc	cag	aag	tat	gga	aag	ata	gat	ggt	ggt	gtg	tcc	aat	gct	gct	gca		288
Val	Gln	Lys	Tyr	Gly 85	Lys	Ile	Asp	Val	Val 90	Val	Ser	Asn	Ala	Ala 95	Ala		
aat	cct	tct	ggt	gat	gcc	atc	ttg	caa	aca	aaa	gac	tcg	gtc	ctt	gac		336
Asn	Pro	Ser 100	Val	Asp	Ala	Ile	Leu	Gln 105	Thr	Lys	Asp	Ser	Val 110	Leu	Asp		
aag	cta	tgg	gag	ata	aat	gtc	aaa	gcc	act	ata	ctt	ctt	ctg	aag	gac		384
Lys	Leu	Trp 115	Glu	Ile	Asn	Val	Lys 120	Ala	Thr	Ile	Leu	Leu 125	Leu	Lys	Asp		
gca	gtg	cct	cac	ttg	cag	aag	ggt	tct	tct	ggt	ggt	atc	att	tcc	tca		432
Ala	Val	Pro 130	His	Leu	Gln	Lys 135	Gly	Ser	Ser	Val	Val 140	Ile	Ile	Ser	Ser		
att	gca	ggt	ttt	aac	ccg	cca	cct	tct	ctg	gct	atg	tat	gga	gtg	acc		480
Ile 145	Ala	Gly	Phe	Asn	Pro 150	Pro	Pro	Ser	Leu	Ala 155	Met	Tyr	Gly	Val	Thr 160		
aaa	aca	gcc	ctt	ctt	gga	ctt	act	aaa	gcc	ctg	gct	gct	gag	atg	gcc		528
Lys	Thr	Ala	Leu	Leu 165	Gly	Leu	Thr	Lys	Ala 170	Leu	Ala	Ala	Glu	Met 175	Ala		
cca	aac	act	cgt	gta	aac	tgt	ggt	gct	cct	ggt	ttt	gtg	cca	acc	aat		576
Pro	Asn	Thr 180	Arg	Val	Asn	Cys	Val	Ala 185	Pro	Gly	Phe	Val 190	Pro	Thr	Asn		
ttt	gct	tca	ttc	att	aca	agt	aac	gat	gct	gtg	aag	aaa	gaa	ctg	gaa		624
Phe	Ala	Ser 195	Phe	Ile	Thr	Ser	Asn 200	Asp	Ala	Val	Lys	Lys 205	Glu	Leu	Glu		
gag	aag	aca	tta	ctt	gga	agg	ctt	ggt	aca	aca	gaa	atg	ggt	gct			672
Glu	Lys	Thr 210	Leu	Leu	Gly	Arg 215	Leu	Gly	Thr	Thr	Glu 220	Asp	Met	Gly	Ala		
gca	gca	gct	ttt	ttg	gca	tct	gac	gat	gct	gct	tat	ata	aca	gga	gag		720
Ala	Ala	Ala	Phe	Leu	Ala 230	Ser	Asp	Asp	Ala	Ala 235	Tyr	Ile	Thr	Gly	Glu 240		
acc	att	gta	ggt	gct	ggg	gga	acg	cct	tcc	agg	ttg	tag					759
Thr	Ile	Val	Val	Ala 245	Gly	Gly	Thr	Pro	Ser 250	Arg	Leu						

&lt;210&gt; 2082

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2082

Met	Glu	Thr	Pro	Lys 5	Arg	Phe	Glu	Gly	Lys 10	Val	Ala	Ile	Val	Thr	Ala		
Ser	Thr	Gln	Gly 20	Ile	Gly	Leu	Ala	Ile 25	Ala	Glu	Arg	Leu	Gly 30	Leu	Glu		
Gly	Ala	Ser 35	Val	Val	Ile	Ser	Ser 40	Arg	Lys	Gln	Gln	Asn 45	Val	Asp	Ala		
Ala	Ala	Glu 50	Gln	Leu	Arg	Ala 55	Lys	Gly	Ile	Gln	Val 60	Leu	Gly	Val	Val		
Cys	His	Val	Ser	Ser	Ala 70	Gln	Gln	Arg	Lys	Asn 75	Leu	Ile	Asp	Lys	Thr 80		
Val	Gln	Lys	Tyr	Gly 85	Lys	Ile	Asp	Val	Val 90	Val	Ser	Asn	Ala	Ala 95	Ala		
Asn	Pro	Ser 100	Val	Asp	Ala	Ile	Leu	Gln 105	Thr	Lys	Asp	Ser	Val 110	Leu	Asp		
Lys	Leu	Trp 115	Glu	Ile	Asn	Val	Lys 120	Ala	Thr	Ile	Leu	Leu 125	Leu	Lys	Asp		
Ala	Val	Pro 130	His	Leu	Gln	Lys 135	Gly	Ser	Ser	Val	Val 140	Ile	Ile	Ser	Ser		

## PhoenixTemp32470.tmp.txt

```

Ile Ala Gly Phe Asn Pro Pro Pro Ser Leu Ala Met Tyr Gly Val Thr
145 150 155 160
Lys Thr Ala Leu Leu Gly Leu Thr Lys Ala Leu Ala Ala Glu Met Ala
165 170 175
Pro Asn Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr Asn
180 185 190
Phe Ala Ser Phe Ile Thr Ser Asn Asp Ala Val Lys Lys Glu Leu Glu
195 200 205
Glu Lys Thr Leu Leu Gly Arg Leu Gly Thr Thr Glu Asp Met Gly Ala
210 215 220
Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ala Tyr Ile Thr Gly Glu
225 230 235 240
Thr Ile Val Val Ala Gly Gly Thr Pro Ser Arg Leu
245 250

```

&lt;210&gt; 2083

&lt;211&gt; 885

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(885)

&lt;400&gt; 2083

```

atg gca agc aat aag gag tct aag ttc cca gca cag agc cag aaa act      48
Met Ala Ser Asn Lys 5 Glu Ser Lys Phe Pro 10 Ala Gln Ser Gln Lys 15 Thr
1
cag cca gga aaa gaa cat gta atg aat cca ctc cca caa gcc aca aat      96
Gln Pro Gly Lys 20 Glu His Val Met Asn 25 Pro Leu Pro Gln 30 Thr Asn
20
cct gat cac aag gcc gcc aat aaa ctc cag gga aag gtg gcg ttg gtg      144
Pro Asp His 35 Lys Ala Ala Asn Lys 40 Leu Gln Gly Lys 45 Val Ala Leu Val
35
aca gga ggt gac tca gga att ggc aga gcg gtt tgc ctg tgt ttc gca      192
Thr Gly 50 Gly Asp Ser Gly 55 Gly Arg Ala Val 60 Cys Leu Cys Phe Ala
50
aaa gag ggt gca acc gtg gcc ttt aca tac gta aag ggc cat gag gac      240
Lys 65 Glu Gly Ala Thr Val 70 Ala Phe Thr Tyr Val 75 Lys Gly His Glu Asp
65
agg gat aaa gat gat act ctg aag atg ctg ctt gaa gct aag aca agt      288
Arg Asp Lys Asp Asp 85 Thr Leu Lys Met Leu 90 Leu Glu Ala Lys Thr Ser
85
ggt gca gac aat cca ttg gca ata gca gcg gat att ggc ttt gat gag      336
Gly Ala Asp Asn 100 Pro Leu Ala Ile Ala 105 Ala Asp Ile Gly Phe Asp Glu
100
aac tgc aaa cag gtc att gac ctt gtt gtc aaa gaa tat ggc cgc ctt      384
Asn Cys Lys 115 Gln Val Ile Asp Leu 120 Val Val Lys Glu Tyr 125 Gly Arg Leu
115
gat gtt ctg gtc aac aat gca gct gag cag cat ttg aca aac tct gtt      432
Asp Val 130 Leu Val Asn Asn Ala 135 Ala Glu Gln His 140 Thr Asn Ser Val
130
gag gaa atc aca caa cag cag ctt gag aga gtc ttc gga acc aac atc      480
Glu Glu Ile Thr Gln 150 Gln Leu Glu Arg Val 155 Phe Gly Thr Asn Ile
145
ttt tct cag ttc ttt ttg gtc aag cat gct ctg aag cac atg aaa gaa      528
Phe Ser Gln Phe 165 Leu Val Lys His 170 Ala Leu Lys His Met Lys Glu
165
ggg agc tgc atc ata aac tct act tca gtt aat gca tac aat ggg aat      576
Gly Ser Cys 180 Ile Ile Asn Ser Thr 185 Ser Val Asn Ala Tyr Asn Gly Asn
180
cca gaa gcg ttg gac tac act gct acc aag gga gca att gtg gcc ttc      624
Pro Glu 195 Leu Asp Tyr Thr 200 Thr Lys Gly Ala 205 Val Ala Phe
195
acc aga ggt ctt tct cag cag cta gcg agt agg gga att agg gtg aat      672
Thr Arg 210 Gly Leu Ser Gln 215 Leu Ala Ser Arg Gly Ile Arg Val Asn
210
ggt gtg gca cct ggc cca gtt tgg acg cca ata caa cca gct tca aag      720
Gly Val Ala Pro Gly Pro Val Trp Thr Pro Ile Gln Pro Ala Ser Lys
215

```

## PhoenixTemp32470.tmp.txt

225	cct gct gag att	230	cag aac ttg ggg tgt	235	gag gtg cca atg aac	240	cgc	
Pro	Ala Glu Met	Ile	Gln Asn Leu Gly	Cys	Glu Val Pro Met	Asn	Arg	768
		245		250		255		
gtg gct cag cct	tgt gag att gca	cca	tgt tat ttg ttc	ttg	gca act			816
Val	Ala Gln Pro	Cys	Glu Ile Ala	Pro	Cys Tyr Leu Phe	Leu	Ala Thr	
		260		265		270		
tgt cag gac tct	tcc tac ttt act	ggc	caa gtc ctc	cat	cca aat ggt			864
Cys	Gln Asp Ser	Ser	Tyr Phe Thr	Gly	Gln Val Leu His	Pro	Asn Gly	
		275		280		285		
ggg atg gtc gtc	aac gct taa							885
Gly	Met Val Val	Asn	Ala					
		290						

<210> 2084  
 <211> 294  
 <212> PRT  
 <213> Glycine max

<400> 2084  
 Met Ala Ser Asn Lys Glu Ser Lys Phe Pro Ala Gln Ser Gln Lys Thr  
 1 5 10 15  
 Gln Pro Gly Lys Glu His Val Met Asn Pro Leu Pro Gln Ala Thr Asn  
 20 25 30  
 Pro Asp His Lys Ala Ala Asn Lys Leu Gln Gly Lys Val Ala Leu Val  
 35 40 45  
 Thr Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe Ala  
 50 55 60  
 Lys Glu Gly Ala Thr Val Ala Phe Thr Tyr Val Lys Gly His Glu Asp  
 65 70 75 80  
 Arg Asp Lys Asp Asp Thr Leu Lys Met Leu Leu Glu Ala Lys Thr Ser  
 85 90 95  
 Gly Ala Asp Asn Pro Leu Ala Ile Ala Asp Ile Gly Phe Asp Glu  
 100 105 110  
 Asn Cys Lys Gln Val Ile Asp Leu Val Val Lys Glu Tyr Gly Arg Leu  
 115 120 125  
 Asp Val Leu Val Asn Asn Ala Ala Glu Gln His Leu Thr Asn Ser Val  
 130 135 140  
 Glu Glu Ile Thr Gln Gln Gln Leu Glu Arg Val Phe Gly Thr Asn Ile  
 145 150 155 160  
 Phe Ser Gln Phe Phe Leu Val Lys His Ala Leu Lys His Met Lys Glu  
 165 170 175  
 Gly Ser Cys Ile Ile Asn Ser Thr Ser Val Asn Ala Tyr Asn Gly Asn  
 180 185 190  
 Pro Glu Ala Leu Asp Tyr Thr Ala Thr Lys Gly Ala Ile Val Ala Phe  
 195 200 205  
 Thr Arg Gly Leu Ser Gln Gln Leu Ala Ser Arg Gly Ile Arg Val Asn  
 210 215 220  
 Gly Val Ala Pro Gly Pro Val Trp Thr Pro Ile Gln Pro Ala Ser Lys  
 225 230 235 240  
 Pro Ala Glu Met Ile Gln Asn Leu Gly Cys Glu Val Pro Met Asn Arg  
 245 250 255  
 Val Ala Gln Pro Cys Glu Ile Ala Pro Cys Tyr Leu Phe Leu Ala Thr  
 260 265 270  
 Cys Gln Asp Ser Ser Tyr Phe Thr Gly Gln Val Leu His Pro Asn Gly  
 275 280 285  
 Gly Met Val Val Asn Ala  
 290

<210> 2085  
 <211> 768  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(768)

<400> 2085

## PhoenixTemp32470.tmp.txt

atg	gag	aga	acc	aaa	tat	ggc	aag	aga	ttt	caa	ggt	aag	gta	gcc	att	48
Met	Glu	Arg	Thr	Lys	Tyr	Gly	Lys	Arg	Phe	Gln	Gly	Lys	Val	Ala	Ile	
1				5					10					15		
gtg	aca	gct	tcc	acc	ctt	gga	att	ggc	ttt	agc	ata	gca	gag	agg	ctt	96
Val	Thr	Ala	Ser	Thr	Leu	Gly	Ile	Gly	Phe	Ser	Ile	Ala	Glu	Arg	Leu	
			20					25					30			
ggc	ttg	gag	ggt	gca	tct	ggt	gtc	atc	tct	tct	cgc	aaa	cag	caa	aat	144
Gly	Leu	Glu	Gly	Ala	Ser	Val	Val	Ile	Ser	Ser	Arg	Lys	Gln	Gln	Asn	
			35				40					45				
gtt	gat	gag	gct	gct	ggt	aaa	ctg	aga	gct	aaa	gga	atc	gaa	gta	ttg	192
Val	Asp	Glu	Ala	Ala	Gly	Lys	Leu	Arg	Ala	Lys	Gly	Ile	Glu	Val	Leu	
	50					55				60						
gcg	gtt	gtt	tgc	cac	gtt	tca	aat	gct	caa	caa	agg	aag	aat	ttg	ata	240
Ala	Val	Val	Cys	His	Val	Ser	Asn	Ala	Gln	Gln	Arg	Lys	Asn	Leu	Ile	
	65				70				75						80	
gac	aaa	act	tta	cag	aag	tat	gga	aag	ata	gat	gtt	gtt	gtg	tcc	aat	288
Asp	Lys	Thr	Leu	Gln	Lys	Tyr	Gly	Lys	Ile	Asp	Val	Val	Val	Ser	Asn	
				85					90					95		
gct	gcc	gta	cat	cct	tct	gta	gat	ccc	att	ttg	caa	aca	caa	gaa	tcg	336
Ala	Ala	Val	His	Pro	Ser	Val	Asp	Pro	Ile	Leu	Gln	Thr	Gln	Glu	Ser	
			100					105					110			
atc	ctt	gac	aag	ttg	tgg	gag	ata	aat	gtc	aaa	tcc	act	ata	ctt	ctt	384
Ile	Leu	Asp	Lys	Leu	Trp	Glu	Ile	Asn	Val	Lys	Ser	Thr	Ile	Leu	Leu	
			115				120					125				
ctc	aag	gat	gca	gct	cct	cac	ttg	aag	aag	ggt	tct	tct	gtt	gtt	ctc	432
Leu	Lys	Asp	Ala	Ala	Pro	His	Leu	Lys	Lys	Gly	Ser	Ser	Val	Val	Leu	
	130					135					140					
att	gcc	tca	ctt	gtt	gct	tat	aat	cca	cca	cct	act	atg	gct	atg	tat	480
Ile	Ala	Ser	Leu	Val	Ala	Tyr	Asn	Pro	Pro	Pro	Thr	Met	Ala	Met	Tyr	
	145				150					155					160	
gga	gtg	acc	aaa	aca	gca	gtt	ctt	gga	ctt	acc	aaa	gct	atg	gct	agt	528
Gly	Val	Thr	Lys	Thr	Ala	Val	Leu	Gly	Leu	Thr	Lys	Ala	Met	Ala	Ser	
			165					170					175			
gaa	atg	ggc	cct	aat	act	cgg	gtg	aat	tgt	gtt	gtt	cct	ggg	att	gtg	576
Glu	Met	Gly	Pro	Asn	Thr	Arg	Val	Asn	Cys	Val	Val	Pro	Gly	Ile	Val	
			180					185					190			
cca	act	cat	ttt	gtt	gca	ctt	tat	acc	tca	aat	gat	gct	aca	aga	gag	624
Pro	Thr	His	Phe	Val	Ala	Leu	Tyr	Thr	Ser	Asn	Asp	Gly	Ala	Thr	Glu	
			195				200					205				
gaa	ctt	gaa	aga	aag	gca	ttg	ctt	gga	agg	ctt	ggt	aca	act	gaa	gac	672
Glu	Leu	Glu	Arg	Lys	Ala	Leu	Leu	Gly	Arg	Leu	Gly	Thr	Thr	Glu	Asp	
	210					215					220					
atg	gct	gct	gcg	aca	gcg	ttt	ttg	gcg	tct	gat	gat	gct	tct	tac	ata	720
Met	Ala	Ala	Ala	Thr	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr	Ile	
	225				230					235					240	
aca	gga	gaa	aat	cta	gtg	gtt	tct	ggg	gga	atg	cct	tct	agg	ttg	tag	768
Thr	Gly	Glu	Asn	Leu	Val	Val	Ser	Gly	Gly	Met	Pro	Ser	Arg	Leu		
				245					250					255		

&lt;210&gt; 2086

&lt;211&gt; 255

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2086

Met	Glu	Arg	Thr	Lys	Tyr	Gly	Lys	Arg	Phe	Gln	Gly	Lys	Val	Ala	Ile	
1				5					10					15		
Val	Thr	Ala	Ser	Thr	Leu	Gly	Ile	Gly	Phe	Ser	Ile	Ala	Glu	Arg	Leu	
			20					25					30			
Gly	Leu	Glu	Gly	Ala	Ser	Val	Val	Ile	Ser	Ser	Arg	Lys	Gln	Gln	Asn	
			35				40					45				
Val	Asp	Glu	Ala	Ala	Gly	Lys	Leu	Arg	Ala	Lys	Gly	Ile	Glu	Val	Leu	
	50					55					60					
Ala	Val	Val	Cys	His	Val	Ser	Asn	Ala	Gln	Gln	Arg	Lys	Asn	Leu	Ile	
	65				70				75						80	
Asp	Lys	Thr	Leu	Gln	Lys	Tyr	Gly	Lys	Ile	Asp	Val	Val	Val	Ser	Asn	
				85					90					95		
Ala	Ala	Val	His	Pro	Ser	Val	Asp	Pro	Ile	Leu	Gln	Thr	Gln	Glu	Ser	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Ile Leu Asp Lys Leu Trp Glu Ile Asn Val Lys Ser Thr Ile Leu Leu  
 115 120 125  
 Leu Lys Asp Ala Ala Pro His Leu Lys Lys Gly Ser Ser Val Val Leu  
 130 135 140  
 Ile Ala Ser Leu Val Ala Tyr Asn Pro Pro Pro Thr Met Ala Met Tyr  
 145 150 155 160  
 Gly Val Thr Lys Thr Ala Val Leu Gly Leu Thr Lys Ala Met Ala Ser  
 165 170 175  
 Glu Met Gly Pro Asn Thr Arg Val Asn Cys Val Val Pro Gly Ile Val  
 180 185 190  
 Pro Thr His Phe Val Ala Leu Tyr Thr Ser Asn Asp Ala Thr Arg Glu  
 195 200 205  
 Glu Leu Glu Arg Lys Ala Leu Leu Gly Arg Leu Gly Thr Thr Glu Asp  
 210 215 220  
 Met Ala Ala Ala Thr Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile  
 225 230 235 240  
 Thr Gly Glu Asn Leu Val Val Ser Gly Gly Met Pro Ser Arg Leu  
 245 250 255

&lt;210&gt; 2087

&lt;211&gt; 804

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(804)

&lt;400&gt; 2087

atg gct gag gca agc att ggc agc aaa agc agc aga tgg tct tta cag	48
Met Ala Glu Ala Ser Ile Gly Ser Lys Ser Ser Arg Trp Ser Leu Gln	
1 5 10 15	
gga atg aca gct ctc gtc acc ggt gga tcc aaa gga atc gga tat gct	96
Gly Met Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Tyr Ala	
20 25 30	
atc gtg gag gag ttg gca cag ctt gga gcc act gtg cac act tgc gct	144
Ile Val Glu Glu Leu Ala Gln Leu Gly Ala Thr Val His Thr Cys Ala	
35 40 45	
cgg aac gaa gct gaa ctc aat gaa tcc tta aat gaa tgg aac aca aaa	192
Arg Asn Glu Ala Glu Leu Asn Glu Ser Leu Asn Glu Trp Asn Thr Lys	
50 55 60	
gga tac aga gta act ggt tcc gtc tgt gac gtg gcg tct cgt gca gaa	240
Gly Tyr Arg Val Thr Gly Ser Val Cys Asp Val Ala Ser Arg Ala Glu	
65 70 75 80	
aga caa gac ctc ata gct aga gtc tcc aat gag ttt aat ggc aaa ctc	288
Arg Gln Asp Leu Ile Ala Arg Val Ser Asn Glu Phe Asn Gly Lys Leu	
85 90 95	
aat atc ctt gta aac aac gtg gga aca aac gta ccg aaa cat acc ctt	336
Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Pro Lys His Thr Leu	
100 105 110	
gat gtt acg gag gaa gac ttc tca ttt ctg ata aat aca aat ctt gaa	384
Asp Val Thr Glu Glu Asp Phe Ser Phe Leu Ile Asn Thr Asn Leu Glu	
115 120 125	
tct gct tac cac cta agc cag ctt gca cat cct ctc ctg aaa gct tca	432
Ser Ala Tyr His Leu Ser Gln Leu Ala His Pro Leu Leu Lys Ala Ser	
130 135 140	
gag gct gca aac atc att ttt ata tcc tcc att gct ggt gtg cta tca	480
Glu Ala Ala Asn Ile Ile Phe Ile Ser Ser Ile Ala Gly Val Leu Ser	
145 150 155 160	
ata ggt ata gga tcc act tat ggt gca aca aaa gga gca atg aac caa	528
Ile Gly Ile Gly Ser Thr Tyr Gly Ala Thr Lys Gly Ala Met Asn Gln	
165 170 175	
ctg act aaa aat ttg gca tgt gag tgg gcc aaa gac aat ata agg act	576
Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg Thr	
180 185 190	
aat tgc gtt gca cca ggg cca atc aaa acc cct ctc ggt gac aag cat	624
Asn Cys Val Ala Pro Gly Pro Ile Lys Thr Pro Leu Gly Asp Lys His	
195 200 205	
ttt aaa aat gaa aaa ctt ctt aat gct ttc att tcg caa acc ccc ctt	672



## PhoenixTemp32470.tmp.txt

Phe	Lys	Asn	Glu	Lys	Leu	Leu	Asn	Ala	Phe	Ile	Ser	Gln	Thr	Pro	Leu		
210	210					215					220						
gga	cgg	att	gga	gaa	gca	gag	gaa	gtg	tct	tca	ttg	gtg	gca	ttc	ctc		720
Gly	Arg	Ile	Gly	Glu	Ala	Glu	Glu	Val	Ser	Ser	Leu	Val	Ala	Phe	Leu		
225					230					235					240		
tgc	tta	cct	gca	gcc	tct	tac	ata	aca	gga	cag	acc	att	tgt	gtt	gat		768
Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp		
				245					250					255			
ggt	gga	tta	aca	gtg	aat	ggt	ctc	tat	ata	aat	tag						804
Gly	Gly	Leu	Thr	Val	Asn	Gly	Leu	Tyr	Ile	Asn							
			260					265									

<210> 2088  
 <211> 267  
 <212> PRT  
 <213> Glycine max

Met	Ala	Glu	Ala	Ser	Ile	Gly	Ser	Lys	Ser	Ser	Arg	Trp	Ser	Leu	Gln		
1				5					10					15			
Gly	Met	Thr	Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Tyr	Ala		
			20					25					30				
Ile	Val	Glu	Glu	Leu	Ala	Gln	Leu	Gly	Ala	Thr	Val	His	Thr	Cys	Ala		
		35					40					45					
Arg	Asn	Glu	Ala	Glu	Leu	Asn	Glu	Ser	Leu	Asn	Glu	Trp	Asn	Thr	Lys		
	50					55					60						
Gly	Tyr	Arg	Val	Thr	Gly	Ser	Val	Cys	Asp	Val	Ala	Ser	Arg	Ala	Glu		
65					70				75						80		
Arg	Gln	Asp	Leu	Ile	Ala	Arg	Val	Ser	Asn	Glu	Phe	Asn	Gly	Lys	Leu		
			85					90						95			
Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Val	Pro	Lys	His	Thr	Leu		
		100					105						110				
Asp	Val	Thr	Glu	Glu	Asp	Phe	Ser	Phe	Leu	Ile	Asn	Thr	Asn	Leu	Glu		
		115					120					125					
Ser	Ala	Tyr	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser		
	130					135					140						
Glu	Ala	Ala	Asn	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Ala	Gly	Val	Leu	Ser		
145					150					155					160		
Ile	Gly	Ile	Gly	Ser	Thr	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln		
			165						170					175			
Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Thr		
		180						185					190				
Asn	Cys	Val	Ala	Pro	Gly	Pro	Ile	Lys	Thr	Pro	Leu	Gly	Asp	Lys	His		
	195						200					205					
Phe	Lys	Asn	Glu	Lys	Leu	Leu	Asn	Ala	Phe	Ile	Ser	Gln	Thr	Pro	Leu		
	210					215					220						
Gly	Arg	Ile	Gly	Glu	Ala	Glu	Val	Ser	Ser	Leu	Val	Ala	Phe	Leu			
225					230				235					240			
Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp		
				245					250					255			
Gly	Gly	Leu	Thr	Val	Asn	Gly	Leu	Tyr	Ile	Asn							
			260					265									

<210> 2089  
 <211> 843  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(843)

atg	tcc	act	act	ggt	act	gtt	ctg	gct	tcc	act	cca	aca	caa	agg	cta		48
Met	Ser	Thr	Thr	Gly	Thr	Val	Leu	Ala	Ser	Thr	Pro	Thr	Gln	Arg	Leu		
1				5				10						15			
tta	ggc	aaa	gtg	gca	ttg	gtt	act	ggt	gga	gcg	tct	gga	att	gga	gaa		96
Leu	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu		
			20					25					30				

## PhoenixTemp32470.tmp.txt

agc	att	gtg	cgc	ctc	ttc	cat	atc	cat	ggt	gct	aaa	ata	tgt	ata	gct	144
Ser	Ile	Val	Arg	Leu	Phe	His	Ile	His	Gly	Ala	Lys	Ile	Cys	Ile	Ala	
		35					40					45				
gat	gtg	caa	gac	aac	ctt	gga	aag	cag	gtc	tgt	cag	tct	ctt	ggt	gat	192
Asp	Val	Gln	Asp	Asn	Leu	Gly	Lys	Gln	Val	Cys	Gln	Ser	Leu	Gly	Asp	
	50					55				60						
gaa	gca	aat	gtt	gtt	ttt	gtc	cat	tgt	gat	gtt	aca	gta	gag	gat	gat	240
Glu	Ala	Asn	Val	Val	Phe	Val	His	Cys	Asp	Val	Thr	Val	Glu	Asp	Asp	
	65				70					75					80	
gtt	tcc	cat	gca	gtg	gac	ttc	act	gtg	ggt	aaa	ttt	ggc	acc	ctt	cac	288
Val	Ser	His	Ala	Val	Asp	Phe	Thr	Val	Gly	Lys	Phe	Gly	Thr	Leu	His	
				85					90					95		
atc	ata	gtc	aac	aat	gcc	gga	att	tct	gga	tca	cct	tgt	tcc	gat	atc	336
Ile	Ile	Val	Asn	Asn	Ala	Gly	Ile	Ser	Gly	Ser	Pro	Cys	Ser	Asp	Ile	
			100					105					110			
cgc	aat	gca	gac	tta	tca	gaa	ttc	gat	aag	gtg	ttt	agt	gta	aat	acg	384
Arg	Asn	Ala	Asp	Leu	Ser	Glu	Phe	Asp	Lys	Val	Phe	Ser	Val	Asn	Thr	
		115				120						125				
aag	gga	gtg	ttc	cac	ggg	atg	aaa	cac	gct	gct	cga	att	atg	atc	ccg	432
Lys	Gly	Val	Phe	His	Gly	Met	Lys	His	Ala	Ala	Arg	Ile	Met	Ile	Pro	
	130				135						140					
aag	aag	aag	ggc	tca	atc	att	tct	tta	tgc	agt	gta	gca	agt	gcc	ata	480
Lys	Lys	Lys	Gly	Ser	Ile	Ile	Ser	Leu	Cys	Ser	Val	Ala	Ser	Ala	Ile	
	145				150					155					160	
ggt	ggc	tta	gga	ccg	cat	gca	tac	aca	ggg	tcc	aag	tat	gct	gta	ttg	528
Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Thr	Gly	Ser	Lys	Tyr	Ala	Val	Leu	
				165					170					175		
ggg	ctc	aca	aag	aat	gtt	gca	gct	gaa	ttg	ggg	aaa	cat	gct	ata	aga	576
Gly	Leu	Thr	Lys	Asn	Val	Ala	Ala	Glu	Leu	Gly	Lys	His	Ala	Ile	Arg	
			180					185					190			
gtg	aac	tgt	gtg	tca	cct	tat	ggt	gtt	gca	aca	ggt	ttg	gcc	ttg	gct	624
Val	Asn	Cys	Val	Ser	Pro	Tyr	Gly	Val	Ala	Thr	Gly	Leu	Ala	Leu	Ala	
		195					200					205				
cat	ttg	cct	gag	gat	gag	aga	act	gat	gat	gcc	ttg	gtc	agt	ttt	cgt	672
His	Leu	Pro	Glu	Asp	Glu	Arg	Thr	Asp	Asp	Ala	Leu	Val	Ser	Phe	Arg	
						215					220					
gat	ttt	act	ggg	aga	atg	gcc	aac	ttg	cag	ggg	gta	gaa	tta	act	act	720
Asp	Phe	Thr	Gly	Arg	Met	Ala	Asn	Leu	Gln	Gly	Val	Glu	Leu	Thr	Thr	
					230				235						240	
cac	gat	gtg	gct	aat	gct	gtg	ctc	ttc	ctt	gca	agt	gat	gat	gct	aaa	768
His	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Lys	
				245					250					255		
tat	ata	agt	gga	gag	aat	ctc	atg	gtt	gat	gga	ggc	ttc	aca	agt	gca	816
Tyr	Ile	Ser	Gly	Glu	Asn	Leu	Met	Val	Asp	Gly	Gly	Phe	Thr	Ser	Ala	
			260					265					270			
aat	cac	tca	ctc	caa	gtt	ttt	aga	tga								843
Asn	His	Ser	Leu	Gln	Val	Phe	Arg									
		275					280									

&lt;210&gt; 2090

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2090

Met	Ser	Thr	Thr	Gly	Thr	Val	Leu	Ala	Ser	Thr	Pro	Thr	Gln	Arg	Leu	
1				5					10					15		
Leu	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			
Ser	Ile	Val	Arg	Leu	Phe	His	Ile	His	Gly	Ala	Lys	Ile	Cys	Ile	Ala	
			35				40					45				
Asp	Val	Gln	Asp	Asn	Leu	Gly	Lys	Gln	Val	Cys	Gln	Ser	Leu	Gly	Asp	
	50					55				60						
Glu	Ala	Asn	Val	Val	Phe	Val	His	Cys	Asp	Val	Thr	Val	Glu	Asp	Asp	
	65				70					75					80	
Val	Ser	His	Ala	Val	Asp	Phe	Thr	Val	Gly	Lys	Phe	Gly	Thr	Leu	His	
				85					90					95		
Ile	Ile	Val	Asn	Asn	Ala	Gly	Ile	Ser	Gly	Ser	Pro	Cys	Ser	Asp	Ile	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Arg Asn Ala Asp Leu Ser Glu Phe Asp Lys Val Phe Ser Val Asn Thr  
 115 120 125  
 Lys Gly Val Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro  
 130 135 140  
 Lys Lys Lys Gly Ser Ile Ile Ser Leu Cys Ser Val Ala Ser Ala Ile  
 145 150 155 160  
 Gly Gly Leu Gly Pro His Ala Tyr Thr Gly Ser Lys Tyr Ala Val Leu  
 165 170 175  
 Gly Leu Thr Lys Asn Val Ala Ala Glu Leu Gly Lys His Ala Ile Arg  
 180 185 190  
 Val Asn Cys Val Ser Pro Tyr Gly Val Ala Thr Gly Leu Ala Leu Ala  
 195 200 205  
 His Leu Pro Glu Asp Glu Arg Thr Asp Asp Ala Leu Val Ser Phe Arg  
 210 215 220  
 Asp Phe Thr Gly Arg Met Ala Asn Leu Gln Gly Val Glu Leu Thr Thr  
 225 230 235 240  
 His Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Asp Ala Lys  
 245 250 255  
 Tyr Ile Ser Gly Glu Asn Leu Met Val Asp Gly Gly Phe Thr Ala  
 260 265 270  
 Asn His Ser Leu Gln Val Phe Arg  
 275 280

<210> 2091  
 <211> 795  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(795)

<400> 2091  
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 Met Ala Glu Thr Lys Trp Val Met Lys Asp Lys Arg Trp Ser Leu His  
 1 5 10 15  
 gga atg aca gct cta gtc aca gga ggc acc cga ggc ata ggg cat gcc 96  
 Gly Met Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His Ala  
 20 25 30  
 att gtt gaa gag tta gct gag ttt gga gca act gtt cat ata tgt gca 144  
 Ile Val Glu Leu Ala Glu Phe Gly Ala Thr Val His Ile Cys Ala  
 35 40 45  
 cgt aat caa gat gat ata gat aaa tgt tta gaa gag tgg aaa agc aag 192  
 Arg Asn Gln Asp Asp Ile Asp Lys Cys Leu Glu Glu Trp Lys Ser Lys  
 50 55 60  
 gga ctt aat gtg act ggt tca gta tgt gat tta cta tgt tct gac caa 240  
 Gly Leu Asn Val Thr Gly Ser Val Cys Asp Leu Cys Ser Asp Gln  
 65 70 75 80  
 cgt aaa aga tta atg gaa att gtt ggc tcc atc ttt cat gga aag ctc 288  
 Arg Lys Arg Leu Met Glu Ile Val Gly Ser Ile Phe His Gly Lys Leu  
 85 90 95  
 aat att cta gtg aac aat gct gct aca aat ata aca aag aag ata aca 336  
 Asn Ile Leu Val Asn Asn Ala Thr Asn Ile Thr Lys Lys Ile Thr  
 100 105 110  
 gat tac aca gca gag gat ata tca gcc ata atg ggc acc aat ttt gag 384  
 Asp Tyr Thr Ala Glu Asp Ile Ser Ala Ile Met Gly Thr Asn Phe Glu  
 115 120 125  
 tcc gtt tac cat ttg tgt caa gtt gca cac cca ctt cta aaa gat tct 432  
 Ser Val Tyr His Leu Cys Gln Val Ala His Pro Leu Leu Lys Asp Ser  
 130 135 140  
 ggg aat ggg agc ata gta ttt att tct tcc gta gca ggt tta aaa gct 480  
 Gly Asn Gly Ser Ile Val Phe Ile Ser Ser Val Ala Gly Leu Lys Ala  
 145 150 155 160  
 ctt cct gtg ttc tct gtt tat gca gcc tct aaa gga gcc atg aat caa 528  
 Leu Pro Val Phe Ser Val Tyr Ala Ala Ser Lys Gly Ala Met Asn Gln  
 165 170 175  
 ttc acc aaa aac ttg gca ttg gaa tgg gca aag gat aat att cgt gca 576  
 Phe Thr Lys Asn Leu Ala Leu Glu Trp Ala Lys Asp Asn Ile Arg Ala  
 180 185 190

## PhoenixTemp32470.tmp.txt

aat gct gtt gcc cct gga cct gtt aag act aaa ctt ttg gag tgt atc	624
Asn Ala Val Ala Pro Gly Pro Val Lys Thr Lys Leu Leu Glu Cys Ile	
195 200 205	
gtg aat tct tcg gaa ggg aat gag tct ata aat gga gta gtg tct caa	672
Val Asn Ser Ser Glu Gly Asn Glu Ser Ile Asn Gly Val Val Ser Gln	
210 215 220	
aca ttt gtt ggt cgc atg gga gaa act aaa gag ata tca gca tta gtt	720
Thr Phe Val Gly Arg Met Gly Glu Thr Lys Glu Ile Ser Ala Leu Val	
225 230 235 240	
gct ttt ctt tgc ctt ccg gct gca tca tac atc act gga cag gtt ata	768
Ala Phe Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile	
245 250 255	
tgt gta gat ggg ggt ttc aca act tag	795
Cys Val Asp Gly Gly Phe Thr Thr	
260	

<210> 2092  
 <211> 264  
 <212> PRT  
 <213> Glycine max

<400> 2092

Met Ala Glu Thr Lys Trp Val Met Lys Asp Lys Arg Trp Ser Leu His	
1 5 10 15	
Gly Met Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His Ala	
20 25 30	
Ile Val Glu Glu Leu Ala Glu Phe Gly Ala Thr Val His Ile Cys Ala	
35 40 45	
Arg Asn Gln Asp Asp Ile Asp Lys Cys Leu Glu Glu Trp Lys Ser Lys	
50 55 60	
Gly Leu Asn Val Thr Gly Ser Val Cys Asp Leu Leu Cys Ser Asp Gln	
65 70 75 80	
Arg Lys Arg Leu Met Glu Ile Val Gly Ser Ile Phe His Gly Lys Leu	
85 90 95	
Asn Ile Leu Val Asn Asn Ala Ala Thr Asn Ile Thr Lys Lys Ile Thr	
100 105 110	
Asp Tyr Thr Ala Glu Asp Ile Ser Ala Ile Met Gly Thr Asn Phe Glu	
115 120 125	
Ser Val Tyr His Leu Cys Gln Val Ala His Pro Leu Leu Lys Asp Ser	
130 135 140	
Gly Asn Gly Ser Ile Val Phe Ile Ser Ser Val Ala Gly Leu Lys Ala	
145 150 155 160	
Leu Pro Val Phe Ser Val Tyr Ala Ala Ser Lys Gly Ala Met Asn Gln	
165 170 175	
Phe Thr Lys Asn Leu Ala Leu Glu Trp Ala Lys Asp Asn Ile Arg Ala	
180 185 190	
Asn Ala Val Ala Pro Gly Pro Val Lys Thr Lys Leu Leu Glu Cys Ile	
195 200 205	
Val Asn Ser Ser Glu Gly Asn Glu Ser Ile Asn Gly Val Val Ser Gln	
210 215 220	
Thr Phe Val Gly Arg Met Gly Glu Thr Lys Glu Ile Ser Ala Leu Val	
225 230 235 240	
Ala Phe Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile	
245 250 255	
Cys Val Asp Gly Gly Phe Thr Thr	
260	

<210> 2093  
 <211> 963  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(963)

<400> 2093

atg gct tcc att gcc gga tcc aac tgc gtc gct ctc cga acc gcc aac	48
Met Ala Ser Ile Ala Gly Ser Asn Cys Val Ala Leu Arg Thr Ala Asn	

## PhoenixTemp32470.tmp.txt

1	5	10	15	
ttc ggc gcc tcc ggt aac cgg aaa atc ggc cag atc cgc caa tgg tct	Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser	96		
ccg att ctc acg aat ctc cgt ccc gtt tcc ggt ctt cgt cac cga tcg	Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser	144		
aat act ccg ttt agc tcc tcc ggt gtg aga gca cag gtt gct act ctg	Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu	192		
gag gaa gca gga acc gga gca act cag aaa gtg gaa gcg ccg gtt gca	Glu Glu Ala Gly Thr Gly Ala Thr Gln Lys Val Glu Ala Pro Val Ala	240		
gtg gtg acc gga gct tcc aga ggc att ggc aaa gcg att gca ctg tca	Val Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser	288		
tta ggt aaa gca ggt tgc aag gtt ctg gtc aac tat gca agg tca tcc	Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser	336		
aag gaa gct gag gag gtt tcc aag gag att gag gag ttt ggt ggt caa	Lys Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Glu Phe Gly Gly Gln	384		
gct ctt aca ttt ggt gga gat gtt tct aac gag gat gac gtg gag tct	Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Asp Val Glu Ser	432		
atg att aaa act gca gtt gat gct tgg gga aca gtt gat gta tta ata	Met Ile Lys Thr Ala Val Asp Ala Trp Gly Thr Val Asp Val Leu Ile	480		
aac aat gca gga ata act aga gat ggt tta tta atg aga atg aag aaa	Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Leu Met Arg Met Lys Lys	528		
tct caa tgg cag gat gtt att gat cta aat ctc act ggt gtt ttt ctt	Ser Gln Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu	576		
tgc acc cag gct gct aag att atg atg aag aaa aga aag gga aga	Cys Thr Gln Ala Ala Lys Ile Met Met Lys Lys Arg Lys Gly Arg	624		
att gtc aat att gca tca gtt gtt ggt ttg gtt ggc aat gtt gga caa	Ile Val Asn Ile Ala Ser Val Val Gly Leu Val Gly Asn Val Gly Gln	672		
gcc aat tat agt gct gcg aaa gca gga gta att ggc ctg aca aaa act	Ala Asn Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Thr	720		
gtt gca aag gaa tat gct agc aga aac atc act gtt aat gca gtt gct	Val Ala Lys Glu Tyr Ala Ser Arg Asn Ile Thr Val Asn Ala Val Ala	768		
cca ggg ttt att gca tcc gac atg act gcc aag cta gga caa gac att	Pro Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Gln Asp Ile	816		
gag aaa aag att ttg gag acg atc cca tta gga aga tat ggc caa cca	Glu Lys Lys Ile Leu Glu Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro	864		
gaa gaa gtt gcc gga ctg gtt gaa ttc ttg gct ctt aat caa gct gcc	Glu Glu Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Gln Ala Ala	912		
agt tac atc act ggg cag gtt ttc acc att gat gga ggt atg gtg atg	Ser Tyr Ile Thr Gly Gln Val Phe Thr Ile Asp Gly Gly Met Val Met	960		
taa		963		

<210> 2094  
 <211> 320  
 <212> PRT  
 <213> Glycine max

<400> 2094  
 Met Ala Ser Ile Ala Gly Ser Asn Cys Val Ala Leu Arg Thr Ala Asn  
 Page 1366

## PhoenixTemp32470.tmp.txt

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1      5      10      15
Phe Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser
20      25      30
Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser
35      40      45
Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu
50      55      60
Glu Glu Ala Gly Thr Gly Ala Thr Gln Lys Val Glu Ala Pro Val Ala
65      70      75      80
Val Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser
85      90      95
Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser
100      105      110
Lys Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Glu Phe Gly Gly Gln
115      120      125
Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Asp Asp Val Glu Ser
130      135      140
Met Ile Lys Thr Ala Val Asp Ala Trp Gly Thr Val Asp Val Leu Ile
145      150      155      160
Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Leu Met Arg Met Lys Lys
165      170      175
Ser Gln Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu
180      185      190
Cys Thr Gln Ala Ala Ala Lys Ile Met Met Lys Lys Arg Lys Gly Arg
195      200      205
Ile Val Asn Ile Ala Ser Val Val Gly Leu Val Gly Asn Val Gly Gln
210      215      220
Ala Asn Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Thr
225      230      235      240
Val Ala Lys Glu Tyr Ala Ser Arg Asn Ile Thr Val Asn Ala Val Ala
245      250      255
Pro Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Gln Asp Ile
260      265      270
Glu Lys Lys Ile Leu Glu Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro
275      280      285
Glu Glu Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Gln Ala Ala
290      295      300
Ser Tyr Ile Thr Gly Gln Val Phe Thr Ile Asp Gly Gly Met Val Met
305      310      315      320

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<210> 2095  
 <211> 810  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(810)

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<400> 2095
atg gca agt att tct act gtc tcg gtt ctt gat aga agg ctt gaa ggg      48
Met Ala Ser Ile Ser Thr Val Ser Val Leu Asp Arg Arg Leu Glu Gly
1      5      10      15
aaa gtg gct ctt atc agt ggt ggt gct agc ggt ata ggt gag gcc act      96
Lys Val Ala Leu Ile Ser Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr
20      25      30
gca aga ctc ttc tct aag cat gga gca cac gtt gtg ata gct gat att      144
Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile
35      40      45
caa gac gat ttg ggt ctc tct ctt tgc aaa cac ttg gaa tcc gct tcc      192
Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser
50      55      60
tat gtc cat tgc gat gtc aca aac gaa aac gac gtt caa aac gcc gtt      240
Tyr Val His Cys Asp Val Thr Asn Glu Asn Asp Val Gln Asn Ala Val
65      70      75      80
aac aca gcg att tcc aag tat ggc aat cta gat atc atg ttt aat aat      288
Asn Thr Ala Ile Ser Lys Tyr Gly Asn Leu Asp Ile Met Phe Asn Asn
85      90      95
gct ggc ata att gat gag ata aaa aca agc ata ctt gac aac agc aag      336

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## PhoenixTemp32470.tmp.txt

Ala	Gly	Ile	Ile	Asp	Glu	Ile	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Ser	Lys		
100								105					110				
ttt	gat	ttt	gag	aga	gtg	ata	agt	gtg	aac	ttg	ggt	cct	ttt	ctg		384	
Phe	Asp	Phe	Glu	Arg	Val	Ile	Ser	Val	Asn	Leu	Val	Gly	Pro	Phe	Leu		
115							120					125					
gga	aca	aag	cac	gct	gct	agg	gtt	atg	att	cct	gct	aaa	agg	gga	agc	432	
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Arg	Gly	Ser		
130						135					140						
ata	att	aac	act	gct	agt	gtt	gct	gga	acc	ttt	agt	gga	ggg	gct	tca	480	
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Thr	Phe	Ser	Gly	Gly	Ala	Ser		
145					150					155					160		
cat	gcc	tac	aca	agt	tca	aag	cac	gca	cta	att	gga	ctg	atg	aaa	aac	528	
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Met	Lys	Asn		
				165					170					175			
act	gcg	gtg	gag	ctt	gga	cag	ttt	ggg	att	agg	gta	aat	tgc	ttg	tcc	576	
Thr	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser		
			180					185					190				
cct	tat	gtg	gtt	gcc	aca	cca	ttg	act	aag	aaa	tgt	ttc	aat	ctt	gat	624	
Pro	Tyr	Val	Val	Ala	Thr	Pro	Leu	Thr	Lys	Lys	Cys	Phe	Asn	Leu	Asp		
			195				200					205					
gaa	gac	cga	aat	ggg	gag	att	tat	tcc	aac	cta	aaa	ggg	gtt	cat	ctt	672	
Glu	Asp	Arg	Asn	Gly	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Val	His	Leu		
210						215					220						
gtg	cca	aac	gat	gtg	gcc	gaa	gct	gct	cta	tat	ttg	gca	ggg	gat	gag	720	
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu		
225					230					235					240		
tca	aag	tat	gtt	agt	ggg	cac	aat	ctt	gtg	tta	gat	gga	ggg	ttc	acc	768	
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Leu	Asp	Gly	Gly	Phe	Thr		
				245					250					255			
aat	cta	aat	gta	ttt	tct	gtg	ttt	ggg	cag	tct	gag	taa				810	
Asn	Leu	Asn	Val	Gly	Phe	Ser	Val	Phe	Gly	Gln	Ser	Glu					
			260				265										

&lt;210&gt; 2096

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2096

Met	Ala	Ser	Ile	Ser	Thr	Val	Ser	Val	Leu	Asp	Arg	Arg	Leu	Glu	Gly		
1				5					10					15			
Lys	Val	Ala	Leu	Ile	Ser	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr		
			20					25					30				
Ala	Arg	Leu	Phe	Ser	Lys	His	Gly	Ala	His	Val	Val	Ile	Ala	Asp	Ile		
		35					40					45					
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Leu	Cys	Lys	His	Leu	Glu	Ser	Ala	Ser		
		50				55					60						
Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Glu	Asn	Asp	Val	Gln	Asn	Ala	Val		
65					70					75					80		
Asn	Thr	Ala	Ile	Ser	Lys	Tyr	Gly	Asn	Leu	Asp	Ile	Met	Phe	Asn	Asn		
				85					90					95			
Ala	Gly	Ile	Ile	Asp	Glu	Ile	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Ser	Lys		
			100					105					110				
Phe	Asp	Phe	Glu	Arg	Val	Ile	Ser	Val	Asn	Leu	Val	Gly	Pro	Phe	Leu		
		115					120					125					
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Arg	Gly	Ser		
		130				135					140						
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Thr	Phe	Ser	Gly	Gly	Ala	Ser		
145					150					155					160		
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Met	Lys	Asn		
				165					170					175			
Thr	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser		
			180					185					190				
Pro	Tyr	Val	Val	Ala	Thr	Pro	Leu	Thr	Lys	Lys	Cys	Phe	Asn	Leu	Asp		
		195					200					205					
Glu	Asp	Arg	Asn	Gly	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Val	His	Leu		
		210				215					220						
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu		
225					230				235						240		

Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Thr  
 245 250 255  
 Asn Leu Asn Val Gly Phe Ser Val Phe Gly Gln Ser Glu  
 260 265

<210> 2097  
 <211> 816  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(816)

<400> 2097  
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 Met Ala Asn Pro Glu Gly Ser Ser Arg Gly Ser Arg Trp Ser Leu Lys  
 1 5 10 15  
 gga acc act gct ctc gtt act gga gga acg cgt gga att ggg cac gct 96  
 Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His Ala  
 20 25 30  
 gtg gtg gag gaa cta gcg gag ttt ggt gcc aca gtg tac act tgt tcg 144  
 Val Val Glu Glu Leu Ala Glu Phe Gly Ala Thr Val Tyr Thr Cys Ser  
 35 40 45  
 agg aat gaa gaa gag ctg aat gca tgc ttg aag gag tgg aaa gag aag 192  
 Arg Asn Glu Glu Glu Leu Asn Ala Cys Leu Lys Glu Trp Lys Glu Lys  
 50 55 60  
 gga ttt tcg gtt tct ggg ttg gtt tgt gat gcg tct tct cca ccc cat 240  
 Gly Phe Ser Val Ser Gly Leu Val Cys Asp Ala Ser Ser Pro Pro His  
 65 70 75 80  
 aga gag aac ctc att caa caa gtg gcc tct gct ttc aac ggc aag ctc 288  
 Arg Glu Asn Leu Ile Gln Gln Val Ala Ser Ala Phe Asn Gly Lys Leu  
 85 90 95  
 aac ata ctt gta aac aat gtt gga aca aat gtg agg aag ccg aca att 336  
 Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Arg Lys Pro Thr Ile  
 100 105 110  
 gag tat aca gcc gaa gaa tat tca aaa ttg atg gca act aac ttg gac 384  
 Glu Tyr Thr Ala Glu Glu Tyr Ser Lys Leu Met Ala Thr Asn Leu Asp  
 115 120 125  
 tcc aca tac cat ttg tgc caa ctt gca tat cct ctt ctt aaa gca tct 432  
 Ser Thr Tyr His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala Ser  
 130 135 140  
 gga aat gga agt att gtg tcc att tcc tct gtt gca agt cag aca agc 480  
 Gly Asn Gly Ser Ile Val Ser Ile Ser Ser Val Ala Ser Gln Thr Ser  
 145 150 155 160  
 gta ggt tct gga gcc att tac gca gca act aaa gct gct att gat cag 528  
 Val Gly Ser Gly Ala Ile Tyr Ala Ala Thr Lys Ala Ala Ile Asp Gln  
 165 170 175  
 ctt acc aaa tat ttt gct tgt gaa tgg gca aaa gac aat ata agg agc 576  
 Leu Thr Lys Tyr Phe Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg Ser  
 180 185 190  
 aac ggt gtt gca ccc tgg tat acc ata act tca ctt gtg gaa cct ttg 624  
 Asn Gly Val Ala Pro Trp Tyr Thr Ile Thr Ser Leu Val Glu Pro Leu  
 195 200 205  
 ctt gcg aac aaa cag ctt gtt agt gag ata ata tct cga acg ccg ata 672  
 Leu Ala Asn Lys Gln Leu Val Ser Glu Ile Ile Ser Arg Thr Pro Ile  
 210 215 220  
 aag cgg atg gca gaa aca cat gaa gtt tca tcc ttg gtg act ttc ctt 720  
 Lys Arg Met Ala Glu Thr His Glu Val Ser Ser Leu Val Thr Phe Leu  
 225 230 235 240  
 tgc ctg cca gca gca tcc tac atc act gga cag att gtt tca gtt gat 768  
 Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Ile Val Ser Val Asp  
 245 250 255  
 gga gga ttc act gct aat gga ttt caa ccc agc atg aga att tct taa 816  
 Gly Gly Phe Thr Ala Asn Gly Phe Gln Pro Ser Met Arg Ile Ser  
 260 265 270

<210> 2098  
 <211> 271



&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2098

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Met Ala Asn Pro Glu Gly Ser Ser Arg Gly Ser Arg Trp Ser Leu Lys
1      5      10      15
Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His Ala
20      25      30
Val Val Glu Glu Leu Ala Glu Phe Gly Ala Thr Val Tyr Thr Cys Ser
35      40      45
Arg Asn Glu Glu Glu Leu Asn Ala Cys Leu Lys Glu Trp Lys Glu Lys
50      55      60
Gly Phe Ser Val Ser Gly Leu Val Cys Asp Ala Ser Ser Pro Pro His
65      70      75      80
Arg Glu Asn Leu Ile Gln Gln Val Ala Ser Ala Phe Asn Gly Lys Leu
85      90      95
Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Arg Lys Pro Thr Ile
100      105      110
Glu Tyr Thr Ala Glu Glu Tyr Ser Lys Leu Met Ala Thr Asn Leu Asp
115      120      125
Ser Thr Tyr His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala Ser
130      135      140
Gly Asn Gly Ser Ile Val Ser Ile Ser Ser Val Ala Ser Gln Thr Ser
145      150      155      160
Val Gly Ser Gly Ala Ile Tyr Ala Ala Thr Lys Ala Ala Ile Asp Gln
165      170      175
Leu Thr Lys Tyr Phe Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg Ser
180      185      190
Asn Gly Val Ala Pro Trp Tyr Thr Ile Thr Ser Leu Val Glu Pro Leu
195      200      205
Leu Ala Asn Lys Gln Leu Val Ser Glu Ile Ile Ser Arg Thr Pro Ile
210      215      220
Lys Arg Met Ala Glu Thr His Glu Val Ser Ser Leu Val Thr Phe Leu
225      230      235      240
Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Ile Val Ser Val Asp
245      250      255
Gly Gly Phe Thr Ala Asn Gly Phe Gln Pro Ser Met Arg Ile Ser
260      265      270

```

&lt;210&gt; 2099

&lt;211&gt; 963

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(963)

&lt;400&gt; 2099

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atg gct tcc att gcc gga tcc aac tgc gtc gct ctc cga acc gcc aac      48
Met Ala Ser Ile Ala Gly Ser Asn Cys Val Ala Leu Arg Thr Ala Asn
1      5      10      15
ttc ggc gcc tcc ggt aac cgg aaa atc ggc cag atc cgc caa tgg tct      96
Phe Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser
20      25      30
ccg att ctc acg aat ctc cgt ccc gtt tcc ggt ctt cgt cac cga tcg      144
Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser
35      40      45
aat act ccg ttt agc tcc tcc ggt gtg aga gca cag gtt gct act ctg      192
Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu
50      55      60
gag gaa gca gga acc gga gca act cag aaa gtg gaa gcg ccg gtt gca      240
Glu Glu Ala Gly Thr Gly Ala Thr Gln Lys Val Glu Ala Pro Val Ala
65      70      75      80
gtg gtg acc gga gct tcc aga ggc att ggc aaa gcg att gca ctg tca      288
Val Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser
85      90      95
tta ggt aaa gca ggt tgc aag gtt ctg gtc aac tat gca agg tca tcc      336
Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser

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## PhoenixTemp32470.tmp.txt

			100					105				110							
aag	gaa	gct	gag	gag	ggt	tcc	aag	gag	att	gag	gag	ttt	ggt	caa					384
Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Glu	Phe	Gly	Gly	Gln				
		115					120					125							
gct	ctt	aca	ttt	ggt	gga	gat	ggt	tct	aac	gag	gct	gat	gtg	gag	tct				432
Ala	Leu	Thr	Phe	Gly	Gly	Asp	Val	Ser	Asn	Glu	Ala	Asp	Val	Glu	Ser				
		130					135					140							
atg	att	aaa	act	gca	ggt	gat	gct	tgg	gga	aca	ggt	gat	gta	tta	ata				480
Met	Ile	Lys	Thr	Ala	Val	Asp	Ala	Trp	Gly	Thr	Val	Asp	Val	Leu	Ile				
145					150					155					160				
aac	aat	gca	gga	ata	act	aga	gat	ggt	tta	tta	atg	aga	atg	aag	aaa				528
Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Lys				
				165					170					175					
tct	caa	tgg	cag	gat	ggt	att	gat	cta	aat	ctc	act	ggt	ggt	ttt	ctt				576
Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu				
			180					185					190						
tgc	acc	cag	gct	gct	gct	aag	att	atg	atg	aag	aaa	aga	aag	gga	aga				624
Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys	Gly	Arg				
		195					200					205							
att	gtc	aat	att	gca	tca	ggt	ggt	ggt	ttg	ggt	ggc	aat	ggt	gga	caa				672
Ile	Val	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Gly	Asn	Val	Gly	Gln				
		210				215					220								
gcc	aat	tat	agt	gct	gca	aaa	gca	gga	gta	att	ggc	ctg	aca	aaa	act				720
Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr				
225				230					235						240				
ggt	gcg	aag	gaa	tat	gct	agc	aga	aac	atc	act	ggt	aat	gca	ggt	gct				768
Val	Ala	Lys	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala				
				245				250						255					
cca	ggg	ttt	att	gca	tct	gac	atg	act	gcc	aag	cta	gga	caa	gac	att				816
Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Gln	Asp	Ile				
			260					265					270						
gag	aaa	aag	att	ttg	gag	acg	atc	cca	tta	gga	aga	tat	ggc	caa	cca				864
Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro				
		275					280					285							
gag	gaa	ggt	gct	gga	ctg	ggt	gaa	ttc	ttg	gct	ctt	aat	caa	gct	gcc				912
Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Gln	Ala	Ala				
		290				295					300								
agt	tac	atc	act	ggg	cag	ggt	ttc	acc	att	gat	gga	ggt	atg	gtg	atg				960
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Phe	Thr	Ile	Asp	Gly	Gly	Met	Val	Met				
305					310					315					320				
taa																			963

<210> 2100  
 <211> 320  
 <212> PRT  
 <213> Glycine max

<400> 2100  
 Met Ala Ser Ile Ala Gly Ser Asn Cys Val Ala Leu Arg Thr Ala Asn  
 1 5 10 15  
 Phe Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser  
 20 25 30  
 Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser  
 35 40 45  
 Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu  
 50 55 60  
 Glu Glu Ala Gly Thr Gly Ala Thr Gln Lys Val Glu Ala Pro Val Ala  
 65 70 75 80  
 Val Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser  
 85 90 95  
 Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser  
 100 105 110  
 Lys Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Glu Phe Gly Gly Gln  
 115 120 125  
 Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Ala Asp Val Glu Ser  
 130 135 140  
 Met Ile Lys Thr Ala Val Asp Ala Trp Gly Thr Val Asp Val Leu Ile

## PhoenixTemp32470.tmp.txt

145	Asn	Asn	Ala	Gly	Ile	150	Thr	Arg	Asp	Gly	Leu	155	Leu	Met	Arg	Met	Lys	160	Lys
					165							170					175		
	Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu			
				180						185					190				
	Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys	Gly	Arg			
			195					200						205					
	Ile	Val	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Gly	Asn	Val	Gly	Gln			
		210					215					220							
	Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr			
		225			230						235					240			
	Val	Ala	Lys	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala			
				245						250					255				
	Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Gln	Asp	Ile			
				260					265					270					
	Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro			
			275					280					285						
	Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Gln	Ala	Ala			
		290				295						300							
	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Phe	Thr	Ile	Asp	Gly	Gly	Met	Val	Met			
		305			310						315					320			

<210> 2101  
 <211> 822  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(822)

<400> 2101	
atg gga agt gtt cca ttg gcc tcc gct gct gct ctt gcc aga agg cta	48
Met Gly Ser Val Pro 5 Leu Ala Ser Ala Ala Leu Ala Arg Arg Leu	
1 10 15	
gaa ggg aag gtg gca ctg ata act ggt gga gca agt ggt ata ggt gag	96
Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu	
20 25 30	
tgc aca gca aga ctt ttc tcc aag cat gga gcc aaa gtg gtg att gct	144
Cys Thr Ala Arg Leu Phe Ser Lys His Gly Ala Lys Val Val Ile Ala	
35 40 45	
gat atc caa gac gag tta ggc cac tca att tgc aaa gac ttg gat tca	192
Asp Ile Gln Asp Glu Leu Gly His Ser Ile Cys Lys Asp Leu Asp Ser	
50 55 60	
tct tca gct act tac att cat tgt gat gtc aca aaa gaa gaa aac atc	240
Ser Ser Ala Thr Tyr Ile His Cys Asp Val Thr Lys Glu Glu Asn Ile	
65 70 75 80	
gaa cac gcc gtg aac acg acc gtt tcc aag tac ggt aaa cta gac atc	288
Glu His Ala Val Asn Thr Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile	
85 90 95	
atg cac agc agc gca ggt ata gtt ggc gca tgg aac ccc agc ata ttg	336
Met His Ser Ser Ala Gly Ile Val Gly Ala Trp Asn Pro Ser Ile Leu	
100 105 110	
cac aac aag aag tct cac ttt gag caa gtt atc agt gtc aac ctg gtg	384
His Asn Lys Lys Ser His Phe Glu Gln Val Ile Ser Val Asn Leu Val	
115 120 125	
ggc aca ttc ctg gga atc aag cac gcc gcg agg gtg atg atc cct tct	432
Gly Thr Phe Leu Gly Ile Lys His Ala Ala Arg Val Met Ile Pro Ser	
130 135 140	
ggg cgt ggc agc ata gtt gca atg gct agc att tgt gga aga att ggt	480
Gly Arg Gly Ser Ile Val Ala Met Ala Ser Ile Cys Gly Arg Ile Gly	
145 150 155 160	
ggc gtg gct tcg cat gcc tat acg agc tcg aag cac ggc atc gtg gga	528
Gly Val Ala Ser His Ala Tyr Thr Ser Ser Lys His Gly Ile Val Gly	
165 170 175	
ctg gtg cga aac act gcc gtg gag ctt gga acc tta ggg atc aga gtg	576
Leu Val Arg Asn Thr Ala Val Glu Leu Gly Thr Leu Gly Ile Arg Val	
180 185 190	
aat agt gtg tct cct tat gcg gtc cct acg ccc atg agt aaa act ttc	624

PhoenixTemp32470.tmp.txt

Asn	Ser	Val	Ser	Pro	Tyr	Ala	Val	Pro	Thr	Pro	Met	Ser	Lys	Thr	Phe	
ctc	aac	act	gat	gat	gag	ggg	att	gct	gca	ctg	tat	tcc	aat	ctt	aaa	672
Leu	Asn	Thr	Asp	Asp	Glu	Gly	Ile	Ala	Ala	Leu	Tyr	Ser	Asn	Leu	Lys	
	210					215					220					
ggg	act	gtt	ctt	aag	ccc	cag	gat	gtg	gct	gaa	gct	gtt	ctt	tac	ttg	720
Gly	Thr	Val	Leu	Lys	Pro	Gln	Asp	Val	Ala	Glu	Ala	Val	Leu	Tyr	Leu	
225					230					235					240	
gga	agt	gac	gag	tcc	aag	tat	gtt	agt	ggc	cat	gac	ctt	gtt	gta	gat	768
Gly	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	His	Asp	Leu	Val	Val	Asp	
				245					250					255		
ggg	ggt	ttc	act	gtc	gta	aac	cct	ggt	ttg	tgt	gtg	ttt	ggg	caa	tcc	816
Gly	Gly	Phe	Thr	Val	Val	Asn	Pro	Gly	Leu	Cys	Val	Phe	Gly	Gln	Ser	
			260					265					270			
gtg	tag															822
Val																

<210> 2102  
 <211> 273  
 <212> PRT  
 <213> Glycine max

<400> 2102

Met	Gly	Ser	Val	Pro	Leu	Ala	Ser	Ala	Ala	Ala	Leu	Ala	Arg	Arg	Leu	
1				5					10				15			
Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			
Cys	Thr	Ala	Arg	Leu	Phe	Ser	Lys	His	Gly	Ala	Lys	Val	Val	Ile	Ala	
			35				40					45				
Asp	Ile	Gln	Asp	Glu	Leu	Gly	His	Ser	Ile	Cys	Lys	Asp	Leu	Asp	Ser	
	50					55					60					
Ser	Ser	Ala	Thr	Tyr	Ile	His	Cys	Asp	Val	Thr	Lys	Glu	Glu	Asn	Ile	
65					70					75				80		
Glu	His	Ala	Val	Asn	Thr	Thr	Val	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	
				85					90					95		
Met	His	Ser	Ser	Ala	Gly	Ile	Val	Gly	Ala	Trp	Asn	Pro	Ser	Ile	Leu	
			100					105					110			
His	Asn	Lys	Lys	Ser	His	Phe	Glu	Gln	Val	Ile	Ser	Val	Asn	Leu	Val	
		115					120					125				
Gly	Thr	Phe	Leu	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ser	
	130					135					140					
Gly	Arg	Gly	Ser	Ile	Val	Ala	Met	Ala	Ser	Ile	Cys	Gly	Arg	Ile	Gly	
145					150					155					160	
Gly	Val	Ala	Ser	His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Gly	Ile	Val	Gly	
				165					170					175		
Leu	Val	Arg	Asn	Thr	Ala	Val	Glu	Leu	Gly	Thr	Leu	Gly	Ile	Arg	Val	
			180					185					190			
Asn	Ser	Val	Ser	Pro	Tyr	Ala	Val	Pro	Thr	Pro	Met	Ser	Lys	Thr	Phe	
		195					200					205				
Leu	Asn	Thr	Asp	Asp	Glu	Gly	Ile	Ala	Ala	Leu	Tyr	Ser	Asn	Leu	Lys	
	210					215					220					
Gly	Thr	Val	Leu	Lys	Pro	Gln	Asp	Val	Ala	Glu	Ala	Val	Leu	Tyr	Leu	
225					230					235					240	
Gly	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	His	Asp	Leu	Val	Val	Asp	
				245					250					255		
Gly	Gly	Phe	Thr	Val	Val	Asn	Pro	Gly	Leu	Cys	Val	Phe	Gly	Gln	Ser	
			260					265					270			
Val																

<210> 2103  
 <211> 819  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(819)

## PhoenixTemp32470.tmp.txt

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<400> 2103
atg gca gaa gca gga agc agc att aac aga gga gca aga tgg tct ctc      48
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1      5      10      15
aat gga acg acg gct ctc gtc acc ggc ggc acc cgt ggg atc ggg cac      96
Asn Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His
20      25      30
gcc ata gtg agt gac ttg gcc gcg ttt ggc gct gct gtg cac act tgc      144
Ala Ile Val Ser Asp Leu Ala Ala Phe Gly Ala Ala Val His Thr Cys
35      40      45
tcc agg acc caa aca gag ctc aac aaa tgc tta caa gag tgg cag agt      192
Ser Arg Thr Gln Thr Glu Leu Asn Lys Cys Leu Gln Glu Trp Gln Ser
50      55      60
ctg ggc ttt cag gta act ggg tcg gtg tgt gac gtg tcc tca cca tcc      240
Leu Gly Phe Gln Val Thr Gly Ser Val Cys Asp Val Ser Ser Pro Ser
65      70      75
cag aga gag aag ctc att gag gaa gtc act tcc atc ttg aat ggc aag      288
Gln Arg Glu Lys Leu Ile Glu Glu Val Thr Ser Ile Leu Asn Gly Lys
85      90      95
ctt aac atc tat gtg aac aat gtt gga aca aac ttt aga aag cca acc      336
Leu Asn Ile Tyr Val Asn Asn Val Gly Thr Asn Phe Arg Lys Pro Thr
100      105      110
att gag tac act gct gaa gaa tat tca cag ctt atg aca gtt aat tta      384
Ile Glu Tyr Thr Ala Glu Glu Tyr Ser Gln Leu Met Thr Val Asn Leu
115      120      125
gac tcc tca ttc cat ctg tgc caa ctt gca tat cct ctt ctg aaa gca      432
Asp Ser Ser Phe His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala
130      135      140
tct gaa aat gga agc att gtg ttt att tca tct gtt gct ggt gtg gtg      480
Ser Glu Asn Gly Ser Ile Val Phe Ile Ser Ser Val Ala Gly Val Val
145      150      155
agc ttg ggt act gga gct gtt tat gca gca agt aaa gct gca att aat      528
Ser Leu Gly Thr Gly Ala Val Tyr Ala Ala Ser Lys Ala Ala Ile Asn
165      170      175
cag ctt aca aaa aac ctg gct tgt gaa tgg gcc aaa gac aac ata agg      576
Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg
180      185      190
agc aac tgt gtt gta cca tgg gca acc aga acc cca ctt gta gaa cat      624
Ser Asn Cys Val Val Pro Trp Ala Thr Arg Thr Pro Leu Val Glu His
195      200      205
ttg ttg aga gac caa aag ttt gtg gat gat att atg tct cga act ccg      672
Leu Leu Arg Asp Gln Lys Phe Val Asp Asp Ile Met Ser Arg Thr Pro
210      215      220
att aaa cgt ata gca gaa ccc gaa gaa gtg tca tcg ttg gtg act gtc      720
Ile Lys Arg Ile Ala Glu Pro Glu Glu Val Ser Ser Leu Val Thr Val
225      230      235
ctt tgc ttg cct gct gct tct tac atc act gga cag gtt att tgt gtt      768
Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile Cys Val
245      250      255
gat gga gga tta acg gtg aat gga tgt caa ccc agc atg aga att acc      816
Asp Gly Gly Leu Thr Val Asn Gly Cys Gln Pro Ser Met Arg Ile Thr
260      265      270
tga
819

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<210> 2104
<211> 272
<212> PRT
<213> Glycine max

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<400> 2104
Met Ala Glu Ala Gly Ser Ser Ile Asn Arg Gly Ala Arg Trp Ser Leu
1      5      10      15
Asn Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His
20      25      30
Ala Ile Val Ser Asp Leu Ala Ala Phe Gly Ala Ala Val His Thr Cys
35      40      45

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## PhoenixTemp32470.tmp.txt

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Ser Arg Thr Gln Thr Glu Leu Asn Lys Cys Leu Gln Glu Trp Gln Ser
50 55 60
Leu Gly Phe Gln Val Thr Gly Ser Val Cys Asp Val Ser Ser Pro Ser
65 70 75 80
Gln Arg Glu Lys Leu Ile Glu Glu Val Thr Ser Ile Leu Asn Gly Lys
85 90 95
Leu Asn Ile Tyr Val Asn Asn Val Gly Thr Asn Phe Arg Lys Pro Thr
100 105 110
Ile Glu Tyr Thr Ala Glu Glu Tyr Ser Gln Leu Met Thr Val Asn Leu
115 120 125
Asp Ser Ser Phe His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala
130 135 140
Ser Glu Asn Gly Ser Ile Val Phe Ile Ser Ser Val Ala Gly Val Val
145 150 155 160
Ser Leu Gly Thr Gly Ala Val Tyr Ala Ala Ser Lys Ala Ala Ile Asn
165 170 175
Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg
180 185 190
Ser Asn Cys Val Val Pro Trp Ala Thr Arg Thr Pro Leu Val Glu His
195 200 205
Leu Leu Arg Asp Gln Lys Phe Val Asp Asp Ile Met Ser Arg Thr Pro
210 215 220
Ile Lys Arg Ile Ala Glu Pro Glu Glu Val Ser Ser Leu Val Thr Val
225 230 235 240
Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile Cys Val
245 250 255
Asp Gly Gly Leu Thr Val Asn Gly Cys Gln Pro Ser Met Arg Ile Thr
260 265 270

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<210> 2105  
 <211> 804  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(804)

<400> 2105

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Met	Thr	Lys	Gln	Ser	Ser	Arg	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	
1				5				10					15			
gga	gca	gca	agt	ggg	att	ggt	gaa	gag	aca	gtg	aga	ttg	ttc	gct	gaa	96
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Thr	Val	Arg	Leu	Phe	Ala	Glu	
			20				25					30				
cat	gga	gca	ctt	att	gtt	gca	aca	gat	att	caa	gat	gaa	caa	ggt	cac	144
His	Gly	Ala	Leu	Ile	Val	Ala	Thr	Asp	Ile	Gln	Asp	Glu	Gln	Gly	His	
			35			40					45					
cga	gtt	gct	gct	tca	ata	ggg	tca	gag	aga	gtg	act	tac	cat	cat	tgt	192
Arg	Val	Ala	Ala	Ser	Ile	Gly	Ser	Glu	Arg	Val	Thr	Tyr	His	His	Cys	
	50				55			60								
gat	gtg	aga	gat	gaa	aac	caa	gtt	gaa	gaa	aca	atc	aat	ttc	act	ttg	240
Asp	Val	Arg	Asp	Glu	Asn	Gln	Val	Glu	Glu	Thr	Ile	Asn	Phe	Thr	Leu	
	65			70				75							80	
gaa	aaa	cat	ggt	cgc	ata	gat	gtt	ttg	ttc	agc	aac	gct	gga	gta	ata	288
Glu	Lys	His	Gly	Arg	Ile	Asp	Val	Leu	Phe	Ser	Asn	Ala	Gly	Val	Ile	
			85					90					95			
ggt	tcc	tta	tct	ggg	atc	ctt	gac	ctt	gat	ctg	aat	gag	ttt	gac	aac	336
Gly	Ser	Leu	Ser	Gly	Ile	Leu	Asp	Leu	Asp	Leu	Asn	Glu	Phe	Asp	Asn	
			100				105					110				
acc	atg	gcc	aca	aat	gtt	cg	ggt	gta	gct	gcc	aca	att	aag	cac	acg	384
Thr	Met	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Ala	Thr	Ile	Lys	His	Thr	
		115					120				125					
gca	cg	gcc	atg	gtt	gct	aaa	agc	acc	cg	gga	tcc	atc	ata	tgc	acc	432
Ala	Arg	Ala	Met	Val	Ala	Lys	Ser	Thr	Arg	Gly	Ser	Ile	Ile	Cys	Thr	
	130					135				140						
act	agt	gtg	gct	gct	act	att	ggt	gga	aca	ggt	cct	cat	ggt	tat	acc	480
Thr	Ser	Val	Ala	Ala	Thr	Ile	Gly	Gly	Thr	Gly	Pro	His	Gly	Tyr	Thr	
	145				150					155					160	

## PhoenixTemp32470.tmp.txt

aca	tca	aaa	cat	gct	ctt	ctg	ggg	ttg	gtg	aaa	tca	gct	tgt	agt	gaa	528
Thr	Ser	Lys	His	Ala	Leu	Leu	Gly	Leu	Val	Lys	Ser	Ala	Cys	Ser	Glu	
				165				170						175		
ctt	ggt	gct	tat	gga	ata	aga	ggt	aat	agc	ata	tcc	cct	ttc	gga	ggt	576
Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	Phe	Gly	Val	
			180					185						190		
gca	aca	cct	ctt	gca	tgc	aaa	gct	ttc	aac	ttt	gag	cct	gag	caa	ggt	624
Ala	Thr	Pro	Leu	Ala	Cys	Lys	Ala	Phe	Asn	Phe	Glu	Pro	Glu	Gln	Val	
		195					200					205				
gaa	gct	aat	agc	tgc	tca	cag	gct	aat	ctg	aag	ggg	ggt	gtg	ttg	aag	672
Glu	Ala	Asn	Ser	Cys	Ser	Gln	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	
	210					215					220					
gct	agg	cat	ata	gct	gaa	gca	gct	ttg	ttt	ctt	gct	tct	gat	gat	gct	720
Ala	Arg	His	Ile	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	
	225				230					235					240	
gct	ggt	tac	atc	agt	ggg	cac	aac	ttg	gtg	gtg	gat	ggg	ggg	ttc	tct	768
Ala	Val	Tyr	Ile	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Ser	
				245					250					255		
gtg	ggt	aat	aga	agt	tat	tct	ttc	aca	cca	gct	taa					804
Val	Val	Asn	Arg	Ser	Tyr	Ser	Phe	Thr	Pro	Ala						
			260					265								

&lt;210&gt; 2106

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2106

Met	Thr	Lys	Gln	Ser	Ser	Arg	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	
1				5					10					15		
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Thr	Val	Arg	Leu	Phe	Ala	Glu	
			20					25					30			
His	Gly	Ala	Leu	Ile	Val	Ala	Thr	Asp	Ile	Gln	Asp	Glu	Gln	Gly	His	
		35					40					45				
Arg	Val	Ala	Ala	Ser	Ile	Gly	Ser	Glu	Arg	Val	Thr	Tyr	His	His	Cys	
	50					55					60					
Asp	Val	Arg	Asp	Glu	Asn	Gln	Val	Glu	Glu	Thr	Ile	Asn	Phe	Thr	Leu	
65					70					75					80	
Glu	Lys	His	Gly	Arg	Ile	Asp	Val	Leu	Phe	Ser	Asn	Ala	Gly	Val	Ile	
			85						90					95		
Gly	Ser	Leu	Ser	Gly	Ile	Leu	Asp	Leu	Asp	Leu	Asn	Glu	Phe	Asp	Asn	
			100					105					110			
Thr	Met	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Ala	Thr	Ile	Lys	His	Thr	
		115					120					125				
Ala	Arg	Ala	Met	Val	Ala	Lys	Ser	Thr	Arg	Gly	Ser	Ile	Ile	Cys	Thr	
	130					135					140					
Thr	Ser	Val	Ala	Ala	Thr	Ile	Gly	Gly	Thr	Gly	Pro	His	Gly	Tyr	Thr	
145					150					155					160	
Thr	Ser	Lys	His	Ala	Leu	Leu	Gly	Leu	Val	Lys	Ser	Ala	Cys	Ser	Glu	
				165					170					175		
Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	Phe	Gly	Val	
			180					185					190			
Ala	Thr	Pro	Leu	Ala	Cys	Lys	Ala	Phe	Asn	Phe	Glu	Pro	Glu	Gln	Val	
		195					200					205				
Glu	Ala	Asn	Ser	Cys	Ser	Gln	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	
	210					215					220					
Ala	Arg	His	Ile	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	
	225				230					235					240	
Ala	Val	Tyr	Ile	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Ser	
				245					250					255		
Val	Val	Asn	Arg	Ser	Tyr	Ser	Phe	Thr	Pro	Ala						
			260					265								

&lt;210&gt; 2107

&lt;211&gt; 960

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(960)

&lt;400&gt; 2107

atg	ttg	atc	gtg	ttc	att	tgc	atc	ttc	ctt	ttc	ttc	atc	ttt	ctt	tac	48
Met	Leu	Ile	Val	Phe	Ile	Cys	Ile	Phe	Leu	Phe	Phe	Ile	Phe	Leu	Tyr	
1				5					10					15		
aag	ttc	ctc	atc	gct	tat	ggc	gat	ttc	act	ttg	atg	tct	aag	aag	caa	96
Lys	Phe	Leu	Ile	Ala	Tyr	Gly	Asp	Phe	Thr	Leu	Met	Ser	Lys	Lys	Gln	
			20					25					30			
cct	aag	cgc	caa	gag	att	gaa	gat	aag	ggt	ggt	tgg	att	act	ggt	gct	144
Pro	Lys	Arg	Gln	Glu	Ile	Glu	Asp	Lys	Val	Val	Trp	Ile	Thr	Gly	Ala	
			35				40					45				
agc	cgt	gga	att	ggg	gag	att	ctg	gct	aaa	cag	ttt	gca	agt	tta	ggg	192
Ser	Arg	Gly	Ile	Gly	Glu	Ile	Leu	Ala	Lys	Gln	Phe	Ala	Ser	Leu	Gly	
	50			55							60					
gcc	aag	ctt	att	atc	tct	gca	agg	aat	gaa	gct	gag	cta	aac	cga	gta	240
Ala	Lys	Leu	Ile	Ile	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	Asn	Arg	Val	
	65			70						75					80	
agg	aca	cag	ctg	aaa	ggt	aag	cat	gca	cct	gat	gac	gtc	aag	atc	tta	288
Arg	Thr	Gln	Leu	Lys	Gly	Lys	His	Ala	Pro	Asp	Asp	Val	Lys	Ile	Leu	
			85						90					95		
cca	ttg	gat	tta	tca	tct	gga	gag	gat	tct	ctt	agg	ata	gct	ggt	gag	336
Pro	Leu	Asp	Leu	Ser	Ser	Gly	Glu	Asp	Ser	Leu	Arg	Ile	Ala	Val	Glu	
			100					105					110			
aaa	gca	gaa	tcc	ttt	ttt	ccg	gat	tct	ggt	ggt	gat	tac	atg	gtc	cat	384
Lys	Ala	Glu	Ser	Phe	Phe	Pro	Asp	Ser	Gly	Val	Asp	Tyr	Met	Val	His	
			115				120					125				
aat	gca	gct	ttt	gag	cgt	cct	aaa	aca	tca	att	tta	gat	gta	act	gag	432
Asn	Ala	Ala	Phe	Glu	Arg	Pro	Lys	Thr	Ser	Ile	Leu	Asp	Val	Thr	Glu	
	130					135					140					
gaa	ggt	ctt	aag	gct	acc	ttt	gat	gtc	aat	ggt	ctg	ggg	aca	ata	act	480
Glu	Gly	Leu	Lys	Ala	Thr	Phe	Asp	Val	Asn	Val	Leu	Gly	Thr	Ile	Thr	
	145			150				155							160	
ctc	aca	aag	ctc	ttg	gca	cct	ttc	atg	ttg	aag	agg	ggg	cat	ggt	cat	528
Leu	Thr	Lys	Leu	Leu	Ala	Pro	Phe	Met	Leu	Lys	Arg	Gly	His	Gly	His	
				165					170					175		
ttt	gtg	gtg	atg	agt	agt	gca	gca	gga	aag	aca	cct	gcc	cca	ggt	cag	576
Phe	Val	Val	Met	Ser	Ser	Ala	Ala	Gly	Lys	Thr	Pro	Ala	Pro	Gly	Gln	
			180					185					190			
gct	gta	tac	tct	gct	tct	aaa	tat	gcg	ctc	aat	ggt	tac	ttc	cat	acc	624
Ala	Val	Tyr	Ser	Ala	Ser	Lys	Tyr	Ala	Leu	Asn	Gly	Tyr	Phe	His	Thr	
		195					200					205				
ttg	cgt	tca	gag	ctt	tgt	cag	aaa	gga	atc	cag	gta	act	gtg	gtc	tgt	672
Leu	Arg	Ser	Glu	Leu	Cys	Gln	Lys	Gly	Ile	Gln	Val	Thr	Val	Val	Cys	
	210					215					220					
cct	ggt	cca	ata	gaa	aca	tca	aat	aat	gct	gga	tca	agg	ggt	cca	tct	720
Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Asn	Ala	Gly	Ser	Arg	Val	Pro	Ser	
	225			230					235					240		
gag	aag	cgt	gtg	cca	tct	gaa	agg	tgt	gca	gag	ctg	act	att	att	gct	768
Glu	Lys	Arg	Val	Pro	Ser	Glu	Arg	Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	
				245					250					255		
gca	act	cat	ggc	tta	aag	gaa	gct	tgg	ata	tca	tat	cag	cct	gtg	ctt	816
Ala	Thr	His	Gly	Leu	Lys	Glu	Ala	Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	
			260					265				270				
gct	gtc	atg	tat	ctc	ggt	cag	tac	atg	cca	act	att	ggt	tat	tgg	gtc	864
Ala	Val	Met	Tyr	Leu	Val	Gln	Tyr	Met	Pro	Thr	Ile	Gly	Tyr	Trp	Val	
		275					280					285				
atg	gac	aag	att	ggc	aaa	agt	cga	gta	gaa	gct	gct	gaa	cag	aag	gga	912
Met	Asp	Lys	Ile	Gly	Lys	Ser	Arg	Val	Glu	Ala	Ala	Glu	Gln	Lys	Gly	
	290					295				300						
aac	aca	tat	tct	ttg	agc	tta	ctg	ctc	gga	aaa	aag	aag	gcc	act	tga	960
Asn	Thr	Tyr	Ser	Leu	Ser	Leu	Leu	Leu	Gly	Lys	Lys	Lys	Ala	Thr		
					310				315							

&lt;210&gt; 2108

&lt;211&gt; 319

&lt;212&gt; PRT

&lt;213&gt; Glycine max



## PhoenixTemp32470.tmp.txt

<400> 2108  
 Met Leu Ile Val Phe<sup>5</sup> Ile Cys Ile Phe<sup>10</sup> Leu Phe Phe Ile Phe<sup>15</sup> Leu Tyr  
 1 Lys Phe Leu<sup>20</sup> Ile Ala Tyr Gly Asp Phe<sup>25</sup> Thr Leu Met Ser Lys<sup>30</sup> Lys Gln  
 Pro Lys Arg<sup>35</sup> Gln Glu Ile Glu Asp<sup>40</sup> Lys Val Val Trp Ile<sup>45</sup> Thr Gly Ala  
 Ser Arg Gly<sup>50</sup> Ile Gly Glu Ile<sup>55</sup> Leu Ala Lys Gln Phe<sup>60</sup> Ala Ser Leu Gly  
 Ala Lys Leu Ile Ile Ser<sup>65</sup> Ala Arg Asn Glu Ala<sup>70</sup> Glu Leu Asn Arg Val<sup>75</sup>  
 65 Arg Thr Gln Leu Lys<sup>80</sup> Gly Lys His Ala Pro<sup>85</sup> Asp Asp Val Lys Ile<sup>90</sup> Leu  
 Pro Leu Asp<sup>95</sup> Leu Ser Ser Gly Glu Asp<sup>100</sup> Ser Leu Arg Ile Ala Val Glu  
 Lys Ala Glu<sup>105</sup> Ser Phe Phe Pro Asp<sup>110</sup> Ser Gly Val Asp Tyr<sup>115</sup> Met Val His  
 Asn Ala<sup>120</sup> Phe Glu Arg Pro<sup>125</sup> Lys Thr Ser Ile Leu Asp Val Thr Glu  
 130 Glu Gly Leu Lys Ala Thr<sup>135</sup> Phe Asp Val Asn Val<sup>140</sup> Leu Gly Thr Ile Thr  
 145 Leu Thr Lys Leu<sup>145</sup> Ala Pro Phe Met Leu<sup>150</sup> Lys Arg Gly His Gly His  
 Phe Val Val<sup>155</sup> Met Ser Ala Ala Gly<sup>160</sup> Lys Thr Pro Ala Pro Gly Gln  
 165 Ala Val Tyr<sup>165</sup> Ser Ala Ser Lys Tyr<sup>170</sup> Ala Leu Asn Gly Tyr<sup>175</sup> Phe His Thr  
 Leu Arg Ser<sup>180</sup> Glu Leu Cys Gln<sup>185</sup> Lys Gly Ile Gln Val Thr Val Val Cys  
 210 Pro Gly Pro Ile Glu Thr Ser Asn Asn Ala Gly<sup>190</sup> Ser Arg Val Pro Ser  
 225 Glu Lys Arg Val<sup>195</sup> Pro Ser Glu Arg Cys Ala<sup>200</sup> Glu Leu Thr Ile Ile Ala  
 Ala Thr His Gly<sup>205</sup> Leu Lys Glu Ala Trp<sup>210</sup> Ile Ser Tyr Gln Pro Val Leu  
 240 Ala Val Met Tyr<sup>215</sup> Leu Val Gln Tyr<sup>220</sup> Met Pro Thr Ile Gly Tyr Trp Val  
 Met Asp Lys Ile Gly Lys Ser<sup>225</sup> Arg Val Glu Ala Ala<sup>230</sup> Glu Gln Lys Gly  
 290 Asn Thr Tyr Ser Leu Ser<sup>235</sup> Leu Leu Leu Gly Lys<sup>240</sup> Lys Lys Ala Thr  
 305 310 315

<210> 2109  
 <211> 864  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(864)

<400> 2109  
 atg caa gca tgt tcc tcc tca gac gct cca ctc tcc aag agg tta gat 48  
 Met Gln Ala Cys Ser<sup>5</sup> Ser Ser Asp Ala Pro<sup>10</sup> Leu Ser Lys Arg Leu<sup>15</sup> Asp  
 1 ggc aaa gta gca ctc ata atc ggc gga gcc agt ggc atc ggt gaa gcc 96  
 Gly Lys Val<sup>20</sup> Ala Leu Ile Ile Gly<sup>25</sup> Gly Ala Ser Gly Ile<sup>30</sup> Gly Glu Ala  
 acc gcc aag ctt ttc ctt cgc tac ggt gcc aag gtc gtc atc gcc gac 144  
 Thr Ala Lys<sup>35</sup> Leu Phe Leu Arg Tyr<sup>40</sup> Gly Ala Lys Val<sup>45</sup> Val Ile Ala Asp  
 atc caa gac aac ctc gga cac tcc cta tgc caa agt ctc aat tcc tcc 192  
 Ile Gln Asp Asn Leu Gly His<sup>55</sup> Ser Leu Cys Gln Ser<sup>60</sup> Leu Asn Ser Ser  
 gac aaa aac aac aac gac gac att tcc tat gtt cac tgc gac gtc acc 240  
 Asp Lys Asn Asn Asn Asp<sup>70</sup> Asp Ile Ser Tyr Val<sup>75</sup> His Cys Asp Val Thr<sup>80</sup>  
 aac gac aaa gac gtc gaa acc gcc gtc aac gct gcc gtc tcg cga cac 288  
 Page 1378

## PhoenixTemp32470.tmp.txt

Asn	Asp	Lys	Asp	Val <sub>85</sub>	Glu	Thr	Ala	Val	Asn <sub>90</sub>	Ala	Ala	Val	Ser	Arg <sub>95</sub>	His	
ggc	aag	ctc	gac	atc	ctc	ttc	agc	aac	gcc	ggc	atc	acg	ggc	cgt	tcc	336
Gly	Lys	Leu	Asp <sub>100</sub>	Ile	Leu	Phe	Ser	Asn <sub>105</sub>	Ala	Gly	Ile	Thr	Gly <sub>110</sub>	Arg	Ser	
gac	tgt	tct	aac	tcc	atc	acg	gcc	atc	gac	agc	ggt	gac	ctg	aag	agg	384
Asp	Cys	Ser <sub>115</sub>	Asn	Ser	Ile	Thr	Ala <sub>120</sub>	Ile	Asp	Ser	Gly	Asp <sub>125</sub>	Leu	Lys	Arg	
gtc	ttc	gag	gtg	aac	gtc	ttc	ggt	gcc	ttc	tac	gcc	gcc	aaa	cac	gcc	432
Val	Phe <sub>130</sub>	Glu	Val	Asn	Val	Phe <sub>135</sub>	Gly	Ala	Phe	Tyr	Ala <sub>140</sub>	Ala	Lys	His	Ala	
gct	aag	gtc	atg	att	ccc	aga	aag	aaa	ggg	agc	att	ggt	ttc	act	gct	480
Ala <sub>145</sub>	Lys	Val	Met	Ile	Pro <sub>150</sub>	Arg	Lys	Lys	Gly <sub>155</sub>	Ser	Ile	Val	Phe	Thr	Ala <sub>160</sub>	
agc	atc	gct	tct	gtg	tcg	aat	gcg	ggt	tgg	gcg	cac	ccg	tac	gcg	gcg	528
Ser	Ile	Ala	Ser <sub>165</sub>	Val	Ser	Asn	Ala	Gly <sub>170</sub>	Trp	Ala	His	Pro	Tyr	Ala <sub>175</sub>	Ala	
tcg	aag	aac	gca	gtg	gtg	ggt	ttg	atg	aag	aac	ctg	tcg	gtg	gaa	ttg	576
Ser	Lys	Asn <sub>180</sub>	Ala	Val	Val	Gly	Leu	Met <sub>185</sub>	Lys	Asn	Leu	Cys	Val <sub>190</sub>	Glu	Leu	
ggg	aaa	cat	gga	atc	aga	gtt	aac	tgt	ggt	tcg	ccc	tat	gcg	gtg	ggg	624
Gly	Lys	His <sub>195</sub>	Gly	Ile	Arg	Val	Asn <sub>200</sub>	Cys	Val	Ser	Pro	Tyr <sub>205</sub>	Ala	Val	Gly	
act	cca	atg	ctg	aca	cgt	gcg	atg	agg	atg	gag	aag	gag	aaa	gca	gag	672
Thr	Pro <sub>210</sub>	Met	Leu	Thr	Arg	Ala <sub>215</sub>	Met	Arg	Met	Glu	Lys <sub>220</sub>	Glu	Lys	Ala	Glu	
gag	ata	tat	ttg	gag	gcg	gcg	aac	ttg	aag	gga	gtg	ggt	tta	aag	gaa	720
Glu <sub>225</sub>	Ile	Tyr	Leu	Glu	Ala <sub>230</sub>	Ala	Asn	Leu	Lys	Gly <sub>235</sub>	Val	Val	Leu	Lys	Glu <sub>240</sub>	
aag	gat	gtg	gca	gaa	gca	act	ttg	ttt	ttg	gct	agt	gat	gag	tca	aaa	768
Lys	Asp	Val	Ala <sub>245</sub>	Glu	Ala	Thr	Leu	Phe <sub>250</sub>	Leu	Ala	Ser	Asp	Glu <sub>255</sub>	Ser	Lys	
tac	gtg	agt	gga	gtg	aat	cta	gtt	gtg	gac	gga	ggt	tat	act	acc	acc	816
Tyr	Val	Ser <sub>260</sub>	Gly	Val	Asn	Leu	Val <sub>265</sub>	Val	Asp	Gly	Gly	Tyr <sub>270</sub>	Thr	Thr	Thr	
aat	tct	tct	tcc	aaa	caa	gct	ttc	aca	aag	ttt	tct	ttt	aat	gtt	taa	864
Asn	Ser <sub>275</sub>	Ser	Ser	Lys	Gln	Ala	Phe <sub>280</sub>	Thr	Lys	Phe	Ser	Phe <sub>285</sub>	Asn	Val		

&lt;210&gt; 2110

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2110

Met	Gln	Ala	Cys	Ser <sub>5</sub>	Ser	Ser	Asp	Ala	Pro <sub>10</sub>	Leu	Ser	Lys	Arg	Leu <sub>15</sub>	Asp
Gly	Lys	Val	Ala <sub>20</sub>	Leu	Ile	Ile	Gly	Gly <sub>25</sub>	Ala	Ser	Gly	Ile	Gly <sub>30</sub>	Glu	Ala
Thr	Ala	Lys <sub>35</sub>	Leu	Phe	Leu	Arg	Tyr <sub>40</sub>	Gly	Ala	Lys	Val	Val <sub>45</sub>	Ile	Ala	Asp
Ile	Gln <sub>50</sub>	Asp	Asn	Leu	Gly	His <sub>55</sub>	Ser	Leu	Cys	Gln	Ser <sub>60</sub>	Leu	Asn	Ser	Ser
Asp <sub>65</sub>	Lys	Asn	Asn	Asn	Asp <sub>70</sub>	Asp	Ile	Ser	Tyr	Val <sub>75</sub>	His	Cys	Asp	Val <sub>80</sub>	Thr
Asn	Asp	Lys	Asp	Val <sub>85</sub>	Glu	Thr	Ala	Val	Asn <sub>90</sub>	Ala	Ala	Val	Ser	Arg <sub>95</sub>	His
Gly	Lys	Leu	Asp <sub>100</sub>	Ile	Leu	Phe	Ser	Asn <sub>105</sub>	Ala	Gly	Ile	Thr	Gly <sub>110</sub>	Arg	Ser
Asp	Cys	Ser <sub>115</sub>	Asn	Ser	Ile	Thr	Ala <sub>120</sub>	Ile	Asp	Ser	Gly	Asp <sub>125</sub>	Leu	Lys	Arg
Val	Phe <sub>130</sub>	Glu	Val	Asn	Val	Phe <sub>135</sub>	Gly	Ala	Phe	Tyr	Ala <sub>140</sub>	Ala	Lys	His	Ala
Ala <sub>145</sub>	Lys	Val	Met	Ile	Pro <sub>150</sub>	Arg	Lys	Lys	Gly	Ser <sub>155</sub>	Ile	Val	Phe	Thr	Ala <sub>160</sub>
Ser	Ile	Ala	Ser	Val <sub>165</sub>	Ser	Asn	Ala	Gly	Trp <sub>170</sub>	Ala	His	Pro	Tyr	Ala <sub>175</sub>	Ala
Ser	Lys	Asn <sub>180</sub>	Ala	Val	Val	Gly	Leu	Met <sub>185</sub>	Lys	Asn	Leu	Cys	Val <sub>190</sub>	Glu	Leu

## PhoenixTemp32470.tmp.txt

Gly Lys His Gly Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Gly  
 195 200 205  
 Thr Pro Met Leu Thr Arg Ala Met Arg Met Glu Lys Glu Lys Ala Glu  
 210 215 220  
 Glu Ile Tyr Leu Glu Ala Ala Asn Leu Lys Gly Val Val Leu Lys Glu  
 225 230 235 240  
 Lys Asp Val Ala Glu Ala Thr Leu Phe Leu Ala Ser Asp Glu Ser Lys  
 245 250 255  
 Tyr Val Ser Gly Val Asn Leu Val Val Asp Gly Gly Tyr Thr Thr Thr  
 260 265 270  
 Asn Ser Ser Ser Lys Gln Ala Phe Thr Lys Phe Ser Phe Asn Val  
 275 280 285

<210> 2111  
 <211> 849  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 2111  
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 Met Asn Ala Ile Ala Ala Glu Gln Val Leu Glu Pro Trp His Lys Leu  
 1 5 10 15  
 gac gac aaa gtc gtt ttg gtg acg ggt gct tcc tcg ggg ctc ggg cga 96  
 Asp Asp Lys Val Val Leu Val Thr Gly Ala Ser Ser Gly Leu Gly Arg  
 20 25 30  
 gat ttc tgc atc gac ctc gcc aaa gct ggc tgc tgt gtc gtc gcg gca 144  
 Asp Phe Cys Ile Asp Leu Ala Lys Ala Gly Cys Cys Val Val Ala Ala  
 35 40 45  
 gct cgt cgc ctc gat cgc ctc act tcc ctc tgc cac gaa atc aac cac 192  
 Ala Arg Arg Leu Asp Arg Leu Thr Ser Leu Cys His Glu Ile Asn His  
 50 55 60  
 cga tgg ccc tcg aac gtc gga atc cac cgc gcg gtg gcg gtg gag ctt 240  
 Arg Trp Pro Ser Asn Val Gly Ile His Arg Ala Val Ala Val Glu Leu  
 65 70 75 80  
 gat gtc gcc gcc gat ggc ccc gcc atc gac agg gct gtg cag aag gcc 288  
 Asp Val Ala Ala Asp Gly Pro Ala Ile Asp Arg Ala Val Gln Lys Ala  
 85 90 95  
 tgg gac gcc ttt ggc cgc gtt gat tcc ttg att aac aac gct ggt gtc 336  
 Trp Asp Ala Phe Gly Arg Val Asp Ser Leu Ile Asn Asn Ala Gly Val  
 100 105 110  
 aga gga agt gtt aaa tca ccc ttg aaa ttg tct gaa gag gaa tgg gat 384  
 Arg Gly Ser Val Lys Ser Pro Leu Lys Leu Ser Glu Glu Trp Asp  
 115 120 125  
 cat gtc ttc aag act aac cta act ggt tgt tgg ttg gtg tca aaa tat 432  
 His Val Phe Lys Thr Asn Leu Thr Gly Cys Trp Leu Val Ser Lys Tyr  
 130 135 140  
 gta tgc aaa cgc atg tgt gat atc cag ctt aag gga tca att att aat 480  
 Val Cys Lys Arg Met Cys Asp Ile Gln Leu Lys Gly Ser Ile Ile Asn  
 145 150 155 160  
 att tct tca gtt tct ggt tta aat cgg ggg caa ttg cct gga gct gct 528  
 Ile Ser Ser Val Ser Gly Leu Asn Arg Gly Gln Leu Pro Gly Ala Ala  
 165 170 175  
 gca tat gca tct tcg aag gca ggg gta aac atg ctg act aag gtc atg 576  
 Ala Tyr Ala Ser Lys Ala Gly Val Asn Met Leu Thr Lys Val Met  
 180 185 190  
 gct atg gaa ttg ggg atg cac aaa att aga gta aat tcc ata tcc cct 624  
 Ala Met Glu Leu Gly Met His Lys Ile Arg Val Asn Ser Ile Ser Pro  
 195 200 205  
 gga att ttc aaa tct gaa ata act gaa aat tta tta caa aaa gat tgg 672  
 Gly Ile Phe Lys Ser Glu Ile Thr Glu Asn Leu Leu Gln Lys Asp Trp  
 210 215 220  
 ctg aat gat gtg gtc agg aaa ata atg cct ttg aga aga tta ggt act 720  
 Leu Asn Asp Val Val Arg Lys Ile Met Pro Leu Arg Arg Leu Gly Thr  
 225 230 235 240  
 tca gat cca gca tta aca tct cta gct cgt tat ctt att cat gat tct 768

## PhoenixTemp32470.tmp.txt

Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser		
tct	gag	tac	gtc	acg	ggc	aac	aat	ttt	att	gtc	gat	tat	gga	ggc	acc		816
Ser	Glu	Tyr	Val	Thr	Gly	Asn	Asn	Phe	Ile	Val	Asp	Tyr	Gly	Gly	Thr		
			260					265					270				
tta	cca	ggt	gta	cca	att	tat	tct	tct	ctg	taa							849
Leu	Pro	Gly	Val	Pro	Ile	Tyr	Ser	Ser	Leu								
		275					280										

<210> 2112  
 <211> 282  
 <212> PRT  
 <213> Glycine max

Met	Asn	Ala	Ile	Ala	Ala	Glu	Gln	Val	Leu	Glu	Pro	Trp	His	Lys	Leu		
1				5					10					15			
Asp	Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg		
			20					25					30				
Asp	Phe	Cys	Ile	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Cys	Val	Val	Ala	Ala		
		35					40					45					
Ala	Arg	Arg	Leu	Asp	Arg	Leu	Thr	Ser	Leu	Cys	His	Glu	Ile	Asn	His		
	50					55					60						
Arg	Trp	Pro	Ser	Asn	Val	Gly	Ile	His	Arg	Ala	Val	Ala	Val	Glu	Leu		
65				70						75					80		
Asp	Val	Ala	Ala	Asp	Gly	Pro	Ala	Ile	Asp	Arg	Ala	Val	Gln	Lys	Ala		
			85						90					95			
Trp	Asp	Ala	Phe	Gly	Arg	Val	Asp	Ser	Leu	Ile	Asn	Asn	Ala	Gly	Val		
			100					105					110				
Arg	Gly	Ser	Val	Lys	Ser	Pro	Leu	Lys	Leu	Ser	Glu	Glu	Glu	Trp	Asp		
		115					120					125					
His	Val	Phe	Lys	Thr	Asn	Leu	Thr	Gly	Cys	Trp	Leu	Val	Ser	Lys	Tyr		
	130				135						140						
Val	Cys	Lys	Arg	Met	Cys	Asp	Ile	Gln	Leu	Lys	Gly	Ser	Ile	Ile	Asn		
145				150						155					160		
Ile	Ser	Ser	Val	Ser	Gly	Leu	Asn	Arg	Gly	Gln	Leu	Pro	Gly	Ala	Ala		
			165						170					175			
Ala	Tyr	Ala	Ser	Ser	Lys	Ala	Gly	Val	Asn	Met	Leu	Thr	Lys	Val	Met		
			180					185					190				
Ala	Met	Glu	Leu	Gly	Met	His	Lys	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro		
		195					200					205					
Gly	Ile	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Asn	Leu	Leu	Gln	Lys	Asp	Trp		
	210					215					220						
Leu	Asn	Asp	Val	Val	Arg	Lys	Ile	Met	Pro	Leu	Arg	Arg	Leu	Gly	Thr		
225					230					235					240		
Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser		
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Ser	Glu	Tyr	Val	Thr	Gly	Asn	Asn	Phe	Ile	Val	Asp	Tyr	Gly	Gly	Thr		
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<210> 2113  
 <211> 858  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(858)

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1				5					10					15			
gag	ctc	aaa	gac	aaa	gtg	gtt	ctc	cta	aca	gga	gct	tca	tcc	ggc	atc		96
Glu	Leu	Lys	Asp	Lys	Val	Val	Leu	Leu	Thr	Gly	Ala	Ser	Ser	Gly	Ile		
			20					25					30				
gga	aga	gag	atc	tgc	ctc	gat	cta	gcc	aaa	tcc	ggc	tgc	aag	atc	atc		144

## PhoenixTemp32470.tmp.txt

Gly	Arg	Glu	Ile	Cys	Leu	Asp	Leu	Ala	Lys	Ser	Gly	Cys	Lys	Ile	Ile	
		35					40					45				
gcc	gca	gct	cgc	cgt	ctc	gac	cgt	ctc	caa	tcc	ctc	tgc	tcc	gag	atc	192
Ala	Ala	Ala	Arg	Arg	Leu	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Ser	Glu	Ile	
		50				55					60					
aac	gcc	tta	ttc	tcc	cca	aca	aaa	acc	aaa	caa	gcc	gca	cct	ctc	gag	240
Asn	Ala	Leu	Phe	Ser	Pro	Thr	Lys	Thr	Lys	Gln	Ala	Ala	Pro	Leu	Glu	
		65			70					75					80	
cta	gac	gtc	tcc	tca	gac	tca	tcc	acc	atc	cga	aac	gca	gtc	aaa	caa	288
Leu	Asp	Val	Ser	Ser	Asp	Ser	Ser	Thr	Ile	Arg	Asn	Ala	Val	Lys	Gln	
				85					90					95		
gct	tgg	gac	atc	ttc	gga	aac	atc	gac	gtc	ttg	atc	aac	aac	gca	ggc	336
Ala	Trp	Asp	Ile	Phe	Gly	Asn	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	
			100					105					110			
atc	aga	ggc	aac	gtc	aag	tcg	agt	ctg	gac	cta	tcc	gaa	gaa	gaa	tgg	384
Ile	Arg	Gly	Asn	Val	Lys	Ser	Ser	Leu	Asp	Leu	Ser	Glu	Glu	Glu	Trp	
		115					120					125				
gaa	aga	gtc	ttc	aga	aca	aac	cta	acc	gga	cct	tgg	cta	gta	tca	aaa	432
Glu	Arg	Val	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Pro	Trp	Leu	Val	Ser	Lys	
		130				135					140					
cac	gtc	tgc	gtt	ctg	atg	cgc	gac	gcc	aaa	cgc	cgc	ggc	gga	gga	tcg	480
His	Val	Cys	Val	Leu	Met	Arg	Asp	Ala	Lys	Arg	Arg	Gly	Gly	Gly	Ser	
				150						155					160	
gtg	ata	aac	gtt	tcc	atc	gcg	ggg	ctt	cag	cgc	ggg	aag	cta	ccc		528
Val	Ile	Asn	Val	Ser	Ile	Ala	Gly	Leu	Gln	Arg	Gly	Lys	Leu	Pro		
				165				170					175			
ggc	gcg	ttg	gcg	tac	gcg	tgt	tcg	aaa	gga	ggt	ctt	gat	att	atg	acg	576
Gly	Ala	Leu	Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Leu	Asp	Ile	Met	Thr	
			180					185					190			
aag	atg	atg	gcg	gtt	gag	ctg	ggt	gag	tat	ggt	ata	aga	gtg	aac	tcg	624
Lys	Met	Met	Ala	Val	Glu	Leu	Gly	Glu	Tyr	Gly	Ile	Arg	Val	Asn	Ser	
		195					200					205				
ata	gcc	ccg	ggg	ctg	ttt	aag	tcg	gag	atc	acg	gaa	ggg	ctg	atg	agg	672
Ile	Ala	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Gly	Leu	Met	Arg	
		210				215					220					
aaa	gag	tgg	atg	aag	aat	gtg	agg	gag	agg	att	gtt	ccg	ttg	aag	gtg	720
Lys	Glu	Trp	Met	Lys	Asn	Val	Arg	Glu	Arg	Ile	Val	Pro	Leu	Lys	Val	
				230						235				240		
cag	cag	agt	gtg	gac	ccg	ggg	ctt	acc	tcg	ctg	gtt	agg	tat	ctg	att	768
Gln	Gln	Ser	Val	Asp	Pro	Gly	Leu	Thr	Ser	Leu	Val	Arg	Tyr	Leu	Ile	
				245					250					255		
cat	gac	tct	tcc	agg	tat	gtc	tct	ggg	aat	gtt	tac	att	gtt	gac	gct	816
His	Asp	Ser	Ser	Arg	Tyr	Val	Ser	Gly	Asn	Val	Tyr	Ile	Val	Asp	Ala	
			260					265					270			
ggt	gct	acg	ttg	tct	ggt	ctg	ccg	att	ttt	tct	tct	ctt	tga			858
Gly	Ala	Thr	Leu	Ser	Gly	Leu	Pro	Ile	Phe	Ser	Ser	Leu				
		275					280					285				

&lt;210&gt; 2114

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2114

Met	Ser	Ser	Asn	His	Gln	Thr	Val	Met	Lys	Gln	Leu	Glu	Pro	Trp	Cys	
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Glu	Leu	Lys	Asp	Lys	Val	Val	Leu	Leu	Thr	Gly	Ala	Ser	Ser	Gly	Ile	
			20					25					30			
Gly	Arg	Glu	Ile	Cys	Leu	Asp	Leu	Ala	Lys	Ser	Gly	Cys	Lys	Ile	Ile	
		35					40					45				
Ala	Ala	Ala	Arg	Arg	Leu	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Ser	Glu	Ile	
		50				55					60					
Asn	Ala	Leu	Phe	Ser	Pro	Thr	Lys	Thr	Lys	Gln	Ala	Ala	Pro	Leu	Glu	
				70						75					80	
Leu	Asp	Val	Ser	Ser	Asp	Ser	Ser	Thr	Ile	Arg	Asn	Ala	Val	Lys	Gln	
				85					90					95		
Ala	Trp	Asp	Ile	Phe	Gly	Asn	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	
		100						105					110			
Ile	Arg	Gly	Asn	Val	Lys	Ser	Ser	Leu	Asp	Leu	Ser	Glu	Glu	Glu	Trp	

## PhoenixTemp32470.tmp.txt

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 Glu Arg Val Phe Arg Thr Asn 120  
 130 Leu Thr Gly Pro Trp 125  
 135 Leu Val Ser Lys  
 His Val Cys Val Leu Met Arg Asp Ala Lys Arg Arg Gly Gly Gly Ser  
 145 150 155 160  
 Val Ile Asn Val Ser Ser Ile Ala Gly Leu Gln Arg Gly Lys Leu Pro  
 165 170 175  
 Gly Ala Leu Ala Tyr Ala Cys Ser Lys Gly Gly Leu Asp Ile Met Thr  
 180 185 190  
 Lys Met Met Ala Val Glu Leu Gly Glu Tyr Gly Ile Arg Val Asn Ser  
 195 200 205  
 Ile Ala Pro Gly Leu Phe Lys Ser Glu Ile Thr Glu Gly Leu Met Arg  
 210 215 220  
 Lys Glu Trp Met Lys Asn Val Arg Glu Arg Ile Val Pro Leu Lys Val  
 225 230 235 240  
 Gln Gln Ser Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile  
 245 250 255  
 His Asp Ser Ser Arg Tyr Val Ser Gly Asn Val Tyr Ile Val Asp Ala  
 260 265 270  
 Gly Ala Thr Leu Ser Gly Leu Pro Ile Phe Ser Ser Leu  
 275 280 285

<210> 2115  
 <211> 762  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(762)

<400> 2115  
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 gcc tcc acg cag ggc atc ggt ctc gcc atc gcc gag cgc ctc ggc ctc 96  
 Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 gag ggc gcc gcc gtc gtc atc tcc tcc cgc aag aag aag aac gtc gac 144  
 Glu Gly Ala Ala Val Val Ile Ser Arg Lys Lys Lys Asn Val Asp  
 35 40 45  
 gag gcg gtc gtg ggc ctc agg gcg aag ggg atc acc gtc gtc ggg gtg 192  
 Glu Ala Val Val Gly Leu Arg Ala Lys Gly Ile Thr Val Val Gly Val  
 50 55 60  
 gtc tgc cat gtc tcc atc ccg gag cag cgc aag aac ctc atc gac acg 240  
 Val Cys His Val Ser Ile Pro Glu Gln Arg Lys Asn Leu Ile Asp Thr  
 65 70 75 80  
 gcg gtc aag aat ttt ggg cat atc gac ata gtt gtc tcc aat gct gct 288  
 Ala Val Lys Asn Phe Gly His Ile Asp Ile Val Val Ser Asn Ala Ala  
 85 90 95  
 gcc aat cct tcc gta gat aac ata tta gaa atg aaa gag cct atc ctt 336  
 Ala Asn Pro Ser Val Asp Asn Ile Leu Glu Met Lys Glu Pro Ile Leu  
 100 105 110  
 gac aaa cta tgg gat att aat gtt aag gca tct att ctt ctt ctt cag 384  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Leu Gln  
 115 120 125  
 gat gct gct gca tat ttg cgg aag gga tca tcc gtg ata ttg att tct 432  
 Asp Ala Ala Tyr Leu Arg Lys Gly Ser Ser Val Ile Leu Ile Ser  
 130 135 140  
 tca att act ggc tat aat cca gaa cca gca ttg tcg atg tat gct gtt 480  
 Ser Ile Thr Gly Tyr Asn Pro Glu Pro Ala Leu Ser Met Tyr Ala Val  
 145 150 155 160  
 aca aaa act gcc ctg ctt ggt ctc aca aag gct ctt gct gct gag atg 528  
 Thr Lys Thr Ala Leu Leu Gly Leu Thr Lys Ala Leu Ala Ala Glu Met  
 165 170 175  
 ggg cca aat act cgt gtt aac tgt ata gcc cct ggt ttt gtt cct aca 576  
 Gly Pro Asn Thr Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 aat ttt gct cgt ttc ctc aca act aat gac acc att aaa aat gag ctt 624

PhoenixTemp32470.tmp.txt

Asn	Phe	Ala	Arg	Phe	Leu	Thr	Thr	Asn	Asp	Thr	Ile	Lys	Asn	Glu	Leu		
		195					200					205					
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Ile	Asp	Arg	Ser	Thr	Leu	Lys	Arg	Leu	Gly	Thr	Val	Glu	Asp	Met	Ala		
	210					215					220						
gca	gcc	gca	gct	ttc	ttg	gca	tca	gac	gat	gca	tca	ttc	att	aca	gct		720
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
	225				230					235					240		
gaa	act	att	gtt	gtt	gct	gga	gga	act	cga	tct	agg	ctg	tag				762
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Thr	Arg	Ser	Arg	Leu					
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<210> 2116  
 <211> 253  
 <212> PRT  
 <213> Oryza sativa

<400> 2116

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			20					25					30				
Glu	Gly	Ala	Ala	Val	Val	Ile	Ser	Arg	Lys	Lys	Lys	Asn	Val	Asp			
		35					40					45					
Glu	Ala	Val	Val	Gly	Leu	Arg	Ala	Lys	Gly	Ile	Thr	Val	Val	Gly	Val		
	50					55					60						
Val	Cys	His	Val	Ser	Ile	Pro	Glu	Gln	Arg	Lys	Asn	Leu	Ile	Asp	Thr		
65					70					75					80		
Ala	Val	Lys	Asn	Phe	Gly	His	Ile	Asp	Ile	Val	Val	Ser	Asn	Ala	Ala		
				85					90					95			
Ala	Asn	Pro	Ser	Val	Asp	Asn	Ile	Leu	Glu	Met	Lys	Glu	Pro	Ile	Leu		
			100					105					110				
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Leu	Gln		
		115					120					125					
Asp	Ala	Ala	Tyr	Leu	Arg	Lys	Gly	Ser	Ser	Val	Ile	Leu	Ile	Ser			
	130				135					140							
Ser	Ile	Thr	Gly	Tyr	Asn	Pro	Glu	Pro	Ala	Leu	Ser	Met	Tyr	Ala	Val		
145					150					155					160		
Thr	Lys	Thr	Ala	Leu	Leu	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Ala	Glu	Met		
				165					170					175			
Gly	Pro	Asn	Thr	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr		
		180						185					190				
Asn	Phe	Ala	Arg	Phe	Leu	Thr	Thr	Asn	Asp	Thr	Ile	Lys	Asn	Glu	Leu		
		195					200					205					
Ile	Asp	Arg	Ser	Thr	Leu	Lys	Arg	Leu	Gly	Thr	Val	Glu	Asp	Met	Ala		
	210					215					220						
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
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Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Thr	Arg	Ser	Arg	Leu					
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<210> 2117  
 <211> 888  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(888)

<400> 2117

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Gly	Leu	Leu	His	Gln	Phe	Ser	Thr	Ala	Ala	Asn	Ser	Gln	Arg	Leu	Ala		
			20					25					30				
ggg	aag	gtg	gcc	gtc	atc	acc	ggc	gcc	agc	ggc	atc	ggc	aag	gcg			144
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala		

## PhoenixTemp32470.tmp.txt

																192
tcg Ser	gcg Ala 50	aag Lys	gag Glu	ttc Phe	atc Ile	ggc Gly 55	aat Asn	ggc Gly	gcc Ala	aag Lys	gtt Val 60	ata Ile	ctc Leu	gcc Ala	gac Asp	
gtc Val 65	cag Gln	gac Asp	gac Asp	ctc Leu	ggc Gly 70	cgc Arg	gcc Ala	gtc Val	gcc Ala	gcc Ala 75	gag Glu	ctc Leu	ggc Gly	cct Pro	ggc Gly 80	240
gcg Ala	acg Thr	tac Tyr	acg Thr	cgg Arg 85	tgc Cys	gac Asp	gtc Val	acg Thr	gac Asp 90	gag Glu	gcg Ala	cag Gln	gtc Val	gcc Ala 95	gcg Ala	288
gcg Ala	gtg Val	gac Asp	ctc Leu 100	gcc Ala	gtg Val	gcg Ala	cgc Arg	cac His 105	ggg Gly	gcg Ala	ctc Leu	gac Asp	gtg Val 110	ttc Phe	tac Tyr	336
agc Ser	aac Asn	gcc Ala 115	ggc Gly	gtc Val	ctg Leu	ggc Gly	tcc Ser 120	atc Ile	gcg Ala	ccg Pro	gcg Ala	ccg Pro 125	ctc Leu	gcc Ala	tcc Ser	384
ctg Leu 130	gac Asp	ctg Leu	ggc Gly	gag Glu	ttc Phe	gac Asp 135	cgc Arg	gtc Val	atg Met	gcc Ala	gtg Val 140	aac Asn	gcc Ala	cgc Arg	gcc Ala	432
gcc Ala 145	gtc Val	gcc Ala	gcc Ala	gcc Ala	aag Lys 150	cac His	gcg Ala	gcg Ala	cgc Arg	gcc Ala 155	atg Met	gtg Val	ccg Pro	cgc Arg	cgg Arg 160	480
agc Ser	ggg Gly	tgc Cys	gtc Val	ctc Leu 165	ttc Phe	acg Thr	ggg Gly	agc Ser	gtg Val 170	tcg Ser	ggc Gly	gtg Val	gtg Val	ggc Gly 175	ggc Gly	528
acg Thr	ggg Gly	ccg Pro	acg Thr 180	tcg Ser	tac Tyr	ggc Gly	gtg Val	tcg Ser 185	aag Lys	gcg Ala	gcc Ala	gtg Val	ctg Leu 190	ggc Gly	gtg Val	576
gtg Val	cgc Arg	gcc Ala 195	gtg Val	gcc Ala	ggg Gly	gag Glu	ctg Leu 200	gcg Ala	cgc Arg	cac His	ggc Gly	gtg Val 205	cgg Arg	gcg Ala	aac Asn	624
gcc Ala 210	gtc Val	tcg Ser	ccg Pro	tgc Cys	ggc Gly	gtc Val 215	gcg Ala	acg Thr	ccg Pro	ctg Leu	tcc Ser 220	atg Met	gtg Val	cag Gln	gtc Val	672
ctt Leu 225	gag Glu	gcc Ala	tac Tyr	ccc Pro	ggg Gly 230	atg Met	agc Ser	ttc Phe	gag Glu	gag Glu 235	ctc Leu	aag Lys	aac Asn	gcc Ala	atg Met 240	720
gcg Ala	gcg Ala	tcc Ser	atg Met	gag Glu 245	cag Gln	atg Met	gaa Glu	gct Ala	ggc Gly 250	ccg Pro	ttg Leu	atc Ile	gac Asp	ccc Pro 255	gag Glu	768
gac Asp	gtg Val	gcg Ala	agg Arg 260	gcg Ala	gcc Ala	gtc Val	ttc Phe	ctg Leu 265	gcg Ala	tcc Ser	gac Asp	gag Glu	gcc Ala 270	agg Arg	tac Tyr	816
atc Ile	aac Asn	ggc Gly 275	cat His	aac Asn	ctc Leu	gtc Val	gtc Val 280	gac Asp	ggc Gly	ggc Gly	ttc Phe	aca Thr 285	acg Thr	cat His	aaa Lys	864
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<210> 2118
<211> 295
<212> PRT
<213> Oryza sativa
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			20					25					30		
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala
		35					40					45			
Ser	Ala	Lys	Glu	Phe	Ile	Gly	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp
	50					55					60				
Val	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Gly
65					70				75					80	
Ala	Thr	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala
				85					90					95	
Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Ala	Leu	Asp	Val	Phe	Tyr



## PhoenixTemp32470.tmp.txt

100 105 110  
 Ser Asn Ala Gly Val Leu Gly Ser Ile Ala Pro Ala Pro Leu Ala Ser  
 115 120 125  
 Leu Asp Leu Gly Glu Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala  
 130 135 140  
 Ala Val Ala Ala Ala Lys His Ala Ala Arg Ala Met Val Pro Arg Arg  
 145 150 155 160  
 Ser Gly Cys Val Leu Phe Thr Gly Ser Val Ser Gly Val Val Gly Gly  
 165 170 175  
 Thr Gly Pro Thr Ser Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val  
 180 185 190  
 Val Arg Ala Val Ala Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn  
 195 200 205  
 Ala Val Ser Pro Cys Gly Val Ala Thr Pro Leu Ser Met Val Gln Val  
 210 215 220  
 Leu Glu Ala Tyr Pro Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met  
 225 230 235 240  
 Ala Ala Ser Met Glu Gln Met Glu Ala Gly Pro Leu Ile Asp Pro Glu  
 245 250 255 260  
 Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr  
 265 270 275 280  
 Ile Asn Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Thr His Lys  
 285 290 295  
 Gly Asp Asn Arg Met Asn

<210> 2119  
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 <212> DNA  
 <213> Oryza sativa

<220>  
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 <222> (1)..(1107)

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 ctt cac ctc cga cga gcc ctt gca ccc gcg tcg tcg tct tct ccg gcg 96  
 Leu His Leu Arg Ala Leu Ala Pro Ala Ser Ser Ser Ser Pro Ala  
 20 25 30  
 ccg gtg ctg ttg ctg cgt cct gcg gtt tct tgt tct tct ttg ttt gtt 144  
 Pro Val Leu Leu Leu Arg Pro Ala Val Ser Cys Ser Ser Leu Phe Val  
 35 40 45  
 agc gac agg gcg gcg gcg gcg gcg gct cgc ccg agc agc ggc agc 192  
 Ser Asp Arg Ala Ala Ala Ala Ala Ala Arg Arg Ser Ser Gly Ser  
 50 55 60  
 agc agg aga agc atg gcg tcg cag cag ttc ccg ccg cag aag cag gag 240  
 Ser Arg Arg Ser Met Ala Ser Gln Gln Phe Pro Pro Gln Lys Gln Glu  
 65 70 75 80  
 acg cag ccg ggg aag gag gag cac gcc atg gat ccc cgc ccc gag gcc atc 288  
 Thr Gln Pro Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile  
 85 90 95  
 atc cag agc tac aag cca gcc aac aag ctg aag gac aag gtg gcg atc 336  
 Ile Gln Ser Tyr Lys Pro Ala Asn Lys Leu Lys Asp Lys Val Ala Ile  
 100 105 110  
 gtg acc ggc ggc gac tcc ggc atc ggg cgg gcg gtg tgc ctg tgc ttc 384  
 Val Thr Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe  
 115 120 125  
 gcg ctg gag ggc gcg acg gtg gcg ttc acg tac gtg aag ggg cag gag 432  
 Ala Leu Glu Gly Ala Thr Val Ala Phe Thr Tyr Val Lys Gly Gln Glu  
 130 135 140  
 gag aag gac gcg gag gag acg ctc cgc gcg ctg cgc gac atc agg gcg 480  
 Glu Lys Asp Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Arg Ala  
 145 150 155 160  
 cgc acc ggc gcc aag gac ccc atg gcg atc ccc gcc gac ctc ggg tac 528  
 Arg Thr Gly Ala Lys Asp Pro Met Ala Ile Pro Ala Asp Leu Gly Tyr  
 165 170 175

## PhoenixTemp32470.tmp.txt

gac	gac	aac	tgc	cgc	aag	gtg	gtc	gac	gag	gtc	gcc	ggc	gcg	tac	ggc	576
Asp	Asp	Asn	Cys	Arg	Lys	Val	Val	Asp	Glu	Val	Ala	Gly	Ala	Tyr	Gly	
			180					185					190			
ggc	gcc	atc	gac	atc	ctc	gtc	aac	aac	gcc	gcc	gag	cag	tac	gag	cgc	624
Gly	Ala	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Ala	Glu	Gln	Tyr	Glu	Arg	
		195					200					205				
ccc	tcc	atc	acc	gac	atc	acc	gag	gac	gac	ctg	gaa	cgc	gtg	ttc	cgc	672
Pro	Ser	Ile	Thr	Asp	Ile	Thr	Glu	Asp	Asp	Leu	Glu	Arg	Val	Phe	Arg	
	210					215					220					
acc	aac	atc	ttc	tcc	tac	ttc	ttc	atg	tcg	aag	cac	gcc	gtg	aag	cgg	720
Thr	Asn	Ile	Phe	Ser	Tyr	Phe	Phe	Met	Ser	Lys	His	Ala	Val	Lys	Arg	
225					230					235					240	
atg	cgc	gat	cgc	cgc	ggc	ggc	gcc	ggc	gcc	ggc	ggg	tgc	agc	atc	atc	768
Met	Arg	Asp	Arg	Arg	Gly	Gly	Ala	Gly	Ala	Gly	Gly	Cys	Ser	Ile	Ile	
				245				250						255		
aac	acg	tcg	tcg	atc	aac	gcg	tac	aag	ggg	aac	aag	acg	ctg	ctg	gac	816
Asn	Thr	Ser	Ser	Ile	Asn	Ala	Tyr	Lys	Gly	Asn	Lys	Thr	Leu	Leu	Asp	
			260					265					270			
tac	acg	gcg	acc	aag	ggc	gcc	atc	gtg	gcg	ttc	acg	agg	gcg	ctg	gcg	864
Tyr	Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	Thr	Arg	Ala	Leu	Ala	
		275					280					285				
ctg	cag	ctg	gcg	gag	gag	ggg	atc	cgg	gtg	aac	ggc	gtc	gcg	ccg	ggg	912
Leu	Gln	Leu	Ala	Glu	Glu	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Gly	
	290					295					300					
ccg	atc	tgg	acg	ccg	ctg	atc	ccg	gcg	tcg	ttc	gcg	gag	gag	aag	gtg	960
Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ala	Ser	Phe	Ala	Glu	Glu	Lys	Val	
305					310					315					320	
agg	cag	ttc	ggc	tcc	cag	gtg	ccc	atg	ggc	cgc	gcc	ggc	cag	ccg	tcg	1008
Arg	Gln	Phe	Gly	Ser	Gln	Val	Pro	Met	Gly	Arg	Ala	Gly	Gln	Pro	Ser	
				325					330					335		
gag	gtg	gcg	ccc	agc	ttc	gtc	ttc	ctc	gcc	agc	gac	gac	gcc	tcc	tac	1056
Glu	Val	Ala	Pro	Ser	Phe	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr	
			340				345						350			
atg	tcc	ggc	cag	atg	ctg	cac	gtc	aac	ggc	ggc	gtc	atc	gtc	aac	ggc	1104
Met	Ser	Gly	Gln	Met	Leu	His	Val	Asn	Gly	Gly	Val	Ile	Val	Asn	Gly	
		355					360					365				
tag																1107

<210> 2120  
 <211> 368  
 <212> PRT  
 <213> Oryza sativa

<400> 2120  
 Met Arg Ala Leu Ser Leu Ala Arg Ala Ser Ser Pro Pro Pro Leu Leu  
 1 5 10 15  
 Leu His Leu Arg Arg Ala Leu Ala Pro Ala Ser Ser Ser Ser Pro Ala  
 20 25 30  
 Pro Val Leu Leu Arg Pro Ala Val Ser Cys Ser Ser Leu Phe Val  
 35 40 45  
 Ser Asp Arg Ala Ala Ala Ala Ala Arg Arg Ser Ser Gly Ser  
 50 55 60  
 Ser Arg Arg Ser Met Ala Ser Gln Gln Phe Pro Pro Gln Lys Gln Glu  
 65 70 75 80  
 Thr Gln Pro Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile  
 85 90 95  
 Ile Gln Ser Tyr Lys Pro Ala Asn Lys Leu Lys Asp Lys Val Ala Ile  
 100 105 110  
 Val Thr Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe  
 115 120 125  
 Ala Leu Glu Gly Ala Thr Val Ala Phe Thr Tyr Val Lys Gly Gln Glu  
 130 135 140  
 Glu Lys Asp Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Arg Ala  
 145 150 155 160  
 Arg Thr Gly Ala Lys Asp Pro Met Ala Ile Pro Ala Asp Leu Gly Tyr  
 165 170 175  
 Asp Asp Asn Cys Arg Lys Val Val Asp Glu Val Ala Gly Ala Tyr Gly  
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Gly	Ala	Ile	180	Asp	Ile	Leu	Val	Asn	185	Asn	Ala	Ala	Glu	Gln	190	Tyr	Glu	Arg
Pro	Ser	195	Thr	Asp	Ile	Thr	200	Glu	Asp	Asp	Leu	Glu	205	Arg	Val	Phe	Arg	
Thr	Asn	Ile	Phe	Ser	Tyr	Phe	Phe	Met	Ser	Lys	His	Ala	Val	Lys	Arg	240		
Met	Arg	Asp	Arg	Arg	Gly	Gly	Ala	Gly	Ala	Gly	Gly	Cys	Ser	Ile	255	Ile		
Asn	Thr	Ser	Ser	Ile	Asn	Ala	Tyr	Lys	265	Gly	Asn	Lys	Thr	Leu	270	Leu	Asp	
Tyr	Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	Thr	Arg	Ala	Leu	Ala			
Leu	Gln	Leu	Ala	Glu	Glu	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Gly			
Pro	Ile	Trp	Thr	Pro	Leu	Ile	Pro	Ala	Ser	Phe	Ala	Glu	Glu	Lys	Val	320		
Arg	Gln	Phe	Gly	Ser	Gln	Val	Pro	Met	Gly	Arg	Ala	Gly	Gln	Pro	Ser	335		
Glu	Val	Ala	Pro	Ser	Phe	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr			
Met	Ser	Gly	Gln	Met	Leu	His	Val	Asn	Gly	Gly	Val	Ile	Val	Asn	Gly			

<220>  
<221> CDS  
<222> (1)..(900)

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## PhoenixTemp32470.tmp.txt

			180				185			190								
gac	atc	agg	gtc	aat	gga	att	gca	cca	ggg	cca	att	gaa	ggc	act	cca			
Asp	Ile	Arg	Val	Asn	Gly	Ile	Ala	Pro	Gly	Pro	Ile	Glu	Gly	Thr	Pro			624
		195					200					205						
gga	atg	agg	aag	ctt	gca	cct	gag	gaa	atg	gcc	aag	ggg	agt	cgg	gaa			672
Gly	Met	Arg	Lys	Leu	Ala	Pro	Glu	Glu	Met	Ala	Lys	Gly	Ser	Arg	Glu			
		210				215					220							
ata	atg	cct	tta	ttt	aag	ttg	ggt	gaa	aaa	tgg	gac	ata	gct	atg	gct			720
Ile	Met	Pro	Leu	Phe	Lys	Leu	Gly	Glu	Lys	Trp	Asp	Ile	Ala	Met	Ala			
					230					235					240			
gca	ctt	tac	ctt	gct	tct	gat	gca	gga	aaa	tat	gta	aat	ggg	act	aca			768
Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Ala	Gly	Lys	Tyr	Val	Asn	Gly	Thr	Thr			
				245					250					255				
gtg	gtt	gtt	gat	gga	ggt	ctt	tgg	cta	agt	cgc	cct	cgc	cat	att	ccg			816
Val	Val	Val	Asp	Gly	Gly	Leu	Trp	Leu	Ser	Arg	Pro	Arg	His	Ile	Pro			
			260					265					270					
aag	gag	gaa	gtg	aag	gag	ctc	tca	aag	gtt	gtc	gag	aag	aag	gtt	agg			864
Lys	Glu	Glu	Val	Lys	Glu	Leu	Ser	Lys	Val	Val	Glu	Lys	Lys	Val	Arg			
		275					280					285						
gcc	tct	ggt	gtt	ggt	gtg	cca	tca	agc	aaa	ttg	tga							900
Ala	Ser	Gly	Val	Gly	Val	Pro	Ser	Ser	Lys	Leu								
		290				295												

<210> 2122  
 <211> 299  
 <212> PRT  
 <213> Oryza sativa

<400> 2122  
 Met Ala Val Glu Ser Pro Phe Arg Ala Asp Val Leu Arg Gly Lys Ala  
 1 5 10 15  
 Ala Leu Val Thr Gly Gly Gly Ser Gly Ile Gly Phe Glu Ile Ala Ala  
 20 25 30  
 Gln Leu Ala Arg His Gly Ala His Val Ala Ile Met Gly Arg Arg Arg  
 35 40 45  
 Glu Val Leu Asp Lys Ala Val Ala Ala Leu Arg Ser His Gly Leu Arg  
 50 55 60  
 Ala Val Gly Phe Glu Gly Asp Val Arg Lys Gln Glu Asp Ala Ala Arg  
 65 70 75 80  
 Val Val Ala Ala Thr Val Gln His Phe Gly Lys Leu Asp Ile Leu Val  
 85 90 95  
 Asn Gly Ala Ala Gly Asn Phe Leu Ala Ser Pro Glu Asp Leu Thr Pro  
 100 105 110  
 Lys Gly Phe Arg Thr Val Val Asp Ile Asp Thr Val Gly Thr Tyr Thr  
 115 120 125  
 Met Cys Tyr Glu Ala Leu Lys Tyr Leu Lys Lys Gly Pro Gly Lys  
 130 135 140  
 Gly Pro Ser Thr Gly Gly Val Ile Ile Asn Ile Ser Ala Thr Leu His  
 145 150 155 160  
 Tyr Thr Ala Ala Trp Tyr Gln Ile His Val Ser Ala Ala Lys Ala Gly  
 165 170 175  
 Val Asp Ser Ile Thr Arg Ser Leu Ala Leu Glu Trp Gly Thr Asp Tyr  
 180 185 190  
 Asp Ile Arg Val Asn Gly Ile Ala Pro Gly Pro Ile Glu Gly Thr Pro  
 195 200 205  
 Gly Met Arg Lys Leu Ala Pro Glu Glu Met Ala Lys Gly Ser Arg Glu  
 210 215 220  
 Ile Met Pro Leu Phe Lys Leu Gly Glu Lys Trp Asp Ile Ala Met Ala  
 225 230 235 240  
 Ala Leu Tyr Leu Ala Ser Asp Ala Gly Lys Tyr Val Asn Gly Thr Thr  
 245 250 255  
 Val Val Val Asp Gly Gly Leu Trp Leu Ser Arg Pro Arg His Ile Pro  
 260 265 270  
 Lys Glu Glu Val Lys Glu Leu Ser Lys Val Val Glu Lys Lys Val Arg  
 275 280 285  
 Ala Ser Gly Val Gly Val Pro Ser Ser Lys Leu  
 290 295

<210> 2123

<211> 795  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(795)

```

<400> 2123
atg gcc atg gcg act acc agc tct aaa aac gag agg tgg agc ctc gcc      48
Met Ala Met Ala Thr Thr Ser Ser Lys Asn Glu Arg Trp Ser Leu Ala
 1          5          10          15
ggc gcc acc gcg ctc gtc acc ggc ggc agc aaa ggc atc ggc cgc gcc      96
Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Arg Ala
          20          25          30
atc gtc gag gag ctc gcc agc ttg ggc gcg acg gtg cac acc tgc gcc      144
Ile Val Glu Glu Leu Ala Ser Leu Gly Ala Thr Val His Thr Cys Ala
          35          40          45
cgg acc gag gcg ccg ctg aac aga tgc cgg gag gag ttg acg gcc aag      192
Arg Thr Glu Ala Pro Leu Asn Arg Cys Arg Glu Glu Leu Thr Ala Lys
          50          55          60
ggc ctt gcc gtc acc gtc tcc gtc tgt gac gtc tgc ttg cgt gcc gac      240
Gly Leu Ala Val Thr Val Ser Val Cys Asp Val Ser Leu Arg Ala Asp
 65          70          75          80
agg gag gcg ctc gcc ggc acg gtg cgc gag ctc ttc ggc ggc aag ctc      288
Arg Glu Ala Leu Ala Gly Thr Val Arg Glu Leu Phe Gly Gly Lys Leu
          85          90          95
agc atc ctg gtg aac tgc gcc ggg atg tgc ttc ctg aag ccg gcg gtg      336
Ser Ile Leu Val Asn Cys Ala Gly Met Ser Phe Leu Lys Pro Ala Val
          100          105          110
gag ctg acg ccg gac gat tgc tgc cag gtg atg ggg atg aac ttc gag      384
Glu Leu Thr Pro Asp Asp Cys Ser Gln Val Met Gly Met Asn Phe Glu
          115          120          125
tcg tgc ttc cac ttg agc cag ctg gcg tac cct ctc ctc aag gcc tct      432
Ser Cys Phe His Leu Ser Gln Leu Ala Tyr Pro Leu Leu Lys Ala Ser
          130          135          140
cag aga ggt tgt atc atc aac atc tgc tcc att gct tgc gtg gtc gcg      480
Gln Arg Gly Cys Ile Ile Asn Ile Ser Ser Ile Ala Ser Val Val Ala
          145          150          155          160
ttc tgc tct ctt ccc aac gcc gtc tac tca gct gct aaa gga gca atg      528
Phe Cys Ser Leu Pro Asn Ala Val Tyr Ser Ala Ala Lys Gly Ala Met
          165          170          175          180
aac caa gtc aca agg aac ctg gct gct gag tgg gcg aac gat ggg atc      576
Asn Gln Val Thr Arg Asn Leu Ala Ala Glu Trp Ala Asn Asp Gly Ile
          185          190          195          200
aga gtt aac tgt gtt gcg cca ggc ttc att cgt act ccg ctc cta tct      624
Arg Val Asn Cys Val Ala Pro Gly Phe Ile Arg Thr Pro Leu Leu Ser
          205          210          215          220
gaa ttc gtg gag ggt aac gag ttg ggg cga gca gag ttc agc cgt gtt      672
Glu Phe Val Glu Gly Asn Glu Leu Gly Arg Ala Glu Phe Ser Arg Val
          225          230          235          240
ccc atg ggc cgt ctc ggt gaa gag cca gag gac atc gca tgc ctg gtg gcg      720
Pro Met Gly Arg Leu Gly Glu Pro Glu Asp Ile Ala Ser Leu Val Ala
          245          250          255          260
ttt ctg tca atg cca gcg tcc tcc tat ata acc ggt cag gtc ata tgc      768
Phe Leu Ser Met Pro Ala Ser Ser Tyr Ile Thr Gly Gln Val Ile Cys
          265          270          275          280
gcc gac ggc ggt cgc tgc ctt tct tga      795
Ala Asp Gly Gly Arg Cys Leu Ser
          285          290          295          300

```

<210> 2124  
 <211> 264  
 <212> PRT  
 <213> Oryza sativa

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<400> 2124
Met Ala Met Ala Thr Thr Ser Ser Lys Asn Glu Arg Trp Ser Leu Ala
1          5          10          15

```

## PhoenixTemp32470.tmp.txt

Gly Ala Thr Ala<sub>20</sub> Leu Val Thr Gly Gly<sub>25</sub> Ser Lys Gly Ile<sub>30</sub> Gly Arg Ala  
 Ile Val Glu<sub>35</sub> Glu Leu Ala Ser Leu<sub>40</sub> Gly Ala Thr Val His<sub>45</sub> Thr Cys Ala  
 Arg Thr<sub>50</sub> Glu Ala Pro Leu Asn<sub>55</sub> Arg Cys Arg Glu Glu<sub>60</sub> Leu Thr Ala Lys  
 Gly<sub>65</sub> Leu Ala Val Thr Val<sub>70</sub> Ser Val Cys Asp Val<sub>75</sub> Ser Leu Arg Ala Asp<sub>80</sub>  
 Arg Glu Ala Leu Ala<sub>85</sub> Gly Thr Val Arg Glu<sub>90</sub> Leu Phe Gly Gly<sub>95</sub> Lys Leu  
 Ser Ile Leu Val<sub>100</sub> Asn Cys Ala Gly Met<sub>105</sub> Ser Phe Leu Lys Pro Ala Val<sub>110</sub>  
 Glu Leu Thr<sub>115</sub> Pro Asp Asp Cys Ser<sub>120</sub> Gln Val Met Gly Met<sub>125</sub> Asn Phe Glu  
 Ser Cys<sub>130</sub> Phe His Leu Ser Gln<sub>135</sub> Leu Ala Tyr Pro Leu Leu Lys Ala Ser  
 Gln<sub>145</sub> Arg Gly Cys Ile Ile<sub>150</sub> Asn Ile Ser Ser Ile<sub>155</sub> Ala Ser Val Val Ala<sub>160</sub>  
 Phe Cys Ser Leu Pro<sub>165</sub> Asn Ala Val Tyr Ser<sub>170</sub> Ala Ala Lys Gly Ala Met<sub>175</sub>  
 Asn Gln Val Thr<sub>180</sub> Arg Asn Leu Ala Ala<sub>185</sub> Glu Trp Ala Asn Asp Gly Ile<sub>190</sub>  
 Arg Val Asn<sub>195</sub> Cys Val Ala Pro Gly<sub>200</sub> Phe Ile Arg Thr Pro Leu Leu Ser<sub>205</sub>  
 Glu Phe<sub>210</sub> Val Glu Gly Asn Glu<sub>215</sub> Leu Gly Arg Ala Glu<sub>220</sub> Phe Ser Arg Val  
 Pro Met Gly Arg Leu Gly<sub>230</sub> Glu Pro Glu Asp Ile<sub>235</sub> Ala Ser Leu Val Ala<sub>240</sub>  
 Phe Leu Ser Met Pro<sub>245</sub> Ala Ser Ser Tyr Ile<sub>250</sub> Thr Gly Gln Val Ile<sub>255</sub> Cys  
 Ala Asp Gly Gly<sub>260</sub> Arg Cys Leu Ser

<210> 2125  
 <211> 966  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(966)

<400> 2125  
 atg ggg acc atc acc gcc gcc aaa gca gcc gcg gcg gcg gcc gtc ttc 48  
 Met Gly Thr Ile Thr<sub>5</sub> Ala Ala Lys Ala<sub>10</sub> Ala Ala Ala Ala Val<sub>15</sub> Phe  
 cag tct ccg tgc tcc cct gcg cct gcg gcc agc ttc ccc gcc cgc agc 96  
 Gln Ser Pro Cys Ser Pro Ala Pro Ala<sub>25</sub> Ser Phe Pro Ala Arg Ser  
 gtc cgg ccg gat cgc cgc cgc gcc gtc tcg ctc tca gtc tca ggt gta 144  
 Val Arg Pro<sub>35</sub> Asp Arg Arg Arg Ala<sub>40</sub> Val Ser Leu Ser Val<sub>45</sub> Ser Gly Val  
 aga act cat gtt gca gct gtt gaa caa gca gtg gta caa gat gct att 192  
 Arg Thr His Val Ala Ala Val Glu Gln Ala Val Val Gln Asp Ala Ile  
 gca cag tca gag gct cca gtt gtt gtt gtt aca ggt gct tcc agg gga 240  
 Ala Gln Ser Glu Ala Pro<sub>70</sub> Val Val Val Thr<sub>75</sub> Gly Ala Ser Arg Gly<sub>80</sub>  
 att ggg aaa gcc att gca ttg gct ttt gga aaa gcc ggc tgc aag gtc 288  
 Ile Gly Lys Ala Ile Ala Leu Ala Phe Gly<sub>90</sub> Lys Ala Gly Cys Lys<sub>95</sub> Val  
 tta gtg aat tat gct cgg tct tca aca gat gct gaa gaa gtc tgc aaa 336  
 Leu Val Asn<sub>100</sub> Tyr Ala Arg Ser Ser Thr<sub>105</sub> Asp Ala Glu Glu<sub>110</sub> Val Cys Lys  
 gag att gaa gga ttt ggt ggt cag gca att acc ttc cga gga gat gtt 384  
 Glu Ile Glu Gly Phe Gly Gly Gln Ala Ile Thr Phe Arg<sub>125</sub> Gly Asp Val  
 tct aat gaa gcc gat gtg gat tct atg att aaa gca gct gtt gat aca 432  
 Ser Asn Glu Ala Asp Val Asp Ser Met Ile Lys Ala Val Asp Thr

## PhoenixTemp32470.tmp.txt

[illegible]

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<210> 2126
<211> 321
<212> PRT
<213> Oryza sativa
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<400>	2126														
Met	Gly	Thr	Ile	Thr <sub>5</sub>	Ala	Ala	Lys	Ala	Ala <sub>10</sub>	Ala	Ala	Ala	Ala	Val <sub>15</sub>	Phe
1	Gln	Ser	Pro	Cys <sub>20</sub>	Ser	Pro	Ala	Pro	Ala <sub>25</sub>	Ala	Ser	Phe	Pro	Ala <sub>30</sub>	Arg Ser
Val	Arg	Pro	Asp	Arg	Arg	Arg	Ala <sub>40</sub>	Val	Ser	Leu	Ser	Val <sub>45</sub>	Ser	Gly	Val
Arg	Thr <sub>50</sub>	His	Val	Ala	Ala	Val <sub>55</sub>	Glu	Gln	Ala	Val	Val <sub>60</sub>	Gln	Asp	Ala	Ile
Ala	Gln	Ser	Glu	Ala	Pro <sub>70</sub>	Val	Val	Val	Val	Thr <sub>75</sub>	Gly	Ala	Ser	Arg	Gly <sub>80</sub>
65	Ile	Gly	Lys	Ala	Ile <sub>85</sub>	Ala	Leu	Ala	Phe	Gly <sub>90</sub>	Lys	Ala	Gly	Cys	Lys <sub>95</sub> Val
Leu	Val	Asn	Tyr <sub>100</sub>	Ala	Arg	Ser	Ser	Thr <sub>105</sub>	Asp	Ala	Glu	Glu	Val <sub>110</sub>	Cys	Lys
Glu	Ile	Glu <sub>115</sub>	Gly	Phe	Gly	Gly	Gln <sub>120</sub>	Ala	Ile	Thr	Phe	Arg <sub>125</sub>	Gly	Asp	Val
Ser	Asn <sub>130</sub>	Glu	Ala	Asp	Val	Asp <sub>135</sub>	Ser	Met	Ile	Lys	Ala <sub>140</sub>	Ala	Val	Asp	Thr
Trp	Gly	Thr	Ile	Asp	Val <sub>150</sub>	Leu	Val	Asn	Asn	Ala <sub>155</sub>	Gly	Ile	Thr	Arg	Asp <sub>160</sub>
145	Thr	Leu	Leu	Leu	Arg <sub>165</sub>	Met	Lys	Lys	Ser	Gln <sub>170</sub>	Trp	Gln	Asp	Val <sub>175</sub>	Val Asp
Leu	Asn	Leu	Thr <sub>180</sub>	Gly	Val	Phe	Leu	Cys <sub>185</sub>	Thr	Gln	Ala	Ala	Thr <sub>190</sub>	Lys	Val
Met	Met	Lys	Lys	Lys	Lys	Gly	Arg	Val	Ile	Asn	Ile	Ala	Ser	Val	val

## PhoenixTemp32470.tmp.txt

195  
 Gly Leu Thr Gly Asn Leu Gly 200  
 210 Thr Val Asn Tyr Ala 205  
 225 Ala Val Ile Gly Leu Thr Lys Thr Thr Ala Arg Glu Phe Ala Ser Arg  
 Asn Ile Thr Val Asn 230 Ala Val Ala Pro Gly Phe Ile Ser Ser Asp Met  
 245  
 Thr Ser Gln Leu 260 Gly Glu Glu Ile Glu 265 Lys Lys Asn Leu Ile Thr Ile  
 Pro Leu Gly Arg Tyr Gly Glu Pro Glu Glu Val Ala Asp Leu Val Glu  
 275  
 Phe Leu Ala Leu Ser Pro Gly Glu Ser Tyr Ile Thr Gly Gln Val Ser  
 290  
 Tyr Ser Arg Val Thr Ile 310 Gln Val Leu Thr Ile 315 Asp Gly Gly Met Val 320  
 305  
 Met

<210> 2127  
 <211> 1077  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1077)

<400> 2127  
 atg cgc gcg cta ctg cat ctg cgg ctc atc aat ccg tgc agt ccc aga 48  
 Met Arg Ala Leu Leu His Leu Arg Leu Ile Asn Pro Cys Ser Pro Arg  
 1 5 10 15  
 gca ccc cgt ctt ccc gct act ccc gca agg gcg ctc gtc gct tcc ttc 96  
 Ala Pro Arg Leu Pro Ala Thr Pro Ala Arg Ala Leu Val Ala Ser Phe  
 20 25 30  
 tcc ggg gcg tgg cag gca cct tct ggt aga gcg aga gcg aga gca gcg 144  
 Ser Gly Ala Trp Gln Ala Pro Ser Gly Arg Ala Arg Ala Arg Ala Ala  
 35 40 45  
 ccg ccg gca gtt cgc gct atg gcg tcc cag cag gtg ttc ccg gct cag 192  
 Pro Pro Ala Val Arg Ala Met Ala Ser Gln Gln Val Phe Arg Ala Gln  
 50 55 60  
 cag cag cag cag cag cag ttc ccg gct cag cag gag tcc cag ccg 240  
 Gln Gln Gln Gln Gln Gln Phe Pro Ala Gln Gln Gln Glu Ser Gln Pro  
 65 70 75 80  
 ggg aag gag cac gcg atg gac ccc cgg ccc gag gcc atc gtc cag gac 288  
 Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile Val Gln Asp  
 85 90 95  
 tac aag gcc gcc aac aag ctc aag gac aag gtg gcg ctc gtg acc ggc 336  
 Tyr Lys Ala Ala Asn Lys Leu Lys Asp Lys Val Ala Leu Val Thr Gly  
 100 105 110  
 ggc gac tcc ggc atc ggg cgc gcc gtg tgc ctg tgc ttc gcg aag gag 384  
 Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe Ala Lys Glu  
 115 120 125  
 ggc gcg acg gtg gcc ttc acc ttc gtg agg ggg cag gag gag aag gac 432  
 Gly Ala Thr Val Ala Phe Thr Phe Val Arg Gly Gln Glu Glu Lys Asp  
 130 135 140  
 gcg gag gag acg ctg cgt gcg ctg cgc gac atc ggg tcc gag acg ggc 480  
 Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Gly Ser Glu Thr Gly  
 145 150 155 160  
 gcg cgc gag ccg atg gcc ctg ccc gcc gac ctc ggg tac gag gcc aac 528  
 Ala Arg Glu Pro Met Ala Leu Pro Ala Asp Leu Gly Tyr Glu Ala Asn  
 165 170 175  
 tgc cgg gag gtg gtg gag cgg gtg gcg tcg gcg tac ggc ggg cgc atc 576  
 Cys Arg Glu Val Val Glu Arg Val Ala Ser Ala Tyr Gly Gly Arg Ile  
 180 185 190  
 gac gtg gtg gtg aac aac gcg gcg gag cag tac gag ccg gag agc atc 624  
 Asp Val Val Val Asn Asn Ala Ala Glu Gln Tyr Glu Arg Glu Ser Ile  
 195 200 205  
 ggg gac gtg acg gag gcg gac ctg gag cgc gtg ttc ccg acc aac atc 672  
 Gly Asp Val Thr Glu Ala Asp Leu Glu Arg Val Phe Arg Thr Asn Ile



## PhoenixTemp32470.tmp.txt

210	215	220		
tcc	tcc	tcc	aac	cac
Phe	Ser	Lys	His	Ala
225	230	235	gag	gag
gag	gag	gag	gag	gag
Gly	Ala	Ala	Tyr	Lys
aag	acg	ctg	ctg	gac
Lys	Thr	Leu	Leu	Asp
acg	cg	gag	ctc	tcg
Thr	Arg	Ala	Leu	Ser
gag	gag	gag	gag	gag
Gly	Val	Ala	Pro	Gly
290	295	300		
gag	aag	gag	aag	gtg
Gly	Lys	Glu	Lys	Val
305				
gag	gag	gag	gag	gag
Ala	Ala	Gln	Pro	Ala
aac	cag	gat	tcg	tcc
Asn	Gln	Asp	Ser	Ser
gag	gag	gag	gag	gag
Gly	Val	Ala	Pro	Gly
355				

<210> 2128  
 <211> 358  
 <212> PRT  
 <213> Zea mays

<400> 2128	
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Ala Pro Arg Leu Pro Ala Thr Pro Ala Arg Ala Leu Val Ala Ser Phe	
20 25 30	
Ser Gly Ala Trp Gln Ala Pro Ser Gly Arg Ala Arg Ala Ala Ala	
35 40 45	
Pro Pro Ala Val Arg Ala Met Ala Ser Gln Gln Val Phe Arg Ala Gln	
50 55 60	
Gln Gln Gln Gln Gln Gln Phe Pro Ala Gln Gln Gln Glu Ser Gln Pro	
65 70 75 80	
Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile Val Gln Asp	
85 90 95	
Tyr Lys Ala Ala Asn Lys Leu Lys Asp Lys Val Ala Leu Val Thr Gly	
100 105 110	
Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe Ala Lys Glu	
115 120 125	
Gly Ala Thr Val Ala Phe Thr Phe Val Arg Gly Gln Glu Glu Lys Asp	
130 135 140	
Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Gly Ser Glu Thr Gly	
145 150 155 160	
Ala Arg Glu Pro Met Ala Leu Pro Ala Asp Leu Gly Tyr Glu Ala Asn	
165 170 175	
Cys Arg Glu Val Val Glu Arg Val Ala Ser Ala Tyr Gly Gly Arg Ile	
180 185 190	
Asp Val Val Val Asn Asn Ala Ala Glu Gln Tyr Glu Arg Glu Ser Ile	
195 200 205	
Gly Asp Val Thr Glu Ala Asp Leu Glu Arg Val Phe Arg Thr Asn Ile	
210 215 220	
Phe Ser Tyr Phe Leu Val Ser Lys His Ala Val Pro Arg Met Glu Pro	
225 230 235 240	
Gly Ala Cys Ile Ile Asn Thr Ser Ser Val Asn Ala Tyr Lys Gly Asn	
245 250 255	
Lys Thr Leu Leu Asp Tyr Thr Ala Thr Lys Gly Ala Ile Val Ala Phe	
260 265 270	

## PhoenixTemp32470.tmp.txt

Thr Arg Ala Leu Ser Leu Gln Leu Ala Asp Arg Gly Ile Arg Val Asn  
 275 280 285  
 Gly Val Ala Pro Gly Pro Val Trp Thr Pro Leu Ile Pro Ala Ser Phe  
 290 300  
 Gly Lys Glu Lys Val Glu Gln Phe Gly Ser Gln Val Pro Met Lys Arg  
 305 310 315  
 Ala Ala Gln Pro Ala Glu Ile Ala Pro Ser Phe Val Phe Leu Ala Ser  
 325 330 335  
 Asn Gln Asp Ser Ser Tyr Met Ser Gly Gln Ile Leu His Val Asn Gly  
 340 345 350  
 Gly Val Ile Val Asn Ser  
 355

&lt;210&gt; 2129

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;400&gt; 2129

atg gat gtc aag tgc cgg cgt ctg gag ggg aag gtg gcc atc gtg acg	48
Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr	
1 5 10 15	
gcg tcc acg atg ggg atc ggc ctc gcc atc gcc gag cgc ctc ggt ctg	96
Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu	
20 25 30	
gag ggc gcc gtc gtc atc tcc tcc cgc aag cag aag aac gtg aac	144
Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn	
35 40 45	
gag gcg gtg gag ggg ctc agg gcc aag ggt atc acc gcg gtt ggt gcc	192
Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala	
50 55 60	
gtc tgc cac gtc tcc gac gca cag cag cgc aag agc ctc atc gag acg	240
Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr	
65 70 75 80	
gcc gtc aag agc ttt ggg cac ata gat att ctt gtc tcc aat gct gcc	288
Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala	
85 90 95	
gca aat cct tct gta gat agc ata ctt gaa atg aaa gag tct gtt ctc	336
Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu	
100 105 110	
gat aag ctg tgg gat att aac gtc aag gct tct atc ctt ctt att cag	384
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln	
115 120 125	
gat gct gct cct cac cta cgg aag ggg tca tct gtg att att att tct	432
Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser	
130 135 140	
tca att gct ggt tac aat cca gaa caa gga ttg aca atg tat ggt gtc	480
Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val	
145 150 155 160	
aca aag act gct ctc ttt ggt ctc acg aag gct ctt gct ggt gag atg	528
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met	
165 170 175	
gga ccc gat act cgt gtt aac tgt ata gcc cct ggt ttt gtt cct aca	576
Gly Pro Asp Thr Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr	
180 185 190	
cgg ttt gct agt ttc ctc aca gaa aat gag acc att agg aaa gag ctt	624
Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu	
195 200 205	
aac gag agg acc aag ctt aag aga ttg ggt act gtg gaa gac atg gct	672
Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala	
210 215 220	
gcg gct gcg gct ttt ctg gcg tct gac gac gca tca tac att acg gct	720
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala	
225 230 235 240	
gaa acc att gtt gtt gct gga ggg gtg cag tct agg ctg taa	762

Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
245 250

<210> 2130  
<211> 253  
<212> PRT  
<213> Zea mays

<400> 2130  
Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr  
1 5 10 15  
Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
20 25 30  
Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn  
35 40 45  
Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala  
50 55 60  
Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr  
65 70 75 80  
Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
85 90 95  
Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
100 105 110  
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Ile Gln  
115 120 125  
Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
130 135 140  
Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
145 150 155 160  
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
165 170 175  
Gly Pro Asp Thr Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
180 185 190  
Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
195 200 205  
Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
210 215 220  
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
225 230 235 240  
Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
245 250

<210> 2131  
<211> 843  
<212> DNA  
<213> Zea mays

<220>  
<221> CDS  
<222> (1)..(843)

<400> 2131  
atg tcg tcg gcg ggg cca ccg ccg ccg ctg ccg ccg tgg agc agg ctg 48  
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gag ggg cag gtg gtg ctg gtg acg ggc gct tcc tcc ggc atc gga cgc 96  
Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg  
20 25 30  
gac ttc tgc ctc gac ctg gcg cgc gcc ggc tgc cgc gtc gtc gcc gcc 144  
Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala  
35 40 45  
gcc cgc cgc gcc gat cgt ctc cgc tgc ctc tgc gac gag atc aac ccc 192  
Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro  
50 55 60  
tcc gct gcc tcc cga gcc ccc cgc gcg gtg gct gtg gag gtc gac gtc 240  
Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val  
65 70 75 80  
gcc gcc ggt ggt tcg gcc ctg gag gcg gcg gtg cag aag gcc tgg gac 288  
Ala Ala Gly Gly Ser Ala Leu Glu Ala Ala Val Gln Lys Ala Trp Asp

## PhoenixTemp32470.tmp.txt

														85															90															95	
gcc	ttt	ggc	cgt	atc	gac	gcc	ttg	gtc	aac	aac	gcc	ggc	ata	cga	ggg	336																													
Ala	Phe	Gly	Arg	Ile	Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	Ile	Arg	Gly																														
																100																	110												
gca	gtg	cat	tct	cca	tta	gat	tgg	ccc	gag	gat	gag	tgg	gac	aga	atc	384																													
Ala	Val	His	Ser	Pro	Leu	Asp	Trp	Pro	Glu	Asp	Glu	Trp	Asp	Arg	Ile																														
																115																	125												
atc	aag	acg	aac	ctt	acc	gga	tca	tgg	ctc	gtg	gcc	aaa	cat	gtc	tgt	432																													
Ile	Lys	Thr	Asn	Leu	Thr	Gly	Ser	Trp	Leu	Val	Ala	Lys	His	Val	Cys																														
																130																	140												
cga	cgc	atg	cgt	gat	gcc	aag	ctg	aag	ggg	tca	gtg	ggt	aac	atc	acc	480																													
Arg	Arg	Met	Arg	Asp	Ala	Lys	Leu	Lys	Gly	Ser	Val	Val	Asn	Ile	Thr																														
																145																	155												
tct	att	gct	ggc	ctt	aac	cgt	ggg	cat	ctg	cct	ggc	tcc	acg	gga	tac	528																													
Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	His	Leu	Pro	Gly	Ser	Thr	Gly	Tyr																														
																165																	175												
gca	tcc	tca	aag	gct	gct	gtg	cat	tat	gcc	acc	aag	att	atg	gct	ttg	576																													
Ala	Ser	Ser	Lys	Ala	Ala	Val	His	Tyr	Ala	Thr	Lys	Ile	Met	Ala	Leu																														
																180																	190												
gaa	ttg	ggc	gcg	gat	cgc	atc	aga	gtg	aac	tcg	att	gca	cct	gga	ctc	624																													
Glu	Leu	Gly	Ala	Asp	Arg	Ile	Arg	Val	Asn	Ser	Ile	Ala	Pro	Gly	Leu																														
																195																	205												
ttc	aaa	tca	gag	ata	act	gct	cct	ctg	ttt	caa	aag	agg	tgg	ttg	agc	672																													
Phe	Lys	Ser	Glu	Ile	Thr	Ala	Pro	Leu	Phe	Gln	Lys	Arg	Trp	Leu	Ser																														
																210																	220												
acc	gtt	gct	tca	aag	ata	gtg	ccg	ctt	aag	gag	cat	ggc	gct	act	gat	720																													
Thr	Val	Ala	Ser	Lys	Ile	Val	Pro	Leu	Lys	Glu	His	Gly	Ala	Thr	Asp																														
																225																	235												
cct	gca	ttg	acg	tcg	ctg	gtc	cgt	ttt	ctg	atc	cat	gaa	gca	tcg	tcg	768																													
Pro	Ala	Leu	Thr	Ser	Leu	Val	Arg	Phe	Leu	Ile	His	Glu	Ala	Ser	Ser																														
																245																	255												
tat	gtg	act	ggc	aac	atc	ttc	att	gta	gac	tca	ggg	gcc	acc	ata	cct	816																													
Tyr	Val	Thr	Gly	Asn	Ile	Phe	Ile	Val	Asp	Ser	Gly	Ala	Thr	Ile	Pro																														
																260																	270												
ggg	gtt	ccg	ata	ttc	tca	tcc	ctg	taa								843																													
Gly	Val	Pro	Ile	Phe	Ser	Ser	Leu																																						
																275																	280												

<210> 2132  
 <211> 280  
 <212> PRT  
 <213> Zea mays

<400> 2132  
 Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu  
 1 5 10 15  
 Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg  
 20 25 30  
 Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala  
 35 40 45  
 Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro  
 50 55 60  
 Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val  
 65 70 75 80  
 Ala Ala Gly Gly Ser Ala Leu Glu Ala Ala Val Gln Lys Ala Trp Asp  
 85 90 95  
 Ala Phe Gly Arg Ile Asp Ala Leu Val Asn Asn Ala Gly Ile Arg Gly  
 100 105 110  
 Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile  
 115 120 125  
 Ile Lys Thr Asn Leu Thr Gly Ser Trp Leu Val Ala Lys His Val Cys  
 130 135 140  
 Arg Arg Met Arg Asp Ala Lys Leu Lys Gly Ser Val Val Asn Ile Thr  
 145 150 155 160  
 Ser Ile Ala Gly Leu Asn Arg Gly His Leu Pro Gly Ser Thr Gly Tyr  
 165 170 175  
 Ala Ser Ser Lys Ala Ala Val His Tyr Ala Thr Lys Ile Met Ala Leu  
 180 185 190  
 Glu Leu Gly Ala Asp Arg Ile Arg Val Asn Ser Ile Ala Pro Gly Leu

## PhoenixTemp32470.tmp.txt

195  
 Phe Lys Ser Glu Ile Thr Ala 200  
 210 215  
 Thr Val Ala Ser Lys Ile Val Pro Leu Phe Gln Lys 205  
 225 230  
 Pro Ala Leu Thr Ser Leu Val Arg Phe Leu Ile His Glu Ala Trp Leu Ser  
 245 250  
 Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ser Gly Ala Thr Ile Pro  
 260 270  
 Gly Val Pro Ile Phe Ser Ser Leu 280  
 275

<210> 2133  
 <211> 939  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(939)

<400> 2133  
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 ctc tcc aca tcg ctg gcg cgc cgc ggc ctc gtc agc ttc gca ccc gcg 96  
 Leu Ser Thr Ser Leu Ala Arg Arg Gly 25 Leu Val Ser Phe Ala Pro Ala 30  
 ctc cgc ccc ggc cct gac cgc agc tct cgc gcc gtc gcc ctc ctc ggt 144  
 Leu Arg Pro 35 Gly Pro Asp Arg 40 Ser Arg Ala Val 45 Leu Leu Gly 50  
 gta cga act cat gtc acg gct gtt gat caa gcc att gta aaa ggt gat 192  
 Val Arg Thr His Val Thr Ala Val Asp Gln Ala Ile Val Lys Gly Asp 60  
 aca aag ttg gaa ggt cct gtg gtt gtt gtt act ggt gct tcc agg ggg 240  
 Thr Lys Leu Glu Gly Pro Val Val Val Thr Gly Ala Ser Arg Gly 75 80  
 att gga aaa gcc act gca ttg gct ctt gga aaa gca ggc tgc aag gtc 288  
 Ile Gly Lys Ala Thr 85 Ala Leu Ala Leu Gly Lys Ala Gly Cys Lys Val 90 95  
 ttg gtg aat tat gct cga tct tca aag gag gct gaa gaa gtc tcc aag 336  
 Leu Val Asn Tyr 100 Ala Arg Ser Ser Lys 105 Glu Ala Glu Glu Val Ser Lys 110  
 gag att gaa gca tct gga ggc cag gcc att acc ttt gga gga gat gtt 384  
 Glu Ile Glu Ala Ser Gly Gly Gln Ala Ile Thr Phe Gly Gly Asp Val 115 120 125  
 tcc aaa gag gct gat gtt gaa tct atg ata aaa gtg gct gtt gat aca 432  
 Ser Lys Glu Ala Asp Val Glu Ser Met Ile Lys Val Ala Val Asp Thr 130 135 140  
 tgg gga acg att gat gta cta gta aat aat gca gga atc aca cgg gac 480  
 Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp 145 150 155 160  
 aca ttg ttg atg aga atg aag aaa tca cag tgg caa gat gtg att gat 528  
 Thr Leu Leu Met Arg Met Lys Lys Ser Gln Trp Gln Asp Val Ile Asp 165 170 175  
 ttg aat ctt aca ggc gtt ttc ctt tgc acg cag gct gca aca aaa gta 576  
 Leu Asn Leu Thr 180 Gly Val Phe Leu Cys 185 Thr Gln Ala Ala Thr Lys Val 190  
 atg atg aag aag aaa aag gga aga att atc aat ata gca tcg gtt gtt 624  
 Met Met Lys Lys Lys Lys Gly Arg Ile Ile Asn Ile Ala Ser Val Val 195 200 205  
 ggt ctt act ggt aat gct gga caa gct aat tat gct gct gcc aag gct 672  
 Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn Tyr 210 215 220 Ala Ala Lys Ala 225  
 ggg gtt att ggg ttc aca aaa aca gtt gct agg gag tat gcc agc aga 720  
 Gly Val Ile Gly Phe Thr Lys Thr Val Ala Arg Glu Tyr Ala Ser Arg 230 235 240  
 aat att aat gca aac gtt atc gct cct gga ttt att gct tca gat atg 768  
 Asn Ile Asn Ala Asn Val Ile Ala Pro Gly Phe Ile Ala Ser Asp Met

## PhoenixTemp32470.tmp.txt

act	gct	gaa	ctt	245	ggt	gaa	gag	tta	gag	250	aaa	att	ctg	tca	255	act	att	816
Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	Lys	Ile	Leu	Ser	Thr	Ile			
cct	tta	ggg	cg	tat	ggt	cgg	cca	gag	gat	gta	gca	ggc	ctg	gtg	gaa			864
Pro	Leu	Gly	Arg	Tyr	Gly	Arg	Pro	Glu	Asp	Val	Ala	Gly	Leu	Val	Glu			
ttc	tta	gcc	ctc	agc	cct	gct	gca	agc	tac	atc	act	gga	cag	gtc	ctc			912
Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Leu			
acc	atc	gat	gga	gga	atg	gta	atg	taa										939
Thr	Ile	Asp	Gly	Gly	Met	Val	Met											
305					310													

<210> 2134  
 <211> 312  
 <212> PRT  
 <213> Zea mays

Met	Ala	Ala	Ala	Thr	Ala	Ala	Ala	Ala	Ala	Leu	Ala	Ser	Pro	Ala	Gly			
1				5				10					15					
Leu	Ser	Thr	Ser	Leu	Ala	Arg	Arg	Gly	Leu	Val	Ser	Phe	Ala	Pro	Ala			
			20					25					30					
Leu	Arg	Pro	Gly	Pro	Asp	Arg	Ser	Ser	Arg	Ala	Val	Ala	Leu	Leu	Gly			
		35					40					45						
Val	Arg	Thr	His	Val	Thr	Ala	Val	Asp	Gln	Ala	Ile	Val	Lys	Gly	Asp			
		50				55					60							
Thr	Lys	Leu	Glu	Gly	Pro	Val	Val	Val	Val	Thr	Gly	Ala	Ser	Arg	Gly			
65					70					75					80			
Ile	Gly	Lys	Ala	Thr	Ala	Leu	Ala	Leu	Gly	Lys	Ala	Gly	Cys	Lys	Val			
				85				90					95					
Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys			
		100						105					110					
Glu	Ile	Glu	Ala	Ser	Gly	Gly	Gln	Ala	Ile	Thr	Phe	Gly	Gly	Asp	Val			
		115					120					125						
Ser	Lys	Glu	Ala	Asp	Val	Glu	Ser	Met	Ile	Lys	Val	Ala	Val	Asp	Thr			
		130				135					140							
Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp			
145				150				155						160				
Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp			
			165					170						175				
Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Gln	Ala	Ala	Thr	Lys	Val			
		180						185					190					
Met	Met	Lys	Lys	Lys	Lys	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Val			
		195					200					205						
Gly	Leu	Thr	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Lys	Ala			
		210				215					220							
Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	Arg	Glu	Tyr	Ala	Ser	Arg			
225				230				235						240				
Asn	Ile	Asn	Ala	Asn	Val	Ile	Ala	Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met			
				245				250					255					
Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	Lys	Ile	Leu	Ser	Thr	Ile			
		260						265					270					
Pro	Leu	Gly	Arg	Tyr	Gly	Arg	Pro	Glu	Asp	Val	Ala	Gly	Leu	Val	Glu			
		275					280					285						
Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Leu			
		290				295					300							
Thr	Ile	Asp	Gly	Gly	Met	Val	Met											
305					310													

<210> 2135  
 <211> 843  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(843)

## PhoenixTemp32470.tmp.txt

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<400> 2135
atg tcg tcg gcg ggg cca ccg ccg ccg ctg ccg ccg tgg agc agg ctg      48
Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu
1      5      10      15
gag ggg cag gtg gtg ctg gtg acg ggc gct tcc tcc ggc atc gga cgc      96
Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg
20      25      30
gac ttc tgc ctc gac ctg gcg cgc gcc ggc tgc cgc gtc gtc gcc gcc      144
Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala
35      40      45
gcc cgc cgc gcc gat cgt ctc cgc tgc ctc tgc gac gag atc aac ccc      192
Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro
50      55      60
tcc gct gcc tcc cga gcc ccc cgc gcg gtg gct gtg gag gtc gac gtc      240
Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val
65      70      75      80
gcc gcc ggt ggt tcg gcc ctg gag gcg gcg gtg cag aag gcc tgg gac      288
Ala Ala Gly Gly Ser Ala Leu Glu Ala Val Val Gln Lys Ala Trp Asp
85      90      95
gcc ttt ggc cgt atc gac ccc ttg gtc aac aac gcc ggc ata cga ggt      336
Ala Phe Gly Arg Ile Asp Pro Leu Val Asn Asn Ala Gly Ile Arg Gly
100      105      110
gca gtg cat tct cca tta gat tgg ccc gag gat gag tgg gac aga atc      384
Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile
115      120      125
atc aag acg aac ctt acc gga tca tgg ctc gtg gcc aaa cat gtc tgt      432
Ile Lys Thr Asn Leu Thr Gly Ser Trp Leu Val Ala Lys His Val Cys
130      135      140
cga cgc atg cgt gat gcc aag ctg aag ggt tca gtg gtt aac atc acc      480
Arg Arg Met Arg Asp Ala Lys Leu Lys Gly Ser Val Val Asn Ile Thr
145      150      155      160
tct att gct ggc ctt aac cgt ggg cat ctg cct ggc tcc acg gga tac      528
Ser Ile Ala Gly Leu Asn Arg Gly His Leu Pro Gly Ser Thr Gly Tyr
165      170      175
gca tcc tca aag gct gct gtg cat tat gcc acc aag att atg gct ttg      576
Ala Ser Ser Lys Ala Ala Val His Tyr Ala Thr Lys Ile Met Ala Leu
180      185      190
gaa ttg ggc gcg gat cgc atc aga gtg aac tcg att gca cct gga ctc      624
Glu Leu Gly Ala Asp Arg Ile Arg Val Asn Ser Ile Ala Pro Gly Leu
195      200      205
ttc aaa tca gag ata act gct cct ctg ttt caa aag agg tgg ttg agc      672
Phe Lys Ser Glu Ile Thr Ala Pro Leu Phe Gln Lys Arg Trp Leu Ser
210      215      220
acc gtt gct tca aag ata gtg ccg ctt aag gag cat ggc gct act gat      720
Thr Val Ala Ser Lys Ile Val Pro Leu Lys His Gly Ala Thr Asp
225      230      235
cct gca ttg acg tcg ctg gtc cgt ttt ctg atc cat gaa gca tcg tcg      768
Pro Ala Leu Thr Ser Leu Val Arg Phe Leu Ile His Glu Ala Ser Ser
245      250      255
tat gtg act ggc aac atc ttc att gta gac tca ggt gcc acc ata cct      816
Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ser Gly Ala Thr Ile Pro
260      265      270
ggt gtt ccg ata ttc tca tcc ctg taa
Gly Val Pro Ile Phe Ser Ser Leu
275      280

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<210> 2136
<211> 280
<212> PRT
<213> Zea mays

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<400> 2136
Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu
1      5      10      15
Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg
20      25      30
Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala
35      40      45

```

## PhoenixTemp32470.tmp.txt

Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro  
 50 55 60  
 Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val  
 65 70 75 80  
 Ala Ala Gly Gly Ser Ala Leu Glu Ala Ala Val Gln Lys Ala Trp Asp  
 85 90 95  
 Ala Phe Gly Arg Ile Asp Pro Leu Val Asn Asn Ala Gly Ile Arg Gly  
 100 105 110  
 Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile  
 115 120 125  
 Ile Lys Thr Asn Leu Thr Gly Ser Trp Leu Val Ala Lys His Val Cys  
 130 135 140  
 Arg Arg Met Arg Asp Ala Lys Leu Lys Gly Ser Val Val Asn Ile Thr  
 145 150 155 160  
 Ser Ile Ala Gly Leu Asn Arg Gly His Leu Pro Gly Ser Thr Gly Tyr  
 165 170 175  
 Ala Ser Ser Lys Ala Ala Val His Tyr Ala Thr Lys Ile Met Ala Leu  
 180 185 190  
 Glu Leu Gly Ala Asp Arg Ile Arg Val Asn Ser Ile Ala Pro Gly Leu  
 195 200 205  
 Phe Lys Ser Glu Ile Thr Ala Pro Leu Phe Gln Lys Arg Trp Leu Ser  
 210 215 220  
 Thr Val Ala Ser Lys Ile Val Pro Leu Lys Glu His Gly Ala Thr Asp  
 225 230 235 240  
 Pro Ala Leu Thr Ser Leu Val Arg Phe Leu Ile His Glu Ala Ser Ser  
 245 250 255  
 Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ser Gly Ala Thr Ile Pro  
 260 265 270  
 Gly Val Pro Ile Phe Ser Ser Leu  
 275 280

<210> 2137  
 <211> 1011  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1011)

<400> 2137  
 atg cac gct agc ctc gcc tcc tac gcc gcg gca gct atg ccg gcg ctg 48  
 Met His Ala Ser Leu Ala Ser Tyr Ala Ala Ala Ala Met Pro Ala Leu  
 1 5 10 15  
 gac ctc cgc ccc gag ata gcg cac gcg cac cag ccc gtc atg tcg ccc 96  
 Asp Leu Arg Pro Glu Ile Ala His Ala His Gln Pro Val Met Ser Pro  
 20 25 30  
 tct cac cac ggc tgg gac ggc aat ggc gcc aca gcc gtg ccc aca ccg 144  
 Ser His His Gly Trp Asp Gly Asn Gly Ala Thr Ala Val Pro Thr Pro  
 35 40 45  
 atg ccc aag agg ctg gac ggg aag gtg gcc att gtg acg ggc ggc gcg 192  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 cgc ggg atc ggc gag gcc atc gtg cgg ctg ttc gcc aag cac ggg gcc 240  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 cgg gtg gtg atc gcg gac atc gac gac gcc gcg ggg gag gcg ctg gcg 288  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala  
 85 90 95  
 tcg gcg ctg ggc ccg cag gtc agc ttc gtg gcg tgc gac gtg tcc gtg 336  
 Ser Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 gag gac gac gtc cgg cgc gcc gtg gac tgg gcg ctg tcg cgc cac ggc 384  
 Glu Asp Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 ggc cgc ctc gac gtc tac tgc aac aac gcc ggg gtg ctg ggc cgc cag 432  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 acg cgc gcc gcc agg agc atc ctg tcc ttc gac gcg gcc gag ttc gac 480



## PhoenixTemp32470.tmp.txt

Thr 145	Arg	Ala	Ala	Arg	Ser 150	Ile	Leu	Ser	Phe	Asp 155	Ala	Ala	Glu	Phe	Asp 160	
cgc	gtg	ctc	cgc	gtc	aac	gcg	ctg	ggc	gcc	gcg	ctc	ggg	atg	aag	cac	528
Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	Lys	His	
				165					170						175	
gcg	gcg	cgc	gcc	atg	gcg	ccg	cgc	cgc	gcg	ggg	agc	atc	gtc	tcc	gtc	576
Ala	Ala	Arg	Ala	Met	Ala	Pro	Arg	Arg	Ala	Gly	Ser	Ile	Val	Ser	Val	
				180					185						190	
gcc	agc	gtc	gcg	gcc	gtg	ctg	ggc	ggc	ctc	ggc	ccg	cac	gcc	tac	acc	624
Ala	Ser	Val	Ala	Ala	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Thr	
		195					200					205				
gcc	tcc	aag	cac	gcc	atc	gtc	ggg	ctc	acc	aag	aac	gcc	gcc	tgc	gag	672
Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	
		210				215					220					
ctg	cgc	gcg	cac	ggg	gtc	cgg	gtc	aac	tgc	gtc	tcg	ccc	ttc	ggc	gtc	720
Leu	Arg	Ala	His	Gly	Val	Arg	Val	Asn	Cys	Val	Ser	Pro	Phe	Gly	Val	
				230					235						240	
gcc	acg	ccc	atg	ctc	atc	aac	gcc	tgg	cgc	cag	gga	cac	gac	gac	acc	768
Ala	Thr	Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Asp	Thr	
				245					250					255		
acc	gcc	gac	gcc	gac	cga	gac	ctc	gac	ctc	gac	ctc	gac	gtc	acc	gtg	816
Thr	Ala	Asp	Ala	Asp	Arg	Asp	Leu	Asp	Leu	Asp	Leu	Asp	Val	Thr	Val	
				260				265					270			
ccc	agc	gac	cag	gag	gtg	gag	aag	atg	gag	gag	gtg	gtc	agg	ggc	ctg	864
Pro	Ser	Asp	Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	
		275					280					285				
gcc	acg	ctc	aag	ggc	ccc	acg	ctc	agg	ccc	agg	gac	atc	gcc	gag	gcg	912
Ala	Thr	Leu	Lys	Gly	Pro	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	
		290				295					300					
gtg	ctc	ttc	ctg	gcc	agc	gac	gag	gcc	agg	tat	ata	tcg	ggc	cac	aac	960
Val	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Ser	Gly	His	Asn	
		305			310					315					320	
ctc	gtc	gtg	gac	ggc	ggc	gtc	acc	aca	tcc	agg	aac	ctc	atc	ggc	ttg	1008
Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu	
				325					330					335		
tga																1011

<210> 2138  
 <211> 336  
 <212> PRT  
 <213> Zea mays

<400> 2138  
 Met His Ala Ser Leu Ala Ser Tyr Ala Ala Ala Ala Met Pro Ala Leu  
 1 5 10 15  
 Asp Leu Arg Pro Glu Ile Ala His Ala His Gln Pro Val Met Ser Pro  
 20 25 30  
 Ser His His Gly Trp Asp Gly Asn Gly Ala Thr Ala Val Pro Thr Pro  
 35 40 45  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Gly Glu Ala Leu Ala  
 85 90 95  
 Ser Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 Glu Asp Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 Thr Arg Ala Ala Arg Ser Ile Leu Ser Phe Asp Ala Ala Glu Phe Asp  
 145 150 155 160  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190

## PhoenixTemp32470.tmp.txt

Ala Ser Val Ala Ala Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 Leu Arg Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Asp Thr  
 245 250 255  
 Thr Ala Asp Ala Asp Arg Asp Leu Asp Leu Asp Leu Asp Val Thr Val  
 260 265 270  
 Pro Ser Asp Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu  
 275 280 285  
 Ala Thr Leu Lys Gly Pro Thr Thr Arg Pro Arg Asp Ile Ala Glu Ala  
 290 295 300  
 Val Leu Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Ser Gly His Asn  
 305 310 315 320  
 Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330 335

<210> 2139  
 <211> 1026  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1026)

<400> 2139  
 atg gct gcc acc ttc acc gtc gcc gcc cgc ctc ccg ctg cgg ggc ccc 48  
 Met Ala Ala Thr Phe Thr Val Ala Ala Arg Leu Pro Leu Arg Gly Pro  
 1 5 10 15  
 gcg cgc gct ccg tcc cgg ccg gcc gtc gct gct gta acc cgg ctt cga 96  
 Ala Arg Ala Pro Ser Arg Pro Ala Val Ala Val Thr Arg Leu Arg  
 20 25 30  
 agc cgg cag gag cgg cgc ggc cta gca gcg aca ggc ggg agg gga cct 144  
 Ser Arg Gln Glu Arg Arg Gly Leu Ala Ala Thr Gly Gly Arg Gly Pro  
 35 40 45  
 gcc cgg gtt cgg gcc gag act ttc tcc ggt ggt gga ggc gtg ggg cgg 192  
 Ala Arg Val Arg Ala Glu Thr Phe Ser Gly Gly Gly Val Gly Arg  
 50 55 60  
 agg gac ccc atg gcg ccg cct tac aat gtc ctc atc acc ggc tct acg 240  
 Arg Asp Pro Met Ala Pro Pro Tyr Asn Val Leu Ile Thr Gly Ser Thr  
 65 70 75 80  
 aaa ggt ata gga tat gca ttg gca agg aaa ttt ctg gag gct ggt gat 288  
 Lys Gly Ile Gly Tyr Ala Leu Ala Arg Lys Phe Leu Glu Ala Gly Asp  
 85 90 95  
 aac gtt ata atc tgc tgc aga tca gct caa aag gta gaa tct gtg gtc 336  
 Asn Val Ile Ile Cys Ser Arg Ser Ala Gln Lys Val Glu Ser Val Val  
 100 105 110  
 ggt gac ttg aag gag gag tac gga gag caa cat gtg tgg gga act gtc 384  
 Gly Asp Leu Lys Glu Glu Tyr Gly Glu Gln His Val Trp Gly Thr Val  
 115 120 125  
 tgt gat gtt aga aat gga aag gat gta aag gca ctt gtg gag ttt gca 432  
 Cys Asp Val Arg Asn Gly Lys Asp Val Lys Ala Leu Val Glu Phe Ala  
 130 135 140  
 cgt gac aaa ctt aag cat att gat ata tgg atc aac aat gct gga tca 480  
 Arg Asp Lys Leu Lys His Ile Asp Ile Trp Ile Asn Asn Ala Gly Ser  
 145 150 155 160  
 aat gca tat aca tac aaa cca cta gtg gag acc tct gat gag gct ctc 528  
 Asn Ala Tyr Thr Tyr Lys Pro Leu Val Glu Thr Ser Asp Glu Ala Leu  
 165 170 175  
 atg gaa atc atc acc act aac acc ctt gga ttg atg ata tgt tgt cgt 576  
 Met Glu Ile Ile Thr Thr Asn Thr Leu Gly Leu Met Ile Cys Cys Arg  
 180 185 190  
 gag gca ata aat atg atg agg aac caa cct cga ggt ggt cac ata ttc 624  
 Glu Ala Ile Asn Met Met Arg Asn Gln Pro Arg Gly Gly His Ile Phe  
 195 200 205  
 aac ctt gat ggt gct ggt tct gat gga agg cca act cca aga ttt gct 672

## PhoenixTemp32470.tmp.txt

Asn	Leu	Asp	Gly	Ala	Gly	Ser	Asp	Gly	Arg	Pro	Thr	Pro	Arg	Phe	Ala		
210	210					215					220						
gca	tat	ggt	gca	aca	aag	aga	agt	gtt	gtg	cat	ctt	acg	aag	tca	ctt	720	
Ala	Tyr	Gly	Ala	Thr	Lys	Arg	Ser	Val	Val	His	Leu	Thr	Lys	Ser	Leu		
225					230					235					240		
cag	gct	gaa	ttg	cag	atg	aat	gaa	gtg	aat	aat	gtg	atg	gtg	cac	aat	768	
Gln	Ala	Glu	Leu	Gln	Met	Asn	Glu	Val	Asn	Val	Met	Val	His	Asn			
				245					250					255			
cta	tcg	cct	ggc	atg	gtc	aca	aca	gat	ctt	ctt	atg	tct	ggt	gca	act	816	
Leu	Ser	Pro	Gly	Met	Val	Thr	Thr	Asp	Leu	Leu	Met	Ser	Gly	Ala	Thr		
			260					265					270				
aca	aaa	caa	gca	aaa	ttt	ttc	atc	aat	ata	tta	gct	gaa	cct	cct	gat	864	
Thr	Lys	Gln	Ala	Lys	Phe	Phe	Ile	Asn	Ile	Leu	Ala	Glu	Pro	Pro	Asp		
		275					280					285					
gtg	gtt	gca	gac	tac	ctt	gtt	ccg	aac	gtc	aga	gaa	atc	cct	acc	aag	912	
Val	Val	Ala	Asp	Tyr	Leu	Val	Pro	Asn	Val	Arg	Glu	Ile	Pro	Thr	Lys		
	290				295					300							
caa	tcc	atg	aag	cca	acc	tac	att	cgc	ttc	ctc	aca	ggc	ttg	aaa	gcc	960	
Gln	Ser	Met	Lys	Pro	Thr	Tyr	Ile	Arg	Phe	Leu	Thr	Gly	Leu	Lys	Ala		
305					310					315					320		
tac	tca	aga	att	ttt	tct	aga	ctt	gct	ttt	ggt	gct	agg	aga	aac	aag	1008	
Tyr	Ser	Arg	Ile	Phe	Ser	Arg	Leu	Ala	Phe	Gly	Ala	Arg	Arg	Asn	Lys		
				325					330					335			
tat	gtt	act	gaa	gat	tag											1026	
Tyr	Val	Thr	Glu	Asp													
			340														

&lt;210&gt; 2140

&lt;211&gt; 341

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2140

Met	Ala	Ala	Thr	Phe	Thr	Val	Ala	Ala	Arg	Leu	Pro	Leu	Arg	Gly	Pro		
1				5					10					15			
Ala	Arg	Ala	Pro	Ser	Arg	Pro	Ala	Val	Ala	Ala	Val	Thr	Arg	Leu	Arg		
			20					25					30				
Ser	Arg	Gln	Glu	Arg	Arg	Gly	Leu	Ala	Ala	Thr	Gly	Gly	Arg	Gly	Pro		
		35					40					45					
Ala	Arg	Val	Arg	Ala	Glu	Thr	Phe	Ser	Gly	Gly	Gly	Gly	Val	Gly	Arg		
	50					55				60							
Arg	Asp	Pro	Met	Ala	Pro	Pro	Tyr	Asn	Val	Leu	Ile	Thr	Gly	Ser	Thr		
65					70					75					80		
Lys	Gly	Ile	Gly	Tyr	Ala	Leu	Ala	Arg	Lys	Phe	Leu	Glu	Ala	Gly	Asp		
				85					90					95			
Asn	Val	Ile	Ile	Cys	Ser	Arg	Ser	Ala	Gln	Lys	Val	Glu	Ser	Val	Val		
		100						105					110				
Gly	Asp	Leu	Lys	Glu	Glu	Tyr	Gly	Glu	Gln	His	Val	Trp	Gly	Thr	Val		
	115					120					125						
Cys	Asp	Val	Arg	Asn	Gly	Lys	Asp	Val	Lys	Ala	Leu	Val	Glu	Phe	Ala		
130					135					140							
Arg	Asp	Lys	Leu	Lys	His	Ile	Asp	Ile	Trp	Ile	Asn	Asn	Ala	Gly	Ser		
145					150					155					160		
Asn	Ala	Tyr	Thr	Tyr	Lys	Pro	Leu	Val	Glu	Thr	Ser	Asp	Glu	Ala	Leu		
			165						170					175			
Met	Glu	Ile	Ile	Thr	Thr	Asn	Thr	Leu	Gly	Leu	Met	Ile	Cys	Cys	Arg		
		180						185					190				
Glu	Ala	Ile	Asn	Met	Met	Arg	Asn	Gln	Pro	Arg	Gly	Gly	His	Ile	Phe		
	195						200					205					
Asn	Leu	Asp	Gly	Ala	Gly	Ser	Asp	Gly	Arg	Pro	Thr	Pro	Arg	Phe	Ala		
	210					215					220						
Ala	Tyr	Gly	Ala	Thr	Lys	Arg	Ser	Val	Val	His	Leu	Thr	Lys	Ser	Leu		
225					230					235					240		
Gln	Ala	Glu	Leu	Gln	Met	Asn	Glu	Val	Asn	Asn	Val	Met	Val	His	Asn		
				245					250					255			
Leu	Ser	Pro	Gly	Met	Val	Thr	Thr	Asp	Leu	Leu	Met	Ser	Gly	Ala	Thr		
			260					265					270				
Thr	Lys	Gln	Ala	Lys	Phe	Phe	Ile	Asn	Ile	Leu	Ala	Glu	Pro	Pro	Asp		
		275					280					285					

## PhoenixTemp32470.tmp.txt

Val Val Ala Asp Tyr Leu Val Pro Asn Val Arg Glu Ile Pro Thr Lys  
 290 300  
 Gln Ser Met Lys Pro Thr Tyr Ile Arg Phe Leu Thr Gly Leu Lys Ala  
 305 310 315 320  
 Tyr Ser Arg Ile Phe Ser Arg Leu Ala Phe Gly Ala Arg Arg Asn Lys  
 325 330 335  
 Tyr Val Thr Glu Asp  
 340

<210> 2141  
 <211> 957  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(957)

<400> 2141

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Met	Ala	Thr	Ala	Ala	Ala	Thr	Ala	Ala	Ala	Ala	Ala	Val	Ser	Ser	Pro	
1				5				10						15		
gct	gcc	cca	cga	gca	gcc	ggg	gcc	gcc	gcc	gcc	tcc	cgc	cgg	ggg	ttc	96
Ala	Ala	Pro	Arg	Ala	Ala	Gly	Ala	Ala	Ala	Ala	Ser	Arg	Arg	Gly	Phe	
			20				25						30			
gtc	acg	ttt	ggg	gga	ggc	gcc	gcc	cgc	ttc	tct	ccc	acg	ctg	cgg	tcc	144
Val	Thr	Phe	Gly	Gly	Gly	Ala	Ala	Arg	Phe	Ser	Pro	Thr	Leu	Arg	Ser	
		35				40					45					
ggc	cgt	ggg	ttc	tct	ggt	gtg	caa	acc	cat	gtt	gcc	gct	ggt	gaa	caa	192
Gly	Arg	Gly	Phe	Ser	Gly	Val	Gln	Thr	His	Val	Ala	Ala	Val	Glu	Gln	
	50				55					60						
gca	att	gta	aaa	gat	gct	acc	aag	ctg	gaa	gct	cca	ggt	ggt	ggt	ggt	240
Ala	Ile	Val	Lys	Asp	Ala	Thr	Lys	Leu	Glu	Ala	Pro	Val	Val	Val	Val	
65				70			75								80	
aca	ggt	gca	tct	aga	ggg	att	ggt	aag	gca	act	gct	cta	gcc	ctt	gga	288
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Leu	Ala	Leu	Gly	
				85			90							95		
aaa	gca	gga	tgc	aag	ggt	ctg	gta	aac	tat	gcc	cgg	tcc	tcg	aaa	gag	336
Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	Lys	Glu	
			100					105					110			
gct	gaa	gag	gtc	tcc	aaa	gag	att	gaa	gca	tct	ggt	ggt	gag	gct	atc	384
Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Ala	Ser	Gly	Gly	Glu	Ala	Ile	
		115				120						125				
acc	ttc	gga	gga	gat	ggt	tca	aaa	gaa	gct	gat	gta	gag	tct	atg	atg	432
Thr	Phe	Gly	Gly	Asp	Val	Ser	Lys	Glu	Ala	Asp	Val	Glu	Ser	Met	Met	
	130					135					140					
aaa	gca	gct	cta	gat	aaa	tgg	gga	aca	ata	gat	gtg	ctg	gta	aat	aat	480
Lys	Ala	Ala	Leu	Asp	Lys	Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn	
145				150					155						160	
gca	ggg	att	aca	cga	gac	aca	ttg	ttg	atg	agg	atg	aag	aaa	tct	cag	528
Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	
				165					170					175		
tgg	caa	gac	gta	att	gat	ctg	aat	ctt	act	ggt	gtc	ttc	ctt	tgt	aca	576
Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	
		180					185					190				
cag	gct	gca	aca	aaa	gta	atg	atg	aaa	aag	aga	aag	gga	aaa	att	atc	624
Gln	Ala	Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Arg	Lys	Gly	Lys	Ile	Ile	
		195				200						205				
aac	att	gca	tct	gta	ggt	ctt	act	ggc	aat	ggt	ggc	caa	gct	aat		672
Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Val	Gly	Gln	Ala	Asn	
	210				215				220							
tat	agc	gca	gcc	aag	gct	gga	gtg	att	ggt	ttc	aca	aaa	aca	ggt	gcc	720
Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	
225				230					235						240	
agg	gag	tat	gca	agc	aga	aat	atc	aat	gtg	aat	gct	att	gca	cca	ggg	768
Arg	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	
				245					250					255		
ttc	att	gca	tct	atg	act	gcc	gaa	gag	gaa	gag	gag	ctt	gag	aag		816
Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	

## PhoenixTemp32470.tmp.txt

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260
aaa atc ttg tca acc att ccg tta ggg aga tat ggc caa cca gag gaa 864
Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu Glu
275
gtt gca ggg ttg gtc gag ttc ctg gcc ctt aac ccc gca gct agc tat 912
Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Pro Ala Ala Ser Tyr
290
atg act gga cag gtg ctt aca att gac gga ggg atg gta atg taa 957
Met Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met
305
310
315

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<210> 2142  
 <211> 318  
 <212> PRT  
 <213> Zea mays

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<400> 2142
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1 5 10 15
Ala Ala Pro Arg Ala Ala Gly Ala Ala Ala Ser Arg Arg Gly Phe
20 25 30
Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser
35 40 45
Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Val Glu Gln
50 55 60
Ala Ile Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val
65 70 75 80
Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly
85 90 95
Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu
100 105 110
Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile
115 120 125
Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met
130 135 140
Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn
145 150 155 160
Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln
165 170 175 180
Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr
185 190 195
Gln Ala Ala Thr Lys Val Met Met Lys Lys Arg Lys Gly Lys Ile Ile
200 205 210
Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Val Gly Gln Ala Asn
215 220 225
Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala
230 235 240
Arg Glu Tyr Ala Ser Arg Asn Ile Asn Val Asn Ala Ile Ala Pro Gly
245 250 255 260
Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys
265 270 275
Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu Glu
280 285 290
Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Pro Ala Ala Ser Tyr
295 300 305
Met Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met
310 315

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<210> 2143  
 <211> 939  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(939)

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<400> 2143
atg gcc gct gcc aca gcc gcc gcc gcc gcc gct ctc gcc tcc ccg gcg tgc
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## PhoenixTemp32470.tmp.txt

Met 1	Ala	Ala	Ala	Thr 5	Ala	Ala	Ala	Ala	Ala	Ala 10	Leu	Ala	Ser	Pro	Ala 15	Cys	
ctc Leu	tcc Ser	aca Thr	tcg Ser	ctg Leu	gcg Ala	cgc Arg	cgc Arg	ggc Gly	ctc Leu	gac Asp	agc Ser	ttc Phe	gca Ala	ccc Pro	gcg Ala		96
ctc Leu	cgc Arg	ccc Pro	ggc Gly	cct Pro	gac Asp	cgc Arg	agc Ser	tct Ser	cgc Arg	gcc Ala	gtc Val	gcc Ala	ctc Leu	ctc Leu	ggt Gly		144
gta Val	cga Arg	act Thr	cat His	gtc Val	acg Thr	gct Ala	ggt Val	gat Asp	caa Gln	gcc Ala	att Ile	gta Val	aaa Lys	ggt Gly	gat Asp		192
aca Thr	aag Lys	ttg Leu	gaa Glu	ggt Gly	cct Pro	gtg Val	ggt Val	ggt Val	ggt Val	act Thr	ggt Gly	gct Ala	tcc Ser	agg Arg	ggg Gly		240
att Ile	gga Gly	aaa Lys	gcc Ala	act Thr	gca Ala	ttg Leu	gct Ala	ctt Leu	gga Gly	aaa Lys	gca Ala	ggc Gly	tgc Cys	aag Lys	gtc Val		288
ttg Leu	gtg Val	aat Asn	tat Tyr	gct Ala	cga Arg	tct Ser	tca Ser	aag Lys	gag Glu	gct Ala	gaa Glu	gaa Glu	gtc Val	tcc Ser	aag Lys		336
gag Glu	att Ile	gaa Glu	gca Ala	tct Ser	gga Gly	ggc Gly	cag Gln	gcc Ala	att Ile	acc Thr	ttt Phe	gga Gly	gga Gly	gat Asp	ggt Val		384
tcc Ser	aaa Lys	gag Glu	gct Ala	gat Asp	ggt Val	gaa Glu	tct Ser	atg Met	ata Ile	aaa Lys	gtg Val	gct Ala	ggt Val	gat Asp	aca Thr		432
tgg Trp	gga Gly	acg Thr	att Ile	gat Asp	gta Val	cta Leu	gta Val	aat Asn	aat Asn	gca Ala	gga Gly	atc Ile	aca Thr	cgg Arg	gac Asp		480
aca Thr	ttg Leu	ttg Leu	atg Met	aga Arg	atg Met	aag Lys	aaa Lys	tca Ser	cag Gln	ttg Trp	caa Gln	gat Asp	gtg Val	att Ile	gat Asp		528
ttg Leu	aat Asn	ctt Leu	aca Thr	ggc Gly	ggt Val	ttc Phe	ctt Leu	tg Cys	acg Thr	cag Gln	gct Ala	gca Ala	aca Thr	aaa Lys	gta Val		576
atg Met	atg Met	aag Lys	aag Lys	aaa Lys	aag Lys	gga Gly	aga Arg	att Ile	atc Ile	aat Asn	ata Ile	gca Ala	tcg Ser	ggt Val	ggt Val		624
ggt Gly	ctt Leu	act Thr	ggt Gly	aat Asn	gct Ala	gga Gly	caa Gln	gct Ala	aat Asn	tat Tyr	gct Ala	gct Ala	gcc Ala	aag Lys	gct Ala		672
ggg Gly	ggt Val	att Ile	ggg Gly	ttc Phe	aca Thr	aaa Lys	aca Thr	ggt Val	gct Ala	agg Arg	gag Glu	tat Tyr	gcc Ala	agc Ser	aga Arg		720
aat Asn	att Ile	aat Asn	gca Ala	aac Asn	ggt Val	atc Ile	gct Ala	cct Pro	gga Gly	ttt Phe	att Ile	gct Ala	tca Ser	gat Asp	atg Met		768
act Thr	gct Ala	gaa Glu	ctt Leu	ggt Gly	gaa Glu	gag Glu	tta Leu	gag Glu	aag Lys	aaa Lys	att Ile	ctg Leu	tca Ser	act Thr	att Ile		816
cct Pro	tta Leu	ggg Gly	cg Arg	tat Tyr	ggt Gly	cgg Arg	cca Pro	gag Glu	gat Asp	gta Val	gca Ala	ggc Gly	ctg Leu	gtg Val	gaa Glu		864
ttc Phe	tta Leu	gcc Ala	ctc Leu	agc Ser	cct Pro	gct Ala	gca Ala	agc Ser	tac Tyr	atc Ile	act Thr	gga Gly	cag Gln	gtc Val	ctc Leu		912
acc Thr	atc Ile	gat Asp	gga Gly	gga Gly	atg Met	gta Val	atg Met	taa									939

&lt;210&gt; 2144

&lt;211&gt; 312

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2144

Met 1	Ala	Ala	Ala	Thr 5	Ala	Ala	Ala	Ala	Ala 10	Leu	Ala	Ser	Pro	Ala 15	Cys	
Leu	Ser	Thr	Ser	Leu	Ala	Arg	Arg	Gly	Leu	Asp	Ser	Phe	Ala	Pro	Ala	

## PhoenixTemp32470.tmp.txt

20 25 30  
 Leu Arg Pro Gly Pro Asp Arg Ser Arg Ala Val Ala Leu Leu Gly  
 35 40 45  
 Val Arg Thr His Val Thr Ala Val Asp Gln Ala Ile Val Lys Gly Asp  
 50 55 60  
 Thr Lys Leu Glu Gly Pro Val Val Val Thr Gly Ala Ser Arg Gly  
 65 70 75 80  
 Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly Lys Ala Gly Cys Lys Val  
 85 90 95  
 Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu Ala Glu Glu Val Ser Lys  
 100 105 110  
 Glu Ile Glu Ala Ser Gly Gly Gln Ala Ile Thr Phe Gly Gly Asp Val  
 115 120 125  
 Ser Lys Glu Ala Asp Val Glu Ser Met Ile Lys Val Ala Val Asp Thr  
 130 135 140  
 Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp  
 145 150 155 160  
 Thr Leu Leu Met Arg Met Lys Lys Ser Gln Trp Gln Asp Val Ile Asp  
 165 170 175  
 Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Gln Ala Ala Thr Lys Val  
 180 185 190  
 Met Met Lys Lys Lys Lys Gly Arg Ile Ile Asn Ile Ala Ser Val Val  
 195 200 205  
 Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Lys Ala  
 210 215 220  
 Gly Val Ile Gly Phe Thr Lys Thr Val Ala Arg Glu Tyr Ala Ser Arg  
 225 230 235 240  
 Asn Ile Asn Ala Asn Val Ile Ala Pro Gly Phe Ile Ala Ser Asp Met  
 245 250 255  
 Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys Lys Ile Leu Ser Thr Ile  
 260 265 270  
 Pro Leu Gly Arg Tyr Gly Arg Pro Glu Asp Val Ala Gly Leu Val Glu  
 275 280 285  
 Phe Leu Ala Leu Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Leu  
 290 300  
 Thr Ile Asp Gly Gly Met Val Met  
 305 310

<210> 2145  
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 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(915)

<400> 2145  
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 1 5 10 15 48  
 ttc ccg gct cag cag cag gag tcc cag ccg ggg aag gag cac gcg atg  
 Phe Pro Ala Gln Gln Gln Glu Ser Gln Pro Gly Lys Glu His Ala Met  
 20 25 30 35 96  
 gac ccc cgg ccc gag gcc atc gtc cag gac tac aag gcc gcc aac aag  
 Asp Pro Arg Pro Glu Ala Ile Val Gln Asp Tyr Lys Ala Ala Asn Lys  
 35 40 45 50 144  
 ctc aag gac aag gtg gcg ctc gtg acc ggc ggc gac tcc ggc atc ggg  
 Leu Lys Asp Lys Val Ala Leu Val Thr Gly Gly Asp Ser Gly Ile Gly  
 50 55 60 65 192  
 cgc gcc gtg tgc ctg tgc ttc gcg aag gag ggc gcg acg gtg gcc ttc  
 Arg Ala Val Cys Leu Cys Phe Ala Lys Glu Gly Ala Thr Val Ala Phe  
 65 70 75 80 240  
 acc ttc gtg agg ggg cag gag gag aag gac gcg gag gag acg ctg cgt  
 Thr Phe Val Arg Gly Gln Glu Glu Lys Asp Ala Glu Glu Thr Leu Arg  
 85 90 95 100 288  
 gcg ctg cgc gac atc ggg tcc gag acg ggc gcg cgc gag ccg atg gcc  
 Ala Leu Arg Asp Ile Gly Ser Glu Thr 105 Gly Ala Arg Glu 110 Met Ala  
 336

## PhoenixTemp32470.tmp.txt

ctg	ccc	gcc	gac	ctc	ggg	tac	gag	gcc	aac	tgc	cgg	gag	gtg	gtg	gag	384
Leu	Pro	Ala	Asp	Leu	Gly	Tyr	Glu	Ala	Asn	Cys	Arg	Glu	Val	Val	Glu	
		115					120					125				
cgg	gtg	gcg	tcg	gcg	tac	ggc	ggg	cgc	atc	gac	gtg	gtg	gtg	aac	aac	432
Arg	Val	Ala	Ser	Ala	Tyr	Gly	Gly	Arg	Ile	Asp	Val	Val	Val	Asn	Asn	
	130					135					140					
gcg	gcg	gag	cag	tac	gag	cgg	gag	agc	atc	ggg	gac	gtg	acg	gag	gag	480
Ala	Ala	Glu	Gln	Tyr	Glu	Arg	Glu	Ser	Ile	Gly	Asp	Val	Thr	Glu	Ala	
145					150					155					160	
gac	ctg	gag	cgc	gtg	ttc	cgc	acc	aac	atc	ttc	tcc	tac	ttc	ctg	gtg	528
Asp	Leu	Glu	Arg	Val	Phe	Arg	Thr	Asn	Ile	Phe	Ser	Tyr	Phe	Leu	Val	
				165					170					175		
tcc	aag	cac	gcg	gtg	ccg	cgc	atg	gag	ccc	ggc	gcc	tgc	atc	atc	aac	576
Ser	Lys	His	Ala	Val	Pro	Arg	Met	Glu	Pro	Gly	Ala	Cys	Ile	Ile	Asn	
			180					185					190			
acc	tcc	tcc	gtc	aac	gcg	tac	aag	ggc	aac	aag	acg	ctg	ctg	gac	tac	624
Thr	Ser	Ser	Val	Asn	Ala	Tyr	Lys	Gly	Asn	Lys	Thr	Leu	Leu	Asp	Tyr	
		195					200					205				
acg	gcc	acc	aag	ggc	gcc	atc	gtg	gcc	ttc	acg	cgc	gag	ctc	tcg	ctg	672
Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	Thr	Arg	Ala	Leu	Ser	Leu	
	210					215					220					
cag	ctg	gcc	gac	agg	ggc	atc	cgc	gtc	aac	ggc	gtc	gag	ccg	ggc	ccc	720
Gln	Leu	Ala	Asp	Arg	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Gly	Pro	
225					230					235					240	
gtc	tgg	acg	ccg	ctc	atc	ccg	cgc	tcc	ttc	ggc	aag	gag	aag	gtg	gag	768
Val	Trp	Thr	Pro	Leu	Ile	Pro	Ala	Ser	Phe	Gly	Lys	Glu	Lys	Val	Glu	
				245					250					255		
cag	ttc	ggg	tcc	cag	gtg	ccc	atg	aag	cgc	gcc	gag	cag	ccg	gcc	gag	816
Gln	Phe	Gly	Ser	Gln	Val	Pro	Met	Lys	Arg	Ala	Ala	Gln	Pro	Ala	Glu	
			260					265					270			
atc	gag	ccc	agc	ttc	gtc	ttc	ctc	gcc	agc	aac	cag	gat	tcg	tcc	tac	864
Ile	Ala	Pro	Ser	Phe	Val	Phe	Leu	Ala	Ser	Asn	Gln	Asp	Ser	Ser	Tyr	
		275					280					285				
atg	tcc	ggc	cag	atc	ctc	cac	gtc	aac	gga	ggc	gtc	atc	gtc	aat	agc	912
Met	Ser	Gly	Gln	Ile	Leu	His	Val	Asn	Gly	Gly	Val	Ile	Val	Asn	Ser	
	290					295					300					
tag																915

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 <212> PRT  
 <213> Zea mays

<400> 2146  
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 20 25 30  
 Asp Pro Arg Pro Glu Ala Ile Val Gln Asp Tyr Lys Ala Ala Asn Lys  
 35 40 45  
 Leu Lys Asp Lys Val Ala Leu Val Thr Gly Gly Asp Ser Gly Ile Gly  
 50 55 60  
 Arg Ala Val Cys Leu Cys Phe Ala Lys Glu Gly Ala Thr Val Ala Phe  
 65 70 75 80  
 Thr Phe Val Arg Gly Gln Glu Glu Lys Asp Ala Glu Glu Thr Leu Arg  
 85 90 95  
 Ala Leu Arg Asp Ile Gly Ser Glu Thr Gly Ala Arg Glu Pro Met Ala  
 100 105 110  
 Leu Pro Ala Asp Leu Gly Tyr Glu Ala Asn Cys Arg Glu Val Val Glu  
 115 120 125  
 Arg Val Ala Ser Ala Tyr Gly Arg Ile Asp Val Val Val Asn Asn  
 130 135 140  
 Ala Ala Glu Gln Tyr Glu Arg Glu Ser Ile Gly Asp Val Thr Glu Ala  
 145 150 155 160  
 Asp Leu Glu Arg Val Phe Arg Thr Asn Ile Phe Ser Tyr Phe Leu Val  
 165 170 175  
 Ser Lys His Ala Val Pro Arg Met Glu Pro Gly Ala Cys Ile Ile Asn



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## PhoenixTemp32470.tmp.txt

Thr	Val	Ala	Ser	Lys	Ile	Val	Pro	Leu	Lys	Glu	His	Gly	Ala	Thr	Asp	
225					230					235					240	
cct	gca	tgt	acg	tcg	ctg	gtt	cgt	ttt	ctg	atc	cat	gaa	gca	tcg	tcg	768
Pro	Ala	Leu	Thr	Ser	Leu	Val	Arg	Phe	Leu	Ile	His	Glu	Ala	Ser	Ser	
				245					250					255		
tat	gtg	act	ggc	aac	atc	ttc	att	gta	gac	tca	ggg	gcc	acc	ata	cct	816
Tyr	Val	Thr	Gly	Asn	Ile	Phe	Ile	Val	Asp	Ser	Gly	Ala	Thr	Ile	Pro	
			260					265					270			
ggg	gtt	ccg	ata	ttc	tca	tcc	ctg	taa								843
Gly	Val	Pro	Ile	Phe	Ser	Ser	Leu									
		275					280									

<210> 2148  
 <211> 280  
 <212> PRT  
 <213> Zea mays

<400> 2148

Met	Ser	Ser	Ala	Gly	Pro	Pro	Pro	Pro	Leu	Pro	Pro	Trp	Ser	Arg	Leu	
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Glu	Gly	Gln	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Arg	
			20					25					30			
Asp	Phe	Cys	Leu	Asp	Leu	Ala	Arg	Ala	Gly	Cys	Arg	Val	Val	Ala	Ala	
		35					40					45				
Ala	Arg	Arg	Ala	Asp	Arg	Leu	Arg	Ser	Leu	Cys	Asp	Glu	Ile	Asn	Ala	
		50				55					60					
Ser	Ala	Ala	Ser	Arg	Ala	Pro	Arg	Ala	Val	Ala	Val	Glu	Val	Asp	Val	
65					70					75					80	
Ala	Ala	Gly	Gly	Ser	Ala	Leu	Glu	Ala	Ala	Val	Gln	Lys	Ala	Trp	Asp	
				85					90					95		
Ala	Phe	Gly	Arg	Ile	Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	Ile	Arg	Gly	
			100					105					110			
Ala	Val	His	Ser	Pro	Leu	Asp	Trp	Pro	Glu	Asp	Glu	Trp	Asp	Arg	Ile	
		115					120					125				
Ile	Lys	Thr	Asn	Leu	Thr	Gly	Ser	Trp	Leu	Val	Ala	Lys	His	Val	Cys	
	130					135					140					
Arg	Arg	Met	Arg	Asp	Ala	Lys	Leu	Lys	Gly	Ser	Val	Val	Asn	Ile	Thr	
145					150					155					160	
Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	His	Leu	Pro	Gly	Ser	Thr	Gly	Tyr	
				165					170					175		
Ala	Ser	Ser	Lys	Ala	Ala	Val	His	Tyr	Ala	Thr	Lys	Ile	Met	Ala	Leu	
			180					185					190			
Glu	Leu	Gly	Ala	Asp	Arg	Ile	Arg	Val	Asn	Ser	Ile	Ala	Pro	Gly	Leu	
		195					200					205				
Phe	Lys	Ser	Glu	Ile	Thr	Ala	Pro	Leu	Phe	Gln	Lys	Arg	Trp	Leu	Ser	
	210					215					220					
Thr	Val	Ala	Ser	Lys	Ile	Val	Pro	Leu	Lys	Glu	His	Gly	Ala	Thr	Asp	
225					230					235					240	
Pro	Ala	Leu	Thr	Ser	Leu	Val	Arg	Phe	Leu	Ile	His	Glu	Ala	Ser	Ser	
				245					250					255		
Tyr	Val	Thr	Gly	Asn	Ile	Phe	Ile	Val	Asp	Ser	Gly	Ala	Thr	Ile	Pro	
			260					265					270			
Gly	Val	Pro	Ile	Phe	Ser	Ser	Leu									
		275					280									

<210> 2149  
 <211> 813  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(813)

<400> 2149

atg	act	gca	gaa	act	ctc	tca	ctt	gaa	ggc	aag	act	gcc	tgt	atc	act	48
Met	Thr	Ala	Glu	Thr	Leu	Ser	Leu	Glu	Gly	Lys	Thr	Ala	Leu	Ile	Thr	
1				5					10					15		
ggc	tcg	ggc	aga	gaa	aat	ggc	att	ggc	gct	gcc	atc	gcc	aga	gct	ttt	96

## PhoenixTemp32470.tmp.txt

Gly	Ser	Gly	Arg 20	Glu	Asn	Gly	Ile	Gly 25	Ala	Ala	Ile	Ala	Arg 30	Ala	Phe		
gcc	cgg	aac	ggt	gca	gct	gtt	gca	atc	cac	tat	gtc	tcg	gag	agc	tcc	144	
Ala	Arg	Asn 35	Gly	Ala	Ala	Val	Ala	Ile	His	Tyr	Val	Ser 45	Glu	Ser	Ser		
aag	gtg	cgg	gct	gag	aag	gtt	gca	gca	gac	att	agt	cgg	gag	ttt	gga	192	
Lys	Val 50	Arg	Ala	Glu	Lys	Val 55	Ala	Ala	Asp	Ile	Ser 60	Arg	Glu	Phe	Gly		
acc	aaa	act	acc	gtt	gta	caa	ggg	gcg	gtg	gag	aaa	gct	agc	aat	gcg	240	
Thr	Lys	Thr	Thr	Val	Val 70	Gln	Gly	Ala	Val	Glu	Lys	Ala	Ser	Asn	Ala 80		
acg	aag	ata	gtc	aaa	gaa	acc	ttg	gaa	gga	ctt	ggc	gct	tcc	cac	att	288	
Thr	Lys	Ile	Val	Lys 85	Glu	Thr	Leu	Glu	Gly 90	Leu	Gly	Ala	Ser	His 95	Ile		
gac	att	ctc	gtg	aat	aac	gct	gga	tat	gga	aat	cct	aaa	agt	ctc	ttg	336	
Asp	Ile	Leu	Val 100	Asn	Asn	Ala	Gly	Tyr 105	Gly	Asn	Pro	Lys	Ser 110	Leu	Leu		
gag	gca	acg	cca	gaa	ttg	ctc	gaa	gcc	gaa	ttc	ggg	atc	aat	gtc	ttt	384	
Glu	Ala	Thr 115	Pro	Glu	Leu	Leu	Glu 120	Ala	Glu	Phe	Gly	Ile 125	Asn	Val	Phe		
ggc	tca	gtt	tac	cta	aca	caa	gct	gtc	att	gga	ata	ggg	aaa	atg	cct	432	
Gly	Ser 130	Val	Tyr	Leu	Thr	Gln 135	Ala	Val	Ile	Gly	Ile 140	Gly	Lys	Met	Pro		
aga	ggc	ggg	cgt	ata	atc	aat	gtc	ggc	tct	att	tcc	tca	aaa	ctt	ggt	480	
Arg	Gly	Gly	Arg	Ile	Ile 150	Asn	Val	Gly	Ser	Ile 155	Ser	Ser	Lys	Leu	Gly 160		
cct	gaa	gtc	agt	gca	gtc	tac	ggc	gca	tca	aag	gct	gcg	caa	gat	agt	528	
Pro	Glu	Val	Ser	Ala 165	Val	Tyr	Gly	Ala	Ser 170	Lys	Ala	Ala	Gln	Asp 175	Ser		
ctc	acg	gca	tcc	tgg	gct	ggc	cag	ctt	ggc	cgt	agc	cgc	gga	att	acc	576	
Leu	Thr	Ala	Ser 180	Trp	Ala	Gly	Gln 185	Leu	Gly	Arg	Ser	Arg	Gly 190	Ile	Thr		
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Val	Asn	Thr 195	Leu	Ala	Pro	Gly	Pro 200	Ile	Leu	Thr	Asp	Met 205	Ala	Lys	Pro		
ttc	ttg	gag	gca	aag	gaa	gga	gct	tca	gct	gat	ttg	ttg	aaa	gcg	gta	672	
Phe	Leu	Glu	Ala	Lys	Glu	Gly 215	Ala	Ser	Ala	Asp	Leu 220	Leu	Lys	Ala	Val		
gag	gcg	cag	acg	cga	gct	gag	gca	cga	att	ggg	aca	gtt	gag	gac	atg	720	
Glu	Ala	Gln	Thr	Arg	Ala 230	Glu	Ala	Arg	Ile	Gly	Thr	Val	Glu	Asp	Met 240		
gcc	gac	gct	gcg	ttg	ctc	cta	gtt	tcg	gag	aag	agc	cgc	tgg	ctt	acc	768	
Ala	Asp	Ala	Ala	Leu 245	Leu	Leu	Val	Ser	Glu 250	Lys	Ser	Arg	Trp	Leu 255	Thr		
gcc	caa	tgg	atc	tcg	gtc	agc	ggt	ggg	gtc	aca	gga	act	atg	taa		813	
Ala	Gln	Trp	Ile 260	Ser	Val	Ser	Gly	Gly 265	Val	Thr	Gly	Thr	Met 270				

&lt;210&gt; 2150

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2150

Met	Thr	Ala	Glu	Thr 5	Leu	Ser	Leu	Glu	Gly 10	Lys	Thr	Ala	Leu	Ile 15	Thr		
Gly	Ser	Gly	Arg 20	Glu	Asn	Gly	Ile	Gly 25	Ala	Ala	Ile	Ala	Arg 30	Ala	Phe		
Ala	Arg	Asn 35	Gly	Ala	Ala	Val	Ala	Ile	His	Tyr	Val	Ser 45	Glu	Ser	Ser		
Lys	Val 50	Arg	Ala	Glu	Lys	Val 55	Ala	Ala	Asp	Ile	Ser 60	Arg	Glu	Phe	Gly		
Thr	Lys	Thr	Thr	Val	Val 70	Gln	Gly	Ala	Val	Glu 75	Lys	Ala	Ser	Asn	Ala 80		
Thr	Lys	Ile	Val	Lys 85	Glu	Thr	Leu	Glu	Gly 90	Leu	Gly	Ala	Ser	His 95	Ile		
Asp	Ile	Leu	Val 100	Asn	Asn	Ala	Gly	Tyr 105	Gly	Asn	Pro	Lys	Ser 110	Leu	Leu		
Glu	Ala	Thr	Pro	Glu	Leu	Leu	Glu	Ala	Glu	Phe	Gly	Ile	Asn	Val	Phe		

## PhoenixTemp32470.tmp.txt

115  
 Gly Ser Val Tyr Leu Thr Gln 120 Ala Val Ile Gly Ile 125 Gly Lys Met Pro  
 130  
 Arg Gly Gly Arg Ile Ile 135 Asn Val Gly Ser Ile 140 Ser Ser Lys Leu Gly  
 145  
 Pro Glu Val Ser Ala 150 Val Tyr Gly Ala Ser 155 Lys Ala Ala Gln Asp Ser  
 165  
 Leu Thr Ala Ser 180 Trp Ala Gly Gln Leu 185 Gly Arg Ser Arg Gly 190 Ile Thr  
 Val Asn Thr Leu Ala Pro Gly Pro 200 Ile Leu Thr Asp Met 205 Ala Lys Pro  
 195  
 Phe Leu Glu Ala Lys Glu Gly 215 Ala Ser Ala Asp Leu Leu Lys Ala Val  
 210  
 Glu Ala Gln Thr Arg Ala 230 Glu Ala Arg Ile Gly Thr Val Glu Asp Met  
 225  
 Ala Asp Ala Ala Leu 245 Leu Leu Val Ser Glu 250 Lys Ser Arg Trp Leu Thr  
 Ala Gln Trp Ile 260 Ser Val Ser Gly Gly 265 Val Thr Gly Thr Met 270

<210> 2151  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

<400> 2151  
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 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr  
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 5  
 10  
 15  
 gcg tcc acg cag ggg atc ggc ctc gcc atc gcc gag cgc ctc ggc ctg 96  
 Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20  
 25  
 30  
 gag ggc gcc gcc gtc gtc gtc tcc tcc cgc aag cag aag aac gtg gac 144  
 Glu Gly Ala Ala Val Val Val Ser Ser Arg Lys Gln Lys Asn Val Asp  
 35  
 40  
 45  
 gag gcc gtg gag ggg ctc aag gcc aag ggg atc acc gtg gtg ggc gcc 192  
 Glu Ala Val Glu Gly Leu Lys Ala Lys Gly Ile Thr Val Val Gly Ala  
 50  
 55  
 60  
 gtc tgc cac gta tcc gac gca cag caa cgc aag aac ctc gtc gag acg 240  
 Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Asn Leu Val Glu Thr  
 65  
 70  
 75  
 80  
 gcc gtc aag aac ttt ggg cac att gat att ctt gtc tcc aac gct gct 288  
 Ala Val Lys Asn Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85  
 90  
 95  
 gca aat cct act gtg aat gtc ata ctt gaa atg aaa gag gtt gtt ctc 336  
 Ala Asn Pro Thr Val Asn Val Ile Leu Glu Met Lys Glu Val Val Leu  
 100  
 105  
 110  
 gat aag ttg tgg gat att aac gtc aag gct tct att ctt ctt att cag 384  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln  
 115  
 120  
 125  
 gat gct gct ccc cac cta cga gca agg tca tct gtg atc ctt att tct 432  
 Asp Ala Ala Pro His Leu Arg Ala Arg Ser Ser Val Ile Leu Ile Ser  
 130  
 135  
 140  
 tca att gct ggt tac aat cct gag caa gga ttg aca atg tat ggt gtt 480  
 Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
 145  
 150  
 155  
 160  
 aca aag acc gct ctc ttt ggt ctc aca aag gct ctt gct ggt gag atg 528  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165  
 170  
 175  
 gga ccc gat att cgt gtt aat tgt ata gcc cct ggt ttt gtt ccg aca 576  
 Gly Pro Asp Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
 180  
 185  
 190  
 cgg ttt gct agt ttc ttc ata gac aac gag acc att agg aaa aag ctt 624  
 Arg Phe Ala Ser Phe Phe Ile Asp Asn Glu Thr Ile Arg Lys Lys Leu  
 195  
 200

## PhoenixTemp32470.tmp.txt

aac	gag	agg	act	atg	ctt	aag	aga	ttg	ggt	tcc	gtg	gaa	gat	atg	gcg	672
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala	
210						215					220					
gca	gct	gcc	gca	ttc	ctg	gca	tct	gac	gat	gca	tca	ttc	atc	aca	gct	720
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala	
225					230					235					240	
gaa	acc	att	gtt	gtt	gct	gga	ggg	gtg	ccg	tcg	aga	ttg	taa			762
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Pro	Ser	Arg	Leu				
				245					250							

<210> 2152  
 <211> 253  
 <212> PRT  
 <213> Zea mays

<400> 2152

Met	Asp	Val	Lys	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Val	Thr	
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Ala	Ser	Thr	Gln	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Glu	Arg	Leu	Gly	Leu	
			20					25					30			
Glu	Gly	Ala	Ala	Val	Val	Val	Ser	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asp	
		35					40					45				
Glu	Ala	Val	Glu	Gly	Leu	Lys	Ala	Lys	Gly	Ile	Thr	Val	Val	Gly	Ala	
	50					55				60						
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Asn	Leu	Val	Glu	Thr	
65					70					75					80	
Ala	Val	Lys	Asn	Phe	Gly	His	Ile	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala	
				85					90					95		
Ala	Asn	Pro	Thr	Val	Asn	Val	Ile	Leu	Glu	Met	Lys	Glu	Val	Val	Leu	
			100					105					110			
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln	
		115					120					125				
Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Arg	Ser	Ser	Val	Ile	Leu	Ile	Ser	
	130					135					140					
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val	
145					150					155					160	
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met	
				165					170					175		
Gly	Pro	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr	
			180					185					190			
Arg	Phe	Ala	Ser	Phe	Phe	Ile	Asp	Asn	Glu	Thr	Ile	Arg	Lys	Lys	Leu	
		195					200					205				
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala	
	210					215					220					
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala	
225					230					235					240	
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Pro	Ser	Arg	Leu				
				245					250							

<210> 2153  
 <211> 969  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(969)

<400> 2153

atg	atg	cac	cgg	ctt	gtc	gtc	gaa	gct	agg	aga	aga	gca	gcc	ccg	gtg	48
Met	Met	His	Arg	Leu	Val	Val	Glu	Ala	Arg	Arg	Arg	Ala	Ala	Pro	Val	
1				5					10					15		
gcg	atg	gcc	gcc	ggc	ggg	gtg	gcg	ggc	ggc	gag	cgg	tgg	atg	tcg	tcg	96
Ala	Met	Ala	Ala	Gly	Gly	Val	Ala	Gly	Gly	Glu	Arg	Trp	Met	Ser	Ser	
			20					25					30			
tcg	gca	gcc	agc	aaa	gga	agg	cta	gta	ggg	aag	att	gcg	ctg	atc	acc	144
Ser	Ala	Ala	Ser	Lys	Gly	Arg	Leu	Val	Gly	Lys	Ile	Ala	Leu	Ile	Thr	
		35					40					45				
gga	ggc	gcg	agc	ggg	ctg	ggc	aag	gcc	gcg	gcc	cgc	gag	ttc	atc	gag	192

## PhoenixTemp32470.tmp.txt

Gly	Gly	Ala	Ser	Gly	Leu	Gly	Lys	Ala	Ala	Ala	Arg	Glu	Phe	Ile	Glu		
50	55										60						
gaa	ggc	gcg	ggg	gcc	gta	gtc	ctc	gcg	gac	atc	aac	tcc	aag	ctg	ggc	240	
Glu	Gly	Ala	Gly	Ala	Val	Val	Leu	Ala	Asp	Ile	Asn	Ser	Lys	Leu	Gly		
65					70					75					80		
ctc	gag	acg	gcc	cac	gag	ctg	ggc	ccg	gac	gcc	cac	ttc	gtg	cac	tgc	288	
Leu	Glu	Thr	Ala	His	Glu	Leu	Gly	Pro	Asp	Ala	His	Phe	Val	His	Cys		
				85					90					95			
gac	gtg	gcc	gtc	gag	gac	agc	gtc	gcc	gcg	gcc	gtg	gac	gcc	gcc	gtg	336	
Asp	Val	Ala	Val	Glu	Asp	Ser	Val	Ala	Ala	Ala	Val	Asp	Ala	Ala	Val		
			100					105					110				
gcg	cgc	cac	ggc	cgg	ctg	gac	gtc	atg	ctc	aac	agc	gcc	ggc	gta	gtg	384	
Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Met	Leu	Asn	Ser	Ala	Gly	Val	Val		
		115					120					125					
ggc	ccg	ctg	acc	cca	ggc	acg	tcg	cgg	gtc	gcc	agc	ctg	gac	ctg	gcg	432	
Gly	Pro	Leu	Thr	Pro	Gly	Thr	Ser	Arg	Val	Ala	Ser	Leu	Asp	Leu	Ala		
	130					135					140						
cag	ttc	gac	tcc	gtc	atg	tcc	gtg	aac	gtg	cgc	ggg	acg	ctg	gcc	ggg	480	
Gln	Phe	Asp	Ser	Val	Met	Ser	Val	Asn	Val	Arg	Gly	Thr	Leu	Ala	Gly		
145					150					155					160		
atc	aag	cac	gcc	gcg	cgc	gcc	atg	ctg	gcg	gcg	gcg	ccc	gcg	ggg	gca	528	
Ile	Lys	His	Ala	Ala	Arg	Ala	Met	Leu	Ala	Ala	Ala	Pro	Ala	Gly	Ala		
			165					170						175			
gga	gga	gga	gga	gga	gga	gca	gga	ggg	tcg	atc	ctc	tgc	atg	gcg	agc	576	
Gly	Gly	Gly	Gly	Gly	Gly	Ala	Gly	Gly	Ser	Ile	Leu	Cys	Met	Ala	Ser		
			180					185					190				
gtc	agc	ggc	atc	ctc	ggc	ggg	ctg	ggc	acg	tac	ctg	tac	tcg	gtg	tcc	624	
Val	Ser	Gly	Ile	Leu	Gly	Gly	Leu	Gly	Thr	Tyr	Leu	Tyr	Ser	Val	Ser		
		195					200					205					
aag	ttc	gcc	atc	gcg	ggg	atc	gtc	aag	gcc	gcg	gcg	gag	ctg	tcg		672	
Lys	Phe	Ala	Ile	Ala	Gly	Ile	Val	Lys	Ala	Ala	Ala	Ala	Glu	Leu	Ser		
	210					215				220							
cgc	ctc	ggc	gtc	cgc	gtc	aac	tgc	atc	tcg	ccg	tac	gcg	gtg	ccc	acg	720	
Arg	Leu	Gly	Val	Arg	Val	Asn	Cys	Ile	Ser	Pro	Tyr	Ala	Val	Pro	Thr		
					230				235						240		
ccg	atg	gtg	ctg	ggc	cag	ttt	tcc	gcg	atg	ctg	ggc	ggg	gca	gcc	gac	768	
Pro	Met	Val	Leu	Gly	Gln	Phe	Ser	Ala	Met	Leu	Gly	Gly	Ala	Ala	Asp		
				245				250					255				
gag	gcg	cag	gtg	gcg	gcc	atc	gtc	agg	ggc	ctc	ggg	gag	ctc	agg	ggc	816	
Glu	Ala	Gln	Val	Ala	Ala	Ile	Val	Arg	Gly	Leu	Gly	Glu	Leu	Arg	Gly		
			260					265					270				
gcc	acc	tgc	gag	gcc	gtc	gac	atc	gcc	agg	gcc	gcc	gtg	tac	ctg	gcc	864	
Ala	Thr	Cys	Glu	Ala	Val	Asp	Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala		
		275					280					285					
tcc	gac	gac	gcc	aag	tac	gtg	tct	ggc	cac	aac	ctt	gtg	gtc	gac	ggc	912	
Ser	Asp	Asp	Ala	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly		
					295						300						
ggc	ttc	acg	agc	tac	aag	cac	atg	aac	ctg	ccc	ttc	cct	acc	aag	cca	960	
Gly	Phe	Thr	Ser	Tyr	Lys	His	Met	Asn	Leu	Pro	Phe	Pro	Thr	Lys	Pro		
				310						315					320		
cat	gag	tga														969	
His	Glu																

<210> 2154  
 <211> 322  
 <212> PRT  
 <213> Zea mays

<400> 2154  
 Met Met His Arg Leu Val Val Glu Ala Arg Arg Arg Ala Ala Pro Val  
 1 5 10 15  
 Ala Met Ala Ala Gly Gly Val Ala Gly Glu Arg Trp Met Ser Ser  
 20 25 30  
 Ser Ala Ala Ser Lys Gly Arg Leu Val Gly Lys Ile Ala Leu Ile Thr  
 35 40 45  
 Gly Gly Ala Ser Gly Leu Gly Lys Ala Ala Arg Glu Phe Ile Glu  
 50 55 60  
 Glu Gly Ala Gly Ala Val Val Leu Ala Asp Ile Asn Ser Lys Leu Gly

## PhoenixTemp32470.tmp.txt

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65      70      75      80
Leu Glu Thr Ala His Glu Leu Gly Pro Asp Ala His Phe Val His Cys
      85
Asp Val Ala Val Glu Asp Ser Val Ala Ala Val Asp Ala Ala Val
      100
Ala Arg His Gly Arg Leu Asp Val Met Leu Asn Ser Ala Gly Val Val
      115
Gly Pro Leu Thr Pro Gly Thr Ser Arg Val Ala Ser Leu Asp Leu Ala
      130
Gln Phe Asp Ser Val Met Ser Val Asn Val Arg Gly Thr Leu Ala Gly
      145
Ile Lys His Ala Ala Arg Ala Met Leu Ala Ala Ala Pro Ala Gly Ala
      165
Gly Gly Gly Gly Gly Gly Ala Gly Gly Ser Ile Leu Cys Met Ala Ser
      180
Val Ser Gly Ile Leu Gly Gly Leu Gly Thr Tyr Leu Tyr Ser Val Ser
      195
Lys Phe Ala Ile Ala Gly Ile Val Lys Ala Ala Ala Glu Leu Ser
      210
Arg Leu Gly Val Arg Val Asn Cys Ile Ser Pro Tyr Ala Val Pro Thr
      225
Pro Met Val Leu Gly Gln Phe Ser Ala Met Leu Gly Gly Ala Ala Asp
      245
Glu Ala Gln Val Ala Ala Ile Val Arg Gly Leu Gly Glu Leu Arg Gly
      260
Ala Thr Cys Glu Ala Val Asp Ile Ala Arg Ala Ala Val Tyr Leu Ala
      275
Ser Asp Asp Ala Lys Tyr Val Ser Gly His Asn Leu Val Val Asp Gly
      290
Gly Phe Thr Ser Tyr Lys His Met Asn Leu Pro Phe Pro Thr Lys Pro
      305
His Glu
      310

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<210> 2155  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

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<400> 2155
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Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr
1      5
gcg tcc acg cag ggg atc ggc cta gcc atc gcc gag cgc ctc ggc ctg      96
Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu
20      25
gag ggc gcc gcc gcc gtc gtc tcc tcc cgc aag cag aag aac gtg gac      144
Glu Gly Ala Ala Ala Val Val Ser Arg Lys Gln Lys Asn Val Asp
35      40
gag gcc gtg gag ggg ctc aag gcc aag ggg atc acc gtg gtg ggc gcc      192
Glu Ala Val Glu Gly Leu Lys Ala Lys Gly Ile Thr Val Val Gly Ala
50      55
gtc tgc cac gta tcc gac gca cag caa cgc aag aac atc atc gag acg      240
Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Asn Ile Ile Glu Thr
65      70
gcc gtc aag aac ttt ggg cac att gat att ctt gtc tcc aac gct gct      288
Ala Val Lys Asn Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala
85      90
gca aat cct act gtg aat gtc ata ctt gaa atg aaa gag gtt gtt ctc      336
Ala Asn Pro Thr Val Asn Val Ile Leu Glu Met Lys Glu Val Val Leu
100      105
gat aag ttg tgg gat att aac gtc aag gct tct att ctt ctt att cag      384
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln
115      120
gat gct gct ccc cac cta cgg gca ggg tca tct gtg atc ctt att tct      432

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## PhoenixTemp32470.tmp.txt

Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Gly	Ser	Ser	Val	Ile	Leu	Ile	Ser		
130						135					140						
tca	att	gct	ggt	tac	aat	cct	gag	caa	gga	ttg	aca	atg	tat	ggt	ggt		480
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val		
145					150					155					160		
aca	aag	acc	gct	ctc	ttt	ggt	ctc	aca	aag	gct	ctt	gct	ggt	gag	atg		528
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met		
				165					170					175			
gga	ccc	gat	att	cgt	ggt	aat	tgt	ata	gcc	cct	ggt	ttt	ggt	ccg	aca		576
Gly	Pro	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr		
			180					185					190				
cgg	ttt	gct	agt	ttc	ttc	ata	gac	aac	gag	acc	att	agg	aaa	aag	ctt		624
Arg	Phe	Ala	Ser	Phe	Phe	Ile	Asp	Asn	Glu	Thr	Ile	Arg	Lys	Lys	Leu		
		195					200					205					
aac	gag	agg	act	atg	ctt	aag	aga	ttg	ggt	tcc	gtg	gaa	gat	atg	gcg		672
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala		
	210					215					220						
gca	gct	gcc	gca	ttc	ctg	gca	tct	gac	gat	gca	tca	ttc	atc	aca	gct		720
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
225					230					235					240		
gaa	acc	att	gtt	gtt	gct	gga	ggg	gtg	ccg	tcg	aga	ttg	taa				762
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Pro	Ser	Arg	Leu					
				245					250								

<210> 2156  
 <211> 253  
 <212> PRT  
 <213> Zea mays

<400> 2156

Met	Asp	Val	Lys	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Val	Thr		
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Ala	Ser	Thr	Gln	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Glu	Arg	Leu	Gly	Leu		
			20					25					30				
Glu	Gly	Ala	Ala	Val	Val	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asp				
		35				40				45							
Glu	Ala	Val	Glu	Gly	Leu	Lys	Ala	Lys	Gly	Ile	Thr	Val	Val	Gly	Ala		
		50				55				60							
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Asn	Ile	Ile	Glu	Thr		
65					70				75					80			
Ala	Val	Lys	Asn	Phe	Gly	His	Ile	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala		
				85					90					95			
Ala	Asn	Pro	Thr	Val	Asn	Val	Ile	Leu	Glu	Met	Lys	Glu	Val	Val	Leu		
			100					105					110				
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln		
		115				120						125					
Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Gly	Ser	Ser	Val	Ile	Leu	Ile	Ser		
		130				135					140						
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val		
145					150					155					160		
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met		
				165					170					175			
Gly	Pro	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr		
			180					185					190				
Arg	Phe	Ala	Ser	Phe	Phe	Ile	Asp	Asn	Glu	Thr	Ile	Arg	Lys	Lys	Leu		
		195					200					205					
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala		
		210				215					220						
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
225					230					235					240		
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Pro	Ser	Arg	Leu					
				245					250								

<210> 2157  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>



## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;400&gt; 2157

atg	gat	gtc	aag	tgc	cgg	cgt	ctg	gag	ggg	aag	gtg	gcc	atc	gtg	acg	48
Met	Asp	Val	Lys	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	
1				5					10					15		
gcg	tcc	acg	atg	ggg	atc	ggc	ctc	gcc	atc	gcc	gag	cgc	ctc	ggg	ctg	96
Ala	Ser	Thr	Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Glu	Arg	Leu	Gly	Leu	
			20					25					30			
gag	ggc	gcc	gcc	gtc	gtc	atc	tcc	tcc	cgc	aag	cag	aag	aac	gtg	aac	144
Glu	Gly	Ala	Ala	Val	Val	Ile	Ser	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asn	
			35				40					45				
gag	gcg	gtg	gag	ggg	ctc	agg	gcc	aag	ggg	atc	acc	gcg	ggt	ggg	gcc	192
Glu	Ala	Val	Glu	Gly	Leu	Arg	Ala	Lys	Gly	Ile	Thr	Ala	Val	Gly	Ala	
			50			55					60					
gtc	tgc	cac	gtc	tcc	gac	gca	cag	cag	cgc	aag	agc	ctc	atc	gag	acg	240
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Ser	Leu	Ile	Glu	Thr	
			65		70					75					80	
gcc	gtc	aag	agc	ttt	ggg	cac	ata	gat	att	ctt	gtc	tcc	aat	gct	gcc	288
Ala	Val	Lys	Ser	Phe	Gly	His	Ile	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala	
				85					90					95		
gca	aat	cct	tct	gta	gat	agc	ata	ctt	gaa	atg	aaa	gag	tct	ggt	ctc	336
Ala	Asn	Pro	Ser	Val	Asp	Ser	Ile	Leu	Glu	Met	Lys	Glu	Ser	Val	Leu	
			100					105					110			
gat	aag	ctg	tgg	gat	att	aac	gtc	aag	gct	tct	atc	ctt	ctt	att	cag	384
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln	
			115				120					125				
gat	gct	gct	cct	cac	cta	cgg	aag	ggg	tca	tct	gtg	att	att	att	tct	432
Asp	Ala	Ala	Pro	His	Leu	Arg	Lys	Gly	Ser	Ser	Val	Ile	Ile	Ile	Ser	
			130			135					140					
tca	att	gct	ggg	tac	aat	cca	gaa	caa	gga	ttg	aca	atg	tat	ggg	gtc	480
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val	
			145		150				155						160	
aca	aag	act	gct	ctc	ttt	ggg	ctc	acg	aag	gct	ctt	gct	ggg	gag	atg	528
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met	
				165					170					175		
gga	ccc	gat	act	cgt	gtt	aac	tgt	gta	gcc	cct	ggg	ttt	gtt	cct	aca	576
Gly	Pro	Asp	Thr	Arg	Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Val	Pro	Thr	
			180					185				190				
cgg	ttt	gct	agt	ttc	ctc	aca	gaa	aat	gag	acc	att	agg	aaa	gag	ctt	624
Arg	Phe	Ala	Ser	Phe	Leu	Thr	Glu	Asn	Glu	Thr	Ile	Arg	Lys	Glu	Leu	
			195				200					205				
aac	gag	agg	acc	aag	ctt	aag	aga	ttg	ggg	act	gtg	gaa	gac	atg	gct	672
Asn	Glu	Arg	Thr	Lys	Leu	Lys	Arg	Leu	Gly	Thr	Val	Glu	Asp	Met	Ala	
			210			215					220					
gcg	gct	gcg	gct	ttt	ctg	gcg	tct	gac	gac	gca	tca	tac	att	acg	gct	720
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr	Ile	Thr	Ala	
			225		230				235						240	
gaa	acc	att	gtt	gtt	gct	gga	ggg	gtg	cag	tct	agg	ctg	taa			762
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Gln	Ser	Arg	Leu				
				245					250							

&lt;210&gt; 2158

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2158

Met	Asp	Val	Lys	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	
1				5					10					15		
Ala	Ser	Thr	Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Glu	Arg	Leu	Gly	Leu	
			20					25					30			
Glu	Gly	Ala	Ala	Val	Val	Ile	Ser	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asn	
			35				40					45				
Glu	Ala	Val	Glu	Gly	Leu	Arg	Ala	Lys	Gly	Ile	Thr	Ala	Val	Gly	Ala	
			50			55					60					
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Ser	Leu	Ile	Glu	Thr	80
65					70					75						

## PhoenixTemp32470.tmp.txt

Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
 100 105 110  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln  
 115 120 125  
 Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
 130 135 140  
 Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
 145 150 155 160  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165 170 175  
 Gly Pro Asp Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
 195 200 205  
 Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
 210 215 220  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
 225 230 235 240  
 Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
 245 250

&lt;210&gt; 2159

&lt;211&gt; 957

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(957)

&lt;400&gt; 2159

atg gcc acc gcc gcc gcc acc gca gca gca gca gca gtc tcc tcc ccg	48
Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Ala Ala Val Ser Ser Pro	
1 5 10 15	
gct gcg cgt gga gca gcc ggg gcc gcc gcc gcc tcc cgc cgg ggg ttc	96
Ala Ala Arg Gly Ala Ala Gly Ala Ala Ala Ala Ser Arg Arg Gly Phe	
20 25 30	
gtc acg ttt ggt gga ggc gcc gcc cgc ttc tct ccc acg ctg cgg tcc	144
Val Thr Phe Gly Gly Gly Ala Arg Phe Ser Pro Thr Leu Arg Ser	
35 40 45	
ggc cgt ggg ttc tct ggt gtg caa acc cat gtt gct gct gtt gaa caa	192
Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln	
50 55 60	
gca gtt gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt	240
Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val	
65 70 75 80	
aca ggt gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga	288
Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly	
85 90 95	
aaa gca gga tgc aag gtt ctg gta aac tat gcc cgg tcc tcg aaa gag	336
Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu	
100 105 110	
gct gaa gag gtc tcc aaa gag att gaa gca tct ggt ggt gag gct atc	384
Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile	
115 120 125	
acc ttc gga gga gat gtt tca aaa gaa gct gat gta gag tct atg atg	432
Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met	
130 135 140	
aaa gca gct cta gat aaa tgg gga aca ata gat gtg ctg gta aat aat	480
Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn	
145 150 155 160	
gca ggg att aca cga gac aca ttg ttg atg agg atg aag aaa tct cag	528
Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln	
165 170 175	
tgg caa gac gta att gat ctg aat ctt act ggc gtc ttc ctt tgt aca	576
Trp Gln Asp Val Ile Asp Leu Asn Thr Gly Val Phe Leu Cys Thr	
180 185 190	

## PhoenixTemp32470.tmp.txt

cag	gct	gca	aca	aaa	gta	atg	atg	aaa	aag	aga	aag	gga	aaa	att	atc	624
Gln	Ala	Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Arg	Lys	Gly	Lys	Ile	Ile	
		195					200					205				
aac	att	gca	tct	gta	gtt	ggt	ctt	act	ggc	aat	gtt	ggc	caa	gct	aat	672
Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Val	Gly	Gln	Ala	Asn	
	210					215					220					
tat	agc	gca	gcc	aag	gct	gga	gtg	att	ggt	ttc	aca	aaa	aca	gtt	gcc	720
Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	
	225				230					235					240	
agg	gag	tat	gca	agc	aga	aat	atc	aat	gtg	aat	gct	att	gca	cca	ggg	768
Arg	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	
				245					250					255		
ttc	att	gca	tct	gat	atg	act	gcc	gaa	ctt	gga	gaa	gag	ctt	gag	aag	816
Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	
			260					265					270			
aaa	atc	ttg	tca	acc	att	ccg	tta	ggg	aga	tat	ggc	caa	cca	gag	gaa	864
Lys	Ile	Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu	Glu	
		275					280					285				
gtt	gca	ggg	ttg	gtc	gag	ttc	ctg	gcc	ctt	aac	ccc	gca	gct	agc	tat	912
Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	Ala	Ala	Ser	Tyr	
		290				295					300					
atg	act	gga	cag	gtg	ctt	aca	att	gac	gga	ggg	atg	gta	atg	taa		957
Met	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met			
					310					315						

<210> 2160  
 <211> 318  
 <212> PRT  
 <213> Zea mays

<400> 2160  
 Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Ala Ala Val Ser Ser Pro  
 1 5 10 15  
 Ala Ala Arg Gly Ala Ala Gly Ala Ala Ala Ser Arg Arg Gly Phe  
 20 25 30  
 Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser  
 35 40 45  
 Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln  
 50 55 60  
 Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val  
 65 70 75 80  
 Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly  
 85 90 95  
 Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu  
 100 105 110  
 Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile  
 115 120 125  
 Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met  
 130 135 140  
 Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn  
 145 150 155 160  
 Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln  
 165 170 175  
 Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr  
 180 185 190  
 Gln Ala Ala Thr Lys Val Met Met Lys Lys Arg Lys Gly Lys Ile Ile  
 195 200 205  
 Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Val Gly Gln Ala Asn  
 210 215 220  
 Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala  
 225 230 235 240  
 Arg Glu Tyr Ala Ser Arg Asn Ile Asn Val Asn Ala Ile Ala Pro Gly  
 245 250 255  
 Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys  
 260 265 270  
 Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu Glu  
 275 280 285  
 Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Pro Ala Ala Ser Tyr  
 290 295 300

Met Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met  
305 310 315

<210> 2161  
<211> 822  
<212> DNA  
<213> Zea mays

<220>  
<221> CDS  
<222> (1)..(822)

<400> 2161  
atg gcc acg gtg gag acc tcg ggc acg gcg ata ggg tcc tcc ggg aga 48  
Met Ala Thr Val Glu Thr Ser Gly Thr Ala Ile Gly Ser Ser Gly Arg  
1 5 10 15  
tgg gca cta cac ggc aag aca gcc ctc gtc acc ggc ggc acc cgc ggc 96  
Trp Ala Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg Gly  
20 25 30  
atc ggg cgt gcg gta gtg gag gag ctg gcg gcg ctg ggg gcg gcc gtg 144  
Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala Val  
35 40 45  
cac aca tgc tcc cgg aag gcg gag gag ctc ggc gag cgc atc aag gag 192  
His Thr Cys Ser Arg Lys Ala Glu Glu Leu Gly Glu Arg Ile Lys Glu  
50 55 60  
tgg gag gcc agg gga ttc agc gtt acc ggg tcc gtc tgc gac ctc tcc 240  
Trp Glu Ala Arg Gly Phe Ser Val Thr Gly Ser Val Cys Asp Leu Ser  
65 70 75 80  
gag agg gac cag cgg gag cgg ttg ctc cgc gag gtt gcc gac cgc ttc 288  
Glu Arg Asp Gln Arg Glu Arg Leu Leu Arg Glu Val Ala Asp Arg Phe  
85 90 95  
ggc ggc aag ctc aac atc ctc gta aac aat gta gga aca aac ata agg 336  
Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile Arg  
100 105 110  
aaa cca act act gag ttt act gca gag gaa tac tcg ttt ctg atg gct 384  
Lys Pro Thr Thr Glu Phe Thr Ala Glu Glu Tyr Ser Phe Leu Met Ala  
115 120 125  
act aat ctt gaa tct gca tat cac ttg tgc caa att gca cat cct ctt 432  
Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Ile Ala His Pro Leu  
130 135 140  
ttg aaa tta tct ggg tca agc att ata ttc ata tca tct gtt gct 480  
Leu Lys Leu Ser Gly Ser Gly Ser Ile Ile Phe Ile Ser Ser Val Ala  
145 150 155 160  
gga gcg ata gga atc ttt agt gga act ata tat gct atg act aaa ggt 528  
Gly Ala Ile Gly Ile Phe Ser Gly Thr Ile Tyr Ala Met Thr Lys Gly  
165 170 175  
gcc att aac cag cta acc aag aat tta gct tgt gaa tgg gct aag gac 576  
Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp  
180 185 190  
aac ata aga gcc aac tct gtc gct ccg tgg tac atc acc act tca ctt 624  
Asn Ile Arg Ala Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser Leu  
195 200 205  
acg gaa gga att ttg gca aat aag aac ttt gag gaa caa gtt gtg agt 672  
Thr Glu Gly Ile Leu Ala Asn Lys Asn Phe Glu Glu Gln Val Val Ser  
210 215 220  
cga act ccg ctt gga cgt gtc gga gaa cct gga gaa gta tcg gca ctt 720  
Arg Thr Pro Leu Gly Arg Val Gly Glu Pro Gly Glu Val Ser Ala Leu  
225 230 235 240  
gtt gct ttt ctt tgc atg ccg ggt tcc act tat att agc ggc cag acg 768  
Val Ala Phe Leu Cys Met Pro Gly Ser Thr Tyr Ile Ser Gly Gln Thr  
245 250 255  
att gcg gtc gac gga ggt atg act gtg aac ggg ttt tac cct ccc aag 816  
Ile Ala Val Asp Gly Gly Met Thr Val Asn Gly Phe Tyr Pro Pro Lys  
260 265 270  
ccc tag 822  
Pro

<210> 2162

<211> 273  
 <212> PRT  
 <213> Zea mays

<400> 2162  
 Met Ala Thr Val Glu Thr Ser Gly Thr Ala Ile Gly Ser Ser Gly Arg  
 1 5 10 15  
 Trp Ala Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg Gly  
 20 25 30  
 Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala Val  
 35 40 45  
 His Thr Cys Ser Arg Lys Ala Glu Glu Leu Gly Glu Arg Ile Lys Glu  
 50 55 60  
 Trp Glu Ala Arg Gly Phe Ser Val Thr Gly Ser Val Cys Asp Leu Ser  
 65 70 75 80  
 Glu Arg Asp Gln Arg Glu Arg Leu Leu Arg Glu Val Ala Asp Arg Phe  
 85 90 95  
 Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile Arg  
 100 105 110  
 Lys Pro Thr Thr Glu Phe Thr Ala Glu Glu Tyr Ser Phe Leu Met Ala  
 115 120 125  
 Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Ile Ala His Pro Leu  
 130 135 140  
 Leu Lys Leu Ser Gly Ser Gly Ser Ile Ile Phe Ile Ser Ser Val Ala  
 145 150 155 160  
 Gly Ala Ile Gly Ile Phe Ser Gly Thr Ile Tyr Ala Met Thr Lys Gly  
 165 170 175  
 Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp  
 180 185 190  
 Asn Ile Arg Ala Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser Leu  
 195 200 205  
 Thr Glu Gly Ile Leu Ala Asn Lys Asn Phe Glu Glu Gln Val Val Ser  
 210 215 220  
 Arg Thr Pro Leu Gly Arg Val Gly Glu Pro Gly Glu Val Ser Ala Leu  
 225 230 235 240  
 Val Ala Phe Leu Cys Met Pro Gly Ser Thr Tyr Ile Ser Gly Gln Thr  
 245 250 255  
 Ile Ala Val Asp Gly Gly Met Thr Val Asn Gly Phe Tyr Pro Pro Lys  
 260 265 270  
 Pro

<210> 2163  
 <211> 792  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(792)

<400> 2163  
 atg gcg cca gga ggc agc ggc gag cgg tgg agc ctg gcc ggc gcg aca 48  
 Met Ala Pro Gly Gly Ser Gly Glu Arg Trp Ser Leu Ala Gly Ala Thr 15  
 1 5 10  
 gcg ctg gtc acc ggt ggc agc aag ggg atc ggg caa gcc gtc gtg gag 96  
 Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Gln Ala Val Val Glu 20 25 30  
 gag ctg gcc agg ctc ggc gcg cgc gtg cac acg tgc gcc cgc agc gcg 144  
 Glu Leu Ala Arg Leu Gly Ala Arg Val His Thr Cys Ala Arg Ser Ala 35 40 45  
 gcg gac ctg gag gag tgc cgc cgg cgg tgg gcc gag aag ggg ctc cgc 192  
 Ala Asp Leu Glu Glu Cys Arg Arg Arg Trp Ala Glu Lys Gly Leu Arg 50 55 60  
 gtc acc gtc tcc gtg tgc gac gtc gcc gtg cgc gcc gac cgg gag agg 240  
 Val Thr Val Ser Val Cys Asp Val Ala Val Arg Ala Asp Arg Glu Arg 65 70 75 80  
 ctc gtc ctg gac acg gtc agc gcg gcc ttc gac ggc aag ctc gat atc 288  
 Leu Val Leu Asp Thr Val Ser Ala Ala Phe Asp Gly Lys Leu Asp Ile 255 260 265 270

## PhoenixTemp32470.tmp.txt

															85											90											95	
ctg	gtc	aac	aac	gct	gcg	ctg	ctg	ctg	ctc	aag	ccg	gcg	gcg	gag	tgg	336																						
Leu	Val	Asn	Asn	Ala	Ala	Leu	Leu	Leu	Leu	Lys	Pro	Ala	Ala	Glu	Trp																							
															100											105											110	
gcg	gcg	gag	gac	tac	gcg	cgg	atc	atg	gcg	acc	aac	ctg	gag	tcg	tgc	384																						
Ala	Ala	Glu	Asp	Tyr	Ala	Arg	Ile	Met	Ala	Thr	Asn	Leu	Glu	Ser	Cys																							
															115											120											125	
ttg	cac	atc	tcc	cag	ctc	gcg	cac	ccg	ctg	ctc	ctc	aac	gcc	tcc	gtc	432																						
Leu	His	Ile	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Leu	Asn	Ala	Ser	Val																							
															130											135											140	
gcc	gga	ggg	gcg	agc	atc	gtc	aac	gtc	tcc	tcc	atc	gcc	agc	gtc	ctt	480																						
Ala	Gly	Gly	Ala	Ser	Ile	Val	Asn	Val	Ser	Ser	Ile	Ala	Ser	Val	Leu																							
															145											150											155	
ggc	ttc	ccg	cag	gaa	gtt	atg	tac	agc	gtc	acc	aaa	gga	gga	ctg	aat	528																						
Gly	Phe	Pro	Gln	Glu	Val	Met	Tyr	Ser	Val	Thr	Lys	Gly	Gly	Leu	Asn																							
															165											170											175	
cag	atg	acg	aga	agt	cta	gct	gtg	gag	tgg	gcc	tgc	gat	agg	atc	cgt	576																						
Gln	Met	Thr	Arg	Ser	Leu	Ala	Val	Glu	Trp	Ala	Cys	Asp	Arg	Ile	Arg																							
															180											185											190	
gtg	aac	tgc	gtc	gcg	ccg	ggc	gtg	atc	atg	acg	gac	atg	ggg	aaa	gag	624																						
Val	Asn	Cys	Val	Ala	Pro	Gly	Val	Ile	Met	Thr	Asp	Met	Gly	Lys	Glu																							
															195											200											205	
cta	ccg	gcg	gcg	ttg	gtg	gag	cag	gag	cgg	tca	cgc	atc	ccg	ctg	cgg	672																						
Leu	Pro	Ala	Ala	Leu	Val	Glu	Gln	Glu	Arg	Ser	Arg	Ile	Pro	Leu	Arg																							
															210											215											220	
cgg	acc	ggc	gag	ccg	gag	gag	gtg	gcg	tcc	ctg	gtg	tcg	ttc	ctc	tgc	720																						
Arg	Thr	Gly	Glu	Pro	Glu	Glu	Val	Ala	Ser	Leu	Val	Ser	Phe	Leu	Cys																							
															225											230											235	
atg	ccg	gcg	gcg	tcc	tac	gtc	acc	ggg	cag	gtc	atc	ttc	gtc	gac	ggc	768																						
Met	Pro	Ala	Ala	Ser	Tyr	Val	Thr	Gly	Gln	Val	Ile	Phe	Val	Asp	Gly																							
															245											250											255	
ggc	cgg	acc	att	agt	ggc	gcc	tga												792																			
Gly	Arg	Thr	Ile	Ser	Gly	Ala																																
															260																							

<210> 2164  
 <211> 263  
 <212> PRT  
 <213> Zea mays

<400> 2164  
 Met Ala Pro Gly Gly Ser Gly Glu Arg Trp Ser Leu Ala Gly Ala Thr  
 1 5 10 15  
 Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Gln Ala Val Val Glu  
 20 25 30  
 Glu Leu Ala Arg Leu Gly Ala Arg Val His Thr Cys Ala Arg Ser Ala  
 35 40 45  
 Ala Asp Leu Glu Glu Cys Arg Arg Arg Trp Ala Glu Lys Gly Leu Arg  
 50 55 60  
 Val Thr Val Ser Val Cys Asp Val Ala Val Arg Ala Asp Arg Glu Arg  
 65 70 75 80  
 Leu Val Leu Asp Thr Val Ser Ala Ala Phe Asp Gly Lys Leu Asp Ile  
 85 90 95  
 Leu Val Asn Asn Ala Ala Leu Leu Leu Leu Lys Pro Ala Ala Glu Trp  
 100 105 110  
 Ala Ala Glu Asp Tyr Ala Arg Ile Met Ala Thr Asn Leu Glu Ser Cys  
 115 120 125  
 Leu His Ile Ser Gln Leu Ala His Pro Leu Leu Leu Asn Ala Ser Val  
 130 135 140  
 Ala Gly Gly Ala Ser Ile Val Asn Val Ser Ser Ile Ala Ser Val Leu  
 145 150 155 160  
 Gly Phe Pro Gln Glu Val Met Tyr Ser Val Thr Lys Gly Gly Leu Asn  
 165 170 175  
 Gln Met Thr Arg Ser Leu Ala Val Glu Trp Ala Cys Asp Arg Ile Arg  
 180 185 190  
 Val Asn Cys Val Ala Pro Gly Val Ile Met Thr Asp Met Gly Lys Glu  
 195 200 205  
 Leu Pro Ala Ala Leu Val Glu Gln Glu Arg Ser Arg Ile Pro Leu Arg  
 210 215 220

## PhoenixTemp32470.tmp.txt

Arg Thr Gly Glu Pro Glu Glu Val Ala Ser Leu Val Ser Phe Leu Cys  
 225 230 235 240  
 Met Pro Ala Ala Ser Tyr Val Thr Gly Gln Val Ile Phe Val Asp Gly  
 245 250 255  
 Gly Arg Thr Ile Ser Gly Ala  
 260

<210> 2165  
 <211> 957  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(957)

<400> 2165  
 atg gcc acc gcc gcc gcc acc gca gca gca gca gca gtc tcc tcc ccg 48  
 Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Ala Ala Val Ser Ser Pro  
 1 5 10 15  
 gct gcg cgt gga gca gcc ggg gcc gcc gcc gcc tcc cgc cgg ggg ttc 96  
 Ala Ala Arg Gly Ala Ala Gly Ala Ala Ala Ser Arg Arg Gly Phe  
 20 25 30  
 gtc acg ttt ggt gga ggc gcc gcc ttc tct ccc acg ctg cgg tcc 144  
 Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser  
 35 40 45  
 ggc cgt ggg ttc tct ggt gtg caa acc cat gtt gct gct gtt gaa caa 192  
 Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln  
 50 55 60  
 gca gtt gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt 240  
 Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val  
 65 70 75 80  
 aca ggt gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga 288  
 Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly  
 85 90 95  
 aaa gca gga tgc aag gtt ctg gta aac tat gcc cgg tcc tcg aaa gag 336  
 Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu  
 100 105 110  
 gct gaa gag gtc tcc aaa gag att gaa gca tct ggt ggt gag gct atc 384  
 Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile  
 115 120 125  
 acc ttc gga gga gat gtt tca aaa gaa gct gat gta gag tct atg atg 432  
 Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met  
 130 135 140  
 aaa gca gct cta gat aaa tgg gga aca ata gat gtg ctg gta aat aat 480  
 Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn  
 145 150 155 160  
 gca gga atc aca cgg gac aca ttg ttg atg aga atg aag aaa tca cag 528  
 Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln  
 165 170 175  
 tgg caa gat gtg att gat ttg aat ctt aca ggc gtt ttc ctt tgc acg 576  
 Trp Gln Asp Val Ile Asp Leu Asn Thr Gly Val Phe Leu Cys Thr  
 180 185 190  
 cag gct gca aca aaa gta atg atg aag aag aaa aag gga aga att atc 624  
 Gln Ala Ala Thr Lys Val Met Met Lys Lys Lys Lys Gly Arg Ile Ile  
 195 200 205  
 aat ata gca tcg gtt gtt ggt ctt act ggt aat gct gga caa gct aat 672  
 Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn  
 210 215 220  
 tat gct gct gcc aag gct ggg gtt att ggg ttc aca aaa aca gtt gct 720  
 Tyr Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala  
 225 230 235 240  
 agg gag tat gcc agc aat att aat gca aac gtt atc gct cct gga 768  
 Arg Glu Tyr Ala Ser Arg Asn Ile Asn Ala Asn Val Ile Ala Pro Gly  
 245 250 255  
 ttt att gct tca gat atg act gct gaa ctt ggt gaa gag tta gag aag 816  
 Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys  
 260 265 270  
 aaa att ctg tca act att cct tta ggg cgc tat ggt cgg cca gag gat 864

## PhoenixTemp32470.tmp.txt

Lys	Ile	Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Arg	Pro	Glu	Asp		
gta	gcg	ggc	ctg	gtg	gaa	ttc	tta	gcc	ctc	agc	cct	gct	gca	agc	tac	912	
Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser	Tyr		
	290					295					300						
atc	act	gga	cag	gtc	ctc	acc	atc	gat	gga	gga	atg	gta	atg	taa		957	
Ile	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met				
305					310					315							

<210> 2166  
 <211> 318  
 <212> PRT  
 <213> Zea mays

Met	Ala	Thr	Ala	Ala	Ala	Thr	Ala	Ala	Ala	Ala	Ala	Val	Ser	Ser	Pro		
1				5				10					15				
Ala	Ala	Arg	Gly	Ala	Ala	Gly	Ala	Ala	Ala	Ser	Arg	Arg	Gly	Phe			
			20				25					30					
Val	Thr	Phe	Gly	Gly	Gly	Ala	Ala	Arg	Phe	Ser	Pro	Thr	Leu	Arg	Ser		
		35				40						45					
Gly	Arg	Gly	Phe	Ser	Gly	Val	Gln	Thr	His	Val	Ala	Ala	Val	Glu	Gln		
	50				55					60							
Ala	Val	Val	Lys	Asp	Ala	Thr	Lys	Leu	Glu	Ala	Pro	Val	Val	Val	Val		
65				70					75						80		
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Leu	Ala	Leu	Gly		
			85					90						95			
Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	Lys	Glu		
		100						105					110				
Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Ala	Ser	Gly	Gly	Glu	Ala	Ile		
	115					120						125					
Thr	Phe	Gly	Gly	Asp	Val	Ser	Lys	Glu	Ala	Asp	Val	Glu	Ser	Met	Met		
	130				135					140							
Lys	Ala	Ala	Leu	Asp	Lys	Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn		
145				150					155					160			
Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln		
			165					170						175			
Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr		
	180						185					190					
Gln	Ala	Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Lys	Lys	Gly	Arg	Ile	Ile		
	195					200						205					
Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Ala	Gly	Gln	Ala	Asn		
	210				215					220							
Tyr	Ala	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala		
225				230					235					240			
Arg	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Ala	Asn	Val	Ile	Ala	Pro	Gly		
			245					250						255			
Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys		
		260					265					270					
Lys	Ile	Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Arg	Pro	Glu	Asp		
	275					280					285						
Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser	Tyr		
	290				295					300							
Ile	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met				
305					310				315								

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 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

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Met	Asp	Val	Lys	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Val	Thr		
1				5				10						15			



## PhoenixTemp32470.tmp.txt

gcg tcc acg cag ggg atc ggc ctc gcc atc gcc gag cgc ctc ggc ctg	96
Ala Ser Thr Gln 20 Gly Ile Gly Leu Ala 25 Ile Ala Glu Arg Leu 30 Gly Leu	
gag ggc gcc gcc gtc gtc gtc tcc tcc cgc aag cag aag aac gtg gac	144
Glu Gly Ala Ala Val Val Val Ser 40 Ser Arg Lys Gln Lys 45 Asn Val Asp	
gag gcc gtg gag ggg ctc aag gcc aag ggg atc acc gtg ggc gcc	192
Glu Ala Val Glu Gly Leu Lys 55 Ala Lys Gly Ile Thr 60 Val Val Gly Ala	
gtc tgc cac gta tcc gac gca cag caa cgc aag aac ctc gtc gag acg	240
Val Cys His Val Ser Asp 70 Ala Gln Gln Arg Lys 75 Asn Leu Val Glu Thr 80	
gcc gtc aag aac ttt ggg cac att gat att ctt gtc tcc aac gct gct	288
Ala Val Lys Asn Phe 85 Gly His Ile Asp Ile Leu Val Ser Asn Ala 95 Ala	
gca aat cct act gtg aat gtc ata ctt gaa atg aaa gag gtt gtt ctc	336
Ala Asn Pro Thr 100 Val Asn Val Ile Leu 105 Glu Met Lys Glu Val Val Leu	
gat aag ttg tgg gat att aac gtc aag gct tct att ctt ctt att cag	384
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln	
gat gct gct ccc cac cta cga gca agg tca tct gtg atc ctt att tct	432
Asp Ala Ala Pro His Leu Arg 135 Ala Arg Ser Ser Val 140 Ile Leu Ile Ser	
tca att gct ggt tac aat cct gag cac gga ttg aca atg tat ggt gtt	480
Ser Ile Ala Gly Tyr Asn 150 Pro Glu His Gly Leu 155 Thr Met Tyr Gly Val 160	
aca aag acc gct ctc ttt ggt ctc aca aag gct ctt gct ggt gag atg	528
Thr Lys Thr Ala Leu Phe Gly Leu Thr 170 Lys Ala Leu Ala Gly Glu Met 175	
gga ccc gat att cgt gtt aac tgt ata gcc cct ggt ttt gtt ccg aca	576
Gly Pro Asp Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr 190	
cgg ttt gct agt ttc ttc gta gac aac gag acc att agg aaa aag ctt	624
Arg Phe Ala Ser Phe Phe Val Asp 200 Asn Glu Thr Ile Arg Lys Lys Leu	
aac gag agg act atg ctt aag aga ttg ggt tcc gtg gaa gat atg gcg	672
Asn Glu Arg Thr Met Leu Lys 215 Arg Leu Gly Ser Val 220 Glu Asp Met Ala	
gca gct gcc gca ttc ctg gca tct gac gat gca tca ttc atc aca gct	720
Ala Ala Ala Ala Phe 230 Ala Ser Asp Asp Ala Ser Phe Ile Thr Ala 240	
gaa acc att gtt gtt gct gga ggg gtg ccg tcg aga ttg taa	762
Glu Thr Ile Val Val Ala Gly Gly Val Pro 250 Ser Arg Leu	

&lt;210&gt; 2168

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2168

Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr	
1 Ala Ser Thr Gln 5 Gly Ile Gly Leu Ala 10 Ile Ala Glu Arg Leu Gly Leu	
Glu Gly Ala 20 Val Val Val Ser 25 Arg Lys Gln Lys 30 Asn Val Asp	
Glu Ala Val Glu Gly Leu Lys 40 Ala Lys Gly Ile Thr Val Val Gly Ala	
Val Cys His Val Ser Asp 55 Ala Gln Gln Arg Lys 60 Asn Leu Val Glu Thr	
65 Ala Val Lys Asn Phe 70 Gly His Ile Asp Ile Leu Val Ser Asn Ala 80	
Ala Asn Pro Thr 85 Val Asn Val Ile Leu Glu Met Lys Glu Val Val Leu	
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln	
Asp Ala Ala Pro His Leu Arg Ala Arg Ser Ser Val Ile Leu Ile Ser	

## PhoenixTemp32470.tmp.txt

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      130      135      140
Ser Ile Ala Gly Tyr Asn Pro Glu His Gly Leu Thr Met Tyr Gly Val
145 150 155 160
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met
      165      170      175
Gly Pro Asp Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr
      180      185      190
Arg Phe Ala Ser Phe Phe Val Asp Asn Glu Thr Ile Arg Lys Lys Leu
      195      200      205
Asn Glu Arg Thr Met Leu Lys Arg Leu Gly Ser Val Glu Asp Met Ala
      210      215      220
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Phe Ile Thr Ala
225 230 235 240
Glu Thr Ile Val Val Ala Gly Gly Val Pro Ser Arg Leu
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<210> 2169  
 <211> 26  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2169  
 atgtttatcc tgtattttca gagggg

26

<210> 2170  
 <211> 24  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2170  
 ttagataaccg acgctaaccg tctc

24

<210> 2171  
 <211> 354  
 <212> PRT  
 <213> Artificial sequence

<220>  
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<220>  
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 <223> Xaa in position 13 to 22 is any or no amino acid

<220>  
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 <222> (26)..(35)  
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<222> (37)..(57)  
<223> Xaa in position 37 to 57 is any amino acid

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<221> Variant  
<222> (58)..(81)  
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<220>  
<221> Variant  
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<222> (94)..(109)  
<223> Xaa in position 94 to 109 is any or no amino acid

<220>  
<221> Variant  
<222> (111)..(114)  
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<222> (118)..(136)  
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<222> (137)..(149)  
<223> Xaa in position 137 to 149 is any or no amino acid

<220>  
<221> Variant  
<222> (151)..(168)  
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<220>  
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<222> (169)..(189)  
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<220>  
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<222> (191)..(191)  
<223> Xaa in position 191 is any amino acid

<220>  
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<222> (198)..(208)  
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<220>  
<221> Variant  
<222> (209)..(212)  
<223> Xaa in position 209 to 212 is any or no amino acid

<220>  
<221> Variant  
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<220>

<221> Variant  
 <222> (218)..(236)  
 <223> Xaa in position 218 to 236 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (237)..(244)  
 <223> Xaa in position 237 to 244 is any or no amino acid  
  
 <220>  
 <221> Variant  
 <222> (246)..(248)  
 <223> Xaa in position 246 to 248 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (250)..(253)  
 <223> Xaa in position 250 to 253 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (255)..(279)  
 <223> Xaa in position 255 to 279 is any amino acid  
  
 <220>  
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 <223> Xaa in position 334 to 336 is any or no amino acid  
  
 <220>  
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 <222> (338)..(341)  
 <223> Xaa in position 338 to 341 is any amino acid  
  
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 <222> (342)..(351)  
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 Xaa Xaa Xaa Xaa Xaa Xaa Gly Ile Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55 60  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 65 70 75 80  
 Xaa Asp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 85 90 95  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa Xaa  
 100 105 110  
 Xaa Xaa Asn Ala Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 115 120 125  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 130 135 140  
 Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

## PhoenixTemp32470.tmp.txt

[illegible]

<210>	2172
<211>	258
<212>	DNA
<213>	GLYCINE MAX

<220>  
<221> CDS  
<222> (1)..(258)

[illegible]

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<211> 85
<212> PRT
<213> GLYCINE MAX
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Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
20 25 30  
Asn Val Arg Arg Leu Phe Asp Phe Leu Val Gln Phe Glu Ala Thr Thr  
35 40 45

## PhoenixTemp32470.tmp.txt

Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Val Leu Glu Arg  
 50 55 60  
 Arg Leu Glu Leu Leu Glu Val Gln Val Gly Asn Ala Ser Ala Asn Pro  
 65 70 75 80  
 Ser Leu Phe Ala Thr  
 85

<210> 2174  
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 <213> Zea mays subsp. mays

<220>  
 <221> CDS  
 <222> (61)..(297)

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atg ggg aac cca gtc aac gtg ggc atc gcg gtg cag gcg gac tgg gag 108  
 Met Gly Asn Pro Val Asn Val Gly Ile Ala Val Gln Ala Asp Trp Glu  
 1 5 10 15

aac cgc gag ttc atc tcc aac atc tcc ctc aac gtc cga cgc ctc ttc 156  
 Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu Asn Val Arg Arg Leu Phe  
 20 25 30

gac ttc ctc ctc aga ttc gaa gct acg acg aag agc aag ctg gca agt 204  
 Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr Lys Ser Lys Leu Ala Ser  
 35 40 45

ttg aac gag aag ctg gac atc cta gag cgg aag ctg gag gtg ctt gaa 252  
 Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg Lys Leu Glu Val Leu Glu  
 50 55 60

gtc caa gtg ggc agc gcg acg acc aac cct tcc gtc ttc aac taggaggggc 304  
 Val Gln Val Gly Ser Ala Thr Thr Asn Pro Ser Val Phe Asn  
 65 70 75

gggtttatat gtttaaataa ataaatgtag gtatgaatgt tgcttgtagc aacgaattct 364

ggtcgctatc tatcgtgtag tgtgttgtgg aggatgttat tattaatgtg 414

<210> 2175  
 <211> 78  
 <212> PRT  
 <213> Zea mays subsp. mays

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 Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu Asn Val Arg Arg Leu Phe  
 20 25 30  
 Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr Lys Ser Lys Leu Ala Ser  
 35 40 45  
 Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg Lys Leu Glu Val Leu Glu  
 50 55 60  
 Val Gln Val Gly Ser Ala Thr Thr Asn Pro Ser Val Phe Asn  
 65 70 75

<210> 2176  
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 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (58)..(312)

<400> 2176

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atg ggt cgc ggc ggc ggg atg ggg aac ccg gtc aac gtg ggc atc gcg 105  
Met Gly Arg Gly Gly Gly Met Gly Asn Pro Val Asn Val Gly Ile Ala  
1 5 10 15

gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc tcc ctc 153  
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu  
20 25 30

aac gtc cga cgc ctc ttc gac ttc ctc ctc aga ttc gaa gct acg acg 201  
Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr  
35 40 45

aag agc aag ctg gca agt ttg aac gag aag ctg gac atc cta gag cgg 249  
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg  
50 55 60

aag ctg gag atg ctt gaa gtc caa gtg ggc agc gcg acg acc aac cct 297  
Lys Leu Glu Met Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro  
65 70 75 80

tcc gtc ttc aac taggaatcgc gggtttatat gcttgtagca acgaattctg 349  
Ser Val Phe Asn

gtcgcctatca attatgtaat gtaatgtaat ggattttggtt attattattg tggtatgtgt 409

aaagatgtgc agaatcg 426

<210> 2177  
<211> 84  
<212> PRT  
<213> Zea mays

<400> 2177  
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20 25 30  
Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr  
35 40 45  
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg  
50 55 60  
Lys Leu Glu Met Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro  
65 70 75 80  
Ser Val Phe Asn

<210> 2178  
<211> 267  
<212> DNA  
<213> Triticum aestivum

<220>  
<221> CDS  
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1 5 10 15

ggg atc gcg gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac 96  
Gly Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn  
20 25 30

atc tcc ctc aac gtc cgc cgc ctc ttc gac ttc ctc ctc cga ttc gag 144  
Ile Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu  
35 40 45

gcc acg acg aag agc aag ctg gcg tcg ctg aac gag aaa cta gac agc 192  
Ala Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ser  
50 55 60

## PhoenixTemp32470.tmp.txt

cta gag cgg aag ctg gag gtg ctg gag gtc caa gtg agc agc gcc acc 240  
 Leu Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr  
 65 70 75 80  
 acc aac ccc tcc gtt ttc aac aac tag 267  
 Thr Asn Pro Ser Val Phe Asn Asn  
 85

<210> 2179  
 <211> 88  
 <212> PRT  
 <213> Triticum aestivum

<400> 2179  
 Met Ala Arg Ala Gly Gln Gly Gly Gly Met Gly Ser Ala Val Asn Val  
 1 5 10 15  
 Gly Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn  
 20 25 30  
 Ile Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu  
 35 40 45  
 Ala Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ser  
 50 55 60  
 Leu Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr  
 65 70 75 80  
 Thr Asn Pro Ser Val Phe Asn Asn  
 85

<210> 2180  
 <211> 358  
 <212> DNA  
 <213> Gossypium hirsutum

<220>  
 <221> CDS  
 <222> (45)..(302)

<400> 2180  
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 Met Ala Arg Ala  
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 gga ggg ata acg aac gcc gtt aac gta ggg ata gca gtc caa gcc gat 104  
 Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala Val Gln Ala Asp  
 5 10 15 20  
 tgg gag aat cgc gaa ttc atc tct cac att tcc ctc aat gtt cgt cgc 152  
 Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu Asn Val Arg Arg  
 25 30 35  
 ctc ttt gaa ttt ctc ctc caa ttc gag gct aca acg aag agc aaa tta 200  
 Leu Phe Glu Phe Leu Leu Gln Phe Glu Ala Thr Thr Lys Ser Lys Leu  
 40 45 50  
 gca tcc ttg aac gag aaa ctg gac acc ctg gaa cgt cgt ttg gag ctt 248  
 Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg Arg Leu Glu Leu  
 55 60 65  
 ctt gaa gtt caa gtt gga act gcg tcc gct aac cct tct ctt ttc agt 296  
 Leu Glu Val Gln Val Gly Thr Ala Ser Ala Asn Pro Ser Leu Phe Ser  
 70 75 80  
 acg tgattcatat ttaaaagttg tatttgtttc catatctttg tcgggatttt 349  
 Thr  
 85  
 gttcctctc 358

<210> 2181  
 <211> 85  
 <212> PRT  
 <213> Gossypium hirsutum

<400> 2181  
 Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala  
 1 5 10 15



## PhoenixTemp32470.tmp.txt

Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
 20 25 30  
 Asn Val Arg Arg Leu Phe Glu Phe Leu Leu Gln Phe Glu Ala Thr Thr  
 35 40 45  
 Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg  
 50 55 60  
 Arg Leu Glu Leu Leu Glu Val Gln Val Gly Thr Ala Ser Ala Asn Pro  
 65 70 75 80  
 Ser Leu Phe Ser Thr  
 85

&lt;210&gt; 2182

&lt;211&gt; 231

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(231)

&lt;400&gt; 2182

atg agt ggg gct cac aga gag gcg atc caa aag cag atc cac cag gac	48
Met Ser Gly Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp	
1 5 10 15	
tgg gcg aac agg gag tat atc gaa gtg ata act gcc agc ata aag aga	96
Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg	
20 25 30	
atc acc gac ttt ctg aac tct ttc gat atg tcc tgt cgc tcc cgt ctg	144
Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu	
35 40 45	
gcg gtg ctg aac gaa aaa cta acg atc ctg gag cgg cgc ata gac tat	192
Ala Val Leu Asn Glu Lys Leu Thr Ile Leu Glu Arg Arg Ile Asp Tyr	
50 55 60	
ctg gag gcg tgc gtc gcc cag ggt gaa aca tta acg taa	231
Leu Glu Ala Cys Val Ala Gln Gly Glu Thr Leu Thr	
65 70 75	

&lt;210&gt; 2183

&lt;211&gt; 76

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2183

Met Ser Gly Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp	
1 5 10 15	
Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg	
20 25 30	
Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu	
35 40 45	
Ala Val Leu Asn Glu Lys Leu Thr Ile Leu Glu Arg Arg Ile Asp Tyr	
50 55 60	
Leu Glu Ala Cys Val Ala Gln Gly Glu Thr Leu Thr	
65 70 75	

&lt;210&gt; 2184

&lt;211&gt; 234

&lt;212&gt; DNA

&lt;213&gt; Strongylocentrotus purpuratus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(234)

&lt;400&gt; 2184

atg tct cga cca atg cca caa tcc tcc gtt cgg aat caa att caa gaa	48
Met Ser Arg Pro Met Pro Gln Ser Ser Val Arg Asn Gln Ile Gln Glu	
1 5 10 15	
gac tgg gcg aac aga gag tac ata gaa att atc aca acg aat att aaa	96
Asp Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Thr Thr Asn Ile Lys	

## PhoenixTemp32470.tmp.txt

20 25 30  
 aag ata gcg gat ttt ctc aac tct ttt gat aca tca tgc aga tca aga 144  
 Lys Ile Ala Asp Phe Leu Asn Ser Phe Asp Thr Ser Cys Arg Ser Arg  
 35 40 45  
 ctt gcc ata ttg aat gaa aaa tta aca gga ctt gag aga agg ata gag 192  
 Leu Ala Ile Leu Asn Glu Lys Leu Thr Gly Leu Glu Arg Arg Ile Glu  
 50 55 60  
 tac ctt gaa gct aga gta aca aga ggg gac aca ctg gtc tga 234  
 Tyr Leu Glu Ala Arg Val Thr Arg Gly Asp Thr Leu Val  
 65 70 75

<210> 2185  
 <211> 77  
 <212> PRT  
 <213> Strongylocentrotus purpuratus

<400> 2185  
 Met Ser Arg Pro Met Pro Gln Ser Ser Val Arg Asn Gln Ile Gln Glu  
 1 5 10 15  
 Asp Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Thr Thr Asn Ile Lys  
 20 25 30  
 Lys Ile Ala Asp Phe Leu Asn Ser Phe Asp Thr Ser Cys Arg Ser Arg  
 35 40 45  
 Leu Ala Ile Leu Asn Glu Lys Leu Thr Gly Leu Glu Arg Arg Ile Glu  
 50 55 60  
 Tyr Leu Glu Ala Arg Val Thr Arg Gly Asp Thr Leu Val  
 65 70 75

<210> 2186  
 <211> 384  
 <212> DNA  
 <213> Nasonia vitripennis

<220>  
 <221> CDS  
 <222> (56)..(286)

<400> 2186  
 gcttgatcaaa agaaaacgca aattgaaaga aaaagtacct cttaactggt cgaaa atg 58  
 Met  
 1  
 tcg act gga cac aga gaa gcg att caa aag cag ata caa caa gat tgg 106  
 Ser Thr Gly His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp Trp  
 5 10 15  
 gca aat cga gag tac att gaa gtt atc acg ggc agt att aaa aaa atc 154  
 Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Gly Ser Ile Lys Lys Ile  
 20 25 30  
 act gat ttt ctt aat tct ttt gat atg tct tgt aga tcc cga tta gct 202  
 Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu Ala  
 35 40 45  
 gtt cta aac gaa aag ctg acc aca ttg gaa cga aga att gaa tat tta 250  
 Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Ile Glu Tyr Leu  
 50 55 60 65  
 gaa gca tgc gtt aca aaa ggc gaa aca ctt aca tagataatga gtttgccgac 303  
 Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Thr  
 70 75  
 gagtatgttc tatttattct acgctttttt acttgattca ttgtacataa ccataggttt 363  
 caataactaa ttaaattcaa a 384

<210> 2187  
 <211> 76  
 <212> PRT  
 <213> Nasonia vitripennis

<400> 2187

## PhoenixTemp32470.tmp.txt

Met Ser Thr Gly His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Gly Ser Ile Lys Lys  
 20 25 30  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu  
 35 40 45  
 Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Ile Glu Tyr  
 50 55 60  
 Leu Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Thr  
 65 70 75

&lt;210&gt; 2188

&lt;211&gt; 228

&lt;212&gt; DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(228)

&lt;400&gt; 2188

atg gat gcc cat cgg gaa gcg atc cag aaa cag ata cac cag gac tgg	48
Met Asp Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp Trp	
1 5 10 15	
gcc aat cga gag tac atc gaa gtg ata acg gcc agc atc aag cgt atc	96
Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg Ile	
20 25 30	
acc gat ttc ctc aac tcc ttc gat atg tcc tgc cga tcc cgg ctg gcg	144
Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu Ala	
35 40 45	
gtg ctg aac gag aag cta act acg ctg gaa cga cgg atc gac tat ctg	192
Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Asp Tyr Leu	
50 55 60	
gag gcg tgc gtc acg aaa ggc gaa acg ctg caa tag	228
Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Gln	
65 70 75	

&lt;210&gt; 2189

&lt;211&gt; 75

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 2189

Met Asp Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp Trp  
 1 5 10 15  
 Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg Ile  
 20 25 30  
 Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu Ala  
 35 40 45  
 Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Asp Tyr Leu  
 50 55 60  
 Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Gln  
 65 70 75

&lt;210&gt; 2190

&lt;211&gt; 231

&lt;212&gt; DNA

&lt;213&gt; Tribolium castaneum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(231)

&lt;400&gt; 2190

atg gct gct cct aga gga gag aca gtc ccc aag ccc atc caa caa gac	48
Met Ala Ala Pro Arg Gly Glu Thr Val Pro Lys Pro Ile Gln Gln Asp	
1 5 10 15	
tgg gta aac cgc gaa tac atc gaa gtg ata acc gtc agc ata aaa aag	96
Trp Val Asn Arg Glu Tyr Ile Glu Val Ile Thr Val Ser Ile Lys Lys	

## PhoenixTemp32470.tmp.txt

			20					25					30				
atc	acc	gat	ttc	ctc	aat	tct	ttc	gac	tta	tct	tgt	cga	tca	aaa	ctc		144
Ile	Thr	Asp	Phe	Leu	Asn	Ser	Phe	Asp	Leu	Ser	Cys	Arg	Ser	Lys	Leu		
		35					40					45					
gcc	gtt	tta	aac	gaa	aag	ttg	aca	act	ctc	gag	cga	aag	atc	gac	tat		192
Ala	Val	Leu	Asn	Glu	Lys	Leu	Thr	Thr	Leu	Glu	Arg	Lys	Ile	Asp	Tyr		
		50				55					60						
ttg	gaa	gct	tgt	gtc	acc	aaa	ggg	gaa	acc	ttg	aca	taa					231
Leu	Glu	Ala	Cys	Val	Thr	Lys	Gly	Glu	Thr	Leu	Thr						
		65			70					75							

```
<210> 2191
<211> 76
<212> PRT
<213> Tribolium castaneum
```

<400> 2191  
Met Ala Ala Pro Arg Gly Glu Thr Val Pro Lys Pro Ile Gln Gln Asp  
1 5 10 15  
Trp Val Asn Arg Glu Tyr Ile Glu Val Ile Thr Val Ser Ile Lys Lys  
20 25 30  
Ile Thr Asp Phe Leu Asn Ser Phe Asp Leu Ser Cys Arg Ser Lys Leu  
35 40 45  
Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Lys Ile Asp Tyr  
50 55 60  
Leu Glu Ala Cys Val Thr Gly Glu Thr Leu Thr  
65 70 75

```
<210> 2192
<211> 948
<212> DNA
<213> Oryza sativa subsp
```

<220>  
<221> CDS  
<222> (1)..(948)

<400>	2192																	
atg	gct	cgc	gcg	ggc	ggg	cat	ggg	atg	ggg	aac	ccg	gtg	aac	gtg	ggg			48
Met	Ala	Arg	Ala	Gly	Gly	His	Gly	Met	Gly	Asn	Pro	Val	Asn	Val	Gly			
1				5					10					15				
atc	gcg	gtg	cag	gcg	gac	tgg	gag	aac	cgc	gag	ttc	atc	tcc	aac	atc			96
Ile	Ala	Val	Gln	Ala	Asp	Trp	Glu	Asn	Arg	Glu	Phe	Ile	Ser	Asn	Ile			
			20					25					30					
tcc	ctc	aac	gtc	cgt	cgc	ctc	ttc	gac	ttc	ctc	ctc	cga	ttc	gaa	gct			144
Ser	Leu	Asn	Val	Arg	Arg	Leu	Phe	Asp	Phe	Leu	Leu	Arg	Phe	Glu	Ala			
		35					40					45						
act	acg	aag	agc	aaa	ctt	gcg	tcc	ttg	aat	gag	aag	ctg	gac	atc	cta			192
Thr	Thr	Lys	Ser	Lys	Leu	Ala	Ser	Leu	Asn	Glu	Lys	Leu	Asp	Ile	Leu			
	50					55					60							
gag	cgg	aaa	ctg	gag	gtg	ctt	gag	gtt	caa	gtg	agc	agc	gca	aca	acc			240
Glu	Arg	Lys	Leu	Glu	Val	Leu	Glu	Val	Gln	Val	Ser	Ser	Ala	Thr	Thr			
	65				70					75					80			
aat	cca	tcc	gtt	ttc	aac	tat	tgc	tca	tca	atg	aat	gaa	tca	atc	aat			288
Asn	Pro	Ser	Val	Phe	Asn	Tyr	Cys	Ser	Ser	Met	Asn	Glu	Ser	Ile	Asn			
				85					90					95				
ggg	aaa	atg	aat	gag	tta	ttc	gca	gtg	gca	ggg	agg	gcg	ggg	gtg	gcg			336
Gly	Lys	Met	Asn	Glu	Leu	Phe	Ala	Val	Ala	Gly	Arg	Ala	Gly	Val	Ala			
			100					105					110					
atg	atg	aat	atg	gtg	tcg	agc	agc	agc	atc	caa	ccg	ggg	cag	ata	cat			384
Met	Met	Asn	Met	Val	Ser	Ser	Ser	Ser	Ile	Gln	Pro	Gly	Gln	Ile	His			
		115					120					125						
agc	ata	tgg	cag	cga	cga	caa	gga	ggg	gag	agt	aga	agg	agg	tat	gtg			432
Ser	Ile	Trp	Gln	Arg	Arg	Gln	Gly	Gly	Glu	Ser	Arg	Gly	Arg	Tyr	Val			
	130					135					140							
gtg	atg	agc	agc	ggc	agc	gtc	agg	aag	agc	agc	agc	agc	agg	agg	agg			480
Val	Met	Ser	Ser	Gly	Ser	Val	Arg	Lys	Ser	Ser	Ser	Ser	Arg	Arg	Arg			
	145				150					155					160			
gtg	gtg	gcg	gtt	atc	cgg	gcc	gtg	ggc	gac	ggc	gca	ggg	gaa	tcg	acg			528

## PhoenixTemp32470.tmp.txt

Val	Val	Ala	Val	Ile 165	Arg	Ala	Val	Gly	Asp 170	Gly	Ala	Gly	Glu	Ser 175	Thr		
agc	ggc	aag	gac	gag	gag	gag	gag	gag	aag	agg	cgt	cgg	gag	gag	ctg	576	
Ser	Gly	Lys	Asp 180	Glu	Glu	Glu	Glu	Glu	Lys	Arg	Arg	Arg	Glu	Glu	Leu		
gag	cgg	ttg	gtg	ggt	gga	ccg	gag	gac	gcg	acg	ttc	agc	ggg	gcg	gac	624	
Glu	Arg	Leu	Val	Gly	Gly	Pro	Glu	Asp	Ala	Thr	Phe	Ser 205	Gly	Ala	Asp		
ctg	gcg	gcg	ctg	ata	agg	agc	aag	tac	ggg	agg	tcg	tac	gac	gtg	acg	672	
Leu	Ala	Ala	Leu	Ile	Arg	Ser 215	Lys	Tyr	Gly	Arg	Ser 220	Tyr	Asp	Val	Thr		
ctg	ata	aag	aag	gag	ttc	atg	ggg	cgg	aac	ctg	ctg	gcc	atg	aac	gtc	720	
Leu	Ile	Lys	Lys	Glu	Phe 230	Met	Gly	Arg	Asn	Leu	Leu	Ala	Met	Asn	Val 240		
atg	tgg	aag	tac	cgg	gag	cag	cgg	tcc	ttc	ccg	ctg	acg	gag	gag	gag	768	
Met	Trp	Lys	Tyr	Arg 245	Glu	Gln	Arg	Ser	Phe 250	Pro	Leu	Thr	Glu	Glu	Glu		
tac	ctg	ctc	cgc	ctc	gac	gac	gtc	gcc	tcc	ctc	cgc	tgc	tgg	ggc	816		
Tyr	Leu	Leu	Arg 260	Leu	Asp	Asp	Val	Ala 265	Ala	Ser	Leu	Arg	Cys 270	Trp	Gly		
gcc	gtc	gcc	cac	gtc	cgc	tcc	tcc	ctc	gcc	aag	ctc	aag	gac	cgc	ccc	864	
Ala	Val	Ala	His 275	Val	Arg	Ser	Ser 280	Leu	Ala	Lys	Leu	Lys 285	Asp	Arg	Pro		
cgc	atc	ggc	aag	gcc	gtc	agc	atc	ttc	atc	gac	atg	ccc	acc	gac	gac	912	
Arg	Ile 290	Gly	Lys	Ala	Val	Ser 295	Ile	Phe	Ile	Asp	Met 300	Pro	Thr	Asp	Asp		
tcc	ggc	gcc	cgc	tcc	aac	gag	tgg	atc	tac	aaa	taa					948	
Ser	Gly	Ala	Arg	Ser	Asn 310	Glu	Trp	Ile	Tyr	Lys 315							

&lt;210&gt; 2193

&lt;211&gt; 315

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2193

Met	Ala	Arg	Ala	Gly 5	Gly	His	Gly	Met	Gly 10	Asn	Pro	Val	Asn	Val 15	Gly		
Ile	Ala	Val	Gln	Ala	Asp	Trp	Glu	Asn 25	Arg	Glu	Phe	Ile	Ser 30	Asn	Ile		
Ser	Leu	Asn 35	Val	Arg	Arg	Leu	Phe 40	Asp	Phe	Leu	Leu	Arg 45	Phe	Glu	Ala		
Thr	Thr	Lys	Ser	Lys	Leu	Ala 55	Ser	Leu	Asn	Glu	Lys 60	Leu	Asp	Ile	Leu		
Glu	Arg	Lys	Leu	Glu	Val 70	Leu	Glu	Val	Gln 75	Val	Ser	Ser	Ala	Thr	Thr 80		
Asn	Pro	Ser	Val	Phe 85	Asn	Tyr	Cys	Ser	Ser 90	Met	Asn	Glu	Ser	Ile 95	Asn		
Gly	Lys	Met	Asn 100	Glu	Leu	Phe	Ala	Val 105	Ala	Gly	Arg	Ala	Gly 110	Val	Ala		
Met	Met	Asn 115	Met	Val	Ser	Ser	Ser	Ile	Gln	Pro	Gly 125	Gln	Ile	His			
Ser	Ile 130	Trp	Gln	Arg	Arg	Gln 135	Gly	Gly	Glu	Ser	Arg 140	Gly	Arg	Tyr	Val		
Val	Met	Ser	Ser	Gly	Ser 150	Val	Arg	Lys	Ser	Ser 155	Ser	Ser	Arg	Arg	Arg 160		
Val	Val	Ala	Val	Ile 165	Arg	Ala	Val	Gly	Asp 170	Gly	Ala	Gly	Glu	Ser 175	Thr		
Ser	Gly	Lys	Asp 180	Glu	Glu	Glu	Glu	Glu	Lys	Arg	Arg	Arg	Glu	Glu	Leu		
Glu	Arg	Leu 195	Val	Gly	Gly	Pro	Glu 200	Asp	Ala	Thr	Phe	Ser 205	Gly	Ala	Asp		
Leu	Ala 210	Ala	Leu	Ile	Arg	Ser 215	Lys	Tyr	Gly	Arg	Ser 220	Tyr	Asp	Val	Thr		
Leu	Ile 225	Lys	Lys	Glu	Phe 230	Met	Gly	Arg	Asn 235	Leu	Leu	Ala	Met	Asn	Val 240		
Met	Trp	Lys	Tyr	Arg 245	Glu	Gln	Arg	Ser	Phe 250	Pro	Leu	Thr	Glu	Glu	Glu 255		
Tyr	Leu	Leu	Arg	Leu	Asp	Asp	Val	Ala	Ala	Ser	Leu	Arg	Cys	Trp	Gly		

## PhoenixTemp32470.tmp.txt

260  
 Ala Val Ala His Val Arg Ser Ser 265  
 275  
 Arg Ile Gly Lys Ala Val Ser 280  
 290  
 Ser Gly Ala Arg Ser Asn 295  
 305 310  
 270  
 Leu Ala Lys Leu Lys Asp Arg Pro  
 285  
 Phe Ile Asp Met Pro Thr Asp Asp  
 300  
 Trp Ile Tyr Lys  
 315

<210> 2194  
 <211> 258  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(258)

<400> 2194  
 atg gcg aga gcg ggt ggg atc acc aac gcg gtg aat gtg gga att gca 48  
 Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala  
 1 5 10 15  
 gtg caa gca gat tgg gag aac cgg gaa ttc atc tct cac att tcc ctc 96  
 Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
 20 25 30  
 aat atc cgt cgc ctc ttc gaa ttc ctc gtc caa ttc gag gct aca aca 144  
 Asn Ile Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ala Thr Thr  
 35 40 45  
 aag agc aaa ttg gca tca ttg aat gag aag ctt gat acg cta gag cgt 192  
 Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg  
 50 55 60  
 cgt cta gaa ttg ctt gaa gtt caa gtg ggt act gca tca tcc aac cca 240  
 Arg Leu Glu Leu Leu Glu Val Gln Val Gly Thr Ala Ser Ser Asn Pro  
 65 70 75 80  
 tct ctt ttt gct aca tga 258  
 Ser Leu Phe Ala Thr  
 85

<210> 2195  
 <211> 85  
 <212> PRT  
 <213> Vitis vinifera

<400> 2195  
 Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala  
 1 5 10 15  
 Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
 20 25 30  
 Asn Ile Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ala Thr Thr  
 35 40 45  
 Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg  
 50 55 60  
 Arg Leu Glu Leu Leu Glu Val Gln Val Gly Thr Ala Ser Ser Asn Pro  
 65 70 75 80  
 Ser Leu Phe Ala Thr  
 85

<210> 2196  
 <211> 231  
 <212> DNA  
 <213> Triatoma infestans

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 2196  
 atg gcc ggt gta cat aga gaa gca ata caa aaa caa atc caa cag gat 48  
 Met Ala Gly Val His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15

PhoenixTemp32470.tmp.txt

tgg gca aat cgt gaa tat att gaa gta att act ggc agt atc aag aaa	96
Trp Ala Asn Arg 20 Glu Tyr Ile Glu Val 25 Ile Thr Gly Ser Ile 30 Lys Lys	
ata aca gat ttt tta aat tca ttt gat atg tct tgc aga tct agg ttg	144
Ile Thr Asp 35 Phe Leu Asn Ser Phe 40 Asp Met Ser Cys Arg 45 Ser Arg Leu	
gct gta ctg aat gaa aaa ttg act aca ctg gaa aga cgt att gaa tat	192
Ala Val 50 Leu Asn Glu Lys 55 Thr Thr Leu Glu 60 Arg Arg Ile Glu Tyr	
ctt gaa gca cgg gtt acg aaa gga gaa acc ctt act tga	231
Leu Glu Ala Arg Val Thr 70 Lys Gly Glu Thr Leu Thr 75	

<210> 2197  
 <211> 76  
 <212> PRT  
 <213> *Triatoma infestans*

<400> 2197

Met Ala Gly Val His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp	
1 Trp Ala Asn Arg 20 Glu Tyr Ile Glu Val 25 Ile Thr Gly Ser Ile 30 Lys Lys	
Ile Thr Asp 35 Phe Leu Asn Ser Phe 40 Asp Met Ser Cys Arg 45 Ser Arg Leu	
Ala Val 50 Leu Asn Glu Lys Leu 55 Thr Thr Leu Glu Arg 60 Arg Arg Ile Glu Tyr	
Leu Glu Ala Arg Val Thr 70 Lys Gly Glu Thr Leu Thr 75	

<210> 2198  
 <211> 240  
 <212> DNA  
 <213> *Physcomitrella patens*

<220>  
 <221> CDS  
 <222> (1)..(240)

<400> 2198

atg gcg aag aac ggg att aat aac agt gtc gcc gtc ggc att gct gta	48
Met Ala Lys Asn Gly 5 Ile Asn Asn Ser Val 10 Ala Val Gly Ile Ala Val 15	
caa tct gac tgg gac aat cgc cat ttt tcg agc tcc ctg tcg ctg aac	96
Gln Ser Asp Trp 20 Asp Asn Arg His Phe 25 Ser Ser Ser Leu Ser 30 Leu Asn	
gtc cgg cgc ctt ttc gag ttc ctt ttg cag ttt gaa tcg tcc acc agg	144
Val Arg Arg Leu Phe Glu Phe Leu Leu Gln Phe Glu Ser Ser Thr Arg 45	
agt aag cta gca acc ctg aac gag aag cta acg gtg ctg gag cgt cag	192
Ser Lys 50 Leu Ala Thr Leu Asn 55 Glu Lys Leu Thr Val 60 Leu Glu Arg Gln	
ctg gag ttt cta gag gct cag ttt agc act gcc att aac cct gtc	237
Leu Glu Phe Leu Glu Ala Gln Phe Ser Thr Ala Ile Asn Pro Val 75	
taa	240

<210> 2199  
 <211> 79  
 <212> PRT  
 <213> *Physcomitrella patens*

<400> 2199

Met Ala Lys Asn Gly Ile Asn Asn Ser Val Ala Val Gly Ile Ala Val	
1 Gln Ser Asp Trp 20 Asp Asn Arg His Phe 25 Ser Ser Ser Leu Ser 30 Leu Asn	

## PhoenixTemp32470.tmp.txt

Val Arg Arg Leu Phe Glu Phe Leu Leu Gln Phe Glu Ser Ser Thr Arg  
 35 40 45  
 Ser Lys Leu Ala Thr Leu Asn Glu Lys Leu Thr Val Leu Glu Arg Gln  
 50 55 60  
 Leu Glu Phe Leu Glu Ala Gln Phe Ser Thr Ala Ile Asn Pro Val  
 65 70 75

<210> 2200  
 <211> 231  
 <212> DNA  
 <213> Ixodes scapularis

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 2200  
 atg tct gtg tgc gaa aga gaa gcg atc cag aaa cag ata cag cag gac 48  
 Met Ser Val Ser Glu Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 tgg gcc aac cga gaa tac atc gaa ata atc agt gga agc atc aaa aag 96  
 Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Ser Gly Ser Ile Lys Lys  
 20 25 30  
 atc gca gac ttc ctg aca tca ttc gac atg tca tgc aga gca cga ctc 144  
 Ile Ala Asp Phe Leu Thr Ser Phe Asp Met Ser Cys Arg Ala Arg Leu  
 35 40 45  
 gca acc cta aac gaa aag ctt acg tcc ctg gaa aga aga ata gag tat 192  
 Ala Thr Leu Asn Glu Lys Leu Thr Ser Leu Glu Arg Arg Ile Glu Tyr  
 50 55 60  
 ttg gag gcc agg gtc aca aaa gga gaa acc ttg tcc tag 231  
 Leu Glu Ala Arg Val Thr Lys Gly Glu Thr Leu Ser  
 65 70 75

<210> 2201  
 <211> 76  
 <212> PRT  
 <213> Ixodes scapularis

<400> 2201  
 Met Ser Val Ser Glu Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Ser Gly Ser Ile Lys Lys  
 20 25 30  
 Ile Ala Asp Phe Leu Thr Ser Phe Asp Met Ser Cys Arg Ala Arg Leu  
 35 40 45  
 Ala Thr Leu Asn Glu Lys Leu Thr Ser Leu Glu Arg Arg Ile Glu Tyr  
 50 55 60  
 Leu Glu Ala Arg Val Thr Lys Gly Glu Thr Leu Ser  
 65 70 75

<210> 2202  
 <211> 258  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(258)

<400> 2202  
 atg gcg aaa gct gga ggg atc acg aac gca gta aac gta gga atc gct 48  
 Met Ala Lys Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala  
 1 5 10 15  
 gtt caa gca gat tgg gag aat cga gaa ttt atc tca cat atc tct ctt 96  
 Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
 20 25 30  
 aat gtt cgt cgt ctc ttc gaa ttc ctt gtt caa ttt gaa tca acc aca 144  
 Asn Val Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ser Thr Thr  
 35 40 45



## PhoenixTemp32470.tmp.txt

```

aag agc aag ttg gct tct ttg aat gag aag ttg gat ctg ttg gaa cgt      192
Lys Ser 50 Lys Leu Ala Ser Leu 55 Asn Glu Lys Leu 60 Asp Leu Leu Glu Arg
cgc ttg gaa atg ctg gag gtg caa gta agt acc gcg aca gca aat cct      240
Arg Leu Glu Met Leu Glu Val Gln Val Ser Thr 75 Ala Thr Ala Asn Pro 80
tct ctg ttt gcg acg tga
Ser Leu Phe Ala Thr 85

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<210> 2203  
 <211> 85  
 <212> PRT  
 <213> Arabidopsis thaliana

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<400> 2203
Met Ala Lys Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala
1 5 10 15
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu
20 25 30
Asn Val Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ser Thr Thr
35 40 45
Lys Ser 50 Lys Leu Ala Ser Leu 55 Asn Glu Lys Leu 60 Asp Leu Leu Glu Arg
65 70 75 80
Arg Leu Glu Met Leu Glu Val Gln Val Ser Thr Ala Thr Ala Asn Pro
Ser Leu Phe Ala Thr 85

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<210> 2204  
 <211> 255  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(255)

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<400> 2204
atg ggt cgc ggc ggc ggg atg ggg aac cca gtc aac gtg ggc atc gcg      48
Met Gly Arg Gly Gly Gly Met Gly Asn Pro Val Asn Val Gly Ile Ala
1 5 10 15
gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc tcc ctc      96
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu
20 25 30
aac gtc cga cgc ctc ttc gac ttc ctc aga ttc gaa gct acg acg      144
Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr
35 40 45
aag agc aag ctg gca agt ttg aac gag aag ctg gac atc cta gag cgg      192
Lys Ser 50 Lys Leu Ala Ser Leu 55 Asn Glu Lys Leu 60 Asp Ile Leu Glu Arg
65 70 75 80
aag ctg gag gtg ctt gaa gtc caa gtg ggc agc gcg acg acc aac cct      240
Lys Leu Glu Val Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro
tcc gtc ttc aac tag
Ser Val Phe Asn 255

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<210> 2205  
 <211> 84  
 <212> PRT  
 <213> Zea mays

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<400> 2205
Met Gly Arg Gly Gly Gly Met Gly Asn Pro Val Asn Val Gly Ile Ala
1 5 10 15
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu
20 25 30
Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr

```

## PhoenixTemp32470.tmp.txt

35  
 Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg  
 50  
 Lys Leu Glu Val Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro  
 65  
 Ser Val Phe Asn 70 75 80

<210> 2206  
 <211> 261  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(261)

<400> 2206  
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 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 atc gcg gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc 96  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 tcc ctc aac gtc cgt cgc ctc ttc gac ttc ctc ctc cga ttc gaa gct 144  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45  
 act acg aag agc aaa ctt gcg tcc ttg aat gag aag ctg gac atc cta 192  
 Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu  
 50 55 60  
 gag cgg aaa ctg gag gtg ctt gag gtt caa gtg agc agc gca aca acc 240  
 Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr Thr  
 65 70 75 80  
 aat cca tcc gtt ttc aac tag 261  
 Asn Pro Ser Val Phe Asn  
 85

<210> 2207  
 <211> 86  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 2207  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45  
 Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu  
 50 55 60  
 Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr Thr  
 65 70 75 80  
 Asn Pro Ser Val Phe Asn  
 85

<210> 2208  
 <211> 231  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 2208  
 atg gct cgc gcg ggc ggg cat ggg atg ggg aac ccg gtg aac gtg ggg 48  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15

PhoenixTemp32470.tmp.txt

atc	gcg	gtg	cag	gcg	gac	tgg	gag	aac	cgc	gag	ttc	atc	tcc	aac	atc	96
Ile	Ala	Val	Gln	Ala	Asp	Trp	Glu	Asn	Arg	Glu	Phe	Ile	Ser	Asn	Ile	
			20					25					30			
tcc	ctc	aac	gtc	cgt	cgc	ctc	ttc	gac	ttc	ctc	ctc	cga	ttc	gaa	gct	144
Ser	Leu	Asn	Val	Arg	Arg	Leu	Phe	Asp	Phe	Leu	Leu	Arg	Phe	Glu	Ala	
		35					40					45				
act	acg	aag	agc	aaa	ctt	gcg	tcc	ttg	aat	gag	aag	ctg	gac	atc	cta	192
Thr	Thr	Lys	Ser	Lys	Leu	Ala	Ser	Leu	Asn	Glu	Lys	Leu	Asp	Ile	Leu	
	50					55					60					
gag	cgg	aaa	ctg	gag	gtg	ctt	gag	ggt	caa	tgc	cag	tag				231
Glu	Arg	Lys	Leu	Glu	Val	Leu	Glu	Val	Gln	Cys	Gln					
65					70					75						

<210> 2209  
 <211> 76  
 <212> PRT  
 <213> Oryza sativa

<400> 2209

Met	Ala	Arg	Ala	Gly	Gly	His	Gly	Met	Gly	Asn	Pro	Val	Asn	Val	Gly	
1				5					10					15		
Ile	Ala	Val	Gln	Ala	Asp	Trp	Glu	Asn	Arg	Glu	Phe	Ile	Ser	Asn	Ile	
			20					25					30			
Ser	Leu	Asn	Val	Arg	Arg	Leu	Phe	Asp	Phe	Leu	Leu	Arg	Phe	Glu	Ala	
		35					40					45				
Thr	Thr	Lys	Ser	Lys	Leu	Ala	Ser	Leu	Asn	Glu	Lys	Leu	Asp	Ile	Leu	
	50					55					60					
Glu	Arg	Lys	Leu	Glu	Val	Leu	Glu	Val	Gln	Cys	Gln					
65					70					75						

<210> 2210  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2210  
 atggctcgcg caggaggat aac 23

<210> 2211  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2211  
 tcaagtggca aaaagagaag 20

<210> 2212  
 <211> 76  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> consensus sequence

<220>  
 <221> Variant  
 <222> (2)..(12)  
 <223> Xaa in position 2 to 12 is any amino acid

<220>  
 <221> Variant  
 <222> (13)..(20)

<223> Xaa in position 13 to 20 is any or no amino acid

<220>

<221> Variant

<222> (22)..(22)

<223> Xaa in position 22 is any amino acid

<220>

<221> Variant

<222> (25)..(25)

<223> Xaa in position 25 is any amino acid

<220>

<221> Variant

<222> (29)..(29)

<223> Xaa in position 29 is any amino acid

<220>

<221> Variant

<222> (31)..(32)

<223> Xaa in position 31 to 32 is any amino acid

<220>

<221> Variant

<222> (34)..(42)

<223> Xaa in position 34 to 42 is any amino acid

<220>

<221> Variant

<222> (45)..(46)

<223> Xaa in position 45 to 46 is any amino acid

<220>

<221> Variant

<222> (48)..(52)

<223> Xaa in position 48 to 52 is any amino acid

<220>

<221> Variant

<222> (54)..(54)

<223> Xaa in position 54 is any amino acid

<220>

<221> Variant

<222> (57)..(57)

<223> Xaa in position 57 is any amino acid

<220>

<221> Variant

<222> (63)..(64)

<223> Xaa in position 63 to 64 is any amino acid

<220>

<221> Variant

<222> (68)..(69)

<223> Xaa in position 68 to 69 is any amino acid

<220>

<221> Variant

<222> (71)..(71)

<223> Xaa in position 71 is any amino acid

<220>

<221> Variant

<222> (74)..(75)

<223> Xaa in position 74 to 75 is any amino acid

<400> 2212

Met Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

PhoenixTemp32470.tmp.txt

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1           5           10           15
Xaa Xaa Xaa Xaa Gln Xaa Asp Trp Xaa Asn Arg Glu Xaa Ile Xaa Xaa
          20          25          30
Ile Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Leu Xaa Xaa Phe Xaa
          35          40          45
Xaa Xaa Xaa Xaa Ser Xaa Leu Ala Xaa Leu Asn Glu Lys Leu Xaa Xaa
          50          55          60
Leu Glu Arg Xaa Xaa Glu Xaa Leu Glu Xaa Xaa Val
65          70          75

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<210> 2213
<211> 59
<212> PRT
<213> Artificial sequence

<220>
<223> protein pattern

<220>
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<222> (2)..(2)
<223> Xaa in position 2 is any amino acid

<220>
<221> Variant
<222> (3)..(3)
<223> Xaa in position 3 is any or no amino acid

<220>
<221> Variant
<222> (5)..(5)
<223> Xaa in position 5 is any or no amino acid

<220>
<221> Variant
<222> (8)..(8)
<223> Xaa in position 8 is any amino acid

<220>
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<222> (12)..(12)
<223> Xaa in position 12 is Phe or Tyr

<220>
<221> Variant
<222> (14)..(14)
<223> Xaa in position 14 is Glu or Ser

<220>
<221> Variant
<222> (15)..(15)
<223> Xaa in position 15 is any amino acid

<220>
<221> Variant
<222> (17)..(17)
<223> Xaa in position 17 is Ser or Thr

<220>
<221> Variant
<222> (18)..(18)
<223> Xaa in position 18 is Ala, Gly, Leu or Val

<220>
<221> Variant
<222> (19)..(19)
<223> Xaa in position 19 is Asn or Ser

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<220>  
<221> Variant  
<222> (20)..(20)  
<223> Xaa in position 20 is Ile or Val

<220>  
<221> Variant  
<222> (21)..(22)  
<223> Xaa in position 21 to 22 is Lys or Arg

<220>  
<221> Variant  
<222> (23)..(23)  
<223> Xaa in position 23 is Ile or Leu

<220>  
<221> Variant  
<222> (24)..(24)  
<223> Xaa in position 24 is any amino acid

<220>  
<221> Variant  
<222> (25)..(25)  
<223> Xaa in position 25 is Asp or Glu

<220>  
<221> Variant  
<222> (28)..(28)  
<223> Xaa in position 28 is any amino acid

<220>  
<221> Variant  
<222> (29)..(29)  
<223> Xaa in position 29 is Gln, Arg or Ser

<220>  
<221> Variant  
<222> (31)..(31)  
<223> Xaa in position 31 is Asp or Glu

<220>  
<221> Variant  
<222> (32)..(32)  
<223> Xaa in position 32 is any amino acid

<220>  
<221> Variant  
<222> (33)..(33)  
<223> Xaa in position 33 is Ser or Thr

<220>  
<221> Variant  
<222> (34)..(34)  
<223> Xaa in position 34 is Cys or Thr

<220>  
<221> Variant  
<222> (35)..(35)  
<223> Xaa in position 35 is Lys or Arg

<220>  
<221> Variant  
<222> (37)..(37)  
<223> Xaa in position 37 is Lys or Arg

<220>  
<221> Variant  
<222> (40)..(40)  
<223> Xaa in position 40 is Ser or Val

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<220>
<221> Variant
<222> (46)..(46)
<223> Xaa in position 46 is Asp or Thr

<220>
<221> Variant
<222> (47)..(47)
<223> Xaa in position 47 is any amino acid

<220>
<221> Variant
<222> (51)..(51)
<223> Xaa in position 51 is Lys or Arg

<220>
<221> Variant
<222> (52)..(52)
<223> Xaa in position 52 is Ile or Leu

<220>
<221> Variant
<222> (53)..(53)
<223> Xaa in position 53 is Asp or Glu

<220>
<221> Variant
<222> (54)..(54)
<223> Xaa in position 54 is any amino acid

<220>
<221> Variant
<222> (57)..(57)
<223> Xaa in position 57 is Ala or Val

<220>
<221> Variant
<222> (58)..(58)
<223> Xaa in position 58 is any amino acid

<220>
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<222> (59)..(59)
<223> Xaa in position 59 is Cys or Val

<400> 2213
Ile Xaa Xaa Gln Xaa Asp Trp Xaa Asn Arg Glu Xaa Ile Xaa Xaa Ile
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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Leu Xaa Xaa Phe Xaa Xaa
20          25          30
Xaa Xaa Xaa Ser Xaa Leu Ala Xaa Leu Asn Glu Lys Leu Xaa Xaa Leu
35          40          45
Glu Arg Xaa Xaa Xaa Xaa Leu Glu Xaa Xaa Xaa
50          55

<210> 2214
<211> 957
<212> DNA
<213> SYNECHOCYSTIS SP.

<220>
<221> CDS
<222> (1)..(957)
<223> transl_table=11

<400> 2214
atg ccc gag tat ttg ctt ctg ccc gct ggc cta att tcc ctc tcc ctg
Met Pro Glu Tyr Leu Leu Leu Pro Ala Gly Leu Ile Ser Leu Ser Leu

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## PhoenixTemp32470.tmp.txt

1	gcg	atc	gcc	gct	gga	ctg	tat	ctc	cta	act	gcc	cgg	ggc	tat	15	cag	tca	96
	Ala	Ile	Ala	Ala	Gly	Leu	Tyr	Leu	Leu	Thr	Ala	Arg	Gly	Tyr		Gln	Ser	
				20					25					30				
	tcg	gat	tcc	gtg	gcc	aac	gcc	tac	gac	caa	tgg	aca	gag	gac	ggc	att	144	
	Ser	Asp	Ser	Val	Ala	Asn	Ala	Tyr	Asp	Gln	Trp	Thr	Glu	Asp	Gly	Ile		
			35					40					45					
	ttg	gaa	tat	tac	tgg	ggc	gac	cat	atc	cac	ctc	ggc	cat	tat	ggc	gat	192	
	Leu	Glu	Tyr	Tyr	Trp	Gly	Asp	His	Ile	His	Leu	Gly	His	Tyr	Gly	Asp		
		50					55					60						
	ccg	cca	gtg	gcc	aag	gat	ttc	atc	caa	tcg	aaa	att	gat	ttt	gtc	cat	240	
	Pro	Pro	Val	Ala	Lys	Asp	Phe	Ile	Gln	Ser	Lys	Ile	Asp	Phe	Val	His		
	65				70						75					80		
	gcc	atg	gcc	cag	tgg	ggc	gga	tta	gat	aca	ctt	ccc	ccc	ggc	aca	acg	288	
	Ala	Met	Ala	Gln	Trp	Gly	Gly	Leu	Asp	Thr	Leu	Pro	Pro	Gly	Thr	Thr		
				85						90					95			
	gta	ttg	gat	gtg	ggt	tgc	ggc	att	ggc	ggt	agc	agt	cgc	att	ctc	gcc	336	
	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala		
				100					105					110				
	aaa	gat	tat	ggt	ttt	aac	ggt	acc	ggc	atc	acc	att	agt	ccc	caa	cag	384	
	Lys	Asp	Tyr	Gly	Phe	Asn	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Gln	Gln		
			115				120					125						
	gtg	aaa	cgg	gcg	acg	gaa	tta	act	cct	ccc	gat	gtg	acg	gcc	aag	ttt	432	
	Val	Lys	Arg	Ala	Thr	Glu	Leu	Thr	Pro	Pro	Asp	Val	Thr	Ala	Lys	Phe		
		130					135					140						
	gcg	gtg	gac	gat	gct	atg	gct	ttg	tct	ttt	cct	gac	ggt	agt	ttc	gac	480	
	Ala	Val	Asp	Asp	Ala	Met	Ala	Leu	Ser	Phe	Pro	Asp	Gly	Ser	Phe	Asp		
	145				150					155					160			
	gta	ggt	tgg	tcg	gtg	gaa	gca	ggg	ccc	cac	atg	cct	gac	aaa	gct	gtg	528	
	Val	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Ala	Val		
				165					170						175			
	ttt	gcc	aag	gaa	tta	ctg	cgg	gtc	gtg	aaa	cca	ggg	ggc	att	ctg	gtg	576	
	Phe	Ala	Lys	Glu	Leu	Leu	Arg	Val	Val	Lys	Pro	Gly	Gly	Ile	Leu	Val		
			180					185						190				
	gtg	gcg	gat	tgg	aat	caa	cgg	gac	gat	cgc	caa	gtg	ccc	ctc	aac	ttc	624	
	Val	Ala	Asp	Trp	Asn	Gln	Arg	Asp	Asp	Arg	Gln	Val	Pro	Leu	Asn	Phe		
			195				200						205					
	tgg	gaa	aaa	cca	gtg	atg	cga	caa	ctg	ttg	gat	caa	tgg	tcc	cac	cct	672	
	Trp	Glu	Lys	Pro	Val	Met	Arg	Gln	Leu	Leu	Asp	Gln	Trp	Ser	His	Pro		
		210				215						220						
	gcc	ttt	gcc	agc	att	gaa	ggt	ttt	gcg	gaa	aat	ttg	gaa	gcc	acg	ggt	720	
	Ala	Phe	Ala	Ser	Ile	Glu	Gly	Phe	Ala	Glu	Asn	Leu	Glu	Ala	Thr	Gly		
	225				230					235					240			
	ttg	gtg	gag	ggc	cag	gtg	act	act	gct	gat	tgg	act	gta	ccg	acc	ctc	768	
	Leu	Val	Glu	Gly	Gln	Val	Thr	Thr	Ala	Asp	Trp	Thr	Val	Pro	Thr	Leu		
				245						250					255			
	ccc	gct	tgg	ttg	gat	acc	att	tgg	cag	ggc	att	atc	cgg	ccc	cag	ggc	816	
	Pro	Ala	Trp	Leu	Asp	Thr	Ile	Trp	Gln	Gly	Ile	Ile	Arg	Pro	Gln	Gly		
				260				265						270				
	tgg	tta	caa	tac	ggc	att	cgt	ggg	ttt	atc	aaa	tcc	gtg	cgg	gaa	gta	864	
	Trp	Leu	Gln	Tyr	Gly	Ile	Arg	Gly	Phe	Ile	Lys	Ser	Val	Arg	Glu	Val		
			275				280						285					
	ccg	act	att	tta	ttg	atg	cgc	ctt	gcc	ttt	ggg	gta	gga	ctt	tgt	cgc	912	
	Pro	Thr	Ile	Leu	Leu	Met	Arg	Leu	Ala	Phe	Gly	Val	Gly	Leu	Cys	Arg		
		290				295						300						
	ttc	ggt	atg	ttc	aaa	gca	gtg	cga	aaa	aac	gcc	act	caa	gct	taa		957	
	Phe	Gly	Met	Phe	Lys	Ala	Val	Arg	Lys	Asn	Ala	Thr	Gln	Ala				
	305				310						315							

&lt;210&gt; 2215

&lt;211&gt; 318

&lt;212&gt; PRT

&lt;213&gt; SYNECHOCYSTIS SP.

&lt;400&gt; 2215

Met	Pro	Glu	Tyr	Leu	Leu	Leu	Pro	Ala	Gly	Leu	Ile	Ser	Leu	Ser	Leu	
1				5					10				15			
Ala	Ile	Ala	Ala	Gly	Leu	Tyr	Leu	Leu	Thr	Ala	Arg	Gly	Tyr	Gln	Ser	
			20					25					30			



## PhoenixTemp32470.tmp.txt

Ser Asp Ser<sub>35</sub> Val Ala Asn Ala Tyr<sub>40</sub> Asp Gln Trp Thr Glu<sub>45</sub> Asp Gly Ile  
 Leu Glu<sub>50</sub> Tyr Tyr Trp Gly Asp<sub>55</sub> His Ile His Leu Gly<sub>60</sub> His Tyr Gly Asp  
 Pro<sub>65</sub> Pro Val Ala Lys Asp<sub>70</sub> Phe Ile Gln Ser Lys<sub>75</sub> Ile Asp Phe Val His<sub>80</sub>  
 Ala Met Ala Gln Trp<sub>85</sub> Gly Gly Leu Asp Thr<sub>90</sub> Leu Pro Pro Gly Thr<sub>95</sub>  
 Val Leu Asp Val<sub>100</sub> Gly Cys Gly Ile Gly<sub>105</sub> Gly Ser Ser Arg Ile Leu Ala  
 Lys Asp Tyr<sub>115</sub> Gly Phe Asn Val Thr<sub>120</sub> Gly Ile Thr Ile Ser<sub>125</sub> Pro Gln Gln  
 Val<sub>130</sub> Lys Arg Ala Thr Glu Leu<sub>135</sub> Thr Pro Pro Asp Val<sub>140</sub> Thr Ala Lys Phe  
 Ala<sub>145</sub> Val Asp Asp Ala Met<sub>150</sub> Ala Leu Ser Phe Pro<sub>155</sub> Asp Gly Ser Phe Asp<sub>160</sub>  
 Val<sub>165</sub> Val Trp Ser Val<sub>165</sub> Glu Ala Gly Pro His<sub>170</sub> Met Pro Asp Lys Ala Val<sub>175</sub>  
 Phe Ala Lys Glu<sub>180</sub> Leu Leu Arg Val Val<sub>185</sub> Lys Pro Gly Gly Ile Leu Val<sub>190</sub>  
 Val<sub>195</sub> Ala Asp Trp Asn Gln Arg Asp<sub>200</sub> Asp Arg Gln Val Pro<sub>205</sub> Leu Asn Phe  
 Trp Glu<sub>210</sub> Lys Pro Val Met Arg<sub>215</sub> Gln Leu Leu Asp Gln Trp Ser His Pro  
 Ala<sub>225</sub> Phe Ala Ser Ile Glu<sub>230</sub> Gly Phe Ala Glu Asn<sub>235</sub> Leu Glu Ala Thr Gly<sub>240</sub>  
 Leu Val Glu Gly Gln<sub>245</sub> Val Thr Thr Ala Asp<sub>250</sub> Trp Thr Val Pro Thr Leu<sub>255</sub>  
 Pro Ala Trp<sub>260</sub> Leu Asp Thr Ile Trp Gln<sub>265</sub> Gly Ile Ile Arg Pro Gln Gly  
 Trp Leu Gln<sub>275</sub> Tyr Gly Ile Arg Gly<sub>280</sub> Phe Ile Lys Ser Val Arg Glu Val<sub>285</sub>  
 Pro Thr<sub>290</sub> Ile Leu Leu Met Arg<sub>295</sub> Leu Ala Phe Gly Val Gly Leu Cys Arg  
 Phe<sub>305</sub> Gly Met Phe Lys Ala<sub>310</sub> Val Arg Lys Asn Ala<sub>315</sub> Thr Gln Ala

&lt;210&gt; 2216

&lt;211&gt; 930

&lt;212&gt; DNA

&lt;213&gt; Synechocystis sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (10)..(915)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2216

gatatcacc atg gcc gct gga ctg tat ctc cta act gcc cgg ggc tat cag 51  
 Met Ala Ala Gly Leu Tyr Leu Leu Thr Ala Arg Gly Tyr Gln  
 1 5 10  
 tca tcg gat tcc gtg gcc aac gcc tac gac caa tgg aca gag gac ggc 99  
 Ser Ser Asp Ser Val Ala Asn Ala Tyr Asp Gln Trp Thr Glu Asp Gly  
 15 20 25 30  
 att ttg gaa tat tac tgg ggc gac cat atc cac ctc ggc cat tat ggc 147  
 Ile Leu Glu Tyr Tyr Trp Gly Asp His Ile His Leu Gly His Tyr Gly  
 35 40 45  
 gat ccg cca gtg gcc aag gat ttc atc caa tcg aaa att gat ttt gtc 195  
 Asp Pro Pro Val Ala Lys Asp Phe Ile Gln Ser Lys Ile Asp Phe Val  
 50 55 60  
 cat gcc atg gcc cag tgg ggc gga tta gat aca ctt ccc ccc ggc aca 243  
 His Ala Met Ala Gln Trp Gly Gly Leu Asp Thr Leu Pro Pro Gly Thr  
 65 70 75  
 acg gta ttg gat gtg ggt tgc ggc att ggc ggt agc agt cgc att ctc 291  
 Thr Val Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu  
 80 85 90  
 gcc aaa gat tat ggt ttt aac gtt acc ggc atc acc att agt ccc caa 339  
 Ala Lys Asp Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Gln  
 95 100 105 110

## PhoenixTemp32470.tmp.txt

cag gtg aaa cgg gcg acg gaa tta act cct ccc gat gtg acg gcc aag 387  
 Gln Val Lys Arg Ala Thr Glu Leu Thr Pro Asp Val Thr Ala Lys  
 115 120 125  
 ttt gcg gtg gac gat gct atg gct ttg tct ttt cct gac ggt agt ttc 435  
 Phe Ala Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Gly Ser Phe  
 130 135 140  
 gac gta gtt tgg tgc gtg gaa gca ggg ccc cac atg cct gac aaa gct 483  
 Asp Val Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Ala  
 145 150 155  
 gtg ttt gcc aag gaa tta ctg cgg gtc gtg aaa cca ggg ggc att ctg 531  
 Val Phe Ala Lys Glu Leu Leu Arg Val Val Lys Pro Gly Gly Ile Leu  
 160 165 170  
 gtg gtg gcg gat tgg aat caa cgg gac gat cgc caa gtg ccc ctc aac 579  
 Val Val Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Val Pro Leu Asn  
 175 180 185 190  
 ttc tgg gaa aaa cca gtg atg cga caa ctg ttg gat caa tgg tcc cac 627  
 Phe Trp Glu Lys Pro Val Met Arg Gln Leu Leu Asp Gln Trp Ser His  
 195 200 205  
 cct gcc ttt gcc agc att gaa ggt ttt gcg gaa aat ttg gaa gcc acg 675  
 Pro Ala Phe Ala Ser Ile Glu Gly Phe Ala Glu Asn Leu Glu Ala Thr  
 210 215 220  
 ggt ttg gtg gag ggc cag gtg act act gct gat tgg act gta ccg acc 723  
 Gly Leu Val Glu Gly Gln Val Thr Thr Ala Asp Trp Thr Val Pro Thr  
 225 230 235  
 ctc ccc gct tgg ttg gat acc att tgg cag ggc att atc cgg ccc cag 771  
 Leu Pro Ala Trp Leu Asp Thr Ile Trp Gln Gly Ile Ile Arg Pro Gln  
 240 245 250  
 ggc tgg tta caa tac ggc att cgt ggg ttt atc aaa tcc gtg cgg gaa 819  
 Gly Trp Leu Gln Tyr Gly Ile Arg Gly Phe Ile Lys Ser Val Arg Glu  
 255 260 265 270  
 gta ccg act att tta ttg atg cgc ctt gcc ttt ggg gta gga ctt tgt 867  
 Val Pro Thr Ile Leu Leu Met Arg Leu Ala Phe Gly Val Gly Leu Cys  
 275 280 285  
 cgc ttc ggt atg ttc aaa gca gtg cga aaa aac gcc act caa gct taa 915  
 Arg Phe Gly Met Phe Lys Ala Val Arg Lys Asn Ala Thr Gln Ala  
 290 300  
 attcttaagg tcgac 930

&lt;210&gt; 2217

&lt;211&gt; 301

&lt;212&gt; PRT

&lt;213&gt; Synechocystis sp

&lt;400&gt; 2217

Met Ala Ala Gly Leu Tyr Leu Leu Thr Ala Arg Gly Tyr Gln Ser Ser  
 1 5 10 15  
 Asp Ser Val Ala Asn Ala Tyr Asp Gln Trp Thr Glu Asp Gly Ile Leu  
 20 25 30  
 Glu Tyr Tyr Trp Gly Asp His Ile His Leu Gly His Tyr Gly Asp Pro  
 35 40 45  
 Pro Val Ala Lys Asp Phe Ile Gln Ser Lys Ile Asp Phe Val His Ala  
 50 55 60  
 Met Ala Gln Trp Gly Gly Leu Asp Thr Leu Pro Pro Gly Thr Thr Val  
 65 70 75 80  
 Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Arg Ile Leu Ala Lys  
 85 90 95  
 Asp Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Gln Gln Val  
 100 105 110  
 Lys Arg Ala Thr Glu Leu Thr Pro Pro Asp Val Thr Ala Lys Phe Ala  
 115 120 125  
 Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Gly Ser Phe Asp Val  
 130 135 140  
 Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Ala Val Phe  
 145 150 155 160  
 Ala Lys Glu Leu Leu Arg Val Val Lys Pro Gly Gly Ile Leu Val Val  
 165 170 175  
 Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Val Pro Leu Asn Phe Trp

## PhoenixTemp32470.tmp.txt

180 185 190  
 Glu Lys Pro Val Met Arg Gln Leu Leu Asp Gln Trp Ser His Pro Ala  
 195 200 205  
 Phe Ala Ser Ile Glu Gly Phe Ala Glu Asn Leu Glu Ala Thr Gly Leu  
 210 215 220  
 Val Glu Gly Gln Val Thr Thr Ala Asp Trp Thr Val Pro Thr Leu Pro  
 225 230 235 240  
 Ala Trp Leu Asp Thr Ile Trp Gln Gly Ile Ile Arg Pro Gln Gly Trp  
 245 250 255  
 Leu Gln Tyr Gly Ile Arg Gly Phe Ile Lys Ser Val Arg Glu Val Pro  
 260 265 270  
 Thr Ile Leu Leu Met Arg Leu Ala Phe Gly Val Gly Leu Cys Arg Phe  
 275 285  
 Gly Met Phe Lys Ala Val Arg Lys Asn Ala Thr Gln Ala  
 290 295 300

&lt;210&gt; 2218

&lt;211&gt; 936

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(936)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2218

atg	tcc	att	ttt	tta	ata	tct	tca	ctt	ggt	ata	ttt	tta	act	tta	tta	48
Met	Ser	Ile	Phe	Leu	Ile	Ser	Ser	Leu	Val	Ile	Phe	Leu	Thr	Leu	Leu	
1				5					10					15		
ttt	tct	tct	cta	ata	ctt	tgg	aga	att	aat	act	aga	aaa	tat	att	tct	96
Phe	Ser	Ser	Leu	Ile	Leu	Trp	Arg	Ile	Asn	Thr	Arg	Lys	Tyr	Ile	Ser	
			20					25					30			
tcg	aga	act	gta	gct	aca	gca	tat	gat	tcc	tgg	act	caa	gat	aaa	tta	144
Ser	Arg	Thr	Val	Ala	Thr	Ala	Tyr	Asp	Ser	Trp	Thr	Gln	Asp	Lys	Leu	
			35				40					45				
cta	gaa	aga	tta	tgg	gga	gaa	cat	ata	cat	cta	ggt	ttc	tat	cct	cta	192
Leu	Glu	Arg	Leu	Trp	Gly	Glu	His	Ile	His	Leu	Gly	Phe	Tyr	Pro	Leu	
	50				55				60							
aat	aaa	aat	att	gat	ttt	aga	gag	gct	aaa	ggt	caa	ttt	gta	cat	gag	240
Asn	Lys	Asn	Ile	Asp	Phe	Arg	Glu	Ala	Lys	Val	Gln	Phe	Val	His	Glu	
	65			70					75					80		
tta	gta	agt	tgg	agt	ggt	tta	gat	aaa	tta	cca	aga	ggt	tct	agg	att	288
Leu	Val	Ser	Trp	Ser	Gly	Leu	Asp	Lys	Leu	Pro	Arg	Gly	Ser	Arg	Ile	
				85				90					95			
tta	gat	gtc	ggt	tgc	gga	ata	ggt	gga	agt	tct	aga	att	ctc	gcc	aat	336
Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Asn	
			100				105					110				
tat	tat	gga	ttt	aat	gtc	act	gga	ata	act	att	agt	cca	gct	caa	gta	384
Tyr	Tyr	Gly	Phe	Asn	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Ala	Gln	Val	
		115					120					125				
aaa	aga	gca	aaa	gaa	ctt	act	cct	tat	gaa	tgt	aaa	tgc	aac	ttc	aaa	432
Lys	Arg	Ala	Lys	Glu	Leu	Thr	Pro	Tyr	Glu	Cys	Lys	Cys	Asn	Phe	Lys	
	130				135					140						
gtt	atg	gat	gct	ttg	gat	ttg	aaa	ttt	gaa	gag	gga	ata	ttt	gat	ggt	480
Val	Met	Asp	Ala	Leu	Asp	Leu	Lys	Phe	Glu	Glu	Gly	Ile	Phe	Asp	Gly	
	145				150				155					160		
gtt	tgg	agt	gtt	gag	gca	gga	gcc	cat	atg	aat	aat	aaa	act	aaa	ttt	528
Val	Trp	Ser	Val	Glu	Ala	Gly	Ala	His	Met	Asn	Asn	Lys	Thr	Lys	Phe	
				165				170					175			
gca	gat	caa	atg	tta	aga	act	tta	aga	cct	gga	gga	tat	tta	gca	ttg	576
Ala	Asp	Gln	Met	Leu	Arg	Thr	Leu	Arg	Pro	Gly	Gly	Tyr	Leu	Ala	Leu	
			180				185					190				
gct	gat	tgg	aat	tca	aga	gat	tta	caa	aag	caa	ccc	cca	tcc	atg	att	624
Ala	Asp	Trp	Asn	Ser	Arg	Asp	Leu	Gln	Lys	Gln	Pro	Pro	Ser	Met	Ile	
		195				200					205					
gaa	aaa	ata	atc	tta	aaa	caa	tta	ctt	gaa	cag	tgg	gta	cat	cct	aaa	672
Glu	Lys	Ile	Ile	Leu	Lys	Gln	Leu	Leu	Glu	Gln	Trp	Val	His	Pro	Lys	
	210				215						220					

## PhoenixTemp32470.tmp.txt

ttt	att	agt	atc	aat	gaa	ttc	agt	agt	att	ctt	ata	aat	aac	aaa	aat	720
Phe	Ile	Ser	Ile	Asn	Glu	Phe	Ser	Ser	Ile	Leu	Ile	Asn	Asn	Lys	Asn	
225					230					235					240	
agt	tca	ggt	caa	gtt	ata	tcc	tct	aat	tgg	aat	tct	ttt	aca	aat	ccc	768
Ser	Ser	Gly	Gln	Val	Ile	Ser	Ser	Asn	Trp	Asn	Ser	Phe	Thr	Asn	Pro	
				245					250					255		
tct	tgg	ttt	gat	tca	ata	ttt	gaa	gga	atg	aga	aga	cct	aat	tca	att	816
Ser	Trp	Phe	Asp	Ser	Ile	Phe	Glu	Gly	Met	Arg	Arg	Pro	Asn	Ser	Ile	
				260				265					270			
tta	tcc	ctt	ggt	cca	gga	gca	att	ata	aag	tct	atc	aga	gag	ata	cct	864
Leu	Ser	Leu	Gly	Pro	Gly	Ala	Ile	Ile	Lys	Ser	Ile	Arg	Glu	Ile	Pro	
				275			280					285				
aca	ata	ctt	tta	atg	gat	tgg	gcc	ttt	aaa	aaa	ggt	tta	atg	gaa	ttt	912
Thr	Ile	Leu	Leu	Met	Asp	Trp	Ala	Phe	Lys	Lys	Gly	Leu	Met	Glu	Phe	
	290					295					300					
gga	gtt	tat	aaa	tgt	aga	ggt	taa									936
Gly	Val	Tyr	Lys	Cys	Arg	Gly										
305					310											

&lt;210&gt; 2219

&lt;211&gt; 311

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus

&lt;400&gt; 2219

Met	Ser	Ile	Phe	Leu	Ile	Ser	Ser	Leu	Val	Ile	Phe	Leu	Thr	Leu	Leu	
1				5				10						15		
Phe	Ser	Ser	Leu	Ile	Leu	Trp	Arg	Ile	Asn	Thr	Arg	Lys	Tyr	Ile	Ser	
			20					25					30			
Ser	Arg	Thr	Val	Ala	Thr	Ala	Tyr	Asp	Ser	Trp	Thr	Gln	Asp	Lys	Leu	
			35				40					45				
Leu	Glu	Arg	Leu	Trp	Gly	Glu	His	Ile	His	Leu	Gly	Phe	Tyr	Pro	Leu	
	50				55					60						
Asn	Lys	Asn	Ile	Asp	Phe	Arg	Glu	Ala	Lys	Val	Gln	Phe	Val	His	Glu	
65				70				75						80		
Leu	Val	Ser	Trp	Ser	Gly	Leu	Asp	Lys	Leu	Pro	Arg	Gly	Ser	Arg	Ile	
				85				90						95		
Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Asn	
			100				105					110				
Tyr	Tyr	Gly	Phe	Asn	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Ala	Gln	Val	
		115				120						125				
Lys	Arg	Ala	Lys	Glu	Leu	Thr	Pro	Tyr	Glu	Cys	Lys	Cys	Asn	Phe	Lys	
	130				135					140						
Val	Met	Asp	Ala	Leu	Asp	Leu	Lys	Phe	Glu	Glu	Gly	Ile	Phe	Asp	Gly	
145				150				155						160		
Val	Trp	Ser	Val	Glu	Ala	Gly	Ala	His	Met	Asn	Asn	Lys	Thr	Lys	Phe	
				165				170						175		
Ala	Asp	Gln	Met	Leu	Arg	Thr	Leu	Arg	Pro	Gly	Gly	Tyr	Leu	Ala	Leu	
			180				185					190				
Ala	Asp	Trp	Asn	Ser	Arg	Asp	Leu	Gln	Lys	Gln	Pro	Pro	Ser	Met	Ile	
	195					200					205					
Glu	Lys	Ile	Ile	Leu	Lys	Gln	Leu	Leu	Glu	Gln	Trp	Val	His	Pro	Lys	
	210				215					220						
Phe	Ile	Ser	Ile	Asn	Glu	Phe	Ser	Ser	Ile	Leu	Ile	Asn	Asn	Lys	Asn	
225				230					235					240		
Ser	Ser	Gly	Gln	Val	Ile	Ser	Ser	Asn	Trp	Asn	Ser	Phe	Thr	Asn	Pro	
				245				250						255		
Ser	Trp	Phe	Asp	Ser	Ile	Phe	Glu	Gly	Met	Arg	Arg	Pro	Asn	Ser	Ile	
			260					265				270				
Leu	Ser	Leu	Gly	Pro	Gly	Ala	Ile	Ile	Lys	Ser	Ile	Arg	Glu	Ile	Pro	
		275				280						285				
Thr	Ile	Leu	Leu	Met	Asp	Trp	Ala	Phe	Lys	Lys	Gly	Leu	Met	Glu	Phe	
	290					295					300					
Gly	Val	Tyr	Lys	Cys	Arg	Gly										
305					310											

&lt;210&gt; 2220

&lt;211&gt; 1038

&lt;212&gt; DNA

&lt;213&gt; Gossypium hirsutum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1038)

&lt;400&gt; 2220

atg	gct	gcc	gcg	tta	caa	tta	caa	aca	cac	cct	tcg	ttc	cat	ggc	acg	48
Met	Ala	Ala	Ala	Leu	Gln	Leu	Gln	Thr	His	Pro	Cys	Phe	His	Gly	Thr	
1				5				10				15				
tg	caa	ctc	tca	cct	ccg	cca	cga	cct	tcc	gtt	tcc	ttc	cct	tct	tcc	96
Cys	Gln	Leu	Ser	Pro	Pro	Pro	Arg	Pro	Ser	Val	Ser	Phe	Pro	Ser	Ser	
			20					25				30				
tcc	cg	tcg	ttt	cca	tct	agc	aga	cgt	tcc	ctg	tcc	gcg	cat	gtg	aag	144
Ser	Arg	Ser	Phe	Pro	Ser	Ser	Arg	Arg	Ser	Leu	Ser	Ala	His	Val	Lys	
		35					40					45				
gcg	gcg	gcg	tcg	tct	ttg	tcc	acc	acc	acc	ttg	cag	gaa	ggg	ata	gcg	192
Ala	Ala	Ala	Ser	Ser	Leu	Ser	Thr	Thr	Thr	Leu	Gln	Glu	Gly	Ile	Ala	
	50					55					60					
gag	ttt	tac	gat	gag	tcg	tcg	ggg	att	tgg	gaa	gac	ata	tgg	ggg	gac	240
Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Ile	Trp	Glu	Asp	Ile	Trp	Gly	Asp	
	65			70					75					80		
cat	atg	cac	cat	gga	tat	tac	gag	ccg	ggg	tcc	gat	att	tcg	ggg	tca	288
His	Met	His	His	Gly	Tyr	Tyr	Glu	Pro	Gly	Ser	Asp	Ile	Ser	Gly	Ser	
				85					90					95		
gat	cat	cgt	gcc	gct	cag	att	cga	atg	gtc	gaa	gaa	tcg	ctc	cgt	ttt	336
Asp	His	Arg	Ala	Ala	Gln	Ile	Arg	Met	Val	Glu	Glu	Ser	Leu	Arg	Phe	
			100					105					110			
gct	gga	ata	tca	gag	gac	cca	gca	aac	agg	ccc	aag	aga	ata	ggt	gat	384
Ala	Gly	Ile	Ser	Glu	Asp	Pro	Ala	Asn	Arg	Pro	Lys	Arg	Ile	Val	Asp	
	115						120					125				
gtt	ggg	tgt	ggg	ata	gga	ggc	agt	tct	agg	tat	cta	gca	agg	aaa	tat	432
Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg	Lys	Tyr	
	130				135					140						
ggg	gca	aaa	tcg	caa	ggc	att	act	ttg	agc	cct	gtt	caa	gct	gga	aga	480
Gly	Ala	Lys	Cys	Gln	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala	Gly	Arg	
	145			150						155				160		
gcc	aat	gct	ctt	gct	aat	gct	caa	gga	cta	gca	gaa	cag	ggt	tgt	ttt	528
Ala	Asn	Ala	Leu	Ala	Asn	Ala	Gln	Gly	Leu	Ala	Glu	Gln	Val	Cys	Phe	
			165					170						175		
gaa	gtt	gca	gat	gcc	ttg	aac	caa	cca	ttc	cct	gat	gac	caa	ttt	gat	576
Glu	Val	Ala	Asp	Ala	Leu	Asn	Gln	Pro	Phe	Pro	Asp	Asp	Gln	Phe	Asp	
			180					185					190			
ctt	gtt	tgg	tct	atg	gaa	agc	gga	gaa	cac	atg	cct	gac	aaa	ccc	aag	624
Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Pro	Lys	
		195					200					205				
ttt	gtt	aaa	gag	ctg	gtg	cga	gtg	gca	gct	cca	gga	ggc	aca	ata	ata	672
Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Ala	Ala	Pro	Gly	Gly	Thr	Ile	Ile	
	210					215				220						
gta	gtg	aca	tgg	tgc	cat	agg	gat	ctt	ggg	cca	tct	gaa	gag	tct	ttg	720
Val	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly	Pro	Ser	Glu	Glu	Ser	Leu	
	225				230					235				240		
cag	cca	tgg	gag	caa	aag	ctt	tta	aac	aga	ata	tgt	gat	gct	tac	tat	768
Gln	Pro	Trp	Glu	Gln	Lys	Leu	Leu	Asn	Arg	Ile	Cys	Asp	Ala	Tyr	Tyr	
			245					250						255		
tta	cca	gag	tgg	tgt	tct	act	tct	gat	tat	gtc	aaa	tta	ttt	cag	tcc	816
Leu	Pro	Glu	Trp	Cys	Ser	Thr	Ser	Asp	Tyr	Val	Lys	Leu	Phe	Gln	Ser	
		260						265					270			
cta	tct	ctc	cag	gat	ata	aag	gca	gga	gac	tgg	act	gag	aat	gta	gca	864
Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ala	Gly	Asp	Trp	Thr	Glu	Asn	Val	Ala	
		275					280					285				
ccc	ttt	tgg	cca	gca	gtg	ata	cgt	tca	gca	ttg	aca	tgg	aag	ggc	ttc	912
Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala	Leu	Thr	Trp	Lys	Gly	Phe	
	290					295				300						
aca	tcg	ctg	cta	cga	agt	gga	tta	aaa	aca	ata	aaa	ggg	gca	ctg	gtg	960
Thr	Ser	Leu	Leu	Arg	Ser	Gly	Leu	Lys	Thr	Ile	Lys	Gly	Ala	Leu	Val	
	305				310					315				320		
atg	cca	ttg	atg	atc	gaa	ggg	ttc	cag	aaa	ggg	gtg	ata	aag	ttt	gcc	1008
Met	Pro	Leu	Met	Ile	Glu	Gly	Phe	Gln	Lys	Gly	Val	Ile	Lys	Phe	Ala	

atc att gct tgc 325 cgg aag cca gct gag 330 tag 335  
 Ile Ile Ala Cys Arg Lys Pro Ala Glu  
 340 345

1038

<210> 2221  
 <211> 345  
 <212> PRT  
 <213> Gossypium hirsutum

<400> 2221  
 Met Ala Ala Ala Leu Gln Leu Gln Thr His Pro Cys Phe His Gly Thr  
 1 5 10 15  
 Cys Gln Leu Ser Pro Pro Pro Arg Pro Ser Val Ser Phe Pro Ser Ser  
 20 25 30  
 Ser Arg Ser Phe Pro Ser Ser Arg Arg Ser Leu Ser Ala His Val Lys  
 35 40 45  
 Ala Ala Ala Ser Ser Leu Ser Thr Thr Thr Leu Gln Glu Gly Ile Ala  
 50 55 60  
 Glu Phe Tyr Asp Glu Ser Ser Gly Ile Trp Glu Asp Ile Trp Gly Asp  
 65 70 75 80  
 His Met His His Gly Tyr Tyr Glu Pro Gly Ser Asp Ile Ser Gly Ser  
 85 90 95  
 Asp His Arg Ala Gln Ile Arg Met Val Glu Glu Ser Leu Arg Phe  
 100 105 110  
 Ala Gly Ile Ser Glu Asp Pro Ala Asn Arg Pro Lys Arg Ile Val Asp  
 115 120 125  
 Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Arg Lys Tyr  
 130 135 140  
 Gly Ala Lys Cys Gln Gly Ile Thr Leu Ser Pro Val Gln Ala Gly Arg  
 145 150 155 160  
 Ala Asn Ala Leu Ala Asn Ala Gln Gly Leu Ala Glu Gln Val Cys Phe  
 165 170 175  
 Glu Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Asp Gln Phe Asp  
 180 185 190  
 Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys Pro Lys  
 195 200 205  
 Phe Val Lys Glu Leu Val Arg Val Ala Ala Pro Gly Gly Thr Ile Ile  
 210 215 220  
 Val Val Thr Trp Cys His Arg Asp Leu Gly Pro Ser Glu Glu Ser Leu  
 225 230 235 240  
 Gln Pro Trp Glu Gln Lys Leu Leu Asn Arg Ile Cys Asp Ala Tyr Tyr  
 245 250 255  
 Leu Pro Glu Trp Cys Ser Thr Ser Asp Tyr Val Lys Leu Phe Gln Ser  
 260 265 270  
 Leu Ser Leu Gln Asp Ile Lys Ala Gly Asp Trp Thr Glu Asn Val Ala  
 275 280 285  
 Pro Phe Trp Pro Ala Val Ile Arg Ser Ala Leu Thr Trp Lys Gly Phe  
 290 295 300  
 Thr Ser Leu Leu Arg Ser Gly Leu Lys Thr Ile Lys Gly Ala Leu Val  
 305 310 315 320  
 Met Pro Leu Met Ile Glu Gly Phe Gln Lys Gly Val Ile Lys Phe Ala  
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 Ile Ile Ala Cys Arg Lys Pro Ala Glu  
 340 345

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 <211> 1278  
 <212> DNA  
 <213> Chlamydomonas reinhardtii

<220>  
 <221> CDS  
 <222> (1)..(1278)

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 1 10 15

48

## PhoenixTemp32470.tmp.txt

agg	tcg	tcg	caa	ccc	act	gcg	tca	atc	gcg	ccc	atc	tca	tct	agg	tca	96
Arg	Ser	Ser	Gln	Pro	Thr	Ala	Ser	Ile	Ala	Pro	Ile	Ser	Ser	Arg	Ser	
			20					25					30			
gca	agc	cgg	cgc	gtg	gcc	tgc	gcg	tcc	gca	caa	tcg	acc	gat	gtc	gcc	144
Ala	Ser	Arg	Arg	Val	Ala	Cys	Ala	Ser	Ala	Gln	Ser	Thr	Asp	Val	Ala	
		35				40					45					
tct	gag	gca	gtg	gcc	acg	acc	agc	gct	ggc	gca	gcc	cgc	tct	gct	gct	192
Ser	Glu	Ala	Val	Ala	Thr	Thr	Ser	Ala	Gly	Ala	Ala	Arg	Ser	Ala	Ala	
	50					55				60						
cgg	gag	gta	tac	cag	ttg	agc	gat	gct	gcg	tgc	tgc	tcc	acc	tct	gcc	240
Arg	Glu	Val	Tyr	Gln	Leu	Ser	Asp	Ala	Ala	Cys	Cys	Ser	Thr	Ser	Ala	
	65				70					75					80	
ccc	acc	gcg	agc	act	act	ttt	gct	ggc	gtc	gac	cca	act	gtc	ttg	gca	288
Pro	Thr	Ala	Ser	Thr	Thr	Phe	Ala	Gly	Val	Asp	Pro	Thr	Val	Leu	Ala	
				85					90					95		
gcc	gtc	gct	ggg	cta	ggg	cta	agt	ctg	ttt	gcg	ctc	aag	cgc	atc	ctg	336
Ala	Val	Ala	Gly	Leu	Gly	Leu	Ser	Leu	Phe	Ala	Leu	Lys	Arg	Ile	Leu	
			100					105					110			
gac	acc	ccc	tcg	cgc	aaa	tat	gac	aac	gtg	ggc	cag	gag	tat	gat		384
Asp	Thr	Pro	Ser	Arg	Lys	Tyr	Asp	Asn	Val	Gly	Gln	Glu	Tyr	Asp		
		115					120				125					
gcg	tgg	acg	gag	gaa	ggc	gtt	ctg	gag	tac	tac	tgg	ggc	gag	cac	atc	432
Ala	Trp	Thr	Glu	Glu	Gly	Val	Leu	Glu	Tyr	Tyr	Trp	Gly	Glu	His	Ile	
	130					135					140					
cat	ttg	ggc	tat	tat	tcg	gag	gag	ctg	gcg	cgc	ggg	tac	cta	aag		480
His	Leu	Gly	Tyr	Tyr	Ser	Asp	Glu	Glu	Leu	Ala	Arg	Gly	Tyr	Leu	Lys	
	145				150					155					160	
aag	gac	ttc	aag	cag	gca	aag	ttc	gac	ttc	gtg	gac	gag	atg	ctc	cga	528
Lys	Asp	Phe	Lys	Gln	Ala	Lys	Phe	Asp	Phe	Val	Asp	Glu	Met	Leu	Arg	
				165					170					175		
ttc	agc	ggg	gcg	aag	aac	ccc	gcg	acc	atc	ctg	gac	gtg	ggg	tgt	ggc	576
Phe	Ser	Gly	Ala	Lys	Asn	Pro	Ala	Thr	Ile	Leu	Asp	Val	Gly	Cys	Gly	
			180					185					190			
ttc	ggt	ggc	acc	tcc	cgc	cac	ctg	gcc	aag	aag	ttc	cgc	gac	gcc	aac	624
Phe	Gly	Gly	Thr	Ser	Arg	His	Leu	Ala	Lys	Lys	Phe	Arg	Asp	Ala	Asn	
		195					200					205				
gtg	acc	ggt	atc	acg	ctg	tct	ccc	aag	cag	gtg	cag	cgc	ggc	acg	gag	672
Val	Thr	Gly	Ile	Thr	Leu	Ser	Pro	Lys	Gln	Val	Gln	Arg	Gly	Thr	Glu	
	210					215					220					
ctg	gcc	aag	gag	cag	ggc	gtg	ggc	aac	gtc	aag	ttc	cag	gtg	atg	gac	720
Leu	Ala	Lys	Glu	Gln	Gly	Val	Gly	Asn	Val	Lys	Phe	Gln	Val	Met	Asp	
	225				230					235					240	
gcg	ctg	gcc	atg	gag	ttc	cct	gac	aac	tcc	ttt	gac	ctg	gtg	tgg	gcg	768
Ala	Leu	Ala	Met	Glu	Phe	Pro	Asp	Asn	Ser	Phe	Asp	Leu	Val	Trp	Ala	
				245					250					255		
tgc	gag	agc	ggc	gag	cac	atg	ccc	gac	aag	cgc	aag	tac	atc	gag	gag	816
Cys	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Arg	Lys	Tyr	Ile	Glu	Glu	
			260					265					270			
atg	acg	cgt	gtg	ctc	aag	ccc	ggc	ggc	acg	ctc	gtc	att	gcc	tgc	tgg	864
Met	Thr	Arg	Val	Leu	Lys	Pro	Gly	Gly	Thr	Leu	Val	Ile	Ala	Cys	Trp	
		275					280					285				
tgc	cag	cgc	gag	gag	ggc	gac	ccc	ttc	acg	ccc	cag	gac	aag	gag		912
Cys	Gln	Arg	Glu	Glu	Gly	Asp	Lys	Pro	Phe	Pro	Gln	Asp	Lys	Glu		
	290					295				300						
gac	ctc	cag	ttc	ctg	tac	gac	gag	tgg	gcg	cac	ccc	tac	ttc	atc	tcc	960
Asp	Leu	Gln	Phe	Leu	Tyr	Asp	Glu	Trp	Ala	His	Pro	Tyr	Phe	Ile	Ser	
				310						315					320	
atc	gcc	gag	ttc	ggc	cgc	ctc	atg	aac	ggc	acg	ggc	aag	ctg	gac	ggc	1008
Ile	Ala	Glu	Phe	Gly	Arg	Leu	Met	Asn	Gly	Thr	Gly	Lys	Leu	Asp	Gly	
				325					330					335		
gtc	aag	ctg	gag	gac	tgg	aac	aag	aac	acc	atc	tcg	tcc	tgg	cgg	cac	1056
Val	Lys	Leu	Glu	Asp	Trp	Asn	Lys	Asn	Thr	Ile	Ser	Ser	Trp	Arg	His	
				340				345					350			
agc	atc	tgg	gtg	ggc	gtg	ttc	gac	ccc	tgg	gtc	gtg	gtg	ttc	aag	ggg	1104
Ser	Ile	Trp	Val	Gly	Val	Phe	Asp	Pro	Trp	Val	Val	Val	Phe	Lys	Gly	
		355					360					365				
ccg	cgc	atc	tgg	tac	aag	acc	gtg	cgc	gag	atc	gtg	acc	ctg	gag	cgc	1152
Pro	Arg	Ile	Trp	Tyr	Lys	Thr	Val	Arg	Glu	Ile	Val	Thr	Leu	Glu	Arg	
		370				375					380					

## PhoenixTemp32470.tmp.txt

atg	cac	cag	gcg	ttc	gag	aag	ggc	ctg	atg	gag	tac	ggc	atg	atg	acg	1200
Met	His	Gln	Ala	Phe	Glu	Lys	Gly	Leu	Met	Glu	Tyr	Gly	Met	Met	Thr	
385					390					395					400	
gcc	acg	aag	aag	ctg	gca	ccg	gcg	agc	gag	tcc	gcg	gcc	aac	acg	cag	1248
Ala	Thr	Lys	Lys	Leu	Ala	Pro	Ala	Ser	Glu	Ser	Ala	Ala	Asn	Thr	Gln	
				405					410					415		
gac	cg	gtg	ccg	gtg	ggc	gcc	aag	g	tga							1278
Asp	Arg	Val	Pro	Val	Gly	Ala	Lys	Gly	Ala							
			420					425								

&lt;210&gt; 2223

&lt;211&gt; 425

&lt;212&gt; PRT

&lt;213&gt; Chlamydomonas reinhardtii

&lt;400&gt; 2223

Met	Leu	Gly	Gln	Ser	Leu	Arg	Gly	Asp	Val	Gly	Arg	Ser	Ala	Ser	Val	
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Arg	Ser	Ser	Gln	Pro	Thr	Ala	Ser	Ile	Ala	Pro	Ile	Ser	Ser	Arg	Ser	
			20					25					30			
Ala	Ser	Arg	Arg	Val	Ala	Cys	Ala	Ser	Ala	Gln	Ser	Thr	Asp	Val	Ala	
		35					40					45				
Ser	Glu	Ala	Val	Ala	Thr	Thr	Ser	Ala	Gly	Ala	Ala	Arg	Ser	Ala	Ala	
	50					55				60						
Arg	Glu	Val	Tyr	Gln	Leu	Ser	Asp	Ala	Ala	Cys	Cys	Ser	Thr	Ser	Ala	
65				70					75						80	
Pro	Thr	Ala	Ser	Thr	Thr	Phe	Ala	Gly	Val	Asp	Pro	Thr	Val	Leu	Ala	
				85				90						95		
Ala	Val	Ala	Gly	Leu	Gly	Leu	Ser	Leu	Phe	Ala	Leu	Lys	Arg	Ile	Leu	
			100					105					110			
Asp	Thr	Pro	Ser	Arg	Lys	Tyr	Asp	Asn	Asn	Val	Gly	Gln	Glu	Tyr	Asp	
		115					120					125				
Ala	Trp	Thr	Glu	Glu	Gly	Val	Leu	Glu	Tyr	Tyr	Trp	Gly	Glu	His	Ile	
	130				135					140						
His	Leu	Gly	Tyr	Tyr	Ser	Asp	Glu	Glu	Leu	Ala	Arg	Gly	Tyr	Leu	Lys	
145				150					155						160	
Lys	Asp	Phe	Lys	Gln	Ala	Lys	Phe	Asp	Phe	Val	Asp	Glu	Met	Leu	Arg	
			165					170						175		
Phe	Ser	Gly	Ala	Lys	Asn	Pro	Ala	Thr	Ile	Leu	Asp	Val	Gly	Cys	Gly	
		180						185					190			
Phe	Gly	Gly	Thr	Ser	Arg	His	Leu	Ala	Lys	Lys	Phe	Arg	Asp	Ala	Asn	
	195						200					205				
Val	Thr	Gly	Ile	Thr	Leu	Ser	Pro	Lys	Gln	Val	Gln	Arg	Gly	Thr	Glu	
	210				215					220						
Leu	Ala	Lys	Glu	Gln	Gly	Val	Gly	Asn	Val	Lys	Phe	Gln	Val	Met	Asp	
225				230						235					240	
Ala	Leu	Ala	Met	Glu	Phe	Pro	Asp	Asn	Ser	Phe	Asp	Leu	Val	Trp	Ala	
			245					250						255		
Cys	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Arg	Lys	Tyr	Ile	Glu	Glu	
		260						265					270			
Met	Thr	Arg	Val	Leu	Lys	Pro	Gly	Thr	Leu	Val	Ile	Ala	Cys	Trp		
		275					280					285				
Cys	Gln	Arg	Glu	Glu	Gly	Asp	Lys	Pro	Phe	Thr	Pro	Gln	Asp	Lys	Glu	
	290				295						300					
Asp	Leu	Gln	Phe	Leu	Tyr	Asp	Glu	Trp	Ala	His	Pro	Tyr	Phe	Ile	Ser	
305				310						315					320	
Ile	Ala	Glu	Phe	Gly	Arg	Leu	Met	Asn	Gly	Thr	Gly	Lys	Leu	Asp	Gly	
			325						330					335		
Val	Lys	Leu	Glu	Asp	Trp	Asn	Lys	Asn	Thr	Ile	Ser	Ser	Trp	Arg	His	
		340						345					350			
Ser	Ile	Trp	Val	Gly	Val	Phe	Asp	Pro	Trp	Val	Val	Val	Phe	Lys	Gly	
	355						360					365				
Pro	Arg	Ile	Trp	Tyr	Lys	Thr	Val	Arg	Glu	Ile	Val	Thr	Leu	Glu	Arg	
	370				375						380					
Met	His	Gln	Ala	Phe	Glu	Lys	Gly	Leu	Met	Glu	Tyr	Gly	Met	Met	Thr	
385				390						395					400	
Ala	Thr	Lys	Lys	Leu	Ala	Pro	Ala	Ser	Glu	Ser	Ala	Ala	Asn	Thr	Gln	
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Asp	Arg	Val	Pro	Val	Gly	Ala	Lys	Ala								



420

425

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 <211> 1017  
 <212> DNA  
 <213> Chlamydomonas reinhardtii

<220>  
 <221> CDS  
 <222> (1)..(1017)

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 tgc cta ggt aga gct aca cgc cat gta tgc aga gtg tcc aca cgg agc 96  
 Cys Leu Gly Arg Ala Thr Arg His Val Cys Arg Val Ser Thr Arg Ser  
 20 25 30  
 cgg cgc gct gtg acg gtt cgc gcg gga ccg ctg gag acg ctc gtg aag 144  
 Arg Arg Ala Val Thr Val Arg Ala Gly Pro Leu Glu Thr Leu Val Lys  
 35 40 45  
 ccg ctc acg acg ctg gga aag gtc agc gac ctc aaa gtc ggc atc gcc 192  
 Pro Leu Thr Thr Leu Gly Lys Val Ser Asp Leu Lys Val Gly Ile Ala  
 50 55 60  
 aac ttc tat gac gag tct tcg gag ctg tgg gag aac atg tgg ggg gag 240  
 Asn Phe Tyr Asp Glu Ser Ser Glu Leu Trp Glu Asn Met Trp Gly Glu  
 65 70 75 80  
 cac atg cat cac ggc tac tat ccc aag ggt gcc ccc gtc aag agc aac 288  
 His Met His His Gly Tyr Tyr Pro Lys Gly Ala Pro Val Lys Ser Asn  
 85 90 95  
 cag cag gca cag atc gat atg att gag gag acg ctc aag gtg gct ggt 336  
 Gln Gln Ala Gln Ile Asp Met Ile Glu Glu Thr Leu Lys Val Ala Gly  
 100 105 110  
 gtg aca caa gcc aag aag atg gtg gac gtg ggc tgc ggc atc ggc ggc 384  
 Val Thr Gln Ala Lys Lys Met Val Asp Val Gly Cys Gly Ile Gly Gly  
 115 120 125  
 agc tcg cgc tac atc agc cgc aag ttc ggc tgc acc tcc aac ggc atc 432  
 Ser Ser Arg Tyr Ile Ser Arg Lys Phe Gly Cys Thr Ser Asn Gly Ile  
 130 135 140  
 acg ctc agc ccc aag cag gct gct cgc gcc aat gcg ctg agc aag gag 480  
 Thr Leu Ser Pro Lys Gln Ala Ala Arg Ala Asn Ala Leu Ser Lys Glu  
 145 150 155 160  
 cag ggc ttt ggc gac aag ctg cag ttc cag gtg ggc gac gcg ctg gcg 528  
 Gln Gly Phe Gly Asp Lys Leu Gln Phe Gln Val Gly Asp Ala Leu Ala  
 165 170 175  
 cag ccg ttc gag gcc ggc gcc ttc gac ctg gtg tgg tcc atg gag agc 576  
 Gln Pro Phe Glu Ala Gly Ala Phe Asp Leu Val Trp Ser Met Glu Ser  
 180 185 190  
 ggc gag cac atg ccc gac aag aag aag ttt gtg tcg gag ctg gcg cgc 624  
 Gly Glu His Met Pro Asp Lys Lys Lys Phe Val Ser Glu Leu Ala Arg  
 195 200 205  
 gtg tgt gcg ccc ggc ggc acc gtg gtg acg tgg tgc cac cgc 672  
 Val Cys Ala Pro Gly Gly Thr Val Ile Val Val Thr Trp Cys His Arg  
 210 215 220  
 gtg ttg ggt ccg ggc gag gcg ggc ttg cgc gag gac gag aag gcg ctg 720  
 Val Leu Gly Pro Gly Glu Ala Gly Leu Arg Glu Asp Glu Lys Ala Leu  
 225 230 235 240  
 ctg gac cgc atc aac gag gcc tac tac ctg ccc gac tgg tgc tcc gtg 768  
 Leu Asp Arg Ile Asn Glu Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Val  
 245 250 255  
 gca gac tac cag aaa ctg ttc gag gca caa ggc ctg act gac atc cag 816  
 Ala Asp Tyr Gln Lys Leu Phe Glu Ala Gln Gly Leu Thr Asp Ile Gln  
 260 265 270  
 acc cgc gac tgg agc cag gag gtg tcg ccc ttc tgg ggc gcc gtg atc 864  
 Thr Arg Asp Trp Ser Gln Glu Val Ser Pro Phe Trp Gly Ala Val Ile  
 275 280 285  
 gcc acg gcc ctg acc agc gag ggt ctg gcg ggt ctg gcc aag gcg ggc 912  
 Ala Thr Ala Leu Thr Ser Glu Gly Leu Ala Gly Leu Ala Lys Ala Gly  
 290 295 300

## PhoenixTemp32470.tmp.txt

tgg acc acc atc aag ggc gcc ctg gtg atg ccg ctc atg gcc gag ggc	960
Trp Thr Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ala Glu Gly	
305 310 315 320	
ttc aga cgc ggc ctc atc aag ttc aac ctc atc agc ggc cgc aag ctg	1008
Phe Arg Arg Gly Leu Ile Lys Phe Asn Leu Ile Ser Gly Arg Lys Leu	
325 330 335	
cag cag tag	1017
Gln Gln	

<210> 2225  
 <211> 338  
 <212> PRT  
 <213> Chlamydomonas reinhardtii

<400> 2225

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20 25 30	
Arg Arg Ala Val Thr Val Arg Ala Gly Pro Leu Glu Thr Leu Val Lys	
35 40 45	
Pro Leu Thr Thr Leu Gly Lys Val Ser Asp Leu Lys Val Gly Ile Ala	
50 55 60	
Asn Phe Tyr Asp Glu Ser Ser Glu Leu Trp Glu Asn Met Trp Gly Glu	
65 70 75 80	
His Met His His Gly Tyr Tyr Pro Lys Gly Ala Pro Val Lys Ser Asn	
85 90 95	
Gln Gln Ala Gln Ile Asp Met Ile Glu Thr Leu Lys Val Ala Gly	
100 105 110	
Val Thr Gln Ala Lys Lys Met Val Asp Val Gly Cys Gly Ile Gly Gly	
115 120 125	
Ser Ser Arg Tyr Ile Ser Arg Lys Phe Gly Cys Thr Ser Asn Gly Ile	
130 135 140	
Thr Leu Ser Pro Lys Gln Ala Ala Arg Ala Asn Ala Leu Ser Lys Glu	
145 150 155 160	
Gln Gly Phe Gly Asp Lys Leu Gln Phe Gln Val Gly Asp Ala Leu Ala	
165 170 175	
Gln Pro Phe Glu Ala Gly Ala Phe Asp Leu Val Trp Ser Met Glu Ser	
180 185 190	
Gly Glu His Met Pro Asp Lys Lys Lys Phe Val Ser Glu Leu Ala Arg	
195 200 205	
Val Cys Ala Pro Gly Gly Thr Val Ile Val Val Thr Trp Cys His Arg	
210 215 220	
Val Leu Gly Pro Gly Glu Ala Gly Leu Arg Glu Asp Glu Lys Ala Leu	
225 230 235 240	
Leu Asp Arg Ile Asn Glu Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Val	
245 250 255	
Ala Asp Tyr Gln Lys Leu Phe Glu Ala Gln Gly Leu Thr Asp Ile Gln	
260 265 270	
Thr Arg Asp Trp Ser Gln Glu Val Ser Pro Phe Trp Gly Ala Val Ile	
275 280 285	
Ala Thr Ala Leu Thr Ser Glu Gly Leu Ala Gly Leu Ala Lys Ala Gly	
290 295 300	
Trp Thr Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ala Glu Gly	
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Gln Gln	

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 <211> 930  
 <212> DNA  
 <213> Prochlorococcus marinus str. MIT 9211

<220>  
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 <222> (1)..(930)

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&lt;400&gt; 2226

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1 5 10 15	
ata tgg att tgg tta aag act aat cga gct tat aag agc aaa tca agt	96
Ile Trp Ile Trp Leu Lys Thr Asn Arg Ala Tyr Lys Ser Lys Ser Ser	
20 25 30	
gtt tca cta gcc tat gat tct tgg act aat gac cgc ctt cta gag aga	144
Val Ser Leu Ala Tyr Asp Ser Trp Thr Asn Asp Arg Leu Leu Glu Arg	
35 40 45	
ttg tgg gga gaa cat att cat ctt ggc tat tac aaa gat agt tct gta	192
Leu Trp Gly Glu His Ile His Leu Gly Tyr Tyr Lys Asp Ser Ser Val	
50 55 60	
aaa act gat ttt agg caa gca aaa gtt gat ttt gta cat caa tta gtc	240
Lys Thr Asp Phe Arg Gln Ala Lys Val Asp Phe Val His Gln Leu Val	
65 70 75 80	
aaa tgg agc ggt atg gat cat ttg cca aaa ggc tca cga att ctt gat	288
Lys Trp Ser Gly Met Asp His Leu Pro Lys Gly Ser Arg Ile Leu Asp	
85 90 95	
att ggt tgt ggt ata gga ggt agt gca aga atc ttg gca aga gat tat	336
Ile Gly Cys Gly Ile Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr	
100 105 110	
aac ttt gat gtt tta gga att act att agt cct ctc cag gtt cgg aga	384
Asn Phe Asp Val Leu Gly Ile Thr Ile Ser Pro Leu Gln Val Arg Arg	
115 120 125	
gcc caa gaa ttg act cct gag gac tct act tgt cga ttc gaa gta atg	432
Ala Gln Glu Leu Thr Pro Glu Asp Ser Thr Cys Arg Phe Glu Val Met	
130 135 140	
gat gct ttg gat ctt caa cta gaa aat ggc agc ttt gat ggt gta tgg	480
Asp Ala Leu Asp Leu Gln Leu Glu Asn Gly Ser Phe Asp Gly Val Trp	
145 150 155 160	
agt gtg gaa gct ggg ccg cat ata cct gat aaa caa ctt tat gca gat	528
Ser Val Glu Ala Gly Pro His Ile Pro Asp Lys Gln Leu Tyr Ala Asp	
165 170 175	
gag atg ctt cgt gta tta cgt cca ggc ggt gtt ttg gct gtt gcg gat	576
Glu Met Leu Arg Val Leu Arg Pro Gly Gly Val Leu Ala Val Ala Asp	
180 185 190	
ttg aat aga aga gat atc caa aag aag aaa tat gat ttt ttg gaa gaa	624
Trp Asn Arg Arg Asp Ile Gln Lys Lys Tyr Asp Phe Leu Glu Glu	
195 200 205	
ctt gtg ctt cgt cag ctt tta aat caa tgg gcc cat ccc gaa ttt tct	672
Leu Val Leu Arg Gln Leu Leu Asn Gln Trp Ala His Pro Glu Phe Ser	
210 215 220	
act att aat gcc ttt caa aag aat tta tcg aat agt gca tat tct gca	720
Thr Ile Asn Ala Phe Gln Lys Asn Leu Ser Asn Ser Ala Tyr Ser Ala	
225 230 235 240	
ggt act gca gat aca gat gat tgg aca aga ttt acg ata cct tcc tgg	768
Gly Thr Ala Asp Thr Asp Asp Trp Thr Arg Phe Thr Ile Pro Ser Trp	
245 250 255	
aat gat tca ata atc gaa gga att aaa aga cca aaa gtc ttt ttt gat	816
Asn Asp Ser Ile Ile Glu Gly Ile Lys Arg Pro Lys Val Phe Phe Asp	
260 265 270	
ttg ggg cca aaa tcc ttc tat aaa gga ttt cgc gag att cct act ata	864
Leu Gly Pro Lys Ser Phe Tyr Lys Gly Phe Arg Glu Ile Pro Thr Ile	
275 280 285	
tta tta atg cgg tgg gct ttt tct gta ggc cta atg gag ttt ggt gtc	912
Leu Leu Met Arg Trp Ala Phe Ser Val Gly Leu Met Glu Phe Gly Val	
290 295 300	
ttt aga act aga ggc tga	930
Phe Arg Thr Arg Gly	
305	

&lt;210&gt; 2227

&lt;211&gt; 309

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus str. MIT 9211

## PhoenixTemp32470.tmp.txt

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<400> 2227
Met Gly Thr Leu Ile Ser Leu Leu Val Gly Ile Leu Leu Ile Leu Ile
1      5      10      15
Ile Trp Ile Trp Leu Lys Thr Asn Arg Ala Tyr Lys Ser Lys Ser Ser
20      25      30
Val Ser Leu Ala Tyr Asp Ser Trp Thr Asn Asp Arg Leu Leu Glu Arg
35      40      45
Leu Trp Gly Glu His Ile His Leu Gly Tyr Tyr Lys Asp Ser Ser Val
50      55      60
Lys Thr Asp Phe Arg Gln Ala Lys Val Asp Phe Val His Gln Leu Val
65      70      75      80
Lys Trp Ser Gly Met Asp His Leu Pro Lys Gly Ser Arg Ile Leu Asp
85      90      95
Ile Gly Cys Gly Ile Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr
100     105     110
Asn Phe Asp Val Leu Gly Ile Thr Ile Ser Pro Leu Gln Val Arg Arg
115     120     125
Ala Gln Glu Leu Thr Pro Glu Asp Ser Thr Cys Arg Phe Glu Val Met
130     135     140
Asp Ala Leu Asp Leu Gln Leu Glu Asn Gly Ser Phe Asp Gly Val Trp
145     150     155     160
Ser Val Glu Ala Gly Pro His Ile Pro Asp Lys Gln Leu Tyr Ala Asp
165     170     175
Glu Met Leu Arg Val Leu Arg Pro Gly Val Leu Ala Val Ala Asp
180     185     190
Trp Asn Arg Arg Asp Ile Gln Lys Lys Lys Tyr Asp Phe Leu Glu Glu
195     200     205
Leu Val Leu Arg Gln Leu Leu Asn Gln Trp Ala His Pro Glu Phe Ser
210     215     220
Thr Ile Asn Ala Phe Gln Lys Asn Leu Ser Asn Ser Ala Tyr Ser Ala
225     230     235     240
Gly Thr Ala Asp Thr Asp Asp Trp Thr Arg Phe Thr Ile Pro Ser Trp
245     250     255
Asn Asp Ser Ile Ile Glu Gly Ile Lys Arg Pro Lys Val Phe Phe Asp
260     265     270
Leu Gly Pro Lys Ser Phe Tyr Lys Gly Phe Arg Glu Ile Pro Thr Ile
275     280     285
Leu Leu Met Arg Trp Ala Phe Ser Val Gly Leu Met Glu Phe Gly Val
290     295     300
Phe Arg Thr Arg Gly
305

```

```

<210> 2228
<211> 954
<212> DNA
<213> Synechocystis sp. PCC 6803

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<220>
<221> CDS
<222> (1)..(954)
<223> transl_table=11

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<400> 2228
atg gtt tac cat gtt agg cct aag cac gcc ctg ttc tta gca ttc tat      48
Met Val Tyr His Val Arg Pro Lys His Ala Leu Phe Leu Ala Phe Tyr
1      5      10      15
tgt tat ttc tct ttg ctt acc atg gcc agc gcc acc att gcc agt gca      96
Cys Tyr Phe Ser Leu Leu Thr Met Ala Ser Ala
20      25      30
gac ctc tac gaa aaa att aaa aat ttc tac gac gac tcc agc ggt ctc      144
Asp Leu Tyr Glu Lys Ile Lys Asn Phe Tyr Asp Asp Ser Ser Gly Leu
35      40      45
tgg gaa gac gtt tgg ggt gag cat atg cac cac ggc tac ggt ccc      192
Trp Glu Asp Val Trp Gly Glu His Met His His Gly Tyr Tyr Gly Pro
50      55      60
cac ggc acc tat cgg atc gat cgc cgc cag gct caa att gat ctg atc      240
His Gly Thr Tyr Arg Ile Asp Arg Arg Gln Ala Gln Ile Asp Leu Ile
65      70      80
aaa gaa cta ttg gcc tgg gca gtg ccc caa aat agc gcc aaa cca cga      288

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## PhoenixTemp32470.tmp.txt

Lys	Glu	Leu	Leu	Ala 85	Trp	Ala	Val	Pro	Gln 90	Asn	Ser	Ala	Lys	Pro 95	Arg		
aaa	att	ctc	gat	tta	ggc	tgt	ggc	att	ggc	ggc	agt	agt	ttg	tac	ttg	336	
Lys	Ile	Leu	Asp 100	Leu	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Tyr	Leu		
gcc	cag	caa	cac	caa	gca	gaa	gtg	atg	ggg	gct	agt	ctt	tcc	cca	gtg	384	
Ala	Gln	Gln 115	His	Gln	Ala	Glu	Val	Met	Gly	Ala	Ser	Leu	Ser	Pro	Val		
cag	gtg	gaa	cgg	gcg	ggg	gaa	agg	gcc	agg	gcc	ctg	ggg	ttg	ggc	tca	432	
Gln	Val	Glu	Arg	Ala	Gly	Glu	Arg	Ala	Arg	Ala	Leu	Gly	Leu	Gly	Ser		
130																	
acc	tgc	cag	ttt	cag	gtg	gcc	aat	gcc	ttg	gat	ttg	ccc	ttt	gct	tcc	480	
Thr	Cys	Gln	Phe	Gln	Val	Ala	Asn	Ala	Leu	Asp	Leu	Pro	Phe	Ala	Ser		
145																	
gat	tcc	ttt	gac	tgg	gtt	tgg	tcg	ttg	gaa	agt	ggg	gag	cac	atg	ccc	528	
Asp	Ser	Phe	Asp	Trp	Val	Trp	Ser	Leu	Glu	Ser	Gly	Glu	His	Met	Pro		
aac	aaa	gct	cag	ttt	tta	caa	gaa	gct	tgg	cgg	gta	ctt	aaa	cca	ggt	576	
Asn	Lys	Ala	Gln 180	Phe	Leu	Gln	Glu	Ala	Trp	Arg	Val	Leu	Lys	Pro	Gly		
ggc	cgt	ctg	att	tta	gcg	acc	tgg	tgt	cat	cgt	ccc	att	gat	ccc	ggc	624	
Gly	Arg	Leu	Ile	Leu	Ala	Thr	Trp	Cys	His	Arg	Pro	Ile	Asp	Pro	Gly		
195																	
aat	ggc	ccc	ctg	act	gcc	gat	gaa	cgt	cgc	cat	ctc	caa	gcc	atc	tat	672	
Asn	Gly	Pro	Leu	Thr	Ala	Asp	Glu	Arg	Arg	His	Leu	Gln	Ala	Ile	Tyr		
210																	
gac	gtt	tac	tgt	ttg	ccc	tat	gtg	gtt	tcc	ctg	ccg	gac	tac	gag	gcg	720	
Asp	Val	Tyr	Cys	Leu	Pro	Tyr	Val	Val	Ser	Leu	Pro	Asp	Tyr	Glu	Ala		
225																	
atc	gcc	agg	gaa	tgt	ggg	ttt	ggg	gaa	att	aag	act	gcc	gat	tgg	tca	768	
Ile	Ala	Arg	Glu	Cys 245	Gly	Phe	Gly	Glu	Ile	Lys	Thr	Ala	Asp	Trp	Ser		
gtg	gcg	gtg	gca	cct	ttt	tgg	gac	cgg	gtg	att	gag	tct	gcg	ttc	gat	816	
Val	Ala	Val	Ala	Pro	Phe	Trp	Asp	Arg	Val	Ile	Glu	Ser	Ala	Phe	Asp		
ccc	cgg	gtg	ttg	tgg	gcc	ttg	ggg	caa	gcg	ggg	cca	aaa	att	atc	aat	864	
Pro	Arg	Val	Leu	Trp	Ala	Leu	Gly	Gln	Ala	Gly	Pro	Lys	Ile	Ile	Asn		
275																	
gcc	gcc	ctg	tgt	tta	cga	tta	atg	aaa	tgg	ggc	tat	gaa	cgg	gga	tta	912	
Ala	Ala	Leu	Cys	Leu	Arg	Leu	Met	Lys	Trp	Gly	Tyr	Glu	Arg	Gly	Leu		
290																	
gtg	cgt	ttt	ggc	tta	tta	acg	ggg	ata	aag	cct	tta	gtt	tga			954	
Val	Arg	Phe	Gly	Leu	Leu	Thr	Gly	Ile	Lys	Pro	Leu	Val					
305																	

&lt;210&gt; 2229

&lt;211&gt; 317

&lt;212&gt; PRT

&lt;213&gt; Synechocystis sp. PCC 6803

&lt;400&gt; 2229

Met	Val	Tyr	His	Val 5	Arg	Pro	Lys	His	Ala 10	Leu	Phe	Leu	Ala	Phe	Tyr		
1																	
Cys	Tyr	Phe	Ser	Leu	Leu	Thr	Met	Ala	Ser	Ala	Thr	Ile	Ala	Ser	Ala		
Asp	Leu	Tyr	Glu	Lys	Ile	Lys	Asn	Phe	Tyr	Asp	Asp	Ser	Ser	Gly	Leu		
Trp	Glu	Asp	Val	Trp	Gly	Glu	His	Met	His	His	Gly	Tyr	Tyr	Gly	Pro		
His	Gly	Thr	Tyr	Arg	Ile	Asp	Arg	Arg	Gln	Ala	Gln	Ile	Asp	Leu	Ile		
65																	
Lys	Glu	Leu	Leu	Ala	Trp	Ala	Val	Pro	Gln	Asn	Ser	Ala	Lys	Pro	Arg		
Lys	Ile	Leu	Asp	Leu	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Tyr	Leu		
Ala	Gln	Gln	His	Gln	Ala	Glu	Val	Met	Gly	Ala	Ser	Leu	Ser	Pro	Val		
Gln	Val	Glu	Arg	Ala	Gly	Glu	Arg	Ala	Arg	Ala	Leu	Gly	Leu	Gly	Ser		
130																	

## PhoenixTemp32470.tmp.txt

Thr Cys Gln Phe Gln Val Ala Asn Ala Leu Asp Leu Pro Phe Ala Ser  
 145 150 155 160  
 Asp Ser Phe Asp Trp Val Trp Ser Leu Glu Ser Gly Glu His Met Pro  
 165 170 175  
 Asn Lys Ala Gln Phe Leu Gln Glu Ala Trp Arg Val Leu Lys Pro Gly  
 180 185 190  
 Gly Arg Leu Ile Leu Ala Thr Trp Cys His Arg Pro Ile Asp Pro Gly  
 195 200 205  
 Asn Gly Pro Leu Thr Ala Asp Glu Arg Arg His Leu Gln Ala Ile Tyr  
 210 215 220  
 Asp Val Tyr Cys Leu Pro Tyr Val Val Ser Leu Pro Asp Tyr Glu Ala  
 225 230 235 240  
 Ile Ala Arg Glu Cys Gly Phe Gly Glu Ile Lys Thr Ala Asp Trp Ser  
 245 250 255  
 Val Ala Val Ala Pro Phe Trp Asp Arg Val Ile Glu Ser Ala Phe Asp  
 260 265 270  
 Pro Arg Val Leu Trp Ala Leu Gly Gln Ala Gly Pro Lys Ile Ile Asn  
 275 280 285  
 Ala Ala Leu Cys Leu Arg Leu Met Lys Trp Gly Tyr Glu Arg Gly Leu  
 290 295 300  
 Val Arg Phe Gly Leu Leu Thr Gly Ile Lys Pro Leu Val  
 305 310 315

&lt;210&gt; 2230

&lt;211&gt; 843

&lt;212&gt; DNA

&lt;213&gt; Nostoc sp. PCC 7120

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(843)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2230

atg agt gca aca ctt tac caa caa att cag caa ttt tac gat gct tcc	48
Met Ser Ala Thr Leu Tyr Gln Gln Ile Gln Gln Phe Tyr Asp Ala Ser	
1 5 10 15	
tct ggg ctg tgg gaa gag att tgg ggc gaa cat atg cac cac ggc tat	96
Ser Gly Leu Trp Glu Glu Ile Trp Gly Glu His Met His His Gly Tyr	
20 25 30	
tat ggt gca gac ggt act gaa caa aaa aac cgc cgt cag gcg caa att	144
Tyr Gly Ala Asp Gly Thr Glu Gln Lys Asn Arg Arg Gln Ala Gln Ile	
35 40 45	
gat tta att gaa gaa tta ctc act tgg gca gga gta caa aca gca gaa	192
Asp Leu Ile Glu Glu Leu Leu Thr Trp Ala Gly Val Gln Thr Ala Glu	
50 55 60	
aat ata cta gat gtg ggt tgt ggt att ggt ggt agt tct ctg tat ttg	240
Asn Ile Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Leu Tyr Leu	
65 70 75 80	
gca gga aag ttg aat gct aaa gct aca gga att acc ctg agt cca gtg	288
Ala Gly Lys Leu Asn Ala Lys Ala Thr Gly Ile Thr Leu Ser Pro Val	
85 90 95	
caa gcc gct aga gcc aca gaa aga gcc aag gaa gct ggt tta agt ggt	336
Gln Ala Ala Arg Ala Thr Glu Arg Ala Lys Glu Ala Gly Leu Ser Gly	
100 105 110	
aga agt cag ttt tta gtg gca aat gcc caa gca atg cct ttt gat gat	384
Arg Ser Gln Phe Leu Val Ala Asn Ala Gln Ala Met Pro Phe Asp Asp	
115 120 125	
aat tct ttt gac ttg gtg tgg tcg cta gaa agt ggc gaa cat atg cca	432
Asn Ser Phe Asp Leu Val Trp Ser Leu Glu Ser Gly Glu His Met Pro	
130 135 140	
gat aaa acc aag ttt ttg caa gag tgt tat cga gtc ttg aaa ccg ggc	480
Asp Lys Thr Lys Phe Leu Gln Glu Cys Tyr Arg Val Leu Lys Pro Gly	
145 150 155 160	
ggt aag tta atc atg gtg aca tgg tgt cat cgt ccc act gat aaa aca	528
Gly Lys Leu Ile Met Val Thr Trp Cys His Arg Pro Thr Asp Lys Thr	
165 170 175	
cca ctg acg gct gat gaa aaa aaa cac cta gaa gat att tat cgg gtg	576
Pro Leu Thr Ala Asp Glu Lys Lys His Leu Glu Asp Ile Tyr Arg Val	

## PhoenixTemp32470.tmp.txt

			180				185				190								
tat	tgt	ttg	cct	tat	gta	att	tcg	ttg	ccg	gag	tat	gaa	gcg	atc	gca				
Tyr	Cys	Leu	Pro	Tyr	Val	Ile	Ser	Leu	Pro	Glu	Tyr	Glu	Ala	Ile	Ala				624
		195					200					205							
cgt	caa	cta	cca	tta	aat	aat	atc	cg	acc	gcc	gac	tg	tcg	caa	tcc				
Arg	Gln	Leu	Pro	Leu	Asn	Asn	Ile	Arg	Thr	Ala	Asp	Trp	Ser	Gln	Ser				672
	210					215					220								
gtc	gcc	caa	ttt	tg	aac	ata	gtc	atc	gat	tcc	gcc	ttt	acc	ccc	caa				
Val	Ala	Gln	Phe	Trp	Asn	Ile	Val	Ile	Asp	Ser	Ala	Phe	Thr	Pro	Gln				720
	225				230					235					240				
gca	ata	ttc	ggc	tta	ctc	cg	gca	gg	tg	act	acc	atc	caa	gga	gcc				
Ala	Ile	Phe	Gly	Leu	Leu	Arg	Ala	Gly	Trp	Thr	Thr	Ile	Gln	Gly	Ala				768
			245						250					255					
tta	tca	cta	ggc	tta	atg	cg	cg	gg	tat	gag	cg	gg	tta	att	cg				
Leu	Ser	Leu	Gly	Leu	Met	Arg	Arg	Gly	Tyr	Glu	Arg	Gly	Leu	Ile	Arg				816
			260					265					270						
ttt	ggg	ttg	ctt	tgt	ggg	gat	aag	tga											
Phe	Gly	Leu	Leu	Cys	Gly	Asp	Lys												843
		275					280												

&lt;210&gt; 2231

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Nostoc sp. PCC 7120

&lt;400&gt; 2231

Met	Ser	Ala	Thr	Leu	Tyr	Gln	Gln	Ile	Gln	Gln	Phe	Tyr	Asp	Ala	Ser				
1				5					10					15					
Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	Gly	Glu	His	Met	His	His	Gly	Tyr				
			20					25					30						
Tyr	Gly	Ala	Asp	Gly	Thr	Glu	Gln	Lys	Asn	Arg	Arg	Gln	Ala	Gln	Ile				
		35					40					45							
Asp	Leu	Ile	Glu	Glu	Leu	Leu	Thr	Trp	Ala	Gly	Val	Gln	Thr	Ala	Glu				
	50				55					60									
Asn	Ile	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Tyr	Leu				
65				70					75						80				
Ala	Gly	Lys	Leu	Asn	Ala	Lys	Ala	Thr	Gly	Ile	Thr	Leu	Ser	Pro	Val				
				85				90						95					
Gln	Ala	Ala	Arg	Ala	Thr	Glu	Arg	Ala	Lys	Glu	Ala	Gly	Leu	Ser	Gly				
			100					105					110						
Arg	Ser	Gln	Phe	Leu	Val	Ala	Asn	Ala	Gln	Ala	Met	Pro	Phe	Asp	Asp				
		115					120					125							
Asn	Ser	Phe	Asp	Leu	Val	Trp	Ser	Leu	Glu	Ser	Gly	Glu	His	Met	Pro				
	130				135					140									
Asp	Lys	Thr	Lys	Phe	Leu	Gln	Glu	Cys	Tyr	Arg	Val	Leu	Lys	Pro	Gly				
145				150					155					160					
Gly	Lys	Leu	Ile	Met	Val	Thr	Trp	Cys	His	Arg	Pro	Thr	Asp	Lys	Thr				
			165					170						175					
Pro	Leu	Thr	Ala	Asp	Glu	Lys	Lys	His	Leu	Glu	Asp	Ile	Tyr	Arg	Val				
			180					185					190						
Tyr	Cys	Leu	Pro	Tyr	Val	Ile	Ser	Leu	Pro	Glu	Tyr	Glu	Ala	Ile	Ala				
		195					200					205							
Arg	Gln	Leu	Pro	Leu	Asn	Asn	Ile	Arg	Thr	Ala	Asp	Trp	Ser	Gln	Ser				
	210				215						220								
Val	Ala	Gln	Phe	Trp	Asn	Ile	Val	Ile	Asp	Ser	Ala	Phe	Thr	Pro	Gln				
225					230				235					240					
Ala	Ile	Phe	Gly	Leu	Leu	Arg	Ala	Gly	Trp	Thr	Thr	Ile	Gln	Gly	Ala				
			245					250					255						
Leu	Ser	Leu	Gly	Leu	Met	Arg	Arg	Gly	Tyr	Glu	Arg	Gly	Leu	Ile	Arg				
			260					265					270						
Phe	Gly	Leu	Leu	Cys	Gly	Asp	Lys												
		275					280												

&lt;210&gt; 2232

&lt;211&gt; 993

&lt;212&gt; DNA

&lt;213&gt; Nostoc sp. PCC 7120

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(993)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2232

atg	agt	tgg	ttg	ttt	tct	aca	ctg	gta	ttt	ttc	tta	acg	cta	ttg	aca	48
Met	Ser	Trp	Leu	Phe	Ser	Thr	Leu	Val	Phe	Phe	Leu	Thr	Leu	Leu	Thr	
1				5					10					15		
gca	ggg	atc	gcg	tta	tat	ctc	att	act	gct	aga	cgt	tat	caa	tca	tct	96
Ala	Gly	Ile	Ala	Leu	Tyr	Leu	Ile	Thr	Ala	Arg	Arg	Tyr	Gln	Ser	Ser	
			20					25					30			
aac	tcc	gta	gcc	aat	tcc	tac	gac	cag	tgg	act	gaa	gac	ggt	att	tta	144
Asn	Ser	Val	Ala	Asn	Ser	Tyr	Asp	Gln	Trp	Thr	Glu	Asp	Gly	Ile	Leu	
			35				40					45				
gag	ttt	tac	tgg	ggc	gaa	cat	atc	cat	tta	ggt	cat	tat	ggt	tcg	cca	192
Glu	Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Ser	Pro	
	50					55			60							
cct	caa	aga	aag	gat	ttt	ctg	gtg	gct	aaa	tct	gat	ttt	gtc	cat	gaa	240
Pro	Gln	Arg	Lys	Asp	Phe	Leu	Val	Ala	Lys	Ser	Asp	Phe	Val	His	Glu	
	65				70				75						80	
atg	gtg	cgt	tgg	ggt	ggt	ttg	gat	aaa	cta	ccc	cct	ggt	act	acc	ttg	288
Met	Val	Arg	Trp	Gly	Gly	Leu	Asp	Lys	Leu	Pro	Pro	Gly	Thr	Thr	Leu	
				85					90					95		
tta	gat	gtt	ggt	tgt	gga	att	ggg	ggt	agt	cgc	att	ttg	gca	cgg		336
Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Arg	
			100				105					110				
gat	tat	gga	ttt	gcc	gtt	aca	ggt	atc	acc	atc	agc	ccc	caa	caa	gtc	384
Asp	Tyr	Gly	Phe	Ala	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Gln	Gln	Val	
		115				120						125				
caa	cgc	gct	caa	gag	tta	aca	cca	cag	gaa	ctg	aat	gca	cag	ttt	ttg	432
Gln	Arg	Ala	Gln	Glu	Leu	Thr	Pro	Gln	Glu	Leu	Asn	Ala	Gln	Phe	Leu	
	130					135					140					
gtg	gat	gat	gca	atg	gcg	ctt	tcc	ttc	cca	gat	aat	agt	ttt	gat	gta	480
Val	Asp	Asp	Ala	Met	Ala	Leu	Ser	Phe	Pro	Asp	Asn	Ser	Phe	Asp	Val	
	145				150					155				160		
gtt	tgg	tca	att	gaa	gct	ggc	cca	cat	atg	cca	gat	aaa	gcc	att	ttt	528
Val	Trp	Ser	Ile	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Ala	Ile	Phe	
				165					170					175		
gcc	aaa	gaa	ttg	atg	cgg	gta	cta	aag	cct	ggt	gga	atc	atg	gtt	tta	576
Ala	Lys	Glu	Leu	Met	Arg	Val	Leu	Lys	Pro	Gly	Gly	Ile	Met	Val	Leu	
			180					185					190			
gcc	gac	tgg	aat	cag	cga	gac	gat	cgc	caa	aaa	ccc	ctc	aat	ttt	tgg	624
Ala	Asp	Trp	Asn	Gln	Arg	Asp	Asp	Arg	Gln	Lys	Pro	Leu	Asn	Phe	Trp	
		195				200						205				
gag	aaa	cca	gta	atg	cag	caa	cta	cta	gat	cag	tgg	tct	cat	cca	gct	672
Glu	Lys	Pro	Val	Met	Gln	Gln	Leu	Leu	Asp	Gln	Trp	Ser	His	Pro	Ala	
	210				215						220					
ttt	tcc	agc	atc	gaa	ggc	ttt	tct	gag	ctt	ttg	gca	gcg	acg	gga	tta	720
Phe	Ser	Ser	Ile	Glu	Gly	Phe	Ser	Glu	Leu	Leu	Ala	Ala	Thr	Gly	Leu	
				230				235						240		
gta	gaa	ggg	gag	gta	atc	acc	gca	gac	tgg	acg	aaa	caa	aca	ctc	ccc	768
Val	Glu	Gly	Glu	Val	Ile	Thr	Ala	Asp	Trp	Thr	Lys	Gln	Thr	Leu	Pro	
				245					250					255		
tct	tgg	ctt	gat	tct	atc	tgg	caa	gga	ata	gtt	aga	cca	gaa	gga	tta	816
Ser	Trp	Leu	Asp	Ser	Ile	Trp	Gln	Gly	Ile	Val	Arg	Pro	Glu	Gly	Leu	
			260					265					270			
gtg	cgt	ttt	ggt	cta	tct	ggt	ttc	att	aaa	tct	ctg	cga	gaa	gtg	cct	864
Val	Arg	Phe	Gly	Leu	Ser	Gly	Phe	Ile	Lys	Ser	Leu	Arg	Glu	Val	Pro	
		275				280						285				
acc	cta	cta	ctg	atg	agg	ctg	gca	ttc	ggt	aca	gga	ctc	tgt	aga	ttt	912
Thr	Leu	Leu	Leu	Met	Arg	Leu	Ala	Phe	Gly	Thr	Gly	Leu	Cys	Arg	Phe	
	290					295					300					
ggg	atg	ttc	cgc	gct	tta	cga	gct	gac	act	gta	aga	tca	tca	gca	gaa	960
Gly	Met	Phe	Arg	Ala	Leu	Arg	Ala	Asp	Thr	Val	Arg	Ser	Ser	Ala	Glu	
				310						315					320	
cag	aca	tct	gcg	atc	aag	gtt	gct	caa	aag	taa						993
Gln	Thr	Ser	Ala	Ile	Lys	Val	Ala	Gln	Lys							
				325					330							



<210> 2233  
 <211> 330  
 <212> PRT  
 <213> Nostoc sp. PCC 7120

<400> 2233  
 Met Ser Trp Leu Phe Ser Thr Leu Val Phe Phe Leu Thr Leu Leu Thr  
 1 5 10 15  
 Ala Gly Ile Ala Leu Tyr Leu Ile Thr Ala Arg Arg Tyr Gln Ser Ser  
 20 25 30  
 Asn Ser Val Ala Asn Ser Tyr Asp Gln Trp Thr Glu Asp Gly Ile Leu  
 35 40 45  
 Glu Phe Tyr Trp Gly Glu His Ile His Leu Gly His Tyr Gly Ser Pro  
 50 55 60  
 Pro Gln Arg Lys Asp Phe Leu Val Ala Lys Ser Asp Phe Val His Glu  
 65 70 75 80  
 Met Val Arg Trp Gly Gly Leu Asp Lys Leu Pro Pro Gly Thr Thr Leu  
 85 90 95  
 Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Arg  
 100 105 110  
 Asp Tyr Gly Phe Ala Val Thr Gly Ile Thr Ile Ser Pro Gln Gln Val  
 115 120 125  
 Gln Arg Ala Gln Glu Leu Thr Pro Gln Glu Leu Asn Ala Gln Phe Leu  
 130 135 140  
 Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Asn Ser Phe Asp Val  
 145 150 155 160  
 Val Trp Ser Ile Glu Ala Gly Pro His Met Pro Asp Lys Ala Ile Phe  
 165 170 175  
 Ala Lys Glu Leu Met Arg Val Leu Lys Pro Gly Gly Ile Met Val Leu  
 180 185 190  
 Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Lys Pro Leu Asn Phe Trp  
 195 200 205  
 Glu Lys Pro Val Met Gln Gln Leu Leu Asp Gln Trp Ser His Pro Ala  
 210 215 220  
 Phe Ser Ser Ile Glu Gly Phe Ser Glu Leu Leu Ala Ala Thr Gly Leu  
 225 230 235 240  
 Val Glu Gly Glu Val Ile Thr Ala Asp Trp Thr Lys Gln Thr Leu Pro  
 245 250 255  
 Ser Trp Leu Asp Ser Ile Trp Gln Gly Ile Val Arg Pro Glu Gly Leu  
 260 265 270  
 Val Arg Phe Gly Leu Ser Gly Phe Ile Lys Ser Leu Arg Glu Val Pro  
 275 280 285  
 Thr Leu Leu Leu Met Arg Leu Ala Phe Gly Thr Gly Leu Cys Arg Phe  
 290 295 300  
 Gly Met Phe Arg Ala Leu Arg Ala Asp Thr Val Arg Ser Ser Ala Glu  
 305 310 315 320  
 Gln Thr Ser Ala Ile Lys Val Ala Gln Lys  
 325 330

<210> 2234  
 <211> 987  
 <212> DNA  
 <213> Thermosynechococcus elongatus BP-1

<220>  
 <221> CDS  
 <222> (1)..(987)  
 <223> transl\_table=11

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 1 5 10 15  
 ctg ctg ggc tta gcg ctt tac ctg ttg ttc ccc cgc aag tac gag tct 96  
 Leu Leu Gly Leu Ala Leu Tyr Leu Leu Phe Pro Arg Lys Tyr Glu Ser 20 25 30  
 gcc cgt tcc gtg gcc gag tcc tat gac aac tgg acc aag gac ggc att 144  
 Ala Arg Ser Val Ala Glu Ser Tyr Asp Asn Trp Thr Lys Asp Gly Ile 35 40 45

## PhoenixTemp32470.tmp.txt

cta	gaa	ttt	tac	tgg	ggt	gag	cat	att	cac	ctt	ggc	cac	tat	ggt	ttg	192
Leu	Glu	Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Leu	
	50					55				60						
cct	cct	cgt	ccc	aag	gac	ttt	cgc	caa	gcg	aag	gta	gat	ttt	ggt	cat	240
Pro	Pro	Arg	Pro	Lys	Asp	Phe	Arg	Gln	Ala	Lys	Val	Asp	Phe	Val	His	
65				70				75							80	
gaa	atg	gtg	cgt	tgg	gcc	ggt	ctc	gat	cgc	ctg	ccg	ccg	ggg	aca	acc	288
Glu	Met	Val	Arg	Trp	Ala	Gly	Leu	Asp	Arg	Leu	Pro	Pro	Gly	Thr	Thr	
				85				90						95		
gtc	ttg	gat	gtc	ggc	tgt	ggt	att	ggc	ggg	agc	agt	cgt	atc	ctg	gcc	336
Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	
			100					105					110			
cgt	gac	tat	ggc	ttt	cat	gtg	act	ggg	att	acg	att	agc	cct	gag	cag	384
Arg	Asp	Tyr	Gly	Phe	His	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Glu	Gln	
		115					120					125				
gta	cgc	cgg	gcg	cga	gaa	ctc	act	cct	gcg	gag	ctg	aat	ggt	cgc	ttt	432
Val	Arg	Arg	Ala	Arg	Glu	Leu	Thr	Pro	Ala	Glu	Leu	Asn	Val	Arg	Phe	
	130					135					140					
cag	ctc	gat	gac	gcg	cta	gcc	ttg	tca	ttt	cca	gat	gcc	agc	ttt	gac	480
Gln	Leu	Asp	Asp	Ala	Leu	Ala	Leu	Ser	Phe	Pro	Asp	Ala	Ser	Phe	Asp	
145					150					155					160	
gta	gtt	tgg	tca	att	gaa	gcc	ggc	ccc	cac	atg	ccc	gat	aaa	cag	cag	528
Val	Val	Trp	Ser	Ile	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Gln	Gln	
				165					170					175		
ttc	gct	aaa	gaa	tta	ctc	cgt	gtc	ctg	aag	cct	ggg	gga	att	ctg	gtg	576
Phe	Ala	Lys	Glu	Leu	Leu	Arg	Val	Leu	Lys	Pro	Gly	Gly	Ile	Leu	Val	
			180					185					190			
gtt	gct	gat	tgg	aac	cag	cgg	gac	gat	cgc	cag	cag	ccc	ttg	aac	ttc	624
Val	Ala	Asp	Trp	Asn	Gln	Arg	Asp	Asp	Arg	Gln	Gln	Pro	Leu	Asn	Phe	
		195					200					205				
tgg	gag	cgg	ctg	atc	atg	cgg	cag	ctc	ttg	gat	caa	tgg	gca	cac	ccc	672
Trp	Glu	Arg	Leu	Ile	Met	Arg	Gln	Leu	Leu	Asp	Gln	Trp	Ala	His	Pro	
	210					215					220					
gcc	ttt	gcc	agc	att	gaa	ggc	ttt	gcc	gag	gcc	ctt	gca	gca	acg	ggt	720
Ala	Phe	Ala	Ser	Ile	Glu	Gly	Phe	Ala	Glu	Ala	Leu	Ala	Ala	Thr	Gly	
225					230				235						240	
tta	gtg	gct	gga	gag	gtc	atg	act	gct	gac	tgg	acc	cag	gaa	acg	ctc	768
Leu	Val	Ala	Gly	Glu	Val	Met	Thr	Ala	Asp	Trp	Thr	Gln	Glu	Thr	Leu	
				245					250					255		
ccc	tca	tgg	cta	gat	tcg	att	tgg	cag	gga	att	gtg	cgg	cca	gag	ggg	816
Pro	Ser	Trp	Leu	Asp	Ser	Ile	Trp	Gln	Gly	Ile	Val	Arg	Pro	Glu	Gly	
			260					265					270			
cta	att	cgc	ttt	ggc	cta	ccg	ggg	ctc	gtg	aaa	tcc	ttg	cgg	gaa	gtt	864
Leu	Ile	Arg	Phe	Gly	Leu	Pro	Gly	Leu	Val	Lys	Ser	Leu	Arg	Glu	Val	
		275					280					285				
ccc	aca	ttc	ctg	ctg	atg	cgg	att	gcc	ttt	ggt	atg	gga	ctc	tgc	cgc	912
Pro	Thr	Phe	Leu	Leu	Met	Arg	Ile	Ala	Phe	Gly	Met	Gly	Leu	Cys	Arg	
	290					295					300					
ttt	ggt	atg	ttt	cgc	gct	gtg	cga	gcg	gag	att	ccc	gct	gtc	tcc	ctt	960
Phe	Gly	Met	Phe	Arg	Ala	Val	Arg	Ala	Glu	Ile	Pro	Ala	Val	Ser	Leu	
305					310					315					320	
gag	ccc	gcc	cct	caa	gtg	aac	tgc	tga								987
Glu	Pro	Ala	Pro	Gln	Val	Asn	Cys									
				325												

&lt;210&gt; 2235

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Thermosynechococcus elongatus BP-1

&lt;400&gt; 2235

Met	Ser	His	Leu	Gly	Leu	Ile	Leu	Val	Ile	Thr	Val	Val	Ala	Leu	Val	
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Leu	Leu	Gly	Leu	Ala	Leu	Tyr	Leu	Leu	Phe	Pro	Arg	Lys	Tyr	Glu	Ser	
			20					25					30			
Ala	Arg	Ser	Val	Ala	Glu	Ser	Tyr	Asp	Asn	Trp	Thr	Lys	Asp	Gly	Ile	
		35					40					45				
Leu	Glu	Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Leu	
	50					55					60					

## PhoenixTemp32470.tmp.txt

Pro 65 Pro Arg Pro Lys 70 Asp 75 Phe Arg Gln Ala Lys 75 Val Asp Phe Val His 80  
 Glu Met Val Arg Trp 85 Ala Gly Leu Asp Arg 90 Leu Pro Pro Gly Thr Thr 95  
 Val Leu Asp Val Gly Cys Gly Ile Gly 105 Gly Ser Ser Arg Ile Leu Ala 110  
 Arg Asp Tyr 115 Gly Phe His Val Thr 120 Gly Ile Thr Ile Ser 125 Pro Glu Gln  
 Val Arg Arg Ala Arg Glu Leu 135 Thr Pro Ala Glu Leu Asn Val Arg Phe 140  
 Gln Leu Asp Asp Ala Leu 150 Ala Leu Ser Phe Pro 155 Asp Ala Ser Phe Asp 160  
 Val Val Trp Ser Ile 165 Glu Ala Gly Pro His 170 Met Pro Asp Lys Gln Gln 175  
 Phe Ala Lys Glu Leu Leu Arg Val Leu 185 Lys Pro Gly Gly Ile Leu Val 190  
 Val Ala Asp Trp Asn Gln Arg Asp 200 Asp Arg Gln Gln Pro 205 Leu Asn Phe  
 Trp Glu Arg Leu Ile Met Arg 215 Gln Leu Leu Asp Gln Trp Ala His Pro 220  
 Ala Phe Ala Ser Ile Glu 230 Gly Phe Ala Glu Ala Leu Ala Ala Thr Gly 240  
 Leu Val Ala Gly Glu Val Met Thr Ala Asp 250 Trp Thr Gln Glu Thr Leu 255  
 Pro Ser Trp Leu 260 Asp Ser Ile Trp Gln 265 Gly Ile Val Arg Pro Glu Gly  
 Leu Ile Arg Phe Gly Leu Pro Gly 280 Leu Val Lys Ser Leu Arg Glu Val 285  
 Pro Thr Phe Leu Leu Met Arg 295 Ile Ala Phe Gly Met 300 Gly Leu Cys Arg  
 Phe Gly Met Phe Arg Ala 310 Val Arg Ala Glu Ile Pro Ala Val Ser Leu 320  
 Glu Pro Ala Pro Gln Val Asn Cys 325

&lt;210&gt; 2236

&lt;211&gt; 930

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus subsp. marinus str. CCMP1375

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(930)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2236

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Met	Ile	Ala	Phe	Leu	Leu	Pro	Ile	Val	Ser	Leu	Leu	Val	Leu	Ser	Leu	
1				5					10				15			
ata	ttt	tta	tgg	cta	ttt	aat	gac	aga	aag	tat	aaa	tct	tct	gaa	agt	96
Ile	Phe	Leu	Trp	Leu	Phe	Asn	Asp	Arg	Lys	Tyr	Lys	Ser	Ser	Glu	Ser	
			20					25					30			
gtt	tct	tca	gca	tat	gat	tca	tgg	act	aat	gat	cgc	ttg	cta	gaa	aaa	144
Val	Ser	Ser	Ala	Tyr	Asp	Ser	Trp	Thr	Asn	Asp	Arg	Leu	Leu	Glu	Lys	
			35				40					45				
ttg	tgg	ggt	gaa	cat	att	cat	ctt	ggt	tat	tat	gaa	aat	tct	tat	aaa	192
Leu	Trp	Gly	Glu	His	Ile	His	Leu	Gly	Tyr	Tyr	Glu	Asn	Ser	Tyr	Lys	
			50			55					60					
acg	aag	gat	ttt	cga	cag	gca	aag	ata	gat	ttt	ggt	cat	aag	tta	gct	240
Thr	Lys	Asp	Phe	Arg	Gln	Ala	Lys	Ile	Asp	Phe	Val	His	Lys	Leu	Ala	
						70				75					80	
cat	tgg	agt	ggg	ctt	tcc	act	ctt	cct	aaa	ggt	tct	cgt	att	att	gat	288
His	Trp	Ser	Gly	Leu	Ser	Thr	Leu	Pro	Lys	Gly	Ser	Arg	Ile	Ile	Asp	
				85					90					95		
att	ggt	tgt	ggt	att	gga	gga	agt	tcc	agg	att	tta	gct	aaa	gac	tac	336
Ile	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Lys	Asp	Tyr	
			100					105					110			
gga	ttt	gat	ggt	ggt	ata	aca	att	agt	tcc	gaa	caa	gta	aaa	aga		384
Gly	Phe	Asp	Val	Val	Gly	Ile	Thr	Ile	Ser	Ser	Glu	Gln	Val	Lys	Arg	

## PhoenixTemp32470.tmp.txt

gca	aat	115	taa	act	cca	aaa	120	gag	ctc	aaa	125	gaa	atc	atg	432
Ala	Asn	Gln	Leu	Thr	Pro	Lys	Glu	Leu	Lys	Cys	His	Phe	Glu	Ile	Met
aat	gca	130	ctt	aat	ttg	aaa	135	ttc	gaa	gat	gga	agt	ttc	gat	ggg
Asn	Ala	Leu	Asn	Leu	Lys	Phe	Glu	Asp	Gly	Ser	Phe	Asp	Gly	Val	Trp
145	agt	ggt	gaa	gca	ggg	cat	att	tta	aat	aaa	caa	tta	ttt	gct	gat
Ser	Val	Glu	Ala	Gly	Pro	His	Ile	Leu	Asn	Lys	Gln	Leu	Phe	Ala	Asp
gaa	atg	ctt	aga	gta	tta	cgt	cca	ggg	ggg	ggt	ttg	gct	ggt	gct	gat
Glu	Met	Leu	Arg	Val	Leu	Arg	Pro	Gly	Gly	Val	Leu	Ala	Val	Ala	Asp
ttg	aat	aga	aga	gat	tat	gcg	aaa	aaa	gaa	att	gga	ttt	tta	aat	agt
Trp	Asn	Arg	Arg	Asp	Tyr	Ala	Lys	Lys	Glu	Ile	Gly	Phe	Leu	Asn	Ser
tta	ggt	ctt	aaa	cag	tta	tta	aat	caa	tg	tct	cac	cca	gac	ttt	gca
Leu	Val	Leu	Lys	Gln	Leu	Leu	Asn	Gln	Trp	Ser	His	Pro	Asp	Phe	Ala
210	act	att	tat	ggt	ttt	aga	aat	aat	cta	tca	gat	agt	att	tac	tct
Thr	Ile	Tyr	Gly	Phe	Arg	Asn	Asn	Leu	Ser	Asp	Ser	Ile	Tyr	Ser	Ala
225	ggc	aga	gtc	gaa	act	gat	gac	tg	aca	aaa	tat	acg	ata	cct	tct
Gly	Arg	Val	Glu	Thr	Asp	Asp	Trp	Thr	Lys	Tyr	Thr	Ile	Pro	Ser	Trp
aat	gat	tca	att	att	gaa	ggg	att	cga	agg	cca	aat	ggt	ttt	ttt	gac
Asn	Asp	Ser	Ile	Ile	Glu	Gly	Ile	Arg	Arg	Pro	Asn	Val	Phe	Phe	Asp
ttg	ggg	tta	gga	tct	ttt	ttt	aaa	gca	att	aga	gaa	gtg	cct	aca	att
Leu	Gly	Leu	Gly	Ser	Phe	Phe	Lys	Ala	Ile	Arg	Glu	Val	Pro	Thr	Ile
gta	tta	atg	cga	tg	gcc	ttt	cat	act	ggc	ctt	atg	caa	ttt	gga	ggt
Val	Leu	Met	Arg	Trp	Ala	Phe	His	Thr	Gly	Leu	Met	Gln	Phe	Gly	Val
290	ttt	cgc	tct	aga	gga	taa					300				
Phe	Arg	Ser	Arg	Gly											
305															

&lt;210&gt; 2237

&lt;211&gt; 309

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus subsp. marinus str. CCMP1375

&lt;400&gt; 2237

Met	Ile	Ala	Phe	Leu	Leu	Pro	Ile	Val	Ser	Leu	Leu	Val	Leu	Ser	Leu
1				5					10					15	
Ile	Phe	Leu	Trp	Leu	Phe	Asn	Asp	Arg	Lys	Tyr	Lys	Ser	Ser	Glu	Ser
val	Ser	Ser	Ala	Tyr	Asp	Ser	Trp	Thr	Asn	Asp	Arg	Leu	Leu	Glu	Lys
Leu	Trp	Gly	Glu	His	Ile	His	Leu	Gly	Tyr	Tyr	Glu	Asn	Ser	Tyr	Lys
Thr	Lys	Asp	Phe	Arg	Gln	Ala	Lys	Ile	Asp	Phe	Val	His	Lys	Leu	Ala
65	His	Trp	Ser	Gly	Leu	Ser	Thr	Leu	Pro	Lys	Gly	Ser	Arg	Ile	Asp
Ile	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Lys	Asp	Tyr
Gly	Phe	Asp	Val	Val	Gly	Ile	Thr	Ile	Ser	Ser	Glu	Gln	Val	Lys	Arg
Ala	Asn	Gln	Leu	Thr	Pro	Lys	Glu	Leu	Lys	Cys	His	Phe	Glu	Ile	Met
130	Asn	Ala	Leu	Asn	Leu	Lys	Phe	Glu	Asp	Gly	Ser	Phe	Asp	Gly	Val
145	Ser	Val	Glu	Ala	Gly	Pro	His	Ile	Leu	Asn	Lys	Gln	Leu	Phe	Ala
Glu	Met	Leu	Arg	Val	Leu	Arg	Pro	Gly	Gly	Val	Leu	Ala	Val	Ala	Asp
Trp	Asn	Arg	Arg	Asp	Tyr	Ala	Lys	Lys	Glu	Ile	Gly	Phe	Leu	Asn	Ser

## PhoenixTemp32470.tmp.txt

195  
 Leu Val Leu Lys Gln Leu Leu 200 Asn Gln Trp Ser His 205 Pro Asp Phe Ala  
 210 215  
 Thr Ile Tyr Gly Phe Arg Asn Asn Leu Ser Asp Ser Ile Tyr Ser Ala  
 225 230 235 240  
 Gly Arg Val Glu Thr Asp Asp Trp Thr Lys Tyr Thr Ile Pro Ser Trp  
 245 250 255  
 Asn Asp Ser Ile Glu Gly Ile Arg Arg Pro Asn Val Phe Phe Asp  
 260 265 270  
 Leu Gly Leu Gly Ser Phe Phe Lys Ala Ile Arg Glu Val Pro Thr Ile  
 275 280 285  
 Val Leu Met Arg Trp Ala Phe His Thr Gly Leu Met Gln Phe Gly Val  
 290 300  
 Phe Arg Ser Arg Gly  
 305

&lt;210&gt; 2238

&lt;211&gt; 915

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus str. MIT 9313

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(915)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2238

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caa cgg gat cga cga tac aaa tca agc gcc agt gtt gcc tct gct tac	96
Gln Arg Asp Arg Arg Tyr Lys Ser Ser Ala Ser Val Ala Ser Ala Tyr	
20 25 30	
gat gcc tgg acc aat gac cag ctg ctc gag cgg ctc tgg ggt gaa cac	144
Asp Ala Trp Thr Asn Asp Gln Leu Leu Glu Arg Leu Trp Gly Glu His	
35 40 45	
gtc cac ctc ggc tat tac ggc aaa cct cct agc acc aga gat ttc cga	192
Val His Leu Gly Tyr Tyr Gly Lys Pro Pro Ser Thr Arg Asp Phe Arg	
50 55 60	
gcc gca aag caa gac ttc gta cat gag ctc gtt caa tgg agt gga ctg	240
Ala Ala Lys Gln Asp Phe Val His Glu Leu Val Gln Trp Ser Gly Leu	
65 70 75 80	
gcc caa ctc cct cga ggc tcc cga gta ctt gac gtg ggc tgc ggt att	288
Ala Gln Leu Pro Arg Gly Ser Arg Val Leu Asp Val Gly Cys Gly Ile	
85 90 95	
ggt ggt agc gca aga atc ctg gcc cgg gat tac aac ttt gac gtg ctt	336
Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr Asn Phe Asp Val Leu	
100 105 110	
ggc atc acc atc agt cca gcc cag gtg aaa cga gcg tct caa ctc act	384
Gly Ile Thr Ile Ser Pro Ala Gln Val Lys Arg Ala Ser Gln Leu Thr	
115 120 125	
cct gag ggg atg acc tgc caa ttc cag gtg atg gat gcc ctc gat tta	432
Pro Glu Gly Met Thr Cys Gln Phe Gln Val Met Asp Ala Leu Asp Leu	
130 135 140	
aaa ctg gcc aac ggt agc ttc gac gct gtt tgg agt gtg gaa gca ggc	480
Lys Leu Ala Asn Gly Ser Phe Asp Ala Val Trp Ser Val Glu Ala Gly	
145 150 155 160	
ccc cac atg cca gac aag cag cgc tat gca gat gaa ctg ctg cgt gtg	528
Pro His Met Pro Asp Lys Gln Arg Tyr Ala Asp Glu Leu Leu Arg Val	
165 170 175	
ctg agg cca aaa ggt gta ctt gcg gtg gcc gat tgg aac cgc cgt gat	576
Leu Arg Pro Lys Gly Val Leu Ala Val Ala Asp Trp Asn Arg Arg Asp	
180 185 190	
tac gaa gat ggg gag atg acc agc ctt gag cga tgg gtg atg cgt cag	624
Tyr Glu Asp Gly Glu Met Thr Ser Leu Glu Arg Trp Val Met Arg Gln	
195 200 205	
cta ctc gac cag tgg gcc cat ccg gaa ttc gcc agc att aaa gga ttc	672
Leu Leu Asp Gln Trp Ala His Pro Glu Phe Ala Ser Ile Lys Gly Phe	
210 215 220	

## PhoenixTemp32470.tmp.txt

cgc	cgc	aat	ttg	ctt	cat	agc	cct	ttt	gct	tgc	ggc	act	gtc	gaa	tct	720
Arg	Arg	Asn	Leu	Leu	His	Ser	Pro	Phe	Ala	Cys	Gly	Thr	Val	Glu	Ser	
225					230					235					240	
gac	gac	tgg	aca	aga	tcc	atc	ctg	ccc	tcc	tgg	aat	gat	tcg	att	ttg	768
Asp	Asp	Trp	Thr	Arg	Ser	Ile	Leu	Pro	Ser	Trp	Asn	Asp	Ser	Ile	Leu	
				245					250					255		
gag	ggg	ttt	cgt	cgt	cct	gga	gcc	gtg	ctc	ggg	ttg	ggt	cca	gcc	gcc	816
Glu	Gly	Phe	Arg	Arg	Pro	Gly	Ala	Val	Leu	Gly	Leu	Gly	Pro	Ala	Ala	
				260				265					270			
ttg	gtc	aag	gga	ttc	aga	gaa	ata	cca	acg	att	ttg	ttg	atg	cgc	tgg	864
Leu	Val	Lys	Gly	Phe	Arg	Glu	Ile	Pro	Thr	Ile	Leu	Leu	Met	Arg	Trp	
		275					280					285				
gct	ttt	gcc	cac	ggg	ctg	atg	caa	ttc	ggg	gtc	ttc	cgc	agc	cgc	gac	912
Ala	Phe	Ala	His	Gly	Leu	Met	Gln	Phe	Gly	Val	Phe	Arg	Ser	Arg	Asp	
	290					295					300					
tga																915

<210> 2239  
 <211> 304  
 <212> PRT  
 <213> *Prochlorococcus marinus* str. MIT 9313

<400> 2239  
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 Gln Arg Asp Arg Tyr Lys Ser Ser Ala Ser Val Ala Ser Ala Tyr  
 20 25 30  
 Asp Ala Trp Thr Asn Asp Gln Leu Glu Arg Leu Trp Gly Glu His  
 35 40 45  
 Val His Leu Gly Tyr Tyr Gly Lys Pro Pro Ser Thr Arg Asp Phe Arg  
 50 55 60  
 Ala Ala Lys Gln Asp Phe Val His Glu Leu Val Gln Trp Ser Gly Leu  
 65 70 75 80  
 Ala Gln Leu Pro Arg Gly Ser Arg Val Leu Asp Val Gly Cys Gly Ile  
 85 90 95  
 Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr Asn Phe Asp Val Leu  
 100 105 110  
 Gly Ile Thr Ile Ser Pro Ala Gln Val Lys Arg Ala Ser Gln Leu Thr  
 115 120 125  
 Pro Glu Gly Met Thr Cys Gln Phe Gln Val Met Asp Ala Leu Asp Leu  
 130 135 140  
 Lys Leu Ala Asn Gly Ser Phe Asp Ala Val Trp Ser Val Glu Ala Gly  
 145 150 155 160  
 Pro His Met Pro Asp Lys Gln Arg Tyr Ala Asp Glu Leu Leu Arg Val  
 165 170 175  
 Leu Arg Pro Lys Gly Val Leu Ala Val Ala Asp Trp Asn Arg Arg Asp  
 180 185 190  
 Tyr Glu Asp Gly Glu Met Thr Ser Leu Glu Arg Trp Val Met Arg Gln  
 195 200 205  
 Leu Leu Asp Gln Trp Ala His Pro Glu Phe Ala Ser Ile Lys Gly Phe  
 210 215 220  
 Arg Arg Asn Leu Leu His Ser Pro Phe Ala Cys Gly Thr Val Glu Ser  
 225 230 235 240  
 Asp Asp Trp Thr Arg Ser Ile Leu Pro Ser Trp Asn Asp Ser Ile Leu  
 245 250 255  
 Glu Gly Phe Arg Pro Gly Ala Val Leu Gly Leu Gly Pro Ala Ala  
 260 265 270  
 Leu Val Lys Gly Phe Arg Glu Ile Pro Thr Ile Leu Leu Met Arg Trp  
 275 280 285  
 Ala Phe Ala His Gly Leu Met Gln Phe Gly Val Phe Arg Ser Arg Asp  
 290 295 300

<210> 2240  
 <211> 930  
 <212> DNA  
 <213> *Synechococcus* sp. WH 8102

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(930)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2240

atg	ttg	gct	ggc	ctg	ctt	ctc	ctg	acc	ggg	gct	gcc	ggt	gcc	acg	gcc	48
Met	Leu	Ala	Gly	Leu	Leu	Leu	Leu	Thr	Gly	Ala	Ala	Gly	Ala	Thr	Ala	
1				5					10					15		
ctg	ctg	atc	tgg	ttg	cag	cgt	gat	cgc	cgc	tac	cac	tcc	tca	gac	agc	96
Leu	Leu	Ile	Trp	Leu	Gln	Arg	Asp	Arg	Arg	Tyr	His	Ser	Ser	Asp	Ser	
		20						25				30				
gtc	gcc	gcg	gcc	tac	gac	gcc	tgg	acc	gat	gac	caa	ctg	ctg	gaa	cgg	144
Val	Ala	Ala	Ala	Tyr	Asp	Ala	Trp	Thr	Asp	Asp	Gln	Leu	Leu	Glu	Arg	
		35					40					45				
ctc	tgg	gga	gac	cat	gtc	cac	ctg	ggg	cat	tac	gga	aac	ccg	cca	ggt	192
Leu	Trp	Gly	Asp	His	Val	His	Leu	Gly	His	Tyr	Gly	Asn	Pro	Pro	Gly	
	50					55					60					
tct	gtc	gac	ttc	cgc	cag	gcc	aag	gag	gct	ttt	gtg	cac	gag	ctg	gtg	240
Ser	Val	Asp	Phe	Arg	Gln	Ala	Lys	Glu	Ala	Phe	Val	His	Glu	Leu	Val	
	65				70					75					80	
cgc	tgg	agc	ggg	ctc	gac	caa	cta	cct	cga	ggc	agt	cgg	gtg	ttg	gat	288
Arg	Trp	Ser	Gly	Leu	Asp	Gln	Leu	Pro	Arg	Gly	Ser	Arg	Val	Leu	Asp	
				85					90				95			
gtg	ggt	tgc	ggc	atc	ggc	ggc	agt	gcc	cgg	atc	ctg	gcc	agg	gat	tac	336
Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala	Arg	Ile	Leu	Ala	Arg	Asp	Tyr	
			100					105					110			
ggc	ttg	gac	gtg	ctc	ggg	gtg	agc	atc	agc	cca	gcc	cag	atc	cgc	cgc	384
Gly	Leu	Asp	Val	Leu	Gly	Val	Ser	Ile	Ser	Pro	Ala	Gln	Ile	Arg	Arg	
		115					120					125				
gcc	aca	gaa	ctc	acc	ccc	gcc	ggc	ctc	agc	tgt	cgc	ttt	gaa	gtg	atg	432
Ala	Thr	Glu	Leu	Thr	Pro	Ala	Gly	Leu	Ser	Cys	Arg	Phe	Glu	Val	Met	
	130					135				140						
gac	gcc	ctt	aac	ctt	caa	ctt	ccc	gat	cgg	caa	ttc	gat	gcg	gtg	tgg	480
Asp	Ala	Leu	Asn	Leu	Gln	Leu	Pro	Asp	Arg	Gln	Phe	Asp	Ala	Val	Trp	
	145				150					155					160	
acg	gtg	gag	gcg	ggg	ccc	cac	atg	cca	gac	aag	cag	cgt	ttc	gct	gat	528
Thr	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Gln	Arg	Phe	Ala	Asp	
			165						170				175			
gag	ttg	ctg	cgg	gta	ctc	cgg	ccc	ggg	ggc	tgc	tta	gcc	gcc	gct	gat	576
Glu	Leu	Leu	Arg	Val	Leu	Arg	Pro	Gly	Gly	Cys	Leu	Ala	Ala	Ala	Asp	
			180					185					190			
tgg	aac	cgc	cgc	gcc	ccc	aag	gat	ggc	gcc	atg	aac	agc	acc	gaa	cgc	624
Trp	Asn	Arg	Arg	Ala	Pro	Lys	Asp	Gly	Ala	Met	Asn	Ser	Thr	Glu	Arg	
	195						200				205					
tgg	gtg	atg	cgg	cag	ttg	ttg	aat	caa	tgg	gcg	cat	ccg	gaa	ttc	gcc	672
Trp	Val	Met	Arg	Gln	Leu	Leu	Asn	Gln	Trp	Ala	His	Pro	Glu	Phe	Ala	
	210					215					220					
agc	atc	tcc	ggc	ttc	cgg	gcc	aac	ctc	gaa	gcc	agc	cct	cac	cag	cgg	720
Ser	Ile	Ser	Gly	Phe	Arg	Ala	Asn	Leu	Glu	Ala	Ser	Pro	His	Gln	Arg	
	225				230					235					240	
ggc	ctg	atc	agt	acc	ggc	gac	tgg	act	ctg	gcc	acc	ctt	ccc	tcc	tgg	768
Gly	Leu	Ile	Ser	Thr	Gly	Asp	Trp	Thr	Leu	Ala	Thr	Leu	Pro	Ser	Trp	
				245					250					255		
ttt	gat	tgc	atc	gcc	gaa	ggc	ctc	cgt	cgc	ccc	tgg	gct	gtc	ctg	ggc	816
Phe	Asp	Ser	Ile	Ala	Glu	Gly	Leu	Arg	Arg	Pro	Trp	Ala	Val	Leu	Gly	
			260					265					270			
ctt	ggt	ccc	aaa	gca	gtg	ctt	caa	ggc	ctg	cga	gag	acc	ccg	acg	ctg	864
Leu	Gly	Pro	Lys	Ala	Val	Leu	Gln	Gly	Leu	Arg	Glu	Thr	Pro	Thr	Leu	
		275					280					285				
ctg	ttg	atg	cat	tgg	gcc	ttt	gcc	aca	ggg	ttg	atg	cag	ttc	ggc	gtc	912
Leu	Leu	Met	His	Trp	Ala	Phe	Ala	Thr	Gly	Leu	Met	Gln	Phe	Gly	Val	
	290					295					300					
ttt	cgc	ctc	agc	cgc	tga											930
Phe	Arg	Leu	Ser	Arg												
																305

&lt;210&gt; 2241

&lt;211&gt; 309

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 8102

&lt;400&gt; 2241

```

Met Leu Ala Gly Leu Leu Leu Leu Thr Gly Ala Ala Gly Ala Thr Ala
1      5      10      15
Leu Leu Ile Trp Leu Gln Arg Asp Arg Tyr His Ser Ser Asp Ser
20      25      30
Val Ala Ala Ala Tyr Asp Ala Trp Thr Asp Asp Gln Leu Leu Glu Arg
35      40      45
Leu Trp Gly Asp His Val His Leu Gly His Tyr Gly Asn Pro Pro Gly
50      55      60
Ser Val Asp Phe Arg Gln Ala Lys Glu Ala Phe Val His Glu Leu Val
65      70      75      80
Arg Trp Ser Gly Leu Asp Gln Leu Pro Arg Gly Ser Arg Val Leu Asp
85      90      95
Val Gly Cys Gly Ile Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr
100     105     110
Gly Leu Asp Val Leu Gly Val Ser Ile Ser Pro Ala Gln Ile Arg Arg
115
Ala Thr Glu Leu Thr Pro Ala Gly Leu Ser Cys Arg Phe Glu Val Met
130     135     140
Asp Ala Leu Asn Leu Gln Leu Pro Asp Arg Gln Phe Asp Ala Val Trp
145     150     155     160
Thr Val Glu Ala Gly Pro His Met Pro Asp Lys Gln Arg Phe Ala Asp
165     170     175
Glu Leu Leu Arg Val Leu Arg Pro Gly Gly Cys Leu Ala Ala Ala Asp
180     185     190
Trp Asn Arg Arg Ala Pro Lys Asp Gly Ala Met Asn Ser Thr Glu Arg
195     200     205
Trp Val Met Arg Gln Leu Leu Asn Gln Trp Ala His Pro Glu Phe Ala
210     215     220
Ser Ile Ser Gly Phe Arg Ala Asn Leu Glu Ala Ser Pro His Gln Arg
225     230     235     240
Gly Leu Ile Ser Thr Gly Asp Trp Thr Leu Ala Thr Leu Pro Ser Trp
245     250     255
Phe Asp Ser Ile Ala Glu Gly Leu Arg Arg Pro Trp Ala Val Leu Gly
260     265     270
Leu Gly Pro Lys Ala Val Leu Gln Gly Leu Arg Glu Thr Pro Thr Leu
275     280     285
Leu Leu Met His Trp Ala Phe Ala Thr Gly Leu Met Gln Phe Gly Val
290     295     300
Phe Arg Leu Ser Arg
305

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&lt;210&gt; 2242

&lt;211&gt; 846

&lt;212&gt; DNA

&lt;213&gt; Gloeobacter violaceus PCC 7421

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(846)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2242

```

atg ggc gag cga acg gtt ctc aac gaa aat atc cgg cgg ttc tac gac      48
Met Gly Glu Arg Thr Val Leu Asn Glu Asn Ile Arg Arg Phe Tyr Asp
1      5      10      15
gcg tcc tcc ggg ttg tgg gag gag gtc tgg ggc gag cac atg cac cac      96
Ala Ser Ser Gly Leu Trp Glu Glu Val Trp Gly Glu His Met His His
20      25      30
ggc cac tgg gaa gtg ggg gaa gcg gac aaa gat cgc cgc gtc gcc cag      144
Gly His Trp Glu Val Gly Glu Ala Asp Lys Asp Arg Arg Val Ala Gln
35      40      45
gtg gat ttg gtc gtc agg ctc ctc gac tgg gcg ggg atc gac cgg gcc      192
Val Asp Leu Val Val Arg Leu Leu Asp Trp Ala Gly Ile Asp Arg Ala
50      55      60
gag tcg atc gtc gat gtc ggc tgc ggc atc ggc ggc agc agt ctg ttt      240

```



## PhoenixTemp32470.tmp.txt

Glu 65	Ser	Ile	Val	Asp	Val 70	Gly	Cys	Gly	Ile	Gly 75	Gly	Ser	Ser	Leu	Phe 80	
ctg	gcg	gag	cgc	ttc	ggc	gcc	cgg	gtg	gag	ggg	atc	acc	ctc	agc	ccc	288
Leu	Ala	Glu	Arg	Phe 85	Gly	Ala	Arg	Val	Glu 90	Gly	Ile	Thr	Leu	Ser 95	Pro	
gtg	cag	tgt	aag	cgc	gcc	gcc	gag	cgc	gcc	cgc	gag	cac	cat	ctg	gac	336
Val	Gln	Cys	Lys 100	Arg	Ala	Ala	Glu	Arg 105	Ala	Arg	Glu	His 110	His	Leu	Asp	
ggg	cgc	gcg	cac	ttt	cag	gtg	gcc	gac	gcc	cac	cgg	atg	ccc	ttc	gcc	384
Gly	Arg	Ala	His 115	Phe	Gln	Val	Ala 120	Asp	Ala	His	Arg	Met 125	Pro	Phe	Ala	
gac	ggc	cgg	ttc	gac	ctg	gtc	tgg	tcg	ctc	gaa	agc	ggt	gag	cac	atg	432
Asp	Gly 130	Arg	Phe	Asp	Leu	Val 135	Trp	Ser	Leu	Glu 140	Ser	Gly	Glu	His	Met	
gcc	gac	aag	gcc	caa	ttt	ttg	cgc	gaa	tgc	cac	cgg	gtg	ctc	agg	ccc	480
Ala	Asp	Lys	Ala	Gln 150	Phe	Leu	Arg	Glu	Cys 155	His	Arg	Val	Leu	Arg	Pro 160	
ggc	ggc	cgc	ttc	gtg	ttt	gtg	act	tgg	tgc	tgt	cgc	cac	ggc	gcc	ttg	528
Gly	Gly	Arg	Phe 165	Val	Phe	Val	Thr	Trp	Cys 170	Cys	Arg	His	Gly	Ala 175	Leu	
gac	gcg	cgg	gat	caa	aaa	tgg	ctc	ggg	gcg	atc	tac	cgg	atc	tac	cac	576
Asp	Ala	Arg	Asp 180	Gln	Lys	Trp	Leu	Gly 185	Ala	Ile	Tyr	Arg 190	Ile	Tyr	His	
ctg	ccc	tac	atc	ctc	tcg	atc	gag	agc	tac	acg	cag	ttg	ctt	ggt	gag	624
Leu	Pro	Tyr 195	Ile	Leu	Ser	Ile	Glu 200	Ser	Tyr	Thr	Gln	Leu 205	Leu	Gly	Glu	
acg	ggg	ttc	tcg	ggc	att	cgg	acc	acc	gac	tgg	tcc	gat	cgg	gtg	gcc	672
Thr	Gly 210	Phe	Ser	Gly	Ile	Arg 215	Thr	Thr	Asp	Trp	Ser 220	Asp	Arg	Val	Ala	
cgc	ttc	tgg	tcg	ctg	gtc	atc	gat	tcg	gcc	ctc	gaa	ccg	gcg	gtg	ctg	720
Arg	Phe	Trp	Ser	Leu	Val 230	Ile	Asp	Ser	Ala 235	Leu	Glu	Pro	Ala	Val	Leu 240	
tgg	aag	gtg	atc	gcc	cag	gga	ccg	acg	gta	atc	aaa	ggc	gcg	ctc	gcc	768
Trp	Lys	Val	Ile 245	Ala	Gln	Gly	Pro	Thr	Val 250	Ile	Lys	Gly	Ala	Leu 255	Ala	
atg	cag	ttg	atg	cgg	cgc	agc	tac	gcg	cgg	ggg	ctg	gtg	cgc	ttc	ggc	816
Met	Gln	Leu	Met 260	Arg	Arg	Ser	Tyr	Ala 265	Arg	Gly	Leu	Val	Arg 270	Phe	Gly	
gtg	ttc	gcg	gcc	caa	aag	gcg	gag	gga	taa							846
Val	Phe	Ala 275	Ala	Gln	Lys	Ala	Glu 280	Gly								

&lt;210&gt; 2243

&lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Gloeobacter violaceus PCC 7421

&lt;400&gt; 2243

Met	Gly	Glu	Arg	Thr	Val	Leu	Asn	Glu	Asn	Ile	Arg	Arg	Phe	Tyr	Asp	
1				5					10					15		
Ala	Ser	Ser	Gly	Leu	Trp	Glu	Glu	Val	Trp	Gly	Glu	His	Met	His	His	
			20					25					30			
Gly	His	Trp	Glu	Val	Gly	Glu	Ala	Asp	Lys	Asp	Arg	Arg	Val	Ala	Gln	
		35					40					45				
Val	Asp	Leu	Val	Val	Arg	Leu	Leu	Asp	Trp	Ala	Gly	Ile	Asp	Arg	Ala	
	50					55					60					
Glu	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Phe	
65					70					75					80	
Leu	Ala	Glu	Arg	Phe	Gly	Ala	Arg	Val	Glu	Gly	Ile	Thr	Leu	Ser	Pro	
				85					90					95		
Val	Gln	Cys	Lys	Arg	Ala	Ala	Glu	Arg	Ala	Arg	Glu	His	His	Leu	Asp	
			100					105					110			
Gly	Arg	Ala	His	Phe	Gln	Val	Ala	Asp	Ala	His	Arg	Met	Pro	Phe	Ala	
		115					120					125				
Asp	Gly	Arg	Phe	Asp	Leu	Val	Trp	Ser	Leu	Glu	Ser	Gly	Glu	His	Met	
	130				135						140					
Ala	Asp	Lys	Ala	Gln	Phe	Leu	Arg	Glu	Cys	His	Arg	Val	Leu	Arg	Pro	
145					150					155					160	
Gly	Gly	Arg	Phe	Val	Phe	Val	Thr	Trp	Cys	Cys	Arg	His	Gly	Ala	Leu	

## PhoenixTemp32470.tmp.txt

165 170 175  
 Asp Ala Arg Asp Gln Lys Trp Leu Gly Ala Ile Tyr Arg Ile Tyr His  
 180 185 190  
 Leu Pro Tyr Ile Leu Ser Ile Glu Ser Tyr Thr Gln Leu Leu Gly Glu  
 195 200 205  
 Thr Gly Phe Ser Gly Ile Arg Thr Thr Asp Trp Ser Asp Arg Val Ala  
 210 215 220  
 Arg Phe Trp Ser Leu Val Ile Asp Ser Ala Leu Glu Pro Ala Val Leu  
 225 230 235 240  
 Trp Lys Val Ile Ala Gln Gly Pro Thr Val Ile Lys Gly Ala Leu Ala  
 245 250 255  
 Met Gln Leu Met Arg Arg Ser Tyr Ala Arg Gly Leu Val Arg Phe Gly  
 260 265 270  
 Val Phe Ala Ala Gln Lys Ala Glu Gly  
 275 280

&lt;210&gt; 2244

&lt;211&gt; 936

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus str. AS9601

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(936)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2244

atg att gat tta tta ttc cct ttt ttt ata ctt ttt tta ctc ttt cta	48
Met Ile Asp Leu Leu Phe Pro Phe Phe Ile Leu Phe Leu Leu Phe Leu	
1 5 10 15	
gtc ctt gca ata att tgg aga aat aat gct aga aaa tac att tct tcc	96
Val Leu Ala Ile Ile Trp Arg Asn Asn Ala Arg Lys Tyr Ile Ser Ser	
20 25 30	
ggt aca gta gct tct gca tat gat gct tgg acc aac gat aaa tta ctt	144
Gly Thr Val Ala Ser Ala Tyr Asp Ala Trp Thr Asn Asp Lys Leu Leu	
35 40 45	
gag aga tta tgg gga gaa cat ata cat ttg ggt ttt tat ccc tta gga	192
Glu Arg Leu Trp Gly Glu His Ile His Leu Gly Phe Tyr Pro Leu Gly	
50 55 60	
aac aaa aat act gat ttt aga aag gct aaa gtt cag ttt gtt cat gaa	240
Asn Lys Asn Thr Asp Phe Arg Lys Ala Lys Val Gln Phe Val His Glu	
65 70 75 80	
tta gtc aaa tgg agt ggt tta gat aaa ttg cca cgg gga tcc aga ata	288
Leu Val Lys Trp Ser Gly Leu Asp Lys Leu Pro Arg Gly Ser Arg Ile	
85 90 95	
ctc gac gta ggt tgc gga ata ggg ggg agt tct agg att ctt gca gaa	336
Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Glu	
100 105 110	
tat tat ggg ttt aat gtc act ggc att aca att agt ccg gct caa gtt	384
Tyr Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Ala Gln Val	
115 120 125	
aaa aga gca aga gaa ctt act cct cat ggg cta aat tgc aac ttc caa	432
Lys Arg Ala Arg Glu Leu Thr Pro His Gly Leu Asn Cys Asn Phe Gln	
130 135 140	
gtt atg gat gct tta aat ttg aaa ttt gaa aat gga tca ttt gat gcc	480
Val Met Asp Ala Leu Asn Leu Lys Phe Glu Asn Gly Ser Phe Asp Ala	
145 150 155 160	
atc tgg agt gtt gag gct ggc gca cac atg aat aat aaa act agg ttt	528
Ile Trp Ser Val Glu Ala Gly Ala His Met Asn Asn Lys Thr Arg Phe	
165 170 175	
gca gat gaa atg atg aga acc cta aga cct gga ggg tat cta gca ttg	576
Ala Asp Glu Met Met Arg Thr Leu Arg Pro Gly Gly Tyr Ala Leu	
180 185 190	
gca gat tgg aac tca aga gac ctc cat gca tat ccc cca tca ttt ttt	624
Ala Asp Trp Asn Ser Arg Asp Leu His Ala Tyr Pro Pro Ser Phe Phe	
195 200 205	
gaa aag tta gtt ctt aaa caa tta ctt gaa caa tgg gta cat cct aat	672
Glu Lys Leu Val Leu Lys Gln Leu Leu Glu Gln Trp Val His Pro Asn	
210 215 220	

## PhoenixTemp32470.tmp.txt

ttt att agc ata aat gaa ttc agt aac att ctt aga aca aac gaa aat	720
Phe Ile Ser Ile Asn Glu Phe Ser Asn Ile Leu Arg Thr Asn Glu Asn	
225 230 235 240	
agt tca gga aga gtt ata tca gaa aat tgg aat acc tat aca aat cct	768
Ser Ser Gly Arg Val Ile Ser Glu Asn Trp Asn Thr Tyr Thr Asn Pro	
245 250 255	
tca tgg tat gac tcc att ttt gaa ggt att cga aga ccc ttt gta att	816
Ser Trp Tyr Asp Ser Ile Phe Glu Gly Ile Arg Arg Pro Phe Val Ile	
260 265 270	
ttg tcg ctt ggc cca ttt gcg ata gtg aag tcg att aga gaa ata cca	864
Leu Ser Leu Gly Pro Phe Ala Ile Val Lys Ser Ile Arg Glu Ile Pro	
275 280 285	
aca ata ctt ctc atg aat tgg gca ttt aga aaa ggt tta atg gag ttt	912
Thr Ile Leu Leu Met Asn Trp Ala Phe Arg Lys Gly Leu Met Glu Phe	
290 295 300	
gga gtt tat aaa tgt aga gga taa	936
Gly Val Tyr Lys Cys Arg Gly	
305 310	

&lt;210&gt; 2245

&lt;211&gt; 311

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus str. AS9601

&lt;400&gt; 2245

Met Ile Asp Leu Leu Phe Pro Phe Phe Ile Leu Phe Leu Leu Phe Leu	
1 5 10 15	
Val Leu Ala Ile Ile Trp Arg Asn Asn Ala Arg Lys Tyr Ile Ser Ser	
20 25 30	
Gly Thr Val Ala Ser Ala Tyr Asp Ala Trp Thr Asn Asp Lys Leu Leu	
35 40 45	
Glu Arg Leu Trp Gly Glu His Ile His Leu Gly Phe Tyr Pro Leu Gly	
50 55 60	
Asn Lys Asn Thr Asp Phe Arg Lys Ala Lys Val Gln Phe Val His Glu	
65 70 75 80	
Leu Val Lys Trp Ser Gly Leu Asp Lys Leu Pro Arg Gly Ser Arg Ile	
85 90 95	
Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Glu	
100 105 110	
Tyr Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Ala Gln Val	
115 120 125	
Lys Arg Ala Arg Glu Leu Thr Pro His Gly Leu Asn Cys Asn Phe Gln	
130 135 140	
Val Met Asp Ala Leu Asn Leu Lys Phe Glu Asn Gly Ser Phe Asp Ala	
145 150 155 160	
Ile Trp Ser Val Glu Ala Gly Ala His Met Asn Asn Lys Thr Arg Phe	
165 170 175	
Ala Asp Glu Met Met Arg Thr Leu Arg Pro Gly Gly Tyr Leu Ala Leu	
180 185 190	
Ala Asp Trp Asn Ser Arg Asp Leu His Ala Tyr Pro Pro Ser Phe Phe	
195 200 205	
Glu Lys Leu Val Leu Lys Gln Leu Leu Glu Gln Trp Val His Pro Asn	
210 215 220	
Phe Ile Ser Ile Asn Glu Phe Ser Asn Ile Leu Arg Thr Asn Glu Asn	
225 230 235 240	
Ser Ser Gly Arg Val Ile Ser Glu Asn Trp Asn Thr Tyr Thr Asn Pro	
245 250 255	
Ser Trp Tyr Asp Ser Ile Phe Glu Gly Ile Arg Arg Pro Phe Val Ile	
260 265 270	
Leu Ser Leu Gly Pro Phe Ala Ile Val Lys Ser Ile Arg Glu Ile Pro	
275 280 285	
Thr Ile Leu Leu Met Asn Trp Ala Phe Arg Lys Gly Leu Met Glu Phe	
290 295 300	
Gly Val Tyr Lys Cys Arg Gly	
305 310	

&lt;210&gt; 2246

&lt;211&gt; 915

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus str. MIT 9303

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(915)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2246

ttg atc ctg gca ggg aca acc ctg gct tct gct gta gtg atc tgg acc	48
Met Ile Leu Ala Gly Thr Thr Leu Ala Ser Ala Val Val Ile Trp Thr	
1 5 10 15	
caa cgg gat cgg cgc tac aaa tca agc gcc agt gtt gcc tct gct tac	96
Gln Arg Asp Arg Tyr Lys Ser Ser Ala Ser Val Ala Ser Ala Tyr	
20 25 30	
gat gcc tgg acc aat gac cag ctg ctc gag cgg ctc tgg ggt gaa cac	144
Asp Ala Trp Thr Asn Asp Gln Leu Leu Glu Arg Leu Trp Gly Glu His	
35 40 45	
gtc cac ctc ggc tat tac ggc aaa cct cct agc ccc aga gat ttc cga	192
Val His Leu Gly Tyr Tyr Gly Lys Pro Pro Ser Pro Arg Asp Phe Arg	
50 55 60	
gcc gca aag caa gac ttc gta cat gag ctc gtt caa tgg agt gga ctc	240
Ala Ala Lys Gln Asp Phe Val His Glu Leu Val Gln Trp Ser Gly Leu	
65 70 75 80	
gcc aaa ctc cct cga ggc tcc cga gta ctt gac gtg ggc tgc ggt att	288
Ala Lys Leu Pro Arg Gly Ser Arg Val Leu Asp Val Gly Cys Gly Ile	
85 90 95	
ggt ggt agc gca aga atc ctg gcc cgg gat tac aac ttt gac gtg ctt	336
Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr Asn Phe Asp Val Leu	
100 105 110	
ggc atc acc atc agt cca gcc cag gta aaa cga gcg tct caa ctc act	384
Gly Ile Thr Ile Ser Pro Ala Gln Val Lys Arg Ala Ser Gln Leu Thr	
115 120 125	
cct gag ggg atg acc tgc caa ttc cag gtg atg gat gcc ctc gat tta	432
Pro Glu Gly Met Thr Cys Gln Phe Gln Val Met Asp Ala Leu Asp Leu	
130 135 140	
aaa ctg gcc aaa ggt agc ttc gac gct gtt tgg agt gtg gaa gca ggc	480
Lys Leu Ala Lys Gly Ser Phe Asp Ala Val Trp Ser Val Glu Ala Gly	
145 150 155 160	
ccc cac atg cca gac aag cag cgc tat gca gat gaa ctg ctg cgt gtg	528
Pro His Met Pro Asp Lys Gln Arg Tyr Ala Asp Glu Leu Leu Arg Val	
165 170 175	
ctg agg cca aaa ggt gta ctt gcg gtg gcc gat tgg aac cgc cgt gat	576
Leu Arg Pro Lys Gly Val Leu Ala Val Ala Asp Trp Asn Arg Arg Asp	
180 185 190	
tac gaa gat ggg gag atg acc aac ctt gag cga tgg gtg atg cgt cag	624
Tyr Glu Asp Gly Glu Met Thr Asn Leu Glu Arg Trp Val Met Arg Gln	
195 200 205	
cta ctc gac cag tgg gcc cat ccg gaa ttc gcc agc att aaa gga ttc	672
Leu Leu Asp Gln Trp Ala His Pro Glu Phe Ala Ser Ile Lys Gly Phe	
210 215 220	
cgc cgc aat ttg ctt cat agc cct ttt gct tgc ggc cct gtc gaa tct	720
Arg Arg Asn Leu Leu His Ser Pro Phe Ala Cys Gly Pro Val Glu Ser	
225 230 235 240	
gac gac tgg aca aga tcc atc ctg ccc tcc tgg aat gat tgc att ttg	768
Asp Asp Trp Thr Arg Ser Ile Leu Pro Ser Trp Asn Asp Ser Ile Leu	
245 250 255	
gag ggg ttt cgt cgt cct gga gcc gtg ctc ggg ttg ggt cca gcc gcc	816
Glu Gly Phe Arg Arg Pro Gly Ala Val Leu Gly Leu Gly Pro Ala Ala	
260 265 270	
gtg gtc aag gga ttc aga gaa ata cca acg att ttg ttg atg cgc tgg	864
Val Val Lys Gly Phe Arg Glu Ile Pro Thr Ile Leu Leu Met Arg Trp	
275 280 285	
gct ttt gcc cat ggt ctg atg caa ttc ggt gtc ttc cgc agc cgc gac	912
Ala Phe Ala His Gly Leu Met Gln Phe Gly Val Phe Arg Ser Arg Asp	
290 295 300	
tga	915

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 <212> PRT  
 <213> Prochlorococcus marinus str. MIT 9303

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 35 40 45  
 Val His Leu Gly Tyr Tyr Gly Lys Pro Pro Ser Pro Arg Asp Phe Arg  
 50 55 60  
 Ala Ala Lys Gln Asp Phe Val His Glu Leu Val Gln Trp Ser Gly Leu  
 65 70 75 80  
 Ala Lys Leu Pro Arg Gly Ser Arg Val Leu Asp Val Gly Cys Gly Ile  
 85 90 95  
 Gly Gly Ser Ala Arg Ile Leu Ala Arg Asp Tyr Asn Phe Asp Val Leu  
 100 105 110  
 Gly Ile Thr Ile Ser Pro Ala Gln Val Lys Arg Ala Ser Gln Leu Thr  
 115 120 125  
 Pro Glu Gly Met Thr Cys Gln Phe Gln Val Met Asp Ala Leu Asp Leu  
 130 135 140  
 Lys Leu Ala Lys Gly Ser Phe Asp Ala Val Trp Ser Val Glu Ala Gly  
 145 150 155 160  
 Pro His Met Pro Asp Lys Gln Arg Tyr Ala Asp Glu Leu Leu Arg Val  
 165 170 175  
 Leu Arg Pro Lys Gly Val Leu Ala Val Ala Asp Trp Asn Arg Arg Asp  
 180 185 190  
 Tyr Glu Asp Gly Glu Met Thr Asn Leu Glu Arg Trp Val Met Arg Gln  
 195 200 205  
 Leu Leu Asp Gln Trp Ala His Pro Glu Phe Ala Ser Ile Lys Gly Phe  
 210 215 220  
 Arg Arg Asn Leu Leu His Ser Pro Phe Ala Cys Gly Pro Val Glu Ser  
 225 230 235 240  
 Asp Asp Trp Thr Arg Ser Ile Leu Pro Ser Trp Asn Asp Ser Ile Leu  
 245 250 255  
 Glu Gly Phe Arg Arg Pro Gly Ala Val Leu Gly Leu Gly Pro Ala Ala  
 260 265 270  
 Val Val Lys Gly Phe Arg Glu Ile Pro Thr Ile Leu Leu Met Arg Trp  
 275 280 285  
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 290 295 300

<210> 2248  
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 <212> DNA  
 <213> Prochlorococcus marinus str. MIT 9301

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 1 5 10 15  
 ttg cta tct ata atc tgg aga att aaa gct aga aaa tat att tct tcc 96  
 Leu Leu Ser Ile Ile Trp Arg Ile Lys Ala Arg Lys Tyr Ile Ser Ser  
 20 25 30  
 agc aca gtg gct tct gca tat gat gcc tgg aca cag gat aaa tta ctt 144  
 Ser Thr Val Ala Ser Ala Tyr Asp Ala Trp Thr Gln Asp Lys Leu Leu  
 35 40 45  
 gag aga ttg tgg gga gaa cat ata cat ttg ggt tat tat ccg tca gga 192  
 Glu Arg Leu Trp Gly Glu His Ile His Leu Gly Tyr Tyr Pro Ser Gly  
 50 55 60  
 aaa aat att gat ttt aga aag gct aaa att aag ttt gtc cat gaa tta 240

## PhoenixTemp32470.tmp.txt

Lys 65	Asn	Ile	Asp	Phe	Arg 70	Lys	Ala	Lys	Ile	Lys 75	Phe	Val	His	Glu	Leu 80	
gtc	aaa	tgg	agt	ggt	tta	gat	aaa	tgt	cca	aag	gga	tcc	aga	att	ctt	288
Val	Lys	Trp	Ser	Gly 85	Leu	Asp	Lys	Leu	Pro 90	Lys	Gly	Ser	Arg	Ile 95	Leu	
gat	gta	ggt	tgt	gga	ata	ggg	ggg	agt	tcc	agg	att	ctt	gcg	gaa	tct	336
Asp	Val	Gly	Cys 100	Gly	Ile	Gly	Gly	Ser 105	Ser	Arg	Ile	Leu	Ala 110	Glu	Ser	
tat	ggg	ttt	aat	gtc	act	ggg	att	aca	att	agt	ccg	gct	caa	ggt	aaa	384
Tyr	Gly	Phe 115	Asn	Val	Thr	Gly	Ile 120	Thr	Ile	Ser	Pro	Ala 125	Gln	Val	Lys	
aga	gct	aga	gaa	ctt	act	cct	aat	gga	cta	aat	tgc	cac	ttc	caa	ggt	432
Arg	Ala 130	Arg	Glu	Leu	Thr	Pro 135	Asn	Gly	Leu	Asn	Cys 140	His	Phe	Gln	Val	
atg	gat	gct	tta	aat	ttg	aaa	ttt	gaa	gaa	gga	tca	ttt	gat	gca	gtc	480
Met	Asp	Ala	Leu	Asn 150	Leu	Lys	Phe	Glu	Glu	Gly 155	Ser	Phe	Asp	Ala 160	Val	
145	agg	agt	ggt	gag	gct	ggt	gca	cat	atg	aat	gat	aaa	act	agg	ttt	528
Trp	Ser	Val	Glu	Ala 165	Gly	Ala	His	Met	Asn 170	Asp	Lys	Thr	Arg	Phe 175	Ala	
gat	gaa	atg	ctg	aga	att	cta	aga	cct	gat	ggt	tat	ttg	gca	ttg	gct	576
Asp	Glu	Met 180	Leu	Arg	Ile	Leu	Arg	Pro 185	Asp	Gly	Tyr	Leu	Ala 190	Leu	Ala	
gat	tgg	aac	tca	aga	gac	ctt	gag	gca	tac	ccc	cca	tca	ttt	ttt	gaa	624
Asp	Trp	Asn 195	Ser	Arg	Asp	Leu	Glu 200	Ala	Tyr	Pro	Pro	Ser 205	Phe	Phe	Glu	
aag	tta	ggt	ctt	aaa	caa	tta	ctc	gaa	caa	tgg	gta	cat	cct	aat	ttt	672
Lys	Leu 210	Val	Leu	Lys	Gln	Leu 215	Leu	Glu	Gln	Trp	Val 220	His	Pro	Asn	Phe	
att	agc	att	aat	gat	ttc	ggt	aat	att	ctc	aga	tct	aat	aaa	aat	agt	720
Ile	Ser	Ile	Asn	Asp	Phe 230	Gly	Asn	Ile	Leu	Arg 235	Ser	Asn	Lys	Asn	Ser 240	
225	tca	gga	aga	ggt	att	gct	gaa	aat	tgg	aat	tcc	tat	aca	aat	cct	768
Ser	Gly	Arg	Val 245	Ile	Ala	Glu	Asn	Trp	Asn	Ser 250	Ser	Tyr	Thr	Asn 255	tca	
tgg	tat	gac	tcc	att	att	gaa	ggc	att	cga	agg	cct	ttc	gca	att	ttg	816
Trp	Tyr	Asp 260	Ser	Ile	Ile	Glu	Gly 265	Ile	Arg	Arg	Pro	Phe	Ala 270	Ile	Leu	
tca	ctt	ggc	cca	ttt	gcc	ata	ttg	aag	tcg	att	aga	gag	att	cca	aca	864
Ser	Leu	Gly 275	Pro	Phe	Ala	Ile	Leu 280	Lys	Ser	Ile	Arg	Glu 285	Ile	Pro	Thr	
ata	ctt	ctc	atg	aac	tgg	gca	ttt	aga	aaa	ggt	tta	atg	gag	ttt	gga	912
Ile	Leu 290	Leu	Met	Asn	Trp	Ala 295	Phe	Arg	Lys	Gly	Leu 300	Met	Glu	Phe	Gly	
gtt	tat	aaa	tgt	aga	gga	taa										933
Val	Tyr	Lys	Cys	Arg	Gly 310											
305																

&lt;210&gt; 2249

&lt;211&gt; 310

&lt;212&gt; PRT

&lt;213&gt; Prochlorococcus marinus str. MIT 9301

&lt;400&gt; 2249

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Leu	Leu	Ser	Ile	Ile	Trp	Arg	Ile	Lys	Ala	Arg	Lys	Tyr	Ile	Ser	Ser
			20					25					30		
Ser	Thr	Val	Ala	Ser	Ala	Tyr	Asp	Ala	Trp	Thr	Gln	Asp	Lys	Leu	Leu
		35					40					45			
Glu	Arg	Leu	Trp	Gly	Glu	His	Ile	His	Leu	Gly	Tyr	Tyr	Pro	Ser	Gly
	50					55					60				
Lys	Asn	Ile	Asp	Phe	Arg	Lys	Ala	Lys	Ile	Lys	Phe	Val	His	Glu	Leu
65					70					75					80
Val	Lys	Trp	Ser	Gly	Leu	Asp	Lys	Leu	Pro	Lys	Gly	Ser	Arg	Ile	Leu
				85					90					95	
Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Arg	Ile	Leu	Ala	Glu	Ser	
			100					105				110			
Tyr	Gly	Phe	Asn	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Ala	Gln	Val	Lys

## PhoenixTemp32470.tmp.txt

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      115      120      125
Arg Ala Arg Glu Leu Thr Pro Asn Gly Leu Asn Cys His Phe Gln Val
130      135      140
Met Asp Ala Leu Asn Leu Lys Phe Glu Glu Gly Ser Phe Asp Ala Val
145      150      155      160
Trp Ser Val Glu Ala Gly Ala His Met Asn Asp Lys Thr Arg Phe Ala
165      170      175
Asp Glu Met Leu Arg Ile Leu Arg Pro Asp Gly Tyr Leu Ala Leu Ala
180      185      190
Asp Trp Asn Ser Arg Asp Leu Glu Ala Tyr Pro Pro Ser Phe Phe Glu
195      200      205
Lys Leu Val Leu Lys Gln Leu Leu Glu Gln Trp Val His Pro Asn Phe
210      215      220
Ile Ser Ile Asn Asp Phe Gly Asn Ile Leu Arg Ser Asn Lys Asn Ser
225      230      235      240
Ser Gly Arg Val Ile Ala Glu Asn Trp Asn Ser Tyr Thr Asn Pro Ser
245      250      255
Trp Tyr Asp Ser Ile Ile Glu Gly Ile Arg Arg Pro Phe Ala Ile Leu
260      265      270
Ser Leu Gly Pro Phe Ala Ile Leu Lys Ser Ile Arg Glu Ile Pro Thr
275      280      285      290
Ile Leu Leu Met Asn Trp Ala Phe Arg Lys Gly Leu Met Glu Phe Gly
295      300
Val Tyr Lys Cys Arg Gly
305      310

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&lt;210&gt; 2250

&lt;211&gt; 966

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. WH 7803

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(966)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2250

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1      5      10      15
gcc gtt ggt gcc tac gcg ctg tgg act cgc cgc aat cgc gct tac ctc      96
Ala Val Gly Ala Tyr Ala Leu Trp Thr Arg Arg Asn Arg Ala Tyr Leu
20      25      30
tca agc gag agt gtg gct tcg gcg tac gac gca tgg acg gag gac agg      144
Ser Ser Glu Ser Val Ala Ser Ala Tyr Asp Ala Trp Thr Glu Asp Arg
35      40      45
ctt ctt gaa acc ctc tgg ggt gag cat gtg cat ctc ggt cac tac ggg      192
Leu Leu Glu Thr Leu Trp Gly Glu His Val His Leu Gly His Tyr Gly
50      55      60
gct ccc ccc cgc agc aag gat ttc cgg cga gcc aag gct gat ttc gtt      240
Ala Pro Pro Arg Ser Lys Asp Phe Arg Arg Ala Lys Ala Asp Phe Val
65      70      75      80
cat gaa ttg gtg cgc tgg agt ggt ttg gat cag tta cca cct ggc gcg      288
His Glu Leu Val Arg Trp Ser Gly Leu Asp Gln Leu Pro Pro Gly Ala
85      90      95
aag gtg ctg gat gtg ggc tgt ggc atc ggc ggc agc gcc aga att ctt      336
Lys Val Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ala Arg Ile Leu
100      105      110
gcc agg gat tac ggc ttt gac gtt ctc gga gtg agc atc agc cca gca      384
Ala Arg Asp Tyr Gly Phe Asp Val Leu Gly Val Ser Ile Ser Pro Ala
115      120      125
cag atc cgt cgg gcc acc gaa ctc aca ccg gag gga atg acc tgc cga      432
Gln Ile Arg Arg Ala Thr Glu Leu Thr Pro Glu Gly Met Thr Cys Arg
130      135      140
ttc gcc gtg atg gat gcc ctt gat ctg gca ctg gac gat ggg ggg ttt      480
Phe Ala Val Met Asp Ala Leu Asp Leu Ala Leu Asp Asp Gly Gly Phe
145      150      155      160
gat gcg gtt tgg agt gtg gaa gcc ggt ccg cac atg ccg gac aaa cag      528
Asp Ala Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Gln

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## PhoenixTemp32470.tmp.txt

cg	ta	gc	ga	165	ct	ct	cg	at	170	cg	cc	gg	gg	175		
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			180					185					190			
gc	gt	gc	ga	tgg	aat	cgt	cgg	ga	cct	gtg	ga	gg	cca	ttg	aac	624
Ala	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	Val	Asp	Gly	Pro	Leu	Asn	
		195					200					205				
gg	cg	ga	cgt	tgg	gtg	atg	cat	cag	ctg	ctc	acg	caa	tgg	gcg	cac	672
Gly	Arg	Glu	Arg	Trp	Val	Met	His	Gln	Leu	Leu	Thr	Gln	Trp	Ala	His	
	210					215					220					
cc	ga	ttc	gcc	agc	atc	cgt	ggc	ctg	cag	cac	aac	ctg	gaa	acc	agt	720
Pro	Glu	Phe	Ala	Ser	Ile	Arg	Gly	Leu	Gln	His	Asn	Leu	Glu	Thr	Ser	
225				230					235						240	
gc	ta	tcc	aaa	gg	ccg	atc	gca	gtg	gcc	aat	tgg	aat	caa	gcc	acg	768
Ala	Tyr	Ser	Lys	Gly	Pro	Ile	Ala	Val	Ala	Asn	Trp	Asn	Gln	Ala	Thr	
			245					250					255			
ct	ccc	tcc	tgg	aac	gat	tcg	att	ctg	gaa	ggc	ctg	cga	cg	ccc	gca	816
Leu	Pro	Ser	Trp	Asn	Asp	Ser	Ile	Leu	Glu	Gly	Leu	Arg	Arg	Pro	Ala	
			260					265				270				
gc	gt	ctg	cga	ctc	gg	cca	tca	gcc	atc	gtt	cag	ggg	ttg	cg	gaa	864
Ala	Val	Leu	Arg	Leu	Gly	Pro	Ser	Ala	Ile	Val	Gln	Gly	Leu	Arg	Glu	
		275				280					285					
ac	cca	acc	ctg	ttg	ttg	atg	cg	tgg	gcc	ttt	gcc	cgg	gga	atg	atg	912
Thr	Pro	Thr	Leu	Leu	Leu	Met	Arg	Trp	Ala	Phe	Ala	Arg	Gly	Met	Met	
	290					295				300						
ca	ttc	gg	gtg	ttt	cg	ctc	gcc	aac	gat	cag	gtc	aga	tca	gaa	ctc	960
Gln	Phe	Gly	Val	Phe	Arg	Leu	Ala	Asn	Asp	Gln	Val	Arg	Ser	Glu	Leu	
305				310					315						320	
gga	tag															966
Gly																

&lt;210&gt; 2251

&lt;211&gt; 321

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 7803

&lt;400&gt; 2251

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			20					25					30			
Ser	Ser	Glu	Ser	Val	Ala	Ser	Ala	Tyr	Asp	Ala	Trp	Thr	Glu	Asp	Arg	
		35					40					45				
Leu	Leu	Glu	Thr	Leu	Trp	Gly	Glu	His	Val	His	Leu	Gly	His	Tyr	Gly	
	50					55					60					
Ala	Pro	Pro	Arg	Ser	Lys	Asp	Phe	Arg	Arg	Ala	Lys	Ala	Asp	Phe	Val	
65				70					75					80		
His	Glu	Leu	Val	Arg	Trp	Ser	Gly	Leu	Asp	Gln	Leu	Pro	Pro	Gly	Ala	
			85					90					95			
Lys	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala	Arg	Ile	Leu	
		100					105					110				
Ala	Arg	Asp	Tyr	Gly	Phe	Asp	Val	Leu	Gly	Val	Ser	Ile	Ser	Pro	Ala	
	115					120					125					
Gln	Ile	Arg	Arg	Ala	Thr	Glu	Leu	Thr	Pro	Glu	Gly	Met	Thr	Cys	Arg	
	130				135					140						
Phe	Ala	Val	Met	Asp	Ala	Leu	Asp	Leu	Ala	Leu	Asp	Asp	Gly	Gly	Phe	
145				150					155						160	
Asp	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Gln	
		165						170					175			
Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Met	Leu	Arg	Pro	Gly	Gly	Leu	Leu	
		180						185					190			
Ala	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	Val	Asp	Gly	Pro	Leu	Asn	
		195					200					205				
Gly	Arg	Glu	Arg	Trp	Val	Met	His	Gln	Leu	Leu	Thr	Gln	Trp	Ala	His	
	210					215					220					
Pro	Glu	Phe	Ala	Ser	Ile	Arg	Gly	Leu	Gln	His	Asn	Leu	Glu	Thr	Ser	
225				230					235						240	
Ala	Tyr	Ser	Lys	Gly	Pro	Ile	Ala	Val	Ala	Asn	Trp	Asn	Gln	Ala	Thr	



## PhoenixTemp32470.tmp.txt

245  
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 260  
 Ala Val Leu Arg Leu Gly Pro Ser Ala Ile Val Gln Gly Leu Arg Glu  
 275  
 Thr Pro Thr Leu Leu Leu Met Arg Trp Ala Phe Ala Arg Gly Met Met  
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 Gln Phe Gly Val Phe Arg Leu Ala Asn Asp Gln Val Arg Ser Glu Leu  
 305  
 Gly 310 315 320

<210> 2252  
 <211> 936  
 <212> DNA  
 <213> Prochlorococcus marinus str. MIT 9215

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 1 5 10 15  
 gtc ttt tct att atc tgg aga att aag gct aga aaa tat att tct tca 96  
 Val Phe Ser Ile Ile Trp Arg Ile Lys Ala Arg Lys Tyr Ile Ser Ser  
 20 25 30  
 ggt aca gtg gct tcg gca tat gat gct tgg acc caa gat aaa tta ctc 144  
 Gly Thr Val Ala Ser Ala Tyr Asp Ala Trp Thr Gln Asp Lys Leu Leu  
 35 40 45  
 gag aga ttg tgg gga gaa cat ata cat ttg ggt ttt tat aat tca ggg 192  
 Glu Arg Leu Trp Gly Glu His Ile His Leu Gly Phe Tyr Asn Ser Gly  
 50 55 60  
 aaa aaa aat att gat ttt aga aaa gct aaa gtt cag ttt gtt cat gaa 240  
 Lys Lys Asn Ile Asp Phe Arg Lys Ala Lys Val Gln Phe Val His Glu  
 65 70 75 80  
 tta gtc aaa tgg agt ggt tta gat aaa ttg cca aag gga tct aga ata 288  
 Leu Val Lys Trp Ser Gly Leu Asp Lys Leu Pro Lys Gly Ser Arg Ile  
 85 90 95  
 cta gat gtc ggc tgt gga att ggg gga agt tct agg att ctt gca aaa 336  
 Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Lys  
 100 105 110  
 aat tat ggg ttt aat gtc acc ggc att aca atc agt ccg gct caa gtt 384  
 Asn Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Ala Gln Val  
 115 120 125  
 aag aga gca aga gaa ctt act cct aat gga ctt aat tgc aac ttc caa 432  
 Lys Arg Ala Arg Glu Leu Thr Pro Asn Gly Leu Asn Cys Asn Phe Gln  
 130 135 140  
 gtt atg gat gct ttg gat ttg aaa ttt gaa gat gga tta ttt gat gct 480  
 Val Met Asp Ala Leu Asp Leu Lys Phe Glu Asp Gly Leu Phe Asp Ala  
 145 150 155 160  
 gtt tgg agt gtt gag gct ggt gca cac atg agt gat aaa aac agg ttt 528  
 Val Trp Ser Val Glu Ala Gly Ala His Met Ser Asp Lys Asn Arg Phe  
 165 170 175  
 gca gat gaa atg ttg aga att cta agg cct gga ggg tat ttg gca ttg 576  
 Ala Asp Glu Met Leu Arg Ile Leu Arg Pro Gly Gly Tyr Leu Ala Leu  
 180 185 190  
 gct gat tgg aac tca aga gac cta aag gaa tgc ccc cca tct ttt ttt 624  
 Ala Asp Trp Asn Ser Arg Asp Leu Lys Glu Cys Pro Pro Ser Phe Phe  
 195 200 205  
 gaa aag tta gtt ctt aaa caa cta ctt gaa caa tgg gta cat cct gaa 672  
 Glu Lys Leu Val Leu Lys Gln Leu Leu Glu Gln Trp Val His Pro Glu  
 210 215 220  
 ttt atc agc att aac gaa ttt ggt aac att ctt aga gct aac aaa cat 720  
 Phe Ile Ser Ile Asn Glu Phe Gly Asn Ile Leu Arg Ala Asn Lys His  
 225 230 235 240  
 agt tca gga aga gtt att tct gaa aat tgg aat tcc tat aca aat ccg 768

PhoenixTemp32470.tmp.txt

Ser	Ser	Gly	Arg	Val	Ile	Ser	Glu	Asn	Trp	Asn	Ser	Tyr	Thr	Asn	Pro		
tca	tgg	tac	gac	tcc	att	att	gaa	ggg	ttt	cga	agg	cct	ttt	gca	att	816	
Ser	Trp	Tyr	Asp	Ser	Ile	Ile	Glu	Gly	Phe	Arg	Arg	Pro	Phe	Ala	Ile		
ttg	tca	ctt	ggc	cca	att	gcg	ata	gtg	aag	tcg	att	aga	gag	atc	cca	864	
Leu	Ser	Leu	Gly	Pro	Ile	Ala	Ile	Val	Lys	Ser	Ile	Arg	Glu	Ile	Pro		
acc	ata	ctc	ctc	atg	aat	tgg	gca	ttt	agg	aaa	ggg	tta	atg	gag	ttt	912	
Thr	Ile	Leu	Leu	Met	Asn	Trp	Ala	Phe	Arg	Lys	Gly	Leu	Met	Glu	Phe		
gga	ggt	ttt	aaa	tgt	aga	gga	taa									936	
Gly	Val	Phe	Lys	Cys	Arg	Gly											

<210> 2253

<211> 311

<212> PRT

<213> Prochlorococcus marinus str. MIT 9215

<400> 2253

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1				5					10					15			
Val	Phe	Ser	Ile	Trp	Arg	Ile	Lys	Ala	Arg	Lys	Tyr	Ile	Ser	Ser			
Gly	Thr	Val	Ala	Ser	Ala	Tyr	Asp	Ala	Trp	Thr	Gln	Asp	Lys	Leu	Leu		
Glu	Arg	Leu	Trp	Gly	Glu	His	Ile	His	Leu	Gly	Phe	Tyr	Asn	Ser	Gly		
Lys	Lys	Asn	Ile	Asp	Phe	Arg	Lys	Ala	Lys	Val	Gln	Phe	Val	His	Glu		
65				70					75					80			
Leu	Val	Lys	Trp	Ser	Gly	Leu	Asp	Lys	Leu	Pro	Lys	Gly	Ser	Arg	Ile		
Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Lys		
Asn	Tyr	Gly	Phe	Asn	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Ala	Gln	Val		
Lys	Arg	Ala	Arg	Glu	Leu	Thr	Pro	Asn	Gly	Leu	Asn	Cys	Asn	Phe	Gln		
Val	Met	Asp	Ala	Leu	Asp	Leu	Lys	Phe	Glu	Asp	Gly	Leu	Phe	Asp	Ala		
145				150					155					160			
Val	Trp	Ser	Val	Glu	Ala	Gly	Ala	His	Met	Ser	Asp	Lys	Asn	Arg	Phe		
Ala	Asp	Glu	Met	Leu	Arg	Ile	Leu	Arg	Pro	Gly	Gly	Tyr	Leu	Ala	Leu		
Ala	Asp	Trp	Asn	Ser	Arg	Asp	Leu	Lys	Glu	Cys	Pro	Pro	Ser	Phe	Phe		
Glu	Lys	Leu	Val	Leu	Lys	Gln	Leu	Leu	Glu	Gln	Trp	Val	His	Pro	Glu		
Phe	Ile	Ser	Ile	Asn	Glu	Phe	Gly	Asn	Ile	Leu	Arg	Ala	Asn	Lys	His		
225				230					235					240			
Ser	Ser	Gly	Arg	Val	Ile	Ser	Glu	Asn	Trp	Asn	Ser	Tyr	Thr	Asn	Pro		
Ser	Trp	Tyr	Asp	Ser	Ile	Ile	Glu	Gly	Phe	Arg	Arg	Pro	Phe	Ala	Ile		
Leu	Ser	Leu	Gly	Pro	Ile	Ala	Ile	Val	Lys	Ser	Ile	Arg	Glu	Ile	Pro		
Thr	Ile	Leu	Leu	Met	Asn	Trp	Ala	Phe	Arg	Lys	Gly	Leu	Met	Glu	Phe		
Gly	Val	Phe	Lys	Cys	Arg	Gly											
305				310													

<210> 2254

<211> 993

<212> DNA

<213> Anabaena variabilis ATCC 29413

<220>

<221> CDS

&lt;222&gt; (1)..(993)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2254

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Met	Asn	Trp	Leu	Phe	Ser	Thr	Leu	Val	Phe	Phe	Leu	Thr	Leu	Leu	Ala	
1				5					10					15		
gca	ggt	att	gcg	tta	tat	ctc	att	act	gct	aga	cgt	tat	caa	tca	tct	96
Ala	Gly	Ile	Ala	Leu	Tyr	Leu	Ile	Thr	Ala	Arg	Arg	Tyr	Gln	Ser	Ser	
			20					25					30			
aac	tcc	gta	gcc	aat	tcc	tac	gac	cag	tgg	act	gaa	gac	ggt	att	tta	144
Asn	Ser	Val	Ala	Asn	Ser	Tyr	Asp	Gln	Trp	Thr	Glu	Asp	Gly	Ile	Leu	
		35					40					45				
gag	ttt	tac	tgg	ggc	gaa	cac	atc	cat	tta	ggt	cat	tat	ggt	tcg	cca	192
Glu	Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Ser	Pro	
	50					55					60					
ccg	caa	agg	aaa	gat	ttt	ctg	gca	gct	aaa	tct	gat	ttt	gtc	cat	gaa	240
Pro	Gln	Arg	Lys	Asp	Phe	Leu	Ala	Ala	Lys	Ser	Asp	Phe	Val	His	Glu	
	65				70					75					80	
atg	gtg	cgt	tgg	ggt	ggt	ttg	gat	aaa	tta	ccc	cct	ggt	act	acc	ctg	288
Met	Val	Arg	Trp	Gly	Gly	Leu	Asp	Lys	Leu	Pro	Pro	Gly	Thr	Thr	Leu	
				85					90					95		
tta	gat	gtt	ggt	tgt	gga	att	ggg	gga	agt	agt	cgc	att	ttg	gca	cgg	336
Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Arg	
			100					105					110			
gat	tat	gga	ttt	gcc	gtt	aca	ggt	atc	acc	atc	agc	ccc	caa	caa	gtc	384
Asp	Tyr	Gly	Phe	Ala	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Gln	Gln	Val	
		115					120					125				
caa	cgc	gcc	caa	gaa	tta	aca	cct	cag	gaa	ctg	aat	gca	cag	ttt	ttg	432
Gln	Arg	Ala	Gln	Glu	Leu	Thr	Pro	Gln	Glu	Leu	Asn	Ala	Gln	Phe	Leu	
	130					135					140					
gtg	gat	gat	gcg	atg	gcg	ctt	tct	tcc	cca	gat	ggt	agt	ttt	gat	gta	480
Val	Asp	Asp	Ala	Met	Ala	Leu	Ser	Ser	Pro	Asp	Gly	Ser	Phe	Asp	Val	
	145				150					155					160	
gtt	tgg	tca	att	gaa	gct	ggc	cca	cat	atg	cca	gat	aaa	gcc	att	ttt	528
Val	Trp	Ser	Ile	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Ala	Ile	Phe	
				165					170					175		
gcc	aaa	gaa	ttg	atg	cgg	gtg	cta	aag	cct	ggt	gga	atc	atg	gtt	tta	576
Ala	Lys	Glu	Leu	Met	Arg	Val	Leu	Lys	Pro	Gly	Gly	Ile	Met	Val	Leu	
		180						185				190				
gcc	gac	tgg	aat	cag	cga	gac	gat	cgc	caa	aaa	ccc	cta	aat	att	tgg	624
Ala	Asp	Trp	Asn	Gln	Arg	Asp	Asp	Arg	Gln	Lys	Pro	Leu	Asn	Ile	Trp	
		195					200					205				
gag	aaa	cca	gta	atg	cag	caa	cta	cta	gat	cag	tgg	tct	cac	ccg	gct	672
Glu	Lys	Pro	Val	Met	Gln	Gln	Leu	Leu	Asp	Gln	Trp	Ser	His	Pro	Ala	
	210					215					220					
ttt	tcc	agc	atc	gaa	ggc	ttt	tct	gag	ctt	ttg	gcc	gcg	acg	gga	tta	720
Phe	Ser	Ser	Ile	Glu	Gly	Phe	Ser	Glu	Leu	Leu	Ala	Ala	Thr	Gly	Leu	
				225		230				235					240	
gta	gaa	ggg	gag	gta	atc	acg	gca	gac	tgg	aca	aaa	caa	aca	ctc	ccc	768
Val	Glu	Gly	Glu	Val	Ile	Thr	Ala	Asp	Trp	Thr	Lys	Gln	Thr	Leu	Pro	
				245					250					255		
tct	tgg	ctg	gat	tct	atc	tgg	caa	gga	ata	gtt	aga	cca	gaa	gga	tta	816
Ser	Trp	Leu	Asp	Ser	Ile	Trp	Gln	Gly	Ile	Val	Arg	Pro	Glu	Gly	Leu	
			260					265					270			
gtg	cgt	ttt	ggt	cta	tct	ggt	ttc	att	aaa	tct	ctg	cga	gaa	gta	ccc	864
Val	Arg	Phe	Gly	Leu	Ser	Gly	Phe	Ile	Lys	Ser	Leu	Arg	Glu	Val	Pro	
			275				280					285				
acc	cta	cta	ctg	atg	agg	cta	gca	ttt	ggt	atg	gga	ctc	tgt	aga	ttt	912
Thr	Leu	Leu	Leu	Met	Arg	Leu	Ala	Phe	Gly	Met	Gly	Leu	Cys	Arg	Phe	
			290			295					300					
ggg	atg	ttc	cgt	gct	tta	cga	gct	aac	act	gtg	aca	cca	cca	gca	gaa	960
Gly	Met	Phe	Arg	Ala	Leu	Arg	Ala	Asn	Thr	Val	Thr	Pro	Pro	Ala	Glu	
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cag	aca	act	ggg	atc	aaa	gtt	gct	caa	agg	taa						993
Gln	Thr	Thr	Gly	Ile	Lys	Val	Ala	Gln	Arg							
				325					330							

&lt;210&gt; 2255

&lt;211&gt; 330

&lt;212&gt; PRT

<213> *Anabaena variabilis* ATCC 29413

&lt;400&gt; 2255

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Ala Gly Ile Ala Leu Tyr Leu Ile Thr Ala Arg Arg Tyr Gln Ser Ser
20      25      30
Asn Ser Val Ala Asn Ser Tyr Asp Gln Trp Thr Glu Asp Gly Ile Leu
35      40      45
Glu Phe Tyr Trp Gly Glu His Ile His Leu Gly His Tyr Gly Ser Pro
50      55      60
Pro Gln Arg Lys Asp Phe Leu Ala Ala Lys Ser Asp Phe Val His Glu
65      70      75      80
Met Val Arg Trp Gly Gly Leu Asp Lys Leu Pro Pro Gly Thr Thr Leu
85      90      95
Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Arg
100     105     110
Asp Tyr Gly Phe Ala Val Thr Gly Ile Thr Ile Ser Pro Gln Gln Val
115     120     125
Gln Arg Ala Gln Glu Leu Thr Pro Gln Glu Leu Asn Ala Gln Phe Leu
130     135     140
Val Asp Asp Ala Met Ala Leu Ser Ser Pro Asp Gly Ser Phe Asp Val
145     150     155     160
Val Trp Ser Ile Glu Ala Gly Pro His Met Pro Asp Lys Ala Ile Phe
165     170     175
Ala Lys Glu Leu Met Arg Val Leu Lys Pro Gly Gly Ile Met Val Leu
180     185     190
Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Lys Pro Leu Asn Ile Trp
195     200     205
Glu Lys Pro Val Met Gln Gln Leu Leu Asp Gln Trp Ser His Pro Ala
210     215     220
Phe Ser Ser Ile Glu Gly Phe Ser Glu Leu Leu Ala Ala Thr Gly Leu
225     230     235     240
Val Glu Gly Glu Val Ile Thr Ala Asp Trp Thr Lys Gln Thr Leu Pro
245     250     255
Ser Trp Leu Asp Ser Ile Trp Gln Gly Ile Val Arg Pro Glu Gly Leu
260     265     270
Val Arg Phe Gly Leu Ser Gly Phe Ile Lys Ser Leu Arg Glu Val Pro
275     280     285
Thr Leu Leu Leu Met Arg Leu Ala Phe Gly Met Gly Leu Cys Arg Phe
290     295     300
Gly Met Phe Arg Ala Leu Arg Ala Asn Thr Val Thr Pro Pro Ala Glu
305     310     315     320
Gln Thr Thr Gly Ile Lys Val Ala Gln Arg
325     330

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&lt;210&gt; 2256

&lt;211&gt; 843

&lt;212&gt; DNA

<213> *Anabaena variabilis* ATCC 29413

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(843)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2256

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1      5      10      15
tct ggg ctg tgg gaa gag att tgg ggc gaa cac atg cac cac ggt tat      96
Ser Gly Leu Trp Glu Glu Ile Trp Gly Glu His Met His His Gly Tyr
20      25      30
tat ggt gta gac ggt act gaa caa aaa aac cgt cgt cag gcg caa att      144
Tyr Gly Val Asp Gly Thr Glu Gln Lys Asn Arg Arg Gln Ala Gln Ile
35      40      45
gat tta att gaa gaa tta ctt act tgg gca ggg gta caa aca gca gaa      192

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## PhoenixTemp32470.tmp.txt

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Asn	Ile	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Tyr	Leu	
65				70						75					80	
gca	gaa	aag	ttg	aat	gct	aaa	gct	aca	gga	att	acc	ctg	agt	ccg	gtg	288
Ala	Glu	Lys	Leu	Asn	Ala	Lys	Ala	Thr	Gly	Ile	Thr	Leu	Ser	Pro	Val	
				85					90					95		
caa	gct	gct	aga	gcc	aca	gaa	aga	gcc	aag	gaa	gct	ggt	tta	agt	ggt	336
Gln	Ala	Ala	Arg	Ala	Thr	Glu	Arg	Ala	Lys	Glu	Ala	Gly	Leu	Ser	Gly	
			100					105					110			
aga	agt	cag	ttt	tta	gtg	gca	aat	gcc	caa	gca	atg	cct	ttt	gat	gat	384
Arg	Ser	Gln	Phe	Leu	Val	Ala	Asn	Ala	Gln	Ala	Met	Pro	Phe	Asp	Asp	
		115					120					125				
aat	tct	ttt	gac	ttg	gtg	tgg	tcg	ctg	gaa	agt	ggc	gaa	cat	atg	cca	432
Asn	Ser	Phe	Asp	Leu	Val	Trp	Ser	Leu	Glu	Ser	Gly	Glu	His	Met	Pro	
130					135						140					
gat	aaa	acc	aag	ttt	ttg	caa	gag	tgt	tac	cga	gtc	cta	aaa	ccg	ggt	480
Asp	Lys	Thr	Lys	Phe	Leu	Gln	Glu	Cys	Tyr	Arg	Val	Leu	Lys	Pro	Gly	
145					150					155					160	
ggt	aag	tta	atc	atg	gtg	aca	tgg	tgt	cat	cgt	cct	acg	gat	gaa	aca	528
Gly	Lys	Leu	Ile	Met	Val	Thr	Trp	Cys	His	Arg	Pro	Thr	Asp	Glu	Thr	
				165					170					175		
cca	ctg	acg	gct	gat	gaa	caa	aaa	cac	cta	gaa	gat	att	tat	cgg	gtg	576
Pro	Leu	Thr	Ala	Asp	Glu	Gln	Lys	His	Leu	Glu	Asp	Ile	Tyr	Arg	Val	
			180					185					190			
tat	tgt	ttg	cct	tat	gta	att	tcg	ttg	cca	gag	tat	gag	gcg	atc	gca	624
Tyr	Cys	Leu	Pro	Tyr	Val	Ile	Ser	Leu	Pro	Glu	Tyr	Glu	Ala	Ile	Ala	
		195					200					205				
cgt	caa	cta	cca	tta	aac	aat	atc	cgc	acc	gcc	gac	tgg	tcg	caa	tcc	672
Arg	Gln	Leu	Pro	Leu	Asn	Asn	Ile	Arg	Thr	Ala	Asp	Trp	Ser	Gln	Ser	
	210				215						220					
gtc	gcc	caa	ttt	tgg	aac	ata	gtc	atc	gat	tcc	gcc	ttt	act	ccc	caa	720
Val	Ala	Gln	Phe	Trp	Asn	Ile	Val	Ile	Asp	Ser	Ala	Phe	Thr	Pro	Gln	
225					230					235					240	
gca	ata	ttt	ggg	tta	ctc	cgc	gct	ggt	tgg	act	acc	atc	caa	gga	gca	768
Ala	Ile	Phe	Gly	Leu	Leu	Arg	Ala	Gly	Trp	Thr	Thr	Ile	Gln	Gly	Ala	
				245					250					255		
tta	tca	cta	ggc	tta	atg	cgt	cgc	ggt	tat	gag	cgg	ggg	tta	att	cgg	816
Leu	Ser	Leu	Gly	Leu	Met	Arg	Arg	Gly	Tyr	Glu	Arg	Gly	Leu	Ile	Arg	
			260					265					270			
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Phe	Gly	Leu	Leu	Cys	Gly	Asp	Lys									
		275					280									

&lt;210&gt; 2257

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Anabaena variabilis ATCC 29413

&lt;400&gt; 2257

Met	Ser	Ala	Thr	Leu	Tyr	Gln	Gln	Ile	Gln	Gln	Phe	Tyr	Asp	Ala	Ser	
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			20					25					30			
Tyr	Gly	Val	Asp	Gly	Thr	Glu	Gln	Lys	Asn	Arg	Arg	Gln	Ala	Gln	Ile	
		35					40					45				
Asp	Leu	Ile	Glu	Glu	Leu	Leu	Thr	Trp	Ala	Gly	Val	Gln	Thr	Ala	Glu	
	50				55						60					
Asn	Ile	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Tyr	Leu	
65				70						75					80	
Ala	Glu	Lys	Leu	Asn	Ala	Lys	Ala	Thr	Gly	Ile	Thr	Leu	Ser	Pro	Val	
				85					90					95		
Gln	Ala	Ala	Arg	Ala	Thr	Glu	Arg	Ala	Lys	Glu	Ala	Gly	Leu	Ser	Gly	
			100					105					110			
Arg	Ser	Gln	Phe	Leu	Val	Ala	Asn	Ala	Gln	Ala	Met	Pro	Phe	Asp	Asp	
		115					120					125				
Asn	Ser	Phe	Asp	Leu	Val	Trp	Ser	Leu	Glu	Ser	Gly	Glu	His	Met	Pro	
		130				135					140					

## PhoenixTemp32470.tmp.txt

Asp Lys Thr Lys Phe Leu Gln Glu Cys Tyr Arg Val Leu Lys Pro Gly  
 145 150 155 160  
 Gly Lys Leu Ile Met Val Thr Trp Cys His Arg Pro Thr Asp Glu Thr  
 165 170 175  
 Pro Leu Thr Ala Asp Glu Gln Lys His Leu Glu Asp Ile Tyr Arg Val  
 180 185 190  
 Tyr Cys Leu Pro Tyr Val Ile Ser Leu Pro Glu Tyr Glu Ala Ile Ala  
 195 200 205  
 Arg Gln Leu Pro Leu Asn Asn Ile Arg Thr Ala Asp Trp Ser Gln Ser  
 210 215 220  
 Val Ala Gln Phe Trp Asn Ile Val Ile Asp Ser Ala Phe Thr Pro Gln  
 225 230 235 240  
 Ala Ile Phe Gly Leu Arg Ala Gly Trp Thr Thr Ile Gln Gly Ala  
 245 250 255  
 Leu Ser Leu Gly Leu Met Arg Arg Gly Tyr Glu Arg Gly Leu Ile Arg  
 260 265 270  
 Phe Gly Leu Leu Cys Gly Asp Lys  
 275 280

&lt;210&gt; 2258

&lt;211&gt; 915

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. CC9605

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(915)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2258

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1				5		10								15		
cgc	gac	cgg	cgc	tac	gaa	tcg	tcg	gag	agt	gtc	gcc	tcc	gcc	tac	gac	96
Arg	Asp	Arg	Arg	Tyr	Glu	Ser	Ser	Glu	Ser	Val	Ala	Ser	Ala	Tyr	Asp	
			20					25					30			
gcc	tgg	acg	gaa	gac	cgt	ttg	ctg	gag	cag	ctc	tgg	gga	gag	cat	gtc	144
Ala	Trp	Thr	Glu	Asp	Arg	Leu	Leu	Glu	Gln	Leu	Trp	Gly	Glu	His	Val	
		35				40						45				
cat	ctc	ggc	cat	tac	ggg	acc	ccg	ccg	ggc	tcc	ttc	gac	ttc	cgc	gaa	192
His	Leu	Gly	His	Tyr	Gly	Thr	Pro	Pro	Gly	Ser	Phe	Asp	Phe	Arg	Glu	
	50				55					60						
gcc	aag	gaa	gcc	ttc	gtc	cac	gag	ctg	gtg	cgc	tgg	agc	ggt	ctg	gac	240
Ala	Lys	Glu	Ala	Phe	Val	His	Glu	Leu	Val	Arg	Trp	Ser	Gly	Leu	Asp	
	65			70		75				80						
caa	ctc	ccc	gct	ggc	agc	cgg	gtg	ctg	gat	gtg	gga	tgc	ggc	atc	ggt	288
Gln	Leu	Pro	Ala	Gly	Ser	Arg	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	
			85					90						95		
ggc	agc	gcc	cga	ata	ctg	gcg	cgg	gat	tac	gga	ttg	gac	gtt	ctc	ggc	336
Gly	Ser	Ala	Arg	Ile	Leu	Ala	Arg	Asp	Tyr	Gly	Leu	Asp	Val	Leu	Gly	
			100					105					110			
atc	agc	atc	agc	cca	gcc	cag	gtg	gaa	cga	gcc	aca	caa	ctc	acc	cca	384
Ile	Ser	Ile	Ser	Pro	Ala	Gln	Val	Glu	Arg	Ala	Thr	Gln	Leu	Thr	Pro	
		115					120					125				
tca	ggc	ctg	agc	tgc	cgc	ttc	cag	gta	atg	gac	gcc	ttg	gat	ctt	caa	432
Ser	Gly	Leu	Ser	Cys	Arg	Phe	Gln	Val	Met	Asp	Ala	Leu	Asp	Leu	Gln	
	130					135					140					
ctg	ccc	gac	cag	agc	ttt	gat	gcg	gtc	tgg	agt	gtg	gag	gcc	ggt	ccc	480
Leu	Pro	Asp	Gln	Ser	Phe	Asp	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	
	145				150					155					160	
cac	atg	ccg	aac	aaa	cag	cgt	tat	gcc	gat	gag	ctg	ctg	cgg	gcg	atg	528
His	Met	Pro	Asn	Lys	Gln	Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Ala	Met	
				165				170						175		
cga	ccg	ggg	ggt	ctg	cta	gct	gtg	gcc	gac	tgg	aac	cgc	cga	gac	ccc	576
Arg	Pro	Gly	Gly	Leu	Leu	Ala	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	
			180					185					190			
tct	gac	ggc	ggc	atg	acg	aga	acc	gaa	cgc	tgg	gtg	atg	cgt	cag	ctg	624
Ser	Asp	Gly	Gly	Met	Thr	Arg	Thr	Glu	Arg	Trp	Val	Met	Arg	Gln	Leu	
		195					200					205				

## PhoenixTemp32470.tmp.txt

ctc	aac	cag	tgg	gcc	cac	cct	gaa	ttc	gcc	agc	atc	aag	ggg	ttc	cgc	672
Leu	Asn	Gln	Trp	Ala	His	Pro	Glu	Phe	Ala	Ser	Ile	Lys	Gly	Phe	Arg	
	210					215					220					
cag	aac	ctc	gac	aac	agc	gtc	cac	cac	cgt	ggc	gag	atc	gtc	acc	ggc	720
Gln	Asn	Leu	Asp	Asn	Ser	Val	His	His	Arg	Gly	Glu	Ile	Val	Thr	Gly	
225					230					235					240	
gat	tgg	acc	cag	gcc	acg	ctc	ccc	tca	tgg	att	gac	tcg	atc	atc	gag	768
Asp	Trp	Thr	Gln	Ala	Thr	Leu	Pro	Ser	Trp	Ile	Asp	Ser	Ile	Ile	Glu	
				245					250					255		
ggc	atc	cga	cgc	ccc	tgg	gcc	gtg	gtc	agc	ctg	ggg	ccg	aaa	gct	gtc	816
Gly	Ile	Arg	Arg	Pro	Trp	Ala	Val	Val	Ser	Leu	Gly	Pro	Lys	Ala	Val	
			260				265					270				
ctg	caa	ggc	ctg	aga	gaa	acg	ccg	acg	ttg	ctg	ctg	atg	cac	tgg	gcc	864
Leu	Gln	Gly	Leu	Arg	Glu	Thr	Pro	Thr	Leu	Leu	Leu	Met	His	Trp	Ala	
		275					280					285				
ttc	gcc	acc	ggg	ctg	atg	caa	ttc	ggc	gtc	ttc	cga	atc	agc	aaa	gac	912
Phe	Ala	Thr	Gly	Leu	Met	Gln	Phe	Gly	Val	Phe	Arg	Ile	Ser	Lys	Asp	
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tga																915

&lt;210&gt; 2259

&lt;211&gt; 304

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. CC9605

&lt;400&gt; 2259

Met	Val	Ala	Gly	Ala	Val	Gly	Thr	Thr	Gly	Val	Ala	Leu	Trp	Leu	Arg	
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Arg	Asp	Arg	Arg	Tyr	Glu	Ser	Ser	Glu	Ser	Val	Ala	Ser	Ala	Tyr	Asp	
			20					25					30			
Ala	Trp	Thr	Glu	Asp	Arg	Leu	Leu	Glu	Gln	Leu	Trp	Gly	Glu	His	Val	
		35				40						45				
His	Leu	Gly	His	Tyr	Gly	Thr	Pro	Pro	Gly	Ser	Phe	Asp	Phe	Arg	Glu	
	50				55						60					
Ala	Lys	Glu	Ala	Phe	Val	His	Glu	Leu	Val	Arg	Trp	Ser	Gly	Leu	Asp	
65				70					75					80		
Gln	Leu	Pro	Ala	Gly	Ser	Arg	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	
			85					90						95		
Gly	Ser	Ala	Arg	Ile	Leu	Ala	Arg	Asp	Tyr	Gly	Leu	Asp	Val	Leu	Gly	
			100					105					110			
Ile	Ser	Ile	Ser	Pro	Ala	Gln	Val	Glu	Arg	Ala	Thr	Gln	Leu	Thr	Pro	
		115				120						125				
Ser	Gly	Leu	Ser	Cys	Arg	Phe	Gln	Val	Met	Asp	Ala	Leu	Asp	Leu	Gln	
	130					135					140					
Leu	Pro	Asp	Gln	Ser	Phe	Asp	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	
145				150					155					160		
His	Met	Pro	Asn	Lys	Gln	Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Ala	Met	
			165					170						175		
Arg	Pro	Gly	Gly	Leu	Leu	Ala	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	
		180						185					190			
Ser	Asp	Gly	Gly	Met	Thr	Arg	Thr	Glu	Arg	Trp	Val	Met	Arg	Gln	Leu	
		195				200						205				
Leu	Asn	Gln	Trp	Ala	His	Pro	Glu	Phe	Ala	Ser	Ile	Lys	Gly	Phe	Arg	
	210					215					220					
Gln	Asn	Leu	Asp	Asn	Ser	Val	His	His	Arg	Gly	Glu	Ile	Val	Thr	Gly	
225				230					235					240		
Asp	Trp	Thr	Gln	Ala	Thr	Leu	Pro	Ser	Trp	Ile	Asp	Ser	Ile	Ile	Glu	
			245						250					255		
Gly	Ile	Arg	Arg	Pro	Trp	Ala	Val	Val	Ser	Leu	Gly	Pro	Lys	Ala	Val	
		260				265						270				
Leu	Gln	Gly	Leu	Arg	Glu	Thr	Pro	Thr	Leu	Leu	Leu	Met	His	Trp	Ala	
		275				280						285				
Phe	Ala	Thr	Gly	Leu	Met	Gln	Phe	Gly	Val	Phe	Arg	Ile	Ser	Lys	Asp	
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&lt;210&gt; 2260

&lt;211&gt; 936

&lt;212&gt; DNA

<213> *Prochlorococcus marinus* str. MIT 9312

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(936)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2260

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1 5 10 15	
gct ttg ttt ttt gtc tgg aga att aat cct aga aaa tat att tct tct	96
Ala Leu Phe Phe Val Trp Arg Ile Asn Pro Arg Lys Tyr Ile Ser Ser	
20 25 30	
ggc aca gtg gca tct gca tat gat gct tgg acc caa gat aaa ttg ctt	144
Gly Thr Val Ala Ser Ala Tyr Asp Ala Trp Thr Gln Asp Lys Leu Leu	
35 40 45	
gag aga ttg tgg gga gag cat ata cat tta ggc ttt tat ccc tca gat	192
Glu Arg Leu Trp Gly Glu His Ile His Leu Gly Phe Tyr Pro Ser Asp	
50 55 60	
ggg aag aat att gat ttt aga aag gct aaa gtt cag ttt gtg cat gaa	240
Gly Lys Asn Ile Asp Phe Arg Lys Ala Lys Val Gln Phe Val His Glu	
65 70 75 80	
tta gtc aag tgg agt ggt tta gat aaa ttg cca aaa gga tcc aga ata	288
Leu Val Lys Trp Ser Gly Leu Asp Lys Leu Pro Lys Gly Ser Arg Ile	
85 90 95	
ctc gat gta ggt tgt gga ata gga gga agt tct agg att ctt gcg aaa	336
Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Lys	
100 105 110	
tat tat gga ttt aat gtt act gga att aca att agt cct gct caa gta	384
Tyr Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Ala Gln Val	
115 120 125	
aaa aga gca aaa gaa ctt act cct ctt gga ctc aat tgt aat ttt caa	432
Lys Arg Ala Lys Glu Leu Thr Pro Leu Gly Leu Asn Cys Asn Phe Gln	
130 135 140	
gtt atg gac gca ttg aat tta aaa ttt aaa gat gga tca ttt gat gcg	480
Val Met Asp Ala Leu Asn Leu Lys Phe Lys Asp Gly Ser Phe Asp Ala	
145 150 155 160	
gta tgg agt gtg gag gcg ggc gca cac atg aat gat aaa act aag ttt	528
Val Trp Ser Val Glu Ala Gly Ala His Met Asn Asp Lys Thr Lys Phe	
165 170 175	
gca gat gaa atg ctg aga act ttg aga ccc gga ggt tat ttg gca tta	576
Ala Asp Glu Met Leu Arg Thr Leu Arg Pro Gly Gly Tyr Leu Ala Leu	
180 185 190	
gct gat tgg aac tca aga gat ctc aga tca tat cct cct ttt ttt	624
Ala Asp Trp Asn Ser Arg Asp Leu Arg Ser Tyr Pro Pro Ser Phe Phe	
195 200 205	
gaa aag ttg gtt ctt aaa caa tta ctt gat cag tgg gtt cat cct gat	672
Glu Lys Leu Val Leu Lys Gln Leu Leu Asp Gln Trp Val His Pro Asp	
210 215 220	
ttt ata agc att aac gaa ttt gct aat att ctt agt act aat aaa aat	720
Phe Ile Ser Ile Asn Glu Phe Ala Asn Ile Leu Ser Thr Asn Lys Asn	
225 230 235 240	
agt gca gga aga gtt gtt tct gaa aat tgg aat ttt tat aca aat cct	768
Ser Ala Gly Arg Val Val Ser Glu Asn Trp Asn Phe Tyr Thr Asn Pro	
245 250 255	
tca tgg tac gac tcc ata atc gag gga att cga aga cct tct gca att	816
Ser Trp Tyr Asp Ser Ile Ile Glu Gly Ile Arg Arg Pro Ser Ala Ile	
260 265 270	
tta act ctt gga cct tta gcg ata gtt aag tca ata aga gag atc ccg	864
Leu Thr Leu Gly Pro Leu Ala Ile Val Lys Ser Ile Arg Glu Ile Pro	
275 280 285	
aca ata ctt ctt atg aat tgg gca ttt aga aaa ggt tta atg gag ttt	912
Thr Ile Leu Leu Met Asn Trp Ala Phe Arg Lys Gly Leu Met Glu Phe	
290 295 300	
gga gtt tat aaa tgt aga gga taa	936
Gly Val Tyr Lys Cys Arg Gly	
305 310	



<210> 2261  
 <211> 311  
 <212> PRT  
 <213> Prochlorococcus marinus str. MIT 9312

<400> 2261  
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 1 Ala Leu Phe Phe<sub>20</sub> Val Trp Arg Ile Asn<sub>25</sub> Pro Arg Lys Tyr Ile<sub>30</sub> Ser Ser  
 Gly Thr Val<sub>35</sub> Ala Ser Ala Tyr Asp<sub>40</sub> Ala Trp Thr Gln<sub>45</sub> Asp Lys Leu Leu  
 Glu Arg<sub>50</sub> Leu Trp Gly Glu His<sub>55</sub> Ile His Leu Gly Phe<sub>60</sub> Tyr Pro Ser Asp  
 Gly Lys Asn Ile Asp Phe<sub>70</sub> Arg Lys Ala Lys Val<sub>75</sub> Gln Phe Val His<sub>80</sub> Glu  
 65 Leu Val Lys Trp Ser<sub>85</sub> Gly Leu Asp Lys Leu<sub>90</sub> Pro Lys Gly Ser Arg<sub>95</sub> Ile  
 Leu Asp Val Gly<sub>100</sub> Cys Gly Ile Gly<sub>105</sub> Ser Ser Arg Ile Leu<sub>110</sub> Ala Lys  
 Tyr Tyr Gly<sub>115</sub> Phe Asn Val Thr Gly<sub>120</sub> Ile Thr Ile Ser Pro<sub>125</sub> Ala Gln Val  
 Lys Arg<sub>130</sub> Ala Lys Glu Leu Thr<sub>135</sub> Pro Leu Gly Leu Asn<sub>140</sub> Cys Asn Phe Gln  
 Val<sub>145</sub> Met Asp Ala Leu Asn<sub>150</sub> Leu Lys Phe Lys Asp<sub>155</sub> Gly Ser Phe Asp Ala  
 Val<sub>160</sub> Trp Ser Val Glu<sub>165</sub> Ala Gly Ala His Met<sub>170</sub> Asn Asp Lys Thr Lys<sub>175</sub> Phe  
 Ala Asp Glu Met<sub>180</sub> Leu Arg Thr Leu Arg<sub>185</sub> Pro Gly Gly Tyr Leu<sub>190</sub> Ala Leu  
 Ala Asp Trp Asn Ser Arg Asp Leu<sub>200</sub> Arg Ser Tyr Pro<sub>205</sub> Pro Ser Phe Phe  
 Glu Lys<sub>210</sub> Leu Val Leu Lys Gln<sub>215</sub> Leu Leu Asp Gln Trp<sub>220</sub> Val His Pro Asp  
 Phe<sub>225</sub> Ile Ser Ile Asn Glu<sub>230</sub> Phe Ala Asn Ile Leu<sub>235</sub> Ser Thr Asn Lys Asn<sub>240</sub>  
 Ser Ala Gly Arg Val<sub>245</sub> Val Ser Glu Asn Trp<sub>250</sub> Asn Phe Tyr Thr Asn<sub>255</sub> Pro  
 Ser Trp Tyr Asp<sub>260</sub> Ser Ile Ile Glu Gly<sub>265</sub> Ile Arg Arg Pro Ser<sub>270</sub> Ala Ile  
 Leu Thr<sub>275</sub> Leu Gly Pro Leu Ala Ile<sub>280</sub> Val Lys Ser Ile Arg<sub>285</sub> Glu Ile Pro  
 Thr Ile<sub>290</sub> Leu Leu Met Asn Trp<sub>295</sub> Ala Phe Arg Lys Gly<sub>300</sub> Leu Met Glu Phe  
 Gly Val Tyr Lys Cys Arg<sub>310</sub> Gly  
 305

<210> 2262  
 <211> 933  
 <212> DNA  
 <213> Synechococcus elongatus PCC 7942

<220>  
 <221> CDS  
 <222> (1)..(933)  
 <223> transl\_table=11

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 1 ctc gcc att tac ctc ctc act cct cgt cgc tac cag tct tcc gac tca 96  
 Leu Ala Ile Tyr Leu Leu Thr Pro Arg Arg Tyr Gln Ser Ser Asp Ser  
 20 gtg gcg cag gcc tac gac agc tgg aca cag gac ggc atc ctg gag ttt 144  
 Val Ala Gln Ala Tyr Asp Ser Trp<sub>40</sub> Thr Gln Asp Gly Ile<sub>45</sub> Leu Glu Phe  
 35 tac tgg ggc gag cac att cac ctc ggg cac tac ggc aat ccg ctg cgc 192  
 Page 1490

## PhoenixTemp32470.tmp.txt

Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Asn	Pro	Leu	Arg	
	50					55					60					
cgc	aaa	gat	ttt	cgg	gca	gcc	aaa	gca	gat	ttt	gtt	cat	gaa	atg	gtg	240
Arg	Lys	Asp	Phe	Arg	Ala	Ala	Lys	Ala	Asp	Phe	Val	His	Glu	Met	Val	
65					70					75					80	
cgc	tgg	ggt	aac	ctc	gat	cgc	ctg	cca	gcg	ggc	acc	aca	gtc	ttg	gat	288
Arg	Trp	Gly	Asn	Leu	Asp	Arg	Leu	Pro	Ala	Gly	Thr	Thr	Val	Leu	Asp	
				85					90					95		
gtg	ggt	tgc	ggc	att	ggc	gga	agc	agc	cgg	att	ctg	gcg	cgg	gac	tac	336
Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Arg	Asp	Tyr	
			100					105					110			
cac	ttt	gat	gtc	act	ggc	atc	acg	atc	agt	ccg	ggg	caa	gtt	cag	cgg	384
His	Phe	Asp	Val	Thr	Gly	Ile	Thr	Ile	Ser	Pro	Gly	Gln	Val	Gln	Arg	
		115					120					125				
gcg	cga	tcg	ctg	acg	cca	gac	gga	gtg	aca	gcg	caa	ttc	aaa	gtc	gat	432
Ala	Arg	Ser	Leu	Thr	Pro	Asp	Gly	Val	Thr	Ala	Gln	Phe	Lys	Val	Asp	
130					135					140						
gac	gcc	ctc	aat	ctc	tcg	ttt	cct	gac	gcc	agc	ttt	gat	gtg	gtc	tgg	480
Asp	Ala	Leu	Asn	Leu	Ser	Phe	Pro	Asp	Ala	Ser	Phe	Asp	Val	Val	Trp	
145					150				155						160	
tgc	att	gag	gca	ggg	cct	cac	atg	ccc	gat	aaa	gcc	ctg	ttc	gct	aaa	528
Cys	Ile	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Ala	Leu	Phe	Ala	Lys	
				165					170					175		
gaa	ttg	ctg	cgg	gtg	ctc	aaa	ccc	ggt	ggc	acg	ctg	gtc	gtg	gct	gac	576
Glu	Leu	Leu	Arg	Val	Leu	Lys	Pro	Gly	Gly	Thr	Leu	Val	Val	Ala	Asp	
			180					185					190			
tgg	aat	caa	cgc	gat	acc	cgc	cgg	cga	tcg	ctc	caa	ggt	tgg	gag	cgc	624
Trp	Asn	Gln	Arg	Asp	Thr	Arg	Arg	Arg	Ser	Leu	Gln	Gly	Trp	Glu	Arg	
		195					200					205				
tgg	gtg	atg	cgc	cag	ctc	tta	gat	cag	tgg	gct	cac	cca	gaa	ttt	gcc	672
Trp	Val	Met	Arg	Gln	Leu	Leu	Asp	Gln	Trp	Ala	His	Pro	Glu	Phe	Ala	
					215					220						
agc	atc	gaa	ggc	ttc	agt	gaa	ctg	tta	gaa	gcg	aca	ggc	tgg	gtt	gat	720
Ser	Ile	Glu	Gly	Phe	Ser	Glu	Leu	Leu	Glu	Ala	Thr	Gly	Trp	Val	Asp	
225					230				235						240	
ggt	gcg	gtc	aca	aca	gcg	gat	tgg	act	cgc	gaa	acc	ctg	ccc	tct	tgg	768
Gly	Ala	Val	Thr	Thr	Ala	Asp	Trp	Thr	Arg	Glu	Thr	Leu	Pro	Ser	Trp	
				245					250					255		
ctg	gat	tcg	atc	tgg	cag	ggt	atc	ctc	cgc	ccg	gct	ggc	ctc	gtt	cgc	816
Leu	Asp	Ser	Ile	Trp	Gln	Gly	Ile	Leu	Arg	Pro	Ala	Gly	Leu	Val	Arg	
				260				265					270			
ttt	ggc	ttc	tcg	ggg	ctg	atc	aaa	tca	ctg	cgc	gaa	gtt	ccg	acc	ctg	864
Phe	Gly	Phe	Ser	Gly	Leu	Ile	Lys	Ser	Leu	Arg	Glu	Val	Pro	Thr	Leu	
				275			280					285				
atc	ctg	atg	cga	atc	gcc	ttt	ggt	caa	ggg	ctc	tgc	cgc	ttc	ggg	atg	912
Ile	Leu	Met	Arg	Ile	Ala	Phe	Gly	Gln	Gly	Leu	Cys	Arg	Phe	Gly	Met	
					295						300					
ttc	cga	gcg	act	cgc	gcc	tag										933
Phe	Arg	Ala	Thr	Arg	Ala											
305					310											

&lt;210&gt; 2263

&lt;211&gt; 310

&lt;212&gt; PRT

&lt;213&gt; Synechococcus elongatus PCC 7942

&lt;400&gt; 2263

Met	Pro	Met	Ser	Pro	Leu	Trp	Leu	Leu	Val	Leu	Pro	Val	Ser	Leu	
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Leu	Ala	Ile	Tyr	Leu	Leu	Thr	Pro	Arg	Arg	Tyr	Gln	Ser	Ser	Asp	Ser
			20					25				30			
Val	Ala	Gln	Ala	Tyr	Asp	Ser	Trp	Thr	Gln	Asp	Gly	Ile	Leu	Glu	Phe
			35				40					45			
Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Asn	Pro	Leu	Arg
			50			55				60					
Arg	Lys	Asp	Phe	Arg	Ala	Ala	Lys	Ala	Asp	Phe	Val	His	Glu	Met	Val
65					70				75						80
Arg	Trp	Gly	Asn	Leu	Asp	Arg	Leu	Pro	Ala	Gly	Thr	Thr	Val	Leu	Asp
				85					90					95	

## PhoenixTemp32470.tmp.txt

Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Arg Asp Tyr  
 100 110  
 His Phe Asp Val Thr Gly Ile Thr Ile Ser Pro Gly Gln Val Gln Arg  
 115 125  
 Ala Arg Ser Leu Thr Pro Asp Gly Val Thr Ala Gln Phe Lys Val Asp  
 130 140  
 Asp Ala Leu Asn Leu Ser Phe Pro Asp Ala Ser Phe Asp Val Val Trp  
 145 155 160  
 Cys Ile Glu Ala Gly Pro His Met Pro Asp Lys Ala Leu Phe Ala Lys  
 165 175  
 Glu Leu Leu Arg Val Leu Lys Pro Gly Gly Thr Leu Val Val Ala Asp  
 180 190  
 Trp Asn Gln Arg Asp Thr Arg Arg Arg Ser Leu Gln Gly Trp Glu Arg  
 195 205  
 Trp Val Met Arg Gln Leu Leu Asp Gln Trp Ala His Pro Glu Phe Ala  
 210 215 220  
 Ser Ile Glu Gly Phe Ser Glu Leu Leu Glu Ala Thr Gly Trp Val Asp  
 225 235 240  
 Gly Ala Val Thr Thr Ala Asp Trp Thr Arg Glu Thr Leu Pro Ser Trp  
 245 255  
 Leu Asp Ser Ile Trp Gln Gly Ile Leu Arg Pro Ala Gly Leu Val Arg  
 260 270  
 Phe Gly Phe Ser Gly Leu Ile Lys Ser Leu Arg Glu Val Pro Thr Leu  
 275 285  
 Ile Leu Met Arg Ile Ala Phe Gly Gln Gly Leu Cys Arg Phe Gly Met  
 290 295 300  
 Phe Arg Ala Thr Arg Ala  
 305 310

&lt;210&gt; 2264

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Trichodesmium erythraeum IMS101

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2264

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1				5					10					15		
ggc	ata	gtt	atc	tat	tta	atc	act	ccc	cgt	agc	tat	gaa	tcc	tct	aat	96
Gly	Ile	Val	Ile	Tyr	Leu	Ile	Thr	Pro	Arg	Ser	Tyr	Glu	Ser	Ser	Asn	
			20					25					30			
acg	gta	gcc	aat	tcc	tat	gac	gac	tgg	act	caa	gac	ggg	att	tta	gaa	144
Thr	Val	Ala	Asn	Ser	Tyr	Asp	Asp	Trp	Thr	Gln	Asp	Gly	Ile	Leu	Glu	
		35				40						45				
ttt	tac	tgg	ggc	gaa	cat	att	cat	tta	ggg	cac	tat	ggg	tca	cca	cca	192
Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Ser	Pro	Pro	
		50				55					60					
cga	cgc	aaa	gat	ttt	ttg	caa	gcc	aaa	gct	gac	ttc	ggt	cac	gaa	atg	240
Arg	Arg	Lys	Asp	Phe	Leu	Gln	Ala	Lys	Ala	Asp	Phe	Val	His	Glu	Met	
					70				75					80		
gtc	aag	tgg	ggg	ggt	tta	gac	aaa	tta	cct	cgt	ggg	act	act	ggt	tta	288
Val	Lys	Trp	Gly	Gly	Leu	Asp	Lys	Leu	Pro	Arg	Gly	Thr	Thr	Val	Leu	
				85					90					95		
gat	gtc	ggg	tgt	gga	att	ggg	ggc	agc	agc	cgt	atc	tta	gcc	aaa	gaa	336
Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Lys	Glu	
			100					105					110			
tac	gag	ttt	gaa	gtt	acg	ggg	gtt	acc	att	agc	ccc	aaa	cag	gta	caa	384
Tyr	Glu	Phe	Glu	Val	Thr	Gly	Val	Thr	Ile	Ser	Pro	Lys	Gln	Val	Gln	
		115					120					125				
cgg	gca	aca	gaa	tta	acc	cct	caa	gga	gtt	acg	gct	aaa	ttc	cag	gta	432
Arg	Ala	Thr	Glu	Leu	Thr	Pro	Gln	Gly	Val	Thr	Ala	Lys	Phe	Gln	Val	
		130				135					140					
gat	gat	gcg	ttg	gca	cta	tct	ttc	cca	gac	aat	agt	ttt	gat	gtg	gtt	480
Asp	Asp	Ala	Leu	Ala	Leu	Ser	Phe	Pro	Asp	Asn	Ser	Phe	Asp	Val	Val	

## PhoenixTemp32470.tmp.txt

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	180	185	190	
gat	tg	aat	cag	624
Asp	Trp	Asn	Gln	
	195	200	205	
aaa	ccc	gta	atg	672
Lys	Pro	Val	Met	
	210	215	220	
tct	agt	atc	gaa	720
Ser	Ser	Ile	Glu	
	225	230	235	
gaa	gga	gaa	gta	768
Glu	Gly	Glu	Val	
	245	250	255	
tg	ttc	gaa	tca	816
Trp	Phe	Glu	Ser	
	260	265	270	
aag	ttt	ggc	ttt	864
Lys	Phe	Gly	Phe	
	275	280	285	
atg	tta	ttg	atg	912
Met	Leu	Leu	Met	
	290	295	300	
atg	ttc	cgc	gct	960
Met	Phe	Arg	Ala	
	305	310	315	
gct	acc	act	gaa	987
Ala	Thr	Thr	Glu	
	325			

&lt;210&gt; 2265

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Trichodesmium erythraeum IMS101

&lt;400&gt; 2265

Met	Tyr	Leu	Tyr	Tyr	Ala	Leu	Gly	Phe	Ile	Leu	Leu	Leu	Val	Ala	Leu
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Gly	Ile	Val	Ile	Tyr	Leu	Ile	Thr	Pro	Arg	Ser	Tyr	Glu	Ser	Ser	Asn
			20					25					30		
Thr	Val	Ala	Asn	Ser	Tyr	Asp	Asp	Trp	Thr	Gln	Asp	Gly	Ile	Leu	Glu
		35				40						45			
Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Ser	Pro	Pro
	50				55					60					
Arg	Arg	Lys	Asp	Phe	Leu	Gln	Ala	Lys	Ala	Asp	Phe	Val	His	Glu	Met
65					70				75					80	
Val	Lys	Trp	Gly	Gly	Leu	Asp	Lys	Leu	Pro	Arg	Gly	Thr	Thr	Val	Leu
			85						90					95	
Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Lys	Glu
		100						105					110		
Tyr	Glu	Phe	Glu	Val	Thr	Gly	Val	Thr	Ile	Ser	Pro	Lys	Gln	Val	Gln
		115					120					125			
Arg	Ala	Thr	Glu	Leu	Thr	Pro	Gln	Gly	Val	Thr	Ala	Lys	Phe	Gln	Val
	130				135					140					
Asp	Asp	Ala	Leu	Ala	Leu	Ser	Phe	Pro	Asp	Asn	Ser	Phe	Asp	Val	Val
145				150					155					160	
Trp	Ser	Ile	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Val	Lys	Tyr	Gly
			165					170					175		
Ser	Glu	Met	Met	Arg	Val	Leu	Lys	Pro	Gly	Gly	Ile	Leu	Val	Val	Ala
		180					185					190			
Asp	Trp	Asn	Gln	Arg	Asp	Asp	Arg	Gln	Lys	Pro	Leu	Asn	Tyr	Trp	Glu
		195				200						205			
Lys	Pro	Val	Met	Arg	Gln	Leu	Leu	Asp	Gln	Trp	Ser	His	Pro	Ala	Phe
	210					215				220					

## PhoenixTemp32470.tmp.txt

Ser 225 Ser Ile Glu Gly Phe 230 Ser Glu Gln Ile Ala 235 Glu Thr Gly Leu Val 240  
 Glu Gly Glu Val Ala 245 Thr Ala Asp Trp Thr 250 Gln Glu Thr Leu Pro Ser 255  
 Trp Phe Glu Ser 260 Ile Trp Gln Gly Ile 265 Val Arg Pro Lys Gly 270 Leu Ile  
 Lys Phe 275 Phe Ser Gly Phe Ile 280 Lys Ser Leu Arg Glu 285 Val Pro Thr  
 Met 290 Leu Leu Met Arg Leu Gly 295 Phe Gly Ala Gly Leu Cys Arg Phe Gly  
 Met 305 Phe Arg Ala Val Lys 310 Ser Asn Ser Val Pro 315 Val Ser Thr Glu Thr 320  
 Ala Thr Thr Glu Val 325 Ala Asn Ala

&lt;210&gt; 2266

&lt;211&gt; 945

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. CC9311

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(945)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2266

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Met Pro Ser Pro Thr 5 Val Leu Ile Pro Thr 10 Ala Ala Gly Leu 15 Leu Leu	
ttg ggt tgc gcc tac cag ctc tgg aat cgt cgc aat cgc gcc tac cac	96
Leu Gly Cys Ala 20 Tyr Gln Leu Trp Asn 25 Arg Arg Asn Arg Ala 30 Tyr His	
tcc agt gag agc gtt gct gcc gca tac gac gcc tgg aca gat gac cag	144
Ser Ser Glu 35 Ser Val Ala Ala 40 Tyr Asp Ala Trp 45 Thr Asp Asp Gln	
tta ctg gaa tcc ctt tgg ggt gag cat gtt cat ctt ggc cac tac gga	192
Leu Leu Glu Ser Leu Trp Gly 55 Glu His Val His 60 Leu Gly His Tyr Gly	
tcc cca ccc cag cct cgg gat ttc aga cag gcc aaa tcc gac ttc gtt	240
Ser Pro Pro Gln Pro Arg 70 Asp Phe Arg Gln Ala 75 Lys Ser Asp Phe 80 Val	
cat gag tta gtc cac tgg agt ggc ttc gat caa ttg cca cca gga tcc	288
His Glu Leu Val 85 His Trp Ser Gly Phe 90 Asp Gln Leu Pro Pro Gly 95 Ser	
cgt gtt tta gat gtg ggt tgc ggt atc ggg gga agc gcc agg atc ctt	336
Arg Val Leu Asp 100 Val Gly Cys Gly 105 Gly Gly Ser Ala Arg 110 Ile Leu	
tct cgc gac tac ggt tta gac gta ctg ggt atc agc atc agt ccg gct	384
Ser Arg Asp Tyr Gly Leu Asp Val Leu Gly Ile Ser 125 Ile Ser Pro Ala	
cag gtg aac aga gcc acc cac cta aca cca gac tct ctg ccc tgt cgc	432
Gln Val Asn Arg Ala Thr 135 Leu Thr Pro Asp Ser 140 Leu Pro Cys Arg	
ttc gca gtg atg gat gcc ctc aac ctg caa ctt gag gat caa agc ttt	480
Phe Ala Val Met Asp Ala 150 Leu Asn Leu Gln Leu Glu Asp Gln Ser Phe 160	
gac gcc gtt tgg acg gtc gag gcc ggt ccg cat atg cct gac aag cag	528
Asp Ala Val Trp 165 Val Glu Ala Gly Pro 170 His Met Pro Asp Lys Gln	
cgg ttt gcc aac gaa ctc tta aga gtc cta aaa cct ggc ggt cgc ctg	576
Arg Phe Ala Asn Glu Leu Leu Arg Val Leu Lys Pro Gly Gly Arg Leu	
gct gtt gcc gat tgg aat cgc cgt gat cct gtg gat ggt gcc ctt aat	624
Ala Val Ala Asp Trp Asn Arg Arg Asp Pro Val Asp 205 Gly Ala Leu Asn	
cgg cgc gaa cgc tgg gtg atg cat caa tta ctc aca caa tgg gcg cat	672
Arg Arg Glu Arg Trp Val Met 215 His Gln Leu Leu Thr 220 Gln Trp Ala His	
cct gaa ttc gcc agc atc cga ggc ttt cgc cag aac ctt gag aac agc	720

## PhoenixTemp32470.tmp.txt

Pro	Glu	Phe	Ala	Ser	Ile	Arg	Gly	Phe	Arg	Gln	Asn	Leu	Glu	Asn	Ser	
225					230					235					240	
cct	cat	cat	cgc	ggc	acc	atc	agc	acc	gat	gat	tgg	aca	gac	gcc	acc	768
Pro	His	His	Arg	Gly	Thr	Ile	Ser	Thr	Asp	Asp	Trp	Thr	Asp	Ala	Thr	
				245					250					255		
ttg	ccc	tct	tgg	aat	gaa	tcc	atc	ctc	gaa	ggc	atc	cgc	agg	ccc	aat	816
Leu	Pro	Ser	Trp	Asn	Glu	Ser	Ile	Leu	Glu	Gly	Ile	Arg	Arg	Pro	Asn	
				260					265					270		
gca	atc	ctc	cgc	ctt	ggc	ccc	aag	gca	gtg	ctg	cag	ggc	cta	cgt	gaa	864
Ala	Ile	Leu	Arg	Leu	Gly	Pro	Lys	Ala	Val	Leu	Gln	Gly	Leu	Arg	Glu	
				275				280					285			
aca	cca	acg	ctg	ttg	tta	atg	cgc	tgg	gct	ttt	gcc	aga	ggg	atg	atg	912
Thr	Pro	Thr	Leu	Leu	Leu	Met	Arg	Trp	Ala	Phe	Ala	Arg	Gly	Met	Met	
				290		295					300					
cag	ttc	ggc	gtg	ttt	aaa	act	aat	cac	tgc	tga						945
Gln	Phe	Gly	Val	Phe	Lys	Thr	Asn	His	Cys							
305					310											

&lt;210&gt; 2267

&lt;211&gt; 314

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. CC9311

&lt;400&gt; 2267

Met	Pro	Ser	Pro	Thr	Val	Leu	Ile	Pro	Thr	Ala	Ala	Gly	Leu	Leu	Leu	
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			20					25					30			
Ser	Ser	Glu	Ser	Val	Ala	Ala	Ala	Tyr	Asp	Ala	Trp	Thr	Asp	Asp	Gln	
		35					40					45				
Leu	Leu	Glu	Ser	Leu	Trp	Gly	Glu	His	Val	His	Leu	Gly	His	Tyr	Gly	
		50				55					60					
Ser	Pro	Pro	Gln	Pro	Arg	Asp	Phe	Arg	Gln	Ala	Lys	Ser	Asp	Phe	Val	
65					70				75					80		
His	Glu	Leu	Val	His	Trp	Ser	Gly	Phe	Asp	Gln	Leu	Pro	Pro	Gly	Ser	
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Arg	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala	Arg	Ile	Leu	
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Ser	Arg	Asp	Tyr	Gly	Leu	Asp	Val	Leu	Gly	Ile	Ser	Ile	Ser	Pro	Ala	
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Gln	Val	Asn	Arg	Ala	Thr	His	Leu	Thr	Pro	Asp	Ser	Leu	Pro	Cys	Arg	
		130				135					140					
Phe	Ala	Val	Met	Asp	Ala	Leu	Asn	Leu	Gln	Leu	Glu	Asp	Gln	Ser	Phe	
145					150				155					160		
Asp	Ala	Val	Trp	Thr	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Gln	
			165						170					175		
Arg	Phe	Ala	Asn	Glu	Leu	Leu	Arg	Val	Leu	Lys	Pro	Gly	Gly	Arg	Leu	
			180					185					190			
Ala	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	Val	Asp	Gly	Ala	Leu	Asn	
		195					200					205				
Arg	Arg	Glu	Arg	Trp	Val	Met	His	Gln	Leu	Leu	Thr	Gln	Trp	Ala	His	
		210				215						220				
Pro	Glu	Phe	Ala	Ser	Ile	Arg	Gly	Phe	Arg	Gln	Asn	Leu	Glu	Asn	Ser	
225					230					235					240	
Pro	His	His	Arg	Gly	Thr	Ile	Ser	Thr	Asp	Asp	Trp	Thr	Asp	Ala	Thr	
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Leu	Pro	Ser	Trp	Asn	Glu	Ser	Ile	Leu	Glu	Gly	Ile	Arg	Arg	Pro	Asn	
			260					265					270			
Ala	Ile	Leu	Arg	Leu	Gly	Pro	Lys	Ala	Val	Leu	Gln	Gly	Leu	Arg	Glu	
			275				280					285				
Thr	Pro	Thr	Leu	Leu	Leu	Met	Arg	Trp	Ala	Phe	Ala	Arg	Gly	Met	Met	
		290				295					300					
Gln	Phe	Gly	Val	Phe	Lys	Thr	Asn	His	Cys							
305					310											

&lt;210&gt; 2268

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Crocosphaera watsonii WH 8501

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2268

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Met	Tyr	Leu	Tyr	Tyr	Thr	Leu	Gly	Phe	Ile	Ala	Val	Val	Leu	Val	Ile	
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ggt	gtt	ggt	gtc	tat	ctt	gta	aca	cct	cgc	agt	tat	gaa	tca	tct	gac	96
Gly	Val	Val	Val	Tyr	Leu	Val	Thr	Pro	Arg	Ser	Tyr	Glu	Ser	Ser	Asp	
			20					25					30			
aca	gta	gcc	act	tct	tac	gac	gaa	tgg	act	caa	gac	gga	att	tta	gaa	144
Thr	Val	Ala	Thr	Ser	Tyr	Asp	Glu	Trp	Thr	Gln	Asp	Gly	Ile	Leu	Glu	
		35					40					45				
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Phe	Tyr	Trp	Gly	Glu	His	Ile	His	Leu	Gly	His	Tyr	Gly	Ser	Pro	Pro	
	50					55					60					
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Arg	Ser	Lys	Asp	Phe	Leu	Glu	Ala	Lys	Ala	Asp	Phe	Val	His	Glu	Met	
	65				70				75					80		
gtc	aaa	tgg	ggt	ggt	tta	gac	aaa	tta	cct	cgc	ggt	aca	acc	ggt	tta	288
Val	Lys	Trp	Gly	Gly	Leu	Asp	Lys	Leu	Pro	Arg	Gly	Thr	Thr	Val	Leu	
				85					90					95		
gac	ggt	ggc	tgt	ggt	att	ggt	ggc	agt	agt	cgg	att	tta	gcc	aaa	gca	336
Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Ile	Leu	Ala	Lys	Ala	
			100					105					110			
tac	ggg	ttt	gag	aca	aca	gga	ggt	acc	atc	agt	ccc	aaa	caa	gta	caa	384
Tyr	Gly	Phe	Glu	Thr	Thr	Gly	Val	Thr	Ile	Ser	Pro	Lys	Gln	Val	Gln	
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cgg	gcc	acc	gaa	tta	acc	ccc	gaa	gat	ggt	act	gcc	aaa	ttc	cag	gta	432
Arg	Ala	Thr	Glu	Leu	Thr	Pro	Glu	Asp	Val	Thr	Ala	Lys	Phe	Gln	Val	
	130					135				140						
gat	gac	gct	tta	aat	ctc	tct	ttc	cca	gat	aac	agt	ttt	gat	gtg	ggt	480
Asp	Asp	Ala	Leu	Asn	Leu	Ser	Phe	Pro	Asp	Asn	Ser	Phe	Asp	Val	Val	
	145				150					155				160		
tgg	tcc	att	gaa	gct	ggt	ccc	cat	atg	cca	gac	aaa	gct	aaa	tat	gcc	528
Trp	Ser	Ile	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Ala	Lys	Tyr	Ala	
			165						170					175		
caa	gag	atg	gtg	cga	ggt	tta	aaa	cct	ggt	ggc	ctt	tta	gta	gta	gca	576
Gln	Glu	Met	Val	Arg	Val	Leu	Lys	Pro	Gly	Gly	Leu	Leu	Val	Val	Ala	
			180					185					190			
gac	tgg	aac	caa	cgg	gat	gac	cgt	caa	aaa	ccc	ctg	aat	ttc	tgg	gaa	624
Asp	Trp	Asn	Gln	Arg	Asp	Asp	Arg	Gln	Lys	Pro	Leu	Asn	Phe	Trp	Glu	
		195					200					205				
aaa	cca	gtg	atg	cgt	caa	ctc	tta	gac	caa	tgg	tca	cac	cct	tca	ttt	672
Lys	Pro	Val	Met	Arg	Gln	Leu	Leu	Asp	Gln	Trp	Ser	His	Pro	Ser	Phe	
	210					215					220					
tcc	agt	atc	gaa	ggc	ttt	tct	gaa	caa	atc	gca	gcc	aca	gga	tta	atc	720
Ser	Ser	Ile	Glu	Gly	Phe	Ser	Glu	Gln	Ile	Ala	Ala	Thr	Gly	Leu	Ile	
	225				230					235				240		
gaa	gga	gaa	ggt	atc	acc	gca	gat	tgg	aca	aaa	gaa	acc	cta	ccc	tct	768
Glu	Gly	Glu	Val	Ile	Thr	Ala	Asp	Trp	Thr	Lys	Glu	Thr	Leu	Pro	Ser	
			245					250					255			
tgg	tta	gaa	tcc	att	tgg	caa	gga	att	ggt	cga	ccc	caa	ggt	tta	att	816
Trp	Leu	Glu	Ser	Ile	Trp	Gln	Gly	Ile	Val	Arg	Pro	Gln	Gly	Leu	Ile	
			260					265					270			
aag	ttc	ggt	ttc	tca	gga	ttc	att	aaa	tct	tta	aga	gaa	ggt	ccc	act	864
Lys	Phe	Gly	Phe	Ser	Gly	Phe	Ile	Lys	Ser	Leu	Arg	Glu	Val	Pro	Thr	
	275						280					285				
atg	tta	ttg	atg	cga	ttg	gga	ttt	ggt	gct	ggt	ttg	tgt	cgt	ttt	gga	912
Met	Leu	Leu	Met	Arg	Leu	Gly	Phe	Gly	Ala	Gly	Leu	Cys	Arg	Phe	Gly	
	290					295					300					
atg	ttc	cgc	gcc	att	aaa	tct	cct	tct	ggt	tcc	cag	tca	acc	cag	act	960
Met	Phe	Arg	Ala	Ile	Lys	Ser	Pro	Ser	Val	Ser	Gln	Ser	Thr	Gln	Thr	
	305				310					315					320	
gca	aaa	ggt	gaa	aca	gta	aac	ggt	taa								987
Ala	Lys	Gly	Glu	Thr	Val	Asn	Val									

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 <213> Crocosphaera watsonii WH 8501

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 Thr Val Ala Thr Ser Tyr Asp Glu Trp Thr Gln Asp Gly Ile Leu Glu  
 35 40 45  
 Phe Tyr Trp Gly Glu His Ile His Leu Gly His Tyr Gly Ser Pro Pro  
 50 55 60  
 Arg Ser Lys Asp Phe Leu Glu Ala Lys Ala Asp Phe Val His Glu Met  
 65 70 75 80  
 Val Lys Trp Gly Gly Leu Asp Lys Leu Pro Arg Gly Thr Thr Val Leu  
 85 90 95  
 Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala Lys Ala  
 100 105 110  
 Tyr Gly Phe Glu Thr Thr Gly Val Thr Ile Ser Pro Lys Gln Val Gln  
 115 120 125  
 Arg Ala Thr Glu Leu Thr Pro Asp Val Thr Ala Lys Phe Gln Val  
 130 135 140  
 Asp Asp Ala Leu Asn Leu Ser Phe Pro Asp Asn Ser Phe Asp Val Val  
 145 150 155 160  
 Trp Ser Ile Glu Ala Gly Pro His Met Pro Asp Lys Ala Lys Tyr Ala  
 165 170 175  
 Gln Glu Met Val Arg Val Leu Lys Pro Gly Gly Leu Leu Val Val Ala  
 180 185 190  
 Asp Trp Asn Gln Arg Asp Asp Arg Gln Lys Pro Leu Asn Phe Trp Glu  
 195 200 205  
 Lys Pro Val Met Arg Gln Leu Asp Gln Trp Ser His Pro Ser Phe  
 210 215 220  
 Ser Ser Ile Glu Gly Phe Ser Glu Gln Ile Ala Ala Thr Gly Leu Ile  
 225 230 235 240  
 Glu Gly Glu Val Ile Thr Ala Asp Trp Thr Lys Glu Thr Leu Pro Ser  
 245 250 255  
 Trp Leu Glu Ser Ile Trp Gln Gly Ile Val Arg Pro Gln Gly Leu Ile  
 260 265 270  
 Lys Phe Gly Phe Ser Gly Phe Ile Lys Ser Leu Arg Glu Val Pro Thr  
 275 280 285  
 Met Leu Leu Met Arg Leu Gly Phe Gly Ala Gly Leu Cys Arg Phe Gly  
 290 295 300  
 Met Phe Arg Ala Ile Lys Ser Pro Ser Val Ser Gln Ser Thr Gln Thr  
 305 310 315 320  
 Ala Lys Gly Glu Thr Val Asn Val  
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<210> 2270  
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 <212> DNA  
 <213> Synechococcus sp. RS9917

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 <223> transl\_table=11

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 gcc gct gcc gtg ggc ctt gcg atc tgg agt cgc cgc aat cgc gcc tat 96  
 Ala Ala Ala Val Gly Leu Ala Ile Trp Ser Arg Arg Asn Arg Ala Tyr 20 25 30  
 20 25 30  
 cac tcc agc gcc agt gtc gct gcg gct tac gac gcc tgg acc gac gat 144  
 Page 1497



## PhoenixTemp32470.tmp.txt

His	Ser	Ser	Ala	Ser	Val	Ala	Ala	Ala	Tyr	Asp	Ala	Trp	Thr	Asp	Asp	
cg	tt	ct	ga	ca	ct	tg	gg	ga	ca	gt	ca	ct	gg	ca	ta	192
Arg	Leu	Leu	Glu	Gln	Leu	Trp	Gly	Glu	His	Val	His	Leu	Gly	His	Tyr	
	50					55					60					
gg	ga	cc	cc	cg	cg	cg	ga	ga	tt	cg	gc	gc	aa	gc	ga	240
Gly	Glu	Pro	Pro	Arg	Arg	Arg	Asp	Phe	Arg	Ala	Ala	Lys	Ala	Asp	Phe	
	65					70					75				80	
gt	ca	gc	ct	gt	ca	tg	ag	gg	ct	ga	ca	ct	cc	cc	gg	288
Val	His	Ala	Leu	Val	His	Trp	Ser	Gly	Leu	Asp	Gln	Leu	Pro	Pro	Gly	
				85					90					95		
tc	cg	ct	ct	ga	gt	gg	tg	gg	at	gg	gg	ag	gc	cg	at	336
Ser	Arg	Leu	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala	Arg	Ile	
				100				105					110			
ct	gc	cg	ga	ta	gg	tt	ga	gt	ct	gg	at	ag	at	ag	cc	384
Leu	Ala	Arg	Glu	Tyr	Gly	Phe	Asp	Val	Leu	Gly	Ile	Ser	Ile	Ser	Pro	
		115					120					125				
gc	ca	gt	gc	cg	gc	ac	ag	ct	ac	cc	ac	gg	ct	ag	tg	432
Ala	Gln	Val	Ala	Arg	Ala	Thr	Ser	Leu	Thr	Pro	Thr	Gly	Leu	Ser	Cys	
	130					135					140					
cg	tt	gc	gt	at	ga	gc	ct	ga	ct	aaa	ct	gc	ga	gg	ca	480
Arg	Phe	Ala	Val	Met	Asp	Ala	Leu	Asp	Leu	Lys	Leu	Ala	Asp	Gly	Gln	
	145				150					155					160	
tt	ga	gc	gt	tg	ag	gt	ga	gc	gg	cc	ca	at	cc	ga	aa	528
Phe	Asp	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	
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ca	cg	ta	gc	ga	ga	ct	tt	cg	gt	ct	cg	cc	gg	gg	gt	576
Gln	Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Val	Leu	Arg	Pro	Gly	Gly	Val	
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ct	gc	gt	gc	ga	tg	aa	cg	gc	ga	gt	tc	ga	gg	gc	at	624
Leu	Ala	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Val	Ser	Asp	Gly	Ala	Met	
		195				200						205				
tc	gg	ct	ga	cg	ca	gt	at	ca	ca	ct	ct	ac	ca	tg	gc	672
Ser	Gly	Leu	Glu	Arg	Gln	Val	Met	His	Gln	Leu	Leu	Thr	Gln	Trp	Ala	
	210					215					220					
ca	cc	ga	tt	gc	ag	at	aa	gg	tt	gg	gc	aa	ct	aa	gc	720
His	Pro	Glu	Phe	Ala	Ser	Ile	Lys	Gly	Phe	Gly	Ala	Asn	Leu	Asn	Ala	
	225				230					235					240	
ag	cc	ta	aa	ca	gg	gg	ac	at	gt	ag	gc	ga	tg	ac	gc	768
Ser	Pro	Tyr	Asn	His	Gly	Gly	Thr	Ile	Val	Ser	Ala	Asp	Trp	Thr	Ala	
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gc	ac	ct	cc	tc	tg	at	ga	tc	at	at	ga	gg	gt	cg	cg	816
Ala	Thr	Leu	Pro	Ser	Trp	Ile	Asp	Ser	Ile	Met	Glu	Gly	Val	Arg	Arg	
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Pro	Gly	Ala	Val	Leu	Ser	Leu	Gly	Pro	Lys	Ala	Val	Leu	Gln	Gly	Leu	
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Arg	Glu	Thr	Pro	Thr	Leu	Leu	Leu	Met	His	Trp	Ala	Phe	Ala	Thr	Gly	
	290					295					300					
ct	at	ca	tt	gg	gt	tt	cg	cg	ga	taa						945
Leu	Met	Gln	Phe	Gly	Val	Phe	Arg	Arg	Asp							
	305				310											

&lt;210&gt; 2271

&lt;211&gt; 314

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. RS9917

&lt;400&gt; 2271

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			20					25					30			
His	Ser	Ser	Ala	Ser	Val	Ala	Ala	Ala	Tyr	Asp	Ala	Trp	Thr	Asp	Asp	
		35					40					45				
Arg	Leu	Leu	Glu	Gln	Leu	Trp	Gly	Glu	His	Val	His	Leu	Gly	His	Tyr	
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Gly	Glu	Pro	Pro	Arg	Arg	Arg	Asp	Phe	Arg	Ala	Ala	Lys	Ala	Asp	Phe	

## PhoenixTemp32470.tmp.txt

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Leu Ala Arg Glu Tyr Gly Phe Asp Val Leu Gly Ile Ser Ile Ser Pro
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Ala Gln Val Ala Arg Ala Thr Ser Leu Thr Pro Thr Gly Leu Ser Cys
130
Arg Phe Ala Val Met Asp Ala Leu Asp Leu Lys Leu Ala Asp Gly Gln
145
Phe Asp Ala Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys
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Gln Arg Tyr Ala Asp Glu Leu Leu Arg Val Leu Arg Pro Gly Gly Val
180
Leu Ala Val Ala Asp Trp Asn Arg Arg Asp Val Ser Asp Gly Ala Met
195
Ser Gly Leu Glu Arg Gln Val Met His Gln Leu Leu Thr Gln Trp Ala
210
His Pro Glu Phe Ala Ser Ile Lys Gly Phe Gly Ala Asn Leu Asn Ala
225
Ser Pro Tyr Asn His Gly Gly Thr Ile Val Ser Ala Asp Trp Thr Ala
245
Ala Thr Leu Pro Ser Trp Ile Asp Ser Ile Met Glu Gly Val Arg Arg
260
Pro Gly Ala Val Leu Ser Leu Gly Pro Lys Ala Val Leu Gln Gly Leu
275
Arg Glu Thr Pro Thr Leu Leu Leu Met His Trp Ala Phe Ala Thr Gly
290
Leu Met Gln Phe Gly Val Phe Arg Arg Asp
305      310

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&lt;210&gt; 2272

&lt;211&gt; 975

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. WH 5701

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(975)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2272

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1      5      10      15
ggt ctg ctc agt ctt gcc ctg gtg agg gaa tgg cag cgc cgt gac cgc      96
Gly Leu Leu Ser Leu Ala Leu Val Arg Glu Trp Gln Arg Arg Asp Arg
20      25      30
cgc ttc cag agc acg gcc acc gtg gct gag gcc tac gac cgc tgg acc      144
Arg Phe Gln Ser Thr Ala Thr Val Ala Glu Ala Tyr Asp Arg Trp Thr
35      40      45
ggt gat cgg ctg ctg gaa aac ctc tgg ggt gag cac gtg cac ctc ggg      192
Gly Asp Arg Leu Leu Glu Asn Leu Trp Gly Glu His Val His Leu Gly
50      55      60
cac tac ggc aac ccc ccg gtg gcc cgc gat ttc agg gcc gcc aag gaa      240
His Tyr Gly Asn Pro Pro Val Ala Arg Asp Phe Arg Ala Ala Lys Glu
65      70      75      80
gag ttc gtg cat gag ctg gtg cgc tgg tcg ggc ctc gac cat cta ccc      288
Glu Phe Val His Glu Leu Val Arg Trp Ser Gly Leu Asp His Leu Pro
85      90      95
ccc ggc acc cgg ctg ctg gat gtg ggt tgc ggc atc ggc ggc agc gcc      336
Pro Gly Thr Arg Leu Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ala
100      105      110
cgc acc ctc gcc cgc gac tac ggc ttc gac gtg ctg ggc atc agc atc      384
Arg Thr Leu Ala Arg Asp Tyr Gly Phe Asp Val Leu Gly Ile Ser Ile
115      120      125
agc cca gcc cag gtg gag cgg gcc cgc cag ctc acg ccc tcc ggg ctc      432
Ser Pro Ala Gln Val Glu Arg Ala Arg Gln Leu Thr Pro Ser Gly Leu

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## PhoenixTemp32470.tmp.txt

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Gly	Trp	Glu	Gly	Pro
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gac	gat	ctg	gtc	ctg
Asp	Asp	Leu	Val	Leu
		185		
ggg	tgg	aac	cg	gat
Gly	Trp	Asn	Arg	Asp
		200		
gag	ctc	aac	ggt	ctg
Glu	Leu	Asn	Gly	Leu
		210		
tgg	gcc	cat	ccg	gaa
Trp	Ala	His	Pro	Glu
		225		
gaa	gcc	agc	ccc	cat
Glu	Ala	Ser	Pro	His
				245
agt	gag	gcc	acc	ctg
Ser	Glu	Ala	Thr	Leu
				260
cg	cg	ccc	ggc	gcc
Arg	Arg	Pro	Gly	Ala
				275
ggg	ttg	cg	gaa	gc
Gly	Leu	Arg	Glu	Ala
				290
acc	ggg	atg	atg	cg
Thr	Gly	Met	Met	Arg
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ttg	gtg	agc	ggg	tag
Leu	Val	Ser	Gly	

&lt;210&gt; 2273

&lt;211&gt; 324

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 5701

&lt;400&gt; 2273

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			20					25					30		
Arg	Phe	Gln	Ser	Thr	Ala	Thr	Val	Ala	Glu	Ala	Tyr	Asp	Arg	Trp	Thr
			35				40					45			
Gly	Asp	Arg	Leu	Leu	Glu	Asn	Leu	Trp	Gly	Glu	His	Val	His	Leu	Gly
	50					55					60				
His	Tyr	Gly	Asn	Pro	Pro	Val	Ala	Arg	Asp	Phe	Arg	Ala	Ala	Lys	Glu
65					70					75					80
Glu	Phe	Val	His	Glu	Leu	Val	Arg	Trp	Ser	Gly	Leu	Asp	His	Leu	Pro
				85					90					95	
Pro	Gly	Thr	Arg	Leu	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala
			100					105					110		
Arg	Thr	Leu	Ala	Arg	Asp	Tyr	Gly	Phe	Asp	Val	Leu	Gly	Ile	Ser	Ile
			115				120						125		
Ser	Pro	Ala	Gln	Val	Glu	Arg	Ala	Arg	Gln	Leu	Thr	Pro	Ser	Gly	Leu
	130					135					140				
Ser	Cys	Arg	Phe	Ala	Val	Met	Asp	Ala	Leu	Ala	Leu	Glu	Leu	Glu	Asp
145					150					155					160
Gly	Ser	Val	Gln	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	His	Met	Pro
				165					170					175	
Asp	Lys	Gln	Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Val	Leu	Ala	Pro	Ala
			180					185					190		
Gly	Gln	Leu	Val	Val	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	Ala	Asp	Gly

## PhoenixTemp32470.tmp.txt

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 210 215  
 Trp Ala His Pro Glu Phe Ala Ser Ile Pro Ser Phe Arg Arg Asn Leu  
 225 230 235 240  
 Glu Ala Ser Pro His Arg Arg Ala Gly Ala Val Glu Thr Ala Asp Trp  
 245 250 255  
 Ser Glu Ala Thr Leu Pro Ser Trp Ile Asp Ser Ile Leu Glu Gly Val  
 260 265 270  
 Arg Arg Pro Gly Ala Ile Leu Ser Leu Gly Pro Ala Ala Val Leu Gln  
 275 280 285  
 Gly Leu Arg Glu Ala Pro Thr Ile Leu Leu Met His Trp Ala Phe Ser  
 290 295 300  
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 305 310 315 320  
 Leu Val Ser Gly

&lt;210&gt; 2274

&lt;211&gt; 966

&lt;212&gt; DNA

&lt;213&gt; Synechococcus sp. WH 7805

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(966)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2274

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gcc	gcg	ggt	gcc	tat	gtg	ctt	tgg	tct	cgg	cgc	aat	cgc	gct	tac	ctc	96
Ala	Ala	Gly	Ala	Tyr	Val	Leu	Trp	Ser	Arg	Arg	Asn	Arg	Ala	Tyr	Leu	
			20					25					30			
tcc	agc	gag	agt	gtt	gct	tcg	gca	tac	gac	gct	tgg	acg	gag	gac	agg	144
Ser	Ser	Glu	Ser	Val	Ala	Ser	Ala	Tyr	Asp	Ala	Trp	Thr	Glu	Asp	Arg	
			35				40					45				
ctt	cta	gaa	act	ctc	tgg	ggc	gat	cat	gtt	cat	ctc	ggt	cac	tac	gga	192
Leu	Leu	Glu	Thr	Leu	Trp	Gly	Asp	His	Val	His	Leu	Gly	His	Tyr	Gly	
			50			55					60					
gct	ccc	ccc	cgc	aac	aag	gat	ttc	cgt	cgt	gcc	aaa	gcc	gat	ttc	gtc	240
Ala	Pro	Pro	Arg	Asn	Lys	Asp	Phe	Arg	Arg	Ala	Lys	Ala	Asp	Phe	Val	
				70				75							80	
cat	gaa	ttg	gtt	cgc	tgg	agt	ggc	cta	gac	cag	ctg	cca	cct	gga	gcg	288
His	Glu	Leu	Val	Arg	Trp	Ser	Gly	Leu	Asp	Gln	Leu	Pro	Pro	Gly	Ala	
				85				90						95		
aaa	gtg	ctg	gat	gtg	ggt	tgc	ggc	atc	ggc	ggc	agc	gcc	agg	att	ctg	336
Lys	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala	Arg	Ile	Leu	
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gcc	agg	gat	tat	ggg	ttt	gac	gtt	ctt	gga	gtc	agc	atc	agc	cca	gcc	384
Ala	Arg	Asp	Tyr	Gly	Phe	Asp	Val	Leu	Gly	Val	Ser	Ile	Ser	Pro	Ala	
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Gln	Ile	Arg	Arg	Ala	Thr	Glu	Leu	Thr	Pro	Glu	Gly	Met	Thr	Cys	Arg	
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ttc	gcc	gtt	atg	gat	gcc	ctc	gat	cta	gag	ctg	aac	gat	gga	gag	ttt	480
Phe	Ala	Val	Met	Asp	Ala	Leu	Asp	Leu	Glu	Leu	Asn	Asp	Gly	Glu	Phe	
					150					155					160	
gat	gcg	gtt	tgg	agt	gtg	gaa	gcc	ggt	ccg	cac	atg	ccg	gac	aag	cag	528
Asp	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Gln	
				165				170						175		
cgt	tat	gcc	gat	gaa	ttg	ttg	cgc	atg	atc	cgc	cct	ggt	gga	atg	ctg	576
Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Met	Ile	Arg	Pro	Gly	Gly	Met	Leu	
			180					185					190			
gcc	atc	gcg	gat	tgg	aat	cgt	cgc	gac	ccg	ctg	gat	gga	cct	tta	aat	624
Ala	Ile	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	Leu	Asp	Gly	Pro	Leu	Asn	
			195				200					205				
cgc	caa	gag	cgc	tgg	gtc	atg	cat	cag	ctg	ctc	acc	cag	tgg	gcg	cac	672

## PhoenixTemp32470.tmp.txt

Arg	Gln	Glu	Arg	Trp	Val	Met	His	Gln	Leu	Leu	Thr	Gln	Trp	Ala	His	
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Pro	Glu	Phe	Ala	Ser	Ile	Arg	Gly	Leu	Gln	His	Asn	Leu	Glu	Thr	Ser	
225					230					235					240	
gtt	tat	tcg	aaa	ggg	ccg	att	gca	gtg	gcc	aat	tgg	aat	cag	cag	aca	768
Val	Tyr	Ser	Lys	Gly	Pro	Ile	Ala	Val	Ala	Asn	Trp	Asn	Gln	Gln	Thr	
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Leu	Pro	Ser	Trp	Asn	Asp	Ser	Ile	Leu	Glu	Gly	Leu	Arg	Arg	Pro	Ser	
			260					265					270			
gcc	gtt	ctg	cga	ctt	ggc	ccc	tca	gcc	atc	gtt	cag	ggg	ttg	cgc	gaa	864
Ala	Val	Leu	Arg	Leu	Gly	Pro	Ser	Ala	Ile	Val	Gln	Gly	Leu	Arg	Glu	
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Thr	Pro	Thr	Leu	Leu	Leu	Met	Arg	Trp	Ala	Phe	Ala	Arg	Gly	Met	Met	
	290					295					300					
cag	ttt	ggg	gtg	ttt	cgc	ctg	aat	gga	gat	cag	gag	aga	tct	gaa	ctc	960
Gln	Phe	Gly	Val	Phe	Arg	Leu	Asn	Gly	Asp	Gln	Glu	Arg	Ser	Glu	Leu	
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gga	taa															966
Gly																

&lt;210&gt; 2275

&lt;211&gt; 321

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 7805

&lt;400&gt; 2275

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			20					25					30			
Ser	Ser	Glu	Ser	Val	Ala	Ser	Ala	Tyr	Asp	Ala	Trp	Thr	Glu	Asp	Arg	
		35					40					45				
Leu	Leu	Glu	Thr	Leu	Trp	Gly	Asp	His	Val	His	Leu	Gly	His	Tyr	Gly	
		50				55					60					
Ala	Pro	Pro	Arg	Asn	Lys	Asp	Phe	Arg	Arg	Ala	Lys	Ala	Asp	Phe	Val	
65				70						75				80		
His	Glu	Leu	Val	Arg	Trp	Ser	Gly	Leu	Asp	Gln	Leu	Pro	Pro	Gly	Ala	
				85					90					95		
Lys	Val	Leu	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ala	Arg	Ile	Leu	
			100					105					110			
Ala	Arg	Asp	Tyr	Gly	Phe	Asp	Val	Leu	Gly	Val	Ser	Ile	Ser	Pro	Ala	
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Gln	Ile	Arg	Arg	Ala	Thr	Glu	Leu	Thr	Pro	Glu	Gly	Met	Thr	Cys	Arg	
	130					135					140					
Phe	Ala	Val	Met	Asp	Ala	Leu	Asp	Leu	Glu	Leu	Asn	Asp	Gly	Glu	Phe	
145				150						155					160	
Asp	Ala	Val	Trp	Ser	Val	Glu	Ala	Gly	Pro	His	Met	Pro	Asp	Lys	Gln	
				165					170					175		
Arg	Tyr	Ala	Asp	Glu	Leu	Leu	Arg	Met	Ile	Arg	Pro	Gly	Gly	Met	Leu	
			180					185					190			
Ala	Ile	Ala	Asp	Trp	Asn	Arg	Arg	Asp	Pro	Leu	Asp	Gly	Pro	Leu	Asn	
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	210					215					220					
Pro	Glu	Phe	Ala	Ser	Ile	Arg	Gly	Leu	Gln	His	Asn	Leu	Glu	Thr	Ser	
225				230						235					240	
Val	Tyr	Ser	Lys	Gly	Pro	Ile	Ala	Val	Ala	Asn	Trp	Asn	Gln	Gln	Thr	
				245					250					255		
Leu	Pro	Ser	Trp	Asn	Asp	Ser	Ile	Leu	Glu	Gly	Leu	Arg	Arg	Pro	Ser	
			260					265					270			
Ala	Val	Leu	Arg	Leu	Gly	Pro	Ser	Ala	Ile	Val	Gln	Gly	Leu	Arg	Glu	
		275					280					285				
Thr	Pro	Thr	Leu	Leu	Leu	Met	Arg	Trp	Ala	Phe	Ala	Arg	Gly	Met	Met	
	290					295					300					
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305  
Gly

310

315

320

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 Val Ala Ala Gly Val Leu Leu Trp Ala Lys Arg Asn Arg Ala Tyr His  
 20 25 30  
 tcc agt gaa agc gtc gcc gcg gcc tat gac gcc tgg acc gaa gat cgc 144  
 Ser Ser Glu Ser Val Ala Ala Ala Tyr Asp Ala Trp Thr Glu Asp Arg  
 35 40 45  
 tta ctg gag aac ctc tgg ggt gag cac gtc cac ctc ggc cac tac gga 192  
 Leu Leu Glu Asn Leu Trp Gly Glu His Val His Leu Gly His Tyr Gly  
 50 55 60  
 gat cca ccg cga caa cgg gat ttt cgc gaa gcg aaa gcc gat ttt gtg 240  
 Asp Pro Pro Arg Gln Arg Asp Phe Arg Glu Ala Lys Ala Asp Phe Val  
 65 70 75 80  
 cat gct ctc gtg cac tgg agt ggc ctg gat cgc tta tca cca ggc acg 288  
 His Ala Leu Val His Trp Ser Gly Leu Asp Arg Leu Ser Pro Gly Thr  
 85 90 95  
 aag atc ctt gat gtg ggc tgt ggc att ggc ggc agt gcg cgc atc ctg 336  
 Lys Ile Leu Asp Val Gly Cys Gly Ile Gly Ser Ala Arg Ile Leu  
 100 105 110  
 gcc cgc gac tat ggc ttc gat gtg ctg ggc atc agc atc agt ccc gcc 384  
 Ala Arg Asp Tyr Gly Phe Asp Val Leu Gly Ile Ser Ile Ser Pro Ala  
 115 120 125  
 cag gtg gcc agg gcc aca gcc cta acg cct gca gga ctc agc tgc cgc 432  
 Gln Val Ala Arg Ala Thr Ala Leu Thr Pro Ala Gly Leu Ser Cys Arg  
 130 135 140  
 ttc gct gtg atg gat gcc ctt gat ctg caa ttg gca gac caa cag ttt 480  
 Phe Ala Val Met Asp Ala Leu Asp Leu Gln Leu Ala Asp Gln Gln Phe  
 145 150 155 160  
 gat gcg gtg tgg agc gtg gag gca gga ccg cac atg ccc gac aag cag 528  
 Asp Ala Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Gln  
 165 170 175  
 cgc tac gcc gac gaa ttg ctg cgc gtg ctc aag ccc ggt gga acg ttg 576  
 Arg Tyr Ala Asp Glu Leu Leu Arg Val Leu Lys Pro Gly Gly Thr Leu  
 180 185 190  
 gcg gtg gcc gac tgg aac agg cgt gat ccc agt gac ggc gag atg aat 624  
 Ala Val Ala Asp Trp Asn Arg Arg Asp Pro Ser Asp Gly Glu Met Asn  
 195 200 205  
 cgc cgc gaa cgc tgg gtg atg cac caa ctg ctc acc caa tgg gcc cac 672  
 Arg Arg Glu Arg Trp Val Met His Gln Leu Leu Thr Gln Trp Ala His  
 210 215 220  
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 Pro Glu Phe Ser Ser Ile Lys Gly Phe His Arg Asn Leu Glu Ala Ser  
 225 230 235 240  
 ccc cat cag cgc ggg acc att gag gtg ggt gac tgg acc cga gcc aca 768  
 Pro His Gln Arg Gly Thr Ile Glu Val Gly Asp Trp Thr Arg Ala Thr  
 245 250 255  
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 Leu Pro Ser Trp Ile Asp Ser Val Val Glu Gly Leu Arg Arg Pro Gly  
 260 265 270  
 gca gtg ctc ggc ctt ggt cct tcc gcc gtg ctt cag ggc ctg cgc gaa 864  
 Ala Val Leu Gly Leu Gly Pro Ser Ala Val Leu Gln Gly Leu Arg Glu  
 275 280 285

## PhoenixTemp32470.tmp.txt

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 35 40 45  
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 50 55 60  
 Asp Pro Pro Arg Gln Arg Asp Phe Arg Glu Ala Lys Ala Asp Phe Val  
 65 70 75 80  
 His Ala Leu Val His Trp Ser Gly Leu Asp Arg Leu Ser Pro Gly Thr  
 85 90 95  
 Lys Ile Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ala Arg Ile Leu  
 100 105 110  
 Ala Arg Asp Tyr Gly Phe Asp Val Leu Gly Ile Ser Ile Ser Pro Ala  
 115 120 125  
 Gln Val Ala Arg Ala Thr Ala Leu Thr Pro Ala Gly Leu Ser Cys Arg  
 130 135 140  
 Phe Ala Val Met Asp Ala Leu Asp Leu Gln Leu Ala Asp Gln Gln Phe  
 145 150 155 160  
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 165 170 175  
 Arg Tyr Ala Asp Glu Leu Leu Arg Val Leu Lys Pro Gly Gly Thr Leu  
 180 185 190  
 Ala Val Ala Asp Trp Asn Arg Arg Asp Pro Ser Asp Gly Glu Met Asn  
 195 200 205  
 Arg Arg Glu Arg Trp Val Met His Gln Leu Leu Thr Gln Trp Ala His  
 210 215 220  
 Pro Glu Phe Ser Ser Ile Lys Gly Phe His Arg Asn Leu Glu Ala Ser  
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 Pro His Gln Arg Gly Thr Ile Glu Val Gly Asp Trp Thr Arg Ala Thr  
 245 250 255  
 Leu Pro Ser Trp Ile Asp Ser Val Val Glu Gly Leu Arg Arg Pro Gly  
 260 265 270  
 Ala Val Leu Gly Leu Gly Pro Ser Ala Val Leu Gln Gly Leu Arg Glu  
 275 280 285  
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 305 310 315

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 <213> Zea mays

<220>  
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 <222> (1)..(1059)

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 Ala Ala Cys Arg Arg Gly Ser His Tyr Arg Ala Pro Ser His Val Pro  
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cgc	cac	tcc	cgc	cgt	ctc	cga	cgc	gcc	gtc	gtc	agc	ctg	cgt	ccg	atg		144																																																	
Arg	His	Ser	Arg	Arg	Leu	Arg	Arg	Ala	Val	Val	Ser	Leu	Arg	Pro	Met																																																			
																35																	40																	45																
gcc	tcg	tcg	acg	gct	cag	gcc	ccc	gcg	acg	gcg	ccg	ccg	ggg	ctg	aag		192																																																	
Ala	Ser	Ser	Thr	Ala	Gln	Ala	Pro	Ala	Thr	Ala	Pro	Pro	Gly	Leu	Lys																																																			
																50																	55																	60																
gag	ggc	atc	gcg	ggg	ctg	tac	gac	gag	tcg	tcg	ggg	ctg	tgg	gag	aac		240																																																	
Glu	Gly	Ile	Ala	Gly	Leu	Tyr	Asp	Glu	Ser	Ser	Gly	Leu	Trp	Glu	Asn																																																			
																65																	70																	75																
atc	tgg	ggc	gac	cac	atg	cac	cac	ggc	ttc	tac	gac	tcg	agc	gag	gcc		288																																																	
Ile	Trp	Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Ser	Ser	Glu	Ala																																																			
																85																	90																																	
gcc	tcc	atg	gcc	gat	cac	cgc	cgc	gcc	cag	atc	cgc	atg	atc	gag	gag		336																																																	
Ala	Ser	Met	Ala	Asp	His	Arg	Arg	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu																																																			
																100																	105																	110																
gcg	ctc	gcc	ttc	gcc	ggg	gtc	cca	gcc	tca	gat	gat	cca	gag	aag	aca		384																																																	
Ala	Leu	Ala	Phe	Ala	Gly	Val	Pro	Ala	Ser	Asp	Asp	Pro	Glu	Lys	Thr																																																			
																115																	120																	125																
cca	aaa	aca	ata	gtc	gat	gtc	gga	tgt	ggc	att	ggg	ggg	agc	tca	agg		432																																																	
Pro	Lys	Thr	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg																																																			
																130																	135																	140																
tac	ttg	gcg	aag	aaa	tac	gga	gcg	cag	tgc	act	ggc	acc	acg	ttg	agc		480																																																	
Tyr	Leu	Ala	Lys	Lys	Tyr	Gly	Ala	Gln	Cys	Thr	Gly	Thr	Thr	Leu	Ser																																																			
																145																	150																	155																
cct	gtt	caa	gcc	gag	aga	gga	aat	gct	ctc	gct	gca	gcg	cag	ggg	ttg		528																																																	
Pro	Val	Gln	Ala	Glu	Arg	Gly	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	Leu																																																			
																165																	170																	175																
tcg	gat	cag	gtt	act	ctg	caa	gtt	gct	gat	gct	ctg	gag	caa	ccg	ttt		576																																																	
Ser	Asp	Gln	Val	Thr	Leu	Gln	Val	Ala	Asp	Ala	Leu	Glu	Gln	Pro	Phe																																																			
																180																	185																	190																
cct	gac	ggg	cag	ttc	gat	ctg	gtg	tgg	tcc	atg	gag	agt	ggc	gag	cac		624																																																	
Pro	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His																																																			
																195																	200																	205																
atg	ccg	gac	aag	aga	aag	ttt	gtt	agt	gag	cta	gca	cgc	gtg	gcg	gct		672																																																	
Met	Pro	Asp	Lys	Arg	Lys	Phe	Val	Ser	Glu	Leu	Ala	Arg	Val	Ala	Ala																																																			
																210																	215																	220																
cct	gga	ggg	aca	ata	atc	atc	gtg	aca	tgg	tgc	cat	agg	aac	ctg	gat		720																																																	
Pro	Gly	Gly	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Asp																																																			
																225																	230																	235																
cca	tcc	gaa	acc	tcg	cta	aag	ccc	gat	gaa	ctg	agc	ctc	ctg	agg	agg		768																																																	
Pro	Ser	Glu	Thr	Ser	Leu	Lys	Pro	Asp	Glu	Leu	Ser	Leu	Leu	Arg	Arg																																																			

<210> 2279  
<211> 352  
<212> PRT  
<213> Zea mays



## PhoenixTemp32470.tmp.txt

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<400> 2279
Met Ala His Ala Ala Leu Leu His Cys Ser Gln Ser Ser Arg Ser Leu
1      5      10      15
Ala Ala Cys Arg Arg Gly Ser His Tyr Arg Ala Pro Ser His Val Pro
20      25      30
Arg His Ser Arg Arg Leu Arg Arg Ala Val Val Ser Leu Arg Pro Met
35      40      45
Ala Ser Ser Thr Ala Gln Ala Pro Ala Thr Ala Pro Pro Gly Leu Lys
50      55      60
Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu Trp Glu Asn
65      70      75
Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Ser Glu Ala
85      90      95
Ala Ser Met Ala Asp His Arg Arg Ala Gln Ile Arg Met Ile Glu Glu
100     105     110
Ala Leu Ala Phe Ala Gly Val Pro Ala Ser Asp Asp Pro Glu Lys Thr
115     120     125
Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
130     135     140
Tyr Leu Ala Lys Lys Tyr Gly Ala Gln Cys Thr Gly Thr Thr Leu Ser
145     150     155
Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly Leu
160     165     170
Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe
175     180     185
Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
190     195     200
Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val Ala Ala
205     210     220
Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Asp
225     230     235
Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu Arg Arg
240     245     250
Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr
255     260     265
Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala Asp
270     275     280
Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala
285     290     300
Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp Lys Thr
305     310     315
Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr Lys Lys
320     325     330
Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro Gly Ala Ala
335     340     345     350

```

```

<210> 2280
<211> 921
<212> DNA
<213> Oryza sativa subsp

```

```

<220>
<221> CDS
<222> (1)..(921)

```

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<400> 2280
atg gca ccg acg ttg tcc tcg tcg tcg acg gcg gcg gca gct ccc ccg      48
Met Ala Pro Thr Leu Ser Ser Ser Ser Thr Ala Ala Ala Ala Pro Pro
1      5      10      15
ggg ctg aag gag ggc atc gcg ggg ctc tac gac gag tcg tcc ggc gtg      96
Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Val
20      25      30
tgg gag agc atc tgg ggc gag cac atg cac cac ggc ttc tac gac gcc      144
Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ala
35      40      45
ggc gag gcc gcc tcc atg tcc gac cac cgc cgc gcc cag atc cgc atg      192
Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met
50      55      60

```

## PhoenixTemp32470.tmp.txt

atc	gag	gaa	tcc	ctc	gcc	ttc	gcc	gcc	gtc	ccc	gat	gat	gcg	gag	aag	240
Ile	Glu	Glu	Ser	Leu	Ala	Phe	Ala	Ala	Val	Pro	Asp	Asp	Ala	Glu	Lys	
65					70					75					80	
aaa	ccc	aaa	agt	ata	gtt	gat	gtt	ggc	tgt	ggc	att	ggg	ggg	agc	tca	288
Lys	Pro	Lys	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	
			85						90					95		
aga	tac	ttg	gcg	aac	aaa	tac	gga	gcg	caa	tgc	tac	ggc	atc	acg	ttg	336
Arg	Tyr	Leu	Ala	Asn	Lys	Tyr	Gly	Ala	Gln	Cys	Tyr	Gly	Ile	Thr	Leu	
			100					105					110			
agt	ccg	gtg	cag	gct	gaa	aga	gga	aat	gcc	ctc	gcg	gca	gag	caa	ggg	384
Ser	Pro	Val	Gln	Ala	Glu	Arg	Gly	Asn	Ala	Leu	Ala	Ala	Glu	Gln	Gly	
		115					120				125					
tta	tca	gac	aag	gtc	tcc	ttt	caa	gtt	ggg	gat	gca	ttg	gag	cag	cct	432
Leu	Ser	Asp	Lys	Val	Ser	Phe	Gln	Val	Gly	Asp	Ala	Leu	Glu	Gln	Pro	
	130					135					140					
ttt	cct	gat	ggg	cag	ttt	gat	ctt	gtc	tgg	tcc	atg	gag	agt	ggc	gag	480
Phe	Pro	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	
145					150					155					160	
cac	atg	cca	gac	aaa	cgg	cag	ttt	gta	agc	gag	ctg	gca	cg	gtc	gca	528
His	Met	Pro	Asp	Lys	Arg	Gln	Phe	Val	Ser	Glu	Leu	Ala	Arg	Val	Ala	
			165						170					175		
gct	cct	ggg	gcg	aga	ata	atc	att	gtg	acc	tgg	tgc	cat	agg	aac	ctc	576
Ala	Pro	Gly	Ala	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	
			180					185					190			
gag	cca	tcc	gaa	gag	tcc	ctg	aaa	cct	gat	gag	ctg	aat	ctc	ctg	aaa	624
Glu	Pro	Ser	Glu	Glu	Ser	Leu	Lys	Pro	Asp	Glu	Leu	Asn	Leu	Leu	Lys	
		195					200					205				
ggg	ata	tgc	gat	gca	tat	tat	ctc	cca	gac	tgg	tgc	tct	cct	tct	gat	672
Gly	Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Asp	Trp	Cys	Ser	Pro	Ser	Asp	
	210					215					220					
tat	gtc	aaa	att	gcc	gag	tca	ctg	tct	ctt	gag	gat	ata	agg	aca	gct	720
Tyr	Val	Lys	Ile	Ala	Glu	Ser	Leu	Ser	Leu	Glu	Asp	Ile	Arg	Thr	Ala	
225				230						235					240	
gat	tgg	tca	gag	aac	gtc	gcc	cca	ttc	tgg	cct	gcg	gtt	ata	aaa	tca	768
Asp	Trp	Ser	Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Ser	
				245					250					255		
gca	ttg	aca	tgg	aaa	ggg	tta	act	tct	ctg	cta	aga	agt	ggg	tgg	aag	816
Ala	Leu	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	
			260					265					270			
acg	ata	aga	ggg	gca	atg	gtg	atg	cct	ctg	atg	atc	gaa	gga	tac	aag	864
Thr	Ile	Arg	Gly	Ala	Met	Val	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	
		275					280					285				
aaa	ggg	ctc	atc	aaa	ttc	acc	atc	atc	acc	tgt	cg	aag	ccc	gaa	aca	912
Lys	Gly	Leu	Ile	Lys	Phe	Thr	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu	Thr	
	290					295					300					
acg	cag	tag														921
Thr	Gln															
305																

&lt;210&gt; 2281

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2281

Met	Ala	Pro	Thr	Leu	Ser	Ser	Ser	Ser	Thr	Ala	Ala	Ala	Ala	Pro	Pro	
1				5					10					15		
Gly	Leu	Lys	Glu	Gly	Ile	Ala	Gly	Leu	Tyr	Asp	Glu	Ser	Ser	Gly	Val	
			20					25					30			
Trp	Glu	Ser	Ile	Trp	Gly	Glu	His	Met	His	His	Gly	Phe	Tyr	Asp	Ala	
		35					40					45				
Gly	Glu	Ala	Ala	Ser	Met	Ser	Asp	His	Arg	Arg	Ala	Gln	Ile	Arg	Met	
	50					55					60					
Ile	Glu	Glu	Ser	Leu	Ala	Phe	Ala	Ala	Val	Pro	Asp	Asp	Ala	Glu	Lys	
65				70					75					80		
Lys	Pro	Lys	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	
			85						90					95		
Arg	Tyr	Leu	Ala	Asn	Lys	Tyr	Gly	Ala	Gln	Cys	Tyr	Gly	Ile	Thr	Leu	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Glu Gln Gly  
 115 120 125  
 Leu Ser Asp Lys Val Ser Phe Gln Val Gly Asp Ala Leu Glu Gln Pro  
 130 135 140  
 Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu  
 145 150 155 160  
 His Met Pro Asp Lys Arg Gln Phe Val Ser Glu Leu Ala Arg Val Ala  
 165 170 175  
 Ala Pro Gly Ala Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu  
 180 185 190  
 Glu Pro Ser Glu Glu Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys  
 195 200 205  
 Gly Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp  
 210 215 220  
 Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala  
 225 230 235 240  
 Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser  
 245 250 255  
 Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys  
 260 265 270  
 Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Glu Gly Tyr Lys  
 275 280 285  
 Lys Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro Glu Thr  
 290 300  
 Thr Gln  
 305

&lt;210&gt; 2282

&lt;211&gt; 921

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(921)

&lt;400&gt; 2282

atg gca ccg acg ttg tcc tcg tcg tcg acg gcg gcg gca gct ccc ccg	48
Met Ala Pro Thr Leu Ser Ser Ser Ser Thr Ala Ala Ala Ala Pro Pro	
1 5 10 15	
ggg ctg aag gag ggc atc gcg ggg ctc tac gac gag tcg tcc ggc gtg	96
Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Val	
20 25 30	
tgg gag agc atc tgg ggc gag cac atg cac cac ggc ttc tac gac gcc	144
Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ala	
35 40 45	
ggc gag gcc ggc tcc atg tcc gac cac cgc cgc gcc cag atc cgc atg	192
Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met	
50 55 60	
atc gag gaa tcc ctc gcc ttc gcc gcc gtc ccc gat gat gcg gag aag	240
Ile Glu Glu Ser Leu Ala Phe Ala Ala Val Pro Asp Asp Ala Glu Lys	
65 70 75 80	
aaa ccc aaa agt gta gtt gat gtt ggc tgt ggc att ggt ggt agc tca	288
Lys Pro Lys Ser Val Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser	
85 90 95	
aga tac ttg gcg aac aaa tac gga gcg caa tgc tac ggc atc acg ttg	336
Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Tyr Gly Ile Thr Leu	
100 105 110	
agt ccg gtg cag gct gaa aga gga aat gcc ctc gcg gca gag caa ggg	384
Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Glu Gln Gly	
115 120 125	
tta tca gac aag gtc tcc ttt caa gtt ggt gat gca ttg gag cag cct	432
Leu Ser Asp Lys Val Ser Phe Gln Val Gly Asp Ala Leu Glu Gln Pro	
130 135 140	
ttt cct gat ggg cag ttt gat ctt gtc tgg tcc atg gag agt ggc gag	480
Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu	
145 150 155 160	
cac atg cca gac aaa cgg cag ttt gta agc gag ctg gca cgc gtc gca	528
His Met Pro Asp Lys Arg Gln Phe Val Ser Glu Leu Ala Arg Val Ala	

## PhoenixTemp32470.tmp.txt

gct	cct	ggg	gcg	165	ata	atc	att	gtg	170	tgg	tgc	cat	agg	175	ctc	576
Ala	Pro	Gly	Ala	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	
			180					185					190			
gag	cca	tcc	gaa	gag	tcc	ctg	aaa	cct	gat	gag	ctg	aat	ctc	ctg	aaa	624
Glu	Pro	Ser	Glu	Glu	Ser	Leu	Lys	Pro	Asp	Glu	Leu	Asn	Leu	Leu	Lys	
		195					200					205				
agg	ata	tgc	gat	gca	tat	tat	ctc	cca	gac	tgg	tgc	tct	cct	tct	gat	672
Arg	Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Asp	Trp	Cys	Ser	Pro	Ser	Asp	
	210					215					220					
tat	gtc	aaa	att	gcc	gag	tca	ctg	tct	ctt	gag	gat	ata	agg	aca	gct	720
Tyr	Val	Lys	Ile	Ala	Glu	Ser	Leu	Ser	Leu	Glu	Asp	Ile	Arg	Thr	Ala	
	225				230					235					240	
gat	tgg	tca	gag	aac	gtc	gcc	cca	ttc	tgg	cct	gcg	gtt	ata	aaa	tca	768
Asp	Trp	Ser	Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Ser	
				245					250					255		
gca	ttg	aca	tgg	aaa	ggt	tta	act	tct	ctg	cta	aga	agt	ggg	tgg	aag	816
Ala	Leu	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	
			260					265					270			
acg	ata	aga	ggt	gca	atg	gtg	atg	cct	ctg	atg	atc	gaa	gga	tac	aag	864
Thr	Ile	Arg	Gly	Ala	Met	Val	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	
		275					280					285				
aaa	ggg	ctc	atc	aaa	ttc	acc	atc	atc	acc	tgt	cgc	aag	ccc	gaa	aca	912
Lys	Gly	Leu	Ile	Lys	Phe	Thr	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu	Thr	
	290					295					300					
acg	cag	tag														921
Thr	Gln															
305																

&lt;210&gt; 2283

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2283

Met	Ala	Pro	Thr	Leu	Ser	Ser	Ser	Ser	Thr	Ala	Ala	Ala	Ala	Pro	Pro	
1				5					10					15		
Gly	Leu	Lys	Glu	Gly	Ile	Ala	Gly	Leu	Tyr	Asp	Glu	Ser	Ser	Gly	Val	
			20					25					30			
Trp	Glu	Ser	Ile	Trp	Gly	Glu	His	Met	His	His	Gly	Phe	Tyr	Asp	Ala	
		35					40					45				
Gly	Glu	Ala	Ala	Ser	Met	Ser	Asp	His	Arg	Arg	Ala	Gln	Ile	Arg	Met	
	50					55					60					
Ile	Glu	Glu	Ser	Leu	Ala	Phe	Ala	Ala	Val	Pro	Asp	Asp	Ala	Glu	Lys	
65					70					75				80		
Lys	Pro	Lys	Ser	Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	
				85					90					95		
Arg	Tyr	Leu	Ala	Asn	Lys	Tyr	Gly	Ala	Gln	Cys	Tyr	Gly	Ile	Thr	Leu	
			100					105					110			
Ser	Pro	Val	Gln	Ala	Glu	Arg	Gly	Asn	Ala	Leu	Ala	Ala	Glu	Gln	Gly	
		115					120					125				
Leu	Ser	Asp	Lys	Val	Ser	Phe	Gln	Val	Gly	Asp	Ala	Leu	Glu	Gln	Pro	
	130					135					140					
Phe	Pro	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	
145					150					155					160	
His	Met	Pro	Asp	Arg	Gln	Phe	Val	Ser	Glu	Leu	Ala	Arg	Val	Ala		
				165				170					175			
Ala	Pro	Gly	Ala	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	
			180					185					190			
Glu	Pro	Ser	Glu	Glu	Ser	Leu	Lys	Pro	Asp	Glu	Leu	Asn	Leu	Leu	Lys	
		195					200					205				
Arg	Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Asp	Trp	Cys	Ser	Pro	Ser	Asp	
	210					215					220					
Tyr	Val	Lys	Ile	Ala	Glu	Ser	Leu	Ser	Leu	Glu	Asp	Ile	Arg	Thr	Ala	
225					230					235					240	
Asp	Trp	Ser	Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Ser	
				245					250					255		
Ala	Leu	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	
			260					265					270			

Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Glu Gly Tyr Lys  
 275 280  
 Lys Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro Glu Thr  
 290 300  
 Thr Gln  
 305

<210> 2284  
 <211> 1038  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(1038)

<400> 2284  
 atg gca gtc att cct gcg tcc tgc aag tgc cac ctg tta ccg ctg ctg 48  
 Met Ala Val Ile Pro Ala Ser Cys Lys Cys His Leu Leu Pro Leu Leu  
 1 5 10 15  
 cag cca ccc cag cgc ctc cct tct cca ccc cac gtg tgg cct cga cct 96  
 Gln Pro Pro Gln Arg Leu Pro Ser Pro Pro His Val Trp Pro Arg Pro  
 20 25 30  
 gcg gtg act gcg ccg act tcg agg aga ttc gca cgt ttg acg gcg gcg 144  
 Ala Val Thr Ala Pro Thr Ser Arg Arg Phe Ala Arg Leu Thr Ala Ala  
 35 40 45  
 gct ata tcc acg atg tcg ccg gag gac gcg tcg ctg aag aag ggc ata 192  
 Ala Ile Ser Thr Met Ser Pro Glu Asp Ala Ser Leu Lys Lys Gly Ile  
 50 55 60  
 gcg gag ctt tac gac cag tct tcc ggc ttg tgg gag gac atc tgg ggt 240  
 Ala Glu Leu Tyr Asp Gln Ser Ser Gly Leu Trp Glu Asp Ile Trp Gly  
 65 70 75 80  
 gac cac atg cac cac ggc ttc tac gag ccg gac tcc gcc gct tca gat 288  
 Asp His Met His His Gly Phe Tyr Glu Pro Asp Ser Ala Ala Ser Asp  
 85 90 95  
 gcc gac cac cgg ttc gct cag atc cga atg atc gaa gag agc ctc cgg 336  
 Ala Asp His Arg Phe Ala Gln Ile Arg Met Ile Glu Glu Ser Leu Arg  
 100 105 110  
 ttc gcc gga gtt tcc gag gag gga gag aag agg cca aag aga gtg gtg 384  
 Phe Ala Gly Val Ser Glu Glu Gly Glu Lys Arg Pro Lys Arg Val Val  
 115 120 125  
 gat gtg ggg tgt ggg att gga ggg agc tca agg tac ttg gct aag aag 432  
 Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Lys Lys  
 130 135 140  
 tat ggg gcc agt tgc caa ggg att act ctc agt ccc ctc caa gct caa 480  
 Tyr Gly Ala Ser Cys Gln Gly Ile Thr Leu Ser Pro Leu Gln Ala Gln  
 145 150 155 160  
 agg gct cag act ctt gct gca tcc caa ggt ttg gct gac aag gta tct 528  
 Arg Ala Gln Thr Leu Ala Ala Ser Gln Gly Leu Ala Asp Lys Val Ser  
 165 170 175  
 ttc caa gtt gca gat gct ctg gat caa ccg ttt cct gat gga caa ttt 576  
 Phe Gln Val Ala Asp Ala Leu Asp Gln Pro Phe Pro Asp Gly Gln Phe  
 180 185 190  
 gat ctg gtt tgg tcc atg gag agt gga gaa cac atg cct gac aaa aaa 624  
 Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys Lys  
 195 200 205  
 aag ttt gtt agt gag ttg gct cga gtt gta gcc cca ggt ggc aca ata 672  
 Lys Phe Val Ser Glu Leu Ala Arg Val Val Ala Pro Gly Gly Thr Ile  
 210 215 220  
 ata ctt gta aca tgg tgc cat agg gat ctc tcc cct tct gaa gaa tcc 720  
 Ile Leu Val Thr Trp Cys His Arg Asp Leu Ser Pro Ser Glu Glu Ser  
 225 230 235 240  
 tta aag cca gag gag aaa gca ctc ttg gac aag att tgc agt gct tat 768  
 Leu Lys Pro Glu Glu Lys Ala Leu Leu Asp Lys Ile Cys Ser Ala Tyr  
 245 250 255  
 tat ctt cca gat tgg tgt tct act act gat tat gtc aaa tta ctt gag 816  
 Tyr Leu Pro Asp Trp Cys Ser Thr Thr Asp Tyr Val Lys Leu Leu Glu  
 260 265 270  
 tct cta tct ctt cag gat atc aag gcc gca gat tgg tct gag tat gtt 864

## PhoenixTemp32470.tmp.txt

Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ala	Ala	Asp	Trp	Ser	Glu	Tyr	Val		
gca	ccc	ttt	tgg	cca	gca	gtg	ata	cgc	tct	gct	ttg	acg	ttc	aag	ggc	912	
Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala	Leu	Thr	Phe	Lys	Gly		
	290					295					300						
ttc	ata	tca	ctg	tta	cgc	agt	gga	tgg	aaa	acc	ata	aga	gga	gca	ttg	960	
Phe	Ile	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	Thr	Ile	Arg	Gly	Ala	Leu		
305					310					315					320		
gtg	atg	cca	ttg	atg	atc	cga	ggg	tac	aag	atg	ggc	ctg	att	aag	ttt	1008	
Val	Met	Pro	Leu	Met	Ile	Arg	Gly	Tyr	Lys	Met	Gly	Leu	Ile	Lys	Phe		
				325					330					335			
gct	atc	att	aca	tgt	cga	aag	ccc	gaa	tga							1038	
Ala	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu									
			340					345									

&lt;210&gt; 2285

&lt;211&gt; 345

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 2285

Met	Ala	Val	Ile	Pro	Ala	Ser	Cys	Lys	Cys	His	Leu	Leu	Pro	Leu	Leu		
1				5					10					15			
Gln	Pro	Pro	Gln	Arg	Leu	Pro	Ser	Pro	Pro	His	Val	Trp	Pro	Arg	Pro		
			20					25					30				
Ala	Val	Thr	Ala	Pro	Thr	Ser	Arg	Arg	Phe	Ala	Arg	Leu	Thr	Ala	Ala		
		35					40					45					
Ala	Ile	Ser	Thr	Met	Ser	Pro	Glu	Asp	Ala	Ser	Leu	Lys	Lys	Gly	Ile		
	50					55					60						
Ala	Glu	Leu	Tyr	Asp	Gln	Ser	Ser	Gly	Leu	Trp	Glu	Asp	Ile	Trp	Gly		
65				70						75					80		
Asp	His	Met	His	His	Gly	Phe	Tyr	Glu	Pro	Asp	Ser	Ala	Ala	Ser	Asp		
			85						90					95			
Ala	Asp	His	Arg	Phe	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	Ser	Leu	Arg		
			100					105					110				
Phe	Ala	Gly	Val	Ser	Glu	Glu	Gly	Glu	Lys	Arg	Pro	Lys	Arg	Val	Val		
		115					120					125					
Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Lys	Lys		
	130					135					140						
Tyr	Gly	Ala	Ser	Cys	Gln	Gly	Ile	Thr	Leu	Ser	Pro	Leu	Gln	Ala	Gln		
145				150						155					160		
Arg	Ala	Gln	Thr	Leu	Ala	Ala	Ser	Gln	Gly	Leu	Ala	Asp	Lys	Val	Ser		
			165					170						175			
Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Pro	Asp	Gly	Gln	Phe		
		180					185					190					
Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Lys		
	195					200						205					
Lys	Phe	Val	Ser	Glu	Leu	Ala	Arg	Val	Val	Ala	Pro	Gly	Gly	Thr	Ile		
	210					215					220						
Ile	Leu	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Ser	Pro	Ser	Glu	Glu	Ser		
225				230						235					240		
Leu	Lys	Pro	Glu	Glu	Lys	Ala	Leu	Leu	Asp	Lys	Ile	Cys	Ser	Ala	Tyr		
			245						250					255			
Tyr	Leu	Pro	Asp	Trp	Cys	Ser	Thr	Thr	Asp	Tyr	Val	Lys	Leu	Leu	Glu		
		260						265				270					
Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ala	Ala	Asp	Trp	Ser	Glu	Tyr	Val		
		275					280					285					
Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala	Leu	Thr	Phe	Lys	Gly		
	290					295					300						
Phe	Ile	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	Thr	Ile	Arg	Gly	Ala	Leu		
305					310					315					320		
Val	Met	Pro	Leu	Met	Ile	Arg	Gly	Tyr	Lys	Met	Gly	Leu	Ile	Lys	Phe		
				325					330					335			
Ala	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu									
			340					345									

&lt;210&gt; 2286

&lt;211&gt; 1098

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1098)

&lt;400&gt; 2286

atg	gca	aac	tcc	gcc	gcc	ctg	ctc	cac	tca	ctc	ctc	tcc	acc	gcc	tgg	48
Met	Ala	Asn	Ser	Ala	Ala	Leu	Leu	His	Ser	Leu	Leu	Ser	Thr	Ala	Trp	
1				5					10					15		
acg	ccg	cg	cg	cg	ctc	gac	cga	gcc	tgc	gcc	acg	cg	ctc	gcc	ccg	96
Thr	Pro	Arg	Arg	Arg	Leu	Asp	Arg	Ala	Ser	Ala	Thr	Arg	Leu	Ala	Pro	
			20					25					30			
tcc	ccc	ggc	ctg	tcc	tgc	cg	tcc	tcc	cg	ccg	acg	cg	tcc	gtg	cg	144
Ser	Pro	Gly	Leu	Ser	Cys	Arg	Ser	Ser	Arg	Pro	Thr	Arg	Ser	Val	Arg	
		35					40					45				
ccg	atg	gcg	tgc	tgc	acg	acc	gcg	gcc	cg	gcc	gac	gcg	gcg	ccg	ccg	192
Pro	Met	Ala	Ser	Ser	Thr	Thr	Ala	Ala	Arg	Ala	Asp	Ala	Ala	Pro	Pro	
		50				55					60					
ggg	ctg	aag	gag	ggc	atc	gcg	ggg	ctc	tac	gac	gag	tgc	tcc	ggc	ctg	240
Gly	Leu	Lys	Glu	Gly	Ile	Ala	Gly	Leu	Tyr	Asp	Glu	Ser	Ser	Gly	Leu	
					70					75					80	
tgg	gag	agc	atc	tgg	ggc	gag	cac	atg	cac	ggc	ttc	tac	gac	tcc		288
Trp	Glu	Ser	Ile	Trp	Gly	Glu	His	Met	His	Gly	Phe	Tyr	Asp	Ser		
				85				90					95			
ggc	gag	gcc	gcc	tcc	atg	tcc	gac	cac	cg	cg	gcc	cag	atc	cg	atg	336
Gly	Glu	Ala	Ala	Ser	Met	Ser	Asp	His	Arg	Arg	Ala	Gln	Ile	Arg	Met	
			100					105				110				
atc	gag	gag	gcc	ctc	gcc	ttc	gcc	gtc	ccc	gac	gat	ccg	aca	aac		384
Ile	Glu	Glu	Ala	Leu	Ala	Phe	Ala	Val	Pro	Asp	Asp	Pro	Thr	Asn		
			115				120				125					
aaa	ccg	aaa	acg	att	gtt	gat	gtt	gga	tgc	gga	atc	ggg	ggg	agc	tca	432
Lys	Pro	Lys	Thr	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	
		130				135					140					
aga	tac	ctg	gcg	aac	aaa	tat	gga	gca	caa	tgc	ggg	atc	aca	ttg		480
Arg	Tyr	Leu	Ala	Asn	Lys	Tyr	Gly	Ala	Gln	Cys	Ser	Gly	Ile	Thr	Leu	
		145			150				155						160	
agc	cca	gtg	caa	gcc	gag	aga	gga	aat	gcc	ctc	gca	gca	gca	cag	ggg	528
Ser	Pro	Val	Gln	Ala	Glu	Arg	Gly	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	
			165						170					175		
ttg	tgc	gac	aag	gct	tct	ttc	caa	gtt	gct	gat	gct	ctg	gag	caa	cca	576
Leu	Ser	Asp	Lys	Ala	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Glu	Gln	Pro	
			180					185					190			
ttt	cct	gat	ggg	cag	ttt	gat	ctt	gtc	tgg	tct	atg	gag	agt	ggg	gag	624
Phe	Pro	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	
		195					200					205				
cac	atg	ccg	aac	aaa	cag	aag	ttt	gta	agc	gag	ctg	gca	cg	gtc	gca	672
His	Met	Pro	Asn	Lys	Gln	Lys	Phe	Val	Ser	Glu	Leu	Ala	Arg	Val	Ala	
		210				215					220					
gct	cca	gga	gca	act	atc	atc	atc	gtg	acc	tgg	tgc	cat	agg	aac	ctc	720
Ala	Pro	Gly	Ala	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	
		225			230					235					240	
gcg	ccg	tgc	gag	gac	tca	ctg	aaa	cct	gac	gag	ctg	aat	ctt	ttg	aaa	768
Ala	Pro	Ser	Glu	Asp	Ser	Leu	Lys	Pro	Asp	Glu	Leu	Asn	Leu	Leu	Lys	
			245						250				255			
aag	att	tgt	gat	gca	tat	tac	ctc	ccg	gat	tgg	tgc	tgc	ccc	tgc	gat	816
Lys	Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Asp	Trp	Cys	Ser	Pro	Ser	Asp	
			260					265					270			
tat	gtc	aag	att	gcc	gag	tca	ttg	tct	ctt	gag	gat	atc	aaa	acg	gcc	864
Tyr	Val	Lys	Ile	Ala	Glu	Ser	Leu	Ser	Leu	Glu	Asp	Ile	Lys	Thr	Ala	
		275					280					285				
gac	tgg	tca	gaa	aac	gtg	gcc	ccg	ttc	tgg	cct	gct	gtc	atc	caa	tca	912
Asp	Trp	Ser	Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Gln	Ser	
		290				295					300					
gca	ctg	aca	tgg	aaa	ggc	ctc	act	tct	cta	cta	agg	agt	gga	tgg	aag	960
Ala	Leu	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	
		305			310					315					320	
acg	ata	aag	gga	gca	ctg	gtg	atg	cct	ctc	atg	caa	ggc	tac	aag		1008
Thr	Ile	Lys	Gly	Ala	Leu	Val	Met	Pro	Leu	Met	Ile	Gln	Gly	Tyr	Lys	

## PhoenixTemp32470.tmp.txt

```

          325          330          335
aaa ggc ctc att aag ttc agc atc atc tgc cac aaa ccc caa gca
Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys His Lys Pro Gln Ala
          340          345          350
gcc ata gaa gga gaa cct gag gcc gca tcg ccc aga gtg tag
Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Arg Val
          355          360          365

```

1056

1098

<210> 2287  
 <211> 365  
 <212> PRT  
 <213> Triticum aestivum

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<400> 2287
Met Ala Asn Ser Ala Ala Leu Leu His Ser Leu Leu Ser Thr Ala Trp
1      5      10      15
Thr Pro Arg Arg Leu Asp Arg Ala Ser Ala Thr Arg Leu Ala Pro
20
Ser Pro Gly Leu Ser Cys Arg Ser Arg Pro Thr Arg Ser Val Arg
35
Pro Met Ala Ser Ser Thr Thr Ala Ala Arg Ala Asp Ala Ala Pro Pro
50
Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu
65
Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ser
85
Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met
100
Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Pro Thr Asn
115
Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser
130
Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Ser Gly Ile Thr Leu
145
Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly
165
Leu Ser Asp Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Glu Gln Pro
180
Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu
195
His Met Pro Asn Lys Gln Lys Phe Val Ser Glu Leu Ala Arg Val Ala
210
Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu
225
Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys
245
Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp
260
Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala
275
Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Gln Ser
290
Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys
305
Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ile Gln Gly Tyr Lys
325
Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys His Lys Pro Gln Ala
340
Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Arg Val
355          360          365

```

<210> 2288  
 <211> 936  
 <212> DNA  
 <213> Ostreococcus tauri

<220>  
 <221> CDS  
 <222> (1)..(936)



## PhoenixTemp32470.tmp.txt

```

<400> 2288
atg cgc tcg cgc gcg gac gag acg acg cgg tgc gac gcg cgc gcg 48
Met Arg Ser Arg Ala Asp Glu Thr Thr Arg Cys Asp Ala Arg Arg Ala
1 5 10 15
gtg gag ccg ttg gtg acg cga acg tcc acc cta aac gag ggc atc gcc 96
Val Glu Pro Leu Val Thr Arg Thr Ser Thr Leu Asn Glu Gly Ile Ala
20 25 30
aag ttt tac gac gaa tcg agc gag ctg tgg gaa cgc gtg tgg gga agc 144
Lys Phe Tyr Asp Glu Ser Ser Glu Leu Trp Glu Arg Val Trp Gly Ser
35 40 45
gac ggg ggc gac ggg acg cac atg cat cac gga tac tac cgc gcg ggc 192
Asp Gly Gly Asp Gly Thr His Met His Gly Tyr Tyr Arg Ala Gly
50 55 60
gaa ccg atc gat cac gcc aag gcg cag gtg gac atg atc gag gag agc 240
Glu Pro Ile Asp His Ala Lys Ala Gln Val Asp Met Ile Glu Glu Ser
65 70 75 80
ttg aaa ttc gcg ggc gtc gag ggg gcg agg cgg gtg ttg gac gtc ggg 288
Leu Lys Phe Ala Gly Val Glu Gly Ala Arg Val Leu Asp Val Gly
85 90 95
tgc ggc atc ggc ggg agc tcg aga cac atg gtg cga aag tgg gac ggg 336
Cys Gly Ile Gly Gly Ser Ser Arg His Met Val Arg Lys Trp Asp Gly
100 105 110
tgc gcg gcg gag ggc gtg acg ctg tcg ccg gtg cag gcg gcg cgg gcg 384
Cys Ala Ala Glu Gly Val Thr Leu Ser Pro Val Gln Ala Ala Arg Ala
115 120 125
aac gcg ctg gcg ata gag caa ggc gtg gag gat cga gcg aat tat cgc 432
Asn Ala Leu Ala Ile Glu Gln Gly Val Glu Asp Arg Ala Asn Tyr Arg
130 135 140
gtc gcg gac gcg ctg aat acg ccg ttc gag gac gcg tcg ttc gat ttc 480
Val Ala Asp Ala Leu Asn Thr Pro Phe Glu Asp Ala Ser Phe Asp Phe
145 150 155 160
gtg tgg tcc atg gaa tcg ggc gag cac atg ccg gac aag aag aaa ttc 528
Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys Lys Lys Phe
165 170 175
gtc gac gaa ctc gcg cgg gtg tgc gaa ccc ggg ggg acg att ttg atc 576
Val Asp Glu Leu Ala Arg Val Cys Glu Pro Gly Gly Thr Ile Leu Ile
180 185 190
gtt acc tgg tgt cat cgc gtg ttg aaa gac ggc gag acc gag ctc gag 624
Val Thr Trp Cys His Arg Val Leu Lys Asp Gly Glu Thr Glu Leu Glu
195 200 205
gct ggg gag aag atc ttg ctc gat cgc atc tgc gac gcg tac tac ctc 672
Ala Gly Glu Lys Ile Leu Leu Asp Arg Ile Cys Asp Ala Tyr Tyr Leu
210 215 220
ccg gcg tgg tgc tcc gtc gcg gat tac gag tcg ctc gcg aaa gac gct 720
Pro Ala Trp Cys Ser Val Ala Asp Tyr Glu Ser Leu Ala Lys Asp Ala
225 230 235 240
ggg ctg gtg gac ata cgc acg gct gat tgg agt gag gag gtg aag ccg 768
Gly Leu Val Asp Ile Arg Thr Ala Asp Trp Ser Glu Glu Val Lys Pro
245 250 255
ttc tgg aaa ggg gtc atc aag acc gcg ctg acg ccg aga ggg ata atc 816
Phe Trp Lys Gly Val Ile Lys Thr Ala Leu Thr Pro Arg Gly Ile Ile
260 265 270
ggg ctc atc aaa tct ggc gcc gcc acc ttg cgc gga gcg ctc gtg atg 864
Gly Leu Ile Lys Ser Gly Ala Ala Thr Leu Arg Gly Ala Leu Val Met
275 280 285
ccg ctc atg caa acc ggc ttg gcg acg gga acc att aaa ttt aac gtc 912
Pro Leu Met Gln Thr Gly Leu Ala Thr Gly Thr Ile Lys Phe Asn Val
290 295 300
atc gtc gct cga aaa ccc atc tga 936
Ile Val Ala Arg Lys Pro Ile
305 310

```

```

<210> 2289
<211> 311
<212> PRT
<213> Ostreococcus tauri

```

```
<400> 2289
```

## PhoenixTemp32470.tmp.txt

Met Arg Ser Arg Ala Asp Glu Thr Thr Arg Cys Asp Ala Arg Arg Ala  
 1 Val Glu Pro Leu Val Thr Arg Thr Ser Thr Leu Asn Glu Gly Ile Ala  
 20 Lys Phe Tyr Asp Glu Ser Ser Glu Leu Trp Glu Arg Val Trp Gly Ser  
 35 Asp Gly Gly Asp Gly Thr His Met His His Gly Tyr Tyr Arg Ala Gly  
 50 Glu Pro Ile Asp His Ala Lys Ala Gln Val Asp Met Ile Glu Glu Ser  
 65 Leu Lys Phe Ala Gly Val Glu Gly Ala Arg Arg Val Leu Asp Val Gly  
 80 Cys Gly Ile Gly Gly Ser Ser Arg His Met Val Arg Lys Trp Asp Gly  
 100 Cys Ala Ala Glu Gly Val Thr Leu Ser Pro Val Gln Ala Ala Arg Ala  
 115 Asn Ala Leu Ala Ile Glu Gln Gly Val Glu Asp Arg Ala Asn Tyr Arg  
 130 Val Ala Asp Ala Leu Asn Thr Pro Phe Glu Asp Ala Ser Phe Asp Phe  
 145 Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys Lys Lys Phe  
 160 Val Asp Glu Leu Ala Arg Val Cys Glu Pro Gly Gly Thr Ile Leu Ile  
 175 Val Thr Trp Cys His Arg Val Leu Lys Asp Gly Glu Thr Glu Leu Glu  
 190 Ala Gly Glu Lys Ile Leu Leu Asp Arg Ile Cys Asp Ala Tyr Tyr Leu  
 205 Pro Ala Trp Cys Ser Val Ala Asp Tyr Glu Ser Leu Ala Lys Asp Ala  
 220 Gly Leu Val Asp Ile Arg Thr Ala Asp Trp Ser Glu Glu Val Lys Pro  
 240 Phe Trp Lys Gly Val Ile Lys Thr Ala Leu Thr Pro Arg Gly Ile Ile  
 260 Gly Leu Ile Lys Ser Gly Ala Ala Thr Leu Arg Gly Ala Leu Val Met  
 275 Pro Leu Met Gln Thr Gly Leu Ala Thr Gly Thr Ile Lys Phe Asn Val  
 290 Ile Val Ala Arg Lys Pro Ile  
 305 310

&lt;210&gt; 2290

&lt;211&gt; 1023

&lt;212&gt; DNA

<213> *Ostreococcus tauri*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1023)

&lt;400&gt; 2290

atg	acg	aat	cgg	gac	att	gac	tac	ggg	aag	caa	ctc	gtc	gcc	tcg	gtc	48
Met	Thr	Asn	Arg	Asp	Ile	Asp	Tyr	Gly	Lys	Gln	Leu	Val	Ala	Ser	Val	
1				5				10						15		
gct	ggt	ttg	gcg	ctc	gcg	gcg	ggg	att	ttg	aag	gtg	aag	aag	ggt	ttg	96
Ala	Gly	Leu	Ala	Leu	Ala	Ala	Gly	Ile	Leu	Lys	Val	Lys	Lys	Val	Leu	
			20					25						30		
gac	acg	ccg	agt	cga	acg	tac	atc	ccc	ggg	gag	aac	acc	gtg	ggg	gcg	144
Asp	Thr	Pro	Ser	Arg	Thr	Tyr	Ile	Pro	Gly	Glu	Asn	Thr	Val	Gly	Ala	
			35				40					45				
gag	tac	gac	gcg	tgg	acc	gag	gag	gaa	att	tta	gag	tac	tac	tgg	ggc	192
Glu	Tyr	Asp	Ala	Trp	Thr	Glu	Glu	Glu	Ile	Leu	Glu	Tyr	Tyr	Trp	Gly	
			50			55					60					
gag	cac	atc	cat	ctc	ggg	tac	tac	cgc	gac	gaa	gac	ttg	gcc	aag	ggc	240
Glu	His	Ile	His	Leu	Gly	Tyr	Tyr	Arg	Asp	Glu	Asp	Leu	Ala	Lys	Gly	
					70				75						80	
gcg	ggc	acg	ctc	ctg	gga	cac	aga	gtg	aaa	gat	ttc	atc	gag	gcc	aag	288
Ala	Gly	Thr	Leu	Leu	Gly	His	Arg	Val	Lys	Asp	Phe	Ile	Glu	Ala	Lys	
				85					90					95		

## PhoenixTemp32470.tmp.txt

gaa	gat	ttc	gtg	gac	gag	atg	tac	gcg	tgg	agc	ggg	gtg	gag	gcg	aac	336
Glu	Asp	Phe	Val	Asp	Glu	Met	Tyr	Ala	Trp	Ser	Gly	Val	Glu	Ala	Asn	
			100					105					110			
aac	ggc	ggg	aaa	aag	ccg	aag	aaa	ata	ttg	gac	gtc	ggg	tgc	ggc	atc	384
Asn	Gly	Gly	Lys	Lys	Pro	Lys	Lys	Ile	Leu	Asp	Val	Gly	Cys	Gly	Ile	
		115					120					125				
ggc	gga	gcg	acg	cga	cgc	ttg	gcg	tcc	aaa	tgc	gtc	gga	ccc	gat	agc	432
Gly	Gly	Ala	Thr	Arg	Arg	Leu	Ala	Ser	Lys	Cys	Val	Gly	Pro	Asp	Ser	
	130					135					140					
caa	gtg	acg	ggc	atc	acg	cta	tct	tca	aag	caa	gcg	gcg	cgc	gcg	acc	480
Gln	Val	Thr	Gly	Ile	Thr	Leu	Ser	Ser	Lys	Gln	Ala	Ala	Arg	Ala	Thr	
145					150					155					160	
gcg	ctc	gcc	gag	cgc	caa	gga	att	ccg	aac	gcc	gat	ttc	caa	gtc	atg	528
Ala	Leu	Ala	Glu	Arg	Gln	Gly	Ile	Pro	Asn	Ala	Asp	Phe	Gln	Val	Met	
				165					170					175		
gac	gcg	ctc	gcg	atg	acg	ttt	gaa	gac	gac	acg	ttt	gac	atg	gtg	tgg	576
Asp	Ala	Leu	Ala	Met	Thr	Phe	Glu	Asp	Asp	Thr	Phe	Asp	Met	Val	Trp	
			180					185					190			
gcg	tgc	gag	agc	ggc	gaa	cac	atg	ccg	gac	aag	aag	aag	tac	gtc	gac	624
Ala	Cys	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Lys	Lys	Tyr	Val	Asp	
		195					200					205				
gag	atg	gtt	cgc	gtg	ctc	aaa	ccg	ggc	ggg	aca	ctc	gtc	atc	gcg	acg	672
Glu	Met	Val	Arg	Val	Leu	Lys	Pro	Gly	Gly	Thr	Leu	Val	Ile	Ala	Thr	
	210					215					220					
tgg	tgt	cag	cga	cac	gct	ccg	ccg	gag	ttg	acg	gcg	gtg	gag	aag	agt	720
Trp	Cys	Gln	Arg	His	Ala	Pro	Pro	Glu	Leu	Thr	Ala	Val	Glu	Lys	Ser	
225					230					235					240	
aag	ctt	cag	ttt	ttg	tac	gac	gag	tgg	gcg	cat	ccg	tac	ttc	atc	tcc	768
Lys	Leu	Gln	Phe	Leu	Tyr	Asp	Glu	Trp	Ala	His	Pro	Tyr	Phe	Ile	Ser	
				245					250					255		
atc	aag	gat	tat	tgc	tcg	ctc	gcc	acc	gac	acg	ggc	gcg	atg	acg	cgc	816
Ile	Lys	Asp	Tyr	Cys	Ser	Leu	Ala	Thr	Asp	Thr	Gly	Ala	Met	Thr	Arg	
			260				265						270			
gtg	gag	ggg	gac	gac	tgg	acg	aaa	caa	acg	atc	gtg	agc	tgg	cgt	cac	864
Val	Glu	Gly	Asp	Asp	Trp	Thr	Lys	Gln	Thr	Ile	Val	Ser	Trp	Arg	His	
		275					280					285				
tcc	atc	tgg	gct	ggc	gtg	tac	gat	ccg	att	ccc	gtg	ttc	tct	cga	ccg	912
Ser	Ile	Trp	Ala	Gly	Val	Tyr	Asp	Pro	Ile	Pro	Val	Phe	Ser	Arg	Pro	
	290					295					300					
aaa	att	tgg	tac	aag	acg	ctg	cgc	gac	atc	gtc	tgt	ctc	gag	cgc	atg	960
Lys	Ile	Trp	Tyr	Lys	Thr	Leu	Arg	Asp	Ile	Val	Cys	Leu	Glu	Arg	Met	
305					310					315					320	
cgt	cgc	gcg	ttc	ggc	gag	gga	ctc	atg	caa	tac	ggg	atg	att	cgc	ggc	1008
Arg	Arg	Ala	Phe	Gly	Glu	Gly	Leu	Met	Gln	Tyr	Gly	Met	Ile	Arg	Gly	
				325					330					335		
gtg	aag	aag	gaa	tag												1023
Val	Lys	Lys	Glu													
			340													

&lt;210&gt; 2291

&lt;211&gt; 340

&lt;212&gt; PRT

<213> *Ostreococcus tauri*

&lt;400&gt; 2291

Met	Thr	Asn	Arg	Asp	Ile	Asp	Tyr	Gly	Lys	Gln	Leu	Val	Ala	Ser	Val	
1				5					10					15		
Ala	Gly	Leu	Ala	Leu	Ala	Ala	Gly	Ile	Leu	Lys	Val	Lys	Lys	Val	Leu	
			20					25					30			
Asp	Thr	Pro	Ser	Arg	Thr	Tyr	Ile	Pro	Gly	Glu	Asn	Thr	Val	Gly	Ala	
		35					40					45				
Glu	Tyr	Asp	Ala	Trp	Thr	Glu	Glu	Glu	Ile	Leu	Glu	Tyr	Tyr	Trp	Gly	
	50					55				60						
Glu	His	Ile	His	Leu	Gly	Tyr	Tyr	Arg	Asp	Glu	Asp	Leu	Ala	Lys	Gly	
65					70					75					80	
Ala	Gly	Thr	Leu	Leu	Gly	His	Arg	Val	Lys	Asp	Phe	Ile	Glu	Ala	Lys	
				85					90					95		
Glu	Asp	Phe	Val	Asp	Glu	Met	Tyr	Ala	Trp	Ser	Gly	Val	Glu	Ala	Asn	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Asn Gly Gly Lys Lys Pro Lys Lys Ile Leu Asp Val Gly Cys Gly Ile  
 115 120 125  
 Gly Gly Ala Thr Arg Arg Leu Ala Ser Lys Cys Val Gly Pro Asp Ser  
 130 135 140  
 Gln Val Thr Gly Ile Thr Leu Ser Ser Lys Gln Ala Ala Arg Ala Thr  
 145 150 155 160  
 Ala Leu Ala Glu Arg Gln Gly Ile Pro Asn Ala Asp Phe Gln Val Met  
 165 170 175  
 Asp Ala Leu Ala Met Thr Phe Glu Asp Asp Thr Phe Asp Met Val Trp  
 180 185 190  
 Ala Cys Glu Ser Gly Glu His Met Pro Asp Lys Lys Lys Tyr Val Asp  
 195 200 205  
 Glu Met Val Arg Val Leu Lys Pro Gly Gly Thr Leu Val Ile Ala Thr  
 210 215 220  
 Trp Cys Gln Arg His Ala Pro Pro Glu Leu Thr Ala Val Glu Lys Ser  
 225 230 235 240  
 Lys Leu Gln Phe Leu Tyr Asp Glu Trp Ala His Pro Tyr Phe Ile Ser  
 245 250 255  
 Ile Lys Asp Tyr Cys Ser Leu Ala Thr Asp Thr Gly Ala Met Thr Arg  
 260 265 270  
 Val Glu Gly Asp Asp Trp Thr Lys Gln Thr Ile Val Ser Trp Arg His  
 275 280 285  
 Ser Ile Trp Ala Gly Val Tyr Asp Pro Ile Pro Val Phe Ser Arg Pro  
 290 295 300  
 Lys Ile Trp Tyr Lys Thr Leu Arg Asp Ile Val Cys Leu Glu Arg Met  
 305 310 315 320  
 Arg Arg Ala Phe Gly Glu Gly Leu Met Gln Tyr Gly Met Ile Arg Gly  
 325 330 335  
 Val Lys Lys Glu  
 340

&lt;210&gt; 2292

&lt;211&gt; 1044

&lt;212&gt; DNA

&lt;213&gt; Brassica juncea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1044)

&lt;400&gt; 2292

atg	aaa	gcg	act	ctc	gca	cca	ccc	tcc	tct	ctc	ata	agc	ctc	ccc	agg	48
Met	Lys	Ala	Thr	Leu	Ala	Pro	Pro	Ser	Ser	Leu	Ile	Ser	Leu	Pro	Arg	
1				5				10						15		
cac	aaa	gta	tct	tct	ctc	cgt	tca	ccg	tcg	ctt	ctc	ctt	cag	tcc	caa	96
His	Lys	Val	Ser	Ser	Leu	Arg	Ser	Pro	Ser	Leu	Leu	Leu	Gln	Ser	Gln	
			20					25					30			
cgg	cca	tcc	tca	gcc	tta	atg	acg	acg	acg	gca	tca	cgt	gga	agc	gtg	144
Arg	Pro	Ser	Ser	Ala	Leu	Met	Thr	Thr	Thr	Ala	Ser	Arg	Gly	Ser	Val	
		35					40					45				
gct	gtg	acg	gct	gct	gct	acc	tcc	tcc	gct	gag	gcg	ctg	cga	gaa	gga	192
Ala	Val	Thr	Ala	Ala	Ala	Thr	Ser	Ser	Ala	Glu	Ala	Leu	Arg	Glu	Gly	
	50					55				60						
ata	gcg	gaa	ttc	tac	aac	gag	acg	tcg	gga	tta	tgg	gag	gag	att	tgg	240
Ile	Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	
	65				70				75					80		
gga	gat	cat	atg	cat	cac	ggc	ttc	tac	gat	cct	gat	tcc	tct	gtt	caa	288
Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln	
				85					90					95		
ctt	tca	gat	tcc	ggt	cac	cgg	gaa	gct	cag	atc	cgg	atg	att	gaa	gag	336
Leu	Ser	Asp	Ser	Gly	His	Arg	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	
			100					105					110			
tct	cta	cgt	ttc	gcc	ggc	gtt	act	gaa	gag	gag	aaa	aag	ata	aag	ata	384
Ser	Leu	Arg	Phe	Ala	Gly	Val	Thr	Glu	Glu	Glu	Lys	Lys	Ile	Lys	Ile	
		115					120					125				
gtg	gtg	gat	gtt	ggg	tgt	ggg	atc	gga	gga	agc	tca	agg	tat	att	gcc	432
Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Ile	Ala	
	130					135					140					
tct	aaa	ttt	ggt	gcc	gaa	tgc	att	ggc	atc	aca	ctc	agt	ccc	gtt	caa	480

## PhoenixTemp32470.tmp.txt

Ser 145	Lys	Phe	Gly	Ala	Glu 150	Cys	Ile	Gly	Ile	Thr 155	Leu	Ser	Pro	Val	Gln 160	
gcc	aag	aga	gca	aat	gat	ctc	gcc	acc	gct	caa	tca	ctc	tct	cat	aag	528
Ala	Lys	Arg	Ala	Asn 165	Asp	Leu	Ala	Thr	Ala 170	Gln	Ser	Leu	Ser	His 175	Lys	
gtt	tcc	ttc	caa	gtt	gca	gat	gca	ttg	gac	caa	cca	ttt	gaa	gat	ggg	576
Val	Ser	Phe	Gln 180	Val	Ala	Asp	Ala	Leu 185	Asp	Gln	Pro	Phe	Glu 190	Asp	Gly	
ata	ttc	gat	ctt	gtt	tgg	tca	atg	gaa	agc	ggg	gag	cat	atg	cct	gac	624
Ile	Phe	Asp 195	Leu	Val	Trp	Ser	Met 200	Glu	Ser	Gly	Glu	His 205	Met	Pro	Asp	
aag	gcc	aag	ttc	gtg	aag	gaa	ttg	gta	cgt	gtg	acg	gct	cca	gga	gga	672
Lys	Ala	Lys	Phe	Val	Lys	Glu 215	Leu	Val	Arg	Val 220	Thr	Ala	Pro	Gly	Gly	
agg	ata	ata	ata	gtg	aca	tgg	tgc	cac	aga	aat	cta	tct	caa	ggg	gaa	720
Arg	Ile	Ile	Ile	Val	Thr 230	Trp	Cys	His	Arg	Asn 235	Leu	Ser	Gln	Gly	Glu 240	
gaa	tct	ttg	cag	cca	tgg	gag	cag	aac	ctc	ttg	gac	aga	atc	tgc	aaa	768
Glu	Ser	Leu	Gln 245	Pro	Trp	Glu	Gln	Asn 250	Leu	Asp	Arg	Ile	Cys 255	Lys		
aca	ttt	tat	ctc	ccg	gcc	tgg	tgc	tcc	acc	act	gat	tat	gtc	gag	ttg	816
Thr	Phe	Tyr	Leu 260	Pro	Ala	Trp	Cys	Ser 265	Thr	Thr	Asp	Tyr	Val 270	Glu	Leu	
ctt	caa	tcc	ctc	tcg	ctc	cag	gat	att	aag	tat	gca	gat	tgg	tca	gag	864
Leu	Gln 275	Ser	Leu	Ser	Leu	Gln	Asp 280	Ile	Lys	Tyr	Ala	Asp 285	Trp	Ser	Glu	
aac	gta	gct	cct	ttc	tgg	ccg	gcg	gtt	ata	cga	acc	gca	tta	acg	tgg	912
Asn	Val 290	Ala	Pro	Phe	Trp	Pro 295	Ala	Val	Ile	Arg	Thr 300	Ala	Leu	Thr	Trp	
aag	ggc	ctt	gtg	tct	ctg	ctt	cgt	agt	ggg	atg	aag	agt	ata	aaa	gga	960
Lys	Gly	Leu	Val	Ser	Leu 310	Leu	Arg	Ser	Gly	Met 315	Lys	Ser	Ile	Lys	Gly 320	
gca	ttg	aca	att	cca	ttg	atg	att	gaa	ggg	tac	aag	aaa	ggg	gtc	att	1008
Ala	Leu	Thr	Ile 325	Pro	Leu	Met	Ile	Glu	Gly 330	Tyr	Lys	Lys	Gly	Val 335	Ile	
aag	ttt	ggc	atc	atc	act	tgc	cag	aag	cct	ctc	tga					1044
Lys	Phe	Gly 340	Ile	Ile	Thr	Cys	Gln 345	Lys	Pro	Leu						

&lt;210&gt; 2293

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Brassica juncea

&lt;400&gt; 2293

Met	Lys	Ala	Thr	Leu 5	Ala	Pro	Pro	Ser	Ser 10	Leu	Ile	Ser	Leu	Pro 15	Arg	
His	Lys	Val	Ser	Ser	Leu	Arg	Ser	Pro 25	Ser	Leu	Leu	Leu	Gln 30	Ser	Gln	
Arg	Pro	Ser 35	Ser	Ala	Leu	Met	Thr 40	Thr	Ala	Ser	Arg 45	Gly	Ser	Val		
Ala	Val	Thr	Ala	Ala	Ala	Thr 55	Ser	Ser	Ala	Glu	Ala 60	Leu	Arg	Glu	Gly	
Ile	Ala	Glu	Phe	Tyr	Asn 70	Glu	Thr	Ser	Gly	Leu	Trp 75	Glu	Glu	Ile	Trp 80	
Gly	Asp	His	Met	His 85	His	Gly	Phe	Tyr	Asp 90	Pro	Asp	Ser	Ser	Val 95	Gln	
Leu	Ser	Asp	Ser 100	Gly	His	Arg	Glu	Ala 105	Gln	Ile	Arg	Met	Ile 110	Glu	Glu	
Ser	Leu	Arg 115	Phe	Ala	Gly	Val	Thr 120	Glu	Glu	Glu	Lys	Lys 125	Ile	Lys	Ile	
Val	Val	Asp	Val	Gly	Cys	Gly 135	Ile	Gly	Gly	Ser	Ser 140	Arg	Tyr	Ile	Ala	
Ser	Lys	Phe	Gly	Ala	Glu 150	Cys	Ile	Gly	Ile	Thr 155	Leu	Ser	Pro	Val	Gln 160	
Ala	Lys	Arg	Ala	Asn 165	Asp	Leu	Ala	Thr	Ala 170	Gln	Ser	Leu	Ser	His 175	Lys	
Val	Ser	Phe	Gln 180	Val	Ala	Asp	Ala	Leu 185	Asp	Gln	Pro	Phe	Glu 190	Asp	Gly	

## PhoenixTemp32470.tmp.txt

Ile Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp  
 195 200 205  
 Lys Ala Lys Phe Val Lys Glu Val Arg Val Thr Ala Pro Gly Gly  
 210 215 220  
 Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Ser Gln Gly Glu  
 225 230 235 240  
 Glu Ser Leu Gln Pro Trp Glu Gln Asn Leu Asp Arg Ile Cys Lys  
 245 250 255  
 Thr Phe Tyr Leu Pro Ala Trp Cys Ser Thr Thr Asp Tyr Val Glu Leu  
 260 265 270  
 Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Tyr Ala Asp Trp Ser Glu  
 275 280 285  
 Asn Val Ala Pro Phe Trp Pro Ala Val Ile Arg Thr Ala Leu Thr Trp  
 290 295 300  
 Lys Gly Leu Val Ser Leu Leu Arg Ser Gly Met Lys Ser Ile Lys Gly  
 305 310 315 320  
 Ala Leu Thr Ile Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val Ile  
 325 330 335  
 Lys Phe Gly Ile Thr Cys Gln Lys Pro Leu  
 340 345

&lt;210&gt; 2294

&lt;211&gt; 1044

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1044)

&lt;400&gt; 2294

atg	aaa	gcg	act	ctc	gca	cca	ccc	tcc	tct	ctc	ata	agc	ctc	cca	agg	48
Met	Lys	Ala	Thr	Leu	Ala	Pro	Pro	Ser	Ser	Leu	Ile	Ser	Leu	Pro	Arg	
1				5				10						15		
cac	aaa	gta	tct	tct	ctc	cgt	tca	ccg	tcg	ctt	ctc	ctt	cag	tcc	caa	96
His	Lys	Val	Ser	Ser	Leu	Arg	Ser	Pro	Ser	Leu	Leu	Leu	Gln	Ser	Gln	
			20					25					30			
cgg	cca	tcc	tca	gcc	tta	atg	aca	acg	acg	gca	tca	cgt	gga	agc	gta	144
Arg	Pro	Ser	Ser	Ala	Leu	Met	Thr	Thr	Thr	Ala	Ser	Arg	Gly	Ser	Val	
			35				40					45				
gct	gtg	acg	gct	gct	gct	acc	tcc	tcc	gct	gag	gcg	ctg	cga	gaa	gga	192
Ala	Val	Thr	Ala	Ala	Ala	Thr	Ser	Ser	Ala	Glu	Ala	Leu	Arg	Glu	Gly	
			50			55					60					
ata	gcg	gaa	ttc	tac	aac	gag	acg	tcg	gga	tta	tgg	gag	gag	att	tgg	240
Ile	Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	
			65		70				75						80	
gga	gat	cat	atg	cat	cac	ggc	ttc	tac	gat	ccc	gat	tcc	tct	gtt	caa	288
Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln	
				85					90					95		
ctt	tca	gat	tcc	ggt	cac	cgg	gaa	gct	cag	atc	cgg	atg	att	gaa	gag	336
Leu	Ser	Asp	Ser	Gly	His	Arg	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	
			100					105					110			
tct	cta	cgt	ttc	gcc	ggc	gtt	act	gaa	gag	gag	aaa	aag	ata	aag	aga	384
Ser	Leu	Arg	Phe	Ala	Gly	Val	Thr	Glu	Glu	Glu	Lys	Lys	Ile	Lys	Arg	
			115				120					125				
gtg	gtg	gat	gtt	ggg	tgt	ggg	atc	gga	gga	agc	tca	agg	tat	att	gcc	432
Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Ile	Ala	
			130			135					140					
tct	aaa	ttt	ggt	gcc	gaa	tgc	att	ggc	atc	aca	ctc	agt	ccc	gtt	caa	480
Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	
				150					155						160	
gcc	aag	aga	gcc	aat	gat	ctc	gcc	gcc	gct	caa	tca	ctc	tct	cat	aag	528
Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ser	His	Lys	
				165					170					175		
gtt	tcc	ttc	caa	gtt	gca	gat	gca	ttg	gac	caa	cca	ttt	gaa	gat	ggt	576
Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp	Gly	
			180					185					190			
att	ttc	gat	ctt	gtt	tgg	tca	atg	gaa	agc	ggt	gag	cat	atg	cct	gac	624
Ile	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	

## PhoenixTemp32470.tmp.txt

aag	gcc	195	ttc	gtg	aag	gaa	200	gtg	acg	205	cca	gga	gga	672			
Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Thr	Ala	Pro	Gly	Gly			
agg	ata	210	ata	ata	gtg	aca	tgg	tgc	cac	aga	aat	cta	tct	caa	ggg	gaa	720
Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Gln	Gly	Glu	240	
225	tct	ttg	cag	cca	tgg	gag	cag	gac	ctc	ttg	gac	aga	atc	tgc	aaa	768	
Glu	Ser	Leu	Gln	Pro	Trp	Glu	Gln	Asp	Leu	Leu	Asp	Arg	Ile	Cys	Lys	255	
aca	ttt	tat	ctc	ccg	gcc	tgg	tgc	tcc	acc	act	gat	tat	gtc	gag	ttg	816	
Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Thr	Asp	Tyr	Val	Glu	Leu	270	
ctt	caa	tcc	ctc	tcg	ctc	cag	gat	att	aag	tat	gca	gat	tgg	tca	gag	864	
Leu	Gln	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Tyr	Ala	Asp	Trp	Ser	Glu	285	
aac	gta	gct	cct	ttc	tgg	ccg	gcg	ggt	ata	cga	acc	gca	tta	acg	tgg	912	
Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Thr	Ala	Leu	Thr	Trp	300	
290	gag	ggt	gta	gta	gta	gta	gta	gta	gta	gta	gta	gta	gta	gta	gta	960	
Lys	Gly	Leu	Val	Ser	Leu	Leu	Arg	Ser	Gly	Met	Lys	Ser	Ile	Lys	Gly	320	
305	gca	ttg	aca	att	cca	ttg	atg	att	gaa	ggg	tac	aag	aaa	ggt	gtc	att	1008
Ala	Leu	Thr	Ile	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys	Gly	Val	Ile	335	
225	aag	ttt	ggc	atc	atc	act	tgc	cag	aaa	cct	ctc	taa				1044	
Lys	Phe	Gly	Ile	Ile	Thr	Cys	Gln	Lys	Pro	Leu						340	
340																345	

&lt;210&gt; 2295

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2295

Met	Lys	Ala	Thr	Leu	Ala	Pro	Pro	Ser	Ser	Leu	Ile	Ser	Leu	Pro	Arg	
1	His	Lys	Val	Ser	Ser	Leu	Arg	Ser	Pro	Ser	Leu	Leu	Leu	Gln	Ser	Gln
				20					25					30		
Arg	Pro	Ser	Ser	Ala	Leu	Met	Thr	Thr	Ala	Ser	Arg	Gly	Ser	Val		
				35				40						45		
Ala	Val	Thr	Ala	Ala	Ala	Thr	Ser	Ser	Ala	Glu	Ala	Leu	Arg	Glu	Gly	
				50				55						60		
Ile	Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	
65					70					75					80	
Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln	
				85					90					95		
Leu	Ser	Asp	Ser	Gly	His	Arg	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	
			100					105					110			
Ser	Leu	Arg	Phe	Ala	Gly	Val	Thr	Glu	Glu	Glu	Lys	Lys	Ile	Lys	Arg	
			115				120					125				
Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Ile	Ala	
			130			135					140					
Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	
145				150						155					160	
Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ser	His	Lys	
				165					170					175		
Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp	Gly	
			180					185					190			
Ile	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	
			195				200					205				
Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Thr	Ala	Pro	Gly	Gly	
				210			215				220					
Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Gln	Gly	Glu	
225					230					235					240	
Glu	Ser	Leu	Gln	Pro	Trp	Glu	Gln	Asp	Leu	Leu	Asp	Arg	Ile	Cys	Lys	
				245					250					255		
Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Thr	Asp	Tyr	Val	Glu	Leu	
			260					265					270			

## PhoenixTemp32470.tmp.txt

Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Tyr Ala Asp Trp Ser Glu  
 275 280 285  
 Asn Val Ala Pro Phe Trp Pro Ala Val Ile Arg Thr Ala Leu Thr Trp  
 290 295 300  
 Lys Gly Leu Val Ser Leu Leu Arg Ser Gly Met Lys Ser Ile Lys Gly  
 305 310 315 320  
 Ala Leu Thr Ile Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val Ile  
 325 330 335  
 Lys Phe Gly Ile Ile Thr Cys Gln Lys Pro Leu  
 340 345

&lt;210&gt; 2296

&lt;211&gt; 1035

&lt;212&gt; DNA

<213> *Gossypium hirsutum*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1035)

&lt;400&gt; 2296

atg	gct	gcc	gcg	tta	caa	tta	caa	aca	cac	cct	tgc	ttc	cat	ggc	acg	48
Met	Ala	Ala	Ala	Leu	Gln	Leu	Gln	Thr	His	Pro	Cys	Phe	His	Gly	Thr	
1				5				10						15		
tgc	caa	ctc	tca	cct	ccg	cca	cga	cct	tcc	gtt	tcc	ttc	cct	tct	tcc	96
Cys	Gln	Leu	Ser	Pro	Pro	Pro	Arg	Pro	Ser	Val	Ser	Phe	Pro	Ser	Ser	
			20				25						30			
tcc	cg	tcg	ttt	cca	tct	agc	aga	cgt	tcc	ctg	tcc	gcg	cat	gtg	aag	144
Ser	Arg	Ser	Phe	Pro	Ser	Ser	Arg	Arg	Ser	Leu	Ser	Ala	His	Val	Lys	
			35				40					45				
gcg	gcg	gcg	tcg	tct	ttg	tcc	acc	acc	acc	ttg	cag	gaa	ggg	ata	gcg	192
Ala	Ala	Ala	Ser	Ser	Leu	Ser	Thr	Thr	Thr	Leu	Gln	Glu	Gly	Ile	Ala	
			50				55				60					
gag	ttc	tac	gac	cag	tcg	tcg	ggg	att	tgg	gaa	gac	ata	tgg	ggt	gac	240
Glu	Phe	Tyr	Asp	Gln	Ser	Ser	Gly	Ile	Trp	Glu	Asp	Ile	Trp	Gly	Asp	
					70					75					80	
cat	atg	cac	cat	gga	tat	tac	gac	ccg	gat	tcc	aat	gtt	tca	ggc	tca	288
His	Met	His	His	Gly	Tyr	Tyr	Asp	Pro	Asp	Ser	Asn	Val	Ser	Gly	Ser	
				85					90					95		
gat	cat	cca	gcc	gag	atc	cga	atg	atc	gaa	gaa	tcg	ctc	cgt	ttc		336
Asp	His	Pro	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	Ser	Leu	Arg	Phe		
			100				105					110				
gct	gga	ata	acc	gag	gac	cca	gca	aac	aaa	ccc	aag	aca	ata	gtt	gat	384
Ala	Gly	Ile	Thr	Glu	Asp	Pro	Ala	Asn	Lys	Pro	Lys	Thr	Ile	Val	Asp	
			115				120					125				
gtt	gga	tgt	ggg	ata	gga	ggc	agc	tct	aga	tac	cta	gca	agg	aaa	tat	432
Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg	Lys	Tyr	
			130			135					140					
gga	gca	aaa	tgc	caa	ggc	att	act	ttg	agc	cct	gtc	caa	gct	gga	aga	480
Gly	Ala	Lys	Cys	Gln	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala	Gly	Arg	
					150					155					160	
gcc	aat	gct	ctt	gct	aaa	gat	caa	gga	cta	gca	gac	aag	gtt	tca	ttt	528
Ala	Asn	Ala	Leu	Ala	Lys	Asp	Gln	Gly	Leu	Ala	Asp	Lys	Val	Ser	Phe	
				165					170					175		
caa	gtt	gca	gat	gcc	ctg	aac	caa	cca	ttc	cct	gat	gac	caa	ttt	gat	576
Gln	Val	Ala	Asp	Ala	Leu	Asn	Gln	Pro	Phe	Pro	Asp	Asp	Gln	Phe	Asp	
			180					185					190			
cta	gtt	tgg	tct	atg	gaa	agc	gga	gaa	cac	atg	cct	gac	aaa	ccc	aag	624
Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Pro	Lys	
			195				200					205				
ttt	gtt	aaa	gag	ctg	gca	cga	gtg	gca	gct	cca	gga	ggc	aca	ata	ata	672
Phe	Val	Lys	Glu	Leu	Ala	Arg	Val	Ala	Ala	Pro	Gly	Gly	Thr	Ile	Ile	
			210			215					220					
ata	gtg	aca	tgg	tgc	cat	agg	gat	ctt	ggt	cca	tca	gaa	gag	gat	ttg	720
Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly	Pro	Ser	Glu	Glu	Asp	Leu	
					230					235					240	
cag	cca	tgg	gag	aaa	aag	ctg	cta	aac	aga	ata	tgt	aat	gct	tac	tat	768
Gln	Pro	Trp	Glu	Lys	Lys	Leu	Leu	Asn	Arg	Ile	Cys	Asn	Ala	Tyr	Tyr	
				245					250					255		



## PhoenixTemp32470.tmp.txt

tta	cca	gag	tgg	tgt	tct	act	tct	gac	tat	gtc	aaa	cta	ctt	cag	tcc	816
Leu	Pro	Glu	Trp	Cys	Ser	Thr	Ser	Asp	Tyr	Val	Lys	Leu	Leu	Gln	Ser	
			260					265					270			
cta	tct	ctc	cag	gat	ata	aag	gca	gca	gat	tgg	act	gag	aat	gta	gca	864
Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ala	Ala	Asp	Trp	Thr	Glu	Asn	Val	Ala	
		275					280					285				
ccc	ttt	tgg	cca	gca	gtg	ata	cgc	tca	gca	ttg	aca	tgg	aag	ggc	ttc	912
Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala	Leu	Thr	Trp	Lys	Gly	Phe	
	290					295				300						
aca	tca	ctg	cta	cga	agt	gga	tta	aaa	aca	ata	aaa	ggg	gca	cta	gtg	960
Thr	Ser	Leu	Leu	Arg	Ser	Gly	Leu	Lys	Thr	Ile	Lys	Gly	Ala	Leu	Val	
305					310					315					320	
atg	cca	ttg	atg	atc	caa	ggg	tac	cag	aaa	ggg	gtg	ata	aag	ttc	gct	1008
Met	Pro	Leu	Met	Ile	Gln	Gly	Tyr	Gln	Lys	Gly	Val	Ile	Lys	Phe	Ala	
				325					330					335		
atc	atc	aca	tgc	cgg	aaa	ccc	gag	taa								1035
Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu									
			340													

&lt;210&gt; 2297

&lt;211&gt; 344

&lt;212&gt; PRT

&lt;213&gt; Gossypium hirsutum

&lt;400&gt; 2297

Met	Ala	Ala	Ala	Leu	Gln	Leu	Gln	Thr	His	Pro	Cys	Phe	His	Gly	Thr	
1				5				10						15		
Cys	Gln	Leu	Ser	Pro	Pro	Pro	Arg	Pro	Ser	Val	Ser	Phe	Pro	Ser	Ser	
			20					25					30			
Ser	Arg	Ser	Phe	Pro	Ser	Ser	Arg	Arg	Ser	Leu	Ser	Ala	His	Val	Lys	
		35					40					45				
Ala	Ala	Ala	Ser	Ser	Leu	Ser	Thr	Thr	Thr	Leu	Gln	Glu	Gly	Ile	Ala	
	50				55					60						
Glu	Phe	Tyr	Asp	Gln	Ser	Ser	Gly	Ile	Trp	Glu	Asp	Ile	Trp	Gly	Asp	
65				70					75						80	
His	Met	His	His	Gly	Tyr	Tyr	Asp	Pro	Asp	Ser	Asn	Val	Ser	Gly	Ser	
				85					90					95		
Asp	His	Pro	Ala	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	Ser	Leu	Arg	Phe	
			100					105					110			
Ala	Gly	Ile	Thr	Glu	Asp	Pro	Ala	Asn	Lys	Pro	Lys	Thr	Ile	Val	Asp	
		115					120					125				
Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg	Lys	Tyr	
	130				135						140					
Gly	Ala	Lys	Cys	Gln	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala	Gly	Arg	
145				150					155						160	
Ala	Asn	Ala	Leu	Ala	Lys	Asp	Gln	Gly	Leu	Ala	Asp	Lys	Val	Ser	Phe	
			165						170					175		
Gln	Val	Ala	Asp	Ala	Leu	Asn	Gln	Pro	Phe	Pro	Asp	Asp	Gln	Phe	Asp	
			180					185					190			
Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	Pro	Lys	
		195					200					205				
Phe	Val	Lys	Glu	Leu	Ala	Arg	Val	Ala	Ala	Pro	Gly	Gly	Thr	Ile	Ile	
	210					215					220					
Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly	Pro	Ser	Glu	Glu	Asp	Leu	
225				230						235					240	
Gln	Pro	Trp	Glu	Lys	Lys	Leu	Leu	Asn	Arg	Ile	Cys	Asn	Ala	Tyr	Tyr	
				245					250					255		
Leu	Pro	Glu	Trp	Cys	Ser	Thr	Ser	Asp	Tyr	Val	Lys	Leu	Leu	Gln	Ser	
			260					265					270			
Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ala	Ala	Asp	Trp	Thr	Glu	Asn	Val	Ala	
		275					280					285				
Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala	Leu	Thr	Trp	Lys	Gly	Phe	
	290					295					300					
Thr	Ser	Leu	Leu	Arg	Ser	Gly	Leu	Lys	Thr	Ile	Lys	Gly	Ala	Leu	Val	
305				310						315					320	
Met	Pro	Leu	Met	Ile	Gln	Gly	Tyr	Gln	Lys	Gly	Val	Ile	Lys	Phe	Ala	
				325					330					335		
Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu									
			340													

## PhoenixTemp32470.tmp.txt

<210> 2298  
 <211> 1059  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1059)

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 Met Ala His Ala Ala Leu Leu His Cys Ser Gln Ser Ser Arg Ser Leu  
 1 5  
 gca gcc tgc gcg gcg ggc agc cac tac cgc gcc cct tcg cac gtc ccg 96  
 Ala Ala Cys Arg Arg Gly Ser His Tyr Arg Ala Pro Ser His Val Pro  
 20 25 30  
 cgc cac tcc gcg cgt ctc cga cgc gcc gtc gtc agc ctg cgt ccg atg 144  
 Arg His Ser Arg Arg Leu Arg Arg Ala Val Val Ser Leu Arg Pro Met  
 35 40 45  
 gcc tcg tcg acg gct cag gcc ccc gcg acg gcg ccg ccg ggt ctg aag 192  
 Ala Ser Ser Thr Ala Gln Ala Pro Ala Thr Ala Pro Pro Gly Leu Lys  
 50 55 60  
 gag ggc atc gcg ggg ctg tac gac gag tcg tcg ggg ctg tgg gag aac 240  
 Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu Trp Glu Asn  
 65 70 75 80  
 atc tgg ggc gac cac atg cac cac ggc ttc tac gac tcg agc gag gcc 288  
 Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Ser Glu Ala  
 85 90 95  
 gcc tcc atg gcc gat cac cgc cgc gcc cag atc cgc atg atc gag gag 336  
 Ala Ser Met Ala Asp His Arg Arg Ala Gln Ile Arg Met Ile Glu Glu  
 100 105 110  
 gcg ctc gcc ttc gcc ggt gtc cca gcc tca gat gat cca gag aag aca 384  
 Ala Leu Ala Phe Ala Gly Val Pro Ala Ser Asp Asp Pro Glu Lys Thr  
 115 120 125  
 cca aaa aca ata gtc gat gtc gga tgt ggc att ggt ggt agc tca agg 432  
 Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg  
 130 135 140  
 tac ttg gcg aag aaa tac gga gcg cag tgc act ggg atc acg ttg agc 480  
 Tyr Leu Ala Lys Lys Tyr Gly Ala Gln Cys Thr Gly Ile Thr Leu Ser  
 145 150 155 160  
 cct gtt caa gcc gag aga gga aat gct ctc gct gca gcg cag ggg ttg 528  
 Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Gln Gly Leu  
 165 170 175  
 tcg gat cag gtt act ctg caa gtt gct gat gct ctg gag caa ccg ttt 576  
 Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe  
 180 185 190  
 cct gac ggg cag ttc gat ctg gtg tgg tcc atg gag agt ggc gag cac 624  
 Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His  
 195 200 205  
 atg ccg gac aag aga aag ttt gtt agt gag cta gca cgc gtg gcg gct 672  
 Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val Ala Ala  
 210 215 220  
 cct gga ggg aca ata atc atc gtg aca tgg tgc cat agg aac ctg gat 720  
 Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Asp  
 225 230 235 240  
 cca tcc gaa acc tcg cta aag ccc gat gaa ctg agc ctc ctg agg agg 768  
 Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu Arg Arg  
 245 250 255  
 ata tgc gac gcg tac tac ctc ccg gac tgg tgc tca cct tca gac tat 816  
 Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr  
 260 265 270  
 gtg aac att gcc aag tca ctg tct ctc gag gat atc aag aca gct gac 864  
 Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala Asp  
 275 280 285  
 tgg tcg gag aac gtg gcc ccg ttt tgg ccc gcc gtg ata aaa tca gcg 912  
 Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala  
 290 295 300  
 cta aca tgg aag ggc ttc acc tct ctg ctg acg acc gga tgg aag acg 960

## PhoenixTemp32470.tmp.txt

Leu 305	Thr	Trp	Lys	Gly	Phe 310	Thr	Ser	Leu	Leu	Thr 315	Thr	Gly	Trp	Lys	Thr 320	
atc	aga	ggc	gcg	atg	gtg	atg	ccg	cta	atg	atc	cag	ggc	tac	aag	aag	1008
Ile	Arg	Gly	Ala	Met 325	Val	Met	Pro	Leu	Met 330	Ile	Gln	Gly	Tyr	Lys 335	Lys	
ggc	ctc	atc	aaa	ttc	acc	atc	atc	acc	tgt	cgc	aag	cct	gga	gcc	gcg	1056
Gly	Leu	Ile	Lys 340	Phe	Thr	Ile	Ile	Thr 345	Cys	Arg	Lys	Pro	Gly 350	Ala	Ala	
tag																1059

<210> 2299  
 <211> 352  
 <212> PRT  
 <213> Zea mays

<400> 2299

Met 1	Ala	His	Ala	Ala 5	Leu	Leu	His	Cys	Ser 10	Gln	Ser	Ser	Arg	Ser 15	Leu	
Ala	Ala	Cys	Arg 20	Arg	Gly	Ser	His	Tyr 25	Arg	Ala	Pro	Ser	His 30	Val	Pro	
Arg	His	Ser 35	Arg	Arg	Leu	Arg	Arg 40	Ala	Val	Val	Ser	Leu 45	Arg	Pro	Met	
Ala	Ser 50	Ser	Thr	Ala	Gln	Ala 55	Pro	Ala	Thr	Ala	Pro 60	Pro	Gly	Leu	Lys	
Glu 65	Gly	Ile	Ala	Gly	Leu 70	Tyr	Asp	Glu	Ser	Ser 75	Gly	Leu	Trp	Glu	Asn 80	
Ile	Trp	Gly	Asp	His 85	Met	His	His	Gly	Phe 90	Tyr	Asp	Ser	Ser	Glu 95	Ala	
Ala	Ser	Met	Ala 100	Asp	His	Arg	Arg	Ala 105	Gln	Ile	Arg	Met	Ile 110	Glu	Glu	
Ala	Leu	Ala 115	Phe	Ala	Gly	Val	Pro 120	Ala	Ser	Asp	Asp	Pro 125	Glu	Lys	Thr	
Pro	Lys 130	Thr	Ile	Val	Asp	Val 135	Gly	Cys	Gly	Ile	Gly 140	Gly	Ser	Ser	Arg	
Tyr 145	Leu	Ala	Lys	Lys	Tyr 150	Gly	Ala	Gln	Cys	Thr 155	Gly	Ile	Thr	Leu	Ser 160	
Pro	Val	Gln	Ala	Glu 165	Arg	Gly	Asn	Ala	Leu 170	Ala	Ala	Ala	Gln	Gly 175	Leu	
Ser	Asp	Gln	Val 180	Thr	Leu	Gln	Val	Ala 185	Asp	Ala	Leu	Glu	Gln 190	Pro	Phe	
Pro	Asp	Gly 195	Gln	Phe	Asp	Leu	Val 200	Trp	Ser	Met	Glu	Ser 205	Gly	Glu	His	
Met	Pro 210	Asp	Lys	Arg	Lys	Phe 215	Val	Ser	Glu	Leu	Ala 220	Arg	Val	Ala	Ala	
Pro 225	Gly	Gly	Thr	Ile	Ile 230	Ile	Val	Thr	Trp	Cys 235	His	Arg	Asn	Leu	Asp 240	
Pro	Ser	Glu	Thr	Ser 245	Leu	Lys	Pro	Asp	Glu 250	Leu	Ser	Leu	Leu	Arg 255	Arg	
Ile	Cys	Asp	Ala 260	Tyr	Tyr	Leu	Pro	Asp 265	Trp	Cys	Ser	Pro	Ser	Asp 270	Tyr	
Val	Asn	Ile 275	Ala	Lys	Ser	Leu	Ser 280	Leu	Glu	Asp	Ile	Lys 285	Thr	Ala	Asp	
Trp	Ser 290	Glu	Asn	Val	Ala	Pro 295	Phe	Trp	Pro	Ala	Val 300	Ile	Lys	Ser	Ala	
Leu 305	Thr	Trp	Lys	Gly	Phe 310	Thr	Ser	Leu	Leu	Thr 315	Thr	Gly	Trp	Lys	Thr 320	
Ile	Arg	Gly	Ala	Met 325	Val	Met	Pro	Leu	Met 330	Ile	Gln	Gly	Tyr	Lys 335	Lys	
Gly	Leu	Ile	Lys 340	Phe	Thr	Ile	Ile	Thr 345	Cys	Arg	Lys	Pro	Gly 350	Ala	Ala	

<210> 2300  
 <211> 1107  
 <212> DNA  
 <213> Solanum tuberosum

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(1107)

&lt;400&gt; 2300

atg ggc agc cca tgc tat tcc gct tgt act atc caa tca ttg aac ccc	48
Met Gly Ser Pro Cys Tyr Ser Ala Cys Thr Ile Gln Ser Leu Asn Pro	
1 5 10 15	
acg tgt cct tca tct tcc tcc tct gtt atc ttc gct ctt cat aaa	96
Thr Cys Pro Ser Ser Ser Ser Ser Val Ile Phe Ala Leu His Lys	
20 25 30	
ccc cag att cac agt aat att att caa aat tat act agg aga aga atc	144
Pro Gln Ile His Ser Asn Ile Ile Gln Asn Tyr Thr Arg Arg Arg Ile	
35 40 45	
att act tgt agt agt aat agt aga aga atg gct agt gtt act gcg	192
Ile Thr Cys Ser Ser Asn Ser Arg Arg Arg Met Ala Ser Val Thr Ala	
50 55 60	
atg aat gct ggg tct tca tca tca gta gaa gtt gga ata cag aat caa	240
Met Asn Ala Gly Ser Ser Ser Ser Val Glu Val Gly Ile Gln Asn Gln	
65 70 75 80	
caa gag ttg aaa aaa gga att gca gat tta tat gat gag tct tct ggg	288
Gln Glu Leu Lys Lys Gly Ile Ala Asp Leu Tyr Asp Glu Ser Ser Gly	
85 90 95	
att tgg gaa gat att tgg ggt gac cat atg cat cat gga tat tat gaa	336
Ile Trp Glu Asp Ile Trp Gly Asp His Met His His Gly Tyr Tyr Glu	
100 105 110	
cct cag tca tct gtg gaa ctt tct gat cat cgt gct gct cag atc cgt	384
Pro Gln Ser Ser Val Glu Leu Ser Asp His Arg Ala Ala Gln Ile Arg	
115 120 125	
atg att gaa aag gcg cta agt ttt gct gct att tct gaa gat cca gcg	432
Met Ile Glu Lys Ala Leu Ser Phe Ala Ala Ile Ser Glu Asp Pro Ala	
130 135 140	
aag aaa cca acg tcc ata gtt gat gtt gga tgt ggc att ggt ggc agt	480
Lys Lys Pro Thr Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser	
145 150 155 160	
tct agg tac ctt gca aag aaa tat ggc gct aca gct aaa ggt atc act	528
Ser Arg Tyr Leu Ala Lys Lys Tyr Gly Ala Thr Ala Lys Gly Ile Thr	
165 170 175	
ttg agt cct gta caa gca gag agg gct caa gct ctt gct gat gct cag	576
Leu Ser Pro Val Gln Ala Glu Arg Ala Gln Ala Leu Ala Asp Ala Gln	
180 185 190	
gga tta ggg gat aag gtt tca ttt gta gca gac gcc ttg aat cag	624
Gly Leu Gly Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Asn Gln	
195 200 205	
cct ttt cca gat ggg caa ttc gac ttg gtt tgg tcc atg gag agt gga	672
Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly	
210 215 220	
gaa cac atg cca aac aaa gaa aag ttt gtt ggc gaa tta gct aga gtg	720
Glu His Met Pro Asn Lys Glu Lys Phe Val Gly Glu Leu Ala Arg Val	
225 230 235 240	
gca gca cca gga ggc aca atc atc ctt gtc aca tgg tgc cac agg gac	768
Ala Ala Pro Gly Gly Thr Ile Ile Leu Val Thr Trp Cys His Arg Asp	
245 250 255	
ctt tcc cct tca gag gaa tct ctg act cca gag gag aaa gag ctg tta	816
Leu Ser Pro Ser Glu Glu Ser Leu Thr Pro Glu Glu Lys Glu Leu Leu	
260 265 270	
aat aag ata tgt aaa gcc ttc tat ctt ccg gcg tgg tgt tcc gct gct	864
Asn Lys Ile Cys Lys Ala Phe Tyr Leu Pro Ala Trp Cys Ser Ala Ala	
275 280 285	
gat tat gtg aag tta ctt caa tcc aat tct ctt cag gat att aag gca	912
Asp Tyr Val Lys Leu Leu Gln Ser Asn Ser Leu Gln Asp Ile Lys Ala	
290 295 300	
gaa gac tgg tct gag aat gtt gct cca ttt tgg cca gca gtc ata aag	960
Glu Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys	
305 310 315 320	
tca gca ctg aca tgg aag ggc ttc aca tca gta cta cgc agt gga tgg	1008
Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Val Leu Arg Ser Gly Trp	
325 330 335	
aag aca atc aaa gct gca ctg gca atg cca ctg atg att gaa gga tac	1056
Lys Thr Ile Lys Ala Ala Leu Ala Met Pro Leu Met Ile Glu Gly Tyr	

## PhoenixTemp32470.tmp.txt

aag aaa ggt 340  
 Lys Lys Gly 355 ctc atc aaa ttt gcc 345 atc aca tgt cga 350 aaa cct gaa 1104  
 tag 1107  
 360 365

<210> 2301  
 <211> 368  
 <212> PRT  
 <213> Solanum tuberosum

<400> 2301  
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 1 5 10 15  
 Thr Cys Pro Ser Ser Ser Ser Ser Val Ile Phe Ala Leu His Lys  
 20 25 30  
 Pro Gln Ile His Ser Asn Ile Ile Gln Asn Tyr Thr Arg Arg Arg Ile  
 35 40 45  
 Ile Thr Cys Ser Ser Asn Ser Arg Arg Arg Met Ala Ser Val Thr Ala  
 50 55 60  
 Met Asn Ala Gly Ser Ser Ser Val Glu Val Gly Ile Gln Asn Gln  
 65 70 75 80  
 Gln Glu Leu Lys Lys Gly Ile Ala Asp Leu Tyr Asp Glu Ser Ser Gly  
 85 90 95  
 Ile Trp Glu Asp Ile Trp Gly Asp His Met His His Gly Tyr Tyr Glu  
 100 105 110  
 Pro Gln Ser Val Glu Leu Ser Asp His Arg Ala Ala Gln Ile Arg  
 115 120 125  
 Met Ile Glu Lys Ala Leu Ser Phe Ala Ala Ile Ser Glu Asp Pro Ala  
 130 135 140  
 Lys Lys Pro Thr Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser  
 145 150 155 160  
 Ser Arg Tyr Leu Ala Lys Lys Tyr Gly Ala Thr Ala Lys Gly Ile Thr  
 165 170 175  
 Leu Ser Pro Val Gln Ala Glu Arg Ala Gln Ala Leu Ala Asp Ala Gln  
 180 185 190  
 Gly Leu Gly Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Asn Gln  
 195 200 205  
 Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly  
 210 215 220  
 Glu His Met Pro Asn Lys Glu Lys Phe Val Gly Glu Leu Ala Arg Val  
 225 230 235 240  
 Ala Ala Pro Gly Gly Thr Ile Ile Leu Val Thr Trp Cys His Arg Asp  
 245 250 255  
 Leu Ser Pro Ser Glu Glu Ser Leu Thr Pro Glu Glu Lys Glu Leu Leu  
 260 265 270  
 Asn Lys Ile Cys Lys Ala Phe Tyr Leu Pro Ala Trp Cys Ser Ala Ala  
 275 280 285  
 Asp Tyr Val Lys Leu Leu Gln Ser Asn Ser Leu Gln Asp Ile Lys Ala  
 290 295 300  
 Glu Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys  
 305 310 315 320  
 Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Val Leu Arg Ser Gly Trp  
 325 330 335  
 Lys Thr Ile Lys Ala Ala Leu Ala Met Pro Leu Met Ile Glu Gly Tyr  
 340 345 350  
 Lys Lys Gly Leu Ile Lys Phe Ala Ile Ile Thr Cys Arg Lys Pro Glu  
 355 360 365

<210> 2302  
 <211> 1089  
 <212> DNA  
 <213> Solanum lycopersicum

<220>  
 <221> CDS  
 <222> (1)..(1089)

## PhoenixTemp32470.tmp.txt

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<400> 2302
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Met Gly Ser Gln Cys Tyr Ser Ala Tyr Ser Ile Gln Ser Leu Asn Pro
1      5      10      15
acg tgt cca tca tct tct tcc tcc tct gtt atc ttc act ctt ctt aaa      96
Thr Cys Pro Ser Ser Ser Ser Ser Val Ile Phe Thr Leu Leu Lys
20      25      30
ccc cag att cac aga aga aga atc att act tgt tgt aat agt agt aga      144
Pro Gln Ile His Arg Arg Arg Ile Ile Thr Cys Cys Asn Ser Ser Arg
35      40      45
aga aga aga aga atg gct agt gtt gct gcg atg aat gct gtg tct tcg      192
Arg Arg Arg Arg Met Ala Ser Val Ala Ala Met Asn Ala Val Ser Ser
50      55      60
tca tct gta gaa gtt gga ata cag aat caa cag gag ctg aaa aaa gga      240
Ser Ser Val Glu Val Gly Ile Gln Asn Gln Gln Glu Leu Lys Lys Gly
65      70      75      80
att gca gat tta tat gat gag tct tct ggg att tgg gaa gat att tgg      288
Ile Ala Asp Leu Tyr Asp Glu Ser Ser Gly Ile Trp Glu Asp Ile Trp
85      90      95
ggg gac cat atg cat cat gga tat tat gaa cct aaa tcc tct gtg gaa      336
Gly Asp His Met His His Gly Tyr Tyr Glu Pro Lys Ser Ser Val Glu
100      105      110
ctt tca gat cat cgt gct gct cag atc cgt atg att gaa cag gct cta      384
Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile Glu Gln Ala Leu
115      120      125
agt ttt gct gct att tct gaa gat cca gcg aag aaa cca acg tcc ata      432
Ser Phe Ala Ala Ile Ser Glu Asp Pro Ala Lys Lys Pro Thr Ser Ile
130      135      140
gtt gat gtt gga tgt ggc gct ggt ggc agt tct agg tac ctt gca aag      480
Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Lys
145      150      155      160
aaa tat ggc gct aca gct aaa ggt atc act ttg agt cct gta caa gca      528
Lys Tyr Gly Ala Thr Ala Lys Gly Ile Thr Leu Ser Pro Val Gln Ala
165      170      175
gag agg gct caa gct ctt gct gat gct cag gga tta ggt gat aag gtt      576
Glu Arg Ala Gln Ala Leu Ala Asp Ala Gln Gly Leu Gly Asp Lys Val
180      185      190
tca ttt caa gta gca gac gcc ttg aat cag cct ttt cca gat ggg caa      624
Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Gly Gln
195      200      205
ttc gac ttg gtt tgg tcc atg gag agt gga gaa cac atg ccg aac aaa      672
Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asn Lys
210      215      220
gaa aag ttt gtt ggc gaa tta gct cga gtg gca gca cca gga ggc aca      720
Glu Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala Pro Gly Gly Thr
225      230      235
atc atc ctt gtc aca tgg tgc cac agg gac ctt tcc cct tcg gag gaa      768
Ile Ile Leu Val Thr Trp Cys His Arg Asp Leu Ser Pro Ser Glu Glu
245      250      255
tct ctg act cca gag gag aaa gag ctg tta aat aag ata tgc aaa gcc      816
Ser Leu Thr Pro Glu Glu Lys Glu Leu Asn Lys Ile Cys Lys Ala
260      265      270
ttc tat ctt ccg gct tgg tgt tcc act gct gat tat gtg aag tta ctt      864
Phe Tyr Leu Pro Ala Trp Cys Ser Thr Ala Asp Tyr Val Lys Leu Leu
275      280      285
caa tcc aat tct ctt cag gat atc aag gca gaa gac tgg tct gag aat      912
Gln Ser Asn Ser Leu Gln Asp Ile Lys Ala Glu Asp Trp Ser Glu Asn
290      295      300
gtt gct cca ttt tgg cca gca gtc ata aag tca gca ctg aca tgg aag      960
Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala Leu Thr Trp Lys
305      310      315      320
ggc ttc aca tca gta cta cgc agt gga tgg aag aca atc aaa gct gca      1008
Gly Phe Thr Ser Val Leu Arg Ser Gly Trp Lys Thr Ile Lys Ala Ala
325      330      335
ctg gca atg cca ctg atg att gaa gga tac aag aaa ggt ctc atc aaa      1056
Leu Ala Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Leu Ile Lys
340      345      350
ttt gcc atc atc aca tgt cga aaa cct gaa taa
350

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Phe Ala Ile Ile Thr Cys Arg Lys Pro Glu  
 355 360

<210> 2303  
 <211> 362  
 <212> PRT  
 <213> Solanum lycopersicum

<400> 2303  
 Met Gly Ser Gln Cys Tyr Ser Ala Tyr Ser Ile Gln Ser Leu Asn Pro  
 1 5 10 15  
 Thr Cys Pro Ser Ser Ser Ser Val Ile Phe Thr Leu Leu Lys  
 20 25 30  
 Pro Gln Ile His Arg Arg Arg Ile Ile Thr Cys Cys Asn Ser Ser Arg  
 35 40 45  
 Arg Arg Arg Arg Met Ala Ser Val Ala Ala Met Asn Ala Val Ser Ser  
 50 55 60  
 Ser Ser Val Glu Val Gly Ile Gln Asn Gln Gln Glu Leu Lys Lys Gly  
 65 70 75 80  
 Ile Ala Asp Leu Tyr Asp Glu Ser Ser Gly Ile Trp Glu Asp Ile Trp  
 85 90 95  
 Gly Asp His Met His His Gly Tyr Tyr Glu Pro Lys Ser Ser Val Glu  
 100 105 110  
 Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile Glu Gln Ala Leu  
 115 120 125  
 Ser Phe Ala Ala Ile Ser Glu Asp Pro Ala Lys Lys Pro Thr Ser Ile  
 130 135 140  
 Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Lys  
 145 150 155 160  
 Lys Tyr Gly Ala Thr Ala Lys Gly Ile Thr Leu Ser Pro Val Gln Ala  
 165 170 175  
 Glu Arg Ala Gln Ala Leu Ala Asp Ala Gln Gly Leu Gly Asp Lys Val  
 180 185 190  
 Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Gly Gln  
 195 200 205  
 Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asn Lys  
 210 215 220  
 Glu Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala Pro Gly Gly Thr  
 225 230 235 240  
 Ile Ile Leu Val Thr Trp Cys His Arg Asp Leu Ser Pro Ser Glu Glu  
 245 250 255  
 Ser Leu Thr Pro Glu Glu Lys Glu Leu Leu Asn Lys Ile Cys Lys Ala  
 260 265 270  
 Phe Tyr Leu Pro Ala Trp Cys Ser Thr Ala Asp Tyr Val Lys Leu Leu  
 275 280 285  
 Gln Ser Asn Ser Leu Gln Asp Ile Lys Ala Glu Asp Trp Ser Glu Asn  
 290 295 300  
 Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala Leu Thr Trp Lys  
 305 310 315 320  
 Gly Phe Thr Ser Val Leu Arg Ser Gly Trp Lys Thr Ile Lys Ala Ala  
 325 330 335  
 Leu Ala Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Leu Ile Lys  
 340 345 350  
 Phe Ala Ile Ile Thr Cys Arg Lys Pro Glu  
 355 360

<210> 2304  
 <211> 1047  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(1047)

<400> 2304  
 atg aaa gca act cta gca gca ccc tct tct ctc aca agc ctc cct tat  
 Met Lys Ala Thr Leu Ala Ala Pro Ser Ser Leu Thr Ser Leu Pro Tyr  
 1 5 10 15

## PhoenixTemp32470.tmp.txt

cga	acc	aac	tct	tct	ttc	ggc	tca	aag	tca	tcg	ctt	ctc	ttt	cgg	tct	96
Arg	Thr	Asn	Ser	Ser	Phe	Gly	Ser	Lys	Ser	Ser	Leu	Leu	Phe	Arg	Ser	
			20					25					30			
cca	tcc	tcc	tcc	tcc	tca	gtc	tct	atg	acg	aca	acg	cgt	gga	aac	gtg	144
Pro	Ser	Ser	Ser	Ser	Ser	Val	Ser	Met	Thr	Thr	Thr	Arg	Gly	Asn	Val	
			35				40					45				
gct	gtg	gcg	gct	gct	gct	aca	tcc	act	gag	gcg	cta	aga	aaa	gga	ata	192
Ala	Val	Ala	Ala	Ala	Ala	Thr	Ser	Thr	Glu	Ala	Leu	Arg	Lys	Gly	Ile	
	50					55					60					
gcg	gag	ttc	tac	aat	gaa	act	tcg	ggg	ttg	tgg	gaa	gag	att	tgg	gga	240
Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	Gly	
	65				70				75					80		
gat	cat	atg	cat	cat	ggc	ttt	tgt	gac	cct	gat	tct	tct	gtt	caa	ctt	288
Asp	His	Met	His	His	Gly	Phe	Cys	Asp	Pro	Asp	Ser	Ser	Val	Gln	Leu	
				85					90					95		
tct	gat	tct	ggg	cac	aag	gaa	gct	cag	atc	cgt	atg	att	gaa	gag	tct	336
Ser	Asp	Ser	Gly	His	Lys	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	Ser	
			100					105					110			
ctc	cgt	ttt	ggc	ggg	gtt	act	gat	gaa	gag	gag	gag	aaa	aag	ata	aag	384
Leu	Arg	Phe	Ala	Gly	Val	Thr	Asp	Glu	Glu	Glu	Glu	Lys	Lys	Ile	Lys	
		115					120					125				
aaa	gta	gtg	gat	gtt	ggg	tgt	ggg	att	gga	gga	agc	tca	aga	tat	ctt	432
Lys	Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	
	130					135					140					
gcc	tct	aaa	ttt	gga	gct	gaa	tgc	att	ggc	att	act	ctc	agc	cct	gtt	480
Ala	Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val	
	145				150				155						160	
cag	gcc	aag	aga	gcc	aat	gat	ctc	gcg	gct	gct	caa	tca	ctc	gct	cat	528
Gln	Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ala	His	
				165				170						175		
aag	gct	tcc	ttc	caa	gtt	gcg	gat	gcg	ttg	gat	cag	cca	ttc	gaa	gat	576
Lys	Ala	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp	
			180				185					190				
gga	aaa	ttc	gat	cta	gtg	tgg	tcg	atg	gag	agt	ggg	gag	cat	atg	cct	624
Gly	Lys	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	
		195					200					205				
gac	aag	gcc	aag	ttt	gta	aaa	gag	ttg	gta	cgt	gtg	gcg	gct	cca	gga	672
Asp	Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Ala	Ala	Pro	Gly	
		210				215					220					
ggg	agg	ata	ata	ata	gtg	aca	tgg	tgc	cat	aga	aat	cta	tct	gcg	ggg	720
Gly	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Ala	Gly	
					230					235					240	
gag	gaa	gct	ttg	cag	ccg	tgg	gag	caa	aac	atc	ttg	gac	aaa	atc	tgt	768
Glu	Glu	Ala	Leu	Gln	Pro	Trp	Glu	Gln	Asn	Ile	Leu	Asp	Lys	Ile	Cys	
				245				250						255		
aag	acg	ttc	tat	ctc	ccg	gct	tgg	tgc	tcc	acc	gat	gat	tat	gtc	aac	816
Lys	Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Asp	Asp	Tyr	Val	Asn	
			260					265					270			
ttg	ctt	caa	tcc	cat	tct	ctc	cag	gat	att	aag	tgt	gcg	gat	tgg	tca	864
Leu	Leu	Gln	Ser	His	Ser	Leu	Gln	Asp	Ile	Lys	Cys	Ala	Asp	Trp	Ser	
		275					280					285				
gag	aac	gta	gct	cct	ttc	tgg	cct	gcg	gtt	ata	cgg	act	gca	tta	aca	912
Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Thr	Ala	Leu	Thr	
		290				295					300					
tgg	aag	ggc	ctt	gtg	tct	cgg	ctt	cgt	agt	ggg	atg	aaa	agt	att	aaa	960
Trp	Lys	Gly	Leu	Val	Ser	Arg	Leu	Arg	Ser	Gly	Met	Lys	Ser	Ile	Lys	
					310					315					320	
gga	gca	ttg	aca	atg	cca	ttg	atg	att	gaa	ggg	tac	aag	aaa	ggg	gtc	1008
Gly	Ala	Leu	Thr	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys	Gly	Val	
				325					330					335		
att	aag	ttt	ggg	atc	atc	act	tgc	cag	aag	cca	ctc	taa				1047
Ile	Lys	Phe	Gly	Ile	Ile	Thr	Cys	Gln	Lys	Pro	Leu					
			340					345								

&lt;210&gt; 2305

&lt;211&gt; 348

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana



## PhoenixTemp32470.tmp.txt

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<400> 2305
Met Lys Ala Thr Leu Ala Ala Pro Ser Ser Leu Thr Ser Leu Pro Tyr
1      5      10      15
Arg Thr Asn Ser Ser Phe Gly Ser Lys Ser Ser Leu Leu Phe Arg Ser
      20      25      30
Pro Ser Ser Ser Ser Ser Val Ser Met Thr Thr Thr Arg Gly Asn Val
      35      40      45
Ala Val Ala Ala Ala Ala Thr Ser Thr Glu Ala Leu Arg Lys Gly Ile
      50      55      60
Ala Glu Phe Tyr Asn Glu Thr Ser Gly Leu Trp Glu Glu Ile Trp Gly
65      70      75      80
Asp His Met His His Gly Phe Cys Asp Pro Asp Ser Ser Val Gln Leu
      85      90      95
Ser Asp Ser Gly His Lys Glu Ala Gln Ile Arg Met Ile Glu Glu Ser
      100      105      110
Leu Arg Phe Ala Gly Val Thr Asp Glu Glu Glu Glu Lys Lys Ile Lys
      115      120      125
Lys Val Val Asp Val Gly Cys Gly Ile Gly Gly Ser Arg Tyr Leu
      130      135      140
Ala Ser Lys Phe Gly Ala Glu Cys Ile Gly Ile Thr Leu Ser Pro Val
145      150      155      160
Gln Ala Lys Arg Ala Asn Asp Leu Ala Ala Ala Gln Ser Leu Ala His
      165      170      175
Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Asp Gln Pro Phe Glu Asp
      180      185      190
Gly Lys Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro
      195      200      205
Asp Lys Ala Lys Phe Val Lys Glu Leu Val Arg Val Ala Ala Pro Gly
210      215      220
Gly Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Ser Ala Gly
225      230      235      240
Glu Glu Ala Leu Gln Pro Trp Glu Gln Asn Ile Leu Asp Lys Ile Cys
      245      250      255
Lys Thr Phe Tyr Leu Pro Ala Trp Cys Ser Thr Asp Asp Tyr Val Asn
      260      265      270
Leu Leu Gln Ser His Ser Leu Gln Asp Ile Lys Cys Ala Asp Trp Ser
      275      280      285
Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Arg Thr Ala Leu Thr
      290      295      300
Trp Lys Gly Leu Val Ser Arg Leu Arg Ser Gly Met Lys Ser Ile Lys
305      310      315      320
Gly Ala Leu Thr Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val
      325      330      335
Ile Lys Phe Gly Ile Ile Thr Cys Gln Lys Pro Leu
      340      345

```

```

<210> 2306
<211> 945
<212> DNA
<213> Helianthus annuus

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<220>
<221> CDS
<222> (1)..(945)

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<400> 2306
atg gct acg acg gca gtt ggc gta tcg gcg acg ccg atg acg gag aag      48
Met Ala Thr Thr Ala Val Gly Val Ser Ala Thr Pro Met Thr Glu Lys
1      5      10      15
ctg acg gcg gca gat gat gac cag caa cag cag aag ctc aaa aaa gga      96
Leu Thr Ala Ala Asp Asp Asp Gln Gln Gln Lys Leu Lys Lys Gly
      20      25      30
atc gca gag ttc tac gac gaa tcc tca ggt atg tgg gag aac att tgg      144
Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Met Trp Glu Asn Ile Trp
      35      40      45
gga gaa cac atg cat cac gga tat tat aac tcc gac gac gtc gtt gaa      192
Gly Glu His Met His His Gly Tyr Tyr Asn Ser Asp Asp Val Val Glu
      50      55      60
ctc tcc gat cac cgt tct gct cag atc cgt atg att gaa caa gcc cta      240

```

## PhoenixTemp32470.tmp.txt

Leu 65	Ser	Asp	His	Arg	Ser 70	Ala	Gln	Ile	Arg	Met 75	Ile	Glu	Gln	Ala	Leu 80	
acg	ttc	gcc	tct	gtt	tca	gat	gat	ccg	gaa	aag	aaa	cct	aaa	acc	ata	288
Thr	Phe	Ala	Ser	Val	Ser	Asp	Asp	Pro	Glu	Lys	Lys	Pro	Lys	Thr	Ile	
				85					90					95		
gtt	gat	gtc	ggg	tgt	ggt	ata	gga	ggt	agc	tca	agg	tat	cta	gca	aga	336
Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg	
			100					105					110			
aaa	tac	gga	gcc	gaa	tgt	cac	gga	atc	acc	ctc	agc	cct	gtg	caa	gct	384
Lys	Tyr	Gly	Ala	Glu	Cys	His	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala	
		115					120					125				
gag	aga	gct	aat	gcc	ctt	gct	gcg	gcc	caa	ggg	ttg	gcc	gat	aag	gtt	432
Glu	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	Leu	Ala	Asp	Lys	Val	
		130				135					140					
tca	ttt	caa	gtt	gct	gat	gct	tta	aac	cag	ccg	ttt	cct	gat	gga	aag	480
Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asn	Gln	Pro	Phe	Pro	Asp	Gly	Lys	
145					150				155					160		
ttt	gac	ctt	gtt	tgg	tca	atg	gag	agt	gga	gag	cac	atg	cct	gac	aaa	528
Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	
				165					170					175		
ctt	aag	ttt	gtt	agt	gag	ttg	act	cgg	gtg	gct	gcc	ccc	gga	gcc	acc	576
Leu	Lys	Phe	Val	Ser	Glu	Leu	Thr	Arg	Val	Ala	Ala	Pro	Gly	Ala	Thr	
			180					185					190			
att	atc	ata	gtt	aca	tgg	tgc	cac	aga	gat	ctt	aac	ccc	gga	gaa	aaa	624
Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Asn	Pro	Gly	Glu	Lys	
		195					200					205				
tcc	ctt	cgc	ccc	gag	gaa	gaa	aaa	atc	ttg	aat	aag	att	tgt	tcc	agc	672
Ser	Leu	Arg	Pro	Glu	Glu	Glu	Lys	Ile	Leu	Asn	Lys	Ile	Cys	Ser	Ser	
	210				215						220					
ttt	tat	ctt	ccc	gct	tgg	tgt	tct	aca	gct	gat	tat	gta	aag	tta	cta	720
Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ala	Asp	Tyr	Val	Lys	Leu	Leu	
225					230				235					240		
gaa	tcc	ctt	tct	ctt	cag	gac	ata	aaa	tcc	gca	gac	tgg	tct	ggc	aat	768
Glu	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Ala	Asp	Trp	Ser	Gly	Asn	
				245					250					255		
gtg	gcc	cca	ttt	tgg	cct	gct	gta	ata	aaa	aca	gca	ttg	tct	tgg	aag	816
Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Thr	Ala	Leu	Ser	Trp	Lys	
			260				265					270				
ggc	att	act	tca	ttg	cta	cgt	agt	ggt	tgg	aag	tcc	ata	aga	ggg	gca	864
Gly	Ile	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	Ser	Ile	Arg	Gly	Ala	
		275					280					285				
atg	gta	atg	cca	cta	atg	att	gaa	gga	ttt	aag	aag	gat	gta	ata	aaa	912
Met	Val	Met	Pro	Leu	Met	Ile	Glu	Gly	Phe	Lys	Lys	Asp	Val	Ile	Lys	
	290				295						300					
ttc	tcc	atc	att	aca	tgc	aaa	aag	cct	gaa	taa						945
Phe	Ser	Ile	Ile	Thr	Cys	Lys	Lys	Pro	Glu							
305					310											

&lt;210&gt; 2307

&lt;211&gt; 314

&lt;212&gt; PRT

&lt;213&gt; Helianthus annuus

&lt;400&gt; 2307

Met	Ala	Thr	Thr	Ala	Val	Gly	Val	Ser	Ala	Thr	Pro	Met	Thr	Glu	Lys
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Leu	Thr	Ala	Ala	Asp	Asp	Asp	Gln	Gln	Gln	Gln	Lys	Leu	Lys	Lys	Gly
			20				25						30		
Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Met	Trp	Glu	Asn	Ile	Trp
		35					40					45			
Gly	Glu	His	Met	His	His	Gly	Tyr	Tyr	Asn	Ser	Asp	Asp	Val	Val	Glu
	50					55					60				
Leu	Ser	Asp	His	Arg	Ser	Ala	Gln	Ile	Arg	Met	Ile	Glu	Gln	Ala	Leu
65					70					75					80
Thr	Phe	Ala	Ser	Val	Ser	Asp	Asp	Pro	Glu	Lys	Lys	Pro	Lys	Thr	Ile
				85					90					95	
Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg
			100				105						110		
Lys	Tyr	Gly	Ala	Glu	Cys	His	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala

## PhoenixTemp32470.tmp.txt

115  
 Glu Arg Ala Asn Ala Leu Ala Ala Gln Gly Leu Ala Asp Lys Val  
 130 135 140  
 Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Gly Lys  
 145 150 155 160  
 Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys  
 165 170 175  
 Leu Lys Phe Val Ser Glu Leu Thr Arg Val Ala Ala Pro Gly Ala Thr  
 180 185 190  
 Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Asn Pro Gly Glu Lys  
 195 200 205  
 Ser Leu Arg Pro Glu Glu Glu Lys Ile Leu Asn Lys Ile Cys Ser Ser  
 210 215 220  
 Phe Tyr Leu Pro Ala Trp Cys Ser Thr Ala Asp Tyr Val Lys Leu Leu  
 225 230 235 240  
 Glu Ser Leu Ser Leu Gln Asp Ile Lys Ser Ala Asp Trp Ser Gly Asn  
 245 250 255  
 Val Ala Pro Phe Trp Pro Ala Val Ile Lys Thr Ala Leu Ser Trp Lys  
 260 265 270  
 Gly Ile Thr Ser Leu Leu Arg Ser Gly Trp Lys Ser Ile Arg Gly Ala  
 275 280 285  
 Met Val Met Pro Leu Met Ile Glu Gly Phe Lys Lys Asp Val Ile Lys  
 290 295 300  
 Phe Ser Ile Ile Thr Cys Lys Lys Pro Glu  
 305 310

&lt;210&gt; 2308

&lt;211&gt; 945

&lt;212&gt; DNA

&lt;213&gt; Helianthus annuus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(945)

&lt;400&gt; 2308

atg gct acg acg gca gtt ggc gta tcg gcg acg ccg atg acg gag aag	48
Met Ala Thr Thr Ala Val Gly Val Ser Ala Thr Pro Met Thr Glu Lys	
1 5 10 15	
ctg acg gcg gca gat gat gac cag cag cag cag aag ctc aaa aaa gga	96
Leu Thr Ala Ala Asp Asp Asp Gln Gln Gln Gln Lys Leu Lys Lys Gly	
20 25 30	
atc gca gag ttc tac gac gaa tcc tca ggt atg tgg gag aac ata tgg	144
Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Met Trp Glu Asn Ile Trp	
35 40 45	
gga gaa cac atg cat cac gga tat tat aac tcc gac gac gtc gtt gaa	192
Gly Glu His Met His His Gly Tyr Tyr Asn Ser Asp Asp Val Val Glu	
50 55 60	
ctc tcc gat cac cgt tct gct cag atc cgt atg att gaa caa gcc cta	240
Leu Ser Asp His Arg Ser Ala Gln Ile Arg Met Ile Glu Gln Ala Leu	
65 70 75 80	
acg ttc gcc tct gtt tca gat gat ctg gaa aag aaa cct aaa acc ata	288
Thr Phe Ala Ser Val Ser Asp Asp Leu Glu Lys Lys Pro Lys Thr Ile	
85 90 95	
gtt gat gtc ggg tgt ggt ata gga ggt agc tca agg tat cta gca aga	336
Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Arg	
100 105 110	
aaa tac gga gcc gaa tgt cac gga atc acc ctc agc cct gtg caa gct	384
Lys Tyr Gly Ala Glu Cys His Gly Ile Thr Leu Ser Pro Val Gln Ala	
115 120 125	
gag aga gct aat gcc ctt gct gcg gcc caa ggg ttg gcc gat aag gtt	432
Glu Arg Ala Asn Ala Leu Ala Ala Gln Gly Leu Ala Asp Lys Val	
130 135 140	
tca ttt caa gtt gct gat gct tta aac cag ccg ttt cct gat gga aag	480
Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Gly Lys	
145 150 155 160	
ttt gac ctg gtt tgg tca atg gag agt gga gag cac atg cct gac aaa	528
Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys	
165 170 175	

## PhoenixTemp32470.tmp.txt

ctt	aag	ttt	ggt	agt	gag	ttg	act	cgg	gtg	gct	gcc	ccc	gga	gcc	acc	576
Leu	Lys	Phe	Val	Ser	Glu	Leu	Thr	Arg	Val	Ala	Ala	Pro	Gly	Ala	Thr	
			180					185					190			
att	atc	ata	ggt	aca	tgg	tgc	cac	aga	gat	ctt	aac	ccc	gga	gaa	aaa	624
Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Asn	Pro	Gly	Glu	Lys	
			195				200					205				
tcc	ctt	cgc	ccc	gag	gaa	gaa	aaa	atc	ttg	aat	aag	att	tgt	tcc	agc	672
Ser	Leu	Arg	Pro	Glu	Glu	Glu	Lys	Ile	Leu	Asn	Lys	Ile	Cys	Ser	Ser	
	210					215					220					
ttt	tat	ctt	ccc	gct	tgg	tgt	tct	aca	gct	gat	tat	ggt	aag	tta	cta	720
Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ala	Asp	Tyr	Val	Lys	Leu	Leu	
225					230				235						240	
gaa	tcc	ctt	tct	ctt	cag	gac	ata	aaa	tcc	gca	gac	tgg	tct	ggc	aat	768
Glu	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Ala	Asp	Trp	Ser	Gly	Asn	
				245					250					255		
gtg	gcc	cca	ttt	tgg	cct	gct	gta	ata	aaa	aca	gca	ttg	tct	tgg	aag	816
Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Thr	Ala	Leu	Ser	Trp	Lys	
			260				265						270			
ggc	att	act	tca	ttg	cta	cgt	agt	ggg	tgg	aag	tcc	ata	aga	ggg	gca	864
Gly	Ile	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	Ser	Ile	Arg	Gly	Ala	
		275					280					285				
atg	gta	atg	cca	cta	atg	att	gaa	gga	ttt	aag	aag	gat	gta	ata	aaa	912
Met	Val	Met	Pro	Leu	Met	Ile	Glu	Gly	Phe	Lys	Lys	Asp	Val	Ile	Lys	
	290					295					300					
ttc	tcc	atc	att	aca	tgc	aaa	aag	cct	gaa	taa						945
Phe	Ser	Ile	Ile	Thr	Cys	Lys	Lys	Pro	Glu							
305					310											

&lt;210&gt; 2309

&lt;211&gt; 314

&lt;212&gt; PRT

&lt;213&gt; Helianthus annuus

&lt;400&gt; 2309

Met	Ala	Thr	Thr	Ala	Val	Gly	Val	Ser	Ala	Thr	Pro	Met	Thr	Glu	Lys	
1				5					10					15		
Leu	Thr	Ala	Ala	Asp	Asp	Asp	Gln	Gln	Gln	Gln	Lys	Leu	Lys	Lys	Gly	
			20				25						30			
Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Met	Trp	Glu	Asn	Ile	Trp	
		35					40					45				
Gly	Glu	His	Met	His	His	Gly	Tyr	Tyr	Asn	Ser	Asp	Asp	Val	Val	Glu	
	50					55					60					
Leu	Ser	Asp	His	Arg	Ser	Ala	Gln	Ile	Arg	Met	Ile	Glu	Gln	Ala	Leu	
65				70					75					80		
Thr	Phe	Ala	Ser	Val	Ser	Asp	Asp	Leu	Glu	Lys	Lys	Pro	Lys	Thr	Ile	
			85						90					95		
Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg	
			100				105						110			
Lys	Tyr	Gly	Ala	Glu	Cys	His	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala	
		115					120					125				
Glu	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Gln	Gly	Leu	Ala	Asp	Lys	Val		
	130					135				140						
Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asn	Gln	Pro	Phe	Pro	Asp	Gly	Lys	
145				150					155					160		
Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	
			165						170					175		
Leu	Lys	Phe	Val	Ser	Glu	Leu	Thr	Arg	Val	Ala	Ala	Pro	Gly	Ala	Thr	
		180						185					190			
Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Asn	Pro	Gly	Glu	Lys	
		195					200					205				
Ser	Leu	Arg	Pro	Glu	Glu	Glu	Lys	Ile	Leu	Asn	Lys	Ile	Cys	Ser	Ser	
	210					215					220					
Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ala	Asp	Tyr	Val	Lys	Leu	Leu	
225				230					235						240	
Glu	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Ala	Asp	Trp	Ser	Gly	Asn	
			245						250					255		
Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Thr	Ala	Leu	Ser	Trp	Lys	
			260					265					270			
Gly	Ile	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	Ser	Ile	Arg	Gly	Ala	

## PhoenixTemp32470.tmp.txt

275  
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 290 Met Pro Leu Met Ile 285  
 Phe Ser Ile Ile Thr Cys Lys Lys Lys Asp Val Ile Lys  
 305 310 300

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 <211> 945  
 <212> DNA  
 <213> Helianthus annuus

<220>  
 <221> CDS  
 <222> (1)..(945)

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 ctg acg gcg gca gat gat gac cag caa cag cag aag ctc aaa aaa gga 96  
 Leu Thr Ala Ala Asp Asp Asp Gln Gln Gln Lys Leu Lys Lys Gly  
 20 25 30  
 atc gca gag ttc tac gac gaa tcc tca ggt atg tgg gag aac ata tgg 144  
 Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Met Trp Glu Asn Ile Trp  
 35 40 45  
 gga gaa cac atg cat cac gga tat tat aac tcc gac gac gtc gtt gaa 192  
 Gly Glu His Met His His Gly Tyr Tyr Asn Ser Asp Asp Val Val Glu  
 50 55 60  
 ctc tcc gat cac cgt tct gct cag atc cgt atg att gaa caa gcc cta 240  
 Leu Ser Asp His Arg Ser Ala Gln Ile Arg Met Ile Glu Gln Ala Leu  
 65 70 75 80  
 acg ttc gcc tat gtt tca gat gat ccg gaa aag aaa cct aaa acc ata 288  
 Thr Phe Ala Tyr Val Ser Asp Asp Pro Glu Lys Lys Pro Lys Thr Ile  
 85 90 95  
 gtt gat gtc ggg tgt ggt ata gga ggt agc tca agg tat cta gca aga 336  
 Val Asp Val Gly Cys Gly Ile Gly Ser Ser Arg Tyr Leu Ala Arg  
 100 105 110  
 aaa tac gga gcc gaa tgt cac gga atc acc ctc agc cct gtg caa gct 384  
 Lys Tyr Gly Ala Glu Cys His Gly Ile Thr Leu Ser Pro Val Gln Ala  
 115 120 125  
 gag aga gct aat gcc ctt gct gcg gcc caa ggg ttg gcc gat aag gtt 432  
 Glu Arg Ala Asn Ala Leu Ala Ala Gln Gly Leu Ala Asp Lys Val  
 130 135 140  
 tca ttt caa gtt gct gat gct tta aac cag ccg ttt cct gat gga aag 480  
 Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Gly Lys  
 145 150 155 160  
 ttt gac ctt gtt tgg tca atg gag agt gga gag cac atg cct gac aaa 528  
 Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys  
 165 170 175  
 ctt aag ttt gtt agt gag ttg act cgg gtg gct gcc ccc gga gcc acc 576  
 Leu Lys Phe Val Ser Glu Leu Thr Arg Val Ala Ala Pro Gly Ala Thr  
 180 185 190  
 att atc ata gtt aca tgg tgc cac aga gat ctt aac ccc gga gaa aaa 624  
 Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Asn Pro Gly Glu Lys  
 195 200 205  
 tcc ctt cgc ccc gag gaa gaa aaa atc ttg aat aag att tgt tcc agc 672  
 Ser Leu Arg Pro Glu Glu Glu Lys Ile Leu Asn Lys Ile Cys Ser Ser  
 210 215 220  
 ttt tat ctt ccc gct tgg tgt tct aca gct gat tat gta aag tta cta 720  
 Phe Tyr Leu Pro Ala Trp Cys Ser Thr Ala Asp Tyr Val Lys Leu Leu  
 225 230 235 240  
 gaa tcc ctt tct ctt cag gac ata aaa tcc gca gac tgg tct ggc aat 768  
 Glu Ser Leu Ser Leu Gln Asp Ile Lys Ser Ala Asp Trp Ser Gly Asn  
 245 250 255  
 gtg gcc cca ttt tgg cct gct gta ata aaa aca gca ttg tct tgg aag 816  
 Val Ala Pro Phe Trp Pro Ala Val Ile Lys Thr Ala Leu Ser Trp Lys  
 260 265 270  
 ggc att act tca ttg cta cgt agt ggt tgg aag tcc ata aga ggg gca 864  
 Gly Ile Thr Ser Leu Leu Arg Ser Gly Trp Lys Ser Ile Arg Gly Ala

## PhoenixTemp32470.tmp.txt

275  
 atg gta atg cca cta atg att gaa gga ttt aag aag gat gta ata aaa 912  
 Met Val Met Pro Leu Met Ile Glu Gly Phe Lys Lys Asp Val Ile Lys  
 280 285  
 290  
 ttc tcc atc att aca tgc aaa aag cct gaa taa 945  
 Phe Ser Ile Ile Thr Cys Lys Lys Pro Glu  
 305 310

<210> 2311  
 <211> 314  
 <212> PRT  
 <213> Helianthus annuus

<400> 2311  
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 1 5 10 15  
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 20 25 30  
 Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Met Trp Glu Asn Ile Trp  
 35 40 45  
 Gly Glu His Met His His Gly Tyr Tyr Asn Ser Asp Asp Val Val Glu  
 50 55 60  
 Leu Ser Asp His Arg Ser Ala Gln Ile Arg Met Ile Glu Gln Ala Leu  
 65 70 75 80  
 Thr Phe Ala Tyr Val Ser Asp Asp Pro Glu Lys Lys Pro Lys Thr Ile  
 85 90 95  
 Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Arg  
 100 105 110  
 Lys Tyr Gly Ala Glu Cys His Gly Ile Thr Leu Ser Pro Val Gln Ala  
 115 120 125  
 Glu Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu Ala Asp Lys Val  
 130 135 140  
 Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Pro Asp Gly Lys  
 145 150 155 160  
 Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys  
 165 170 175  
 Leu Lys Phe Val Ser Glu Leu Thr Arg Val Ala Ala Pro Gly Ala Thr  
 180 185 190  
 Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Asn Pro Gly Glu Lys  
 195 200 205  
 Ser Leu Arg Pro Glu Glu Gly Lys Ile Leu Asn Lys Ile Cys Ser Ser  
 210 215 220  
 Phe Tyr Leu Pro Ala Trp Cys Ser Thr Ala Asp Tyr Val Lys Leu Leu  
 225 230 235 240  
 Glu Ser Leu Ser Leu Gln Asp Ile Lys Ser Ala Asp Trp Ser Gly Asn  
 245 250 255  
 Val Ala Pro Phe Trp Pro Ala Val Ile Lys Thr Ala Leu Ser Trp Lys  
 260 265 270  
 Gly Ile Thr Ser Leu Leu Arg Ser Gly Trp Lys Ser Ile Arg Gly Ala  
 275 280 285  
 Met Val Met Pro Leu Met Ile Glu Gly Phe Lys Lys Asp Val Ile Lys  
 290 295 300  
 Phe Ser Ile Ile Thr Cys Lys Lys Pro Glu  
 305 310

<210> 2312  
 <211> 945  
 <212> DNA  
 <213> Helianthus annuus

<220>  
 <221> CDS  
 <222> (1)..(945)

<400> 2312  
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 Met Ala Thr Thr Ala Val Gly Val Ser Ala Thr Pro Met Thr Glu Lys  
 1 5 10 15  
 ctg acg gcg gca gat gat gac cag caa cag cag aag ctc aaa aaa gga 96  
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## PhoenixTemp32470.tmp.txt

Leu	Thr	Ala	Ala	Asp	Asp	Asp	Gln	Gln	Gln	Gln	Lys	Leu	Lys	Lys	Gly	
			20					25					30			
atc	gca	gag	ttc	tac	gac	gaa	tcc	tca	ggg	atg	tgg	gag	aac	ata	tgg	144
Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Met	Trp	Glu	Asn	Ile	Trp	
		35					40					45				
gga	gaa	cac	atg	cat	cac	gga	tat	tat	aac	tcc	gac	gac	gtc	gtt	gaa	192
Gly	Glu	His	Met	His	His	Gly	Tyr	Tyr	Asn	Ser	Asp	Asp	Val	Val	Glu	
		50				55					60					
ctc	tcc	gat	cac	cgt	tct	gct	cag	atc	cgt	atg	att	gaa	caa	gcc	cta	240
Leu	Ser	Asp	His	Arg	Ser	Ala	Gln	Ile	Arg	Met	Ile	Glu	Gln	Ala	Leu	
		65			70					75					80	
acg	ttc	gcc	tct	gtt	tca	gat	gat	ccg	gaa	aag	aaa	cct	aaa	aca	ata	288
Thr	Phe	Ala	Ser	Val	Ser	Asp	Asp	Pro	Glu	Lys	Lys	Pro	Lys	Thr	Ile	
				85					90					95		
gtt	gat	gtc	ggg	tgt	ggg	ata	gga	ggg	agc	tca	agg	tat	cta	gca	aga	336
Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Ala	Arg	
			100				105						110			
aaa	tac	gga	gcc	gaa	tgt	cac	gga	atc	acc	ctc	agc	cct	gtg	caa	gct	384
Lys	Tyr	Gly	Ala	Glu	Cys	His	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	Ala	
		115					120					125				
gag	aga	gct	aat	gcc	ctt	gct	gcg	gcc	caa	ggg	ttg	gcc	gat	aag	gtt	432
Glu	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	Leu	Ala	Asp	Lys	Val	
		130				135					140					
tca	ttt	caa	gtt	gct	gat	gct	ttg	aac	cag	ccg	ttt	tct	gat	gga	aag	480
Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asn	Gln	Pro	Phe	Ser	Asp	Gly	Lys	
				150						155					160	
ttt	gac	ctg	gtt	tgg	tca	atg	gag	agt	gga	gag	cac	atg	cct	gac	aaa	528
Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	Lys	
				165					170					175		
ctt	aag	ttt	gtt	agt	gag	ttg	act	cgg	gtg	gct	gcc	ccc	gga	gcc	acc	576
Leu	Lys	Phe	Val	Ser	Glu	Leu	Thr	Arg	Val	Ala	Ala	Pro	Gly	Ala	Thr	
			180					185					190			
att	atc	ata	gtt	aca	tgg	tgc	cac	aga	gat	ctt	aac	ccc	gga	gaa	aaa	624
Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Asn	Pro	Gly	Glu	Lys	
			195				200					205				
tcc	ctt	cgc	ccc	gag	gaa	gaa	aaa	atc	ttg	aat	aag	att	tgt	tcc	agc	672
Ser	Leu	Arg	Pro	Glu	Glu	Glu	Lys	Ile	Leu	Asn	Lys	Ile	Cys	Ser	Ser	
			210			215					220					
ttt	tat	ctt	ccc	gct	tgg	tgt	tct	aca	gct	gat	tat	gta	aag	tta	cta	720
Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ala	Asp	Tyr	Val	Lys	Leu	Leu	
					230					235				240		
gaa	tcc	ctt	tct	ctt	cag	gac	ata	aaa	tcc	gca	gac	tgg	tct	ggc	aat	768
Glu	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Ala	Asp	Trp	Ser	Gly	Asn	
				245					250					255		
gtg	gcc	cca	ttt	tgg	cct	gct	gta	ata	aaa	aca	gcg	ttg	tct	tgg	aag	816
Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Thr	Ala	Leu	Ser	Trp	Lys	
			260				265						270			
ggc	att	act	tca	ttg	cta	cgt	agt	ggg	tgg	aag	tcc	ata	aga	ggg	gca	864
Gly	Ile	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp	Lys	Ser	Ile	Arg	Gly	Ala	
			275				280					285				
atg	gta	atg	cca	cta	atg	att	gaa	gga	ttt	aag	aag	gat	gta	att	aaa	912
Met	Val	Met	Pro	Leu	Met	Ile	Glu	Gly	Phe	Lys	Lys	Asp	Val	Ile	Lys	
			290			295					300					
ttc	tcc	atc	att	aca	tgc	aaa	aag	cct	gaa	taa						945
Phe	Ser	Ile	Ile	Thr	Cys	Lys	Lys	Pro	Glu							
					310											
305																

&lt;210&gt; 2313

&lt;211&gt; 314

&lt;212&gt; PRT

&lt;213&gt; Helianthus annuus

&lt;400&gt; 2313

Met	Ala	Thr	Thr	Ala	Val	Gly	Val	Ser	Ala	Thr	Pro	Met	Thr	Glu	Lys	
				5					10					15		
Leu	Thr	Ala	Ala	Asp	Asp	Asp	Gln	Gln	Gln	Gln	Lys	Leu	Lys	Lys	Gly	
			20					25					30			
Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Met	Trp	Glu	Asn	Ile	Trp	
		35					40					45				

## PhoenixTemp32470.tmp.txt

Gly Glu His Met His His Gly Tyr Tyr Asn Ser Asp Asp Val Val Glu  
 50 55 60  
 Leu Ser Asp His Arg Ser Ala Gln Ile Arg Met Ile Glu Gln Ala Leu  
 65 70 75  
 Thr Phe Ala Ser Val Ser Asp Asp Pro Glu Lys Lys Pro Lys Thr Ile  
 85 90 95  
 Val Asp Val Gly Cys Gly Ile Gly Ser Ser Arg Tyr Leu Ala Arg  
 100 105 110  
 Lys Tyr Gly Ala Glu Cys His Gly Ile Thr Leu Ser Pro Val Gln Ala  
 115 120 125  
 Glu Arg Ala Asn Ala Leu Ala Ala Gln Gly Leu Ala Asp Lys Val  
 130 135 140  
 Ser Phe Gln Val Ala Asp Ala Leu Asn Gln Pro Phe Ser Asp Gly Lys  
 145 150 155 160  
 Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys  
 165 170 175  
 Leu Lys Phe Val Ser Glu Leu Thr Arg Val Ala Ala Pro Gly Ala Thr  
 180 185 190  
 Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Asn Pro Gly Glu Lys  
 195 200 205  
 Ser Leu Arg Pro Glu Glu Glu Lys Ile Leu Asn Lys Ile Cys Ser Ser  
 210 215 220  
 Phe Tyr Leu Pro Ala Trp Cys Ser Thr Ala Asp Tyr Val Lys Leu Leu  
 225 230 235 240  
 Glu Ser Leu Ser Leu Gln Asp Ile Lys Ser Ala Asp Trp Ser Gly Asn  
 245 250 255  
 Val Ala Pro Phe Trp Pro Ala Val Ile Lys Thr Ala Leu Ser Trp Lys  
 260 265 270  
 Gly Ile Thr Ser Leu Leu Arg Ser Gly Trp Lys Ser Ile Arg Gly Ala  
 275 280 285  
 Met Val Met Pro Leu Met Ile Glu Gly Phe Lys Lys Asp Val Ile Lys  
 290 295 300  
 Phe Ser Ile Ile Thr Cys Lys Lys Pro Glu  
 305 310

&lt;210&gt; 2314

&lt;211&gt; 1098

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1098)

&lt;400&gt; 2314

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Met Ala Asn Ser Ala Ala Leu Leu His Ser Leu Leu Ser Thr Gly Trp	
1 5 10 15	
acg ccg cgc cgc cgc ctc gac cga gcc tcg gcc acg cgg ctc gcc ccg	96
Thr Pro Arg Arg Arg Leu Asp Arg Ala Ser Ala Thr Arg Leu Ala Pro	
20 25 30	
tcc ccc ggc ctg tcc tgc cgc tcc tcc cgg ccg acg cgc tcc gtg cgc	144
Ser Pro Gly Leu Ser Cys Arg Ser Ser Arg Pro Thr Arg Ser Val Arg	
35 40 45	
ccg atg gcg tcg tcg acg acc gcg gcc cgg gcc gac gcg gcg ccg ccg	192
Pro Met Ala Ser Ser Thr Thr Ala Ala Arg Ala Asp Ala Ala Pro Pro	
50 55 60	
ggg ctg aag gag ggc atc gcg ggg ctc tac gac gag tcg tcc ggc ctg	240
Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu	
65 70 75 80	
tgg gag agc atc tgg ggc gag cac atg cac cac ggc ttc tac gac tcc	288
Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ser	
85 90 95	
ggc gag gcc gcc tcc atg tcc gac cac cgc cgc gcc cag atc cgc atg	336
Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met	
100 105 110	
atc gag gag gcc ctc gcc ttc gcc gcc gtc ccc gac gat ccg aca aac	384
Ile Glu Glu Ala Leu Ala Phe Ala Val Pro Asp Asp Pro Thr Asn	
115 120 125	



## PhoenixTemp32470.tmp.txt

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aaa ccg aaa acg att gtt gat gtt gga tac gga atc ggt ggt agc tca 432
Lys Pro 130 Lys Thr Ile Val Asp 135 Val Gly Tyr Gly Ile Gly Gly Ser Ser
aga tac ctg gcg aac aaa tat gga gca caa tgc tct ggg atc aca ttg 480
Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Ser Gly Ile Thr Leu
145 150 155 160
agc cca gtg caa gcc gag aga gga aat gcc ctc gca gca gtg cag ggg 528
Ser Pro Val Gln Ala 165 Glu Arg Gly Asn Ala Leu Ala Val Gln Gly
170 175
ttg tcg gac aag gct tct ttc caa gtt gct gat gct ctg gag caa cca 576
Leu Ser Asp Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Glu Gln Pro
180 185 190
ttt cct gat ggg cag ttt gat ctt gtc tgg tct atg gag agt ggt gag 624
Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu
195 200 205
cac atg ccg aac aaa cag aag ttt gta agc gag ctg gca cgc gtc gca 672
His Met Pro Asn Lys Gln Lys Phe Val Ser Glu Leu Ala Arg Val Ala
210 215 220
gct cca gga gca act atc atc atc gtg acc tgg tgc cat agg aac ctc 720
Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu
225 230 235 240
gcg ccg tcg gag gac tca ctg aaa cct gac gag ctg aat ctt ttg aaa 768
Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys
245 250 255
aag att tgt gat gca tat tac ctc cca gat tgg tgc tcg ccc tcg gat 816
Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp
260 265 270
tat gtc aag att gcc gag tca ttg tct ctt gag gat atc aaa acg gcc 864
Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala
275 280 285
gac tgg tct gaa aac gtg gcc ccg ttc tgg cct gct gtc atc caa tca 912
Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Gln Ser
290 295 300
gca ctg aca tgg aaa ggc ctc act tct cta cta agg agt gga tgg aag 960
Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys
305 310 315 320
acg ata aag gga gca ctg gtg atg cct ctc atg atc caa ggc tac aag 1008
Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ile Gln Gly Tyr Lys
325 330 335
aaa ggc ctc att aag ttc agc atc atc acc tgc cac aaa ccc caa gca 1056
Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys His Lys Pro Gln Ala
340 345 350 355
gcc ata gaa gga gaa cct gag gcc gca tcg ccc aga gtg tag 1098
Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Arg Val
355 360 365

```

&lt;210&gt; 2315

&lt;211&gt; 365

&lt;212&gt; PRT

&lt;213&gt; Triticum aestivum

&lt;400&gt; 2315

```

Met Ala Asn Ser Ala Ala Leu Leu His Ser Leu Leu Ser Thr Gly Trp
1 5 10 15
Thr Pro Arg Arg Arg Leu Asp Arg Ala Ser Ala Thr Arg Leu Ala Pro
20 25 30
Ser Pro Gly 35 Leu Ser Cys Arg Ser Arg Pro Thr Arg Ser Val Arg
40 45
Pro Met Ala Ser Ser Thr Thr Ala Ala Arg Ala Asp Ala Ala Pro Pro
50 55 60
Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu
65 70 75 80
Trp Glu Ser Ile Trp 85 Gly Glu His Met His 90 Gly Phe Tyr Asp Ser
95
Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met
100 105 110
Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Pro Thr Asn
115 120 125
Lys Pro Lys Thr Ile Val Asp Val Gly Tyr Gly Ile Gly Gly Ser Ser

```

## PhoenixTemp32470.tmp.txt

130 135 140  
 Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Ser Gly Ile Thr Leu  
 145 150 155 160  
 Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Val Gln Gly  
 165 170 175  
 Leu Ser Asp Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Glu Gln Pro  
 180 185 190  
 Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu  
 195 200 205  
 His Met Pro Asn Lys Gln Lys Phe Val Ser Glu Leu Ala Arg Val Ala  
 210 215 220  
 Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu  
 225 230 235 240  
 Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys  
 245 250 255  
 Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp  
 260 265 270  
 Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala  
 275 280 285  
 Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Gln Ser  
 290 295 300  
 Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys  
 305 310 315 320  
 Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ile Gln Gly Tyr Lys  
 325 330 335  
 Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys His Lys Pro Gln Ala  
 340 345 350  
 Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Arg Val  
 355 360 365

&lt;210&gt; 2316

&lt;211&gt; 1077

&lt;212&gt; DNA

&lt;213&gt; Lotus japonicus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1077)

&lt;400&gt; 2316

atg gcc acg atg atg atg tca att ttt cca cca cca cca agc gtg gct	48
Met Ala Thr Met Met Met Ser Ile Phe Pro Pro Pro Pro Ser Val Ala	
1 5 10 15	
tca tta ttt ata cta tca cac tgc act cac aca att cgt gta caa tca	96
Ser Leu Phe Ile Leu Ser His Cys Thr His Thr Ile Arg Val Gln Ser	
20 25 30	
aca acg cag ttc aca ggt ttt tct ata aga acc aga aca cgt gat tgt	144
Thr Thr Gln Phe Thr Gly Phe Ser Ile Arg Thr Arg Thr Arg Asp Cys	
35 40 45	
agt aga att ctg tta aca gaa gaa cga gaa atg gcg gtg atg gag gag	192
Ser Arg Ile Leu Leu Thr Glu Glu Arg Glu Met Ala Val Met Glu Glu	
50 55 60	
aag aag ctt ttg cag acc gga atc gct gag ttc tac gac gag tcg tcc	240
Lys Lys Leu Leu Gln Thr Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser	
65 70 75 80	
ggg tta tgg gaa gac atg tgg gga gac cac atg cat cac ggg ttt tac	288
Gly Leu Trp Glu Asp Met Trp Gly Asp His Met His His Gly Phe Tyr	
85 90 95	
gag cag gat gtc acc gtc tct gtt tca gac cac cgt gtt gct cag atc	336
Glu Gln Asp Val Thr Val Ser Val Ser Asp His Arg Val Ala Gln Ile	
100 105 110	
cga atg att gaa gag tct ctt cgt ttt gct gca ctt tct gag gat cca	384
Arg Met Ile Glu Glu Ser Leu Arg Phe Ala Ala Leu Ser Glu Asp Pro	
115 120 125	
gct aaa aag cca gag agt ata gtg gat gtt ggg tgc ggc ata gga ggc	432
Ala Lys Lys Pro Glu Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly	
130 135 140	
agt tct agg tac cta gct aag aaa ttt cag gca aag agc gtt ggt atc	480
Ser Ser Arg Tyr Leu Ala Lys Lys Phe Gln Ala Lys Ser Val Gly Ile	

## PhoenixTemp32470.tmp.txt

145	act	ctg	agt	cct	ggt	150	caa	gct	cag	aga	gca	155	aat	gct	ctt	gct	gct	160	tct	
	Thr	Leu	Ser	Pro	Val		Gln	Ala	Gln	Arg	Ala		Asn	Ala	Leu	Ala	Ala		Ser	528
					165						170							175		
	caa	ggc	tta	gct	gac	aag	ggt	tcc	ttt	caa	ggt	gct	gat	gct	cta	gag				576
	Gln	Gly	Leu	Ala	Asp	Lys	Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Glu				
				180					185									190		
	caa	cca	ttc	cct	gat	ggt	cag	ttt	gat	ctg	gtg	tgg	tcc	atg	gag	agt				624
	Gln	Pro	Phe	Pro	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser				
			195					200					205							
	gga	gag	cat	atg	cct	gac	aaa	cct	aag	ttt	ggt	ggc	gag	tta	gct	cgg				672
	Gly	Glu	His	Met	Pro	Asp	Lys	Pro	Lys	Phe	Val	Gly	Glu	Leu	Ala	Arg				
		210					215					220								
	gtg	gca	gca	cca	ggt	ggg	acc	ata	ata	att	gta	aca	tgg	tgc	cac	cgg				720
	Val	Ala	Ala	Pro	Gly	Gly	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg				
		225			230						235									
	gat	ctt	gga	cca	gct	gaa	gaa	tcc	ctg	cag	cca	tgg	gag	cag	aat	ctc				768
	Asp	Leu	Gly	Pro	Ala	Glu	Glu	Ser	Leu	Gln	Pro	Trp	Glu	Gln	Asn	Leu				
					245										255					
	ttg	aag	agg	ata	tgc	gat	gca	ttt	tac	ctt	cca	gca	tgg	tgc	tca	act				816
	Leu	Lys	Arg	Ile	Cys	Asp	Ala	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr				
				260					265											
	gct	gat	tat	gtc	aaa	ttg	ctg	gaa	tcc	cat	tca	ctt	cag	gac	atc	aaa				864
	Ala	Asp	Tyr	Val	Lys	Leu	Leu	Glu	Ser	His	Ser	Leu	Gln	Asp	Ile	Lys				
			275					280					285							
	tca	gca	gat	tgg	tct	ccc	ttt	ggt	gct	cca	ttt	tgg	cca	gct	gtg	ata				912
	Ser	Ala	Asp	Trp	Ser	Pro	Phe	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile				
		290				295						300								
	cgc	tca	gca	ttt	aca	tgg	aag	ggt	ctc	act	tca	ctg	ttg	cgc	agt	gga				960
	Arg	Ser	Ala	Phe	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Arg	Ser	Gly				
						310					315									
	atg	aaa	acc	ata	aaa	gga	gct	ttg	gct	atg	cca	ttg	atg	ata	gaa	gga				1008
	Met	Lys	Thr	Ile	Lys	Gly	Ala	Leu	Ala	Met	Pro	Leu	Met	Ile	Glu	Gly				
					325					330					335					
	ttc	aag	aag	ggt	gtc	atc	aag	ttt	gcc	att	gtt	aca	tgt	aga	aag	cct				1056
	Phe	Lys	Lys	Gly	Val	Ile	Lys	Phe	Ala	Ile	Val	Thr	Cys	Arg	Lys	Pro				
				340					345					350						
	gaa	aat	gtg	gag	ata	gaa	taa													1077
	Glu	Asn	Val	Glu	Ile	Glu														
			355																	

&lt;210&gt; 2317

&lt;211&gt; 358

&lt;212&gt; PRT

&lt;213&gt; Lotus japonicus

&lt;400&gt; 2317

Met	Ala	Thr	Met	Met	Met	Ser	Ile	Phe	Pro	Pro	Pro	Pro	Ser	Val	Ala	
1				5				10						15		
Ser	Leu	Phe	Ile	Leu	Ser	His	Cys	Thr	His	Thr	Ile	Arg	Val	Gln	Ser	
			20					25					30			
Thr	Thr	Gln	Phe	Thr	Gly	Phe	Ser	Ile	Arg	Thr	Arg	Thr	Arg	Asp	Cys	
		35					40					45				
Ser	Arg	Ile	Leu	Leu	Thr	Glu	Glu	Arg	Glu	Met	Ala	Val	Met	Glu	Glu	
		50				55				60						
Lys	Lys	Leu	Leu	Gln	Thr	Gly	Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	
65				70					75					80		
Gly	Leu	Trp	Glu	Asp	Met	Trp	Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	
				85					90					95		
Glu	Gln	Asp	Val	Thr	Val	Ser	Val	Ser	Asp	His	Arg	Val	Ala	Gln	Ile	
		100						105					110			
Arg	Met	Ile	Glu	Glu	Ser	Leu	Arg	Phe	Ala	Ala	Leu	Ser	Glu	Asp	Pro	
		115					120					125				
Ala	Lys	Lys	Pro	Glu	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	
	130				135					140						
Ser	Ser	Arg	Tyr	Leu	Ala	Lys	Lys	Phe	Gln	Ala	Lys	Ser	Val	Gly	Ile	
145				150					155					160		
Thr	Leu	Ser	Pro	Val	Gln	Ala	Gln	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Ser	
				165					170					175		

## PhoenixTemp32470.tmp.txt

Gln Gly Leu Ala Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Glu  
 180 185 190  
 Gln Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser  
 195 200 205  
 Gly Glu His Met Pro Asp Lys Pro Lys Phe Val Gly Glu Leu Ala Arg  
 210 215 220  
 Val Ala Ala Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg  
 225 230 235 240  
 Asp Leu Gly Pro Ala Glu Glu Ser Leu Gln Pro Trp Glu Gln Asn Leu  
 245 250 255  
 Leu Lys Arg Ile Cys Asp Ala Phe Tyr Leu Pro Ala Trp Cys Ser Thr  
 260 265 270  
 Ala Asp Tyr Val Lys Leu Leu Glu Ser His Ser Leu Gln Asp Ile Lys  
 275 280 285  
 Ser Ala Asp Trp Ser Pro Phe Val Ala Pro Phe Trp Pro Ala Val Ile  
 290 295 300  
 Arg Ser Ala Phe Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly  
 305 310 315 320  
 Met Lys Thr Ile Lys Gly Ala Leu Ala Met Pro Leu Met Ile Glu Gly  
 325 330 335  
 Phe Lys Lys Gly Val Ile Lys Phe Ala Ile Val Thr Cys Arg Lys Pro  
 340 345 350  
 Glu Asn Val Glu Ile Glu  
 355

<210> 2318  
 <211> 1053  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(1053)

<400> 2318  
 atg gcc acc gtg gtg agg atc cca aca atc tca tgc atc cac atc cac 48  
 Met Ala Thr Val Val Arg Ile Pro Thr Ile Ser Cys Ile His Ile His  
 1 5 10 15  
 acg ttc cgt tcc caa tcc cct cgc act ttc gcc aga atc cgg gtc gga 96  
 Thr Phe Arg Ser Gln Ser Pro Arg Thr Phe Ala Arg Ile Arg Val Gly  
 20 25 30  
 ccc agg tcg tgg gct cct att cgg gca tcg gca gcg agc tcg gag aga 144  
 Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ser Ser Glu Arg  
 35 40 45  
 ggg gag ata gta ttg gag gag aag ccg aag aag gat gac aag aag aag 192  
 Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys  
 50 55 60  
 ctg cag aag gga atc gca gag ttt tac gac gag tct tct ggc tta tgg 240  
 Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp  
 65 70 75 80  
 gag aac att tgg ggc gac cac atg cac cat ggc ttt tat gac tcg gat 288  
 Glu Asn Ile Trp Gly Asp His Met His Gly Phe Tyr Asp Ser Asp  
 85 90 95  
 tcc act gtt tcg ctt tcg gat cat cgt gct gct cag atc cga atg atc 336  
 Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile  
 100 105 110  
 caa gag tct ctt cgc ttt gcc tct gtt tct gag gag cgt agt aaa tgg 384  
 Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp  
 115 120 125  
 ccc aag agt ata gtt gat gtt ggg tgt ggc ata ggt ggc agc tct aga 432  
 Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg  
 130 135 140  
 tac ctg gcc aag aaa ttt gga gca acc agt gta ggc atc act ctg agt 480  
 Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser  
 145 150 155 160  
 cct gtt caa gct caa aga gca aat gct ctt gct gct gct caa gga ttg 528  
 Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu  
 165 170 175  
 gct gat aag gtt tcc ttt cag gtt gct gac gct cta cag caa cca ttc 576

## PhoenixTemp32470.tmp.txt

Ala	Asp	Lys	Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Gln	Gln	Pro	Phe		
tct	gac	ggc	cag	ttt	gat	ctg	gtg	tgg	tcc	atg	gag	agt	gga	gag	cat		624
Ser	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His		
		195					200					205					
atg	cct	gac	aaa	gct	aag	ttt	gtt	gga	gag	tta	gct	cgg	gta	gca	gca		672
Met	Pro	Asp	Lys	Ala	Lys	Phe	Val	Gly	Glu	Leu	Ala	Arg	Val	Ala	Ala		
		210				215					220						
cca	ggt	gcc	act	ata	ata	ata	gta	aca	tgg	tgc	cac	agg	gat	ctt	ggc		720
Pro	Gly	Ala	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly		
225				230						235					240		
cct	gac	gaa	caa	tcc	tta	cat	cca	tgg	gag	caa	gat	ctc	tta	aag	aag		768
Pro	Asp	Glu	Gln	Ser	Leu	His	Pro	Trp	Glu	Gln	Asp	Leu	Leu	Lys	Lys		
				245					250					255			
att	tgc	gat	gca	tat	tac	ctc	cct	gcc	tgg	tgc	tca	act	tct	gat	tat		816
Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ser	Asp	Tyr		
			260				265						270				
gtt	aag	ttg	ctc	caa	tcc	ctg	tca	ctt	cag	gac	atc	aag	tca	gaa	gat		864
Val	Lys	Leu	Gln	Ser	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Glu	Asp		
		275					280					285					
tgg	tct	cgc	ttt	gtt	gct	cca	ttt	tgg	cca	gca	gtg	ata	cgc	tca	gcc		912
Trp	Ser	Arg	Phe	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala		
		290				295					300						
ttc	aca	tgg	aag	ggt	cta	act	tca	ctc	ttg	agc	agt	gga	caa	aaa	acg		960
Phe	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Ser	Ser	Gly	Gln	Lys	Thr		
305					310					315					320		
ata	aaa	gga	gct	ttg	gct	atg	cca	ttg	atg	ata	gag	gga	tac	aag	aaa		1008
Ile	Lys	Gly	Ala	Leu	Ala	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys		
				325					330					335			
gat	cta	att	aag	ttt	gcc	atc	att	aca	tgt	cga	aaa	cct	gaa	taa			1053
Asp	Leu	Ile	Lys	Phe	Ala	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu				
			340					345					350				

&lt;210&gt; 2319

&lt;211&gt; 350

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2319

Met	Ala	Thr	Val	Val	Arg	Ile	Pro	Thr	Ile	Ser	Cys	Ile	His	Ile	His		
1				5					10					15			
Thr	Phe	Arg	Ser	Gln	Ser	Pro	Arg	Thr	Phe	Ala	Arg	Ile	Arg	Val	Gly		
			20					25					30				
Pro	Arg	Ser	Trp	Ala	Pro	Ile	Arg	Ala	Ser	Ala	Ala	Ser	Ser	Glu	Arg		
			35				40					45					
Gly	Glu	Ile	Val	Leu	Glu	Gln	Lys	Pro	Lys	Lys	Asp	Asp	Lys	Lys	Lys		
		50				55					60						
Leu	Gln	Lys	Gly	Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Leu	Trp		
65				70					75					80			
Glu	Asn	Ile	Trp	Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Ser	Asp		
				85				90						95			
Ser	Thr	Val	Ser	Leu	Ser	Asp	His	Arg	Ala	Ala	Gln	Ile	Arg	Met	Ile		
			100					105					110				
Gln	Glu	Ser	Leu	Arg	Phe	Ala	Ser	Val	Ser	Glu	Glu	Arg	Ser	Lys	Trp		
		115					120					125					
Pro	Lys	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg		
		130				135					140						
Tyr	Leu	Ala	Lys	Lys	Phe	Gly	Ala	Thr	Ser	Val	Gly	Ile	Thr	Leu	Ser		
145					150					155				160			
Pro	Val	Gln	Ala	Gln	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	Leu		
				165				170						175			
Ala	Asp	Lys	Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Gln	Gln	Pro	Phe		
			180					185					190				
Ser	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His		
		195					200					205					
Met	Pro	Asp	Lys	Ala	Lys	Phe	Val	Gly	Glu	Leu	Ala	Arg	Val	Ala	Ala		
		210				215					220						
Pro	Gly	Ala	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly		
225				230						235					240		

## PhoenixTemp32470.tmp.txt

Pro Asp Glu Gln Ser Leu His Pro Trp Glu Gln Asp Leu Leu Lys Lys  
 245 255  
 Ile Cys Asp Ala Tyr Tyr Leu Pro Ala Trp Cys Ser Thr Ser Asp Tyr  
 260 270  
 Val Lys Leu Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Ser Glu Asp  
 275 280  
 Trp Ser Arg Phe Val Ala Pro Phe Trp Pro Ala Val Ile Arg Ser Ala  
 290 300  
 Phe Thr Trp Lys Gly Leu Thr Ser Leu Leu Ser Ser Gly Gln Lys Thr  
 305 310 315 320  
 Ile Lys Gly Ala Leu Ala Met Pro Leu Met Ile Glu Gly Tyr Lys Lys  
 325 335  
 Asp Leu Ile Lys Phe Ala Ile Ile Thr Cys Arg Lys Pro Glu  
 340 345 350

&lt;210&gt; 2320

&lt;211&gt; 1044

&lt;212&gt; DNA

&lt;213&gt; Brassica oleracea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1044)

&lt;400&gt; 2320

atg	aaa	gcg	act	ctc	gca	cca	ccc	tcc	tct	ctc	ata	agc	ctc	ccc	agg	48
Met	Lys	Ala	Thr	Leu	Ala	Pro	Pro	Ser	Ser	Leu	Ile	Ser	Leu	Pro	Arg	
1				5				10						15		
cac	aaa	gta	tct	tct	ctc	cgt	tca	ccg	tcg	ctt	ctc	ctt	cag	tcc	cag	96
His	Lys	Val	Ser	Ser	Leu	Arg	Ser	Pro	Ser	Leu	Leu	Leu	Gln	Ser	Gln	
			20					25					30			
cgg	cca	tcc	tca	gcc	tta	atg	aca	acg	acg	gca	aca	cgt	gga	agc	gta	144
Arg	Pro	Ser	Ser	Ala	Leu	Met	Thr	Thr	Thr	Ala	Thr	Arg	Gly	Ser	Val	
			35				40					45				
gct	gtg	acg	gct	gct	gct	acc	tcc	tcc	gct	gag	gcg	ctg	cga	gaa	gga	192
Ala	Val	Thr	Ala	Ala	Ala	Thr	Ser	Ser	Ala	Glu	Ala	Leu	Arg	Glu	Gly	
			50			55					60					
ata	gcg	gaa	ttc	tac	aac	gag	acg	tcg	gga	tta	tgg	gag	gag	att	tgg	240
Ile	Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	
			65		70				75						80	
gga	gat	cat	atg	cat	cac	ggc	ttc	tac	gat	ccc	gat	tcc	tct	gtt	caa	288
Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln	
				85					90					95		
ctt	tca	gat	tcc	ggt	cac	cgg	gaa	gct	cag	atc	cgg	atg	att	gaa	gag	336
Leu	Ser	Asp	Ser	Gly	His	Arg	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	
			100					105					110			
tct	cta	cgt	ttc	gcc	ggc	gtt	act	gaa	gag	gag	aaa	aag	ata	aag	aga	384
Ser	Leu	Arg	Phe	Ala	Gly	Val	Thr	Glu	Glu	Glu	Lys	Lys	Ile	Lys	Arg	
			115				120					125				
gtg	gtg	gat	gtt	ggg	tgt	ggg	atc	gga	gga	agc	tca	agg	tat	att	gcc	432
Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Ile	Ala	
			130			135					140					
tct	aaa	ttt	ggt	gcc	gaa	tgc	att	ggc	atc	aca	ctc	agt	ccc	gtt	caa	480
Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln	
				150						155				160		
gcc	aag	aga	gcc	aat	gat	ctc	gcc	gcc	gct	caa	tca	ctc	tct	cat	aag	528
Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ser	His	Lys	
				165					170					175		
gtt	tcc	ttc	caa	gtt	gca	gat	gca	ttg	gac	caa	cca	ttt	gaa	gat	ggt	576
Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp	Gly	
			180					185					190			
att	ttc	gat	ctt	gtt	tgg	tca	atg	gaa	agc	ggt	gag	cat	atg	cct	gac	624
Ile	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp	
			195				200					205				
aag	gcc	aag	ttc	gtg	aag	gaa	ttg	gta	cgt	gtg	acg	gct	cca	gga	gga	672
Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Thr	Ala	Pro	Gly	Gly	
			210			215					220					
agg	ata	ata	gtg	aca	tgg	tgc	cac	aga	aat	cta	tcc	caa	ggg	gaa		720
Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Gln	Gly	Glu	

## PhoenixTemp32470.tmp.txt

225	gaa	tct	ttg	cag	cca	230	trg	gag	cag	aac	ctc	235	gac	aga	atc	tgc	240	aaa		
	Glu	Ser	Leu	Gln	Pro	Trp	Glu	Gln	Asn	Leu	Leu	Asp	Arg	Ile	Cys	Lys				768
	aca	ttt	tat	ctc	ccg	gcc	trg	tgc	tcc	acc	tct	gat	tat	gtc	gag	ttg				816
	Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ser	Asp	Tyr	Val	Glu	Leu				
	ctt	caa	tcc	ctc	tcg	ctc	cag	gat	att	aag	tgt	gca	gat	tgg	tca	gag				864
	Leu	Gln	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Cys	Ala	Asp	Trp	Ser	Glu				
	aac	gta	gct	cct	ttc	trg	ccg	gcg	ggt	ata	cga	acc	gca	tta	acg	tgg				912
	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Thr	Ala	Leu	Thr	Trp				
	aag	ggc	ctt	gtg	tct	ctg	ctt	cgt	agt	ggg	atg	aag	agt	ata	aaa	gga				960
	Lys	Gly	Leu	Val	Ser	Leu	Leu	Arg	Ser	Gly	Met	Lys	Ser	Ile	Lys	Gly				
	gca	ttg	aca	atg	cca	ttg	atg	att	gaa	ggg	tac	aag	aaa	ggg	gtc	att				1008
	Ala	Leu	Thr	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys	Gly	Val	Ile				
	aaa	ttt	ggc	atc	atc	gct	tgc	cag	aag	cct	ctc	taa								1044
	Lys	Phe	Gly	Ile	Ile	Ala	Cys	Gln	Lys	Pro	Leu									

&lt;210&gt; 2321

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Brassica oleracea

&lt;400&gt; 2321

Met	Lys	Ala	Thr	Leu	Ala	Pro	Pro	Ser	Ser	Leu	Ile	Ser	Leu	Pro	Arg
1				5				10						15	
His	Lys	Val	Ser	Ser	Leu	Arg	Ser	Pro	Ser	Leu	Leu	Leu	Gln	Ser	Gln
			20					25					30		
Arg	Pro	Ser	Ser	Ala	Leu	Met	Thr	Thr	Thr	Ala	Thr	Arg	Gly	Ser	Val
			35				40					45			
Ala	Val	Thr	Ala	Ala	Ala	Thr	Ser	Ser	Ala	Glu	Ala	Leu	Arg	Glu	Gly
			50			55					60				
Ile	Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp
65					70					75					80
Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln
			85						90					95	
Leu	Ser	Asp	Ser	Gly	His	Arg	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu
			100					105					110		
Ser	Leu	Arg	Phe	Ala	Gly	Val	Thr	Glu	Glu	Glu	Lys	Lys	Ile	Lys	Arg
			115				120					125			
Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Ile	Ala
			130			135					140				
Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val	Gln
145					150					155					160
Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ser	His	Lys
				165					170					175	
Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp	Gly
			180					185					190		
Ile	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	Asp
			195				200					205			
Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Thr	Ala	Pro	Gly	Gly
					215						220				
Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Gln	Gly	Glu
225					230					235					240
Glu	Ser	Leu	Gln	Pro	Trp	Glu	Gln	Asn	Leu	Leu	Asp	Arg	Ile	Cys	Lys
				245					250					255	
Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ser	Asp	Tyr	Val	Glu	Leu
			260					265					270		
Leu	Gln	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Cys	Ala	Asp	Trp	Ser	Glu
			275				280					285			
Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Thr	Ala	Leu	Thr	Trp
			290			295					300				
Lys	Gly	Leu	Val	Ser	Leu	Leu	Arg	Ser	Gly	Met	Lys	Ser	Ile	Lys	Gly
305					310					315					320

## PhoenixTemp32470.tmp.txt

Ala Leu Thr Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val Ile  
 325 335  
 Lys Phe Gly Ile Ala Cys Gln Lys Pro Leu  
 340 345

&lt;210&gt; 2322

&lt;211&gt; 909

&lt;212&gt; DNA

&lt;213&gt; Sorghum bicolor

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(909)

&lt;400&gt; 2322

atg gcc tcc gcg gcg gtg ccg gcg gcc aca gga ggc ctg aag gag gac	48
Met Ala Ser Ala Ala Val Pro Ala Ala Thr Gly Gly Leu Lys Glu Asp	
1 5 10 15	
atc gcg ggg cta tac gac gag tcg tcg ggg gtg tgg gaa cgc atc tgc	96
Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Val Trp Glu Arg Ile Cys	
20 25 30	
ggc gag cac ctg cac cac ggc ttc tac gaa ccg gcc ggc gac gcc acg	144
Gly Glu His Leu His His Gly Phe Tyr Glu Pro Ala Gly Asp Ala Thr	
35 40 45	
gcg gtg cgg ccc gac gtc cgc cgc gcc cag atc cgc acc atc gac gag	192
Ala Val Arg Pro Asp Val Arg Arg Ala Gln Ile Arg Thr Ile Asp Glu	
50 55 60	
gcg ctc gca ttc gcc gcc gtc cca gat gat cta gag aag agg ccc aaa	240
Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Leu Glu Lys Arg Pro Lys	
65 70 75 80	
aca ata gtc gac gta gga tgt ggc att gga ggc agc tca agg tac ttg	288
Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu	
85 90 95	
gcc aga aaa tac gga gca caa tgt acg ggc atc acg ttg agc cct gtt	336
Ala Arg Lys Tyr Gly Ala Gln Cys Thr Gly Ile Thr Leu Ser Pro Val	
100 105 110	
caa gct gag aga gga aat gct ctt act gcc gcc cag ggc ttg tca gac	384
Gln Ala Glu Arg Gly Asn Ala Leu Thr Ala Ala Gln Gly Leu Ser Asp	
115 120 125	
cag gtt tcc ctc caa gtt gct gat gct cta gaa caa ccc ttt cct gat	432
Gln Val Ser Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe Pro Asp	
130 135 140	
gga atg ttt gat ctt gta tgg tcc atg gag agt ggt gag cac atg ccg	480
Gly Met Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro	
145 150 155 160	
gat aaa aga aag ttt gtt agt gag cta gcg cgt gtc gca gct cct gga	528
Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val Ala Ala Pro Gly	
165 170 175	
ggg aca ata atc atc gtg aca tgc tgc cat agg aac ctc aat ccg tct	576
Gly Thr Ile Ile Ile Val Thr Cys Cys His Arg Asn Leu Asn Pro Ser	
180 185 190	
gaa act tcc ctg aaa ccc gat gaa cag aga ctc cta aag agg ata tct	624
Glu Thr Ser Leu Lys Pro Asp Glu Gln Arg Leu Leu Lys Arg Ile Ser	
195 200 205	
gat gca tac tgt ctt gcc gac tgg ttc cta cct tca gac tat gtc agc	672
Asp Ala Tyr Cys Leu Ala Asp Trp Phe Leu Pro Ser Asp Tyr Val Ser	
210 215 220	
att gct aag tca ctg tct ctc gag gat atc agg aca gct gac tgg tcg	720
Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp Trp Ser	
225 230 235 240	
gag aac gtg gtc ccg ttt tgg ccc gct gtg ata aaa ctg tca ttg tca	768
Glu Asn Val Val Pro Phe Trp Pro Ala Val Ile Lys Leu Ser Leu Ser	
245 250 255	
tgg aag ggc ctg acc tct gcg tta aca tgt gga tgg aag acg atc aat	816
Trp Lys Gly Leu Thr Ser Ala Leu Thr Cys Gly Trp Lys Thr Ile Asn	
260 265 270	
ggg gcg atg ggg ata cta ctg ctg atc caa ggc tac agg aag ggg ctc	864
Gly Ala Met Gly Ile Leu Leu Leu Ile Gln Gly Tyr Arg Lys Gly Leu	
275 280 285	



atc aaa ttc aca gtc atc acc tgc cgc aag cct gga cca cca tag  
 ile Lys Phe Thr Val Ile Thr Cys Arg Lys Pro Gly Pro Pro  
       290                      295                      300

<210> 2323  
 <211> 302  
 <212> PRT  
 <213> Sorghum bicolor

<400> 2323  
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 Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Val Trp Glu Arg Ile Cys  
                       20                      25                      30  
 Gly Glu His Leu His His Gly Phe Tyr Glu Pro Ala Gly Asp Ala Thr  
                       35                      40                      45  
 Ala Val Arg Pro Asp Val Arg Arg Ala Gln Ile Arg Thr Ile Asp Glu  
                       50                      55                      60  
 Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Leu Glu Lys Arg Pro Lys  
 65                      70                      75                      80  
 Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu  
                       85                      90                      95  
 Ala Arg Lys Tyr Gly Ala Gln Cys Thr Gly Ile Thr Leu Ser Pro Val  
                       100                      105                      110  
 Gln Ala Glu Arg Gly Asn Ala Leu Thr Ala Ala Gln Gly Leu Ser Asp  
                       115                      120                      125  
 Gln Val Ser Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe Pro Asp  
                       130                      135                      140  
 Gly Met Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro  
 145                      150                      155                      160  
 Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val Ala Ala Pro Gly  
                       165                      170                      175  
 Gly Thr Ile Ile Ile Val Thr Cys Cys His Arg Asn Leu Asn Pro Ser  
                       180                      185                      190  
 Glu Thr Ser Leu Lys Pro Asp Glu Gln Arg Leu Leu Lys Arg Ile Ser  
                       195                      200                      205  
 Asp Ala Tyr Cys Leu Ala Asp Trp Phe Leu Pro Ser Asp Tyr Val Ser  
                       210                      215                      220  
 Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp Trp Ser  
 225                      230                      235                      240  
 Glu Asn Val Val Pro Phe Trp Pro Ala Val Ile Lys Leu Ser Leu Ser  
                       245                      250                      255  
 Trp Lys Gly Leu Thr Ser Ala Leu Thr Cys Gly Trp Lys Thr Ile Asn  
                       260                      265                      270  
 Gly Ala Met Gly Ile Leu Leu Leu Ile Gln Gly Tyr Arg Lys Gly Leu  
                       275                      280                      285  
 Ile Lys Phe Thr Val Ile Thr Cys Arg Lys Pro Gly Pro Pro  
       290                      295                      300

<210> 2324  
 <211> 1110  
 <212> DNA  
 <213> Perilla frutescens

<220>  
 <221> CDS  
 <222> (1)..(1110)

<400> 2324  
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 Met Ala Glu Ala Val Thr Pro Gly Ile Cys Thr Thr Gly Trp Arg Arg  
 1                      5                      10                      15  
 ggt ggg gtc cac gct ccc act tat aat att tct ata aag cca gcg aca  
 Gly Gly Val His Ala Pro Thr Tyr Asn Ile Ser Ile Lys Pro Ala Thr  
                       20                      25                      30  
 gcg ttg ctg gtt ggc tgc acc acc aaa acc aaa agc att act tct ttt  
 Ala Leu Leu Val Gly Cys Thr Thr Lys Thr Lys Ser Ile Thr Ser Phe  
                       35                      40                      45  
 tcc aca gac tcc ctc agg aca cgt ggc aga gca cgt cgc ccg acg atg  
                       50                      55                      60  
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48

96

144

192

## PhoenixTemp32470.tmp.txt

Ser	Thr	Asp	Ser	Leu	Arg	Thr	Arg	Gly	Arg	Ala	Arg	Pro	Thr	Met	
50	50					55				60					
agc	ctg	aac	gcc	gct	gcg	gcg	gag	atg	gag	acg	gag	atg	gag	acc	ttg
Ser	Leu	Asn	Ala	Ala	Ala	Ala	Glu	Met	Glu	Thr	Glu	Met	Glu	Thr	Leu
65					70					75					80
cgt	aaa	ggg	att	gcg	gag	ttc	tac	gac	gag	tcg	tcg	ggg	gtg	tgg	gag
Arg	Lys	Gly	Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Val	Trp	Glu
				85					90					95	
aac	ata	tgg	gga	gac	cac	atg	cac	cac	ggc	ttt	tac	gag	ccg	gcc	gcc
Asn	Ile	Trp	Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Glu	Pro	Ala	Ala
			100				105						110		
gac	gtc	tcc	atc	tcc	gac	cat	cgc	gcc	gcc	cag	atc	cgc	atg	att	gag
Asp	Val	Ser	Ile	Ser	Asp	His	Arg	Ala	Ala	Gln	Ile	Arg	Met	Ile	Glu
			115				120					125			
gag	tcc	ctc	cga	ttc	gct	tcc	ttc	tct	ccg	ata	act	acg	acg	gag	aaa
Glu	Ser	Leu	Arg	Phe	Ala	Ser	Phe	Ser	Pro	Ile	Thr	Thr	Thr	Glu	Lys
	130					135					140				
ccg	aag	aat	ata	gtt	gat	gtg	gga	tgt	ggc	ata	gga	ggc	agt	tct	agg
Pro	Lys	Asn	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg
145					150					155					160
tat	ctg	gca	aga	aaa	tat	ggg	gct	aaa	ttg	tct	agg	gct	att	act	ctt
Tyr	Leu	Ala	Arg	Lys	Tyr	Gly	Ala	Lys	Leu	Ser	Arg	Ala	Ile	Thr	Leu
				165					170					175	
tcc	agc	cct	gtg	caa	gcg	cag	aga	gct	caa	cag	ctt	gct	gat	gct	caa
Ser	Ser	Pro	Val	Gln	Ala	Gln	Arg	Ala	Gln	Gln	Leu	Ala	Asp	Ala	Gln
			180					185					190		
gga	tta	aat	ggc	aag	gtt	tcc	ttt	gaa	gtt	gct	gat	gcg	ttg	aac	caa
Gly	Leu	Asn	Gly	Lys	Val	Ser	Phe	Glu	Val	Ala	Asp	Ala	Leu	Asn	Gln
		195					200					205			
cca	ttt	cct	gaa	ggg	aag	ttt	gat	ctg	gtt	tgg	tcg	atg	gag	agt	gga
Pro	Phe	Pro	Glu	Gly	Lys	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly
	210					215					220				
gaa	cac	atg	cct	gat	aag	aaa	aag	ttt	gta	aat	gag	ctg	gtg	cg	gtg
Glu	His	Met	Pro	Asp	Lys	Lys	Lys	Phe	Val	Asn	Glu	Leu	Val	Arg	Val
225					230					235					240
gct	gct	cct	ggt	gga	aga	ata	atc	atc	gtt	aca	tgg	tgc	cac	agg	gac
Ala	Ala	Pro	Gly	Gly	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp
			245						250					255	
cta	tca	cct	tct	gaa	gaa	tct	ctt	cg	caa	gag	gag	aaa	gat	ttg	cta
Leu	Ser	Pro	Ser	Glu	Glu	Ser	Leu	Arg	Gln	Glu	Glu	Lys	Asp	Leu	Leu
			260					265					270		
aac	aaa	ata	tgt	agt	gct	tat	tat	ctt	cca	gca	tgg	tgc	tct	act	gct
Asn	Lys	Ile	Cys	Ser	Ala	Tyr	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ala
		275					280					285			
gac	tat	gtc	aaa	tta	ctc	gac	tcc	ctc	tca	atg	gag	gac	att	aag	tct
Asp	Tyr	Val	Lys	Leu	Leu	Asp	Ser	Leu	Ser	Met	Glu	Asp	Ile	Lys	Ser
			290			295					300				
gca	gac	tgg	tct	gac	cat	gtc	gct	cca	ttt	tgg	ccg	gca	gtt	ata	aag
Ala	Asp	Trp	Ser	Asp	His	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys
305					310				315						320
tcg	gca	ttg	aca	tgg	aag	ggc	ata	acc	tca	ctg	cta	agg	agc	gga	tgg
Ser	Ala	Leu	Thr	Trp	Lys	Gly	Ile	Thr	Ser	Leu	Leu	Arg	Ser	Gly	Trp
				325					330					335	
aag	act	ata	aga	gga	gca	atg	gtg	atg	cca	ttg	atg	atc	gaa	gga	tat
Lys	Thr	Ile	Arg	Gly	Ala	Met	Val	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr
			340					345					350		
aag	aag	ggc	gtg	atc	aaa	ttt	gcc	atc	att	aca	tgc	cga	aaa	cct	gca
Lys	Lys	Gly	Val	Ile	Lys	Phe	Ala	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Ala
		355					360					365			
tct	taa														
Ser															

&lt;210&gt; 2325

&lt;211&gt; 369

&lt;212&gt; PRT

&lt;213&gt; Perilla frutescens

&lt;400&gt; 2325

## PhoenixTemp32470.tmp.txt

Met Ala Glu Ala Val Thr Pro Gly Ile Cys Thr Thr Gly Trp Arg Arg  
 1 5 10 15  
 Gly Gly Val His Ala Pro Thr Tyr Asn Ile Ser Ile Lys Pro Ala Thr  
 20 25 30  
 Ala Leu Leu Val Gly Cys Thr Thr Lys Thr Lys Ser Ile Thr Ser Phe  
 35 40 45  
 Ser Thr Asp Ser Leu Arg Thr Arg Gly Arg Ala Arg Pro Thr Met  
 50 55 60  
 Ser Leu Asn Ala Ala Ala Ala Glu Met Glu Thr Glu Met Glu Thr Leu  
 65 70 75 80  
 Arg Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Val Trp Glu  
 85 90 95  
 Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Glu Pro Ala Ala  
 100 105 110  
 Asp Val Ser Ile Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile Glu  
 115 120 125  
 Glu Ser Leu Arg Phe Ala Ser Phe Ser Pro Ile Thr Thr Thr Glu Lys  
 130 135 140  
 Pro Lys Asn Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg  
 145 150 155 160  
 Tyr Leu Ala Arg Lys Tyr Gly Ala Lys Leu Ser Arg Ala Ile Thr Leu  
 165 170 175  
 Ser Ser Pro Val Gln Ala Gln Arg Ala Gln Gln Leu Ala Asp Ala Gln  
 180 185 190  
 Gly Leu Asn Gly Lys Val Ser Phe Glu Val Ala Asp Ala Asn Gln  
 195 200 205  
 Pro Phe Pro Glu Gly Lys Phe Asp Leu Val Trp Ser Met Glu Ser Gly  
 210 215 220  
 Glu His Met Pro Asp Lys Lys Lys Phe Val Asn Glu Leu Val Arg Val  
 225 230 235 240  
 Ala Ala Pro Gly Gly Arg Ile Ile Ile Val Thr Trp Cys His Arg Asp  
 245 250 255  
 Leu Ser Pro Ser Glu Glu Ser Leu Arg Gln Glu Glu Lys Asp Leu Leu  
 260 265 270  
 Asn Lys Ile Cys Ser Ala Tyr Tyr Leu Pro Ala Trp Cys Ser Thr Ala  
 275 280 285  
 Asp Tyr Val Lys Leu Leu Asp Ser Leu Ser Met Glu Asp Ile Lys Ser  
 290 295 300  
 Ala Asp Trp Ser Asp His Val Ala Pro Phe Trp Pro Ala Val Ile Lys  
 305 310 315 320  
 Ser Ala Leu Thr Trp Lys Gly Ile Thr Ser Leu Leu Arg Ser Gly Trp  
 325 330 335  
 Lys Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Glu Gly Tyr  
 340 345 350  
 Lys Lys Gly Val Ile Lys Phe Ala Ile Ile Thr Cys Arg Lys Pro Ala  
 355 360 365  
 Ser

&lt;210&gt; 2326

&lt;211&gt; 1047

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1047)

&lt;400&gt; 2326

atg	aaa	gca	act	cta	gca	gca	ccc	tct	tct	ctc	aca	agc	ctc	cct	tat	48
Met	Lys	Ala	Thr	Leu	Ala	Ala	Pro	Ser	Ser	Leu	Thr	Ser	Leu	Pro	Tyr	
1				5				10						15		
cga	acc	aac	tct	tct	ttc	ggc	tca	aag	tca	tcg	ctt	ctc	ttt	cgg	tct	96
Arg	Thr	Asn	Ser	Ser	Phe	Gly	Ser	Lys	Ser	Ser	Leu	Leu	Phe	Arg	Ser	
			20					25					30			
cca	tcc	tcc	tcc	tcc	tca	gtc	tct	atg	acg	aca	acg	cgt	gga	aac	gtg	144
Pro	Ser	Ser	Ser	Ser	Ser	Val	Ser	Met	Thr	Thr	Thr	Arg	Gly	Asn	Val	
			35				40					45				
gct	gtg	gcg	gct	gct	gct	aca	tcc	act	gag	gcg	cta	aga	aaa	gga	ata	192

PhoenixTemp32470.tmp.txt

Ala	Val	Ala	Ala	Ala	Ala	Thr	Ser	Thr	Glu	Ala	Leu	Arg	Lys	Gly	Ile		
50						55					60						
gcg	gag	ttc	tac	aat	gaa	act	tcg	ggt	ttg	tgg	gaa	gag	att	tgg	gga	240	
Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	Gly		
65					70					75					80		
gat	cat	atg	cat	cat	ggc	ttt	tat	gac	cct	gat	tct	tct	gtt	caa	ctt	288	
Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln	Leu		
				85					90					95			
tct	gat	tct	ggt	cac	aag	gaa	gct	cag	atc	cgt	atg	att	gaa	gag	tct	336	
Ser	Asp	Ser	Gly	His	Lys	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	Ser		
			100					105					110				
ctc	cgt	ttt	gcc	ggt	gtt	act	gat	gaa	gag	gag	gag	aaa	aag	ata	aag	384	
Leu	Arg	Phe	Ala	Gly	Val	Thr	Asp	Glu	Glu	Glu	Glu	Lys	Lys	Ile	Lys		
		115					120					125					
aaa	gta	gtg	gat	gtt	ggg	tgt	ggg	att	gga	gga	agc	tca	aga	tat	ctt	432	
Lys	Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu		
	130					135					140						
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Ala	Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val		
	145				150					155					160		
cag	gcc	aag	aga	gcc	aat	gat	ctc	gcg	gct	gct	caa	tca	ctc	gct	cat	528	
Gln	Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ala	His		
				165				170						175			
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Lys	Ala	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp		
			180					185					190				
gga	aaa	ttc	gat	cta	gtg	tgg	tcg	atg	gag	agt	ggt	gag	cat	atg	cct	624	
Gly	Lys	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro		
		195					200					205					
gac	aag	gcc	aag	ttt	gta	aaa	gag	ttg	gta	cgt	gtg	gcg	gct	cca	gga	672	
Asp	Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Ala	Ala	Pro	Gly		
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Gly	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Ala	Gly		
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gag	gaa	gct	ttg	cag	ccg	tgg	gag	caa	aac	atc	ttg	gac	aaa	atc	tgt	768	
Glu	Glu	Ala	Leu	Gln	Pro	Trp	Glu	Gln	Asn	Ile	Leu	Asp	Lys	Ile	Cys		
				245				250						255			
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Lys	Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Asp	Asp	Tyr	Val	Asn		
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Leu	Leu	Gln	Ser	His	Ser	Leu	Gln	Asp	Ile	Lys	Cys	Ala	Asp	Trp	Ser		
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gag	aac	gta	gct	cct	ttc	tgg	cct	gcg	gtt	ata	cgg	act	gca	tta	aca	912	
Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Thr	Ala	Leu	Thr		
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Trp	Lys	Gly	Leu	Val	Ser	Leu	Leu	Arg	Ser	Gly	Met	Lys	Ser	Ile	Lys		
	305				310					315					320		
gga	gca	ttg	aca	atg	cca	ttg	atg	att	gaa	ggt	tac	aag	aaa	ggt	gtc	1008	
Gly	Ala	Leu	Thr	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys	Gly	Val		
				325					330					335			
att	aag	ttt	ggt	atc	atc	act	tgc	cag	aag	cca	ctc	taa				1047	
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<212> PRT

<213> Arabidopsis thaliana

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Pro Ser Ser Ser Ser Ser Val Ser Met Thr Thr Thr Arg Gly Asn Val

35 40 45

## PhoenixTemp32470.tmp.txt

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Ala Glu Phe Tyr Asn Glu Thr Ser Gly Leu Trp Glu Glu Ile Trp Gly  
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85 90 95  
Ser Asp Ser Gly His Lys Glu Ala Gln Ile Arg Met Ile Glu Ser  
100 105 110  
Leu Arg Phe Ala Gly Val Thr Asp Glu Glu Glu Glu Lys Lys Ile Lys  
115 120 125  
Lys Val Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu  
130 135 140  
Ala Ser Lys Phe Gly Ala Glu Cys Ile Gly Ile Thr Leu Ser Pro Val  
145 150 155 160  
Gln Ala Lys Arg Ala Asn Asp Leu Ala Ala Ala Gln Ser Leu Ala His  
165 170 175  
Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Asp Gln Pro Phe Glu Asp  
180 185 190  
Gly Lys Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro  
195 200 205  
Asp Lys Ala Lys Phe Val Lys Glu Leu Val Arg Val Ala Ala Pro Gly  
210 215 220  
Gly Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Ser Ala Gly  
225 230 235 240  
Glu Glu Ala Leu Gln Pro Trp Glu Gln Asn Ile Leu Asp Lys Ile Cys  
245 250 255  
Lys Thr Phe Tyr Leu Pro Ala Trp Cys Ser Thr Asp Asp Tyr Val Asn  
260 265 270  
Leu Leu Gln Ser His Ser Leu Gln Asp Ile Lys Cys Ala Asp Trp Ser  
275 280 285  
Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Arg Thr Ala Leu Thr  
290 295 300  
Trp Lys Gly Leu Val Ser Leu Leu Arg Ser Gly Met Lys Ser Ile Lys  
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Leu Leu Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg  
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gcc ggc ctc tgc ctc cac cac cac cgc cgc cgc cgc agc agc cgg 144  
Ala Gly Leu Cys Leu His His Arg Arg Arg Arg Arg Ser Ser Arg  
35 40 45  
agg acg aaa ctc gcc gtg cgc gcg atg gca ccg acg ttg tcc tcg tcg 192  
Arg Thr Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser  
50 55 60  
tcg acg gcg gcg gca gct ccc ccg ggg ctg aag gag ggc atc gcg ggg 240  
Ser Thr Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly  
65 70 75 80  
ctc tac gac gag tcg tcc ggc gtg tgg gag agc atc tgg ggc gag cac 288  
Leu Tyr Asp Glu Ser Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His  
85 90 95  
atg cac cac ggc ttc tac gac gcc ggc gag gcc gcc tcc atg tcc gac 336  
Met His His Gly Phe Tyr Asp Ala Gly Glu Ala Ala Ser Met Ser Asp

## PhoenixTemp32470.tmp.txt

100																105																110																
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gcc Ala	gtc Val 130	ccc Pro	gat Asp	gat Asp	gcg Ala	gag Glu 135	aag Lys	aaa Lys	ccc Pro	aaa Lys	agt Ser 140	gta Val	gtt Val	gat Asp	gtt Val	432																																
ggc Gly 145	tgt Cys	ggc Gly	att Ile	ggt Gly	ggt Gly 150	agc Ser	tca Ser	aga Arg	tac Tyr	ttg Leu 155	gcg Ala	aac Asn	aaa Lys	tac Tyr	gga Gly 160	480																																
gcg Ala	caa Gln	tgc Cys	tac Tyr	ggc Gly 165	atc Ile	acg Thr	ttg Leu	agt Ser	ccg Pro 170	gtg Val	cag Gln	gct Ala	gaa Glu	aga Arg 175	gga Gly	528																																
aat Asn	gcc Ala	ctc Leu	gcg Ala 180	gca Ala	gag Glu	caa Gln	ggg Gly 185	tta Leu	tca Ser	gac Asp	aag Lys	gtc Val	tcc Ser 190	ttt Phe	caa Gln	576																																
gtt Val	ggt Gly	gat Asp 195	gca Ala	ttg Leu	gag Glu	cag Gln	cct Pro 200	ttt Phe	cct Pro	gat Asp	ggg Gly 205	cag Gln	ttt Phe	gat Asp	ctt Leu	624																																
gtc Val	tgg Trp 210	tcc Ser	atg Met	gag Glu	agt Ser	ggc Gly 215	gag Glu	cac His	atg Met	cca Pro 220	gac Asp 225	aaa Lys	cgg Arg	cag Gln	ttt Phe	672																																
gta Val 225	agc Ser	gag Glu	ctg Leu	gca Ala	cgc Arg 230	gtc Val	gca Ala	gct Ala	cct Pro	ggg Gly 235	gcg Ala	aga Arg	ata Ile	atc Ile	att Ile 240	720																																
gtg Val	acc Thr	tgg Trp	tgc Cys	cat His 245	agg Arg	aac Asn	ctc Leu	gag Glu	cca Pro 250	tcc Ser	gaa Glu	gag Glu	tcc Ser	ctg Leu 255	aaa Lys	768																																
cct Pro	gat Asp	gag Glu	ctg Leu 260	aat Asn	ctc Leu	ctg Leu	aaa Lys	agg Arg 265	ata Ile	tgc Cys	gat Asp	gca Ala 270	tat Tyr 275	tat Tyr	ctc Leu	816																																
cca Pro	gac Asp	tgg Trp 275	tgc Cys	tct Ser	cct Pro	tct Ser	gat Asp 280	tat Tyr	gtc Val	aaa Lys	att Ile	gcc Ala 285	gag Glu	tca Ser	ctg Leu	864																																
tct Ser	ctt Leu 290	gag Glu	gat Asp	ata Ile	agg Arg	aca Thr 295	gct Ala	gat Asp	tgg Trp	tca Ser	gag Glu 300	aac Asn	gtc Val	gcc Ala	cca Pro	912																																
ttc Phe 305	tgg Trp	cct Pro	gcg Ala	gtt Val	ata Ile 310	aaa Lys	tca Ser	gca Ala	ttg Leu	aca Thr 315	tgg Trp	aaa Lys	ggt Gly	tta Leu	act Thr 320	960																																
tct Ser	ctg Leu	cta Leu	aga Arg	agt Ser 325	ggg Gly	tgg Trp	aag Lys	acg Thr	ata Ile 330	aga Arg	ggt Gly	gca Ala	atg Met	gtg Val 335	atg Met	1008																																
cct Pro	ctg Leu	atg Met	atc Ile 340	gaa Glu	gga Gly	tac Tyr	aag Lys	aaa Lys 345	ggg Gly	ctc Leu	atc Ile	aaa Lys	ttc Phe 350	acc Thr	atc Ile	1056																																
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Ala	Gly	Leu	Cys	Leu	His	His	His	Arg	Arg	Arg	Arg	Arg	Arg	Ser	Ser	Arg
		35					40						45			
Arg	Thr	Lys	Leu	Ala	Val	Arg	Ala	Met	Ala	Pro	Thr	Leu	Ser	Ser	Ser	
	50					55					60					
Ser	Thr	Ala	Ala	Ala	Ala	Pro	Pro	Gly	Leu	Lys	Glu	Gly	Ile	Ala	Gly	
65					70					75					80	
Leu	Tyr	Asp	Glu	Ser	Gly	Val	Trp	Glu	Ser	Ile	Trp	Gly	Glu	Gly	His	
				85				90					95			
Met	His	His	Gly	Phe	Tyr	Asp	Ala	Gly	Glu	Ala	Ala	Ser	Met	Ser	Asp	

## PhoenixTemp32470.tmp.txt

100 105 110  
 His Arg Arg Ala Gln Ile Arg Met Ile Glu Glu Ser Leu Phe Ala  
 115 120 125  
 Ala Val Pro Asp Asp Ala Glu Lys Lys Pro Lys Ser Val Val Asp Val  
 130 135 140  
 Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu Ala Asn Lys Tyr Gly  
 145 150 155 160  
 Ala Gln Cys Tyr Gly Ile Thr Leu Ser Pro Val Gln Ala Glu Arg Gly  
 165 170 175  
 Asn Ala Leu Ala Ala Glu Gln Gly Leu Ser Asp Lys Val Ser Phe Gln  
 180 185 190  
 Val Gly Asp Ala Leu Glu Gln Pro Phe Pro Asp Gly Gln Phe Asp Leu  
 195 200 205  
 Val Trp Ser Met Glu Ser Gly Glu His Met Pro Asp Lys Arg Gln Phe  
 210 215 220  
 Val Ser Glu Leu Ala Arg Val Ala Ala Pro Gly Ala Arg Ile Ile Ile  
 225 230 235 240  
 Val Thr Trp Cys His Arg Asn Leu Glu Pro Ser Glu Glu Ser Leu Lys  
 245 250 255  
 Pro Asp Glu Leu Asn Leu Leu Lys Arg Ile Cys Asp Ala Tyr Tyr Leu  
 260 265 270  
 Pro Asp Trp Cys Ser Pro Ser Asp Tyr Val Lys Ile Ala Glu Ser Leu  
 275 280 285  
 Ser Leu Glu Asp Ile Arg Thr Ala Asp Trp Ser Glu Asn Val Ala Pro  
 290 295 300  
 Phe Trp Pro Ala Val Ile Lys Ser Ala Leu Thr Trp Lys Gly Leu Thr  
 305 310 315 320  
 Ser Leu Leu Arg Ser Gly Trp Lys Thr Ile Arg Gly Ala Met Val Met  
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 acg ttc cgt tcc caa tcc cct cgc act ttc gcc aga atc cgg gtc gga 96  
 Thr Phe Arg Ser Gln Ser Pro Arg Thr Phe Ala Arg Ile Arg Val Gly  
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 ccc agg tcg tgg gct cct att cgg gca tcg gca gcg agc tcg gag aga 144  
 Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ser Ser Glu Arg  
 35 40 45  
 ggg gag ata gta ttg gag cag aag ccg aag aag gat gac aag aag aag 192  
 Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys  
 50 55 60  
 ctg cag aag gga atc gca gag ttt tac gag gag tct tct ggc tta tgg 240  
 Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp  
 65 70 75 80  
 gag aac att tgg ggc gac cac atg cac cat ggc ttt tat gac tcg gat 288  
 Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp  
 85 90 95  
 tcc act gtt tcg ctt tcg gat cat cgt gct gct cag atc cga atg atc 336  
 Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile  
 100 105 110  
 caa gag tct ctt cgc ttt gcc tct gtt tct gag gag cgt agt aaa tgg 384  
 Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp  
 115 120 125  
 ccc aag agt ata gtt gat gtt ggg tgt ggc ata ggt ggc agc tcc aga 432  
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## PhoenixTemp32470.tmp.txt

Pro	Lys	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	
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Tyr	Leu	Ala	Lys	Lys	Phe	Gly	Ala	Thr	Ser	Val	Gly	Ile	Thr	Leu	Ser	
145					150					155					160	
cct	gtt	caa	gct	caa	aga	gca	aat	gct	ctt	gct	gct	gct	caa	gga	ttg	528
Pro	Val	Gln	Ala	Gln	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	Leu	
				165					170					175		
gct	gat	aag	gtt	tcc	ttt	gag	gtt	gct	gac	gct	cta	aag	caa	cca	ttc	576
Ala	Asp	Lys	Val	Ser	Phe	Glu	Val	Ala	Asp	Ala	Leu	Lys	Gln	Pro	Phe	
			180					185					190			
tct	gac	ggg	aag	ttt	gat	ctg	gtg	tgg	tcc	atg	gag	agt	gga	gag	cat	624
Ser	Asp	Gly	Lys	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	
		195					200				205					
atg	cct	gac	aaa	gct	aag	ttt	gtt	gga	gag	tta	gct	cgg	gta	gca	gca	672
Met	Pro	Asp	Lys	Ala	Lys	Phe	Val	Gly	Glu	Leu	Ala	Arg	Val	Ala	Ala	
210					215					220						
cca	ggt	gcc	act	ata	ata	ata	gta	aca	tgg	tgc	cac	agg	gat	ctt	ggc	720
Pro	Gly	Ala	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly	
225				230						235					240	
cct	gac	gaa	caa	tcc	tta	cat	cca	tgg	gag	caa	gat	ctc	tta	aag	aag	768
Pro	Asp	Glu	Gln	Ser	Leu	His	Pro	Trp	Glu	Gln	Asp	Leu	Leu	Lys	Lys	
				245				250					255			
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Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ser	Asp	Tyr	
			260					265				270				
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Val	Lys	Leu	Leu	Gln	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Glu	Asp	
		275					280					285				
tgg	tct	cgc	ttt	gtt	gct	cca	ttt	tgg	cca	gca	gtg	ata	cgc	tca	gcc	912
Trp	Ser	Arg	Phe	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala	
290						295					300					
ttc	aca	tgg	aag	ggt	cta	act	tca	ctc	ttg	agc	agt	gga	caa	aaa	acg	960
Phe	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Ser	Ser	Gly	Gln	Lys	Thr	
305				310						315					320	
ata	aaa	gga	gct	ttg	gct	atg	cca	ttg	atg	ata	gag	gga	tac	aag	aaa	1008
Ile	Lys	Gly	Ala	Leu	Ala	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys	
				325				330						335		
gat	cta	att	aag	ttt	gcc	atc	att	aca	tgt	cga	aaa	cct	gaa	taa		1053
Asp	Leu	Ile	Lys	Phe	Ala	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Glu			
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 35 40 45  
 Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys  
 50 55 60  
 Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp  
 65 70 75 80  
 Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp  
 85 90 95  
 Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile  
 100 105 110  
 Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp  
 115 120 125  
 Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg  
 130 135 140  
 Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser  
 145 150 155 160  
 Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu



PhoenixTemp32470.tmp.txt

				165				170					175				
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Ser	Asp	Gly	Lys	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His		
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Met	Pro	Asp	Lys	Ala	Lys	Phe	Val	Gly	Glu	Leu	Ala	Arg	Val	Ala	Ala		
	210					215					220						
Pro	Gly	Ala	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly		
225					230					235					240		
Pro	Asp	Glu	Gln	Ser	Leu	His	Pro	Trp	Glu	Gln	Asp	Leu	Leu	Lys	Lys		
			245						250					255			
Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ser	Asp	Tyr		
			260					265					270				
Val	Lys	Leu	Leu	Gln	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Glu	Asp		
		275					280					285					
Trp	Ser	Arg	Phe	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala		
	290					295				300							
Phe	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	Ser	Ser	Gly	Gln	Lys	Thr		
305					310					315					320		
Ile	Lys	Gly	Ala	Leu	Ala	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys		
			325						330					335			
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<220>  
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 <222> (6)..(11)  
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 <222> (12)..(13)  
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<220>

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<222> (143)..(147)

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<223> Xaa in position 149 to 150 is any amino acid

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<223> Xaa in position 173 to 174 is any amino acid

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<220>  
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<222> (223)..(241)  
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<220>

&lt;221&gt; Variant

&lt;222&gt; (253)..(253)

&lt;223&gt; Xaa in position 253 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (255)..(257)

&lt;223&gt; Xaa in position 255 to 257 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (259)..(285)

&lt;223&gt; Xaa in position 259 to 285 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (286)..(287)

&lt;223&gt; Xaa in position 286 to 287 is any or no amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (290)..(295)

&lt;223&gt; Xaa in position 290 to 295 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (297)..(299)

&lt;223&gt; Xaa in position 297 to 299 is any amino acid

&lt;400&gt; 2334

Ala	Xaa	Xaa	Tyr	Asp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Glu	Xaa	Xaa
1				5					10					15	
Trp	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	His	Xaa	His	Xaa	Gly	Xaa	Tyr
			20					25					30		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			35				40					45			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			50			55				60					
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
65					70				75						80
Xaa	Xaa	Xaa	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Xaa	Arg	Xaa	Leu
				85					90					95	
Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Gly	Ile	Thr	Xaa
				100				105					110		
Ser	Xaa	Pro	Xaa	Gln	Xaa	Xaa	Arg	Ala	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa
		115					120					125			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Xaa	Val	Xaa	Asp	Ala	Leu	Xaa	Xaa
		130				135					140				
Xaa	Xaa	Xaa	Asp	Xaa	Xaa	Phe	Asp	Xaa	Val	Trp	Ser	Xaa	Glu	Xaa	Gly
145					150				155						160
Xaa	His	Met	Pro	Asp	Lys	Xaa	Xaa	Xaa	Xaa	Xaa	Glu	Xaa	Xaa	Arg	Val
				165					170					175	
Xaa	Xaa	Pro	Gly	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Trp	Xaa	Xaa	Arg	Xaa
			180					185						190	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Glu	Xaa	Xaa	Xaa	Xaa
			195				200					205			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Xaa	Xaa	Ser	Xaa	Xaa
		210				215					220				
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
225					230				235						240
Xaa	Xaa	Xaa	Xaa	Asp	Trp	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Trp	Xaa	Xaa
				245					250					255	
Xaa	Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			260					265					270		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu
			275				280					285			
Met	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Xaa	Phe				
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<211> 52  
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<220>  
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<220>  
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<220>  
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<223> Xaa in position 8 is any or no amino acid

<220>  
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<223> Xaa in position 10 is any amino acid

<220>  
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<220>  
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<222> (20)..(20)  
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<223> Xaa in position 22 is any amino acid

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<220>  
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<222> (26)..(26)  
<223> Xaa in position 26 is Asp or Asn

<220>  
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<223> Xaa in position 30 is Phe or Tyr

<220>  
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<223> Xaa in position 31 is Ala, Gly, Ile, Leu or Val

<220>  
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<223> Xaa in position 32 is any amino acid

<220>  
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<223> Xaa in position 34 to 35 is any amino acid

<220>  
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<222> (37)..(39)  
<223> Xaa in position 37 to 39 is any amino acid

<220>  
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<223> Xaa in position 42 is Ala or Gly

<220>  
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<222> (43)..(43)  
<223> Xaa in position 43 is any amino acid

<220>  
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<223> Xaa in position 44 is Phe, Ile, Leu or Met

<220>  
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<223> Xaa in position 45 is Ala, Ile, Leu or Val

<220>  
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<222> (46)..(46)  
<223> Xaa in position 46 is any amino acid

<220>  
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<222> (47)..(47)  
<223> Xaa in position 47 is Ala or Val

<220>  
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<222> (48)..(48)  
<223> Xaa in position 48 is Cys, Asp or Thr

<220>  
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<222> (50)..(50)  
<223> Xaa in position 50 is Cys or Asn

<220>  
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<223> Xaa in position 51 is any amino acid

PhoenixTemp32470.tmp.txt

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 1 5 10 15  
 Xaa Xaa Glu Xaa Gly Xaa His Met Xaa Xaa Lys Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Glu Xaa Xaa Arg Xaa Xaa Xaa Pro Gly Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Trp Xaa Xaa Arg  
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<210> 2336  
 <211> 16  
 <212> PRT  
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<220>  
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<220>  
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<220>  
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 <222> (10)..(10)  
 <223> Xaa in position 10 is any amino acid

<220>  
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 <222> (11)..(11)  
 <223> Xaa in position 11 is Ile or Leu

<220>  
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 <223> Xaa in position 13 to 14 is any amino acid

<220>  
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<220>  
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 <223> Xaa in position 16 is Glu, Gly, Asn or Gln

<400> 2336  
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 1 5 10 15

<210> 2337  
 <211> 13  
 <212> PRT  
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<220>  
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<220>  
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 <223> Xaa in position 2 to 3 is any amino acid



<220>  
 <221> Variant  
 <222> (6)..(6)  
 <223> Xaa in position 6 is Asp or Glu  
  
 <220>  
 <221> Variant  
 <222> (8)..(8)  
 <223> Xaa in position 8 is Ile, Met or Val  
  
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 <221> Variant  
 <222> (10)..(10)  
 <223> Xaa in position 10 is any amino acid  
  
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 <221> Variant  
 <222> (12)..(12)  
 <223> Xaa in position 12 is Phe, His or Tyr  
  
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 1 5 10  
  
 <210> 2338  
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 <212> PRT  
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 <222> (5)..(5)  
 <223> Xaa in position 5 is any or no amino acid  
  
 <220>  
 <221> Variant  
 <222> (7)..(8)  
 <223> Xaa in position 7 to 8 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (9)..(9)  
 <223> Xaa in position 9 is Ala or Gly  
  
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 <222> (10)..(10)  
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 <222> (13)..(13)  
 <223> Xaa in position 13 is Asp or Gly  
  
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<210> 2339
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<212> PRT
<213> Artificial sequence
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<220>  
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<223> Xaa in position 2 is Asn, Ser or Thr
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<220>  
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<223> Xaa in position 3 to 4 is any amino acid
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<220>
<221> variant
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<223> Xaa in position 5 is Thr or Val
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<220>
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<220>
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<223> Xaa in position 11 is Ala, Asp or Glu
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<220>  
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 <223> Xaa in position 12 is Ser, Thr or Val

<400> 2339  
 Trp Xaa Xaa Xaa Xaa Xaa Pro Xaa Trp Xaa Xaa Xaa Ile  
 1 5 10

<210> 2340  
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 <223> Xaa in position 3 is Ser or Thr

<220>  
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 <222> (4)..(4)  
 <223> Xaa in position 4 is Ile or Leu

<220>  
 <221> Variant  
 <222> (7)..(7)  
 <223> Xaa in position 7 is any amino acid

<220>  
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 <223> Xaa in position 9 is Ala, Cys or Val

<220>  
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<400> 2340  
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 1 5 10

<210> 2341  
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 <213> Saccharomyces cerevisiae

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<400> 2341  
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 Met Leu Phe Leu Tyr Thr Tyr Val Tyr Val Phe Leu Cys Thr Asn Asn  
 1 5 10 15  
 gat gtt tac aat gaa aca tct gtt atg cta tca aaa acg tca gcg cat 96  
 Asp Val Tyr Asn Glu Thr Ser Val Met Leu Ser Lys Thr Ser Ala His  
 20 25 30  
 tgt ttt ata gct gaa gaa gtt aca acg gat aac ggt ctg att tgc ggc 144  
 Cys Phe Ile Ala Glu Glu Val Thr Thr Asp Asn Gly Leu Ile Cys Gly  
 35 40 45  
 ctg gca atg ctt ggt aaa act aaa tat caa ttt tac gaa tta ttt act 192  
 Leu Ala Met Leu Gly Lys Thr Lys Tyr Gln Phe Tyr Glu Leu Phe Thr  
 50 55 60

## PhoenixTemp32470.tmp.txt

gta tat agt att cag tcc ctc act caa ctg gcg tca aga gtg aag aag 240  
 Val Tyr Ser Ile Gln Ser Leu Thr Gln Leu Ala Ser Arg Val Lys Lys  
 65 70 75 80  
 ggc ggc ctc att atg gct cgc ctt att ctg ttc acc ctc tgc gct ctt 288  
 Gly Gly Leu Ile Met Ala Arg Leu Ile Leu Phe Thr Leu Cys Ala Leu  
 85 90 95  
 ccc gta tta ttt cat ttt att ttg ttt atg ctt caa tat ctt gta ttt 336  
 Pro Val Leu Phe His Phe Ile Leu Phe Met Leu Gln Tyr Leu Val Phe  
 100 105 110  
 gtt tac att gaa aaa tga 354  
 Val Tyr Ile Glu Lys  
 115

&lt;210&gt; 2342

&lt;211&gt; 117

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2342

Met Leu Phe Leu Tyr Thr Tyr Val Tyr Val Phe Leu Cys Thr Asn Asn  
 1 5 10 15  
 Asp Val Tyr Asn Glu Thr Ser Val Met Leu Ser Lys Thr Ser Ala His  
 20 25 30  
 Cys Phe Ile Ala Glu Glu Val Thr Asp Asn Gly Leu Ile Cys Gly  
 35 40 45  
 Leu Ala Met Leu Gly Lys Thr Lys Tyr Gln Phe Tyr Glu Leu Phe Thr  
 50 55 60  
 Val Tyr Ser Ile Gln Ser Leu Thr Gln Leu Ala Ser Arg Val Lys Lys  
 65 70 75 80  
 Gly Gly Leu Ile Met Ala Arg Leu Ile Leu Phe Thr Leu Cys Ala Leu  
 85 90 95  
 Pro Val Leu Phe His Phe Ile Leu Phe Met Leu Gln Tyr Leu Val Phe  
 100 105 110  
 Val Tyr Ile Glu Lys  
 115

&lt;210&gt; 2343

&lt;211&gt; 28

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 2343

atgttggttct tatatacata tgtttatg 28

&lt;210&gt; 2344

&lt;211&gt; 28

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 2344

tcatttttca atgtaaaca atacaaga 28

&lt;210&gt; 2345

&lt;211&gt; 1284

&lt;212&gt; DNA

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1284)

&lt;400&gt; 2345

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## PhoenixTemp32470.tmp.txt

Met 1	His	His	Asn	Ser 5	Gln	Ser	Leu	Ser	Ser 10	Gly	His	Ile	Arg	Ser 15	Pro	
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tcc Ser	ctc Leu	agt Ser 35	cat His	att Ile	tca Ser	tct Ser	gcg Ala 40	cac His	ccg Pro	agg Arg	gtc Val	gca Ala 45	ctt Leu	agc Ser	gac Asp	144
gtt Val	acc Thr 50	aat Asn	ata Ile	gtt Val	gcg Ala	aca Thr 55	aac Asn	tct Ser	agc Ser	aac Asn	aac Asn 60	agc Ser	ata Ile	agt Ser	aag Lys	192
cca Pro 65	aaa Lys	gtc Val	gcc Ala	cca Pro	att Ile 70	aaa Lys	gaa Glu	aga Arg	ttg Leu	gat Asp 75	tca Ser	gct Ala	gcg Ala	ata Ile	att Ile 80	240
gag Glu	gaa Glu	gaa Glu	agg Arg 85	ctg Leu	gat Asp	gcg Ala	aat Asn	agt Ser	gtt Val 90	gca Ala	cag Gln	aga Arg	aaa Lys	gaa Glu 95	gct Ala	288
gat Asp	cat His	aac Asn	gat Asp 100	ttg Leu	tta Leu	acg Thr	gac Asp	agg Arg 105	gaa Glu	caa Gln	gag Glu	gaa Glu	ccc Pro 110	gtt Val	gaa Glu	336
gac Asp	gac Asp	gga Gly 115	gaa Glu	agc Ser	gaa Glu	gag Glu	gat Asp 120	gaa Glu	gaa Glu	gaa Glu	gac Asp	cag Gln 125	gag Glu	cct Pro	cta Leu	384
ctg Leu 130	ttg Leu	caa Gln	cat His	tat Tyr	gct Ala	agt Ser 135	gat Asp	aca Thr	ttg Leu	gtc Val	tgg Trp 140	gag Glu	cat His	gca Ala	ttt Phe	432
aga Arg 145	act Thr	tac Tyr	tat Tyr	aga Arg	act Thr 150	aca Thr	tta Leu	gat Asp	ccc Pro	aat Asn 155	gat Asp	gat Asp	gac Asp	gtg Val	tac Tyr 160	480
gat Asp	gtg Val	gtc Val	atg Met	gtt Val 165	gcc Ala	gaa Glu	tta Leu	tct Ser	aat Asn 170	gag Glu	ata Ile	ttc Phe	gag Glu	tat Tyr 175	atg Met	528
agg Arg	aaa Lys	ttg Leu	gaa Glu 180	gac Asp	ctg Leu	tat Tyr	aaa Lys	ccc Pro 185	aac Asn	ccg Pro	tac Tyr	tac Tyr	atg Met 190	gat Asp	aaa Lys	576
caa Gln	cca Pro	gag Glu 195	tta Leu	aga Arg	tggt Trp	tcg Ser	ttt Phe 200	cga Arg	agc Ser	aca Thr	ctg Leu	att Ile 205	gat Asp	tggt Trp	atc Ile	624
gtc Val	caa Gln 210	gta Val	cat His	gaa Glu	aaa Lys	ttt Phe 215	caa Gln	ctt Leu	tta Leu	cct Pro	gaa Glu 220	act Thr	cta Leu	tat Tyr	ctc Leu	672
tgc Cys 225	att Ile	aat Asn	ata Ile	ata Ile	gac Asp 230	aga Arg	tat Tyr	ctg Leu	tgc Cys 235	aaa Lys	gaa Glu	gtt Val	gtt Val	cct Pro	gta Val 240	720
aat Asn	aag Lys	ttc Phe	caa Gln	ctt Leu 245	gtg Val	ggt Gly	gca Ala	gcc Ala	tca Ser 250	ctc Leu	ttc Phe	att Ile	gct Ala	gct Ala 255	aaa Lys	768
tat Tyr	gag Glu	gaa Glu	atc Ile 260	aac Asn	tgt Cys	cct Pro	aca Thr	atc Ile 265	aag Lys	gat Asp	ttc Phe	gta Val	tac Tyr 270	atg Met	tca Ser	816
gaa Glu	aac Asn	tcg Cys 275	tac Tyr	tca Ser	agg Arg	aac Asn	gac Asp 280	ctg Leu	ctg Leu	gac Asp	gca Ala	gaa Glu 285	aga Arg	act Thr	att Ile	864
ttg Leu	aac Asn 290	ggc Gly	tta Leu	gaa Glu	ttt Phe 295	gaa Glu	ttg Leu	ggt Gly	tgg Trp	cct Pro	ggt Gly 300	ccg Pro	atg Met	tca Ser	ttt Phe	912
tta Leu 305	cga Arg	aga Arg	atc Ile	agt Ser	aag Lys 310	gca Ala	gat Asp	tac Tyr	gag Glu 315	cat His	gat Asp	acg Thr	aga Arg	aca Thr 320		960
ctg Leu	gcc Ala	aaa Lys	tat Tyr 325	cta Leu	ttg Leu	gaa Glu	tcc Ser	aca Thr	ata Ile 330	atg Met	gac Asp	cat His	cga Arg	ctg Leu 335	gtt Val	1008
tcc Ser	gct Ala	caa Gln 340	cct Pro	agt Ser	tggt Trp	tta Leu	gct Ala	gcc Ala 345	ggt Gly	gca Ala	tac Tyr	ttt Phe	cta Leu 350	agt Ser	aag Lys	1056
att Ile	att Ile	ctg Leu 355	ggc Gly	caa Gln	aat Asn	cag Gln	tggt Trp 360	tct Ser	ctg Leu	gcg Ala	cac His	gtc Val 365	tac Tyr	tat Tyr	tcc Ser	1104
aat Ile	tat Ile	aca Ile	caa Ile	gaa Ile	caa Ile	att Ile	ctt Ile	ccg Ile	ttg Ile	gcc Ile	acc Ile	att Ile	att Ile	tta Ile	gaa Ile	1152

## PhoenixTemp32470.tmp.txt

Asn	Tyr	Thr	Gln	Glu	Gln	Ile	Leu	Pro	Leu	Ala	Thr	Ile	Ile	Leu	Glu	
370						375				380						
aat	tgc	aga	tat	gcc	tct	aaa	cgt	cat	aac	gcc	ata	tggt	aga	aaa	tat	1200
Asn	Cys	Arg	Tyr	Ala	Ser	Lys	Arg	His	Asn	Ala	Ile	Trp	Arg	Lys	Tyr	
385					390					395					400	
tct	tca	cgt	cgt	tat	ttg	cat	tct	tca	cag	atc	gta	gcg	aag	tggt	ata	1248
Ser	Ser	Arg	Arg	Tyr	Leu	His	Ser	Ser	Gln	Ile	Val	Ala	Lys	Trp	Ile	
				405					410					415		
gca	tta	gct	gaa	cac	aga	gta	gaa	aga	tct	aac	taa					1284
Ala	Leu	Ala	Glu	His	Arg	Val	Glu	Arg	Ser	Asn						
			420				425									

&lt;210&gt; 2346

&lt;211&gt; 427

&lt;212&gt; PRT

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;400&gt; 2346

Met	His	His	Asn	Ser	Gln	Ser	Leu	Ser	Ser	Gly	His	Ile	Arg	Ser	Pro	
1				5					10					15		
Glu	Asp	Glu	Asn	Val	Ala	Pro	Ile	Gly	Asn	Leu	Lys	His	Arg	Thr	Gly	
			20					25					30			
Ser	Leu	Ser	His	Ile	Ser	Ser	Ala	His	Pro	Arg	Val	Ala	Leu	Ser	Asp	
		35					40					45				
Val	Thr	Asn	Ile	Val	Ala	Thr	Asn	Ser	Ser	Asn	Asn	Ser	Ile	Ser	Lys	
	50					55				60						
Pro	Lys	Val	Ala	Pro	Ile	Lys	Glu	Arg	Leu	Asp	Ser	Ala	Ala	Ile	Ile	
65					70					75					80	
Glu	Glu	Glu	Arg	Leu	Asp	Ala	Asn	Ser	Val	Ala	Gln	Arg	Lys	Glu	Ala	
				85					90					95		
Asp	His	Asn	Asp	Leu	Leu	Thr	Asp	Arg	Glu	Gln	Glu	Glu	Pro	Val	Glu	
			100				105						110			
Asp	Asp	Gly	Glu	Ser	Glu	Glu	Asp	Glu	Glu	Glu	Asp	Gln	Glu	Pro	Leu	
		115					120					125				
Leu	Leu	Gln	His	Tyr	Ala	Ser	Asp	Thr	Leu	Val	Trp	Glu	His	Ala	Phe	
	130					135					140					
Arg	Thr	Tyr	Tyr	Arg	Thr	Thr	Leu	Asp	Pro	Asn	Asp	Asp	Asp	Val	Tyr	
145					150					155					160	
Asp	Val	Val	Met	Val	Ala	Glu	Leu	Ser	Asn	Glu	Ile	Phe	Glu	Tyr	Met	
			165						170					175		
Arg	Lys	Leu	Glu	Asp	Leu	Tyr	Lys	Pro	Asn	Pro	Tyr	Tyr	Met	Asp	Lys	
		180						185					190			
Gln	Pro	Glu	Leu	Arg	Trp	Ser	Phe	Arg	Ser	Thr	Leu	Ile	Asp	Trp	Ile	
		195					200					205				
Val	Gln	Val	His	Glu	Lys	Phe	Gln	Leu	Leu	Pro	Glu	Thr	Leu	Tyr	Leu	
	210					215					220					
Cys	Ile	Asn	Ile	Ile	Asp	Arg	Tyr	Leu	Cys	Lys	Glu	Val	Val	Pro	Val	
225					230					235					240	
Asn	Lys	Phe	Gln	Leu	Val	Gly	Ala	Ala	Ser	Leu	Phe	Ile	Ala	Ala	Lys	
			245						250					255		
Tyr	Glu	Glu	Ile	Asn	Cys	Pro	Thr	Ile	Lys	Asp	Phe	Val	Tyr	Met	Ser	
			260					265					270			
Glu	Asn	Cys	Tyr	Ser	Arg	Asn	Asp	Leu	Leu	Asp	Ala	Glu	Arg	Thr	Ile	
		275					280					285				
Leu	Asn	Gly	Leu	Glu	Phe	Glu	Leu	Gly	Trp	Pro	Gly	Pro	Met	Ser	Phe	
	290					295					300					
Leu	Arg	Arg	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Glu	His	Asp	Thr	Arg	Thr	
305					310					315					320	
Leu	Ala	Lys	Tyr	Leu	Leu	Glu	Ser	Thr	Ile	Met	Asp	His	Arg	Leu	Val	
				325					330					335		
Ser	Ala	Gln	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	Tyr	Phe	Leu	Ser	Lys	
		340						345					350			
Ile	Ile	Leu	Gly	Gln	Asn	Gln	Trp	Ser	Leu	Ala	His	Val	Tyr	Tyr	Ser	
		355					360					365				
Asn	Tyr	Thr	Gln	Glu	Gln	Ile	Leu	Pro	Leu	Ala	Thr	Ile	Ile	Leu	Glu	
	370					375					380					
Asn	Cys	Arg	Tyr	Ala	Ser	Lys	Arg	His	Asn	Ala	Ile	Trp	Arg	Lys	Tyr	
385					390					395					400	
Ser	Ser	Arg	Arg	Tyr	Leu	His	Ser	Ser	Gln	Ile	Val	Ala	Lys	Trp	Ile	

Ala Leu Ala Glu His Arg Val Glu Arg Ser Asn  
 405 410 415  
 420 425

<210> 2347  
 <211> 1578  
 <212> DNA  
 <213> Bombyx mori

<220>  
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 <222> (1)..(1578)

<400> 2347  
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 Met Glu Ile Gln Leu Arg Arg His Arg Ser Ala Gln Ile Gln Asp Gln  
 1 5 10 15  
 gaa aat ctg tat gct ggt gtc cgc ggg aaa ggt aat gga gcc gtc cct 96  
 Glu Asn Leu Tyr Ala Gly Val Arg Gly Lys Gly Asn Gly Ala Val Pro  
 20 25 30  
 aca aaa agg ctg gga tta aca gta cgt ggg gcg tta ggt gat ttg aac 144  
 Thr Lys Arg Leu Gly Leu Thr Val Arg Gly Ala Leu Gly Asp Leu Asn  
 35 40 45  
 aca aat gtg caa gtt caa cgc gaa gct ctc ggc aaa gtt gcc gtt aca 192  
 Thr Asn Val Gln Val Gln Arg Glu Ala Leu Gly Lys Val Ala Val Thr  
 50 55 60  
 act gct gaa ttt gag aaa aaa gcc acc cta aac cgt ggc gta gta cga 240  
 Thr Ala Glu Phe Glu Lys Lys Ala Thr Leu Asn Arg Gly Val Val Arg  
 65 70 75 80  
 agc aac tat agt cat gta aca tca aaa gta gac aca gga tta gct gtc 288  
 Ser Asn Tyr Ser His Val Thr Ser Lys Val Asp Thr Gly Leu Ala Val  
 85 90 95  
 aaa aat gtt att cag cca tct tca agg ccc cca ctc cgc cgt gaa gag 336  
 Lys Asn Val Ile Gln Pro Ser Ser Arg Pro Pro Leu Arg Arg Glu Glu  
 100 105 110  
 agc act gct gga ttg acc gcc aga gct gta act cgt acc agg gtc gct 384  
 Ser Thr Ala Gly Leu Thr Ala Arg Ala Val Thr Arg Thr Arg Val Ala  
 115 120 125  
 tta aaa gat aat cag aac aag cca aat gaa ata aaa gaa tca att aac 432  
 Leu Lys Asp Asn Gln Asn Lys Pro Asn Glu Ile Lys Glu Ser Ile Asn  
 130 135 140  
 atc tac ata caa act aag aaa tgt caa gac aca aaa aag aca aag ctg 480  
 Ile Tyr Ile Gln Thr Lys Lys Cys Gln Asp Thr Lys Lys Thr Lys Leu  
 145 150 155 160  
 ccc atg cta aag gaa aat aaa gaa tta aga aca tcc aaa tca cat cta 528  
 Pro Met Leu Lys Glu Asn Lys Glu Leu Arg Thr Ser Lys Ser His Leu  
 165 170 175  
 aaa gat gga act gac tct tta cgg aaa aca aaa cta gca tta aaa gac 576  
 Lys Asp Gly Thr Asp Ser Leu Arg Lys Thr Lys Leu Ala Leu Lys Asp  
 180 185 190  
 cca atc gaa tca tta gga aag tta aaa cta gct gaa aca tac cct gag 624  
 Pro Ile Glu Ser Leu Gly Lys Leu Lys Leu Ala Glu Thr Tyr Pro Glu  
 195 200 205  
 aag gga atg ggc tta ata gat aaa gcc aag gta gaa aag caa gct gaa 672  
 Lys Gly Met Gly Leu Ile Asp Lys Ala Lys Val Glu Lys Gln Ala Glu  
 210 215 220  
 ttc ttt gaa act gtg ttt gat att aca cct cca ctg cct gag gat att 720  
 Phe Phe Glu Thr Val Phe Asp Ile Thr Pro Pro Leu Pro Glu Asp Ile  
 225 230 235 240  
 gaa gat att gat gcc gga gac aac aac agc cct ttg cta atg tct atg 768  
 Glu Asp Ile Asp Ala Gly Asp Asn Asn Ser Pro Leu Leu Met Ser Met  
 245 250 255  
 tat atc aag gac att tac aaa tac ttg act gaa ttg gaa gag aaa tat 816  
 Tyr Ile Lys Asp Ile Tyr Lys Tyr Leu Thr Glu Leu Glu Glu Lys Tyr  
 260 265 270  
 tct att gag cct gat cat tta aaa aag cag act gtt ata act ggc aaa 864  
 Ser Ile Glu Pro Asp His Leu Lys Lys Gln Thr Val Ile Thr Gly Lys  
 275 280 285  
 atg aga gca aca ctc att gat tgg ctt gtg gaa gtt caa cgc caa ttc 912

## PhoenixTemp32470.tmp.txt

Met	Arg	Ala	Thr	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val	Gln	Arg	Gln	Phe	
290	290					295				300	300					
tca	tta	gta	ttg	gag	aca	ttc	cat	ctc	act	gtt	ggc	att	att	gac	aga	960
Ser	Leu	Val	Leu	Glu	Thr	Phe	His	Leu	Thr	Val	Gly	Ile	Ile	Asp	Arg	
305					310					315					320	
tat	ttg	cag	gtt	gtt	cca	aat	gtc	cag	cgc	aat	caa	tta	caa	tta	gtc	1008
Tyr	Leu	Gln	Val	Val	Pro	Asn	Val	Gln	Arg	Asn	Gln	Leu	Gln	Leu	Val	
				325					330					335		
ggt	gtg	acg	gct	atg	ttc	ata	gca	agc	aag	tat	gaa	gag	atc	tac	gct	1056
Gly	Val	Thr	Ala	Met	Phe	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Ile	Tyr	Ala	
			340					345					350			
cca	gat	gtt	ggc	gat	ttt	gtt	tat	gtc	act	gat	aat	gcc	tac	acc	aag	1104
Pro	Asp	Val	Gly	Asp	Phe	Val	Tyr	Val	Thr	Asp	Asn	Ala	Tyr	Thr	Lys	
		355					360					365				
tct	gat	gta	ttc	cgc	tgt	gag	aga	gac	att	atg	tgc	aaa	ctg	ggc	ttc	1152
Ser	Asp	Val	Phe	Arg	Cys	Glu	Arg	Asp	Ile	Met	Cys	Lys	Leu	Gly	Phe	
		370			375						380					
tgt	ctt	gcg	aga	ccg	ata	cct	ttg	agt	ttt	ctt	aga	aga	ttt	gta	aaa	1200
Cys	Leu	Ala	Arg	Pro	Ile	Pro	Leu	Ser	Phe	Leu	Arg	Arg	Phe	Val	Lys	
385					390					395					400	
gcc	gca	cgt	ggt	aca	tcg	agg	aat	cat	cat	ttg	gcc	aaa	tac	ttt	gtt	1248
Ala	Ala	Arg	Gly	Thr	Ser	Arg	Asn	His	His	Leu	Ala	Lys	Tyr	Phe	Val	
				405				410						415		
gat	ctc	tgt	cta	gtc	gaa	tat	act	atg	gcc	cat	tat	cga	ccg	tca	gaa	1296
Asp	Leu	Cys	Leu	Val	Glu	Tyr	Thr	Met	Ala	His	Tyr	Arg	Pro	Ser	Glu	
			420					425					430			
cta	gca	gcg	gca	gca	atc	tgc	ctc	tca	ctt	cat	ttg	cta	tcg	agc	aag	1344
Leu	Ala	Ala	Ala	Ala	Ile	Cys	Leu	Ser	Leu	His	Leu	Leu	Ser	Ser	Lys	
		435					440					445				
aca	ctc	tcc	gaa	gta	tgg	acg	tct	acc	ttg	tct	tac	tac	tct	ggg	tac	1392
Thr	Leu	Ser	Glu	Val	Trp	Thr	Ser	Thr	Leu	Ser	Tyr	Tyr	Ser	Gly	Tyr	
		450				455					460					
gat	ctt	gac	cac	ata	gat	ccg	att	ata	agg	aaa	atc	gca	aag	att	gtt	1440
Asp	Leu	Asp	His	Ile	Asp	Pro	Ile	Ile	Arg	Lys	Ile	Ala	Lys	Ile	Val	
465					470					475					480	
att	aac	att	gaa	aat	tcc	aaa	tat	aaa	gcc	gta	tat	aac	aaa	tat	ttg	1488
Ile	Asn	Ile	Glu	Asn	Ser	Lys	Tyr	Lys	Ala	Val	Tyr	Asn	Lys	Tyr	Leu	
				485					490					495		
gac	acg	acg	ttg	gct	aaa	gtt	tcc	agt	ctt	ccg	cag	ttg	aaa	agc	gaa	1536
Asp	Thr	Thr	Leu	Ala	Lys	Val	Ser	Ser	Leu	Pro	Gln	Leu	Lys	Ser	Glu	
			500					505					510			
gcg	att	tat	gaa	ctc	gca	aag	ata	tca	agc	cca	agc	cct	tag			1578
Ala	Ile	Tyr	Glu	Leu	Ala	Lys	Ile	Ser	Ser	Pro	Ser	Pro				
		515					520					525				

<210> 2348  
 <211> 525  
 <212> PRT  
 <213> Bombyx mori

<400> 2348  
 Met Glu Ile Gln Leu Arg Arg His Arg Ser Ala Gln Ile Gln Asp Gln  
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 Glu Asn Leu Tyr Ala Gly Val Arg Gly Lys Gly Asn Gly Ala Val Pro  
 20 25 30  
 Thr Lys Arg Leu Gly Leu Thr Val Arg Gly Ala Leu Gly Asp Leu Asn  
 35 40 45  
 Thr Asn Val Gln Val Gln Arg Glu Ala Leu Gly Lys Val Ala Val Thr  
 50 55 60  
 Thr Ala Glu Phe Glu Lys Lys Ala Thr Leu Asn Arg Gly Val Val Arg  
 65 70 75 80  
 Ser Asn Tyr Ser His Val Thr Ser Lys Val Asp Thr Gly Leu Ala Val  
 85 90 95  
 Lys Asn Val Ile Gln Pro Ser Ser Arg Pro Pro Leu Arg Arg Glu Glu  
 100 105 110  
 Ser Thr Ala Gly Leu Thr Ala Arg Ala Val Thr Arg Thr Arg Val Ala  
 115 120 125  
 Leu Lys Asp Asn Gln Asn Lys Pro Asn Glu Ile Lys Glu Ser Ile Asn  
 130 135 140



## PhoenixTemp32470.tmp.txt

Ile Tyr Ile Gln Thr Lys Lys Cys Gln Asp Thr Lys Lys Thr Lys Leu  
 145 150 155 160  
 Pro Met Leu Lys Glu Asn Lys Glu Leu Arg Thr Ser Lys Ser His Leu  
 165 170 175  
 Lys Asp Gly Thr Asp Ser Leu Arg Lys Thr Lys Leu Ala Leu Lys Asp  
 180 185 190  
 Pro Ile Glu Ser Leu Gly Lys Leu Lys Leu Ala Glu Thr Tyr Pro Glu  
 195 200 205  
 Lys Gly Met Gly Leu Ile Asp Lys Ala Lys Val Glu Lys Gln Ala Glu  
 210 215 220  
 Phe Phe Glu Thr Val Phe Asp Ile Thr Pro Pro Leu Pro Glu Asp Ile  
 225 230 235 240  
 Glu Asp Ile Asp Ala Gly Asp Asn Asn Ser Pro Leu Leu Met Ser Met  
 245 250 255  
 Tyr Ile Lys Asp Ile Tyr Lys Tyr Leu Thr Glu Leu Glu Glu Lys Tyr  
 260 265 270  
 Ser Ile Glu Pro Asp His Leu Lys Lys Gln Thr Val Ile Thr Gly Lys  
 275 280 285  
 Met Arg Ala Thr Leu Ile Asp Trp Leu Val Glu Val Gln Arg Gln Phe  
 290 295 300  
 Ser Leu Val Leu Glu Thr Phe His Leu Thr Val Gly Ile Ile Asp Arg  
 305 310 315 320  
 Tyr Leu Gln Val Val Pro Asn Val Gln Arg Asn Gln Leu Gln Leu Val  
 325 330 335  
 Gly Val Thr Ala Met Phe Ile Ala Ser Lys Tyr Glu Glu Ile Tyr Ala  
 340 345 350  
 Pro Asp Val Gly Asp Phe Val Tyr Val Thr Asp Asn Ala Tyr Thr Lys  
 355 360 365  
 Ser Asp Val Phe Arg Cys Glu Arg Asp Ile Met Cys Lys Leu Gly Phe  
 370 375 380  
 Cys Leu Ala Arg Pro Ile Pro Leu Ser Phe Leu Arg Arg Phe Val Lys  
 385 390 395 400  
 Ala Ala Arg Gly Thr Ser Arg Asn His His Leu Ala Lys Tyr Phe Val  
 405 410 415  
 Asp Leu Cys Leu Val Glu Tyr Thr Met Ala His Tyr Arg Pro Ser Glu  
 420 425 430  
 Leu Ala Ala Ala Ala Ile Cys Leu Ser Leu His Leu Leu Ser Ser Lys  
 435 440 445  
 Thr Leu Ser Glu Val Trp Thr Ser Thr Leu Ser Tyr Tyr Ser Gly Tyr  
 450 455 460  
 Asp Leu Asp His Ile Asp Pro Ile Ile Arg Lys Ile Ala Lys Ile Val  
 465 470 475 480  
 Ile Asn Ile Glu Asn Ser Lys Tyr Lys Ala Val Tyr Asn Lys Tyr Leu  
 485 490 495  
 Asp Thr Thr Leu Ala Lys Val Ser Ser Leu Pro Gln Leu Lys Ser Glu  
 500 505 510  
 Ala Ile Tyr Glu Leu Ala Lys Ile Ser Ser Pro Ser Pro  
 515 520 525

&lt;210&gt; 2349

&lt;211&gt; 1314

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1314)

&lt;400&gt; 2349

atg	cat	aga	gct	tct	tct	aag	cac	act	aat	gcg	aag	aaa	gaa	gca	atc	48
Met	His	Arg	Ala	Ser	Ser	Lys	His	Thr	Asn	Ala	Lys	Lys	Glu	Ala	Ile	
1				5				10						15		
tct	act	tcg	aaa	att	cga	gat	aat	aat	gtg	aga	gtc	act	aga	tca	aga	96
Ser	Thr	Ser	Lys	Ile	Arg	Asp	Asn	Asn	Val	Arg	Val	Thr	Arg	Ser	Arg	
			20					25					30			
gct	aag	gcc	tta	gga	gtg	tcg	aat	tct	cca	tca	aaa	ccc	gct	ttt	aaa	144
Ala	Lys	Ala	Leu	Gly	Val	Ser	Asn	Ser	Pro	Ser	Lys	Pro	Ala	Phe	Lys	
		35					40					45				
cat	gaa	acg	aag	cgt	gtt	gct	aga	ccg	agt	aat	aaa	cga	atg	gca	tcg	192

## PhoenixTemp32470.tmp.txt

His	Glu	Thr	Lys	Arg	Val	Ala	Arg	Pro	Ser	Asn	Lys	Arg	Met	Ala	Ser	
	50					55					60					
gat	aat	atc	aca	gtt	tgt	aat	cag	aaa	aga	cga	gcg	gtg	ctc	aag	gat	240
Asp	Asn	Ile	Thr	Val	Cys	Asn	Gln	Lys	Arg	Arg	Ala	Val	Leu	Lys	Asp	
65					70					75					80	
gtg	act	aac	act	tgt	gca	gaa	agt	ata	att	tct	aca	gaa	ggc	aat	gtt	288
Val	Thr	Asn	Thr	Leu	Ala	Glu	Ser	Ile	Ile	Ser	Thr	Glu	Gly	Asn	Val	
				85					90					95		
aag	gct	tgc	aag	cga	ggt	ggt	aaa	gaa	act	aag	caa	ata	gaa	gaa	gat	336
Lys	Ala	Cys	Lys	Arg	Gly	Gly	Lys	Glu	Thr	Lys	Gln	Ile	Glu	Glu	Asp	
			100				105						110			
ggt	tgt	gta	gat	gtg	gat	ggc	gaa	aaa	tct	aaa	cta	gca	gaa	gat	tgt	384
Gly	Leu	Val	Asp	Val	Asp	Gly	Glu	Lys	Ser	Lys	Leu	Ala	Glu	Asp	Leu	
		115					120					125				
tca	aag	att	aga	atg	gtt	gaa	tct	tta	gat	gca	tct	gct	tca	aag	caa	432
Ser	Lys	Ile	Arg	Met	Val	Glu	Ser	Leu	Asp	Ala	Ser	Ala	Ser	Lys	Gln	
	130				135					140						
aaa	gaa	gac	aga	tct	gat	gtc	aca	gat	tgt	gtt	cag	att	gta	gat	ata	480
Lys	Glu	Asp	Arg	Ser	Asp	Val	Thr	Asp	Cys	Val	Gln	Ile	Val	Asp	Ile	
145					150					155					160	
gat	tca	ggt	gtc	caa	gat	cct	cag	ttt	tgt	agc	tta	tat	gct	gca	agt	528
Asp	Ser	Gly	Val	Gln	Asp	Pro	Gln	Phe	Cys	Ser	Leu	Tyr	Ala	Ala	Ser	
				165					170					175		
ata	tat	gac	agc	att	aat	gtt	gca	gag	ctt	gaa	caa	aga	cct	tca	act	576
Ile	Tyr	Asp	Ser	Ile	Asn	Val	Ala	Glu	Leu	Glu	Gln	Arg	Pro	Ser	Thr	
			180				185						190			
agc	tat	atg	gtg	caa	gtg	cag	cga	gat	atc	gat	cca	acg	atg	cgc	gga	624
Ser	Tyr	Met	Val	Gln	Val	Gln	Arg	Asp	Ile	Asp	Pro	Thr	Met	Arg	Gly	
		195				200						205				
att	ctg	att	gat	tgg	ctc	gtg	gag	gtc	tct	gaa	gag	tac	aag	ttg	gtt	672
Ile	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val	Ser	Glu	Glu	Tyr	Lys	Leu	Val	
	210				215					220						
tca	gat	aca	ctt	tac	ctt	acc	gtg	aat	cta	att	gat	cgg	ttc	atg	tct	720
Ser	Asp	Thr	Leu	Tyr	Leu	Thr	Val	Asn	Leu	Ile	Asp	Arg	Phe	Met	Ser	
225					230				235						240	
cat	aat	tac	att	gaa	aag	cag	aag	ctc	cag	cta	ctt	ggt	atc	act	tgc	768
His	Asn	Tyr	Ile	Glu	Lys	Gln	Lys	Leu	Gln	Leu	Leu	Gly	Ile	Thr	Cys	
				245					250					255		
atg	tta	ata	gcc	tcc	aaa	tac	gaa	gag	att	agt	gca	ccg	cgg	ttg	gag	816
Met	Leu	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Ile	Ser	Ala	Pro	Arg	Leu	Glu	
			260				265						270			
gag	ttt	tgc	ttc	att	aca	gac	aat	aca	tac	aca	aga	cta	gaa	gta	cta	864
Glu	Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	Tyr	Thr	Arg	Leu	Glu	Val	Leu	
		275				280						285				
agt	atg	gag	att	aaa	gtt	tta	aac	tct	ctt	cat	ttt	cgg	tta	tca	gtt	912
Ser	Met	Glu	Ile	Lys	Val	Leu	Asn	Ser	Leu	His	Phe	Arg	Leu	Ser	Val	
	290				295					300						
ccc	acc	acc	aaa	acg	ttt	ctc	agg	cgg	ttc	att	cgc	gcc	gct	caa	gcg	960
Pro	Thr	Thr	Lys	Thr	Phe	Leu	Arg	Arg	Phe	Ile	Arg	Ala	Ala	Gln	Ala	
305				310					315					320		
tct	gat	aag	gtt	cct	ctc	att	gaa	atg	gag	tac	tta	gcc	aac	tat	ttc	1008
Ser	Asp	Lys	Val	Pro	Leu	Ile	Glu	Met	Glu	Tyr	Leu	Ala	Asn	Tyr	Phe	
				325					330					335		
gcg	gaa	cta	act	ctc	aca	gaa	tat	act	ttc	cta	agg	ttc	ctt	cca	tcc	1056
Ala	Glu	Leu	Thr	Leu	Thr	Glu	Tyr	Thr	Phe	Leu	Arg	Phe	Leu	Pro	Ser	
			340				345					350				
cta	att	gcc	gct	tca	gcg	gtt	ttc	tta	gca	aga	tgg	aca	ctc	gac	caa	1104
Leu	Ile	Ala	Ala	Ser	Ala	Val	Phe	Leu	Ala	Arg	Trp	Thr	Leu	Asp	Gln	
		355				360						365				
tct	aac	cat	cct	tgg	aac	caa	act	cta	caa	cac	tat	aca	aga	tat	gaa	1152
Ser	Asn	His	Pro	Trp	Asn	Gln	Thr	Leu	Gln	His	Tyr	Thr	Arg	Tyr	Glu	
	370				375					380						
aca	tcc	gct	cta	aaa	aac	acg	gta	ctt	gca	atg	gag	gag	ttg	cag	ctc	1200
Thr	Ser	Ala	Leu	Lys	Asn	Thr	Val	Leu	Ala	Met	Glu	Glu	Leu	Gln	Leu	
385				390					395					400		
aac	acc	agt	gga	agc	act	ctt	atc	gct	ata	cac	acc	aaa	tac	aac	caa	1248
Asn	Thr	Ser	Gly	Ser	Thr	Leu	Ile	Ala	Ile	His	Thr	Lys	Tyr	Asn	Gln	
				405					410					415		
caa	aag	ttt	aaa	aga	gtg	gca	aca	tta	aca	tct	cct	gaa	cgt	gtg	aac	1296

Gln Lys Phe Lys Arg Val Ala Thr Leu Thr Ser Pro Glu Arg Val Asn  
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1314

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 <213> Arabidopsis thaliana

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 35 40 45  
 His Glu Thr Lys Arg Val Ala Arg Pro Ser Asn Lys Arg Met Ala Ser  
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 Asp Asn Ile Thr Val Cys Asn Gln Lys Arg Arg Ala Val Leu Lys Asp  
 65 70 75 80  
 Val Thr Asn Thr Leu Ala Glu Ser Ile Ile Ser Thr Glu Gly Asn Val  
 85 90 95  
 Lys Ala Cys Lys Arg Gly Gly Lys Glu Thr Lys Gln Ile Glu Glu Asp  
 100 105 110  
 Gly Leu Val Asp Val Asp Gly Glu Lys Ser Lys Leu Ala Glu Asp Leu  
 115 120 125  
 Ser Lys Ile Arg Met Val Glu Ser Leu Asp Ala Ser Ala Ser Lys Gln  
 130 135 140  
 Lys Glu Asp Arg Ser Asp Val Thr Asp Cys Val Gln Ile Val Asp Ile  
 145 150 155 160  
 Asp Ser Gly Val Gln Asp Pro Gln Phe Cys Ser Leu Tyr Ala Ala Ser  
 165 170 175  
 Ile Tyr Asp Ser Ile Asn Val Ala Glu Leu Glu Gln Arg Pro Ser Thr  
 180 185 190  
 Ser Tyr Met Val Gln Val Gln Arg Asp Ile Asp Pro Thr Met Arg Gly  
 195 200 205  
 Ile Leu Ile Asp Trp Leu Val Glu Val Ser Glu Glu Tyr Lys Leu Val  
 210 215 220  
 Ser Asp Thr Leu Tyr Leu Thr Val Asn Leu Ile Asp Arg Phe Met Ser  
 225 230 235 240  
 His Asn Tyr Ile Glu Lys Gln Lys Leu Gln Leu Leu Gly Ile Thr Cys  
 245 250 255  
 Met Leu Ile Ala Ser Lys Tyr Glu Glu Ile Ser Ala Pro Arg Leu Glu  
 260 265 270  
 Glu Phe Cys Phe Ile Thr Asp Asn Thr Tyr Thr Arg Leu Glu Val Leu  
 275 280 285  
 Ser Met Glu Ile Lys Val Leu Asn Ser Leu His Phe Arg Leu Ser Val  
 290 295 300  
 Pro Thr Thr Lys Thr Phe Leu Arg Arg Phe Ile Arg Ala Ala Gln Ala  
 305 310 315 320  
 Ser Asp Lys Val Pro Leu Ile Glu Met Glu Tyr Leu Ala Asn Tyr Phe  
 325 330 335  
 Ala Glu Leu Thr Leu Thr Glu Tyr Thr Phe Leu Arg Phe Leu Pro Ser  
 340 345 350  
 Leu Ile Ala Ala Ser Ala Val Phe Leu Ala Arg Trp Thr Leu Asp Gln  
 355 360 365  
 Ser Asn His Pro Trp Asn Gln Thr Leu Gln His Tyr Thr Arg Tyr Glu  
 370 375 380  
 Thr Ser Ala Leu Lys Asn Thr Val Leu Ala Met Glu Glu Leu Gln Leu  
 385 390 395 400  
 Asn Thr Ser Gly Ser Thr Leu Ile Ala Ile His Thr Lys Tyr Asn Gln  
 405 410 415  
 Gln Lys Phe Lys Arg Val Ala Thr Leu Thr Ser Pro Glu Arg Val Asn  
 420 425 430  
 Thr Leu Phe Ser Arg  
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 <213> Drosophila melanogaster

<220>  
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 <222> (1)..(1575)

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 1 5 10 15  
 ttg aag aaa ttg acg gtt cct tcc atg gag gca aca aca aaa cgc gcg 96  
 Leu Lys Lys Leu Thr Val Pro Ser Met Glu Ala Thr Thr Lys Arg Ala  
 20 25 30  
 gcc ttg ggc gat ttg cag aat cgc ggc ata agt cgt ccc atc gca gcg 144  
 Ala Leu Gly Asp Leu Gln Asn Arg Gly Ile Ser Arg Pro Ile Ala Ala  
 35 40 45  
 aag gat gcg gca cag aaa gac tcc aag gat ctc aag ctc aca gac gcc 192  
 Lys Asp Ala Ala Gln Lys Asp Ser Lys Asp Leu Lys Leu Thr Asp Ala  
 50 55 60  
 ctg cgc aat gcc aaa gct cgg gtg gac agc cac tgg aag aaa cag cca 240  
 Leu Arg Asn Ala Lys Ala Arg Val Asp Ser His Trp Lys Lys Gln Pro  
 65 70 75 80  
 ctg ggc agc acc aat ggc aat ggc aat ggc gcc gtt ccg ccc aag gtc 288  
 Leu Gly Ser Thr Asn Gly Asn Gly Asn Gly Ala Val Pro Pro Lys Val  
 85 90 95  
 aac gag ggg ggc gtg tcg gcg ttt ttg cgt tcg aat tcg gtg cgc aat 336  
 Asn Glu Gly Gly Val Ser Ala Phe Leu Arg Ser Asn Ser Val Arg Asn  
 100 105 110  
 cgc gtt ccg acc aag acc act gta gaa ccc act aaa gtt aca gtc aag 384  
 Arg Val Pro Thr Lys Thr Thr Val Glu Pro Thr Lys Val Thr Val Lys  
 115 120 125  
 tcc agt tct tcc gag aac gtg aac gag ccc acc ttg aag cgc gag gac 432  
 Ser Ser Ser Ser Glu Asn Val Asn Glu Pro Thr Leu Lys Arg Glu Asp  
 130 135 140  
 agc aat ctg tcg aag aag tcg ctg acc aaa ctg cgt gcc gct ttg gcc 480  
 Ser Asn Leu Ser Lys Lys Ser Leu Thr Lys Leu Arg Ala Ala Leu Ala  
 145 150 155 160  
 aaa ccc gtg atg gga gtt tca gga att cga cgg gaa cca gta gct gtt 528  
 Lys Pro Val Met Gly Val Ser Gly Ile Arg Arg Glu Pro Val Ala Val  
 165 170 175  
 tcc cgc aaa gag gca gag acc aag aag gaa ctg cca gaa acc aag aag 576  
 Ser Arg Lys Glu Ala Glu Thr Lys Lys Glu Leu Pro Glu Thr Lys Lys  
 180 185 190  
 gac tca ctg gaa gtg aaa aag gat gcg acc agg atg ccc ctt att agg 624  
 Asp Ser Leu Glu Val Lys Lys Asp Ala Thr Arg Met Pro Leu Ile Arg  
 195 200 205  
 ggc aac agt gca gtc act acg acc aca tct acg atg ccc acc acc atg 672  
 Gly Asn Ser Ala Val Thr Thr Thr Thr Ser Thr Met Pro Thr Thr Met  
 210 215 220  
 tcc ctt tcc agc aag cgc ttg gct gga atc gag gac att gat gcc aat 720  
 Ser Leu Ser Ser Lys Arg Leu Ala Gly Ile Glu Asp Ile Asp Ala Asn  
 225 230 235 240  
 gac aag gag aac ctg gta ctg gtc tcc gaa tat gta aac gac atc tac 768  
 Asp Lys Glu Asn Leu Val Leu Val Ser Glu Tyr Val Asn Asp Ile Tyr  
 245 250 255  
 gac tac ttg tat cag gtg gag ctg gag cag ccc att cac aag gat cac 816  
 Asp Tyr Leu Tyr Gln Val Glu Leu Glu Gln Pro Ile His Lys Asp His  
 260 265 270  
 ctg gcc gga cag aag gag gtg tcc cac aag atg cga gcc gtg ctg atc 864  
 Leu Ala Gly Gln Lys Glu Val Ser His Lys Met Arg Ala Val Leu Ile  
 275 280 285  
 gat tgg atc aac gaa gtc cac ctg cag ttc cat ctg gct gca gag acc 912  
 Asp Trp Ile Asn Glu Val His Leu Gln Phe His Leu Ala Ala Glu Thr  
 290 295 300  
 ttc cag ctg gcg gtg gct atc att gat cgc tac ctg cag gtg gtc aag 960  
 Phe Gln Leu Ala Val Ala Ile Ile Asp Arg Tyr Leu Gln Val Val Lys

## PhoenixTemp32470.tmp.txt

305	gac	acc	aaa	cgc	acg	310	tac	ttg	caa	ttg	gtg	315	gga	gtg	aca	gca	ctc	320	ttc		1008
Asp	Thr	Lys	Arg	Thr	Thr	Tyr	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Leu	Phe					
				325							330					335					
ata	gcc	acc	aag	tac	gag	gag	ctg	ttc	ccg	ccg	gca	atc	gga	gat	ttc					1056	
Ile	Ala	Thr	Lys	Tyr	Glu	Glu	Leu	Phe	Pro	Pro	Ala	Ile	Gly	Asp	Phe						
			340					345					350								
gtc	ttc	atc	acg	gac	gac	acc	tac	act	gcc	cgg	cag	atc	cga	cag	atg					1104	
Val	Phe	Ile	Thr	Asp	Asp	Thr	Tyr	Thr	Ala	Arg	Gln	Ile	Arg	Gln	Met						
		355					360					365									
gag	ctg	caa	atc	ttc	aag	gcc	atc	gac	tgt	aat	ctg	tcg	cgt	ccg	ctg					1152	
Glu	Leu	Gln	Ile	Phe	Lys	Ala	Ile	Asp	Cys	Asn	Leu	Ser	Arg	Pro	Leu						
	370					375					380										
ccg	att	cac	ttc	ctt	cga	cgc	tac	tcg	aag	gct	gct	ggc	gcc	gag	gac					1200	
Pro	Ile	His	Phe	Leu	Arg	Arg	Tyr	Ser	Lys	Ala	Ala	Gly	Ala	Glu	Asp						
					390					395					400						
gag	cac	cat	acg	atg	tcc	aag	tac	ttc	atc	gag	tta	gct	tcc	gtg	gac					1248	
Glu	His	His	Thr	Met	Ser	Lys	Tyr	Phe	Ile	Glu	Leu	Ala	Ser	Val	Asp						
				405					410					415							
tac	gaa	atg	gcc	act	tac	agg	cca	tcg	gag	att	gca	gct	gcc	tca	ctg					1296	
Tyr	Glu	Met	Ala	Thr	Tyr	Arg	Pro	Ser	Glu	Ile	Ala	Ala	Ala	Ser	Leu						
			420					425					430								
ttc	ctg	tcg	ctg	cac	ttg	ctc	aat	gga	aac	cac	cgg	gcc	ggt	aca	gga					1344	
Phe	Leu	Ser	Leu	His	Leu	Leu	Asn	Gly	Asn	His	Arg	Ala	Gly	Thr	Gly						
		435					440					445									
ttc	aac	gac	cgt	cac	tgg	acg	ccc	act	ctg	acc	ttc	tac	tcg	cga	tac					1392	
Phe	Asn	Asp	Arg	His	Trp	Thr	Pro	Thr	Leu	Thr	Phe	Tyr	Ser	Arg	Tyr						
	450					455					460										
tcg	gcc	gcg	cac	ttg	cgt	ccg	att	acc	cgg	ctg	atc	gcg	aaa	ctg	gcc					1440	
Ser	Ala	Ala	His	Leu	Arg	Pro	Ile	Thr	Arg	Leu	Ile	Ala	Lys	Leu	Ala						
	465				470					475					480						
cgg	gac	gct	cct	cag	gcc	aag	ctg	aag	gcc	atc	tac	aac	aag	tac	cag					1488	
Arg	Asp	Ala	Pro	Gln	Ala	Lys	Leu	Lys	Ala	Ile	Tyr	Asn	Lys	Tyr	Gln						
				485					490					495							
ggc	agc	aag	ttc	cag	aag	atc	gcg	ctg	cga	acg	gag	ctg	acc	ggt	gcg					1536	
Gly	Ser	Lys	Phe	Gln	Lys	Ile	Ala	Leu	Arg	Thr	Glu	Leu	Thr	Gly	Ala						
			500					505					510								
ctg	atg	gac	tcg	att	gtg	ggc	cag	agc	cag	agg	aaa	tag								1575	
Leu	Met	Asp	Ser	Ile	Val	Gly	Gln	Ser	Gln	Arg	Lys										
		515					520														

&lt;210&gt; 2352

&lt;211&gt; 524

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2352

Met	Ala	Ala	Leu	Glu	Lys	Asn	Ala	Ser	Glu	Asn	Phe	Lys	Gln	Val	Gln					
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Leu	Lys	Lys	Leu	Thr	Val	Pro	Ser	Met	Glu	Ala	Thr	Thr	Lys	Arg	Ala					
			20					25					30							
Ala	Leu	Gly	Asp	Gln	Asn	Arg	Gly	Ile	Ser	Arg	Pro	Ile	Ala	Ala						
		35				40					45									
Lys	Asp	Ala	Ala	Gln	Lys	Asp	Ser	Lys	Asp	Leu	Lys	Leu	Thr	Asp	Ala					
	50					55				60										
Leu	Arg	Asn	Ala	Lys	Ala	Arg	Val	Asp	Ser	His	Trp	Lys	Lys	Gln	Pro					
	65				70					75				80						
Leu	Gly	Ser	Thr	Asn	Gly	Asn	Gly	Asn	Gly	Ala	Val	Pro	Pro	Lys	Val					
				85					90					95						
Asn	Glu	Gly	Gly	Val	Ser	Ala	Phe	Leu	Arg	Ser	Asn	Ser	Val	Arg	Asn					
		100						105					110							
Arg	Val	Pro	Thr	Lys	Thr	Thr	Val	Glu	Pro	Thr	Lys	Val	Thr	Val	Lys					
		115					120					125								
Ser	Ser	Ser	Ser	Glu	Asn	Val	Asn	Glu	Pro	Thr	Leu	Lys	Arg	Glu	Asp					
	130					135					140									
Ser	Asn	Leu	Ser	Lys	Lys	Ser	Leu	Thr	Lys	Leu	Arg	Ala	Ala	Leu	Ala					
	145				150					155				160						
Lys	Pro	Val	Met	Gly	Val	Ser	Gly	Ile	Arg	Arg	Glu	Pro	Val	Ala	Val					
				165					170					175						

## PhoenixTemp32470.tmp.txt

Ser Arg Lys Glu Ala Glu Thr Lys Lys Glu Leu Pro Glu Thr Lys Lys  
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 Asp Ser Leu Glu Val Lys Lys Asp Ala Thr Arg Met Pro Leu Ile Arg  
 195 200 205  
 Gly Asn Ser Ala Val Thr Thr Thr Thr Ser Thr Met Pro Thr Thr Met  
 210 215 220  
 Ser Leu Ser Ser Lys Arg Leu Ala Gly Ile Glu Asp Ile Asp Ala Asn  
 225 230 235 240  
 Asp Lys Glu Asn Leu Val Leu Val Ser Glu Tyr Val Asn Asp Ile Tyr  
 245 250 255  
 Asp Tyr Leu Tyr Gln Val Glu Leu Glu Gln Pro Ile His Lys Asp His  
 260 265 270  
 Leu Ala Gly Gln Lys Glu Val Ser His Lys Met Arg Ala Val Leu Ile  
 275 280 285  
 Asp Trp Ile Asn Glu Val His Leu Gln Phe His Leu Ala Ala Glu Thr  
 290 295 300  
 Phe Gln Leu Ala Val Ala Ile Ile Asp Arg Tyr Leu Gln Val Val Lys  
 305 310 315 320  
 Asp Thr Lys Arg Thr Tyr Leu Gln Leu Val Gly Val Thr Ala Leu Phe  
 325 330 335  
 Ile Ala Thr Lys Tyr Glu Glu Leu Phe Pro Pro Ala Ile Gly Asp Phe  
 340 345 350  
 Val Phe Ile Thr Asp Asp Thr Tyr Thr Ala Arg Gln Ile Arg Gln Met  
 355 360 365  
 Glu Leu Gln Ile Phe Lys Ala Ile Asp Cys Asn Leu Ser Arg Pro Leu  
 370 375 380  
 Pro Ile His Phe Leu Arg Arg Tyr Ser Lys Ala Ala Gly Ala Glu Asp  
 385 390 395 400  
 Glu His His Thr Met Ser Lys Tyr Phe Ile Glu Leu Ala Ser Val Asp  
 405 410 415  
 Tyr Glu Met Ala Thr Tyr Arg Pro Ser Glu Ile Ala Ala Ala Ser Leu  
 420 425 430  
 Phe Leu Ser Leu His Leu Leu Asn Gly Asn His Arg Ala Gly Thr Gly  
 435 440 445  
 Phe Asn Asp Arg His Trp Thr Pro Thr Leu Thr Phe Tyr Ser Arg Tyr  
 450 455 460  
 Ser Ala Ala His Leu Arg Pro Ile Thr Arg Leu Ile Ala Lys Leu Ala  
 465 470 475 480  
 Arg Asp Ala Pro Gln Ala Lys Leu Lys Ala Ile Tyr Asn Lys Tyr Gln  
 485 490 495  
 Gly Ser Lys Phe Gln Lys Ile Ala Leu Arg Thr Glu Leu Thr Gly Ala  
 500 505 510  
 Leu Met Asp Ser Ile Val Gly Gln Ser Gln Arg Lys  
 515 520

&lt;210&gt; 2353

&lt;211&gt; 1503

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1503)

&lt;400&gt; 2353

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1				5					10					15		
ggc	ata	agt	cgt	ccc	atc	gca	gcg	aag	gat	gcg	gca	cag	aaa	gac	tcc	96
Gly	Ile	Ser	Arg	Pro	Ile	Ala	Ala	Lys	Asp	Ala	Ala	Gln	Lys	Asp	Ser	
			20					25					30			
aag	gat	ctc	aag	ctc	aca	gac	gcc	ctg	cgc	aat	gcc	aaa	gct	cgg	gtg	144
Lys	Asp	Leu	Lys	Leu	Thr	Asp	Ala	Leu	Arg	Asn	Ala	Lys	Ala	Arg	Val	
			35				40					45				
gac	agc	cac	tgg	aag	aaa	cag	cca	ctg	ggc	agc	acc	aat	ggc	aat	ggc	192
Asp	Ser	His	Trp	Lys	Lys	Gln	Pro	Leu	Gly	Ser	Thr	Asn	Gly	Asn	Gly	
			50			55					60					
aat	ggc	gcc	gtt	ccg	ccc	aag	gtc	aac	gag	ggg	ggc	gtg	tcg	gcg	ttt	240
Asn	Gly	Ala	Val	Pro	Pro	Lys	Val	Asn	Glu	Gly	Gly	Val	Ser	Ala	Phe	

## PhoenixTemp32470.tmp.txt

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Leu	Val	Pro	Thr	Thr
Arg	Arg	Thr	Lys	Val
Ser	Asn	Arg	Thr	Val
Asn	Val	Pro	Lys	Val
85	90	95		
gaa	aca	gtt	tcc	gtg
Glu	Thr	Val	Ser	Asn
Pro	Val	Lys	Ser	Val
Thr	Val	Lys	Ser	Val
Thr	Val	Lys	Ser	Val
100	105	110		
gag	gag	gag	aag	ctg
Glu	Glu	Glu	Lys	Leu
Pro	Arg	Ser	Lys	Leu
Thr	Lys	Asn	Lys	Leu
115	120	125		
acc	gtt	atg	gga	ggt
Thr	Leu	Met	Gly	Val
Lys	Ala	Val	Gly	Val
130	135	140		
att	gct	gag	gca	acc
Ile	Ala	Lys	Ala	Thr
Arg	Val	Arg	Glu	Lys
Arg	Val	Arg	Glu	Lys
145	150	155		
aag	acc	gac	tca	ctg
Lys	Thr	Asp	Ser	Leu
Glu	Lys	Lys	Leu	Glu
Leu	Lys	Lys	Val	Lys
Pro	Thr	Lys	Val	Lys
165	170	175		
gcg	att	agg	aac	agt
Ala	Ile	Arg	Asn	Ser
Thr	Leu	Arg	Ala	Val
Arg	Leu	Arg	Val	Val
180	185	190		
aca	acc	acc	agg	ctg
Thr	Thr	Thr	Ser	Leu
Ser	Thr	Thr	Ser	Leu
195	200	205		
gga	gac	gag	aac	ctg
Gly	Asp	Glu	Asn	Leu
Ile	Ala	Glu	Asn	Leu
210	215	220		
tcc	gac	tat	cag	gtg
Ser	Asp	Tyr	Gln	Val
Glu	Ile	Tyr	Val	Glu
225	230	235		
gag	gag	gag	aag	gag
Glu	Gln	Gln	Lys	Glu
Gln	Pro	Pro	Lys	Val
245	250	255		
cac	gag	gag	gac	ctg
His	Ala	Val	Val	His
Lys	Val	Leu	Val	His
Met	Ala	Leu	Val	His
260	265	270		
cag	gag	gag	gag	gag
Gln	Ala	Ala	Ala	Ala
Phe	Ala	Ala	Ala	Ala
275	280	285		
gat	gag	gag	gag	gag
Asp	Ala	Ala	Ala	Ala
Arg	Ala	Ala	Ala	Ala
290	295	300		
ttg	gag	gag	gag	gag
Leu	Ala	Ala	Ala	Ala
Val	Ala	Ala	Ala	Ala
305	310	315		
ttc	gag	gag	gag	gag
Phe	Ala	Ala	Ala	Ala
Pro	Ala	Ala	Ala	Ala
325	330	335		
act	gag	gag	gag	gag
Thr	Ala	Ala	Ala	Ala
Ala	Ala	Ala	Ala	Ala
340	345	350		
gac	gag	gag	gag	gag
Asp	Ala	Ala	Ala	Ala
Cys	Ala	Ala	Ala	Ala
355	360	365		
tcg	gag	gag	gag	gag
Ser	Ala	Ala	Ala	Ala
Lys	Ala	Ala	Ala	Ala
370	375	380		
ttc	gag	gag	gag	gag
Phe	Ala	Ala	Ala	Ala
Ile	Ala	Ala	Ala	Ala
385	390	395		
tcg	gag	gag	gag	gag
Ser	Ala	Ala	Ala	Ala
Glu	Ala	Ala	Ala	Ala
405	410	415		
gga	gag	gag	gag	gag
Gly	Ala	Ala	Ala	Ala
Asn	Ala	Ala	Ala	Ala
His	Ala	Ala	Ala	Ala
420	425	430		
act	gag	gag	gag	gag
Thr	Ala	Ala	Ala	Ala
Leu	Ala	Ala	Ala	Ala
Thr	Ala	Ala	Ala	Ala

PhoenixTemp32470.tmp.txt

		435						440						445						
acc	cgg	ctg	atc	gcg	aaa	ctg	gcc	cgg	gac	gct	cct	cag	gcc	aag	ctg					
Thr	Arg	Leu	Ile	Ala	Lys	Leu	Ala	Arg	Asp	Ala	Pro	Gln	Ala	Lys	Leu	1392				
		450						455						460						
aag	gcc	atc	tac	aac	aag	tac	cag	ggc	agc	aag	ttc	cag	aag	atc	gcg					
Lys	Ala	Ile	Tyr	Asn	Lys	Tyr	Gln	Gly	Ser	Lys	Phe	Gln	Lys	Ile	Ala	1440				
		465						470						475						
ctg	cga	acg	gag	ctg	acc	ggg	gcg	ctg	atg	gac	tcg	att	gtg	ggc	cag					
Leu	Arg	Thr	Glu	Leu	Thr	Gly	Ala	Leu	Met	Asp	Ser	Ile	Val	Gly	Gln	1488				
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agc	cag	agg	aaa	tag												1503				
Ser	Gln	Arg	Lys																	
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<213> Drosophila melanogaster
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Gly	Ile	Ser	Arg	Pro	Ile	Ala	Ala	Lys	Asp	Ala	Ala	Gln	Lys	Asp	Ser
			20					25					30		
Lys	Asp	Leu	Lys	Leu	Thr	Asp	Ala	Leu	Arg	Asn	Ala	Lys	Ala	Arg	Val
		35					40					45			
Asp	Ser	His	Trp	Lys	Lys	Gln	Pro	Leu	Gly	Ser	Thr	Asn	Gly	Asn	Gly
	50					55					60				
Asn	Gly	Ala	Val	Pro	Pro	Lys	Val	Asn	Glu	Gly	Gly	Val	Ser	Ala	Phe
65					70						75				80
Leu	Arg	Ser	Asn	Ser	Val	Arg	Asn	Arg	Val	Pro	Thr	Lys	Thr	Thr	Val
				85					90					95	
Glu	Pro	Thr	Lys	Val	Thr	Val	Lys	Ser	Ser	Ser	Ser	Glu	Asn	Val	Asn
			100					105					110		
Glu	Pro	Thr	Leu	Lys	Arg	Glu	Asp	Ser	Asn	Leu	Ser	Lys	Lys	Ser	Leu
		115					120					125			
Thr	Lys	Leu	Arg	Ala	Ala	Leu	Ala	Lys	Pro	Val	Met	Gly	Val	Ser	Gly
	130					135					140				
Ile	Arg	Arg	Glu	Pro	Val	Ala	Val	Ser	Arg	Lys	Glu	Ala	Glu	Thr	Lys
145					150					155					160
Lys	Glu	Leu	Pro	Glu	Thr	Lys	Lys	Asp	Ser	Leu	Glu	Val	Lys	Lys	Asp
				165					170					175	
Ala	Thr	Arg	Met	Pro	Leu	Ile	Arg	Gly	Asn	Ser	Ala	Val	Thr	Thr	Thr
			180					185					190		
Thr	Ser	Thr	Met	Pro	Thr	Thr	Met	Ser	Leu	Ser	Ser	Lys	Arg	Leu	Ala
		195					200					205			
Gly	Ile	Glu	Asp	Ile	Asp	Ala	Asn	Asp	Lys	Glu	Asn	Leu	Val	Leu	Val
	210					215					220				
Ser	Glu	Tyr	Val	Asn	Asp	Ile	Tyr	Asp	Tyr	Leu	Tyr	Gln	Val	Glu	Leu
225					230					235					240
Glu	Gln	Pro	Ile	His	Lys	Asp	His	Leu	Ala	Gly	Gln	Lys	Glu	Val	Ser
				245					250					255	
His	Lys	Met	Arg	Ala	Val	Leu	Ile	Asp	Trp	Ile	Asn	Glu	Val	His	Leu
			260					265					270		
Gln	Phe	His	Leu	Ala	Ala	Glu	Thr	Phe	Gln	Leu	Ala	Val	Ala	Ile	Ile
		275					280					285			
Asp	Arg	Tyr	Leu	Gln	Val	Val	Lys	Asp	Thr	Lys	Arg	Thr	Tyr	Leu	Gln
	290					295					300				
Leu	Val	Gly	Val	Thr	Ala	Leu	Phe	Ile	Ala	Thr	Lys	Tyr	Glu	Glu	Leu
305					310					315					320
Phe	Pro	Pro	Ala	Ile	Gly	Asp	Phe	Val	Phe	Ile	Thr	Asp	Asp	Thr	Tyr
				325					330					335	
Thr	Ala	Arg	Gln	Ile	Arg	Gln	Met	Glu	Leu	Gln	Ile	Phe	Lys	Ala	



## PhoenixTemp32470.tmp.txt

385 Ser Glu Ile Ala Ala 390 Ala Ser Leu Phe Leu 395 Ser Leu His Leu Leu 400 Asn  
 Gly Asn His Arg Ala 405 Gly Thr Gly Phe Asn 410 Asp Arg His Trp Thr 415 Pro  
 Thr Leu Thr Phe Tyr Ser Arg Tyr 425 Ser Ala Ala His Leu 430 Arg Pro Ile  
 Thr Arg 435 Leu Ile Ala Lys Leu 440 Ala Arg Asp Ala Pro 445 Gln Ala Lys Leu  
 Lys Ala 450 Ile Tyr Asn Lys Tyr Gln Gly Ser Lys 460 Phe Gln Lys Ile Ala  
 465 Leu Arg Thr Glu Leu 470 Thr Gly Ala Leu Met 475 Asp Ser Ile Val Gly 480 Gln  
 Ser Gln Arg Lys 485 490 495 500

&lt;210&gt; 2355

&lt;211&gt; 1290

&lt;212&gt; DNA

<213> *Nasonia vitripennis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1290)

&lt;400&gt; 2355

atg acc gtt aac gat cag aat gtt gct aat caa gag aat gtc aag aat	48
Met Thr Val Asn Asp 5 Gln Asn Val Ala Asn 10 Gln Glu Asn Val Lys 15 Asn	
gtc aag tct atg gca ttg gct cca ggg cag aca agg aga gct gct ttg	96
Val Lys Ser Met 20 Ala Leu Ala Pro Gly 25 Gln Thr Arg Arg Ala 30 Ala Leu	
ggc gaa att ggc aat aaa gtc att att caa agg acc aat gat ttg aca	144
Gly Glu Ile 35 Gly Asn Lys Val Ile Ile Gln Arg Thr Asn 45 Asp Leu Thr	
ggc aaa tct agt caa gca gga aag gac aaa gtt ttg ctg aaa aaa cca	192
Gly Lys Ser Ser Gln Ala Gly Lys Asp Lys Val Leu Leu Lys Lys Pro	
ttg gta acc aag cag cct caa gtt aag gtt gac aga atc gag aag att	240
Leu Val Thr Lys Gln Pro 70 Gln Val Lys Val Asp 75 Arg Ile Glu Lys Ile	
gaa aaa gtt gtc caa aaa cct cat gtg caa ata gtt aag cca gta gtt	288
Glu Lys Val Val Gln Lys Pro His Val Gln Ile Val Lys Pro Val Val	
aaa act gat ata cat gtt gat aat cgc ccg ctg ccc gag gcc aag aaa	336
Lys Thr Asp Ile 100 His Val Asp Asn 105 Arg Pro Leu Pro Glu Ala Lys Lys	
aat gag act gat aat att aat aag aaa gac tct gag ttg aat gaa gcc	384
Asn Glu Thr Asp Asn Ile Asn Lys Lys Asp Ser Glu Leu Asn Glu Ala	
aaa aaa gat acg gat tca ttt tct tca gat ctg ata aca atc gaa gat	432
Lys Lys Asp Thr Asp Ser Phe 135 Ser Ser Asp Leu Thr Ile Glu Asp	
att gac gaa gag gat aga aaa aat ccc att ctt gtt tct gta tat agt	480
Ile Asp Glu Glu Asp Arg Lys Asn Pro Ile Leu Val Ser Val Tyr Ser	
aac gac att tac agg cat ctg aga aat ttg gag acc cag ttt cct ata	528
Asn Asp Ile Tyr Arg 165 His Leu Arg Asn Leu 170 Glu Thr Gln Phe Pro Ile	
cta aaa ggg tac ttg cat ggg caa gag gta act ccc aag atg aga tgt	576
Leu Lys Gly Tyr 180 Leu His Gly Gln Glu Val Thr Pro Lys Met Arg Cys	
gta ctt gtt gat tgg tta att gaa gtc cat gaa cag ttt cat ctg atg	624
Val Leu Val Asp Trp Leu Ile Glu Val His Glu Gln Phe His Leu Met	
cag gag aca ctg tat ctt acc att gca atc att gat cga ttc tta cag	672
Gln Glu Thr Leu Tyr Leu Thr 215 Ile Ala Ile Ile Asp 220 Arg Phe Leu Gln	
gac ttt cga ctg att acc cga aag agg ctg cag tta gta ggt gta aca	720

## PhoenixTemp32470.tmp.txt

Asp 225	Phe	Arg	Leu	Ile	Thr 230	Arg	Lys	Arg	Leu	Gln 235	Leu	Val	Gly	Val	Thr 240	
gct	atg	ttt	ata	gct	agc	aaa	tat	gaa	gaa	atg	tac	tcc	cca	gac	ata	768
Ala	Met	Phe	Ile	Ala 245	Ser	Lys	Tyr	Glu	Glu 250	Met	Tyr	Ser	Pro	Asp 255	Ile	
agc	gat	ttt	gtg	tat	att	acg	gat	aat	gct	tac	aca	aag	gca	gaa	att	816
Ser	Asp	Phe	Val 260	Tyr	Ile	Thr	Asp	Asn 265	Ala	Tyr	Thr	Lys	Ala 270	Glu	Ile	
tta	caa	atg	gaa	atg	ctc	atg	att	aaa	aca	ctc	gaa	ttt	tca	ttt	gga	864
Leu	Gln	Met	Glu 275	Met	Leu	Met	Ile 280	Lys	Thr	Leu	Glu	Phe 285	Ser	Phe	Gly	
cgg	ccg	cta	ccg	ttg	cat	ttc	ctc	agg	aga	tac	agc	aaa	gct	gga	aag	912
Arg	Pro 290	Leu	Pro	Leu	His	Phe 295	Leu	Arg	Arg	Tyr	Ser 300	Lys	Ala	Gly	Lys	
gct	ctg	cca	gtt	cat	cac	aca	ttg	gca	aaa	tac	ttt	ttg	gag	caa	tgc	960
Ala	Leu	Pro	Val	His	His 310	Thr	Leu	Ala	Lys	Tyr 315	Phe	Leu	Glu	Gln	Cys 320	
ctg	gtt	cat	tac	gaa	gtt	tgc	cat	cat	cca	cct	agc	ttg	att	gca	gcg	1008
Leu	Val	His	Tyr	Glu 325	Val	Cys	His	His	Pro 330	Pro	Ser	Leu	Ile	Ala 335	Ala	
gct	gct	ctc	tat	ctt	tca	ttc	ctt	ttg	cta	ggg	aat	gac	tct	cct	caa	1056
Ala	Ala	Leu	Tyr 340	Leu	Ser	Phe	Leu 345	Leu	Gly	Asn	Asp	Ser	Pro	Gln		
gaa	tca	gag	agc	gat	ctc	att	tgg	act	aaa	act	ttg	gta	cat	tac	agt	1104
Glu	Ser	Glu 355	Ser	Asp	Leu	Ile	Trp 360	Thr	Lys	Thr	Leu	Val 365	His	Tyr	Ser	
aca	tac	aag	tta	agg	gac	gta	ttg	ccc	gta	gta	aaa	gaa	att	tcc	tca	1152
Thr	Tyr 370	Lys	Leu	Arg	Asp	Val 375	Leu	Pro	Val	Val	Lys 380	Glu	Ile	Ser	Ser	
ata	atg	gtt	aca	gcg	gaa	aag	agc	aag	tat	cag	gct	gcg	cgg	aga	aag	1200
Ile	Met	Val	Thr	Ala 390	Glu	Lys	Ser	Lys	Tyr	Gln 395	Ala	Ala	Arg	Arg	Lys 400	
tac	acg	aac	ccg	aag	cac	atg	aag	atc	agt	ctc	cgt	cct	gag	ttg	aag	1248
Tyr	Thr	Asn	Pro	Lys 405	His	Met	Lys	Ile	Ser 410	Leu	Arg	Pro	Glu	Leu 415	Lys	
tct	ccg	act	tta	gcc	gcc	ttg	gcg	aat	cac	aag	gac	gaa	taa			1290
Ser	Pro	Thr	Leu 420	Ala	Ala	Leu	Ala	Asn 425	His	Lys	Asp	Glu				

&lt;210&gt; 2356

&lt;211&gt; 429

&lt;212&gt; PRT

&lt;213&gt; Nasonia vitripennis

&lt;400&gt; 2356

Met	Thr	Val	Asn	Asp 5	Gln	Asn	Val	Ala	Asn 10	Gln	Glu	Asn	Val	Lys 15	Asn	
Val	Lys	Ser	Met 20	Ala	Leu	Ala	Pro	Gly 25	Gln	Thr	Arg	Arg	Ala 30	Ala	Leu	
Gly	Glu	Ile 35	Gly	Asn	Lys	Val	Ile 40	Ile	Gln	Arg	Thr	Asn 45	Asp	Leu	Thr	
Gly	Lys 50	Ser	Ser	Gln	Ala	Gly 55	Lys	Asp	Lys	Val	Leu 60	Leu	Lys	Lys	Pro	
Leu	Val	Thr	Lys	Gln 70	Pro	Gln	Val	Lys	Val	Asp 75	Arg	Ile	Glu	Lys	Ile 80	
Glu	Lys	Val	Val	Gln 85	Lys	Pro	His	Val	Gln 90	Ile	Val	Lys	Pro	Val 95	Val	
Lys	Thr	Asp	Ile 100	His	Val	Asp	Asn	Arg 105	Pro	Leu	Pro	Glu	Ala 110	Lys	Lys	
Asn	Glu	Thr 115	Asp	Asn	Ile	Asn	Lys 120	Lys	Asp	Ser	Glu	Leu	Asn 125	Glu	Ala	
Lys	Lys 130	Asp	Thr	Asp	Ser	Phe 135	Ser	Ser	Asp	Leu	Ile 140	Thr	Ile	Glu	Asp	
Ile	Asp	Glu	Glu	Asp	Arg 150	Lys	Asn	Pro	Ile	Leu 155	Val	Ser	Val	Tyr	Ser 160	
Asn	Asp	Ile	Tyr	Arg 165	His	Leu	Arg	Asn	Leu 170	Glu	Thr	Gln	Phe	Pro 175	Ile	
Leu	Lys	Gly	Tyr 180	Leu	His	Gly	Gln	Glu 185	Val	Thr	Pro	Lys	Met 190	Arg	Cys	

## PhoenixTemp32470.tmp.txt

Val Leu Val Asp Trp Leu Ile Glu Val His Glu Gln Phe His Leu Met  
 195 200 205  
 Gln Glu Thr Leu Tyr Leu Thr Ile Ala Ile Ile Asp Arg Phe Leu Gln  
 210 215 220  
 Asp Phe Arg Leu Ile Thr Arg Lys Arg Leu Gln Leu Val Gly Val Thr  
 225 230 235 240  
 Ala Met Phe Ile Ala Ser Lys Tyr Glu Glu Met Tyr Ser Pro Asp Ile  
 245 250 255  
 Ser Asp Phe Val Tyr Ile Thr Asp Asn Ala Tyr Thr Lys Ala Glu Ile  
 260 265 270  
 Leu Gln Met Glu Met Leu Met Ile Lys Thr Leu Glu Phe Ser Phe Gly  
 275 280 285  
 Arg Pro Leu Pro Leu His Phe Leu Arg Arg Tyr Ser Lys Ala Gly Lys  
 290 295 300  
 Ala Leu Pro Val His His Thr Leu Ala Lys Tyr Phe Leu Glu Gln Cys  
 305 310 315 320  
 Leu Val His Tyr Glu Val Cys His His Pro Pro Ser Leu Ile Ala Ala  
 325 330 335  
 Ala Ala Leu Tyr Leu Ser Phe Leu Leu Glu Gly Asn Asp Ser Pro Gln  
 340 345 350  
 Glu Ser Glu Ser Asp Leu Ile Trp Thr Lys Thr Leu Val His Tyr Ser  
 355 360 365  
 Thr Tyr Lys Leu Arg Asp Val Leu Pro Val Val Lys Glu Ile Ser Ser  
 370 375 380  
 Ile Met Val Thr Ala Glu Lys Ser Lys Tyr Gln Ala Arg Arg Lys  
 385 390 395 400  
 Tyr Thr Asn Pro Lys His Met Lys Ile Ser Leu Arg Pro Glu Leu Lys  
 405 410 415  
 Ser Pro Thr Leu Ala Ala Leu Ala Asn His Lys Asp Glu  
 420 425

&lt;210&gt; 2357

&lt;211&gt; 1968

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1968)

&lt;400&gt; 2357

atg gac gca agg cca caa cgt ccc tcc cgt gct gga gcc ctc cag ccg	48
Met Asp Ala Arg Pro Gln Arg Pro Ser Arg Ala Gly Ala Leu Gln Pro	
1 5 10 15	
tct ggc aac gag aac att gca ccg gtc aaa caa gtt ttg cat cag cgt	96
Ser Gly Asn Glu Asn Ile Ala Pro Val Lys Gln Val Leu His Gln Arg	
20 25 30	
cat aag tcg gcc ggg aat ctg aag acc atc tac aac cca gct act gcg	144
His Lys Ser Ala Gly Asn Leu Lys Thr Ile Tyr Asn Pro Ala Thr Ala	
35 40 45	
ttc ccg gca ggt ggt ctc aac gtt gca cca aag cga gct gtc ttc ggc	192
Phe Pro Ala Gly Gly Leu Asn Val Ala Pro Lys Arg Ala Val Phe Gly	
50 55 60	
gag atg aac acg aac gcc aag agc gca gct cag gat ctg ccc tca aag	240
Glu Met Asn Thr Asn Ala Lys Ser Ala Ala Gln Asp Leu Pro Ser Lys	
65 70 75 80	
aag gca tcc atg gct cca gtg gtt tcc cat gtg ggc aag gag aac tct	288
Lys Ala Ser Met Ala Pro Val Val Ser His Val Gly Lys Glu Asn Ser	
85 90 95	
ggt aaa cca gca gct ttg caa aag cct gca caa cga tcg agt aaa agc	336
Gly Lys Pro Ala Ala Leu Gln Lys Pro Ala Gln Arg Ser Ser Lys Ser	
100 105 110	
tac gcg atg ctg cac cag cag cca tcc gca gct gat acc cac ggc gct	384
Tyr Ala Met Leu His Gln Gln Pro Ser Ala Ala Asp Thr His Gly Ala	
115 120 125	
gca ctt cgc aag gcc acg gcc gat gta ctc act aag cct caa gtg acc	432
Ala Leu Arg Lys Ala Thr Ala Asp Val Leu Thr Lys Pro Gln Val Thr	
130 135 140	
aag aag acc act ttc gta tac caa gac acg act gct gca caa ctc ctg	480

## PhoenixTemp32470.tmp.txt

Lys 145	Lys	Thr	Thr	Phe	Val 150	Tyr	Gln	Asp	Thr	Thr 155	Ala	Ala	Gln	Leu	Leu 160	
ccc Pro	gag Glu	ccg Pro	aat Asn	cag Gln 165	cat His	atg Met	att Ile	gct Ala	gat Asp 170	cac His	cca Pro	gta Val	ata Ile	ctc Leu 175	cca Pro	528
aag Lys	ccc Pro	gac Asp	ata Ile 180	atc Ile	aag Lys	aat Asn	ccc Pro	cgc Arg 185	cat His	tac Tyr	aaa Lys	agc Ser	cag Gln 190	cct Pro	caa Gln	576
ctt Leu	aag Lys	ccg Pro 195	aat Asn	cag Gln	ccc Pro	gtc Val	ctc Leu 200	cgc Arg	cga Arg	act Thr	ctt Leu	agc Ser 205	aga Arg	cag Gln	ttc Phe	624
gcc Ala	gag Glu 210	gtg Val	gcg Ala	agc Ser	ttg Leu	atc Ile 215	tcg Ser	tca Ser	gct Ala	ctg Leu	gcg Ala 220	gaa Glu	gag Glu	gcc Ala	caa Gln	672
gat Asp 225	cca Pro	cca Pro	tat Tyr	gag Glu	gat Asp 230	gcg Ala	ttg Leu	gaa Glu	gag Glu	att Ile 235	gcc Ala	gac Asp	atc Ile	aat Asn	ggg Gly 240	720
tca Ser	agg Arg	ggc Gly	gtt Val	cca Pro 245	atc Ile	aac Asn	ata Ile	cta Leu	ggt Gly 250	gac Asp	tac Tyr	atg Met	gag Glu	gag Glu 255	cca Pro	768
aac Asn	att Ile	gag Glu	att Ile 260	atc Ile	tcg Ser	cat His	gat Asp	gct Ala 265	ata Ile	gat Asp	gac Asp	tac Tyr	ccc Pro 270	ttg Leu	gag Glu	816
gag Glu	cac His	gtc Val 275	cca Pro	gca Ala	ccg Pro	cca Pro	acc Thr 280	gca Ala	ttc Phe	gag Glu	tcc Ser	gaa Glu 285	gac Asp	ggg Gly	tgg Trp	864
gag Glu 290	gag Glu	gag Glu	gac Asp	ggc Gly	gat Asp	atg Met 295	gat Asp	gac Asp	gag Glu	caa Gln	ggt Gly 300	tat Tyr	acc Thr	act Thr	gcc Ala	912
cat His 305	tct Ser	tac Tyr	cga Arg	tcc Ser	cat His 310	ggc Gly	gaa Glu	aac Asn	acc Thr	acg Thr 315	ggg Gly	ggg Gly	ctc Leu	act Thr	gaa Glu 320	960
ctc Leu	ctg Leu	gcc Ala	ccc Pro	aag Lys 325	gca Ala	acg Thr	gcc Ala	aga Arg	gtg Val 330	caa Gln	cag Gln	gaa Glu	ctg Leu	gag Glu 335	cag Gln	1008
gcc Ala	aaa Lys	gca Ala	atc Ile 340	gtc Val	gag Glu	gag Glu	tcg Ser	agg Arg 345	act Thr	att Ile	gaa Glu	gaa Glu	atc Ile 350	gaa Glu	gag Glu	1056
gag Glu	caa Gln	tgg Trp 355	gat Asp	gtc Val	agc Ser	atg Met	gtg Val 360	gca Ala	gag Glu	tat Tyr	gga Gly	gaa Glu 365	gag Glu	atc Ile	ttt Phe	1104
gag Glu 370	tac Tyr	atg Met	cgc Arg	gag Glu	ctc Leu	gag Glu 375	acc Thr	cgt Arg	atg Met	act Thr	ccc Pro 380	gac Asp	cct Pro	cac His	tac Tyr	1152
atg Met 385	gac Asp	atc Ile	caa Gln	aca Thr	gag Glu 390	ata Ile	cag Gln	tgg Trp	tcc Ser	atg Met 395	cgc Arg	tca Ser	gtc Val	ctg Leu	atc Ile 400	1200
gat Asp	tgg Trp	gtc Val	gtt Val	cag Gln 405	gtt Val	cac His	cac His	cga Arg	ttc Phe 410	acg Thr	ctc Leu	ctc Leu	ccc Pro	gaa Glu 415	act Thr	1248
ctc Leu	ttc Phe	cta Leu	tgt Cys 420	gtc Val	aac Asn	tac Tyr	atc Ile	gac Asp 425	cgg Arg	ttc Phe	ctg Leu	tca Ser	cag Gln 430	aag Lys	gtc Val	1296
gtt Val	tcc Ser	gtt Val 435	gcc Ala	aag Lys	ttg Leu	caa Gln	ctt Leu 440	gtc Val	gga Gly	gcc Ala	acg Thr	gcc Ala 445	ata Ile	ttc Phe	atc Ile	1344
gcg Ala	gcc Ala 450	aag Lys	tac Tyr	gag Glu	gag Glu	atc Ile 455	aac Asn	tgc Cys	ccc Pro	tcg Ser	gtc Val 460	aat Asn	gag Glu	ata Ile	ata Ile	1392
ttc Phe 465	atg Met	gtc Val	gac Asp	aac Asn	ggc Gly 470	ttc Phe	tct Ser	gcc Ala	gat Asp	gag Glu 475	att Ile	ctc Leu	aag Lys	gct Ala	gag Glu 480	1440
cgt Arg	ttt Phe	atg Met	ctc Leu	agc Ser 485	atg Met	tta Leu	caa Gln	ttc Phe	gag Glu 490	ctt Leu	ggg Gly	tgg Trp	ccc Pro	ggt Gly 495	ccc Pro	1488
atg Met	agc Ser	ttc Phe	ttg Leu 500	cgc Arg	cga Arg	atc Ile	agc Ser	aag Lys 505	gcc Ala	gat Asp	gac Asp	tac Tyr	gac Asp 510	ctg Leu	gag Glu	1536
acc	agg	act	ctg	gcg	aag	tac	ttc	ctc	gaa	gtt	act	atc	atg	gac	gag	1584

## PhoenixTemp32470.tmp.txt

Thr	Arg	Thr	Leu	Ala	Lys	Tyr	Phe	Leu	Glu	Val	Thr	Ile	Met	Asp	Glu	
aga	ttt	gtt	ggc	tgc	ccg	cca	agc	ttc	ctg	gca	gct	gga	gca	cac	tgc	1632
Arg	Phe	Val	Gly	Cys	Pro	Pro	Ser	Phe	Leu	Ala	Ala	Gly	Ala	His	Cys	
	530					535					540					
ctc	tct	cga	atg	att	ctt	gag	aag	ggt	gac	tgg	gcc	cac	acc	tac	tgg	1680
Leu	Ser	Arg	Met	Ile	Leu	Glu	Lys	Gly	Asp	Trp	Ala	His	Thr	Tyr	Trp	
545					550					555					560	
tcg	ggc	tac	acc	tgg	tct	cag	ctc	agg	cca	ctg	gtg	gcg	ttg	cta	ttt	1728
Ser	Gly	Tyr	Thr	Trp	Ser	Gln	Leu	Arg	Pro	Leu	Val	Ala	Leu	Leu	Phe	
				565					570					575		
gac	tgc	tgc	cag	tac	ccc	gag	aag	cac	cat	caa	gcc	gtg	ttt	gaa	aag	1776
Asp	Cys	Cys	Gln	Tyr	Pro	Glu	Lys	His	His	Gln	Ala	Val	Phe	Glu	Lys	
			580					585					590			
tac	tgc	gac	cgc	cgc	tat	aag	ggt	gcg	tca	acg	ttt	gtc	cag	agg	gcc	1824
Tyr	Cys	Asp	Arg	Arg	Tyr	Lys	Gly	Ala	Ser	Thr	Phe	Val	Gln	Arg	Ala	
		595					600					605				
atc	gcg	cgc	ggc	tgg	acg	ccg	cct	ttc	ccc	atc	cag	cag	cca	ttc	gtt	1872
Ile	Ala	Arg	Gly	Trp	Thr	Pro	Pro	Phe	Pro	Ile	Gln	Gln	Pro	Phe	Val	
	610					615					620					
ttg	gac	gca	aac	tgc	ttc	gca	gag	acc	att	gcc	tca	tgc	agg	aac	ttc	1920
Leu	Asp	Ala	Asn	Cys	Phe	Ala	Glu	Thr	Ile	Ala	Ser	Cys	Arg	Asn	Phe	
625					630					635					640	
tct	tca	atg	gaa	gtg	gga	cgc	atg	atg	gcc	acc	gcg	acg	caa	gca		1965
Ser	Ser	Met	Glu	Val	Gly	Arg	Met	Met	Ala	Thr	Ala	Thr	Gln	Ala		
				645					650					655		
taa																1968

&lt;210&gt; 2358

&lt;211&gt; 655

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 2358

Met	Asp	Ala	Arg	Pro	Gln	Arg	Pro	Ser	Arg	Ala	Gly	Ala	Leu	Gln	Pro	
1				5					10					15		
Ser	Gly	Asn	Glu	Asn	Ile	Ala	Pro	Val	Lys	Gln	Val	Leu	His	Gln	Arg	
		20						25					30			
His	Lys	Ser	Ala	Gly	Asn	Leu	Lys	Thr	Ile	Tyr	Asn	Pro	Ala	Thr	Ala	
		35					40					45				
Phe	Pro	Ala	Gly	Gly	Leu	Asn	Val	Ala	Pro	Lys	Arg	Ala	Val	Phe	Gly	
	50					55					60					
Glu	Met	Asn	Thr	Asn	Ala	Lys	Ser	Ala	Ala	Gln	Asp	Leu	Pro	Ser	Lys	
65					70					75					80	
Lys	Ala	Ser	Met	Ala	Pro	Val	Val	Ser	His	Val	Gly	Lys	Glu	Asn	Ser	
				85					90					95		
Gly	Lys	Pro	Ala	Ala	Leu	Gln	Lys	Pro	Ala	Gln	Arg	Ser	Ser	Lys	Ser	
		100						105					110			
Tyr	Ala	Met	Leu	His	Gln	Gln	Pro	Ser	Ala	Ala	Asp	Thr	His	Gly	Ala	
		115					120					125				
Ala	Leu	Arg	Lys	Ala	Thr	Ala	Asp	Val	Leu	Thr	Lys	Pro	Gln	Val	Thr	
	130					135					140					
Lys	Lys	Thr	Thr	Phe	Val	Tyr	Gln	Asp	Thr	Thr	Ala	Ala	Gln	Leu	Leu	
145				150					155					160		
Pro	Glu	Pro	Asn	Gln	His	Met	Ile	Ala	Asp	His	Pro	Val	Ile	Leu	Pro	
			165						170					175		
Lys	Pro	Asp	Ile	Ile	Lys	Asn	Pro	Arg	His	Tyr	Lys	Ser	Gln	Pro	Gln	
		180						185					190			
Leu	Lys	Pro	Asn	Gln	Pro	Val	Leu	Arg	Arg	Thr	Leu	Ser	Arg	Gln	Phe	
	195						200					205				
Ala	Glu	Val	Ala	Ser	Leu	Ile	Ser	Ser	Ala	Leu	Ala	Glu	Glu	Ala	Gln	
	210					215					220					
Asp	Pro	Pro	Tyr	Glu	Asp	Ala	Leu	Glu	Glu	Ile	Ala	Asp	Ile	Asn	Gly	
225					230					235					240	
Ser	Arg	Gly	Val	Pro	Ile	Asn	Ile	Leu	Gly	Asp	Tyr	Met	Glu	Glu	Pro	
			245						250					255		
Asn	Ile	Glu	Ile	Ile	Ser	His	Asp	Ala	Ile	Asp	Asp	Tyr	Pro	Leu	Glu	

## PhoenixTemp32470.tmp.txt

260  
 Glu His Val Pro Ala Pro Pro Thr 265 Ala Phe Glu Ser Glu 270 Asp Gly Trp  
 275  
 Glu Glu Glu Asp Gly Asp Met 280 Asp Asp Glu Gln Gly Tyr Thr Thr Ala  
 290  
 His Ser Tyr Arg Ser His 300 Gly Glu Asn Thr Thr Gly Gly Leu Thr Glu  
 305  
 Leu Leu Ala Pro Lys 310 Ala Thr Ala Arg Val 315 Gln Gln Glu Leu Glu Gln  
 325  
 Ala Lys Ala Ile Val Glu Glu Ser Arg Thr Ile Glu Glu Ile Glu Glu  
 340  
 Glu Gln Trp Asp Val Ser Met Val 345 Ala Glu Tyr Gly Glu Glu Ile Phe  
 355  
 Glu Tyr Met Arg Glu Leu Glu 360 Thr Arg Met Thr Pro Asp Pro His Tyr  
 370  
 Met Asp Ile Gln Thr Glu 375 Ile Gln Trp Ser Met Arg Ser Val Leu Ile  
 385  
 Asp Trp Val Val Gln 390 Val His His Arg Phe Thr Leu Leu Pro Glu Thr  
 405  
 Leu Phe Leu Cys Val Asn Tyr Ile Asp 410 Arg Phe Leu Ser Gln Lys Val  
 420  
 Val Ser Val Ala Lys Leu Gln Leu 425 Val Gly Ala Thr Ala Ile Phe Ile  
 435  
 Ala Ala Lys Tyr Glu Glu Ile 440 Asn Cys Pro Ser Val Asn Glu Ile Ile  
 450  
 Phe Met Val Asp Asn Gly Phe Ser Ala Asp Glu Ile Leu Lys Ala Glu  
 465  
 Arg Phe Met Leu Ser 470 Met Leu Gln Phe Glu Leu Gly Trp Pro Gly Pro  
 485  
 Met Ser Phe Leu 490 Arg Arg Ile Ser Lys Ala Asp Asp Tyr Asp Leu Glu  
 500  
 Thr Arg Thr Leu Ala Lys Tyr Phe 505 Leu Glu Val Thr Ile Met Asp Glu  
 515  
 Arg Phe Val Gly Cys Pro 520 Ser Phe Leu Ala Ala Gly Ala His Cys  
 530  
 Leu Ser Arg Met Ile Leu 535 Glu Lys Gly Asp Trp Ala His Thr Tyr Trp  
 545  
 Ser Gly Tyr Thr Trp 550 Ser Gln Leu Arg Pro Leu Val Ala Leu Leu Phe  
 565  
 Asp Cys Cys Gln Tyr Pro Glu Lys 570 His Gln Ala Val Phe Glu Lys  
 580  
 Tyr Cys Asp Arg Arg Tyr Lys 585 Gly Ala Ser Thr Phe Val Gln Arg Ala  
 595  
 Ile Ala Arg Gly Trp Thr Pro 600 Pro Phe Pro Ile Gln Gln Pro Phe Val  
 610  
 Leu Asp Ala Asn Cys Phe 615 Ala Glu Thr Ile Ala Ser Cys Arg Asn Phe  
 625  
 Ser Ser Met Glu Val Gly Arg Met Met Ala Thr Ala Thr Gln Ala  
 645  
 650  
 655

&lt;210&gt; 2359

&lt;211&gt; 1422

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1422)

&lt;400&gt; 2359

atg	cct	aca	gtt	cgg	gcc	act	cgt	acg	cgc	aac	gag	aac	gac	gag	aat	48
Met	Pro	Thr	Val	Arg	Ala	Thr	Arg	Thr	Arg	Asn	Glu	Asn	Asp	Glu	Asn	
1				5				10					15			
agc	ggc	acg	acg	cgt	ctc	aca	aga	gcc	cag	gct	gct	gct	ctc	aag	gtt	96
Ser	Gly	Thr	Thr	Arg	Leu	Thr	Arg	Ala	Gln	Ala	Ala	Ala	Leu	Lys	Val	
			20					25					30			
gac	gag	cta	tca	atg	cct	gcc	aag	gct	gcc	ctg	caa	acg	aag	aag	tcc	144
Asp	Glu	Leu	Ser	Met	Pro	Ala	Lys	Ala	Ala	Leu	Gln	Thr	Lys	Lys	Ser	
		35					40					45				

## PhoenixTemp32470.tmp.txt

aca	gca	aac	ggt	act	gcc	gct	gcc	aac	acg	cgg	aaa	cgc	gct	gca	ttg	192
Thr	Ala	Asn	Gly	Thr	Ala	Ala	Ala	Asn	Thr	Arg	Lys	Arg	Ala	Ala	Leu	
	50					55					60					
ggc	gat	gtc	agc	aat	gtt	gga	aag	gcc	gat	ggg	gtt	gct	gga	aag	aag	240
Gly	Asp	Val	Ser	Asn	Val	Gly	Lys	Ala	Asp	Gly	Val	Ala	Gly	Lys	Lys	
65					70					75					80	
gcg	aaa	gga	tta	gtc	tcc	aag	gct	gct	cag	ccc	acc	ggg	att	gag	aag	288
Ala	Lys	Gly	Leu	Val	Ser	Lys	Ala	Ala	Gln	Pro	Thr	Gly	Ile	Glu	Lys	
				85					90					95		
aag	acc	gcg	cga	ccc	aca	aga	cct	gct	ctc	gca	tcc	cag	acc	gcc	aac	336
Lys	Thr	Ala	Arg	Pro	Thr	Arg	Pro	Ala	Leu	Ala	Ser	Gln	Thr	Ala	Asn	
			100					105					110			
tcc	aaa	cct	gcc	cag	tcc	ggg	tct	ggg	act	atc	aac	aac	aag	cga	aag	384
Ser	Lys	Pro	Ala	Gln	Ser	Gly	Ser	Gly	Thr	Ile	Asn	Asn	Lys	Arg	Lys	
		115					120					125				
gtc	ctg	aca	gac	acc	aag	ccc	aag	gcc	cct	gtc	aag	aaa	act	gag	ccc	432
Val	Leu	Thr	Asp	Thr	Lys	Pro	Lys	Ala	Pro	Val	Lys	Lys	Thr	Glu	Pro	
130						135					140					
aca	tcc	aag	gaa	ccc	gag	gtt	act	gaa	gag	aat	gag	cgg	tca	gag	aca	480
Thr	Ser	Lys	Glu	Pro	Glu	Leu	Thr	Glu	Glu	Asn	Glu	Arg	Ser	Glu	Thr	
145					150					155					160	
ccc	gaa	gag	gct	gag	gtt	gag	aag	cct	gaa	gtc	tct	gtt	gag	aag	ccc	528
Pro	Glu	Glu	Ala	Glu	Val	Glu	Lys	Pro	Glu	Val	Ser	Val	Glu	Lys	Pro	
				165					170					175		
gaa	gtt	cag	gac	gcg	ccc	ttc	aag	tac	cct	ccc	ggg	gtc	aat	aac	ctg	576
Glu	Val	Gln	Asp	Ala	Pro	Phe	Lys	Tyr	Pro	Pro	Gly	Val	Asn	Asn	Leu	
			180					185					190			
gac	gaa	gag	gat	ctt	gaa	gac	cct	ctc	atg	gtt	gct	gaa	tac	gcc	aac	624
Asp	Glu	Glu	Asp	Leu	Glu	Asp	Pro	Leu	Met	Val	Ala	Glu	Tyr	Ala	Asn	
			195				200					205				
gaa	att	ttc	gaa	tac	ctc	cgc	gac	ctc	gag	tgc	aag	tcg	att	ccc	aac	672
Glu	Ile	Phe	Glu	Tyr	Leu	Arg	Asp	Leu	Glu	Cys	Lys	Ser	Ile	Pro	Asn	
	210					215					220					
cct	caa	tat	atg	tct	cac	caa	gac	gac	ctc	gaa	tgg	aag	acg	cgt	ggg	720
Pro	Gln	Tyr	Met	Ser	His	Gln	Asp	Asp	Leu	Glu	Trp	Lys	Thr	Arg	Gly	
225					230					235					240	
atc	ctg	gtt	gac	tgg	ctg	att	gaa	gtc	cac	acg	cgt	ttc	cac	ctg	ctc	768
Ile	Leu	Val	Asp	Trp	Leu	Ile	Glu	Val	His	Thr	Arg	Phe	His	Leu	Leu	
				245					250					255		
ccc	gag	acc	ctc	ttc	ctc	gcc	atc	aac	gtt	atc	gat	cga	ttc	ctg	tcg	816
Pro	Glu	Thr	Leu	Phe	Leu	Ala	Ile	Asn	Val	Ile	Asp	Arg	Phe	Leu	Ser	
			260					265					270			
gag	aag	gtt	gtc	cag	ctt	gac	cgt	ttc	caa	ctc	gtg	ggc	atc	act	gcc	864
Glu	Lys	Val	Val	Gln	Leu	Asp	Arg	Phe	Gln	Leu	Val	Gly	Ile	Thr	Ala	
		275					280					285				
atg	ttt	atc	gcg	tcc	aag	tac	gaa	gag	gtc	ctc	tct	cct	cat	gtc	gag	912
Met	Phe	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Val	Leu	Ser	Pro	His	Val	Glu	
	290					295					300					
aac	ttc	aag	cgc	att	gcc	gat	gat	ggg	ttc	agc	gag	gct	gag	atc	ctc	960
Asn	Phe	Lys	Arg	Ile	Ala	Asp	Asp	Gly	Phe	Ser	Glu	Ala	Glu	Ile	Leu	
				310						315					320	
agc	gcc	gag	cga	ttt	gta	ctc	agc	aca	ctc	aac	tat	gat	ctc	agc	tac	1008
Ser	Ala	Glu	Arg	Phe	Val	Leu	Ser	Thr	Leu	Asn	Tyr	Asp	Leu	Ser	Tyr	
				325					330					335		
ccc	aac	ccc	atg	aac	ttc	ctc	cgc	cga	gtc	tcc	aag	gcc	gac	aac	tat	1056
Pro	Asn	Pro	Met	Asn	Phe	Leu	Arg	Arg	Val	Ser	Lys	Ala	Asp	Asn	Tyr	
								345					350			
gac	att	cag	tct	cgc	acc	atc	gga	aag	tac	ttg	atg	gag	atc	agc	ctc	1104
Asp	Ile	Gln	Ser	Arg	Thr	Ile	Gly	Lys	Tyr	Leu	Met	Glu	Ile	Ser	Leu	
							360					365				
ttg	gac	cac	cga	ttt	atg	gcc	tac	cga	ccc	agt	cac	gtt	gct	gct	ggg	1152
Leu	Asp	His	Arg	Phe	Met	Ala	Tyr	Arg	Pro	Ser	His	Val	Ala	Ala	Gly	
						375					380					
gcc	atg	tac	ttg	gcg	cga	ctt	atg	ctt	gac	cgc	ggg	gaa	tgg	gat	gcc	1200
Ala	Met	Tyr	Leu	Ala	Arg	Leu	Met	Leu	Asp	Arg	Gly	Glu	Trp	Asp	Ala	
				390						395					400	
act	cta	tct	tac	tat	gcg	ggg	tac	acc	gag	gat	gag	gtc	gag	cct	gtc	1248
Thr	Leu	Ser	Tyr	Tyr	Ala	Gly	Tyr	Thr	Glu	Asp	Glu	Val	Glu	Pro	Val	
				405					410					415		

## PhoenixTemp32470.tmp.txt

gtc	cac	ctc	atg	gtc	gac	tac	ctc	gct	cgc	cct	gtc	gtc	cat	gag	gcc	1296
Val	His	Leu	Met	Val	Asp	Tyr	Leu	Ala	Arg	Pro	Val	Val	His	Glu	Ala	
			420					425					430			
ttt	gac	aag	aag	tat	gct	gcc	aag	aag	ttc	ttg	agg	gct	tcg	ctc	ctc	1344
Phe	Asp	Lys	Lys	Tyr	Ala	Ala	Lys	Lys	Phe	Leu	Arg	Ala	Ser	Leu	Leu	
		435					440					445				
gct	cgc	caa	tg	gcc	aag	aag	aat	gct	ggt	ctc	ttc	ggc	att	acc	gat	1392
Ala	Arg	Gln	Trp	Ala	Lys	Lys	Asn	Ala	Val	Leu	Phe	Gly	Ile	Thr	Asp	
		450				455					460					
att	gaa	ctg	ggt	ctc	gac	caa	ata	tca	tag							1422
Ile	Glu	Leu	Gly	Leu	Asp	Gln	Ile	Ser								
465					470											

&lt;210&gt; 2360

&lt;211&gt; 473

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 2360

Met	Pro	Thr	Val	Arg	Ala	Thr	Arg	Thr	Arg	Asn	Glu	Asn	Asp	Glu	Asn	
1				5					10					15		
Ser	Gly	Thr	Thr	Arg	Leu	Thr	Arg	Ala	Gln	Ala	Ala	Ala	Leu	Lys	Val	
			20					25					30			
Asp	Glu	Leu	Ser	Met	Pro	Ala	Lys	Ala	Ala	Leu	Gln	Thr	Lys	Lys	Ser	
		35					40					45				
Thr	Ala	Asn	Gly	Thr	Ala	Ala	Ala	Asn	Thr	Arg	Lys	Arg	Ala	Ala	Leu	
	50				55					60						
Gly	Asp	Val	Ser	Asn	Val	Gly	Lys	Ala	Asp	Gly	Val	Ala	Gly	Lys	Lys	
65				70					75					80		
Ala	Lys	Gly	Leu	Val	Ser	Lys	Ala	Ala	Gln	Pro	Thr	Gly	Ile	Glu	Lys	
			85					90					95			
Lys	Thr	Ala	Arg	Pro	Thr	Arg	Pro	Ala	Leu	Ala	Ser	Gln	Thr	Ala	Asn	
		100						105					110			
Ser	Lys	Pro	Ala	Gln	Ser	Gly	Ser	Gly	Thr	Ile	Asn	Asn	Lys	Arg	Lys	
		115					120					125				
Val	Leu	Thr	Asp	Thr	Lys	Pro	Lys	Ala	Pro	Val	Lys	Lys	Thr	Glu	Pro	
	130					135					140					
Thr	Ser	Lys	Glu	Pro	Glu	Leu	Thr	Glu	Glu	Asn	Glu	Arg	Ser	Glu	Thr	
145				150					155						160	
Pro	Glu	Glu	Ala	Glu	Val	Glu	Lys	Pro	Glu	Val	Ser	Val	Glu	Lys	Pro	
			165					170						175		
Glu	Val	Gln	Asp	Ala	Pro	Phe	Lys	Tyr	Pro	Pro	Gly	Val	Asn	Asn	Leu	
		180						185					190			
Asp	Glu	Glu	Asp	Leu	Glu	Asp	Pro	Leu	Met	Val	Ala	Glu	Tyr	Ala	Asn	
	195						200					205				
Glu	Ile	Phe	Glu	Tyr	Leu	Arg	Asp	Leu	Glu	Cys	Lys	Ser	Ile	Pro	Asn	
	210					215					220					
Pro	Gln	Tyr	Met	Ser	His	Gln	Asp	Asp	Leu	Glu	Trp	Lys	Thr	Arg	Gly	
225				230					235						240	
Ile	Leu	Val	Asp	Trp	Leu	Ile	Glu	Val	His	Thr	Arg	Phe	His	Leu	Leu	
			245						250				255			
Pro	Glu	Thr	Leu	Phe	Leu	Ala	Ile	Asn	Val	Ile	Asp	Arg	Phe	Leu	Ser	
		260						265					270			
Glu	Lys	Val	Val	Gln	Leu	Asp	Arg	Phe	Gln	Leu	Val	Gly	Ile	Thr	Ala	
		275					280					285				
Met	Phe	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Val	Leu	Ser	Pro	His	Val	Glu	
	290					295					300					
Asn	Phe	Lys	Arg	Ile	Ala	Asp	Asp	Gly	Phe	Ser	Glu	Ala	Glu	Ile	Leu	
305					310					315					320	
Ser	Ala	Glu	Arg	Phe	Val	Leu	Ser	Thr	Leu	Asn	Tyr	Asp	Leu	Ser	Tyr	
			325					330						335		
Pro	Asn	Pro	Met	Asn	Phe	Leu	Arg	Arg	Val	Ser	Lys	Ala	Asp	Asn	Tyr	
		340						345					350			
Asp	Ile	Gln	Ser	Arg	Thr	Ile	Gly	Lys	Tyr	Leu	Met	Glu	Ile	Ser	Leu	
		355					360					365				
Leu	Asp	His	Arg	Phe	Met	Ala	Tyr	Arg	Pro	Ser	His	Val	Ala	Ala	Gly	
	370					375					380					
Ala	Met	Tyr	Leu	Ala	Arg	Leu	Met	Leu	Asp	Arg	Gly	Glu	Trp	Asp	Ala	
385					390					395					400	



## PhoenixTemp32470.tmp.txt

Thr Leu Ser Tyr Tyr Ala Gly Tyr Thr Glu Asp Glu Val Glu Pro Val  
 Val His Leu Met Val Asp Tyr Leu Ala Arg Pro Val Val His Glu Ala  
 Phe Asp Lys Lys Tyr Ala Ala Lys Lys Phe Leu Arg Ala Ser Leu Leu  
 Ala Arg Gln Trp Ala Lys Lys Asn Ala Val Leu Phe Gly Ile Thr Asp  
 Ile Glu Leu Gly Leu Asp Gln Ile Ser  
 405 410 415 420 425 430 435 440 445 450 455 460 465

&lt;210&gt; 2361

&lt;211&gt; 1401

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1401)

&lt;400&gt; 2361

atg	cag	act	gga	aat	gag	gag	aat	gct	gtt	ccc	tca	tgg	tat	tca	gtg	48
Met	Gln	Thr	Gly	Asn	Glu	Glu	Asn	Ala	Val	Pro	Ser	Trp	Tyr	Ser	Val	
1				5					10					15		
cct	ggt	aag	gag	gtg	cat	agc	gat	aag	gct	cat	gag	cac	cgg	gtg	gct	96
Pro	Gly	Lys	Glu	Val	His	Ser	Asp	Lys	Ala	His	Glu	His	Arg	Val	Ala	
			20					25					30			
ttg	agc	gat	gta	act	ggg	ttg	gcc	aac	agt	aat	ttc	atg	cat	gaa	aag	144
Leu	Ser	Asp	Val	Thr	Gly	Leu	Ala	Asn	Ser	Asn	Phe	Met	His	Glu	Lys	
			35				40					45				
ctt	cat	tct	aac	aga	tgc	agt	ggt	gaa	ccg	tct	agc	acg	gca	cgt	aat	192
Leu	His	Ser	Asn	Arg	Cys	Ser	Gly	Glu	Pro	Ser	Ser	Thr	Ala	Arg	Asn	
			50			55					60					
agt	ctc	gag	ata	aat	ctg	aat	cat	gcg	gtg	gag	tcg	gat	cag	gaa	aac	240
Ser	Leu	Glu	Ile	Asn	Leu	Asn	His	Ala	Val	Glu	Ser	Asp	Gln	Glu	Asn	
					70					75					80	
atg	gtg	tcc	ata	tat	gct	tcg	aac	act	ctg	gac	aca	ccc	aat	agc	aac	288
Met	Val	Ser	Ile	Tyr	Ala	Ser	Asn	Thr	Leu	Asp	Thr	Pro	Asn	Ser	Asn	
				85					90					95		
gat	gtg	agc	agc	ctt	ctt	gaa	gat	caa	cag	ctg	gaa	agt	ata	cga	aga	336
Asp	Val	Ser	Ser	Leu	Leu	Glu	Asp	Gln	Gln	Leu	Glu	Ser	Ile	Arg	Arg	
				100				105					110			
gtc	acc	cag	cac	atg	tca	aat	aca	tca	aat	ggc	gat	gac	tcg	gac	tca	384
Val	Thr	Gln	His	Met	Ser	Asn	Thr	Ser	Asn	Gly	Asp	Asp	Ser	Asp	Ser	
			115				120					125				
aca	acg	gtg	gcc	aat	aag	gac	tct	cac	cag	ggt	gat	aac	agt	aac	aat	432
Thr	Thr	Val	Ala	Asn	Lys	Asp	Ser	His	Gln	Gly	Asp	Asn	Ser	Asn	Asn	
			130			135					140					
aca	agt	gat	gat	gct	ctc	agg	aat	gag	tat	tca	gaa	cca	cca	gtg	aat	480
Thr	Ser	Asp	Asp	Ala	Leu	Arg	Asn	Glu	Tyr	Ser	Glu	Pro	Pro	Val	Asn	
				145	150					155					160	
gat	gat	ata	cga	agg	aca	ttg	atg	aaa	gca	tac	cag	aca	tat	aag	ttg	528
Asp	Asp	Ile	Arg	Arg	Thr	Leu	Met	Lys	Ala	Tyr	Gln	Thr	Tyr	Lys	Leu	
				165					170					175		
gca	tac	ttg	gat	gat	tct	gac	gag	gac	aac	tac	gat	cct	gta	atg	gtg	576
Ala	Tyr	Leu	Asp	Asp	Ser	Asp	Glu	Asp	Asn	Tyr	Asp	Pro	Val	Met	Val	
			180					185					190			
gta	gaa	tta	gcc	tct	ggg	ata	ttt	gat	atg	aaa	caa	ctg	gag	atc		624
Val	Glu	Leu	Ala	Ser	Gly	Ile	Phe	Asp	Tyr	Met	Lys	Gln	Leu	Glu	Ile	
			195				200					205				
aaa	tac	cgt	cct	gac	cct	tat	tac	atg	gat	ttg	caa	tcc	gaa	cta	aaa	672
Lys	Tyr	Arg	Pro	Asp	Pro	Tyr	Tyr	Met	Asp	Leu	Gln	Ser	Glu	Leu	Lys	
			210			215					220					
cca	tca	tac	aga	agt	aca	tta	ctg	gat	tgg	atc	gtt	caa	gta	gat	gag	720
Pro	Ser	Tyr	Arg	Ser	Thr	Leu	Leu	Asp	Trp	Ile	Val	Gln	Val	Asp	Glu	
					230					235					240	
aga	ttc	cag	cta	ctg	cca	gag	act	tta	ttc	ctc	acg	att	aac	ata	ata	768
Arg	Phe	Gln	Leu	Leu	Pro	Glu	Thr	Leu	Phe	Leu	Thr	Ile	Asn	Ile	Ile	
				245					250					255		

## PhoenixTemp32470.tmp.txt

gac	aga	ttt	ttg	tcc	aaa	gcc	gct	ata	aaa	ctc	aac	aag	ttt	caa	ttg	816
Asp	Arg	Phe	Leu	Ser	Lys	Ala	Ala	Ile	Lys	Leu	Asn	Lys	Phe	Gln	Leu	
		260						265					270			
gtc	ggt	gct	gtt	tca	atg	ttt	atc	gct	gca	aaa	tat	gaa	gaa	ata	aac	864
Val	Gly	Ala	Val	Ser	Met	Phe	Ile	Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Asn	
		275					280					285				
tgt	cca	aca	atg	aag	gac	ttt	ctt	tac	atg	ctt	gat	aat	gca	tat	aca	912
Cys	Pro	Thr	Met	Lys	Asp	Phe	Leu	Tyr	Met	Leu	Asp	Asn	Ala	Tyr	Thr	
	290					295					300					
aaa	gaa	gaa	atg	ata	gat	gct	gaa	cga	ttt	ata	cta	aac	aca	ttg	gat	960
Lys	Glu	Glu	Met	Ile	Asp	Ala	Glu	Arg	Phe	Ile	Leu	Asn	Thr	Leu	Asp	
305					310					315					320	
ttt	tca	ata	gga	tgg	cct	ggc	cca	atg	tct	ttc	ctg	cgt	cgt	ata	agc	1008
Phe	Ser	Ile	Gly	Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	Arg	Arg	Ile	Ser	
				325					330					335		
aaa	gct	gat	gat	tat	gat	tat	aac	att	aga	acg	ttg	gct	aaa	tac	cta	1056
Lys	Ala	Asp	Asp	Tyr	Asp	Tyr	Asn	Ile	Arg	Thr	Leu	Ala	Lys	Tyr	Leu	
			340					345					350			
tta	gaa	aca	atc	atg	gac	gct	aga	cta	ata	gga	act	cca	cct	agc		1104
Leu	Glu	Thr	Thr	Ile	Met	Asp	Ala	Arg	Leu	Ile	Gly	Thr	Pro	Pro	Ser	
		355				360					365					
tgg	ctg	gca	tcg	ggt	gcc	tat	ttc	cta	agt	aaa	acc	atc	ttg	agc	tat	1152
Trp	Leu	Ala	Ser	Gly	Ala	Tyr	Phe	Leu	Ser	Lys	Thr	Ile	Leu	Ser	Tyr	
	370					375					380					
gga	aat	gaa	gaa	aga	gat	gct	gaa	gaa	aga	tca	gtt	tat	gag	act	ggc	1200
Gly	Asn	Glu	Glu	Arg	Asp	Ala	Glu	Glu	Arg	Ser	Val	Tyr	Glu	Thr	Gly	
385					390					395					400	
tgg	acc	cta	aaa	cat	gtc	ttt	tat	tct	ggc	tat	acc	caa	gag	caa	gtt	1248
Trp	Thr	Leu	Lys	His	Val	Phe	Tyr	Ser	Gly	Tyr	Thr	Gln	Glu	Gln	Val	
				405					410				415			
ttt	cct	tta	tct	agt	ctg	att	ctc	gag	aac	tgt	agg	cat	gca	caa	gaa	1296
Phe	Pro	Leu	Ser	Ser	Leu	Ile	Leu	Glu	Asn	Cys	Arg	His	Ala	Gln	Glu	
			420				425						430			
cgt	cat	agt	gca	att	tgg	aca	aag	tat	tcc	gac	agg	cgc	tat	cac	cgt	1344
Arg	His	Ser	Ala	Ile	Trp	Thr	Lys	Tyr	Ser	Asp	Arg	Arg	Tyr	His	Arg	
		435					440					445				
tcc	tca	gtg	atg	gtg	gat	aag	tgg	atc	gag	gtt	gca	gaa	agc	aaa	atg	1392
Ser	Ser	Val	Met	Val	Asp	Lys	Trp	Ile	Glu	Val	Ala	Glu	Ser	Lys	Met	
	450					455					460					
aat	agt	taa														1401
Asn	Ser															
465																

&lt;210&gt; 2362

&lt;211&gt; 466

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2362

Met	Gln	Thr	Gly	Asn	Glu	Glu	Asn	Ala	Val	Pro	Ser	Trp	Tyr	Ser	Val	
1				5					10					15		
Pro	Gly	Lys	Glu	Val	His	Ser	Asp	Lys	Ala	His	Glu	His	Arg	Val	Ala	
			20					25					30			
Leu	Ser	Asp	Val	Thr	Gly	Leu	Ala	Asn	Ser	Asn	Phe	Met	His	Glu	Lys	
		35					40					45				
Leu	His	Ser	Asn	Arg	Cys	Ser	Gly	Glu	Pro	Ser	Ser	Thr	Ala	Arg	Asn	
	50					55					60					
Ser	Leu	Glu	Ile	Asn	Leu	Asn	His	Ala	Val	Glu	Ser	Asp	Gln	Glu	Asn	
65				70						75					80	
Met	Val	Ser	Ile	Tyr	Ala	Ser	Asn	Thr	Leu	Asp	Thr	Pro	Asn	Ser	Asn	
			85						90					95		
Asp	Val	Ser	Ser	Leu	Leu	Glu	Asp	Gln	Leu	Glu	Ser	Ile	Arg	Arg		
			100					105				110				
Val	Thr	Gln	His	Met	Ser	Asn	Thr	Ser	Asn	Gly	Asp	Asp	Ser	Asp	Ser	
		115					120					125				
Thr	Thr	Val	Ala	Asn	Lys	Asp	Ser	His	Gln	Gly	Asp	Asn	Ser	Asn	Asn	
	130					135					140					
Thr	Ser	Asp	Asp	Ala	Leu	Arg	Asn	Glu	Tyr	Ser	Glu	Pro	Pro	Val	Asn	
145					150					155					160	

## PhoenixTemp32470.tmp.txt

Asp Asp Ile Arg Arg Thr Leu Met Lys Ala Tyr Gln Thr Tyr Lys Leu  
 165 170 175  
 Ala Tyr Leu Asp Asp Ser Asp Glu Asp Asn Tyr Asp Pro Val Met Val  
 180 185 190  
 Val Glu Leu Ala Ser Gly Ile Phe Asp Tyr Met Lys Gln Leu Glu Ile  
 195 200 205  
 Lys Tyr Arg Pro Asp Pro Tyr Tyr Met Asp Leu Gln Ser Glu Leu Lys  
 210 215 220  
 Pro Ser Tyr Arg Ser Thr Leu Leu Asp Trp Ile Val Gln Val Asp Glu  
 225 230 235 240  
 Arg Phe Gln Leu Leu Pro Glu Thr Leu Phe Leu Thr Ile Asn Ile Ile  
 245 250 255  
 Asp Arg Phe Leu Ser Lys Ala Ala Ile Lys Leu Asn Lys Phe Gln Leu  
 260 265 270  
 Val Gly Ala Val Ser Met Phe Ile Ala Ala Lys Tyr Glu Glu Ile Asn  
 275 280 285  
 Cys Pro Thr Met Lys Asp Phe Leu Tyr Met Leu Asp Asn Ala Tyr Thr  
 290 295 300  
 Lys Glu Glu Met Ile Asp Ala Glu Arg Phe Ile Leu Asn Thr Leu Asp  
 305 310 315 320  
 Phe Ser Ile Gly Trp Pro Gly Pro Met Ser Phe Leu Arg Arg Ile Ser  
 325 330 335  
 Lys Ala Asp Asp Tyr Asp Tyr Asn Ile Arg Thr Leu Ala Lys Tyr Leu  
 340 345 350  
 Leu Glu Thr Thr Ile Met Asp Ala Arg Leu Ile Gly Thr Pro Pro Ser  
 355 360 365  
 Trp Leu Ala Ser Gly Ala Tyr Phe Leu Ser Lys Thr Ile Leu Ser Tyr  
 370 375 380  
 Gly Asn Glu Glu Arg Asp Ala Glu Glu Arg Ser Val Tyr Glu Thr Gly  
 385 390 395 400  
 Trp Thr Leu Lys His Val Phe Tyr Ser Gly Tyr Thr Gln Glu Gln Val  
 405 410 415  
 Phe Pro Leu Ser Ser Leu Ile Leu Glu Asn Cys Arg His Ala Gln Glu  
 420 425 430  
 Arg His Ser Ala Ile Trp Thr Lys Tyr Ser Asp Arg Arg Tyr His Arg  
 435 440 445  
 Ser Ser Val Met Val Asp Lys Trp Ile Glu Val Ala Glu Ser Lys Met  
 450 455 460  
 Asn Ser  
 465

&lt;210&gt; 2363

&lt;211&gt; 1332

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1332)

&lt;400&gt; 2363

atg aat aat act gaa gat atg ttt agg gac gtt gaa aat gca agc caa	48
Met Asn Asn Thr Glu Asp Met Phe Arg Asp Val Glu Asn Ala Ser Gln	
1 5 10 15	
aat atg gct tca aca gtg aac act tca aga atg gac caa aga caa aga	96
Asn Met Ala Ser Thr Val Asn Thr Ser Arg Met Asp Gln Arg Gln Arg	
20 25 30	
agg gct ttg act gat ttg aca tca caa aaa gtg aac aga att cat act	144
Arg Ala Leu Thr Asp Leu Thr Ser Gln Lys Val Asn Arg Ile His Thr	
35 40 45	
tca aaa aca att aag gat att cca gca tat tta tca aat tac act gcc	192
Ser Lys Thr Ile Lys Asp Ile Pro Ala Tyr Leu Ser Asn Tyr Thr Ala	
50 55 60	
gat gga gag aat aaa aac att gac caa gct ttt aat cat agt aat gac	240
Asp Gly Glu Asn Lys Asn Ile Asp Gln Ala Phe Asn His Ser Asn Asp	
65 70 75 80	
caa gat atc ggt tta gta aat caa atc aac tca gga tat gcc aat gtt	288
Gln Asp Ile Gly Leu Val Asn Gln Ile Asn Ser Gly Tyr Ala Asn Val	
85 90 95	

## PhoenixTemp32470.tmp.txt

gaa	aac	gaa	cca	gga	aaa	gaa	act	gat	cac	ata	ttt	ata	gat	cag	gat	336
Glu	Asn	Glu	Pro	Gly	Lys	Glu	Thr	Asp	His	Ile	Phe	Ile	Asp	Gln	Asp	
			100					105					110			
gat	ctg	tca	gat	tta	gat	att	gta	caa	gag	gac	tcc	ttg	agg	gag	caa	384
Asp	Leu	Ser	Asp	Leu	Asp	Ile	Val	Gln	Glu	Asp	Ser	Leu	Arg	Glu	Gln	
		115					120					125				
cta	gaa	gaa	ttt	gaa	cac	gac	ttt	gag	aat	ttt	gtg	gag	cca	ctc	tca	432
Leu	Glu	Glu	Phe	Glu	His	Asp	Phe	Glu	Asn	Phe	Val	Glu	Pro	Leu	Ser	
	130					135					140					
cca	ata	ttt	aat	gat	gaa	ata	caa	gat	act	ctt	gat	aga	gca	ttt	aaa	480
Pro	Ile	Phe	Asn	Asp	Glu	Ile	Gln	Asp	Thr	Leu	Asp	Arg	Ala	Phe	Lys	
145					150					155					160	
gaa	tac	tat	aga	gca	act	cca	gat	atg	gag	gat	gat	aca	ttt	gat		528
Glu	Tyr	Tyr	Arg	Ala	Thr	Pro	Asp	Met	Glu	Asp	Asp	Asp	Thr	Phe	Asp	
				165					170					175		
gct	gtt	atg	gta	acg	gag	tat	ggt	agt	gat	att	ttt	cgt	tac	atg	aga	576
Ala	Val	Met	Val	Thr	Glu	Tyr	Gly	Ser	Asp	Ile	Phe	Arg	Tyr	Met	Arg	
			180					185					190			
aag	ctt	gaa	taa	aaa	tat	aga	cca	aat	ccg	tac	tac	atg	gca	ggc	caa	624
Lys	Leu	Glu	Leu	Lys	Tyr	Arg	Pro	Asn	Pro	Tyr	Tyr	Met	Ala	Gly	Gln	
		195					200					205				
ccg	gaa	ttg	aaa	tgg	gaa	tat	aga	aag	act	gtg	att	gac	tgg	att	gtg	672
Pro	Glu	Leu	Lys	Trp	Glu	Tyr	Arg	Lys	Thr	Val	Ile	Asp	Trp	Ile	Val	
	210					215					220					
cag	gtt	cac	gag	agg	ttc	caa	tta	ctt	cct	gaa	aca	cta	tat	cta	act	720
Gln	Val	His	Glu	Arg	Phe	Gln	Leu	Leu	Pro	Glu	Thr	Leu	Tyr	Leu	Thr	
225					230					235					240	
att	aac	atc	atc	gac	aga	ttt	tta	tca	aga	aag	aat	att	aca	ctt	aac	768
Ile	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ser	Arg	Lys	Asn	Ile	Thr	Leu	Asn	
				245					250					255		
aga	ttc	caa	cta	gtt	agt	gct	act	gca	tta	ctg	ata	gca	tcc	aaa	tac	816
Arg	Phe	Gln	Leu	Val	Ser	Ala	Thr	Ala	Leu	Leu	Ile	Ala	Ser	Lys	Tyr	
			260					265					270			
gag	gaa	atc	aat	tgc	cct	act	ata	aag	gat	ata	gtc	tat	atg	gta	gac	864
Glu	Glu	Ile	Asn	Cys	Pro	Thr	Ile	Lys	Asp	Ile	Val	Tyr	Met	Val	Asp	
		275					280					285				
aat	act	tat	tcc	agg	gat	gac	atc	ata	gaa	gct	gaa	aaa	tat	atg	att	912
Asn	Thr	Tyr	Ser	Arg	Asp	Asp	Ile	Ile	Glu	Ala	Glu	Lys	Tyr	Met	Ile	
	290				295					300						
gat	gca	cta	gac	ttc	gaa	gtt	agc	tgg	cca	ggt	cct	atg	tcg	ttc	ttg	960
Asp	Ala	Leu	Asp	Phe	Glu	Val	Ser	Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	
305					310					315					320	
cgg	aga	ata	agt	aaa	gca	gat	gat	tat	gaa	tac	cga	act	aga	aat	cta	1008
Arg	Arg	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Glu	Tyr	Arg	Thr	Arg	Asn	Leu	
				325					330					335		
gct	aag	tat	ttg	cta	gaa	acc	aca	cta	atg	gaa	tcc	tct	tta	atc	agt	1056
Ala	Lys	Tyr	Leu	Leu	Glu	Thr	Thr	Leu	Met	Glu	Ser	Ser	Leu	Ile	Ser	
			340					345					350			
gca	cta	cca	agc	tgg	ctt	gca	gct	ggt	gcc	tac	ttt	tta	agt	aga	ata	1104
Ala	Leu	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	Tyr	Phe	Leu	Ser	Arg	Ile	
		355					360					365				
ata	tta	ggt	tac	gaa	gag	tgg	acc	ctt	aaa	cat	gtc	tac	tat	tcg	ggc	1152
Ile	Leu	Gly	Tyr	Glu	Glu	Trp	Thr	Leu	Lys	His	Val	Tyr	Tyr	Ser	Gly	
		370				375					380					
tat	act	cac	gaa	cag	ctt	tat	cct	ctg	gct	aca	ctt	atc	tta	gac	aac	1200
Tyr	Thr	His	Glu	Gln	Leu	Tyr	Pro	Leu	Ala	Thr	Leu	Ile	Leu	Asp	Asn	
					390					395					400	
tgc	cag	aat	tat	gaa	gaa	agc	cac	caa	gca	att	tgg	acg	aag	tat	agt	1248
Cys	Gln	Asn	Tyr	Glu	Glu	Ser	His	Gln	Ala	Ile	Trp	Thr	Lys	Tyr	Ser	
				405					410					415		
caa	cca	caa	tat	cat	caa	gtt	tca	ata	ctg	gtt	acg	aag	ttc	tta	ggt	1296
Gln	Pro	Gln	Tyr	His	Gln	Val	Ser	Ile	Leu	Val	Thr	Lys	Phe	Leu	Gly	
			420					425					430			
aga	gtt	tct	tca	gac	gat	atg	tca	gaa	att	tat	taa					1332
Arg	Val	Ser	Ser	Asp	Asp	Met	Ser	Glu	Ile	Tyr						
		435					440									

&lt;210&gt; 2364

&lt;211&gt; 443

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2364

```

Met Asn Asn Thr Glu Asp Met Phe Arg Asp Val Glu Asn Ala Ser Gln
1      5      10      15
Asn Met Ala Ser Thr Val Asn Thr Ser Arg Met Asp Gln Arg Gln Arg
20      25      30
Arg Ala Leu Thr Asp Leu Thr Ser Gln Lys Val Asn Arg Ile His Thr
35      40      45
Ser Lys Thr Ile Lys Asp Ile Pro Ala Tyr Leu Ser Asn Tyr Thr Ala
50      55      60
Asp Gly Glu Asn Lys Asn Ile Asp Gln Ala Phe Asn His Ser Asn Asp
65      70      75      80
Gln Asp Ile Gly Leu Val Asn Gln Ile Asn Ser Gly Tyr Ala Asn Val
85      90      95
Glu Asn Glu Pro Gly Lys Glu Thr Asp His Ile Phe Ile Asp Gln Asp
100      105      110
Asp Leu Ser Asp Leu Asp Ile Val Gln Glu Asp Ser Leu Arg Glu Gln
115      120      125
Leu Glu Glu Phe Glu His Asp Phe Glu Asn Phe Val Glu Pro Leu Ser
130      135      140
Pro Ile Phe Asn Asp Glu Ile Gln Asp Thr Leu Asp Arg Ala Phe Lys
145      150      155      160
Glu Tyr Tyr Arg Ala Thr Pro Asp Met Glu Asp Asp Asp Thr Phe Asp
165      170      175
Ala Val Met Val Thr Glu Tyr Gly Ser Asp Ile Phe Arg Tyr Met Arg
180      185      190
Lys Leu Glu Leu Lys Tyr Arg Pro Asn Pro Tyr Tyr Met Ala Gly Gln
195      200      205
Pro Glu Leu Lys Trp Glu Tyr Arg Lys Thr Val Ile Asp Trp Ile Val
210      215      220
Gln Val His Glu Arg Phe Gln Leu Leu Pro Glu Thr Leu Tyr Leu Thr
225      230      235      240
Ile Asn Ile Ile Asp Arg Phe Leu Ser Arg Lys Asn Ile Thr Leu Asn
245      250      255
Arg Phe Gln Leu Val Ser Ala Thr Ala Leu Leu Ile Ala Ser Lys Tyr
260      265      270
Glu Glu Ile Asn Cys Pro Thr Ile Lys Asp Ile Val Tyr Met Val Asp
275      280      285
Asn Thr Tyr Ser Arg Asp Asp Ile Ile Glu Ala Glu Lys Tyr Met Ile
290      295      300
Asp Ala Leu Asp Phe Glu Val Ser Trp Pro Gly Pro Met Ser Phe Leu
305      310      315      320
Arg Arg Ile Ser Lys Ala Asp Asp Tyr Glu Tyr Arg Thr Arg Asn Leu
325      330      335
Ala Lys Tyr Leu Glu Thr Thr Leu Met Glu Ser Ser Leu Ile Ser
340      345      350
Ala Leu Pro Ser Trp Leu Ala Ala Gly Ala Tyr Phe Leu Ser Arg Ile
355      360      365
Ile Leu Gly Tyr Glu Glu Trp Thr Leu Lys His Val Tyr Tyr Ser Gly
370      375      380
Tyr Thr His Glu Gln Leu Tyr Pro Leu Ala Thr Leu Ile Leu Asp Asn
385      390      395      400
Cys Gln Asn Tyr Glu Glu Ser His Gln Ala Ile Trp Thr Lys Tyr Ser
405      410      415
Gln Pro Gln Tyr His Gln Val Ser Ile Leu Val Thr Lys Phe Leu Gly
420      425      430
Arg Val Ser Ser Asp Asp Met Ser Glu Ile Tyr
435      440

```

&lt;210&gt; 2365

&lt;211&gt; 1335

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1335)

## PhoenixTemp32470.tmp.txt

```

<400> 2365
atg atg caa atg cag caa agg gta gca ctt ggt gat gtt act tca cag      48
Met Met Gln Met Gln Gln Arg Val Ala Leu Gly Asp Val Thr Ser Gln
1      5      10      15
att aac aat agg gcc aat cgg ttt agt gtt gac ggt gac agc aag aaa      96
Ile Asn Asn Arg Ala Asn Arg Phe Ser Val Asp Gly Asp Ser Lys Lys
20      25      30
gcg ttt gtt gat gct gga ttc ttg aag gag aaa agg gta aag aat gcg      144
Ala Phe Val Asp Ala Gly Phe Leu Lys Glu Lys Arg Val Lys Asn Ala
35      40      45
aag gag aat gat ttg ttt agt ggt cat gac gat gat tta gta gta gca      192
Lys Glu Asn Asp Leu Phe Ser Gly His Asp Asp Asp Leu Val Val Ala
50      55      60
cgg gct caa aaa cta cga gaa cag act ctt gtt tct tct gtg agt act      240
Arg Ala Gln Lys Leu Arg Glu Gln Thr Leu Val Ser Ser Val Ser Thr
65      70      80
gag agt ata cgg tcg caa caa ttg tct agc aat agt aac gaa aca gta      288
Glu Ser Ile Arg Ser Gln Gln Leu Ser Ser Asn Ser Asn Glu Thr Val
85      90      95
caa cac cat ttg att gag gtt gaa gca gat gat gag gat gat gcg gag      336
Gln His His Leu Ile Glu Val Glu Ala Asp Asp Glu Asp Asp Ala Glu
100
act gat agt gag gca cta gct ttt aaa gaa gat gaa gaa gca gaa aca      384
Thr Asp Ser Glu Ala Leu Ala Phe Lys Glu Asp Glu Glu Ala Glu Thr
115
ggc gga gat ata agt gag gaa atg gaa gac gta gat gaa agt ttt acg      432
Gly Gly Asp Ile Ser Glu Glu Met Glu Asp Val Asp Glu Ser Phe Thr
130
ccg tta gtg ccg gtg gta acg gaa cat tca gag agg tta tat caa tat      480
Pro Leu Val Pro Val Val Thr Glu His Ser Glu Arg Leu Tyr Gln Tyr
145      150      160
gtg tat gag agg tta cac cgt gag gag cct gac cct aac gat gag gac      528
Val Tyr Glu Arg Leu His Arg Glu Glu Pro Asp Pro Asn Asp Glu Asp
165
aca tgg gac cct gtt atg gta tcg gaa tat acc att gaa att ttt gaa      576
Thr Trp Asp Pro Val Met Val Ser Glu Tyr Thr Ile Glu Ile Phe Glu
180      185      190
cat ttg aag ttt ttg gag agg aaa ttt tcg ccg aat ccc agg tat atc      624
His Leu Lys Phe Leu Glu Arg Lys Phe Ser Pro Asn Pro Arg Tyr Ile
195
gaa cat caa ccg gaa cta acg tgg aaa tac aga tca acg ttg atc gat      672
Glu His Gln Pro Glu Leu Thr Trp Lys Tyr Arg Ser Thr Leu Ile Asp
210      215      220
tgg att gtt caa gtc cac gat agg ttc cag ttg tta cct gag acg tta      720
Trp Ile Val Gln Val His Asp Arg Phe Gln Leu Leu Pro Glu Thr Leu
225      230      235
ttt tta acg gta aac att atc gat agg ttt tta tca aag aaa caa gtc      768
Phe Leu Thr Val Asn Ile Ile Asp Arg Phe Leu Ser Lys Lys Gln Val
245      250      255
act ttg aac agg ttg caa tta gtc ggt gca gca gct cta ttc att gct      816
Thr Leu Asn Arg Leu Gln Leu Val Gly Ala Ala Ala Leu Phe Ile Ala
260      265      270
tcc aaa tac gag gag atc aac tgt cca act ttg aaa gat atg ctg tat      864
Ser Lys Tyr Glu Glu Ile Asn Cys Pro Thr Leu Lys Asp Met Leu Tyr
275      280      285
atg ctg gac aat gca tac act aga gaa gag att cta agg gca gaa aga      912
Met Leu Asp Asn Ala Tyr Thr Arg Glu Glu Ile Leu Arg Ala Glu Arg
290      295      300
ttc atg atc aat acg tta aat ttc gaa ttt gga tgg cca ggt cca atg      960
Phe Met Ile Asn Thr Leu Asn Phe Glu Phe Gly Trp Pro Gly Pro Met
305      310      315
tca ttt tta aga aga gtt agt aaa gcg gat gat tat gaa tac gat aca      1008
Ser Phe Leu Arg Arg Val Ser Lys Ala Asp Asp Tyr Glu Tyr Asp Thr
325      330      335
aga acc gtg gct aaa tat tta ttg gaa act tcc ata atg gag cca gaa      1056
Arg Thr Val Ala Lys Tyr Leu Leu Glu Thr Ser Ile Met Glu Pro Glu
340      345      350
ata ata gca gcg cca cca tct tgg ctt gct gca ggt gca tat tac ttg      1104

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## PhoenixTemp32470.tmp.txt

Ile	Ile	Ala	Ala	Pro	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	Tyr	Tyr	Leu		
355							360					365					
agt	aaa	atc	att	atc	gga	ctc	aca	ggg	tgg	tct	gac	gaa	cac	ata	tat	1152	
Ser	Lys	Ile	Ile	Ile	Gly	Leu	Thr	Gly	Trp	Ser	Asp	Glu	His	Ile	Tyr		
370						375					380						
tat	tcc	ggg	tac	aca	gaa	gag	caa	tta	ata	ccg	ttg	gca	aca	atg	att	1200	
Tyr	Ser	Gly	Tyr	Thr	Glu	Glu	Gln	Leu	Ile	Pro	Leu	Ala	Thr	Met	Ile		
385					390					395					400		
ttg	gat	tca	tgc	aga	cat	gca	aca	gaa	cgt	cac	aaa	gca	ata	ttc	gat	1248	
Leu	Asp	Ser	Cys	Arg	His	Ala	Thr	Glu	Arg	His	Lys	Ala	Ile	Phe	Asp		
				405					410					415			
aag	tac	tcg	agg	agt	cgc	cat	agg	aaa	tct	gct	ttt	gta	gta	gcg	aag	1296	
Lys	Tyr	Ser	Arg	Ser	Arg	His	Arg	Lys	Ser	Ala	Phe	Val	Val	Ala	Lys		
			420					425					430				
tgg	att	tca	atg	gcc	gag	agt	cgg	ttg	gaa	cag	aaa	taa				1335	
Trp	Ile	Ser	Met	Ala	Glu	Ser	Arg	Leu	Glu	Gln	Lys						
		435					440										

&lt;210&gt; 2366

&lt;211&gt; 444

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces fragilis NRRL Y-1140

&lt;400&gt; 2366

Met	Met	Gln	Met	Gln	Gln	Arg	Val	Ala	Leu	Gly	Asp	Val	Thr	Ser	Gln		
1				5					10					15			
Ile	Asn	Asn	Arg	Ala	Asn	Arg	Phe	Ser	Val	Asp	Gly	Asp	Ser	Lys	Lys		
			20					25					30				
Ala	Phe	Val	Asp	Ala	Gly	Phe	Leu	Lys	Glu	Lys	Arg	Val	Lys	Asn	Ala		
		35					40					45					
Lys	Glu	Asn	Asp	Leu	Phe	Ser	Gly	His	Asp	Asp	Asp	Leu	Val	Val	Ala		
	50					55					60						
Arg	Ala	Gln	Lys	Leu	Arg	Glu	Gln	Thr	Leu	Val	Ser	Ser	Val	Ser	Thr		
65					70					75					80		
Glu	Ser	Ile	Arg	Ser	Gln	Gln	Leu	Ser	Ser	Asn	Ser	Asn	Glu	Thr	Val		
				85					90					95			
Gln	His	His	Leu	Ile	Glu	Val	Glu	Ala	Asp	Asp	Glu	Asp	Asp	Ala	Glu		
			100					105					110				
Thr	Asp	Ser	Glu	Ala	Leu	Ala	Phe	Lys	Glu	Asp	Glu	Glu	Ala	Glu	Thr		
		115					120					125					
Gly	Gly	Asp	Ile	Ser	Glu	Glu	Met	Glu	Asp	Val	Asp	Glu	Ser	Phe	Thr		
	130					135					140						
Pro	Leu	Val	Pro	Val	Val	Thr	Glu	His	Ser	Glu	Arg	Leu	Tyr	Gln	Tyr		
145					150					155					160		
Val	Tyr	Glu	Arg	Leu	His	Arg	Glu	Glu	Pro	Asp	Pro	Asn	Asp	Glu	Asp		
				165					170					175			
Thr	Trp	Asp	Pro	Val	Met	Val	Ser	Glu	Tyr	Thr	Ile	Glu	Ile	Phe	Glu		
			180					185					190				
His	Leu	Lys	Phe	Leu	Glu	Arg	Lys	Phe	Ser	Pro	Asn	Pro	Arg	Tyr	Ile		
		195					200					205					
Glu	His	Gln	Pro	Glu	Leu	Thr	Trp	Lys	Tyr	Arg	Ser	Thr	Leu	Ile	Asp		
	210					215					220						
Trp	Ile	Val	Gln	Val	His	Asp	Arg	Phe	Gln	Leu	Leu	Pro	Glu	Thr	Leu		
225					230				235						240		
Phe	Leu	Thr	Val	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ser	Lys	Lys	Gln	Val		
				245					250					255			
Thr	Leu	Asn	Arg	Leu	Gln	Leu	Val	Gly	Ala	Ala	Ala	Leu	Phe	Ile	Ala		
			260					265					270				
Ser	Lys	Tyr	Glu	Glu	Ile	Asn	Cys	Pro	Thr	Leu	Lys	Asp	Met	Leu	Tyr		
		275					280					285					
Met	Leu	Asp	Asn	Ala	Tyr	Thr	Arg	Glu	Glu	Ile	Leu	Arg	Ala	Glu	Arg		
	290					295					300						
Phe	Met	Ile	Asn	Thr	Leu	Asn	Phe	Glu	Phe	Gly	Trp	Pro	Gly	Pro	Met		
305					310					315					320		
Ser	Phe	Leu	Arg	Arg	Val	Ser	Lys	Ala	Asp	Asp	Tyr	Glu	Tyr	Asp	Thr		
				325					330					335			
Arg	Thr	Val	Ala	Lys	Tyr	Leu	Leu	Glu	Thr	Ser	Ile	Met	Glu	Pro	Glu		
			340					345					350				
Ile	Ile	Ala	Ala	Pro	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	Tyr	Tyr	Leu		

## PhoenixTemp32470.tmp.txt

Ser Lys 355 Ile Ile Ile Gly Leu 360 Thr Gly Trp Ser Asp 365 Glu His Ile Tyr  
 370 375 380  
 Tyr Ser Gly Tyr Thr Glu Glu Gln Leu Ile Pro Leu Ala Thr Met Ile  
 385 390 395 400  
 Leu Asp Ser Cys Arg His Ala Thr Glu Arg His Lys Ala Ile Phe Asp  
 405 415  
 Lys Tyr Ser Arg Ser Arg His Arg Lys Ser Ala Phe Val Val Ala Lys  
 420 425 430  
 Trp Ile Ser Met Ala Glu Ser Arg Leu Glu Gln Lys  
 435 440

&lt;210&gt; 2367

&lt;211&gt; 1422

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1422)

&lt;400&gt; 2367

atg	aaa	tcc	ttt	aaa	cac	caa	acc	aag	tcg	ttt	gat	gaa	aac	gcc	cgg	48
Met	Lys	Ser	Phe	Lys	His	Gln	Thr	Lys	Ser	Phe	Asp	Glu	Asn	Ala	Arg	
1				5				10					15			
atc	aag	tcc	aaa	agt	aac	acc	agt	gca	aaa	ttg	atc	tcc	aaa	aat	tca	96
Ile	Lys	Ser	Lys	Ser	Asn	Thr	Ser	Ala	Lys	Leu	Ile	Ser	Lys	Asn	Ser	
			20					25					30			
aat	aat	aac	aat	gct	aat	aac	atc	acc	tcg	agt	att	gat	aaa	aga	gaa	144
Asn	Asn	Asn	Asn	Ala	Asn	Asn	Ile	Thr	Ser	Ser	Ile	Asp	Lys	Arg	Glu	
			35				40					45				
gca	ctt	ggc	gac	tta	acg	cag	ctt	aat	gag	aac	cgg	aaa	att	gat	ttg	192
Ala	Leu	Gly	Asp	Leu	Thr	Gln	Leu	Asn	Glu	Asn	Arg	Lys	Ile	Asp	Leu	
	50					55					60					
aat	ctg	aaa	act	tct	ctt	caa	ggt	cat	att	tac	aaa	caa	aaa	cac		240
Asn	Leu	Lys	Thr	Ser	Leu	Gln	Lys	Val	His	Ile	Tyr	Lys	Gln	Lys	His	
	65				70				75					80		
caa	aaa	aga	cca	cat	gaa	gaa	tta	ggt	aca	aag	aca	gaa	ctt	ggc	aca	288
Gln	Lys	Arg	Pro	His	Glu	Glu	Leu	Gly	Thr	Lys	Thr	Glu	Leu	Gly	Thr	
				85				90						95		
aac	gaa	cat	tat	gat	aat	agc	cag	aac	tct	gat	gat	gta	ctt	aag	ttc	336
Asn	Glu	His	Tyr	Asp	Asn	Ser	Gln	Asn	Ser	Asp	Asp	Val	Leu	Lys	Phe	
			100					105					110			
cat	ttt	gat	cgt	tta	ggg	ggt	agt	tca	gat	gtg	tcc	aat	ctt	gaa	gat	384
His	Phe	Asp	Arg	Leu	Gly	Gly	Ser	Ser	Asp	Val	Ser	Asn	Leu	Glu	Asp	
			115				120					125				
att	gga	ttt	gag	ttt	gct	aac	caa	aat	aga	att	gta	gag	caa	ttt	gat	432
Ile	Gly	Phe	Glu	Phe	Ala	Asn	Gln	Asn	Arg	Ile	Val	Glu	Gln	Phe	Asp	
	130				135						140					
gat	gac	gaa	gaa	gag	ata	ggt	cag	gta	gat	cca	gag	gtg	gac	gag	gaa	480
Asp	Asp	Glu	Glu	Glu	Ile	Val	Gln	Val	Asp	Pro	Glu	Val	Asp	Glu	Glu	
	145				150					155					160	
gaa	gaa	gaa	gaa	gaa	gaa	gaa	gaa	gaa	gag	gaa	gag	gaa	gat	tac	agc	528
Glu	Glu	Glu	Glu	Glu	Glu	Glu	Glu	Glu	Glu	Glu	Glu	Glu	Asp	Tyr	Ser	
				165					170					175		
aag	cca	atg	gaa	cca	aaa	tgg	aac	aaa	gct	ata	ttc	aat	gaa	tta	caa	576
Lys	Pro	Met	Glu	Pro	Lys	Trp	Asn	Lys	Ala	Ile	Phe	Asn	Glu	Leu	Gln	
			180					185					190			
tat	gtc	atg	aag	aaa	ttc	tct	aaa	aat	acg	ttg	gat	gaa	acc	gat	gag	624
Tyr	Val	Met	Lys	Lys	Phe	Ser	Lys	Asn	Thr	Leu	Asp	Glu	Thr	Asp	Glu	
			195				200					205				
gat	aca	ttt	gat	ggt	act	atg	gta	gca	gaa	tat	gca	cca	gag	att	ttt	672
Asp	Thr	Phe	Asp	Val	Thr	Met	Val	Ala	Glu	Tyr	Ala	Pro	Glu	Ile	Phe	
	210				215						220					
aac	tac	atg	cat	gaa	cta	gaa	tac	aga	ttg	ggt	cca	gat	ctg	aat	tat	720
Asn	Tyr	Met	His	Glu	Leu	Glu	Tyr	Arg	Leu	Val	Pro	Asp	Leu	Asn	Tyr	
	225				230					235					240	
atg	agt	aac	cag	gac	gaa	ttg	aaa	tgg	gaa	atg	aga	agt	ggt	tta	atc	768
Met	Ser	Asn	Gln	Asp	Glu	Leu	Lys	Trp	Glu	Met	Arg	Ser	Val	Leu	Ile	



## PhoenixTemp32470.tmp.txt

gat	tgg	gtg	gtc	245	cag	ggt	cac	aat	aga	250	ttc	aat	tta	tta	ccg	gaa	aca	816
Asp	Trp	Val	Val	260	Gln	Val	His	Asn	Arg	265	Phe	Asn	Leu	Leu	Pro	Glu	Thr	
tta	ttc	tta	acg	gta	aat	tat	atc	gat	aga	ttt	tta	agt	aag	cgt	aag		864	
Leu	Phe	Leu	Thr	Val	Asn	Tyr	Ile	Asp	Arg	280	Phe	Leu	Ser	Lys	Arg	Lys		
gtc	tcg	tta	tcg	aga	ttt	caa	ttg	gtc	gga	gct	ggt	gca	ttg	ttc	att		912	
Val	Ser	Leu	Ser	Arg	Phe	Gln	Leu	Val	Gly	Ala	Val	Ala	Leu	Phe	Ile			
gct	gca	aag	tat	gaa	gaa	att	aac	tgt	cca	act	ggt	caa	gaa	ggt	gca		960	
Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Asn	Cys	Pro	Thr	Val	Gln	Glu	Val	Ala			
305				310					315						320			
tac	atg	gct	gat	aat	gcg	tat	aca	gta	gat	gaa	ttc	tta	aaa	gca	gag		1008	
Tyr	Met	Ala	Asp	Asn	Ala	Tyr	Thr	Val	Asp	Glu	Phe	Leu	Lys	Ala	Glu			
				325					330						335			
aga	ttc	atg	att	gat	gtc	tta	gag	ttt	gat	atg	ggt	ttg	cct	ggt	cca		1056	
Arg	Phe	Met	Ile	Asp	Val	Leu	Glu	Phe	Asp	Met	Gly	Trp	Pro	Gly	Pro			
				340					345									
atg	tct	ttt	tta	aga	aga	act	agt	aaa	gct	gat	gac	tat	gat	tat	gaa		1104	
Met	Ser	Phe	Leu	Arg	Arg	Thr	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Tyr	Glu			
				355					360									
act	aga	aca	ttg	gct	aaa	tac	ttt	tta	gaa	atc	aca	ata	atg	gat	tca		1152	
Thr	Arg	Thr	Leu	Ala	Lys	Tyr	Phe	Leu	Glu	Ile	Thr	Ile	Met	Asp	Ser			
				370														
aga	ttt	gtc	gct	tca	cag	cca	agt	tgg	ttg	gca	gct	ggg	gca	cat	tac		1200	
Arg	Phe	Val	Ala	Ser	Gln	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	His	Tyr			
385					390					395					400			
tta	tca	aga	aag	tta	ctt	aat	aga	ggt	cac	ttg	aca	gaa	gct	cat	gtg		1248	
Leu	Ser	Arg	Lys	Leu	Leu	Asn	Arg	Gly	His	Trp	Thr	Glu	Ala	His	Val			
				405					410									
tat	tat	tct	ggc	tat	acc	gaa	tct	caa	tta	aga	cca	tta	gca	gaa	atc		1296	
Tyr	Tyr	Ser	Gly	Tyr	Thr	Glu	Ser	Gln	Leu	Arg	Pro	Leu	Ala	Glu	Ile			
				420					425									
tta	ttg	caa	aat	tgt	cgt	aat	gct	gaa	tcc	aac	cat	aaa	gcc	att	ttt		1344	
Leu	Leu	Gln	Asn	Cys	Arg	Asn	Ala	Glu	Ser	Asn	His	Lys	Ala	Ile	Phe			
				435					440									
gaa	aag	tac	caa	gaa	cgt	cgc	tac	aga	aga	tcc	tca	gca	ttc	ggt	caa		1392	
Glu	Lys	Tyr	Gln	Glu	Arg	Arg	Tyr	Arg	Arg	Ser	Ser	Ala	Phe	Val	Gln			
				450								460						
gaa	tac	ttc	gaa	gct	ctt	gaa	cag	tta	taa								1422	
Glu	Tyr	Phe	Glu	Ala	Leu	Glu	Gln	Leu										
465					470													

&lt;210&gt; 2368

&lt;211&gt; 473

&lt;212&gt; PRT

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;400&gt; 2368

Met	Lys	Ser	Phe	Lys	His	Gln	Thr	Lys	Ser	Phe	Asp	Glu	Asn	Ala	Arg		
1				5				10					15				
Ile	Lys	Ser	Lys	Ser	Asn	Thr	Ser	Ala	Lys	Leu	Ile	Ser	Lys	Asn	Ser		
			20					25					30				
Asn	Asn	Asn	Asn	Ala	Asn	Asn	Ile	Thr	Ser	Ser	Ile	Asp	Lys	Arg	Glu		
			35				40					45					
Ala	Leu	Gly	Asp	Leu	Thr	Gln	Leu	Asn	Glu	Asn	Arg	Lys	Ile	Asp	Leu		
			50			55					60						
Asn	Leu	Lys	Thr	Ser	Leu	Gln	Lys	Val	His	Ile	Tyr	Lys	Gln	Lys	His		
65					70					75					80		
Gln	Lys	Arg	Pro	His	Glu	Glu	Leu	Gly	Thr	Lys	Thr	Glu	Leu	Gly	Thr		
				85					90					95			
Asn	Glu	His	Tyr	Asp	Asn	Ser	Gln	Asn	Ser	Asp	Asp	Val	Leu	Lys	Phe		
			100					105					110				
His	Phe	Asp	Arg	Leu	Gly	Gly	Ser	Ser	Asp	Val	Ser	Asn	Leu	Glu	Asp		
			115				120					125					
Ile	Gly	Phe	Glu	Phe	Ala	Asn	Gln	Asn	Arg	Ile	Val	Glu	Gln	Phe	Asp		
	130				135						140						
Asp	Asp	Glu	Glu	Glu	Ile	Val	Gln	Val	Asp	Pro	Glu	Val	Asp	Glu	Glu		

## PhoenixTemp32470.tmp.txt

145 Glu Glu Glu Glu 150 Glu Glu Glu Glu 155 Glu Glu Glu Asp Tyr 160  
 Lys Pro Met Glu 165 Pro Lys Trp Asn Lys 170 Ala Ile Phe Asn Glu 175 Leu Gln  
 Tyr Val Met 180 Lys Lys Phe Ser Lys 185 Asn Thr Leu Asp Glu 190 Thr Asp Glu  
 Asp Thr 195 Phe Asp Val Thr Met 200 Val Ala Glu Tyr Ala 205 Pro Glu Ile Phe  
 Asn Tyr Met His Glu 210 Leu Glu Tyr Arg Leu Val 220 Pro Asp Leu Asn Tyr  
 225 Met Ser Asn Gln Asp 230 Glu Leu Lys Trp Glu 235 Met Arg Ser Val Leu Ile  
 Asp Trp Val 245 Gln Val His Asn Arg 250 Phe Asn Leu Leu Pro 255 Glu Thr  
 Leu Phe 260 Leu Thr Val Asn Tyr Ile 265 Asp Arg Phe Leu Ser 270 Lys Arg Lys  
 Val 275 Ser Leu Ser Arg Phe Gln 280 Ile Val Gly Ala Val 285 Ala Leu Phe Ile  
 290 Ala Lys Tyr Glu Glu 295 Ile Asn Cys Pro Thr Val Gln Glu Val Ala  
 305 Tyr Met Ala Asp Asn 310 Ala Tyr Thr Val Asp 315 Glu Phe Leu Lys Ala Glu  
 Arg Phe Met Ile 325 Asp Val Leu Glu Phe 330 Asp Met Gly Trp Pro Gly Pro  
 340 Met Ser Phe Leu Arg Arg Thr Ser 345 Lys Ala Asp Asp Tyr Asp Tyr Glu  
 355 Thr Arg Thr Leu Ala Lys Tyr 360 Phe Leu Glu Ile Thr 365 Ile Met Asp Ser  
 370 Arg Phe Val Ala Ser Gln 375 Pro Ser Trp Leu Ala 380 Gly Ala His Tyr  
 385 Leu Ser Arg Lys Leu 390 Leu Asn Arg Gly His 395 Trp Thr Glu Ala His Val  
 405 Tyr Tyr Ser Gly Tyr Thr Glu Ser Gln 410 Leu Arg Pro Leu Ala Glu Ile  
 420 Leu Leu Gln Asn Cys Arg Asn Ala 425 Glu Ser Asn His Lys Ala Ile Phe  
 435 Glu Lys Tyr Gln Glu Arg Arg Tyr Arg Arg Ser Ser 445 Ala Phe Val Gln  
 450 Glu Tyr Phe Glu Ala Leu 455 Glu Gln Leu  
 465 470

&lt;210&gt; 2369

&lt;211&gt; 1293

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1293)

&lt;400&gt; 2369

atg gac aga aca cga acc cac gac gaa aac tcg cta cat gag tac aga	48
Met Asp Arg Thr Arg Thr His Asp Glu Asn Ser Leu His Glu Tyr Arg	
1 5 10 15	
aag ccg act gcg gcc gga gga gcc ccc acc aaa cga gtg gca ctc gga	96
Lys Pro Thr Ala Ala Gly Gly Ala Pro Thr Lys Arg Val Ala Leu Gly	
20 25 30	
aca gtg acc aac acc gcc tcg gtg gct acc aag gcc aag gtt gcc atc	144
Thr Val Thr Asn Thr Ala Ser Val Ala Thr Lys Ala Lys Val Ala Ile	
35 40 45	
tcc aag cca ccc caa aga atc acc cga caa cca tta gtc gca cag aac	192
Ser Lys Pro Pro Gln Arg Ile Thr Arg Gln Pro Leu Val Ala Gln Asn	
50 55 60	
caa aac att ccc cca tta gca gca caa acg tca act acc tcg ctt gtg	240
Gln Asn Ile Pro Pro Leu Ala Ala Gln Thr Ser Thr Thr Ser Leu Val	
65 70 75 80	
cag ccg tgc cct ggt tct gac gac acc gtg gac gag gag gtg gac aca	288
Gln Pro Cys Pro Gly Ser Asp Asp Thr Val Asp Glu Glu Val Asp Thr	

## PhoenixTemp32470.tmp.txt

				85					90					95	
cag	acg	gcc	gat	gtt	gag	cca	aca	cag	ata	gaa	gac	gac	ttc	tac	336
Gln	Thr	Ala	Asp	Val	Glu	Pro	Thr	Gln	Ile	Glu	Asp	Asp	Phe	Tyr	Glu
			100					105					110		
tcc	gac	gag	gaa	ggc	ccc	acc	caa	cga	ttt	gct	gtg	tcc	gag	tcc	aac
Ser	Asp	Glu	Glu	Gly	Pro	Thr	Gln	Arg	Phe	Ala	Val	Ser	Glu	Ser	Asn
		115					120					125			
ccc	cag	gcg	ctg	tac	ccc	gtg	gtc	gac	aag	gag	tcc	atg	gcc	gag	ctc
Pro	Gln	Ala	Leu	Tyr	Pro	Val	Val	Asp	Lys	Glu	Ser	Met	Ala	Glu	Leu
	130					135					140				
aac	cga	gtg	gcc	acc	tac	ttt	agc	aca	aac	aac	ggc	gtg	gat	ctg	gat
Asn	Arg	Val	Ala	Thr	Tyr	Phe	Ser	Thr	Asn	Asn	Gly	Val	Asp	Leu	Asp
	145				150					155					160
gag	aac	gac	gac	gac	act	tac	gac	att	agc	atg	gtg	gca	gaa	tat	gcg
Glu	Asn	Asp	Asp	Asp	Thr	Tyr	Asp	Ile	Ser	Met	Val	Ala	Glu	Tyr	Ala
				165					170					175	
gag	gag	atc	ttc	aca	tac	atg	aag	gag	ctg	gag	gtg	cgg	ttc	cag	ccc
Glu	Glu	Ile	Phe	Thr	Tyr	Met	Lys	Glu	Leu	Glu	Val	Arg	Phe	Gln	Pro
			180					185					190		
aac	ccc	gga	tac	atg	gac	tcg	cag	acg	gag	atc	cac	tgg	gcc	atg	cgg
Asn	Pro	Gly	Tyr	Met	Asp	Ser	Gln	Thr	Glu	Ile	His	Trp	Ala	Met	Arg
		195					200					205			
tcc	att	ctg	gtg	gac	tgg	ctg	gtg	cag	gtg	cac	cac	cgg	ttc	tcg	ctg
Ser	Ile	Leu	Val	Asp	Trp	Leu	Val	Gln	Val	His	His	Arg	Phe	Ser	Leu
	210				215					220					
cta	ccc	gag	act	ctc	ttt	ctc	acc	atc	aac	tac	att	gac	cgg	ttt	ctg
Leu	Pro	Glu	Thr	Leu	Phe	Leu	Thr	Ile	Asn	Tyr	Ile	Asp	Arg	Phe	Leu
	225			230				235							240
acc	atc	aag	aca	gtg	agt	ctc	agc	aag	ctg	cag	ttg	gtt	ggc	gcg	gtg
Thr	Ile	Lys	Thr	Val	Ser	Leu	Ser	Lys	Leu	Gln	Leu	Val	Gly	Ala	Val
				245				250					255		
gct	ctg	ttt	gtg	gcc	gcc	aag	tac	gag	gaa	atc	aac	tgc	ccc	agc	gtg
Ala	Leu	Phe	Val	Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Asn	Cys	Pro	Ser	Val
			260					265					270		
cag	gaa	atc	gca	tac	atg	gtt	gat	aat	ggc	tac	cat	gta	gac	gag	att
Gln	Glu	Ile	Ala	Tyr	Met	Val	Asp	Asn	Gly	Tyr	His	Val	Asp	Glu	Ile
		275					280					285			
ctc	aag	gcc	gag	cga	tac	atg	atc	gac	ttg	ctg	gat	ttt	aat	cta	ggg
Leu	Lys	Ala	Glu	Arg	Tyr	Met	Ile	Asp	Leu	Leu	Asp	Phe	Asn	Leu	Gly
	290				295						300				
tgg	ccc	ggc	ccc	atg	tcg	ctg	cga	cga	act	tcc	aag	gcc	gac	gac	
Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	Arg	Thr	Ser	Lys	Ala	Asp	Asp	
	305			310					315					320	
tac	gac	ctg	gaa	acc	cgg	act	ctc	gcc	aag	tat	tta	ttg	gag	gtg	acc
Tyr	Asp	Leu	Glu	Thr	Arg	Thr	Leu	Ala	Lys	Tyr	Leu	Leu	Glu	Val	Thr
				325					330					335	
atc	atg	gag	aag	acc	ttt	gtt	ggc	gcc	cca	cca	tcg	tgg	ctt	gct	gcc
Ile	Met	Glu	Lys	Thr	Phe	Val	Gly	Ala	Pro	Pro	Ser	Trp	Leu	Ala	Ala
			340				345						350		
gca	gca	cac	ttt	ctg	tcg	cgg	cgc	atg	ctt	aac	cgt	ggc	cat	tgg	acc
Ala	Ala	His	Phe	Leu	Ser	Arg	Arg	Met	Leu	Asn	Arg	Gly	His	Trp	Thr
		355					360					365			
gat	ggc	cac	act	tat	tac	tct	ggc	tat	acc	gaa	aag	cag	ctg	ctg	ccc
Asp	Gly	His	Thr	Tyr	Tyr	Ser	Gly	Tyr	Thr	Glu	Lys	Gln	Leu	Leu	Pro
	370				375						380				
gcc	gtc	atg	cgg	atc	atc	cag	tgc	tgc	cgg	gac	ccg	ctt	acc	cac	cac
Ala	Val	Met	Arg	Ile	Ile	Gln	Cys	Cys	Arg	Asp	Pro	Leu	Thr	His	His
	385			390					395						400
aag	gcc	att	ttc	gag	aag	tac	aag	gac	cgc	aag	ttc	aag	cgt	gca	tcg
Lys	Ala	Ile	Phe	Glu	Lys	Tyr	Lys	Asp	Arg	Lys	Phe	Lys	Arg	Ala	Ser
			405					410						415	
gtc	tat	gtg	cag	gag	tgg	atg	gac	cat	gag	gaa	aac	aac	cac	taa	
Val	Tyr	Val	Gln	Glu	Trp	Met	Asp	His	Glu	Glu	Asn	Asn	His		
			420				425						430		

&lt;210&gt; 2370

&lt;211&gt; 430

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

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<400> 2370
Met Asp Arg Thr Arg Thr His Asp Glu Asn Ser Leu His Glu Tyr Arg
1      5      10      15
Lys Pro Thr Ala Ala Gly Gly Ala Pro Thr Lys Arg Val Ala Leu Gly
      20      25      30
Thr Val Thr Asn Thr Ala Ser Val Ala Thr Lys Ala Lys Val Ala Ile
      35      40      45
Ser Lys Pro Pro Gln Arg Ile Thr Arg Gln Pro Leu Val Ala Gln Asn
      50      55      60
Gln Asn Ile Pro Pro Leu Ala Ala Gln Thr Ser Thr Thr Ser Leu Val
65      70      75      80
Gln Pro Cys Pro Gly Ser Asp Asp Thr Val Asp Glu Glu Val Asp Thr
      85      90      95
Gln Thr Ala Asp Val Glu Pro Thr Gln Ile Glu Asp Asp Phe Tyr Glu
      100      105      110
Ser Asp Glu Glu Gly Pro Thr Gln Arg Phe Ala Val Ser Glu Ser Asn
      115      120      125
Pro Gln Ala Leu Tyr Pro Val Asp Lys Glu Ser Met Ala Glu Leu
      130      135      140
Asn Arg Val Ala Thr Tyr Phe Ser Thr Asn Asn Gly Val Asp Leu Asp
145      150      155      160
Glu Asn Asp Asp Asp Thr Tyr Asp Ile Ser Met Val Ala Glu Tyr Ala
      165      170      175
Glu Glu Ile Phe Thr Tyr Met Lys Glu Leu Glu Val Arg Phe Gln Pro
      180      185      190
Asn Pro Gly Tyr Met Asp Ser Gln Thr Glu Ile His Trp Ala Met Arg
      195      200      205
Ser Ile Leu Val Asp Trp Leu Val Gln Val His His Arg Phe Ser Leu
      210      215      220
Leu Pro Glu Thr Leu Phe Leu Thr Ile Asn Tyr Ile Asp Arg Phe Leu
225      230      235      240
Thr Ile Lys Thr Val Ser Leu Ser Lys Leu Gln Leu Val Gly Ala Val
      245      250      255
Ala Leu Phe Val Ala Ala Lys Tyr Glu Ile Asn Cys Pro Ser Val
      260      265      270
Gln Glu Ile Ala Tyr Met Val Asp Asn Gly Tyr His Val Asp Glu Ile
      275      280      285
Leu Lys Ala Glu Arg Tyr Met Ile Asp Leu Leu Asp Phe Asn Leu Gly
      290      295      300
Trp Pro Gly Pro Met Ser Phe Leu Arg Arg Thr Ser Lys Ala Asp Asp
305      310      315      320
Tyr Asp Leu Glu Thr Arg Thr Leu Ala Lys Tyr Leu Leu Glu Val Thr
      325      330      335
Ile Met Glu Lys Thr Phe Val Gly Ala Pro Pro Ser Trp Leu Ala Ala
      340      345      350
Ala Ala His Phe Leu Ser Arg Arg Met Leu Asn Arg Gly His Trp Thr
      355      360      365
Asp Gly His Thr Tyr Tyr Ser Gly Tyr Thr Glu Lys Gln Leu Leu Pro
      370      375      380
Ala Val Met Arg Ile Ile Gln Cys Cys Arg Asp Pro Leu Thr His His
385      390      395      400
Lys Ala Ile Phe Glu Lys Tyr Lys Asp Arg Lys Phe Lys Arg Ala Ser
      405      410      415
Val Tyr Val Gln Glu Trp Met Asp His Glu Glu Asn Asn His
      420      425      430

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<210> 2371
<211> 1212
<212> DNA
<213> Apis mellifera

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<220>
<221> CDS
<222> (1)..(1212)

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<400> 2371
atg gct tta aga aat cgg act gca ctt acg aat att gta aat caa gaa
Met Ala Leu Arg Asn Arg Thr Ala Leu Thr Asn Ile Val Asn Gln Glu

```

## PhoenixTemp32470.tmp.txt

1	5	10	15	
aat gtt aag aac ctt aag tcc tca gtg act aca ata cct gga aag act	Asn Val Lys Asn 20 Leu Lys Ser Ser Val 25 Thr Thr Ile Pro Gly Lys Thr	96		
aaa aga gct gct ttg ggt gaa ata ggt aac aaa gtg aat acc tta aga	Lys Arg Ala 35 Leu Gly Glu Ile Gly Asn Lys Val Asn Thr Leu Arg	144		
ggt gtg gag ccc att gat aga act agc ttg ctg aca aaa gat agt aaa	Gly Val 50 Glu Pro Ile Asp Arg 55 Thr Ser Leu Leu Thr Lys Asp Ser Lys	192		
aaa atc aca gtt tca aaa caa att att aaa aca tca gaa aaa gga att	Lys Ile Thr Val Ser Lys 70 Gln Ile Ile Lys Thr 75 Ser Glu Lys Gly Ile 80	240		
gag aaa cta cct atc caa ata gtt aaa cct gta aaa aag att aca gtt	Glu Lys Leu Pro Ile Gln Ile Val Lys Pro 90 Val Lys Lys Ile Thr Val 95	288		
tct tat gaa aat aat gtg gtg tca cta cct cct aag gaa gtt cag tca	Ser Tyr Glu Asn 100 Val Val Ser Leu Pro Pro Lys Glu Val 110 Gln Ser	336		
ttc tcc tca gat ctg tta gca gtt gag gat att gat gaa gaa gat aaa	Phe Ser Ser Asp Leu Leu Ala Val 120 Glu Asp Ile Asp Glu Glu Asp Lys	384		
gga aat cct agt cta gtt tct att tat agt aat gac att tat gga tat	Gly Asn 130 Pro Ser Leu Val Ser 135 Ile Tyr Ser Asn 140 Ile Tyr Gly Tyr	432		
tta aga acc tta gaa aat atg ttt cct atc tca aaa gga tat tta gat	Leu Arg Thr Leu Glu Asn 150 Met Phe Pro Ile Ser Lys Gly Tyr Leu Asp 160	480		
gga caa gaa gtt aca cca aaa atg aga agt gta ctt ata gat tgg tta	Gly Gln Glu Val Thr 165 Pro Lys Met Arg 170 Val Leu Ile Asp Trp Leu 175	528		
gta gaa gta cat caa caa ttc cat cta atg caa gag aca tta tat ctg	Val Glu Val His 180 Gln Gln Phe His Leu 185 Met Gln Glu Thr Leu Tyr Leu 190	576		
act gtt gct act att gat aga ttt tta cag gtt tat aga aaa aga tta	Thr Val Ala 195 Thr Ile Asp Arg Phe 200 Leu Gln Val Tyr Arg Lys Arg Leu 205	624		
caa tta gtt ggt gtg aca gct atg ttt ata gct agt aag tac gaa gag	Gln Leu Val Gly Val Thr 215 Ala Met Phe Ile Ala Ser 220 Lys Tyr Gln Glu 225	672		
atg tat tct cca gat gta aat gac ttt gta tat atc aca gat aat gca	Met Tyr Ser Pro Asp Val Asn 230 Asp Phe Val Tyr 235 Ile Thr Asp Asn Ala 240	720		
tat tca agg ata gaa ata tta caa atg gaa atg ctt att gtg aaa aca	Tyr Ser Arg Ile Glu Ile Leu Gln Met Glu Met Leu Ile Val Lys Thr 255	768		
tta gat tat tct ttt ggt aga cca tta cct tta cat ttt ttg aga aga	Leu Asp Tyr Ser Phe 260 Gly Arg Pro Leu Pro Leu His Phe Leu Arg Arg 270	816		
tac agc aaa gct gga aag gct ctt cca ata cat cat aca atg gct aaa	Tyr Ser Lys 275 Ala Gly Lys Ala Leu Pro Ile His His Thr Met Ala Lys 285	864		
tat ttt cta gaa caa agt tta gtg cat tat gaa atg tgt cat tat cca	Tyr Phe Leu Glu Gln Ser Leu Val His Tyr Glu Met Cys His Tyr Pro 300	912		
cca agt ctt att gca gct gca gca ata tat tta gct ttc cta att att	Pro Ser Leu Ile Ala 310 Ala Ala Ile Tyr Leu Ala Phe Leu Ile Ile 320	960		
gat aat aat gac gag gac gag cat aaa att gtt tgg acc aat acc ttg	Asp Asn Asn Asp Glu Asp Glu His Lys Ile Val Trp Thr Asn Thr Leu 335	1008		
gca cat tac agc act tat tct aag gac gtg ttt ccc gtg gta cgg	Ala His Tyr Ser Thr 340 Thr Ser Lys Asp Val Phe Pro 350 Val Val Arg	1056		
gaa aca gcg agt att ata gtt aat gcg gat aag atc aaa tat caa gct	Glu Thr Ala 355 Ser Ile Ile Val Asn 360 Ala Asp Lys Ile Lys Tyr Gln Ala	1104		
gta aga aag aag tac gcc caa tgc aaa tgc atg aag att agc aca cga	Val Arg Lys Lys Tyr Ala Gln Ser Lys Cys Met Lys Ile Ser Thr Arg	1152		

## PhoenixTemp32470.tmp.txt

370	ccg gaa ctt aaa tca gca	375	acg ata ttt gct ata	380	tcc act gcg gat aat	1200
Pro	Glu Leu Lys Ser Ala	Thr	Ile Phe Ala Ile	Ser	Thr Ala Asp Asn	
385	aaa gca ata taa	390		395	400	1212
Lys	Ala Ile					

<210> 2372  
 <211> 403  
 <212> PRT  
 <213> Apis mellifera

<400> 2372

Met	Ala	Leu	Arg	Asn	Arg	Thr	Ala	Leu	Thr	Asn	Ile	Val	Asn	Gln	Glu
1				5					10					15	
Asn	Val	Lys	Asn	Leu	Lys	Ser	Ser	Val	Thr	Thr	Ile	Pro	Gly	Lys	Thr
			20					25					30		
Lys	Arg	Ala	Ala	Leu	Gly	Glu	Ile	Gly	Asn	Lys	Val	Asn	Thr	Leu	Arg
		35					40					45			
Gly	Val	Glu	Pro	Ile	Asp	Arg	Thr	Ser	Leu	Leu	Thr	Lys	Asp	Ser	Lys
	50				55					60					
Lys	Ile	Thr	Val	Ser	Lys	Gln	Ile	Ile	Lys	Thr	Ser	Glu	Lys	Gly	Ile
65					70				75					80	
Glu	Lys	Leu	Pro	Ile	Gln	Ile	Val	Lys	Pro	Val	Lys	Lys	Ile	Thr	Val
			85					90					95		
Ser	Tyr	Glu	Asn	Asn	Val	Val	Ser	Leu	Pro	Pro	Lys	Glu	Val	Gln	Ser
			100					105					110		
Phe	Ser	Ser	Asp	Leu	Leu	Ala	Val	Glu	Asp	Ile	Asp	Glu	Glu	Asp	Lys
		115					120					125			
Gly	Asn	Pro	Ser	Leu	Val	Ser	Ile	Tyr	Ser	Asn	Asp	Ile	Tyr	Gly	Tyr
	130					135					140				
Leu	Arg	Thr	Leu	Glu	Asn	Met	Phe	Pro	Ile	Ser	Lys	Gly	Tyr	Leu	Asp
145					150					155					160
Gly	Gln	Glu	Val	Thr	Pro	Lys	Met	Arg	Ser	Val	Leu	Ile	Asp	Trp	Leu
			165					170					175		
Val	Glu	Val	His	Gln	Gln	Phe	His	Leu	Met	Gln	Glu	Thr	Leu	Tyr	Leu
			180					185					190		
Thr	Val	Ala	Thr	Ile	Asp	Arg	Phe	Leu	Gln	Val	Tyr	Arg	Lys	Arg	Leu
		195					200					205			
Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Phe	Ile	Ala	Ser	Lys	Tyr	Glu	Glu
	210					215					220				
Met	Tyr	Ser	Pro	Asp	Val	Asn	Asp	Phe	Val	Tyr	Ile	Thr	Asp	Asn	Ala
225					230					235					240
Tyr	Ser	Arg	Ile	Glu	Ile	Leu	Gln	Met	Glu	Met	Leu	Ile	Val	Lys	Thr
				245					250					255	
Leu	Asp	Tyr	Ser	Phe	Gly	Arg	Pro	Leu	Pro	Leu	His	Phe	Leu	Arg	Arg
			260					265					270		
Tyr	Ser	Lys	Ala	Gly	Lys	Ala	Leu	Pro	Ile	His	His	Thr	Met	Ala	Lys
		275					280					285			
Tyr	Phe	Leu	Glu	Gln	Ser	Leu	Val	His	Tyr	Glu	Met	Cys	His	Tyr	Pro
	290					295					300				
Pro	Ser	Leu	Ile	Ala	Ala	Ala	Ala	Ile	Tyr	Leu	Ala	Phe	Leu	Ile	Ile
305					310					315					320
Asp	Asn	Asn	Asp	Glu	Asp	Glu	His	Lys	Ile	Val	Trp	Thr	Asn	Thr	Leu
				325					330					335	
Ala	His	Tyr	Ser	Thr	Tyr	Ser	Lys	Asp	Val	Phe	Pro	Val	Val	Arg	
			340					345				350			
Glu	Thr	Ala	Ser	Ile	Ile	Val	Asn	Ala	Asp	Lys	Ile	Lys	Tyr	Gln	Ala
		355					360					365			
Val	Arg	Lys	Lys	Tyr	Ala	Gln	Ser	Lys	Cys	Met	Lys	Ile	Ser	Thr	Arg
	370					375					380				
Pro	Glu	Leu	Lys	Ser	Ala	Thr	Ile	Phe	Ala	Ile	Ser	Thr	Ala	Asp	Asn
385					390					395					400
Lys	Ala	Ile													

<210> 2373  
 <211> 1890

&lt;212&gt; DNA

<213> *Aspergillus nidulans* FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1890)

&lt;400&gt; 2373

atg gac gcg aag ccc caa cgc atc cgt gtc cgt ggt gac gag aat gct	48
Met Asp Ala Lys Pro Gln Arg Ile Arg Val Arg Gly Asp Glu Asn Ala	
1 5 10 15	
ccc ttt ccc ctc gcc gcg acc aag aca ctt cac caa cga acg aag tct	96
Pro Phe Pro Leu Ala Ala Thr Lys Thr Leu His Gln Arg Thr Lys Ser	
20 25 30	
act act gca ttg tcc gca acc ttc cag aac ggt gcc agt aag aat gga	144
Thr Thr Ala Leu Ser Ala Thr Phe Gln Asn Gly Ala Ser Lys Asn Gly	
35 40 45	
gcc cgc aga gcc gcc ttt gga gat gtc agc aac acc gcc agc cta gtt	192
Ala Arg Arg Ala Ala Phe Gly Asp Val Ser Asn Thr Ala Ser Leu Val	
50 55 60	
cac gcc aac cga gac gat gcc tcc ctt gct ggc agg aaa cca tcc aaa	240
His Gly Asn Arg Asp Asp Ala Ser Leu Ala Gly Arg Lys Pro Ser Lys	
65 70 75 80	
ttg ctg gag aag gga tct atg gct acg gaa aag aag tcg acc gcg ctg	288
Leu Leu Glu Lys Gly Ser Met Ala Thr Glu Lys Lys Ser Thr Ala Leu	
85 90 95	
tca cag ccc gcc caa cgt ccc gtt tcc atg tcg ggt ttc aag ggc ctg	336
Ser Gln Pro Ala Gln Arg Pro Val Ser Met Ser Gly Phe Lys Gly Leu	
100 105 110	
ctg aac aat gtg acc aac ccc aag ctt gag gtc acg aag cag gca	384
Leu Asn Asn Val Thr Asn Pro Lys Pro Leu Glu Val Thr Lys Gln Ala	
115 120 125	
gct ggg cag cag caa agc aca aac tcc cgt aag acc ttg aac aag cgc	432
Ala Gly Gln Gln Gln Ser Thr Asn Ser Arg Lys Thr Leu Asn Lys Arg	
130 135 140	
gct acg gtt ttc aaa gat cac cta gaa cca ttg acg gag agc aaa gaa	480
Ala Thr Val Phe Lys Asp His Leu Glu Pro Leu Thr Glu Ser Lys Glu	
145 150 155 160	
ctt aca tcc aag gaa tcg aaa ccc gaa cct aag gaa ggc aac atg aag	528
Leu Thr Ser Lys Glu Ser Lys Pro Glu Pro Lys Glu Gly Asn Met Lys	
165 170 175	
ggc cat tca aaa cca agc ttg ggg gaa cat ctg cag aag gac ggc aaa	576
Gly His Ser Lys Pro Ser Leu Gly Glu His Leu Gln Lys Asp Gly Lys	
180 185 190	
gtg gag ggt act gtc tct ttg aat gaa aaa tta gag agc gaa atg tgc	624
Val Glu Gly Thr Val Ser Leu Asn Glu Lys Leu Glu Ser Glu Met Cys	
195 200 205	
aaa ctc gag gtt ctg ttg tcc cag cct gga gcc gaa gaa gac gag aag	672
Lys Leu Glu Val Leu Leu Ser Gln Pro Gly Ala Glu Glu Asp Glu Lys	
210 215 220	
gag ttc ccg gat ctt gag gac gat tgc aaa gtg caa cct atg ccg	720
Glu Phe Pro Asp Leu Glu Asp Asp Cys Val Gln Pro Met Pro	
225 230 235 240	
aag caa acc ggc gaa gct cat atc gca gcg gac tcc aac gga ccc gct	768
Lys Gln Thr Gly Glu Ala His Ile Ala Ala Asp Ser Asn Gly Pro Ala	
245 250 255	
att agc tcg agg gtc act tgc aaa tcc acc aca gtc tcc cgt gct tca	816
Ile Ser Ser Arg Val Thr Cys Lys Ser Thr Thr Val Ser Arg Ala Ser	
260 265 270	
cag gat gac tta cct cat cag tcg gaa cct gaa gaa tac tgg gac gat	864
Gln Asp Asp Leu Pro His Gln Ser Glu Pro Glu Glu Tyr Trp Asp Asp	
275 280 285	
gac gat gag gag aac gag gaa gac gat tat atc act gcc cga tca tac	912
Asp Asp Glu Glu Asn Glu Glu Asp Asp Tyr Ile Thr Ala Arg Ser Tyr	
290 295 300	
cgc tcc cgt agc gag aat acc acc ggc gga gca acg acc cta ctg ttt	960
Arg Ser Arg Ser Glu Asn Thr Thr Gly Gly Ala Thr Thr Leu Leu Phe	
305 310 315 320	
ccc aga tat aac cag cag gtc aaa cgt gag ctg gct ctc gca aag cag	1008

## PhoenixTemp32470.tmp.txt

Pro	Arg	Tyr	Asn	Gln	Gln	Val	Lys	Arg	Glu	Leu	Ala	Leu	Ala	Lys	Gln	
ata	gtc	gag	gct	acc	cgc	acc	gtg	gaa	gat	atc	gag	gac	gac	tat	tgt	1056
Ile	Val	Glu	Ala	Thr	Arg	Thr	Val	Glu	Asp	Ile	Glu	Asp	Asp	Tyr	Cys	
			340					345					350			
gat	aca	agt	atg	gtg	gct	gaa	tac	agc	gag	gag	att	ttc	gag	tac	atc	1104
Asp	Thr	Ser	Met	Val	Ala	Glu	Tyr	Ser	Glu	Glu	Ile	Phe	Glu	Tyr	Ile	
		355					360					365				
aga	gag	caa	gag	atc	aag	atg	ctg	cca	aat	gca	cat	tat	atg	gac	aac	1152
Arg	Glu	Gln	Glu	Ile	Lys	Met	Leu	Pro	Asn	Ala	His	Tyr	Met	Asp	Asn	
	370					375				380						
caa	gcc	gag	atc	caa	tgg	tcc	atg	cgg	tct	gtt	ctc	atg	gac	tgg	ctt	1200
Gln	Ala	Glu	Ile	Gln	Trp	Ser	Met	Arg	Ser	Val	Leu	Met	Asp	Trp	Leu	
385					390					395					400	
gtg	cag	gtc	cac	cat	cgg	ttc	tca	ctg	ctc	cct	gaa	act	ctt	ttt	ctt	1248
Val	Gln	Val	His	His	Arg	Phe	Ser	Leu	Leu	Pro	Glu	Thr	Leu	Phe	Leu	
			405					410						415		
tgc	gtc	aac	tat	atc	gac	cgt	ttc	ctc	tca	tgc	aag	att	gtt	tcg	ctt	1296
Cys	Val	Asn	Tyr	Ile	Asp	Arg	Phe	Leu	Ser	Cys	Lys	Ile	Val	Ser	Leu	
			420					425					430			
ggc	aag	ctg	cag	ctt	gtt	ggt	gcg	act	gct	att	ttt	atc	gcc	gcg	aaa	1344
Gly	Lys	Leu	Gln	Leu	Val	Gly	Ala	Thr	Ala	Ile	Phe	Ile	Ala	Ala	Lys	
		435					440				445					
tat	gaa	gag	atc	aac	tgt	ccg	tct	gtc	cag	gag	att	gtt	tac	atg	gtt	1392
Tyr	Glu	Glu	Ile	Asn	Cys	Pro	Ser	Val	Gln	Glu	Ile	Val	Tyr	Met	Val	
	450					455					460					
gac	ggc	ggt	tac	act	gtc	gat	gaa	att	ctg	aaa	gca	gag	cgg	ttc	atg	1440
Asp	Gly	Gly	Tyr	Thr	Val	Asp	Glu	Ile	Leu	Lys	Ala	Glu	Arg	Phe	Met	
465				470						475					480	
cta	agc	atg	ctc	cag	gag	ctt	ggg	ttt	cca	gga	cct	atg	agc	ttc	ttc	1488
Leu	Ser	Met	Leu	Gln	Phe	Glu	Leu	Gly	Phe	Pro	Gly	Pro	Met	Ser	Phe	
			485					490						495		
ctt	cgc	aga	atc	agc	aaa	gct	gac	gat	tac	gac	ctc	gaa	act	cgc	aca	1536
Leu	Arg	Arg	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Leu	Glu	Thr	Arg	Thr	
			500					505					510			
ctt	gcg	aaa	tat	ttc	ctg	gag	gtt	act	atc	atg	gat	gag	cga	ttc	gtt	1584
Leu	Ala	Lys	Tyr	Phe	Leu	Glu	Val	Thr	Ile	Met	Asp	Glu	Arg	Phe	Val	
		515					520					525				
ggt	agt	cct	gct	agt	ttc	ctt	gct	gcc	ggc	gct	cat	tgc	ttg	gcg	agg	1632
Gly	Ser	Pro	Ala	Ser	Phe	Leu	Ala	Ala	Gly	Ala	His	Cys	Leu	Ala	Arg	
		530				535					540					
tta	atg	ctc	aag	aaa	ggc	acc	tgg	tct	cct	gct	cat	gtg	cat	tac	gcc	1680
Leu	Met	Leu	Lys	Lys	Gly	Thr	Trp	Ser	Pro	Ala	His	Val	His	Tyr	Ala	
545					550					555					560	
ggt	tat	act	tac	tct	cag	cta	tac	ccg	ctc	gtc	tct	ctc	att	gtt	gag	1728
Gly	Tyr	Thr	Tyr	Ser	Gln	Leu	Tyr	Pro	Leu	Val	Ser	Leu	Ile	Val	Glu	
				565					570					575		
tgc	tgt	gag	atg	ccc	cgc	aag	cat	cat	tca	gct	att	tac	gat	aag	tac	1776
Cys	Cys	Glu	Met	Pro	Arg	Lys	His	His	Ser	Ala	Ile	Tyr	Asp	Lys	Tyr	
			580					585					590			
aac	gat	aga	cga	ttc	aag	ctt	gct	tct	gct	tac	gtg	gaa	gcc	gaa	atg	1824
Asn	Asp	Arg	Arg	Phe	Lys	Leu	Ala	Ser	Ala	Tyr	Val	Glu	Ala	Glu	Met	
		595					600					605				
agg	aag	aac	ttc	cgt	ctt	cca	gag	ccg	gct	atc	gac	cgc	aaa	aca	aca	1872
Arg	Lys	Asn	Phe	Arg	Leu	Pro	Glu	Pro	Ala	Ile	Asp	Arg	Lys	Thr	Thr	
	610					615					620					
ctt	ggt	caa	gga	cat	tag											1890
Leu	Gly	Gln	Gly	His												
625																

&lt;210&gt; 2374

&lt;211&gt; 629

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 2374

Met	Asp	Ala	Lys	Pro	Gln	Arg	Ile	Arg	Val	Arg	Gly	Asp	Glu	Asn	Ala
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Pro	Phe	Pro	Leu	Ala	Ala	Thr	Lys	Thr	Leu	His	Gln	Arg	Thr	Lys	Ser



## PhoenixTemp32470.tmp.txt

			20					25					30		
Thr	Thr	Ala	Leu	Ser	Ala	Thr	Phe	Gln	Asn	Gly	Ala	Ser	Lys	Asn	Gly
		35					40					45			
Ala	Arg	Arg	Ala	Ala	Phe	Gly	Asp	Val	Ser	Asn	Thr	Ala	Ser	Leu	Val
	50					55					60				
His	Gly	Asn	Arg	Asp	Asp	Ala	Ser	Leu	Ala	Gly	Arg	Lys	Pro	Ser	Lys
65				70						75				80	
Leu	Leu	Glu	Lys	Gly	Ser	Met	Ala	Thr	Glu	Lys	Lys	Ser	Thr	Ala	Leu
			85						90					95	
Ser	Gln	Pro	Ala	Gln	Arg	Pro	Val	Ser	Met	Ser	Gly	Phe	Lys	Gly	Leu
			100					105				110			
Leu	Asn	Asn	Val	Thr	Asn	Pro	Lys	Pro	Leu	Glu	Val	Thr	Lys	Gln	Ala
		115					120					125			
Ala	Gly	Gln	Gln	Gln	Ser	Thr	Asn	Ser	Arg	Lys	Thr	Leu	Asn	Lys	Arg
	130					135					140				
Ala	Thr	Val	Phe	Lys	Asp	His	Leu	Glu	Pro	Leu	Thr	Glu	Ser	Lys	Glu
145					150					155					160
Leu	Thr	Ser	Lys	Glu	Ser	Lys	Pro	Glu	Pro	Lys	Glu	Gly	Asn	Met	Lys
			165						170					175	
Gly	His	Ser	Lys	Pro	Ser	Leu	Gly	Glu	His	Leu	Gln	Lys	Asp	Gly	Lys
			180					185					190		
Val	Glu	Gly	Thr	Val	Ser	Leu	Asn	Glu	Lys	Leu	Glu	Ser	Glu	Met	Cys
		195					200					205			
Lys	Leu	Glu	Val	Leu	Leu	Ser	Gln	Pro	Gly	Ala	Glu	Glu	Asp	Glu	Lys
	210					215					220				
Glu	Phe	Pro	Asp	Leu	Glu	Asp	Asp	Asp	Cys	Lys	Val	Gln	Pro	Met	Pro
225				230					235						240
Lys	Gln	Thr	Gly	Glu	Ala	His	Ile	Ala	Ala	Asp	Ser	Asn	Gly	Pro	Ala
			245					250						255	
Ile	Ser	Ser	Arg	Val	Thr	Cys	Lys	Ser	Thr	Thr	Val	Ser	Arg	Ala	Ser
			260					265					270		
Gln	Asp	Asp	Leu	Pro	His	Gln	Ser	Glu	Pro	Glu	Glu	Tyr	Trp	Asp	Asp
		275					280					285			
Asp	Asp	Glu	Glu	Asn	Glu	Glu	Asp	Asp	Tyr	Ile	Thr	Ala	Arg	Ser	Tyr
	290					295					300				
Arg	Ser	Arg	Ser	Glu	Asn	Thr	Thr	Gly	Gly	Ala	Thr	Thr	Leu	Leu	Phe
305					310					315					320
Pro	Arg	Tyr	Asn	Gln	Gln	Val	Lys	Arg	Glu	Leu	Ala	Leu	Ala	Lys	Gln
			325						330					335	
Ile	Val	Glu	Ala	Thr	Arg	Thr	Val	Glu	Asp	Ile	Glu	Asp	Asp	Tyr	Cys
			340					345					350		
Asp	Thr	Ser	Met	Val	Ala	Glu	Tyr	Ser	Glu	Glu	Ile	Phe	Glu	Tyr	Ile
		355					360					365			
Arg	Glu	Gln	Glu	Ile	Lys	Met	Leu	Pro	Asn	Ala	His	Tyr	Met	Asp	Asn
	370					375									

## PhoenixTemp32470.tmp.txt

Cys Cys Glu Met Pro Arg Lys His His Ser Ala Ile Tyr Asp Lys Tyr  
 580 585 590  
 Asn Asp Arg Arg Phe Lys Leu Ala Ser Ala Tyr Val Glu Ala Glu Met  
 595 600 605  
 Arg Lys Asn Phe Arg Leu Pro Glu Pro Ala Ile Asp Arg Lys Thr Thr  
 610 615 620  
 Leu Gly Gln Gly His  
 625

&lt;210&gt; 2375

&lt;211&gt; 1461

&lt;212&gt; DNA

&lt;213&gt; Candida albicans SC5314

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1461)

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&lt;400&gt; 2375

atg	cga	tct	tat	aaa	tca	tcc	ata	acg	gat	gaa	aat	gag	ttg	aca	aaa	48
Met	Arg	Ser	Tyr	Lys	Ser	Ser	Ile	Thr	Asp	Glu	Asn	Glu	Leu	Thr	Lys	
1				5					10					15		
caa	aga	ctt	aga	gcc	aaa	agt	att	gcc	aat	ttg	agc	agc	aat	cac	aca	96
Gln	Arg	Leu	Arg	Ala	Lys	Ser	Ile	Ala	Asn	Leu	Ser	Ser	Asn	His	Thr	
			20					25					30			
aca	gct	ggg	caa	cca	tca	aca	agc	tct	caa	cat	aga	gag	gca	ttg	act	144
Thr	Ala	Gly	Gln	Pro	Ser	Thr	Ser	Ser	Gln	His	Arg	Glu	Ala	Leu	Thr	
		35					40					45				
gat	ttg	acc	tca	cag	gag	aat	aaa	aat	cac	cca	aga	gtg	aaa	cta	aca	192
Asp	Leu	Thr	Ser	Gln	Glu	Asn	Lys	Asn	His	Pro	Arg	Val	Lys	Leu	Thr	
	50					55					60					
caa	aca	aac	acc	aat	cat	cac	aga	aac	agc	tca	agt	agt	tcg	aac	aaa	240
Gln	Thr	Asn	Thr	Asn	His	His	Arg	Asn	Ser	Ser	Ser	Ser	Ser	Asn	Lys	
	65				70				75						80	
ata	caa	ata	tat	caa	caa	ata	gag	caa	aag	aaa	acc	gat	atc	cat	cag	288
Ile	Gln	Ile	Tyr	Gln	Gln	Ile	Glu	Gln	Lys	Lys	Thr	Asp	Ile	His	Gln	
				85					90				95			
ttc	aaa	aaa	cca	aga	ttg	gag	aag	gta	tta	cta	aat	gac	gac	gac	gat	336
Phe	Lys	Lys	Pro	Arg	Leu	Glu	Lys	Val	Leu	Leu	Asn	Asp	Asp	Asp	Asp	
			100					105					110			
gaa	acc	gat	gac	gaa	ttt	gac	gac	gaa	gaa	gat	aaa	gaa	aac	aga	tat	384
Glu	Thr	Asp	Asp	Glu	Phe	Asp	Asp	Glu	Glu	Asp	Lys	Glu	Asn	Arg	Tyr	
		115				120						125				
cat	gat	cta	gag	ttg	aat	gaa	gat	gac	agt	aaa	cat	caa	cta	ata	agt	432
His	Asp	Leu	Glu	Leu	Asn	Glu	Asp	Asp	Ser	Lys	His	Gln	Leu	Ile	Ser	
	130				135					140						
gaa	gca	ttt	gaa	aca	att	gat	gat	cgg	gga	ata	agt	gag	ggt	gaa	aat	480
Glu	Ala	Phe	Glu	Thr	Ile	Asp	Asp	Arg	Gly	Ile	Ser	Glu	Gly	Glu	Asn	
	145				150				155						160	
gat	aca	gcg	caa	gaa	gca	cgt	gaa	aga	tta	gag	gaa	gaa	aca	caa	tca	528
Asp	Thr	Ala	Gln	Glu	Ala	Arg	Glu	Arg	Leu	Glu	Glu	Glu	Thr	Gln	Ser	
			165						170					175		
cat	aca	cag	gat	atg	aga	tca	ata	tat	ggg	ggt	cat	gtg	ccc	atg	caa	576
His	Thr	Gln	Asp	Met	Arg	Ser	Ile	Tyr	Gly	Val	His	Val	Pro	Met	Gln	
		180						185					190			
cca	atg	tgg	aat	aat	gcg	ata	ata	aac	gag	ctc	aaa	tac	gtt	ata	caa	624
Pro	Met	Trp	Asn	Asn	Ala	Ile	Ile	Asn	Glu	Leu	Lys	Tyr	Val	Ile	Gln	
		195					200					205				
aag	tac	tct	cgt	aat	acg	ttg	gac	gaa	aat	gac	gaa	gat	act	tat	gat	672
Lys	Tyr	Ser	Arg	Asn	Thr	Leu	Asp	Glu	Asn	Asp	Glu	Asp	Thr	Tyr	Asp	
	210					215				220						
act	acc	atg	gtg	gca	gaa	tat	tca	ccg	gaa	att	ttc	aat	tac	ttg	cat	720
Thr	Thr	Met	Val	Ala	Glu	Tyr	Ser	Pro	Glu	Ile	Phe	Asn	Tyr	Leu	His	
	225				230				235						240	
gaa	ctt	gaa	aat	aag	ttt	aca	cct	gat	cca	aat	tat	atg	gat	ttc	caa	768
Glu	Leu	Glu	Asn	Lys	Phe	Thr	Pro	Asp	Pro	Asn	Tyr	Met	Asp	Phe	Gln	
				245					250					255		
gac	gat	cta	aag	tgg	gag	atg	cgt	gca	gtg	ctt	att	gat	tgg	gtc	gtc	816

## PhoenixTemp32470.tmp.txt

Asp	Asp	Leu	Lys	Trp	Glu	Met	Arg	Ala	Val	Leu	Ile	Asp	Trp	Val	Val	
caa	gtg	cat	gct	cga	ttc	aac	ttg	ttt	tca	gaa	acc	ttg	tac	ttg	act	864
Gln	Val	His	Ala	Arg	Phe	Asn	Leu	Phe	Ser	Glu	Thr	Leu	Tyr	Leu	Thr	
		275					280					285				
gta	aat	tac	att	gac	aga	ttc	tta	tcc	aag	aga	agg	gtg	tca	tta	tcc	912
Val	Asn	Tyr	Ile	Asp	Arg	Phe	Leu	Ser	Lys	Arg	Arg	Val	Ser	Leu	Ser	
	290					295				300						
aga	ttt	cag	tta	gtt	gga	gca	gta	gca	ttg	ttt	att	gct	gcc	aaa	tac	960
Arg	Phe	Gln	Leu	Val	Gly	Ala	Val	Ala	Leu	Phe	Ile	Ala	Ala	Lys	Tyr	
305				310						315					320	
gaa	gaa	atc	aat	tgt	cct	aca	gtc	caa	gaa	att	gca	tac	atg	gca	gac	1008
Glu	Glu	Ile	Asn	Cys	Pro	Thr	Val	Gln	Glu	Ile	Ala	Tyr	Met	Ala	Asp	
				325					330					335		
aat	gcc	tat	tca	atc	gac	gag	ttt	tta	aaa	gcc	gag	aga	ttt	atg	att	1056
Asn	Ala	Tyr	Ser	Ile	Asp	Glu	Phe	Leu	Lys	Ala	Glu	Arg	Phe	Met	Ile	
			340					345					350			
gat	gta	ttg	gaa	ttt	gat	ttg	gga	tgg	cca	ggg	cca	atg	tcg	ttt	ttg	1104
Asp	Val	Leu	Glu	Phe	Asp	Leu	Gly	Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	
		355					360						365			
aga	aga	ata	tca	aaa	gct	gac	gat	tat	gat	tat	gaa	act	aga	aca	ctt	1152
Arg	Arg	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Tyr	Glu	Thr	Arg	Thr	Leu	
	370					375					380					
gcc	aaa	tat	ttt	ctt	gaa	ata	act	ata	atg	gac	tca	aaa	ttt	gtt	gct	1200
Ala	Lys	Tyr	Phe	Leu	Glu	Ile	Thr	Ile	Met	Asp	Ser	Lys	Phe	Val	Ala	
385					390					395					400	
tct	cca	cca	agt	tgg	ttg	gcc	gct	gga	gca	cat	tac	ata	tca	aga	ata	1248
Ser	Pro	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	His	Tyr	Ile	Ser	Arg	Ile	
				405					410					415		
cta	ttg	gga	aga	ggt	gaa	tgg	aca	gaa	ttg	cat	ggt	ttt	tat	agt	ggc	1296
Leu	Leu	Gly	Arg	Gly	Glu	Trp	Thr	Glu	Leu	His	Val	Phe	Tyr	Ser	Gly	
			420					425					430			
tat	acc	gaa	aag	caa	ttg	cag	cca	ttg	gca	gac	ggt	ttg	tta	gag	aac	1344
Tyr	Thr	Glu	Lys	Gln	Leu	Gln	Pro	Leu	Ala	Asp	Val	Leu	Leu	Glu	Asn	
		435					440					445				
tgt	cgc	cat	gct	gaa	ata	aac	cat	aaa	gcc	att	ttc	gaa	aaa	tac	aag	1392
Cys	Arg	His	Ala	Glu	Ile	Asn	His	Lys	Ala	Ile	Phe	Glu	Lys	Tyr	Lys	
	450					455					460					
gaa	aga	agg	tat	aga	aaa	agt	tca	ctt	ttt	gtt	caa	gaa	tat	ttt	cgt	1440
Glu	Arg	Arg	Tyr	Arg	Lys	Ser	Ser	Leu	Phe	Val	Gln	Glu	Tyr	Phe	Arg	
465					470					475					480	
cac	ata	atg	tcc	cag	agt	tga										1461
His	Ile	Met	Ser	Gln	Ser											
				485												

&lt;210&gt; 2376

&lt;211&gt; 486

&lt;212&gt; PRT

&lt;213&gt; Candida albicans SC5314

&lt;400&gt; 2376

Met	Arg	Ser	Tyr	Lys	Ser	Ser	Ile	Thr	Asp	Glu	Asn	Glu	Leu	Thr	Lys	
1				5					10					15		
Gln	Arg	Leu	Arg	Ala	Lys	Ser	Ile	Ala	Asn	Leu	Ser	Ser	Asn	His	Thr	
			20					25					30			
Thr	Ala	Gly	Gln	Pro	Ser	Thr	Ser	Ser	Gln	His	Arg	Glu	Ala	Leu	Thr	
		35					40					45				
Asp	Leu	Thr	Ser	Gln	Glu	Asn	Lys	Asn	His	Pro	Arg	Val	Lys	Leu	Thr	
	50					55					60					
Gln	Thr	Asn	Thr	Asn	His	His	Arg	Asn	Ser	Ser	Ser	Ser	Ser	Asn	Lys	
65					70					75					80	
Ile	Gln	Ile	Tyr	Gln	Ile	Glu	Gln	Lys	Lys	Thr	Asp	Ile	His	Gln		
				85				90					95			
Phe	Lys	Lys	Pro	Arg	Leu	Glu	Lys	Val	Leu	Leu	Asn	Asp	Asp	Asp	Asp	
			100					105					110			
Glu	Thr	Asp	Asp	Glu	Phe	Asp	Asp	Glu	Glu	Asp	Lys	Glu	Asn	Arg	Tyr	
		115					120					125				
His	Asp	Leu	Glu	Leu	Asn	Glu	Asp	Asp	Ser	Lys	His	Gln	Leu	Ile	Ser	
	130					135					140					

## PhoenixTemp32470.tmp.txt

Glu Ala Phe Glu Thr Ile Asp Asp Arg Gly Ile Ser Glu Gly Glu Asn  
 145 150 155  
 Asp Thr Ala Gln Glu Ala Arg Glu Arg Leu Glu Glu Thr Gln Ser  
 165 170 175  
 His Thr Gln Asp Met Arg Ser Ile Tyr Gly Val His Val Pro Met Gln  
 180 185 190  
 Pro Met Trp Asn Asn Ala Ile Ile Asn Glu Leu Lys Tyr Val Ile Gln  
 195 200 205  
 Lys Tyr Ser Arg Asn Thr Leu Asp Glu Asn Asp Glu Asp Thr Tyr Asp  
 210 215 220  
 Thr Thr Met Val Ala Glu Tyr Ser Pro Glu Ile Phe Asn Tyr Leu His  
 225 230 235  
 Glu Leu Glu Asn Lys Phe Thr Pro Asp Pro Asn Tyr Met Asp Phe Gln  
 245 250 255  
 Asp Asp Leu Lys Trp Glu Met Arg Ala Val Leu Ile Asp Trp Val Val  
 260 265 270  
 Gln Val His Ala Arg Phe Asn Leu Phe Ser Glu Thr Leu Tyr Leu Thr  
 275 280 285  
 Val Asn Tyr Ile Asp Arg Phe Leu Ser Lys Arg Arg Val Ser Leu Ser  
 290 295 300  
 Arg Phe Gln Leu Val Gly Ala Val Ala Leu Phe Ile Ala Ala Lys Tyr  
 305 310 315  
 Glu Glu Ile Asn Cys Pro Thr Val Gln Glu Ile Ala Tyr Met Ala Asp  
 325 330 335  
 Asn Ala Tyr Ser Ile Asp Glu Phe Leu Lys Ala Glu Arg Phe Met Ile  
 340 345 350  
 Asp Val Leu Glu Phe Asp Leu Gly Trp Pro Gly Pro Met Ser Phe Leu  
 355 360 365  
 Arg Arg Ile Ser Lys Ala Asp Tyr Asp Tyr Glu Thr Arg Thr Leu  
 370 375 380  
 Ala Lys Tyr Phe Leu Glu Ile Thr Ile Met Asp Ser Lys Phe Val Ala  
 385 390 395 400  
 Ser Pro Pro Ser Trp Leu Ala Ala Gly Ala His Tyr Ile Ser Arg Ile  
 405 410 415  
 Leu Leu Gly Arg Gly Glu Trp Thr Glu Leu His Val Phe Tyr Ser Gly  
 420 425 430  
 Tyr Thr Glu Lys Gln Leu Gln Pro Leu Ala Asp Val Leu Leu Glu Asn  
 435 440 445  
 Cys Arg His Ala Glu Ile Asn His Lys Ala Ile Phe Glu Lys Tyr Lys  
 450 455 460  
 Glu Arg Arg Tyr Arg Lys Ser Ser Leu Phe Val Gln Glu Tyr Phe Arg  
 465 470 475 480  
 His Ile Met Ser Gln Ser  
 485

&lt;210&gt; 2377

&lt;211&gt; 2223

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2223)

&lt;400&gt; 2377

atg gct caa cct gcc gtc aga caa cct acc gtg aca agg tca cgc atc	48
Met Ala Gln Pro Ala Val Arg Gln Pro Thr Val Thr Arg Ser Arg Ile	
1 5 10 15	
agc cga cca gga ggc atc cca gct tct cgt agc ggc gac cgc atc cat	96
Ser Arg Pro Gly Gly Ile Pro Ala Ser Arg Ser Gly Asp Arg Ile His	
20 25 30	
ctc aca gaa gct gcc tcc aca agt cat ctg gca aaa gcc aag tca aca	144
Leu Thr Glu Ala Ala Ser Thr His Leu Ala Lys Ala Lys Ser Thr	
35 40 45	
aaa ttg gtc ggc ccc tct acc gca ggt aaa ctc cga gcc gat tcc aga	192
Lys Leu Val Gly Pro Ser Thr Ala Gly Lys Leu Arg Ala Asp Ser Arg	
50 55 60	
tcc atg cca caa cgc gct gcc ctt tct gac gtc agt aat cgt gct ggc	240
Ser Met Pro Gln Arg Ala Ala Leu Ser Asp Val Ser Asn Arg Ala Gly	

## PhoenixTemp32470.tmp.txt

65	70	75	80	
gtc	gca	gcc	gag	ccc
Val	Ala	Val	Leu	Pro
ggc	cac	aat	ggc	ctc
Gly	His	Asn	Gly	Leu
cgc	gac	gcc	cg	cca
Arg	Asp	Ala	Arg	Pro
aca	cg	tct	gtc	gag
Thr	Arg	Ser	Val	Glu
tct	atg	cat	gtg	tcc
Ser	Met	His	Val	Ser
gct	tca	gtc	aag	ctg
Ala	Ser	Val	Lys	Leu
cac	gaa	gac	gca	gac
His	Glu	Asp	Ala	Asp
cat	gtc	gaa	gag	gag
His	Val	Glu	Asp	Glu
gac	gac	gat	acc	gca
Asp	Asp	Asp	Thr	Ala
gat	tcg	gaa	cga	ctc
Asp	Ser	Glu	Arg	Leu
ctg	gag	gag	gcc	gcg
Leu	Glu	Glu	Ala	Ala
cag	gag	gaa	gtc	att
Gln	Glu	Glu	Val	Ile
gca	gaa	gca	gtc	gcc
Ala	Glu	Ala	Val	Ala
gaa	gac	gag	ctg	atc
Glu	Asp	Glu	Leu	Ile
acg	agt	atg	gtg	gcc
Thr	Ser	Met	Val	Ala
cg	tgc	gag	cg	gag
Arg	Cys	Glu	Arg	Glu
agc	gag	att	cac	tgg
Ser	Glu	Ile	His	Trp
cag	gtg	cac	atg	cg
Gln	Val	His	Met	Arg
atc	aat	gtg	gtc	agc
Ile	Asn	Val	Val	Arg
aag	ctg	cag	ctc	gtc
Lys	Leu	Gln	Leu	Val
gaa	gag	atc	ctg	gcg
Glu	Glu	Ile	Leu	Arg
ggt	ggc	tac	tcg	caa
Gly	Gly	Tyr	Ser	Gln
tcg	acg	ttg	gac	ttt
Ser	Thr	Leu	Asp	Tyr

## PhoenixTemp32470.tmp.txt

gtg	cga	aag	atc	tcc	aag	gcg	gac	tac	gac	att	cgc	acc	cgt	acc		1392
Val	Arg	Lys	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Ile	Arg	Thr	Arg	Thr	
	450					455					460					
ctg	tcc	aag	ttc	ctg	atg	gag	ctg	gcg	ctg	ctg	gat	cat	cgc	ttc	ctg	1440
Leu	Ser	Lys	Phe	Leu	Met	Glu	Leu	Ala	Leu	Leu	Asp	His	Arg	Phe	Leu	
465					470					475					480	
cgt	gct	cgg	ccc	agt	ctt	gtg	gcc	gct	gtg	ggc	atg	ttt	ttg	gcc	aaa	1488
Arg	Ala	Arg	Pro	Ser	Leu	Val	Ala	Ala	Val	Gly	Met	Phe	Leu	Ala	Lys	
				485					490					495		
aag	atg	ctg	gga	ggc	gag	tgg	gat	gac	gcc	ttt	gtc	tac	tac	tct	gac	1536
Lys	Met	Leu	Gly	Gly	Glu	Trp	Asp	Asp	Ala	Phe	Val	Tyr	Tyr	Ser	Asp	
			500					505					510			
ttt	acc	gaa	gag	cag	ctg	gtc	ccc	ggc	gag	aat	cta	tta	ctc	gag	cgt	1584
Phe	Thr	Glu	Glu	Gln	Leu	Val	Pro	Gly	Ala	Asn	Leu	Leu	Leu	Glu	Arg	
		515					520					525				
ttg	ctg	gac	caa	ggc	ttt	gag	gag	cag	ttt	gtc	tac	cgc	aag	tac	tcg	1632
Leu	Leu	Asp	Gln	Gly	Phe	Glu	Glu	Gln	Phe	Val	Tyr	Arg	Lys	Tyr	Ser	
		530				535					540					
aac	aaa	aag	ttt	ctc	cgg	gcc	agc	gtc	ttt	gcg	cgt	gat	tgg	gcc	ttc	1680
Asn	Lys	Lys	Phe	Leu	Arg	Ala	Ser	Val	Phe	Ala	Arg	Asp	Trp	Ala	Phe	
545					550				555						560	
cag	aac	cac	agc	gca	cta	ctc	gcc	gct	gct	gca	gca	gcg	gca	ggg	tcg	1728
Gln	Asn	His	Ser	Ala	Leu	Leu	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Gly	Ser	
				565				570						575		
act	caa	gca	gtg	cac	tct	tgc	ttg	gtt	aca	acg	act	gtg	cag	cac	aga	1776
Thr	Gln	Ala	Val	His	Ser	Cys	Leu	Val	Thr	Thr	Thr	Val	Gln	His	Arg	
			580					585					590			
ttt	cgc	gag	cag	aga	acc	tat	gtg	cag	aga	aga	aga	gcg	ggt	gcg	agt	1824
Phe	Arg	Glu	Gln	Arg	Thr	Tyr	Val	Gln	Arg	Arg	Arg	Ala	Gly	Ala	Ser	
		595					600					605				
gtg	tgg	cgc	gat	gag	cgg	aag	gat	ccg	cgc	ggc	tct	aca	ttt	gga	agc	1872
Val	Trp	Arg	Asp	Glu	Arg	Lys	Asp	Pro	Arg	Gly	Ser	Thr	Phe	Gly	Ser	
		610				615					620					
ggg	tgc	gga	gag	tgg	aaa	gac	aaa	gat	cgg	atc	gaa	gca	gac	gtg	aag	1920
Gly	Cys	Gly	Glu	Trp	Lys	Asp	Lys	Asp	Arg	Ile	Glu	Ala	Asp	Val	Lys	
625					630					635					640	
cgc	gaa	gcg	agt	cga	atg	aaa	ctt	gtt	cac	gcg	gtc	tct	gac	atg	gcc	1968
Arg	Glu	Ala	Ser	Arg	Met	Lys	Leu	Val	His	Ala	Val	Ser	Asp	Met	Ala	
				645					650					655		
aag	ctg	tac	ttg	cac	act	cat	cct	cat	cac	tgc	agc	cac	aaa	agg	gta	2016
Lys	Leu	Tyr	Leu	His	Thr	His	Pro	His	His	Cys	Ser	His	Lys	Arg	Val	
			660					665					670			
cat	gca	tgg	tat	gag	agc	gtg	tct	gtc	atg	tgc	att	cac	gat	ttt	cgc	2064
His	Ala	Trp	Tyr	Glu	Ser	Val	Ser	Val	Met	Cys	Ile	His	Asp	Phe	Arg	
			675				680					685				
agc	gct	cag	ctt	gct	tgg	ttg	agg	ctt	gaa	cct	gtg	atc	gcg	cgc	tgc	2112
Ser	Ala	Gln	Leu	Ala	Trp	Leu	Arg	Leu	Glu	Pro	Val	Ile	Ala	Arg	Cys	
						695					700					
gaa	gct	caa	gcc	att	cac	gat	cgt	gcc	tgc	tcg	caa	tca	cta	tgg	ccg	2160
Glu	Ala	Gln	Ala	Ile	His	Asp	Arg	Ala	Cys	Ser	Gln	Ser	Leu	Trp	Pro	
705					710					715					720	
act	caa	cgc	tct	tgc	ctg	acg	aga	aac	gga	acg	cac	gac	gag	aag	ctg	2208
Thr	Gln	Arg	Ser	Cys	Leu	Thr	Arg	Asn	Gly	Thr	His	Asp	Glu	Lys	Leu	
				725					730					735		
agt	tgc	aac	tca	taa												2223
Ser	Cys	Asn	Ser													
			740													

&lt;210&gt; 2378

&lt;211&gt; 740

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 2378

Met	Ala	Gln	Pro	Ala	Val	Arg	Gln	Pro	Thr	Val	Thr	Arg	Ser	Arg	Ile	
1				5					10					15		
Ser	Arg	Pro	Gly	Gly	Ile	Pro	Ala	Ser	Arg	Ser	Gly	Asp	Arg	Ile	His	
			20					25					30			

## PhoenixTemp32470.tmp.txt

Leu Thr Glu Ala Ala Ser Thr Ser His Leu Ala Lys Ala Lys Ser Thr  
 35 40 45  
 Lys Leu Val Gly Pro Ser Thr Ala Gly Lys Leu Arg Ala Asp Ser Arg  
 50 55 60  
 Ser Met Pro Gln Arg Ala Ala Leu Ser Asp Val Ser Asn Arg Ala Gly  
 65 70 75 80  
 Val Ala Arg Ala Asn Ala Leu Ala Asp Gly Ala Val Lys Leu Ala Pro  
 85 90 95  
 Gly His Asn Gly Leu Arg Ser Gln His Thr Lys Ser Met Thr Arg Leu  
 100 105 110  
 Arg Asp Ala Arg Ser Arg Ser Thr Ser Glu Gln Arg Leu Ser Gly Pro  
 115 120 125  
 Thr Arg Ser Val Ser Glu Gln Arg Asp Cys Ala Pro Ala Ala Glu  
 130 135 140  
 Ser Met His Val Glu Ala Ser Gln Leu Leu Pro Pro Phe Gln Ser Ser  
 145 150 155 160  
 Ala Ser Val Lys Val Gly Ile Ser Asp Glu Ala Gly Ser Ser Arg Leu  
 165 170 175  
 His Glu Asp Ala Asp Ile Arg Asp Leu Ala Gly Ser Gln His Ser Asp  
 180 185 190  
 His Val Glu Glu Asp Glu Met Ser Asp Val Ala Ser Thr Ser Ser Ser  
 195 200 205  
 Asp Asp Asp Thr Ala Glu Asp Ile Gly Val Asp Lys Ala Asn Trp Leu  
 210 215 220  
 Asp Ser Glu Arg Leu Asp Ala Glu Gly Leu Val Ser Leu His Pro Glu  
 225 230 235 240  
 Leu Glu Glu Ala Ala Arg Arg Lys Val Ala Leu Ile Lys Ser Arg Tyr  
 245 250 255  
 Gln Glu Glu Val Ile Gln Pro Arg Ala Ala Arg Ala Gln Ala Gln His  
 260 265 270  
 Ala Glu Ala Val Ala Ala Gly Gln Leu Ser Ala Glu Leu Ala Ala His  
 275 280 285  
 Glu Asp Glu Leu Ile Val Met Gly Leu Asp Pro Glu Glu Val Arg Asp  
 290 295 300  
 Thr Ser Met Val Ala Glu Tyr Ser Asn Glu Ile Phe Ser Tyr Met Ala  
 305 310 315 320  
 Arg Cys Glu Arg Glu Thr Met Ala Asn Pro Asn Tyr Met Glu Phe Gln  
 325 330 335  
 Ser Glu Ile His Trp His Met Arg Ala Thr Leu Val Asp Trp Leu Leu  
 340 345 350  
 Gln Val His Met Arg Tyr His Met Leu Pro Glu Thr Leu Trp Ile Ala  
 355 360 365  
 Ile Asn Val Val Asp Arg Phe Leu Ser Val Arg Val Val Ser Leu Ala  
 370 375 380  
 Lys Leu Gln Leu Val Gly Val Thr Ala Met Phe Ile Ala Ala Lys Tyr  
 385 390 395 400  
 Glu Glu Ile Leu Ala Pro Ser Val Lys Glu Phe Val Tyr Met Thr Glu  
 405 410 415  
 Gly Gly Tyr Ser Gln Glu Glu Ile Leu Lys Gly Glu Arg Ile Ile Leu  
 420 425 430  
 Ser Thr Leu Asp Phe Asn Ile Ser Tyr Cys Ser Pro Tyr Ser Trp  
 435 440 445  
 Val Arg Lys Ile Ser Lys Ala Asp Asp Tyr Asp Ile Arg Thr Arg Thr  
 450 455 460  
 Leu Ser Lys Phe Leu Met Glu Leu Ala Leu Leu Asp His Arg Phe Leu  
 465 470 475 480  
 Arg Ala Arg Pro Ser Leu Val Ala Ala Val Gly Met Phe Leu Ala Lys  
 485 490 495  
 Lys Met Leu Gly Gly Glu Trp Asp Asp Ala Phe Val Tyr Tyr Ser Asp  
 500 505 510  
 Phe Thr Glu Glu Gln Leu Val Pro Gly Ala Asn Leu Leu Leu Glu Arg  
 515 520 525  
 Leu Leu Asp Gln Gly Phe Glu Gln Phe Val Tyr Arg Lys Tyr Ser  
 530 535 540  
 Asn Lys Lys Phe Leu Arg Ala Ser Val Phe Ala Arg Asp Trp Ala Phe  
 545 550 555 560  
 Gln Asn His Ser Ala Leu Leu Ala Ala Ala Ala Ala Gly Ser  
 565 570 575  
 Thr Gln Ala Val His Ser Cys Leu Val Thr Thr Thr Val Gln His Arg

## PhoenixTemp32470.tmp.txt

Phe Arg Glu 580  
 Val Trp Arg Asp Glu Arg Lys 585  
 Gly Cys Gly Glu Trp Lys 590  
 Arg Glu Ala Ser Arg Met Lys Leu Val His 595  
 Lys Leu Tyr Leu His Thr His Pro His His Cys Ser His Lys Arg Val 600  
 His Ala Trp Tyr Glu Ser Val Ser Val Met Cys Ile His Asp Phe Arg 605  
 Ser Ala Gln Leu Ala Trp Leu Arg Leu Glu Pro Val Ile Ala Arg Cys 610  
 Glu Ala Gln Ala Ile His Asp Arg Ala Cys Ser Gln Ser Leu Trp Pro 615  
 Thr Gln Arg Ser Cys 620  
 Ser Cys Asn Ser 625  
 Ser Cys Asn Ser 630  
 Ser Cys Asn Ser 635  
 Ser Cys Asn Ser 640  
 Ser Cys Asn Ser 645  
 Ser Cys Asn Ser 650  
 Ser Cys Asn Ser 655  
 Ser Cys Asn Ser 660  
 Ser Cys Asn Ser 665  
 Ser Cys Asn Ser 670  
 Ser Cys Asn Ser 675  
 Ser Cys Asn Ser 680  
 Ser Cys Asn Ser 685  
 Ser Cys Asn Ser 690  
 Ser Cys Asn Ser 695  
 Ser Cys Asn Ser 700  
 Ser Cys Asn Ser 705  
 Ser Cys Asn Ser 710  
 Ser Cys Asn Ser 715  
 Ser Cys Asn Ser 720  
 Ser Cys Asn Ser 725  
 Ser Cys Asn Ser 730  
 Ser Cys Asn Ser 735  
 Ser Cys Asn Ser 740

&lt;210&gt; 2379

&lt;211&gt; 1233

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1233)

&lt;400&gt; 2379

atg gat agg gcg agc gag aac cgg agg ctg gcg gcg gtg ggg aag ccc	48
Met Asp Arg Ala Ser 5 Glu Asn Arg Arg Leu 10 Ala Ala Val Gly Lys 15 Pro	
gtg ccg ggg atc gga gag atg ggg aac cgg agg ccg ctc agg gac atc	96
Val Pro Gly Ile Gly Glu Met Gly Asn Arg Arg Pro Leu Arg Asp Ile	
aac aac ctc gtc ggg gcg ccg ccg cac ccg tcc gcg atc gcc aag aag	144
Asn Asn Leu Val Gly Ala Pro Pro His Pro Ser Ala Ile Ala Lys Lys	
ccg atg cta gag aag agt ggg aag gaa gag cag aag cct gca ttg gtg	192
Pro Met Leu Glu Lys Ser Gly Lys Glu Glu Gln Lys Pro Ala Leu Val	
gtg agc cac cgg cct atg acg agg aat ttc gcg gcc tcc ttg acg cga	240
Val Ser His Arg Pro Met Thr Arg Asn Phe Ala Ala Ser Leu Thr Arg	
aaa gaa cag ctt gac cat cag gtt tcc gtg gct gat gca gcg gtc gtc	288
Lys Glu Gln Leu Asp His Gln Val Ser Val Ala Asp Ala Ala Val Val	
tgc act gat cca cag aag aac ccc atc ccc gat ggc aca gtt gac gac	336
Cys Thr Asp Pro 100 Gln Lys Asn Pro 105 Ile Pro Asp Gly Thr 110 Val Asp Asp	
gat gtg gaa tcg tgc gaa tcg aac gac tat att gcc gtg gat gaa tgc	384
Asp Val Glu Ser Cys Glu Ser Asn Asp Tyr Ile Ala Val Asp Glu Cys	
aat gat act gat gag gat gag tcc atg atg gac att gac agt gcc gac	432
Asn Asp Thr Asp Glu Asp Glu 135 Ser Met Met Asp 140 Ile Asp Ser Ala Asp	
tca ggg aat ccg ctt gca gca acc gag tac gtc gaa gag ttg tac aag	480
Ser Gly Asn Pro Leu Ala Ala Thr Glu Tyr Val Glu Glu Leu Tyr Lys	
ttc tat aga gaa aat gag gaa atg agt tgt gtg cag cct gat tac atg	528
Phe Tyr Arg Glu Asn 165 Glu Glu Met Ser Cys 170 Val Gln Pro Asp Tyr Met	
tcc agt caa gga gac ata aat gaa aag atg aga gca att ctg att gat	576
Ser Ser Gln Gly Asp Ile Asn Glu Lys 185 Met Arg Ala Ile Leu Ile Asp	
tgg ctc att gag gtc cat cac aag ttt gag ctg atg gat gag act ctc	624



## PhoenixTemp32470.tmp.txt

Trp	Leu	Ile	Glu	Val	His	His	Lys	Phe	Glu	Leu	Met	Asp	Glu	Thr	Leu		
195	200	205															
ttt	ctt	act	gtt	aac	ata	gta	gac	aga	ttc	ttg	gaa	aaa	caa	gtt	gtg	672	
Phe	Leu	Thr	Val	Asn	Ile	Val	Asp	Arg	Phe	Leu	Glu	Lys	Gln	Val	Val		
210	215	220															
cca	agg	aag	aag	ttg	cag	cta	gtt	gga	gtg	aca	gct	atg	ctc	ctt	gct	720	
Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala		
225	230	235															
tgc	aaa	tat	gag	gaa	gtc	gca	gtc	cct	gtc	gtc	gag	gat	cta	gtg	cta	768	
Cys	Lys	Tyr	Glu	Glu	Val	Ala	Val	Pro	Val	Val	Glu	Asp	Leu	Val	Leu		
245	250	255															
att	tct	gac	cgg	gct	tat	aca	aaa	gga	caa	att	ctg	gaa	atg	gaa	aag	816	
Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	Gln	Ile	Leu	Glu	Met	Glu	Lys		
260	265	270															
ttg	atc	cta	aac	aca	ctc	cag	ttc	aac	atg	tct	gta	cca	aca	cct	tac	864	
Leu	Ile	Leu	Asn	Thr	Leu	Gln	Phe	Asn	Met	Ser	Val	Pro	Thr	Pro	Tyr		
275	280	285															
gtt	ttt	atg	aga	cgg	ttt	ctg	aag	gca	gct	cag	tct	gac	aag	cag	ctc	912	
Val	Phe	Met	Arg	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Asp	Lys	Gln	Leu		
290	295	300															
tcc	ctg	gtg	gaa	tac	caa	atg	ctc	aag	tac	cga	cct	tcg	ctt	ctt	gct	960	
Ser	Leu	Val	Glu	Tyr	Gln	Met	Leu	Lys	Tyr	Arg	Pro	Ser	Leu	Leu	Ala		
305	310	315															
gct	gct	gca	gtt	tac	aca	gca	caa	tgt	gct	ctc	act	cgt	tgc	cag	cag	1008	
Ala	Ala	Ala	Val	Tyr	Thr	Ala	Gln	Cys	Ala	Leu	Thr	Arg	Cys	Gln	Gln		
325	330	335															
tgg	aca	aag	acc	tgc	gaa	cta	cat	agt	aga	tat	acc	gga	gag	cag	ctt	1056	
Trp	Thr	Lys	Thr	Cys	Glu	Leu	His	Ser	Arg	Tyr	Thr	Gly	Glu	Gln	Leu		
340	345	350															
ctt	gag	tgt	tct	agg	atg	atg	gta	gat	ttc	cac	cag	aag	gcg	gga	gca	1104	
Leu	Glu	Cys	Ser	Arg	Met	Met	Val	Asp	Phe	His	Gln	Lys	Ala	Gly	Ala		
355	360	365															
ggc	aag	ctc	acc	ggc	gtg	cac	cgg	aaa	tac	agt	acg	ttc	aag	ttt	ggg	1152	
Gly	Lys	Leu	Thr	Gly	Val	His	Arg	Lys	Tyr	Ser	Thr	Phe	Lys	Phe	Gly		
370	375	380															
tgt	gca	gcc	aaa	acg	gag	cct	gct	ctc	ttc	ttg	ctt	gag	tca	gga	gca	1200	
Cys	Ala	Ala	Lys	Thr	Glu	Pro	Ala	Leu	Phe	Leu	Leu	Glu	Ser	Gly	Ala		
385	390	395															
gga	ggt	tac	aac	ctt	cag	aag	cag	cct	tgt	tga						1233	
Gly	Gly	Tyr	Asn	Leu	Gln	Lys	Gln	Pro	Cys								
405	410																

&lt;210&gt; 2380

&lt;211&gt; 410

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2380

Met	Asp	Arg	Ala	Ser	Glu	Asn	Arg	Arg	Leu	Ala	Ala	Val	Gly	Lys	Pro		
1				5					10					15			
Val	Pro	Gly	Ile	Gly	Glu	Met	Gly	Asn	Arg	Arg	Pro	Leu	Arg	Asp	Ile		
			20					25					30				
Asn	Asn	Leu	Val	Gly	Ala	Pro	Pro	His	Pro	Ser	Ala	Ile	Ala	Lys	Lys		
			35				40					45					
Pro	Met	Leu	Glu	Lys	Ser	Gly	Lys	Glu	Glu	Gln	Lys	Pro	Ala	Leu	Val		
	50					55					60						
Val	Ser	His	Arg	Pro	Met	Thr	Arg	Asn	Phe	Ala	Ala	Ser	Leu	Thr	Arg		
65					70					75					80		
Lys	Glu	Gln	Leu	Asp	His	Gln	Val	Ser	Val	Ala	Asp	Ala	Ala	Val	Val		
				85					90					95			
Cys	Thr	Asp	Pro	Gln	Lys	Asn	Pro	Ile	Pro	Asp	Gly	Thr	Val	Asp	Asp		
			100					105					110				
Asp	Val	Glu	Ser	Cys	Glu	Ser	Asn	Asp	Tyr	Ile	Ala	Val	Asp	Glu	Cys		
		115					120					125					
Asn	Asp	Thr	Asp	Glu	Asp	Glu	Ser	Met	Met	Asp	Ile	Asp	Ser	Ala	Asp		
	130					135					140						
Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	Tyr	Val	Glu	Glu	Leu	Tyr	Lys		
145					150					155					160		
Phe	Tyr	Arg	Glu	Asn	Glu	Glu	Met	Ser	Cys	Val	Gln	Pro	Asp	Tyr	Met		

## PhoenixTemp32470.tmp.txt

```

165      170      175
Ser Ser Gln Gly Asp Ile Asn Glu Lys Met Arg Ala Ile Leu Ile Asp
180      185      190
Trp Leu Ile Glu Val His His Lys Phe Glu Leu Met Asp Glu Thr Leu
195      200      205
Phe Leu Thr Val Asn Ile Val Asp Arg Phe Leu Glu Lys Gln Val Val
210      215      220
Pro Arg Lys Lys Leu Gln Leu Val Gly Val Thr Ala Met Leu Leu Ala
225      230      235
Cys Lys Tyr Glu Glu Val Ala Val Pro Val Val Glu Asp Leu Val Leu
245      250      255
Ile Ser Asp Arg Ala Tyr Thr Lys Gly Gln Ile Leu Glu Met Glu Lys
260      265      270
Leu Ile Leu Asn Thr Leu Gln Phe Asn Met Ser Val Pro Thr Pro Tyr
275      280      285
Val Phe Met Arg Arg Phe Leu Lys Ala Ala Gln Ser Asp Lys Gln Leu
290      295      300
Ser Leu Val Glu Tyr Gln Met Leu Lys Tyr Arg Pro Ser Leu Leu Ala
305      310      315
Ala Ala Ala Val Tyr Thr Ala Gln Cys Ala Leu Thr Arg Cys Gln Gln
325      330      335
Trp Thr Lys Thr Cys Glu Leu His Ser Arg Tyr Thr Gly Glu Gln Leu
340      345      350
Leu Glu Cys Ser Arg Met Met Val Asp Phe His Gln Lys Ala Gly Ala
355      360      365
Gly Lys Leu Thr Gly Val His Arg Lys Tyr Ser Thr Phe Lys Phe Gly
370      375      380
Cys Ala Ala Lys Thr Glu Pro Ala Leu Phe Leu Leu Glu Ser Gly Ala
385      390      395
Gly Gly Tyr Asn Leu Gln Lys Gln Pro Cys
405      410

```

&lt;210&gt; 2381

&lt;211&gt; 1305

&lt;212&gt; DNA

&lt;213&gt; Dreissena polymorpha

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1305)

&lt;400&gt; 2381

```

atg aat aca aga gca gcg tct gct aat tta gct ggc agg atg gca ctg      48
Met Asn Thr Arg Ala Ala Ser Ala Asn Leu Ala Gly Arg Met Ala Leu
1      5      10
cag caa atc aac agt gac aat att gac caa att cct ggc aag gcc caa      96
Gln Gln Ile Asn Ser Asp Asn Ile Asp Gln Ile Pro Gly Lys Ala Gln
20      25      30
ctt ctg caa aga cct caa acc tca cac cta atg caa aga aat acc ctt      144
Leu Leu Gln Arg Pro Gln Thr Ser His Leu Met Gln Arg Asn Thr Leu
35      40      45
agt gac att gga aat caa gta tct gca atc aca ata tca gat gcc agt      192
Ser Asp Ile Gly Asn Gln Val Ser Ala Ile Thr Ile Ser Asp Ala Ser
50      55      60
aaa aag ggt cct att aaa aaa gaa att gtg caa gta aat ccc aga cag      240
Lys Lys Gly Pro Ile Lys Lys Glu Ile Val Gln Val Asn Pro Arg Gln
65      70      75
cag aaa gca ttg acc aag acc aaa gca act aca tcc ctc aaa gca ttg      288
Gln Lys Ala Leu Thr Lys Thr Lys Ala Thr Thr Ser Leu Lys Ala Leu
85      90      95
gca gag aag aag gaa acc aaa aag gag cat gat gaa ttc cat ttc gtt      336
Ala Glu Lys Lys Glu Thr Lys Lys Glu His Asp Glu Phe His Phe Val
100      105      110
gag cct tca ttt cct tcg cga att cca gtc cca aca gcc act gtt cac      384
Glu Pro Ser Phe Pro Ser Arg Ile Pro Val Pro Thr Ala Thr Val His
115      120      125
cca ttg cca tct gca cat gtg cct atg gac aca agt gat gcg gga aaa      432
Pro Leu Pro Ser Ala His Val Pro Met Asp Thr Ser Asp Ala Gly Lys
130      135      140

```

## PhoenixTemp32470.tmp.txt

gat	gca	ttt	tcg	aaa	gct	ttg	cta	aat	gta	cag	ggc	att	gat	gca	aat	480
Asp	Ala	Phe	Ser	Lys	Ala	Leu	Leu	Asn	Val	Gln	Gly	Ile	Asp	Ala	Asn	
145					150					155					160	
ggc	agg	gga	aac	ccc	caa	cta	gtc	agt	gaa	tat	gtc	aac	gat	ata	tac	528
Gly	Arg	Gly	Asn	Pro	Gln	Leu	Val	Ser	Glu	Tyr	Val	Asn	Asp	Ile	Tyr	
				165					170					175		
gag	tac	atg	aga	ata	tta	gag	aaa	aag	tac	cca	att	gcg	gac	agc	tac	576
Glu	Tyr	Met	Arg	Ile	Leu	Glu	Lys	Lys	Tyr	Pro	Ile	Ala	Asp	Ser	Tyr	
				180				185					190			
tta	gaa	aag	caa	gaa	atc	tcc	ggg	aag	atg	cgt	gcc	att	ctc	att	gac	624
Leu	Glu	Lys	Gln	Glu	Ile	Ser	Gly	Lys	Met	Arg	Ala	Ile	Leu	Ile	Asp	
		195					200					205				
tgg	ttg	tgc	caa	ggt	cat	cac	aga	ttt	cat	ctt	ctc	caa	gaa	aca	ctc	672
Trp	Leu	Cys	Gln	Val	His	His	Arg	Phe	His	Leu	Leu	Gln	Glu	Thr	Leu	
	210				215					220						
tac	ctg	act	ggt	ggc	ata	atc	gat	aga	ttt	ctc	cag	gaa	tct	cct	gtg	720
Tyr	Leu	Thr	Val	Gly	Ile	Ile	Asp	Arg	Phe	Leu	Gln	Glu	Ser	Pro	Val	
225				230						235					240	
acc	aaa	aac	aaa	ttg	cag	ttg	gtc	ggt	gtc	aca	tcc	atg	ttg	att	gcc	768
Thr	Lys	Asn	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ser	Met	Leu	Ile	Ala	
				245				250						255		
tcc	aaa	tat	gaa	gag	atg	tac	gca	cct	gaa	ggt	gca	gac	ttt	ggt	tat	816
Ser	Lys	Tyr	Glu	Glu	Met	Tyr	Ala	Pro	Glu	Val	Ala	Asp	Phe	Val	Tyr	
			260					265					270			
att	aca	gac	aat	gct	tac	act	aaa	aag	gaa	att	ttg	gaa	atg	gaa	caa	864
Ile	Thr	Asp	Asn	Ala	Tyr	Thr	Lys	Lys	Glu	Ile	Leu	Glu	Met	Glu	Gln	
		275					280					285				
act	atc	tta	cgg	aca	tta	aac	ttt	agt	ttt	gga	aag	cca	ttg	tgt	ttg	912
Thr	Ile	Leu	Arg	Thr	Leu	Asn	Phe	Ser	Phe	Gly	Lys	Pro	Leu	Cys	Leu	
	290					295					300					
cat	ttc	ttg	agg	agg	aat	tca	aag	gct	ggt	cag	ggt	gat	gcc	agc	aag	960
His	Phe	Leu	Arg	Arg	Asn	Ser	Lys	Ala	Gly	Gln	Val	Asp	Ala	Ser	Lys	
305					310				315						320	
cat	acg	ctg	gcc	aag	tac	ctg	atg	gag	ttg	acg	ata	gtg	gag	tac	gat	1008
His	Thr	Leu	Ala	Lys	Tyr	Leu	Met	Glu	Leu	Thr	Ile	Val	Glu	Tyr	Asp	
				325				330					335			
atg	gtg	caa	tat	ctc	cct	tct	caa	ata	gct	gcc	gca	gcc	cta	tgt	ctt	1056
Met	Val	Gln	Tyr	Leu	Pro	Ser	Gln	Ile	Ala	Ala	Ala	Ala	Leu	Cys	Leu	
			340					345					350			
tct	atg	aaa	ctt	ctg	ggc	gac	tgt	aaa	tgg	acg	gag	aca	ttg	gcg	cac	1104
Ser	Met	Lys	Leu	Leu	Gly	Asp	Cys	Lys	Trp	Thr	Glu	Thr	Leu	Ala	His	
		355					360					365				
tat	agc	tct	tat	aca	gag	gaa	gaa	ctt	gtg	cca	acc	atg	cgt	aaa	ctt	1152
Tyr	Ser	Ser	Tyr	Thr	Glu	Glu	Glu	Leu	Val	Pro	Thr	Met	Arg	Lys	Leu	
	370					375					380					
gcc	agt	cta	gtc	atg	aaa	cag	gag	gat	tcc	aaa	ctc	aaa	ctc	act	gcc	1200
Ala	Ser	Leu	Val	Met	Lys	Gln	Glu	Asp	Ser	Lys	Leu	Lys	Leu	Thr	Ala	
385					390					395					400	
ata	agg	acc	aaa	tat	tca	agt	tca	aaa	ttc	atg	aag	ata	agc	acc	ata	1248
Ile	Arg	Thr	Lys	Tyr	Ser	Ser	Ser	Lys	Phe	Met	Lys	Ile	Ser	Thr	Ile	
				405				410						415		
cca	gct	ttg	aag	tct	cca	ctg	gtg	cag	gaa	ctt	gca	ggt	gct	tca	gac	1296
Pro	Ala	Leu	Lys	Ser	Pro	Leu	Val	Gln	Glu	Leu	Ala	Gly	Ala	Ser	Asp	
			420					425					430			
tgc	tcc	taa														1305
Cys	Ser															

&lt;210&gt; 2382

&lt;211&gt; 434

&lt;212&gt; PRT

&lt;213&gt; Dreissena polymorpha

&lt;400&gt; 2382

Met Asn Thr Arg Ala Ala Ser Ala Asn Leu Ala Gly Arg Met Ala Leu

1 5 10 15

Gln Gln Ile Asn Ser Asp Asn Ile Asp Gln Ile Pro Gly Lys Ala Gln

20 25 30

Leu Leu Gln Arg Pro Gln Thr Ser His Leu Met Gln Arg Asn Thr Leu

## PhoenixTemp32470.tmp.txt

```

      35      40      45
Ser Asp Ile Gly Asn Gln Val Ser Ala Ile Thr Ile Ser Asp Ala Ser
  50      55      60
Lys Lys Gly Pro Ile Lys Lys Glu Ile Val Gln Val Asn Pro Arg Gln
  65      70      75      80
Gln Lys Ala Leu Thr Lys Thr Lys Ala Thr Thr Ser Leu Lys Ala Leu
      85      90      95
Ala Glu Lys Lys Glu Thr Lys Lys Glu His Asp Glu Phe His Phe Val
  100      105      110
Glu Pro Ser Phe Pro Ser Arg Ile Pro Val Pro Thr Ala Thr Val His
  115      120      125
Pro Leu Pro Ser Ala His Val Pro Met Asp Thr Ser Asp Ala Gly Lys
  130      135      140
Asp Ala Phe Ser Lys Ala Leu Asn Val Gln Gly Ile Asp Ala Asn
  145      150      155      160
Gly Arg Gly Asn Pro Gln Leu Val Ser Glu Tyr Val Asn Asp Ile Tyr
      165      170      175
Glu Tyr Met Arg Ile Leu Glu Lys Lys Tyr Pro Ile Ala Asp Ser Tyr
  180      185      190
Leu Glu Lys Gln Glu Ile Ser Gly Lys Met Arg Ala Ile Leu Ile Asp
  195      200      205
Trp Leu Cys Gln Val His His Arg Phe His Leu Leu Gln Glu Thr Leu
  210      215      220
Tyr Leu Thr Val Gly Ile Asp Arg Phe Leu Gln Glu Ser Pro Val
  225      230      235      240
Thr Lys Asn Lys Leu Gln Leu Val Gly Val Thr Ser Met Leu Ile Ala
      245      250      255
Ser Lys Tyr Glu Glu Met Tyr Ala Pro Glu Val Ala Asp Phe Val Tyr
  260      265      270
Ile Thr Asp Asn Ala Tyr Thr Lys Lys Glu Ile Leu Glu Met Glu Gln
  275      280      285
Thr Ile Leu Arg Thr Leu Asn Phe Ser Phe Gly Lys Pro Leu Cys Leu
  290      295      300
His Phe Leu Arg Arg Asn Ser Lys Ala Gly Gln Val Asp Ala Ser Lys
  305      310      315      320
His Thr Leu Ala Lys Tyr Leu Met Glu Leu Thr Ile Val Glu Tyr Asp
      325      330      335
Met Val Gln Tyr Leu Pro Ser Gln Ile Ala Ala Ala Ala Leu Cys Leu
  340      345      350
Ser Met Lys Leu Leu Gly Asp Cys Lys Trp Thr Glu Thr Leu Ala His
  355      360      365
Tyr Ser Ser Tyr Thr Glu Glu Glu Leu Val Pro Thr Met Arg Lys Leu
  370      375      380
Ala Ser Leu Val Met Lys Gln Glu Asp Ser Lys Leu Lys Leu Thr Ala
  385      390      395      400
Ile Arg Thr Lys Tyr Ser Ser Ser Lys Phe Met Lys Ile Ser Thr Ile
      405      410      415
Pro Ala Leu Lys Ser Pro Leu Val Gln Glu Leu Ala Gly Ala Ser Asp
      420      425      430
Cys Ser

```

&lt;210&gt; 2383

&lt;211&gt; 1524

&lt;212&gt; DNA

&lt;213&gt; Candida albicans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1524)

&lt;223&gt; transl\_table=12

&lt;400&gt; 2383

```

atg cga tct tat aaa tca tcc ata acg gat gag aat gag ttg aca aaa
Met Arg Ser Tyr Lys Ser Ser Ile Thr Asp Glu Asn Glu Leu Thr Lys
  1      5      10      15
caa aga ctt aga gcc aaa agt att gcc aat ttg agc agc aat cac gca
Gln Arg Leu Arg Ala Lys Ser Ile Ala Asn Leu Ser Ser Asn His Ala
      20      25      30

```

48

96

## PhoenixTemp32470.tmp.txt

aca	gct	ggg	caa	aca	tca	aca	agc	tct	caa	cat	aga	gag	gca	ttg	act	144
Thr	Ala	Gly	Gln	Thr	Ser	Thr	Ser	Ser	Gln	His	Arg	Glu	Ala	Leu	Thr	
		35					40					45				
gat	ttg	acc	tca	cag	gag	aat	aaa	aat	cac	cca	aga	gtg	aaa	ctc	aca	192
Asp	Leu	Thr	Ser	Gln	Glu	Asn	Lys	Asn	His	Pro	Arg	Val	Lys	Leu	Thr	
	50					55					60					
caa	aca	aac	acc	aat	cat	cac	aga	aac	agc	tca	agt	agt	tcg	aac	aaa	240
Gln	Thr	Asn	Thr	Asn	His	His	Arg	Asn	Ser	Ser	Ser	Ser	Ser	Asn	Lys	
	65				70					75					80	
ata	caa	ata	tat	caa	caa	ata	gag	caa	aag	aaa	acc	gat	atc	cat	caa	288
Ile	Gln	Ile	Tyr	Gln	Gln	Ile	Glu	Gln	Lys	Lys	Thr	Asp	Ile	His	Gln	
				85					90					95		
ttc	aaa	aaa	cca	aga	ttg	gag	aag	gta	cta	aat	gac	gac	gac	gac	gat	336
Phe	Lys	Lys	Pro	Arg	Leu	Glu	Lys	Val	Leu	Asn	Asp	Asp	Asp	Asp	Asp	
			100					105					110			
gaa	acc	gat	gac	gaa	ttt	gac	gac	gaa	gaa	gat	aaa	gaa	aac	aga	tat	384
Glu	Thr	Asp	Asp	Glu	Phe	Asp	Asp	Glu	Glu	Asp	Lys	Glu	Asn	Arg	Tyr	
		115				120						125				
cat	gat	cta	gag	ttg	aat	gac	gat	gac	agt	aaa	cat	caa	cta	ata	agt	432
His	Asp	Leu	Glu	Leu	Asn	Asp	Asp	Asp	Ser	Lys	His	Gln	Leu	Ile	Ser	
	130					135					140					
gaa	gca	ttt	gaa	aca	att	gat	gac	cgg	gga	ata	agt	gaa	ggt	gag	aat	480
Glu	Ala	Phe	Glu	Thr	Ile	Asp	Asp	Arg	Gly	Ile	Ser	Glu	Gly	Glu	Asn	
	145				150					155					160	
gat	aca	gcg	caa	gaa	gca	cgt	gaa	aga	tta	gag	gaa	gaa	aca	caa	tca	528
Asp	Thr	Ala	Gln	Glu	Ala	Arg	Glu	Arg	Leu	Glu	Glu	Glu	Thr	Gln	Ser	
				165					170					175		
cat	aca	cag	gat	atg	aga	tcg	ata	tat	ggg	ggt	cat	gta	ccc	atg	caa	576
His	Thr	Gln	Asp	Met	Arg	Ser	Ile	Tyr	Gly	Val	His	Val	Pro	Met	Gln	
			180					185					190			
cca	atg	tgg	aat	aat	gcg	ata	ata	aac	gag	ctc	aaa	tac	ggt	ata	caa	624
Pro	Met	Trp	Asn	Asn	Ala	Ile	Ile	Asn	Glu	Leu	Lys	Tyr	Val	Ile	Gln	
		195				200						205				
aag	tac	tct	cgt	aat	acg	ttg	gac	gaa	aat	gac	gaa	gat	act	tat	gat	672
Lys	Tyr	Ser	Arg	Asn	Thr	Leu	Asp	Glu	Asn	Asp	Glu	Asp	Thr	Tyr	Asp	
	210					215					220					
act	acc	atg	gtg	gca	gaa	tat	tca	ccg	gaa	att	ttc	aat	tac	ttg	cat	720
Thr	Thr	Met	Val	Ala	Glu	Tyr	Ser	Pro	Glu	Ile	Phe	Asn	Tyr	Leu	His	
	225			230					235						240	
gaa	ctt	gaa	aat	aag	ttt	aca	cct	gat	cca	aat	tat	atg	gat	ttc	caa	768
Glu	Leu	Glu	Asn	Lys	Phe	Thr	Pro	Asp	Pro	Asn	Tyr	Met	Asp	Phe	Gln	
				245					250					255		
gac	gat	cta	aag	tgg	gag	atg	cgt	gca	gtg	ctt	att	gat	tgg	gtc	gtc	816
Asp	Asp	Leu	Lys	Trp	Glu	Met	Arg	Ala	Val	Leu	Ile	Asp	Trp	Val	Val	
			260					265					270			
caa	gtg	cat	gct	cga	ttc	aac	ttg	ttt	tca	gaa	acc	ttg	tac	ttg	act	864
Gln	Val	His	Ala	Arg	Phe	Asn	Leu	Phe	Ser	Glu	Thr	Leu	Tyr	Leu	Thr	
		275					280					285				
gta	aat	tac	att	gac	aga	ttc	tta	tcc	aag	aga	agg	gtg	tca	tta	tcc	912
Val	Asn	Tyr	Ile	Asp	Arg	Phe	Leu	Ser	Lys	Arg	Arg	Val	Ser	Leu	Ser	
	290					295					300					
aga	ttt	cag	tta	gtt	ggg	gca	gta	gca	ttg	ttt	att	gct	gcc	aaa	tac	960
Arg	Phe	Gln	Leu	Val	Gly	Ala	Val	Ala	Leu	Phe	Ile	Ala	Ala	Lys	Tyr	
	305				310					315					320	
gaa	gaa	atc	aat	tgt	cct	aca	gtc	caa	gaa	att	gca	tac	atg	gca	gac	1008
Glu	Glu	Ile	Asn	Cys	Pro	Thr	Val	Gln	Glu	Ile	Ala	Tyr	Met	Ala	Asp	
				325					330					335		
aat	gcc	tat	tca	att	gac	gag	ttt	tta	aaa	gcc	gag	aga	ttt	atg	att	1056
Asn	Ala	Tyr	Ser	Ile	Asp	Glu	Phe	Leu	Lys	Ala	Glu	Arg	Phe	Met	Ile	
			340					345					350			
gat	gta	ttg	gaa	ttt	gat	ttg	gga	tggt	cca	ggg	cca	atg	tcg	ttt	ttg	1104
Asp	Val	Leu	Glu	Phe	Asp	Leu	Gly	Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	
		355					360					365				
aga	aga	ata	tca	aaa	gct	gac	gat	tat	gat	tat	gaa	act	aga	aca	ctt	1152
Arg	Arg	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Tyr	Glu	Thr	Arg	Thr	Leu	
		370				375					380					
gcc	aaa	tat	ttt	ctt	gaa	ata	act	ata	atg	gac	tca	aaa	ttt	gtt	gct	1200
Ala	Lys	Tyr	Phe	Leu	Glu	Ile	Thr	Ile	Met	Asp	Ser	Lys	Phe	Val	Ala	
					390					395					400	

## PhoenixTemp32470.tmp.txt

tct	cca	cca	agt	tgg	ttg	gcc	gct	gga	gca	cat	tac	ata	tca	aga	ata	1248
Ser	Pro	Pro	Ser	Trp	Leu	Ala	Ala	Gly	Ala	His	Tyr	Ile	Ser	Arg	Ile	
				405					410					415		
cta	ttg	gga	aga	ggg	gaa	tgg	aca	gaa	ttg	cat	ggt	ttt	tat	agt	ggc	1296
Leu	Leu	Gly	Arg	Gly	Glu	Trp	Thr	Glu	Leu	His	Val	Phe	Tyr	Ser	Gly	
			420					425					430			
tat	acc	gaa	aag	caa	ttg	cag	cca	ttg	gca	gac	ggt	ttg	tta	gag	aac	1344
Tyr	Thr	Glu	Lys	Gln	Leu	Gln	Pro	Leu	Ala	Asp	Val	Leu	Leu	Glu	Asn	
		435					440					445				
tgt	cgc	cat	gct	gaa	ata	aac	cat	aaa	gcc	att	ttc	gaa	aaa	tac	aag	1392
Cys	Arg	His	Ala	Glu	Ile	Asn	His	Lys	Ala	Ile	Phe	Glu	Lys	Tyr	Lys	
	450					455				460						
gaa	aga	agg	tat	aga	aaa	agt	tca	ctt	ttt	gta	caa	gaa	tat	ttt	cg	1440
Glu	Arg	Arg	Tyr	Arg	Lys	Ser	Ser	Leu	Phe	Val	Gln	Glu	Tyr	Phe	Arg	
	465				470				475						480	
cac	ata	atg	tcc	aga	gtt	gat	cta	aag	aca	agt	ttc	caa	caa	tgc	gg	1488
His	Ile	Met	Ser	Arg	Val	Asp	Leu	Lys	Thr	Ser	Phe	Gln	Gln	Cys	Gly	
				485					490					495		
act	tta	cat	ttt	att	caa	tct	agc	caa	aat	cat	taa					1524
Thr	Leu	His	Phe	Ile	Gln	Ser	Ser	Gln	Asn	His						
			500					505								

&lt;210&gt; 2384

&lt;211&gt; 507

&lt;212&gt; PRT

&lt;213&gt; Candida albicans

&lt;400&gt; 2384

Met	Arg	Ser	Tyr	Lys	Ser	Ser	Ile	Thr	Asp	Glu	Asn	Glu	Leu	Thr	Lys	
1				5					10					15		
Gln	Arg	Leu	Arg	Ala	Lys	Ser	Ile	Ala	Asn	Leu	Ser	Ser	Asn	His	Ala	
			20					25					30			
Thr	Ala	Gly	Gln	Thr	Ser	Thr	Ser	Ser	Gln	His	Arg	Glu	Ala	Leu	Thr	
		35				40						45				
Asp	Leu	Thr	Ser	Gln	Glu	Asn	Lys	Asn	His	Pro	Arg	Val	Lys	Leu	Thr	
	50					55				60						
Gln	Thr	Asn	Thr	Asn	His	His	Arg	Asn	Ser	Ser	Ser	Ser	Ser	Asn	Lys	
65					70				75					80		
Ile	Gln	Ile	Tyr	Gln	Gln	Ile	Glu	Gln	Lys	Lys	Thr	Asp	Ile	His	Gln	
			85						90					95		
Phe	Lys	Lys	Pro	Arg	Leu	Glu	Lys	Val	Leu	Leu	Asn	Asp	Asp	Asp	Asp	
			100					105					110			
Glu	Thr	Asp	Asp	Glu	Phe	Asp	Asp	Glu	Glu	Asp	Lys	Glu	Asn	Arg	Tyr	
		115				120						125				
His	Asp	Leu	Glu	Leu	Asn	Asp	Asp	Asp	Ser	Lys	His	Gln	Leu	Ile	Ser	
	130					135					140					
Glu	Ala	Phe	Glu	Thr	Ile	Asp	Asp	Arg	Gly	Ile	Ser	Glu	Gly	Glu	Asn	
145					150				155						160	
Asp	Thr	Ala	Gln	Glu	Ala	Arg	Glu	Arg	Leu	Glu	Glu	Glu	Thr	Gln	Ser	
			165						170					175		
His	Thr	Gln	Asp	Met	Arg	Ser	Ile	Tyr	Gly	Val	His	Val	Pro	Met	Gln	
			180					185					190			
Pro	Met	Trp	Asn	Asn	Ala	Ile	Ile	Asn	Glu	Leu	Lys	Tyr	Val	Ile	Gln	
		195					200					205				
Lys	Tyr	Ser	Arg	Asn	Thr	Leu	Asp	Glu	Asn	Asp	Glu	Asp	Thr	Tyr	Asp	
	210					215					220					
Thr	Thr	Met	Val	Ala	Glu	Tyr	Ser	Pro	Glu	Ile	Phe	Asn	Tyr	Leu	His	
225					230					235					240	
Glu	Leu	Glu	Asn	Lys	Phe	Thr	Pro	Asp	Pro	Asn	Tyr	Met	Asp	Phe	Gln	
			245						250					255		
Asp	Asp	Leu	Lys	Trp	Glu	Met	Arg	Ala	Val	Leu	Ile	Asp	Trp	Val	Val	
			260					265					270			
Gln	Val	His	Ala	Arg	Phe	Asn	Leu	Phe	Ser	Glu	Thr	Leu	Tyr	Leu	Thr	
		275					280					285				
Val	Asn	Tyr	Ile	Asp	Arg	Phe	Leu	Ser	Lys	Arg	Arg	Val	Ser	Leu	Ser	
	290					295					300					
Arg	Phe	Gln	Leu	Val	Gly	Ala	Val	Ala	Leu	Phe	Ile	Ala	Ala	Lys	Tyr	
305					310					315					320	
Glu	Glu	Ile	Asn	Cys	Pro	Thr	Val	Gln	Glu	Ile	Ala	Tyr	Met	Ala	Asp	

## PhoenixTemp32470.tmp.txt

```

          325          330          335
Asn Ala Tyr Ser Ile Asp Glu Phe Leu Lys Ala Glu Arg Phe Met Ile
          340          345          350
Asp Val Leu Glu Phe Asp Leu Gly Trp Pro Gly Pro Met Ser Phe Leu
          355          360          365
Arg Arg Ile Ser Lys Ala Asp Asp Tyr Asp Tyr Glu Thr Arg Thr Leu
          370          375          380
Ala Lys Tyr Phe Leu Glu Ile Thr Ile Met Asp Ser Lys Phe Val Ala
          385          390          395
Ser Pro Pro Ser Trp Leu Ala Ala Gly Ala His Tyr Ile Ser Arg Ile
          400          405          410
Leu Leu Gly Arg Gly Glu Trp Thr Glu Leu His Val Phe Tyr Ser Gly
          415          420          425
Tyr Thr Glu Lys Gln Leu Gln Pro Leu Ala Asp Val Leu Glu Asn
          430          435          440
Cys Arg His Ala Glu Ile Asn His Lys Ala Ile Phe Glu Lys Tyr Lys
          445          450          455
Glu Arg Arg Tyr Arg Lys Ser Ser Leu Phe Val Gln Glu Tyr Phe Arg
          460          465          470
His Ile Met Ser Arg Val Asp Leu Lys Thr Ser Phe Gln Gln Cys Gly
          475          480          485
Thr Leu His Phe Ile Gln Ser Ser Gln Asn His
          490          495          500
          505

```

&lt;210&gt; 2385

&lt;211&gt; 1380

&lt;212&gt; DNA

&lt;213&gt; Pneumocystis carinii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1380)

&lt;400&gt; 2385

```

atg aac gca gcg agg cgt gta aca cgt cag acg gca acg ttt aat ctt      48
Met Asn Ala Ala Arg Arg Val Thr Arg Gln Thr Ala Thr Phe Asn Leu
1          5          10          15
aat gat gag aac aaa ttg cat gga caa ata tct cgg gtg aag caa gta      96
Asn Asp Glu Asn Lys Leu His Gly Gln Ile Ser Arg Val Lys Gln Val
          20          25          30
tct aca caa gga tta gaa ggg gta aat aag cca tgg acg gcg gcg acg      144
Ser Thr Gln Gly Leu Glu Gly Val Asn Lys Pro Trp Thr Ala Ala Thr
          35          40          45
cga aag aga gca gca tta gga gat gta agc aat gtg cat aat aag gag      192
Arg Lys Arg Ala Ala Leu Gly Asp Val Ser Asn Val His Asn Lys Glu
          50          55          60
aat cag acg gcg aaa acg aaa acg cag ccg tta tca acc aaa gca cgc      240
Asn Gln Thr Ala Lys Thr Lys Thr Gln Pro Leu Ser Thr Lys Ala Arg
          65          70          75          80
gtg gtg acg aaa acc gga gtt caa agt cat caa agc aaa gaa tcc gtt      288
Val Val Thr Lys Thr Gly Val Gln Ser His Gln Ser Lys Glu Ser Val
          85          90          95
cat acg gta cca acg gga gaa ttg cgt ggt gaa gaa aca aca cga aaa      336
His Thr Val Pro Thr Gly Glu Leu Arg Gly Glu Glu Thr Thr Arg Lys
          100          105          110
aga cgg aca tca aag gtt tta acg gag caa gaa gtg atc att gag gtg      384
Arg Arg Thr Ser Lys Val Leu Thr Glu Gln Glu Val Ile Ile Glu Val
          115          120          125
gaa caa aca caa gca agt aaa aaa gtg aga acc gat ggc ctt tta aac      432
Glu Gln Thr Gln Ala Ser Lys Lys Val Arg Thr Asp Gly Leu Leu Asn
          130          135          140
gga tcg gta caa gag cat cca gca tca caa gat tgg gat gat tta gat      480
Gly Ser Val Gln Glu His Pro Ala Ser Gln Asp Trp Asp Asp Leu Asp
          145          150          155          160
gcg gat gat gct cat gat cca ttg atg gta tcg gaa tac gtt gaa gaa      528
Ala Asp Asp Ala His Asp Pro Leu Met Val Ser Glu Tyr Val Glu Glu
          165          170          175
atc atg ggt tac atg agg gaa tta gag gtg tta aca ctt cct tta cca      576
Ile Met Gly Tyr Met Arg Glu Leu Glu Val Leu Thr Leu Pro Leu Pro

```

## PhoenixTemp32470.tmp.txt

gat	tat	atg	gat	cga	cag	aaa	gaa	ctt	caa	tgg	aaa	atg	cga	gga	atc	624
Asp	Tyr	Met	Asp	Arg	Gln	Lys	Glu	Leu	Gln	Trp	Lys	Met	Arg	Gly	Ile	
		180						185				190				
ttg	gta	gat	tgg	cta	att	gag	ggt	cat	gcg	aaa	ttt	cgt	ctt	ctt	cca	672
Leu	Val	Asp	Trp	Leu	Ile	Glu	Val	His	Ala	Lys	Phe	Arg	Leu	Leu	Pro	
	210					215					220					
gaa	acg	tta	ttt	ctt	tct	gtc	aat	att	att	gat	cga	ttt	tta	tcc	cta	720
Glu	Thr	Leu	Phe	Leu	Ser	Val	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ser	Leu	
225					230					235					240	
cga	gta	tgt	tcg	ctt	cct	aag	ctt	caa	tta	gta	ggg	att	aca	gca	ctt	768
Arg	Val	Cys	Ser	Leu	Pro	Lys	Leu	Gln	Leu	Val	Gly	Ile	Thr	Ala	Leu	
				245					250					255		
ttt	atc	gca	gca	aaa	tat	gaa	gaa	gtg	atg	tgt	cca	tcg	ata	caa	aat	816
Phe	Ile	Ala	Ala	Lys	Tyr	Glu	Glu	Val	Met	Cys	Pro	Ser	Ile	Gln	Asn	
		260						265					270			
ttt	atg	tac	atg	gca	gat	ggt	gga	tat	acg	aat	gaa	gaa	att	cta	aaa	864
Phe	Met	Tyr	Met	Ala	Asp	Gly	Gly	Tyr	Thr	Asn	Glu	Glu	Ile	Leu	Lys	
		275					280					285				
gca	gaa	caa	tac	gtt	tta	caa	gtt	ctt	gga	tat	gat	atg	tca	tat	cca	912
Ala	Glu	Gln	Tyr	Val	Leu	Gln	Val	Leu	Gly	Tyr	Asp	Met	Ser	Tyr	Pro	
	290					295					300					
aat	ccc	att	aat	ttt	cta	aga	aga	gta	tca	aag	gca	gat	aat	tat	gat	960
Asn	Pro	Ile	Asn	Phe	Leu	Arg	Arg	Val	Ser	Lys	Ala	Asp	Asn	Tyr	Asp	
305					310					315					320	
att	cag	aca	cgt	aca	gtg	gca	aaa	tat	ctt	atg	gaa	att	agt	ctt	ctt	1008
Ile	Gln	Thr	Arg	Thr	Val	Ala	Lys	Tyr	Leu	Met	Glu	Ile	Ser	Leu	Leu	
			325						330					335		
gat	cat	cga	ttt	ttg	cct	ttt	gtg	cca	tct	aat	att	gca	gct	tcg	ggc	1056
Asp	His	Arg	Phe	Leu	Pro	Phe	Val	Pro	Ser	Asn	Ile	Ala	Ala	Ser	Gly	
			340					345					350			
att	tat	ttg	gct	aga	att	atg	gtt	act	ggg	ggc	aat	tgg	aat	gct	aat	1104
Ile	Tyr	Leu	Ala	Arg	Ile	Met	Val	Thr	Gly	Gly	Asn	Trp	Asn	Ala	Asn	
		355					360					365				
tta	ata	cat	tat	tcg	gga	tat	aaa	gaa	tca	gat	ctt	ggt	cca	tgt	tct	1152
Leu	Ile	His	Tyr	Ser	Gly	Tyr	Lys	Glu	Ser	Asp	Leu	Val	Pro	Cys	Ser	
	370					375					380					
aaa	atg	atg	ctg	gat	tat	ctt	tca	cga	tca	gtt	ata	aaa	cat	gaa	gca	1200
Lys	Met	Met	Leu	Asp	Tyr	Leu	Ser	Arg	Ser	Val	Ile	Lys	His	Glu	Ala	
385					390					395					400	
ttt	ttt	aaa	aaa	tat	gcc	agc	aaa	aaa	ttc	atg	aaa	gct	agt	tta	ttt	1248
Phe	Phe	Lys	Lys	Tyr	Ala	Ser	Lys	Lys	Phe	Met	Lys	Ala	Ser	Leu	Phe	
				405					410					415		
gtt	cgc	gat	tgg	gtt	aaa	aaa	cat	tac	gat	ctt	gag	gca	aac	gtg	cga	1296
Val	Arg	Asp	Trp	Val	Lys	Lys	His	Tyr	Asp	Leu	Glu	Ala	Asn	Val	Arg	
			420					425					430			
tta	aac	act	atc	tct	ttc	gat	tac	gat	aac	cat	gaa	tca	aat	gaa	ata	1344
Leu	Asn	Thr	Ile	Ser	Phe	Asp	Tyr	Asp	Asn	His	Glu	Ser	Asn	Glu	Ile	
		435					440					445				
cat	cag	gac	tta	gaa	gag	gaa	gaa	gga	tcc	cta	tag					1380
His	Gln	Asp	Leu	Glu	Glu	Glu	Glu	Gly	Ser	Leu						
	450					455										

&lt;210&gt; 2386

&lt;211&gt; 459

&lt;212&gt; PRT

&lt;213&gt; Pneumocystis carinii

&lt;400&gt; 2386

Met	Asn	Ala	Ala	Arg	Arg	Val	Thr	Arg	Gln	Thr	Ala	Thr	Phe	Asn	Leu	
1				5					10					15		
Asn	Asp	Glu	Asn	Lys	Leu	His	Gly	Gln	Ile	Ser	Arg	Val	Lys	Gln	Val	
			20					25					30			
Ser	Thr	Gln	Gly	Leu	Glu	Gly	Val	Asn	Lys	Pro	Trp	Thr	Ala	Ala	Thr	
		35					40					45				
Arg	Lys	Arg	Ala	Ala	Leu	Gly	Asp	Val	Ser	Asn	Val	His	Asn	Lys	Glu	
	50					55					60					
Asn	Gln	Thr	Ala	Lys	Thr	Lys	Thr	Gln	Pro	Leu	Ser	Thr	Lys	Ala	Arg	
65					70					75					80	



## PhoenixTemp32470.tmp.txt

Val Val Thr Lys Thr Gly Val Gln Ser His Gln Ser Lys Glu Ser Val  
 85 90 95  
 His Thr Val Pro Thr Gly Glu Leu Arg Gly Glu Glu Thr Thr Arg Lys  
 100 105 110  
 Arg Arg Thr Ser Lys Val Leu Thr Glu Gln Glu Val Ile Ile Glu Val  
 115 120 125  
 Glu Gln Thr Gln Ala Ser Lys Lys Val Arg Thr Asp Gly Leu Leu Asn  
 130 135 140  
 Gly Ser Val Gln Glu His Pro Ala Ser Gln Asp Trp Asp Asp Leu Asp  
 145 150 155 160  
 Ala Asp Asp Ala His Asp Pro Leu Met Val Ser Glu Tyr Val Glu Glu  
 165 170 175  
 Ile Met Gly Tyr Met Arg Glu Leu Glu Val Leu Thr Leu Pro Leu Pro  
 180 185 190  
 Asp Tyr Met Asp Arg Gln Lys Glu Leu Gln Trp Lys Met Arg Gly Ile  
 195 200 205  
 Leu Val Asp Trp Leu Ile Glu Val His Ala Lys Phe Arg Leu Leu Pro  
 210 215 220  
 Glu Thr Leu Phe Leu Ser Val Asn Ile Ile Asp Arg Phe Leu Ser Leu  
 225 230 235 240  
 Arg Val Cys Ser Leu Pro Lys Leu Gln Leu Val Gly Ile Thr Ala Leu  
 245 250 255  
 Phe Ile Ala Ala Lys Tyr Glu Glu Val Met Cys Pro Ser Ile Gln Asn  
 260 265 270  
 Phe Met Tyr Met Ala Asp Gly Gly Tyr Thr Asn Glu Glu Ile Leu Lys  
 275 280 285  
 Ala Glu Gln Tyr Val Leu Gln Val Leu Gly Tyr Asp Met Ser Tyr Pro  
 290 295 300  
 Asn Pro Ile Asn Phe Leu Arg Arg Val Ser Lys Ala Asp Asn Tyr Asp  
 305 310 315 320  
 Ile Gln Thr Arg Thr Val Ala Lys Tyr Leu Met Glu Ile Ser Leu Leu  
 325 330 335  
 Asp His Arg Phe Leu Pro Phe Val Pro Ser Asn Ile Ala Ala Ser Gly  
 340 345 350  
 Ile Tyr Leu Ala Arg Ile Met Val Thr Gly Gly Asn Trp Asn Ala Asn  
 355 360 365  
 Leu Ile His Tyr Ser Gly Tyr Lys Glu Ser Asp Leu Val Pro Cys Ser  
 370 375 380  
 Lys Met Met Leu Asp Tyr Leu Ser Arg Ser Val Ile Lys His Glu Ala  
 385 390 395 400  
 Phe Phe Lys Lys Tyr Ala Ser Lys Lys Phe Met Lys Ala Ser Leu Phe  
 405 410 415  
 Val Arg Asp Trp Val Lys Lys His Tyr Asp Leu Glu Ala Asn Val Arg  
 420 425 430  
 Leu Asn Thr Ile Ser Phe Asp Tyr Asp Asn His Glu Ser Asn Glu Ile  
 435 440 445  
 His Gln Asp Leu Glu Glu Glu Glu Gly Ser Leu  
 450 455

&lt;210&gt; 2387

&lt;211&gt; 1338

&lt;212&gt; DNA

&lt;213&gt; Sesbania rostrata

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1338)

&lt;400&gt; 2387

atg gct tca aga ccc att gtt cca caa cag ccc aga ggt gac gca gcc  
 Met Ala Ser Arg Pro Ile Val Pro Gln Gln Pro Arg Gly Asp Ala Ala  
 1 5 10 15  
 ttg ggg gca ggg aag cag cag aag aag ggt gca gca gat gga agg  
 Leu Gly Ala Gly Lys Gln Gln Lys Lys Asn Gly Ala Ala Asp Gly Arg  
 20 25 30  
 aac cgt aaa gca ctt ggt gat att gga aac ttg gtc act gta aga gga  
 Asn Arg Lys Ala Leu Gly Asp Ile Gly Asn Leu Val Thr Val Arg Gly  
 35 40 45  
 gtt gag gtc aag cct aat cgt ccc atc aca agg agt ttc tgt gcc caa  
 450 455

48

96

144

192

## PhoenixTemp32470.tmp.txt

Val	Glu	Val	Lys	Pro	Asn	Arg	Pro	Ile	Thr	Arg	Ser	Phe	Cys	Ala	Gln	
cta	ctt	gcc	aat	gca	caa	gct	gca	gct	gct	gct	gaa	aat	aac	aag	aaa	240
Leu	Leu	Ala	Asn	Ala	Gln	Ala	Ala	Ala	Ala	Ala	Glu	Asn	Asn	Lys	Lys	
65					70					75					80	
cag	gct	tgt	ccc	aat	gtg	gct	ggg	cct	cct	cct	gtt	gtt	gaa	gga	gtt	288
Gln	Ala	Cys	Pro	Asn	Val	Ala	Gly	Pro	Pro	Pro	Val	Val	Glu	Gly	Val	
				85					90					95		
gca	gtg	gct	aaa	aga	gtg	gcc	ccc	aaa	cca	ggt	cag	aag	aaa	gtc	acc	336
Ala	Val	Ala	Lys	Arg	Val	Ala	Pro	Lys	Pro	Gly	Gln	Lys	Lys	Val	Thr	
			100					105					110			
aca	aaa	cca	aag	cct	gag	gaa	gtc	att	gaa	ata	agt	cca	gac	gaa	gag	384
Thr	Lys	Pro	Lys	Pro	Glu	Glu	Val	Ile	Glu	Ile	Ser	Pro	Asp	Glu	Glu	
			115				120					125				
gtc	cac	aaa	gac	aat	aat	aag	aaa	aag	gaa	ggt	gat	gcc	aac	acc	aag	432
Val	His	Lys	Asp	Asn	Asn	Lys	Lys	Lys	Glu	Gly	Asp	Ala	Asn	Thr	Lys	
	130				135						140					
aag	aaa	tca	cac	act	tat	tct	tct	gtg	ctc	aca	gct	cga	agc	aag	gca	480
Lys	Lys	Ser	His	Thr	Tyr	Ser	Ser	Val	Leu	Thr	Ala	Arg	Ser	Lys	Ala	
145					150				155						160	
gca	tgt	ggt	ctg	act	aat	aaa	cct	aaa	gag	att	att	gac	att	gat	gct	528
Ala	Cys	Gly	Leu	Thr	Asn	Lys	Pro	Lys	Glu	Ile	Ile	Asp	Ile	Asp	Ala	
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gct	gac	act	gcc	aat	gag	ctt	gct	gct	gaa	tat	att	gaa	gac	gac	att	576
Ala	Asp	Thr	Ala	Asn	Glu	Leu	Ala	Ala	Val	Glu	Tyr	Ile	Glu	Asp	Ile	
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tac	aaa	ttc	tat	aaa	atg	gtt	gag	aat	gaa	agc	cgt	ccc	cat	gac	tac	624
Tyr	Lys	Phe	Tyr	Lys	Met	Val	Glu	Asn	Glu	Ser	Arg	Pro	His	Asp	Tyr	
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Met	Asp	Ser	Gln	Pro	Glu	Ile	Asn	Glu	Arg	Met	Arg	Ala	Ile	Leu	Val	
	210					215					220					
gat	tgg	ctg	ata	gat	gta	cac	agc	aaa	ttt	gac	ctt	tca	ctt	gaa	acc	720
Asp	Trp	Leu	Ile	Asp	Val	His	Ser	Lys	Phe	Asp	Leu	Ser	Leu	Glu	Thr	
225					230					235					240	
ctt	tat	ttg	acc	atc	aac	ata	gtt	gat	agg	ttc	tta	gca	gtt	aag	act	768
Leu	Tyr	Leu	Thr	Ile	Asn	Ile	Val	Asp	Arg	Phe	Leu	Ala	Val	Lys	Thr	
				245					250					255		
gtg	cca	agg	agg	gaa	ctg	caa	ttg	gtt	ggc	atc	agt	gcc	atg	ctg	atg	816
Val	Pro	Arg	Arg	Glu	Leu	Gln	Leu	Val	Gly	Ile	Ser	Ala	Met	Leu	Met	
			260					265					270			
gca	tcc	aag	tat	gaa	gaa	atc	tgg	ccc	cca	gag	gtt	aat	gac	ttt	gtc	864
Ala	Ser	Lys	Tyr	Glu	Glu	Ile	Trp	Pro	Pro	Glu	Val	Asn	Asp	Phe	Val	
		275					280					285				
tgc	ctc	tca	gac	aga	gct	tac	act	cat	gaa	cag	ata	ctt	ttc	atg	gag	912
Cys	Leu	Ser	Asp	Arg	Ala	Tyr	Thr	His	Glu	Gln	Ile	Leu	Phe	Met	Glu	
	290					295					300					
aaa	atc	ata	ttg	ggg	aag	cta	gaa	tgg	acc	ttg	act	gtg	cct	acc	cct	960
Lys	Ile	Ile	Leu	Gly	Lys	Leu	Glu	Trp	Thr	Leu	Thr	Val	Pro	Thr	Pro	
305				310					315						320	
ttt	gtt	ttc	cta	gtt	cgt	ttt	atc	aag	gca	tca	gtg	cca	gat	gag	gca	1008
Phe	Val	Phe	Leu	Val	Arg	Phe	Ile	Lys	Ala	Ser	Val	Pro	Asp	Glu	Ala	
				325					330					335		
ttg	gaa	aac	atg	gca	cat	ttc	ctt	tct	gaa	ttg	ggg	atg	atg	cat	tat	1056
Leu	Glu	Asn	Met	Ala	His	Phe	Leu	Ser	Glu	Leu	Gly	Met	Met	His	Tyr	
			340					345					350			
gcc	acc	tta	atg	tat	tgt	tca	tca	atg	gtt	gct	gcc	tca	gca	gtc	tat	1104
Ala	Thr	Leu	Met	Tyr	Cys	Ser	Ser	Met	Val	Ala	Ala	Ser	Ala	Val	Tyr	
		355					360					365				
gct	gca	aga	tgc	act	ctg	aat	aag	agc	cct	gtt	tgg	aat	gag	aca	ctt	1152
Ala	Ala	Arg	Cys	Thr	Leu	Asn	Lys	Ser	Pro	Val	Trp	Asn	Glu	Thr	Leu	
		370				375					380					
aag	cag	cac	act	ggt	tac	tct	gaa	gaa	caa	ctt	atg	gat	tgt	gct	aga	1200
Lys	Gln	His	Thr	Gly	Tyr	Ser	Glu	Glu	Gln	Leu	Met	Asp	Cys	Ala	Arg	
385				390					395						400	
cta	ctg	gtg	agc	ttg	cac	tcc	aca	gtt	ggg	aat	ggg	aag	ctt	aag	gtt	1248
Leu	Leu	Val	Ser	Leu	His	Ser	Thr	Val	Gly	Asn	Gly	Lys	Leu	Lys	Val	
				405					410					415		
gtg	tat	aga	aag	tac	tct	gat	cct	gag	aga	gga	tct	gtt	gca	gtg	ctt	1296

PhoenixTemp32470.tmp.txt  
Val Tyr Arg Lys Tyr Ser Asp Pro Glu Arg Gly Ser Val Ala Val Leu  
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Pro Pro Ala Lys Asn Leu Leu Ser Glu Gly Lys Ser Leu  
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1338

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<212> PRT  
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Asn Arg Lys Ala Leu Gly Asp Ile Gly Asn Leu Val Thr Val Arg Gly  
35 40 45  
Val Glu Val Lys Pro Asn Arg Pro Ile Thr Arg Ser Phe Cys Ala Gln  
50 55 60  
Leu Leu Ala Asn Ala Gln Ala Ala Ala Ala Glu Asn Asn Lys Lys  
65 70 75 80  
Gln Ala Cys Pro Asn Val Ala Gly Pro Pro Val Val Glu Gly Val  
85 90 95  
Ala Val Ala Lys Arg Val Ala Pro Lys Pro Gly Gln Lys Lys Val Thr  
100 105 110  
Thr Lys Pro Lys Pro Glu Glu Val Ile Glu Ile Ser Pro Asp Glu Glu  
115 120 125  
Val His Lys Asp Asn Asn Lys Lys Lys Glu Gly Asp Ala Asn Thr Lys  
130 135 140  
Lys Lys Ser His Thr Tyr Ser Ser Val Leu Thr Ala Arg Ser Lys Ala  
145 150 155 160  
Ala Cys Gly Leu Thr Asn Lys Pro Lys Glu Ile Ile Asp Ile Asp Ala  
165 170 175  
Ala Asp Thr Ala Asn Glu Leu Ala Ala Val Glu Tyr Ile Glu Asp Ile  
180 185 190  
Tyr Lys Phe Tyr Lys Met Val Glu Asn Glu Ser Arg Pro His Asp Tyr  
195 200 205  
Met Asp Ser Gln Pro Glu Ile Asn Glu Arg Met Arg Ala Ile Leu Val  
210 215 220  
Asp Trp Leu Ile Asp Val His Ser Lys Phe Asp Leu Ser Leu Glu Thr  
225 230 235 240  
Leu Tyr Leu Thr Ile Asn Ile Val Asp Arg Phe Leu Ala Val Lys Thr  
245 250 255  
Val Pro Arg Arg Glu Leu Gln Leu Val Gly Ile Ser Ala Met Leu Met  
260 265 270  
Ala Ser Lys Tyr Glu Glu Ile Trp Pro Pro Glu Val Asn Asp Phe Val  
275 280 285  
Cys Leu Ser Asp Arg Ala Tyr Thr His Glu Gln Ile Leu Phe Met Glu  
290 295 300  
Lys Ile Ile Leu Gly Lys Leu Glu Trp Thr Leu Thr Val Pro Thr Pro  
305 310 315 320  
Phe Val Phe Leu Val Arg Phe Ile Lys Ala Ser Val Pro Asp Glu Ala  
325 330 335  
Leu Glu Asn Met Ala His Phe Leu Ser Glu Leu Gly Met Met His Tyr  
340 345 350  
Ala Thr Leu Met Tyr Cys Ser Ser Met Val Ala Ala Ser Ala Val Tyr  
355 360 365  
Ala Ala Arg Cys Thr Leu Asn Lys Ser Pro Val Trp Asn Glu Thr Leu  
370 375 380  
Lys Gln His Thr Gly Tyr Ser Glu Glu Gln Leu Met Asp Cys Ala Arg  
385 390 395 400  
Leu Leu Val Ser Leu His Ser Thr Val Gly Asn Gly Lys Leu Lys Val  
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Val Tyr Arg Lys Tyr Ser Asp Pro Glu Arg Gly Ser Val Ala Val Leu  
420 425 430  
Pro Pro Ala Lys Asn Leu Leu Ser Glu Gly Lys Ser Leu  
435 440 445

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 <212> DNA  
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<220>  
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 <222> (1)..(1926)

<400> 2389  
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 gcc ttc cct ctg act agc aaa acg gtt cat cag aaa aac aaa tcg acc 96  
 Ala Phe Pro Leu Thr Ser Lys Thr Val His Gln Lys Asn Lys Ser Thr 20 25 30  
 ccc gcc ttg tcc act atg ttc cag aat ggc gtg acg aag aat ggg cca 144  
 Pro Ala Leu Ser Thr Met Phe Gln Asn Gly Val Thr Lys Asn Gly Pro 35 40 45  
 aga aga gcc gct ttt gga gat gtc agc aat act gtg aaa acc gtc caa 192  
 Arg Arg Ala Ala Phe Gly Asp Val Ser Asn Thr Val Lys Thr Val Gln 50 55 60  
 ggc att cgg gat gac atc tct gtt gca gca aag aaa cag atc aag cca 240  
 Gly Ile Arg Asp Asp Ile Ser Val Ala Ala Lys Lys Gln Ile Lys Pro 65 70 75 80  
 ttg gag aag cct tcc gtg cag gcc acg gag agg aaa tcc tct gtc ttg 288  
 Leu Glu Lys Pro Ser Val Gln Ala Thr Glu Arg Lys Ser Ser Val Leu 85 90 95  
 gcc caa cct gcc cag cgg cca atg tcg gtg gcg gga gtc aaa ggc cta 336  
 Ala Gln Pro Ala Gln Arg Pro Met Ser Val Ala Gly Val Lys Gly Leu 100 105 110  
 tcg agc aat gtg acg act tcc aaa ccc ctg gag ccc atc gga aag tcg 384  
 Ser Ser Asn Val Thr Thr Ser Lys Pro Leu Glu Pro Ile Gly Lys Ser 115 120 125  
 atc ggc gtg ccg cag cat acc gcc aac gcc cga aag gcc ctg aac aag 432  
 Ile Gly Val Pro Gln His Thr Ala Asn Ala Arg Lys Ala Leu Asn Lys 130 135 140  
 cga gga aca gtg ttc aaa gat cac atg gaa cca ttg acg gaa aaa cgc 480  
 Arg Gly Thr Val Phe Lys Asp His Met Glu Pro Leu Thr Glu Lys Arg 145 150 155 160  
 gaa ctt aca tcc aag gaa aca aca caa act aag gaa ggg att act ggg 528  
 Glu Leu Thr Ser Lys Glu Thr Thr Gln Thr Lys Glu Gly Ile Thr Gly 165 170 175  
 ggc caa ctc gcg cat tcg tct acg gcg ccg tcg cag ctc agc agc ctg 576  
 Gly Gln Leu Ala His Ser Ser Thr Ala Pro Ser Gln Leu Ser Ser Leu 180 185 190  
 aag gaa aag gac gtg gtc aac gag gga tca aat gat gag tcg gag acc 624  
 Lys Glu Lys Asp Val Val Asn Glu Gly Ser Asn Asp Glu Ser Glu Thr 195 200 205  
 cat gac gaa cat tcc att gtc agc tct gaa gtt gat gga gag gag aag 672  
 His Asp Glu His Ser Ile Val Ser Ser Glu Val Asp Gly Glu Glu Lys 210 215 220  
 gac gca ccc aag ctc gac gag gat gtt tgt aag gtc cag ggt att aag 720  
 Asp Ala Pro Lys Leu Asp Glu Asp Val Cys Lys Val Gln Gly Ile Lys 225 230 235 240  
 gaa ctc agg gaa gcc tct gaa ccc ggt acg gca acg gat gcc gac ggc 768  
 Glu Leu Arg Glu Ala Ser Glu Pro Gly Thr Ala Thr Asp Ala Asp Gly 245 250 255  
 tca gac cgc gct gtg aag cca caa cgt gta tct gtt cct ggc gca cat 816  
 Ser Asp Arg Ala Val Lys Pro Gln Arg Val Ser Val Pro Gly Ala His 260 265 270  
 atg tct cat gaa cat gtg ccc gcc cac tcg gag ccg gaa gag tcc tgg 864  
 Met Ser His Glu His Val Pro Ala His Ser Glu Pro Glu Glu Ser Trp 275 280 285  
 gac gac gag gat gac gaa aat gaa gaa gag gat gag tat atc act gct 912  
 Asp Asp Glu Asp Asp Glu Asn Glu Glu Glu Asp Glu Tyr Ile Thr Ala 290 295 300  
 cgc tcc tat cga tcc cgt ggc gaa aac aca act ggc gcg act act aca 960  
 Arg Ser Tyr Arg Ser Arg Gly Glu Asn Thr Thr Gly Ala Thr Thr Thr

## PhoenixTemp32470.tmp.txt

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Ile	Leu	Phe	Pro	Lys	Tyr	Tyr	Thr	Gln	Gln	Val	Arg	Arg	Glu	Leu	Ala	Leu			
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gcc	aag	caa	atc	gtc	gag	gca	aca	cgg	aca	gtg	gag	gat	att	gag	gac			1056	
Ala	Lys	Gln	Ile	Val	Glu	Ala	Thr	Arg	Thr	Val	Glu	Asp	Ile	Glu	Asp				
			340					345					350						
gaa	tat	tggt	gat	acg	agc	atg	gtc	gcg	gaa	tat	agt	gaa	gat	ata	ttc			1104	
Glu	Tyr	Trp	Asp	Thr	Ser	Met	Val	Ala	Glu	Tyr	Ser	Glu	Asp	Ile	Phe				
		355					360					365							
gat	tac	atg	cgg	gaa	cag	gag	atc	aaa	atg	ctg	cca	aac	gcg	cac	tat			1152	
Asp	Tyr	Met	Arg	Glu	Gln	Glu	Ile	Lys	Met	Leu	Pro	Asn	Ala	His	Tyr				
		370				375					380								
atg	gac	aac	caa	gcg	gaa	atc	caa	tggt	tct	atg	cgg	tct	gtc	ctg	atg			1200	
Met	Asp	Asn	Gln	Ala	Glu	Ile	Gln	Trp	Ser	Met	Arg	Ser	Val	Leu	Met				
					390					395					400				
gac	tggt	ctt	gtc	cag	gtc	cac	cat	cgg	ttc	tct	ctg	ctt	cct	gag	acc			1248	
Asp	Trp	Leu	Val	Gln	Val	His	His	Arg	Phe	Ser	Leu	Leu	Pro	Glu	Thr				
				405					410					415					
ctt	ttc	ttg	tgt	gtc	aac	tat	atc	gac	cggt	ttc	ctg	tcc	tgc	aag	ata			1296	
Leu	Phe	Leu	Cys	Val	Asn	Tyr	Ile	Asp	Arg	Phe	Leu	Ser	Cys	Lys	Ile				
			420					425					430						
gtc	tct	cta	ggc	aaa	ttg	cag	ctt	ggt	gct	acc	gcg	atc	ttc	att				1344	
Val	Ser	Leu	Gly	Lys	Leu	Gln	Val	Gly	Ala	Thr	Ala	Ile	Phe	Ile					
		435				440					445								
gct	gcc	aag	tac	gaa	gag	ata	aac	tggt	cct	tcc	gtg	caa	gag	att	ggt			1392	
Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Asn	Cys	Pro	Ser	Val	Gln	Glu	Ile	Val				
					455					460									
tat	atg	gtc	gac	gga	ggc	tac	aca	gcc	gat	gag	att	ctc	aag	gcg	gaa			1440	
Tyr	Met	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Asp	Glu	Ile	Leu	Lys	Ala	Glu				
					470					475					480				
cggt	ttc	atg	ctc	act	atg	ctg	cag	ttc	gag	ctc	gga	tggt	ccc	gggt	ccc			1488	
Arg	Phe	Met	Leu	Thr	Met	Leu	Gln	Phe	Glu	Leu	Gly	Trp	Pro	Gly	Pro				
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atg	agc	ttt	ctg	cgg	aag	atc	agc	aaa	gct	gat	gac	tac	gac	ctg	gag			1536	
Met	Ser	Phe	Leu	Arg	Lys	Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Leu	Glu				
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acc	cgg	aca	ctg	gcg	aag	tat	ttc	ttg	gag	att	acc	atc	atg	gat	gaa			1584	
Thr	Arg	Thr	Leu	Ala	Lys	Tyr	Phe	Leu	Glu	Ile	Thr	Ile	Met	Asp	Glu				
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cggt	ttc	gtc	gga	tgc	cca	cca	agg	ttt	aca	gct	gct	ggc	gct	cat	tgt			1632	
Arg	Phe	Val	Gly	Cys	Pro	Pro	Ser	Phe	Thr	Ala	Ala	Gly	Ala	His	Cys				
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ctt	gca	agg	atg	atg	ttg	aga	aaa	gggt	aac	tggt	acg	cct	gcc	cat	gtc			1680	
Leu	Ala	Arg	Met	Met	Leu	Arg	Lys	Gly	Asn	Trp	Thr	Pro	Ala	His	Val				
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cat	tac	gcg	gga	tac	acc	tat	tca	cag	ctt	tac	ccg	ctt	att	tcc	ctc			1728	
His	Tyr	Ala	Gly	Tyr	Thr	Tyr	Ser	Gln	Leu	Tyr	Pro	Leu	Ile	Ser	Leu				
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atg	gtg	gaa	tgc	tgc	gag	atc	cct	cggt	aag	cac	cat	gcg	gct	att	tat			1776	
Met	Val	Glu	Cys	Cys	Glu	Ile	Pro	Arg	Lys	His	His	Ala	Ala	Ile	Tyr				
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gaa	aag	tac	act	gac	aaa	cgg	ttc	aag	cggt	gct	tcg	ctt	ttc	gtc	gag			1824	
Glu	Lys	Tyr	Thr	Asp	Lys	Arg	Phe	Lys	Arg	Ala	Ser	Leu	Phe	Val	Glu				
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gct	gaa	atg	aga	aaa	ggc	ttt	cat	ctg	ccg	gag	gtc	act	cgg	gaa	aag			1872	
Ala	Glu	Met	Arg	Lys	Gly	Phe	His	Leu	Pro	Glu	Val	Thr	Arg	Glu	Lys				
					615						620								
agt	ctt	tgc	aat	ccg	cca	tct	ctt	gac	gcc	gga	cat	cag	tggt	aag	cggt			1920	
Ser	Leu	Cys	Asn	Pro	Pro	Ser	Leu	Asp	Ala	Gly	His	Gln	Trp	Lys	Arg				
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gca	taa																	1926	
Ala																			

&lt;210&gt; 2390

&lt;211&gt; 641

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2390

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Pro Ala Leu Ser Thr Met Phe Gln Asn Gly Val Thr Lys Asn Gly Pro
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Arg Arg Ala Ala Phe Gly Asp Val Ser Asn Thr Val Lys Thr Val Gln
      50      55      60
Gly Ile Arg Asp Asp Ile Ser Val Ala Ala Lys Lys Gln Ile Lys Pro
65      70      75      80
Leu Glu Lys Pro Ser Val Gln Ala Thr Glu Arg Lys Ser Ser Val Leu
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Ala Gln Pro Ala Gln Arg Pro Met Ser Val Ala Gly Val Lys Gly Leu
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Ser Ser Asn Val Thr Thr Ser Lys Pro Leu Glu Pro Ile Gly Lys Ser
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Ile Gly Val Pro Gln His Thr Ala Asn Ala Arg Lys Ala Leu Asn Lys
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Arg Gly Thr Val Phe Lys Asp His Met Glu Pro Leu Thr Glu Lys Arg
145      150      155      160
Glu Leu Thr Ser Lys Glu Thr Thr Gln Thr Lys Glu Gly Ile Thr Gly
      165      170      175
Gly Gln Leu Ala His Ser Ser Thr Ala Pro Ser Gln Leu Ser Ser Leu
      180      185      190
Lys Glu Lys Asp Val Val Asn Glu Gly Ser Asn Asp Glu Ser Glu Thr
      195      200      205
His Asp Glu His Ser Ile Val Ser Ser Glu Val Asp Gly Glu Glu Lys
      210      215      220
Asp Ala Pro Lys Leu Asp Glu Asp Val Cys Lys Val Gln Gly Ile Lys
225      230      235      240
Glu Leu Arg Glu Ala Ser Glu Pro Gly Thr Ala Thr Asp Ala Asp Gly
      245      250      255
Ser Asp Arg Ala Val Lys Pro Gln Arg Val Ser Val Pro Gly Ala His
      260      265      270
Met Ser His Glu His Val Pro Ala His Ser Glu Pro Glu Glu Ser Trp
      275      280      285
Asp Asp Glu Asp Asp Glu Asn Glu Glu Glu Asp Glu Tyr Ile Thr Ala
      290      295      300
Arg Ser Tyr Arg Ser Arg Gly Glu Asn Thr Thr Gly Ala Thr Thr Thr
305      310      315      320
Ile Leu Phe Pro Lys Tyr Thr Gln Gln Val Arg Arg Glu Leu Ala Leu
      325      330      335
Ala Lys Gln Ile Val Glu Ala Thr Arg Thr Val Glu Asp Ile Glu Asp
      340      345      350
Glu Tyr Trp Asp Thr Ser Met Val Ala Glu Tyr Ser Glu Asp Ile Phe
      355      360      365
Asp Tyr Met Arg Glu Gln Glu Ile Lys Met Leu Pro Asn Ala His Tyr
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Met Asp Asn Gln Ala Glu Ile Gln Trp Ser Met Arg Ser Val Leu Met
385      390      395      400
Asp Trp Leu Val Gln Val His His Arg Phe Ser Leu Leu Pro Glu Thr
      405      410      415
Leu Phe Leu Cys Val Asn Tyr Ile Asp Arg Phe Leu Ser Cys Lys Ile
      420      425      430
Val Ser Leu Gly Lys Leu Gln Leu Val Gly Ala Thr Ala Ile Phe Ile
      435      440      445
Ala Ala Lys Tyr Glu Glu Ile Asn Cys Pro Ser Val Gln Glu Ile Val
      450      455      460
Tyr Met Val Asp Gly Gly Tyr Thr Ala Asp Glu Ile Leu Lys Ala Glu
465      470      475      480
Arg Phe Met Leu Thr Met Leu Gln Phe Glu Leu Gly Trp Pro Gly Pro
      485      490      495
Met Ser Phe Leu Arg Lys Ile Ser Lys Ala Asp Asp Tyr Asp Leu Glu
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Thr Arg Thr Leu Ala Lys Tyr Phe Leu Glu Ile Thr Ile Met Asp Glu
      515      520      525
Arg Phe Val Gly Cys Pro Pro Ser Phe Thr Ala Ala Gly Ala His Cys

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## PhoenixTemp32470.tmp.txt

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				565	Cys	Glu	Ile	Pro	Arg	570	Lys	His	His	Ala	Ala	575	Ile	Tyr	
			580	Thr	Asp	Lys	Arg	Phe	585	Lys	Arg	Ala	Ser	Leu	590	Phe	Val	Glu	
			595	Met	Arg	Lys	Gly	Phe	600	His	Leu	Pro	Glu	Val	605	Thr	Arg	Glu	Lys
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&lt;211&gt; 1449

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1449)

&lt;400&gt; 2391

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Lys	Ala	Ala	Ala	Leu	Ser	Ala	Gly	Asp	Val	Ser	Thr	Ala	Ala	Thr	Lys	
			20					25					30			
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Lys	Pro	Leu	Glu	Ser	Lys	Lys	Ala	Ala	Thr	Ser	Thr	Ala	Thr	Ala	Gly	
			35				40					45				
acc	aca	agg	aag	cgc	gct	gct	ttg	ggt	gat	gtc	agc	aat	gtc	acc	aag	192
Thr	Thr	Arg	Lys	Arg	Ala	Ala	Leu	Gly	Asp	Val	Ser	Asn	Val	Thr	Lys	
			50			55					60					
ggt	gag	aac	ggc	gcc	gcg	aag	gag	gga	aag	aag	cca	gcc	ggg	gcc	aag	240
Gly	Glu	Asn	Gly	Ala	Ala	Lys	Glu	Gly	Lys	Lys	Pro	Ala	Gly	Ala	Lys	
65				70					75					80		
gtc	ggc	ttg	act	tcg	aaa	gcc	aca	atg	caa	gct	ggc	ggt	ggt	gcg	aag	288
Val	Gly	Leu	Thr	Ser	Lys	Ala	Thr	Met	Gln	Ala	Gly	Gly	Val	Ala	Lys	
				85					90					95		
ctc	acc	cgc	acc	aac	tcg	tcg	cgt	act	act	gcc	ctg	aca	aac	aag	acc	336
Leu	Thr	Arg	Thr	Asn	Ser	Ser	Arg	Thr	Thr	Ala	Leu	Thr	Asn	Lys	Thr	
			100				105						110			
acc	aac	acg	aag	aag	cct	acg	gag	gac	aag	gag	aaa	cgc	tcg	gga	ccc	384
Thr	Asn	Thr	Lys	Lys	Pro	Thr	Glu	Asp	Lys	Glu	Lys	Arg	Ser	Gly	Pro	
			115				120					125				
gga	tct	atc	aag	gat	agt	gca	cag	aag	cgc	caa	aaa	acc	acg	aaa	gac	432
Gly	Ser	Ile	Lys	Asp	Ser	Ala	Gln	Lys	Arg	Gln	Lys	Thr	Thr	Lys	Asp	
130						135					140					
aac	gcg	ttg	gtc	gag	gag	cca	ccc	cgc	aag	aag	gtg	gaa	gtg	gaa	aag	480
Asn	Ala	Leu	Val	Glu	Glu	Pro	Pro	Arg	Lys	Lys	Val	Glu	Val	Glu	Lys	
145				150					155					160		
aag	ctt	acc	gag	aag	aag	ctt	gtc	gct	gaa	gag	gct	ccc	gcc	aag	gaa	528
Lys	Leu	Thr	Glu	Lys	Lys	Leu	Val	Ala	Glu	Glu	Ala	Pro	Ala	Lys	Glu	
				165					170					175		
aat	gtc	gaa	gcc	cct	gtc	gag	cca	aag	acg	ctg	cag	aag	cct	tct	caa	576
Asn	Val	Glu	Ala	Pro	Val	Glu	Pro	Lys	Thr	Leu	Gln	Lys	Pro	Ser	Gln	
			180					185					190			
gat	ctc	gtg	gag	gat	ttg	gat	acc	gag	gat	ttg	gac	gac	ccc	ttg	atg	624
Asp	Leu	Val	Glu	Asp	Leu	Asp	Thr	Glu	Asp	Leu	Asp	Asp	Pro	Leu	Met	
			195				200					205				
gtg	gca	gaa	tat	gtg	gtg	gag	att	ttc	gaa	tac	atg	aag	gac	ctt	gaa	672
Val	Ala	Glu	Tyr	Val	Val	Glu	Ile	Phe	Glu	Tyr	Met	Lys	Asp	Leu	Glu	
210						215					220					
ctg	gag	aca	cta	cct	aac	ccc	cat	tac	att	gac	cat	caa	cct	gat	ctg	720

## PhoenixTemp32470.tmp.txt

Leu 225	Glu	Thr	Leu	Pro	Asn 230	Pro	His	Tyr	Ile	Asp 235	His	Gln	Pro	Asp	Leu 240	
gag	tgg	aag	atg	cgt	ggt	atc	ctg	gtt	gac	tgg	ctc	atc	gag	gtt	cac	768
Glu	Trp	Lys	Met	Arg 245	Gly	Ile	Leu	Val	Asp 250	Trp	Leu	Ile	Glu	Val 255	His	
act	cgt	ttc	cgc	ctg	ttg	cct	gaa	acc	ctt	ttc	ctc	gct	gtc	aac	atc	816
Thr	Arg	Phe	Arg 260	Leu	Leu	Pro	Glu	Thr 265	Leu	Phe	Leu	Ala	Val 270	Asn	Ile	
atc	gac	cgt	ttc	ctg	tcg	gcc	gag	gtg	gtg	gct	ctg	gat	cgt	ctg	cag	864
Ile	Asp	Arg 275	Phe	Leu	Ser	Ala	Glu 280	Val	Val	Ala	Leu	Asp 285	Arg	Leu	Gln	
ctt	gtt	gga	gtt	gct	gct	atg	ttc	atc	gcg	tct	aaa	tac	gag	gag	gtc	912
Leu	Val 290	Gly	Val	Ala	Ala	Met 295	Phe	Ile	Ala	Ser	Lys 300	Tyr	Glu	Glu	Val	
ctc	tcg	ccg	cat	gtg	gcc	aat	ttc	agt	cac	gtc	gcc	gac	gag	act	ttc	960
Leu	Ser	Pro	His	Val 310	Ala	Asn	Phe	Ser	His	Val 315	Ala	Asp	Glu	Thr	Phe 320	
acc	gac	aag	gag	att	ttg	gac	gct	gag	cgc	cac	atc	ctg	gcg	act	ctc	1008
Thr	Asp	Lys	Glu	Ile 325	Leu	Asp	Ala	Glu	Arg 330	His	Ile	Leu	Ala	Thr 335	Leu	
gag	tac	aac	atg	agc	tat	ccc	aat	ccg	atg	aac	ttc	ctg	cgt	cgt	att	1056
Glu	Tyr	Asn	Met 340	Ser	Tyr	Pro	Asn	Pro 345	Met	Asn	Phe	Leu	Arg 350	Arg	Ile	
tcc	aag	gcg	gac	aac	tat	gat	atc	caa	acg	cgt	acc	ctt	gga	aag	tac	1104
Ser	Lys	Ala 355	Asp	Asn	Tyr	Asp	Ile 360	Gln	Thr	Arg	Thr	Leu 365	Gly	Lys	Tyr	
ctt	atg	gaa	atc	agt	ctg	cta	gat	cac	cgg	ttc	atg	gct	tac	cgt	caa	1152
Leu	Met 370	Glu	Ile	Ser	Leu	Leu 375	Asp	His	Arg	Phe	Met 380	Ala	Tyr	Arg	Gln	
agt	cac	gtg	tca	gct	gcc	gct	atg	tat	ctg	gca	cgt	ctc	att	ctg	gag	1200
Ser	His	Val	Ser	Ala	Ala 390	Ala	Met	Tyr	Leu	Ala 395	Arg	Leu	Ile	Leu	Glu 400	
cgt	ggg	cct	tgg	gat	gca	acc	ctg	gct	tat	tac	gcc	gga	tat	gat	gaa	1248
Arg	Gly	Pro	Trp	Asp 405	Ala	Thr	Leu	Ala	Tyr 410	Tyr	Ala	Gly	Tyr	Asp 415	Glu	
gag	cag	atc	gac	cct	gtc	ttc	cgt	cta	atg	atc	gac	tac	ctt	cac	cgc	1296
Glu	Gln	Ile	Asp 420	Pro	Val	Phe	Arg	Leu 425	Met	Ile	Asp	Tyr	Leu 430	His	Arg	
ccg	gtc	tgc	cac	gag	gcg	ttc	ttc	aag	aaa	tat	gcc	agc	aag	aag	ttc	1344
Pro	Val	Cys 435	His	Glu	Ala	Phe	Phe 440	Lys	Lys	Tyr	Ala	Ser 445	Lys	Lys	Phe	
ctc	aaa	gcg	tcc	atc	ttg	acc	cgc	caa	tgg	gcc	aag	aag	tat	cac	cac	1392
Leu	Lys	Ala	Ser	Ile	Leu	Thr 455	Arg	Gln	Trp	Ala 460	Lys	Lys	Tyr	His	His	
ctg	tac	atc	gac	agc	tcc	ctc	tca	gaa	ccg	tac	aac	tat	atc	aag	gat	1440
Leu	Tyr	Ile	Asp	Ser	Ser 470	Leu	Ser	Glu	Pro	Tyr 475	Asn	Tyr	Ile	Lys	Asp 480	
cac	gaa	taa														1449
His	Glu															

&lt;210&gt; 2392

&lt;211&gt; 482

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 2392

Met	Asn	Glu	Asn	Asp	Glu	Asn	Arg	Pro	Ser	Thr	Arg	Leu	Thr	Arg	Ala	
1				5					10					15		
Lys	Ala	Ala	Ala	Leu	Ser	Ala	Gly	Asp	Val	Ser	Thr	Ala	Ala	Thr	Lys	
			20					25					30			
Lys	Pro	Leu	Glu	Ser	Lys	Lys	Ala	Ala	Thr	Ser	Thr	Ala	Thr	Ala	Gly	
		35					40					45				
Thr	Thr	Arg	Lys	Arg	Ala	Ala	Leu	Gly	Asp	Val	Ser	Asn	Val	Thr	Lys	
		50				55					60					
Gly	Glu	Asn	Gly	Ala	Ala	Lys	Glu	Gly	Lys	Lys	Pro	Ala	Gly	Ala	Lys	
65				70					75					80		
Val	Gly	Leu	Thr	Ser	Lys	Ala	Thr	Met	Gln	Ala	Gly	Gly	Val	Ala	Lys	
				85					90				95			



## PhoenixTemp32470.tmp.txt

Leu Thr Arg Thr Asn Ser Ser Arg Thr Thr Ala Leu Thr Asn Lys Thr  
 100 105 110  
 Thr Asn Thr Lys Lys Pro Thr Glu Asp Lys Glu Lys Arg Ser Gly Pro  
 115 120 125  
 Gly Ser Ile Lys Asp Ser Ala Gln Lys Arg Gln Lys Thr Thr Lys Asp  
 130 135 140  
 Asn Ala Leu Val Glu Glu Pro Pro Arg Lys Lys Val Glu Val Glu Lys  
 145 150 155 160  
 Lys Leu Thr Glu Lys Lys Leu Val Ala Glu Glu Ala Pro Ala Lys Glu  
 165 170 175  
 Asn Val Glu Ala Pro Val Glu Pro Lys Thr Leu Gln Lys Pro Ser Gln  
 180 185 190  
 Asp Leu Val Glu Asp Leu Asp Thr Glu Asp Leu Asp Asp Pro Leu Met  
 195 200 205  
 Val Ala Glu Tyr Val Val Glu Ile Phe Glu Tyr Met Lys Asp Leu Glu  
 210 215 220  
 Leu Glu Thr Leu Pro Asn Pro His Tyr Ile Asp His Gln Pro Asp Leu  
 225 230 235 240  
 Glu Trp Lys Met Arg Gly Ile Leu Val Asp Trp Leu Ile Glu Val His  
 245 250 255  
 Thr Arg Phe Arg Leu Leu Pro Glu Thr Leu Phe Leu Ala Val Asn Ile  
 260 265 270  
 Ile Asp Arg Phe Leu Ser Ala Glu Val Val Ala Leu Asp Arg Leu Gln  
 275 280 285  
 Leu Val Gly Val Ala Ala Met Phe Ile Ala Ser Lys Tyr Glu Glu Val  
 290 295 300  
 Leu Ser Pro His Val Ala Asn Phe Ser His Val Ala Asp Glu Thr Phe  
 305 310 315 320  
 Thr Asp Lys Glu Ile Leu Asp Ala Glu Arg His Ile Leu Ala Thr Leu  
 325 330 335  
 Glu Tyr Asn Met Ser Tyr Pro Asn Pro Met Asn Phe Leu Arg Arg Ile  
 340 345 350  
 Ser Lys Ala Asp Asn Tyr Asp Ile Gln Thr Arg Thr Leu Gly Lys Tyr  
 355 360 365  
 Leu Met Glu Ile Ser Leu Leu Asp His Arg Phe Met Ala Tyr Arg Gln  
 370 375 380  
 Ser His Val Ser Ala Ala Ala Met Tyr Leu Ala Arg Leu Ile Leu Glu  
 385 390 395 400  
 Arg Gly Pro Trp Asp Ala Thr Leu Ala Tyr Tyr Ala Gly Tyr Asp Glu  
 405 410 415  
 Glu Gln Ile Asp Pro Val Phe Arg Leu Met Ile Asp Tyr Leu His Arg  
 420 425 430  
 Pro Val Cys His Glu Ala Phe Phe Lys Lys Tyr Ala Ser Lys Lys Phe  
 435 440 445  
 Leu Lys Ala Ser Ile Leu Thr Arg Gln Trp Ala Lys Tyr His His  
 450 455 460  
 Leu Tyr Ile Asp Ser Ser Leu Ser Glu Pro Tyr Asn Tyr Ile Lys Asp  
 465 470 475 480  
 His Glu

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 <212> DNA  
 <213> Allium cepa

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 <222> (1)..(1218)

<400> 2393  
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 Met Ala Gly Ala Asp Glu Asn His Gly Ala Val Lys Leu Ala Asn Phe  
 1 5 10 15  
 aga gaa act aca aac aga aga gca tta aag gac att aag aac ttt gtt 96  
 Arg Glu Thr Thr Asn Arg Arg Ala Leu Lys Asp Ile Lys Asn Phe Val  
 20 25 30  
 ggc gcg cct tct ttt cct tgt gcc gct aat aag aga caa tta aaa gaa 144  
 Gly Ala Pro Ser Phe Pro Cys Ala Ala Asn Lys Arg Gln Leu Lys Glu

## PhoenixTemp32470.tmp.txt

		35				40			45									
gtc	gta	tgt	ggc	aac	aat	gat	agt	gtt	ata	cct	cga	aga	cca	ata	aca			192
Val	Val	Cys	Gly	Asn	Asn	Asp	Ser	Val	Ile	Pro	Arg	Arg	Pro	Ile	Thr			
	50					55					60							
agg	caa	ttt	gct	tct	act	tta	gca	agc	aaa	tca	caa	caa	agt	cat	ggg			240
Arg	Gln	Phe	Ala	Ser	Thr	Leu	Ala	Ser	Lys	Ser	Gln	Gln	Ser	His	Gly			
65					70					75					80			
gaa	act	agt	aat	aaa	cac	ggg	cag	att	act	ggg	aat	gag	aag	cac	aat			288
Glu	Thr	Ser	Asn	Lys	His	Gly	Gln	Ile	Thr	Gly	Asn	Glu	Lys	His	Asn			
				85					90					95				
ccc	att	att	att	gat	gag	gat	gtg	cca	atg	gtt	gaa	gaa	tca	gaa	gag			336
Pro	Ile	Ile	Ile	Asp	Glu	Asp	Val	Pro	Met	Val	Glu	Glu	Ser	Glu	Glu			
			100					105					110					
atg	gag	gag	tgt	gag	ctc	gtt	gag	gaa	att	acg	atg	gaa	gat	att	gtg			384
Met	Glu	Glu	Cys	Glu	Leu	Val	Glu	Glu	Ile	Thr	Met	Glu	Asp	Ile	Val			
		115					120					125						
att	gac	agt	gca	caa	gat	att	gat	ata	ggg	gat	gta	gga	aat	cca	cta			432
Ile	Asp	Ser	Ala	Gln	Asp	Ile	Asp	Ile	Gly	Asp	Val	Gly	Asn	Pro	Leu			
		130				135					140							
gct	gtt	gtg	gat	tat	gtt	gat	gat	ata	tac	aac	tac	tac	agg	cga	gtt			480
Ala	Val	Val	Asp	Tyr	Val	Asp	Asp	Ile	Tyr	Asn	Tyr	Tyr	Arg	Arg	Val			
145				150						155					160			
gag	gct	agc	agt	tgt	gtt	cat	cct	gat	tac	atg	tct	aac	caa	ttt	gac			528
Glu	Ala	Ser	Ser	Cys	Val	His	Pro	Asp	Tyr	Met	Ser	Asn	Gln	Phe	Asp			
				165					170					175				
att	aac	gac	aaa	atg	aga	gct	att	ctt	att	gac	tgg	ctc	gta	gag	gtt			576
Ile	Asn	Asp	Lys	Met	Arg	Ala	Ile	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val			
			180					185					190					
cac	tac	aag	ttt	gag	ctg	atg	gag	gaa	acg	ctg	tac	ctt	act	gtg	aac			624
His	Tyr	Lys	Phe	Glu	Leu	Met	Glu	Glu	Thr	Leu	Tyr	Leu	Thr	Val	Asn			
		195					200					205						
ata	ata	gat	aga	ttt	cta	tca	agg	caa	gca	gtt	gtt	agg	aag	aag	ctt			672
Ile	Ile	Asp	Arg	Phe	Leu	Ser	Arg	Gln	Ala	Val	Val	Arg	Lys	Lys	Leu			
		210				215					220							
caa	tta	gta	gga	gtt	act	gcc	atg	ctt	ctt	gct	tgc	aaa	tat	gaa	gaa			720
Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala	Cys	Lys	Tyr	Glu	Glu			
225					230					235				240				
gta	tcg	gtt	cca	gta	gtc	gat	gac	tta	gtt	acc	ata	tcc	gat	cgt	gca			768
Val	Ser	Val	Pro	Val	Val	Asp	Asp	Leu	Val	Thr	Ile	Ser	Asp	Arg	Ala			
				245					250					255				
tat	aca	cga	aaa	gtg	ctt	gac	atg	gaa	aaa	tcg	ata	gtg	aaa	act				816
Tyr	Thr	Arg	Lys	Glu	Val	Leu	Asp	Glu	Lys	Ser	Ile	Val	Lys	Thr				
			260				265					270						
ttg	cag	ttc	aac	acg	tct	gtg	ccg	acc	ccg	ttt	gta	ttt	ttg	aga	agg			864
Leu	Gln	Phe	Asn	Thr	Ser	Val	Pro	Thr	Pro	Phe	Val	Phe	Leu	Arg	Arg			
		275					280					285						
ttc	ctt	aag	gca	gct	ggg	tct	gaa	aag	aag	ctg	gag	ctg	ctt	tca	tcc			912
Phe	Leu	Lys	Ala	Ala	Gly	Ser	Glu	Lys	Lys	Leu	Glu	Leu	Leu	Ser	Ser			
		290				295					300							
ttc	att	ata	gag	ctt	agt	ctt	gtt	gag	tat	caa	atg	ctt	aag	ttt	caa			960
Phe	Ile	Ile	Glu	Leu	Ser	Leu	Val	Glu	Tyr	Gln	Met	Leu	Lys	Phe	Gln			
305					310					315				320				
cct	tca	ttg	ctg	gct	gcc	gcc	gcc	ata	tac	act	gct	caa	tgc	agt	ctc			1008
Pro	Ser	Leu	Leu	Ala	Ala	Ala	Ala	Ile	Tyr	Thr	Ala	Gln	Cys	Ser	Leu			
				325					330					335				
aaa	gga	ttc	aag	ttt	tgg	aca	agg	act	tgt	gag	cag	tac	acc	atg	tat			1056
Lys	Gly	Phe	Lys	Phe	Trp	Thr	Arg	Thr	Cys	Glu	Gln	Tyr	Thr	Met	Tyr			
			340					345					350					
act	gaa	gat	cag	ctt	ctg	gaa	tgc	tcg	aag	atg	atg	gtg	gga	ttt	cat			1104
Thr	Glu	Asp	Gln	Leu	Leu	Glu	Cys	Ser	Lys	Met	Met	Val	Gly	Phe	His			
		355					360					365						
aga	aat	gca	gga	tca	gga	aaa	tta	acg	ggg	gtg	cat	aga	aaa	tac	agc			1152
Arg	Asn	Ala	Gly	Ser	Gly	Lys	Leu	Thr	Gly	Val	His	Arg	Lys	Tyr	Ser			
		370				375					380							
act	tca	aaa	ttt	ggg	ttt	gca	ggg	aag	tcg	tat	cca	gca	ctt	ttc	ttg			1200
Thr	Ser	Lys	Phe	Gly	Phe	Ala	Gly	Lys	Ser	Tyr	Pro	Ala	Leu	Phe	Leu			
385					390					395					400			
ttg	gat	aac	aga	ctt	tga													1218
Leu	Asp	Asn	Arg	Leu														

405

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 <212> PRT  
 <213> Allium cepa

<400> 2394  
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 Arg Glu Thr Thr Asn Arg Arg Ala Leu Lys Asp Ile Lys Asn Phe Val  
 20 25 30  
 Gly Ala Pro Ser Phe Pro Cys Ala Asn Lys Arg Gln Leu Lys Glu  
 35 40 45  
 Val Val Cys Gly Asn Asn Asp Ser Val Ile Pro Arg Arg Pro Ile Thr  
 50 55 60  
 Arg Gln Phe Ala Ser Thr Leu Ala Ser Lys Ser Gln Gln Ser His Gly  
 65 70 75 80  
 Glu Thr Ser Asn Lys His Gly Gln Ile Thr Gly Asn Glu Lys His Asn  
 85 90 95  
 Pro Ile Ile Ile Asp Glu Asp Val Pro Met Val Glu Glu Ser Glu Glu  
 100 105 110  
 Met Glu Glu Cys Glu Leu Val Glu Glu Ile Thr Met Glu Asp Ile Val  
 115 120 125  
 Ile Asp Ser Ala Gln Asp Ile Asp Ile Gly Asp Val Gly Asn Pro Leu  
 130 135 140  
 Ala Val Val Asp Tyr Val Asp Asp Ile Tyr Asn Tyr Tyr Arg Arg Val  
 145 150 155 160  
 Glu Ala Ser Ser Cys Val His Pro Asp Tyr Met Ser Asn Gln Phe Asp  
 165 170 175  
 Ile Asn Asp Lys Met Arg Ala Ile Leu Ile Asp Trp Leu Val Glu Val  
 180 185 190  
 His Tyr Lys Phe Glu Leu Met Glu Glu Thr Leu Tyr Leu Thr Val Asn  
 195 200 205  
 Ile Ile Asp Arg Phe Leu Ser Arg Gln Ala Val Val Arg Lys Lys Leu  
 210 215 220  
 Gln Leu Val Gly Val Thr Ala Met Leu Leu Ala Cys Lys Tyr Glu Glu  
 225 230 235 240  
 Val Ser Val Pro Val Val Asp Asp Leu Val Thr Ile Ser Asp Arg Ala  
 245 250 255  
 Tyr Thr Arg Lys Glu Val Leu Asp Met Glu Lys Ser Ile Val Lys Thr  
 260 265 270  
 Leu Gln Phe Asn Thr Ser Val Pro Thr Pro Phe Val Phe Leu Arg Arg  
 275 280 285  
 Phe Leu Lys Ala Ala Gly Ser Glu Lys Lys Leu Glu Leu Leu Ser Ser  
 290 295 300  
 Phe Ile Ile Glu Leu Ser Leu Val Glu Tyr Gln Met Leu Lys Phe Gln  
 305 310 315 320  
 Pro Ser Leu Leu Ala Ala Ala Ala Ile Tyr Thr Ala Gln Cys Ser Leu  
 325 330 335  
 Lys Gly Phe Lys Phe Trp Thr Arg Thr Cys Glu Gln Tyr Thr Met Tyr  
 340 345 350  
 Thr Glu Asp Gln Leu Leu Glu Cys Ser Lys Met Met Val Gly Phe His  
 355 360 365  
 Arg Asn Ala Gly Ser Gly Lys Leu Thr Gly Val His Arg Lys Tyr Ser  
 370 375 380  
 Thr Ser Lys Phe Gly Phe Ala Gly Lys Ser Tyr Pro Ala Leu Phe Leu  
 385 390 395 400  
 Leu Asp Asn Arg Leu  
 405

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 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
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## PhoenixTemp32470.tmp.txt

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1      5      10      15
cga atc acc aga gca aga gct aga gcc ttg aga ggg att act ccc tac      96
Arg Ile Thr Arg Ala Arg Ala Arg Ala Leu Arg Gly Ile Thr Pro Tyr
20      25      30
tca aga ccc tcc tta aaa aat gag cag aaa aac gtg ctt cga gct aat      144
Ser Arg Pro Ser Leu Lys Asn Glu Gln Lys Asn Val Leu Arg Ala Asn
35      40      45
tcc aaa aga gca gca agt tct gga aac aaa act ttt gcg gtt gtt cct      192
Ser Lys Arg Ala Ala Ser Ser Gly Asn Lys Thr Phe Ala Val Val Pro
50      55      60
gct gtt gtc cag caa aag gga agg gca gtg ctt tca gat ata tca aac      240
Ala Val Val Gln Gln Lys Gly Arg Ala Val Leu Ser Asp Ile Ser Asn
65      70      75      80
atg tgt gca aaa cca cat gat aag tgt act aag gca tca aaa ttt cag      288
Met Cys Ala Lys Pro His Asp Lys Cys Thr Lys Ala Ser Lys Phe Gln
85      90      95
gcc aaa gga gtt tgt aca aag aaa aac acc aag ctt gca gcc tca agt      336
Ala Lys Gly Val Cys Thr Lys Lys Asn Thr Lys Leu Ala Ala Ser Ser
100      105      110
gtt tcc act gac gtt tca tcc tca cat gac gat gtt aga gca aag tta      384
Val Ser Thr Asp Val Ser Ser Ser His Asp Asp Val Arg Ala Lys Leu
115      120      125
gct gaa gaa tta tcc aca ata aag atg gtt gaa tca aat gac acc tta      432
Ala Glu Glu Leu Ser Thr Ile Lys Met Val Glu Ser Asn Asp Thr Leu
130      135      140
aga gaa ggt gta aca gca gac acc tca ctt tca atg caa aac tct gtg      480
Arg Glu Gly Val Thr Ala Asp Thr Ser Leu Ser Met Gln Asn Ser Val
145      150      155      160
aaa tct gat gaa ctc cgg aac tct cca aac aaa gac ata gat ata att      528
Lys Ser Asp Glu Leu Arg Asn Ser Pro Asn Lys Asp Ile Asp Ile Ile
165      170      175
tgt gag aag ctg gga gcc tca gac tcc ctg act att gtg gac att gat      576
Cys Glu Lys Leu Gly Ala Ser Asp Ser Leu Thr Ile Val Asp Ile Asp
180      185      190
tca gag tta aag gat cct caa ctg tgg agt ttt tat gcc cct gac ata      624
Ser Glu Leu Lys Asp Pro Gln Leu Trp Ser Phe Tyr Ala Pro Asp Ile
195      200      205
tac agc aat att cga gtc aca gag ctt caa agg aaa cca ttg acc aac      672
Tyr Ser Asn Ile Arg Val Thr Glu Leu Gln Arg Lys Pro Leu Thr Asn
210      215      220
tac atg gac aag ttg cag gln aaa gat att aat cca agc atg cgt gga att      720
Tyr Met Asp Lys Leu Gln Lys Asp Ile Asn Pro Ser Met Arg Gly Ile
225      230      235      240
ctg gtt gat tgg ctt gtg gag gtt tct gag gaa tac aag ttg gtt cca      768
Leu Val Asp Trp Leu Val Glu Val Ser Glu Glu Tyr Lys Leu Val Pro
245      250      255
gac act ctt tac ctg acc gtg aac ctc att gat cgg tat ctc tca aca      816
Asp Thr Leu Tyr Leu Thr Val Asn Leu Ile Asp Arg Tyr Leu Ser Thr
260      265      270
aga ctc att cag aag caa aag ctc cag ttg ctc ggt gtt act tgc atg      864
Arg Leu Ile Gln Lys Gln Lys Leu Gln Leu Leu Gly Val Thr Cys Met
275      280      285
ttg att gca tca aaa tat gaa gag atg tgt gca cct cga gtg gag gaa      912
Leu Ile Ala Ser Lys Tyr Glu Glu Met Cys Ala Pro Arg Val Glu Glu
290      295      300
ttt tgc ttc atc aca gat aat aca tac aca aaa gaa gag gta ttg aaa      960
Phe Cys Phe Ile Thr Asp Asn Thr Tyr Thr Lys Glu Glu Val Leu Lys
305      310      315      320
atg gag aga gaa gta aat ctt gtg cat ttt cag tta tct gtc ccc      1008
Met Glu Arg Glu Val Leu Asn Leu Val His Phe Gln Leu Ser Val Pro
325      330      335
aca atc aaa act ttt ctc agg aga ttc atc caa gca gca caa tct tct      1056
Thr Ile Lys Thr Phe Leu Arg Arg Phe Ile Gln Ala Ala Gln Ser Ser
340      345      350
tac aag gct cct tat gtt gaa ctg gaa ttc ctg gca aat tat tta gca      1104

```

## PhoenixTemp32470.tmp.txt

Tyr	Lys	Ala	Pro	Tyr	Val	Glu	Leu	Glu	Phe	Leu	Ala	Asn	Tyr	Leu	Ala		
		355					360					365					
gag	ctt	gct	ctt	gtt	gaa	tgc	agc	ttc	ttc	cag	ttt	cta	cct	tcc	ctt		1152
Glu	Leu	Ala	Leu	Val	Glu	Cys	Ser	Phe	Phe	Gln	Phe	Leu	Pro	Ser	Leu		
		370				375					380						
ata	gct	gca	tct	gct	gtg	ttc	ctt	gcc	aaa	tgg	acc	ctg	aat	gag	tca		1200
Ile	Ala	Ala	Ser	Ala	Val	Phe	Leu	Ala	Lys	Trp	Thr	Leu	Asn	Glu	Ser		
					390					395					400		
gaa	cat	cca	tgg	aat	cca	act	ctg	gag	cac	tat	aca	aaa	tac	aaa	gct		1248
Glu	His	Pro	Trp	Asn	Pro	Thr	Leu	Glu	His	Tyr	Thr	Lys	Tyr	Lys	Ala		
				405					410					415			
tca	gac	ctc	aaa	act	gtt	gtt	ctt	gca	ctg	caa	gat	ctg	caa	ctt	aat		1296
Ser	Asp	Leu	Lys	Thr	Val	Val	Leu	Ala	Leu	Gln	Asp	Leu	Gln	Leu	Asn		
				420				425					430				
acc	aaa	gga	tgc	ttc	ctg	aat	gct	gtc	cgc	gag	aag	tat	aag	caa	cag		1344
Thr	Lys	Gly	Cys	Phe	Leu	Asn	Ala	Val	Arg	Glu	Lys	Tyr	Lys	Gln	Gln		
		435					440					445					
aag	ttc	aat	tgt	gtg	gca	aac	ttg	tct	cca	aaa	tcg	gtg	cag	tca	ctc		1392
Lys	Phe	Asn	Cys	Val	Ala	Asn	Leu	Ser	Pro	Lys	Ser	Val	Gln	Ser	Leu		
		450				455					460						
ttc	cag	aac	caa	gtg	taa												1410
Phe	Gln	Asn	Gln	Val													
465																	

&lt;210&gt; 2396

&lt;211&gt; 469

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2396

Met	Asp	Lys	Val	Asn	Arg	Val	Cys	Ala	Lys	Asp	Glu	Glu	Arg	Pro	Leu		
1				5					10					15			
Arg	Ile	Thr	Arg	Ala	Arg	Ala	Arg	Ala	Leu	Arg	Gly	Ile	Thr	Pro	Tyr		
			20					25					30				
Ser	Arg	Pro	Ser	Leu	Lys	Asn	Glu	Gln	Lys	Asn	Val	Leu	Arg	Ala	Asn		
		35					40					45					
Ser	Lys	Arg	Ala	Ala	Ser	Ser	Gly	Asn	Lys	Thr	Phe	Ala	Val	Val	Pro		
		50				55					60						
Ala	Val	Val	Gln	Gln	Lys	Gly	Arg	Ala	Val	Leu	Ser	Asp	Ile	Ser	Asn		
65				70						75					80		
Met	Cys	Ala	Lys	Pro	His	Asp	Lys	Cys	Thr	Lys	Ala	Ser	Lys	Phe	Gln		
				85					90					95			
Ala	Lys	Gly	Val	Cys	Thr	Lys	Lys	Asn	Thr	Lys	Leu	Ala	Ala	Ser	Ser		
			100					105					110				
Val	Ser	Thr	Asp	Val	Ser	Ser	Ser	His	Asp	Asp	Val	Arg	Ala	Lys	Leu		
		115					120					125					
Ala	Glu	Glu	Leu	Ser	Thr	Ile	Lys	Met	Val	Glu	Ser	Asn	Asp	Thr	Leu		
		130				135					140						
Arg	Glu	Gly	Val	Thr	Ala	Asp	Thr	Ser	Leu	Ser	Met	Gln	Asn	Ser	Val		
145					150					155					160		
Lys	Ser	Asp	Glu	Leu	Arg	Asn	Ser	Pro	Asn	Lys	Asp	Ile	Asp	Ile	Ile		
				165					170					175			
Cys	Glu	Lys	Leu	Gly	Ala	Ser	Asp	Ser	Leu	Thr	Ile	Val	Asp	Ile	Asp		
			180					185					190				
Ser	Glu	Leu	Lys	Asp	Pro	Gln	Leu	Trp	Ser	Phe	Tyr	Ala	Pro	Asp	Ile		
		195					200					205					
Tyr	Ser	Asn	Ile	Arg	Val	Thr	Glu	Leu	Gln	Arg	Lys	Pro	Leu	Thr	Asn		
		210				215					220						
Tyr	Met	Asp	Lys	Leu	Gln	Lys	Asp	Ile	Asn	Pro	Ser	Met	Arg	Gly	Ile		
225					230					235					240		
Leu	Val	Asp	Trp	Leu	Val	Glu	Val	Ser	Glu	Glu	Tyr	Lys	Leu	Val	Pro		
				245					250					255			
Asp	Thr	Leu	Tyr	Leu	Thr	Val	Asn	Leu	Ile	Asp	Arg	Tyr	Leu	Ser	Thr		
			260					265					270				
Arg	Leu	Ile	Gln	Lys	Gln	Lys	Leu	Gln	Leu	Leu	Gly	Val	Thr	Cys	Met		
		275						280					285				
Leu	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Met	Cys	Ala	Pro	Arg	Val	Glu	Glu		
		290				295					300						
Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	Tyr	Thr	Lys	Glu	Glu	Val	Leu	Lys		

## PhoenixTemp32470.tmp.txt

305 Met Glu Arg Glu Val 310 Leu Asn Leu Val His 315 Phe Gln Leu Ser Val 320 Pro  
 Thr Ile Lys Thr Phe 325 Leu Arg Arg Phe 330 Ile Gln Ala Ala Gln Ser Ser  
 Tyr Lys Ala 340 Pro Tyr Val Glu Leu 345 Phe Leu Ala Asn 350 Tyr Leu Ala  
 Glu Leu Ala 355 Leu Val Glu Cys 360 Ser Phe Phe Gln Phe 365 Leu Pro Ser Leu  
 Ile Ala Ala Ser Ala Val Phe 375 Leu Ala Lys Trp Thr 380 Leu Asn Glu Ser  
 385 Glu His Pro Trp Asn 390 Pro Thr Leu Glu His 395 Tyr Thr Lys Tyr Lys Ala  
 Ser Asp Leu Lys 405 Thr Val Val Leu Ala 410 Leu Gln Asp Leu Gln Leu Asn  
 Thr Lys Gly Cys Phe 420 Leu Asn Ala Val Arg Glu Lys Tyr Lys Gln Gln  
 Lys Phe Asn Cys Val Ala Asn 435 Leu Ser Pro Lys Ser 445 Val Gln Ser Leu  
 450 Phe Gln Asn Gln Val 465

<210> 2397  
 <211> 1275  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1275)

<400> 2397  
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 Met Glu Asn Leu Arg 5 Ser Gln Asn Cys His 10 Gln Gly Val Ala Met 15 Glu  
 1 gga gtc aag ttt gcg ccg gag aag gcc aac acc aac cgg aga gcc ctc 96  
 Gly Val Lys Phe 20 Ala Pro Glu Lys Ala Asn Thr Asn Arg Arg Ala Leu  
 agc gac atc aag aac ata ata gga ggc cca cac cag cac ttg gcg gtc 144  
 Ser Asp Ile 35 Lys Asn Ile Ile Gly 40 Gly Pro His Gln His 45 Leu Ala Val  
 agc aag agg gct ctg tca gaa aaa cca gct gct gct gct gct gca aat 192  
 Ser Lys Arg Ala Leu Ser Glu Lys Pro Ala Ala Ala Ala Ala Ala Asn  
 50 gct aaa gat caa gct ggc ttt gtt gga cac cgt cca gtc acc agg aaa 240  
 Ala Lys Asp Gln Ala Gly 70 Phe Val Gly His Arg 75 Pro Val Thr Arg Lys  
 65 ttc gct gca aca ttg gca acc caa cct aca gtt gcc ctt ctg gac cca 288  
 Phe Ala Ala Thr 85 Leu Ala Thr Gln Pro Thr Val Ala Leu Leu Asp Pro  
 95 att gga agt gaa aga ctg aaa aga aac gct gat acg gca ttt cac aca 336  
 Ile Gly Ser 100 Glu Arg Leu Lys Arg Asn Ala Asp Thr Ala Phe His Thr  
 110 cct gca gat atg gaa agc aca aaa atg aca gat gac agt ccc ttg cct 384  
 Pro Ala Asp Met Glu Ser Thr Lys 120 Met Thr Asp Asp Ser Pro Leu Pro  
 115 atg gtg tcg gag atg gat gaa atg atg agt cct gaa ctg aaa gag atc 432  
 Met Val Ser Glu Met Asp Glu 135 Met Met Ser Pro Glu Leu Lys Glu Ile  
 130 gag atg gaa gat att gag gag gca gca cct gat att gac agt ggt gat 480  
 Glu Met Glu Asp Ile Glu Glu Ala Ala Pro Asp 155 Ile Asp Ser Gly Asp  
 145 gca gga aat tct ctg gct gtg gct gac tat gta gat gaa att tac aga 528  
 Ala Gly Asn Ser 165 Leu Ala Val Ala Asp Tyr 170 Val Asp Glu Ile Tyr Arg  
 175 ttt tac agg aaa act gag ggt gca agc tgc gtc cct aca aat tat atg 576  
 Phe Tyr Arg Lys 180 Thr Glu Gly Ala Ser 185 Cys Val Pro Thr Asn Tyr Met  
 190 tca agc caa act gat ata aat gag aag atg cgt ggc att cta att gac 624

## PhoenixTemp32470.tmp.txt

Ser	Ser	Gln	Thr	Asp	Ile	Asn	Glu	Lys	Met	Arg	Gly	Ile	Leu	Ile	Asp		
195							200				205						
tgg	ctc	ata	gag	gta	cac	tac	aaa	cta	gag	ctg	ttg	gag	gag	acc	ctt	672	
Trp	Leu	Ile	Glu	Val	His	Tyr	Lys	Leu	Glu	Leu	Leu	Glu	Glu	Thr	Leu		
210						215					220						
ttc	cta	acc	gtg	aac	atc	ata	gac	aga	ttc	ttg	gca	cgt	gaa	aat	gtg	720	
Phe	Leu	Thr	Val	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ala	Arg	Glu	Asn	Val		
225					230					235					240		
gtg	cgg	aag	aag	ctt	cag	tta	gct	ggt	gta	act	gct	atg	ttg	ctc	gcg	768	
Val	Arg	Lys	Lys	Leu	Gln	Leu	Ala	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala		
				245				250						255			
tgc	aag	tat	gaa	gaa	gtg	agc	gta	cct	gtg	gtc	gag	gat	ctg	atc	ttg	816	
Cys	Lys	Tyr	Glu	Glu	Val	Ser	Val	Pro	Val	Val	Glu	Asp	Leu	Ile	Leu		
			260					265					270				
atc	tgt	gat	cgt	gca	tac	aca	agg	gct	gac	att	ctt	gag	atg	gag	agg	864	
Ile	Cys	Asp	Arg	Ala	Tyr	Thr	Arg	Ala	Asp	Ile	Leu	Glu	Met	Glu	Arg		
		275					280					285					
agg	ata	gtg	aac	aca	ctt	aat	ttc	aat	atg	tcg	gtg	ccg	act	cca	tac	912	
Arg	Ile	Val	Asn	Thr	Leu	Asn	Phe	Asn	Met	Ser	Val	Pro	Thr	Pro	Tyr		
		290				295					300						
tgt	ttc	atg	aga	agg	ttt	cta	aag	gca	gca	caa	tca	gag	aag	aag	ctc	960	
Cys	Phe	Met	Arg	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Glu	Lys	Lys	Leu		
305					310					315					320		
gaa	ctc	ctg	tct	ttc	ttc	atg	atc	gag	ttg	agt	ctt	gtc	gaa	tat	gag	1008	
Glu	Leu	Leu	Ser	Phe	Phe	Met	Ile	Glu	Leu	Ser	Leu	Val	Glu	Tyr	Glu		
				325				330						335			
atg	ctc	cag	ttc	tgc	ccg	tct	atg	cta	gca	gcc	gct	gcc	atc	tac	acc	1056	
Met	Leu	Gln	Phe	Cys	Pro	Ser	Met	Leu	Ala	Ala	Ala	Ala	Ile	Tyr	Thr		
			340					345					350				
gct	caa	tgc	acc	ata	aat	ggg	ttc	aag	tcc	tgg	aac	aaa	tgc	tgt	gaa	1104	
Ala	Gln	Cys	Thr	Ile	Asn	Gly	Phe	Lys	Ser	Trp	Asn	Lys	Cys	Cys	Glu		
		355				360						365					
ctg	cac	aca	aga	tat	tca	gaa	gaa	cat	cta	atg	gtt	tgc	tct	agg	atg	1152	
Leu	His	Thr	Arg	Tyr	Ser	Glu	Glu	His	Leu	Met	Val	Cys	Ser	Arg	Met		
		370				375					380						
atg	gtt	gaa	ctg	cac	caa	aga	gca	gct	cat	ggg	aaa	ctt	aca	ggg	gtc	1200	
Met	Val	Glu	Leu	His	Gln	Arg	Ala	Ala	His	Gly	Lys	Leu	Thr	Gly	Val		
385					390					395					400		
cat	aga	aag	tac	aac	act	tct	aga	tat	agc	tat	gct	gcg	aaa	tcg	gaa	1248	
His	Arg	Lys	Tyr	Asn	Thr	Ser	Arg	Tyr	Ser	Tyr	Ala	Ala	Lys	Ser	Glu		
				405					410					415			
ccc	gca	act	ttc	ttg	ctg	gat	gcc	tga								1275	
Pro	Ala	Thr	Phe	Leu	Leu	Asp	Ala										
			420														

<210> 2398  
 <211> 424  
 <212> PRT  
 <213> Zea mays

<400> 2398  
 Met Glu Asn Leu Arg Ser Gln Asn Cys His Gln Gly Val Ala Met Glu  
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 Gly Val Lys Phe Ala Pro Glu Lys Ala Asn Thr Asn Arg Arg Ala Leu  
 20 25 30  
 Ser Asp Ile Lys Asn Ile Ile Gly Gly Pro His Gln His Leu Ala Val  
 35 40 45  
 Ser Lys Arg Ala Leu Ser Glu Lys Pro Ala Ala Ala Ala Ala Asn  
 50 55 60  
 Ala Lys Asp Gln Ala Gly Phe Val Gly His Arg Pro Val Thr Arg Lys  
 65 70 75 80  
 Phe Ala Ala Thr Leu Ala Thr Gln Pro Thr Val Ala Leu Leu Asp Pro  
 85 90 95  
 Ile Gly Ser Glu Arg Leu Lys Arg Asn Ala Asp Thr Ala Phe His Thr  
 100 105 110  
 Pro Ala Asp Met Glu Ser Thr Lys Met Thr Asp Asp Ser Pro Leu Pro  
 115 120 125  
 Met Val Ser Glu Met Asp Glu Met Met Ser Pro Glu Leu Lys Glu Ile  
 130 135 140

## PhoenixTemp32470.tmp.txt

Glu Met Glu Asp Ile Glu Glu Ala Ala Pro Asp Ile Asp Ser Gly Asp  
 145 150 155 160  
 Ala Gly Asn Ser Leu Ala Val Ala Asp Tyr Val Asp Glu Ile Tyr Arg  
 165 170 175  
 Phe Tyr Arg Lys Thr Glu Gly Ala Ser Cys Val Pro Thr Asn Tyr Met  
 180 185 190  
 Ser Ser Gln Thr Asp Ile Asn Glu Lys Met Arg Gly Ile Leu Ile Asp  
 195 200 205  
 Trp Leu Ile Glu Val His Tyr Lys Leu Glu Leu Leu Glu Glu Thr Leu  
 210 215 220  
 Phe Leu Thr Val Asn Ile Ile Asp Arg Phe Leu Ala Arg Glu Asn Val  
 225 230 235 240  
 Val Arg Lys Lys Leu Gln Leu Ala Gly Val Thr Ala Met Leu Leu Ala  
 245 250 255  
 Cys Lys Tyr Glu Glu Val Ser Val Pro Val Val Glu Asp Leu Ile Leu  
 260 265 270  
 Ile Cys Asp Arg Ala Tyr Thr Arg Ala Asp Ile Leu Glu Met Glu Arg  
 275 280 285  
 Arg Ile Val Asn Thr Leu Asn Phe Asn Met Ser Val Pro Thr Pro Tyr  
 290 295 300  
 Cys Phe Met Arg Arg Phe Leu Lys Ala Ala Gln Ser Glu Lys Lys Leu  
 305 310 315 320  
 Glu Leu Leu Ser Phe Phe Met Ile Glu Leu Ser Leu Val Glu Tyr Glu  
 325 330 335  
 Met Leu Gln Phe Cys Pro Ser Met Leu Ala Ala Ala Ile Tyr Thr  
 340 345 350  
 Ala Gln Cys Thr Ile Asn Gly Phe Lys Ser Trp Asn Lys Cys Cys Glu  
 355 360 365  
 Leu His Thr Arg Tyr Ser Glu Glu His Leu Met Val Cys Ser Arg Met  
 370 375 380  
 Met Val Glu Leu His Gln Arg Ala Ala His Gly Lys Leu Thr Gly Val  
 385 390 395 400  
 His Arg Lys Tyr Asn Thr Ser Arg Tyr Ser Tyr Ala Ala Lys Ser Glu  
 405 410 415  
 Pro Ala Thr Phe Leu Leu Asp Ala  
 420

&lt;210&gt; 2399

&lt;211&gt; 1605

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1605)

&lt;400&gt; 2399

atg	cct	agt	ggt	atc	cct	act	cgc	cgc	gtc	cgt	ctg	gtc	gac	gag	aat	48
Met	Pro	Ser	Gly	Ile	Pro	Thr	Arg	Arg	Val	Arg	Leu	Val	Asp	Glu	Asn	
1				5					10					15		
gcc	cca	cct	ccc	ccc	ggc	gcc	gtt	gtc	acc	cgt	acg	cgt	tct	cgg	gct	96
Ala	Pro	Pro	Pro	Pro	Gly	Ala	Val	Val	Thr	Arg	Thr	Arg	Ser	Arg	Ala	
			20					25					30			
ttg	gcc	tcc	acc	act	tct	act	gcc	acc	aac	gtg	aaa	ccg	acc	acc	acc	144
Leu	Ala	Ser	Thr	Thr	Ser	Thr	Ala	Thr	Asn	Val	Lys	Pro	Thr	Thr	Thr	
		35				40					45					
tct	atc	cct	atg	atg	aaa	cga	caa	cgc	tcc	act	atc	tca	tcc	gaa	aac	192
Ser	Ile	Pro	Met	Met	Lys	Arg	Gln	Arg	Ser	Thr	Ile	Ser	Ser	Glu	Asn	
		50				55					60					
aag	att	gtc	gac	aag	tct	gat	gtg	agg	cgt	aat	gct	ctt	ggt	gag	gta	240
Lys	Ile	Val	Asp	Lys	Ser	Asp	Val	Arg	Arg	Asn	Ala	Leu	Gly	Glu	Val	
		65			70				75					80		
cgg	aat	ggc	aag	ggc	gga	gaa	aag	gag	aag	gag	agt	ggg	aag	gga	aag	288
Arg	Asn	Gly	Lys	Gly	Gly	Glu	Lys	Glu	Lys	Glu	Ser	Gly	Lys	Gly	Lys	
				85					90					95		
gtc	gtg	gca	atc	gaa	cga	aag	ccg	ttg	gcg	acg	act	cag	gca	aag	gcg	336
Val	Val	Ala	Ile	Glu	Arg	Lys	Pro	Leu	Ala	Thr	Thr	Gln	Ala	Lys	Ala	
			100					105					110			
caa	aga	gtc	aca	cgt	tca	gcg	tct	gct	cag	ccg	gta	atg	ggt	gtc	aag	384



## PhoenixTemp32470.tmp.txt

Gln	Arg	Val	Thr	Arg	Ser	Ala	Ser	Ala	Gln	Pro	Val	Met	Gly	Val	Lys	
gat	gga	gat	aag	aag	cga	aag	gct	gtc	att	acc	agc	aaa	att	ccg	tct	432
Asp	Gly	Asp	Lys	Lys	Arg	Lys	Ala	Val	Ile	Thr	Ser	Lys	Ile	Pro	Ser	
130						135					140					
cgt	tct	cga	tcg	acc	ggt	gct	gaa	cct	gct	caa	gtc	gaa	gtg	aaa	ccc	480
Arg	Ser	Arg	Ser	Thr	Gly	Ala	Glu	Pro	Ala	Gln	Val	Glu	Val	Lys	Pro	
145					150					155					160	
act	atc	aag	act	gaa	gag	gag	cct	ggt	cgt	aag	cgt	cgg	aaa	acg	tcg	528
Thr	Ile	Lys	Thr	Glu	Glu	Glu	Pro	Val	Arg	Lys	Arg	Arg	Lys	Thr	Ser	
				165					170					175		
agc	ccc	ggt	gta	gaa	ggt	gga	gag	gat	gga	cca	aca	gtg	gat	gga	aag	576
Ser	Pro	Val	Val	Glu	Val	Gly	Glu	Asp	Gly	Pro	Thr	Val	Asp	Gly	Lys	
				180				185					190			
gaa	ttg	ctg	ttg	tca	agt	gga	agc	aaa	aat	gcg	aca	gcc	ttc	agg	tca	624
Glu	Leu	Leu	Leu	Ser	Ser	Gly	Ser	Lys	Asn	Ala	Thr	Ala	Phe	Arg	Ser	
				195			200					205				
ccc	aag	att	aaa	gcc	aag	gat	gac	gga	tgg	acg	gat	ctg	gat	gct	gag	672
Pro	Lys	Ile	Lys	Ala	Lys	Asp	Asp	Gly	Trp	Thr	Asp	Leu	Asp	Ala	Glu	
	210					215					220					
gac	gaa	ggg	gac	cca	aca	atg	gtc	agc	gaa	tat	gtc	ggt	gaa	gct	ttt	720
Asp	Glu	Gly	Asp	Pro	Thr	Met	Val	Ser	Glu	Tyr	Val	Val	Glu	Ala	Phe	
225				230					235						240	
aag	tac	atg	atg	gat	atc	caa	ggc	caa	aca	atg	ccc	gat	ccc	gag	tac	768
Lys	Tyr	Met	Met	Asp	Ile	Gln	Gly	Gln	Thr	Met	Pro	Asp	Pro	Glu	Tyr	
				245					250					255		
atg	gac	aac	caa	gct	gaa	ctc	caa	tgg	aag	atg	cgt	caa	atc	ctc	atg	816
Met	Asp	Asn	Gln	Ala	Glu	Leu	Gln	Trp	Lys	Met	Arg	Gln	Ile	Leu	Met	
				260				265					270			
gat	tgg	atc	atc	gaa	gtc	cac	tcc	aaa	ttc	cga	ctc	ctc	ccc	gaa	acc	864
Asp	Trp	Ile	Ile	Glu	Val	His	Ser	Lys	Phe	Arg	Leu	Leu	Pro	Glu	Thr	
				275			280					285				
ctc	ttc	atc	gcc	acc	aac	ctt	ggt	gat	cgc	ttc	ctc	tcc	aag	cgc	gtc	912
Leu	Phe	Ile	Ala	Thr	Asn	Leu	Val	Asp	Arg	Phe	Leu	Ser	Lys	Arg	Val	
				290		295					300					
att	tcc	ctc	gtc	aag	ttc	cag	cta	gtc	ggt	ctt	acc	gcc	ctc	ttt	atc	960
Ile	Ser	Leu	Val	Lys	Phe	Gln	Leu	Val	Gly	Leu	Thr	Ala	Leu	Phe	Ile	
305				310					315						320	
gca	tca	aaa	tat	gaa	gaa	gtc	tgt	tgc	cca	ggt	ggt	gag	cat	ttc	cta	1008
Ala	Ser	Lys	Tyr	Glu	Glu	Val	Cys	Cys	Pro	Gly	Val	Glu	His	Phe	Leu	
				325					330					335		
cat	atg	tcg	gac	gga	gga	tac	acc	gtc	gag	gaa	ttg	ctt	aaa	gca	gag	1056
His	Met	Ser	Asp	Gly	Gly	Tyr	Thr	Val	Glu	Glu	Leu	Leu	Lys	Ala	Glu	
				340				345					350			
cgt	tac	atg	ttg	tcc	acg	ttg	caa	ttc	gac	atg	tcg	tac	cct	aac	ccg	1104
Arg	Tyr	Met	Leu	Ser	Thr	Leu	Gln	Phe	Asp	Met	Ser	Tyr	Pro	Asn	Pro	
				355			360						365			
ctc	aat	ttt	ata	agg	cgg	atc	agt	aaa	gcc	gat	ggg	tac	gat	atc	caa	1152
Leu	Asn	Phe	Ile	Arg	Arg	Ile	Ser	Lys	Ala	Asp	Gly	Tyr	Asp	Ile	Gln	
				370		375					380					
tcg	agg	acg	ggt	gca	aag	tat	ctt	gtc	gag	att	agt	tgt	gtc	gac	cat	1200
Ser	Arg	Thr	Val	Ala	Lys	Tyr	Leu	Val	Glu	Ile	Ser	Cys	Val	Asp	His	
385					390					395					400	
cgg	ctt	ttg	ggt	tat	aca	cct	agt	atg	ttg	gct	gcc	gcg	tcc	atg	tgg	1248
Arg	Leu	Leu	Gly	Tyr	Thr	Pro	Ser	Met	Leu	Ala	Ala	Ala	Ser	Met	Trp	
				405					410					415		
ctc	gcg	aga	tta	tgt	ctt	gag	cgt	ggg	gaa	tgg	aac	gcg	aac	ctt	gtg	1296
Leu	Ala	Arg	Leu	Cys	Leu	Glu	Arg	Gly	Glu	Trp	Asn	Ala	Asn	Leu	Val	
				420				425					430			
cac	tac	tcg	acg	tat	tcc	gaa	gat	gag	att	cgt	cct	tgt	gcg	cag	gtc	1344
His	Tyr	Ser	Thr	Tyr	Ser	Glu	Asp	Glu	Ile	Arg	Pro	Cys	Ala	Gln	Val	
				435			440					445				
atg	ttg	gat	cgt	att	ctc	gat	ccc	gat	ttc	gac	gag	tct	act	tca	ttc	1392
Met	Leu	Asp	Arg	Ile	Leu	Asp	Pro	Asp	Phe	Asp	Glu	Ser	Thr	Ser	Phe	
					455						460					
tac	aaa	aag	tat	gca	agc	aag	aaa	cac	atg	aag	gcg	agt	gtg	tac	gta	1440
Tyr	Lys	Lys	Tyr	Ala	Ser	Lys	Lys	His	Met	Lys	Ala	Ser	Val	Tyr	Val	
465					470					475					480	
cgc	gaa	tgg	gca	act	cag	ctg	tgg	cct	gcg	tcg	gcg	gat	ggg	agt	gca	1488

## PhoenixTemp32470.tmp.txt

Arg	Glu	Trp	Ala	Thr	Gln	Leu	Trp	Pro	Ala	Ser	Ala	Asp	Gly	Ser	Ala		
				485					490					495			
gtt	gag	agg	ggc	aca	gag	ctt	gaa	ctt	tta	aag	atg	ttt	ttg	gag	gat		1536
Val	Glu	Arg	Gly	Thr	Glu	Leu	Glu	Leu	Leu	Lys	Met	Phe	Leu	Glu	Asp		
			500					505					510				
gaa	gag	gaa	gag	aat	aac	aag	ggg	agt	aag	agg	agg	atg	aag	gcg	gtt		1584
Glu	Glu	Glu	Glu	Asn	Asn	Lys	Gly	Ser	Lys	Arg	Arg	Met	Lys	Ala	Val		
		515					520					525					
gat	gag	gaa	gag	gag	tat	taa											1605
Asp	Glu	Glu	Glu	Glu	Tyr												
		530															

&lt;210&gt; 2400

&lt;211&gt; 534

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var

&lt;400&gt; 2400

Met	Pro	Ser	Gly	Ile	Pro	Thr	Arg	Arg	Val	Arg	Leu	Val	Asp	Glu	Asn		
1				5					10					15			
Ala	Pro	Pro	Pro	Pro	Gly	Ala	Val	Val	Thr	Arg	Thr	Arg	Ser	Arg	Ala		
			20					25					30				
Leu	Ala	Ser	Thr	Thr	Ser	Thr	Ala	Thr	Asn	Val	Lys	Pro	Thr	Thr	Thr		
		35					40					45					
Ser	Ile	Pro	Met	Met	Lys	Arg	Gln	Arg	Ser	Thr	Ile	Ser	Ser	Glu	Asn		
	50					55					60						
Lys	Ile	Val	Asp	Lys	Ser	Asp	Val	Arg	Arg	Asn	Ala	Leu	Gly	Glu	Val		
65				70						75					80		
Arg	Asn	Gly	Lys	Gly	Glu	Lys	Glu	Lys	Glu	Ser	Gly	Lys	Gly	Lys			
			85					90					95				
Val	Val	Ala	Ile	Glu	Arg	Lys	Pro	Leu	Ala	Thr	Thr	Gln	Ala	Lys	Ala		
			100					105					110				
Gln	Arg	Val	Thr	Arg	Ser	Ala	Ser	Ala	Gln	Pro	Val	Met	Gly	Val	Lys		
		115					120					125					
Asp	Gly	Asp	Lys	Lys	Arg	Lys	Ala	Val	Ile	Thr	Ser	Lys	Ile	Pro	Ser		
	130					135					140						
Arg	Ser	Arg	Ser	Thr	Gly	Ala	Glu	Pro	Ala	Gln	Val	Glu	Val	Lys	Pro		
145				150						155					160		
Thr	Ile	Lys	Thr	Glu	Glu	Glu	Pro	Val	Arg	Lys	Arg	Arg	Lys	Thr	Ser		
			165						170					175			
Ser	Pro	Val	Val	Glu	Val	Gly	Glu	Asp	Gly	Pro	Thr	Val	Asp	Gly	Lys		
		180						185					190				
Glu	Leu	Leu	Leu	Ser	Ser	Gly	Ser	Lys	Asn	Ala	Thr	Ala	Phe	Arg	Ser		
		195					200					205					
Pro	Lys	Ile	Lys	Ala	Lys	Asp	Asp	Gly	Trp	Thr	Asp	Leu	Asp	Ala	Glu		
	210					215					220						
Asp	Glu	Gly	Asp	Pro	Thr	Met	Val	Ser	Glu	Tyr	Val	Val	Glu	Ala	Phe		
225				230						235					240		
Lys	Tyr	Met	Met	Asp	Ile	Gln	Gly	Gln	Thr	Met	Pro	Asp	Pro	Glu	Tyr		
			245						250					255			
Met	Asp	Asn	Gln	Ala	Glu	Leu	Gln	Trp	Lys	Met	Arg	Gln	Ile	Leu	Met		
		260						265					270				
Asp	Trp	Ile	Ile	Glu	Val	His	Ser	Lys	Phe	Arg	Leu	Leu	Pro	Glu	Thr		
		275					280					285					
Leu	Phe	Ile	Ala	Thr	Asn	Leu	Val	Asp	Arg	Phe	Leu	Ser	Lys	Arg	Val		
	290					295					300						
Ile	Ser	Leu	Val	Lys	Phe	Gln	Leu	Val	Gly	Leu	Thr	Ala	Leu	Phe	Ile		
305					310					315					320		
Ala	Ser	Lys	Tyr	Glu	Glu	Val	Cys	Cys	Pro	Gly	Val	Glu	His	Phe	Leu		
			325						330					335			
His	Met	Ser	Asp	Gly	Gly	Tyr	Thr	Val	Glu	Glu	Leu	Leu	Lys	Ala	Glu		
		340						345					350				
Arg	Tyr	Met	Leu	Ser	Thr	Leu	Gln	Phe	Asp	Met	Ser	Tyr	Pro	Asn	Pro		
		355					360					365					
Leu	Asn	Phe	Ile	Arg	Arg	Ile	Ser	Lys	Ala	Asp	Gly	Tyr	Asp	Ile	Gln		
	370					375					380						
Ser	Arg	Thr	Val	Ala	Lys	Tyr	Leu	Val	Glu	Ile	Ser	Cys	Val	Asp	His		
385					390					395					400		
Arg	Leu	Leu	Gly	Tyr	Thr	Pro	Ser	Met	Leu	Ala	Ala	Ala	Ser	Met	Trp		

## PhoenixTemp32470.tmp.txt

405 410 415  
 Leu Ala Arg Leu Cys Leu Glu Arg Gly Glu Trp Asn Ala Asn Leu Val  
 420 425 430  
 His Tyr Ser Thr Tyr Ser Glu Asp Glu Ile Arg Pro Cys Ala Gln Val  
 435 440 445  
 Met Leu Asp Arg Ile Leu Asp Pro Asp Phe Asp Glu Ser Thr Ser Phe  
 450 455 460  
 Tyr Lys Lys Tyr Ala Ser Lys Lys His Met Lys Ala Ser Val Tyr Val  
 465 470 475 480  
 Arg Glu Trp Ala Thr Gln Leu Trp Pro Ala Ser Ala Asp Gly Ser Ala  
 485 490 495  
 Val Glu Arg Gly Thr Glu Leu Glu Leu Lys Met Phe Leu Glu Asp  
 500 505 510  
 Glu Glu Glu Asn Asn Lys Gly Ser Lys Arg Arg Met Lys Ala Val  
 515 520 525  
 Asp Glu Glu Glu Tyr  
 530

&lt;210&gt; 2401

&lt;211&gt; 1491

&lt;212&gt; DNA

&lt;213&gt; Scutellaria baicalensis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1491)

&lt;400&gt; 2401

atg	gcg	agt	tct	gct	ggc	ggt	agg	agg	cca	acg	acg	tcg	tct	ttg	gcc	48
Met	Ala	Ser	Ser	Ala	Gly	Val	Arg	Arg	Pro	Thr	Thr	Ser	Ser	Leu	Ala	
1				5					10					15		
aag	cg	cat	gct	tct	tcc	gcg	tcg	gat	aat	gtc	ggg	aag	gtg	gcg	tcg	96
Lys	Arg	His	Ala	Ser	Ser	Ala	Ser	Asp	Asn	Val	Gly	Lys	Val	Ala	Ser	
			20					25					30			
tcc	gct	tcc	gcc	tcc	aag	aaa	cg	ccg	gcg	ctt	gct	aat	gtc	acc	aac	144
Ser	Ala	Ser	Ala	Ser	Lys	Lys	Arg	Pro	Ala	Leu	Ala	Asn	Val	Thr	Asn	
			35				40					45				
cag	agg	cat	gga	acc	ggt	tct	gct	aat	gcg	ggt	cgg	gcc	cct	ttg	ccc	192
Gln	Arg	His	Gly	Thr	Gly	Ser	Ala	Asn	Ala	Gly	Arg	Ala	Pro	Leu	Pro	
	50				55				60							
gaa	tca	tcc	aaa	att	gcg	cca	tgt	aca	acc	aaa	atc	gta	agc	atc	aag	240
Glu	Ser	Ser	Lys	Ile	Ala	Pro	Cys	Thr	Thr	Lys	Ile	Val	Ser	Ile	Lys	
	65				70				75						80	
aag	gga	cct	tcg	gct	tcc	aca	aat	tcc	ggc	ttc	cca	gga	gct	atc	ctg	288
Lys	Gly	Pro	Ser	Ala	Ser	Thr	Asn	Ser	Gly	Phe	Pro	Gly	Ala	Ile	Leu	
				85					90					95		
ccc	acg	tcc	tcc	tct	gta	aaa	cag	aat	att	ggt	gca	ggt	gga	aga	tct	336
Pro	Thr	Ser	Ser	Ser	Val	Lys	Gln	Asn	Ile	Val	Ala	Val	Gly	Arg	Ser	
			100					105					110			
aca	ttc	atc	cca	aaa	agt	gat	ggt	gtg	ctt	ccc	aag	aca	ctt	gct	gcc	384
Thr	Phe	Ile	Pro	Lys	Ser	Asp	Val	Val	Leu	Pro	Lys	Thr	Leu	Ala	Ala	
			115				120					125				
ccg	ggt	tca	tgc	agc	atg	gat	gtg	tct	cca	gat	aaa	tca	gat	tca	ctc	432
Pro	Val	Ser	Cys	Ser	Met	Asp	Val	Ser	Pro	Asp	Lys	Ser	Asp	Ser	Leu	
	130				135					140						
tct	ggt	tcc	atg	gat	gaa	tcc	atg	tcc	aca	tgt	gat	tcc	ttg	aag	agt	480
Ser	Val	Ser	Met	Asp	Glu	Ser	Met	Ser	Thr	Cys	Asp	Ser	Leu	Lys	Ser	
	145				150					155					160	
cct	gat	gtc	gaa	cat	gtg	gac	tat	att	gat	gta	gct	gca	ggt	gat	tcc	528
Pro	Asp	Val	Glu	His	Val	Asp	Tyr	Ile	Asp	Val	Ala	Ala	Val	Asp	Ser	
			165					170						175		
att	gag	agg	aag	gca	tca	aac	atg	ctt	tgc	att	tct	gac	cat	atg	gaa	576
Ile	Glu	Arg	Lys	Ala	Ser	Asn	Met	Leu	Cys	Ile	Ser	Asp	His	Met	Glu	
			180					185					190			
att	gca	ggg	aat	cta	tgc	aag	aga	gat	gct	ctg	gca	tca	tta	gaa	tca	624
Ile	Ala	Gly	Asn	Leu	Cys	Lys	Arg	Asp	Ala	Leu	Ala	Ser	Leu	Glu	Ser	
		195					200					205				
ggg	gac	aag	att	gta	gat	gtc	gat	gag	aat	cta	gac	gac	cca	cag	tta	672
Gly	Asp	Lys	Ile	Val	Asp	Val	Asp	Glu	Asn	Leu	Asp	Asp	Pro	Gln	Leu	

## PhoenixTemp32470.tmp.txt

210	tgt gca acc att gct	215	tgt gat atc tac aaa cac	220	ttg aga gca tca gag	720
Cys Ala Thr Ile Ala	Cys Asp Ile Tyr Lys His	Leu Arg Ala Ser Glu				
225	gca aag aaa agg cca	230	gct aca aac ttc atg	235	gaa aga gtc caa aag	768
Ala Lys Lys Arg Pro	Ala Thr Asn Phe Met	Ala Thr Asn Phe Met		Arg Val Gln Lys	gat Asp	
245	atc aat gca agc atg	250	cgc gct att ctc att	255	gat tgg ctt gtt gag	816
Ile Asn Ala Ser Met	Arg Ala Ile Leu Ile	Arg Ala Ile Leu Ile		Asp Trp Leu Val	gag Glu Val	
260	gcg gag gaa tac agg	265	ctc gtt cct gac aca	270	ttg tat cta act gtt	864
Ala Glu Glu Tyr Arg	Leu Val Pro Asp Thr	Leu Val Pro Asp Thr		Leu Tyr Leu Thr	Val Asn	
275	tat ata gat cgt tat	280	ctt tct gga aat gtc	285	atg gac agg caa agg	912
Tyr Ile Asp Arg Tyr	Leu Ser Gly Asn Val	Leu Ser Gly Asn Val		Met Asp Arg Gln	Arg Leu	
290	caa ttg ctt ggg ata	295	gcc tgc atg atg att	300	gca tca aaa tat gaa	960
Gln Leu Leu Gly Ile	Ala Cys Met Met Ile	Ala Cys Met Met Ile		Ala Ser Lys Tyr	Glu Glu	
305	att tgt gca cct caa	310	gtg gaa gag ttt tgc	315	tac ata aca gac aac	1008
Ile Cys Ala Pro Gln	Val Glu Glu Phe Cys	Val Glu Glu Phe Cys		Tyr Ile Thr Asp	Asn Thr	
325	tac ttt aag gac gag	330	gtt ttg gaa atg gaa	335	tct gct gtt ttg aat	1056
Tyr Phe Lys Asp Glu	Val Leu Glu Met	Val Leu Glu Met		Ala Val Leu Asn	Tyr	
340	cta aaa ttt gaa atg	345	aca gcc cca aca gcg	350	aaa tgt ttc tta agg	1104
Leu Lys Phe Glu Met	Thr Ala Pro Thr	Thr Ala Pro Thr		Lys Cys Phe Leu	Arg Arg	
355	ttt gtt agg gct gca	360	caa ggt gtt aat gag	365	act cca tta ctc cag	1152
Phe Val Arg Ala Ala	Gln Gly Val Asn	Gln Gly Val Asn		Thr Pro Leu Leu	Gln Phe	
370	gag tgc ttg gct aac	375	tac ata act gag cta	380	tct ctc cta gag tat	1200
Glu Cys Leu Ala Asn	Tyr Ile Thr Glu Leu	Tyr Ile Thr Glu Leu		Ser Leu Leu Glu	Tyr Ser	
385	atg ctg tgt ttt gcc	390	tca ttg ata gca gct	395	gca tca att ttc ttg	1248
Met Leu Cys Phe Ala	Pro Ser Leu Ile	Pro Ser Leu Ile		Ala Ala Ser Ile	Phe Leu	
405	gcc aga ttt att ctt	410	ctt cct tcc aag agg	415	cct tgg aat cat aca	1296
Ala Arg Phe Ile Leu	Leu Pro Ser Lys	Leu Pro Ser Lys		Pro Trp Asn His	Thr Leu	
420	aga cat tat acc ctc	425	tat tat gat tta cgt	430	gat tgt gtc tta	1344
Arg His Tyr Thr Leu	Tyr Gln Pro Tyr	Tyr Gln Pro Tyr		Leu Arg Asp Cys	Val Leu	
435	gca tta cat ggg ttt	440	tgc tgc aac agt cac	445	aat tct agt tta cct	1392
Ala Leu His Gly Phe	Cys Cys Asn Ser	Cys Cys Asn Ser		His Asn Ser Ser	Leu Pro	
450	att cgg gag aag tac	455	agt cag cac aag tac	460	aaa ttt gtt gca aaa	1440
Ile Arg Glu Lys Tyr	Ser Gln His Lys Tyr	Ser Gln His Lys Tyr		Lys Phe Val Ala	Lys Lys	
465	tac tgc cct cta tct	470	ata cct cca gaa tac	475	ttc cac aat gtg agc	1488
Tyr Cys Pro Leu Ser	Ile Pro Pro Glu Tyr	Ile Pro Pro Glu Tyr		Phe His Asn Val	Ser Ser	
485	tag					1491

&lt;210&gt; 2402

&lt;211&gt; 496

&lt;212&gt; PRT

&lt;213&gt; Scutellaria baicalensis

&lt;400&gt; 2402

Met Ala Ser Ser Ala Gly Val Arg Arg Pro Thr Thr Ser Ser Leu Ala	1	5	10	15
Lys Arg His Ala Ser Ser Ala Ser Asp Asn Val Gly Lys Val Ala Ser	20	25	30	35
Ser Ala Ser Ala Ser Lys Lys Arg Pro Ala Leu Ala Asn Val Thr Asn	40	45	50	55
Gln Arg His Gly Thr Gly Ser Ala Asn Ala Gly Arg Ala Pro Leu Pro	60	65	70	75

## PhoenixTemp32470.tmp.txt

50 55 60  
 Glu Ser Ser Lys Ile Ala Pro Cys Thr Thr Lys Ile Val Ser Ile Lys  
 65 70 75 80  
 Lys Gly Pro Ser Ala Ser Thr Asn Ser Gly Phe Pro Gly Ala Ile Leu  
 85 90 95  
 Pro Thr Ser Ser Ser Val Lys Gln Asn Ile Val Ala Val Gly Arg Ser  
 100 105 110  
 Thr Phe Ile Pro Lys Ser Asp Val Val Leu Pro Lys Thr Leu Ala Ala  
 115 120 125  
 Pro Val Ser Cys Ser Met Asp Val Ser Pro Asp Lys Ser Asp Ser Leu  
 130 135 140  
 Ser Val Ser Met Asp Glu Ser Met Ser Thr Cys Asp Ser Leu Lys Ser  
 145 150 155 160  
 Pro Asp Val Glu His Val Asp Tyr Ile Asp Val Ala Ala Val Asp Ser  
 165 170 175  
 Ile Glu Arg Lys Ala Ser Asn Met Leu Cys Ile Ser Asp His Met Glu  
 180 185 190  
 Ile Ala Gly Asn Leu Cys Lys Arg Asp Ala Leu Ala Ser Leu Glu Ser  
 195 200 205  
 Gly Asp Lys Ile Val Asp Val Asp Glu Asn Leu Asp Asp Pro Gln Leu  
 210 215 220  
 Cys Ala Thr Ile Ala Cys Asp Ile Tyr Lys His Leu Arg Ala Ser Glu  
 225 230 235 240  
 Ala Lys Lys Arg Pro Ala Thr Asn Phe Met Glu Arg Val Gln Lys Asp  
 245 250 255  
 Ile Asn Ala Ser Met Arg Ala Ile Leu Ile Asp Trp Leu Val Glu Val  
 260 265 270  
 Ala Glu Glu Tyr Arg Leu Val Pro Asp Thr Leu Tyr Leu Thr Val Asn  
 275 280 285  
 Tyr Ile Asp Arg Tyr Leu Ser Gly Asn Val Met Asp Arg Gln Arg Leu  
 290 295 300  
 Gln Leu Leu Gly Ile Ala Cys Met Met Ile Ala Ser Lys Tyr Glu Glu  
 305 310 315 320  
 Ile Cys Ala Pro Gln Val Glu Glu Phe Cys Tyr Ile Thr Asp Asn Thr  
 325 330 335  
 Tyr Phe Lys Asp Glu Val Leu Glu Met Glu Ser Ala Val Leu Asn Tyr  
 340 345 350  
 Leu Lys Phe Glu Met Thr Ala Pro Thr Ala Lys Cys Phe Leu Arg Arg  
 355 360 365  
 Phe Val Arg Ala Ala Gln Gly Val Asn Glu Thr Pro Leu Leu Gln Phe  
 370 375 380  
 Glu Cys Leu Ala Asn Tyr Ile Thr Glu Leu Ser Leu Leu Glu Tyr Ser  
 385 390 395 400  
 Met Leu Cys Phe Ala Pro Ser Leu Ile Ala Ala Ala Ser Ile Phe Leu  
 405 410 415  
 Ala Arg Phe Ile Leu Leu Pro Ser Lys Arg Pro Trp Asn His Thr Leu  
 420 425 430  
 Arg His Tyr Thr Leu Tyr Gln Pro Tyr Asp Leu Arg Asp Cys Val Leu  
 435 440 445  
 Ala Leu His Gly Phe Cys Cys Asn Ser His Asn Ser Ser Leu Pro Ala  
 450 455 460  
 Ile Arg Glu Lys Tyr Ser Gln His Lys Tyr Lys Phe Val Ala Lys Lys  
 465 470 475 480  
 Tyr Cys Pro Leu Ser Ile Pro Pro Glu Tyr Phe His Asn Val Ser Ser  
 485 490 495

&lt;210&gt; 2403

&lt;211&gt; 1107

&lt;212&gt; DNA

&lt;213&gt; Helobdella triserialis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1107)

&lt;400&gt; 2403

atg gca ttc gct cgt tcc gtt gca gtt tct aat tta ttg aat gcc aaa  
 Met Ala Phe Ala Arg Ser Val Ala Val Ser Asn Leu Leu Asn Ala Lys  
 1 5 10 15

PhoenixTemp32470.tmp.txt

gac	aaa	aaa	aat	act	gga	aag	att	act	cat	cga	gga	gca	ttg	ggg	aac	96
Asp	Lys	Lys	Asn	Thr	Gly	Lys	Ile	Thr	His	Arg	Gly	Ala	Leu	Gly	Asn	
			20					25					30			
att	tca	aat	gcg	cca	gtc	agt	aag	gca	act	gaa	gga	aag	cag	ttg	tcc	144
Ile	Ser	Asn	Ala	Pro	Val	Ser	Lys	Ala	Thr	Glu	Gly	Lys	Gln	Leu	Ser	
		35					40					45				
aag	ctg	cct	ccc	gtt	aag	cat	gaa	aag	tgt	gaa	aag	att	gaa	gaa	gtt	192
Lys	Leu	Pro	Pro	Val	Lys	His	Glu	Lys	Cys	Glu	Lys	Ile	Glu	Glu	Val	
	50					55					60					
gaa	aat	aaa	gct	cca	att	ata	gtt	caa	caa	caa	gaa	gaa	ata	ata	aaa	240
Glu	Asn	Lys	Ala	Pro	Ile	Ile	Val	Gln	Gln	Gln	Glu	Glu	Ile	Ile	Lys	
	65				70				75						80	
gaa	att	ata	ttg	gga	ccc	ata	gat	gat	att	gac	aaa	gat	gac	aag	gag	288
Glu	Ile	Ile	Leu	Gly	Pro	Ile	Asp	Asp	Ile	Asp	Lys	Asp	Asp	Lys	Glu	
				85					90					95		
aat	cct	cag	cta	atg	agt	gaa	tac	gta	aaa	gac	ata	tac	ggc	tat	atg	336
Asn	Pro	Gln	Leu	Met	Ser	Glu	Tyr	Val	Lys	Asp	Ile	Tyr	Gly	Tyr	Met	
			100					105					110			
aga	att	ctt	gaa	agc	aga	tat	ata	atc	agg	ccc	gac	tac	ttg	tca	gaa	384
Arg	Ile	Leu	Glu	Ser	Arg	Tyr	Ile	Ile	Arg	Pro	Asp	Tyr	Leu	Ser	Glu	
		115					120					125				
caa	aca	gaa	gta	aat	ggt	aga	atg	aga	gcc	ata	tta	gtt	gac	tgg	ctt	432
Gln	Thr	Glu	Val	Asn	Gly	Arg	Met	Arg	Ala	Ile	Leu	Val	Asp	Trp	Leu	
		130				135					140					
gtt	cag	gtt	cat	tta	cga	ttc	cat	ttg	cta	caa	gaa	acg	ttg	ttc	ttg	480
Val	Gln	Val	His	Leu	Arg	Phe	His	Leu	Leu	Gln	Glu	Thr	Leu	Phe	Leu	
					150					155					160	
tca	gtt	gcc	att	cta	gac	aga	tat	cta	cag	aaa	aat	caa	gtg	gcg	aag	528
Ser	Val	Ala	Ile	Leu	Asp	Arg	Tyr	Leu	Gln	Lys	Asn	Gln	Val	Ala	Lys	
				165					170					175		
tca	aag	tta	caa	ctg	gtt	gga	gtt	act	tct	gtg	tgg	att	gct	tca	aag	576
Ser	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ser	Val	Trp	Ile	Ala	Ser	Lys	
			180					185					190			
tat	gag	gag	atg	cat	gcc	cca	gag	gtg	gct	gac	ttt	gtc	tac	atc	acc	624
Tyr	Glu	Glu	Met	His	Ala	Pro	Glu	Val	Ala	Asp	Phe	Val	Tyr	Ile	Thr	
		195					200					205				
gac	aat	gcg	tac	aca	aaa	tca	gaa	atg	aga	cag	atg	gag	tgt	acc	atc	672
Asp	Asn	Ala	Tyr	Thr	Lys	Ser	Glu	Met	Arg	Gln	Met	Glu	Cys	Thr	Ile	
	210					215				220						
atg	aag	gca	ctt	gac	ttc	caa	ctt	ggc	aga	cct	ctc	cct	att	cat	ttc	720
Met	Lys	Ala	Leu	Asp	Phe	Gln	Leu	Gly	Arg	Pro	Leu	Pro	Ile	His	Phe	
					230				235						240	
ctt	cgc	aga	ttc	tca	aaa	gct	gga	gag	gtt	gaa	gga	gaa	acg	cat	aac	768
Leu	Arg	Arg	Phe	Ser	Lys	Ala	Gly	Glu	Val	Glu	Gly	Glu	Thr	His	Asn	
				245				250						255		
ttg	gca	aaa	tat	ttt	atg	gag	atg	att	ctg	gtt	gaa	tat	gac	atg	gtg	816
Leu	Ala	Lys	Tyr	Phe	Met	Glu	Met	Ile	Leu	Val	Glu	Tyr	Asp	Met	Val	
			260					265					270			
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His	Tyr	Leu	Pro	Ser	Lys	Ile	Ala	Ala	Ala	Ala	Leu	Leu	Leu	Ser	Lys	
		275					280					285				
ctg	ata	ctt	gaa	ggg	aca	caa	tgg	aca	gca	tcg	ctg	gtt	cat	tac	agt	912
Leu	Ile	Leu	Glu	Gly	Thr	Gln	Trp	Thr	Ala	Ser	Leu	Val	His	Tyr	Ser	
						295					300					
aca	tac	aca	gaa	gcc	gaa	ctt	tta	cct	ctt	gtg	tac	aag	ctt	gct	agt	960
Thr	Tyr	Thr	Glu	Ala	Glu	Leu	Leu	Pro	Leu	Val	Tyr	Lys	Leu	Ala	Ser	
					310					315					320	
ttt	gtc	ata	aaa	acc	aat	tct	gcc	aca	aag	ttg	gtg	gcg	gtc	aag	aac	1008
Phe	Val	Ile	Lys	Thr	Asn	Ser	Ala	Thr	Lys	Leu	Val	Ala	Val	Lys	Asn	
				325					330					335		
aaa	ttt	gcc	agt	agc	aag	ttt	ctc	cgc	ata	agt	aaa	tca	gaa	aag	ttg	1056
Lys	Phe	Ala	Ser	Ser	Lys	Phe	Leu	Arg	Ile	Ser	Lys	Ser	Glu	Lys	Leu	
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 <213> Helobdella triserialis

<400> 2404  
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 Ile Ser Asn Ala Pro Val Ser Lys Ala Thr Glu Gly Lys Gln Leu Ser  
 35 40 45  
 Lys Leu Pro Pro Val Lys His Glu Lys Cys Glu Lys Ile Glu Glu Val  
 50 55 60  
 Glu Asn Lys Ala Pro Ile Ile Val Gln Gln Gln Glu Glu Ile Ile Lys  
 65 70 75 80  
 Glu Ile Ile Leu Gly Pro Ile Asp Asp Ile Asp Lys Asp Asp Lys Glu  
 85 90 95  
 Asn Pro Gln Leu Met Ser Glu Tyr Val Lys Asp Ile Tyr Gly Tyr Met  
 100 105 110  
 Arg Ile Leu Glu Ser Arg Tyr Ile Ile Arg Pro Asp Tyr Leu Ser Glu  
 115 120 125  
 Gln Thr Glu Val Asn Gly Arg Met Arg Ala Ile Leu Val Asp Trp Leu  
 130 135 140  
 Val Gln Val His Leu Arg Phe His Leu Leu Gln Glu Thr Leu Phe Leu  
 145 150 155 160  
 Ser Val Ala Ile Leu Asp Arg Tyr Leu Gln Lys Asn Gln Val Ala Lys  
 165 170 175  
 Ser Lys Leu Gln Leu Val Gly Val Thr Ser Val Trp Ile Ala Ser Lys  
 180 185 190  
 Tyr Glu Glu Met His Ala Pro Glu Val Ala Asp Phe Val Tyr Ile Thr  
 195 200 205  
 Asp Asn Ala Tyr Thr Lys Ser Glu Met Arg Gln Met Glu Cys Thr Ile  
 210 215 220  
 Met Lys Ala Leu Asp Phe Gln Leu Gly Arg Pro Leu Pro Ile His Phe  
 225 230 235 240  
 Leu Arg Arg Phe Ser Lys Ala Gly Glu Val Glu Gly Glu Thr His Asn  
 245 250 255  
 Leu Ala Lys Tyr Phe Met Glu Met Ile Leu Val Glu Tyr Asp Met Val  
 260 265 270  
 His Tyr Leu Pro Ser Lys Ile Ala Ala Ala Leu Leu Leu Ser Lys  
 275 280 285  
 Leu Ile Leu Glu Gly Thr Gln Trp Thr Ala Ser Leu Val His Tyr Ser  
 290 295 300  
 Thr Tyr Thr Glu Ala Glu Leu Leu Pro Leu Val Tyr Lys Leu Ala Ser  
 305 310 315 320  
 Phe Val Ile Lys Thr Asn Ser Ala Thr Lys Leu Val Ala Val Lys Asn  
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 Lys Phe Ala Ser Ser Lys Phe Leu Arg Ile Ser Lys Ser Glu Lys Leu  
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 agc cga cca gga ggc atc cca gct tct agc ggc gac cgc atc cat  
 Ser Arg Pro Gly Gly Ile Pro Ala Ser Arg Ser Gly Asp Arg Ile His  
 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

48

96

## PhoenixTemp32470.tmp.txt

Protein sequence alignment																
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ctc Leu	aca Thr	gaa Glu 35	gct Ala	gcc Ala	tcc Ser	aca Thr	agt Ser 40	cat His	ctg Leu	gca Ala	aaa Lys	gcc Ala 45	aag Lys	tca Ser	aca Thr	144
aaa Lys	ttg Leu 50	gtc Val	ggc Gly	ccc Pro	tct Ser	acc Thr 55	gca Ala	ggg Gly	aaa Lys	ctc Leu	cga Arg 60	gcc Ala	gat Asp	tcc Ser	aga Arg	192
tcc Ser 65	atg Met	cca Pro	caa Gln	cgc Arg	gct Ala 70	gcc Ala	ctt Leu	tct Ser	gac Asp	gtc Val 75	agt Ser	aat Asn	cgt Arg	gct Ala	ggc Gly 80	240
gtc Val	gcc Ala	aga Arg	gcc Ala	aat Asn 85	gca Ala	cta Leu	gca Ala	gat Asp	ggc Gly 90	gcc Ala	gtc Val	aag Lys	ctg Leu	gcg Ala 95	ccc Pro	288
ggc Gly	cac His	aat Asn 100	ggc Gly	ctg Leu	cgc Arg	tct Ser	caa Gln	cac His 105	aca Thr	aaa Lys	agc Ser	atg Met	acc Thr 110	cgt Arg	ctc Leu	336
cgc Arg	gac Asp	gcc Ala 115	cgt Arg	tcg Ser	cga Arg	tcc Ser	acg Thr 120	tcc Ser	gag Glu	cag Gln	aga Arg	ctc Leu 125	tct Ser	ggc Gly	cca Pro	384
aca Thr	cgc Arg 130	tct Ser	gtc Val	tcg Ser	gaa Glu	caa Gln 135	cgt Arg	gac Asp	tgt Cys	gca Ala	cca Pro 140	gcc Ala	gct Ala	gcc Ala	gag Glu	432
tct Ser 145	atg Met	cat His	gtg Val	gag Glu	gcg Ala 150	tca Ser	caa Gln	ctc Leu	ctc Leu	cca Pro 155	ccc Pro	ttc Phe	cag Gln	agc Ser	tcc Ser 160	480
gct Ala	tca Ser	gtc Val	aag Lys	gtg Val 165	ggc Gly	atc Ile	agc Ser	gac Asp	gaa Glu 170	gca Ala	gga Gly	agc Ser	agc Ser	agg Arg 175	ctg Leu	528
cac His	gaa Glu	gac Asp	gca Ala 180	gac Asp	atc Ile	cgc Arg	gac Asp	ctc Leu 185	gcc Ala	ggc Gly	tcg Ser	cag Gln	cac His 190	agt Ser	gac Asp	576
cat His	gtc Val	gaa Glu 195	gag Glu	gac Asp	gag Glu	atg Met	tca Ser 200	gat Asp	gtc Val	gcc Ala	tct Ser	act Thr 205	tcg Ser	agc Ser	agc Ser	624
gac Asp	gac Asp 210	gat Asp	acc Thr	gca Ala	gag Glu	gac Asp 215	atc Ile	ggc Gly	gta Val	gac Asp	aag Lys 220	gcc Ala	aac Asn	tgg Trp	ctc Leu	672
gat Asp 225	tcg Ser	gaa Glu	cga Arg	ctc Leu	gat Asp 230	gcc Ala	ggg Gly	gca Ala	aga Arg	ccc Pro 235	gag Glu	agc Ser	gtc Val	acc Thr	tct Ser 240	720
gcc Ala	gag Glu	gac Asp	ggc Gly	gac Asp 245	atg Met	ctc Leu	gac Asp	ttc Phe 250	aac Asn	att Ile	gat Asp	cca Pro	gag Glu	ggg Gly 255	ttg Leu	768
gtc Val	tcg Ser	tta Leu	cat His 260	ccg Pro	gag Glu	ctg Leu	gag Glu 265	gag Glu	gcc Ala	gcg Ala	cga Arg	cgc Arg	aag Lys 270	gtg Val	gcc Ala	816
ttg Leu	atc Ile	aag Lys 275	tct Ser	cgc Arg	tac Tyr	cag Gln	gag Glu 280	gaa Glu	gtc Val	att Ile	cag Gln	cct Pro 285	cgt Arg	gcg Ala	gcg Ala	864
cgc Arg	gcg Ala 290	caa Gln	gca Ala	caa Gln	cat His	gca Ala 295	gaa Glu	gca Ala	gtc Val	gcc Ala	gcc Ala 300	ggg Gly	cag Gln	ctc Leu	tcg Ser	912
gct Ala 305	gag Glu	ctg Leu	gct Ala	gcg Ala	cac His 310	gaa Glu	gac Asp	gag Glu	ctg Leu	atc Ile 315	gtc Val	atg Met	ggg Gly	ctc Leu	gat Asp 320	960
ccc Pro	gag Glu	gag Glu	gta Val	cgc Arg 325	gac Asp	acg Thr	agt Ser	atg Met	gtg Val 330	gcc Ala	gag Glu	tac Tyr	tcg Ser	aat Asn 335	gag Glu	1008
atc Ile	ttt Phe	agc Ser	tac Tyr 340	atg Met	gct Ala	cgg Arg	tgc Cys	gag Glu 345	cgc Arg	gag Glu	acc Thr	atg Met	gcc Ala 350	aac Asn	ccg Pro	1056
aat Asn	tac Tyr	atg Met 355	gag Glu	ttt Phe	cag Gln	agc Ser	gag Glu 360	att Ile	cac His	tgg Trp	cac His	atg Met 365	cgt Arg	gct Ala	acg Thr	1104
ctc Leu	gtc Val 370	gac Asp	tgg Trp	ctc Leu</												



## PhoenixTemp32470.tmp.txt

385	cg	gt	gt	ag	ct	390	gc	aa	ct	ca	ct	395	gt	gg	gt	ac	gc	400	at	
Arg	Val	Val	Ser	Leu	Ala	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Met		1248			
				405					410											
ttt	att	gca	gca	aag	tac	gaa	gag	atc	ctg	gcg	cct	agc	gtc	aag	gag		1296			
Phe	Ile	Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Leu	Ala	Pro	Ser	Val	Lys	Glu					
			420					425						430						
ttt	gtc	tac	atg	acc	gag	ggg	ggc	tac	tcg	caa	gag	gag	atc	ctc	aag		1344			
Phe	Val	Tyr	Met	Thr	Glu	Gly	Gly	Tyr	Ser	Gln	Glu	Glu	Ile	Leu	Lys					
			435				440							445						
ggc	gag	cg	atc	atc	ctc	tcg	acg	ttg	ggc	ttt	aac	att	tcg	tcc	tac		1392			
Gly	Glu	Arg	Ile	Ile	Leu	Ser	Thr	Leu	Gly	Phe	Asn	Ile	Ser	Ser	Tyr					
							455				460									
tgc	tca	cct	tac	tct	tgg	cga	aag	atc	tcc	aag	gag	gac	gac	tac			1440			
Cys	Ser	Pro	Tyr	Ser	Trp	Val	Arg	Lys	Ile	Ser	Lys	Ala	Asp	Asp	Tyr					
					470				475					480						
gac	att	cg	acc	cgt	acc	ctg	tcc	aag	ttc	ctg	atg	gag	ctg	gcg	ctg		1488			
Asp	Ile	Arg	Thr	Arg	Thr	Leu	Ser	Lys	Phe	Leu	Met	Glu	Leu	Ala	Leu					
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ctg	gat	cat	cg	ttc	ctg	cgt	gct	cg	ccc	agt	ctt	gtg	gcc	gct	gtg		1536			
Leu	Asp	His	Arg	Phe	Leu	Arg	Ala	Arg	Pro	Ser	Leu	Val	Ala	Ala	Val					
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ggc	atg	ttt	ttg	gcc	aaa	aag	atg	ctg	gga	ggc	gag	ttg	gat	gac	gcc		1584			
Gly	Met	Phe	Leu	Ala	Lys	Lys	Met	Leu	Gly	Gly	Glu	Trp	Asp	Asp	Ala					
			515				520						525							
ttt	gtc	tac	tac	tct	gac	ttt	acc	gaa	gag	cag	ctg	gtc	ccc	ggc	gcg		1632			
Phe	Val	Tyr	Tyr	Ser	Asp	Phe	Thr	Glu	Glu	Gln	Leu	Val	Pro	Gly	Ala					
					535						540									
aat	cta	tta	ctc	gag	cgt	ttg	ctg	gac	caa	ggc	ttt	gag	gag	cag	ttt		1680			
Asn	Leu	Leu	Leu	Glu	Arg	Leu	Leu	Asp	Gln	Gly	Phe	Glu	Glu	Gln	Phe					
					550					555					560					
gtc	tac	cg	aag	tac	tcg	aac	aaa	aag	ttt	ctc	cg	gcc	agc	gtc	ttt		1728			
Val	Tyr	Arg	Lys	Tyr	Ser	Asn	Lys	Lys	Phe	Leu	Arg	Ala	Ser	Val	Phe					
				565					570					575						
gcg	cgt	gat	tgg	gcc	ttc	cag	aac	cac	agc	gca	cta	ctc	gcc	gct	gct		1776			
Ala	Arg	Asp	Trp	Ala	Phe	Gln	Asn	His	Ser	Ala	Leu	Leu	Ala	Ala	Ala					
			580					585					590							
gca	gca	gc	gca	ggg	tcg	act	caa	gca	ggg	cag	cct	tga					1815			
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 35 40 45  
 Lys Leu Val Gly Pro Ser Thr Ala Gly Lys Leu Arg Ala Asp Ser Arg  
 50 55 60  
 Ser Met Pro Gln Arg Ala Leu Ser Asp Val Ser Asn Arg Ala Gly  
 65 70 75 80  
 Val Ala Arg Ala Asn Ala Leu Ala Asp Gly Ala Val Lys Leu Ala Pro  
 85 90 95  
 Gly His Asn Gly Leu Arg Ser Gln His Thr Lys Ser Met Thr Arg Leu  
 100 105 110  
 Arg Asp Ala Arg Ser Arg Ser Thr Ser Glu Gln Arg Leu Ser Gly Pro  
 115 120 125  
 Thr Arg Ser Val Ser Glu Gln Arg Asp Cys Ala Pro Ala Ala Ala Glu  
 130 135 140  
 Ser Met His Val Glu Ala Ser Gln Leu Leu Pro Pro Phe Gln Ser Ser  
 145 150 155 160  
 Ala Ser Val Lys Val Gly Ile Ser Asp Glu Ala Gly Ser Ser Arg Leu  
 165 170 175

## PhoenixTemp32470.tmp.txt

His Glu Asp Ala Asp Ile Arg Asp Leu Ala Gly Ser Gln His Ser Asp  
 180 185 190  
 His Val Glu Glu Asp Glu Met Ser Asp Val Ala Ser Thr Ser Ser  
 195 200 205  
 Asp Asp Asp Thr Ala Glu Asp Ile Gly Val Asp Lys Ala Asn Trp Leu  
 210 215 220  
 Asp Ser Glu Arg Leu Asp Ala Gly Ala Arg Pro Glu Ser Val Thr Ser  
 225 230 235 240  
 Ala Glu Asp Gly Asp Met Leu Asp Phe Asn Ile Asp Pro Glu Gly Leu  
 245 250 255  
 Val Ser Leu His Pro Glu Leu Glu Glu Ala Ala Arg Arg Lys Val Ala  
 260 265 270  
 Leu Ile Lys Ser Arg Tyr Gln Glu Glu Val Ile Gln Pro Arg Ala Ala  
 275 280 285  
 Arg Ala Gln Ala Gln His Ala Glu Ala Val Ala Ala Gly Gln Leu Ser  
 290 295 300  
 Ala Glu Leu Ala Ala His Glu Asp Glu Leu Ile Val Met Gly Leu Asp  
 305 310 315 320  
 Pro Glu Glu Val Arg Asp Thr Ser Met Val Ala Glu Tyr Ser Asn Glu  
 325 330 335  
 Ile Phe Ser Tyr Met Ala Arg Cys Glu Arg Glu Thr Met Ala Asn Pro  
 340 345 350  
 Asn Tyr Met Glu Phe Gln Ser Glu Ile His Trp His Met Arg Ala Thr  
 355 360 365  
 Leu Val Asp Trp Leu Leu Gln Val His Met Arg Tyr His Met Leu Pro  
 370 375 380  
 Glu Thr Leu Trp Ile Ala Ile Asn Val Val Asp Arg Phe Leu Ser Val  
 385 390 395 400  
 Arg Val Val Ser Leu Ala Lys Leu Gln Leu Val Gly Val Thr Ala Met  
 405 410 415  
 Phe Ile Ala Ala Lys Tyr Glu Glu Ile Leu Ala Pro Ser Val Lys Glu  
 420 425 430  
 Phe Val Tyr Met Thr Glu Gly Gly Tyr Ser Gln Glu Glu Ile Leu Lys  
 435 440 445  
 Gly Glu Arg Ile Ile Leu Ser Thr Leu Gly Phe Asn Ile Ser Ser Tyr  
 450 455 460  
 Cys Ser Pro Tyr Ser Trp Val Arg Lys Ile Ser Lys Ala Asp Asp Tyr  
 465 470 475 480  
 Asp Ile Arg Thr Arg Thr Leu Ser Lys Phe Leu Met Glu Leu Ala Leu  
 485 490 495  
 Leu Asp His Arg Phe Leu Arg Ala Arg Pro Ser Leu Val Ala Ala Val  
 500 505 510  
 Gly Met Phe Leu Ala Lys Lys Met Leu Gly Gly Glu Trp Asp Asp Ala  
 515 520 525  
 Phe Val Tyr Tyr Ser Asp Phe Thr Glu Glu Gln Leu Val Pro Gly Ala  
 530 535 540  
 Asn Leu Leu Leu Glu Arg Leu Leu Asp Gln Gly Phe Glu Glu Gln Phe  
 545 550 555 560  
 Val Tyr Arg Lys Tyr Ser Asn Lys Lys Phe Leu Arg Ala Ser Val Phe  
 565 570 575  
 Ala Arg Asp Trp Ala Phe Gln Asn His Ser Ala Leu Leu Ala Ala  
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 Ala Ala Ala Ala Gly Ser Thr Gln Ala Gly Gln Pro  
 595 600

&lt;210&gt; 2407

&lt;211&gt; 1962

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1962)

&lt;400&gt; 2407

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 Met Asp Ala Lys Pro Gln Arg Pro Leu Trp Ala Pro Pro Val Arg Tyr  
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 ggt gac gag aat atc cca cct gcc gat ccg act cat caa agt aag agg  
 Page 1643

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## PhoenixTemp32470.tmp.txt

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tcg	gac	agc	aag	atc	aag	gca	atg	atg	gcg	gtt	aac	ggc	acc	ttg	aac	144
Ser	Asp	Ser	Lys	Ile	Lys	Ala	Met	Met	Ala	Val	Asn	Gly	Thr	Leu	Asn	
		35					40					45				
gca	cca	ccc	aag	agg	gct	gcc	tgc	ttc	gac	aag	agc	aac	acc	tcg	aag	192
Ala	Pro	Pro	Lys	Arg	Ala	Ala	Cys	Phe	Asp	Lys	Ser	Asn	Thr	Ser	Lys	
	50					55					60					
cca	cta	gcc	gac	ggc	ggg	aac	aag	gac	atg	ctg	aag	aac	agg	gtg	aaa	240
Pro	Leu	Ala	Asp	Gly	Gly	Asn	Lys	Asp	Met	Leu	Lys	Asn	Arg	Val	Lys	
65				70						75				80		
ccg	atg	gtc	aca	acc	agc	agc	act	cga	gac	cta	cgg	tcg	gat	ggc	agg	288
Pro	Met	Val	Thr	Thr	Ser	Ser	Thr	Arg	Asp	Leu	Arg	Ser	Asp	Gly	Arg	
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gag	aat	aac	cgc	tcg	gca	gcg	gag	gag	cat	tat	atg	cgg	cca	acg	gcg	336
Glu	Asn	Asn	Arg	Ser	Ala	Ala	Glu	Glu	His	Tyr	Met	Arg	Pro	Thr	Ala	
			100					105					110			
acc	tcg	aag	gca	gca	tca	cac	ggc	cac	caa	aag	tat	tct	tcg	acg	gct	384
Thr	Ser	Lys	Ala	Ala	Ser	His	Gly	His	Gln	Lys	Tyr	Ser	Ser	Thr	Ala	
		115					120					125				
ccc	cta	tca	tcc	cat	gcc	gcc	agc	ggg	gca	tac	ggg	ggc	att	cgc	tca	432
Pro	Leu	Ser	Ser	His	Ala	Ala	Ser	Gly	Ala	Tyr	Gly	Gly	Ile	Arg	Ser	
	130					135					140					
cac	aat	gcc	atc	gcc	aaa	ctc	tcc	gca	ccg	gtc	aag	aaa	acg	acc	aac	480
His	Asn	Ala	Ile	Ala	Lys	Leu	Ser	Ala	Pro	Val	Lys	Lys	Thr	Thr	Asn	
145					150					155					160	
gta	tac	cgc	gac	aac	aaa	gtc	aag	gag	gag	agc	aca	tct	cat	gcg	ccc	528
Val	Tyr	Arg	Asp	Asn	Lys	Val	Lys	Glu	Glu	Ser	Thr	Ser	His	Ala	Pro	
				165				170						175		
act	tcc	tcg	tca	gtt	gat	gat	ctt	gtt	gcg	atg	gtc	gac	aag	cat	att	576
Thr	Ser	Ser	Ser	Val	Asp	Asp	Leu	Val	Ala	Met	Val	Asp	Lys	His	Ile	
			180					185					190			
aag	gat	cca	cgc	cac	tac	aaa	agt	caa	ccg	caa	ctc	aag	tcg	gac	cag	624
Lys	Asp	Pro	Arg	His	Tyr	Lys	Ser	Gln	Pro	Gln	Leu	Lys	Ser	Asp	Gln	
		195					200					205				
cag	cat	acc	cta	cac	cgg	aat	cag	agc	aaa	tac	gtg	ccc	aat	tac	gag	672
Gln	His	Thr	Leu	His	Arg	Asn	Gln	Ser	Lys	Tyr	Val	Pro	Asn	Tyr	Glu	
	210					215					220					
aac	ctg	aat	gac	gtg	gat	gat	ccc	gac	gat	tca	aat	gcc	gat	tac	gcc	720
Asn	Leu	Asn	Asp	Val	Asp	Asp	Pro	Asp	Asp	Ser	Asn	Ala	Asp	Tyr	Ala	
225					230					235					240	
gag	tct	tac	gag	gac	gcg	gtc	gag	caa	tta	tcc	aga	gat	ctc	gat	att	768
Glu	Ser	Tyr	Glu	Asp	Ala	Val	Glu	Gln	Leu	Ser	Arg	Asp	Leu	Asp	Ile	
				245				250						255		
cct	gcg	aac	act	gat	cct	gca	gct	atc	gtc	cac	gca	aat	cac	atg	tca	816
Pro	Ala	Asn	Thr	Asp	Pro	Ala	Ala	Ile	Val	His	Ala	Asn	His	Met	Ser	
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Ile	Ala	Gln	Ala	Ser	Tyr	Asp	Ser	Met	Pro	Gln	Gly	Ala	Pro	Leu	Ala	
		275					280					285				
ccc	tcg	aaa	cca	gtc	agg	gcc	ctt	cca	ctg	ccc	ccc	aac	gtc	tct	gat	912
Pro	Ser	Lys	Pro	Val	Arg	Ala	Leu	Pro	Leu	Pro	Pro	Asn	Val	Ser	Asp	
	290					295					300					
ccc	gaa	gag	tat	tct	gaa	gat	gac	gac	gat	cag	gac	ctc	tac	gac	gac	960
Pro	Glu	Glu	Tyr	Ser	Glu	Asp	Asp	Asp	Asp	Gln	Asp	Leu	Tyr	Asp	Asp	
305				310						315					320	
caa	gga	tat	acc	acc	gcc	cat	tct	tat	cga	tct	cat	tgc	gac	aat	acc	1008
Gln	Gly	Tyr	Thr	Thr	Ala	His	Ser	Tyr	Arg	Ser	His	Cys	Asp	Asn	Thr	
				325					330					335		
aca	gga	gga	cct	ccc	aca	tta	gtc	gcg	ccc	aaa	ttt	acc	gcg	gac	atc	1056
Thr	Gly	Gly	Pro	Pro	Thr	Leu	Val	Ala	Pro	Lys	Phe	Thr	Ala	Asp	Ile	
			340					345					350			
cag	aag	gaa	ctt	gac	att	gcg	aag	gca	tgg	gtt	ttg	gag	cat	caa	acg	1104
Gln	Lys	Glu	Leu	Asp	Ile	Ala	Lys	Ala	Trp	Val	Leu	Glu	His	Gln	Thr	
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gag	gaa	gag	gtt	gag	gaa	gag	aat	tgg	gat	gtg	agc	atg	gta	gct	gag	1152
Glu	Glu	Glu	Val	Glu	Glu	Glu	Asn	Trp	Asp	Val	Ser	Met	Val	Ala	Glu	
	370					375					380					
tac	ggc	gac	gag	atc	ttt	gag	tac	ttg	cgc	gag	ctt	gag	gaa	cgg	atg	1200

## PhoenixTemp32470.tmp.txt

Tyr 385	Gly	Asp	Glu	Ile	Phe 390	Glu	Tyr	Leu	Arg	Glu 395	Leu	Glu	Glu	Arg	Met 400	
ctt	ccg	aat	cct	cac	tac	atg	gac	atc	caa	acc	gag	atc	cgg	tgg	tcc	1248
Leu	Pro	Asn	Pro	His 405	Tyr	Met	Asp	Ile	Gln 410	Thr	Glu	Ile	Arg	Trp 415	Ser	
atg	cga	tcc	gtc	ctc	atg	gac	tgg	ctg	gtc	cag	gtt	cac	cat	cgc	ttc	1296
Met	Arg	Ser	Val 420	Leu	Met	Asp	Trp	Leu 425	Val	Gln	Val	His 430	Arg	Arg	Phe	
agt	ctt	ctc	ccg	gag	acc	ctc	ttt	ctc	acc	gtg	aac	tac	atc	gac	cgc	1344
Ser	Leu	Leu	Pro	Glu	Thr	Leu	Phe 440	Leu	Thr	Val	Asn 445	Tyr	Ile	Asp	Arg	
ttt	ctt	tca	gtt	aag	gtt	gtt	tgc	ctg	ggc	aag	ctt	caa	ctg	gtt	ggc	1392
Phe 450	Leu	Ser	Val	Lys	Val 455	Val	Ser	Leu	Gly	Lys 460	Leu	Gln	Leu	Val	Gly	
gcg	act	gcc	att	ttc	gtc	gca	gcc	aag	tac	gag	gag	atc	aac	tgc	cct	1440
Ala 465	Thr	Ala	Ile	Phe 470	Val	Ala	Ala	Lys	Tyr	Glu 475	Glu	Ile	Asn	Cys	Pro 480	
tcc	att	cag	gaa	ctt	gtg	tac	atg	gtg	gat	cag	gga	tac	tct	gtt	gag	1488
Ser	Ile	Gln	Glu	Leu 485	Val	Tyr	Met	Val	Asp 490	Gln	Gly	Tyr	Ser	Val 495	Glu	
gag	att	cta	aag	gca	gag	aag	ttc	atg	ctc	acc	atg	ctg	aac	ttc	gaa	1536
Glu	Ile	Leu	Lys 500	Ala	Glu	Lys	Phe 505	Met	Leu	Thr	Met	Leu	Asn 510	Phe	Glu	
ctt	ggt	tgg	cca	ggc	ccg	atg	agc	ttc	ctt	cgg	cgc	att	agc	aaa	gcc	1584
Leu	Gly 515	Trp	Pro	Gly	Pro	Met	Ser 520	Phe	Leu	Arg	Arg	Ile 525	Ser	Lys	Ala	
gat	gac	tac	gat	ttg	gaa	act	cga	act	ctt	gca	aag	tac	ttg	ctc	gaa	1632
Asp 530	Asp	Tyr	Asp	Leu	Glu	Thr 535	Arg	Thr	Leu	Ala	Lys 540	Tyr	Leu	Leu	Glu	
gtg	act	atc	atg	gat	gag	cgt	arg	phe	val	ggc	tgc	cct	gcg	agt	tat	1680
Val 545	Thr	Ile	Met	Asp	Glu 550	Arg	Arg	Val	Val	Gly 555	Cys	Pro	Ala	Ser	Tyr 560	
gct	gcc	ggt	gcc	cat	tgc	ctc	tcc	cgc	ttt	ttc	ctg	caa	aga	ggg	cca	1728
Ala	Ala	Gly	Ala	His 565	Cys	Leu	Ser	Arg	Phe 570	Phe	Leu	Gln	Arg	Gly 575	Pro	
tgg	aca	cat	gcc	cat	gtt	cac	ttt	tcc	ggc	tat	acg	ctg	gct	caa	ttg	1776
Trp	Thr	His	Ala 580	His	Val	His	Phe 585	Ser	Gly	Tyr	Thr	Leu	Ala 590	Gln	Leu	
agg	cca	ctc	atc	att	agc	atc	ctc	gac	tgc	tgc	cag	gaa	cca	cgc	aaa	1824
Arg	Pro	Leu 595	Ile	Ile	Ser	Ile	Leu 600	Asp	Cys	Cys	Gln	Glu 605	Pro	Arg	Lys	
cat	cac	ggc	gcg	gta	tac	gac	aag	tac	tct	cat	cag	agg	ttc	aag	tcc	1872
His 610	His	Gly	Ala	Val	Tyr	Asp 615	Lys	Tyr	Ser	His 620	Gln	Arg	Phe	Lys	Ser	
gcg	tct	act	ttc	gtg	gaa	ggc	aaa	att	gcg	aac	ggt	ttc	gtg	ctg	ccg	1920
Ala 625	Ser	Thr	Phe	Val	Glu 630	Gly	Lys	Ile	Ala	Asn 635	Gly	Phe	Val	Leu	Pro 640	
att	cga	acg	aac	gct	tct	atc	agc	gac	agt	gcg	caa	tca	tag			1962
Ile	Arg	Thr	Asn	Ala 645	Ser	Ile	Ser	Asp	Ser 650	Ala	Gln	Ser				

&lt;210&gt; 2408

&lt;211&gt; 653

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 2408

Met	Asp	Ala	Lys	Pro	Gln	Arg	Pro	Leu	Trp	Ala	Pro	Pro	Val	Arg	Tyr	
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Gly	Asp	Glu	Asn	Ile	Pro	Pro	Ala	Asp	Pro	Thr	His	Gln	Ser	Lys	Arg	
			20					25					30			
Ser	Asp	Ser	Lys	Ile	Lys	Ala	Met	Met	Ala	Val	Asn	Gly	Thr	Leu	Asn	
		35					40					45				
Ala	Pro	Pro	Lys	Arg	Ala	Ala	Cys	Phe	Asp	Lys	Ser	Asn	Thr	Ser	Lys	
		50				55					60					
Pro	Leu	Ala	Asp	Gly	Gly	Asn	Lys	Asp	Met	Leu	Lys	Asn	Arg	Val	Lys	
65				70						75					80	
Pro	Met	Val	Thr	Thr	Ser	Ser	Thr	Arg	Asp	Leu	Arg	Ser	Asp	Gly	Arg	
				85					90					95		

## PhoenixTemp32470.tmp.txt

Glu	Asn	Asn	Arg	Ser	Ala	Ala	Glu	Glu	His	Tyr	Met	Arg	Pro	Thr	Ala
Thr	Ser	Lys	Ala	Ala	Ser	His	Gly	His	Gln	Lys	Tyr	Ser	Ser	Thr	Ala
Pro	Leu	Ser	Ser	His	Ala	Ala	Ser	Gly	Ala	Tyr	Gly	Gly	Ile	Arg	Ser
His	Asn	Ala	Ile	Ala	Lys	Leu	Ser	Ala	Pro	Val	Lys	Lys	Thr	Thr	Asn
Val	Tyr	Arg	Asp	Asn	Lys	Val	Lys	Glu	Glu	Ser	Thr	Ser	His	Ala	Pro
Thr	Ser	Ser	Ser	Val	Asp	Asp	Leu	Val	Ala	Met	Val	Asp	Lys	His	Ile
Lys	Asp	Pro	Arg	His	Tyr	Lys	Ser	Gln	Pro	Gln	Leu	Lys	Ser	Asp	Gln
Gln	His	Thr	Leu	His	Arg	Asn	Gln	Ser	Lys	Tyr	Val	Pro	Asn	Tyr	Glu
Asn	Leu	Asn	Asp	Val	Asp	Asp	Pro	Asp	Asp	Ser	Asn	Ala	Asp	Tyr	Ala
Glu	Ser	Tyr	Glu	Asp	Ala	Val	Glu	Gln	Leu	Ser	Arg	Asp	Leu	Asp	Ile
Pro	Ala	Asn	Thr	Asp	Pro	Ala	Ala	Ile	Val	His	Ala	Asn	His	Met	Ser
Ile	Ala	Gln	Ala	Ser	Tyr	Asp	Ser	Met	Pro	Gln	Gly	Ala	Pro	Leu	Ala
Pro	Ser	Lys	Pro	Val	Arg	Ala	Leu	Pro	Leu	Pro	Pro	Asn	Val	Ser	Asp
Pro	Glu	Glu	Tyr	Ser	Glu	Asp	Asp	Asp	Asp	Gln	Asp	Leu	Tyr	Asp	Asp
Gln	Gly	Tyr	Thr	Thr	Ala	His	Ser	Tyr	Arg	Ser	His	Cys	Asp	Asn	Thr
Thr	Gly	Gly	Pro	Pro	Thr	Leu	Val	Ala	Pro	Lys	Phe	Thr	Ala	Asp	Ile
Gln	Lys	Glu	Leu	Asp	Ile	Ala	Lys	Ala	Trp	Val	Leu	Glu	His	Gln	Thr
Glu	Glu	Glu	Val	Glu	Glu	Glu	Asn	Trp	Asp	Val	Ser	Met	Val	Ala	Glu
Tyr	Gly	Asp	Glu	Ile	Phe	Glu	Tyr	Leu	Arg	Glu	Leu	Glu	Glu	Arg	Met
Leu	Pro	Asn	Pro	His	Tyr	Met	Asp	Ile	Gln	Thr	Glu	Ile	Arg	Trp	Ser
Met	Arg	Ser	Val	Leu	Met	Asp	Trp	Leu	Val	Gln	Val	His	His	Arg	Phe
Ser	Leu	Leu	Pro	Glu	Thr	Leu	Phe	Leu	Thr	Val	Asn	Tyr	Ile	Asp	Arg
Phe	Leu	Ser	Val	Lys	Val	Val	Ser	Leu	Gly	Lys	Leu	Gln	Leu	Val	Gly
Ala	Thr	Ala	Ile	Phe	Val	Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Asn	Cys	Pro
Ser	Ile	Gln	Glu	Leu	Val	Tyr	Met	Val	Asp	Gln	Gly	Tyr	Ser	Val	Glu
Glu	Ile	Leu	Lys	Ala	Glu	Lys	Phe	Met	Leu	Thr	Met	Leu	Asn	Phe	Glu
Leu	Gly	Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	Arg	Arg	Ile	Ser	Lys	Ala
Asp	Asp	Tyr	Asp	Leu	Glu	Thr	Arg	Thr	Leu	Ala	Lys	Tyr	Leu	Leu	Glu
Val	Thr	Ile	Met	Asp	Glu	Arg	Phe	Val	Gly	Cys	Pro	Ala	Ser	Tyr	Leu
Ala	Ala	Gly	Ala	His	Cys	Leu	Ser	Arg	Phe	Phe	Leu	Gln	Arg	Gly	Pro
Trp	Thr	His	Ala	His	Val	His	Phe	Ser	Gly	Tyr	Thr	Leu	Ala	Gln	Leu
Arg	Pro	Leu	Ile	Ile	Ser	Ile	Leu	Asp	Cys	Cys	Gln	Glu	Pro	Arg	Lys
His	His	Gly	Ala	Val	Tyr	Asp	Lys	Tyr	Ser	His	Gln	Arg	Phe	Lys	Ser
Ala	Ser	Thr	Phe	Val	Glu	Gly	Lys	Ile	Ala	Asn	Gly	Phe	Val	Leu	Pro
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 <211> 1380  
 <212> DNA  
 <213> *Pneumocystis carinii*

<220>  
 <221> CDS  
 <222> (1)..(1380)

<400> 2409  
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 1 5 10 15  
 aat gat gag aac aaa ttg cat gga caa ata tct cgg gtg aag caa gta 96  
 Asn Asp Glu Asn Lys Leu His Gly Gln Ile Ser Arg Val Lys Gln Val  
 20 25 30  
 tct aca caa gga tta gaa ggg gta aat aag cca tgg acg gcg gcg acg 144  
 Ser Thr Gln Gly Leu Glu Gly Val Asn Lys Pro Trp Thr Ala Ala Thr  
 35 40 45  
 cga aag aga gca gca tta gga gat gta agc aat gtg cat aat aag gag 192  
 Arg Lys Arg Ala Ala Leu Gly Asp Val Ser Asn Val His Asn Lys Glu  
 50 55 60  
 aat cag acg gcg aaa acg aaa acg cag ccg tta tca acc aaa gca cgc 240  
 Asn Gln Thr Ala Lys Thr Lys Thr Gln Pro Leu Ser Thr Lys Ala Arg  
 65 70 75 80  
 gtg gtg acg aaa acc gga gtt caa agt cat caa agc aaa gaa tcc gtt 288  
 Val Val Thr Lys Thr Gly Val Gln Ser His Gln Ser Lys Glu Ser Val  
 85 90 95  
 cat acg gta cca acg gga gaa ttg cgt ggt gaa gaa aca aca cga aaa 336  
 His Thr Val Pro Thr Gly Glu Leu Arg Gly Glu Glu Thr Thr Arg Lys  
 100 105 110  
 aga cgg aca tca aag gtt tta acg gag caa aaa gtg atc att gag gtg 384  
 Arg Arg Thr Ser Lys Val Leu Thr Glu Gln Lys Val Ile Ile Glu Val  
 115 120 125  
 gaa caa aca caa gca agt aaa aaa gtg aga acc gat ggc ctt tta aac 432  
 Glu Gln Thr Gln Ala Ser Lys Lys Val Arg Thr Asp Gly Leu Leu Asn  
 130 135 140  
 gga tcg gta caa gag cat cca gca tca caa gat tgg gat gat tta gat 480  
 Gly Ser Val Gln Glu His Pro Ala Ser Gln Asp Trp Asp Asp Leu Asp  
 145 150 155 160  
 gcg gat gat gct cat gat cca ttg atg gta tcg gaa tac gtt gaa gaa 528  
 Ala Asp Asp Ala His Asp Pro Leu Met Val Ser Glu Tyr Val Glu Glu  
 165 170 175  
 atc atg ggt tac atg agg gaa tta gag gta tta aca ctt cct tta cca 576  
 Ile Met Gly Tyr Met Arg Glu Leu Glu Val Leu Thr Leu Pro Leu Pro  
 180 185 190  
 gat tat atg gat cga cag aaa gaa ctt caa tgg aaa atg cga gga atc 624  
 Asp Tyr Met Asp Arg Gln Lys Glu Leu Gln Trp Lys Met Arg Gly Ile  
 195 200 205  
 ttg gta gat tgg tta att gag gtt cat gcg aaa ttt cgt ctt ctt cca 672  
 Leu Val Asp Trp Leu Ile Glu Val His Ala Lys Phe Arg Leu Leu Pro  
 210 215 220  
 gaa acg tta ttt ctt tct gtc aat att att gat cga ttt tta tcc cta 720  
 Glu Thr Leu Phe Leu Ser Val Asn Ile Ile Asp Arg Phe Leu Ser Leu  
 225 230 235 240  
 cga gta tgt tcg ctt cct aag ctt caa tta gta ggg att aca gca ctt 768  
 Arg Val Cys Ser Leu Pro Lys Leu Gln Leu Val Gly Ile Thr Ala Leu  
 245 250 255  
 ttt atc gca gca aaa tat gaa gaa gtg atg tgt cca tcg ata caa aat 816  
 Phe Ile Ala Ala Lys Tyr Glu Glu Val Met Cys Pro Ser Ile Gln Asn  
 260 265 270  
 ttt atg tac atg gca gat ggt gga tat acg aat gaa gaa att cta aaa 864  
 Phe Met Tyr Met Ala Asp Gly Gly Tyr Thr Asn Glu Glu Ile Leu Lys  
 275 280 285  
 gca gaa caa tac gtt tta caa gtt ctt gga tat gat atg tca tat cca 912  
 Ala Glu Gln Tyr Val Leu Val Val Leu Gly Tyr Asp Met Ser Tyr Pro  
 290 295 300

## PhoenixTemp32470.tmp.txt

aat	ccc	att	aat	ttt	cta	aga	aga	gta	tca	aag	gca	gat	aat	tat	gat	960
Asn	Pro	Ile	Asn	Phe	Leu	Arg	Arg	Val	Ser	Lys	Ala	Asp	Asn	Tyr	Asp	
305				310						315					320	
att	cag	aca	cgt	aca	gtg	gca	aaa	tat	ctt	atg	gaa	att	agt	ctt	ctt	1008
Ile	Gln	Thr	Arg	Thr	Val	Ala	Lys	Tyr	Leu	Met	Glu	Ile	Ser	Leu	Leu	
			325						330					335		
gat	cat	cga	ttt	ttg	cct	ttt	gtg	cca	tct	aat	att	gca	gct	tcg	ggc	1056
Asp	His	Arg	Phe	Leu	Pro	Phe	Val	Pro	Ser	Asn	Ile	Ala	Ala	Ser	Gly	
			340					345					350			
att	tat	ttg	gct	aga	att	atg	gtt	act	ggg	ggc	aat	tgg	aat	gct	aat	1104
Ile	Tyr	Leu	Ala	Arg	Ile	Met	Val	Thr	Gly	Gly	Asn	Trp	Asn	Ala	Asn	
		355					360					365				
tta	ata	cat	tat	tcg	gga	tat	aaa	gaa	tca	gat	ctt	gtt	cca	tgt	tct	1152
Leu	Ile	His	Tyr	Ser	Gly	Tyr	Lys	Glu	Ser	Asp	Leu	Val	Pro	Cys	Ser	
		370				375					380					
aaa	atg	atg	ctg	gat	tat	ctt	tca	cga	tca	gtt	ata	aaa	cat	gaa	gca	1200
Lys	Met	Met	Leu	Asp	Tyr	Leu	Ser	Arg	Ser	Val	Ile	Lys	His	Glu	Ala	
385				390						395					400	
ttt	ttt	aaa	aaa	tat	gcc	agc	aaa	aaa	ttc	atg	aaa	gct	agt	tta	ttt	1248
Phe	Phe	Lys	Lys	Tyr	Ala	Ser	Lys	Lys	Phe	Met	Lys	Ala	Ser	Leu	Phe	
				405					410					415		
gtt	cgc	gat	tgg	gtt	aaa	aaa	cat	tac	gat	ctt	gag	gca	aac	gtg	cga	1296
Val	Arg	Asp	Trp	Val	Lys	Lys	His	Tyr	Asp	Leu	Glu	Ala	Asn	Val	Arg	
			420					425					430			
tta	aac	act	atc	tct	ttc	gat	tac	gat	aac	cat	gaa	tca	aat	gaa	ata	1344
Leu	Asn	Thr	Ile	Ser	Phe	Asp	Tyr	Asp	Asn	His	Glu	Ser	Asn	Glu	Ile	
		435				440					445					
cat	cag	gac	tta	gaa	gag	gaa	gaa	gga	tcc	cta	tag					1380
His	Gln	Asp	Leu	Glu	Glu	Glu	Glu	Gly	Ser	Leu						
	450					455										

&lt;210&gt; 2410

&lt;211&gt; 459

&lt;212&gt; PRT

&lt;213&gt; Pneumocystis carinii

&lt;400&gt; 2410

Met	Asn	Ala	Ala	Arg	Arg	Val	Thr	Arg	Gln	Thr	Ala	Thr	Phe	Asn	Leu	
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Asn	Asp	Glu	Asn	Lys	Leu	His	Gly	Gln	Ile	Ser	Arg	Val	Lys	Gln	Val	
			20					25					30			
Ser	Thr	Gln	Gly	Leu	Glu	Gly	Val	Asn	Lys	Pro	Trp	Thr	Ala	Ala	Thr	
		35					40					45				
Arg	Lys	Arg	Ala	Ala	Leu	Gly	Asp	Val	Ser	Asn	Val	His	Asn	Lys	Glu	
		50				55					60					
Asn	Gln	Thr	Ala	Lys	Thr	Lys	Thr	Gln	Pro	Leu	Ser	Thr	Lys	Ala	Arg	
65				70					75						80	
Val	Val	Thr	Lys	Thr	Gly	Val	Gln	Ser	His	Gln	Ser	Lys	Glu	Ser	Val	
			85					90						95		
His	Thr	Val	Pro	Thr	Gly	Glu	Leu	Arg	Gly	Glu	Glu	Thr	Thr	Arg	Lys	
			100					105					110			
Arg	Arg	Thr	Ser	Lys	Val	Leu	Thr	Glu	Gln	Lys	Val	Ile	Ile	Glu	Val	
		115					120					125				
Glu	Gln	Thr	Gln	Ala	Ser	Lys	Lys	Val	Arg	Thr	Asp	Gly	Leu	Leu	Asn	
		130				135					140					
Gly	Ser	Val	Gln	Glu	His	Pro	Ala	Ser	Gln	Asp	Trp	Asp	Asp	Leu	Asp	
145					150					155					160	
Ala	Asp	Asp	Ala	His	Asp	Pro	Leu	Met	Val	Ser	Glu	Tyr	Val	Glu	Glu	
			165						170					175		
Ile	Met	Gly	Tyr	Met	Arg	Glu	Leu	Glu	Val	Leu	Thr	Leu	Pro	Leu	Pro	
			180					185					190			
Asp	Tyr	Met	Asp	Arg	Gln	Lys	Glu	Leu	Gln	Trp	Lys	Met	Arg	Gly	Ile	
		195					200					205				
Leu	Val	Asp	Trp	Leu	Ile	Glu	Val	His	Ala	Lys	Phe	Arg	Leu	Leu	Pro	
		210				215					220					
Glu	Thr	Leu	Phe	Leu	Ser	Val	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ser	Leu	
225					230					235					240	
Arg	Val	Cys	Ser	Leu	Pro	Lys	Leu	Gln	Leu	Val	Gly	Ile	Thr	Ala	Leu	
				245					250					255		

## PhoenixTemp32470.tmp.txt

Phe Ile Ala Ala Lys Tyr Glu Glu Val Met Cys Pro Ser Ile Gln Asn  
 260 270  
 Phe Met Tyr Met Ala Asp Gly Gly Tyr Thr Asn Glu Glu Ile Leu Lys  
 275 280 285  
 Ala Glu Gln Tyr Val Leu Gln Val Leu Gly Tyr Asp Met Ser Tyr Pro  
 290 295 300  
 Asn Pro Ile Asn Phe Leu Arg Arg Val Ser Lys Ala Asp Asn Tyr Asp  
 305 310 315 320  
 Ile Gln Thr Arg Thr Val Ala Lys Tyr Leu Met Glu Ile Ser Leu Leu  
 325 330 335  
 Asp His Arg Phe Leu Pro Phe Val Pro Ser Asn Ile Ala Ala Ser Gly  
 340 345 350  
 Ile Tyr Leu Ala Arg Ile Met Val Thr Gly Gly Asn Trp Asn Ala Asn  
 355 360 365  
 Leu Ile His Tyr Ser Gly Tyr Lys Glu Ser Asp Leu Val Pro Cys Ser  
 370 375 380  
 Lys Met Met Leu Asp Tyr Leu Ser Arg Ser Val Ile Lys His Glu Ala  
 385 390 395 400  
 Phe Phe Lys Lys Tyr Ala Ser Lys Lys Phe Met Lys Ala Ser Leu Phe  
 405 410 415  
 Val Arg Asp Trp Val Lys Lys His Tyr Asp Leu Glu Ala Asn Val Arg  
 420 425 430  
 Leu Asn Thr Ile Ser Phe Asp Tyr Asp Asn His Glu Ser Asn Glu Ile  
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 His Gln Asp Leu Glu Glu Glu Glu Gly Ser Leu  
 450 455

&lt;210&gt; 2411

&lt;211&gt; 1477

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (149)..(1477)

&lt;400&gt; 2411

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ctctctcact ctcgcagaag agaaacccta aatctcaccg gaaaacgaga acgccgagcc 120

tgagatattt tcgattgctt catcaaca atg tct tct tcg tcg aga aat cta 172

Met Ser Ser Ser Ser Arg Asn Leu

tct cag gag aat ccg att cct cgt ccg aac tta gcc aag act cga acc 220

Ser Gln Glu Asn Pro Ile Pro Arg Pro Asn Leu Ala Lys Thr Arg Thr

10 15 20

tca ctc cgc gat gtt gga aac cgt cgt gct ccc ctc ggc gac atc aca 268

Ser Leu Arg Asp Val Gly Asn Arg Arg Ala Pro Leu Gly Asp Ile Thr

25 30 35 40

aat cag aag aat gga tct aga aat cct tca ccg tcg tct act ctg gtg 316

Asn Gln Lys Asn Gly Ser Arg Asn Pro Ser Pro Ser Ser Thr Leu Val

45 50 55

aat tgt tca aat aag atc ggc caa tct aag aaa gca cca aaa cct gct 364

Asn Cys Ser Asn Lys Ile Gly Gln Ser Lys Lys Ala Pro Lys Pro Ala

60 65 70

tta tct cgt aat tgg aat ttg gga att ctc gat tcc ggt tta cct ccc 412

Leu Ser Arg Asn Trp Asn Leu Gly Ile Leu Asp Ser Gly Leu Pro Pro

75 80 85

aag cca aat gcg aaa tca aac ata atc gtt cct tac gaa gac acc gaa 460

Lys Pro Asn Ala Lys Ser Asn Ile Ile Val Pro Tyr Glu Asp Thr Glu

90 95 100

ttg ctc caa agc gat gat agt ctt cta tgt tct tca cct gca tta tcc 508

Leu Leu Gln Ser Asp Asp Ser Leu Leu Cys Ser Ser Pro Ala Leu Ser

105 110 115 120

ttg gat gcc tct cct act caa tct gac ccg tca att tcc act cat gac 556

Leu Asp Ala Ser Pro Thr Gln Ser Asp Pro Ser Ile Ser Thr His Asp



## PhoenixTemp32470.tmp.txt

tct	ttg	acg	aac	125	ggt	gta	gat	tac	130	gtc	gag	agc	act	135	gat	
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Asp	Gly	Asn	Asp	Asp	Asp	Asp	Asp	Glu	Ile	Val	Asn	Ile	Asp	Ser	Asp	
ttg	atg	gat	cca	cag	ctt	tgt	gct	tct	ttt	gct	tgt	gat	atc	tac	gag	
Leu	Met	Asp	Pro	Gln	Leu	Cys	Ala	Ser	Phe	Ala	Cys	Asp	Ile	Tyr	Glu	
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His	Leu	Arg	Val	Ser	Glu	Val	Asn	Lys	Arg	Pro	Ala	Leu	Asp	Tyr	Met	
gaa	aga	act	cag	tca	agc	atc	aat	gct	agc	atg	cgt	tct	ata	ctg	att	
Glu	Arg	Thr	Gln	Ser	Ser	Ile	Asn	Ala	Ser	Met	Arg	Ser	Ile	Leu	Ile	
gac	tgg	ctt	gtg	gag	ggt	gct	gaa	gag	tat	agg	ctt	tcg	ccc	gag	acg	
Asp	Trp	Leu	Val	Glu	Val	Ala	Glu	Glu	Tyr	Arg	Leu	Ser	Pro	Glu	Thr	
ttg	tat	ttg	gca	gta	aac	tac	ggt	gat	cgg	tat	ctt	aca	gga	aat	gca	
Leu	Tyr	Leu	Ala	Val	Asn	Tyr	Val	Asp	Arg	Tyr	Leu	Thr	Gly	Asn	Ala	
atc	aac	aag	caa	aat	ctg	cag	cta	ctt	ggt	ggt	acc	tgc	atg	atg	ata	
Ile	Asn	Lys	Gln	Asn	Leu	Gln	Leu	Leu	Gly	Val	Thr	Cys	Met	Met	Ile	
gca	gca	aaa	tat	gaa	gaa	gtg	tgt	gtg	ccg	caa	gtg	gag	gat	ttc	tgt	
Ala	Ala	Lys	Tyr	Glu	Glu	Val	Cys	Val	Pro	Gln	Val	Glu	Asp	Phe	Cys	
tac	atc	act	gat	aac	aca	tac	tta	aga	aat	gag	ctt	ttg	gag	atg	gag	
Tyr	Ile	Thr	Asp	Asn	Thr	Tyr	Leu	Arg	Asn	Glu	Leu	Leu	Glu	Met	Glu	
tct	tct	ggt	ctg	aac	tac	ttg	aag	ttc	gaa	tta	aca	act	cca	aca	gca	
Ser	Ser	Val	Leu	Asn	Tyr	Leu	Lys	Phe	Glu	Leu	Thr	Thr	Pro	Thr	Ala	
aaa	tgt	ttc	ttg	agg	cgc	ttt	ctt	cgt	gct	gct	caa	ggc	aga	aag	gag	
Lys	Cys	Phe	Leu	Arg	Arg	Phe	Leu	Arg	Ala	Ala	Gln	Gly	Arg	Lys	Glu	
gta	cca	tca	ctg	ctg	tct	gag	tgt	ctg	gcc	tgc	tat	ctc	acc	gaa	tta	
Val	Pro	Ser	Leu	Leu	Ser	Glu	Cys	Leu	Ala	Cys	Tyr	Leu	Thr	Glu	Leu	
tcg	ctg	tta	gat	tac	gct	atg	ctt	cga	tac	gct	cca	tca	ctt	ggt	gca	
Ser	Leu	Leu	Asp	Tyr	Ala	Met	Leu	Arg	Tyr	Ala	Pro	Ser	Leu	Val	Ala	
gcc	tct	gca	ggt	ttc	ttg	gca	caa	tac	act	cta	cac	cct	tca	aga	aaa	
Ala	Ser	Ala	Val	Phe	Leu	Ala	Gln	Tyr	Thr	Leu	His	Pro	Ser	Arg	Lys	
cca	tgg	aat	gct	acg	cta	gag	cat	tac	aca	tcg	tac	agg	gct	aaa	cat	
Pro	Trp	Asn	Ala	Thr	Leu	Glu	His	Tyr	Thr	Ser	Tyr	Arg	Ala	Lys	His	
atg	gaa	gca	tgc	ggt	aag	aat	ctt	ctt	cag	ctg	tgt	aat	gag	aaa	ctc	
Met	Glu	Ala	Cys	Val	Lys	Asn	Leu	Leu	Gln	Leu	Cys	Asn	Glu	Lys	Leu	
tca	tct	gat	gtg	ggt	gca	atc	aga	aag	aag	tac	agt	caa	cac	aaa	tac	
Ser	Ser	Asp	Val	Val	Ala	Ile	Arg	Lys	Lys	Tyr	Ser	Gln	His	Lys	Tyr	
aag	ttt	gca	gca	aag	aag	ctt	tgt	ccc	acg	tca	cta	ccg	caa	gag	ctt	
Lys	Phe	Ala	Ala	Lys	Lys	Leu	Cys	Pro	Thr	Ser	Leu	Pro	Gln	Glu	Leu	
ttc	ctc	tga														
Phe	Leu															

&lt;210&gt; 2412

&lt;211&gt; 442

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2412

Met Ser Ser Ser Ser Arg Asn Leu Ser Gln Glu Asn Pro Ile Pro Arg

## PhoenixTemp32470.tmp.txt

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1          5          10          15
Pro Asn Leu Ala Lys Thr Arg Thr Ser Leu Arg Asp Val Gly Asn Arg
20
Arg Ala Pro Leu Gly Asp Ile Thr Asn Gln Lys Asn Gly Ser Arg Asn
35
Pro Ser Pro Ser Ser Thr Leu Val Asn Cys Ser Asn Lys Ile Gly Gln
50
Ser Lys Lys Ala Pro Lys Pro Ala Leu Ser Arg Asn Trp Asn Leu Gly
65
Ile Leu Asp Ser Gly Leu Pro Pro Lys Pro Asn Ala Lys Ser Asn Ile
85
Ile Val Pro Tyr Glu Asp Thr Glu Leu Leu Gln Ser Asp Asp Ser Leu
100
Leu Cys Ser Ser Pro Ala Leu Ser Leu Asp Ala Ser Pro Thr Gln Ser
115
Asp Pro Ser Ile Ser Thr His Asp Ser Leu Thr Asn His Val Val Asp
130
Tyr Met Val Glu Ser Thr Thr Asp Asp Gly Asn Asp Asp Asp Asp
145
Glu Ile Val Asn Ile Asp Ser Asp Leu Met Asp Pro Gln Leu Cys Ala
165
Ser Phe Ala Cys Asp Ile Tyr Glu His Leu Arg Val Ser Glu Val Asn
180
Lys Arg Pro Ala Leu Asp Tyr Met Glu Arg Thr Gln Ser Ser Ile Asn
195
Ala Ser Met Arg Ser Ile Leu Ile Asp Trp Leu Val Glu Val Ala Glu
210
Glu Tyr Arg Leu Ser Pro Glu Thr Leu Tyr Leu Ala Val Asn Tyr Val
225
Asp Arg Tyr Leu Thr Gly Asn Ala Ile Asn Lys Gln Asn Leu Gln Leu
245
Leu Gly Val Thr Cys Met Met Ile Ala Ala Lys Tyr Glu Glu Val Cys
260
Val Pro Gln Val Glu Asp Phe Cys Tyr Ile Thr Asp Asn Thr Tyr Leu
275
Arg Asn Glu Leu Leu Glu Met Glu Ser Ser Val Leu Asn Tyr Leu Lys
290
Phe Glu Leu Thr Thr Pro Thr Ala Lys Cys Phe Leu Arg Arg Phe Leu
305
Arg Ala Ala Gln Gly Arg Lys Glu Val Pro Ser Leu Leu Ser Glu Cys
325
Leu Ala Cys Tyr Leu Thr Glu Leu Ser Leu Leu Asp Tyr Ala Met Leu
340
Arg Tyr Ala Pro Ser Leu Val Ala Ala Ser Ala Val Phe Leu Ala Gln
355
Tyr Thr Leu His Pro Ser Arg Lys Pro Trp Asn Ala Thr Leu Glu His
370
Tyr Thr Ser Tyr Arg Ala Lys His Met Glu Ala Cys Val Lys Asn Leu
385
Leu Gln Leu Cys Asn Glu Lys Leu Ser Ser Asp Val Val Ala Ile Arg
405
Lys Lys Tyr Ser Gln His Lys Tyr Lys Phe Ala Ala Lys Lys Leu Cys
420
Pro Thr Ser Leu Pro Gln Glu Leu Phe Leu
435
440

```

&lt;210&gt; 2413

&lt;211&gt; 1335

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1335)

&lt;400&gt; 2413

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atg cat aga gct tct tct aag cac act aat gcg aag aaa gaa gca atc
Met His Arg Ala Ser Ser Lys His Thr Asn Ala Lys Lys Glu Ala Ile
1          5          10          15

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## PhoenixTemp32470.tmp.txt

tct	act	tcg	aaa	att	cga	gat	aat	aat	gtg	aga	gtc	act	aga	tca	aga	96
Ser	Thr	Ser	Lys	Ile	Arg	Asp	Asn	Asn	Val	Arg	Val	Thr	Arg	Ser	Arg	
			20					25					30			
gct	aag	gcc	tta	gga	gtg	tcg	aat	tct	cca	tca	aaa	ccc	gct	ttt	aaa	144
Ala	Lys	Ala	Leu	Gly	Val	Ser	Asn	Ser	Pro	Ser	Lys	Pro	Ala	Phe	Lys	
		35					40				45					
cat	gaa	acg	aag	cgt	gtt	gct	aga	ccg	agt	aat	aaa	cga	atg	gca	tcg	192
His	Glu	Thr	Lys	Arg	Val	Ala	Arg	Pro	Ser	Asn	Lys	Arg	Met	Ala	Ser	
	50					55					60					
gat	aat	atc	aca	gtt	tgt	aat	cag	aaa	aga	cga	gcg	gtg	ctc	aag	gat	240
Asp	Asn	Ile	Thr	Val	Cys	Asn	Gln	Lys	Arg	Arg	Ala	Val	Leu	Lys	Asp	
	65				70				75						80	
gtg	act	aac	act	ttg	gca	gaa	agt	ata	att	tct	aca	gaa	ggc	aat	gtt	288
Val	Thr	Asn	Thr	Leu	Ala	Glu	Ser	Ile	Ile	Ser	Thr	Glu	Gly	Asn	Val	
				85				90						95		
aag	gta	gct	tgc	aag	cga	ggt	ggt	aaa	gaa	act	aag	caa	ata	gaa	gaa	336
Lys	Val	Ala	Cys	Lys	Arg	Gly	Gly	Lys	Glu	Thr	Lys	Gln	Ile	Glu	Glu	
			100					105				110				
gat	ggt	ttg	gta	gat	gtg	gat	ggc	gaa	tct	aaa	cta	gca	gaa	gat		384
Asp	Gly	Leu	Val	Asp	Val	Asp	Gly	Glu	Lys	Ser	Lys	Leu	Ala	Glu	Asp	
		115					120				125					
ttg	tca	aag	att	aga	atg	gtt	gaa	tct	tta	gat	gca	tct	gct	tca	aag	432
Leu	Ser	Lys	Ile	Arg	Met	Val	Glu	Ser	Leu	Asp	Ala	Ser	Ala	Ser	Lys	
	130					135					140					
caa	aaa	tta	gtg	gat	tgt	gca	gaa	gaa	gac	aga	tct	gat	gtc	aca	gat	480
Gln	Lys	Leu	Val	Asp	Cys	Ala	Glu	Glu	Asp	Arg	Ser	Asp	Val	Thr	Asp	
	145				150				155						160	
tgt	gtt	cag	att	gta	gat	ata	gat	tca	ggt	gtc	caa	gat	cct	cag	ttt	528
Cys	Val	Gln	Ile	Val	Asp	Ile	Asp	Ser	Gly	Val	Gln	Asp	Pro	Gln	Phe	
				165					170					175		
tgt	agc	tta	tat	gct	gca	agt	ata	tat	gac	agc	att	aat	gtt	gca	gag	576
Cys	Ser	Leu	Tyr	Ala	Ala	Ser	Ile	Tyr	Asp	Ser	Ile	Asn	Val	Ala	Glu	
		180					185				190					
ctt	gaa	caa	aga	cct	tca	act	agc	tat	atg	gtg	caa	gtg	cag	cga	gat	624
Leu	Glu	Gln	Arg	Pro	Ser	Thr	Ser	Tyr	Met	Val	Gln	Val	Gln	Arg	Asp	
	195						200				205					
atc	gat	cca	acg	atg	cgc	gga	att	ctg	att	gat	tgg	ctc	gtg	gag	gtc	672
Ile	Asp	Pro	Thr	Met	Arg	Gly	Ile	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val	
	210				215						220					
tct	gaa	gag	tac	aag	ttg	gtt	tca	gat	aca	ctt	tac	ctt	acc	gtg	aat	720
Ser	Glu	Glu	Tyr	Lys	Leu	Val	Ser	Asp	Thr	Leu	Tyr	Leu	Thr	Val	Asn	
	225				230					235					240	
cta	att	gat	cgg	ttc	atg	tct	cat	aat	tac	att	gaa	aag	cag	aag	ctc	768
Leu	Ile	Asp	Arg	Phe	Met	Ser	His	Asn	Tyr	Ile	Glu	Lys	Gln	Lys	Leu	
			245						250				255			
cag	cta	ctt	ggt	atc	act	tgc	atg	tta	ata	gcc	tcc	aaa	tac	gaa	gag	816
Gln	Leu	Leu	Gly	Ile	Thr	Cys	Met	Leu	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	
			260					265					270			
att	agt	gca	ccg	cgg	ttg	gag	gag	ttt	tgc	ttc	att	aca	gac	aat	aca	864
Ile	Ser	Ala	Pro	Arg	Leu	Glu	Glu	Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	
		275				280					285					
tac	aca	aga	cta	gaa	gta	cta	agt	atg	gag	att	aaa	gtt	tta	aac	tct	912
Tyr	Thr	Arg	Leu	Glu	Val	Leu	Ser	Met	Glu	Ile	Lys	Val	Leu	Asn	Ser	
	290				295						300					
ctt	cat	ttt	cgg	tta	tca	gtt	ccc	acc	acc	aaa	acg	ttt	ctc	agg	cgg	960
Leu	His	Phe	Arg	Leu	Ser	Val	Pro	Thr	Thr	Lys	Thr	Phe	Leu	Arg	Arg	
				310						315				320		
ttc	att	cgc	gcc	gct	caa	gcg	tct	gat	aag	gtt	cct	ctc	att	gaa	atg	1008
Phe	Ile	Arg	Ala	Ala	Gln	Ala	Ser	Asp	Lys	Val	Pro	Leu	Ile	Glu	Met	
			325						330				335			
gag	tac	tta	gcc	aac	tat	ttc	gcg	gaa	cta	act	ctc	aca	gaa	tat	act	1056
Glu	Tyr	Leu	Ala	Asn	Tyr	Phe	Ala	Glu	Leu	Thr	Leu	Thr	Glu	Tyr	Thr	
			340					345					350			
ttc	cta	agg	ttc	ctt	cca	tcc	cta	att	gcc	gct	tca	gcg	gtt	ttc	tta	1104
Phe	Leu	Arg	Phe	Leu	Pro	Ser	Leu	Ile	Ala	Ala	Ser	Ala	Val	Phe	Leu	
		355				360						365				
gca	aga	tgg	aca	ctc	gac	caa	tct	aac	cat	cct	tgg	aac	caa	act	cta	1152
Ala	Arg	Trp	Thr	Leu	Asp	Gln	Ser	Asn	His	Pro	Trp	Asn	Gln	Thr	Leu	
	370					375					380					

## PhoenixTemp32470.tmp.txt

caa	cac	tat	aca	aga	tat	gaa	aca	tcc	gct	cta	aaa	aac	acg	gta	ctt	1200
Gln	His	Tyr	Thr	Arg	Tyr	Glu	Thr	Ser	Ala	Leu	Lys	Asn	Thr	Val	Leu	
385					390				395						400	
gca	atg	gag	gag	ttg	cag	ctc	aac	acc	agt	gga	agc	act	ctt	atc	gct	1248
Ala	Met	Glu	Glu	Leu	Gln	Leu	Asn	Thr	Ser	Gly	Ser	Thr	Leu	Ile	Ala	
				405					410					415		
ata	cac	acc	aaa	tac	aac	caa	caa	aag	ttt	aaa	aga	gtg	gca	aca	tta	1296
Ile	His	Thr	Lys	Tyr	Asn	Gln	Gln	Lys	Phe	Lys	Arg	Val	Ala	Thr	Leu	
			420					425					430			
aca	tct	cct	gaa	cgt	gtg	aac	aca	ctc	ttc	tca	aga	tga				1335
Thr	Ser	Pro	Glu	Arg	Val	Asn	Thr	Leu	Phe	Ser	Arg					
		435					440									

&lt;210&gt; 2414

&lt;211&gt; 444

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2414

Met	His	Arg	Ala	Ser	Ser	Lys	His	Thr	Asn	Ala	Lys	Lys	Glu	Ala	Ile	
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Ser	Thr	Ser	Lys	Ile	Arg	Asp	Asn	Asn	Val	Arg	Val	Thr	Arg	Ser	Arg	
			20					25					30			
Ala	Lys	Ala	Leu	Gly	Val	Ser	Asn	Ser	Pro	Ser	Lys	Pro	Ala	Phe	Lys	
		35					40					45				
His	Glu	Thr	Lys	Arg	Val	Ala	Arg	Pro	Ser	Asn	Lys	Arg	Met	Ala	Ser	
	50					55					60					
Asp	Asn	Ile	Thr	Val	Cys	Asn	Gln	Lys	Arg	Arg	Ala	Val	Leu	Lys	Asp	
65					70				75					80		
Val	Thr	Asn	Thr	Leu	Ala	Glu	Ser	Ile	Ile	Ser	Thr	Glu	Gly	Asn	Val	
			85					90					95			
Lys	Val	Ala	Cys	Lys	Arg	Gly	Gly	Lys	Glu	Thr	Lys	Gln	Ile	Glu	Glu	
		100					105						110			
Asp	Gly	Leu	Val	Asp	Val	Asp	Gly	Glu	Lys	Ser	Lys	Leu	Ala	Glu	Asp	
		115				120						125				
Leu	Ser	Lys	Ile	Arg	Met	Val	Glu	Ser	Leu	Asp	Ala	Ser	Ala	Ser	Lys	
	130					135					140					
Gln	Lys	Leu	Val	Asp	Cys	Ala	Glu	Glu	Asp	Arg	Ser	Asp	Val	Thr	Asp	
145					150					155					160	
Cys	Val	Gln	Ile	Val	Asp	Ile	Asp	Ser	Gly	Val	Gln	Asp	Pro	Gln	Phe	
			165						170					175		
Cys	Ser	Leu	Tyr	Ala	Ala	Ser	Ile	Tyr	Asp	Ser	Ile	Asn	Val	Ala	Glu	
		180						185					190			
Leu	Glu	Gln	Arg	Pro	Ser	Thr	Ser	Tyr	Met	Val	Gln	Val	Gln	Arg	Asp	
		195					200					205				
Ile	Asp	Pro	Thr	Met	Arg	Gly	Ile	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val	
	210					215					220					
Ser	Glu	Glu	Tyr	Lys	Leu	Val	Ser	Asp	Thr	Leu	Tyr	Leu	Thr	Val	Asn	
225					230					235					240	
Leu	Ile	Asp	Arg	Phe	Met	Ser	His	Asn	Tyr	Ile	Glu	Lys	Gln	Lys	Leu	
				245					250					255		
Gln	Leu	Leu	Gly	Ile	Thr	Cys	Met	Leu	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	
		260						265					270			
Ile	Ser	Ala	Pro	Arg	Leu	Glu	Glu	Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	
		275					280					285				
Tyr	Thr	Arg	Leu	Glu	Val	Leu	Ser	Met	Glu	Ile	Lys	Val	Leu	Asn	Ser	
	290					295					300					
Leu	His	Phe	Arg	Leu	Ser	Val	Pro	Thr	Thr	Lys	Thr	Phe	Leu	Arg	Arg	
305					310					315					320	
Phe	Ile	Arg	Ala	Ala	Gln	Ala	Ser	Asp	Lys	Val	Pro	Leu	Ile	Glu	Met	
			325						330					335		
Glu	Tyr	Leu	Ala	Asn	Tyr	Phe	Ala	Glu	Leu	Thr	Leu	Thr	Glu	Tyr	Thr	
		340						345					350			
Phe	Leu	Arg	Phe	Leu	Pro	Ser	Leu	Ile	Ala	Ala	Ser	Ala	Val	Phe	Leu	
		355					360					365				
Ala	Arg	Trp	Thr	Leu	Asp	Gln	Ser	Asn	His	Pro	Trp	Asn	Gln	Thr	Leu	
	370					375					380					
Gln	His	Tyr	Thr	Arg	Tyr	Glu	Thr	Ser	Ala	Leu	Lys	Asn	Thr	Val	Leu	
385					390					395					400	

## PhoenixTemp32470.tmp.txt

Ala Met Glu Glu Leu Gln Leu Asn Thr Ser Gly Ser Thr Leu Ile Ala  
 405 410  
 Ile His Thr Lys Tyr Asn Gln Gln Lys Phe Lys Arg Val Ala Thr Leu  
 420 425 430  
 Thr Ser Pro Glu Arg Val Asn Thr Leu Phe Ser Arg  
 435 440

&lt;210&gt; 2415

&lt;211&gt; 1272

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1272)

&lt;400&gt; 2415

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Met	Asp	Arg	Ala	Ser	Glu	Asn	Arg	Arg	Leu	Ala	Ala	Val	Gly	Lys	Pro	
1				5					10					15		
gtg	ccg	ggg	atc	gga	gag	atg	ggg	aac	cgg	agg	ccg	ctc	agg	gac	atc	96
Val	Pro	Gly	Ile	Gly	Glu	Met	Gly	Asn	Arg	Arg	Pro	Leu	Arg	Asp	Ile	
			20					25					30			
aac	aac	ctc	gtc	ggg	gcg	ccg	ccg	cac	ccg	tcc	gcg	atc	gcc	aag	aag	144
Asn	Asn	Leu	Val	Gly	Ala	Pro	Pro	His	Pro	Ser	Ala	Ile	Ala	Lys	Lys	
		35					40					45				
ccg	atg	cta	gag	aag	agt	ggg	aag	gaa	gag	cag	aag	cct	gca	ttg	gtg	192
Pro	Met	Leu	Glu	Lys	Ser	Gly	Lys	Glu	Glu	Gln	Lys	Pro	Ala	Leu	Val	
	50					55					60					
gtg	agc	cac	cgg	cct	atg	acg	agg	aat	ttc	gcg	gcc	tcc	ttg	acg	cga	240
Val	Ser	His	Arg	Pro	Met	Thr	Arg	Asn	Phe	Ala	Ala	Ser	Leu	Thr	Arg	
	65				70					75					80	
aaa	gaa	cag	ctt	gac	cat	cag	gtt	tcc	gtg	gct	gat	gca	gcg	gtc	gtc	288
Lys	Glu	Gln	Leu	Asp	His	Gln	Val	Ser	Val	Ala	Asp	Ala	Ala	Val	Val	
				85					90					95		
tgc	act	gat	cca	cag	aag	aac	ccc	atc	ccc	gat	ggc	aca	gtt	gac	gac	336
Cys	Thr	Asp	Pro	Gln	Lys	Asn	Pro	Ile	Pro	Asp	Gly	Thr	Val	Asp	Asp	
			100					105					110			
gat	gtg	gaa	tcg	tgc	gaa	tcg	aac	gac	tat	att	gcc	gtg	gat	gaa	tgc	384
Asp	Val	Glu	Ser	Cys	Glu	Ser	Asn	Asp	Tyr	Ile	Ala	Val	Asp	Glu	Cys	
		115					120					125				
aat	gat	act	gat	gag	gat	gag	tcc	atg	atg	gac	att	gac	agt	gcc	gac	432
Asn	Asp	Thr	Asp	Glu	Asp	Glu	Ser	Met	Met	Asp	Ile	Asp	Ser	Ala	Asp	
		130				135					140					
tca	ggg	aat	ccg	ctt	gca	gca	acc	gag	tac	gtc	gaa	gag	ttg	tac	aag	480
Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	Tyr	Val	Glu	Glu	Leu	Tyr	Lys	
	145				150					155					160	
ttc	tat	aga	gaa	aat	gag	gaa	atg	agt	tgt	gtg	cag	cct	gat	tac	atg	528
Phe	Tyr	Arg	Glu	Asn	Glu	Glu	Met	Ser	Cys	Val	Gln	Pro	Asp	Tyr	Met	
				165					170					175		
tcc	agt	caa	gga	gac	ata	aat	gaa	aag	atg	aga	gca	att	ctg	att	gat	576
Ser	Ser	Gln	Gly	Asp	Ile	Asn	Glu	Lys	Met	Arg	Ala	Ile	Leu	Ile	Asp	
			180					185					190			
tgg	ctc	att	gag	gtc	cat	cac	aaa	ttt	gag	ctg	atg	gat	gag	act	ctc	624
Trp	Leu	Ile	Glu	Val	His	His	Lys	Phe	Glu	Leu	Met	Asp	Glu	Thr	Leu	
		195					200					205				
ttt	ctt	act	gtt	aac	ata	gta	gac	aga	ttc	ttg	gaa	aaa	caa	gtt	gtg	672
Phe	Leu	Thr	Val	Asn	Ile	Val	Asp	Arg	Phe	Leu	Glu	Lys	Gln	Val	Val	
		210				215					220					
cca	agg	aag	aag	ttg	cag	cta	gtt	gga	gtg	aca	gct	atg	ctc	ctt	gct	720
Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala	
				225		230				235					240	
gtc	aaa	tat	gag	gaa	gtc	gca	gtc	cct	gtc	gtc	gag	gat	cta	gtg	cta	768
Cys	Lys	Tyr	Glu	Glu	Val	Ala	Val	Pro	Val	Val	Glu	Asp	Leu	Val	Leu	
				245					250					255		
att	tct	gac	cgg	gct	tat	aca	aaa	gga	caa	att	ctg	gaa	atg	gaa	aag	816
Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	Gln	Ile	Leu	Glu	Met	Glu	Lys	
			260					265					270			
ttg	atc	cta	aac	aca	ctc	cag	ttc	aac	atg	tct	gta	cca	aca	cct	tac	864

## PhoenixTemp32470.tmp.txt

Leu	Ile	Leu	Asn	Thr	Leu	Gln	Phe	Asn	Met	Ser	Val	Pro	Thr	Pro	Tyr	
gtt	ttt	atg	aga	cgg	ttt	ctg	aag	gca	gct	cag	tct	gac	aag	cag	cta	912
Val	Phe	Met	Arg	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Asp	Lys	Gln	Leu	
	290					295					300					
cag	cta	ctt	tcc	ttt	ttc	att	ctg	gag	ctc	tcc	ctg	gtg	gaa	tac	caa	960
Gln	Leu	Leu	Ser	Phe	Phe	Ile	Leu	Glu	Leu	Ser	Leu	Val	Glu	Tyr	Gln	
305					310					315					320	
atg	ctc	aag	tac	cga	cct	tcg	ctt	ctt	gct	gct	gct	gca	gtt	tac	aca	1008
Met	Leu	Lys	Tyr	Arg	Pro	Ser	Leu	Leu	Ala	Ala	Ala	Ala	Val	Tyr	Thr	
				325					330					335		
gca	caa	tgt	gct	ctc	act	cgt	tgc	cag	cag	tgg	aca	aag	acc	tgc	gaa	1056
Ala	Gln	Cys	Ala	Leu	Thr	Arg	Cys	Gln	Gln	Trp	Thr	Lys	Thr	Cys	Glu	
				340				345					350			
cta	cat	agt	aga	tat	acc	gga	gag	cag	ctt	ctt	gag	tgt	tct	agg	atg	1104
Leu	His	Ser	Arg	Tyr	Thr	Gly	Glu	Gln	Leu	Leu	Glu	Cys	Ser	Arg	Met	
		355				360						365				
atg	gta	gat	ttc	cac	cag	aag	gcc	gga	gca	ggc	aag	ctc	acc	ggc	gtg	1152
Met	Val	Asp	Phe	His	Gln	Lys	Ala	Gly	Ala	Gly	Lys	Leu	Thr	Gly	Val	
	370					375					380					
cac	cgg	aaa	tac	agt	acg	ttc	aag	ttt	ggg	tgt	gca	gcc	aaa	acg	gag	1200
His	Arg	Lys	Tyr	Ser	Thr	Phe	Lys	Phe	Gly	Cys	Ala	Ala	Lys	Thr	Glu	
385					390					395					400	
cct	gct	ctc	ttc	ttg	ctt	gag	tca	gga	gca	gga	ggg	tac	aac	ctt	cag	1248
Pro	Ala	Leu	Phe	Leu	Leu	Glu	Ser	Gly	Ala	Gly	Gly	Tyr	Asn	Leu	Gln	
				405					410					415		
aag	cac	cta	cag	caa	gca	tgt	tga									1272
Lys	His	Leu	Gln	Gln	Ala	Cys										
				420												

&lt;210&gt; 2416

&lt;211&gt; 423

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2416

Met	Asp	Arg	Ala	Ser	Glu	Asn	Arg	Arg	Leu	Ala	Ala	Val	Gly	Lys	Pro	
1				5					10					15		
Val	Pro	Gly	Ile	Gly	Glu	Met	Gly	Asn	Arg	Arg	Pro	Leu	Arg	Asp	Ile	
			20					25					30			
Asn	Asn	Leu	Val	Gly	Ala	Pro	Pro	His	Pro	Ser	Ala	Ile	Ala	Lys	Lys	
		35					40					45				
Pro	Met	Leu	Glu	Lys	Ser	Gly	Lys	Glu	Glu	Gln	Lys	Pro	Ala	Leu	Val	
	50					55					60					
Val	Ser	His	Arg	Pro	Met	Thr	Arg	Asn	Phe	Ala	Ala	Ser	Leu	Thr	Arg	
65					70					75					80	
Lys	Glu	Gln	Leu	Asp	His	Gln	Val	Ser	Val	Ala	Asp	Ala	Ala	Val	Val	
				85					90					95		
Cys	Thr	Asp	Pro	Gln	Lys	Asn	Pro	Ile	Pro	Asp	Gly	Thr	Val	Asp	Asp	
			100					105					110			
Asp	Val	Glu	Ser	Cys	Glu	Ser	Asn	Asp	Tyr	Ile	Ala	Val	Asp	Glu	Cys	
		115						120				125				
Asn	Asp	Thr	Asp	Glu	Asp	Glu	Ser	Met	Met	Asp	Ile	Asp	Ser	Ala	Asp	
	130					135					140					
Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	Tyr	Val	Glu	Glu	Leu	Tyr	Lys	
145					150					155					160	
Phe	Tyr	Arg	Glu	Asn	Glu	Glu	Met	Ser	Cys	Val	Gln	Pro	Asp	Tyr	Met	
				165					170					175		
Ser	Ser	Gln	Gly	Asp	Ile	Asn	Glu	Lys	Met	Arg	Ala	Ile	Leu	Ile	Asp	
		180						185					190			
Trp	Leu	Ile	Glu	Val	His	His	Lys	Phe	Glu	Leu	Met	Asp	Glu	Thr	Leu	
		195					200					205				
Phe	Leu	Thr	Val	Asn	Ile	Val	Asp	Arg	Phe	Leu	Glu	Lys	Gln	Val	Val	
	210					215					220					
Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala	
225					230					235					240	
Cys	Lys	Tyr	Glu	Glu	Val	Ala	Val	Pro	Val	Val	Glu	Asp	Leu	Val	Leu	
				245					250					255		
Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	Gln	Ile	Leu	Glu	Met	Glu	Lys	

## PhoenixTemp32470.tmp.txt

260  
 Leu Ile Leu Asn Thr Leu Gln Phe Asn Met Ser Val Pro Thr Pro Tyr  
 275  
 Val Phe Met Arg Arg Phe Leu Lys Ala Ala Gln Ser Asp Lys Gln Leu  
 290  
 Gln Leu Leu Ser Phe Phe Ile Leu Glu Leu Ser Leu Val Glu Tyr Gln  
 305  
 Met Leu Lys Tyr Arg Pro Ser Leu Leu Ala Ala Ala Val Tyr Thr  
 325  
 Ala Gln Cys Ala Leu Thr Arg Cys Gln Gln Trp Thr Lys Thr Cys Glu  
 340  
 Leu His Ser Arg Tyr Thr Gly Glu Gln Leu Leu Glu Cys Ser Arg Met  
 355  
 Met Val Asp Phe His Gln Lys Ala Gly Ala Gly Lys Leu Thr Gly Val  
 370  
 His Arg Lys Tyr Ser Thr Phe Lys Phe Gly Cys Ala Ala Lys Thr Glu  
 385  
 Pro Ala Leu Phe Leu Glu Ser Gly Ala Gly Gly Tyr Asn Leu Gln  
 405  
 Lys His Leu Gln Gln Ala Cys  
 420

&lt;210&gt; 2417

&lt;211&gt; 1593

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1593)

&lt;400&gt; 2417

atg	gtg	ggc	aca	aca	ctg	aaa	atg	cgt	ggc	gat	gag	aac	gct	tcg	gag	48
Met	Val	Gly	Thr	Thr	Leu	Lys	Met	Arg	Gly	Asp	Glu	Asn	Ala	Ser	Glu	
1				5					10					15		
aac	ttc	aag	caa	gtg	caa	ttg	aag	aaa	ttg	acg	gtt	cct	tcc	atg	gag	96
Asn	Phe	Lys	Gln	Val	Gln	Leu	Lys	Lys	Leu	Thr	Val	Pro	Ser	Met	Glu	
			20					25					30			
gca	aca	aca	aaa	cgc	gcg	gcc	ttg	ggc	gat	ttg	cag	aat	cgc	ggc	ata	144
Ala	Thr	Thr	Lys	Arg	Ala	Ala	Leu	Gly	Asp	Leu	Gln	Asn	Arg	Gly	Ile	
			35				40					45				
agt	cgt	ccc	atc	gca	gcg	aag	gat	gcg	gca	cag	aaa	gac	tcc	aag	gat	192
Ser	Arg	Pro	Ile	Ala	Ala	Lys	Asp	Ala	Ala	Gln	Lys	Asp	Ser	Lys	Asp	
			50			55					60					
ctc	aag	ctc	aca	gac	gcc	ctg	cgc	aat	gcc	aaa	gct	cgg	gtg	gac	agc	240
Leu	Lys	Leu	Thr	Asp	Ala	Leu	Arg	Asn	Ala	Lys	Ala	Arg	Val	Asp	Ser	
			65		70				75					80		
cac	tgg	aag	aaa	cag	cca	ctg	ggc	agc	acc	aat	ggc	aat	ggc	aat	ggc	288
His	Trp	Lys	Lys	Gln	Pro	Leu	Gly	Ser	Thr	Asn	Gly	Asn	Gly	Asn	Gly	
			85					90				95				
gcc	gtt	ccg	ccc	aag	gtc	aac	gag	ggg	ggc	gtg	tcg	gcg	ttt	ttg	cgt	336
Ala	Val	Pro	Pro	Lys	Val	Asn	Glu	Gly	Gly	Val	Ser	Ala	Phe	Leu	Arg	
			100					105					110			
tcg	aat	tcg	gtg	cgc	aat	cgc	gtt	ccg	acc	aag	acc	act	gta	gaa	ccc	384
Ser	Asn	Ser	Val	Arg	Asn	Arg	Val	Pro	Thr	Lys	Thr	Thr	Val	Glu	Pro	
			115				120					125				
act	aaa	gtt	aca	gtc	aag	tcc	agt	tct	tcc	gag	aac	gtg	aac	gag	ccc	432
Thr	Lys	Val	Thr	Val	Lys	Ser	Ser	Ser	Ser	Glu	Asn	Val	Asn	Glu	Pro	
			130			135					140					
acc	tta	aag	cgc	gag	gac	agc	aat	ctg	tcg	aag	aag	tcg	ctg	acc	aaa	480
Thr	Leu	Lys	Arg	Glu	Asp	Ser	Asn	Leu	Ser	Lys	Lys	Ser	Leu	Thr	Lys	
			145		150					155					160	
ctg	cgt	gcc	gct	ttg	gcc	aaa	ccc	gtg	atg	gga	gtt	tca	gga	att	cga	528
Leu	Arg	Ala	Ala	Leu	Ala	Lys	Pro	Val	Met	Gly	Val	Ser	Gly	Ile	Arg	
			165					170						175		
cgg	gaa	cca	gta	gct	gtt	tcc	cgc	aaa	gag	gca	gag	acc	aag	aag	gaa	576
Arg	Glu	Pro	Val	Ala	Val	Ser	Arg	Lys	Glu	Ala	Glu	Thr	Lys	Lys	Glu	
			180					185					190			
ctg	cca	gaa	acc	aag	aag	gac	tca	ctg	gaa	gtg	aaa	aag	gat	gcg	acc	624

## PhoenixTemp32470.tmp.txt

Leu	Pro	Glu	Thr	Lys	Lys	Asp	Ser	Leu	Glu	Val	Lys	Lys	Asp	Ala	Thr		
agg	atg	ccc	ctt	att	agg	ggc	aac	agt	gca	gtc	act	acg	acc	aca	tct	672	
Arg	Met	Pro	Leu	Ile	Arg	Gly	Asn	Ser	Ala	Val	Thr	Thr	Thr	Thr	Ser		
	210					215					220						
acg	atg	ccc	acc	acc	atg	tcc	ctt	tcc	agc	aag	cgc	ttg	gct	gga	atc	720	
Thr	Met	Pro	Thr	Thr	Met	Ser	Leu	Ser	Ser	Lys	Arg	Leu	Ala	Gly	Ile		
	225					230					235				240		
gag	gac	att	gat	gcc	aat	gac	aag	gag	aac	ctg	gta	ctg	gtc	tcc	gaa	768	
Glu	Asp	Ile	Asp	Ala	Asn	Asp	Lys	Glu	Asn	Leu	Val	Leu	Val	Ser	Glu		
				245					250					255			
tat	gta	aac	gac	atc	tac	gac	tac	ttg	tat	cag	gtg	gag	ctg	gag	cag	816	
Tyr	Val	Asn	Asp	Ile	Tyr	Asp	Tyr	Leu	Tyr	Gln	Val	Glu	Leu	Glu	Gln		
			260					265					270				
ccc	att	cac	aag	gat	cac	ctg	gcc	gga	cag	aag	gag	gtg	tcc	cac	aag	864	
Pro	Ile	His	Lys	Asp	His	Leu	Ala	Gly	Gln	Lys	Glu	Val	Ser	His	Lys		
	275						280					285					
atg	cga	gcc	gtg	ctg	atc	gat	tgg	atc	aac	gaa	gtc	cac	ctg	cag	ttc	912	
Met	Arg	Ala	Val	Leu	Ile	Asp	Trp	Ile	Asn	Glu	Val	His	Leu	Gln	Phe		
	290					295					300						
cat	ctg	gct	gca	gag	acc	ttc	cag	ctg	gcg	gtg	gct	atc	att	gat	cgc	960	
His	Leu	Ala	Ala	Glu	Thr	Phe	Gln	Leu	Ala	Val	Ala	Ile	Ile	Asp	Arg		
	305				310					315					320		
tac	ctg	cag	gtg	gtc	aag	gac	acc	aaa	cgc	acg	tac	ttg	caa	ttg	gtg	1008	
Tyr	Leu	Gln	Val	Val	Lys	Asp	Thr	Lys	Arg	Thr	Tyr	Leu	Gln	Leu	Val		
				325					330					335			
gga	gtg	aca	gca	ctc	ttc	ata	gcc	acc	aag	tac	gag	gag	ctg	ttc	ccg	1056	
Gly	Val	Thr	Ala	Leu	Phe	Ile	Ala	Thr	Lys	Tyr	Glu	Glu	Leu	Phe	Pro		
			340					345					350				
ccg	gca	atc	gga	gat	ttc	gtc	ttc	atc	acg	gac	gac	acc	tac	act	gcc	1104	
Pro	Ala	Ile	Gly	Asp	Phe	Val	Phe	Ile	Thr	Asp	Asp	Thr	Tyr	Thr	Ala		
		355					360					365					
cgg	cag	atc	cga	cag	atg	gag	ctg	caa	atc	ttc	aag	gcc	atc	gac	tgt	1152	
Arg	Gln	Ile	Arg	Gln	Met	Glu	Leu	Gln	Ile	Phe	Lys	Ala	Ile	Asp	Cys		
	370					375					380						
aat	ctg	tcg	cgt	ccg	ctg	ccg	att	cac	ttc	ctt	cga	cgc	tac	tcg	aag	1200	
Asn	Leu	Ser	Arg	Pro	Leu	Pro	Ile	His	Phe	Leu	Arg	Arg	Tyr	Ser	Lys		
	385				390					395				400			
gct	gct	ggc	gcc	gag	gac	gag	cac	cat	acg	atg	tcc	aag	tac	ttc	atc	1248	
Ala	Ala	Gly	Ala	Glu	Asp	Glu	His	His	Thr	Met	Ser	Lys	Tyr	Phe	Ile		
				405					410					415			
gag	tta	gct	tcc	gtg	gac	tac	gaa	atg	gcc	act	tac	agg	cca	tcg	gag	1296	
Glu	Leu	Ala	Ser	Val	Asp	Tyr	Glu	Met	Ala	Thr	Tyr	Arg	Pro	Ser	Glu		
			420				425						430				
att	gca	gct	gcc	tca	ctg	ttc	ctg	tcg	ctg	cac	ttg	ctc	aat	gga	aac	1344	
Ile	Ala	Ala	Ala	Ser	Leu	Phe	Leu	Ser	Leu	His	Leu	Leu	Asn	Gly	Asn		
		435				440						445					
cac	cgg	gcc	ggt	aca	gga	ttc	aac	gac	cgt	cac	tgg	acg	ccc	act	ctg	1392	
His	Arg	Ala	Gly	Thr	Gly	Phe	Asn	Asp	Arg	His	Trp	Thr	Pro	Thr	Leu		
	450				455						460						
acc	ttc	tac	tcg	cga	tac	tcg	gcc	gcg	cac	ttg	cgt	ccg	att	acc	cgg	1440	
Thr	Phe	Tyr	Ser	Arg	Tyr	Ser	Ala	Ala	His	Leu	Arg	Pro	Ile	Thr	Arg		
	465				470					475				480			
ctg	atc	gcg	aaa	ctg	gcc	cgg	gac	gct	cct	cag	gcc	aag	ctg	aag	gcc	1488	
Leu	Ile	Ala	Lys	Leu	Ala	Arg	Asp	Ala	Pro	Gln	Ala	Lys	Leu	Lys	Ala		
				485					490					495			
atc	tac	aac	aag	tac	cag	ggc	agc	aag	ttc	cag	aag	atc	gcg	ctg	cga	1536	
Ile	Tyr	Asn	Lys	Tyr	Gln	Gly	Ser	Lys	Phe	Gln	Lys	Ile	Ala	Leu	Arg		
			500					505					510				
acg	gag	ctg	acc	ggt	gcg	ctg	atg	gac	tcg	att	gtg	ggc	cag	agc	cag	1584	
Thr	Glu	Leu	Thr	Gly	Ala	Leu	Met	Asp	Ser	Ile	Val	Gly	Gln	Ser	Gln		
		515					520					525					
agg	aaa	tag														1593	
Arg	Lys																
	530																

&lt;210&gt; 2418

&lt;211&gt; 530

&lt;212&gt; PRT



&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2418

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Met Val Gly Thr Thr Leu Lys Met Arg Gly Asp Glu Asn Ala Ser Glu
1      5      10      15
Asn Phe Lys Gln Val Gln Leu Lys Lys Leu Thr Val Pro Ser Met Glu
20      25      30
Ala Thr Thr Lys Arg Ala Ala Leu Gly Asp Leu Gln Asn Arg Gly Ile
35      40      45
Ser Arg Pro Ile Ala Ala Lys Asp Ala Ala Gln Lys Asp Ser Lys Asp
50      55      60
Leu Lys Leu Thr Asp Ala Leu Arg Asn Ala Lys Ala Arg Val Asp Ser
65      70      75
His Trp Lys Lys Gln Pro Leu Gly Ser Thr Asn Gly Asn Gly Asn Gly
85      90      95
Ala Val Pro Pro Lys Val Asn Glu Gly Gly Val Ser Ala Phe Leu Arg
100     105
Ser Asn Ser Val Arg Asn Arg Val Pro Thr Lys Thr Thr Val Glu Pro
115
Thr Lys Val Thr Val Lys Ser Ser Ser Ser Glu Asn Val Asn Glu Pro
130
Thr Leu Lys Arg Glu Asp Ser Asn Leu Ser Lys Lys Ser Leu Thr Lys
145     150     155
Leu Arg Ala Ala Leu Ala Lys Pro Val Met Gly Val Ser Gly Ile Arg
165     170     175
Arg Glu Pro Val Ala Val Ser Arg Lys Glu Ala Glu Thr Lys Lys Glu
180     185     190
Leu Pro Glu Thr Lys Lys Asp Ser Leu Glu Val Lys Lys Asp Ala Thr
195     200     205
Arg Met Pro Leu Ile Arg Gly Asn Ser Ala Val Thr Thr Thr Ser
210     215     220
Thr Met Pro Thr Thr Met Ser Leu Ser Ser Lys Arg Leu Ala Gly Ile
225     230     235
Glu Asp Ile Asp Ala Asn Asp Lys Glu Asn Leu Val Leu Val Ser Glu
245     250     255
Tyr Val Asn Asp Ile Tyr Asp Tyr Leu Tyr Gln Val Glu Leu Glu Gln
260     265     270
Pro Ile His Lys Asp His Leu Ala Gly Gln Lys Glu Val Ser His Lys
275     280     285
Met Arg Ala Val Leu Ile Asp Trp Ile Asn Glu Val His Leu Gln Phe
290     295     300
His Leu Ala Ala Glu Thr Phe Gln Leu Ala Val Ala Ile Ile Asp Arg
305     310     315
Tyr Leu Gln Val Val Lys Asp Thr Lys Arg Thr Tyr Leu Gln Leu Val
325     330     335
Gly Val Thr Ala Leu Phe Ile Ala Thr Lys Tyr Glu Glu Leu Phe Pro
340     345     350
Pro Ala Ile Gly Asp Phe Val Phe Ile Thr Asp Asp Thr Tyr Thr Ala
355     360     365
Arg Gln Ile Arg Gln Met Glu Leu Gln Ile Phe Lys Ala Ile Asp Cys
370     375     380
Asn Leu Ser Arg Pro Leu Pro Ile His Phe Leu Arg Arg Tyr Ser Lys
385     390     395
Ala Ala Gly Ala Glu Asp Glu His His Thr Met Ser Lys Tyr Phe Ile
405     410     415
Glu Leu Ala Ser Val Asp Tyr Glu Met Ala Thr Tyr Arg Pro Ser Glu
420     425     430
Ile Ala Ala Ala Ser Leu Phe Leu Ser Leu His Leu Leu Asn Gly Asn
435     440     445
His Arg Ala Gly Thr Gly Phe Asn Asp Arg His Trp Thr Pro Thr Leu
450     455     460
Thr Phe Tyr Ser Arg Tyr Ser Ala Ala His Leu Arg Pro Ile Thr Arg
465     470     475
Leu Ile Ala Lys Leu Ala Arg Asp Ala Pro Gln Ala Lys Leu Lys Ala
485     490     495
Ile Tyr Asn Lys Tyr Gln Gly Ser Lys Phe Gln Lys Ile Ala Leu Arg
500     505     510
Thr Glu Leu Thr Gly Ala Leu Met Asp Ser Ile Val Gly Gln Ser Gln
515     520     525

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Arg Lys  
530

<210> 2419  
<211> 1227  
<212> DNA  
<213> *Patella vulgata*

<220>  
<221> CDS  
<222> (1)..(1227)

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<400> 2419
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Met Thr Thr Val Thr Arg Ser Ser Ser Ala Asn Leu Gly Ala Ser Gln
  1          5          10          15
aag ttg gct gtg aag aaa ggt gat gca atg atg tcg agt aaa ggt att      96
Lys Leu Ala Val Lys Lys Gly Asp Ala Met Met Ser Ser Lys Gly Ile
          20          25          30
tcc aac cga agc aat cgg tct gct tta gga gac ata gga aat aaa gtt      144
Ser Asn Arg Ser Asn Arg Ser Ala Leu Gly Asp Ile Gly Asn Lys Val
          35          40          45
tct aat atg act att gac cca acg aaa aaa gca tta ggc cta cct gta      192
Ser Asn Met Thr Ile Asp Pro Thr Lys Lys Ala Leu Gly Leu Pro Val
          50          55          60
atc aaa aag gag ata att cag aaa tcc aag ttt aca aga agt aag act      240
Ile Lys Lys Glu Ile Ile Gln Lys Ser Lys Phe Thr Arg Ser Lys Thr
          65          70          75          80
acc gtt tcg gaa tcg gat atc ttg tta cag gag aaa gag tct gcc tgt      288
Thr Val Ser Glu Ser Asp Ile Leu Leu Gln Glu Lys Glu Ser Ala Cys
          85          90          95
tgt agt aga gct tat acc atc ttt aaa gat gcc atc gaa cca att gtg      336
Cys Ser Arg Ala Tyr Thr Ile Phe Lys Asp Ala Ile Glu Pro Ile Val
          100          105          110
tcg act gtt gat ctt atg gac att agt gaa gac aaa cca gac gcc ttc      384
Ser Thr Val Asp Leu Met Asp Ile Ser Glu Asp Lys Pro Asp Ala Phe
          115          120          125
tcc aaa gtt tta tta aca gtt gaa gat att gac gcc aac gac aaa gat      432
Ser Lys Val Leu Leu Thr Val Glu Asp Ile Asp Ala Asn Asp Lys Asp
          130          135          140
aac ccc caa ctt gtc agt gac tat gtc aat gat att tac cat tac atg      480
Asn Pro Gln Leu Val Ser Asp Tyr Val Asn Asp Ile Tyr His Tyr Met
          145          150          155          160
aga cat tta gag gaa acg ttt gcc gta aaa gct aac ttt ctt gaa gga      528
Arg His Leu Glu Glu Thr Phe Ala Val Lys Ala Asn Phe Leu Glu Gly
          165          170          175          180
caa gaa gta act ggt aaa atg aga tca atc ttg att gat tgg tta tgc      576
Gln Glu Val Thr Gly Lys Met Arg Ser Ile Leu Ile Asp Trp Leu Cys
          185          190          195          200
caa gtt cat cac aga ttc cat cta tta caa gaa act tta tat tta acg      624
Gln Val His His Arg Phe His Leu Leu Gln Glu Thr Leu Tyr Leu Thr
          205          210          215          220
gtt tct ata ata gac agg ttt ttg cag gtt cat ccg att tct aga aat      672
Val Ser Ile Ile Asp Arg Phe Leu Gln Val His Pro Ile Ser Arg Asn
          225          230          235          240
aag ttg cag tta gtt ggg gtt acc tca atg ctg ctt gct tca aaa tat      720
Lys Leu Gln Leu Val Gly Val Thr Ser Met Leu Leu Ala Ser Lys Tyr
          245          250          255          260
gaa gaa atg tac gcc ccc gaa gtg gcg gat ttt gtg tac ata acg gac      768
Glu Glu Met Tyr Ala Pro Glu Val Ala Asp Phe Val Tyr Ile Thr Asp
          265          270          275          280
aat gct tat acc aaa gcc gat att agg act atg gaa caa aca ata tta      816
Asn Ala Tyr Thr Lys Ala Asp Ile Arg Thr Met Glu Gln Thr Ile Leu
          285          290          295          300
aaa aca cta gat ttt agt ttt gga aag cca ttg tgt tta cat ttt tta      864
Lys Thr Leu Asp Phe Ser Phe Gly Lys Pro Leu Cys Leu His Phe Leu
          305          310          315          320
cga agg aat tct aaa gct ggt cag gtt gat gca acc aaa cat aca ctt      912
Arg Arg Asn Ser Lys Ala Gly Gln Val Asp Ala Thr Lys His Thr Leu

```

## PhoenixTemp32470.tmp.txt

290	gcc aag tat tta atg gaa	295	ctt acc att ata gag	300	tat gat atg gtg cat		960
Ala Lys Tyr Leu Met	Glu Leu Thr Ile Ile	Glu Tyr Asp Met Val	His				
305	tgt aat cca tct att ata	310	gct gct gca gct tta	315	tgt tta tct atg aag		1008
Cys Asn Pro Ser Ile	Ile Ala Ala Ala Leu	Cys Leu Ser Met	Lys				
325	gtg cta gat gat tca caa	330	tgg tct gaa acc tta	335	gct cat tac agt aac		1056
Val Leu Asp Asp Ser	Gln Trp Ser Glu Thr	Leu Ala His Tyr	Asn				
340	tac tcg gaa aaa gag att	345	tat cca gta atg cag	350	aaa tta gct cag ttg		1104
Tyr Ser Glu Lys Glu	Ile Tyr Pro Val Met	Gln Lys Leu Ala	Gln Leu				
355	gtg gtt aaa gca gaa act	360	agt aaa tta acg gct	365	gta aag ata aaa tat		1152
Val Val Lys Ala Glu	Thr Ser Lys Leu Thr	Ala Val Lys Ile	Lys Tyr				
370	tcc agt tca agg ttt atg	375	aaa atc agt tcc att	380	cca gaa ttg aaa tct		1200
Ser Ser Ser Arg Phe	Met Lys Ile Ser Ser	Ile Pro Glu Leu	Ser				
385	aat gct ata acg gat ctc	390	gta tta tag	395			1227
Asn Ala Ile Thr Asp	Leu Val Leu						
405							

&lt;210&gt; 2420

&lt;211&gt; 408

&lt;212&gt; PRT

&lt;213&gt; Patella vulgata

&lt;400&gt; 2420

Met Thr Thr Val Thr Arg Ser Ser Ser	Ala Asn Leu Gly Ala Ser Gln	
1 Lys Leu Ala Val Lys Lys Gly Asp	Ala Met Met Ser Ser Lys Gly Ile	
20 Ser Asn Arg Ser Asn Arg Ser Ala	Leu Gly Asp Ile Gly Asn Lys Val	
35 Ser Asn Met Thr Ile Asp Pro Thr	Lys Lys Ala Leu Gly Leu Pro Val	
50 Ile Lys Lys Glu Ile Ile Gln Lys	Ser Lys Phe Thr Arg Ser Lys Thr	
65 Thr Val Ser Glu Ser Asp Ile Leu	Leu Gln Glu Lys Glu Ser Ala Cys	
80 Cys Ser Arg Ala Tyr Thr Ile Phe	Lys Asp Ala Ile Glu Pro Ile Val	
100 Ser Thr Val Asp Leu Met Asp Ile	Ser Glu Asp Lys Pro Asp Ala Phe	
115 Ser Lys Val Leu Leu Thr Val Glu	Asp Ile Asp Ala Asn Asp Lys Asp	
130 Asn Pro Gln Leu Val Ser Asp Tyr	Val Asn Asp Ile Tyr His Tyr Met	
145 Arg His Leu Glu Glu Thr Phe Ala	Val Lys Ala Asn Phe Leu Glu Gly	
160 Gln Glu Val Thr Gly Lys Met Arg	Ser Ile Leu Ile Asp Trp Leu Cys	
180 Gln Val His His Arg Phe His Leu	Leu Gln Glu Thr Leu Tyr Leu Thr	
195 Val Ser Ile Ile Asp Arg Phe Leu	Gln Val His Pro Ile Ser Arg Asn	
210 Lys Leu Gln Leu Val Gly Val Thr	Ser Met Leu Leu Ala Ser Lys Tyr	
225 Glu Glu Met Tyr Ala Pro Glu Val	Ala Asp Phe Val Tyr Ile Thr Asp	
240 Asn Ala Tyr Thr Lys Ala Asp Ile	Arg Thr Met Glu Gln Thr Ile Leu	
260 Lys Thr Leu Asp Phe Ser Phe Gly	Lys Pro Leu Cys Leu His Phe Leu	
275 Arg Arg Asn Ser Lys Ala Gly Gln	Val Asp Ala Thr Lys His Thr Leu	
290 Ala Lys Tyr Leu Met Glu Leu Thr	Ile Ile Glu Tyr Asp Met Val His	
305		

## PhoenixTemp32470.tmp.txt

Cys Asn Pro Ser Ile Ile Ala Ala Ala Leu Cys Leu Ser Met Lys  
 325 335  
 Val Leu Asp Asp Ser Gln Trp Ser Glu Thr Leu Ala His Tyr Ser Asn  
 340 350  
 Tyr Ser Glu Lys Glu Ile Tyr Pro Val Met Gln Lys Leu Ala Gln Leu  
 355 360  
 Val Val Lys Ala Glu Thr Ser Lys Leu Thr Ala Val Lys Ile Lys Tyr  
 370 380  
 Ser Ser Ser Arg Phe Met Lys Ile Ser Ser Ile Pro Glu Leu Lys Ser  
 385 390 400  
 Asn Ala Ile Thr Asp Leu Val Leu  
 405

<210> 2421  
 <211> 1479  
 <212> DNA  
 <213> Candida albicans

<220>  
 <221> CDS  
 <222> (1)..(1479)  
 <223> transl\_table=12

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 atg cca caa gtc act aaa act aat aat gaa aat gag ttt aga ctt act 48  
 Met Pro Gln Val Thr Lys Thr Asn Asn Glu Asn Glu Phe Arg Leu Thr  
 1 5 10 15  
 aga tca aaa gta cag cat caa gag tcg ata agt acc atc aaa aat acg 96  
 Arg Ser Lys Val Gln His Gln Glu Ser Ile Ser Thr Ile Lys Asn Thr  
 20 25 30  
 acc ata tcc aat tct cag cat aaa caa caa aca caa caa att tca 144  
 Thr Ile Ser Asn Ser Gln His Lys Gln Gln Thr Gln Gln Gln Ile Ser  
 35 40 45  
 tca cca cct caa gtc tct gta aca tca tct gaa gga gtt tca cat gtc 192  
 Ser Pro Pro Gln Val Ser Val Thr Ser Ser Glu Gly Val Ser His Val  
 50 55 60  
 aat aca cgt caa tat ttg ggt gat gtt tca aat caa tac ata aca aat 240  
 Asn Thr Arg Gln Tyr Leu Gly Asp Val Ser Asn Gln Tyr Ile Thr Asn  
 65 70 75 80  
 gct aaa cca aca aat aaa aga aaa cca ttg ggt gga gac aat gcc cct 288  
 Ala Lys Pro Thr Asn Lys Arg Lys Pro Leu Gly Gly Asp Asn Ala Pro  
 85 90 95  
 cta caa aaa caa cag cat aga cca tct aga cca ata ccc att gcc agt 336  
 Leu Gln Lys Gln Gln His Arg Pro Ser Arg Pro Ile Pro Ile Ala Ser  
 100 105 110  
 gat aac aac aat aat ggt agt acc agt agc agt agc aac agt agc aac 384  
 Asp Asn Asn Asn Asn Gly Ser Thr Ser Ser Ser Ser Asn Ser Ser Asn  
 115 120 125  
 aac aat aac aac gac gca aat aga cta gca tct ttg gca gtt cca tct 432  
 Asn Asn Asn Asn Asp Ala Asn Arg Leu Ala Ser Leu Ala Val Pro Ser  
 130 135 140  
 cga tta ccc caa aaa cga caa gct act gaa tcg tca aat tta gta 480  
 Arg Leu Pro Gln Lys Arg Gln Ala Thr Glu Ser Ser Thr Asn Leu Val  
 145 150 155 160  
 gag aaa tta aga gta cca caa cca gaa gta ggg gaa aga agt cag tca 528  
 Glu Lys Leu Arg Val Pro Gln Pro Glu Val Gly Glu Arg Ser Gln Ser  
 165 170 175  
 tac cat aag aaa tca cgt tta att gat tat gaa tgg cag gat ttg gat 576  
 Tyr His Lys Lys Ser Arg Leu Ile Asp Tyr Glu Trp Gln Asp Leu Asp  
 180 185 190  
 gaa gaa gat aat gac gac caa tta atg gtt agt gaa tat gtt aac gaa 624  
 Glu Glu Asp Asn Asp Asp Gln Leu Met Val Ser Glu Tyr Val Asn Glu  
 195 200 205  
 ata ttt tcg tac tat tac gaa tta gaa aca cga atg tta cct gat ccg 672  
 Ile Phe Ser Tyr Tyr Tyr Glu Leu Glu Thr Arg Met Leu Pro Asp Pro  
 210 215 220  
 caa tat ctt ttc aaa caa aca ttg tta aaa cca aga atg aga tcg ata 720  
 Gln Tyr Leu Phe Lys Gln Thr Leu Leu Lys Pro Arg Met Arg Ser Ile  
 225 230 235 240

## PhoenixTemp32470.tmp.txt

ttg gtt gat tgg ctt gtt gaa atg cat tta aaa ttc aag tta tta cct	768
Leu Val Asp Trp Leu Val Glu Met His Leu Lys Phe Lys Leu Leu Pro	
gaa tca ctt ttt ttg gca gtc aat gta atg gat aga ttc atg tct gtt	816
Glu Ser Leu Phe Leu Ala Val Asn Val Met Asp Arg Phe Met Ser Val	
gaa gtg gtt caa ata gat aaa tta caa tta ttg gct aca gca gct tta	864
Glu Val Val Gln Ile Asp Lys Leu Gln Leu Leu Ala Thr Ala Ala Leu	
ttt act gct gcc aaa aat gaa gaa gta ttt tct ccc ctg gtt aaa aat	912
Phe Thr Ala Ala Lys Asn Glu Glu Val Phe Ser Pro Ser Val Lys Asn	
tat gca tat ttc act gat ggt tca tat act cca gaa gtg gta caa	960
Tyr Ala Tyr Phe Thr Asp Gly Ser Tyr Thr Pro Glu Glu Val Val Gln	
gca gaa aaa tac atg ctt acc att ctt aac ttt gat ttg aat tac ccc	1008
Ala Glu Lys Tyr Met Leu Thr Ile Leu Asn Phe Asp Leu Asn Tyr Pro	
aat cca atg aat ttc ttg aga aga att tct aaa gct gat gat tat gat	1056
Asn Pro Met Asn Phe Leu Arg Arg Ile Ser Lys Ala Asp Asp Tyr Asp	
gtc caa tca aga acg cta gga aaa tat ctt ttg gaa atc act ata gtt	1104
Val Gln Ser Arg Thr Leu Gly Lys Tyr Leu Leu Glu Ile Thr Ile Val	
gat tac aaa ttt att ggt atg aga cca tct tta tgt tgt gcc ctg gcc	1152
Asp Tyr Lys Phe Ile Gly Met Arg Pro Ser Leu Cys Cys Ala Ser Ala	
atg tat tta gca aga cta ata ttg ggc aaa ttg cca gtt ttg aat ggg	1200
Met Tyr Leu Ala Arg Leu Ile Leu Gly Lys Leu Pro Val Trp Asn Gly	
aat ttg att cat tat agt gga ggt tat aga atc agt gat atg aga gaa	1248
Asn Leu Ile His Tyr Ser Gly Gly Tyr Arg Ile Ser Asp Met Arg Glu	
tgt atc gaa tta atg ttt caa tat ctt att gct cct ata gaa cat gat	1296
Cys Ile Glu Leu Met Phe Gln Tyr Leu Ile Ala Pro Ile Glu His Asp	
gaa ttt ttc aaa aaa tat gcc atg aga aaa ttt atg aga gca agt act	1344
Glu Phe Phe Lys Lys Tyr Ala Met Arg Lys Phe Met Arg Ala Ser Thr	
ctt tgt cga aat tgg gct aaa aaa ttc caa gca tca gga aga gat ttg	1392
Leu Cys Arg Asn Trp Ala Lys Lys Phe Gln Ala Ser Gly Arg Asp Leu	
ttt gat gaa cga tta tcg acc cat agg cta aca tta gaa gat gat gac	1440
Phe Asp Glu Arg Leu Ser Thr His Arg Leu Thr Leu Glu Asp Asp Asp	
gaa gaa gaa gaa ata gtg gta gca gaa gca gaa gag taa	1479
Glu Glu Glu Glu Ile Val Val Ala Glu Ala Glu Glu Glu	

&lt;210&gt; 2422

&lt;211&gt; 492

&lt;212&gt; PRT

&lt;213&gt; Candida albicans

&lt;400&gt; 2422

Met Pro Gln Val Thr Lys Thr Asn Asn Glu Asn Glu Phe Arg Leu Thr	
1 Arg Ser Lys Val Gln His Gln Glu Ser Ile Ser Thr Ile Lys Asn Thr	
Thr Ile Ser Asn Ser Gln His Lys Gln Gln Thr Gln Gln Gln Ile Ser	
Ser Pro Pro Gln Val Ser Val Thr Ser Ser Glu Gly Val Ser His Val	
Asn Thr Arg Gln Tyr Leu Gly Asp Val Ser Asn Gln Tyr Ile Thr Asn	
65 Ala Lys Pro Thr Asn Lys Arg Lys Pro Leu Gly Gly Asp Asn Ala Pro	
Leu Gln Lys Gln His Arg Pro Ser Arg Pro Ile Pro Ile Ala Ser	

## PhoenixTemp32470.tmp.txt

Asp Asn Asn Asn Asn Gly Ser Thr Ser Ser Ser Ser Asn Ser Ser Asn  
 115 120 125  
 Asn Asn Asn Asn Asp Ala Asn Arg Leu Ala Ser Leu Ala Val Pro Ser  
 130 135 140  
 Arg Leu Pro Gln Lys Arg Gln Ala Thr Glu Ser Ser Thr Asn Leu Val  
 145 150 155 160  
 Glu Lys Leu Arg Val Pro Gln Pro Glu Val Gly Glu Arg Ser Gln Ser  
 165 170 175  
 Tyr His Lys Lys Ser Arg Leu Ile Asp Tyr Glu Trp Gln Asp Leu Asp  
 180 185 190  
 Glu Glu Asp Asn Asp Asp Gln Leu Met Val Ser Glu Tyr Val Asn Glu  
 195 200 205  
 Ile Phe Ser Tyr Tyr Tyr Glu Leu Glu Thr Arg Met Leu Pro Asp Pro  
 210 215 220  
 Gln Tyr Leu Phe Lys Gln Thr Leu Leu Lys Pro Arg Met Arg Ser Ile  
 225 230 235 240  
 Leu Val Asp Trp Leu Val Glu Met His Leu Lys Phe Lys Leu Leu Pro  
 245 250 255  
 Glu Ser Leu Phe Leu Ala Val Asn Val Met Asp Arg Phe Met Ser Val  
 260 265 270  
 Glu Val Val Gln Ile Asp Lys Leu Gln Leu Leu Ala Thr Ala Ala Leu  
 275 280 285  
 Phe Thr Ala Ala Lys Asn Glu Glu Val Phe Ser Pro Ser Val Lys Asn  
 290 295 300  
 Tyr Ala Tyr Phe Thr Asp Gly Ser Tyr Thr Pro Glu Glu Val Val Gln  
 305 310 315 320  
 Ala Glu Lys Tyr Met Leu Thr Ile Leu Asn Phe Asp Leu Asn Tyr Pro  
 325 330 335  
 Asn Pro Met Asn Phe Leu Arg Arg Ile Ser Lys Ala Asp Asp Tyr Asp  
 340 345 350  
 Val Gln Ser Arg Thr Leu Gly Lys Tyr Leu Leu Glu Ile Thr Ile Val  
 355 360 365  
 Asp Tyr Lys Phe Ile Gly Met Arg Pro Ser Leu Cys Cys Ala Ser Ala  
 370 375 380  
 Met Tyr Leu Ala Arg Leu Ile Leu Gly Lys Leu Pro Val Trp Asn Gly  
 385 390 395 400  
 Asn Leu Ile His Tyr Ser Gly Gly Tyr Arg Ile Ser Asp Met Arg Glu  
 405 410 415  
 Cys Ile Glu Leu Met Phe Gln Tyr Leu Ile Ala Pro Ile Glu His Asp  
 420 425 430  
 Glu Phe Phe Lys Lys Tyr Ala Met Arg Lys Phe Met Arg Ala Ser Thr  
 435 440 445  
 Leu Cys Arg Asn Trp Ala Lys Lys Phe Gln Ala Ser Gly Arg Asp Leu  
 450 455 460  
 Phe Asp Glu Arg Leu Ser Thr His Arg Leu Thr Leu Glu Asp Asp Asp  
 465 470 475 480  
 Glu Glu Glu Glu Ile Val Val Ala Glu Ala Glu  
 485 490

&lt;210&gt; 2423

&lt;211&gt; 1248

&lt;212&gt; DNA

&lt;213&gt; Schizosaccharomyces pombe

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1248)

&lt;400&gt; 2423

atg	gac	gtt	tcg	act	caa	aca	aga	cac	gca	aca	tat	ttt	caa	gat	gag	48
Met	Asp	Val	Ser	Thr	Gln	Thr	Arg	His	Ala	Thr	Tyr	Phe	Gln	Asp	Glu	
1				5				10					15			
aat	cag	cta	caa	aag	gat	cac	att	tat	gtg	aag	aag	aaa	agt	cac	atc	96
Asn	Gln	Leu	Gln	Lys	Asp	His	Ile	Tyr	Val	Lys	Lys	Lys	Ser	His	Ile	
			20					25					30			
aag	tta	aat	acg	ggt	gtt	cgt	gca	cct	ttc	aag	gca	gta	gat	aac	atc	144
Lys	Leu	Asn	Thr	Gly	Val	Arg	Ala	Pro	Phe	Lys	Ala	Val	Asp	Asn	Ile	
		35					40					45				
aat	caa	caa	gat	gaa	cca	aca	ttg	att	gaa	ggg	aat	aat	gaa	tcc	tcc	192

## PhoenixTemp32470.tmp.txt

Asn	Gln	Gln	Asp	Glu	Pro	Thr	Leu	Ile	Glu	Gly	Asn	Asn	Glu	Ser	Ser	
atc	tct	tcg	tcc	act	ggc	gac	act	ttt	gaa	gag	gat	ttt	gca	tac	cag	240
Ile	Ser	Ser	Ser	Thr	Gly	Asp	Thr	Phe	Glu	Glu	Asp	Phe	Ala	Tyr	Gln	
65					70					75					80	
gac	aaa	gtc	gag	ata	gag	gaa	cgg	tca	att	cgc	tcc	act	cct	aag	tct	288
Asp	Lys	Val	Glu	Ile	Glu	Glu	Arg	Ser	Ile	Arg	Ser	Thr	Pro	Lys	Ser	
				85					90					95		
att	gga	gat	gat	gat	ttg	gaa	aac	cgt	gag	ggc	agc	ttt	gac	gca	cct	336
Ile	Gly	Asp	Asp	Asp	Leu	Glu	Asn	Arg	Glu	Gly	Ser	Phe	Asp	Ala	Pro	
			100					105					110			
gaa	gga	att	ctt	aca	cac	ggg	aag	cat	aga	cta	cca	aca	att	ccc	gag	384
Glu	Gly	Ile	Leu	Thr	His	Gly	Lys	His	Arg	Leu	Pro	Thr	Ile	Pro	Glu	
			115				120					125				
tgg	acc	aag	gaa	gat	tta	gcc	gcc	ctg	tct	gaa	gct	gct	gct	cga	tta	432
Trp	Thr	Lys	Glu	Asp	Leu	Ala	Ala	Leu	Ser	Glu	Ala	Ala	Ala	Arg	Leu	
	130					135					140					
caa	gct	aac	cca	tcg	cct	gag	gat	ata	gaa	act	gat	cca	tcc	atg	gta	480
Gln	Ala	Asn	Pro	Ser	Pro	Glu	Asp	Ile	Glu	Thr	Asp	Pro	Ser	Met	Val	
145					150					155					160	
cca	gac	tat	gat	cct	gag	ata	ttt	cac	tac	atg	caa	tct	ttg	gaa	agg	528
Pro	Asp	Tyr	Asp	Pro	Glu	Ile	Phe	His	Tyr	Met	Gln	Ser	Leu	Glu	Arg	
				165					170					175		
aag	ctg	gct	cca	cct	cct	aat	tac	atg	tca	ggt	cag	caa	gag	att	gac	576
Lys	Leu	Ala	Pro	Pro	Pro	Asn	Tyr	Met	Ser	Val	Gln	Gln	Glu	Ile	Asp	
			180					185					190			
tgg	ggt	aca	aga	cat	atg	ctt	ggt	gat	tgg	att	gtg	caa	ggt	caa	ata	624
Trp	Val	Thr	Arg	His	Met	Leu	Val	Asp	Trp	Ile	Val	Gln	Val	Gln	Ile	
		195				200						205				
cat	ttt	cgt	tta	ctt	cct	gag	aca	tta	ttt	ttg	gcg	gta	aac	ctt	atc	672
His	Phe	Arg	Leu	Leu	Pro	Glu	Thr	Leu	Phe	Leu	Ala	Val	Asn	Leu	Ile	
	210					215					220					
gac	cgg	ttt	ctt	tcc	ata	aaa	gtc	gta	tct	ttg	caa	aaa	gtc	cag	ttg	720
Asp	Arg	Phe	Leu	Ser	Ile	Lys	Val	Val	Ser	Leu	Gln	Lys	Val	Gln	Leu	
225					230					235					240	
gta	ggt	tta	tca	gct	ttg	ctg	att	gcc	tgt	aag	tat	gaa	gag	ata	cac	768
Val	Gly	Leu	Ser	Ala	Leu	Leu	Ile	Ala	Cys	Lys	Tyr	Glu	Glu	Ile	His	
				245					250					255		
cct	cca	agc	atc	tac	aac	ttt	gcg	cat	ggt	gtc	caa	ggg	atc	ttc	acc	816
Pro	Pro	Ser	Ile	Tyr	Asn	Phe	Ala	His	Val	Val	Gln	Gly	Ile	Phe	Thr	
			260					265					270			
ggt	gac	gaa	atc	att	aga	gcc	gag	cgc	tat	atg	ctg	atg	ctt	ttg	gat	864
Val	Asp	Glu	Ile	Ile	Arg	Ala	Glu	Arg	Tyr	Met	Leu	Met	Leu	Leu	Asp	
		275				280					285					
ttt	gac	att	agt	tgg	cca	ggg	ccc	atg	tcg	ttt	ttg	cgt	cgt	ata	agt	912
Phe	Asp	Ile	Ser	Trp	Pro	Gly	Pro	Met	Ser	Phe	Leu	Arg	Arg	Ile	Ser	
					295					300						
cga	gct	gat	tct	tac	gat	cac	gac	att	cgc	atg	ctc	gcc	aaa	tat	ctt	960
Arg	Ala	Asp	Ser	Tyr	Asp	His	Asp	Ile	Arg	Met	Leu	Ala	Lys	Tyr	Leu	
305					310				315						320	
caa	gaa	gta	acc	ttg	atg	gat	gaa	att	ttt	ata	ggt	gcc	cat	att	agc	1008
Gln	Glu	Val	Thr	Leu	Met	Asp	Glu	Ile	Phe	Ile	Gly	Ala	His	Ile	Ser	
				325					330					335		
ttc	att	gct	gct	act	gcc	tac	tac	ttg	tct	atg	cag	atg	ttg	ggt	cat	1056
Phe	Ile	Ala	Ala	Thr	Ala	Tyr	Tyr	Leu	Ser	Met	Gln	Met	Leu	Gly	His	
			340					345					350			
ttg	gat	tgg	act	cct	tgc	cat	gta	tat	agt	ggg	tac	acg	gct	cgt		1104
Leu	Asp	Trp	Thr	Pro	Cys	His	Val	Tyr	Tyr	Ser	Gly	Tyr	Thr	Ala	Arg	
		355					360					365				
caa	ttg	aaa	ccg	tgt	gcc	ata	atc	att	atg	gaa	tgt	ttg	gtc	gat	gcc	1152
Gln	Leu	Lys	Pro	Cys	Ala	Ile	Ile	Ile	Met	Glu	Cys	Leu	Val	Asp	Ala	
					375						380					
cct	aac	cat	cac	aat	gcc	att	tac	cga	aag	tac	gag	aat	aga	atg		1200
Pro	Asn	His	His	Asn	Ala	Ile	Tyr	Arg	Lys	Tyr	Ser	Glu	Asn	Arg	Met	
385					390					395					400	
aag	cga	ggt	agc	gcc	ttt	gct	cac	aac	tgg	gta	cta	agt	gtg	att		1245
Lys	Arg	Val	Ser	Ala	Phe	Ala	His	Asn	Trp	Val	Leu	Ser	Val	Ile		
				405					410					415		
tga																1248

<210> 2424  
 <211> 415  
 <212> PRT  
 <213> Schizosaccharomyces pombe

<400> 2424  
 Met Asp Val Ser Thr Gln Thr Arg His Ala Thr Tyr Phe Gln Asp Glu  
 1 5 10 15  
 Asn Gln Leu Gln Lys Asp His Ile Tyr Val Lys Lys Lys Ser His Ile  
 20 25 30  
 Lys Leu Asn Thr Gly Val Arg Ala Pro Phe Lys Ala Val Asp Asn Ile  
 35 40 45  
 Asn Gln Gln Asp Glu Pro Thr Leu Ile Glu Gly Asn Asn Glu Ser Ser  
 50 55 60  
 Ile Ser Ser Ser Thr Gly Asp Thr Phe Glu Glu Asp Phe Ala Tyr Gln  
 65 70 75 80  
 Asp Lys Val Glu Ile Glu Glu Arg Ser Ile Arg Ser Thr Pro Lys Ser  
 85 90 95  
 Ile Gly Asp Asp Asp Leu Glu Asn Arg Glu Gly Ser Phe Asp Ala Pro  
 100 105 110  
 Glu Gly Ile Leu Thr His Gly Lys His Arg Leu Pro Thr Ile Pro Glu  
 115 120 125  
 Trp Thr Lys Glu Asp Leu Ala Ala Leu Ser Glu Ala Ala Ala Arg Leu  
 130 135 140  
 Gln Ala Asn Pro Ser Pro Glu Asp Ile Glu Thr Asp Pro Ser Met Val  
 145 150 155 160  
 Pro Asp Tyr Asp Pro Glu Ile Phe His Tyr Met Gln Ser Leu Glu Arg  
 165 170 175  
 Lys Leu Ala Pro Pro Pro Asn Tyr Met Ser Val Gln Gln Glu Ile Asp  
 180 185 190  
 Trp Val Thr Arg His Met Leu Val Asp Trp Ile Val Gln Val Gln Ile  
 195 200 205  
 His Phe Arg Leu Leu Pro Glu Thr Leu Phe Leu Ala Val Asn Leu Ile  
 210 215 220  
 Asp Arg Phe Leu Ser Ile Lys Val Val Ser Leu Gln Lys Val Gln Leu  
 225 230 235 240  
 Val Gly Leu Ser Ala Leu Leu Ile Ala Cys Lys Tyr Glu Glu Ile His  
 245 250 255  
 Pro Pro Ser Ile Tyr Asn Phe Ala His Val Val Gln Gly Ile Phe Thr  
 260 265 270  
 Val Asp Glu Ile Ile Arg Ala Glu Arg Tyr Met Leu Met Leu Leu Asp  
 275 280 285  
 Phe Asp Ile Ser Trp Pro Gly Pro Met Ser Phe Leu Arg Arg Ile Ser  
 290 295 300  
 Arg Ala Asp Ser Tyr Asp His Asp Ile Arg Met Leu Ala Lys Tyr Leu  
 305 310 315 320  
 Gln Glu Val Thr Leu Met Asp Glu Ile Phe Ile Gly Ala His Ile Ser  
 325 330 335  
 Phe Ile Ala Ala Thr Ala Tyr Tyr Leu Ser Met Gln Met Leu Gly His  
 340 345 350  
 Leu Asp Trp Thr Pro Cys His Val Tyr Tyr Ser Gly Tyr Thr Ala Arg  
 355 360 365  
 Gln Leu Lys Pro Cys Ala Ile Ile Ile Met Glu Cys Leu Val Asp Ala  
 370 375 380  
 Pro Asn His His Asn Ala Ile Tyr Arg Lys Tyr Ser Glu Asn Arg Met  
 385 390 395 400  
 Lys Arg Val Ser Ala Phe Ala His Asn Trp Val Leu Ser Val Ile  
 405 410 415

<210> 2425  
 <211> 1416  
 <212> DNA  
 <213> Saccharomyces cerevisiae

<220>  
 <221> CDS



&lt;222&gt; (1)..(1416)

&lt;400&gt; 2425

atg tca cga tcc ctt ttg gta gag aat agt aga acc att aat agt aat	48
Met Ser Arg Ser Leu Leu Val Glu Asn Ser Arg Thr Ile Asn Ser Asn	
1 5 10 15	
gaa gag aag ggg gta aac gaa agt caa tat atc tta caa aag aga aac	96
Glu Glu Lys Gly Val Asn Glu Ser Gln Tyr Ile Leu Gln Lys Arg Asn	
20 25 30	
gtc cca agg acc att ctc ggt aat gtc aca aat aat gca aat atc ctg	144
Val Pro Arg Thr Ile Leu Gly Asn Val Thr Asn Asn Ala Asn Ile Leu	
35 40 45	
caa gag att tct atg aac aga aaa att ggg atg aag aac ttc tca aaa	192
Gln Glu Ile Ser Met Asn Arg Lys Ile Gly Met Lys Asn Phe Ser Lys	
50 55 60	
ttg aac aac ttc ttt cct tta aag gat gat gtt tcg aga gcc gat gac	240
Leu Asn Asn Phe Phe Pro Leu Lys Asp Asp Val Ser Arg Ala Asp Asp	
65 70 75 80	
ttc acc tcc tct ttt aat gac agt aga cag ggg gtg aaa caa gaa gta	288
Phe Thr Ser Ser Phe Asn Asp Ser Arg Gln Gly Val Lys Gln Glu Val	
85 90 95	
cta aac aat aag gaa aat att cct gaa tat gga tat tcc gag caa gaa	336
Leu Asn Asn Lys Glu Asn Ile Pro Glu Tyr Gly Tyr Ser Glu Gln Glu	
100 105 110	
aag cag cag tgc tca aat gat gac tct ttt cat acg aat tcg act gcc	384
Lys Gln Gln Cys Ser Asn Asp Asp Ser Phe His Thr Asn Ser Thr Ala	
115 120 125	
ttg agc tgt aat cgg ttg ata tac tct gag aac aag tct att tcc act	432
Leu Ser Cys Asn Arg Leu Ile Tyr Ser Glu Asn Lys Ser Ile Ser Thr	
130 135 140	
caa atg gaa tgg cag aaa aaa ata atg aga gaa gat tcc aaa aaa aaa	480
Gln Met Glu Trp Gln Lys Lys Ile Met Arg Glu Asp Ser Lys Lys Lys	
145 150 155 160	
agg cca ata tca act ctt gta gag cag gat gac cag aaa aag ttc aaa	528
Arg Pro Ile Ser Thr Leu Val Glu Gln Asp Gln Lys Lys Phe Lys	
165 170 175	
ctc cat gaa ttg act aca gaa gaa gag gtt ctg gag gag tac gaa tgg	576
Leu His Glu Leu Thr Thr Glu Glu Glu Val Leu Glu Glu Tyr Glu Trp	
180 185 190	
gat gac cta gat gaa gaa gat tgt gat gat ccc tta atg gtg agc gaa	624
Asp Asp Leu Asp Glu Glu Asp Cys Asp Asp Pro Leu Met Val Ser Glu	
195 200 205	
gag gtt aat gat atc ttc gat tat ttg cat cac ttg gaa ata atc aca	672
Glu Val Asn Asp Ile Phe Asp Tyr Leu His His Leu Glu Ile Ile Thr	
210 215 220	
ttg cca aat aag gcg aat ctc tat aag cat aaa aat att aag caa aac	720
Leu Pro Asn Lys Ala Asn Leu Tyr Lys His Asn Ile Lys Gln Asn	
225 230 235 240	
aga gac att ttg gtg aac tgg ata atc aag att cat aat aag ttt ggc	768
Arg Asp Ile Leu Val Asn Trp Ile Ile Lys Ile His Asn Lys Phe Gly	
245 250 255	
ctt ctg ccg gaa cta tat ttg gcc ata aac ata atg gat aga ttt	816
Leu Leu Pro Glu Thr Leu Tyr Leu Ala Ile Asn Ile Met Asp Arg Phe	
260 265 270	
ctt tgt gaa gag gtg gtt cag tta aat aga ttg caa ctg gtt ggt aca	864
Leu Cys Glu Glu Val Val Gln Leu Asn Arg Leu Gln Leu Val Gly Thr	
275 280 285	
tca tgc ctg ttc atc gca tct aag tat gag gaa ata tac tcc cct agc	912
Ser Cys Leu Phe Ile Ala Ser Lys Tyr Glu Glu Ile Tyr Ser Pro Ser	
290 295 300	
ata aaa cat ttt gcg tac gag aca gac ggt gca tgc tct gtg gaa gat	960
Ile Lys His Phe Ala Tyr Glu Thr Asp Gly Ala Cys Ser Val Glu Asp	
305 310 315 320	
att aaa gag ggt gaa aga ttt ata ttg gaa aaa ctc gat ttt caa att	1008
Ile Lys Glu Gly Glu Arg Phe Ile Leu Glu Lys Leu Asp Phe Gln Ile	
325 330 335	
agt ttc gct aac cca atg aat ttc tta agg aga ata tca aaa gcg gat	1056
Ser Phe Ala Asn Pro Met Asn Phe Leu Arg Arg Ile Ser Lys Ala Asp	
340 345 350	

## PhoenixTemp32470.tmp.txt

gac	tat	gat	atc	cag	tct	agg	acg	tta	gcg	aag	ttc	cta	atg	gaa	ata	1104
Asp	Tyr	Asp	Ile	Gln	Ser	Arg	Thr	Leu	Ala	Lys	Phe	Leu	Met	Glu	Ile	
		355					360					365				
tct	ata	gtg	gac	ttc	aag	ttc	atc	ggg	ata	tta	ccg	tca	tta	tgt	gcc	1152
Ser	Ile	Val	Asp	Phe	Lys	Phe	Ile	Gly	Ile	Leu	Pro	Ser	Leu	Cys	Ala	
	370					375					380					
tca	gcg	gca	atg	ttc	ctt	tcg	aga	aaa	atg	ctg	ggc	aag	ggc	acc	tgg	1200
Ser	Ala	Ala	Met	Phe	Leu	Ser	Arg	Lys	Met	Leu	Gly	Lys	Gly	Thr	Trp	
385					390					395					400	
gat	ggc	aac	tta	atc	cat	tat	agt	ggg	ggg	tac	aca	aag	gca	aaa	cta	1248
Asp	Gly	Asn	Leu	Ile	His	Tyr	Ser	Gly	Gly	Tyr	Thr	Lys	Ala	Lys	Leu	
				405				410						415		
tat	ccc	gtt	tgc	caa	tta	ctg	atg	gat	tat	ctt	gtt	gga	tct	act	att	1296
Tyr	Pro	Val	Cys	Gln	Leu	Leu	Met	Asp	Tyr	Leu	Val	Gly	Ser	Thr	Ile	
			420					425					430			
cac	gac	gag	ttc	ttg	aaa	aaa	tat	caa	tcg	aga	aga	ttt	tta	aag	gct	1344
His	Asp	Glu	Phe	Leu	Lys	Lys	Tyr	Gln	Ser	Arg	Arg	Phe	Leu	Lys	Ala	
		435					440					445				
tcc	ata	att	tct	atc	gaa	tgg	gca	ttg	aag	gta	agg	aaa	aat	gga	tat	1392
Ser	Ile	Ile	Ser	Ile	Glu	Trp	Ala	Leu	Lys	Val	Arg	Lys	Asn	Gly	Tyr	
	450					455					460					
gat	att	atg	aca	ttg	cat	gag	tga									1416
Asp	Ile	Met	Thr	Leu	His	Glu										
465					470											

&lt;210&gt; 2426

&lt;211&gt; 471

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2426

Met	Ser	Arg	Ser	Leu	Leu	Val	Glu	Asn	Ser	Arg	Thr	Ile	Asn	Ser	Asn	
1				5				10					15			
Glu	Glu	Lys	Gly	Val	Asn	Glu	Ser	Gln	Tyr	Ile	Leu	Gln	Lys	Arg	Asn	
			20					25					30			
Val	Pro	Arg	Thr	Ile	Leu	Gly	Asn	Val	Thr	Asn	Asn	Ala	Asn	Ile	Leu	
		35					40					45				
Gln	Glu	Ile	Ser	Met	Asn	Arg	Lys	Ile	Gly	Met	Lys	Asn	Phe	Ser	Lys	
		50				55					60					
Leu	Asn	Asn	Phe	Phe	Pro	Leu	Lys	Asp	Asp	Val	Ser	Arg	Ala	Asp	Asp	
65					70					75					80	
Phe	Thr	Ser	Ser	Phe	Asn	Asp	Ser	Arg	Gln	Gly	Val	Lys	Gln	Glu	Val	
				85					90					95		
Leu	Asn	Asn	Lys	Glu	Asn	Ile	Pro	Glu	Tyr	Gly	Tyr	Ser	Glu	Gln	Glu	
			100					105					110			
Lys	Gln	Gln	Cys	Ser	Asn	Asp	Asp	Ser	Phe	His	Thr	Asn	Ser	Thr	Ala	
		115					120					125				
Leu	Ser	Cys	Asn	Arg	Leu	Ile	Tyr	Ser	Glu	Asn	Lys	Ser	Ile	Ser	Thr	
	130				135						140					
Gln	Met	Glu	Trp	Gln	Lys	Lys	Ile	Met	Arg	Glu	Asp	Ser	Lys	Lys	Lys	
145				150						155					160	
Arg	Pro	Ile	Ser	Thr	Leu	Val	Glu	Gln	Asp	Gln	Lys	Lys	Phe	Lys	Lys	
				165					170				175			
Leu	His	Glu	Leu	Thr	Thr	Glu	Glu	Glu	Val	Leu	Glu	Glu	Tyr	Glu	Trp	
			180					185					190			
Asp	Asp	Leu	Asp	Glu	Glu	Asp	Cys	Asp	Asp	Pro	Leu	Met	Val	Ser	Glu	
		195					200					205				
Glu	Val	Asn	Asp	Ile	Phe	Asp	Tyr	Leu	His	His	Leu	Glu	Ile	Ile	Thr	
	210					215					220					
Leu	Pro	Asn	Lys	Ala	Asn	Leu	Tyr	Lys	His	Lys	Asn	Ile	Lys	Gln	Asn	
225				230						235					240	
Arg	Asp	Ile	Leu	Val	Asn	Trp	Ile	Ile	Lys	Ile	His	Asn	Lys	Phe	Gly	
			245						250					255		
Leu	Leu	Pro	Glu	Thr	Leu	Tyr	Leu	Ala	Ile	Asn	Ile	Met	Asp	Arg	Phe	
			260					265					270			
Leu	Cys	Glu	Glu	Val	Val	Gln	Leu	Asn	Arg	Leu	Gln	Leu	Val	Gly	Thr	
	275						280					285				
Ser	Cys	Leu	Phe	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Ile	Tyr	Ser	Pro	Ser	
	290					295					300					

## PhoenixTemp32470.tmp.txt

Ile Lys His Phe Ala Tyr Glu Thr Asp Gly Ala Cys Ser Val Glu Asp  
 305 310 315 320  
 Ile Lys Glu Gly Glu Arg Phe Ile Leu Glu Lys Leu Asp Phe Gln Ile  
 325 330 335  
 Ser Phe Ala Asn Pro Met Asn Phe Leu Arg Arg Ile Ser Lys Ala Asp  
 340 345 350  
 Asp Tyr Asp Ile Gln Ser Arg Thr Leu Ala Lys Phe Leu Met Glu Ile  
 355 360 365  
 Ser Ile Val Asp Phe Lys Phe Ile Gly Ile Leu Pro Ser Leu Cys Ala  
 370 375 380  
 Ser Ala Ala Met Phe Leu Ser Arg Lys Met Leu Gly Lys Gly Thr Trp  
 385 390 395 400  
 Asp Gly Asn Leu Ile His Tyr Ser Gly Gly Tyr Thr Lys Ala Lys Leu  
 405 410 415  
 Tyr Pro Val Cys Gln Leu Leu Met Asp Tyr Leu Val Gly Ser Thr Ile  
 420 425 430  
 His Asp Glu Phe Leu Lys Lys Tyr Gln Ser Arg Arg Phe Leu Lys Ala  
 435 440 445  
 Ser Ile Ile Ser Ile Glu Trp Ala Leu Lys Val Arg Lys Asn Gly Tyr  
 450 455 460  
 Asp Ile Met Thr Leu His Glu  
 465 470

&lt;210&gt; 2427

&lt;211&gt; 1236

&lt;212&gt; DNA

&lt;213&gt; Schizosaccharomyces pombe

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1236)

&lt;400&gt; 2427

atg gct ctc tat tca att tca aag cct gtt ggt tct aaa atc aat aag	48
Met Ala Leu Tyr Ser Ile Ser Lys Pro Val Gly Ser Lys Ile Asn Lys	
1 5 10 15	
cat agt tat caa gat gaa aac aca ctt gtt ggc aaa caa gct tta tca	96
His Ser Tyr Gln Asp Glu Asn Thr Leu Val Gly Lys Gln Ala Leu Ser	
20 25 30	
aaa ggg act gag aag aca aaa tta tct aca aat ttt gaa att aat ctg	144
Lys Gly Thr Glu Lys Thr Lys Leu Ser Thr Asn Phe Glu Ile Asn Leu	
35 40 45	
cca cgt cga act gtc cta tct gat gtt tcc aat gta ggt aaa aat aat	192
Pro Arg Arg Thr Val Leu Ser Asp Val Ser Asn Val Gly Lys Asn Asn	
50 55 60	
gct gat gag aag gat acg aaa gcg aaa aga ttc gat gaa tct	240
Ala Asp Glu Lys Asp Thr Lys Lys Ala Lys Arg Ser Phe Asp Glu Ser	
65 70 75 80	
aat tta tct aca aat gaa gaa gct gat aaa cct gtc gaa tct aaa ttc	288
Asn Leu Ser Thr Asn Glu Glu Ala Asp Lys Pro Val Glu Ser Lys Phe	
85 90 95	
gtg aaa aag ttg aaa gtt tat agc aaa aat gcg gat cca tct gta gaa	336
Val Lys Lys Leu Lys Val Tyr Ser Lys Asn Ala Asp Pro Ser Val Glu	
100 105 110	
act tta caa aag gac aga gtc tct aat gtt gat gat cat tta tcc tcc	384
Thr Leu Gln Lys Asp Arg Val Ser Asn Val Asp Asp His Leu Ser Ser	
115 120 125	
aat cct ttg atg gct gag gaa tac gca ccc gaa ata ttt gag tac atc	432
Asn Pro Leu Met Ala Glu Glu Tyr Ala Pro Glu Ile Phe Glu Tyr Ile	
130 135 140	
aga aag ctg gat tta aag tgt ctt ccc aat cca aaa tat atg gac caa	480
Arg Lys Leu Asp Leu Lys Cys Leu Pro Asn Pro Lys Tyr Met Asp Gln	
145 150 155 160	
caa aaa gaa tta acc tgg aaa atg agg gaa att ttg aat gaa tgg ttg	528
Gln Lys Glu Leu Thr Trp Lys Met Arg Glu Ile Leu Asn Glu Trp Leu	
165 170 175	
gtg gaa ata cat tcc aac ttt tgt tta atg ccc gaa acc ctt tat ttg	576
Val Glu Ile His Ser Asn Phe Cys Leu Met Pro Glu Thr Leu Tyr Leu	
180 185 190	

## PhoenixTemp32470.tmp.txt

gca	gtc	aat	ata	att	gat	cga	ttc	ttg	tcg	cgt	cgt	tca	tgc	tct	ttg	624
Ala	Val	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ser	Arg	Arg	Ser	Cys	Ser	Leu	
		195					200					205				
tct	aaa	ttt	caa	tta	aca	ggc	att	act	gct	ctt	ctc	atc	gct	agc	aaa	672
Ser	Lys	Phe	Gln	Leu	Thr	Gly	Ile	Thr	Ala	Leu	Leu	Ile	Ala	Ser	Lys	
	210					215					220					
tat	gag	gag	gtt	atg	tgt	cct	tcg	ata	caa	aac	ttt	gtt	tac	atg	act	720
Tyr	Glu	Glu	Val	Met	Cys	Pro	Ser	Ile	Gln	Asn	Phe	Val	Tyr	Met	Thr	
225					230					235					240	
gat	ggg	gct	ttt	acc	gta	gaa	gat	gtc	tgt	gtc	gct	gaa	cgt	tat	atg	768
Asp	Gly	Ala	Phe	Thr	Val	Glu	Asp	Val	Cys	Val	Ala	Glu	Arg	Tyr	Met	
			245						250					255		
tta	aat	gtt	ctc	aat	ttt	gac	ttg	tcc	cca	agt	cct	tta	aat	ttt	ttt	816
Leu	Asn	Val	Leu	Asn	Phe	Asp	Leu	Ser	Tyr	Pro	Ser	Pro	Leu	Asn	Phe	
			260					265					270			
ctt	cgc	aaa	ata	tct	caa	gca	gaa	ggg	tat	gat	gca	caa	aca	agg	aca	864
Leu	Arg	Lys	Ile	Ser	Gln	Ala	Glu	Gly	Tyr	Asp	Ala	Gln	Thr	Arg	Thr	
		275				280						285				
ttg	ggg	aaa	tac	cta	aca	gaa	att	tat	ctg	ttt	gac	cac	gat	tta	tta	912
Leu	Gly	Lys	Tyr	Leu	Thr	Glu	Ile	Tyr	Leu	Phe	Asp	His	Asp	Leu	Leu	
	290					295					300					
cga	tat	cct	atg	tct	aaa	att	gct	gct	gcc	gca	atg	tat	ttg	agc	cgc	960
Arg	Tyr	Pro	Met	Ser	Lys	Ile	Ala	Ala	Ala	Ala	Met	Tyr	Leu	Ser	Arg	
305					310				315						320	
cga	tta	ttg	cgt	cgc	ggc	cca	tggt	acg	cca	aag	tta	gtt	gaa	agc	tct	1008
Arg	Leu	Leu	Arg	Arg	Gly	Pro	Trp	Thr	Pro	Lys	Leu	Val	Glu	Ser	Ser	
				325					330					335		
ggg	ggg	tat	gaa	gag	cat	gaa	tta	aag	gag	ata	gcg	tat	att	atg	ctt	1056
Gly	Gly	Tyr	Glu	Glu	His	Glu	Leu	Lys	Glu	Ile	Ala	Tyr	Ile	Met	Leu	
			340					345					350			
cat	tat	cat	aac	aag	cct	cta	gaa	cac	aaa	gcc	ttt	ttc	caa	aaa	tac	1104
His	Tyr	His	Asn	Lys	Pro	Leu	Glu	His	Lys	Ala	Phe	Phe	Gln	Lys	Tyr	
			355				360					365				
tcc	tca	aaa	agg	ttc	ctg	aag	gct	agt	att	ttt	gtt	cat	caa	ctc	gtc	1152
Ser	Ser	Lys	Arg	Phe	Leu	Lys	Ala	Ser	Ile	Phe	Val	His	Gln	Leu	Val	
		370				375					380					
cgt	caa	cga	tac	tca	gtc	aat	cgt	acg	gac	gat	gat	gac	ctt	caa	tca	1200
Arg	Gln	Arg	Tyr	Ser	Val	Asn	Arg	Thr	Asp	Asp	Asp	Asp	Leu	Gln	Ser	
385					390					395					400	
gaa	ccg	tct	tct	tct	tta	aca	aat	gat	ggg	cac	taa					1236
Glu	Pro	Ser	Ser	Ser	Leu	Thr	Asn	Asp	Gly	His						
				405					410							

&lt;210&gt; 2428

&lt;211&gt; 411

&lt;212&gt; PRT

&lt;213&gt; Schizosaccharomyces pombe

&lt;400&gt; 2428

Met	Ala	Leu	Tyr	Ser	Ile	Ser	Lys	Pro	Val	Gly	Ser	Lys	Ile	Asn	Lys	
1				5					10					15		
His	Ser	Tyr	Gln	Asp	Glu	Asn	Thr	Leu	Val	Gly	Lys	Gln	Ala	Leu	Ser	
			20					25					30			
Lys	Gly	Thr	Glu	Lys	Thr	Lys	Leu	Ser	Thr	Asn	Phe	Glu	Ile	Asn	Leu	
		35					40					45				
Pro	Arg	Arg	Thr	Val	Leu	Ser	Asp	Val	Ser	Asn	Val	Gly	Lys	Asn	Asn	
	50					55					60					
Ala	Asp	Glu	Lys	Asp	Thr	Lys	Lys	Ala	Lys	Arg	Ser	Phe	Asp	Glu	Ser	
65					70					75					80	
Asn	Leu	Ser	Thr	Asn	Glu	Glu	Ala	Asp	Lys	Pro	Val	Glu	Ser	Lys	Phe	
				85					90					95		
Val	Lys	Lys	Leu	Lys	Val	Tyr	Ser	Lys	Asn	Ala	Asp	Pro	Ser	Val	Glu	
			100					105					110			
Thr	Leu	Gln	Lys	Asp	Arg	Val	Ser	Asn	Val	Asp	Asp	His	Leu	Ser	Ser	
		115					120					125				
Asn	Pro	Leu	Met	Ala	Glu	Glu	Tyr	Ala	Pro	Glu	Ile	Phe	Glu	Tyr	Ile	
	130					135					140					
Arg	Lys	Leu	Asp	Leu	Lys	Cys	Leu	Pro	Asn	Pro	Lys	Tyr	Met	Asp	Gln	
145					150					155					160	

## PhoenixTemp32470.tmp.txt

Gln Lys Glu Leu Thr Trp Lys Met Arg Glu Ile Leu Asn Glu Trp Leu  
 165 Ser Asn Phe Cys Leu Met Pro Glu Thr Leu Tyr Leu  
 Val Glu Ile His 180  
 Ala Val Asn 195 Ile Ile Asp Arg Phe 200 Leu Ser Arg Arg Ser 205 Cys Ser Leu  
 Ser Lys 210 Phe Gln Leu Thr Gly 215 Ile Thr Ala Leu Leu 220 Ile Ala Ser Lys  
 Tyr Glu Glu Val Met Cys 230 Pro Ser Ile Gln Asn Phe Val Tyr Met Thr  
 225 Asp Gly Ala Phe Thr 245 Val Glu Asp Val Cys 250 Val Ala Glu Arg Tyr Met  
 Leu Asn Val 260 Asn Phe Asp Leu Ser Tyr Pro Ser Pro Leu Asn Phe  
 Leu Arg Lys 275 Ile Ser Gln Ala Glu Gly Tyr Asp Ala Gln Thr Arg Thr  
 Leu Gly Lys Tyr Leu Thr Glu 295 Ile Tyr Leu Phe Asp His Asp Leu Leu  
 290 Arg Tyr Pro Met Ser Lys 310 Ile Ala Ala Ala 315 Met Tyr Leu Ser Arg  
 305 Arg Leu Leu Arg Arg Gly Pro Trp Thr Pro Lys Leu Val Glu Ser Ser  
 Gly Gly Tyr Glu Glu His Glu Leu Lys 345 Glu Ile Ala Tyr Ile Met Leu  
 340 His Tyr His 355 Asn Lys Pro Leu Glu 360 His Lys Ala Phe Phe 365 Gln Lys Tyr  
 Ser Ser Lys Arg Phe Leu Lys 375 Ala Ser Ile Phe Val His Gln Leu Val  
 370 Arg Gln Arg Tyr Ser Val 390 Asn Arg Thr Asp Asp 395 Asp Asp Leu Gln Ser  
 385 Glu Pro Ser Ser Ser 405 Leu Thr Asn Asp Gly His 410

&lt;210&gt; 2429

&lt;211&gt; 1476

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1476)

&lt;400&gt; 2429

atg tcc aac cca ata gaa aac aca gaa aac tca cag aat act agt tca	48
Met Ser Asn Pro Ile 5 Glu Asn Thr Glu Asn 10 Ser Gln Asn Thr Ser 15	
tca agg ttt ttg agg aat gta caa agg ttg gcc tta aac aat gta aca	96
Ser Arg Phe Leu Arg Asn Val Gln Arg 25 Leu Ala Leu Asn Asn Val Thr 30	
aat acg aca ttt caa aag agt aat gcg aat aat cca gcc cta aca aat	144
Asn Thr Thr 35 Phe Gln Lys Ser Asn 40 Ala Asn Asn Pro Ala Leu Thr Asn 45	
ttc aaa tct aca cta aac tca gta aag aag gag gga agt cgg att cct	192
Phe Lys Ser Thr Leu Asn Ser Val Lys Lys Glu Gly Ser Arg Ile Pro 60	
caa ttt act aga gaa agc gta tca aga tca aca gcc gca caa gag gag	240
Gln Phe Thr Arg Glu Ser 70 Val Ser Arg Ser Thr 75 Ala Ala Gln Glu 80	
aaa aga acc ctg aaa gaa aat ggt atc caa ctc ccc aaa aac aat ctt	288
Lys Arg Thr Leu Lys 85 Glu Asn Gly Ile Gln Leu Pro Lys Asn Asn Leu 95	
tta gat gat aaa gaa aac caa gac cca agt agt cag caa ttt ggt gcg	336
Leu Asp Asp Lys 100 Glu Asn Gln Asp Pro 105 Ser Ser Gln Gln Phe Gly Ala 110	
cta act tct ata aag gag ggg aga gct gag ctg cct gca aat ata agt	384
Leu Thr Ser 115 Ile Lys Glu Gly Arg 120 Ala Glu Leu Pro Ala Asn Ile Ser 125	
tta caa gaa tcc tcc tca gcg aag gag ata atc cag cat gat ccc cta	432
Leu Gln Glu Ser Ser Ser Ala Lys Glu Ile Ile Gln His Asp Pro Leu	

## PhoenixTemp32470.tmp.txt

130	135	140		
aaa ggc gtt gga tca agc 135	act gag gta gtc cat 140	aac tcg gta gaa aac	480	
Lys Gly Val Gly Ser Ser Thr	Glu Val Val His Asn Ser	Val Glu Asn		
145	150	155		
gaa aaa ctt cat cca gct aga agt caa ctt caa gtt aga aat acc gaa	528			
Glu Lys Leu His Pro Ala Arg Ser Gln Leu Gln Val Arg Asn Thr Glu				
165	170	175		
agt gaa act gat agt gga aaa aaa aga cca att tct aca att gtt gaa	576			
Ser Glu Thr Asp Ser Gly Lys Lys Arg Pro Ile Ser Thr Ile Val Glu				
180	185	190		
caa gaa ctg ccc aaa aag ttt aaa gtg tgc gat gaa aat ggc aaa gaa	624			
Gln Glu Leu Pro Lys Lys Phe Lys Val Cys Asp Glu Asn Gly Lys Glu				
195	200	205		
gaa tat gaa tgg gaa gac cta gat gca gaa gat gta aat ggc cca ttc	672			
Glu Tyr Glu Trp Glu Asp Leu Asp Ala Glu Asp Val Asn Asp Pro Phe				
210	215	220		
atg gtc agc gag tac gtc aat gat ata ttc gaa tat ctc cac caa cta	720			
Met Val Ser Glu Tyr Val Asn Asp Ile Phe Glu Tyr Leu His Gln Leu				
225	230	235		
gag gtc att act ctt cca aag aag gaa gat ctc tat cag cat aga aat	768			
Glu Val Ile Thr Leu Pro Lys Lys Glu Asp Leu Tyr Gln His Arg Asn				
245	250	255		
att cat caa aat cga gat atc cta gtt aat tgg ttg gtt aaa atc cat	816			
Ile His Gln Asn Arg Asp Ile Leu Val Asn Trp Leu Val Lys Ile His				
260	265	270		
aat aaa ttc ggc tta tta ccg gag act ttg tat ctt gcc att aac ata	864			
Asn Lys Phe Gly Leu Leu Pro Glu Thr Leu Tyr Leu Ala Ile Asn Ile				
275	280	285		
atg gac agg ttt tta ggt aaa gag cta gtt caa ctg gat aag tta caa	912			
Met Asp Arg Phe Leu Gly Lys 295				
290	295	300		
ttg gtt ggc aca tca tgc ctt ttc att gcc tct aaa tat gaa gag gtc	960			
Leu Val Gly Thr Ser Cys Leu Phe Ile Ala Ser Lys Tyr Glu Glu Val				
305	310	315		
tat tct cct agt ata aaa cat ttc gca tca gag aca gac ggt gca tgt	1008			
Tyr Ser Pro Ser Ile Lys His Phe Ala Ser Glu Thr Asp Gly Ala Cys				
325	330	335		
acg gaa gat gaa atc aaa gaa ggg gag aaa ttc att tta aag aca ttg	1056			
Thr Glu Asp Glu Ile Lys Glu Gly Glu Lys Phe Ile Leu Lys Thr Leu				
340	345	350		
aaa ttt aac cta aat tat ccc aat ccg atg aat ttt ctg aga att	1104			
Lys Phe Asn Leu Asn Tyr Pro Asn Pro Met Asn Phe Leu Arg Arg Ile				
355	360	365		
tcg aaa gca gat gac tac gat ata cag tct cga act ctt gcc aaa ttc	1152			
Ser Lys Ala Asp Asp Tyr Asp Ile Gln Ser Arg Thr Leu Ala Lys Phe				
370	375	380		
tta tta gag ata tca ttg gta gat ttc aga ttt att ggg ata cta ccc	1200			
Leu Leu Glu Ile Ser Leu Val Asp Phe Arg Phe Ile Gly Ile Leu Pro				
385	390	395		
tca ttg tgt gca gca gct gcg atg ttt atg tcg aga aaa atg tta ggt	1248			
Ser Leu Cys Ala Ala Ala Met Phe Met Ser Arg Lys Met Leu Gly				
405	410	415		
aaa ggt aaa tgg gat gga aat cta ata cac tat agc ggc ggg tat act	1296			
Lys Gly Lys Trp Asp Gly Asn Leu Ile His Tyr Ser Gly Gly Tyr Thr				
420	425	430		
aaa gaa gaa ctt gcg ccc gtg tgt cac atg ata atg gat tat cta gtg	1344			
Lys Glu Glu Leu Ala Pro Val Cys 440				
435	440	445		
agt cca att gtt cat gat gaa ttt cat aga aaa tat caa tct aga aga	1392			
Ser Pro Ile Val His Asp Glu Phe His Arg Lys Tyr Gln Ser Arg Arg				
450	455	460		
ttt atg aaa gct tct ata att tcc gtc caa tgg gct tta aag gtt aga	1440			
Phe Met Lys Ala Ser Ile 470				
465	470	475		
aaa aac ggc tat gat ata atg acc ttg cat gaa tga	1476			
Lys Asn Gly Tyr Asp Ile Met Thr Leu His 490				
485	490			

&lt;210&gt; 2430

&lt;211&gt; 491

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 2430

```

Met Ser Asn Pro Ile Glu Asn Thr Glu Asn Ser Gln Asn Thr Ser Ser
1      5      10      15
Ser Arg Phe Leu Arg Asn Val Gln Arg Leu Ala Leu Asn Asn Val Thr
20      25      30
Asn Thr Thr Phe Gln Lys Ser Asn Ala Asn Asn Pro Ala Leu Thr Asn
35      40      45
Phe Lys Ser Thr Leu Asn Ser Val Lys Lys Glu Gly Ser Arg Ile Pro
50      55      60
Gln Phe Thr Arg Glu Ser Val Ser Arg Ser Thr Ala Ala Gln Glu Glu
65      70      75      80
Lys Arg Thr Leu Lys Glu Asn Gly Ile Gln Leu Pro Lys Asn Asn Leu
85      90      95
Leu Asp Asp Lys Glu Asn Gln Asp Pro Ser Ser Gln Gln Phe Gly Ala
100     105     110
Leu Thr Ser Ile Lys Glu Gly Arg Ala Glu Leu Pro Ala Asn Ile Ser
115     120     125
Leu Gln Glu Ser Ser Ser Ala Lys Glu Ile Ile Gln His Asp Pro Leu
130     135     140
Lys Gly Val Gly Ser Ser Thr Glu Val Val His Asn Ser Val Glu Asn
145     150     155     160
Glu Lys Leu His Pro Ala Arg Ser Gln Leu Gln Val Arg Asn Thr Glu
165     170     175
Ser Glu Thr Asp Ser Gly Lys Lys Arg Pro Ile Ser Thr Ile Val Glu
180     185     190
Gln Glu Leu Pro Lys Lys Phe Lys Val Cys Asp Glu Asn Gly Lys Glu
195     200     205
Glu Tyr Glu Trp Glu Asp Leu Asp Ala Glu Asp Val Asn Asp Pro Phe
210     215     220
Met Val Ser Glu Tyr Val Asn Asp Ile Phe Glu Tyr Leu His Gln Leu
225     230     235     240
Glu Val Ile Thr Leu Pro Lys Lys Glu Asp Leu Tyr Gln His Arg Asn
245     250     255
Ile His Gln Asn Arg Asp Ile Leu Val Asn Trp Leu Val Lys Ile His
260     265     270
Asn Lys Phe Gly Leu Leu Pro Glu Thr Leu Tyr Leu Ala Ile Asn Ile
275     280     285
Met Asp Arg Phe Leu Gly Lys Glu Leu Val Gln Leu Asp Lys Leu Gln
290     295     300
Leu Val Gly Thr Ser Cys Leu Phe Ile Ala Ser Lys Tyr Glu Glu Val
305     310     315     320
Tyr Ser Pro Ser Ile Lys His Phe Ala Ser Glu Thr Asp Gly Ala Cys
325     330     335
Thr Glu Asp Glu Ile Lys Glu Gly Glu Lys Phe Ile Leu Lys Thr Leu
340     345     350
Lys Phe Asn Leu Asn Tyr Pro Asn Pro Met Asn Phe Leu Arg Arg Ile
355     360     365
Ser Lys Ala Asp Asp Tyr Asp Ile Gln Ser Arg Thr Leu Ala Lys Phe
370     375     380
Leu Leu Glu Ile Ser Leu Val Asp Phe Arg Phe Ile Gly Ile Leu Pro
385     390     395     400
Ser Leu Cys Ala Ala Ala Met Phe Met Ser Arg Lys Met Leu Gly
405     410     415
Lys Gly Lys Trp Asp Gly Asn Leu Ile His Tyr Ser Gly Gly Tyr Thr
420     425     430
Lys Glu Glu Leu Ala Pro Val Cys His Met Ile Met Asp Tyr Leu Val
435     440     445
Ser Pro Ile Val His Asp Glu Phe His Arg Lys Tyr Gln Ser Arg Arg
450     455     460
Phe Met Lys Ala Ser Ile Ile Ser Val Gln Trp Ala Leu Lys Val Arg
465     470     475     480
Lys Asn Gly Tyr Asp Ile Met Thr Leu His Glu
485     490

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&lt;210&gt; 2431

<211> 1449  
 <212> DNA  
 <213> Schizosaccharomyces pombe

<220>  
 <221> CDS  
 <222> (1)..(1449)

<400> 2431  
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 Met Thr Thr Arg Arg Leu Thr Arg Gln His Leu Leu Ala Asn Thr Leu  
 1 5 10 15  
 ggc aac aat gac gaa aat cat cct tca aac cat att gcc cgt gca aaa 96  
 Gly Asn Asn Asp Glu Asn His Pro Ser Asn His Ile Ala Arg Ala Lys  
 20 25 30  
 agc tct ttg cac tct tca gaa aat tct tta gta aat ggc aag aaa gcc 144  
 Ser Ser Leu His Ser Ser Glu Asn Ser Leu Val Asn Gly Lys Lys Ala  
 35 40 45  
 act gtg tct tcc acc aac gtt cct aag aag cgt cat gcg ttg gat gat 192  
 Thr Val Ser Ser Thr Asn Val Pro Lys Lys Arg His Ala Leu Asp Asp  
 50 55 60  
 gtt tcc aat ttt cac aac aaa gaa ggt gtt cca tta gct agt aaa aac 240  
 Val Ser Asn Phe His Asn Lys Glu Gly Val Pro Leu Ala Ser Lys Asn  
 65 70 75 80  
 aca aat gtc aga cac act act gct tct gtc agt acc cgt cgt gct ctc 288  
 Thr Asn Val Arg His Thr Thr Ala Ser Val Ser Thr Arg Arg Ala Leu  
 85 90 95  
 gag gaa aag tct ata atc cct gca aca gat gat gaa ccc gct tcc aag 336  
 Glu Glu Lys Ser Ile Ile Pro Ala Thr Asp Asp Glu Pro Ala Ser Lys  
 100 105 110  
 aag cgt cgc caa cct tct gtt ttt aat tca tca gtc ccc tcg tta cct 384  
 Lys Arg Arg Gln Pro Ser Val Phe Asn Ser Ser Val Pro Ser Leu Pro  
 115 120 125  
 caa cac ttg tca acg aaa tca cac tct gtt tca acc cat ggg gtt gat 432  
 Gln His Leu Ser Thr Lys Ser His Ser Val Ser Thr His Gly Val Asp  
 130 135 140  
 gct ttc cat aag gat caa gca act att cca aaa aaa tta aag aaa gat 480  
 Ala Phe His Lys Asp Gln Ala Thr Ile Pro Lys Lys Leu Lys Lys Asp  
 145 150 155 160  
 gtt gat gaa cgc gtt gtt tcg aaa gat att ccc aaa ctt cac cgt gat 528  
 Val Asp Glu Arg Val Val Ser Lys Asp Ile Pro Lys Leu His Arg Asp  
 165 170 175  
 agt gtt gag agt ccc gaa tct caa gat tgg gat gac ttg gat gca gaa 576  
 Ser Val Glu Ser Pro Glu Ser Gln Asp Trp Asp Asp Leu Asp Ala Glu  
 180 185 190  
 gat tgg gct gac cct ctt atg gtt tct gaa tat gtc gtt gat att ttt 624  
 Asp Trp Ala Asp Pro Leu Met Val Ser Glu Tyr Val Val Asp Ile Phe  
 195 200 205  
 gaa tat ttg aat gag ttg gaa att gaa act atg ccc tct cct act tat 672  
 Glu Tyr Leu Asn Glu Leu Glu Ile Glu Thr Met Pro Ser Pro Thr Tyr  
 210 215 220  
 atg gat cgt caa aaa gag gtt gca tgg aag atg cgt gga ata ctt acc 720  
 Met Asp Arg Gln Lys Glu Leu Ala Trp Lys Met Arg Gly Ile Leu Thr  
 225 230 235 240  
 gat tgg tta att gaa gtg cat tct cgt ttc cga ctg ctt cct gaa aca 768  
 Asp Trp Leu Ile Glu Val His Ser Arg Phe Arg Leu Leu Pro Glu Thr  
 245 250 255  
 ttg ttt ttg gcc gta aat att att gat aga ttt tta tca ttg cgg gta 816  
 Leu Phe Leu Ala Val Asn Ile Ile Asp Arg Phe Leu Ser Leu Arg Val  
 260 265 270  
 tgc tct ctt aac aaa cta caa ttg gtt ggc att gct gcc ttg ttc atc 864  
 Cys Ser Leu Asn Lys Leu Gln Leu Val Gly Ile Ala Ala Leu Phe Ile  
 275 280 285  
 gct agc aag tat gag gag gtg atg tgc cct tca gtc caa aac ttt gta 912  
 Ala Ser Lys Tyr Glu Glu Val Met Cys Pro Ser Val Gln Asn Phe Val  
 290 295 300  
 tat atg gcg gat ggt ggg tat gat gaa gag gaa att ctt caa gcc gag 960  
 Tyr Met Ala Asp Gly Tyr Asp Glu Glu Ile Leu Gln Ala Glu  
 305 310 315 320



## PhoenixTemp32470.tmp.txt

cg	ta	at	tt	cg	gt	ct	ga	tt	aa	ct	gc	ta	cc	aa	cc	1008
Arg	Tyr	Ile	Leu	Arg	Val	Leu	Glu	Phe	Asn	Leu	Ala	Tyr	Pro	Asn	Pro	
				325					330					335		
at	aa	tt	ct	cg	cg	at	tc	aa	gc	ga	tt	ta	ga	at	ca	1056
Met	Asn	Phe	Leu	Arg	Arg	Ile	Ser	Lys	Ala	Asp	Phe	Tyr	Asp	Ile	Gln	
			340					345					350			
ac	ag	ac	gt	gc	aa	ta	ct	gt	ga	at	gg	ct	ta	ga	ca	1104
Thr	Arg	Thr	Val	Ala	Lys	Tyr	Leu	Val	Glu	Ile	Gly	Leu	Leu	Asp	His	
		355					360					365				
aa	ct	ta	cc	ta	cc	cc	tc	ca	ca	tg	gc	gc	gc	at	ta	1152
Lys	Leu	Leu	Pro	Tyr	Pro	Pro	Ser	Gln	Gln	Cys	Ala	Ala	Ala	Met	Tyr	
	370				375					380						
ct	gc	ag	ga	at	ct	gg	cg	gg	cc	tg	aa	cg	aa	ct	gt	1200
Leu	Ala	Arg	Glu	Met	Leu	Gly	Arg	Gly	Pro	Trp	Asn	Arg	Asn	Leu	Val	
	385				390					395					400	
ca	ta	tc	gg	ta	ga	ga	ta	ca	ta	at	tc	gt	gt	aa	aa	1248
His	Tyr	Ser	Gly	Tyr	Glu	Glu	Tyr	Gln	Leu	Ile	Ser	Val	Val	Lys	Lys	
			405					410					415			
at	at	aa	ta	ta	ca	aa	cc	gt	ca	ca	ga	gc	tt	tt	aa	1296
Met	Ile	Asn	Tyr	Leu	Gln	Lys	Pro	Val	Gln	His	Glu	Ala	Phe	Phe	Lys	
			420				425					430				
aa	ta	gc	tc	aa	aa	tt	at	aa	gc	ag	ct	tt	gt	cg	ga	1344
Lys	Tyr	Ala	Ser	Lys	Lys	Phe	Met	Lys	Ala	Ser	Leu	Phe	Val	Arg	Asp	
		435				440					445					
tg	at	aa	aa	aa	tc	at	cc	ct	gg	ga	ga	gc	ga	ga	ga	1392
Trp	Ile	Lys	Lys	Asn	Ser	Ile	Pro	Leu	Gly	Asp	Asp	Ala	Asp	Glu	Asp	
	450				455					460						
ta	ac	tt	ca	aa	ca	aa	cg	at	ca	ca	ga	at	aa	ga	ga	1440
Tyr	Thr	Phe	His	Lys	Gln	Lys	Arg	Ile	Gln	His	Asp	Met	Lys	Asp	Glu	
	465				470				475						480	
ga	tg	ta														1449
Glu	Trp															

&lt;210&gt; 2432

&lt;211&gt; 482

&lt;212&gt; PRT

&lt;213&gt; Schizosaccharomyces pombe

&lt;400&gt; 2432

Met	Thr	Thr	Arg	Arg	Leu	Thr	Arg	Gln	His	Leu	Leu	Ala	Asn	Thr	Leu	
1				5					10					15		
Gly	Asn	Asn	Asp	Glu	Asn	His	Pro	Ser	Asn	His	Ile	Ala	Arg	Ala	Lys	
			20					25					30			
Ser	Ser	Leu	His	Ser	Ser	Glu	Asn	Ser	Leu	Val	Asn	Gly	Lys	Lys	Ala	
		35					40					45				
Thr	Val	Ser	Ser	Thr	Asn	Val	Pro	Lys	Lys	Arg	His	Ala	Leu	Asp	Asp	
	50				55					60						
Val	Ser	Asn	Phe	His	Asn	Lys	Glu	Gly	Val	Pro	Leu	Ala	Ser	Lys	Asn	
65					70				75						80	
Thr	Asn	Val	Arg	His	Thr	Thr	Ala	Ser	Val	Ser	Thr	Arg	Arg	Ala	Leu	
			85					90					95			
Glu	Glu	Lys	Ser	Ile	Ile	Pro	Ala	Thr	Asp	Asp	Glu	Pro	Ala	Ser	Lys	
		100					105					110				
Lys	Arg	Arg	Gln	Pro	Ser	Val	Phe	Asn	Ser	Ser	Val	Pro	Ser	Leu	Pro	
		115					120				125					
Gln	His	Leu	Ser	Thr	Lys	Ser	His	Ser	Val	Ser	Thr	His	Gly	Val	Asp	
	130				135						140					
Ala	Phe	His	Lys	Asp	Gln	Ala	Thr	Ile	Pro	Lys	Lys	Leu	Lys	Lys	Asp	
145					150				155						160	
Val	Asp	Glu	Arg	Val	Val	Ser	Lys	Asp	Ile	Pro	Lys	Leu	His	Arg	Asp	
			165					170					175			
Ser	Val	Glu	Ser	Pro	Glu	Ser	Gln	Asp	Trp	Asp	Asp	Leu	Asp	Ala	Glu	
		180					185					190				
Asp	Trp	Ala	Asp	Pro	Leu	Met	Val	Ser	Glu	Tyr	Val	Val	Asp	Ile	Phe	
	195					200					205					
Glu	Tyr	Leu	Asn	Glu	Leu	Glu	Ile	Glu	Thr	Met	Pro	Ser	Pro	Thr	Tyr	
	210				215					220						
Met	Asp	Arg	Gln	Lys	Glu	Leu	Ala	Trp	Lys	Met	Arg	Gly	Ile	Leu	Thr	

## PhoenixTemp32470.tmp.txt

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225      230      235      240
Asp Trp Leu Ile Glu Val His Ser Arg Phe Arg Leu Leu Pro Glu Thr
245      250      255
Leu Phe Leu Ala Val Asn Ile Ile Asp Arg Phe Leu Ser Leu Arg Val
260      265      270
Cys Ser Leu Asn Lys Leu Gln Leu Val Gly Ile Ala Ala Leu Phe Ile
275      280      285
Ala Ser Lys Tyr Glu Glu Val Met Cys Pro Ser Val Gln Asn Phe Val
290      295      300
Tyr Met Ala Asp Gly Gly Tyr Asp Glu Glu Glu Ile Leu Gln Ala Glu
305      310      315
Arg Tyr Ile Leu Arg Val Leu Glu Phe Asn Leu Ala Tyr Pro Asn Pro
320      325      330
Met Asn Phe Leu Arg Arg Ile Ser Lys Ala Asp Phe Tyr Asp Ile Gln
335      340      345
Thr Arg Thr Val Ala Lys Tyr Leu Val Glu Ile Gly Leu Leu Asp His
350      355      360
Lys Leu Leu Pro Tyr Pro Pro Ser Gln Gln Cys Ala Ala Met Tyr
365      370      375
Leu Ala Arg Glu Met Leu Gly Arg Gly Pro Trp Asn Arg Asn Leu Val
380      385      390
His Tyr Ser Gly Tyr Glu Glu Tyr Gln Leu Ile Ser Val Val Lys Lys
395      400      405
Met Ile Asn Tyr Leu Gln Lys Pro Val Gln His Glu Ala Phe Phe Lys
410      415      420
Lys Tyr Ala Ser Lys Lys Phe Met Lys Ala Ser Leu Phe Val Arg Asp
425      430      435
Trp Ile Lys Lys Asn Ser Ile Pro Leu Gly Asp Asp Ala Asp Glu Asp
440      445      450
Tyr Thr Phe His Lys Gln Lys Arg Ile Gln His Asp Met Lys Asp Glu
455      460      465
Glu Trp
470      475      480

```

&lt;210&gt; 2433

&lt;211&gt; 1383

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1383)

&lt;400&gt; 2433

```

atg atg ctt gaa ggg tat acg gta caa cct cca cag tct act ttg ata      48
Met Met Leu Glu Gly Tyr Thr Val Gln Pro Pro Gln Ser Thr Leu Ile
1      5      10      15
ggt gac att gaa att cag gac gaa aat gca aac caa gaa gtt aag aac      96
Gly Asp Ile Glu Ile Gln Asp Glu Asn Ala Asn Gln Glu Val Lys Asn
20      25      30
gta ctt tac caa gga gtt caa aag ggt ata aaa agg cta gaa aaa aga      144
Val Leu Tyr Gln Gly Val Gln Lys Gly Ile Lys Arg Leu Glu Lys Arg
35      40      45
caa agg agg gtt gca tta ggt gat gta acc tct caa aag gca aac aaa      192
Gln Arg Arg Val Ala Leu Gly Asp Val Thr Ser Gln Lys Ala Asn Lys
50      55      60
ata cac aat gct ata cat aat aaa ttc cat cag acg aag aac aat ttt      240
Ile His Asn Ala Ile His Asn Lys Phe His Gln Thr Lys Asn Asn Phe
65      70      75      80
gaa ata gag aac ata cgc tca tcg gcc ttg gta aaa gaa caa caa cga      288
Glu Ile Glu Asn Ile Arg Ser Ser Ala Leu Val Lys Glu Gln Gln Arg
85      90      95
gac gta agg cat gaa gat agc gac tat ttt tta att gat agt tct gaa      336
Asp Val Arg His Glu Asp Ser Asp Tyr Phe Leu Ile Asp Ser Ser Glu
100      105      110
ggc tct tct act gat gac gaa caa gtt aat gaa gat gct att gat gat      384
Gly Ser Ser Thr Asp Asp Glu Gln Val Asn Glu Asp Ala Ile Asp Asp
115      120      125
ttg tta agt cga aga gta aat gat cag cag att caa gcc gat gaa gtg      432

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## PhoenixTemp32470.tmp.txt

Leu	Leu	Ser	Arg	Arg	Val	Asn	Asp	Gln	Gln	Ile	Gln	Ala	Asp	Glu	Val		
130	130					135					140						
tat	gaa	gat	ttc	gat	gga	gaa	atg	caa	gat	gtc	att	gaa	gag	gat	gtt	480	
Tyr	Glu	Asp	Phe	Asp	Gly	Glu	Met	Gln	Asp	Val	Ile	Glu	Glu	Asp	Val		
145					150					155					160		
gat	agt	caa	att	gaa	cca	cta	tca	cca	ata	aac	aac	gat	gaa	att	cag	528	
Asp	Ser	Gln	Ile	Glu	Pro	Leu	Ser	Pro	Ile	Asn	Asn	Asp	Glu	Ile	Gln		
				165					170						175		
act	gag	ctg	gac	agg	gcg	ttt	gaa	aaa	tat	ttt	cgg	tcg	gtt	ccc	aat	576	
Thr	Glu	Leu	Asp	Arg	Ala	Phe	Glu	Lys	Tyr	Phe	Arg	Ser	Val	Pro	Asn		
			180					185					190				
ccg	ctg	gat	gat	gat	acc	cat	gat	ggt	gtg	atg	ggt	gtg	gag	tac	gct	624	
Pro	Leu	Asp	Asp	Asp	Thr	His	Asp	Val	Val	Met	Val	Val	Glu	Tyr	Ala		
			195				200					205					
tcc	gac	ata	ttc	tat	tac	ttg	aga	gaa	ctt	gaa	gtg	aaa	tat	agg	cct	672	
Ser	Asp	Ile	Phe	Tyr	Tyr	Leu	Arg	Glu	Leu	Glu	Val	Lys	Tyr	Arg	Pro		
						215					220						
aat	ccc	tac	tat	atg	caa	aat	caa	gta	gag	ctt	aca	tgg	ccg	ttc	aga	720	
Asn	Pro	Tyr	Tyr	Met	Gln	Asn	Gln	Val	Glu	Leu	Thr	Trp	Pro	Phe	Arg		
225					230					235					240		
cga	act	atg	ata	gat	tgg	cta	ggt	caa	ctg	cat	ttt	aga	ttt	caa	ctt	768	
Arg	Thr	Met	Ile	Asp	Trp	Leu	Val	Gln	Leu	His	Phe	Arg	Phe	Gln	Leu		
				245				250						255			
tta	cca	gaa	acg	cta	tac	ctg	acg	att	aat	ata	gtg	gat	aga	ttt	ctg	816	
Leu	Pro	Glu	Thr	Leu	Tyr	Leu	Thr	Ile	Asn	Ile	Val	Asp	Arg	Phe	Leu		
			260					265					270				
tca	aag	aag	acc	ggt	act	ttg	aac	agg	ttt	caa	ttg	ggt	ggt	gta	tcg	864	
Ser	Lys	Lys	Thr	Val	Thr	Leu	Asn	Arg	Phe	Gln	Leu	Val	Gly	Val	Ser		
			275				280					285					
gct	tta	ttt	att	gct	gcc	aag	ttt	gaa	gag	att	aac	tgc	ccc	act	ttg	912	
Ala	Leu	Phe	Ile	Ala	Ala	Lys	Phe	Glu	Glu	Ile	Asn	Cys	Pro	Thr	Leu		
						295					300						
gat	gat	cta	ggt	tac	atg	ctg	gaa	aat	aca	tac	act	aga	gat	gac	att	960	
Asp	Asp	Leu	Val	Tyr	Met	Leu	Glu	Asn	Thr	Tyr	Thr	Arg	Asp	Asp	Ile		
305					310					315					320		
att	aga	gcg	gaa	cag	tat	atg	ata	gat	act	ctg	gaa	ttt	gaa	ata	ggt	1008	
Ile	Arg	Ala	Glu	Gln	Tyr	Met	Ile	Asp	Thr	Leu	Glu	Phe	Glu	Ile	Gly		
				325					330					335			
tgg	cca	gga	ccc	atg	cca	ttt	tta	aga	agg	ata	agt	aaa	gca	gat	gac	1056	
Trp	Pro	Gly	Pro	Met	Pro	Phe	Leu	Arg	Arg	Ile	Ser	Lys	Ala	Asp	Asp		
			340					345					350				
tat	gac	ttc	gaa	cca	aga	aca	tta	gca	aag	tac	tta	ttg	gaa	act	aca	1104	
Tyr	Asp	Phe	Glu	Pro	Arg	Thr	Leu	Ala	Lys	Tyr	Leu	Leu	Glu	Thr	Thr		
			355				360					365					
ata	gta	gaa	ccc	aaa	cta	gtg	gct	gcg	gca	cca	agc	tgg	tta	gct	gct	1152	
Ile	Val	Glu	Pro	Lys	Leu	Val	Ala	Ala	Ala	Pro	Ser	Trp	Leu	Ala	Ala		
						375					380						
ggc	gcg	tat	ttt	ctg	agc	aga	aca	att	ctt	ggt	tca	aat	gat	tgg	tct	1200	
Gly	Ala	Tyr	Phe	Leu	Ser	Arg	Thr	Ile	Leu	Gly	Ser	Asn	Asp	Trp	Ser		
385					390					395					400		
tta	aaa	cat	gta	ttc	tac	tct	ggc	tat	aca	tcc	agc	caa	ata	att	cct	1248	
Leu	Lys	His	Val	Phe	Tyr	Ser	Gly	Tyr	Thr	Ser	Ser	Gln	Ile	Ile	Pro		
				405				410						415			
tta	gca	tca	ctg	ata	ttg	gag	aat	tgc	aag	aac	gca	tct	cga	cgc	cat	1296	
Leu	Ala	Ser	Leu	Ile	Leu	Glu	Asn	Cys	Lys	Asn	Ala	Ser	Arg	Arg	His		
			420					425					430				
cat	tca	att	tgg	aaa	aaa	tac	ttt	gac	caa	aag	cat	tac	cgc	tgt	tct	1344	
His	Ser	Ile	Trp	Lys	Lys	Tyr	Phe	Asp	Gln	Lys	His	Tyr	Arg	Cys	Ser		
			435				440					445					
caa	att	gta	gaa	gaa	tgg	att	ggt	tcg	aca	gaa	gcc	taa				1383	
Gln	Ile	Val	Glu	Glu	Trp	Ile	Val	Ser	Thr	Glu	Ala						
			450			455					460						

&lt;210&gt; 2434

&lt;211&gt; 460

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2434

## PhoenixTemp32470.tmp.txt

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Met Met Leu Glu Gly Tyr Thr Val Gln Pro Pro Gln Ser Thr Leu Ile
1      5      10      15
Gly Asp Ile Glu Ile Gln Asp Glu Asn Ala Asn Gln Glu Val Lys Asn
20      25      30
Val Leu Tyr Gln Gly Val Gln Lys Gly Ile Lys Arg Leu Glu Lys Arg
35      40      45
Gln Arg Arg Val Ala Leu Gly Asp Val Thr Ser Gln Lys Ala Asn Lys
50      55      60
Ile His Asn Ala Ile His Asn Lys Phe His Gln Thr Lys Asn Asn Phe
65      70      75      80
Glu Ile Glu Asn Ile Arg Ser Ser Ala Leu Val Lys Glu Gln Gln Arg
85      90      95
Asp Val Arg His Glu Asp Ser Asp Tyr Phe Leu Ile Asp Ser Ser Glu
100      105      110
Gly Ser Ser Thr Asp Asp Glu Gln Val Asn Glu Asp Ala Ile Asp Asp
115      120      125
Leu Leu Ser Arg Arg Val Asn Asp Gln Gln Ile Gln Ala Asp Glu Val
130      135      140
Tyr Glu Asp Phe Asp Gly Glu Met Gln Asp Val Ile Glu Glu Asp Val
145      150      155      160
Asp Ser Gln Ile Glu Pro Leu Ser Pro Ile Asn Asn Asp Glu Ile Gln
165      170      175
Thr Glu Leu Asp Arg Ala Phe Glu Lys Tyr Phe Arg Ser Val Pro Asn
180      185      190
Pro Leu Asp Asp Thr His Asp Val Val Met Val Val Glu Tyr Ala
195      200      205
Ser Asp Ile Phe Tyr Tyr Leu Arg Glu Leu Glu Val Lys Tyr Arg Pro
210      215      220
Asn Pro Tyr Tyr Met Gln Asn Gln Val Glu Leu Thr Trp Pro Phe Arg
225      230      235      240
Arg Thr Met Ile Asp Trp Leu Val Gln Leu His Phe Arg Phe Gln Leu
245      250      255
Leu Pro Glu Thr Leu Tyr Leu Thr Ile Asn Ile Val Asp Arg Phe Leu
260      265      270
Ser Lys Lys Thr Val Thr Leu Asn Arg Phe Gln Leu Val Gly Val Ser
275      280      285
Ala Leu Phe Ile Ala Ala Lys Phe Glu Glu Ile Asn Cys Pro Thr Leu
290      295      300
Asp Asp Leu Val Tyr Met Leu Glu Asn Thr Tyr Thr Arg Asp Asp Ile
305      310      315      320
Ile Arg Ala Glu Gln Tyr Met Ile Asp Thr Leu Glu Phe Glu Ile Gly
325      330      335
Trp Pro Gly Pro Met Pro Phe Leu Arg Arg Ile Ser Lys Ala Asp Asp
340      345      350
Tyr Asp Phe Glu Pro Arg Thr Leu Ala Lys Tyr Leu Leu Glu Thr Thr
355      360      365
Ile Val Glu Pro Lys Leu Val Ala Ala Pro Ser Trp Leu Ala Ala
370      375      380
Gly Ala Tyr Phe Leu Ser Arg Thr Ile Leu Gly Ser Asn Asp Trp Ser
385      390      395      400
Leu Lys His Val Phe Tyr Ser Gly Tyr Thr Ser Ser Gln Ile Ile Pro
405      410      415
Leu Ala Ser Leu Ile Leu Glu Asn Cys Lys Asn Ala Ser Arg Arg His
420      425      430
His Ser Ile Trp Lys Lys Tyr Phe Asp Gln Lys His Tyr Arg Cys Ser
435      440      445
Gln Ile Val Glu Glu Trp Ile Val Ser Thr Glu Ala
450      455      460

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&lt;210&gt; 2435

&lt;211&gt; 1308

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1308)

&lt;400&gt; 2435

PhoenixTemp32470.tmp.txt																
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Met	Gly	Glu	Asn	His	Asp	His	Glu	Gln	Ser	Ile	Lys	Arg	Asn	Ser	Met	
1				5				10						15		
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Ile	Tyr	Asn	Glu	Asn	Glu	Arg	Gln	Leu	Cys	Asn	Ser	Asn	Leu	Lys	Ile	
		20						25					30			
ctt	caa	aat	aaa	agg	gcc	ctt	tca	aaa	aat	gac	agc	tct	agt	aag	cag	144
Leu	Gln	Asn	Lys	Arg	Ala	Leu	Ser	Lys	Asn	Asp	Ser	Ser	Ser	Lys	Gln	
		35					40					45				
cag	gtt	cag	gat	tct	aaa	cca	aga	agg	gct	tta	aca	gat	gta	cca	gtg	192
Gln	Val	Gln	Asp	Ser	Lys	Pro	Arg	Arg	Ala	Leu	Thr	Asp	Val	Pro	Val	
	50					55					60					
aac	aat	aat	cct	tta	agc	cag	aac	aag	aga	ata	gta	gca	ggg	agc	aag	240
Asn	Asn	Asn	Pro	Leu	Ser	Gln	Asn	Lys	Arg	Ile	Val	Ala	Gly	Ser	Lys	
	65				70					75					80	
gcg	gcc	aaa	gta	cga	aga	gaa	gaa	aac	att	aga	cct	att	gtt	agc	gcc	288
Ala	Ala	Lys	Val	Arg	Arg	Glu	Glu	Asn	Ile	Arg	Pro	Ile	Val	Ser	Ala	
				85					90					95		
gtt	caa	aaa	aga	cag	ata	tat	aac	gat	cga	acg	gca	gca	gag	caa	gaa	336
Val	Gln	Lys	Arg	Gln	Ile	Tyr	Asn	Asp	Arg	Thr	Ala	Ala	Glu	Gln	Glu	
			100					105					110			
gaa	gaa	gaa	gaa	gaa	gaa	gga	gaa	gat	gat	gat	gct	gct	tcg	ata	gtg	384
Glu	Glu	Glu	Glu	Glu	Glu	Gly	Glu	Asp	Asp	Asp	Ala	Ala	Ser	Ile	Val	
		115					120					125				
aac	aaa	aaa	cgc	aga	ata	gac	gct	gaa	gga	gtg	agt	gaa	ata	gta	ggc	432
Asn	Lys	Lys	Arg	Arg	Ile	Asp	Ala	Glu	Gly	Val	Ser	Glu	Ile	Val	Gly	
	130					135					140					
tgg	cag	gac	cta	gat	tat	gtt	gaa	aaa	gat	gat	act	gca	atg	gta	gca	480
Trp	Gln	Asp	Leu	Asp	Tyr	Val	Glu	Lys	Asp	Asp	Thr	Ala	Met	Val	Ala	
	145				150					155				160		
gaa	tat	tct	gct	gaa	att	ttt	gca	ttt	tta	tat	aga	aga	gaa	tta	gaa	528
Glu	Tyr	Ser	Ala	Glu	Ile	Phe	Ala	Phe	Leu	Tyr	Arg	Arg	Glu	Leu	Glu	
			165					170						175		
acg	tta	cca	tcg	cac	aac	tat	tta	ctc	gac	aaa	acg	tcc	aag	tat	tat	576
Thr	Leu	Pro	Ser	His	Asn	Tyr	Leu	Leu	Asp	Lys	Thr	Ser	Lys	Tyr	Tyr	
			180					185					190			
ttg	agg	cct	tcc	atg	aga	aca	ata	tta	gtg	gat	tgg	ctg	gta	gag	gtg	624
Leu	Arg	Pro	Ser	Met	Arg	Thr	Ile	Leu	Val	Asp	Trp	Leu	Val	Glu	Val	
		195					200					205				
cac	gaa	aaa	ttt	caa	tgc	tat	ccg	gaa	acg	tta	ttc	cta	tcc	ata	aac	672
His	Glu	Lys	Phe	Gln	Cys	Tyr	Pro	Glu	Thr	Leu	Phe	Leu	Ser	Ile	Asn	
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Leu	Met	Asp	Arg	Phe	Leu	Ala	Lys	Asn	Lys	Val	Thr	Met	Asn	Lys	Leu	
	225				230					235				240		
caa	tta	ttg	gca	gtt	acc	tca	ctt	ttc	atc	gcg	gca	aaa	ttt	gaa	gag	768
Gln	Leu	Leu	Ala	Val	Thr	Ser	Leu	Phe	Ile	Ala	Ala	Lys	Phe	Glu	Glu	
			245					250						255		
gta	aat	ttg	ccc	aaa	cta	gct	gaa	tac	gct	tat	atc	act	gac	ggc	gcg	816
Val	Asn	Leu	Pro	Lys	Leu	Ala	Glu	Tyr	Ala	Tyr	Ile	Thr	Asp	Gly	Ala	
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Ala	Ser	Lys	Asn	Asp	Ile	Lys	Asn	Ala	Glu	Met	Phe	Met	Leu	Thr	Ser	
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Leu	Glu	Phe	Asn	Ile	Gly	Trp	Pro	Asn	Pro	Leu	Asn	Phe	Leu	Arg	Arg	
	290					295					300					
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Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Pro	Val	Asn	Arg	Asn	Ile	Gly	Lys	
	305				310					315				320		
ttt	att	tta	gag	tat	gcc	tac	tgc	tgc	cac	caa	ttc	att	cat	tta	cct	1008
Phe	Ile	Leu	Glu	Tyr	Ala	Tyr	Cys	Cys	His	Gln	Phe	Ile	His	Leu	Pro	
			325						330					335		
cca	tct	acc	gta	agc	gca	atg	gca	atg	tat	ata	gcg	aga	aga	atg	acc	1056
Pro	Ser	Thr	Val	Ser	Ala	Met	Ala	Met	Tyr	Ile	Ala	Arg	Arg	Met	Thr	
			340					345					350			
aac	aga	aac	aag	aac	gag	cta	ttg	aat	gga	aca	cta	cag	cat	tac	agt	1104
Asn	Arg	Asn	Lys	Asn	Glu	Leu	Trp	Asn	Gly	Thr	Leu	Gln	His	Tyr	Ser	
		355					360					365				

## PhoenixTemp32470.tmp.txt

ggt	ggt	atc	gat	cca	ata	cac	gat	gaa	gcg	ttt	cag	tct	ctc	tgc	att	1152
Gly	Gly	Ile	Asp	Pro	Ile	His	Asp	Glu	Ala	Phe	Gln	Ser	Leu	Cys	Ile	
	370					375					380					
gat	cta	gtc	aaa	gac	atc	gct	agt	tcc	aaa	act	cat	tta	gat	tca	ttg	1200
Asp	Leu	Val	Lys	Asp	Ile	Ala	Ser	Ser	Lys	Thr	His	Leu	Asp	Ser	Leu	
385					390					395					400	
att	ttg	aag	tac	aag	aaa	cca	agg	tat	ggc	tct	ggt	tat	ttc	caa	act	1248
Ile	Leu	Lys	Tyr	Lys	Lys	Pro	Arg	Tyr	Gly	Ser	Val	Tyr	Phe	Gln	Thr	
				405					410					415		
ttc	aag	tgg	tgt	aca	tcc	gaa	atg	cat	agc	aac	ttt	caa	aat	cta	ttt	1296
Phe	Lys	Trp	Cys	Thr	Ser	Glu	Met	His	Ser	Asn	Phe	Gln	Asn	Leu	Phe	
			420					425					430			
aat	ctt	aag	tag													1308
Asn	Leu	Lys														
		435														

&lt;210&gt; 2436

&lt;211&gt; 435

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2436

Met	Gly	Glu	Asn	His	Asp	His	Glu	Gln	Ser	Ile	Lys	Arg	Asn	Ser	Met	
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Ile	Tyr	Asn	Glu	Asn	Glu	Arg	Gln	Leu	Cys	Asn	Ser	Asn	Leu	Lys	Ile	
			20					25					30			
Leu	Gln	Asn	Lys	Arg	Ala	Leu	Ser	Lys	Asn	Asp	Ser	Ser	Ser	Lys	Gln	
		35					40					45				
Gln	Val	Gln	Asp	Ser	Lys	Pro	Arg	Arg	Ala	Leu	Thr	Asp	Val	Pro	Val	
	50					55					60					
Asn	Asn	Asn	Pro	Leu	Ser	Gln	Asn	Lys	Arg	Ile	Val	Ala	Gly	Ser	Lys	
65				70						75					80	
Ala	Ala	Lys	Val	Arg	Arg	Glu	Glu	Asn	Ile	Arg	Pro	Ile	Val	Ser	Ala	
				85					90					95		
Val	Gln	Lys	Arg	Gln	Ile	Tyr	Asn	Asp	Arg	Thr	Ala	Ala	Glu	Gln	Glu	
		100					105						110			
Glu	Glu	Glu	Glu	Glu	Glu	Gly	Glu	Asp	Asp	Asp	Ala	Ala	Ser	Ile	Val	
		115				120					125					
Asn	Lys	Lys	Arg	Arg	Ile	Asp	Ala	Glu	Gly	Val	Ser	Glu	Ile	Val	Gly	
	130					135				140						
Trp	Gln	Asp	Leu	Asp	Tyr	Val	Glu	Lys	Asp	Asp	Thr	Ala	Met	Val	Ala	
145				150					155					160		
Glu	Tyr	Ser	Ala	Glu	Ile	Phe	Ala	Phe	Leu	Tyr	Arg	Arg	Glu	Leu	Glu	
			165					170					175			
Thr	Leu	Pro	Ser	His	Asn	Tyr	Leu	Leu	Asp	Lys	Thr	Ser	Lys	Tyr	Tyr	
			180				185						190			
Leu	Arg	Pro	Ser	Met	Arg	Thr	Ile	Leu	Val	Asp	Trp	Leu	Val	Glu	Val	
		195					200					205				
His	Glu	Lys	Phe	Gln	Cys	Tyr	Pro	Glu	Thr	Leu	Phe	Leu	Ser	Ile	Asn	
	210				215					220						
Leu	Met	Asp	Arg	Phe	Leu	Ala	Lys	Asn	Lys	Val	Thr	Met	Asn	Lys	Leu	
225					230					235				240		
Gln	Leu	Leu	Ala	Val	Thr	Ser	Leu	Phe	Ile	Ala	Ala	Lys	Phe	Glu	Glu	
			245					250					255			
Val	Asn	Leu	Pro	Lys	Leu	Ala	Glu	Tyr	Ala	Tyr	Ile	Thr	Asp	Gly	Ala	
			260				265					270				
Ala	Ser	Lys	Asn	Asp	Ile	Lys	Asn	Ala	Glu	Met	Phe	Met	Leu	Thr	Ser	
		275					280					285				
Leu	Glu	Phe	Asn	Ile	Gly	Trp	Pro	Asn	Pro	Leu	Asn	Phe	Leu	Arg	Arg	
	290				295					300						
Ile	Ser	Lys	Ala	Asp	Asp	Tyr	Asp	Pro	Val	Asn	Arg	Asn	Ile	Gly	Lys	
305				310					315					320		
Phe	Ile	Leu	Glu	Tyr	Ala	Tyr	Cys	Cys	His	Gln	Phe	Ile	His	Leu	Pro	
			325					330					335			
Pro	Ser	Thr	Val	Ser	Ala	Met	Ala	Met	Tyr	Ile	Ala	Arg	Arg	Met	Thr	
			340				345						350			
Asn	Arg	Asn	Lys	Asn	Glu	Leu	Trp	Asn	Gly	Thr	Leu	Gln	His	Tyr	Ser	
		355				360						365				
Gly	Gly	Ile	Asp	Pro	Ile	His	Asp	Glu	Ala	Phe	Gln	Ser	Leu	Cys	Ile	

## PhoenixTemp32470.tmp.txt

370  
 Asp Leu Val Lys Asp Ile 375  
 385 390  
 Ile Leu Lys Tyr Lys Lys Pro Arg Tyr Gly Ser Val Tyr Phe Gln Thr  
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 Phe Lys Trp Cys Thr Ser Glu Met His Ser Asn Phe Gln Asn Leu Phe  
 415  
 Asn Leu Lys 420  
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 <212> DNA  
 <213> Oryza sativa

<220>  
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 <222> (1)..(1515)

<400> 2437  
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 gcg ggc gcc gcg gcc aag aag cgc gtc gcg ctt gtc aac atc acc 96  
 Ala Gly Ala Ala Lys Lys Arg Val Ala Leu Val Asn Ile Thr  
 20 25 30  
 aac gtt gcc gcc gcg gcc aac aat gcg aaa ttt aat tca gct acc tgg 144  
 Asn Val Ala Ala Ala Asn Asn Ala Lys Phe Asn Ser Ala Thr Trp  
 35 40 45  
 gct gca cct gtg aag aag gga tct ttg gcc agt ggc cgc aat gtg tgc 192  
 Ala Ala Pro Val Lys Lys Gly Ser Leu Ala Ser Gly Arg Asn Val Cys  
 50 55 60  
 acg aat cgg gtc tca gcg gtg aaa tcg gct tcc gcc aag cca gct ccg 240  
 Thr Asn Arg Val Ser Ala Val Lys Ser Ala Ser Ala Lys Pro Ala Pro  
 65 70 75 80  
 gcc ata tcc cgc cat gag agc gcc cca cag aag gag tca gtt att cct 288  
 Ala Ile Ser Arg His Glu Ser Ala Pro Gln Lys Glu Ser Val Ile Pro  
 85 90 95  
 cct aaa gtg ctt agc att gtt ccg act gct gca ccc gca cct gtc act 336  
 Pro Lys Val Leu Ser Ile Val Pro Thr Ala Ala Pro Ala Pro Val Thr  
 100 105 110  
 gta ccc tgc agc agc ttc gtc tcc cct atg cat tca gga gat tca gtt 384  
 Val Pro Cys Ser Ser Phe Val Ser Pro Met His Ser Gly Asp Ser Val  
 115 120 125  
 tcg gtt gac gag acg atg tcg atg tgt gac tca atg aaa agc cca gac 432  
 Ser Val Asp Glu Thr Met Ser Met Cys Asp Ser Met Lys Ser Pro Asp  
 130 135 140  
 ttt gag tac att gat aat ggg gat tcc tcc tca gtt cta ggt tcc ttg 480  
 Phe Glu Tyr Ile Asp Asn Gly Asp Ser Ser Ser Val Leu Gly Ser Leu  
 145 150 155 160  
 cag cga aga gca aac gag aac ctg cgt atc tca gag gat aga gat gtt 528  
 Gln Arg Arg Ala Asn Glu Asn Leu Arg Ile Ser Glu Asp Arg Asp Val  
 165 170 175  
 gaa gaa act aag tgg aat aag gat gct cct tcc cca atg gaa atc gac 576  
 Glu Glu Thr Lys Trp Asn Lys Asp Ala Pro Ser Pro Met Glu Ile Asp  
 180 185 190  
 caa att tgt gat gtt gac aat aac tac gag gat ccg cag ttg tgt gct 624  
 Gln Ile Cys Asp Val Asp Asn Asn Tyr Glu Asp Pro Gln Leu Cys Ala  
 195 200 205  
 act ctt gct tct gat atc tac atg cac ttg cgc gag gcc gag acc agg 672  
 Thr Leu Ala Ser Asp Ile Tyr Met His Leu Arg Glu Ala Glu Thr Arg  
 210 215 220  
 aaa cgt cca tca act gat ttt atg gaa aca atc caa aag gat gta aac 720  
 Lys Arg Pro Ser Thr Asp Phe Met Glu Thr Ile Gln Lys Asp Val Asn  
 225 230 235 240  
 cca agc atg aga gcg atc ctg ata gac tgg ctt gtg gaa gtc gct gaa 768  
 Pro Ser Met Arg Ala Ile Leu Ile Asp Trp Leu Val Glu Val Ala Glu  
 245 250 255  
 gaa tat cgt ctt gtt cct gat aca tta tac ctg aca gtt aac tac att 816

## PhoenixTemp32470.tmp.txt

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Asp	Arg	Tyr	Leu	Ser	Gly	Asn	Glu	Ile	Asn	Arg	Gln	Arg	Leu	Gln	Leu	
	275						280				285					
ctt	gga	gtt	gct	tgt	atg	ctt	att	gct	gca	aaa	tac	gag	gag	ata	tgt	912
Leu	Gly	Val	Ala	Cys	Met	Leu	Ile	Ala	Ala	Lys	Tyr	Glu	Glu	Ile	Cys	
	290					295					300					
gca	cct	caa	gta	gaa	gaa	ttc	tgc	tat	ata	act	gac	aac	aca	tac	ttc	960
Ala	Pro	Gln	Val	Glu	Glu	Phe	Cys	Tyr	Ile	Thr	Asp	Asn	Thr	Tyr	Phe	
305					310					315					320	
aga	gat	gag	gtt	ttg	gaa	atg	gaa	gct	tct	gtc	ctg	aat	tac	ctg	aag	1008
Arg	Asp	Glu	Val	Leu	Glu	Met	Glu	Ala	Ser	Val	Leu	Asn	Tyr	Leu	Lys	
				325					330					335		
ttt	gaa	gtg	act	gca	cct	aca	gca	aaa	tgc	ttt	ttg	agg	aga	ttt	gtc	1056
Phe	Glu	Val	Thr	Ala	Pro	Thr	Ala	Lys	Cys	Phe	Leu	Arg	Arg	Phe	Val	
			340					345					350			
cgt	gtt	gca	caa	gta	tcg	gat	gag	gat	cca	gca	ttg	cat	ctt	gag	ttc	1104
Arg	Val	Ala	Gln	Val	Ser	Asp	Glu	Asp	Pro	Ala	Leu	His	Leu	Glu	Phe	
		355					360					365				
cta	gcc	aat	tat	gtt	gct	gag	cta	tca	ctg	ctg	gag	tac	aat	cta	ctt	1152
Leu	Ala	Asn	Tyr	Val	Ala	Glu	Leu	Ser	Leu	Leu	Glu	Tyr	Asn	Leu	Leu	
	370					375					380					
tct	tac	cct	cct	tca	cta	gta	gcg	gca	tcg	gct	att	ttc	ttg	gcc	aaa	1200
Ser	Tyr	Pro	Pro	Ser	Leu	Val	Ala	Ala	Ser	Ala	Ile	Phe	Leu	Ala	Lys	
385					390					395					400	
ttc	ata	ctg	cag	cca	aca	aag	cac	cct	tgg	aat	tcc	acc	ctt	gct	cac	1248
Phe	Ile	Leu	Gln	Pro	Thr	Lys	His	Pro	Trp	Asn	Ser	Thr	Leu	Ala	His	
			405						410					415		
tac	aca	caa	tac	aag	tcg	tca	gag	tta	agc	gac	tgt	gta	aag	gca	ttg	1296
Tyr	Thr	Gln	Tyr	Lys	Ser	Ser	Glu	Leu	Ser	Asp	Cys	Val	Lys	Ala	Leu	
			420					425					430			
cac	cgc	ctt	ttt	agc	gtt	ggt	ccc	ggg	agt	aac	ctt	cct	gca	atc	agg	1344
His	Arg	Leu	Phe	Ser	Val	Gly	Pro	Gly	Ser	Asn	Leu	Pro	Ala	Ile	Arg	
			435				440					445				
gag	aag	tat	acc	caa	cat	aag	ata	ctg	cat	gca	gct	gat	gtg	atc	gac	1392
Glu	Lys	Tyr	Thr	Gln	His	Lys	Ile	Leu	His	Ala	Ala	Asp	Val	Ile	Asp	
	450					455					460					
ttg	aac	atg	gca	aat	gca	ttt	aag	aat	gtg	aaa	ata	tta	tgt	caa	tgt	1440
Leu	Asn	Met	Ala	Asn	Ala	Phe	Lys	Asn	Val	Lys	Ile	Leu	Cys	Gln	Cys	
465					470					475					480	
ccc	tgt	caa	tgc	aac	ctt	ctt	gaa	gaa	gtc	atg	ctc	aag	cta	ttt	cca	1488
Pro	Cys	Gln	Cys	Asn	Leu	Leu	Glu	Glu	Val	Met	Leu	Lys	Leu	Phe	Pro	
			485						490					495		
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Tyr	Trp	Lys	Leu	Ser	Thr	Ala	Val									
			500													

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 <213> Oryza sativa

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 35 40 45  
 Ala Ala Pro Val Lys Lys Gly Ser Leu Ala Ser Gly Arg Asn Val Cys  
 50 55 60  
 Thr Asn Arg Val Ser Ala Val Lys Ser Ala Ser Ala Lys Pro Ala Pro  
 65 70 75 80  
 Ala Ile Ser Arg His Glu Ser Ala Pro Gln Lys Glu Ser Val Ile Pro  
 85 90 95  
 Pro Lys Val Leu Ser Ile Val Pro Thr Ala Ala Pro Ala Pro Val Thr  
 100 105 110  
 Val Pro Cys Ser Ser Phe Val Ser Pro Met His Ser Gly Asp Ser Val



## PhoenixTemp32470.tmp.txt

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115
Ser Val Asp Glu Thr Met Ser 120 Met Cys Asp Ser Met 125 Lys Ser Pro Asp
130
Phe Glu Tyr Ile Asp Asn 135 Gly Asp Ser Ser Ser Val 140 Leu Gly Ser Leu
145
Gln Arg Arg Ala Asn 150 Glu Asn Leu Arg Ile Ser 155 Glu Asp Arg Asp Val
165
Glu Glu Thr Lys 180 Trp Asn Lys Asp Ala 185 Pro Ser Pro Met Glu 190 Ile Asp
195
Gln Ile Cys Asp Val Asp Asn 200 Asn Tyr Glu Asp Pro Gln Leu Cys Ala
210
Thr Leu Ala Ser Asp Ile Tyr 215 Met His Leu Arg Glu 220 Ala Glu Thr Arg
225
Lys Arg Pro Ser Thr Asp 230 Phe Met Glu Thr Ile 235 Gln Lys Asp Val Asn
240
Pro Ser Met Arg Ala 245 Ile Leu Ile Asp Trp Leu Val Glu Val Ala Glu
255
Glu Tyr Arg Leu Val Pro Asp Thr Leu Tyr Leu Thr Val Asn Tyr Ile
260
Asp Arg Tyr Leu Ser Gly Asn Glu 280 Ile Asn Arg Gln Arg Leu Gln Leu
275
Leu Gly Val Ala Cys Met Leu 295 Ile Ala Ala Lys Tyr 300 Glu Glu Ile Cys
310
Ala Pro Gln Val Glu Glu Phe Cys Tyr Ile Thr 315 Asp Asn Thr Tyr Phe
320
Arg Asp Glu Val Leu Glu Met Glu Ala Ser Val Leu Asn Tyr Leu Lys
335
Phe Glu Val Thr Ala Pro Thr Ala Lys 345 Cys Phe Leu Arg Arg Phe Val
350
Arg Val Ala Gln Val Ser Asp Glu 360 Asp Pro Ala Leu His Leu Glu Phe
370
Leu Ala Asn Tyr Val Ala Glu Leu Ser Leu Leu Glu Tyr Asn Leu Leu
380
Ser Tyr Pro Pro Ser Leu Val Ala Ala Ser Ala 395 Ile Phe Leu Ala Lys
400
Phe Ile Leu Gln Pro Thr Lys His Pro Trp 410 Asn Ser Thr Leu Ala His
420
Tyr Thr Gln Tyr Lys Ser Ser Glu Leu Ser Asp Cys Val Lys Ala Leu
435
His Arg Leu Phe Ser Val Gly Pro Gly Ser Asn Leu Pro Ala Ile Arg
445
Glu Lys Tyr Thr Gln His Lys 455 Ile Leu His Ala Ala Asp Val Ile Asp
460
Leu Asn Met Ala Asn Ala Phe Lys Asn Val Lys 475 Ile Leu Cys Gln Cys
480
Pro Cys Gln Cys Asn 485 Leu Leu Glu Glu Val Met Leu Lys Leu Phe Pro
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Tyr Trp Lys Leu Ser Thr Ala Val
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<210> 2439  
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 <212> DNA  
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cct gct cag gaa cgc aag gga gag gct gcc aag att gcg agg agg cca      96
Pro Ala Gln Glu Arg Lys Gly Glu Ala Ala Lys Ile Ala Arg Arg Pro
20
aag acc acg acg gtt gtt gct cag caa ccg cca aga atc cgt cga gcc      144
Lys Thr Thr Thr Val Val Ala Gln Pro Pro Arg Ile Arg Arg Ala
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40
45

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## PhoenixTemp32470.tmp.txt

ctc	gcc	gac	gtc	agt	aat	ctc	gtc	aat	ggc	cgg	gct	gct	ctg	cct	gtc	192
Leu	Ala	Asp	Val	Ser	Asn	Leu	Val	Asn	Gly	Arg	Ala	Ala	Leu	Pro	Val	
	50					55					60					
gta	aat	cgc	cag	aag	gca	gca	gca	gca	gca	gct	gac	aag	tgc	agg	aaa	240
Val	Asn	Arg	Gln	Lys	Ala	Ala	Ala	Ala	Ala	Ala	Asp	Lys	Cys	Arg	Lys	
65					70					75					80	
cca	atc	aag	cag	cgc	aac	gag	aac	aac	aag	gcg	gcc	aag	cca	gaa	gtc	288
Pro	Ile	Lys	Gln	Arg	Asn	Glu	Asn	Asn	Lys	Ala	Ala	Lys	Pro	Glu	Val	
				85					90					95		
atc	gtg	atc	agt	tca	gac	tcc	gag	aaa	cat	aag	aaa	aat	cca	gcc	cag	336
Ile	Val	Ile	Ser	Ser	Asp	Ser	Glu	Lys	His	Lys	Lys	Asn	Pro	Ala	Gln	
			100					105					110			
aga	gca	gcc	tcc	cgg	agg	gcg	cca	atc	caa	acg	ctc	acc	tcg	att	ctg	384
Arg	Ala	Ala	Ser	Arg	Arg	Ala	Pro	Ile	Gln	Thr	Leu	Thr	Ser	Ile	Leu	
		115					120					125				
acc	aag	tgc	agc	agg	gct	tct	gac	ggt	gtg	atc	agc	ccg	aaa	aag	gag	432
Thr	Lys	Cys	Ser	Arg	Ala	Ser	Asp	Gly	Val	Ile	Ser	Pro	Lys	Lys	Glu	
130						135					140					
ctg	ata	tac	gac	atc	gat	gca	tct	gat	tct	cac	aac	gag	ctg	gca	gtg	480
Leu	Ile	Tyr	Asp	Ile	Asp	Ala	Ser	Asp	Ser	His	Asn	Glu	Leu	Ala	Val	
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Val	Asp	Tyr	Val	Glu	Asp	Ile	Tyr	Arg	Phe	Tyr	Arg	Asn	Thr	Glu	Asn	
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acc	tac	cgg	cct	ctc	tgc	acc	tac	atg	gtg	tca	cag	acc	gag	atc	aac	576
Thr	Tyr	Arg	Pro	Leu	Cys	Thr	Tyr	Met	Val	Ser	Gln	Thr	Glu	Ile	Asn	
			180					185					190			
gag	aga	atg	aga	gca	atc	ctg	act	gat	tgg	ctc	atc	gaa	gtg	cac	tac	624
Glu	Arg	Met	Arg	Ala	Ile	Leu	Thr	Asp	Trp	Leu	Ile	Glu	Val	His	Tyr	
		195					200					205				
agg	ctt	atg	ctg	atg	cca	gag	aca	ctg	tac	ctc	act	gtc	tac	ata	att	672
Arg	Leu	Met	Leu	Met	Pro	Glu	Thr	Leu	Tyr	Leu	Thr	Val	Tyr	Ile	Ile	
210					215						220					
gat	cag	tac	ctg	tcc	ctg	gag	aat	gtg	ccc	agg	aag	gag	ctg	cag	ctt	720
Asp	Gln	Tyr	Leu	Ser	Leu	Glu	Asn	Val	Pro	Arg	Lys	Glu	Leu	Gln	Leu	
225					230				235						240	
gtc	ggt	gta	agc	gcc	atg	ttg	ata	gcc	tgc	aag	tat	gag	gag	act	tgg	768
Val	Gly	Val	Ser	Ala	Met	Leu	Ile	Ala	Cys	Lys	Tyr	Glu	Glu	Thr	Trp	
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gct	cca	ttg	gtt	aag	gac	ttc	ctt	gtc	ata	tca	gac	aac	tcc	ttc	agc	816
Ala	Pro	Leu	Val	Lys	Asp	Phe	Leu	Val	Ile	Ser	Asp	Asn	Ser	Phe	Ser	
			260					265					270			
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Arg	Gln	Gln	Val	Leu	Ser	Thr	Glu	Lys	Ser	Ile	Leu	Asn	Lys	Leu	Gln	
		275					280					285				
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Trp	Asn	Leu	Thr	Val	Pro	Thr	Met	Tyr	Met	Phe	Ile	Leu	Arg	Tyr	Leu	
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Lys	Ala	Ala	Leu	Gly	Asp	Glu	Glu	Leu	Glu	His	Met	Thr	Phe	Phe	Tyr	
305				310						315					320	
gca	gag	ctc	gca	ctg	gtt	cag	tac	tcc	atg	ctc	ttt	ttt	gcg	cca	tcg	1008
Ala	Glu	Leu	Ala	Leu	Val	Gln	Tyr	Ser	Met	Leu	Phe	Phe	Ala	Pro	Ser	
				325					330					335		
gtg	ata	gca	gcc	gct	gcc	gtc	tac	gct	gct	cgg	tgt	acc	ctt	ggc	ctg	1056
Val	Ile	Ala	Ala	Ala	Ala	Val	Tyr	Ala	Ala	Arg	Cys	Thr	Leu	Gly	Leu	
			340					345					350			
agc	cca	cta	tgg	agc	gat	ctt	ctg	gag	tac	cac	acc	ggc	tta	gct	gag	1104
Ser	Pro	Leu	Trp	Ser	Asp	Leu	Leu	Glu	Tyr	His	Thr	Gly	Leu	Ala	Glu	
		355				360						365				
ccg	caa	ttg	ctg	gag	tgt	gcg	agg	cgg	ctg	gtg	agc	ctg	cac	gcg	gcg	1152
Pro	Gln	Leu	Leu	Glu	Cys	Ala	Arg	Arg	Leu	Val	Ser	Leu	His	Ala	Ala	
		370				375					380					
gcg	ccg	gag	agc	agg	cag	aag	gtg	gtg	tac	aag	aag	tac	gcg	agc	ccc	1200
Ala	Pro	Glu	Ser	Arg	Gln	Lys	Val	Val	Tyr	Lys	Lys	Tyr	Ala	Ser	Pro	
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aag	ctc	gga	gcc	gtc	tcc	ctc	cac	tcg	ccg	gcc	aag	aag	ctt	ctc	ccg	1248
Lys	Leu	Gly	Ala	Val	Ser	Leu	His	Ser	Pro	Ala	Lys	Lys	Leu	Leu	Pro	
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 <213> Oryza sativa

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 35 40 45  
 Leu Ala Asp Val Ser Asn Leu Val Asn Gly Arg Ala Ala Leu Pro Val  
 50 55 60  
 Val Asn Arg Gln Lys Ala Ala Ala Ala Asp Lys Cys Arg Lys  
 65 70 75 80  
 Pro Ile Lys Gln Arg Asn Glu Asn Asn Lys Ala Ala Lys Pro Glu Val  
 85 90 95  
 Ile Val Ile Ser Ser Asp Ser Glu Lys His Lys Lys Asn Pro Ala Gln  
 100 105 110  
 Arg Ala Ala Ser Arg Arg Ala Pro Ile Gln Thr Leu Thr Ser Ile Leu  
 115 120 125  
 Thr Lys Cys Ser Arg Ala Ser Asp Gly Val Ile Ser Pro Lys Lys Glu  
 130 135 140  
 Leu Ile Tyr Asp Ile Asp Ala Ser Asp Ser His Asn Glu Leu Ala Val  
 145 150 155 160  
 Val Asp Tyr Val Glu Asp Ile Tyr Arg Phe Tyr Arg Asn Thr Glu Asn  
 165 170 175  
 Thr Tyr Arg Pro Leu Cys Thr Tyr Met Val Ser Gln Thr Glu Ile Asn  
 180 185 190  
 Glu Arg Met Arg Ala Ile Leu Thr Asp Trp Leu Ile Glu Val His Tyr  
 195 200 205  
 Arg Leu Met Leu Met Pro Glu Thr Leu Tyr Leu Thr Val Tyr Ile Ile  
 210 215 220  
 Asp Gln Tyr Leu Ser Leu Glu Asn Val Pro Arg Lys Glu Leu Gln Leu  
 225 230 235 240  
 Val Gly Val Ser Ala Met Leu Ile Ala Cys Lys Tyr Glu Glu Thr Trp  
 245 250 255  
 Ala Pro Leu Val Lys Asp Phe Leu Val Ile Ser Asp Asn Ser Phe Ser  
 260 265 270  
 Arg Gln Gln Val Leu Ser Thr Glu Lys Ser Ile Leu Asn Lys Leu Gln  
 275 280 285  
 Trp Asn Leu Thr Val Pro Thr Met Tyr Met Phe Ile Leu Arg Tyr Leu  
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 Lys Ala Ala Leu Gly Asp Glu Glu Leu Glu His Met Thr Phe Phe Tyr  
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 Ala Glu Leu Ala Leu Val Gln Tyr Ser Met Leu Phe Phe Ala Pro Ser  
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 Val Ile Ala Ala Ala Val Tyr Ala Ala Arg Cys Thr Leu Gly Leu  
 340 345 350  
 Ser Pro Leu Trp Ser Asp Leu Leu Glu Tyr His Thr Gly Leu Ala Glu  
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 Pro Gln Leu Leu Glu Cys Ala Arg Arg Leu Val Ser Leu His Ala Ala  
 370 375 380  
 Ala Pro Glu Ser Arg Gln Lys Val Val Tyr Lys Lys Tyr Ala Ser Pro  
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&lt;221&gt; CDS

&lt;222&gt; (1)..(1263)

&lt;400&gt; 2441

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gtg	ccg	ggg	atc	gga	gag	atg	ggg	aac	cgg	agg	ccg	ctc	agg	gac	atc	96
Val	Pro	Gly	Ile	Gly	Glu	Met	Gly	Asn	Arg	Arg	Pro	Leu	Arg	Asp	Ile	
			20					25					30			
aac	aac	ctc	gtc	ggg	gcg	ccg	ccg	cac	ccg	tcc	gcg	atc	gcc	aag	aag	144
Asn	Asn	Leu	Val	Gly	Ala	Pro	Pro	His	Pro	Ser	Ala	Ile	Ala	Lys	Lys	
			35				40					45				
ccg	atg	cta	gag	aag	agt	ggg	aag	gaa	gag	cag	aag	cct	gca	ttg	gtg	192
Pro	Met	Leu	Glu	Lys	Ser	Gly	Lys	Glu	Glu	Gln	Lys	Pro	Ala	Leu	Val	
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gtg	agc	cac	cgg	cct	atg	acg	agg	aat	ttc	gcg	gcc	tcc	ttg	acg	cga	240
Val	Ser	His	Arg	Pro	Met	Thr	Arg	Asn	Phe	Ala	Ala	Ser	Leu	Thr	Arg	
	65				70					75					80	
aaa	gaa	cag	ctt	gac	cat	cag	gtt	tcc	gtg	gct	gat	gca	gcg	gtc	gtc	288
Lys	Glu	Gln	Leu	Asp	His	Gln	Val	Ser	Val	Ala	Asp	Ala	Ala	Val	Val	
				85					90					95		
tgc	act	gat	cca	cag	aag	aac	ccc	atc	ccc	gat	ggc	aca	gtt	gac	gac	336
Cys	Thr	Asp	Pro	Gln	Lys	Asn	Pro	Ile	Pro	Asp	Gly	Thr	Val	Asp	Asp	
			100					105					110			
gat	gtg	gaa	tcg	tgc	gaa	tcg	aac	gac	tat	att	gcc	gtg	gat	gaa	tgc	384
Asp	Val	Glu	Ser	Cys	Glu	Ser	Asn	Asp	Tyr	Ile	Ala	Val	Asp	Glu	Cys	
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Asn	Asp	Thr	Asp	Glu	Asp	Glu	Ser	Met	Met	Asp	Ile	Asp	Ser	Ala	Asp	
	130					135					140					
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Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	Tyr	Val	Glu	Glu	Leu	Tyr	Lys	
	145				150					155					160	
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Phe	Tyr	Arg	Glu	Asn	Glu	Glu	Met	Ser	Cys	Val	Gln	Pro	Asp	Tyr	Met	
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tcc	agt	caa	gga	gac	ata	aat	gaa	aag	atg	aga	gca	att	ctg	att	gat	576
Ser	Ser	Gln	Gly	Asp	Ile	Asn	Glu	Lys	Met	Arg	Ala	Ile	Leu	Ile	Asp	
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tgg	ctc	att	gag	gtc	cat	cac	aag	ttt	gag	ctg	atg	gat	gag	act	ctc	624
Trp	Leu	Ile	Glu	Val	His	His	Lys	Phe	Glu	Leu	Met	Asp	Glu	Thr	Leu	
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ttt	ctt	act	gtt	aac	ata	gta	gac	aga	ttc	ttg	gaa	aaa	caa	gtt	gtg	672
Phe	Leu	Thr	Val	Asn	Ile	Val	Asp	Arg	Phe	Leu	Glu	Lys	Gln	Val	Val	
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cca	agg	aag	aag	ttg	cag	cta	gtt	gga	gtg	aca	gct	atg	ctc	ctt	gct	720
Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala	
	225				230					235					240	
tgc	aaa	tat	gag	gaa	gtc	gca	gtc	cct	gtc	gtc	gag	gat	cta	gtg	cta	768
Cys	Lys	Tyr	Glu	Glu	Val	Ala	Val	Pro	Val	Val	Glu	Asp	Leu	Val	Leu	
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att	tct	gac	cgg	gct	tat	aca	aaa	gga	caa	att	ctg	gaa	atg	gaa	aag	816
Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	Gln	Ile	Leu	Glu	Met	Glu	Lys	
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Leu	Ile	Leu	Asn	Thr	Leu	Gln	Phe	Asn	Met	Ser	Val	Pro	Thr	Pro	Tyr	
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gtt	ttt	atg	aga	cgg	ttt	ctg	aag	gca	gct	cag	tct	gac	aag	cag	cta	912
Val	Phe	Met	Arg	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Asp	Lys	Gln	Leu	
	290					295					300					
cag	cta	ctt	tcc	ttt	ttc	att	ctg	gag	ctc	tcc	ctg	gtg	gaa	tac	caa	960
Gln	Leu	Leu	Ser	Phe	Phe	Ile	Leu	Glu	Leu	Ser	Leu	Val	Glu	Tyr	Gln	
	305				310					315					320	
atg	ctc	aag	tac	cga	cct	tcg	ctt	ctt	gct	gct	gct	gca	gtt	tac	aca	1008
Met	Leu	Lys	Tyr	Arg	Pro	Ser	Leu	Leu	Ala	Ala	Ala	Ala	Val	Tyr	Thr	
				325					330					335		

## PhoenixTemp32470.tmp.txt

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cta	cat	agt	aga	tat	acc	gga	gag	cag	ctt	ctt	gag	tgt	tct	agg	atg	1104
Leu	His	Ser	Arg	Tyr	Thr	Gly	Glu	Gln	Leu	Leu	Glu	Cys	Ser	Arg	Met	
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atg	gta	gat	ttc	cac	cag	aag	gcg	gga	gca	ggc	aag	ctc	acc	ggc	gtg	1152
Met	Val	Asp	Phe	His	Gln	Lys	Ala	Gly	Ala	Gly	Lys	Leu	Thr	Gly	Val	
	370					375					380					
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His	Arg	Lys	Tyr	Ser	Thr	Phe	Lys	Phe	Gly	Cys	Ala	Ala	Lys	Thr	Glu	
385					390					395					400	
cct	gct	ctc	ttc	ttg	ctt	gag	tca	gga	gca	gga	ggg	tac	aac	ctt	cag	1248
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aag	cag	cct	tgt	tga												1263
Lys	Gln	Pro	Cys													
			420													

&lt;210&gt; 2442

&lt;211&gt; 420

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa

&lt;400&gt; 2442

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Asn	Asn	Leu	Val	Gly	Ala	Pro	Pro	His	Pro	Ser	Ala	Ile	Ala	Lys	Lys	
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Lys	Glu	Gln	Leu	Asp	His	Gln	Val	Ser	Val	Ala	Asp	Ala	Ala	Val	Val	
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Cys	Thr	Asp	Pro	Gln	Lys	Asn	Pro	Ile	Pro	Asp	Gly	Thr	Val	Asp	Asp	
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Asn	Asp	Thr	Asp	Glu	Asp	Glu	Ser	Met	Met	Asp	Ile	Asp	Ser	Ala	Asp	
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Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	Tyr	Val	Glu	Glu	Leu	Tyr	Lys	
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				165					170					175		
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		180						185					190			
Trp	Leu	Ile	Glu	Val	His	His	Lys	Phe	Glu	Leu	Met	Asp	Glu	Thr	Leu	
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Phe	Leu	Thr	Val	Asn	Ile	Val	Asp	Arg	Phe	Leu	Glu	Lys	Gln	Val	Val	
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Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala	
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Cys	Lys	Tyr	Glu	Glu	Val	Ala	Val	Pro	Val	Val	Glu	Asp	Leu	Val	Leu	
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Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	Gln	Ile	Leu	Glu	Met	Glu	Lys	
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Leu	Ile	Leu	Asn	Thr	Leu	Gln	Phe	Asn	Met	Ser	Val	Pro	Thr	Pro	Tyr	
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Val	Phe	Met	Arg	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Asp	Lys	Gln	Leu	
	290					295					300					
Gln	Leu	Leu	Ser	Phe	Phe	Ile	Leu	Glu	Leu	Ser	Leu	Val	Glu	Tyr	Gln	
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Met	Leu	Lys	Tyr	Arg	Pro	Ser	Leu	Leu	Ala	Ala	Ala	Ala	Val	Tyr	Thr	
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Ala	Gln	Cys	Ala	Leu	Thr	Arg	Cys	Gln	Gln	Trp	Thr	Lys	Thr	Cys	Glu	
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## PhoenixTemp32470.tmp.txt

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 Met Val Asp Phe His Gln Lys Ala Gly Ala Gly Lys Leu Thr Gly Val  
 370 375 380  
 His Arg Lys Tyr Ser Thr Phe Lys Phe Gly Cys Ala Ala Lys Thr Glu  
 385 390 395 400  
 Pro Ala Leu Phe Leu Glu Ser Gly Ala Gly Gly Tyr Asn Leu Gln  
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 Lys Gln Pro Cys  
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 <222> (1)..(1473)

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 agt ggt cga atc aca cga gct caa gct gct gca aat cgt gga cgg ttt 96  
 Ser Gly Arg Ile Thr Arg Ala Gln Ala Ala Asn Arg Gly Arg Phe 20 25 30  
 ggg ttt gct ccc tcc gta tca cta ccc gca aga act gaa cga aag cag 144  
 Gly Phe Ala Pro Ser Val Ser Leu Pro Ala Arg Thr Glu Arg Lys Gln 35 40 45  
 aca gca aaa gga aag aca aaa agg gga gct ttg gat gaa atc act agt 192  
 Thr Ala Lys Gly Lys Thr Lys Arg Gly Ala Leu Asp Glu Ile Thr Ser 50 55 60  
 gca agt act gca act tca gct cct cag cct aaa cgg cgc aca gtg ctc 240  
 Ala Ser Thr Ala Thr Ser Ala Pro Gln Pro Lys Arg Arg Thr Val Leu 65 70 75 80  
 aag gat gta acc aac atc ggc tgt gcc aac tca tcc aaa aat tgc acc 288  
 Lys Asp Val Thr Asn Ile Gly Cys Ala Asn Ser Ser Lys Asn Cys Thr 85 90 95  
 acc acg agc aag ctg cag caa aag tca aag ccc acc caa agg gtg aaa 336  
 Thr Thr Ser Lys Leu Gln Gln Lys Ser Lys Pro Thr Gln Arg Val Lys 100 105 110  
 caa atc ccg agc aaa aag cag tgt gca aag aag gtt cct aag cta ccc 384  
 Gln Ile Pro Ser Lys Lys Gln Cys Ala Lys Lys Val Pro Lys Leu Pro 115 120 125  
 cct ccg gct gtt gct gga act tca ttt gtg att gat tct aaa agt tct 432  
 Pro Pro Ala Val Ala Gly Thr Ser Phe Val Ile Asp Ser Lys Ser Ser 130 135 140  
 gaa gaa act caa aag gtg gag ctt ttg gca aaa gca gag gaa ccc aca 480  
 Glu Glu Thr Gln Lys Val Glu Leu Leu Ala Lys Ala Glu Glu Glu Pro Thr 145 150 155 160  
 aat ttg ttt gaa aac gag ggg tta ctg tca ttg cag aat att gag cga 528  
 Asn Leu Phe Glu Asn Glu Gly Leu Leu Ser Leu Gln Asn Ile Glu Arg 165 170 175  
 aac agg gac agt aat tgc cat gag gca ttc ttt gag gca aga aac gcc 576  
 Asn Arg Asp Ser Asn Cys His Glu Ala Phe Phe Glu Ala Arg Asn Ala 180 185 190  
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 Met Asp Lys His Glu Leu Ala Asp Ser Lys Pro Gly Asp Ser Ser Gly 195 200 205  
 tta ggt ttt ata gat att gac aat gat aat gga aat cct caa atg tgt 672  
 Leu Gly Phe Ile Asp Ile Asp Asn Asp Asn Gly Asn Pro Gln Met Cys 210 215 220  
 gct tcc tat gct tca gag ata tac aca aat ctg atg gcc tct gag ctt 720  
 Ala Ser Tyr Ala Ser Glu Ile Tyr Thr Asn Leu Met Ala Ser Glu Leu 225 230 235 240  
 atc aga aga ccc agg tca aat tac atg gag gct ttg caa cgt gac atc 768  
 Ile Arg Arg Pro Arg Ser Asn Tyr Met Glu Ala Leu Gln Arg Asp Ile 245 250 255

## PhoenixTemp32470.tmp.txt

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Thr	Lys	Gly	Met	Arg	Gly	Ile	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val	Ser	
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Glu	Glu	Tyr	Lys	Leu	Val	Pro	Asp	Thr	Leu	Tyr	Leu	Thr	Ile	Asn	Leu	
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att	gac	cga	ttt	ctt	tct	caa	cat	tat	att	gaa	aga	cag	aaa	ctc	caa	912
Ile	Asp	Arg	Phe	Leu	Ser	Gln	His	Tyr	Ile	Glu	Arg	Gln	Lys	Leu	Gln	
	290					295				300						
ctt	ctt	gga	ata	aca	agc	atg	ctg	att	gcc	tgc	aaa	tat	gaa	gag	ata	960
Leu	Leu	Gly	Ile	Thr	Ser	Met	Leu	Ile	Ala	Ser	Lys	Tyr	Glu	Glu	Ile	
305					310				315						320	
tgt	gct	cct	cgt	gtt	gaa	gaa	ttt	tgt	ttc	ata	act	gac	aat	aca	tac	1008
Cys	Ala	Pro	Arg	Val	Glu	Glu	Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	Tyr	
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aca	aaa	gct	gag	gtg	ctg	aaa	atg	gag	ggc	ctg	gtg	ctt	aat	gat	atg	1056
Thr	Lys	Ala	Glu	Val	Leu	Lys	Met	Glu	Gly	Leu	Val	Leu	Asn	Asp	Met	
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ggg	ttt	cat	cta	tct	gtt	cca	aca	aca	aaa	aca	ttt	ctc	agg	aga	ttc	1104
Gly	Phe	His	Leu	Ser	Val	Pro	Thr	Thr	Lys	Thr	Phe	Leu	Arg	Arg	Phe	
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ctt	aga	gcc	gca	cag	gct	tct	cgt	aat	gtt	cct	tca	att	acc	ttg	gga	1152
Leu	Arg	Ala	Ala	Gln	Ala	Ser	Arg	Asn	Val	Pro	Ser	Ile	Thr	Leu	Gly	
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Tyr	Leu	Ala	Asn	Tyr	Leu	Ala	Glu	Leu	Thr	Leu	Ile	Asp	Tyr	Ser	Phe	
385					390				395						400	
ctc	aaa	ttt	ctt	cct	tca	gtg	gtg	gca	gca	tct	gca	gtc	ttt	ctt	gca	1248
Leu	Lys	Phe	Leu	Pro	Ser	Val	Val	Ala	Ala	Ser	Ala	Val	Phe	Leu	Ala	
				405				410						415		
aga	tgg	aca	ctt	gac	caa	tct	gac	att	cca	tgg	aat	cat	act	ctt	gag	1296
Arg	Trp	Thr	Leu	Asp	Gln	Ser	Asp	Ile	Pro	Trp	Asn	His	Thr	Leu	Glu	
			420				425						430			
cac	tac	act	tct	tac	aaa	agc	tct	gat	att	caa	ata	tgt	gtc	tgt	gct	1344
His	Tyr	Thr	Ser	Tyr	Lys	Ser	Ser	Asp	Ile	Gln	Ile	Cys	Val	Cys	Ala	
		435					440					445				
cta	cgg	gaa	ctg	cag	cat	aac	acc	agt	aat	tgc	cct	ctc	aat	gct	ata	1392
Leu	Arg	Glu	Leu	Gln	His	Asn	Thr	Ser	Asn	Cys	Pro	Leu	Asn	Ala	Ile	
	450					455				460						
cgt	gaa	aag	tat	agg	caa	caa	aag	ttt	gag	tgt	gta	gcc	aac	ctg	aca	1440
Arg	Glu	Lys	Tyr	Arg	Gln	Gln	Lys	Phe	Glu	Cys	Val	Ala	Asn	Leu	Thr	
465					470				475						480	
tca	ccg	gag	ctg	ggg	cag	tca	ctc	ttc	agc	tga						1473
Ser	Pro	Glu	Leu	Gly	Gln	Ser	Leu	Phe	Ser							
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 <212> PRT  
 <213> Oryza sativa

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 35 40 45  
 Thr Ala Lys Gly Lys Thr Lys Arg Gly Ala Leu Asp Glu Ile Thr Ser  
 50 55 60  
 Ala Ser Thr Ala Thr Ser Ala Pro Gln Pro Lys Arg Arg Thr Val Leu  
 65 70 75 80  
 Lys Asp Val Thr Asn Ile Gly Cys Ala Asn Ser Ser Lys Asn Cys Thr  
 85 90 95  
 Thr Thr Ser Lys Leu Gln Gln Lys Ser Lys Pro Thr Gln Arg Val Lys  
 100 105 110  
 Gln Ile Pro Ser Lys Lys Gln Cys Ala Lys Lys Val Pro Lys Leu Pro  
 115 120 125  
 Pro Pro Ala Val Ala Gly Thr Ser Phe Val Ile Asp Ser Lys Ser Ser

## PhoenixTemp32470.tmp.txt

130 135 140  
 Glu Glu Thr Gln Lys Val Glu Leu Leu Ala Lys Ala Glu Glu Pro Thr  
 145 150 155 160  
 Asn Leu Phe Glu Asn Glu Gly Leu Leu Ser Leu Gln Asn Ile Glu Arg  
 165 170 175  
 Asn Arg Asp Ser Asn Cys His Glu Ala Phe Phe Glu Ala Arg Asn Ala  
 180 185 190  
 Met Asp Lys His Glu Leu Ala Asp Ser Lys Pro Gly Asp Ser Ser Gly  
 195 200 205  
 Leu Gly Phe Ile Asp Ile Asp Asn Asp Asn Gly Asn Pro Gln Met Cys  
 210 215 220  
 Ala Ser Tyr Ala Ser Glu Ile Tyr Thr Asn Leu Met Ala Ser Glu Leu  
 225 230 235 240  
 Ile Arg Arg Pro Arg Ser Asn Tyr Met Glu Ala Leu Gln Arg Asp Ile  
 245 250 255  
 Thr Lys Gly Met Arg Gly Ile Leu Ile Asp Trp Leu Val Glu Val Ser  
 260 265 270  
 Glu Glu Tyr Lys Leu Val Pro Asp Thr Leu Tyr Leu Thr Ile Asn Leu  
 275 280 285  
 Ile Asp Arg Phe Leu Ser Gln His Tyr Ile Glu Arg Gln Lys Leu Gln  
 290 295 300  
 Leu Leu Gly Ile Thr Ser Met Leu Ile Ala Ser Lys Tyr Glu Glu Ile  
 305 310 315 320  
 Cys Ala Pro Arg Val Glu Glu Phe Cys Phe Ile Thr Asp Asn Thr Tyr  
 325 330 335  
 Thr Lys Ala Glu Val Leu Lys Met Glu Gly Leu Val Leu Asn Asp Met  
 340 345 350  
 Gly Phe His Leu Ser Val Pro Thr Thr Lys Thr Phe Leu Arg Arg Phe  
 355 360 365  
 Leu Arg Ala Ala Gln Ala Ser Arg Asn Val Pro Ser Ile Thr Leu Gly  
 370 375 380  
 Tyr Leu Ala Asn Tyr Leu Ala Glu Leu Thr Leu Ile Asp Tyr Ser Phe  
 385 390 395 400  
 Leu Lys Phe Leu Pro Ser Val Val Ala Ala Ser Ala Val Phe Leu Ala  
 405 410 415  
 Arg Trp Thr Leu Asp Gln Ser Asp Ile Pro Trp Asn His Thr Leu Glu  
 420 425 430  
 His Tyr Thr Ser Tyr Lys Ser Ser Asp Ile Gln Ile Cys Val Cys Ala  
 435 440 445  
 Leu Arg Glu Leu Gln His Asn Thr Ser Asn Cys Pro Leu Asn Ala Ile  
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 Arg Glu Lys Tyr Arg Gln Gln Lys Phe Glu Cys Val Ala Asn Leu Thr  
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 aat ggc cgg atc acg cga gct caa gct gct gca aat cgt cga agc ttt 96  
 Asn Gly Arg Ile Thr Arg Ala Gln Ala Ala Asn Arg Arg Ser Phe 20 25 30  
 gga gct ttc cct tct gtt cca ttg cct gca aaa acc gaa cga aaa cag 144  
 Gly Ala Phe Pro Ser Val Pro Leu Pro Ala Lys Thr Glu Arg Lys Gln 35 40 45  
 act gca caa ggg aag gca aaa cga ggt tct tca tat gac aac acc agt 192  
 Thr Ala Gln Gly Lys Ala Lys Arg Gly Ser Ser Tyr Asp Asn Thr Ser 50 55 60  
 gca agc gtt gca ctt tca ggc ccc cag cct aaa agg cgc aca gta ctc 240  
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## PhoenixTemp32470.tmp.txt

Ala 65	Ser	Val	Ala	Leu	Ser 70	Gly	Pro	Gln	Pro	Lys 75	Arg	Arg	Thr	Val	Leu 80	
agg	gat	gtg	acc	aat	ttg	agc	aat	gct	aac	tct	aac	aaa	agt	ttt	gct	288
Arg	Asp	Val	Thr	Asn 85	Leu	Ser	Asn	Ala	Asn 90	Ser	Asn	Lys	Ser	Phe 95	Ala	
gct	gca	ccg	aag	ctt	cag	aca	aag	ccc	tct	cta	agg	act	gga	aga	acc	336
Ala	Ala	Pro	Lys 100	Leu	Gln	Thr	Lys	Pro 105	Ser	Leu	Arg	Thr	Gly 110	Arg	Thr	
gtg	agc	aaa	agc	aag	ccg	tgc	gca	aaa	aag	att	cct	aaa	aaa	cca	cca	384
Val	Ser	Lys 115	Ser	Lys	Pro	Cys	Ala 120	Lys	Lys	Ile	Pro	Lys 125	Lys	Pro	Pro	
cca	gct	ggt	aat	gga	agt	gca	ttg	act	aat	gtt	ttg	aac	att	gct	gaa	432
Pro	Ala 130	Gly	Asn	Gly	Ser	Ala 135	Leu	Thr	Asn	Val 140	Leu	Asn	Ile	Ala	Glu	
gaa	aca	caa	gcg	gag	aag	att	ttg	gca	gag	aga	gtg	gaa	ccc	gtt	ctg	480
Glu	Thr	Gln	Ala	Glu	Lys 150	Ile	Leu	Ala	Glu	Arg 155	Val	Glu	Pro	Val	Leu 160	
145	ttg	ctt	gag	aac	agg	ggg	cca	ctg	tca	ttg	cag	aat	gtt	gaa	agg	528
Leu	Leu	Glu	Asn	Arg 165	Gly	Pro	Leu	Ser	Leu	Gln 170	Asn	Val	Glu	Arg 175	Asn	
agg	gac	agt	gct	tgt	cat	gag	gta	ttc	ttt	gag	gaa	aga	aac	ctc	agg	576
Arg	Asp	Ser	Ala 180	Cys	His	Glu	Val	Phe 185	Phe	Glu	Glu	Arg	Asn 190	Leu	Arg	
gat	aaa	tgt	gaa	cct	tct	gtg	tca	aag	aat	ggg	gac	tct	tat	gtg	tta	624
Asp	Lys	Cys 195	Glu	Pro	Ser	Val	Ser 200	Lys	Asn	Gly	Asp	Ser 205	Tyr	Val	Leu	
gac	att	gta	gat	atc	gac	aaa	gat	aat	ggc	aat	cct	caa	atg	tgt	gct	672
Asp	Ile 210	Val	Asp	Ile	Asp	Lys 215	Asp	Asn	Gly	Asn	Pro 220	Gln	Met	Cys	Ala	
tcc	tac	gtt	gtg	gag	ata	tac	tca	aac	cta	atg	gct	tca	gag	ctt	atg	720
Ser	Tyr	Val	Val	Glu	Ile 230	Tyr	Ser	Asn	Leu	Met 235	Ala	Ser	Glu	Leu	Met 240	
225	aga	aga	cca	agt	cca	aat	tac	atg	gag	ggt	ttg	caa	cgg	gac	atc	768
Arg	Arg	Pro	Ser	Pro 245	Asn	Tyr	Met	Glu	Gly 250	Leu	Gln	Arg	Asp	Ile 255	Thr	
aag	ggc	atg	aga	gaa	ata	ctc	att	gat	tgg	ctt	gtg	gag	gtt	tct	gaa	816
Lys	Gly	Met	Arg 260	Glu	Ile	Leu	Ile	Asp 265	Trp	Leu	Val	Glu	Val 270	Ser	Glu	
gaa	tac	aag	ctt	gtt	cca	gac	acg	ctg	tac	cta	act	gta	tat	ctt	att	864
Glu	Tyr	Lys 275	Leu	Val	Pro	Asp	Thr 280	Leu	Tyr	Leu	Thr	Val 285	Tyr	Leu	Ile	
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Asp	Arg 290	Phe	Leu	Ser	Arg	Asn 295	Tyr	Ile	Glu	Arg	Gln 300	Arg	Leu	Gln	Leu	
gtg	gga	ata	aca	agc	atg	ctt	gtt	gcc	tcg	aaa	tat	gaa	gag	ata	tgt	960
Val	Gly	Ile	Thr	Ser	Met 310	Leu	Val	Ala	Ser	Lys 315	Tyr	Glu	Glu	Ile	Cys 320	
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Ala	Pro	Arg	Val 325	Glu	Glu	Phe	Cys	Phe	Ile 330	Thr	Asp	Asn	Thr	Tyr 335	Thr	
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Lys	Ala	Glu	Val 340	Leu	Lys	Met	Glu	Ser 345	Gln	Leu	Leu	Asn	Asp 350	Leu	Gly	
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Arg	Ala 370	Ala	Gln	Ala	Ser	Arg 375	Lys	Thr	Pro	Ser	Met 380	Thr	Leu	Gly	Phe	
ctg	gcc	aat	tat	ctc	gcg	gag	ttg	act	ttg	acc	gaa	tat	gag	ttc	ttg	1200
Leu	Ala	Asn	Tyr	Leu	Ala 390	Glu	Leu	Thr	Leu	Thr 395	Glu	Tyr	Glu	Phe	Leu 400	
385	aaa	ttt	ctt	ccg	tcg	gtg	gca	gca	tcg	gcc	gtg	ttt	ctc	gct	aga	1248
Lys	Phe	Leu	Pro	Ser 405	Leu	Val	Ala	Ala	Ser 410	Ala	Val	Phe	Leu	Ala 415	Arg	
tgg	acg	ctt	gac	caa	tcc	gac	ctt	cca	tgg	aac	cag	act	cta	gag	cac	1296
Trp	Thr	Leu	Asp 420	Gln	Ser	Asp	Leu	Pro 425	Trp	Asn	Gln	Thr	Leu 430	Glu	His	
tac	acc	tct	tac	aaa	tgc	tct	gac	att	caa	ttg	tgt	gtc	tgt	gct	cta	1344

## PhoenixTemp32470.tmp.txt

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Arg	Glu	Leu	Gln	His	Asn	Thr	Ser	Asn	Cys	Pro	Leu	Asn	Ala	Ile	Arg		
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gag	aag	tac	agg	cat	caa	aag	ttt	gaa	tgc	gta	gcg	aac	cta	act	tca	1440	
Glu	Lys	Tyr	Arg	His	Gln	Lys	Phe	Glu	Cys	Val	Ala	Asn	Leu	Thr	Ser		
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ccg	gag	ttc	cct	cgg	tcg	ttc	ttc	agc	tga							1470	
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Gly	Ala	Phe	Pro	Ser	Val	Pro	Leu	Pro	Ala	Lys	Thr	Glu	Arg	Lys	Gln		
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Thr	Ala	Gln	Gly	Lys	Ala	Lys	Arg	Gly	Ser	Ser	Tyr	Asp	Asn	Thr	Ser		
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Ala	Ser	Val	Ala	Leu	Ser	Gly	Pro	Gln	Pro	Lys	Arg	Arg	Thr	Val	Leu		
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Arg	Asp	Val	Thr	Asn	Leu	Ser	Asn	Ala	Asn	Ser	Asn	Lys	Ser	Phe	Ala		
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Val	Ser	Lys	Ser	Lys	Pro	Cys	Ala	Lys	Lys	Ile	Pro	Lys	Lys	Pro	Pro		
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Pro	Ala	Gly	Asn	Gly	Ser	Ala	Leu	Thr	Asn	Val	Leu	Asn	Ile	Ala	Glu		
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Arg	Asp	Ser	Ala	Cys	His	Glu	Val	Phe	Phe	Glu	Glu	Arg	Asn	Leu	Arg		
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Asp	Lys	Cys	Glu	Pro	Ser	Val	Ser	Lys	Asn	Gly	Asp	Ser	Tyr	Val	Leu		
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Asp	Ile	Val	Asp	Ile	Asp	Lys	Asp	Asn	Gly	Asn	Pro	Gln	Met	Cys	Ala		
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Lys	Gly	Met	Arg	Glu	Ile	Leu	Ile	Asp	Trp	Leu	Val	Glu	Val	Ser	Glu		
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Glu	Tyr	Lys	Leu	Val	Pro	Asp	Thr	Leu	Tyr	Leu	Thr	Val	Tyr	Leu	Ile		
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Val	Gly	Ile	Thr	Ser	Met	Leu	Val	Ala	Ser	Lys	Tyr	Glu	Glu	Ile	Cys		
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Ala	Pro	Arg	Val	Glu	Glu	Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	Tyr	Thr		
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Lys	Ala	Glu	Val	Leu	Lys	Met	Glu	Ser	Gln	Leu	Leu	Asn	Asp	Leu	Gly		
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Phe	Asn	Leu	Ser	Val	Pro	Thr	Thr	Lys	Thr	Phe	Leu	Arg	Arg	Phe	Leu		
		355					360					365					
Arg	Ala	Ala	Gln	Ala	Ser	Arg	Lys	Thr	Pro	Ser	Met	Thr	Leu	Gly	Phe		
	370					375					380						
Leu	Ala	Asn	Tyr	Leu	Ala	Glu	Leu	Thr	Leu	Thr	Glu	Tyr	Glu	Phe	Leu		
385				390						395					400		
Lys	Phe	Leu	Pro	Ser	Leu	Val	Ala	Ala	Ser	Ala	Val	Phe	Leu	Ala	Arg		

## PhoenixTemp32470.tmp.txt

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 Tyr Thr Ser Tyr Lys Cys Ser Asp Ile Gln Leu Cys Val Cys Ala Leu  
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 Arg Glu Leu Gln His Asn Thr Ser Asn Cys Pro Leu Asn Ala Ile Arg  
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 Glu Lys Tyr Arg His Gln Lys Phe Glu Cys Val Ala Asn Leu Thr Ser  
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 Arg Ile Thr Arg Ala Arg Ala Arg Ala Leu Arg Gly Ile Thr Pro Tyr  
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 Ser Arg Pro Ser Leu Lys Asn Gln Lys Asn Val Leu Arg Ala His  
 35 40 45  
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 50 55 60  
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 Ala Val Val Gln Gln Lys Gly Arg Ala Val Leu Ser Asp Val Ser Asn  
 65 70 75 80  
 atg tgt gca aaa cca cat gat aag tgt act aag tca tca aag ttt cag 288  
 Met Cys Ala Lys Pro His Asp Lys Cys Thr Lys Ser Ser Lys Phe Gln  
 85 90 95  
 gcc aaa gga gtt tat aca aag aaa acc acc aag cta gca gcc tca agt 336  
 Ala Lys Gly Val Tyr Thr Lys Lys Thr Thr Lys Leu Ala Ala Ser Ser  
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 Ala Glu Glu Leu Ser Thr Ile Lys Met Val Glu Ser Lys Asp Thr Leu  
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 Arg Glu Gly Val Thr Ala Asp Thr Ser Leu Ser Met Gln Asn Ser Val  
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 Lys Ser Asp Glu Leu Arg Asn Ser Pro Asn Lys Asp Ile Asp Ile Ile  
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 Cys Glu Lys Leu Gly Ala Ser Asp Ser Leu Thr Ile Val Asp Ile Asp  
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 Ser Val Glu Leu Lys Asp Pro Gln Leu Trp Ser Ser Tyr Ala Pro Asp  
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## PhoenixTemp32470.tmp.txt

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Glu	Phe	Cys	Phe	Ile	Thr	Asp	Asn	Thr	Thr	Thr	Lys	Glu	Glu	Val	Leu		
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Lys	Met	Glu	Arg	Glu	Val	Leu	Asp	Leu	Val	His	Phe	Gln	Leu	Ser	Val		
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Pro	Thr	Ile	Lys	Thr	Phe	Leu	Arg	Arg	Phe	Ile	Gln	Ala	Ala	Gln	Ser		
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Ser	Tyr	Lys	Ala	Pro	Cys	Val	Glu	Glu	Glu	Phe	Leu	Ala	Ala	Asn	Tyr	Leu	
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Ser	Glu	His	Pro	Trp	Asn	Pro	Thr	Leu	Lys	His	Tyr	Thr	Lys	Tyr	Lys		
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Asn	Thr	Lys	Gly	Ser	Ser	Leu	Asn	Ala	Val	Pro	Glu	Lys	Tyr	Lys	Gln		
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Gln	Lys	Phe	Asn	Cys	Val	Ala	Asn	Leu	Ser	Pro	Lys	Pro	Val	Gln	Ser		
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Leu	Phe	Gln	Asp	Lys	Val												1413
465				470													

&lt;210&gt; 2448

&lt;211&gt; 470

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2448

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Ala	Lys	Gly	Val	Tyr	Thr	Lys	Lys	Thr	Lys	Lys	Leu	Ala	Ala	Ser	Ser		
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Arg	Glu	Gly	Val	Thr	Ala	Asp	Thr	Ser	Leu	Ser	Met	Gln	Asn	Ser	Val		

## PhoenixTemp32470.tmp.txt

145 Lys Ser Asp Glu Leu 150 Arg Asn Ser Pro Asn 155 Lys Asp Ile Asp Ile 160  
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 Ser Val Glu Leu Lys Asp Pro Gln Leu Trp Ser Ser Tyr Ala Pro Asp  
 Ile Tyr Asn Asn Ile Arg Val Thr Glu Leu Gln Arg Lys Pro Leu Thr  
 Asn Tyr Met Asp Lys Leu Gln Lys Asp Ile Asn Pro Ser Met Arg Gly  
 Ile Leu Ile Asp Trp Leu Val Glu Val Ser Glu Glu Tyr Lys Leu Val  
 Pro Asp Thr Leu Tyr Leu Thr Val Asn Leu Ile Asp Arg Tyr Leu Ser  
 Lys Arg Leu Ile Gln Lys Gln Arg Leu Gln Leu Leu Gly Val Thr Cys  
 Met Leu Ile Ala Ser Lys Tyr Glu Glu Ile Cys Ala Pro Arg Val Glu  
 Glu Phe Cys Phe Ile Thr Asp Asn Thr Tyr Thr Lys Glu Glu Val Leu  
 Lys Met Glu Arg Glu Val Leu Asp Leu Val His Phe Gln Leu Ser Val  
 Pro Thr Ile Lys Thr Phe Leu Arg Arg Phe Ile Gln Ala Ala Gln Ser  
 Ser Tyr Lys Ala Pro Cys Val Glu Leu Glu Phe Leu Ala Asn Tyr Leu  
 Ala Glu Leu Ala Leu Val Glu Cys Asn Phe Phe Gln Phe Leu Pro Ser  
 Leu Val Ala Ala Ser Ala Val Phe Leu Ala Lys Trp Thr Leu Asn Glu  
 Ser Glu His Pro Trp Asn Pro Thr Leu Lys His Tyr Thr Lys Tyr Lys  
 Ala Ser Glu Leu Lys Thr Val Val Leu Ala Leu Gln Asp Leu Gln Leu  
 Asn Thr Lys Gly Ser Ser Leu Asn Ala Val Pro Glu Lys Tyr Lys Gln  
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 Thr Tyr Trp Ser Leu Leu Thr Thr Lys Arg Lys Ser Ile Gln Asn Ser 20  
 2 tct aaa cca atc aac cct aca agt ttt caa gga ggg ata gaa tgt gtg 144  
 Ser Lys Pro Ile Asn Pro Thr Ser Phe Gln Gly Gly Ile Glu Cys Val 35  
 3 ggg aac aga aag atg ggg cag aac aga agg gct tta agc gtg atc aat 192  
 Gly Asn Arg Lys Met Gly Gln Asn Arg Arg Ala Leu Ser Val Ile Asn 50  
 4 cag gat ctg gtg gcg gaa ggg aga cct tac cct tgt gtt gtt aac aag 240  
 Gln Asp Leu Val Ala Glu Gly Arg Pro Tyr Pro Cys Val Val Asn Lys 65  
 5 agg gca ttg gca gaa aaa cac aat gtt tgt gag aag aag cag gcg gat 288  
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## PhoenixTemp32470.tmp.txt

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455

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Pro Gly His Arg Pro Ile Thr Arg Arg Phe Ala Ala Gln Ile Ala Ser
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Lys Ser Thr Thr Asp Asp Gln Pro Val Pro Met Ser Leu Glu Lys Thr
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Glu Pro Met His Ser Glu Ser Asp Gln Met Glu Glu Val Glu Met Glu
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Asp Ile Ile Glu Glu Glu Thr Val Leu Asp Ile Asp Thr Cys Asp Ala
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275     280     285
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&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1281)

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Pro Ala Pro Gly Val Arg Asp Met Ala Ser Arg Arg Ala Leu Thr Asp	
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Ile Lys Asn Leu Val Gly Ala Ala Pro Tyr Pro Cys Ala Val Ala Lys	
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Ala Ser Ser Arg Pro Met Thr Arg Lys Phe Ala Ala Ser Leu Ala Ser	
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Lys Gly Gln Pro Glu Cys Gln Pro Ile Val Ala Asp Pro Glu Pro Glu	
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Val Cys Gln Gln Lys Glu Ser Val Gly Asp Gly Thr Val Asp Ile Asp	
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Gly Asp Glu Thr Glu Asn Lys Asp Ile Met Asn Gln Asp Glu Ser Leu	
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Gln Ile Leu Glu Met Glu Lys Leu Ile Leu Asn Thr Leu Gln Phe Asn	
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295 300 305	
gca gac gca gat aaa cag ctt gag cta gtg tca ttt ttc atg ctg gag	960
Ala Asp Ala Asp Lys Gln Leu Glu Leu Val Ser Phe Phe Met Leu Glu	
310 315 320	
ctc tgc ttg gta gag tac caa atg ctg aat tat agg cct tca cat ctg	1008



## PhoenixTemp32470.tmp.txt

Leu	Cys	Leu	Val	Glu	Tyr	Gln	Met	Leu	Asn	Tyr	Arg	Pro	Ser	His	Leu	
				325					330					335		
gct	gcc	gct	gcg	gtt	tat	act	gca	caa	tgt	gct	att	aac	cgt	tgc	cag	1056
Ala	Ala	Ala	Ala	Val	Tyr	Thr	Ala	Gln	Cys	Ala	Ile	Asn	Arg	Cys	Gln	
			340					345					350			
caa	tgg	aca	aag	gtt	tgc	gag	tca	cac	agc	aga	tac	act	ggc	gac	caa	1104
Gln	Trp	Thr	Lys	Val	Cys	Glu	Ser	His	Ser	Arg	Tyr	Thr	Gly	Asp	Gln	
		355					360					365				
ctc	ctg	gag	tgc	tcg	agg	atg	atg	gta	gac	ttt	cac	cag	aag	gct	gga	1152
Leu	Leu	Glu	Cys	Ser	Arg	Met	Met	Val	Asp	Phe	His	Gln	Lys	Ala	Gly	
	370					375					380					
acc	ggc	aag	ctc	act	ggc	gtg	cac	agg	aag	tac	agt	acc	tac	aag	ttc	1200
Thr	Gly	Lys	Leu	Thr	Gly	Val	His	Arg	Lys	Tyr	Ser	Thr	Tyr	Lys	Phe	
	385				390					395					400	
ggg	tgc	gcg	gcc	aag	att	ttg	cct	gcg	cag	ttc	atg	ctg	gag	tca	gga	1248
Gly	Cys	Ala	Ala	Lys	Ile	Leu	Pro	Ala	Gln	Phe	Met	Leu	Glu	Ser	Gly	
			405					410						415		
ggg	aca	gca	ccg	cct	cct	tca	ggt	gca	atc	taa						1281
Gly	Thr	Ala	Pro	Pro	Pro	Ser	Gly	Ala	Ile							
			420					425								

&lt;210&gt; 2452

&lt;211&gt; 426

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 2452

Met	Ala	Ala	Arg	Ala	Ala	Asp	Glu	Asn	Arg	Arg	Pro	Ala	Ala	Gly	Lys	
1				5				10						15		
Pro	Ala	Pro	Gly	Val	Arg	Asp	Met	Ala	Ser	Arg	Arg	Ala	Leu	Thr	Asp	
			20					25					30			
Ile	Lys	Asn	Leu	Val	Gly	Ala	Ala	Pro	Tyr	Pro	Cys	Ala	Val	Ala	Lys	
		35				40						45				
Lys	Pro	Met	Leu	Gln	Lys	Ser	Arg	Arg	Asp	Glu	Lys	Gln	Pro	Ala	Leu	
	50					55				60						
Ala	Ser	Ser	Arg	Pro	Met	Thr	Arg	Lys	Phe	Ala	Ala	Ser	Leu	Ala	Ser	
	65				70				75						80	
Lys	Gly	Gln	Pro	Glu	Cys	Gln	Pro	Ile	Val	Ala	Asp	Pro	Glu	Pro	Glu	
				85					90					95		
Val	Cys	Gln	Gln	Lys	Glu	Ser	Val	Gly	Asp	Gly	Thr	Val	Asp	Ile	Asp	
		100						105					110			
Val	Glu	Leu	Tyr	Glu	Leu	Val	Asp	Asp	Ser	Asp	Ser	Asp	Ile	Asp	Met	
		115					120					125				
Gly	Asp	Glu	Thr	Glu	Asn	Lys	Asp	Ile	Met	Asn	Gln	Asp	Glu	Ser	Leu	
	130					135				140						
Met	Asp	Ile	Asp	Ser	Ala	Asp	Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	
	145				150				155						160	
Tyr	Val	Glu	Glu	Leu	Tyr	Lys	Phe	Tyr	Arg	Glu	Asn	Glu	Ala	Lys	Ser	
				165				170						175		
Cys	Val	Asn	Pro	Asp	Tyr	Met	Ser	Ser	Gln	Gln	Asp	Ile	Asn	Ala	Lys	
		180					185						190			
Met	Arg	Ala	Ile	Leu	Ile	Asp	Trp	Leu	Ile	Glu	Val	His	Tyr	Lys	Phe	
		195					200					205				
Glu	Leu	Met	Asp	Glu	Thr	Leu	Phe	Leu	Thr	Val	Asn	Val	Ile	Asp	Arg	
	210					215					220					
Phe	Leu	Glu	Lys	Glu	Val	Val	Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	
	225				230					235					240	
Ile	Thr	Ala	Leu	Leu	Ala	Cys	Lys	Tyr	Glu	Glu	Val	Ser	Val	Pro		
			245					250					255			
Val	Val	Glu	Asp	Leu	Val	Leu	Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	
		260						265					270			
Gln	Ile	Leu	Glu	Met	Glu	Lys	Leu	Ile	Leu	Asn	Thr	Leu	Gln	Phe	Asn	
		275					280					285				
Met	Ser	Val	Pro	Thr	Pro	Tyr	Val	Phe	Met	Lys	Arg	Phe	Leu	Lys	Ala	
	290					295					300					
Ala	Asp	Ala	Asp	Lys	Gln	Leu	Glu	Leu	Val	Ser	Phe	Phe	Met	Leu	Glu	
	305				310					315					320	
Leu	Cys	Leu	Val	Glu	Tyr	Gln	Met	Leu	Asn	Tyr	Arg	Pro	Ser	His	Leu	
				325					330					335		

## PhoenixTemp32470.tmp.txt

Ala Ala Ala Ala Val Tyr Thr Ala Gln Cys Ala Ile Asn Arg Cys Gln  
 340 350  
 Gln Trp Thr Lys Val Cys Glu Ser His Ser Arg Tyr Thr Gly Asp Gln  
 355 360  
 Leu Leu Glu Cys Ser Arg Met Met Val Asp Phe His Gln Lys Ala Gly  
 370 375  
 Thr Gly Lys Leu Thr Gly Val His Arg Lys Tyr Ser Thr Tyr Lys Phe  
 385 390  
 Gly Cys Ala Ala Lys Ile Leu Pro Ala Gln Phe Met Leu Glu Ser Gly  
 400 415  
 Gly Thr Ala Pro Pro Pro Ser Gly Ala Ile  
 420 425

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 <211> 1329  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1329)

<400> 2453  
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 Met Ala Ser Arg Asn His Asn Ala Ala Ala Pro Gln Leu His His His  
 1 5 10 15  
 aac cga gcc ggt gtt ccc gct ctt gga aag acc aag gcc gtg ccc gcc 96  
 Asn Arg Ala Gly Val Pro Ala Leu Gly Lys Thr Lys Ala Val Pro Ala  
 20 25 30  
 cga cct gac gct ctg aac cgg cga ccc cct ctc ggc gat ata ggc aac 144  
 Arg Pro Asp Ala Leu Asn Arg Arg Pro Pro Leu Gly Asp Ile Gly Asn  
 35 40 45  
 ctc gtc agc gtc cgc cca gcc aca ggg aac ccg cag gag cag gtc aat 192  
 Leu Val Ser Val Arg Pro Ala Thr Gly Asn Pro Gln Glu Gln Val Asn  
 50 55 60  
 cgc ccc atc act aga agc ttc ggc gct caa ctc gtc aag aaa gcg cag 240  
 Arg Pro Ile Thr Arg Ser Phe Gly Ala Gln Leu Val Lys Lys Ala Gln  
 65 70 75 80  
 gcg aag gcc gca atc aag aat gcc gca atc ctg cct gcg agg cat gcg 288  
 Ala Lys Ala Ala Ile Lys Asn Ala Ala Ile Leu Pro Ala Arg His Ala  
 85 90 95  
 ccg agg cag gag agg aag gct cct gtc aag cag cac ccg ccg ccg gag 336  
 Pro Arg Gln Glu Arg Lys Ala Pro Val Lys Gln His Pro Pro Pro Glu  
 100 105 110  
 gat atc ata gta ctc agc tcc gat tct gaa cag agc agg gcg cag tcc 384  
 Asp Ile Ile Val Leu Ser Ser Asp Ser Glu Gln Ser Arg Ala Gln Ser  
 115 120 125  
 gag agc agc gct agc tcc gtc cgc tcc agg agg aag gcc atc aac acc 432  
 Glu Ser Ser Ala Ser Ser Val Arg Ser Arg Arg Lys Ala Ile Asn Thr  
 130 135 140  
 ctt tct tcc gtg ctc tcg gct cgc tca aag gct gcc tgt gga atc gct 480  
 Leu Ser Ser Val Leu Ser Ala Arg Ser Lys Ala Cys Gly Ile Ala  
 145 150 155 160  
 ggt aag cct aga caa gtg gtc gat gac atc gac aag ctg gac gtc aac 528  
 Gly Lys Pro Arg Gln Val Val Asp Asp Ile Asp Lys Leu Asp Val Asn  
 165 170 175  
 aat gag ctc gcg gtg gtg gaa tac att gag gac atc tac acg ttc tac 576  
 Asn Glu Leu Ala Val Val Glu Tyr Ile Glu Asp Ile Tyr Thr Phe Tyr  
 180 185 190  
 aag att gct cag cac gag aga cgg cca tgt gac tac atc gac gcc caa 624  
 Lys Ile Ala Gln His Glu Arg Arg Pro Cys Asp Tyr Ile Asp Ala Gln  
 195 200 205  
 ctc gag atc aac tct aag atg agg gct atc ctg gct gat tgg ata atc 672  
 Leu Glu Ile Asn Ser Lys Met Arg Ala Ile Leu Ala Asp Trp Ile Ile  
 210 215 220  
 gaa gta cac cac aag ttt gaa ctg atg ccc gaa act ctc tac ctg acc 720  
 Glu Val His His Lys Phe Glu Leu Met Pro Glu Thr Leu Tyr Leu Thr  
 225 230 235 240  
 atg tac atc atc gat cag tac ctc tcg ctg caa cca gtc ctg cgt aag 768

## PhoenixTemp32470.tmp.txt

Met	Tyr	Ile	Ile	Asp 245	Gln	Tyr	Leu	Ser	Leu 250	Gln	Pro	Val	Leu	Arg 255	Lys	
gag	ctg	cag	ctt	gtc	ggc	gtt	tca	tct	atg	ctg	atc	gcc	tgc	aag	tac	816
Glu	Leu	Gln	Leu	Val	Gly	Val	Ser	Ser	Met	Leu	Ile	Ala	Cys	Lys	Tyr	
			260					265					270			
gag	gag	att	tgg	gcc	cca	gag	gtg	aac	gac	ttc	atc	ctc	ata	tca	gac	864
Glu	Glu	Ile	Trp	Ala	Pro	Glu	Val	Asn	Asp	Phe	Ile	Leu	Ile	Ser	Asp	
		275					280					285				
agt	gca	tac	agt	aga	gaa	cag	att	ctt	tcg	atg	gag	aag	gga	att	ctg	912
Ser	Ala	Tyr	Ser	Arg	Glu	Gln	Ile	Leu	Ser	Met	Glu	Lys	Gly	Ile	Leu	
	290					295				300						
aat	agg	ctg	gag	tgg	aac	ctg	act	gtc	cct	aca	gtg	tat	atg	ttc	ctt	960
Asn	Arg	Leu	Glu	Trp	Asn	Leu	Thr	Val	Pro	Thr	Val	Tyr	Met	Phe	Leu	
305					310				315						320	
gtc	cgt	ttt	ctg	aag	gcc	gca	aca	ttg	ggc	ggc	aaa	gtt	gag	aaa	gag	1008
Val	Arg	Phe	Leu	Lys	Ala	Ala	Thr	Leu	Gly	Gly	Lys	Val	Glu	Lys	Glu	
			325					330					335			
atg	gag	aat	atg	gtg	ttc	ttc	ttc	gct	gaa	ttg	gcg	ctg	atg	caa	tac	1056
Met	Glu	Asn	Met	Val	Phe	Phe	Phe	Ala	Glu	Leu	Ala	Leu	Met	Gln	Tyr	
			340					345					350			
gat	ttg	gtg	acg	cgc	ctg	cca	tcg	ctg	gtc	gct	gct	tct	gct	gtc	tac	1104
Asp	Leu	Val	Thr	Arg	Leu	Pro	Ser	Leu	Val	Ala	Ala	Ser	Ala	Val	Tyr	
		355					360					365				
gca	gcc	aga	ctc	act	ctc	aag	agg	gct	ccc	ctt	tgg	acc	gac	acc	ctc	1152
Ala	Ala	Arg	Leu	Thr	Leu	Lys	Arg	Ala	Pro	Leu	Trp	Thr	Asp	Thr	Leu	
	370					375					380					
aag	cac	cac	acg	ggc	ttc	agg	gag	tca	gag	gca	gag	ctc	att	gaa	tgc	1200
Lys	His	His	Thr	Gly	Phe	Arg	Glu	Ser	Glu	Ala	Glu	Leu	Ile	Glu	Cys	
385				390					395					400		
acg	aag	atg	ctg	gtg	atc	gcg	cac	tcg	act	gcc	cct	gag	agc	aag	ctg	1248
Thr	Lys	Met	Leu	Val	Ile	Ala	His	Ser	Thr	Ala	Pro	Glu	Ser	Lys	Leu	
			405					410					415			
agg	gtt	gta	tac	aag	aag	tat	tcc	agc	gag	cag	ttc	gga	ggg	gtc	gcg	1296
Arg	Val	Val	Tyr	Lys	Lys	Tyr	Ser	Ser	Glu	Gln	Phe	Gly	Gly	Val	Ala	
		420						425					430			
ctg	cgt	cca	ccc	gca	gag	gag	atc	tgc	aag	tga						1329
Leu	Arg	Pro	Pro	Ala	Glu	Glu	Ile	Cys	Lys							
		435					440									

<210> 2454  
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 <212> PRT  
 <213> Zea mays

<400> 2454

Met	Ala	Ser	Arg	Asn 5	His	Asn	Ala	Ala	Ala 10	Pro	Gln	Leu	His 15	His	His	
Asn	Arg	Ala	Gly	Val	Pro	Ala	Leu	Gly	Lys	Thr	Lys	Ala	Val	Pro	Ala	
			20					25					30			
Arg	Pro	Asp	Ala	Leu	Asn	Arg	Arg	Pro	Pro	Leu	Gly	Asp	Ile	Gly	Asn	
		35					40					45				
Leu	Val	Ser	Val	Arg	Pro	Ala	Thr	Gly	Asn	Pro	Gln	Glu	Gln	Val	Asn	
	50					55					60					
Arg	Pro	Ile	Thr	Arg	Ser	Phe	Gly	Ala	Gln	Leu	Val	Lys	Lys	Ala	Gln	
65					70				75						80	
Ala	Lys	Ala	Ala	Ile	Lys	Asn	Ala	Ala	Ile	Leu	Pro	Ala	Arg	His	Ala	
				85					90					95		
Pro	Arg	Gln	Glu	Arg	Lys	Ala	Pro	Val	Lys	Gln	His	Pro	Pro	Pro	Glu	
		100						105					110			
Asp	Ile	Ile	Val	Leu	Ser	Ser	Asp	Ser	Glu	Gln	Ser	Arg	Ala	Gln	Ser	
	115						120					125				
Glu	Ser	Ser	Ala	Ser	Ser	Val	Arg	Ser	Arg	Arg	Lys	Ala	Ile	Asn	Thr	
	130					135					140					
Leu	Ser	Ser	Val	Leu	Ser	Ala	Arg	Ser	Lys	Ala	Ala	Cys	Gly	Ile	Ala	
145					150				155						160	
Gly	Lys	Pro	Arg	Gln	Val	Val	Asp	Asp	Ile	Asp	Lys	Leu	Asp	Val	Asn	
			165					170						175		
Asn	Glu	Leu	Ala	Val	Val	Glu	Tyr	Ile	Glu	Asp	Ile	Tyr	Thr	Phe	Tyr	
		180						185					190			

## PhoenixTemp32470.tmp.txt

Lys Ile Ala Gln His Glu Arg Arg Pro Cys Asp Tyr Ile Asp Ala Gln  
 195 200 205  
 Leu Glu Ile Asn Ser Lys Met Arg Ala Ile Leu Ala Asp Trp Ile Ile  
 210 215 220  
 Glu Val His His Lys Phe Glu Leu Met Pro Glu Thr Leu Tyr Leu Thr  
 225 230 235 240  
 Met Tyr Ile Ile Asp Gln Tyr Leu Ser Leu Gln Pro Val Leu Arg Lys  
 245 250 255  
 Glu Leu Gln Leu Val Gly Val Ser Ser Met Leu Ile Ala Cys Lys Tyr  
 260 265 270  
 Glu Glu Ile Trp Ala Pro Glu Val Asn Asp Phe Ile Leu Ile Ser Asp  
 275 280 285  
 Ser Ala Tyr Ser Arg Glu Gln Ile Leu Ser Met Glu Lys Gly Ile Leu  
 290 295 300  
 Asn Arg Leu Glu Trp Asn Leu Thr Val Pro Thr Val Tyr Met Phe Leu  
 305 310 315 320  
 Val Arg Phe Leu Lys Ala Ala Thr Leu Gly Gly Lys Val Glu Lys Glu  
 325 330 335  
 Met Glu Asn Met Val Phe Phe Phe Ala Glu Leu Ala Leu Met Gln Tyr  
 340 345 350  
 Asp Leu Val Thr Arg Leu Pro Ser Leu Val Ala Ala Ser Ala Val Tyr  
 355 360 365  
 Ala Ala Arg Leu Thr Leu Lys Arg Ala Pro Leu Trp Thr Asp Thr Leu  
 370 375 380  
 Lys His His Thr Gly Phe Arg Glu Ser Glu Ala Glu Leu Ile Glu Cys  
 385 390 395 400  
 Thr Lys Met Leu Val Ile Ala His Ser Thr Ala Pro Glu Ser Lys Leu  
 405 410 415  
 Arg Val Val Tyr Lys Lys Tyr Ser Ser Glu Gln Phe Gly Gly Val Ala  
 420 425 430 435  
 Leu Arg Pro Pro Ala Glu Glu Ile Cys Lys 440

&lt;210&gt; 2455

&lt;211&gt; 1275

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1275)

&lt;400&gt; 2455

atg gcg gcg cgg gcg gct gac gag aac agg aga ccg gcg gca ggg aag	48
Met Ala Ala Arg Ala 5 Asp Glu Asn Arg 10 Arg Pro Ala Ala Gly Lys 15	
ccc gcg cca ggc gtc cga gac atg gcg agc cgg cgc gcg ctc acg gac	96
Pro Ala Pro Gly Val Arg Asp Met Ala Ser Arg Arg Ala Leu Thr Asp 20 25 30	
atc aag aac ctc gtc ggg gct gcc ccg tac ccc tac gcc gtc gcc aag	144
Ile Lys Asn 35 Leu Val Gly Ala Ala 40 Pro Tyr Pro Tyr 45 Val Ala Lys	
aag ccc atg ctg cag aag agc aaa agg gac gaa aag cag cca gcg ttg	192
Lys Pro Met Leu Gln Lys Ser Lys Arg Asp Glu Lys 60 Gln Pro Ala Leu 50 55 60	
gca agc agc cgg ccc atg aca agg aaa ttc gcc gcc tcc ttg gcg agc	240
Ala Ser Ser Arg Pro Met 70 Thr Arg Lys Phe Ala Ala Ser Leu Ala Ser 65 70 75 80	
aag ggc caa cct gaa tgt cag ccg atc gta gct gat cca gaa ccc gaa	288
Lys Gly Gln Pro Glu Cys Gln Pro Ile Val Ala Asp Pro Glu Pro Glu 85 90 95	
gtt tgt caa cag aag gaa tca gta ggc gat ggc acc gtt gat att gac	336
Val Cys Gln 100 Lys Glu Ser Val Gly 105 Asp Gly Thr Val Asp Ile Asp 110	
gtg gaa ctc tac gag ctg gtc gac ggt agt gat agt gac atc gac atg	384
Val Glu Leu Tyr Glu Leu Val Asp 120 Gly Ser Asp Ser Asp Ile Asp Met 115 120 125	
ggt gcg aca gag aac aag gac att atg aac gaa gat gaa ttg ctc atg	432
Gly Ala Thr Glu Asn Lys Asp Ile Met Asn Glu Asp Glu Leu Leu Met 125 130 135	

## PhoenixTemp32470.tmp.txt

130	gat	att	gac	agt	gca	gac	135	ggg	aac	ccg	ctt	140	gct	gca	aca	gaa	tat	480
Asp	Ile	Asp	Ser	Ala	Ala	Asp	Ser	Gly	Asn	Pro	Leu	Ala	Ala	Thr	Glu	Tyr		
145	ggt	aaa	gag	ctt	tac	acc	ttt	tac	aga	gaa	aat	gag	gct	aag	agt	tgt	528	
Val	Lys	Glu	Leu	Tyr	Thr	Phe	Tyr	Arg	Arg	Glu	Asn	Glu	Ala	Lys	Ser	Cys		
				165						170					175			
gta	agg	cca	gat	tac	atg	tcc	agc	caa	caa	gac	ata	aac	tca	aag	atg		576	
Val	Arg	Pro	Asp	Tyr	Met	Ser	Ser	Gln	Gln	Asp	Ile	Asn	Ser	Lys	Met			
			180					185					190					
aga	gca	att	ctg	att	gac	tgg	ctg	att	gag	ggt	cac	tac	aag	ttt	gaa		624	
Arg	Ala	Ile	Leu	Ile	Asp	Trp	Leu	Ile	Glu	Val	His	Tyr	Lys	Phe	Glu			
			195				200					205						
ctg	atg	gat	gag	acg	ctc	ttt	ctt	atg	gta	aac	ata	ata	gat	aga	ttc		672	
Leu	Met	Asp	Glu	Thr	Leu	Phe	Leu	Met	Val	Asn	Ile	Ile	Asp	Arg	Phe			
						215					220							
ttg	gaa	aag	gaa	gtg	gtt	cca	agg	aag	aag	cta	caa	ctg	ggt	gga	gtc		720	
Leu	Glu	Lys	Glu	Val	Val	Pro	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Val			
225					230					235					240			
aca	gct	atg	ctg	ctc	gct	tgt	aaa	tat	gag	gag	gta	tct	ggt	cca	ggt		768	
Thr	Ala	Met	Leu	Leu	Ala	Cys	Lys	Tyr	Glu	Glu	Val	Ser	Val	Pro	Val			
				245					250					255				
ggt	gag	gac	ctt	gtg	ctg	ata	tct	gac	cgt	gcc	tac	aca	aaa	ggg	caa		816	
Val	Glu	Asp	Leu	Val	Leu	Ile	Ser	Asp	Arg	Ala	Tyr	Thr	Lys	Gly	Gln			
			260					265					270					
att	cta	gaa	atg	gaa	aag	ttg	att	ctg	aac	acg	ctg	cag	ttc	aac	atg		864	
Ile	Leu	Glu	Met	Glu	Lys	Leu	Ile	Leu	Asn	Thr	Leu	Gln	Phe	Asn	Met			
			275			280					285							
tct	ggt	cca	aca	cct	tat	gtc	ttc	atg	aag	agg	ttt	ctg	aaa	gct	gca		912	
Ser	Val	Pro	Thr	Pro	Tyr	Val	Phe	Met	Lys	Arg	Phe	Leu	Lys	Ala	Ala			
	290					295					300							
gat	gca	gat	aaa	cag	ctt	gag	cta	gcg	tca	ttt	ttc	atg	ctg	gag	ctc		960	
Asp	Ala	Asp	Lys	Gln	Leu	Glu	Leu	Ala	Ser	Phe	Phe	Met	Leu	Glu	Leu			
305				310						315					320			
tgc	ttg	gta	gaa	tac	caa	atg	ctg	aat	tat	cgg	cct	tcg	cat	ctg	gct		1008	
Cys	Leu	Val	Glu	Tyr	Gln	Met	Leu	Asn	Tyr	Arg	Pro	Ser	His	Leu	Ala			
				325					330					335				
gct	gct	gcg	ggt	tat	act	gca	cag	tgt	gct	atc	aat	cgt	tgc	cag	cac		1056	
Ala	Ala	Ala	Val	Tyr	Thr	Ala	Gln	Cys	Ala	Ile	Asn	Arg	Cys	Gln	His			
			340					345					350					
tgg	aca	aag	gtc	tgc	gag	tct	cat	agc	aga	tac	act	agc	gac	caa	ctc		1104	
Trp	Thr	Lys	Val	Cys	Glu	Ser	His	Ser	Arg	Tyr	Thr	Ser	Asp	Gln	Leu			
		355					360					365						
ctg	gag	tgc	tcg	agg	atg	atg	gta	gat	ttt	cac	cag	aag	gct	gga	acc		1152	
Leu	Glu	Cys	Ser	Arg	Met	Met	Val	Asp	Phe	His	Gln	Lys	Ala	Gly	Thr			
						375					380							
agt	aag	ctc	act	ggc	gtg	cac	agg	aag	tac	agt	acc	tac	aag	ttc	ggt		1200	
Ser	Lys	Leu	Thr	Gly	Val	His	Arg	Lys	Tyr	Ser	Thr	Tyr	Lys	Phe	Gly			
385				390						395					400			
tgc	gtg	gcc	aag	att	ttg	cct	gcg	cag	ttc	ctg	ctg	gag	tcg	gga	ggg		1248	
Cys	Val	Ala	Lys	Ile	Leu	Pro	Ala	Gln	Phe	Leu	Leu	Glu	Ser	Gly	Gly			
				405					410					415				
aca	ccg	cct	cct	tca	ggt	gca	aac	tag									1275	
Thr	Pro	Pro	Pro	Ser	Gly	Ala	Asn											
			420															

<210> 2456  
 <211> 424  
 <212> PRT  
 <213> Zea mays

<400> 2456  
 Met Ala Ala Arg Ala Ala Asp Glu Asn Arg Arg Pro Ala Ala Gly Lys  
 1 Pro Ala Pro Gly Val Arg Asp Met Ala Ser Arg Arg Ala Leu Thr Asp  
 20 Ile Lys Asn Leu Val Gly Ala Ala Pro Tyr Pro Tyr Ala Val Ala Lys  
 35 Lys Pro Met Leu Gln Lys Ser Lys Arg Asp Glu Lys Gln Pro Ala Leu  
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## PhoenixTemp32470.tmp.txt

50 55 60  
 Ala Ser Ser Arg Pro Met Thr Arg Lys Phe Ala Ser Leu Ala Ser  
 65 70 75 80  
 Lys Gly Gln Pro Glu Cys Gln Pro Ile Val Ala Asp Pro Glu Pro Glu  
 85 90 95  
 Val Cys Gln Gln Lys Glu Ser Val Gly Asp Gly Thr Val Asp Ile Asp  
 100 105 110  
 Val Glu Leu Tyr Glu Leu Val Asp Gly Ser Asp Ser Asp Ile Asp Met  
 115 120 125  
 Gly Ala Thr Glu Asn Lys Asp Ile Met Asn Glu Asp Glu Leu Leu Met  
 130 135 140  
 Asp Ile Asp Ser Ala Asp Ser Gly Asn Pro Leu Ala Ala Thr Glu Tyr  
 145 150 155 160  
 Val Lys Glu Leu Tyr Thr Phe Tyr Arg Glu Asn Glu Ala Lys Ser Cys  
 165 170 175  
 Val Arg Pro Asp Tyr Met Ser Ser Gln Gln Asp Ile Asn Ser Lys Met  
 180 185 190  
 Arg Ala Ile Leu Ile Asp Trp Leu Ile Glu Val His Tyr Lys Phe Glu  
 195 200 205  
 Leu Met Asp Glu Thr Leu Phe Leu Met Val Asn Ile Ile Asp Arg Phe  
 210 215 220  
 Leu Glu Lys Glu Val Val Pro Arg Lys Lys Leu Gln Leu Val Gly Val  
 225 230 235 240  
 Thr Ala Met Leu Leu Ala Cys Lys Tyr Glu Glu Val Ser Val Pro Val  
 245 250 255  
 Val Glu Asp Leu Val Leu Ile Ser Asp Arg Ala Tyr Thr Lys Gly Gln  
 260 265 270  
 Ile Leu Glu Met Glu Lys Leu Ile Leu Asn Thr Leu Gln Phe Asn Met  
 275 280 285  
 Ser Val Pro Thr Pro Tyr Val Phe Met Lys Arg Phe Leu Lys Ala Ala  
 290 295 300  
 Asp Ala Asp Lys Gln Leu Glu Leu Ala Ser Phe Phe Met Leu Glu Leu  
 305 310 315 320  
 Cys Leu Val Glu Tyr Gln Met Leu Asn Tyr Arg Pro Ser His Leu Ala  
 325 330 335  
 Ala Ala Ala Val Tyr Thr Ala Gln Cys Ala Ile Asn Arg Cys Gln His  
 340 345 350  
 Trp Thr Lys Val Cys Glu Ser His Ser Arg Tyr Thr Ser Asp Gln Leu  
 355 360 365  
 Leu Glu Cys Ser Arg Met Met Val Asp Phe His Gln Lys Ala Gly Thr  
 370 375 380  
 Ser Lys Leu Thr Gly Val His Arg Lys Tyr Ser Thr Tyr Lys Phe Gly  
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 <212> DNA  
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<220>  
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 gga gtc aag ttt gcg ccg gag aag gcc aac acc aac cgg aga gcc ctc 96  
 Gly Val Lys Phe Ala Pro Glu Lys Ala Asn Thr Asn Arg Arg Ala Leu  
 20 25 30  
 agc gac atc aag aac ata ata gga ggc cca cac cag cac ttg gcg gtc 144  
 Ser Asp Ile Lys Asn Ile Ile Gly Gly Pro His Gln His Leu Ala Val  
 35 40 45  
 agc aag agg gct ctg tca gaa aaa cca gct gct gct gct gct gca aat 192  
 Ser Lys Arg Ala Leu Ser Glu Lys Pro Ala Ala Ala Ala Ala Asn

## PhoenixTemp32470.tmp.txt

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	Phe	Ala	Ala	Thr	Leu	Ala	Thr	Gln	Pro	Thr	Val	Ala	Leu	Leu	Asp	Pro	
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	Ile	Gly	Ser	Glu	Arg	Leu	Lys	Arg	Asn	Ala	Asp	Thr	Ala	Phe	His	Thr	
100	cct	gca	gat	atg	gaa	agc	aca	aaa	atg	aca	gat	gac	agt	ccc	ttg	cct	384
	Pro	Ala	Asp	Met	Glu	Ser	Thr	Lys	Met	Thr	Asp	Asp	Ser	Pro	Leu	Pro	
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	Met	Val	Ser	Glu	Met	Asp	Glu	Met	Met	Ser	Pro	Glu	Leu	Lys	Glu	Ile	
130	gag	atg	gaa	gat	att	gag	gag	gca	gca	cct	gat	att	gac	agt	ggt	gat	480
	Glu	Met	Glu	Asp	Ile	Glu	Glu	Ala	Ala	Pro	Asp	Ile	Asp	Ser	Gly	Asp	
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	Ala	Gly	Asn	Ser	Leu	Ala	Val	Ala	Asp	Tyr	Val	Asp	Glu	Ile	Tyr	Arg	
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	Phe	Tyr	Arg	Lys	Thr	Glu	Gly	Ala	Ser	Cys	Val	Pro	Thr	Asn	Tyr	Met	
180	tca	agc	caa	act	gat	ata	aat	gag	aag	atg	cg	ggc	att	cta	att	gac	624
	Ser	Ser	Gln	Thr	Asp	Ile	Asn	Glu	Lys	Met	Arg	Gly	Ile	Leu	Ile	Asp	
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	Trp	Leu	Ile	Glu	Val	His	Tyr	Lys	Leu	Glu	Leu	Leu	Glu	Glu	Thr	Leu	
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	Phe	Leu	Thr	Val	Asn	Ile	Ile	Asp	Arg	Phe	Leu	Ala	Arg	Glu	Asn	Val	
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	Val	Arg	Lys	Lys	Leu	Gln	Leu	Ala	Gly	Val	Thr	Ala	Met	Leu	Leu	Ala	
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	Cys	Lys	Tyr	Glu	Glu	Val	Ser	Val	Pro	Val	Val	Glu	Asp	Leu	Ile	Leu	
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	Ile	Cys	Asp	Arg	Ala	Tyr	Thr	Arg	Ala	Asp	Ile	Leu	Glu	Met	Glu	Arg	
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	Arg	Ile	Val	Asn	Thr	Leu	Asn	Phe	Asn	Met	Ser	Val	Pro	Thr	Pro	Tyr	
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	Cys	Phe	Met	Arg	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Glu	Lys	Lys	Leu	
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	Glu	Leu	Leu	Ser	Phe	Phe	Met	Ile	Glu	Leu	Ser	Leu	Val	Glu	Tyr	Glu	
325	atg	ctc	cag	ttc	tgc	ccg	tct	atg	cta	gca	gcc	gct	gcc	atc	tac	acc	1056
	Met	Leu	Gln	Phe	Cys	Pro	Ser	Met	Leu	Ala	Ala	Ala	Ala	Ile	Tyr	Thr	
340	gct	caa	tgc	acc	ata	aat	ggg	ttc	aag	tcc	tgg	aac	aaa	tgc	tgt	gag	1104
	Ala	Gln	Cys	Thr	Ile	Asn	Gly	Phe	Lys	Ser	Trp	Asn	Lys	Cys	Cys	Glu	
355	ctg	cac	aca	aaa	tat	tca	gaa	gaa	cat	cta	atg	gtt	tgc	tct	agg	atg	1152
	Leu	His	Thr	Lys	Tyr	Ser	Glu	Glu	His	Leu	Met	Val	Cys	Ser	Arg	Met	
370	atg	gtt	gaa	ctg	cac	caa	aga	gca	gct	cat	ggg	aaa	ctt	aca	ggg	gtc	1200
	Met	Val	Glu	Leu	His	Gln	Arg	Ala	Ala	His	Gly	Lys	Leu	Thr	Gly	Val	
385	cat	aga	aag	tac	aac	act	tct	aga	tat	agc	tat	gct	gcg	aaa	tcg	gaa	1248
	His	Arg	Lys	Tyr	Asn	Thr	Ser	Arg	Tyr	Ser	Tyr	Ala	Ala	Lys	Ser	Glu	
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	Pro	Ala	Thr	Phe	Leu	Leu	Asp	Ala									

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 <213> Zea mays

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 Ser Asp Ile Lys Asn Ile Ile Gly Gly Pro His Gln His Leu Ala Val  
 35 40 45  
 Ser Lys Arg Ala Leu Ser Glu Lys Pro Ala Ala Ala Ala Ala Asn  
 50 55 60  
 Ala Lys Asp Gln Ala Gly Phe Val Gly His Arg Pro Val Thr Arg Lys  
 65 70 75 80  
 Phe Ala Ala Thr Leu Ala Thr Gln Pro Thr Val Ala Leu Leu Asp Pro  
 85 90 95  
 Ile Gly Ser Glu Arg Leu Lys Arg Asn Ala Asp Thr Ala Phe His Thr  
 100 105 110  
 Pro Ala Asp Met Glu Ser Thr Lys Met Thr Asp Asp Ser Pro Leu Pro  
 115 120 125  
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 130 135 140  
 Glu Met Glu Asp Ile Glu Glu Ala Ala Pro Asp Ile Asp Ser Gly Asp  
 145 150 155 160  
 Ala Gly Asn Ser Leu Ala Val Ala Asp Tyr Val Asp Glu Ile Tyr Arg  
 165 170 175  
 Phe Tyr Arg Lys Thr Glu Gly Ala Ser Cys Val Pro Thr Asn Tyr Met  
 180 185 190  
 Ser Ser Gln Thr Asp Ile Asn Glu Lys Met Arg Gly Ile Leu Ile Asp  
 195 200 205  
 Trp Leu Ile Glu Val His Tyr Lys Leu Glu Leu Glu Glu Thr Leu  
 210 215 220  
 Phe Leu Thr Val Asn Ile Ile Asp Arg Phe Leu Ala Arg Glu Asn Val  
 225 230 235 240  
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 Cys Lys Tyr Glu Glu Val Ser Val Pro Val Val Glu Asp Leu Ile Leu  
 260 265 270  
 Ile Cys Asp Arg Ala Tyr Thr Arg Ala Asp Ile Leu Glu Met Glu Arg  
 275 280 285  
 Arg Ile Val Asn Thr Leu Asn Phe Asn Met Ser Val Pro Thr Pro Tyr  
 290 295 300  
 Cys Phe Met Arg Arg Phe Leu Lys Ala Ala Gln Ser Glu Lys Lys Leu  
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 325 330 335  
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 340 345 350  
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 355 360 365  
 Leu His Thr Lys Tyr Ser Glu Glu His Leu Met Val Cys Ser Arg Met  
 370 375 380  
 Met Val Glu Leu His Gln Arg Ala Ala His Gly Lys Leu Thr Gly Val  
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<220>



<223> primer

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25

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26

<210> 2461  
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<212> PRT  
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&lt;222&gt; (199)..(202)

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&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (203)..(216)

&lt;223&gt; Xaa in position 203 to 216 is any or no amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (218)..(253)

&lt;223&gt; Xaa in position 218 to 253 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (254)..(259)

&lt;223&gt; Xaa in position 254 to 259 is any or no amino acid

&lt;400&gt; 2461

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35      40      45
Xaa Xaa Xaa Xaa Leu Xaa Xaa Glu Thr Leu Xaa Leu Xaa Xaa Xaa Xaa
50      55      60
Xaa Asp Arg Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu
65      70      75      80
Gln Leu Xaa Gly Xaa Xaa Xaa Xaa Xaa Ala Xaa Lys Tyr Glu Glu
85      90      95
Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa
100     105     110
Tyr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Xaa Xaa
115     120     125
Leu Xaa Phe Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Phe Xaa Arg
130     135     140
Arg Xaa Xaa Lys Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
145     150     155     160
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Xaa Xaa
165     170     175
Xaa Xaa Xaa Xaa Xaa Xaa Pro Ser Xaa Xaa Ala Ala Xaa Ala Xaa Xaa
180     185     190
Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
195     200     205
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Trp Xaa Xaa Xaa Xaa Xaa Xaa Xaa
210     215     220
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
225     230     235     240
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
245     250     255
Xaa Xaa Xaa Lys Tyr
260

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&lt;210&gt; 2462

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; protein pattern

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (2)..(3)

&lt;223&gt; Xaa in position 2 to 3 is any amino acid

&lt;220&gt;

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 Xaa Xaa

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 <212> DNA  
 <213> Saccharomyces cerevisiae

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 tcg aag aat att aga gca cta ccg aat cta tcg tcg gtt ctt tca agt 96  
 Ser Lys Asn Ile Arg Ala Leu Pro Asn Leu Ser Ser Val Leu Ser Ser  
 20 25 30  
 ttc aaa caa tgt tat cat gac ggg tcg cct cca att ctc tcc caa aac 144  
 Phe Lys Gln Cys Tyr His Asp Gly Ser Pro Pro Ile Leu Ser Gln Asn  
 35 40 45  
 gat tgg ttc ttt ata cat ttg aag aga gac ttt ctg cat ttc gtt tca 192  
 Asp Trp Phe Phe Ile His Leu Lys Arg Asp Phe Leu His Phe Val Ser  
 50 55 60  
 gtg ata cat acc aca gac aaa cca aat ata gac tta atg act ata cta 240  
 Val Ile His Thr Thr Asp Lys Pro Asn Ile Asp Leu Met Thr Ile Leu  
 65 70 75 80  
 gcc ttt ttg gaa caa ttt tat cat ctt tta caa aaa tat ttt gaa atc 288  
 Ala Phe Leu Glu Gln Phe Tyr His Leu Leu Gln Lys Tyr Phe Glu Ile  
 85 90 95  
 gag gtc tta act aag aat gtc ata ctg gac aac atc tta ctt gtc ctg 336  
 Glu Val Leu Thr Lys Asn Val Ile Leu Asp Asn Ile Leu Leu Val Leu  
 100 105 110  
 gag ttg att gat gaa tgt ata gac ttt ggt atc gta caa gtg acg gat 384  
 Glu Leu Ile Asp Glu Cys Ile Asp Phe Gly Ile Val Gln Val Thr Asp  
 115 120 125  
 cca agt atc atc aag gac tac att cgt gtg aag gtc aac gta cca aga 432  
 Pro Ser Ile Ile Lys Asp Tyr Ile Arg Val Lys Val Asn Val Pro Arg  
 130 135 140  
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 Val Thr Val Asp Asn Glu Glu Trp Ser Pro Gly Glu Glu Ser Ser Ser  
 145 150 155 160  
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 Ser Ser Gly Ser Asp Ser Asp Ser Glu Tyr Ser Asn Thr Asn Lys Arg  
 165 170 175  
 aag gat aag aag aag aaa agg aag aag aaa aag ggc act aaa ggg aaa 576  
 Lys Asp Lys Lys Lys Lys Arg Lys Lys Lys Lys Gly Thr Lys Gly Lys  
 180 185 190  
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 Ser Val Gly Lys Ser Lys Leu Lys Ser Ile Met Val Asn Asn Lys Glu  
 195 200 205  
 aat agg ggc ata aac gtg gtg gaa act gtc aag gag aca cta agg aac 672  
 Asn Arg Gly Ile Asn Val Val Glu Thr Val Lys Glu Thr Leu Arg Asn

## PhoenixTemp32470.tmp.txt

210	aag	aat	gat	acc	ggt	aaa	215	gaa	gct	aat	220	gag	ctc	ccc	aat	gac	720
Lys	Asn	Asp	Thr	Gly	Lys	Glu	Glu	Ala	Ala	Asn	Asp	Glu	Leu	Pro	Asn	Asp	
225	ggt	aat	gat	tta	tac	atc	230	aat	ggc	gat	235	gcg	aag	acg	att	ata	768
Gly	Asn	Asp	Leu	Tyr	Ile	Asn	Gly	Asp	Ile	Ala	Lys	Thr	Ile	Ile	Met		
245	ccc	ata	tca	tggt	aga	aca	245	aag	ggg	ata	250	tac	gcc	aaa	aac	gag	816
Pro	Ile	Ser	Trp	Arg	Thr	Lys	Gly	Ile	His	Tyr	Ala	Lys	Asn	Glu	Phe		
260	ttt	ctt	gat	gtt	att	gaa	265	cgt	ggt	cag	270	atg	gat	ttt	gaa	aaa	864
Phe	Leu	Asp	Val	Ile	Glu	Arg	Val	Gln	Tyr	Leu	Met	Asp	Phe	Glu	Lys		
275	gga	gtg	att	agg	aaa	aat	280	ctg	ata	cat	285	gag	att	gtg	tgc	aga	912
Gly	Val	Ile	Arg	Lys	Asn	Leu	Ile	His	Gly	Glu	Ile	Val	Cys	Arg	Cys		
290	tat	tta	tca	ggg	atg	ccc	295	aaa	ctg	aaa	300	tcc	ata	aac	aag	ata	960
Tyr	Leu	Ser	Gly	Met	Pro	Lys	Leu	Lys	Ile	Ser	Ile	Asn	Lys	Ile	Leu		
305	aac	agg	gac	ccc	cag	ttc	310	atg	tcg	aat	315	agc	ttt	cat	cag	tgt	1008
Asn	Arg	Asp	Pro	Gln	Phe	Met	Ser	Asn	Ser	Ser	Phe	His	Gln	Cys	Val		
325	tca	cta	gat	tcc	ata	aac	330	act	att	gaa	335	gat	gaa	gaa	aag	aat	1056
Ser	Leu	Asp	Ser	Ile	Asn	Thr	Ile	Glu	Lys	Asp	Glu	Glu	Lys	Asn	Ser		
340	gac	gat	gat	gct	ggt	ttg	345	cag	gcc	gcc	350	gca	aga	gaa	atc	gaa	1104
Asp	Asp	Asp	Ala	Gly	Leu	Gln	Ala	Ala	Thr	Asp	Ala	Arg	Glu	Ile	Glu		
355	ttt	ata	ccg	ccg	gat	ggc	360	gaa	ttt	gtt	365	tgc	caa	tac	gag	ttg	1152
Phe	Ile	Pro	Pro	Asp	Gly	Glu	Phe	Val	Leu	Cys	Gln	Tyr	Glu	Leu	Lys		
370	aga	cat	gta	aag	gat	gcg	375	ccg	atg	gtg	380	aaa	gat	ttt	gaa	atc	1200
Arg	His	Val	Lys	Asp	Ala	Pro	Met	Val	Arg	Leu	Lys	Asp	Phe	Glu	Ile		
385	aaa	cct	aaa	ctg	aag	ttt	390	aaa	atc	caa	395	gta	acc	aaa	att	caa	1248
Lys	Pro	Lys	Leu	Lys	Phe	Lys	Ile	Gln	Ile	Val	Thr	Lys	Ile	Gln			
405	aca	aat	ttt	aaa	ccc	acc	410	aac	tca	acg	415	cta	aac	gtg	aga	att	1296
Thr	Asn	Phe	Lys	Pro	Thr	Asn	Ser	Thr	Ser	Lys	Leu	Asn	Val	Arg	Ile		
420	ccc	ctg	aca	aaa	gtc	ttc	425	cag	gaa	tat	430	gac	ctc	agc	aag	caa	1344
Pro	Leu	Thr	Lys	Val	Phe	Gln	Glu	Tyr	Lys	Ile	Asp	Leu	Ser	Lys	Gln		
435	att	aga	ttc	aag	gca	aac	440	atc	ggc	aag	445	gtg	ttt	aac	ttg	agt	1392
Ile	Arg	Phe	Lys	Ala	Asn	Ile	Gly	Lys	Val	Val	Phe	Asn	Leu	Ser	Asp		
450	gat	ttt	ctc	ctc	tggt	gag	455	ata	caa	acc	460	ggg	cac	cga	gaa	cat	1440
Asp	Phe	Leu	Leu	Trp	Glu	Ile	Gln	Thr	Met	Lys	Gly	His	Arg	Glu	His		
465	agc	aca	aac	aag	agc	tca	470	cag	tac	aac	475	gac	gaa	gat	gat	cca	1488
Ser	Thr	Asn	Lys	Ser	Ser	Gln	Tyr	Asn	Ser	Asp	Glu	Asp	Asp	Pro	Asn		
485	acg	tgt	gca	tcc	atg	gtg	490	gca	gag	ttc	495	ctc	ttc	aac	cag	gaa	1536
Thr	Cys	Ala	Ser	Met	Val	Ala	Glu	Phe	Pro	Leu	Phe	Asn	Gln	Glu	Glu		
500	tat	gac	cg	ctg	caa	gaa	505	gaa	atg	aaa	510	tca	atg	aat	ccg	ccc	1584
Tyr	Asp	Arg	Leu	Gln	Glu	Glu	Met	Lys	Thr	Ser	Met	Asn	Pro	Pro	Pro		
515	ttg	cg	acg	gga	ccc	agg	520	ctg	gaa	gaa	525	aga	caa	gtg	cac	gac	1632
Leu	Arg	Thr	Gly	Pro	Arg	Leu	Glu	Glu	Leu	Tyr	Arg	Gln	Val	His	Asp		
530	caa	caa	act	tcc	cac	gtt	535	act	cct	cga	540	ttg	gtc	aac	att	gat	1680
Gln	Gln	Thr	Ser	His	Val	Thr	Pro	Arg	Asp	Lys	Leu	Val	Asn	Ile	Asp		
545	ttc	gag	att	ccg	tac	tgt	550	aca	tgc	agt	555	ctg	aaa	gtt	gag	tac	1728
Phe	Glu	Ile	Pro	Tyr	Cys	Thr	Cys	Ser	Gly	Leu	Lys	Val	Glu	Tyr	Leu		
565	aag	gtc	gaa	gag	cca	ttg	570	cag	tac	tct	575	ccc	tggt	gtc	aga		
Lys	Val	Glu	Glu	Pro	Gln	Leu	Gln	Tyr	Gln	Ser	Phe	Pro	Trp	Val	Arg		

580  
 tac aag acc gtc agc gac gaa gag tac gca tat att gtt tga  
 Tyr Lys Thr Val Ser Asp Glu Glu Tyr Ala Tyr Ile Val  
 595 600 605

<210> 2464

<211> 605

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 2464

Met Ser Ser Ser Leu Phe Ile Leu Asp Glu Asn Leu Glu Pro Leu Val  
 1 5 10 15  
 Ser Lys Asn Ile Arg Ala Leu Pro Asn Leu Ser Ser Val Leu Ser Ser  
 20 25 30  
 Phe Lys Gln Cys Tyr His Asp Gly Ser Pro Pro Ile Leu Ser Gln Asn  
 35 40 45  
 Asp Trp Phe Phe Ile His Leu Lys Arg Asp Phe Leu His Phe Val Ser  
 50 55 60  
 Val Ile His Thr Thr Asp Lys Pro Asn Ile Asp Leu Met Thr Ile Leu  
 65 70 75 80  
 Ala Phe Leu Glu Gln Phe Tyr His Leu Leu Gln Lys Tyr Phe Glu Ile  
 85 90 95  
 Glu Val Leu Thr Lys Asn Val Ile Leu Asp Asn Ile Leu Leu Val Leu  
 100 105 110  
 Glu Leu Ile Asp Glu Cys Ile Asp Phe Gly Ile Val Gln Val Thr Asp  
 115 120 125  
 Pro Ser Ile Ile Lys Asp Tyr Ile Arg Val Lys Val Asn Val Pro Arg  
 130 135 140  
 Val Thr Val Asp Asn Glu Trp Ser Pro Gly Glu Glu Ser Ser Ser  
 145 150 155 160  
 Ser Ser Gly Ser Asp Ser Asp Ser Glu Tyr Ser Asn Thr Asn Lys Arg  
 165 170 175  
 Lys Asp Lys Lys Lys Arg Lys Lys Lys Gly Thr Lys Gly Lys  
 180 185 190  
 Ser Val Gly Lys Ser Lys Leu Lys Ser Ile Met Val Asn Asn Lys Glu  
 195 200 205  
 Asn Arg Gly Ile Asn Val Val Glu Thr Val Lys Glu Thr Leu Arg Asn  
 210 215 220  
 Lys Asn Asp Thr Gly Lys Glu Ala Ala Asn Asp Glu Leu Pro Asn Asp  
 225 230 235 240  
 Gly Asn Asp Leu Tyr Ile Asn Gly Asp Ile Ala Lys Thr Ile Ile Met  
 245 250 255  
 Pro Ile Ser Trp Arg Thr Lys Gly Ile His Tyr Ala Lys Asn Glu Phe  
 260 265 270  
 Phe Leu Asp Val Ile Glu Arg Val Gln Tyr Leu Met Asp Phe Glu Lys  
 275 280 285  
 Gly Val Ile Arg Lys Asn Leu Ile His Gly Glu Ile Val Cys Arg Cys  
 290 295 300  
 Tyr Leu Ser Gly Met Pro Lys Leu Lys Ile Ser Ile Asn Lys Ile Leu  
 305 310 315 320  
 Asn Arg Asp Pro Gln Phe Met Ser Asn Ser Ser Phe His Gln Cys Val  
 325 330 335  
 Ser Leu Asp Ser Ile Asn Thr Ile Glu Lys Asp Glu Glu Lys Asn Ser  
 340 345 350  
 Asp Asp Asp Ala Gly Leu Gln Ala Ala Thr Asp Ala Arg Glu Ile Glu  
 355 360 365  
 Phe Ile Pro Pro Asp Gly Glu Phe Val Leu Cys Gln Tyr Glu Leu Lys  
 370 375 380  
 Arg His Val Lys Asp Ala Pro Met Val Arg Leu Lys Asp Phe Glu Ile  
 385 390 395 400  
 Lys Pro Lys Leu Lys Lys Phe Lys Ile Gln Ile Val Thr Lys Ile Gln  
 405 410 415  
 Thr Asn Phe Lys Pro Thr Asn Ser Thr Ser Lys Leu Asn Val Arg Ile  
 420 425 430  
 Pro Leu Thr Lys Val Phe Gln Glu Tyr Lys Ile Asp Leu Ser Lys Gln  
 435 440 445  
 Ile Arg Phe Lys Ala Asn Ile Gly Lys Val Val Phe Asn Leu Ser Asp  
 450 455 460



## PhoenixTemp32470.tmp.txt

Asp Phe Leu Leu Trp Glu Ile Gln Thr Met Lys Gly His Arg Glu His  
 465 470 475 480  
 Ser Thr Asn Lys Ser Ser Gln Tyr Asn Ser Asp Glu Asp Asp Pro Asn  
 485 490 495  
 Thr Cys Ala Ser Met Val Ala Glu Phe Pro Leu Phe Asn Gln Glu Glu  
 500 505 510  
 Tyr Asp Arg Leu Gln Glu Glu Met Lys Thr Ser Met Asn Pro Pro Pro  
 515 520 525  
 Leu Arg Thr Gly Pro Arg Leu Glu Glu Leu Tyr Arg Gln Val His Asp  
 530 535 540  
 Gln Gln Thr Ser His Val Thr Pro Arg Asp Lys Leu Val Asn Ile Asp  
 545 550 555 560  
 Phe Glu Ile Pro Tyr Cys Thr Cys Ser Gly Leu Lys Val Glu Tyr Leu  
 565 570 575  
 Lys Val Glu Glu Pro Gln Leu Gln Tyr Gln Ser Phe Pro Trp Val Arg  
 580 585 590  
 Tyr Lys Thr Val Ser Asp Glu Glu Tyr Ala Tyr Ile Val  
 595 600 605

&lt;210&gt; 2465

&lt;211&gt; 1269

&lt;212&gt; DNA

&lt;213&gt; Aedes aegypti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1269)

&lt;400&gt; 2465

atg tcc tca tca gca att ttc att ctg gac gcc aaa ggg aag gtg ttg	48
Met Ser Ser Ser Ala Ile Phe Ile Leu Asp Ala Lys Gly Lys Val Leu	
1 5 10 15	
ata tcc cga aat tac cgt ggc cac atc gac atg ggc gta atc gac aag	96
Ile Ser Arg Asn Tyr Arg Gly His Ile Asp Met Gly Val Ile Asp Lys	
20 25 30	
ttt atg cca ctt ttg atg gag aag gag gaa gaa ggt ctg ata acg ccg	144
Phe Met Pro Leu Leu Met Glu Lys Glu Glu Glu Gly Leu Ile Thr Pro	
35 40 45	
att ctg cag act ccg gaa tgc act ttt gcg tac gtc aag acc aac aat	192
Ile Leu Gln Thr Pro Glu Cys Thr Phe Ala Tyr Val Lys Thr Asn Asn	
50 55 60	
ctg tac tta gtg tcc gta aca aga agc aat gcc aac att gcg ctg gtg	240
Leu Tyr Leu Val Ser Val Thr Arg Ser Asn Ala Asn Ile Ala Leu Val	
65 70 75 80	
ttt gtg ttt cta cac aaa gtt gtt cag gtt ttc acg gaa tat ttc aaa	288
Phe Val Phe Leu His Lys Val Val Gln Val Phe Thr Glu Tyr Phe Lys	
85 90 95	
gaa ctg gag gag gaa agt atc cgc gac aat ttt gtc gtg atc tac gag	336
Glu Leu Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Val Ile Tyr Glu	
100 105 110	
ttg atg gat gag ctg att gat ttc ggc tac ccg caa acc aca gac agc	384
Leu Met Asp Glu Leu Ile Asp Phe Gly Tyr Pro Gln Thr Thr Asp Ser	
115 120 125	
aag atc ctt cag gaa tac atc acc cag gag ggt cac aaa ctg gag ata	432
Lys Ile Leu Gln Glu Tyr Ile Thr Gln Glu Gly His Lys Leu Glu Ile	
130 135 140	
caa ccc cgg att ccg atg gcc gtg acg aat gcc gtt ttc ctg gat gtg atc gaa	480
Gln Pro Arg Ile Pro Met Ala Val Thr Asn Ala Val Ser Trp Arg Ser	
145 150 155 160	
gaa ggc atc aag tat agg aaa aac gaa gtg ttc ctg gat gtg atc gaa	528
Glu Gly Ile Lys Tyr Arg Lys Asn Glu Val Phe Leu Asp Val Ile Glu	
165 170 175	
agc gtc aac ctg ttg gcc aac gcc aat gga aac gtg ctc cgg agt gaa	576
Ser Val Asn Leu Leu Ala Asn Ala Asn Gly Asn Val Leu Arg Ser Glu	
180 185 190	
att gtg ggc gcc atc aaa atg cgc gtc tac ttg tcc gga atg cct gag	624
Ile Val Gly Ala Ile Lys Met Arg Val Tyr Leu Ser Gly Met Pro Glu	
195 200 205	
ctc cgg ctc gga ttg aat gat aaa gtt ctg ttc gaa agc acc ggt agg	672

## PhoenixTemp32470.tmp.txt

Leu	Arg	Leu	Gly	Leu	Asn	Asp	Lys	Val	Leu	Phe	Glu	Ser	Thr	Gly	Arg	
210	210					215					220					
ggt	aaa	tca	aag	tcg	gtg	gaa	ctg	gag	gac	gtg	aaa	ttc	cac	cag	tgc	720
Gly	Lys	Ser	Lys	Ser	Val	Glu	Leu	Glu	Asp	Val	Lys	Phe	His	Gln	Cys	
225					230					235					240	
gtg	cga	ttg	tcc	cgc	ttc	gaa	aat	gat	cgc	acc	att	tca	ttc	att	cca	768
Val	Arg	Leu	Ser	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	Ser	Phe	Ile	Pro	
				245					250					255		
ccg	gat	ggc	gag	ttt	gag	ctg	atg	tcc	tat	cgt	ttg	aac	acc	cac	gtg	816
Pro	Asp	Gly	Glu	Phe	Glu	Leu	Met	Ser	Tyr	Arg	Leu	Asn	Thr	His	Val	
			260					265					270			
aaa	cct	ttg	atc	tgg	atc	gaa	tcg	gta	ata	gaa	cgg	cac	gcc	cac	agt	864
Lys	Pro	Leu	Ile	Trp	Ile	Glu	Ser	Val	Ile	Glu	Arg	His	Ala	His	Ser	
		275					280					285				
cgg	gtg	gag	tac	atg	atc	aag	gcc	aag	tcg	cag	ttc	aag	cgc	cgt	tcg	912
Arg	Val	Glu	Tyr	Met	Ile	Lys	Ala	Lys	Ser	Gln	Phe	Lys	Arg	Arg	Ser	
290						295					300					
acg	gcc	aac	aac	gtg	gaa	ata	gtc	att	ccg	gtg	ccg	gct	gat	gcc	gat	960
Thr	Ala	Asn	Asn	Val	Glu	Ile	Val	Ile	Pro	Val	Pro	Ala	Asp	Ala	Asp	
305					310					315					320	
tcg	ccc	aag	ttt	aag	acc	acc	att	gga	agt	gtc	aag	tac	gcc	ccg	gag	1008
Ser	Pro	Lys	Phe	Lys	Thr	Thr	Ile	Gly	Ser	Val	Lys	Tyr	Ala	Pro	Glu	
				325				330						335		
cag	aat	gcc	atc	acc	tgg	acc	atc	aag	tcg	ttc	ccg	ggt	gga	aag	gag	1056
Gln	Asn	Ala	Ile	Thr	Trp	Thr	Ile	Lys	Ser	Phe	Pro	Gly	Gly	Lys	Glu	
			340					345					350			
tat	ctg	atg	aga	gcc	cac	ttt	gga	ctt	ccc	agt	gtc	gag	tgc	gag	gac	1104
Tyr	Leu	Met	Arg	Ala	His	Phe	Gly	Leu	Pro	Ser	Val	Glu	Cys	Glu	Asp	
		355					360					365				
tcg	gaa	ggc	aaa	cct	cca	att	cag	gtc	aag	ttt	gag	att	ccg	tac	ttc	1152
Ser	Glu	Gly	Lys	Pro	Pro	Ile	Gln	Val	Lys	Phe	Glu	Ile	Pro	Tyr	Phe	
	370					375					380					
acc	acg	tcc	gga	att	cag	gtt	cgt	tat	ctg	aag	atc	atc	gag	aag	agt	1200
Thr	Thr	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	Lys	Ile	Ile	Glu	Lys	Ser	
385					390					395					400	
ggt	tat	caa	gca	ttg	ccg	tgg	gtg	cgc	tac	att	acc	cag	aac	gga	gac	1248
Gly	Tyr	Gln	Ala	Leu	Pro	Trp	Val	Arg	Tyr	Ile	Thr	Gln	Asn	Gly	Asp	
				405					410					415		
tac	cag	ctg	aga	acg	aac	taa										1269
Tyr	Gln	Leu	Arg	Thr	Asn											
			420													

<210> 2466  
 <211> 422  
 <212> PRT  
 <213> Aedes aegypti

<400> 2466  
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 1 5 10 15  
 Ile Ser Arg Asn Tyr Arg Gly His Ile Asp Met Gly Val Ile Asp Lys  
 20 25 30  
 Phe Met Pro Leu Leu Met Glu Lys Glu Glu Gly Leu Ile Thr Pro  
 35 40 45  
 Ile Leu Gln Thr Pro Glu Cys Thr Phe Ala Tyr Val Lys Thr Asn Asn  
 50 55 60  
 Leu Tyr Leu Val Ser Val Thr Arg Ser Asn Ala Asn Ile Ala Leu Val  
 65 70 75 80  
 Phe Val Phe Leu His Lys Val Val Gln Val Phe Thr Glu Tyr Phe Lys  
 85 90 95  
 Glu Leu Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Val Ile Tyr Glu  
 100 105 110  
 Leu Met Asp Glu Leu Ile Asp Phe Gly Tyr Pro Gln Thr Thr Asp Ser  
 115 120 125  
 Lys Ile Leu Gln Glu Tyr Ile Thr Gln Glu Gly His Lys Leu Glu Ile  
 130 135 140  
 Gln Pro Arg Ile Pro Met Ala Val Thr Asn Ala Val Ser Trp Arg Ser  
 145 150 155 160  
 Glu Gly Ile Lys Tyr Arg Lys Asn Glu Val Phe Leu Asp Val Ile Glu

## PhoenixTemp32470.tmp.txt

165 170 175  
 Ser Val Asn Leu Ala Asn Ala Asn Gly Asn Val Leu Arg Ser Glu  
 180 185 190  
 Ile Val Gly Ala Ile Lys Met Arg Val Tyr Leu Ser Gly Met Pro Glu  
 195 200 205  
 Leu Arg Leu Gly Leu Asn Asp Lys Val Leu Phe Glu Ser Thr Gly Arg  
 210 215 220  
 Gly Lys Ser Lys Ser Val Glu Leu Glu Asp Val Lys Phe His Gln Cys  
 225 230 235 240  
 Val Arg Leu Ser Arg Phe Glu Asn Asp Arg Thr Ile Ser Phe Ile Pro  
 245 250 255  
 Pro Asp Gly Glu Phe Glu Leu Met Ser Tyr Arg Leu Asn Thr His Val  
 260 265 270  
 Lys Pro Leu Ile Trp Ile Glu Ser Val Ile Glu Arg His Ala His Ser  
 275 280 285  
 Arg Val Glu Tyr Met Ile Lys Ala Lys Ser Gln Phe Lys Arg Arg Ser  
 290 295 300  
 Thr Ala Asn Asn Val Glu Ile Val Ile Pro Val Pro Ala Asp Ala Asp  
 305 310 315 320  
 Ser Pro Lys Phe Lys Thr Thr Ile Gly Ser Val Lys Tyr Ala Pro Glu  
 325 330 335  
 Gln Asn Ala Ile Thr Trp Thr Ile Lys Ser Phe Pro Gly Gly Lys Glu  
 340 345 350  
 Tyr Leu Met Arg Ala His Phe Gly Leu Pro Ser Val Glu Cys Glu Asp  
 355 360 365  
 Ser Glu Gly Lys Pro Pro Ile Gln Val Lys Phe Glu Ile Pro Tyr Phe  
 370 375 380  
 Thr Thr Ser Gly Ile Gln Val Arg Tyr Leu Lys Ile Ile Glu Lys Ser  
 385 390 395 400  
 Gly Tyr Gln Ala Leu Pro Trp Val Arg Tyr Ile Thr Gln Asn Gly Asp  
 405 410 415  
 Tyr Gln Leu Arg Thr Asn  
 420

&lt;210&gt; 2467

&lt;211&gt; 1287

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1287)

&lt;400&gt; 2467

atg gca ggg gcg gcc tca gcg ctg ttt ctg ctc gat atc aaa ggt cgt	48
Met Ala Gly Ala Ala Ser Ala Leu Phe Leu Leu Asp Ile Lys Gly Arg	
1 5 10 15	
gtt ctc gtg tgg cgc gat tac cgt ggc gat gtc acc gct gct caa gct	96
Val Leu Val Trp Arg Asp Tyr Arg Gly Asp Val Thr Ala Ala Gln Ala	
20 25 30	
gag cgt ttc ttc acc aaa ctc atc gag aca gag ggt gat tca cag tca	144
Glu Arg Phe Phe Thr Lys Leu Ile Glu Thr Glu Gly Asp Ser Gln Ser	
35 40 45	
aat gat ccg gtt gct tat gat aat ggc gtg acc tac atg ttt gta cag	192
Asn Asp Pro Val Ala Tyr Asp Asn Gly Val Thr Tyr Met Phe Val Gln	
50 55 60	
cat agt aac att tac ctc atg ata gcg tcc aga cag aac tgt aat gct	240
His Ser Asn Ile Tyr Leu Met Ile Ala Ser Arg Gln Asn Cys Asn Ala	
65 70 75 80	
gcc agt ctt ctc ttc ttc ttg cat cgt gta gtc gat gtc ttc aag cat	288
Ala Ser Leu Leu Phe Phe Leu His Arg Val Val Asp Val Phe Lys His	
85 90 95	
tac ttc gag gag tta gag gaa gaa tct ttg aga gat aac ttt gtg gta	336
Tyr Phe Glu Glu Leu Glu Glu Glu Ser Leu Arg Asp Asn Phe Val Val	
100 105 110	
gtg tat gag tta ctt gac gag atg atg gac ttt ggt tac cct cag ttt	384
Val Tyr Glu Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Phe	
115 120 125	
act gag gca aga atc ctt agt gaa ttc atc aag act gat gca tat aga	432

## PhoenixTemp32470.tmp.txt

Thr	Glu	Ala	Arg	Ile	Leu	Ser	Glu	Phe	Ile	Lys	Thr	Asp	Ala	Tyr	Arg	
130	130					135					140					
atg	gaa	gtt	aca	cag	aga	cct	cca	atg	gct	gtc	act	aat	tct	gtc	tca	480
Met	Glu	Val	Thr	Gln	Arg	Pro	Pro	Met	Ala	Val	Thr	Asn	Ser	Val	Ser	
145					150					155					160	
tgg	agg	agt	gag	ggg	tta	aag	ttt	aag	aaa	aac	gaa	gtt	ttc	ttg	gat	528
Trp	Arg	Ser	Glu	Gly	Leu	Lys	Phe	Lys	Lys	Asn	Glu	Val	Phe	Leu	Asp	
				165					170					175		
gtg	ata	gag	agt	gta	aat	atc	ctt	gtg	aac	agt	aat	ggg	caa	att	gtc	576
Val	Ile	Glu	Ser	Val	Asn	Ile	Leu	Val	Asn	Ser	Asn	Gly	Gln	Ile	Val	
			180					185					190			
agg	tct	gat	gtc	gtt	gga	gct	ttg	aag	atg	cga	aca	tac	ttg	agt	gga	624
Arg	Ser	Asp	Val	Val	Gly	Ala	Leu	Lys	Met	Arg	Thr	Tyr	Leu	Ser	Gly	
			195				200					205				
atg	cca	gag	tgt	aag	cta	ggc	ttg	aat	gac	aga	ata	ttg	ttg	gag	gca	672
Met	Pro	Glu	Cys	Lys	Leu	Gly	Leu	Asn	Asp	Arg	Ile	Leu	Leu	Glu	Ala	
						215					220					
cag	gga	cga	gca	ata	aaa	gga	aaa	gcc	att	gat	ttg	gag	gac	atc	aaa	720
Gln	Gly	Arg	Ala	Ile	Lys	Gly	Lys	Ala	Ile	Asp	Leu	Glu	Asp	Ile	Lys	
225					230					235					240	
ttt	cat	cag	tgt	gtt	cga	tta	gcc	cgt	ttt	gag	aac	gac	agg	aca	ata	768
Phe	His	Gln	Cys	Val	Arg	Leu	Ala	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	
				245				250						255		
tca	ttc	ata	cca	cct	gat	gga	tct	ttt	gat	ctt	atg	acg	tat	aga	ctc	816
Ser	Phe	Ile	Pro	Pro	Asp	Gly	Ser	Phe	Asp	Leu	Met	Thr	Tyr	Arg	Leu	
			260				265						270			
agt	act	cag	gta	aag	cct	ctt	ata	tgg	gtg	gaa	gcg	cat	ata	gag	agg	864
Ser	Thr	Gln	Val	Lys	Pro	Leu	Ile	Trp	Val	Glu	Ala	His	Ile	Glu	Arg	
			275				280					285				
cat	tcc	aga	agt	cgt	gtt	gag	atg	cta	gta	aaa	gct	aga	agc	caa	ttc	912
His	Ser	Arg	Ser	Arg	Val	Glu	Met	Leu	Val	Lys	Ala	Arg	Ser	Gln	Phe	
						295					300					
aag	gac	aga	agc	tat	gca	aca	agt	gtt	gag	att	gag	tta	cct	gta	cca	960
Lys	Asp	Arg	Ser	Tyr	Ala	Thr	Ser	Val	Glu	Ile	Glu	Leu	Pro	Val	Pro	
305					310					315					320	
act	gat	gcg	tat	aac	ccc	gat	gta	aga	aca	tct	ctc	ggg	tcg	gcc	gca	1008
Thr	Asp	Ala	Tyr	Asn	Pro	Asp	Val	Arg	Thr	Ser	Leu	Gly	Ser	Ala	Ala	
				325				330						335		
tat	gct	cct	gag	aaa	gat	gca	ctg	gtc	tgg	aag	ata	caa	tat	ttc	tat	1056
Tyr	Ala	Pro	Glu	Lys	Asp	Ala	Leu	Val	Trp	Lys	Ile	Gln	Tyr	Phe	Tyr	
				340				345					350			
ggg	aac	aag	gag	cat	aca	ttg	aaa	gca	gat	ttc	cat	ctt	cca	agt	ata	1104
Gly	Asn	Lys	Glu	His	Thr	Leu	Lys	Ala	Asp	Phe	His	Leu	Pro	Ser	Ile	
				355			360					365				
gcc	gca	gag	gaa	gca	acg	cct	gag	cga	aaa	gct	cca	atc	cgt	gtc	aaa	1152
Ala	Ala	Glu	Glu	Ala	Thr	Pro	Glu	Arg	Lys	Ala	Pro	Ile	Arg	Val	Lys	
						375					380					
ttt	gag	atc	cca	aaa	ttc	ata	gtt	tca	gga	ata	cag	gtt	cga	tac	ctg	1200
Phe	Glu	Ile	Pro	Lys	Phe	Ile	Val	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	
385					390					395					400	
aag	atc	att	gag	aag	agt	ggg	tac	cag	gca	cat	cca	tgg	gtg	aga	tat	1248
Lys	Ile	Ile	Glu	Lys	Ser	Gly	Tyr	Gln	Ala	His	Pro	Trp	Val	Arg	Tyr	
				405					410					415		
ata	acc	atg	gct	ggt	gag	tac	gaa	ctg	aga	ctc	atg	taa				1287
Ile	Thr	Met	Ala	Gly	Glu	Tyr	Glu	Leu	Arg	Leu	Met					
			420					425								

&lt;210&gt; 2468

&lt;211&gt; 428

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2468

Met	Ala	Gly	Ala	Ala	Ser	Ala	Leu	Phe	Leu	Leu	Asp	Ile	Lys	Gly	Arg	
1				5					10					15		
Val	Leu	Val	Trp	Arg	Asp	Tyr	Arg	Gly	Asp	Val	Thr	Ala	Ala	Gln	Ala	
			20					25					30			
Glu	Arg	Phe	Thr	Lys	Leu	Ile	Glu	Thr	Glu	Gly	Asp	Ser	Gln	Ser		
		35				40					45					

## PhoenixTemp32470.tmp.txt

Asn Asp Pro Val Ala Tyr Asp Asn Gly Val Thr Tyr Met Phe Val Gln  
 50 55 60  
 His Ser Asn Ile Tyr Leu Met Ile Ala Ser Arg Gln Asn Cys Asn Ala  
 65 70 75 80  
 Ala Ser Leu Leu Phe Phe Leu His Arg Val Val Asp Val Phe Lys His  
 85 90 95  
 Tyr Phe Glu Glu Leu Glu Glu Glu Ser Leu Arg Asp Asn Phe Val Val  
 100 105 110  
 Val Tyr Glu Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Phe  
 115 120 125  
 Thr Glu Ala Arg Ile Leu Ser Glu Phe Ile Lys Thr Asp Ala Tyr Arg  
 130 135 140  
 Met Glu Val Thr Gln Arg Pro Pro Met Ala Val Thr Asn Ser Val Ser  
 145 150 155 160  
 Trp Arg Ser Glu Gly Leu Lys Phe Lys Lys Asn Glu Val Phe Leu Asp  
 165 170 175  
 Val Ile Glu Ser Val Asn Ile Leu Val Asn Ser Asn Gly Gln Ile Val  
 180 185 190  
 Arg Ser Asp Val Val Gly Ala Leu Lys Met Arg Thr Tyr Leu Ser Gly  
 195 200 205  
 Met Pro Glu Cys Lys Leu Gly Leu Asn Asp Arg Ile Leu Leu Glu Ala  
 210 215 220  
 Gln Gly Arg Ala Ile Lys Gly Lys Ala Ile Asp Leu Glu Asp Ile Lys  
 225 230 235 240  
 Phe His Gln Cys Val Arg Leu Ala Arg Phe Glu Asn Asp Arg Thr Ile  
 245 250 255  
 Ser Phe Ile Pro Pro Asp Gly Ser Phe Asp Leu Met Thr Tyr Arg Leu  
 260 265 270  
 Ser Thr Gln Val Lys Pro Leu Ile Trp Val Glu Ala His Ile Glu Arg  
 275 280 285  
 His Ser Arg Ser Arg Val Glu Met Leu Val Lys Ala Arg Ser Gln Phe  
 290 295 300  
 Lys Asp Arg Ser Tyr Ala Thr Ser Val Glu Ile Glu Leu Pro Val Pro  
 305 310 315 320  
 Thr Asp Ala Tyr Asn Pro Asp Val Arg Thr Ser Leu Gly Ser Ala Ala  
 325 330 335  
 Tyr Ala Pro Glu Lys Asp Ala Leu Val Trp Lys Ile Gln Tyr Phe Tyr  
 340 345 350  
 Gly Asn Lys Glu His Thr Leu Lys Ala Asp Phe His Leu Pro Ser Ile  
 355 360 365  
 Ala Ala Glu Glu Ala Thr Pro Glu Arg Lys Ala Pro Ile Arg Val Lys  
 370 375 380  
 Phe Glu Ile Pro Lys Phe Ile Val Ser Gly Ile Gln Val Arg Tyr Leu  
 385 390 395 400  
 Lys Ile Ile Glu Lys Ser Gly Tyr Gln Ala His Pro Trp Val Arg Tyr  
 405 410 415  
 Ile Thr Met Ala Gly Glu Tyr Glu Leu Arg Leu Met  
 420 425

&lt;210&gt; 2469

&lt;211&gt; 1287

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1287)

&lt;400&gt; 2469

atg gca gga gct gcc tcc gcg ctg ttt ctg ctt gat atc aag gga cgc	48
Met Ala Gly Ala Ala Ser Ala Leu Phe Leu Leu Asp Ile Lys Gly Arg	
1 5 10 15	
gtt ctc gtc tgg cgt gat tat cgt ggc gat gtc tcc gct gct caa gcc	96
Val Leu Val Trp Arg Asp Tyr Arg Gly Asp Val Ser Ala Ala Gln Ala	
20 25 30	
gag cga ttc ttc act aag ctc atc gag aaa gag ggt gat tca cag tca	144
Glu Arg Phe Phe Thr Lys Leu Ile Glu Lys Glu Gly Asp Ser Gln Ser	
35 40 45	
aat gat cca gtt gct tac gat aat ggg gtg act tat atg ttt gta caa	192

## PhoenixTemp32470.tmp.txt

Asn	Asp	Pro	Val	Ala	Tyr	Asp	Asn	Gly	Val	Thr	Tyr	Met	Phe	Val	Gln	
cat	agt	aat	gta	tac	ttg	atg	ata	gca	tcc	agg	cag	aat	tgt	aat	gct	240
His	Ser	Asn	Val	Tyr	Leu	Met	Ile	Ala	Ser	Arg	Gln	Asn	Cys	Asn	Ala	
65					70					75					80	
gcc	agt	ctt	ctc	ttc	ttt	ctt	cac	cgc	ggt	gtc	gat	ggt	ttc	aag	cat	288
Ala	Ser	Leu	Leu	Phe	Phe	Leu	His	Arg	Val	Val	Asp	Val	Phe	Lys	His	
				85					90					95		
tac	ttc	gag	gag	tta	gaa	gag	gaa	tca	ttg	agg	gat	aac	ttt	gtg	gta	336
Tyr	Phe	Glu	Glu	Leu	Glu	Glu	Glu	Ser	Leu	Arg	Asp	Asn	Phe	Val	Val	
			100					105					110			
gtg	tat	gag	cta	ctt	gac	gag	atg	atg	gac	ttt	ggt	tac	cct	cag	tat	384
Val	Tyr	Glu	Leu	Leu	Asp	Glu	Met	Met	Asp	Phe	Gly	Tyr	Pro	Gln	Tyr	
		115					120					125				
acc	gaa	gca	aga	att	ctc	agt	gaa	ttc	atc	aag	act	gat	gca	tat	aga	432
Thr	Glu	Ala	Arg	Ile	Leu	Ser	Glu	Phe	Ile	Lys	Thr	Asp	Ala	Tyr	Arg	
	130					135				140						
atg	gaa	ggt	aca	cag	aga	cct	cca	atg	gct	gtg	acg	aat	gct	gtc	tcc	480
Met	Glu	Val	Thr	Gln	Arg	Pro	Pro	Met	Ala	Val	Thr	Asn	Ala	Val	Ser	
145					150					155					160	
tgg	agg	agt	gag	gga	ata	cag	tac	aag	aag	aat	gaa	ggt	ttc	ttg	gat	528
Trp	Arg	Ser	Glu	Gly	Ile	Gln	Tyr	Lys	Lys	Asn	Glu	Val	Phe	Leu	Asp	
			165					170					175			
ggt	att	gag	aat	gta	aat	att	ctt	gtc	aac	agt	aat	ggg	caa	att	gtc	576
Val	Ile	Glu	Asn	Val	Asn	Ile	Leu	Val	Asn	Ser	Asn	Gly	Gln	Ile	Val	
			180					185					190			
agg	tct	gat	ggt	ggt	gga	gcg	ctg	aag	atg	cga	act	tac	ttg	act	gga	624
Arg	Ser	Asp	Val	Val	Gly	Ala	Leu	Lys	Met	Arg	Thr	Tyr	Leu	Thr	Gly	
		195				200						205				
atg	cca	gag	tgt	aag	tta	gga	ctg	aat	gat	aga	gta	ttg	ctg	gaa	gcg	672
Met	Pro	Glu	Cys	Lys	Leu	Gly	Leu	Asn	Asp	Arg	Val	Leu	Leu	Glu	Ala	
	210					215				220						
cag	gga	cga	gca	act	aag	gga	aaa	gcc	att	gat	ttg	gag	gac	atc	aaa	720
Gln	Gly	Arg	Ala	Thr	Lys	Gly	Lys	Ala	Ile	Asp	Leu	Glu	Asp	Ile	Lys	
225					230					235					240	
ttt	cat	cag	tgt	ggt	cga	ttg	gcc	cgt	ttt	gaa	aac	gat	agg	acg	ata	768
Phe	His	Gln	Cys	Val	Arg	Leu	Ala	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	
			245					250					255			
tct	ttc	ata	cca	cct	gat	ggg	gct	ttt	gat	ctg	atg	aca	tat	aga	ctc	816
Ser	Phe	Ile	Pro	Pro	Asp	Gly	Ala	Phe	Asp	Leu	Met	Thr	Tyr	Arg	Leu	
			260					265					270			
agc	act	cag	gta	aag	cca	ctt	ata	tgg	gtg	gaa	gca	caa	ata	gaa	agt	864
Ser	Thr	Gln	Val	Lys	Pro	Leu	Ile	Trp	Val	Glu	Ala	Gln	Ile	Glu	Ser	
		275					280					285				
cat	tca	aga	agt	cgt	ggt	gag	atg	ctc	ata	aaa	gct	aga	agt	cag	ttc	912
His	Ser	Arg	Ser	Arg	Val	Glu	Met	Leu	Ile	Lys	Ala	Arg	Ser	Gln	Phe	
		290				295				300						
aag	gaa	cga	agc	acc	gca	acg	aac	ggt	gag	att	gag	ttg	cct	gta	cca	960
Lys	Glu	Arg	Ser	Thr	Ala	Thr	Asn	Val	Glu	Ile	Glu	Leu	Pro	Val	Pro	
305				310					315						320	
acc	gat	gca	tct	aac	ccc	acc	ggt	agg	aca	tct	cta	ggg	tct	gcc	tct	1008
Thr	Asp	Ala	Ser	Asn	Pro	Thr	Val	Arg	Thr	Ser	Leu	Gly	Ser	Ala	Ser	
				325				330					335			
tat	gct	cct	gaa	aaa	gat	gcg	tta	gtc	tgg	aaa	atc	aaa	tct	ttc	ccg	1056
Tyr	Ala	Pro	Glu	Lys	Asp	Ala	Leu	Val	Trp	Lys	Ile	Lys	Ser	Phe	Pro	
			340					345					350			
ggg	aac	aag	gag	tac	atg	tta	agg	gca	gag	ttc	cat	ctt	cca	agt	atc	1104
Gly	Asn	Lys	Glu	Tyr	Met	Leu	Arg	Ala	Glu	Phe	His	Leu	Pro	Ser	Ile	
		355					360					365				
act	gca	gag	gaa	gca	act	cct	gag	cga	aag	gct	cct	atc	cgt	gtc	aaa	1152
Thr	Ala	Glu	Glu	Ala	Thr	Pro	Glu	Arg	Lys	Ala	Pro	Ile	Arg	Val	Lys	
		370				375				380						
ttt	gag	atc	cct	tat	ttc	ggt	tca	ggg	att	cag	gtt	cgg	tac	cta		1200
Phe	Glu	Ile	Pro	Tyr	Phe	Thr	Val	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	
385					390				395						400	
aag	att	att	gag	aag	agt	ggg	tac	caa	gca	ctt	cca	tgg	gtg	aga	tac	1248
Lys	Ile	Ile	Glu	Lys	Ser	Gly	Tyr	Gln	Ala	Leu	Pro	Trp	Val	Arg	Tyr	
			405					410					415			
ata	acc	atg	gct	ggt	gag	tac	gaa	cta	aga	ctc	gtg	taa				1287

Ile Thr Met Ala Gly Glu Tyr Glu Leu Arg Leu Val  
 420 425

<210> 2470  
 <211> 428  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 2470  
 Met Ala Gly Ala Ala Ser Ala Leu Phe Leu Leu Asp Ile Lys Gly Arg  
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 Val Leu Val Trp Arg Asp Tyr Arg Gly Asp Val Ser Ala Ala Gln Ala  
 20 25 30  
 Glu Arg Phe Phe Thr Lys Leu Ile Glu Lys Glu Gly Asp Ser Gln Ser  
 35 40 45  
 Asn Asp Pro Val Ala Tyr Asp Asn Gly Val Thr Tyr Met Phe Val Gln  
 50 55 60  
 His Ser Asn Val Tyr Leu Met Ile Ala Ser Arg Gln Asn Cys Asn Ala  
 65 70 75 80  
 Ala Ser Leu Leu Phe Phe Leu His Arg Val Val Asp Val Phe Lys His  
 85 90 95  
 Tyr Phe Glu Glu Leu Glu Glu Glu Ser Leu Arg Asp Asn Phe Val Val  
 100 105 110  
 Val Tyr Glu Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Tyr  
 115 120 125  
 Thr Glu Ala Arg Ile Leu Ser Glu Phe Ile Lys Thr Asp Ala Tyr Arg  
 130 135 140  
 Met Glu Val Thr Gln Arg Pro Pro Met Ala Val Thr Asn Ala Val Ser  
 145 150 155 160  
 Trp Arg Ser Glu Gly Ile Gln Tyr Lys Lys Asn Glu Val Phe Leu Asp  
 165 170 175  
 Val Ile Glu Asn Val Asn Ile Leu Val Asn Ser Asn Gly Gln Ile Val  
 180 185 190  
 Arg Ser Asp Val Val Gly Ala Leu Lys Met Arg Thr Tyr Leu Thr Gly  
 195 200 205  
 Met Pro Glu Cys Lys Leu Gly Leu Asn Asp Arg Val Leu Leu Glu Ala  
 210 215 220  
 Gln Gly Arg Ala Thr Lys Gly Lys Ala Ile Asp Leu Glu Asp Ile Lys  
 225 230 235 240  
 Phe His Gln Cys Val Arg Leu Ala Arg Phe Glu Asn Asp Arg Thr Ile  
 245 250 255  
 Ser Phe Ile Pro Pro Asp Gly Ala Phe Asp Leu Met Thr Tyr Arg Leu  
 260 265 270  
 Ser Thr Gln Val Lys Pro Leu Ile Trp Val Glu Ala Gln Ile Glu Ser  
 275 280 285  
 His Ser Arg Ser Arg Val Glu Met Leu Ile Lys Ala Arg Ser Gln Phe  
 290 295 300  
 Lys Glu Arg Ser Thr Ala Thr Asn Val Glu Ile Glu Leu Pro Val Pro  
 305 310 315 320  
 Thr Asp Ala Ser Asn Pro Thr Val Arg Thr Ser Leu Gly Ser Ala Ser  
 325 330 335  
 Tyr Ala Pro Glu Lys Asp Ala Leu Val Trp Lys Ile Lys Ser Phe Pro  
 340 345 350  
 Gly Asn Lys Glu Tyr Met Leu Arg Ala Glu Phe His Leu Pro Ser Ile  
 355 360 365  
 Thr Ala Glu Glu Ala Thr Pro Glu Arg Lys Ala Pro Ile Arg Val Lys  
 370 375 380  
 Phe Glu Ile Pro Tyr Phe Thr Val Ser Gly Ile Gln Val Arg Tyr Leu  
 385 390 395 400  
 Lys Ile Ile Glu Lys Ser Gly Tyr Gln Ala Leu Pro Trp Val Arg Tyr  
 405 410 415  
 Ile Thr Met Ala Gly Glu Tyr Glu Leu Arg Leu Val  
 420 425

<210> 2471  
 <211> 1293  
 <212> DNA  
 <213> Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1293)

&lt;400&gt; 2471

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Met	Ala	Ser	Ala	Leu	Phe	Phe	Leu	Asp	Leu	Lys	Gly	Lys	Thr	Leu	Leu	
1				5					10					15		
gct	cga	aac	tat	cgt	ggt	gac	atc	ccc	atg	tca	gct	gtc	gaa	aag	ttc	96
Ala	Arg	Asn	Tyr	Arg	Gly	Asp	Ile	Pro	Met	Ser	Ala	Val	Glu	Lys	Phe	
			20					25					30			
cct	gta	ctc	ctt	tca	gaa	gct	gag	gaa	gat	tca	tct	gct	ggt	cca	cca	144
Pro	Val	Leu	Leu	Ser	Glu	Ala	Glu	Glu	Asp	Ser	Ser	Ala	Val	Pro	Pro	
			35				40					45				
tgc	ttc	tcc	cac	gaa	ggc	atc	aac	tac	ctc	tac	atc	cgt	cac	aac	aac	192
Cys	Phe	Ser	His	Glu	Gly	Ile	Asn	Tyr	Leu	Tyr	Ile	Arg	His	Asn	Asn	
	50					55					60					
ctt	tac	ctt	ctc	gcc	ctt	acg	aaa	cga	aat	acc	aat	gcc	gcc	gaa	atc	240
Leu	Tyr	Leu	Leu	Ala	Leu	Thr	Lys	Arg	Asn	Thr	Asn	Ala	Ala	Glu	Ile	
	65				70					75					80	
cta	ttg	ttc	ctc	cac	aag	gtc	gtc	gag	gtc	ttt	acc	gaa	tat	ttc	aag	288
Leu	Leu	Phe	Leu	His	Lys	Val	Val	Glu	Val	Phe	Thr	Glu	Tyr	Phe	Lys	
				85				90						95		
gcg	cta	gaa	gaa	gag	tcc	att	cgc	gac	aac	ttt	gtc	atc	atc	tac	gaa	336
Ala	Leu	Glu	Glu	Glu	Ser	Ile	Arg	Asp	Asn	Phe	Val	Ile	Ile	Tyr	Glu	
			100					105					110			
ctt	ctc	gac	gag	atg	atg	gac	ttt	ggc	tac	cct	caa	aca	aca	gaa	tcc	384
Leu	Leu	Asp	Glu	Met	Met	Asp	Phe	Gly	Tyr	Pro	Gln	Thr	Thr	Glu	Ser	
		115					120					125				
aag	atc	ctt	caa	gag	tac	atc	acc	cag	gaa	tcc	cac	aag	ctc	gag	atc	432
Lys	Ile	Leu	Gln	Glu	Tyr	Ile	Thr	Gln	Glu	Ser	His	Lys	Leu	Glu	Ile	
	130					135					140					
cag	gcc	cga	cca	ccc	att	gcc	gtc	aca	aat	gcc	gtc	tcg	tgg	cga	tca	480
Gln	Ala	Arg	Pro	Pro	Ile	Ala	Val	Thr	Asn	Ala	Val	Ser	Trp	Arg	Ser	
	145			150						155					160	
gag	ggt	att	cgc	tac	cgc	aag	aac	gag	gtc	ttc	ctt	gat	gtc	gtc	gag	528
Glu	Gly	Ile	Arg	Tyr	Arg	Lys	Asn	Glu	Val	Phe	Leu	Asp	Val	Val	Glu	
				165				170						175		
tcc	ctt	aac	ctg	ttg	gtt	tcc	gca	aac	ggc	aac	gtc	ctc	cgt	tca	gag	576
Ser	Leu	Asn	Leu	Leu	Val	Ser	Ala	Asn	Gly	Asn	Val	Leu	Arg	Ser	Glu	
			180					185					190			
att	ctt	ggc	gcc	att	aag	atg	aag	tgc	tac	ctc	agt	ggc	atg	ccc	gag	624
Ile	Leu	Gly	Ala	Ile	Lys	Met	Lys	Cys	Tyr	Leu	Ser	Gly	Met	Pro	Glu	
		195					200					205				
tta	cgc	ctg	ggc	ctt	aat	gat	aag	gtc	atg	ttt	gag	aca	act	gga	cgt	672
Leu	Arg	Leu	Gly	Leu	Asn	Asp	Lys	Val	Met	Phe	Glu	Thr	Thr	Gly	Arg	
	210					215					220					
gct	acc	cga	ggt	aag	gct	atc	gaa	atg	gag	gat	gtc	aaa	ttt	cac	caa	720
Ala	Thr	Arg	Gly	Lys	Ala	Ile	Glu	Met	Glu	Asp	Val	Lys	Phe	His	Gln	
	225			230					235						240	
tgt	gta	cga	cta	tca	cgt	ttc	gaa	aac	gac	cgc	acc	atc	tct	ttc	atc	768
Cys	Val	Arg	Leu	Ser	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	Ser	Phe	Ile	
				245					250					255		
ccc	cct	gat	ggc	gaa	ttc	gag	ctc	atg	tcc	tac	cgt	ctg	aac	act	caa	816
Pro	Pro	Asp	Gly	Glu	Phe	Glu	Leu	Met	Ser	Tyr	Arg	Leu	Asn	Thr	Gln	
			260					265					270			
gtc	aag	cca	tta	att	tgg	gtc	gag	tgt	gtt	gag	tct	cac	tca	gga		864
Val	Lys	Pro	Leu	Ile	Trp	Val	Glu	Cys	Val	Val	Glu	Ser	His	Ser	Gly	
		275				280					285					
tcc	cgt	atc	gaa	tac	atg	ctc	aag	gcg	cgc	gct	cag	ttc	aag	cgt	cgc	912
Ser	Arg	Ile	Glu	Tyr	Met	Leu	Lys	Ala	Arg	Ala	Gln	Phe	Lys	Arg	Arg	
	290					295					300					
agt	acc	gcc	aac	aac	gtc	gaa	atc	gtg	gtt	ccc	gtt	cct	gac	gat	gcc	960
Ser	Thr	Ala	Asn	Asn	Val	Glu	Ile	Val	Val	Pro	Val	Pro	Asp	Asp	Ala	
	305				310					315					320	
gat	agc	cct	cgt	ttc	cgc	aca	aac	att	gga	tcc	gtt	cac	tat	gca	ccc	1008
Asp	Ser	Pro	Arg	Phe	Arg	Thr	Asn	Ile	Gly	Ser	Val	His	Tyr	Ala	Pro	
				325					330					335		
gaa	caa	agc	gcc	att	gtc	tgg	aag	att	aag	cag	ttt	ggc	ggc	ggc	aaa	1056



## PhoenixTemp32470.tmp.txt

Glu	Gln	Ser	Ala	Ile	Val	Trp	Lys	Ile	Lys	Gln	Phe	Gly	Gly	Gly	Lys		
			340					345					350				
gag	ttc	ctc	atg	cgc	gct	gag	ctg	ggc	ctg	cca	agt	gtg	agg	ggt	gat	1104	
Glu	Phe	Leu	Met	Arg	Ala	Glu	Leu	Gly	Leu	Pro	Ser	Val	Arg	Gly	Asp		
		355					360					365					
gat	gaa	caa	ggc	aag	ggt	gct	aag	cga	cct	atc	cag	gtc	aag	ttc	gag	1152	
Asp	Glu	Gln	Gly	Lys	Gly	Ala	Lys	Arg	Pro	Ile	Gln	Val	Lys	Phe	Glu		
	370					375					380						
atc	ccc	tac	ttt	act	aca	agc	ggt	att	cag	ggt	cgg	tat	ctg	aag	att	1200	
Ile	Pro	Tyr	Phe	Thr	Thr	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	Lys	Ile		
385					390				395						400		
acc	gag	cca	aag	ttg	caa	tac	cct	tca	ctc	cca	tgg	gtg	cga	tac	atc	1248	
Thr	Glu	Pro	Lys	Leu	Gln	Tyr	Pro	Ser	Leu	Pro	Trp	Val	Arg	Tyr	Ile		
				405					410					415			
act	caa	tct	gga	gat	atc	gcc	gta	cga	ctt	ccc	gac	gca	gtc	tga		1293	
Thr	Gln	Ser	Gly	Asp	Ile	Ala	Val	Arg	Leu	Pro	Asp	Ala	Val				
			420					425					430				

&lt;210&gt; 2472

&lt;211&gt; 430

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 2472

Met	Ala	Ser	Ala	Leu	Phe	Phe	Leu	Asp	Leu	Lys	Gly	Lys	Thr	Leu	Leu		
1				5					10					15			
Ala	Arg	Asn	Tyr	Arg	Gly	Asp	Ile	Pro	Met	Ser	Ala	Val	Glu	Lys	Phe		
		20						25					30				
Pro	Val	Leu	Ser	Glu	Ala	Glu	Asp	Ser	Ser	Ser	Ala	Val	Pro	Pro			
		35				40					45						
Cys	Phe	Ser	His	Glu	Gly	Ile	Asn	Tyr	Leu	Tyr	Ile	Arg	His	Asn	Asn		
	50					55					60						
Leu	Tyr	Leu	Leu	Ala	Leu	Thr	Lys	Arg	Asn	Thr	Asn	Ala	Ala	Glu	Ile		
65				70						75				80			
Leu	Leu	Phe	Leu	His	Lys	Val	Val	Glu	Val	Phe	Thr	Glu	Tyr	Phe	Lys		
			85					90						95			
Ala	Leu	Glu	Glu	Glu	Ser	Ile	Arg	Asp	Asn	Phe	Val	Ile	Ile	Tyr	Glu		
		100						105				110					
Leu	Leu	Asp	Glu	Met	Met	Asp	Phe	Gly	Tyr	Pro	Gln	Thr	Thr	Glu	Ser		
		115				120					125						
Lys	Ile	Leu	Gln	Glu	Tyr	Ile	Thr	Gln	Glu	Ser	His	Lys	Leu	Glu	Ile		
	130					135					140						
Gln	Ala	Arg	Pro	Pro	Ile	Ala	Val	Thr	Asn	Ala	Val	Ser	Trp	Arg	Ser		
145				150						155				160			
Glu	Gly	Ile	Arg	Tyr	Arg	Lys	Asn	Glu	Val	Phe	Leu	Asp	Val	Val	Glu		
			165					170						175			
Ser	Leu	Asn	Leu	Val	Ser	Ala	Asn	Gly	Asn	Val	Leu	Arg	Ser	Glu			
		180					185					190					
Ile	Leu	Gly	Ala	Ile	Lys	Met	Lys	Cys	Tyr	Leu	Ser	Gly	Met	Pro	Glu		
	195					200					205						
Leu	Arg	Leu	Gly	Leu	Asn	Asp	Lys	Val	Met	Phe	Glu	Thr	Thr	Gly	Arg		
	210				215						220						
Ala	Thr	Arg	Gly	Lys	Ala	Ile	Glu	Met	Glu	Asp	Val	Lys	Phe	His	Gln		
225				230					235					240			
Cys	Val	Arg	Leu	Ser	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	Ser	Phe	Ile		
			245						250					255			
Pro	Pro	Asp	Gly	Phe	Glu	Leu	Met	Ser	Tyr	Arg	Leu	Asn	Thr	Gln			
		260					265					270					
Val	Lys	Pro	Leu	Ile	Trp	Val	Glu	Cys	Val	Val	Glu	Ser	His	Ser	Gly		
	275					280					285						
Ser	Arg	Ile	Glu	Tyr	Met	Leu	Lys	Ala	Arg	Ala	Gln	Phe	Lys	Arg	Arg		
	290					295					300						
Ser	Thr	Ala	Asn	Asn	Val	Glu	Ile	Val	Val	Pro	Val	Pro	Asp	Asp	Ala		
305				310						315					320		
Asp	Ser	Pro	Arg	Phe	Arg	Thr	Asn	Ile	Gly	Ser	Val	His	Tyr	Ala	Pro		
			325						330					335			
Glu	Gln	Ser	Ala	Ile	Val	Trp	Lys	Ile	Lys	Gln	Phe	Gly	Gly	Gly	Lys		
			340					345					350				
Glu	Phe	Leu	Met	Arg	Ala	Glu	Leu	Gly	Leu	Pro	Ser	Val	Arg	Gly	Asp		

## PhoenixTemp32470.tmp.txt

Asp Glu 355 Gly Lys Gly Ala 360 Lys Arg Pro Ile Gln 365 Val Lys Phe Glu  
 370 Ile Pro Tyr Phe Thr Thr Ser Gly Ile Gln Val Arg Tyr Leu Lys Ile  
 385 Thr Glu Pro Lys Leu 390 Gln Tyr Pro Ser Leu 395 Pro Trp Val Arg Tyr Ile  
 Thr Gln Ser Gly 405 Asp Ile Ala Val Arg 410 Leu Pro Asp Ala Val 415  
 420 425 430

&lt;210&gt; 2473

&lt;211&gt; 1371

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1371)

&lt;400&gt; 2473

atg gca tct gcg ata tat ttt tgt gac aac aag ggt aga cct ctt tta	48
Met Ala Ser Ala Ile Tyr Phe Cys Asp Asn Lys Gly Arg Pro Leu Leu	
1 5 10 15	
tcg aga aag tat aga gac gac ata ccg ttc tcg gcc ata gat agg ttt	96
Ser Arg Lys Tyr Arg Asp Asp Ile Pro Phe Ser Ala Ile Asp Arg Phe	
20 25 30	
cct atc ctc ctc tca aat ttc gaa gaa gag aca aat ctg ata cct cct	144
Pro Ile Leu Leu Ser Asn Phe Glu Glu Glu Thr Asn Leu Ile Pro Pro	
35 40 45	
tgt atc gag cac aat ggt ata caa ttc cta ttc atc caa cac aat gat	192
Cys Ile Glu His Asn Gly Ile Gln Phe Leu Phe Ile Gln His Asn Asp	
50 55 60	
tta tac ctt gta gca att gct acc tca att tca tgc aat gct gcc cta	240
Leu Tyr Leu Val Ala Ile Ala Thr Ser Ile Ser Cys Asn Ala Ala Leu	
65 70 75 80	
att ttt agc ttt tta cac aaa gtt atc gaa gta ctt tct gag tat cta	288
Ile Phe Ser Phe Leu His Lys Val Ile Glu Val Leu Ser Glu Tyr Leu	
85 90 95	
aaa gcg gtt gaa gaa gaa tcc att agg gat aat ttt gtt atc ata tat	336
Lys Ala Val Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Ile Ile Tyr	
100 105 110	
gaa tta cta gat gag atg atg gat tat ggg att ccg caa atc aca gag	384
Glu Leu Leu Asp Glu Met Met Asp Tyr Gly Ile Pro Gln Ile Thr Glu	
115 120 125	
cca aag atg ttg aaa caa tac att acc caa aag tct ttc aaa ctg aag	432
Pro Lys Met Leu Lys Gln Tyr Ile Thr Gln Lys Ser Phe Lys Leu Lys	
130 135 140	
aaa gca gcc aaa aag aag aga aat gct gct aga cct cca aca tca cta	480
Lys Ala Ala Lys Lys Lys Arg Asn Ala Ala Arg Pro Pro Thr Ser Leu	
145 150 155 160	
aca aat tct gta agt tgg cgt cct gaa ggt ata aaa cac aag aaa aac	528
Thr Asn Ser Val Ser Trp Arg Pro Glu Gly Ile Lys His Lys Lys Asn	
165 170 175	
gag gca ttt ctg gat att atc gag tcg atc aat atg cta atg act cag	576
Glu Ala Phe Leu Asp Ile Ile Glu Ser Ile Asn Met Leu Met Thr Gln	
180 185 190	
aag gga caa gtc ttg aga tca gag ata att ggt gag gtt aaa gta aag	624
Lys Gly Gln Val Leu Arg Ser Glu Ile Ile Gly Glu Val Lys Val Lys	
195 200 205	
tca aag ctt tca ggt atg ccc gac ttg aag ctt ggc ata aac gac aaa	672
Ser Lys Leu Ser Gly Met Pro Asp Leu Lys Leu Gly Ile Asn Asp Lys	
210 215 220	
ggg tta ttt tca aag tat ttg gaa ggt gat gag aac ggt gtt cct ata	720
Gly Leu Phe Ser Lys Tyr Leu Glu Gly Asp Glu Asn Gly Val Pro Ile	
225 230 235 240	
gca cca gat gac agt agt gtt gat gag tcc aaa cct aaa aag aag aga	768
Ala Pro Asp Asp Ser Ser Val Asp Glu Ser Lys Pro Lys Lys Lys Arg	
245 250 255	
tca aac aat atg gaa ctt gag gac ttg aaa ttt cat caa tgt gtt cgt	816

## PhoenixTemp32470.tmp.txt

Ser	Asn	Asn	Met	Glu	Leu	Glu	Asp	Leu	Lys	Phe	His	Gln	Cys	Val	Arg		
tta	agc	aag	ttt	gaa	aac	gaa	aag	caa	att	acc	ttt	ata	cca	ccc	gat	864	
Leu	Ser	Lys	Phe	Glu	Asn	Glu	Lys	Gln	Ile	Thr	Phe	Ile	Pro	Pro	Asp		
		275					280					285					
gga	gac	ttt	gag	tta	atg	agc	tac	aga	tta	tct	acg	gca	atc	aaa	cca	912	
Gly	Asp	Phe	Glu	Leu	Met	Ser	Tyr	Arg	Leu	Ser	Thr	Ala	Ile	Lys	Pro		
	290					295					300						
cta	att	tgg	tgt	gac	gtc	aat	att	aaa	act	cat	tcc	aaa	tca	aga	ata	960	
Leu	Ile	Trp	Cys	Asp	Val	Asn	Ile	Lys	Thr	His	Ser	Lys	Ser	Arg	Ile		
305					310					315					320		
gaa	ata	ttt	tgc	aga	gcc	aaa	gct	cag	ata	aag	aag	aaa	tca	aca	gcc	1008	
Glu	Ile	Phe	Cys	Arg	Ala	Lys	Ala	Gln	Ile	Lys	Lys	Lys	Ser	Thr	Ala		
				325					330					335			
act	aac	gtg	gag	ata	tta	att	cca	gtt	cct	gaa	gac	gca	gat	act	cca	1056	
Thr	Asn	Val	Glu	Ile	Leu	Ile	Pro	Val	Pro	Glu	Asp	Ala	Asp	Thr	Pro		
			340					345					350				
gta	ttc	aaa	tac	tca	cac	ggg	tct	att	aaa	tac	gtg	cct	gaa	aag	aat	1104	
Val	Phe	Lys	Tyr	Ser	His	Gly	Ser	Ile	Lys	Tyr	Val	Pro	Glu	Lys	Asn		
		355					360					365					
gca	atc	tta	tgg	aaa	att	aga	aca	ttc	cca	gga	gac	aag	gaa	tat	tct	1152	
Ala	Ile	Leu	Trp	Lys	Ile	Arg	Thr	Phe	Pro	Gly	Asp	Lys	Glu	Tyr	Ser		
						375					380						
atg	gcg	gct	gaa	atg	ggc	ctt	cca	tct	acc	aat	gct	gga	gaa	gaa	tca	1200	
Met	Ala	Ala	Glu	Met	Gly	Leu	Pro	Ser	Thr	Asn	Ala	Gly	Glu	Glu	Ser		
385					390					395					400		
gaa	aag	tta	aaa	aga	cca	gtg	caa	gtc	aag	ttt	caa	ata	cct	tat	ttc	1248	
Glu	Lys	Leu	Lys	Arg	Pro	Val	Gln	Val	Lys	Phe	Gln	Ile	Pro	Tyr	Phe		
				405				410						415			
acc	aca	tcc	ggc	att	cag	gta	cgc	tat	ctg	aaa	att	gaa	gaa	aaa	aat	1296	
Thr	Thr	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	Lys	Ile	Glu	Glu	Lys	Asn		
			420					425					430				
ctt	caa	tac	aag	agc	tat	cct	tgg	gtt	aga	tat	att	act	aag	agc	ggg	1344	
Leu	Gln	Tyr	Lys	Ser	Tyr	Pro	Trp	Val	Arg	Tyr	Ile	Thr	Lys	Ser	Gly		
		435					440					445					
gat	gac	tat	aca	att	aga	ctc	tct	tga								1371	
Asp	Asp	Tyr	Thr	Ile	Arg	Leu	Ser										
	450					455											

&lt;210&gt; 2474

&lt;211&gt; 456

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2474

Met	Ala	Ser	Ala	Ile	Tyr	Phe	Cys	Asp	Asn	Lys	Gly	Arg	Pro	Leu	Leu		
1				5					10					15			
Ser	Arg	Lys	Tyr	Arg	Asp	Asp	Ile	Pro	Phe	Ser	Ala	Ile	Asp	Arg	Phe		
			20					25					30				
Pro	Ile	Leu	Leu	Ser	Asn	Phe	Glu	Glu	Glu	Thr	Asn	Leu	Ile	Pro	Pro		
		35					40					45					
Cys	Ile	Glu	His	Asn	Gly	Ile	Gln	Phe	Leu	Phe	Ile	Gln	His	Asn	Asp		
		50				55					60						
Leu	Tyr	Leu	Val	Ala	Ile	Ala	Thr	Ser	Ile	Ser	Cys	Asn	Ala	Ala	Leu		
65					70					75					80		
Ile	Phe	Ser	Phe	Leu	His	Lys	Val	Ile	Glu	Val	Leu	Ser	Glu	Tyr	Leu		
				85					90					95			
Lys	Ala	Val	Glu	Glu	Ser	Ile	Arg	Asp	Asn	Phe	Val	Ile	Ile	Tyr			
			100				105					110					
Glu	Leu	Leu	Asp	Glu	Met	Met	Asp	Tyr	Gly	Ile	Pro	Gln	Ile	Thr	Glu		
		115					120					125					
Pro	Lys	Met	Leu	Lys	Gln	Tyr	Ile	Thr	Gln	Lys	Ser	Phe	Lys	Leu	Lys		
		130				135					140						
Lys	Ala	Ala	Lys	Lys	Lys	Arg	Asn	Ala	Ala	Arg	Pro	Pro	Thr	Ser	Leu		
145					150					155					160		
Thr	Asn	Ser	Val	Ser	Trp	Arg	Pro	Glu	Gly	Ile	Lys	His	Lys	Lys	Asn		
				165					170					175			
Glu	Ala	Phe	Leu	Asp	Ile	Ile	Glu	Ser	Ile	Asn	Met	Leu	Met	Thr	Gln		
			180					185					190				

## PhoenixTemp32470.tmp.txt

Lys Gly Gln Val Leu Arg Ser Glu Ile Ile Gly Glu Val Lys Val Lys  
 195 200 205  
 Ser Lys Leu Ser Gly Met Pro Asp Leu Lys Leu Gly Ile Asn Asp Lys  
 210 215 220  
 Gly Leu Phe Ser Lys Tyr Leu Glu Gly Asp Glu Asn Gly Val Pro Ile  
 225 230 235 240  
 Ala Pro Asp Asp Ser Val Asp Glu Ser Lys Pro Lys Lys Arg  
 245 250 255  
 Ser Asn Asn Met Glu Leu Glu Asp Leu Lys Phe His Gln Cys Val Arg  
 260 265 270  
 Leu Ser Lys Phe Glu Asn Glu Lys Gln Ile Thr Phe Ile Pro Pro Asp  
 275 280 285  
 Gly Asp Phe Glu Leu Met Ser Tyr Arg Leu Ser Thr Ala Ile Lys Pro  
 290 295 300  
 Leu Ile Trp Cys Asp Val Asn Ile Lys Thr His Ser Lys Ser Arg Ile  
 305 310 315 320  
 Glu Ile Phe Cys Arg Ala Lys Ala Gln Ile Lys Lys Lys Ser Thr Ala  
 325 330 335  
 Thr Asn Val Glu Ile Leu Ile Pro Val Pro Glu Asp Ala Asp Thr Pro  
 340 345 350  
 Val Phe Lys Tyr Ser His Gly Ser Ile Lys Tyr Val Pro Glu Lys Asn  
 355 360 365  
 Ala Ile Leu Trp Lys Ile Arg Thr Phe Pro Gly Asp Lys Glu Tyr Ser  
 370 375 380  
 Met Ala Ala Glu Met Gly Leu Pro Ser Thr Asn Ala Gly Glu Glu Ser  
 385 390 395 400  
 Glu Lys Leu Lys Arg Pro Val Gln Val Lys Phe Gln Ile Pro Tyr Phe  
 405 410 415  
 Thr Thr Ser Gly Ile Gln Val Arg Tyr Leu Lys Ile Glu Glu Lys Asn  
 420 425 430  
 Leu Gln Tyr Lys Ser Tyr Pro Trp Val Arg Tyr Ile Thr Lys Ser Gly  
 435 440 445  
 Asp Asp Tyr Thr Ile Arg Leu Ser  
 450 455

&lt;210&gt; 2475

&lt;211&gt; 1797

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1797)

&lt;400&gt; 2475

atg	tcc	tct	tcg	ata	tat	ata	ttt	gat	gag	act	ttg	gaa	ccg	cta	gta	48
Met	Ser	Ser	Ser	Ile	Tyr	Ile	Phe	Asp	Glu	Thr	Leu	Glu	Pro	Leu	Val	
1				5				10						15		
tct	aag	agt	gtg	aaa	ggt	cta	ccg	aat	gtc	aat	gag	cta	gga	gat	ttg	96
Ser	Lys	Ser	Val	Lys	Gly	Leu	Pro	Asn	Val	Asn	Glu	Leu	Gly	Asp	Leu	
			20					25					30			
ttc	cga	tac	cat	gtg	cga	caa	tcg	caa	aac	cct	att	ata	gat	gtg	tac	144
Phe	Arg	Tyr	His	Val	Arg	Gln	Ser	Gln	Asn	Pro	Ile	Ile	Asp	Val	Tyr	
			35				40					45				
aat	tgg	cga	ttc	gtc	tat	atc	aaa	cgc	gat	aca	cta	tac	ttt	gtt	gct	192
Asn	Trp	Arg	Phe	Val	Tyr	Ile	Lys	Arg	Asp	Thr	Leu	Tyr	Phe	Val	Ala	
	50					55					60					
gtg	gta	gat	gct	gct	gat	gat	gct	atc	gcg	aac	tat	tta	gcg	att	tta	240
Val	Val	Asp	Ala	Ala	Asp	Asp	Ala	Ile	Ala	Asn	Tyr	Leu	Ala	Ile	Leu	
	65				70				75						80	
acg	tac	ttg	gag	cag	ttg	tac	cag	tta	ttt	agg	gat	tac	ggt	ggt	gtg	288
Thr	Tyr	Leu	Glu	Gln	Leu	Tyr	Gln	Leu	Phe	Arg	Asp	Tyr	Val	Gly	Val	
				85					90					95		
aaa	gta	ctc	gat	cgg	aac	tta	gta	tta	gac	aac	aca	ttg	cta	gtc	atg	336
Lys	Val	Leu	Asp	Arg	Asn	Leu	Val	Leu	Asp	Asn	Thr	Leu	Leu	Val	Met	
			100					105				110				
gag	ctc	att	gat	gaa	aca	ttg	gac	tac	gga	att	ggt	caa	ttg	act	gag	384
Glu	Leu	Ile	Asp	Glu	Thr	Leu	Asp	Tyr	Gly	Ile	Val	Gln	Leu	Thr	Glu	
		115					120					125				

## PhoenixTemp32470.tmp.txt

cca	agc	atc	atg	aag	gac	tat	ata	agg	ggt	aga	gta	aat	ttg	cct	gaa	432
Pro	Ser	Ile	Met	Lys	Asp	Tyr	Ile	Arg	Val	Arg	Val	Asn	Leu	Pro	Glu	
	130					135					140					
caa	cgc	ata	atg	ctg	gaa	gag	ata	tgg	aat	acc	gat	tcc	gat	tct	gac	480
Gln	Arg	Ile	Met	Leu	Glu	Glu	Ile	Trp	Asn	Thr	Asp	Ser	Asp	Ser	Asp	
145					150					155					160	
tcg	gat	ggg	aat	agt	aaa	agg	aaa	cac	aaa	cat	aag	tca	aaa	ggg	gat	528
Ser	Asp	Gly	Asn	Ser	Lys	Arg	Lys	His	Lys	His	Lys	Ser	Lys	Gly	Asp	
				165					170					175		
aaa	gat	aaa	cct	gcc	ttg	ggg	aaa	gtc	cca	tta	tcc	aaa	gag	gaa	cta	576
Lys	Asp	Lys	Pro	Ala	Leu	Gly	Lys	Val	Pro	Leu	Ser	Lys	Glu	Glu	Leu	
			180					185					190			
gac	aaa	gtg	ctc	aag	aca	agt	aaa	gac	aaa	gta	tac	aaa	aaa	att	aag	624
Asp	Lys	Val	Leu	Lys	Thr	Ser	Lys	Asp	Lys	Val	Tyr	Lys	Lys	Ile	Lys	
		195					200					205				
gat	aat	ata	aac	gaa	ttg	gaa	aaa	atc	ggt	aaa	ttt	aga	ggt	aaa	gat	672
Asp	Asn	Ile	Asn	Glu	Leu	Glu	Lys	Ile	Gly	Lys	Phe	Arg	Gly	Lys	Asp	
	210					215					220					
gaa	tat	gat	gac	gat	gcc	aat	gag	aat	gaa	aca	ttc	ata	aac	agt	tat	720
Glu	Tyr	Asp	Asp	Asp	Ala	Asn	Glu	Asn	Glu	Thr	Phe	Ile	Asn	Ser	Tyr	
225					230					235					240	
atc	gct	aaa	acg	acg	atc	atg	ccc	gta	tct	tgg	cgt	gcg	aag	ggt	atc	768
Ile	Ala	Lys	Thr	Thr	Ile	Met	Pro	Val	Ser	Trp	Arg	Ala	Lys	Gly	Ile	
				245					250					255		
cat	tat	gca	aaa	aac	gaa	ttt	ttc	ctt	gat	gta	atc	gaa	aag	ttg	caa	816
His	Tyr	Ala	Lys	Asn	Glu	Phe	Phe	Leu	Asp	Val	Ile	Glu	Lys	Leu	Gln	
			260				265						270			
tat	tta	gtg	gat	tta	gag	tct	ggt	atg	ggt	aga	aga	agt	ctt	atc	cat	864
Tyr	Leu	Val	Asp	Leu	Glu	Ser	Gly	Met	Val	Arg	Arg	Ser	Leu	Ile	His	
		275					280					285				
ggt	caa	att	gtg	tgt	aga	tcg	tat	ttg	tct	ggt	atg	cct	aaa	ctg	aaa	912
Gly	Gln	Ile	Val	Cys	Arg	Ser	Tyr	Leu	Ser	Gly	Met	Pro	Lys	Leu	Lys	
	290				295					300						
atg	agt	tta	aac	aaa	cta	tta	caa	aat	gat	aaa	cag	ttt	att	tct	cag	960
Met	Ser	Leu	Asn	Lys	Leu	Leu	Gln	Asn	Asp	Lys	Gln	Phe	Ile	Ser	Gln	
305					310					315					320	
gta	cag	ttc	cac	caa	tgt	ggt	tct	ttg	gat	tcg	ata	gaa	aag	ggt	ata	1008
Val	Gln	Phe	His	Gln	Cys	Val	Ser	Leu	Asp	Ser	Ile	Glu	Lys	Val	Ile	
				325					330					335		
aag	tat	gcc	gaa	gaa	cat	tca	gat	gaa	cta	aag	aca	tta	aaa	cac	aca	1056
Lys	Tyr	Ala	Glu	Glu	His	Ser	Asp	Glu	Leu	Lys	Thr	Leu	Lys	His	Thr	
			340					345					350			
gag	cat	aat	gct	gaa	agt	gaa	att	gaa	ttt	atc	cct	cca	gat	ggt	gat	1104
Glu	His	Asn	Ala	Glu	Ser	Glu	Ile	Glu	Phe	Ile	Pro	Pro	Asp	Gly	Asp	
		355				360					365					
ttt	aca	tta	tgt	tct	tat	gaa	cta	aaa	aga	cat	att	aga	gat	cct	cct	1152
Phe	Thr	Leu	Cys	Ser	Tyr	Glu	Leu	Lys	Arg	His	Ile	Arg	Asp	Pro	Pro	
	370					375					380					
atg	gtc	aaa	ctt	tgc	tca	ttt	gaa	ata	aca	cca	aag	tgg	aaa	aaa	tat	1200
Met	Val	Lys	Leu	Cys	Ser	Phe	Glu	Ile	Thr	Pro	Lys	Trp	Lys	Lys	Tyr	
385					390					395					400	
aaa	ctc	aaa	att	tct	gct	gca	gta	gaa	aca	cac	ttt	aag	cca	aca	aat	1248
Lys	Leu	Lys	Ile	Ser	Ala	Ala	Val	Glu	Thr	His	Phe	Lys	Pro	Thr	Asn	
				405					410					415		
tct	aca	tca	aaa	cta	gat	ggt	aag	att	ccc	att	tcc	aag	gta	ttc	aag	1296
Ser	Thr	Ser	Lys	Leu	Asp	Val	Lys	Ile	Pro	Ile	Ser	Lys	Val	Phe	Lys	
			420					425					430			
gac	tac	cag	att	gat	cta	aaa	aag	cca	ata	aag	ttt	aaa	aca	tcg	aat	1344
Asp	Tyr	Gln	Ile	Asp	Leu	Lys	Lys	Pro	Ile	Lys	Phe	Lys	Thr	Ser	Asn	
		435					440					445				
ggt	cga	gta	gtc	tat	aat	att	agc	gat	gat	ttc	tta	tta	tgg	gag	atc	1392
Gly	Arg	Val	Val	Tyr	Asn	Ile	Ser	Asp	Asp	Phe	Leu	Leu	Trp	Glu	Ile	
	450					455					460					
ggt	ggt	att	aaa	ggt	ggt	aaa	atg	cat	ggc	tca	aag	gaa	gat	ata	agc	1440
Gly	Val	Ile	Lys	Gly	Gly	Lys	Met	His	Gly	Ser	Lys	Glu	Asp	Ile	Ser	
465				470					475						480	
aag	ttt	gac	aat	gtc	gct	aca	atg	gca	gcg	gag	ttt	gga	cta	ttc	aac	1488
Lys	Phe	Asp	Asn	Val	Ala	Thr	Met	Ala	Ala	Glu	Phe	Gly	Leu	Phe	Asn	
				485					490					495		

## PhoenixTemp32470.tmp.txt

gag	gaa	gag	tat	gaa	aga	gaa	agg	aag	gaa	aga	gaa	act	tca	atg	aat	1536
Glu	Glu	Glu	Tyr	Glu	Arg	Glu	Arg	Lys	Glu	Arg	Glu	Thr	Ser	Met	Asn	
			500					505					510			
cca	cca	cca	ctg	agg	aca	ggc	cct	aag	ctt	gaa	gat	ata	tat	aaa	gaa	1584
Pro	Pro	Pro	Leu	Arg	Thr	Gly	Pro	Lys	Leu	Glu	Asp	Ile	Tyr	Lys	Glu	
			515				520					525				
act	cac	gag	gag	aat	gac	gga	tat	aat	tct	gtg	ggg	caa	aag	cca	aag	1632
Thr	His	Glu	Glu	Asn	Asp	Gly	Tyr	Asn	Ser	Val	Gly	Gln	Lys	Pro	Lys	
	530					535					540					
aat	aat	ctc	aac	tta	ctt	tca	atg	gat	ttt	gag	att	cct	tac	tgc	aca	1680
Asn	Asn	Leu	Asn	Leu	Leu	Ser	Met	Asp	Phe	Glu	Ile	Pro	Tyr	Cys	Thr	
545					550					555					560	
tgt	agt	ggg	ttg	aaa	gtt	gag	tat	ttg	aag	att	gat	gaa	gac	caa	tta	1728
Cys	Ser	Gly	Leu	Lys	Val	Glu	Tyr	Leu	Lys	Ile	Asp	Glu	Asp	Gln	Leu	
				565					570					575		
caa	tac	cag	tca	ttc	cca	tgg	gtg	aga	tat	aaa	acg	att	aac	gat	gac	1776
Gln	Tyr	Gln	Ser	Phe	Pro	Trp	Val	Arg	Tyr	Lys	Thr	Ile	Asn	Asp	Asp	
			580					585					590			
gaa	tat	gca	tat	att	att	taa										1797
Glu	Tyr	Ala	Tyr	Ile	Ile											
			595													

&lt;210&gt; 2476

&lt;211&gt; 598

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2476

Met	Ser	Ser	Ser	Ile	Tyr	Ile	Phe	Asp	Glu	Thr	Leu	Glu	Pro	Leu	Val	
1				5					10					15		
Ser	Lys	Ser	Val	Lys	Gly	Leu	Pro	Asn	Val	Asn	Glu	Leu	Gly	Asp	Leu	
			20					25					30			
Phe	Arg	Tyr	His	Val	Arg	Gln	Ser	Gln	Asn	Pro	Ile	Ile	Asp	Val	Tyr	
		35					40					45				
Asn	Trp	Arg	Phe	Val	Tyr	Ile	Lys	Arg	Asp	Thr	Leu	Tyr	Phe	Val	Ala	
	50					55					60					
Val	Val	Asp	Ala	Ala	Asp	Asp	Ala	Ile	Ala	Asn	Tyr	Leu	Ala	Ile	Leu	
65				70					75						80	
Thr	Tyr	Leu	Glu	Gln	Leu	Tyr	Gln	Leu	Phe	Arg	Asp	Tyr	Val	Gly	Val	
				85					90					95		
Lys	Val	Leu	Asp	Arg	Asn	Leu	Val	Leu	Asp	Asn	Thr	Leu	Leu	Val	Met	
			100					105					110			
Glu	Leu	Ile	Asp	Glu	Thr	Leu	Asp	Tyr	Gly	Ile	Val	Gln	Leu	Thr	Glu	
		115					120					125				
Pro	Ser	Ile	Met	Lys	Asp	Tyr	Ile	Arg	Val	Arg	Val	Asn	Leu	Pro	Glu	
	130					135					140					
Gln	Arg	Ile	Met	Leu	Glu	Ile	Trp	Asn	Thr	Asp	Ser	Asp	Ser	Asp		
145				150					155						160	
Ser	Asp	Gly	Asn	Ser	Lys	Arg	Lys	His	Lys	His	Lys	Ser	Lys	Gly	Asp	
			165					170						175		
Lys	Asp	Lys	Pro	Ala	Leu	Gly	Lys	Val	Pro	Leu	Ser	Lys	Glu	Glu	Leu	
			180					185					190			
Asp	Lys	Val	Leu	Lys	Thr	Ser	Lys	Asp	Lys	Val	Tyr	Lys	Lys	Ile	Lys	
		195					200					205				
Asp	Asn	Ile	Asn	Glu	Leu	Glu	Lys	Ile	Gly	Lys	Phe	Arg	Gly	Lys	Asp	
	210					215					220					
Glu	Tyr	Asp	Asp	Asp	Ala	Asn	Glu	Asn	Glu	Thr	Phe	Ile	Asn	Ser	Tyr	
225					230					235					240	
Ile	Ala	Lys	Thr	Thr	Ile	Met	Pro	Val	Ser	Trp	Arg	Ala	Lys	Gly	Ile	
			245						250					255		
His	Tyr	Ala	Lys	Asn	Glu	Phe	Phe	Leu	Asp	Val	Ile	Glu	Lys	Leu	Gln	
			260					265					270			
Tyr	Leu	Val	Asp	Leu	Glu	Ser	Gly	Met	Val	Arg	Arg	Ser	Leu	Ile	His	
		275					280					285				
Gly	Gln	Ile	Val	Cys	Arg	Ser	Tyr	Leu	Ser	Gly	Met	Pro	Lys	Leu	Lys	
	290					295					300					
Met	Ser	Leu	Asn	Lys	Leu	Gln	Asn	Asp	Lys	Gln	Phe	Ile	Ser	Gln		
305					310				315					320		
Val	Gln	Phe	His	Gln	Cys	Val	Ser	Leu	Asp	Ser	Ile	Glu	Lys	Val	Ile	

## PhoenixTemp32470.tmp.txt

Lys Tyr Ala Glu 325 His Ser Asp Glu 330 Leu Lys Thr Leu Lys 335 Thr  
 Glu His Asn Ala Glu Ser Glu Ile Glu Phe Ile Pro Pro Asp Gly Asp  
 Phe Thr Leu Cys Ser Tyr Glu 335 Leu Lys Arg His Ile Arg Asp Pro Pro  
 Met Val Lys Leu Cys Ser Phe Glu Ile Thr Pro Lys Trp Lys Lys Tyr  
 Lys Leu Lys Ile Ser Ala Ala Val Glu Thr His Phe Lys Pro Thr Asn  
 Ser Thr Ser Lys Leu Asp Val Lys Ile Pro Ile Ser Lys Val Phe Lys  
 Asp Tyr Gln Ile Asp Leu Lys Lys Pro Ile Lys Phe Lys Thr Ser Asn  
 Gly Arg Val Val Tyr Asn Ile Ser Asp Asp Phe Leu Leu Trp Glu Ile  
 Gly Val Ile Lys Gly Gly Lys Met His Gly Ser Lys Glu Asp Ile Ser  
 Lys Phe Asp Asn Val Ala Thr Met Ala Ala Glu Phe Gly Leu Phe Asn  
 Glu Glu Glu Tyr Glu Arg Glu Arg Lys Glu Arg Glu Thr Ser Met Asn  
 Pro Pro Pro Leu Arg Thr Gly Pro Lys Leu Glu Asp Ile Tyr Lys Glu  
 Thr His Glu Glu Asn Asp Gly Tyr Asn Ser Val Gly Gln Lys Pro Lys  
 Asn Asn Leu Asn Leu Leu Ser Met Asp Phe Glu Ile Pro Tyr Cys Thr  
 Cys Ser Gly Leu Lys Val Glu Tyr Leu Lys Ile Asp Glu Asp Gln Leu  
 Gln Tyr Gln Ser Phe Pro Trp Val Arg Tyr Lys Thr Ile Asn Asp Asp  
 Glu Tyr Ala Tyr Ile Ile

&lt;210&gt; 2477

&lt;211&gt; 1524

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces fragilis NRRL Y-1140

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1524)

&lt;400&gt; 2477

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Met Ser Ser Cys Phe Leu Leu Leu Asp Glu Thr Tyr Glu Pro Leu Ile	
1 5 10 15	
aga aga gca cta cga ccg atc cat ttc ctt gat gat gct ata ctt caa	96
Arg Arg Ala Leu Arg Pro Ile His Phe Leu Asp Asp Ala Ile Leu Gln	
20 25 30	
tta cag aat aac ctt aaa cat cat aag gga tgc aca aaa cct ata ttc	144
Leu Gln Asn Asn Leu Lys His His Lys Gly Cys Thr Lys Pro Ile Phe	
35 40 45	
gaa ggc aat ggg tgg cat tac gct gtg ata act cgt gat aac cta tat	192
Glu Gly Asn Gly Trp His Tyr Ala Val Ile Thr Arg Asp Asn Leu Tyr	
50 55 60	
ttc gct atg ata atg caa gtg aat aat agt gtt tct ccc ata agt gtg	240
Phe Ala Met Ile Met Gln Val Asn Asn Ser Val Ser Pro Ile Ser Val	
65 70 75 80	
tta cat tac tta gat gaa atc tac cag tta tgc agg aaa ttt atg ggc	288
Leu His Tyr Leu Asp Glu Ile Tyr Gln Cys Arg Lys Phe Met Gly	
85 90 95	
atg aag ctt aac aag ctc aat gta cga gat aac ttc cat tta att ttc	336
Met Lys Leu Asn Lys Leu Asn Val Arg Asp Asn Phe His Leu Ile Phe	
100 105 110	
gaa gtt att gag gaa tca tcc gat tat ggt atc ata cag gtt aca aac	384
Glu Val Ile Glu Glu Ser Ser Asp Tyr Gly Ile Ile Gln Val Thr Asn	

## PhoenixTemp32470.tmp.txt

tat	aat	115	ata	cat	gat	ttc	120	aat	gta	gaa	gtt	125	aaa	ccc	gac	432
Tyr	Asn	Ile	Ile	His	Asp	Phe	Ile	Lys	Val	Glu	Val	Ile	Lys	Pro	Asp	
gat	gat	130	tcc	gag	aat	aca	135	tct	gaa	aaa	cat	140	gag	ctg	cca	480
Asp	Asp	Ser	Glu	Asn	Thr	Ala	Ser	Glu	Lys	His	Glu	Leu	Pro	Pro	Gly	
145	gac	cag	gat	gaa	aca	ata	aac	agt	tat	att	ctt	cga	acg	atg	aca	528
Asp	Gln	Asp	Glu	Thr	Phe	Ile	Asn	Ser	Tyr	Ile	Leu	Arg	Thr	Met	Thr	
165	tct	gct	gtc	tca	tgg	cgt	cct	aag	ggg	atc	cat	tac	ggg	aag	aac	576
Ser	Ala	Val	Ser	Trp	Arg	Pro	Lys	Gly	Ile	His	Tyr	Gly	Lys	Asn	Glu	
180	ttc	ttt	ctt	gat	gta	att	gag	aaa	tta	gaa	ttc	att	atg	gat	ttc	624
Phe	Phe	Leu	Asp	Val	Ile	Glu	Lys	Leu	Glu	Phe	Ile	Met	Asp	Phe	Glu	
195	gaa	ggg	gtg	gtc	aga	aat	aat	gta	atc	aac	gga	aca	ata	ata	tgc	672
Glu	Gly	Val	Val	Arg	Asn	Asn	Val	Ile	Asn	Gly	Thr	Ile	Ile	Cys	Arg	
210	agt	tat	ttg	tct	ggg	atg	cct	caa	ttg	agt	ata	gga	ttg	aat	aag	720
Ser	Tyr	Leu	Ser	Gly	Met	Pro	Gln	Leu	Ser	Ile	Gly	Leu	Asn	Lys	Leu	
225	atg	cag	aag	aat	gta	cac	ttc	atg	aaa	cgt	tta	aaa	ttc	cat	gaa	768
Met	Gln	Lys	Asn	Val	His	Phe	Met	Lys	Arg	Leu	Lys	Phe	His	Glu	tgc	
245	gta	gac	ctg	cat	acc	tta	atc	aag	gaa	gaa	tct	cca	gtt	att	aag	816
Val	Asp	Leu	His	Thr	Leu	Ile	Lys	Glu	Glu	Ser	Pro	Val	Ile	Lys	Phe	
260	att	cca	ccg	gat	gga	gaa	ttt	gag	ctt	tgt	aat	tat	aaa	ttg	aat	864
Ile	Pro	Pro	Asp	Gly	Glu	Phe	Glu	Leu	Cys	Asn	Tyr	Lys	Leu	Asn	Arg	
275	ccg	cta	ctt	gat	gaa	cca	gtt	ata	aaa	cta	cag	tca	ttc	ggg	cta	912
Pro	Leu	Leu	Asp	Glu	Pro	Val	Ile	Lys	Leu	Gln	Ser	Phe	Gly	Leu	Ser	
290	caa	aaa	cct	aga	aag	aac	caa	gaa	acc	cag	gat	aag	cta	ttg	ttg	960
Gln	Lys	Pro	Arg	Lys	Asn	Gln	Glu	Thr	Gln	Asp	Lys	Leu	Leu	Leu	Lys	
305	gct	gcc	ata	act	acg	cat	ttc	aaa	gct	cag	gat	agt	gca	aag	gag	1008
Ala	Ala	Ile	Thr	Thr	His	Phe	Lys	Ala	Gln	Asp	Ser	Ala	Lys	Glu	Leu	
325	tta	att	aaa	att	ccg	ata	aag	tca	gtt	att	cga	aag	tgg	aat	att	1056
Leu	Ile	Lys	Ile	Pro	Ile	Lys	Ser	Val	Ile	Arg	Lys	Trp	Asn	Ile	Asp	
340	ctc	gaa	aag	ccg	ccc	ctg	ttt	aaa	agc	gat	ata	gga	gat	gtt	gtg	1104
Leu	Glu	Lys	Pro	Pro	Leu	Phe	Lys	Ser	Asp	Ile	Gly	Asp	Val	Val	Phe	
355	gac	ata	aca	gcg	ggg	tcg	ata	att	tgg	aaa	att	aac	aat	ttg	aag	1152
Asp	Ile	Thr	Ala	Gly	Ser	Ile	Ile	Trp	Lys	Ile	Asn	Asn	Leu	Lys	Gly	
370	ggg	cat	gga	aac	aag	aat	tat	ggg	ctt	aaa	tgc	atg	ttt	gaa	ata	1200
Gly	His	Gly	Asn	Lys	Asn	Tyr	Gly	Leu	Lys	Cys	Met	Phe	Glu	Ile	Trp	
385	gac	cg	cag	att	cat	gaa	gct	tta	gag	gtg	cag	cta	cga	aat	tcc	1248
Asp	Arg	Gln	Ile	His	Glu	Ala	Leu	Glu	Val	Gln	Leu	Arg	Asn	Ser	Met	
405	gac	cca	cca	cct	tta	agg	act	ggc	ccc	aaa	cta	gag	aga	att	tgg	1296
Asp	Pro	Pro	Pro	Leu	Arg	Thr	Gly	Pro	Lys	Leu	Glu	Arg	Ile	Trp	Asp	
420	cag	tac	cat	gga	aaa	act	acg	gaa	tat	gat	ggc	aat	gag	aac	caa	1344
Gln	Tyr	His	Gly	Lys	Thr	Thr	Thr	Glu	Tyr	Asp	Gly	Asn	Glu	Asn	Gln	
435	gaa	gat	gta	gac	aag	ttc	gcg	tta	att	gct	atg	tcg	ttt	gaa	atc	1392
Glu	Asp	Val	Asp	Lys	Phe	Ala	Leu	Ile	Ala	Met	Ser	Phe	Glu	Ile	Pro	
450	tat	tat	gca	gtg	agc	ggg	tta	aaa	gtt	gag	tat	ttc	aag	atc	gaa	1440
Tyr	Tyr	Ala	Val	Ser	Gly	Leu	Lys	Val	Glu	Tyr	Phe	Lys	Ile	Glu	Glu	
465	cct	caa	tta	aac	tac	caa	tct	ttc	cca	tgg	gtt	aga	tac	aag	aca	1488
Pro	Gln	Leu	Asn	Tyr	Gln	Ser	Phe	Pro	Trp	Val	Arg	Tyr	Lys	Thr	Val	



485  
 aat gat aac gaa 485  
 Asn Asp Asn Glu Tyr  
 500  
 490  
 ata tac cag gtt tcc att tag  
 Ile Tyr Gln Val Ser Ile  
 505  
 495  
 1524

<210> 2478  
 <211> 507  
 <212> PRT  
 <213> Kluyveromyces fragilis NRRL Y-1140

<400> 2478  
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 Arg Arg Ala Leu Arg Pro Ile His Phe Leu Asp Asp Ala Ile Leu Gln  
 20 25 30  
 Leu Gln Asn Asn Leu Lys His His Lys Gly Cys Thr Lys Pro Ile Phe  
 35 40 45  
 Glu Gly Asn Gly Trp His Tyr Ala Val Ile Thr Arg Asp Asn Leu Tyr  
 50 55 60  
 Phe Ala Met Ile Met Gln Val Asn Asn Ser Val Ser Pro Ile Ser Val  
 65 70 75 80  
 Leu His Tyr Leu Asp Glu Ile Tyr Gln Leu Cys Arg Lys Phe Met Gly  
 85 90 95  
 Met Lys Leu Asn Lys Leu Asn Val Arg Asp Asn Phe His Leu Ile Phe  
 100 105 110  
 Glu Val Ile Glu Glu Ser Ser Asp Tyr Gly Ile Ile Gln Val Thr Asn  
 115 120 125  
 Tyr Asn Ile Ile His Asp Phe Ile Lys Val Glu Val Ile Lys Pro Asp  
 130 135 140  
 Asp Asp Ser Glu Asn Thr Ala Ser Glu Lys His Glu Leu Pro Pro Gly  
 145 150 155 160  
 Asp Gln Asp Glu Thr Phe Ile Asn Ser Tyr Ile Leu Arg Thr Met Thr  
 165 170 175  
 Ser Ala Val Ser Trp Arg Pro Lys Gly Ile His Tyr Gly Lys Asn Glu  
 180 185 190  
 Phe Phe Leu Asp Val Ile Glu Lys Leu Glu Phe Ile Met Asp Phe Glu  
 195 200 205  
 Glu Gly Val Val Arg Asn Asn Val Ile Asn Gly Thr Ile Ile Cys Arg  
 210 215 220  
 Ser Tyr Leu Ser Gly Met Pro Gln Leu Ser Ile Gly Leu Asn Lys Leu  
 225 230 235 240  
 Met Gln Lys Asn Val His Phe Met Lys Arg Leu Lys Phe His Glu Cys  
 245 250 255  
 Val Asp Leu His Thr Leu Ile Lys Glu Glu Ser Pro Val Ile Lys Phe  
 260 265 270  
 Ile Pro Pro Asp Gly Glu Phe Glu Leu Cys Asn Tyr Lys Leu Asn Arg  
 275 280 285  
 Pro Leu Leu Asp Glu Pro Val Ile Lys Leu Gln Ser Phe Gly Leu Ser  
 290 295 300  
 Gln Lys Pro Arg Lys Asn Gln Glu Thr Gln Asp Lys Leu Leu Leu Lys  
 305 310 315 320  
 Ala Ala Ile Thr Thr His Phe Lys Ala Gln Asp Ser Ala Lys Glu Leu  
 325 330 335  
 Leu Ile Lys Ile Pro Ile Lys Ser Val Ile Arg Lys Trp Asn Ile Asp  
 340 345 350  
 Leu Glu Lys Pro Pro Leu Phe Lys Ser Asp Ile Gly Asp Val Val Phe  
 355 360 365  
 Asp Ile Thr Ala Gly Ser Ile Trp Lys Ile Asn Asn Leu Lys Gly  
 370 375 380  
 Gly His Gly Asn Lys Asn Tyr Gly Leu Lys Cys Met Phe Glu Ile Trp  
 385 390 395 400  
 Asp Arg Gln Ile His Glu Ala Leu Glu Val Gln Leu Arg Asn Ser Met  
 405 410 415  
 Asp Pro Pro Pro Leu Arg Thr Gly Pro Lys Leu Glu Arg Ile Trp Asp  
 420 425 430  
 Gln Tyr His Gly Lys Thr Thr Glu Tyr Asp Gly Asn Glu Asn Gln Lys  
 435 440 445  
 Glu Asp Val Asp Lys Phe Ala Leu Ile Ala Met Ser Phe Glu Ile Pro  
 450 455 460

## PhoenixTemp32470.tmp.txt

Tyr Tyr Ala Val Ser Gly Leu Lys Val Glu Tyr Phe Lys Ile Glu Glu  
 465 470 475 480  
 Pro Gln Leu Asn Tyr Gln Ser Phe Pro Trp Val Arg Tyr Lys Thr Val  
 485 490 495  
 Asn Asp Asn Glu Tyr Ile Tyr Gln Val Ser Ile  
 500 505

&lt;210&gt; 2479

&lt;211&gt; 2067

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2067)

&lt;400&gt; 2479

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gac	tac	ctg	cgg	agc	gag	tgt	tta	tgt	cat	aga	agc	tat	aat	aat	agt	96
Asp	Tyr	Leu	Arg	Ser	Glu	Leu	Leu	Leu	His	Arg	Ser	Tyr	Asn	Asn	Ser	
			20					25					30			
tgt	ccg	gat	caa	acg	cta	gtc	tgt	caa	aac	ttc	gaa	aat	gca	tac	aaa	144
Leu	Pro	Asp	Gln	Thr	Leu	Val	Leu	Gln	Asn	Phe	Glu	Asn	Ala	Tyr	Lys	
		35					40					45				
aac	cta	cta	ccg	gaa	gaa	aga	aca	cct	ttt	att	cac	agt	cga	ggt	ata	192
Asn	Leu	Leu	Pro	Glu	Glu	Arg	Thr	Pro	Phe	Ile	His	Ser	Arg	Gly	Ile	
	50					55					60					
aat	tat	gtg	tat	atg	aga	gga	gat	aat	gat	att	ata	ttg	ata	gcg	gtt	240
Asn	Tyr	Val	Tyr	Met	Arg	Gly	Asp	Asn	Asp	Ile	Ile	Leu	Ile	Ala	Val	
	65				70					75					80	
acg	aag	aaa	aat	atc	aat	gca	atg	ctg	aca	ggt	gta	ttt	ttg	cat	aat	288
Thr	Lys	Lys	Asn	Ile	Asn	Ala	Met	Leu	Thr	Val	Val	Phe	Leu	His	Asn	
			85						90					95		
ttt	tat	gga	att	cta	ttt	cat	tac	ata	tgt	gac	atg	gcc	aga	aag	cag	336
Phe	Tyr	Gly	Ile	Leu	Phe	His	Tyr	Ile	Cys	Asp	Met	Ala	Arg	Lys	Gln	
		100						105					110			
aaa	acc	tct	caa	gaa	gat	tta	agg	atc	ggg	gcc	aaa	cta	agt	aag	gaa	384
Lys	Thr	Ser	Gln	Glu	Asp	Leu	Arg	Ile	Gly	Ala	Lys	Leu	Ser	Lys	Glu	
		115					120					125				
gtg	ata	atg	gat	agt	tct	acg	tta	att	ttt	gaa	ttg	ttg	gat	gag	tgc	432
Val	Ile	Met	Asp	Ser	Ser	Thr	Leu	Ile	Phe	Glu	Leu	Leu	Asp	Glu	Cys	
	130					135				140						
atg	gat	ttt	gga	att	gtt	cag	gtg	acg	gat	tat	aag	att	ctt	cga	gaa	480
Met	Asp	Phe	Gly	Ile	Val	Gln	Val	Thr	Asp	Tyr	Lys	Ile	Leu	Arg	Glu	
	145				150					155					160	
tat	att	aaa	gtt	gaa	gcc	aat	ctt	cct	aag	tta	ggt	cat	tat	ggg	gaa	528
Tyr	Ile	Lys	Val	Glu	Ala	Asn	Leu	Pro	Lys	Leu	Gly	His	Tyr	Gly	Glu	
			165					170						175		
caa	agg	gat	gag	tac	tca	tct	gaa	tca	gat	ata	gag	ggt	ggc	gat	aaa	576
Gln	Arg	Asp	Glu	Tyr	Ser	Ser	Glu	Ser	Asp	Ile	Glu	Val	Gly	Asp	Lys	
		180						185					190			
tct	gac	cac	aag	cgt	aaa	caa	gct	aag	gat	aaa	ata	aag	aaa	ggt	aaa	624
Ser	Asp	His	Lys	Arg	Lys	Gln	Ala	Lys	Asp	Lys	Ile	Lys	Lys	Val	Lys	
		195					200					205				
tca	acc	cat	aat	caa	gcg	gtc	aat	gct	gat	ata	ata	gat	aca	gac	act	672
Ser	Thr	His	Asn	Gln	Ala	Val	Asn	Ala	Asp	Ile	Ile	Asp	Thr	Asp	Thr	
	210					215					220					
tcg	tat	att	aat	act	tct	gta	tta	aga	gca	aca	tcg	ctg	gcc	att	agt	720
Ser	Tyr	Ile	Asn	Thr	Ser	Val	Leu	Arg	Ala	Thr	Ser	Leu	Ala	Ile	Ser	
	225				230					235					240	
tgg	cgg	ccg	aaa	ggt	att	ttc	tac	ccc	aaa	aac	gaa	att	tac	atc	gat	768
Trp	Arg	Pro	Lys	Gly	Ile	Phe	Tyr	Pro	Lys	Asn	Glu	Ile	Tyr	Ile	Asp	
				245					250					255		
ata	ata	gag	aac	tgt	gaa	ttt	cta	ttt	agt	cta	agc	aca	aat	tcc	atc	816
Ile	Ile	Glu	Asn	Cys	Glu	Phe	Leu	Phe	Ser	Leu	Ser	Thr	Asn	Ser	Ile	
			260				265						270			
aaa	aga	aat	gaa	gtt	tac	ggc	aga	tgc	tta	gtc	aaa	tgt	tat	ctt	tcg	864

## PhoenixTemp32470.tmp.txt

Lys	Arg	Asn	Glu	Val	Tyr	Gly	Arg	Cys	Leu	Val	Lys	Cys	Tyr	Leu	Ser	
ggg	atg	cca	gtt	tgt	aaa	ttg	gga	ttt	aat	gaa	aag	tac	att	tca	gga	912
Gly	Met	Pro	Val	Cys	Lys	Leu	Gly	Phe	Asn	Glu	Lys	Tyr	Ile	Ser	Gly	
	290					295					300					
ata	gat	aat	gaa	gac	gaa	tat	atg	ata	tat	gaa	gac	cca	aag	aat	gga	960
Ile	Asp	Asn	Glu	Asp	Glu	Tyr	Met	Ile	Tyr	Glu	Asp	Pro	Lys	Asn	Gly	
	305				310					315					320	
gac	acg	gtt	aga	tcc	gat	aac	caa	ttg	aaa	ttg	gag	gat	agt	aac	ttg	1008
Asp	Thr	Val	Arg	Ser	Asp	Asn	Gln	Leu	Lys	Leu	Glu	Asp	Ser	Asn	Leu	
				325					330					335		
aca	gtt	gat	ggt	gat	gat	gaa	aac	cta	agc	gaa	gac	gga	att	gag	gaa	1056
Thr	Val	Asp	Gly	Asp	Asp	Glu	Asn	Leu	Ser	Glu	Asp	Gly	Ile	Glu	Glu	
			340					345					350			
ggt	ctt	gat	gat	att	aaa	tca	act	gtt	gag	ctc	gga	gat	gag	gat	act	1104
Gly	Leu	Asp	Asp	Ile	Lys	Ser	Thr	Val	Glu	Leu	Gly	Asp	Glu	Asp	Thr	
		355					360					365				
aaa	act	acg	gac	gat	att	gtc	agt	gag	aac	att	cca	aac	gaa	aat	cat	1152
Lys	Thr	Thr	Asp	Asp	Ile	Val	Ser	Glu	Asn	Ile	Pro	Asn	Glu	Asn	His	
	370					375					380					
aga	aag	aga	aag	aag	aag	aac	cat	agg	att	cct	ata	cga	aat	att	caa	1200
Arg	Lys	Arg	Lys	Lys	Lys	Asn	His	Arg	Ile	Pro	Ile	Arg	Asn	Ile	Gln	
	385				390					395					400	
ttc	cat	caa	tgt	ata	gaa	cta	gct	tct	gtc	tat	aag	gag	aac	att	att	1248
Phe	His	Gln	Cys	Ile	Glu	Leu	Ala	Ser	Val	Tyr	Lys	Glu	Asn	Ile	Ile	
				405					410					415		
aac	ttc	att	cct	cca	gat	gat	aaa	ttt	gta	ctc	atg	aca	tac	cat	gtg	1296
Asn	Phe	Ile	Pro	Pro	Asp	Asp	Lys	Phe	Val	Leu	Met	Thr	Tyr	His	Val	
			420					425					430			
gag	caa	caa	aag	cag	aag	cgt	aag	ctt	ccc	ctt	atc	atg	gta	aaa	cca	1344
Glu	Gln	Gln	Lys	Gln	Lys	Arg	Lys	Leu	Pro	Leu	Ile	Met	Val	Lys	Pro	
		435					440					445				
aca	tac	cga	att	ctt	aaa	ctg	tca	aat	aaa	tta	caa	att	atg	tgt	att	1392
Thr	Tyr	Arg	Ile	Leu	Lys	Leu	Ser	Asn	Lys	Leu	Gln	Ile	Met	Cys	Ile	
	450					455					460					
ctt	tcc	aca	aac	ttc	aag	aaa	aga	tta	cac	tgt	cgt	aat	ttg	ata	att	1440
Leu	Ser	Thr	Asn	Phe	Lys	Lys	Arg	Leu	His	Cys	Arg	Asn	Leu	Ile	Ile	
	465				470					475					480	
aaa	att	cct	ata	aat	cca	cat	ttg	att	aga	ctt	gac	cat	gag	gct	aat	1488
Lys	Ile	Pro	Ile	Asn	Pro	His	Leu	Ile	Arg	Leu	Asp	His	Glu	Ala	Asn	
				485					490					495		
gaa	ttc	agc	gac	gga	atg	aag	ttt	aag	gct	gaa	ata	ggt	aat	gtt	agt	1536
Glu	Phe	Ser	Asp	Gly	Met	Lys	Phe	Lys	Ala	Glu	Ile	Gly	Asn	Val	Ser	
			500					505					510			
tat	aag	att	gat	tct	tct	gaa	tta	ttc	tgg	tat	gtt	gat	aat	gtt	aat	1584
Tyr	Lys	Ile	Asp	Ser	Ser	Glu	Leu	Phe	Trp	Tyr	Val	Asp	Asn	Val	Asn	
		515					520					525				
ggg	aaa	ata	ggc	gcc	atg	aaa	atg	atg	gcg	gaa	atg	gca	tta	gcc	tca	1632
Gly	Lys	Ile	Gly	Ala	Met	Lys	Met	Met	Ala	Glu	Met	Ala	Leu	Ala	Ser	
	530					535					540					
aaa	gat	aac	gat	aca	tta	acc	ctg	gag	gca	gta	cag	gac	tcg	ctt	aat	1680
Lys	Asp	Asn	Asp	Thr	Leu	Thr	Leu	Glu	Ala	Val	Gln	Asp	Ser	Leu	Asn	
	545				550					555					560	
aat	aaa	tat	atg	cag	cag	tct	gat	gcg	ata	gaa	gat	ctg	gat	gat	gat	1728
Asn	Lys	Tyr	Met	Gln	Gln	Ser	Asp	Ala	Ile	Glu	Asp	Leu	Asp	Asp	Asp	
				565					570					575		
act	gag	gcc	aag	gaa	gat	ctc	gat	aga	tat	tac	ggt	gtc	aat	ggc	gca	1776
Thr	Glu	Ala	Lys	Glu	Asp	Leu	Asp	Arg	Tyr	Tyr	Gly	Val	Asn	Gly	Ala	
			580					585					590			
gtt	tca	tct	ttg	tct	aag	aga	atc	caa	aag	ctg	ata	aaa	ttt	tca	caa	1824
Val	Ser	Ser	Leu	Ser	Lys	Arg	Ile	Gln	Lys	Leu	Ile	Lys	Phe	Ser	Gln	
		595					600					605				
gac	ttt	aac	cat	gtg	aag	tgt	tct	ttc	aat	att	cca	atg	tta	tct	tat	1872
Asp	Phe	Asn	His	Val	Lys	Cys	Ser	Phe	Asn	Ile	Pro	Met	Leu	Ser	Tyr	
	610					615					620					
tct	ggt	ctt	aaa	tta	act	tat	ttg	aag	gtt	gca	gag	gaa	caa	atg	aaa	1920
Ser	Gly	Leu	Lys	Leu	Thr	Tyr	Leu	Lys	Val	Ala	Glu	Glu	Gln	Met	Lys	
	625				630					635					640	
tat	aca	tgc	ttt	cca	tgg	gtc	agg	tat	atc	acc	gaa	tcc	aat	tct	gac	1968

PhoenixTemp32470.tmp.txt

Tyr	Thr	Cys	Phe	Pro	Trp	Val	Arg	Tyr	Ile	Thr	Glu	Ser	Asn	Ser	Asp	
				645					650					655		
act	cac	agc	tca	aat	aag	gtt	gag	gat	gag	agt	ctt	tct	act	cgg	gat	2016
Thr	His	Ser	Ser	Asn	Lys	Val	Glu	Asp	Glu	Ser	Leu	Ser	Thr	Arg	Asp	
			660					665					670			
tgt	aat	tat	aat	ttt	gaa	ttg	ggt	ctc	aat	tgt	ttt	cag	ttt	gta	gat	2064
Cys	Asn	Tyr	Asn	Phe	Glu	Leu	Gly	Leu	Asn	Cys	Phe	Gln	Phe	Val	Asp	
		675					680					685				
tag																2067

<210> 2480  
 <211> 688  
 <212> PRT  
 <213> Debaryomyces hansenii CBS767

<400> 2480

Met	Val	Val	Tyr	Ser	Leu	Tyr	Ile	Ile	His	Trp	Pro	Glu	Thr	His	Leu	
1				5					10					15		
Asp	Tyr	Leu	Arg	Ser	Glu	Leu	Leu	Leu	His	Arg	Ser	Tyr	Asn	Asn	Ser	
			20					25					30			
Leu	Pro	Asp	Gln	Thr	Leu	Val	Leu	Gln	Asn	Phe	Glu	Asn	Ala	Tyr	Lys	
		35					40					45				
Asn	Leu	Leu	Pro	Glu	Glu	Arg	Thr	Pro	Phe	Ile	His	Ser	Arg	Gly	Ile	
	50					55					60					
Asn	Tyr	Val	Tyr	Met	Arg	Gly	Asp	Asn	Asp	Ile	Ile	Leu	Ile	Ala	Val	
65				70						75					80	
Thr	Lys	Lys	Asn	Ile	Asn	Ala	Met	Leu	Thr	Val	Val	Phe	Leu	His	Asn	
			85						90					95		
Phe	Tyr	Gly	Ile	Leu	Phe	His	Tyr	Ile	Cys	Asp	Met	Ala	Arg	Lys	Gln	
		100					105						110			
Lys	Thr	Ser	Gln	Glu	Asp	Leu	Arg	Ile	Gly	Ala	Lys	Leu	Ser	Lys	Glu	
		115					120					125				
Val	Ile	Met	Asp	Ser	Ser	Thr	Leu	Ile	Phe	Glu	Leu	Leu	Asp	Glu	Cys	
	130					135					140					
Met	Asp	Phe	Gly	Ile	Val	Gln	Val	Thr	Asp	Tyr	Lys	Ile	Leu	Arg	Glu	
145				150						155					160	
Tyr	Ile	Lys	Val	Glu	Ala	Asn	Leu	Pro	Lys	Leu	Gly	His	Tyr	Gly	Glu	
			165						170					175		
Gln	Arg	Asp	Glu	Tyr	Ser	Ser	Glu	Ser	Asp	Ile	Glu	Val	Gly	Asp	Lys	
		180						185					190			
Ser	Asp	His	Lys	Arg	Lys	Gln	Ala	Lys	Asp	Lys	Ile	Lys	Lys	Val	Lys	
		195					200					205				
Ser	Thr	His	Asn	Gln	Ala	Val	Asn	Ala	Asp	Ile	Ile	Asp	Thr	Asp	Thr	
	210					215					220					
Ser	Tyr	Ile	Asn	Thr	Ser	Val	Leu	Arg	Ala	Thr	Ser	Leu	Ala	Ile	Ser	
225				230					235						240	
Trp	Arg	Pro	Lys	Gly	Ile	Phe	Tyr	Pro	Lys	Asn	Glu	Ile	Tyr	Ile	Asp	
			245						250					255		
Ile	Ile	Glu	Asn	Cys	Glu	Phe	Leu	Phe	Ser	Leu	Ser	Thr	Asn	Ser	Ile	
			260					265					270			
Lys	Arg	Asn	Glu	Val	Tyr	Gly	Arg	Cys	Leu	Val	Lys	Cys	Tyr	Leu	Ser	
		275					280					285				
Gly	Met	Pro	Val	Cys	Lys	Leu	Gly	Phe	Asn	Glu	Lys	Tyr	Ile	Ser	Gly	
	290					295					300					
Ile	Asp	Asn	Glu	Asp	Glu	Tyr	Met	Ile	Tyr	Glu	Asp	Pro	Lys	Asn	Gly	
305					310					315					320	
Asp	Thr	Val	Arg	Ser	Asp	Asn	Gln	Leu	Lys	Leu	Glu	Asp	Ser	Asn	Leu	
			325						330					335		
Thr	Val	Asp	Gly	Asp	Asp	Glu	Asn	Leu	Ser	Glu	Asp	Gly	Ile	Glu	Glu	
		340						345					350			
Gly	Leu	Asp	Asp	Ile	Lys	Ser	Thr	Val	Glu	Leu	Gly	Asp	Glu	Asp	Thr	
		355					360					365				
Lys	Thr	Thr	Asp	Asp	Ile	Val	Ser	Glu	Asn	Ile	Pro	Asn	Glu	Asn	His	
	370					375					380					
Arg	Lys	Arg	Lys	Lys	Lys	Asn	His	Arg	Ile	Pro	Ile	Arg	Asn	Ile	Gln	
385					390					395					400	
Phe	His	Gln	Cys	Ile	Glu	Leu	Ala	Ser	Val	Tyr	Lys	Glu	Asn	Ile	Ile	

## PhoenixTemp32470.tmp.txt

405 410 415  
 Asn Phe Ile Pro Asp Asp Lys Phe Val Leu Met Thr Tyr His Val  
 420 425 430  
 Glu Gln Gln Lys Gln Lys Arg Lys Leu Pro Leu Ile Met Val Lys Pro  
 435 440 445  
 Thr Tyr Arg Ile Leu Lys Leu Ser Asn Lys Leu Gln Ile Met Cys Ile  
 450 455 460  
 Leu Ser Thr Asn Phe Lys Lys Arg Leu His Cys Arg Asn Leu Ile Ile  
 465 470 475 480  
 Lys Ile Pro Ile Asn Pro His Leu Ile Arg Leu Asp His Glu Ala Asn  
 485 490 495  
 Glu Phe Ser Asp Gly Met Lys Phe Lys Ala Glu Ile Gly Asn Val Ser  
 500 505 510  
 Tyr Lys Ile Asp Ser Ser Glu Leu Phe Trp Tyr Val Asp Asn Val Asn  
 515 520 525  
 Gly Lys Ile Gly Ala Met Lys Met Met Ala Glu Met Ala Leu Ala Ser  
 530 535 540  
 Lys Asp Asn Asp Thr Leu Thr Leu Glu Ala Val Gln Asp Ser Leu Asn  
 545 550 555 560  
 Asn Lys Tyr Met Gln Gln Ser Asp Ala Ile Glu Asp Leu Asp Asp Asp  
 565 570 575  
 Thr Glu Ala Lys Glu Asp Leu Asp Arg Tyr Tyr Gly Val Asn Gly Ala  
 580 585 590  
 Val Ser Ser Leu Ser Lys Arg Ile Gln Lys Leu Ile Lys Phe Ser Gln  
 595 600 605  
 Asp Phe Asn His Val Lys Cys Ser Phe Asn Ile Pro Met Leu Ser Tyr  
 610 615 620  
 Ser Gly Leu Lys Leu Thr Tyr Leu Lys Val Ala Glu Glu Gln Met Lys  
 625 630 635 640  
 Tyr Thr Cys Phe Pro Trp Val Arg Tyr Ile Thr Glu Ser Asn Ser Asp  
 645 650 655  
 Thr His Ser Ser Asn Lys Val Glu Asp Glu Ser Leu Ser Thr Arg Asp  
 660 665 670  
 Cys Asn Tyr Asn Phe Glu Leu Gly Leu Asn Cys Phe Gln Phe Val Asp  
 675 680 685

&lt;210&gt; 2481

&lt;211&gt; 1353

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1353)

&lt;400&gt; 2481

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Met Ala Ser Ala Ile Phe Phe Leu Asp Leu Lys Gly Lys Pro Leu Leu	
1 5 10 15	
tcg cga aac tac cgc ggc gac atc cct atg tcg gct gtc gac aag ttc	96
Ser Arg Asn Tyr Arg Gly Asp Ile Pro Met Ser Ala Val Asp Lys Phe	
20 25 30	
ccc atg ctg ctt ctg cag gcc gag gag gag tca cct gtc gtc cct ccg	144
Pro Met Leu Leu Leu Gln Ala Glu Glu Glu Ser Pro Val Val Pro Pro	
35 40 45	
tgt ttc acc cat gag gga gtc aac tac ctg tac att acc cac aac aac	192
Cys Phe Thr His Glu Gly Val Asn Tyr Leu Tyr Ile Thr His Asn Asn	
50 55 60	
ctg tac ctg ctg gct ctg acg aag cgc aac act aat gcc gcc gag att	240
Leu Tyr Leu Leu Ala Leu Thr Lys Arg Asn Thr Asn Ala Ala Glu Ile	
65 70 75 80	
ctg ctg ttt ttg cat cgg gtc gtc cag gtg ctg aca gaa tac ttc aag	288
Leu Leu Phe Leu His Arg Val Val Gln Val Leu Thr Glu Tyr Phe Lys	
85 90 95	
ggt cta gag gag gag tca atc aga gac aac ttt gtg ctc atc tac gag	336
Gly Leu Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Leu Ile Tyr Glu	
100 105 110	
ctg ttg gac gag ctg atg gac tac ggt ttc cca cag acc acc gac aca	384
Leu Leu Asp Glu Leu Met Asp Tyr Gly Phe Pro Gln Thr Thr Asp Thr	

## PhoenixTemp32470.tmp.txt

aag	atc	115	aag	gag	tac	atc	120	caa	aag	tcc	cac	125	ctc	gaa	atc	432
Lys	Ile	Leu	Lys	Glu	Tyr	Ile	Thr	Gln	Lys	Ser	His	Ile	Leu	Glu	Ile	
	130					135					140					
gcc	atg	gaa	atc	gcc	cag	gtg	cca	aaa	gag	caa	cca	aga	ccc	cct	atg	480
Ala	Met	Glu	Ile	Ala	Gln	Val	Pro	Lys	Glu	Gln	Pro	Arg	Pro	Pro	Met	
145				150						155					160	
gct	gtc	acg	aac	gcc	gtg	tct	tgg	cgt	tcc	gaa	ggc	atc	aag	tac	cga	528
Ala	Val	Thr	Asn	Ala	Val	Ser	Trp	Arg	Ser	Glu	Gly	Ile	Lys	Tyr	Arg	
				165					170					175		
aag	aac	gag	gca	ttt	ttg	gat	gtt	gtt	gag	gct	gtc	aac	ttg	ctg	atg	576
Lys	Asn	Glu	Ala	Phe	Leu	Asp	Val	Val	Glu	Ala	Val	Asn	Leu	Leu	Met	
			180					185					190			
tct	cct	tcg	ggc	cag	gtt	ctg	cgt	tct	gag	gtt	ctc	ggc	tct	gtc	cag	624
Ser	Pro	Ser	Gly	Gln	Val	Leu	Arg	Ser	Glu	Val	Leu	Gly	Ser	Val	Gln	
		195					200					205				
atg	aaa	tgt	tac	ctc	tct	ggt	atg	cct	gaa	ctg	cga	ctg	gga	ctt	aac	672
Met	Lys	Cys	Tyr	Leu	Ser	Gly	Met	Pro	Glu	Leu	Arg	Leu	Gly	Leu	Asn	
	210					215					220					
gac	aag	gtg	ctg	ttt	gac	cat	gtg	agc	aac	acc	ggc	gct	ggg	gga	ggc	720
Asp	Lys	Val	Leu	Phe	Asp	His	Val	Ser	Asn	Thr	Gly	Ala	Gly	Gly	Gly	
225				230			235								240	
gga	tcg	ggc	gga	tct	gct	cgt	gca	tct	cga	gga	aag	agc	atc	gag	atg	768
Gly	Ser	Gly	Gly	Ser	Ala	Arg	Ala	Ser	Arg	Gly	Lys	Ser	Ile	Glu	Met	
				245				250						255		
gag	gac	gtc	aag	ttc	cac	cag	tgt	gtg	cga	ctt	tcg	cga	ttt	gag	aac	816
Glu	Asp	Val	Lys	Phe	His	Gln	Cys	Val	Arg	Leu	Ser	Arg	Phe	Glu	Asn	
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gat	aga	act	att	tcg	ttc	atc	cct	ccg	gat	ggc	cag	ttt	gag	ctc	atg	864
Asp	Arg	Thr	Ile	Ser	Phe	Ile	Pro	Pro	Asp	Gly	Gln	Phe	Glu	Leu	Met	
		275					280					285				
agc	tac	cgc	ctc	aac	acc	acc	gtc	aag	ccg	ctg	att	tgg	gtt	gac	tgc	912
Ser	Tyr	Arg	Leu	Asn	Thr	Thr	Val	Lys	Pro	Leu	Ile	Trp	Val	Asp	Cys	
	290					295					300					
aag	atc	aac	aag	tac	tcc	aac	acg	cgt	att	gag	att	ctg	gct	aag	gcc	960
Lys	Ile	Asn	Lys	Tyr	Ser	Asn	Thr	Arg	Ile	Glu	Ile	Leu	Ala	Lys	Ala	
305				310						315					320	
cgt	ggc	caa	ttc	aag	aag	cga	tcg	acg	gcc	aac	aac	gtc	gaa	atc	cac	1008
Arg	Gly	Gln	Phe	Lys	Lys	Arg	Ser	Thr	Ala	Asn	Asn	Val	Glu	Ile	His	
			325						330					335		
att	cct	gtt	ccc	gaa	gat	gcc	gat	tcg	cct	aag	ctg	gct	gct	acc	gca	1056
Ile	Pro	Val	Pro	Glu	Asp	Ala	Asp	Ser	Pro	Lys	Leu	Ala	Ala	Thr	Ala	
			340					345					350			
ggt	tcc	atc	aag	tgg	cac	cct	gag	aag	gca	tgt	gtc	acg	tgg	aag	atc	1104
Gly	Ser	Ile	Lys	Trp	His	Pro	Glu	Lys	Ala	Cys	Val	Thr	Trp	Lys	Ile	
		355					360					365				
aag	cag	ttt	gga	gga	gga	cga	gaa	ttc	tcc	atg	cga	gcg	gag	ttg	ggt	1152
Lys	Gln	Phe	Gly	Gly	Gly	Arg	Glu	Phe	Ser	Met	Arg	Ala	Glu	Leu	Gly	
		370				375					380					
ctt	ccc	tcc	gtt	cag	gac	gct	gat	gag	cag	gct	aag	agc	aag	aga	ccc	1200
Leu	Pro	Ser	Val	Gln	Asp	Ala	Asp	Glu	Gln	Ala	Lys	Ser	Lys	Arg	Pro	
				390						395					400	
atc	caa	gtc	aag	ttc	tcc	att	cct	tac	ttt	act	acc	tcg	ggt	att	cag	1248
Ile	Gln	Val	Lys	Phe	Ser	Ile	Pro	Tyr	Phe	Thr	Thr	Ser	Gly	Ile	Gln	
				405					410					415		
gtt	cga	tat	ctg	aag	att	gtc	gag	ccg	aag	ctg	cag	tac	act	tct	tac	1296
Val	Arg	Tyr	Leu	Lys	Ile	Val	Glu	Pro	Lys	Leu	Gln	Tyr	Thr	Ser	Tyr	
			420					425					430			
cct	tgg	gtt	cga	tac	att	acc	act	agt	gga	gag	gac	tac	acc	ata	cga	1344
Pro	Trp	Val	Arg	Tyr	Ile	Thr	Thr	Ser	Gly	Glu	Asp	Tyr	Thr	Ile	Arg	
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Leu	Ala															
	450															

&lt;210&gt; 2482

&lt;211&gt; 450

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2482

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 Pro Met Leu Leu Gln Ala Glu Glu Ser Pro Val Val Pro Pro  
 35 40 45  
 Cys Phe Thr His Glu Gly Val Asn Tyr Leu Tyr Ile Thr His Asn Asn  
 50 55 60  
 Leu Tyr Leu Leu Ala Leu Thr Lys Arg Asn Thr Asn Ala Ala Glu Ile  
 65 70 75 80  
 Leu Leu Phe Leu His Arg Val Val Gln Val Leu Thr Glu Tyr Phe Lys  
 85 90 95  
 Gly Leu Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Leu Ile Tyr Glu  
 100 105 110  
 Leu Leu Asp Glu Leu Met Asp Tyr Gly Phe Pro Gln Thr Thr Asp Thr  
 115 120 125  
 Lys Ile Leu Lys Glu Tyr Ile Thr Gln Lys Ser His Ile Leu Glu Ile  
 130 135 140  
 Ala Met Glu Ile Ala Gln Val Pro Lys Glu Gln Pro Arg Pro Pro Met  
 145 150 155 160  
 Ala Val Thr Asn Ala Val Ser Trp Arg Ser Glu Gly Ile Lys Tyr Arg  
 165 170 175  
 Lys Asn Glu Ala Phe Leu Asp Val Val Glu Ala Val Asn Leu Leu Met  
 180 185 190  
 Ser Pro Ser Gly Gln Val Leu Arg Ser Glu Val Leu Gly Ser Val Gln  
 195 200 205  
 Met Lys Cys Tyr Leu Ser Gly Met Pro Glu Leu Arg Leu Gly Leu Asn  
 210 215 220  
 Asp Lys Val Leu Phe Asp His Val Ser Asn Thr Gly Ala Gly Gly Gly  
 225 230 235 240  
 Gly Ser Gly Gly Ser Ala Arg Ala Ser Arg Gly Lys Ser Ile Glu Met  
 245 250 255  
 Glu Asp Val Lys Phe His Gln Cys Val Arg Leu Ser Arg Phe Glu Asn  
 260 265 270  
 Asp Arg Thr Ile Ser Phe Ile Pro Pro Asp Gly Gln Phe Glu Leu Met  
 275 280 285  
 Ser Tyr Arg Leu Asn Thr Thr Val Lys Pro Leu Ile Trp Val Asp Cys  
 290 295 300  
 Lys Ile Asn Lys Tyr Ser Asn Thr Arg Ile Glu Ile Leu Ala Lys Ala  
 305 310 315 320  
 Arg Gly Gln Phe Lys Lys Arg Ser Thr Ala Asn Asn Val Glu Ile His  
 325 330 335  
 Ile Pro Val Pro Glu Asp Ala Asp Ser Pro Lys Leu Ala Ala Thr Ala  
 340 345 350  
 Gly Ser Ile Lys Trp His Pro Glu Lys Ala Cys Val Thr Trp Lys Ile  
 355 360 365  
 Lys Gln Phe Gly Gly Gly Arg Glu Phe Ser Met Arg Ala Glu Leu Gly  
 370 375 380  
 Leu Pro Ser Val Gln Asp Ala Asp Glu Gln Ala Lys Ser Lys Arg Pro  
 385 390 395 400  
 Ile Gln Val Lys Phe Ser Ile Pro Tyr Phe Thr Thr Ser Gly Ile Gln  
 405 410 415  
 Val Arg Tyr Leu Lys Ile Val Glu Pro Lys Leu Gln Tyr Thr Ser Tyr  
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 Pro Trp Val Arg Tyr Ile Thr Thr Ser Gly Glu Asp Tyr Thr Ile Arg  
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&lt;210&gt; 2483

&lt;211&gt; 1545

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1545)

## PhoenixTemp32470.tmp.txt

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<400> 2483
atg atc tcg gcc ttg ttc atc ttg gat ccg tca ttc aag ccg ctt ctg      48
Met Ile Ser Ala Leu Phe Ile Leu Asp Pro Ser Phe Lys Pro Leu Leu
1      5      10      15
agc cga aac tac cgg gga gac gtg cct ctc agt tgt att tct gat ctt      96
Ser Arg Asn Tyr Arg Gly Asp Val Pro Leu Ser Cys Ile Ser Asp Leu
20      25      30
cct ggg ctc att cag atc gct caa cag aat ggc aat gtg gcc cct cct      144
Pro Gly Leu Ile Gln Ile Ala Gln Gln Asn Gly Asn Val Ala Pro Pro
35      40      45
gtt ctc gaa gac aga ggt atc cac tac atg tgg atg gaa agt ggc tca      192
Val Leu Glu Asp Arg Gly Ile His Tyr Met Trp Met Glu Ser Gly Ser
50      55      60
gtt atc ttc gtg gcc gtg agt ccc cag gtg agc tgc aac tct atg gag      240
Val Ile Phe Val Ala Val Ser Pro Gln Val Ser Cys Asn Ser Met Glu
65      70      75
act ctg gtc ttt cta tcg caa tta gcc acc gtt ctg acc tca tat ttc      288
Thr Leu Val Phe Leu Ser Gln Leu Ala Thr Val Leu Thr Ser Tyr Phe
85      90      95
gaa caa ttg cat gcc gaa tcg gtc cag gac aac ttt gtg ctc atc tac      336
Glu Gln Leu His Ala Glu Ser Val Gln Asp Asn Phe Val Leu Ile Tyr
100      105      110
gag ctg ctc gac gaa atg atg gac ttt gga gtg ccc cag atc aca gac      384
Glu Leu Leu Asp Glu Met Met Asp Phe Gly Val Pro Gln Ile Thr Asp
115      120      125
gcg ggc att ctc aag gag tac atc act gtg gac gct cac aaa agc tta      432
Ala Gly Ile Leu Lys Glu Tyr Ile Thr Val Asp Ala His Lys Ser Leu
130      135      140
ctg gga gcc gtg gga gat ctg gtc aat gcc gct gtg ggc gag gaa gga      480
Leu Gly Ala Val Gly Asp Leu Val Asn Ala Ala Val Gly Glu Glu Gly
145      150      155
gca gcc gga aat tcg gga gac atc gac gtg gca aca cac aca acc agt      528
Ala Ala Gly Asn Ser Gly Asp Ile Asp Val Ala Thr His Thr Thr Ser
165      170      175
aga atc tcg tgg cga ccg acc ggt ctg cag tat aag aaa aac gaa ctg      576
Arg Ile Ser Trp Arg Pro Thr Gly Leu Gln Tyr Lys Lys Asn Glu Leu
180      185      190
ttt ttg gac gtt gtt gaa agc gtc aat ctg ctc tat gct aac gac aaa      624
Phe Leu Asp Val Val Glu Ser Val Asn Leu Leu Tyr Ala Asn Asp Lys
195      200      205
gtg gtt cga cac gag att cag ggc cga atc aac gtc acc tcc tat tta      672
Val Val Arg His Glu Ile Gln Gly Arg Ile Asn Val Thr Ser Tyr Leu
210      215      220
tcc gga atg cct gag cta cgt ctg gga ctc aat gaa aag gcc atg ctg      720
Ser Gly Met Pro Glu Leu Arg Leu Gly Leu Asn Glu Lys Ala Met Leu
225      230      235
gaa cac aag ttg gct gcc act gga gcc act aca cat aaa aag ccg cgc      768
Glu His Lys Leu Ala Ala Thr Gly Ala Thr Thr His Lys Lys Pro Arg
245      250      255
tca aaa act gtg gag atg gaa gac gtg ccg ttc cac cag tgc gtc gaa      816
Ser Lys Thr Val Glu Met Glu Asp Val Arg Phe His Gln Cys Val Glu
260      265      270
ttg tcc aag ttt aac gtc gac cgc cag att tcc ttt att cct cca gac      864
Leu Ser Lys Phe Asn Val Asp Arg Gln Ile Ser Phe Ile Pro Pro Asp
275      280      285
ggc aag ttc gag ctc atg agc tac cga ctc aac ctg gcc aac gcg gaa      912
Gly Lys Phe Glu Leu Met Ser Tyr Arg Leu Asn Leu Ala Asn Ala Glu
290      295      300
gaa gat cat gct gaa gaa gag gag ggc caa aag gtg cga aac tac gct      960
Glu Asp His Ala Glu Glu Glu Glu Gly Gln Lys Val Arg Asn Tyr Ala
305      310      315
gcc aga aac ccg cca ctg att ctg gta acc aca gat gtt gag aag aag      1008
Ala Arg Asn Arg Pro Leu Ile Leu Val Thr Thr Asp Val Glu Lys Lys
325      330      335
gga aac acg cgt ctt ctg att tct gtt aag ctc aag tcg cag ttc aga      1056
Gly Asn Thr Arg Leu Leu Ile Ser Val Lys Leu Lys Ser Gln Phe Arg
340      345      350
aaa cgt tca aca gcc aac gat gta gaa gtg ttt gtt cct gtg cct cca      1104

```



## PhoenixTemp32470.tmp.txt

Lys	Arg	Ser	Thr	Ala	Asn	Asp	Val	Glu	Val	Phe	Val	Pro	Val	Pro	Pro	
gat	gcc	act	tca	cca	cgt	ttc	aga	gcc	act	gcc	gga	acc	gtg	gtc	tac	1152
Asp	Ala	Thr	Ser	Pro	Arg	Phe	Arg	Ala	Thr	Ala	Gly	Thr	Val	Val	Tyr	
370						375					380					
atg	ccc	gag	cgt	aac	gcc	atc	cga	tgg	aag	atc	aaa	cag	ctc	cag	gga	1200
Met	Pro	Glu	Arg	Asn	Ala	Ile	Arg	Trp	Lys	Ile	Lys	Gln	Leu	Gln	Gly	
385					390					395					400	
gga	gga	aag	gag	ttt	tcc	atg	aag	gcc	gag	atc	tct	gtt	tcg	cgc	acg	1248
Gly	Gly	Lys	Glu	Phe	Ser	Met	Lys	Ala	Glu	Ile	Ser	Val	Ser	Arg	Thr	
				405				410						415		
gag	gag	cag	gga	gag	tct	ttg	tca	gag	ttg	ctg	cat	ctt	aat	aac	act	1296
Glu	Glu	Gln	Gly	Glu	Ser	Leu	Ser	Glu	Leu	Leu	His	Leu	Asn	Asn	Thr	
			420					425					430			
cca	cag	agc	cag	atc	ccc	gtc	cag	gtt	acc	ttc	gag	att	cct	tac	tat	1344
Pro	Gln	Ser	Gln	Ile	Pro	Val	Gln	Val	Thr	Phe	Glu	Ile	Pro	Tyr	Tyr	
						440					445					
gcc	atg	tca	ggc	ctg	caa	gtg	cga	tat	ctc	aag	gtc	aac	gag	cct	act	1392
Ala	Met	Ser	Gly	Leu	Gln	Val	Arg	Tyr	Leu	Lys	Val	Asn	Glu	Pro	Thr	
450						455					460					
ctc	aag	tac	agg	tcg	ttg	cca	tgg	gtt	agg	tac	atc	acc	aag	aac	gga	1440
Leu	Lys	Tyr	Arg	Ser	Leu	Pro	Trp	Val	Arg	Tyr	Ile	Thr	Lys	Asn	Gly	
465					470					475					480	
gat	gac	tac	agt	tac	cga	ctg	aag	aaa	cct	cga	gag	aag	gag	tcc	aag	1488
Asp	Asp	Tyr	Ser	Tyr	Arg	Leu	Lys	Lys	Pro	Arg	Glu	Lys	Glu	Ser	Lys	
				485					490					495		
aag	aag	gac	aag	acc	aag	gct	gag	cca	gcc	gct	ggg	gat	gcc	aat	acg	1536
Lys	Lys	Asp	Lys	Thr	Lys	Ala	Glu	Pro	Ala	Ala	Gly	Asp	Ala	Asn	Thr	
			500					505					510			
agt	aca	tag														1545
Ser	Thr															

&lt;210&gt; 2484

&lt;211&gt; 514

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;400&gt; 2484

Met	Ile	Ser	Ala	Leu	Phe	Ile	Leu	Asp	Pro	Ser	Phe	Lys	Pro	Leu	Leu	
1				5					10					15		
Ser	Arg	Asn	Tyr	Arg	Gly	Asp	Val	Pro	Leu	Ser	Cys	Ile	Ser	Asp	Leu	
			20					25					30			
Pro	Gly	Leu	Ile	Gln	Ile	Ala	Gln	Gln	Asn	Gly	Asn	Val	Ala	Pro	Pro	
		35					40					45				
Val	Leu	Glu	Asp	Arg	Gly	Ile	His	Tyr	Met	Trp	Met	Glu	Ser	Gly	Ser	
	50					55					60					
Val	Ile	Phe	Val	Ala	Val	Ser	Pro	Gln	Val	Ser	Cys	Asn	Ser	Met	Glu	
65				70					75						80	
Thr	Leu	Val	Phe	Leu	Ser	Gln	Leu	Ala	Thr	Val	Leu	Thr	Ser	Tyr	Phe	
				85				90						95		
Glu	Gln	Leu	His	Ala	Glu	Ser	Val	Gln	Asp	Asn	Phe	Val	Leu	Ile	Tyr	
			100					105					110			
Glu	Leu	Leu	Asp	Glu	Met	Met	Asp	Phe	Gly	Val	Pro	Gln	Ile	Thr	Asp	
		115					120					125				
Ala	Gly	Ile	Leu	Lys	Glu	Tyr	Ile	Thr	Val	Asp	Ala	His	Lys	Ser	Leu	
	130					135					140					
Leu	Gly	Ala	Val	Gly	Asp	Leu	Val	Asn	Ala	Ala	Val	Gly	Glu	Glu	Gly	
145				150					155						160	
Ala	Ala	Gly	Asn	Ser	Gly	Asp	Ile	Asp	Val	Ala	Thr	His	Thr	Thr	Ser	
			165					170						175		
Arg	Ile	Ser	Trp	Arg	Pro	Thr	Gly	Leu	Gln	Tyr	Lys	Lys	Asn	Glu	Leu	
			180					185					190			
Phe	Leu	Asp	Val	Val	Glu	Ser	Val	Asn	Leu	Leu	Tyr	Ala	Asn	Asp	Lys	
		195					200					205				
Val	Val	Arg	His	Glu	Ile	Gln	Gly	Arg	Ile	Asn	Val	Thr	Ser	Tyr	Leu	
	210					215					220					
Ser	Gly	Met	Pro	Glu	Leu	Arg	Leu	Gly	Leu	Asn	Glu	Lys	Ala	Met	Leu	
225					230					235					240	

## PhoenixTemp32470.tmp.txt

Glu His Lys Leu Ala Ala Thr Gly Ala Thr Thr His Lys Lys Pro Arg  
 Ser Lys Thr Val<sup>245</sup> Glu Met Glu Asp Val<sup>250</sup> Arg Phe His Gln Cys<sup>255</sup> Val Glu  
 Leu Ser Lys<sup>260</sup> Phe Asn Val Asp Arg Gln Ile Ser Phe Ile<sup>270</sup> Pro Pro Asp  
 Gly Lys<sup>275</sup> Phe Glu Leu Met Ser<sup>280</sup> Tyr Arg Leu Asn Leu<sup>285</sup> Ala Asn Ala Glu  
 Glu<sup>290</sup> Asp His Ala Glu Glu Glu Gly Gln Lys Val Arg Asn Tyr Ala  
 Ala Arg Asn Arg Pro<sup>300</sup> Leu Ile Leu Val Thr<sup>305</sup> Thr Asp Val Glu Lys<sup>310</sup> Lys  
 Gly Asn Thr Arg<sup>315</sup> Leu Leu Ile Ser Val<sup>320</sup> Lys Leu Lys Ser Gln Phe Arg  
 Lys Arg Ser<sup>325</sup> Thr Ala Asn Asp Val<sup>330</sup> Glu Val Phe Val Pro<sup>335</sup> Val Pro Pro  
 Asp Ala Thr Ser Pro Arg Phe<sup>340</sup> Arg Ala Thr Ala Gly<sup>345</sup> Thr Val Val Tyr  
 Met<sup>350</sup> Pro Glu Arg Asn Ala<sup>355</sup> Ile Arg Trp Lys Ile<sup>360</sup> Lys Gln Leu Gln Gly  
 Gly Gly Lys Glu Phe Ser Met Lys Ala Glu Ile Ser Val Ser Arg Thr  
 Glu Glu Gln Gly<sup>370</sup> Glu Ser Leu Ser Glu Leu Leu His Leu Asn Asn Thr  
 Pro Gln Ser<sup>375</sup> Gln Ile Pro Val Gln<sup>380</sup> Val Thr Phe Glu Ile<sup>385</sup> Pro Tyr Tyr  
 Ala Met Ser Gly Leu Gln Val<sup>390</sup> Arg Tyr Leu Lys Val Asn Glu Pro Thr  
 Leu Lys Tyr Arg Ser Leu<sup>395</sup> Pro Trp Val Arg Tyr Ile Thr Lys Asn Gly  
 Asp Asp Tyr Ser Tyr<sup>400</sup> Arg Leu Lys Lys Pro Arg Glu Lys Glu Ser Lys  
 Lys Lys Asp Lys<sup>405</sup> Thr Lys Ala Glu Pro<sup>410</sup> Ala Ala Gly Asp Ala<sup>415</sup> Asn Thr  
 Ser Thr

&lt;210&gt; 2485

&lt;211&gt; 1365

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1365)

&lt;400&gt; 2485

atg	ctc	tca	ggg	atc	ttg	att	ttt	aac	cag	aaa	ggc	gag	aat	ctg	atc	48
Met	Leu	Ser	Gly	Ile	Leu	Ile	Phe	Asn	Gln	Lys	Gly	Glu	Asn	Leu	Ile	
1				5				10						15		
ttt	cg	gct	ttc	cg	aat	gac	tgc	cg	ccc	cgg	tta	gcc	gac	atc	ttc	96
Phe	Arg	Ala	Phe	Arg	Asn	Asp	Cys	Arg	Pro	Arg	Leu	Ala	Asp	Ile	Phe	
			20					25					30			
cg	atc	caa	gtc	atc	tcg	aac	ccg	cag	gtg	cgg	tct	ccg	atc	ctc	acg	144
Arg	Ile	Gln	Val	Ile	Ser	Asn	Pro	Gln	Val	Arg	Ser	Pro	Ile	Leu	Thr	
			35				40					45				
ctt	gga	tcg	acc	aca	ttc	agc	cat	gta	aag	cac	gag	aat	atc	tac	cta	192
Leu	Gly	Ser	Thr	Thr	Phe	Ser	His	Val	Lys	His	Glu	Asn	Ile	Tyr	Leu	
	50					55					60					
gtc	gct	gtg	acg	aag	agc	aat	gcg	aat	gcg	gcg	ctg	gtc	ttc	gag	ttc	240
Val	Ala	Val	Thr	Lys	Ser	Asn	Ala	Asn	Ala	Ala	Leu	Val	Phe	Glu	Phe	
	65			70				75						80		
cta	tac	cga	ctg	gtg	cta	ctg	gga	aag	agc	tac	ttt	ggg	aaa	ttc	gac	288
Leu	Tyr	Arg	Leu	Val	Leu	Leu	Gly	Lys	Ser	Tyr	Phe	Gly	Lys	Phe	Asp	
			85					90					95			
gag	gag	gcc	gtg	aag	aac	aat	ttt	gtg	ttg	att	tat	gag	ctg	ctt	gat	336
Glu	Glu	Ala	Val	Lys	Asn	Asn	Phe	Val	Leu	Ile	Tyr	Glu	Leu	Leu	Asp	
			100					105					110			
gaa	att	ctc	gac	ttc	ggc	tac	cca	cag	aac	acc	gaa	act	gac	act	cta	384

## PhoenixTemp32470.tmp.txt

Glu	Ile	Leu	Asp	Phe	Gly	Tyr	Pro	Gln	Asn	Thr	Glu	Thr	Asp	Thr	Leu		
aaa	atg	tac	atc	aca	acc	gag	ggc	gtg	aaa	tcc	gct	ata	aca	aat	aat	432	
Lys	Met	Tyr	Ile	Thr	Thr	Glu	Gly	Val	Lys	Ser	Ala	Ile	Thr	Asn	Asn		
	130					135					140						
ccg	tcc	gac	tca	gcg	cga	ata	acg	cag	cag	gca	acg	ggc	gcg	ctg	tcc	480	
Pro	Ser	Asp	Ser	Ala	Arg	Ile	Thr	Gln	Gln	Ala	Thr	Gly	Ala	Leu	Ser		
	145				150					155					160		
tgg	cgc	cgc	gca	gac	gtc	aag	tac	cgc	aag	aac	gag	gcc	ttc	gtg	gac	528	
Trp	Arg	Arg	Ala	Asp	Val	Lys	Tyr	Arg	Lys	Asn	Glu	Ala	Phe	Val	Asp		
				165					170					175			
gtc	att	gag	gac	gtg	aac	ctg	ctc	atg	tcc	gcg	acg	ggg	acg	ggt	cta	576	
Val	Ile	Glu	Asp	Val	Asn	Leu	Leu	Met	Ser	Ala	Thr	Gly	Thr	Val	Leu		
			180					185					190				
cgt	gcg	gat	gta	aat	ggg	cag	att	gtc	atg	cgt	gct	tat	ctg	agc	ggg	624	
Arg	Ala	Asp	Val	Asn	Gly	Gln	Ile	Val	Met	Arg	Ala	Tyr	Leu	Ser	Gly		
	195					200						205					
act	ccc	gag	tgc	aag	ttc	ggc	ttg	aac	gac	cgg	ctg	ttg	ctc	gat	aat	672	
Thr	Pro	Glu	Cys	Lys	Phe	Gly	Leu	Asn	Asp	Arg	Leu	Leu	Leu	Asp	Asn		
	210					215					220						
gat	gcg	gcg	ggg	ccg	ggg	tcc	tcc	aac	ccc	gga	gca	gga	ggg	agg	gga	720	
Asp	Ala	Ala	Gly	Pro	Gly	Ser	Ser	Asn	Pro	Gly	Ala	Gly	Gly	Arg	Gly		
	225				230				235						240		
gtt	ggt	gga	cat	agc	tcg	tcg	aag	aca	agg	gct	gca	gcg	ggt	agt	gtc	768	
Val	Gly	Gly	His	Ser	Ser	Ser	Lys	Thr	Arg	Ala	Ala	Ala	Gly	Ser	Val		
				245					250					255			
act	ctg	gag	gac	tgc	cag	ttc	cat	cag	tgc	gtt	aag	cta	ggc	cgg	ttt	816	
Thr	Leu	Glu	Asp	Cys	Gln	Phe	His	Gln	Cys	Val	Lys	Leu	Gly	Arg	Phe		
			260					265					270				
gac	tcg	gat	cgg	att	att	agt	ttc	gtg	ccg	ccg	gac	ggg	gag	ttc	gag	864	
Asp	Ser	Asp	Arg	Ile	Ile	Ser	Phe	Val	Pro	Pro	Asp	Gly	Glu	Phe	Glu		
		275					280					285					
ctt	atg	cgg	tat	cgc	gcg	aca	gaa	aac	gtc	aac	ctt	ccg	ttc	aag	gtg	912	
Leu	Met	Arg	Tyr	Arg	Ala	Thr	Glu	Asn	Val	Asn	Leu	Pro	Phe	Lys	Val		
	290					295					300						
cat	cca	att	gtg	cgg	gaa	att	ggg	acg	acg	aag	gtc	gag	tac	agc	gta	960	
His	Pro	Ile	Val	Arg	Glu	Ile	Gly	Thr	Thr	Lys	Val	Glu	Tyr	Ser	Val		
	305				310					315					320		
gcc	att	aaa	gcg	aac	tac	tcg	tca	aag	ctc	ttt	gcg	aca	aat	gtc	gtg	1008	
Ala	Ile	Lys	Ala	Asn	Tyr	Ser	Ser	Lys	Leu	Phe	Ala	Thr	Asn	Val	Val		
				325					330					335			
ata	cgc	att	ccc	acc	ccg	ttg	aat	acg	gct	aaa	act	acg	gag	cgg	acc	1056	
Ile	Arg	Ile	Pro	Thr	Pro	Leu	Asn	Thr	Ala	Lys	Thr	Thr	Glu	Arg	Thr		
			340					345					350				
tcg	cag	ggc	cgg	gca	aag	tat	gag	cct	gag	cat	aac	aat	atc	gtg	tgg	1104	
Ser	Gln	Gly	Arg	Ala	Lys	Tyr	Glu	Pro	Glu	His	Asn	Asn	Ile	Val	Trp		
		355					360					365					
aag	atc	gca	cgg	ttt	tct	gga	ggc	tct	gag	tat	gta	ctc	acg	gct	gag	1152	
Lys	Ile	Ala	Arg	Phe	Ser	Gly	Gly	Ser	Glu	Tyr	Val	Leu	Thr	Ala	Glu		
	370					375					380						
gca	acg	ctc	tct	gcg	atg	acg	aac	cag	aag	gct	tgg	agt	cgg	ccg	ccg	1200	
Ala	Thr	Leu	Ser	Ala	Met	Thr	Asn	Gln	Lys	Ala	Trp	Ser	Arg	Pro	Pro		
	385				390					395				400			
ctc	agt	ctg	aac	ttt	tcc	ctc	ctg	atg	ttc	acg	agc	tca	ggg	cta	ctt	1248	
Leu	Ser	Leu	Asn	Phe	Ser	Leu	Leu	Met	Phe	Thr	Ser	Ser	Gly	Leu	Leu		
				405					410					415			
gtt	cgc	tat	cta	aaa	gtc	ttt	gag	aag	agc	aat	tat	agc	agc	gtg	aag	1296	
Val	Arg	Tyr	Leu	Lys	Val	Phe	Glu	Lys	Ser	Asn	Tyr	Ser	Ser	Val	Lys		
			420					425					430				
tgg	gtg	cga	tat	atg	acc	aga	gcg	gga	agt	tac	gag	att	cgg	tac	gtt	1344	
Trp	Val	Arg	Tyr	Met	Thr	Arg	Ala	Gly	Ser	Tyr	Glu	Ile	Arg	Tyr	Val		
		435					440					445					
tac	ttc	gag	tgt	tcg	tgg	tag										1365	
Tyr	Phe	Glu	Cys	Ser	Trp												
	450																

&lt;210&gt; 2486

&lt;211&gt; 454

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 2486

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Met Leu Ser Gly Ile Leu Ile Phe Asn Gln Lys Gly Glu Asn Leu Ile
1      5      10      15
Phe Arg Ala Phe Arg Asn Asp Cys Arg Pro Arg Leu Ala Asp Ile Phe
20      25      30
Arg Ile Gln Val Ile Ser Asn Pro Gln Val Arg Ser Pro Ile Leu Thr
35      40      45
Leu Gly Ser Thr Thr Phe Ser His Val Lys His Glu Asn Ile Tyr Leu
50      55      60
Val Ala Val Thr Lys Ser Asn Ala Asn Ala Ala Leu Val Phe Glu Phe
65      70      75      80
Leu Tyr Arg Leu Val Leu Leu Gly Lys Ser Tyr Phe Gly Lys Phe Asp
85      90      95
Glu Glu Ala Val Lys Asn Asn Phe Val Leu Ile Tyr Glu Leu Leu Asp
100      105      110
Glu Ile Leu Asp Phe Gly Tyr Pro Gln Asn Thr Glu Thr Asp Thr Leu
115      120      125
Lys Met Tyr Ile Thr Thr Glu Gly Val Lys Ser Ala Ile Thr Asn Asn
130      135      140
Pro Ser Asp Ser Ala Arg Ile Thr Gln Gln Ala Thr Gly Ala Leu Ser
145      150      155      160
Trp Arg Arg Ala Asp Val Lys Tyr Arg Lys Asn Glu Ala Phe Val Asp
165      170      175
Val Ile Glu Asp Val Asn Leu Leu Met Ser Ala Thr Gly Thr Val Leu
180      185      190
Arg Ala Asp Val Asn Gly Gln Ile Val Met Arg Ala Tyr Leu Ser Gly
195      200      205
Thr Pro Glu Cys Lys Phe Gly Leu Asn Asp Arg Leu Leu Asp Asn
210      215      220
Asp Ala Ala Gly Pro Gly Ser Ser Asn Pro Gly Ala Gly Gly Arg Gly
225      230      235      240
Val Gly Gly His Ser Ser Ser Lys Thr Arg Ala Ala Ala Gly Ser Val
245      250      255
Thr Leu Glu Asp Cys Gln Phe His Gln Cys Val Lys Leu Gly Arg Phe
260      265      270
Asp Ser Asp Arg Ile Ile Ser Phe Val Pro Pro Asp Gly Glu Phe Glu
275      280      285
Leu Met Arg Tyr Arg Ala Thr Glu Asn Val Asn Leu Pro Phe Lys Val
290      295      300
His Pro Ile Val Arg Glu Ile Gly Thr Thr Lys Val Glu Tyr Ser Val
305      310      315      320
Ala Ile Lys Ala Asn Tyr Ser Ser Lys Leu Phe Ala Thr Asn Val Val
325      330      335
Ile Arg Ile Pro Thr Pro Leu Asn Thr Ala Lys Thr Thr Glu Arg Thr
340      345      350
Ser Gln Gly Arg Ala Lys Tyr Glu Pro Glu His Asn Asn Ile Val Trp
355      360      365
Lys Ile Ala Arg Phe Ser Gly Gly Ser Glu Tyr Val Leu Thr Ala Glu
370      375      380
Ala Thr Leu Ser Ala Met Thr Asn Gln Lys Ala Trp Ser Arg Pro Pro
385      390      395      400
Leu Ser Leu Asn Phe Ser Leu Leu Met Phe Thr Ser Ser Gly Leu Leu
405      410      415
Val Arg Tyr Leu Lys Val Phe Glu Lys Ser Asn Tyr Ser Ser Val Lys
420      425      430
Trp Val Arg Tyr Met Thr Arg Ala Gly Ser Tyr Glu Ile Arg Tyr Val
435      440      445
Tyr Phe Glu Cys Ser Trp
450

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&lt;210&gt; 2487

&lt;211&gt; 2010

&lt;212&gt; DNA

&lt;213&gt; Candida albicans SC5314

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2010)

&lt;223&gt; transl\_table=12

&lt;400&gt; 2487

atg	atc	tct	gct	att	tat	ata	ata	tat	tta	gca	gag	aaa	caa	gaa	tcg	48
Met	Ile	Ser	Ala	Ile	Tyr	Ile	Ile	Tyr	Leu	Ala	Glu	Lys	Gln	Glu	Ser	
1				5					10					15		
aac	gag	ttt	tct	caa	att	gag	ttg	tta	ggt	aac	cgg	aga	tac	cac	cag	96
Asn	Glu	Phe	Ser	Gln	Ile	Glu	Leu	Leu	Val	Asn	Arg	Arg	Tyr	His	Gln	
			20				25						30			
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Thr	Leu	Pro	His	Asp	Glu	Ile	Ile	Leu	Gln	Asn	Phe	His	Asn	Leu	Met	
			35				40					45				
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Thr	Asn	Leu	Pro	Ser	Ser	Glu	Gln	Val	Pro	Val	Leu	Tyr	Tyr	Asp	Asn	
	50					55					60					
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Leu	Ser	Tyr	Ile	Tyr	Met	Arg	Cys	Ser	Asn	Gly	Ile	Ile	Ser	Leu	Ala	
	65				70					75					80	
gtt	tca	aat	aga	aac	att	gat	gtt	atg	ctg	gcc	gtt	atg	ttc	tta	aac	288
Val	Ser	Asn	Arg	Asn	Ile	Asp	Val	Met	Ser	Ala	Val	Met	Phe	Leu	Asn	
				85					90					95		
cag	ttc	cac	tta	atc	tta	gtg	cat	tat	tta	tgt	aat	tcc	aaa	ttg	aat	336
Gln	Phe	His	Leu	Ile	Leu	Val	His	Tyr	Leu	Cys	Asn	Ser	Lys	Leu	Asn	
			100					105					110			
atc	ggg	aac	aag	tca	gca	cct	aaa	tcg	ctt	gat	aga	gat	act	atc	att	384
Ile	Gly	Asn	Lys	Ser	Ala	Pro	Lys	Ser	Leu	Asp	Arg	Asp	Thr	Ile	Ile	
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gat	aat	att	aca	ttg	att	cta	gaa	tta	tta	gac	gaa	tgt	tta	gat	tat	432
Asp	Asn	Ile	Thr	Leu	Ile	Leu	Glu	Leu	Leu	Asp	Glu	Cys	Leu	Asp	Tyr	
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Val	Leu	Pro	Asn	Ile	Pro	Lys	Ile	Asp	Gly	Leu	Thr	Asp	Lys	Tyr	Asp	
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Thr	Ser	Asp	Ser	Asp	Asp	Ser	Ser	Asp	Glu	Asp	Glu	Pro	Lys	Lys	Glu	
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Thr	Lys	Lys	Ser	Lys	Ser	Lys	Thr	Lys	Ile	Gly	Lys	Asn	Lys	Lys	Gly	
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Thr	Tyr	Ser	Ser	Ala	Ile	Asn	Trp	Arg	Pro	Lys	Gly	Ile	Phe	Tyr	Ala	
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Lys	Asn	Glu	Ile	Phe	Ile	Asp	Ile	Ile	Glu	Asp	Cys	Glu	Phe	Val	Tyr	
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Asp	Leu	Gly	Thr	Gly	Val	Ile	Lys	Cys	Asn	Glu	Ile	Tyr	Gly	Thr	Cys	
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gtc	gtg	aaa	tct	tat	ttg	tca	ggg	atg	cca	gtt	tgt	cga	ctt	ggg	ttt	912
Val	Val	Lys	Ser	Tyr	Leu	Ser	Gly	Met	Pro	Val	Cys	Arg	Leu	Gly	Phe	
	290					295					300					
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Asn	Glu	Arg	Asn	Leu	Ser	Arg	Ile	Glu	Asp	Asp	Gln	Glu	Glu	Glu	Ser	
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Leu	Gly	Ile	Pro	Glu	Asn	Gln	Leu	Asn	Leu	Leu	Lys	Glu	Asp	Gln	Asn	
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<212> PRT
<213> Candida albicans SC5314
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Page 1743

## PhoenixTemp32470.tmp.txt

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	Thr	Asn	Leu	Pro	Ser	Ser	Glu	Gln	Val	Pro	Val	Leu	Tyr	Tyr	Asp	Asn
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	Leu	Ser	Tyr	Ile	Tyr	Met	Arg	Cys	Ser	Asn	Gly	Ile	Ile	Ser	Leu	Ala
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	Val	Ser	Asn	Arg	Asn	Ile	Asp	Val	Met	Ser	Ala	Val	Met	Phe	Leu	Asn
				85						90					95	
	Gln	Phe	His	Leu	Ile	Leu	Val	His	Tyr	Leu	Cys	Asn	Ser	Lys	Leu	Asn
				100					105					110		
	Ile	Gly	Asn	Lys	Ser	Ala	Pro	Lys	Ser	Leu	Asp	Arg	Asp	Thr	Ile	Ile
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	Asp	Asn	Ile	Thr	Leu	Ile	Leu	Glu	Leu	Leu	Asp	Glu	Cys	Leu	Asp	Tyr
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	Gly	Leu	Leu	Gln	Ile	Thr	Asp	Tyr	Lys	Leu	Leu	Glu	Glu	Tyr	Ile	Lys
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	Val	Leu	Pro	Asn	Ile	Pro	Lys	Ile	Asp	Gly	Leu	Thr	Asp	Lys	Tyr	Asp
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	Thr	Ser	Asp	Ser	Asp	Asp	Ser	Ser	Asp	Glu	Asp	Glu	Pro	Lys	Lys	Glu
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	Thr	Lys	Lys	Ser	Lys	Ser	Lys	Thr	Lys	Ile	Gly	Lys	Asn	Lys	Lys	Gly
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	Ser	Lys	Lys	Glu	Ile	Lys	Ser	Thr	Arg	Asn	Gln	Ala	Ile	Lys	Thr	Asp
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	Thr	Tyr	Ser	Ser	Ala	Ile	Asn	Trp	Arg	Pro	Lys	Gly	Ile	Phe	Tyr	Ala
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	Asp	Leu	Gly	Thr	Gly	Val	Ile	Lys	Cys	Asn	Glu	Ile	Tyr	Gly	Thr	Cys
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	Leu	Gly	Ile	Pro	Glu	Asn	Gln	Leu	Asn	Leu	Lys	Glu	Asp	Gln	Asn	
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	Glu	Asp	Asp	Asp	Glu	Glu	Glu	Gly	Glu	Gly	Asp	Gln	Glu	Thr	Asn	Gly
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	Glu	Gly	Thr	Glu	Ile	Leu	Glu	His	Ile	Pro	Glu	Phe	Pro	Ala	Ser	Glu
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	Val	Thr	Phe	Ile	Pro	Pro	Asp	Asp	Lys	Phe	Val	Leu	Met	Thr	Tyr	Asn
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		450					455					460				
	Ile	Arg	Ile	Pro	Ile	Asn	Pro	His	Tyr	Phe	Asp	Leu	Asp	Ala	Asn	Asp
465					470						475					480
	Asn	Asp	Leu	Lys	Tyr	Lys	Ala	Glu	Leu	Gly	Glu	Val	Ser	Phe	Lys	Ile
				485						490					495	
	Asp	Ser	Phe	Glu	Leu	Ile	Trp	Lys	Ile	Asp	Ser	Ile	Asp	Gly	Lys	Lys
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## PhoenixTemp32470.tmp.txt

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 Ser Ser Thr Gln Lys Met Ser Leu Lys Phe Lys Ser Ser Val Phe Asn  
 580 585 590  
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 595 600 605  
 Leu Lys Leu Ser Tyr Leu Ser Val Glu Glu Glu Gln Met Lys Tyr Pro  
 610 615 620  
 Cys Phe Pro Trp Val Arg Tyr Leu Thr Lys Ser Ile Asp His Tyr Glu  
 625 630 635 640  
 Pro Ser Ile Ala Leu Glu Asn Gln Lys Phe Ser Gly Arg Cys Cys Asp  
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&lt;211&gt; 1317

&lt;212&gt; DNA

&lt;213&gt; Candida albicans SC5314

&lt;220&gt;

&lt;221&gt; CDS

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&lt;400&gt; 2489

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Ser Arg Asp Tyr Lys Gly Asp Ile Ser Ser Thr Thr Ile Glu Lys Phe	
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ccg ctt ttg cta ttg gaa ttg gaa aac act gtt gat gac ggt gaa tac	144
Pro Leu Leu Leu Leu Glu Leu Glu Asn Thr Val Asp Asp Gly Glu Tyr	
35 40 45	
aaa ccg ttt atc aac cat gaa ggc ata aac tac att ttc atc aac cac	192
Lys Pro Phe Ile Asn His Glu Gly Ile Asn Tyr Ile Phe Ile Asn His	
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Thr Ile Ile Ile Phe Leu Ser Lys Leu Val Glu Val Met Thr Gln Tyr	
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Phe Lys Ser Leu Glu Glu Glu Ser Ile Lys Asp Asn Phe Val Ile Ile	
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Tyr Glu Leu Leu Asp Glu Met Met Asp Phe Gly Val Pro Gln Thr Thr	
115 120 125	
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Asp Thr Lys Ile Leu Lys Glu Tyr Ile Thr Gln Asp Tyr Tyr Ser Leu	
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Ala Phe Leu Asp Val Ile Glu Ser Ile Asn Met Leu Ile Thr Ala Asn	
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Gly Gln Val Leu Asn Ser Glu Ile Leu Gly Glu Ile Lys Ile Lys Ser	
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His Leu Ser Gly Met Pro Asp Leu Arg Leu Gly Leu Asn Asp Lys Gly	
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## PhoenixTemp32470.tmp.txt

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ata Ile 290	ttg Leu	gtc Val	aat Asn	tgc Cys	aag Lys	acc Thr 295	aaa Lys	gtg Val	cat His	aaa Lys 300	cac His	tcg Ser	cgt Arg	att Ile	gag Glu	912
att Ile 305	gtg Val	tgt Cys	aca Thr	gtc Val	aag Lys 310	gca Ala	caa Gln	atc Ile	aaa Lys 315	aag Lys	aag Lys	tct Ser	aca Thr	gcc Ala	aat Asn 320	960
aat Asn	gtt Val	gaa Glu	gtg Val	gtc Val 325	ata Ile	cct Pro	att Ile	cca Pro	gaa Glu 330	gat Asp	gcc Ala	gac Asp	acc Thr	cct Pro 335	aaa Lys	1008
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agc Ser 385	aag Lys	aaa Lys	cct Pro	ata Ile	aaa Lys 390	gta Val	aac Asn	ttt Phe	tcc Ser	ata Ile 395	cca Pro	tac Tyr	ttt Phe	act Thr	acc Thr 400	1200
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tac Tyr	caa Gln	tcg Ser	tac Tyr 420	cca Pro	tgg Trp	gtg Val	aga Arg	tac Tyr 425	att Ile	aca Thr	caa Gln	tca Ser	ggg Gly 430	gat Asp	gac Asp	1296
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&lt;210&gt; 2490

&lt;211&gt; 438

&lt;212&gt; PRT

&lt;213&gt; Candida albicans SC5314

&lt;400&gt; 2490

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Pro	Leu	Leu	Leu 35	Leu	Glu	Leu	Glu 40	Asn	Thr	Val	Asp	Asp 45	Gly	Glu	Tyr	
Lys	Pro	Phe	Ile	Asn	His	Glu 55	Gly	Ile	Asn	Tyr	Ile	Phe	Ile	Asn	His	
Asn 65	Asn	Leu	Tyr	Ile	Cys 70	Ala	Leu	Thr	Arg	Lys 75	Asn	Glu	Asn	Ile	Met 80	
Thr	Ile	Ile	Ile	Phe 85	Leu	Ser	Lys	Leu	Val 90	Glu	Val	Met	Thr	Gln 95	Tyr	
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Tyr	Glu	Leu 115	Leu	Asp	Glu	Met	Met 120	Asp	Phe	Gly	Val	Pro	Gln	Thr	Thr	
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## PhoenixTemp32470.tmp.txt

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 210 215 220  
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 225 230 235 240  
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 245 250 255  
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 260 265 270  
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 305 310 315 320  
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 325 330 335  
 Phe Ser Pro Glu Tyr Gly Ser Val Lys Trp Ile Pro Glu Lys Ser Cys  
 340 345 350  
 Leu Ile Trp Lys Leu Lys Thr Phe Pro Gly Gly Lys Gln Phe Ser Met  
 355 360 365  
 Arg Ala Glu Leu Gly Leu Pro Ala Val Thr Asp Pro Glu Ser Ile Met  
 370 375 380  
 Ser Lys Lys Pro Ile Lys Val Asn Phe Ser Ile Pro Tyr Phe Thr Thr  
 385 390 395 400  
 Ser Gly Ile Gln Val Arg Tyr Leu Arg Ile Asn Glu Pro Lys Leu Gln  
 405 410 415  
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 420 425 430  
 Tyr Ile Val Arg Thr Lys  
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 <212> DNA  
 <213> Vitis vinifera

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 <222> (1)..(1287)

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 Val Leu Val Trp Arg Asp Tyr Arg Gly Asp Val Ser Ala Val Gln Ala  
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 Glu Arg Phe Phe Ala Lys Leu Met Glu Lys Glu Gly Asp Pro Glu Ser  
 35 40 45  
 caa gat cct gtt gtg tat gat aat ggt gtt aca tac atg ttt ata caa 192  
 Gln Asp Pro Val Val Tyr Asp Asn Gly Val Thr Tyr Met Phe Ile Gln  
 50 55 60  
 cac aat aat gtt ttc cta atg acc gca tca agg cag aac tgc aat gct 240  
 His Asn Asn Val Phe Leu Met Thr Ala Ser Arg Gln Asn Cys Asn Ala  
 65 70 75 80  
 gcc agc cac ctc ctc ttt cta cac cgt gtt gtt gat gtc ttt aag cat 288  
 Ala Ser His Leu Leu Phe Leu His Arg Val Val Asp Val Phe Lys His  
 85 90 95  
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 Tyr Phe Glu Glu Leu Glu Glu Glu Ser Leu Arg Asp Asn Phe Val Val  
 100 105 110  
 gtg tat gag ttg ctt gat gag atg gac ttt ggt tac cct cag tat 384  
 Val Tyr Glu Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Tyr

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Met	Glu	Val	Ser	Gln	Arg	Pro	Pro	Met	Ala	Val	Thr	Asn	Ala	Val	Ser		
	145				150				155						160		
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Trp	Arg	Ser	Glu	Gly	Ile	Arg	Tyr	Lys	Lys	Asn	Glu	Val	Phe	Leu	Asp		
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gtg	gtg	gaa	agt	gtt	aat	ata	ctt	gta	aac	agc	aat	ggg	caa	ata	att		576
Val	Val	Glu	Ser	Val	Asn	Ile	Leu	Val	Asn	Ser	Asn	Gly	Gln	Ile	Ile		
			180					185					190				
aga	tcg	gat	gtt	gtt	gga	gca	ttg	aag	atg	aga	aca	tat	ttg	agt	ggt		624
Arg	Ser	Asp	Val	Val	Gly	Ala	Leu	Lys	Met	Arg	Thr	Tyr	Leu	Ser	Gly		
		195					200					205					
atg	cca	gag	tgt	aag	ctt	ggg	cta	aac	gac	aga	gta	ttg	ttg	gag	gca		672
Met	Pro	Glu	Cys	Lys	Leu	Gly	Leu	Asn	Asp	Arg	Val	Leu	Leu	Glu	Ala		
	210					215					220						
caa	ggt	cga	tca	aca	aaa	gga	aaa	gcc	att	gat	ctg	gat	gac	atc	aag		720
Gln	Gly	Arg	Ser	Thr	Lys	Gly	Lys	Ala	Ile	Asp	Leu	Asp	Asp	Ile	Lys		
	225				230					235					240		
ttc	cac	caa	tgt	gtt	cgt	ttg	gct	cga	ttt	gag	aat	gat	cga	aca	ata		768
Phe	His	Gln	Cys	Val	Arg	Leu	Ala	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile		
				245					250					255			
tcc	ttt	att	cct	cca	gat	gga	tct	ttt	gat	ctc	atg	aca	tat	agg	ctc		816
Ser	Phe	Ile	Pro	Pro	Asp	Gly	Ser	Phe	Asp	Leu	Met	Thr	Tyr	Arg	Leu		
			260					265					270				
agt	act	cag	gta	aaa	cct	ctg	ata	tgg	gtg	gaa	gct	caa	gtt	gaa	agg		864
Ser	Thr	Gln	Val	Lys	Pro	Leu	Ile	Trp	Val	Glu	Ala	Gln	Val	Glu	Arg		
			275				280					285					
cat	tca	aga	agt	cgt	atc	gag	atc	atg	gtc	aaa	gca	cgg	agc	cag	ttc		912
His	Ser	Arg	Ser	Arg	Ile	Glu	Ile	Met	Val	Lys	Ala	Arg	Ser	Gln	Phe		
	290					295					300						
aag	gag	cgt	agc	act	gca	aca	aat	gtt	gaa	att	gaa	ttg	cct	gta	cca		960
Lys	Glu	Arg	Ser	Thr	Ala	Thr	Asn	Val	Glu	Ile	Glu	Leu	Pro	Val	Pro		
	305				310				315						320		
tct	gat	gct	acc	aat	cca	aat	att	cga	aca	tca	atg	gga	tct	gct	gca		1008
Ser	Asp	Ala	Thr	Asn	Pro	Asn	Ile										

```
<210> 2492
<211> 428
<212> PRT
<213> Vitis vinifera
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<400> 2492  
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1 5 10 15  
Val Leu Val Trp Arg Asp Tyr Arg Gly Asp Val Ser Ala Val Gln Ala  
20 25 30

## PhoenixTemp32470.tmp.txt

Glu Arg Phe Phe Ala Lys Leu Met Glu Lys Glu Gly Asp Pro Glu Ser  
 35 40 45  
 Gln Asp Pro Val Val Tyr Asp Asn Gly Val Thr Tyr Met Phe Ile Gln  
 50 55 60  
 His Asn Asn Val Phe Leu Met Thr Ala Ser Arg Gln Asn Cys Asn Ala  
 65 70 75 80  
 Ala Ser His Leu Leu Phe Leu His Arg Val Asp Val Phe Lys His  
 85 90 95  
 Tyr Phe Glu Glu Leu Glu Glu Glu Ser Leu Arg Asp Asn Phe Val Val  
 100 105 110  
 Val Tyr Glu Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Tyr  
 115 120 125  
 Thr Glu Ala Lys Ile Leu Ser Glu Phe Ile Lys Thr Asp Ala Tyr Arg  
 130 135 140  
 Met Glu Val Ser Gln Arg Pro Pro Met Ala Val Thr Asn Ala Val Ser  
 145 150 155 160  
 Trp Arg Ser Glu Gly Ile Arg Tyr Lys Lys Asn Glu Val Phe Leu Asp  
 165 170 175  
 Val Val Glu Ser Val Asn Ile Leu Val Asn Ser Asn Gly Gln Ile Ile  
 180 185 190  
 Arg Ser Asp Val Val Gly Ala Leu Lys Met Arg Thr Tyr Leu Ser Gly  
 195 200 205  
 Met Pro Glu Cys Lys Leu Gly Leu Asn Asp Arg Val Leu Leu Glu Ala  
 210 215 220  
 Gln Gly Arg Ser Thr Lys Gly Lys Ala Ile Asp Leu Asp Asp Ile Lys  
 225 230 235 240  
 Phe His Gln Cys Val Arg Leu Ala Arg Phe Glu Asn Asp Arg Thr Ile  
 245 250 255  
 Ser Phe Ile Pro Pro Asp Gly Ser Phe Asp Leu Met Thr Tyr Arg Leu  
 260 265 270  
 Ser Thr Gln Val Lys Pro Leu Ile Trp Val Glu Ala Gln Val Glu Arg  
 275 280 285  
 His Ser Arg Ser Arg Ile Glu Ile Met Val Lys Ala Arg Ser Gln Phe  
 290 295 300  
 Lys Glu Arg Ser Thr Ala Thr Asn Val Glu Ile Glu Leu Pro Val Pro  
 305 310 315 320  
 Ser Asp Ala Thr Asn Pro Asn Ile Arg Thr Ser Met Gly Ser Ala Ala  
 325 330 335 340  
 Tyr Ala Pro Glu Asn Asp Ala Leu Leu Trp Lys Ile Lys Ser Phe Pro  
 345 350 355  
 Gly Gly Lys Glu Tyr Met Leu Arg Ala Glu Phe Ser Leu Pro Ser Ile  
 360 365 370  
 Thr Ala Glu Glu Gly Ala Pro Glu Arg Lys Ala Pro Ile Arg Val Lys  
 375 380 385  
 Phe Glu Ile Pro Tyr Phe Thr Val Ser Gly Ile Gln Val Arg Tyr Leu  
 390 395 400  
 Lys Ile Ile Glu Lys Ser Gly Tyr Gln Ala Leu Pro Trp Val Arg Tyr  
 405 410 415 420  
 Ile Thr Met Ala Gly Glu Tyr Glu Leu Arg Leu Ile 425

&lt;210&gt; 2493

&lt;211&gt; 1338

&lt;212&gt; DNA

&lt;213&gt; Phaeosphaeria nodorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1338)

&lt;400&gt; 2493

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Met	Ala	Ser	Ala	Val	Phe	Phe	Leu	Asp	Leu	Lys	Gly	Lys	Thr	Leu	Leu	
1				5					10					15		
gcg	cgc	aat	tac	cgt	gga	gat	att	ccc	atg	tcc	gcc	gtc	gaa	aag	ttc	96
Ala	Arg	Asn	Tyr	Arg	Gly	Asp	Ile	Pro	Met	Ser	Ala	Val	Glu	Lys	Phe	
			20					25					30			
ccc	gtc	ctg	ctc	agc	gag	gcc	gaa	gaa	gac	agc	tcc	gcc	gtg	ccg	cca	144
Pro	Val	Leu	Leu	Ser	Glu	Ala	Glu	Glu	Asp	Ser	Ser	Ala	Val	Pro	Pro	

## PhoenixTemp32470.tmp.txt

		35				40				45								
tgc	ttc	tcc	aac	gaa	ggc	atc	aac	tac	ctc	tac	atc	cgt	cat	aac	aac			192
Cys	Phe	Ser	Asn	Glu	Gly	Ile	Asn	Tyr	Leu	Tyr	Ile	Arg	His	Asn	Asn			
	50					55					60							
ctc	tac	ctc	ctc	gcc	ctc	acc	aag	cga	aac	acc	aat	gcc	gcc	gag	atc			240
Leu	Tyr	Leu	Leu	Ala	Leu	Thr	Lys	Arg	Asn	Thr	Asn	Ala	Ala	Glu	Ile			
65					70					75					80			
ctc	ctc	ttc	ctg	cac	aag	atc	gtc	gag	gtc	ttc	acc	gag	tac	ttc	aag			288
Leu	Leu	Phe	Leu	His	Lys	Ile	Val	Glu	Val	Phe	Thr	Glu	Tyr	Phe	Lys			
				85					90					95				
gag	ctg	gag	gag	gag	agt	ata	cga	gac	aac	ttt	gtt	gtc	atc	tac	gag			336
Glu	Leu	Glu	Glu	Glu	Ser	Ile	Arg	Asp	Asn	Phe	Val	Val	Ile	Tyr	Glu			
				100				105					110					
ttg	cta	gac	gag	atg	atg	gat	ttt	ggg	tac	cca	caa	acg	acc	gag	acg			384
Leu	Leu	Asp	Glu	Met	Met	Asp	Phe	Gly	Tyr	Pro	Gln	Thr	Thr	Glu	Thr			
		115					120					125						
aag	ata	ttg	cag	gag	tac	atc	aca	cag	gag	tcg	cat	aag	ctg	gag	gtg			432
Lys	Ile	Leu	Gln	Glu	Tyr	Ile	Thr	Gln	Glu	Ser	His	Lys	Leu	Glu	Val			
		130				135					140							
gcc	cgg	cca	ccg	att	gca	gtc	acc	aac	gca	gtc	agc	tggt	aga	agt	gaa			480
Ala	Arg	Pro	Pro	Ile	Ala	Val	Thr	Asn	Ala	Val	Ser	Trp	Arg	Ser	Glu			
145				150					155						160			
ggt	atc	cgg	tac	cg	aag	aac	gag	gtc	ttc	ctc	gac	gtc	atc	gag	tcg			528
Gly	Ile	Arg	Tyr	Arg	Lys	Asn	Glu	Val	Phe	Leu	Asp	Val	Ile	Glu	Ser			
				165					170					175				
ctc	aac	ttg	ctc	gtc	tct	gca	gac	ggc	aat	gtg	cta	cgg	tct	gag	atc			576
Leu	Asn	Leu	Leu	Val	Ser	Ala	Asp	Gly	Asn	Val	Leu	Arg	Ser	Glu	Ile			
			180					185					190					
ctg	gga	gct	gtc	aag	atg	aag	tgc	tac	ctg	tcc	ggt	atg	ccc	gag	ctg			624
Leu	Gly	Ala	Val	Lys	Met	Lys	Cys	Tyr	Leu	Ser	Gly	Met	Pro	Glu	Leu			
		195					200					205						
cgg	ttg	ggc	ctc	aac	gac	aag	gtc	atg	ttc	gag	acc	acc	ggc	aga	gcg			672
Arg	Leu	Gly	Leu	Asn	Asp	Lys	Val	Met	Phe	Glu	Thr	Thr	Gly	Arg	Ala			
210					215					220								
acg	cgc	gga	aag	gcc	gtc	gaa	atg	gaa	gac	gtc	aag	ttc	cac	cag	tgc			720
Thr	Arg	Gly	Lys	Ala	Val	Glu	Met	Glu	Asp	Val	Lys	Phe	His	Gln	Cys			
225				230						235					240			
gtg	cgc	ttg	tca	cga	ttc	gaa	aat	gac	cgg	acc	atc	tcc	ttc	atc	ccg			768
Val	Arg	Leu	Ser	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	Ser	Phe	Ile	Pro			
				245					250					255				
ccc	gat	ggt	gaa	gtc	gag	ctt	atg	agc	cgc	ctg	aac	aca	caa	gtc				816
Pro	Asp	Gly	Glu	Phe	Glu	Leu	Met	Ser	Tyr	Arg	Leu	Thr	Gln	Val				
			260					265				270						
aag	ccc	ttg	atc	tgg	gtc	gag	tgc	ata	gta	gag	agt	cac	tcc	ggc	agc			864
Lys	Pro	Leu	Ile	Trp	Val	Glu	Cys	Ile	Val	Glu	Ser	His	Ser	Gly	Ser			
		275					280					285						
agg	ata	gag	tac	atg	ttg	aag	gcg	cga	gca	cag	ttt	aag	cgg	cgg	agc			912
Arg	Ile	Glu	Tyr	Met	Leu	Lys	Ala	Arg	Ala	Gln	Phe	Lys	Arg	Arg	Ser			
		290				295					300							
aca	gcc	aac	aac	gtc	cag	atc	tcg	ata	ccc	gta	ccc	gaa	gat	gca	gac			960
Thr	Ala	Asn	Asn	Val	Gln	Ile	Ser	Ile	Pro	Val	Pro	Glu	Asp	Ala	Asp			
305				310						315					320			
aca	ccc	cgc	ttc	cga	acc	aac	atc	ggc	acc	gta	cac	tac	gcc	ccc	gaa			1008
Thr	Pro	Arg	Phe	Arg	Thr	Asn	Ile	Gly	Thr	Val	His	Tyr	Ala	Pro	Glu			
				325					330					335				
aca	tcc	tcc	ata	gta	tgg	aag	att	aag	caa	ttc	ggt	ggc	ggc	aag	gag			1056
Thr	Ser	Ser	Ile	Val	Trp	Lys	Ile	Lys	Gln	Phe	Gly	Gly	Gly	Lys	Glu			
			340					345					350					
ttc	ctc	atg	cgc	gcg	gag	cta	ggt	ctg	ccc	tcc	gtg	cga	ggc	gac	gat			1104
Phe	Leu	Met	Arg	Ala	Glu	Leu	Gly	Leu	Pro	Ser	Val	Arg	Gly	Asp	Asp			
		355					360					365						
gag	aaa	ggt	ggc	ggc	atg	atg	ggt	ggc	ttt	ggt	gga	agt	atg	ggc	ggt			1152
Glu	Lys	Gly	Gly	Gly	Met	Met	Gly	Gly	Phe	Gly	Gly	Ser	Met	Gly	Gly			
		370				375					380							
gtt	ggt	gct	ggc	aag	gga	aag	aga	ccg	atc	aac	gtc	aaa	ttt	gaa	atc			1200
Val	Gly	Ala	Gly	Lys	Gly	Lys	Arg	Pro	Ile	Asn	Val	Lys	Phe	Glu	Ile			
385				390					395						400			
ccc	tac	ttt	aca	aca	tcg	ggt	att	cag	gtc	agg	tat	ctg	aag	att	att			1248
Pro	Tyr	Phe	Thr	Thr	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	Lys	Ile	Ile			

## PhoenixTemp32470.tmp.txt

405 410 415  
 gaa ccg aag ctg caa tat cct tcc ctg tgg gtg cgg tat att aca 1296  
 Glu Pro Lys Leu Gln Tyr Pro Ser Leu Pro Trp Val Arg Tyr Ile Thr  
 420 425 430  
 cag tct gga gac att gcg gtg cga tta cca gac gtg aac tag 1338  
 Gln Ser Gly Asp Ile Ala Val Arg Leu Pro Asp Val Asn  
 435 440 445

&lt;210&gt; 2494

&lt;211&gt; 445

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 2494

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 Ala Arg Asn Tyr Arg Gly Asp Ile Pro Met Ser Ala Val Glu Lys Phe  
 20 25 30  
 Pro Val Leu Ser Glu Ala Glu Asp Ser Ser Ala Val Pro Pro  
 35 40 45  
 Cys Phe Ser Asn Glu Gly Ile Asn Tyr Leu Tyr Ile Arg His Asn Asn  
 50 55 60  
 Leu Tyr Leu Leu Ala Leu Thr Lys Arg Asn Thr Asn Ala Ala Glu Ile  
 65 70 75 80  
 Leu Leu Phe Leu His Lys Ile Val Glu Val Phe Thr Glu Tyr Phe Lys  
 85 90 95  
 Glu Leu Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Val Ile Tyr Glu  
 100 105 110  
 Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Thr Thr Glu Thr  
 115 120 125  
 Lys Ile Leu Gln Glu Tyr Ile Thr Gln Glu Ser His Lys Leu Glu Val  
 130 135 140  
 Ala Arg Pro Pro Ile Ala Val Thr Asn Ala Val Ser Trp Arg Ser Glu  
 145 150 155 160  
 Gly Ile Arg Tyr Arg Lys Asn Glu Val Phe Leu Asp Val Ile Glu Ser  
 165 170 175  
 Leu Asn Leu Leu Val Ser Ala Asp Gly Asn Val Leu Arg Ser Glu Ile  
 180 185 190  
 Leu Gly Ala Val Lys Met Lys Cys Tyr Leu Ser Gly Met Pro Glu Leu  
 195 200 205  
 Arg Leu Gly Leu Asn Asp Lys Val Met Phe Glu Thr Thr Gly Arg Ala  
 210 215 220  
 Thr Arg Gly Lys Ala Val Glu Met Glu Asp Val Lys Phe His Gln Cys  
 225 230 235 240  
 Val Arg Leu Ser Arg Phe Glu Asn Asp Arg Thr Ile Ser Phe Ile Pro  
 245 250 255  
 Pro Asp Gly Glu Phe Glu Leu Met Ser Tyr Arg Leu Asn Thr Gln Val  
 260 265 270  
 Lys Pro Leu Ile Trp Val Glu Cys Ile Val Glu Ser His Ser Gly Ser  
 275 280 285  
 Arg Ile Glu Tyr Met Leu Lys Ala Arg Ala Gln Phe Lys Arg Arg Ser  
 290 295 300  
 Thr Ala Asn Asn Val Gln Ile Ser Ile Pro Val Pro Glu Asp Ala Asp  
 305 310 315 320  
 Thr Pro Arg Phe Arg Thr Asn Ile Gly Thr Val His Tyr Ala Pro Glu  
 325 330 335  
 Thr Ser Ser Ile Val Trp Lys Ile Lys Gln Phe Gly Gly Gly Lys Glu  
 340 345 350  
 Phe Leu Met Arg Ala Glu Leu Gly Leu Pro Ser Val Arg Gly Asp Asp  
 355 360 365  
 Glu Lys Gly Gly Gly Met Met Gly Gly Phe Gly Gly Ser Met Gly Gly  
 370 375 380  
 Val Gly Ala Gly Lys Gly Lys Arg Pro Ile Asn Val Lys Phe Glu Ile  
 385 390 395 400  
 Pro Tyr Phe Thr Thr Ser Gly Ile Gln Val Arg Tyr Leu Lys Ile Ile  
 405 410 415  
 Glu Pro Lys Leu Gln Tyr Pro Ser Leu Pro Trp Val Arg Tyr Ile Thr  
 420 425 430  
 Gln Ser Gly Asp Ile Ala Val Arg Leu Pro Asp Val Asn

435

PhoenixTemp32470.tmp.txt

440

445

&lt;210&gt; 2495

&lt;211&gt; 1377

&lt;212&gt; DNA

<213> *Aspergillus oryzae*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1377)

&lt;400&gt; 2495

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1				5				10						15		
ttc	cgt	gcc	ttc	cg	aat	gac	tgc	cg	ccc	cg	ttg	gcc	gac	atc	ttc	96
Phe	Arg	Ala	Phe	Arg	Asn	Asp	Cys	Arg	Pro	Arg	Leu	Ala	Asp	Ile	Phe	
			20					25					30			
cg	atc	caa	gtc	atc	tcc	aac	ccg	caa	ggt	cg	tcg	ccc	att	ctc	acg	144
Arg	Ile	Gln	Val	Ile	Ser	Asn	Pro	Gln	Val	Arg	Ser	Pro	Ile	Leu	Thr	
		35					40					45				
cta	gga	tcc	acg	acg	ttc	agc	cat	gtg	aag	cac	gaa	aat	atc	tat	ctg	192
Leu	Gly	Ser	Thr	Thr	Phe	Ser	His	Val	Lys	His	Glu	Asn	Ile	Tyr	Leu	
	50					55					60					
gta	gcg	gtg	acc	aag	agc	aac	gcc	aat	gcg	gcg	ctc	gtg	ttc	gag	ttt	240
Val	Ala	Val	Thr	Lys	Ser	Asn	Ala	Asn	Ala	Ala	Leu	Val	Phe	Glu	Phe	
	65			70					75					80		
ttg	tat	cg	ttg	gtg	atg	ctg	ggg	aag	agc	tac	ttt	ggg	aaa	ttc	gac	288
Leu	Tyr	Arg	Leu	Val	Met	Leu	Gly	Lys	Ser	Tyr	Phe	Gly	Lys	Phe	Asp	
				85				90					95			
gag	gag	gcg	ggt	aag	aat	aat	ttc	ggt	ttg	ggt	tat	gag	ctg	ctg	gat	336
Glu	Glu	Ala	Val	Lys	Asn	Asn	Phe	Val	Leu	Val	Tyr	Glu	Leu	Leu	Asp	
			100				105					110				
gag	atc	ctc	gac	ttc	gga	tac	ccc	caa	aac	acg	gaa	aca	gac	act	ctg	384
Glu	Ile	Leu	Asp	Phe	Gly	Tyr	Pro	Gln	Asn	Thr	Glu	Thr	Asp	Thr	Leu	
		115					120					125				
aag	atg	tac	atc	acg	acg	gag	gga	gtc	aaa	tcc	gcc	atc	gtc	aac	aac	432
Lys	Met	Tyr	Ile	Thr	Thr	Glu	Gly	Val	Lys	Ser	Ala	Ile	Val	Asn	Asn	
	130					135					140					
ccc	acc	gac	tca	agc	cg	atc	acc	atg	caa	gcc	acc	ggc	gcg	ctc	tcc	480
Pro	Thr	Asp	Ser	Ser	Arg	Ile	Thr	Met	Gln	Ala	Thr	Gly	Ala	Leu	Ser	
	145				150					155					160	
tgg	cg	cg	tcc	gat	atc	aaa	tac	cg	aag	aac	gag	gcc	ttt	ggt	gac	528
Trp	Arg	Arg	Ser	Asp	Ile	Lys	Tyr	Arg	Lys	Asn	Glu	Ala	Phe	Val	Asp	
			165					170					175			
gtg	atc	gaa	gat	gtc	aat	ctt	tta	atg	tcc	gcg	act	ggc	acc	gta	ctc	576
Val	Ile	Glu	Asp	Val	Asn	Leu	Leu	Met	Ser	Ala	Thr	Gly	Thr	Val	Leu	
			180				185					190				
cg	gcc	gac	gtc	aac	ggc	cag	atc	gtc	atg	cg	gcc	tac	ctc	tcc	ggc	624
Arg	Ala	Asp	Val	Asn	Gly	Gln	Ile	Val	Met	Arg	Ala	Tyr	Leu	Ser	Gly	
		195				200						205				
aca	ccg	gag	tgc	aag	ttc	ggc	ctc	aac	gat	cg	cta	ctg	ctc	gac	act	672
Thr	Pro	Glu	Cys	Lys	Phe	Gly	Leu	Asn	Asp	Arg	Leu	Leu	Leu	Asp	Thr	
	210					215					220					
gat	gcg	gct	ggt	ggc	tca	gag	tcc	ggt	caa	cg	ggc	atg	aca	acg	aag	720
Asp	Ala	Ala	Gly	Gly	Ser	Glu	Ser	Gly	Gln	Arg	Gly	Met	Thr	Thr	Lys	
					230					235				240		
gga	act	cg	gcc	gcg	gcg	ggc	tcc	gtc	aca	ctt	gag	gac	tgt	caa	ttc	768
Gly	Thr	Arg	Ala	Ala	Ala	Gly	Ser	Val	Thr	Leu	Glu	Asp	Cys	Gln	Phe	
			245						250					255		
cac	cag	tgc	gtg	aaa	ctg	ggc	cg	ttc	gac	gca	gac	cg	atc	atc	tcg	816
His	Gln	Cys	Val	Lys	Leu	Gly	Arg	Phe	Asp	Ala	Asp	Arg	Ile	Ile	Ser	
			260					265					270			
ttc	gtt	ccg	ccg	gac	ggc	gag	ttc	gag	ctc	atg	cga	tac	cg	gcg	acg	864
Phe	Val	Pro	Pro	Asp	Gly	Glu	Phe	Glu	Leu	Met	Arg	Tyr	Arg	Ala	Thr	
		275					280					285				
gag	aac	gta	aac	ctc	ccg	ttc	aag	gtg	cat	ccc	atc	gtg	agg	gaa	gtg	912
Glu	Asn	Val	Asn	Leu	Pro	Lys	Lys	Val	His	Pro	Ile	Val	Arg	Glu	Val	
	290					295					300					

## PhoenixTemp32470.tmp.txt

ggt	acg	acg	aag	gtc	gaa	tac	agc	gtc	gcc	atc	aag	gcg	aac	tat	agc	960
Gly	Thr	Thr	Lys	Val	Glu	Tyr	Ser	Val	Ala	Ile	Lys	Ala	Asn	Tyr	Ser	
305				310					315						320	
tcg	aaa	ctc	ttc	gcg	acg	aac	gtc	gtc	att	cgc	atc	ccg	acg	ccg	ctc	1008
Ser	Lys	Leu	Phe	Ala	Thr	Asn	Val	Val	Ile	Arg	Ile	Pro	Thr	Pro	Leu	
				325					330					335		
aac	aca	gcc	aaa	acc	acc	gaa	cgc	acc	agt	caa	ggc	cgc	gcc	aaa	tac	1056
Asn	Thr	Ala	Lys	Thr	Thr	Glu	Arg	Thr	Ser	Gln	Gly	Arg	Ala	Lys	Tyr	
			340					345					350			
gaa	ccc	gaa	cac	aac	aac	att	gtc	tgg	aag	atc	gcc	cgt	ttc	tct	ggt	1104
Glu	Pro	Glu	His	Asn	Asn	Ile	Val	Trp	Lys	Ile	Ala	Arg	Phe	Ser	Gly	
		355					360					365				
gga	agc	gag	tac	gtg	ctc	acg	gcc	gag	gca	acg	ctc	acc	agc	atg	aca	1152
Gly	Ser	Glu	Tyr	Val	Leu	Thr	Ala	Glu	Ala	Thr	Leu	Thr	Ser	Met	Thr	
	370					375					380					
cat	cag	aag	gct	tgg	agc	cgg	ccg	ccg	ctc	agt	ctc	tcg	ttc	agc	ctt	1200
His	Gln	Lys	Ala	Trp	Ser	Arg	Pro	Pro	Leu	Ser	Leu	Ser	Phe	Ser	Leu	
385					390					395					400	
ctc	atg	ttc	acg	agt	agc	gga	ctg	ttg	gtc	cgg	tat	ctc	aag	gtc	ttt	1248
Leu	Met	Phe	Thr	Ser	Ser	Gly	Leu	Leu	Val	Arg	Tyr	Leu	Lys	Val	Phe	
				405					410					415		
gag	aag	agc	aac	tat	agc	agt	gtg	aag	tgg	gta	cgg	tat	atg	act	cga	1296
Glu	Lys	Ser	Asn	Tyr	Ser	Ser	Val	Lys	Trp	Val	Arg	Tyr	Met	Thr	Arg	
			420					425					430			
gca	gga	agt	tac	gaa	att	cgg	tgc	gtt	ctt	tgt	caa	ccc	tcc	agc	ctt	1344
Ala	Gly	Ser	Tyr	Glu	Ile	Arg	Cys	Val	Leu	Cys	Gln	Pro	Ser	Ser	Leu	
		435					440					445				
atc	tca	tct	cac	tac	cat	tgt	gtc	caa	tac	taa						1377
Ile	Ser	Ser	His	Tyr	His	Cys	Val	Gln	Tyr							
	450					455										

&lt;210&gt; 2496

&lt;211&gt; 458

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 2496

Met	Leu	Ser	Gly	Ile	Leu	Ile	Phe	Asn	Gln	Lys	Gly	Glu	Asn	Leu	Ile	
1				5				10						15		
Phe	Arg	Ala	Phe	Arg	Asn	Asp	Cys	Arg	Pro	Arg	Leu	Ala	Asp	Ile	Phe	
			20					25					30			
Arg	Ile	Gln	Val	Ile	Ser	Asn	Pro	Gln	Val	Arg	Ser	Pro	Ile	Leu	Thr	
		35					40					45				
Leu	Gly	Ser	Thr	Thr	Phe	Ser	His	Val	Lys	His	Glu	Asn	Ile	Tyr	Leu	
	50					55					60					
Val	Ala	Val	Thr	Lys	Ser	Asn	Ala	Asn	Ala	Ala	Leu	Val	Phe	Glu	Phe	
65					70				75						80	
Leu	Tyr	Arg	Leu	Val	Met	Leu	Gly	Lys	Ser	Tyr	Phe	Gly	Lys	Phe	Asp	
				85				90						95		
Glu	Glu	Ala	Val	Lys	Asn	Asn	Phe	Val	Leu	Val	Tyr	Glu	Leu	Leu	Asp	
			100					105					110			
Glu	Ile	Leu	Asp	Phe	Gly	Tyr	Pro	Gln	Asn	Thr	Glu	Thr	Asp	Thr	Leu	
		115					120					125				
Lys	Met	Tyr	Ile	Thr	Thr	Glu	Gly	Val	Lys	Ser	Ala	Ile	Val	Asn	Asn	
	130					135					140					
Pro	Thr	Asp	Ser	Ser	Arg	Ile	Thr	Met	Gln	Ala	Thr	Gly	Ala	Leu	Ser	
145					150					155					160	
Trp	Arg	Arg	Ser	Asp	Ile	Lys	Tyr	Arg	Lys	Asn	Glu	Ala	Phe	Val	Asp	
			165						170					175		
Val	Ile	Glu	Asp	Val	Asn	Leu	Leu	Met	Ser	Ala	Thr	Gly	Thr	Val	Leu	
			180					185					190			
Arg	Ala	Asp	Val	Asn	Gly	Gln	Ile	Val	Met	Arg	Ala	Tyr	Leu	Ser	Gly	
		195					200					205				
Thr	Pro	Glu	Cys	Lys	Phe	Gly	Leu	Asn	Asp	Arg	Leu	Leu	Leu	Asp	Thr	
	210					215					220					
Asp	Ala	Ala	Gly	Gly	Ser	Glu	Ser	Gly	Gln	Arg	Gly	Met	Thr	Thr	Lys	
225					230					235					240	
Gly	Thr	Arg	Ala	Ala	Gly	Ser	Val	Thr	Leu	Glu	Asp	Cys	Gln	Phe		
				245				250						255		



## PhoenixTemp32470.tmp.txt

His Gln Cys Val Lys Leu Gly Arg Phe Asp Ala Asp Arg Ile Ile Ser  
 260 270  
 Phe Val Pro Asp Gly Glu Phe Glu Leu Met Arg Tyr Arg Ala Thr  
 275 285  
 Glu Asn Val Asn Leu Pro Phe Lys Val His Pro Ile Val Arg Glu Val  
 290 300  
 Gly Thr Thr Lys Val Glu Tyr Ser Val Ala Ile Lys Ala Asn Tyr Ser  
 305 310 315 320  
 Ser Lys Leu Phe Ala Thr Asn Val Val Ile Arg Ile Pro Thr Pro Leu  
 325 330 335  
 Asn Thr Ala Lys Thr Thr Glu Arg Thr Ser Gln Gly Arg Ala Lys Tyr  
 340 345 350  
 Glu Pro Glu His Asn Asn Ile Val Trp Lys Ile Ala Arg Phe Ser Gly  
 355 360 365  
 Gly Ser Glu Tyr Val Leu Thr Ala Glu Ala Thr Leu Thr Ser Met Thr  
 370 375 380  
 His Gln Lys Ala Trp Ser Arg Pro Pro Leu Ser Leu Ser Phe Ser Leu  
 385 390 395 400  
 Leu Met Phe Thr Ser Gly Leu Leu Val Arg Tyr Leu Lys Val Phe  
 405 410 415  
 Glu Lys Ser Asn Tyr Ser Ser Val Lys Trp Val Arg Tyr Met Thr Arg  
 420 425 430  
 Ala Gly Ser Tyr Glu Ile Arg Cys Val Leu Cys Gln Pro Ser Ser Leu  
 435 440 445  
 Ile Ser Ser His Tyr His Cys Val Gln Tyr  
 450 455

&lt;210&gt; 2497

&lt;211&gt; 1287

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1287)

&lt;400&gt; 2497

atg gcg tcc gcc att ttc ttt cta gat ctc aag ggc aag acc ctc ctt	48
Met Ala Ser Ala Ile Phe Phe Leu Asp Leu Lys Gly Lys Thr Leu Leu	
1 5 10 15	
gcc cgt aac tac cgc ggt gat att ccc atg tcg gcc gtc gaa aag ttc	96
Ala Arg Asn Tyr Arg Gly Asp Ile Pro Met Ser Ala Val Glu Lys Phe	
20 25 30	
cct att cta tta agc gaa gcc gaa gaa gag tcg tcc gcc gta cca cca	144
Pro Ile Leu Leu Ser Glu Ala Glu Glu Glu Ser Ser Ala Val Pro Pro	
35 40 45	
tgc ttt tcc cac gag ggt atc aac tac ctc tac atc cgc cat aat aac	192
Cys Phe Ser His Glu Gly Ile Asn Tyr Leu Tyr Ile Arg His Asn Asn	
50 55 60	
ctg tac ctt ctc gcc ctc aca aaa cgc aac acc aac gcc gcc gag atc	240
Leu Tyr Leu Leu Ala Leu Thr Lys Arg Asn Thr Asn Ala Ala Glu Ile	
65 70 75 80	
ctg ctc ttc ctg cac aag atc gtc gag gtc ttc acc gag tac ttc aaa	288
Leu Leu Phe Leu His Lys Ile Val Glu Val Phe Thr Glu Tyr Phe Lys	
85 90 95	
gcg ttg gaa gag gaa tcg atc cgg gac aac ttc gtc atc atc tac gag	336
Ala Leu Glu Glu Glu Ser Ile Arg Asp Asn Phe Val Ile Tyr Glu	
100 105 110	
ctc ctg gac gag atg atg gat ttc ggc tac ccg caa acg acc gag tcc	384
Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Thr Thr Glu Ser	
115 120 125	
aag atc ctg cag gag tac atc acc caa gag tcg cac aag ctc gaa atc	432
Lys Ile Leu Gln Glu Tyr Ile Thr Gln Glu Ser His Lys Leu Glu Ile	
130 135 140	
caa gcg cgc ccg ccc atc gcc gtc acc aac gcc gtc tca tgg cga tcc	480
Gln Ala Arg Pro Pro Ile Ala Val Thr Asn Ala Val Ser Trp Arg Ser	
145 150 155 160	
gaa ggc atc cgc tac cgc aag aac gaa gtg ttc ctc gac gtg atc gaa	528
Glu Gly Ile Arg Tyr Arg Lys Asn Glu Val Phe Leu Asp Val Ile Glu	

## PhoenixTemp32470.tmp.txt

																165																	170																	175																
tcc Ser	ctc Leu	aac Asn	ctg Leu 180	ctg Leu	gtc Val	tcg Ser	gcc Ala	aac Asn 185	ggc Gly	aac Asn	gtc Val	ttg Leu	cgc Arg 190	tcc Ser	gaa Glu																	576																																		
atc Ile	ctc Leu	ggc Gly 195	gcc Ala	atc Ile	aaa Lys	atg Met	aag Lys 200	tgc Cys	tac Tyr	ctc Leu	tcc Ser	ggc Gly 205	atg Met	ccc Pro	gag Glu																	624																																		
ctg Leu	cgc Arg 210	ctg Leu	ggc Gly	cta Leu	aac Asn	gac Asp 215	aaa Lys	gtc Val	atg Met	ttc Phe	gag Glu 220	acc Thr	acg Thr	ggg Gly	cgc Arg																	672																																		
acc Thr 225	acg Thr	cgg Arg	gga Gly	aag Lys	gcc Ala 230	att Ile	gag Glu	atg Met	gaa Glu	gac Asp 235	gtc Val	aag Lys	ttc Phe	cac His	cag Gln 240																	720																																		
tgc Cys	gta Val	cgc Arg	ctg Leu	tcg Ser 245	cgc Arg	ttc Phe	gaa Glu	aac Asn	gac Asp 250	cgc Arg	acc Thr	atc Ile	tcc Ser	ttc Phe 255	atc Ile																	768																																		
ccg Pro	ccc Pro	gac Asp	ggc Gly 260	gag Glu	ttc Phe	gag Glu	ctc Leu	atg Met 265	tcg Ser	tac Tyr	cgc Arg	ttg Leu	aac Asn 270	acc Thr	caa Gln																	816																																		
gtc Val	aaa Lys	ccc Pro 275	ctg Leu	atc Ile	tgg Trp	gtc Val	gag Glu 280	tgc Cys	gtg Val	gtc Val	gag Glu	tcc Ser 285	cac His	tcc Ser	ggg Gly																	864																																		
tcg Ser	cga Arg 290	atc Ile	gag Glu	tac Tyr	atg Met	ctc Leu 295	aaa Lys	gcg Ala	cgc Arg	gcg Ala	cag Gln 300	ttc Phe	aag Lys	cgc Arg	cgc Arg																	912																																		
tcg Ser 305	acg Thr	gcc Ala	aac Asn	aac Asn	gtg Val 310	gag Glu	atc Ile	att Ile	gtg Val	ccg Pro 315	gtc Val	ccc Pro	gac Asp	gac Asp	gcc Ala 320																	960																																		
gac Asp	acg Thr	ccc Pro	cgg Arg	ttc Phe 325	cgg Arg	acg Thr	aac Asn	gtg Val	ggg Gly 330	agc Ser	gtg Val	cac His	tac Tyr	gcg Ala 335	ccc Pro																	1008																																		
gag Glu	aag Lys	agt Ser	gcc Ala 340	atc Ile	gtg Val	tgg Trp	aag Lys	atc Ile 345	aag Lys	cag Gln	ttt Phe	ggg Gly 350	ggc Gly	ggc Gly	aag Lys																	1056																																		
gag Glu	ttt Phe	ttg Leu 355	atg Met	cgc Arg	gcg Ala	gag Glu 360	ctg Leu	ggg Gly	ctt Leu	cct Pro	agt Ser	gtg Val 365	agg Arg	ggc Gly	gac Asp																	1104																																		
gat Asp	gag Glu 370	cac His	ggc Gly	gcc Ala	aag Lys	agg Arg 375	ccg Pro	att Ile	cag Gln	gtc Val	aag Lys 380	ttt Phe	gag Glu	att Ile	cca Pro																	1152																																		
tat Tyr 385	ttc Phe	acc Thr	acg Thr	agt Ser	ggg Gly 390	att Ile	cag Gln	gtg Val	cgg Arg	tat Tyr 395	ttg Leu	aag Lys	att Ile	acg Thr	gag Glu 400																	1200																																		
cca Pro	aag Lys	cta Leu	caa Gln	tac Tyr 405	ccc Pro	tcc Ser	ttg Leu	cct Pro	tgg Trp 410	gtc Val	agg Arg	tac Tyr	att Ile	acg Thr 415	cag Gln																	1248																																		
tca Ser	gga Gly	gat Asp	atc Ile 420	gcc Ala	gtc Val	aga Arg	ttg Leu	ccc Pro 425	gac Asp	gcg Ala	gta Val	tga																	1287																																					

<210> 2498  
<211> 428  
<212> PRT  
<213> Neurospora crassa

[illegible]

## PhoenixTemp32470.tmp.txt

100 105 110  
 Leu Leu Asp Glu Met Met Asp Phe Gly Tyr Pro Gln Thr Thr Glu Ser  
 115 120 125  
 Lys Ile Leu Gln Glu Tyr Ile Thr Gln Glu Ser His Lys Leu Glu Ile  
 130 135 140  
 Gln Ala Arg Pro Pro Ile Ala Val Thr Asn Ala Val Ser Trp Arg Ser  
 145 150 155 160  
 Glu Gly Ile Arg Tyr Arg Lys Asn Glu Val Phe Leu Asp Val Ile Glu  
 165 170 175  
 Ser Leu Asn Leu Leu Val Ser Ala Asn Gly Asn Val Leu Arg Ser Glu  
 180 185 190  
 Ile Leu Gly Ala Ile Lys Met Lys Cys Tyr Leu Ser Gly Met Pro Glu  
 195 200 205  
 Leu Arg Leu Gly Leu Asn Asp Lys Val Met Phe Glu Thr Thr Gly Arg  
 210 215 220  
 Thr Thr Arg Gly Lys Ala Ile Glu Met Glu Asp Val Lys Phe His Gln  
 225 230 235 240  
 Cys Val Arg Leu Ser Arg Phe Glu Asn Asp Arg Thr Ile Ser Phe Ile  
 245 250 255  
 Pro Pro Asp Gly Glu Phe Glu Leu Met Ser Tyr Arg Leu Asn Thr Gln  
 260 265 270  
 Val Lys Pro Leu Ile Trp Val Glu Cys Val Val Glu Ser His Ser Gly  
 275 280 285  
 Ser Arg Ile Glu Tyr Met Leu Lys Ala Arg Ala Gln Phe Lys Arg Arg  
 290 295 300  
 Ser Thr Ala Asn Asn Val Glu Ile Ile Val Pro Val Pro Asp Asp Ala  
 305 310 315 320  
 Asp Thr Pro Arg Phe Arg Thr Asn Val Gly Ser Val His Tyr Ala Pro  
 325 330 335  
 Glu Lys Ser Ala Ile Val Trp Lys Ile Lys Gln Phe Gly Gly Gly Lys  
 340 345 350  
 Glu Phe Leu Met Arg Ala Glu Leu Gly Leu Pro Ser Val Arg Gly Asp  
 355 360 365  
 Asp Glu His Gly Ala Lys Arg Pro Ile Gln Val Lys Phe Glu Ile Pro  
 370 375 380  
 Tyr Phe Thr Thr Ser Gly Ile Gln Val Arg Tyr Leu Lys Ile Thr Glu  
 385 390 395 400  
 Pro Lys Leu Gln Tyr Pro Ser Leu Pro Trp Val Arg Tyr Ile Thr Gln  
 405 410 415  
 Ser Gly Asp Ile Ala Val Arg Leu Pro Asp Ala Val  
 420 425

&lt;210&gt; 2499

&lt;211&gt; 1281

&lt;212&gt; DNA

&lt;213&gt; Schizosaccharomyces pombe

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1281)

&lt;400&gt; 2499

atg gct tct gct ata ttc gtt ctg aat tta aag gga aag gta atc att	48
Met Ala Ser Ala Ile Phe Val Leu Asn Leu Lys Gly Lys Val Ile Ile	
1 5 10 15	
tcc cgt gat tac cga gct gat atc ccc atg tca gta gtt gaa aag ttt	96
Ser Arg Asp Tyr Arg Ala Asp Ile Pro Met Ser Val Val Glu Lys Phe	
20 25 30	
tta cct tta aaa tca gaa gtt gaa gaa gaa caa gga ttc tcc acc cct	144
Leu Pro Leu Lys Ser Glu Val Glu Glu Glu Gln Gly Phe Ser Thr Pro	
35 40 45	
tgt ctc act cac gaa ggc att aac tac att tac att cac cat aat gat	192
Cys Leu Thr His Glu Gly Ile Asn Tyr Ile Tyr Ile His His Asn Asp	
50 55 60	
gtc tac ctc ctt gct tta tcc aaa atg aat tcc gat gca atg gag atg	240
Val Tyr Leu Leu Ala Leu Ser Lys Met Asn Ser Asp Ala Met Glu Met	
65 70 75 80	
cta gta ttt ttg cgt aaa atg gcg gac gtt ttt ata gat tac ttt aaa	288
Leu Val Phe Leu Arg Lys Met Ala Asp Val Phe Ile Asp Tyr Phe Lys	

## PhoenixTemp32470.tmp.txt

															85																90																95	
gaa	ttg	cag	gaa	gag	tcg	att	cga	gat	aac	ttt	ggt	ctt	ggt	tat	gaa	336																																
Glu	Leu	Gln	Glu	Glu	Ser	Ile	Arg	Asp	Asn	Phe	Val	Leu	Val	Tyr	Glu																																	
															100																105																110	
ttg	tta	gac	gag	atc	atg	gat	ttc	ggt	ttt	cca	caa	aca	act	gaa	aca	384																																
Leu	Leu	Asp	Glu	Ile	Met	Asp	Phe	Gly	Phe	Pro	Gln	Thr	Thr	Glu	Thr																																	
															115																120																125	
aaa	atc	ttg	caa	gaa	tac	atc	caa	acc	tca	aat	acg	gta	aaa	aag		432																																
Lys	Ile	Leu	Gln	Glu	Tyr	Ile	Thr	Gln	Thr	Asn	Thr	Val	Lys	Lys																																		
															130																135																140	
cat	gct	cca	ccc	ccc	att	gct	atg	aca	aat	gct	atc	tcc	tggt	cgt	tct	480																																
His	Ala	Pro	Pro	Pro	Ile	Ala	Met	Thr	Asn	Ala	Ile	Ser	Trp	Arg	Ser																																	
															145																150																155	
gaa	gga	att	cac	tat	cgt	aag	aat	gaa	gta	ttt	ttg	gac	ggt	att	gaa	528																																
Glu	Gly	Ile	His	Tyr	Arg	Lys	Asn	Glu	Val	Phe	Leu	Asp	Val	Ile	Glu																																	
															165																170																175	
tca	ggt	aat	tta	att	gct	gct	gcc	gat	ggt	acg	gtc	att	caa	agt	gaa	576																																
Ser	Val	Asn	Leu	Ile	Ala	Ala	Ala	Asp	Gly	Thr	Val	Ile	Gln	Ser	Glu																																	
															180																185																190	
atc	tta	gga	aaa	ggt	cgt	ctc	aaa	tgc	tac	tta	tca	gga	atg	cct	gaa	624																																
Ile	Leu	Gly	Lys	Val	Arg	Leu	Lys	Cys	Tyr	Leu	Ser	Gly	Met	Pro	Glu																																	
															195																200																205	
ctt	cgt	ctt	ggg	ctc	aat	gac	aag	gtc	ctt	ttc	gaa	gcg	gct	ggt	cgt	672																																
Leu	Arg	Leu	Gly	Leu	Asn	Asp	Lys	Val	Leu	Phe	Glu	Ala	Ala	Gly	Arg																																	
															210																215																220	
acc	att	aaa	gga	aac	act	gtg	gaa	atg	gaa	gat	gtg	aaa	ttt	cac	caa	720																																
Thr	Ile	Lys	Gly	Asn	Thr	Val	Glu	Met	Glu	Asp	Val	Lys	Phe	His	Gln																																	
															225																230																235	
tgt	ggt	cgt	ctt	gct	cga	ttt	gaa	aac	gat	cgt	aca	att	tcg	ttc	att	768																																
Cys	Val	Arg	Leu	Ala	Arg	Phe	Glu	Asn	Asp	Arg	Thr	Ile	Ser	Phe	Ile																																	
															245																250																255	
cct	cct	gat	ggc	gaa	ttt	gat	tta	atg	tcc	tat	cgc	atg	agt	tca	aat	816																																
Pro	Pro	Asp	Gly	Glu	Phe	Asp	Leu	Met	Ser	Tyr	Arg	Met	Ser	Ser	Asn																																	
															260																265																270	
gta	cggt	cca	tta	att	tggt	ggt	gaa	tgt	gaa	tcc	atc	gtg	cat	tca	ggt	864																																
Val	Arg	Pro	Leu	Ile	Trp	Val	Glu	Cys	Glu	Ser	Ile	Val	His	Ser	Gly																																	
															275																280																285	
tcg	aga	att	gag	ttt	atg	gta	aaa	gct	aag	gct	caa	ttc	aaa	aag	cgt	912																																
Ser	Arg	Ile	Glu	Phe	Met	Val	Lys	Ala	Lys	Ala	Gln	Phe	Lys	Lys	Arg																																	
															290																295																300	
tgt	att	gca	aat	aat	gtc	caa	atc	atc	att	ccc	ggt	ccg	gaa	gat	gct	960																																
Cys	Ile	Ala	Asn	Asn	Val	Gln	Ile	Ile	Ile	Pro	Val	Pro	Glu	Asp	Ala																																	
															305																310																315	
gac	agt	cct	cggt	ttt	caa	act	agc	aat	ggt	cat	gtg	caa	tat	gca	cct	1008																																
Asp	Ser	Pro	Arg	Phe	Gln	Thr	Ser	Asn	Gly	His	Val	Gln	Tyr	Ala	Pro																																	
															325																330																335	
gaa	caa	gct	gcc	atg	ggt	tggt	aac	att	aag	aaa	ttt	gca	ggt	ggt	aaa	1056																																
Glu	Gln	Ala	Ala	Met	Val	Trp	Asn	Ile	Lys	Lys	Phe	Ala	Gly	Gly	Lys																																	
															340																345																350	
gaa	ttt	ttc	atg	cgt	gct	gaa	atg	ggt	tta	cca	agt	ggt	aaa	aat	gaa	1104																																
Glu	Phe	Phe	Met	Arg	Ala	Glu	Met	Gly	Leu	Pro	Ser	Val	Lys	Asn	Glu																																	
															355																360																365	
gat	att	caa	ggt	cag	aaa	aaa	cgt	cct	ggt	caa	cta	aaa	ttt	gct	att	1152																																
Asp	Ile	Gln	Val	Gln	Lys	Lys	Arg	Pro	Val	Gln	Leu	Lys	Phe	Ala	Ile																																	
															370																375																380	
ccc	tat	ttc	act	acc	tca	ggg	atc	caa	ggt	cgt	tat	tta	aaa	atc	acc	1200																																
Pro	Tyr	Phe	Thr	Thr	Ser	Gly	Ile	Gln	Val	Arg	Tyr	Leu	Lys	Ile	Thr																																	
															385																390																395	
gaa	cca	aaa	ctt	aat	tat	cat	gct	atg	cct	tggt	ggt	cga	tat	ggt	aca	1248																																
Glu	Pro	Lys	Leu	Asn	Tyr	His	Ala	Met	Pro	Trp	Val	Arg	Tyr	Val	Thr																																	
															405																410																415	
caa	aat	ggt	act	gaa	tat	tcc	atc	cgt	cag	taa						1281																																
Gln	Asn	Gly	Thr	Glu	Tyr	Ser	Ile	Arg	Gln																																							
															420																425																	

&lt;210&gt; 2500

&lt;211&gt; 426

&lt;212&gt; PRT

&lt;213&gt; Schizosaccharomyces pombe

## PhoenixTemp32470.tmp.txt

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<400> 2500
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20      25      30
Leu Pro Leu Lys Ser Glu Val Glu Glu Gln Gly Phe Ser Thr Pro
35      40      45
Cys Leu Thr His Glu Gly Ile Asn Tyr Ile Tyr Ile His His Asn Asp
50      55      60
Val Tyr Leu Leu Ala Leu Ser Lys Met Asn Ser Asp Ala Met Glu Met
65      70      75      80
Leu Val Phe Leu Arg Lys Met Ala Asp Val Phe Ile Asp Tyr Phe Lys
85      90      95
Glu Leu Gln Glu Glu Ser Ile Arg Asp Asn Phe Val Leu Val Tyr Glu
100      105      110
Leu Leu Asp Glu Ile Met Asp Phe Gly Phe Pro Gln Thr Thr Glu Thr
115      120      125
Lys Ile Leu Gln Glu Tyr Ile Thr Gln Thr Ser Asn Thr Val Lys Lys
130      135      140
His Ala Pro Pro Pro Ile Ala Met Thr Asn Ala Ile Ser Trp Arg Ser
145      150      155      160
Glu Gly Ile His Tyr Arg Lys Asn Glu Val Phe Leu Asp Val Ile Glu
165      170      175
Ser Val Asn Leu Ile Ala Ala Ala Asp Gly Thr Val Ile Gln Ser Glu
180      185      190
Ile Leu Gly Lys Val Arg Leu Lys Cys Tyr Leu Ser Gly Met Pro Glu
195      200      205
Leu Arg Leu Gly Leu Asn Asp Lys Val Leu Phe Glu Ala Ala Gly Arg
210      215      220
Thr Ile Lys Gly Asn Thr Val Glu Met Glu Asp Val Lys Phe His Gln
225      230      235      240
Cys Val Arg Leu Ala Arg Phe Glu Asn Asp Arg Thr Ile Ser Phe Ile
245      250      255
Pro Pro Asp Gly Glu Phe Asp Leu Met Ser Tyr Arg Met Ser Asn
260      265      270
Val Arg Pro Leu Ile Trp Val Glu Cys Glu Ser Ile Val His Ser Gly
275      280      285
Ser Arg Ile Glu Phe Met Val Lys Ala Lys Ala Gln Phe Lys Lys Arg
290      295      300
Cys Ile Ala Asn Asn Val Gln Ile Ile Ile Pro Val Pro Glu Asp Ala
305      310      315      320
Asp Ser Pro Arg Phe Gln Thr Ser Asn Gly His Val Gln Tyr Ala Pro
325      330      335
Glu Gln Ala Ala Met Val Trp Asn Ile Lys Lys Phe Ala Gly Gly Lys
340      345      350
Glu Phe Phe Met Arg Ala Glu Met Gly Leu Pro Ser Val Lys Asn Glu
355      360      365
Asp Ile Gln Val Gln Lys Lys Arg Pro Val Gln Leu Lys Phe Ala Ile
370      375      380
Pro Tyr Phe Thr Thr Ser Gly Ile Gln Val Arg Tyr Leu Lys Ile Thr
385      390      395      400
Glu Pro Lys Leu Asn Tyr His Ala Met Pro Trp Val Arg Tyr Val Thr
405      410      415
Gln Asn Gly Thr Glu Tyr Ser Ile Arg Gln
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Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa
20      25      30
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35      40      45
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa
50      55      60
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
65      70      75      80
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Leu Xaa
85      90      95
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Xaa Xaa Xaa Xaa
100     105     110
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
115     120     125
Xaa Xaa Xaa Xaa Asp Asn Xaa Xaa Xaa Xaa Xaa Glu Leu Xaa Asp Glu
130     135     140
Xaa Xaa Asp Xaa Gly Xaa Xaa Gln Xaa Thr Xaa Xaa Xaa Xaa Leu Xaa
145     150     155     160

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## PhoenixTemp32470.tmp.txt

Xaa	Xaa	Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				165				170						175	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				180				185						190	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				195				200						205	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				210				215						220	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
225						230				235					240
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				245				250						255	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				260				265						270	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ser	Trp	Arg
				275				280					285		
Xaa	Xaa	Gly	Ile	Xaa	Tyr	Xaa	Lys	Asn	Glu	Xaa	Phe	Xaa	Asp	Val	Xaa
290						295				300					
Glu	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
305					310					315					320
Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Tyr	Leu	Ser	Gly	Met
				325				330						335	
Pro	Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Asn	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				340				345						350	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				355				360						365	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				370				375						380	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
385					390					395					400
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				405				410						415	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				420				425						430	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	His
				435				440						445	
Gln	Cys	Val	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
450					455					460					
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
465					470					475					480
Xaa	Xaa	Xaa	Ile	Xaa	Phe	Ile	Pro	Pro	Asp	Gly	Xaa	Phe	Xaa	Leu	Met
				485					490					495	
Xaa	Tyr	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				500				505						510	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu
				515				520						525	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				530				535						540	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
545					550					555					560
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				565				570						575	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				580				585						590	
Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				595				600						605	
Xaa	Trp	Xaa	Ile	Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
610								615						620	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
625					630					635					640
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				645				650						655	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				660				665						670	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				675				680						685	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
690					695					700					
Xaa	Phe	Xaa	Ile	Pro	Xaa	Xaa	Xaa	Ser	Gly	Xaa	Xaa	Val	Xaa	Tyr	

PhoenixTemp32470.tmp.txt

705                      710                      715                      720  
Leu Lys Xaa Xaa Glu Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Pro Trp Val  
                              725                      730                      735  
Arg Tyr Xaa Thr  
                              740

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Xaa

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<220>

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<400> 2505

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			20				25					30		
Xaa	Xaa	Xaa	Xaa	Ile										
			35											

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<211> 20

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<220>

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<223> Xaa in position 4 is Leu or Pro

<220>

<221> Variant

<222> (5)..(8)

<223> Xaa in position 5 to 8 is any amino acid

<220>

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<220>

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<222> (12)..(12)

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 Xaa Xaa Xaa Glu  
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 1 5 10

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<400> 2508  
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 1 5 10

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<220>  
 <221> Variant  
 <222> (5)..(5)  
 <223> Xaa in position 5 is Phe, Ile or Leu

<220>  
 <221> Variant



&lt;222&gt; (6)..(6)

&lt;223&gt; Xaa in position 6 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (7)..(7)

&lt;223&gt; Xaa in position 7 is Asp or Asn

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (8)..(10)

&lt;223&gt; Xaa in position 8 to 10 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (11)..(11)

&lt;223&gt; Xaa in position 11 is Glu, Lys or Arg

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (12)..(12)

&lt;223&gt; Xaa in position 12 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (14)..(14)

&lt;223&gt; Xaa in position 14 is Ile, Leu or Val

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (15)..(15)

&lt;223&gt; Xaa in position 15 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (16)..(16)

&lt;223&gt; Xaa in position 16 is Lys or Arg

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (17)..(18)

&lt;223&gt; Xaa in position 17 to 18 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (19)..(19)

&lt;223&gt; Xaa in position 19 is Lys or Arg

&lt;400&gt; 2509

Ser	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa
1				5				10					15		

Xaa Xaa Xaa

&lt;210&gt; 2510

&lt;211&gt; 7413

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7413)

&lt;400&gt; 2510

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1				5				10					15		

48

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96

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gtt	ttg	aaa	agt	1205	gca	tgg	aat	1210	tct	agc	caa	caa	aga	act	aaa	gaa	gat	3696	
Val	Leu	Lys	Ser	Ala	Trp	Asn	Ser	Gln	Gln	Arg	Thr	Lys	Glu	Asp					
tgg	cag	gaa	tgg	1220	agc	aaa	cgt	1225	cta	tcc	att	caa	tta	tta	aaa	gag	tca	3744	
Trp	Gln	Glu	Trp	Ser	Lys	Arg	Leu	Ser	Ile	Gln	Leu	Leu	Lys	Glu	Ser				
ccc	tcc	cat	gct	1235	cta	aga	gct	1240	tgt	tca	aat	ctt	gca	agc	atg	tat	tat	3792	
Pro	Ser	His	Ala	Leu	Arg	Ala	Cys	Ser	Asn	Leu	Ala	Ser	Met	Tyr	Tyr				
cca	cta	gcc	aaa	1250	gaa	ctt	ttt	1255	aat	acc	gca	ttc	gca	tgt	gtt	tgg	acc	3840	
Pro	Leu	Ala	Lys	Glu	Leu	Phe	Asn	Thr	Ala	Phe	Ala	Cys	Val	Trp	Thr				
gaa	ctt	tat	agc	1265	caa	tat	caa	1270	gaa	gat	tta	att	ggg	tca	tta	tgt	ata	3888	
Glu	Leu	Tyr	Ser	Gln	Tyr	Gln	Glu	Asp	Leu	Ile	Gly	Ser	Leu	Cys	Ile				
gcc	tta	tct	tct	1285	ccc	tta	aat	1290	cca	cca	gaa	ata	cat	caa	aca	ttg	tta	3936	
Ala	Leu	Ser	Ser	Pro	Leu	Asn	Pro	Pro	Glu	Ile	His	Gln	Thr	Leu	Leu				
aac	ctg	gta	gaa	1300	ttt	atg	gaa	1305	cac	gat	gac	aag	gca	tta	cca	ata	cca	3984	
Asn	Leu	Val	Glu	Phe	Met	Glu	His	Asp	Asp	Lys	Ala	Leu	Pro	Ile	Pro				
act	caa	agc	ctg	1315	ggc	gag	tat	1320	gct	gaa	aga	tgt	cac	gcc	tat	gcc	aaa	4032	
Thr	Gln	Ser	Leu	Gly	Glu	Tyr	Ala	Glu	Arg	Cys	His	Ala	Tyr	Ala	Lys				
gcg	cta	cat	tat	1330	aaa	gag	att	1335	aaa	ttt	att	aaa	gag	cct	gag	aac	tca	4080	
Ala	Leu	His	Tyr	Lys	Glu	Ile	Lys	Phe	Ile	Lys	Glu	Pro	Glu	Asn	Ser				
act	att	gaa	tca	1345	ttg	atc	agc	1350	att	aac	aac	cag	ctg	aat	caa	acg	gat	4128	
Thr	Ile	Glu	Ser	Leu	Ile	Ser	Ile	Asn	Asn	Gln	Leu	Asn	Gln	Thr	Asp				
gct	gca	att	ggt	1365	ata	tta	aag	1370	cat	gcc	caa	caa	cat	cat	tca	ctt	caa	4176	
Ala	Ala	Ile	Gly	Ile	Leu	Lys	His	Ala	Gln	Gln	His	His	Ser	Leu	Gln				
tta	aag	gag	aca	1380	tgg	ttt	gaa	1385	aaa	tta	gag	cgt	tgg	gaa	gat	gca	cta	4224	
Leu	Lys	Glu	Thr	Trp	Phe	Glu	Lys	Leu	Glu	Arg	Trp	Glu	Asp	Ala	Leu				
cat	gct	tat	aat	1395	gaa	cgt	gaa	1400	aag	gca	ggt	gat	act	tcc	gtg	agc	gtt	4272	
His	Ala	Tyr	Asn	Glu	Arg	Glu	Lys	Ala	Gly	Asp	Thr	Ser	Val	Ser	Val				
aca	ctc	ggt	aag	1410	atg	aga	tcc	1415	ctt	cat	gcc	ctt	ggc	gaa	tgg	gaa	cag	4320	
Thr	Leu	Gly	Lys	Met	Arg	Ser	Leu	His	Ala	Leu	Gly	Glu	Trp	Glu	Gln				
ttg	tcg	caa	ttg	1425	gca	gct	aga	1430	aag	tgg	aaa	ggt	tcg	aag	cta	caa	act	4368	
Leu	Ser	Gln	Leu	Ala	Ala	Arg	Lys	Trp	Lys	Val	Ser	Lys	Leu	Gln	Thr				
aag	aag	cta	ata	1445	gct	ccc	ttg	1450	gca	gct	ggt	gct	gcg	tgg	ggg	ttg	gga	4416	
Lys	Lys	Leu	Ile	Ala	Pro	Leu	Ala	Ala	Gly	Ala	Ala	Ala	Trp	Gly	Leu	Gly			
gag	tgg	gat	atg	1460	ctt	gag	caa	1465	tat	atc	agc	ggt	atg	aaa	cct	aaa	tct	4464	
Glu	Trp	Asp	Met	Leu	Glu	Gln	Tyr	Ile	Ser	Val	Met	Lys	Pro	Lys	Ser				
cca	gat	aag	gaa	1475	ttt	ttt	gat	1480	gca	att	tta	tac	ttg	cac	aag	aat	gat	4512	
Pro	Asp	Lys	Glu	Phe	Phe	Asp	Ala	Ile	Leu	Tyr	Leu	His	Lys	Asn	Asp				

## PhoenixTemp32470.tmp.txt

1490	1495	1500	
tac gac aat gct agt aag cat ata tta aac gcc aga gat ttg ctt gtg			4560
Tyr Asp Asn Ala Ser Lys His Ile Leu Asn Ala Arg Asp Leu Leu Val			
1505	1510	1515	1520
act gaa att tcc gcg ttg atc aat gaa agt tat aat aga gca tat agc			4608
Thr Glu Ile Ser Ala Leu Ile Asn Glu Ser Tyr Asn Arg Ala Tyr Ser			
1525	1530	1535	
gtt att gtt aga act caa ata ata aca gag ttt gag gaa atc atc aag			4656
Val Ile Val Arg Thr Gln Ile Ile Thr Glu Phe Glu Glu Ile Ile Lys			
1540	1545	1550	
tat aaa caa ttg cca cct aat tcc gag aaa aaa ctt cac tat caa aat			4704
Tyr Lys Gln Leu Pro Pro Asn Ser Glu Lys Lys Leu His Tyr Gln Asn			
1555	1560	1565	
ctt tgg aca aaa aga ctg ctg ggc tgc caa aaa aat gtc gat tta tgg			4752
Leu Trp Thr Lys Arg Leu Leu Gly Cys Gln Lys Asn Val Asp Leu Trp			
1570	1575	1580	
caa aga gtg ctt aga gta aga tca ttg gta ata aag ccc aag caa gac			4800
Gln Arg Val Leu Arg Val Arg Ser Leu Val Ile Lys Pro Lys Gln Asp			
1585	1590	1595	1600
ctg caa ata tgg ata aaa ttt gca aat ttg tgc aga aaa tct ggt aga			4848
Leu Gln Ile Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg			
1605	1610	1615	
atg agg cta gca aat aag gca ttg aat atg cta cta gaa gga ggc aac			4896
Met Arg Leu Ala Asn Lys Ala Leu Asn Met Leu Leu Glu Gly Gly Asn			
1620	1625	1630	
gat cct agt tta cca aat acg ttc aaa gct cct ccc cca gtt gtt tac			4944
Asp Pro Ser Leu Pro Asn Thr Phe Lys Ala Pro Pro Pro Val Val Tyr			
1635	1640	1645	
gcg caa cta aaa tat att tgg gct aca gga gct tat aaa gaa gca tta			4992
Ala Gln Leu Lys Tyr Ile Trp Ala Thr Gly Ala Tyr Lys Glu Ala Leu			
1650	1655	1660	
aac cac ttg ata gga ttt aca tcc agg tta gcg cat gat ctt ggt ttg			5040
Asn His Leu Ile Gly Phe Thr Ser Arg Leu Ala His Asp Leu Gly Leu			
1665	1670	1675	1680
gat ccg aat aat atg atc gcg caa agt gtc aaa ctc tca agt gca agt			5088
Asp Pro Asn Asn Met Ile Ala Gln Ser Val Lys Leu Ser Ser Ala Ser			
1685	1690	1695	
act gct ccg tat gtt gag gaa tac aca aaa tta tta gct cga tgt ttt			5136
Thr Ala Pro Tyr Val Glu Glu Tyr Thr Lys Leu Leu Ala Arg Cys Phe			
1700	1705	1710	
tta aag caa ggt gag tgg aga ata gca aca caa ccg aac tgg aga aac			5184
Leu Lys Gln Gly Glu Trp Arg Ile Ala Thr Gln Pro Asn Trp Arg Asn			
1715	1720	1725	
aca aat ccg gat gca att ctt ggt tct tat cta ttg gct aca cat ttc			5232
Thr Asn Pro Asp Ala Ile Leu Gly Ser Tyr Leu Leu Ala Thr His Phe			
1730	1735	1740	
gat aaa aat tgg tac aag gca tgg cat aat tgg gcc tta gct aat ttt			5280
Asp Lys Asn Trp Tyr Lys Ala Trp His Asn Trp Ala Leu Ala Asn Phe			
1745	1750	1755	1760
gaa gta ata tcc atg gtt cag gaa gag act aag ctc aac gga ggt aag			5328
Glu Val Ile Ser Met Val Gln Glu Glu Thr Lys Leu Asn Gly Gly Lys			
1765	1770	1775	
aat gat gat gat gat gac acg gca gtt aat aat gat aat gtg cgg att			5376
Asn Asp Asp Asp Asp Asp Thr Ala Val Asn Asn Asp Asn Val Arg Ile			
1780	1785	1790	
gac ggt agt atc cta gga agt ggt tct ttg act att aat ggc aac aga			5424
Asp Gly Ser Ile Leu Gly Ser Gly Ser Leu Thr Ile Asn Gly Asn Arg			
1795	1800	1805	
tac ccg cta gag ctt att caa aga cat gtt gtt cca gcg atc aag ggc			5472
Tyr Pro Leu Glu Leu Ile Gln Arg His Val Val Pro Ala Ile Lys Gly			
1810	1815	1820	
ttt ttt cat tca ata tct cta tta gaa aca agt tgt ttg caa gac acg			5520
Phe Phe His Ser Ile Ser Leu Leu Glu Thr Ser Cys Leu Gln Asp Thr			
1825	1830	1835	1840
ttg agg tta ttg act ctt tta ttt aac ttt ggt ggt att aaa gaa gtc			5568
Leu Arg Leu Leu Thr Leu Leu Phe Asn Phe Gly Gly Ile Lys Glu Val			
1845	1850	1855	
tca caa gcc atg tat gaa ggc ttc aat ttg atg aaa ata gag aac tgg			5616
Ser Gln Ala Met Tyr Glu Gly Phe Asn Leu Met Lys Ile Glu Asn Trp			

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1860	1865	1870	
ctt gaa gtc tta cca cag ttg atc tct cgt ata cat cag cca gat cct			5664
Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln Pro Asp Pro			
1875	1880	1885	
acg gtg agt aat tcc ctt ttg tcg ttg ctt tct gat tta ggg aaa gct			5712
Thr Val Ser Asn Ser Leu Leu Ser Leu Leu Ser Asp Leu Gly Lys Ala			
1890	1895	1900	
cat cca caa gct ctc gtg tat cct tta act gtc gcg atc aag tct gaa			5760
His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ile Lys Ser Glu			
1905	1910	1915	
tct gtt tca aga caa aaa gcg gct ctt tca ata ata gag aaa att agg			5808
Ser Val Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu Lys Ile Arg			
1925	1930	1935	
att cat agt cca gtc ctg gta aac cag gca gaa tta gtt agt cac gag			5856
Ile His Ser Pro Val Leu Val Asn Gln Ala Glu Leu Val Ser His Glu			
1940	1945	1950	
ttg atc aga gta gcc gtt cta tgg cac gaa tta tgg tat gaa gga ctg			5904
Leu Ile Arg Val Ala Val Leu Trp His Glu Leu Trp Tyr Glu Gly Leu			
1955	1960	1965	
gaa gat gcg agc cgc caa ttt ttc gtt gaa cat aac ata gaa aaa atg			5952
Glu Asp Ala Ser Arg Gln Phe Phe Val Glu His Asn Ile Glu Lys Met			
1970	1975	1980	
ttt tct act tta gaa cct tta cat aaa cac tta ggc aat gag cct caa			6000
Phe Ser Thr Leu Glu Pro Leu His Lys His Gly Asn Glu Pro Gln			
1985	1990	1995	
acg tta agt gag gta tcg ttt cag aaa tca ttt ggt aga gat ttg aac			6048
Thr Leu Ser Glu Val Ser Phe Gln Lys Ser Phe Gly Arg Asp Leu Asn			
2005	2010	2015	
gat gcc tac gaa tgg ttg aat aac tac aaa aag tca aaa gac atc aat			6096
Asp Ala Tyr Glu Trp Leu Asn Asn Tyr Lys Lys Ser Lys Asp Ile Asn			
2020	2025	2030	
aat ttg aac caa gct tgg gat att tat tat aac gtc ttc aga aaa ata			6144
Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Lys Ile			
2035	2040	2045	
aca cgt caa ata cca cag tta caa acc tta gac tta cag cat gtt tct			6192
Thr Arg Gln Ile Pro Gln Leu Gln Thr Leu Asp Leu Gln His Val Ser			
2050	2055	2060	
ccc cag ctt ctg gct act cat gat ctc gaa ttg gct gtt cct ggg aca			6240
Pro Gln Leu Leu Ala Thr His Asp Leu Glu Leu Ala Val Pro Gly Thr			
2065	2070	2075	
tat ttc cca gga aaa cct acc att aga ata gcg aag ttt gag cca tta			6288
Tyr Phe Pro Gly Lys Pro Thr Ile Arg Ile Ala Lys Phe Glu Pro Leu			
2085	2090	2095	
ttt tct gtg atc tct tcg aag caa agg cca aga aaa ttc tcc atc aag			6336
Phe Ser Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Phe Ser Ile Lys			
2100	2105	2110	
ggt agc gac ggt aaa gat tat aaa tac gtt tta aag gga cat gaa gat			6384
Gly Ser Asp Gly Lys Asp Tyr Lys Tyr Val Leu Lys Gly His Glu Asp			
2115	2120	2125	
ata aga caa gat agc ctt gtt atg caa tta ttt ggt cta gtt aac act			6432
Ile Arg Gln Asp Ser Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr			
2130	2135	2140	
ttg ttg aag aat gat tca gag tgt ttc aag aga cat ttg gat atc caa			6480
Leu Leu Lys Asn Asp Ser Glu Cys Phe Lys Arg His Leu Asp Ile Gln			
2145	2150	2155	
caa tac ccg gct att cca ttg tcg cct aaa tct ggt tta cta gga tgg			6528
Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu Gly Trp			
2165	2170	2175	
gta cca aat agt gac aca ttc cac gtt ttg atc aga gaa cac cgt gat			6576
Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg Glu His Arg Asp			
2180	2185	2190	
gcc aaa aaa att ccg ttg aac att gaa cat tgg gtt atg tta caa atg			6624
Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val Met Leu Gln Met			
2195	2200	2205	
gcc ccc gat tat gag aat ttg act ctt tta caa aaa att gaa gta ttc			6672
Ala Pro Asp Tyr Glu Asn Leu Thr Leu Leu Gln Lys Ile Glu Val Phe			
2210	2215	2220	
acg tac gct tta gat aat aca aaa ggc caa gac ctt tat aaa ata tta			6720
Thr Tyr Ala Leu Asp Asn Thr Lys Gly Gln Asp Leu Tyr Lys Ile Leu			

## PhoenixTemp32470.tmp.txt

2225 tgg tta aag agt agg ttc tca gag aca tgg cta gaa cgt aga aca act 6768  
 Trp Leu Lys Ser Arg Ser Ser Glu Thr Trp Leu Glu Arg Arg Thr Thr  
 2230 2235 2240  
 2245 tat acg aga tct tta gca gtt atg tcc atg act ggt tat att ctg gga 6816  
 Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly Tyr Ile Leu Gly  
 2250 2255  
 2260 cta ggt gat cgc cat cca agc aac ctg atg cta gat aga atc acc ggt 6864  
 Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Ile Thr Gly  
 2265 2270  
 2275 aaa gtt atc cac att gat ttc ggc gat tgt ttt gaa gct gcc atc tta 6912  
 Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu  
 2280 2285  
 2290 aga gaa aag tat cca gaa aaa gtg cca ttt aga cta act agg atg tta 6960  
 Arg Glu Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu  
 2300 2305  
 2310 aca tac gca atg gaa gtt agt gga att gaa ggc agt ttc cga att act 7008  
 Thr Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr  
 2315 2320  
 2325 tgt gaa aat gtc atg aga gtc tta aga gat aat aaa gaa tca tta atg 7056  
 Cys Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met  
 2330 2335  
 2340 gcg atc ttg gaa gct ttt gcg ctt gat cct ttg atc cat tgg gga ttt 7104  
 Ala Ile Leu Glu Ala Phe Ala Leu Asp Pro Leu Ile His Trp Gly Phe  
 2345 2350  
 2355 gat tta ccg cca caa aaa ctt act gag caa act gga att cct ttg ccg 7152  
 Asp Leu Pro Pro Gln Lys Leu Thr Glu Gln Thr Gly Ile Pro Leu Pro  
 2360 2365  
 2370 ttg att aat cct agt gaa tta tta agg aag ggg gca att act gtc gaa 7200  
 Leu Ile Asn Pro Ser Glu Leu Leu Arg Lys Gly Ala Ile Thr Val Glu  
 2375 2380  
 2385 gaa gcg gca aat atg gaa gca gaa caa caa aat gag acc aaa aac gcc 7248  
 Glu Ala Ala Asn Met Glu Ala Glu Gln Gln Asn Glu Thr Lys Asn Ala  
 2390 2395  
 2400 aga gca atg ctt gtt ttg aga cgt att aca gat aaa tta acg ggc aat 7296  
 Arg Ala Met Leu Val Leu Arg Arg Ile Thr Asp Lys Leu Thr Gly Asn  
 2405 2410  
 2415 gat atc aag agg ttc aat gaa tta gac gtc cct gag cag gtt gat aaa 7344  
 Asp Ile Lys Arg Phe Asn Glu Leu Asp Val Pro Glu Gln Val Asp Lys  
 2420 2425  
 2430 ctg atc caa caa gcc act tct att gaa agg tta tgt caa cat tat att 7392  
 Leu Ile Gln Gln Ala Thr Ser Ile Glu Arg Leu Cys Gln His Tyr Ile  
 2440 2445  
 2450 gga tgg tgc cca ttc tgg tga 7413  
 Gly Trp Cys Pro Phe Trp  
 2455 2460  
 2465 2470

&lt;210&gt; 2511

&lt;211&gt; 2470

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2511

Met Glu Pro His Glu Glu Gln Ile Trp Lys Ser Lys Leu Leu Lys Ala  
 1 5 10 15  
 Ala Asn Asn Asp Met Asp Met Asp Arg Asn Val Pro Leu Ala Pro Asn  
 20 25 30  
 Leu Asn Val Asn Met Asn Met Lys Met Asn Ala Ser Arg Asn Gly Asp  
 35 40 45  
 Glu Phe Gly Leu Thr Ser Ser Arg Phe Asp Gly Val Val Ile Gly Ser  
 50 55 60  
 Asn Gly Asp Val Asn Phe Lys Pro Ile Leu Glu Lys Ile Phe Arg Glu  
 65 70 75 80  
 Leu Thr Ser Asp Tyr Lys Glu Glu Arg Lys Leu Ala Ser Ile Ser Leu  
 85 90 95  
 Phe Asp Leu Leu Val Ser Leu Glu His Glu Leu Ser Ile Glu Glu Phe  
 100 105 110  
 Gln Ala Val Ser Asn Asp Ile Asn Lys Ile Leu Glu Leu Val His  
 115 120 125



## PhoenixTemp32470.tmp.txt

Thr	Lys	Lys	Thr	Ser	Thr	Arg	Val	Gly	Ala	Val	Leu	Ser	Ile	Asp	Thr
130	130					135					140				
Leu	Ile	Ser	Phe	Tyr	Ala	Tyr	Thr	Glu	Arg	Leu	Pro	Asn	Glu	Thr	Ser
145					150					155					160
Arg	Leu	Ala	Gly	Tyr	Leu	Arg	Gly	Leu	Ile	Pro	Ser	Asn	Asp	Val	Glu
			165						170					175	
Val	Met	Arg	Leu	Ala	Ala	Lys	Thr	Leu	Gly	Lys	Leu	Ala	Val	Pro	Gly
			180						185					190	
Gly	Thr	Tyr	Thr	Ser	Asp	Phe	Val	Glu	Phe	Glu	Ile	Lys	Ser	Cys	Leu
		195					200					205			
Glu	Trp	Leu	Thr	Ala	Ser	Thr	Glu	Lys	Asn	Ser	Phe	Ser	Ser	Ser	Lys
	210					215					220				
Pro	Asp	His	Ala	Lys	His	Ala	Ala	Leu	Leu	Ile	Ile	Thr	Ala	Leu	Ala
225					230					235					240
Glu	Asn	Cys	Pro	Tyr	Leu	Leu	Tyr	Gln	Tyr	Leu	Asn	Ser	Ile	Leu	Asp
				245					250					255	
Asn	Ile	Trp	Arg	Ala	Leu	Arg	Asp	Pro	His	Leu	Val	Ile	Arg	Ile	Asp
			260					265					270		
Ala	Ser	Ile	Thr	Leu	Ala	Lys	Cys	Leu	Ser	Thr	Leu	Arg	Asn	Arg	Asp
		275					280					285			
Pro	Gln	Leu	Thr	Ser	Gln	Trp	Val	Gln	Arg	Leu	Ala	Thr	Ser	Cys	Glu
	290					295					300				
Tyr	Gly	Phe	Gln	Val	Asn	Thr	Leu	Glu	Cys	Ile	His	Ala	Ser	Leu	Leu
305					310					315					320
Val	Tyr	Lys	Glu	Ile	Leu	Phe	Leu	Lys	Asp	Pro	Phe	Leu	Asn	Gln	Val
				325					330					335	
Phe	Asp	Gln	Met	Cys	Leu	Asn	Cys	Ile	Ala	Tyr	Glu	Asn	His	Lys	Ala
			340					345					350		
Lys	Met	Ile	Arg	Glu	Lys	Ile	Tyr	Gln	Ile	Val	Pro	Leu	Leu	Ala	Ser
		355					360					365			
Phe	Asn	Pro	Gln	Leu	Phe	Ala	Gly	Lys	Tyr	Leu	His	Gln	Ile	Met	Asp
	370					375					380				
Asn	Tyr	Leu	Glu	Ile	Leu	Thr	Asn	Ala	Pro	Ala	Asn	Lys	Ile	Pro	His
385					390					395					400
Leu	Lys	Asp	Asp	Lys	Pro	Gln	Ile	Leu	Ile	Ser	Ile	Gly	Asp	Ile	Ala
				405					410					415	
Tyr	Glu	Val	Gly	Pro	Asp	Ile	Ala	Pro	Tyr	Val	Lys	Gln	Ile	Leu	Asp
			420					425					430		
Tyr	Ile	Glu	His	Asp	Leu	Gln	Thr	Lys	Phe	Lys	Phe	Arg	Lys	Lys	Phe
		435					440					445			
Glu	Asn	Glu	Ile	Phe	Tyr	Cys	Ile	Gly	Arg	Leu	Ala	Val	Pro	Leu	Gly
	450					455					460				
Pro	Val	Leu	Gly	Lys	Leu	Leu	Asn	Arg	Asn	Ile	Leu	Asp	Leu	Met	Phe
465					470					475					480
Lys	Cys	Pro	Leu	Ser	Asp	Tyr	Met	Gln	Glu	Thr	Phe	Gln	Ile	Leu	Thr
				485					490					495	
Glu	Arg	Ile	Pro	Ser	Leu	Gly	Pro	Lys	Ile	Asn	Asp	Glu	Leu	Leu	Asn
			500					505					510		
Leu	Val	Cys	Ser	Thr	Leu	Ser	Gly	Thr	Pro	Phe	Ile	Gln	Pro	Gly	Ser
		515					520					525			
Pro	Met	Glu	Ile	Pro	Ser	Phe	Ser	Arg	Glu	Arg	Ala	Arg	Glu	Trp	Arg
	530					535					540				
Asn	Lys	Asn	Ile	Leu	Gln	Lys	Thr	Gly	Glu	Ser	Asn	Asp	Asp	Asn	Asn
545					550					555					560
Asp	Ile	Lys	Ile	Ile	Ile	Gln	Ala	Phe	Arg	Met	Leu	Lys	Asn	Ile	Lys
				565					570					575	
Ser	Arg	Phe	Ser	Leu	Val	Glu	Phe	Val	Arg	Ile	Val	Ala	Leu	Ser	Tyr
			580					585					590		
Ile	Glu	His	Thr	Asp	Pro	Arg	Val	Arg	Lys	Leu	Ala	Ala	Leu	Thr	Ser
		595					600					605			
Cys	Glu	Ile	Tyr	Val	Lys	Asp	Asn	Ile	Cys	Lys	Gln	Thr	Ser	Leu	His
	610					615					620				
Ser	Leu	Asn	Thr	Val	Ser	Glu	Val	Leu	Ser	Lys	Leu	Leu	Ala	Ile	Thr
625					630					635					640
Ile	Ala	Asp	Pro	Leu	Gln	Asp	Ile	Arg	Leu	Glu	Val	Leu	Lys	Asn	Leu
				645					650					655	
Asn	Pro	Cys	Phe	Asp	Pro	Gln	Leu	Ala	Gln	Pro	Asp	Asn	Leu	Arg	Leu
			660					665					670		
Leu	Phe	Thr	Ala	Leu	His	Asp	Glu	Ser	Phe	Asn	Ile	Gln	Ser	Val	Ala

## PhoenixTemp32470.tmp.txt

675  
 Met Glu Leu Val Gly Arg Leu 680 Ser Ser Val Asn Pro 685 Ala Tyr Val Ile  
 690  
 Pro Ser Ile Arg Lys Ile Leu 695 Leu Leu Glu Leu Leu 700 Thr Lys Leu Lys Phe  
 705  
 Ser Thr Ser Ser Arg Glu Lys Glu Glu Thr 715 Ala Ser Leu Leu Cys Thr  
 725  
 Leu Ile Arg Ser Lys Asp Val Ala Lys Pro Tyr Ile Glu 735 Pro Leu  
 740  
 Leu Asn Val Leu Leu Pro Lys Phe Gln Asp Thr Ser Ser Thr Val Ala  
 755  
 Ser Thr Ala Leu Arg Thr Ile Gly Glu Leu Ser Val Val Gly Gly Glu  
 760  
 Asp Met Lys Ile Tyr Leu 775 Lys Asp Leu Phe Pro 780 Leu Ile Ile Lys Thr  
 785  
 Phe Gln Asp Gln Ser Asn Ser Phe Lys Arg Glu Ala Ala Leu Lys Ala  
 805  
 Leu Gly Gln Leu Ala Ala Ser Ser Gly Tyr Val Ile Asp Pro Leu Leu  
 820  
 Asp Tyr Pro Glu Leu Leu Gly Ile Leu Val Asn Ile Leu Lys Thr Glu  
 835  
 Asn Ser Gln Asn Ile Arg Arg Gln Thr Val Thr Leu Ile Gly Ile Leu  
 850  
 Gly Ala Ile Asp Pro Tyr Arg Gln Lys Glu Arg Glu Val Thr Ser Thr  
 865  
 Thr Asp Ile Ser Thr Glu Gln Asn Ala Pro Pro Ile Asp Ile Ala Leu  
 885  
 Leu Met Gln Gly Met Ser Pro Ser Asn Asp Glu Tyr Tyr Thr Thr Val  
 900  
 Val Ile His Cys Leu Leu Lys Ile Leu Lys Asp Pro Ser Leu Ser Ser  
 915  
 Tyr His Thr Ala Val Ile Gln Ala Ile Met His Ile Phe Gln Thr Leu  
 930  
 Gly Leu Lys Cys Val Ser Phe Leu Asp Gln Ile Ile Pro Thr Ile Leu  
 945  
 Asp Val Met Arg Thr Cys Ser Gln Ser Leu Glu Phe Tyr Phe Gln  
 965  
 Gln Leu Cys Ser Leu Ile Ile Ile Val Arg Gln His Ile Arg Pro His  
 980  
 Val Asp Ser Ile Phe Gln Ala Ile Lys Asp Phe Ser Ser Val Ala Lys  
 995  
 Leu Gln Ile Thr Leu Val Ser Val Ile Glu Ala Ile Ser Lys Ala Leu  
 1010  
 Glu Gly Glu Phe Lys Arg Leu Val Pro Leu Thr Leu Thr Leu Phe Leu  
 1025  
 Val Ile Leu Glu Asn Asp Lys Ser Ser Asp Lys Val Leu Ser Arg Arg  
 1030  
 Val Leu Arg Leu Leu Glu Ser Phe Gly Pro Asn Leu Glu Gly Tyr Ser  
 1045  
 His Leu Ile Thr Pro Lys Ile Val Gln Met Ala Glu Phe Thr Ser Gly  
 1060  
 Asn Leu Gln Arg Ser Ala Ile Ile Thr Ile Gly Lys Leu Ala Lys Asp  
 1075  
 Val Asp Leu Phe Glu Met Ser Ser Arg Ile Val His Ser Leu Leu Arg  
 1090  
 Val Leu Ser Ser Thr Ser Asp Glu Leu Ser Lys Val Ile Met Asn  
 1105  
 Thr Leu Ser Leu Leu Ile Gln Met Gly Thr Ser Phe Ala Ile Phe  
 1120  
 Ile Pro Val Ile Asn Glu Val Leu Met Lys Lys His Ile Gln His Thr  
 1135  
 Ile Tyr Asp Asp Leu Thr Asn Arg Ile Leu Asn Asn Asp Val Leu Pro  
 1150  
 Thr Lys Ile Leu Glu Ala Asn Thr Thr Asp Tyr Lys Pro Ala Glu Gln  
 1165  
 Met Glu Ala Ala Asp Ala Gly Val Ala Lys Leu Pro Ile Asn Gln Ser  
 1180  
 Val Leu Lys Ser Ala Trp Asn Ser Ser Gln Gln Arg Thr Lys Glu Asp  
 1195  
 1200  
 1210  
 1220  
 1230

## PhoenixTemp32470.tmp.txt

Trp Gln Glu Trp Ser Lys Arg Leu Ser Ile Gln Leu Leu Lys Glu Ser  
 1235 1240 1245  
 Pro Ser His Ala Leu Arg Ala Cys Ser Asn Leu Ala Ser Met Tyr Tyr  
 1250 1255 1260  
 Pro Leu Ala Lys Glu Leu Phe Asn Thr Ala Phe Ala Cys Val Trp Thr  
 1265 1270 1275 1280  
 Glu Leu Tyr Ser Gln Tyr Gln Glu Asp Leu Ile Gly Ser Leu Cys Ile  
 1285 1290 1295  
 Ala Leu Ser Ser Pro Leu Asn Pro Pro Glu Ile His Gln Thr Leu Leu  
 1300 1305 1310  
 Asn Leu Val Glu Phe Met Glu His Asp Asp Lys Ala Leu Pro Ile Pro  
 1315 1320 1325  
 Thr Gln Ser Leu Gly Glu Tyr Ala Glu Arg Cys His Ala Tyr Ala Lys  
 1330 1335 1340  
 Ala Leu His Tyr Lys Glu Ile Lys Phe Ile Lys Glu Pro Glu Asn Ser  
 1345 1350 1355 1360  
 Thr Ile Glu Ser Leu Ile Ser Ile Asn Asn Gln Leu Asn Gln Thr Asp  
 1365 1370 1375  
 Ala Ala Ile Gly Ile Leu Lys His Ala Gln Gln His His Ser Leu Gln  
 1380 1385 1390  
 Leu Lys Glu Thr Trp Phe Glu Lys Leu Glu Arg Trp Glu Asp Ala Leu  
 1395 1400 1405  
 His Ala Tyr Asn Glu Arg Glu Lys Ala Gly Asp Thr Ser Val Ser Val  
 1410 1415 1420  
 Thr Leu Gly Lys Met Arg Ser Leu His Ala Leu Gly Glu Trp Glu Gln  
 1425 1430 1435 1440  
 Leu Ser Gln Leu Ala Ala Arg Lys Trp Lys Val Ser Lys Leu Gln Thr  
 1445 1450 1455  
 Lys Lys Leu Ile Ala Pro Leu Ala Ala Gly Ala Ala Trp Gly Leu Gly  
 1460 1465 1470  
 Glu Trp Asp Met Leu Glu Gln Tyr Ile Ser Val Met Lys Pro Lys Ser  
 1475 1480 1485  
 Pro Asp Lys Glu Phe Phe Asp Ala Ile Leu Tyr Leu His Lys Asn Asp  
 1490 1495 1500  
 Tyr Asp Asn Ala Ser Lys His Ile Leu Asn Ala Arg Asp Leu Leu Val  
 1505 1510 1515 1520  
 Thr Glu Ile Ser Ala Leu Ile Asn Glu Ser Tyr Asn Arg Ala Tyr Ser  
 1525 1530 1535  
 Val Ile Val Arg Thr Gln Ile Ile Thr Glu Phe Glu Glu Ile Ile Lys  
 1540 1545 1550  
 Tyr Lys Gln Leu Pro Pro Asn Ser Glu Lys Lys Leu His Tyr Gln Asn  
 1555 1560 1565  
 Leu Trp Thr Lys Arg Leu Leu Gly Cys Gln Lys Asn Val Asp Leu Trp  
 1570 1575 1580  
 Gln Arg Val Leu Arg Val Arg Ser Leu Val Ile Lys Pro Lys Gln Asp  
 1585 1590 1595 1600  
 Leu Gln Ile Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg  
 1605 1610 1615  
 Met Arg Leu Ala Asn Lys Ala Leu Asn Met Leu Leu Glu Gly Gly Asn  
 1620 1625 1630  
 Asp Pro Ser Leu Pro Asn Thr Phe Lys Ala Pro Pro Pro Val Val Tyr  
 1635 1640 1645  
 Ala Gln Leu Lys Tyr Ile Trp Ala Thr Gly Ala Tyr Lys Glu Ala Leu  
 1650 1655 1660  
 Asn His Leu Ile Gly Phe Thr Ser Arg Leu Ala His Asp Leu Gly Leu  
 1665 1670 1675 1680  
 Asp Pro Asn Asn Met Ile Ala Gln Ser Val Lys Leu Ser Ser Ala Ser  
 1685 1690 1695  
 Thr Ala Pro Tyr Val Glu Glu Tyr Thr Lys Leu Leu Ala Arg Cys Phe  
 1700 1705 1710  
 Leu Lys Gln Gly Glu Trp Arg Ile Ala Thr Gln Pro Asn Trp Arg Asn  
 1715 1720 1725  
 Thr Asn Pro Asp Ala Ile Leu Glu Ser Tyr Leu Leu Ala Thr His Phe  
 1730 1735 1740  
 Asp Lys Asn Trp Tyr Lys Ala Trp His Asn Trp Ala Leu Ala Asn Phe  
 1745 1750 1755 1760  
 Glu Val Ile Ser Met Val Gln Glu Glu Thr Lys Leu Asn Gly Gly Lys  
 1765 1770 1775  
 Asn Asp Asp Asp Asp Asp Thr Ala Val Asn Asn Asp Asn Val Arg Ile

## PhoenixTemp32470.tmp.txt

1780 1785 1790  
 Asp Gly Ser Ile Leu Gly Ser Gly Ser Leu Thr Ile Asn Gly Asn Arg  
 1795 1800 1805  
 Tyr Pro Leu Glu Leu Ile Gln Arg His Val Val Pro Ala Ile Lys Gly  
 1810 1815 1820  
 Phe Phe His Ser Ile Ser Leu Leu Glu Thr Ser Cys Leu Gln Asp Thr  
 1825 1830 1835 1840  
 Leu Arg Leu Leu Thr Leu Leu Phe Asn Phe Gly Gly Ile Lys Glu Val  
 1845 1850 1855  
 Ser Gln Ala Met Tyr Glu Gly Phe Asn Leu Met Lys Ile Glu Asn Trp  
 1860 1865 1870  
 Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln Pro Asp Pro  
 1875 1880 1885  
 Thr Val Ser Asn Ser Leu Leu Ser Leu Leu Ser Asp Leu Gly Lys Ala  
 1890 1895 1900  
 His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ile Lys Ser Glu  
 1905 1910 1915 1920  
 Ser Val Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu Lys Ile Arg  
 1925 1930 1935  
 Ile His Ser Pro Val Leu Val Asn Gln Ala Glu Leu Val Ser His Glu  
 1940 1945 1950  
 Leu Ile Arg Val Ala Val Leu Trp His Glu Leu Trp Tyr Glu Gly Leu  
 1955 1960 1965  
 Glu Asp Ala Ser Arg Gln Phe Val Glu His Asn Ile Glu Lys Met  
 1970 1975 1980  
 Phe Ser Thr Leu Glu Pro Leu His Lys His Leu Gly Asn Glu Pro Gln  
 1985 1990 1995 2000  
 Thr Leu Ser Glu Val Ser Phe Gln Lys Ser Phe Gly Arg Asp Leu Asn  
 2005 2010 2015  
 Asp Ala Tyr Glu Trp Leu Asn Asn Tyr Lys Lys Ser Lys Asp Ile Asn  
 2020 2025 2030  
 Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Lys Ile  
 2035 2040 2045  
 Thr Arg Gln Ile Pro Gln Leu Gln Thr Leu Asp Leu Gln His Val Ser  
 2050 2055 2060  
 Pro Gln Leu Leu Ala Thr His Asp Leu Glu Leu Ala Val Pro Gly Thr  
 2065 2070 2075 2080  
 Tyr Phe Pro Gly Lys Pro Thr Ile Arg Ile Ala Lys Phe Glu Pro Leu  
 2085 2090 2095  
 Phe Ser Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Phe Ser Ile Lys  
 2100 2105 2110  
 Gly Ser Asp Gly Lys Asp Tyr Lys Tyr Val Leu Lys Gly His Glu Asp  
 2115 2120 2125  
 Ile Arg Gln Asp Ser Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr  
 2130 2135 2140  
 Leu Leu Lys Asn Asp Ser Glu Cys Phe Lys Arg His Leu Asp Ile Gln  
 2145 2150 2155 2160  
 Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu Gly Trp  
 2165 2170 2175  
 Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg Glu His Arg Asp  
 2180 2185 2190  
 Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val Met Leu Gln Met  
 2195 2200 2205  
 Ala Pro Asp Tyr Glu Asn Leu Thr Leu Leu Gln Lys Ile Glu Val Phe  
 2210 2215 2220  
 Thr Tyr Ala Leu Asp Asn Thr Lys Gly Gln Asp Leu Tyr Lys Ile Leu  
 2225 2230 2235 2240  
 Trp Leu Lys Ser Arg Ser Ser Glu Thr Trp Leu Glu Arg Arg Thr Thr  
 2245 2250 2255  
 Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly Tyr Ile Leu Gly  
 2260 2265 2270  
 Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Ile Thr Gly  
 2275 2280 2285  
 Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu  
 2290 2295 2300  
 Arg Glu Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu  
 2305 2310 2315 2320  
 Thr Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr  
 2325 2330 2335

## PhoenixTemp32470.tmp.txt

Cys Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met  
 2340 2345 2350  
 Ala Ile Leu Glu Ala Phe Ala Leu Asp Pro Leu Ile His Trp Gly Phe  
 2355 2360 2365  
 Asp Leu Pro Pro Gln Lys Leu Thr Glu Gln Thr Gly Ile Pro Leu Pro  
 2370 2375 2380  
 Leu Ile Asn Pro Ser Glu Leu Leu Arg Lys Gly Ala Ile Thr Val Glu  
 2385 2390 2395 2400  
 Glu Ala Ala Asn Met Glu Ala Glu Gln Gln Asn Glu Thr Lys Asn Ala  
 2405 2410 2415  
 Arg Ala Met Leu Val Leu Arg Arg Ile Thr Asp Lys Leu Thr Gly Asn  
 2420 2425 2430  
 Asp Ile Lys Arg Phe Asn Glu Leu Asp Val Pro Glu Gln Val Asp Lys  
 2435 2440 2445  
 Leu Ile Gln Gln Ala Thr Ser Ile Glu Arg Leu Cys Gln His Tyr Ile  
 2450 2455 2460  
 Gly Trp Cys Pro Phe Trp  
 2465 2470

&lt;210&gt; 2512

&lt;211&gt; 7422

&lt;212&gt; DNA

&lt;213&gt; Bacteria

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7422)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2512

atg aat aaa tac att aac aaa tac acc acg cca cct aac tta ttg tct	48
Met Asn Lys Tyr Ile Asn Lys Tyr Thr Thr Pro Pro Asn Leu Leu Ser	
1 5 10 15	
tta cga caa agg gcc gaa ggc aaa cac aga aca aga aag aaa ctt aca	96
Leu Arg Gln Arg Ala Glu Gly Lys His Arg Thr Arg Lys Lys Leu Thr	
20 25 30	
cac aaa tcg cac tcc cac gat gat gag atg tca act act tca aac aca	144
His Lys Ser His Ser His Asp Asp Glu Met Ser Thr Thr Ser Asn Thr	
35 40 45	
gat tcc aat cac aat ggg ccc aat gac tct ggt aga gtg atc act ggt	192
Asp Ser Asn His Asn Gly Pro Asn Asp Ser Gly Arg Val Ile Thr Gly	
50 55 60	
tct gct ggt cat att ggt aaa ata tcc ttt gta gat tca gaa cta gat	240
Ser Ala Gly His Ile Gly Lys Ile Ser Phe Val Asp Ser Glu Leu Asp	
65 70 75 80	
aca aca ttt tct act tta aat ttg att ttt gat aaa ctt aaa agc gat	288
Thr Thr Phe Ser Thr Leu Asn Leu Ile Phe Asp Lys Leu Lys Ser Asp	
85 90 95	
gtg cca caa gaa cga gcc tct ggc gct aat gaa tta agc act act ttg	336
Val Pro Gln Glu Arg Ala Ser Gly Ala Asn Glu Leu Ser Thr Thr Leu	
100 105 110	
acc tca tta aca agg gaa gta tct gct gag caa ttt caa agg ttt agc	384
Thr Ser Leu Ala Arg Glu Val Ser Ala Glu Gln Phe Gln Arg Phe Ser	
115 120 125	
aac agt tta aac aat aag ata ttt gaa ctt att cac ggg ttt act tca	432
Asn Ser Leu Asn Asn Lys Ile Phe Glu Leu Ile His Gly Phe Thr Ser	
130 135 140	
agt gag aag ata ggt ggt att ctt gct gtt gat act ctg atc tca ttc	480
Ser Glu Lys Ile Gly Gly Ile Leu Ala Val Asp Thr Leu Ile Ser Phe	
145 150 155 160	
tac ctg agt aca gag gag ctg cca aac caa act tca aga ctg gcg aac	528
Tyr Leu Ser Thr Glu Glu Leu Pro Asn Gln Thr Ser Arg Leu Ala Asn	
165 170 175	
tat tta cgt gtt tta att cca tcc agt gac att gaa gtt atg aga tta	576
Tyr Leu Arg Val Leu Ile Pro Ser Ser Asp Ile Glu Val Met Arg Leu	
180 185 190	
gcg gct aac acc tta ggt aga ttg acc gtg cca ggt ggt aca tta aca	624
Ala Ala Asn Thr Leu Gly Arg Leu Thr Val Pro Gly Gly Thr Leu Thr	
195 200 205	

## PhoenixTemp32470.tmp.txt

tca	gat	ttc	gtc	gaa	ttt	gag	gtc	aga	act	tgc	att	gat	tgg	ctt	act	672
Ser	Asp	Phe	Val	Glu	Phe	Glu	Val	Arg	Thr	Cys	Ile	Asp	Trp	Leu	Thr	
	210					215					220					
ctg	aca	gca	gat	aat	aac	tca	tcg	agc	tct	aag	ttg	gaa	tac	agg	aga	720
Leu	Thr	Ala	Asp	Asn	Asn	Ser	Ser	Ser	Ser	Lys	Leu	Glu	Tyr	Arg	Arg	
225					230					235					240	
cat	gct	gcg	cta	tta	atc	ata	aag	gca	tta	gca	gac	aat	tca	ccc	tat	768
His	Ala	Ala	Leu	Leu	Ile	Ile	Lys	Ala	Leu	Ala	Asp	Asn	Ser	Pro	Tyr	
				245					250					255		
ctt	tta	tac	cct	tac	gtt	aac	tct	atc	tta	gac	aat	att	tgg	gtg	cca	816
Leu	Leu	Tyr	Pro	Tyr	Val	Asn	Ser	Ile	Leu	Asp	Asn	Ile	Trp	Val	Pro	
			260					265					270			
tta	agg	gat	gca	aag	tta	att	ata	cga	tta	gat	gcc	gca	gtg	gca	ttg	864
Leu	Arg	Asp	Ala	Lys	Leu	Ile	Ile	Arg	Leu	Asp	Ala	Ala	Val	Ala	Leu	
		275					280					285				
ggt	aaa	tgt	ctt	act	att	att	cag	gat	aga	gac	cct	gct	ttg	gga	aaa	912
Gly	Lys	Cys	Leu	Thr	Ile	Ile	Gln	Asp	Arg	Asp	Pro	Ala	Leu	Gly	Lys	
	290					295					300					
cag	tgg	ttt	caa	aga	tta	ttt	caa	ggt	tgt	aca	cat	ggc	tta	agt	ctc	960
Gln	Trp	Phe	Gln	Arg	Leu	Phe	Gln	Gly	Cys	Thr	His	Gly	Leu	Ser	Leu	
305					310					315					320	
aat	acg	aat	gat	tca	gtg	cat	gct	act	ctg	ttg	gta	ttt	cga	gaa	tta	1008
Asn	Thr	Asn	Asp	Ser	Val	His	Ala	Thr	Leu	Leu	Val	Phe	Arg	Glu	Leu	
				325					330					335		
ctc	agc	ttg	aaa	gca	cct	tat	ctc	agg	gat	aaa	tat	gat	gat	att	tac	1056
Leu	Ser	Leu	Lys	Ala	Pro	Tyr	Leu	Arg	Asp	Lys	Tyr	Asp	Asp	Ile	Tyr	
			340					345					350			
aaa	tct	act	atg	aag	tac	aag	gaa	tat	aaa	ttt	gat	gtt	ata	agg	aga	1104
Lys	Ser	Thr	Met	Lys	Tyr	Lys	Glu	Tyr	Lys	Phe	Asp	Val	Ile	Arg	Arg	
		355					360					365				
gaa	gtt	tat	gct	att	tta	cct	ctt	tta	gct	gct	ttt	gac	cct	gcc	att	1152
Glu	Val	Tyr	Ala	Ile	Leu	Pro	Leu	Leu	Ala	Ala	Phe	Asp	Pro	Ala	Ile	
	370					375					380					
ttc	aca	aag	aaa	tat	ctc	gat	agg	ata	atg	gtt	cat	tat	tta	aga	tat	1200
Phe	Thr	Lys	Lys	Tyr	Leu	Asp	Arg	Ile	Met	Val	His	Tyr	Leu	Arg	Tyr	
385					390					395					400	
ttg	aag	aac	atc	gat	atg	aat	gct	gca	aat	aat	tcg	gat	aaa	cct	ttt	1248
Leu	Lys	Asn	Ile	Asp	Met	Asn	Ala	Ala	Asn	Asn	Ser	Asp	Lys	Pro	Phe	
			405					410						415		
ata	tta	gtt	tct	ata	ggt	gat	att	gca	ttt	gaa	gtt	ggt	tcg	agc	att	1296
Ile	Leu	Val	Ser	Ile	Gly	Asp	Ile	Ala	Phe	Glu	Val	Gly	Ser	Ser	Ile	
			420					425					430			
tca	ccc	tat	atg	aca	ctt	att	ctg	gat	aat	att	agg	gaa	ggc	tta	aga	1344
Ser	Pro	Tyr	Met	Thr	Leu	Ile	Leu	Asp	Asn	Ile	Arg	Glu	Gly	Leu	Arg	
		435					440					445				
acg	aaa	ttc	aaa	gtt	aga	aaa	caa	ttc	gag	aag	gat	ttt	tta	ttt	tgc	1392
Thr	Lys	Phe	Lys	Val	Arg	Lys	Gln	Phe	Glu	Lys	Asp	Leu	Phe	Tyr	Cys	
	450					455					460					
att	ggt	aaa	tta	gct	tgt	gct	ttg	ggc	cca	gct	ttt	gct	aag	cac	ttg	1440
Ile	Gly	Lys	Leu	Ala	Cys	Ala	Leu	Gly	Pro	Ala	Phe	Ala	Lys	His	Leu	
465				470				475							480	
aac	aaa	gat	ctt	ctt	aat	ttg	atg	tta	aac	tgt	cca	atg	tcc	gac	cat	1488
Asn	Lys	Asp	Leu	Leu	Asn	Leu	Met	Leu	Asn	Cys	Pro	Met	Ser	Asp	His	
				485				490						495		
atg	cag	gag	act	tta	atg	atc	ctt	aac	gag	aaa	ata	ccc	tct	ttg	gaa	1536
Met	Gln	Glu	Thr	Leu	Met	Ile	Leu	Asn	Glu	Lys	Ile	Pro	Ser	Leu	Glu	
			500					505					510			
tct	acc	gtt	aat	tcg	agg	ata	cta	aat	tta	ctg	tcg	ata	tcc	tta	tct	1584
Ser	Thr	Val	Asn	Ser	Arg	Ile	Leu	Asn	Leu	Leu	Ser	Ile	Ser	Leu	Ser	
		515					520					525				
ggt	gaa	aaa	ttt	att	caa	tca	aac	caa	tac	gat	ttt	aat	aat	caa	ttt	1632
Gly	Glu	Lys	Phe	Ile	Gln	Ser	Asn	Gln	Tyr	Asp	Phe	Asn	Asn	Gln	Phe	
	530					535					540					
tcc	att	gaa	aag	gct	cgt	aaa	tca	aga	aac	caa	agt	ttc	atg	aaa	aaa	1680
Ser	Ile	Glu	Lys	Ala	Arg	Lys	Ser	Arg	Asn	Gln	Ser	Phe	Met	Lys	Lys	
545				550						555					560	
act	ggt	gaa	tct	aat	gac	gat	att	aca	gat	gcc	caa	att	ttg	att	cag	1728
Thr	Gly	Glu	Ser	Asn	Asp	Asp	Ile	Thr	Asp	Ala	Gln	Ile	Leu	Ile	Gln	
				565					570					575		

## PhoenixTemp32470.tmp.txt

tgt	ttt	aaa	atg	ctg	caa	cta	att	cat	cat	caa	tat	tcc	ttg	acg	gag	1776
Cys	Phe	Lys	Met	Leu	Gln	Leu	Ile	His	His	Gln	Tyr	Ser	Leu	Thr	Glu	
			580					585					590			
ttt	gtt	agg	ctt	ata	acc	att	tct	tac	att	gag	cat	gag	gat	tcg	tct	1824
Phe	Val	Arg	Leu	Ile	Thr	Ile	Ser	Tyr	Ile	Glu	His	Glu	Asp	Ser	Ser	
		595					600					605				
gtc	aga	aaa	ttg	gca	gca	tta	acg	tcg	tgt	gat	tta	ttt	atc	aaa	gac	1872
Val	Arg	Lys	Leu	Ala	Ala	Leu	Thr	Ser	Cys	Asp	Leu	Phe	Ile	Lys	Asp	
	610					615					620					
gat	ata	tgt	aaa	caa	aca	tca	gtt	cat	gct	tta	cac	tcg	gtt	tct	gaa	1920
Asp	Ile	Cys	Lys	Gln	Thr	Ser	Val	His	Ala	Leu	His	Ser	Val	Ser	Glu	
625					630					635					640	
gtg	cta	agt	aag	cta	tta	atg	atc	gca	ata	act	gat	ccg	gtt	gca	gaa	1968
Val	Leu	Ser	Lys	Leu	Leu	Met	Ile	Ala	Ile	Thr	Asp	Pro	Val	Ala	Glu	
				645					650					655		
att	aga	ttg	gaa	att	ctt	cag	cat	ttg	ggg	tca	aat	ttt	gat	cct	caa	2016
Ile	Arg	Leu	Glu	Ile	Leu	Gln	His	Leu	Gly	Ser	Asn	Phe	Asp	Pro	Gln	
			660					665					670			
ttg	gcc	caa	cca	gac	aat	tta	cgc	cta	ctt	ttc	atg	gcg	ctg	aac	gat	2064
Leu	Ala	Gln	Pro	Asp	Asn	Leu	Arg	Leu	Leu	Phe	Met	Ala	Leu	Asn	Asp	
		675					680					685				
gag	att	ttt	ggt	att	caa	ttg	gaa	gct	atc	aaa	ata	ata	ggc	aga	ttg	2112
Glu	Ile	Phe	Gly	Ile	Gln	Leu	Glu	Ala	Ile	Lys	Ile	Ile	Gly	Arg	Leu	
	690					695					700					
agt	tct	gtc	aac	ccc	gct	tat	gta	gtt	cct	tct	ttg	agg	aaa	act	tta	2160
Ser	Ser	Val	Asn	Pro	Ala	Tyr	Val	Val	Pro	Ser	Leu	Arg	Lys	Thr	Leu	
705					710					715					720	
ctg	gaa	cta	tta	acg	caa	ttg	aag	ttc	tca	aat	atg	cca	aaa	aaa	aag	2208
Leu	Glu	Leu	Leu	Thr	Gln	Leu	Lys	Phe	Ser	Asn	Met	Pro	Lys	Lys	Lys	
				725					730					735		
gag	gaa	agt	gca	act	cta	tta	tgt	acg	ctg	ata	aat	tcc	agc	gat	gaa	2256
Glu	Glu	Ser	Ala	Thr	Leu	Leu	Cys	Thr	Leu	Ile	Asn	Ser	Ser	Asp	Glu	
			740				745					750				
gta	gcg	aaa	cct	tat	att	gat	cct	att	cta	gac	gtc	att	ctt	cct	aaa	2304
Val	Ala	Lys	Pro	Tyr	Ile	Asp	Pro	Ile	Leu	Asp	Val	Ile	Leu	Pro	Lys	
		755					760					765				
tgc	cag	gat	gct	tca	tct	gcc	gta	gca	tcc	acc	gct	tta	aag	gtt	ttg	2352
Cys	Gln	Asp	Ala	Ser	Ser	Ala	Val	Ala	Ser	Thr	Ala	Leu	Lys	Val	Leu	
	770					775					780					
ggt	gaa	cta	tct	gtt	gtt	gga	gga	aaa	gaa	atg	acg	cgt	tac	tta	aag	2400
Gly	Glu	Leu	Ser	Val	Val	Gly	Gly	Lys	Glu	Met	Thr	Arg	Tyr	Leu	Lys	
785					790					795					800	
gaa	ttg	atg	cca	ttg	atc	att	aac	aca	ttt	cag	gac	caa	tca	aac	tct	2448
Glu	Leu	Met	Pro	Leu	Ile	Ile	Asn	Thr	Phe	Gln	Asp	Gln	Ser	Asn	Ser	
				805					810					815		
ttt	aaa	aga	gat	gcc	gcc	tta	aca	aca	tta	gga	cag	ctg	gct	gct	tcc	2496
Phe	Lys	Arg	Asp	Ala	Ala	Leu	Thr	Thr	Leu	Gly	Gln	Leu	Ala	Ala	Ser	
			820					825					830			
tct	ggt	tat	gtt	gtt	ggc	cct	tta	cta	gac	tac	cca	gag	tta	ctt	ggc	2544
Ser	Gly	Tyr	Val	Val	Gly	Pro	Leu	Leu	Asp	Tyr	Pro	Glu	Leu	Leu	Gly	
		835					840					845				
att	ttg	ata	aat	att	ctt	aag	act	gaa	aac	aac	cct	cat	atc	agg	cgt	2592
Ile	Leu	Ile	Asn	Ile	Leu	Lys	Thr	Glu	Asn	Asn	Pro	His	Ile	Arg	Arg	
						855					860					
gga	act	gtt	cgt	ttg	att	ggt	ata	tta	ggc	gct	ctt	gat	cca	tat	aag	2640
Gly	Thr	Val	Arg	Leu	Ile	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	
865					870				875						880	
cac	aga	gaa	ata	gaa	gtc	aca	tca	aac	tca	aag	agt	tca	gta	gag	caa	2688
His	Arg	Glu	Ile	Glu	Val	Thr	Ser	Asn	Ser	Lys	Ser	Ser	Val	Glu	Gln	
				885					890					895		
aat	gct	cct	tca	atc	gac	atc	gca	ttg	cta	atg	caa	ggg	gta	tct	cca	2736
Asn	Ala	Pro	Ser	Ile	Asp	Ile	Ala	Leu	Leu	Met	Gln	Gly	Val	Ser	Pro	
			900					905					910			
tcc	aac	gat	gaa	tat	tac	ccc	act	gta	gtt	atc	cac	aat	ctg	atg	aag	2784
Ser	Asn	Asp	Glu	Tyr	Tyr	Pro	Thr	Val	Val	Ile	His	Asn	Leu	Met	Lys	
		915					920					925				
ata	ttg	aat	gat	cca	tcg	ttg	tca	atc	cat	cac	acg	gct	gct	att	caa	2832
Ile	Leu	Asn	Asp	Pro	Ser		Ser	Ile	His	His	Thr	Ala	Ala	Ile	Gln	
		930				935					940					

## PhoenixTemp32470.tmp.txt

gct att atg cat att ttt	caa aac ctt ggt tta cga tgt gtc tcc ttt	2880
Ala Ile Met His Ile Phe	Gln Asn Leu Gly Leu Arg Cys Val Ser Phe	
945	950 955 960	
ttg gat caa att att cca ggt atc att tta gtc atg cgt tca tgc ccg		2928
Leu Asp Gln Ile Ile Pro Gly Ile Ile Leu Val Met Arg Ser Cys Pro		
965	970 975	
ccg tcc caa ctt gac ttt tat ttt cag caa ctg gga tct ctc atc tca		2976
Pro Ser Gln Leu Asp Phe Tyr Phe Gln Leu Gly Ser Leu Ile Ser		
980	985 990	
att gtc aag caa cat att agg ccc cat gtc gag aaa att tat ggt gtg		3024
Ile Val Lys Gln His Ile Arg Pro His Val Glu Lys Ile Tyr Gly Val		
995	1000 1005	
atc agg gag ttt ttc ccg atc att aaa cta caa atc aca att att tct		3072
Ile Arg Glu Phe Phe Pro Ile Ile Lys Leu Gln Ile Thr Ile Ile Ser		
1010	1015 1020	
gtc ata gaa tcg ata tct aag gct ctg gaa ggt gag ttt aaa aga ttt		3120
Val Ile Glu Ser Ile Ser Lys Ala Leu Glu Gly Glu Phe Lys Arg Phe		
1025	1030 1035	
gtt ccc gag act cta acc ttt ttc ctt gat att ctt gag aac gac cag		3168
Val Pro Glu Thr Leu Thr Phe Phe Leu Asp Ile Leu Glu Asn Asp Gln		
1045	1050 1055	
tct aat aaa agg atc gtt ccg att cgt ata tta aaa tct ttg gtt act		3216
Ser Asn Lys Arg Ile Val Pro Ile Arg Ile Leu Lys Ser Leu Val Thr		
1060	1065 1070	
ttt ggg ccg aat cta gaa gac tat tcc cat ttg att atg cct atc gtt		3264
Phe Gly Pro Asn Leu Glu Asp Tyr Ser His Leu Ile Met Pro Ile Val		
1075	1080 1085	
gtt aga atg act gag tat tct gct gga agt cta aag aaa atc tcc att		3312
Val Arg Met Thr Glu Tyr Ala Gly Ser Leu Lys Ile Ser Ile		
1090	1095 1100	
ata act ttg ggt aga tta gca aag aat atc aac ctc tct gaa atg tca		3360
Ile Thr Leu Gly Arg Leu Ala Lys Asn Ile Asn Leu Ser Glu Met Ser		
1105	1110 1115	
tca aga att gtt cag gcg ttg gta aga att ttg aat aat ggg gat aga		3408
Ser Arg Ile Val Gln Ala Leu Val Arg Ile Leu Asn Asn Gly Asp Arg		
1125	1130 1135	
gaa cta aca aaa gca acc atg aat acg cta agt ttg ctc ctt tta caa		3456
Glu Leu Thr Lys Ala Thr Met Asn Thr Leu Ser Leu Leu Leu Gln		
1140	1145 1150	
cta ggt acc gac ttt gtg gtc ttt gtg cca gtg att aac aag gcg tta		3504
Leu Gly Thr Asp Phe Val Val Phe Val Pro Val Ile Asn Lys Ala Leu		
1155	1160 1165	
ttg agg aat agg att cag cat tca gtg tac gat caa ctg gtt aat aaa		3552
Leu Arg Asn Arg Ile Gln His Ser Val Tyr Asp Gln Leu Val Asn Lys		
1170	1175 1180	
tta ctg aac aat gaa tgc ttg cca aca aat atc ata ttt gac aag gag		3600
Leu Leu Asn Asn Glu Cys Leu Pro Thr Asn Ile Ile Phe Asp Lys Glu		
1185	1190 1195	
aac gaa gta cct gaa agg aaa aat tat gaa gac gaa atg caa gta acg		3648
Asn Glu Val Pro Glu Arg Lys Asn Tyr Glu Asp Glu Met Gln Val Thr		
1205	1210 1215	
aaa tta ccg gta aac caa aat atc cta aag aat gca tgg tat tgt tct		3696
Lys Leu Pro Val Asn Gln Asn Ile Leu Lys Asn Ala Trp Tyr Cys Ser		
1220	1225 1230	
caa cag aag acc aaa gaa gat tgg caa gaa tgg ata aga agg cta tct		3744
Gln Gln Lys Thr Lys Glu Asp Trp Gln Glu Trp Ile Arg Leu Ser		
1235	1240 1245	
att cag ctt cta aag gaa tca cct tca gct tgt cta cga tcc tgt tcg		3792
Ile Gln Leu Leu Lys Glu Ser Pro Ser Ala Cys Leu Arg Ser Cys Ser		
1250	1255 1260	
agt tta gtc agc gtt tat tat ccg ttg gcg aga gaa ttg ttt aat gct		3840
Ser Leu Val Ser Val Tyr Tyr Pro Leu Ala Arg Glu Leu Phe Asn Ala		
1265	1270 1275	
tca ttc tca agt tgc tgg gtt gag ctt caa acg tca tac caa gag gat		3888
Ser Phe Ser Ser Cys Trp Val Glu Leu Gln Thr Ser Tyr Gln Glu Asp		
1285	1290 1295	
ttg att caa gca tta tgc aag gct tta tca tcc tct gaa aac cca ccc		3936
Leu Ile Gln Ala Leu Cys Lys Ala Leu Ser Ser Ser Glu Asn Pro Pro		
1300	1305 1310	



## PhoenixTemp32470.tmp.txt

gag att tat caa atg ttg tta aat tta gtg gaa ttt atg gag cac gat 3984  
 Glu Ile Tyr Gln Met Leu Leu Asn Leu Val Glu Phe Met Glu His Asp  
 1315 1320 1325  
 gac aaa cca ttg cct atc cca atc cat aca tta ggt aag tat gcc caa 4032  
 Asp Lys Pro Leu Pro Ile Pro Ile His Thr Leu Gly Lys Tyr Ala Gln  
 1330 1335 1340  
 aaa tgt cat gct ttt gcg aag gca cta cat tac aaa gag gta gaa ttc 4080  
 Lys Cys His Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Val Glu Phe  
 1345 1350 1355 1360  
 tta gaa gag ccg aaa aat tca aca atc gag gca ttg att agc att aat 4128  
 Leu Glu Glu Pro Lys Asn Ser Thr Ile Glu Ala Leu Ile Ser Ile Asn  
 1365 1370 1375  
 aat caa ctt cac caa act gat tct gct att ggt att ttg aag cat gcg 4176  
 Asn Gln Leu His Gln Thr Asp Ser Ala Ile Gly Ile Leu Lys His Ala  
 1380 1385 1390  
 caa caa cac aat gaa ttg cag ctg aag gaa act tgg tat gaa aaa ctt 4224  
 Gln Gln His Asn Glu Leu Gln Leu Lys Glu Thr Trp Tyr Glu Lys Leu  
 1395 1400 1405  
 caa cgt tgg gag gat gct ctt gca gca tat aat gag aag gag gca gca 4272  
 Gln Arg Trp Glu Asp Ala Leu Ala Ala Tyr Asn Glu Lys Glu Ala Ala  
 1410 1415 1420  
 gga gaa gat tcg gtt gaa gtg atg atg gga aaa tta aga tcg tta tat 4320  
 Gly Glu Asp Ser Val Glu Val Met Met Gly Lys Leu Arg Ser Leu Tyr  
 1425 1430 1435 1440  
 gcc ctt gga gag tgg gaa gag ctt tct aaa ttg gca tct gaa aag tgg 4368  
 Ala Leu Gly Glu Trp Glu Glu Leu Ser Lys Leu Ala Ser Glu Lys Trp  
 1445 1450 1455  
 ggc acg gca aaa ccc gaa gtg aag aag gca atg gcg cct ttg gct gcc 4416  
 Gly Thr Ala Lys Pro Glu Val Lys Lys Ala Met Ala Pro Leu Ala Ala  
 1460 1465 1470  
 gct gcc tgg ggt ttg gag caa tgg gat gaa ata gcc cag tat act agc 4464  
 Ala Ala Trp Gly Leu Glu Gln Trp Asp Glu Ile Ala Gln Tyr Thr Ser  
 1475 1480 1485  
 gtc atg aaa tcg cag tct cca gat aaa gaa ttc tat gat gca att tta 4512  
 Val Met Lys Ser Gln Ser Pro Asp Lys Glu Phe Tyr Asp Ala Ile Leu  
 1490 1495 1500  
 tgt ttg cat agg aat aat ttt aag aag gcg gaa gtt cac atc ttt aat 4560  
 Cys Leu His Arg Asn Asn Phe Lys Lys Ala Glu Val His Ile Phe Asn  
 1505 1510 1515 1520  
 gca agg gat ctt cta gtt act gaa ttg tca gct ctt gtt aat gaa agc 4608  
 Ala Arg Asp Leu Val Thr Glu Leu Ser Ala Leu Val Asn Glu Ser  
 1525 1530 1535  
 tac aat aga gca tat aat gtt gtt gtt aga gcg cag att ata gca gag 4656  
 Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Ala Gln Ile Ile Ala Glu  
 1540 1545 1550  
 ttg gag gaa atc atc aaa tat aag aag ttg cca caa aat tca gat aaa 4704  
 Leu Glu Glu Ile Ile Lys Tyr Lys Lys Leu Pro Gln Asn Ser Asp Lys  
 1555 1560 1565  
 cgt cta act atg aga gaa act tgg aat acc aga tta ctg gcc tgt caa 4752  
 Arg Leu Thr Met Arg Glu Thr Trp Asn Thr Arg Leu Leu Gly Cys Gln  
 1570 1575 1580  
 aaa aat att gat gtg tgg caa aga att ctg cgt gtc aga tca ttg gtg 4800  
 Lys Asn Ile Asp Val Trp Gln Arg Ile Leu Arg Val Arg Ser Leu Val  
 1585 1590 1595 1600  
 ata aag cca aag gag gat gct caa gtg agg att aag ttt gcc aac tta 4848  
 Ile Lys Pro Lys Glu Asp Ala Gln Val Arg Ile Lys Phe Ala Asn Leu  
 1605 1610 1615  
 tgc aga aaa tcg ggt agg atg gcg cta gct aaa aaa gtc tta aat aca 4896  
 Cys Arg Lys Ser Gly Arg Met Ala Leu Ala Lys Lys Val Leu Asn Thr  
 1620 1625 1630  
 ttg ctt gaa gaa aca gat gac cca gat cat cct aat act gct aag gca 4944  
 Leu Leu Glu Glu Thr Asp Asp Pro Asp His Pro Asn Thr Ala Lys Ala  
 1635 1640 1645  
 tcc cct cca gtt gtt tat gca caa ctg aag tac ttg tgg gct acg ggg 4992  
 Ser Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Leu Trp Ala Thr Gly  
 1650 1655 1660  
 ttg caa gat gag gct ttg aag caa tta att aat ttc aca tct aga atg 5040  
 Leu Gln Asp Glu Ala Leu Lys Gln Leu Ile Asn Phe Thr Ser Arg Met  
 1665 1670 1675 1680

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gct cat gat tta ggt ttg gat cca aat aat atg ata gct caa agc gtt	5088
Ala His Asp Leu Gly 1685 Leu Asp Pro Asn Asn Met Ile Ala Gln Ser Val 1695	
cct caa caa agc aaa aga gtc cct cgt cac gtt gaa gat tat act aag	5136
Pro Gln Gln Ser Lys Arg Val Pro Arg His Val Glu Asp Tyr Thr Lys 1700 1705 1710	
ctt tta gct cgt tgt ttc ttg aag caa gga gaa tgg aga gtt tgc tta	5184
Leu Leu 1715 Ala Arg Cys Phe Leu 1720 Lys Gln Gly Glu Trp Arg Val Cys Leu 1725	
cag cct aaa tgg aga ttg agc aat cca gat tcg atc cta ggc tcc tat	5232
Gln Pro Lys Trp Arg Leu Ser Asn Pro Asp Ser Ile Leu Gly Ser Tyr 1730 1735 1740	
ttg ctc gct aca cat ttt gac aac aca tgg tac aaa gcg tgg cat aac	5280
Leu Leu Ala Thr His 1750 Phe Asp Asn Thr Trp Tyr 1755 Lys Ala Trp His Asn 1760	
tgg gca ctg gcc aat ttt gaa gtc att tct atg cta aca tct gtc tct	5328
Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Met Leu Thr Ser Val Ser 1765 1770 1775	
aaa aag aaa cag gaa gga agt gat gct tcc tcg gta act gat att aat	5376
Lys Lys Lys 1780 Gln Glu Gly Ser Asp Ala Ser Ser Val Thr Asp Ile Asn 1785 1790	
gag ttt gat aat ggc atg atc ggc gtc aat aca ttt gat gct aag gaa	5424
Glu Phe Asp Asn Gly Met Ile Gly Val Asn Thr Phe Asp Ala Lys Glu 1795 1800 1805	
gtt cat tac tct tct aat tta ata cac agg cac gta att cca gca att	5472
Val His Tyr Ser Ser Asn Leu Ile His Arg His Val Ile Pro Ala Ile 1810 1815 1820	
aag ggt ttt ttt cat tcc att tct tta tca gaa tca agc tct ctt caa	5520
Lys Gly Phe Phe His 1830 Ser Ile Ser Leu Ser Glu Ser Ser Ser Leu Gln 1825 1835 1840	
gat gca tta agg tta tta act tta tgg ttt act ttt ggt ggt att cca	5568
Asp Ala Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Gly Ile Pro 1845 1850 1855	
gaa gca acc caa gct atg cac gag ggt ttc aac cta atc caa ata ggc	5616
Glu Ala Thr 1860 Ala Met His Glu Gly Phe Asn Leu Ile Gln Ile Gly 1865 1870	
aca tgg tta gaa gtg ttg cca cag tta att tct aga att cat caa ccc	5664
Thr Trp Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln Pro 1875 1880 1885	
aat caa att gtt agt agg tca tta ctc tcc cta tta tct gat cta ggt	5712
Asn Gln Ile Val Ser Arg Ser Leu Leu Ser Leu Ser Asp Leu Gly 1890 1895 1900	
aag gct cat ccg cag gca tta gtg tac ccc tta atg gtt gcg att aaa	5760
Lys Ala His Pro Gln Ala Leu Val Tyr Pro Leu Met Val Ala Ile Lys 1905 1910 1915 1920	
tcc gaa tct ctc tca cag aaa gca gct ttg tcc atc ata gaa aag	5808
Ser Glu Ser Leu Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu Lys 1925 1930 1935	
atg aga ata cat agt cca gtt ttg gtc gac cag gct gaa ctt gtc agc	5856
Met Arg Ile His Ser Pro Val Leu Val Asp Gln Ala Glu Leu Val Ser 1940 1945 1950	
cac gaa ttg ata cgt atg gcg gtg ctt ttg cat gag caa tgg tat gag	5904
His Glu Leu Ile Arg Met Ala Val Leu Trp His Glu Gln Trp Tyr Glu 1955 1960 1965	
ggt ctg gat gac gcc agt agg cag ttt ttt gga gaa cat aat acc gaa	5952
Gly Leu Asp Asp Ala Ser Arg Gln Phe Phe Gly Glu His Asn Thr Glu 1970 1975 1980	
aaa atg ttt gct gct tta gag cct ctg tac gaa atg ctg aag aga gga	6000
Lys Met Phe Ala Ala Leu Glu Pro Leu Tyr Glu Met Leu Lys Arg Gly 1985 1990 1995 2000	
ccg gaa act ttg agg gaa ata tcg ttc caa aat tct ttt ggt agg gac	6048
Pro Glu Thr Leu Arg Glu Ile Ser Phe Gln Asn Ser Phe Gly Arg Asp 2005 2010 2015	
ttg aat gac gct tac gaa tgg ctg atg aat tac aaa aaa tct aaa gat	6096
Leu Asn Asp Ala Tyr Glu Trp Leu Met Asn Tyr Lys Lys Ser Lys Asp 2020 2025 2030	
gtt agt aat tta aac caa gcg tgg gac att tac tat aat gtt ttc agg	6144
Val Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg 2035 2040 2045	

## PhoenixTemp32470.tmp.txt

aaa att ggt aaa cag ttg cca caa tta caa act ctt gaa cta caa cat	6192
Lys Ile Gly Lys Gln Leu Pro Gln Leu Gln Thr Leu Glu Leu Gln His	
2050 2055 2060	
gtg tcg cca aaa cta cta tct gcg cat gat ttg gaa ttg gct gtc ccc	6240
Val Ser Pro Lys Leu Leu Ser Ala His Asp Leu Glu Leu Ala Val Pro	
2065 2070 2075 2080	
ggg acc cgt gca agt ggt gga aaa cca att gtt aaa ata tct aaa ttc	6288
Gly Thr Arg Ala Ser Gly Gly Lys Pro Ile Val Lys Ile Ser Lys Phe	
2085 2090 2095	
gag cca gta ttt tca gta atc tca tcc aaa caa aga ccg aga aag ttt	6336
Glu Pro Val Phe Ser Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Phe	
2100 2105 2110	
tgt atc aag ggt agt gat ggt aaa gat tat aag tat gtg ttg aaa gga	6384
Cys Ile Lys Gly Ser Asp Gly Lys Asp Tyr Lys Tyr Val Leu Lys Gly	
2115 2120 2125	
cat gaa gac att aga cag gat agc ttg gtc atg caa tta ttc gga cta	6432
His Glu Asp Ile Arg Gln Asp Ser Leu Val Met Gln Leu Phe Gly Leu	
2130 2135 2140	
gtt aac acg ctt ttg caa aat gac gct gag tgc ttt aga agg cat cta	6480
Val Asn Thr Leu Leu Gln Asn Asp Ala Glu Cys Phe Arg Arg His Leu	
2145 2150 2155 2160	
gat atc cag caa tat cca gca atc cca tta tct ccg aag tct ggg tta	6528
Asp Ile Gln Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu	
2165 2170 2175	
ctg ggt tgg gta ccg aat agt gac acg ttc cat gta tta att agg gag	6576
Leu Gly Trp Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg Glu	
2180 2185 2190	
cat aga gaa gcc aaa aaa att cct tta aac att gag cat tgg gtc atg	6624
His Arg Glu Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val Met	
2195 2200 2205	
tta caa atg gca cct gat tat gac aat tta acg ttg ttg cag aaa gta	6672
Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Leu Gln Lys Val	
2210 2215 2220	
gaa gtc ttc act tac gcc cta aat aat acg gag gga caa gat ctt tat	6720
Glu Val Phe Thr Tyr Ala Leu Asn Asn Thr Glu Gly Gln Asp Leu Tyr	
2225 2230 2235 2240	
aag gtg tta tgg ctg aag agt agg tca tcg gaa acg tgg ttg gag cgt	6768
Lys Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Thr Trp Leu Glu Arg	
2245 2250 2255	
aga act act tac act cga tcg cta gcc gtg atg tcc atg acc ggt tat	6816
Arg Thr Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly Tyr	
2260 2265 2270	
ata ttg ggg tta ggt gac cgc cac cct agt aat ttg atg ttg gat aga	6864
Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg	
2275 2280 2285	
atc act ggg aaa gtc att cat att gat ttt ggt gat tgt ttc gag gct	6912
Ile Thr Gly Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala	
2290 2295 2300	
gct ata tta aga gaa aaa ttc ccc gaa aaa gta cct ttt aga tta act	6960
Ala Ile Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr	
2305 2310 2315 2320	
aga atg tta aca tat gca atg gaa gtg agt gga att gaa ggt agc ttc	7008
Arg Met Leu Thr Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe	
2325 2330 2335	
cgt att act tgt gag aat gtt atg aag gta ctt aga gat aac aag ggt	7056
Arg Ile Thr Cys Glu Asn Val Met Lys Val Leu Arg Asp Asn Lys Gly	
2340 2345 2350	
tca tta atg gca atc ctt gaa gct ttt gct ttc gat cct ttg atc aat	7104
Ser Leu Met Ala Ile Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile Asn	
2355 2360 2365	
tgg ggt ttt gac tta cca aca aag aaa att gag gaa gaa acg ggc att	7152
Trp Gly Phe Asp Leu Pro Thr Lys Lys Ile Glu Glu Glu Thr Gly Ile	
2370 2375 2380	
caa ctt ccc gtg atg aat gcc aat gag cta ttg agt aat ggg gct att	7200
Gln Leu Pro Val Met Asn Ala Asn Glu Leu Leu Ser Asn Gly Ala Ile	
2385 2390 2395 2400	
acc gaa gaa gaa gtt caa agg gtg gaa aac gag cac aag aat gcc att	7248
Thr Glu Glu Glu Val Gln Arg Val Glu Asn Glu His Lys Asn Ala Ile	
2405 2410 2415	

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cga aat gca agg gcc atg ttg gta ttg aag cgc att act gac aaa tta 7296
Arg Asn Ala Arg Ala Met Leu Val Leu Lys Arg Ile Thr Asp Lys Leu
2420 2425 2430
acg ggg aac gat ata aga agg ttt aat gac ttg gac gtt cca gaa caa 7344
Thr Gly Asn Asp Ile Arg Arg Phe Asn Asp Leu Asp Val Pro Glu Gln
2435 2440 2445
gtg gat aaa cta atc caa caa gcc aca tca gtg gaa aac cta tgc caa 7392
Val Asp Lys Leu Ile Gln Gln Ala Thr Ser Val Glu Asn Leu Cys Gln
2450 2455 2460
cat tat atc ggt tgg tgt cca ttc tgg tag 7422
His Tyr Ile Gly Trp Cys Pro Phe Trp
2465 2470

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&lt;210&gt; 2513

&lt;211&gt; 2473

&lt;212&gt; PRT

&lt;213&gt; Bacteria

&lt;400&gt; 2513

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Met Asn Lys Tyr Ile Asn Lys Tyr Thr Thr Pro Pro Asn Leu Leu Ser
1 5 10 15
Leu Arg Gln Arg Ala Glu Gly Lys His Arg Thr Arg Lys Lys Leu Thr
20 25 30
His Lys Ser His Ser His Asp Asp Glu Met Ser Thr Thr Ser Asn Thr
35 40 45
Asp Ser Asn His Asn Gly Pro Asn Asp Ser Gly Arg Val Ile Thr Gly
50 55 60
Ser Ala Gly His Ile Gly Lys Ile Ser Phe Val Asp Ser Glu Leu Asp
65 70 75 80
Thr Thr Phe Ser Thr Leu Asn Leu Ile Phe Asp Lys Leu Lys Ser Asp
85 90 95
Val Pro Gln Glu Arg Ala Ser Gly Ala Asn Glu Leu Ser Thr Thr Leu
100 105 110
Thr Ser Leu Ala Arg Glu Val Ser Ala Glu Gln Phe Gln Arg Phe Ser
115 120 125
Asn Ser Leu Asn Asn Lys Ile Phe Glu Leu Ile His Gly Phe Thr Ser
130 135 140
Ser Glu Lys Ile Gly Gly Ile Leu Ala Val Asp Thr Leu Ile Ser Phe
145 150 155 160
Tyr Leu Ser Thr Glu Glu Leu Pro Asn Gln Thr Ser Arg Leu Ala Asn
165 170 175
Tyr Leu Arg Val Leu Ile Pro Ser Ser Asp Ile Glu Val Met Arg Leu
180 185 190
Ala Ala Asn Thr Leu Gly Arg Leu Thr Val Pro Gly Gly Thr Leu Thr
195 200 205
Ser Asp Phe Val Glu Phe Glu Val Arg Thr Cys Ile Asp Trp Leu Thr
210 215 220
Leu Thr Ala Asp Asn Asn Ser Ser Ser Lys Leu Glu Tyr Arg Arg
225 230 235 240
His Ala Ala Leu Leu Ile Ile Lys Ala Leu Ala Asp Asn Ser Pro Tyr
245 250 255
Leu Leu Tyr Pro Tyr Val Asn Ser Ile Leu Asp Asn Ile Trp Val Pro
260 265 270
Leu Arg Asp Ala Lys Leu Ile Ile Arg Leu Asp Ala Ala Val Ala Leu
275 280 285
Gly Lys Cys Leu Thr Ile Ile Gln Asp Arg Asp Pro Ala Leu Gly Lys
290 295 300
Gln Trp Phe Gln Arg Leu Phe Gln Gly Cys Thr His Gly Leu Ser Leu
305 310 315 320
Asn Thr Asn Asp Ser Val His Ala Thr Leu Leu Val Phe Arg Glu Leu
325 330 335
Leu Ser Leu Lys Ala Pro Tyr Leu Arg Asp Lys Tyr Asp Ile Tyr
340 345 350
Lys Ser Thr Met Lys Tyr Lys Glu Tyr Lys Phe Asp Val Ile Arg Arg
355 360 365
Glu Val Tyr Ala Ile Leu Pro Leu Leu Ala Ala Phe Asp Pro Ala Ile
370 375 380
Phe Thr Lys Lys Tyr Leu Asp Arg Ile Met Val His Tyr Leu Arg Tyr
385 390 395 400

```

## PhoenixTemp32470.tmp.txt

Leu Lys Asn Ile Asp Met Asn Ala Ala Asn Asn Ser Asp Lys Pro Phe  
 405 410 415  
 Ile Leu Val Ser Ile Gly Asp Ile Ala Phe Glu Val Gly Ser Ser Ile  
 420 425 430  
 Ser Pro Tyr Met Thr Leu Ile Leu Asp Asn Ile Arg Glu Gly Leu Arg  
 435 440 445  
 Thr Lys Phe Lys Val Arg Lys Glu Phe Glu Lys Asp Leu Phe Tyr Cys  
 450 455 460  
 Ile Gly Lys Leu Ala Cys Ala Leu Gly Pro Ala Phe Ala Lys His Leu  
 465 470 475 480  
 Asn Lys Asp Leu Leu Asn Leu Met Leu Asn Cys Pro Met Ser Asp His  
 485 490 495  
 Met Gln Glu Thr Leu Met Ile Leu Asn Glu Lys Ile Pro Ser Leu Glu  
 500 505 510  
 Ser Thr Val Asn Ser Arg Ile Leu Asn Leu Leu Ser Ile Ser Leu Ser  
 515 520 525  
 Gly Glu Lys Phe Ile Gln Ser Asn Gln Tyr Asp Phe Asn Asn Gln Phe  
 530 535 540  
 Ser Ile Glu Lys Ala Arg Lys Ser Arg Asn Gln Ser Phe Met Lys Lys  
 545 550 555 560  
 Thr Gly Glu Ser Asn Asp Asp Ile Thr Asp Ala Gln Ile Leu Ile Gln  
 565 570 575  
 Cys Phe Lys Met Leu Gln Leu Ile His His Gln Tyr Ser Leu Thr Glu  
 580 585 590  
 Phe Val Arg Leu Ile Thr Ile Ser Tyr Ile Glu His Glu Asp Ser Ser  
 595 600 605  
 Val Arg Lys Leu Ala Ala Leu Thr Ser Cys Asp Leu Phe Ile Lys Asp  
 610 615 620  
 Asp Ile Cys Lys Gln Thr Ser Val His Ala Leu His Ser Val Ser Glu  
 625 630 635 640  
 Val Leu Ser Lys Leu Leu Met Ile Ala Ile Thr Asp Pro Val Ala Glu  
 645 650 655  
 Ile Arg Leu Glu Ile Leu Gln His Leu Gly Ser Asn Phe Asp Pro Gln  
 660 665 670  
 Leu Ala Gln Pro Asp Asn Leu Arg Leu Leu Phe Met Ala Leu Asn Asp  
 675 680 685  
 Glu Ile Phe Gly Ile Gln Leu Glu Ala Ile Lys Ile Ile Gly Arg Leu  
 690 695 700  
 Ser Ser Val Asn Pro Ala Tyr Val Val Pro Ser Leu Arg Lys Thr Leu  
 705 710 715 720  
 Leu Glu Leu Leu Thr Gln Leu Lys Phe Ser Asn Met Pro Lys Lys Lys  
 725 730 735  
 Glu Glu Ser Ala Thr Leu Leu Cys Thr Leu Ile Asn Ser Ser Asp Glu  
 740 745 750  
 Val Ala Lys Pro Tyr Ile Asp Pro Ile Leu Asp Val Ile Leu Pro Lys  
 755 760 765  
 Cys Gln Asp Ala Ser Ser Ala Val Ala Ser Thr Ala Leu Lys Val Leu  
 770 775 780  
 Gly Glu Leu Ser Val Val Gly Gly Lys Glu Met Thr Arg Tyr Leu Lys  
 785 790 795 800  
 Glu Leu Met Pro Leu Ile Ile Asn Thr Phe Gln Asp Gln Ser Asn Ser  
 805 810 815  
 Phe Lys Arg Asp Ala Ala Leu Thr Thr Leu Gly Gln Leu Ala Ala Ser  
 820 825 830  
 Ser Gly Tyr Val Val Gly Pro Leu Leu Asp Tyr Pro Glu Leu Leu Gly  
 835 840 845  
 Ile Leu Ile Asn Ile Leu Lys Thr Glu Asn Asn Pro His Ile Arg Arg  
 850 855 860  
 Gly Thr Val Arg Leu Ile Gly Ile Leu Gly Ala Leu Asp Pro Tyr Lys  
 865 870 875 880  
 His Arg Glu Ile Glu Val Thr Ser Asn Ser Lys Ser Ser Val Glu Gln  
 885 890 895  
 Asn Ala Pro Ser Ile Asp Ile Ala Leu Met Gln Gly Val Ser Pro  
 900 905 910  
 Ser Asn Asp Glu Tyr Tyr Pro Thr Val Val Ile His Asn Leu Met Lys  
 915 920 925  
 Ile Leu Asn Asp Pro Ser Leu Ser Ile His His Thr Ala Ala Ile Gln  
 930 935 940  
 Ala Ile Met His Ile Phe Gln Asn Leu Gly Leu Arg Cys Val Ser Phe

PhoenixTemp32470.tmp.txt

945	Leu	Asp	Gln	Ile	Ile	Pro	Gly	Ile	Ile	Leu	Val	Met	Arg	Ser	Cys	Pro
				965	Asp	Phe	Tyr	Phe	Gln	970	Gln	Leu	Gly	Ser	Leu	Ile
Pro	Ser	Gln	Leu	980	His	Ile	Arg	Pro	985	Val	Glu	Lys	Ile	1005	Tyr	Gly
Ile	Val	Lys	995	Gln	His	Ile	Arg	Pro	1000	His	Val	Glu	Lys	Ile	1005	Tyr
Ile	Arg	Glu	Phe	Phe	Pro	Ile	Ile	Lys	1015	Leu	Gln	Ile	Thr	Ile	Ile	Ser
1010	Val	Ile	Glu	Ser	Ile	Ser	Lys	Ala	Leu	Glu	Gly	Glu	Phe	Lys	Arg	Phe
1025	Val	Pro	Glu	Thr	Leu	Thr	Phe	Phe	Leu	1035	Asp	Ile	Leu	Glu	Asn	Asp
				1045	Thr	Phe	Phe	Leu	1050	Ile	Leu	Lys	Ser	Leu	Val	Thr
Ser	Asn	Lys	Arg	Ile	Val	Pro	Ile	Arg	1065	Ile	Leu	Lys	Ser	Leu	Val	Thr
				1060	Val	Pro	Ile	Arg	1065	Ile	Leu	Lys	Ser	Leu	Val	Thr
Phe	Gly	Pro	Asn	Leu	Glu	Asp	Tyr	Ser	1080	His	Leu	Ile	Met	Pro	Ile	Val
				1075	Val	Arg	Met	Thr	Glu	Tyr	Ser	Ala	Gly	Ser	Leu	Lys
Val	Arg	Met	Thr	Glu	Tyr	Ser	1095	Ala	Gly	Ser	Leu	Lys	1100	Lys	Ile	Ser
1090	Ile	Thr	Leu	Gly	Arg	Leu	Ala	Lys	Asn	Ile	Asn	Leu	Ser	Glu	Met	Ser
1105	Ser	Arg	Ile	Val	Gln	Ala	Leu	Val	Arg	Ile	Leu	Asn	Asn	Gly	Asp	Arg
				1125	Ala	Leu	Val	Arg	1130	Leu	Asn	Asn	Gly	Asp	Arg	
Glu	Leu	Thr	Lys	Ala	Thr	Met	Asn	Thr	1145	Leu	Ser	Leu	Leu	Leu	Leu	Gln
				1140	Leu	Gly	Thr	Asp	Phe	Val	Val	Phe	Val	Pro	Val	Ile
Leu	Gly	Thr	Asp	Phe	Val	Val	Phe	Val	1160	Pro	Val	Ile	Asn	Lys	Ala	Leu
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Leu	Arg	Asn	Arg	Ile	Gln	His	1175	Ser	Val	Tyr	Asp	Gln	Leu	Val	Asn	Lys
1170	Leu	Leu	Asn	Asn	Glu	Cys	Leu	Pro	Thr	Asn	Ile	Ile	Phe	Asp	Lys	Glu
1185	Asn	Glu	Val	Pro	Glu	Arg	Lys	Asn	Tyr	Glu	Asp	Glu	Met	Gln	Val	Thr
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Lys	Leu	Pro	Val	Asn	Gln	Asn	Ile	Leu	1225	Lys	Asn	Ala	Trp	Tyr	Cys	Ser
				1220	Gln	Gln	Lys	Thr	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Ile
Gln	Gln	Lys	Thr	Lys	Glu	Asp	Trp	Gln	1240	Glu	Trp	Ile	Arg	Arg	Leu	Ser
				1235	Ile	Gln	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Ala	Cys	Leu
Ile	Gln	Leu	Leu	Lys	Glu	Ser	Pro	Ser	1255	Ala	Cys	Leu	Arg	Ser	Cys	Ser
				1250	Ser	Leu	Val	Ser	Val	Tyr	Trp	Pro	Leu	Ala	Arg	Glu
Ser	Leu	Val	Ser	Val	Tyr	Trp	Pro	Leu	1270	Ala	Arg	Glu	Leu	Phe	Asn	Ala
1265	Ser	Phe	Ser	Ser	Cys	Trp	Val	Glu	Leu	Gln	Thr	Ser	Tyr	Gln	Glu	Asp
				1285	Leu	Ile	Gln	Ala	Leu	Cys	Lys	Ala	Leu	Cys	Lys	Glu
Leu	Ile	Gln	Ala	Leu	Cys	Lys	Ala	Leu	1305	Ser	Ser	Ser	Ser	Glu	Asn	Pro
				1300	Glu	Ile	Tyr	Pro	1330	Ile	His	Thr	Leu	Gly	Lys	Tyr
Glu	Ile	Tyr	Gln	Met	Leu	Leu	Asn	Leu	1320	Val	G					

## PhoenixTemp32470.tmp.txt

Cys Leu His Arg Asn Asn Phe Lys Lys Ala Glu Val His Ile Phe Asn  
 1505 1510 1515 1520  
 Ala Arg Asp Leu Leu Val Thr Glu Leu Ser Ala Leu Val Asn Glu Ser  
 1525 1530 1535  
 Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Ala Gln Ile Ile Ala Glu  
 1540 1545 1550  
 Leu Glu Glu Ile Ile Lys Tyr Lys Lys Leu Pro Gln Asn Ser Asp Lys  
 1555 1560 1565  
 Arg Leu Thr Met Arg Glu Thr Trp Asn Thr Arg Leu Leu Gly Cys Gln  
 1570 1575 1580  
 Lys Asn Ile Asp Val Trp Gln Arg Ile Leu Arg Val Arg Ser Leu Val  
 1585 1590 1595 1600  
 Ile Lys Pro Lys Glu Asp Ala Gln Val Arg Ile Lys Phe Ala Asn Leu  
 1605 1610 1615  
 Cys Arg Lys Ser Gly Arg Met Ala Leu Ala Lys Lys Val Leu Asn Thr  
 1620 1625 1630  
 Leu Leu Glu Glu Thr Asp Asp Pro Asp His Pro Asn Thr Ala Lys Ala  
 1635 1640 1645  
 Ser Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Leu Trp Ala Thr Gly  
 1650 1655 1660  
 Leu Gln Asp Glu Ala Leu Lys Gln Leu Ile Asn Phe Thr Ser Arg Met  
 1665 1670 1675 1680  
 Ala His Asp Leu Gly Leu Asp Pro Asn Asn Met Ile Ala Gln Ser Val  
 1685 1690 1695  
 Pro Gln Gln Ser Lys Arg Val Pro Arg His Val Glu Asp Tyr Thr Lys  
 1700 1705 1710  
 Leu Leu Ala Arg Cys Phe Leu Lys Gln Gly Glu Trp Arg Val Cys Leu  
 1715 1720 1725  
 Gln Pro Lys Trp Arg Leu Ser Asn Pro Asp Ser Ile Leu Gly Ser Tyr  
 1730 1735 1740  
 Leu Leu Ala Thr His Phe Asp Asn Thr Trp Tyr Lys Ala Trp His Asn  
 1745 1750 1755 1760  
 Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Met Leu Thr Ser Val Ser  
 1765 1770 1775  
 Lys Lys Lys Gln Glu Gly Ser Asp Ala Ser Ser Val Thr Asp Ile Asn  
 1780 1785 1790  
 Glu Phe Asp Asn Gly Met Ile Gly Val Asn Thr Phe Asp Ala Lys Glu  
 1795 1800 1805  
 Val His Tyr Ser Ser Asn Leu Ile His Arg His Val Ile Pro Ala Ile  
 1810 1815 1820  
 Lys Gly Phe Phe His Ser Ile Ser Leu Ser Glu Ser Ser Ser Leu Gln  
 1825 1830 1835 1840  
 Asp Ala Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Gly Ile Pro  
 1845 1850 1855  
 Glu Ala Thr Gln Ala Met His Glu Gly Phe Asn Leu Ile Gln Ile Gly  
 1860 1865 1870  
 Thr Trp Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln Pro  
 1875 1880 1885  
 Asn Gln Ile Val Ser Arg Ser Leu Leu Ser Leu Leu Ser Asp Leu Gly  
 1890 1895 1900  
 Lys Ala His Pro Gln Ala Leu Val Tyr Pro Leu Met Val Ala Ile Lys  
 1905 1910 1915 1920  
 Ser Glu Ser Leu Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu Lys  
 1925 1930 1935  
 Met Arg Ile His Ser Pro Val Leu Val Asp Gln Ala Glu Leu Val Ser  
 1940 1945 1950  
 His Glu Leu Ile Arg Met Ala Val Leu Trp His Glu Gln Trp Tyr Glu  
 1955 1960 1965  
 Gly Leu Asp Asp Ala Ser Arg Gln Phe Phe Gly Glu His Asn Thr Glu  
 1970 1975 1980  
 Lys Met Phe Ala Ala Leu Glu Pro Leu Tyr Glu Met Leu Lys Arg Gly  
 1985 1990 1995 2000  
 Pro Glu Thr Leu Arg Glu Ile Ser Phe Gln Asn Ser Phe Gly Arg Asp  
 2005 2010 2015  
 Leu Asn Asp Ala Tyr Glu Trp Leu Met Asn Tyr Lys Lys Ser Lys Asp  
 2020 2025 2030  
 Val Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg  
 2035 2040 2045  
 Lys Ile Gly Lys Gln Leu Pro Gln Leu Gln Thr Leu Glu Leu Gln His

## PhoenixTemp32470.tmp.txt

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 2065 2070 2075 2080  
 Gly Thr Arg Ala Ser Gly Gly Lys Pro Ile Val Lys Ile Ser Lys Phe  
 2085 2090 2095  
 Glu Pro Val Phe Ser Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Phe  
 2100 2105 2110  
 Cys Ile Lys Gly Ser Asp Gly Lys Asp Tyr Lys Tyr Val Leu Lys Gly  
 2115 2120 2125  
 His Glu Asp Ile Arg Gln Asp Ser Leu Val Met Gln Leu Phe Gly Leu  
 2130 2135 2140  
 Val Asn Thr Leu Leu Gln Asn Asp Ala Glu Cys Phe Arg Arg His Leu  
 2145 2150 2155 2160  
 Asp Ile Gln Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu  
 2165 2170 2175  
 Leu Gly Trp Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg Glu  
 2180 2185 2190  
 His Arg Glu Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val Met  
 2195 2200 2205  
 Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Leu Gln Lys Val  
 2210 2215 2220  
 Glu Val Phe Thr Tyr Ala Leu Asn Asn Thr Glu Gly Gln Asp Leu Tyr  
 2225 2230 2235 2240  
 Lys Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Thr Trp Leu Glu Arg  
 2245 2250 2255  
 Arg Thr Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly Tyr  
 2260 2265 2270  
 Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg  
 2275 2280 2285  
 Ile Thr Gly Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala  
 2290 2295 2300  
 Ala Ile Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr  
 2305 2310 2315 2320  
 Arg Met Leu Thr Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe  
 2325 2330 2335  
 Arg Ile Thr Cys Glu Asn Val Met Lys Val Leu Arg Asp Asn Lys Gly  
 2340 2345 2350  
 Ser Leu Met Ala Ile Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile Asn  
 2355 2360 2365  
 Trp Gly Phe Asp Leu Pro Thr Lys Lys Ile Glu Glu Thr Gly Ile  
 2370 2375 2380  
 Gln Leu Pro Val Met Asn Ala Asn Glu Leu Leu Ser Asn Gly Ala Ile  
 2385 2390 2395 2400  
 Thr Glu Glu Glu Val Gln Arg Val Glu Asn Glu His Lys Asn Ala Ile  
 2405 2410 2415  
 Arg Asn Ala Arg Ala Met Leu Val Leu Lys Arg Ile Thr Asp Lys Leu  
 2420 2425 2430  
 Thr Gly Asn Asp Ile Arg Arg Phe Asn Asp Leu Asp Val Pro Glu Gln  
 2435 2440 2445  
 Val Asp Lys Leu Ile Gln Gln Ala Thr Ser Val Glu Asn Leu Cys Gln  
 2450 2455 2460  
 His Tyr Ile Gly Trp Cys Pro Phe Trp  
 2465 2470

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 Met Ser Thr Val Val Leu Gln Phe Val Ser Gly Leu Lys Ser Arg Asn  
 1 5 10 15  
 aag gat gca cag aat aag gcg gcc cag gaa ctg tcg ctg tac gtc aag  
 Lys Asp Ala Gln Asn Lys Ala Ala Gln Glu Leu Ser Leu Tyr Val Lys

48

96



## PhoenixTemp32470.tmp.txt

20																	25																	30																	
acg Thr	gaa Glu	ctg Leu 35	cgc Arg	gag Glu	att Ile	ccg Pro	cag Gln 40	gat Asp	gat Asp	ctg Leu	ctg Leu	gcg Ala 45	ttc Phe	ttc Phe	gag Glu	144																																			
gac Asp	ttc Phe 50	aac Asn	cag Gln	tac Tyr	att Ile	ttc Phe 55	gag Glu	atg Met	ttg Leu	tcc Ser	agt Ser 60	gcc Ala	gat Asp	atc Ile	aac Asn	192																																			
gac Asp 65	aaa Lys	aag Lys	gga Gly	ggc Gly	gtg Val 70	ctg Leu	gcc Ala	atc Ile	aat Asn	tgc Cys 75	ttg Leu	ata Ile	agt Ser	ggc Gly	gat Asp 80	240																																			
gtg Val	gtc Val	aac Asn	acg Thr	aca Thr 85	act Thr	cag Gln	att Ile	tcc Ser	cgt Arg 90	tac Tyr	tcg Ser	aac Asn	aat Asn	ctc Leu 95	cgg Arg	288																																			
aat Asn	ctt Leu	ctt Leu	ccg Pro 100	tcg Ser	agt Ser	gac Asp	att Ile	tcg Ser 105	gtg Val	atg Met	gag Glu	ctg Leu	gca Ala 110	gcg Ala	aag Lys	336																																			
gtg Val	ctc Leu	gtc Val 115	aag Lys	ttg Leu	gcc Ala	ctc Leu	ctg Leu 120	ccc Pro	ggg Gly	tcc Ser	aaa Lys	ggc Gly 125	gcc Ala	gag Glu	tcg Ser	384																																			
ttc Phe	gag Glu 130	ttc Phe	gac Asp	atc Ile	aaa Lys	cgt Arg 135	gcc Ala	ttc Phe	gaa Glu	tgg Trp	ctc Leu 140	atg Met	gag Glu	gaa Glu	cga Arg	432																																			
acc Thr 145	gag Glu	ggc Gly	aaa Lys	cgc Arg	cat His 150	gca Ala	gcc Ala	gtt Val	ttg Leu	gtg Val 155	ctg Leu	cgt Arg	gaa Glu	ctg Leu	gcc Ala 160	480																																			
gtg Val	gcc Ala	atg Met	ccg Pro	acg Thr 165	ttt Phe	ttc Phe	tac Tyr	caa Gln	cag Gln 170	gtc Val	gga Gly	agc Ser	ttt Phe	ttc Phe 175	gag Glu	528																																			
cac His	ata Ile	ttc Phe	gtc Val 180	gcc Ala	atc Ile	aag Lys	gat Asp	ccc Pro 185	aaa Lys	ccg Pro	atg Met	att Ile	cgg Arg 190	gag Glu	ggc Gly	576																																			
gct Ala	ggc Gly	caa Gln 195	gcc Ala	ttg Leu	cgg Arg	gct Ala	gta Val 200	ctg Leu	att Ile	gtc Val	act Thr 205	tcg Ser	cag Gln	aga Arg	gag Glu	624																																			
gga Gly	acc Thr 210	aag Lys	cag Gln	aat Asn	aat Asn	aat Asn 215	cct Pro	caa Gln	tgg Trp	tac Tyr	aac Asn 220	cac His	tgt Cys	tac Tyr	gac Asp	672																																			
aat Asn 225	gca Ala	atg Met	gaa Glu	tgc Cys	ttc Phe 230	agg Arg	gag Glu	ctt Leu	cct Pro	tcc Ser 235	cgc Arg	gag Glu	aaa Lys	ggg Gly	ttc Phe 240	720																																			
aac Asn	cga Arg	gat Asp	gat Asp	cgc Arg 245	atc Ile	cac His	gga Gly	gca Ala	ata Ile 250	att Ile	gtg Val	ttc Phe	aat Asn 255	gaa Glu 255	atc Ile	768																																			
tta Leu	cga Arg	tgt Cys	tca Ser 260	aat Asn	gca Ala	gcc Ala	tgg Trp 265	gag Glu	aaa Lys	aag Lys	tac Tyr	atg Met	caa Gln 270	tta Leu	gaa Glu	816																																			
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cga Arg	ttg Leu 370	gcc Ala	gcc Ala	ttc Phe																																															

## PhoenixTemp32470.tmp.txt

385	cg	aat	ctg	gcg	ttc	390	gtc	acg	ctt	ggc	tat	395	atc	gcc	gtg	gca	gtc	400		
Arg	Asn	Leu	Ala	Phe	Val	Val	Thr	Leu	Gly	Tyr	Ile	Ile	Ala	Val	Ala	Val	Val	Glu		1248
				405						410							415			
aag	gat	att	gcc	ccc	ttc	agg	acc	agg	atc	atc	gag	gtg	atc	acg	gca					1296
Lys	Asp	Ile	Ala	Pro	Phe	Arg	Thr	Arg	Ile	Ile	Glu	Val	Ile	Thr	Ala					
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gct	ctg	cct	ccg	aaa	gaa	acc	cca	agc	aag	aag	aaa	gtc	tgc	gtc	gat					1344
Ala	Leu	Pro	Pro	Lys	Glu	Thr	Pro	Ser	Lys	Lys	Lys	Val	Cys	Val	Asp					
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ccg	tcg	gtg	ttc	atg	tgc	atc	acc	ctg	ttg	ggg	cat	gcg	tta	aaa	agt					1392
Pro	Ser	Val	Phe	Met	Cys	Ile	Thr	Leu	Leu	Gly	His	Ala	Leu	Lys	Ser					
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gca	att	aca	acc	gat	gtc	aag	agc	ttg	atc	ctg	cca	atg	ctt	tcg	act					1440
Ala	Ile	Thr	Thr	Asp	Val	Lys	Ser	Leu	Ile	Leu	Pro	Met	Leu	Ser	Thr					
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gga	ctg	agc	aca	ggg	cta	acg	gtg	tgc	tta	cac	gag	ttg	agc	gag	aat					1488
Gly	Leu	Ser	Thr	Gly	Leu	Thr	Val	Cys	Leu	His	Glu	Leu	Ser	Glu	Asn					
				485				490						495						
gtg	ccg	cag	ttg	agg	cag	gaa	att	acc	agc	gga	ctg	ttg	aag	att	ttg					1536
Val	Pro	Gln	Leu	Arg	Gln	Glu	Ile	Thr	Ser	Gly	Leu	Leu	Lys	Ile	Leu					
		500						505					510							
tcc	tgc	gtg	ctg	atg	aat	aaa	cca	ttg	ccg	cag	ttt	ata	ccc	ggg	cgg					1584
Ser	Cys	Val	Leu	Met	Asn	Lys	Pro	Leu	Pro	Gln	Phe	Ile	Pro	Gly	Arg					
		515					520					525								
cct	caa	ggg	gga	atg	aac	acg	agc	ctc	tac	gag	caa	cag	atc	caa	gat					1632
Pro	Gln	Gly	Gly	Met	Asn	Thr	Ser	Leu	Tyr	Glu	Gln	Gln	Ile	Gln	Asp					
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act	ccc	acc	aca	gtg	ctg	gcc	ctc	cgt	acg	ctg	ggc	acc	ttc	aat	ttc					1680
Thr	Pro	Thr	Thr	Val	Leu	Ala	Leu	Arg	Thr	Leu	Gly	Thr	Phe	Asn	Phe					
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gag	ggg	cac	agc	ttg	ttg	ccg	ttc	gtg	caa	cga	tgt	gcc	gac	cat	ttc					1728
Glu	Gly	His	Ser	Leu	Leu	Pro	Phe	Val	Gln	Arg	Cys	Ala	Asp	His	Phe					
				565				570						575						
ctg	ctc	agc	gag	cag	cag	gaa	att	cg	atc	gaa	gcc	gta	cag	act	tgt					1776
Leu	Leu	Ser	Glu	Gln	Gln	Glu	Ile	Arg	Ile	Glu	Ala	Val	Gln	Thr	Cys					
			580					585					590							
acg	ttg	ctg	cta	aag	cta	gct	ctc	caa	tcg	gtc	gat	tcg	gca	gac	gga					1824
Thr	Leu	Leu	Leu	Lys	Leu	Ala	Leu	Gln	Ser	Val	Asp	Ser	Ala	Asp	Gly					
		595					600					605								
tcg	gaa	acc	ctc	acc	cag	acc	gtt	gga	agc	gtg	ctg	gag	aag	att	ctg					1872
Ser	Glu	Thr	Leu	Thr	Gln	Thr	Val	Gly	Ser	Val	Leu	Glu	Lys	Ile	Leu					
		610				615					620									
atc	gtt	ggg	atc	acc	gac	gtt	gat	ccg	aat	gtg	cgt	ctg	agg	gtg	ctg					1920
Ile	Val	Gly	Ile	Thr	Asp	Val	Asp	Pro	Asn	Val	Arg	Leu	Arg	Val	Leu					
					630					635					640					
aaa	tct	ttg	gac	gac	agc	ttc	gat	tct	cag	ctg	gcg	caa	cca	tg	ttc					1968
Lys	Ser	Leu	Asp	Asp	Ser	Phe	Asp	Ser	Gln	Leu	Ala	Gln	Pro	Trp	Phe					
				645					650					655						
ctg	agc	tcg	ctg	ttg	atc	acg	atg	aat	gat	gag	gtg	ttt	gaa	atc	agg					2016
Leu	Ser	Ser	Leu	Leu	Ile	Thr	Met	Asn	Asp	Glu	Val	Phe	Glu	Ile	Arg					
			660					665					670							
gag	cta	gcg	att	atc	atc	att	gga	cga	ctg	tcg	gcc	atc	aat	ccg	gct					2064
Glu	Leu	Ala	Ile	Ile	Ile	Ile	Gly	Arg	Leu	Ser	Ala	Ile	Asn	Pro	Ala					
		675					680				685									
tac	gtg	atg	cca	agc	ttg	agg	aaa	acg	atg	gta	cag	atc	cta	acg	gag					2112
Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Met	Val	Gln	Ile	Leu	Thr	Glu					
		690				695					700									
ctg	gaa	cac	tcc	ggg	atg	agt	aga	aac	aag	gag	cag	agc	gcg	aga	atg					2160
Leu	Glu	His	Ser	Gly	Met	Ser	Arg	Asn	Lys	Glu	Gln	Ser	Ala	Arg	Met					
				710					715					720						
ttg	gat	cat	ctg	att	gtc	agc	acg	ccg	agg	ttg	ata	tct	tcc	tat	atg					2208
Leu	Asp	His	Leu	Ile	Val	Ser	Thr	Pro	Arg	Leu	Ile	Ser	Ser	Tyr	Met					
				725					730					735						
cgt	ccg	atc	ttg	tcg	atc	ttg	gtt	ccg	aaa	ttg	aaa	gag	cct	gaa	tcg					2256
Arg	Pro	Ile	Leu	Ser	Ile	Leu	Val	Pro	Lys	Leu	Lys	Glu	Pro	Glu	Ser					
			740					745					750							
aat	ccg	gga	gtg	gtt	ttg	aat	gtg	tta	aga	gcg	att	ggg	gat	ctt	gct					2304
Asn	Pro	Gly	Val	Val	Leu	Asn	Val	Leu	Arg	Ala	Ile	Gly	Asp	Leu	Ala					

## PhoenixTemp32470.tmp.txt

															755																760																765																
gaa	gtc	aat	ggc	ggc	cat	aac	ggt	ttg	gag	aaa	tgg	tcc	gat	gag	ctg		Glu	Val	Asn	Gly	Gly	His	Asn	Val	Leu	Glu	Lys	Trp	Ser	Asp	Glu	Leu		2352																													
															770																775																780																
ctg	gct	acg	ttg	cta	gag	atg	cta	agc	gat	gcc	gga	tca	acg	gaa	aag		Leu	Ala	Thr	Leu	Leu	Glu	Met	Leu	Ser	Asp	Ala	Gly	Ser	Thr	Glu	Lys		2400																													
															785																790																795																
cgc	ggc	gta	gca	tta	tg	act	ctt	ggc	cag	ttg	gtc	agt	gcc	acg	ggg		Arg	Gly	Val	Ala	Leu	Trp	Thr	Leu	Gly	Gln	Leu	Val	Ser	Ala	Thr	Gly		2448																													
															805																810																815																
caa	gca	gtt	aaa	ccg	tac	cac	aaa	tat	ccc	aat	ctg	atc	gat	ata	ttg		Gln	Ala	Val	Lys	Pro	Tyr	His	Lys	Tyr	Pro	Asn	Leu	Ile	Asp	Ile	Leu		2496																													
															820																825																830																
atc	aac	ttt	ttg	aaa	aca	gaa	cag	caa	ccg	tac	gta	agg	cgg	gaa	acg		Ile	Asn	Phe	Leu	Lys	Thr	Glu	Gln	Gln	Pro	Tyr	Val	Arg	Arg	Glu	Thr		2544																													
															835																840																845																
atc	cgt	gtc	ctc	ggg	ttg	ctc	ggt	gcc	ttg	gat	ccg	tac	aag	cac	aag		Ile	Arg	Val	Leu	Gly	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	Lys		2592																														
															850																855																860																
atg	aat	cgt	ggc	ctg	att	gac	agc	cag	acc	aac	aat	atc	ctc	att	tcg		Met	Asn	Arg	Gly	Leu	Ile	Asp	Ser	Gln	Thr	Asn	Asn	Ile	Leu	Ile	Ser		2640																													
															865																870																875																
att	tcc	gac	agc	aag	act	gag	gaa	tat	acc	gat	ttg	tct	acg	tcg	gaa		Ile	Ser	Asp	Ser	Lys	Thr	Glu	Glu	Tyr	Thr	Asp	Leu	Ser	Thr	Glu		2688																														
															885																890																895																
atg	ttg	atc	aat	atg	aac	aat	cag	ctg	gag	gag	tac	tac	ccg	gcg	gtg		Met	Leu	Ile	Asn	Met	Asn	Asn	Gln	Leu	Glu	Glu	Tyr	Tyr	Pro	Ala	Val		2736																													
															900																905																910																
gcc	att	tca	acg	ctg	atg	aag	atc	ctt	cgt	gat	cct	acg	tta	tcc	tcg		Ala	Ile	Ser	Thr	Leu	Met	Lys	Ile	Leu	Arg	Asp	Pro	Thr	Leu	Ser	Ser		2784																													
															915																920																925																
cat	cac	acc	agc	gtt	gtc	cag	gcg	atc	acc	ttt	atc	ttc	aaa	agt	ttg		His	His	Thr	Ser	Val	Val	Gln	Ala	Ile	Thr	Phe	Ile	Phe	Lys	Ser	Leu		2832																													
															930																935																940																
ggt	atc	aaa	tgc	gtt	ccg	tac	ttg	tcc	cag	gtc	tta	cct	agt	ctg	ctc		Gly	Ile	Lys	Cys	Val	Pro	Tyr	Leu	Ser	Gln	Val	Leu	Pro	Ser	Leu	Leu		2880																													
															945																950																955																
ggc	aat	att	cgc	aat	gcc	gaa	atg	aac	ttg	aag	gag	ttc	ttg	ttc	cag		Gly	Asn	Ile	Arg	Asn	Ala	Glu	Met	Asn	Leu	Lys	Glu	Phe	Leu	Phe	Gln		2928																													
															965																970																975																
cag	cta	tcg	atc	ctg	atc	gag	ata	gtc	aaa	cag	cac	atc	atc	agc	ttc		Gln	Leu	Ser	Ile	Leu	Ile	Glu	Ile	Lys	Gln	His	Ile	Ile	Ser	Phe		2976																														
															980																985																990																
atg	gag	gaa	ata	ttc	cag	ctg	atc	aaa	acg	ttc	tgg	aac	agt	atc	tat		Met	Glu	Glu	Ile	Phe	Gln	Leu	Ile	Lys	Thr	Phe	Trp	Asn	Ser	Ile	Tyr		3024																													
															995																1000																1005																
cct	ttg	cag	ccg	acc	ctc	atc	att	ttg	gtg	gaa	aag	atc	gcc	atc	gct		Pro	Leu	Gln	Pro	Thr	Leu	Ile	Ile	Leu	Val	Glu	Lys	Ile	Ala	Ile	Ala		3072																													
															1010																1015																1020																
ttg	gga	tgt	gag	ttc	aag	atc	tat	ctt	cct	cag	ttg	atg	ccg	cag	atc		Leu	Gly	Cys	Glu	Phe	Lys	Ile	Tyr	Leu	Pro	Gln	Leu	Met	Pro	Gln	Ile		3120																													
															1025																1030																1035																
ttg	cga	gtt	ctc	ctt	cac	gat	gcg	tcc	acc	cat	cga	ata	gtc	acc	gtc		Leu	Arg	Val	Leu	Leu	His	Asp	Ala	Ser	Thr	His	Arg	Ile	Val	Thr	Val		3168																													
															1045																1050																1055																
aag	ctc	ctc	aac	gct	ctg	cag	aag	ttc	ggg	aac	aat	ctg	gac	gac	tat		Lys	Leu	Leu	Asn	Ala	Leu	Gln	Lys	Phe	Gly	Asn	Asn	Leu	Asp	Asp	Tyr		3216																													
															1060																1065																1070																
ctt	cac	ttg	atc	att	cca	gcc	att	gtt	aag	ctg	ttc	gaa	ccg	atc	gaa		Leu	His	Leu	Ile	Ile	Pro	Ala	Ile	Val	Lys	Leu	Phe	Glu	Pro	Ile	Glu		3264																													
															1075																1080																1085																
gtt	cct	tac	cag	gtg	tcc	ctt	gca	gcc	cta	gaa	acc	atc	aac	tac	ctt		Val	Pro	Tyr	Gln	Val	Ser	Leu	Ala	Ala	Leu	Glu	Thr	Ile	Asn	Tyr	Leu		3312																													
															1090																1095																1100																
gca	gag	atc	ctt	gat	ttc	acc	gat	ttc	tcc	tcg	cg	atc	atc	cat	ccc		Ala	Glu	Ile	Leu	Asp	Phe	Thr	Asp	Phe	Ser	Ser	Arg	Ile	Ile	His	Pro		3360																													
															1105																1110																1115																
ttg	gta	cgc	gtc	ctg	gac	aac	cac	ccg	ggt	cag	ctc	caa	acg	gcc	gcg		Leu	Val	Arg	Val	Leu	Asp	Asn	His	Pro	Gly	Gln	Leu	Gln	Thr	Ala	Ala		3408																													

## PhoenixTemp32470.tmp.txt

1125 1130 1135  
 ctg caa acc ctc tgc atc atg atc caa ctg ggc aag aaa tac ctc 3456  
 Leu Gln Thr Leu Cys Ser Ile Met Ile Gln Leu Gly Lys Lys Tyr Leu  
 1140 1145 1150  
 gtt ttt gtc ccg cta gtc aac cgg gtc atg atc agg cac aaa ata tct 3504  
 Val Phe Val Pro Leu Val Asn Arg Val Met Ile Arg His Lys Ile Ser  
 1155 1160 1165  
 tac aca gag tac aac aaa ctc tcc aag ctg caa agt cag agt acc 3552  
 Tyr Thr Glu Tyr Asn Lys Leu Leu Ser Lys Leu Gln Ser Gln Ser Thr  
 1170 1175 1180  
 ctc gcc ctg gac gat gaa ttc cga ctg cgc caa gct cgg ttc aag aat 3600  
 Leu Ala Leu Asp Asp Glu Phe Arg Leu Arg Gln Ala Arg Phe Lys Asn  
 1185 1190 1195 1200  
 cgc gaa atg tcc ctc gct ggg gac acg acc atc cgc aag ttg aac gtg 3648  
 Arg Glu Met Ser Leu Ala Gly Asp Thr Thr Ile Arg Lys Leu Asn Val  
 1205 1210 1215  
 tcc acc gcg gat ctt cag ctg gcg ttc aaa gct aat cgc agg gtg tcc 3696  
 Ser Thr Ala Asp Leu Gln Leu Ala Phe Lys Ala Asn Arg Arg Val Ser  
 1220 1225 1230  
 cgt gac gat tgg ctc gag tgg ctc cgt cgg ctc agc att ggt ctt ctg 3744  
 Arg Asp Asp Trp Leu Glu Trp Leu Arg Arg Leu Ser Ile Gly Leu Leu  
 1235 1240 1245  
 aag gag tcc aaa agc cca gcg ctg cga tcc tgc cga acc ctg gcc cag 3792  
 Lys Glu Ser Lys Ser Pro Ala Leu Arg Ser Cys Arg Thr Leu Ala Gln  
 1250 1255 1260  
 aac tat ccc caa ctg ttg aag gat ttg ttc aac gca gcc ttc gtc agc 3840  
 Asn Tyr Pro Gln Leu Leu Lys Asp Leu Phe Asn Ala Ala Phe Val Ser  
 1265 1270 1275 1280  
 tgc tgg acc gat tta ccg gac agt ctc aaa gag gag cta tcg tcc agc 3888  
 Cys Trp Thr Asp Leu Pro Asp Ser Leu Lys Glu Glu Leu Ser Ser Ser  
 1285 1290 1295  
 ttg agg cag gct ctg atg gtg ccg gac ctt ccg gaa att acc caa acc 3936  
 Leu Arg Gln Ala Leu Met Val Pro Asp Leu Pro Glu Ile Thr Gln Thr  
 1300 1305 1310  
 att ctc aac ctg gcc gag ttt atg gaa cac tgc gag aat gat gcg ctg 3984  
 Ile Leu Asn Leu Ala Glu Phe Met Glu His Cys Glu Asn Asp Ala Leu  
 1315 1320 1325  
 agg atc gat ccg aag atc ttg ggc gag aga gcc atg gag tgc cga gcc 4032  
 Arg Ile Asp Pro Lys Ile Leu Gly Glu Arg Ala Met Glu Cys Arg Ala  
 1330 1335 1340  
 tat gcc aag gct ttg cac tac aag gag gaa gag ttc ctg aac atg aag 4080  
 Tyr Ala Lys Ala Leu His Tyr Lys Glu Glu Glu Phe Leu Asn Met Lys  
 1345 1350 1355 1360  
 gac aag gat cag agc gtg ttc gag tcg ttg att ttg atc aac aat aag 4128  
 Asp Lys Asp Gln Ser Val Phe Glu Ser Leu Ile Leu Ile Asn Asn Lys  
 1365 1370 1375  
 ctg caa cag aag gaa gcg gct gag ggg ctg ctg gag tac gcc atg gaa 4176  
 Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Glu Tyr Ala Met Glu  
 1380 1385 1390  
 cac agg agc gct tct gag gaa atg aaa gtc caa gtg agg tgg tac gag 4224  
 His Arg Ser Ala Ser Glu Glu Met Lys Val Gln Val Arg Trp Tyr Glu  
 1395 1400 1405  
 aaa ttg cac agc tgg gag aag gcg ttg aac ttg tat cag gac aaa ttg 4272  
 Lys Leu His Ser Trp Glu Lys Ala Leu Asn Leu Tyr Gln Asp Lys Leu  
 1410 1415 1420  
 gag agc aat ccg ggt gat ttg gat tcg cga ctt ggc cag tgg agg tgt 4320  
 Glu Ser Asn Pro Gly Asp Leu Asp Ser Arg Leu Gly Gln Trp Arg Cys  
 1425 1430 1435 1440  
 ttg gaa gcg cta ggg gag tgg tca acg ttg aat acg ctg acc aag gag 4368  
 Leu Glu Ala Leu Gly Glu Trp Ser Thr Leu Asn Thr Leu Thr Lys Glu  
 1445 1450 1455  
 acg tgg gaa tca ctg gga acc gaa gga cag agt aag gcc ggt aga ctt 4416  
 Thr Trp Glu Ser Leu Gly Thr Glu Gly Gln Ser Lys Ala Gly Arg Leu  
 1460 1465 1470  
 gct gcc gct gca gcc tgg ggt ttg aag gat tgg gag gga atg cag gag 4464  
 Ala Ala Ala Ala Ala Trp Gly Leu Lys Asp Trp Glu Gly Met Gln Glu  
 1475 1480 1485  
 ttt gtc aag ttc atc cca gag gac acg cag gac ggg tcg ttc tat cgt 4512  
 Phe Val Lys Phe Ile Pro Glu Asp Thr Gln Asp Gly Ser Phe Tyr Arg

## PhoenixTemp32470.tmp.txt

1490	gcc gta ctg gct gtg cat cac	1495	ggg gag tat gaa ctt gcc caa acc cta	1500	4560
Ala Val Leu Ala Val His	His Gly Glu Tyr Glu Leu Ala Gln Thr Leu				
1505	att gac gat acg aga gac ttg ttg gat acg gaa ttg acc gcg atg gcc	1510	1515	1520	4608
Ile Asp Asp Thr Arg Asp Leu Leu Asp Thr Glu Leu Thr Ala Met Ala					
1525	ggc gaa tcg tac gaa cgc gcc tat gga gca atg gtt tgc gtt caa atg	1530	1535	4656	
Gly Glu Ser Tyr Glu Arg Ala Tyr Gly Ala Met Val Cys Val Gln Met					
1540	ctg tcg gaa ttg gaa gaa gtc att cag tac aag ctg att ccc gag cgg	1545	1550	4704	
Leu Ser Glu Leu Glu Glu Val Ile Gln Tyr Lys Leu Ile Pro Glu Arg					
1555	cag gaa act atc aag gca atg tgg tgg gat cgc ttg ctc ggt ggc caa	1560	1565	4752	
Gln Glu Thr Ile Lys Ala Met Trp Trp Asp Arg Leu Leu Gly Gly Gln					
1570	cgt ttg gtg gaa gat tgg caa cga att ttg cag gtt cat act ttg gtt	1575	1580	4800	
Arg Leu Val Glu Asp Trp Gln Arg Ile Leu Gln Val His Thr Leu Val					
1585	gtc cat ccc gca aat gac gtc aaa acg tgg ctg aag ttt gcc tca ctt	1590	1595	4848	
Val His Pro Ala Asn Asp Val Lys Thr Trp Leu Lys Phe Ala Ser Leu					
1605	tgt cgc aag agt gat tca ttg aaa ctt tcc gag aag acc ctc gtc atg	1610	1615	4896	
Cys Arg Lys Ser Asp Ser Leu Lys Ser Glu Lys Thr Leu Val Met					
1620	ctg ctt cgc tac aat ccc tcg gag tac ccg gat cat ccg ttg gaa ttc	1625	1630	4944	
Leu Leu Arg Tyr Asn Pro Ser Glu Tyr Pro Asp His Pro Leu Glu Phe					
1635	atg caa cca gac atc agc ttt gcc tac gcg aaa cat ctg tgg gca gct	1640	1645	4992	
Met Gln Pro Asp Ile Ser Phe Ala Tyr Ala Lys His Leu Trp Ala Ala					
1650	ggc gaa caa gaa aag gct tac aat caa ctt aat cga cta gtc gcc gat	1655	1660	5040	
Gly Glu Gln Glu Lys Ala Tyr Asn Gln Leu Asn Arg Leu Val Ala Asp					
1665	atg ggc atc gag ggt aac ttc gac gtc gag gaa aag gac gaa aac cgc	1670	1675	5088	
Met Gly Ile Glu Gly Asn Phe Asp Val Glu Glu Lys Asp Glu Asn Arg					
1685	cgt ctg ttg gcg cgt tgc tac atg aag ctc gga caa tgg cag aac caa	1690	1695	5136	
Arg Leu Leu Ala Arg Cys Tyr Met Lys Leu Gly Gln Trp Gln Asn Gln					
1700	cta caa gga ctc aac gag caa tcc atc aag ggc atc ctg gca tgc tac	1705	1710	5184	
Leu Gln Gly Leu Asn Glu Gln Ser Ile Lys Gly Ile Leu Ala Cys Tyr					
1715	gaa aaa gct acc aaa cac gac tcc aat tgg tac aag gca tgg cat ctc	1720	1725	5232	
Glu Lys Ala Thr Lys His Asp Ser Asn Trp Tyr Lys Ala Trp His Leu					
1730	tgg gcc tac atg aac ttt gaa gtt gtc cag aat cag aaa caa cag gaa	1735	1740	5280	
Trp Ala Tyr Met Asn Phe Glu Val Val Gln Asn Gln Lys Gln Gln Glu					
1745	gac ctc atc aag aac cct ggc gga gac aaa gag aag tgt atg att cgg	1750	1755	5328	
Asp Leu Ile Lys Asn Pro Gly Gly Asp Lys Glu Lys Cys Met Ile Arg					
1765	cag tat gcc gtt cca gcg gtt gaa ggc ttc ttc cgc tcg atc aat ctg	1770	1775	5376	
Gln Tyr Ala Val Pro Ala Val Glu Gly Phe Phe Arg Ser Ile Asn Leu					
1780	tca cac gga aac tcc ctc caa gac aca ctc cgt ctc cta acc ctc tgg	1785	1790	5424	
Ser His Gly Asn Ser Leu Gln Asp Thr Leu Arg Leu Thr Leu Trp					
1795	ttc gac tac gga cag tat ccc aag gtg tac gaa gcc ctg gtc gaa gga	1800	1805	5472	
Phe Asp Tyr Gly Gln Tyr Pro Lys Val Tyr Glu Ala Leu Val Glu Gly					
1810	atg cgc gtc att gaa atc aac aca tgg ctt cag gtc atc cct cag ttg	1815	1820	5520	
Met Arg Val Ile Glu Ile Asn Thr Trp Leu Gln Val Ile Pro Gln Leu					
1825	atc gcc cgc atc gat act ccg cgc aac cta gtt ggc caa cta atc cac	1830	1835	5568	
Ile Ala Arg Ile Asp Thr Pro Arg Asn Leu Val Gly Gln Leu Ile His					
1845	cag ctg ttg aac gac atc gga aag tgt cat ccg cag gct ctt gtc tat	1850	1855	5616	
Gln Leu Leu Asn Asp Ile Gly Lys Cys His Pro Gln Ala Leu Val Tyr					

## PhoenixTemp32470.tmp.txt

1860															1865															1870															
ccg	ctg	acc	gtt	gct	tcc	aat	tcg	gca	tcc	agc	gcg	cga	cga	cag	gcc	5664																													
Pro	Leu	Thr	Val	Ala	Ser	Asn	Ser	Ala	Ser	Ser	Ala	Arg	Arg	Gln	Ala																														
1875															1880															1885															
gct	cac	aag	atc	ctg	ggc	tcc	atg	ggt	gaa	cat	tcg	tct	aac	ttg	gtc	5712																													
Ala	His	Lys	Ile	Leu	Gly	Ser	Met	Gly	Glu	His	Ser	Ser	Asn	Leu	Val																														
1890															1895															1900															
aac	caa	gcg	atc	atg	tgc	agc	gag	gaa	ctg	atc	cgc	gtg	gcc	att	ctg	5760																													
Asn	Gln	Ala	Ile	Met	Cys	Ser	Glu	Glu	Leu	Ile	Arg	Val	Ala	Ile	Leu																														
1905															1910															1915															
tgg	cac	gaa	cag	tgg	cac	gag	ggc	ttg	gag	gag	gcg	tcg	cgg	ctt	tat	5808																													
Trp	His	Glu	Gln	Trp	His	Glu	Gly	Leu	Glu	Glu	Ala	Ser	Arg	Leu	Tyr																														
1925															1930															1935															
ttc	ggc	gac	cgg	aac	atc	aaa	gga	atg	ttc	gaa	acg	ttg	gaa	ccg	ctg	5856																													
Phe	Gly	Asp	Arg	Asn	Ile	Lys	Gly	Met	Phe	Glu	Thr	Leu	Glu	Pro	Leu																														
1940															1945															1950															
cac	caa	atg	ctt	caa	agg	gga	cct	caa	acc	ttg	aag	gag	acc	tcg	ttc	5904																													
His	Gln	Met	Leu	Gln	Arg	Gly	Pro	Gln	Thr	Leu	Lys	Glu	Thr	Ser	Phe																														
1955															1960															1965															
aat	cag	gcg	tac	ggt	agg	gat	ctg	aac	gag	gcg	cag	gag	ttg	tgc	aaa	5952																													
Asn	Gln	Ala	Tyr	Gly	Arg	Asp	Leu	Asn	Glu	Ala	Gln	Glu	Trp	Cys	Lys																														
1970															1975															1980															
cat	tat	aag	aac	tcg	ggc	aac	att	cgt	gac	ttg	aat	caa	gcg	tgg	gat	6000																													
His	Tyr	Lys	Asn	Ser	Gly	Asn	Ile	Arg	Asp	Leu	Asn	Gln	Ala	Trp	Asp																														
1985															1990															1995															
ttg	tac	tat	cac	gta	ttc	cgc	cga	att	tcc	cgg	cag	ttg	ccg	cag	ctt	6048																													
Leu	Tyr	Tyr	His	Val	Phe	Arg	Arg	Ile	Ser	Arg	Gln	Leu	Pro	Gln	Leu																														
2005															2010															2015															
acc	tcc	cta	gaa	cta	caa	tac	gtc	agt	cct	aag	ctt	ctt	gcc	tgt	cgt	6096																													
Thr	Ser	Leu	Glu	Leu	Gln	Tyr	Val	Ser	Pro	Lys	Leu	Leu	Ala	Cys	Arg																														
2020															2025															2030															
gat	cta	gag	cta	gcc	gtc	cca	gga	agc	tac	gcc	ccc	ggt	cag	gag	ctg	6144																													
Asp	Leu	Glu	Leu	Ala	Val	Pro	Gly	Ser	Tyr	Ala	Pro	Gly	Gln	Glu	Leu																														
2035															2040															2045															
atc	cga	atc	gcc	agc	att	caa	tcg	aac	ctc	cag	gtg	atc	act	tcg	aag	6192																													
Ile	Arg	Ile	Ala	Ser	Ile	Gln	Ser	Asn	Leu	Gln	Val	Ile	Thr	Ser	Lys																														
2050															2055															2060															
caa	aga	ccg	cga	aaa	ctt	tgc	atc	cgt	ggc	tcc	aac	ggc	aag	gag	tac	6240																													
Gln	Arg	Pro	Arg	Lys	Leu	Cys	Ile	Arg	Gly	Ser	Asn	Gly	Lys	Glu	Tyr																														
2065															2070															2075															
atg	ttc	ctg	ctg	aag	ggc	cac	gaa	gat	ttg	cgc	cag	gac	gaa	cgc	gtg	6288																													
Met	Phe	Leu	Leu	Lys	Gly	His	Glu	Asp	Leu	Arg	Gln	Asp	Glu	Arg	Val																														
2085															2090															2095															
atg	cag	ctg	ttt	ggg	ctg	gtg	aac	acc	ctg	ctg	cta	aac	gat	ccg	gac	6336																													
Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu	Leu	Asn	Asp	Pro	Asp																														
2100															2105															2110															
acg	ttc	cgt	cgg	aat	ctg	acc	att	caa	cgg	tat	gcg	gtc	att	ccg	ttg	6384																													
Thr	Phe	Arg	Arg	Asn	Leu	Thr	Ile	Gln	Arg	Tyr	Ala	Val	Ile	Pro	Leu																														
2115															2120															2125															
agc	acc	aat	tcc	ggc	ttg	atc	ggt	tgg	gtg	ccc	cac	tgc	gat	acg	ctg	6432																													
Ser	Thr	Asn	Ser	Gly	Leu	Ile	Gly	Trp	Val	Pro	His	Cys	Asp	Thr	Leu																														
2130															2135															2140															
cac	acg	ctg	att	cga	gat	tac	cgc	gag	aag	aaa	aag	acc	atg	ctg	aac	6480																													
His	Thr	Leu	Ile	Arg	Asp	Tyr	Arg	Glu	Lys	Lys	Lys	Thr	Met	Leu	Asn																														
2145															2150															2155															
atc	gag	cat	cgg	att	atg	ttg	cga	atg	gca	acg	gat	tac	gac	cat	ctg	6528																													
Ile	Glu	His	Arg	Ile	Met	Leu	Arg	Met	Ala	Thr	Asp	Tyr	Asp	His	Leu																														
2165															2170															2175															
acg	ttg	atg	caa	aag	gtc	gaa	gtc	ttt	gag	tat	gcg	ttg	gag	ctc	acc	6576																													
Thr	Leu	Met	Gln	Lys	Val	Glu	Val	Phe	Glu	Tyr	Ala	Leu	Glu	Leu	Thr																														
2180															2185															2190															
aaa	gga	gac	gac	ctg	gcc	aag	ctg	ctc	tgg	ctg	aag	agc	ccc	tcg	tcg	6624																													
Lys	Gly	Asp	Asp	Leu	Ala	Lys	Leu	Leu	Trp	Leu	Lys	Ser	Pro	Ser	Ser																														
2195															2200															2205															
gag	gtt	tgg	ttc	gat	aga	aga	acg	aat	tat	acg	cga	tcc	ctt	gcg	gtc	6672																													
Glu	Val	Trp	Phe	Asp	Arg	Arg	Thr	Asn	Tyr	Thr	Arg	Ser	Leu	Ala	Val																														
2210															2215															2220															
atg	tcg	atg	gtt	ggc	tac	att	ctg	gga	ctg	ggc	gat	cga	cat	ccg	tcg	6720																													
Met	Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser																														

## PhoenixTemp32470.tmp.txt

```

2225      2230      2235      2240
aac ttg atg ctg gat cga ttg agc ggc aaa att ctg cac atc gac ttt      6768
Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile Asp Phe
      2245      2250      2255
ggc gat tgc ttc gag gtt gcg atg acc cgc gag aag ttc ccg gag aag      6816
Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro Glu Lys
      2260      2265      2270
atc ccc ttc cgt ttg acg cga atg ctg atc aac gcc atg gaa gtt acc      6864
Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Thr
      2275      2280      2285
ggc atc gag gga acc tac cgc cgg acg tgt gaa agc gtc atg cac gtg      6912
Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met His Val
      2290      2295      2300
ctc cgt cgc aac aag gac agt cta atg gcc gtg ctg gaa gct ttc gta      6960
Leu Arg Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Val
2305      2310      2315      2320
tac gat cca ttg ctc aac tgg cgc ctg ctg gat gtg gac aag aat cgc      7008
Tyr Asp Pro Leu Leu Asn Trp Arg Leu Leu Asp Val Asp Lys Asn Arg
      2325      2330      2335
agg tcc aag aat gcc acc gac gtg gac agc aca acg gaa agc atg gaa      7056
Arg Ser Lys Asn Ala Thr Asp Val Asp Ser Thr Thr Glu Ser Met Glu
      2340      2345      2350
gaa acg ttg gat ctt ctg atc aac gcc aga aac ctg cgg atg aac gaa      7104
Glu Thr Leu Asp Leu Leu Ile Asn Ala Arg Asn Leu Arg Met Asn Glu
      2355      2360      2365
gcc aac gga ggc gga gac gtg gtg gat cag gcc agc aat tgc atc gcc      7152
Ala Asn Gly Gly Gly Asp Val Val Asp Gln Gly Ser Asn Cys Ile Ala
2370      2375      2380
aat cca gcc gag gct acc aac aac aaa gcc cgg gcc atc gtg gat cgt      7200
Asn Pro Ala Glu Ala Thr Asn Asn Lys Ala Arg Ala Ile Val Asp Arg
2385      2390      2395      2400
gtg aag cag aaa ctg acc gga aag gac ttc aac acg gtc gaa ccg gtg      7248
Val Lys Gln Lys Leu Thr Gly Lys Asp Phe Asn Thr Val Glu Pro Val
      2405      2410      2415
caa cgg cag atc gat ctg ttg ata cgg cag gcg acg aac aat gaa aac      7296
Gln Arg Gln Ile Asp Leu Leu Ile Arg Gln Ala Thr Asn Asn Glu Asn
      2420      2425      2430
ctc tgc cag tgc tac atc ggg tgg tgt cct ttc tgg tag      7335
Leu Cys Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp
      2435      2440

```

<210> 2515  
 <211> 2444  
 <212> PRT  
 <213> Aedes aegypti

```

<400> 2515
Met Ser Thr Val Val Leu Gln Phe Val Ser Gly Leu Lys Ser Arg Asn
1      5      10      15
Lys Asp Ala Gln Asn Lys Ala Ala Gln Glu Leu Ser Leu Tyr Val Lys
      20      25      30
Thr Glu Leu Arg Glu Ile Pro Gln Asp Asp Leu Leu Ala Phe Phe Glu
      35      40      45
Asp Phe Asn Gln Tyr Ile Phe Glu Met Leu Ser Ser Ala Asp Ile Asn
      50      55      60
Asp Lys Lys Gly Gly Val Leu Ala Ile Asn Cys Leu Ile Ser Gly Asp
65      70      75      80
Val Val Asn Thr Thr Thr Gln Ile Ser Arg Tyr Ser Asn Asn Leu Arg
      85      90      95
Asn Leu Leu Pro Ser Ser Asp Ile Ser Val Met Glu Leu Ala Ala Lys
      100      105      110
Val Leu Val Lys Leu Ala Leu Leu Pro Gly Ser Lys Gly Ala Glu Ser
      115      120      125
Phe Glu Phe Asp Ile Lys Arg Ala Phe Glu Trp Leu Met Glu Glu Arg
130      135      140
Thr Glu Gly Lys Arg His Ala Ala Val Leu Val Leu Arg Glu Leu Ala
145      150      155      160
Val Ala Met Pro Thr Phe Phe Tyr Gln Gln Val Gly Ser Phe Phe Glu
      165      170      175

```

## PhoenixTemp32470.tmp.txt

His	Ile	Phe	Val	Ala	Ile	Lys	Asp	Pro	Lys	Pro	Met	Ile	Arg	Glu	Gly
			180					185					190		
Ala	Gly	Gln	Ala	Leu	Arg	Ala	Val	Leu	Ile	Val	Thr	Ser	Gln	Arg	Glu
		195					200					205			
Gly	Thr	Lys	Gln	Asn	Asn	Asn	Pro	Gln	Trp	Tyr	Asn	His	Cys	Tyr	Asp
	210					215					220				
Asn	Ala	Met	Glu	Cys	Phe	Arg	Glu	Leu	Pro	Ser	Arg	Glu	Lys	Gly	Phe
225					230					235					240
Asn	Arg	Asp	Asp	Arg	Ile	His	Gly	Ala	Ile	Ile	Val	Phe	Asn	Glu	Ile
				245					250					255	
Leu	Arg	Cys	Ser	Asn	Ala	Ala	Trp	Glu	Lys	Lys	Tyr	Met	Gln	Leu	Glu
			260					265					270		
Ser	Leu	Asn	Val	Asp	Arg	Arg	Ser	Arg	His	Thr	Asp	Glu	Gly	His	Ser
		275					280					285			
Ile	Phe	Pro	Arg	Ile	Arg	Val	Pro	Phe	Met	Asp	Lys	Leu	Gly	Gly	Gly
	290					295					300				
His	Ser	Ser	Gly	Ala	Ser	Arg	Thr	Ser	Glu	Gly	Ser	Asp	Val	Lys	Phe
305					310					315					320
Phe	Arg	Gln	Asn	Ser	Ser	Ile	Gln	Glu	Ser	Ala	Ile	Cys	Arg	Ala	Leu
				325					330					335	
Thr	Asn	Asp	Asn	Tyr	Glu	Leu	Ile	Cys	Gln	Lys	Val	Leu	Glu	Gln	Arg
			340					345					350		
Asn	Ser	Lys	Ser	Pro	Tyr	Val	Ile	Gln	Ser	Leu	Leu	Thr	Ile	Leu	Pro
		355					360					365			
Arg	Leu	Ala	Ala	Phe	Asn	Arg	Arg	Asp	Phe	Val	Asn	Asn	His	Leu	Lys
	370					375					380				
Thr	Val	Val	Asn	Tyr	Leu	Ile	Leu	Thr	Ile	Lys	Ser	Lys	Glu	Lys	Glu
385					390					395					400
Arg	Asn	Leu	Ala	Phe	Val	Thr	Leu	Gly	Tyr	Ile	Ala	Val	Ala	Val	Glu
				405					410					415	
Lys	Asp	Ile	Ala	Pro	Phe	Arg	Thr	Arg	Ile	Ile	Glu	Val	Ile	Thr	Ala
			420					425					430		
Ala	Leu	Pro	Pro	Lys	Glu	Thr	Pro	Ser	Lys	Lys	Lys	Val	Cys	Val	Asp
		435					440					445			
Pro	Ser	Val	Phe	Met	Cys	Ile	Thr	Leu	Leu	Gly	His	Ala	Leu	Lys	Ser
	450					455					460				
Ala	Ile	Thr	Thr	Asp	Val	Lys	Ser	Leu	Ile	Leu	Pro	Met	Leu	Ser	Thr
465					470					475					480
Gly	Leu	Ser	Thr	Gly	Leu	Thr	Val	Cys	Leu	His	Glu	Leu	Ser	Glu	Asn
				485					490					495	
Val	Pro	Gln	Leu	Arg	Gln	Glu	Ile	Thr	Ser	Gly	Leu	Leu	Lys	Ile	Leu
			500					505					510		
Ser	Cys	Val	Leu	Met	Asn	Lys	Pro	Leu	Pro	Gln	Phe	Ile	Pro	Gly	Arg
		515					520					525			
Pro	Gln	Gly	Gly	Met	Asn	Thr	Ser	Leu	Tyr	Glu	Gln	Gln	Ile	Gln	Asp
	530					535					540				
Thr	Pro	Thr	Thr	Val	Leu	Ala	Leu	Arg	Thr	Leu	Gly	Thr	Phe	Asn	Phe
545					550					555					560
Glu	Gly	His	Ser	Leu	Leu	Pro	Phe	Val	Gln	Arg	Cys	Ala	Asp	His	Phe
				565					570					575	
Leu	Leu	Ser	Glu	Gln	Gln	Glu	Ile	Arg	Ile	Glu	Ala	Val	Gln	Thr	Cys
			580					585					590		
Thr	Leu	Leu	Leu	Lys	Leu	Ala	Leu	Gln	Ser	Val	Asp	Ser	Ala	Asp	Gly
		595					600					605			
Ser	Glu	Thr	Leu	Thr	Gln	Thr	Val	Gly	Ser	Val	Leu	Glu	Lys	Ile	Leu
	610					615					620				
Ile	Val	Gly	Ile	Thr	Asp	Val	Asp	Pro	Asn	Val	Arg	Leu	Arg	Val	Leu
625					630					635					640
Lys	Ser	Leu	Asp	Asp	Ser	Phe	Asp	Ser	Gln	Leu	Ala	Gln	Pro	Trp	Phe
				645					650					655	
Leu	Ser	Ser	Leu	Leu	Ile	Thr	Met	Asn	Asp	Glu	Val	Phe	Glu	Ile	Arg
			660					665					670		
Glu	Leu	Ala	Ile	Ile	Ile	Ile	Gly	Arg	Leu	Ser	Ala	Ile	Asn	Pro	Ala
		675					680					685			
Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Met	Val	Gln	Ile	Leu	Thr	Glu
	690					695					700				
Leu	Glu	His	Ser	Gly	Met	Ser	Arg	Asn	Lys	Glu	Gln	Ser	Ala	Arg	Met
705					710					715					720
Leu	Asp	His	Leu	Ile	Val	Ser	Thr	Pro	Arg	Leu	Ile	Ser	Ser	Tyr	Met



## PhoenixTemp32470.tmp.txt

```

725      730      735
Arg Pro Ile Leu Ser Ile Leu Val Pro Lys Leu Lys Glu Pro Glu Ser
740      745      750
Asn Pro Gly Val Val Leu Asn Val Leu Arg Ala Ile Gly Asp Leu Ala
755      760      765
Glu Val Asn Gly Gly His Asn Val Leu Glu Lys Trp Ser Asp Glu Leu
770      775      780
Leu Ala Thr Leu Leu Glu Met Leu Ser Asp Ala Gly Ser Thr Glu Lys
785      790      795      800
Arg Gly Val Ala Leu Trp Thr Leu Gly Gln Leu Val Ser Ala Thr Gly
805      810      815
Gln Ala Val Lys Pro Tyr His Lys Tyr Pro Asn Leu Ile Asp Ile Leu
820      825      830
Ile Asn Phe Leu Lys Thr Glu Gln Gln Pro Tyr Val Arg Arg Glu Thr
835      840      845
Ile Arg Val Leu Gly Leu Leu Gly Ala Leu Asp Pro Tyr Lys His Lys
850      855      860
Met Asn Arg Gly Leu Ile Asp Ser Gln Thr Asn Asn Ile Leu Ile Ser
865      870      875      880
Ile Ser Asp Ser Lys Thr Glu Glu Tyr Thr Asp Leu Ser Thr Ser Glu
885      890      895
Met Leu Ile Asn Met Asn Asn Gln Leu Glu Glu Tyr Tyr Pro Ala Val
900      905      910
Ala Ile Ser Thr Leu Met Lys Ile Leu Arg Asp Pro Thr Leu Ser Ser
915      920      925
His His Thr Ser Val Val Gln Ala Ile Thr Phe Ile Phe Lys Ser Leu
930      935      940
Gly Ile Lys Cys Val Pro Tyr Leu Ser Gln Val Leu Pro Ser Leu Leu
945      950      955      960
Gly Asn Ile Arg Asn Ala Glu Met Asn Leu Lys Glu Phe Leu Phe Gln
965      970      975
Gln Leu Ser Ile Leu Ile Glu Ile Val Lys Gln His Ile Ile Ser Phe
980      985      990
Met Glu Glu Ile Phe Gln Leu Ile Lys Thr Phe Trp Asn Ser Ile Tyr
995      1000      1005
Pro Leu Gln Pro Thr Leu Ile Ile Leu Val Glu Lys Ile Ala Ile Ala
1010      1015      1020
Leu Gly Cys Glu Phe Lys Ile Tyr Leu Pro Gln Leu Met Pro Gln Ile
1025      1030      1035      1040
Leu Arg Val Leu Leu His Asp Ala Ser Thr His Arg Ile Val Thr Val
1045      1050      1055
Lys Leu Leu Asn Ala Leu Gln Lys Phe Gly Asn Asn Leu Asp Asp Tyr
1060      1065      1070
Leu His Leu Ile Ile Pro Ala Ile Val Lys Leu Phe Glu Pro Ile Glu
1075      1080      1085
Val Pro Tyr Gln Val Ser Leu Ala Ala Leu Glu Thr Ile Asn Tyr Leu
1090      1095      1100
Ala Glu Ile Leu Asp Phe Thr Asp Phe Ser Ser Arg Ile Ile His Pro
1105      1110      1115      1120
Leu Val Arg Val Leu Asp Asn His Pro Gly Gln Leu Gln Thr Ala Ala
1125      1130      1135
Leu Gln Thr Leu Cys Ser Ile Met Ile Gln Leu Gly Lys Lys Tyr Leu
1140      1145      1150
Val Phe Val Pro Leu Val Asn Arg Val Met Ile Arg His Lys Ile Ser
1155      1160      1165
Tyr Thr Glu Tyr Asn Lys Leu Ser Lys Leu Gln Ser Gln Ser Thr
1170      1175      1180
Leu Ala Leu Asp Asp Glu Phe Arg Leu Arg Gln Ala Arg Phe Lys Asn
1185      1190      1195      1200
Arg Glu Met Ser Leu Ala Gly Asp Thr Thr Ile Arg Lys Leu Asn Val
1205      1210      1215
Ser Thr Ala Asp Leu Gln Leu Ala Phe Lys Ala Asn Arg Arg Val Ser
1220      1225      1230
Arg Asp Asp Trp Leu Glu Trp Leu Arg Arg Leu Ser Ile Gly Leu Leu
1235      1240      1245
Lys Glu Ser Lys Ser Pro Ala Leu Arg Ser Cys Arg Thr Leu Ala Gln
1250      1255      1260
Asn Tyr Pro Gln Leu Leu Lys Asp Leu Phe Asn Ala Ala Phe Val Ser
1265      1270      1275      1280

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## PhoenixTemp32470.tmp.txt

Cys Trp Thr Asp Leu Pro Asp Ser Leu Lys Glu Glu Leu Ser Ser Ser  
 1285 1290 1295  
 Leu Arg Gln Ala Leu Met Val Pro Asp Leu Pro Glu Ile Thr Gln Thr  
 1300 1305 1310  
 Ile Leu Asn Leu Ala Glu Phe Met Glu His Cys Glu Asn Asp Ala Leu  
 1315 1320 1325  
 Arg Ile Asp Pro Lys Ile Leu Gly Glu Arg Ala Met Glu Cys Arg Ala  
 1330 1335 1340  
 Tyr Ala Lys Ala Leu His Tyr Lys Glu Glu Glu Phe Leu Asn Met Lys  
 1345 1350 1355 1360  
 Asp Lys Asp Gln Ser Val Phe Glu Ser Leu Ile Leu Ile Asn Asn Lys  
 1365 1370 1375  
 Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Glu Tyr Ala Met Glu  
 1380 1385 1390  
 His Arg Ser Ala Ser Glu Glu Met Lys Val Gln Val Arg Trp Tyr Glu  
 1395 1400 1405  
 Lys Leu His Ser Trp Glu Lys Ala Leu Asn Leu Tyr Gln Asp Lys Leu  
 1410 1415 1420  
 Glu Ser Asn Pro Gly Asp Leu Asp Ser Arg Leu Gly Gln Trp Arg Cys  
 1425 1430 1435 1440  
 Leu Glu Ala Leu Gly Glu Trp Ser Thr Leu Asn Thr Leu Thr Lys Glu  
 1445 1450 1455  
 Thr Trp Glu Ser Leu Gly Thr Glu Gly Gln Ser Lys Ala Gly Arg Leu  
 1460 1465 1470  
 Ala Ala Ala Ala Trp Gly Leu Lys Asp Trp Glu Gly Met Gln Glu  
 1475 1480 1485  
 Phe Val Lys Phe Ile Pro Glu Asp Thr Gln Asp Gly Ser Phe Tyr Arg  
 1490 1495 1500  
 Ala Val Leu Ala Val His Gly Glu Tyr Glu Leu Ala Gln Thr Leu  
 1505 1510 1515 1520  
 Ile Asp Asp Thr Arg Asp Leu Leu Asp Thr Glu Leu Thr Ala Met Ala  
 1525 1530 1535  
 Gly Glu Ser Tyr Glu Arg Ala Tyr Gly Ala Met Val Cys Val Gln Met  
 1540 1545 1550  
 Leu Ser Glu Leu Glu Glu Val Ile Gln Tyr Lys Leu Ile Pro Glu Arg  
 1555 1560 1565  
 Gln Glu Thr Ile Lys Ala Met Trp Trp Asp Arg Leu Leu Gly Gly Gln  
 1570 1575 1580  
 Arg Leu Val Glu Asp Trp Gln Arg Ile Leu Gln Val His Thr Leu Val  
 1585 1590 1595 1600  
 Val His Pro Ala Asn Asp Val Lys Thr Trp Leu Lys Phe Ala Ser Leu  
 1605 1610 1615  
 Cys Arg Lys Ser Asp Ser Leu Lys Leu Ser Glu Lys Thr Leu Val Met  
 1620 1625 1630  
 Leu Leu Arg Tyr Asn Pro Ser Glu Tyr Pro Asp His Pro Leu Glu Phe  
 1635 1640 1645  
 Met Gln Pro Asp Ile Ser Phe Ala Tyr Ala Lys His Leu Trp Ala Ala  
 1650 1655 1660  
 Gly Glu Gln Glu Lys Ala Tyr Asn Gln Leu Asn Arg Leu Val Ala Asp  
 1665 1670 1675 1680  
 Met Gly Ile Glu Gly Asn Phe Asp Val Glu Lys Asp Glu Asn Arg  
 1685 1690 1695  
 Arg Leu Leu Ala Arg Cys Tyr Met Lys Leu Gly Gln Trp Gln Asn Gln  
 1700 1705 1710  
 Leu Gln Gly Leu Asn Glu Gln Ser Ile Lys Gly Ile Leu Ala Cys Tyr  
 1715 1720 1725  
 Glu Lys Ala Thr Lys His Asp Ser Asn Trp Tyr Lys Ala Trp His Leu  
 1730 1735 1740  
 Trp Ala Tyr Met Asn Phe Glu Val Val Gln Asn Gln Lys Gln Gln Glu  
 1745 1750 1755 1760  
 Asp Leu Ile Lys Asn Pro Gly Gly Asp Lys Glu Lys Cys Met Ile Arg  
 1765 1770 1775  
 Gln Tyr Ala Val Pro Ala Val Glu Gly Phe Phe Arg Ser Ile Asn Leu  
 1780 1785 1790  
 Ser His Gly Asn Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp  
 1795 1800 1805  
 Phe Asp Tyr Gly Gln Tyr Pro Lys Val Tyr Glu Ala Leu Val Glu Gly  
 1810 1815 1820  
 Met Arg Val Ile Glu Ile Asn Thr Trp Leu Gln Val Ile Pro Gln Leu

## PhoenixTemp32470.tmp.txt

1825 1830 1835 1840  
 Ile Ala Arg Ile Asp Thr Pro Arg Asn Leu Val Gly Gln Leu Ile His  
 1845 1850 1855  
 Gln Leu Leu Asn Asp Ile Gly Lys Cys His Pro Gln Ala Leu Val Tyr  
 1860 1865 1870  
 Pro Leu Thr Val Ala Ser Asn Ser Ala Ser Ser Ala Arg Arg Gln Ala  
 1875 1880 1885  
 Ala His Lys Ile Leu Gly Ser Met Gly Glu His Ser Ser Asn Leu Val  
 1890 1895 1900  
 Asn Gln Ala Ile Met Cys Ser Glu Glu Leu Ile Arg Val Ala Ile Leu  
 1905 1910 1915 1920  
 Trp His Glu Gln Trp His Glu Gly Leu Glu Ala Ser Arg Leu Tyr  
 1925 1930 1935  
 Phe Gly Asp Arg Asn Ile Lys Gly Met Phe Glu Thr Leu Glu Pro Leu  
 1940 1945 1950  
 His Gln Met Leu Gln Arg Gly Pro Gln Thr Leu Lys Glu Thr Ser Phe  
 1955 1960 1965  
 Asn Gln Ala Tyr Gly Arg Asp Leu Asn Glu Ala Gln Glu Trp Cys Lys  
 1970 1975 1980  
 His Tyr Lys Asn Ser Gly Asn Ile Arg Asp Leu Asn Gln Ala Trp Asp  
 1985 1990 1995 2000  
 Leu Tyr Tyr His Val Phe Arg Arg Ile Ser Arg Gln Leu Pro Gln Leu  
 2005 2010 2015  
 Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Ala Cys Arg  
 2020 2025 2030  
 Asp Leu Glu Leu Ala Val Pro Gly Ser Tyr Ala Pro Gly Gln Glu Leu  
 2035 2040 2045  
 Ile Arg Ile Ala Ser Ile Gln Ser Asn Leu Gln Val Ile Thr Ser Lys  
 2050 2055 2060  
 Gln Arg Pro Arg Lys Leu Cys Ile Arg Gly Ser Asn Gly Lys Glu Tyr  
 2065 2070 2075 2080  
 Met Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val  
 2085 2090 2095  
 Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Leu Asn Asp Pro Asp  
 2100 2105 2110  
 Thr Phe Arg Arg Asn Leu Thr Ile Gln Arg Tyr Ala Val Ile Pro Leu  
 2115 2120 2125  
 Ser Thr Asn Ser Gly Leu Ile Gly Trp Val Pro His Cys Asp Thr Leu  
 2130 2135 2140  
 His Thr Leu Ile Arg Asp Tyr Arg Glu Lys Lys Thr Met Leu Asn  
 2145 2150 2155 2160  
 Ile Glu His Arg Ile Met Leu Arg Met Ala Thr Asp Tyr Asp His Leu  
 2165 2170 2175  
 Thr Leu Met Gln Lys Val Glu Val Phe Glu Tyr Ala Leu Glu Leu Thr  
 2180 2185 2190  
 Lys Gly Asp Asp Leu Ala Lys Leu Trp Leu Lys Ser Pro Ser Ser  
 2195 2200 2205  
 Glu Val Trp Phe Asp Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val  
 2210 2215 2220  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2225 2230 2235 2240  
 Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile Asp Phe  
 2245 2250 2255  
 Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro Glu Lys  
 2260 2265 2270  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Thr  
 2275 2280 2285  
 Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met His Val  
 2290 2295 2300  
 Leu Arg Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Val  
 2305 2310 2315 2320  
 Tyr Asp Pro Leu Leu Asn Trp Arg Leu Leu Asp Val Asp Lys Asn Arg  
 2325 2330 2335  
 Arg Ser Lys Asn Ala Thr Asp Val Asp Ser Thr Thr Glu Ser Met Glu  
 2340 2345 2350  
 Glu Thr Leu Asp Leu Leu Ile Asn Ala Arg Asn Leu Arg Met Asn Glu  
 2355 2360 2365  
 Ala Asn Gly Gly Gly Asp Val Val Asp Gln Gly Ser Asn Cys Ile Ala  
 2370 2375 2380

## PhoenixTemp32470.tmp.txt

Asn Pro Ala Glu Ala Thr Asn Asn Lys Ala Arg Ala Ile Val Asp Arg  
 2385 2390 2395 2400  
 Val Lys Gln Lys Leu Thr Gly Lys Asp Phe Asn Thr Val Glu Pro Val  
 2405 2410 2415  
 Gln Arg Gln Ile Asp Leu Leu Ile Arg Gln Ala Thr Asn Asn Glu Asn  
 2420 2425 2430  
 Leu Cys Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp  
 2435 2440

&lt;210&gt; 2516

&lt;211&gt; 7446

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7446)

&lt;400&gt; 2516

atg tct acc tcg tcg caa tct ttt gtg gct gga cgg cct gca tcc atg	48
Met Ser Thr Ser Ser Gln Ser Phe Val Ala Gly Arg Pro Ala Ser Met	
1 5 10 15	
gct tcc cct tcg caa tcg cac cgc ttt tgt ggt ccc tca gcc acc gct	96
Ala Ser Pro Ser Gln Ser His Arg Phe Cys Gly Pro Ser Ala Thr Ala	
20 25 30	
tct ggt ggc gga agc ttt gac act ttg aat cgt gtc atc gct gac ctt	144
Ser Gly Gly Gly Ser Phe Asp Thr Leu Asn Arg Val Ile Ala Asp Leu	
35 40 45	
tgc agc cgt ggt aat cct aag gag gga gct cct tta gcg ttt agg aaa	192
Cys Ser Arg Gly Asn Pro Lys Glu Gly Ala Pro Leu Ala Phe Arg Lys	
50 55 60	
cac gta gag gaa gca gtt cgt gat ctt agt ggt gaa gct tcc tct agg	240
His Val Glu Glu Ala Val Arg Asp Leu Ser Gly Glu Ala Ser Ser Arg	
65 70 75 80	
ttc atg gag caa tta tat gac agg att gct aat tta att gag agc act	288
Phe Met Glu Gln Tyr Asp Arg Ile Ala Asn Leu Ile Glu Ser Thr	
85 90 95	
gat gtg gcg gaa aac atg ggt gca ctc aga gcc att gat gag ttg acg	336
Asp Val Ala Glu Asn Met Gly Ala Leu Arg Ala Ile Asp Glu Leu Thr	
100 105 110	
gag att gga ttt ggt gag aat gct act aag gtt tct aga ttt gcg ggt	384
Glu Ile Gly Phe Gly Glu Asn Ala Thr Lys Val Ser Arg Phe Ala Gly	
115 120 125	
tac atg agg act gtg ttc gag ttg aag cgt gat cct gaa atc ttg gtg	432
Tyr Met Arg Thr Val Phe Glu Leu Lys Arg Asp Pro Glu Ile Leu Val	
130 135 140	
ctt gct agt aga gtt ttg gag ctc ctt gct cgg gca ggt gga gca atg	480
Leu Ala Ser Arg Val Leu Gly His Leu Ala Arg Ala Gly Gly Ala Met	
145 150 155 160	
act tct gat gaa gtg gag ttt cag atg aaa aca gct ttt gat tgg ctt	528
Thr Ser Asp Glu Val Glu Phe Gln Met Lys Thr Ala Phe Asp Trp Leu	
165 170 175	
cgc gta gac agg gtg gaa tat cgt cgt ttc gcc gcc gtt tta ata tta	576
Arg Val Asp Arg Val Glu Tyr Arg Arg Phe Ala Ala Val Leu Ile Leu	
180 185 190	
aag gag atg gcc gaa aat gct tct act gtc ttt aac gtt cat gtc cct	624
Lys Glu Met Ala Glu Asn Ala Ser Thr Val Phe Asn Val His Val Pro	
195 200 205	
gaa ttt gtg gat gct atc tgg gtt gca ctt agg gac ccc cag ttg caa	672
Glu Phe Val Asp Ala Ile Trp Val Ala Leu Arg Asp Pro Gln Leu Gln	
210 215 220	
gtg cga gaa cga gct gtt gaa gct ttg cgt gca tgc ctt cgt gtt att	720
Val Arg Glu Arg Ala Val Glu Ala Leu Arg Ala Cys Leu Arg Val Ile	
225 230 235 240	
gag aaa agg gag act cga tgg cga gtg cag tgg tac tat cga atg ttt	768
Glu Lys Arg Glu Thr Arg Trp Arg Val Gln Trp Tyr Tyr Arg Met Phe	
245 250 255	
gaa gct aca cag gat ggg ttg ggc aga aat gct ccg gtt cac agt att	816
Glu Ala Thr Gln Asp Gly Leu Gly Arg Asn Ala Pro Val His Ser Ile	

## PhoenixTemp32470.tmp.txt

cat	ggt	tct	260	ctt	gcc	gtg	265	gag	ctg	ttg	agg	aat	270	ggt	gag	864
His	Gly	Ser	tta	Leu	Ala	Val	Gly	Glu	Leu	Leu	Arg	Asn	Thr	Gly	Glu	
		275					280					285				
ttc	atg	atg	tct	agg	tat	aga	gaa	ggt	gcc	gaa	att	gtc	ctc	aga	tac	912
Phe	Met	Met	Ser	Arg	Tyr	Arg	Glu	Val	Ala	Glu	Ile	Val	Leu	Arg	Tyr	
	290					295					300					
ctt	gaa	cat	cgt	gat	cgc	ctt	ggt	cgc	ctt	agc	atc	acc	tcg	tta	ctg	960
Leu	Glu	His	Arg	Asp	Arg	Leu	Val	Arg	Leu	Ser	Ile	Thr	Ser	Leu	Leu	
305					310					315					320	
cct	cgc	att	gct	cac	ttt	ctc	cgt	gac	cgg	ttt	gtg	aca	aac	tat	tta	1008
Pro	Arg	Ile	Ala	His	Phe	Leu	Arg	Asp	Arg	Phe	Val	Thr	Asn	Tyr	Leu	
				325					330					335		
acg	ata	tgc	atg	aat	cat	att	ctt	act	gtg	tta	aga	ata	ccg	gct	gaa	1056
Thr	Ile	Cys	Met	Asn	His	Ile	Leu	Thr	Val	Leu	Arg	Ile	Pro	Ala	Glu	
			340					345					350			
aga	gcc	agt	ggg	ttc	atc	gcc	ctt	ggg	gaa	atg	gct	ggt	gct	ttg	gat	1104
Arg	Ala	Ser	Gly	Phe	Ile	Ala	Leu	Gly	Glu	Met	Ala	Gly	Ala	Leu	Asp	
		355					360					365				
ggt	gag	ctt	atc	cat	tat	ttg	ccg	aca	att	atg	tct	cat	ctg	cgg	gat	1152
Gly	Glu	Leu	Ile	His	Tyr	Leu	Pro	Thr	Ile	Met	Ser	His	Leu	Arg	Asp	
	370					375					380					
gcg	att	gct	cca	cgt	aaa	ggc	aga	cct	ttg	ctt	gaa	gct	gtg	gct	tgt	1200
Ala	Ile	Ala	Pro	Arg	Lys	Gly	Arg	Pro	Leu	Leu	Glu	Ala	Val	Ala	Cys	
385					390				395						400	
gtt	ggt	aac	atc	gca	aag	gca	atg	gga	tcc	aca	gtg	gaa	act	cat	ggt	1248
Val	Gly	Asn	Ile	Ala	Lys	Ala	Met	Gly	Ser	Thr	Val	Glu	Thr	His	Val	
				405				410						415		
cga	gat	ctt	tta	gat	gtt	atg	ttt	tca	tct	agt	ctc	tct	tcc	aca	ctt	1296
Arg	Asp	Leu	Leu	Asp	Val	Met	Phe	Ser	Ser	Ser	Leu	Ser	Ser	Thr	Leu	
			420					425					430			
gtt	gac	gct	ctt	gac	cag	ata	acc	atc	agc	att	cct	tct	ttg	ctg	cca	1344
Val	Asp	Ala	Leu	Asp	Gln	Ile	Thr	Ile	Ser	Ile	Pro	Ser	Leu	Leu	Pro	
		435				440					445					
aca	gta	caa	gat	cgg	ctt	cta	gat	tgc	att	tcg	ttg	gtt	ctt	tca	aaa	1392
Thr	Val	Gln	Asp	Arg	Leu	Leu	Asp	Cys	Ile	Ser	Leu	Val	Leu	Ser	Lys	
	450					455					460					
tcc	cat	tat	tct	caa	gca	aag	cct	cct	gtt	acc	att	gtc	cga	ggt	agt	1440
Ser	His	Tyr	Ser	Gln	Ala	Lys	Pro	Pro	Val	Thr	Ile	Val	Arg	Gly	Ser	
465					470				475						480	
aca	gtg	ggc	atg	gca	cca	cag	tct	tct	gac	cct	agt	tgt	tca	gct	caa	1488
Thr	Val	Gly	Met	Ala	Pro	Gln	Ser	Ser	Asp	Pro	Ser	Cys	Ser	Ala	Gln	
				485					490					495		
gtt	caa	cta	gcc	ctg	cag	act	ctt	gct	cgt	ttc	aat	ttc	aag	gga	cat	1536
Val	Gln	Leu	Ala	Leu	Gln	Thr	Leu	Ala	Arg	Phe	Asn	Phe	Lys	Gly	His	
			500					505					510			
gat	ctt	ctt	gaa	ttt	gct	cgg	gag	tca	gtt	gtt	gtt	tat	ttg	gat	gat	1584
Asp	Leu	Leu	Glu	Phe	Ala	Arg	Glu	Ser	Val	Val	Val	Tyr	Leu	Asp	Asp	
		515					520					525				
gag	gat	gca	gcc	aca	aga	aaa	gat	gct	gct	ttg	tgt	tgt	tgc	aga	cta	1632
Glu	Asp	Ala	Ala	Thr	Arg	Lys	Asp	Ala	Ala	Leu	Cys	Cys	Cys	Arg	Leu	
		530				535					540					
att	gca	aat	tct	ctt	tct	ggc	atc	aca	caa	ttt	ggc	tcg	agc	agg	tca	1680
Ile	Ala	Asn	Ser	Leu	Ser	Gly	Ile	Thr	Gln	Phe	Gly	Ser	Ser	Arg	Ser	
545					550				555						560	
aca	cga	gca	ggg	ggg	aga	cgc	agg	cgc	ctt	gtg	gaa	gag	att	gtg	gaa	1728
Thr	Arg	Ala	Gly	Gly	Arg	Arg	Arg	Arg	Leu	Val	Glu	Glu	Ile	Val	Glu	
				565					570					575		
aag	ctt	ctc	agg	aca	gcc	gtt	gca	gat	gct	gat	gta	act	gtt	cgc	aaa	1776
Lys	Leu	Leu	Arg	Thr	Ala	Val	Ala	Asp	Ala	Asp	Val	Thr	Val	Arg	Lys	
			580				585						590			
tct	ata	ttc	gtt	gct	tta	ttt	ggc	aac	caa	tgt	ttc	gat	gat	tat	cta	1824
Ser	Ile	Phe	Val	Ala	Leu	Phe	Gly	Asn	Gln	Cys	Phe	Asp	Asp	Tyr	Leu	
		595					600					605				
gca	cag	gct	gat	agt	ttg	act	gcc	att	ttt	gct	tcc	tta	aat	gat	gag	1872
Ala	Gln	Ala	Asp	Ser	Leu	Thr	Ala	Ile	Phe	Ala	Ser	Leu	Asn	Asp	Glu	
	610					615					620					
gac	ctt	gat	gtt	cga	gaa	tat	gcc	atc	tca	gtt	gct	gga	agg	tta	tcg	1920
Asp	Leu	Asp	Val	Arg	Glu	Tyr	Ala	Ile	Ser	Val	Ala	Gly	Arg	Leu	Ser	

## PhoenixTemp32470.tmp.txt

625	gaa	aaa	aat	cca	gca	630	tac	gta	ctt	cca	gca	635	cgt	cgc	cat	ctt	640	ata	1968
Glu	Lys	Asn	Pro	Ala	Tyr	Val	Leu	Pro	Ala	Leu	Arg	Arg	His	Leu	Ile				
				645															
cag	ttg	ttg	acc	tat	ctt	gag	ctg	agt	gca	gat	aac	aag	tgc	agg	gaa			2016	
Gln	Leu	Leu	Thr	Tyr	Leu	Glu	Leu	Ser	Ala	Asp	Asn	Lys	Cys	Arg	Glu				
			660																
gag	agt	gca	aag	ctc	ctt	ggt	tgt	tta	ggt	cga	aat	tgt	gaa	cgg	ctc			2064	
Glu	Ser	Ala	Lys	Leu	Leu	Gly	Cys	Leu	Val	Arg	Asn	Cys	Glu	Arg	Leu				
			675				680												
att	ctt	cca	tac	gta	gcc	cct	gtc	caa	aag	gca	ctt	ggt	gcg	aga	ctt			2112	
Ile	Leu	Pro	Tyr	Val	Ala	Pro	Val	Gln	Lys	Ala	Leu	Val	Ala	Arg	Leu				
			690			695													
agt	gaa	gga	act	gga	gtg	gct	aac	aat	aat	att	gtc	act	gga	ggt				2160	
Ser	Glu	Gly	Thr	Gly	Val	Asn	Ala	Asn	Asn	Ile	Val	Thr	Gly	Val					
					710														
ctc	gta	act	gtt	ggg	gat	ctt	gca	aga	gtg	ggt	ggc	ttg	gca	atg	aga			2208	
Leu	Val	Thr	Val	Gly	Asp	Leu	Ala	Arg	Val	Gly	Gly	Leu	Ala	Met	Arg				
				725															
caa	tat	att	ccg	gag	ctg	atg	cct	tta	att	gtt	gaa	gct	tta	atg	gat			2256	
Gln	Tyr	Ile	Pro	Glu	Leu	Met	Pro	Leu	Ile	Val	Glu	Ala	Leu	Met	Asp				
			740					745											
gga	gct	gct	gta	gca	aaa	cgt	gag	gtg	gct	gtt	tct	act	ctt	ggt	caa			2304	
Gly	Ala	Ala	Val	Ala	Lys	Arg	Glu	Val	Ala	Val	Ser	Thr	Leu	Gly	Gln				
			755				760												
gtt	gtt	caa	agt	aca	ggg	tat	gtt	gtg	act	cca	tac	aag	gaa	tac	cca			2352	
Val	Val	Gln	Ser	Thr	Gly	Tyr	Val	Val	Thr	Pro	Tyr	Lys	Glu	Tyr	Pro				
						775													
ttg	ttg	ctt	ggg	tta	ctc	ttg	aaa	ttg	ctg	aag	ggt	gac	tta	gtg	tgg			2400	
Leu	Leu	Leu	Gly	Leu	Leu	Lys	Leu	Leu	Leu	Lys	Gly	Asp	Leu	Val	Trp				
						790									800				
tct	acc	aga	cga	gaa	gtg	ctc	aag	gtt	ctt	gga	att	atg	ggc	gct	ttg			2448	
Ser	Thr	Arg	Arg	Glu	Val	Leu	Lys	Val	Leu	Gly	Ile	Met	Gly	Ala	Leu				
				805															
gat	cct	cat	gtg	cat	aaa	cgt	aac	caa	agt	tta	tca	gga	tca	cat				2496	
Asp	Pro	His	Val	His	Lys	Arg	Asn	Gln	Ser	Leu	Ser	Gly	Ser	His					
			820					825											
ggt	gaa	gtt	cct	cgc	ggc	act	ggt	gat	tct	ggt	caa	cct	att	cca	tca			2544	
Gly	Glu	Val	Pro	Arg	Gly	Thr	Gly	Asp	Ser	Gly	Gln	Pro	Ile	Pro	Ser				
			835				840												
att	gat	gag	tta	cct	gtc	gaa	ctc	cgg	ccg	tca	ttt	gct	aca	tct	gag			2592	
Ile	Asp	Glu	Leu	Pro	Val	Glu	Leu	Arg	Pro	Ser	Phe	Ala	Thr	Ser	Glu				
						855													
gat	tat	tac	tca	acg	gtt	gct	atc	aac	tcg	ctt	atg	cga	att	ctt	aga			2640	
Asp	Tyr	Tyr	Ser	Thr	Val	Ala	Ile	Asn	Ser	Leu	Met	Arg	Ile	Leu	Arg				
						870									880				
gat	gca	tca	ctt	ctt	agt	tac	cac	aaa	agg	gtt	gtt	aga	tct	ctg	atg			2688	
Asp	Ala	Ser	Leu	Leu	Ser	Tyr	His	Lys	Arg	Val	Val	Arg	Ser	Leu	Met				
						885									895				
atc	att	ttc	aag	tca	atg	gga	ttg	gga	tgc	gtg	cct	tac	ttg	ccg	aag			2736	
Ile	Ile	Phe	Lys	Ser	Met	Gly	Leu	Gly	Cys	Val	Pro	Tyr	Leu	Pro	Lys				
			900																
gtt	tta	cct	gag	ctt	ttt	cac	act	gtt	cga	aca	tct	gat	gag	aac	ctg			2784	
Val	Leu	Pro	Glu	Leu	Phe	His	Thr	Val	Arg	Thr	Ser	Asp	Glu	Asn	Leu				
			915				920												
aag	gac	ttc	att	acg	tgg	ggt	ctt	ggg	act	ctt	gtt	tcc	att	gtt	cgc			2832	
Lys	Asp	Phe	Ile	Thr	Trp	Gly	Leu	Gly	Thr	Leu	Val	Ser	Ile	Val	Arg				
						935													
cag	cac	ata	cgc	aag	tat	ctg	cca	gag	ctg	ctt	tca	tta	gtc	tct	gaa			2880	
Gln	His	Ile	Arg	Lys	Tyr	Leu	Pro	Glu	Leu	Leu	Ser	Leu	Val	Ser	Glu				
						950									960				
cta	tgg	tca	tcc	ttc	acc	ttg	ccc	ggt	ccc	ata	cgc	cca	tca	cgt	ggt			2928	
Leu	Trp	Ser	Ser	Phe	Thr	Leu	Pro	Gly	Pro	Ile	Arg	Pro	Ser	Arg	Gly				
						965									975				
ctt	ccg	gtt	ctg	cat	cta	ctg	gaa	cat	ctt	tgc	ttg	gca	ctt	aat	gat			2976	
Leu	Pro	Val	Leu	His	Leu	Leu	Glu	His	Leu	Cys	Leu	Ala	Leu	Asn	Asp				
gaa	ttc	aga	act	tat	ctt	cca	gtc	atc	ctt	cca	tgt	ttc	atc	caa	gta			3024	
Glu	Phe	Arg	Thr	Tyr	Leu	Pro	Val	Ile	Leu	Pro	Cys	Phe	Ile	Gln	Val				

## PhoenixTemp32470.tmp.txt

995	1000	1005	
tta ggt gac gcc gag cgg ttt aat gat tac acc tat gtt cct gat att			3072
Leu Gly Asp Ala Glu Arg Phe Asn Asp Tyr Thr Tyr Val Pro Asp Ile			
1010	1015	1020	
ctc cac aca ctc gaa gtg ttt ggc gga act ctt gat gag cac atg cat			3120
Leu His Thr Leu Glu Val Phe Gly Gly Thr Leu Asp Glu His Met His			
1025	1030	1035	1040
tta ctc ctt ccg gca ctt att cga ttg ttt aaa gta gat gct cct gta			3168
Leu Leu Leu Pro Ala Leu Ile Arg Leu Phe Lys Val Asp Ala Pro Val			
1045	1050	1055	
gct ata aga cgc gat gcc atc aaa act ttg aca aga gta atc ccg tgt			3216
Ala Ile Arg Arg Asp Ala Ile Lys Thr Leu Thr Arg Val Ile Pro Cys			
1060	1065	1070	
gtt cag gtt act ggt cat atc tcc gct ctc gtg cat cac ttg aag cta			3264
Val Gln Val Thr Gly His Ile Ser Ala Leu Val His His Leu Lys Leu			
1075	1080	1085	
gta tta gat ggg aag aat gat gag ttg cgg aaa gat gct gtc gat gca			3312
Val Leu Asp Gly Lys Asn Asp Glu Leu Arg Lys Asp Ala Val Asp Ala			
1090	1095	1100	
cta tgc tgt ttg gct cat gca ctt gga gag gac ttc acc ata ttc att			3360
Leu Cys Cys Leu Ala His Ala Leu Gly Glu Asp Phe Thr Ile Phe Ile			
1105	1110	1115	1120
gaa tca att cac aag ctt tta ttg aag cat cga ttg cgg cat aaa gaa			3408
Glu Ser Ile His Lys Leu Leu Leu Lys His Arg Leu Arg His Lys Glu			
1125	1130	1135	
ttt gag gaa att cat gct cgc tgg cgg aga cgt gaa cca ttg att gta			3456
Phe Glu Glu Ile His Ala Arg Trp Arg Arg Arg Glu Pro Leu Ile Val			
1140	1145	1150	
gct aca act gca acc caa caa tta agt agg cga ctg cca gtt gag gtt			3504
Ala Thr Thr Ala Thr Gln Gln Leu Ser Arg Arg Leu Pro Val Glu Val			
1155	1160	1165	
atc agg gat cct gta att gag aat gag atc gat cct ttc gaa gaa gga			3552
Ile Arg Asp Pro Val Ile Glu Asn Glu Ile Asp Pro Phe Glu Glu Gly			
1170	1175	1180	
act gag aga aac cat cag gtt aat gat ggt aga cta cgg aca gct gga			3600
Thr Asp Arg Asn His Gln Val Asn Asp Gly Arg Leu Arg Thr Ala Gly			
1185	1190	1195	1200
gaa gct tct caa cgc agc acc aaa gaa gat tgg gag gaa tgg atg aga			3648
Glu Ala Ser Gln Arg Ser Thr Lys Glu Asp Trp Glu Glu Trp Met Arg			
1205	1210	1215	
cat ttt agt att gaa tta ctt aag gag tct ccc tct cca gca tta aga			3696
His Phe Ser Ile Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg			
1220	1225	1230	
act tgt gca aaa ctt gct cag ttg cag cca ttt gtc ggg aga gag ttg			3744
Thr Cys Ala Lys Leu Ala Gln Leu Gln Pro Phe Val Gly Arg Glu Leu			
1235	1240	1245	
ttt gct gct ggc ttt gtc agt tgc tgg gca cag cta aac gag tct agc			3792
Phe Ala Ala Gly Phe Val Ser Cys Trp Ala Gln Leu Asn Glu Ser Ser			
1250	1255	1260	
caa aag cag tta gtt agg agc ttg gaa atg gcc ttt tca tct cca aat			3840
Gln Lys Gln Leu Val Arg Ser Leu Glu Met Ala Phe Ser Ser Pro Asn			
1265	1270	1275	1280
atc cct cca gaa att tta gct aca cta ctc aat ttg gca gag ttt atg			3888
Ile Pro Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met			
1285	1290	1295	
gaa cat gat gag aag cct ctt ccc att gat att cgt ctt ctg ggg gct			3936
Glu His Asp Glu Lys Pro Leu Pro Ile Asp Ile Arg Leu Gly Ala			
1300	1305	1310	
ctt gct gaa aag tgc cgt gtt ttt gcc aaa gct ctg cat tat aaa gag			3984
Leu Ala Glu Lys Cys Arg Val Phe Ala Lys Ala Leu His Tyr Lys Glu			
1315	1320	1325	
atg gaa ttt gaa ggt cca cga tcc aag agg atg gat gcc aac cca gtt			4032
Met Glu Phe Glu Gly Pro Arg Ser Lys Arg Met Asp Ala Asn Pro Val			
1330	1335	1340	
gct gtt gtc gag gct ctt ata cac ata aat aat cag tta cac cag cat			4080
Ala Val Val Glu Ala Leu Ile His Ile Asn Asn Gln Leu His Gln His			
1345	1350	1355	1360
gag gct gct gtc ggt ata cta acc tat gct caa cat ctt gat gtg			4128
Glu Ala Ala Val Gly Ile Leu Thr Tyr Ala Gln Gln His Leu Asp Val			

## PhoenixTemp32470.tmp.txt

caa tta aaa gaa tca tgg tat gag aag ctg cag cgc tgg gac gat gca	1365	1370	1375	4176
Gln Leu Lys Glu Ser Trp Tyr Glu Lys Leu Gln Arg Trp Asp Asp Ala				
ctc aag gcg tac act ttg aaa gca tct caa aca aca aat cct cat ctt	1380	1385	1390	4224
Leu Lys Ala Tyr Thr Leu Lys Ala Ser Gln Thr Thr Asn Pro His Leu				
gta tta gaa gcc aca tta gga caa atg aga tgt ctt gct gca ctt gca	1395	1400	1405	4272
Val Leu Glu Ala Thr Leu Gly Gln Met Arg Cys Leu Ala Ala Leu Ala				
cga tgg gaa gag ctc aac aat ctc tgc aaa gag tac tgg agt cct gct	1410	1415	1420	4320
Arg Trp Glu Glu Leu Asn Asn Leu Cys Lys Glu Tyr Trp Ser Pro Ala				
gag cca tct gcg cgt ctg gaa atg gca cca atg gct gca caa gct gca	1425	1430	1435	4368
Glu Pro Ser Ala Arg Leu Glu Met Ala Pro Met Ala Ala Gln Ala Ala				
tgg aac atg gga gag tgg gat caa atg gcc gaa tat gtg tct cgg cta	1445	1450	1455	4416
Trp Asn Met Gly Glu Trp Asp Gln Met Ala Glu Tyr Val Ser Arg Leu				
gat gat ggt gat gaa aca aag ctt cgg ggt tta gca agc ccg gtt tct	1460	1465	1470	4464
Asp Asp Gly Asp Glu Thr Lys Leu Arg Gly Leu Ala Ser Pro Val Ser				
agt ggc gat ggg agc agt aat ggc aca ttc ttc agg gct gtt ctg tta	1475	1480	1485	4512
Ser Gly Asp Gly Ser Ser Asn Gly Thr Phe Phe Arg Ala Val Leu Leu				
gtt cga agg gca aag tac gac gag gca cgc gaa tat gtg gaa aga gct	1490	1495	1500	4560
Val Arg Arg Ala Lys Tyr Asp Glu Ala Arg Glu Tyr Val Glu Arg Ala				
aga aaa tgt ctt gcc aca gaa ctt gca gcg ctg gtt ttg gag agc tat	1505	1510	1515	4608
Arg Lys Cys Leu Ala Thr Glu Leu Ala Leu Val Leu Glu Ser Tyr				
gag cgt gcg tac agc aat atg gtt cgt gtt cag cag ctg tca gaa cta	1525	1530	1535	4656
Glu Arg Ala Tyr Ser Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu				
gag gag gta att gaa tat tat acg ctg cct gtg gga aat act att gcc	1540	1545	1550	4704
Glu Glu Val Ile Glu Tyr Tyr Thr Leu Pro Val Gly Asn Thr Ile Ala				
gaa gaa cgg aga gct cta att cgt aat atg tgg act cag cgg att cag	1555	1560	1565	4752
Glu Glu Arg Arg Ala Leu Ile Arg Asn Met Trp Thr Gln Arg Ile Gln				
gga tct aag cgt aat gtg gag gtg tgg caa gca ctt ttg gct gtc cgg	1570	1575	1580	4800
Gly Ser Lys Arg Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg				
gca ctt gtg cta cct cct aca gaa gat gtg gaa act tgg ctc aag ttt	1585	1590	1595	4848
Ala Leu Val Leu Pro Pro Thr Glu Asp Val Glu Thr Trp Leu Lys Phe				
gcc tcg ctt tgt cga aag agt ggg agg atc agt cag gcg aaa tct act	1605	1610	1615	4896
Ala Ser Leu Cys Arg Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr				
cta ctc aag ctc tta ccg ttt gat cca gaa gta tca cca gaa aac atg	1620	1625	1630	4944
Leu Leu Lys Leu Leu Pro Phe Asp Pro Glu Val Ser Pro Glu Asn Met				
caa tat cac gga cct cca caa gtg atg ctt gga tac tta aaa tac caa	1635	1640	1645	4992
Gln Tyr His Gly Pro Pro Gln Val Met Leu Gly Tyr Leu Lys Tyr Gln				
tgg tca ctt gga gag gaa cgt aag cgc aaa gag gca ttt acc aag ctg	1650	1655	1660	5040
Trp Ser Leu Gly Glu Glu Arg Lys Arg Lys Glu Ala Phe Thr Lys Leu				
cag att cta acg aga gag ctc tca agt gtg cca cat tct caa tct gac	1665	1670	1675	5088
Gln Ile Leu Thr Arg Glu Leu Ser Ser Val Pro His Ser Gln Ser Asp				
ata ctg gct agc atg gta tct agc aag ggc gca aat gtt cca ctt ctt	1685	1690	1695	5136
Ile Leu Ala Ser Met Val Ser Ser Lys Gly Ala Asn Val Pro Leu Leu				
gca cgt gta aat ctc aaa ctg gga acg tgg cag tgg gca ctt tct tcc	1700	1705	1710	5184
Ala Arg Val Asn Leu Lys Leu Gly Thr Trp Gln Trp Ala Leu Ser Ser				
ggt ttg aat gat ggg tct att caa gaa att cgt gat gcg ttt gac aaa	1715	1720	1725	5232
Gly Leu Asn Asp Gly Ser Ile Gln Glu Ile Arg Asp Ala Phe Asp Lys				



## PhoenixTemp32470.tmp.txt

1730	tct act tgc tat gct cct	1735	aaa tgg gct aaa gca tgg cac	1740	aca tgg gca	5280
Ser Thr Cys Tyr Ala Pro	Lys Trp Ala Lys Ala Trp His Thr Trp Ala					
1745	tta ttc aat aca gca gtg atg tgc cat tac att tca aga ggt caa att	1750	Met Ser His Tyr Ile Ser Arg Gly Gln Ile	1755	1760	5328
Leu Phe Asn Thr Ala Val						
1765	gct tcc cag tac gtt tct gca gtc act gga tat ttt tat tct ata	1770	Ala Val Thr Gly Tyr Phe Tyr Ser Ile	1775		5376
Ala Ser Gln Tyr Val Val Ser						
1780	gca tgt gca gca aat gcc aaa gga gtt gat gat agt tta cag gac ata	1785	Ala Cys Ala Ala Asn Ala Lys Gly Val Asp Asp Ser Leu Gln Asp Ile	1790		5424
Ala Cys Ala Ala Asn Ala Lys						
1795	ctg cgt ctt ctg aca ttg tgg ttc aac cat gga gct aca gct gat gtc	1800	Leu Arg Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ala Asp Val	1805		5472
Leu Arg Leu Leu Thr Leu Trp						
1810	caa acc gca ttg aag aca gga ttc agt cat gtc aac att aac aca tgg	1815	Gln Thr Ala Leu Lys Thr Gly Phe Ser His Val Asn Ile Asn Thr Trp	1820		5520
Gln Thr Ala Leu Lys Thr						
1825	ctt gtt gtg cta cct caa atc att gct agg ata cat tct aat aat cgt	1830	Leu Val Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Arg	1835	1840	5568
Leu Val Val Leu Pro Gln						
1845	gct gtc agg gaa ctg att cag tct ctt ctc atc cgc ata ggc gaa aac	1850	Ala Val Arg Glu Leu Ile Arg Ile Gly Glu Asn	1855		5616
Ala Val Arg Glu Leu Ile Gln Ser Leu Leu Ile Arg Ile						
1860	cac cca cag gct ctg atg tat ccc ctt ctc gtt gca tgt aaa tca ata	1865	His Pro Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Cys Lys Ser Ile	1870		5664
His Pro Gln Ala Leu Met Tyr						
1875	agc aat ctt cgg aga gct gcg gct caa gag gtg gtt gat aaa gtt cgc	1880	Ser Asn Leu Arg Arg Ala Ala Gln Glu Val Val Asp Lys Val Arg	1885		5712
Ser Asn Leu Arg Arg Ala Ala						
1890	cag cac agt ggt gca ctc gtg gat cag gcg caa ctt gta tca cat gaa	1895	Gln His Ser Gly Ala Leu Val Asp Gln Ala Gln Leu Val Ser His Glu	1900		5760
Gln His Ser Gly Ala Leu Val						
1905	ctt atc agg gtt gcc ata ctt tgg cat gaa atg tgg cat gaa gca cta	1910	Leu Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Ala Leu	1915	1920	5808
Leu Ile Arg Val Ala Ile Leu						
1925	gaa gaa gct agt cgc ttg tat ttt ggt gaa cat aac att gaa ggc atg	1930	Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu His Asn Ile Glu Gly Met	1935		5856
Glu Glu Ala Ser Arg Leu Tyr						
1940	ctg aaa gta ctt gaa ccc tta cat gac atg ctc gac gaa ggt gta aaa	1945	Leu Lys Val Leu Glu Pro Leu His Asp Met Leu Asp Glu Gly Val Lys	1950		5904
Leu Lys Val Leu Glu Pro Leu						
1955	aag gac agt acg acc ata cag gaa aga gca ttt ata gag gca tac cgt	1960	Lys Asp Ser Thr Thr Ile Gln Glu Arg Ala Phe Ile Glu Ala Tyr Arg	1965		5952
Lys Asp Ser Thr Thr Ile Gln						
1970	cac gaa cta aaa gag gca cat gaa tgc tgt tgc aat tac aag ata act	1975	His Glu Leu Lys Glu Ala His Glu Cys Cys Cys Asn Tyr Lys Ile Thr	1980		6000
His Glu Leu Lys Glu Ala His						
1985	ggg aaa gat gct gaa ctt aca cag gct tgg gat ctt tac tat cac gtt	1990	Gly Lys Asp Ala Glu Leu Thr Gln Ala Trp Asp Leu Tyr Tyr His Val	1995	2000	6048
Gly Lys Asp Ala Glu Leu Thr						
2005	ttc aaa cgg att gac aaa cag cta gcc agt ctc acg aca ttg gat ttg	2010	Phe Lys Arg Ile Asp Lys Gln Leu Ala Ser Leu Thr Thr Leu Asp Leu	2015		6096
Phe Lys Arg Ile Asp Lys Gln						
2020	gaa tct gtt tct cct gag ttg ctg ctg tgc cgt gac ttg gag cta gca	2025	Glu Ser Val Ser Pro Glu Leu Leu Cys Arg Asp Leu Glu Leu Ala	2030		6144
Glu Ser Val Ser Pro Glu Leu						
2035	gtt cct gga aca tat cgt gca gat gcc ccc gtc gtg act ata tca tct	2040	Val Pro Gly Thr Tyr Arg Ala Asp Ala Pro Val Val Thr Ile Ser Ser	2045		6192
Val Pro Gly Thr Tyr Arg Ala						
2050	ttt tca cgc caa ctt gtt gtt ata acc tct aaa caa aga cca agg aaa	2055	Phe Ser Arg Gln Leu Val Ile Thr Ser Lys Gln Arg Pro Arg Lys	2060		6240
Phe Ser Arg Gln Leu Val Ile						
2065	ttg act att cac gga aat gac ggt gag gac tac gcc ttc ttg ttg aag	2070	Leu Thr Ile His Gly Asn Asp Gly Glu Asp Tyr Ala Phe Leu Leu Lys	2075	2080	6288
Leu Thr Ile His Gly Asn Asp						
2085	gga cat gaa gat tta agg caa gat gag cgt gtt atg cag ctt ttt ggt	2090	Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly	2095		6336
Gly His Glu Asp Leu Arg Gln						

## PhoenixTemp32470.tmp.txt

2100	2105	2110	
ttg gtg aac act ttg ctt gag aat tcc aga aaa aca gcc gaa aaa gat			6384
Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ala Glu Lys Asp			
2115	2120	2125	
ctt tcc att caa cgc tat tct gta ata cca cta tct ccc aat agt gga			6432
Leu Ser Ile Gln Arg Tyr Ser Val Ile Pro Leu Ser Pro Asn Ser Gly			
2130	2135	2140	
ctc atc gga tgg gtt ccg aac tgc gat acc ctt cac cat ctt att cga			6480
Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His His Leu Ile Arg			
2145	2150	2155	2160
gag cac aga gat gca aga aag atc att ctt aat caa gaa aat aag cat			6528
Glu His Arg Asp Ala Arg Lys Ile Ile Leu Asn Gln Glu Asn Lys His			
2165	2170	2175	
atg ttg agt ttt gct cca gac tat gac aat cta ccg ctt ata gca aag			6576
Met Leu Ser Phe Ala Pro Asp Tyr Asp Asn Leu Pro Leu Ile Ala Lys			
2180	2185	2190	
gtt gaa gta ttt gag tat gct cta gaa aac aca gag gga aat gat cta			6624
Val Glu Val Phe Glu Tyr Ala Leu Glu Asn Thr Glu Gly Asn Asp Leu			
2195	2200	2205	
tcc agg gtt ctc tgg tta aaa agt cgc tcg tca gaa gtt tgg cta gaa			6672
Ser Arg Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Val Trp Leu Glu			
2210	2215	2220	
aga aga aca aac tat act aga agt tta gca gtt atg agt atg gtt ggt			6720
Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly			
2225	2230	2235	2240
tat att ctt ggg tta ggt gat cga cac cca agt aac ctt atg ctt cat			6768
Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu His			
2245	2250	2255	
aga tac agt gga aag atc ttg cat att gat ttt gga gat tgt ttt gag			6816
Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu			
2260	2265	2270	
gct tct atg aat aga gag aag ttt cct gaa aag gtt cca ttc cgc ctg			6864
Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu			
2275	2280	2285	
aca aga atg ctt gtc aaa gca atg gaa gtc agt ggc att gaa gga aac			6912
Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu Gly Asn			
2290	2295	2300	
ttc cgc tca acc tgc gaa aac gtt atg caa gtt ctc aga acc aat aaa			6960
Phe Arg Ser Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr Asn Lys			
2305	2310	2315	2320
gat agt gta atg gca atg atg gaa gcg ttt gta cat gat cct tta atc			7008
Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro Leu Ile			
2325	2330	2335	
aat tgg cgt ctt ttc aat ttc aat gaa gtc ccc caa tta gca ctg ctc			7056
Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Leu Ala Leu Leu			
2340	2345	2350	
ggt aac aac aac ccc aat gct cct gct gat gtt gag cct gac gaa gaa			7104
Gly Asn Asn Asn Pro Asn Ala Pro Ala Asp Val Glu Pro Asp Glu Glu			
2355	2360	2365	
gat gaa gat ccc gct gat ata gat ctt cct cag cct caa agg agt act			7152
Asp Glu Asp Pro Ala Asp Ile Asp Leu Pro Gln Pro Gln Arg Ser Thr			
2370	2375	2380	
cga gag aag gag att ctt cag gct gta aat atg ctt gga gat gct aat			7200
Arg Glu Lys Glu Ile Leu Gln Ala Val Asn Met Leu Gly Asp Ala Asn			
2385	2390	2395	2400
gaa gtt tta aat gag cgt gcc gta gtt gtt atg gca cgt atg agt cat			7248
Glu Val Leu Asn Glu Arg Ala Val Val Val Met Ala Arg Met Ser His			
2405	2410	2415	
aag ctt aca ggg cgt gat ttt tct tcg tct gca att ccg agc aat ccc			7296
Lys Leu Thr Gly Arg Asp Phe Ser Ser Ser Ala Ile Pro Ser Asn Pro			
2420	2425	2430	
att gct gat cat aat aac ttg ctc gga gga gat tct cat gaa gtc gaa			7344
Ile Ala Asp His Asn Asn Leu Leu Gly Gly Asp Ser His Glu Val Glu			
2435	2440	2445	
cat ggt ttg tct gtg aaa gtt cag gtt caa aaa cta atc aat caa gcc			7392
His Gly Leu Ser Val Lys Val Gln Val Gln Lys Leu Ile Asn Gln Ala			
2450	2455	2460	
act tcc cat gag aat ctc tgt caa aac tat gtt ggg tgg tgc cct ttc			7440
Thr Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe			

2465  
tgg tga  
Trp

2470

2475

2480

7446

<210> 2517  
<211> 2481  
<212> PRT  
<213> Arabidopsis thaliana

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1 Ala Ser Pro Ser<sub>20</sub> Gln Ser His Arg Phe<sub>25</sub> Cys Gly Pro Ser Ala<sub>30</sub> Thr Ala  
Ser Gly Gly<sub>35</sub> Gly Ser Phe Asp Thr<sub>40</sub> Leu Asn Arg Val Ile<sub>45</sub> Ala Asp Leu  
Cys Ser<sub>50</sub> Arg Gly Asn Pro Lys<sub>55</sub> Glu Gly Ala Pro Leu<sub>60</sub> Ala Phe Arg Lys  
His Val<sub>65</sub> Glu Glu Ala Val<sub>70</sub> Arg Asp Leu Ser Gly<sub>75</sub> Glu Ala Ser Ser Arg<sub>80</sub>  
Phe Met Glu Gln Leu<sub>85</sub> Tyr Asp Arg Ile Ala<sub>90</sub> Asn Leu Ile Glu Ser Thr<sub>95</sub>  
Asp Val Ala<sub>100</sub> Glu Asn Met Gly Ala Leu<sub>105</sub> Arg Ala Ile Asp Glu Leu Thr  
Glu Ile Gly<sub>115</sub> Phe Gly Glu Asn Ala Thr Lys Val Ser Arg Phe Ala Gly  
Tyr Met<sub>130</sub> Arg Thr Val Phe Glu<sub>135</sub> Leu Lys Arg Asp Pro Glu Ile Leu Val  
Leu<sub>145</sub> Ala Ser Arg Val Leu<sub>150</sub> Gly His Leu Ala Arg<sub>155</sub> Ala Gly Gly Ala Met<sub>160</sub>  
Thr Ser Asp Glu Val<sub>165</sub> Glu Phe Gln Met Lys<sub>170</sub> Thr Ala Phe Asp Trp Leu  
Arg Val Asp<sub>180</sub> Arg Val Glu Tyr Arg Arg<sub>185</sub> Phe Ala Ala Val Leu Ile Leu  
Lys Glu Met<sub>195</sub> Ala Glu Asn Ala Ser<sub>200</sub> Thr Val Phe Asn Val<sub>205</sub> His Val Pro  
Glu Phe Val<sub>210</sub> Asp Ala Ile Trp Val Ala Leu Arg Asp<sub>220</sub> Pro Gln Leu Gln  
Val<sub>225</sub> Arg Glu Arg Ala Val<sub>230</sub> Glu Ala Leu Arg Ala Cys Leu Arg Val Ile<sub>240</sub>  
Glu Lys Arg Glu Thr<sub>245</sub> Arg Trp Arg Val Gln<sub>250</sub> Trp Tyr Tyr Arg Met<sub>255</sub> Phe  
Glu Ala Thr Gln<sub>260</sub> Asp Gly Leu Gly Arg<sub>265</sub> Asn Ala Pro Val His Ser Ile  
His Gly Ser<sub>275</sub> Leu Leu Ala Val Gly<sub>280</sub> Glu Leu Leu Arg Asn Thr Gly Glu  
Phe Met<sub>290</sub> Met Ser Arg Tyr Arg<sub>295</sub> Glu Val Ala Glu Ile Val Leu Arg Tyr  
Leu<sub>305</sub> Glu His Arg Asp Arg<sub>310</sub> Leu Val Arg Leu Ser Ile Thr Ser Leu Leu  
Pro Arg Ile Ala His<sub>325</sub> Phe Leu Arg Asp Arg<sub>330</sub> Phe Val Thr Asn Tyr Leu  
Thr Ile Cys Met<sub>340</sub> Asn His Ile Leu Thr Val Leu Arg Ile Pro Ala Glu  
Arg Ala Ser<sub>355</sub> Gly Phe Ile Ala Leu Gly<sub>360</sub> Glu Met Ala Gly Ala Leu Asp  
Gly Glu<sub>370</sub> Leu Ile His Tyr Leu<sub>375</sub> Pro Thr Ile Met Ser His Leu Arg Asp  
Ala Ile Ala Pro Arg Lys<sub>390</sub> Gly Arg Pro Leu Leu Glu Ala Val Ala Cys  
385 Val Gly Asn Ile Ala<sub>405</sub> Lys Ala Met Gly Ser Thr Val Glu Thr His Val  
Arg Asp Leu Leu<sub>420</sub> Asp Val Met Phe Ser<sub>425</sub> Ser Ser Leu Ser Ser Thr Leu  
Val Asp Ala<sub>435</sub> Leu Asp Gln Ile Thr Ile Ser Ile Pro Ser Leu Leu Pro  
Thr Val<sub>450</sub> Gln Asp Arg Leu Leu<sub>455</sub> Asp Cys Ile Ser Leu Val Leu Ser Lys

## PhoenixTemp32470.tmp.txt

Ser 465	His	Tyr	Ser	Gln	Ala 470	Lys	Pro	Pro	Val	Thr 475	Ile	Val	Arg	Gly	Ser 480
Thr	Val	Gly	Met	Ala 485	Pro	Gln	Ser	Ser	Asp 490	Pro	Ser	Cys	Ser	Ala 495	Gln
Val	Gln	Leu	Ala 500	Leu	Gln	Thr	Leu	Ala 505	Arg	Phe	Asn	Phe	Lys 510	Gly	His
Asp	Leu	Leu 515	Glu	Phe	Ala	Arg	Glu 520	Ser	Val	Val	Val	Tyr 525	Leu	Asp	Asp
Glu	Asp 530	Ala	Ala	Thr	Arg	Lys 535	Asp	Ala	Ala	Leu	Cys 540	Cys	Cys	Arg	Leu
Ile 545	Ala	Asn	Ser	Leu	Ser 550	Gly	Ile	Thr	Gln	Phe 555	Gly	Ser	Ser	Arg	Ser 560
Thr	Arg	Ala	Gly	Gly 565	Arg	Arg	Arg	Arg	Leu 570	Val	Glu	Glu	Ile	Val 575	Glu
Lys	Leu	Leu	Arg 580	Thr	Ala	Val	Ala	Asp 585	Ala	Asp	Val	Thr	Val 590	Arg	Lys
Ser	Ile	Phe 595	Val	Ala	Leu	Phe	Gly 600	Asn	Gln	Cys	Phe	Asp 605	Asp	Tyr	Leu
Ala	Gln 610	Ala	Asp	Ser	Leu	Thr 615	Ala	Ile	Phe	Ala	Ser 620	Leu	Asn	Asp	Glu
Asp 625	Leu	Asp	Val	Arg	Glu 630	Tyr	Ala	Ile	Ser	Val 635	Ala	Gly	Arg	Leu	Ser 640
Glu	Lys	Asn	Pro	Ala 645	Tyr	Val	Leu	Pro	Ala 650	Leu	Arg	Arg	His	Leu 655	Ile
Gln	Leu	Leu	Thr 660	Tyr	Leu	Glu	Leu	Ser 665	Ala	Asp	Asn	Lys	Cys 670	Arg	Glu
Glu	Ser	Ala 675	Lys	Leu	Leu	Gly	Cys 680	Leu	Val	Arg	Asn	Cys 685	Glu	Arg	Leu
Ile	Leu 690	Pro	Tyr	Val	Ala	Pro 695	Val	Gln	Lys	Ala	Leu 700	Val	Ala	Arg	Leu
Ser 705	Glu	Gly	Thr	Gly	Val 710	Asn	Ala	Asn	Asn	Asn 715	Ile	Val	Thr	Gly	Val 720
Leu	Val	Thr	Val	Gly 725	Asp	Leu	Ala	Arg	Val 730	Gly	Gly	Leu	Ala	Met 735	Arg
Gln	Tyr	Ile	Pro 740	Glu	Leu	Met	Pro	Leu 745	Ile	Val	Glu	Ala	Leu 750	Met	Asp
Gly	Ala	Ala 755	Val	Ala	Lys	Arg	Glu 760	Val	Ala	Val	Ser	Thr 765	Leu	Gly	Gln
Val	Val 770	Gln	Ser	Thr	Gly	Tyr 775	Val	Val	Thr	Pro	Tyr 780	Lys	Glu	Tyr	Pro
Leu 785	Leu	Leu	Gly	Leu	Leu 790	Leu	Lys	Leu	Leu	Lys 795	Gly	Asp	Leu	Val	Trp 800
Ser	Thr	Arg	Arg	Glu 805	Val	Leu	Lys	Val	Leu 810	Gly	Ile	Met	Gly	Ala 815	Leu
Asp	Pro	His	Val 820	His	Lys	Arg	Asn	Gln 825	Gln	Ser	Leu	Ser	Gly 830	Ser	His
Gly	Glu	Val 835	Pro	Arg	Gly	Thr	Gly 840	Asp	Ser	Gly	Gln	Pro 845	Ile	Pro	Ser
Ile	Asp 850	Glu	Leu	Pro	Val	Glu 855	Leu	Arg	Pro	Ser	Phe 860	Ala	Thr	Ser	Glu
Asp 865	Tyr	Tyr	Ser	Thr	Val 870	Ala	Ile	Asn	Ser	Leu 875	Met	Arg	Ile	Leu	Arg 880
Asp	Ala	Ser	Leu	Leu 885	Ser	Tyr	His	Lys	Arg 890	Val	Val	Arg	Ser	Leu 895	Met
Ile	Ile	Phe	Lys 900	Ser	Met	Gly	Leu	Gly 905	Cys	Val	Pro	Tyr	Leu 910	Pro	Lys
Val	Leu	Pro 915	Glu	Leu	Phe	His	Thr 920	Val	Arg	Thr	Ser	Asp 925	Glu	Asn	Leu
Lys	Asp 930	Phe	Ile	Thr	Trp	Gly 935	Leu	Gly	Thr	Leu	Val 940	Ser	Ile	Val	Arg
Gln 945	His	Ile	Arg	Lys	Tyr 950	Leu	Pro	Glu	Leu	Leu 955	Ser	Leu	Val	Ser	Glu 960
Leu	Trp	Ser	Ser	Phe 965	Thr	Leu	Pro	Gly	Pro 970	Ile	Arg	Pro	Ser	Arg 975	Gly
Leu	Pro	Val	Leu 980	His	Leu	Leu	Glu	His 985	Leu	Cys	Leu	Ala	Leu 990	Asn	Asp
Glu	Phe	Arg 995	Thr	Tyr	Leu	Pro	Val 1000	Ile	Leu	Pro	Cys	Phe 1005	Ile	Gln	Val
Leu	Gly	Asp	Ala	Glu	Arg	Phe	Asn	Asp	Tyr	Thr	Tyr	Val	Pro	Asp	Ile

## PhoenixTemp32470.tmp.txt

1010 1015 1020  
 Leu His Thr Leu Glu Val Phe Gly Gly Thr Leu Asp Glu His Met His  
 1025 1030 1035 1040  
 Leu Leu Leu Pro Ala Leu Ile Arg Leu Phe Lys Val Asp Ala Pro Val  
 1045 1050 1055  
 Ala Ile Arg Arg Asp Ala Ile Lys Thr Leu Thr Arg Val Ile Pro Cys  
 1060 1065 1070  
 Val Gln Val Thr Gly His Ile Ser Ala Leu Val His His Leu Lys Leu  
 1075 1080 1085  
 Val Leu Asp Gly Lys Asn Asp Glu Leu Arg Lys Asp Ala Val Asp Ala  
 1090 1095 1100  
 Leu Cys Cys Leu Ala His Ala Leu Gly Glu Asp Phe Thr Ile Phe Ile  
 1105 1110 1115 1120  
 Glu Ser Ile His Lys Leu Leu Lys His Arg Leu Arg His Lys Glu  
 1125 1130 1135  
 Phe Glu Glu Ile His Ala Arg Trp Arg Arg Arg Glu Pro Leu Ile Val  
 1140 1145 1150  
 Ala Thr Thr Ala Thr Gln Gln Leu Ser Arg Arg Leu Pro Val Glu Val  
 1155 1160 1165  
 Ile Arg Asp Pro Val Ile Glu Asn Glu Ile Asp Pro Phe Glu Glu Gly  
 1170 1175 1180  
 Thr Asp Arg Asn His Gln Val Asn Asp Gly Arg Leu Arg Thr Ala Gly  
 1185 1190 1195 1200  
 Glu Ala Ser Gln Arg Ser Thr Lys Glu Asp Trp Glu Glu Trp Met Arg  
 1205 1210 1215  
 His Phe Ser Ile Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg  
 1220 1225 1230  
 Thr Cys Ala Lys Leu Ala Gln Leu Gln Pro Phe Val Gly Arg Glu Leu  
 1235 1240 1245  
 Phe Ala Ala Gly Phe Val Ser Cys Trp Ala Gln Leu Asn Glu Ser Ser  
 1250 1255 1260  
 Gln Lys Gln Leu Val Arg Ser Leu Glu Met Ala Phe Ser Ser Pro Asn  
 1265 1270 1275 1280  
 Ile Pro Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met  
 1285 1290 1295  
 Glu His Asp Glu Lys Pro Leu Pro Ile Asp Ile Arg Leu Leu Gly Ala  
 1300 1305 1310  
 Leu Ala Glu Lys Cys Arg Val Phe Ala Lys Ala Leu His Tyr Lys Glu  
 1315 1320 1325  
 Met Glu Phe Glu Gly Pro Arg Ser Lys Arg Met Asp Ala Asn Pro Val  
 1330 1335 1340  
 Ala Val Val Glu Ala Leu Ile His Ile Asn Asn Gln Leu His Gln His  
 1345 1350 1355 1360  
 Glu Ala Ala Val Gly Ile Leu Thr Tyr Ala Gln Gln His Leu Asp Val  
 1365 1370 1375  
 Gln Leu Lys Glu Ser Trp Tyr Glu Lys Leu Gln Arg Trp Asp Asp Ala  
 1380 1385 1390  
 Leu Lys Ala Tyr Thr Leu Lys Ala Ser Gln Thr Thr Asn Pro His Leu  
 1395 1400 1405  
 Val Leu Glu Ala Thr Leu Gly Gln Met Arg Cys Leu Ala Ala Leu Ala  
 1410 1415 1420  
 Arg Trp Glu Glu Leu Asn Asn Leu Cys Lys Glu Tyr Trp Ser Pro Ala  
 1425 1430 1435 1440  
 Glu Pro Ser Ala Arg Leu Glu Met Ala Pro Met Ala Ala Gln Ala Ala  
 1445 1450 1455  
 Trp Asn Met Gly Glu Trp Asp Gln Met Ala Glu Tyr Val Ser Arg Leu  
 1460 1465 1470  
 Asp Asp Gly Asp Glu Thr Lys Leu Arg Gly Leu Ala Ser Pro Val Ser  
 1475 1480 1485  
 Ser Gly Asp Gly Ser Ser Asn Gly Thr Phe Phe Arg Ala Val Leu Leu  
 1490 1495 1500  
 Val Arg Arg Ala Lys Tyr Asp Glu Ala Arg Glu Tyr Val Glu Arg Ala  
 1505 1510 1515 1520  
 Arg Lys Cys Leu Ala Thr Glu Leu Ala Ala Leu Val Leu Glu Ser Tyr  
 1525 1530 1535  
 Glu Arg Ala Tyr Ser Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu  
 1540 1545 1550  
 Glu Glu Val Ile Glu Tyr Tyr Thr Leu Pro Val Gly Asn Thr Ile Ala  
 1555 1560 1565

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Glu Glu Arg Arg Ala Leu Ile Arg Asn Met Trp Thr Gln Arg Ile Gln  
 1570 1575 1580  
 Gly Ser Lys Arg Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg  
 1585 1590 1595 1600  
 Ala Leu Val Leu Pro Pro Thr Glu Asp Val Glu Thr Trp Leu Lys Phe  
 1605 1610 1615  
 Ala Ser Leu Cys Arg Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr  
 1620 1625 1630  
 Leu Leu Lys Leu Leu Pro Phe Asp Pro Glu Val Ser Pro Glu Asn Met  
 1635 1640 1645  
 Gln Tyr His Gly Pro Pro Gln Val Met Leu Gly Tyr Leu Lys Tyr Gln  
 1650 1655 1660  
 Trp Ser Leu Gly Glu Glu Arg Lys Arg Lys Glu Ala Phe Thr Lys Leu  
 1665 1670 1675 1680  
 Gln Ile Leu Thr Arg Glu Leu Ser Ser Val Pro His Ser Gln Ser Asp  
 1685 1690 1695  
 Ile Leu Ala Ser Met Val Ser Ser Lys Gly Ala Asn Val Pro Leu Leu  
 1700 1705 1710  
 Ala Arg Val Asn Leu Lys Leu Gly Thr Trp Gln Trp Ala Leu Ser Ser  
 1715 1720 1725  
 Gly Leu Asn Asp Gly Ser Ile Gln Glu Ile Arg Asp Ala Phe Asp Lys  
 1730 1735 1740  
 Ser Thr Cys Tyr Ala Pro Lys Trp Ala Lys Ala Trp His Thr Trp Ala  
 1745 1750 1755 1760  
 Leu Phe Asn Thr Ala Val Met Ser His Tyr Ile Ser Arg Gly Gln Ile  
 1765 1770 1775  
 Ala Ser Gln Tyr Val Val Ser Ala Val Thr Gly Tyr Phe Tyr Ser Ile  
 1780 1785 1790  
 Ala Cys Ala Ala Asn Ala Lys Gly Val Asp Asp Ser Leu Gln Asp Ile  
 1795 1800 1805  
 Leu Arg Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ala Asp Val  
 1810 1815 1820  
 Gln Thr Ala Leu Lys Thr Gly Phe Ser His Val Asn Ile Asn Thr Trp  
 1825 1830 1835 1840  
 Leu Val Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Arg  
 1845 1850 1855  
 Ala Val Arg Glu Leu Ile Gln Ser Leu Leu Ile Arg Ile Gly Glu Asn  
 1860 1865 1870  
 His Pro Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Cys Lys Ser Ile  
 1875 1880 1885  
 Ser Asn Leu Arg Arg Ala Ala Gln Glu Val Val Asp Lys Val Arg  
 1890 1895 1900  
 Gln His Ser Gly Ala Leu Val Asp Gln Ala Gln Leu Val Ser His Glu  
 1905 1910 1915 1920  
 Leu Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Ala Leu  
 1925 1930 1935  
 Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu His Asn Ile Glu Gly Met  
 1940 1945 1950  
 Leu Lys Val Leu Glu Pro Leu His Asp Met Leu Asp Glu Gly Val Lys  
 1955 1960 1965  
 Lys Asp Ser Thr Thr Ile Gln Glu Arg Ala Phe Ile Glu Ala Tyr Arg  
 1970 1975 1980  
 His Glu Leu Lys Glu Ala His Glu Cys Cys Cys Asn Tyr Lys Ile Thr  
 1985 1990 1995 2000  
 Gly Lys Asp Ala Glu Leu Thr Gln Ala Trp Asp Leu Tyr Tyr His Val  
 2005 2010 2015  
 Phe Lys Arg Ile Asp Lys Gln Leu Ala Ser Leu Thr Thr Leu Asp Leu  
 2020 2025 2030  
 Glu Ser Val Ser Pro Glu Leu Leu Leu Cys Arg Asp Leu Glu Leu Ala  
 2035 2040 2045  
 Val Pro Gly Thr Tyr Arg Ala Asp Ala Pro Val Val Thr Ile Ser Ser  
 2050 2055 2060  
 Phe Ser Arg Gln Leu Val Ile Thr Ser Lys Gln Arg Pro Arg Lys  
 2065 2070 2075 2080  
 Leu Thr Ile His Gly Asn Asp Gly Glu Asp Tyr Ala Phe Leu Leu Lys  
 2085 2090 2095  
 Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly  
 2100 2105 2110  
 Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ala Glu Lys Asp

PhoenixTemp32470.tmp.txt

2115  
 Leu Ser Ile Gln Arg Tyr Ser Val Ile Pro Leu Ser Pro Asn Ser Gly  
 2130 2135 2140  
 Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His His Leu Ile Arg  
 2145 2150 2155 2160  
 Glu His Arg Asp Ala Arg Lys Ile Ile Leu Asn Gln Glu Asn Lys His  
 2165 2170 2175  
 Met Leu Ser Phe Ala Pro Asp Tyr Asp Asn Leu Pro Leu Ile Ala Lys  
 2180 2185 2190  
 Val Glu Val Phe Glu Tyr Ala Leu Glu Asn Thr Glu Gly Asn Asp Leu  
 2195 2200 2205  
 Ser Arg Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Val Trp Leu Glu  
 2210 2215 2220  
 Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly  
 2225 2230 2235 2240  
 Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu His  
 2245 2250 2255  
 Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu  
 2260 2265 2270  
 Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu  
 2275 2280 2285  
 Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu Gly Asn  
 2290 2295 2300  
 Phe Arg Ser Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr Asn Lys  
 2305 2310 2315 2320  
 Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro Leu Ile  
 2325 2330 2335  
 Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Leu Ala Leu Leu  
 2340 2345 2350  
 Gly Asn Asn Asn Pro Asn Ala Pro Ala Asp Val Glu Pro Asp Glu Glu  
 2355 2360 2365  
 Asp Glu Asp Pro Ala Asp Ile Asp Leu Pro Gln Pro Gln Arg Ser Thr  
 2370 2375 2380  
 Arg Glu Lys Glu Ile Leu Gln Ala Val Asn Met Leu Gly Asp Ala Asn  
 2385 2390 2395 2400  
 Glu Val Leu Asn Glu Arg Ala Val Val Val Met Ala Arg Met Ser His  
 2405 2410 2415  
 Lys Leu Thr Gly Arg Asp Phe Ser Ser Ser Ala Ile Pro Ser Asn Pro  
 2420 2425 2430  
 Ile Ala Asp His Asn Asn Leu Leu Gly Gly Asp Ser His Glu Val Glu  
 2435 2440 2445  
 His Gly Leu Ser Val Lys Val Gln Val Gln Lys Leu Ile Asn Gln Ala  
 2450 2455 2460  
 Thr Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe  
 2465 2470 2475 2480  
 Trp

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 Met Ser Thr Thr Ser Val Val Gln Gln Phe Val Asn Gly Leu Lys Ser  
 1 5 10 15  
 cgc aac cgg aat gta cag aac aag gca acc cag gat ctg ctc ttc tat 96  
 Arg Asn Arg Asn Val Gln Asn Lys Ala Thr Gln Asp Leu Leu Phe Tyr  
 20 25 30  
 gtg aag acc gag cta cgc gaa atg tcc cag gag gag ctg gcc caa ttt 144  
 Val Lys Thr Glu Leu Arg Glu Met Ser Gln Glu Glu Leu Ala Gln Phe  
 35 40 45  
 ttc gac gag ttc gac cat cac att ttc acg atg gtg aat gcg aca gat 192  
 Phe Asp Glu Phe Asp His His Ile Phe Thr Met Val Asn Ala Thr Asp

## PhoenixTemp32470.tmp.txt

50	55	60		
atc aac gag aaa aaa ggc ggt gcc ctg gcc atg tgc ctg att aac				240
Ile Asn Glu Lys Lys Gly Gly Ala Leu Ala Met Lys Cys Leu Ile Asn				
65	70	75	80	
tgc gag ggc agt ctt act gcc agg aag ggc att tcg ccc tat ctc aac				288
Cys Glu Gly Ser Leu Thr Ala Arg Lys Gly Ile Ser Pro Tyr Leu Asn				
85	90	95		
cgc ctg cgc gat ctt ctg cta atc aac gat gtg tcc gtc atg gag att				336
Arg Leu Arg Asp Leu Leu Leu Ile Asn Asp Val Ser Val Met Glu Ile				
100	105	110		
gcc gcc cgc tcc ctg gtc aaa ttg gcc aac atg ccc acc tcc aag ggc				384
Ala Ala Arg Ser Leu Val Lys Leu Ala Asn Met Pro Thr Ser Lys Gly				
115	120	125		
gcc gat tcc ttc gac ttt gat att aag aag gct ttt gag gtg ctc aga				432
Ala Asp Ser Phe Asp Phe Asp Ile Lys Lys Ala Phe Glu Val Leu Arg				
130	135	140		
ggc gag aga caa gag tac cgc cgc cat tca gcc gtc ttt atc ctc cgt				480
Gly Glu Arg Gln Glu Tyr Arg Arg His Ser Ala Val Phe Ile Leu Arg				
145	150	155	160	
gag ctg gct atc gcc ttg ccc aca tac ttc tac cag cac atc ctg acc				528
Glu Leu Ala Ile Ala Leu Pro Thr Tyr Phe Tyr Gln His Ile Leu Thr				
165	170	175		
ttc ttc gag gtt atc ttt aac gcc atc ttc gat ccc aaa cct gct ata				576
Phe Phe Glu Val Ile Phe Asn Ala Ile Phe Asp Pro Lys Pro Ala Ile				
180	185	190		
cga gag tca gct ggc gag gct ttg agg gcg gct ttg att gtc acc gct				624
Arg Glu Ser Ala Gly Glu Ala Leu Arg Ala Ala Leu Ile Val Thr Ala				
195	200	205		
cag cga gag agc acc aag cag tcc agt gaa cca cag tgg tac aga atc				672
Gln Arg Glu Ser Thr Lys Gln Ser Ser Glu Pro Gln Trp Tyr Arg Ile				
210	215	220		
tgc tat gac gag gcg aat gga agc ttc aat gca gac ttg ggc tct agc				720
Cys Tyr Asp Glu Ala Asn Gly Ser Phe Asn Ala Asp Leu Gly Ser Ser				
225	230	235	240	
aag gat cag aaa ggc gtg acc cga gac gat cgc att cac ggt ggc ctc				768
Lys Asp Gln Lys Gly Val Thr Arg Asp Asp Arg Ile His Gly Gly Leu				
245	250	255		
gtc gtc ttc aac gag ctc ttt cgc tgt gcc aat gcc acc tgg gag cgg				816
Val Val Phe Asn Glu Leu Phe Arg Cys Ala Asn Ala Thr Trp Glu Arg				
260	265	270		
cgc tac acg tct ctg aag acg ctg ttc ccc aag acc caa cac aat aag				864
Arg Tyr Thr Ser Leu Lys Thr Leu Phe Pro Lys Thr Gln His Asn Lys				
275	280	285		
ttc ctg gag gcc agc agt tcg tcg agt atg ggt tcc cag ctg aat act				912
Phe Leu Glu Ala Ser Ser Ser Ser Met Gly Ser Gln Leu Asn Thr				
290	295	300		
cta gtg ccg cgg cta aag gtg ccc ttc att gac aag ctc ggc agc acc				960
Leu Val Pro Arg Leu Lys Val Pro Phe Ile Asp Lys Leu Gly Ser Thr				
305	310	315	320	
caa acg cat ttg ggt gag gga gag cat cac aaa gga gtt gcc aag ttc				1008
Gln Thr His Leu Gly Glu Gly Glu His His Lys Gly Val Ala Lys Phe				
325	330	335		
gcg agc cac aac gta ctg gag tcc gca tat gct cag gag atc ctt cag				1056
Ala Ser His Asn Val Leu Glu Ser Ala Tyr Ala Gln Glu Ile Leu Gln				
340	345	350		
gag cac tac acc tcc att tgc gac aat gtt ttg gag cag cga act tcg				1104
Glu His Tyr Thr Ser Ile Cys Asp Asn Val Leu Glu Gln Arg Thr Ser				
355	360	365		
aag tct ccg tat gta cag cag gca ctc ctt caa ata ctt cct cga ttg				1152
Lys Ser Pro Tyr Val Gln Gln Ala Leu Leu Gln Ile Leu Pro Arg Leu				
370	375	380		
gct gcc ttt aac cgc gcg gtg ttt gtg gaa aaa tac ctg cag aca tgc				1200
Ala Ala Phe Asn Arg Ala Val Phe Val Glu Lys Tyr Leu Gln Thr Cys				
385	390	395	400	
gtg tcg cat tta atg cag atc ctg cga ggc aag gag aag gat cgc acg				1248
Val Ser His Leu Met Gln Ile Leu Arg Gly Lys Glu Lys Asp Arg Thr				
405	410	415		
gtg gcg tac ata acc att ggt tac atg gct gta gcg gtg cag agt gcg				1296
Val Ala Tyr Ile Thr Ile Gly Tyr Met Ala Val Ala Val Gln Ser Ala				



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785	ctc	gaa	atg	ctg	ggc	790	gac	gct	ggc	795	gat	aag	cga	gga	gtg	800	gct		2448
	Leu	Glu	Met	Leu	Gly		Asp	Ala	Gly		Asp	Lys	Arg	Gly	Val		Ala		
					805										815				
	ctg	tgg	acg	ttg	gga	cag	tta	atc	agt	gca	aca	ggc	agg	gtg	ggt	acc			2496
	Leu	Trp	Thr	Leu	Gly	Gln	Leu	Ile	Ser	Ala	Thr	Gly	Arg	Val	Val	Thr			
				820					825					830					
	cca	tat	cac	aag	tac	ccc	gtg	ctc	ata	gat	att	ttg	att	aat	ttc	ctt			2544
	Pro	Tyr	His	Lys	Tyr	Pro	Val	Leu	Ile	Asp	Ile	Leu	Ile	Asn	Phe	Leu			
			835					840					845						
	aaa	acg	gaa	caa	cgt	cga	tcc	att	cga	agg	gaa	acg	ata	cga	gtg	ctg			2592
	Lys	Thr	Glu	Gln	Arg	Arg	Ser	Ile	Arg	Arg	Glu	Thr	Ile	Arg	Val	Leu			
		850					855					860							
	ggc	ttg	ttg	gga	gcc	atg	gat	cct	tac	aag	cac	aag	atg	aac	aag	ggc			2640
	Gly	Leu	Leu	Gly	Ala	Met	Asp	Pro	Tyr	Lys	His	Lys	Met	Asn	Lys	Gly			
	865				870						875					880			
	ttg	att	gat	agc	caa	aag	gat	aat	gtt	tta	ata	gca	tac	tcc	gat	ggc			2688
	Leu	Ile	Asp	Ser	Gln	Lys	Asp	Asn	Val	Leu	Ile	Ala	Tyr	Ser	Asp	Gly			
				885						890					895				
	aaa	gtc	gat	gaa	agt	cag	gac	atc	tcc	acc	gct	gag	ttg	cta	gtt	aac			2736
	Lys	Val	Asp	Glu	Ser	Gln	Asp	Ile	Ser	Thr	Ala	Glu	Leu	Leu	Val	Asn			
				900					905					910					
	atg	ggt	aac	gca	ttg	gat	gag	tat	tat	ccc	gct	gtg	gcc	ata	gct	gca			2784
	Met	Gly	Asn	Ala	Leu	Asp	Glu	Tyr	Tyr	Pro	Ala	Val	Ala	Ile	Ala	Ala			
			915					920					925						
	ttg	atg	agg	att	cta	cgg	gat	ccc	acg	tta	agt	aca	cgt	cac	acc	agc			2832
	Leu	Met	Arg	Ile	Leu	Arg	Asp	Pro	Thr	Leu	Ser	Thr	Arg	His	Thr	Ser			
		930					935					940							
	gtg	gtg	cag	gcg	gtt	act	ttt	atc	ttc	cag	agc	ctg	ggc	atc	aaa	tgt			2880
	Val	Val	Gln	Ala	Val	Thr	Phe	Ile	Phe	Gln	Ser	Leu	Gly	Ile	Lys	Cys			
	945				950						955					960			
	gtg	ccg	tac	ttg	gcc	caa	gtg	ctt	ccc	aat	ttg	ctg	gac	aat	gta	cgc			2928
	Val	Pro	Tyr	Leu	Ala	Gln	Val	Leu	Pro	Asn	Leu	Leu	Asp	Asn	Val	Arg			
				965					970						975				
	act	gca	gat	aat	cta	agg	gag	ttt	ctc	ctc	cag	cag	ctc	gcc	att			2976	
	Thr	Ala	Asp	Asn	Leu	Arg	Glu	Phe	Leu	Phe	Gln	Gln	Leu	Ala	Ile				
				980				985					990						
	ctg	gtg	gct	ttt	gtc	aag	ctg	cat	atc	atc	agc	tac	atg	gga	gat	att			3024
	Leu	Val	Ala	Phe	Val	Lys	Leu	His	Ile	Ile	Ser	Tyr	Met	Gly	Asp	Ile			
			995					1000					1005						
	ttt	aag	ctg	atc	aaa	gaa	ttt	tgg	acc	att	aat	acg	cct	ctg	caa	aac			3072
	Phe	Lys	Leu	Ile	Lys	Glu	Phe	Trp	Thr	Ile	Asn	Thr	Pro	Leu	Gln	Asn			
	1010					1015						1020							
	act	cta	atc	aat	ttg	att	gaa	cag	atc	gcc	gtg	gct	ttg	gga	tgc	gag			3120
	Thr	Leu	Ile	Asn	Leu	Ile	Glu	Gln	Ile	Ala	Val	Ala	Leu	Gly	Cys	Glu			
	1025				1030					1035					1040				
	ttt	agg	gat	tat	ttg	gcg	gag	ctg	atc	cca	caa	att	ctg	cga	gtg	ttg			3168
	Phe	Arg	Asp	Tyr	Leu	Ala	Glu	Leu	Ile	Pro	Gln	Ile	Leu	Arg	Val	Leu			
				1045						1050				1055					
	cag	cac	gat	aac	tcc	aag	gat	aga	atg	gtc	acg	aga	agg	ttg	ctc	caa			3216
	Gln	His	Asp	Asn	Ser	Lys	Asp	Arg	Met	Val	Thr	Arg	Arg	Leu	Gln				
				1060				1065					1070						
	gct	ctt	caa	aag	ttt	ggc	agc	act	ttg	ggt	tac	tat	ctg	ccg	ctg	att			3264
	Ala	Leu	Gln	Lys	Phe	Gly	Ser	Thr	Leu	Gly	Tyr	Tyr	Leu	Pro	Leu	Ile			
				1075				1080					1085						
	ttg	cct	ccg	atc	gtg	aaa	ctc	ttc	gat	tct	ccg	tac	gta	cca	caa	cag			3312
	Leu	Pro	Pro	Ile	Val	Lys	Leu	Phe	Asp	Ser	Pro	Tyr	Val	Pro	Gln	Gln			
		1090				1095					1100								
	gtg	tca	atg	gta	gcc	ctg	gaa	acg	atc	aac	aat	cta	gcc	tgt	cag	ctg			3360
	Val	Ser	Met	Val	Ala	Leu	Glu	Thr	Ile	Asn	Asn	Leu	Ala	Cys	Gln	Leu			
	1105				1110					1115					1120				
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	Asp	Phe	Thr	Asp	Phe	Ser	Ser	Arg	Ile	Ile	His	Pro	Leu	Val	Arg	Val			
				1125					1130					1135					
	ctg	gac	gct	gag	cca	gag	ctt	cgg	gac	caa	gct	atg	aca	acc	ctt	cgc			3456
	Leu	Asp	Ala	Glu	Pro	Glu	Leu	Arg	Asp	Gln	Ala	Met	Thr	Thr	Leu	Arg			
				1140				1145					1150						
	tca	ctg	gca	aag	caa	ctg	ggc	aag	aag	tac	ctc	gtg	ttc	gtg	cct	atg			3504
	Ser	Leu	Ala	Lys	Gln	Leu	Gly	Lys	Lys	Tyr	Leu	Val	Phe	Val	Pro	Met			

## PhoenixTemp32470.tmp.txt

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gtc cag cgc act ctc aac aaa cat cgc att gtg gat ccc gag tac gag	1160	1165	3552
Val Gln Arg Thr Leu Asn Lys His Arg Ile Val Asp Pro Glu Tyr Glu			
1170	1175	1180	
gag cta ctg agt aag att aag tcc tgc agc aca ctg gcg gat tcc tat			3600
Glu Leu Leu Ser Lys Ile Lys Ser Cys Ser Thr Leu Ala Asp Ser Tyr			
1185	1190	1195	1200
ggg gcc ggg gag tca gaa ctg cgg ccg tcc agg ttc aaa aac aac gag			3648
Gly Ala Gly Glu Ser Glu Leu Arg Pro Ser Arg Phe Lys Asn Asn Glu			
1205	1210	1215	
cca ttt gtg acc gac aga aat agc aat aat aaa aat ctg cag gtc acc			3696
Pro Phe Val Thr Asp Arg Asn Ser Asn Asn Lys Asn Leu Gln Val Thr			
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aca aac gaa cta cga acg gcg tgg cag gtg acg cgg cgg gtg tcc aag			3744
Thr Asn Glu Leu Arg Thr Ala Trp Gln Val Thr Arg Arg Val Ser Lys			
1235	1240	1245	
gac gac tgg gtg gag tgg cta aag cgg ttg tcc att ggc ctg ctg aag			3792
Asp Asp Trp Val Glu Trp Lys Arg Leu Ser Ile Gly Leu Leu Lys			
1250	1255	1260	
gaa tcg cct tcg cac gca ctg aga gcc tgt cgt tcg ttg gcc caa gag			3840
Glu Ser Pro Ser His Ala Leu Arg Ala Cys Arg Ser Leu Ala Gln Glu			
1265	1270	1275	1280
tac gat acg ctg ttg aga gat ctt ttt aac gcc gca ttt atc tcc tgt			3888
Tyr Asp Thr Leu Arg Asp Leu Phe Asn Ala Ala Phe Ile Ser Cys			
1285	1290	1295	
tgg acg gaa cta tcg ccg gat ttg aaa aac gag cta aca cag tca ctg			3936
Trp Thr Glu Leu Ser Pro Asp Leu Lys Asn Glu Leu Thr Gln Ser Leu			
1300	1305	1310	
att caa gcc ctg caa gtt acc gac atg ccg gaa atc act cag aca atc			3984
Ile Gln Ala Leu Gln Val Thr Asp Met Pro Glu Ile Thr Gln Thr Ile			
1315	1320	1325	
ctc aac ttg gcc gag ttt atg gag cat tgc gat cgc gat cca ata cca			4032
Leu Asn Leu Ala Glu Phe Met Glu His Cys Asp Arg Asp Pro Ile Pro			
1330	1335	1340	
ata gaa act aag cta ttg ggt act cga gcg atg gct tgc aga gcg tat			4080
Ile Glu Thr Lys Leu Leu Gly Thr Arg Ala Met Ala Cys Arg Ala Tyr			
1345	1350	1355	1360
gcc aag gca ttg cgc tac aag gag gag gag ttc ctt ctg cga gaa gat			4128
Ala Lys Ala Leu Arg Tyr Lys Glu Glu Glu Phe Leu Leu Arg Glu Asp			
1365	1370	1375	
tcc caa gtt ttt gag tcc ttg att cta atc aac aac aag ctg cag caa			4176
Ser Gln Val Phe Glu Ser Leu Ile Leu Ile Asn Asn Lys Leu Gln Gln			
1380	1385	1390	
aga gaa gca gcg gaa ggt ctg ctc aca agg tat cgt aat gca gcc aac			4224
Arg Glu Ala Ala Glu Gly Leu Leu Thr Arg Tyr Arg Asn Ala Ala Asn			
1395	1400	1405	
gaa cta aat gtt caa gga aga tgg tat gaa aaa ctt cac aat tgg gat			4272
Glu Leu Asn Val Gln Gly Arg Trp Tyr Glu Lys Leu His Asn Trp Asp			
1410	1415	1420	
gag gcg ctg gaa cac tat gaa agg aat cta aag acg gat tcc tcg gac			4320
Glu Ala Leu Glu His Tyr Glu Arg Asn Leu Lys Thr Asp Ser Ser Asp			
1425	1430	1435	1440
ttg gag gcg cga ctc ggt cac atg cgc tgc ttg gag gcc ctc gga gat			4368
Leu Glu Ala Arg Leu Gly His Met Arg Cys Leu Glu Ala Leu Gly Asp			
1445	1450	1455	
tgg tcg gag ctg agc aac gtg acc aag cac gag tgg gaa aac ttc ggt			4416
Trp Ser Glu Leu Ser Asn Val Thr Lys His Glu Trp Glu Asn Phe Gly			
1460	1465	1470	
aca gag gcc aaa tca aga gca gga ccc ttg gcc gca gtg gcc gcc tgg			4464
Thr Glu Ala Lys Ser Arg Ala Gly Pro Leu Ala Ala Val Ala Ala Trp			
1475	1480	1485	
ggt ctc cag gat tgg gag gcg atg cgg gag tac gta agg tgt ata cca			4512
Gly Leu Gln Asp Trp Glu Ala Met Arg Glu Tyr Val Arg Cys Ile Pro			
1490	1495	1500	
gag gat acc caa gat gga agc tac tat cgt gct gtc ctc gcc gtg cat			4560
Glu Asp Thr Gln Asp Gly Ser Tyr Tyr Arg Ala Val Leu Ala Val His			
1505	1510	1515	1520
cat gac gac ttt gag acc gca cag cgc ctt att gac gaa aca agg gac			4608
His Asp Asp Phe Glu Thr Ala Gln Arg Leu Ile Asp Glu Thr Arg Asp			

## PhoenixTemp32470.tmp.txt

1525																1530																1535																4656
ctc	ctc	gac	acg	gag	ctc	aca	tca	atg	gcg	ggc	gag	tcc	tat	gaa	aga																																	
Leu	Leu	Asp	Thr	Glu	Leu	Thr	Ser	Met	Ala	Gly	Glu	Ser	Tyr	Glu	Arg																																	
1540																1545																1550																4704
gcc	tac	gga	gcc	atg	gta	tgt	gta	caa	atg	ctg	gcg	gag	ctg	gag	gag																																	
Ala	Tyr	Gly	Ala	Met	Val	Cys	Val	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu																																	
1555																1560																1565																4752
gtc	atc	caa	tac	aag	ctc	att	ccc	gag	agg	cga	gag	ccg	tta	aag	acc																																	
Val	Ile	Gln	Tyr	Lys	Leu	Ile	Pro	Glu	Arg	Arg	Glu	Pro	Leu	Lys	Thr																																	
1570																1575																1580																4800
atg	tgg	tgg	aag	cgt	ctt	caa	gga	ggc	cag	cga	cta	gta	gaa	gac	tgg																																	
Met	Trp	Trp	Lys	Arg	Leu	Gln	Gly	Gly	Gln	Arg	Leu	Val	Glu	Asp	Trp																																	
1585																1590																1595																4848
cga	agg	atc	atc	cag	gtg	cac	tcg	ctg	gtg	gta	aaa	ccg	cac	gag	gac																																	
Arg	Arg	Ile	Ile	Gln	Val	His	Ser	Leu	Val	Val	Lys	Pro	His	Glu	Asp																																	
1605																1610																1615																4896
ata	cat	acc	tgg	ctg	aag	tac	gct	agt	ctg	tgc	agg	aag	agc	ggc	tcc																																	
Ile	His	Thr	Trp	Leu	Lys	Tyr	Ala	Ser	Leu	Cys	Arg	Lys	Ser	Gly	Ser																																	
1620																1625																1630																4944
ctg	cac	ttg	tcc	cat	aaa	act	ctg	gtg	atg	ctg	cta	ggc	acc	gat	ccc																																	
Leu	His	Leu	Ser	His	Lys	Thr	Leu	Val	Met	Leu	Leu	Gly	Thr	Asp	Pro																																	
1635																1640																1645																4992
aag	ctt	aat	ccg	aac	cag	cca	ctg	cct	tgt	aat	caa	cca	cag	gtg	acc																																	
Lys	Leu	Asn	Pro	Asn	Gln	Pro	Leu	Pro	Cys	Asn	Gln	Pro	Gln	Val	Thr																																	
1650																1655																1660																5040
tat	gcg	tac	acc	aag	tac	atg	gct	gcc	aat	aat	cag	ctg	cag	gaa	gcc																																	
Tyr	Ala	Tyr	Thr	Lys	Tyr	Met	Ala	Ala	Asn	Asn	Gln	Leu	Gln	Glu	Ala																																	
1665																1670																1675																5088
tac	gag	cag	ttg	acg	cac	ttc	gtc	agc	acc	tat	agt	cag	gag	cta	agc																																	
Tyr	Glu	Gln	Leu	Thr	His	Phe	Val	Ser	Thr	Tyr	Ser	Gln	Glu	Leu	Ser																																	
1685																1690																1695																5136
tgt	tta	cct	ccg	gaa	gca	cta	aag	caa	caa	gat	cag	cga	ctc	atg	gcc																																	
Cys	Leu	Pro	Pro	Glu	Ala	Leu	Lys	Gln	Gln	Asp	Gln	Arg	Leu	Met	Ala																																	
1700																1705																1710																5184
cgc	tgc	tat	ctg	cgc	atg	gcc	acc	tgg	cag	aac	aag	ctg	cag	gac	agc																																	
Arg	Cys	Tyr	Leu	Arg	Met	Ala	Thr	Trp	Gln	Asn	Lys	Leu	Gln	Asp	Ser																																	
1715																1720																1725																5232
atc	aga	ccg	gat	gcc	att	caa	ggc	gca	ctc	gaa	tgc	ttt	gaa	aag	gcc																																	
Ile	Arg	Pro	Asp	Ala	Ile	Gln	Gly	Ala	Leu	Glu	Cys	Phe	Glu	Lys	Ala																																	
1730																1735																1740																5280
acc	agc	tat	gat	ccc	aac	tgg	tac	aag	gcc	tgg	cac	ctg	tgg	gcg	tac																																	
Thr	Ser	Tyr	Asp	Pro	Asn	Trp	Tyr	Lys	Ala	Trp	His	Leu	Trp	Ala	Tyr																																	
1745																1750																1755																5328
atg	aac	ttt	aag	gtg	cag	gcc	caa	aaa	tcg	gcg	ctg																																					

## PhoenixTemp32470.tmp.txt

1890	tca ttg gcg cgc agg aac	1895	gcc ttt aag atc	1900	ctc gac tcg atg agg	5760
Ser Leu Ala Arg Arg Asn	1910	Ala Ala Phe Lys Ile	1915	Leu Asp Ser Met Arg		
1905	aaa cac tcg ccc acc ttg gta gag cag gcg gtc atg tgt agt gag gag	1920	Lys His Ser Pro Thr Leu Val Glu Gln Ala Val Met Cys Ser Glu Glu		5808	
	1925	1930	1935			
ctc atc cgt gtg gcg att ctg tgg cac gaa cag tgg cac gaa ggt ttg	1940	1945	1950		5856	
Leu Ile Arg Val Ala Ile Leu Trp His Glu Gln Trp His Glu Gly Leu						
gag gaa gcc tcg cgt ctt tac ttt gga gat cgc aac gta aag ggc atg	1955	1960	1965		5904	
Glu Glu Ala Ser Arg Leu Tyr Phe Gly Asp Arg Asn Val Lys Gly Met						
ttt gag atc ttg gag cca ctg cat gct atg ctg gag agg gga cca caa	1970	1975	1980		5952	
Phe Glu Ile Leu Glu Pro Leu His Ala Met Leu Glu Arg Gly Pro Gln						
aca ctc aag gag aca tcc ttc tcg cag gcc tat gga cgc gag ctg aca	1985	1990	1995		6000	
Thr Leu Lys Glu Thr Ser Phe Ser Gln Ala Tyr Gly Arg Glu Leu Thr						
gag gcg tac gag tgg tcg caa cgg tac aag aca tcg gcg gtg gtg atg	2000	2005	2010		6048	
Glu Ala Tyr Glu Trp Ser Gln Arg Tyr Lys Thr Ser Ala Val Val Met						
gat ctg gat cga gcg tgg gac att tac tat cac gtc ttc caa aag atc	2015	2020	2025		6096	
Asp Leu Asp Arg Ala Trp Asp Ile Tyr His Val Phe Gln Lys Ile						
tcg cgc cag ctg cca caa ctt acc tcg ctg gag ctg ccg tat gtc tcg	2030	2035	2040		6144	
Ser Arg Gln Leu Pro Gln Leu Thr Ser Leu Glu Leu Pro Tyr Val Ser						
ccc aaa ctg atg acg tgc aaa gat ctc gaa ctg gca gtg ccc ggg tcc	2045	2050	2055		6192	
Pro Lys Leu Met Thr Cys Lys Asp Leu Glu Leu Ala Val Pro Gly Ser						
tac aat cct ggc cag gag ctc atc cgg att agt atc att aaa acc aac	2060	2065	2070		6240	
Tyr Asn Pro Gly Gln Glu Leu Ile Arg Ile Ser Ile Ile Lys Thr Asn						
ctt cag gtg att act tcc aag cag cgg ccg cga aaa ctg tgc ata cgc	2075	2080	2085		6288	
Leu Gln Val Ile Thr Ser Lys Gln Arg Pro Arg Lys Leu Cys Ile Arg						
ggc tcc aat ggc aag gac tat atg tac ctt cta aag gga cac gag gac	2090	2095	2100		6336	
Gly Ser Asn Gly Lys Asp Tyr Met Tyr Leu Leu Lys Gly His Glu Asp						
ctt cgt cag gac gaa cgc gtg atg cag cta ttc tcc ctg gtg aac aca	2105	2110	2115		6384	
Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Ser Leu Val Asn Thr						
ttg ctg ttg gat gac ccc gac act ttc cgt cgt aac ttg gcc atc cag	2120	2125	2130		6432	
Leu Leu Leu Asp Asp Pro Asp Thr Phe Arg Arg Asn Leu Ala Ile Gln						
cgg tat gcg gtt atc ccg ctc agt acc aac tcg ggt ctt att ggt tgg	2135	2140	2145		6480	
Arg Tyr Ala Val Ile Pro Leu Ser Thr Asn Ser Gly Leu Ile Gly Trp						
gtg cca cat tgt gac acc ctt cat acg cta atc cgg gac tac cgc gac	2150	2155	2160		6528	
Val Pro His Cys Asp Thr Leu His Thr Ile Arg Asp Tyr Arg Asp						
aag aag aag gtg cca ctg aat cag gag cat cgc acc atg ctc aat ttt	2165	2170	2175		6576	
Lys Lys Lys Val Pro Leu Asn Gln Glu His Arg Thr Met Leu Asn Phe						
gcg cca gac tat gat cac ctc acg ctg atg cag aag gtg gaa gtg ttc	2180	2185	2190		6624	
Ala Pro Asp Tyr Asp His Leu Thr Leu Met Gln Lys Val Glu Val Phe						
gag cat gcg ttg ggt cag acg caa ggc gac gac ttg gcc aag ttg ctg	2195	2200	2205		6672	
Glu His Ala Leu Gly Gln Thr Gln Gly Asp Asp Leu Ala Lys Leu Leu						
tgg ctc aag tct ccg tcc tct gaa ttg tgg ttt gaa cgg aga aac aac	2210	2215	2220		6720	
Trp Leu Lys Ser Pro Ser Glu Leu Trp Phe Glu Arg Arg Asn Asn						
tat acc cgc tca ctg gca gtc atg tca atg gtt gga tat atc cta ggt	2225	2230	2235		6768	
Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly						
ctg ggc gat cgt cat cca tcg aac ctt atg ctg gat cgt atg agc ggc	2245	2250	2255		6816	
Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Met Ser Gly						

## PhoenixTemp32470.tmp.txt

```

2260
aag ata ctg cac ata gac ttt ggc gac tgc ttc gag gtg gcc atg acc 6864
Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala Met Thr
2275
cgc gaa aag ttt ccc gaa aag ata ccc ttc cgt ctc acc cgg atg cta 6912
Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe Arg Leu Thr Arg Met Leu
2290
ata aag gca atg gag gtc act ggc atc gag ggc acc tac aga cgc acc 6960
Ile Lys Ala Met Glu Val Thr Gly Ile Glu Gly Thr Tyr Arg Arg Thr
2305
tgc gaa agc gtg atg ctg gtg ctt cgc cgc aac aag gat tcc ctg atg 7008
Cys Glu Ser Val Met Leu Val Leu Arg Arg Asn Lys Asp Ser Leu Met
2325
gcg gtg ctg gag gcc ttt gtc tat gat ccg ctg ctc aac tgg aga ctg 7056
Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Leu Asn Trp Arg Leu
2340
ttg gat gtg gac aag aag ggt aac gat gcg gtg gct ggg gcg ggt gct 7104
Leu Asp Val Asp Lys Lys Gly Asn Asp Ala Val Ala Gly Ala Gly Ala
2355
cca ggt gga cgt ggc ggt tcc gga atg cag gat agc ctc agt aac tcc 7152
Pro Gly Gly Arg Gly Gly Ser Gly Met Gln Asp Ser Leu Ser Asn Ser
2370
gta gag gac tcc ctg ccc atg gcc aag tcg aag ccc tac gat ccg acg 7200
Val Glu Asp Ser Leu Pro Met Ala Lys Ser Lys Pro Tyr Asp Pro Thr
2385
cta cag caa ggc ggc ctg cac aac aac gtg gcc gac gag acg aac agc 7248
Leu Gln Gln Gly Gly Leu His Asn Asn Val Ala Asp Glu Thr Asn Ser
2405
aaa gcc agc cag gta atc aag cgg gtc aag tgc aag cta aca ggc acc 7296
Lys Ala Ser Gln Val Ile Lys Arg Val Lys Cys Lys Leu Thr Gly Thr
2420
gac ttc cag acg gaa aag agc gta aac gag cag tcg cag gtg gag ctg 7344
Asp Phe Gln Thr Glu Lys Ser Val Asn Glu Gln Ser Gln Val Glu Leu
2435
ctc atc cag cag gcg acc aat aac gag aac ctc tgc cag tgc tac att 7392
Leu Ile Gln Gln Ala Thr Asn Asn Glu Asn Leu Cys Gln Cys Tyr Ile
2450
ggc tgg tgt ccg ttt tgg tag 7413
Gly Trp Cys Pro Phe Trp
2465
2470

```

&lt;210&gt; 2519

&lt;211&gt; 2470

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2519

```

Met Ser Thr Thr Ser Val Val Gln Gln Phe Val Asn Gly Leu Lys Ser
1      5      10      15
Arg Asn Arg Asn Val Gln Asn Lys Ala Thr Gln Asp Leu Leu Phe Tyr
20      25      30
Val Lys Thr Glu Leu Arg Glu Met Ser Gln Glu Glu Leu Ala Gln Phe
35      40      45
Phe Asp Glu Phe Asp His His Ile Phe Thr Met Val Asn Ala Thr Asp
50      55      60
Ile Asn Glu Lys Lys Gly Gly Ala Leu Ala Met Lys Cys Leu Ile Asn
65      70      75      80
Cys Glu Gly Ser Leu Thr Ala Arg Lys Gly Ile Ser Pro Tyr Leu Asn
85      90      95
Arg Leu Arg Asp Leu Leu Leu Ile Asn Asp Val Ser Val Met Glu Ile
100      105      110
Ala Ala Arg Ser Leu Val Lys Leu Ala Asn Met Pro Thr Ser Lys Gly
115      120      125
Ala Asp Ser Phe Asp Phe Asp Ile Lys Lys Ala Phe Glu Val Leu Arg
130      135      140
Gly Glu Arg Gln Glu Tyr Arg Arg His Ser Ala Val Phe Ile Leu Arg
145      150      155      160
Glu Leu Ala Ile Ala Leu Pro Thr Tyr Phe Tyr Gln His Ile Leu Thr
165      170      175

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## PhoenixTemp32470.tmp.txt

Phe	Phe	Glu	Val	Ile	Phe	Asn	Ala	Ile	Phe	Asp	Pro	Lys	Pro	Ala	Ile
Arg	Glu	Ser	Ala	Gly	Glu	Ala	Leu	Arg	Ala	Ala	Leu	Ile	Val	Thr	Ala
Gln	Arg	Glu	Ser	Thr	Lys	Gln	Ser	Ser	Glu	Pro	Gln	Trp	Tyr	Arg	Ile
Cys	Tyr	Asp	Glu	Ala	Asn	Gly	Ser	Phe	Asn	Ala	Asp	Leu	Gly	Ser	Ser
Lys	Asp	Gln	Lys	Gly	Val	Thr	Arg	Asp	Asp	Arg	Ile	His	Gly	Gly	Leu
Val	Val	Phe	Asn	Glu	Leu	Phe	Arg	Cys	Ala	Asn	Ala	Thr	Trp	Glu	Arg
Arg	Tyr	Thr	Ser	Leu	Lys	Thr	Leu	Phe	Pro	Lys	Thr	Gln	His	Asn	Lys
Phe	Leu	Glu	Ala	Ser	Ser	Ser	Ser	Ser	Met	Gly	Ser	Gln	Leu	Asn	Thr
Leu	Val	Pro	Arg	Leu	Lys	Val	Pro	Phe	Ile	Asp	Lys	Leu	Gly	Ser	Thr
Gln	Thr	His	Leu	Gly	Glu	Gly	Glu	His	His	Lys	Gly	Val	Ala	Lys	Phe
Ala	Ser	His	Asn	Val	Leu	Glu	Ser	Ala	Tyr	Ala	Gln	Glu	Ile	Leu	Gln
Glu	His	Tyr	Thr	Ser	Ile	Cys	Asp	Asn	Val	Leu	Glu	Gln	Arg	Thr	Ser
Lys	Ser	Pro	Tyr	Val	Gln	Gln	Ala	Leu	Leu	Gln	Ile	Leu	Pro	Arg	Leu
Ala	Ala	Phe	Asn	Arg	Ala	Val	Phe	Val	Glu	Lys	Tyr	Leu	Gln	Thr	Cys
Val	Ser	His	Leu	Met	Gln	Ile	Leu	Arg	Gly	Lys	Glu	Lys	Asp	Arg	Thr
Val	Ala	Tyr	Ile	Thr	Ile	Gly	Tyr	Met	Ala	Val	Ala	Val	Gln	Ser	Ala
Ile	Glu	Val	His	Leu	Ser	Ser	Ile	Met	Thr	Ser	Val	Lys	Val	Ala	Leu
Pro	Ser	Lys	Asp	Leu	Thr	Ser	Lys	Arg	Lys	Val	Pro	Val	Asp	Pro	Ala
Val	Phe	Ala	Cys	Ile	Thr	Leu	Leu	Ala	His	Ala	Val	Lys	Ser	Glu	Ile
Ala	Asp	Asp	Val	Lys	Asp	Ile	Leu	Glu	Gln	Met	Phe	Tyr	Thr	Gly	Leu
Ser	Pro	Ala	Leu	Thr	Val	Cys	Leu	Arg	Glu	Leu	Ser	Glu	Asn	Val	Pro
Gln	Leu	Lys	Ser	Ala	Ile	Thr	Glu	Gly	Leu	Ile	Gly	Ile	Leu	Ser	Gln
Val	Leu	Met	Asn	Lys	Ala	Ala	Ile	Leu	Pro	Tyr	Thr	Ala	Leu	Pro	Thr
Ile	Ala	Ile	Asp	Gly	Ser	Leu	Met	Gln	Asn	Gly	Asp	Gly	Ala	Thr	Thr
Val	Leu	Ala	Leu	Lys	Thr	Leu	Gly	Thr	Phe	Asn	Phe	Glu	Glu	Gln	Asn
Met	Leu	Asp	Phe	Val	Gln	Arg	Cys	Ala	Asp	Tyr	Phe	Ile	Val	His	Glu
Gln	Gln	Glu	Ile	Arg	Leu	Glu	Ala	Val	Gln	Thr	Cys	Thr	Arg	Leu	Leu
Lys	Leu	Ala	Val	Gln	Ser	Ser	Glu	Ser	Met	Glu	Asn	Ser	Lys	Thr	Leu
Ser	Asp	Thr	Val	Ser	His	Val	Ile	Glu	Arg	Leu	Leu	Met	Val	Ala	Ile
Thr	Asp	Met	Asp	Cys	Asn	Val	Arg	Ile	Arg	Ile	Leu	Arg	Ser	Leu	Asp
Glu	Thr	Phe	Asp	Gly	Lys	Leu	Ala	Gln	Pro	Glu	Ser	Leu	Asn	Ser	Leu
Phe	Ile	Thr	Leu	His	Asp	Glu	Ile	Phe	Glu	Ile	Arg	Glu	Leu	Ala	Met
Val	Thr	Ile	Gly	Arg	Leu	Ser	Ser	Ile	Asn	Pro	Ala	Tyr	Val	Met	Pro
Lys	Leu	Arg	Thr	Thr	Met	Ile	Glu	Leu	Ile	Thr	Asp	Leu	Lys	Tyr	Ser
Gly	Met	Ser	Arg	Asn	Lys	Glu	Gln	Ser	Ala	Lys	Met	Leu	Asp	His	Leu

## PhoenixTemp32470.tmp.txt

Val Ile Ser Thr 725 Pro Arg Leu Ile Ser 730 Tyr Met Asn Pro 735 Ile Leu  
 Lys Ala Leu Val 740 Pro Lys Leu His 745 Glu Pro Glu Ser Asn Pro 750 Gly Val  
 Ile Leu Asn Val 755 Leu Arg Thr 760 Ile Gly Asp Leu Ala 765 Glu Val Asn Gly  
 Gly 770 Ser Asp Glu Met 775 Glu Leu Trp Ala Asp 780 Leu Leu Ser Ile Leu  
 785 Leu Glu Met Leu 805 Gly Asp Ala Gly Ser Pro 810 Asp Lys Arg Gly Val Ala  
 Leu Trp Thr 820 Gly Gln Leu Ile Ser 825 Ala Thr Gly Arg Val Val Thr  
 Pro Tyr His 835 Lys Tyr Pro Val Leu 840 Ile Asp Ile Leu Ile Asn Phe Leu  
 Lys Thr Glu Gln Arg Arg Ser 855 Ile Arg Arg Glu Thr 860 Ile Arg Val Leu  
 Gly 865 Leu Leu Gly Ala Met 870 Asp Pro Tyr Lys His 875 Lys Met Asn Lys Gly  
 Leu Ile Asp Ser 885 Gln Lys Asp Asn Val Leu 890 Ile Ala Tyr Ser Asp Gly  
 Lys Val Asp Glu 900 Ser Gln Asp Ile Ser 905 Thr Ala Glu Leu Leu Val Asn  
 Met Gly Asn Ala Leu Asp Glu Tyr 920 Tyr Pro Ala Val Ala Ile Ala Ala  
 Leu Met Arg Ile Leu Arg Asp 935 Pro Thr Leu Ser Thr 940 Arg His Thr Ser  
 Val Val Gln Ala Val Thr 950 Phe Ile Phe Gln Ser 955 Leu Gly Ile Lys Cys  
 945 Val Pro Tyr Leu Ala 965 Gln Val Leu Pro Asn 970 Leu Leu Asp Asn Val Arg  
 Thr Ala Asp Asn Asn Leu Arg Glu Phe 985 Leu Phe Gln Gln Leu Ala Ile  
 Leu Val Ala Phe Val Lys Leu His 1000 Ile Ile Ser Tyr Met 1005 Gly Asp Ile  
 Phe Lys Leu Ile Lys Glu Phe 1015 Thr Ile Asn Thr Pro Leu Gln Asn  
 1010 Thr Leu Ile Asn Leu Ile Glu Gln Ile Ala Val Ala Leu Gly Cys Glu  
 1025 Phe Arg Asp Tyr Leu Ala Glu Leu Ile Pro 1035 Gln Ile Leu Arg Val Leu  
 Gln His Asp Asn Ser Lys Asp Arg Met 1050 Val Thr Arg Arg Leu Leu Gln  
 1060 Ala Leu Gln Lys Phe Gly Ser Thr 1080 Leu Gly Tyr Tyr Leu Pro Leu Ile  
 Leu Pro Pro Ile Val Lys Leu Phe 1095 Asp Ser Pro Tyr Val Pro Gln Gln  
 1090 Val Ser Met Val Ala Leu Glu Thr Ile Asn Asn Leu Ala Cys Gln Leu  
 1105 Asp Phe Thr Asp Phe Ser Ser Arg Ile Ile His Pro Leu Val Arg Val  
 Leu Asp Ala Glu 1125 Pro Glu Leu Arg Asp 1130 Gln Ala Met Thr Thr Leu Arg  
 Ser Leu Ala Lys Gln Leu Gly Lys 1145 Lys Tyr Leu Val Phe Val Pro Met  
 Val Gln Arg Thr Leu Asn Lys His 1175 Arg Ile Val Asp 1180 Pro Glu Tyr Glu  
 1170 Glu Leu Leu Ser Lys Ile Lys Ser Cys Ser Thr 1195 Leu Ala Asp Ser Tyr  
 1185 Gly Ala Gly Glu Ser 1190 Glu Leu Arg Pro Ser Arg Phe Lys Asn Asn Glu  
 Pro Phe Val Thr Asp Arg Asn Ser Asn 1210 Lys Asn Leu Gln Val Thr  
 Thr Asn Glu Leu Arg Thr Ala Trp Gln Val Thr Arg Arg Val Ser Lys  
 1235 Asp Asp Trp Val Glu Trp Leu Lys Arg Leu Ser Ile Gly Leu Leu Lys  
 1250 Glu Ser Pro Ser His Ala Leu Arg Ala Cys Arg Ser Leu Ala Gln Glu  
 1265 1270 1275 1280



## PhoenixTemp32470.tmp.txt

Tyr Asp Thr Leu Leu Arg Asp Leu Phe Asn Ala Ala Phe Ile Ser Cys  
 1285 1290 1295  
 Trp Thr Glu Leu Ser Pro Asp Leu Lys Asn Glu Leu Thr Gln Ser Leu  
 1300 1305 1310  
 Ile Gln Ala Leu Gln Val Thr Asp Met Pro Glu Ile Thr Gln Thr Ile  
 1315 1320 1325  
 Leu Asn Leu Ala Glu Phe Met Glu His Cys Asp Arg Asp Pro Ile Pro  
 1330 1335 1340  
 Ile Glu Thr Lys Leu Leu Gly Thr Arg Ala Met Ala Cys Arg Ala Tyr  
 1345 1350 1355 1360  
 Ala Lys Ala Leu Arg Tyr Lys Glu Glu Glu Phe Leu Leu Arg Glu Asp  
 1365 1370 1375  
 Ser Gln Val Phe Glu Ser Leu Ile Leu Ile Asn Asn Lys Leu Gln Gln  
 1380 1385 1390  
 Arg Glu Ala Ala Glu Gly Leu Leu Thr Arg Tyr Arg Asn Ala Ala Asn  
 1395 1400 1405  
 Glu Leu Asn Val Gln Gly Arg Trp Tyr Glu Lys Leu His Asn Trp Asp  
 1410 1415 1420  
 Glu Ala Leu Glu His Tyr Glu Arg Asn Leu Lys Thr Asp Ser Ser Asp  
 1425 1430 1435 1440  
 Leu Glu Ala Arg Leu Gly His Met Arg Cys Leu Glu Ala Leu Gly Asp  
 1445 1450 1455  
 Trp Ser Glu Leu Ser Asn Val Thr Lys His Glu Trp Glu Asn Phe Gly  
 1460 1465 1470  
 Thr Glu Ala Lys Ser Arg Ala Gly Pro Leu Ala Ala Val Ala Ala Trp  
 1475 1480 1485  
 Gly Leu Gln Asp Trp Glu Ala Met Arg Glu Tyr Val Arg Cys Ile Pro  
 1490 1495 1500  
 Glu Asp Thr Gln Asp Gly Ser Tyr Tyr Arg Ala Val Leu Ala Val His  
 1505 1510 1515 1520  
 His Asp Asp Phe Glu Thr Ala Gln Arg Leu Ile Asp Glu Thr Arg Asp  
 1525 1530 1535  
 Leu Leu Asp Thr Glu Leu Thr Ser Met Ala Gly Glu Ser Tyr Glu Arg  
 1540 1545 1550  
 Ala Tyr Gly Ala Met Val Cys Val Gln Met Leu Ala Glu Leu Glu Glu  
 1555 1560 1565  
 Val Ile Gln Tyr Lys Leu Ile Pro Glu Arg Arg Glu Pro Leu Lys Thr  
 1570 1575 1580  
 Met Trp Trp Lys Arg Leu Gln Gly Gly Gln Arg Leu Val Glu Asp Trp  
 1585 1590 1595 1600  
 Arg Arg Ile Ile Gln Val His Ser Leu Val Val Lys Pro His Glu Asp  
 1605 1610 1615  
 Ile His Thr Trp Leu Lys Tyr Ala Ser Leu Cys Arg Lys Ser Gly Ser  
 1620 1625 1630  
 Leu His Leu Ser His Lys Thr Leu Val Met Leu Leu Gly Thr Asp Pro  
 1635 1640 1645  
 Lys Leu Asn Pro Asn Gln Pro Leu Pro Cys Asn Gln Pro Gln Val Thr  
 1650 1655 1660  
 Tyr Ala Tyr Thr Lys Tyr Met Ala Ala Asn Asn Gln Leu Gln Glu Ala  
 1665 1670 1675 1680  
 Tyr Glu Gln Leu Thr His Phe Val Ser Thr Tyr Ser Gln Glu Leu Ser  
 1685 1690 1695  
 Cys Leu Pro Pro Glu Ala Leu Lys Gln Gln Asp Gln Arg Leu Met Ala  
 1700 1705 1710  
 Arg Cys Tyr Leu Arg Met Ala Thr Trp Gln Asn Lys Leu Gln Asp Ser  
 1715 1720 1725  
 Ile Arg Pro Asp Ala Ile Gln Gly Ala Leu Glu Cys Phe Glu Lys Ala  
 1730 1735 1740  
 Thr Ser Tyr Asp Pro Asn Trp Tyr Lys Ala Trp His Leu Trp Ala Tyr  
 1745 1750 1755 1760  
 Met Asn Phe Lys Val Val Gln Ala Gln Lys Ser Ala Leu Asp Lys Gln  
 1765 1770 1775  
 Gln Pro Pro Gly Ala Ser Met Gly Met Thr Met Gly Ser Gly Leu Asp  
 1780 1785 1790  
 Ser Asp Leu Met Ile Ile Gln Arg Tyr Ala Val Pro Ala Val Gln Gly  
 1795 1800 1805  
 Phe Phe Arg Ser Ile Ser Leu Ile Lys Gly Asn Ser Leu Gln Asp Thr  
 1810 1815 1820  
 Leu Arg Leu Leu Thr Leu Trp Phe Asp Tyr Gly Asn His Ala Glu Val

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1825 Tyr Glu Ala Leu 1830 Leu Ser Gly Met Lys Leu 1835 Ile Glu Ile Asn Thr Trp 1840  
 Leu Gln Val Ile 1845 Pro Gln Leu Ile Ala Arg Ile Asp Thr His Arg Gln 1855  
 Leu Val Gly Gln 1860 Leu Ile His Gln Leu Leu Met Asp Ile Gly Lys Asn 1870  
 His Pro Gln Ala Leu Val Tyr 1880 Pro Leu Thr Val Ala Ser Lys Ser Ala 1885  
 Ser Leu Ala Arg Arg Asn Ala Ala Phe Lys Ile Leu Asp Ser Met Arg 1900  
 1905 Lys His Ser Pro Thr Leu Val Glu Gln Ala Val Met Cys Ser Glu Gly 1915  
 Leu Ile Arg Val 1925 Ala Ile Leu Trp His Glu Gln Trp His Glu Gly Leu 1935  
 Glu Glu Ala Ser Arg Leu Tyr Phe Gly Asp Arg Asn Val Lys Gly Met 1945  
 Phe Glu Ile Leu Glu Pro Leu His Ala Met Leu Glu Arg Gly Pro Gln 1955  
 Thr Leu Lys Glu Thr Ser Phe Ser Gln Ala Tyr Gly Arg Glu Leu Thr 1965  
 1970 Glu Ala Tyr Glu Trp Ser Gln Arg Tyr Lys Thr Ser Ala Val Val Met 1980  
 1985 Asp Leu Asp Arg Ala Trp Asp Ile Tyr Thr His Val Phe Gln Lys Ile 1995  
 Ser Arg Gln Leu Pro Gln Leu Thr Ser Leu Glu Leu Pro Tyr Val Ser 2000  
 Pro Lys Leu Met Thr Cys Lys Asp Leu Glu Leu Ala Val Pro Gly Ser 2015  
 2020 Tyr Asn Pro Gly Gln Glu Ile Arg Ile Ser Ile Ile Lys Thr Asn 2030  
 2035 Leu Gln Val Ile Thr Ser Lys Gln Arg Pro Arg Lys Leu Cys Ile Arg 2045  
 Gly Ser Asn Gly Lys Asp Tyr Met Tyr Leu Leu Lys Gly His Glu Asp 2055  
 Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Ser Leu Val Asn Thr 2060  
 Leu Leu Leu Asp Asp Pro Asp Thr Phe Arg Arg Asn Leu Ala Ile Gln 2075  
 Arg Tyr Ala Val Ile Pro Leu Ser Thr Asn Ser Gly Leu Ile Gly Trp 2085  
 2090 Val Pro His Cys Asp Thr Leu His Thr Leu Ile Arg Asp Tyr Arg Asp 2100  
 Lys Lys Lys Val Pro Leu Asn Gln Glu His Arg Thr Met Leu Asn Phe 2110  
 Ala Pro Asp Tyr Asp His Leu Thr Leu Met Gln Lys Val Glu Val Phe 2125  
 Glu His Ala Leu Gly Gln Thr Gln Gly Asp Asp Leu Ala Lys Leu Leu 2135  
 Trp Leu Lys Ser Pro Ser Ser Glu Leu Trp Phe Glu Arg Arg Asn Asn 2140  
 2145 Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly 2155  
 Val Pro His Cys Asp Thr Leu His Thr Leu Ile Arg Asp Tyr Arg Asp 2165  
 Lys Lys Lys Val Pro Leu Asn Gln Glu His Arg Thr Met Leu Asn Phe 2175  
 Ala Pro Asp Tyr Asp His Leu Thr Leu Met Gln Lys Val Glu Val Phe 2185  
 Glu His Ala Leu Gly Gln Thr Gln Gly Asp Asp Leu Ala Lys Leu Leu 2190  
 2200 Trp Leu Lys Ser Pro Ser Ser Glu Leu Trp Phe Glu Arg Arg Asn Asn 2205  
 2210 Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly 2215  
 Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Met Ser Gly 2220  
 Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala Met Thr 2235  
 Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe Arg Leu Thr Arg Met Leu 2245  
 2250 Ile Lys Ala Met Glu Val Thr Gly Ile Glu Gly Thr Tyr Arg Arg Thr 2255  
 2260 Cys Glu Ser Val Met Leu Val Leu Arg Arg Asn Lys Asp Ser Leu Met 2265  
 Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Leu Asn Trp Arg Leu 2270  
 Leu Asp Val Asp Lys Lys Gly Asn Asp Ala Val Ala Gly Ala Gly Ala 2275  
 2280 Pro Gly Arg Gly Gly Ser Gly Met Gln Asp Ser Leu Ser Asn Ser 2285  
 2290 2300 2310 2315 2320 2325 2330 2335 2340 2345 2350 2355 2360 2365 2370 2375 2380

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Val Glu Asp Ser Leu Pro Met Ala Lys Ser Lys Pro Tyr Asp Pro Thr  
 2385 2390 2395 2400  
 Leu Gln Gln Gly Gly Leu His Asn Asn Val Ala Asp Glu Thr Asn Ser  
 2405 2410 2415  
 Lys Ala Ser Gln Val Ile Lys Arg Val Lys Cys Lys Leu Thr Gly Thr  
 2420 2425 2430  
 Asp Phe Gln Thr Glu Lys Ser Val Asn Glu Gln Ser Gln Val Glu Leu  
 2435 2440 2445  
 Leu Ile Gln Gln Ala Thr Asn Asn Glu Asn Leu Cys Gln Cys Tyr Ile  
 2450 2455 2460  
 Gly Trp Cys Pro Phe Trp  
 2465 2470

&lt;210&gt; 2520

&lt;211&gt; 7404

&lt;212&gt; DNA

&lt;213&gt; Nasonia vitripennis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7404)

&lt;400&gt; 2520

atg	aca	agt	acg	ctt	gtt	tta	caa	ttc	gtc	cag	cgg	ctc	aag	tca	aag	48
Met	Thr	Ser	Thr	Leu	Val	Leu	Gln	Phe	Val	Gln	Arg	Leu	Lys	Ser	Lys	
1				5					10					15		
cat	gag	gat	gtc	aga	aat	aaa	gca	gcc	cgt	gag	ctc	tgt	ctc	tat	gtc	96
His	Glu	Asp	Val	Arg	Asn	Lys	Ala	Ala	Arg	Glu	Leu	Cys	Leu	Tyr	Val	
			20					25					30			
aag	aca	gag	cta	cgc	gag	gcc	aca	caa	gag	gaa	att	aca	gct	ttt	atg	144
Lys	Thr	Glu	Leu	Arg	Glu	Ala	Thr	Gln	Glu	Glu	Ile	Thr	Ala	Phe	Met	
			35				40					45				
gat	gag	ttc	aat	cac	cac	ata	ttt	gag	atg	gtt	tct	ggc	tca	gac	atc	192
Asp	Glu	Phe	Asn	His	His	Ile	Phe	Glu	Met	Val	Ser	Gly	Ser	Asp	Ile	
			50			55					60					
aac	gag	aaa	aaa	ggt	ggt	atc	ctg	gca	ata	gta	tgc	ctc	att	ggg	gca	240
Asn	Glu	Lys	Lys	Gly	Gly	Ile	Leu	Ala	Ile	Val	Cys	Leu	Ile	Gly	Ala	
				70					75					80		
gat	gta	ggc	aac	atc	aat	act	cgc	acc	att	cga	ttt	gcc	aac	tat	ctg	288
Asp	Val	Gly	Asn	Ile	Asn	Thr	Arg	Thr	Ile	Arg	Phe	Ala	Asn	Tyr	Leu	
				85					90					95		
cga	aac	ctt	ctg	cct	tcc	agt	gac	att	gga	gtt	atg	gag	ttg	gct	gcc	336
Arg	Asn	Leu	Leu	Pro	Ser	Ser	Asp	Ile	Gly	Val	Met	Glu	Leu	Ala	Ala	
			100				105					110				
aaa	aca	gtt	ggc	aaa	cta	gct	ctg	gtt	tct	ggc	acc	ttt	act	gct	gag	384
Lys	Thr	Val	Gly	Lys	Leu	Ala	Leu	Val	Ser	Gly	Thr	Phe	Thr	Ala	Glu	
			115				120					125				
tat	gtt	gaa	ttc	gaa	gtc	aag	agg	gcc	ttt	gaa	tgg	ctt	agt	ggg	gat	432
Tyr	Val	Glu	Phe	Glu	Val	Lys	Arg	Ala	Phe	Glu	Trp	Leu	Ser	Gly	Asp	
			130			135				140						
aga	aat	gag	aac	aag	aga	cac	gca	gca	gtt	ttg	gtt	ctc	aaa	gag	cta	480
Arg	Asn	Glu	Asn	Lys	Arg	His	Ala	Ala	Val	Leu	Val	Leu	Lys	Glu	Leu	
				150					155					160		
gca	gtc	tct	atg	ccc	aca	tat	ttt	ttc	cag	cat	att	acc	cag	ttc	ttt	528
Ala	Val	Ser	Met	Pro	Thr	Tyr	Phe	Phe	Gln	His	Ile	Thr	Gln	Phe	Phe	
				165				170						175		
gaa	ttg	atc	ttt	aaa	gca	gtc	tgt	gac	cct	aag	cca	gcc	att	cgt	gaa	576
Glu	Leu	Ile	Phe	Lys	Ala	Val	Cys	Asp	Pro	Lys	Pro	Ala	Ile	Arg	Glu	
			180					185				190				
ggg	gct	gta	gaa	gcc	ctc	cgc	gca	gct	cta	gtc	ttg	aca	gca	caa	cgt	624
Gly	Ala	Val	Glu	Ala	Leu	Arg	Ala	Ala	Leu	Val	Leu	Thr	Ala	Gln	Arg	
			195				200					205				
gaa	act	gcc	aag	cag	aca	cag	ccc	aca	tgg	tac	aag	ttg	tgc	tat		672
Glu	Thr	Ala	Lys	Gln	Thr	Gln	Lys	Pro	Thr	Trp	Tyr	Lys	Leu	Cys	Tyr	
			210			215				220						
gaa	gag	ata	gtt	gca	ggc	ttt	gag	gag	gtt	tat	gtc	cgg	gag	aag	agc	720
Glu	Glu	Ile	Val	Ala	Gly	Phe	Glu	Glu	Val	Tyr	Val	Arg	Glu	Lys	Ser	
			225		230				235					240		
ttc	aat	cgg	gat	gat	cga	atg	cac	ggc	tca	ttg	cta	att	ctc	aat	gag	768

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Phe	Asn	Arg	Asp	Asp 245	Arg	Met	His	Gly	Ser 250	Leu	Leu	Ile	Leu	Asn 255	Glu		
ctg	tgt	cgc	tgt	agt	aat	cta	caa	tgg	gag	cgg	ctt	tat	gaa	gac	ctc	816	
Leu	Leu	Arg	Cys 260	Ser	Asn	Leu	Gln	Trp 265	Glu	Arg	Leu	Tyr	Glu 270	Asp	Leu		
atg	gag	cgg	ctc	agc	tgt	tcc	agc	cag	ccg	acc	gac	aat	gat	atc	ctg	864	
Met	Glu	Arg 275	Leu	Ser	Cys	Ser	Ser 280	Gln	Pro	Thr	Asp	Asn 285	Asp	Ile	Leu		
tca	tgt	atg	ccg	aga	tta	aag	acg	agc	ctc	atg	tca	aag	tgg	acg	gcc	912	
Ser	Leu	Met	Pro	Arg	Leu	Lys 295	Thr	Ser	Leu	Met	Ser 300	Lys	Trp	Thr	Ala		
tca	gct	cct	cag	agt	tcg	ttg	cag	agt	gtt	caa	cac	aat	ctc	cat	cca	960	
Ser 305	Ala	Pro	Gln	Ser	Ser 310	Leu	Gln	Ser	Val	Gln 315	His	Asn	Leu	His	Pro 320		
gtt	cac	gag	tcg	aac	gcc	tgt	cgg	agt	ttg	atg	ctg	gag	aaa	ctc	gat	1008	
Val	His	Glu	Ser	Asn 325	Ala	Cys	Arg	Ser	Leu 330	Met	Leu	Glu	Lys	Leu 335	Asp		
gaa	atc	aac	gca	gac	gtg	atg	aac	cag	cgc	cac	tgc	cgc	aac	tcg	cac	1056	
Glu	Ile	Asn	Ala 340	Asp	Val	Met	Asn	Gln 345	Arg	His	Cys	Arg	Asn 350	Ser	His		
ata	cag	aac	gcg	ctc	atg	act	ctg	cta	cca	aga	tta	gcg	gcc	ttc	aac	1104	
Ile	Gln	Asn 355	Ala	Leu	Met	Thr	Leu 360	Leu	Pro	Arg	Leu	Ala 365	Ala	Phe	Asn		
aag	gaa	aaa	ttt	gtt	cag	gac	aat	cta	cgc	gag	tgc	atg	cat	tat	cta	1152	
Lys	Glu 370	Lys	Phe	Val	Gln	Asp 375	Asn	Leu	Arg	Glu	Cys 380	Met	His	Tyr	Leu		
att	gtc	agc	ctg	agg	ggc	aga	gag	aag	gac	aga	gca	gct	gcc	ttt	acc	1200	
Ile 385	Val	Ser	Leu	Arg	Gly 390	Arg	Glu	Lys	Asp	Arg 395	Ala	Ala	Ala	Phe	Thr 400		
acg	atc	ggg	ttg	ata	gct	gta	gcc	gtt	gac	gag	gcc	atc	aag	cct	tac	1248	
Thr	Ile	Gly	Leu	Ile 405	Ala	Val	Ala	Val	Asp 410	Glu	Ala	Ile	Lys	Pro 415	Tyr		
tta	ccc	aag	att	atg	gac	gtg	att	aaa	agc	tcg	cta	ccg	tcc	aaa	gag	1296	
Leu	Pro	Lys	Ile 420	Met	Asp	Val	Ile	Lys 425	Ser	Ser	Leu	Pro	Ser 430	Lys	Glu		
aca	ccc	aac	aaa	aag	agg	agc	tct	gct	ctc	gaa	cct	gcg	gtt	ttt	gtt	1344	
Thr	Pro	Asn 435	Lys	Lys	Arg	Ser	Ser 440	Ala	Leu	Glu	Pro	Ala 445	Val	Phe	Val		
tgc	att	aca	ctg	ctg	gga	cat	gct	gtg	aaa	cag	acc	atc	acg	tcg	gat	1392	
Cys	Ile 450	Thr	Leu	Leu	Gly	His 455	Ala	Val	Lys	Gln	Thr 460	Ile	Thr	Ser	Asp		
gtg	agg	gat	ttg	ctg	gag	ccg	atg	ctg	gct	acc	ggg	ttg	tcg	ccg	att	1440	
Val 465	Arg	Asp	Leu	Leu	Glu 470	Pro	Met	Leu	Ala 475	Thr	Gly	Leu	Ser	Pro 480	Ile		
ctc	acc	acc	tcc	ttg	aga	gaa	ctg	gcg	cat	agc	gtg	cct	tcc	ttg	aag	1488	
Leu	Thr	Thr	Ser 485	Leu	Arg	Glu	Leu	Ala 490	His	Ser	Val	Pro	Ser 495	Leu	Lys		
cct	gat	ata	tct	cag	ggc	cta	ctc	agg	atg	ttg	tca	cag	gtg	ctg	atg	1536	
Pro	Asp	Ile	Ser 500	Gln	Gly	Leu	Leu	Arg 505	Met	Leu	Ser	Gln 510	Val	Leu	Met		
tac	aag	cct	ctt	cgt	cat	cca	ggt	gca	cct	tgg	aca	gcc	aca	agt	ccc	1584	
Tyr	Lys	Pro 515	Leu	Arg	His	Pro	Gly 520	Ala	Pro	Trp	Thr	Ala 525	Thr	Ser	Pro		
gtt	tct	gcc	cca	cct	act	gag	atc	gat	gta	gct	tcc	acg	gtc	tta	ggt	1632	
Val 530	Ser	Ala	Pro	Pro	Thr	Glu 535	Ile	Asp	Val	Ala 540	Ser	Thr	Val	Leu	Gly		
ctt	cgc	acc	ctt	ggt	acc	ttc	aac	ttc	gat	gga	aat	cca	tta	tta	cag	1680	
Leu 545	Arg	Thr	Leu	Gly	Thr 550	Phe	Asn	Phe	Asp	Gly 555	Asn	Pro	Leu	Leu	Gln 560		
ttc	gtg	cgt	cgt	tgt	gcc	gac	tac	ttc	ctc	aca	tgg	gaa	gaa	ccg	gag	1728	
Phe	Val	Arg	Arg	Cys 565	Ala	Asp	Tyr	Phe	Leu 570	Thr	Trp	Glu	Glu	Pro 575	Glu		
gta	cgt	ctc	gag	gcc	gtc	aaa	acg	tgc	tcg	aga	ctg	ctg	aga	tta	gcg	1776	
Val	Arg	Leu	Glu 580	Ala	Val	Lys	Thr	Cys 585	Ser	Arg	Leu	Leu 590	Arg	Leu	Ala		
ctt	ggt	caa	ccc	gga	cct	act	gtt	act	agt	acc	gta	tct	act	gtg	ctt	1824	
Leu	Gly	Gln 595	Pro	Gly	Pro	Thr	Val 600	Thr	Ser	Thr	Val	Ser 605	Thr	Val	Leu		
ggg	aaa	ttg	tta	gtc	gtg	gga	atc	acg	gat	acc	gat	tcg	gat	gtt	aga	1872	

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Gly	Lys	Leu	Leu	Val	Val	Gly	Ile	Thr	Asp	Thr	Asp	Ser	Asp	Val	Arg	
610	610					615					620					1920
tac	tg	gt	ct	gc	tc	ct	gat	gag	cca	ttt	gat	att	cat	cta	gca	
Tyr	Trp	Val	Leu	Ala	Ser	Leu	Asp	Glu	Pro	Phe	Asp	Ile	His	Leu	Ala	
625					630					635					640	
caa	gca	gag	agt	ctc	tca	tgt	ttg	ttt	gtc	gct	atg	aat	gac	gag	ggt	1968
Gln	Ala	Glu	Ser	Leu	Ser	Cys	Leu	Phe	Val	Ala	Met	Asn	Asp	Glu	Val	
				645					650					655		
ttt	gaa	att	cgg	gaa	tta	gct	att	cgt	aca	atc	ggt	cgg	ctg	agc	ggc	2016
Phe	Glu	Ile	Arg	Glu	Leu	Ala	Ile	Arg	Thr	Ile	Gly	Arg	Leu	Ser	Gly	
			660					665					670			
atg	aat	cca	gcc	tac	gtg	atg	cca	tcc	ctt	cgt	aaa	gct	ctc	ata	cag	2064
Met	Asn	Pro	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Ala	Leu	Ile	Gln	
		675					680					685				
ttc	ctc	acc	gag	ctc	gaa	cac	tcg	ggt	atg	ggt	cgc	aac	aag	gag	cag	2112
Phe	Leu	Thr	Glu	Leu	Glu	His	Ser	Gly	Met	Gly	Arg	Asn	Lys	Glu	Gln	
					695						700					
gca	gcc	cgt	atg	ctg	gat	cat	cta	gtc	gtc	tca	gca	ccg	aga	ctc	atc	2160
Ala	Ala	Arg	Met	Leu	Asp	His	Leu	Val	Val	Ser	Ala	Pro	Arg	Leu	Ile	
705					710					715					720	
cga	ccc	tac	atg	gaa	ccg	gtg	ctc	aaa	ggt	ttg	gta	ccc	aag	cta	aag	2208
Arg	Pro	Tyr	Met	Glu	Pro	Val	Leu	Lys	Val	Leu	Val	Pro	Lys	Leu	Lys	
				725				730						735		
gaa	acc	gaa	act	aat	cca	gga	ggt	gtg	gca	ggt	ttg	aga	gca	ggt		2256
Glu	Thr	Glu	Thr	Asn	Pro	Gly	Val	Val	Ala	Val	Leu	Arg	Ala	Val		
			740					745				750				
gga	gat	ttg	gca	gag	ggt	agc	ggc	gct	gag	atg	cag	ccc	tg	atg	cct	2304
Gly	Asp	Leu	Ala	Glu	Val	Ser	Gly	Ala	Glu	Met	Gln	Pro	Trp	Met	Pro	
		755					760				765					
gag	ctg	ctc	gca	ata	ttg	cta	gag	atg	cta	gtg	gac	gcg	tcg	tcg	ccg	2352
Glu	Leu	Leu	Ala	Ile	Leu	Leu	Glu	Met	Leu	Val	Asp	Ala	Ser	Ser	Pro	
					775						780					
gaa	aag	aga	ggt	ggt	gca	ctg	tgg	gtc	ttg	ggt	cag	ctt	ggt	ggt	agt	2400
Glu	Lys	Arg	Gly	Val	Ala	Leu	Trp	Val	Leu	Gly	Gln	Leu	Val	Gly	Ser	
785					790					795					800	
acg	ggt	cat	gta	gtg	cga	ccg	tat	aca	cag	tac	cca	tcg	ctg	ctc	gat	2448
Thr	Gly	His	Val	Val	Arg	Pro	Tyr	Thr	Gln	Tyr	Pro	Ser	Leu	Leu	Asp	
				805					810					815		
ggt	ctt	ctg	aac	ttc	ctc	aag	acc	gag	caa	cag	ccc	gtc	ggt	cgt	cgt	2496
Val	Leu	Leu	Asn	Phe	Leu	Lys	Thr	Glu	Gln	Gln	Pro	Val	Val	Arg	Arg	
				820				825					830			
gaa	act	atc	cgt	gta	ctt	ggt	ctt	tta	ggc	gcg	ctc	gac	ccc	tac	aag	2544
Glu	Thr	Ile	Arg	Val	Leu	Gly	Leu	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	
				835			840				845					
cac	aaa	atg	aac	ctt	gga	cag	ata	tca	tct	cca	cag	ctc	gaa	gct	ctg	2592
His	Lys	Met	Asn	Leu	Gly	Gln	Ile	Ser	Ser	Pro	Gln	Leu	Glu	Ala	Leu	
					855					860						
agc	tct	cga	ccg	tct	gcc	gat	gct	cg	cct	gaa	gct	ggt	gac	gag	ctt	2640
Ser	Ser	Arg	Pro	Ser	Ala	Asp	Ala	Arg	Pro	Glu	Ala	Gly	Asp	Glu	Leu	
865					870				875						880	
agc	acc	agt	gag	atg	ctg	gtc	aat	atg	ccc	tcg	gct	acc	ctg	gag	gag	2688
Ser	Thr	Ser	Glu	Met	Leu	Val	Asn	Met	Pro	Ser	Ala	Thr	Leu	Glu	Glu	
				885					890					895		
tac	tat	cca	gcc	gta	gcc	atc	gca	acc	ctc	atg	cg	att	atc	cg	gag	2736
Tyr	Tyr	Pro	Ala	Val	Ala	Ile	Ala	Thr	Leu	Met	Arg	Ile	Ile	Arg	Glu	
				900				905					910			
cca	act	ctc	gcg	cag	cat	cac	act	atg	ggt	gtc	caa	gcc	gtc	act	ttc	2784
Pro	Thr	Leu	Ala	Gln	His	His	Thr	Met	Val	Val	Gln	Ala	Val	Thr	Phe	
				915			920					925				
att	ttc	aag	agt	ctt	ggt	att	aaa	tgc	gtg	cca	tat	ata	tcc	caa	gtg	2832
Ile	Phe	Lys	Ser	Leu	Gly	Ile	Lys	Cys	Val	Pro	Tyr	Ile	Ser	Gln	Val	
					935					940						
atg	ccg	agt	ttt	ctt	aac	gtg	ctt	cg	act	gca	gat	gtc	gga	ttc	cg	2880
Met	Pro	Ser	Phe	Leu	Asn	Val	Leu	Arg	Thr	Ala	Asp	Val	Gly	Phe	Arg	
945					950					955					960	
gag	tat	ctc	ttc	cag	cag	ctc	gct	att	ctc	att	gct	atc	gtc	aag	cat	2928
Glu	Tyr	Leu	Phe	Gln	Gln	Leu	Ala	Ile	Leu	Ile	Ala	Ile	Val	Lys	His	
				965					970					975		
cat	att	cg	aac	tac	ctc	gat	gac	ata	ttc	cg	ctt	gtg	caa	gag	ttc	2976

## PhoenixTemp32470.tmp.txt

His	Ile	Arg	Asn	Tyr	Leu	Asp	Asp	Ile	Phe	Ala	Leu	Val	Gln	Glu	Phe		
980								985					990				
tgg	acg	tgg	aac	agt	ccg	ctt	caa	ggc	acg	ctc	att	cat	cta	gtc	gaa	3024	
Trp	Thr	Trp	Asn	Ser	Pro	Leu	Gln	Gly	Thr	Leu	Ile	His	Leu	Val	Glu		
		995					1000					1005					
cac	atc	gct	gtg	gct	tta	gga	gcc	gaa	ttt	aag	ata	tat	ctt	cct	cgc	3072	
His	Ile	Ala	Val	Ala	Leu	Gly	Ala	Glu	Phe	Lys	Ile	Tyr	Leu	Pro	Arg		
	1010					1015					1020						
ctg	atg	cct	caa	ata	ctg	cga	gtc	ctg	agt	cat	gac	aca	agc	aaa	gaa	3120	
Leu	Met	Pro	Gln	Ile	Leu	Arg	Val	Leu	Ser	His	Asp	Thr	Ser	Lys	Glu		
	1025				1030					1035					1040		
cgc	cag	gtc	acg	gtg	aaa	ctg	tta	ctc	gct	ttg	caa	aag	ttc	gcc	gga	3168	
Arg	Gln	Val	Thr	Val	Lys	Leu	Leu	Leu	Ala	Leu	Gln	Lys	Phe	Ala	Gly		
				1045					1050					1055			
aac	ctc	gac	aat	tac	ctg	cac	ttg	gtc	tta	cca	cct	gta	gtc	cga	ctc	3216	
Asn	Leu	Asp	Asn	Tyr	Leu	His	Leu	Val	Leu	Pro	Pro	Val	Val	Arg	Leu		
			1060					1065					1070				
ttc	cag	acg	agt	ccg	gat	tgc	ccg	gtc	gct	gtc	agt	cgg	tgt	gct	ctg	3264	
Phe	Gln	Thr	Ser	Pro	Asp	Cys	Pro	Val	Ala	Val	Ser	Arg	Cys	Ala	Leu		
	1075					1080						1085					
gaa	aca	gtc	gaa	caa	cta	gcc	gaa	agc	ctt	gac	ttt	aca	gac	ttt	gcc	3312	
Glu	Thr	Val	Glu	Gln	Leu	Ala	Glu	Ser	Leu	Asp	Phe	Thr	Asp	Phe	Ala		
	1090					1095					1100						
tcc	cgc	atc	gta	cag	ccg	ctc	gtt	cga	acg	ctg	gat	cag	tgt	tcc	gag	3360	
Ser	Arg	Ile	Val	Gln	Pro	Leu	Val	Arg	Thr	Leu	Asp	Gln	Cys	Ser	Glu		
	1105				1110					1115					1120		
ctt	cga	gct	ccg	gcc	tgc	gag	act	ctg	tgc	gcc	tta	ttg	ctg	caa	ttg	3408	
Leu	Arg	Ala	Pro	Ala	Cys	Glu	Thr	Leu	Cys	Ala	Leu	Leu	Leu	Gln	Leu		
			1125					1130					1135				
ggg	ccc	aag	ttc	cac	atc	ttc	ttg	cca	ctt	ggt	cag	cgt	gtc	atg	gta	3456	
Gly	Pro	Lys	Phe	His	Ile	Phe	Leu	Pro	Leu	Val	Gln	Arg	Val	Met	Val		
			1140					1145					1150				
cgg	cat	agg	atc	gtc	cat	cca	cga	ttt	gag	agt	tta	gta	gac	aaa	gtg	3504	
Arg	His	Arg	Ile	Val	His	Pro	Arg	Phe	Glu	Ser	Leu	Val	Asp	Lys	Val		
		1155					1160					1165					
caa	agc	gca	tct	aga	tta	gga	ggc	cca	gga	cgt	ttt	gaa	gta	cgc	cag	3552	
Gln	Ser	Ala	Ser	Arg	Leu	Gly	Gly	Pro	Gly	Arg	Phe	Glu	Val	Arg	Gln		
	1170					1175					1180						
gcc	aga	agt	aag	agt	cag	cgc	gcg	gaa	ttg	ggc	cta	gct	agt	gct	gca	3600	
Ala	Arg	Ser	Lys	Ser	Gln	Arg	Ala	Glu	Leu	Gly	Leu	Ala	Ser	Ala	Ala		
	1185				1190					1195					1200		
gat	aca	acc	gtc	atc	aag	aag	ctc	aac	gtt	tct	gca	tcg	aat	ctt	caa	3648	
Asp	Thr	Thr	Val	Ile	Lys	Lys	Leu	Asn	Val	Ser	Ala	Ser	Asn	Leu	Gln		
			1205					1210						1215			
aaa	gcc	tgg	aca	gct	act	aga	cgc	gtg	tcc	aag	gac	gac	tgg	ctc	gag	3696	
Lys	Ala	Trp	Thr	Ala	Thr	Arg	Arg	Val	Ser	Lys	Asp	Asp	Trp	Leu	Glu		
		1220						1225					1230				
tgg	ctt	cgc	agc	ctc	tcc	att	ggt	ctc	tta	aaa	gaa	tcc	ccg	tcg	ccg	3744	
Trp	Leu	Arg	Ser	Leu	Ser	Ile	Gly	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro		
		1235				1240						1245					
gcc	tta	cgt	tcc	tgc	tgg	gct	ctg	gcc	caa	acc	tat	tca	cag	cta	ccg	3792	
Ala	Leu	Arg	Ser	Cys	Trp	Ala	Leu	Ala	Gln	Thr	Tyr	Ser	Gln	Leu	Pro		
	1250					1255					1260						
cga	gac	ctc	ttc	aac	gcg	gct	ttt	gtc	tcc	tgc	tgg	agc	gaa	ctc	gac	3840	
Arg	Asp	Leu	Phe	Asn	Ala	Ala	Phe	Val	Ser	Cys	Trp	Ser	Glu	Leu	Asp		
	1265				1270					1275					1280		
gag	tcc	cac	cgc	acc	gag	ctc	gtg	gct	act	ctt	caa	caa	gct	ctc	atg	3888	
Glu	Ser	His	Arg	Thr	Glu	Leu	Val	Ala	Thr	Leu	Gln	Gln	Ala	Leu	Met		
			1285					1290					1295				
gtt	ccc	gat	ata	ccc	gag	atc	agt	cag	aca	atc	cta	aat	ctc	gcc	gag	3936	
Val	Pro	Asp	Ile	Pro	Glu	Ile	Ser	Gln	Thr	Ile	Leu	Asn	Leu	Ala	Glu		
		1300						1305					1310				
ttt	atg	gaa	cat	tgt	gat	aag	gga	cca	gga	ctt	ttg	gat	agt	aaa	gtc	3984	
Phe	Met	Glu	His	Cys	Asp	Lys	Gly	Pro	Leu	Pro	Leu	Asp	Ser	Lys	Val		
		1315					1320					1325					
ttg	ggt	gaa	cga	gcg	atg	cat	tgt	cgg	gca	tac	gct	aag	gcg	ctc	cac	4032	
Leu	Gly	Glu	Arg	Ala	Met	His	Cys	Arg	Ala	Tyr	Ala	Lys	Ala	Leu	His		
	1330					1335					1340						
tac	aaa	gag	gac	gaa	tac	cac	aag	ggc	cgc	agc	ggt	gct	gta	ttc	gag	4080	

## PhoenixTemp32470.tmp.txt

Tyr	Lys	Glu	Asp	Glu	Tyr	His	Lys	Gly	Arg	Ser	Gly	Ala	Val	Phe	Glu		
1345					1350				1355						1360		
tca	ctc	atc	agc	att	aac	aac	aaa	tta	cag	cag	aaa	gag	gct	gcg	gaa	4128	
Ser	Leu	Ile	Ser	Ile	Asn	Asn	Lys	Leu	Gln	Gln	Lys	Glu	Ala	Ala	Glu		
				1365					1370					1375			
ggt	cta	ctc	gag	tac	gtt	atg	aat	cag	cag	caa	gag	aac	aac	aag	caa	4176	
Gly	Leu	Leu	Glu	Tyr	Val	Met	Asn	Gln	Gln	Gln	Glu	Asn	Asn	Lys	Gln		
				1380					1385					1390			
gag	ctg	aag	gtg	cag	gtt	cg	tgg	tac	gag	aaa	ctc	cat	aac	tgg	gac	4224	
Glu	Leu	Lys	Val	Gln	Val	Arg	Trp	Tyr	Glu	Lys	Leu	His	Asn	Trp	Asp		
				1395			1400					1405					
aag	gct	tgt	cat	ctg	tat	agg	gag	agg	tgt	gag	gtt	gat	gcg	caa	gac	4272	
Lys	Ala	Leu	His	Leu	Tyr	Arg	Glu	Arg	Leu	Glu	Val	Asp	Ala	Gln	Asp		
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gtt	gag	tcg	act	tgt	gga	gag	atg	cg	tgt	tgt	gaa	gct	tgt	gga	gaa	4320	
Val	Glu	Ser	Thr	Leu	Gly	Glu	Met	Arg	Cys	Leu	Glu	Ala	Leu	Gly	Glu		
1425					1430				1435					1440			
tgg	gga	caa	ctg	cac	gag	gtg	gcg	atg	aga	caa	tgg	agt	tcg	cat	acc	4368	
Trp	Gly	Gln	Leu	His	Glu	Val	Ala	Met	Arg	Gln	Trp	Ser	Ser	His	Thr		
				1445					1450					1455			
caa	gag	act	aaa	cag	cg	atg	gcc	aga	atg	gca	gcg	gcg	gct	gcc	tgg	4416	
Gln	Glu	Thr	Lys	Gln	Arg	Met	Ala	Arg	Met	Ala	Ala	Ala	Ala	Ala	Trp		
				1460			1465						1470				
ggg	tgt	aac	cag	tgt	gag	agc	atg	gaa	aag	cac	gtg	gcg	ctg	att	ccc	4464	
Gly	Leu	Asn	Gln	Trp	Glu	Ser	Met	Glu	Lys	His	Val	Ala	Leu	Ile	Pro		
				1475			1480					1485					
aaa	gaa	act	caa	gac	gga	gct	ttc	tac	aga	gct	gtg	tgt	gca	att	cac	4512	
Lys	Glu	Thr	Gln	Asp	Gly	Ala	Phe	Tyr	Arg	Ala	Val	Leu	Ala	Ile	His		
				1490		1495				1500							
gac	gag	caa	tat	gac	ctg	gcg	cac	aag	tgt	ata	gac	aat	gcg	aga	gac	4560	
Asp	Glu	Gln	Tyr	Asp	Leu	Ala	His	Lys	Leu	Ile	Asp	Asn	Ala	Arg	Asp		
1505					1510				1515					1520			
tta	ctg	gac	acc	gaa	tgt	aca	gcc	atg	gct	ggc	gag	agt	tat	cag	aga	4608	
Leu	Leu	Asp	Thr	Glu	Leu	Thr	Ala	Met	Ala	Gly	Glu	Ser	Tyr	Gln	Arg		
				1525					1530					1535			
gct	tac	aac	gca	atg	gtc	gag	gta	cag	aag	ctc	gcg	gag	ctc	gag	gag	4656	
Ala	Tyr	Asn	Ala	Met	Val	Glu	Val	Gln	Lys	Leu	Ala	Glu	Leu	Glu	Glu		
				1540			1545						1550				
gtg	ata	cag	tac	aag	ctc	gta	ccg	gaa	aga	cga	gcg	acc	atc	aag	tcc	4704	
Val	Ile	Gln	Tyr	Lys	Leu	Val	Pro	Glu	Arg	Arg	Ala	Thr	Ile	Lys	Ser		
				1555			1560					1565					
atg	tgt	tgt	gag	cga	tgt	cag	ggt	ggt	caa	cg	atc	gta	gag	gac	tgt	4752	
Met	Trp	Trp	Glu	Arg	Leu	Gln	Gly	Gly	Gln	Arg	Ile	Val	Glu	Asp	Trp		
				1570		1575			1580								
cag	aag	atc	ata	cag	gtg	cac	acg	ctc	gtt	att	tct	cca	cag	gac	gat	4800	
Gln	Lys	Ile	Ile	Gln	Val	His	Thr	Leu	Val	Ile	Ser	Pro	Gln	Asp	Asp		
1585				1590					1595					1600			
atg	tac	aca	tgt	ctc	aag	tat	gcg	agt	ctt	tgt	cg	aaa	agt	gga	aac	4848	
Met	Tyr	Thr	Trp	Leu	Lys	Tyr	Ala	Ser	Leu	Cys	Arg	Lys	Ser	Gly	Asn		
				1605			1610						1615				
ctt	gcg	tgt	tgt	cac	aag	aca	ctg	gtt	atg	ctg	cta	gga	gtc	gac	cca	4896	
Leu	Ala	Leu	His	Lys	Thr	Leu	Val	Met	Leu	Leu	Gly	Val	Asp	Pro			
				1620			1625					1630					
tcc	aca	gcg	aga	ccc	gac	caa	gct	ctt	ccc	att	caa	cat	cca	cag	gta	4944	
Ser	Thr	Ala	Arg	Pro	Asp	Gln	Ala	Leu	Pro	Ile	Gln	His	Pro	Gln	Val		
				1635			1640					1645					
aca	ttc	gct	tac	tgc	aag	cac	atg	tgt	gtg	gat	ggc	aag	cgt	gac	gca	4992	
Thr	Phe	Ala	Tyr	Cys	Lys	His	Met	Trp	Val	Asp	Gly	Lys	Arg	Asp	Ala		
				1650		1655			1660								
gct	tat	ggt	caa	ctc	cag	cg	ttc	gtg	cg	acc	ttc	cta	cca	ggc	cag	5040	
Ala	Tyr	Gly	Gln	Leu	Gln	Arg	Phe	Val	Arg	Thr	Phe	Leu	Pro	Gly	Gln		
1665				1670					1675					1680			
caa	caa	cag	cag	cag	caa	gcc	gaa	gac	gaa	cg	caa	ctc	gaa	gct		5088	
Gln	Gln	Gln	Gln	Gln	Gln	Pro	Ala	Glu	Asp	Glu	Arg	Gln	Leu	Glu	Ala		
				1685			1690					1695					
cg	aag	cg	cta	ctc	gct	cg	tgt	tat	ctc	aaa	ctc	gga	gag	tgt	ctg	5136	
Arg	Lys	Arg	Leu	Leu	Ala	Arg	Cys	Tyr	Leu	Lys	Leu	Gly	Glu	Trp	Leu		
			1700				1705					1710					
gaa	gct	ctg	caa	ggt	atc	aac	gag	gac	tcg	att	ccc	aat	gtc	tgt	tct	5184	

## PhoenixTemp32470.tmp.txt

Glu	Ala	Leu	Gln	Gly	Ile	Asn	Glu	Asp	Ser	Ile	Pro	Asn	Val	Leu	Ser		
	1715						1720					1725					
tac	tac	gcg	cac	gcg	aca	aag	cac	gat	ccg	agt	tgg	tac	aaa	gcc	tgg		5232
Tyr	Tyr	Ala	His	Ala	Thr	Lys	His	Asp	Pro	Ser	Trp	Tyr	Lys	Ala	Trp		
	1730						1735					1740					
cac	gcg	ttc	gcc	tac	acc	aac	ttc	gaa	gcg	gta	ttg	ttc	tat	aaa	cac		5280
His	Ala	Phe	Ala	Tyr	Thr	Asn	Phe	Glu	Ala	Val	Leu	Phe	Tyr	Lys	His		
	1745						1750					1755				1760	
caa	caa	acg	gaa	acg	gca	ttc	aac	gag	cag	caa	cag	caa	caa	caa	aat		5328
Gln	Gln	Thr	Glu	Thr	Ala	Phe	Asn	Glu	Gln	Gln	Gln	Gln	Gln	Gln	Asn		
																1775	
gga	ggt	cca	aac	gga	gcg	aat	gtt	ttg	gca	aac	gga	gct	gca	aag	agt		5376
Gly	Gly	Pro	Asn	Gly	Ala	Asn	Val	Leu	Ala	Asn	Gly	Ala	Ala	Lys	Ser		
																1790	
caa	ttg	tcg	tcc	cag	ttt	ata	acg	agg	ttc	acg	gta	cca	gcg	ctg	gaa		5424
Gln	Leu	Ser	Ser	Gln	Phe	Ile	Thr	Arg	Phe	Thr	Val	Pro	Ala	Leu	Glu		
																1805	
ggt	ttc	atc	aga	tcg	atc	aat	ctg	tca	aat	ggg	aac	tct	ctg	cag	gat		5472
Gly	Phe	Ile	Arg	Ser	Ile	Asn	Leu	Ser	Asn	Gly	Asn	Ser	Leu	Gln	Asp		
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acg	ctc	agg	ttg	ctg	acg	ttg	tgg	ttc	gag	tat	gga	cag	tgg	cct	gaa		5520
Thr	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Glu	Tyr	Gly	Gln	Trp	Pro	Glu		
																1840	
gtt	tac	gag	gct	att	ata	gag	ggc	att	cga	ctc	att	gaa	atc	aac	act		5568
Val	Tyr	Glu	Ala	Ile	Ile	Glu	Gly	Ile	Arg	Leu	Ile	Glu	Ile	Asn	Thr		
																1855	
tgg	cta	cag	gtt	ata	ccg	cag	ctc	ata	gcc	aga	att	gac	aca	ccg	cga		5616
Trp	Leu	Gln	Val	Ile	Pro	Gln	Leu	Ile	Ala	Arg	Ile	Asp	Thr	Pro	Arg		
																1870	
gct	ttg	gtc	gga	cgt	tgc	att	cat	aat	ctt	ctc	gtt	gac	atc	ggc	aag		5664
Ala	Leu	Val	Gly	Arg	Cys	Ile	His	Asn	Leu	Leu	Val	Asp	Ile	Gly	Lys		
																1885	
act	cat	cct	cag	gct	ctg	gta	tat	cca	ttg	acc	gtg	gca	tcg	aag	agt		5712
Thr	His	Pro	Gln	Ala	Leu	Val	Tyr	Pro	Leu	Thr	Val	Ala	Ser	Lys	Ser		
																1900	
gcg	agt	cac	gcg	cgt	aag	acg	gcc	gct	aac	aag	atc	ttg	aac	agc	atg		5760
Ala	Ser	His	Ala	Arg	Lys	Thr	Ala	Ala	Asn	Lys	Ile	Leu	Asn	Ser	Met		
																1920	
agc	gag	cat	agt	ccg	aca	ttg	gta	caa	cag	gcg	aag	atg	gtg	agt	gac		5808
Ser	Glu	His	Ser	Pro	Thr	Leu	Val	Gln	Ala	Lys	Met	Val	Ser	Asp			
																1935	
gag	ctc	atc	cg	gta	gcc	ata	ctc	tgg	cac	gag	ttg	tgg	cac	gag	ggt		5856
Glu	Leu	Ile	Arg	Val	Ala	Ile	Leu	Trp	His	Glu	Leu	Trp	His	Glu	Gly		
																1950	
ctc	gag	gaa	gcg	agt	aga	ctg	tat	ttc	ggt	gaa	cga	aat	gtc	aaa	ggc		5904
Leu	Glu	Ala	Ser	Arg	Leu	Tyr	Phe	Gly	Glu	Arg	Asn	Val	Lys	Gly			
																1965	
atg	ttt	gac	aca	cta	gaa	cct	tta	cac	gcg	atg	ctg	gag	cg	gga	cct		5952
Met	Phe	Asp	Thr	Leu	Glu	Pro	Leu	His	Ala	Met	Leu	Glu	Arg	Gly	Pro		
																1980	
cag	acg	ctc	aaa	gaa	acg	tct	ttc	aat	caa	gcc	tat	ggt	cg	gac	tta		6000
Gln	Thr	Leu	Lys	Glu	Thr	Ser	Phe	Asn	Gln	Ala	Tyr	Gly	Arg	Asp	Leu		
																2000	
atg	gaa	gca	caa	gac	tgg	tgt	cac	agg	tac	aag	gtg	tca	gga	aac	gta		6048
Met	Glu	Ala	Gln	Asp	Trp	Cys	His	Arg	Tyr	Lys	Val	Ser	Gly	Asn	Val		
																2015	
cg	gat	ctc	aat	caa	gcc	tgg	gac	ctt	tac	cac	gtg	ttc	cg	cga		6096	
Arg	Asp	Leu	Asn	Gln	Ala	Trp	Asp	Leu	Tyr	Tyr	His	Val	Phe	Arg	Arg		
																2030	
ata	tcg	aga	caa	tta	cca	cag	ctg	acg	agt	ctc	gaa	ttg	cag	tac	gtc		6144
Ile	Ser	Arg	Gln	Leu	Pro	Gln	Leu	Thr	Ser	Leu	Glu	Leu	Gln	Tyr	Val		
																2045	
agt	cct	aag	ctg	ctg	ttg	tgc	aga	gat	ttg	gaa	ctg	gct	gta	ccg	gga		6192
Ser	Pro	Lys	Leu	Leu	Leu	Cys	Arg	Asp	Leu	Glu	Leu	Ala	Val	Pro	Gly		
																2060	
agc	tat	caa	ccc	ggg	cag	cct	gtt	atc	agg	atc	ggt	agt	ata	aat	agt		6240
Ser	Tyr	Gln	Pro	Gly	Gln	Pro	Val	Ile	Arg	Ile	Gly	Ser	Ile	Asn	Ser		
																2080	
tcg	ctg	caa	gtc	ata	acg	agc	aaa	cag	cga	ccg	aga	aag	tta	tgc	gtc		6288



## PhoenixTemp32470.tmp.txt

Ser	Leu	Gln	Val	Ile	Thr	Ser	Lys	Gln	Arg	Pro	Arg	Lys	Leu	Cys	Val		
aag	ggt	agt	aac	gga	aag	gat	tac	atg	ttc	ttg	ctc	aaa	ggt	cac	gaa		6336
Lys	Gly	Ser	Asn	Gly	Lys	Asp	Tyr	Met	Phe	Leu	Leu	Lys	Gly	His	Glu		
			2100				2105						2110				
gat	ctt	cgt	cag	gac	gag	cgt	ggt	atg	cag	cta	ttc	ggt	cta	gtc	aat		6384
Asp	Leu	Arg	Gln	Asp	Glu	Arg	Val	Met	Gln	Leu	Phe	Gly	Leu	Val	Asn		
			2115				2120					2125					
act	ttg	ttg	ctg	cac	gat	cca	gat	acg	ttt	agg	aga	aat	ttg	acg	att		6432
Thr	Leu	Leu	Leu	His	Asp	Pro	Asp	Thr	Phe	Arg	Arg	Asn	Leu	Thr	Ile		
			2130				2135					2140					
cag	aga	tac	gcc	ggt	att	cct	tta	tct	aca	aat	agt	ggc	ctt	att	gga		6480
Gln	Arg	Tyr	Ala	Val	Ile	Pro	Leu	Ser	Thr	Asn	Ser	Gly	Leu	Ile	Gly		
			2145				2150					2155			2160		
tgg	gta	cct	cac	tgt	gat	act	ttg	cac	act	tta	atc	agg	gat	tac	cga		6528
Trp	Val	Pro	His	Cys	Asp	Thr	Leu	His	Thr	Leu	Ile	Arg	Asp	Tyr	Arg		
			2165				2170						2175				
gag	aaa	aag	aag	ata	ctt	ctc	aac	atc	gaa	cat	aga	att	atg	ctg	aga		6576
Glu	Lys	Lys	Lys	Ile	Leu	Leu	Asn	Ile	Glu	His	Arg	Ile	Met	Leu	Arg		
			2180				2185					2190					
atg	gca	ccg	gac	tac	gat	cac	ctg	atg	ctc	atg	caa	aaa	gtc	gaa	ggt		6624
Met	Ala	Pro	Asp	Tyr	Asp	His	Leu	Met	Leu	Met	Gln	Lys	Val	Glu	Val		
			2195				2200					2205					
ttt	gaa	cac	gcc	tta	gaa	cac	acg	tgc	ggt	gac	gat	ttg	gcc	cgt	ttg		6672
Phe	Glu	His	Ala	Leu	Glu	His	Thr	Cys	Gly	Asp	Asp	Leu	Ala	Arg	Leu		
			2210				2215				2220						
ctc	tgg	ttg	aaa	tca	cca	tcg	agc	gag	gtc	tgg	ttt	gat	cga	cgc	acc		6720
Leu	Trp	Leu	Lys	Ser	Pro	Ser	Ser	Glu	Val	Trp	Phe	Asp	Arg	Arg	Thr		
			2225				2230				2235				2240		
aac	tac	act	cgc	tca	ctg	gcc	ggt	atg	tcg	atg	ggt	gga	tac	atc	ctc		6768
Asn	Tyr	Thr	Arg	Ser	Leu	Ala	Val	Met	Ser	Met	Val	Gly	Tyr	Ile	Leu		
			2245				2250					2255					
ggt	ttg	ggc	gat	cga	cat	ccc	tcg	aat	ctt	atg	ttg	gac	agg	ctt	agc		6816
Gly	Leu	Gly	Asp	Arg	His	Pro	Ser	Asn	Leu	Met	Leu	Asp	Arg	Leu	Ser		
			2260				2265					2270					
ggc	aaa	ata	ctt	cac	att	gac	ttt	ggc	gat	tgc	ttc	gag	gtc	gct	atg		6864
Gly	Lys	Ile	Leu	His	Ile	Asp	Phe	Gly	Asp	Cys	Phe	Glu	Val	Ala	Met		
			2275				2280					2285					
act	cgc	gag	aag	ttc	cct	gaa	aag	ata	ccc	ttc	cgt	ctc	acc	cga	atg		6912
Thr	Arg	Glu	Lys	Phe	Pro	Glu	Lys	Ile	Pro	Phe	Arg	Leu	Thr	Arg	Met		
			2290				2295				2300						
tta	att	aac	gcg	atg	gag	gtg	acg	ggt	ata	gag	ggc	aca	tac	aga	cgc		6960
Leu	Ile	Asn	Ala	Met	Glu	Val	Thr	Gly	Ile	Glu	Gly	Thr	Tyr	Arg	Arg		
			2305				2310				2315				2320		
acc	tgc	gaa	tcg	ggt	atg	tcg	gtg	cta	cat	cgc	aac	aag	gac	agc	ttg		7008
Thr	Cys	Glu	Ser	Val	Met	Ser	Val	Leu	His	Arg	Asn	Lys	Asp	Ser	Leu		
			2325				2330					2335					
atg	gcc	gta	ctc	gag	gcc	ttc	ggt	tac	gat	cct	ttg	ttg	aac	tgg	agg		7056
Met	Ala	Val	Leu	Glu	Ala	Phe	Val	Tyr	Asp	Pro	Leu	Leu	Asn	Trp	Arg		
			2340				2345					2350					
ctg	atg	gac	aac	gcc	gct	cct	aag	ggc	aag	agg	agc	gac	gca	cag	ggc		7104
Leu	Met	Asp	Asn	Ala	Ala	Pro	Lys	Gly	Lys	Arg	Ser	Asp	Ala	Gln	Gly		
			2355				2360				2365						
atg	agc	act	agt	agt	agt	cag	gaa	cat	ggt	gac	atg	ctg	gat	tcg	ttg		7152
Met	Ser	Thr	Ser	Ser	Ser	Gln	Glu	His	Gly	Asp	Met	Leu	Asp	Ser	Leu		
			2370				2375				2380						
aca	gct	acg	ttc	ccg	aag	aag	ggc	gta	cct	tgt	agc	att	gaa	aac	gga		7200
Thr	Ala	Thr	Phe	Pro	Lys	Lys	Gly	Val	Pro	Cys	Ser	Ile	Glu	Asn	Gly		
			2385				2390				2395				2400		
ggt	atg	tgt	gac	agt	aat	cag	cca	gaa	gct	ttg	aac	aaa	aag	gct	ctt		7248
Gly	Met	Cys	Asp	Ser	Asn	Gln	Pro	Glu	Ala	Leu	Asn	Lys	Lys	Ala	Leu		
			2405				2410					2415					
cag	atc	ata	aac	aga	gtc	cgt	gat	aag	ctc	act	ggc	cgc	gac	ttt	tca		7296
Gln	Ile	Ile	Asn	Arg	Val	Arg	Asp	Lys	Leu	Thr	Gly	Arg	Asp	Phe	Ser		
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cac	gaa	gag	acg	cta	agt	gtg	cag	cga	caa	gtg	gat	ctt	ttg	ata	caa		7344
His	Glu	Glu	Thr	Leu	Ser	Val	Gln	Arg	Gln	Val	Asp	Leu	Leu	Ile	Gln		
			2435				2440				2445						
caa	gca	act	aat	aat	gaa	aac	ctc	tgt	caa	tgt	tat	ata	gga	tgg	tgt		7392

Gln Ala Thr Asn Asn Glu Asn Leu Cys Gln Cys Tyr Ile Gly Trp Cys  
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 cca ttt tgg taa  
 Pro Phe Trp  
 2465

7404

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 <212> PRT  
 <213> Nasonia vitripennis

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 Lys Thr Glu Leu Arg Glu Ala Thr Gln Glu Glu Ile Thr Ala Phe Met  
 35 40 45  
 Asp Glu Phe Asn His His Ile Phe Glu Met Val Ser Gly Ser Asp Ile  
 50 55 60  
 Asn Glu Lys Lys Gly Gly Ile Leu Ala Ile Val Cys Leu Ile Gly Ala  
 65 70 75 80  
 Asp Val Gly Asn Ile Asn Thr Arg Thr Ile Arg Phe Ala Asn Tyr Leu  
 85 90 95  
 Arg Asn Leu Leu Pro Ser Ser Asp Ile Gly Val Met Glu Leu Ala Ala  
 100 105 110  
 Lys Thr Val Gly Lys Leu Ala Leu Val Ser Gly Thr Phe Thr Ala Glu  
 115 120 125  
 Tyr Val Glu Phe Glu Val Lys Arg Ala Phe Glu Trp Leu Ser Gly Asp  
 130 135 140  
 Arg Asn Glu Asn Lys Arg His Ala Ala Val Leu Val Leu Lys Glu Leu  
 145 150 155 160  
 Ala Val Ser Met Pro Thr Tyr Phe Phe Gln His Ile Thr Gln Phe Phe  
 165 170 175  
 Glu Leu Ile Phe Lys Ala Val Cys Asp Pro Lys Pro Ala Ile Arg Glu  
 180 185 190  
 Gly Ala Val Glu Ala Leu Arg Ala Ala Leu Val Leu Thr Ala Gln Arg  
 195 200 205  
 Glu Thr Ala Lys Gln Thr Gln Lys Pro Thr Trp Tyr Lys Leu Cys Tyr  
 210 215 220  
 Glu Glu Ile Val Ala Gly Phe Glu Glu Val Tyr Val Arg Glu Lys Ser  
 225 230 235 240  
 Phe Asn Arg Asp Asp Arg Met His Gly Ser Leu Leu Ile Leu Asn Glu  
 245 250 255  
 Leu Leu Arg Cys Ser Asn Leu Gln Trp Glu Arg Leu Tyr Glu Asp Leu  
 260 265 270  
 Met Glu Arg Leu Ser Cys Ser Ser Gln Pro Thr Asp Asn Asp Ile Leu  
 275 280 285  
 Ser Leu Met Pro Arg Leu Lys Thr Ser Leu Met Ser Lys Trp Thr Ala  
 290 295 300  
 Ser Ala Pro Gln Ser Ser Leu Gln Ser Val Gln His Asn Leu His Pro  
 305 310 315 320  
 Val His Glu Ser Asn Ala Cys Arg Ser Leu Met Leu Glu Lys Leu Asp  
 325 330 335  
 Glu Ile Asn Ala Asp Val Met Asn Gln Arg His Cys Arg Asn Ser His  
 340 345 350  
 Ile Gln Asn Ala Leu Met Thr Leu Leu Pro Arg Leu Ala Ala Phe Asn  
 355 360 365  
 Lys Glu Lys Phe Val Gln Asp Asn Leu Arg Glu Cys Met His Tyr Leu  
 370 375 380  
 Ile Val Ser Leu Arg Gly Arg Glu Lys Asp Arg Ala Ala Ala Phe Thr  
 385 390 395 400  
 Thr Ile Gly Leu Ile Ala Val Ala Val Asp Glu Ala Ile Lys Pro Tyr  
 405 410 415  
 Leu Pro Lys Ile Met Asp Val Ile Lys Ser Ser Leu Pro Ser Lys Glu  
 420 425 430  
 Thr Pro Asn Lys Lys Arg Ser Ser Ala Leu Glu Pro Ala Val Phe Val  
 435 440 445  
 Cys Ile Thr Leu Leu Gly His Ala Val Lys Gln Thr Ile Thr Ser Asp  
 Page 1835

## PhoenixTemp32470.tmp.txt

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465	Leu	Thr	Thr	Ser	Leu	Arg	470	Glu	Leu	Ala	His	Ser	475	Val	Pro	Ser	Leu	Lys
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	Tyr	Lys	Pro	515	Leu	Arg	His	Pro	Gly	520	Ala	Pro	Trp	Thr	Ala	Thr	Ser	Pro
	Val	Ser	Ala	Pro	Pro	Thr	Glu	535	Ile	Asp	Val	Ala	Ser	540	Thr	Val	Leu	Gly
	Leu	Arg	Thr	Leu	Gly	Thr	550	Phe	Asn	Phe	Asp	Gly	555	Asn	Pro	Leu	Leu	Gln
545	Phe	Val	Arg	Arg	Cys	565	Ala	Asp	Tyr	Phe	Leu	570	Thr	Trp	Glu	Glu	Pro	Glu
	Val	Arg	Leu	Glu	Ala	Val	Lys	Thr	Cys	585	Ser	Arg	Leu	Leu	Arg	Leu	Ala	
	Leu	Gly	Gln	Pro	Gly	Pro	Thr	Val	Thr	Ser	Thr	Val	Ser	605	Thr	Val	Leu	
	Gly	Lys	Leu	Leu	Val	Val	Gly	615	Ile	Thr	Asp	Thr	Asp	620	Ser	Asp	Val	Arg
625	Tyr	Trp	Val	Leu	Ala	Ser	630	Leu	Asp	Glu	Pro	Phe	Asp	635	Ile	His	Leu	Ala
	Gln	Ala	Glu	Ser	Leu	Ser	Cys	Leu	Phe	Val	650	Ala	Met	Asn	Asp	Glu	Val	
	Phe	Glu	Ile	Arg	Glu	Leu	Ala	Ile	Arg	Thr	665	Ile	Gly	Arg	Leu	Ser	Gly	
	Met	Asn	Pro	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Ala	685	Leu	Ile	Gln	
	Phe	Leu	Thr	Glu	Leu	Glu	His	695	Ser	Gly	Met	Gly	Arg	700	Asn	Lys	Glu	Gln
705	Ala	Ala	Arg	Met	Leu	Asp	710	His	Leu	Val	Val	Ser	Ala	715	Pro	Arg	Leu	Ile
	Arg	Pro	Tyr	Met	Glu	Pro	Val	Leu	Lys	Val	730	Leu	Val	Pro	Lys	Leu	Lys	
	Glu	Thr	Glu	Thr	Asn	Pro	Gly	Val	Val	Leu	Ala	Val	Leu	Arg	Ala	Val		
	Gly	Asp	Leu	Ala	Glu	Val	Ser	Gly	Ala	Glu	Met	Gln	Pro	765	Trp	Met	Pro	
	Glu	Leu	Leu	Ala	Ile	Leu	Leu	775	Glu	Met	Leu	Val	Asp	780	Ala	Ser	Ser	Pro
785	Glu	Lys	Arg	Gly	Val	Ala	Leu	Trp	Val	Leu	Gly	795	Gln	Leu	Val	Gly	Ser	
	Thr	Gly	His	Val	Val	Arg	Pro	Tyr	Thr	Gln	810	Tyr	Pro	Ser	Leu	Leu	Asp	
	Val	Leu	Leu	Asn	Phe	Leu	Lys	Thr	Glu	Gln	825	Gln	Gln	Pro	Val	Val	Arg	Arg
	Glu	Thr	Ile	Arg	Val	Leu	Gly	Leu	Leu	Gly	Ala	Leu	Asp	845	Pro	Tyr	Lys	
	His	Lys	Met	Asn	Leu	Gly	Gln	855	Ile	Ser	Ser	Pro	Gln	860	Leu	Glu	Ala	Leu
865	Ser	Ser	Arg	Pro	Ser	Ala	Asp	870	Ala	Arg	Pro	Glu	875	Ala	Gly	Asp	Glu	Leu
	Ser	Thr	Ser	Glu	Met	Leu	Val	Asn	Met	Pro	890	Ser	Ala	Thr	Leu	Glu	Glu	
	Tyr	Tyr	Pro	Ala	Val	Ala	Ile	Ala	Thr	Leu	Met	Arg	Ile	910	Ile	Arg	Glu	
	Pro	Thr	Leu	Ala	Gln	His	His	Thr	920	Met	Val	Val	Gln	Ala	Val	Thr	Phe	
	Ile	Phe	Lys	Ser	Leu	Gly	Ile	Lys	Cys	Val	Pro	Tyr	940	Ile	Ser	Gln	Val	
945	Met	Pro	Ser	Phe	Leu	Asn	Val	Leu	Arg	Thr	Ala	Asp	Val	Gly	Phe	Arg		
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	His	Ile	Arg	Asn	Tyr	Leu	Asp	Asp	Ile	Phe	Ala	Leu	Val	Gln	Glu	Phe		
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			995					1000						1005				

## PhoenixTemp32470.tmp.txt

His Ile Ala Val Ala Leu Gly Ala Glu Phe Lys Ile Tyr Leu Pro Arg  
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 Leu Met Pro Gln Ile Leu Arg Val Leu Ser His Asp Thr Ser Lys Glu  
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 Arg Gln Val Thr Val Lys Leu Leu Leu Ala Leu Gln Lys Phe Ala Gly  
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 Asn Leu Asp Asn Tyr Leu His Leu Val Leu Pro Pro Val Val Arg Leu  
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 Phe Gln Thr Ser Pro Asp Cys Pro Val Ala Val Ser Arg Cys Ala Leu  
 1075 1080 1085  
 Glu Thr Val Glu Gln Leu Ala Glu Ser Leu Asp Phe Thr Asp Phe Ala  
 1090 1095 1100  
 Ser Arg Ile Val Gln Pro Leu Val Arg Thr Leu Asp Gln Cys Ser Glu  
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 Leu Arg Ala Pro Ala Cys Glu Thr Leu Cys Ala Leu Leu Leu Gln Leu  
 1125 1130 1135  
 Gly Pro Lys Phe His Ile Phe Leu Pro Leu Val Gln Arg Val Met Val  
 1140 1145 1150  
 Arg His Arg Ile Val His Pro Arg Phe Glu Ser Leu Val Asp Lys Val  
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 Gln Ser Ala Ser Arg Leu Gly Gly Pro Gly Arg Phe Glu Val Arg Gln  
 1170 1175 1180  
 Ala Arg Ser Lys Ser Gln Arg Ala Glu Leu Gly Leu Ala Ser Ala Ala  
 1185 1190 1195 1200  
 Asp Thr Thr Val Ile Lys Lys Leu Asn Val Ser Ala Ser Asn Leu Gln  
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 Lys Ala Trp Thr Ala Thr Arg Arg Val Ser Lys Asp Asp Trp Leu Glu  
 1220 1225 1230  
 Trp Leu Arg Ser Leu Ser Ile Gly Leu Leu Lys Glu Ser Pro Ser Pro  
 1235 1240 1245  
 Ala Leu Arg Ser Cys Trp Ala Leu Ala Gln Thr Tyr Ser Gln Leu Pro  
 1250 1255 1260  
 Arg Asp Leu Phe Asn Ala Ala Phe Val Ser Cys Trp Ser Glu Leu Asp  
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 Glu Ser His Arg Thr Glu Leu Val Ala Thr Leu Gln Gln Ala Leu Met  
 1285 1290 1295  
 Val Pro Asp Ile Pro Glu Ile Ser Gln Thr Ile Leu Asn Leu Ala Glu  
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 Phe Met Glu His Cys Asp Lys Gly Pro Leu Pro Leu Asp Ser Lys Val  
 1315 1320 1325  
 Leu Gly Glu Arg Ala Met His Cys Arg Ala Tyr Ala Lys Ala Leu His  
 1330 1335 1340  
 Tyr Lys Glu Asp Glu Tyr His Lys Gly Arg Ser Gly Ala Val Phe Glu  
 1345 1350 1355 1360  
 Ser Leu Ile Ser Ile Asn Asn Lys Leu Gln Gln Lys Glu Ala Ala Glu  
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 Gly Leu Leu Glu Tyr Val Met Asn Gln Gln Gln Glu Asn Asn Lys Gln  
 1380 1385 1390  
 Glu Leu Lys Val Gln Val Arg Trp Tyr Glu Lys Leu His Asn Trp Asp  
 1395 1400 1405  
 Lys Ala Leu His Leu Tyr Arg Glu Arg Leu Glu Val Asp Ala Gln Asp  
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 Val Glu Ser Thr Leu Gly Glu Met Arg Cys Leu Glu Ala Leu Gly Glu  
 1425 1430 1435 1440  
 Trp Gly Gln Leu His Glu Val Ala Met Arg Gln Trp Ser Ser His Thr  
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 Gln Glu Thr Lys Gln Arg Met Ala Arg Met Ala Ala Ala Ala Trp  
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 Lys Glu Thr Gln Asp Gly Ala Phe Tyr Arg Ala Val Leu Ala Ile His  
 1490 1495 1500  
 Asp Glu Gln Tyr Asp Leu Ala His Lys Leu Ile Asp Asn Ala Arg Asp  
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 Leu Leu Asp Thr Glu Leu Thr Ala Met Ala Gly Glu Ser Tyr Gln Arg  
 1525 1530 1535  
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 1540 1545 1550  
 Val Ile Gln Tyr Lys Leu Val Pro Glu Arg Arg Ala Thr Ile Lys Ser

## PhoenixTemp32470.tmp.txt

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 Met Tyr Thr Trp Leu Lys Tyr Ala Ser Leu Cys Arg Lys Ser Gly Asn  
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 Leu Ala Leu Cys His Lys Thr Leu Val Met Leu Leu Gly Val Asp Pro  
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 Ser Thr Ala Arg Pro Asp Gln Ala Leu Pro Ile Gln His Pro Gln Val  
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 Thr Phe Ala Tyr Cys Lys His Met Trp Val Asp Gly Lys Arg Asp Ala  
 1650 1655 1660  
 Ala Tyr Gly Gln Leu Gln Arg Phe Val Arg Thr Phe Leu Pro Gly Gln  
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 Arg Lys Arg Leu Ala Arg Cys Tyr Leu Lys Leu Gly Glu Trp Leu  
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 Tyr Tyr Ala His Ala Thr Lys His Asp Pro Ser Trp Tyr Lys Ala Trp  
 1730 1735 1740  
 His Ala Phe Ala Tyr Thr Asn Phe Glu Ala Val Leu Phe Tyr Lys His  
 1745 1750 1755 1760  
 Gln Gln Thr Glu Thr Ala Phe Asn Glu Gln Gln Gln Gln Gln Asn  
 1765 1770 1775  
 Gly Gly Pro Asn Gly Ala Asn Val Leu Ala Asn Gly Ala Ala Lys Ser  
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 Gln Leu Ser Ser Gln Phe Ile Thr Arg Phe Thr Val Pro Ala Leu Glu  
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 Gly Phe Ile Arg Ser Ile Asn Leu Ser Asn Gly Asn Ser Leu Gln Asp  
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 Thr Leu Arg Leu Leu Thr Leu Trp Phe Glu Tyr Gly Gln Trp Pro Glu  
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 Val Tyr Glu Ala Ile Ile Glu Gly Ile Arg Leu Ile Glu Ile Asn Thr  
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 Trp Leu Gln Val Ile Pro Gln Leu Ile Ala Arg Ile Asp Thr Pro Arg  
 1860 1865 1870  
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 1875 1880 1885  
 Thr His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ser Lys Ser  
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 Ser Glu His Ser Pro Thr Leu Val Gln Gln Ala Lys Met Val Ser Asp  
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 2020 2025 2030  
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 Ser Pro Lys Leu Leu Leu Cys Arg Asp Leu Glu Leu Ala Val Pro Gly  
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 Ser Leu Gln Val Ile Thr Ser Lys Gln Arg Pro Arg Lys Leu Cys Val  
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## PhoenixTemp32470.tmp.txt

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 Phe Glu His Ala Leu Glu His Thr Cys Gly Asp Asp Leu Ala Arg Leu  
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 Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu  
 2245 2250 2255  
 Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Leu Ser  
 2260 2265 2270  
 Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala Met  
 2275 2280 2285  
 Thr Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe Arg Leu Thr Arg Met  
 2290 2295 2300  
 Leu Ile Asn Ala Met Glu Val Thr Gly Ile Glu Gly Thr Tyr Arg Arg  
 2305 2310 2315 2320  
 Thr Cys Glu Ser Val Met Ser Val Leu His Arg Asn Lys Asp Ser Leu  
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 Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Leu Asn Trp Arg  
 2340 2345 2350  
 Leu Met Asp Asn Ala Ala Pro Lys Gly Lys Arg Ser Asp Ala Gln Gly  
 2355 2360 2365  
 Met Ser Thr Ser Ser Ser Gln Glu His Gly Asp Met Leu Asp Ser Leu  
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 Thr Ala Thr Phe Pro Lys Lys Gly Val Pro Cys Ser Ile Glu Asn Gly  
 2385 2390 2395 2400  
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 Pro Phe Trp  
 2465

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&lt;211&gt; 7371

&lt;212&gt; DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7371)

&lt;400&gt; 2522

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1				5					10					15		
aac	aag	gat	gtg	cag	aac	aag	gcc	atc	aag	gac	ctg	tcg	ctg	tac	gtc	96
Asn	Lys	Asp	Val	Gln	Asn	Lys	Ala	Ile	Lys	Asp	Leu	Ser	Leu	Tyr	Val	
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aag	acg	gag	ctg	cgc	gaa	act	ccg	gac	gac	atg	ttt	ttc	gaa	gac	ttt	144
Lys	Thr	Glu	Leu	Arg	Glu	Thr	Pro	Asp	Asp	Met	Phe	Phe	Glu	Asp	Phe	
		35					40				45					
aac	cac	cac	atc	ttc	gag	atg	ctc	acc	agc	aca	gac	aat	aac	gag	aaa	192
Asn	His	His	Ile	Phe	Glu	Met	Leu	Thr	Ser	Thr	Asp	Asn	Asn	Glu	Lys	
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## PhoenixTemp32470.tmp.txt

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ttg Leu	ccg Pro	atg Met	agc Ser 100	gac Asp	ggt Val	tgt Cys	gtg Val	atg Met 105	cag Gln	ctg Leu	gcc Ala	gcc Ala	aac Asn 110	gtg Val	ttg Leu	336
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aac Asn 145	aag Lys	cgg Arg	cac His	gcc Ala	gcg Ala 150	gtg Val	ctg Leu	gta Val	ctg Leu	cgc Arg 155	gag Glu	ctg Leu	gcc Ala	gtc Val	gca Ala 160	480
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cag Gln	gcg Ala 195	ctg Leu	cgg Arg	gcc Ala	gta Val	ctg Leu	atc Ile 200	gtg Val	acg Thr	tcg Ser	cag Gln	cgc Arg 205	gaa Glu	gga Gly	acc Thr	624
aag Lys 210	caa Gln	aac Asn	aat Asn	aac Asn	acc Thr	cag Gln 215	tgg Trp	cac His	atg Met	aac Asn	tgc Cys 220	tac Tyr	gat Asp	cag Gln	gca Ala	672
ttc Phe 225	gag Glu	tgc Cys	ttg Leu	cgc Arg	gat Asp 230	acg Thr	gtg Val	ggg Gly	cgc Arg	gag Glu 235	aag Lys	aat Asn	tta Leu	aat Asn	cgc Arg 240	720
gac Asp	gat Asp	cgc Arg	gtc Val	cac His 245	ggt Gly	gcg Ala	ctg Leu	atc Ile	gtg Val 250	ttc Phe	aac Asn	gaa Glu	ata Ile	ctg Leu 255	cgc Arg	768
tgt Cys	tcg Ser	cac His 260	gca Ala	gcg Ala	tgg Trp	gag Glu	aag Lys	aag Lys 265	tac Tyr	atg Met	cag Gln	ctg Leu	gac Asp 270	agt Ser	ttg Leu	816
ccg Pro	gtg Val	gac Asp 275	cag Gln	aag Lys	cga Arg	tcg Ser	ttg Leu 280	cgt Arg	tcg Ser	cag Gln	cgg Arg	gaa Glu 285	gag Glu	gaa Glu	ggg Gly	864
cgg Arg 290	gga Gly	ttc Phe	ttc Phe	cca Pro	cgc Arg	atc Ile 295	cgt Arg	gtg Val	cct Pro	ttt Phe	atg Met 300	gag Glu	aag Lys	ttt Phe	gga Gly	912
aac Asn 305	cat His	tcg Ser	gga Gly	caa Gln	agc Ser 310	tcg Ser	gtc Val	agc Ser	tac Tyr	agc Ser 315	tcg Ser	cgc Arg	tac Tyr	tac Tyr	gac Asp 320	960
gtc Val	gta Val	acg Thr	gat Asp	atg Met 325	aag Lys	ttc Phe	ttc Phe	cgc Arg	cag Gln 330	aac Asn	agc Ser	agc Ser	gtg Val	cag Gln 335	gag Glu	1008
tcg Ser	gca Ala	ctg Leu	tac Tyr 340	cga Arg	gcg Ala	ctg Leu	gtg Val	aag Lys 345	gag Glu	aag Lys	tac Tyr	gac Asp	acc Thr 350	atc Ile	tgc Cys	1056
cag Gln	gcg Ala 355	gtg Val	ctg Leu	gat Asp	cag Gln	cgt Arg	agc Ser 360	tcc Ser	aag Lys	tca Ser	ccg Pro	tac Tyr 365	ggt Val	atc Ile	cag Gln	1104
acg Thr 370	ctg Leu	ttg Leu	gcg Ala	atc Ile	ttt Phe	ccg Pro 375	cgg Arg	ctg Leu	gca Ala	gcc Ala	ttc Phe 380	aat Asn	agg Arg	gag Glu	gag Glu	1152
ttt Phe 385	gtg Val	cgg Arg	ctg Leu	cat His	ctg Leu 390	cgc Arg	acg Thr	gtc Val	gcc Ala	aac Asn 395	tac Tyr	ctg Leu	ctg Leu	acg Thr	ctg Leu 400	1200
cta Leu	cga Arg	agc Ser	aaa Lys	gag Glu 405	aag Lys	gaa Glu	cgc Arg	aat Asn	gcc Ala 410	gcc Ala	ttc Phe	gta Val	tcg Ser	ctc Leu 415	ggc Gly	1248
tat Tyr	att Ile	gcg Ala 420	gtc Val	gcg Ala	gtg Val	gaa Glu	aag Lys	gaa Glu 425	att Ile	gaa Glu	ccg Pro	tac Tyr	acc Thr 430	aaa Lys	cgc Arg	1296

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atc	atg	gag	ttg	atc	gga	agt	gca	ctg	ccg	ctg	aag	gat	aca	ccc	agc	1344
Ile	Met	Glu	Leu	Ile	Gly	Ser	Ala	Leu	Pro	Leu	Lys	Asp	Thr	Pro	Ser	
		435					440					445				
aag	cgg	aaa	gcg	ccg	gtg	gat	cct	tcc	gtg	ttc	atg	tgc	gtc	atg	ctg	1392
Lys	Arg	Lys	Ala	Pro	Val	Asp	Pro	Ser	Val	Phe	Met	Cys	Val	Met	Leu	
	450					455					460					
ctg	ggg	cat	gcg	ctg	aaa	gga	ggc	ata	act	cac	gag	atc	aag	gag	ata	1440
Leu	Gly	His	Ala	Leu	Lys	Gly	Gly	Ile	Thr	His	Glu	Ile	Lys	Glu	Ile	
	465				470					475					480	
ata	gca	ccg	atg	cta	tcg	acc	ggt	cta	agt	ccg	gca	ctg	atc	gtt	tgc	1488
Ile	Ala	Pro	Met	Leu	Ser	Thr	Gly	Leu	Ser	Pro	Ala	Leu	Ile	Val	Cys	
				485					490					495		
ttg	cgg	gag	ctc	tgc	gaa	acg	gtg	ccc	cag	gcg	caa	cag	gag	ata	acg	1536
Leu	Arg	Glu	Leu	Cys	Glu	Thr	Val	Pro	Gln	Ala	Gln	Gln	Glu	Ile	Thr	
			500					505					510			
gcg	ggc	ctg	ctg	aag	ata	ctg	tcg	tac	gtg	ctg	atg	aac	cga	cct	ttg	1584
Ala	Gly	Leu	Leu	Lys	Ile	Leu	Ser	Tyr	Val	Leu	Met	Asn	Arg	Pro	Leu	
		515					520					525				
cca	caa	ttt	att	gtg	cca	aag	tca	cac	tcg	cag	cca	cag	tcg	caa	ccg	1632
Pro	Gln	Phe	Ile	Val	Pro	Lys	Ser	His	Ser	Gln	Pro	Gln	Ser	Gln	Pro	
		530				535					540					
ccg	cag	cag	cag	gtc	cac	gat	aca	gcc	acg	ata	gtg	ctg	gcg	ctg	caa	1680
Pro	Gln	Gln	Gln	Val	His	Asp	Thr	Ala	Thr	Ile	Val	Leu	Ala	Leu	Gln	
				545		550				555					560	
acg	ctt	ggc	aag	ttt	agc	ttc	gaa	gga	tgc	agc	ttg	cta	cag	ttt	gtg	1728
Thr	Leu	Gly	Lys	Phe	Ser	Phe	Glu	Gly	Cys	Ser	Leu	Leu	Gln	Phe	Val	
				565					570					575		
cag	cgc	tgt	gcc	gat	cac	ttt	ctc	aac	agc	gag	cag	cag	cag	atc	cgc	1776
Gln	Arg	Cys	Ala	Asp	His	Phe	Leu	Asn	Ser	Glu	Gln	Gln	Gln	Ile	Arg	
			580					585					590			
ata	gaa	gca	gtc	cat	acc	tgt	acg	ttt	ttg	cta	aag	cta	gcg	ctc	cag	1824
Ile	Glu	Ala	Val	His	Thr	Cys	Thr	Phe	Leu	Leu	Lys	Leu	Ala	Leu	Gln	
		595				600						605				
gcg	gcg	gaa	agt	aac	ggg	aac	gat	gtg	tcg	gaa	acg	ctt	acg	caa	acg	1872
Ala	Ala	Glu	Ser	Asn	Gly	Asn	Asp	Val	Ser	Glu	Thr	Leu	Thr	Gln	Thr	
		610				615					620					
ctc	agc	tcg	gtg	ctg	gag	aaa	atc	ctc	gtc	gtt	ggc	atc	acg	gac	gtg	1920
Leu	Ser	Ser	Val	Leu	Glu	Lys	Ile	Leu	Val	Val	Gly	Ile	Thr	Asp	Val	
				625		630				635					640	
gat	ccg	gcg	gtg	cgc	ttg	cga	gtg	ctg	aaa	tcg	ctg	gac	gaa	agc	ttc	1968
Asp	Pro	Ala	Val	Arg	Leu	Arg	Val	Leu	Lys	Ser	Leu	Asp	Glu	Ser	Phe	
				645					650					655		
gac	acg	cag	cta	gcg	cag	ccg	tgg	ttt	ctc	agc	tcg	ctg	cta	gtg	acg	2016
Asp	Thr	Gln	Leu	Ala	Gln	Pro	Trp	Phe	Leu	Ser	Ser	Leu	Leu	Val	Thr	
			660				665						670			
atc	cac	gac	gag	gtg	ttt	gag	ata	cgc	gag	ctg	gcg	atc	atc	atc	att	2064
Ile	His	Asp	Glu	Val	Phe	Glu	Ile	Arg	Glu	Leu	Ala	Ile	Ile	Ile	Ile	
		675					680					685				
ggc	cgg	ctg	tcg	acg	atc	aat	ccg	gcc	tat	gtg	atg	cca	agc	ttg	cgc	2112
Gly	Arg	Leu	Ser	Thr	Ile	Asn	Pro	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg	
		690				695					700					
aaa	acg	atg	gtt	cag	ttg	ctg	acc	gag	ctg	gag	cat	tcg	ggc	gtc	agc	2160
Lys	Thr	Met	Val	Gln	Leu	Leu	Thr	Glu	Leu	Glu	His	Ser	Gly	Val	Ser	
				705		710				715					720	
cgc	aac	aag	gag	caa	agt	gcg	aga	atg	ctg	gat	cat	ctg	atc	gtc	agc	2208
Arg	Asn	Lys	Glu	Gln	Ser	Ala	Arg	Met	Leu	Asp	His	Leu	Ile	Val	Ser	
				725					730					735		
acg	ccc	cgg	ctg	gtg	gcg	tcg	tac	atg	cgc	ccg	ata	ctg	acc	att	ctc	2256
Thr	Pro	Arg	Leu	Val	Ala	Ser	Tyr	Met	Arg	Pro	Ile	Leu	Thr	Ile	Leu	
			740				745						750			
gtg	cca	aag	ctg	aag	gaa	ccg	gac	cag	aac	ccg	agt	gtg	gtg	ctg	aac	2304
Val	Pro	Lys	Leu	Lys	Glu	Pro	Asp	Gln	Asn	Pro	Ser	Val	Val	Leu	Asn	
		755					760					765				
gtg	ctc	cgt	gcg	atc	ggc	gat	ctg	gcg	gag	gtg	att	ggc	ggc	cac	cat	2352
Val	Leu	Arg	Ala	Ile	Gly	Asp	Leu	Ala	Glu	Val	Ile	Gly	Gly	His	His	
		770				775					780					
gtg	ctg	cag	aag	tgg	tcg	gac	gag	ctg	cta	cag	ctg	ctg	ctg	gac	atg	2400
Val	Leu	Gln	Lys	Trp	Ser	Asp	Glu	Leu	Leu	Gln	Leu	Leu	Leu	Asp	Met	
					790					795					800	



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ctc	agt	gac	gct	ggc	agc	acg	gaa	aag	cga	gct	gtg	gca	ctg	tgg	acc	2448
Leu	Ser	Asp	Ala	Gly	Ser	Thr	Glu	Lys	Arg	Ala	Val	Ala	Leu	Trp	Thr	
				805					810					815		
ttt	ggg	cag	cta	gtc	agt	gcg	acc	ggg	cag	gta	gtg	gta	ccg	tac	aac	2496
Phe	Gly	Gln	Leu	Val	Ser	Ala	Thr	Gly	Gln	Val	Val	Val	Pro	Tyr	Asn	
			820					825					830			
aag	tac	ccg	aat	ctg	atc	gat	ata	ctg	ata	aac	ttc	ctg	aaa	acg	gag	2544
Lys	Tyr	Pro	Asn	Leu	Ile	Asp	Ile	Leu	Ile	Asn	Phe	Leu	Lys	Thr	Glu	
			835				840					845				
cag	caa	ctg	tac	gtc	cgt	cgg	gaa	acg	atc	cga	gtg	ctg	ggg	ttg	ttg	2592
Gln	Gln	Leu	Tyr	Val	Arg	Arg	Glu	Thr	Ile	Arg	Val	Leu	Gly	Leu	Leu	
	850					855					860					
gga	gcg	ctc	gac	ccg	tac	aag	cac	aag	atg	aat	cgc	ggg	ctg	atc	gac	2640
Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	Lys	Met	Asn	Arg	Gly	Leu	Ile	Asp	
865					870					875					880	
agc	cag	acg	agt	gca	aac	att	ctt	att	tct	gtc	gac	acg	aaa	acc	gac	2688
Ser	Gln	Thr	Ser	Ala	Asn	Ile	Leu	Ile	Ser	Val	Asp	Thr	Lys	Thr	Asp	
				885					890					895		
gaa	cat	acg	gac	ctg	tcc	acg	tcg	gaa	atg	ctg	atc	aac	atg	agc	acc	2736
Glu	His	Thr	Asp	Leu	Ser	Thr	Ser	Glu	Met	Leu	Ile	Asn	Met	Ser	Thr	
			900					905					910			
cag	ctg	gac	gag	tac	tat	ccg	gcg	gtg	gtc	ata	tcg	acg	ttg	atg	aaa	2784
Gln	Leu	Asp	Glu	Tyr	Tyr	Pro	Ala	Val	Val	Ile	Ser	Thr	Leu	Met	Lys	
			915				920					925				
att	ttg	cgc	gat	ccc	acc	ctg	tcc	aac	cat	cat	ctc	agc	gtg	gtg	cag	2832
Ile	Leu	Arg	Asp	Pro	Thr	Leu	Ser	Asn	His	His	Leu	Ser	Val	Val	Gln	
	930					935					940					
gcc	atc	acg	ttc	acc	ttc	acc	agt	ctg	ggc	atc	aaa	ggg	gtc	ccg	tac	2880
Ala	Ile	Thr	Phe	Thr	Phe	Thr	Ser	Leu	Gly	Ile	Lys	Gly	Val	Pro	Tyr	
945					950					955					960	
ctc	tcg	cag	gtg	ttg	ccc	tgt	ctg	ctg	cgc	aac	atc	gtc	aca	gcc	gag	2928
Leu	Ser	Gln	Val	Leu	Pro	Cys	Leu	Leu	Arg	Asn	Ile	Val	Thr	Ala	Glu	
			965						970					975		
atg	agc	ctt	aag	gag	tac	ctg	ttt	cag	ctg	tcc	acg	ctg	ata	tcg		2976
Met	Ser	Leu	Lys	Glu	Tyr	Leu	Phe	Gln	Gln	Leu	Ser	Thr	Leu	Ile	Ser	
			980					985					990			
atc	gtg	aag	cag	cac	att	atc	ggg	ttc	atg	gac	gac	att	ttc	gag	ctg	3024
Ile	Val	Lys	Gln	His	Ile	Ile	Gly	Phe	Met	Asp	Asp	Ile	Phe	Glu	Leu	
		995					1000					1005				
atc	aag	acc	tcg	acc	gca	tcg	gcc	gcc	tcg	ctg	caa	ccg	acc	atc	atc	3072
Ile	Lys	Thr	Ser	Thr	Ala	Ser	Ala	Ala	Ser	Leu	Gln	Pro	Thr	Ile	Ile	
	1010					1015					1020					
aat	ctg	gtg	gag	aag	att	gcg	att	gcg	ctc	ggg	tgc	gag	ttc	aaa	gtg	3120
Asn	Leu	Val	Glu	Lys	Ile	Ala	Ile	Ala	Leu	Gly	Cys	Glu	Phe	Lys	Val	
	1025				1030					1035					1040	
tat	cta	cct	cag	ctg	atg	ccg	caa	ata	ttg	cgc	gtg	ctg	ctg	cac	gac	3168
Tyr	Leu	Pro	Gln	Leu	Met	Pro	Gln	Ile	Leu	Arg	Val	Leu	Leu	His	Asp	
			1045					1050						1055		
acg	tct	aag	gac	cgg	gcg	gtg	acg	gtg	aag	cta	ctc	ggc	gcg	atg	cgc	3216
Thr	Ser	Lys	Asp	Arg	Ala	Val	Thr	Val	Lys	Leu	Leu	Gly	Ala	Met	Arg	
			1060				1065					1070				
aac	ttc	ggc	aac	aat	tta	gac	gac	tat	ctg	cac	ctg	att	ata	ccg	gcg	3264
Asn	Phe	Gly	Asn	Asn	Leu	Asp	Asp	Tyr	Leu	His	Leu	Ile	Ile	Pro	Ala	
		1075				1080						1085				
atc	gtg	aag	ctg	ttc	gag	ccg	ctc	gac	ata	cca	ctg	aac	ggt	tcc	att	3312
Ile	Val	Lys	Leu	Phe	Glu	Pro	Leu	Asp	Ile	Pro	Leu	Asn	Val	Ser	Ile	
	1090					1095					1100					
acc	gca	ctg	caa	acg	atc	aac	tat	ctc	gcc	gag	gtg	cta	gat	ttc	act	3360
Thr	Ala	Leu	Gln	Thr	Ile	Asn	Tyr	Leu	Ala	Glu	Val	Leu	Asp	Phe	Thr	
	1105				1110					1115					1120	
gat	ttt	tct	tcg	cgc	atc	gtg	cac	ccg	ctg	gtg	cgc	gtg	ctc	gat	ttc	3408
Asp	Phe	Ser	Ser	Arg	Ile	Val	His	Pro	Leu	Val	Arg	Val	Leu	Asp	Phe	
			1125					1130						1135		
tat	ccc	gag	ctg	cgt	ccc	gta	gca	ctc	acg	acg	ctc	tgc	tcg	atc	atg	3456
Tyr	Pro	Glu	Leu	Arg	Pro	Val	Ala	Leu	Thr	Thr	Leu	Cys	Ser	Ile	Met	
			1140				1145					1150				
atc	cag	ctc	ggg	cgg	aag	tac	ctc	gtg	ttt	gtg	ccg	ctt	gtg	aat	cgg	3504
Ile	Gln	Leu	Gly	Arg	Lys	Tyr	Leu	Val	Phe	Val	Pro	Leu	Val	Asn	Arg	
		1155				1160						1165				

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gtg atg atc aag cac aag atc ccg tcg gtg gag tac acg aag ctg ctg 3552  
 Val Met Ile Lys His Lys Ile Pro Ser Val Glu Tyr Thr Lys Leu Leu  
 1170 1175 1180  
 acg aag ctg cag aac aac agc aca ctg gcg atg gat gac gag ttc cgc 3600  
 Thr Lys Leu Gln Asn Asn Ser Thr Leu Ala Met Asp Asp Glu Phe Arg  
 1185 1190 1195 1200  
 ata cga cag gcc cgg aat cgg aat cgc gaa att tcc ctc ccg agc gac 3648  
 Ile Arg Gln Ala Arg Asn Arg Asn Arg Glu Ile Ser Leu Pro Ser Asp  
 1205 1210 1215  
 agc acg atc aag aag ttc ccc gtt tcg atg tcc gat ctg gag gca atg 3696  
 Ser Thr Ile Lys Lys Phe Pro Val Ser Met Ser Asp Leu Glu Ala Met  
 1220 1225 1230  
 ttt aag gcg aat cga cgc gtc tcc aag gac gat tgg ttg gag tgg ctg 3744  
 Phe Lys Ala Asn Arg Arg Val Ser Lys Asp Asp Trp Leu Glu Trp Leu  
 1235 1240 1245  
 cgc cgg ctg agc atc att ctg ctg aag gag tcc aaa aat ccg gcc ctt 3792  
 Arg Arg Leu Ser Ile Ile Leu Leu Lys Glu Ser Lys Asn Pro Ala Leu  
 1250 1255 1260  
 cga tcg tgc gcc aca ctg gcc caa aac tac cca cag cta ctg aaa gac 3840  
 Arg Ser Cys Ala Thr Leu Ala Gln Asn Tyr Pro Gln Leu Leu Lys Asp  
 1265 1270 1275 1280  
 ctg ttc aac gct gcg ttc gta tcg tgc tgg tcg gat ttg tcg gaa aag 3888  
 Leu Phe Asn Ala Ala Phe Val Ser Cys Trp Ser Asp Leu Ser Glu Lys  
 1285 1290 1295  
 ctg aag cag gat ctt gct cac agc ctc acg cag gcg ctg acg gtg cag 3936  
 Leu Lys Gln Asp Leu Ala His Ser Leu Thr Gln Ala Leu Thr Val Gln  
 1300 1305 1310  
 gat ctg ccc gaa att acc caa acg gtg ttg aat ttg gcg gaa ttt atg 3984  
 Asp Leu Pro Glu Ile Thr Gln Thr Val Leu Asn Leu Ala Glu Phe Met  
 1315 1320 1325  
 gag cac tgc gaa agc tac ccg ctg aag atc gac tcg aag ata ctg ggc 4032  
 Glu His Cys Glu Ser Tyr Pro Leu Lys Ile Asp Ser Lys Ile Leu Gly  
 1330 1335 1340  
 gaa cga gcc atg gag tgc cgt gct tac gcg aaa gcg ctg cac tac aaa 4080  
 Glu Arg Ala Met Glu Cys Arg Ala Tyr Ala Lys Ala Leu His Tyr Lys  
 1345 1350 1355 1360  
 gag gac gaa ttt cac cgg aca gac gat ccg ccc cag tcg ctg ttc gag 4128  
 Glu Asp Glu Phe His Arg Thr Asp Asp Pro Pro Gln Ser Leu Phe Glu  
 1365 1370 1375  
 tcg ctg atc ctg atc aac aac aag ctg cag cag aag gaa gcg gcg gaa 4176  
 Ser Leu Ile Leu Ile Asn Asn Lys Leu Gln Gln Lys Glu Ala Ala Glu  
 1380 1385 1390  
 ggg ctg ctg gag tat gcc ggc cgc cat cgg tcc agc gcc gag gag atg 4224  
 Gly Leu Leu Glu Tyr Ala Gly Arg His Arg Ser Ser Ala Glu Glu Met  
 1395 1400 1405  
 aag gtg caa gtg cgc tgg tac gaa aag ctg cac agc tgg gaa cag gcg 4272  
 Lys Val Gln Val Arg Trp Tyr Glu Lys Leu His Ser Trp Glu Gln Ala  
 1410 1415 1420  
 cgg tca ctg tac tcg gaa aag ctg aag agc aat ccg aac gat ttg gag 4320  
 Arg Ser Leu Tyr Ser Glu Lys Leu Lys Ser Asn Pro Asn Asp Leu Glu  
 1425 1430 1435 1440  
 tcc cgg ctc ggt gag atg cgc tgc ctg gaa gcg ttg ggc gag tgg tcg 4368  
 Ser Arg Leu Gly Glu Met Arg Cys Leu Glu Ala Leu Gly Glu Trp Ser  
 1445 1450 1455  
 gca ttg aat gct gtc acc acg cag aac tgg gat gct ctc gcc tcg gag 4416  
 Ala Leu Asn Ala Val Thr Thr Gln Asn Trp Asp Ala Leu Gly Ser Glu  
 1460 1465 1470  
 gga cag agc aag gct ggt cgg ctg gca gca gcc gcc gcc tgg ggt ctg 4464  
 Gly Gln Ser Lys Ala Gly Arg Leu Ala Ala Ala Ala Ala Trp Gly Leu  
 1475 1480 1485  
 cag gac tgg gat ggg atg cat cgg ttc gtg cgc tgc att ccg gag gac 4512  
 Gln Asp Trp Asp Gly Met His Arg Phe Val Arg Cys Ile Pro Glu Asp  
 1490 1495 1500  
 acg cag gac gga gca ttc tat cgc gcc gtg ctg gcc gta cat aat gag 4560  
 Thr Gln Asp Gly Ala Phe Tyr Arg Ala Val Leu Ala Val His Asn Glu  
 1505 1510 1515 1520  
 caa tac gcg ttg gcg caa agt ttg atc gat tcg acg cgt gat ctg ctg 4608  
 Gln Tyr Ala Leu Ala Gln Ser Leu Ile Asp Ser Thr Arg Asp Leu Leu  
 1525 1530 1535

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gac acg gag ctg aca gcg atg gcg ggc gag tcg tac gag cgt gcg tac 4656  
 Asp Thr Glu Leu Thr Ala Met Ala Gly Glu Ser Tyr Glu Arg Ala Tyr  
 1540 1545 1550  
 ggt gcg atg gta tgc gtg cag atg ctt gcc gag ctg gag gaa gtg atc 4704  
 Gly Ala Met Val Cys Val Gln Met Leu Ala Glu Leu Glu Glu Val Ile  
 1555 1560 1565  
 cag tac aag ctg atc ccg gaa cgg cgc gag acg atc aaa tcg atg tgg 4752  
 Gln Tyr Lys Leu Ile Pro Glu Arg Arg Glu Thr Ile Lys Ser Met Trp  
 1570 1575 1580  
 tgg gac cgc ctg ctc ggt ggc cag cgg ctg gtc gag gac tgg cag cgc 4800  
 Trp Asp Arg Leu Leu Gly Gly Gln Arg Leu Val Glu Asp Trp Gln Arg  
 1585 1590 1595 1600  
 gtc ata cag gtg cac tcg ctg gtg ctg tcg ccc aag gag gac att cgt 4848  
 Val Ile Gln Val His Ser Leu Val Leu Ser Pro Lys Glu Asp Ile Arg  
 1605 1610 1615  
 acg tgg ctg aag ttt gcg tcg ctc tgt cgc aag aat gga tcc ttg aag 4896  
 Thr Trp Leu Lys Phe Ala Ser Leu Cys Arg Lys Asn Gly Ser Leu Lys  
 1620 1625 1630  
 ttg tcc gag aag aca ctc acc atg ctg ctc gag tac gat ccg atg gag 4944  
 Leu Ser Glu Lys Thr Leu Thr Met Leu Leu Glu Tyr Asp Pro Met Glu  
 1635 1640 1645  
 aat ctg agc gaa ccg ctt cca att gac aaa ccg cac gtc acc ttc gcc 4992  
 Asn Leu Ser Glu Pro Leu Pro Ile Asp Lys Pro His Val Thr Phe Ala  
 1650 1655 1660  
 tac aca aag cac ctg cat atg gcg ggg tac acg aaa gag gct tac gac 5040  
 Tyr Thr Lys His Leu His Met Ala Gly Tyr Thr Lys Glu Ala Tyr Asp  
 1665 1670 1675 1680  
 cac ctg aac cgg ttt gtc gcg tcc agt ggt gcg ggc ggg cag gat gac 5088  
 His Leu Asn Arg Phe Val Ala Ser Ser Gly Ala Gly Gly Gln Asp Asp  
 1685 1690 1695  
 ttg aag gat gaa aat aga cgc ctg ttg gcg cga tgc ttc ctg aag ctg 5136  
 Leu Lys Asp Glu Asn Arg Arg Leu Leu Ala Arg Cys Phe Leu Lys Leu  
 1700 1705 1710  
 ggc atg tgg cag agt agt tcc acc ggc gga aac ctg gta aag gac cac 5184  
 Gly Met Trp Gln Ser Ser Ser Thr Gly Gly Asn Leu Val Lys Asp His  
 1715 1720 1725  
 ctc atc aat ggc atc ctg gtg tgc tac agc cgg gca acg aag cac gat 5232  
 Leu Ile Asn Gly Ile Leu Val Cys Tyr Ser Arg Ala Thr Lys His Asp  
 1730 1735 1740  
 ccg aac tgg tac aaa gcg tgg cac aac tgg gcg tac atg aac ttt gaa 5280  
 Pro Asn Trp Tyr Lys Ala Trp His Asn Trp Ala Tyr Met Asn Phe Glu  
 1745 1750 1755 1760  
 gtg gtg cag gcg aag aag cag cag gaa gaa tac acc aaa aat ccg gga 5328  
 Val Val Gln Ala Lys Lys Gln Gln Glu Glu Tyr Thr Lys Asn Pro Gly  
 1765 1770 1775  
 agc gcg gcg gag cga aac ttg ata aag cat tac gcc gtg ccg gcc gtc 5376  
 Ser Ala Ala Glu Arg Asn Leu Ile Lys His Tyr Ala Val Pro Ala Val  
 1780 1785 1790  
 cgg ggc ttc ttc cag tcg atc aac ctc tcg cag ggc aat tcg ctg cag 5424  
 Arg Gly Phe Phe Gln Ser Ile Asn Leu Ser Gln Gly Asn Ser Leu Gln  
 1795 1800 1805  
 gac aca ctg cgc ctg cta acg ctc tgg ttc gat cat gcc cag tac gag 5472  
 Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe Asp His Ala Gln Tyr Glu  
 1810 1815 1820  
 gag gtg tac gaa gcg ctc gtc gaa gga atg cgt gtg atc gac aaa aac 5520  
 Glu Val Tyr Glu Ala Leu Val Glu Gly Met Arg Val Ile Asp Lys Asn  
 1825 1830 1835 1840  
 acg tgg ctg cag gtg atc ccg cag ctg atc gca cgc atc gat acg ccg 5568  
 Thr Trp Leu Gln Val Ile Pro Gln Leu Ile Ala Arg Ile Asp Thr Pro  
 1845 1850 1855  
 cgc aat ctt gtc ggc cag ctg atc aac tat ctg ctg acg gag atc ggt 5616  
 Arg Asn Leu Val Gly Gln Leu Ile Asn Tyr Leu Leu Thr Glu Ile Gly  
 1860 1865 1870  
 aaa act cac ccg caa gcg ctc gtg tat ccg ctt acg gtg gcc tcg aag 5664  
 Lys Thr His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ser Lys  
 1875 1880 1885  
 tcg gcg ccg ggc acg cgt aag cag gcg gcg cac aaa atc ctc aac aac 5712  
 Ser Ala Pro Gly Thr Arg Lys Gln Ala Ala His Lys Ile Leu Asn Asn  
 1890 1895 1900

## PhoenixTemp32470.tmp.txt

atg tgc gaa cat tcg aac acg ctg gtc aat cag gta ctg ctg atc agt	5760
Met Cys Glu His Ser Asn Thr Leu Val Asn Gln Val Leu Leu Ile Ser	
1905 1910 1915 1920	
gag gag ctg att cgg gtg gcc atc ctt tgg cac gag cag tgg cac gag	5808
Glu Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu Gln Trp His Glu	
1925 1930 1935	
ggt ttg gag gaa gcg tcc cgg ctg tac ttt ggc gag cag aat gtg gaa	5856
Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Gln Asn Val Glu	
1940 1945 1950	
ggc atg ttc gcg acg ctg gaa ccg ttg cac gcc atg ctg cag cgg gga	5904
Gly Met Phe Ala Thr Leu Glu Pro Leu His Ala Met Leu Gln Arg Gly	
1955 1960 1965	
ccg caa acg tta aag gaa tca ttc aac cag gcg tac gga cgt gac	5952
Pro Gln Thr Leu Lys Glu Ser Phe Asn Gln Ala Tyr Gly Arg Asp	
1970 1975 1980	
ttg acc gag gca cag gaa tgg tgc aaa cat tat aag aac tct aaa aat	6000
Leu Thr Glu Ala Gln Glu Trp Cys Lys His Tyr Lys Asn Ser Lys Asn	
1985 1990 1995 2000	
acg cga gat ttg aat caa gca tgg gac cta tac cac gtg ttc cgg	6048
Thr Arg Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg	
2005 2010 2015	
cgc att tcg cgc cag ctc gta cag ctc acc tcc ctg gag ctg cag tat	6096
Arg Ile Ser Arg Gln Leu Val Gln Leu Thr Ser Leu Glu Leu Gln Tyr	
2020 2025 2030	
gtc agt ccg aag ctg ctg gca tgt cgc aac ctt gag ctg gca gtc cca	6144
Val Ser Pro Lys Leu Leu Ala Cys Arg Asn Leu Glu Leu Ala Val Pro	
2035 2040 2045	
ggc agc tac acg ccc ggt caa cag ctg atc tgc atc gcc agc atc gag	6192
Gly Ser Tyr Thr Pro Gly Gln Gln Leu Ile Cys Ile Ala Ser Ile Glu	
2050 2055 2060	
acg aac ctg acg atc atc agc tcg aag caa cgg cct agg aag ctg tgc	6240
Thr Asn Leu Thr Ile Ile Ser Ser Lys Gln Arg Pro Arg Lys Leu Cys	
2065 2070 2075 2080	
atc cgc ggg tcg aat ggt aaa aac tac atg ttc ctg ctg aaa ggc cac	6288
Ile Arg Gly Ser Asn Gly Lys Asn Tyr Met Phe Leu Leu Lys Gly His	
2085 2090 2095	
gaa gat ttg cgc caa gat gag cga gtg atg cag ctg ttc ggg ctg gtc	6336
Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu Val	
2100 2105 2110	
aac aca ctg ctg ctg aat gat cgt gac acg ttc cgg cgc aat cta acc	6384
Asn Thr Leu Leu Asn Asp Arg Asp Thr Phe Arg Arg Asn Leu Thr	
2115 2120 2125	
att caa cgg tat gcg gtg atc ccg ctg agc acc aac tcg ggt ctg atc	6432
Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Thr Asn Ser Gly Leu Ile	
2130 2135 2140	
ggt tgg gtg ccc cac tgt gac acg ctg cac aag ctg atc cgg gac tat	6480
Gly Trp Val Pro His Cys Asp Thr Leu His Lys Leu Ile Arg Asp Tyr	
2145 2150 2155 2160	
cgc gat tcg aag aaa acg atg cta aac atc gag cat agg atc atg ctg	6528
Arg Asp Ser Lys Lys Thr Met Leu Asn Ile Glu His Arg Ile Met Leu	
2165 2170 2175	
cga atg gca ccg gac tac gac cat ctc acg gtg atg cag aag gtg gag	6576
Arg Met Ala Pro Asp Tyr Asp His Leu Thr Val Met Gln Lys Val Glu	
2180 2185 2190	
gtg ttt gag cat gcg ctt gat caa acg aaa gga gac gat ctg gcg aag	6624
Val Phe Glu His Ala Leu Asp Gln Thr Lys Gly Asp Asp Leu Ala Lys	
2195 2200 2205	
ctg ctc tgg ctg aaa agc cct tcg tcg gag cag tgg ttt gat cgg cgc	6672
Leu Leu Trp Leu Lys Ser Pro Ser Ser Glu Gln Trp Phe Asp Arg Arg	
2210 2215 2220	
acg aac tac atc cgc tcc ctt gcg gtc atg tcg atg gtg ggc tac atc	6720
Thr Asn Tyr Ile Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile	
2225 2230 2235 2240	
ttg ggt ctc ggc gat gcg cat cct tcc aat ctg atg ctg gat agg ttg	6768
Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Leu	
2245 2250 2255	
agt gga aaa att ctt cac atc gat ttc ggc gat tgc ttc gag gtt gca	6816
Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala	
2260 2265 2270	

## PhoenixTemp32470.tmp.txt

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atg acg cga gaa aag ttc ccg gag aaa ata ccc ttc cgc ttg acg cgc      6864
Met Thr Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe Arg Leu Thr Arg
2275 2280 2285
atg ctg atc aac gcg atg gag gtg acc ggc atc gaa gga acg tat cgg      6912
Met Leu Ile Asn Ala Met Glu Val Thr Gly Ile Glu Gly Thr Tyr Arg
2290 2295 2300
cgc acg tgc gag agc gta atg aac gtg ctg cgc cgt aac aag gac agt      6960
Arg Thr Cys Glu Ser Val Met Asn Val Leu Arg Arg Asn Lys Asp Ser
2305 2310 2315 2320
ctt atg gcg gta ctg gaa gcg ttc gtg tac gat ccg ctg ctc aac tgg      7008
Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Leu Asn Trp
2325 2330 2335
cgc ctg cta gat tcg gac cga ttg cgt cgt tca aag aac gcc ggt gac      7056
Arg Leu Leu Asp Ser Asp Arg Leu Arg Arg Ser Lys Asn Ala Gly Asp
2340 2345 2350
atg gac agc gtg tcg ggc agc atg cac gaa gac tct ctg ctg agc tac      7104
Met Asp Ser Val Ser Gly Ser Met His Glu Asp Ser Leu Leu Ser Tyr
2355 2360 2365
aat gcc aga cgc gat gct cgg ttg aat gag ctg aat gca acg acg gga      7152
Asn Ala Arg Arg Asp Ala Arg Leu Asn Glu Leu Asn Ala Thr Thr Gly
2370 2375 2380
ccg gcc gcc gga ggt caa ccg tcg gct acc aat ccc gtc gac gta acc      7200
Pro Ala Ala Gly Gly Gln Pro Ser Ala Thr Asn Pro Val Asp Val Thr
2385 2390 2395 2400
aat aag aag gca cgt gca att gtc gat cga gtg aag gac aag ctg acc      7248
Asn Lys Lys Ala Arg Ala Ile Val Asp Arg Val Lys Asp Lys Leu Thr
2405 2410 2415
ggc aaa gat ttc ggc aaa gca gaa cca gtg gcc gtc aat aga cag atc      7296
Gly Lys Asp Phe Gly Lys Ala Glu Val Ala Val Asn Arg Gln Ile
2420 2425 2430
gac ctg ctg atc cag cag gca acc agc aac gaa aat ctg tgc cag tgc      7344
Asp Leu Leu Ile Gln Gln Ala Thr Ser Asn Glu Asn Leu Cys Gln Cys
2435 2440 2445
tat atc ggc tgg tgt ccg ttt tgg taa      7371
Tyr Ile Gly Trp Cys Pro Phe Trp
2450 2455

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&lt;210&gt; 2523

&lt;211&gt; 2456

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 2523

```

Met Ser Met Val Lys Val Leu Gln Phe Val Asn Gly Leu Lys Ser Arg
1 5 10 15
Asn Lys Asp Val Gln Asn Lys Ala Ile Lys Asp Leu Ser Leu Tyr Val
20 25 30
Lys Thr Glu Leu Arg Glu Thr Pro Asp Asp Met Phe Phe Glu Asp Phe
35 40 45
Asn His His Ile Phe Glu Met Leu Thr Ser Thr Asp Asn Asn Glu Lys
50 55 60
Lys Gly Gly Ile Leu Ala Ile Asp Cys Leu Ile Asn Gly Asp Val Val
65 70 75 80
Asn Thr Thr Asn Lys Ile Ser Arg Tyr Ser Asn Asn Leu Arg Asn Leu
85 90 95
Leu Pro Met Ser Asp Val Cys Val Met Gln Leu Ala Ala Asn Val Leu
100 105 110
Val Lys Leu Ala Leu Leu Pro Gly Ser Asn Gly Ala Ser Phe Glu
115 120 125
Phe Asp Ile Lys Arg Ala Phe Glu Trp Leu Ser Glu Asp Arg Val Glu
130 135 140
Asn Lys Arg His Ala Ala Val Leu Val Leu Arg Glu Leu Ala Val Ala
145 150 155 160
Met Pro Thr Phe Phe Tyr Gln Gln Val Gly Ser Phe Phe Asp His Ile
165 170 175
Phe Val Ala Ile Lys Asp Pro Lys Ala Ala Ile Arg Glu Gly Ala Gly
180 185 190
Gln Ala Leu Arg Ala Val Leu Ile Val Thr Ser Gln Arg Glu Gly Thr
195 200 205

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## PhoenixTemp32470.tmp.txt

Lys	Gln	Asn	Asn	Asn	Thr	Gln	Trp	His	Met	Asn	Cys	Tyr	Asp	Gln	Ala
210						215					220				
Phe	Glu	Cys	Leu	Arg	Asp	Thr	Val	Gly	Arg	Glu	Lys	Asn	Leu	Asn	Arg
225					230					235					240
Asp	Asp	Arg	Val	His	Gly	Ala	Leu	Ile	Val	Phe	Asn	Glu	Ile	Leu	Arg
				245					250					255	
Cys	Ser	His	Ala	Ala	Trp	Glu	Lys	Lys	Tyr	Met	Gln	Leu	Asp	Ser	Leu
			260					265					270		
Pro	Val	Asp	Gln	Lys	Arg	Ser	Leu	Arg	Ser	Gln	Arg	Glu	Glu	Glu	Gly
		275					280					285			
Arg	Gly	Phe	Phe	Pro	Arg	Ile	Arg	Val	Pro	Phe	Met	Glu	Lys	Phe	Gly
	290					295				300					
Asn	His	Ser	Gly	Gln	Ser	Val	Ser	Tyr	Ser	Ser	Arg	Tyr	Tyr	Asp	
305					310				315					320	
Val	Val	Thr	Asp	Met	Lys	Phe	Phe	Arg	Gln	Asn	Ser	Ser	Val	Gln	Glu
				325					330					335	
Ser	Ala	Leu	Tyr	Arg	Ala	Leu	Val	Lys	Glu	Lys	Tyr	Asp	Thr	Ile	Cys
			340					345					350		
Gln	Ala	Val	Leu	Asp	Gln	Arg	Ser	Lys	Ser	Pro	Tyr	Val	Ile	Gln	
		355					360				365				
Thr	Leu	Leu	Ala	Ile	Phe	Pro	Arg	Leu	Ala	Ala	Phe	Asn	Arg	Glu	Glu
	370					375					380				
Phe	Val	Arg	Leu	His	Leu	Arg	Thr	Val	Ala	Asn	Tyr	Leu	Leu	Thr	Leu
385					390					395					400
Leu	Arg	Ser	Lys	Glu	Lys	Glu	Arg	Asn	Ala	Ala	Phe	Val	Ser	Leu	Gly
				405					410					415	
Tyr	Ile	Ala	Val	Ala	Val	Glu	Lys	Glu	Ile	Glu	Pro	Tyr	Thr	Lys	Arg
			420					425					430		
Ile	Met	Glu	Leu	Ile	Gly	Ser	Ala	Leu	Pro	Leu	Lys	Asp	Thr	Pro	Ser
		435					440					445			
Lys	Arg	Lys	Ala	Pro	Val	Asp	Pro	Ser	Val	Phe	Met	Cys	Val	Met	Leu
	450					455					460				
Leu	Gly	His	Ala	Leu	Lys	Gly	Gly	Ile	Thr	His	Glu	Ile	Lys	Glu	Ile
465					470					475					480
Ile	Ala	Pro	Met	Leu	Ser	Thr	Gly	Leu	Ser	Pro	Ala	Leu	Ile	Val	Cys
				485					490					495	
Leu	Arg	Glu	Leu	Cys	Glu	Thr	Val	Pro	Gln	Ala	Gln	Gln	Glu	Ile	Thr
			500					505					510		
Ala	Gly	Leu	Leu	Lys	Ile	Leu	Ser	Tyr	Val	Leu	Met	Asn	Arg	Pro	Leu
		515					520					525			
Pro	Gln	Phe	Ile	Val	Pro	Lys	Ser	His	Ser	Gln	Pro	Gln	Ser	Gln	Pro
	530					535					540				
Pro	Gln	Gln	Gln	Val	His	Asp	Thr	Ala	Thr	Ile	Val	Leu	Ala	Leu	Gln
545					550					555					560
Thr	Leu	Gly	Lys	Phe	Ser	Phe	Glu	Gly	Cys	Ser	Leu	Leu	Gln	Phe	Val
				565					570					575	
Gln	Arg	Cys	Ala	Asp	His	Phe	Leu	Asn	Ser	Glu	Gln	Gln	Glu	Ile	Arg
			580					585					590		
Ile	Glu	Ala	Val	His	Thr	Cys	Thr	Phe	Leu	Leu	Lys	Leu	Ala	Leu	Gln
		595					600					605			
Ala	Ala	Glu	Ser	Asn	Gly	Asn	Asp	Val	Ser	Glu	Thr	Leu	Thr	Gln	Thr
	610					615					620				
Leu	Ser	Ser	Val	Leu	Glu	Lys	Ile	Leu	Val	Val	Gly	Ile	Thr	Asp	Val
625					630					635					640
Asp	Pro	Ala	Val	Arg	Leu	Arg	Val	Leu	Lys	Ser	Leu	Asp	Glu	Ser	Phe
				645					650					655	
Asp	Thr	Gln	Leu	Ala	Gln	Pro	Trp	Phe	Leu	Ser	Ser	Leu	Leu	Val	Thr
			660					665					670		
Ile	His	Asp	Glu	Val	Phe	Glu	Ile	Arg	Glu	Leu	Ala	Ile	Ile	Ile	Ile
		675					680					685			
Gly	Arg	Leu	Ser	Thr	Ile	Asn	Pro	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg
	690					695					700				
Lys	Thr	Met	Val	Gln	Leu	Leu	Thr	Glu	Leu	Glu	His	Ser	Gly	Val	Ser
705					710					715					720
Arg	Asn	Lys	Glu	Gln	Ser	Ala	Arg	Met	Leu	Asp	His	Leu	Ile	Val	Ser
				725					730					735	
Thr	Pro	Arg	Leu	Val	Ala	Ser	Tyr	Met	Arg	Pro	Ile	Leu	Thr	Ile	Leu
			740					745					750		
Val	Pro	Lys	Leu	Lys	Glu	Pro	Asp	Gln	Asn	Pro	Ser	Val	Val	Leu	Asn

## PhoenixTemp32470.tmp.txt

Val Leu 755 Arg Ala Ile Gly Asp 760 Leu Ala Glu Val Ile 765 Gly Gly His His  
 770 775 780  
 Val Leu Gln Lys Trp Ser Asp Glu Leu Leu Gln Leu Leu Leu Asp Met  
 785 790 795 800  
 Leu Ser Asp Ala Gly Ser Thr Glu Lys Arg Ala Val Ala Leu Trp Thr  
 805 810 815  
 Phe Gly Gln Leu Val Ser Ala Thr Gly Gln Val Val Val Pro Tyr Asn  
 820 825 830  
 Lys Tyr Pro Asn Leu Ile Asp Ile Leu Ile Asn Phe Leu Lys Thr Glu  
 835 840 845  
 Gln Gln Leu Tyr Val Arg Arg Glu Thr Ile Arg Val Leu Gly Leu Leu  
 850 855 860  
 Gly Ala Leu Asp Pro Tyr Lys His Lys Met Asn Arg Gly Leu Ile Asp  
 865 870 875 880  
 Ser Gln Thr Ser Ala Asn Ile Leu Ile Ser Val Asp Thr Lys Thr Asp  
 885 890 895  
 Glu His Thr Asp Leu Ser Thr Ser Glu Met Leu Ile Asn Met Ser Thr  
 900 905 910  
 Gln Leu Asp Glu Tyr Tyr Pro Ala Val Val Ile Ser Thr Leu Met Lys  
 915 920 925  
 Ile Leu Arg Asp Pro Thr Leu Ser Asn His His Leu Ser Val Val Gln  
 930 935 940  
 Ala Ile Thr Phe Thr Phe Thr Ser Leu Gly Ile Lys Gly Val Pro Tyr  
 945 950 955 960  
 Leu Ser Gln Val Leu Pro Cys Leu Leu Arg Asn Ile Val Thr Ala Glu  
 965 970 975  
 Met Ser Leu Lys Glu Tyr Leu Phe Gln Gln Leu Ser Thr Leu Ile Ser  
 980 985 990  
 Ile Val Lys Gln His Ile Ile Gly Phe Met Asp Asp Ile Phe Glu Leu  
 995 1000 1005  
 Ile Lys Thr Ser Thr Ala Ser Ala Ala Ser Leu Gln Pro Thr Ile Ile  
 1010 1015 1020  
 Asn Leu Val Glu Lys Ile Ala Ile Ala Leu Gly Cys Glu Phe Lys Val  
 1025 1030 1035 1040  
 Tyr Leu Pro Gln Leu Met Pro Gln Ile Leu Arg Val Leu Leu His Asp  
 1045 1050 1055  
 Thr Ser Lys Asp Arg Ala Val Thr Val Lys Leu Leu Gly Ala Met Arg  
 1060 1065 1070  
 Asn Phe Gly Asn Asn Leu Asp Asp Tyr Leu His Leu Ile Ile Pro Ala  
 1075 1080 1085  
 Ile Val Lys Leu Phe Glu Pro Leu Asp Ile Pro Leu Asn Val Ser Ile  
 1090 1095 1100  
 Thr Ala Leu Gln Thr Ile Asn Tyr Leu Ala Glu Val Leu Asp Phe Thr  
 1105 1110 1115 1120  
 Asp Phe Ser Ser Arg Ile Val His Pro Leu Val Arg Val Leu Asp Phe  
 1125 1130 1135  
 Tyr Pro Glu Leu Arg Pro Val Ala Leu Thr Thr Leu Cys Ser Ile Met  
 1140 1145 1150  
 Ile Gln Leu Gly Arg Lys Tyr Leu Val Phe Val Pro Leu Val Asn Arg  
 1155 1160 1165  
 Val Met Ile Lys His Lys Ile Pro Ser Val Glu Tyr Thr Lys Leu Leu  
 1170 1175 1180  
 Thr Lys Leu Gln Asn Asn Ser Thr Leu Ala Met Asp Asp Glu Phe Arg  
 1185 1190 1195 1200  
 Ile Arg Gln Ala Arg Asn Arg Asn Arg Glu Ile Ser Leu Pro Ser Asp  
 1205 1210 1215  
 Ser Thr Ile Lys Lys Phe Pro Val Ser Met Ser Asp Leu Glu Ala Met  
 1220 1225 1230  
 Phe Lys Ala Asn Arg Arg Val Ser Lys Asp Asp Trp Leu Glu Trp Leu  
 1235 1240 1245  
 Arg Arg Leu Ser Ile Ile Leu Lys Glu Ser Lys Asn Pro Ala Leu  
 1250 1255 1260  
 Arg Ser Cys Ala Thr Leu Ala Gln Asn Tyr Pro Gln Leu Leu Lys Asp  
 1265 1270 1275 1280  
 Leu Phe Asn Ala Ala Phe Val Ser Cys Trp Ser Asp Leu Ser Glu Lys  
 1285 1290 1295  
 Leu Lys Gln Asp Leu Ala His Ser Leu Thr Gln Ala Leu Thr Val Gln  
 1300 1305 1310

## PhoenixTemp32470.tmp.txt

Asp Leu Pro Glu Ile Thr Gln Thr Val Leu Asn Leu Ala Glu Phe Met  
 1315 1320 1325  
 Glu His Cys Glu Ser Tyr Pro Leu Lys Ile Asp Ser Lys Ile Leu Gly  
 1330 1335 1340  
 Glu Arg Ala Met Glu Cys Arg Ala Tyr Ala Lys Ala Leu His Tyr Lys  
 1345 1350 1355 1360  
 Glu Asp Glu Phe His Arg Thr Asp Asp Pro Gln Ser Leu Phe Glu  
 1365 1370 1375  
 Ser Leu Ile Leu Ile Asn Asn Lys Leu Gln Gln Lys Glu Ala Ala Glu  
 1380 1385 1390  
 Gly Leu Leu Glu Tyr Ala Gly Arg His Arg Ser Ser Ala Glu Glu Met  
 1395 1400 1405  
 Lys Val Gln Val Arg Trp Tyr Glu Lys Leu His Ser Trp Glu Gln Ala  
 1410 1415 1420  
 Arg Ser Leu Tyr Ser Glu Lys Leu Lys Ser Asn Pro Asn Asp Leu Glu  
 1425 1430 1435 1440  
 Ser Arg Leu Gly Glu Met Arg Cys Leu Glu Ala Leu Gly Glu Trp Ser  
 1445 1450 1455  
 Ala Leu Asn Ala Val Thr Thr Gln Asn Trp Asp Ala Leu Gly Ser Glu  
 1460 1465 1470  
 Gly Gln Ser Lys Ala Gly Arg Leu Ala Ala Ala Ala Trp Gly Leu  
 1475 1480 1485  
 Gln Asp Trp Asp Gly Met His Arg Phe Val Arg Cys Ile Pro Glu Asp  
 1490 1495 1500  
 Thr Gln Asp Gly Ala Phe Tyr Arg Ala Val Leu Ala Val His Asn Glu  
 1505 1510 1515 1520  
 Gln Tyr Ala Leu Ala Gln Ser Leu Ile Asp Ser Thr Arg Asp Leu Leu  
 1525 1530 1535  
 Asp Thr Glu Leu Thr Ala Met Ala Gly Glu Ser Tyr Glu Arg Ala Tyr  
 1540 1545 1550  
 Gly Ala Met Val Cys Val Gln Met Leu Ala Glu Leu Glu Glu Val Ile  
 1555 1560 1565  
 Gln Tyr Lys Leu Ile Pro Glu Arg Arg Glu Thr Ile Lys Ser Met Trp  
 1570 1575 1580  
 Trp Asp Arg Leu Leu Gly Gln Arg Leu Val Glu Asp Trp Gln Arg  
 1585 1590 1595 1600  
 Val Ile Gln Val His Ser Leu Val Leu Ser Pro Lys Glu Asp Ile Arg  
 1605 1610 1615  
 Thr Trp Leu Lys Phe Ala Ser Leu Cys Arg Lys Asn Gly Ser Leu Lys  
 1620 1625 1630  
 Leu Ser Glu Lys Thr Leu Thr Met Leu Leu Glu Tyr Asp Pro Met Glu  
 1635 1640 1645  
 Asn Leu Ser Glu Pro Leu Pro Ile Asp Lys Pro His Val Thr Phe Ala  
 1650 1655 1660  
 Tyr Thr Lys His Leu His Met Ala Gly Tyr Thr Lys Glu Ala Tyr Asp  
 1665 1670 1675 1680  
 His Leu Asn Arg Phe Val Ala Ser Ser Gly Ala Gly Gly Gln Asp Asp  
 1685 1690 1695  
 Leu Lys Asp Glu Asn Arg Arg Leu Leu Ala Arg Cys Phe Leu Lys Leu  
 1700 1705 1710  
 Gly Met Trp Gln Ser Ser Ser Thr Gly Gly Asn Leu Val Lys Asp His  
 1715 1720 1725  
 Leu Ile Asn Gly Ile Leu Val Cys Tyr Ser Arg Ala Thr Lys His Asp  
 1730 1735 1740  
 Pro Asn Trp Tyr Lys Ala Trp His Asn Trp Ala Tyr Met Asn Phe Glu  
 1745 1750 1755 1760  
 Val Val Gln Ala Lys Lys Gln Gln Glu Glu Tyr Thr Lys Asn Pro Gly  
 1765 1770 1775  
 Ser Ala Ala Glu Arg Asn Leu Ile Lys His Tyr Ala Val Pro Ala Val  
 1780 1785 1790  
 Arg Gly Phe Phe Gln Ser Ile Asn Leu Ser Gln Gly Asn Ser Leu Gln  
 1795 1800 1805  
 Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe Asp His Ala Gln Tyr Glu  
 1810 1815 1820  
 Glu Val Tyr Glu Ala Leu Val Glu Gly Met Arg Val Ile Asp Lys Asn  
 1825 1830 1835 1840  
 Thr Trp Leu Gln Val Ile Pro Gln Leu Ile Ala Arg Ile Asp Thr Pro  
 1845 1850 1855  
 Arg Asn Leu Val Gly Gln Leu Ile Asn Tyr Leu Leu Thr Glu Ile Gly



## PhoenixTemp32470.tmp.txt

1860 1865 1870  
 Lys Thr His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ser Lys  
 1875 1880 1885  
 Ser Ala Pro Gly Thr Arg Lys Gln Ala Ala His Lys Ile Leu Asn Asn  
 1890 1895 1900  
 Met Cys Glu His Ser Asn Thr Leu Val Asn Gln Val Leu Leu Ile Ser  
 1905 1910 1915 1920  
 Glu Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu Gln Trp His Glu  
 1925 1930 1935  
 Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Gln Asn Val Glu  
 1940 1945 1950  
 Gly Met Phe Ala Thr Leu Glu Pro Leu His Ala Met Leu Gln Arg Gly  
 1955 1960 1965  
 Pro Gln Thr Leu Lys Glu Ser Phe Asn Gln Ala Tyr Gly Arg Asp  
 1970 1975 1980  
 Leu Thr Glu Ala Gln Glu Trp Cys Lys His Tyr Lys Asn Ser Lys Asn  
 1985 1990 1995 2000  
 Thr Arg Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg  
 2005 2010 2015  
 Arg Ile Ser Arg Gln Leu Val Gln Leu Thr Ser Leu Glu Leu Gln Tyr  
 2020 2025 2030  
 Val Ser Pro Lys Leu Leu Ala Cys Arg Asn Leu Glu Leu Ala Val Pro  
 2035 2040 2045  
 Gly Ser Tyr Thr Pro Gly Gln Leu Ile Cys Ile Ala Ser Ile Glu  
 2050 2055 2060  
 Thr Asn Leu Thr Ile Ile Ser Ser Lys Gln Arg Pro Arg Lys Leu Cys  
 2065 2070 2075 2080  
 Ile Arg Gly Ser Asn Gly Lys Asn Tyr Met Phe Leu Leu Lys Gly His  
 2085 2090 2095  
 Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu Val  
 2100 2105 2110  
 Asn Thr Leu Leu Leu Asn Asp Arg Asp Thr Phe Arg Arg Asn Leu Thr  
 2115 2120 2125  
 Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Thr Asn Ser Gly Leu Ile  
 2130 2135 2140  
 Gly Trp Val Pro His Cys Asp Thr Leu His Lys Leu Ile Arg Asp Tyr  
 2145 2150 2155 2160  
 Arg Asp Ser Lys Lys Thr Met Leu Asn Ile Glu His Arg Ile Met Leu  
 2165 2170 2175  
 Arg Met Ala Pro Asp Tyr Asp His Leu Thr Val Met Gln Lys Val Glu  
 2180 2185 2190  
 Val Phe Glu His Ala Leu Asp Gln Thr Lys Gly Asp Asp Leu Ala Lys  
 2195 2200 2205  
 Leu Leu Trp Leu Lys Ser Pro Ser Ser Glu Gln Trp Phe Asp Arg Arg  
 2210 2215 2220  
 Thr Asn Tyr Ile Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile  
 2225 2230 2235 2240  
 Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Leu  
 2245 2250 2255  
 Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala  
 2260 2265 2270  
 Met Thr Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe Arg Leu Thr Arg  
 2275 2280 2285  
 Met Leu Ile Asn Ala Met Glu Val Thr Gly Ile Glu Gly Thr Tyr Arg  
 2290 2295 2300  
 Arg Thr Cys Glu Ser Val Met Asn Val Leu Arg Arg Asn Lys Asp Ser  
 2305 2310 2315 2320  
 Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Leu Asn Trp  
 2325 2330 2335  
 Arg Leu Leu Asp Ser Asp Arg Leu Arg Arg Ser Lys Asn Ala Gly Asp  
 2340 2345 2350  
 Met Asp Ser Val Ser Gly Ser Met His Glu Asp Ser Leu Leu Ser Tyr  
 2355 2360 2365  
 Asn Ala Arg Arg Asp Ala Arg Leu Asn Glu Leu Asn Ala Thr Thr Gly  
 2370 2375 2380  
 Pro Ala Ala Gly Gly Gln Pro Ser Ala Thr Asn Pro Val Asp Val Thr  
 2385 2390 2395 2400  
 Asn Lys Lys Ala Arg Ala Ile Val Asp Arg Val Lys Asp Lys Leu Thr  
 2405 2410 2415

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Gly Lys Asp Phe Gly Lys Ala Glu Pro Val Ala Val Asn Arg Gln Ile  
 2420 2425 2430  
 Asp Leu Leu Ile Gln Gln Ala Thr Ser Asn Glu Asn Leu Cys Gln Cys  
 2435 2440 2445  
 Tyr Ile Gly Trp Cys Pro Phe Trp  
 2450 2455

&lt;210&gt; 2524

&lt;211&gt; 7272

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7272)

&lt;400&gt; 2524

atg	gcg	caa	gca	cag	cag	atc	gcc	ttg	gag	cga	ctg	gag	caa	gtc	tcc	48
Met	Ala	Gln	Ala	Gln	Gln	Ile	Ala	Leu	Glu	Arg	Leu	Glu	Gln	Val	Ser	
1				5				10						15		
cgc	ggc	ctc	aag	tca	aag	gtt	agc	gac	gat	ttg	cga	aag	cga	tcc	gcc	96
Arg	Gly	Leu	Lys	Ser	Lys	Val	Ser	Asp	Asp	Leu	Arg	Lys	Arg	Ser	Ala	
			20					25					30			
gtt	cag	ctt	cgc	gag	ctc	gta	gtt	att	tgc	cat	cga	gac	ctt	agc	ccc	144
Val	Gln	Leu	Arg	Glu	Leu	Val	Val	Ile	Cys	His	Arg	Asp	Leu	Ser	Pro	
			35				40					45				
gaa	ttg	ttc	cag	tcc	ttc	tac	aac	gca	gtc	aac	aac	agg	att	aca	cag	192
Glu	Leu	Phe	Gln	Ser	Phe	Tyr	Asn	Ala	Val	Asn	Asn	Arg	Ile	Thr	Gln	
			50			55				60						
ctc	atc	aca	cat	gga	agc	gac	tct	tcc	gag	cga	ctc	ggc	ggt	atc	tac	240
Leu	Ile	Thr	His	Gly	Ser	Asp	Ser	Ser	Glu	Arg	Leu	Gly	Gly	Ile	Tyr	
					70					75					80	
gct	ctc	gat	gcg	ctc	atc	gac	ttc	gaa	ggc	gtc	gat	gtc	gcc	ggt	aaa	288
Ala	Leu	Asp	Ala	Leu	Ile	Asp	Phe	Glu	Gly	Val	Asp	Val	Ala	Val	Lys	
				85					90					95		
tac	acg	cgt	ttc	acc	cag	aat	cta	aag	acg	atc	ctc	cgt	gga	aaa	gac	336
Tyr	Thr	Arg	Phe	Thr	Gln	Asn	Leu	Lys	Thr	Ile	Leu	Arg	Gly	Lys	Asp	
			100					105					110			
att	aac	cct	atg	caa	cca	gcc	gca	atc	gcg	ctt	gga	aag	tta	tgt	cga	384
Ile	Asn	Pro	Met	Gln	Pro	Ala	Ala	Ile	Ala	Leu	Gly	Lys	Leu	Cys	Arg	
			115				120					125				
ccc	ggc	gga	tcg	atg	ata	tcg	gag	gtg	gtg	gat	tca	gag	gtc	aac	aca	432
Pro	Gly	Gly	Ser	Met	Ile	Ser	Glu	Val	Val	Asp	Ser	Glu	Val	Asn	Thr	
			130			135					140					
gca	ctc	gaa	tgg	cta	cag	aac	gac	cgc	gtg	gaa	gag	cga	cga	tat	agt	480
Ala	Leu	Glu	Trp	Leu	Gln	Asn	Asp	Arg	Val	Glu	Glu	Arg	Arg	Tyr	Ser	
					150					155					160	
gcc	gtc	ctc	gtc	ctg	cgt	gaa	ttg	gcc	cgc	agc	gcc	cca	acg	ctc	atg	528
Ala	Val	Leu	Val	Leu	Arg	Glu	Leu	Ala	Arg	Ser	Ala	Pro	Thr	Leu	Met	
				165				170						175		
tat	caa	tac	atc	ccg	aca	att	ttt	gac	tgg	atc	tgg	att	ggt	ctt	cga	576
Tyr	Gln	Tyr	Ile	Pro	Thr	Ile	Phe	Asp	Trp	Ile	Trp	Ile	Gly	Leu	Arg	
			180					185					190			
gac	tcc	aga	cag	ctc	atc	cgg	gcg	aca	tct	gcg	gaa	aca	ggt	agc	gcc	624
Asp	Ser	Arg	Gln	Leu	Ile	Arg	Ala	Thr	Ser	Ala	Glu	Thr	Val	Ser	Ala	
			195			200					205					
tgc	ttc	cga	atc	ctt	cgc	gaa	cga	gac	caa	gag	atg	aag	cag	cgg	tgg	672
Cys	Phe	Arg	Ile	Leu	Arg	Glu	Arg	Asp	Gln	Glu	Met	Lys	Gln	Arg	Trp	
			210			215					220					
atg	agc	aat	att	tac	aac	gaa	gcg	aag	cag	ggt	ctc	aag	gtc	aac	acc	720
Met	Ser	Asn	Ile	Tyr	Asn	Glu	Ala	Lys	Gln	Gly	Leu	Lys	Val	Asn	Thr	
					230					235					240	
gtt	gaa	tcc	atc	cac	ggt	tca	tta	ctc	gtc	ttg	aaa	gag	ctt	ctc	gag	768
Val	Glu	Ser	Ile	His	Gly	Ser	Leu	Leu	Val	Leu	Lys	Glu	Leu	Leu	Glu	
				245					250					255		
cag	ggc	gcc	atg	tac	atg	cag	gag	cat	tac	caa	caa	gcg	tgt	gag	att	816
Gln	Gly	Ala	Met	Tyr	Met	Gln	Glu	His	Tyr	Gln	Gln	Ala	Cys	Glu	Ile	
			260					265					270			
gtc	ttt	aag	cac	aag	gac	cac	aga	gac	ccg	acc	att	cga	aag	aca	gtg	864

## PhoenixTemp32470.tmp.txt

Val	Phe	Lys	His	Lys	Asp	His	Arg	Asp	Pro	Thr	Ile	Arg	Lys	Thr	Val		
gtc	ctc	ttg	atc	ccc	gac	ctt	gct	agt	tat	tct	ccg	gcc	gat	ttc	gcg	912	
Val	Leu	Leu	Ile	Pro	Asp	Leu	Ala	Ser	Tyr	Ser	Pro	Ala	Asp	Phe	Ala		
	290					295					300						
cac	aca	tgg	cta	cac	aag	ttt	atg	gtg	tac	ctg	tcg	ggc	atg	ctc	aag	960	
His	Thr	Trp	Leu	His	Lys	Phe	Met	Val	Tyr	Leu	Ser	Gly	Met	Leu	Lys		
305					310					315					320		
aag	gac	aag	gag	aga	aac	gat	gct	ttc	ctg	gca	atc	ggc	aac	att	gcc	1008	
Lys	Asp	Lys	Glu	Arg	Asn	Asp	Ala	Phe	Leu	Ala	Ile	Gly	Asn	Ile	Ala		
				325					330					335			
aat	tcg	gtc	aag	agc	gcc	att	gct	cct	tat	ctt	gac	ggc	gtt	ttg	atc	1056	
Asn	Ser	Val	Lys	Ser	Ala	Ile	Ala	Pro	Tyr	Leu	Asp	Gly	Val	Leu	Ile		
			340					345					350				
tac	gta	cgc	gaa	ggc	ctc	agc	gtg	cag	tcc	cgt	aag	agg	gga	tca	gtc	1104	
Tyr	Val	Arg	Glu	Gly	Leu	Ser	Val	Gln	Ser	Arg	Lys	Arg	Gly	Ser	Val		
		355					360					365					
gat	ccg	gta	ttc	gac	tgt	atc	agt	cgt	ctc	gcc	gtg	gct	gta	ggc	cag	1152	
Asp	Pro	Val	Phe	Asp	Cys	Ile	Ser	Arg	Leu	Ala	Val	Ala	Val	Gly	Gln		
	370					375					380						
acg	ctc	agc	aag	tat	atg	gag	gca	ctg	ttg	gat	ccc	atc	ttt	gca	tgc	1200	
Thr	Leu	Ser	Lys	Tyr	Met	Glu	Ala	Leu	Leu	Asp	Pro	Ile	Phe	Ala	Cys		
385					390					395					400		
gac	ctt	acc	cct	aaa	ctg	aca	cag	gcc	ctt	ggt	gat	atg	gct	ttc	tac	1248	
Asp	Leu	Thr	Pro	Lys	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	Phe	Tyr		
				405					410					415			
atc	cct	cca	gtc	aaa	ccc	aca	atc	caa	gaa	cga	tta	ctc	gat	atg	ctc	1296	
Ile	Pro	Pro	Val	Lys	Pro	Thr	Ile	Gln	Glu	Arg	Leu	Leu	Asp	Met	Leu		
			420					425					430				
agt	gtg	gtg	ctc	tgc	ggc	gaa	ccc	ttc	aag	ccg	ctc	ggc	gct	cct	cac	1344	
Ser	Val	Val	Leu	Cys	Gly	Glu	Pro	Phe	Lys	Pro	Leu	Gly	Ala	Pro	His		
		435					440					445					
ccc	aac	act	ctt	acc	tcc	gtt	cca	att	att	ccc	aag	gac	gcc	aag	gat	1392	
Pro	Asn	Thr	Leu	Thr	Ser	Val	Pro	Ile	Ile	Pro	Lys	Asp	Ala	Lys	Asp		
	450					455					460						
cct	ctc	gct	tat	gag	cat	agg	gcc	gag	gtc	aag	ctg	gcg	ctc	aac		1440	
Pro	Leu	Ala	Tyr	Glu	His	Arg	Ala	Glu	Val	Lys	Leu	Ala	Leu	Asn			
465					470				475					480			
act	ctt	ggc	agc	ttc	gat	ttc	tcc	gga	cat	gtt	ttg	aac	gag	ttc	gtc	1488	
Thr	Leu	Gly	Ser	Phe	Asp	Phe	Ser	Gly	His	Val	Leu	Asn	Glu	Phe	Val		
				485					490					495			
cgg	gat	gtc	gca	atc	aag	tac	gtc	gaa	gat	gaa	gac	cca	gaa	att	cgg	1536	
Arg	Asp	Val	Ala	Ile	Lys	Tyr	Val	Glu	Asp	Glu	Asp	Pro	Glu	Ile	Arg		
			500					505					510				
gag	gcg	gct	gct	ttg	aca	tgc	tgt	caa	ctc	tac	gtc	cgc	gat	cct	att	1584	
Glu	Ala	Ala	Ala	Leu	Thr	Cys	Cys	Gln	Leu	Tyr	Val	Arg	Asp	Pro	Ile		
		515					520					525					
gtc	aac	cag	acc	agt	tat	cat	gca	ctc	cag	gta	gtc	ggg	gat	gtt	ata	1632	
Val	Asn	Gln	Thr	Ser	Tyr	His	Ala	Leu	Gln	Val	Val	Gly	Asp	Val	Ile		
	530					535					540						
gaa	aaa	ctt	ctc	act	gtc	gga	gtc	tca	gat	cct	gaa	cca	aac	ata	aga	1680	
Glu	Lys	Leu	Leu	Thr	Val	Gly	Val	Ser	Asp	Pro	Glu	Pro	Asn	Ile	Arg		
545					550					555					560		
aga	acg	gtc	ctg	gca	gct	ctc	gac	gaa	cga	ttc	gat	cga	cac	ttg	gcc	1728	
Arg	Thr	Val	Leu	Ala	Ala	Leu	Asp	Glu	Arg	Phe	Asp	Arg	His	Leu	Ala		
				565					570					575			
aag	gcc	gag	aac	atc	cgc	att	ctt	ttc	gcg	ctc	aac	gat	gag	gtc		1776	
Lys	Ala	Glu	Asn	Ile	Arg	Ile	Leu	Phe	Phe	Ala	Leu	Asn	Asp	Glu	Val		
			580					585					590				
ttt	tcc	att	agg	gaa	gtc	gcc	atc	tct	atc	att	ggc	cgt	ttg	gct	aga	1824	
Phe	Ser	Ile	Arg	Glu	Val	Ala	Ile	Ser	Ile	Ile	Gly	Arg	Leu	Ala	Arg		
		595					600					605					
tac	aat	cca	gcc	tat	gtt	att	cct	tcg	cta	cga	aag	acg	ctc	atc	caa	1872	
Tyr	Asn	Pro	Ala	Tyr	Val	Ile	Pro	Ser	Leu	Arg	Lys	Thr	Leu	Ile	Gln		
					615						620						
cta	ctc	act	gag	ctg	gaa	ttc	tcc	gac	gtg	gcc	cgc	aac	aaa	gag	gag	1920	
Leu	Leu	Thr	Glu	Leu	Glu	Phe	Ser	Asp	Val	Ala	Arg	Asn	Lys	Glu	Glu		
625					630					635					640		
agc	gct	aag	cta	ttg	agt	ctc	ttg	gtc	cag	aat	gcg	cag	tct	ctc	atc	1968	

## PhoenixTemp32470.tmp.txt

Ser	Ala	Lys	Leu	Leu	Ser	Leu	Leu	Val	Gln	Asn	Ala	Gln	Ser	Leu	Ile	
aag	cca	tac	gtc	gag	ccc	atg	atc	tcg	ggt	ctc	tta	ccc	aaa	gcg	aaa	2016
Lys	Pro	Tyr	Val	Glu	Pro	Met	Ile	Ser	Val	Leu	Leu	Pro	Lys	Ala	Lys	
			660					665					670			
gac	ccc	aac	ccg	tcg	gtg	gct	gcc	acc	atc	ctc	aag	gct	atc	ggt	gag	2064
Asp	Pro	Asn	Pro	Ser	Val	Ala	Ala	Thr	Ile	Leu	Lys	Ala	Ile	Gly	Glu	
			675				680					685				
ctc	gcg	act	gtt	ggt	ggc	gag	gac	atg	atg	cca	tac	aaa	gac	cga	ttg	2112
Leu	Ala	Thr	Val	Gly	Gly	Glu	Asp	Met	Met	Pro	Tyr	Lys	Asp	Arg	Leu	
	690					695					700					
atg	cct	ctc	att	ctt	gat	gcg	cta	caa	gac	caa	agc	tcc	aat	gcg	aag	2160
Met	Pro	Leu	Ile	Leu	Asp	Ala	Leu	Gln	Asp	Gln	Ser	Ser	Asn	Ala	Lys	
	705				710					715					720	
aga	gag	gcc	gcc	ttg	cac	gca	ctt	gga	cag	ctt	gca	agc	aac	tcc	gga	2208
Arg	Glu	Ala	Ala	Leu	His	Ala	Leu	Gly	Gln	Leu	Ala	Ser	Asn	Ser	Gly	
				725				730						735		
tac	gtc	att	tta	cca	tat	atc	gag	tac	cct	caa	ctt	cta	gaa	atc	ttg	2256
Tyr	Val	Ile	Leu	Pro	Tyr	Ile	Glu	Tyr	Pro	Gln	Leu	Leu	Glu	Ile	Leu	
			740					745					750			
cag	agc	atc	atc	aga	acc	gaa	ggg	caa	cga	gtg	cca	ttg	cga	caa	gaa	2304
Gln	Ser	Ile	Ile	Arg	Thr	Glu	Gly	Gln	Arg	Val	Pro	Leu	Arg	Gln	Glu	
		755					760					765				
acc	atc	aaa	ctt	atg	ggt	att	ctc	ggt	gcg	ctg	gat	cct	tac	aaa	cac	2352
Thr	Ile	Lys	Leu	Met	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	
	770				775						780					
cag	gcc	gaa	gaa	cga	act	cct	gat	tca	cga	aat	ggc	gag	gcc	act	caa	2400
Gln	Ala	Glu	Glu	Arg	Thr	Pro	Asp	Ser	Arg	Asn	Gly	Glu	Ala	Thr	Gln	
	785				790					795					800	
ttg	acc	gac	atc	tct	ctc	atg	atg	acc	ggc	ctg	aca	cca	tcg	aac	aag	2448
Leu	Thr	Asp	Ile	Ser	Leu	Met	Met	Thr	Gly	Leu	Thr	Pro	Ser	Asn	Lys	
				805					810					815		
gag	tac	ttc	cct	acc	gtc	gtc	att	aat	gcc	ctc	ctc	caa	atc	ttg	aag	2496
Glu	Tyr	Phe	Pro	Thr	Val	Val	Ile	Asn	Ala	Leu	Leu	Gln	Ile	Leu	Lys	
			820					825					830			
gat	tca	tcc	ctc	gtc	cag	cac	cac	gcc	gct	gtg	att	gaa	gca	att	atg	2544
Asp	Ser	Ser	Leu	Val	Gln	His	His	Ala	Ala	Val	Ile	Glu	Ala	Ile	Met	
		835				840						845				
aac	atc	ttc	cgc	act	ctg	ggc	ttg	gag	tgt	gtg	tct	ttc	ctc	gac	cga	2592
Asn	Ile	Phe	Arg	Thr	Leu	Gly	Leu	Glu	Cys	Val	Ser	Phe	Leu	Asp	Arg	
		850				855					860					
att	atc	ccg	gca	ttc	ctt	caa	gtc	att	cga	tcg	gcc	acc	tcc	aca	agg	2640
Ile	Ile	Pro	Ala	Phe	Leu	Gln	Val	Ile	Arg	Ser	Ala	Thr	Ser	Thr	Arg	
				865		870				875					880	
ctc	gaa	tcg	tac	ttc	aac	caa	ctc	gct	act	ctt	gtc	agc	att	gtc	aga	2688
Leu	Glu	Ser	Tyr	Phe	Asn	Gln	Leu	Ala	Thr	Leu	Val	Ser	Ile	Val	Arg	
				885				890						895		
caa	cac	atc	cga	aac	tac	ctg	cca	tca	att	gtc	gag	atc	ctt	caa	gaa	2736
Gln	His	Ile	Arg	Asn	Tyr	Leu	Pro	Ser	Ile	Val	Glu	Ile	Leu	Gln	Glu	
			900					905					910			
tac	tgg	cac	acc	tct	cca	tcg	ctg	cag	act	act	att	ctg	tcg	ctc	ggt	2784
Tyr	Trp	His	Thr	Ser	Pro	Ser	Leu	Gln	Thr	Thr	Ile	Leu	Ser	Leu	Val	
		915					920					925				
gag	gct	atc	tcc	agg	tcg	ctt	gag	ggt	gaa	ttc	aag	att	tac	ctc	gct	2832
Glu	Ala	Ile	Ser	Arg	Ser	Leu	Glu	Gly	Glu	Phe	Lys	Ile	Tyr	Leu	Ala	
		930				935					940					
ggt	ctc	ttg	ccg	ttg	atg	ctt	gga	gtc	ttg	gac	aag	gat	aac	tct	gct	2880
Gly	Leu	Leu	Pro	Leu	Met	Leu	Gly	Val	Leu	Asp	Lys	Asp	Asn	Ser	Ala	
					950					955					960	
aag	cgc	acg	cca	tct	gag	agg	ggt	atg	cac	gct	ttc	tta	gtg	ttt	ggt	2928
Lys	Arg	Thr	Pro	Ser	Glu	Arg	Val	Met	His	Ala	Phe	Leu	Val	Phe	Gly	
				965					970					975		
gcc	agc	gcg	gag	gag	tac	atg	cat	ctc	atc	atc	cca	ggt	ata	gtc	cgc	2976
Ala	Ser	Ala	Glu	Glu	Tyr	Met	His	Leu	Ile	Ile	Pro	Val	Ile	Val	Arg	
			980					985					990			
aca	ttc	gag	aaa	cag	ggt	cag	cct	aca	ttt	att	aga	aag	cag	gcc	atc	3024
Thr	Phe	Glu	Lys	Gln	Gly	Gln	Pro	Thr	Phe	Ile	Arg	Lys	Gln	Ala	Ile	
		995				1000						1005				
gac	acc	att	ggc	aaa	atc	tct	cga	caa	gtc	aac	ctt	aat	gac	tac	gcc	3072

## PhoenixTemp32470.tmp.txt

Asp	Thr	Ile	Gly	Lys	Ile	Ser	Arg	Gln	Val	Asn	Leu	Asn	Asp	Tyr	Ala		
1010	1010				1015	1015				1020	1020						
gca	aag	atc	atc	cac	cct	ctc	aca	cgt	gtg	ttg	gac	atg	ggt	gag	cct	3120	
Ala	Lys	Ile	Ile	His	Pro	Leu	Thr	Arg	Val	Leu	Asp	Met	Gly	Glu	Pro		
1025				1030	1030					1035					1040		
gtg	cta	cga	acc	gcg	gct	ctg	gat	acc	ctc	tgt	gct	ctc	att	cag	caa	3168	
Val	Leu	Arg	Thr	Ala	Ala	Leu	Asp	Thr	Leu	Cys	Ala	Leu	Ile	Gln	Gln		
				1045					1050					1055			
tta	ggt	aag	gac	tac	ctg	cac	ttc	atg	ggc	acc	gtc	aac	aag	acc	atc	3216	
Leu	Gly	Lys	Asp	Tyr	Leu	His	Phe	Met	Gly	Thr	Val	Asn	Lys	Thr	Ile		
			1060				1065						1070				
aac	cag	cac	caa	atc	cag	cac	tcc	aac	tac	gag	ctg	ctt	gtg	agc	aag	3264	
Asn	Gln	His	Gln	Ile	Gln	His	Ser	Asn	Tyr	Glu	Leu	Val	Ser	Lys			
			1075				1080					1085					
ctc	cag	aag	gga	gaa	gtt	ttg	cca	cag	gac	ctc	agc	tcg	ggg	gct	ggt	3312	
Leu	Gln	Lys	Gly	Glu	Val	Leu	Pro	Gln	Asp	Leu	Ser	Ser	Gly	Ala	Gly		
1090					1095					1100							
ttt	ggc	gat	gga	gcc	gac	gag	gct	acc	ttt	gcc	gac	caa	ggc	acg	aag	3360	
Phe	Gly	Asp	Gly	Ala	Asp	Glu	Ala	Thr	Phe	Ala	Asp	Gln	Gly	Thr	Lys		
1105				1110					1115						1120		
aag	cta	gag	atg	aat	gcc	att	cac	ctc	aag	gct	gcc	tgg	gat	aca	aag	3408	
Lys	Leu	Glu	Met	Asn	Ala	Ile	His	Leu	Lys	Ala	Ala	Trp	Asp	Thr	Lys		
				1125					1130					1135			
ggc	aag	tcg	acc	aag	gag	gat	tgg	caa	gag	tgg	cta	cga	cgc	ttc	agt	3456	
Gly	Lys	Ser	Thr	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Leu	Arg	Arg	Phe	Ser		
			1140				1145						1150				
act	act	cta	ctt	aca	gaa	tca	ccg	aac	cac	gcc	ctt	cga	gct	tgc	gcc	3504	
Thr	Thr	Leu	Leu	Thr	Glu	Ser	Pro	Asn	His	Ala	Leu	Arg	Ala	Cys	Ala		
			1155				1160					1165					
agt	ctt	gcg	agc	gta	tac	ctt	cct	ctt	gct	cgc	gag	ctg	ttc	aat	tct	3552	
Ser	Leu	Ala	Ser	Val	Tyr	Leu	Pro	Leu	Ala	Arg	Glu	Leu	Phe	Asn	Ser		
1170					1175					1180							
gcg	ttt	gtg	tct	tgt	tgg	agt	gaa	cta	tat	gag	cag	ttc	caa	gac	gag	3600	
Ala	Phe	Val	Ser	Cys	Trp	Ser	Glu	Leu	Tyr	Glu	Gln	Phe	Gln	Asp	Glu		
1185				1190					1195						1200		
ctc	atc	cag	aat	att	gag	agc	gca	atc	aag	tcc	gag	aac	gtt	cca	ccg	3648	
Leu	Ile	Gln	Asn	Ile	Glu	Ser	Ala	Ile	Lys	Ser	Glu	Asn	Val	Pro	Pro		
				1205					1210					1215			
gat	ctg	ttg	ggt	ctt	ttg	ctc	aac	ctc	gct	gag	ttc	atg	gag	cat	gac	3696	
Asp	Leu	Leu	Gly	Leu	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	Asp		
			1220				1225					1230					
gac	aag	gct	ttg	ccg	atc	gac	atc	aga	gtc	ctg	ggt	agg	gag	gct	gct	3744	
Asp	Lys	Ala	Leu	Pro	Ile	Asp	Ile	Arg	Val	Leu	Gly	Arg	Glu	Ala	Ala		
			1235			1240					1245						
cgt	tgt	cac	gcg	tac	gca	aag	gct	ttg	cac	tac	aag	gaa	ctc	gag	ttc	3792	
Arg	Cys	His	Ala	Tyr	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu	Phe		
1250				1255					1260								
ctg	cag	gat	cag	agc	agt	ggt	gct	gtc	gag	gct	ttg	atc	gtt	atc	aac	3840	
Leu	Gln	Asp	Gln	Ser	Ser	Gly	Ala	Val	Glu	Ala	Leu	Ile	Val	Ile	Asn		
1265				1270					1275						1280		
aat	cag	ctc	caa	cag	tct	gat	gct	gcc	att	ggt	att	ctt	cgc	aaa	gct	3888	
Asn	Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile	Gly	Ile	Leu	Arg	Lys	Ala		
				1285					1290				1295				
caa	ctg	tat	aag	gaa	ggc	att	cag	ctt	cga	gag	acc	tgg	ttc	gag	aag	3936	
Gln	Leu	Tyr	Lys	Glu	Gly	Ile	Gln	Leu	Arg	Glu	Thr	Trp	Phe	Glu	Lys		
			1300				1305					1310					
ttg	gag	cgt	tgg	gaa	gaa	gcg	ctt	gcg	ttt	tac	aac	aag	cg	gag	gag	3984	
Leu	Glu	Arg	Trp	Glu	Glu	Ala	Leu	Ala	Phe	Tyr	Asn	Lys	Arg	Glu	Glu		
			1315			1320						1325					
gaa	gtg	ccc	gag	gat	caa	gca	att	ccc	gtc	gac	att	gtt	atg	gga	aag	4032	
Glu	Val	Pro	Glu	Asp	Gln	Ala	Ile	Pro	Val	Asp	Ile	Val	Met	Gly	Lys		
1330				1335					1340								
atg	cgt	tgt	ttg	cat	gcc	ttg	gga	gag	tgg	gag	gca	ctg	gct	tcg	ctg	4080	
Met	Arg	Cys	Leu	His	Ala	Leu	Gly	Glu	Trp	Glu	Ala	Leu	Ala	Ser	Leu		
1345				1350					1355						1360		
act	ggc	agc	acc	tgg	gcc	aac	tct	aca	cca	gaa	gtc	caa	agg	atg	att	4128	
Thr	Gly	Ser	Thr	Trp	Ala	Asn	Ser	Thr	Pro	Glu	Val	Gln	Arg	Met	Ile		
				1365				1370					1375				
gca	cct	ttg	gca	aca	gct	gcc	gct	tgg	ggt	ctc	aac	aag	tgg	gat	tcc	4176	

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Ala	Pro	Leu	Ala	Thr	Ala	Ala	Ala	Trp	Gly	Leu	Asn	Lys	Trp	Asp	Ser		
1380																	
atg	gac	aac	tac	ctt	tca	tcg	ctc	aag	agg	tac	tca	cct	gat	cgt	tca	4224	
Met	Asp	Asn	Tyr	Leu	Ser	Ser	Leu	Lys	Arg	Tyr	Ser	Pro	Asp	Arg	Ser		
1395																	
ttc	ttt	ggt	gcc	att	ctg	gct	ctc	cac	cga	aac	cag	ttc	cgc	gag	gcc	4272	
Phe	Phe	Gly	Ala	Ile	Leu	Ala	Leu	His	Arg	Asn	Gln	Phe	Arg	Glu	Ala		
1410																	
ata	gcg	tgt	gtc	acg	caa	gct	cgt	gaa	ggt	ctg	gat	acc	gag	ttg	agt	4320	
Ile	Ala	Cys	Val	Thr	Gln	Ala	Arg	Glu	Gly	Leu	Asp	Thr	Glu	Leu	Ser		
1425																	
gcc	ctg	ggt	agt	gag	tcg	tac	aac	cga	gca	tac	caa	gtc	gtc	ggt	cgc	4368	
Ala	Leu	Val	Ser	Glu	Ser	Tyr	Asn	Arg	Ala	Tyr	Gln	Val	Val	Val	Arg		
1445																	
gtc	caa	atg	ctt	gcc	gaa	ttg	gaa	gaa	ctc	atc	gtg	tat	aag	caa	tgc	4416	
Val	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu	Leu	Ile	Val	Tyr	Lys	Gln	Cys		
1460																	
gat	gag	aag	aag	cag	gcc	att	atg	aga	cga	acc	tgg	gaa	aca	cga	ctt	4464	
Asp	Glu	Lys	Lys	Gln	Ala	Ile	Met	Arg	Arg	Thr	Trp	Glu	Thr	Arg	Leu		
1475																	
aag	ggt	tgt	caa	agg	aac	gtc	gag	ggt	tgg	cag	cgc	atg	ctc	agg	cta	4512	
Lys	Gly	Cys	Gln	Arg	Asn	Val	Glu	Val	Trp	Gln	Arg	Met	Leu	Arg	Leu		
1490																	
cgt	gct	ata	gtg	att	gca	cca	act	gag	aac	atg	cac	atg	tgg	atc	aag	4560	
Arg	Ala	Ile	Val	Ile	Ala	Pro	Thr	Glu	Asn	Met	His	Met	Trp	Ile	Lys		
1505																	
ttc	gcc	aac	ctt	tgc	cgc	aag	tct	ggt	cga	atg	ggt	ctc	gcc	gaa	aag	4608	
Phe	Ala	Asn	Leu	Cys	Arg	Lys	Ser	Gly	Arg	Met	Gly	Leu	Ala	Glu	Lys		
1525																	
tca	ctc	aaa	caa	ctt	atc	gga	aca	gac	gct	cct	ttg	gag	tct	atg	att	4656	
Ser	Leu	Lys	Gln	Leu	Ile	Gly	Thr	Asp	Ala	Pro	Leu	Glu	Ser	Met	Ile		
1540																	
ccc	tac	tgg	aac	gat	cag	cga	caa	ccc	gga	cct	ggt	cct	aga	agc	gcg	4704	
Pro	Tyr	Trp	Asn	Asp	Gln	Arg	Gln	Pro	Gly	Pro	Gly	Pro	Arg	Ser	Ala		
1555																	
ccg	gca	gca	cag	gtc	atc	tac	gct	gtg	ctc	aag	tac	caa	tgg	gag	act	4752	
Pro	Ala	Ala	Gln	Val	Ile	Tyr	Ala	Val	Leu	Lys	Tyr	Gln	Trp	Glu	Thr		
1570																	
gga	caa	caa	gct	gcc	aag	aag	aca	aac	atc	ccc	gaa	aag	aca	ctg	tac	4800	
Gly	Gln	Gln	Ala	Ala	Lys	Lys	Thr	Asn	Ile	Pro	Glu	Lys	Thr	Leu	Tyr		
1585																	
tgc	ttg	cgc	aag	ttt	act	aat	gat	gct	gcg	cag	aga	ttg	gat	atc	acc	4848	
Cys	Leu	Arg	Lys	Phe	Thr	Asn	Asp	Ala	Ala	Gln	Arg	Leu	Asp	Ile	Thr		
1605																	
agg	gcc	cat	ctc	aat	gct	caa	gtg	ggc	agt	gaa	gtc	aac	atc	acg	ggc	4896	
Arg	Ala	His	Leu	Asn	Ala	Gln	Val	Gly	Ser	Glu	Val	Asn	Ile	Thr	Gly		
1620																	
gac	tac	ggc	ttc	cag	aac	cct	atg	gat	cct	acg	att	atg	agc	cct	cag	4944	
Asp	Tyr	Gly	Phe	Gln	Asn	Pro	Met	Asp	Pro	Thr	Ile	Met	Ser	Pro	Gln		
1635																	
acc	cag	cgg	gcg	ttg	tat	gaa	caa	acg	gtc	ctg	ttg	gcc	aag	tgc	tac	4992	
Thr	Gln	Arg	Ala	Leu	Tyr	Gln	Thr	Val	Leu	Leu	Ala	Lys	Cys	Tyr			
1650																	
ttg	aga	cag	gga	gaa	tgg	ctg	att	gca	ctc	aac	aag	gac	gac	tgg	caa	5040	
Leu	Arg	Gln	Gly	Glu	Trp	Leu	Ile	Ala	Leu	Asn	Lys	Asp	Asp	Trp	Gln		
1665																	
tac	act	cag	gtc	caa	gac	atc	ctc	acc	tct	tac	tct	cag	gcg	acc	aag	5088	
Tyr	Thr	Gln	Val	Gln	Asp	Ile	Leu	Thr	Ser	Tyr	Ser	Gln	Ala	Thr	Lys		
1685																	
tac	aac	cct	cgt	tgg	tac	aag	gct	tgg	cac	gct	tgg	gca	ctg	gca	aac	5136	
Tyr	Asn	Pro	Arg	Trp	Tyr	Lys	Ala	Trp	His	Ala	Trp	Ala	Leu	Ala	Asn		
1700																	
ttt	gag	atc	gtg	cag	act	ctt	aca	gcc	cag	aac	gaa	gga	acc	tta	tcg	5184	
Phe	Glu	Ile	Val	Gln	Thr	Leu	Thr	Ala	Gln	Asn	Glu	Gly	Thr	Leu	Ser		
1715																	
agg	gcg	gat	caa	tcc	atg	gtg	att	gaa	cac	gtg	gta	cca	gct	gtc	aag	5232	
Arg	Ala	Asp	Gln	Ser	Met	Val	Ile	Glu	His	Val	Val	Pro	Ala	Val	Lys		
1730																	
ggc	ttc	ttc	aag	tcg	atc	gcg	ctg	tct	gaa	gga	agc	tcg	ctg	cag	gac	5280	
1735																	

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Gly 1745	Phe	Phe	Lys	Ser	Ile 1750	Ala	Leu	Ser	Glu 1755	Gly	Ser	Ser	Leu	Gln 1760	Asp		
act	ctt	cgt	ctg	ctc	act	ctc	tgg	ttc	act	cat	gga	ggc	agc	gcg	gat		5328
Thr	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Thr	His	Gly	Gly	Ser	Ala	Asp		
				1765					1770					1775			
gtc	act	tca	gct	gtc	aca	gaa	ggc	ttt	gct	aat	gtc	agc	gtc	gac	acg		5376
Val	Thr	Ser	Ala	Val	Thr	Glu	Gly	Phe	Ala	Asn	Val	Ser	Val	Asp	Thr		
			1780					1785					1790				
tgg	ctg	gag	gtc	att	ccc	cag	tgg	att	gca	cga	atc	aac	cag	cct	aac		5424
Trp	Leu	Glu	Val	Ile	Pro	Gln	Leu	Ile	Ala	Arg	Ile	Asn	Gln	Pro	Asn		
			1795				1800					1805					
aag	cgc	gtt	cag	caa	tcg	gtg	cat	aac	ttg	ctt	gcc	gat	gtt	gga	cga		5472
Lys	Arg	Val	Gln	Gln	Ser	Val	His	Asn	Leu	Leu	Ala	Asp	Val	Gly	Arg		
	1810					1815					1820						
gct	cat	cct	caa	gct	ttg	gtg	tat	cct	ctc	acc	gtc	gcc	atg	aag	tcc		5520
Ala	His	Pro	Gln	Ala	Leu	Val	Tyr	Pro	Leu	Thr	Val	Ala	Met	Lys	Ser		
1825				1830				1835						1840			
tgg	cag	aac	acc	agg	cga	tct	cgt	tcc	gca	gct	caa	att	atg	gat	agc		5568
Trp	Gln	Asn	Thr	Arg	Arg	Ser	Arg	Ser	Ala	Gln	Ile	Met	Asp	Ser			
			1845					1850				1855					
atg	cga	caa	cat	agc	gca	aac	ttg	gtc	gct	cag	gca	gac	att	gtc	agc		5616
Met	Arg	Gln	His	Ser	Ala	Asn	Leu	Val	Ala	Gln	Ala	Asp	Ile	Val	Ser		
		1860					1865					1870					
cac	gaa	ctc	att	cgc	gtg	gcc	gtc	ttg	tgg	cac	gag	ctt	tgg	cat	gag		5664
His	Glu	Leu	Ile	Arg	Val	Ala	Val	Leu	Trp	His	Glu	Leu	Trp	His	Glu		
	1875					1880					1885						
gga	ctc	gaa	gaa	gcc	tcg	cgc	ttg	tac	ttt	ggc	gat	cac	aac	att	gaa		5712
Gly	Leu	Glu	Glu	Ala	Ser	Arg	Leu	Tyr	Phe	Gly	Asp	His	Asn	Ile	Glu		
1890				1895					1900								
ggc	atg	ttt	gcc	act	ctg	gag	cct	cta	cac	gag	ctt	gag	cgt	gga			5760
Gly	Met	Phe	Ala	Thr	Leu	Glu	Pro	Leu	His	Glu	Leu	Leu	Glu	Arg	Gly		
1905				1910				1915						1920			
ccc	gag	act	ctt	cgt	gag	att	tcg	ttc	gcg	caa	gca	ttt	ggt	cgc	gac		5808
Pro	Glu	Thr	Leu	Arg	Glu	Ile	Ser	Phe	Ala	Gln	Ala	Phe	Gly	Arg	Asp		
			1925					1930					1935				
ctt	aag	gag	gct	caa	gac	tgg	tgc	aga	caa	tac	gag	aca	agc	caa	gac		5856
Leu	Lys	Glu	Ala	Gln	Asp	Trp	Cys	Arg	Gln	Tyr	Glu	Thr	Ser	Gln	Asp		
		1940				1945					1950						
gtc	aac	gac	ctg	aac	cag	gca	tgg	gat	ttg	tac	tac	cag	gta	ttc	cgc		5904
Val	Asn	Asp	Leu	Asn	Gln	Ala	Trp	Asp	Leu	Tyr	Tyr	Gln	Val	Phe	Arg		
	1955					1960					1965						
aga	ata	agc	agg	cag	tta	cct	cag	gtt	aca	act	ctc	gag	ttg	acg	tac		5952
Arg	Ile	Ser	Arg	Gln	Leu	Pro	Gln	Val	Thr	Thr	Leu	Glu	Leu	Thr	Tyr		
1970				1975				1980									
tgt	tca	ccc	aaa	ttg	ctc	aac	gca	aag	aac	ctc	gac	ctc	gct	gtg	ccg		6000
Cys	Ser	Pro	Lys	Leu	Leu	Asn	Ala	Lys	Asn	Leu	Asp	Leu	Ala	Val	Pro		
1985				1990				1995						2000			
gga	aca	tac	aag	agc	ggg	cag	cct	att	gtc	cg	atc	atg	tct	ttc	gac		6048
Gly	Thr	Tyr	Lys	Ser	Gly	Gln	Pro	Ile	Val	Arg	Ile	Met	Ser	Phe	Asp		
			2005					2010				2015					
acg	acg	ttt	agc	gtt	atc	aac	tct	aag	cag	cg	ccg	cga	aag	ctt	aat		6096
Thr	Thr	Phe	Ser	Val	Ile	Asn	Ser	Lys	Gln	Arg	Pro	Arg	Lys	Leu	Asn		
		2020					2025				2030						
gtc	aat	ggc	agc	gac	gga	aag	tcg	tac	gcc	ttc	ctt	ctc	aag	ggt	cac		6144
Val	Asn	Gly	Ser	Asp	Gly	Lys	Ser	Tyr	Ala	Phe	Leu	Leu	Lys	Gly	His		
	2035				2040			2045									
gaa	gat	att	cgt	cag	gat	gaa	aga	gtc	atg	cag	ctg	ttt	ggt	ctc	tgc		6192
Glu	Asp	Ile	Arg	Gln	Asp	Glu	Arg	Val	Met	Gln	Leu	Phe	Gly	Leu	Cys		
	2050				2055			2060									
aat	acc	ctc	cta	tcg	cac	gac	tcg	gaa	tgc	ttc	aag	cg	cac	ctc	aac		6240
Asn	Thr	Leu	Leu	Ser	His	Asp	Ser	Glu	Cys	Phe	Lys	Arg	His	Leu	Asn		
2065				2070				2075						2080			
atc	cag	cg	tac	cca	gct	att	cct	ctg	tcg	caa	aac	agt	ggt	ctg	ctc		6288
Ile	Gln	Arg	Tyr	Pro	Ala	Ile	Pro	Leu	Ser	Gln	Asn	Ser	Gly	Leu	Leu		
		2085					2090					2095					
gga	tgg	gtt	ccc	aac	agt	gac	acc	ctc	cac	gtc	ctt	atc	agg	gag	tac		6336
Gly	Trp	Val	Pro	Asn	Ser	Asp	Thr	Leu	His	Val	Leu	Ile	Arg	Glu	Tyr		
		2100					2105				2110						
cga	gag	agt	cg	aag	att	ttg	ctg	aat	atc	gaa	cat	cga	atc	atg	ctc		6384

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Arg Glu Ser Arg Lys Ile Leu Leu Asn Ile Glu His Arg Ile Met Leu  
 2115 2120 2125  
 cag atg gct ccc gat tac gac aac ctg acc ctg atg caa aag gtc gag 6432  
 Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Met Gln Lys Val Glu  
 2130 2135 2140  
 gtc ttt ggt tac gcc ttg gac aac acc acc ggc caa gat ctc tac cgt 6480  
 Val Phe Gly Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu Tyr Arg  
 2145 2150 2155 2160  
 gta tta tgg ctc aag tca aag tcg tcc gag gct tgg ctc gag agg cga 6528  
 Val Leu Trp Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Glu Arg Arg  
 2165 2170 2175  
 aca aac tac act cgc tcg ctc ggt gtc atg tcc atg gtc ggc tac att 6576  
 Thr Asn Tyr Thr Arg Ser Leu Gly Val Met Ser Met Val Gly Tyr Ile  
 2180 2185 2190  
 ctc gga ttg ggt gat cgt cac ccg tcc aac ttg atg ctt gac cgt gtc 6624  
 Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Val  
 2195 2200 2205  
 acc gga aag att atc cac atc gat ttc ggt gat tgt ttt gag gtt gcg 6672  
 Thr Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala  
 2210 2215 2220  
 atg aag cgt gaa aag tac ccc gag cgg gtt cct ttc cgt ctg acc cga 6720  
 Met Lys Arg Glu Lys Tyr Pro Glu Arg Val Pro Phe Arg Leu Thr Arg  
 2225 2230 2235 2240  
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 Met Leu Thr Tyr Ala Met Glu Val Ser Asn Ile Glu Gly Ser Phe Arg  
 2245 2250 2255  
 atc aca tgt gag aac gta atg agg gta ttg aga gac aac aag gaa agc 6816  
 Ile Thr Cys Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser  
 2260 2265 2270  
 gtc atg gct gtt ctc gaa gcg ttc atc cat gac cct ctc ctc aca tgg 6864  
 Val Met Ala Val Leu Glu Ala Phe Ile His Asp Pro Leu Leu Thr Trp  
 2275 2280 2285  
 cgt cta aca aac gcc ccc tcc cca gca ggc ccc aac ttc cgc aac gac 6912  
 Arg Leu Thr Asn Ala Pro Ser Pro Ala Gly Pro Asn Phe Arg Asn Asp  
 2290 2295 2300  
 aga gac acc gcc atg ccc gtg ccc ggc ggc gtc cgc gcc cgt cgc caa 6960  
 Arg Asp Thr Ala Met Pro Val Pro Gly Gly Val Arg Ala Arg Arg Gln  
 2305 2310 2315 2320  
 tcc atc ctc gac agc gac gtc gcc ccc tcc gaa ctc ctc aac gct ccc 7008  
 Ser Ile Leu Asp Ser Asp Val Ala Pro Ser Glu Leu Leu Asn Ala Pro  
 2325 2330 2335  
 gaa cca tcc atc caa aca cgc gcg cgc gcc cgc aca aac agc tcc gcc 7056  
 Glu Pro Ser Ile Gln Thr Arg Ala Arg Ala Arg Thr Asn Ser Ser Ala  
 2340 2345 2350  
 ggc gtc ccc gag acc aac ggc ggc gct cca gaa gtc gaa agc caa aac 7104  
 Gly Val Pro Glu Thr Asn Gly Gly Ala Pro Glu Val Glu Ser Gln Asn  
 2355 2360 2365  
 gcg cga gcc gtc gag gtt ctc gat cgc gtg cag cag aag ctc aca ggt 7152  
 Ala Arg Ala Val Glu Val Leu Asp Arg Val Gln Gln Lys Leu Thr Gly  
 2370 2375 2380  
 cgt gat ttt aag aat aac gag gag ctg gat gtt att aac cag gtt aat 7200  
 Arg Asp Phe Lys Asn Asn Glu Glu Leu Asp Val Ile Asn Gln Val Asn  
 2385 2390 2395 2400  
 aag ttg atc atg gag gcg acg aag ctg gag aat ctg tgt cag cat tat 7248  
 Lys Leu Ile Met Glu Ala Thr Lys Leu Glu Asn Leu Cys Gln His Tyr  
 2405 2410 2415  
 atc gga tgg tgt agt ttc tgg tag 7272  
 Ile Gly Trp Cys Ser Phe Trp  
 2420

&lt;210&gt; 2525

&lt;211&gt; 2423

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 2525

Met Ala Gln Ala Gln Gln Ile Ala Leu Glu Arg Leu Glu Gln Val Ser  
 1 5 10 15  
 Arg Gly Leu Lys Ser Lys Val Ser Asp Asp Leu Arg Lys Arg Ser Ala  
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			20					25			30			
Val	Gln	Leu	Arg	Glu	Leu	Val	Val	Ile	Cys	His	Arg	Asp	Leu	Ser
		35					40					45		Pro
Glu	Leu	Phe	Gln	Ser	Phe	Tyr	Asn	Ala	Val	Asn	Asn	Arg	Ile	Gln
	50					55					60			
Leu	Ile	Thr	His	Gly	Ser	Asp	Ser	Ser	Glu	Arg	Leu	Gly	Gly	Ile
65					70					75				80
Ala	Leu	Asp	Ala	Leu	Ile	Asp	Phe	Glu	Gly	Val	Asp	Val	Ala	Val
				85					90				95	Lys
Tyr	Thr	Arg	Phe	Thr	Gln	Asn	Leu	Lys	Thr	Ile	Leu	Arg	Gly	Lys
			100					105					110	Asp
Ile	Asn	Pro	Met	Gln	Pro	Ala	Ala	Ile	Ala	Leu	Gly	Lys	Leu	Cys
		115					120					125		Arg
Pro	Gly	Gly	Ser	Met	Ile	Ser	Glu	Val	Val	Asp	Ser	Glu	Val	Asn
	130					135					140			Thr
Ala	Leu	Glu	Trp	Leu	Gln	Asn	Asp	Arg	Val	Glu	Glu	Arg	Arg	Tyr
145					150					155				160
Ala	Val	Leu	Val	Leu	Arg	Glu	Leu	Ala	Arg	Ser	Ala	Pro	Thr	Leu
				165					170					175
Tyr	Gln	Tyr	Ile	Pro	Thr	Ile	Phe	Asp	Trp	Ile	Trp	Ile	Gly	Leu
			180					185					190	Arg
Asp	Ser	Arg	Gln	Leu	Ile	Arg	Ala	Thr	Ser	Ala	Glu	Thr	Val	Ser
		195					200					205		Ala
Cys	Phe	Arg	Ile	Leu	Arg	Glu	Arg	Asp	Gln	Glu	Met	Lys	Gln	Arg
	210					215					220			Trp
Met	Ser	Asn	Ile	Tyr	Asn	Glu	Ala	Lys	Gln	Gly	Leu	Lys	Val	Asn
225					230					235				240
Val	Glu	Ser	Ile	His	Gly	Ser	Leu	Leu	Val	Leu	Lys	Glu	Leu	Leu
				245					250					255
Gln	Gly	Ala	Met	Tyr	Met	Gln	Glu	His	Tyr	Gln	Gln	Ala	Cys	Glu
			260					265					270	Ile
Val	Phe	Lys	His	Lys	Asp	His	Arg	Asp	Pro	Thr	Ile	Arg	Lys	Thr
		275					280					285		Val
Val	Leu	Leu	Ile	Pro	Asp	Leu	Ala	Ser	Tyr	Ser	Pro	Ala	Asp	Phe
	290					295					300			Ala
His	Thr	Trp	Leu	His	Lys	Phe	Met	Val	Tyr	Leu	Ser	Gly	Met	Leu
305					310					315				Lys
Lys	Asp	Lys	Glu	Arg	Asn	Asp	Ala	Phe	Leu	Ala	Ile	Gly	Asn	Ile
				325					330					335
Asn	Ser	Val	Lys	Ser	Ala	Ile	Ala	Pro	Tyr	Leu	Asp	Gly	Val	Leu
			340					345					350	Ile
Tyr	Val	Arg	Glu	Gly	Leu	Ser	Val	Gln	Ser	Arg	Lys	Arg	Gly	Ser
		355					360					365		Val
Asp	Pro	Val	Phe	Asp	Cys	Ile	Ser	Arg	Leu	Ala	Val	Ala	Val	Gly
	370					375					380			Gln
Thr	Leu	Ser	Lys	Tyr	Met	Glu	Ala	Leu	Leu	Asp	Pro	Ile	Phe	Ala
385					390					395				Cys
Asp	Leu	Thr	Pro	Lys	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	Phe
				405					410					415
Ile	Pro	Pro	Val	Lys	Pro	Thr	Ile	Gln	Glu	Arg	Leu	Leu	Asp	Met
			420					425					430	Leu
Ser	Val	Val	Leu	Cys	Gly	Glu	Pro	Phe	Lys	Pro	Leu	Gly	Ala	Pro
		435					440					445		His
Pro	Asn	Thr	Leu	Thr	Ser	Val	Pro	Ile	Ile	Pro	Lys	Asp	Ala	Lys
	450					455					460			Asp
Pro	Leu	Ala	Tyr	Glu	His	Arg	Arg	Ala	Glu	Val	Lys	Leu	Ala	Leu
465					470					475				Asn
Thr	Leu	Gly	Ser	Phe	Asp	Phe	Ser	Gly	His	Val	Leu	Asn	Glu	Phe
				485					490					495
Arg	Asp	Val	Ala	Ile	Lys	Tyr	Val	Glu	Asp	Glu	Asp	Pro	Glu	Ile
			500					505					510	Arg
Glu	Ala	Ala	Ala	Leu	Thr	Cys	Cys	Gln	Leu	Tyr	Val	Arg	Asp	Pro
		515					520					525		Ile
Val	Asn	Gln	Thr	Ser	Tyr	His	Ala	Leu	Gln	Val	Val	Gly	Asp	Val
	530					535					540			Ile
Glu	Lys	Leu	Leu	Thr	Val	Gly	Val	Ser	Asp	Pro	Glu	Pro	Asn	Ile
545					550					555				Arg
Arg	Thr	Val	Leu	Ala	Leu	Asp	Glu	Arg	Phe	Asp	Arg	His	Leu	Ala
				565				570					575	

## PhoenixTemp32470.tmp.txt

Lys Ala Glu Asn Ile Arg Ile Leu Phe Phe Ala Leu Asn Asp Glu Val  
 580 585 590  
 Phe Ser Ile Arg Glu Val Ala Ile Ser Ile Ile Gly Arg Leu Ala Arg  
 595 600 605  
 Tyr Asn Pro Ala Tyr Val Ile Pro Ser Leu Arg Lys Thr Leu Ile Gln  
 610 615 620  
 Leu Leu Thr Glu Leu Glu Phe Ser Asp Val Ala Arg Asn Lys Glu Glu  
 625 630 635 640  
 Ser Ala Lys Leu Leu Ser Leu Leu Val Gln Asn Ala Gln Ser Leu Ile  
 645 650 655  
 Lys Pro Tyr Val Glu Pro Met Ile Ser Val Leu Leu Pro Lys Ala Lys  
 660 665 670  
 Asp Pro Asn Pro Ser Val Ala Ala Thr Ile Leu Lys Ala Ile Gly Glu  
 675 680 685  
 Leu Ala Thr Val Gly Gly Glu Asp Met Met Pro Tyr Lys Asp Arg Leu  
 690 695 700  
 Met Pro Leu Ile Leu Asp Ala Leu Gln Asp Gln Ser Ser Asn Ala Lys  
 705 710 715 720  
 Arg Glu Ala Ala Leu His Ala Leu Gly Gln Leu Ala Ser Asn Ser Gly  
 725 730 735  
 Tyr Val Ile Leu Pro Tyr Ile Glu Tyr Pro Gln Leu Leu Glu Ile Leu  
 740 745 750  
 Gln Ser Ile Ile Arg Thr Glu Gly Gln Arg Val Pro Leu Arg Gln Glu  
 755 760 765  
 Thr Ile Lys Leu Met Gly Ile Leu Gly Ala Leu Asp Pro Tyr Lys His  
 770 775 780  
 Gln Ala Glu Glu Arg Thr Pro Asp Ser Arg Asn Gly Glu Ala Thr Gln  
 785 790 795 800  
 Leu Thr Asp Ile Ser Leu Met Met Thr Gly Leu Thr Pro Ser Asn Lys  
 805 810 815  
 Glu Tyr Phe Pro Thr Val Val Ile Asn Ala Leu Leu Gln Ile Leu Lys  
 820 825 830  
 Asp Ser Ser Leu Val Gln His His Ala Ala Val Ile Glu Ala Ile Met  
 835 840 845  
 Asn Ile Phe Arg Thr Leu Gly Leu Glu Cys Val Ser Phe Leu Asp Arg  
 850 855 860  
 Ile Ile Pro Ala Phe Leu Gln Val Ile Arg Ser Ala Thr Ser Thr Arg  
 865 870 875 880  
 Leu Glu Ser Tyr Phe Asn Gln Leu Ala Thr Leu Val Ser Ile Val Arg  
 885 890 895  
 Gln His Ile Arg Asn Tyr Leu Pro Ser Ile Val Glu Ile Leu Gln Glu  
 900 905 910  
 Tyr Trp His Thr Ser Pro Ser Leu Gln Thr Thr Ile Leu Ser Leu Val  
 915 920 925  
 Glu Ala Ile Ser Arg Ser Leu Glu Gly Glu Phe Lys Ile Tyr Leu Ala  
 930 935 940  
 Gly Leu Leu Pro Leu Met Leu Gly Val Leu Asp Lys Asp Asn Ser Ala  
 945 950 955 960  
 Lys Arg Thr Pro Ser Glu Arg Val Met His Ala Phe Leu Val Phe Gly  
 965 970 975  
 Ala Ser Ala Glu Tyr Met His Leu Ile Ile Pro Val Ile Val Arg  
 980 985 990  
 Thr Phe Glu Lys Gln Gly Gln Pro Thr Phe Ile Arg Lys Gln Ala Ile  
 995 1000 1005  
 Asp Thr Ile Gly Lys Ile Ser Arg Gln Val Asn Leu Asn Asp Tyr Ala  
 1010 1015 1020  
 Ala Lys Ile Ile His Pro Leu Thr Arg Val Leu Asp Met Gly Glu Pro  
 1025 1030 1035 1040  
 Val Leu Arg Thr Ala Ala Leu Asp Thr Leu Cys Ala Leu Ile Gln Gln  
 1045 1050 1055  
 Leu Gly Lys Asp Tyr Leu His Phe Met Gly Thr Val Asn Lys Thr Ile  
 1060 1065 1070  
 Asn Gln His Gln Ile Gln His Ser Asn Tyr Glu Leu Leu Val Ser Lys  
 1075 1080 1085  
 Leu Gln Lys Gly Glu Val Leu Pro Gln Asp Leu Ser Ser Gly Ala Gly  
 1090 1095 1100  
 Phe Gly Asp Gly Ala Asp Glu Ala Thr Phe Ala Asp Gln Gly Thr Lys  
 1105 1110 1115 1120  
 Lys Leu Glu Met Asn Ala Ile His Leu Lys Ala Ala Trp Asp Thr Lys

## PhoenixTemp32470.tmp.txt

Gly Lys Ser Thr 1125 Lys Glu Asp Trp Gln 1130 Glu Trp Leu Arg Arg 1135 Phe Ser  
 Thr Thr Leu 1140 Leu Thr Glu Ser Pro Asn His Ala Leu Arg Ala Cys Ala 1150  
 Ser Leu Ala 1155 Ser Val Tyr Leu Pro Leu Ala Arg Glu Leu Phe Asn Ser 1165  
 Ala Phe Val 1170 Ser Cys Trp 1175 Glu Leu Tyr Glu 1180 Gln Phe Gln Asp Glu  
 1185 Leu Ile Gln Asn 1190 Ile Glu Ser Ala Ile Lys Ser Glu Asn Val Pro Pro 1200  
 Asp Leu Leu Gly 1205 Leu Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp 1215  
 Asp Lys Ala 1220 Leu Pro Ile Asp Ile Arg Val Leu Gly Arg Glu Ala Ala 1230  
 Arg Cys His Ala Tyr Ala Lys 1235 Ala Leu His Tyr Lys Glu Leu Glu Phe 1245  
 Leu Gln Asp Gln Ser Ser Gly 1250 Ala Val Glu Ala Leu Ile Val Ile Asn 1260  
 1265 Asn Gln Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Arg Lys Ala 1275  
 Gln Leu Tyr Lys 1285 Glu Gly Ile Gln Leu Arg Glu Thr Trp Phe Glu Lys 1295  
 Leu Glu Arg Trp Glu Glu Ala Leu Ala Phe Tyr Asn Lys Arg Glu Glu 1305  
 Glu Val Pro Glu Asp Gln Ala Ile Pro Val Asp Ile Val Met Gly Lys 1310  
 1315 Met Arg Cys Leu His Ala Leu Gly Glu Trp Glu Ala Leu Ala Ser Leu 1325  
 1330 Thr Gly Ser Thr Trp 1335 Ala Asn Ser Thr Pro Glu Val Gln Arg Met Ile 1340  
 Ala Pro Leu Ala Thr Ala Ala Ala Trp Gly Leu Asn Lys Trp Asp Ser 1355  
 Met Asp Asn Tyr Leu Ser Ser Leu Lys Arg Tyr Ser Pro Asp Arg Ser 1360  
 Phe Phe Gly Ala Ile Leu Ala Leu His Arg Asn Gln Phe Arg Glu Ala 1375  
 Ile Ala Cys Val Thr Gln Ala Arg Glu Gly Leu Asp Thr Glu Leu Ser 1385  
 1390 Ala Leu Val Ser Glu Ser Tyr Asn Arg Ala Tyr Gln Val Val Val Arg 1405  
 Val Gln Met Leu Ala Glu Leu Glu Glu Leu Ile Val Tyr Lys Gln Cys 1420  
 Asp Glu Lys Lys Gln Ala Ile Met Arg Arg Thr Trp Glu Thr Arg Leu 1435  
 Lys Gly Cys Gln Arg Asn Val Glu Val Trp Gln Arg Met Leu Arg Leu 1445  
 Arg Ala Ile Val Ile Ala Pro Thr Glu Asn Met His Met Trp Ile Lys 1460  
 Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg Met Gly Leu Ala Glu Lys 1470  
 Ser Leu Lys Gln Leu Ile Gly Thr Asp Ala Pro Leu Glu Ser Met Ile 1485  
 Pro Tyr Trp Asn Asp Gln Arg Gln Pro Gly Pro Gly Pro Arg Ser Ala 1495  
 Pro Ala Ala Gln Val Ile Tyr Ala Val Leu Lys Tyr Gln Trp Glu Thr 1500  
 Gly Gln Gln Ala Ala Lys Lys Thr Asn Ile Pro Glu Lys Thr Leu Tyr 1515  
 1520 Cys Leu Arg Lys Phe Thr Asn Asp Ala Ala Gln Arg Leu Asp Ile Thr 1530  
 Arg Ala His Leu Asn Ala Gln Val Gly Ser Glu Val Asn Ile Thr Gly 1545  
 Asp Tyr Gly Phe Gln Asn Pro Met Asp Pro Thr Ile Met Ser Pro Gln 1555  
 Thr Gln Arg Ala Leu Tyr Glu Gln Thr Val Leu Leu Ala Lys Cys Tyr 1565  
 Leu Arg Gln Gly Glu Trp Leu Ile Ala Leu Asn Lys Asp Asp Trp Gln 1580  
 1600 1665 1670 1680

## PhoenixTemp32470.tmp.txt

Tyr Thr Gln Val Gln Asp Ile Leu Thr Ser Tyr Ser Gln Ala Thr Lys  
 1685 1690 1695  
 Tyr Asn Pro Arg Trp Tyr Lys Ala Trp His Ala Trp Ala Leu Ala Asn  
 1700 1705 1710  
 Phe Glu Ile Val Gln Thr Leu Thr Ala Gln Asn Glu Gly Thr Leu Ser  
 1715 1720 1725  
 Arg Ala Asp Gln Ser Met Val Ile Glu His Val Val Pro Ala Val Lys  
 1730 1735 1740  
 Gly Phe Phe Lys Ser Ile Ala Leu Ser Glu Gly Ser Ser Leu Gln Asp  
 1745 1750 1755 1760  
 Thr Leu Arg Leu Leu Thr Leu Trp Phe Thr His Gly Gly Ser Ala Asp  
 1765 1770 1775  
 Val Thr Ser Ala Val Thr Glu Gly Phe Ala Asn Val Ser Val Asp Thr  
 1780 1785 1790  
 Trp Leu Glu Val Ile Pro Gln Leu Ile Ala Arg Ile Asn Gln Pro Asn  
 1795 1800 1805  
 Lys Arg Val Gln Gln Ser Val His Asn Leu Leu Ala Asp Val Gly Arg  
 1810 1815 1820  
 Ala His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Met Lys Ser  
 1825 1830 1835 1840  
 Trp Gln Asn Thr Arg Arg Ser Arg Ser Ala Ala Gln Ile Met Asp Ser  
 1845 1850 1855  
 Met Arg Gln His Ser Ala Asn Leu Val Ala Gln Ala Asp Ile Val Ser  
 1860 1865 1870  
 His Glu Leu Ile Arg Val Ala Val Leu Trp His Glu Leu Trp His Glu  
 1875 1880 1885  
 Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Asp His Asn Ile Glu  
 1890 1895 1900  
 Gly Met Phe Ala Thr Leu Glu Pro Leu His Glu Leu Leu Glu Arg Gly  
 1905 1910 1915 1920  
 Pro Glu Thr Leu Arg Glu Ile Ser Phe Ala Gln Ala Phe Gly Arg Asp  
 1925 1930 1935  
 Leu Lys Glu Ala Gln Asp Trp Cys Arg Gln Tyr Glu Thr Ser Gln Asp  
 1940 1945 1950  
 Val Asn Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr Gln Val Phe Arg  
 1955 1960 1965  
 Arg Ile Ser Arg Gln Leu Pro Gln Val Thr Thr Leu Glu Leu Thr Tyr  
 1970 1975 1980  
 Cys Ser Pro Lys Leu Leu Asn Ala Lys Asn Leu Asp Leu Ala Val Pro  
 1985 1990 1995 2000  
 Gly Thr Tyr Lys Ser Gly Gln Pro Ile Val Arg Ile Met Ser Phe Asp  
 2005 2010 2015  
 Thr Thr Phe Ser Val Ile Asn Ser Lys Gln Arg Pro Arg Lys Leu Asn  
 2020 2025 2030  
 Val Asn Gly Ser Asp Gly Lys Ser Tyr Ala Phe Leu Leu Lys Gly His  
 2035 2040 2045  
 Glu Asp Ile Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu Cys  
 2050 2055 2060  
 Asn Thr Leu Leu Ser His Asp Ser Glu Cys Phe Lys Arg His Leu Asn  
 2065 2070 2075 2080  
 Ile Gln Arg Tyr Pro Ala Ile Pro Leu Ser Gln Asn Ser Gly Leu Leu  
 2085 2090 2095  
 Gly Trp Val Pro Asn Ser Asp Thr Leu His Val Leu Ile Arg Glu Tyr  
 2100 2105 2110  
 Arg Glu Ser Arg Lys Ile Leu Leu Asn Ile Glu His Arg Ile Met Leu  
 2115 2120 2125  
 Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Met Gln Lys Val Glu  
 2130 2135 2140  
 Val Phe Gly Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu Tyr Arg  
 2145 2150 2155 2160  
 Val Leu Trp Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Glu Arg Arg  
 2165 2170 2175  
 Thr Asn Tyr Thr Arg Ser Leu Gly Val Met Ser Met Val Gly Tyr Ile  
 2180 2185 2190  
 Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Val  
 2195 2200 2205  
 Thr Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala  
 2210 2215 2220  
 Met Lys Arg Glu Lys Tyr Pro Glu Arg Val Pro Phe Arg Leu Thr Arg

## PhoenixTemp32470.tmp.txt

2225 Met Leu Thr Tyr Ala Met Glu Val Ser Asn Ile Glu Gly Ser Phe Arg 2230 2235 2240  
 Ile Thr Cys Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser 2245 2250 2255  
 Val Met Ala Val Leu Glu Ala Phe Ile His Asp Pro Leu Leu Thr Trp 2260 2265 2270  
 Arg Leu Thr Asn Ala Pro Ser Pro Ala Gly Pro Asn Phe Arg Asn Asp 2275 2280 2285  
 Arg Asp Thr Ala Met Pro Val Pro Gly Gly Val Arg Ala Arg Arg Gln 2290 2295 2300  
 2305 Ser Ile Leu Asp Ser Asp Val Ala Pro Ser Glu Leu Leu Asn Ala Pro 2310 2315 2320  
 Glu Pro Ser Ile Gln Thr Arg Ala Arg Ala Arg Thr Asn Ser Ser Ala 2325 2330 2335  
 Gly Val Pro Glu Thr Asn Gly Gly Ala Pro Glu Val Glu Ser Gln Asn 2340 2345 2350  
 Ala Arg Ala Val Glu Val Leu Asp Arg Val Gln Gln Lys Leu Thr Gly 2355 2360 2365  
 Arg Asp Phe Lys Asn Asn Glu Glu Leu Asp Val Ile Asn Gln Val Asn 2370 2375 2380  
 2385 Lys Leu Ile Met Glu Ala Thr Lys Leu Glu Asn Leu Cys Gln His Tyr 2390 2395 2400  
 Ile Gly Trp Cys Ser Phe Trp 2405 2410 2415  
 2420

&lt;210&gt; 2526

&lt;211&gt; 7371

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7371)

&lt;400&gt; 2526

atg tca agt ttg aaa cta gaa gat agg gat agc agt gaa agt gcc gcg	48
Met Ser Ser Leu Lys 5 Leu Glu Asp Arg Asp Ser Ser Glu Ser Ala Ala	
1 10 15	
tta ctc cga tct gct gta att ggt acc ccg aat gag cag agc atg tca	96
Leu Leu Arg Ser 20 Ala Val Ile Gly 25 Pro Asn Glu Gln 30 Met Ser	
ccg gtt cct ata ctc gac tat gac tct ggt tct gct agt aat ttt aca	144
Pro Val Pro Ile Leu Asp Tyr Asp Ser Gly Ser Ala Ser Asn Phe Thr	
35 40 45	
aag ggg gaa tca act atg ttg gaa agt gat gtg ctt ccc gat ttg gaa	192
Lys Gly Glu Ser Thr Met Leu 55 Glu Ser Asp Val 60 Pro Asp Leu Glu	
50 55 60	
tca ttg ccc atg ctc atg gac tac att tta gaa tta ttg aaa agt ccg	240
Ser Leu Pro Met Leu Met 70 Asp Tyr Ile Leu Glu Leu Leu Lys Ser Pro	
65 70 75 80	
aac gtt aga cta aga cta tcg gct aca aat aag cta aag acc gtc tta	288
Asn Val Arg Leu Arg 85 Leu Ser Ala Thr Asn Lys Leu Lys Thr Val Leu	
90 95	
ata tca ttg gct cat gag ata tca ata gag cag ttt cag agc ttc aat	336
Ile Ser Leu Ala His Glu Ile Ser Ile Glu Gln Phe Gln Ser Phe Asn	
100 105 110	
cat aag ttg gac aat aag att tac cag atg gtt cac agt aag gat gtg	384
His Lys Leu Asp Asn Lys Ile Tyr Gln Met Val His Ser Lys Asp Val	
115 120 125	
aga agt caa att gca ggt gtg cta tcc gtt gac tgt tta ata tgg tat	432
Arg Ser Gln Ile Ala Gly Val 135 Leu Ser Val Asp Cys Leu Ile Trp Tyr	
130 135 140	
tat tca caa acc gaa gaa ctt cca aat tat act act aaa ctt gct gga	480
Tyr Ser Gln Thr Glu Glu Leu Pro Asn Tyr Thr Thr Lys Leu Ala Gly	
145 150 155 160	
tat tta aag gta ctt ata cct tcc aaa aac ttg gat tta atg aag caa	528
Tyr Leu Lys Val 165 Leu Ile Pro Ser Lys 170 Asn Leu Asp Leu Met Lys Gln	
165 170 175	

## PhoenixTemp32470.tmp.txt

gca	att	gag	ata	cta	ggc	aag	tta	gct	att	cca	acg	agc	tca	ata	act	576
Ala	Ile	Glu	Ile	Leu	Gly	Lys	Leu	Ala	Ile	Pro	Thr	Ser	Ile	Ile	Thr	
			180					185					190			
tct	gaa	ttt	tta	cag	cac	gag	gtt	aaa	aac	tgt	ata	gag	tgg	cta	aca	624
Ser	Glu	Phe	Leu	Gln	His	Glu	Val	Lys	Asn	Cys	Ile	Glu	Trp	Leu	Thr	
		195					200					205				
aca	tca	cct	gaa	agc	aaa	ttc	tca	acc	caa	acc	caa	gaa	cta	agg	aag	672
Thr	Ser	Pro	Glu	Ser	Lys	Phe	Ser	Thr	Gln	Thr	Gln	Glu	Leu	Arg	Lys	
	210					215					220					
cac	gcg	tca	tta	caa	ata	att	act	gta	ttg	agt	aaa	aac	tct	cct	act	720
His	Ala	Ser	Leu	Gln	Ile	Ile	Thr	Val	Leu	Ser	Lys	Asn	Ser	Pro	Thr	
225					230					235					240	
gtg	tta	tac	cca	tac	atc	aat	tct	att	ctt	gac	aat	ata	tgg	cga	gca	768
Val	Leu	Tyr	Pro	Tyr	Ile	Asn	Ser	Ile	Leu	Asp	Asn	Ile	Trp	Arg	Ala	
				245					250					255		
cta	cga	gat	cca	gat	aat	ttg	atg	cgt	ttt	gat	gcc	gct	aaa	gta	gtt	816
Leu	Arg	Asp	Pro	Asp	Asn	Leu	Met	Arg	Phe	Asp	Ala	Ala	Lys	Val	Val	
			260					265					270			
ggc	tgt	tgt	ttg	aga	atc	att	tcg	aag	aga	gat	gaa	agt	gca	tgt	aag	864
Gly	Cys	Cys	Leu	Arg	Ile	Ile	Ser	Lys	Arg	Asp	Glu	Ser	Ala	Cys	Lys	
		275					280					285				
gaa	tgg	ata	ata	cac	ctt	atg	caa	ggt	tgt	gcg	ttt	gga	ctg	act	tta	912
Glu	Trp	Ile	Ile	His	Leu	Met	Gln	Gly	Cys	Ala	Phe	Gly	Leu	Thr	Leu	
	290					295					300					
aaa	aca	aca	gat	gct	att	cat	gca	act	ttg	ttg	gtt	tat	cat	gag	ctt	960
Lys	Thr	Thr	Asp	Ala	Ile	His	Ala	Thr	Leu	Leu	Val	Tyr	His	Glu	Leu	
305					310					315					320	
ctc	gaa	ctg	gat	agc	gaa	tgc	tta	aat	gac	ttt	ttt	gat	gat	atc	tac	1008
Leu	Glu	Leu	Asp	Ser	Glu	Cys	Leu	Asn	Asp	Phe	Phe	Asp	Asp	Ile	Tyr	
				325					330					335		
tac	gtt	act	atg	tca	ttt	aag	gat	cat	agg	tca	cca	tta	att	cgg	gaa	1056
Tyr	Val	Thr	Met	Ser	Phe	Lys	Asp	His	Arg	Ser	Pro	Leu	Ile	Arg	Glu	
			340					345					350			
gaa	ata	tgt	agt	att	gta	tca	ctg	ttg	gca	tca	ctt	aat	ccg	gta	atg	1104
Glu	Ile	Cys	Ser	Ile	Val	Ser	Leu	Leu	Ala	Ser	Leu	Asn	Pro	Val	Met	
		355					360					365				
ttt	tct	aat	ctt	tat	ttg	gac	aag	gtc	atg	aac	cat	ttc	cta	gat	tta	1152
Phe	Ser	Asn	Leu	Tyr	Leu	Asp	Lys	Val	Met	Asn	His	Phe	Leu	Asp	Leu	
	370					375					380					
ctt	caa	aat	att	aca	act	tac	aac	att	tct	aac	aaa	gaa	aga	tcg	cat	1200
Leu	Gln	Asn	Ile	Thr	Thr	Tyr	Asn	Ile	Ser	Asn	Lys	Glu	Arg	Ser	His	
385					390					395					400	
atc	ttt	atc	tct	att	ggc	gat	att	gct	gat	aat	gtt	ggc	gaa	atg	atg	1248
Ile	Phe	Ile	Ser	Ile	Gly	Asp	Ile	Ala	Asp	Asn	Val	Gly	Glu	Met	Met	
				405				410						415		
ttt	gaa	ttt	tta	gaa	cct	aca	tta	att	aca	ttg	aag	gaa	agc	ctg	aga	1296
Phe	Glu	Phe	Leu	Glu	Pro	Thr	Leu	Ile	Thr	Leu	Lys	Glu	Ser	Leu	Arg	
			420					425					430			
aca	agg	tac	agg	aca	aga	aaa	gat	tac	gag	gag	ggc	gta	ttc	tat	tgt	1344
Thr	Arg	Tyr	Arg	Thr	Arg	Lys	Asp	Tyr	Glu	Glu	Gly	Val	Phe	Tyr	Cys	
		435					440					445				
att	gga	aaa	cta	tct	tct	gct	atc	aga	gaa	gat	cta	caa	aaa	tat	ttg	1392
Ile	Gly	Lys	Leu	Ser	Ser	Ala	Ile	Arg	Glu	Asp	Leu	Gln	Lys	Tyr	Leu	
	450					455					460					
gag	ggc	ggc	cta	tta	aaa	tta	att	cta	gaa	tgt	cct	tta	tca	gat	cat	1440
Glu	Gly	Gly	Leu	Leu	Lys	Leu	Ile	Leu	Glu	Cys	Pro	Leu	Ser	Asp	His	
465					470					475					480	
atg	caa	aaa	aca	ctt	tct	att	ttg	agt	gct	aac	aca	cct	gac	tat	gca	1488
Met	Gln	Lys	Thr	Leu	Ser	Ile	Leu	Ser	Ala	Asn	Thr	Pro	Asp	Tyr	Ala	
				485					490					495		
aag	cat	att	gat	aag	gaa	ttg	cta	gat	ctg	tta	tgt	atc	cat	ctt	tct	1536
Lys	His	Ile	Asp	Lys	Glu	Leu	Leu	Asp	Leu	Leu	Cys	Ile	His	Leu	Ser	
			500					505					510			
ggc	gat	cat	ttt	ata	gaa	cct	ggc	acg	ccc	ata	aaa	ggc	aaa	ccg	ttt	1584
Gly	Asp	His	Phe	Ile	Glu	Pro	Gly	Thr	Pro	Ile	Lys	Gly	Lys	Pro	Phe	
		515					520					525				
tca	cca	aat	gcg	gca	aga	gta	ttg	aga	aat	caa	aac	gtt	tat	cat	caa	1632
Ser	Pro	Asn	Ala	Ala	Arg	Val	Trp	Arg	Asn	Gln	Asn	Val	Tyr	His	Gln	
		530				535					540					

## PhoenixTemp32470.tmp.txt

atc Ile 545	gga Gly	ata Ile	gca Ala	aat Asn	gat Asp 550	gac Asp	cta Leu	aat Asn	gac Asp	gct Ala 555	caa Gln	att Ile	ctg Leu	ata Ile	cag Gln 560	1680
act Thr	ttg Leu	aag Lys	ata Ile	ttc Phe 565	cgc Arg	gaa Glu	act Thr	aaa Lys	ttt Phe 570	aag Lys	gta Val	gta Val	tta Leu	act Thr 575	gag Glu	1728
ttt Phe	gtt Val	aag Lys	aat Asn 580	gtg Val	ata Ile	ata Ile	tac Tyr	tat Tyr 585	atc Ile	gaa Glu	cat His	gaa Glu	aac Asn 590	caa Gln	ctt Leu	1776
gtg Val	cga Arg	aaa Lys 595	cta Leu	gct Ala	gct Ala	tta Leu	aca Thr 600	agt Ser	tgt Cys	gaa Glu	att Ile	ttt Phe 605	att Ile	aat Asn	gat Asp	1824
agc Ser	ata Ile 610	tgt Cys	aaa Lys	gaa Glu	act Thr	tct Ser 615	ctc Leu	aat Asn	tct Ser	ttg Leu	aat Asn 620	act Thr	gta Val	tct Ser	gaa Glu	1872
gta Val 625	cta Leu	gag Glu	aaa Lys	ttg Leu	tta Leu 630	aca Thr	gtt Val	gcg Ala	gtg Val	act Thr 635	gac Asp	ttg Leu	aat Asn	cct Pro	gaa Glu 640	1920
att Ile	aga Arg	cta Leu	gaa Glu	ata Ile 645	tta Leu	aaa Lys	cat His	ctc Leu	tca Ser 650	tcc Ser	cca Pro	ttt Phe	gac Asp	tca Ser 655	cat His	1968
ttg Leu	gca Ala	aaa Lys	cca Pro 660	gag Glu	aat Asn	ctt Leu	cag Gln	ctg Leu 665	ctg Leu	ttc Phe	aca Thr	gct Ala 670	cta Leu	aat Asn	gac Asp	2016
gaa Glu	ctg Leu	att Ile 675	gct Ala	atc Ile	caa Gln	att Ile	gag Glu 680	gct Ala	atg Met	aaa Lys	ata Ile	att Ile 685	agg Gly	aga Arg	cta Leu	2064
gtc Val	acg Thr 690	gtt Val	aat Asn	cct Pro	gca Ala	tat Tyr 695	gtt Val	att Ile	cct Pro	tcc Ser	tta Leu 700	aga Arg	aac Asn	tac Tyr	tta Leu	2112
ttg Leu 705	tct Ser	ctt Leu	att Ile	act Thr	gaa Glu 710	ttg Leu	aag Lys	tat Tyr	cca Pro	aat Asn 715	ttt Phe	tca Ser	act Thr	aga Arg	aaa Lys 720	2160
gat Asp	gag Glu	gca Ala	gcc Ala	aca Thr 725	ttg Leu	cta Leu	tgt Cys	act Thr	tta Leu 730	atc Ile	caa Gln	tca Ser	agc Ser	aaa Lys 735	aat Asn	2208
gtt Val	acg Thr	aaa Lys	cct Pro 740	tat Tyr	att Ile	gag Glu	ccc Pro 745	att Ile	tta Leu	aac Asn	gtt Val	tta Leu 750	tta Leu	cca Pro	aag Lys	2256
tta Leu	gat Asp 755	gac Asn	aac Ser	tcc Ser	tca Thr	acc Thr	gta Val 760	gca Ala	tcc Ser	att Ile	gca Ala 765	ctt Leu	aaa Lys	gca Ala	att Ile	2304
ggg Gly 770	gca Ala	cta Leu	gca Ala	gtg Val	gtt Val	ggg Gly 775	ggg Gly	gaa Glu	gat Asp	atg Met	aag Lys 780	cag Gln	aat Asn	aac Asn	tcg Ser	2352
aca Thr 785	cta Leu	ttt Phe	ccg Pro	ttg Leu	atg Met 790	ata Ile	aaa Lys	aca Thr	ctc Leu 795	cag Gln	gat Asp	caa Gln	tca Ser	aac Asn	tcc Ser 800	2400
ttc Phe	aaa Lys	aga Arg	gat Asp	gca Ala 805	gca Ala	ttg Leu	aaa Lys	tca Ser	ttg Leu 810	gga Gly	caa Gln	ttg Leu	gca Ala	gcc Ala 815	tct Ser	2448
tca Ser	gga Gly	tat Tyr	gtt Val 820	ata Ile	cgt Arg	cca Pro	ttt Phe	tta Leu 825	gac Asp	tat Tyr	cct Pro	gat Asp	ctg Leu 830	tta Leu	agt Ser	2496
gtg Val	tta Leu	att Ile 835	ggg Gly	atc Ile	tta Leu	agg Arg	gca Ala 840	gaa Glu	agt Ser	gca Ala	caa Gln	aat Asn 845	att Ile	aga Arg	agg Arg	2544
gaa Glu	act Thr 850	gtt Val	aga Arg	tta Leu	atc Ile	ggg Gly 855	att Ile	tta Leu	ggg Gly	gca Ala 860	ctt Leu	gac Asp	cca Pro	cac His	aaa Lys	2592
caa Gln 865	aga Arg	gat Asp	gtt Val	gaa Glu	gtt Val 870	aac Asn	cta Leu	aaa Lys	aca Thr	aag Lys 875	ctt Leu	gca Ala	gta Val	gaa Glu	cag Gln 880	2640
aat Asn	caa Gln	cct Pro	cca Pro	att Ile 885	gat Asp	gtg Val	gca Ala	tta Leu	tta Leu 890	atg Met	caa Gln	ggg Gly	aat Asn	tct Ser 895	cca Pro	2688
tct Ser	aat Asn	gat Asp	gac Asp 900	tat Tyr	tat Tyr	ccc Pro	aca Thr	gtc Val 905	gtg Val	att Ile	gtt Val	tcc Ser	ctc Leu 910	atg Met	aaa Lys	2736

## PhoenixTemp32470.tmp.txt

att ctg aag gat ccg tca tta tca tcc tat cat aca tct gca gtg cag	2784
Ile Leu 915 Lys Asp Pro Ser Leu 920 Ser Ser Tyr His Thr 925 Ser Ala Val Gln	
gcc ata atg cag ata ttc caa att atg gga ttg aaa tgt att tca ttc	2832
Ala Ile Met Gln Ile Phe 935 Gln Ile Met Gly Leu 940 Lys Cys Ile Ser Phe	
ctt gac aag att ata cct ggg ata att tca gtc atg cat atg tgt ccc	2880
Leu Asp Lys Ile Ile Pro 950 Gly Ile Ile Ser Val Met His Met Cys Pro 960	
agt aat ctt ttg gat ttt tat ttc caa cag cta tgt caa ttg aca gtt	2928
Ser Asn Leu Leu Asp 965 Phe Tyr Phe Gln Gln Leu Cys Gln Leu Thr Val 975	
ata atg aaa caa cat ata cgg cct tat gtt gac gaa ata tat gat gca	2976
Ile Met Lys 980 Gln His Ile Arg Pro Tyr 985 Val Asp Glu Ile Tyr Asp Ala 990	
att att gag ttt ttt cga ttt gag aac tta cag gtc aca ata tta tct	3024
Ile Ile 995 Glu Phe Phe Arg Phe 1000 Glu Asn Leu Gln Val Thr 1005 Ile Leu Ser	
gtt ata aat tct cta tgt tat gca cta aaa ggt gag ttt aaa aga ttt	3072
Val Ile 1010 Asn Ser Leu Cys Tyr 1015 Ala Leu Lys Gly Glu Phe Lys Arg Phe 1020	
atc cct tta act tta aat tta ttg tta gga gtt cta gaa aaa gat cgt	3120
Ile Pro Leu Thr Leu Asn Leu Leu Leu Gly Val 1035 Leu Glu Lys Asp Arg 1040	
tca gct gga aga gaa aac tca att aga gtt ctt cag tct ttt gtg ata	3168
Ser Ala Gly Arg 1045 Glu Asn Ser Ile Arg Val Leu Gln Ser Phe Val Ile 1055	
ttt gac aca aat cta gag ttg tat gct cat act ata tta cca tca ata	3216
Phe Asp Thr 1060 Asn Leu Glu Leu Tyr Ala His Thr Ile Leu Pro Ser Ile 1070	
tta aaa ctt act gaa ttt tct acc ggc cat ctt aga aag gct gcc atc	3264
Leu Lys Leu Thr Glu Phe Ser Thr Gly His Leu Arg Lys Ala Ala Ile 1085	
ata acg gtt ggt aaa ctt tca aaa tgt att aat tta tca gag atg gcg	3312
Ile Thr Val Gly Lys Leu Ser Lys Cys Ile Asn Leu Ser Glu Met Ala 1100	
tca cga ata gtt cac tca ttg gca agg gta ttg tat gtt aat gat gac	3360
Ser Arg Ile Val His Ser Leu Ala Arg Val Leu Tyr Val Asn Asp Asp 1120	
gaa ctt agg gaa gtg act ctg aat aca cta tct ttg ttg tta cta cgt	3408
Glu Leu Arg Glu Val Thr Leu Asn Thr Leu Ser Leu Leu Leu Arg 1135	
ttg aaa aga aac tat atc ata ttt gtc cca gta gtc aat aga att tta	3456
Leu Lys Arg Asn Tyr Ile Ile Phe Val Pro Val Val Asn Arg Ile Leu 1150	
gtt gat tgc tct ata aag cac gcc ata tat gat gat ttg gtt aca aaa	3504
Val Asp Cys Ser Ile Lys His Ala Ile Tyr Asp Asp Leu Val Thr Lys 1165	
tta ctt aat gga gag gct ctt ccg aat act atc ata ttg gaa gat gat	3552
Leu Leu Asn Gly Glu Ala Leu Pro Asn Thr Ile Ile Leu Glu Asp Asp 1180	
act gag cag aaa caa tta ttc ttg tct aat ata gct gaa act act gat	3600
Thr Glu Gln Lys Gln Leu Ser Leu Ser Asn Ile Ala Glu Thr Thr Asp 1200	
aaa aaa ctt ccg ata aac caa aat ggt ttg aaa tct gtt tgg gac tgt	3648
Lys Lys Leu Pro Ile Asn Gln Asn Gly Leu Lys Ser Val Trp Asp Cys 1215	
tct cag ctt aga acc aaa gaa gac tgg caa gat tgg ata agg cgt tta	3696
Ser Gln Leu Arg Thr Lys Glu Asp Trp Gln Asp Trp Ile Arg Arg Leu 1230	
tct atc cag ttc tta aag gag tca cca tct cca gcg cta cgc aca tgt	3744
Ser Ile 1235 Gln Phe Leu Lys Glu Ser 1240 Pro Ser Pro Ala Leu Arg Thr Cys 1245	
gct aat ttg gca agc att tat cac cct cta gca agg gaa cta ttc aat	3792
Ala Asn Leu Ala Ser Ile Tyr His Pro Leu Ala Arg Glu Leu Phe Asn 1260	
gcc tct ttc tcc agc ctt tgg tct gaa tta tac act caa tac caa gaa	3840
Ala Ser Phe Ser Ser 1270 Trp Ser Glu Leu Tyr Thr Gln Tyr Gln Glu 1280	



## PhoenixTemp32470.tmp.txt

agt ttg atc gga tct cta tgt agt gca tta tca tca cca caa aac ccc 3888  
 Ser Leu Ile Gly Ser Leu Cys Ser Ala Leu Ser Ser Pro Gln Asn Pro  
 1285 1290 1295  
 cca gaa ata cat caa gtt tta ttg aac tta ata gaa ttc atg gaa cat 3936  
 Pro Glu Ile His Gln Val Leu Leu Asn Leu Ile Glu Phe Met Glu His  
 1300 1305 1310  
 gat gat aaa ccg ttg cca atc cca ata aac act tta gga caa tat gct 3984  
 Asp Asp Lys Pro Leu Pro Ile Pro Ile Asn Thr Leu Gly Gln Tyr Ala  
 1315 1320 1325  
 gaa aga tgt cac gcg tat gct aaa gca cta cat tat aaa gaa gta aaa 4032  
 Glu Arg Cys His Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Val Lys  
 1330 1335 1340  
 ttt ata aag gag ccg gta agc tct acg att gag tcc ttg att agt att 4080  
 Phe Ile Lys Glu Pro Val Ser Ser Thr Ile Glu Ser Leu Ile Ser Ile  
 1345 1350 1355 1360  
 aac aat caa tta cat caa act gat gca gct ata ggt att cta aaa cat 4128  
 Asn Asn Gln Leu His Gln Thr Asp Ala Ala Ile Gly Ile Leu Lys His  
 1365 1370 1375  
 gca cag caa cat cat tct tat cag ttg aag gaa aca tgg tat gaa aag 4176  
 Ala Gln Gln His His Ser Tyr Gln Leu Lys Glu Thr Trp Tyr Glu Lys  
 1380 1385 1390  
 ctc caa aga tgg gat gat gca cta gac tct tat acc aaa agg gcg gaa 4224  
 Leu Gln Arg Trp Asp Asp Ala Leu Asp Ser Tyr Thr Lys Arg Ala Glu  
 1395 1400 1405  
 gca gga gat aac tca att gaa gtt act gta ggt aga atg agg tca tta 4272  
 Ala Gly Asp Asn Ser Ile Glu Val Thr Val Gly Arg Met Arg Ser Leu  
 1410 1415 1420  
 cat gct ttg ggt gaa tat gaa acc ttg tct caa ctg gca gaa aac aaa 4320  
 His Ala Leu Gly Glu Tyr Glu Thr Leu Ser Gln Leu Ala Glu Asn Lys  
 1425 1430 1435 1440  
 tgg aag aca tct aat ttg caa gta cga aag aaa att gca cct cta gct 4368  
 Trp Lys Thr Ser Asn Leu Gln Val Arg Lys Lys Ile Ala Pro Leu Ala  
 1445 1450 1455  
 gct ggg gcg gct tgg ggt tta ggt gaa tgg gat gag att gaa aag tat 4416  
 Ala Gly Ala Ala Trp Gly Leu Gly Glu Trp Asp Glu Ile Glu Lys Tyr  
 1460 1465 1470  
 att agc gta atg aaa gaa aat tcg cct gat aag gaa ttc ttt gat gca 4464  
 Ile Ser Val Met Lys Glu Asn Ser Pro Asp Lys Glu Phe Phe Asp Ala  
 1475 1480 1485  
 gtt ctg tgt tta cac aga aac aga ttt gat gag gct gag aaa cat ata 4512  
 Val Leu Cys Leu His Arg Asn Arg Phe Asp Glu Ala Glu Lys His Ile  
 1490 1495 1500  
 ttt gct gct cgc gac tta ttg gtt aca gaa ata tca gca cta att aat 4560  
 Phe Ala Ala Arg Asp Leu Leu Val Thr Glu Ile Ser Ala Leu Ile Asn  
 1505 1510 1515 1520  
 gaa agt tat act aga gct tat ggt gtt gtt gtt cggt acg caa atc ata 4608  
 Glu Ser Tyr Thr Arg Ala Tyr Gly Val Val Val Arg Thr Gln Ile Ile  
 1525 1530 1535  
 gct gaa ctc gaa gaa ata att gac tat aag aag gca tct cat aac tcg 4656  
 Ala Glu Leu Glu Glu Ile Ile Asp Tyr Lys Lys Ala Ser His Asn Ser  
 1540 1545 1550  
 gca aaa aga cat tac cgc aat tta tgg gat caa cgt cta ctg ggt 4704  
 Ala Lys Arg Thr His Tyr Arg Asn Leu Trp Asp Gln Arg Leu Leu Gly  
 1555 1560 1565  
 tgt cag aaa aat gtt gac att tgg caa aga att cta cga gtg cgc tct 4752  
 Cys Gln Lys Asn Val Asp Ile Trp Gln Arg Ile Leu Arg Val Arg Ser  
 1570 1575 1580  
 ttg gtc gtt aag cca aaa cag gat atg cat att tgg ata aag ttt gct 4800  
 Leu Val Val Lys Pro Lys Gln Asp Met His Ile Trp Ile Lys Phe Ala  
 1585 1590 1595 1600  
 aat tta tgt cgt aag tct ggc aga atg agt ttg gct caa aaa gct ctt 4848  
 Asn Leu Cys Arg Lys Ser Gly Arg Met Ser Leu Ala Gln Lys Ala Leu  
 1605 1610 1615  
 tac tca tta cta gag gat ggt agt gat cca aat caa cca aat act gcg 4896  
 Tyr Ser Leu Leu Glu Asp Gly Ser Asp Pro Asn Gln Pro Asn Thr Ala  
 1620 1625 1630  
 aag gca cca cca cca gta gtt tac gct caa tta aaa tat ctg tgg gcg 4944  
 Lys Ala Pro Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Leu Trp Ala  
 1635 1640 1645

## PhoenixTemp32470.tmp.txt

aca tct tcc cat gaa gag gtc ttg cat cat tta atc gga ttc act tca	4992
Thr Ser His Glu Glu Val Leu His His Leu Ile Gly Phe Thr Ser	
1650 1655 1660	
aga atg gct cat gat ttg ggt ttg gac cct agt aat atg ata gcg cag	5040
Arg Met Ala His Asp Leu Gly Leu Asp Pro Ser Asn Met Ile Ala Gln	
1665 1670 1675 1680	
agc gta ccg caa aat gcg acg gtt gct ccg cag cac att gag aca tac	5088
Ser Val Pro Gln Asn Ala Thr Val Ala Pro Gln His Ile Glu Thr Tyr	
1685 1690 1695	
aca aaa ttg cta gca agg tgc ttt ttg aaa cag gga gaa tgg aga gtt	5136
Thr Lys Leu Leu Ala Arg Cys Phe Leu Lys Gln Gly Glu Trp Arg Val	
1700 1705 1710	
gca ata caa ccc aat tgg aga gtg caa aat cct gat gcg att ttg ggt	5184
Ala Ile Gln Pro Asn Trp Arg Val Gln Asn Pro Asp Ala Ile Leu Gly	
1715 1720 1725	
tct tac tta tta gca aca cac ttt gat aag aat tgg tat aag gca tgg	5232
Ser Tyr Leu Leu Ala Thr His Phe Asp Lys Asn Trp Tyr Lys Ala Trp	
1730 1735 1740	
cac aac tgg gct tta gcc aat ttt gag gtt att agt atg cta acg tca	5280
His Asn Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Met Leu Thr Ser	
1745 1750 1755 1760	
aaa aat aaa aat gag gac acg aac ggc gct caa gtt aat ggg gat tgg	5328
Lys Asn Lys Asn Glu Asp Thr Asn Gly Ala Gln Val Asn Gly Asp Trp	
1765 1770 1775	
agg atc gaa aat agt ata atg gga aca gat tat ttt agt aac gat gaa	5376
Arg Ile Glu Asn Ser Ile Met Gly Thr Asp Tyr Phe Ser Asn Asp Glu	
1780 1785 1790	
agt aag ttc tcc cct gaa att ata cag cgt cac gtt gtt cct gct atc	5424
Ser Lys Phe Ser Pro Glu Ile Ile Gln Arg His Val Val Pro Ala Ile	
1795 1800 1805	
aaa ggt ttc ttt cat tca ata tcc ctc ctt aag gca agt tca ctt caa	5472
Lys Gly Phe Phe His Ser Ile Ser Leu Leu Lys Ala Ser Ser Leu Gln	
1810 1815 1820	
gat aat tta cgt ctt ctg aca tta tgg ttc acc ttc ggt gga gta gaa	5520
Asp Asn Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Gly Val Glu	
1825 1830 1835 1840	
gaa gct aat aaa gcg atg cat gat gga ttt ggt atg att aaa att gac	5568
Glu Ala Asn Lys Ala Met His Asp Gly Phe Gly Met Ile Lys Ile Asp	
1845 1850 1855	
aat tgg tta gaa gtc cta cca caa ttg ata tct aga ata cat caa cct	5616
Asn Trp Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln Pro	
1860 1865 1870	
aat cct gtt gtg agt aaa gcg ttg ctt tca ctt ctt tct gat ttg ggg	5664
Asn Pro Val Val Ser Lys Ala Leu Leu Ser Leu Leu Ser Asp Leu Gly	
1875 1880 1885	
aaa gcg cat cca caa gca cta att tat cct tta act gtt gca att aaa	5712
Lys Ala His Pro Gln Ala Leu Ile Tyr Pro Leu Thr Val Ala Ile Lys	
1890 1895 1900	
tcc gag tct gtt tcg agg cag aaa gct gct ttg tcc ata att gag aag	5760
Ser Glu Ser Val Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu Lys	
1905 1910 1915 1920	
atg agg ata cat agt cct atc tta gtt gac caa gcg gag tta gta agt	5808
Met Arg Ile His Ser Pro Ile Leu Val Asp Gln Ala Glu Leu Val Ser	
1925 1930 1935	
cat gaa ctg atc agg ttg gct gtt cta tgg cac gaa tta tgg tat gaa	5856
His Glu Leu Ile Arg Leu Ala Val Leu Trp His Glu Leu Trp Tyr Glu	
1940 1945 1950	
gga ctg gag gat gca agt aga caa ttt ttc gga gag cat aat acc gaa	5904
Gly Leu Glu Asp Ala Ser Arg Gln Phe Phe Gly Glu His Asn Thr Glu	
1955 1960 1965	
aaa atg ttt gca acg tta gaa cct ctt cat gag tta ctg aac tgc gaa	5952
Lys Met Phe Ala Thr Leu Glu Pro Leu His Glu Leu Leu Asn Cys Glu	
1970 1975 1980	
ccc gag act tta cga gag gcc aca ttt aag aaa tcc ttc ggc aga gat	6000
Pro Glu Thr Leu Arg Glu Ala Thr Phe Lys Lys Ser Phe Gly Arg Asp	
1985 1990 1995 2000	
cta aat gat gct tat gag tgg gtt ctc aac tac aag cgc aca aaa gat	6048
Leu Asn Asp Ala Tyr Glu Trp Val Leu Asn Tyr Lys Arg Thr Lys Asp	
2005 2010 2015	

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gta agc aac tta aat caa gct tgg gat ata tat tat aac gtc ttt aga	6096
Val Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg	
2020 2025 2030	
agg att agc agg caa ttg cca caa ttg caa tca ttg gaa ctt caa tac	6144
Arg Ile Ser Arg Gln Leu Pro Gln Leu Gln Ser Leu Glu Leu Gln Tyr	
2035 2040 2045	
gtt tct cca aaa cta tta gca gca cat gat ttg gaa tta gct gtc cct	6192
Val Ser Pro Lys Leu Leu Ala His Asp Leu Glu Leu Ala Val Pro	
2050 2055 2060	
gga aca tac tca gcc act aag aat gtg atc aag ata tct tat ttt gaa	6240
Gly Thr Tyr Ser Ala Thr Lys Asn Val Ile Lys Ile Ser Tyr Phe Glu	
2065 2070 2075 2080	
ccg aca tta aca gtc ata tcg tca aaa cag aga cct aga aag ata tgg	6288
Pro Thr Leu Thr Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Ile Trp	
2085 2090 2095	
att cat ggt agt gac ggt gtt gaa tac cag tat gtc tta aaa ggt cac	6336
Ile His Gly Ser Asp Gly Val Glu Tyr Gln Tyr Val Leu Lys Gly His	
2100 2105 2110	
gag gat att cga caa gac aac tta gta atg cag tta ttt gga ttg gta	6384
Glu Asp Ile Arg Gln Asp Asn Leu Val Met Gln Leu Phe Gly Leu Val	
2115 2120 2125	
aat acc ctc cta aga aat gat tct gaa tgt ttc caa aga cat ttg gac	6432
Asn Thr Leu Leu Arg Asn Asp Ser Glu Cys Phe Gln Arg His Leu Asp	
2130 2135 2140	
ata cag caa tat cca gct att cca tta tct cct aaa tct ggt tta ttg	6480
Ile Gln Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu	
2145 2150 2155 2160	
ggc tgg gtt cct aac agt gac act ttt cat gta ctt att agc gaa cac	6528
Gly Trp Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Ser Glu His	
2165 2170 2175	
cgt gat gca aag aaa att cct ctc aac att gag cat tgg gtt atg ttg	6576
Arg Asp Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val Met Leu	
2180 2185 2190	
cag atg gca cca gac ttt gac aat ctt act ctg ctt caa aag att gaa	6624
Gln Met Ala Pro Asp Phe Asp Asn Leu Thr Leu Leu Gln Lys Ile Glu	
2195 2200 2205	
gta ttt act tat gct tta gat agt aca aaa ggt caa gac ctg tat aaa	6672
Val Phe Thr Tyr Ala Leu Asp Ser Thr Lys Gly Gln Asp Leu Tyr Lys	
2210 2215 2220	
att ttg tgg ctg aaa agt aga tca tca gag gca tgg ctg gat aga aga	6720
Ile Leu Trp Leu Lys Ser Arg Ser Ser Glu Ala Trp Leu Asp Arg Arg	
2225 2230 2235 2240	
aca aca tac aca aga tca cta gct gtt atg tct atg gtt ggt tat att	6768
Thr Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile	
2245 2250 2255	
ctt ggt cta ggt gat cgt cac cca agt aat tta atg tta gac aga aca	6816
Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Thr	
2260 2265 2270	
aca ggt aag gta att cat atc gac ttc ggt gat tgt ttt gaa gct gct	6864
Thr Gly Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala	
2275 2280 2285	
ata ctt agg gag aaa ttc cca gag gaa gta cca ttc aga ttg act aga	6912
Ile Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr Arg	
2290 2295 2300	
atg ctt aca ttc gca atg gag gtt agc ggc ata gaa gga agc ttc aga	6960
Met Leu Thr Phe Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg	
2305 2310 2315 2320	
ata act tgt gag cac gta atg aga gtt ttg agg gca aac aaa gaa tct	7008
Ile Thr Cys Glu His Val Met Arg Val Leu Arg Ala Asn Lys Glu Ser	
2325 2330 2335	
tta atg gcc atg tta gaa gca ttt gca ttt gat cca tta atc cat tgg	7056
Leu Met Ala Met Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile His Trp	
2340 2345 2350	
ggc ttt gat tta cca ccg cag aaa ata aca gaa atg act ggc att cag	7104
Gly Phe Asp Leu Pro Pro Gln Lys Ile Thr Glu Met Thr Gly Ile Gln	
2355 2360 2365	
ttg caa tta agt aac acc aac gaa ttg cta cgt aga gga gca att act	7152
Leu Gln Leu Ser Asn Thr Asn Glu Leu Leu Arg Arg Gly Ala Ile Thr	
2370 2375 2380	

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tta gag caa gct aat aaa atg gaa aaa gag cag caa gcg gag atc aag	7200
Leu Glu Gln Ala Asn Lys Met Glu Lys Glu Gln Gln Ala Glu Ile Lys	
2385 2390 2395 2400	
aat gct aga gca ttg ttg gtt ctt cgg aga atc atc aac aag tta act	7248
Asn Ala Arg Ala Leu Leu Val Leu Arg Arg Ile Ile Asn Lys Leu Thr	
2405 2410 2415	
ggg aac gat ttt aaa agg tgt aag gac ctc gga att aat gaa caa gtt	7296
Gly Asn Asp Phe Lys Arg Cys Lys Asp Leu Gly Ile Asn Glu Gln Val	
2420 2425 2430	
gat aag tta atc cag caa gct act tct gtg gaa aat tta tgt caa cat	7344
Asp Lys Leu Ile Gln Gln Ala Thr Ser Val Glu Asn Leu Cys Gln His	
2435 2440 2445	
tat atc ggt tgg tgt cca ttt tgg taa	7371
Tyr Ile Gly Trp Cys Pro Phe Trp	
2450 2455	

&lt;210&gt; 2527

&lt;211&gt; 2456

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2527

Met Ser Ser Leu Lys Leu Glu Asp Arg Asp Ser Ser Glu Ser Ala Ala	
1 5 10 15	
Leu Leu Arg Ser Ala Val Ile Gly Thr Pro Asn Glu Gln Ser Met Ser	
20 25 30	
Pro Val Pro Ile Leu Asp Tyr Asp Ser Gly Ser Ala Ser Asn Phe Thr	
35 40 45	
Lys Gly Glu Ser Thr Met Leu Glu Ser Asp Val Leu Pro Asp Leu Glu	
50 55 60	
Ser Leu Pro Met Leu Met Asp Tyr Ile Leu Glu Leu Leu Lys Ser Pro	
65 70 75 80	
Asn Val Arg Leu Arg Leu Ser Ala Thr Asn Lys Leu Lys Thr Val Leu	
85 90 95	
Ile Ser Leu Ala His Glu Ile Ser Ile Glu Gln Phe Gln Ser Phe Asn	
100 105 110	
His Lys Leu Asp Asn Lys Ile Tyr Gln Met Val His Ser Lys Asp Val	
115 120 125	
Arg Ser Gln Ile Ala Gly Val Leu Ser Val Asp Cys Leu Ile Trp Tyr	
130 135 140	
Tyr Ser Gln Thr Glu Glu Leu Pro Asn Tyr Thr Thr Lys Leu Ala Gly	
145 150 155 160	
Tyr Leu Lys Val Leu Ile Pro Ser Lys Asn Leu Asp Leu Met Lys Gln	
165 170 175	
Ala Ile Glu Ile Leu Gly Lys Leu Ala Ile Pro Thr Ser Ser Ile Thr	
180 185 190	
Ser Glu Phe Leu Gln His Glu Val Lys Asn Cys Ile Glu Trp Leu Thr	
195 200 205	
Thr Ser Pro Glu Ser Lys Phe Ser Thr Gln Thr Gln Glu Leu Arg Lys	
210 215 220	
His Ala Ser Leu Gln Ile Thr Val Leu Ser Lys Asn Ser Pro Thr	
225 230 235 240	
Val Leu Tyr Pro Tyr Ile Asn Ser Ile Leu Asp Asn Ile Trp Arg Ala	
245 250 255	
Leu Arg Asp Pro Asp Asn Leu Met Arg Phe Asp Ala Ala Lys Val Val	
260 265 270	
Gly Cys Cys Leu Arg Ile Ile Ser Lys Arg Asp Glu Ser Ala Cys Lys	
275 280 285	
Glu Trp Ile Ile His Leu Met Gln Gly Cys Ala Phe Gly Leu Thr Leu	
290 295 300	
Lys Thr Thr Asp Ala Ile His Ala Thr Leu Leu Val Tyr His Glu Leu	
305 310 315 320	
Leu Glu Leu Asp Ser Glu Cys Leu Asn Asp Phe Phe Asp Asp Ile Tyr	
325 330 335	
Tyr Val Thr Met Ser Phe Lys Asp His Arg Ser Pro Leu Ile Arg Glu	
340 345 350	
Glu Ile Cys Ser Ile Val Ser Leu Leu Ala Ser Leu Asn Pro Val Met	
355 360 365	
Phe Ser Asn Leu Tyr Leu Asp Lys Val Met Asn His Phe Leu Asp Leu	

## PhoenixTemp32470.tmp.txt

	370					375					380				
Leu 385	Gln	Asn	Ile	Thr	Thr 390	Tyr	Asn	Ile	Ser	Asn 395	Lys	Glu	Arg	Ser	His 400
Ile	Phe	Ile	Ser	Ile 405	Gly	Asp	Ile	Ala	Asp 410	Asn	Val	Gly	Glu	Met 415	Met
Phe	Glu	Phe	Leu 420	Glu	Pro	Thr	Leu	Ile 425	Thr	Leu	Lys	Glu	Ser 430	Leu	Arg
Thr	Arg	Tyr 435	Arg	Thr	Arg	Lys	Asp 440	Tyr	Glu	Glu	Gly	Val 445	Phe	Tyr	Cys
Ile	Gly 450	Lys	Leu	Ser	Ser	Ala 455	Ile	Arg	Glu	Asp	Leu 460	Gln	Lys	Tyr	Leu
Glu 465	Gly	Gly	Leu	Leu	Lys 470	Leu	Ile	Leu	Glu	Cys 475	Pro	Leu	Ser	Asp	His 480
Met	Gln	Lys	Thr 485	Leu	Ser	Ile	Leu	Ser	Ala 490	Asn	Thr	Pro	Asp	Tyr 495	Ala
Lys	His	Ile	Asp 500	Lys	Glu	Leu	Leu	Asp 505	Leu	Leu	Cys	Ile	His 510	Leu	Ser
Gly	Asp	His 515	Phe	Ile	Glu	Pro	Gly 520	Thr	Pro	Ile	Lys	Gly 525	Lys	Pro	Phe
Ser	Pro 530	Asn	Ala	Ala	Arg	Val 535	Trp	Arg	Asn	Gln	Asn 540	Val	Tyr	His	Gln
Ile 545	Gly	Ile	Ala	Asn	Asp 550	Asp	Leu	Asn	Asp	Ala 555	Gln	Ile	Leu	Ile	Gln 560
Thr	Leu	Lys	Ile	Phe 565	Arg	Glu	Thr	Lys	Phe 570	Lys	Val	Val	Leu	Thr 575	Glu
Phe	Val	Lys	Asn 580	Val	Ile	Ile	Tyr	Tyr 585	Ile	Glu	His	Glu	Asn 590	Gln	Leu
Val	Arg	Lys 595	Leu	Ala	Ala	Leu	Thr 600	Ser	Cys	Glu	Ile	Phe 605	Ile	Asn	Asp
Ser	Ile 610	Cys	Lys	Glu	Thr	Ser 615	Leu	Asn	Ser	Leu	Asn 620	Thr	Val	Ser	Glu
Val 625	Leu	Glu	Lys	Leu	Leu 630	Thr	Val	Ala	Val	Thr 635	Asp	Leu	Asn	Pro	Glu 640
Ile	Arg	Leu	Glu	Ile 645	Leu	Lys	His	Leu	Ser 650	Ser	Pro	Phe	Asp	Ser 655	His
Leu	Ala	Lys	Pro 660	Glu	Asn	Leu	Gln	Leu 665	Leu	Phe	Thr	Ala	Leu 670	Asn	Asp
Glu	Leu	Ile 675	Ala	Ile	Gln	Ile	Glu 680	Ala	Met	Lys	Ile	Ile 685	Gly	Arg	Leu
Val	Thr 690	Val	Asn	Pro	Ala	Tyr 695	Val	Ile	Pro	Ser	Leu 700	Arg	Asn	Tyr	Leu
Leu 705	Ser	Leu	Ile	Thr	Glu 710	Leu	Lys	Tyr	Pro	Asn 715	Phe	Ser	Thr	Arg	Lys 720
Asp	Glu	Ala	Ala	Thr 725	Leu	Leu	Cys	Thr	Leu 730	Ile	Gln	Ser	Ser	Lys 735	Asn
Val	Thr	Lys	Pro 740	Tyr	Ile	Glu	Pro	Ile 745	Leu	Asn	Val	Leu	Leu 750	Pro	Lys
Leu	Asp	Asp 755	Asn	Ser	Ser	Thr	Val 760	Ala	Ser	Ile	Ala	Leu 765	Lys	Ala	Ile
Gly	Ala 770	Leu	Ala	Val	Val	Gly 775	Gly	Glu	Asp	Met	Lys 780	Gln	Asn	Asn	Ser
Thr 785	Leu	Phe	Pro	Leu	Met 790	Ile	Lys	Thr	Leu	Gln 795	Asp	Gln	Ser	Asn	Ser 800
Phe	Lys	Arg	Asp	Ala 805	Ala	Leu	Lys	Ser	Leu 810	Gly	Gln	Leu	Ala	Ala 815	Ser
Ser	Gly	Tyr	Val 820	Ile	Arg	Pro	Phe	Leu 825	Asp	Tyr	Pro	Asp	Leu 830	Leu	Ser
Val	Leu	Ile 835	Gly	Ile	Leu	Arg	Ala 840	Glu	Ser	Ala	Gln	Asn 845	Ile	Arg	Arg
Glu	Thr 850	Val	Arg	Leu	Ile	Gly 855	Ile	Leu	Gly	Ala	Leu 860	Asp	Pro	His	Lys
Gln 865	Arg	Asp	Val	Glu	Val 870	Asn	Leu	Lys	Thr	Lys 875	Leu	Ala	Val	Glu	Gln 880
Asn	Gln	Pro	Pro	Ile 885	Asp	Val	Ala	Leu	Leu 890	Met	Gln	Gly	Asn	Ser 895	Pro
Ser	Asn	Asp	Asp 900	Tyr	Tyr	Pro	Thr	Val 905	Val	Ile	Val	Ser	Leu 910	Met	Lys
Ile	Leu	Lys 915	Asp	Pro	Ser	Leu	Ser 920	Ser	Tyr	His	Thr	Ser 925	Ala	Val	Gln

## PhoenixTemp32470.tmp.txt

Ala Ile Met Gln Ile Phe Gln Ile Met Gly Leu Lys Cys Ile Ser Phe  
 930 935 940  
 Leu Asp Lys Ile Ile Pro Gly Ile Ile Ser Val Met His Met Cys Pro  
 945 950 955 960  
 Ser Asn Leu Leu Asp Phe Tyr Phe Gln Gln Leu Cys Gln Leu Thr Val  
 965 970 975  
 Ile Met Lys Gln His Ile Arg Pro Tyr Val Asp Glu Ile Tyr Asp Ala  
 980 985 990  
 Ile Ile Glu Phe Phe Arg Phe Glu Asn Leu Gln Val Thr Ile Leu Ser  
 995 1000 1005  
 Val Ile Asn Ser Leu Cys Tyr Ala Leu Lys Gly Glu Phe Lys Arg Phe  
 1010 1015 1020  
 Ile Pro Leu Thr Leu Asn Leu Leu Gly Val Leu Glu Lys Asp Arg  
 1025 1030 1035 1040  
 Ser Ala Gly Arg Glu Asn Ser Ile Arg Val Leu Gln Ser Phe Val Ile  
 1045 1050 1055  
 Phe Asp Thr Asn Leu Glu Leu Tyr Ala His Thr Ile Leu Pro Ser Ile  
 1060 1065 1070  
 Leu Lys Leu Thr Glu Phe Ser Thr Gly His Leu Arg Lys Ala Ala Ile  
 1075 1080 1085  
 Ile Thr Val Gly Lys Leu Ser Lys Cys Ile Asn Leu Ser Glu Met Ala  
 1090 1095 1100  
 Ser Arg Ile Val His Ser Leu Ala Arg Val Leu Tyr Val Asn Asp Asp  
 1105 1110 1115 1120  
 Glu Leu Arg Glu Val Thr Leu Asn Thr Leu Ser Leu Leu Leu Arg  
 1125 1130 1135  
 Leu Lys Arg Asn Tyr Ile Ile Phe Val Pro Val Val Asn Arg Ile Leu  
 1140 1145 1150  
 Val Asp Cys Ser Ile Lys His Ala Ile Tyr Asp Asp Leu Val Thr Lys  
 1155 1160 1165  
 Leu Leu Asn Gly Glu Ala Leu Pro Asn Thr Ile Ile Leu Glu Asp Asp  
 1170 1175 1180  
 Thr Glu Gln Lys Gln Leu Ser Leu Ser Asn Ile Ala Glu Thr Thr Asp  
 1185 1190 1195 1200  
 Lys Lys Leu Pro Ile Asn Gln Asn Gly Leu Lys Ser Val Trp Asp Cys  
 1205 1210 1215  
 Ser Gln Leu Arg Thr Lys Glu Asp Trp Gln Asp Trp Ile Arg Arg Leu  
 1220 1225 1230  
 Ser Ile Gln Phe Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Thr Cys  
 1235 1240 1245  
 Ala Asn Leu Ala Ser Ile Tyr His Pro Leu Ala Arg Glu Leu Phe Asn  
 1250 1255 1260  
 Ala Ser Phe Ser Ser Leu Trp Ser Glu Leu Tyr Thr Gln Tyr Gln Glu  
 1265 1270 1275 1280  
 Ser Leu Ile Gly Ser Leu Cys Ser Ala Leu Ser Ser Pro Gln Asn Pro  
 1285 1290 1295  
 Pro Glu Ile His Gln Val Leu Leu Asn Leu Ile Glu Phe Met Glu His  
 1300 1305 1310  
 Asp Asp Lys Pro Leu Pro Ile Pro Ile Asn Thr Leu Gly Gln Tyr Ala  
 1315 1320 1325  
 Glu Arg Cys His Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Val Lys  
 1330 1335 1340  
 Phe Ile Lys Glu Pro Val Ser Ser Thr Ile Glu Ser Leu Ile Ser Ile  
 1345 1350 1355 1360  
 Asn Asn Gln Leu His Gln Thr Asp Ala Ala Ile Gly Ile Leu Lys His  
 1365 1370 1375  
 Ala Gln Gln His Ser Tyr Gln Leu Lys Glu Thr Trp Tyr Glu Lys  
 1380 1385 1390  
 Leu Gln Arg Trp Asp Asp Ala Leu Asp Ser Tyr Thr Lys Arg Ala Glu  
 1395 1400 1405  
 Ala Gly Asp Asn Ser Ile Glu Val Thr Val Gly Arg Met Arg Ser Leu  
 1410 1415 1420  
 His Ala Leu Gly Glu Tyr Glu Thr Leu Ser Gln Leu Ala Glu Asn Lys  
 1425 1430 1435 1440  
 Trp Lys Thr Ser Asn Leu Gln Val Arg Lys Lys Ile Ala Pro Leu Ala  
 1445 1450 1455  
 Ala Gly Ala Ala Trp Gly Leu Gly Glu Trp Asp Glu Ile Glu Lys Tyr  
 1460 1465 1470  
 Ile Ser Val Met Lys Glu Asn Ser Pro Asp Lys Glu Phe Phe Asp Ala

## PhoenixTemp32470.tmp.txt

```

1475      1480      1485
Val Leu Cys Leu His Arg Asn Arg Phe Asp Glu Ala Glu Lys His Ile
1490      1495      1500
Phe Ala Ala Arg Asp Leu Leu Val Thr Glu Ile Ser Ala Leu Ile Asn
1505      1510      1515      1520
Glu Ser Tyr Thr Arg Ala Tyr Gly Val Val Val Arg Thr Gln Ile Ile
1525      1530      1535
Ala Glu Leu Glu Glu Ile Ile Asp Tyr Lys Lys Ala Ser His Asn Ser
1540      1545      1550
Ala Lys Arg Thr His Tyr Arg Asn Leu Trp Asp Gln Arg Leu Leu Gly
1555      1560      1565
Cys Gln Lys Asn Val Asp Ile Trp Gln Arg Ile Leu Arg Val Arg Ser
1570      1575      1580
Leu Val Val Lys Pro Lys Gln Asp Met His Ile Trp Ile Lys Phe Ala
1585      1590      1595      1600
Asn Leu Cys Arg Lys Ser Gly Arg Met Ser Leu Ala Gln Lys Ala Leu
1605      1610      1615
Tyr Ser Leu Leu Glu Asp Gly Ser Asp Pro Asn Gln Pro Asn Thr Ala
1620      1625      1630
Lys Ala Pro Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Leu Trp Ala
1635      1640      1645
Thr Ser Ser His Glu Glu Val Leu His His Leu Ile Gly Phe Thr Ser
1650      1655      1660
Arg Met Ala His Asp Leu Gly Leu Asp Pro Ser Asn Met Ile Ala Gln
1665      1670      1675      1680
Ser Val Pro Gln Asn Ala Thr Val Ala Pro Gln His Ile Glu Thr Tyr
1685      1690      1695
Thr Lys Leu Leu Ala Arg Cys Phe Leu Lys Gln Gly Glu Trp Arg Val
1700      1705      1710
Ala Ile Gln Pro Asn Trp Arg Val Gln Asn Pro Asp Ala Ile Leu Gly
1715      1720      1725
Ser Tyr Leu Leu Ala Thr His Phe Asp Lys Asn Trp Tyr Lys Ala Trp
1730      1735      1740
His Asn Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Met Leu Thr Ser
1745      1750      1755      1760
Lys Asn Lys Asn Glu Asp Thr Asn Gly Ala Gln Val Asn Gly Asp Trp
1765      1770      1775
Arg Ile Glu Asn Ser Ile Met Gly Thr Asp Tyr Phe Ser Asn Asp Glu
1780      1785      1790
Ser Lys Phe Ser Pro Glu Ile Ile Gln Arg His Val Val Pro Ala Ile
1795      1800      1805
Lys Gly Phe Phe His Ser Ile Ser Leu Leu Lys Ala Ser Ser Leu Gln
1810      1815      1820
Asp Asn Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Gly Val Glu
1825      1830      1835      1840
Glu Ala Asn Lys Ala Met His Asp Gly Phe Gly Met Ile Lys Ile Asp
1845      1850      1855
Asn Trp Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln Pro
1860      1865      1870
Asn Pro Val Val Ser Lys Ala Leu Leu Ser Leu Leu Ser Asp Leu Gly
1875      1880      1885
Lys Ala His Pro Gln Ala Leu Ile Tyr Pro Leu Thr Val Ala Ile Lys
1890      1895      1900
Ser Glu Ser Val Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu Lys
1905      1910      1915      1920
Met Arg Ile His Ser Pro Ile Leu Val Asp Gln Ala Glu Leu Val Ser
1925      1930      1935
His Glu Leu Ile Arg Leu Ala Val Leu Trp His Glu Leu Trp Tyr Glu
1940      1945      1950
Gly Leu Glu Asp Ala Ser Arg Gln Phe Phe Gly Glu His Asn Thr Glu
1955      1960      1965
Lys Met Phe Ala Thr Leu Glu Pro Leu His Glu Leu Leu Asn Cys Glu
1970      1975      1980
Pro Glu Thr Leu Arg Glu Ala Thr Phe Lys Lys Ser Phe Gly Arg Asp
1985      1990      1995      2000
Leu Asn Asp Ala Tyr Glu Trp Val Leu Asn Tyr Lys Arg Thr Lys Asp
2005      2010      2015
Val Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg
2020      2025      2030

```

## PhoenixTemp32470.tmp.txt

Arg Ile Ser Arg Gln Leu Pro Gln Leu Gln Ser Leu Glu Leu Gln Tyr  
 2035 2040 2045  
 Val Ser Pro Lys Leu Leu Ala Ala His Asp Leu Glu Leu Ala Val Pro  
 2050 2055 2060  
 Gly Thr Tyr Ser Ala Thr Lys Asn Val Ile Lys Ile Ser Tyr Phe Glu  
 2065 2070 2075 2080  
 Pro Thr Leu Thr Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Ile Trp  
 2085 2090 2095  
 Ile His Gly Ser Asp Gly Val Glu Tyr Gln Tyr Val Leu Lys Gly His  
 2100 2105 2110  
 Glu Asp Ile Arg Gln Asp Asn Leu Val Met Gln Leu Phe Gly Leu Val  
 2115 2120 2125  
 Asn Thr Leu Leu Arg Asn Asp Ser Glu Cys Phe Gln Arg His Leu Asp  
 2130 2135 2140  
 Ile Gln Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu  
 2145 2150 2155 2160  
 Gly Trp Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Ser Glu His  
 2165 2170 2175  
 Arg Asp Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val Met Leu  
 2180 2185 2190  
 Gln Met Ala Pro Asp Phe Asp Asn Leu Thr Leu Leu Gln Lys Ile Glu  
 2195 2200 2205  
 Val Phe Thr Tyr Ala Leu Asp Ser Thr Lys Gly Gln Asp Leu Tyr Lys  
 2210 2215 2220  
 Ile Leu Trp Leu Lys Ser Arg Ser Ser Glu Ala Trp Leu Asp Arg Arg  
 2225 2230 2235 2240  
 Thr Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile  
 2245 2250 2255  
 Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Thr  
 2260 2265 2270  
 Thr Gly Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala  
 2275 2280 2285  
 Ile Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr Arg  
 2290 2295 2300  
 Met Leu Thr Phe Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg  
 2305 2310 2315 2320  
 Ile Thr Cys Glu His Val Met Arg Val Leu Arg Ala Asn Lys Glu Ser  
 2325 2330 2335  
 Leu Met Ala Met Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile His Trp  
 2340 2345 2350  
 Gly Phe Asp Leu Pro Pro Gln Lys Ile Thr Glu Met Thr Gly Ile Gln  
 2355 2360 2365  
 Leu Gln Leu Ser Asn Thr Asn Glu Leu Leu Arg Arg Gly Ala Ile Thr  
 2370 2375 2380  
 Leu Glu Gln Ala Asn Lys Met Glu Lys Glu Gln Gln Ala Glu Ile Lys  
 2385 2390 2395 2400  
 Asn Ala Arg Ala Leu Val Leu Arg Arg Ile Ile Asn Lys Leu Thr  
 2405 2410 2415  
 Gly Asn Asp Phe Lys Arg Cys Lys Asp Leu Gly Ile Asn Glu Gln Val  
 2420 2425 2430  
 Asp Lys Leu Ile Gln Gln Ala Thr Ser Val Glu Asn Leu Cys Gln His  
 2435 2440 2445  
 Tyr Ile Gly Trp Cys Pro Phe Trp  
 2450 2455

&lt;210&gt; 2528

&lt;211&gt; 7416

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7416)

&lt;400&gt; 2528

atg cag gcc att tta aga aaa gga gca gat aag cga ata aaa acg ggc  
 Met Gln Ala Ile Leu Arg Lys Gly Ala Asp Lys Arg Ile Lys Thr Gly  
 1 5 10 15  
 aat aaa agc aat aaa ttg act gta cga aag cat cgt aaa tca gag gaa  
 Page 1873

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## PhoenixTemp32470.tmp.txt

Asn	Lys	Ser	Asn 20	Lys	Leu	Thr	Val	Arg 25	Lys	His	Arg	Lys	Ser 30	Glu	Glu	
gaa Glu	cta Leu	tca Ser 35	aat Asn	gtt Val	tcg Ser	gct Ala	cca Pro 40	ggt Gly	gga Gly	gac Asp	cca Pro	act Thr 45	gac Asp	aac Asn	tca Ser	144
acg Thr	gca Ala 50	aga Arg	aga Arg	gct Ala	gca Ala	tcc Ser 55	tcg Ser	gct Ala	aat Asn	ggg Gly	gaa Glu 60	gaa Glu	aat Asn	gca Ala	aag Lys	192
ttt Phe 65	att Ile	gat Asp	ctc Leu	gaa Glu	aat Asn 70	ggt Gly	tgg Trp	gat Asp	gat Asp	tcg Ser 75	gac Asp	att Ile	tca Ser	cct Pro	tca Ser 80	240
aat Asn	tta Leu	tat Tyr	gat Asp	cta Leu 85	ttt Phe	gaa Glu	aga Arg	ctg Leu	aaa Lys 90	agt Ser	gat Asp	gac Asp	cag Gln	atg Met 95	gtg Val	288
aga Arg	aca Thr	aat Asn	act Thr 100	gct Ala	atg Met	gaa Glu	ctt Leu	aga Arg 105	aca Thr	tcc Ser	atc Ile	ata Ile	tcg Ser 110	att Ile	gcc Ala	336
aga Arg	gaa Glu	ata Ile 115	cct Pro	act Thr	gat Asp	caa Gln	ttc Phe 120	cag Gln	aga Arg	ttc Phe	atc Ile	aac Asn 125	aca Thr	cta Leu	aac Asn	384
aat Asn 130	aaa Lys	ata Ile	ttt Phe	gaa Glu	ctg Leu	att Ile 135	cat His	ggt Gly	tcc Ser	agt Ser	tct Ser 140	aat Asn	gaa Glu	aag Lys	atg Met	432
gga Gly 145	gga Gly	atc Ile	tta Leu	gct Ala	gtc Val 150	gat Asp	tct Ser	ctt Leu	ata Ile	gac Asp 155	ttt Phe	tat Tyr	tta Leu	gaa Glu	atc Ile 160	480
ggt Gly	gaa Glu	cta Leu	tca Ser	aac Asn 165	cag Gln	aca Thr	aca Thr	cgt Arg	cta Leu 170	gcg Ala	aat Asn	tac Tyr	ctt Leu	aga Arg 175	gta Val	528
cta Leu	atc Ile	cct Pro	tct Ser 180	aat Asn	gat Asp	ata Ile	gac Asp	gtt Val 185	atg Met	cgt Arg	ttg Leu	gcc Ala	aca Thr 190	caa Gln	act Thr	576
ctt Leu	gga Gly	aag Lys 195	ctg Leu	gca Ala	ctt Leu	cct Pro	cga Arg 200	ggg Gly	aca Thr	gta Val	act Thr	tct Ser 205	gaa Glu	ttt Phe	gtt Val	624
gac Asp	ttt Phe 210	gaa Glu	gtc Val	aaa Lys	acc Thr	tgt Cys 215	ttg Leu	gaa Glu	tgg Trp	cta Leu	aca Thr 220	gca Ala	tcg Ser	aca Thr	gat Asp	672
aac Asn 225	cca Pro	cca Pro	tta Leu	aac Asn	ttt Phe 230	aaa Lys	cag Gln	gaa Glu	tat Tyr	agg Arg 235	aga Arg	cat His	gca Ala	gca Ala	ata Ile 240	720
ctt Leu	ata Ile	ctt Leu	tac Tyr	tct Ser 245	ctt Leu	ata Ile	gaa Glu	aac Asn	tct Ser 250	cca Pro	tat Tyr	ttg Leu	cta Leu	ttt Phe 255	cct Pro	768
tac Tyr	atc Ile	aac Asn	ccg Pro 260	ata Ile	ttg Leu	gat Asp	aat Asn	ata Ile 265	tgg Trp	ggt Gly	tca Ser	tta Leu	aaa Lys 270	gat Asp	aca Thr	816
aag Lys	cta Leu	att Ile 275	ata Ile	aga Arg	aga Arg	gat Asp	gcc Ala 280	gct Ala	gaa Glu	act Thr	atg Met	aga Arg 285	aaa Lys	tgc Cys	atg Met	864
gaa Glu	act Thr 290	tta Leu	caa Gln	tcc Ser	aga Arg	gat Asp 295	cca Pro	caa Gln	aat Asn	gca Ala 300	aga Arg	gaa Glu	tgg Trp	tat Tyr	caa Gln	912
aga Arg 305	tcg Ser	ttt Phe	tct Ser	aca Thr 310	gcg Ala	act Thr	caa Gln	gga Gly	ctg Leu	aat Asn 315	tca Ser	aat Asn	aac Asn	atc Ile	gaa Glu 320	960
agc Ser	ata Ile	cat His	gct Ala 325	aca Thr	tta Leu	tta Leu	aca Thr	ttc Phe 330	aag Lys	gaa Glu	cta Leu	ctt Leu	aat Asn 335	ctg Leu	aag Lys	1008
gat Asp	tca Ser	tac Tyr	atc Ile 340	aaa Lys	gat Asp	aag Lys	tat Tyr	tct Ser 345	cag Gln	ata Ile	ttt Phe	cag Gln	gtt Val 350	gtg Val	ata Ile	1056
aag Lys	ttt Phe 355	aga Arg	cat Asp	aaa Lys	aat Asn	gac Asp 360	att Ile	gtg Val	aga Arg	cga Arg	gaa Glu 365	gtc Val	tac Tyr	gca Ala		1104
ata Ile 370	cta Leu	cca Pro	cta Leu	ctt Leu	gca Ala	atg Met 375	aat Asn	gat Asp	tcc Ser	gat Asp	ata Ile 380	ttt Phe	gcc Ala	agt Ser	aaa Lys	1152
tat	ttg	gat	ccc	acg	atg	tct	ttt	tat	ctc	aaa	gta	ctg	aaa	gat	atg	1200

## PhoenixTemp32470.tmp.txt

Tyr 385	Leu	Asp	Pro	Thr	Met 390	Ser	Phe	Tyr	Leu	Lys 395	Val	Leu	Lys	Asp	Met 400	
gac	agc	agt	aca	gcc	aac	aat	gca	gat	aaa	gaa	gcg	ata	ttt	atc	tct	1248
Asp	Ser	Ser	Thr	Ala 405	Asn	Asn	Ala	Asp	Lys 410	Glu	Ala	Ile	Phe	Ile 415	Ser	
att	gga	gat	tta	tca	gaa	aat	gtg	aga	tca	aaa	atg	cac	tcc	tac	att	1296
Ile	Gly	Asp	Leu 420	Ser	Glu	Asn	Val	Arg 425	Ser	Lys	Met	His	tcc	Tyr	Ile	
cac	caa	ctg	gag	ata	aat	ttg	aga	gaa	gga	cta	caa	aca	aag	tat	aaa	1344
His	Gln 435	Leu	Glu	Ile	Asn	Leu	Arg 440	Glu	Gly	Leu	Gln	Thr 445	Lys	Tyr	Lys	
att	aga	aaa	cac	tac	gaa	aag	gca	tta	ttc	tat	tgc	att	atc	aaa	tta	1392
Ile	Arg 450	Lys	His	Tyr	Glu	Lys 455	Ala	Leu	Phe	Tyr	Cys 460	Ile	Ile	Lys	Leu	
act	gcc	gct	ctt	ggt	cca	gca	atc	gct	aca	aat	atc	aat	aaa	gga	ttt	1440
Thr 465	Ala	Ala	Leu	Gly	Pro 470	Ala	Ile	Ala	Thr	Asn 475	Ile	Asn	Lys	Gly	Phe 480	
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Leu	Asp	Leu	Ile 485	Ser	Cys	Pro	Leu	Ser 490	Ser	His	Leu	Leu	Leu	Glu 495	Val	
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Lys	Arg	Leu 515	Ile	Glu	Ile	Val	His 520	Ala	Tyr	Leu	Ser	Gly 525	Glu	Arg	Tyr	
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Asn	Asp 530	Gly	Thr	Asn	Ser	Gln 535	Ile	Met	Lys	Thr	Val 540	Ser	Leu	Pro	Leu	
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Ala 545	Arg	Lys	Trp	Arg	Asp 550	Arg	Asp	Tyr	Cys	Trp 555	Lys	Thr	Gly	Asp	Gln 560	
aat	tcc	gat	aat	aac	gac	gac	ttc	tta	ctt	gtt	caa	act	ctg	aaa	atg	1728
Asn	Ser	Asp	Asn	Asn 565	Asp	Asp	Phe	Leu	Leu 570	Val	Gln	Thr	Leu	Lys 575	Met	
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Val	Asp	Ile	Ile 580	Asp	Pro	Lys	His	Leu 585	Val	Ser	Glu	His	Thr 590	Lys	Met	
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Ser	Ile	Ile 595	Ala	Tyr	Ile	Glu	His 600	Thr	His	Glu	Thr	Val 605	Arg	Lys	Leu	
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Ala 610	Ala	Leu	Lys	Ser	Val 615	Glu	Leu	Tyr	Lys	Leu 620	Thr	Glu	Ala	Asn	Leu	
cca	gat	gat	gaa	cat	gcc	ctt	gat	aca	tct	gct	aca	ggt	cta	ggc	aaa	1920
Pro 625	Asp	Asp	Glu	His	Ala 630	Leu	Asp	Thr	Ser	Ala 635	Thr	Val	Leu	Gly	Lys 640	
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Leu	Leu	Val	Leu 645	Ala	Ile	Thr	Asp	Pro	Asn 650	Ser	Asn	Ile	Arg	Leu 655	Ser	
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Ile	Leu	Gln 660	Ser	Phe	Asp	Tyr	His	Phe 665	Ser	Ser	Gln	Leu	Ala 670	Gln	Pro	
gat	aac	ctt	aga	cta	cta	ttt	tgc	tca	gtg	aac	gat	gag	gta	tat	aca	2064
Asp	Asn	Leu 675	Arg	Leu	Leu	Phe	Cys 680	Ser	Val	Asn	Asp	Glu 685	Val	Tyr	Thr	
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Ile	Arg 690	Leu	Glu	Ala	Ile	Arg 695	Val	Ile	Gly	Ala	Leu 700	Thr	Glu	Phe	Asn	
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Pro 705	Ile	Tyr	Val	Val 710	Pro	Glu	Met	Gln	Lys	Ile 715	Phe	Leu	Ser	Phe	Leu 720	
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Thr	Leu	Ile 740	His	Ala	Val	Ile	Asn	Ser 745	His	Pro	Asp	Thr	Leu 750	Val	Pro	
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Thr	Ala	Ile	Lys	Thr	Leu	Ile	Gln	Ile	Ser	Ser	Ser	Thr	Ala	Tyr	Val		
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Ile	Phe	Gln	Asp	Met	Gly	Val	Gln	Ser	Ile	Ile	Phe	Leu	Lys	Ile	Leu		
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Val	Pro	Ala	Ile	Lys	Ser	Val	Val	Lys	Thr	Cys	Pro	Pro	Ser	His	Leu		
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Phe	Ser	Ile	Thr	Lys	Leu	Gln	Val	Val	Ile	Ile	Ser	Leu	Ile	Glu	Ser		
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Leu	Glu	Asp	Tyr	Ser	His	Leu	Ile	Ile	Pro	Thr	Ile	Val	Arg	Ile	Cys		
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Glu	Tyr	Ser	Gln	Asn	His	Leu	Arg	Lys	Ile	Ser	Ile	Val	Thr	Phe	Gly		
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Lys	Leu	Ala	Lys	Cys	Ile	Asn	Leu	Thr	Glu	Leu	Ser	Ser	Met	Ile	Ile		
	1105			1110					1115					1120			
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Val	Thr	Met	Asn	Thr	Leu	Cys	Leu	Leu	Leu	Leu	Gln	Leu	Gly	Asn	Asp	
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ttt	gtc	gtg	tat	ata	cca	acc	att	cat	tct	ggt	tta	atc	aaa	aat	aga	3504
Phe	Val	Val	Tyr	Ile	Pro	Thr	Ile	His	Ser	Val	Leu	Ile	Lys	Asn	Arg	
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Ile	Gln	His	Ser	Ile	Tyr	Asp	Gln	Leu	Val	Asn	Lys	Leu	Leu	Asn	Gly	
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Glu	Val	Leu	Asn	Thr	Asn	Ile	Leu	Leu	Asp	Lys	Asp	Ser	Glu	Glu	Lys	
1185				1190					1195					1200		
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Asn	Lys	Asn	Ile	Asn	Leu	Gln	Asn	Asn	Pro	Arg	Thr	Glu	Lys	Phe	Val	
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Ser	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Phe	Arg	Arg	Leu	Ser	Val	His	Thr	
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Ile	Arg	Glu	Ser	Ala	Ser	Pro	Ser	Leu	Arg	Ala	Cys	Ser	Asn	Leu	Val	
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Ser	Leu	Cys	Ser	Ala	Leu	Ser	Ser	Pro	Gln	Asn	Pro	Thr	Glu	Ile	Tyr	
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Glu	Lys	Pro	Cys	Ile	Ile	Glu	Ser	Leu	Ile	Asp	Ile	Asn	Asn	Gln	Leu	
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His	Gln	Pro	Asp	Ala	Ser	Ile	Gly	Ile	Leu	Lys	Tyr	Ala	Gln	Gln	His	
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Tyr	Asn	Leu	Gln	Leu	Lys	Glu	Trp	Tyr	Glu	Lys	Leu	Gln	Arg	Trp		
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Asn	Trp	Ser	Glu	Ile	Ala	Asp	Leu	Ala	Asn	Asp	Lys	Trp	Asn	Thr	Val	
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Trp	Ala	Leu	His	Asn	Trp	Asp	Asp	Ile	Glu	Lys	Tyr	Cys	Ser	Ile	Leu	
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Arg	Ile	Tyr	Asn	Ser	Val	Ala	Lys	Cys	Gln	Thr	Val	Ala	Glu	Leu	Lys		
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Ala	Met	Arg	Glu	Thr	Trp	Asn	Lys	Arg	Leu	Leu	Gly	Cys	Gln	Gln	Asn		
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Ile	Asp	Val	Trp	Gln	Val	Ile	Leu	Lys	Thr	Arg	Ser	Leu	Val	Val	Asn		
1585				1590					1595					1600			
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Arg	Asn	Gly	Arg	Met	Asn	Met	Thr	Arg	Asp	Val	Leu	Asn	Ser	Leu	Leu		
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Lys	Phe	Asn	Glu	Met	Ser	Glu	Asn	Pro	Asp	Ile	Leu	Gln	Ala	Ser	Pro		
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	1715				1720				1725								
cct	aac	tgg	agc	aat	aca	gat	ccg	ggg	tca	gtt	tta	agt	tcc	tat	ctt	5232	
Pro	Asn	Trp	Ser	Asn	Thr	Asp	Pro	Gly	Ser	Val	Leu	Ser	Ser	Tyr	Leu		
	1730				1735				1740								
ctg	gca	act	cat	ttt	gat	ccg	caa	tgg	tac	aaa	gct	tgg	cat	aac	tgg	5280	
Leu	Ala	Thr	His	Phe	Asp	Pro	Gln	Trp	Tyr	Lys	Ala	Trp	His	Asn	Trp		
1745				1750				1755						1760			
gct	tta	gcc	aat	ttt	gaa	gta	ata	tcc	atg	atg	tca	tcc	aca	aac	aag	5328	
Ala	Leu	Ala	Asn	Phe	Glu	Val	Ile	Ser	Met	Ser	Ser	Ser	Thr	Asn	Lys		
			1765				1770				1775						
gat	acc	aat	tac	caa	aaa	agt	aat	gct	cca	ata	aca	agc	ttc	tac	caa	5376	
Asp	Thr	Asn	Tyr	Gln	Lys	Ser	Asn	Ala	Pro	Ile	Thr	Ser	Phe	Tyr	Gln		
			1780				1785				1790						
ata	aga	aat	aat	att	ttc	gaa	aag	aac	ggc	gaa	act	cct	tat	tac	aat	5424	
Ile	Arg	Asn	Asn	Ile	Phe	Glu	Lys	Asn	Gly	Glu	Thr	Pro	Tyr	Tyr	Asn		
	1795					1800					1805						
caa	ttt	cca	tca	aga	ctc	ata	aat	aat	cat	gtc	gtt	tct	gct	ata	aaa	5472	
Gln	Phe	Pro	Ser	Arg	Leu	Ile	Asn	Asn	His	Val	Val	Ser	Ala	Ile	Lys		
1810				1815					1820								
ggg	ttt	ttc	cat	tca	atc	gca	ctg	tcc	gat	tca	agt	cta	ttg	caa	gat	5520	
Gly	Phe	Phe	His	Ser	Ile	Ala	Leu	Ser	Asp	Ser	Ser	Leu	Leu	Gln	Asp		
1825				1830				1835						1840			
gca	tta	cgt	ctt	tta	act	cta	tgg	ttt	act	ttt	gga	agt	act	tct	gaa	5568	
Ala	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Thr	Phe	Gly	Ser	Thr	Ser	Glu		
			1845					1850				1855					
acg	aca	cag	gcg	atg	cag	gag	ggt	ttt	aat	atg	gtt	aag	atc	agt	act	5616	

## PhoenixTemp32470.tmp.txt

Thr	Thr	Gln	Ala	Met	Gln	Glu	Gly	Phe	Asn	Met	Val	Lys	Ile	Ser	Thr	
tgg	ctt	gag	gtt	tta	ccc	caa	tta	att	tcg	cat	ata	cat	cag	cca	aac	5664
Trp	Leu	Glu	Val	Leu	Pro	Gln	Leu	Ile	Ser	His	Ile	His	Gln	Pro	Asn	
		1875				1880					1885					
cct	ctc	att	agt	cgt	gca	ctt	ctt	act	tta	ctc	tca	gat	ttg	ggt	aaa	5712
Pro	Leu	Ile	Ser	Arg	Ala	Leu	Leu	Thr	Leu	Leu	Ser	Asp	Leu	Gly	Lys	
		1890				1895					1900					
gaa	cat	ccg	caa	gcg	ctt	gta	tac	cct	tta	aca	gtt	gca	ata	aaa	tca	5760
Glu	His	Pro	Gln	Ala	Leu	Val	Tyr	Pro	Leu	Thr	Val	Ala	Ile	Lys	Ser	
1905						1910					1915				1920	
gaa	tct	tta	tct	cga	caa	aaa	gca	gct	att	tca	att	atc	gat	aat	gtt	5808
Glu	Ser	Leu	Ser	Arg	Gln	Lys	Ala	Ala	Ile	Ser	Ile	Ile	Asp	Asn	Val	
				1925					1930						1935	
cgc	tct	cat	agc	cca	gta	ctt	gtt	gac	caa	gct	gaa	cta	tta	agt	cgt	5856
Arg	Ser	His	Ser	Pro	Val	Leu	Val	Asp	Gln	Ala	Glu	Leu	Leu	Ser	Arg	
		1940						1945								
gag	ttg	att	aga	gta	gtg	gcc	tta	tgg	aac	gag	atg	tgg	tat	gag	ggt	5904
Glu	Leu	Ile	Arg	Val	Val	Ala	Leu	Trp	Asn	Glu	Met	Trp	Tyr	Glu	Gly	
		1955				1960						1965				
tta	gaa	gac	gcg	agt	cga	cat	ttc	ttt	gga	gag	aat	gac	aac	acg	aaa	5952
Leu	Glu	Asp	Ala	Ser	Arg	His	Phe	Phe	Gly	Glu	Asn	Asp	Asn	Thr	Lys	
		1970				1975					1980					
atg	ctt	gag	aca	ctc	gaa	cca	cta	tat	gag	ctc	ttg	aat	aaa	ggc	cca	6000
Met	Leu	Glu	Thr	Leu	Glu	Pro	Leu	Tyr	Glu	Leu	Leu	Asn	Lys	Gly	Pro	
1985						1990					1995				2000	
gag	acc	ata	cgc	gaa	ata	tcc	ttc	aag	tac	gct	ttt	gga	aaa	gat	ctc	6048
Glu	Thr	Ile	Arg	Glu	Ile	Ser	Phe	Lys	Tyr	Ala	Phe	Gly	Lys	Asp	Leu	
			2005						2010					2015		
acc	tat	gca	tat	gaa	tgg	gta	aaa	aaa	tac	aaa	gaa	aca	ggt	gag	gta	6096
Thr	Tyr	Ala	Tyr	Glu	Trp	Val	Lys	Lys	Tyr	Lys	Glu	Thr	Gly	Glu	Val	
		2020						2025					2030			
agt	aac	cta	aac	caa	gca	tgg	gac	att	tat	tat	agc	att	ttc	aag	aag	6144
Ser	Asn	Leu	Asn	Gln	Ala	Trp	Asp	Ile	Tyr	Tyr	Ser	Ile	Phe	Lys	Lys	
		2035					2040					2045				
ata	aac	aaa	cag	cta	cca	caa	atg	gaa	aca	tta	gaa	ttg	caa	cat	gtt	6192
Ile	Asn	Lys	Gln	Leu	Pro	Gln	Met	Glu	Thr	Leu	Glu	Leu	Gln	His	Val	
		2050				2055					2060					
tca	cct	aaa	ctt	tta	gct	gcg	aag	aat	ctt	gag	tta	gct	atg	cct	gga	6240
Ser	Pro	Lys	Leu	Leu	Ala	Ala	Lys	Asn	Leu	Glu	Leu	Ala	Met	Pro	Gly	
2065						2070					2075				2080	
act	tat	atc	cct	ggt	act	gaa	ata	gtt	aca	ata	gag	agt	gtg	aat	ggt	6288
Thr	Tyr	Ile	Pro	Gly	Thr	Glu	Ile	Val	Thr	Ile	Glu	Ser	Val	Asn	Gly	
			2085						2090					2095		
aca	tgt	gaa	gtt	ata	tct	tct	aaa	caa	aga	cct	aga	aaa	ata	gcc	tta	6336
Thr	Cys	Glu	Val	Ile	Ser	Ser	Lys	Gln	Arg	Pro	Arg	Lys	Ile	Ala	Leu	
		2100						2105					2110			
aaa	gga	agt	gat	ggt	aaa	gag	tac	tta	tat	gtt	ctg	aaa	ggt	cat	gaa	6384
Lys	Gly	Ser	Asp	Gly	Lys	Glu	Tyr	Leu	Tyr	Val	Leu	Lys	Gly	His	Glu	
		2115				2120					2125					
gat	atc	aga	caa	gat	agc	ctt	gta	atg	caa	tta	ttt	ggt	ttg	gtt	aat	6432
Asp	Ile	Arg	Gln	Asp	Ser	Leu	Val	Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	
		2130				2135					2140					
aca	cta	cta	cag	aac	gat	atc	gaa	tgt	ttc	cag	agg	cat	ttg	gat	atc	6480
Thr	Leu	Leu	Gln	Asn	Asp	Ile	Glu	Cys	Phe	Gln	Arg	His	Leu	Asp	Ile	
2145						2150				2155					2160	
caa	cag	tac	gcg	gca	ata	cca	tta	tcc	cct	aaa	aca	ggt	ctt	ctt	ggg	6528
Gln	Gln	Tyr	Ala	Ala	Ile	Pro	Leu	Ser	Pro	Lys	Thr	Gly	Leu	Leu	Gly	
			2165						2170					2175		
tgg	gta	act	gag	agt	gat	acc	att	cac	gtg	ctg	att	aaa	gat	tat	aga	6576
Trp	Val	Thr	Glu	Ser	Asp	Thr	Ile	His	Val	Leu	Ile	Lys	Asp	Tyr	Arg	
		2180						2185					2190			
gat	gca	aag	aaa	atg	cca	ctg	aat	att	gaa	cat	cta	gtt	atg	ctt	caa	6624
Asp	Ala	Lys	Lys	Met	Pro	Leu	Asn	Ile	Glu	His	Leu	Val	Met	Leu	Gln	
		2195					2200					2205				
atg	gca	ccg	gat	tat	gac	agt	ctc	act	cta	tta	caa	aaa	gtt	gag	gtc	6672
Met	Ala	Pro	Asp	Tyr	Asp	Ser	Leu	Thr	Leu	Leu	Gln	Lys	Val	Glu	Val	
		2210				2215					2220					
ttt	aag	tac	gtt	cta	gat	aat	act	caa	ggg	ttt	gat	ctt	tat	aac	ata	6720

## PhoenixTemp32470.tmp.txt

Phe Lys Tyr Val Leu Asp Asn Thr Gln Gly Phe Asp Leu Tyr Asn Ile  
 2225 2230 2235 2240  
 ttg tgg tta aaa agc aaa tca tct gaa acg tgg tta gag aga cgt act 6768  
 Leu Trp Leu Lys Ser Lys Ser Ser Glu Thr Trp Leu Glu Arg Arg Thr  
 2245 2250 2255  
 aca tac acc cga tct tta gcg gtt atg tct atg act gga tat att tta 6816  
 Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly Tyr Ile Leu  
 2260 2265 2270  
 gga ctg ggt gac cgt cat cca agc aac tta atg ctt aat agg aat aca 6864  
 Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asn Arg Asn Thr  
 2275 2280 2285  
 ggg aaa gta gta cat att gac ttt ggt gat tgt ttc gaa gct gca att 6912  
 Gly Lys Val Val His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile  
 2290 2295 2300  
 ttg aga gaa aaa ttt cca gaa aaa gta cct ttt aga tta act aga atg 6960  
 Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met  
 2305 2310 2315 2320  
 tta atc aag gcc atg gag gta agt ggt gtt gaa ggt agt ttc aga ata 7008  
 Leu Ile Lys Ala Met Glu Val Ser Gly Val Glu Gly Ser Phe Arg Ile  
 2325 2330 2335  
 aca tgc gag aat gta atg aga gtg tta cgt gat aat aaa gat tcc cta 7056  
 Thr Cys Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys Asp Ser Leu  
 2340 2345 2350  
 atg gca ata cta gaa gca ttt gca ttt gat cct ctt att cgg tgg gga 7104  
 Met Ala Ile Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile Arg Trp Gly  
 2355 2360 2365  
 ttt gac cta ccc aca gaa caa att aaa gag aat gac aag cac ttc 7152  
 Phe Asp Leu Pro Thr Glu Gln Ile Lys Lys Glu Asn Asp Lys His Phe  
 2370 2375 2380  
 aag gca act gaa tct ata tat ggt att gac gaa gct tca tca atg agc 7200  
 Lys Ala Thr Glu Ser Ile Tyr Gly Ile Asp Glu Ala Ser Ser Met Ser  
 2385 2390 2395 2400  
 aac ata act act acg tca gtg aag gac aag aaa aga gag tat atc aac 7248  
 Asn Ile Thr Thr Thr Ser Val Lys Asp Lys Lys Arg Glu Tyr Ile Asn  
 2405 2410 2415  
 act agg gca gtt tta gtt ttg aag aga ata tca agc aag ctc aca ggt 7296  
 Thr Arg Ala Val Leu Val Leu Lys Arg Ile Ser Ser Lys Leu Thr Gly  
 2420 2425 2430  
 aat gac att cca aaa cac gaa gat ctg gat gtt gca gaa cag gta gat 7344  
 Asn Asp Ile Pro Lys His Glu Asp Leu Asp Val Ala Glu Gln Val Asp  
 2435 2440 2445  
 cat cta atc gaa caa gct aag tct gtt gaa aat tta tgc caa cac tac 7392  
 His Leu Ile Glu Gln Ala Lys Ser Val Glu Asn Leu Cys Gln His Tyr  
 2450 2455 2460  
 att gga tgg tgc cca ttc tgg taa 7416  
 Ile Gly Trp Cys Pro Phe Trp  
 2465 2470

&lt;210&gt; 2529

&lt;211&gt; 2471

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2529

Met Gln Ala Ile Leu Arg Lys Gly Ala Asp Lys Arg Ile Lys Thr Gly  
 1 5 10 15  
 Asn Lys Ser Asn Lys Leu Thr Val Arg Lys His Arg Lys Ser Glu Glu  
 20 25 30  
 Glu Leu Ser Asn Val Ser Ala Pro Gly Gly Asp Pro Thr Asp Asn Ser  
 35 40 45  
 Thr Ala Arg Arg Ala Ala Ser Ser Ala Asn Gly Glu Glu Asn Ala Lys  
 50 55 60  
 Phe Ile Asp Leu Glu Asn Gly Trp Asp Asp Ser Asp Ile Ser Pro Ser  
 65 70 75 80  
 Asn Leu Tyr Asp Leu Phe Glu Arg Leu Lys Ser Asp Asp Gln Met Val  
 85 90 95  
 Arg Thr Asn Thr Ala Met Glu Leu Arg Thr Ser Ile Ile Ser Ile Ala  
 100 105 110  
 Arg Glu Ile Pro Thr Asp Gln Phe Gln Arg Phe Ile Asn Thr Leu Asn

## PhoenixTemp32470.tmp.txt

Asn	Lys	115	Phe	Glu	Leu	Ile	120	His	Gly	Ser	Ser	Ser	125	Asn	Glu	Lys	Met
Gly	Gly	130	Ile	Leu	Ala	Val	135	Asp	Ser	Leu	Ile	Asp	140	Phe	Tyr	Leu	Glu
145	Gly	Glu	Leu	Ser	Asn	150	Gln	Thr	Thr	Arg	Leu	155	Ala	Asn	Tyr	Leu	Arg
Gly	Ile	Pro	Ser	165	Asn	Asp	Ile	Asp	Val	170	Met	Arg	Leu	Ala	Thr	175	Gln
Leu	Gly	Lys	Leu	180	Ala	Leu	Pro	Arg	Gly	Thr	Val	185	Thr	Ser	Glu	Phe	Val
Asp	Phe	Glu	Val	195	Lys	Thr	Cys	200	Leu	Glu	Trp	Leu	205	Ala	Ser	Thr	Asp
Asn	Pro	Pro	Leu	210	Asn	Phe	215	Lys	Gln	Glu	Tyr	Arg	220	Arg	His	Ala	Ala
225	Ile	Leu	Tyr	230	Ser	Leu	Ile	Glu	Asn	Ser	Pro	235	Tyr	Leu	Leu	Phe	Pro
Tyr	Ile	Asn	Pro	245	Ile	Leu	Asp	Asn	Ile	Trp	Gly	250	Ser	Leu	Lys	Asp	Thr
Lys	Leu	Ile	Ile	260	Arg	Arg	Asp	Ala	265	Ala	Glu	Thr	Met	Arg	Lys	Cys	Met
Glu	Thr	Leu	Gln	275	Ser	Arg	Asp	Pro	Gln	Asn	Ala	280	Arg	Glu	Trp	Tyr	Gln
Arg	Ser	Phe	Ser	290	Thr	Ala	Thr	Gln	Gly	Leu	Asn	300	Ser	Asn	Asn	Ile	Glu
305	Ile	His	Ala	310	Thr	Leu	Leu	Thr	Phe	Lys	Glu	315	Leu	Leu	Asn	Leu	Lys
Asp	Ser	Tyr	Ile	325	Lys	Asp	Lys	Tyr	Ser	Gln	Ile	330	Phe	Gln	Val	Val	Ile
Lys	Phe	Arg	Asp	340	His	Lys	Asn	Asp	Ile	Val	Arg	345	Arg	Arg	Glu	Val	Tyr
Ile	Leu	Pro	Leu	355	Leu	Ala	Met	Asn	Asp	Ser	Asp	360	Ile	Phe	Ala	Ser	Lys
Tyr	Leu	Asp	Pro	370	Thr	Met	375	Ser	Phe	Tyr	Leu	380	Val	Leu	Lys	Asp	Met
385	Ser	Ser	Thr	390	Ala	Asn	Asn	Ala	Asp	Lys	Glu	395	Ala	Ile	Phe	Ile	Ser
Ile	Gly	Asp	Leu	405	Ser	Glu	Asn	Val	Arg	Ser	Lys	410	Met	His	Ser	Tyr	Ile
His	Gln	Leu	Glu	420	Ile	Asn	Leu	Arg	425	Gly	Leu	430	Gln	Thr	Lys	Tyr	Lys
Ile	Arg	Lys	His	435	Tyr	Glu	Lys	Ala	Leu	Phe	Tyr	440	Cys	Ile	Ile	Lys	Leu
Thr	Ala	Ala	Leu	450	Gly	Pro	455	Ile	Ala	Thr	Asn	460	Ile	Asn	Lys	Gly	Phe
465	Asp	Leu	Ile	470	Leu	Ser	Cys	Pro	Leu	Ser	His	475	Ser	Leu	Leu	Glu	Val
Leu	Ala	Thr	Ile	485	Lys	Lys	Ser	Ile	Pro	Ala	Leu	490	Ser	Thr	Ser	Ile	Asp
Met	Arg	Leu	Ile	500	Glu	Ile	Val	His	505	Ala	Tyr	510	Leu	Ser	Gly	Glu	Arg
Lys	Asp	Gly	Thr	515	Asn	Ser	Gln	Ile	Met	Lys	Thr	520	Val	Ser	Leu	Pro	Leu
Asn	Arg	Lys	Trp	530	Arg	Asp	Arg	Asp	Tyr	Cys	Trp	535	Lys	Thr	Gly	Asp	Gln
545	Ser	Asp	Asn	550	Asp	Asp	Phe	Leu	Leu	Val	Gln	555	Thr	Leu	Lys	Met	Met
Val	Asp	Ile	Ile	565	Pro	Lys	His	Leu	Val	Ser	Glu	570	His	Thr	Lys	Met	Met
Ser	Ile	Ile	Ala	580	Tyr	Ile	Glu	His	Thr	His	Glu	585	Thr	Val	Arg	Lys	Leu
Ala	Ala	Leu	Lys	595	Ser	Val	Glu	Leu	Tyr	Lys	Leu	600	Thr	Glu	Ala	Asn	Leu
610	Asp	Asp	Glu	615	His	Ala	Leu	Asp	Thr	Ser	Ala	620	Thr	Val	Leu	Gly	Lys
Pro	Leu	Val	Leu	625	Ala	Ile	Thr	Asp	Pro	Asn	Ser	630	Asn	Ile	Arg	Leu	Ser
Ile	Leu	Gln	Ser	635	Phe	Asp	Tyr	His	Phe	Ser	Ser	640	Gln	Leu	Ala	Gln	Pro
			660						665						670		



## PhoenixTemp32470.tmp.txt

Asp Asn Leu Arg Leu Leu Phe Cys Ser Val Asn Asp Glu Val Tyr Thr  
 675 680 685  
 Ile Arg Leu Glu Ala Ile Arg Val Ile Gly Ala Leu Thr Glu Phe Asn  
 690 695 700  
 Pro Ile Tyr Val Val Pro Glu Met Gln Lys Ile Phe Leu Ser Phe Leu  
 705 710 715 720  
 Thr Glu Leu Lys Tyr Ser Ala Thr Asn Arg Lys Lys Glu Asn Met Leu  
 725 730 735  
 Thr Leu Ile His Ala Val Ile Asn Ser His Pro Asp Thr Leu Val Pro  
 740 745 750  
 Phe Ile Lys Asp Cys Leu Asp Ser Leu Ile Gln Arg Leu Glu Asp Asn  
 755 760 765  
 Ser Ser Ala Val Ala Thr Ile Ala Met Lys Thr Ile Gly Ala Leu Ala  
 770 775 780  
 Glu Ala Val Gly Pro Asp Ile Thr Asn Tyr Val His Gln Leu Met Pro  
 785 790 795 800  
 Ile Ile Ile Ser Thr Leu His Asn Gln Leu Asn Ser Ile Lys Arg Ala  
 805 810 815  
 Thr Ala Ile Lys Thr Leu Ile Gln Ile Ser Ser Ser Thr Ala Tyr Val  
 820 825 830  
 Ile Asp Pro Leu Ile Glu Tyr Pro Glu Leu Leu Gly Leu Leu Met Asn  
 835 840 845  
 Ile Leu Lys Thr Glu Ser Asn Met Glu Ile Lys Arg Asp Ile Ile Gln  
 850 855 860  
 Leu Ile Gly Thr Leu Gly Ala Ile Asp Pro Tyr Lys Tyr Arg Ala Val  
 865 870 875 880  
 Glu Thr Asn Ser Lys Gly Val Gln Lys Ile Asp Thr Thr Gln His Ser  
 885 890 895  
 Thr Ala Ile Asp Leu Leu Ile Lys Gly Met Ser Pro Ser Asn Glu Glu  
 900 905 910  
 Phe Tyr Pro Ser Val Val Met His Ser Leu Val Lys Ile Leu Asn Asp  
 915 920 925  
 Asn Ser Leu Ser Ser Tyr His Thr Asn Thr Leu Gln Thr Ile Met Arg  
 930 935 940  
 Ile Phe Gln Asp Met Gly Val Gln Ser Ile Ile Phe Leu Lys Ile Leu  
 945 950 955 960  
 Val Pro Ala Ile Lys Ser Val Val Lys Thr Cys Pro Pro Ser His Leu  
 965 970 975  
 Glu Phe Tyr Phe Gln Gln Leu Ser Val Leu Val Asn Thr Val Asn His  
 980 985 990  
 His Ile Glu Pro Phe Thr Glu Asp Ile Phe Glu Ile Ile Ala Asp His  
 995 1000 1005  
 Phe Ser Ile Thr Lys Leu Gln Val Val Ile Ile Ser Leu Ile Glu Ser  
 1010 1015 1020  
 Met Ser His Leu Val Lys Asn Asn Leu Lys Arg Phe Leu Pro Lys Thr  
 1025 1030 1035 1040  
 Val Asn Leu Phe Leu Asn Val Leu Glu Asn Asp Arg Ser Asn Gln Lys  
 1045 1050 1055  
 Met Ala Ser Val Ser Ile Met Lys Ala Leu Ile Ala Phe Gly Lys Asn  
 1060 1065 1070  
 Leu Glu Asp Tyr Ser His Leu Ile Pro Thr Ile Val Arg Ile Cys  
 1075 1080 1085  
 Glu Tyr Ser Gln Asn His Leu Arg Lys Ile Ser Ile Val Thr Phe Gly  
 1090 1095 1100  
 Lys Leu Ala Lys Cys Ile Asn Leu Thr Glu Leu Ser Ser Met Ile Ile  
 1105 1110 1115 1120  
 Asn Ala Leu Val Arg Val Leu Thr Asn Gly Asp Lys Ser Leu Ile Lys  
 1125 1130 1135  
 Val Thr Met Asn Thr Leu Cys Leu Leu Leu Leu Gln Leu Gly Asn Asp  
 1140 1145 1150  
 Phe Val Val Tyr Ile Pro Thr Ile His Ser Val Leu Ile Lys Asn Arg  
 1155 1160 1165  
 Ile Gln His Ser Ile Tyr Asp Gln Leu Val Asn Lys Leu Leu Asn Gly  
 1170 1175 1180  
 Glu Val Leu Asn Thr Asn Ile Leu Leu Asp Lys Asp Ser Glu Glu Lys  
 1185 1190 1195 1200  
 Asn Lys Asn Ile Asn Leu Gln Asn Asn Pro Arg Thr Glu Lys Phe Val  
 1205 1210 1215  
 Val Asp Gln Gln Ile Leu Lys Ser Ala Trp Asp Cys Ser Gln Gln Lys

## PhoenixTemp32470.tmp.txt

1220 1225 1230  
 Ser Lys Glu Asp Trp Gln Glu Trp Phe Arg Arg Leu Ser Val His Thr  
 1235 1240 1245  
 Ile Arg Glu Ser Ala Ser Pro Ser Leu Arg Ala Cys Ser Asn Leu Val  
 1250 1255 1260  
 Ser Val Tyr Asn Pro Leu Ala Arg Asp Leu Phe Asn Val Ser Phe Ser  
 1265 1270 1275 1280  
 Ser Cys Trp Asn Glu Leu Asn Ile Gly Ser Arg Glu His Ile Leu Asn  
 1285 1290 1295  
 Ser Leu Cys Ser Ala Leu Ser Ser Pro Gln Asn Pro Thr Glu Ile Tyr  
 1300 1305 1310  
 Leu Ile Leu Ile Asn Leu Ile Glu Phe Met Glu His Asp Met Asn Pro  
 1315 1320 1325  
 Leu Pro Ile Pro Ala Thr Ile Thr Gly Glu Tyr Ala Gln Lys Cys Asn  
 1330 1335 1340  
 Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Thr Glu Phe Ile Glu Asn  
 1345 1350 1355 1360  
 Glu Lys Pro Cys Ile Glu Ser Leu Ile Asp Ile Asn Asn Gln Leu  
 1365 1370 1375  
 His Gln Pro Asp Ala Ser Ile Gly Ile Leu Lys Tyr Ala Gln Gln His  
 1380 1385 1390  
 Tyr Asn Leu Gln Leu Lys Glu Thr Trp Tyr Glu Lys Leu Gln Arg Trp  
 1395 1400 1405  
 Asp Asp Ala Leu Gln Ala Tyr Thr Asp Arg Glu Lys Asn Gly Glu Asp  
 1410 1415 1420  
 Thr Pro Glu Val Leu Met Gly Lys Met Arg Ser Leu Tyr Ala Leu Gly  
 1425 1430 1435 1440  
 Asn Trp Ser Glu Ile Ala Asp Leu Ala Asn Asp Lys Trp Asn Thr Val  
 1445 1450 1455  
 Pro Leu His Ile Gln Glu Lys Leu Ser Pro Ile Ala Ala Gly Ser Ser  
 1460 1465 1470  
 Trp Ala Leu His Asn Trp Asp Asp Ile Glu Lys Tyr Cys Ser Ile Leu  
 1475 1480 1485  
 Gln Asp Asn Ser Ile Asp Lys Glu Phe Phe Ser Thr Val Met Cys Leu  
 1490 1495 1500  
 His His Asn Asn Phe Glu Ala Glu Gln His Ala Asp Asn Val Asn  
 1505 1510 1515 1520  
 Ser Leu Leu Val Gly Glu Met Ser Ala Leu Ile Asn Glu Ser Tyr Ser  
 1525 1530 1535  
 Arg Ile Tyr Asn Ser Val Ala Lys Cys Gln Thr Val Ala Glu Leu Lys  
 1540 1545 1550  
 Glu Ile Ile Lys Tyr Lys Arg Leu Pro Arg Met Ser Pro Lys Arg Lys  
 1555 1560 1565  
 Ala Met Arg Glu Thr Trp Asn Lys Arg Leu Leu Gly Cys Gln Gln Asn  
 1570 1575 1580  
 Ile Asp Val Trp Gln Val Ile Leu Lys Thr Arg Ser Leu Val Val Asn  
 1585 1590 1595 1600  
 Pro Glu Asp Asp Glu Glu Ile Trp Ile Lys Phe Ala Asn Leu Cys Arg  
 1605 1610 1615  
 Arg Asn Gly Arg Met Asn Met Thr Arg Asp Val Leu Asn Ser Leu Leu  
 1620 1625 1630  
 Lys Phe Asn Glu Met Ser Glu Asn Pro Asp Ile Leu Gln Ala Ser Pro  
 1635 1640 1645  
 Glu Val Val Tyr Ser Tyr Leu Lys Tyr Lys Trp Asp Thr Gly Glu Lys  
 1650 1655 1660  
 Asn Ser Ala Leu Asn Gln Leu Ala Ile Phe Ile Gly Lys Val Ile Arg  
 1665 1670 1675 1680  
 Asp Leu Gly Leu His Pro Glu His Ile Ile Ser Asn Lys Thr Phe Gln  
 1685 1690 1695  
 Ser Lys Thr Asn Ile Ser Pro Asn Glu Arg Pro Lys Tyr Gln Lys Leu  
 1700 1705 1710  
 Leu Ala Thr Cys Phe Ala Lys Gln Gly Asp Trp Thr Ile Ala Leu Asp  
 1715 1720 1725  
 Pro Asn Trp Ser Asn Thr Asp Pro Gly Ser Val Leu Ser Ser Tyr Leu  
 1730 1735 1740  
 Leu Ala Thr His Phe Asp Pro Gln Trp Tyr Lys Ala Trp His Asn Trp  
 1745 1750 1755 1760  
 Ala Leu Ala Asn Phe Glu Val Ile Ser Met Met Ser Ser Thr Asn Lys  
 1765 1770 1775

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Asp Thr Asn Tyr Gln Lys Ser Asn Ala Pro Ile Thr Ser Phe Tyr Gln  
 1780 1785 1790  
 Ile Arg Asn Asn Ile Phe Glu Lys Asn Gly Glu Thr Pro Tyr Tyr Asn  
 1795 1800 1805  
 Gln Phe Pro Ser Arg Leu Ile Asn Asn His Val Val Ser Ala Ile Lys  
 1810 1815 1820  
 Gly Phe Phe His Ser Ile Ala Leu Ser Asp Ser Ser Leu Leu Gln Asp  
 1825 1830 1835 1840  
 Ala Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Ser Thr Ser Glu  
 1845 1850 1855  
 Thr Thr Gln Ala Met Gln Glu Gly Phe Asn Met Val Lys Ile Ser Thr  
 1860 1865 1870  
 Trp Leu Glu Val Leu Pro Gln Leu Ile Ser His Ile His Gln Pro Asn  
 1875 1880 1885  
 Pro Leu Ile Ser Arg Ala Leu Leu Thr Leu Leu Ser Asp Leu Gly Lys  
 1890 1895 1900  
 Glu His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ile Lys Ser  
 1905 1910 1915 1920  
 Glu Ser Leu Ser Arg Gln Lys Ala Ala Ile Ser Ile Ile Asp Asn Val  
 1925 1930 1935  
 Arg Ser His Ser Pro Val Leu Val Asp Gln Ala Glu Leu Leu Ser Arg  
 1940 1945 1950  
 Glu Leu Ile Arg Val Val Ala Leu Trp Asn Glu Met Trp Tyr Glu Gly  
 1955 1960 1965  
 Leu Glu Asp Ala Ser Arg His Phe Phe Gly Glu Asn Asp Asn Thr Lys  
 1970 1975 1980  
 Met Leu Glu Thr Leu Glu Pro Leu Tyr Glu Leu Leu Asn Lys Gly Pro  
 1985 1990 1995 2000  
 Glu Thr Ile Arg Glu Ile Ser Phe Lys Tyr Ala Phe Gly Lys Asp Leu  
 2005 2010 2015  
 Thr Tyr Ala Tyr Glu Trp Val Lys Lys Tyr Lys Glu Thr Gly Glu Val  
 2020 2025 2030  
 Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Ser Ile Phe Lys Lys  
 2035 2040 2045  
 Ile Asn Lys Gln Leu Pro Gln Met Glu Thr Leu Glu Leu Gln His Val  
 2050 2055 2060  
 Ser Pro Lys Leu Leu Ala Ala Lys Asn Leu Glu Leu Ala Met Pro Gly  
 2065 2070 2075 2080  
 Thr Tyr Ile Pro Gly Thr Glu Ile Val Thr Ile Glu Ser Val Asn Gly  
 2085 2090 2095  
 Thr Cys Glu Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Ile Ala Leu  
 2100 2105 2110  
 Lys Gly Ser Asp Gly Lys Glu Tyr Leu Tyr Val Leu Lys Gly His Glu  
 2115 2120 2125  
 Asp Ile Arg Gln Asp Ser Leu Val Met Gln Leu Phe Gly Leu Val Asn  
 2130 2135 2140  
 Thr Leu Leu Gln Asn Asp Ile Glu Cys Phe Gln Arg His Leu Asp Ile  
 2145 2150 2155 2160  
 Gln Gln Tyr Ala Ala Ile Pro Leu Ser Pro Lys Thr Gly Leu Leu Gly  
 2165 2170 2175  
 Trp Val Thr Glu Ser Asp Thr Ile His Val Leu Ile Lys Asp Tyr Arg  
 2180 2185 2190  
 Asp Ala Lys Lys Met Pro Leu Asn Ile Glu His Leu Val Met Leu Gln  
 2195 2200 2205  
 Met Ala Pro Asp Tyr Asp Ser Leu Thr Leu Leu Gln Lys Val Glu Val  
 2210 2215 2220  
 Phe Lys Tyr Val Leu Asp Asn Thr Gln Gly Phe Asp Leu Tyr Asn Ile  
 2225 2230 2235 2240  
 Leu Trp Leu Lys Ser Lys Ser Ser Glu Thr Trp Leu Glu Arg Arg Thr  
 2245 2250 2255  
 Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly Tyr Ile Leu  
 2260 2265 2270  
 Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asn Arg Asn Thr  
 2275 2280 2285  
 Gly Lys Val Val His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile  
 2290 2295 2300  
 Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met  
 2305 2310 2315 2320  
 Leu Ile Lys Ala Met Glu Val Ser Gly Val Glu Gly Ser Phe Arg Ile

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2325 2330 2335  
 Thr Cys Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys Asp Ser Leu  
 2340 2345 2350  
 Met Ala Ile Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile Arg Trp Gly  
 2355 2360 2365  
 Phe Asp Leu Pro Thr Glu Gln Ile Lys Lys Glu Asn Asp Lys His Phe  
 2370 2375 2380  
 Lys Ala Thr Glu Ser Ile Tyr Gly Ile Asp Glu Ala Ser Ser Met Ser  
 2385 2390 2395 2400  
 Asn Ile Thr Thr Thr Ser Val Lys Asp Lys Lys Arg Glu Tyr Ile Asn  
 2405 2410 2415  
 Thr Arg Ala Val Leu Val Leu Lys Arg Ile Ser Ser Lys Leu Thr Gly  
 2420 2425 2430  
 Asn Asp Ile Pro Lys His Glu Asp Leu Asp Val Ala Glu Gln Val Asp  
 2435 2440 2445  
 His Leu Ile Glu Gln Ala Lys Ser Val Glu Asn Leu Cys Gln His Tyr  
 2450 2455 2460  
 Ile Gly Trp Cys Pro Phe Trp  
 2465 2470

&lt;210&gt; 2530

&lt;211&gt; 7353

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7353)

&lt;400&gt; 2530

atg ctc aga aga aag gga gag tcc gcc aag aaa agg ttg gtg tca gga	48
Met Leu Arg Arg Lys Gly Glu Ser Ala Lys Lys Arg Leu Val Ser Gly	
1 5 10 15	
aca gca gcc tcc tta caa gag ctt agt ttg aag ccc aat tcc aat ggt	96
Thr Ala Ala Ser Leu Gln Glu Leu Ser Leu Lys Pro Asn Ser Asn Gly	
20 25 30	
ata caa tca tct ggt aaa acc gag gac aca gat gta cct ggg gat agc	144
Ile Gln Ser Ser Gly Lys Thr Glu Asp Thr Asp Val Pro Gly Asp Ser	
35 40 45	
att tcc ggc gaa ttt ggt gca gca tta tcc gat tct aat gtt gaa aat	192
Ile Ser Gly Glu Phe Gly Ala Ala Leu Ser Asp Ser Asn Val Glu Asn	
50 55 60	
agt gtt aaa gcg ttc aat ttg atc ttt acc aaa ctt aaa agt acc agt	240
Ser Val Lys Ala Phe Asn Leu Ile Phe Thr Lys Leu Lys Ser Thr Ser	
65 70 75 80	
gag atg gaa cgt aca gct gcc tca ttc gag ttg aga tca tcg ttg att	288
Glu Met Glu Arg Thr Ala Ala Ser Phe Glu Leu Arg Ser Ser Leu Ile	
85 90 95	
tca ttg gca agg gaa gtt tct acg gaa cat ttt caa cgg ttc agt aat	336
Ser Leu Ala Arg Glu Val Ser Thr Glu His Phe Gln Arg Phe Ser Asn	
100 105 110	
gat att aat aat aaa gta ttt gaa ttg att cac ggg aac gac tct aac	384
Asp Ile Asn Asn Lys Val Phe Glu Leu Ile His Gly Asn Asp Ser Asn	
115 120 125	
gaa aag cta ggt ggt gtt tta gct gtt gat act ttg att gat ttc tat	432
Glu Lys Leu Gly Gly Val Leu Ala Val Asp Thr Leu Ile Asp Phe Tyr	
130 135 140	
tct cgt act gac gaa cta cca aat caa aca tca aga ttg gca aac tat	480
Ser Arg Thr Asp Glu Leu Pro Asn Gln Thr Ser Arg Leu Ala Asn Tyr	
145 150 155 160	
tta cgt gtt cta ata cca tcc aat gat att gaa gta atg aga gca gca	528
Leu Arg Val Leu Ile Pro Ser Asn Asp Ile Glu Val Met Arg Ala Ala	
165 170 175	
gca gga acc tta ggt aaa cta gca gtt ccc ggt gga aca ttg aca tcg	576
Ala Gly Thr Leu Gly Lys Leu Ala Val Pro Gly Gly Thr Leu Thr Ser	
180 185 190	
gaa ttt gtg gaa ttc gaa gtt aaa aca tgc att gag tgg ttg acc aca	624
Glu Phe Val Glu Phe Glu Val Lys Thr Cys Ile Glu Trp Leu Thr Thr	
195 200 205	

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tct	cca	gaa	aac	tcc	tca	tcg	aat	tca	aaa	caa	gaa	tat	agg	aaa	cat	672
Ser	Pro	Glu	Asn	Ser	Ser	Ser	Asn	Ser	Lys	Gln	Glu	Tyr	Arg	Lys	His	
	210					215					220					
gca	tct	tta	tta	att	atc	agt	gca	att	gct	gat	aat	tct	cca	tat	cta	720
Ala	Ser	Leu	Leu	Ile	Ile	Ser	Ala	Ile	Ala	Asp	Asn	Ser	Pro	Tyr	Leu	
225					230					235					240	
cta	tat	cca	ttt	gtg	aat	tca	atc	ttg	gat	aac	att	tgg	aga	gcg	ttg	768
Leu	Tyr	Pro	Phe	Val	Asn	Ser	Ile	Leu	Asp	Asn	Ile	Trp	Arg	Ala	Leu	
				245					250					255		
aga	gat	aca	aaa	ctt	gta	att	aga	aca	gat	gca	tct	gtc	aca	ttg	gga	816
Arg	Asp	Thr	Lys	Leu	Val	Ile	Arg	Thr	Asp	Ala	Ser	Val	Thr	Leu	Gly	
			260					265					270			
aaa	tgt	ttg	act	atc	att	aat	aac	cgt	gat	tcc	tct	ctg	acg	aag	aaa	864
Lys	Cys	Leu	Thr	Ile	Ile	Asn	Asn	Arg	Asp	Ser	Ser	Leu	Thr	Lys	Lys	
		275					280					285				
tgg	gtt	caa	aga	cta	ttt	aat	gga	tgc	ata	tat	gga	tta	caa	ctc	aat	912
Trp	Val	Gln	Arg	Leu	Phe	Asn	Gly	Cys	Ile	Tyr	Gly	Leu	Gln	Leu	Asn	
	290					295					300					
agt	act	gtt	tcc	ata	cat	ggt	aca	ttg	ttg	gtt	tat	aga	cag	ttg	gta	960
Ser	Thr	Val	Ser	Ile	His	Gly	Thr	Leu	Leu	Val	Tyr	Arg	Gln	Leu	Val	
305					310					315					320	
tca	ttg	gaa	ggt	gga	tat	ttg	aag	gac	aaa	ttc	gaa	gag	ata	tat	gag	1008
Ser	Leu	Glu	Gly	Gly	Tyr	Leu	Lys	Asp	Lys	Phe	Glu	Glu	Ile	Tyr	Glu	
				325					330					335		
act	act	atg	aga	tac	aga	gaa	aac	aaa	aac	att	ata	att	aga	aag	gaa	1056
Thr	Thr	Met	Arg	Tyr	Arg	Glu	Asn	Lys	Asn	Ile	Ile	Ile	Arg	Lys	Glu	
			340					345					350			
atc	tac	gct	atc	att	ccg	gta	ctt	gct	gcg	ttt	gat	cct	aag	cta	ttt	1104
Ile	Tyr	Ala	Ile	Ile	Pro	Val	Leu	Ala	Ala	Phe	Asp	Pro	Lys	Leu	Phe	
		355					360					365				
aca	caa	aaa	tat	ttg	gat	tca	aca	atg	atc	cat	tac	ttg	act	tta	cta	1152
Thr	Gln	Lys	Tyr	Leu	Asp	Ser	Thr	Met	Ile	His	Tyr	Leu	Thr	Leu	Leu	
					375						380					
aag	aat	atg	aac	tcg	cat	ccg	gtt	aca	aat	tct	gac	aag	ggt	cct	atc	1200
Lys	Asn	Met	Asn	Ser	His	Pro	Val	Thr	Asn	Ser	Asp	Lys	Gly	Pro	Ile	
385					390					395					400	
tta	att	tct	gtt	ggt	gat	att	gca	tat	tac	gtt	ggt	cca	gat	att	gga	1248
Leu	Ile	Ser	Val	Gly	Asp	Ile	Ala	Tyr	Tyr	Val	Gly	Pro	Asp	Ile	Gly	
				405					410					415		
cca	tat	ctt	gac	gcc	att	gtc	gaa	aac	cta	cgg	gat	ggc	cta	acg	aca	1296
Pro	Tyr	Leu	Asp	Ala	Ile	Val	Glu	Asn	Leu	Arg	Asp	Gly	Leu	Thr	Thr	
			420					425					430			
aaa	tac	aaa	ttc	aga	aag	gat	tat	gaa	cag	gaa	att	ttc	tat	tgc	atc	1344
Lys	Tyr	Lys	Phe	Arg	Lys	Asp	Tyr	Glu	Gln	Glu	Ile	Phe	Tyr	Cys	Ile	
		435					440					445				
ggc	aaa	ctc	gca	tgc	gca	gtt	cgt	cca	tta	tta	gca	aaa	tat	cta	aac	1392
Gly	Lys	Leu	Ala	Cys	Ala	Val	Arg	Pro	Leu	Leu	Ala	Lys	Tyr	Leu	Asn	
	450					455					460					
aga	gga	cta	ctt	gaa	tat	atg	tta	gca	tgc	cct	tta	agt	gat	cac	atg	1440
Arg	Gly	Leu	Leu	Glu	Tyr	Met	Leu	Ala	Cys	Pro	Leu	Ser	Asp	His	Met	
465					470					475					480	
caa	gag	acc	tta	ctg	att	gta	tgc	gag	aaa	atc	cct	tcg	ttg	gag	gga	1488
Gln	Glu	Thr	Leu	Leu	Ile	Val	Cys	Glu	Lys	Ile	Pro	Ser	Leu	Glu	Gly	
				485					490					495		
aca	atc	aat	gaa	aag	cta	ctc	aat	ata	ata	tgt	ctt	gta	cta	tct	ggt	1536
Thr	Ile	Asn	Glu	Lys	Leu	Leu	Asn	Ile	Ile	Cys	Leu	Val	Leu	Ser	Gly	
			500					505					510			
gag	aag	ttc	aga	cca	ccg	gga	tcc	cct	acc	cct	atg	aaa	cca	ttc	tcc	1584
Glu	Lys	Phe	Arg	Pro	Pro	Gly	Ser	Pro	Thr	Pro	Met	Lys	Pro	Phe	Ser	
		515					520					525				
gca	gag	acc	gca	aga	aat	tat	aga	gat	caa	tca	ctc	ttc	aag	aaa	act	1632
Ala	Glu	Thr	Ala	Arg	Asn	Tyr	Arg	Asp	Gln	Ser	Leu	Phe	Lys	Lys	Thr	
						535					540					
ggt	gaa	gcc	aat	aac	gat	att	ttt	gat	gct	gtt	ata	ctt	acg	aag	gct	1680
Gly	Glu	Ala	Asn	Asn	Asp	Ile	Phe	Asp	Ala	Val	Ile	Leu	Thr	Lys	Ala	
545					550					555					560	
tta	agg	atg	ctt	tcc	gac	ata	aaa	ccc	aaa	tat	tct	ctc	aca	gag	ttc	1728
Leu	Arg	Met	Leu	Ser	Asp	Ile	Lys	Pro	Lys	Tyr	Ser	Leu	Thr	Glu	Phe	
				565					570					575		

## PhoenixTemp32470.tmp.txt

att Ile	agg Arg	cgt Arg	gtc Val 580	atc Ile	ata Ile	tca Ser	tat Tyr	atg Met 585	gaa Glu	cat His	gac Asp	aat Asn	ttg Leu 590	caa Gln	gtg Val	1776
agg Arg	aag Lys	ctt Leu 595	gca Ala	gct Ala	ttg Leu	acg Thr	tca Ser 600	tgc Cys	gat Asp	cta Leu	ttc Phe	gta Val 605	gag Glu	gac Asp	tcc Ser	1824
atc Ile	tgt Cys 610	aag Lys	caa Gln	act Thr	tca Ser	ctt Leu 615	tac Tyr	gct Ala	ttg Leu	aat Asn	gtt Val 620	gtt Val	tcc Ser	gag Glu	gta Val	1872
ttg Leu 625	agc Ser	aaa Lys	cta Leu	ttg Leu	act Thr 630	gta Val	gca Ala	att Ile	aca Thr	gat Asp 635	cca Pro	ggt Val	gcc Ala	gag Glu	att Ile 640	1920
aga Arg	ctt Leu	gag Glu	atc Ile	ttg Leu 645	aga Arg	cac His	tta Leu	gat Asp	act Thr 650	aat Asn	ttt Phe	gac Asp	cct Pro	caa Gln 655	tta Leu	1968
tca Ser	caa Gln	cca Pro	gat Asp 660	aac Asn	act Thr	aaa Lys	cta Leu	cta Leu 665	ttt Phe	atg Met	gcc Ala	ctg Leu	aac Asn 670	gac Asp	gaa Glu	2016
gtc Val	ttt Phe	gca Ala 675	atc Ile	caa Gln	atg Met	gaa Glu	gca Ala 680	atg Met	agg Arg	ata Ile	tgt Cys	ggt Gly 685	cgg Arg	tta Leu	gcc Ala	2064
ctc Leu	gtg Val 690	aat Asn	cct Pro	gca Ala	tat Tyr	gtc Val 695	att Ile	cca Pro	tct Ser	ttg Leu	agg Arg 700	aaa Lys	act Thr	ctt Leu	att Ile	2112
cag Gln 705	tta Leu	ttg Leu	act Thr	gaa Glu	ttg Leu 710	aaa Lys	cac His	tca Ser	aag Lys	cta Leu 715	act Thr	aga Arg	aag Lys	aaa Lys	gaa Glu 720	2160
gag Glu	tgt Cys	gct Ala	tct Ser	cta Leu 725	tta Leu	tgt Cys	aca Thr	ttg Leu	atc Ile 730	agc Ser	tcc Ser	agt Ser	agt Ser	gat Asp 735	gtt Val	2208
aca Thr	aag Lys	cca Pro	tat Tyr 740	cta Leu	gag Glu	cct Pro	gta Val	att Ile 745	gaa Glu	ata Ile	cta Leu	cta Leu	ccg Pro 750	aag Lys	tca Ser	2256
caa Gln	gac Asp	tct Ser 755	tcc Ser	tct Ser	gcg Ala	gtg Val	gca Ala 760	tca Ser	aca Thr	gct Ala	ctt Leu	aaa Lys 765	gca Ala	atc Ile	ggt Gly	2304
gag Glu 770	cta Leu	tcg Ser	gtg Val	gtc Val	gga Gly	ggt Gly 775	gaa Glu	gat Asp	atg Met	gtt Val	cct Pro 780	ttc Phe	ttg Leu	gat Asp	gaa Glu	2352
ttg Leu 785	atg Met	cca Pro	tta Leu	ata Ile	att Ile 790	gat Asp	act Thr	ttc Phe	caa Gln	gat Asp 795	cag Gln	tct Ser	aac Asn	tca Ser	ttc Phe 800	2400
aaa Lys	aga Arg	aat Asn	gca Ala 805	gct Ala	ttg Leu	aaa Lys	gca Ala	tta Leu	ggc Gly 810	caa Gln	tta Leu	tct Ser	gcc Ala	tct Ser	tcg Ser	2448
gga Gly	tat Tyr	gtt Val 820	att Ile	gat Asp	ccg Pro	cta Leu	tta Leu	gat Asp 825	tat Tyr	cct Pro	gaa Glu	tta Leu	ctt Leu 830	ggc Gly	gtt Val	2496
ctt Leu	ctc Leu	aat Asn 835	att Ile	tta Leu	aaa Lys	tct Ser	gaa Glu 840	agt Ser	tca Ser	cag Gln	aac Asn	att Ile 845	cgt Arg	aga Arg	gaa Glu	2544
acc Thr	gtc Val 850	agg Arg	ctg Leu	ata Ile	ggt Gly	att Ile 855	ctt Leu	ggt Gly	gct Ala	tta Leu	gat Asp 860	ccg Pro	tat Tyr	aaa Lys	cac His	2592
aga Arg 865	gaa Glu	gtg Val	gaa Glu	cgt Arg	aca Thr 870	tct Ser	agt Ser	aca Thr	aat Asn	att Ile 875	acg Thr	gta Val	gaa Glu	caa Gln	aat Asn 880	2640
gcc Ala	cct Pro	cca Pro	att Ile	gat Asp 885	gtg Val	gct Ala	ttg Leu	tta Leu	atg Met 890	caa Gln	ggt Gly	atg Met	tct Ser	cca Pro 895	tct Ser	2688
aac Asn	gag Glu	gag Glu	tat Tyr 900	tat Tyr	cct Pro	acc Thr	gta Val	gta Val 905	att Ile	gga Gly	gtc Val	ctc Leu	atg Met 910	aag Lys	att Ile	2736
ttg Leu	aaa Lys	gat Asp 915	cct Pro	tcg Ser	tta Leu	tct Ser	att Ile 920	cac His	cat His	tca Ser	act Thr	gtt Val 925	att Ile	caa Gln	gcg Ala	2784
atc Ile	atg Met 930	cac His	att Ile	ttc Phe	cag Gln	aca Thr 935	atg Met	ggg Gly	ctt Leu	cgc Arg	tgt Cys 940	gtc Val	ata Ile	ttt Phe	ttg Leu	2832

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aaa	cag	atc	att	cct	gga	ttt	ata	ctg	gtt	atg	cac	aca	tgt	cca	cct	2880
Lys	Gln	Ile	Ile	Pro	Gly	Phe	Ile	Leu	Val	Met	His	Thr	Cys	Pro	Pro	
945					950					955					960	
tca	ctt	ctt	gag	ctc	tac	ttc	caa	cag	ctc	agt	gtt	ttg	att	tca	att	2928
Ser	Leu	Leu	Glu	Leu	Tyr	Phe	Gln	Gln	Leu	Ser	Val	Leu	Ile	Ser	Ile	
				965					970						975	
gtg	aaa	caa	cac	atc	aga	cta	cat	gtg	tct	gaa	att	gtg	gaa	gta	atc	2976
Val	Lys	Gln	His	Ile	Arg	Leu	His	Val	Ser	Glu	Ile	Val	Glu	Val	Ile	
			980					985					990			
tca	gaa	ttc	ttc	cct	atc	gta	aag	cta	caa	tta	act	atc	atc	tcg	gtt	3024
Ser	Glu	Phe	Phe	Pro	Ile	Val	Lys	Leu	Gln	Leu	Thr	Ile	Ile	Ser	Val	
		995					1000					1005				
atc	gaa	tca	cta	tca	aga	gcc	tta	gaa	gga	gaa	ttc	aat	cct	tat	tta	3072
Ile	Glu	Ser	Leu	Ser	Arg	Ala	Leu	Glu	Gly	Glu	Phe	Asn	Pro	Tyr	Leu	
	1010					1015					1020					
cct	aat	ata	cta	tct	ttg	ttt	ttg	gat	gtt	ttg	gaa	aaa	gac	cag	tcg	3120
Pro	Asn	Ile	Leu	Ser	Leu	Phe	Leu	Asp	Val	Leu	Glu	Lys	Asp	Gln	Ser	
1025					1030					1035					1040	
aat	aag	aag	gtt	gtc	tca	att	aga	ata	ttg	aag	tca	ttg	gta	gtt	ttt	3168
Asn	Lys	Lys	Val	Val	Ser	Ile	Arg	Ile	Leu	Lys	Ser	Leu	Val	Val	Phe	
			1045					1050					1055			
gga	cca	cat	cta	gag	gaa	tat	gct	cac	ctc	gta	ctg	cca	act	atc	ata	3216
Gly	Pro	His	Leu	Glu	Glu	Tyr	Ala	His	Leu	Val	Leu	Pro	Thr	Ile	Ile	
			1060				1065					1070				
aaa	cta	tcg	gag	ttt	agc	tca	gga	aat	ttg	aag	aag	gcc	gca	atc	att	3264
Lys	Leu	Ser	Glu	Phe	Ser	Ser	Gly	Asn	Leu	Lys	Lys	Ala	Ala	Ile	Ile	
	1075						1080					1085				
act	ata	gga	cgt	cta	tcg	aaa	aat	gtc	aat	cca	cta	gaa	atg	tcg	tct	3312
Thr	Ile	Gly	Arg	Leu	Ser	Asn	Val	Asn	Pro	Leu	Glu	Met	Ser	Ser		
	1090				1095					1100						
agg	att	gtg	caa	gcc	cta	gta	aga	gtc	tta	aat	aca	tca	gaa	ctc	gag	3360
Arg	Ile	Val	Gln	Ala	Leu	Val	Arg	Val	Leu	Asn	Thr	Ser	Glu	Leu	Glu	
1105				1110				1115							1120	
tac	gtg	aaa	gca	aca	atg	aac	aca	tta	agt	tta	ctt	ctt	tta	caa	ctc	3408
Tyr	Val	Lys	Ala	Thr	Met	Asn	Thr	Leu	Ser	Leu	Leu	Leu	Leu	Gln	Leu	
			1125					1130					1135			
aat	att	gat	ttt	act	gta	ttc	att	cca	gtt	atc	aat	aaa	act	tta	gtc	3456
Asn	Ile	Asp	Phe	Thr	Val	Phe	Ile	Pro	Val	Ile	Asn	Lys	Thr	Leu	Val	
			1140				1145					1150				
aaa	cag	aac	att	cag	cac	aca	ata	tac	gac	cgt	ttg	gtt	gcc	aaa	ctt	3504
Lys	Gln	Asn	Ile	Gln	His	Thr	Ile	Tyr	Asp	Arg	Leu	Val	Ala	Lys	Leu	
	1155					1160					1165					
ttg	aat	aat	gag	cca	cta	ccg	acc	aaa	att	att	att	gat	aaa	gat	ttc	3552
Leu	Asn	Asn	Glu	Pro	Leu	Pro	Thr	Lys	Ile	Ile	Ile	Asp	Lys	Asp	Phe	
	1170				1175				1180							
gat	tta	cct	aat	aaa	gaa	atg	gac	gat	gta	aag	gta	gct	tcc	aag	aag	3600
Asp	Leu	Pro	Asn	Lys	Glu	Met	Asp	Asp	Val	Lys	Val	Ala	Ser	Lys	Lys	
1185				1190				1195							1200	
ctt	cct	gtc	aac	caa	ctt	gtg	cta	aaa	aat	gcc	tgg	gat	tgt	agt	caa	3648
Leu	Pro	Val	Asn	Gln	Leu	Val	Leu	Lys	Asn	Ala	Trp	Asp	Cys	Ser	Gln	
			1205					1210				1215				
caa	aga	aca	aag	gag	gac	tgg	caa	gag	tgg	att	aga	cgg	cta	tca	att	3696
Gln	Arg	Thr	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Ile	Arg	Arg	Leu	Ser	Ile	
			1220				1225					1230				
tct	tta	ctc	aaa	gaa	tca	tct	tct	cat	gct	tta	cgt	gcc	tgc	tcc	gga	3744
Ser	Leu	Leu	Lys	Glu	Ser	Ser	Ser	His	Ala	Leu	Arg	Ala	Cys	Ser	Gly	
			1235				1240					1245				
ttg	gct	ggt	atc	tac	tat	cca	tta	gct	aga	gaa	tta	ttc	aac	gcc	tca	3792
Leu	Ala	Gly	Ile	Tyr	Tyr	Pro	Leu	Ala	Arg	Glu	Leu	Phe	Asn	Ala	Ser	
	1250					1255					1260					
ttt	gca	agt	tgt	tgg	ggt	gaa	ctt	tac	acg	caa	tat	caa	gag	gat	ttg	3840
Phe	Ala	Ser	Cys	Trp	Gly	Glu	Leu	Tyr	Thr	Gln	Tyr	Gln	Glu	Asp	Leu	
1265				1270				1275							1280	
gtt	cag	tct	ttg	tgc	tct	gct	tta	tcc	tca	cca	aac	aat	cct	cct	gaa	3888
Val	Gln	Ser	Leu	Cys	Ser	Ala	Leu	Ser	Ser	Pro	Asn	Asn	Pro	Pro	Glu	
			1285					1290				1295				
atc	cac	cag	aca	tta	tta	aat	ttg	gtt	gaa	ttc	atg	gag	cat	gac	gac	3936
Ile	His	Gln	Thr	Leu	Leu	Asn	Leu	Val	Glu	Phe	Met	Glu	His	Asp	Asp	
			1300				1305					1310				

## PhoenixTemp32470.tmp.txt

aaa ccg cta cca att tct ata tca act ctt ggc gaa tac gct cag cgt 3984  
 Lys Pro 1315 Leu Pro Ile Ser Ile 1320 Ser Thr Leu Gly Glu Tyr Ala Gln Arg 1325  
 tgt cat gca tat gca aaa gct tta cat tat aaa gaa ctg gag ttc att 4032  
 Cys His 1330 Ala Tyr Ala Lys 1335 Ala Leu His Tyr Lys Glu Leu Glu Phe Ile 1340  
 gaa gag cca aca act tca act atc gag tcc tta atc agt atc aat aat 4080  
 Glu Glu Pro Thr Thr 1350 Thr Ile Glu Ser Leu Ile Ser Ile Asn Asn 1360  
 1345  
 caa tta cac caa aca gat gca gca atc ggt att ttg aag cat gcg cag 4128  
 Gln Leu His Gln Thr Asp Ala Ala Ile Gly Ile Leu Lys His Ala Gln 1370 1375  
 1365  
 caa cac cac gat cta caa ttg aag gaa act tgg tac gaa aag tta caa 4176  
 Gln His His Asp Leu Gln Leu Lys Glu Thr Trp Tyr Glu Lys Leu Gln 1385 1390  
 1380  
 aga tgg gat gac gct ttg act gcg tat aat aag cgt gag gct gct ggt 4224  
 Arg Trp Asp Asp Ala Leu Thr Ala Tyr Asn Lys Arg Glu Ala Ala Gly 1400 1405  
 1395  
 gaa gat tcg ata gaa gtt aca att ggt aaa atg aga tca tta cac gcc 4272  
 Glu Asp Ser Ile Glu Val Thr Ile Gly Lys Met Arg Ser Leu His Ala 1410 1415 1420  
 1410  
 tta ggt gac tgg gat caa ttg tct gaa ctt gca gca gac aag tgg gct 4320  
 Leu Gly Asp Trp Asp Gln Leu Ser Glu Leu Ala Ala Asp Lys Trp Ala 1425 1430 1435 1440  
 1435  
 tcg tca aag ata gac att aag aga gca atc gct cct ctg gct gcg ggt 4368  
 Ser Ser Lys Ile Asp Ile Lys Arg Ala Ile Ala Pro Leu Ala Ala Gly 1445 1450 1455  
 1445  
 gct gcg tgg ggt tta gct caa tgg gat cga atc gag cag tac att gag 4416  
 Ala Ala Trp Gly Leu Ala Gln Trp Asp Arg Ile Glu Gln Tyr Ile Glu 1460 1465 1470  
 1460  
 gtg atg aaa cca caa tct cca gat aag gcc ttc ttt gct gcc gtt ctt 4464  
 Val Met Lys Pro Gln Ser Pro Asp Lys Ala Phe Phe Ala Ala Val Leu 1475 1480 1485  
 1475  
 tgt cta cat cgc aac aat ttc gat aaa gca caa gaa caa atc ttt gct 4512  
 Cys Leu His Arg Asn Asn Phe Asp Lys Ala Gln Glu Gln Ile Phe Ala 1490 1495 1500  
 1490  
 gcc aga gat ctt ctt gtt act gaa atg tct gcc ttg gtg aac gaa agt 4560  
 Ala Arg Asp Leu Leu Val Thr Glu Met Ser Ala Leu Val Asn Glu Ser 1505 1510 1515 1520  
 1510  
 tac aac cgt gct tat ggt gtt gtg gta aga act caa atg gtc gcg gaa 4608  
 Tyr Asn Arg Ala Tyr Gly Val Val Val Arg Thr Gln Met Val Ala Glu 1525 1530 1535  
 1525  
 tta gaa gaa ata att cag tat aaa aat tta cca cag ggt tcc gat aga 4656  
 Leu Glu Glu Ile Ile Gln Tyr Lys Asn Leu Pro Gln Gly Ser Asp Arg 1540 1545 1550  
 1540  
 cgg gct atg ata cgg aag aca tgg aac aaa aga ttg tta ggt tgt caa 4704  
 Arg Ala Met Ile Arg Lys Thr Trp Asn Lys Arg Leu Leu Gly Cys Gln 1555 1560 1565  
 1555  
 aag aat gtt gat gtc tgg caa aga att cta aag gta cgg tca cta gtt 4752  
 Lys Asn Val Asp Val Trp Gln Arg Ile Leu Lys Val Arg Ser Leu Val 1570 1575 1580  
 1570  
 ata aag cct aaa caa gat atg aaa gta tgg att aaa ttt gct aat ctt 4800  
 Ile Lys Pro Lys Gln Asp Met Lys Val Trp Ile Lys Phe Ala Asn Leu 1585 1590 1595 1600  
 1585  
 tgt agg aag tcc gga cgg tta ggt cta gct cag aag aca ttg aac act 4848  
 Cys Arg Lys Ser Gly Arg Leu Gly Leu Ala Gln Lys Thr Leu Asn Thr 1605 1610 1615  
 1605  
 ctt ctg gaa gag agt agt gat cca aag aat cca aat act gct cgt gca 4896  
 Leu Leu Glu Glu Ser Ser Asp Pro Lys Asn Pro Asn Thr Ala Arg Ala 1620 1625 1630  
 1620  
 cct cca cca gtt gtc tac gcc caa ttg aaa tac atg tgg gct aca ggt 4944  
 Pro Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Met Trp Ala Thr Gly 1635 1640 1645  
 1635  
 tct caa aag gaa gca ctc aac cat tta ata agc ttt act tct cgt atg 4992  
 Ser Gln Lys Glu Ala Leu Asn His Leu Ile Ser Phe Thr Ser Arg Met 1650 1655 1660  
 1650  
 gca cac gat cta ggc ctc gat ccc agt aac atg ata gct caa agt gtc 5040  
 Ala His Asp Leu Gly Leu Asp Pro Ser Asn Met Ile Ala Gln Ser Val 1665 1670 1680  
 1665



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cca cag aat agc agc gta tct cag cat cac att gaa gac tat acg aag 5088  
Pro Gln Asn Ser Val Ser Gln His Ile Glu Asp Tyr Thr Lys  
1685 1690 1695

tta ctt gct cgt tgt ttc tta aag caa ggt gaa tgg aga gtc tca cta 5136  
Leu Leu Ala Arg Cys Phe Leu Lys Gln Gly Glu Trp Arg Val Ser Leu  
1700 1705 1710

cag cca aat tgg cgc ctg gaa aat cct gat gct atc cta ggt tcc tat 5184  
Gln Pro Asn Trp Arg Leu Glu Asn Pro Asp Ala Ile Leu Gly Ser Tyr  
1715 1720 1725

tta cta gct act cac ttt gat aag tcg tgg tat aaa gct tgg cat aat 5232  
Leu Leu Ala Thr His Phe Asp Lys Ser Trp Tyr Lys Ala Trp His Asn  
1730 1735 1740

tgg gca ttg gca aac ttc gag gtc act tcg tcg ctt acc cag cga atc 5280  
Trp Ala Leu Ala Asn Phe Glu Val Thr Ser Ser Leu Thr Gln Arg Ile  
1745 1750 1755 1760

aaa gat gac aaa gtt cta aca ctt gaa gac gcc tct acg gag ttt acc 5328  
Lys Asp Asp Lys Val Leu Thr Leu Glu Asp Ala Ser Thr Glu Phe Thr  
1765 1770 1775

aat ggt gcc gtg gca ggg ctt ggc gcg aat gaa aat ttc cct cca gaa 5376  
Asn Gly Ala Val Ala Gly Leu Gly Ala Asn Glu Asn Phe Pro Pro Glu  
1780 1785 1790

ctg gtc caa cgt cat gtc gtg cca gcc atc aaa ggt ttt ttc cgt tct 5424  
Leu Val Gln Arg His Val Val Pro Ala Ile Lys Gly Phe Phe Arg Ser  
1795 1800 1805

att gct ctt tcc caa tcg agt tct tta cag gat acg tta aga tta ctc 5472  
Ile Ala Leu Ser Gln Ser Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu  
1810 1815 1820

act ttg tgg ttc aaa ttc ggt ggt att cca gaa gct gca caa gct atg 5520  
Thr Leu Trp Phe Lys Phe Gly Gly Ile Pro Glu Ala Ala Gln Ala Met  
1825 1830 1835 1840

cat gaa ggc ttt gga ttg atc aag atc gat aac tgg tta gaa gtt atc 5568  
His Glu Gly Phe Gly Leu Ile Lys Ile Asp Asn Trp Leu Glu Val Ile  
1845 1850 1855

cca caa ttg atc tcc cga att cat caa cca aat caa acc gtt agt aga 5616  
Pro Gln Leu Ile Ser Arg Ile His Gln Pro Asn Gln Thr Val Ser Arg  
1860 1865 1870

tct tta cta tct ttg cta gct gat ttg ggt aaa gcc cat cca cag gca 5664  
Ser Leu Leu Ser Leu Leu Ala Asp Leu Gly Lys Ala His Pro Gln Ala  
1875 1880 1885

tta gtg tat cca ttg aca gtt gcc att aaa tct gat tcg gtc tca aga 5712  
Leu Val Tyr Pro Leu Thr Val Ala Ile Lys Ser Asp Ser Val Ser Arg  
1890 1895 1900

cag agg gca gct ttg tcc atc ata gat aag atg aga atg cac agt cct 5760  
Gln Arg Ala Ala Leu Ser Ile Ile Asp Lys Met Arg Met His Ser Pro  
1905 1910 1915 1920

aaa ctt gtc gat caa gca gaa tta gta agt gac gaa ttg atc aga gtc 5808  
Lys Leu Val Asp Gln Ala Glu Leu Val Ser Asp Glu Leu Ile Arg Val  
1925 1930 1935

gct gtt ttg tgg cac gaa ctt tgg tac gaa ggt ctt gaa gat gct agt 5856  
Ala Val Leu Trp His Glu Leu Trp Tyr Glu Gly Leu Glu Asp Ala Ser  
1940 1945 1950

aga caa ttc ttt ggt gaa cat aac acg gaa aag atg ttt gcc act ttg 5904  
Arg Gln Phe Phe Gly Glu His Asn Thr Glu Lys Met Phe Ala Thr Leu  
1955 1960 1965

gag cca ttg cat gag atg cta aaa cgt ggt cct gaa acc ttg cgt gag 5952  
Glu Pro Leu His Glu Met Leu Lys Arg Gly Pro Glu Thr Leu Arg Glu  
1970 1975 1980

att tcg ttc caa aat tcg ttt ggt agg gat ttg aac gat gcc cac gag 6000  
Ile Ser Phe Gln Asn Ser Phe Gly Arg Asp Leu Asn Asp Ala His Glu  
1985 1990 1995 2000

tgg gta atg aac tac aag aga aca aaa gat atc aac aac ctt aac caa 6048  
Trp Val Met Asn Tyr Lys Arg Thr Lys Asp Ile Asn Asn Leu Asn Gln  
2005 2010 2015

gct tgg gat atc tat tat aat gtc ttc cgt cgt att agc agg aaa ctc 6096  
Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Arg Ile Ser Arg Lys Leu  
2020 2025 2030

cct caa tta cag acg ttg gat ctc caa cat gtt tca cca aaa cta gct 6144  
Pro Gln Leu Gln Thr Leu Asp Leu Gln His Val Ser Pro Lys Leu Ala  
2035 2040 2045

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gct gcg aaa gat tta gaa ctt gct gtt cca ggt aca tat cat gcc gga	6192
Ala Ala Lys Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr His Ala Gly	
2050 2055 2060	
aaa cct gtc att aga att acc cat ttc gag cca ata ttt act gtt att	6240
Lys Pro Val Ile Arg Ile Thr His Phe Glu Pro Ile Phe Thr Val Ile	
2065 2070 2075 2080	
tca tcc aaa cag cgt cct cgt agg cta tct atc aag ggt agc gat ggt	6288
Ser Ser Lys Gln Arg Pro Arg Arg Leu Ser Ile Lys Gly Ser Asp Gly	
2085 2090 2095	
aaa gac tat caa tat att gtc aag ggc cat gaa gat atc aga caa gat	6336
Lys Asp Tyr Gln Tyr Ile Val Lys Gly His Glu Asp Ile Arg Gln Asp	
2100 2105 2110	
aat ttg gtc atg caa ttg ttt ggt ttg gtt aat act tta tta cag aat	6384
Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Gln Asn	
2115 2120 2125	
aac ccc gag agt ttc caa agg cat ttg aac att caa caa tac cct gct	6432
Asn Pro Glu Ser Phe Gln Arg His Leu Asn Ile Gln Gln Tyr Pro Ala	
2130 2135 2140	
atc cca tta tca cct aaa tcc ggt ctt ttg gga tgg gtt cca aat agt	6480
Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu Gly Trp Val Pro Asn Ser	
2145 2150 2155 2160	
gat aca ttc cat gtc ttg atc aga gaa cat cgt gaa gca agc aaa gtt	6528
Asp Thr Phe His Val Leu Ile Arg Glu His Arg Glu Ala Ser Lys Val	
2165 2170 2175	
cca cta aat ata gaa cac aga ata atg ctc caa atg gct cct gat tat	6576
Pro Leu Asn Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr	
2180 2185 2190	
gat aac cta act cta ttg caa aaa gtg gaa gtt ttc act tat gct ctt	6624
Asp Asn Leu Thr Leu Leu Gln Lys Val Glu Val Phe Thr Tyr Ala Leu	
2195 2200 2205	
gat aac acc aag ggc cag gac ttg tat aag gtt cta tgg tta aag agt	6672
Asp Asn Thr Lys Gly Gln Asp Leu Tyr Lys Val Leu Trp Leu Lys Ser	
2210 2215 2220	
cgt tca tca gaa tca tgg ctc gaa cgt cgt aca act tac aca aga tcg	6720
Arg Ser Ser Glu Ser Trp Leu Glu Arg Arg Thr Thr Tyr Thr Arg Ser	
2225 2230 2235 2240	
tta gcc gtc atg tca atg gta gga tat att tta ggt tta ggt gat cgt	6768
Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg	
2245 2250 2255	
cat cca agt aat ttg atg ttg gac cgt gtt act ggt aaa gtt gtc cac	6816
His Pro Ser Asn Leu Met Leu Asp Arg Val Thr Gly Lys Val Val His	
2260 2265 2270	
att gat ttc ggt gac tgt ttc gaa gct gca att ctc aga gag aaa tac	6864
Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu Lys Tyr	
2275 2280 2285	
cca gaa aag gta cca ttc aga tta aca aga atg tta acg tac gca atg	6912
Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Thr Tyr Ala Met	
2290 2295 2300	
gaa gtc agt ggt att gaa ggt agt ttc cgt atc acc tgt gag aac gta	6960
Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Cys Glu Asn Val	
2305 2310 2315 2320	
atg atg gtc cta agg gat aat aag gag tcc ttg atg gct att ttg gaa	7008
Met Met Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala Ile Leu Glu	
2325 2330 2335	
gcc ttt gca tac gat cca tta atc aac tgg ggt ttc gat cta ccg act	7056
Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp Leu Pro Thr	
2340 2345 2350	
caa gcc gtg atg gaa cag acg gga ata gat cta cct ctt gca aat cca	7104
Gln Ala Val Met Glu Gln Thr Gly Ile Asp Leu Pro Leu Ala Asn Pro	
2355 2360 2365	
agt gag tta cta aga aag ggc gtc atc acc gtt gaa gat gcg gcc aag	7152
Ser Glu Leu Leu Arg Lys Gly Val Ile Thr Val Glu Asp Ala Ala Lys	
2370 2375 2380	
atg gaa cta caa caa aag gca gaa gtc cgc aac gca aga gcc act ctt	7200
Met Glu Leu Gln Gln Lys Ala Glu Val Arg Asn Ala Arg Ala Thr Leu	
2385 2390 2395 2400	
gtt ctc aaa aga atc gct gat aaa ctt act ggt aac gat ttc cca agg	7248
Val Leu Lys Arg Ile Ala Asp Lys Leu Thr Gly Asn Asp Phe Pro Arg	
2405 2410 2415	

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tat	caa	gaa	cta	tct	gtg	cct	gat	caa	gtc	gac	aag	ttg	atc	cag	caa	7296
Tyr	Gln	Glu	Leu	Ser	Val	Pro	Asp	Gln	Val	Asp	Lys	Leu	Ile	Gln	Gln	
		2420						2425				2430				
gct	aca	tca	gta	gaa	aac	cta	tgt	caa	cat	tac	atc	ggc	tgg	tgt	tcg	7344
Ala	Thr	Ser	Val	Glu	Asn	Leu	Cys	Gln	His	Tyr	Ile	Gly	Trp	Cys	Ser	
		2435					2440					2445				
ttc	tgg	tga														7353
Phe	Trp															
	2450															

&lt;210&gt; 2531

&lt;211&gt; 2450

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;400&gt; 2531

Met	Leu	Arg	Arg	Lys	Gly	Glu	Ser	Ala	Lys	Lys	Arg	Leu	Val	Ser	Gly	
1				5					10					15		
Thr	Ala	Ala	Ser	Leu	Gln	Glu	Leu	Ser	Leu	Lys	Pro	Asn	Ser	Asn	Gly	
			20					25					30			
Ile	Gln	Ser	Ser	Gly	Lys	Thr	Glu	Asp	Thr	Asp	Val	Pro	Gly	Asp	Ser	
		35					40					45				
Ile	Ser	Gly	Glu	Phe	Gly	Ala	Ala	Leu	Ser	Asp	Ser	Asn	Val	Glu	Asn	
	50					55					60					
Ser	Val	Lys	Ala	Phe	Asn	Leu	Ile	Phe	Thr	Lys	Leu	Lys	Ser	Thr	Ser	
65					70				75						80	
Glu	Met	Glu	Arg	Thr	Ala	Ala	Ser	Phe	Glu	Leu	Arg	Ser	Ser	Leu	Ile	
				85					90					95		
Ser	Leu	Ala	Arg	Glu	Val	Ser	Thr	Glu	His	Phe	Gln	Arg	Phe	Ser	Asn	
			100					105					110			
Asp	Ile	Asn	Asn	Lys	Val	Phe	Glu	Leu	Ile	His	Gly	Asn	Asp	Ser	Asn	
		115					120					125				
Glu	Lys	Leu	Gly	Gly	Val	Leu	Ala	Val	Asp	Thr	Leu	Ile	Asp	Phe	Tyr	
	130					135					140					
Ser	Arg	Thr	Asp	Glu	Leu	Pro	Asn	Gln	Thr	Ser	Arg	Leu	Ala	Asn	Tyr	
145					150					155					160	
Leu	Arg	Val	Leu	Ile	Pro	Ser	Asn	Asp	Ile	Glu	Val	Met	Arg	Ala	Ala	
				165					170					175		
Ala	Gly	Thr	Leu	Gly	Lys	Leu	Ala	Val	Pro	Gly	Gly	Thr	Leu	Thr	Ser	
			180					185					190			
Glu	Phe	Val	Glu	Phe	Glu	Val	Lys	Thr	Cys	Ile	Glu	Trp	Leu	Thr	Thr	
		195					200					205				
Ser	Pro	Glu	Asn	Ser	Ser	Ser	Asn	Ser	Lys	Gln	Glu	Tyr	Arg	Lys	His	
	210					215					220					
Ala	Ser	Leu	Leu	Ile	Ile	Ser	Ala	Ile	Ala	Asp	Asn	Ser	Pro	Tyr	Leu	
225				230						235					240	
Leu	Tyr	Pro	Phe	Val	Asn	Ser	Ile	Leu	Asp	Asn	Ile	Trp	Arg	Ala	Leu	
				245					250					255		
Arg	Asp	Thr	Lys	Leu	Val	Ile	Arg	Thr	Asp	Ala	Ser	Val	Thr	Leu	Gly	
			260					265					270			
Lys	Cys	Leu	Thr	Ile	Ile	Asn	Asn	Arg	Asp	Ser	Ser	Leu	Thr	Lys	Lys	
		275					280						285			
Trp	Val	Gln	Arg	Leu	Phe	Asn	Gly	Cys	Ile	Tyr	Gly	Leu	Gln	Leu	Asn	
	290					295					300					
Ser	Thr	Val	Ser	Ile	His	Gly	Thr	Leu	Leu	Val	Tyr	Arg	Gln	Leu	Val	
305					310					315					320	
Ser	Leu	Glu	Gly	Gly	Tyr	Leu	Lys	Asp	Lys	Phe	Glu	Glu	Ile	Tyr	Glu	
				325					330					335		
Thr	Thr	Met	Arg	Tyr	Arg	Glu	Asn	Lys	Asn	Ile	Ile	Ile	Arg	Lys	Glu	
			340					345					350			
Ile	Tyr	Ala	Ile	Ile	Pro	Val	Leu	Ala	Ala	Phe	Asp	Pro	Lys	Leu	Phe	
		355					360					365				
Thr	Gln	Lys	Tyr	Leu	Asp	Ser	Thr	Met	Ile	His	Tyr	Leu	Thr	Leu	Leu	
	370					375					380					
Lys	Asn	Met	Asn	Ser	His	Pro	Val	Thr	Asn	Ser	Asp	Lys	Gly	Pro	Ile	
385					390					395					400	
Leu	Ile	Ser	Val	Gly	Asp	Ile	Ala	Tyr	Tyr	Val	Gly	Pro	Asp	Ile	Gly	
				405					410					415		
Pro	Tyr	Leu	Asp	Ala	Ile	Val	Glu	Asn	Leu	Arg	Asp	Gly	Leu	Thr	Thr	

PhoenixTemp32470.tmp.txt

			420					425					430		
Lys	Tyr	Lys	Phe	Arg	Lys	Asp	Tyr	Glu	Gln	Glu	Ile	Phe	Tyr	Cys	Ile
		435					440					445			
Gly	Lys	Leu	Ala	Cys	Ala	Val	Arg	Pro	Leu	Leu	Ala	Lys	Tyr	Leu	Asn
	450					455					460				
Arg	Gly	Leu	Leu	Glu	Tyr	Met	Leu	Ala	Cys	Pro	Leu	Ser	Asp	His	Met
465					470					475					480
Gln	Glu	Thr	Leu	Leu	Ile	Val	Cys	Glu	Lys	Ile	Pro	Ser	Leu	Glu	Gly
				485					490					495	
Thr	Ile	Asn	Glu	Lys	Leu	Leu	Asn	Ile	Ile	Cys	Leu	Val	Leu	Ser	Gly
			500					505					510		
Glu	Lys	Phe	Arg	Pro	Pro	Gly	Ser	Pro	Thr	Pro	Met	Lys	Pro	Phe	Ser
		515					520					525			
Ala	Glu	Thr	Ala	Arg	Asn	Tyr	Arg	Asp	Gln	Ser	Leu	Phe	Lys	Lys	Thr
	530					535					540				
Gly	Glu	Ala	Asn	Asn	Asp	Ile	Phe	Asp	Ala	Val	Ile	Leu	Thr	Lys	Ala
545					550					555					560
Leu	Arg	Met	Leu	Ser	Asp	Ile	Lys	Pro	Lys	Tyr	Ser	Leu	Thr	Glu	Phe
				565					570					575	
Ile	Arg	Arg	Val	Ile	Ile	Ser	Tyr	Met	Glu	His	Asp	Asn	Leu	Gln	Val
			580					585					590		
Arg	Lys	Leu	Ala	Ala	Leu	Thr	Ser	Cys	Asp	Leu	Phe	Val	Glu	Asp	Ser
		595					600					605			
Ile	Cys	Lys	Gln	Thr	Ser	Leu	Tyr	Ala	Leu	Asn	Val	Val	Ser	Glu	Val
	610					615					620				
Leu	Ser	Lys	Leu	Leu	Thr	Val	Ala	Ile	Thr	Asp	Pro	Val	Ala	Glu	Ile
625					630					635				640	
Arg	Leu	Glu	Ile	Leu	Arg	His	Leu	Asp	Thr	Asn	Phe	Asp	Pro	Gln	Leu
				645					650					655	
Ser	Gln	Pro	Asp	Asn	Thr	Lys	Leu	Leu	Phe	Met	Ala	Leu	Asn	Asp	Glu
			660					665					670		
Val	Phe	Ala	Ile	Gln	Met	Glu	Ala	Met	Arg	Ile	Cys	Gly	Arg	Leu	Ala
		675					680					685			
Leu	Val	Asn	Pro	Ala	Tyr	Val	Ile	Pro	Ser	Leu	Arg	Lys	Thr	Leu	Ile
	690					695					700				
Gln	Leu	Leu	Thr	Glu	Leu	Lys	His	Ser	Lys	Leu	Thr	Arg	Lys	Lys	Glu
705					710					715					720
Glu	Cys	Ala	Ser	Leu	Leu	Cys	Thr	Leu	Ile	Ser	Ser	Ser	Ser	Asp	Val
			725						730					735	
Thr	Lys	Pro	Tyr	Leu	Glu	Pro	Val	Ile	Glu	Ile	Leu	Leu	Pro	Lys	Ser
			740					745					750		
Gln	Asp	Ser	Ser	Ser	Ala	Val	Ala	Ser	Thr	Ala	Leu	Lys	Ala	Ile	Gly
		755					760					765			
Glu	Leu	Ser	Val	Val	Gly	Gly	Glu	Asp	Met	Val	Pro	Phe	Leu	Asp	Glu
	770														

## PhoenixTemp32470.tmp.txt

Val Lys Gln His Ile Arg Leu His Val Ser Glu Ile Val Glu Val Ile  
 980 985 990  
 Ser Glu Phe Phe Pro Ile Val Lys Leu Gln Leu Thr Ile Ile Ser Val  
 995 1000 1005  
 Ile Glu Ser Leu Ser Arg Ala Leu Glu Gly Glu Phe Asn Pro Tyr Leu  
 1010 1015 1020  
 Pro Asn Ile Leu Ser Leu Phe Leu Asp Val Leu Glu Lys Asp Gln Ser  
 1025 1030 1035 1040  
 Asn Lys Lys Val Val Ser Ile Arg Ile Leu Lys Ser Leu Val Val Phe  
 1045 1050 1055  
 Gly Pro His Leu Glu Glu Tyr Ala His Leu Val Leu Pro Thr Ile Ile  
 1060 1065 1070  
 Lys Leu Ser Glu Phe Ser Ser Gly Asn Leu Lys Lys Ala Ala Ile Ile  
 1075 1080 1085  
 Thr Ile Gly Arg Leu Ser Lys Asn Val Asn Pro Leu Glu Met Ser Ser  
 1090 1095 1100  
 Arg Ile Val Gln Ala Leu Val Arg Val Leu Asn Thr Ser Glu Leu Glu  
 1105 1110 1115 1120  
 Tyr Val Lys Ala Thr Met Asn Thr Leu Ser Leu Leu Leu Gln Leu  
 1125 1130 1135  
 Asn Ile Asp Phe Thr Val Phe Ile Pro Val Ile Asn Lys Thr Leu Val  
 1140 1145 1150  
 Lys Gln Asn Ile Gln His Thr Ile Tyr Asp Arg Leu Val Ala Lys Leu  
 1155 1160 1165  
 Leu Asn Asn Glu Pro Leu Pro Thr Lys Ile Ile Ile Asp Lys Asp Phe  
 1170 1175 1180  
 Asp Leu Pro Asn Lys Glu Met Asp Asp Val Lys Val Ala Ser Lys Lys  
 1185 1190 1195 1200  
 Leu Pro Val Asn Gln Leu Val Leu Lys Asn Ala Trp Asp Cys Ser Gln  
 1205 1210 1215  
 Gln Arg Thr Lys Glu Asp Trp Gln Glu Trp Ile Arg Arg Leu Ser Ile  
 1220 1225 1230  
 Ser Leu Leu Lys Glu Ser Ser Ser His Ala Leu Arg Ala Cys Ser Gly  
 1235 1240 1245  
 Leu Ala Gly Ile Tyr Tyr Pro Leu Ala Arg Glu Leu Phe Asn Ala Ser  
 1250 1255 1260  
 Phe Ala Ser Cys Trp Gly Glu Leu Tyr Thr Gln Tyr Gln Glu Asp Leu  
 1265 1270 1275 1280  
 Val Gln Ser Leu Cys Ser Ala Leu Ser Ser Pro Asn Asn Pro Pro Glu  
 1285 1290 1295  
 Ile His Gln Thr Leu Leu Asn Leu Val Glu Phe Met Glu His Asp Asp  
 1300 1305 1310  
 Lys Pro Leu Pro Ile Ser Ile Ser Thr Leu Gly Glu Tyr Ala Gln Arg  
 1315 1320 1325  
 Cys His Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Leu Glu Phe Ile  
 1330 1335 1340  
 Glu Glu Pro Thr Thr Ser Thr Ile Glu Ser Leu Ile Ser Ile Asn Asn  
 1345 1350 1355 1360  
 Gln Leu His Gln Thr Asp Ala Ala Ile Gly Ile Leu Lys His Ala Gln  
 1365 1370 1375  
 Gln His His Asp Leu Gln Leu Lys Glu Thr Trp Tyr Glu Lys Leu Gln  
 1380 1385 1390  
 Arg Trp Asp Asp Ala Leu Thr Ala Tyr Asn Lys Arg Glu Ala Ala Gly  
 1395 1400 1405  
 Glu Asp Ser Ile Glu Val Thr Ile Gly Lys Met Arg Ser Leu His Ala  
 1410 1415 1420  
 Leu Gly Asp Trp Asp Gln Leu Ser Glu Leu Ala Ala Asp Lys Trp Ala  
 1425 1430 1435 1440  
 Ser Ser Lys Ile Asp Ile Lys Arg Ala Ile Ala Pro Leu Ala Ala Gly  
 1445 1450 1455  
 Ala Ala Trp Gly Leu Ala Gln Trp Asp Arg Ile Glu Gln Tyr Ile Glu  
 1460 1465 1470  
 Val Met Lys Pro Gln Ser Pro Asp Lys Ala Phe Phe Ala Ala Val Leu  
 1475 1480 1485  
 Cys Leu His Arg Asn Asn Phe Asp Lys Ala Gln Glu Gln Ile Phe Ala  
 1490 1495 1500  
 Ala Arg Asp Leu Leu Val Thr Glu Met Ser Ala Leu Val Asn Glu Ser  
 1505 1510 1515 1520  
 Tyr Asn Arg Ala Tyr Gly Val Val Val Arg Thr Gln Met Val Ala Glu

## PhoenixTemp32470.tmp.txt

1525 1530 1535  
 Leu Glu Glu Ile Ile Gln Tyr Lys Asn Leu Pro Gln Gly Ser Asp Arg  
 1540 1545 1550  
 Arg Ala Met Ile Arg Lys Thr Trp Asn Lys Arg Leu Leu Gly Cys Gln  
 1555 1560 1565  
 Lys Asn Val Asp Val Trp Gln Arg Ile Leu Lys Val Arg Ser Leu Val  
 1570 1575 1580  
 Ile Lys Pro Lys Gln Asp Met Lys Val Trp Ile Lys Phe Ala Asn Leu  
 1585 1590 1595 1600  
 Cys Arg Lys Ser Gly Arg Leu Gly Leu Ala Gln Lys Thr Leu Asn Thr  
 1605 1610 1615  
 Leu Leu Glu Glu Ser Ser Asp Pro Lys Asn Pro Asn Thr Ala Arg Ala  
 1620 1625 1630  
 Pro Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Met Trp Ala Thr Gly  
 1635 1640 1645  
 Ser Gln Lys Glu Ala Leu Asn His Leu Ile Ser Phe Thr Ser Arg Met  
 1650 1655 1660  
 Ala His Asp Leu Gly Leu Asp Pro Ser Asn Met Ile Ala Gln Ser Val  
 1665 1670 1675 1680  
 Pro Gln Asn Ser Ser Val Ser Gln His His Ile Glu Asp Tyr Thr Lys  
 1685 1690 1695  
 Leu Leu Ala Arg Cys Phe Leu Lys Gln Gly Glu Trp Arg Val Ser Leu  
 1700 1705 1710  
 Gln Pro Asn Trp Arg Leu Glu Asn Pro Asp Ala Ile Leu Gly Ser Tyr  
 1715 1720 1725  
 Leu Leu Ala Thr His Phe Asp Lys Ser Trp Tyr Lys Ala Trp His Asn  
 1730 1735 1740  
 Trp Ala Leu Ala Asn Phe Glu Val Thr Ser Ser Leu Thr Gln Arg Ile  
 1745 1750 1755 1760  
 Lys Asp Asp Lys Val Leu Thr Leu Glu Asp Ala Ser Thr Glu Phe Thr  
 1765 1770 1775  
 Asn Gly Ala Val Ala Gly Leu Gly Ala Asn Glu Asn Phe Pro Pro Glu  
 1780 1785 1790  
 Leu Val Gln Arg His Val Val Pro Ala Ile Lys Gly Phe Phe Arg Ser  
 1795 1800 1805  
 Ile Ala Leu Ser Gln Ser Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu  
 1810 1815 1820  
 Thr Leu Trp Phe Lys Phe Gly Gly Ile Pro Glu Ala Ala Gln Ala Met  
 1825 1830 1835 1840  
 His Glu Gly Phe Gly Leu Ile Lys Ile Asp Asn Trp Leu Glu Val Ile  
 1845 1850 1855  
 Pro Gln Leu Ile Ser Arg Ile His Gln Pro Asn Gln Thr Val Ser Arg  
 1860 1865 1870  
 Ser Leu Leu Ser Leu Leu Ala Asp Leu Gly Lys Ala His Pro Gln Ala  
 1875 1880 1885  
 Leu Val Tyr Pro Leu Thr Val Ala Ile Lys Ser Asp Ser Val Ser Arg  
 1890 1895 1900  
 Gln Arg Ala Ala Leu Ser Ile Ile Asp Lys Met Arg Met His Ser Pro  
 1905 1910 1915 1920  
 Lys Leu Val Asp Gln Ala Glu Leu Val Ser Asp Glu Leu Ile Arg Val  
 1925 1930 1935  
 Ala Val Leu Trp His Glu Leu Trp Tyr Glu Gly Leu Glu Asp Ala Ser  
 1940 1945 1950  
 Arg Gln Phe Phe Gly Glu His Asn Thr Glu Lys Met Phe Ala Thr Leu  
 1955 1960 1965  
 Glu Pro Leu His Glu Met Leu Lys Arg Gly Pro Glu Thr Leu Arg Glu  
 1970 1975 1980  
 Ile Ser Phe Gln Asn Ser Phe Gly Arg Asp Leu Asn Asp Ala His Glu  
 1985 1990 1995 2000  
 Trp Val Met Asn Tyr Lys Arg Thr Lys Asp Ile Asn Asn Leu Asn Gln  
 2005 2010 2015  
 Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Arg Ile Ser Arg Lys Leu  
 2020 2025 2030  
 Pro Gln Leu Gln Thr Leu Asp Leu Gln His Val Ser Pro Lys Leu Ala  
 2035 2040 2045  
 Ala Ala Lys Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr His Ala Gly  
 2050 2055 2060  
 Lys Pro Val Ile Arg Ile Thr His Phe Glu Pro Ile Phe Thr Val Ile  
 2065 2070 2075 2080

## PhoenixTemp32470.tmp.txt

Ser Ser Lys Gln Arg Pro Arg Arg Leu Ser Ile Lys Gly Ser Asp Gly  
 2085 2090 2095  
 Lys Asp Tyr Gln Tyr Ile Val Lys Gly His Glu Asp Ile Arg Gln Asp  
 2100 2105 2110  
 Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Gln Asn  
 2115 2120 2125  
 Asn Pro Glu Ser Phe Gln Arg His Leu Asn Ile Gln Gln Tyr Pro Ala  
 2130 2135 2140  
 Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu Gly Trp Val Pro Asn Ser  
 2145 2150 2155 2160  
 Asp Thr Phe His Val Leu Ile Arg Glu His Arg Glu Ala Ser Lys Val  
 2165 2170 2175  
 Pro Leu Asn Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr  
 2180 2185 2190  
 Asp Asn Leu Thr Leu Leu Gln Lys Val Glu Val Phe Thr Tyr Ala Leu  
 2195 2200 2205  
 Asp Asn Thr Lys Gly Gln Asp Leu Tyr Lys Val Leu Trp Leu Lys Ser  
 2210 2215 2220  
 Arg Ser Ser Glu Ser Trp Leu Glu Arg Arg Thr Thr Tyr Thr Arg Ser  
 2225 2230 2235 2240  
 Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg  
 2245 2250 2255  
 His Pro Ser Asn Leu Met Leu Asp Arg Val Thr Gly Lys Val Val His  
 2260 2265 2270  
 Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu Lys Tyr  
 2275 2280 2285  
 Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Thr Tyr Ala Met  
 2290 2295 2300  
 Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Cys Glu Asn Val  
 2305 2310 2315 2320  
 Met Met Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala Ile Leu Glu  
 2325 2330 2335  
 Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp Leu Pro Thr  
 2340 2345 2350  
 Gln Ala Val Met Glu Gln Thr Gly Ile Asp Leu Pro Leu Ala Asn Pro  
 2355 2360 2365  
 Ser Glu Leu Leu Arg Lys Gly Val Ile Thr Val Glu Asp Ala Ala Lys  
 2370 2375 2380  
 Met Glu Leu Gln Gln Lys Ala Glu Val Arg Asn Ala Arg Ala Thr Leu  
 2385 2390 2395 2400  
 Val Leu Lys Arg Ile Ala Asp Lys Leu Thr Gly Asn Asp Phe Pro Arg  
 2405 2410 2415  
 Tyr Gln Glu Leu Ser Val Pro Asp Gln Val Asp Lys Leu Ile Gln Gln  
 2420 2425 2430  
 Ala Thr Ser Val Glu Asn Leu Cys Gln His Tyr Ile Gly Trp Cys Ser  
 2435 2440 2445  
 Phe Trp  
 2450

&lt;210&gt; 2532

&lt;211&gt; 7554

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7554)

&lt;400&gt; 2532

atg	tct	aca	act	cag	cta	caa	ata	gtt	gac	ggg	ata	gca	tta	acc	caa	48
Met	Ser	Thr	Thr	Gln	Leu	Gln	Ile	Val	Asp	Gly	Ile	Ala	Leu	Thr	Gln	
1				5					10					15		
att	ttc	aat	ggg	tta	aaa	tca	aat	aag	gaa	gag	aga	aat	aga	tat		96
Ile	Phe	Asn	Gly	Leu	Lys	Ser	Asn	Lys	Glu	Glu	Glu	Arg	Asn	Arg	Tyr	
			20					25					30			
gcc	tta	gaa	tta	cga	aat	tat	cta	gcg	tct	ata	gct	aga	gat	cta	tct	144
Ala	Leu	Glu	Leu	Arg	Asn	Tyr	Leu	Ala	Ser	Ile	Ala	Arg	Asp	Leu	Ser	
		35					40					45				
ccg	gag	cag	ttc	aat	cgg	tat	aat	aat	gat	atc	aac	aaa	act	att	ttt	192

## PhoenixTemp32470.tmp.txt

Pro	Glu	Gln	Phe	Asn	Arg	Tyr	Asn	Asn	Asp	Ile	Asn	Lys	Thr	Ile	Phe	
gaa	50	ttt	cat	agt	aat	gaa	acc	tcg	gag	aag	ttg	ggg	ggt	ata	gca	240
Glu	Phe	Leu	His	Ser	Asn	Glu	Thr	Ser	Glu	Lys	Leu	Gly	Gly	Ile	Ala	
65					70					75					80	
gcg	ttg	aat	tca	ttg	att	gat	ttt	gat	tcg	ggt	gta	gga	gaa	gaa	aat	288
Ala	Leu	Asn	Ser	Leu	Ile	Asp	Phe	Asp	Ser	Gly	Val	Gly	Glu	Glu	Asn	
				85					90					95		
gct	aca	aag	acg	gct	aga	ttt	tca	aac	tac	ttg	ggt	tca	tta	atc	ttg	336
Ala	Thr	Lys	Thr	Ala	Arg	Phe	Ser	Asn	Tyr	Leu	Gly	Ser	Leu	Ile	Leu	
			100					105					110			
tca	aac	gat	tta	aca	atc	atg	aag	caa	gca	acc	atg	act	tta	ggt	aag	384
Ser	Asn	Asp	Leu	Thr	Ile	Met	Lys	Gln	Ala	Thr	Met	Thr	Leu	Gly	Lys	
		115					120					125				
ttg	gcg	aca	ccc	ggt	ggt	act	ctt	aca	ggt	gac	ttc	ggt	gat	ttt	gaa	432
Leu	Ala	Thr	Pro	Gly	Gly	Thr	Leu	Thr	Gly	Asp	Phe	Val	Asp	Phe	Glu	
130					135					140						
gca	aaa	agg	gcc	ata	gaa	tgg	tta	cag	agt	gac	aat	aaa	caa	cac	gag	480
Ala	Lys	Arg	Ala	Ile	Glu	Trp	Leu	Gln	Ser	Asp	Asn	Lys	Gln	His	Glu	
145					150					155					160	
aac	aga	agg	cac	gca	gca	ata	ttg	att	atc	act	gca	ttg	gtg	gat	aat	528
Asn	Arg	Arg	His	Ala	Ala	Ile	Leu	Ile	Ile	Thr	Ala	Leu	Val	Asp	Asn	
			165						170					175		
gct	cct	acg	tta	ttg	tat	aat	ttt	ata	aac	cag	att	ttg	gag	cat	tta	576
Ala	Pro	Thr	Leu	Leu	Tyr	Asn	Phe	Ile	Asn	Gln	Ile	Leu	Glu	His	Leu	
			180					185					190			
tgg	att	cca	ttg	aga	gat	agc	aaa	ttg	gtg	ata	aga	act	gat	gca	gct	624
Trp	Ile	Pro	Leu	Arg	Asp	Ser	Lys	Leu	Val	Ile	Arg	Thr	Asp	Ala	Ala	
		195					200					205				
att	gct	tta	cag	aaa	tgt	atg	cga	ata	att	tat	gat	aga	gat	att	aac	672
Ile	Ala	Leu	Gln	Lys	Cys	Met	Arg	Ile	Ile	Tyr	Asp	Arg	Asp	Ile	Asn	
210					215						220					
tct	cgt	cga	ttt	tgg	atc	aaa	cat	ttc	ata	gat	atg	gct	tca	aag	ata	720
Ser	Arg	Arg	Phe	Trp	Ile	Lys	His	Phe	Ile	Asp	Met	Ala	Ser	Lys	Ile	
225					230					235					240	
tta	aac	gaa	aat	gtt	gct	aga	aac	ccc	aca	tct	gaa	tcc	aac	gac	tca	768
Leu	Asn	Glu	Asn	Val	Ala	Arg	Asn	Pro	Thr	Ser	Glu	Ser	Asn	Asp	Ser	
				245					250					255		
agc	aat	aat	gga	agc	ggc	aat	aat	agt	gtg	aac	tct	ggt	aac	gca	gcg	816
Ser	Asn	Asn	Gly	Ser	Gly	Asn	Asn	Ser	Val	Asn	Ser	Val	Asn	Ala	Ala	
			260					265					270			
gca	agt	acg	gcc	tat	aat	tta	att	tat	tcc	aca	gct	acg	gga	tca	caa	864
Ala	Ser	Thr	Ala	Tyr	Asn	Leu	Ile	Tyr	Ser	Thr	Ala	Thr	Gly	Ser	Gln	
		275					280					285				
act	aac	gag	tca	atc	cac	ggt	tct	ctt	ctt	gtg	tac	agg	gaa	cta	att	912
Thr	Asn	Glu	Ser	Ile	His	Gly	Ser	Leu	Leu	Val	Tyr	Arg	Glu	Leu	Ile	
		290				295					300					
aca	ttt	cat	agt	gat	cca	tac	att	cat	tcc	aag	ttt	gaa	ttg	att	tac	960
Thr	Phe	His	Ser	Asp	Pro	Tyr	Ile	His	Ser	Lys	Phe	Glu	Leu	Ile	Tyr	
305					310					315					320	
gaa	aat	aca	gta	ttg	tat	agg	aat	cac	aag	caa	gct	ata	att	agg	caa	1008
Glu	Asn	Thr	Val	Leu	Tyr	Arg	Asn	His	Lys	Gln	Ala	Ile	Ile	Arg	Gln	
				325					330					335		
gaa	tta	act	aag	atc	att	cca	cta	cta	tgc	aaa	gta	aat	aca	gaa	tta	1056
Glu	Leu	Thr	Lys	Ile	Ile	Pro	Leu	Leu	Cys	Lys	Val	Asn	Thr	Glu	Leu	
			340					345					350			
ttt	gtt	gaa	aaa	tat	ttg	cac	aga	aca	ttg	ttg	cat	tat	ttg	tca	cag	1104
Phe	Val	Glu	Lys	Tyr	Leu	His	Arg	Thr	Leu	Leu	His	Tyr	Leu	Ser	Gln	
		355					360					365				
tta	aaa	caa	tta	aaa	agt	caa	cac	agt	gag	act	gcc	aat	aat	gat	aaa	1152
Leu	Lys	Gln	Leu	Lys	Ser	Gln	His	Ser	Glu	Thr	Ala	Asn	Asn	Asp	Lys	
		370				375					380					
agt	gcc	att	ttt	aga	agt	ata	ggg	tta	att	tcg	ttg	gaa	gta	ggg	aac	1200
Ser	Ala	Ile	Phe	Arg	Ser	Ile	Gly	Leu	Ile	Ser	Leu	Glu	Val	Gly	Asn	
				390						395					400	
caa	atg	gct	act	tat	ttg	gat	gct	ata	tta	gat	aat	att	cga	gat	ggg	1248
Gln	Met	Ala	Thr	Tyr	Leu	Asp	Ala	Ile	Leu	Asp	Asn	Ile	Arg	Asp	Gly	
			405							410				415		
tta	tct	tat	cct	tct	aat	cca	agc	gtg	caa	ctg	att	tta	gta	aat	gca	1296



## PhoenixTemp32470.tmp.txt

Leu	Ser	Tyr	Pro	Ser	Asn	Pro	Ser	Val	Gln	Leu	Ile	Leu	Val	Asn	Ala	
gta	tct	aat	aat	gga	gat	aat	cca	cta	tct	ggt	gca	gtg	acg	tcg	agt	1344
Val	Ser	Asn	Asn	Gly	Asp	Asn	Pro	Leu	Ser	Gly	Ala	Val	Thr	Ser	Ser	
		435					440					445				
aat	gga	tcc	tcg	caa	tcg	aca	atc	aat	ggt	ttg	aat	agc	att	tct	act	1392
Asn	Gly	Ser	Ser	Gln	Ser	Thr	Ile	Asn	Gly	Leu	Asn	Ser	Ile	Ser	Thr	
	450					455					460					
tca	ggt	tcc	ggg	ccc	aca	aag	tat	aga	ttg	agt	cga	aag	aat	act	gaa	1440
Ser	Gly	Ser	Gly	Pro	Thr	Lys	Tyr	Arg	Leu	Ser	Arg	Lys	Asn	Thr	Glu	
465					470					475					480	
cct	gcc	att	ttt	gat	tcg	atc	agt	aaa	ttg	tcg	att	gcc	gta	ggt	cca	1488
Pro	Ala	Ile	Phe	Asp	Cys	Ile	Ser	Lys	Leu	Ser	Ile	Ala	Val	Gly	Pro	
				485					490					495		
gct	ttg	aca	aag	cat	tta	caa	cgt	gat	ata	tta	gat	atg	atg	ttt	agt	1536
Ala	Leu	Thr	Lys	His	Leu	Gln	Arg	Asp	Ile	Leu	Asp	Met	Met	Phe	Ser	
			500					505					510			
aat	tgt	tcc	tta	tcg	gtc	tac	atg	cag	aat	ggt	tta	caa	act	ttg	atc	1584
Asn	Cys	Ser	Leu	Ser	Val	Tyr	Met	Gln	Asn	Val	Leu	Gln	Thr	Leu	Ile	
		515					520					525				
gtt	aat	att	ccg	atg	tta	act	aat	ctt	ata	agc	atg	aag	tta	tta	aac	1632
Val	Asn	Ile	Pro	Met	Leu	Thr	Asn	Leu	Ile	Ser	Met	Lys	Leu	Leu	Asn	
	530					535					540					
tta	tta	agt	ttg	gtt	tta	tca	ggt	aag	att	ttc	caa	cct	cct	ggt	tcg	1680
Leu	Leu	Ser	Leu	Val	Leu	Ser	Gly	Lys	Ile	Phe	Gln	Pro	Pro	Gly	Ser	
545					550					555					560	
cct	tac	gga	tcc	atc	aaa	atg	aac	gaa	tca	tta	gca	aga	gac	tat	aga	1728
Pro	Tyr	Gly	Ser	Ile	Lys	Met	Asn	Glu	Ser	Leu	Ala	Arg	Asp	Tyr	Arg	
				565					570					575		
tta	ata	atg	ata	tca	aga	gac	aca	gga	ttg	agt	atc	aac	agt	ata	ctt	1776
Leu	Ile	Met	Ile	Ser	Arg	Asp	Thr	Gly	Leu	Ser	Ile	Asn	Ser	Ile	Leu	
			580					585					590			
aat	gac	gcg	gat	gac	tat	gaa	aat	tat	gat	agt	gca	atc	ttg	gtc	caa	1824
Asn	Asp	Ala	Asp	Asp	Tyr	Glu	Asn	Tyr	Asp	Ser	Ala	Ile	Leu	Val	Gln	
		595					600					605				
gca	tta	aat	atg	cta	gca	ttt	ttt	gag	ttc	gaa	aac	tac	cag	cta	aac	1872
Ala	Leu	Asn	Met	Leu	Ala	Phe	Phe	Glu	Phe	Glu	Asn	Tyr	Gln	Leu	Asn	
	610					615					620					
gag	ttt	gtt	aga	tac	tcg	aca	att	acg	tat	ctt	gaa	cac	aac	gtt	cct	1920
Glu	Phe	Val	Arg	Tyr	Cys	Thr	Ile	Thr	Tyr	Leu	Glu	His	Asn	Val	Pro	
625					630					635					640	
aaa	gtt	cgt	caa	aca	gcc	acg	ata	aca	tcc	tgt	gaa	ata	ttt	atc	aag	1968
Lys	Val	Arg	Gln	Thr	Ala	Thr	Ile	Thr	Ser	Cys	Glu	Ile	Phe	Ile	Lys	
			645						650					655		
gat	cca	att	tgt	caa	caa	acc	agc	gtg	aat	gca	tta	aac	gct	gtt	aat	2016
Asp	Pro	Ile	Cys	Gln	Gln	Thr	Ser	Val	Asn	Ala	Leu	Asn	Ala	Val	Asn	
			660					665					670			
gag	gtt	tta	gac	aag	ctt	cta	tca	ata	gcc	atc	acc	gat	cct	ata	cca	2064
Glu	Val	Leu	Asp	Lys	Leu	Leu	Ser	Ile	Ala	Ile	Thr	Asp	Pro	Ile	Pro	
		675					680					685				
gaa	ata	cgg	tta	gaa	ggt	tta	aat	tgt	ttg	gca	aat	gct	gga	aat	ctt	2112
Glu	Ile	Arg	Leu	Glu	Gly	Leu	Asn	Cys	Leu	Ala	Asn	Ala	Gly	Asn	Leu	
	690					695					700					
gat	cct	caa	ctt	tcc	caa	gct	aat	aat	gtt	aga	ctt	cta	ttt	att	gca	2160
Asp	Pro	Gln	Leu	Ser	Gln	Ala	Asn	Asn	Val	Arg	Leu	Leu	Phe	Ile	Ala	
					710					715					720	
tta	aac	gat	gaa	gta	ttc	agt	att	agg	aag	ata	gcg	ata	aaa	ata	ttg	2208
Leu	Asn	Asp	Glu	Val	Phe	Ser	Ile	Arg	Lys	Ile	Ala	Ile	Lys	Ile	Leu	
				725					730					735		
ggt	aga	tta	tca	tcg	ata	aat	cct	gcc	tat	att	gtt	cct	tct	tta	agg	2256
Gly	Arg	Leu	Ser	Ser	Ile	Asn	Pro	Ala	Tyr	Ile	Val	Pro	Ser	Leu	Arg	
			740					745					750			
aaa	act	tta	ata	caa	ttg	tta	tcg	cgt	ttg	gaa	tac	tca	cca	aca	agc	2304
Lys	Thr	Leu	Ile	Gln	Leu	Leu	Ser	Arg	Leu	Glu	Tyr	Ser	Pro	Thr	Ser	
		755					760					765				
cgt	aaa	aag	gaa	gaa	agt	gct	aca	ttg	ata	tcg	ctt	ctc	ata	agc	aat	2352
Arg	Lys	Lys	Glu	Glu	Ser	Ala	Thr	Leu	Ile	Ser	Leu	Leu	Ile	Ser	Asn	
		770				775					780					
tca	aaa	gaa	tta	acc	aga	cct	tac	gtg	aag	cca	ata	gtt	gaa	gca	tta	2400

## PhoenixTemp32470.tmp.txt

Ser 785	Lys	Glu	Leu	Thr	Arg 790	Pro	Tyr	Val	Lys	Pro 795	Ile	Val	Glu	Ala	Leu 800	
ttg	cct	aag	gct	aaa	gat	ccc	agt	tca	tca	gtg	gca	gca	agt	gca	atc	2448
Leu	Pro	Lys	Ala	Lys 805	Asp	Pro	Ser	Ser	Ser 810	Val	Ala	Ala	Ser	Ala 815	Ile	
aat	tgt	ctt	ggt	gag	cta	gca	gtt	gta	ggt	ggg	gaa	gat	ttg	caa	cct	2496
Asn	Cys	Leu	Gly 820	Glu	Leu	Ala	Val	Val 825	Gly	Gly	Glu	Asp	Leu 830	Gln	Pro	
ttt	att	cct	gat	ttg	atg	cca	cta	att	ttg	gaa	acg	ttt	caa	gat	cag	2544
Phe	Ile	Pro	Asp	Leu	Met	Pro	Leu	Ile	Leu	Glu	Thr	Phe	Gln	Asp	Gln	
		835					840				845					
agt	tct	tct	tat	aag	aga	gat	gct	gct	ttg	aag	acg	ttg	ggc	caa	ttg	2592
Ser	Ser	Ser	Tyr	Lys	Arg	Asp 855	Ala	Ala	Leu	Lys	Thr	Leu	Gly	Gln	Leu	
	850									860						
gca	agt	tcg	tct	ggc	tac	gtt	att	aag	cct	tta	ctt	gac	tat	ccg	cag	2640
Ala	Ser	Ser	Ser	Gly	Tyr	Val	Ile	Lys	Pro	Leu	Leu	Asp	Tyr	Pro	Gln	
865				870					875						880	
tta	ttg	ggg	atg	tta	gta	gga	ata	ttg	aaa	ctg	gag	agt	tcg	cct	cac	2688
Leu	Leu	Gly	Met	Leu	Val	Gly	Ile	Leu	Lys 890	Leu	Glu	Ser	Ser	Pro	His	
				885										895		
ata	aga	agg	gaa	aca	gta	agg	cta	ttg	ggt	ata	tta	ggt	gct	ttg	gac	2736
Ile	Arg	Arg	Glu	Thr	Val	Arg	Leu	Leu	Gly	Ile	Leu	Gly	Ala	Leu	Asp	
			900					905					910			
cct	tat	aag	cat	cgt	gaa	gtt	gaa	caa	aat	tct	aag	aat	ata	cct	tca	2784
Pro	Tyr	Lys	His	Arg	Glu	Val	Glu	Gln	Asn	Ser	Lys	Asn	Ile	Pro	Ser	
		915					920					925				
gaa	caa	aat	gca	cca	cca	gtg	gat	gtt	gca	ttg	tta	atg	caa	ggt	atg	2832
Glu	Gln	Asn	Ala	Pro	Pro	Val	Asp	Val	Ala	Leu	Leu	Met	Gln	Gly	Met	
	930					935					940					
tca	cct	tct	aat	gat	gaa	tac	tat	ccg	aca	gtt	gcc	ata	aat	aac	cta	2880
Ser	Pro	Ser	Asn	Asp	Glu	Tyr	Tyr	Pro	Thr	Val	Ala	Ile	Asn	Asn	Leu	
945				950					955						960	
atg	aaa	att	tta	aaa	gac	cca	tca	ttg	aca	gct	cat	cat	aat	aaa	gta	2928
Met	Lys	Ile	Leu	Lys	Asp	Pro	Ser	Leu	Thr	Ala	His	His	Asn	Lys	Val	
				965					970					975		
att	caa	gcc	att	atg	tac	att	ttc	caa	aca	ttg	gga	tta	aga	tgt	gtt	2976
Ile	Gln	Ala	Ile	Met	Tyr	Ile	Phe	Gln	Thr	Leu	Gly	Leu	Arg	Cys	Val	
			980					985					990			
tca	ttt	tta	cca	cag	atc	att	cct	gga	att	att	aat	gtc	atg	aat	aca	3024
Ser	Phe	Leu	Pro	Gln	Ile	Ile	Pro	Gly	Ile	Ile	Asn	Val	Met	Asn	Thr	
		995					1000					1005				
tgt	cag	cct	tcg	atg	ttg	aaa	ttt	tac	ttc	cag	caa	cta	ggt	gca	tta	3072
Cys	Gln	Pro	Ser	Met	Leu	Lys	Phe	Tyr	Phe	Gln	Gln	Leu	Gly	Ala	Leu	
	1010					1015					1020					
ata	ttg	ata	gtt	aaa	caa	cac	ata	aga	cca	ttc	ctt	cct	gaa	ata	ttt	3120
Ile	Leu	Ile	Val	Lys	Gln	His	Ile	Arg	Pro	Phe	Leu	Pro	Glu	Ile	Phe	
1025				1030					1035					1040		
gaa	gtc	atc	aaa	gag	tcg	ttt	aac	ata	aac	atc	caa	tta	aat	gtt	cag	3168
Glu	Val	Ile	Lys	Glu	Ser	Phe	Asn	Ile	Asn	Ile	Gln	Leu	Asn	Val	Gln	
			1045					1050					1055			
gtg	atc	att	ata	aat	ttg	ata	gaa	tcc	att	tca	agg	gct	tta	gaa	ggg	3216
Val	Ile	Ile	Ile	Asn	Leu	Ile	Glu	Ser	Ile	Ser	Arg	Ala	Leu	Glu	Gly	
			1060				1065					1070				
gaa	ttt	aaa	atg	cat	ctt	cca	gat	gtt	ttg	aat	ttg	atg	tta	aat	gtt	3264
Glu	Phe	Lys	Met	His	Leu	Pro	Asp	Val	Leu	Asn	Leu	Met	Leu	Asn	Val	
	1075					1080					1085					
ttt	gaa	gat	gat	aaa	tca	gtt	aag	aga	gaa	cca	tcg	tta	cat	gtt	ttg	3312
Phe	Glu	Asp	Asp	Lys	Ser	Val	Lys	Arg	Glu	Pro	Ser	Leu	His	Val	Leu	
	1090				1095					1100						
aaa	gca	ttt	gtt	gtt	ttt	gga	agt	agc	att	gaa	gaa	tat	gtc	cat	ata	3360
Lys	Ala	Phe	Val	Val	Phe	Gly	Ser	Ser	Ile	Glu	Glu	Tyr	Val	His	Ile	
	1105			1110					1115					1120		
att	gtc	cca	aac	atc	gtg	aaa	atg	ttt	gaa	atg	ggg	ccg	att	gta	tta	3408
Ile	Val	Pro	Asn	Ile	Val	Lys	Met	Phe	Glu	Met	Gly	Pro	Ile	Val	Leu	
			1125					1130					1135			
cgt	agg	gct	gca	att	gag	aca	att	gga	aga	tta	tcg	aag	caa	gtt	cta	3456
Arg	Arg	Ala	Ala	Ile	Glu	Thr	Ile	Gly	Arg	Leu	Ser	Lys	Gln	Val	Leu	
		1140					1145					1150				
tta	aat	gat	atg	gca	tct	aga	atc	ata	cat	ccc	att	tta	cgt	gta	ttg	3504

## PhoenixTemp32470.tmp.txt

Leu	Asn	Asp	Met	Ala	Ser	Arg	Ile	Ile	His	Pro	Ile	Leu	Arg	Val	Leu		
1155	1160	1165															
cgc	caa	ggc	aat	gat	gaa	ttg	aaa	act	acg	gcg	atg	aat	act	tta	agt	3552	
Arg	Gln	Gly	Asn	Asp	Glu	Leu	Lys	Thr	Thr	Ala	Met	Asn	Thr	Leu	Ser		
1170	1175	1180															
tac	tta	cta	ttg	cag	ttg	ggt	aat	gag	ttc	agt	gtg	ttc	att	cct	gta	3600	
Tyr	Leu	Leu	Leu	Gln	Leu	Gly	Asn	Glu	Phe	Ser	Val	Phe	Ile	Pro	Val		
1185	1190	1195															
atc	aaa	tca	ttg	ttg	ata	cag	cag	aaa	att	cat	tca	gca	att	ttc	gag	3648	
Ile	Lys	Ser	Leu	Leu	Ile	Gln	Gln	Lys	Ile	His	Ser	Ala	Ile	Phe	Glu		
1205	1210	1215															
caa	ctt	ggt	aat	aag	tta	tta	agt	gga	gat	cca	tta	cca	gct	tat	ctt	3696	
Gln	Leu	Val	Asn	Lys	Leu	Leu	Ser	Gly	Asp	Pro	Leu	Pro	Ala	Tyr	Leu		
1220	1225	1230															
aac	att	tat	aag	gat	tat	gat	atc	cat	ggt	aac	cat	ttt	gat	ggt	cct	3744	
Asn	Ile	Tyr	Lys	Asp	Tyr	Asp	Ile	His	Val	Asn	His	Phe	Asp	Val	Pro		
1235	1240	1245															
gac	ggt	gat	atg	cca	tcg	aaa	aag	tta	ccg	gta	aac	caa	ggt	gca	tta	3792	
Asp	Val	Asp	Met	Pro	Ser	Lys	Lys	Leu	Pro	Val	Asn	Gln	Gly	Ala	Leu		
1250	1255	1260															
aag	gca	gct	tgg	gat	tca	agt	ctg	cgt	caa	acc	aaa	gaa	gac	tgg	caa	3840	
Lys	Ala	Ala	Trp	Asp	Ser	Ser	Leu	Arg	Gln	Thr	Lys	Glu	Asp	Trp	Gln		
1265	1270	1275															
gaa	tgg	att	ggg	agg	tta	agt	aaa	gaa	tta	ttg	aag	caa	agt	cca	tcg	3888	
Glu	Trp	Ile	Gly	Arg	Leu	Ser	Lys	Glu	Leu	Lys	Gln	Ser	Pro	Ser			
1285	1290	1295															
cat	gca	ata	aga	gca	tgc	gct	ggg	tta	gca	act	gat	tat	cat	cct	ttg	3936	
His	Ala	Ile	Arg	Ala	Cys	Ala	Gly	Leu	Ala	Thr	Asp	Tyr	His	Pro	Leu		
1300	1305	1310															
gca	aag	gac	ttg	ttt	aac	gca	agt	ttt	gca	agt	tgc	tgg	agt	gaa	tta	3984	
Ala	Lys	Asp	Leu	Phe	Asn	Ala	Ser	Phe	Ala	Ser	Cys	Trp	Ser	Glu	Leu		
1315	1320	1325															
tat	tcc	cag	cac	caa	gaa	gag	tta	gta	gaa	tca	ttt	tgt	att	gca	tta	4032	
Tyr	Ser	Gln	His	Gln	Glu	Glu	Leu	Val	Glu	Ser	Phe	Cys	Ile	Ala	Leu		
1330	1335	1340															
tca	tca	gca	aac	aat	ccc	cca	gaa	ata	cat	cag	att	tta	tta	aat	tta	4080	
Ser	Ser	Ala	Asn	Asn	Pro	Pro	Glu	Ile	His	Gln	Ile	Leu	Leu	Asn	Leu		
1345	1350	1355															
gct	gaa	ttt	atg	gaa	cat	gac	gat	aaa	tct	tta	cca	ata	gca	ata	aca	4128	
Ala	Glu	Phe	Met	Glu	His	Asp	Asp	Lys	Ser	Leu	Pro	Ile	Ala	Ile	Thr		
1365	1370	1375															
act	tta	ggt	cag	tat	gcg	caa	cgg	tgc	cat	gca	tat	gct	aaa	gca	ttg	4176	
Thr	Leu	Gly	Gln	Tyr	Ala	Gln	Arg	Cys	His	Ala	Tyr	Ala	Lys	Ala	Leu		
1380	1385	1390															
cat	tat	caa	gaa	tta	gaa	ttt	tat	gtg	gaa	cct	acg	aca	cca	acc	att	4224	
His	Tyr	Gln	Glu	Leu	Glu	Phe	Tyr	Val	Glu	Pro	Thr	Thr	Pro	Thr	Ile		
1395	1400	1405															
gaa	tct	tta	att	agt	atc	aac	att	cag	ctt	caa	caa	tct	gat	gcg	gct	4272	
Glu	Ser	Leu	Ile	Ser	Ile	Asn	Ile	Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala		
1410	1415	1420															
ggt	gga	att	ttg	aaa	cat	gca	cag	tta	cat	cat	gat	ctc	caa	tta	aaa	4320	
Val	Gly	Ile	Leu	Lys	His	Ala	Gln	Leu	His	His	Asp	Leu	Gln	Leu	Lys		
1425	1430	1435															
gag	aca	tgg	tat	gag	aag	tta	caa	aga	tgg	gat	gat	gcc	ttg	cga	gct	4368	
Glu	Thr	Trp	Tyr	Glu	Lys	Leu	Gln	Arg	Trp	Asp	Asp	Ala	Leu	Arg	Ala		
1445	1450	1455															
tat	agt	tta	aga	gag	aaa	cag	gaa	ccg	gac	aat	atg	gag	att	acc	atg	4416	
Tyr	Ser	Leu	Arg	Glu	Lys	Gln	Glu	Pro	Asp	Asn	Met	Glu	Ile	Thr	Met		
1460	1465	1470															
ggt	aaa	atg	aga	tgt	tac	cat	gct	tta	gga	gaa	tgg	gag	cag	tta	tca	4464	
Gly	Lys	Met	Arg	Cys	Tyr	His	Ala	Leu	Gly	Glu	Trp	Glu	Gln	Leu	Ser		
1475	1480	1485															
gaa	tta	gcc	caa	agt	aaa	tgg	aat	aac	tct	tca	agt	gac	ata	aag	aga	4512	
Glu	Leu	Ala	Gln	Ser	Lys	Trp	Asn	Asn	Ser	Ser	Ser	Asp	Ile	Lys	Arg		
1490	1495	1500															
gga	gtg	gct	cct	tta	gca	gca	gca	gca	gct	tgg	ggg	tta	ggc	caa	tgg	4560	
Gly	Val	Ala	Pro	Leu	Ala	Ala	Ala	Ala	Ala	Trp	Gly	Leu	Gly	Gln	Trp		
1505	1510	1515															
gat	aga	atg	gat	gca	tgt	att	aag	ggt	atg	aaa	act	gaa	tcc	cca	gat	4608	

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Asp	Arg	Met	Asp	Ala	Cys	Ile	Lys	Val	Met	Lys	Thr	Glu	Ser	Pro	Asp	
aaa	gct	tct	ttt	aat	gca	att	tta	agt	tta	cat	cgt	aat	agt	ttt	gag	4656
Lys	Ala	Phe	Phe	Asn	Ala	Ile	Leu	Ser	Leu	His	Arg	Asn	Ser	Phe	Glu	
gat	gca	tct	aat	cac	ata	ttg	aaa	gca	aga	gac	cta	tta	gta	act	gaa	4704
Asp	Ala	Ser	Asn	His	Ile	Leu	Lys	Ala	Arg	Asp	Leu	Leu	Val	Thr	Glu	
atc	aca	gca	ttg	gtg	agt	gaa	agt	tat	aat	aga	gct	tat	ggg	gtc	gta	4752
Ile	Thr	Ala	Leu	Val	Ser	Glu	Ser	Tyr	Asn	Arg	Ala	Tyr	Gly	Val	Val	
gta	agg	gta	caa	atg	ctt	gcg	gaa	tta	gag	gaa	att	att	aag	tat	aaa	4800
Val	Arg	Val	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu	Ile	Ile	Lys	Tyr	Lys	
tgc	tta	cca	caa	ggg	tca	gag	aaa	cgt	gtt	ata	atg	aga	aaa	acc	tgg	4848
Cys	Leu	Pro	Gln	Gly	Ser	Glu	Lys	Arg	Val	Ile	Met	Arg	Lys	Thr	Trp	
aat	acc	aga	tta	ctt	gga	tgt	cag	agg	aat	gtt	gac	att	tgg	caa	aga	4896
Asn	Thr	Arg	Leu	Gly	Cys	Gln	Arg	Asn	Val	Asp	Ile	Trp	Gln	Arg		
atg	ttg	aaa	gtt	aga	gct	ctt	gtt	att	aaa	cct	aaa	caa	gat	atg	gat	4944
Met	Leu	Lys	Val	Arg	Ala	Leu	Val	Ile	Lys	Pro	Lys	Gln	Asp	Met	Asp	
atg	tgg	att	aaa	ttt	gca	aat	tta	tgt	cgt	aaa	tca	gga	aga	ttg	aat	4992
Met	Trp	Ile	Lys	Phe	Ala	Asn	Leu	Cys	Arg	Lys	Ser	Gly	Arg	Leu	Asn	
ttg	gct	gaa	aag	tcc	tta	aac	tat	ttg	ttg	gaa	gaa	ggg	tca	cca	gaa	5040
Leu	Ala	Glu	Lys	Ser	Leu	Asn	Tyr	Leu	Leu	Glu	Glu	Gly	Ser	Pro	Glu	
aat	cca	tct	aga	gct	cca	caa	ggt	gtg	tat	gca	caa	ttg	aaa	tat		5088
Asn	Pro	Ser	Arg	Ala	Pro	Pro	Gln	Val	Val	Tyr	Ala	Gln	Leu	Lys	Tyr	
atg	tgg	gct	aag	ggc	caa	caa	aga	gaa	gca	tta	cgc	cat	tta	gtt	gat	5136
Met	Trp	Ala	Lys	Gly	Gln	Gln	Arg	Glu	Ala	Leu	Arg	His	Leu	Val	Asp	
ttt	aca	act	cga	atg	tct	caa	gat	ttg	ggg	tta	aac	cca	aat	gac	tta	5184
Phe	Thr	Thr	Arg	Met	Ser	Gln	Asp	Leu	Gly	Leu	Asn	Pro	Asn	Asp	Leu	
att	act	caa	cca	tta	ccg	tct	gaa	ggg	cca	ggg	att	cca	aag	cat	gtg	5232
Ile	Thr	Gln	Pro	Leu	Pro	Ser	Glu	Gly	Pro	Gly	Ile	Pro	Lys	His	Val	
gaa	gag	tat	acc	aaa	tta	ttg	gct	aga	tgt	ttt	ttg	aag	caa	ggg	gaa	5280
Glu	Glu	Tyr	Thr	Lys	Leu	Leu	Ala	Arg	Cys	Phe	Leu	Lys	Gln	Gly	Glu	
tgg	caa	ata	tta	ttg	aac	aat	aat	tgg	agg	act	gaa	aca	tca	gaa	att	5328
Trp	Gln	Ile	Leu	Asn	Asn	Asn	Trp	Arg	Thr	Glu	Thr	Ser	Glu	Ile		
att	ttg	ggg	gca	tat	ctt	ttg	gct	aca	cat	ttt	gat	gac	aaa	tgg	tat	5376
Ile	Leu	Gly	Ala	Tyr	Leu	Leu	Ala	Thr	His	Phe	Asp	Asp	Lys	Trp	Tyr	
aaa	gca	tgg	cat	aat	tgg	gct	ctt	gct	aat	ttt	gaa	gtt	att	tca	ctt	5424
Lys	Ala	Trp	His	Asn	Trp	Ala	Leu	Ala	Asn	Phe	Glu	Val	Ile	Ser	Leu	
ttt	act	tcg	cag	aat	aac	aac	ggc	aac	aat	ggg	aca	atc	aat	gtt	agt	5472
Phe	Thr	Ser	Gln	Asn	Asn	Asn	Gly	Asn	Asn	Gly	Thr	Ile	Asn	Val	Ser	
caa	ggg	gaa	ata	atg	gat	caa	aat	gat	caa	gtt	gtt	aca	tca	tct	gat	5520
Gln	Gly	Glu	Ile	Met	Asp	Gln	Asn	Asp	Gln	Val	Val	Thr	Ser	Ser	Asp	
gaa	caa	tct	caa	cag	cca	cag	aga	cag	ata	caa	cct	gca	aat	att	ata	5568
Glu	Gln	Ser	Gln	Gln	Pro	Gln	Arg	Gln	Ile	Gln	Pro	Ala	Asn	Ile	Ile	
ccg	atg	gat	gtt	ggt	cag	cga	cat	gtt	gtt	cca	tca	ata	aaa	gga	ttc	5616
Pro	Met	Asp	Val	Val	Gln	Arg	His	Val	Val	Pro	Ser	Ile	Lys	Gly	Phe	
ttt	cac	gct	atc	gca	ttg	tca	aat	aca	aat	tct	ttg	cag	aat	acg	ttg	5664
Phe	His	Ala	Ile	Ala	Leu	Ser	Asn	Thr	Asn	Ser	Leu	Gln	Asn	Thr	Leu	
aga	tta	ctt	aca	ttg	tgg	ttt	aag	ttt	ggg	gga	ata	cca	gag	gca	gct	5712

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Arg	Leu	Leu	Thr	Leu	Trp	Phe	Lys	Phe	Gly	Gly	Ile	Pro	Glu	Ala	Ala		
1890						1895					1900						
caa	gct	atg	aat	gag	gga	ttt	aat	atg	gtt	aag	att	gat	aac	tgg	ttg		5760
Gln	Ala	Met	Asn	Glu	Gly	Phe	Asn	Met	Val	Lys	Ile	Asp	Asn	Trp	Leu		
1905				1910					1915					1920			
gaa	gtt	gta	cct	caa	tta	atc	tca	cgt	att	cat	caa	cca	aat	caa	aca		5808
Glu	Val	Val	Pro	Gln	Leu	Ile	Ser	Arg	Ile	His	Gln	Pro	Asn	Gln	Thr		
			1925					1930					1935				
gtc	agt	aga	tct	tta	att	gga	tta	ttg	agt	gat	ttg	ggt	aaa	gcg	cat		5856
Val	Ser	Arg	Ser	Leu	Ile	Gly	Leu	Leu	Ser	Asp	Leu	Gly	Lys	Ala	His		
			1940				1945				1950						
cct	cag	gca	ctc	gtg	tat	ccg	tta	gct	gtc	gca	gtt	acg	tct	gaa	tcg		5904
Pro	Gln	Ala	Leu	Val	Tyr	Pro	Leu	Ala	Val	Ala	Val	Thr	Ser	Glu	Ser		
			1955			1960					1965						
gtt	agc	cgt	aaa	agg	gcg	gca	ttg	tca	att	att	gat	aaa	atg	cgt	ttg		5952
Val	Ser	Arg	Lys	Arg	Ala	Ala	Leu	Ser	Ile	Ile	Asp	Lys	Met	Arg	Leu		
			1970		1975				1980								
cat	tgg	gct	acg	ttg	gta	gat	caa	tct	gat	tta	gtt	agt	cat	gaa	ttg		6000
His	Trp	Ala	Thr	Leu	Val	Asp	Gln	Ser	Asp	Leu	Val	Ser	His	Glu	Leu		
				1990					1995					2000			
atc	aga	gtt	gca	gtc	ctc	tgg	cac	gag	cag	tgg	tac	gaa	ggt	cta	gag		6048
Ile	Arg	Val	Ala	Val	Leu	Trp	His	Glu	Gln	Trp	Tyr	Glu	Gly	Leu	Glu		
			2005				2010				2015						
gat	gca	tca	aga	ctt	ttc	ttt	ggt	gaa	aag	aac	act	gaa	aag	atg	ttt		6096
Asp	Ala	Ser	Arg	Leu	Phe	Phe	Gly	Glu	Lys	Asn	Thr	Glu	Lys	Met	Phe		
			2020				2025				2030						
gag	gtg	tta	gaa	cct	ttg	cat	caa	atg	cta	caa	aaa	ggc	ccc	gag	act		6144
Glu	Val	Leu	Glu	Pro	Leu	His	Gln	Met	Leu	Gln	Lys	Gly	Pro	Glu	Thr		
			2035			2040				2045							
atg	aga	gaa	gca	tca	ttt	aat	aat	gca	ttt	ggt	aga	gaa	ctt	gct	gat		6192
Met	Arg	Glu	Ala	Ser	Phe	Asn	Asn	Ala	Phe	Gly	Arg	Glu	Leu	Ala	Asp		
			2050		2055				2060								
gcc	tat	gaa	tgg	gtt	ttg	aac	ttc	cgt	cgt	aca	aaa	gac	att	act	aat		6240
Ala	Tyr	Glu	Trp	Val	Leu	Asn	Phe	Arg	Arg	Thr	Lys	Asp	Ile	Thr	Asn		
			2065		2070			2075						2080			
cta	aat	caa	gcg	tgg	gac	att	tat	tat	aat	gtt	ttc	cgc	aga	att	agt		6288
Leu	Asn	Gln	Ala	Trp	Asp	Ile	Tyr	Tyr	Asn	Val	Phe	Arg	Arg	Ile	Ser		
			2085				2090						2095				
aga	caa	ttg	cct	caa	ttg	ctg	agt	ttg	gaa	tta	cag	tat	gta	tcg	cca		6336
Arg	Gln	Leu	Pro	Gln	Leu	Leu	Ser	Leu	Glu	Leu	Gln	Tyr	Val	Ser	Pro		
			2100			2105						2110					
aag	cta	gag	gaa	gca	aat	aat	ctt	gaa	ttg	gct	gct	cca	ggt	aca	tac		6384
Lys	Leu	Glu	Glu	Ala	Asn	Asn	Leu	Glu	Leu	Ala	Ala	Pro	Gly	Thr	Tyr		
			2115		2120			2125									
cat	gct	gga	aag	cca	aca	atc	aag	att	gtt	aag	ttt	gat	cca	acg	ttc		6432
His	Ala	Gly	Lys	Pro	Thr	Ile	Lys	Ile	Val	Lys	Phe	Asp	Pro	Thr	Phe		
			2130		2135			2140									
tca	gtt	atc	tca	tcg	aaa	cag	aga	cca	aga	aaa	tta	tct	tgt	aaa	ggt		6480
Ser	Val	Ile	Ser	Ser	Lys	Gln	Arg	Pro	Arg	Lys	Leu	Ser	Cys	Lys	Gly		
			2145		2150			2155						2160			
agt	gat	ggt	aaa	gaa	tac	cag	tac	gtt	ttg	aaa	gga	cac	gaa	gac	att		6528
Ser	Asp	Gly	Lys	Tyr	Gln	Tyr	Val	Leu	Lys	Gly	His	Glu	Asp	Ile			
			2165			2170						2175					
aga	caa	gat	aat	ttg	gtt	atg	caa	tta	ttt	ggt	tta	gtt	aac	aca	tta		6576
Arg	Gln	Asp	Asn	Leu	Val	Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu		
			2180			2185						2190					
ttg	gta	aat	gat	cca	gaa	tgt	ttc	aaa	aga	cat	tta	gac	att	caa	caa		6624
Leu	Val	Asn	Asp	Pro	Glu	Cys	Phe	Lys	Arg	His	Leu	Asp	Ile	Gln	Gln		
			2195			2200					2205						
tat	cca	gca	att	ccg	tta	tca	cct	aaa	gtt	ggt	tta	tta	ggt	tgg	gta		6672
Tyr	Pro	Ala	Ile	Pro	Leu	Ser	Pro	Lys	Val	Gly	Leu	Leu	Gly	Trp	Val		
			2210		2215						2220						
cca	aac	agt	gat	act	ttc	cat	gtc	ttg	att	agg	gaa	tac	cgt	gag	tcg		6720
Pro	Asn	Ser	Asp	Thr	Phe	His	Val	Leu	Ile	Arg	Glu	Tyr	Arg	Glu	Ser		
			2225		2230			2235						2240			
cgt	aag	att	tta	tta	aat	att	gaa	cat	cgt	att	atg	ttg	cag	atg	gct		6768
Arg	Lys	Ile	Leu	Leu	Asn	Ile	Glu	His	Arg	Ile	Met	Leu	Gln	Met	Ala		
			2245			2250						2255					
cct	gat	tat	gac	agt	ctt	aca	tta	cta	caa	aaa	gtg	gaa	gta	ttc	aca		6816

## PhoenixTemp32470.tmp.txt

Pro Asp Tyr Asp Ser Leu Thr Leu Leu Gln Lys Val Glu Val Phe Thr  
 2260 2265 2270  
 ggg gct tta gac aac acc aga ggc cag gat ttg tat aag gta tta tgg 6864  
 Gly Ala Leu Asp Asn Thr Arg Gly Gln Asp Leu Tyr Lys Val Leu Trp  
 2275 2280 2285  
 ctc aaa tca aag tct tcg gaa gcg tgg tta gat cgt cgt aca acg tat 6912  
 Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Asp Arg Thr Thr Tyr  
 2290 2295 2300  
 act cgt tca ttg gca gta atg tct atg gta ggc tac att tta ggt tta 6960  
 Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu  
 2305 2310 2315 2320  
 ggt gac cgt cat cct tct aat ttg atg ctt aat agg att aca ggt aag 7008  
 Gly Asp Arg His Pro Ser Asn Leu Met Leu Asn Arg Ile Thr Gly Lys  
 2325 2330 2335  
 gtt att cat att gat ttt ggt gat tgt ttt gag gct gct att tta cgt 7056  
 Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg  
 2340 2345 2350  
 gaa aag tat ccc gaa aag gtt cca ttt aga tta aca aga atg ctt aat 7104  
 Glu Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Asn  
 2355 2360 2365  
 tat gct atg gaa gtt agt ggt att gaa ggt tca ttc cgc ata aca tgt 7152  
 Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Cys  
 2370 2375 2380  
 gaa cat gtt atg aga gtc tta agg gac aat aag gag tca tta atg gca 7200  
 Glu His Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala  
 2385 2390 2395 2400  
 att ttg gaa gca ttc gca tat gat cca ttg att aat tgg gga ttt gac 7248  
 Ile Leu Glu Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp  
 2405 2410 2415  
 ttc ccg aca aaa gca gtg gcg gaa gct act ggg att aat gta ccg caa 7296  
 Phe Pro Thr Lys Ala Val Ala Glu Ala Thr Gly Ile Asn Val Pro Gln  
 2420 2425 2430  
 gtt aat ata gca gaa tta ttg aga aga gaa caa ata gat gaa caa gaa 7344  
 Val Asn Ile Ala Glu Leu Leu Arg Arg Glu Gln Ile Asp Glu Gln Glu  
 2435 2440 2445  
 gca gct aga tta acg aga caa aac gaa atc gag att aga aac gcg aga 7392  
 Ala Ala Arg Leu Thr Arg Gln Asn Glu Ile Glu Ile Arg Asn Ala Arg  
 2450 2455 2460  
 gct gca ttg gtg ttg aag aga att act gat aag tta act ggt aat gat 7440  
 Ala Ala Leu Val Leu Lys Arg Ile Thr Asp Lys Leu Thr Gly Asn Asp  
 2465 2470 2475 2480  
 att aaa aga ttg aat gat tta gat gta cca act caa gtg gat aaa tta 7488  
 Ile Lys Arg Leu Asn Asp Leu Asp Val Pro Thr Gln Val Asp Lys Leu  
 2485 2490 2495  
 att cag caa gct aca agt gta gag agt tta tgt cag cat tat att ggg 7536  
 Ile Gln Gln Ala Thr Ser Val Glu Ser Leu Cys Gln His Tyr Ile Gly  
 2500 2505 2510  
 tgg tgt tca ttt tgg tag 7554  
 Trp Cys Ser Phe Trp  
 2515

&lt;210&gt; 2533

&lt;211&gt; 2517

&lt;212&gt; PRT

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;400&gt; 2533

Met Ser Thr Thr Gln Leu Gln Ile Val Asp Gly Ile Ala Leu Thr Gln  
 1 5 10 15  
 Ile Phe Asn Gly Leu Lys Ser Asn Lys Glu Glu Glu Arg Asn Arg Tyr  
 20 25 30  
 Ala Leu Glu Leu Arg Asn Tyr Leu Ala Ser Ile Ala Arg Asp Leu Ser  
 35 40 45  
 Pro Glu Gln Phe Asn Arg Tyr Asn Asn Asp Ile Asn Lys Thr Ile Phe  
 50 55 60  
 Glu Phe Leu His Ser Asn Glu Thr Ser Glu Lys Leu Gly Gly Ile Ala  
 65 70 75 80  
 Ala Leu Asn Ser Leu Ile Asp Phe Asp Ser Gly Val Gly Glu Glu Asn  
 85 90 95

## PhoenixTemp32470.tmp.txt

Ala	Thr	Lys	Thr	Ala	Arg	Phe	Ser	Asn	Tyr	Leu	Gly	Ser	Leu	Ile	Leu
			100					105					110		
Ser	Asn	Asp	Leu	Thr	Ile	Met	Lys	Gln	Ala	Thr	Met	Thr	Leu	Gly	Lys
		115					120					125			
Leu	Ala	Thr	Pro	Gly	Gly	Thr	Leu	Thr	Gly	Asp	Phe	Val	Asp	Phe	Glu
	130					135					140				
Ala	Lys	Arg	Ala	Ile	Glu	Trp	Leu	Gln	Ser	Asp	Asn	Lys	Gln	His	Glu
	145				150					155					160
Asn	Arg	Arg	His	Ala	Ala	Ile	Leu	Ile	Ile	Thr	Ala	Leu	Val	Asp	Asn
				165					170					175	
Ala	Pro	Thr	Leu	Leu	Tyr	Asn	Phe	Ile	Asn	Gln	Ile	Leu	Glu	His	Leu
			180					185					190		
Trp	Ile	Pro	Leu	Arg	Asp	Ser	Lys	Leu	Val	Ile	Arg	Thr	Asp	Ala	Ala
		195					200					205			
Ile	Ala	Leu	Gln	Lys	Cys	Met	Arg	Ile	Ile	Tyr	Asp	Arg	Asp	Ile	Asn
	210					215					220				
Ser	Arg	Arg	Phe	Trp	Ile	Lys	His	Phe	Ile	Asp	Met	Ala	Ser	Lys	Ile
	225				230					235					240
Leu	Asn	Glu	Asn	Val	Ala	Arg	Asn	Pro	Thr	Ser	Glu	Ser	Asn	Asp	Ser
				245					250					255	
Ser	Asn	Asn	Gly	Ser	Gly	Asn	Asn	Ser	Val	Asn	Ser	Val	Asn	Ala	Ala
			260					265					270		
Ala	Ser	Thr	Ala	Tyr	Asn	Leu	Ile	Tyr	Ser	Thr	Ala	Thr	Gly	Ser	Gln
		275					280					285			
Thr	Asn	Glu	Ser	Ile	His	Gly	Ser	Leu	Leu	Val	Tyr	Arg	Glu	Leu	Ile
	290					295					300				
Thr	Phe	His	Ser	Asp	Pro	Tyr	Ile	His	Ser	Lys	Phe	Glu	Leu	Ile	Tyr
	305				310					315					320
Glu	Asn	Thr	Val	Leu	Tyr	Arg	Asn	His	Lys	Gln	Ala	Ile	Ile	Arg	Gln
				325					330					335	
Glu	Leu	Thr	Lys	Ile	Ile	Pro	Leu	Leu	Cys	Lys	Val	Asn	Thr	Glu	Leu
			340					345					350		
Phe	Val	Glu	Lys	Tyr	Leu	His	Arg	Thr	Leu	Leu	His	Tyr	Leu	Ser	Gln
		355					360					365			
Leu	Lys	Gln	Leu	Lys	Ser	Gln	His	Ser	Glu	Thr	Ala	Asn	Asn	Asp	Lys
	370					375					380				
Ser	Ala	Ile	Phe	Arg	Ser	Ile	Gly	Leu	Ile	Ser	Leu	Glu	Val	Gly	Asn
	385				390					395					400
Gln	Met	Ala	Thr	Tyr	Leu	Asp	Ala	Ile	Leu	Asp	Asn	Ile	Arg	Asp	Gly
				405					410					415	
Leu	Ser	Tyr	Pro	Ser	Asn	Pro	Ser	Val	Gln	Leu	Ile	Leu	Val	Asn	Ala
			420					425					430		
Val	Ser	Asn	Asn	Gly	Asp	Asn	Pro	Leu	Ser	Gly	Ala	Val	Thr	Ser	Ser
		435					440					445			
Asn	Gly	Ser	Ser	Gln	Ser	Thr	Ile	Asn	Gly	Leu	Asn	Ser	Ile	Ser	Thr
	450					455					460				
Ser	Gly	Ser	Gly	Pro	Thr	Lys	Tyr	Arg	Leu	Ser	Arg	Lys	Asn	Thr	Glu
	465				470					475					480
Pro	Ala	Ile	Phe	Asp	Cys	Ile	Ser	Lys	Leu	Ser	Ile	Ala	Val	Gly	Pro
				485					490					495	
Ala	Leu	Thr	Lys	His	Leu	Gln	Arg	Asp	Ile	Leu	Asp	Met	Met	Phe	Ser
			500					505					510		
Asn	Cys	Ser	Leu	Ser	Val	Tyr	Met	Gln	Asn	Val	Leu	Gln	Thr	Leu	Ile
		515					520					525			
Val	Asn	Ile	Pro	Met	Leu	Thr	Asn	Leu	Ile	Ser	Met	Lys	Leu	Leu	Asn
	530					535					540				
Leu	Leu	Ser	Leu	Val	Leu	Ser	Gly	Lys	Ile	Phe	Gln	Pro	Pro	Gly	Ser
	545				550					555					560
Pro	Tyr	Gly	Ser	Ile	Lys	Met	Asn	Glu	Ser	Leu	Ala	Arg	Asp	Tyr	Arg
				565					570					575	
Leu	Ile	Met	Ile	Ser	Arg	Asp	Thr	Gly	Leu	Ser	Ile	Asn	Ser	Ile	Leu
			580					585					590		
Asn	Asp	Ala	Asp	Asp	Tyr	Glu	Asn	Tyr	Asp	Ser	Ala	Ile	Leu	Val	Gln
		595					600					605			
Ala	Leu	Asn	Met	Leu	Ala	Phe	Phe	Glu	Phe	Glu	Asn	Tyr	Gln	Leu	Asn
	610					615					620				
Glu	Phe	Val	Arg	Tyr	Cys	Thr	Ile	Thr	Tyr	Leu	Glu	His	Asn	Val	Pro
	625				630					635					640
Lys	Val	Arg	Gln	Thr	Ala	Thr	Ile	Thr	Ser	Cys	Glu	Ile	Phe	Ile	Lys

## PhoenixTemp32470.tmp.txt

645  
 Asp Pro Ile Cys Gln Gln Thr Ser Val Asn Ala Leu Asn Ala Val Asn  
 660  
 Glu Val Leu Asp Lys Leu Leu Ser Ile Ala Ile Thr Asp Pro Ile Pro  
 675  
 Glu Ile Arg Leu Glu Gly Leu Asn Cys Leu Ala Asn Ala Gly Asn Leu  
 690  
 Asp Pro Gln Leu Ser Gln Ala Asn Asn Val Arg Leu Leu Phe Ile Ala  
 705  
 Leu Asn Asp Glu Val Phe Ser Ile Arg Lys Ile Ala Ile Lys Ile Leu  
 725  
 Gly Arg Leu Ser Ser Ile Asn Pro Ala Tyr Ile Val Pro Ser Leu Arg  
 740  
 Lys Thr Leu Ile Gln Leu Leu Ser Arg Leu Glu Tyr Ser Pro Thr Ser  
 755  
 Arg Lys Lys Glu Glu Ser Ala Thr Leu Ile Ser Leu Ile Ser Asn  
 770  
 Ser Lys Glu Leu Thr Arg Pro Tyr Val Lys Pro Ile Val Glu Ala Leu  
 785  
 Leu Pro Lys Ala Lys Asp Pro Ser Ser Ser Val Ala Ala Ser Ala Ile  
 805  
 Asn Cys Leu Gly Glu Leu Ala Val Val Gly Gly Glu Asp Leu Gln Pro  
 820  
 Phe Ile Pro Asp Leu Met Pro Leu Ile Leu Glu Thr Phe Gln Asp Gln  
 835  
 Ser Ser Ser Tyr Lys Arg Asp Ala Ala Leu Lys Thr Leu Gly Gln Leu  
 850  
 Ala Ser Ser Ser Gly Tyr Val Ile Lys Pro Leu Leu Asp Tyr Pro Gln  
 865  
 Leu Leu Gly Met Leu Val Gly Ile Leu Lys Leu Glu Ser Ser Pro His  
 885  
 Ile Arg Arg Glu Thr Val Arg Leu Leu Gly Ile Leu Gly Ala Leu Asp  
 900  
 Pro Tyr Lys His Arg Glu Val Glu Gln Asn Ser Lys Asn Ile Pro Ser  
 915  
 Glu Gln Asn Ala Pro Pro Val Asp Val Ala Leu Leu Met Gln Gly Met  
 930  
 Ser Pro Ser Asn Asp Glu Tyr Tyr Pro Thr Val Ala Ile Asn Asn Leu  
 945  
 Met Lys Ile Leu Lys Asp Pro Ser Leu Thr Ala His His Asn Lys Val  
 965  
 Ile Gln Ala Ile Met Tyr Ile Phe Gln Thr Leu Gly Leu Arg Cys Val  
 980  
 Ser Phe Leu Pro Gln Ile Ile Pro Gly Ile Ile Asn Val Met Asn Thr  
 995  
 Cys Gln Pro Ser Met Leu Lys Phe Tyr Phe Gln Gln Leu Gly Ala Leu  
 1010  
 Ile Leu Ile Val Lys Gln His Ile Arg Pro Phe Leu Pro Glu Ile Phe  
 1025  
 Glu Val Ile Lys Glu Ser Phe Asn Ile Asn Ile Gln Leu Asn Val Gln  
 1045  
 Val Ile Ile Ile Asn Leu Ile Glu Ser Ile Ser Arg Ala Leu Glu Gly  
 1060  
 Glu Phe Lys Met His Leu Pro Asp Val Leu Asn Leu Met Leu Asn Val  
 1075  
 Phe Glu Asp Asp Lys Ser Val Lys Arg Glu Pro Ser Leu His Val Leu  
 1090  
 Lys Ala Phe Val Val Phe Gly Ser Ser Ile Glu Glu Tyr Val His Ile  
 1105  
 Ile Val Pro Asn Ile Val Lys Met Phe Glu Met Gly Pro Ile Val Leu  
 1125  
 Arg Arg Ala Ala Ile Glu Thr Ile Gly Arg Leu Ser Lys Gln Val Leu  
 1140  
 Leu Asn Asp Met Ala Ser Arg Ile Ile His Pro Ile Leu Arg Val Leu  
 1155  
 Arg Gln Gly Asn Asp Glu Leu Lys Thr Thr Ala Met Asn Thr Leu Ser  
 1170  
 Tyr Leu Leu Leu Gln Leu Gly Asn Glu Phe Ser Val Phe Ile Pro Val  
 1185  
 1190  
 1200



## PhoenixTemp32470.tmp.txt

Ile Lys Ser Leu Leu Ile Gln Gln Lys Ile His Ser Ala Ile Phe Glu  
 1205 1210 1215  
 Gln Leu Val Asn Lys Leu Leu Ser Gly Asp Pro Leu Pro Ala Tyr Leu  
 1220 1225 1230  
 Asn Ile Tyr Lys Asp Tyr Asp Ile His Val Asn His Phe Asp Val Pro  
 1235 1240 1245  
 Asp Val Asp Met Pro Ser Lys Lys Leu Pro Val Asn Gln Gly Ala Leu  
 1250 1255 1260  
 Lys Ala Ala Trp Asp Ser Ser Leu Arg Gln Thr Lys Glu Asp Trp Gln  
 1265 1270 1275 1280  
 Glu Trp Ile Gly Arg Leu Ser Lys Glu Leu Leu Lys Gln Ser Pro Ser  
 1285 1290 1295  
 His Ala Ile Arg Ala Cys Ala Gly Leu Ala Thr Asp Tyr His Pro Leu  
 1300 1305 1310  
 Ala Lys Asp Leu Phe Asn Ala Ser Phe Ala Ser Cys Trp Ser Glu Leu  
 1315 1320 1325  
 Tyr Ser Gln His Gln Glu Glu Leu Val Glu Ser Phe Cys Ile Ala Leu  
 1330 1335 1340  
 Ser Ser Ala Asn Asn Pro Pro Glu Ile His Gln Ile Leu Leu Asn Leu  
 1345 1350 1355 1360  
 Ala Glu Phe Met Glu His Asp Asp Lys Ser Leu Pro Ile Ala Ile Thr  
 1365 1370 1375  
 Thr Leu Gly Gln Tyr Ala Gln Arg Cys His Ala Tyr Ala Lys Ala Leu  
 1380 1385 1390  
 His Tyr Gln Glu Leu Glu Phe Tyr Val Glu Pro Thr Thr Pro Thr Ile  
 1395 1400 1405  
 Glu Ser Leu Ile Ser Ile Asn Ile Gln Leu Gln Gln Ser Asp Ala Ala  
 1410 1415 1420  
 Val Gly Ile Leu Lys His Ala Gln Leu His His Asp Leu Gln Leu Lys  
 1425 1430 1435 1440  
 Glu Thr Trp Tyr Glu Lys Leu Gln Arg Trp Asp Asp Ala Leu Arg Ala  
 1445 1450 1455  
 Tyr Ser Leu Arg Glu Lys Gln Glu Pro Asp Asn Met Glu Ile Thr Met  
 1460 1465 1470  
 Gly Lys Met Arg Cys Tyr His Ala Leu Gly Glu Trp Glu Gln Leu Ser  
 1475 1480 1485  
 Glu Leu Ala Gln Ser Lys Trp Asn Asn Ser Ser Ser Asp Ile Lys Arg  
 1490 1495 1500  
 Gly Val Ala Pro Leu Ala Ala Ala Ala Trp Gly Leu Gly Gln Trp  
 1505 1510 1515 1520  
 Asp Arg Met Asp Ala Cys Ile Lys Val Met Lys Thr Glu Ser Pro Asp  
 1525 1530 1535  
 Lys Ala Phe Phe Asn Ala Ile Leu Ser Leu His Arg Asn Ser Phe Glu  
 1540 1545 1550  
 Asp Ala Ser Asn His Ile Leu Lys Ala Arg Asp Leu Leu Val Thr Glu  
 1555 1560 1565  
 Ile Thr Ala Leu Val Ser Glu Tyr Asn Arg Ala Tyr Gly Val Val  
 1570 1575 1580  
 Val Arg Val Gln Met Leu Ala Glu Leu Glu Glu Ile Ile Lys Tyr Lys  
 1585 1590 1595 1600  
 Cys Leu Pro Gln Gly Ser Glu Lys Arg Val Ile Met Arg Lys Thr Trp  
 1605 1610 1615  
 Asn Thr Arg Leu Leu Gly Cys Gln Arg Asn Val Asp Ile Trp Gln Arg  
 1620 1625 1630  
 Met Leu Lys Val Arg Ala Leu Val Ile Lys Pro Lys Gln Asp Met Asp  
 1635 1640 1645  
 Met Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg Leu Asn  
 1650 1655 1660  
 Leu Ala Glu Lys Ser Leu Asn Tyr Leu Leu Glu Glu Gly Ser Pro Glu  
 1665 1670 1675 1680  
 Asn Pro Ser Arg Ala Pro Pro Gln Val Val Tyr Ala Gln Leu Lys Tyr  
 1685 1690 1695  
 Met Trp Ala Lys Gly Gln Gln Arg Glu Ala Leu Arg His Leu Val Asp  
 1700 1705 1710  
 Phe Thr Thr Arg Met Ser Gln Asp Leu Gly Leu Asn Pro Asn Asp Leu  
 1715 1720 1725  
 Ile Thr Gln Pro Leu Pro Ser Glu Gly Pro Gly Ile Pro Lys His Val  
 1730 1735 1740  
 Glu Glu Tyr Thr Lys Leu Leu Ala Arg Cys Phe Leu Lys Gln Gly Glu

## PhoenixTemp32470.tmp.txt

1745 1750 1755 1760  
 Trp Gln Ile Leu Leu Asn Asn Trp Arg Thr Glu Thr Ser Glu Ile  
 1765 1770 1775  
 Ile Leu Gly Ala Tyr Leu Leu Ala Thr His Phe Asp Asp Lys Trp Tyr  
 1780 1785 1790  
 Lys Ala Trp His Asn Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Leu  
 1795 1800 1805  
 Phe Thr Ser Gln Asn Asn Asn Gly Thr Ile Asn Val Ser  
 1810 1815 1820  
 Gln Gly Glu Ile Met Asp Gln Asn Asp Gln Val Val Thr Ser Ser Asp  
 1825 1830 1835 1840  
 Glu Gln Ser Gln Gln Pro Gln Arg Gln Ile Gln Pro Ala Asn Ile Ile  
 1845 1850 1855  
 Pro Met Asp Val Val Gln Arg His Val Val Pro Ser Ile Lys Gly Phe  
 1860 1865 1870  
 Phe His Ala Ile Ala Leu Ser Asn Thr Asn Ser Leu Gln Asn Thr Leu  
 1875 1880 1885  
 Arg Leu Leu Thr Leu Trp Phe Lys Phe Gly Gly Ile Pro Glu Ala Ala  
 1890 1895 1900  
 Gln Ala Met Asn Glu Gly Phe Asn Met Val Lys Ile Asp Asn Trp Leu  
 1905 1910 1915 1920  
 Glu Val Val Pro Gln Leu Ile Ser Arg Ile His Gln Pro Asn Gln Thr  
 1925 1930 1935  
 Val Ser Arg Ser Leu Ile Gly Leu Leu Ser Asp Leu Gly Lys Ala His  
 1940 1945 1950  
 Pro Gln Ala Leu Val Tyr Pro Leu Ala Val Ala Val Thr Ser Glu Ser  
 1955 1960 1965  
 Val Ser Arg Lys Arg Ala Ala Leu Ser Ile Ile Asp Lys Met Arg Leu  
 1970 1975 1980  
 His Trp Ala Thr Leu Val Asp Gln Ser Asp Leu Val Ser His Glu Leu  
 1985 1990 1995 2000  
 Ile Arg Val Ala Val Leu Trp His Glu Gln Trp Tyr Glu Gly Leu Glu  
 2005 2010 2015  
 Asp Ala Ser Arg Leu Phe Phe Gly Glu Lys Asn Thr Glu Lys Met Phe  
 2020 2025 2030  
 Glu Val Leu Glu Pro Leu His Gln Met Leu Gln Lys Gly Pro Glu Thr  
 2035 2040 2045  
 Met Arg Glu Ala Ser Phe Asn Asn Ala Phe Gly Arg Glu Leu Ala Asp  
 2050 2055 2060  
 Ala Tyr Glu Trp Val Leu Asn Phe Arg Arg Thr Lys Asp Ile Thr Asn  
 2065 2070 2075 2080  
 Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Arg Ile Ser  
 2085 2090 2095  
 Arg Gln Leu Pro Gln Leu Leu Ser Leu Glu Leu Gln Tyr Val Ser Pro  
 2100 2105 2110  
 Lys Leu Glu Glu Ala Asn Asn Leu Glu Leu Ala Ala Pro Gly Thr Tyr  
 2115 2120 2125  
 His Ala Gly Lys Pro Thr Ile Lys Ile Val Lys Phe Asp Pro Thr Phe  
 2130 2135 2140  
 Ser Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Leu Ser Cys Lys Gly  
 2145 2150 2155 2160  
 Ser Asp Gly Lys Glu Tyr Gln Tyr Val Leu Lys Gly His Glu Asp Ile  
 2165 2170 2175  
 Arg Gln Asp Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu  
 2180 2185 2190  
 Leu Val Asn Asp Pro Glu Cys Phe Lys Arg His Leu Asp Ile Gln Gln  
 2195 2200 2205  
 Tyr Pro Ala Ile Pro Leu Ser Pro Lys Val Gly Leu Leu Gly Trp Val  
 2210 2215 2220  
 Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg Glu Tyr Arg Glu Ser  
 2225 2230 2235 2240  
 Arg Lys Ile Leu Leu Asn Ile Glu His Arg Ile Met Leu Gln Met Ala  
 2245 2250 2255  
 Pro Asp Tyr Asp Ser Leu Thr Leu Leu Gln Lys Val Glu Val Phe Thr  
 2260 2265 2270  
 Gly Ala Leu Asp Asn Thr Arg Gly Gln Asp Leu Tyr Lys Val Leu Trp  
 2275 2280 2285  
 Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Asp Arg Arg Thr Thr Tyr  
 2290 2295 2300

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Thr Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu  
 2305 2310 2315 2320  
 Gly Asp Arg His Pro Ser Asn Leu Met Leu Asn Arg Ile Thr Gly Lys  
 2325 2330 2335  
 Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg  
 2340 2345 2350  
 Glu Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Asn  
 2355 2360 2365  
 Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Cys  
 2370 2375 2380  
 Glu His Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala  
 2385 2390 2395 2400  
 Ile Leu Glu Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp  
 2405 2410 2415  
 Phe Pro Thr Lys Ala Val Ala Glu Ala Thr Gly Ile Asn Val Pro Gln  
 2420 2425 2430  
 Val Asn Ile Ala Glu Leu Leu Arg Arg Glu Gln Ile Asp Glu Gln Glu  
 2435 2440 2445  
 Ala Ala Arg Leu Thr Arg Gln Asn Glu Ile Glu Ile Arg Asn Ala Arg  
 2450 2455 2460  
 Ala Ala Leu Val Leu Lys Arg Ile Thr Asp Lys Leu Thr Gly Asn Asp  
 2465 2470 2475 2480  
 Ile Lys Arg Leu Asn Asp Leu Asp Val Pro Thr Gln Val Asp Lys Leu  
 2485 2490 2495  
 Ile Gln Gln Ala Thr Ser Val Glu Ser Leu Cys Gln His Tyr Ile Gly  
 2500 2505 2510  
 Trp Cys Ser Phe Trp  
 2515

&lt;210&gt; 2534

&lt;211&gt; 6951

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(6951)

&lt;400&gt; 2534

atg tcc gac gcg agc gtt ttg aat agc atc ttc cag cag ttg cgg aca	48
Met Ser Asp Ala Ser Val Leu Asn Ser Ile Phe Gln Gln Leu Arg Thr	
1 5 10 15	
gcc cgc aca ctg act gaa aaa aca cac gct gca gaa gaa ctg cgc gac	96
Ala Arg Thr Leu Thr Glu Lys Thr His Ala Ala Glu Glu Leu Arg Asp	
20 25 30	
cat cta acc tcc gtc acg cac gaa ctc aac aca gag cct ctc tcg cgc	144
His Leu Thr Ser Val Thr His Glu Leu Asn Thr Glu Pro Leu Ser Arg	
35 40 45	
tac aac aac gac atc aac ctt cgc att tcc gag cta atc cac aat ggc	192
Tyr Asn Asn Asp Ile Asn Leu Arg Ile Ser Glu Leu Ile His Asn Gly	
50 55 60	
gac ccc gtc atc cgg ctg ggc ggt atc atg gcc att gac cgg ctc att	240
Asp Pro Val Ile Arg Leu Gly Gly Ile Met Ala Ile Asp Arg Leu Ile	
65 70 75 80	
gac gtc gat gtc ggc gag gaa aac gcc ata aaa gtg acc cgg ttc acc	288
Asp Val Asp Val Gly Glu Glu Asn Ala Ile Lys Val Thr Arg Phe Thr	
85 90 95	
aac tac ctg aag acg act att cca gga gat aca gaa tcg atg cgc att	336
Asn Tyr Leu Lys Thr Thr Ile Pro Gly Asp Thr Glu Ser Met Arg Ile	
100 105 110	
gcc gtc gac gct ctc ggc cgt cta gct gcc acg gga ggc aat ttg tct	384
Ala Val Asp Ala Leu Gly Arg Leu Ala Ala Thr Gly Gly Asn Leu Ser	
115 120 125	
gcc act gtg gtt gaa tcc gag gtc aac aga gct ctc gaa tgg ctc cag	432
Ala Thr Val Val Glu Ser Glu Val Asn Arg Ala Leu Glu Trp Leu Gln	
130 135 140	
agc gac cga gga gag ggc tct aga cgc cat gct gcc gtc atg gtg atc	480
Ser Asp Arg Gly Glu Gly Ser Arg Arg His Ala Val Met Val Ile	
145 150 155 160	

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aag Lys	agt Ser	atg Met	gcc Ala	cag Gln 165	cat His	tgt Cys	gcc Ala	acg Thr	ttg Leu 170	ctg Leu	tac Tyr	ggg Gly	tac Tyr	atg Met 175	agc Ser	528
cag Gln	atc Ile	ctt Leu	gac Asp 180	ctg Leu	atc Ile	tgg Trp	gtg Val	gga Gly 185	ctg Leu	cgt Arg	gat Asp	ccg Pro	aag Lys 190	gtg Val	cag Gln	576
att Ile	cgg Arg	gtt Val 195	gac Asp	tcg Ser	gcc Ala	gag Glu	gcg Ala 200	ctg Leu	cag Gln	tac Tyr	tgc Cys	ctg Leu 205	aac Asn	att Ile	gtg Val	624
cat His	tct Ser	cgt Arg	gac Asp	cag Gln	acc Thr	ctt Leu 215	aaa Lys	aag Lys	cag Gln	tgg Trp	ttc Phe 220	aac Asn	cga Arg	att Ile	atg Met	672
gag Glu 225	gag Glu	gcc Ala	aag Lys	gtg Val	agt Ser 230	ttg Leu	aac Asn	atg Met	ggg Gly	ggg Gly 235	gtc Val	gac Asp	acc Thr	att Ile	cat His 240	720
ggc Gly	gct Ala	ctg Leu	ctc Leu	acc Thr 245	tac Tyr	aag Lys	gaa Glu	gtc Val	ctt Leu 250	cga Arg	gga Gly	ggc Gly	atg Met	ttt Phe 255	gag Glu	768
aac Asn	tca Ser	cga Arg	tac Tyr 260	gac Asp	gag Glu	gtg Val	tgt Cys	gag Glu 265	gtt Val	gtg Val	tta Leu	gcc Ala	aac Asn 270	cgc Arg	gac Asp	816
tcg Ser	cgt Arg	gac Asp 275	gtg Val	ctg Leu	atc Ile	cga Arg	aag Lys 280	acg Thr	gtg Val	ctc Leu	aac Asn	atc Ile 285	atc Ile	cca Pro	gac Asp	864
ctt Leu 290	gcc Ala	caa Gln	tac Tyr	aat Asn	ccc Pro	tgg Trp 295	cag Gln	ttt Phe	aca Thr	aag Lys	cgg Arg 300	tat Tyr	ctg Leu	cac His	aaa Lys	912
tgc Cys 305	atg Met	ttg Leu	tac Tyr	ctt Leu	ctt Leu 310	tca Ser	cag Gln	ctc Leu	aag Lys	aag Lys 315	gac Asp	aag Lys	gac Asp	cgt Arg	aac Asn 320	960
ctt Leu	gtt Val	ttt Phe	ctg Leu	tcg Ser 325	att Ile	ggc Gly	cag Gln	att Ile	tcc Ser 330	ttt Phe	tct Ser	gtc Val	cgg Arg	tcg Ser 335	gcc Ala	1008
atg Met	gct Ala	cct Pro	tac Tyr 340	ttg Leu	gac Asp	gcc Ala	att Ile 345	ctg Leu	gaa Glu	aat Asn	atc Ile	cga Arg	gaa Glu 350	ggg Gly	ctc Leu	1056
agt Ser	ctg Leu	aaa Lys 355	tct Ser	cga Arg	tat Tyr	agg Arg	aag Lys 360	gag Glu	cag Gln	gag Glu	agt Ser	gcc Ala 365	att Ile	ttc Phe	tcc Ser	1104
tgt Cys	att Ile 370	ggc Gly	atg Met	ttg Leu	gct Ala	gtt Val 375	gct Ala	gtg Val	ggg Gly	cag Gln	gct Ala 380	ctg Leu	gcc Ala	aag Lys	cat His	1152
ctg Leu 385	aac Asn	caa Gln	aaa Lys	att Ile	ctg Leu 390	gat Asp	ctc Leu	atc Ile	atg Met	gct Ala 395	tgt Cys	ggg Gly	ttg Leu	agt Ser	gaa Glu 400	1200
cac His	ctg Leu	cac His	aat Asn	tgt Cys 405	ctg Leu	agt Ser	gag Glu	ctg Leu	gtt Val 410	cac His	aac Asn	att Ile	cct Pro	cca Pro 415	ctg Leu	1248
ggc Gly	cct Pro	tcc Ser	atc Ile 420	cag Gln	cag Gln	cgg Arg	ttg Leu	ttg Leu 425	aac Asn	atc Ile	atc Ile	tcg Ser	ttc Phe 430	act Thr	ctc Leu	1296
tct Ser	ggc Gly	cac His 435	ccc Pro	ttt Phe	aag Lys	ctc Leu	cct Pro 440	ggg Gly	tct Ser	cct Pro	gct Ala	gcg Ala 445	act Thr	tct Ser	tct Ser	1344
gca Ala	gag Glu 450	tac Tyr	atg Met	tct Ser	gtg Val	aca Thr 455	cgt Arg	gca Ala	cgg Arg	gag Glu	tac Tyr 460	cga Arg	gag Glu	act Thr	gag Glu	1392
gac Asp 465	gac Asp	aag Lys	gat Asp	gat Asp	gca Ala 470	gcc Ala	gtg Val	gtt Val	gcg Ala	ctt Leu 475	gct Ala	ctt Leu	cac His	att Ile	ctc Leu 480	1440
ggc Gly	acg Thr	ttt Phe	aac Asn	ttc Phe 485	aag Lys	ggg Gly	ttg Leu	tcg Ser	ctg Leu 490	acc Thr	gag Glu	ttt Phe	gtg Val	cgg Arg 495	ttc Phe	1488
tgt Cys	gca Ala	atc Ile	act Thr 500	tat Tyr	gtt Val	gat Asp	cat His	gac Asp 505	tct Ser	cct Pro	gag Glu	gtg Val	cga Arg 510	aaa Lys	gca Ala	1536
gcc Ala	gcc Ala	ctc Leu 515	tca Ser	tct Ser	tgc Cys	acc Thr	att Ile 520	tat Tyr	ctc Leu	aac Asn	gac Asp	cct Pro 525	att Ile	gtg Val	ttc Phe	1584

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cag	ttc	tcc	gct	cat	gct	ctg	agt	gcc	ggt	tcc	gaa	gtg	ggt	gag	aag	1632
Gln	Phe	Ser	Ala	His	Ala	Leu	Ser	Ala	Val	Ser	Glu	Val	Val	Glu	Lys	
530						535					540					
ctg	ttg	acg	gtg	gct	gtg	ggt	gat	cct	gac	cct	gat	atc	cga	att	ggc	1680
Leu	Leu	Thr	Val	Ala	Val	Val	Asp	Pro	Asp	Pro	Asp	Ile	Arg	Ile	Gly	
545					550					555					560	
att	ctc	act	aca	ttt	gat	ccg	cga	att	gac	cct	cat	ttg	tcc	cag	gcc	1728
Ile	Leu	Thr	Thr	Phe	Asp	Pro	Arg	Ile	Asp	Pro	His	Leu	Ser	Gln	Ala	
				565					570					575		
gag	aac	gtg	cgt	ctt	tta	ttc	act	gct	ttg	aac	gac	gag	ggt	ttt	gcg	1776
Glu	Asn	Val	Arg	Leu	Leu	Phe	Thr	Ala	Leu	Asn	Asp	Glu	Val	Phe	Ala	
			580					585					590			
att	aga	cag	ctg	tcc	att	ggc	att	atc	ggc	cgg	ctg	aca	aag	ata	aac	1824
Ile	Arg	Gln	Leu	Ser	Ile	Gly	Ile	Ile	Gly	Arg	Leu	Thr	Lys	Ile	Asn	
		595					600					605				
cct	gct	tac	gtt	gtt	cct	cat	ctg	aga	aaa	acg	ttg	att	cat	ctt	ctg	1872
Pro	Ala	Tyr	Val	Val	Pro	His	Leu	Arg	Lys	Thr	Leu	Ile	His	Leu	Leu	
		610				615					620					
acc	gaa	ctg	gag	tat	gcc	ttt	gga	cgt	acc	aag	gaa	gag	agt	gcg		1920
Thr	Glu	Leu	Glu	Tyr	Ala	Lys	Phe	Gly	Thr	Lys	Glu	Glu	Ser	Ala		
625					630				635					640		
cgg	ctg	ctt	gca	cag	ctg	att	ggg	tcg	acg	cac	gga	ctc	atc	aag	ccg	1968
Arg	Leu	Leu	Ala	Gln	Leu	Ile	Gly	Ser	Thr	His	Gly	Leu	Ile	Lys	Pro	
				645					650					655		
tac	gtc	aaa	ccc	atc	atc	aag	gtg	ctg	ctt	gct	cgt	gca	cgt	gac	acg	2016
Tyr	Val	Lys	Pro	Ile	Ile	Lys	Val	Leu	Leu	Ala	Arg	Ala	Arg	Asp	Thr	
			660					665					670			
tct	tcc	aac	gtg	gcc	tcc	gcg	ggt	atc	act	gct	atc	gga	gag	cta	gct	2064
Ser	Ser	Asn	Val	Ala	Ser	Ala	Val	Ile	Thr	Ala	Ile	Gly	Glu	Leu	Ala	
		675					680					685				
gcc	act	gga	cgg	gaa	ggc	atg	att	gag	tac	att	ccc	gag	att	atg	cct	2112
Ala	Thr	Gly	Arg	Glu	Gly	Met	Ile	Glu	Tyr	Ile	Pro	Glu	Ile	Met	Pro	
		690				695					700					
att	ttc	ttg	gaa	act	ttt	tcg	gat	cag	aat	gct	cag	aag	aag	ctg	gct	2160
Ile	Phe	Leu	Glu	Thr	Phe	Ser	Asp	Gln	Asn	Ala	Gln	Lys	Lys	Leu	Ala	
705					710					715				720		
ggc	ctg	aaa	tct	ctc	gga	cag	ctc	tct	tcc	tct	tcc	gga	tac	ggt	att	2208
Gly	Leu	Lys	Ser	Leu	Gly	Gln	Leu	Ser	Ser	Ser	Ser	Gly	Tyr	Val	Ile	
				725					730					735		
cag	ccg	ctg	ctg	gat	tac	ccc	cag	ctg	ctc	aca	ctg	ctt	act	aac	act	2256
Gln	Pro	Leu	Leu	Asp	Tyr	Pro	Gln	Leu	Leu	Thr	Leu	Leu	Thr	Asn	Thr	
			740					745					750			
ctc	aag	agc	gac	aat	gtt	gat	act	cgt	cga	gaa	act	gtc	cgt	ctc	atg	2304
Leu	Lys	Ser	Asp	Asn	Val	Asp	Thr	Arg	Arg	Glu	Thr	Val	Arg	Leu	Met	
		755				760					765					
ggc	att	ctt	gga	gct	ctg	gat	cct	tat	aag	cat	cga	gag	gtg	gag	aga	2352
Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	Arg	Glu	Val	Glu	Arg	
		770				775					780					
agt	acc	cag	gat	gat	tca	gca	gag	tat	gac	tcg	atc	ccc	aca	gat	gtg	2400
Ser	Thr	Gln	Asp	Asp	Ser	Ala	Glu	Tyr	Asp	Ser	Ile	Pro	Thr	Asp	Val	
785					790					795					800	
gct	ctt	ctc	atc	cag	ggc	atg	tct	ccc	tct	tcg	gac	gag	tac	aac	cac	2448
Ala	Leu	Leu	Ile	Gln	Gly	Met	Ser	Pro	Ser	Ser	Asp	Glu	Tyr	Asn	His	
				805					810					815		
act	gtc	gtg	att	aca	act	cta	atg	gcg	att	ctc	aag	gac	cag	tcg	ctt	2496
Thr	Val	Val	Ile	Thr	Thr	Leu	Met	Ala	Ile	Leu	Lys	Asp	Gln	Ser	Leu	
			820					825					830			
gta	tcg	cac	cac	aat	gct	ggt	gtc	caa	gcc	att	gtc	atc	att	ttc	aag	2544
Val	Ser	His	His	Asn	Ala	Val	Val	Gln	Ala	Ile	Val	Ile	Ile	Phe	Lys	
		835					840					845				
tcg	ctg	ggc	ctc	aag	tgt	gtg	ccg	ttt	ttg	aat	cag	att	atc	cct	ggc	2592
Ser	Leu	Gly	Leu	Lys	Cys	Val	Pro	Phe	Leu	Asn	Gln	Ile	Ile	Pro	Gly	
		850				855					860					
tgg	ctg	caa	gtg	ctt	cga	agc	agt	act	cct	tct	atg	gcc	gag	ttt	ttt	2640
Trp	Leu	Gln	Val	Leu	Arg	Ser	Ser	Thr	Pro	Ser	Met	Ala	Glu	Phe	Phe	
865					870					875					880	
gtc	cag	cag	ttg	gct	ctt	ctg	ggt	ctc	att	gtc	aag	cag	cac	att	agg	2688
Val	Gln	Gln	Leu	Ala	Leu	Leu	Val	Leu	Ile	Val	Lys	Gln	His	Ile	Arg	
				885					890					895		

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tcg	tat	ctt	gac	gac	att	ttt	gct	ggt	ggt	cag	gag	ctc	ttt	gcc	att	2736
Ser	Tyr	Leu	Asp	Asp	Ile	Phe	Ala	Val	Val	Gln	Glu	Leu	Phe	Ala	Ile	
			900					905					910			
cca	tcc	atg	cag	cct	ggt	gtc	ctg	acg	ctg	ggt	gaa	aac	att	gct	cgg	2784
Pro	Ser	Met	Gln	Pro	Val	Val	Leu	Thr	Leu	Val	Glu	Asn	Ile	Ala	Arg	
		915					920					925				
tct	ctg	agt	ggc	gag	ttc	aag	ctg	cat	gtg	cct	act	ctc	ttg	cct	ctg	2832
Ser	Leu	Ser	Gly	Glu	Phe	Lys	Leu	His	Val	Pro	Thr	Leu	Leu	Pro	Leu	
	930					935					940					
ctt	ctt	ggc	gtg	ctg	gag	aac	gac	aaa	agc	acc	acc	aag	ctc	acc	tcc	2880
Leu	Leu	Gly	Val	Leu	Glu	Asn	Asp	Lys	Ser	Thr	Thr	Lys	Leu	Thr	Ser	
945					950					955					960	
atc	aag	gtg	ctg	cag	acg	ttc	gtg	gtg	ctg	ggc	gcc	aac	att	gag	gac	2928
Ile	Lys	Val	Leu	Gln	Thr	Phe	Val	Val	Leu	Gly	Ala	Asn	Ile	Glu	Asp	
				965					970					975		
tac	att	cac	ctc	atc	atc	ccc	atc	att	gtg	cga	atg	ttc	gaa	tac	tcg	2976
Tyr	Ile	His	Leu	Ile	Ile	Pro	Ile	Ile	Val	Arg	Met	Phe	Glu	Tyr	Ser	
			980					985					990			
act	cat	cag	ctc	aag	aaa	cgg	gcc	att	cag	act	att	gga	cag	ttg	tct	3024
Thr	His	Gln	Leu	Lys	Lys	Arg	Ala	Ile	Gln	Thr	Ile	Gly	Gln	Leu	Ser	
		995					1000					1005				
cga	act	gtg	gat	ctc	acc	gac	atg	tcg	tcg	cga	atc	gtg	cat	cct	ctg	3072
Arg	Thr	Val	Asp	Leu	Thr	Asp	Met	Ser	Ser	Arg	Ile	Val	His	Pro	Leu	
	1010					1015					1020					
ttg	cgt	gta	ctg	gca	gcc	tgt	cct	gtg	act	gaa	gag	ccc	aat	tcg	cac	3120
Leu	Arg	Val	Leu	Ala	Ala	Cys	Pro	Val	Thr	Glu	Glu	Pro	Asn	Ser	His	
1025					1030					1035					1040	
cat	gat	gag	ttg	cgg	cga	acc	gtc	atg	gag	act	ctg	tca	tcg	ctg	tgt	3168
His	Asp	Glu	Leu	Arg	Arg	Thr	Val	Met	Glu	Thr	Leu	Ser	Ser	Leu	Cys	
				1045					1050					1055		
ttc	cag	ctg	ggt	tcc	gat	tac	acc	att	ttc	atc	ccc	ctt	gtg	aac	aag	3216
Phe	Gln	Leu	Gly	Ser	Asp	Tyr	Thr	Ile	Phe	Ile	Pro	Leu	Val	Asn	Lys	
			1060					1065					1070			
gct	atg	ctc	aag	gcc	gga	gtg	aac	tct	ccc	tcc	tac	gac	cag	ctg	gtc	3264
Ala	Met	Leu	Lys	Ala	Gly	Val	Asn	Ser	Pro	Ser	Tyr	Asp	Gln	Leu	Val	
		1075					1080					1085				
aac	cga	ctc	ctc	tct	gga	gaa	cca	ctg	cct	gcg	tcc	atg	gac	ccc	gac	3312
Asn	Arg	Leu	Leu	Ser	Gly	Glu	Pro	Leu	Pro	Ala	Ser	Met	Asp	Pro	Asp	
	1090				1095						1100					
agt	cga	atc	cag	gag	ctc	aac	aat	act	cct	ccg	gat	acc	acc	tcg	ctc	3360
Ser	Arg	Ile	Gln	Glu	Leu	Asn	Asn	Thr	Pro	Pro	Asp	Thr	Thr	Ser	Leu	
1105					1110					1115					1120	
aac	aag	ctg	cct	gtg	aac	caa	cag	cac	ttg	aag	acc	gcg	tgg	gac	act	3408
Asn	Lys	Leu	Pro	Val	Asn	Gln	Gln	His	Leu	Lys	Thr	Ala	Trp	Asp	Thr	
			1125						1130					1135		
gcg	caa	tgc	tcg	act	aag	gag	gat	tgg	cag	gag	tgg	atg	cga	cgt	ctc	3456
Ala	Gln	Cys	Ser	Thr	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Met	Arg	Arg	Leu	
			1140					1145					1150			
tcg	act	gct	ttc	ctg	cgc	gag	tct	tct	tct	cac	gcc	ctg	cga	gcc	tgt	3504
Ser	Thr	Ala	Phe	Leu	Arg	Glu	Ser	Ser	Ser	His	Ala	Leu	Arg	Ala	Cys	
		1155					1160					1165				
ggt	gtc	att	gct	aac	aac	tat	cag	cca	ttg	gcc	aag	gac	ctg	ttc	aat	3552
Gly	Val	Ile	Ala	Asn	Asn	Tyr	Gln	Pro	Leu	Ala	Lys	Asp	Leu	Phe	Asn	
	1170					1175					1180					
ccg	tcc	ttc	tac	tcg	tgc	tgg	tct	gag	ctc	tac	gac	cag	tac	aag	gac	3600
Pro	Ser	Phe	Tyr	Ser	Cys	Trp	Ser	Glu	Leu	Tyr	Asp	Gln	Tyr	Lys	Asp	
	1185				1190					1195					1200	
gac	ttg	gtg	aac	cac	att	gag	acg	gct	ctg	atg	gcg	ccc	aac	atg	ccg	3648
Asp	Leu	Val	Asn	His	Ile	Glu	Thr	Ala	Leu	Met	Ala	Pro	Asn	Met	Pro	
			1205					1210						1215		
ccc	gag	acg	ctg	cag	atc	ctg	cta	aac	ctg	gcc	gag	tac	atg	gag	cac	3696
Pro	Glu	Thr	Leu	Gln	Ile	Leu	Leu	Asn	Leu	Ala	Glu	Tyr	Met	Glu	His	
			1220				1225						1230			
gac	gac	aag	ccg	cta	ccg	atc	gat	atg	cgt	act	ctg	gct	gcc	tat	gct	3744
Asp	Asp	Lys	Pro	Leu	Pro	Ile	Asp	Met	Arg	Thr	Leu	Ala	Ala	Tyr	Ala	
		1235				1240					1245					
cac	cgc	tgc	cat	gcc	tac	gcc	aag	gcg	ctg	cac	tac	aag	gag	ctg	gag	3792
His	Arg	Cys	His	Ala	Tyr	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu	
	1250					1255					1260					

## PhoenixTemp32470.tmp.txt

ttt atg cgg gag cct acg acg ccc atc att gag aat ctg atc gct atc	3840
Phe Met Arg Glu Pro Thr Pro Ile Ile Glu Asn Leu Ile Ala Ile	
1265 1270 1275 1280	
aac aac tcg ttg cag cag agc gac gct gct atc ggt att ctc aag cac	3888
Asn Asn Ser Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Lys His	
1285 1290 1295	
gtg cag cag cat cat cag tgg cag ctc aag gaa tcg tgg tac gag aag	3936
Val Gln Gln His Gln Trp Gln Leu Lys Glu Ser Trp Tyr Glu Lys	
1300 1305 1310	
ctg cag cgg tgg gac gat gct ctc gag gcc tac gac aag ctt gat gac	3984
Leu Gln Arg Trp Asp Asp Ala Leu Glu Ala Tyr Asp Lys Leu Asp Asp	
1315 1320 1325	
aat tcc atg gag gtc aca atg ggt aag atg cga tgt ctg cat gcc ctt	4032
Asn Ser Met Glu Val Thr Met Gly Lys Met Arg Cys Leu His Ala Leu	
1330 1335 1340	
ggt gag tgg gag tcg ctg gcc gag att gca cag gag aaa tgg act tca	4080
Gly Glu Trp Glu Ser Leu Ala Glu Ile Ala Gln Glu Lys Trp Thr Ser	
1345 1350 1355 1360	
tca ggc ccc gag gtg cga gtg gtg gca ccc ctg gct gcc gca gct	4128
Ser Gly Pro Glu Val Arg Arg Val Val Ala Pro Leu Ala Ala Ala	
1365 1370 1375	
tcc tgg ggt ttg tct cag tgg gag cga atg gac aca tat att agt gtc	4176
Ser Trp Gly Leu Ser Gln Trp Glu Arg Met Asp Thr Tyr Ile Ser Val	
1380 1385 1390	
atg aag gtg gac tct gcc gac aag tcc ttc ttc aac gct gtg agc	4224
Met Lys Val Asp Ser Ala Asp Lys Ser Phe Phe Asn Ala Val Val Ser	
1395 1400 1405	
atc cac aga aac aac ttt gat gag gcc cat acg cat atc act cgt gca	4272
Ile His Arg Asn Asn Phe Asp Glu Ala His Thr His Ile Thr Arg Ala	
1410 1415 1420	
cgt gac ttg ctg gct acc gag ctc acc gct ctc att tct gag tcg tac	4320
Arg Asp Leu Leu Ala Thr Glu Leu Thr Ala Leu Ile Ser Glu Ser Tyr	
1425 1430 1435 1440	
aac cga gcc tat ggt gtt gtt gtg cgg ttc cag atg ctg gca gag ctg	4368
Asn Arg Ala Tyr Gly Val Val Val Arg Phe Gln Met Leu Ala Glu Leu	
1445 1450 1455	
gag gag att atc gtc tac aag ggt ctg ggt cgc aac tcc gag gag cag	4416
Glu Glu Ile Ile Val Tyr Lys Gly Leu Gly Arg Asn Ser Glu Glu Gln	
1460 1465 1470	
gct gcc atg cgg gcc acg tgg atg aag cgg ctc aag ggc tgt cag cga	4464
Ala Ala Met Arg Ala Thr Trp Met Lys Arg Leu Lys Gly Cys Gln Arg	
1475 1480 1485	
aac gta gag gac tgg cag cga atg ctc aag gtg cgg tct ctg gtt gtc	4512
Asn Val Glu Asp Trp Gln Arg Met Leu Lys Val Arg Ser Leu Val Val	
1490 1495 1500	
aag ccg aaa cag gat atg gag atg tgg atc aag ttt gca aac ctg tgt	4560
Lys Pro Lys Gln Asp Met Glu Met Trp Ile Lys Phe Ala Asn Leu Cys	
1505 1510 1515 1520	
cga aag agt ggt cgg ctc tct ttg gct gaa aag tcg ctc aat gct ctt	4608
Arg Lys Ser Gly Arg Leu Ser Leu Ala Glu Lys Ser Leu Asn Ala Leu	
1525 1530 1535	
ctt gac ccc gat gat ccc gac tca cag act tcc aga gct cct cca cct	4656
Leu Asp Pro Asp Asp Pro Asp Ser Gln Thr Ser Arg Ala Pro Pro Pro	
1540 1545 1550	
gtt gtt tac gcc cag ctc aag tac atg tgg gct act ggc aac tgg gaa	4704
Val Val Tyr Ala Gln Leu Lys Tyr Met Trp Ala Thr Gly Asn Trp Glu	
1555 1560 1565	
gat gcc ctg aat cac ctc gtt gac ttt acc aat cga atg tcg ctc gat	4752
Asp Ala Leu Asn His Leu Val Asp Phe Thr Asn Arg Met Ser Leu Asp	
1570 1575 1580	
ctg ggc ctg gat cct gaa gat ctc atc act cag aaa cta ccc tca gaa	4800
Leu Gly Leu Asp Pro Glu Asp Leu Ile Thr Gln Lys Leu Pro Ser Glu	
1585 1590 1595 1600	
ggc gct gct gtc cct aag aag att cag gac tac act cgt ctt ctt gct	4848
Gly Ala Ala Val Pro Lys Lys Ile Gln Asp Tyr Thr Arg Leu Leu Ala	
1605 1610 1615	
cga tgt ttc ctc aag cag ggc gag tgg cag att tcg ttg cag gac gac	4896
Arg Cys Phe Leu Lys Gln Gly Glu Trp Gln Ile Ser Leu Gln Asp Asp	
1620 1625 1630	

## PhoenixTemp32470.tmp.txt

tgg aag gag aag aac ccc gat tct atc ctc ggc tcg ttc ctg ttg gcc	4944
Trp Lys Glu Lys Asn Pro Asp Ser Ile Leu Gly Ser Phe Leu Leu Ala	
1635 1640 1645	
act cat ttt gac gcc aaa tgg tac aag gcg tgg cac aac tgg gcg ctg	4992
Thr His Phe Asp Ala Lys Trp Tyr Lys Ala Trp His Asn Trp Ala Leu	
1650 1655 1660	
gca aac ttc cag gtt gtg tct ctg cgg tac tcg gaa aag gag gag ttg	5040
Ala Asn Phe Gln Val Val Ser Leu Arg Tyr Ser Glu Lys Glu Glu Leu	
1665 1670 1675 1680	
gcc ctg gaa gac gtg tct caa tat gtg gta cct gcc atc aag ggt ttc	5088
Ala Leu Glu Asp Val Ser Gln Tyr Val Val Pro Ala Ile Lys Gly Phe	
1685 1690 1695	
ttc cat tcc atc tcc ttg tcc aat gga tct tct ctg caa gac act ctt	5136
Phe His Ser Ile Ser Leu Ser Asn Gly Ser Ser Leu Gln Asp Thr Leu	
1700 1705 1710	
cgt ctt ctg acc ctg tgg ttc cgg tac ggc cat gtg tct gac gcg tct	5184
Arg Leu Leu Thr Leu Trp Phe Arg Tyr Gly His Val Ser Asp Ala Ser	
1715 1720 1725	
cag gcc ctt tat gac gga ttc cag atg ctt tct att gac acg tgg ctg	5232
Gln Ala Leu Tyr Asp Gly Phe Gln Met Leu Ser Ile Asp Thr Trp Leu	
1730 1735 1740	
gat gtc att cct cag ctc att tct cag att cac cag cgg tct cag gtt	5280
Asp Val Ile Pro Gln Leu Ile Ser Gln Ile His Gln Arg Ser Gln Val	
1745 1750 1755 1760	
gtt tcc aag gct ctg cag ggt ctt ctg att gag ctc ggt aag aac cat	5328
Val Ser Lys Ala Leu Gln Gly Leu Leu Ile Glu Leu Gly Lys Asn His	
1765 1770 1775	
ccc cag gct ctg ctg tac ctg ctc aac gtg gct gtc aag agt gac tct	5376
Pro Gln Ala Leu Leu Tyr Leu Leu Asn Val Ala Val Lys Ser Asp Ser	
1780 1785 1790	
ctg tcg cgt caa cag gcc gct atg aac gtt att gac aaa atg aga act	5424
Leu Ser Arg Gln Gln Ala Ala Met Asn Val Ile Asp Lys Met Arg Thr	
1795 1800 1805	
cac aac ccc atc cta gtc gag cag gct gag ctg gtg tcc aag gag ctc	5472
His Asn Pro Ile Leu Val Gln Ala Glu Leu Val Ser Lys Glu Leu	
1810 1815 1820	
att cga gtg gct gtt ttg tgg cac gag caa tgg cac gag ggt ctg gaa	5520
Ile Arg Val Ala Val Leu Trp His Glu Gln Trp His Glu Gly Leu Glu	
1825 1830 1835 1840	
gat gcg tcg cga ttc ttc ttt ggc gag cga aac att gaa aag atg ttc	5568
Asp Ala Ser Arg Phe Phe Gly Glu Arg Asn Ile Glu Lys Met Phe	
1845 1850 1855	
cag acg cta gag cct cta cac gca atg ctg gag cgg ggt ccc gaa act	5616
Gln Thr Leu Glu Pro Leu His Ala Met Leu Glu Arg Gly Pro Glu Thr	
1860 1865 1870	
ctg cga gaa gtg tcc ttc caa aca gct ttt gga cgt gac ttg cac gat	5664
Leu Arg Glu Val Ser Phe Gln Thr Ala Phe Gly Arg Asp Leu His Asp	
1875 1880 1885	
gcc aac gag tgg gtg tgg agt ttt aag cga acc aat gac cct gcc cac	5712
Ala Asn Glu Trp Val Trp Ser Phe Lys Arg Thr Asn Asp Pro Ala His	
1890 1895 1900	
ctc aac cag gcc tgg gac att tac tac aat gtt ttc cga cga atc gcc	5760
Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Arg Ile Ala	
1905 1910 1915 1920	
aag cag ttg ccc cag ctc atc tcg ctt gac ctg cag tac gtg tct ccc	5808
Lys Gln Leu Pro Gln Leu Ile Ser Leu Asp Leu Gln Tyr Val Ser Pro	
1925 1930 1935	
aag ctg ctg gca gcc gag aat ctc gag ctg gcg gtg cct ggt tcg tac	5856
Lys Leu Leu Ala Ala Glu Asn Leu Glu Leu Ala Val Pro Gly Ser Tyr	
1940 1945 1950	
gct ccg ggc aag gag att gtg cga atc atg aag ttc gac cca att ttc	5904
Ala Pro Gly Lys Glu Ile Val Arg Ile Met Lys Phe Asp Pro Ile Phe	
1955 1960 1965	
acc gtt atc tcg tcc aag cag cgg ccc aga cgg ctg tcg tgc aag ggc	5952
Thr Val Ile Ser Ser Lys Gln Arg Pro Arg Arg Leu Ser Cys Lys Gly	
1970 1975 1980	
agt gat ggt aag gac tac gtg tac gct ctc aag ggc cac gag gat atc	6000
Ser Asp Gly Lys Asp Tyr Val Tyr Ala Leu Lys Gly His Glu Asp Ile	
1985 1990 1995 2000	



## PhoenixTemp32470.tmp.txt

aga cag gat aac ctg gtg atg caa ttg ttt gga ctg gtg aac act ctg 6048  
 Arg Gln Asp Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu  
 2005 2010 2015  
 cta tct cag gac tcg gag tgt ttc aag cga cat ctc aac att aca aag 6096  
 Leu Ser Gln Asp Ser Glu Cys Phe Lys Arg His Leu Asn Ile Thr Lys  
 2020 2025 2030  
 tac cct gcc att cct ctg tcc ccc aag tct ggt ctc ctc ggc tgg gtg 6144  
 Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu Gly Trp Val  
 2035 2040 2045  
 cct cat tcg gac act ctg cat aca ctc atc aag gaa tac cgg gat ggc 6192  
 Pro His Ser Asp Thr Leu His Thr Leu Ile Lys Glu Tyr Arg Asp Gly  
 2050 2055 2060  
 cga atc ctc atc aac gtg gag cat aga ttc atg ctg cag atg gcg ccg 6240  
 Arg Ile Leu Ile Asn Val Glu His Arg Phe Met Leu Gln Met Ala Pro  
 2065 2070 2075 2080  
 gac tac gat cca ttg acg cat ctg caa aag att gag gtg ttt acg tac 6288  
 Asp Tyr Asp Pro Leu Thr His Leu Gln Lys Ile Glu Val Phe Thr Tyr  
 2085 2090 2095  
 gct ctg gac aac act aag ggc cag gat ctg tac cga gtc ttg tgg ctc 6336  
 Ala Leu Asp Asn Thr Lys Gly Gln Asp Leu Tyr Arg Val Leu Trp Leu  
 2100 2105 2110  
 aag tcg cgg tcc tcg gaa gct tgg ttg gag cga cga tct caa tac aca 6384  
 Lys Ser Arg Ser Ser Glu Ala Trp Leu Glu Arg Arg Ser Gln Tyr Thr  
 2115 2120 2125  
 cga tcc ttg gct acg atg tcc atg gtt ggc tac att ctc gga ctt gga 6432  
 Arg Ser Leu Ala Thr Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly  
 2130 2135 2140  
 gat cga cat ccc tcc aac ctg atg ctg gac cga tac act ggt aag gtg 6480  
 Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Tyr Thr Gly Lys Val  
 2145 2150 2155 2160  
 att cac att gat ttc ggt gac tgt ttc gag gct gcc att ctg cga gaa 6528  
 Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu  
 2165 2170 2175  
 aag tac ccc gaa aca gtg ccc ttc cga ctg act cga atg ctc aca tac 6576  
 Lys Tyr Pro Glu Thr Val Pro Phe Arg Leu Thr Arg Met Leu Thr Tyr  
 2180 2185 2190  
 gcc atg gag gtg tca gga atc gag ggc tcg tac cga atc acg tcc gag 6624  
 Ala Met Glu Val Ser Gly Ile Glu Gly Ser Tyr Arg Ile Thr Ser Glu  
 2195 2200 2205  
 cat gtg atg cgg gtc atc cga gac aac aag gag tcg ctg ctg gcc att 6672  
 His Val Met Arg Val Ile Arg Asp Asn Lys Glu Ser Leu Leu Ala Ile  
 2210 2215 2220  
 ctg gaa gcc ttt gcc tat gat cct ctc atc aac tgg ggt ttc gag ctt 6720  
 Leu Glu Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Glu Leu  
 2225 2230 2235 2240  
 ccc aga ggc gag gat ctg cct gtc aag cgg ttc gat gag gac gaa aag 6768  
 Pro Arg Gly Glu Asp Leu Pro Val Lys Arg Phe Asp Glu Asp Glu Lys  
 2245 2250 2255  
 gtc aat gtt cga atg gct cga gcg cac ttg gtc ctc aaa cga atc cag 6816  
 Val Asn Val Arg Met Ala Arg Ala His Leu Val Leu Lys Arg Ile Gln  
 2260 2265 2270  
 gac aag ctg tct gga aac gac atc aag aac aga aaa aat gtc gat gtg 6864  
 Asp Lys Leu Ser Gly Asn Asp Ile Lys Asn Arg Lys Asn Val Asp Val  
 2275 2280 2285  
 ccg gca cag gtg gac tac ttg att cag cag gcc act agc att gag aat 6912  
 Pro Ala Gln Val Asp Tyr Leu Ile Gln Gln Ala Thr Ser Ile Glu Asn  
 2290 2295 2300  
 ctg tgt cag cac ttc ata ggt tgg tgt tct ttc tgg tag 6951  
 Leu Cys Gln His Phe Ile Gly Trp Cys Ser Phe Trp  
 2305 2310 2315

&lt;210&gt; 2535

&lt;211&gt; 2316

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;400&gt; 2535

Met Ser Asp Ala Ser Val Leu Asn Ser Ile Phe Gln Gln Leu Arg Thr

1

5

10

15

## PhoenixTemp32470.tmp.txt

Ala	Arg	Thr	Leu <sub>20</sub>	Thr	Glu	Lys	Thr	His <sub>25</sub>	Ala	Ala	Glu	Glu	Leu <sub>30</sub>	Arg	Asp
His	Leu	Thr <sub>35</sub>	Ser	Val	Thr	His	Glu <sub>40</sub>	Leu	Asn	Thr	Glu	Pro <sub>45</sub>	Leu	Ser	Arg
Tyr	Asn <sub>50</sub>	Asn	Asp	Ile	Asn	Leu <sub>55</sub>	Arg	Ile	Ser	Glu	Leu <sub>60</sub>	Ile	His	Asn	Gly
Asp <sub>65</sub>	Pro	Val	Ile	Arg	Leu <sub>70</sub>	Gly	Gly	Ile	Met	Ala <sub>75</sub>	Ile	Asp	Arg	Leu <sub>80</sub>	Ile
Asp	Val	Asp	Val	Gly <sub>85</sub>	Glu	Glu	Asn	Ala	Ile <sub>90</sub>	Lys	Val	Thr	Arg	Phe <sub>95</sub>	Thr
Asn	Tyr	Leu	Lys <sub>100</sub>	Thr	Thr	Ile	Pro	Gly <sub>105</sub>	Asp	Thr	Glu	Ser	Met <sub>110</sub>	Arg	Ile
Ala	Val	Asp <sub>115</sub>	Ala	Leu	Gly	Arg	Leu <sub>120</sub>	Ala	Ala	Thr	Gly	Gly <sub>125</sub>	Asn	Leu	Ser
Ala	Thr <sub>130</sub>	Val	Val	Glu	Ser	Glu <sub>135</sub>	Val	Asn	Arg	Ala	Leu <sub>140</sub>	Glu	Trp	Leu	Gln
Ser <sub>145</sub>	Asp	Arg	Gly	Glu	Gly <sub>150</sub>	Ser	Arg	Arg	His <sub>155</sub>	Ala	Ala	Val	Met	Val	Ile <sub>160</sub>
Lys	Ser	Met	Ala	Gln <sub>165</sub>	His	Cys	Ala	Thr	Leu <sub>170</sub>	Leu	Tyr	Gly	Tyr	Met <sub>175</sub>	Ser
Gln	Ile	Leu	Asp <sub>180</sub>	Leu	Ile	Trp	Val	Gly <sub>185</sub>	Leu	Arg	Asp	Pro	Lys <sub>190</sub>	Val	Gln
Ile	Arg	Val <sub>195</sub>	Asp	Ser	Ala	Glu	Ala <sub>200</sub>	Leu	Gln	Tyr	Cys	Leu <sub>205</sub>	Asn	Ile	Val
His	Ser <sub>210</sub>	Arg	Asp	Gln	Thr	Leu <sub>215</sub>	Lys	Lys	Gln	Trp	Phe <sub>220</sub>	Asn	Arg	Ile	Met
Glu <sub>225</sub>	Glu	Ala	Lys	Val	Ser <sub>230</sub>	Leu	Asn	Met	Gly	Gly <sub>235</sub>	Val	Asp	Thr	Ile	His <sub>240</sub>
Gly	Ala	Leu	Leu	Thr <sub>245</sub>	Tyr	Lys	Glu	Val	Leu <sub>250</sub>	Arg	Gly	Gly	Met	Phe <sub>255</sub>	Glu
Asn	Ser	Arg	Tyr <sub>260</sub>	Asp	Glu	Val	Cys	Glu <sub>265</sub>	Val	Val	Leu	Ala	Asn	Arg	Asp
Ser	Arg	Asp <sub>275</sub>	Val	Leu	Ile	Arg	Lys <sub>280</sub>	Thr	Val	Leu	Asn	Ile <sub>285</sub>	Ile	Pro	Asp
Leu	Ala <sub>290</sub>	Gln	Tyr	Asn	Pro	Trp <sub>295</sub>	Gln	Phe	Thr	Lys	Arg	Tyr <sub>300</sub>	Leu	His	Lys
Cys <sub>305</sub>	Met	Leu	Tyr	Leu	Leu	Ser	Gln	Leu	Lys	Lys	Asp	Lys	Asp	Arg	Asn <sub>320</sub>
Leu	Val	Phe	Leu	Ser <sub>325</sub>	Ile	Gly	Gln	Ile	Ser <sub>330</sub>	Phe	Ser	Val	Arg	Ser <sub>335</sub>	Ala
Met	Ala	Pro	Tyr <sub>340</sub>	Leu	Asp	Ala	Ile	Leu <sub>345</sub>	Glu	Asn	Ile	Arg	Glu <sub>350</sub>	Gly	Leu
Ser	Leu	Lys <sub>355</sub>	Ser	Arg	Tyr	Arg	Lys <sub>360</sub>	Glu	Gln	Glu	Ser	Ala <sub>365</sub>	Ile	Phe	Ser
Cys	Ile <sub>370</sub>	Gly	Met	Leu	Ala	Val	Ala <sub>375</sub>	Val	Gly	Gln	Ala	Leu	Ala	Lys	His
Leu <sub>385</sub>	Asn	Gln	Lys	Ile	Leu <sub>390</sub>	Asp	Leu	Ile	Met	Ala <sub>395</sub>	Cys	Gly	Leu	Ser	Glu <sub>400</sub>
His	Leu	His	Asn	Cys <sub>405</sub>	Leu	Ser	Glu	Leu	Val <sub>410</sub>	His	Asn	Ile	Pro	Pro <sub>415</sub>	Leu
Gly	Pro	Ser	Ile <sub>420</sub>	Gln	Gln	Arg	Leu	Leu <sub>425</sub>	Asn	Ile	Ile	Ser	Phe	Thr	Leu
Ser	Gly	His <sub>435</sub>	Pro	Phe	Lys	Leu	Pro <sub>440</sub>	Gly	Ser	Pro	Ala	Ala <sub>445</sub>	Thr	Ser	Ser
Ala	Glu <sub>450</sub>	Tyr	Met	Ser	Val	Thr <sub>455</sub>	Arg	Ala	Arg	Glu	Tyr <sub>460</sub>	Arg	Glu	Thr	Glu
Asp <sub>465</sub>	Asp	Lys	Asp	Asp	Ala <sub>470</sub>	Ala	Val	Val	Ala	Leu	Ala <sub>475</sub>	Leu	His	Ile	Leu
Gly	Thr	Phe	Asn	Phe <sub>485</sub>	Lys	Gly	Leu	Ser	Leu <sub>490</sub>	Thr	Glu	Phe	Val	Arg <sub>495</sub>	Phe
Cys	Ala	Ile	Thr <sub>500</sub>	Tyr	Val	Asp	His	Asp <sub>505</sub>	Ser	Pro	Glu	Val	Arg <sub>510</sub>	Lys	Ala
Ala	Ala	Leu <sub>515</sub>	Ser	Ser	Cys	Thr	Ile <sub>520</sub>	Tyr	Leu	Asn	Asp	Pro <sub>525</sub>	Ile	Val	Phe
Gln	Phe <sub>530</sub>	Ser	Ala	His	Ala	Leu <sub>535</sub>	Ser	Ala	Val	Ser	Glu	Val <sub>540</sub>	Val	Glu	Lys
Leu <sub>545</sub>	Leu	Thr	Val	Ala	Val	Val	Asp	Pro	Asp	Pro	Asp	Ile	Arg	Ile	Gly <sub>560</sub>
Ile	Leu	Thr	Thr	Phe	Asp	Pro	Arg	Ile	Asp	Pro	His	Leu	Ser	Gln	Ala

## PhoenixTemp32470.tmp.txt

565 570 575  
 Glu Asn Val Arg Leu Leu Phe Thr Ala Leu Asn Asp Glu Val Phe Ala  
 580 585 590  
 Ile Arg Gln Leu Ser Ile Gly Ile Gly Arg Leu Thr Lys Ile Asn  
 595 600 605  
 Pro Ala Tyr Val Val Pro His Leu Arg Lys Thr Leu Ile His Leu Leu  
 610 615 620  
 Thr Glu Leu Glu Tyr Ala Lys Phe Gly Arg Thr Lys Glu Glu Ser Ala  
 625 630 635 640  
 Arg Leu Leu Ala Gln Leu Ile Gly Ser Thr His Gly Leu Ile Lys Pro  
 645 650 655  
 Tyr Val Lys Pro Ile Ile Lys Val Leu Leu Ala Arg Ala Arg Asp Thr  
 660 665 670  
 Ser Ser Asn Val Ala Ser Ala Val Ile Thr Ala Ile Gly Glu Leu Ala  
 675 680 685  
 Ala Thr Gly Arg Glu Gly Met Ile Glu Tyr Ile Pro Glu Ile Met Pro  
 690 695 700  
 Ile Phe Leu Glu Thr Phe Ser Asp Gln Asn Ala Gln Lys Lys Leu Ala  
 705 710 715 720  
 Gly Leu Lys Ser Leu Gly Gln Leu Ser Ser Ser Ser Gly Tyr Val Ile  
 725 730 735  
 Gln Pro Leu Leu Asp Tyr Pro Gln Leu Leu Thr Leu Leu Thr Asn Thr  
 740 745 750  
 Leu Lys Ser Asp Asn Val Asp Thr Arg Arg Glu Thr Val Arg Leu Met  
 755 760 765  
 Gly Ile Leu Gly Ala Leu Asp Pro Tyr Lys His Arg Glu Val Glu Arg  
 770 775 780  
 Ser Thr Gln Asp Asp Ser Ala Glu Tyr Asp Ser Ile Pro Thr Asp Val  
 785 790 795 800  
 Ala Leu Leu Ile Gln Gly Met Ser Pro Ser Ser Asp Glu Tyr Asn His  
 805 810 815  
 Thr Val Val Ile Thr Thr Leu Met Ala Ile Leu Lys Asp Gln Ser Leu  
 820 825 830  
 Val Ser His His Asn Ala Val Val Gln Ala Ile Val Ile Ile Phe Lys  
 835 840 845  
 Ser Leu Gly Leu Lys Cys Val Pro Phe Leu Asn Gln Ile Ile Pro Gly  
 850 855 860  
 Trp Leu Gln Val Leu Arg Ser Ser Thr Pro Ser Met Ala Glu Phe Phe  
 865 870 875 880  
 Val Gln Gln Leu Ala Leu Leu Val Leu Ile Val Lys Gln His Ile Arg  
 885 890 895  
 Ser Tyr Leu Asp Asp Ile Phe Ala Val Val Gln Glu Leu Phe Ala Ile  
 900 905 910  
 Pro Ser Met Gln Pro Val Val Leu Thr Leu Val Glu Asn Ile Ala Arg  
 915 920 925  
 Ser Leu Ser Gly Glu Phe Lys Leu His Val Pro Thr Leu Leu Pro Leu  
 930 935 940  
 Leu Leu Gly Val Leu Glu Asn Asp Lys Ser Thr Thr Lys Leu Thr Ser  
 945 950 955 960  
 Ile Lys Val Leu Gln Thr Phe Val Val Leu Gly Ala Asn Ile Glu Asp  
 965 970 975  
 Tyr Ile His Leu Ile Ile Pro Ile Ile Val Arg Met Phe Glu Tyr Ser  
 980 985 990  
 Thr His Gln Leu Lys Lys Arg Ala Ile Gln Thr Ile Gly Gln Leu Ser  
 995 1000 1005  
 Arg Thr Val Asp Leu Thr Asp Met Ser Ser Arg Ile Val His Pro Leu  
 1010 1015 1020  
 Leu Arg Val Leu Ala Ala Cys Pro Val Thr Glu Glu Pro Asn Ser His  
 1025 1030 1035 1040  
 His Asp Glu Leu Arg Arg Thr Val Met Glu Thr Leu Ser Ser Leu Cys  
 1045 1050 1055  
 Phe Gln Leu Gly Ser Asp Tyr Thr Ile Phe Ile Pro Leu Val Asn Lys  
 1060 1065 1070  
 Ala Met Leu Lys Ala Gly Val Asn Ser Pro Ser Tyr Asp Gln Leu Val  
 1075 1080 1085  
 Asn Arg Leu Leu Ser Gly Glu Pro Leu Pro Ala Ser Met Asp Pro Asp  
 1090 1095 1100  
 Ser Arg Ile Gln Glu Leu Asn Asn Thr Pro Pro Asp Thr Thr Ser Leu  
 1105 1110 1115 1120

## PhoenixTemp32470.tmp.txt

Asn Lys Leu Pro Val Asn Gln Gln His Leu Lys Thr Ala Trp Asp Thr  
 1125 1130 1135  
 Ala Gln Cys Ser Thr Lys Glu Asp Trp Gln Glu Trp Met Arg Arg Leu  
 1140 1145 1150  
 Ser Thr Ala Phe Leu Arg Glu Ser Ser Ser His Ala Leu Arg Ala Cys  
 1155 1160 1165  
 Gly Val Ile Ala Asn Asn Tyr Gln Pro Leu Ala Lys Asp Leu Phe Asn  
 1170 1175 1180  
 Pro Ser Phe Tyr Ser Cys Trp Ser Glu Leu Tyr Asp Gln Tyr Lys Asp  
 1185 1190 1195 1200  
 Asp Leu Val Asn His Ile Glu Thr Ala Leu Met Ala Pro Asn Met Pro  
 1205 1210 1215  
 Pro Glu Thr Leu Gln Ile Leu Leu Asn Leu Ala Glu Tyr Met Glu His  
 1220 1225 1230  
 Asp Asp Lys Pro Leu Pro Ile Asp Met Arg Thr Leu Ala Ala Tyr Ala  
 1235 1240 1245  
 His Arg Cys His Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Leu Glu  
 1250 1255 1260  
 Phe Met Arg Glu Pro Thr Thr Pro Ile Ile Glu Asn Leu Ile Ala Ile  
 1265 1270 1275 1280  
 Asn Asn Ser Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Lys His  
 1285 1290 1295  
 Val Gln Gln His His Gln Trp Gln Leu Lys Glu Ser Trp Tyr Glu Lys  
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 Leu Gln Arg Trp Asp Asp Ala Leu Glu Ala Tyr Asp Lys Leu Asp Asp  
 1315 1320 1325  
 Asn Ser Met Glu Val Thr Met Gly Lys Met Arg Cys Leu His Ala Leu  
 1330 1335 1340  
 Gly Glu Trp Glu Ser Leu Ala Glu Ile Ala Gln Glu Lys Trp Thr Ser  
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 Ser Gly Pro Glu Val Arg Arg Val Val Ala Pro Leu Ala Ala Ala Ala  
 1365 1370 1375  
 Ser Trp Gly Leu Ser Gln Trp Glu Arg Met Asp Thr Tyr Ile Ser Val  
 1380 1385 1390  
 Met Lys Val Asp Ser Ala Asp Lys Ser Phe Phe Asn Ala Val Val Ser  
 1395 1400 1405  
 Ile His Arg Asn Asn Phe Asp Glu Ala His Thr His Ile Thr Arg Ala  
 1410 1415 1420  
 Arg Asp Leu Leu Ala Thr Glu Leu Thr Ala Leu Ile Ser Glu Ser Tyr  
 1425 1430 1435 1440  
 Asn Arg Ala Tyr Gly Val Val Val Arg Phe Gln Met Leu Ala Glu Leu  
 1445 1450 1455  
 Glu Glu Ile Ile Val Tyr Lys Gly Leu Gly Arg Asn Ser Glu Glu Gln  
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 Ala Ala Met Arg Ala Thr Trp Met Lys Arg Leu Lys Gly Cys Gln Arg  
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 Lys Pro Lys Gln Asp Met Glu Met Trp Ile Lys Phe Ala Asn Leu Cys  
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 Arg Lys Ser Gly Arg Leu Ser Leu Ala Glu Lys Ser Leu Asn Ala Leu  
 1525 1530 1535  
 Leu Asp Pro Asp Asp Pro Asp Ser Gln Thr Ser Arg Ala Pro Pro Pro  
 1540 1545 1550  
 Val Val Tyr Ala Gln Leu Lys Tyr Met Trp Ala Thr Gly Asn Trp Glu  
 1555 1560 1565  
 Asp Ala Leu Asn His Leu Val Asp Phe Thr Asn Arg Met Ser Leu Asp  
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 Leu Gly Leu Asp Pro Glu Asp Leu Ile Thr Gln Lys Leu Pro Ser Glu  
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 Gly Ala Ala Val Pro Lys Lys Ile Gln Asp Tyr Thr Arg Leu Leu Ala  
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 Arg Cys Phe Leu Lys Gln Gly Glu Trp Gln Ile Ser Leu Gln Asp Asp  
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 Trp Lys Glu Lys Asn Pro Asp Ser Ile Leu Gly Ser Phe Leu Leu Ala  
 1635 1640 1645  
 Thr His Phe Asp Ala Lys Trp Tyr Lys Ala Trp His Asn Trp Ala Leu  
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 Ala Asn Phe Gln Val Val Ser Leu Arg Tyr Ser Glu Lys Glu Glu Leu

## PhoenixTemp32470.tmp.txt

1665 1670 1675 1680  
 Ala Leu Glu Asp Val Ser Gln Tyr Val Val Pro Ala Ile Lys Gly Phe  
 Phe His Ser Ile Ser Leu Ser Asn Gly Ser Ser Leu Gln Asp Thr Leu  
 Arg Leu Leu Thr Leu Trp Phe Arg Tyr Gly His Val Ser Asp Ala Ser  
 Gln Ala Leu Tyr Asp Gly Phe Gln Met Leu Ser Ile Asp Thr Trp Leu  
 Asp Val Ile Pro Gln Leu Ile Ser Gln Ile His Gln Arg Ser Gln Val  
 Val Ser Lys Ala Leu Gln Gly Leu Leu Ile Glu Leu Gly Lys Asn His  
 Pro Gln Ala Leu Tyr Leu Leu Asn Val Ala Val Lys Ser Asp Ser  
 Leu Ser Arg Gln Gln Ala Ala Met Asn Val Ile Asp Lys Met Arg Thr  
 His Asn Pro Ile Leu Val Glu Gln Ala Glu Leu Val Ser Lys Glu Leu  
 Ile Arg Val Ala Val Leu Trp His Glu Gln Trp His Glu Gly Leu Glu  
 Asp Ala Ser Arg Phe Phe Phe Gly Glu Arg Asn Ile Glu Lys Met Phe  
 Gln Thr Leu Glu Pro Leu His Ala Met Leu Glu Arg Gly Pro Glu Thr  
 Leu Arg Glu Val Ser Phe Gln Thr Ala Phe Gly Arg Asp Leu His Asp  
 Ala Asn Glu Trp Val Trp Ser Phe Lys Arg Thr Asn Asp Pro Ala His  
 Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Arg Ile Ala  
 Lys Gln Leu Pro Gln Leu Ile Ser Leu Asp Leu Gln Tyr Val Ser Pro  
 Lys Leu Leu Ala Ala Glu Asn Leu Glu Leu Ala Val Pro Gly Ser Tyr  
 Ala Pro Gly Lys Glu Ile Val Arg Ile Met Lys Phe Asp Pro Ile Phe  
 Thr Val Ile Ser Ser Lys Gln Arg Pro Arg Arg Leu Ser Cys Lys Gly  
 Ser Asp Gly Lys Asp Tyr Val Tyr Ala Leu Lys Gly His Glu Asp Ile  
 Arg Gln Asp Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu  
 Leu Ser Gln Asp Ser Glu Cys Phe Lys Arg His Leu Asn Ile Thr Lys  
 Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly Leu Leu Gly Trp Val  
 Pro His Ser Asp Thr Leu His Thr Leu Ile Lys Glu Tyr Arg Asp Gly  
 Arg Ile Leu Ile Asn Val Glu His Arg Phe Met Leu Gln Met Ala Pro  
 Asp Tyr Asp Pro Leu Thr His Leu Gln Lys Ile Glu Val Phe Thr Tyr  
 Ala Leu Asp Asn Thr Lys Gly Gln Asp Leu Tyr Arg Val Leu Trp Leu  
 Lys Ser Arg Ser Ser Glu Ala Trp Leu Glu Arg Arg Ser Gln Tyr Thr  
 Arg Ser Leu Ala Thr Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly  
 Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Tyr Thr Gly Lys Val  
 Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu  
 Lys Tyr Pro Glu Thr Val Pro Phe Arg Leu Thr Arg Met Leu Thr Tyr  
 Ala Met Glu Val Ser Gly Ile Glu Gly Ser Tyr Arg Ile Thr Ser Glu  
 His Val Met Arg Val Ile Arg Asp Asn Lys Glu Ser Leu Leu Ala Ile  
 2210 2215 2220

## PhoenixTemp32470.tmp.txt

Leu Glu Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Glu Leu  
 2225 2230 2235 2240  
 Pro Arg Gly Glu Asp Leu Pro Val Lys Arg Phe Asp Glu Asp Glu Lys  
 2245 2250 2255  
 Val Asn Val Arg Met Ala Arg Ala His Leu Val Leu Lys Arg Ile Gln  
 2260 2265 2270  
 Asp Lys Leu Ser Gly Asn Asp Ile Lys Asn Arg Lys Asn Val Asp Val  
 2275 2280 2285  
 Pro Ala Gln Val Asp Tyr Leu Ile Gln Gln Ala Thr Ser Ile Glu Asn  
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 Leu Cys Gln His Phe Ile Gly Trp Cys Ser Phe Trp  
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 1 5 10 15  
 aat gaa gaa ata cgt aac aaa gca gct aga gat tta tgt ctc tat gtt 96  
 Asn Glu Glu Ile Arg Asn Lys Ala Ala Arg Asp Leu Cys Leu Tyr Val  
 20 25 30  
 aaa aca gaa cta cgt gaa gta tca cag gaa gaa att aca gct ttt atg 144  
 Lys Thr Glu Leu Arg Glu Val Ser Gln Glu Glu Ile Thr Ala Phe Met  
 35 40 45  
 gat gaa ttt aat cac cat ata ttt gaa atg gta tct ggt tca gat gta 192  
 Asp Glu Phe Asn His His Ile Phe Glu Met Val Ser Gly Ser Asp Val  
 50 55 60  
 aat gaa aaa aaa gga ggt atc tta gct ata gtt tgc ctt att gga gct 240  
 Asn Glu Lys Lys Gly Gly Ile Leu Ala Ile Val Cys Leu Ile Gly Ala  
 65 70 75 80  
 gat gtg gga aac att aat aca aga act ata aga ttt gca aat tat tta 288  
 Asp Val Gly Asn Ile Asn Thr Arg Thr Ile Arg Phe Ala Asn Tyr Leu  
 85 90 95  
 agg aat tta tta ccc tct aat gat gtg ggt gtt atg gaa tta gct gct 336  
 Arg Asn Leu Leu Pro Ser Asn Asp Val Gly Val Met Glu Leu Ala Ala  
 100 105 110  
 aaa aca gtt ggt aag cta gca tta gtt tct ggt act tat aca gca gaa 384  
 Lys Thr Val Gly Lys Leu Ala Leu Val Ser Gly Thr Tyr Thr Ala Glu  
 115 120 125  
 tat gta gaa ttt gaa gta aag cgt gcc ttt gaa tgg ctt ggt ggt gat 432  
 Tyr Val Glu Phe Glu Val Lys Arg Ala Phe Glu Trp Leu Gly Gly Asp  
 130 135 140  
 aga cat gaa ggt aaa aga cat gct gct gtt ctt gtt tta aga gaa ctt 480  
 Arg His Glu Gly Lys Arg His Ala Ala Val Leu Val Leu Arg Glu Leu  
 145 150 155 160  
 gct gtt tct atg cca aca tat ttt ttt caa caa gtg aca cca ttt ttt 528  
 Ala Val Ser Met Pro Thr Tyr Phe Phe Gln Gln Val Thr Pro Phe Phe  
 165 170 175  
 gaa ctc ata ttt aat gca ata cgt gat cca aaa cct gtg ata aga gaa 576  
 Glu Leu Ile Phe Asn Ala Ile Arg Asp Pro Lys Pro Val Ile Arg Glu  
 180 185 190  
 ggt gct gtt gaa gca tta aga gct gct tta gtt gtt act gca cag agg 624  
 Gly Ala Val Glu Ala Leu Arg Ala Ala Leu Val Val Thr Ala Gln Arg  
 195 200 205  
 gaa aca gca aag caa atg cac tca caa tgg tac aaa caa tgt tat 672  
 Glu Thr Ala Lys Gln Met His Lys Ser Gln Trp Tyr Lys Gln Cys Tyr  
 210 215 220  
 gat gaa ata gta aca gga ttc gag gaa ata tat act aga gaa aga gga 720  
 Asp Glu Ile Val Thr Gly Phe Glu Glu Ile Tyr Thr Arg Glu Arg Gly  
 225 230 235 240  
 gta aat agg gat gat aga ata cat ggt tca ctc tta ata tta aat gaa 768

## PhoenixTemp32470.tmp.txt

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Leu	Leu	Arg	Cys 260	Ser	Asn	Ile	Gln	Trp 265	Glu	Lys	Asn	Tyr	Glu	Ala	Leu		
atg	gaa	cga	tta	aat	tgt	tct	act	caa	caa	aat	gag	aat	gat	ata	ttg	864	
Met	Glu	Arg 275	Leu	Asn	Cys	Ser	Thr 280	Gln	Gln	Asn	Glu	Asn	Asp	Ile	Leu		
tca	tta	atg	cct	cga	tta	aaa	aca	aca	ata	gta	tct	aaa	tgg	tct	aat	912	
Ser	Leu	Met	Pro	Arg	Leu	Lys 295	Thr	Thr	Ile	Val	Ser 300	Lys	Trp	Ser	Asn		
tct	tct	caa	aat	tcg	act	aat	tct	caa	cag	aca	tta	tat	cca	tca	cat	960	
Ser 305	Ser	Gln	Asn	Ser	Thr 310	Asn	Ser	Gln	Gln	Thr 315	Leu	Tyr	Pro	Ser	His 320		
gaa	tct	gca	gta	tgt	cgt	tgt	tta	atg	caa	gaa	cga	tta	gat	gat	ata	1008	
Glu	Ser	Ala	Val	Cys 325	Arg	Cys	Leu	Met	Gln	Glu	Arg	Leu	Asp	Asp	Ile		
tat	aat	gat	gta	atg	aat	cag	aga	ata	tct	aga	aat	cca	cat	att	caa	1056	
Tyr	Asn	Asp	Val 340	Met	Asn	Gln	Arg	Ile 345	Ser	Arg	Asn	Pro	His 350	Ile	Gln		
cat	gct	ctt	atg	ata	ttg	tta	cca	aga	ctt	gca	gca	ttt	aat	aaa	gaa	1104	
His	Ala	Leu 355	Met	Ile	Leu	Leu	Pro 360	Arg	Leu	Ala	Ala	Phe 365	Asn	Lys	Glu		
aaa	ttt	aca	aaa	gat	cat	tta	aga	gaa	tca	cta	gca	tat	ctt	cta	atg	1152	
Lys	Phe 370	Thr	Lys	Asp	His	Leu 375	Arg	Glu	Ser	Leu	Ala 380	Tyr	Leu	Leu	Met		
act	tta	cgt	agt	aga	gaa	aaa	gat	aga	tat	gct	gca	ttt	aca	aca	att	1200	
Thr 385	Leu	Arg	Ser	Arg	Glu 390	Lys	Asp	Arg	Tyr	Ala 395	Ala	Phe	Thr	Thr	Ile 400		
gga	ttt	ata	gca	gtt	gca	gta	gaa	gat	tcg	ata	aat	cct	tat	ctt	tca	1248	
Gly	Phe	Ile	Ala	Val 405	Ala	Val	Glu	Asp	Ser 410	Ile	Asn	Pro	Tyr	Leu	Ser		
aaa	att	atg	gaa	atg	atc	aaa	agt	tta	tta	cct	tct	aag	gaa	aca	tct	1296	
Lys	Ile	Met	Glu 420	Met	Ile	Lys	Ser	Leu 425	Leu	Pro	Ser	Lys	Glu 430	Thr	Ser		
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Thr	Lys	Lys 435	Arg	Gly	Ala	Ser	Leu 440	Glu	Pro	Ala	Val	Phe 445	Ile	Cys	Ile		
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Thr	Leu	Leu	Gly	His	Ala	Val 455	Lys	Gln	Val	Ile	Ala 460	Ala	Asp	Val	Arg		
gat	ttg	tta	gaa	tct	atg	tta	cag	act	gga	tta	agt	cct	att	ctt	aca	1440	
Asp 465	Leu	Leu	Glu	Ser	Met 470	Leu	Gln	Thr	Gly	Leu 475	Ser	Pro	Ile	Leu	Thr 480		
act	tct	ctc	aga	gaa	cta	gct	cat	agt	gtt	cca	tca	tta	aaa	cct	gat	1488	
Thr	Ser	Leu	Arg	Glu 485	Leu	Ala	His	Ser	Val 490	Pro	Ser	Leu	Lys	Pro	Asp 495		
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Ile	Ser	Gln 500	Gly	Leu	Leu	Arg	Met	Leu 505	Ser	Gln	Val	Leu	Met 510	Gln	Lys		
ccc	tta	aga	cat	cct	ggt	gca	cca	tgg	act	gca	act	agt	cct	ata	tct	1584	
Pro	Leu	Arg 515	His	Pro	Gly	Ala	Pro 520	Trp	Thr	Ala	Thr	Ser 525	Pro	Ile	Ser		
ggt	cct	cca	act	gaa	gtg	gat	att	cca	tct	aca	gtt	tta	gct	tta	aaa	1632	
Gly	Pro 530	Pro	Thr	Glu	Val 535	Asp	Ile	Pro	Ser	Thr	Val 540	Leu	Ala	Leu	Lys		
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Thr 545	Leu	Gly	Thr	Phe	Asn 550	Phe	Asp	Gly	Asn	Pro 555	Leu	Leu	Gln	Phe	Val 560		
agg	cga	tgt	gct	gat	cat	ttt	ctt	aca	tct	gaa	caa	gca	gaa	gtt	cga	1728	
Arg	Arg	Cys	Ala	Asp 565	His	Phe	Leu	Thr	Ser 570	Glu	Gln	Ala	Glu	Val 575	Arg		
tta	gag	gct	gta	aga	aca	tgt	tca	aga	tta	cga	tta	gca	tta	aat		1776	
Leu	Glu	Ala	Val 580	Arg	Thr	Cys	Ser	Arg 585	Leu	Leu	Arg	Leu	Ala 590	Leu	Asn		
caa	cct	gga	cct	aca	gtg	act	aat	act	gtc	tct	act	gtt	ctc	gga	aaa	1824	
Gln	Pro	Gly 595	Pro	Thr	Val	Thr	Asn 600	Thr	Val	Ser	Thr	Val 605	Leu	Gly	Lys		
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## PhoenixTemp32470.tmp.txt

Leu	Leu	Val	Val	Gly	Ile	Thr	Asp	Thr	Asp	Pro	Asp	Val	Arg	Leu	Trp	
610	610					615					620					
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Val	Leu	Ala	Ser	Leu	Asp	Asp	Ser	Phe	Asp	Ile	His	Leu	Ala	Gln	Ala	
625					630					635						
gaa	aat	ctt	tct	gca	tta	ttt	att	gca	atg	aat	gat	gaa	atg	ttt	gaa	1968
Glu	Asn	Leu	Ser	Ala	Leu	Phe	Ile	Ala	Met	Asn	Asp	Glu	Met	Phe	Glu	
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ata	aga	gaa	tta	gca	att	cgc	aca	atc	gga	cga	tta	agc	aca	atg	aat	2016
Ile	Arg	Glu	Leu	Ala	Ile	Arg	Thr	Ile	Gly	Arg	Leu	Ser	Thr	Met	Asn	
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cca	gca	tat	gtt	atg	cct	tct	tta	cgt	aaa	aca	ctt	ata	caa	ttt	tta	2064
Pro	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Leu	Ile	Gln	Phe	Leu	
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Thr	Glu	Leu	Glu	His	Ser	Gly	Met	Gly	Arg	Asn	Lys	Glu	Gln	Ala	Ala	
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cga	atg	ttg	gat	cat	tta	gta	gtc	agt	gca	cct	aga	ctt	att	cga	cca	2160
Arg	Met	Leu	Asp	His	Leu	Val	Val	Ser	Ala	Pro	Arg	Leu	Ile	Arg	Pro	
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tat	atg	gaa	ccc	att	cta	aaa	gtt	ctt	gtt	cca	aaa	tta	aag	gag	cct	2208
Tyr	Met	Glu	Pro	Ile	Leu	Lys	Val	Leu	Val	Pro	Lys	Leu	Lys	Glu	Pro	
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gaa	tca	aat	cct	ggt	gta	att	tta	gct	ata	tta	cgc	gct	att	ggt	gat	2256
Glu	Ser	Asn	Pro	Gly	Val	Ile	Leu	Ala	Ile	Leu	Arg	Ala	Ile	Gly	Asp	
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Leu	Ala	Glu	Val	Asn	Gly	Ala	Glu	Met	Gln	Gln	Trp	Met	Pro	Glu	Leu	
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Leu	Ser	Ile	Leu	Leu	Glu	Met	Leu	Val	Asp	Ala	Ser	Ser	Pro	Glu	Lys	
	770				775						780					
aga	gga	gtt	gct	tta	tgg	gtt	ctt	gga	caa	cta	gtg	gga	agt	aca	gga	2400
Arg	Gly	Val	Ala	Leu	Trp	Val	Leu	Gly	Gln	Leu	Val	Gly	Ser	Thr	Gly	
785					790				795						800	
cat	gtt	gtt	aag	cca	tat	atg	caa	tat	cct	tca	tta	cta	gat	gta	ttg	2448
His	Val	Val	Lys	Pro	Tyr	Met	Gln	Tyr	Pro	Ser	Leu	Leu	Asp	Val	Leu	
				805					810					815		
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Ile	Asn	Phe	Leu	Lys	Thr	Glu	Gln	Gln	Leu	Ile	Ile	Arg	Arg	Glu	Thr	
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Ile	Arg	Val	Leu	Gly	Leu	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	Lys	
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Met	Asn	Leu	Gly	Gln	Ile	Asp	Ser	Gln	Leu	Asp	Thr	Leu	Thr	Ser	Met	
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gct	gat	act	aaa	agt	gaa	gct	gaa	aat	aca	caa	gat	tta	act	act	agt	2640
Ala	Asp	Thr	Lys	Ser	Glu	Ala	Glu	Asn	Thr	Gln	Asp	Leu	Thr	Thr	Ser	
865					870				875						880	
gaa	atg	ttg	gtc	aat	atg	tcc	tct	tca	act	tta	gaa	gaa	tat	tat	cca	2688
Glu	Met	Leu	Val	Asn	Met	Ser	Ser	Ser	Thr	Leu	Glu	Glu	Tyr	Tyr	Pro	
				885					890					895		
gcc	att	gct	att	gca	act	ctt	atg	aga	att	att	cgt	gat	cca	aca	tta	2736
Ala	Ile	Ala	Ile	Ala	Thr	Leu	Met	Arg	Ile	Ile	Arg	Asp	Pro	Thr	Leu	
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Ser	Gln	His	His	Thr	Met	Val	Val	Gln	Ala	Val	Thr	Phe	Ile	Phe	Lys	
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agt	tta	gga	att	aaa	tgt	gtt	cca	tat	att	tct	caa	gtg	atg	cca	agt	2832
Ser	Leu	Gly	Ile	Lys	Cys	Val	Pro	Tyr	Ile	Ser	Gln	Val	Met	Pro	Ser	
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ttt	ctt	aat	gta	gtt	cgt	aca	gca	gat	gtt	aat	ttt	cgt	gaa	tat	cta	2880
Phe	Leu	Asn	Val	Val	Arg	Thr	Ala	Asp	Val	Asn	Phe	Arg	Glu	Tyr	Leu	
945					950					955					960	
ttt	caa	caa	ttg	gct	att	ctt	att	gcc	att	gtg	aag	cag	cat	att	aga	2928
Phe	Gln	Gln	Leu	Ala	Ile	Leu	Ile	Ala	Ile	Val	Lys	Gln	His	Ile	Arg	
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aac	tat	ttg	gat	gat	ata	ttt	aat	tta	att	aaa	gaa	ttt	tgg	aca	gtg	2976



## PhoenixTemp32470.tmp.txt

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Asn	Ser	Pro	Leu	Gln	Ser	Thr	Leu	Ile	Leu	Leu	Val	Glu	His	Ile	Ala		
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att	gct	ttg	ggt	gca	gag	ttt	aag	att	tat	tta	cca	cag	tta	atg	cca	3072	
Ile	Ala	Leu	Gly	Ala	Glu	Phe	Lys	Ile	Tyr	Leu	Pro	Gln	Leu	Met	Pro		
	1010					1015					1020						
caa	ata	tta	aga	ggt	tta	aca	cat	gac	aca	agt	aaa	gat	aaa	tca	gtc	3120	
Gln	Ile	Leu	Arg	Val	Leu	Thr	His	Asp	Thr	Ser	Lys	Asp	Lys	Ser	Val		
1025				1030				1035						1040			
aca	gtc	aaa	ctt	ctt	caa	gca	ctt	caa	aaa	ttt	gga	aat	aat	ctg	gat	3168	
Thr	Val	Lys	Leu	Gln	Ala	Leu	Gln	Lys	Phe	Gly	Asn	Asn	Leu	Asp			
			1045				1050						1055				
aat	tat	ctt	cat	tta	ggt	tta	cca	cca	att	gta	aaa	tta	ttt	cat	gct	3216	
Asn	Tyr	Leu	His	Leu	Val	Leu	Pro	Pro	Ile	Val	Lys	Leu	Phe	His	Ala		
			1060				1065						1070				
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Thr	Asp	Cys	Pro	Ile	Thr	Val	Asn	Lys	Val	Ala	Leu	Glu	Thr	Val	Asp		
		1075					1080					1085					
cat	tta	gca	gat	aca	tta	gat	ttt	aca	gat	ttt	gca	tcc	aga	att	gtg	3312	
His	Leu	Ala	Asp	Thr	Leu	Asp	Phe	Thr	Asp	Phe	Ala	Ser	Arg	Ile	Val		
	1090				1095					1100							
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His	Pro	Leu	Val	Arg	Thr	Leu	Asp	Gln	Cys	Pro	Glu	Leu	Arg	Asn	Thr		
	1105			1110				1115						1120			
gca	atg	gat	aca	cta	tgt	gca	ttg	gtg	ata	caa	tta	gga	aaa	aaa	tat	3408	
Ala	Met	Asp	Thr	Leu	Cys	Ala	Leu	Val	Ile	Gln	Leu	Gly	Lys	Lys	Tyr		
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caa	atc	ttt	att	tta	cta	gta	caa	aaa	att	atg	acg	aaa	cat	aaa	att	3456	
Gln	Ile	Phe	Ile	Leu	Leu	Val	Gln	Lys	Ile	Met	Thr	Lys	His	Lys	Ile		
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ggt	aat	tca	cgt	tat	gaa	ggt	tta	att	gat	aaa	att	ttg	aca	gaa	aca	3504	
Val	Asn	Ser	Arg	Tyr	Glu	Val	Leu	Ile	Asp	Lys	Ile	Leu	Thr	Glu	Thr		
	1155					1160						1165					
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Thr	Val	Ala	Asp	Gly	Glu	Asp	Tyr	Leu	Leu	Met	Arg	His	Arg	His	Ser		
	1170			1175				1180									
aga	aac	aaa	aat	cgt	gac	tta	tcg	tta	aca	tca	tct	gat	aca	act	acg	3600	
Arg	Asn	Lys	Asn	Arg	Leu	Ser	Leu	Thr	Ser	Ser	Ser	Asp	Thr	Thr	Thr		
	1185			1190				1195						1200			
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Ile	Lys	Arg	Leu	His	Val	Ser	Ala	Ser	Asn	Leu	Gln	Lys	Ala	Trp	Thr		
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Ala	Thr	Arg	Arg	Val	Ser	Lys	Asp	Asp	Trp	Leu	Glu	Trp	Leu	Arg	Ser		
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Leu	Ser	Ile	Gly	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Ser		
	1235			1240				1245									
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Cys	Trp	Ala	Leu	Ala	Gln	Thr	Tyr	Ser	Lys	Leu	Pro	Arg	Asp	Leu	Phe		
	1250			1255				1260									
aat	gca	gct	ttc	ggt	tct	tgt	tggt	acc	gaa	ttg	gac	gat	act	tat	aag	3840	
Asn	Ala	Ala	Phe	Val	Ser	Cys	Trp	Thr	Glu	Leu	Asp	Asp	Thr	Tyr	Lys		
	1265			1270				1275						1280			
gcg	gaa	ctt	ata	caa	acc	tta	caa	caa	gca	tta	atg	ggt	cct	gat	ctt	3888	
Ala	Glu	Leu	Ile	Gln	Thr	Leu	Gln	Gln	Ala	Leu	Met	Val	Pro	Asp	Leu		
			1285				1290						1295				
cca	gag	ata	aca	caa	aca	atc	tta	aat	tta	gcg	gaa	ttt	atg	gaa	cat	3936	
Pro	Glu	Ile	Thr	Gln	Thr	Ile	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His		
		1300					1305						1310				
tgt	gac	aaa	gga	cca	tta	cct	tta	gac	aat	aaa	att	tta	ggt	gaa	aga	3984	
Cys	Asp	Lys	Gly	Pro	Leu	Pro	Leu	Asp	Asn	Lys	Ile	Leu	Gly	Glu	Arg		
	1315			1320				1325									
gca	atg	cat	tgt	aga	gct	tat	gca	aaa	gca	tta	cat	tat	aaa	gaa	gat	4032	
Ala	Met	His	Cys	Arg	Ala	Tyr	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Asp		
	1330			1335				1340									
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Glu	Phe	His	Lys	Ser	Arg	Asn	Ser	Asn	Val	Phe	Glu	Ser	Leu	Ile	Ser		
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Ile	Asn	Asn	Lys	Leu	Gln	Gln	Lys	Glu	Ala	Ala	Glu	Gly	Leu	Leu	Glu		
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Tyr	Val	Met	Asn	Gln	Asn	Asn	Gln	Gln	Asp	Leu	Lys	Val	Gln	Val	Arg		
			1380				1385					1390					
tgg	tac	gaa	aaa	cta	cat	aat	tgg	gat	aaa	gct	tta	caa	tta	tat	aga		4224
Trp	Tyr	Glu	Lys	Leu	His	Asn	Trp	Asp	Lys	Ala	Leu	Gln	Leu	Tyr	Arg		
		1395				1400			1405								
gaa	aga	cta	gaa	agc	gat	tct	aca	gat	gta	gag	tcg	act	tta	ggg	gaa		4272
Glu	Arg	Leu	Glu	Ser	Asp	Ser	Thr	Asp	Val	Glu	Ser	Thr	Leu	Gly	Glu		
	1410				1415				1420								
atg	cgt	tgt	ttg	gaa	gcc	ctt	gga	gaa	tgg	gga	caa	ttg	cac	gat	ggt		4320
Met	Arg	Cys	Leu	Glu	Ala	Leu	Gly	Glu	Trp	Gly	Gln	Leu	His	Asp	Val		
1425				1430			1435							1440			
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Ala	Thr	Lys	Gln	Trp	Ser	His	Gln	Asn	Asp	Glu	Thr	Lys	Gln	Arg	Met		
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gct	aga	atg	gca	gca	gct	gca	gca	tgg	ggg	tta	aat	caa	tgg	gaa	agt		4416
Ala	Arg	Met	Ala	Ala	Ala	Ala	Ala	Trp	Gly	Leu	Asn	Gln	Trp	Glu	Ser		
		1460				1465			1470								
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Met	Glu	Lys	Tyr	Val	Ser	Leu	Ile	Pro	Lys	Asp	Thr	Gln	Asp	Gly	Ala		
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Phe	Tyr	Arg	Ala	Val	Leu	Ala	Ile	His	Asp	Glu	Gln	Tyr	Asn	Ile	Ala		
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His	Gln	Leu	Ile	Asp	Ser	Ala	Arg	Asp	Leu	Leu	Asp	Thr	Glu	Leu	Thr		
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Ala	Met	Ala	Gly	Glu	Ser	Tyr	Gln	Arg	Ala	Tyr	Asn	Ala	Met	Val	Glu		
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Val	Gln	Lys	Leu	Ala	Glu	Leu	Glu	Glu	Val	Ile	Gln	Phe	Lys	Leu	Val		
		1540				1545			1550								
cca	gaa	aga	aga	tcc	act	att	aaa	tcc	atg	tgg	tgg	gaa	agg	ctt	caa		4704
Pro	Glu	Arg	Arg	Ser	Thr	Ile	Lys	Ser	Met	Trp	Trp	Glu	Arg	Leu	Gln		
	1555					1560			1565								
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Gly	Gly	Gln	Arg	Ile	Val	Glu	Asp	Trp	Gln	Lys	Ile	Ile	Gln	Val	His		
	1570				1575				1580								
aca	ttg	gtg	gtt	tca	cct	caa	gat	gat	atg	tat	aca	tgg	ttg	aaa	tat		4800
Thr	Leu	Val	Val	Ser	Pro	Gln	Asp	Asp	Met	Tyr	Thr	Trp	Leu	Lys	Tyr		
1585				1590					1595					1600			
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Ala	Ser	Leu	Cys	Arg	Lys	Ser	Gly	Ser	Leu	Met	Leu	Cys	His	Lys	Thr		
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Leu	Val	Met	Leu	Gly	Thr	Asp	Pro	Ser	Leu	Thr	Pro	Asp	Gln	Ala			
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Leu	Pro	Thr	Thr	His	Pro	Gln	Val	Thr	Phe	Ala	Tyr	Cys	Lys	His	Met		
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Trp	Val	Ala	Asn	Lys	Arg	Glu	Glu	Ala	Tyr	Asn	Gln	Leu	Gln	Arg	Phe		
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Val	Gln	Met	Ser	Leu	Gln	Pro	Thr	Thr	Leu	Ser	Val	Val	Asn	Gln	Glu		
	1665			1670					1675				1680				
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Asp	Glu	Lys	Gln	Gln	Glu	Ile	Arg	Lys	Arg	Leu	Leu	Ala	Arg	Cys	Tyr		
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Leu	Lys	Leu	Gly	Glu	Trp	Leu	Glu	Ala	Leu	Gln	Gly	Ile	Asn	Glu	His		
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Ser	Ile	Pro	Ala	Val	Leu	Ser	Tyr	Tyr	Ala	Ala	Ala	Thr	Glu	His	Asp		
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Ser	Thr	Trp	Tyr	Lys	Ala	Trp	His	Ala	Phe	Ala	Tyr	Thr	Asn	Phe	Glu		
1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	
aca	gtt	tta	ttt	tat	aaa	cat	cag	caa	ggt	gac	tca	aat	act	gag	aat		5280
Thr	Val	Leu	Phe	Tyr	Lys	His	Gln	Gln	Gly	Asp	Ser	Asn	Thr	Glu	Asn		
1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745	
att	cca	gga	aat	ggg	act	cat	aat	aat	ctt	tct	agt	tca	cag	tat	ata		5328
Ile	Pro	Gly	Asn	Gly	Thr	His	Asn	Asn	Leu	Ser	Ser	Ser	Gln	Tyr	Ile		
1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	
tct	caa	ttt	act	gta	cca	gca	gtt	gaa	gga	ttt	ttt	aga	tct	att	aat		5376
Ser	Gln	Phe	Thr	Val	Pro	Ala	Val	Glu	Gly	Phe	Phe	Arg	Ser	Ile	Asn		
1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	
ctt	tct	cat	ggt	aat	tct	ttg	caa	gat	aca	ctt	cgt	tta	ttg	acc	tta		5424
Leu	Ser	His	Gly	Asn	Ser	Leu	Gln	Asp	Thr	Leu	Arg	Leu	Leu	Thr	Leu		
1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	
tgg	ttt	gat	tat	ggt	caa	tgg	cca	gag	gta	tat	gaa	gct	att	gtc	gaa		5472
Trp	Phe	Asp	Tyr	Gly	Gln	Pro	Glu	Val	Tyr	Glu	Ala	Ile	Val	Glu			
1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	
ggt	atc	cgt	tta	att	gaa	atc	aat	act	tgg	cta	caa	gta	att	ccg	caa		5520
Gly	Ile	Arg	Leu	Ile	Glu	Ile	Asn	Thr	Trp	Leu	Gln	Val	Ile	Pro	Gln		
1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	1825	
ctt	ata	gca	aga	ata	gac	aca	ccc	cga	gct	tta	ggt	ggt	cga	tgc	ata		5568
Leu	Ile	Ala	Arg	Ile	Asp	Thr	Pro	Arg	Ala	Leu	Val	Gly	Arg	Cys	Ile		
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cat	cat	ctt	cta	ata	gat	att	gga	aaa	acg	cat	cca	caa	gct	ttg	gtt		5616
His	His	Leu	Leu	Ile	Asp	Ile	Gly	Lys	Thr	His	Pro	Gln	Ala	Leu	Val		
1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	1860	
tat	cct	ttg	act	gta	gcg	tcg	aaa	agc	gct	agt	cat	gct	aga	aag	act		5664
Tyr	Pro	Leu	Thr	Val	Ala	Ser	Lys	Ser	Ala	Ser	His	Ala	Arg	Lys	Thr		
1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	1875	
gcc	gcc	aat	aaa	att	ctt	aaa	aat	atg	tgt	gaa	cat	agt	ccg	aca	tta		5712
Ala	Ala	Asn	Lys	Ile	Leu	Lys	Asn	Met	Cys	Glu	His	Ser	Pro	Thr	Leu		
1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	1890	
gta	caa	caa	gca	atg	atg	gct	agc	gat	gaa	tta	att	aga	ggt	gca	att		5760
Val	Gln	Gln	Ala	Met	Met	Ala	Ser	Asp	Glu	Leu	Ile	Arg	Val	Ala	Ile		
1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	1905	
ctt	tgg	cat	gaa	tta	tgg	cat	gaa	gga	tta	gaa	gaa	gct	agc	aga	tta		5808
Leu	Trp	His	Glu	Leu	Trp	His	Glu	Gly	Glu	Glu	Glu	Ala	Ser	Arg	Leu		
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tac	ttc	ggc	gaa	aga	aat	gtt	cga	gga	atg	ttt	gat	aca	ttg	gaa	cct		5856
Tyr	Phe	Gly	Glu	Arg	Asn	Val	Arg	Gly	Met	Phe	Asp	Thr	Leu	Glu	Pro		
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tta	cat	gca	atg	tta	gaa	aga	ggt	cca	cag	act	ttg	aaa	gaa	acg	tcc		5904
Leu	His	Ala	Met	Leu	Glu	Arg	Gly	Pro	Gln	Thr	Leu	Lys	Glu	Thr	Ser		
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Phe	Asn	Gln	Ala	Tyr	Gly	Arg	Asp	Leu	Met	Glu	Ala	Gln	Glu	Trp	Cys		
1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	
cgc	aga	tat	aaa	gct	tca	cgc	aat	gtt	cga	gat	tta	aat	caa	gct	tgg		6000
Arg	Arg	Tyr	Lys	Ala	Ser	Arg	Asn	Val	Arg	Asp	Leu	Asn	Gln	Ala	Trp		
1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	
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Asp	Leu	Tyr	Tyr	His	Val	Phe	Arg	Arg	Ile	Ser	Arg	Gln	Leu	Pro	Gln		
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tta	act	agt	tta	gaa	ctt	caa	tat	gtt	agt	cct	aaa	tta	ctt	ctt	tgt		6096
Leu	Thr	Ser	Leu	Glu	Leu	Gln	Tyr	Val	Ser	Pro	Lys	Leu	Leu	Leu	Cys		
2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	
agg	gat	tta	gaa	ctg	gct	gta	ccg	gga	agt	tat	agt	ccg	gga	cag	cca		6144
Arg	Asp	Leu	Glu	Leu	Ala	Val	Pro	Gly	Ser	Tyr	Ser	Pro	Gly	Gln	Pro		
2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	2035	
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Ile	Val	Arg	Ile	Ala	Ser	Ile	His	Ser	Ser	Met	Gln	Val	Ile	Thr	Ser		
2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	
aaa	cag	cga	ccg	cga	aaa	tta	tgt	ata	aaa	ggt	agt	aat	ggt	aaa	gat		6240
Lys	Gln	Arg	Pro	Arg	Lys	Leu	Cys	Ile	Lys	Gly	Ser	Asn	Gly	Lys	Asp		
2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	2065	
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2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	2080	

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Tyr	Met	Phe	Leu	Leu	Lys	Gly	His	Glu	Asp	Leu	Arg	Gln	Asp	Glu	Arg	
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Val	Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu	Leu	His	Asp	Pro	
			2100					2105					2110			
gat	aca	ttt	aga	aga	aat	ctt	act	att	caa	agg	tat	gcg	gta	att	cca	6384
Asp	Thr	Phe	Arg	Arg	Asn	Leu	Thr	Ile	Gln	Arg	Tyr	Ala	Val	Ile	Pro	
		2115					2120					2125				
cta	tcc	aca	aat	agt	ggt	tta	att	ggt	tgg	gta	ccg	cat	tgt	gat	aca	6432
Leu	Ser	Thr	Asn	Ser	Gly	Leu	Ile	Gly	Trp	Val	Pro	His	Cys	Asp	Thr	
	2130				2135					2140						
tta	cat	aca	ctt	atc	aga	gat	tat	aga	gaa	aaa	aaa	aaa	ata	cta	tta	6480
Leu	His	Thr	Leu	Ile	Arg	Asp	Tyr	Arg	Glu	Lys	Lys	Lys	Ile	Leu	Leu	
2145				2150					2155					2160		
aat	ata	gaa	cat	aaa	ata	atg	cta	aga	atg	gcc	cca	ggt	tat	gat	cat	6528
Asn	Ile	Glu	His	Lys	Ile	Met	Leu	Arg	Met	Ala	Pro	Gly	Tyr	Asp	His	
			2165					2170					2175			
ctt	atg	ctt	atg	caa	aaa	gtt	gaa	gta	ttt	gaa	cat	gct	ctt	gag	cat	6576
Leu	Met	Leu	Met	Gln	Lys	Val	Glu	Val	Phe	Glu	His	Ala	Leu	Glu	His	
		2180					2185					2190				
aca	tat	ggt	gat	gat	tta	tcg	cga	ctt	ctt	tgg	tta	aaa	tca	cca	tca	6624
Thr	Tyr	Gly	Asp	Asp	Leu	Ser	Arg	Leu	Leu	Trp	Leu	Lys	Ser	Pro	Ser	
	2195					2200					2205					
agc	gaa	gta	tgg	ttt	gat	cgt	agg	aca	aat	tat	aca	cgt	tct	ctt	gct	6672
Ser	Glu	Val	Trp	Phe	Asp	Arg	Arg	Thr	Asn	Tyr	Thr	Arg	Ser	Leu	Ala	
	2210				2215				2220							
gta	atg	tct	atg	gtg	ggc	tat	atc	ctt	ggt	ctt	ggt	gat	cga	cat	cca	6720
Val	Met	Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	
2225				2230					2235					2240		
tct	aat	ttg	atg	ttg	gat	cgt	tta	agc	ggg	aaa	ata	ttg	cat	atc	gat	6768
Ser	Asn	Leu	Met	Leu	Asp	Arg	Leu	Ser	Gly	Lys	Ile	Leu	His	Ile	Asp	
		2245						2250					2255			
ttt	gga	gat	tgt	ttt	gaa	gtg	gcc	atg	act	cga	gag	aaa	ttt	cct	gag	6816
Phe	Gly	Asp	Cys	Phe	Glu	Val	Ala	Met	Thr	Arg	Glu	Lys	Phe	Pro	Glu	
		2260					2265					2270				
aaa	atc	cca	ttt	cga	tta	aca	aga	atg	tta	atc	aat	gcg	atg	gaa	gta	6864
Lys	Ile	Pro	Phe	Arg	Leu	Thr	Arg	Met	Leu	Ile	Asn	Ala	Met	Glu	Val	
	2275				2280						2285					
acg	gga	atc	gag	ggc	aca	tat	aga	aga	act	tgt	gaa	tct	gta	atg	tca	6912
Thr	Gly	Ile	Glu	Gly	Thr	Tyr	Arg	Arg	Thr	Cys	Glu	Ser	Val	Met	Ser	
	2290				2295					2300						
gtg	tta	cat	cgt	aat	aag	gat	agt	tta	atg	gca	gta	tta	gaa	gca	ttt	6960
Val	Leu	His	Arg	Asn	Lys	Asp	Ser	Leu	Met	Ala	Val	Leu	Glu	Ala	Phe	
2305				2310					2315					2320		
gta	tac	gat	cct	cta	tta	aat	tgg	cga	tta	atg	gac	aat	gct	gca	tta	7008
Val	Tyr	Asp	Pro	Leu	Leu	Asn	Trp	Arg	Leu	Met	Asp	Asn	Ala	Ala	Leu	
			2325					2330					2335			
aaa	ggt	aaa	aga	tct	gat	gct	cag	gga	atg	agt	gct	agc	agt	aat	caa	7056
Lys	Gly	Lys	Arg	Ser	Asp	Ala	Gln	Gly	Met	Ser	Ala	Ser	Ser	Asn	Gln	
		2340				2345					2350					
gag	cag	agc	gat	gca	tta	gat	tct	ctt	act	gcc	aca	tta	cca	aag	aaa	7104
Glu	Gln	Ser	Asp	Ala	Leu	Asp	Ser	Leu	Thr	Ala	Thr	Leu	Pro	Lys	Lys	
	2355					2360					2365					
gga	gta	cca	tgt	agt	gtt	gaa	aat	gga	ggt	gat	act	aat	caa	cca	gag	7152
Gly	Val	Pro	Cys	Ser	Val	Glu	Asn	Gly	Gly	Asp	Thr	Asn	Gln	Pro	Glu	
	2370				2375					2380						
gca	tta	aat	aaa	aaa	gcc	ctt	gct	att	att	aca	aga	gta	agg	gat	aaa	7200
Ala	Leu	Asn	Lys	Lys	Ala	Leu	Ala	Ile	Ile	Thr	Arg	Val	Arg	Asp	Lys	
2385				2390					2395					2400		
tta	acg	gga	cgt	gat	ttc	tct	cat	gaa	gaa	aca	ttg	agt	ggt	caa	cgt	7248
Leu	Thr	Gly	Arg	Asp	Phe	Ser	His	Glu	Glu	Thr	Leu	Ser	Val	Gln	Arg	
			2405					2410					2415			
caa	gtt	gat	ctt	tta	att	caa	caa	gct	acc	aat	aat	gag	aat	tta	tgt	7296
Gln	Val	Asp	Leu	Leu	Ile	Gln	Gln	Ala	Thr	Asn	Asn	Glu	Asn	Leu	Cys	
		2420						2425					2430			
caa	tgt	tat	att	gga	tgg	tgt	ccc	ttt	tgg	taa						7329
Gln	Cys	Tyr	Ile	Gly	Trp	Cys	Pro	Phe	Trp							
		2435					2440									

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 <211> 2442  
 <212> PRT  
 <213> Apis mellifera

<400> 2537  
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 Asn Glu Glu Ile Arg Asn Lys Ala Ala Arg Asp Leu Cys Leu Tyr Val  
 20 25 30  
 Lys Thr Glu Leu Arg Glu Val Ser Gln Glu Glu Ile Thr Ala Phe Met  
 35 40 45  
 Asp Glu Phe Asn His His Ile Phe Glu Met Val Ser Gly Ser Asp Val  
 50 55 60  
 Asn Glu Lys Lys Gly Gly Ile Leu Ala Ile Val Cys Leu Ile Gly Ala  
 65 70 75 80  
 Asp Val Gly Asn Ile Asn Thr Arg Thr Ile Arg Phe Ala Asn Tyr Leu  
 85 90 95  
 Arg Asn Leu Leu Pro Ser Asn Asp Val Gly Val Met Glu Leu Ala Ala  
 100 105 110  
 Lys Thr Val Gly Lys Leu Ala Leu Val Ser Gly Thr Tyr Thr Ala Glu  
 115 120 125  
 Tyr Val Glu Phe Glu Val Lys Arg Ala Phe Glu Trp Leu Gly Gly Asp  
 130 135 140  
 Arg His Glu Gly Lys Arg His Ala Ala Val Leu Val Leu Arg Glu Leu  
 145 150 155 160  
 Ala Val Ser Met Pro Thr Tyr Phe Phe Gln Gln Val Thr Pro Phe Phe  
 165 170 175  
 Glu Leu Ile Phe Asn Ala Ile Arg Asp Pro Lys Pro Val Ile Arg Glu  
 180 185 190  
 Gly Ala Val Glu Ala Leu Arg Ala Ala Leu Val Val Thr Ala Gln Arg  
 195 200 205  
 Glu Thr Ala Lys Gln Met His Lys Ser Gln Trp Tyr Lys Gln Cys Tyr  
 210 215 220  
 Asp Glu Ile Val Thr Gly Phe Glu Glu Ile Tyr Thr Arg Glu Arg Gly  
 225 230 235 240  
 Val Asn Arg Asp Asp Arg Ile His Gly Ser Leu Leu Ile Leu Asn Glu  
 245 250 255  
 Leu Leu Arg Cys Ser Asn Ile Gln Trp Glu Lys Asn Tyr Glu Ala Leu  
 260 265 270  
 Met Glu Arg Leu Asn Cys Ser Thr Gln Gln Asn Glu Asn Asp Ile Leu  
 275 280 285  
 Ser Leu Met Pro Arg Leu Lys Thr Thr Ile Val Ser Lys Trp Ser Asn  
 290 295 300  
 Ser Ser Gln Asn Ser Thr Asn Ser Gln Gln Thr Leu Tyr Pro Ser His  
 305 310 315 320  
 Glu Ser Ala Val Cys Arg Cys Leu Met Gln Glu Arg Leu Asp Asp Ile  
 325 330 335  
 Tyr Asn Asp Val Met Asn Gln Arg Ile Ser Arg Asn Pro His Ile Gln  
 340 345 350  
 His Ala Leu Met Ile Leu Leu Pro Arg Leu Ala Ala Phe Asn Lys Glu  
 355 360 365  
 Lys Phe Thr Lys Asp His Leu Arg Glu Ser Leu Ala Tyr Leu Leu Met  
 370 375 380  
 Thr Leu Arg Ser Arg Glu Lys Asp Arg Tyr Ala Ala Phe Thr Thr Ile  
 385 390 395 400  
 Gly Phe Ile Ala Val Ala Val Glu Asp Ser Ile Asn Pro Tyr Leu Ser  
 405 410 415  
 Lys Ile Met Glu Met Ile Lys Ser Leu Leu Pro Ser Lys Glu Thr Ser  
 420 425 430  
 Thr Lys Lys Arg Gly Ala Ser Leu Glu Pro Ala Val Phe Ile Cys Ile  
 435 440 445  
 Thr Leu Leu Gly His Ala Val Lys Gln Val Ile Ala Ala Asp Val Arg  
 450 455 460  
 Asp Leu Leu Glu Ser Met Leu Gln Thr Gly Leu Ser Pro Ile Leu Thr  
 465 470 475 480  
 Thr Ser Leu Arg Glu Leu Ala His Ser Val Pro Ser Leu Lys Pro Asp  
 485 490 495  
 Ile Ser Gln Gly Leu Leu Arg Met Leu Ser Gln Val Leu Met Gln Lys

## PhoenixTemp32470.tmp.txt

Pro	Leu	Arg	His	Pro	Gly	Ala	Pro	Trp	Thr	Ala	Thr	Ser	Pro	Ile	Ser
Gly	Pro	Pro	Thr	Glu	Val	Asp	Ile	Pro	Ser	Thr	Val	Leu	Ala	Leu	Lys
Thr	Leu	Gly	Thr	Phe	Asn	Phe	Asp	Gly	Asn	Pro	Leu	Leu	Gln	Phe	Val
Arg	Arg	Cys	Ala	Asp	His	Phe	Leu	Thr	Ser	Glu	Gln	Ala	Glu	Val	Arg
Leu	Glu	Ala	Val	Arg	Thr	Cys	Ser	Arg	Leu	Leu	Arg	Leu	Ala	Leu	Asn
Gln	Pro	Gly	Pro	Thr	Val	Thr	Asn	Thr	Val	Ser	Thr	Val	Leu	Gly	Lys
Leu	Leu	Val	Val	Gly	Ile	Thr	Asp	Thr	Asp	Pro	Asp	Val	Arg	Leu	Trp
Val	Leu	Ala	Ser	Leu	Asp	Asp	Ser	Phe	Asp	Ile	His	Leu	Ala	Gln	Ala
Glu	Asn	Leu	Ser	Ala	Leu	Phe	Ile	Ala	Met	Asn	Asp	Glu	Met	Phe	Glu
Ile	Arg	Glu	Leu	Ala	Ile	Arg	Thr	Ile	Gly	Arg	Leu	Ser	Thr	Met	Asn
Pro	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Leu	Ile	Gln	Phe	Leu
Thr	Glu	Leu	Glu	His	Ser	Gly	Met	Gly	Arg	Asn	Lys	Glu	Gln	Ala	Ala
Arg	Met	Leu	Asp	His	Leu	Val	Val	Ser	Ala	Pro	Arg	Leu	Ile	Arg	Pro
Tyr	Met	Glu	Pro	Ile	Leu	Lys	Val	Leu	Val	Pro	Lys	Leu	Lys	Glu	Pro
Glu	Ser	Asn	Pro	Gly	Val	Ile	Leu	Ala	Ile	Leu	Arg	Ala	Ile	Gly	Asp
Leu	Ala	Glu	Val	Asn	Gly	Ala	Glu	Met	Gln	Gln	Trp	Met	Pro	Glu	Leu
Leu	Ser	Ile	Leu	Leu	Glu	Met	Leu	Val	Asp	Ala	Ser	Ser	Pro	Glu	Lys
Arg	Gly	Val	Ala	Leu	Trp	Val	Leu	Gly	Gln	Leu	Val	Gly	Ser	Thr	Gly
His	Val	Val	Lys	Pro	Tyr	Met	Gln	Tyr	Pro	Ser	Leu	Leu	Asp	Val	Leu
Ile	Asn	Phe	Leu	Lys	Thr	Glu	Gln	Gln	Leu	Ile	Ile	Arg	Arg	Glu	Thr
Ile	Arg	Val	Leu	Gly	Leu	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	Lys
Met	Asn	Leu	Gly	Gln	Ile	Asp	Ser	Gln	Leu	Asp	Thr	Leu	Thr	Ser	Met
Ala	Asp	Thr	Lys	Ser	Glu	Ala	Glu	Asn	Thr	Gln	Asp	Leu	Thr	Thr	Ser
Glu	Met	Leu	Val	Asn	Met	Ser	Ser	Ser	Thr	Leu	Glu	Glu	Tyr	Tyr	Pro
Ala	Ile	Ala	Ile	Ala	Thr	Leu	Met	Arg	Ile	Ile	Arg	Asp	Pro	Thr	Leu
Ser	Gln	His	His	Thr	Met	Val	Val	Gln	Ala	Val	Thr	Phe	Ile	Phe	Lys
Ser	Leu	Gly	Ile	Lys	Cys	Val	Pro	Tyr	Ile	Ser	Gln	Val	Met	Pro	Ser
Phe	Leu	Asn	Val	Val	Arg	Thr	Ala	Asp	Val	Asn	Phe	Arg	Glu	Tyr	Leu
Phe	Gln	Gln	Leu	Ala	Ile	Leu	Ile	Ala	Ile	Val	Lys	Gln	His	Ile	Arg
Asn	Tyr	Leu	Asp	Asp	Ile	Phe	Asn	Leu	Ile	Lys	Glu	Phe	Trp	Thr	Val
Asn	Ser	Pro	Leu	Gln	Ser	Thr	Leu	Ile	Leu	Leu	Val	Glu	His	Ile	Ala
Ile	Ala	Leu	Gly	Ala	Glu	Phe	Lys	Ile	Tyr	Leu	Pro	Gln	Leu	Met	Pro
Gln	Ile	Leu	Arg	Val	Leu	Thr	His	Asp	Thr	Ser	Lys	Asp	Lys	Ser	Val
Thr	Val	Lys	Leu	Leu	Gln	Ala	Leu	Gln	Lys	Phe	Gly	Asn	Asn	Leu	Asp

## PhoenixTemp32470.tmp.txt

Asn Tyr Leu His Leu Val Leu Pro Pro Ile Val Lys Leu Phe His Ala  
 1060 1065 1070  
 Thr Asp Cys Pro Ile Thr Val Asn Lys Val Ala Leu Glu Thr Val Asp  
 1075 1080 1085  
 His Leu Ala Asp Thr Leu Asp Phe Thr Asp Phe Ala Ser Arg Ile Val  
 1090 1095 1100  
 His Pro Leu Val Arg Thr Leu Asp Gln Cys Pro Glu Leu Arg Asn Thr  
 1105 1110 1115 1120  
 Ala Met Asp Thr Leu Cys Ala Leu Val Ile Gln Leu Gly Lys Lys Tyr  
 1125 1130 1135  
 Gln Ile Phe Ile Leu Leu Val Gln Lys Ile Met Thr Lys His Lys Ile  
 1140 1145 1150  
 Val Asn Ser Arg Tyr Glu Val Leu Ile Asp Lys Ile Leu Thr Glu Thr  
 1155 1160 1165  
 Thr Val Ala Asp Gly Glu Asp Tyr Leu Leu Met Arg His Arg His Ser  
 1170 1175 1180  
 Arg Asn Lys Asn Arg Asp Leu Ser Leu Thr Ser Ser Asp Thr Thr Thr  
 1185 1190 1195 1200  
 Ile Lys Arg Leu His Val Ser Ala Ser Asn Leu Gln Lys Ala Trp Thr  
 1205 1210 1215  
 Ala Thr Arg Arg Val Ser Lys Asp Asp Trp Leu Glu Trp Leu Arg Ser  
 1220 1225 1230  
 Leu Ser Ile Gly Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Ser  
 1235 1240 1245  
 Cys Trp Ala Leu Ala Gln Thr Tyr Ser Lys Leu Pro Arg Asp Leu Phe  
 1250 1255 1260  
 Asn Ala Ala Phe Val Ser Cys Trp Thr Glu Leu Asp Asp Thr Tyr Lys  
 1265 1270 1275 1280  
 Ala Glu Leu Ile Gln Thr Leu Gln Gln Ala Leu Met Val Pro Asp Leu  
 1285 1290 1295  
 Pro Glu Ile Thr Gln Thr Ile Leu Asn Leu Ala Glu Phe Met Glu His  
 1300 1305 1310  
 Cys Asp Lys Gly Pro Leu Pro Leu Asp Asn Lys Ile Leu Gly Glu Arg  
 1315 1320 1325  
 Ala Met His Cys Arg Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Asp  
 1330 1335 1340  
 Glu Phe His Lys Ser Arg Asn Ser Asn Val Phe Glu Ser Leu Ile Ser  
 1345 1350 1355 1360  
 Ile Asn Asn Lys Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Glu  
 1365 1370 1375  
 Tyr Val Met Asn Gln Asn Asn Gln Gln Asp Leu Lys Val Gln Val Arg  
 1380 1385 1390  
 Trp Tyr Glu Lys Leu His Asn Trp Asp Lys Ala Leu Gln Leu Tyr Arg  
 1395 1400 1405  
 Glu Arg Leu Glu Ser Asp Ser Thr Asp Val Glu Ser Thr Leu Gly Glu  
 1410 1415 1420  
 Met Arg Cys Leu Glu Ala Leu Gly Glu Trp Gly Gln Leu His Asp Val  
 1425 1430 1435 1440  
 Ala Thr Lys Gln Trp Ser His Gln Asn Asp Glu Thr Lys Gln Arg Met  
 1445 1450 1455  
 Ala Arg Met Ala Ala Ala Ala Trp Gly Leu Asn Gln Trp Glu Ser  
 1460 1465 1470  
 Met Glu Lys Tyr Val Ser Leu Ile Pro Lys Asp Thr Gln Asp Gly Ala  
 1475 1480 1485  
 Phe Tyr Arg Ala Val Leu Ala Ile His Asp Glu Gln Tyr Asn Ile Ala  
 1490 1495 1500  
 His Gln Leu Ile Asp Ser Ala Arg Asp Leu Leu Asp Thr Glu Leu Thr  
 1505 1510 1515 1520  
 Ala Met Ala Gly Glu Ser Tyr Gln Arg Ala Tyr Asn Ala Met Val Glu  
 1525 1530 1535  
 Val Gln Lys Leu Ala Glu Leu Glu Glu Val Ile Gln Phe Lys Leu Val  
 1540 1545 1550  
 Pro Glu Arg Arg Ser Thr Ile Lys Ser Met Trp Trp Glu Arg Leu Gln  
 1555 1560 1565  
 Gly Gly Gln Arg Ile Val Glu Asp Trp Gln Lys Ile Ile Gln Val His  
 1570 1575 1580  
 Thr Leu Val Val Ser Pro Gln Asp Asp Met Tyr Thr Trp Leu Lys Tyr  
 1585 1590 1595 1600  
 Ala Ser Leu Cys Arg Lys Ser Gly Ser Leu Met Leu Cys His Lys Thr

## PhoenixTemp32470.tmp.txt

```

1605      1610      1615
Leu Val Met Leu Gly Thr Asp Pro Ser Leu Thr Pro Asp Gln Ala
1620      1625      1630
Leu Pro Thr Thr His Pro Gln Val Thr Phe Ala Tyr Cys Lys His Met
1635      1640      1645
Trp Val Ala Asn Lys Arg Glu Glu Ala Tyr Asn Gln Leu Gln Arg Phe
1650      1655      1660
Val Gln Met Ser Leu Gln Pro Thr Thr Leu Ser Val Val Asn Gln Glu
1665      1670      1675      1680
Asp Glu Lys Gln Gln Glu Ile Arg Lys Arg Leu Leu Ala Arg Cys Tyr
1685      1690      1695
Leu Lys Leu Gly Glu Trp Leu Glu Ala Leu Gln Gly Ile Asn Glu His
1700      1705      1710
Ser Ile Pro Ala Val Leu Ser Tyr Tyr Ala Ala Ala Thr Glu His Asp
1715      1720      1725
Ser Thr Trp Tyr Lys Ala Trp His Ala Phe Ala Tyr Thr Asn Phe Glu
1730      1735      1740
Thr Val Leu Phe Tyr Lys His Gln Gln Gly Asp Ser Asn Thr Glu Asn
1745      1750      1755      1760
Ile Pro Gly Asn Gly Thr His Asn Asn Leu Ser Ser Ser Gln Tyr Ile
1765      1770      1775
Ser Gln Phe Thr Val Pro Ala Val Glu Gly Phe Phe Arg Ser Ile Asn
1780      1785      1790
Leu Ser His Gly Asn Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu
1795      1800      1805
Trp Phe Asp Tyr Gly Gln Trp Pro Glu Val Tyr Glu Ala Ile Val Glu
1810      1815      1820
Gly Ile Arg Leu Ile Glu Ile Asn Thr Trp Leu Gln Val Ile Pro Gln
1825      1830      1835      1840
Leu Ile Ala Arg Ile Asp Thr Pro Arg Ala Leu Val Gly Arg Cys Ile
1845      1850      1855
His His Leu Leu Ile Asp Ile Gly Lys Thr His Pro Gln Ala Leu Val
1860      1865      1870
Tyr Pro Leu Thr Val Ala Ser Lys Ser Ala Ser His Ala Arg Lys Thr
1875      1880      1885
Ala Ala Asn Lys Ile Leu Lys Asn Met Cys Glu His Ser Pro Thr Leu
1890      1895      1900
Val Gln Gln Ala Met Met Ala Ser Asp Glu Leu Ile Arg Val Ala Ile
1905      1910      1915      1920
Leu Trp His Glu Leu Trp His Glu Gly Leu Glu Glu Ala Ser Arg Leu
1925      1930      1935
Tyr Phe Gly Glu Arg Asn Val Arg Gly Met Phe Asp Thr Leu Glu Pro
1940      1945      1950
Leu His Ala Met Leu Glu Arg Gly Pro Gln Thr Leu Lys Glu Thr Ser
1955      1960      1965
Phe Asn Gln Ala Tyr Gly Arg Asp Leu Met Glu Ala Gln Glu Trp Cys
1970      1975      1980
Arg Arg Tyr Lys Ala Ser Arg Asn Val Arg Asp Leu Asn Gln Ala Trp
1985      1990      1995      2000
Asp Leu Tyr Tyr His Val Phe Arg Arg Ile Ser Arg Gln Leu Pro Gln
2005      2010      2015
Leu Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Cys
2020      2025      2030
Arg Asp Leu Glu Leu Ala Val Pro Gly Ser Tyr Ser Pro Gly Gln Pro
2035      2040      2045
Ile Val Arg Ile Ala Ser Ile His Ser Ser Met Gln Val Ile Thr Ser
2050      2055      2060
Lys Gln Arg Pro Arg Lys Leu Cys Ile Lys Gly Ser Asn Gly Lys Asp
2065      2070      2075      2080
Tyr Met Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg
2085      2090      2095
Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Leu His Asp Pro
2100      2105      2110
Asp Thr Phe Arg Arg Asn Leu Thr Ile Gln Arg Tyr Ala Val Ile Pro
2115      2120      2125
Leu Ser Thr Asn Ser Gly Leu Ile Gly Trp Val Pro His Cys Asp Thr
2130      2135      2140
Leu His Thr Leu Ile Arg Asp Tyr Arg Glu Lys Lys Lys Ile Leu Leu
2145      2150      2155      2160

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## PhoenixTemp32470.tmp.txt

Asn Ile Glu His Lys Ile Met Leu Arg Met Ala Pro Gly Tyr Asp His  
 2165 2170 2175  
 Leu Met Leu Met Gln Lys Val Glu Val Phe Glu His Ala Leu Glu His  
 2180 2185 2190  
 Thr Tyr Gly Asp Asp Leu Ser Arg Leu Leu Trp Leu Lys Ser Pro Ser  
 2195 2200 2205  
 Ser Glu Val Trp Phe Asp Arg Thr Asn Tyr Thr Arg Ser Leu Ala  
 2210 2215 2220  
 Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro  
 2225 2230 2235 2240  
 Ser Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile Asp  
 2245 2250 2255  
 Phe Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro Glu  
 2260 2265 2270  
 Lys Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val  
 2275 2280 2285  
 Thr Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met Ser  
 2290 2295 2300  
 Val Leu His Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe  
 2305 2310 2315 2320  
 Val Tyr Asp Pro Leu Leu Asn Trp Arg Leu Met Asp Asn Ala Ala Leu  
 2325 2330 2335  
 Lys Gly Lys Arg Ser Asp Ala Gln Gly Met Ser Ala Ser Ser Asn Gln  
 2340 2345 2350  
 Glu Gln Ser Asp Ala Leu Asp Ser Leu Thr Ala Thr Leu Pro Lys Lys  
 2355 2360 2365  
 Gly Val Pro Cys Ser Val Glu Asn Gly Gly Asp Thr Asn Gln Pro Glu  
 2370 2375 2380  
 Ala Leu Asn Lys Lys Ala Leu Ala Ile Ile Thr Arg Val Arg Asp Lys  
 2385 2390 2395 2400  
 Leu Thr Gly Arg Asp Phe Ser His Glu Glu Thr Leu Ser Val Gln Arg  
 2405 2410 2415  
 Gln Val Asp Leu Leu Ile Gln Gln Ala Thr Asn Asn Glu Asn Leu Cys  
 2420 2425 2430  
 Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp  
 2435 2440

&lt;210&gt; 2538

&lt;211&gt; 7116

&lt;212&gt; DNA

<213> *Aspergillus nidulans* FGSC A4

&lt;220&gt;

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&lt;222&gt; (1)..(7116)

&lt;400&gt; 2538

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gag ctg aag tct aag aac gag gaa acg cgg gtc cga gct gct tac gag	96
Glu Leu Lys Ser Lys Asn Glu Glu Thr Arg Val Arg Ala Tyr Glu	
20 25 30	
ctt tac gaa aat gtt ctt gcc atc tca aga gac tgg cct ccc gag aag	144
Leu Tyr Glu Asn Val Leu Ala Ile Ser Arg Asp Trp Pro Pro Glu Lys	
35 40 45	
ttc att gaa ttc tat aac gcc gtt agt caa cgc atc gcc cag ctt gtt	192
Phe Ile Glu Phe Tyr Asn Ala Val Ser Gln Arg Ile Ala Gln Leu Val	
50 55 60	
gtc acc ggc agt gat gca cac gaa agg atc ggc ggt ctc cta gct ctt	240
Val Thr Gly Ser Asp Ala His Glu Arg Ile Gly Gly Leu Leu Ala Leu	
65 70 75 80	
gac cga cta ata gat ttc gat ggc gtg gac aat gcg cag aag aca acg	288
Asp Arg Leu Ile Asp Phe Asp Gly Val Asp Asn Ala Gln Lys Thr Thr	
85 90 95	
agg ttc gcc agc tat ttg cgg agc gcc ctg cgc agc agc gat aat gcc	336
Arg Phe Ala Ser Tyr Leu Arg Ser Ala Leu Arg Ser Ser Asp Asn Ala	
100 105 110	
gta ctt gtc tac gcc gct cgg gca ctt ggt cgc ctg gcg aag ccc ggt	384

PhoenixTemp32470.tmp.txt

Val	Leu	Val	Tyr	Ala	Ala	Arg	Ala	Leu	Gly	Arg	Leu	Ala	Lys	Pro	Gly	
115	115	115	115	115	115	115	120	120	120	120	125	125	125	125	125	
ggt	gcc	ctt	act	gca	gaa	ttg	ggt	gag	agt	gaa	ata	cag	tcg	gca	ctg	432
Gly	Ala	Leu	Thr	Ala	Glu	Leu	Val	Glu	Ser	Glu	Ile	Gln	Ser	Ala	Leu	
130	130	130	130	130	130	135	135	135	135	140	140	140	140	140	140	
gaa	tgg	ctt	cag	tct	gaa	cga	caa	gaa	ggt	cga	cgg	ttt	gct	gcg	gtg	480
Glu	Trp	Leu	Gln	Ser	Glu	Arg	Gln	Glu	Gly	Arg	Arg	Phe	Ala	Ala	Val	
145	145	145	145	145	150	150	150	150	155	155	155	155	155	155	160	
ctg	ggt	att	cgg	gag	ctc	gct	aaa	ggg	tcg	ccc	acg	ctt	ctt	tac	ggg	528
Leu	Val	Ile	Arg	Glu	Leu	Ala	Lys	Gly	Ser	Pro	Thr	Leu	Leu	Tyr	Gly	
165	165	165	165	165	165	165	170	170	170	170	170	170	170	175	175	
ttc	ggt	cct	cag	atc	ttc	gaa	ctc	atc	tgg	ggt	gct	ctg	aga	gac	ccc	576
Phe	Val	Pro	Gln	Ile	Phe	Glu	Leu	Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	
180	180	180	180	180	180	180	185	185	185	185	185	185	185	190	190	
aag	gta	ctt	atc	cga	gag	act	gct	gca	gaa	gca	ggt	cgg	cag	cta	tgg	624
Lys	Val	Leu	Ile	Arg	Glu	Thr	Ala	Ala	Glu	Ala	Val	Arg	Gln	Leu	Trp	
195	195	195	195	195	195	200	200	200	200	200	200	205	205	205	205	
ttt	gcg	aga	ata	tac	gag	gaa	gcg	ctc	cag	ggc	ttg	aag	tcg	aat	aat	672
Phe	Ala	Arg	Ile	Tyr	Glu	Glu	Ala	Leu	Gln	Gly	Leu	Lys	Ser	Asn	Asn	
210	210	210	210	210	215	215	215	215	215	220	220	220	220	220	220	
gtg	gac	tgg	atc	cat	gga	tca	ctc	ttg	ggt	ctt	aag	gaa	ctt	ctc	ctc	720
Val	Asp	Trp	Ile	His	Gly	Ser	Leu	Leu	Val	Leu	Lys	Glu	Leu	Leu	Leu	
225	225	225	225	225	230	230	230	230	230	235	235	235	235	235	240	
aaa	gga	gcc	atg	ttc	atg	aat	gaa	cat	tat	cga	aat	gcg	tgt	gaa	atc	768
Lys	Gly	Ala	Met	Phe	Met	Asn	Glu	His	Tyr	Arg	Asn	Ala	Cys	Glu	Ile	
245	245	245	245	245	245	245	250	250	250	250	250	250	250	255	255	
gtg	ctt	cgt	ctc	aag	gac	cac	cga	gac	ccg	aaa	att	cgg	acg	caa	ggt	816
Val	Leu	Arg	Leu	Lys	Asp	His	Arg	Asp	Pro	Lys	Ile	Arg	Thr	Gln	Val	
260	260	260	260	260	260	260	265	265	265	265	265	265	265	270	270	
ggt	ctc	aca	att	ccc	att	ctt	gcc	tcc	tac	gct	ccg	ggt	gat	ttc	acc	864
Val	Leu	Thr	Ile	Pro	Ile	Leu	Ala	Ser	Tyr	Ala	Pro	Val	Asp	Phe	Thr	
275	275	275	275	275	275	275	280	280	280	280	280	285	285	285	285	
gaa	aca	tac	ctg	cat	aga	ttc	atg	gtg	tat	ctt	caa	gcc	cag	ctc	aaa	912
Glu	Thr	Tyr	Leu	His	Arg	Phe	Met	Val	Tyr	Leu	Gln	Ala	Gln	Leu	Lys	
290	290	290	290	290	295	295	295	295	295	295	300	300	300	300	300	
aag	gac	aag	gag	cgc	aat	gct	gct	ttc	ata	gct	atc	gga	aag	att	gca	960
Lys	Asp	Lys	Glu	Arg	Asn	Ala	Ala	Phe	Ile	Ala	Ile	Gly	Lys	Ile	Ala	
305	305	305	305	305	310	310	310	310	310	315	315	315	315	315	320	
aat	gcg	gtg	ggt	gta	gct	att	gca	caa	tac	ctt	gat	ggt	atc	att	ggt	1008
Asn	Ala	Val	Gly	Val	Ala	Ile	Ala	Gln	Tyr	Leu	Asp	Gly	Ile	Ile	Val	
325	325	325	325	325	325	325	325	325	325	330	330	330	330	335	335	
tac	atc	cgc	gaa	gga	ctg	gcc	ctg	aaa	gcc	aaa	aat	cga	gct	gcc	att	1056
Tyr	Ile	Arg	Glu	Gly	Leu	Ala	Leu	Lys	Ala	Lys	Asn	Arg	Ala	Ala	Ile	
340	340	340	340	340	340	340	345	345	345	345	345	345	345	350	350	
aat	gaa	gcg	cca	atg	ttt	gag	tgt	att	agt	atg	ctc	tcg	ctg	gct	ggt	1104
Asn	Glu	Ala	Pro	Met	Phe	Glu	Cys	Ile	Ser	Met	Leu	Ser	Leu	Ala	Val	
355	355	355	355	355	355	355	360	360	360	360	360	365	365	365	365	
ggg	cag	gct	ctc	agc	aaa	tac	atg	gaa	tcg	ctc	ctc	gat	ccc	atc	ttt	1152
Gly	Gln	Ala	Leu	Ser	Lys	Tyr	Met	Glu	Ser	Leu	Leu	Asp	Pro	Ile	Phe	
370	370	370	370	370	375	375	375	375	375	375	375	380	380	380	380	
gca	tgt	ggc	tta	agt	gaa	tcc	ctg	aca	cag	gct	ctt	ggt	gat	atg	gct	1200
Ala	Cys	Gly	Leu	Ser	Glu	Ser	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	
385	385	385	385	385	390	390	390	390	390	395	395	395	395	395	400	
cat	tat	att	cca	cca	atc	aag	ccc	acg	att	caa	gta	aag	ctg	ctg	gat	1248
His	Tyr	Ile	Pro	Pro	Ile	Lys	Pro	Thr	Ile	Gln	Val	Lys	Leu	Leu	Asp	
405	405	405	405	405	405	405	410	410	410	410	410	410	410	415	415	
atg	ctt	agc	ctg	att	ctt	gat	ggg	acg	cct	ttt	cgc	ccc	cta	ggt	tgt	1296
Met	Leu	Ser	Leu	Ile	Leu	Asp	Gly	Thr	Pro	Phe	Arg	Pro	Leu	Gly	Cys	
420	420	420	420	420	420	420	425	425	425	425	425	425	425	430	430	
ccg	gaa	agc	agg	cta	cct	ccg	ctg	ccg	tct	ttc	gcc	aaa	gac	ttc	acc	1344
Pro	Glu	Ser	Arg	Leu	Pro	Pro	Leu	Pro	Ser	Phe	Ala	Lys	Asp	Phe	Thr	
435	435	435	435	435	435	435	440	440	440	440	440	445	445	445	445	
ctg	caa	gaa	ctg	cat	tct	gac	gct	gaa	att	gcg	ctg	gct	ctc	cac	acc	1392
Leu	Gln	Glu	Leu	His	Ser	Asp	Ala	Glu	Ile	Ala	Leu	Ala	Leu	His	Thr	
450	450	450	450	450	455	455	455	455	455	455	455	460	460	460	460	
ctg	gga	agc	ttc	gat	ttt	tct	ggt	cat	att	ttg	aat	gaa	ttt	gtg	cgc	1440
Leu	Gly	Ser	Phe	Asp	Phe	Ser	Gly	His	Ile	Leu	Asn	Glu	Phe	Val	Arg	
465	465	465	465	465	470	470	470	470	470	475	475	475	475	475	480	
gac	ggt	gcc	att	cac	tat	ggt	gaa	aac	gac	aac	cct	gaa	att	cgg	aag	1488

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Asp	Val	Ala	Ile	His 485	Tyr	Val	Glu	Asn	Asp 490	Asn	Pro	Glu	Ile	Arg 495	Lys		
gct	gcg	gct	ctt	acc	tcg	tcg	cag	cta	ttt	gtg	cat	gac	ccc	att	atc	1536	
Ala	Ala	Ala	Leu	Thr	Cys	Cys	Gln	Leu	Phe	Val	His	Asp	Pro	Ile	Ile		
			500					505					510				
aat	cag	acc	agc	agc	cac	tca	ata	cag	ggt	ggt	agc	gag	gtc	atc	gac	1584	
Asn	Gln	Thr	Ser	Ser	His	Ser	Ile	Gln	Val	Val	Ser	Glu	Val	Ile	Asp		
		515					520					525					
aag	cta	ttg	acc	gtt	ggc	gtc	ggc	gac	cct	gat	cct	gag	att	aga	cgc	1632	
Lys	Leu	Leu	Thr	Val	Gly	Val	Gly	Asp	Pro	Asp	Pro	Glu	Ile	Arg	Arg		
	530				535					540							
act	gtg	cta	tgg	tcc	ttg	gat	cgc	aaa	ttt	gac	cgg	cac	ctt	gca	cgg	1680	
Thr	Val	Leu	Trp	Ser	Leu	Asp	Arg	Lys	Phe	Asp	Arg	His	Leu	Ala	Arg		
545					550					555					560		
cca	gaa	aat	atc	cga	tcg	ctc	ttc	ttg	gcc	gtg	aat	gat	gaa	gtg	ttc	1728	
Pro	Glu	Asn	Ile	Arg	Cys	Leu	Phe	Leu	Ala	Val	Asn	Asp	Glu	Val	Phe		
				565					570					575			
gct	gtc	aga	gag	gca	gcg	atc	tcg	ata	att	ggc	cgc	ctt	tcc	agt	gtc	1776	
Ala	Val	Arg	Glu	Ala	Ala	Ile	Cys	Ile	Ile	Gly	Arg	Leu	Ser	Ser	Val		
			580					585					590				
aac	cca	gcc	tac	gta	ttc	cct	ccc	cta	agg	aag	ttg	ctg	gtg	aac	ttg	1824	
Asn	Pro	Ala	Tyr	Val	Phe	Pro	Pro	Leu	Arg	Lys	Leu	Leu	Val	Asn	Leu		
		595					600					605					
ctc	act	gga	ctt	ggg	ttc	gca	agc	act	gct	cgc	cag	aag	gaa	gaa	agt	1872	
Leu	Thr	Gly	Leu	Gly	Phe	Ala	Ser	Thr	Ala	Arg	Gln	Lys	Glu	Glu	Ser		
	610					615					620						
gca	cag	ctt	att	agc	ctt	ttt	gtt	tcg	aat	gcc	acg	aaa	ctt	atc	cgg	1920	
Ala	Gln	Leu	Ile	Ser	Leu	Phe	Val	Ser	Asn	Ala	Thr	Lys	Leu	Ile	Arg		
625					630					635					640		
tcg	tac	gtc	gac	cct	atg	gtt	acg	act	ctg	cta	ccg	aaa	gca	gtt	gat	1968	
Ser	Tyr	Val	Asp	Pro	Met	Val	Thr	Thr	Leu	Leu	Pro	Lys	Ala	Val	Asp		
				645					650					655			
gcc	aat	cac	ggc	gtc	gcc	tcc	aca	aca	ctg	aaa	gct	gtc	gga	gaa	ctt	2016	
Ala	Asn	His	Gly	Val	Ala	Ser	Thr	Thr	Leu	Lys	Ala	Val	Gly	Glu	Leu		
			660					665					670				
gca	agc	gtt	ggg	ggc	agc	gat	atg	aaa	gcc	tac	ctg	cct	aag	ctg	atg	2064	
Ala	Ser	Val	Gly	Gly	Ser	Asp	Met	Lys	Ala	Tyr	Leu	Pro	Lys	Leu	Met		
		675					680					685					
cca	atc	gtt	ctg	gat	gcc	ttg	cag	gac	ctt	tca	tct	cat	gct	aag	aga	2112	
Pro	Ile	Val	Leu	Asp	Ala	Leu	Gln	Asp	Leu	Ser	His	Ala	Lys	Lys	Arg		
						695					700						
gaa	gcg	gct	ttg	cga	aca	ttg	ggc	cag	ata	gcc	agc	aac	tca	ggc	tac	2160	
Glu	Ala	Ala	Leu	Arg	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Ser	Gly	Tyr		
705				710						715				720			
gtt	atc	gac	ccg	tac	acc	gac	cac	cct	cat	ctg	ctg	gcg	gtg	ctt	att	2208	
Val	Ile	Asp	Pro	Tyr	Thr	Asp	His	Pro	His	Leu	Leu	Ala	Val	Leu	Ile		
				725					730					735			
ggc	atc	atc	aag	acg	gag	cag	gca	gga	tcg	ctt	cgc	aag	gaa	acg	ata	2256	
Gly	Ile	Ile	Lys	Thr	Glu	Gln	Ala	Gly	Ser	Leu	Arg	Lys	Glu	Thr	Ile		
			740					745					750				
aaa	gtt	cta	gga	att	cta	ggt	gca	ctg	gac	cct	tat	aaa	tac	cag	caa	2304	
Lys	Val	Leu	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	Tyr	Gln	Gln		
		755					760					765					
ata	agc	gaa	acc	gca	cca	gac	gtc	cac	cat	atc	aac	gaa	gta	caa	gtg	2352	
Ile	Ser	Glu	Thr	Ala	Pro	Asp	Val	His	His	Ile	Asn	Glu	Val	Gln	Val		
		770				775					780						
gtg	tca	gac	gtt	agt	ctt	att	atg	caa	ggc	ctt	gcc	cct	tcc	aat	gaa	2400	
Val	Ser	Asp	Val	Ser	Leu	Ile	Met	Gln	Gly	Leu	Ala	Pro	Ser	Asn	Glu		
					790					795					800		
gag	tac	tac	cca	act	gtt	gtt	atc	cat	act	ctc	atg	cag	aac	ata	ctt	2448	
Glu	Tyr	Tyr	Pro	Thr	Val	Val	Ile	His	Thr	Leu	Met	Gln	Asn	Ile	Leu		
				805					810					815			
cgc	gag	aac	tcc	ctt	gcg	caa	tat	cat	tct	gct	gtc	atc	gac	gcg	att	2496	
Arg	Glu	Asn	Ser	Leu	Ala	Gln	Tyr	His	Ser	Ala	Val	Ile	Asp	Ala	Ile		
			820					825					830				
gtt	acg	atc	ttt	aag	acc	ctt	ggc	ttg	aag	tgt	gtc	ccc	ttc	ctt	ggc	2544	
Val	Thr	Ile	Phe	Lys	Thr	Leu	Gly	Leu	Lys	Cys	Val	Pro	Phe	Leu	Gly		
		835					840					845					
cag	atc	att	cct	ggt	ttc	att	tct	gtc	att	cga	ggt	tca	ccc	tca	agc	2592	

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Gln	Ile	Ile	Pro	Gly	Phe	Ile	Ser	Val	Ile	Arg	Gly	Ser	Pro	Ser	Ser	
850	850					855					860					
cgg	ctc	gaa	tct	tat	ttc	aac	caa	atg	gca	atc	ctt	gtc	aat	att	gtg	2640
Arg	Leu	Glu	Ser	Tyr	Phe	Asn	Gln	Met	Ala	Ile	Leu	Val	Asn	Ile	Val	
865					870					875					880	
cgg	cag	cac	atc	aga	gcc	ttt	ctt	cct	gaa	ata	att	gag	gtc	att	cgg	2688
Arg	Gln	His	Ile	Arg	Ala	Phe	Leu	Pro	Glu	Ile	Ile	Glu	Val	Ile	Arg	
				885					890						895	
gaa	ttc	tgg	gac	acg	tca	tat	cag	gtt	caa	gcg	acc	att	ctc	tcg	ctt	2736
Glu	Phe	Trp	Asp	Thr	Ser	Tyr	Gln	Val	Gln	Ala	Thr	Ile	Leu	Ser	Leu	
			900					905					910			
gtg	gac	gcg	ata	gcc	aag	tcc	ctt	gag	ggg	gaa	ttt	aag	aag	tac	ctt	2784
Val	Asp	Ala	Ile	Ala	Lys	Ser	Leu	Glu	Gly	Glu	Phe	Lys	Lys	Tyr	Leu	
			915				920					925				
gca	aat	ctc	att	cct	cca	atg	ctg	gac	aca	ctg	gaa	aag	gat	aat	act	2832
Ala	Asn	Leu	Ile	Pro	Pro	Met	Leu	Asp	Thr	Leu	Glu	Lys	Asp	Asn	Thr	
						935					940					
ccg	cgc	cgc	cag	cct	tcc	gag	agg	att	ttg	cat	agc	ttc	tta	gta	ttc	2880
Pro	Arg	Arg	Gln	Pro	Ser	Glu	Arg	Ile	Leu	His	Ser	Phe	Leu	Val	Phe	
945					950					955					960	
ggc	tcc	agt	ggc	gaa	gag	tac	atg	cat	ctg	att	gtg	ccc	tcc	att	gtg	2928
Gly	Ser	Ser	Gly	Glu	Glu	Tyr	Met	His	Leu	Ile	Val	Pro	Ser	Ile	Val	
				965					970					975		
cgt	ctg	ttt	gat	agg	tcc	cag	aac	cca	gcg	agc	atc	aga	aag	tca	gct	2976
Arg	Leu	Phe	Asp	Arg	Ser	Gln	Asn	Pro	Ala	Ser	Ile	Arg	Lys	Ser	Ala	
			980					985					990			
att	gac	agc	ttg	acc	aaa	ctt	tcg	cga	caa	gtg	aat	gtc	tcc	gat	ttt	3024
Ile	Asp	Ser	Leu	Thr	Lys	Leu	Ser	Arg	Gln	Val	Asn	Val	Ser	Asp	Phe	
			995				1000					1005				
gcg	tcc	ttg	att	gta	cac	tcc	ctt	tct	cga	gtc	gtt	gcc	ggc	aac	gac	3072
Ala	Ser	Leu	Ile	Val	His	Ser	Leu	Ser	Arg	Val	Val	Ala	Gly	Asn	Asp	
						1015					1020					
cgt	atg	tta	cga	cag	gct	gct	atg	gat	tgc	ata	tgc	tct	ttg	ata	ttc	3120
Arg	Met	Leu	Arg	Gln	Ala	Ala	Met	Asp	Cys	Ile	Cys	Ser	Leu	Ile	Phe	
1025					1030					1035					1040	
cag	ctt	ggc	cag	gat	ttc	aac	cat	tat	att	cat	ctg	ctg	aac	aag	gtc	3168
Gln	Leu	Gly	Gln	Asp	Phe	Asn	His	Tyr	Ile	His	Leu	Leu	Asn	Lys	Val	
				1045					1050					1055		
ttg	aag	cat	cat	caa	gtc	aat	cac	gtg	aac	tat	cag	atc	ctt	gtc	aca	3216
Leu	Lys	His	His	Gln	Val	Asn	His	Val	Asn	Tyr	Gln	Ile	Leu	Val	Thr	
				1060				1065					1070			
aag	ctc	cag	aaa	gga	gac	ccg	ctc	cca	cag	gat	ctc	aat	cct	gac	gag	3264
Lys	Leu	Gln	Lys	Gly	Asp	Pro	Leu	Pro	Gln	Asp	Leu	Asn	Pro	Asp	Glu	
				1075			1080					1085				
agc	tat	gcc	cca	ttg	gcg	gat	gac	gcg	aac	tat	gca	gag	atc	ggg	caa	3312
Ser	Tyr	Ala	Pro	Leu	Ala	Asp	Ala	Asn	Tyr		Ala	Glu	Ile	Gly	Gln	
						1095				1100						
aag	aag	atg	gtg	gtc	aat	caa	caa	cat	ctt	aag	aac	gcc	tgg	gac	gct	3360
Lys	Lys	Met	Val	Val	Asn	Gln	Gln	His	Leu	Lys	Asn	Ala	Trp	Asp	Ala	
					1110				1115						1120	
tcg	caa	aag	tcg	act	cgc	gaa	gac	tgg	caa	gaa	tgg	atc	cgg	agg	ttc	3408
Ser	Gln	Lys	Ser	Thr	Arg	Glu	Asp	Trp	Gln	Glu	Trp	Ile	Arg	Arg	Phe	
				1125				1130					1135			
agt	gta	gag	ctt	ttg	aaa	gaa	tca	cct	tcg	ccg	gcg	ctg	cgf	gct	tgt	3456
Ser	Val	Glu	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Ala	Cys	
				1140				1145					1150			
gcc	agc	ctg	gcg	ggc	atc	tac	caa	ccc	ctc	gct	agg	gat	cta	ttc	aat	3504
Ala	Ser	Leu	Ala	Gly	Ile	Tyr	Gln	Pro	Leu	Ala	Arg	Asp	Leu	Phe	Asn	
				1155			1160					1165				
gcc	gct	ttc	gtc	tcc	tgt	tgg	acg	gaa	ttg	tac	gac	cag	tac	cag	gaa	3552
Ala	Ala	Phe	Val	Ser	Cys	Trp	Thr	Glu	Leu	Tyr	Asp	Gln	Tyr	Gln	Glu	
				1170			1175				1180					
gag	ctg	gtt	cgg	tca	atc	gaa	aaa	gcc	ctc	acc	tcg	ccg	aac	att	cca	3600
Glu	Leu	Val	Arg	Ser	Ile	Glu	Lys	Ala	Leu	Thr	Ser	Pro	Asn	Ile	Pro	
					1190				1195						1200	
ccg	gaa	att	ctt	cag	atc	ttg	ctc	aat	ctt	gct	gag	ttt	atg	gag	cac	3648
Pro	Glu	Ile	Leu	Gln	Ile	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	
				1205					1210				1215			
gac	gac	aag	gcg	ctg	ccg	att	gat	atc	cg	act	ctt	gga	aaa	tat	gct	3696

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Asp	Asp	Lys	Ala	Leu	Pro	Ile	Asp	Ile	Arg	Thr	Leu	Gly	Lys	Tyr	Ala		
			1220					1225					1230				
gcc	aaa	tgt	cac	gcg	ttc	gca	aag	gcg	ctc	cac	tac	aaa	gaa	ctc	gag		3744
Ala	Lys	Cys	His	Ala	Phe	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu		
			1235					1240					1245				
ttc	gag	caa	gat	cag	aac	tct	gga	gct	gta	gag	gca	ctc	att	act	atc		3792
Phe	Glu	Gln	Asp	Gln	Asn	Ser	Gly	Ala	Val	Glu	Ala	Leu	Ile	Thr	Ile		
			1250					1255					1260				
aac	aat	cag	ctc	cag	caa	tcc	gat	gcc	gct	att	ggt	atc	ctt	cgg	aag		3840
Asn	Asn	Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile	Gly	Ile	Leu	Arg	Lys		
			1265					1270					1275				
gct	cag	gcg	tat	cgg	gat	gtt	gaa	ctg	aag	gag	acc	tgg	ttt	gag	aaa		3888
Ala	Gln	Ala	Tyr	Arg	Asp	Val	Glu	Leu	Lys	Glu	Thr	Trp	Phe	Glu	Lys		
			1285					1290					1295				
ctt	cag	cga	tgg	gaa	gaa	gcc	ctt	gca	gct	tac	aaa	cgt	cgt	gag	aag		3936
Leu	Gln	Arg	Trp	Glu	Glu	Ala	Leu	Ala	Ala	Tyr	Lys	Arg	Arg	Glu	Lys		
			1300					1305					1310				
att	gac	ccc	gac	tct	ttc	ggt	atc	aca	atg	ggg	aaa	atg	cgc	tgt	cta		3984
Ile	Asp	Pro	Asp	Ser	Phe	Gly	Ile	Thr	Met	Gly	Lys	Met	Arg	Cys	Leu		
			1315					1320					1325				
cat	gct	ctt	gga	gaa	tgg	aaa	gtg	ttg	tct	gac	ctc	gct	cag	gag	aag		4032
His	Ala	Leu	Gly	Glu	Trp	Lys	Val	Leu	Ser	Asp	Leu	Ala	Gln	Glu	Lys		
			1330					1335					1340				
tgg	aac	cag	gcc	tct	cta	gaa	cac	cgg	aaa	tca	atc	gct	cct	ctc	gct		4080
Trp	Asn	Gln	Ala	Ser	Leu	Glu	His	Arg	Lys	Ser	Ile	Ala	Pro	Leu	Ala		
			1345					1350					1355				
gcg	gca	gct	gca	tgg	ggt	cg	ggt	caa	tgg	gag	ctg	atg	gat	tcg	tac		4128
Ala	Ala	Ala	Ala	Trp	Gly	Arg	Gly	Gln	Trp	Glu	Leu	Met	Asp	Ser	Tyr		
			1365					1370					1375				
cta	gga	gtt	atg	aaa	gaa	caa	tct	cct	gac	cgt	tcg	ttc	ttt	ggg	gca		4176
Leu	Gly	Val	Met	Lys	Glu	Gln	Ser	Pro	Asp	Arg	Ser	Phe	Phe	Gly	Ala		
			1380					1385					1390				
ata	ctg	gca	att	cat	cg	aac	caa	ttt	gat	gaa	gcc	att	atg	tac	atc		4224
Ile	Leu	Ala	Ile	His	Arg	Asn	Gln	Phe	Asp	Glu	Ala	Ile	Met	Tyr	Ile		
			1395					1400					1405				
gaa	aag	gcc	cgg	aac	ggc	ctt	gac	acg	gaa	ctc	tca	gca	ctt	ctc	gga		4272
Glu	Lys	Ala	Arg	Asn	Gly	Leu	Asp	Thr	Glu	Leu	Ser	Ala	Leu	Leu	Gly		
			1410					1415					1420				
gag	tca	tat	aac	cgt	gcc	tac	aat	gta	gtt	gtt	cgc	gtt	caa	atg	ctt		4320
Glu	Ser	Tyr	Asn	Arg	Ala	Tyr	Asn	Val	Val	Val	Arg	Val	Gln	Met	Leu		
			1425					1430					1435				
gct	gaa	ctc	gag	gag	atc	atc	acc	tac	aaa	cag	aat	gtt	ggt	gat	ccc		4368
Ala	Glu	Leu	Glu	Glu	Ile	Ile	Thr	Tyr	Lys	Gln	Asn	Val	Gly	Asp	Pro		
			1445					1450					1455				
gag	aga	caa	gag	gca	atg	cg	cag	acc	tgg	aac	agg	cga	ctt	ctc	ggc		4416
Glu	Arg	Gln	Glu	Ala	Met	Arg	Gln	Thr	Trp	Asn	Arg	Arg	Leu	Leu	Gly		
			1460					1465					1470				
tgc	cag	cag	aat	gta	gag	gta	tgg	cag	cg	atg	ctc	aag	gtc	aga	gca		4464
Cys	Gln	Gln	Asn	Val	Glu	Val	Trp	Gln	Arg	Met	Leu	Lys	Val	Arg	Ala		
			1475					1480					1485				
ctt	gtt	aca	aca	ccg	cga	gag	aac	cta	gac	atg	tgg	atc	aag	ttt	gcc		4512
Leu	Val	Thr	Thr	Pro	Arg	Glu	Asn	Leu	Asp	Met	Trp	Ile	Lys	Phe	Ala		
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aat	ttg	tgt	cg	aaa	tca	aac	cg	atg	ggg	tta	gcg	gaa	cgt	tct	ctc		4560
Asn	Leu	Cys	Arg	Lys	Ser	Asn	Arg	Met	Gly	Leu	Ala	Glu	Arg	Ser	Leu		
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gcc	tct	cta	gaa	act	gtc	atc	cct	gac	ggc	aac	ggc	ggc	act	cg	act		4608
Ala	Ser	Leu	Glu	Thr	Val	Ile	Pro	Asp	Gly	Asn	Gly	Gly	Thr	Arg	Thr		
			1525					1530					1535				
atc	tcc	cca	cca	gaa	gtc	aca	tat	gct	cg	ttg	aag	ttt	agc	tgg	gca		4656
Ile	Ser	Pro	Pro	Glu	Val	Thr	Tyr	Ala	Arg	Leu	Lys	Phe	Ser	Trp	Ala		
			1540					1545					1550				
act	ggc	cg	caa	cg	gag	gcc	ctt	cat	atg	ctc	cgt	gaa	ttt	act	gcc		4704
Thr	Gly	Arg	Gln	Arg	Glu	Ala	Leu	His	Met	Leu	Arg	Glu	Phe	Thr	Ala		
			1555					1560					1565				
aac	cta	aca	gaa	gac	ttc	act	cg	ttc	aat	gca	ctt	gtt	gcc	tca	caa		4752
Asn	Leu	Thr	Glu	Asp	Phe	Thr	Arg	Phe	Asn	Ala	Leu	Val	Ala	Ser	Gln		
			1570					1575					1580				
tct	gac	cat	aac	ggt	atc	aac	ggc	gtt	aat	ggt	atc	gca	gaa	gga	aac		4800

## PhoenixTemp32470.tmp.txt

Ser	Asp	His	Asn	Gly	Ile	Asn	Gly	Val	Asn	Gly	Ile	Ala	Glu	Gly	Asn		
1585					1590				1595						1600		
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His	Thr	Asp	Ile	Met	Ala	Leu	Arg	Glu	Arg	Val	Gly	Asp	Val	Asn	Lys		
			1605					1610						1615			
ttt	aga	aag	ctc	ctt	gca	aag	agt	tat	cta	aga	ctt	ggg	gag	tgg	caa	4896	
Phe	Arg	Lys	Leu	Leu	Ala	Lys	Ser	Tyr	Leu	Arg	Leu	Gly	Glu	Trp	Gln		
			1620				1625						1630				
acg	gct	cta	caa	cga	ggg	gac	tgg	cgg	cca	gag	cat	gtc	cgc	gaa	gta	4944	
Thr	Ala	Leu	Gln	Arg	Gly	Asp	Trp	Arg	Pro	Glu	His	Val	Arg	Glu	Val		
			1635				1640					1645					
ctc	aac	gca	tat	tca	gca	gcc	acc	agg	tac	aac	cgc	gat	tcc	tac	aaa	4992	
Leu	Asn	Ala	Tyr	Ser	Ala	Ala	Thr	Arg	Tyr	Asn	Arg	Asp	Ser	Tyr	Lys		
			1650			1655				1660							
gcc	tgg	cac	tca	tgg	gcc	ctg	gcc	aac	ttt	gag	gtc	gtg	acg	aca	att	5040	
Ala	Trp	His	Ser	Trp	Ala	Leu	Ala	Asn	Phe	Glu	Val	Val	Thr	Thr	Ile		
1665				1670				1675						1680			
gcc	agc	cag	gca	agt	aag	gac	ggc	gga	aat	ctg	gca	ttg	gtt	cca	ggg	5088	
Ala	Ser	Gln	Ala	Ser	Lys	Asp	Gly	Gly	Asn	Leu	Ala	Leu	Val	Pro	Gly		
			1685				1690						1695				
cat	atc	gta	aca	gaa	cat	gtg	att	cct	gcg	att	cgc	ggc	ttt	ttt	agg	5136	
His	Ile	Val	Thr	Glu	His	Val	Ile	Pro	Ala	Ile	Arg	Gly	Phe	Phe	Arg		
			1700				1705						1710				
tcc	att	gcc	ctc	tct	tcg	acg	tcg	tct	ctt	cag	gat	act	ctt	cgg	ttg	5184	
Ser	Ile	Ala	Leu	Ser	Ser	Thr	Ser	Ser	Leu	Gln	Asp	Thr	Leu	Arg	Leu		
			1715				1720					1725					
ctc	act	ctc	tgg	ttc	aac	cat	ggg	ggg	gac	cag	gag	gtg	aac	tcg	gtc	5232	
Leu	Thr	Leu	Trp	Phe	Asn	His	Gly	Gly	Asp	Gln	Glu	Val	Asn	Ser	Val		
			1730			1735				1740							
gtt	aca	gag	ggg	ttc	acg	gct	gtt	aat	atc	gac	acg	tgg	ctc	gcc	gtc	5280	
Val	Thr	Glu	Gly	Phe	Thr	Ala	Val	Asn	Ile	Asp	Thr	Trp	Leu	Ala	Val		
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Thr	Pro	Gln	Leu	Ile	Ala	Arg	Ile	Asn	Gln	Pro	Asn	Phe	Arg	Val	Arg		
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agc	gcc	gtt	cat	cgc	ttg	ctt	gct	gaa	gtt	ggc	aag	gca	cat	ccc	caa	5376	
Ser	Ala	Val	His	Arg	Leu	Leu	Ala	Glu	Val	Gly	Lys	Ala	His	Pro	Gln		
			1780				1785					1790					
gcc	ctc	gtg	tat	ccg	ctc	aca	gtt	gcg	atg	aag	tcg	aat	gtt	gcc	cga	5424	
Ala	Leu	Val	Tyr	Pro	Leu	Thr	Val	Ala	Met	Lys	Ser	Asn	Val	Ala	Arg		
			1795				1800					1805					
cga	tca	cag	tcc	gca	ggc	aac	att	atg	gag	agc	atg	cgg	aca	cac	agt	5472	
Arg	Ser	Gln	Ser	Ala	Gly	Asn	Ile	Met	Glu	Ser	Met	Arg	Thr	His	Ser		
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gca	aac	cta	gtg	gag	cag	gct	gat	ctt	gta	agt	cat	gag	ctg	att	agg	5520	
Ala	Asn	Leu	Val	Glu	Gln	Ala	Asp	Leu	Val	Ser	His	Glu	Leu	Ile	Arg		
1825				1830				1835						1840			
gtc	gct	gtt	ctg	tgg	cac	gaa	ctc	tgg	cac	gaa	gga	ctg	gaa	gag	gcg	5568	
Val	Ala	Val	Leu	Trp	His	Glu	Leu	Trp	His	Glu	Gly	Leu	Glu	Glu	Ala		
			1845					1850					1855				
tca	cgt	ctc	tat	ttc	ggg	gac	cat	aac	gtg	gat	ggg	atg	ttt	gca	act	5616	
Ser	Arg	Leu	Tyr	Phe	Gly	Asp	His	Asn	Val	Asp	Gly	Met	Phe	Ala	Thr		
			1860				1865					1870					
ctc	gca	ccg	ctt	cat	gaa	atg	ctt	gat	aaa	ggg	gct	gaa	acc	ctg	cgc	5664	
Leu	Ala	Pro	Leu	His	Glu	Met	Leu	Asp	Lys	Gly	Ala	Glu	Thr	Leu	Arg		
			1875				1880				1885						
gaa	gta	tcg	ttt	gcc	caa	gct	ttc	gga	cgt	gac	ctg	gct	gag	gcc	aag	5712	
Glu	Val	Ser	Phe	Ala	Gln	Ala	Phe	Gly	Arg	Asp	Leu	Ala	Glu	Ala	Lys		
			1890			1895				1900							
cat	tac	tgc	atg	ctc	tat	cgc	gag	acg	gaa	gaa	atc	ggg	gac	cta	aac	5760	
His	Tyr	Cys	Met	Leu	Tyr	Arg	Glu	Thr	Glu	Glu	Ile	Gly	Asp	Leu	Asn		
1905				1910				1915						1920			
caa	gcg	tgg	gat	ttg	tat	tac	aca	gtg	ttc	cgc	aaa	atc	agc	cga	cag	5808	
Gln	Ala	Trp	Asp	Leu	Tyr	Tyr	Thr	Val	Phe	Arg	Lys	Ile	Ser	Arg	Gln		
			1925					1930					1935				
cta	cca	cag	tta	tca	acc	cta	gat	ctc	aaa	tac	gtc	tcg	ccc	aaa	ctc	5856	
Leu	Pro	Gln	Leu	Ser	Thr	Leu	Asp	Leu	Lys	Tyr	Val	Ser	Pro	Lys	Leu		
			1940				1945					1950					
aag	gat	tgc	gtg	gac	ctt	gat	ctc	gct	gtt	cct	ggg	acc	tac	caa	agt	5904	

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Lys	Asp	Cys	Val	Asp	Leu	Asp	Leu	Ala	Val	Pro	Gly	Thr	Tyr	Gln	Ser		
ggc	agg	ccc	att	atc	cga	atc	atc	agt	ttc	gat	cca	atc	cta	cat	gtt	5952	
Gly	Arg	Pro	Ile	Ile	Arg	Ile	Ile	Ser	Phe	Asp	Pro	Ile	Leu	His	Val		
1970							1975				1980						
ctt	caa	acg	aag	aag	cga	cca	cgg	agg	atg	act	ttg	aag	ggc	agt	gac	6000	
Leu	Gln	Thr	Lys	Lys	Arg	Pro	Arg	Arg	Met	Thr	Leu	Lys	Gly	Ser	Asp		
1985						1990				1995					2000		
ggc	agc	tcc	tac	atg	tat	gtg	gtg	aag	ggc	cac	gaa	gat	atc	cga	caa	6048	
Gly	Ser	Ser	Tyr	Met	Tyr	Val	Val	Lys	Gly	His	Glu	Asp	Ile	Arg	Gln		
				2005					2010					2015			
gat	gag	aga	gtc	atg	cag	tta	ttc	ggc	ctg	gtc	aac	act	ctt	ctc	gat	6096	
Asp	Glu	Arg	Val	Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu	Asp		
				2020				2025						2030			
aac	gat	agt	gaa	agc	ttc	aag	cgg	cat	cta	acg	gtg	cag	cgc	ttc	ccg	6144	
Asn	Asp	Ser	Glu	Ser	Phe	Lys	Arg	His	Leu	Thr	Val	Gln	Arg	Phe	Pro		
				2035			2040					2045					
gcc	att	cct	ctg	tct	cag	aac	tct	ggt	atc	atc	ggc	tgg	gtc	acc	aat	6192	
Ala	Ile	Pro	Leu	Ser	Gln	Asn	Ser	Gly	Ile	Ile	Gly	Trp	Val	Thr	Asn		
						2055					2060						
agt	gac	acc	ctc	cat	gct	ttg	ata	aaa	gaa	tac	cgg	gaa	acg	cgg	cgt	6240	
Ser	Asp	Thr	Leu	His	Ala	Leu	Ile	Lys	Glu	Tyr	Arg	Glu	Thr	Arg	Arg		
2065					2070					2075					2080		
att	ctc	ctc	aac	atc	gag	cat	agg	atc	atg	tta	cag	atg	gct	cca	gac	6288	
Ile	Leu	Leu	Asn	Ile	Glu	His	Arg	Ile	Met	Leu	Gln	Met	Ala	Pro	Asp		
				2085					2090					2095			
tat	gac	aat	cta	acg	ctc	atg	cag	aag	gtt	gaa	gta	ttt	ggc	tat	gcg	6336	
Tyr	Asp	Asn	Leu	Thr	Leu	Met	Gln	Lys	Val	Glu	Val	Phe	Gly	Tyr	Ala		
				2100			2105						2110				
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Met	Asp	Asn	Thr	Thr	Gly	Lys	Asp	Leu	Tyr	Arg	Val	Leu	Trp	Leu	Lys		
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agt	aag	agc	tcc	gaa	gcc	tgg	ctt	gag	cgt	cgt	acc	aac	tac	act	cgt	6432	
Ser	Lys	Ser	Ser	Glu	Ala	Trp	Leu	Glu	Arg	Arg	Thr	Asn	Tyr	Thr	Arg		
						2135					2140						
tca	ctt	gga	gtc	atg	tcc	atg	gtc	ggc	tac	atc	ctt	ggt	cta	ggt	gac	6480	
Ser	Leu	Gly	Val	Met	Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp		
2145					2150					2155					2160		
cgc	cac	ccg	tcc	aat	ctt	ctt	ctg	gac	aga	gtg	acc	ggc	aaa	gtg	gtt	6528	
Arg	His	Pro	Ser	Asn	Leu	Leu	Leu	Asp	Arg	Val	Thr	Gly	Lys	Val	Val		
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cat	att	gac	ttt	ggt	gac	tgc	ttc	gaa	gtt	gcc	atg	cat	cgt	gaa	aag	6576	
His	Ile	Asp	Phe	Gly	Asp	Cys	Phe	Glu	Val	Ala	Met	His	Arg	Glu	Lys		
				2180			2185						2190				
tat	ccg	gag	cgc	gtg	cca	ttc	cgt	ttg	acg	cgt	atg	ttg	acg	ttt	gcg	6624	
Tyr	Pro	Glu	Arg	Val	Pro	Phe	Arg	Leu	Thr	Arg	Met	Leu	Thr	Phe	Ala		
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atg	gaa	gtc	agc	aac	att	gaa	gga	agc	tac	cgg	atc	act	tgt	gaa	gct	6672	
Met	Glu	Val	Ser	Asn	Ile	Glu	Gly	Ser	Tyr	Arg	Ile	Thr	Cys	Glu	Ala		
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gtc	atg	cgg	gtg	ata	cgt	gag	aac	aag	gac	tgc	ctg	atg	gcc	gtt	ctg	6720	
Val	Met	Arg	Val	Ile	Arg	Glu	Asn	Lys	Asp	Ser	Leu	Met	Ala	Val	Leu		
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gag	gct	ttt	att	cac	gac	cct	cta	atc	aac	tgg	cgt	ctg	gga	att	cgc	6768	
Glu	Ala	Phe	Ile	His	Asp	Pro	Leu	Ile	Asn	Trp	Arg	Leu	Gly	Ile	Arg		
				2245					2250					2255			
gag	tct	cct	gac	cga	atg	cca	ttt	aac	gcg	gag	cgt	cgt	caa	tcg	att	6816	
Glu	Ser	Pro	Asp	Arg	Met	Pro	Phe	Asn	Ala	Glu	Arg	Arg	Gln	Ser	Ile		
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Val	Ser	Asn	Val	Asn	Leu	Glu	His	Gly	Val	Gln	Pro	Ser	Asn	Phe	Ser		
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cgg	cac	cgt	cgg	cct	tca	atc	ctt	gaa	ggt	ggt	att	ctc	gac	gct	caa	6912	
Arg	His	Arg	Arg	Pro	Ser	Ile	Leu	Glu	Gly	Gly	Ile	Leu	Asp	Ala	Gln		
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gaa	ggg	gtg	cct	aat	gag	gca	cgt	gag	gct	cag	aat	gca	aga	gcc	tta	6960	
Glu	Gly	Val	Pro	Asn	Glu	Ala	Arg	Glu	Ala	Gln	Asn	Ala	Arg	Ala	Leu		
2305					2310					2315					2320		
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Gln	Val	Leu	Ala	Arg	Val	Arg	Glu	Lys	Leu	Thr	Gly	Arg	Asp	Phe	Lys	
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Pro	Ser	Glu	Glu	Leu	Asn	Val	Ser	Asp	Gln	Val	Asp	Lys	Leu	Leu	Ala	
			2340					2345					2350			
cag	gca	act	agt	gtt	gag	aac	atc	tgt	cag	cat	tgg	att	gga	tgg	tgc	7104
Gln	Ala	Thr	Ser	Val	Glu	Asn	Ile	Cys	Gln	His	Trp	Ile	Gly	Trp	Cys	
		2355					2360					2365				
agt	ttc	tgg	tga													7116
Ser	Phe	Trp														
	2370															

&lt;210&gt; 2539

&lt;211&gt; 2371

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 2539

Met	Ala	Gln	Ala	Gly	Pro	Ile	Thr	Asp	Val	Thr	Gln	Arg	Leu	Phe	Ile	
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Glu	Leu	Lys	Ser	Lys	Asn	Glu	Glu	Thr	Arg	Val	Arg	Ala	Ala	Tyr	Glu	
			20					25					30			
Leu	Tyr	Glu	Asn	Val	Leu	Ala	Ile	Ser	Arg	Asp	Trp	Pro	Pro	Glu	Lys	
		35					40					45				
Phe	Ile	Glu	Phe	Tyr	Asn	Ala	Val	Ser	Gln	Arg	Ile	Ala	Gln	Leu	Val	
	50					55					60					
Val	Thr	Gly	Ser	Asp	Ala	His	Glu	Arg	Ile	Gly	Gly	Leu	Leu	Ala	Leu	
65				70						75					80	
Asp	Arg	Leu	Ile	Asp	Phe	Asp	Gly	Val	Asp	Asn	Ala	Gln	Lys	Thr	Thr	
			85					90						95		
Arg	Phe	Ala	Ser	Tyr	Leu	Arg	Ser	Ala	Leu	Arg	Ser	Ser	Asp	Asn	Ala	
			100					105					110			
Val	Leu	Val	Tyr	Ala	Ala	Arg	Ala	Leu	Gly	Arg	Leu	Ala	Lys	Pro	Gly	
		115					120					125				
Gly	Ala	Leu	Thr	Ala	Glu	Leu	Val	Glu	Ser	Glu	Ile	Gln	Ser	Ala	Leu	
	130					135					140					
Glu	Trp	Leu	Gln	Ser	Glu	Arg	Gln	Glu	Gly	Arg	Arg	Phe	Ala	Ala	Val	
145				150					155						160	
Leu	Val	Ile	Arg	Glu	Leu	Ala	Lys	Gly	Ser	Pro	Thr	Leu	Leu	Tyr	Gly	
			165					170						175		
Phe	Val	Pro	Gln	Ile	Phe	Glu	Leu	Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	
		180						185					190			
Lys	Val	Leu	Ile	Arg	Glu	Thr	Ala	Ala	Glu	Ala	Val	Arg	Gln	Leu	Trp	
		195					200					205				
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	210					215					220					
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225					230					235					240	
Lys	Gly	Ala	Met	Phe	Met	Asn	Glu	His	Tyr	Arg	Asn	Ala	Cys	Glu	Ile	
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Val	Leu	Arg	Leu	Lys	Asp	His	Arg	Asp	Pro	Lys	Ile	Arg	Thr	Gln	Val	
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Val	Leu	Thr	Ile	Pro	Ile	Leu	Ala	Ser	Tyr	Ala	Pro	Val	Asp	Phe	Thr	
		275					280					285				
Glu	Thr	Tyr	Leu	His	Arg	Phe	Met	Val	Tyr	Leu	Gln	Ala	Gln	Leu	Lys	
	290					295					300					
Lys	Asp	Lys	Glu	Arg	Asn	Ala	Ala	Phe	Ile	Ala	Ile	Gly	Lys	Ile	Ala	
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Asn	Ala	Val	Gly	Val	Ala	Ile	Ala	Gln	Tyr	Leu	Asp	Gly	Ile	Ile	Val	
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Tyr	Ile	Arg	Glu	Gly	Leu	Ala	Leu	Lys	Ala	Lys	Asn	Arg	Ala	Ala	Ile	
		340						345					350			
Asn	Glu	Ala	Pro	Met	Phe	Glu	Cys	Ile	Ser	Met	Leu	Ser	Leu	Ala	Val	
		355					360					365				
Gly	Gln	Ala	Leu	Ser	Lys	Tyr	Met	Glu	Ser	Leu	Leu	Asp	Pro	Ile	Phe	
	370					375						380				
Ala	Cys	Gly	Leu	Ser	Glu	Ser	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	
385					390					395					400	
His	Tyr	Ile	Pro	Pro	Ile	Lys	Pro	Thr	Ile	Gln	Val	Lys	Leu	Leu	Asp	



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				405					410					415	
Met	Leu	Ser	Leu	Ile	Leu	Asp	Gly	Thr	Pro	Phe	Arg	Pro	Leu	Gly	Cys
			420					425					430		
Pro	Glu	Ser	Arg	Leu	Pro	Pro	Leu	Pro	Ser	Phe	Ala	Lys	Asp	Phe	Thr
			435				440					445			
Leu	Gln	Glu	Leu	His	Ser	Asp	Ala	Glu	Ile	Ala	Leu	Ala	Leu	His	Thr
			450				455				460				
Leu	Gly	Ser	Phe	Asp	Phe	Ser	Gly	His	Ile	Leu	Asn	Glu	Phe	Val	Arg
465					470					475					480
Asp	Val	Ala	Ile	His	Tyr	Val	Glu	Asn	Asp	Asn	Pro	Glu	Ile	Arg	Lys
				485						490					
Ala	Ala	Ala	Leu	Thr	Cys	Cys	Gln	Leu	Phe	Val	His	Asp	Pro	Ile	Ile
			500					505					510		
Asn	Gln	Thr	Ser	Ser	His	Ser	Ile	Gln	Val	Val	Ser	Glu	Val	Ile	Asp
			515				520					525			
Lys	Leu	Leu	Thr	Val	Gly	Val	Gly	Asp	Pro	Asp	Pro	Glu	Ile	Arg	Arg
			530				535				540				
Thr	Val	Leu	Trp	Ser	Leu	Asp	Arg	Lys	Phe	Asp	Arg	His	Leu	Ala	Arg
545					550					555					560
Pro	Glu	Asn	Ile	Arg	Cys	Leu	Phe	Leu	Ala	Val	Asn	Asp	Glu	Val	Phe
				565					570					575	
Ala	Val	Arg	Glu	Ala	Ala	Ile	Cys	Ile	Gly	Arg	Leu	Ser	Ser	Val	
			580					585					590		
Asn	Pro	Ala	Tyr	Val	Phe	Pro	Pro	Leu	Arg	Lys	Leu	Leu	Val	Asn	Leu
			595				600					605			
Leu	Thr	Gly	Leu	Gly	Phe	Ala	Ser	Thr	Ala	Arg	Gln	Lys	Glu	Glu	Ser
			610			615					620				
Ala	Gln	Leu	Ile	Ser	Leu	Phe	Val	Ser	Asn	Ala	Thr	Lys	Leu	Ile	Arg
625					630					635					640
Ser	Tyr	Val	Asp	Pro	Met	Val	Thr	Thr	Leu	Leu	Pro	Lys	Ala	Val	Asp
				645					650					655	
Ala	Asn	His	Gly	Val	Ala	Ser	Thr	Thr	Leu	Lys	Ala	Val	Gly	Glu	Leu
			660					665					670		
Ala	Ser	Val	Gly	Gly	Ser	Asp	Met	Lys	Ala	Tyr	Leu	Pro	Lys	Leu	Met
			675				680								
Pro	Ile	Val	Leu	Asp	Ala	Leu	Gln	Asp	Leu	Ser	Ser	His	Ala	Lys	Arg
			690			695					700				
Glu	Ala	Ala	Leu	Arg	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Ser	Gly	Tyr
705					710					715					720
Val	Ile	Asp	Pro	Tyr	Thr	Asp	His	Pro	His	Leu	Leu	Ala	Val	Leu	Ile
				725					730					735	
Gly	Ile	Ile	Lys	Thr	Glu	Gln	Ala	Gly	Ser	Leu	Arg	Lys	Glu	Thr	Ile
			740					745					750		
Lys	Val	Leu	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	Tyr	Gln	Gln

## PhoenixTemp32470.tmp.txt

Gly Ser Ser Gly Glu Glu Tyr Met His Leu Ile Val Pro Ser Ile Val  
 965 970 975  
 Arg Leu Phe Asp Arg Ser Gln Asn Pro Ala Ser Ile Arg Lys Ser Ala  
 980 985 990  
 Ile Asp Ser Leu Thr Lys Leu Ser Arg Gln Val Asn Val Ser Asp Phe  
 995 1000 1005  
 Ala Ser Leu Ile Val His Ser Leu Ser Arg Val Val Ala Gly Asn Asp  
 1010 1015 1020  
 Arg Met Leu Arg Gln Ala Ala Met Asp Cys Ile Cys Ser Leu Ile Phe  
 1025 1030 1035 1040  
 Gln Leu Gly Gln Asp Phe Asn His Tyr Ile His Leu Leu Asn Lys Val  
 1045 1050 1055  
 Leu Lys His His Gln Val Asn His Val Asn Tyr Gln Ile Leu Val Thr  
 1060 1065 1070  
 Lys Leu Gln Lys Gly Asp Pro Leu Pro Gln Asp Leu Asn Pro Asp Glu  
 1075 1080 1085  
 Ser Tyr Ala Pro Leu Ala Asp Asp Ala Asn Tyr Ala Glu Ile Gly Gln  
 1090 1095 1100  
 Lys Lys Met Val Val Asn Gln Gln His Leu Lys Asn Ala Trp Asp Ala  
 1105 1110 1115 1120  
 Ser Gln Lys Ser Thr Arg Glu Asp Trp Gln Glu Trp Ile Arg Arg Phe  
 1125 1130 1135  
 Ser Val Glu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Ala Cys  
 1140 1145 1150  
 Ala Ser Leu Ala Gly Ile Tyr Gln Pro Leu Ala Arg Asp Leu Phe Asn  
 1155 1160 1165  
 Ala Ala Phe Val Ser Cys Trp Thr Glu Leu Tyr Asp Gln Tyr Gln Glu  
 1170 1175 1180  
 Glu Leu Val Arg Ser Ile Glu Lys Ala Leu Thr Ser Pro Asn Ile Pro  
 1185 1190 1195 1200  
 Pro Glu Ile Leu Gln Ile Leu Leu Asn Leu Ala Glu Phe Met Glu His  
 1205 1210 1215  
 Asp Asp Lys Ala Leu Pro Ile Asp Ile Arg Thr Leu Gly Lys Tyr Ala  
 1220 1225 1230  
 Ala Lys Cys His Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Leu Glu  
 1235 1240 1245  
 Phe Glu Gln Asp Gln Asn Ser Gly Ala Val Glu Ala Leu Ile Thr Ile  
 1250 1255 1260  
 Asn Asn Gln Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Arg Lys  
 1265 1270 1275 1280  
 Ala Gln Ala Tyr Arg Asp Val Glu Leu Lys Glu Thr Trp Phe Glu Lys  
 1285 1290 1295  
 Leu Gln Arg Trp Glu Glu Ala Leu Ala Ala Tyr Lys Arg Arg Glu Lys  
 1300 1305 1310  
 Ile Asp Pro Asp Ser Phe Gly Ile Thr Met Gly Lys Met Arg Cys Leu  
 1315 1320 1325  
 His Ala Leu Gly Glu Trp Lys Val Leu Ser Asp Leu Ala Gln Glu Lys  
 1330 1335 1340  
 Trp Asn Gln Ala Ser Leu Glu His Arg Lys Ser Ile Ala Pro Leu Ala  
 1345 1350 1355 1360  
 Ala Ala Ala Ala Trp Gly Arg Gly Gln Trp Glu Leu Met Asp Ser Tyr  
 1365 1370 1375  
 Leu Gly Val Met Lys Glu Gln Ser Pro Asp Arg Ser Phe Phe Gly Ala  
 1380 1385 1390  
 Ile Leu Ala Ile His Arg Asn Gln Phe Asp Glu Ala Ile Met Tyr Ile  
 1395 1400 1405  
 Glu Lys Ala Arg Asn Gly Leu Asp Thr Glu Leu Ser Ala Leu Leu Gly  
 1410 1415 1420  
 Glu Ser Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Val Gln Met Leu  
 1425 1430 1435 1440  
 Ala Glu Leu Glu Glu Ile Ile Thr Tyr Lys Gln Asn Val Gly Asp Pro  
 1445 1450 1455  
 Glu Arg Gln Glu Ala Met Arg Gln Thr Trp Asn Arg Arg Leu Leu Gly  
 1460 1465 1470  
 Cys Gln Gln Asn Val Glu Val Trp Gln Arg Met Leu Lys Val Arg Ala  
 1475 1480 1485  
 Leu Val Thr Thr Pro Arg Glu Asn Leu Asp Met Trp Ile Lys Phe Ala  
 1490 1495 1500  
 Asn Leu Cys Arg Lys Ser Asn Arg Met Gly Leu Ala Glu Arg Ser Leu

## PhoenixTemp32470.tmp.txt

1505 1510 1515 1520  
 Ala Ser Leu Glu Thr Val Ile Pro Asp Gly Asn Gly Gly Thr Arg Thr  
 1525 1530 1535  
 Ile Ser Pro Pro Glu Val Thr Tyr Ala Arg Leu Lys Phe Ser Trp Ala  
 1540 1545 1550  
 Thr Gly Arg Gln Arg Glu Ala Leu His Met Leu Arg Glu Phe Thr Ala  
 1555 1560 1565  
 Asn Leu Thr Glu Asp Phe Thr Arg Phe Asn Ala Leu Val Ala Ser Gln  
 1570 1575 1580  
 Ser Asp His Asn Gly Ile Asn Gly Val Asn Gly Ile Ala Glu Gly Asn  
 1585 1590 1595 1600  
 His Thr Asp Ile Met Ala Leu Arg Glu Arg Val Gly Asp Val Asn Lys  
 1605 1610 1615  
 Phe Arg Lys Leu Leu Ala Lys Ser Tyr Leu Arg Leu Gly Glu Trp Gln  
 1620 1625 1630  
 Thr Ala Leu Gln Arg Gly Asp Trp Arg Pro Glu His Val Arg Glu Val  
 1635 1640 1645  
 Leu Asn Ala Tyr Ser Ala Ala Thr Arg Tyr Asn Arg Asp Ser Tyr Lys  
 1650 1655 1660  
 Ala Trp His Ser Trp Ala Leu Ala Asn Phe Glu Val Val Thr Thr Ile  
 1665 1670 1675 1680  
 Ala Ser Gln Ala Ser Lys Asp Gly Gly Asn Leu Ala Leu Val Pro Gly  
 1685 1690 1695  
 His Ile Val Thr Glu His Val Ile Pro Ala Ile Arg Gly Phe Phe Arg  
 1700 1705 1710  
 Ser Ile Ala Leu Ser Ser Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu  
 1715 1720 1725  
 Leu Thr Leu Trp Phe Asn His Gly Gly Asp Gln Glu Val Asn Ser Val  
 1730 1735 1740  
 Val Thr Glu Gly Phe Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val  
 1745 1750 1755 1760  
 Thr Pro Gln Leu Ile Ala Arg Ile Asn Gln Pro Asn Phe Arg Val Arg  
 1765 1770 1775  
 Ser Ala Val His Arg Leu Leu Ala Glu Val Gly Lys Ala His Pro Gln  
 1780 1785 1790  
 Ala Leu Val Tyr Pro Leu Thr Val Ala Met Lys Ser Asn Val Ala Arg  
 1795 1800 1805  
 Arg Ser Gln Ser Ala Gly Asn Ile Met Glu Ser Met Arg Thr His Ser  
 1810 1815 1820  
 Ala Asn Leu Val Glu Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg  
 1825 1830 1835 1840  
 Val Ala Val Leu Trp His Glu Leu Trp His Glu Gly Leu Glu Glu Ala  
 1845 1850 1855  
 Ser Arg Leu Tyr Phe Gly Asp His Asn Val Asp Gly Met Phe Ala Thr  
 1860 1865 1870  
 Leu Ala Pro Leu His Glu Met Leu Asp Lys Gly Ala Glu Thr Leu Arg  
 1875 1880 1885  
 Glu Val Ser Phe Ala Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys  
 1890 1895 1900  
 His Tyr Cys Met Leu Tyr Arg Glu Thr Glu Glu Ile Gly Asp Leu Asn  
 1905 1910 1915 1920  
 Gln Ala Trp Asp Leu Tyr Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln  
 1925 1930 1935  
 Leu Pro Gln Leu Ser Thr Leu Asp Leu Lys Tyr Val Ser Pro Lys Leu  
 1940 1945 1950  
 Lys Asp Cys Val Asp Leu Asp Leu Ala Val Pro Gly Thr Tyr Gln Ser  
 1955 1960 1965  
 Gly Arg Pro Ile Ile Arg Ile Ile Ser Phe Asp Pro Ile Leu His Val  
 1970 1975 1980  
 Leu Gln Thr Lys Lys Arg Pro Arg Arg Met Thr Leu Lys Gly Ser Asp  
 1985 1990 1995 2000  
 Gly Ser Ser Tyr Met Tyr Val Val Lys Gly His Glu Asp Ile Arg Gln  
 2005 2010 2015  
 Asp Glu Arg Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Asp  
 2020 2025 2030  
 Asn Asp Ser Glu Ser Phe Lys Arg His Leu Thr Val Gln Arg Phe Pro  
 2035 2040 2045  
 Ala Ile Pro Leu Ser Gln Asn Ser Gly Ile Ile Gly Trp Val Thr Asn  
 2050 2055 2060

## PhoenixTemp32470.tmp.txt

Ser Asp Thr Leu His Ala Leu Ile Lys Glu Tyr Arg Glu Thr Arg Arg  
 2065 2070 2075 2080  
 Ile Leu Leu Asn Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp  
 2085 2090 2095  
 Tyr Asp Asn Leu Thr Leu Met Gln Lys Val Glu Val Phe Gly Tyr Ala  
 2100 2105 2110  
 Met Asp Asn Thr Thr Gly Lys Asp Leu Tyr Arg Val Leu Trp Leu Lys  
 2115 2120 2125  
 Ser Lys Ser Ser Glu Ala Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg  
 2130 2135 2140  
 Ser Leu Gly Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp  
 2145 2150 2155 2160  
 Arg His Pro Ser Asn Leu Leu Leu Asp Arg Val Thr Gly Lys Val Val  
 2165 2170 2175  
 His Ile Asp Phe Gly Asp Cys Phe Glu Val Ala Met His Arg Glu Lys  
 2180 2185 2190  
 Tyr Pro Glu Arg Val Pro Phe Arg Leu Thr Arg Met Leu Thr Phe Ala  
 2195 2200 2205  
 Met Glu Val Ser Asn Ile Glu Gly Ser Tyr Arg Ile Thr Cys Glu Ala  
 2210 2215 2220  
 Val Met Arg Val Ile Arg Glu Asn Lys Asp Ser Leu Met Ala Val Leu  
 2225 2230 2235 2240  
 Glu Ala Phe Ile His Asp Pro Leu Ile Asn Trp Arg Leu Gly Ile Arg  
 2245 2250 2255  
 Glu Ser Pro Asp Arg Met Pro Phe Asn Ala Glu Arg Arg Gln Ser Ile  
 2260 2265 2270  
 Val Ser Asn Val Asn Leu Glu His Gly Val Gln Pro Ser Asn Phe Ser  
 2275 2280 2285  
 Arg His Arg Arg Pro Ser Ile Leu Glu Gly Gly Ile Leu Asp Ala Gln  
 2290 2295 2300  
 Glu Gly Val Pro Asn Glu Ala Arg Glu Ala Gln Asn Ala Arg Ala Leu  
 2305 2310 2315 2320  
 Gln Val Leu Ala Arg Val Arg Glu Lys Leu Thr Gly Arg Asp Phe Lys  
 2325 2330 2335  
 Pro Ser Glu Glu Leu Asn Val Ser Asp Gln Val Asp Lys Leu Leu Ala  
 2340 2345 2350  
 Gln Ala Thr Ser Val Glu Asn Ile Cys Gln His Trp Ile Gly Trp Cys  
 2355 2360 2365  
 Ser Phe Trp  
 2370

&lt;210&gt; 2540

&lt;211&gt; 7233

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7233)

&lt;400&gt; 2540

atg tcc gtc ctt ggc acc cat cag agc gat gcg ctc aat cgc atc ttt	48
Met Ser Val Leu Gly Thr His Gln Ser Asp Ala Leu Asn Arg Ile Phe	
1 5 10 15	
gct gga ctc aag agc aga gat gag gcc aca cgt caa gca gct ggc gaa	96
Ala Gly Leu Lys Ser Arg Asp Glu Ala Thr Arg Gln Ala Ala Gly Glu	
20 25 30	
gag ctc aaa tcg cac gtc gca ctc gtc gtc tcg gaa ctc aag ggt gac	144
Glu Leu Lys Ser His Val Ala Leu Val Val Ser Glu Leu Lys Gly Asp	
35 40 45	
agc ctc tcc tcg ttc aac aac gat cta cac cgc aga atc ttc gaa ctt	192
Ser Leu Ser Ser Phe Asn Asn Asp Leu His Arg Arg Ile Phe Glu Leu	
50 55 60	
gcg cac agt cag cat gtt cac gaa aag ctt ggt ggt gtc att gcc atc	240
Ala His Ser Gln His Val His Glu Lys Leu Gly Gly Val Ile Ala Ile	
65 70 75 80	
gaa gac ctc atc gaa cag gaa agc gag gac aat agc gct cgt ctc tac	288
Glu Asp Leu Ile Glu Gln Glu Ser Glu Asp Asn Ser Ala Arg Leu Tyr	
85 90 95	

## PhoenixTemp32470.tmp.txt

cgc	ttc	tac	caa	tac	ctc	aaa	cct	aat	ttg	cca	tgc	aac	gat	gct	tcc	336
Arg	Phe	Tyr	Gln	Tyr	Leu	Lys	Pro	Asn	Leu	Pro	Cys	Asn	Asp	Ala	Ser	
			100					105					110			
gtc	atg	atc	gcc	gcc	tcc	cgc	gcc	ttg	gga	agg	gtc	gcc	tac	cac	ggc	384
Val	Met	Ile	Ala	Ala	Ser	Arg	Ala	Leu	Gly	Arg	Val	Ala	Tyr	His	Gly	
		115					120					125				
ggt	caa	tcg	ctc	gga	gaa	cag	ttt	atc	gaa	tac	gaa	gtg	ctt	cgt	gtg	432
Gly	Gln	Ser	Leu	Gly	Glu	Gln	Phe	Ile	Glu	Tyr	Glu	Val	Leu	Arg	Val	
	130					135					140					
ctc	gat	ttc	ctc	caa	gcc	ggc	gat	cgg	aac	gag	tcg	gga	cga	tac	gct	480
Leu	Asp	Phe	Leu	Gln	Ala	Gly	Asp	Arg	Asn	Glu	Ser	Gly	Arg	Tyr	Ala	
145					150					155					160	
gcc	gtg	ctc	atc	atc	cgt	gaa	atg	gca	aaa	agg	gtg	ccg	cag	cag	ttt	528
Ala	Val	Leu	Ile	Ile	Arg	Glu	Met	Ala	Lys	Arg	Val	Pro	Gln	Gln	Phe	
				165					170					175		
cat	ccc	tac	gtt	cct	cgt	gtc	cta	gac	cgc	atc	tgg	gtt	gct	ctc	cga	576
His	Pro	Tyr	Val	Pro	Arg	Val	Leu	Asp	Arg	Ile	Trp	Val	Ala	Leu	Arg	
			180					185					190			
gat	gtt	cgt	gtc	atc	gtc	aga	gaa	ggg	gcc	gca	gaa	gcc	atg	ggg	gcc	624
Asp	Val	Arg	Val	Ile	Val	Arg	Glu	Gly	Ala	Ala	Glu	Ala	Met	Gly	Ala	
		195					200					205				
tgt	ctc	ggc	atc	atc	gct	gca	cgt	gaa	aag	cag	atg	ggc	agt	cat	ttt	672
Cys	Leu	Gly	Ile	Ile	Ala	Ala	Arg	Glu	Lys	Gln	Met	Gly	Ser	His	Phe	
	210				215						220					
ttc	gag	tca	atc	tac	gaa	gag	gcc	gaa	aag	ggc	ctc	aag	atg	agc	gca	720
Phe	Glu	Ser	Ile	Tyr	Glu	Glu	Ala	Glu	Lys	Gly	Leu	Lys	Met	Ser	Ala	
225					230					235					240	
ccc	gaa	gcc	atc	cac	gga	agc	ctg	ctc	gct	gta	cag	cag	ctg	ctg	cag	768
Pro	Glu	Ala	Ile	His	Gly	Ser	Leu	Leu	Ala	Val	Gln	Gln	Leu	Leu	Gln	
				245					250					255		
cac	tcg	aaa	acc	ttc	atg	cgc	aat	cgc	ttc	cag	cgc	gcc	tgc	gag	ctc	816
His	Ser	Lys	Thr	Phe	Met	Arg	Asn	Arg	Phe	Gln	Arg	Ala	Cys	Glu	Leu	
			260					265					270			
gtc	ttc	cgt	ctg	cac	aag	cat	cgc	gat	cct	ctg	atc	cgc	cgc	acc	atc	864
Val	Phe	Arg	Leu	His	Lys	His	Arg	Asp	Pro	Leu	Ile	Arg	Arg	Thr	Ile	
		275					280					285				
acc	aac	ctg	gtc	ccc	gtc	ctg	gcg	cgc	tac	gac	cca	cac	tat	ttc	gcc	912
Thr	Asn	Leu	Val	Pro	Val	Leu	Ala	Arg	Tyr	Asp	Pro	His	Tyr	Phe	Ala	
	290				295					300						
gag	gag	cat	ctg	cga	gcc	gtc	atg	ggc	att	ctc	aca	gag	caa	cta	cga	960
Glu	Glu	His	Leu	Arg	Ala	Val	Met	Gly	Ile	Leu	Thr	Glu	Gln	Leu	Arg	
305					310					315					320	
aga	gaa	aag	gac	cga	tcg	ccc	aag	gag	tca	gca	cag	acg	ttt	gaa	aca	1008
Arg	Glu	Lys	Asp	Arg	Ser	Pro	Lys	Glu	Ser	Ala	Gln	Thr	Phe	Glu	Thr	
				325				330						335		
atc	ggc	ttt	gtt	gct	gca	gcc	atg	ggt	ccc	agg	atg	aag	cct	ttc	atc	1056
Ile	Gly	Phe	Val	Ala	Ala	Ala	Met	Gly	Pro	Arg	Met	Lys	Pro	Phe	Ile	
			340					345					350			
gag	cca	gtc	ctg	gcc	tgc	gtc	aag	gag	ggc	ctg	cag	atg	cgc	gga	aag	1104
Glu	Pro	Val	Leu	Ala	Cys	Val	Lys	Glu	Gly	Leu	Gln	Met	Arg	Gly	Lys	
		355					360					365				
aaa	aac	gcc	cca	ccc	gaa	ggc	ccc	atc	ttt	ctc	tgt	gtc	ggc	aac	ctt	1152
Lys	Asn	Ala	Pro	Pro	Glu	Gly	Pro	Ile	Phe	Leu	Cys	Val	Gly	Asn	Leu	
	370					375					380					
gcc	acc	gca	gtg	ggt	cca	cat	ctc	aca	cga	tac	atg	cac	gac	ctc	ctc	1200
Ala	Thr	Ala	Val	Gly	Pro	His	Leu	Thr	Arg	Tyr	Met	His	Asp	Leu	Leu	
385					390					395					400	
gac	ctc	atg	ttc	tct	tgt	ggc	ctc	agc	atc	ccg	ctc	gtc	aca	gca	ctc	1248
Asp	Leu	Met	Phe	Ser	Cys	Gly	Leu	Ser	Ile	Pro	Leu	Val	Thr	Ala	Leu	
				405					410					415		
gat	ggc	atc	gta	aag	gca	att	ccg	cca	ctc	atg	aag	gtg	gta	cag	gat	1296
Asp	Gly	Ile	Val	Lys	Ala	Ile	Pro	Pro	Leu	Met	Lys	Val	Val	Gln	Asp	
			420					425					430			
cgt	ctc	ttg	gac	atg	ctt	tcc	atg	acg	ctg	att	gga	caa	ccc	tac	cgc	1344
Arg	Leu	Leu	Asp	Met	Leu	Ser	Met	Thr	Leu	Ile	Gly	Gln	Pro	Tyr	Arg	
		435					440					445				
ccg	ctc	gga	gct	ccc	gcc	agt	ctt	cgc	ccc	tcg	gcc	aac	gct	agt	cgc	1392
Pro	Leu	Gly	Ala	Pro	Ala	Ser	Leu	Arg	Pro	Ser	Ala	Asn	Ala	Ser	Arg	
	450					455					460					

## PhoenixTemp32470.tmp.txt

gat Asp 465	gtg Val	gtt Val	gcc Ala	gct Ala	caa Gln 470	acc Thr	gtc Val	gaa Glu	tcc Ser	aag Lys 475	ggt Gly	gtc Val	gag Glu	acc Thr	ata Ile 480	1440
acg Thr	gtc Val	gca Ala	ctg Leu	cag Gln 485	acg Thr	ctg Leu	ggc Gly	agg Arg	ttc Phe 490	gac Asp	ttc Phe	caa Gln	ggc Gly	cac His 495	att Ile	1488
ctc Leu	aac Asn	gaa Glu	ttc Phe 500	gtc Val	cgt Arg	aac Asn	tgc Cys	acg Thr 505	ctc Leu	cct Pro	tac Tyr	ctc Leu	gag Glu 510	gat Asp	gac Asp	1536
cat His	gct Ala	gcc Ala 515	gtg Val	cgg Arg	caa Gln	gct Ala	gcg Ala 520	gct Ala	gag Glu	acg Thr	tgc Cys	gcc Ala 525	gac Asp	ttg Leu	ttc Phe	1584
gtc Val	aac Asn 530	gac Asp	ccc Pro	atc Ile	tgc Cys	cgt Arg 535	caa Gln	acc Thr	agc Ser	atg Met	cac His 540	gcc Ala	atc Ile	gag Glu	gtg Val	1632
gtc Val 545	aac Asn	gat Asp	gtg Val	ctc Leu	gac Asp 550	aag Lys	ctc Leu	atg Met	acc Thr	gtc Val 555	ggc Gly	att Ile	gct Ala	gat Asp	cca Pro 560	1680
gat Asp	cca Pro	gaa Glu	ctc Leu	cga Arg 565	tgg Trp	aca Thr	gtg Val	ctc Leu	agc Ser 570	aag Lys	ttt Phe	ggc Gly	gct Ala	cag Gln 575	gag Glu	1728
caa Gln	ttt Phe	gat Asp	cgc Arg 580	cat His	ctt Leu	gcc Ala	caa Gln	tcc Ser 585	gaa Glu	tat Tyr	gtc Val	cgt Arg	tcc Ser 590	ctc Leu	ttc Phe	1776
atc Ile	gcg Ala	ctc Leu 595	aac Asn	gac Asp	gaa Glu	aaa Lys	ttc Phe 600	aag Lys	ggt Val	cgc Arg	gag Glu	gtg Val 605	gcc Ala	att Ile	gtc Val	1824
atc Ile 610	atc Ile	ggg Gly	cgt Arg	ctg Leu	gca Ala	aag Lys 615	cac His	aac Asn	cca Pro	gcc Ala	tac Tyr 620	gtc Val	atg Met	ccc Pro	tcc Ser	1872
ctc Leu 625	cgc Arg	aaa Lys	gca Ala	ctc Leu	att Ile 630	cag Gln	ctg Leu	ctc Leu	acc Thr	gag Glu 635	ctt Leu	gaa Glu	tat Tyr	tcg Ser	acg Thr 640	1920
gtc Val	agc Ser	cgg Arg	cac His	aag Lys 645	gaa Glu	gag Glu	gct Ala	gct Ala	aag Lys 650	ctg Leu	ctg Leu	acc Thr	gag Glu	gtc Val 655	gtc Val	1968
cgt Arg	gcc Ala	tca Ser	caa Gln 660	cgt Arg	ctc Leu	gtc Val	aag Lys	tcg Ser 665	tat Tyr	gcg Ala	ttg Leu	ccc Pro	atg Met 670	ctt Leu	gag Glu	2016
gtg Val	ctg Leu	ttg Leu 675	ccc Pro	aaa Lys	gca Ala	aac Asn	gat Asp 680	ccc Pro	agc Ser	gtc Val	ggt Gly	gtc Val 685	gcg Ala	gcc Ala	aga Arg	2064
gtc Val 690	atg Met	gag Glu	tgt Cys	ctc Leu	ggt Gly	gaa Glu 695	ctc Leu	gcc Ala	aaa Lys	gtg Val	gga Gly 700	gga Gly	gag Glu	gat Asp	ctt Leu	2112
gcg Ala 705	cca Pro	aac Asn	gtc Val	gat Asp	cag Gln 710	ctc Leu	atg Met	cgt Arg	ctt Leu	gcc Ala 715	atc Ile	gac Asp	caa Gln	ctc Leu	tca Ser 720	2160
agc Ser	acc Thr	gca Ala	cct Pro	ggc Gly 725	tca Ser	tcc Ser	acc Thr	gca Ala	aag Lys 730	cgg Arg	gac Asp	gct Ala	gct Ala	ctc Leu 735	aag Lys	2208
aca Thr	ctt Leu	ggt Gly	ctc Leu 740	gtc Val	gct Ala	tcc Ser	aac Asn	act Thr 745	ggc Gly	cac His	gtc Val	gtc Val	aac Asn 750	cca Pro	tac Tyr	2256
ctc Leu	acg Thr	tat Tyr 755	aga Arg	aac Asn	ctg Leu	ctc Leu	ggc Gly 760	acg Thr	gtc Val	gtc Val	aag Lys	atc Ile 765	ctc Leu	aaa Lys	aca Thr	2304
gag Glu 770	cag Gln	tcc Ser	aag Lys	ccc Pro	gtc Val	cgt Arg 775	cgc Arg	gag Glu	acg Thr	atc Ile	cgt Arg 780	gtc Val	atg Met	ggc Gly	atc Ile	2352
ctt Leu 785	ggt Gly	gct Ala	ctg Leu	gat Asp	cca Pro 790	tac Tyr	aga Arg	tac Tyr	aag Lys	ctg Leu 795	ctc Leu	gag Glu	aag Lys	aac Asn	ggc Gly 800	2400
gac Asp	gag Glu	ggt Gly	caa Gln 805	gac Asp	gag Glu	aca Thr	tca Ser	aag Lys	gga Gly 810	agc Ser	ggc Gly	acc Thr	gac Asp	ctc Leu 815	ttt Phe	2448
gag Glu	ctt Leu	gct Ala	ttg Leu 820	gca Ala	atc Ile	ggc Gly	act Thr	tcg Ser 825	acc Thr	gac Asp	gac Asp	tac Tyr	tac Tyr 830	cag Gln	aac Asn	2496

## PhoenixTemp32470.tmp.txt

atc	gcc	att	gat	gcg	ctc	atc	acc	atc	ctc	aag	gac	cct	tcg	ctc	tcg	2544
Ile	Ala	Ile	Asp	Ala	Leu	Ile	Thr	Ile	Leu	Lys	Asp	Pro	Ser	Leu	Ser	
		835					840					845				
aca	cat	cat	cat	gcc	gtc	atc	gag	gcc	atc	atg	tac	atg	ttc	aag	acg	2592
Thr	His	His	His	Ala	Val	Ile	Glu	Ala	Ile	Met	Tyr	Met	Phe	Lys	Thr	
	850					855					860					
caa	ggt	ctc	aag	tgc	gtc	act	ttc	ctg	cct	cag	atc	att	cca	gct	ttc	2640
Gln	Gly	Leu	Lys	Cys	Val	Thr	Phe	Leu	Pro	Gln	Ile	Ile	Pro	Ala	Phe	
865					870					875					880	
ctc	aac	gtg	atc	cgc	acc	tgt	ggc	acg	ggc	ctg	tcc	gaa	ttc	tac	ttt	2688
Leu	Asn	Val	Ile	Arg	Thr	Cys	Gly	Thr	Gly	Leu	Ser	Glu	Phe	Tyr	Phe	
				885					890					895		
cag	cag	cta	gcc	att	ctc	atc	tcg	atc	atc	aag	cag	cac	gtc	cgc	agc	2736
Gln	Gln	Leu	Ala	Ile	Leu	Ile	Ser	Ile	Ile	Lys	Gln	His	Val	Arg	Ser	
			900					905					910			
tac	ctg	gag	ccc	atc	ttt	gag	ctg	gtc	cag	gaa	aat	tgg	aac	ccc	aat	2784
Tyr	Leu	Glu	Pro	Ile	Phe	Glu	Leu	Val	Gln	Glu	Asn	Trp	Asn	Pro	Asn	
		915					920					925				
tca	agc	atc	cag	ctc	acc	att	tcg	ctc	gtc	gag	gag	ggt	gcg	aaa		2832
Ser	Ser	Ile	Gln	Leu	Thr	Ile	Val	Ser	Leu	Val	Glu	Ala	Val	Ala	Lys	
	930					935				940						
gcg	ctt	gaa	ggc	gag	ttc	aaa	tca	tat	ctg	cct	atc	ttg	ctg	ccc	aac	2880
Ala	Leu	Glu	Gly	Glu	Phe	Lys	Ser	Tyr	Leu	Pro	Ile	Leu	Leu	Pro	Asn	
945					950					955					960	
atg	ctc	cag	acg	ctc	gac	ggt	gag	ata	acc	agc	aag	cgt	cag	cct	aca	2928
Met	Leu	Gln	Thr	Leu	Asp	Gly	Glu	Ile	Thr	Ser	Lys	Arg	Gln	Pro	Thr	
				965					970					975		
ttg	ctc	cgt	atc	ctg	cag	gcc	ttc	tac	gtc	ttt	ggt	tcg	aat	atc	gag	2976
Leu	Leu	Arg	Ile	Leu	Gln	Ala	Phe	Tyr	Val	Phe	Gly	Ser	Asn	Ile	Glu	
			980					985					990			
gag	tac	ttg	cat	ctg	gtg	ctg	ccg	gtc	gtc	gtc	aag	atg	ttc	gag	cgc	3024
Glu	Tyr	Leu	His	Leu	Val	Leu	Pro	Val	Val	Val	Lys	Met	Phe	Glu	Arg	
		995				1000					1005					
ccg	gac	gcg	tcg	cag	acg	ctt	cga	cgt	gct	gct	atc	ttg	acc	gta	ggt	3072
Pro	Asp	Ala	Ser	Gln	Thr	Leu	Arg	Arg	Ala	Ala	Ile	Leu	Thr	Val	Gly	
	1010					1015					1020					
aac	ttg	tcg	cgc	aaa	gtc	agc	ttc	tgc	gac	cat	gca	tca	cgc	gta	atc	3120
Asn	Leu	Ser	Arg	Lys	Val	Ser	Phe	Cys	Asp	His	Ala	Ser	Arg	Val	Ile	
1025				1030					1035					1040		
cac	cct	ctg	gtc	cgt	gtg	ctg	cct	acg	ggg	act	agc	gac	att	cgc	aac	3168
His	Pro	Leu	Val	Arg	Val	Leu	Pro	Thr	Gly	Thr	Ser	Asp	Ile	Arg	Asn	
				1045				1050					1055			
gcc	gtc	atg	gag	aca	ttg	tct	gcg	ctc	gta	gtg	cag	ctc	ggc	gct	tcg	3216
Ala	Val	Met	Glu	Thr	Leu	Ser	Ala	Leu	Val	Val	Gln	Leu	Gly	Ala	Ser	
			1060				1065					1070				
tac	gcc	atc	ttt	att	ccc	gtc	gtc	aat	aag	gtg	ctg	att	caa	aat	cgt	3264
Tyr	Ala	Ile	Phe	Ile	Pro	Val	Val	Asn	Lys	Val	Leu	Ile	Gln	Asn	Arg	
		1075				1080					1085					
ata	cag	cat	gcg	acg	tac	gat	cag	ctc	gtc	tcc	aag	ctg	ctg	aat	ggc	3312
Ile	Gln	His	Ala	Thr	Tyr	Asp	Gln	Leu	Val	Ser	Lys	Leu	Leu	Asn	Gly	
	1090				1095					1100						
gaa	cgc	ctg	ccg	caa	gac	ctg	tct	gcg	gct	gac	aat	gcg	ttg	ggg	agc	3360
Glu	Arg	Leu	Pro	Gln	Asp	Leu	Ser	Ala	Ala	Asp	Asn	Ala	Leu	Gly	Ser	
	1105			1110					1115					1120		
aag	atc	gac	gag	tcg	ccc	caa	gcc	gag	gct	aac	aag	atg	act	gtc	aac	3408
Lys	Ile	Asp	Glu	Ser	Pro	Gln	Ala	Glu	Ala	Asn	Lys	Met	Thr	Val	Asn	
				1125				1130					1135			
cag	caa	cat	ctc	aag	caa	gcc	tgg	gat	acg	tcc	aaa	gtg	tcg	acg	agc	3456
Gln	Gln	His	Leu	Lys	Gln	Ala	Trp	Asp	Thr	Ser	Lys	Val	Ser	Thr	Ser	
			1140			1145						1150				
gaa	gac	tgg	caa	gaa	tgg	ctc	aga	agg	atg	gcg	gtc	gag	ttc	atg	cgc	3504
Glu	Asp	Trp	Gln	Glu	Trp	Leu	Arg	Arg	Met	Ala	Val	Glu	Phe	Met	Arg	
		1155				1160					1165					
gaa	tcg	cca	agc	cat	gcc	ttg	agg	gcc	tgc	aga	agt	cta	gca	gac	gtt	3552
Glu	Ser	Pro	Ser	His	Ala	Leu	Arg	Ala	Cys	Arg	Ser	Leu	Ala	Asp	Val	
	1170				1175				1180							
tac	cca	gcg	ttg	gcg	tac	ggc	ctt	ttc	aac	gtc	gcc	ttt	gtt	tcg	tgc	3600
Tyr	Pro	Ala	Leu	Ala	Tyr	Gly	Leu	Phe	Asn	Val	Ala	Phe	Val	Ser	Cys	
	1185			1190					1195						1200	

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tgg acc gag ctg tac gag	cag tat cag agc gat cta gtc aag gcg ctt	3648
Trp Thr Glu Leu 1205	Glu Gln Tyr Gln Ser Asp Leu Val Lys Ala Leu 1215	
gag aca gca ttc gat gca cct gaa gtg cct ggc gat gtg gtg cac atg	3696	
Glu Thr Ala Phe Asp Ala Pro Glu Val Pro Gly Asp Val Val His Met		
1220 1225 1230		
cta ctc aat ctg gcc gag ttt atg gag cac gat gac aag gcg ttg cca	3744	
Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Asp Lys Ala Leu Pro		
1235 1240 1245		
atc aac att cgc gtg ctt ggc gac cgc gca tac aag ttc cac agc tat	3792	
Ile Asn Ile Arg Val Leu Gly Asp Arg Ala Tyr Lys Phe His Ser Tyr		
1250 1255 1260		
gca aag gcg ctc cac tac aag gag gcc gag ttc ctc aca gat cct tcg	3840	
Ala Lys Ala Leu His Tyr Lys Glu Ala Glu Phe Leu Thr Asp Pro Ser		
1265 1270 1275 1280		
ccg cag gtc gtc gaa agt ctc atc gat atc aac acc aag ttg cag cag	3888	
Pro Gln Val Val Glu Ser Leu Ile Asp Ile Asn Thr Lys Leu Gln Gln		
1285 1290 1295		
tcc gat gcg gcg ttc ggt gcc ctc acg tac gct cgg gag cat ctc gac	3936	
Ser Asp Ala Ala Phe Gly Ala Leu Thr Tyr Ala Arg Glu His Leu Asp		
1300 1305 1310		
atc acc cat cac gaa gag tgg tac gag aag ctg cac cgc tgg gag gag	3984	
Ile Thr His His Glu Glu Trp Tyr Glu Lys Leu His Arg Trp Glu Glu		
1315 1320 1325		
gcc ttg act gcg tac gac cgc aaa gcc atg ctc gac cca gac gac tat	4032	
Ala Leu Thr Ala Tyr Asp Arg Lys Ala Met Leu Asp Pro Asp Asp Tyr		
1330 1335 1340		
ggc gtc gcc ttt ggc aag atg cgc tgt ctg cat gct ttg gga gaa tgg	4080	
Gly Val Ala Phe Gly Lys Met Arg Cys Leu His Ala Leu Gly Glu Trp		
1345 1350 1355 1360		
gag cac cta tcg gac ctt gtg cag cag aaa tgg ggc aga gct gac atg	4128	
Glu His Leu Ser Asp Leu Val Gln Gln Lys Trp Gly Arg Ala Asp Met		
1365 1370 1375		
gag gac cgc cga cat atg gcg ccg ctt gcc gcg gct gcc gcc tgg tcg	4176	
Glu Asp Arg Arg His Met Ala Pro Leu Ala Ala Ala Ala Trp Ser		
1380 1385 1390		
ctc ggt cag tgg gac acc atg gac gac tac att tcg gcc atg cgc tcc	4224	
Leu Gly Gln Trp Asp Thr Met Asp Asp Tyr Ile Ser Ala Met Arg Ser		
1395 1400 1405		
gac tca tct gag cgc tcc ttc tac cgt gcc atc ctg cac acg cat cgt	4272	
Asp Ser Ser Glu Arg Ser Phe Tyr Arg Ala Ile Leu His Thr His Arg		
1410 1415 1420		
tcg caa cga gcc gcg gcc aac aag cag atc gcc aag gct cga gag tcg	4320	
Ser Gln Arg Ala Ala Asn Lys Gln Ile Ala Lys Ala Arg Glu Ser		
1425 1430 1435 1440		
ctc gac tcg gag ctc act gct ctc atc agc gag agc tat ggc cgt gca	4368	
Leu Asp Ser Glu Leu Thr Ala Leu Ile Ser Glu Ser Tyr Gly Arg Ala		
1445 1450 1455		
tac gac ctc atg gtt cgt aca cag atg ctt tcc gag ctc gag gag gca	4416	
Tyr Asp Leu Met Val Arg Thr Gln Met Leu Ser Glu Leu Glu Glu Ala		
1460 1465 1470		
ctg gca tac aag ctc gac tac aag gag cag cct gac cgc cag gcg acc	4464	
Leu Ala Tyr Lys Leu Asp Tyr Lys Glu Gln Pro Asp Arg Gln Ala Thr		
1475 1480 1485		
att cgc tcc acg tgg atg aag cgt ctc aaa ggc tgc cag ccc gag gta	4512	
Ile Arg Ser Thr Trp Met Lys Arg Leu Lys Gly Cys Gln Pro Glu Val		
1490 1495 1500		
gag gtg tgg cag cgc atc ctc tct gtg cgt tcg atc gtg ctc act ccg	4560	
Glu Val Trp Gln Arg Ile Leu Ser Val Arg Ser Ile Val Leu Thr Pro		
1505 1510 1515 1520		
gcc gac gat acg gaa acg tgg atc aag ttt gcc aac ttg tgc cgc aag	4608	
Ala Asp Asp Thr Glu Thr Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys		
1525 1530 1535		
tcc gga cgc atg gtg ttg gct gaa aag acg ctt aac tcg ctg ctg ggc	4656	
Ser Gly Arg Met Val Leu Ala Glu Lys Thr Leu Asn Ser Leu Leu Gly		
1540 1545 1550		
ccg gaa cgt acg aat gct gat cca cga tcg ccg att ggt ccc aga gca	4704	
Pro Glu Arg Thr Asn Ala Asp Pro Arg Ser Pro Ile Gly Pro Arg Ala		
1555 1560 1565		



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ccg cct ccg gtc atc tac gcc cac ctg aaa ttc atg tgg gct tct gga 4752  
 Pro Pro Val Ile Tyr Ala His Leu Lys Phe Met Trp Ala Ser Gly  
 1570 1575 1580  
 gcc aga att gag tcg ctt agc tat ctg caa gag ttt acg ctc aat ctc 4800  
 Ala Arg Ile Glu Ser Leu Ser Tyr Leu Gln Glu Phe Thr Leu Asn Leu  
 1585 1590 1595 1600  
 gct gag gat ctt ggg gtc cac act gtc gac gag cac ggc aac ctt gtc 4848  
 Ala Glu Asp Leu Gly Val His Thr Val Asp Glu His Gly Asn Leu Val  
 1605 1610 1615  
 acg cag gac tgg cag tcg tcg cca cat ctc ggc gag ttt gca cgc ctg 4896  
 Thr Gln Asp Trp Gln Ser Ser Pro His Leu Gly Glu Phe Ala Arg Leu  
 1620 1625 1630  
 ctg gca cgc tgc ttc ttc aag caa ggc gaa tgg cag atg tgc ttg cgc 4944  
 Leu Ala Arg Cys Phe Phe Lys Gln Gly Glu Trp Gln Met Ser Leu Arg  
 1635 1640 1645  
 gag aac tgg gtc acg gac gac aac agc aat gtg atc gag agc tac cgc 4992  
 Glu Asn Trp Val Thr Asp Asp Asn Ser Asn Val Ile Glu Ser Tyr Arg  
 1650 1655 1660  
 aga gcg act gag ctc gat cga aac tgg tac aag gca tgg cac gct tgg 5040  
 Arg Ala Thr Glu Leu Asp Arg Asn Trp Tyr Lys Ala Trp His Ala Trp  
 1665 1670 1675 1680  
 gcg ctg gcg aac ttc gag gtc atc tcg cac cac gag gag agg aat gaa 5088  
 Ala Leu Ala Asn Phe Glu Val Ile Ser His His Glu Glu Arg Asn Glu  
 1685 1690 1695  
 cag atc act ccg cag atg att gct gcc agt atc gtg cct tgc gtg cag 5136  
 Gln Ile Thr Pro Gln Met Ile Ala Ala Ser Ile Val Pro Ser Val Gln  
 1700 1705 1710  
 ggc ttc ttc cgc tgc atc gcg ttg gcg agt ggt aac tgc ttg caa gac 5184  
 Gly Phe Phe Arg Ser Ile Ala Leu Ala Ser Gly Asn Ser Leu Gln Asp  
 1715 1720 1725  
 acg ctc cgc ctg ctt acc cta tgg ttc aag tat ggt cat caa gag gac 5232  
 Thr Leu Arg Leu Leu Thr Leu Trp Phe Lys Tyr Gly His Gln Glu Asp  
 1730 1735 1740  
 gtc tgc cag gcg gtt agt gaa ggg ttt gct agt gtc atc gtg gat acg 5280  
 Val Ser Gln Ala Val Ser Glu Gly Phe Ala Ser Val Ile Val Asp Thr  
 1745 1750 1755 1760  
 tgg ctc gag gtg att ccg cag att att gca cgt atc act gcg ccc tct 5328  
 Trp Leu Glu Val Ile Pro Gln Ile Ile Ala Arg Ile Thr Ala Pro Ser  
 1765 1770 1775  
 cca cga gtg cgt cgc ctg atc cac aac ttg ctg tgc gat gtc ggt ctg 5376  
 Pro Arg Val Arg Arg Leu Ile His Asn Leu Leu Ser Asp Val Gly Leu  
 1780 1785 1790  
 gcg cat ccg cag gcg ctt gtc tat cct ctc acg gtc gct gcc aag agt 5424  
 Ala His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ala Lys Ser  
 1795 1800 1805  
 ccg agt cat atg cgt atc cag gct gcc atg ggg atc atg gac aat gtg 5472  
 Pro Ser His Met Arg Ile Gln Ala Ala Met Gly Ile Met Asp Asn Val  
 1810 1815 1820  
 cgc gag cac tgc ccc gtt ctc gtc gag cag gcg tta ctg gtg tgc aac 5520  
 Arg Glu His Ser Pro Val Leu Val Glu Gln Ala Leu Leu Val Ser Asn  
 1825 1830 1835 1840  
 gaa ttg atc cgt gtt gcg atc ctg tgg cat gag atg tgg cac gaa ggg 5568  
 Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Gly  
 1845 1850 1855  
 ctt gaa gag gca tgc cgg ctg tac ttt acc gag gac aac atc gac gcc 5616  
 Leu Glu Glu Ala Ser Arg Leu Tyr Phe Thr Glu Asp Asn Ile Asp Ala  
 1860 1865 1870  
 atg ttt gcc aca ctc gag ccg ctc cac gac gcg ttg gaa aag ggc ccc 5664  
 Met Phe Ala Thr Leu Glu Pro Leu His Asp Ala Leu Glu Lys Gly Pro  
 1875 1880 1885  
 gag acc ctt cgc gag act tca ttt gcc cag acg cac ggc cgc gac ctg 5712  
 Glu Thr Leu Arg Glu Thr Ser Phe Ala Gln Thr His Gly Arg Asp Leu  
 1890 1895 1900  
 gca gaa gcg agg gaa tgc ggt cga cgc ttc cgc cag tac ggt gac atc 5760  
 Ala Glu Ala Arg Glu Cys Gly Arg Arg Phe Arg Gln Tyr Gly Asp Ile  
 1905 1910 1915 1920  
 tgc gat ctc aat cag gcc tgg gat ctg tac tac cac gtc ttt aag aag 5808  
 Ser Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Lys Lys  
 1925 1930 1935

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atc gcc aag cag ctg ccg gcg ggt aac tcg gtg cag ctc gac ctg cag	5856
Ile Ala Lys Gln Leu Pro Ala Gly Asn Ser Val Gln Leu Asp Leu Gln	
1940 1945 1950	
tac gtc tca ccg aag ctg ctg gca atg cga gac ttg gag ctg gcg gtt	5904
Tyr Val Ser Pro Lys Leu Leu Ala Met Arg Asp Leu Glu Leu Ala Val	
1955 1960 1965	
ccc ggt acg tat caa tcc gga aag ccg att gta tgc atc acg cgc ttc	5952
Pro Gly Thr Tyr Gln Ser Gly Lys Pro Ile Val Cys Ile Thr Arg Phe	
1970 1975 1980	
gag cag atc gtg ctc gtc att gca tcg aaa cag cat cct cgt cga ctc	6000
Glu Gln Ile Val Leu Val Ile Ala Ser Lys Gln His Pro Arg Arg Leu	
1985 1990 1995 2000	
aag atg aag ggt tcc gac ggc aag acg tac caa tat ctg ctc aaa ggt	6048
Lys Met Lys Gly Ser Asp Gly Lys Thr Tyr Gln Tyr Leu Leu Lys Gly	
2005 2010 2015	
cac gag gac ttg cga cag gac gaa cgc gtc atg caa ctg ttc ggt ctg	6096
His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu	
2020 2025 2030	
gtt aat aca ctg ctc tcg att gac tcg gag agc tac aag cgt cga ctc	6144
Val Asn Thr Leu Leu Ser Ile Asp Ser Glu Ser Tyr Lys Arg Arg Leu	
2035 2040 2045	
gag atc cgt ccg ttc ccc gtg att ccg ctc tcg ccc aac acg ggc atg	6192
Glu Ile Arg Arg Phe Pro Val Ile Pro Leu Ser Pro Asn Thr Gly Met	
2050 2055 2060	
ttg ggc tgg gtg gaa aat acg gat acg ctg cac gta ctc atc aaa gag	6240
Leu Gly Trp Val Glu Asn Thr Asp Thr Leu His Val Leu Ile Lys Glu	
2065 2070 2075 2080	
tat cga gaa cag cac aag atc ctg ctc aac atc gag cat cga ttg atg	6288
Tyr Arg Glu Gln His Lys Ile Leu Leu Asn Ile Glu His Arg Leu Met	
2085 2090 2095	
ctt cag atg gcg ccg gac tac gac cac ttg acg ctc atg cag aag gtc	6336
Leu Gln Met Ala Pro Asp Tyr Asp His Leu Thr Leu Met Gln Lys Val	
2100 2105 2110	
gag gtg ttc gag tat gcg ttg gac aac acg ccg ggg caa gat ctg tac	6384
Glu Val Phe Glu Tyr Ala Leu Asp Asn Thr Pro Gly Gln Asp Leu Tyr	
2115 2120 2125	
cga gtg ttg tgg ctc aag tcg cgc aat tcc gag tcg tgg ttg gag cga	6432
Arg Val Leu Trp Leu Lys Ser Arg Asn Ser Glu Ser Trp Leu Glu Arg	
2130 2135 2140	
cgg ttg gcg tac acg cgt tcg ctg gcg gtg tcg tcg gtc gca ggc tac	6480
Arg Leu Ala Tyr Thr Arg Ser Leu Ala Val Ser Ser Val Ala Gly Tyr	
2145 2150 2155 2160	
atc ctg ggt ctt gga gat cga cac cct tcg aat ctg ttg ctc gat cgg	6528
Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Leu Leu Asp Arg	
2165 2170 2175	
ttg acc ggt cag att gtg cac att gat ttc ggc gat tgc ttc gag atc	6576
Leu Thr Gly Gln Ile Val His Ile Asp Phe Gly Asp Cys Phe Glu Ile	
2180 2185 2190	
gca tgc cat cgt cct aag ttt cct gaa aag gtg ccg ttc aga ttg acg	6624
Ala Cys His Arg Pro Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr	
2195 2200 2205	
cgc atg ctg gtg aat gcg atg gaa gtg ggc ggg atc aag ggg aca ttc	6672
Arg Met Leu Val Asn Ala Met Glu Val Gly Gly Ile Lys Gly Thr Phe	
2210 2215 2220	
aag gta acc gcg gag aac acg atg cgc gtg ctg agg gac aac aag gag	6720
Lys Val Thr Ala Glu Asn Thr Met Arg Val Leu Arg Asp Asn Lys Glu	
2225 2230 2235 2240	
agc gtg ttg gcg ttg ttg gag gcg ttt gtt cat gat cca ttg att tct	6768
Ser Val Leu Ala Leu Leu Glu Ala Phe Val His Asp Pro Leu Ile Ser	
2245 2250 2255	
tgg agg ttg gtt gcg gat gat ggc gcc gag agg gcg cct gat gcg aag	6816
Trp Arg Leu Val Ala Asp Asp Gly Ala Glu Arg Ala Pro Asp Ala Lys	
2260 2265 2270	
gag aat gaa gct gta gcc gcc gaa ggt ggc gct gct tcc ggt acg gcg	6864
Glu Asn Glu Ala Val Ala Ala Glu Gly Gly Ala Ala Ser Gly Thr Ala	
2275 2280 2285	
acg ggt gca gtc act ggt gcg gcc aat gtc ggc gcg ggt gga act gtg	6912
Thr Gly Ala Val Thr Gly Ala Ala Asn Val Gly Ala Gly Gly Thr Val	
2290 2295 2300	

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gct	ccc	aac	caa	cgc	caa	gac	caa	gcg	ctt	tat	cct	gca	gct	ggt	gca	6960
Ala	Pro	Asn	Gln	Arg	Gln	Asp	Gln	Ala	Leu	Tyr	Pro	Ala	Ala	Gly	Ala	
2305					2310				2315					2320		
ccg	ggc	ggt	ggt	atc	gct	cta	cct	ccc	acc	gcc	acc	gcc	acc	gcc	acg	7008
Pro	Gly	Gly	Gly	Ile	Ala	Leu	Pro	Pro	Thr	Ala	Thr	Ala	Thr	Ala	Thr	
			2325				2330						2335			
gct	gca	gct	gca	gct	gca	ccc	aac	gcc	gtc	caa	gcg	ggt	ggc	cag	gac	7056
Ala	Ala	Ala	Ala	Ala	Ala	Pro	Asn	Ala	Val	Gln	Ala	Gly	Gly	Gln	Asp	
			2340				2345						2350			
atg	cgc	aac	caa	cgc	gct	ctc	gaa	gtc	gtc	cg	gcg	atc	caa	aac	aag	7104
Met	Arg	Asn	Gln	Arg	Ala	Leu	Glu	Val	Val	Arg	Arg	Ile	Gln	Asn	Lys	
		2355					2360					2365				
ctc	agc	ggc	aga	gac	ttc	aat	ccc	gca	gaa	agc	ctc	agc	gtc	gct	gct	7152
Leu	Ser	Gly	Arg	Asp	Phe	Asn	Pro	Ala	Glu	Ser	Leu	Ser	Val	Ala	Ala	
		2370				2375					2380					
cag	atc	gaa	cg	ctc	gta	cag	gac	gcc	acg	agc	aaa	gag	aat	ctg	tgt	7200
Gln	Ile	Glu	Arg	Leu	Val	Gln	Asp	Ala	Thr	Ser	Lys	Glu	Asn	Leu	Cys	
2385					2390					2395					2400	
gtc	gcc	ttc	gtc	ggc	tg	tgt	tcc	ttc	tg	taa						7233
Val	Ala	Phe	Val	Gly	Trp	Cys	Ser	Phe	Trp							
			2405						2410							

&lt;210&gt; 2541

&lt;211&gt; 2410

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 2541

Met	Ser	Val	Leu	Gly	Thr	His	Gln	Ser	Asp	Ala	Leu	Asn	Arg	Ile	Phe	
1				5					10					15		
Ala	Gly	Leu	Lys	Ser	Arg	Asp	Glu	Ala	Thr	Arg	Gln	Ala	Ala	Gly	Glu	
			20					25					30			
Glu	Leu	Lys	Ser	His	Val	Ala	Leu	Val	Val	Ser	Glu	Leu	Lys	Gly	Asp	
		35					40					45				
Ser	Leu	Ser	Ser	Phe	Asn	Asn	Asp	Leu	His	Arg	Arg	Ile	Phe	Glu	Leu	
	50					55				60						
Ala	His	Ser	Gln	His	Val	His	Glu	Lys	Leu	Gly	Gly	Val	Ile	Ala	Ile	
65					70					75					80	
Glu	Asp	Leu	Ile	Glu	Gln	Glu	Ser	Glu	Asp	Asn	Ser	Ala	Arg	Leu	Tyr	
			85						90					95		
Arg	Phe	Tyr	Gln	Tyr	Leu	Lys	Pro	Asn	Leu	Pro	Cys	Asn	Asp	Ala	Ser	
			100					105					110			
Val	Met	Ile	Ala	Ala	Ser	Arg	Ala	Leu	Gly	Arg	Val	Ala	Tyr	His	Gly	
		115					120					125				
Gly	Gln	Ser	Leu	Gly	Glu	Gln	Phe	Ile	Glu	Tyr	Glu	Val	Leu	Arg	Val	
	130					135					140					
Leu	Asp	Phe	Leu	Gln	Ala	Gly	Asp	Arg	Asn	Glu	Ser	Gly	Arg	Tyr	Ala	
145					150					155					160	
Ala	Val	Leu	Ile	Ile	Arg	Glu	Met	Ala	Lys	Arg	Val	Pro	Gln	Gln	Phe	
			165						170					175		
His	Pro	Tyr	Val	Pro	Arg	Val	Leu	Asp	Arg	Ile	Trp	Val	Ala	Leu	Arg	
			180					185					190			
Asp	Val	Arg	Val	Ile	Val	Arg	Glu	Gly	Ala	Ala	Glu	Ala	Met	Gly	Ala	
		195					200					205				
Cys	Leu	Gly	Ile	Ile	Ala	Ala	Arg	Glu	Lys	Gln	Met	Gly	Ser	His	Phe	
	210					215					220					
Phe	Glu	Ser	Ile	Tyr	Glu	Glu	Ala	Glu	Lys	Gly	Leu	Lys	Met	Ser	Ala	
225					230					235					240	
Pro	Glu	Ala	Ile	His	Gly	Ser	Leu	Leu	Ala	Val	Gln	Gln	Leu	Leu	Gln	
			245						250					255		
His	Ser	Lys	Thr	Phe	Met	Arg	Asn	Arg	Phe	Gln	Arg	Ala	Cys	Glu	Leu	
			260					265					270			
Val	Phe	Arg	Leu	His	Lys	His	Arg	Asp	Pro	Leu	Ile	Arg	Arg	Thr	Ile	
		275					280					285				
Thr	Asn	Leu	Val	Pro	Val	Leu	Ala	Arg	Tyr	Asp	Pro	His	Tyr	Phe	Ala	
	290					295					300					
Glu	Glu	His	Leu	Arg	Ala	Val	Met	Gly	Ile	Leu	Thr	Glu	Gln	Leu	Arg	
305					310					315					320	
Arg	Glu	Lys	Asp	Arg	Ser	Pro	Lys	Glu	Ser	Ala	Gln	Thr	Phe	Glu	Thr	

## PhoenixTemp32470.tmp.txt

Ile	Gly	Phe	Val	325	Ala	Ala	Ala	Met	Gly	330	Pro	Arg	Met	Lys	Pro	335	Phe	Ile
Glu	Pro	Val	Leu	340	Ala	Cys	Val	Lys	Gly	345	Gly	Leu	Gln	Met	Arg	350	Gly	Lys
Lys	Asn	Ala	Pro	355	Pro	Glu	Gly	Pro	Ile	360	Phe	Leu	Cys	Val	Gly	365	Asn	Leu
Ala	Thr	Ala	Val	370	Gly	Pro	His	Leu	Thr	375	Arg	Tyr	Met	His	Asp	380	Leu	Leu
385	Asp	Leu	Met	390	Phe	Ser	Cys	Gly	Leu	395	Ile	Pro	Leu	Val	Thr	400	Ala	Leu
Asp	Gly	Ile	Val	405	Lys	Ala	Ile	Pro	Pro	410	Leu	Met	Lys	Val	Val	415	Gln	Asp
Arg	Leu	Leu	Asp	420	Met	Leu	Ser	Met	Thr	425	Leu	Ile	Gly	Gln	Pro	430	Tyr	Arg
Pro	Leu	Gly	Ala	435	Pro	Ala	Ser	Leu	Arg	440	Pro	Ser	Ala	Asn	Ala	445	Ser	Arg
450	Asp	Val	Val	455	Ala	Gln	Thr	Val	Glu	460	Ser	Lys	Gly	Val	Glu	465	Thr	Ile
465	Thr	Val	Ala	470	Leu	Gln	Thr	Leu	Gly	475	Arg	Phe	Asp	Phe	Gln	480	Gly	His
Leu	Asn	Glu	Phe	485	Val	Arg	Asn	Cys	Thr	490	Leu	Pro	Tyr	Leu	Glu	495	Asp	Asp
His	Ala	Ala	Val	500	Arg	Gln	Ala	Ala	Glu	505	Thr	Cys	Ala	Asp	Leu	510	Phe	
Val	Asn	Asp	Pro	515	Ile	Cys	Arg	Gln	Thr	520	Ser	Met	His	Ala	Ile	525	Glu	Val
Val	Asn	Asp	Val	530	Leu	Asp	Lys	Leu	Met	535	Val	Gly	Ile	Ala	Asp	540	Pro	
545	Asp	Pro	Glu	550	Leu	Arg	Thr	Val	Leu	555	Ser	Lys	Phe	Gly	Ala	560	Gln	Glu
Gln	Phe	Asp	Arg	565	His	Leu	Ala	Gln	Ser	570	Glu	Tyr	Val	Arg	Ser	575	Leu	Phe
Ile	Ala	Leu	Asn	580	Asp	Glu	Lys	Phe	Lys	585	Val	Arg	Glu	Val	Ala	590	Ile	Val
Ile	Ile	Gly	Arg	595	Leu	Ala	Lys	His	Asn	600	Pro	Ala	Tyr	Val	Met	605	Pro	Ser
Leu	Arg	Lys	Ala	610	Leu	Ile	Gln	Leu	Leu	615	Thr	Glu	Leu	Glu	Tyr	620	Ser	Thr
625	Val	Ser	Arg	630	His	Lys	Glu	Glu	Ala	635	Ala	Lys	Leu	Leu	Thr	640	Val	Val
Arg	Ala	Ser	Gln	645	Arg	Leu	Val	Lys	Ser	650	Tyr	Ala	Leu	Pro	Met	655	Leu	Glu
Val	Leu	Leu	Pro	660	Lys	Ala	Asn	Asp	Pro	665	Ser	Val	Gly	Val	Ala	670	Ala	Arg
Val	Met	Glu	Cys	675	Leu	Gly	Glu	Leu	Ala	680	Lys	Val	Gly	Gly	Glu	685	Asp	Leu
Ala	Pro	Asn	Val	690	Asp	Gln	Leu	Met	Arg	695	Leu	Ala	Ile	Asp	Gln	700	Leu	Ser
705	Ser	Thr	Ala	710	Gly	Ser	Ser	Thr	Ala	715	Lys	Arg	Asp	Ala	Ala	720	Leu	Lys
Thr	Leu	Gly	Leu	725	Val	Ala	Ser	Asn	Thr	730	Gly	His	Val	Val	Asn	735	Pro	Tyr
Leu	Thr	Tyr	Arg	740	Asn	Leu	Leu	Gly	Thr	745	Val	Val	Lys	Ile	Leu	750	Lys	Thr
Glu	Gln	Ser	Lys	755	Pro	Val	Arg	Arg	Glu	760	Thr	Ile	Arg	Val	Met	765	Gly	Ile
Leu	Gly	Ala	Leu	770	Asp	Pro	Tyr	Arg	Tyr	775	Lys	Leu	Glu	Lys	Asn	780	Gly	
785	Asp	Glu	Gly	790	Gln	Asp	Glu	Thr	Ser	795	Lys	Gly	Ser	Gly	Thr	800	Leu	Phe
Glu	Leu	Ala	Leu	805	Ala	Ile	Gly	Thr	Ser	810	Thr	Asp	Asp	Tyr	Tyr	815	Gln	Asn
Ile	Ala	Ile	Asp	820	Ala	Leu	Ile	Thr	Ile	825	Leu	Lys	Asp	Pro	Ser	830	Leu	Ser
Thr	His	His	His	835	Ala	Val	Ile	Glu	Ala	840	Ile	Met	Tyr	Met	Phe	845	Lys	Thr
Gln	Gly	Leu	Lys	850	Cys	Val	Thr	Phe	Leu	855	Pro	Gln	Ile	Ile	Pro	860	Ala	Phe
865				870						875						880		

## PhoenixTemp32470.tmp.txt

Leu Asn Val Ile Arg Thr Cys Gly Thr Gly Leu Ser Glu Phe Tyr Phe  
 885 890 895  
 Gln Gln Leu Ala Ile Leu Ile Ser Ile Lys Gln His Val Arg Ser  
 900 905 910  
 Tyr Leu Glu Pro Ile Phe Glu Leu Val Gln Glu Asn Trp Asn Pro Asn  
 915 920 925  
 Ser Ser Ile Gln Leu Thr Ile Val Ser Leu Val Glu Ala Val Ala Lys  
 930 935 940  
 Ala Leu Glu Gly Glu Phe Lys Ser Tyr Leu Pro Ile Leu Leu Pro Asn  
 945 950 955 960  
 Met Leu Gln Thr Leu Asp Gly Glu Ile Thr Ser Lys Arg Gln Pro Thr  
 965 970 975  
 Leu Leu Arg Ile Leu Gln Ala Phe Tyr Val Phe Gly Ser Asn Ile Glu  
 980 985 990  
 Glu Tyr Leu His Leu Val Leu Pro Val Val Val Lys Met Phe Glu Arg  
 995 1000 1005  
 Pro Asp Ala Ser Gln Thr Leu Arg Arg Ala Ala Ile Leu Thr Val Gly  
 1010 1015 1020  
 Asn Leu Ser Arg Lys Val Ser Phe Cys Asp His Ala Ser Arg Val Ile  
 1025 1030 1035 1040  
 His Pro Leu Val Arg Val Leu Pro Thr Gly Thr Ser Asp Ile Arg Asn  
 1045 1050 1055  
 Ala Val Met Glu Thr Leu Ser Ala Leu Val Val Gln Leu Gly Ala Ser  
 1060 1065 1070  
 Tyr Ala Ile Phe Ile Pro Val Val Asn Lys Val Leu Ile Gln Asn Arg  
 1075 1080 1085  
 Ile Gln His Ala Thr Tyr Asp Gln Leu Val Ser Lys Leu Leu Asn Gly  
 1090 1095 1100  
 Glu Arg Leu Pro Gln Asp Leu Ser Ala Ala Asp Asn Ala Leu Gly Ser  
 1105 1110 1115 1120  
 Lys Ile Asp Glu Ser Pro Gln Ala Glu Ala Asn Lys Met Thr Val Asn  
 1125 1130 1135  
 Gln Gln His Leu Lys Gln Ala Trp Asp Thr Ser Lys Val Ser Thr Ser  
 1140 1145 1150  
 Glu Asp Trp Gln Glu Trp Leu Arg Arg Met Ala Val Glu Phe Met Arg  
 1155 1160 1165  
 Glu Ser Pro Ser His Ala Leu Arg Ala Cys Arg Ser Leu Ala Asp Val  
 1170 1175 1180  
 Tyr Pro Ala Leu Ala Tyr Gly Leu Phe Asn Val Ala Phe Val Ser Cys  
 1185 1190 1195 1200  
 Trp Thr Glu Leu Tyr Glu Gln Tyr Gln Ser Asp Leu Val Lys Ala Leu  
 1205 1210 1215  
 Glu Thr Ala Phe Asp Ala Pro Glu Val Pro Gly Asp Val Val His Met  
 1220 1225 1230  
 Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Asp Lys Ala Leu Pro  
 1235 1240 1245  
 Ile Asn Ile Arg Val Leu Gly Asp Arg Ala Tyr Lys Phe His Ser Tyr  
 1250 1255 1260  
 Ala Lys Ala Leu His Tyr Lys Glu Ala Glu Phe Leu Thr Asp Pro Ser  
 1265 1270 1275 1280  
 Pro Gln Val Val Glu Ser Leu Ile Asp Ile Asn Thr Lys Leu Gln Gln  
 1285 1290 1295  
 Ser Asp Ala Ala Phe Gly Ala Leu Thr Tyr Ala Arg Glu His Leu Asp  
 1300 1305 1310  
 Ile Thr His His Glu Glu Trp Tyr Glu Lys Leu His Arg Trp Glu Glu  
 1315 1320 1325  
 Ala Leu Thr Ala Tyr Asp Arg Lys Ala Met Leu Asp Pro Asp Asp Tyr  
 1330 1335 1340  
 Gly Val Ala Phe Gly Lys Met Arg Cys Leu His Ala Leu Gly Glu Trp  
 1345 1350 1355 1360  
 Glu His Leu Ser Asp Leu Val Gln Gln Lys Trp Gly Arg Ala Asp Met  
 1365 1370 1375  
 Glu Asp Arg Arg His Met Ala Pro Leu Ala Ala Ala Ala Ala Trp Ser  
 1380 1385 1390  
 Leu Gly Gln Trp Asp Thr Met Asp Asp Tyr Ile Ser Ala Met Arg Ser  
 1395 1400 1405  
 Asp Ser Ser Glu Arg Ser Phe Tyr Arg Ala Ile Leu His Thr His Arg  
 1410 1415 1420  
 Ser Gln Arg Ala Ala Ala Asn Lys Gln Ile Ala Lys Ala Arg Glu Ser

## PhoenixTemp32470.tmp.txt

1425 1430 1435 1440  
 Leu Asp Ser Glu Leu Thr Ala Leu Ile Ser Glu Ser Tyr Gly Arg Ala  
 Tyr Asp Leu Met Val Arg Thr Gln Met Leu Ser Glu Leu Glu Glu Ala  
 Leu Ala Tyr Lys Leu Asp Tyr Lys Glu Gln Pro Asp Arg Gln Ala Thr  
 Ile Arg Ser Thr Trp Met Lys Arg Leu Lys Gly Cys Gln Pro Glu Val  
 Glu Val Trp Gln Arg Ile Leu Ser Val Arg Ser Ile Val Leu Thr Pro  
 Ala Asp Asp Thr Glu Thr Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys  
 Ser Gly Arg Met Val Leu Ala Glu Lys Thr Leu Asn Ser Leu Leu Gly  
 Pro Glu Arg Thr Asn Ala Asp Pro Arg Ser Pro Ile Gly Pro Arg Ala  
 Pro Pro Pro Val Ile Tyr Ala His Leu Lys Phe Met Trp Ala Ser Gly  
 Ala Arg Ile Glu Ser Leu Ser Tyr Leu Gln Glu Phe Thr Leu Asn Leu  
 Ala Glu Asp Leu Gly Val His Thr Val Asp Glu His Gly Asn Leu Val  
 Thr Gln Asp Trp Gln Ser Ser Pro His Leu Gly Glu Phe Ala Arg Leu  
 Leu Ala Arg Cys Phe Phe Lys Gln Gly Glu Trp Gln Met Ser Leu Arg  
 Glu Asn Trp Val Thr Asp Asp Asn Ser Asn Val Ile Glu Ser Tyr Arg  
 Arg Ala Thr Glu Leu Asp Arg Asn Trp Tyr Lys Ala Trp His Ala Trp  
 Ala Leu Ala Asn Phe Glu Val Ile Ser His His Glu Glu Arg Asn Glu  
 Gln Ile Thr Pro Gln Met Ile Ala Ala Ser Ile Val Pro Ser Val Gln  
 Gly Phe Phe Arg Ser Ile Ala Leu Ala Ser Gly Asn Ser Leu Gln Asp  
 Thr Leu Arg Leu Leu Thr Leu Trp Phe Lys Tyr Gly His Gln Glu Asp  
 Val Ser Gln Ala Val Ser Glu Gly Phe Ala Ser Val Ile Val Asp Thr  
 Trp Leu Glu Val Ile Pro Gln Ile Ile Ala Arg Ile Thr Ala Pro Ser  
 Pro Arg Val Arg Arg Leu Ile His Asn Leu Leu Ser Asp Val Gly Leu  
 Ala His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Ala Lys Ser  
 Pro Ser His Met Arg Ile Gln Ala Ala Met Gly Ile Met Asp Asn Val  
 Arg Glu His Ser Pro Val Leu Val Glu Gln Ala Leu Leu Val Ser Asn  
 Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Gly  
 Leu Glu Glu Ala Ser Arg Leu Tyr Phe Thr Glu Asp Asn Ile Asp Ala  
 Met Phe Ala Thr Leu Glu Pro Leu His Asp Ala Leu Glu Lys Gly Pro  
 Glu Thr Leu Arg Glu Thr Ser Phe Ala Gln Thr His Gly Arg Asp Leu  
 Ala Glu Ala Arg Glu Cys Gly Arg Arg Phe Arg Gln Tyr Gly Asp Ile  
 Ser Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Lys Lys  
 Ile Ala Lys Gln Leu Pro Ala Gly Asn Ser Val Gln Leu Asp Leu Gln  
 Tyr Val Ser Pro Lys Leu Leu Ala Met Arg Asp Leu Glu Leu Ala Val  
 Pro Gly Thr Tyr Gln Ser Gly Lys Pro Ile Val Cys Ile Thr Arg Phe

## PhoenixTemp32470.tmp.txt

Glu Gln Ile Val Leu Val Ile Ala Ser Lys Gln His Pro Arg Arg Leu  
 1985 1990 1995 2000  
 Lys Met Lys Gly Ser Asp Gly Lys Thr Tyr Gln Tyr Leu Leu Lys Gly  
 2005 2010 2015  
 His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu  
 2020 2025 2030  
 Val Asn Thr Leu Leu Ser Ile Asp Ser Glu Ser Tyr Lys Arg Arg Leu  
 2035 2040 2045  
 Glu Ile Arg Arg Phe Pro Val Ile Pro Leu Ser Pro Asn Thr Gly Met  
 2050 2055 2060  
 Leu Gly Trp Val Glu Asn Thr Asp Thr Leu His Val Leu Ile Lys Glu  
 2065 2070 2075 2080  
 Tyr Arg Glu Gln His Lys Ile Leu Leu Asn Ile Glu His Arg Leu Met  
 2085 2090 2095  
 Leu Gln Met Ala Pro Asp Tyr Asp His Leu Thr Leu Met Gln Lys Val  
 2100 2105 2110  
 Glu Val Phe Glu Tyr Ala Leu Asp Asn Thr Pro Gly Gln Asp Leu Tyr  
 2115 2120 2125  
 Arg Val Leu Trp Leu Lys Ser Arg Asn Ser Glu Ser Trp Leu Glu Arg  
 2130 2135 2140  
 Arg Leu Ala Tyr Thr Arg Ser Leu Ala Val Ser Ser Val Ala Gly Tyr  
 2145 2150 2155 2160  
 Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Leu Leu Asp Arg  
 2165 2170 2175  
 Leu Thr Gly Gln Ile Val His Ile Asp Phe Gly Asp Cys Phe Glu Ile  
 2180 2185 2190  
 Ala Cys His Arg Pro Lys Phe Pro Glu Lys Val Pro Phe Arg Leu Thr  
 2195 2200 2205  
 Arg Met Leu Val Asn Ala Met Glu Val Gly Gly Ile Lys Gly Thr Phe  
 2210 2215 2220  
 Lys Val Thr Ala Glu Asn Thr Met Arg Val Leu Arg Asp Asn Lys Glu  
 2225 2230 2235 2240  
 Ser Val Leu Ala Leu Leu Glu Ala Phe Val His Asp Pro Leu Ile Ser  
 2245 2250 2255  
 Trp Arg Leu Val Ala Asp Asp Gly Ala Glu Arg Ala Pro Asp Ala Lys  
 2260 2265 2270  
 Glu Asn Glu Ala Val Ala Ala Glu Gly Gly Ala Ala Ser Gly Thr Ala  
 2275 2280 2285  
 Thr Gly Ala Val Thr Gly Ala Ala Asn Val Gly Ala Gly Gly Thr Val  
 2290 2295 2300  
 Ala Pro Asn Gln Arg Gln Asp Gln Ala Leu Tyr Pro Ala Ala Gly Ala  
 2305 2310 2315 2320  
 Pro Gly Gly Gly Ile Ala Leu Pro Pro Thr Ala Thr Ala Thr Ala Thr  
 2325 2330 2335  
 Ala Ala Ala Ala Ala Ala Pro Asn Ala Val Gln Ala Gly Gly Gln Asp  
 2340 2345 2350  
 Met Arg Asn Gln Arg Ala Leu Glu Val Val Arg Arg Ile Gln Asn Lys  
 2355 2360 2365  
 Leu Ser Gly Arg Asp Phe Asn Pro Ala Glu Ser Leu Ser Val Ala Ala  
 2370 2375 2380  
 Gln Ile Glu Arg Leu Val Gln Asp Ala Thr Ser Lys Glu Asn Leu Cys  
 2385 2390 2395 2400  
 Val Ala Phe Val Gly Trp Cys Ser Phe Trp  
 2405 2410

&lt;210&gt; 2542

&lt;211&gt; 7083

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7083)

&lt;400&gt; 2542

atg tct tca caa tca gac gtt ctc gac aac atc ttt cag cgt ctg tct  
 Met Ser Ser Gln Ser Asp Val Leu Asp Asn Ile Phe Gln Arg Leu Ser  
 1 5 10 15  
 gcc agg tcg gag gat gtc cgc gct cag gcc ggt caa gat ctt gca gag  
 Page 1952

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## PhoenixTemp32470.tmp.txt

Ala	Arg	Ser	Glu	Asp	Val	Arg	Ala	Gln	Ala	Gly	Gln	Asp	Leu	Ala	Glu		
			20					25					30				
cac	gtc	gta	gct	tat	acc	cag	gaa	tac	ccg	gga	cat	gat	gct	tcg	aag	144	
His	Val	Val	Ala	Tyr	Thr	Gln	Glu	Tyr	Pro	Gly	His	Asp	Ala	Ser	Lys		
		35					40					45					
ggt	gta	tgg	gca	cag	gtc	ttt	cac	aag	aca	ttc	gag	ttt	act	agg	agc	192	
Gly	Val	Trp	Ala	Gln	Val	Phe	His	Lys	Thr	Phe	Glu	Phe	Thr	Arg	Ser		
	50					55					60						
aac	aat	cag	cta	gaa	aga	tta	ggt	gca	att	att	tcc	atc	tcg	caa	ttg	240	
Asn	Asn	Gln	Leu	Glu	Arg	Leu	Gly	Ala	Ile	Ile	Ser	Ile	Ser	Gln	Leu		
65				70						75					80		
tta	caa	cta	acg	aag	gat	gac	aca	ctg	gat	cgt	gct	caa	caa	aag	ggt	288	
Leu	Gln	Leu	Thr	Lys	Asp	Asp	Thr	Leu	Asp	Arg	Ala	Gln	Gln	Lys	Val		
				85					90					95			
cta	cgc	ctc	tat	gaa	tat	ctt	cgg	cct	ctc	aca	aca	tgc	ggc	gat	tcg	336	
Leu	Arg	Leu	Tyr	Glu	Tyr	Leu	Arg	Pro	Leu	Thr	Thr	Cys	Gly	Asp	Ser		
			100				105					110					
acc	gtc	atg	ctt	ccc	gcc	tcg	ctc	gtc	ggt	gaa	gat	atg	gtc	cgc	aat	384	
Thr	Val	Met	Leu	Pro	Ala	Ser	Leu	Val	Val	Glu	Asp	Met	Val	Arg	Asn		
		115					120					125					
tcc	ccc	acc	ctt	cac	acc	gat	act	ttc	ctt	ggc	aaa	gaa	ggt	gga	caa	432	
Ser	Pro	Thr	Leu	His	Thr	Asp	Thr	Phe	Leu	Gly	Lys	Glu	Val	Gly	Gln		
130						135				140							
gcg	ctg	gta	atg	att	gac	gac	tca	cgt	caa	gaa	gtc	ggg	cgt	ttc	agt	480	
Ala	Leu	Val	Met	Ile	Asp	Asp	Ser	Arg	Gln	Glu	Val	Gly	Arg	Phe	Ser		
145					150					155					160		
ggt	gct	ctt	ctt	ctc	tat	gct	ttc	gcc	cgt	gct	gcc	ccc	gga	gta	ttc	528	
Gly	Ala	Leu	Leu	Leu	Tyr	Ala	Phe	Ala	Arg	Ala	Ala	Pro	Gly	Val	Phe		
				165				170						175			
cat	caa	tac	atc	ccc	aag	gtc	ttg	gaa	aag	att	tgg	ggt	ccc	ctt	cgc	576	
His	Gln	Tyr	Ile	Pro	Lys	Val	Leu	Glu	Lys	Ile	Trp	Val	Pro	Leu	Arg		
			180					185					190				
gac	tca	aga	tct	gtc	gtt	cga	gaa	cgt	gcg	agc	atg	ctc	tta	tct	acc	624	
Asp	Ser	Arg	Ser	Val	Val	Arg	Glu	Arg	Ala	Ser	Met	Leu	Leu	Ser	Thr		
		195					200					205					
tgc	ctt	gac	act	ctc	aaa	acc	cga	gga	gac	cga	cca	tca	acc	gac	acc	672	
Cys	Leu	Asp	Thr	Leu	Lys	Thr	Arg	Gly	Asp	Arg	Pro	Ser	Thr	Asp	Thr		
	210					215					220						
tac	cgc	aag	atc	ttt	gaa	gag	gcc	cgt	ctt	ggt	ctc	ctc	aaa	gcc	agc	720	
Tyr	Arg	Lys	Ile	Phe	Glu	Glu	Ala	Arg	Leu	Gly	Leu	Leu	Lys	Ala	Ser		
225					230					235					240		
tca	aca	gag	tct	atc	ttg	ggt	tct	ctc	ctt	gct	ttc	aat	tcc	atg	ctt	768	
Ser	Thr	Glu	Ser	Ile	Leu	Gly	Ser	Leu	Leu	Ala	Phe	Asn	Ser	Met	Leu		
				245				250						255			
caa	aat	caa	cag	ctt	tcg	atg	gcg	gaa	tat	tat	cgc	tcc	att	tgc	gaa	816	
Gln	Asn	Gln	Gln	Leu	Ser	Met	Ala	Glu	Tyr	Tyr	Arg	Ser	Ile	Cys	Glu		
			260					265					270				
cta	acc	ttc	aaa	tac	cgt	gat	tcg	aag	gaa	ggt	tcc	atc	agg	aag	gct	864	
Leu	Thr	Phe	Lys	Tyr	Arg	Asp	Ser	Lys	Glu	Val	Ser	Ile	Arg	Lys	Ala		
		275					280				285						
gtc	atc	gcc	ctc	ata	cct	tct	atg	gcg	aca	tat	gat	agc	gac	gac	ttt	912	
Val	Ile	Ala	Leu	Ile	Pro	Ser	Met	Ala	Thr	Tyr	Asp	Ser	Asp	Asp	Phe		
	290					295					300						
gag	gca	cat	tat	ttg	cat	agg	agt	atg	gcg	tat	ttg	cta	caa	gcg	ttg	960	
Glu	Ala	His	Tyr	Leu	His	Arg	Ser	Met	Ala	Tyr	Leu	Leu	Gln	Ala	Leu		
305				310					315						320		
aac	agg	ccg	gcg	gac	agg	gac	att	tcg	tat	gtg	gca	ttg	ggt	cat	atg	1008	
Asn	Arg	Pro	Ala	Asp	Arg	Asp	Ile	Ser	Tyr	Val	Ala	Leu	Gly	His	Met		
				325					330					335			
gcc	gta	cat	ctt	gga	tcg	aaa	atg	aaa	cct	ttt	att	gac	gac	att	atg	1056	
Ala	Val	His	Leu	Gly	Ser	Lys	Met	Lys	Pro	Phe	Ile	Asp	Asp	Ile	Met		
			340					345				350					
cgg	atc	att	cga	gat	cat	cta	cgc	atg	cga	ggc	aaa	aaa	aat	gct	cca	1104	
Arg	Ile	Ile	Arg	Asp	His	Leu	Arg	Met	Arg	Gly	Lys	Lys	Asn	Ala	Pro		
		355					360					365					
tac	gaa	gcc	ccc	atc	ttc	cag	tgt	ctt	gcg	atg	ctc	gct	acc	tct	gtc	1152	
Tyr	Glu	Ala	Pro	Ile	Phe	Gln	Cys	Leu	Ala	Met	Leu	Ala	Thr	Ser	Val		
	370					375					380						
ggc	cct	atg	ctt	acc	cgc	cag	atg	cac	gaa	atc	ctc	aac	ctg	atg	ttc	1200	



## PhoenixTemp32470.tmp.txt

Gly 385	Pro	Met	Leu	Thr	Arg 390	Gln	Met	His	Glu	Ile 395	Leu	Asn	Leu	Met	Phe 400	
ccc	tgg	ggc	ctt	tcg	gaa	ccc	tta	tgt	aca	gcc	ctt	caa	gcc	act	gcc	1248
Pro	Trp	Gly	Leu	Ser 405	Glu	Pro	Leu	Cys	Thr 410	Ala	Leu	Gln	Ala	Thr 415	Ala	
tca	cat	atc	cct	cct	cta	ttg	agg	act	atc	caa	gat	agg	ttg	ttg	gag	1296
Ser	His	Ile	Pro 420	Pro	Leu	Leu	Arg	Thr 425	Ile	Gln	Asp	Arg	Leu 430	Leu	Glu	
atg	ctt	tca	cag	act	ttg	acc	gga	cac	agc	tat	aga	ccg	tta	ggg	gcg	1344
Met	Leu	Ser 435	Gln	Thr	Leu	Thr	Gly 440	His	Ser	Tyr	Arg	Pro 445	Leu	Gly	Ala	
cct	gcc	cca	aga	ggg	gga	gcg	cag	atg	gat	ctt	aac	ctt	ttg	caa	tct	1392
Pro	Ala 450	Pro	Arg	Gly	Gly	Ala 455	Gln	Met	Asp	Leu	Asn 460	Leu	Leu	Gln	Ser	
aca	acc	aat	gcc	cag	tca	gca	gac	acc	cta	aaa	ctt	gct	ctt	cgt	ctc	1440
Thr 465	Thr	Asn	Ala	Gln	Ser 470	Ala	Asp	Thr	Leu	Lys 475	Leu	Ala	Leu	Arg	Leu 480	
ctt	gcg	cg	ttt	gat	ttt	gtc	ggc	cat	acc	ctt	agc	gag	ttt	gtc	cgt	1488
Leu	Ala	Arg	Phe 485	Asp	Phe	Val	Gly	His	Thr 490	Leu	Ser	Glu	Phe	Val 495	Arg	
gac	gct	gct	ctt	ccg	tat	ctg	gaa	cac	gac	agt	gtc	gag	gtc	cga	cgt	1536
Asp	Ala	Ala	Leu 500	Pro	Tyr	Leu	Glu	His 505	Asp	Ser	Val	Glu	Val 510	Arg	Arg	
gaa	gcc	gtg	ttg	gcg	acc	acg	acc	ctg	ctg	atg	acg	gac	ccg	atc	tgt	1584
Glu	Ala 515	Val	Leu	Ala	Thr	Thr	Thr 520	Leu	Phe	Met	Thr	Asp 525	Pro	Ile	Cys	
caa	cag	acg	agc	agt	aat	tcg	gtc	gag	att	gta	aat	gat	gtg	ttg	agt	1632
Gln 530	Gln	Thr	Ser	Ser	Asn	Ser 535	Val	Glu	Ile	Val	Asn 540	Asp	Val	Leu	Ser	
aaa	ttg	tta	acc	gta	gcc	att	acc	gat	cct	aat	gct	gga	atc	cg	cgg	1680
Lys 545	Leu	Leu	Thr	Val	Ala 550	Ile	Thr	Asp	Pro	Asn 555	Ala	Gly	Ile	Arg	Arg 560	
aca	gtg	ctc	gat	cac	ctc	gaa	gac	aag	ttt	gat	cg	cat	ctc	gct	cag	1728
Thr	Val	Leu	Asp 565	His	Leu	Glu	Asp	Lys	Phe 570	Asp	Arg	His	Leu	Ala 575	Gln	
gct	gac	gat	atc	cga	tgt	ctc	ttt	atc	gct	ctc	aac	gat	gaa	gtt	ttt	1776
Ala	Asp	Asp	Ile 580	Arg	Cys	Leu	Phe	Ile 585	Ala	Leu	Asn	Asp	Glu 590	Val	Phe	
ggg	aat	cgt	gag	agg	act	atc	tcg	atc	att	ggg	aga	ttg	gca	cac	cat	1824
Gly	Asn 595	Arg	Glu	Arg	Thr	Ile	Ser 600	Ile	Ile	Gly	Arg	Leu 605	Ala	His	His	
aac	ccg	gct	tat	gtg	atg	cct	cat	ttg	aga	aag	agt	ttg	atc	aat	att	1872
Asn 610	Pro	Ala	Tyr	Val	Met	Pro 615	His	Leu	Arg	Lys	Ser 620	Leu	Ile	Asn	Ile	
gtc	act	gag	ttg	gag	tat	tct	acc	aat	gcg	cga	caa	aag	gaa	gag	agt	1920
Val 625	Thr	Glu	Leu	Glu	Tyr 630	Ser	Thr	Asn	Ala	Arg 635	Gln	Lys	Glu	Glu	Ser 640	
gcc	aag	ctg	ctc	tgt	ctt	ata	atc	ggc	gct	gcc	gca	ggg	ctc	gtc	aag	1968
Ala	Lys	Leu	Leu	Cys 645	Leu	Ile	Ile	Gly	Ala 650	Ala	Ala	Gly	Leu	Val 655	Lys	
tct	tat	gcc	cct	acc	atc	cta	tcc	gtt	ctt	ctc	cg	act	gct	tcc	agc	2016
Ser	Tyr	Ala 660	Pro	Thr	Ile	Leu	Ser	Val 665	Leu	Leu	Arg	Thr	Ala 670	Ser	Ser	
ccc	gat	tct	tct	atc	ggg	gtc	caa	gcc	gaa	tgc	ctc	aaa	tgt	att	ggg	2064
Pro	Asp 675	Ser	Ser	Ile	Gly	Val	Gln 680	Ala	Glu	Cys	Leu	Lys 685	Cys	Ile	Gly	
gag	ctt	gcc	aga	gtt	gcg	ggc	gaa	gaa	ctc	gtc	ccc	tcc	gtc	cga	gcc	2112
Glu 690	Leu	Ala	Arg	Val	Ala	Gly 695	Glu	Glu	Leu	Val	Pro 700	Ser	Val	Arg	Ala	
att	ctc	gac	ctc	gtc	att	gaa	atg	ctc	aat	gac	cag	gct	tcc	ccc	gcc	2160
Ile 705	Leu	Asp	Leu	Val	Ile 710	Glu	Met	Leu	Asn	Asp 715	Gln	Ala	Ser	Pro	Ala 720	
aag	aga	gat	act	gcc	ctc	aag	act	tta	ggg	cag	att	gcg	agt	aac	aca	2208
Lys	Arg	Asp	Thr 725	Ala	Leu	Lys	Thr	Leu	Gly 730	Gln	Ile	Ala	Ser	Asn 735	Thr	
gga	gaa	gtt	atc	aaa	ccc	tat	acg	gat	tac	cct	cag	ttg	atg	ggg	gtg	2256
Gly	Glu	Val 740	Ile	Lys	Pro	Tyr	Thr	Asp 745	Tyr	Pro	Gln	Leu	Met 750	Gly	Val	
ctg	ttt	agg	ttt	ttg	aga	atg	gag	gcg	aat	tcg	agt	gtc	agg	caa	gag	2304

## PhoenixTemp32470.tmp.txt

Leu	Phe	Arg	Phe	Leu	Arg	Met	Glu	Ala	Asn	Ser	Ser	Val	Arg	Gln	Glu		
755		755					760					765					
acg	atc	aag	acg	att	ggt	atg	ctc	ggt	gcc	ttg	gat	ccc	ttt	aag	cac	2352	
Thr	Ile	Lys	Thr	Ile	Gly	Met	Leu	Gly	Ala	Leu	Asp	Pro	Phe	Lys	His		
770						775					780						
aag	act	ttg	ttg	ggt	gat	gtg	gac	gac	cct	atc	gac	gaa	ggg	aca	acc	2400	
Lys	Thr	Leu	Leu	Gly	Asp	Val	Asp	Asp	Pro	Ile	Asp	Glu	Gly	Thr	Thr		
785					790					795					800		
tcg	cga	gtc	aat	gac	att	gtg	ttg	ctc	aac	caa	cac	aac	tct	tca	gtc	2448	
Ser	Arg	Val	Asn	Asp	Ile	Val	Leu	Leu	Asn	Gln	His	Asn	Ser	Ser	Val		
			805						810					815			
aat	gac	gag	ttc	ttc	cag	act	gtt	gtc	atc	cat	tct	tta	gtc	aac	gtc	2496	
Asn	Asp	Glu	Phe	Phe	Gln	Thr	Val	Val	Ile	His	Ser	Leu	Val	Asn	Val		
			820					825					830				
ttg	cat	gac	tct	act	tac	aag	gat	cat	tat	caa	gcc	gtg	gaa	gca	att	2544	
Leu	His	Asp	Ser	Thr	Tyr	Lys	Asp	His	Tyr	Gln	Ala	Val	Glu	Ala	Ile		
			835				840					845					
atg	atg	att	ttt	agg	act	caa	cga	ttg	aga	tgt	gtc	aac	ttc	ctc	cct	2592	
Met	Met	Ile	Phe	Arg	Thr	Gln	Arg	Leu	Arg	Cys	Val	Asn	Phe	Leu	Pro		
						855					860						
cag	atc	gtc	cct	gca	ttc	ctc	aat	gtc	att	cgc	att	gca	cat	tcc	tct	2640	
Gln	Ile	Val	Pro	Ala	Phe	Leu	Asn	Val	Ile	Arg	Ile	Ala	His	Ser	Ser		
865					870					875					880		
cgt	acc	gag	ctt	tac	ctc	aaa	caa	ctt	gcg	caa	ttt	att	aca	atc	gtt	2688	
Arg	Thr	Glu	Leu	Tyr	Leu	Lys	Gln	Leu	Ala	Gln	Phe	Ile	Thr	Ile	Val		
				885					890					895			
aaa	ctg	cat	atc	cgc	aac	tac	ctc	aat	gat	gtc	ttt	gat	cta	atc	cac	2736	
Lys	Leu	His	Ile	Arg	Asn	Tyr	Leu	Asn	Asp	Val	Phe	Asp	Leu	Ile	His		
			900					905					910				
gag	ttc	tg	aac	ccc	aac	tct	act	ctt	caa	att	acc	atc	atc	tcc	ctc	2784	
Glu	Phe	Trp	Asn	Pro	Asn	Ser	Thr	Leu	Gln	Ile	Thr	Ile	Ile	Ser	Leu		
		915					920					925					
gtt	gag	gcc	atc	gcg	aag	gct	gtg	gaa	ggt	gaa	ttc	aag	gca	tac	ttg	2832	
Val	Glu	Ala	Ile	Ala	Lys	Ala	Val	Glu	Gly	Glu	Phe	Lys	Ala	Tyr	Leu		
		930				935					940						
ccc	aag	ctt	ttg	cag	cag	att	ttg	aga	tcg	ttt	gat	gga	gac	ttg	tca	2880	
Pro	Lys	Leu	Leu	Gln	Gln	Ile	Leu	Arg	Ser	Phe	Asp	Gly	Asp	Leu	Ser		
945					950					955					960		
gcc	aag	cac	ctc	ccg	gag	ctg	aaa	ctc	aac	act	ttg	ctt	cag	att	ctg	2928	
Ala	Lys	His	Leu	Pro	Glu	Leu	Lys	Leu	Asn	Thr	Leu	Leu	Gln	Ile	Leu		
				965					970					975			
aaa	gcc	ttc	tac	gtc	ttt	ggc	gaa	tct	atc	gaa	gac	tac	ctc	cac	ctt	2976	
Lys	Ala	Phe	Tyr	Val	Phe	Gly	Glu	Ser	Ile	Glu	Asp	Tyr	Leu	His	Leu		
			980					985					990				
gtc	ttg	ccc	gtc	att	gtt	cga	tct	ttt	gag	aac	ccg	gcc	gcc	ccc	gat	3024	
Val	Leu	Pro	Val	Ile	Val	Arg	Ser	Phe	Glu	Asn	Pro	Ala	Ala	Pro	Asp		
			995			1000						1005					
tct	ctc	cg	att	gct	gct	ttg	cg	act	aca	gga	cag	ctt	tgt	cg	aaa	3072	
Ser	Leu	Arg	Ile	Ala	Ala	Leu	Arg	Thr	Thr	Gly	Gln	Leu	Cys	Arg	Lys		
					1015						1020						
gtc	aac	ttt	tcg	gac	cat	gcg	agt	cag	atc	atc	cac	ccg	ttg	gta	aga	3120	
Val	Asn	Phe	Ser	Asp	His	Ala	Ser	Gln	Ile	Ile	His	Pro	Leu	Val	Arg		
1025					1030					1035				1040			
act	ttg	ggt	aat	agc	tca	gag	gag	ttg	agg	cag	act	gca	atg	gaa	aca	3168	
Thr	Leu	Gly	Asn	Ser	Ser	Glu	Glu	Leu	Arg	Gln	Thr	Ala	Met	Glu	Thr		
				1045					1050					1055			
ctt	tg	gtt	ttg	gtg	ttg	cag	ttc	ggc	gat	tat	gct	atc	ttc	att		3216	
Leu	Cys	Val	Leu	Val	Leu	Gln	Phe	Gly	cca	Pro	Asp	Tyr	Ala	Ile	Phe		
				1060				1065					1070				
cct	atg	gta	aac	aaa	gct	ttg	gtg	gaa	aac	aaa	ata	tca	cat	cct	ggt	3264	
Pro	Met	Val	Asn	Lys	Ala	Leu	Val	Glu	Asn	Lys	Ile	Ser	His	Pro	Gly		
		1075					1080					1085					
tac	gaa	gcg	ctc	ata	acc	caa	ttg	ctc	aac	cg	gag	ctt	cct	cca		3312	
Tyr	Glu	Ala	Leu	Ile	Thr	Gln	Leu	Leu	Asn	Arg	Glu	Arg	Leu	Pro	Pro		
		1090				1095					1100						
gat	ctt	ggc	cct	gtc	gaa	cga	tac	gcc	agt	gac	tct	gcc	gtc	gaa	gcc	3360	
Asp	Leu	Gly	Pro	Val	Glu	Arg	Tyr	Ala	Ser	Asp	Ser	Ala	Val	Glu	Ala		
				1110					1115					1120			
tct	gcc	cca	gag	cct	gtt	gct	ctt	aag	gtc	aac	cag	cag	gct	ctt	aaa	3408	

## PhoenixTemp32470.tmp.txt

Ser	Ala	Pro	Glu	Pro	Val	Ala	Leu	Lys	Val	Asn	Gln	Gln	Ala	Leu	Lys	
				1125					1130					1135		
ctg	gcc	tgg	gac	tgt	tcc	cac	ttg	ctt	aac	acc	agc	agc	agg	acc	gag	3456
Leu	Ala	Trp	Asp	Cys	Ser	His	Leu	Leu	Asn	Thr	Ser	Ser	Arg	Thr	Glu	
			1140					1145					1150			
tgg	atc	tct	tgg	att	att	ggc	ttg	ggt	cat	gag	atg	atg	aga	gaa	agc	3504
Trp	Ile	Ser	Trp	Ile	Ile	Gly	Leu	Gly	His	Glu	Met	Met	Arg	Glu	Ser	
		1155					1160					1165				
cct	agt	caa	gcc	ata	agg	gcc	gca	agg	agt	ttg	gcg	ttg	agt	agt	gtg	3552
Pro	Ser	Gln	Ala	Ile	Arg	Ala	Ala	Arg	Ser	Leu	Ala	Leu	Ser	Ser	Val	
	1170					1175					1180					
gcc	ttc	acc	aag	gaa	ctt	ttc	aat	gtt	gct	ttc	tac	tca	tgc	tgg	cag	3600
Ala	Phe	Thr	Lys	Glu	Leu	Phe	Asn	Val	Ala	Phe	Tyr	Ser	Cys	Trp	Gln	
	1185				1190				1195						1200	
gag	ctg	ttt	gag	agt	tac	cag	gag	gat	tta	tgg	cat	aat	ctt	gac	cga	3648
Glu	Leu	Phe	Glu	Ser	Tyr	Gln	Glu	Asp	Leu	Trp	His	Asn	Leu	Asp	Arg	
			1205					1210					1215			
gca	atc	aag	aaa	gat	gat	gtc	ccc	ggc	gat	gtt	gtc	aat	atg	att	ctc	3696
Ala	Ile	Lys	Lys	Asp	Asp	Val	Pro	Gly	Asp	Val	Val	Asn	Met	Ile	Leu	
		1220					1225					1230				
ggg	gcc	act	cag	ttc	ttg	gag	cat	gat	gaa	aag	gaa	gta	gct	atc	gaa	3744
Gly	Ala	Thr	Gln	Phe	Leu	Glu	His	Asp	Glu	Lys	Glu	Val	Ala	Ile	Glu	
	1235					1240				1245						
agt	cgt	gtt	ttg	ggc	agt	gtc	gct	gcc	aat	tat	caa	gct	ctc	gcg	gtc	3792
Ser	Arg	Val	Leu	Gly	Ser	Val	Ala	Ala	Asn	Tyr	Gln	Ala	Leu	Ala	Val	
	1250				1255					1260						
gct	tta	cat	tac	aaa	gaa	cag	gaa	ttc	ttc	ctg	gac	cct	agc	aag	gaa	3840
Ala	Leu	His	Tyr	Lys	Glu	Gln	Glu	Phe	Phe	Leu	Asp	Pro	Ser	Lys	Glu	
	1265			1270					1275						1280	
gtc	atc	gaa	gac	ctc	att	gac	gtc	aac	cag	aaa	ctc	cag	caa	agc	gat	3888
Val	Ile	Glu	Asp	Leu	Ile	Asp	Val	Asn	Gln	Lys	Leu	Gln	Gln	Ser	Asp	
			1285					1290				1295				
gcc	gcc	tgg	ggt	acc	ctt	gaa	tgg	gct	cag	aca	gag	atg	ggt	atg	act	3936
Ala	Ala	Trp	Gly	Thr	Leu	Glu	Trp	Ala	Gln	Thr	Glu	Met	Gly	Met	Thr	
		1300					1305					1310				
act	gag	gtc	gag	tgg	tac	gaa	aag	ctt	gga	agg	tgg	gag	gaa	gcg	tta	3984
Thr	Glu	Val	Glu	Trp	Tyr	Glu	Lys	Leu	Gly	Arg	Trp	Glu	Glu	Ala	Leu	
	1315					1320					1325					
caa	gtg	tgg	aac	gag	cga	gat	gcc	gat	gct	tcg	acc	act	ttc	tca	gag	4032
Gln	Val	Trp	Asn	Glu	Arg	Asp	Ala	Asp	Ala	Ser	Thr	Thr	Phe	Ser	Glu	
	1330				1335					1340						
tgg	gag	atc	act	gaa	ggc	aag	gtc	act	tgt	ctg	cac	gct	atg	ggc	gaa	4080
Trp	Glu	Ile	Thr	Glu	Gly	Lys	Val	Thr	Cys	Leu	His	Ala	Met	Gly	Glu	
	1345			1350				1355							1360	
tgg	gaa	caa	ctc	tcc	gac	ttt	gtc	cag	gct	cga	tgg	gcc	aac	agg	acg	4128
Trp	Glu	Gln	Leu	Ser	Asp	Phe	Val	Gln	Ala	Arg	Trp	Ala	Asn	Arg	Thr	
			1365					1370				1375				
gca	gag	gag	aaa	aag	ttg	ctc	tcg	ccg	tta	gcg	gca	gca	gct	agt	tgg	4176
Ala	Glu	Glu	Lys	Lys	Leu	Leu	Ser	Pro	Leu	Ala	Ala	Ala	Ala	Ser	Trp	
	1380						1385					1390				
tcg	ctg	aaa	caa	tgg	gat	ctg	atg	gac	gat	tac	atc	tcc	gcc	atg	aag	4224
Ser	Leu	Lys	Gln	Trp	Asp	Leu	Met	Asp	Asp	Tyr	Ile	Ser	Ala	Met	Lys	
	1395					1400					1405					
ggc	gac	gga	gcg	gat	cgc	gcg	ttc	ttc	aag	gct	atc	tta	gct	gtg	cac	4272
Gly	Asp	Gly	Ala	Asp	Arg	Ala	Phe	Phe	Lys	Ala	Ile	Leu	Ala	Val	His	
	1410				1415					1420						
aga	aac	caa	atc	cct	gct	gct	ttg	aag	caa	atc	tcc	aag	gcg	cga	gaa	4320
Arg	Asn	Gln	Ile	Pro	Ala	Ala	Leu	Lys	Gln	Ile	Ser	Lys	Ala	Arg	Glu	
	1425			1430					1435						1440	
agg	ctg	gat	cca	gag	ttg	act	acc	tta	act	ggg	gac	agc	tac	ggc	cga	4368
Arg	Leu	Asp	Pro	Glu	Leu	Thr	Thr	Leu	Thr	Gly	Asp	Ser	Tyr	Gly	Arg	
			1445					1450					1455			
gcg	tac	gat	act	gtc	gtg	agg	att	caa	atg	ctt	gct	gag	ctt	gag	gaa	4416
Ala	Tyr	Asp	Thr	Val	Val	Arg	Ile	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu	
	1460						1465					1470				
atc	att	gcc	tac	aag	gat	cac	gcc	gac	gag	cct	gcc	cga	cag	gag	atg	4464
Ile	Ile	Ala	Tyr	Lys	Asp	His	Ala	Asp	Glu	Pro	Ala	Arg	Gln	Glu	Met	
	1475					1480					1485					
caa	cga	cag	act	tgg	aag	aag	cgt	ttg	gct	gga	tgt	cag	cgc	gat	gtc	4512

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Gln	Arg	Gln	Thr	Trp	Lys	Lys	Arg	Leu	Ala	Gly	Cys	Gln	Arg	Asp	Val		
1490	gaa	gtt	tgg	cag	cg	att	ctt	cag	gtc	aga	tcc	ctt	gta	ctc	aag	cct	4560
1505	Glu	Val	Trp	Gln	Arg	Ile	Leu	Gln	Val	Arg	Ser	Leu	Val	Leu	Lys	Pro	
1510	aat	gag	gat	atg	gac	act	tgg	att	gag	ttt	gcg	gac	ctc	tgt	cga	aca	4608
1525	Asn	Glu	Asp	Met	Asp	Thr	Trp	Ile	Glu	Phe	Ala	Asp	Leu	Cys	Arg	Thr	
1540	tct	gac	agg	ctg	aac	tgt	gcc	gag	aaa	acg	ctg	aca	tct	ctt	ggt	ggc	4656
1545	Ser	Asp	Arg	Leu	Asn	Leu	Ala	Glu	Lys	Thr	Leu	Thr	Ser	Leu	Val	Gly	
1555	ttc	caa	tac	cca	tca	atg	gaa	gac	act	cga	gga	cga	gca	cca	cct	ccc	4704
1560	Phe	Gln	Tyr	Pro	Ser	Met	Glu	Asp	Thr	Arg	Gly	Arg	Ala	Pro	Pro	Pro	
1570	atc	att	ttc	gct	tac	cta	cgt	atg	gcc	tgg	gcg	aag	aac	ctt	caa	atc	4752
1575	Ile	Ile	Phe	Ala	Tyr	Leu	Arg	Met	Ala	Trp	Ala	Lys	Asn	Leu	Gln	Ile	
1580	gac	tct	cga	gaa	gaa	cgt	tac	gaa	act	ctc	caa	cac	ttg	cga	gac	ttc	4800
1590	Asp	Ser	Arg	Glu	Glu	Arg	Tyr	Glu	Thr	Leu	Gln	His	Leu	Arg	Asp	Phe	
1595	acg	gac	cag	ctt	acc	gac	gat	gtt	ggt	atc	gga	gcg	agg	ggc	ccc	aac	4848
1605	Thr	Asp	Gln	Leu	Thr	Asp	Asp	Val	Gly	Ile	Gly	Ala	Arg	Gly	Pro	Asn	
1610	ggc	aga	ctc	atg	tta	cct	gac	cag	aag	ttg	tat	gga	tct	tac	acc	aag	4896
1620	Gly	Arg	Leu	Met	Leu	Pro	Asp	Gln	Lys	Leu	Tyr	Gly	Ser	Tyr	Thr	Lys	
1625	ctg	ctg	gcg	cag	tgc	cat	gtt	gaa	ttg	ggt	cag	tgg	caa	gcg	act	ttg	4944
1635	Leu	Leu	Ala	Gln	Cys	His	Val	Glu	Leu	Gly	Gln	Trp	Gln	Ala	Thr	Leu	
1640	agg	gaa	agc	caa	gga	tct	gct	gat	ccc	tcg	ggc	att	ctc	cac	gac	tat	4992
1650	Arg	Glu	Ser	Gln	Gly	Ser	Ala	Asp	Pro	Ser	Gly	Ile	Leu	His	Asp	Tyr	
1655	tct	ctc	gcc	act	gaa	ctt	gac	cct	gag	tgg	tac	caa	gct	tgg	cac	act	5040
1665	Ser	Leu	Ala	Thr	Glu	Leu	Asp	Pro	Glu	Trp	Tyr	Gln	Ala	Trp	His	Thr	
1670	tgg	gct	ttg	gcc	aat	ttc	gaa	gtt	att	acc	cag	ctt	gaa	gta	tca	cag	5088
1685	Trp	Ala	Leu	Ala	Asn	Phe	Glu	Val	Ile	Thr	Gln	Leu	Glu	Val	Ser	Gln	
1690	caa	ggt	ctc	tca	cct	att	cac	ttt	acg	acc	tat	atc	atc	cct	gct	gtc	5136
1700	Gln	Gly	Leu	Ser	Pro	Ile	His	Phe	Thr	Thr	Tyr	Ile	Ile	Pro	Ala	Val	
1705	gaa	ggt	ttc	ctc	aag	tct	atc	tcg	ctt	tct	cct	ggc	aac	tcc	ttg	caa	5184
1715	Glu	Gly	Phe	Leu	Lys	Ser	Ile	Ser	Leu	Ser	Pro	Gly	Asn	Ser	Leu	Gln	
1720	gat	act	tta	agg	ctg	ctg	act	ctc	tgg	ttt	aca	tat	gga	tac	tct	agc	5232
1730	Asp	Thr	Leu	Arg	Leu	Leu	Leu	Trp	Phe	Thr	Tyr	Gly	Tyr	Ser	Ser		
1735	gga	gtg	aca	gcg	gcc	gtt	agc	caa	ggt	ctg	ccc	act	gtc	aac	att	gat	5280
1745	Gly	Val	Thr	Ala	Ala	Val	Ser	Gln	Gly	Leu	Pro	Thr	Val	Asn	Ile	Asp	
1750	gtc	tgg	ctc	gag	gtc	atc	cct	cag	att	att	gcc	cgt	atc	caa	acg	cca	5328
1765	Val	Trp	Leu	Glu	Val	Ile	Pro	Gln	Ile	Ile	Ala	Arg	Ile	Gln	Thr	Pro	
1770	cg	cag	tct	ata	cag	cag	ctc	att	gta	cag	ctc	ttg	cat	gat	att	ggc	5376
1780	Arg	Gln	Ser	Ile	Gln	Gln	Leu	Ile	Val	Gln	Leu	Leu	His	Asp	Ile	Gly	
1785	aaa	gcc	cat	cct	caa	gcc	ctt	atc	tac	cct	ctt	acc	gtc	gcc	tcc	aaa	5424
1795	Lys	Ala	His	Pro	Gln	Ala	Leu	Ile	Tyr	Pro	Leu	Thr	Val	Ala	Ser	Lys	
1800	tct	aca	gtc	gca	gcc	cga	cg	act	gtt	gct	caa	aat	atc	acc	cat	aaa	5472
1810	Ser	Thr	Val	Ala	Ala	Arg	Arg	Thr	Val	Ala	Gln	Asn	Ile	Thr	His	Lys	
1815	atg	cga	gag	cac	tct	ccc	aag	atc	gtt	gac	cag	gcc	gag	ctt	gtc	agt	5520
1825	Met	Arg	Glu	His	Ser	Pro	Lys	Ile	Val	Asp	Gln	Ala	Glu	Leu	Val	Ser	
1830	act	gag	ctc	atc	cga	gcg	gct	atc	tta	tgg	cat	gag	atg	tgg	tat	gat	5568
1845	Thr	Glu	Leu	Ile	Arg	Ala	Ala	Ile	Leu	Trp	His	Glu	Met	Trp	Tyr	Asp	
1850	ggt	ttg	gaa	gaa	gcg	tca	aag	cac	tac	ttt	ggt	gac	cat	gat	atc	cct	5616

## PhoenixTemp32470.tmp.txt

Gly	Leu	Glu	Glu	Ala	Ser	Lys	His	Tyr	Phe	Gly	Asp	His	Asp	Ile	Pro		
ggc	atg	ctg	gga	gtt	ctt	gaa	cct	ttg	cat	gag	att	gtc	gaa	aac	gga	5664	
Gly	Met	Leu	Gly	Val	Leu	Glu	Pro	Leu	His	Glu	Ile	Val	Glu	Asn	Gly		
ccc	caa	acc	ttg	cgt	gag	acg	tcc	ttt	att	caa	tcg	ttc	ggg	cat	gat	5712	
Pro	Gln	Thr	Leu	Arg	Glu	Thr	Ser	Phe	Ile	Gln	Ser	Phe	Gly	His	Asp		
ttg	cgt	atc	gcc	cga	gag	cat	ctc	aag	cgt	tac	cgt	ata	act	cag	gat	5760	
Leu	Arg	Ile	Ala	Arg	Glu	His	Leu	Lys	Arg	Tyr	Arg	Ile	Thr	Gln	Asp		
ggg	acc	gaa	att	caa	caa	gca	tgg	gat	gtc	tac	tac	tcc	gtc	ttc	cag	5808	
Gly	Thr	Glu	Ile	Gln	Gln	Ala	Trp	Asp	Val	Tyr	Tyr	Ser	Val	Phe	Gln		
cgt	ctc	ggc	aaa	cag	ctc	aag	ctc	ctg	aac	gtc	att	gag	ctg	caa	tat	5856	
Arg	Leu	Gly	Lys	Gln	Leu	Lys	Leu	Leu	Asn	Val	Ile	Glu	Leu	Gln	Tyr		
gtc	tcg	ccc	aag	ttg	atg	gcc	gtt	cga	gac	ttg	gat	att	gct	gtt	cca	5904	
Val	Ser	Pro	Lys	Leu	Met	Ala	Val	Arg	Asp	Leu	Asp	Ile	Ala	Val	Pro		
ggt	acc	tac	cag	agt	ggc	aag	cct	atc	atc	ggt	att	aag	aac	gtt	atc	5952	
Gly	Thr	Tyr	Gln	Ser	Gly	Lys	Pro	Ile	Ile	Gly	Ile	Lys	Asn	Val	Ile		
ccg	acc	ttc	aag	gtc	att	gct	tcc	aag	caa	aag	cca	aga	caa	tgc	agc	6000	
Pro	Thr	Phe	Lys	Val	Ile	Ala	Ser	Lys	Gln	Lys	Pro	Arg	Gln	Cys	Ser		
atg	cgc	ggt	atg	gat	ggt	aaa	gaa	tat	gcg	tac	tgc	ctc	aag	ggt	cac	6048	
Met	Arg	Gly	Met	Asp	Gly	Lys	Glu	Tyr	Ala	Tyr	Cys	Leu	Lys	Gly	His		
gag	gac	ttg	cga	caa	gac	gag	cgt	gtt	atg	cag	ctc	ttc	ggt	ttg	gtc	6096	
Glu	Asp	Leu	Arg	Gln	Asp	Glu	Arg	Val	Met	Gln	Leu	Phe	Gly	Leu	Val		
aac	act	ctt	ctt	aat	aat	gat	cac	gag	tct	gcc	aaa	cga	cat	ctc	agt	6144	
Asn	Thr	Leu	Leu	Asn	Asn	Asp	His	Glu	Ser	Ala	Lys	Arg	His	Leu	Ser		
atc	cag	cga	ttt	tct	gtt	act	cct	ctt	tcc	cct	agt	gcc	ggt	tta	ctc	6192	
Ile	Gln	Arg	Phe	Ser	Val	Thr	Pro	Leu	Ser	Pro	Ser	Ala	Gly	Leu	Leu		
ggt	tgg	gtt	acc	cac	agt	gat	acc	atc	cac	gtc	ctc	atc	aaa	caa	tac	6240	
Gly	Trp	Val	Thr	His	Ser	Asp	Thr	Ile	His	Val	Leu	Ile	Lys	Gln	Tyr		
cga	gac	caa	agg	aaa	atc	ttg	gtg	gat	att	gag	cac	aaa	ctt	atg	cag	6288	
Arg	Asp	Gln	Arg	Lys	Ile	Leu	Val	Asp	Ile	Glu	His	Lys	Leu	Met	Gln		
cag	atg	tct	gat	gag	agc	tac	gat	tct	ctg	ccg	ctc	ttg	cac	aag	gtc	6336	
Gln	Met	Ser	Asp	Glu	Ser	Tyr	Asp	Ser	Leu	Pro	Leu	Leu	His	Lys	Val		
gag	atc	ttc	cag	tat	gcc	ttg	gat	aac	aca	act	ggt	cag	gat	ttg	tac	6384	
Glu	Ile	Phe	Gln	Tyr	Ala	Leu	Asp	Asn	Thr	Thr	Gly	Gln	Asp	Leu	Tyr		
cgc	atc	ttg	tgg	ctc	aag	tct	cgt	aac	tca	gat	atc	tgg	ctt	gag	aga	6432	
Arg	Ile	Leu	Trp	Leu	Lys	Ser	Arg	Asn	Ser	Asp	Ile	Trp	Leu	Glu	Arg		
agg	acc	acc	tac	act	aga	agt	ctg	ggt	ctc	aac	tcg	atg	gtc	ggg	tat	6480	
Arg	Thr	Thr	Tyr	Thr	Arg	Ser	Leu	Gly	Leu	Asn	Ser	Met	Val	Gly	Tyr		
atc	ctt	ggc	ctg	ggt	gac	aga	cat	cct	tca	aac	ctg	ttg	ctc	gat	cag	6528	
Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser	Asn	Leu	Leu	Leu	Asp	Gln		
att	acg	ggt	aag	atg	gtg	cac	att	gac	ttt	ggt	gat	tgt	ttc	gag	gtt	6576	
Ile	Thr	Gly	Lys	Met	Val	His	Ile	Asp	Phe	Gly	Asp	Cys	Phe	Glu	Val		
gct	caa	cag	aga	gac	aag	tac	cct	gag	aaa	gta	ccg	ttc	cga	ctt	acc	6624	
Ala	Gln	Gln	Arg	Asp	Lys	Tyr	Pro	Glu	Lys	Val	Pro	Phe	Arg	Leu	Thr		
cga	atg	ctc	att	cat	gcc	atg	gag	gtc	tgc	ggt	atc	act	ggc	aac	ttt	6672	
Arg	Met	Leu	Ile	His	Ala	Met	Glu	Val	Cys	Gly	Ile	Thr	Gly	Asn	Phe		
tcg	cga	agc	tgt	gaa	gtg	tcc	atg	gaa	gtc	ctt	cgt	gac	aac	aga	gaa	6720	

## PhoenixTemp32470.tmp.txt

```

Ser Arg Ser Cys Glu Val Ser Met Glu Val Leu Arg Asp Asn Arg Glu
2225 2230 2235 2240
tca ctt atg gcc gtg ctt gaa gca ttt gtg tac gat cct ctt att gct 6768
Ser Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Ile Ala
2245 2250 2255
tgg cgt ctt acg gcg acg gac aaa cga cct ggt ggc gtt ggc gaa gtc 6816
Trp Arg Leu Thr Ala Thr Asp Lys Arg Pro Gly Gly Val Gly Glu Val
2260 2265 2270
aag gac ctg gat gac ccg gcg gtg tac gga aag cag agg aaa aac aag 6864
Lys Asp Leu Asp Asp Pro Ala Val Tyr Gly Lys Gln Arg Lys Asn Lys
2275 2280 2285
gcg aac gag aca gag att ctc aat gat gta gaa aat acc gag gtg aag 6912
Ala Asn Glu Thr Glu Ile Leu Asn Asp Val Glu Asn Thr Glu Val Lys
2290 2295 2300
aat gac aag ggt ctg cag gtc att gaa cga gta cga cga aaa ttg acc 6960
Asn Asp Lys Gly Leu Gln Val Ile Glu Arg Val Arg Arg Lys Leu Thr
2305 2310 2315 2320
ggt cga gat ttt aag ccc gac gtt gta ctc gat gtc aag tcc caa gtg 7008
Gly Arg Asp Phe Lys Pro Asp Val Val Leu Asp Val Lys Ser Gln Val
2325 2330 2335
gag aaa ttg gtg gtt gag gcg aca aag aca gag aac ctg tgt gtg gcg 7056
Glu Lys Leu Val Val Glu Ala Thr Lys Thr Glu Asn Leu Cys Val Ala
2340 2345 2350
ttc ttg gga tgg tgt tcc ttc tgg taa 7083
Phe Leu Gly Trp Cys Ser Phe Trp
2355 2360

```

&lt;210&gt; 2543

&lt;211&gt; 2360

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 2543

```

Met Ser Ser Gln Ser Asp Val Leu Asp Asn Ile Phe Gln Arg Leu Ser
1 5 10 15
Ala Arg Ser Glu Asp Val Arg Ala Gln Ala Gly Gln Asp Leu Ala Glu
20 25 30
His Val Val Ala Tyr Thr Gln Glu Tyr Pro Gly His Asp Ala Ser Lys
35 40 45
Gly Val Trp Ala Gln Val Phe His Lys Thr Phe Glu Phe Thr Arg Ser
50 55 60
Asn Asn Gln Leu Glu Arg Leu Gly Ala Ile Ile Ser Ile Ser Gln Leu
65 70 75 80
Leu Gln Leu Thr Lys Asp Asp Thr Leu Asp Arg Ala Gln Gln Lys Val
85 90 95
Leu Arg Leu Tyr Glu Tyr Leu Arg Pro Leu Thr Thr Cys Gly Asp Ser
100 105 110
Thr Val Met Leu Pro Ala Ser Leu Val Val Glu Asp Met Val Arg Asn
115 120 125
Ser Pro Thr Leu His Thr Asp Thr Phe Leu Gly Lys Glu Val Gly Gln
130 135 140
Ala Leu Val Met Ile Asp Ser Arg Gln Glu Val Gly Arg Phe Ser
145 150 155 160
Gly Ala Leu Leu Leu Tyr Ala Phe Ala Arg Ala Ala Pro Gly Val Phe
165 170 175
His Gln Tyr Ile Pro Lys Val Leu Glu Lys Ile Trp Val Pro Leu Arg
180 185 190
Asp Ser Arg Ser Val Val Arg Glu Arg Ala Ser Met Leu Ser Thr
195 200 205
Cys Leu Asp Thr Leu Lys Thr Arg Gly Asp Arg Pro Ser Thr Asp Thr
210 215 220
Tyr Arg Lys Ile Phe Glu Glu Ala Arg Leu Gly Leu Leu Lys Ala Ser
225 230 235 240
Ser Thr Glu Ser Ile Leu Gly Ser Leu Leu Ala Phe Asn Ser Met Leu
245 250 255
Gln Asn Gln Gln Leu Ser Met Ala Glu Tyr Tyr Arg Ser Ile Cys Glu
260 265 270
Leu Thr Phe Lys Tyr Arg Asp Ser Lys Glu Val Ser Ile Arg Lys Ala
275 280 285

```

## PhoenixTemp32470.tmp.txt

Val	Ile	Ala	Leu	Ile	Pro	Ser	Met	Ala	Thr	Tyr	Asp	Ser	Asp	Asp	Phe
290						295					300				
Glu	Ala	His	Tyr	Leu	His	Arg	Ser	Met	Ala	Tyr	Leu	Leu	Gln	Ala	Leu
305					310					315					320
Asn	Arg	Pro	Ala	Asp	Arg	Asp	Ile	Ser	Tyr	Val	Ala	Leu	Gly	His	Met
				325					330					335	
Ala	Val	His	Leu	Gly	Ser	Lys	Met	Lys	Pro	Phe	Ile	Asp	Asp	Ile	Met
			340					345					350		
Arg	Ile	Ile	Arg	Asp	His	Leu	Arg	Met	Arg	Gly	Lys	Lys	Asn	Ala	Pro
		355					360					365			
Tyr	Glu	Ala	Pro	Ile	Phe	Gln	Cys	Leu	Ala	Met	Leu	Ala	Thr	Ser	Val
370						375					380				
Gly	Pro	Met	Leu	Thr	Arg	Gln	Met	His	Glu	Ile	Leu	Asn	Leu	Met	Phe
385					390					395					400
Pro	Trp	Gly	Leu	Ser	Glu	Pro	Leu	Cys	Thr	Ala	Leu	Gln	Ala	Thr	Ala
				405					410					415	
Ser	His	Ile	Pro	Pro	Leu	Leu	Arg	Thr	Ile	Gln	Asp	Arg	Leu	Leu	Glu
			420					425					430		
Met	Leu	Ser	Gln	Thr	Leu	Thr	Gly	His	Ser	Tyr	Arg	Pro	Leu	Gly	Ala
		435					440					445			
Pro	Ala	Pro	Arg	Gly	Gly	Ala	Gln	Met	Asp	Leu	Asn	Leu	Leu	Gln	Ser
450						455					460				
Thr	Thr	Asn	Ala	Gln	Ser	Ala	Asp	Thr	Leu	Lys	Leu	Ala	Leu	Arg	Leu
465					470					475					480
Leu	Ala	Arg	Phe	Asp	Phe	Val	Gly	His	Thr	Leu	Ser	Glu	Phe	Val	Arg
			485						490					495	
Asp	Ala	Ala	Leu	Pro	Tyr	Leu	Glu	His	Asp	Ser	Val	Glu	Val	Arg	Arg
			500					505					510		
Glu	Ala	Val	Leu	Ala	Thr	Thr	Thr	Leu	Phe	Met	Thr	Asp	Pro	Ile	Cys
		515					520					525			
Gln	Gln	Thr	Ser	Ser	Asn	Ser	Val	Glu	Ile	Val	Asn	Asp	Val	Leu	Ser
530						535					540				
Lys	Leu	Leu	Thr	Val	Ala	Ile	Thr	Asp	Pro	Asn	Ala	Gly	Ile	Arg	Arg
545					550					555					560
Thr	Val	Leu	Asp	His	Leu	Glu	Asp	Lys	Phe	Asp	Arg	His	Leu	Ala	Gln
				565					570					575	
Ala	Asp	Asp	Ile	Arg	Cys	Leu	Phe	Ile	Ala	Leu	Asn	Asp	Glu	Val	Phe
			580					585					590		
Gly	Asn	Arg	Glu	Arg	Thr	Ile	Ser	Ile	Ile	Gly	Arg	Leu	Ala	His	His
		595					600					605			
Asn	Pro	Ala	Tyr	Val	Met	Pro	His	Leu	Arg	Lys	Ser	Leu	Ile	Asn	Ile
610						615					620				
Val	Thr	Glu	Leu	Glu	Tyr	Ser	Thr	Asn	Ala	Arg	Gln	Lys	Glu	Glu	Ser
625					630					635					640
Ala	Lys	Leu	Leu	Cys	Leu	Ile	Ile	Gly	Ala	Ala	Ala	Gly	Leu	Val	Lys
				645					650					655	
Ser	Tyr	Ala	Pro	Thr	Ile	Leu	Ser	Val	Leu	Leu	Arg	Thr	Ala	Ser	Ser
			660					665					670		
Pro	Asp	Ser	Ser	Ile	Gly	Val	Gln	Ala	Glu	Cys	Leu	Lys	Cys	Ile	Gly
		675					680					685			
Glu	Leu	Ala	Arg	Val	Ala	Gly	Glu	Glu	Leu	Val	Pro	Ser	Val	Arg	Ala
690						695					700				
Ile	Leu	Asp	Leu	Val	Ile	Glu	Met	Leu	Asn	Asp	Gln	Ala	Ser	Pro	Ala
705					710					715					720
Lys	Arg	Asp	Thr	Ala	Leu	Lys	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Thr
				725					730					735	
Gly	Glu	Val	Ile	Lys	Pro	Tyr	Thr	Asp	Tyr	Pro	Gln	Leu	Met	Gly	Val
			740					745					750		
Leu	Phe	Arg	Phe	Leu	Arg	Met	Glu	Ala	Asn	Ser	Ser	Val	Arg	Gln	Glu
		755					760					765			
Thr	Ile	Lys	Thr	Ile	Gly	Met	Leu	Gly	Ala	Leu	Asp	Pro	Phe	Lys	His
	770				775						780				
Lys	Thr	Leu	Leu	Gly	Asp	Val	Asp	Asp	Pro	Ile	Asp	Glu	Gly	Thr	Thr
785					790					795					800
Ser	Arg	Val	Asn	Asp	Ile	Val	Leu	Leu	Asn	Gln	His	Asn	Ser	Ser	Val
				805					810					815	
Asn	Asp	Glu	Phe	Phe	Gln	Thr	Val	Val	Ile	His	Ser	Leu	Val	Asn	Val
			820					825					830		
Leu	His	Asp	Ser	Thr	Tyr	Lys	Asp	His	Tyr	Gln	Ala	Val	Glu	Ala	Ile

## PhoenixTemp32470.tmp.txt

835  
 Met Met Ile Phe Arg Thr Gln 840 Arg Leu Arg Cys Val 845 Asn Phe Leu Pro  
 850  
 Gln Ile Val Pro Ala Phe 855 Leu Asn Val Ile Arg Ile Ala His Ser Ser  
 865  
 Arg Thr Glu Leu Tyr 870 Leu Lys Gln Leu Ala 875 Gln Phe Ile Thr Ile Val  
 885  
 Lys Leu His Ile 900 Arg Asn Tyr Leu Asn 905 Asp Val Phe Asp Leu Ile His  
 915  
 Glu Phe Trp Asn Pro Asn Ser Thr Leu Gln Ile Thr Ile Ile Ser Leu  
 920  
 Val Glu Ala Ile Ala Lys Ala 935 Val Glu Gly Glu Phe 940 Lys Ala Tyr Leu  
 950  
 Pro Lys Leu Leu Gln Gln Ile Leu Arg Ser Phe 955 Asp Gly Asp Leu Ser  
 960  
 Ala Lys His Leu Pro 965 Glu Leu Lys Leu Asn Thr Leu Leu Gln Ile Leu  
 975  
 Lys Ala Phe Tyr 980 Val Phe Gly Glu Ser 985 Ile Glu Asp Tyr Leu His Leu  
 990  
 Val Leu Pro Val Ile Val Arg Ser Phe Glu Asn Pro Ala Ala Pro Asp  
 1000  
 Ser Leu Arg Ile Ala Ala Leu Arg Thr Thr Gly Gln Leu Cys Arg Lys  
 1010  
 Val Asn Phe Ser Asp His Ala Ser Gln Ile Ile His Pro Leu Val Arg  
 1025  
 Thr Leu Gly Asn Ser Ser Glu Glu Leu Arg Gln Thr Ala Met Glu Thr  
 1045  
 Leu Cys Val Leu Val Leu Gln Phe Gly Pro Asp Tyr Ala Ile Phe Ile  
 1060  
 Pro Met Val Asn Lys Ala Leu Val Glu Asn Lys Ile Ser His Pro Gly  
 1075  
 Tyr Glu Ala Leu Ile Thr Gln Leu Leu Asn Arg Glu Arg Leu Pro Pro  
 1090  
 Asp Leu Gly Pro Val Glu Arg Tyr Ala Ser Asp Ser Ala Val Glu Ala  
 1105  
 Ser Ala Pro Glu Pro Val Ala Leu Lys Val Asn Gln Gln Ala Leu Lys  
 1125  
 Leu Ala Trp Asp Cys Ser His Leu Leu Asn Thr Ser Ser Arg Thr Glu  
 1140  
 Trp Ile Ser Trp Ile Ile Gly Leu Gly His Glu Met Met Arg Glu Ser  
 1155  
 Pro Ser Gln Ala Ile Arg Ala Ala Arg Ser Leu Ala Leu Ser Ser Val  
 1170  
 Ala Phe Thr Lys Glu Leu Phe Asn Val Ala Phe Tyr Ser Cys Trp Gln  
 1185  
 Glu Leu Phe Glu Ser Tyr Gln Glu Asp Leu Trp His Asn Leu Asp Arg  
 1205  
 Ala Ile Lys Lys Asp Asp Val Pro Gly Asp Val Val Asn Met Ile Leu  
 1220  
 Gly Ala Thr Gln Phe Leu Glu His Asp Glu Lys Glu Val Ala Ile Glu  
 1235  
 Ser Arg Val Leu Gly Ser Val Ala Ala Asn Tyr Gln Ala Leu Ala Val  
 1250  
 Ala Leu His Tyr Lys Glu Gln Glu Phe Phe Leu Asp Pro Ser Lys Glu  
 1265  
 Val Ile Glu Asp Leu Ile Asp Val Asn Gln Lys Leu Gln Gln Ser Asp  
 1285  
 Ala Ala Trp Gly Thr Leu Glu Trp Ala Gln Thr Glu Met Gly Met Thr  
 1300  
 Thr Glu Val Glu Trp Tyr Glu Lys Leu Gly Arg Trp Glu Glu Ala Leu  
 1315  
 Gln Val Trp Asn Glu Arg Asp Ala Asp Ala Ser Thr Thr Phe Ser Glu  
 1330  
 Trp Glu Ile Thr Glu Gly Lys Val Thr Cys Leu His Ala Met Gly Glu  
 1345  
 Trp Glu Gln Leu Ser Asp Phe Val Gln Ala Arg Trp Ala Asn Arg Thr  
 1365  
 Ala Glu Glu Lys Lys Leu Leu Ser Pro Leu Ala Ala Ala Ala Ser Trp  
 1380  
 1385  
 1390



## PhoenixTemp32470.tmp.txt

Ser Leu Lys Gln Trp Asp Leu Met Asp Asp Tyr Ile Ser Ala Met Lys  
 1395 1400 1405  
 Gly Asp Gly Ala Asp Arg Ala Phe Phe Lys Ala Ile Leu Ala Val His  
 1410 1415 1420  
 Arg Asn Gln Ile Pro Ala Ala Leu Lys Gln Ile Ser Lys Ala Arg Glu  
 1425 1430 1435 1440  
 Arg Leu Asp Pro Glu Leu Thr Thr Leu Thr Gly Asp Ser Tyr Gly Arg  
 1445 1450 1455  
 Ala Tyr Asp Thr Val Val Arg Ile Gln Met Leu Ala Glu Leu Glu Glu  
 1460 1465 1470  
 Ile Ile Ala Tyr Lys Asp His Ala Asp Glu Pro Ala Arg Gln Glu Met  
 1475 1480 1485  
 Gln Arg Gln Thr Trp Lys Lys Arg Leu Ala Gly Cys Gln Arg Asp Val  
 1490 1495 1500  
 Glu Val Trp Gln Arg Ile Leu Gln Val Arg Ser Leu Val Leu Lys Pro  
 1505 1510 1515 1520  
 Asn Glu Asp Met Asp Thr Trp Ile Glu Phe Ala Asp Leu Cys Arg Thr  
 1525 1530 1535  
 Ser Asp Arg Leu Asn Leu Ala Glu Lys Thr Leu Thr Ser Leu Val Gly  
 1540 1545 1550  
 Phe Gln Tyr Pro Ser Met Glu Asp Thr Arg Gly Arg Ala Pro Pro Pro  
 1555 1560 1565  
 Ile Ile Phe Ala Tyr Leu Arg Met Ala Trp Ala Lys Asn Leu Gln Ile  
 1570 1575 1580  
 Asp Ser Arg Glu Glu Arg Tyr Glu Thr Leu Gln His Leu Arg Asp Phe  
 1585 1590 1595 1600  
 Thr Asp Gln Leu Thr Asp Asp Val Gly Ile Gly Ala Arg Gly Pro Asn  
 1605 1610 1615  
 Gly Arg Leu Met Leu Pro Asp Gln Lys Leu Tyr Gly Ser Tyr Thr Lys  
 1620 1625 1630  
 Leu Leu Ala Gln Cys His Val Glu Leu Gly Gln Trp Gln Ala Thr Leu  
 1635 1640 1645  
 Arg Glu Ser Gln Gly Ser Ala Asp Pro Ser Gly Ile Leu His Asp Tyr  
 1650 1655 1660  
 Ser Leu Ala Thr Glu Leu Asp Pro Glu Trp Tyr Gln Ala Trp His Thr  
 1665 1670 1675 1680  
 Trp Ala Leu Ala Asn Phe Glu Val Ile Thr Gln Leu Glu Val Ser Gln  
 1685 1690 1695  
 Gln Gly Leu Ser Pro Ile His Phe Thr Thr Tyr Ile Ile Pro Ala Val  
 1700 1705 1710  
 Glu Gly Phe Leu Lys Ser Ile Ser Leu Ser Pro Gly Asn Ser Leu Gln  
 1715 1720 1725  
 Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe Thr Tyr Gly Tyr Ser Ser  
 1730 1735 1740  
 Gly Val Thr Ala Ala Val Ser Gln Gly Leu Pro Thr Val Asn Ile Asp  
 1745 1750 1755 1760  
 Val Trp Leu Glu Val Ile Pro Gln Ile Ile Ala Arg Ile Gln Thr Pro  
 1765 1770 1775  
 Arg Gln Ser Ile Gln Gln Leu Ile Val Gln Leu Leu His Asp Ile Gly  
 1780 1785 1790  
 Lys Ala His Pro Gln Ala Leu Ile Tyr Pro Leu Thr Val Ala Ser Lys  
 1795 1800 1805  
 Ser Thr Val Ala Ala Arg Arg Thr Val Ala Gln Asn Ile Thr His Lys  
 1810 1815 1820  
 Met Arg Glu His Ser Pro Lys Ile Val Asp Gln Ala Glu Leu Val Ser  
 1825 1830 1835 1840  
 Thr Glu Leu Ile Arg Ala Ala Ile Leu Trp His Glu Met Trp Tyr Asp  
 1845 1850 1855  
 Gly Leu Glu Glu Ala Ser Lys His Tyr Phe Gly Asp His Asp Ile Pro  
 1860 1865 1870  
 Gly Met Leu Gly Val Leu Glu Pro Leu His Glu Ile Val Glu Asn Gly  
 1875 1880 1885  
 Pro Gln Thr Leu Arg Glu Thr Ser Phe Ile Gln Ser Phe Gly His Asp  
 1890 1895 1900  
 Leu Arg Ile Ala Arg Glu His Leu Lys Arg Tyr Arg Ile Thr Gln Asp  
 1905 1910 1915 1920  
 Gly Thr Glu Ile Gln Gln Ala Trp Asp Val Tyr Tyr Ser Val Phe Gln  
 1925 1930 1935  
 Arg Leu Gly Lys Gln Leu Lys Leu Leu Asn Val Ile Glu Leu Gln Tyr

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1940 1945 1950  
 Val Ser Pro Lys Leu Met Ala Val Arg Asp Leu Asp Ile Ala Val Pro  
 1955 1960 1965  
 Gly Thr Tyr Gln Ser Gly Lys Pro Ile Ile Gly Ile Lys Asn Val Ile  
 1970 1975 1980  
 Pro Thr Phe Lys Val Ile Ala Ser Lys Gln Lys Pro Arg Gln Cys Ser  
 1985 1990 1995 2000  
 Met Arg Gly Met Asp Gly Lys Glu Tyr Ala Tyr Cys Leu Lys Gly His  
 2005 2010 2015  
 Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu Val  
 2020 2025 2030  
 Asn Thr Leu Leu Asn Asn Asp His Glu Ser Ala Lys Arg His Leu Ser  
 2035 2040 2045  
 Ile Gln Arg Phe Ser Val Thr Pro Leu Ser Pro Ser Ala Gly Leu Leu  
 2050 2055 2060  
 Gly Trp Val Thr His Ser Asp Thr Ile His Val Leu Ile Lys Gln Tyr  
 2065 2070 2075 2080  
 Arg Asp Gln Arg Lys Ile Leu Val Asp Ile Glu His Lys Leu Met Gln  
 2085 2090 2095  
 Gln Met Ser Asp Glu Ser Tyr Asp Ser Leu Pro Leu Leu His Lys Val  
 2100 2105 2110  
 Glu Ile Phe Gln Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu Tyr  
 2115 2120 2125  
 Arg Ile Leu Trp Leu Lys Ser Arg Asn Ser Asp Ile Trp Leu Glu Arg  
 2130 2135 2140  
 Arg Thr Thr Tyr Thr Arg Ser Leu Gly Leu Asn Ser Met Val Gly Tyr  
 2145 2150 2155 2160  
 Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Leu Leu Asp Gln  
 2165 2170 2175  
 Ile Thr Gly Lys Met Val His Ile Asp Phe Gly Asp Cys Phe Glu Val  
 2180 2185 2190  
 Ala Gln Gln Arg Asp Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr  
 2195 2200 2205  
 Arg Met Leu Ile His Ala Met Glu Val Cys Gly Ile Thr Gly Asn Phe  
 2210 2215 2220  
 Ser Arg Ser Cys Glu Val Ser Met Glu Val Leu Arg Asp Asn Arg Glu  
 2225 2230 2235 2240  
 Ser Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Ile Ala  
 2245 2250 2255  
 Trp Arg Leu Thr Ala Thr Asp Lys Arg Pro Gly Gly Val Gly Glu Val  
 2260 2265 2270  
 Lys Asp Leu Asp Asp Pro Ala Val Tyr Gly Lys Gln Arg Lys Asn Lys  
 2275 2280 2285  
 Ala Asn Glu Thr Glu Ile Leu Asn Asp Val Glu Asn Thr Glu Val Lys  
 2290 2295 2300  
 Asn Asp Lys Gly Leu Gln Val Ile Glu Arg Val Arg Arg Lys Leu Thr  
 2305 2310 2315 2320  
 Gly Arg Asp Phe Lys Pro Asp Val Val Leu Asp Val Lys Ser Gln Val  
 2325 2330 2335  
 Glu Lys Leu Val Val Glu Ala Thr Lys Thr Glu Asn Leu Cys Val Ala  
 2340 2345 2350  
 Phe Leu Gly Trp Cys Ser Phe Trp  
 2355 2360

&lt;210&gt; 2544

&lt;211&gt; 7203

&lt;212&gt; DNA

<213> *Tribolium castaneum*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7203)

&lt;400&gt; 2544

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 Met Ser Thr Leu Ala Met Gln Gln Phe Val Ala Gly Leu Lys Ser Arg  
 1 5 10 15  
 aac ccc gac gtt cgt caa aaa acc gca cga gaa tta agc ttg tac gta  
 Asn Pro Asp Val Arg Gln Lys Thr Ala Arg Glu Leu Ser Leu Tyr Val

48

96

## PhoenixTemp32470.tmp.txt

Protein 1: 1000 amino acids																
20				25				30								
aaa Lys	agc Ser	gag Glu 35	ctt Leu	cgc Arg	gaa Glu	gcc Ala	acc Thr 40	ccc Pro	gac Asp	gaa Glu	ata Ile	aca Thr 45	aac Asn	ttc Phe	ctt Leu	144
gac Asp	gaa Glu 50	ttc Phe	aac Asn	cac His	cac His	atc Ile 55	ttc Phe	gaa Glu	atg Met	gtc Val	tcg Ser 60	agc Ser	aac Asn	gac Asp	ccc Pro	192
aac Asn 65	gag Glu	aaa Lys	aaa Lys	ggc Gly	gga Gly 70	att Ile	ttg Leu	gcg Ala	att Ile	gta Val 75	tgt Cys	ttg Leu	att Ile	gga Gly	gtc Val 80	240
gat Asp	ttc Phe	ggg Gly	aac Asn	atg Met 85	acc Thr	aca Thr	cgt Arg	ata Ile	tca Ser 90	cgc Arg	ttc Phe	gcc Ala	aat Asn	tat Tyr 95	tta Leu	288
cgc Arg	aac Asn	ttg Leu	ttg Leu 100	ccc Pro	tcg Ser	agc Ser	gac Asp	gtg Val 105	agc Ser	gtc Val	atg Met	gag Glu	tcg Ser 110	gtg Val	gcg Ala	336
aag Lys	aca Thr	atg Met 115	ggg Gly	cgc Arg	ttg Leu	gcg Ala	ctg Leu 120	tca Ser	ggc Gly	tcg Ser	aaa Lys 125	gcc Ala	tcc Ser	gaa Glu		384
tac Tyr	gtc Val 130	gag Glu	ttt Phe	gaa Glu	gtt Val	aag Lys 135	agg Arg	gcc Ala	ttt Phe	gag Glu	tgg Trp 140	ctc Leu	agt Ser	ggc Gly	gac Asp	432
cgg Arg 145	att Ile	gaa Glu	ggg Gly	aag Lys	cga Arg 150	caa Gln	gct Ala	gcc Ala	gtt Val	tta Leu 155	gtc Val	ttg Leu	aaa Lys	gag Glu	ttg Leu 160	480
gca Ala	cta Leu	act Thr	atg Met	ccg Pro 165	acg Thr	tat Tyr	ttc Phe	tac Tyr	caa Gln 170	cat His	gtg Val	tcg Ser	caa Gln	ttt Phe 175	ttc Phe	528
gat Asp	ctg Leu	att Ile	ttt Phe 180	ttc Phe	gcg Ala	ata Ile	cag Gln	gac Asp 185	ccc Pro	aaa Lys	cct Pro	gcc Ala	att Ile 190	agg Arg	gag Glu	576
agc Ser	gct Ala	gtg Val 195	gag Glu	gct Ala	ttg Leu	agg Arg	gcc Ala 200	gct Ala	ttg Leu	gtc Val	gtc Val	aca Thr 205	gcg Ala	caa Gln	cga Arg	624
gag Glu	acc Thr 210	gcc Ala	aaa Lys	cag Gln	aac Asn	caa Gln 215	aag Lys	cca Pro	caa Gln	tgg Trp	tac Tyr 220	aaa Lys	caa Gln	tgt Cys	tac Tyr	672
gac Asp 225	gaa Glu	tcc Ser	gtg Val	aaa Lys	atg Met 230	ctc Leu	tcg Ser	gtg Val	gaa Glu 235	aga Arg	ggc Gly	gaa Glu	cgc Arg	atg Met	aaa Lys 240	720
gag Glu	gag Glu	cgc Arg	gtc Val	cac His 245	ggc Gly	ttt Phe	ctc Leu	ctc Leu	att Ile 250	ctc Leu	aac Asn	gaa Glu	ctg Leu	gtg Val 255	cgt Arg	768
tgc Cys	tca Ser	aac Asn	gcc Ala 260	gaa Glu	tgg Trp	gaa Glu	cgc Arg 265	aaa Lys	tgc Cys	aaa Lys	agt Ser	ttg Leu 270	ctc Leu	gaa Glu	cgc Arg	816
act Thr	gac Asp	acc Thr 275	aaa Lys	caa Gln	ccg Pro	gtc Val	gag Glu 280	acc Thr	agc Ser	ttc Phe	aat Asn	ttt Phe 285	act Thr	aaa Lys	tct Ser	864
cgc Arg	ttc Phe 290	gtt Val	ttt Phe	tcg Ser	gtc Val	tct Ser 295	cga Arg	cgc Arg	atc Ile	ccc Pro	caa Gln 300	tac Tyr	caa Gln	gct Ala	gtg Val	912
tct Ser 305	ttg Leu	gca Ala	ccc Pro	tct Ser	caa Gln 310	atc Ile	gca Ala	atc Ile	ata Ile	gaa Glu 315	tcc Ser	caa Gln	agt Ser	tgc Cys	cga Arg 320	960
ggc Gly	ctc Leu	gtt Val	tcc Ser	gag Glu 325	aaa Lys	ttc Phe	gac Asp	tac Tyr	att Ile 330	tgt Cys	tta Leu	gac Asp	gtc Val	ctg Leu 335	gct Ala	1008
cag Gln	aga Arg	ctc Leu	tcc Ser 340	cgt Arg	tcg Ser	tct Ser	cac His	atc Ile 345	caa Gln	caa Gln	agt Ser	ttt Phe 350	ctc Leu	acg Thr	att Ile	1056
tta Leu	ccc Pro	cga Arg 355	ttg Leu	gct Ala	gct Ala	ttt Phe	gac Asp 360	cgc Arg	gaa Glu	aac Asn	tac Tyr	gtc Val 365	aag Lys	cag Gln	cac His	1104
tta Leu	agc Ser 370															

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385	gtc	gag	agc	gac	att	390	gag	ccg	tac	att	395	att	atg	gaa	ata	400		
	Val	Glu	Ser	Asp	Ile		Glu	Pro	Tyr	Ile		Ile	Met	Glu	Ile			1248
					405						410				415			
	cgc	atg	tat	ttg	ccc	cga	gcc	gat	att	ttg	ggg	cgc	aag	cgg	agc	ccc		1296
	Arg	Met	Tyr	Leu	Pro	Arg	Ala	Asp	Ile	Leu	Gly	Arg	Lys	Arg	Ser	Pro		
				420						425				430				
	atc	gac	tcc	tca	att	ttc	aac	tgt	gtc	act	ttc	cta	gcc	cac	gcc	ctc		1344
	Ile	Asp	Ser	Ser	Ile	Phe	Asn	Cys	Val	Thr	Phe	Leu	Ala	His	Ala	Leu		
			435					440					445					
	aaa	aac	cac	tca	aaa	atg	gac	atc	ccg	aac	ctc	ctg	gaa	cca	atg	cta		1392
	Lys	Asn	His	Ser	Lys	Met	Asp	Ile	Pro	Asn	Leu	Leu	Glu	Pro	Met	Leu		
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	gca	acg	gga	tta	acc	gca	tcc	ctc	acg	ata	tgt	ttc	cgg	gaa	tta	tcc		1440
	Ala	Thr	Gly	Leu	Thr	Ala	Ser	Leu	Thr	Ile	Cys	Phe	Arg	Glu	Leu	Ser		
	465					470					475					480		
	cga	aaa	gtc	ccg	gaa	cat	aaa	gaa	cga	atc	agt	ctc	ggg	tta	tta	aaa		1488
	Arg	Lys	Val	Pro	Glu	His	Lys	Glu	Arg	Ile	Ser	Leu	Gly	Leu	Leu	Lys		
					485					490					495			
	atg	ctg	agt	tat	att	ctc	ctg	aat	aaa	cca	cta	gtt	cat	ccc	ggg	atg		1536
	Met	Leu	Ser	Tyr	Ile	Leu	Leu	Asn	Lys	Pro	Leu	Val	His	Pro	Gly	Met		
				500					505					510				
	ccc	cgc	cac	ttg	acc	gga	acc	gta	atg	agt	ctt	gca	ata	cca	gaa	gtc		1584
	Pro	Arg	His	Leu	Thr	Gly	Thr	Val	Met	Ser	Leu	Ala	Ile	Pro	Glu	Val		
			515					520					525					
	aac	gat	gtg	caa	atc	ata	gtt	ttg	gcc	ctc	aaa	aca	ctc	gga	acg	ttt		1632
	Asn	Asp	Val	Gln	Ile	Ile	Val	Leu	Ala	Leu	Lys	Thr	Leu	Gly	Thr	Phe		
							535					540						
	gac	ttt	gag	ggc	cag	aga	ctc	ctc	cct	ttt	gtc	cac	cgc	tgc	gcc	aat		1680
	Asp	Phe	Glu	Gly	Gln	Arg	Leu	Leu	Pro	Phe	Val	His	Arg	Cys	Ala	Asn		
	545					550					555					560		
	cat	ttc	ctc	atc	cat	gac	aat	aac	gaa	atc	cga	ttg	gag	gct	gtc	aga		1728
	His	Phe	Leu	Ile	His	Asp	Asn	Asn	Glu	Ile	Arg	Leu	Glu	Ala	Val	Arg		
					565					570					575			
	acc	acg	tgt	cgg	ctc	ctc	cga	cat	gct	att	cac	tcc	aca	gcg	aaa	aac		1776
	Thr	Thr	Cys	Arg	Leu	Leu	Arg	His	Ala	Ile	His	Ser	Thr	Ala	Lys	Asn		
				580					585					590				
	tcg	tcg	gat	acg	gtc	acc	aaa	acc	gta	gct	gct	gtt	tta	cat	cgt	ttg		1824
	Ser	Ser	Asp	Thr	Val	Thr	Lys	Thr	Val	Ala	Ala	Val	Leu	His	Arg	Leu		
			595					600					605					
	tta	agt	ggt	ttg	acc	gat	acc	gac	cca	aat	gtc	cgg	tac	gga	gtc			1872
	Leu	Ser	Val	Gly	Leu	Thr	Asp	Thr	Pro	Asn	Val	Arg	Tyr	Gly	Val			
							615				620							
	ttg	att	tcg	ctc	gat	cgt	acg	ttt	gat	aat	cat	tta	gca	caa	gct	gag		1920
	Leu	Ile	Ser	Leu	Asp	Arg	Thr	Phe	Asp	Asn	His	Leu	Ala	Gln	Ala	Glu		
	625					630					635					640		
	tcg	ctc	agt	gcg	ctg	ttt	ctg	gcg	ttg	caa	gac	gaa	atg	ttt	gaa	ata		1968
	Ser	Leu	Ser	Ala	Leu	Phe	Leu	Ala	Leu	Gln	Asp	Glu	Met	Phe	Glu	Ile		
					645					650					655			
	cgc	gaa	gtt	gca	ctg	ttt	aca	atc	ggg	cgc	ttg	agt	gcg	atg	aat	ccg		2016
	Arg	Glu	Val	Ala	Leu	Phe	Thr	Ile	Gly	Arg	Leu	Ser	Ala	Met	Asn	Pro		
				660					665					670				
	gca	tat	gtc	atg	ccc	tcg	ttg	agg	aaa	act	tta	gtg	cag	ttt	tta	tcc		2064
	Ala	Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Leu	Val	Gln	Phe	Leu	Ser		
								680					685					
	gaa	ttg	gaa	cat	tcg	ggc	agt	ggg	agg	aat	aag	gaa	caa	ggg	gcg	agg		2112
	Glu	Leu	Glu	His	Ser	Gly	Ser	Gly	Arg	Asn	Lys	Glu	Gln	Gly	Ala	Arg		
							695					700						
	atg	tta	gat	cat	ttg	gtt	gtg	agc	gcc	ccg	agg	atg	ata	agg	ccc	tac		2160
	Met	Leu	Asp	His	Leu	Val	Val	Ser	Ala	Pro	Arg	Met	Ile	Arg	Pro	Tyr		
	705					710					715					720		
	atg	gag	ccc	att	ttg	aag	gtc	ctg	gtg	ccc	aaa	ctg	cgc	gac	ccc	gag		2208
	Met	Glu	Pro	Ile	Leu	Lys	Val	Leu	Val	Pro	Lys	Leu	Arg	Asp	Pro	Glu		
					725					730					735			
	cca	aac	ccc	ggc	gtc	gtg	ctt	tcc	gtc	ctg	ctc	aca	atc	ggc	gat	ttg		2256
	Pro	Asn	Pro	Gly	Val	Val	Leu	Ser	Val	Leu	Leu	Thr	Ile	Gly	Asp	Leu		
				740					745					750				
	gcc	gag	gtg	agc	gga	ggc	acc	gaa	ctg	caa	gaa	tgg	atg	caa	gaa			2304
	Ala	Glu	Val	Ser	Ser	Gly	Gly	Thr	Glu	Gln	Glu	Trp	Met	Gln	Glu			

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	770					775					780					
aaa	cgg	ggc	gcc	gcc	tta	tgc	acc	ttg	ggc	cag	ttg	ggt	gga	gtg	acc	2400
Lys	Arg	Gly	Ala	Ala	Leu	Cys	Thr	Leu	Gly	Gln	Leu	Val	Gly	Val	Thr	
785					790					795					800	
ggt	cac	gta	atc	caa	ccc	tac	acc	gaa	tat	cca	ata	ctg	ctc	gac	gtc	2448
Gly	His	Val	Ile	Gln	Pro	Tyr	Thr	Glu	Tyr	Pro	Ile	Leu	Leu	Asp	Val	
				805					810					815		
ctc	ctc	aat	ttc	ctc	aaa	acc	gaa	caa	cag	tcc	tac	att	cgg	cga	gaa	2496
Leu	Leu	Asn	Phe	Leu	Lys	Thr	Glu	Gln	Gln	Ser	Tyr	Ile	Arg	Arg	Glu	
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aca	atc	cgc	ggt	ttg	ggg	ctg	ttg	ggg	gct	ttg	gat	ccg	tac	aaa	cat	2544
Thr	Ile	Arg	Val	Leu	Gly	Leu	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	
		835					840				845					
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Lys	Ile	Asn	Arg	Gly	Glu	Ile	Asp	Tyr	Tyr	Pro	Glu	Ala	Pro	Val	Leu	
	850					855					860					
ata	ccg	atg	acg	gat	aaa	ggg	gag	gat	ttg	aac	gcg	gat	ttg	acg	tcg	2640
Ile	Pro	Met	Thr	Asp	Lys	Gly	Glu	Asp	Leu	Asn	Ala	Asp	Leu	Thr	Ser	
865					870					875					880	
agc	gaa	atg	ctg	ggt	aat	atg	agt	tcg	agc	act	ttg	gag	gag	tac	tat	2688
Ser	Glu	Met	Leu	Val	Asn	Met	Ser	Ser	Ser	Thr	Leu	Glu	Glu	Tyr	Tyr	
				885				890						895		
ttg	gcg	ata	gct	ata	gcc	act	ttg	atg	cgg	att	att	aag	gat	ccg	acg	2736
Leu	Ala	Ile	Ala	Ile	Ala	Thr	Leu	Met	Arg	Ile	Ile	Lys	Asp	Pro	Thr	
			900				905						910			
ctg	gca	caa	cac	cat	aca	atg	gtg	gtg	caa	gca	ggt	act	ttc	att	ttt	2784
Leu	Ala	Gln	His	His	Thr	Met	Val	Val	Gln	Ala	Val	Thr	Phe	Ile	Phe	
		915					920					925				
aaa	agt	ttg	ggg	att	aag	tgt	gtg	ccg	tat	ata	tcg	caa	ggt	ttg	ccc	2832
Lys	Ser	Leu	Gly	Ile	Lys	Cys	Val	Pro	Tyr	Ile	Ser	Gln	Val	Leu	Pro	
	930					935					940					
agt	ctt	ttg	cac	gta	gta	cgg	aca	gcc	gac	ggt	aac	ttt	aag	gaa	ttc	2880
Ser	Leu	Leu	His	Val	Val	Arg	Thr	Ala	Asp	Val	Asn	Phe	Lys	Glu	Phe	
945					950					955					960	
ctc	ttc	caa	cag	ttg	gca	caa	cta	atc	tac	atc	gtc	aag	caa	cac	att	2928
Leu	Phe	Gln	Gln	Leu	Ala	Gln	Leu	Ile	Tyr	Ile	Val	Lys	Gln	His	Ile	
			965					970						975		
cgt	aac	tac	ttg	gac	gac	att	tgc	cta	atc	aaa	gaa	ttt	tgg	acc		2976
Arg	Asn	Tyr	Leu	Asp	Asp	Ile	Cys	Leu	Leu	Ile	Lys	Glu	Phe	Trp	Thr	
			980					985					990			
ccg	aac	agt	acg	att	caa	ggg	act	ttg	atc	ctt	tta	ggt	gaa	cac	atc	3024
Pro	Asn	Ser	Thr	Ile	Gln	Gly	Thr	Leu	Ile	Leu	Leu	Val	Glu	His	Ile	
		995				1000					1005					
gca	gtg	gcg	ttg	ggg	gcg	caa	ttt	aag	ggt	tat	tta	ccg	aaa	atg	ttg	3072
Ala	Val	Ala	Leu	Gly	Ala	Gln	Phe	Lys	Val	Tyr	Leu	Pro	Lys	Met	Leu	
	1010				1015					1020						
ccc	cat	atc	tta	cgc	gtg	ttg	aac	cac	gac	acg	tcc	aag	gaa	cga	ctc	3120
Pro	His	Ile	Leu	Arg	Val	Leu	Asn	His	Asp	Thr	Ser	Lys	Glu	Arg	Leu	
1025				1030					1035					1040		
tac	act	atc	aaa	tta	ttg	gaa	gcg	tta	cac	aat	ttc	ggt	aac	aat	ttg	3168
Tyr	Thr	Ile	Lys	Leu	Leu	Glu	Ala	Leu	His	Asn	Phe	Gly	Asn	Asn	Leu	
			1045					1050					1055			
gac	gaa	tat	atg	cac	ttg	att	ttg	ccc	ccc	att	gtc	cgg	tta	ttc	gac	3216
Asp	Glu	Tyr	Met	His	Leu	Ile	Leu	Pro	Pro	Ile	Val	Arg	Leu	Phe	Asp	
		1060					1065					1070				
gct	cag	gag	tgt	cca	ata	gtc	gtg	tcg	aaa	aaa	gcc	ctc	gag	act	atc	3264
Ala	Gln	Glu	Cys	Pro	Ile	Val	Val	Ser	Lys	Lys	Ala	Leu	Glu	Thr	Ile	
	1075				1080						1085					
gac	caa	ttg	gcc	gaa	att	atc	gac	ttt	tcg	gac	ttt	atc	tca	cgc	att	3312
Asp	Gln	Leu	Ala	Glu	Ile	Ile	Asp	Phe	Ser	Asp	Phe	Ile	Ser	Arg	Ile	
	1090				1095			1100								
gtc	cac	ccc	ttg	ggt	cga	aca	att	gat	aac	tgt	ccc	gaa	ttg	aga	ccc	3360
Val	His	Pro	Leu	Val	Arg	Thr	Ile	Asp	Asn	Cys	Pro	Glu	Leu	Arg	Pro	
1105				1110				1115			1120					
aca	gcc	atg	gaa	act	tta	tgt	tca	ctc	atg	caa	caa	ttg	ggg	cga	aaa	3408
Thr	Ala	Met	Glu	Thr	Leu	Cys	Ser	Leu	Met	Gln	Gln	Leu	Gly	Arg	Lys	

## PhoenixTemp32470.tmp.txt

1125 1130 1135  
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 Phe Ser Ile Phe Val Pro Leu Val Gln Lys Val Met Thr Lys His Lys  
 1140 1145 1150  
 ata caa cac agt aaa ttc gat act tta gtt tcg aaa atc caa tac gag 3504  
 Ile Gln His Ser Lys Phe Asp Thr Leu Val Ser Lys Ile Gln Tyr Glu  
 1155 1160 1165  
 aca aca ctg gcc gaa gac gtt gat ttc cca atg ccg aga tcc aaa aca 3552  
 Thr Thr Leu Ala Glu Asp Val Asp Phe Pro Met Pro Arg Ser Lys Thr  
 1170 1175 1180  
 acc ggg aaa aat cga gac cca gcg atg cct gcc gat agt gga atg att 3600  
 Thr Gly Lys Asn Arg Asp Pro Ala Met Pro Ala Asp Ser Gly Met Ile  
 1185 1190 1200  
 caa aga ctc aaa gtt tcg gaa tcc aac cta caa cag gcc tgg acc cct 3648  
 Gln Arg Leu Lys Val Ser Glu Ser Asn Leu Gln Gln Ala Trp Thr Pro  
 1205 1210 1215  
 gtc cga aga gtc tcg aaa gac gat tgg ttg gaa tgg cta aga cgc ctc 3696  
 Val Arg Arg Val Ser Lys Asp Asp Trp Leu Glu Trp Leu Arg Arg Leu  
 1220 1225 1230  
 agt atc gaa cta tta aaa cag tca cca att cca gca tta cgt tcg tgc 3744  
 Ser Ile Glu Leu Leu Lys Gln Ser Pro Ile Pro Ala Leu Arg Ser Cys  
 1235 1240 1245  
 ctt act tta gca cag acg tat tcg caa ctg cca cgt gat tta ttc aac 3792  
 Leu Thr Leu Ala Gln Thr Tyr Ser Gln Leu Pro Arg Asp Leu Phe Asn  
 1250 1255 1260  
 gca gcg ttc gta agt tgt tgg tcc gaa ttg agc gaa aac atg cag aat 3840  
 Ala Ala Phe Val Ser Cys Trp Ser Glu Leu Ser Glu Asn Met Gln Asn  
 1265 1270 1275 1280  
 gaa ctg atc agt tgt ctc gag caa gct ttg act gtg ccg gac gtt ccg 3888  
 Glu Leu Ile Ser Cys Leu Glu Gln Ala Leu Thr Val Pro Asp Val Pro  
 1285 1290 1295  
 gaa ata act caa act att ttg aat ttg gcc gaa ttt atg gaa cat tgc 3936  
 Glu Ile Thr Gln Thr Ile Leu Asn Leu Ala Glu Phe Met Glu His Cys  
 1300 1305 1310  
 gac aag ggg cct ttg ccc ctc gat agc cac att ctg ggg cac cat gcg 3984  
 Asp Lys Gly Pro Leu Pro Leu Asp Ser His Ile Leu Gly His His Ala  
 1315 1320 1325  
 atg cat tgc cgg gcg tac gcc aaa gcc ttg cat tat aag gaa gag gag 4032  
 Met His Cys Arg Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Glu Glu  
 1330 1335 1340  
 ttt caa agg ggg gcg agc agt cag gtt gtc gaa gca ctc att tcg atc 4080  
 Phe Gln Arg Gly Ala Ser Ser Gln Val Val Glu Ala Leu Ile Ser Ile  
 1345 1350 1355 1360  
 aat aat aag ttg caa caa aag gag gcg gct gaa ggg ttg tta caa tac 4128  
 Asn Asn Lys Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Gln Tyr  
 1365 1370 1375  
 gtc atg cag agg gaa atg caa gtg cag gtc agg tgg tac gag aag ttg 4176  
 Val Met Gln Arg Glu Met Gln Val Gln Val Arg Trp Tyr Glu Lys Leu  
 1380 1385 1390  
 cac aat tgg gag aag gcc ctg agg ttg tat act gag aaa ctg gaa ggg 4224  
 His Asn Trp Glu Lys Ala Leu Arg Leu Tyr Thr Glu Lys Leu Glu Gly  
 1395 1400 1405  
 gac gag gcg gac caa gag gct tgt ttg ggc aaa atg aga tgt ctc gaa 4272  
 Asp Glu Ala Asp Gln Glu Ala Cys Leu Gly Lys Met Arg Cys Leu Glu  
 1410 1415 1420  
 gcg ttg ggc gaa tgg ggc gaa ctg cac caa gtc gtc gag aaa agt ttc 4320  
 Ala Leu Gly Glu Trp Gly Glu Leu His Gln Val Val Glu Lys Ser Phe  
 1425 1430 1435 1440  
 agt tta cta aat gac gac agc aaa caa aag gcg agt cgg cta gcg gct 4368  
 Ser Leu Leu Asn Asp Asp Ser Lys Gln Lys Ala Ser Arg Leu Ala Ala  
 1445 1450 1455  
 gcg gcc tcc ttc ggt ttg cac gat tac agg tca atg gaa act tac gtt 4416  
 Ala Ala Ser Phe Gly Leu His Asp Tyr Arg Ser Met Glu Thr Tyr Val  
 1460 1465 1470  
 aat gta att cca agg gat acg caa gag ggt gcg ttc tac cgt gca att 4464  
 Asn Val Ile Pro Arg Asp Thr Gln Glu Gly Ala Phe Tyr Arg Ala Ile  
 1475 1480 1485  
 ttg gca ata cat aaa gag gat tac gaa gtg gcc caa aga ttc atc gat 4512  
 Leu Ala Ile His Lys Glu Asp Tyr Glu Val Ala Gln Arg Phe Ile Asp

## PhoenixTemp32470.tmp.txt

1490	tca gct cgc gat tta ctc	1495	gat aat gaa tta act	1500	gcg atg gct ggt gag	4560
Ser Ala Arg Asp Leu Leu	Asp Asn Glu Leu Thr	Ala Met Ala Gly Glu				
1505	tcc tac caa agg gcc tac	1510	ggg gcc atg gtc atg	1515	gta caa atg tta tcc	4608
Ser Tyr Gln Arg Ala Tyr	Gly Ala Met Val Met	Val Gln Met Leu Ser				
1525	gag ttg gaa gaa gta atg	1530	cag tat cgg tta gta cca	1535	gaa cgg agg ccc	4656
Glu Leu Glu Glu Val Met	Gln Tyr Arg Leu Val	Pro Glu Arg Arg Pro				
1540	act tta aaa gcc atg tgg	1545	tgg caa agg ctc caa	1550	tcg ggc caa aaa ctg	4704
Thr Leu Lys Ala Met Trp	Trp Gln Arg Leu Gln	Ser Gly Gln Lys Leu				
1555	gtc gaa gac tgg caa aga	1560	atc atc caa gtc cat	1565	tcc ttg gtc ttg acc	4752
Val Glu Asp Trp Gln Arg	Ile Ile Gln Val His	Ser Leu Val Leu Thr				
1570	cca caa gaa gac aaa cga	1575	acg tgg gtg aaa tac	1580	gcg tca ttg tgt cgc	4800
Pro Gln Glu Asp Lys Thr	Trp Val Lys Tyr Ala	Ser Leu Cys Arg				
1585	aag agc ggt tca tta atg	1590	cta tcg caa aaa acc	1595	cta gtc atg tta ctc	4848
Lys Ser Gly Ser Leu Met	Leu Ser Gln Lys Thr	Leu Val Met Leu Leu				
1605	ggt tac gac cca agc gaa	1610	cgt ccc gac gcc ccc	1615	ttg ccc aaa aac cag	4896
Gly Tyr Asp Pro Ser Glu	Arg Pro Asp Ala Pro	Leu Pro Lys Asn Gln				
1620	cct cac atc aca cta gcc	1625	tac gcc aaa cat tta	1630	tgg gtg gca cag gaa	4944
Pro His Ile Thr Leu Ala	Tyr Ala Lys His Leu	Trp Val Ala Gln Glu				
1635	aaa caa aaa gcg ttc caa	1640	aaa cta tca caa ttc	1645	gtc gct gac tat tcg	4992
Lys Gln Lys Ala Phe Gln	Lys Leu Ser Gln Phe	Val Ala Asp Tyr Ser				
1650	caa aac gag cca aac gac	1655	gac gtg aca gtt gaa	1660	gag aaa aaa aga ctc	5040
Gln Asn Glu Pro Asn Asp	Asp Val Thr Val Glu	Lys Lys Arg Leu				
1665	ctg gct agg tgt tac ctc	1670	aaa ctg ggg gcc cat	1675	gag gca ctt gaa	5088
Leu Ala Arg Cys Tyr Leu	Lys Leu Gly Ala Trp	His Glu Ala Leu Glu				
1685	ggc atc aac gaa acc tcc	1690	ata cct ttc att ttg	1695	aag tgt tac aaa caa	5136
Gly Ile Asn Glu Thr Ser	Ile Pro Phe Ile Leu	Lys Cys Tyr Lys Gln				
1700	gcg act gaa cac gac cct	1705	caa tgg tac aag gca	1710	tgg cac gct tgg gcc	5184
Ala Thr Glu His Asp Pro	Gln Trp Tyr Lys Ala	Trp His Ala Trp Ala				
1715	tat atg aat ttc gaa acg	1720	gtc ttg tat tac acg	1725	aga cag gag gac aag	5232
Tyr Met Asn Phe Glu Thr	Val Leu Tyr Tyr Thr	Arg Gln Glu Asp Lys				
1730	acg cac tat aca gtc tta	1735	gcc gtt cag gga ttt	1740	ttc aaa tcg att aat	5280
Thr His Tyr Thr Val Leu	Ala Val Gln Gly Phe	Phe Phe Lys Ser Ile				
1745	tta tct aaa gga agt tca	1750	ttg caa gac act tta	1755	cgt tta tta aca ctg	5328
Leu Ser Lys Gly Ser Ser	Leu Gln Asp Thr Leu	Arg Leu Leu Thr Leu				
1765	tgg ttc gat tac ggc gat	1770	tgg ccc gaa gtt tac	1775	gat gcc ata gtc gaa	5376
Trp Phe Asp Tyr Gly Asp	Trp Pro Glu Val Tyr	Asp Ala Ile Val Glu				
1780	ggc att cgt tta gtc gag	1785	aaa aac acg tgg ctt	1790	caa gta att ccg caa	5424
Gly Ile Arg Leu Val Glu	Lys Asn Thr Trp Leu	Gln Val Ile Pro Gln				
1795	tta atc gcg cga att gac	1800	aca acg gcg tta gta	1805	tcg aaa tta atc aat	5472
Leu Ile Ala Arg Ile Asp	Thr Thr Ala Leu Val	Ser Lys Leu Ile Asn				
1810	cat cta ttg gtt gat att	1815	gga aaa acg cat cca	1820	caa gcc cta gtc tat	5520
His Leu Leu Val Asp Ile	Gly Lys Thr His Pro	Gln Ala Leu Val Tyr				
1825	ccg tta acc gtc gca aca	1830	aaa agt aat tca atc	1835	aga cgt aga aat gca	5568
Pro Leu Thr Val Ala Thr	Lys Ser Asn Ser Ile	Arg Arg Arg Asn Ala				
1845	gct aat agt att tta aaa	1850	tcg atg agt gaa cat	1855	tcc cct acg ttg gta	5616
Ala Asn Ser Ile Leu Lys	Ser Met Ser Glu His	Ser Pro Thr Leu Val				

## PhoenixTemp32470.tmp.txt

															1860																1865																1870	
agt	cag	gcc	atg	atg	gcc	tca	gaa	gaa	ttg	atc	cga	gtg	gca	att	ttg		5664																															
Ser	Gln	Ala	Met	Met	Ala	Ser	Glu	Glu	Leu	Ile	Arg	Val	Ala	Ile	Leu																																	
															1875																1880																1885	
tgg	cac	gaa	atc	tgg	cac	gag	gga	cta	gaa	gaa	gcc	tca	aga	ttg	tat		5712																															
Trp	His	Glu	Ile	Trp	His	Glu	Gly	Leu	Glu	Glu	Ala	Ser	Arg	Leu	Tyr																																	
															1890																1895																1900	
ttc	ggc	gaa	cgt	aac	gtt	aaa	gga	atg	ttg	cga	att	ctc	gaa	ccg	ttg		5760																															
Phe	Gly	Glu	Arg	Asn	Val	Lys	Gly	Met	Leu	Arg	Ile	Leu	Glu	Pro	Leu																																	
															1905																1910																1915	
cat	gcg	atg	atg	gaa	agg	ggg	ccc	cag	acg	ttg	aaa	gag	acg	agt	ttt		5808																															
His	Ala	Met	Met	Glu	Arg	Gly	Pro	Gln	Thr	Leu	Lys	Glu	Thr	Ser	Phe																																	
															1925																1930																1935	
aat	cag	acg	tac	ggc	agg	gat	ctg	aac	gag	gag	caa	gac	tgg	tgc	caa		5856																															
Asn	Gln	Thr	Tyr	Gly	Arg	Asp	Leu	Asn	Glu	Ala	Gln	Asp	Trp	Cys	Gln																																	
															1940																1945																1950	
aga	tac	aag	ctt	tcg	agc	aac	att	aga	gac	ctg	aac	cag	gcg	tgg	gac		5904																															
Arg	Tyr	Lys	Leu	Ser	Ser	Asn	Ile	Arg	Asp	Leu	Asn	Gln	Ala	Trp	Asp																																	
															1955																1960																1965	
ctc	tac	tac	cac	gtt	ttc	cgc	cgc	att	tcg	cgt	caa	tta	ccg	caa	ctc		5952																															
Leu	Tyr	Tyr	His	Val	Phe	Arg	Arg	Ile	Ser	Arg	Gln	Leu	Pro	Gln	Leu																																	
															1970																1975																1980	
acc	tcc	ctc	gaa	tta	caa	tac	gta	tcg	cca	aat	ttg	cta	gtt	tgt	caa		6000																															
Thr	Ser	Leu	Glu	Leu	Gln	Tyr	Val	Ser	Pro	Asn	Leu	Leu	Val	Cys	Gln																																	
															1985																1990																1995	
gac	tta	gag	ttg	gca	gtg	cct	ggg	agc	tac	tgt	cca	gga	cag	cca	atc		6048																															
Asp	Leu	Glu	Leu	Ala	Val	Pro	Gly	Ser	Tyr	Cys	Pro	Gly	Gln	Pro	Ile																																	
															2005																2010																2015	
gta	cgc	att	gcc	aat	ttt	aac	cga	tct	ctc	gaa	gta	att	acc	tca	aaa		6096																															
Val	Arg	Ile	Ala	Asn	Phe	Asn	Arg	Ser	Leu	Glu	Val	Ile	Thr	Ser	Lys																																	
															2020																2025																2030	
cag	cgg	ccc	cga	aaa	cta	gta	att	cgt	gga	agc	aac	ggc	aaa	gac	tac		6144																															
Gln	Arg	Pro	Arg	Lys	Leu	Val	Ile	Arg	Gly	Ser	Asn	Gly	Lys	Asp	Tyr																																	
															2035																2040																2045	
atg	ttt	tta	ctt	aaa	ggg	cac	gag	gat	ctg	aga	caa	gac	gag	cgt	gtt		6192																															
Met	Phe	Leu	Leu	Lys	Gly	His	Glu	Asp	Leu	Arg	Gln	Asp	Glu	Arg	Val																																	
															2050																2055																2060	
atg	caa	ctg	ttc	ggg	tta	gtt	aat	act	tta	cta	atg	aaa	gac	ccg	gat		6240																															
Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu	Met	Lys	Asp	Pro	Asp																																	
															2065																2070																2075	
acg	ttc	agg	cgg	aat	ttg	acg	ata	cag	cgg	tat	gcg	gtg	att	ccc	ctg		6288																															
Thr	Phe	Arg	Arg	Asn	Leu	Thr	Ile	Gln	Arg	Tyr	Ala	Val	Ile	Pro	Leu																																	
															2085																2090																2095	
agt	acg	aat	tcg	ggg	ctg	att	ggg	tgg	tta	ccg	cac	tgt	gat	acg	ctg		6336																															
Ser	Thr	Asn	Ser	Gly	Leu	Ile	Gly	Trp	Leu	Pro	His	Cys	Asp	Thr	Leu																																	
															2100																2105																2110	
cac	act	tta	ata	cgg	gat	tat	aga	gac	aag	aag	aag	att	ttg	aat			6384																															
His	Thr	Leu	Ile	Arg	Asp	Tyr	Arg	Asp	Lys	Lys	Lys	Ile	Leu	Leu	Asn																																	
															2115																2120																2125	
att	gag	cat	agg	att	atg	tta	cgg	atg	gcg	ccg	gat	tat	gat	cat	tta		6432																															
Ile	Glu	His	Arg	Ile	Met	Leu	Arg	Met	Ala	Pro	Asp	Tyr	Asp	His	Leu																																	
															2130																2135																2140	
acc	gtg	atg	cag	aaa	atg	gaa	gtt	ttt	gag	cac	gca	ctt	gag	cac	aca		6480																															
Thr	Val	Met	Gln	Lys	Met	Glu	Val	Phe	Glu	His	Ala	Leu	Glu	His	Thr																																	
															2145																2150																2155	
cat	ggg	gac	gat	tta	gcg	cgg	ttg	ttg	tgg	ctg	aaa	agc	ccc	tcg	tct		6528																															
His	Gly	Asp	Asp	Leu	Ala	Arg	Leu	Leu	Trp	Leu	Lys	Ser	Pro	Ser	Ser																																	
															2165																2170																2175	
gag	gtt	tgg	ttt	gac	cgg	aga	acg	aac	tac	acg	cgg	tct	tta	gct	gtg		6576																															
Glu	Val	Trp	Phe	Asp	Arg	Arg	Thr	Asn	Tyr	Thr	Arg	Ser	Leu	Ala	Val																																	
															2180																2185																2190	
atg	tca	atg	gtt	ggg	tat	att	ttg	ggg	ttg	ggg	gat	gcg	cac	ccc	tcc		6624																															
Met	Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser																																	
															2195																2200																2205	
aat	tta	atg	ttg	gac	aga	ctg	agc	ggc	aaa	atc	ctg	cat	ata	gat	ttc		6672																															
Asn	Leu	Met	Leu	Asp	Arg	Leu	Ser	Gly	Lys	Ile	Leu	His	Ile	Asp	Phe																																	
															2210																2215																2220	
ggc	gat	tgc	ttc	gaa	gtg	gca	atg	act	agg	gaa	aaa	ttc	ccg	gaa	aag		6720																															
Gly	Asp	Cys	Phe	Glu	Val	Ala	Met	Thr	Arg	Glu	Lys	Phe	Pro	Glu	Lys																																	



## PhoenixTemp32470.tmp.txt

2225                      2230                      2235                      2240  
 atc ccc ttc cgt ttg act agg atg cta ata aac gcc atg gaa gtg aca 6768  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Thr  
                          2245                      2250                      2255  
 ggg att gaa ggc acg tac aga cgg act tgt gag tgc atg tcc atg 6816  
 Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met Ser Met  
                          2260                      2265                      2270  
 tta cac cga aat aaa gac agt ctg atg gcg gtg ctt gaa gcc ttt gtt 6864  
 Leu His Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Val  
                          2275                      2280                      2285  
 tat gac ccc ctg ctt aat tgg cga ttg atg gat att gag gtg cgg aac 6912  
 Tyr Asp Pro Leu Leu Asn Trp Arg Leu Met Asp Ile Glu Val Arg Asn  
                          2290                      2295                      2300  
 ttg ccg atg aac agc gat tca atg tcg acg agt tgt tcc caa aaa cag 6960  
 Leu Pro Met Asn Ser Asp Ser Met Ser Thr Ser Cys Ser Gln Lys Gln  
 2305                      2310                      2315                      2320  
 ggc tca tcc gaa tcg ctc aat gtt ccg aaa cgc gag atg ata atg gaa 7008  
 Gly Ser Ser Glu Ser Leu Asn Val Pro Lys Arg Glu Met Ile Met Glu  
                          2325                      2330                      2335  
 gat aac gaa ccg caa cac gaa gtt aat gcc agg gcg gtt att atc atc 7056  
 Asp Asn Glu Pro Gln His Glu Val Asn Ala Arg Ala Val Ile Ile Ile  
                          2340                      2345                      2350  
 aat cga gtt aga gat aaa ctg acc ggg aac gat ttc gct acg gag gaa 7104  
 Asn Arg Val Arg Asp Lys Leu Thr Gly Asn Asp Phe Ala Thr Glu Glu  
                          2355                      2360                      2365  
 cct ttg act att cct aag caa gtc gat ctg tta ata caa caa gcg aca 7152  
 Pro Leu Thr Ile Pro Lys Gln Val Asp Leu Leu Ile Gln Gln Ala Thr  
 2370                      2375                      2380  
 agt aac gag aac ttg tca cag tgt tac ata ggc tgg tgc ccc ttt tgg 7200  
 Ser Asn Glu Asn Leu Ser Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp  
 2385                      2390                      2395                      2400  
 taa 7203

&lt;210&gt; 2545

&lt;211&gt; 2400

&lt;212&gt; PRT

&lt;213&gt; Tribolium castaneum

&lt;400&gt; 2545

Met Ser Thr Leu Ala Met Gln Gln Phe Val Ala Gly Leu Lys Ser Arg  
 1                      5                      10                      15  
 Asn Pro Asp Val Arg Gln Lys Thr Ala Arg Glu Leu Ser Leu Tyr Val  
                          20                      25                      30  
 Lys Ser Glu Leu Arg Glu Ala Thr Pro Asp Glu Ile Thr Asn Phe Leu  
                          35                      40                      45  
 Asp Glu Phe Asn His His Ile Phe Glu Met Val Ser Ser Asn Asp Pro  
                          50                      55                      60  
 Asn Glu Lys Lys Gly Gly Ile Leu Ala Ile Val Cys Leu Ile Gly Val  
 65                      70                      75                      80  
 Asp Phe Gly Asn Met Thr Thr Arg Ile Ser Arg Phe Ala Asn Tyr Leu  
                          85                      90                      95  
 Arg Asn Leu Leu Pro Ser Ser Asp Val Ser Val Met Glu Ser Val Ala  
                          100                      105                      110  
 Lys Thr Met Gly Arg Leu Ala Leu Val Ser Gly Ser Lys Ala Ser Glu  
                          115                      120                      125  
 Tyr Val Glu Phe Glu Val Lys Arg Ala Phe Glu Trp Leu Ser Gly Asp  
                          130                      135                      140  
 Arg Ile Glu Gly Lys Arg Gln Ala Ala Val Leu Val Leu Lys Glu Leu  
 145                      150                      155                      160  
 Ala Leu Thr Met Pro Thr Tyr Phe Tyr Gln His Val Ser Gln Phe Phe  
                          165                      170                      175  
 Asp Leu Ile Phe Phe Ala Ile Gln Asp Pro Lys Pro Ala Ile Arg Glu  
                          180                      185                      190  
 Ser Ala Val Glu Ala Leu Arg Ala Ala Leu Val Val Thr Ala Gln Arg  
                          195                      200                      205  
 Glu Thr Ala Lys Gln Asn Gln Lys Pro Gln Trp Tyr Lys Gln Cys Tyr  
 210                      215                      220

## PhoenixTemp32470.tmp.txt

Asp 225	Glu	Ser	Val	Lys	Met 230	Leu	Ser	Val	Glu	Arg 235	Gly	Glu	Arg	Met	Lys 240
Glu	Glu	Arg	Val	His 245	Gly	Phe	Leu	Leu	Ile 250	Leu	Asn	Glu	Leu	Val 255	Arg
Cys	Ser	Asn	Ala 260	Glu	Trp	Glu	Arg	Lys 265	Cys	Lys	Ser	Leu	Leu 270	Glu	Arg
Thr	Asp	Thr 275	Lys	Gln	Pro	Val	Glu 280	Thr	Ser	Phe	Asn 285	Phe	Thr	Lys	Ser
Arg	Phe 290	Val	Phe	Ser	Val	Ser 295	Arg	Arg	Ile	Pro	Gln 300	Tyr	Gln	Ala	Val
Ser 305	Leu	Ala	Pro	Ser	Gln 310	Ile	Ala	Ile	Ile	Glu 315	Ser	Gln	Ser	Cys	Arg 320
Gly	Leu	Val	Ser	Glu 325	Lys	Phe	Asp	Tyr	Ile 330	Cys	Leu	Asp	Val	Leu 335	Ala
Gln	Arg	Leu	Ser 340	Arg	Ser	Ser	His 345	Ile	Gln	Gln	Ser	Phe	Leu 350	Thr	Ile
Leu	Pro	Arg 355	Leu	Ala	Ala	Phe	Asp 360	Arg	Glu	Asn	Tyr	Val 365	Lys	Gln	His
Leu	Ser 370	Pro	Val	Met	Asn	His 375	Ile	Phe	Asn	Ile	Leu 380	Lys	Ser	Arg	Glu
Lys 385	Glu	Arg	Ala	Lys	Ala 390	Phe	Val	Thr	Ile	Gly 395	Leu	Ile	Ala	Ile	Ala 400
Val	Glu	Ser	Asp	Ile 405	Glu	Pro	Tyr	Ile	Glu 410	Arg	Ile	Met	Glu	Ile 415	Ile
Arg	Met	Tyr	Leu 420	Pro	Arg	Ala	Asp	Ile 425	Leu	Gly	Arg	Lys	Arg 430	Ser	Pro
Ile	Asp	Ser 435	Ser	Ile	Phe	Asn	Cys 440	Val	Thr	Phe	Leu	Ala 445	His	Ala	Leu
Lys	Asn 450	His	Ser	Lys	Met	Asp 455	Ile	Pro	Asn	Leu	Leu 460	Glu	Pro	Met	Leu
Ala 465	Thr	Gly	Leu	Thr	Ala 470	Ser	Leu	Thr	Ile	Cys 475	Phe	Arg	Glu	Leu	Ser 480
Arg	Lys	Val	Pro	Glu 485	His	Lys	Glu	Arg	Ile 490	Ser	Leu	Gly	Leu 495	Leu	Lys
Met	Leu	Ser	Tyr 500	Ile	Leu	Leu	Asn	Lys 505	Pro	Leu	Val	His	Pro 510	Gly	Met
Pro	Arg	His 515	Leu	Thr	Gly	Thr	Val 520	Met	Ser	Leu	Ala	Ile 525	Pro	Glu	Val
Asn	Asp 530	Val	Gln	Ile	Ile	Val 535	Leu	Ala	Leu	Lys	Thr 540	Leu	Gly	Thr	Phe
Asp 545	Phe	Glu	Gly	Gln	Arg 550	Leu	Leu	Pro	Phe	Val 555	His	Arg	Cys	Ala	Asn 560
His	Phe	Leu	Ile	His 565	Asp	Asn	Asn	Glu	Ile 570	Arg	Leu	Glu	Ala	Val 575	Arg
Thr	Thr	Cys	Arg 580	Leu	Leu	Arg	His	Ala 585	Ile	His	Ser	Thr	Ala 590	Lys	Asn
Ser	Ser	Asp 595	Thr	Val	Thr	Lys	Thr 600	Val	Ala	Ala	Val	Leu 605	His	Arg	Leu
Leu	Ser 610	Val	Gly	Leu	Thr	Asp 615	Thr	Asp	Pro	Asn	Val 620	Arg	Tyr	Gly	Val
Leu	Ile	Ser	Leu	Asp	Arg 630	Thr	Phe	Asp	Asn	His 635	Leu	Ala	Gln	Ala	Glu 640
Ser	Leu	Ser	Ala	Leu 645	Phe	Leu	Ala	Leu	Gln 650	Asp	Glu	Met	Phe	Glu 655	Ile
Arg	Glu	Val	Ala 660	Leu	Phe	Thr	Ile	Gly 665	Arg	Leu	Ser	Ala	Met 670	Asn	Pro
Ala	Tyr	Val 675	Met	Pro	Ser	Leu	Arg 680	Lys	Thr	Leu	Val	Gln 685	Phe	Leu	Ser
Glu	Leu	Glu	His	Ser	Gly	Ser 695	Gly	Arg	Asn	Lys	Glu 700	Gln	Gly	Ala	Arg
Met 705	Leu	Asp	His	Leu	Val 710	Val	Ser	Ala	Pro	Arg 715	Met	Ile	Arg	Pro	Tyr 720
Met	Glu	Pro	Ile	Leu 725	Lys	Val	Leu	Val	Pro 730	Lys	Leu	Arg	Asp	Pro 735	Glu
Pro	Asn	Pro	Gly 740	Val	Val	Leu	Ser	Val 745	Leu	Leu	Thr	Ile	Gly 750	Asp	Leu
Ala	Glu	Val 755	Ser	Ser	Gly	Gly	Thr 760	Glu	Leu	Gln	Glu	Trp	Met	Gln	Glu
Leu	Met	Gly	Ile	Leu	Leu	Glu	Met	Leu	Gly	Asp	Ala	Ser	Ala	Pro	Glu

## PhoenixTemp32470.tmp.txt

```

770      775      780
Lys Arg Gly Ala Ala Leu Cys Thr Leu Gly Gln Leu Val Gly Val Thr
785      790      795      800
Gly His Val Ile Gln Pro Tyr Thr Glu Tyr Pro Ile Leu Leu Asp Val
805      810      815
Leu Leu Asn Phe Leu Lys Thr Glu Gln Gln Ser Tyr Ile Arg Arg Glu
820      825      830
Thr Ile Arg Val Leu Gly Leu Leu Gly Ala Leu Asp Pro Tyr Lys His
835      840      845
Lys Ile Asn Arg Gly Glu Ile Asp Tyr Tyr Pro Glu Ala Pro Val Leu
850      855      860
Ile Pro Met Thr Asp Lys Gly Glu Asp Leu Asn Ala Asp Leu Thr Ser
865      870      875      880
Ser Glu Met Leu Val Asn Met Ser Ser Ser Thr Leu Glu Glu Tyr Tyr
885      890      895
Leu Ala Ile Ala Ile Ala Thr Leu Met Arg Ile Ile Lys Asp Pro Thr
900      905      910
Leu Ala Gln His His Thr Met Val Val Gln Ala Val Thr Phe Ile Phe
915      920      925
Lys Ser Leu Gly Ile Lys Cys Val Pro Tyr Ile Ser Gln Val Leu Pro
930      935      940
Ser Leu Leu His Val Val Arg Thr Ala Asp Val Asn Phe Lys Glu Phe
945      950      955      960
Leu Phe Gln Gln Leu Ala Gln Leu Ile Tyr Ile Val Lys Gln His Ile
965      970      975
Arg Asn Tyr Leu Asp Asp Ile Cys Leu Leu Ile Lys Glu Phe Trp Thr
980      985      990
Pro Asn Ser Thr Ile Gln Gly Thr Leu Ile Leu Leu Val Glu His Ile
995      1000      1005
Ala Val Ala Leu Gly Ala Gln Phe Lys Val Tyr Leu Pro Lys Met Leu
1010      1015      1020
Pro His Ile Leu Arg Val Leu Asn His Asp Thr Ser Lys Glu Arg Leu
1025      1030      1035      1040
Tyr Thr Ile Lys Leu Glu Ala Leu His Asn Phe Gly Asn Asn Leu
1045      1050      1055
Asp Glu Tyr Met His Leu Ile Leu Pro Pro Ile Val Arg Leu Phe Asp
1060      1065      1070
Ala Gln Glu Cys Pro Ile Val Val Ser Lys Lys Ala Leu Glu Thr Ile
1075      1080      1085
Asp Gln Leu Ala Glu Ile Ile Asp Phe Ser Asp Phe Ile Ser Arg Ile
1090      1095      1100
Val His Pro Leu Val Arg Thr Ile Asp Asn Cys Pro Glu Leu Arg Pro
1105      1110      1115      1120
Thr Ala Met Glu Thr Leu Cys Ser Leu Met Gln Gln Leu Gly Arg Lys
1125      1130      1135
Phe Ser Ile Phe Val Pro Leu Val Gln Lys Val Met Thr Lys His Lys
1140      1145      1150
Ile Gln His Ser Lys Phe Asp Thr Leu Val Ser Lys Ile Gln Tyr Glu
1155      1160      1165
Thr Thr Leu Ala Glu Asp Val Asp Phe Pro Met Pro Arg Ser Lys Thr
1170      1175      1180
Thr Gly Lys Asn Arg Asp Pro Ala Met Pro Ala Asp Ser Gly Met Ile
1185      1190      1195      1200
Gln Arg Leu Lys Val Ser Glu Ser Asn Leu Gln Gln Ala Trp Thr Pro
1205      1210      1215
Val Arg Arg Val Ser Lys Asp Asp Trp Leu Glu Trp Leu Arg Arg Leu
1220      1225      1230
Ser Ile Glu Leu Lys Gln Ser Pro Ile Pro Ala Leu Arg Ser Cys
1235      1240      1245
Leu Thr Leu Ala Gln Thr Tyr Ser Gln Leu Pro Arg Asp Leu Phe Asn
1250      1255      1260
Ala Ala Phe Val Ser Cys Trp Ser Glu Leu Ser Glu Asn Met Gln Asn
1265      1270      1275      1280
Glu Leu Ile Ser Cys Leu Glu Gln Ala Leu Thr Val Pro Asp Val Pro
1285      1290      1295
Glu Ile Thr Gln Thr Ile Leu Asn Leu Ala Glu Phe Met Glu His Cys
1300      1305      1310
Asp Lys Gly Pro Leu Pro Leu Asp Ser His Ile Leu Gly His His Ala
1315      1320      1325

```

## PhoenixTemp32470.tmp.txt

Met His Cys Arg Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Glu Glu  
 1330 1335 1340  
 Phe Gln Arg Gly Ala Ser Ser Gln Val Val Glu Ala Leu Ile Ser Ile  
 1345 1350 1355 1360  
 Asn Asn Lys Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Gln Tyr  
 1365 1370 1375  
 Val Met Gln Arg Glu Met Gln Val Gln Val Arg Trp Tyr Glu Lys Leu  
 1380 1385 1390  
 His Asn Trp Glu Lys Ala Leu Arg Leu Tyr Thr Glu Lys Leu Glu Gly  
 1395 1400 1405  
 Asp Glu Ala Asp Gln Glu Ala Cys Leu Gly Lys Met Arg Cys Leu Glu  
 1410 1415 1420  
 Ala Leu Gly Glu Trp Gly Glu Leu His Gln Val Val Glu Lys Ser Phe  
 1425 1430 1435 1440  
 Ser Leu Leu Asn Asp Asp Ser Lys Gln Lys Ala Ser Arg Leu Ala Ala  
 1445 1450 1455  
 Ala Ala Ser Phe Gly Leu His Asp Tyr Arg Ser Met Glu Thr Tyr Val  
 1460 1465 1470  
 Asn Val Ile Pro Arg Asp Thr Gln Glu Gly Ala Phe Tyr Arg Ala Ile  
 1475 1480 1485  
 Leu Ala Ile His Lys Glu Asp Tyr Glu Val Ala Gln Arg Phe Ile Asp  
 1490 1495 1500  
 Ser Ala Arg Asp Leu Leu Asp Asn Glu Leu Thr Ala Met Ala Gly Glu  
 1505 1510 1515 1520  
 Ser Tyr Gln Arg Ala Tyr Gly Ala Met Val Met Val Gln Met Leu Ser  
 1525 1530 1535  
 Glu Leu Glu Glu Val Met Gln Tyr Arg Leu Val Pro Glu Arg Arg Pro  
 1540 1545 1550  
 Thr Leu Lys Ala Met Trp Trp Gln Arg Leu Gln Ser Gly Gln Lys Leu  
 1555 1560 1565  
 Val Glu Asp Trp Gln Arg Ile Ile Gln Val His Ser Leu Val Leu Thr  
 1570 1575 1580  
 Pro Gln Glu Asp Lys Arg Thr Trp Val Lys Tyr Ala Ser Leu Cys Arg  
 1585 1590 1595 1600  
 Lys Ser Gly Ser Leu Met Leu Ser Gln Lys Thr Leu Val Met Leu Leu  
 1605 1610 1615  
 Gly Tyr Asp Pro Ser Glu Arg Pro Asp Ala Pro Leu Pro Lys Asn Gln  
 1620 1625 1630  
 Pro His Ile Thr Leu Ala Tyr Ala Lys His Leu Trp Val Ala Gln Glu  
 1635 1640 1645  
 Lys Gln Lys Ala Phe Gln Lys Leu Ser Gln Phe Val Ala Asp Tyr Ser  
 1650 1655 1660  
 Gln Asn Glu Pro Asn Asp Asp Val Thr Val Glu Glu Lys Lys Arg Leu  
 1665 1670 1675 1680  
 Leu Ala Arg Cys Tyr Leu Lys Leu Gly Ala Trp His Glu Ala Leu Glu  
 1685 1690 1695  
 Gly Ile Asn Glu Thr Ser Ile Pro Phe Ile Leu Lys Cys Tyr Lys Gln  
 1700 1705 1710  
 Ala Thr Glu His Asp Pro Gln Trp Tyr Lys Ala Trp His Ala Trp Ala  
 1715 1720 1725  
 Tyr Met Asn Phe Glu Thr Val Leu Tyr Tyr Thr Arg Gln Glu Asp Lys  
 1730 1735 1740  
 Thr His Tyr Thr Val Leu Ala Val Gln Gly Phe Phe Lys Ser Ile Asn  
 1745 1750 1755 1760  
 Leu Ser Lys Gly Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu  
 1765 1770 1775  
 Trp Phe Asp Tyr Gly Asp Trp Pro Glu Val Tyr Asp Ala Ile Val Glu  
 1780 1785 1790  
 Gly Ile Arg Leu Val Glu Lys Asn Thr Trp Leu Gln Val Ile Pro Gln  
 1795 1800 1805  
 Leu Ile Ala Arg Ile Asp Thr Thr Ala Leu Val Ser Lys Leu Ile Asn  
 1810 1815 1820  
 His Leu Leu Val Asp Ile Gly Lys Thr His Pro Gln Ala Leu Val Tyr  
 1825 1830 1835 1840  
 Pro Leu Thr Val Ala Thr Lys Ser Asn Ser Ile Arg Arg Arg Asn Ala  
 1845 1850 1855  
 Ala Asn Ser Ile Leu Lys Ser Met Ser Glu His Ser Pro Thr Leu Val  
 1860 1865 1870  
 Ser Gln Ala Met Met Ala Ser Glu Glu Leu Ile Arg Val Ala Ile Leu

## PhoenixTemp32470.tmp.txt

1875 1880 1885  
 Trp His Glu Ile Trp His Glu Leu Glu Glu Ala Ser Arg Leu Tyr  
 1890 1895 1900  
 Phe Gly Glu Arg Asn Val Lys Gly Met Leu Arg Ile Leu Glu Pro Leu  
 1905 1910 1915 1920  
 His Ala Met Met Glu Arg Gly Pro Gln Thr Leu Lys Glu Thr Ser Phe  
 1925 1930 1935  
 Asn Gln Thr Tyr Gly Arg Asp Leu Asn Glu Ala Gln Asp Trp Cys Gln  
 1940 1945 1950  
 Arg Tyr Lys Leu Ser Ser Asn Ile Arg Asp Leu Asn Gln Ala Trp Asp  
 1955 1960 1965  
 Leu Tyr Tyr His Val Phe Arg Arg Ile Ser Arg Gln Leu Pro Gln Leu  
 1970 1975 1980  
 Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro Asn Leu Leu Val Cys Gln  
 1985 1990 1995 2000  
 Asp Leu Glu Leu Ala Val Pro Gly Ser Tyr Cys Pro Gly Gln Pro Ile  
 2005 2010 2015  
 Val Arg Ile Ala Asn Phe Asn Arg Ser Leu Glu Val Ile Thr Ser Lys  
 2020 2025 2030  
 Gln Arg Pro Arg Lys Leu Val Ile Arg Gly Ser Asn Gly Lys Asp Tyr  
 2035 2040 2045  
 Met Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val  
 2050 2055 2060  
 Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Met Lys Asp Pro Asp  
 2065 2070 2075 2080  
 Thr Phe Arg Arg Asn Leu Thr Ile Gln Arg Tyr Ala Val Ile Pro Leu  
 2085 2090 2095  
 Ser Thr Asn Ser Gly Leu Ile Gly Trp Leu Pro His Cys Asp Thr Leu  
 2100 2105 2110  
 His Thr Leu Ile Arg Asp Tyr Arg Asp Lys Lys Lys Ile Leu Leu Asn  
 2115 2120 2125  
 Ile Glu His Arg Ile Met Leu Arg Met Ala Pro Asp Tyr Asp His Leu  
 2130 2135 2140  
 Thr Val Met Gln Lys Met Glu Val Phe Glu His Ala Leu Glu His Thr  
 2145 2150 2155 2160  
 His Gly Asp Asp Leu Ala Arg Leu Leu Trp Leu Lys Ser Pro Ser Ser  
 2165 2170 2175  
 Glu Val Trp Phe Asp Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val  
 2180 2185 2190  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2195 2200 2205  
 Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile Asp Phe  
 2210 2215 2220  
 Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro Glu Lys  
 2225 2230 2235 2240  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Thr  
 2245 2250 2255  
 Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met Ser Met  
 2260 2265 2270  
 Leu His Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Val  
 2275 2280 2285  
 Tyr Asp Pro Leu Leu Asn Trp Arg Leu Met Asp Ile Glu Val Arg Asn  
 2290 2295 2300  
 Leu Pro Met Asn Ser Asp Ser Met Ser Thr Ser Cys Ser Gln Lys Gln  
 2305 2310 2315 2320  
 Gly Ser Ser Glu Ser Leu Asn Val Pro Lys Arg Glu Met Ile Met Glu  
 2325 2330 2335  
 Asp Asn Glu Pro Gln His Glu Val Asn Ala Arg Ala Val Ile Ile Ile  
 2340 2345 2350  
 Asn Arg Val Arg Asp Lys Leu Thr Gly Asn Asp Phe Ala Thr Glu Glu  
 2355 2360 2365  
 Pro Leu Thr Ile Pro Lys Gln Val Asp Leu Leu Ile Gln Gln Ala Thr  
 2370 2375 2380  
 Ser Asn Glu Asn Leu Ser Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp  
 2385 2390 2395 2400

&lt;210&gt; 2546

&lt;211&gt; 7494

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7494)

&lt;400&gt; 2546

atg	aag	ccc	tcg	ccg	cac	ttc	ccg	gag	atc	ggg	aag	aag	ccc	aaa	gat	48
Met	Lys	Pro	Ser	Pro	His	Phe	Pro	Glu	Ile	Gly	Lys	Lys	Pro	Lys	Asp	
1				5					10					15		
ttg	ata	gcc	aag	gaa	cac	ggg	ttc	aac	atc	gcg	gcg	tac	atc	tcg	tcg	96
Leu	Ile	Ala	Lys	Glu	His	Gly	Phe	Asn	Ile	Ala	Ala	Tyr	Ile	Ser	Ser	
			20					25					30			
gga	gcg	gat	gtt	att	gct	gcc	gcc	cta	aga	aaa	cat	gtt	gag	gaa	gaa	144
Gly	Ala	Asp	Val	Ile	Ala	Ala	Ala	Leu	Arg	Lys	His	Val	Glu	Glu	Glu	
		35				40						45				
gct	cga	gat	ctg	agt	ggc	gag	gct	ttt	ctg	aga	ttt	atg	gaa	cag	ctc	192
Ala	Arg	Asp	Leu	Ser	Gly	Glu	Ala	Phe	Leu	Arg	Phe	Met	Glu	Gln	Leu	
	50				55						60					
tat	gaa	cag	ata	tgt	agt	ctc	ttg	caa	agc	aac	gat	gtt	gct	gaa	aat	240
Tyr	Glu	Gln	Ile	Cys	Ser	Leu	Leu	Gln	Ser	Asn	Asp	Val	Ala	Glu	Asn	
	65			70				75						80		
tta	ctt	gct	ctt	cgt	gct	att	gat	gct	ttg	atc	gat	atg	cct	ttc	gga	288
Leu	Leu	Ala	Leu	Arg	Ala	Ile	Asp	Ala	Leu	Ile	Asp	Met	Pro	Phe	Gly	
				85				90						95		
gaa	ggt	gct	tca	aag	gtt	tct	aag	ttc	gca	aat	ttc	ttg	cga	act	gtt	336
Glu	Gly	Ala	Ser	Lys	Val	Ser	Lys	Phe	Ala	Asn	Phe	Leu	Arg	Thr	Val	
			100					105					110			
ttt	gaa	gtc	aag	cgt	gat	cct	gaa	gtt	cta	gtt	cca	gca	agc	gca	gtg	384
Phe	Glu	Val	Lys	Arg	Asp	Pro	Glu	Val	Leu	Val	Pro	Ala	Ser	Ala	Val	
		115					120					125				
ctt	ggc	cat	tta	gca	aaa	gct	ggc	ggt	gca	atg	act	gca	gat	gag	gtg	432
Leu	Gly	His	Leu	Ala	Lys	Ala	Gly	Gly	Ala	Met	Thr	Ala	Asp	Glu	Val	
	130			135				140								
gag	cgt	cag	att	aaa	acg	gct	tta	gga	tgg	ctt	ggg	gat	cga	gtg		480
Glu	Arg	Gln	Ile	Lys	Thr	Ala	Leu	Gly	Trp	Leu	Gly	Gly	Asp	Arg	Val	
	145			150				155						160		
gag	tat	cgc	cgc	ttt	gct	tct	gtc	ctt	att	ctc	aaa	gag	atg	gct	gaa	528
Glu	Tyr	Arg	Arg	Phe	Ala	Ser	Val	Leu	Ile	Leu	Lys	Glu	Met	Ala	Glu	
				165				170						175		
aat	gca	tca	aca	gtt	ttc	aat	gtt	cat	gtt	cct	gaa	ttt	gtt	gat	gct	576
Asn	Ala	Ser	Thr	Val	Phe	Asn	Val	His	Val	Pro	Glu	Phe	Val	Asp	Ala	
			180					185					190			
ata	tgg	gta	gca	ctg	aga	gat	ccc	aaa	cag	gct	gtt	cgt	gag	cga	gca	624
Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	Lys	Gln	Ala	Val	Arg	Glu	Arg	Ala	
		195					200					205				
gtg	gaa	gca	ttg	cgt	gcc	tgt	ctc	cat	gtt	att	gaa	aaa	cgt	gag	aca	672
Val	Glu	Ala	Leu	Arg	Ala	Cys	Leu	His	Val	Ile	Glu	Lys	Arg	Glu	Thr	
	210				215						220					
cgt	tgg	cgt	gtg	caa	tgg	tat	tac	cgc	atg	tgt	gaa	gca	gca	cag	gtt	720
Arg	Trp	Arg	Val	Gln	Trp	Tyr	Tyr	Arg	Met	Cys	Glu	Ala	Ala	Gln	Val	
	225			230						235				240		
ggt	ctt	gga	aaa	aat	gcc	tct	gtt	cat	agc	att	cat	ggc	tcg	cta	ttg	768
Gly	Leu	Gly	Lys	Asn	Ala	Ser	Val	His	Ser	Ile	His	Gly	Ser	Leu	Leu	
			245					250					255			
gct	gtt	gga	gaa	tta	ttg	agg	aat	act	ggg	gag	ttt	atg	atg	tct	agg	816
Ala	Val	Gly	Glu	Leu	Leu	Arg	Asn	Thr	Gly	Glu	Phe	Met	Met	Ser	Arg	
			260					265					270			
tac	aga	gaa	gtg	gct	gat	ata	gtc	ctc	aat	tac	cta	aga	cac	cgg	gat	864
Tyr	Arg	Glu	Val	Ala	Asp	Ile	Val	Leu	Asn	Tyr	Leu	Arg	His	Arg	Asp	
		275					280					285				
cag	ctt	gtt	cgt	cgt	agt	ata	act	tcg	ctt	ctt	cct	cga	att	gct	cac	912
Gln	Leu	Val	Arg	Arg	Ser	Ile	Thr	Ser	Leu	Leu	Pro	Arg	Ile	Ala	His	
	290					295					300					
ttc	ctg	cgt	gac	aga	ttt	gtg	acc	aac	tac	tta	aag	att	tgc	atg	gat	960
Phe	Leu	Arg	Asp	Arg	Phe	Val	Thr	Asn	Tyr	Leu	Lys	Ile	Cys	Met	Asp	
	305				310			315						320		
cat	atc	ttg	ttt	gtt	tta	cgt	aca	ccg	gat	gag	cgt	gct	agt	ggc	ttt	1008
His	Ile	Leu	Phe	Val	Leu	Arg	Thr	Pro	Asp	Glu	Arg	Ala	Ser	Gly	Phe	

## PhoenixTemp32470.tmp.txt

gtt	gct	ctt	gga	325	gag	atg	gct	ggc	gct	330	ggt	gct	gaa	ctt	335	gtg	ccc	1056
Val	Ala	Leu	Gly	340	Glu	Met	Ala	Gly	Ala	345	Leu	Gly	Ala	Glu	350	Val	Pro	
tat	ttg	cct	tta	att	acc	tca	cac	ttg	cat	gat	gcg	att	gct	cct	cgt	1104		
Tyr	Leu	Pro	Leu	Ile	Thr	Ser	His	Leu	His	Asp	Ala	Ile	Ala	Pro	Arg			
agg	gga	cgc	cca	tct	ctt	gag	gca	att	tct	tgt	gtg	gga	agt	ttc	gca	1152		
Arg	Gly	Arg	Pro	Ser	Leu	Glu	Ala	Ile	Ser	Cys	Val	Gly	Ser	Phe	Ala			
aaa	gct	atg	ggt	cct	gca	atg	gaa	cct	cat	ata	cgt	ggt	gga	cta	cta	1200		
Lys	Ala	Met	Gly	Pro	Ala	Met	Glu	Pro	His	Ile	Arg	Gly	Gly	Leu	Leu	400		
gat	gcg	atg	ttt	tct	gct	ggt	ctt	tct	gat	aaa	ctt	gta	gag	gca	ctt	1248		
Asp	Ala	Met	Phe	Ser	Ala	Gly	Leu	Ser	Asp	Lys	Leu	Val	Glu	Ala	Leu	415		
gag	tct	ata	agt	acc	agc	atc	cca	tct	cta	ctg	cca	aca	ata	cag	gaa	1296		
Glu	Ser	Ile	Ser	Thr	Ser	Ile	Pro	Ser	Leu	Leu	Pro	Thr	Ile	Gln	Glu	430		
cga	ttg	ttg	gat	tgt	ata	tct	caa	gca	ctg	cca	aag	tca	tcc	gtg	agg	1344		
Arg	Leu	Leu	Asp	Cys	Ile	Ser	Gln	Ala	Leu	Pro	Lys	Ser	Ser	Val	Arg	445		
cct	ggt	gct	gct	gtt	ggc	cga	gga	agc	aga	tca	agc	agt	ttg	cag	cag	1392		
Pro	Gly	Ala	Ala	Val	Gly	Arg	Gly	Ser	Arg	Ser	Ser	Ser	Leu	Gln	Gln	450		
ttt	gtg	gat	tct	ggt	ggt	cca	gtt	ctt	gtg	cag	ctt	gca	ttg	ggg	act	1440		
Phe	Val	Asp	Ser	Gly	Gly	Pro	Val	Leu	Val	Gln	Leu	Ala	Leu	Gly	Thr	480		
cta	gca	aat	ttc	aac	ttt	aag	ggt	cat	gag	ctt	ctg	gaa	ttt	gct	aga	1488		
Leu	Ala	Asn	Phe	Asn	Phe	Lys	Gly	His	Glu	Leu	Leu	Glu	Phe	Ala	Arg	495		
gag	agt	gtc	atc	ctt	tat	ctg	gaa	gat	gag	gat	tgc	agt	acc	cgt	aaa	1536		
Glu	Ser	Val	Ile	Leu	Tyr	Leu	Glu	Asp	Glu	Asp	Cys	Ser	Thr	Arg	Lys	500		
gct	gct	gca	aca	tgc	tgc	tgc	aaa	cta	gtt	gct	cat	tcc	ctt	tca	gct	1584		
Ala	Ala	Ala	Thr	Cys	Cys	Cys	Lys	Leu	Val	Ala	His	Ser	Leu	Ser	Ala	515		
tcg	tct	agc	tca	cag	ttt	agc	tca	aac	cgg	cca	aat	cgt	atg	gga	gga	1632		
Ser	Ser	Ser	Ser	Gln	Phe	Ser	Ser	Asn	Arg	Pro	Asn	Arg	Met	Gly	Gly	520		
gct	aag	cg	cg	cg	ctt	gta	gaa	gag	att	gtg	gag	aaa	ctt	ctt	atg	1680		
Ala	Lys	Arg	Arg	Arg	Leu	Val	Glu	Glu	Ile	Val	Glu	Lys	Leu	Leu	Met	535		
gct	gca	gtt	gct	gat	gct	gat	gtt	ggt	gtt	aga	agt	tct	gta	ttc	aag	1728		
Ala	Ala	Val	Ala	Asp	Ala	Asp	Val	Gly	Val	Arg	Ser	Ser	Val	Phe	Lys	540		
gct	cta	tat	cg	aat	cca	tct	ttt	gat	gat	ttt	ttg	gcc	caa	gct	gac	1776		
Ala	Leu	Tyr	Arg	Asn	Pro	Ser	Phe	Asp	Asp	Phe	Leu	Ala	Gln	Ala	Asp	550		
atc	atg	act	tca	att	ttt	gtt	gcc	tta	aat	gat	gag	gag	tac	cat	gtc	1824		
Ile	Met	Thr	Ser	Ile	Phe	Val	Ala	Leu	Asn	Asp	Glu	Glu	Tyr	His	Val	560		
aga	gaa	ttg	gca	ata	tca	gtt	gca	ggt	aga	ttg	tct	gaa	aaa	aat	cct	1872		
Arg	Glu	Leu	Ala	Ile	Ser	Val	Ala	Gly	Arg	Leu	Ser	Glu	Lys	Asn	Pro	575		
gct	tat	gta	ctg	cct	gcc	ctt	cg	cg	tat	ctt	ata	cag	ttg	ctc	aca	1920		
Ala	Tyr	Val	Leu	Pro	Ala	Leu	Arg	Arg	Tyr	Leu	Ile	Gln	Leu	Leu	Thr	580		
tat	ctt	gac	caa	agt	atg	gat	agc	aag	tgt	aga	gag	gaa	agt	gct	aga	1968		
Tyr	Leu	Asp	Gln	Ser	Met	Asp	Ser	Lys	Cys	Arg	Glu	Glu	Ser	Ala	Arg	585		
ttg	ttg	ggt	tgc	tta	att	agg	agt	tgt	gca	cga	ctc	att	ctt	cct	tat	2016		
Leu	Leu	Gly	Cys	Leu	Ile	Arg	Ser	Cys	Ala	Arg	Leu	Ile	Leu	Pro	Tyr	590		
att	gct	cca	att	cac	aag	gca	cta	gtg	gct	agg	tta	cgt	gaa	gga	aca	2064		
Ile	Ala	Pro	Ile	His	Lys	Ala	Leu	Val	Ala	Arg	Leu	Arg	Glu	Gly	Thr	600		
gga	ccg	aat	gct	aat	aat	gcg	ctt	gca	gca	gga	gtg	ctt	gct	act	gtt	2112		
Gly	Pro	Asn	Ala	Asn	Asn	Ala	Leu	Ala	Ala	Gly	Val	Leu	Ala	Thr	Val	615		

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690	gga	gag	ttg	gcc	aaa	gtg	695	ggt	ttt	gca	atg	700	caa	tat	ctt	cct	2160
	Gly	Glu	Leu	Ala	Lys	Val	Gly	Gly	Phe	Ala	Met	Arg	Gln	Tyr	Leu	Pro	
705						710					715						
	gag	cta	atg	cct	cta	gtt	gtg	gat	gct	ctt	ttg	gat	gga	ggt	gct	ggt	2208
	Glu	Leu	Met	Pro	Leu	Val	Val	Asp	Ala	Leu	Leu	Asp	Gly	Gly	Ala	Val	
					725					730					735		
	agt	aaa	agg	gaa	gtg	gca	gta	gca	acc	ctt	gga	caa	gtt	atc	caa	agc	2256
	Ser	Lys	Arg	Glu	Val	Ala	Val	Ala	Thr	Leu	Gly	Gln	Val	Ile	Gln	Ser	
				740					745					750			
	aca	ggc	tat	gtt	atc	tct	cct	tat	aat	gag	tat	cct	cca	ttg	ctt	ggt	2304
	Thr	Gly	Tyr	Val	Ile	Ser	Pro	Tyr	Asn	Glu	Tyr	Pro	Pro	Leu	Leu	Gly	
			755					760					765				
	tta	ctc	ttg	aaa	ttg	ctg	aat	ggc	gaa	ttg	gaa	tgg	tct	act	aga	ctg	2352
	Leu	Leu	Leu	Lys	Leu	Leu	Asn	Gly	Glu	Leu	Glu	Trp	Ser	Thr	Arg	Leu	
							775					780					
	gaa	gtg	ctg	aag	gtt	tta	ggt	att	atg	ggt	gca	ttg	gac	ccg	cac	gca	2400
	Glu	Val	Leu	Lys	Val	Leu	Gly	Ile	Met	Gly	Ala	Leu	Asp	Pro	His	Ala	
						790					795					800	
	cat	aag	cgt	aat	caa	cat	aag	cta	cct	ggt	caa	cat	agg	gag	gtc	ttg	2448
	His	Lys	Arg	Asn	Gln	His	Lys	Leu	Pro	Gly	Gln	His	Arg	Glu	Val	Leu	
				805						810					815		
	cgg	cca	acg	atg	gaa	aca	gca	caa	cat	att	gtt	tcc	atg	gaa	gaa	ctg	2496
	Arg	Pro	Thr	Met	Glu	Thr	Ala	Gln	His	Ile	Val	Ser	Met	Glu	Glu	Leu	
				820					825					830			
	cca	act	gat	ttc	tgg	cca	tcc	ttt	tca	gca	tct	gag	gac	tat	tat	tca	2544
	Pro	Thr	Asp	Phe	Trp	Pro	Ser	Phe	Ser	Ala	Ser	Glu	Asp	Tyr	Tyr	Ser	
				835				840					845				
	aca	gtt	gca	att	agt	tct	ctc	atg	cgg	att	ctt	cat	gat	cct	tcc	ctt	2592
	Thr	Val	Ala	Ile	Ser	Ser	Leu	Met	Arg	Ile	Leu	His	Asp	Pro	Ser	Leu	
						855						860					
	tca	agt	tat	cat	cag	atg	gtg	gtt	ggc	tct	ctt	ata	ttt	att	ttt	aag	2640
	Ser	Ser	Tyr	His	Gln	Met	Val	Val	Gly	Ser	Leu	Ile	Phe	Ile	Phe	Lys	
						870					875					880	
	tcg	atg	gga	ctt	ggc	tgt	gtt	cca	tat	tta	cca	aag	gtt	ctc	cct	gag	2688
	Ser	Met	Gly	Leu	Gly	Cys	Val	Pro	Tyr	Leu	Pro	Lys	Val	Leu	Pro	Glu	
					885					890					895		
	cta	ttc	cgc	gct	gtt	cgc	atg	tgt	gag	gat	ggt	ggt	ttg	aaa	gag	ttc	2736
	Leu	Phe	Arg	Ala	Val	Arg	Met	Cys	Glu	Asp	Gly	Gly	Leu	Lys	Glu	Phe	
				900					905					910			
	att	acc	tgg	aag	ctt	ggg	aca	ttg	gta	tct	att	gtt	cga	cag	gtt	ctt	2784
	Ile	Thr	Trp	Lys	Leu	Gly	Thr	Leu	Val	Ser	Ile	Val	Arg	Gln	Val	Leu	
								920					925				
	cac	ctt	gtt	gaa	caa	cta	tgc	ttg	gca	ctg	aat	gac	gaa	ttc	aga	atg	2832
	His	Leu	Val	Glu	Gln	Leu	Cys	Leu	Ala	Leu	Asn	Asp	Glu	Phe	Arg	Met	
							935					940					
	tat	ata	ctt	cac	ata	ttg	cca	agt	tgt	att	caa	gtc	ctg	ggt	gat	gct	2880
	Tyr	Ile	Leu	His	Ile	Leu	Pro	Ser	Cys	Ile	Gln	Val	Leu	Gly	Asp	Ala	
						950					955					960	
	gaa	cgc	tgc	aat	gac	tat	tac	tat	gtt	cct	gac	ata	ttg	cac	acc	cta	2928
	Glu	Arg	Cys	Asn	Asp	Tyr	Tyr	Tyr	Val	Pro	Asp	Ile	Leu	His	Thr	Leu	
					965					970					975		
	gag	gtg	ttt	gga	gga	aat	ttg	gat	gag	cac	atg	cac	ttg	gtt	gct	cca	2976
	Glu	Val	Phe	Gly	Gly	Asn	Leu	Asp	Glu	His	Met	His	Leu	Val	Ala	Pro	
									985					990			
	gta	ctt	gtt	cgg	tta	ttt	aaa	gtg	gag	cta	gtt	gat	atc	aga	cgc	cgt	3024
	Val	Leu	Val	Arg	Leu	Phe	Lys	Val	Glu	Leu	Val	Asp	Ile	Arg	Arg	Arg	
							1000						1005				
	gcc	att	gtc	act	ttg	act	aaa	ctc	ata	cct	acg	gtg	cag	ttg	tgc	atc	3072
	Ala	Ile	Val	Thr	Leu	Thr	Lys	Leu	Ile	Pro	Thr	Val	Gln	Leu	Cys	Ile	
							1015					1020					
	acc	aga	ttg	tta	att	tgt	ctt	tct	gtg	gct	aga	aac	aat	gat	gat	cta	3120
	Thr	Arg	Leu	Leu	Ile	Cys	Leu	Ser	Val	Ala	Arg	Asn	Asn	Asp	Asp	Leu	
							1030				1035					1040	
	cgg	aaa	gat	gca	gca	gag	gcg	ctt	tgt	tgt	ctt	gca	cat	gct	ctt	gga	3168
	Arg	Lys	Asp	Ala	Ala	Glu	Ala	Leu	Cys	Cys	Leu	Ala	His	Ala	Leu	Gly	
							1045			1050					1055		
	gaa	gat	ttt	aca	ata	ttc	gtg	tca	tca	ata	cac	aag	ctt	ctt	gtg	aag	3216
	Glu	Asp	Phe	Thr	Ile	Phe	Val	Ser	Ser	Ile	His	Lys	Leu	Leu	Val	Lys	



## PhoenixTemp32470.tmp.txt

1060															1065															1070															
cac	cat	atg	cgg	tat	aga	aaa	tgg	gat	gag	att	gaa	aat	cga	tta	cta	His	His	Met	Arg	Tyr	Arg	Lys	Trp	Asp	Glu	Ile	Glu	Asn	Arg	Leu	Leu		3264												
1075															1080															1085															
agg	cga	gag	cca	ctc	atc	tct	gag	aac	tta	tca	gta	caa	aag	tac	aca	Arg	Arg	Glu	Pro	Leu	Ile	Ser	Glu	Asn	Leu	Ser	Val	Gln	Lys	Tyr	Thr		3312												
1090															1095															1100															
caa	tgc	ccg	cct	gaa	gtc	att	agt	gac	cct	ctt	gat	gat	ttt	ggg	ggg	Gln	Cys	Pro	Pro	Glu	Val	Ile	Ser	Asp	Pro	Leu	Asp	Asp	Phe	Gly	Gly		3360												
1105															1110															1115															
gtt	cct	tct	gag	gag	gct	gat	gaa	aca	cag	cgg	caa	cca	aga	agt	cat	Val	Pro	Ser	Glu	Glu	Ala	Asp	Glu	Thr	Gln	Arg	Gln	Pro	Arg	Ser	His		3408												
1125															1130															1135															
caa	gtc	aat	gat	gtt	cga	ctg	aga	agt	gcc	ggg	gag	gct	tct	caa	agg	Gln	Val	Asn	Asp	Val	Arg	Leu	Arg	Ser	Ala	Gly	Glu	Ala	Ser	Gln	Arg		3456												
1140															1145															1150															
agc	act	aga	gaa	gat	tgg	gct	gaa	tgg	atg	agg	cac	ttc	agt	att	gcg	Ser	Thr	Arg	Glu	Asp	Trp	Ala	Glu	Trp	Met	Arg	His	Phe	Ser	Ile	Ala		3504												
1155															1160															1165															
ctt	ctc	aaa	gaa	tca	cca	tct	cct	gct	tta	cgc	act	tgc	gca	aga	cta	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Thr	Cys	Ala	Arg	Leu		3552												
1170															1175															1180															
gca	caa	ctt	cag	cct	tct	gtt	ggg	cgt	gag	ttg	ttt	gct	gcg	ggc	ttt	Ala	Gln	Leu	Gln	Pro	Ser	Val	Gly	Arg	Glu	Leu	Phe	Ala	Ala	Gly	Phe		3600												
1185															1190															1195															
gca	agt	tgc	tgg	gcc	caa	atg	aat	gaa	aca	tcc	cag	gag	caa	ctt	gtg	Ala	Ser	Cys	Trp	Ala	Gln	Met	Asn	Glu	Thr	Ser	Gln	Glu	Gln	Leu	Val		3648												
1205															1210															1215															
aga	agt	ctc	aag	act	gca	ttc	tca	tct	cag	aac	ata	cct	cca	gaa	att	Arg	Ser	Leu	Lys	Thr	Ala	Phe	Ser	Ser	Gln	Asn	Ile	Pro	Pro	Glu	Ile		3696												
1220															1225															1230															
ctt	gcc	aca	ctg	ctg	aac	ttg	gca	gag	ttt	atg	gaa	cat	gat	gag	aag	Leu	Ala	Thr	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	Asp	Glu	Lys		3744												
1235															1240															1245															
ccg	ctt	cca	att	gat	aca	aga	ctg	ctc	ggg	gca	ctt	gct	gaa	aag	tgt	Pro	Leu	Pro	Ile	Asp	Thr	Arg	Leu	Leu	Gly	Ala	Leu	Ala	Glu	Lys	Cys		3792												
1250															1255															1260															
cga	gca	ttt	gca	aaa	gca	ctg	cat	tat	aaa	gaa	atg	gag	ttt	gaa	gct	Arg	Ala	Phe	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Met	Glu	Phe	Glu	Ala		3840												
1265															1270															1275															
gta	tgt	tcc	aag	aag	atg	ggg	gca	aat	cct	gtt	act	gtt	gtt	gaa	tct	Val	Cys	Ser	Lys	Lys	Met	Gly	Ala	Asn	Pro	Val	Thr	Val	Val	Glu	Ser		3888												
1285															1290															1295															
ctt	att	cat	att	aac	aac	caa	tta	cac	cag	cat	gag	gca	gct	att	ggg	Leu	Ile	His	Ile	Asn	Asn	Gln	Leu	His	Gln	His	Glu	Ala	Ala	Ile	Gly		3936												
1300															1305															1310															
ata	ttg	act	tac	tca	caa	caa	cat	tta	gaa	gtt	caa	ttg	aag	gag	tcc	Ile	Leu	Thr	Tyr	Ser	Gln	Gln	His	Leu	Glu	Val	Gln	Leu	Lys	Glu	Ser		3984												
1315															1320															1325															
tgg	tac	gaa	aaa	ttg	cac	cgt	tgg	gat	gag	gcc	ttg	aag	gca	tac	aaa	Trp	Tyr	Glu	Lys	Leu	His	Arg	Trp	Asp	Glu	Ala	Leu	Lys	Ala	Tyr	Lys		4032												
1330															1335															1340															
gca	aag	tca	tct	caa	gca	tct	ggg	cca	tta	caa	aac	ttg	gat	gct	aca	Ala	Lys	Ser	Ser	Gln	Ala	Ser	Gly	Pro	Leu	Gln	Asn	Leu	Asp	Ala	Thr		4080												
1345															1350															1355															
tta	gat	cta	ctc	tta	ggg	aca	aga	tta	tac	cac	acg	ctg	ttt	ctt	ggg	Leu	Asp	Leu	Leu	Gly	Thr	Arg	Leu	Tyr	His	Thr	Leu	Phe	Leu	Gly	Gly		4128												
1365															1370															1375															
tca	cta	gag	agg	ctg	ttc	aag	acg	agg	att	atg	ggg	ctt	ctt	ggg	tgg	Ser	Leu	Glu	Arg	Leu	Phe	Lys	Thr	Arg	Ile	Met	Gly	Leu	Leu	Gly	Trp		4176												
1380															1385															1390															
atg	atg	aag	aag	agg	atg	acg	acg	acg	atg	aat	ata	gtg	atg	aag	aag	Met	Met	Lys	Lys	Arg	Met	Thr	Thr	Thr	Met	Asn	Ile	Val	Met	Lys	Lys		4224												
1395															1400															1405															
cat	aag	gca	ttc	aag	tgt	cgt	ttg	ttc	tac	tgg	gct	gtt	aga	gaa	aca	His	Lys	Ala	Phe	Lys	Cys	Arg	Leu	Phe	Tyr	Trp	Ala	Val	Arg	Glu	Thr		4272												
1410															1415															1420															
ttg	atc	cca	att	gtt	aac	aat	ttc	caa	gac	aag	ctc	atc	cct	gaa	tca	Leu	Ile	Pro	Ile	Val	Asn	Asn	Phe	Gln	Asp	Lys	Leu	Ile	Pro	Glu	Ser		4320												

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1425	aaa ctt aca ctg	1430	aca ctc atg gct gcc aat	1435	gct gct tgg cat atg ggt	1440		
Lys Leu Thr Leu	Thr Leu Met Ala Ala Asn	Met Ala Ala Trp His Met Gly					4368	
	1445	gag tgg gac cac atg gct gaa tat gtt tct	1450	cg tctg gat gat ggg gat	1455			4416
Glu Trp Asp His Met Ala Glu Tyr Val Ser Arg Leu Asp Asp Gly Asp								
	1460	gaa aac aag ctc cgg ata ttg ggt aac aca aca gct agt ggt gac gga	1465	gct agt ggt gac gga	1470			4464
Glu Asn Lys Leu Arg Ile Leu Gly Asn Thr Thr Ala Ser Gly Asp Gly								
	1475	agc agc aat ggt gct ttc ttt agg gct gtt ctt tca gtt cg tgc aaa	1480	gct gtt ctt tca gtt cg tgc aaa	1485			4512
Ser Ser Asn Gly Ala Phe Phe Arg Ala Val Leu Ser Val Arg Cys Lys								
	1490	aag tat gaa gaa gct cgt gta tat gtt gag aga gct cg cg tgt ttg	1495	gct cg cg tgt ttg	1500			4560
Lys Tyr Glu Glu Ala Arg Val Tyr Val Glu Arg Ala Arg Arg Cys Leu								
	1505	gct aca gaa ctt gca gca ttg gta ctt gag agt tat gag cg tgc tat	1510	gct agt tat gag cg tgc tat	1515			4608
Ala Thr Glu Leu Ala Ala Leu Val Leu Ser Tyr Glu Arg Ala Tyr								
	1525	aat aat atg gtg cgg gtt caa cag ctt tct gag ctg gaa gag gtg att	1530	gct gag ctg gaa gag gtg att	1535			4656
Asn Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu Glu Glu Val Ile								
	1540	gat tac tgc act ctt cca atg gaa agt cca ata gct gac agc cgg agg	1545	gct gac agc cgg agg	1550			4704
Asp Tyr Cys Thr Leu Pro Met Glu Ser Pro Ile Ala Asp Ser Arg Arg								
	1555	gaa ctt atc cgt aat atg ttg aat gag cg ttt aaa gga aca aaa cgg	1560	gct att aaa gga aca aaa cgg	1565			4752
Glu Leu Ile Arg Asn Met Trp Asn Glu Arg Ile Lys Gly Thr Lys Arg								
	1570	aat gtt gag gtg ttg caa gcc tta ctt gct gtt aga gag ttg gtt ctc	1575	gct gtt aga gag ttg gtt ctc	1580			4800
Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg Glu Leu Val Leu								
	1585	cct cct aat gaa gac aga gac acc ttg ata aaa ttt gcc aaa ctt tgc	1590	gct ttt gcc aaa ctt tgc	1595			4848
Pro Pro Asn Glu Asp Arg Asp Thr Trp Ile Lys Phe Ala Lys Leu Cys								
	1605	ttg aag agt ggc cgc att agt cag gct aaa tct acc tta gtc aaa ctc	1610	gct aaa tct acc tta gtc aaa ctc	1615			4896
Trp Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr Leu Val Lys Leu								
	1620	tta cag ttt gat cca gaa tct tcc cct gaa ttg acg ctg tat cat gga	1625	gct gaa ttg acg ctg tat cat gga	1630			4944
Leu Gln Phe Asp Pro Glu Ser Ser Pro Glu Leu Thr Leu Tyr His Gly								
	1635	cat cct caa gta gtc ctg gca tac ctg aag tac cag tat gct gtt gga	1640	gct aag tac cag tat gct gtt gga	1645			4992
His Pro Gln Val Val Leu Ala Tyr Leu Lys Tyr Gln Tyr Ala Val Gly								
	1650	gat gag ctt aaa cga agg gac gcg ttt tgc agg cta cag gat ttg tct	1655	gct agg cta cag gat ttg tct	1660			5040
Asp Glu Leu Lys Arg Asp Ala Phe Cys Arg Leu Gln Asp Leu Ser								
	1665	gtg cag ctt gct acc gca aca aat agt tat tct gga aca tta gca agc	1670	gct aca tta gca agc	1675			5088
Val Gln Leu Ala Thr Ala Thr Asn Ser Tyr Ser Gly Thr Leu Ala Ser								
	1685	cag gtt gcc aca tca aat gct gga gta cca ctt att gct cgc gtc tat	1690	gct gga gta cca ctt att gct cgc gtc tat	1695			5136
Gln Val Ala Thr Ser Asn Ala Gly Val Pro Leu Ile Ala Arg Val Tyr								
	1700	ttg aca ctt gct agc ttg aag aga gca tta tca cct ggg tta gac gat	1705	gct aag aga gca tta tca cct ggg tta gac gat	1710			5184
Leu Thr Leu Ala Ser Trp Lys Arg Ala Leu Ser Pro Gly Leu Asp Asp								
	1715	gat tct att caa gaa ata ttg gtc tct tac aaa aat gcc aca ctt aat	1720	gct att caa gaa ata ttg gtc tct tac aaa aat gcc aca ctt aat	1725			5232
Asp Ser Ile Gln Glu Ile Leu Val Ser Tyr Lys Asn Ala Thr Leu Asn								
	1730	gcc aag gac ttg ggc aag gca ttg cac tta ttg gcc ttg ttc aac act	1735	gct aag gca ttg cac tta ttg gcc ttg ttc aac act	1740			5280
Ala Lys Asp Trp Gly Lys Ala Trp His Leu Trp Ala Leu Phe Asn Thr								
	1745	gaa gtc atg tcc cgc tat act ttg cgt ggt cga cca gat att gca gga	1750	gct att cga cca gat att gca gga	1755			5328
Glu Val Met Ser Arg Tyr Thr Leu Arg Gly Arg Pro Asp Ile Ala Gly								
	1765	aaa tat gtt gtt gca gca gta act ggg tat ttc tac tct att gct tgc	1770	gct gca gta act ggg tat ttc tac tct att gct tgc	1775			5376
Lys Tyr Val Val Ala Ala Val Thr Gly Tyr Phe Tyr Ser Ile Ala Cys								
	1780	gca tcc acg aca aaa ggt gtt gat gat agc tta cag gat atc ctt cg t	1785	gct agc tta cag gat atc ctt cg t	1790			5424
Ala Ser Thr Thr Lys Gly Val Asp Asp Ser Leu Gln Asp Ile Leu Arg								

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1795	1800	1805	
ctc ttg act ctt tgg ttt aat cat ggg gct acc tca gag gtt caa atg			5472
Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ser Glu Val Gln Met			
1810	1815	1820	
gca ctg cag aaa ggc ttt tca ctt gtc aat ata gaa atg tgg ttg gtt			5520
Ala Leu Gln Lys Gly Phe Ser Leu Val Asn Ile Glu Met Trp Leu Val			
1825	1830	1835	1840
gtc ctt ccc cag ata att gca agg atc cat tca aat aat aaa ata gtg			5568
Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Lys Ile Val			
1845	1850	1855	
aga gaa ctg ata cag tca ttg ctg gtt cga att gga aag gat cat cca			5616
Arg Glu Leu Ile Gln Ser Leu Leu Val Arg Ile Gly Lys Asp His Pro			
1860	1865	1870	
cag gac atg tca tct att aaa agg aat aac cta gag aaa ata tta aaa			5664
Gln Asp Met Ser Ser Ile Lys Arg Asn Asn Leu Glu Lys Ile Leu Lys			
1875	1880	1885	
att gaa gga act gaa ttt ata gca cag gca ttg atg tat cct ctg ttg			5712
Ile Glu Gly Thr Glu Phe Ile Ala Gln Ala Leu Met Tyr Pro Leu Leu			
1890	1895	1900	
gtt gct tgc aaa tca ata agc ata tta aga caa cga gcg gcg caa gag			5760
Val Ala Cys Lys Ser Ile Ser Ile Leu Arg Gln Arg Ala Ala Gln Glu			
1905	1910	1915	1920
gtc gtc gat aag atc cgc caa cat agt gga ggt ctt gtt gat cag gca			5808
Val Val Asp Lys Ile Arg Gln His Ser Gly Leu Val Asp Gln Ala			
1925	1930	1935	
cag ctt gtt tca aag gaa ctg ata cga gtt gcc att ctg tgg cat gag			5856
Gln Leu Val Ser Lys Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu			
1940	1945	1950	
atg tgg cat gag gct ctt gag gaa gct agc agg atg tat ttt ggt gag			5904
Met Trp His Glu Ala Leu Glu Ala Ser Arg Met Tyr Phe Gly Glu			
1955	1960	1965	
cac aat att gag gga atg ctt gca gtg ctt gaa cca ttg cat gca atg			5952
His Asn Ile Glu Gly Met Leu Ala Val Leu Glu Pro Leu His Ala Met			
1970	1975	1980	
ctc gag agg ggt cct gag aca ata aaa gaa aat act ttc att cag gct			6000
Leu Glu Arg Gly Pro Glu Thr Ile Lys Glu Asn Thr Phe Ile Gln Ala			
1985	1990	1995	2000
tat ggt cat gaa tta ctg gaa gcc cac gaa tgc tgt tta aaa tat cgg			6048
Tyr Gly His Glu Leu Leu Glu Ala His Glu Cys Cys Leu Lys Tyr Arg			
2005	2010	2015	
gct aca gga gag gat gct gag tta act aag gca tgg gat ttg tat tac			6096
Ala Thr Gly Glu Asp Ala Glu Leu Thr Lys Ala Trp Asp Leu Tyr Tyr			
2020	2025	2030	
cat gtt ttc aga aga ata gac aaa cag ctt cca agt ctt aca act ttg			6144
His Val Phe Arg Arg Ile Asp Lys Gln Leu Pro Ser Leu Thr Thr Leu			
2035	2040	2045	
gat ttg cac tct gtg tca ccc gag ctt ctt gag tgt cga aag ttg gag			6192
Asp Leu His Ser Val Ser Pro Glu Leu Leu Glu Cys Arg Lys Leu Glu			
2050	2055	2060	
ctt gct gta cca gga act tat tct gca gat gca cca ctt gtg aca att			6240
Leu Ala Val Pro Gly Thr Tyr Ser Ala Asp Ala Pro Leu Val Thr Ile			
2065	2070	2075	2080
gag tat ttt gtt cct caa ttg att gtt ata aca tct aaa caa aga cca			6288
Glu Tyr Phe Val Pro Gln Leu Ile Val Ile Thr Ser Lys Gln Arg Pro			
2085	2090	2095	
aga aaa ctg aca att cat gga agt gat ggc aac gat tat gca ttc ttg			6336
Arg Lys Leu Thr Ile His Gly Ser Asp Gly Asn Asp Tyr Ala Phe Leu			
2100	2105	2110	
ctg aaa ggc cat gaa gat tta cgg cag gat gag cgt gta atg cag ctt			6384
Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu			
2115	2120	2125	
ttt ggc ctg gtg aat act ctg ctg gag aac tct agg aaa act tca gag			6432
Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ser Glu			
2130	2135	2140	
aaa gat ctg tca atc caa aga tat gct gtc ata cct ttg tct cct aac			6480
Lys Asp Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn			
2145	2150	2155	2160
agt ggt tta att gga ttg gtt cca aat tgt gac aca ctt cat gcc ctg			6528
Ser Gly Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu			

## PhoenixTemp32470.tmp.txt

2165 2170 2175  
 atc cgt gaa tat aga gat gcc agg aag att ttc tta aat cag gag cac 6576  
 Ile Arg Glu Tyr Arg Asp Ala Arg Lys Ile Phe Leu Asn Gln Glu His  
 2180 2185 2190  
 cga tgt atg ttg agt ttt gca cct gat tat gac cac tta ccc ctc atc 6624  
 Arg Cys Met Leu Ser Phe Ala Pro Asp Tyr Asp His Leu Pro Leu Ile  
 2195 2200 2205  
 gcc aaa gta gaa gta ttt cag cat gcc cta gaa aac agt gaa gga aat 6672  
 Ala Lys Val Glu Val Phe Gln His Ala Leu Glu Asn Ser Glu Gly Asn  
 2210 2215 2220  
 gac ctt gca aag gtt ctc tgg ctt aaa agc cga acc tct gaa gta tgg 6720  
 Asp Leu Ala Lys Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val Trp  
 2225 2230 2235  
 ctt gag cgg cgc aca aat tat acg aga agt ctg gct gtt atg agc atg 6768  
 Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met  
 2245 2250 2255  
 gtt ggc tat ttg ctt ggt tta gga gat cgg cat cca agt aat ctt atg 6816  
 Val Gly Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met  
 2260 2265 2270  
 tta gat cgt tat agt gga aaa ata tta cat att gac ttt ggc gat tgc 6864  
 Leu Asp Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys  
 2275 2280 2285  
 ttt gag gct tca atg aat cgt gaa aag ttt ccc gaa aag gtt cca ttt 6912  
 Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe  
 2290 2295 2300  
 cgc ttg act aga atg ctt gtg aaa gcc atg gaa gtt agt ggt att gag 6960  
 Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu  
 2305 2310 2315 2320  
 ggt acc ttc aga acc act tgc gaa aat gtg atg caa gta ctt cga aca 7008  
 Gly Thr Phe Arg Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr  
 2325 2330 2335  
 aac aag gat agc gtt atg gct atg atg gag gca ttt gtg cat gac cca 7056  
 Asn Lys Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro  
 2340 2345 2350  
 tta atc aat tgg cgt ctg ttc aat ttc aat gaa gtc cct caa gtt aca 7104  
 Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Val Thr  
 2355 2360 2365  
 aac tat gga aat gct cac agt cac aca gtt gtc aat agc gaa gaa gct 7152  
 Asn Tyr Gly Asn Ala His Ser His Thr Val Val Asn Ser Glu Glu Ala  
 2370 2375 2380  
 gct aat cgg gag ctc atg caa ccc cgg gga gct cgg gag aga gaa 7200  
 Ala Asn Arg Glu Leu Met Gln Pro Pro Arg Gly Ala Arg Glu Arg Glu  
 2385 2390 2395 2400  
 ctg cta cag gcg gtc aat caa ctc ggt gat gct aac gag gtt ttg aat 7248  
 Leu Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val Leu Asn  
 2405 2410 2415  
 gag cgt gcc gta gct gtg atg gca cga atg agt cat aag ctc aca ggg 7296  
 Glu Arg Ala Val Ala Val Met Ala Arg Met Ser His Lys Leu Thr Gly  
 2420 2425 2430  
 cgc gat ttc tct tcc gga tca tcg ttg tcg ggg gcg gga agc tcc acc 7344  
 Arg Asp Phe Ser Ser Gly Ser Ser Leu Ser Gly Ala Gly Ser Ser Thr  
 2435 2440 2445  
 caa cat ggt aac gag cat ctg gct tca gga gac act cga gag gtg gaa 7392  
 Gln His Gly Asn Glu His Leu Ala Ser Gly Asp Thr Arg Glu Val Glu  
 2450 2455 2460  
 cct ggt tta tcc gtg aag gtt cag gtt cag agg ctt ata ctt caa gcg 7440  
 Pro Gly Leu Ser Val Lys Val Gln Val Gln Arg Leu Ile Leu Gln Ala  
 2465 2470 2475 2480  
 act tcg cat gaa aac ttg tgc caa aac tac gtc ggg tgg tgc ccg ttt 7488  
 Thr Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe  
 2485 2490 2495  
 tgg tga 7494  
 Trp

&lt;210&gt; 2547

&lt;211&gt; 2497

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2547

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Leu Ile Ala Lys Glu His Gly Phe Asn Ile Ala Ala Tyr Ile Ser Ser
      20      25      30
Gly Ala Asp Val Ile Ala Ala Ala Leu Arg Lys His Val Glu Glu Glu
      35      40      45
Ala Arg Asp Leu Ser Gly Glu Ala Phe Leu Arg Phe Met Glu Gln Leu
      50      55      60
Tyr Glu Gln Ile Cys Ser Leu Leu Gln Ser Asn Asp Val Ala Glu Asn
65      70      75      80
Leu Leu Ala Leu Arg Ala Ile Asp Ala Leu Ile Asp Met Pro Phe Gly
      85      90      95
Glu Gly Ala Ser Lys Val Ser Lys Phe Ala Asn Phe Leu Arg Thr Val
      100      105      110
Phe Glu Val Lys Arg Asp Pro Glu Val Leu Val Pro Ala Ser Ala Val
      115      120      125
Leu Gly His Leu Ala Lys Ala Gly Gly Ala Met Thr Ala Asp Glu Val
      130      135      140
Glu Arg Gln Ile Lys Thr Ala Leu Gly Trp Leu Gly Gly Asp Arg Val
145      150      155      160
Glu Tyr Arg Arg Phe Ala Ser Val Leu Ile Leu Lys Glu Met Ala Glu
      165      170      175
Asn Ala Ser Thr Val Phe Asn Val His Val Pro Glu Phe Val Asp Ala
      180      185      190
Ile Trp Val Ala Leu Arg Asp Pro Lys Gln Ala Val Arg Glu Arg Ala
      195      200      205
Val Glu Ala Leu Arg Ala Cys Leu His Val Ile Glu Lys Arg Glu Thr
210      215      220
Arg Trp Arg Val Gln Trp Tyr Tyr Arg Met Cys Glu Ala Ala Gln Val
225      230      235      240
Gly Leu Gly Lys Asn Ala Ser Val His Ser Ile His Gly Ser Leu Leu
      245      250      255
Ala Val Gly Glu Leu Leu Arg Asn Thr Gly Glu Phe Met Met Ser Arg
      260      265      270
Tyr Arg Glu Val Ala Asp Ile Val Leu Asn Tyr Leu Arg His Arg Asp
      275      280      285
Gln Leu Val Arg Arg Ser Ile Thr Ser Leu Leu Pro Arg Ile Ala His
290      295      300
Phe Leu Arg Asp Arg Phe Val Thr Asn Tyr Leu Lys Ile Cys Met Asp
305      310      315      320
His Ile Leu Phe Val Leu Arg Thr Pro Asp Glu Arg Ala Ser Gly Phe
      325      330      335
Val Ala Leu Gly Glu Met Ala Gly Ala Leu Gly Ala Glu Leu Val Pro
      340      345      350
Tyr Leu Pro Leu Ile Thr Ser His Leu His Asp Ala Ile Ala Pro Arg
      355      360      365
Arg Gly Arg Pro Ser Leu Glu Ala Ile Ser Cys Val Gly Ser Phe Ala
      370      375      380
Lys Ala Met Gly Pro Ala Met Glu Pro His Ile Arg Gly Gly Leu Leu
385      390      395      400
Asp Ala Met Phe Ser Ala Gly Leu Ser Asp Lys Leu Val Glu Ala Leu
      405      410      415
Glu Ser Ile Ser Thr Ser Ile Pro Ser Leu Leu Pro Thr Ile Gln Glu
      420      425      430
Arg Leu Leu Asp Cys Ile Ser Gln Ala Leu Pro Lys Ser Val Arg
      435      440      445
Pro Gly Ala Ala Val Gly Arg Gly Ser Arg Ser Ser Leu Gln Gln
      450      455      460
Phe Val Asp Ser Gly Gly Pro Val Leu Val Gln Leu Ala Leu Gly Thr
465      470      475      480
Leu Ala Asn Phe Asn Phe Lys Gly His Glu Leu Leu Glu Phe Ala Arg
      485      490      495
Glu ser Val Ile Leu Tyr Leu Glu Asp Glu Asp Cys Ser Thr Arg Lys
      500      505      510
Ala Ala Ala Thr Cys Cys Cys Lys Leu Val Ala His Ser Leu Ser Ala
      515      520      525
Ser Ser Ser Ser Gln Phe Ser Ser Asn Arg Pro Asn Arg Met Gly Gly

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## PhoenixTemp32470.tmp.txt

530	Ala	Lys	Arg	Arg	Arg	Leu	535	Val	Glu	Glu	Ile	Val	540	Glu	Lys	Leu	Leu	Met
545	Ala	Ala	Val	Ala	Asp	Ala	550	Asp	Val	Gly	Val	Arg	555	Ser	Ser	Val	Phe	Lys
				565	Asn	Pro	Ser	Phe	Asp	Asp	Phe	Leu	570	Ala	Gln	Ala	Asp	
				580	Ile	Phe	Val	Ala	Leu	Asn	Asp	Glu	585	Glu	Tyr	His	Val	
				595	Ser	Ile	Val	Ala	Gly	Arg	Leu	Ser	600	Glu	Lys	Asn	Pro	
				610	Ala	Ile	Ser	Ala	Gly	Arg	Leu	Ser	615	Glu	Lys	Asn	Pro	
				625	Tyr	Val	Leu	Pro	Ala	Leu	Arg	Arg	630	Tyr	Ile	Gln	Leu	
					645	Ser	Met	Asp	Ser	Lys	Cys	Arg	635	Glu	Glu	Ser	Ala	
					660	Leu	Ile	Arg	Ser	Cys	Ala	Arg	650	Leu	Ile	Leu	Pro	
					675	Ile	Ala	Leu	Val	Ala	Arg	Leu	665	Arg	Glu	Gly	Thr	
					690	Gly	Pro	Asn	Ala	Asn	Ala	Leu	680	Val	Ala	Arg	Leu	
					710	Gly	Glu	Leu	Ala	Lys	Val	Gly	695	Gly	Phe	Ala	Met	
					725	Glu	Leu	Met	Pro	Leu	Val	Val	700	Asp	Ala	Leu	Asp	
					740	Ser	Lys	Arg	Glu	Val	Ala	Val	715	Leu	Asp	Gly	Gly	
					755	Thr	Gly	Tyr	Val	Ile	Ser	Pro	730	Thr	Leu	Gly	Gln	
					770	Leu	Leu	Lys	Leu	Leu	Asn	Gly	745	Glu	Tyr	Pro	Pro	
					785	Glu	Val	Leu	Lys	Val	Leu	Gly	760	Asn	Glu	Tyr	Pro	
					805	His	Lys	Arg	Asn	Gln	His	Lys	775	Gly	Ile	Met	Gly	
					820	Arg	Pro	Thr	Met	Glu	Thr	Ala	790	Gly	Ile	Met	Gly	
					835	Pro	Thr	Asp	Phe	Trp	Pro	Ser	810	Gln	His	Val	Ser	
					850	Thr	Val	Ala	Ile	Ser	Ser	Leu	825	His	Ile	Val	Ser	
					865	Ser	Ser	Tyr	His	Gln	Met	Val	840	Phe	Ser	Ala	Ser	
					880	Ser	Met	Gly	Leu	Gly	Cys	Val	855	Met	Arg	Ile	Leu	
					900	Leu	Phe	Arg	Ala	Val	Arg	Met	870	Val	Gly	Ser	Leu	
					915	Ile	Thr	Trp	Lys	Leu	Gly	Thr	885	Cys	Val	Pro	Tyr	
					930	His	Leu	Val	Glu	Gln	Leu	Cys	890	Leu	Pro	Lys	Val	
					945	Tyr	Ile	Leu	His	Ile	Leu	Pro	905	Glu	Asp	Gly	Gly	
					965	Glu	Arg	Cys	Asn	Asp	Tyr	Tyr	910	Val	Ser	Ile	Val	
					980	Glu	Val	Phe	Gly	Gly	Asn	Leu	920	Ala	Leu	Asn	Asp	
					995	Val	Leu	Val	Arg	Leu	Phe	Lys	935	Leu	Ala	Leu	Asn	
					1010	Ala	Ile	Val	Thr	Leu	Thr	Lys	940	Pro	Thr	Val	Gln	
					1025	Thr	Arg	Leu	Leu	Ile	Cys	Leu	955	Val	Pro	Asp	Ile	
					1045	Arg	Lys	Asp	Ala	Ala	Glu	Ala	960	Leu	His	Ala	Leu	
					1060	Glu	Asp	Phe	Thr	Ile	Phe	Val	970	Pro	Asp	Ile	Leu	
					1075	His	His	Met	Arg	Tyr	Arg	Lys	985	Glu	Ile	Glu	Asn	
													1000	Val	Leu	Val	Lys	
													1015	Leu	Ile	Pro	Thr	
													1030	Val	Ala	Arg	Asn	
													1045	Cys	Leu	Ala	His	
													1065	Ser	Ile	His	Lys	
													1080	Asp	Glu	Ile	Glu	

## PhoenixTemp32470.tmp.txt

Arg Arg Glu Pro Leu Ile Ser Glu Asn Leu Ser Val Gln Lys Tyr Thr  
 1090 1095 1100  
 Gln Cys Pro Pro Glu Val Ile Ser Asp Pro Leu Asp Asp Phe Gly Gly  
 1105 1110 1115 1120  
 Val Pro Ser Glu Glu Ala Asp Glu Thr Gln Arg Gln Pro Arg Ser His  
 1125 1130 1135  
 Gln Val Asn Asp Val Arg Leu Arg Ser Ala Gly Glu Ala Ser Gln Arg  
 1140 1145 1150  
 Ser Thr Arg Glu Asp Trp Ala Glu Trp Met Arg His Phe Ser Ile Ala  
 1155 1160 1165  
 Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Thr Cys Ala Arg Leu  
 1170 1175 1180  
 Ala Gln Leu Gln Pro Ser Val Gly Arg Glu Leu Phe Ala Ala Gly Phe  
 1185 1190 1195 1200  
 Ala Ser Cys Trp Ala Gln Met Asn Glu Thr Ser Gln Glu Gln Leu Val  
 1205 1210 1215  
 Arg Ser Leu Lys Thr Ala Phe Ser Ser Gln Asn Ile Pro Pro Glu Ile  
 1220 1225 1230  
 Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Glu Lys  
 1235 1240 1245  
 Pro Leu Pro Ile Asp Thr Arg Leu Leu Gly Ala Leu Ala Glu Lys Cys  
 1250 1255 1260  
 Arg Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Met Glu Phe Glu Ala  
 1265 1270 1275 1280  
 Val Cys Ser Lys Lys Met Gly Ala Asn Pro Val Thr Val Val Glu Ser  
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 1315 1320 1325  
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 1330 1335 1340  
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 1345 1350 1355 1360  
 Leu Asp Leu Leu Leu Gly Thr Arg Leu Tyr His Thr Leu Phe Leu Gly  
 1365 1370 1375  
 Ser Leu Glu Arg Leu Phe Lys Thr Arg Ile Met Gly Leu Leu Gly Trp  
 1380 1385 1390  
 Met Met Lys Lys Arg Met Thr Thr Thr Met Asn Ile Val Met Lys Lys  
 1395 1400 1405  
 His Lys Ala Phe Lys Cys Arg Leu Phe Tyr Trp Ala Val Arg Glu Thr  
 1410 1415 1420  
 Leu Ile Pro Ile Val Asn Asn Phe Gln Asp Lys Leu Ile Pro Glu Ser  
 1425 1430 1435 1440  
 Lys Leu Thr Leu Thr Leu Met Ala Ala Asn Ala Ala Trp His Met Gly  
 1445 1450 1455  
 Glu Trp Asp His Met Ala Glu Tyr Val Ser Arg Leu Asp Asp Gly Asp  
 1460 1465 1470  
 Glu Asn Lys Leu Arg Ile Leu Gly Asn Thr Thr Ala Ser Gly Asp Gly  
 1475 1480 1485  
 Ser Ser Asn Gly Ala Phe Phe Arg Ala Val Leu Ser Val Arg Cys Lys  
 1490 1495 1500  
 Lys Tyr Glu Glu Ala Arg Val Tyr Val Glu Arg Ala Arg Arg Cys Leu  
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 Ala Thr Glu Leu Ala Ala Leu Val Leu Glu Ser Tyr Glu Arg Ala Tyr  
 1525 1530 1535  
 Asn Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu Glu Glu Val Ile  
 1540 1545 1550  
 Asp Tyr Cys Thr Leu Pro Met Glu Ser Pro Ile Ala Asp Ser Arg Arg  
 1555 1560 1565  
 Glu Leu Ile Arg Asn Met Trp Asn Glu Arg Ile Lys Gly Thr Lys Arg  
 1570 1575 1580  
 Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg Glu Leu Val Leu  
 1585 1590 1595 1600  
 Pro Pro Asn Glu Asp Arg Asp Thr Trp Ile Lys Phe Ala Lys Leu Cys  
 1605 1610 1615  
 Trp Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr Leu Val Lys Leu  
 1620 1625 1630  
 Leu Gln Phe Asp Pro Glu Ser Ser Pro Glu Leu Thr Leu Tyr His Gly

## PhoenixTemp32470.tmp.txt

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 Asp Glu Leu Lys Arg Arg Asp Ala Phe Cys Arg Leu Gln Asp Leu Ser  
 1665 1670 1675 1680  
 Val Gln Leu Ala Thr Ala Thr Asn Ser Tyr Ser Gly Thr Leu Ala Ser  
 1685 1690 1695  
 Gln Val Ala Thr Ser Asn Ala Gly Val Pro Leu Ile Ala Arg Val Tyr  
 1700 1705 1710  
 Leu Thr Leu Ala Ser Trp Lys Arg Ala Leu Ser Pro Gly Leu Asp Asp  
 1715 1720 1725  
 Asp Ser Ile Gln Glu Ile Leu Val Ser Tyr Lys Asn Ala Thr Leu Asn  
 1730 1735 1740  
 Ala Lys Asp Trp Gly Lys Ala Trp His Leu Trp Ala Leu Phe Asn Thr  
 1745 1750 1755 1760  
 Glu Val Met Ser Arg Tyr Thr Leu Arg Gly Arg Pro Asp Ile Ala Gly  
 1765 1770 1775  
 Lys Tyr Val Val Ala Ala Val Thr Gly Tyr Phe Tyr Ser Ile Ala Cys  
 1780 1785 1790  
 Ala Ser Thr Thr Lys Gly Val Asp Asp Ser Leu Gln Asp Ile Leu Arg  
 1795 1800 1805  
 Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ser Glu Val Gln Met  
 1810 1815 1820  
 Ala Leu Gln Lys Gly Phe Ser Leu Val Asn Ile Glu Met Trp Leu Val  
 1825 1830 1835 1840  
 Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Lys Ile Val  
 1845 1850 1855  
 Arg Glu Leu Ile Gln Ser Leu Leu Val Arg Ile Gly Lys Asp His Pro  
 1860 1865 1870  
 Gln Asp Met Ser Ser Ile Lys Arg Asn Asn Leu Glu Lys Ile Leu Lys  
 1875 1880 1885  
 Ile Glu Gly Thr Glu Phe Ile Ala Gln Ala Leu Met Tyr Pro Leu Leu  
 1890 1895 1900  
 Val Ala Cys Lys Ser Ile Ser Ile Leu Arg Gln Arg Ala Ala Gln Glu  
 1905 1910 1915 1920  
 Val Val Asp Lys Ile Arg Gln His Ser Gly Gly Leu Val Asp Gln Ala  
 1925 1930 1935  
 Gln Leu Val Ser Lys Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu  
 1940 1945 1950  
 Met Trp His Glu Ala Leu Glu Glu Ala Ser Arg Met Tyr Phe Gly Glu  
 1955 1960 1965  
 His Asn Ile Glu Gly Met Leu Ala Val Leu Glu Pro Leu His Ala Met  
 1970 1975 1980  
 Leu Glu Arg Gly Pro Glu Thr Ile Lys Glu Asn Thr Phe Ile Gln Ala  
 1985 1990 1995 2000  
 Tyr Gly His Glu Leu Glu Ala His Glu Cys Cys Leu Lys Tyr Arg  
 2005 2010 2015  
 Ala Thr Gly Glu Asp Ala Glu Leu Thr Lys Ala Trp Asp Leu Tyr Tyr  
 2020 2025 2030  
 His Val Phe Arg Arg Ile Asp Lys Gln Leu Pro Ser Leu Thr Thr Leu  
 2035 2040 2045  
 Asp Leu His Ser Val Ser Pro Glu Leu Leu Glu Cys Arg Lys Leu Glu  
 2050 2055 2060  
 Leu Ala Val Pro Gly Thr Tyr Ser Ala Asp Ala Pro Leu Val Thr Ile  
 2065 2070 2075 2080  
 Glu Tyr Phe Val Pro Gln Leu Ile Val Ile Thr Ser Lys Gln Arg Pro  
 2085 2090 2095  
 Arg Lys Leu Thr Ile His Gly Ser Asp Gly Asn Asp Tyr Ala Phe Leu  
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 Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu  
 2115 2120 2125  
 Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ser Glu  
 2130 2135 2140  
 Lys Asp Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn  
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 Ser Gly Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu  
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 2180 2185 2190



## PhoenixTemp32470.tmp.txt

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 Asp Leu Ala Lys Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val Trp  
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 Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met  
 2245 2250 2255  
 Val Gly Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met  
 2260 2265 2270  
 Leu Asp Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys  
 2275 2280 2285  
 Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe  
 2290 2295 2300  
 Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu  
 2305 2310 2315 2320  
 Gly Thr Phe Arg Thr Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr  
 2325 2330 2335  
 Asn Lys Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro  
 2340 2345 2350  
 Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Val Thr  
 2355 2360 2365  
 Asn Tyr Gly Asn Ala His Ser His Thr Val Val Asn Ser Glu Glu Ala  
 2370 2375 2380  
 Ala Asn Arg Glu Leu Met Gln Pro Pro Arg Gly Ala Arg Glu Arg Glu  
 2385 2390 2395 2400  
 Leu Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val Leu Asn  
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 Glu Arg Ala Val Ala Val Met Ala Arg Met Ser His Lys Leu Thr Gly  
 2420 2425 2430  
 Arg Asp Phe Ser Ser Gly Ser Ser Leu Ser Gly Ala Gly Ser Ser Thr  
 2435 2440 2445  
 Gln His Gly Asn Glu His Leu Ala Ser Gly Asp Thr Arg Glu Val Glu  
 2450 2455 2460  
 Pro Gly Leu Ser Val Lys Val Gln Val Gln Arg Leu Ile Leu Gln Ala  
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 Trp

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 Asp Leu Ile Ala Lys Glu His Gly Phe Asn Ile Ala Ala Tyr Ile Ser  
 20 25 30  
 tcg gga gcg gat gtt att gct gcc gcc cta aga aaa cat gtt gag gaa 144  
 Ser Gly Ala Asp Val Ile Ala Ala Leu Arg Lys His Val Glu Glu  
 35 40 45  
 gaa gct cga gat ctg agt ggc gag gct ttt ctg aga ttt atg gaa cag 192  
 Glu Ala Arg Asp Leu Ser Gly Glu Ala Phe Leu Arg Phe Met Glu Gln  
 50 55 60  
 ctc tat gaa cag ata tgt agt ctc ttg caa agc aac gat gtt gct gaa 240  
 Leu Tyr Glu Gln Ile Cys Ser Leu Leu Gln Ser Asn Asp Val Ala Glu  
 65 70 75 80  
 aat tta ctt gct ctt cgt gct att gat gct ttg atc gat atg cct ttc 288  
 Asn Leu Leu Ala Leu Arg Ala Ile Asp Ala Leu Ile Asp Met Pro Phe  
 85 90 95

## PhoenixTemp32470.tmp.txt

gga Gly	gaa Glu	ggt Gly	gct Ala 100	tca Ser	aag Lys	ggt Val	tct Ser	aag Lys 105	ttc Phe	gca Ala	aat Asn	ttc Phe	ttg Arg 110	cga Thr	act	336
ggt Val	ttt Phe	gaa Glu 115	gtc Val	aag Lys	cgt Arg	gat Asp	cct Pro 120	gaa Glu	ggt Val	cta Leu	ggt Val	cca Pro 125	gca Ala	agc Ser	gca Ala	384
gtg Val	ctt Leu 130	ggc Gly	cat His	tta Leu	gca Ala	aaa Lys 135	gct Ala	ggc Gly	ggt Gly	gca Ala	atg Met 140	act Thr	gca Ala	gat Asp	gag Glu	432
gtg Val 145	gag Glu	cgt Arg	cag Gln	att Ile	aaa Lys 150	acg Thr	gct Ala	tta Leu	gga Gly	tgg Trp 155	ctt Leu	ggg Gly	gat Asp	cga Arg 160		480
gtg Val	gag Glu	tat Tyr	cgc Arg	cgc Arg 165	ttt Phe	gct Ala	tct Ser	gtc Val	ctt Leu 170	att Ile	ctc Leu	aaa Lys	gag Glu	atg Met 175	gct Ala	528
gaa Glu	aat Asn	gca Ala	tca Ser 180	aca Thr	ggt Val	ttc Phe	aat Asn	ggt Val 185	cat His	ggt Val	cct Pro	gaa Glu	ttt Phe 190	ggt Val	gat Asp	576
gct Ala	ata Ile	tgg Trp 195	gta Val	gca Ala	ctg Leu	aga Arg	gat Asp 200	ccc Pro	aaa Lys	cag Gln	gct Ala	ggt Val 205	cgt Arg	gag Glu	cga Arg	624
gca Ala 210	gtg Val	gaa Glu	gca Ala	ttg Leu	cgt Arg	gcc Ala 215	tgt Cys	ctc Leu	cat His	ggt Val	att Ile 220	gaa Glu	aaa Lys	cgt Arg	gag Glu	672
aca Thr 225	cgt Arg	tgg Trp	cgt Arg	gtg Val	caa Gln 230	tgg Trp	tat Tyr	tac Tyr	cgc Arg	atg Met 235	tgt Cys	gaa Glu	gca Ala	gca Ala	cag Gln 240	720
ggt Val	ggt Gly	ctt Leu	gga Gly	aaa Lys 245	aat Asn	gcc Ala	tct Ser	ggt Val	cat His 250	agc Ser	att Ile	cat His	ggc Gly	tcg Ser 255	cta Leu	768
ttg Leu	gct Ala	ggt Val	gga Gly 260	gaa Glu	tta Leu	ttg Leu	agg Arg	aat Asn 265	act Thr	ggg Gly	gag Glu	ttt Phe 270	atg Met	atg Met	tct Ser	816
agg Arg	tac Tyr	aga Arg 275	gaa Glu	gtg Val	gct Ala	gat Asp	ata Ile 280	gtc Val	ctc Leu	aat Asn	tac Tyr	cta Leu 285	aga Arg	cac His	cgg Arg	864
gat Asp	cag Gln 290	ctt Leu	ggt Val	cgt Arg	cgt Arg	agt Ser 295	ata Ile	act Thr	tcg Ser	ctt Leu	ctt Leu 300	cct Pro	cga Arg	att Ile	gct Ala	912
cac His 305	ttc Phe	ctg Leu	cgt Arg	gac Asp	aga Arg 310	ttt Phe	gtg Val	acc Thr	aac Asn	tac Tyr 315	tta Leu	aag Lys	att Ile	tgc Cys	atg Met 320	960
gat Asp	cat His	atc Ile	ttg Leu	ttt Phe 325	ggt Val	tta Leu	cgt Arg	aca Thr	ccg Pro 330	gat Asp	gag Glu	cgt Arg	gct Ala	agt Ser 335	ggc Gly	1008
ttt Phe	ggt Val	gct Ala	ctt Leu 340	gga Gly	gag Glu	atg Met	gct Ala	ggc Gly 345	gct Ala	ggt Leu	gct Ala	gaa Glu 350	ctt Leu	gtg Val		1056
ccc Pro	tat Tyr	ttg Leu 355	cct Pro	tta Leu	att Ile	acc Thr	tca Ser 360	cac His	ttg Leu	cat His	gat Asp	gcg Ala 365	att Ile	gct Ala	cct Pro	1104
cgt Arg	agg Arg 370	gga Gly	cgc Arg	cca Pro	tct Ser	ctt Leu 375	gag Glu	gca Ala	att Ile	tct Ser	tgt Cys 380	gga Val	agt Ser	ttc Phe		1152
gca Ala 385	aaa Lys	gct Ala	atg Met	ggt Gly	cct Pro 390	gca Ala	atg Met	gaa Glu	cct Pro	cat His 395	ata Ile	cgt Arg	ggt Gly	gga Gly	cta Leu 400	1200
cta Leu	gat Asp	gcg Ala	atg Met	ttt Phe 405	tct Ser	gct Ala	ggt Gly	ctt Leu	tct Ser 410	gat Asp	aaa Lys	ctt Leu	gta Val 415	gag Glu	gca Ala	1248
ctt Leu	gag Glu	tct Ser	ata Ile 420	agt Ser	acc Thr	agc Ser	atc Ile	cca Pro 425	tct Ser	cta Leu	ctg Leu	cca Pro	aca Thr 430	ata Ile	cag Gln	1296
gaa Glu	cga Arg	ttg Leu 435	ttg Leu	gat Asp	tgt Cys	ata Ile	tct Ser 440	caa Gln	gca Ala	ctg Leu	cca Pro	aag Lys 445	tca Ser	tcc Ser	gtg Val	1344
agg Arg	cct Pro 450	ggt Gly	gct Ala	gct Ala	ggt Val	ggc Gly 455	cga Arg	gga Gly	agc Ser	aga Arg	tca Ser 460	agc Ser	agt Ser	ttg Leu	cag Gln	1392

## PhoenixTemp32470.tmp.txt

cag Gln 465	ttt Phe	gtg Val	gat Asp	tct Ser	ggt Gly 470	ggt Gly	cca Pro	ggt Val	ctt Leu	gtg Val 475	cag Gln	ctt Leu	gca Ala	ttg Leu	ggg Gly 480	1440
act Thr	cta Leu	gca Ala	aat Asn	ttc Phe 485	aac Asn	ttt Phe	aag Lys	ggt Gly	cat His 490	gag Glu	ctt Leu	ctg Leu	gaa Glu	ttt Phe 495	gct Ala	1488
aga Arg	gag Glu	agt Ser	gtc Val 500	atc Ile	ctt Leu	tat Tyr	ctg Leu	gaa Glu 505	gat Asp	gag Glu	gat Asp	tgc Cys	agt Ser 510	acc Thr	cgt Arg	1536
aaa Lys	gct Ala	gct Ala 515	gca Ala	aca Thr	tgc Cys	tgc Cys	tgc Cys 520	aaa Lys	cta Leu	ggt Val	gcg Ala 525	cat His	tcc Ser	ctt Leu	tca Ser	1584
gct Ala 530	tcg Ser	tct Ser	agc Ser	tca Ser	cag Gln	ttt Phe 535	agc Ser	tca Ser	aac Asn	cgg Arg	cca Pro 540	aat Asn	cgt Arg	atg Met	gga Gly	1632
gga Gly 545	gct Ala	aag Lys	cgt Arg	cgc Arg	cgc Arg 550	ctt Leu	gta Val	gaa Glu	gag Glu	att Ile 555	gtg Val	gag Glu	aaa Lys	ctt Leu	ctt Leu 560	1680
atg Met	gct Ala	gca Ala	gtt Val	gct Ala 565	gat Asp	gct Ala	gat Asp	gtt Val	ggt Gly 570	ggt Val	aga Arg	agt Ser	tct Ser	gta Val 575	ttc Phe	1728
aag Lys	gct Ala	cta Leu	tat Tyr 580	cgg Arg	aat Asn	cca Pro	tct Ser	ttt Phe 585	gat Asp	gat Asp	ttt Phe	ttg Leu	gcc Ala 590	caa Gln	gct Ala	1776
gac Asp	atc Ile	atg Met 595	act Thr	tca Ser	att Ile	ttt Phe	gtt Val 600	gcc Ala	tta Leu	aat Asn	gat Asp	gag Glu	gag Glu	tac Tyr	cat His	1824
gtc Val	aga Arg 610	gaa Glu	ttg Leu	gca Ala	ata Ile	tca Ser 615	gtt Val	gca Ala	ggt Gly	aga Arg	ttg Leu 620	tct Ser	gaa Glu	aaa Lys	aat Asn	1872
cct Pro 625	gct Ala	tat Tyr	gta Val	ctg Leu	cct Pro 630	gcc Ala	ctt Leu	cgc Arg	cgt Arg	tat Tyr 635	ctt Leu	ata Ile	cag Gln	ttg Leu	ctc Leu 640	1920
aca Thr	tat Tyr	ctt Leu	gac Asp	caa Gln 645	agt Ser	atg Met	gat Asp	agc Ser	aag Lys 650	tgt Cys	aga Arg	gag Glu	gaa Glu	agt Ser 655	gct Ala	1968
aga Arg	ttg Leu	ttg Leu	ggt Gly 660	tgc Cys	tta Leu	att Ile	agg Arg 665	agt Ser	tgt Cys	gca Ala	cga Arg	ctc Leu	att Ile 670	ctt Leu	cct Pro	2016
tat Tyr	att Ile	gct Ala 675	cca Pro	att Ile	cac His	aag Lys	gca Ala 680	cta Leu	gtg Val	gct Ala	agg Arg	tta Leu 685	cgt Arg	gaa Glu	gga Gly	2064
aca Thr	gga Gly 690	ccg Pro	aat Asn	gct Ala	aat Asn	aat Asn 695	gcg Ala	ctt Leu	gca Ala	gca Ala	gga Gly 700	gtg Val	ctt Leu	gct Ala	act Thr	2112
gtt Val 705	gga Gly	gag Glu	ttg Leu	gcc Ala	aaa Lys 710	gtg Val	ggt Gly	ggt Gly	ttt Phe	gca Ala 715	atg Met	agg Arg	caa Gln	tat Tyr	ctt Leu 720	2160
cct Pro	gag Glu	cta Leu	atg Met	cct Pro 725	cta Leu	gtt Val	gtg Val	gat Asp	gct Ala 730	ctt Leu	ttg Leu	gat Asp	gga Gly	ggt Gly 735	gct Ala	2208
gtt Val	agt Ser	aaa Lys	agg Arg 740	gaa Glu	gtg Val	gca Ala	gta Val	gca Ala 745	acc Thr	ctt Leu	gga Gly	caa Gln	gtt Val 750	atc Ile	caa Gln	2256
agc Ser	aca Thr	ggc Gly 755	tat Tyr	gtt Val	atc Ile	tct Ser	cct Pro 760	tat Tyr	aat Asn	gag Glu	tat Tyr	cct Pro 765	cca Pro	ttg Leu	ctt Leu	2304
ggt Gly 770	tta Leu	ctc Leu	ttg Leu	aaa Lys	ttg Leu	ctg Leu	aat Asn 775	ggc Gly	gaa Glu	ttg Leu	gaa Glu 780	tgg Trp	tct Ser	act Thr	aga Arg	2352
ctg Leu 785	gaa Glu	gtg Val	ctg Leu	aag Lys	gtt Val 790	tta Leu	ggt Gly	att Ile	atg Met	ggt Gly 795	gca Ala	ttg Leu	gac Asp	ccg Pro	cac His 800	2400
gca Ala	cat His	aag Lys	cgt Arg	aat Asn 805	caa Gln	cat His	aag Lys	cta Leu	cct Pro 810	ggt Gly	caa Gln	cat His	agg Arg	gag Glu 815	gtc Val	2448
ttg Leu	cgg Arg	cca Pro	acg Thr 820	atg Met	gaa Glu	aca Thr	gca Ala	caa Gln 825	cat His	att Ile	gtt Val	tcc Ser	atg Met 830	gaa Glu	gaa Glu	2496

## PhoenixTemp32470.tmp.txt

ctg	cca	act	gat	ttc	tgg	cca	tcc	ttt	tca	gca	tct	gag	gac	tat	tat	2544
Leu	Pro	Thr	Asp	Phe	Trp	Pro	Ser	Phe	Ser	Ala	Ser	Glu	Asp	Tyr	Tyr	
		835					840					845				
tca	aca	gtt	gca	att	agt	tct	ctc	atg	cgg	att	ctt	cat	gat	cct	tcc	2592
Ser	Thr	Val	Ala	Ile	Ser	Ser	Leu	Met	Arg	Ile	Leu	His	Asp	Pro	Ser	
	850					855					860					
ctt	tca	agt	tat	cat	cag	atg	gtg	gtt	ggc	tct	ctt	ata	ttt	att	ttt	2640
Leu	Ser	Ser	Tyr	His	Gln	Met	Val	Val	Gly	Ser	Leu	Ile	Phe	Ile	Phe	
865					870					875					880	
aag	tcg	atg	gga	ctt	ggc	tgt	gtt	cca	tat	tta	cca	aag	gtt	ctc	cct	2688
Lys	Ser	Met	Gly	Leu	Gly	Cys	Val	Pro	Tyr	Leu	Pro	Lys	Val	Leu	Pro	
			885						890					895		
gag	cta	ttc	cgc	gct	gtt	cgc	atg	tgt	gag	gat	ggg	ggg	ttg	aaa	gag	2736
Glu	Leu	Phe	Arg	Ala	Val	Arg	Met	Cys	Glu	Asp	Gly	Gly	Leu	Lys	Glu	
			900					905					910			
ttc	att	acc	tgg	aag	ctt	ggg	aca	ttg	gta	tct	att	gtt	cga	cag	gtt	2784
Phe	Ile	Thr	Trp	Lys	Leu	Gly	Thr	Leu	Val	Ser	Ile	Val	Arg	Gln	Val	
		915					920					925				
ctt	cac	ctt	gtt	gaa	caa	cta	tgc	ttg	gca	ctg	aat	gac	gaa	ttc	aga	2832
Leu	His	Leu	Val	Glu	Gln	Leu	Cys	Leu	Ala	Leu	Asn	Asp	Glu	Phe	Arg	
	930					935					940					
atg	tat	ata	ctt	cac	ata	ttg	cca	agt	tgt	att	caa	gtc	ctg	ggg	gat	2880
Met	Tyr	Ile	Leu	His	Ile	Leu	Pro	Ser	Cys	Ile	Gln	Val	Leu	Gly	Asp	
945					950					955					960	
gct	gaa	cgc	tgc	aat	gac	tat	tac	tat	gtt	cct	gac	ata	ttg	cac	acc	2928
Ala	Glu	Arg	Cys	Asn	Asp	Tyr	Tyr	Tyr	Val	Pro	Asp	Ile	Leu	His	Thr	
				965					970					975		
cta	gag	gtg	ttt	gga	gga	aat	ttg	gat	gag	cac	atg	cac	ttg	gtt	gct	2976
Leu	Glu	Val	Phe	Gly	Gly	Asn	Leu	Asp	Glu	His	Met	His	Leu	Val	Ala	
			980					985					990			
cca	gta	ctt	gtt	cgg	tta	ttt	aaa	gtg	gag	cta	gtt	gat	atc	aga	cgc	3024
Pro	Val	Leu	Val	Arg	Leu	Phe	Lys	Val	Glu	Leu	Val	Asp	Ile	Arg	Arg	
		995					1000					1005				
cgt	gcc	att	gtc	act	ttg	act	aaa	ctc	ata	cct	acg	gtg	cag	ttg	tgc	3072
Arg	Ala	Ile	Val	Thr	Leu	Thr	Lys	Leu	Ile	Pro	Thr	Val	Gln	Leu	Cys	
	1010				1015					1020						
atc	acc	aga	ttg	tta	att	tgt	ctt	tct	gtg	gct	aga	aac	aat	gat	gat	3120
Ile	Thr	Arg	Leu	Leu	Ile	Cys	Leu	Ser	Val	Ala	Arg	Asn	Asn	Asp	Asp	
1025					1030				1035					1040		
cta	cgg	aaa	gat	gca	gca	gag	gcg	ctt	tgt	tgt	ctt	gca	cat	gct	ctt	3168
Leu	Arg	Lys	Asp	Ala	Ala	Glu	Ala	Leu	Cys	Cys	Leu	Ala	His	Ala	Leu	
			1045					1050					1055			
gga	gaa	gat	ttt	aca	ata	ttc	gtg	tca	tca	ata	cac	aag	ctt	ctt	gtg	3216
Gly	Glu	Asp	Phe	Thr	Ile	Phe	Val	Ser	Ser	Ile	His	Lys	Leu	Leu	Val	
			1060				1065					1070				
aag	cac	cat	atg	cgg	tat	aga	aaa	tgg	gat	gag	att	gaa	aat	cga	tta	3264
Lys	His	His	Met	Arg	Tyr	Arg	Lys	Trp	Asp	Glu	Ile	Glu	Asn	Arg	Leu	
		1075					1080					1085				
cta	agg	cga	gag	cca	ctc	atc	tct	gag	aac	tta	tca	gta	caa	aag	tac	3312
Leu	Arg	Arg	Glu	Pro	Leu	Ile	Ser	Glu	Asn	Leu	Ser	Val	Gln	Lys	Tyr	
	1090				1095					1100						
aca	caa	tgc	ccg	cct	gaa	gtc	att	agt	gac	cct	ctt	gat	gat	ttt	ggg	3360
Thr	Gln	Cys	Pro	Pro	Glu	Val	Ile	Ser	Asp	Pro	Leu	Asp	Asp	Phe	Gly	
	1105				1110				1115						1120	
ggg	gtt	cct	tct	gag	gag	gct	gat	gaa	aca	cag	cgg	caa	cca	aga	agt	3408
Gly	Val	Pro	Ser	Glu	Glu	Ala	Asp	Glu	Thr	Gln	Arg	Gln	Pro	Arg	Ser	
			1125					1130					1135			
cat	caa	gtc	aat	gat	gtt	cga	ctg	aga	agt	gcc	ggg	gag	gct	tct	caa	3456
His	Gln	Val	Asn	Asp	Val	Arg	Leu	Arg	Ser	Ala	Gly	Glu	Ala	Ser	Gln	
			1140				1145					1150				
agg	agc	act	aga	gaa	gat	tgg	gct	gaa	tgg	atg	agg	cac	ttc	agt	att	3504
Arg	Ser	Thr	Arg	Glu	Asp	Trp	Ala	Glu	Trp	Met	Arg	His	Phe	Ser	Ile	
		1155					1160					1165				
gcg	ctt	ctc	aaa	gaa	tca	cca	tct	cct	gct	tta	cgc	act	tgc	gca	aga	3552
Ala	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Thr	Cys	Ala	Arg	
	1170				1175				1180							
cta	gca	caa	ctt	cag	cct	tct	gtt	ggg	cgt	gag	ttg	ttt	gct	gcg	ggc	3600
Leu	Ala	Gln	Leu	Gln	Pro	Ser	Val	Gly	Arg	Glu	Leu	Phe	Ala	Ala	Gly	
	1185			1190					1195						1200	

## PhoenixTemp32470.tmp.txt

```

ttt gca agt tgc tgg gcc caa atg aat gaa aca tcc cag gag caa ctt 3648
Phe Ala Ser Cys Trp Ala Gln Met Asn Glu Thr Ser Gln Glu Gln Leu
1205 1210 1215
gtg aga agt ctc aag act gca ttc tca tct cag aac ata cct cca gaa 3696
Val Arg Ser Leu Lys Thr Ala Phe Ser Ser Gln Asn Ile Pro Pro Glu
1220 1225 1230
att ctt gcc aca ctg ctg aac ttg gca gag ttt atg gaa cat gat gag 3744
Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Glu
1235 1240 1245
aag ccg ctt cca att gat aca aga ctg ctc ggt gca ctt gct gaa aag 3792
Lys Pro Leu Pro Ile Asp Thr Arg Leu Leu Gly Ala Leu Ala Glu Lys
1250 1255 1260
tgt cga gca ttt gca aaa gca ctg cat tat aaa gaa atg gag ttt gaa 3840
Cys Arg Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Met Glu Phe Glu
1265 1270 1275 1280
gct gta tgt tcc aag aag atg ggt gca aat cct gtt act gtt gtt gaa 3888
Ala Val Cys Ser Lys Lys Met Gly Ala Asn Pro Val Thr Val Val Glu
1285 1290 1295
tct ctt att cat att aac aac caa tta cac cag cat gag gca gct att 3936
Ser Leu Ile His Ile Asn Asn Gln Leu His Gln His Glu Ala Ala Ile
1300 1305 1310
ggg ata ttg act tac tca caa caa cat tta gaa gtt caa ttg aag gag 3984
Gly Ile Leu Thr Tyr Ser Gln Gln His Leu Glu Val Gln Leu Lys Glu
1315 1320 1325
tcc tgg tac gaa aaa ttg cac cgt tgg gat gag gcc ttg aag gca tac 4032
Ser Trp Tyr Glu Lys Leu His Arg Trp Asp Glu Ala Leu Lys Ala Tyr
1330 1335 1340
aaa gca aag tca tct caa gca tct ggg cca tta caa aac ttg gat gct 4080
Lys Ala Lys Ser Ser Gln Ala Ser Gly Pro Leu Gln Asn Leu Asp Ala
1345 1350 1355 1360
aca tta ggt cga atg agg tgt cta gca gcc ttg gcc cgt tgg gaa gat 4128
Thr Leu Gly Arg Met Arg Cys Leu Ala Ala Leu Ala Arg Trp Glu Asp
1365 1370 1375
tta agt gca tta tgc agg gag caa tgg act ggc tca gaa cca tct gcc 4176
Leu Ser Ala Leu Cys Arg Glu Gln Trp Thr Gly Ser Glu Pro Ser Ala
1380 1385 1390
cga cta gaa atg gct ccg atg gct gcc aat gct gct tgg cat atg ggt 4224
Arg Leu Glu Met Ala Pro Met Ala Ala Asn Ala Ala Trp His Met Gly
1395 1400 1405
gag tgg gac cac atg gct gaa tat gtt tct cgt ctg gat gat ggg gat 4272
Glu Trp Asp His Met Ala Glu Tyr Val Ser Arg Leu Asp Asp Gly Asp
1410 1415 1420
gaa aac aag ctc cggtggt aac aca aca gct agt ggt gac gga 4320
Glu Asn Lys Leu Arg Ile Leu Gly Asn Thr Thr Ala Ser Gly Asp Gly
1425 1430 1435 1440
agc agc aat ggt gct ttc ttt agg gct gtt ctt tca gtt cgt tgc aaa 4368
Ser Ser Asn Gly Ala Phe Phe Arg Ala Val Leu Ser Val Arg Cys Lys
1445 1450 1455
aag tat gaa gaa gct cgt gta tat gtt gag aga gct cggtgtgt ttg 4416
Lys Tyr Glu Glu Ala Arg Val Tyr Val Glu Arg Ala Arg Arg Cys Leu
1460 1465 1470
gct aca gaa ctt gca gca ttg gta ctt gag agt tat gag cgt gct tat 4464
Ala Thr Glu Leu Ala Ala Leu Val Leu Glu Ser Tyr Glu Arg Ala Tyr
1475 1480 1485
aat aat atg gtg cggtgtt caa cag ctt tct gag ctg gaa gag gtg att 4512
Asn Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu Glu Glu Val Ile
1490 1495 1500
gat tac tgc act ctt cca atg gaa agt cca ata gct gac agc cgg agg 4560
Asp Tyr Cys Thr Leu Pro Met Glu Ser Pro Ile Ala Asp Ser Arg Arg
1505 1510 1515 1520
gaa ctt atc cgt aat atg ttg aat gag cgt att aaa gga aca aaa cgg 4608
Glu Leu Ile Arg Asn Met Trp Asn Glu Arg Ile Lys Gly Thr Lys Arg
1525 1530 1535
aat gtt gag gtg ttg caa gcc tta ctt gct gtt aga gag ttg gtt ctc 4656
Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg Glu Leu Val Leu
1540 1545 1550
cct cct aat gaa gac aga gac acc ttg ata aaa ttt gcc aaa ctt tgc 4704
Pro Pro Asn Glu Asp Arg Asp Thr Trp Ile Lys Phe Ala Lys Leu Cys
1555 1560 1565

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tgg aag agt ggc cgc att agt cag gct aaa tct acc tta gtc aaa ctc	4752
Trp Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr Leu Val Lys Leu	
1570 1575 1580	
tta cag ttt gat cca gaa tct tcc cct gaa ttg acg ctg tat cat gga	4800
Leu Gln Phe Asp Pro Glu Ser Ser Pro Glu Leu Thr Leu Tyr His Gly	
1585 1590 1595 1600	
cat cct caa gta gtc ctg gca tac ctg aag tac cag tat gct gtt gga	4848
His Pro Gln Val Leu Ala Tyr Leu Lys Tyr Gln Tyr Ala Val Gly	
1605 1610 1615	
gat gag ctt aaa cga agg gac gcg ttt tgc agg cta cag gat ttg tct	4896
Asp Glu Leu Lys Arg Arg Asp Ala Phe Cys Arg Leu Gln Asp Leu Ser	
1620 1625 1630	
gtg cag ctt gct acc gca aca aat agt tat tct gga aca tta gca agc	4944
Val Gln Leu Ala Thr Ala Thr Asn Ser Tyr Ser Gly Thr Leu Ala Ser	
1635 1640 1645	
cag gtt gcc aca tca aat gct gga gta cca ctt att gct cgc gtc tat	4992
Gln Val Ala Thr Ser Asn Ala Gly Val Pro Leu Ile Ala Arg Val Tyr	
1650 1655 1660	
ttg aca ctt gct agc tgg aag aga gca tta tca cct ggg tta gac gat	5040
Leu Thr Leu Ala Ser Trp Lys Arg Ala Leu Ser Pro Gly Leu Asp Asp	
1665 1670 1675 1680	
gat tct att caa gaa ata ttg gtc tct tac aaa aat gcc aca ctt aat	5088
Asp Ser Ile Gln Glu Ile Leu Val Ser Tyr Lys Asn Ala Thr Leu Asn	
1685 1690 1695	
gcc aag gac tgg ggc aag gca tgg cac tta tgg gcc ttg ttc aac act	5136
Ala Lys Asp Trp Gly Lys Ala Trp His Leu Trp Ala Leu Phe Asn Thr	
1700 1705 1710	
gaa gtc atg tcc cgc tat act ttg cgt ggt cga cca gat att gca gga	5184
Glu Val Met Ser Arg Tyr Thr Leu Arg Gly Arg Pro Asp Ile Ala Gly	
1715 1720 1725	
aaa tat gtt gtt gca gca gta act ggg tat ttc tac tct att gct tgc	5232
Lys Tyr Val Val Ala Ala Val Thr Gly Tyr Phe Tyr Ser Ile Ala Cys	
1730 1735 1740	
gca tcc acg aca aaa ggt gtt gat gat agc tta cag gat atc ctt cgt	5280
Ala Ser Thr Thr Lys Gly Val Asp Asp Ser Leu Gln Asp Ile Leu Arg	
1745 1750 1755 1760	
ctc ttg act ctt tgg ttt aat cat ggg gct acc tca gag gtt caa atg	5328
Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ser Glu Val Gln Met	
1765 1770 1775	
gca ctg cag aaa ggc ttt tca ctt gtc aat ata gaa atg tgg ttg gtt	5376
Ala Leu Gln Lys Gly Phe Ser Leu Val Asn Ile Glu Met Trp Leu Val	
1780 1785 1790	
gtc ctt ccc cag ata att gca agg atc cat tca aat aat aaa ata gtg	5424
Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Lys Ile Val	
1795 1800 1805	
aga gaa ctg ata cag tca ttg ctg gtt cga att gga aag gat cat cca	5472
Arg Glu Leu Ile Gln Ser Leu Val Arg Ile Gly Lys Asp His Pro	
1810 1815 1820	
cag gac atg tca tct att aaa agg aat aac cta gag aaa ata tta aaa	5520
Gln Asp Met Ser Ser Ile Lys Arg Asn Asn Leu Glu Lys Ile Leu Lys	
1825 1830 1835 1840	
att gaa gga act gaa ttt ata gca cag gca ttg atg tat cct ctg ttg	5568
Ile Glu Gly Thr Glu Phe Ile Ala Gln Ala Leu Met Tyr Pro Leu Leu	
1845 1850 1855	
gtt gct tgc aaa tca ata agc ata tta aga caa cga gcg gcg caa gag	5616
Val Ala Cys Lys Ser Ile Ser Ile Leu Arg Gln Arg Ala Ala Gln Glu	
1860 1865 1870	
gtc gtc gat aag atc cgc caa cat agt gga ggt ctt gtt gat cag gca	5664
Val Val Asp Lys Ile Arg Gln His Ser Gly Gly Leu Val Asp Gln Ala	
1875 1880 1885	
cag ctt gtt tca aag gaa ctg ata cga gtt gcc att ctg tgg cat gag	5712
Gln Leu Val Ser Lys Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu	
1890 1895 1900	
atg tgg cat gag gct ctt gag gaa gct agc agg atg tat ttt ggt gag	5760
Met Trp His Glu Ala Leu Glu Glu Ala Ser Arg Met Tyr Phe Gly Glu	
1905 1910 1915 1920	
cac aat att gag gga atg ctt gca gtg ctt gaa cca ttg cat gca atg	5808
His Asn Ile Glu Gly Met Leu Ala Val Leu Glu Pro Leu His Ala Met	
1925 1930 1935	

## PhoenixTemp32470.tmp.txt

ctc gag agg ggt cct gag aca ata aaa gaa aat act ttc att cag gct 5856  
 Leu Glu Arg Gly Pro Glu Thr Ile Lys Glu Asn Thr Phe Ile Gln Ala  
 1940 1945 1950

tat ggt cat gaa tta ctg gaa gcc cac gaa tgc tgt tta aaa tat cgg 5904  
 Tyr Gly His Glu Leu Leu Glu Ala His Glu Cys Cys Leu Lys Tyr Arg  
 1955 1960 1965

gct aca gga gag gat gct gag tta act aag gca tgg gat ttg tat tac 5952  
 Ala Thr Gly Glu Asp Ala Glu Leu Thr Lys Ala Trp Asp Leu Tyr Tyr  
 1970 1975 1980

cat gtt ttc aga aga ata gac aaa cag ctt cca agt ctt aca act ttg 6000  
 His Val Phe Arg Arg Ile Asp Lys Gln Leu Pro Ser Leu Thr Thr Leu  
 1985 1990 1995 2000

gat ttg cac tct gtg tca ccc gag ctt ctt gag tgt cga aag ttg gag 6048  
 Asp Leu His Ser Val Ser Pro Glu Leu Leu Glu Cys Arg Lys Leu Glu  
 2005 2010 2015

ctt gct gta cca gga act tat tct gca gat gca cca ctt gtg aca att 6096  
 Leu Ala Val Pro Gly Thr Tyr Ser Ala Asp Ala Pro Leu Val Thr Ile  
 2020 2025 2030

gag tat ttt gtt cct caa ttg att gtt ata aca tct aaa caa aga cca 6144  
 Glu Tyr Phe Val Pro Gln Leu Ile Val Ile Thr Ser Lys Gln Arg Pro  
 2035 2040 2045

aga aaa ctg aca att cat gga agt gat ggc aac gat tat gca ttc ttg 6192  
 Arg Lys Leu Thr Ile His Gly Ser Asp Gly Asn Asp Tyr Ala Phe Leu  
 2050 2055 2060

ctg aaa ggc cat gaa gat tta cgg cag gat gag cgt gta atg cag ctt 6240  
 Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu  
 2065 2070 2075 2080

ttt ggc ctg gtg aat act ctg ctg gag aac tct agg aaa act tca gag 6288  
 Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ser Glu  
 2085 2090 2095

aaa gat ctg tca atc caa aga tat gct gtc ata cct ttg tct cct aac 6336  
 Lys Asp Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn  
 2100 2105 2110

agt ggt tta att gga tgg gtt cca aat tgt gac aca ctt cat gcc ctg 6384  
 Ser Gly Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu  
 2115 2120 2125

atc cgt gaa tat aga gat gcc agg aag att ttc tta aat cag gag cac 6432  
 Ile Arg Glu Tyr Arg Asp Ala Arg Lys Ile Phe Leu Asn Gln Glu His  
 2130 2135 2140

cga tgt atg ttg agt ttt gca cct gat tat gac cac tta ccc ctc atc 6480  
 Arg Cys Met Leu Ser Phe Ala Pro Asp Tyr Asp His Leu Pro Leu Ile  
 2145 2150 2155 2160

gcc aaa gta gaa gta ttt cag cat gcc cta gaa aac agt gaa gga aat 6528  
 Ala Lys Val Glu Val Phe Gln His Ala Leu Glu Asn Ser Glu Gly Asn  
 2165 2170 2175

gac ctt gca aag gtt ctc tgg ctt aaa agc cga acc tct gaa gta tgg 6576  
 Asp Leu Ala Lys Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val Trp  
 2180 2185 2190

ctt gag cgg cgc aca aat tat acg aga agt ctg gct gtt atg agc atg 6624  
 Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met  
 2195 2200 2205

gtt ggc tat ttg ctt ggt tta gga gat cgg cat cca agt aat ctt atg 6672  
 Val Gly Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met  
 2210 2215 2220

tta gat cgt tat agt gga aaa ata tta cat att gac ttt ggc gat tgc 6720  
 Leu Asp Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys  
 2225 2230 2235 2240

ttt gag gct tca atg aat cgt gaa aag ttt ccc gaa aag gtt cca ttt 6768  
 Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe  
 2245 2250 2255

cgc ttg act aga atg ctt gtg aaa gcc atg gaa gtt agt ggt att gag 6816  
 Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu  
 2260 2265 2270

ggt acc ttc aga acc act tgc gaa aat gtg atg caa gta ctt cga aca 6864  
 Gly Thr Phe Arg Thr Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr  
 2275 2280 2285

aac aag gat agc gtt atg gct atg atg gag gca ttt gtg cat gac cca 6912  
 Asn Lys Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro  
 2290 2295 2300

## PhoenixTemp32470.tmp.txt

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tta atc aat tgg cgt ctg ttc aat ttc aat gaa gtc cct caa gtt aca 6960
Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Val Thr
2305 2310 2315 2320
aac tat gga aat gct cac agt cac aca gtt gtc aat agc gaa gaa gct 7008
Asn Tyr Gly Asn Ala His Ser His Thr Val Val Asn Ser Glu Glu Ala
2325 2330 2335
gct aat cgg gag ctc atg caa cca ccc cgg gga gct cgg gag aga gaa 7056
Ala Asn Arg Glu Leu Met Gln Pro Pro Arg Gly Ala Arg Glu Arg Glu
2340 2345 2350
ctg cta cag gcg gtc aat caa ctc ggt gat gct aac gag gtt ttg aat 7104
Leu Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val Leu Asn
2355 2360 2365
gag cgt gcc gta gct gtg atg gca cga atg agt cat aag ctc aca ggg 7152
Glu Arg Ala Val Ala Val Met Ala Arg Met Ser His Lys Leu Thr Gly
2370 2375 2380
cgc gat ttc tct tcc gga tca tcg ttg tcg ggg gcg gga agc tcc acc 7200
Arg Asp Phe Ser Ser Gly Ser Ser Leu Ser Gly Ala Gly Ser Ser Thr
2385 2390 2395 2400
caa cat ggt aac gag cat ctg gct tca gga gac act cga gag gtg gaa 7248
Gln His Gly Asn Glu His Leu Ala Ser Gly Asp Thr Arg Glu Val Glu
2405 2410 2415
cct ggt tta tcc gtg aag gtt cag gtt cag agg ctt ata ctt caa gcg 7296
Pro Gly Leu Ser Val Lys Val Gln Val Gln Arg Leu Ile Leu Gln Ala
2420 2425 2430
act tcg cat gaa aac ttg tgc caa aac tac gtc ggg tgg tgc ccg ttt 7344
Thr Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe
2435 2440 2445
tgg tga 7350
Trp

```

&lt;210&gt; 2549

&lt;211&gt; 2449

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2549

```

Met Val Lys Gly Ile Glu Glu Gly Ile Asn Pro Ile Thr Ser Phe Asp
1 5 10 15
Asp Leu Ile Ala Lys Glu His Gly Phe Asn Ile Ala Ala Tyr Ile Ser
20 25 30
Ser Gly Ala Asp Val Ile Ala Ala Ala Leu Arg Lys His Val Glu Glu
35 40 45
Glu Ala Arg Asp Leu Ser Gly Glu Ala Phe Leu Arg Phe Met Glu Gln
50 55 60
Leu Tyr Glu Gln Ile Cys Ser Leu Leu Gln Ser Asn Asp Val Ala Glu
65 70 75 80
Asn Leu Leu Ala Leu Arg Ala Ile Asp Ala Leu Ile Asp Met Pro Phe
85 90 95
Gly Glu Gly Ala Ser Lys Val Ser Lys Phe Ala Asn Phe Leu Arg Thr
100 105 110
Val Phe Glu Val Lys Arg Asp Pro Glu Val Leu Val Pro Ala Ser Ala
115 120 125
Val Leu Gly His Leu Ala Lys Ala Gly Gly Ala Met Thr Ala Asp Glu
130 135 140
Val Glu Arg Gln Ile Lys Thr Ala Leu Gly Trp Leu Gly Gly Asp Arg
145 150 155 160
Val Glu Tyr Arg Arg Phe Ala Ser Val Leu Ile Leu Lys Glu Met Ala
165 170 175
Glu Asn Ala Ser Thr Val Phe Asn Val His Val Pro Glu Phe Val Asp
180 185 190
Ala Ile Trp Val Ala Leu Arg Asp Pro Lys Gln Ala Val Arg Glu Arg
195 200 205
Ala Val Glu Ala Leu Arg Ala Cys Leu His Val Ile Glu Lys Arg Glu
210 215 220
Thr Arg Trp Arg Val Gln Trp Tyr Tyr Arg Met Cys Glu Ala Ala Gln
225 230 235 240
Val Gly Leu Gly Lys Asn Ala Ser Val His Ser Ile His Gly Ser Leu
245 250 255

```



## PhoenixTemp32470.tmp.txt

Leu Ala Val Gly Glu Leu Leu Arg Asn Thr Gly Glu Phe Met Met Ser  
 260 270  
 Arg Tyr Arg Glu Val Ala Asp Ile Val Leu Asn Tyr Leu Arg His Arg  
 275 280  
 Asp Gln Leu Val Arg Arg Ser Ile Thr Ser Leu Leu Pro Arg Ile Ala  
 290 300  
 His Phe Leu Arg Asp Arg Phe Val Thr Asn Tyr Leu Lys Ile Cys Met  
 305 310 315 320  
 Asp His Ile Leu Phe Val Leu Arg Thr Pro Asp Glu Arg Ala Ser Gly  
 325 335  
 Phe Val Ala Leu Gly Glu Met Ala Gly Ala Leu Gly Ala Glu Leu Val  
 340 345 350  
 Pro Tyr Leu Pro Leu Ile Thr Ser His Leu His Asp Ala Ile Ala Pro  
 355 360 365  
 Arg Arg Gly Arg Pro Ser Leu Glu Ala Ile Ser Cys Val Gly Ser Phe  
 370 375 380  
 Ala Lys Ala Met Gly Pro Ala Met Glu Pro His Ile Arg Gly Gly Leu  
 385 390 400  
 Leu Asp Ala Met Phe Ser Ala Gly Leu Ser Asp Lys Leu Val Glu Ala  
 405 410 415  
 Leu Glu Ser Ile Ser Thr Ser Ile Pro Ser Leu Leu Pro Thr Ile Gln  
 420 425 430  
 Glu Arg Leu Leu Asp Cys Ile Ser Gln Ala Leu Pro Lys Ser Ser Val  
 435 440 445  
 Arg Pro Gly Ala Ala Val Gly Arg Gly Ser Arg Ser Ser Leu Gln  
 450 455 460  
 Gln Phe Val Asp Ser Gly Gly Pro Val Leu Val Gln Leu Ala Leu Gly  
 465 470 475 480  
 Thr Leu Ala Asn Phe Asn Phe Lys Gly His Glu Leu Leu Glu Phe Ala  
 485 490 495  
 Arg Glu Ser Val Ile Leu Tyr Leu Glu Asp Glu Asp Cys Ser Thr Arg  
 500 505 510  
 Lys Ala Ala Ala Thr Cys Cys Cys Lys Leu Val Ala His Ser Leu Ser  
 515 520 525  
 Ala Ser Ser Ser Gln Phe Ser Ser Asn Arg Pro Asn Arg Met Gly  
 530 535 540  
 Gly Ala Lys Arg Arg Arg Leu Val Glu Glu Ile Val Glu Lys Leu Leu  
 545 550 555 560  
 Met Ala Ala Val Ala Asp Ala Asp Val Gly Val Arg Ser Ser Val Phe  
 565 570 575  
 Lys Ala Leu Tyr Arg Asn Pro Ser Phe Asp Asp Phe Leu Ala Gln Ala  
 580 585 590  
 Asp Ile Met Thr Ser Ile Phe Val Ala Leu Asn Asp Glu Glu Tyr His  
 595 600 605  
 Val Arg Glu Leu Ala Ile Ser Val Ala Gly Arg Leu Ser Glu Lys Asn  
 610 615 620  
 Pro Ala Tyr Val Leu Pro Ala Leu Arg Arg Tyr Leu Ile Gln Leu Leu  
 625 630 635 640  
 Thr Tyr Leu Asp Gln Ser Met Asp Ser Lys Cys Arg Glu Glu Ser Ala  
 645 650 655  
 Arg Leu Leu Gly Cys Leu Ile Arg Ser Cys Ala Arg Leu Ile Leu Pro  
 660 665 670  
 Tyr Ile Ala Pro Ile His Lys Ala Leu Val Ala Arg Leu Arg Glu Gly  
 675 680 685  
 Thr Gly Pro Asn Ala Asn Asn Ala Leu Ala Ala Gly Val Leu Ala Thr  
 690 695 700  
 Val Gly Glu Leu Ala Lys Val Gly Gly Phe Ala Met Arg Gln Tyr Leu  
 705 710 715 720  
 Pro Glu Leu Met Pro Leu Val Val Asp Ala Leu Leu Asp Gly Gly Ala  
 725 730 735  
 Val Ser Lys Arg Glu Val Ala Val Ala Thr Leu Gly Gln Val Ile Gln  
 740 745 750  
 Ser Thr Gly Tyr Val Ile Ser Pro Tyr Asn Glu Tyr Pro Pro Leu Leu  
 755 760 765  
 Gly Leu Leu Leu Lys Leu Leu Asn Gly Glu Leu Glu Trp Ser Thr Arg  
 770 775 780  
 Leu Glu Val Leu Lys Val Leu Gly Ile Met Gly Ala Leu Asp Pro His  
 785 790 795 800  
 Ala His Lys Arg Asn Gln His Lys Leu Pro Gly Gln His Arg Glu Val

## PhoenixTemp32470.tmp.txt

805 810 815  
 Leu Arg Pro Thr Met Glu Thr Ala Gln His Ile Val Ser Met Glu Glu  
 820 825 830  
 Leu Pro Thr Asp Phe Trp Pro Ser Phe Ser Ala Ser Glu Asp Tyr Tyr  
 835 840 845  
 Ser Thr Val Ala Ile Ser Ser Leu Met Arg Ile Leu His Asp Pro Ser  
 850 855 860  
 Leu Ser Ser Tyr His Gln Met Val Val Gly Ser Leu Ile Phe Ile Phe  
 865 870 875 880  
 Lys Ser Met Gly Leu Gly Cys Val Pro Tyr Leu Pro Lys Val Leu Pro  
 885 890 895 900  
 Glu Leu Phe Arg Ala Val Arg Met Cys Glu Asp Gly Gly Leu Lys Glu  
 905 910 915  
 Phe Ile Thr Trp Lys Leu Gly Thr Val Ser Ile Val Arg Gln Val  
 920 925 930  
 Leu His Leu Val Glu Gln Leu Cys Leu Ala Leu Asn Asp Glu Phe Arg  
 935 940 945  
 Met Tyr Ile Leu His Ile Leu Pro Ser Cys Ile Gln Val Leu Gly Asp  
 950 955 960  
 Ala Glu Arg Cys Asn Asp Tyr Tyr Tyr Val Pro Asp Ile Leu His Thr  
 965 970 975 980  
 Leu Glu Val Phe Gly Gly Asn Leu Asp Glu His Met His Leu Val Ala  
 985 990 995  
 Pro Val Leu Val Arg Leu Phe Lys Val Glu Leu Val Asp Ile Arg Arg  
 1000 1005 1010  
 Arg Ala Ile Val Thr Leu Thr Lys Leu Ile Pro Thr Val Gln Leu Cys  
 1015 1020 1025  
 Ile Thr Arg Leu Leu Ile Cys Leu Ser Val Ala Arg Asn Asn Asp Asp  
 1030 1035 1040  
 Leu Arg Lys Asp Ala Glu Ala Leu Cys Cys Leu Ala His Ala Leu  
 1045 1050 1055 1060  
 Gly Glu Asp Phe Thr Ile Phe Val Ser Ser Ile His Lys Leu Leu Val  
 1065 1070 1075  
 Lys His His Met Arg Tyr Arg Lys Trp Asp Glu Ile Glu Asn Arg Leu  
 1080 1085 1090  
 Leu Arg Arg Glu Pro Leu Ile Ser Glu Asn Leu Ser Val Gln Lys Tyr  
 1095 1100 1105  
 Thr Gln Cys Pro Pro Glu Val Ile Ser Asp Pro Leu Asp Asp Phe Gly  
 1110 1115 1120  
 Gly Val Pro Ser Glu Ala Asp Glu Thr Gln Arg Gln Pro Arg Ser  
 1125 1130 1135 1140  
 His Gln Val Asn Asp Val Arg Leu Arg Ser Ala Gly Glu Ala Ser Gln  
 1145 1150 1155  
 Arg Ser Thr Arg Glu Asp Trp Ala Glu Trp Met Arg His Phe Ser Ile  
 1160 1165 1170  
 Ala Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Thr Cys Ala Arg  
 1175 1180 1185  
 Leu Ala Gln Leu Gln Pro Ser Val Gly Arg Glu Leu Phe Ala Ala Gly  
 1190 1195 1200  
 Phe Ala Ser Cys Trp Ala Gln Met Asn Glu Thr Ser Gln Glu Gln Leu  
 1205 1210 1215 1220  
 Val Arg Ser Leu Lys Thr Ala Phe Ser Gln Asn Ile Pro Pro Glu  
 1225 1230 1235  
 Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Glu  
 1240 1245 1250  
 Lys Pro Leu Pro Ile Asp Thr Arg Leu Leu Gly Ala Leu Ala Glu Lys  
 1255 1260 1265  
 Cys Arg Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Met Glu Phe Glu  
 1270 1275 1280  
 Ala Val Cys Ser Lys Lys Met Gly Ala Asn Pro Val Thr Val Val Glu  
 1285 1290 1295 1300  
 Ser Leu Ile His Ile Asn Asn Gln Leu His Gln His Glu Ala Ala Ile  
 1305 1310 1315  
 Gly Ile Leu Thr Tyr Ser Gln Gln His Leu Glu Val Gln Leu Lys Glu  
 1320 1325 1330  
 Ser Trp Tyr Glu Lys Leu His Arg Trp Asp Glu Ala Leu Lys Ala Tyr  
 1335 1340 1345  
 Lys Ala Lys Ser Ser Gln Ala Ser Gly Pro Leu Gln Asn Leu Asp Ala  
 1350 1355 1360

## PhoenixTemp32470.tmp.txt

Thr Leu Gly Arg Met Arg Cys Leu Ala Ala Leu Ala Arg Trp Glu Asp  
 1365 1370 1375  
 Leu Ser Ala Leu Cys Arg Glu Gln Trp Thr Gly Ser Glu Pro Ser Ala  
 1380 1385 1390  
 Arg Leu Glu Met Ala Pro Met Ala Ala Asn Ala Ala Trp His Met Gly  
 1395 1400 1405  
 Glu Trp Asp His Met Ala Glu Tyr Val Ser Arg Leu Asp Asp Gly Asp  
 1410 1415 1420  
 Glu Asn Lys Leu Arg Ile Leu Gly Asn Thr Thr Ala Ser Gly Asp Gly  
 1425 1430 1435 1440  
 Ser Ser Asn Gly Ala Phe Phe Arg Ala Val Leu Ser Val Arg Cys Lys  
 1445 1450 1455  
 Lys Tyr Glu Glu Ala Arg Val Tyr Val Glu Arg Ala Arg Arg Cys Leu  
 1460 1465 1470  
 Ala Thr Glu Leu Ala Ala Leu Val Leu Glu Ser Tyr Glu Arg Ala Tyr  
 1475 1480 1485  
 Asn Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu Glu Glu Val Ile  
 1490 1495 1500  
 Asp Tyr Cys Thr Leu Pro Met Glu Ser Pro Ile Ala Asp Ser Arg Arg  
 1505 1510 1515 1520  
 Glu Leu Ile Arg Asn Met Trp Asn Glu Arg Ile Lys Gly Thr Lys Arg  
 1525 1530 1535  
 Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg Glu Leu Val Leu  
 1540 1545 1550  
 Pro Pro Asn Glu Asp Arg Asp Thr Trp Ile Lys Phe Ala Lys Leu Cys  
 1555 1560 1565  
 Trp Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr Leu Val Lys Leu  
 1570 1575 1580  
 Leu Gln Phe Asp Pro Glu Ser Ser Pro Glu Leu Thr Leu Tyr His Gly  
 1585 1590 1595 1600  
 His Pro Gln Val Val Leu Ala Tyr Leu Lys Tyr Gln Tyr Ala Val Gly  
 1605 1610 1615  
 Asp Glu Leu Lys Arg Arg Asp Ala Phe Cys Arg Leu Gln Asp Leu Ser  
 1620 1625 1630  
 Val Gln Leu Ala Thr Ala Thr Asn Ser Tyr Ser Gly Thr Leu Ala Ser  
 1635 1640 1645  
 Gln Val Ala Thr Ser Asn Ala Gly Val Pro Leu Ile Ala Arg Val Tyr  
 1650 1655 1660  
 Leu Thr Leu Ala Ser Trp Lys Arg Ala Leu Ser Pro Gly Leu Asp Asp  
 1665 1670 1675 1680  
 Asp Ser Ile Gln Glu Ile Leu Val Ser Tyr Lys Asn Ala Thr Leu Asn  
 1685 1690 1695  
 Ala Lys Asp Trp Gly Lys Ala Trp His Leu Trp Ala Leu Phe Asn Thr  
 1700 1705 1710  
 Glu Val Met Ser Arg Tyr Thr Leu Arg Gly Arg Pro Asp Ile Ala Gly  
 1715 1720 1725  
 Lys Tyr Val Val Ala Ala Val Thr Gly Tyr Phe Tyr Ser Ile Ala Cys  
 1730 1735 1740  
 Ala Ser Thr Thr Lys Gly Val Asp Asp Ser Leu Gln Asp Ile Leu Arg  
 1745 1750 1755 1760  
 Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ser Glu Val Gln Met  
 1765 1770 1775  
 Ala Leu Gln Lys Gly Phe Ser Leu Val Asn Ile Glu Met Trp Leu Val  
 1780 1785 1790  
 Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Lys Ile Val  
 1795 1800 1805  
 Arg Glu Leu Ile Gln Ser Leu Val Arg Ile Gly Lys Asp His Pro  
 1810 1815 1820  
 Gln Asp Met Ser Ser Ile Lys Arg Asn Asn Leu Glu Lys Ile Leu Lys  
 1825 1830 1835 1840  
 Ile Glu Gly Thr Glu Phe Ile Ala Gln Ala Leu Met Tyr Pro Leu Leu  
 1845 1850 1855  
 Val Ala Cys Lys Ser Ile Ser Ile Leu Arg Gln Arg Ala Ala Gln Glu  
 1860 1865 1870  
 Val Val Asp Lys Ile Arg Gln His Ser Gly Gly Leu Val Asp Gln Ala  
 1875 1880 1885  
 Gln Leu Val Ser Lys Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu  
 1890 1895 1900  
 Met Trp His Glu Ala Leu Glu Glu Ala Ser Arg Met Tyr Phe Gly Glu

## PhoenixTemp32470.tmp.txt

1905 1910 1915 1920  
 His Asn Ile Glu Gly Met Leu Ala Val Leu Glu Pro Leu His Ala Met  
 1925 1930 1935  
 Leu Glu Arg Gly Pro Glu Thr Ile Lys Glu Asn Thr Phe Ile Gln Ala  
 1940 1945 1950  
 Tyr Gly His Glu Leu Leu Glu Ala His Glu Cys Cys Leu Lys Tyr Arg  
 1955 1960 1965  
 Ala Thr Gly Glu Asp Ala Glu Thr Lys Ala Trp Asp Leu Tyr Tyr  
 1970 1975 1980  
 His Val Phe Arg Arg Ile Asp Lys Gln Leu Pro Ser Leu Thr Thr Leu  
 1985 1990 2000  
 Asp Leu His Ser Val Ser Pro Glu Leu Leu Glu Cys Arg Lys Leu Glu  
 2005 2010 2015  
 Leu Ala Val Pro Gly Thr Tyr Ser Ala Asp Ala Pro Leu Val Thr Ile  
 2020 2025 2030  
 Glu Tyr Phe Val Pro Gln Leu Ile Val Ile Thr Ser Lys Gln Arg Pro  
 2035 2040 2045  
 Arg Lys Leu Thr Ile His Gly Ser Asp Gly Asn Asp Tyr Ala Phe Leu  
 2050 2055 2060  
 Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu  
 2065 2070 2075 2080  
 Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ser Glu  
 2085 2090 2095  
 Lys Asp Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn  
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 Ser Gly Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu  
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 Ile Arg Glu Tyr Arg Asp Ala Arg Lys Ile Phe Leu Asn Gln Glu His  
 2130 2135 2140  
 Arg Cys Met Leu Ser Phe Ala Pro Asp Tyr Asp His Leu Pro Leu Ile  
 2145 2150 2155 2160  
 Ala Lys Val Glu Val Phe Gln His Ala Leu Glu Asn Ser Glu Gly Asn  
 2165 2170 2175  
 Asp Leu Ala Lys Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val Trp  
 2180 2185 2190  
 Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser Met  
 2195 2200 2205  
 Val Gly Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met  
 2210 2215 2220  
 Leu Asp Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys  
 2225 2230 2235 2240  
 Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe  
 2245 2250 2255  
 Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu  
 2260 2265 2270  
 Gly Thr Phe Arg Thr Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr  
 2275 2280 2285  
 Asn Lys Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro  
 2290 2295 2300  
 Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Val Thr  
 2305 2310 2315 2320  
 Asn Tyr Gly Asn Ala His Ser His Thr Val Val Asn Ser Glu Glu Ala  
 2325 2330 2335  
 Ala Asn Arg Glu Leu Met Gln Pro Pro Arg Gly Ala Arg Glu Arg Glu  
 2340 2345 2350  
 Leu Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val Leu Asn  
 2355 2360 2365  
 Glu Arg Ala Val Ala Val Met Ala Arg Met Ser His Lys Leu Thr Gly  
 2370 2375 2380  
 Arg Asp Phe Ser Ser Gly Ser Ser Leu Ser Gly Ala Gly Ser Ser Thr  
 2385 2390 2395 2400  
 Gln His Gly Asn Glu His Leu Ala Ser Gly Asp Thr Arg Glu Val Glu  
 2405 2410 2415  
 Pro Gly Leu Ser Val Lys Val Gln Val Gln Arg Leu Ile Leu Gln Ala  
 2420 2425 2430  
 Thr Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe  
 2435 2440 2445  
 Trp

## PhoenixTemp32470.tmp.txt

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 <212> DNA  
 <213> *Pichia angusta*

<220>  
 <221> CDS  
 <222> (1)..(7215)

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 ctc ggc tcg aaa gac gcc gcc cgg cag aag cgc gct gct agc agg cta 96  
 Leu Gly Ser Lys Asp Ala Gly Arg Gln Lys Arg Ala Ala Ser Arg Leu  
 20 25 30  
 cgc gac cag ttt gtt gcc gtg tcg cgt gaa gcc atc aca gcc gaa caa 144  
 Arg Asp Gln Phe Val Ala Val Ser Arg Glu Ala Thr Ala Glu Gln  
 35 40 45  
 tta agt gtc tat aac aac tac atc aac aaa cgc ata ttc gat ctt atc 192  
 Leu Ser Val Tyr Asn Asn Tyr Ile Asn Lys Arg Ile Phe Asp Leu Ile  
 50 55 60  
 aac agt tcg agc gtc tcg cag cta ggc gcc att gag gcg atc aac 240  
 Asn Ser Ser Ser Val Ser Gln Gln Leu Gly Gly Ile Glu Ala Ile Asn  
 65 70 75 80  
 gcg ctt gtg gag ttg atc agc agc tcg atg ccg cgt att gga gcc tct 288  
 Ala Leu Val Glu Leu Ile Ser Ser Ser Met Pro Arg Ile Gly Ala Ser  
 85 90 95  
 tca acc acg gaa gag aac tcc aat atg atc gcc cgg tac gct aac tac 336  
 Ser Thr Thr Glu Glu Asn Ser Asn Met Ile Ala Arg Tyr Ala Asn Tyr  
 100 105 110  
 ctc cgt cgg ctg atc acg tcg aac gac ctc gcc gtc atg aga cgg gcc 384  
 Leu Arg Arg Leu Ile Thr Ser Asn Asp Leu Ala Val Met Arg Arg Ala  
 115 120 125  
 acc acg acg ctt ggc aag ctg gcc att ccg ggg ggt tca ctc aca ggc 432  
 Thr Thr Thr Leu Gly Lys Leu Ala Ile Pro Gly Gly Ser Leu Thr Gly  
 130 135 140  
 gat ttt gtg gag ttt gag gtc aag cgg tcg atc gag tgg ctc gtg gcg 480  
 Asp Phe Val Glu Phe Glu Val Lys Arg Ser Ile Glu Trp Leu Val Ala  
 145 150 155 160  
 gag aaa gtg gaa aac aaa aaa cac gca gcc atc ctg atc att agc tct 528  
 Glu Lys Val Glu Asn Lys Lys His Ala Ala Ile Leu Ile Ile Ser Ser  
 165 170 175  
 ctg gca gaa aat gcc tcc gca atg ctc tat ccg tac atc aag gag gtg 576  
 Leu Ala Glu Asn Ala Ser Ala Met Tyr Pro Tyr Ile Lys Glu Val  
 180 185 190  
 ctg tcg aat att tgg att ggc ttg cgc gac tca aaa agc ttg ctc aga 624  
 Leu Ser Asn Ile Trp Ile Gly Leu Arg Asp Ser Lys Ser Leu Leu Arg  
 195 200 205  
 gaa gat tcc gcc atc tgt ctc cgt cac tgt ctg aat ata gtg tac gag 672  
 Glu Asp Ser Ala Ile Cys Arg His Cys Leu Asn Ile Val Tyr Glu  
 210 215 220  
 cga gac ctg gaa ctt aga agc tat tgg ttt tca aaa ctg tac acg gag 720  
 Arg Asp Leu Glu Leu Arg Ser Tyr Trp Phe Ser Lys Leu Tyr Thr Glu  
 225 230 235 240  
 gcg acg ctg ata ttc cgc aac tcg cct gcg act tcc aac gga agt ggt 768  
 Ala Thr Leu Ile Phe Arg Asn Ser Pro Ala Thr Ser Asn Gly Ser Gly  
 245 250 255  
 ccc gtg gtg aat aat aat ccg tcg gaa ttc att cat ggg tcc ttg ttg 816  
 Pro Val Val Asn Asn Asn Pro Ser Glu Phe Ile His Gly Ser Leu Leu  
 260 265 270  
 tgc tac aga gag ctg gtt ctc cag ggc tcg tcg ctg ctg cac tcg aaa 864  
 Cys Tyr Arg Glu Leu Val Leu Gln Gly Ser Ser Leu Leu His Ser Lys  
 275 280 285  
 ata gac gat att tat gag aac ctc atg ggc atc aag gac cac cgg tct 912  
 Ile Asp Asp Ile Tyr Glu Asn Leu Met Gly Ile Lys Asp His Arg Ser  
 290 295 300  
 gtc gat gtg aga aga gag gtc acc aaa atc atg cct atc ctt gcg aga 960

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Val 305	Asp	Val	Arg	Arg	Glu 310	Val	Thr	Lys	Ile	Met 315	Pro	Ile	Leu	Ala	Arg 320	
ttc	gac	agg	gtc	aag	ttt	gtg	gac	aaa	tac	atg	cat	cgc	gtg	ctg	ctc	1008
Phe	Asp	Arg	Val	Lys 325	Phe	Val	Asp	Lys	Tyr 330	Met	His	Arg	Val	Leu 335	Leu	
tac	tac	atc	tcg	cag	ctg	aaa	att	ggc	aaa	gac	cgc	tca	ttc	atc	ctg	1056
Tyr	Tyr	Ile	Ser 340	Gln	Leu	Lys	Ile	Gly 345	Lys	Asp	Arg	Ser	Phe 350	Ile	Leu	
ctg	agt	att	gga	gat	ctc	tct	gtg	gag	gcc	aaa	aat	aac	atc	atc	aac	1104
Leu	Ser	Ile 355	Gly	Asp	Leu	Ser	Val 360	Glu	Ala	Lys	Asn	Asn 365	Ile	Ile	Asn	
tat	ctt	gac	ggc	gtc	gtg	ctc	gaa	agc	atc	aag	gac	gcg	ttg	gcg	tca	1152
Tyr	Leu 370	Asp	Gly	Val	Val 375	Leu	Glu	Ser	Ile	Lys	Asp 380	Ala	Leu	Ala	Ser	
aaa	gtg	ccc	aaa	acg	aaa	aaa	gag	ctt	ggt	ccg	tac	tgt	ttc	tac	tgt	1200
Lys 385	Val	Pro	Lys	Thr	Lys 390	Lys	Glu	Leu	Val	Pro 395	Tyr	Cys	Phe	Tyr	Cys 400	
ctg	gca	aaa	ttg	gcg	att	tct	ctc	gga	ccg	cca	ttg	aca	aag	ttc	atc	1248
Leu	Ala	Lys	Leu	Ala 405	Ile	Ser	Leu	Gly	Pro 410	Pro	Leu	Thr	Lys	Phe 415	Ile	
aac	aat	tac	gag	ctc	atg	aca	ctg	att	ctc	aaa	tct	cca	atc	aat	gac	1296
Asn	Asn	Tyr	Glu 420	Leu	Met	Thr	Leu	Ile 425	Leu	Lys	Ser	Pro	Ile 430	Asn	Asp	
aat	atg	ctt	agt	ctg	ctt	aaa	ata	ttc	atc	gac	aac	ctc	ccg	tct	tta	1344
Asn	Met	Leu 435	Ser	Leu	Leu	Lys	Ile 440	Phe	Ile	Asp	Asn	Leu 445	Pro	Ser	Leu	
gag	ccc	atg	atc	aac	gaa	aaa	ctg	atc	aac	gca	gtc	agc	ttc	tgt	ctg	1392
Glu 450	Pro	Met	Ile	Asn	Glu 455	Lys	Leu	Ile	Asn	Ala	Val 460	Ser	Phe	Cys	Leu	
tcg	gga	ttc	gag	ttc	aaa	His	cct	gga	gct	ccc	gac	ttc	aaa	cga	caa	1440
Ser 465	Gly	Phe	Glu	Phe	Lys 470	His	Pro	Gly	Ala	Pro 475	Asp	Phe	Lys	Arg	Gln 480	
atg	aac	gcc	act	ctt	gca	cac	aac	tac	cgt	cac	agc	atg	tac	atc	aga	1488
Met	Asn	Ala	Thr	Leu 485	Ala	His	Asn	Tyr	Arg 490	His	Ser	Met	Tyr	Ile 495	Arg	
gac	ggc	ggc	cag	ttc	ggc	acg	ccg	cca	gta	gat	atc	acc	tcg	ctc	aca	1536
Asp	Gly	Gly	Gln 500	Phe	Gly	Thr	Pro	Pro 505	Val	Asp	Ile	Thr	Ser 510	Leu	Thr	
ggg	ctg	cca	aaa	agc	cac	tac	cag	gaa	gag	ccc	gac	ggt	gtg	att	att	1584
Gly	Leu	Pro 515	Lys	Ser	His	Tyr	Gln 520	Glu	Glu	Pro	Asp	Val 525	Val	Ile	Ile	
cta	cag	gcc	ctc	aag	acc	ttg	agc	tat	ttt	gac	ttc	aga	aac	tac	tct	1632
Leu 530	Gln	Ala	Leu	Lys	Thr	Leu 535	Ser	Tyr	Phe	Asp	Phe 540	Arg	Asn	Tyr	Ser	
ctg	aca	gaa	ttt	gtc	cgc	tat	tct	gtc	atc	cac	tac	atc	gac	cac	gac	1680
Leu 545	Thr	Glu	Phe	Val	Arg 550	Tyr	Ser	Val	Ile	His 555	Tyr	Ile	Asp	His	Asp 560	
agt	cct	gag	gtg	cga	cta	cgg	gca	gct	ttg	acc	tcg	tcc	aaa	ata	tat	1728
Ser	Pro	Glu	Val 565	Arg	Leu	Arg	Ala	Ala	Leu 570	Thr	Ser	Ser	Lys	Ile 575	Tyr	
ctc	tcg	gac	cca	atc	tgt	ctc	caa	aaa	agc	ctg	aac	tct	ttg	aaa	gct	1776
Leu	Ser	Asp 580	Ile	Cys	Leu	Gln	Lys 585	Ser	Leu	Asn	Ser	Ser	Leu 590	Lys	Ala	
gtg	agt	gag	ggt	ctt	gac	aaa	ctg	ctt	aca	gtc	tgc	att	acc	gat	ccg	1824
Val	Ser	Glu 595	Val	Leu	Asp	Lys	Leu 600	Leu	Thr	Val	Cys	Ile 605	Thr	Asp	Pro	
cac	gag	gaa	atc	cgc	ctg	caa	gtg	ctc	aac	agt	ctg	ggt	gag	aga	ttt	1872
His 610	Glu	Glu	Ile	Arg	Leu	Gln 615	Val	Leu	Asn	Ser	Leu 620	Gly	Glu	Arg	Phe	
gat	ccc	cag	ctg	tct	cag	gcc	gag	aac	gtg	agg	ctg	ctt	ttc	atg	gct	1920
Asp 625	Pro	Gln	Leu	Ser	Gln 630	Ala	Glu	Asn	Val	Arg 635	Leu	Leu	Phe	Met	Ala 640	
ctg	aac	gac	gag	tcg	ttt	gag	att	cgc	aag	gcg	gcc	atc	aaa	ttg	ggt	1968
Leu	Asn	Asp	Glu 645	Ser	Phe	Glu	Ile	Arg	Lys 650	Ala	Ala	Ile	Lys	Leu 655	Val	
gga	aga	ctc	tca	gca	atc	aac	ccg	gct	tac	atc	gtg	ccc	tcg	ctg	cgc	2016
Gly	Arg	Leu 660	Ser	Ala	Ile	Asn	Pro	Ala 665	Tyr	Ile	Val	Pro	Ser 670	Leu	Arg	
aag	ctg	ctc	atc	cag	ctg	ctc	acc	acg	ctg	gag	tat	ggt	ggc	cac	aac	2064

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Lys	Leu	Leu	Ile	Gln	Leu	Leu	Thr	Thr	Leu	Glu	Tyr	Gly	Gly	His	Asn	
tcc	aga	gaa	aag	gaa	gac	acg	gcg	ctg	ttg	ctt	gct	gtg	ctg	att	tcg	2112
Ser	Arg	Glu	Lys	Glu	Asp	Thr	Ala	Leu	Leu	Leu	Ala	Val	Leu	Ile	Ser	
690						695					700					
cac	aca	ggc	gac	cta	aca	aag	ccg	tat	ttc	aag	ccc	atc	atg	gac	gtg	2160
His	Thr	Gly	Asp	Leu	Thr	Lys	Pro	Tyr	Phe	Lys	Pro	Ile	Met	Asp	Val	
705					710					715					720	
ttg	ctg	cct	gcc	agc	acc	gaa	ccc	ggt	gct	tct	ggt	gcg	gca	gcg	gca	2208
Leu	Leu	Pro	Ala	Ser	Thr	Glu	Pro	Gly	Ala	Ser	Val	Ala	Ala	Ala	Ala	
				725					730						735	
att	gca	gcg	att	ggc	gag	ctg	gcc	gta	gtg	ggt	ggt	gac	gaa	atg	gtg	2256
Ile	Ala	Ala	Ile	Gly	Glu	Leu	Ala	Val	Val	Val	Gly	Asp	Glu	Met	Val	
				740				745						750		
cag	tac	att	ccg	caa	gtg	atg	cca	att	ttt	atc	gaa	acg	ttc	cag	gac	2304
Gln	Tyr	Ile	Pro	Gln	Val	Met	Pro	Ile	Phe	Ile	Glu	Thr	Phe	Gln	Asp	
				755			760					765				
caa	agc	atg	agc	ttc	aag	cgg	gac	gca	gca	ctg	aaa	acg	ctc	ggc	cag	2352
Gln	Ser	Met	Ser	Phe	Lys	Arg	Asp	Ala	Ala	Leu	Lys	Thr	Leu	Gly	Gln	
				770		775					780					
atc	gcc	ggg	tcc	tcg	ggc	tac	ggt	atc	cag	ccg	ctg	ctc	gat	tac	ccg	2400
Ile	Ala	Gly	Ser	Ser	Gly	Tyr	Val	Ile	Gln	Pro	Leu	Leu	Asp	Tyr	Pro	
785					790					795					800	
cag	ctg	ctg	ggt	ctg	ctg	ggt	aat	att	ctg	aag	tct	gag	aca	tca	ctg	2448
Gln	Leu	Leu	Gly	Leu	Val	Val	Asn	Ile	Leu	Lys	Ser	Glu	Thr	Ser	Leu	
				805					810							
gca	gtg	aga	cgc	gaa	act	gtg	cgt	ctg	gtc	ggt	atc	ctc	gga	gct	ctc	2496
Ala	Val	Arg	Arg	Glu	Thr	Val	Arg	Leu	Val	Gly	Ile	Leu	Gly	Ala	Leu	
				820				825					830			
gat	ccg	tac	aaa	cac	aga	gaa	gtg	gaa	cga	cac	ggc	cag	gat	tcg	cag	2544
Asp	Pro	Tyr	Lys	His	Arg	Glu	Val	Glu	Arg	His	Gly	Gln	Asp	Ser	Gln	
				835			840					845				
act	gtg	gca	gag	cag	aat	gca	ccg	ccc	gtg	gac	atg	gag	ctg	ctg	atg	2592
Thr	Val	Ala	Glu	Gln	Asn	Ala	Pro	Pro	Val	Asp	Met	Glu	Leu	Leu	Met	
				850		855					860					
aaa	ggt	aag	tcg	ccg	tca	aac	gag	gac	tat	ttc	cca	aca	gtg	gtg	atc	2640
Lys	Gly	Lys	Ser	Pro	Ser	Asn	Glu	Asp	Tyr	Phe	Pro	Thr	Val	Val	Ile	
865					870					875					880	
aag	acc	ctg	ttg	cgc	ata	ctc	aag	gat	gcg	tcc	ttg	agc	acc	cat	cac	2688
Lys	Thr	Leu	Leu	Arg	Ile	Leu	Lys	Asp	Ala	Ser	Leu	Ser	Thr	His	His	
				885					890					895		
ccg	gcc	gtc	atc	cag	gcg	atc	atg	cac	atc	ttc	aag	acg	ctg	gga	atc	2736
Pro	Ala	Val	Ile	Gln	Ala	Ile	Met	His	Ile	Phe	Lys	Thr	Leu	Gly	Ile	
				900				905						910		
aag	tgc	gtt	ccg	ttc	ctg	gac	aaa	gtt	att	cct	ggt	ttc	gcg	act	gtg	2784
Lys	Cys	Val	Pro	Phe	Leu	Asp	Lys	Val	Ile	Pro	Gly	Phe	Ala	Thr	Val	
				915			920					925				
att	cac	acg	tgt	ccg	ccc	tcg	ttg	ctg	gaa	aca	tac	ttc	caa	cag	ctg	2832
Ile	His	Thr	Cys	Pro	Pro	Ser	Leu	Leu	Glu	Thr	Tyr	Phe	Gln	Gln	Leu	
				930		935					940					
gcc	gac	ttg	atc	aag	atc	gtc	aag	ttg	cac	atc	cgc	cct	cat	tta	cca	2880
Ala	Asp	Leu	Ile	Lys	Ile	Val	Lys	Leu	His	Ile	Arg	Pro	His	Leu	Pro	
945					950					955					960	
gag	att	ttc	gcg	ctc	att	gag	gaa	ttc	ttc	cac	cag	gtc	aat	ctc	cag	2928
Glu	Ile	Phe	Ala	Leu	Ile	Glu	Glu	Phe	Phe	His	Gln	Val	Asn	Leu	Gln	
				965				970						975		
gtc	acc	att	att	ggc	atg	ata	gag	cag	gtc	tcg	aag	gcc	ctg	gac	gac	2976
Val	Thr	Ile	Ile	Gly	Met	Ile	Glu	Gln	Val	Ser	Lys	Ala	Leu	Asp	Asp	
				980				985						990		
gag	ttc	aaa	atc	tac	atg	ttt	cag	gtg	att	acc	att	ttt	ctg	gac	gtg	3024
Glu	Phe	Lys	Ile	Tyr	Met	Phe	Gln	Val	Ile	Thr	Ile	Phe	Leu	Asp	Val	
						1000						1005				
ctg	gac	aag	gac	gac	tca	ccg	cgc	aag	gtg	tcg	acg	ttg	cgc	gta	ctc	3072
Leu	Asp	Lys	Asp	Asp	Ser	Pro	Arg	Lys	Val	Ser	Thr	Leu	Arg	Val	Leu	
						1015					1020					
aag	gct	ttc	aca	gtt	ttc	ggc	agc	aac	att	gag	ccg	tac	atg	cat	ctc	3120
Lys	Ala	Phe	Thr	Val	Phe	Gly	Ser	Asn	Ile	Glu	Pro	Tyr	Met	His	Leu	
1025					1030					1035					1040	
gtg	att	cca	cag	ata	gtc	aag	ctt	ttt	gag	tca	ccg	gac	gaa	gtt	gtc	3168

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Val	Ile	Pro	Gln	Ile	Val	Lys	Leu	Phe	Glu	Ser	Pro	Asp	Glu	Val	Val		
1045									1050					1055			
agt	aag	gag	gcc	atc	gaa	act	att	ggg	aaa	ttg	tct	aga	cat	gtc	agt	3216	
Ser	Lys	Glu	Ala	Ile	Glu	Thr	Ile	Gly	Lys	Leu	Ser	Arg	His	Val	Ser		
1060								1065					1070				
cta	aac	gac	tac	tcg	tcc	cga	att	gtg	cag	cca	cta	gtt	aga	att	ctg	3264	
Leu	Asn	Asp	Tyr	Ser	Ser	Arg	Ile	Val	Gln	Pro	Leu	Val	Arg	Ile	Leu		
1075							1080					1085					
gtc	tcg	cat	tct	tcc	gaa	gac	atc	aag	aat	tct	gtc	gtg	aac	acc	atc	3312	
Val	Ser	His	Ser	Ser	Glu	Asp	Ile	Lys	Asn	Ser	Val	Val	Asn	Thr	Ile		
1090						1095				1100							
tgt	ctg	ctc	ttg	ctg	caa	atg	ggc	acc	gag	ttt	tct	gtg	ttc	atc	cca	3360	
Cys	Leu	Leu	Leu	Leu	Gln	Met	Gly	Thr	Glu	Phe	Ser	Val	Phe	Ile	Pro		
1105					1110				1115					1120			
gga	atc	act	agc	atc	atg	acg	aaa	cat	aag	ctg	caa	tat	ccc	gtc	tac	3408	
Gly	Ile	Thr	Ser	Ile	Met	Thr	Lys	His	Lys	Leu	Gln	Tyr	Pro	Val	Tyr		
1125							1130					1135					
gac	caa	ctg	gtt	gac	aaa	ctg	att	cac	ggc	gag	ccg	ttg	cca	acc	act	3456	
Asp	Gln	Leu	Val	Asp	Lys	Leu	Ile	His	Gly	Glu	Pro	Leu	Pro	Thr	Thr		
1140							1145					1150					
ctc	ctg	aat	gat	aaa	acg	cag	gaa	act	ccg	tcc	aac	gac	aac	ttc	gac	3504	
Leu	Leu	Asn	Asp	Lys	Thr	Gln	Glu	Thr	Pro	Ser	Asn	Asp	Asn	Phe	Asp		
1155						1160						1165					
att	gaa	gca	acg	ccg	cgg	aaa	ctc	cca	gtc	aac	gcc	cag	gcg	ctg	cgt	3552	
Ile	Glu	Ala	Thr	Pro	Arg	Lys	Leu	Pro	Val	Asn	Ala	Gln	Ala	Leu	Arg		
1170					1175				1180								
tat	gtc	tgg	gac	tgc	aat	agc	atg	cgc	aca	aaa	gag	gac	tgg	cag	gaa	3600	
Tyr	Val	Trp	Asp	Cys	Asn	Ser	Met	Arg	Thr	Lys	Glu	Asp	Trp	Gln	Glu		
1185				1190					1195					1200			
tgg	atc	cgc	cga	ctg	agc	att	gag	ctg	ctc	aag	gag	tcg	ccg	tcg	ccg	3648	
Trp	Ile	Arg	Arg	Leu	Ser	Ile	Glu	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro		
1205							1210						1215				
gct	ttg	cgt	gcc	tgc	tcc	tcg	ctc	gct	acc	gtt	tat	cca	cct	ctg	gct	3696	
Ala	Leu	Arg	Ala	Cys	Ser	Ser	Leu	Ala	Thr	Val	Tyr	Pro	Pro	Leu	Ala		
1220							1225					1230					
aga	gat	ctt	ttc	aac	tgt	gcc	ttt	gca	agc	tgc	tgg	aac	gag	ctg	cac	3744	
Arg	Asp	Leu	Phe	Asn	Cys	Ala	Phe	Ala	Ser	Cys	Trp	Asn	Glu	Leu	His		
1235						1240					1245						
atc	cag	tac	cag	gga	gaa	ctg	gcc	cag	gct	ctg	tgc	att	gcg	ctg	tcc	3792	
Ile	Gln	Tyr	Gln	Gly	Glu	Leu	Ala	Gln	Ala	Leu	Cys	Ile	Ala	Leu	Ser		
1250				1255					1260								
tcg	ccg	aac	aat	cta	ccg	gag	atc	cac	cag	acg	ctt	ctc	aat	ctt	gct	3840	
Ser	Pro	Asn	Asn	Leu	Pro	Glu	Ile	His	Gln	Thr	Leu	Leu	Asn	Leu	Ala		
1265				1270					1275				1280				
gag	ttc	ctc	gaa	cac	gac	gac	aag	tcg	ctg	ccg	ata	aga	atc	cag	acc	3888	
Glu	Phe	Leu	Glu	His	Asp	Asp	Lys	Ser	Leu	Pro	Ile	Arg	Ile	Gln	Thr		
1285				1290					1295								
ctg	tcg	cag	tac	gcg	cag	cgg	agc	cat	gtg	tac	gcc	aaa	gca	ctg	cac	3936	
Leu	Ser	Gln	Tyr	Ala	Gln	Arg	Ser	His	Val	Tyr	Ala	Lys	Ala	Leu	His		
1300				1305					1310								
tac	aag	gag	ctg	gaa	ttc	att	cag	gag	ccg	tct	acg	ccg	aca	atc	gaa	3984	
Tyr	Lys	Glu	Leu	Glu	Phe	Ile	Gln	Glu	Pro	Ser	Thr	Pro	Thr	Ile	Glu		
1315				1320					1325								
tcc	ctg	atc	agc	atc	aac	aac	cag	ctg	cag	cag	tcg	gac	gcc	gct	att	4032	
Ser	Leu	Ile	Ser	Ile	Asn	Asn	Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile		
1330				1335					1340								
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Gly	Ile	Leu	Lys	Tyr	Ala	Gln	Asp	His	His	Gly	Leu	Gln	Leu	Lys	Glu		
1345				1350				1355					1360				
acc	tgg	tac	gaa	aag	ctc	cag	cgc	tgg	gac	gat	gca	ttg	cgt	gct	tac	4128	
Thr	Trp	Tyr	Glu	Lys	Leu	Gln	Arg	Trp	Asp	Asp	Ala	Leu	Arg	Ala	Tyr		
1365				1370					1375								
aac	gaa	cgt	gag	aag	gag	gag	ccg	aac	tcc	acc	gat	atc	act	atg	gga	4176	
Asn	Glu	Arg	Glu	Lys	Glu	Glu	Pro	Asn	Ser	Thr	Asp	Ile	Thr	Met	Gly		
1380				1385				1390									
aaa	atg	aga	tgt	cta	cat	gct	ctg	ggc	gaa	tgg	gag	ctg	ttg	agc	gag	4224	
Lys	Met	Arg	Cys	Leu	His	Ala	Leu	Gly	Glu	Trp	Glu	Leu	Leu	Ser	Glu		
1395				1400					1405								
cta	gcg	cag	gat	aaa	tgg	aac	aat	tcg	tct	ggg	gac	atc	aaa	agg	gcc	4272	



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1410						1415					1420						
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Ile	Ala	Pro	Leu	Ala	Ala	Ala	Ala	Ala	Trp	Gly	Ile	Gly	Gln	Trp	Glu		
1425					1430					1435					1440		
cgt	atg	ggt	aac	tac	att	agc	gtc	atg	aag	gtg	gag	tcg	cca	gat	aag		4368
Arg	Met	Gly	Asn	Tyr	Ile	Ser	Val	Met	Lys	Val	Glu	Ser	Pro	Asp	Lys		
				1445					1450					1455			
gcg	ttt	ttc	aat	gct	att	ttg	tgt	ctt	cac	aga	aac	aat	ttt	gag	gag		4416
Ala	Phe	Phe	Asn	Ala	Ile	Leu	Cys	Leu	His	Arg	Asn	Asn	Phe	Glu	Glu		
			1460				1465						1470				
gcc	gca	gaa	caa	att	tcg	aag	gcc	agg	gat	ctt	ctg	gtc	acg	gag	att		4464
Ala	Ala	Glu	Gln	Ile	Ser	Lys	Ala	Arg	Asp	Leu	Leu	Val	Thr	Glu	Ile		
			1475				1480					1485					
act	gca	ttg	gtg	agc	gaa	tcg	tac	aac	agg	gcg	tac	ggg	gtg	ggt	gtg		4512
Thr	Ala	Leu	Val	Ser	Glu	Ser	Tyr	Asn	Arg	Ala	Tyr	Gly	Val	Val	Val		
	1490				1495					1500							
aga	gtg	cag	atg	ctg	gcc	gag	ctc	gag	gaa	atc	atc	aag	tac	aag	tgt		4560
Arg	Val	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu	Ile	Ile	Lys	Tyr	Lys	Cys		
	1505				1510				1515						1520		
ttg	ccc	caa	ggc	tct	gaa	aaa	cgc	atc	cag	atc	cgc	gag	acg	tgg	aac		4608
Leu	Pro	Gln	Gly	Ser	Glu	Lys	Arg	Ile	Gln	Ile	Arg	Glu	Thr	Trp	Asn		
			1525				1530						1535				
aaa	cgg	ctt	ctg	ggc	tgc	cag	cgg	aac	gtg	gat	att	tgg	caa	agg	atg		4656
Lys	Arg	Leu	Leu	Gly	Cys	Gln	Arg	Asn	Val	Asp	Ile	Trp	Gln	Arg	Met		
			1540				1545					1550					
ctt	aaa	gtg	cgt	gct	ctg	gtc	gtg	aag	ccg	aag	cag	gac	atg	gaa	atg		4704
Leu	Lys	Val	Arg	Ala	Leu	Val	Val	Lys	Pro	Lys	Gln	Asp	Met	Glu	Met		
	1555				1560						1565						
tgg	att	aag	ttt	gcc	aat	ctg	tgc	cgg	aaa	tcg	ggc	cgg	ctg	ggg	ctt		4752
Trp	Ile	Lys	Phe	Ala	Asn	Leu	Cys	Arg	Lys	Ser	Gly	Arg	Leu	Gly	Leu		
	1570				1575					1580							
gcg	gaa	aag	tcg	ctc	aac	gca	ctt	ctg	gac	gag	ggg	gac	tcc	ggc	cac		4800
Ala	Glu	Lys	Ser	Leu	Asn	Ala	Leu	Leu	Asp	Glu	Gly	Asp	Ser	Gly	His		
	1585				1590				1595					1600			
cag	acg	tcc	cgg	gcg	cca	ccc	cac	gtg	gtg	tac	gca	cag	ctg	aaa	tac		4848
Gln	Thr	Ser	Arg	Ala	Pro	Pro	His	Val	Val	Tyr	Ala	Gln	Leu	Lys	Tyr		
			1605				1610						1615				
atg	tgg	gcc	aga	ggc	cag	cag	cga	gag	gcg	ctc	aac	cac	ctg	atc	gac		4896
Met	Trp	Ala	Arg	Gly	Gln	Gln	Arg	Glu	Ala	Leu	Asn	His	Leu	Ile	Asp		
			1620				1625					1630					
ttt	gcg	tcg	aaa	cta	tca	cgt	gac	cta	ggc	gtg	aac	gag	aac	gag	gcc		4944
Phe	Ala	Ser	Lys	Leu	Ser	Arg	Asp	Leu	Gly	Val	Asn	Glu	Asn	Glu	Ala		
	1635					1640			1645								
atc	acg	cag	cct	ctg	cca	acg	gcc	att	cct	ggc	gcc	tcc	gac	aat	atc		4992
Ile	Thr	Gln	Pro	Leu	Pro	Ala	Ile	Pro	Gly	Ala	Ser	Asp	Asn	Ile			
	1650				1655				1660								
gag	aag	tac	acc	atg	ctg	ctg	gcg	aga	tgc	tat	ctc	aaa	cag	ggc	gaa		5040
Glu	Lys	Tyr	Thr	Met	Leu	Leu	Ala	Arg	Cys	Tyr	Leu	Lys	Gln	Gly	Glu		
	1665				1670				1675					1680			
tgg	aag	att	gct	ttg	aat	agc	aac	tgg	aca	gag	atg	gac	tct	aca	ggt		5088
Trp	Lys	Ile	Ala	Leu	Asn	Ser	Asn	Trp	Thr	Glu	Met	Asp	Ser	Thr	Gly		
			1685				1690						1695				
atc	tta	ggc	tcg	ttc	ctg	ctt	gct	acg	cat	ttc	gac	ccc	aag	tgg	tac		5136
Ile	Leu	Gly	Ser	Phe	Leu	Leu	Ala	Thr	His	Phe	Asp	Pro	Lys	Trp	Tyr		
		1700					1705					1710					
aaa	gcc	tgg	cac	aac	tgg	gct	ctc	gca	aac	ttt	gag	gtg	att	tcc	ccg		5184
Lys	Ala	Trp	His	Asn	Trp	Ala	Leu	Ala	Asn	Phe	Glu	Val	Ile	Ser	Pro		
	1715					1720					1725						
cag	gca	aag	cag	ttg	cac	cag	gaa	agt	gcg	gac	gtg	gac	gag	aag	agt		5232
Gln	Ala	Lys	Gln	Leu	His	Gln	Glu	Ser	Ala	Asp	Val	Asp	Glu	Lys	Ser		
	1730				1735				1740								
ctg	gga	ggc	att	ttg	cac	tac	gtg	gtg	cca	gcg	ggt	aag	gga	ttt	ttc		5280
Leu	Gly	Gly	Ile	Leu	His	Tyr	Val	Val	Pro	Ala	Val	Lys	Gly	Phe	Phe		
	1745				1750				1755					1760			
cac	tcg	atc	tcg	ctc	tcg	cag	tct	aat	cca	ctc	cag	gac	acg	ctg	aga		5328
His	Ser	Ile	Ser	Leu	Ser	Gln	Ser	Asn	Pro	Leu	Gln	Asp	Thr	Leu	Arg		
			1765						1770				1775				
ctg	ctg	acg	ctg	tgg	atc	aag	tac	gga	ggc	att	gag	gaa	gtg	gcc	aat		5376

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Leu	Leu	Thr	Leu	Trp	Ile	Lys	Tyr	Gly	Gly	Ile	Glu	Glu	Val	Ala	Asn		
			1780					1785					1790				
gcg	atg	cag	gaa	ggg	ttc	cag	ctg	gtg	aag	gtc	gac	acg	tgg	ctg	gac	5424	
Ala	Met	Gln	Glu	Gly	Phe	Gln	Leu	Val	Lys	Val	Asp	Thr	Trp	Leu	Asp		
		1795					1800					1805					
gtg	att	ccg	cag	tta	atc	tcg	agg	atc	cac	cag	ccg	gac	cct	gtg	gtg	5472	
Val	Ile	Pro	Gln	Leu	Ile	Ser	Arg	Ile	His	Gln	Pro	Asp	Pro	Val	Val		
	1810					1815					1820						
agc	aag	tcg	ctt	ttg	ggt	ttg	ctg	tcg	gat	ctg	ggc	cgg	gcg	cat	ccg	5520	
Ser	Lys	Ser	Leu	Leu	Gly	Leu	Leu	Ser	Asp	Leu	Gly	Arg	Ala	His	Pro		
1825					1830				1835						1840		
caa	gcg	ctg	att	tat	ccg	ctg	aca	gtg	gcc	atc	aaa	tcc	gac	agc	ggt	5568	
Gln	Ala	Leu	Ile	Tyr	Pro	Leu	Thr	Val	Ala	Ile	Lys	Ser	Asp	Ser	Val		
			1845					1850					1855				
tcg	cgg	cag	agg	gca	gct	ctg	aca	atc	atc	gac	aag	atg	cgt	gca	cat	5616	
Ser	Arg	Gln	Arg	Ala	Ala	Leu	Thr	Ile	Ile	Asp	Lys	Met	Arg	Ala	His		
		1860					1865						1870				
tcg	gcg	cgg	ctg	gtg	gat	cag	gcg	gac	ctt	gtg	agc	aat	gag	ctg	atc	5664	
Ser	Ala	Arg	Leu	Val	Asp	Gln	Ala	Asp	Leu	Val	Ser	Asn	Glu	Leu	Ile		
	1875					1880					1885						
cgt	gtg	gcg	gtg	cta	tgg	cac	gag	atg	tgg	tat	gag	ggg	ctt	gag	gac	5712	
Arg	Val	Ala	Val	Leu	Trp	His	Glu	Met	Trp	Tyr	Glu	Gly	Leu	Glu	Asp		
	1890				1895				1900								
gcg	tcg	cgg	tcg	tac	ttt	ggc	gac	cag	aac	atc	gag	aag	atg	ttc	cag	5760	
Ala	Ser	Arg	Ser	Tyr	Phe	Gly	Asp	Gln	Asn	Ile	Glu	Lys	Met	Phe	Gln		
1905				1910					1915					1920			
atc	ctg	aca	cct	ctg	cac	cag	atg	ctc	gaa	aaa	ggg	cca	gag	acg	atc	5808	
Ile	Leu	Thr	Pro	Leu	His	Gln	Met	Leu	Glu	Lys	Gly	Pro	Glu	Thr	Ile		
			1925					1930					1935				
cga	gag	gcc	tcg	ttt	gtc	aat	gct	ttc	ggc	aag	gag	ctg	aac	gac	gcg	5856	
Arg	Glu	Ala	Ser	Phe	Val	Asn	Ala	Phe	Gly	Lys	Glu	Leu	Asn	Asp	Ala		
	1940						1945					1950					
cat	cag	tgg	ctg	atg	aat	ttc	cgg	cgc	aca	aag	gac	gtg	gcg	tac	ctt	5904	
His	Gln	Trp	Leu	Met	Asn	Phe	Arg	Arg	Thr	Lys	Asp	Val	Ala	Tyr	Leu		
	1955					1960					1965						
aac	cag	gca	tgg	gat	ctg	tac	tac	ggc	gtc	ttc	cgc	cgg	att	tcc	aga	5952	
Asn	Gln	Ala	Trp	Asp	Leu	Tyr	Tyr	Gly	Val	Phe	Arg	Arg	Ile	Ser	Arg		
1970				1975				1980									
cag	ttg	ccg	cag	ctg	caa	aac	ctc	gat	ctg	cag	cat	ggt	tct	ccc	aag	6000	
Gln	Leu	Pro	Gln	Leu	Gln	Asn	Leu	Asp	Leu	Gln	His	Val	Ser	Pro	Lys		
1985				1990				1995					2000				
ctg	ctg	gcc	gca	aag	aat	ctc	gag	ctc	gct	ggt	ccg	gga	aca	tac	gtg	6048	
Leu	Leu	Ala	Ala	Lys	Asn	Leu	Glu	Leu	Ala	Val	Pro	Gly	Thr	Tyr	Val		
			2005				2010					2015					
cca	gga	aaa	gag	gtg	att	cac	att	gtg	cgt	ttc	gag	ccg	gtg	ttt	tct	6096	
Pro	Gly	Lys	Glu	Val	Ile	His	Ile	Val	Arg	Phe	Glu	Pro	Val	Phe	Ser		
	2020					2025						2030					
gtg	atc	aca	tcg	aag	cag	agg	ccg	cgg	aag	ttc	aac	ggt	ctg	ggc	agc	6144	
Val	Ile	Thr	Ser	Lys	Gln	Arg	Pro	Arg	Lys	Phe	Asn	Val	Leu	Gly	Ser		
	2035				2040				2045								
gac	ggc	aaa	aag	tac	cag	tac	ttg	ctt	aag	ggg	cac	gag	gat	att	aga	6192	
Asp	Gly	Lys	Lys	Tyr	Gln	Tyr	Leu	Leu	Lys	Gly	His	Glu	Asp	Ile	Arg		
	2050				2055				2060								
cag	gac	aac	tta	gtg	atg	cag	cta	ttt	gga	tta	gtg	aac	acg	cta	ctt	6240	
Gln	Asp	Asn	Leu	Val	Met	Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu		
2065				2070				2075					2080				
gcg	aac	gac	ccg	gag	tgt	ttc	aag	cgg	cat	atg	gac	atc	cag	cag	tac	6288	
Ala	Asn	Asp	Pro	Glu	Cys	Phe	Lys	Arg	His	Met	Asp	Ile	Gln	Gln	Tyr		
			2085					2090					2095				
gcg	gcg	atc	ccg	ctg	tct	cct	agc	tcg	ggc	atg	ctt	gga	tgg	ggt	cct	6336	
Ala	Ala	Ile	Pro	Leu	Ser	Pro	Ser	Ser	Gly	Met	Leu	Gly	Trp	Val	Pro		
			2100			2105						2110					
aat	tcc	gac	acg	ttc	cac	gtt	ctc	atc	aag	gag	tac	aga	gaa	ccg	cgc	6384	
Asn	Ser	Asp	Thr	Phe	His	Val	Leu	Ile	Lys	Glu	Tyr	Arg	Glu	Pro	Arg		
	2115					2120					2125						
aag	atc	ttg	cta	gac	gtg	gaa	cat	cgt	atc	atg	ctg	cag	atg	tct	ccg	6432	
Lys	Ile	Leu	Leu	Asp	Val	Glu	His	Arg	Ile	Met	Leu	Gln	Met	Ser	Pro		
	2130				2135			2140									
gac	tac	gac	aat	ttg	aca	ttg	ctg	gag	aag	gtg	gaa	gtg	ttc	acc	tat	6480	

## PhoenixTemp32470.tmp.txt

Asp Tyr Asp Asn Leu Thr Leu Leu Glu Lys Val Glu Val Phe Thr Tyr  
 2145 2150 2155 2160  
 gcc ctg gat att acg cga ggc cag gat cta tac aag gtg ctg tgg ttc 6528  
 Ala Leu Asp Ile Thr Arg Gly Gln Asp Leu Tyr Lys Val Leu Trp Phe  
 2165 2170 2175  
 aaa tcg aag tcg tca gag gcc tgg ctc gac aga cga acc acg tac acg 6576  
 Lys Ser Lys Ser Ser Glu Ala Trp Leu Asp Arg Arg Thr Thr Tyr Thr  
 2180 2185 2190  
 cgc tcc ttg gcg gtg atg tcg atg gtg gga tat att ttg ggt ctt ggc 6624  
 Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly  
 2195 2200 2205  
 gac aga cac cct tcg aac ctg atg atg gac aga atc act gga aaa gtg 6672  
 Asp Arg His Pro Ser Asn Leu Met Met Asp Arg Ile Thr Gly Lys Val  
 2210 2215 2220  
 atc cac atc gat ttt ggc gac tgt ttc gag gcg gcc att ttg aga gaa 6720  
 Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu  
 2225 2230 2235 2240  
 aag tac ccg gaa aaa gtg ccg ttt aga ctg aca cgg atg ctg agt tac 6768  
 Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Ser Tyr  
 2245 2250 2255  
 gcg atg gag gtg agc ggt att gag ggc tct ttc cgg atc acc agc gaa 6816  
 Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Ser Glu  
 2260 2265 2270  
 aat gtc atg aga gtc ctt cgc gac aac aaa gag tcg ttg atg gcc att 6864  
 Asn Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala Ile  
 2275 2280 2285  
 ctg gat gcc ttt gcg tac gac ccg ctg atc aac tgg ggt ttt gac ttt 6912  
 Leu Asp Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp Phe  
 2290 2295 2300  
 ccg ctg aag cag ata gtc gac aat ccg aac cag cac ttc cca aac gca 6960  
 Pro Leu Lys Gln Ile Val Asp Asn Pro Asn Gln His Phe Pro Asn Ala  
 2305 2310 2315 2320  
 aac tac aac gag ctg ttg cgc agc ggc caa atc acc gag gag gag gcc 7008  
 Asn Tyr Asn Glu Leu Leu Arg Ser Gly Gln Ile Thr Glu Glu Glu Ala  
 2325 2330 2335  
 tcc cgg atg gag gcg cag aac aag gca gat atc ttg aac gcg cgg gct 7056  
 Ser Arg Met Glu Ala Gln Asn Lys Ala Asp Ile Leu Asn Ala Arg Ala  
 2340 2345 2350  
 gcg tac gtg ctc aag cgt atc aca gac aaa ctg acg gga aac gac ttc 7104  
 Ala Tyr Val Leu Lys Arg Ile Thr Asp Lys Leu Thr Gly Asn Asp Phe  
 2355 2360 2365  
 aag cgg ttc cgg gag ctg gac gtt ccg agc cag gtc gac aag ctg atc 7152  
 Lys Arg Phe Arg Glu Leu Asp Val Pro Ser Gln Val Asp Lys Leu Ile  
 2370 2375 2380  
 cag cag gct acc tct gtg gag aac ctt tgc cag cac tac ata gga tgg 7200  
 Gln Gln Ala Thr Ser Val Glu Asn Leu Cys Gln His Tyr Ile Gly Trp  
 2385 2390 2395 2400  
 tgc tct ttt tgg taa 7215  
 Cys Ser Phe Trp

&lt;210&gt; 2551

&lt;211&gt; 2404

&lt;212&gt; PRT

&lt;213&gt; Pichia angusta

&lt;400&gt; 2551

Met Ser Thr Pro Leu Asp Asn Trp His Val Asp Glu Ile Phe Thr Glu  
 1 5 10 15  
 Leu Gly Ser Lys Asp Ala Gly Arg Gln Lys Arg Ala Ala Ser Arg Leu  
 20 25 30  
 Arg Asp Gln Phe Val Ala Val Ser Arg Glu Ala Ile Thr Ala Glu Gln  
 35 40 45  
 Leu Ser Val Tyr Asn Asn Tyr Ile Asn Lys Arg Ile Phe Asp Leu Ile  
 50 55 60  
 Asn Ser Ser Ser Val Ser Gln Gln Leu Gly Gly Ile Glu Ala Ile Asn  
 65 70 75 80  
 Ala Leu Val Glu Leu Ile Ser Ser Ser Met Pro Arg Ile Gly Ala Ser  
 85 90 95

## PhoenixTemp32470.tmp.txt

Ser	Thr	Thr	Glu	Glu	Asn	Ser	Asn	Met	Ile	Ala	Arg	Tyr	Ala	Asn	Tyr
Leu	Arg	Arg	100	Ile	Thr	Ser	Asn	105	Leu	Ala	Val	Met	110	Arg	Ala
Thr	Thr	Thr	115	Gly	Lys	Leu	Ala	120	Ile	Pro	Gly	Gly	125	Ser	Gly
Asp	Phe	Val	130	Glu	Phe	Glu	Val	135	Arg	Ser	Ile	Glu	140	Trp	Ala
145	Lys	Val	150	Asn	Lys	Lys	His	155	Ala	Ile	Leu	Ile	160	Ile	Ser
Leu	Ala	Glu	165	Ala	Ser	Ala	Met	170	Leu	Tyr	Pro	Tyr	175	Lys	Val
Leu	Ser	Asn	180	Ile	Trp	Ile	Gly	185	Arg	Asp	Ser	Lys	190	Ser	Leu
Glu	Asp	Ser	195	Ala	Ile	Cys	Leu	200	His	Cys	Leu	Asn	205	Ile	Val
Arg	Asp	Leu	210	Glu	Leu	Arg	Ser	215	Tyr	Trp	Phe	Ser	220	Leu	Tyr
225	Thr	Leu	230	Ile	Phe	Arg	Asn	235	Pro	Ala	Thr	Ser	240	Asn	Gly
Ala	Val	Val	245	Asn	Asn	Asn	Pro	250	Glu	Phe	Ile	His	255	Gly	Ser
Pro	Val	Val	260	Asn	Asn	Asn	Pro	265	Glu	Phe	Ile	His	270	Ser	Leu
Cys	Tyr	Arg	275	Glu	Leu	Val	Leu	280	Gln	Gly	Ser	Ser	285	Leu	His
Ile	Asp	Asp	290	Ile	Tyr	Glu	Asn	295	Leu	Met	Gly	Ile	300	Lys	Asp
Val	Asp	Val	305	Arg	Arg	Glu	Val	310	Thr	Lys	Ile	Met	315	Pro	Ile
Phe	Asp	Arg	325	Val	Lys	Phe	Val	330	Asp	Lys	Tyr	Met	335	His	Arg
Tyr	Tyr	Ile	340	Ser	Gln	Leu	Lys	345	Ile	Gly	Lys	Asp	350	Arg	Val
Leu	Ser	Ile	355	Gly	Asp	Leu	Ser	360	Val	Glu	Ala	Lys	365	Asn	Asn
Tyr	Leu	Asp	370	Gly	Val	Val	Leu	375	Glu	Ser	Ile	Lys	380	Asp	Ala
Lys	Val	Pro	385	Lys	Thr	Lys	Lys	390	Glu	Leu	Val	Pro	395	Tyr	Cys
Leu	Ala	Lys	405	Leu	Ala	Ile	Ser	410	Gly	Pro	Pro	Leu	415	Thr	Phe
Asn	Asn	Tyr	420	Glu	Leu	Met	Thr	425	Ile	Leu	Lys	Ser	430	Pro	Ile
Asn	Met	Leu	435	Ser	Leu	Leu	Lys	440	Phe	Ile	Asp	Asn	445	Leu	Pro
Glu	Pro	Met	450	Ile	Asn	Glu	Lys	455	Leu	Ile	Asn	Ala	460	Val	Ser
Ser	Gly	Phe	465	Glu	Phe	Lys	His	470	Pro	Gly	Ala	Pro	475	Asp	Phe
Met	Asn	Ala	485	Thr	Leu	Ala	His	490	Asn	Tyr	Arg	His	495	Ser	Met
Asp	Gly	Gly	500	Gln	Phe	Gly	Thr	505	Pro	Val	Asp	Ile	510	Thr	Ser
Gly	Leu	Pro	515	Lys	Ser	His	Tyr	520	Gln	Glu	Pro	Asp	525	Val	Val
Leu	Gln	Ala	530	Leu	Lys	Thr	Leu	535	Ser	Tyr	Phe	Asp	540	Phe	Arg
Leu	Thr	Glu	545	Phe	Val	Arg	Tyr	550	Ser	Val	Ile	His	555	Tyr	Ile
Ser	Pro	Glu	565	Val	Arg	Leu	Arg	570	Ala	Ala	Leu	Thr	575	Ser	Ser
Leu	Ser	Asp	580	Pro	Ile	Cys	Leu	585	Gln	Lys	Ser	Leu	590	Asn	Ser
Val	Ser	Glu	595	Val	Leu	Asp	Lys	600	Leu	Thr	Val	Cys	605	Ile	Thr
His	Glu	Glu	610	Ile	Arg	Leu	Gln	615	Val	Leu	Asn	Ser	620	Leu	Gly
Asp	Pro	Gln	625	Leu	Ser	Gln	Ala	630	Glu	Asn	Val	Arg	635	Leu	Leu
Leu	Asn	Asp	640	Glu	Ser	Phe	Glu	645	Ile	Arg	Lys	Ala	650	Ile	Lys

## PhoenixTemp32470.tmp.txt

				645					650					655	
Gly	Arg	Leu	Ser	Ala	Ile	Asn	Pro	Ala	Tyr	Ile	Val	Pro	Ser	Leu	Arg
			660					665					670		
Lys	Leu	Leu	Ile	Gln	Leu	Leu	Thr	Thr	Leu	Glu	Tyr	Gly	Gly	His	Asn
		675					680					685			
Ser	Arg	Glu	Lys	Glu	Asp	Thr	Ala	Leu	Leu	Leu	Ala	Val	Leu	Ile	Ser
	690					695					700				
His	Thr	Gly	Asp	Leu	Thr	Lys	Pro	Tyr	Phe	Lys	Pro	Ile	Met	Asp	Val
	705				710					715					720
Leu	Leu	Pro	Ala	Ser	Thr	Glu	Pro	Gly	Ala	Ser	Val	Ala	Ala	Ala	Ala
			725						730					735	
Ile	Ala	Ala	Ile	Gly	Glu	Leu	Ala	Val	Val	Val	Gly	Asp	Glu	Met	Val
			740					745					750		
Gln	Tyr	Ile	Pro	Gln	Val	Met	Pro	Ile	Phe	Ile	Glu	Thr	Phe	Gln	Asp
		755					760					765			
Gln	Ser	Met	Ser	Phe	Lys	Arg	Asp	Ala	Ala	Leu	Lys	Thr	Leu	Gly	Gln
	770					775					780				
Ile	Ala	Gly	Ser	Ser	Gly	Tyr	Val	Ile	Gln	Pro	Leu	Leu	Asp	Tyr	Pro
	785				790					795					800
Gln	Leu	Leu	Gly	Leu	Leu	Val	Asn	Ile	Leu	Lys	Ser	Glu	Thr	Ser	Leu
			805						810					815	
Ala	Val	Arg	Arg	Glu	Thr	Val	Arg	Leu	Val	Gly	Ile	Leu	Gly	Ala	Leu
			820					825					830		
Asp	Pro	Tyr	Lys	His	Arg	Glu	Val	Glu	Arg	His	Gly	Gln	Asp	Ser	Gln
		835					840					845			
Thr	Val	Ala	Glu	Gln	Asn	Ala	Pro	Pro	Val	Asp	Met	Glu	Leu	Leu	Met
	850					855					860				
Lys	Gly	Lys	Ser	Pro	Ser	Asn	Glu	Asp	Tyr	Phe	Pro	Thr	Val	Val	Ile
	865				870					875					880
Lys	Thr	Leu	Leu	Arg	Ile	Leu	Lys	Asp	Ala	Ser	Leu	Ser	Thr	His	His
				885					890					895	
Pro	Ala	Val	Ile	Gln	Ala	Ile	Met	His	Ile	Phe	Lys	Thr	Leu	Gly	Ile
			900					905					910		
Lys	Cys	Val	Pro	Phe	Leu	Asp	Lys	Val	Ile	Pro	Gly	Phe	Ala	Thr	Val
		915					920					925			
Ile	His	Thr	Cys	Pro	Pro	Ser	Leu	Leu	Glu	Thr	Tyr	Phe	Gln	Gln	Leu
	930					935					940				
Ala	Asp	Leu	Ile	Lys	Ile	Val	Lys	Leu	His	Ile	Arg	Pro	His	Leu	Pro
	945				950					955					960
Glu	Ile	Phe	Ala	Leu	Ile	Glu	Glu	Phe	Phe	His	Gln	Val	Asn	Leu	Gln
				965					970					975	
Val	Thr	Ile	Ile	Gly	Met	Ile	Glu	Gln	Val	Ser	Lys	Ala	Leu	Asp	Asp
			980					985					990		
Glu	Phe	Lys	Ile	Tyr	Met	Phe	Gln	Val	Ile	Thr	Ile	Phe	Leu	Asp	Val
		995													

## PhoenixTemp32470.tmp.txt

Trp Ile Arg Arg Leu Ser Ile Glu Leu Leu Lys Glu Ser Pro Ser Pro  
 Ala Leu Arg Ala Cys Ser Ser Leu Ala Thr Val Tyr Pro Pro Leu Ala  
 Arg Asp Leu Phe Asn Cys Ala Phe Ala Ser Cys Trp Asn Glu Leu His  
 Ile Gln Tyr Gln Gly Glu Leu Ala Gln Ala Leu Cys Ile Ala Leu Ser  
 Ser Pro Asn Asn Leu Pro Glu Ile His Gln Thr Leu Leu Asn Leu Ala  
 Glu Phe Leu Glu His Asp Asp Lys Ser Leu Pro Ile Arg Ile Gln Thr  
 Leu Ser Gln Tyr Ala Gln Arg Ser His Val Tyr Ala Lys Ala Leu His  
 Tyr Lys Glu Leu Glu Phe Ile Gln Glu Pro Ser Thr Pro Thr Ile Glu  
 Ser Leu Ile Ser Ile Asn Asn Gln Leu Gln Gln Ser Asp Ala Ala Ile  
 Gly Ile Leu Lys Tyr Ala Gln Asp His His Gly Leu Gln Leu Lys Glu  
 Thr Trp Tyr Glu Lys Leu Gln Arg Trp Asp Asp Ala Leu Arg Ala Tyr  
 Asn Glu Arg Glu Lys Glu Glu Pro Asn Ser Thr Asp Ile Thr Met Gly  
 Lys Met Arg Cys Leu His Ala Leu Gly Glu Trp Glu Leu Leu Ser Glu  
 Leu Ala Gln Asp Lys Trp Asn Asn Ser Ser Gly Asp Ile Lys Arg Ala  
 Ile Ala Pro Leu Ala Ala Ala Ala Trp Gly Ile Gly Gln Trp Glu  
 Arg Met Gly Asn Tyr Ile Ser Val Met Lys Val Glu Ser Pro Asp Lys  
 Ala Phe Phe Asn Ala Ile Leu Cys Leu His Arg Asn Asn Phe Glu Glu  
 Ala Ala Glu Gln Ile Ser Lys Ala Arg Asp Leu Leu Val Thr Glu Ile  
 Thr Ala Leu Val Ser Glu Ser Tyr Asn Arg Ala Tyr Gly Val Val Val  
 Arg Val Gln Met Leu Ala Glu Leu Glu Glu Ile Ile Lys Tyr Lys Cys  
 Leu Pro Gln Gly Ser Glu Lys Arg Ile Gln Ile Arg Glu Thr Trp Asn  
 Lys Arg Leu Leu Gly Cys Gln Arg Asn Val Asp Ile Trp Gln Arg Met  
 Leu Lys Val Arg Ala Leu Val Val Lys Pro Lys Gln Asp Met Glu Met  
 Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg Leu Gly Leu  
 Ala Glu Lys Ser Leu Asn Ala Leu Leu Asp Glu Gly Asp Ser Gly His  
 Gln Thr Ser Arg Ala Pro Pro His Val Val Tyr Ala Gln Leu Lys Tyr  
 Met Trp Ala Arg Gly Gln Gln Arg Glu Ala Leu Asn His Leu Ile Asp  
 Phe Ala Ser Lys Leu Ser Arg Asp Leu Gly Val Asn Glu Asn Glu Ala  
 Ile Thr Gln Pro Leu Pro Thr Ala Ile Pro Gly Ala Ser Asp Asn Ile  
 Glu Lys Tyr Thr Met Leu Leu Ala Arg Cys Tyr Leu Lys Gln Gly Glu  
 Trp Lys Ile Ala Leu Asn Ser Asn Trp Thr Glu Met Asp Ser Thr Gly  
 Ile Leu Gly Ser Phe Leu Leu Ala Thr His Phe Asp Pro Lys Trp Tyr  
 Lys Ala Trp His Asn Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Pro  
 Gln Ala Lys Gln Leu His Gln Glu Ser Ala Asp Val Asp Glu Lys Ser  
 Leu Gly Gly Ile Leu His Tyr Val Val Pro Ala Val Lys Gly Phe Phe

## PhoenixTemp32470.tmp.txt

1745 1750 1755 1760  
 His Ser Ile Ser Leu Ser Gln Ser Asn Pro Leu Gln Asp Thr Leu Arg  
 1765 1770 1775  
 Leu Leu Thr Leu Trp Ile Lys Tyr Gly Gly Ile Glu Glu Val Ala Asn  
 1780 1785 1790  
 Ala Met Gln Glu Gly Phe Gln Leu Val Lys Val Asp Thr Trp Leu Asp  
 1795 1800 1805  
 Val Ile Pro Gln Leu Ile Ser Arg Ile His Gln Pro Asp Pro Val Val  
 1810 1815 1820  
 Ser Lys Ser Leu Leu Gly Leu Leu Ser Asp Leu Gly Arg Ala His Pro  
 1825 1830 1835 1840  
 Gln Ala Leu Ile Tyr Pro Leu Thr Val Ala Ile Lys Ser Asp Ser Val  
 1845 1850 1855  
 Ser Arg Gln Arg Ala Ala Leu Thr Ile Ile Asp Lys Met Arg Ala His  
 1860 1865 1870  
 Ser Ala Arg Leu Val Asp Gln Ala Asp Leu Val Ser Asn Glu Leu Ile  
 1875 1880 1885  
 Arg Val Ala Val Leu Trp His Glu Met Trp Tyr Glu Gly Leu Glu Asp  
 1890 1895 1900  
 Ala Ser Arg Ser Tyr Phe Gly Asp Gln Asn Ile Glu Lys Met Phe Gln  
 1905 1910 1915 1920  
 Ile Leu Thr Pro Leu His Gln Met Leu Glu Lys Gly Pro Glu Thr Ile  
 1925 1930 1935  
 Arg Glu Ala Ser Phe Val Asn Ala Phe Gly Lys Glu Leu Asn Asp Ala  
 1940 1945 1950  
 His Gln Trp Leu Met Asn Phe Arg Arg Thr Lys Asp Val Ala Tyr Leu  
 1955 1960 1965  
 Asn Gln Ala Trp Asp Leu Tyr Tyr Gly Val Phe Arg Arg Ile Ser Arg  
 1970 1975 1980  
 Gln Leu Pro Gln Leu Gln Asn Leu Asp Leu Gln His Val Ser Pro Lys  
 1985 1990 1995 2000  
 Leu Leu Ala Ala Lys Asn Leu Glu Leu Ala Val Pro Gly Thr Tyr Val  
 2005 2010 2015  
 Pro Gly Lys Glu Val Ile His Ile Val Arg Phe Glu Pro Val Phe Ser  
 2020 2025 2030  
 Val Ile Thr Ser Lys Gln Arg Pro Arg Lys Phe Asn Val Leu Gly Ser  
 2035 2040 2045  
 Asp Gly Lys Lys Tyr Gln Tyr Leu Leu Lys Gly His Glu Asp Ile Arg  
 2050 2055 2060  
 Gln Asp Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu  
 2065 2070 2075 2080  
 Ala Asn Asp Pro Glu Cys Phe Lys Arg His Met Asp Ile Gln Gln Tyr  
 2085 2090 2095  
 Ala Ala Ile Pro Leu Ser Pro Ser Ser Gly Met Leu Gly Trp Val Pro  
 2100 2105 2110  
 Asn Ser Asp Thr Phe His Val Leu Ile Lys Glu Tyr Arg Glu Pro Arg  
 2115 2120 2125  
 Lys Ile Leu Leu Asp Val Glu His Arg Ile Met Leu Gln Met Ser Pro  
 2130 2135 2140  
 Asp Tyr Asp Asn Leu Thr Leu Leu Glu Lys Val Glu Val Phe Thr Tyr  
 2145 2150 2155 2160  
 Ala Leu Asp Ile Thr Arg Gly Gln Asp Leu Tyr Lys Val Leu Trp Phe  
 2165 2170 2175  
 Lys Ser Lys Ser Ser Glu Ala Trp Leu Asp Arg Arg Thr Thr Tyr Thr  
 2180 2185 2190  
 Arg Ser Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly  
 2195 2200 2205  
 Asp Arg His Pro Ser Asn Leu Met Met Asp Arg Ile Thr Gly Lys Val  
 2210 2215 2220  
 Ile His Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu  
 2225 2230 2235 2240  
 Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Ser Tyr  
 2245 2250 2255  
 Ala Met Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Ser Glu  
 2260 2265 2270  
 Asn Val Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala Ile  
 2275 2280 2285  
 Leu Asp Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp Phe  
 2290 2295 2300

## PhoenixTemp32470.tmp.txt

Pro Leu Lys Gln Ile Val Asp Asn Pro Asn Gln His Phe Pro Asn Ala  
 2305 2310 2315 2320  
 Asn Tyr Asn Glu Leu Leu Arg Ser Gly Gln Ile Thr Glu Glu Glu Ala  
 2325 2330 2335  
 Ser Arg Met Glu Ala Gln Asn Lys Ala Asp Ile Leu Asn Ala Arg Ala  
 2340 2345 2350  
 Ala Tyr Val Leu Lys Arg Ile Thr Asp Lys Leu Thr Gly Asn Asp Phe  
 2355 2360 2365  
 Lys Arg Phe Arg Glu Leu Asp Val Pro Ser Gln Val Asp Lys Leu Ile  
 2370 2375 2380  
 Gln Gln Ala Thr Ser Val Glu Asn Leu Cys Gln His Tyr Ile Gly Trp  
 2385 2390 2395 2400  
 Cys Ser Phe Trp

&lt;210&gt; 2552

&lt;211&gt; 7155

&lt;212&gt; DNA

&lt;213&gt; Penicillium chrysogenum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7155)

&lt;400&gt; 2552

atg gcc caa gca ggt gca atc aca gac gtg acc caa aga ttg ttc gtg	48
Met Ala Gln Ala Gly Ala Ile Thr Asp Val Thr Gln Arg Leu Phe Val	
1 5 10 15	
gag ctc aag tca aag aat gag gag gcc agg gcc aga gct gcc tac gag	96
Glu Leu Lys Ser Lys Asn Glu Glu Ala Arg Ala Arg Ala Tyr Glu	
20 25 30	
ctc tac gat aat gtc cta tct gtg tcc aga gat tgg ccc tcg gag aag	144
Leu Tyr Asp Asn Val Leu Ser Val Ser Arg Asp Trp Pro Ser Glu Lys	
35 40 45	
ttc gtg gaa ttt tac aac gcc gtt agc caa cgc atc gcc caa ctc gtg	192
Phe Val Glu Phe Tyr Asn Ala Val Ser Gln Arg Ile Ala Gln Leu Val	
50 55 60	
gtc aac ggt agc gat gca aac gaa aga atc ggt gga ttg tta gca ctc	240
Val Asn Gly Ser Asp Ala Asn Glu Arg Ile Gly Gly Leu Leu Ala Leu	
65 70 75 80	
gac cga ctc att gac ttt gac gga gtt gat gcc gcc cag aaa acg acg	288
Asp Arg Leu Ile Asp Phe Asp Gly Val Asp Ala Ala Gln Lys Thr Thr	
85 90 95	
aga ttc gcc agt tac ttg cgc agc gcc ctt cgc agt aat gat aat gtg	336
Arg Phe Ala Ser Tyr Leu Arg Ser Ala Leu Arg Ser Asn Asp Asn Val	
100 105 110	
gtc ctg gtg tat gcg gcc cga tcg ctg ggc cga ctc gcg aag ccc ggc	384
Val Leu Val Tyr Ala Ala Arg Ser Leu Gly Arg Leu Ala Lys Pro Gly	
115 120 125	
ggg gct cta acc gcg gaa ctg gtg gaa agc gaa ata caa tct gca ttg	432
Gly Ala Leu Thr Ala Glu Leu Val Glu Ser Glu Ile Gln Ser Ala Leu	
130 135 140	
gaa tgg cta caa tcg gag cga cag gaa agt cgg cgg ttt gca gca gtg	480
Glu Trp Leu Gln Ser Glu Arg Gln Glu Ser Arg Arg Phe Ala Ala Val	
145 150 155 160	
ctt gtg atc cgg gaa ctg gcc aag ggc tca cca aca ctc ctc tac ggc	528
Leu Val Ile Arg Glu Leu Ala Lys Gly Ser Pro Thr Leu Leu Tyr Gly	
165 170 175	
ttc gtt ccg cag gta ttt gag ctt gtc tgg gtt gcc ctt cga gat ccg	576
Phe Val Pro Gln Val Phe Glu Leu Val Trp Val Ala Leu Arg Asp Pro	
180 185 190	
aaa gtc ctc atc cgt gag act gcc gag gcc gtc ggg gaa tgc ttt	624
Lys Val Leu Ile Arg Glu Thr Ala Glu Ala Val Gly Glu Cys Phe	
195 200 205	
gag ata att gtg gct cgt gat tct caa gtc cgt caa tca tgg ttt gca	672
Glu Ile Ile Val Ala Arg Asp Ser Gln Val Arg Gln Ser Trp Phe Ala	
210 215 220	
cgg ata cac gat gaa gca ctt ctg ggc ttg aag tcc cat aac att gat	720
Arg Ile His Asp Glu Ala Leu Leu Gly Leu Lys Ser His Asn Ile Asp	



## PhoenixTemp32470.tmp.txt

225	230	235	240	
tg	att	gag	aag	ggc
Trp	Ile	Glu	Lys	Gly
	245	250	255	
acg	aag	gct	atc	ctc
Thr	Lys	Ala	Ile	Leu
	260	265	270	
cgt	cat	aag	gtc	ctc
Arg	His	Lys	Val	Leu
	275	280	285	
acc	ctc	gcc	act	gag
Thr	Ile	Ala	Thr	Glu
	290	295	300	
tat	ctc	caa	ctc	agg
Tyr	Leu	Gln	Leu	Arg
	305	310	315	
aaa	gag	gga	att	gca
Lys	Glu	Gly	Ile	Ala
	320	325	330	
gtg	acc	gat	att	tac
Val	Thr	Asp	Ile	Tyr
	340	345	350	
cga	gag	agg	ggt	aac
Arg	Glu	Arg	Val	Asn
	355	360	365	
gcc	cca	atg	gtg	caa
Ala	Pro	Phe	Ala	Gln
	370	375	380	
gcg	ctc	aaa	ccc	tgc
Ala	Leu	Lys	Pro	Cys
	385	390	395	
ggg	ctg	aca	gtc	tac
Gly	Leu	Thr	Val	His
	405	410	415	
atc	cct	gaa	gat	ctg
Ile	Pro	Glu	Asp	Leu
	420	425	430	
agt	atc	ctt	gtt	cct
Ser	Ile	Leu	Gly	Pro
	435	440	445	
aac	cga	cct	gac	cac
Asn	Arg	Pro	Asp	His
	450	455	460	
gag	ctt	gat	cat	gga
Glu	Leu	Asp	His	Gly
	465	470	475	
agc	ttt	ggg	gtg	ggt
Ser	Phe	Gly	Val	Val
	485	490	495	
gct	atc	gaa	cga	tcg
Ala	Ile	Glu	Arg	Ser
	500	505	510	
gct	ctt	gtt	atc	caa
Ala	Leu	Val	Ile	Gln
	515	520	525	
aca	agc	ggt	att	ctc
Thr	Ser	Gly	Ile	Leu
	530	535	540	
tta	acc	cct	cga	gtt
Leu	Thr	Pro	Arg	Val
	545	550	555	
ttg	tg	aaa	ttg	gag
Leu	Trp	Lys	Leu	Ala
	565	570	575	
aat	att	gtc	ttc	gtc
Asn	Ile	Val	Phe	Val
	580	585	590	
aaa	gaa	ggt	aac	cct
Lys	Glu	Gly	Asn	Pro

## PhoenixTemp32470.tmp.txt

gct	tat	595	ttc	ccg	cca	cta	600	aaa	ctg	ttg	gtc	605	ctt	ctc	act	1872
Ala	Tyr	610	Val	Phe	Pro	Leu	615	Arg	Lys	Leu	Val	620	Asn	Leu	Thr	
ggt	ctt	ggc	ttc	gcg	aat	acc	gcc	cgc	cag	aag	gag	gaa	aca	gct	caa	1920
Gly	Leu	Gly	Phe	Ala	Asn	Thr	Ala	Arg	Gln	Lys	Glu	Glu	Thr	Ala	Gln	
625					630					635					640	
cta	atc	agc	ttg	ttt	gtc	tct	aat	gcg	acg	aaa	ttg	atc	agg	tca	tac	1968
Leu	Ile	Ser	Leu	Phe	Val	Ser	Asn	Ala	Thr	Lys	Leu	Ile	Arg	Ser	Tyr	
				645					650					655		
gtt	gat	ccc	atg	gtg	act	gcc	ttg	ttg	ccc	aaa	tca	aca	gac	att	aat	2016
Val	Asp	Pro	Met	Val	Thr	Ala	Leu	Leu	Pro	Lys	Ser	Thr	Asp	Ile	Asn	
			660					665					670			
ccc	ggc	gtt	gct	gcc	act	act	ttg	aag	gct	gtc	ggt	gag	ctc	gca	agt	2064
Pro	Gly	Val	Ala	Ala	Thr	Thr	Leu	Lys	Ala	Val	Gly	Glu	Leu	Ala	Ser	
		675					680					685				
gtg	ggc	ggg	cat	gag	atg	aga	caa	tat	ctg	cct	caa	atc	atg	cca	att	2112
Val	Gly	Gly	His	Glu	Met	Arg	Gln	Tyr	Leu	Pro	Gln	Ile	Met	Pro	Ile	
		690				695					700					
att	ctg	gac	tcg	ctc	cag	gac	ctt	tcg	tcg	cat	aac	aag	cg	gaa	gct	2160
Ile	Leu	Asp	Ser	Leu	Gln	Asp	Leu	Ser	Ser	His	Asn	Lys	Arg	Glu	Ala	
705					710					715					720	
gcg	ctt	cgg	aca	ttg	gga	caa	ttg	gcc	agc	aat	tca	ggc	tac	gtc	atc	2208
Ala	Leu	Arg	Thr	Leu	Gly	Gln	Leu	Ala	Ser	Asn	Ser	Gly	Tyr	Val	Ile	
				725					730					735		
gag	cca	tac	atg	gaa	tac	cct	cat	ctt	ctc	gcc	gtt	ctc	atc	aat	atc	2256
Glu	Pro	Tyr	Met	Glu	Tyr	Pro	His	Leu	Leu	Ala	Val	Leu	Ile	Asn	Ile	
			740					745					750			
atc	aaa	acg	gaa	cag	aca	ggc	tct	taa	cg	aag	gag	acc	atc	aaa	ctt	2304
Ile	Lys	Thr	Glu	Gln	Thr	Gly	Ser	Leu	Arg	Lys	Glu	Thr	Ile	Lys	Leu	
		755					760					765				
gtc	gga	gtg	ctc	ggt	gcg	ctt	gat	ccc	tac	aag	tac	cag	cag	atc	agc	2352
Val	Gly	Val	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	Tyr	Gln	Gln	Ile	Ser	
		770				775					780					
gag	att	gaa	cct	gat	gtt	cat	atc	aac	gaa	ata	cag	aat	gtt	tcc		2400
Glu	Ile	Glu	Pro	Asp	Val	His	His	Asn	Glu	Ile	Gln	Asn	Val	Ser		
				790					795					800		
gat	gtt	gcc	ctc	att	atg	cag	ggt	ctc	acg	ccc	tcc	aat	gaa	gag	tat	2448
Asp	Val	Ala	Leu	Ile	Met	Gln	Gly	Leu	Thr	Pro	Ser	Asn	Glu	Glu	Tyr	
				805					810					815		
tat	ccc	act	gtg	gtc	atc	cat	act	ttg	cag	aac	att	cta	cgt	gag		2496
Tyr	Pro	Thr	Val	Val	Ile	His	Thr	Leu	Met	Gln	Asn	Ile	Leu	Arg	Glu	
			820					825				830				
aac	tcc	ctg	gct	caa	tat	cac	tca	gct	gtc	att	gat	gcc	atc	gtc	aca	2544
Asn	Ser	Leu	Ala	Gln	Tyr	His	Ser	Ala	Val	Ile	Asp	Ala	Ile	Val	Thr	
		835					840					845				
att	ttc	aag	act	ctg	ggc	ttg	aag	tgt	gtc	ccg	ttc	gga	caa	att		2592
Ile	Phe	Lys	Thr	Leu	Gly	Leu	Lys	Cys	Val	Pro	Phe	Leu	Gly	Gln	Ile	
		850				855					860					
att	cca	ggg	ttc	att	ctg	gtt	atc	aga	agc	gct	cct	gct	agc	cg	ctt	2640
Ile	Pro	Gly	Phe	Ile	Leu	Val	Ile	Arg	Ser	Ala	Pro	Ala	Ser	Arg	Leu	
				870						875					880	
gag	tcc	tat	ttc	aat	cag	atg	gca	atc	ttg	gtg	aat	atc	gtg	cga	caa	2688
Glu	Ser	Tyr	Phe	Asn	Gln	Met	Ala	Ile	Leu	Val	Asn	Ile	Val	Arg	Gln	
				885					890					895		
cat	att	cg	act	ttc	ctg	cca	gag	ata	atc	gag	gtc	att	aaa	gat	ttc	2736
His	Ile	Arg	Thr	Phe	Leu	Pro	Glu	Ile	Ile	Glu	Val	Ile	Lys	Asp	Phe	
			900					905					910			
tgg	gat	gct	tca	tac	cag	atc	caa	ggt	acc	att	tta	tcc	ttg	gtc	gag	2784
Trp	Asp	Ala	Ser	Tyr	Gln	Ile	Gln	Gly	Thr	Ile	Leu	Ser	Leu	Val	Glu	
			915				920						925			
gcc	att	gct	agg	tca	ttg	gaa	gga	gaa	ttc	agg	aag	tat	ctt	gct	ggc	2832
Ala	Ile	Ala	Arg	Ser	Leu	Glu	Gly	Glu	Phe	Arg	Lys	Tyr	Leu	Ala	Gly	
		930				935					940					
ctg	att	cct	ttg	atg	ctc	gat	aca	ctt	gat	aaa	gac	acc	tca	cct	cg	2880
Leu	Ile	Pro	Leu	Met	Leu	Asp	Thr	Leu	Asp	Lys	Asp	Thr	Ser	Pro	Arg	
				950						955					960	
cga	cag	ccc	tct	gag	aag	att	ctc	cat	gct	ctt	ttg	att	ttc	ggc	tca	2928
Arg	Gln	Pro	Ser	Glu	Lys	Ile	Leu	His	Ala	Leu	Leu	Ile	Phe	Gly	Ser	

## PhoenixTemp32470.tmp.txt

agc	gga	gag	gaa	965	tac	atg	cat	ctc	atc	970	att	cct	tcc	att	ggt	975	cgt	ctg	2976
Ser	Gly	Glu	Glu	980	Tyr	Met	His	Leu	Ile	985	Ile	Pro	Ser	Ile	Val	Arg	Leu		
ttt	gat	cgg	cca	cag	aat	cct	cag	agc	atc	cgt	aaa	tcc	gct	atc	gat				3024
Phe	Asp	Arg	Pro	Gln	Asn	Pro	Gln	Ser	Ile	Arg	Lys	Ser	Ala	Ile	Asp				
agc	ttg	aca	aaa	cta	tcg	cga	caa	ggt	aac	gtc	tct	gac	ttt	gca	tcc				3072
Ser	Leu	Thr	Lys	Leu	Ser	Arg	Gln	Val	Asn	Val	Ser	Asp	Phe	Ala	Ser				
cta	atg	ggt	cat	tca	ttg	tcc	cga	gtc	gtg	gct	ggc	ggt	gat	cgt	gtg				3120
Leu	Met	Val	His	Ser	Leu	Ser	Arg	Val	Val	Ala	Gly	Gly	Asp	Arg	Val				
ttg	cgt	caa	gct	gcg	atg	gac	tgc	att	tgt	gcc	ctc	att	ttc	cag	ctc				3168
Leu	Arg	Gln	Ala	Ala	Met	Asp	Cys	Ile	Cys	Ala	Leu	Ile	Phe	Gln	Leu				
gga	caa	gac	ttc	acg	cat	tac	att	cat	ctt	cta	aac	aag	gtc	cta	aaa				3216
Gly	Gln	Asp	Phe	Thr	His	Tyr	Ile	His	Leu	Leu	Asn	Lys	Val	Leu	Lys				
acc	aac	cag	atc	gcg	cat	acc	aac	tac	caa	atc	ctg	gtg	acc	aaa	ctc				3264
Thr	Asn	Gln	Ile	Ala	His	Thr	Asn	Tyr	Gln	Ile	Leu	Val	Thr	Lys	Leu				
caa	aag	ggc	gac	ccg	ctc	ccg	cag	gac	ctc	aat	ccg	gaa	gag	gtc	tat				3312
Gln	Lys	Gly	Asp	Pro	Leu	Pro	Gln	Asp	Leu	Asn	Pro	Glu	Glu	Val	Tyr				
tct	ttc	ccc	acc	gac	gac	acc	aac	ttt	tcc	gaa	att	gga	caa	aag	aag				3360
Ser	Phe	Pro	Thr	Asp	Asp	Thr	Asn	Phe	Ser	Glu	Ile	Gly	Gln	Lys	Lys				
att	gtt	gtg	aac	cag	caa	cat	ctc	aag	aac	gca	tgg	gat	gct	tcg	caa				3408
Ile	Val	Val	Asn	Gln	His	Leu	Lys	Asn	Ala	Trp	Asp	Ala	Ser	Gln					
aag	tcc	act	cgt	gac	gat	tgg	cag	gaa	tgg	ata	cgc	cgt	ttc	agc	att				3456
Lys	Ser	Thr	Arg	Asp	Asp	Trp	Gln	Glu	Trp	Ile	Arg	Arg	Phe	Ser	Ile				
gag	ctg	ttg	aag	gaa	tca	cca	tct	ccg	gca	ttg	cgt	gca	tgt	gct	agc				3504
Glu	Leu	Lys	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Ala	Cys	Ala	Ser				
tta	gct	ggt	atc	tac	cag	ccc	ctc	tca	agg	gat	ctt	ttc	aat	gct	gct				3552
Leu	Ala	Gly	Ile	Tyr	Gln	Pro	Leu	Ser	Arg	Asp	Leu	Phe	Asn	Ala	Ala				
ttc	gtc	tcg	tgc	tgg	act	gag	ttg	tat	gat	caa	tac	caa	gaa	gag	ctc				3600
Phe	Val	Ser	Cys	Trp	Thr	Glu	Leu	Tyr	Asp	Gln	Tyr	Gln	Glu	Glu	Leu				
gtc	cgc	tca	att	gaa	aag	gcg	ctt	act	tct	cct	aac	atc	tcc	cca	gag				3648
Val	Arg	Ser	Ile	Glu	Lys	Ala	Leu	Thr	Ser	Pro	Asn	Ile	Ser	Pro	Glu				
att	ttg	caa	att	ctc	ctc	aat	ctg	gcc	gaa	ttc	atg	gag	cat	gat	gac				3696
Ile	Leu	Gln	Ile	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	Asp	Asp				
aag	gct	ctt	ccc	atc	gac	atc	cgc	aca	ctt	gga	aaa	tat	gct	gca	aag				3744
Lys	Ala	Leu	Pro	Ile	Asp	Ile	Arg	Thr	Leu	Gly	Lys	Tyr	Ala	Ala	Lys				
tgt	cat	gct	ttt	gct	aaa	gct	ctt	cac	tac	aaa	gaa	ctg	gag	ttc	gaa				3792
Cys	His	Ala	Phe	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu	Phe	Glu				
caa	gac	cag	aac	tcg	ggt	gca	ggt	gaa	gcc	ttg	att	acc	att	aac	aac				3840
Gln	Asp	Gln	Asn	Ser	Gly	Ala	Val	Glu	Ala	Leu	Ile	Thr	Ile	Asn	Asn				
cag	ctt	cag	cag	tcc	gat	gcc	gcc	atc	ggt	atc	ctt	cgc	aaa	gcg	cag				3888
Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile	Gly	Ile	Leu	Arg	Lys	Ala	Gln				
gcg	tat	cgt	gat	gtg	gag	ctc	aag	gaa	act	tgg	ttc	gag	aag	ctc	caa				3936
Ala	Tyr	Arg	Asp	Val	Glu	Leu	Lys	Glu	Thr	Trp	Phe	Glu	Lys	Leu	Gln				
cgg	tgg	gac	gaa	gcc	ctt	gct	gct	tac	aag	cga	cgt	gag	aag	acg	gac				3984
Arg	Trp	Asp	Glu	Ala	Leu	Ala	Ala	Tyr	Lys	Arg	Arg	Glu	Lys	Thr	Asp				
cca	gac	tca	ttt	ggt	atc	acc	atg	ggt	aag	atg	cgc	tgt	ttg	cac	gct				4032
Pro	Asp	Ser	Phe	Gly	Ile	Thr	Met	Gly	Lys	Met	Arg	Cys	Leu	His	Ala				

## PhoenixTemp32470.tmp.txt

1330	1335	1340	
ctt ggc gag tgg aag gtt	ctc tgc gat ctc gct	caa gaa aag tgg aac	4080
Leu Gly Glu Trp Lys Val	Leu Ser Asp Leu Ala	Gln Glu Lys Trp Asn	
1345	1350	1355	1360
caa gcg tca ctg gag cac	cgc cgc gct att gca	cct ctt gcc gct gcc	4128
Gln Ala Ser Leu Glu His	Arg Arg Ala Ile Ala	Pro Leu Ala Ala Ala	
1365	1370	1375	
gct gcc tgg ggt cgg ggc	caa tgg gag ttg atg	gac tct tac ctt ggt	4176
Ala Ala Trp Gly Arg Gly	Gln Trp Glu Leu Met	Asp Ser Tyr Leu Gly	
1380	1385	1390	
gtc atg aaa gag cag tct	ccg gac cgt tct ttc	ttc ggt gcc att ctg	4224
Val Met Lys Glu Gln Ser	Pro Asp Arg Ser Phe	Phe Gly Ala Ile Leu	
1395	1400	1405	
gca atc cat cgg aac caa	ttc gat gag gcc aac	atg tac att gag aag	4272
Ala Ile His Arg Asn Gln	Phe Asp Glu Ala Asn	Met Tyr Ile Glu Lys	
1410	1415	1420	
gct cgc aat ggt ctc gat	act gaa ttg tct gct	ctt ctg gga gag tca	4320
Ala Arg Asn Gly Leu Asp	Thr Glu Leu Ser Ala	Leu Leu Gly Glu Ser	
1425	1430	1435	1440
tac aac cgt gcc tac aat	ggt gtt gtc cgg gtc	cag atg ctc gcc gag	4368
Tyr Asn Arg Ala Tyr Asn	Val Val Val Arg Val	Gln Met Leu Ala Glu	
1445	1450	1455	
cta gaa gag atc atc aca	tac aag caa aac atc	ggc gac cct gaa aag	4416
Leu Glu Glu Ile Thr Tyr	Lys Gln Asn Ile Gly	Asp Pro Glu Lys	
1460	1465	1470	
cag gat gcc atg cgt aaa	act tgg aat caa aga	ctg ctt gga tgt cag	4464
Gln Asp Ala Met Arg Lys	Thr Trp Asn Gln Arg	Leu Leu Gly Cys Gln	
1475	1480	1485	
caa aac gtg gaa gtg tgg	cag cgt atg ctc aag	gtc aga gct ctt gtc	4512
Gln Asn Val Glu Val Trp	Gln Arg Met Leu Lys	Val Arg Ala Leu Val	
1490	1495	1500	
aca gcc ccg cgt gag aat	ctt gat atg tcc atc	aag ttc gcc aat ctt	4560
Thr Ala Pro Arg Glu Asn	Leu Asp Met Ser Ile	Lys Phe Ala Asn Leu	
1505	1510	1515	1520
tgt cgc aag tcc aat cgc	atg ggt ctt gcg gaa	cgg tcc ctt gca tct	4608
Cys Arg Lys Ser Asn Arg	Met Gly Leu Ala Glu	Arg Ser Leu Ala Ser	
1525	1530	1535	
cta gag aca gtg gtg tcc	gat gcc aat ggc acg	cgc act atc gca cca	4656
Leu Glu Thr Val Val Ser	Asp Ala Asn Gly Thr	Arg Thr Ile Ala Pro	
1540	1545	1550	
ccc gaa gtc aca tac gcc	agg ctg aaa ttc agt	tgg gca aat ggt cac	4704
Pro Glu Val Thr Tyr Ala	Arg Leu Lys Phe Ser	Trp Ala Asn Gly His	
1555	1560	1565	
caa cta gag tca ctt gaa	atg atg aag gag ttt	acc tct ggt ctg aca	4752
Gln Leu Glu Ser Leu Glu	Met Met Lys Glu Phe	Thr Ser Gly Leu Thr	
1570	1575	1580	
gat gat ttc tcc aga tac	aca ctc atg gta tca	aat ggt gaa cat	4800
Asp Asp Phe Ser Arg Tyr	Asn Thr Leu Met Val	Ser Asn Gly Glu His	
1585	1590	1595	1600
cat ggc gcg aat gga gtc	aac ggg gtc gtt gac	cag aac cac cca gat	4848
His Gly Ala Asn Gly Val	Asn Gly Val Asp Gln	Asn His Pro Asp	
1605	1610	1615	
gcc atc agc ctg aat gaa	cgg atc ggc gac gtc	aac aaa ttt aga aaa	4896
Ala Ile Ser Leu Asn Glu	Arg Ile Gly Asp Val	Asn Lys Phe Arg Lys	
1620	1625	1630	
ctt ctc tcc aag agc tat	ctt aga cag gga gag	tgg cag acc gct ttg	4944
Leu Leu Ser Lys Ser Tyr	Leu Arg Gln Gly Glu	Trp Gln Thr Ala Leu	
1635	1640	1645	
cag agg ggt gac tgg aga	ccg gaa cat gtt cga	gag gtt ctc aac gcc	4992
Gln Arg Gly Asp Trp Arg	Pro Glu His Val Arg	Glu Val Leu Asn Ala	
1650	1655	1660	
tac tcg gcc gcg acc caa	tac aac cgc gat tca	tac aag gcg tgg cac	5040
Tyr Ser Ala Ala Thr Gln	Tyr Asn Arg Asp Ser	Tyr Lys Ala Trp His	
1665	1670	1675	1680
tcc tgg gca ctt gca aac	ttc gag gtt gtt aca	acg att gcc aac cag	5088
Ser Trp Ala Leu Ala Asn	Phe Glu Val Val Thr	Thr Ile Ala Asn Gln	
1685	1690	1695	
gct agt cgt gag ggc ata	cct gcg ccg gtt cct	gct cat atc gtg aca	5136
Ala Ser Arg Glu Gly Ile	Pro Ala Pro Val Pro	Ala His Ile Val Thr	

## PhoenixTemp32470.tmp.txt

1700	1705	1710	
gaa cat gtg att cct gcc att cgc gga ttc att cgc tcc atc gct ttg	1705	1710	5184
Glu His Val Ile Pro Ala Ile Arg Gly Phe Ile Arg Ser Ile Ala Leu	1715	1720	
1715	1720	1725	5232
tcc ttg aca tct tcg ttg caa gat acc ttg aga tta ctc act ctg tgg	1720	1725	
Ser Leu Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp	1730	1735	
1730	1735	1740	5280
ttt aat cat ggc gga gat cat gag gta aac act gtc gtt acg gaa gga	1735	1740	
Phe Asn His Gly Gly Asp His Glu Val Asn Thr Val Val Thr Glu Gly	1745	1750	
1745	1750	1755	5328
ttt acg gct gtc aat atc gac act tgg ctc gct gtc act cct caa ctg	1750	1755	
Phe Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val Thr Pro Gln Leu	1765	1770	
1765	1770	1775	5376
atc gct cga atc aac caa ccc aat atc agg gtc cgc ggt gcg gtt cat	1770	1775	
Ile Ala Arg Ile Asn Gln Pro Asn Ile Arg Val Arg Gly Ala Val His	1780	1785	
1780	1785	1790	5424
agg ttg ctt gcc gag gtt ggc aaa gcg cat cct caa gcc ctt gtg tat	1785	1790	
Arg Leu Leu Ala Glu Val Gly Lys Ala His Pro Gln Ala Leu Val Tyr	1795	1800	
1795	1800	1805	5472
cca ctg acg gtg gca atg aaa tcg aat gtg act cga cgc tct caa tct	1800	1805	
Pro Leu Thr Val Ala Met Lys Ser Asn Val Thr Arg Arg Ser Gln Ser	1810	1815	
1810	1815	1820	5520
gct agc aac atc atg gaa agt atg cgg caa cat agc gcc aaa ctt gtt	1815	1820	
Ala Ser Asn Ile Met Glu Ser Met Arg Gln His Ser Ala Lys Leu Val	1825	1830	
1825	1830	1835	5568
gag caa gca gat ctt gtg agt cat gag ctt atc cga gtt gcg gtc ttg	1830	1835	
Glu Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg Val Ala Val Leu	1845	1850	
1845	1850	1855	5616
tgg cat gaa ctt tgg cat gaa ggt ctc gaa gaa gcg tct cgt ctc tat	1850	1855	
Trp His Glu Leu Trp His Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr	1860	1865	
1860	1865	1870	5664
ttc ggc gat cac aat gtt gaa ggc atg ttc tca aca ctt gcg ccc ttc	1865	1870	
Phe Gly Asp His Asn Val Glu Gly Met Phe Ser Thr Leu Ala Pro Phe	1875	1880	
1875	1880	1885	5712
cat gat atg cta gac aag ggc gcc gag acc ctt cgt gag gtg tca ttt	1880	1885	
His Asp Met Leu Asp Lys Gly Ala Glu Thr Leu Arg Glu Val Ser Phe	1890	1895	
1890	1895	1900	5760
gcg caa gct ttc ggt cgt gac ctt gct gaa gcc aag cat tac tgc atg	1895	1900	
Ala Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys His Tyr Cys Met	1905	1910	
1905	1910	1915	5808
atg tat cgc gaa tcg gag gaa atc ggt gat ctc aac caa gct tgg gac	1910	1915	
Met Tyr Arg Glu Ser Glu Glu Ile Gly Asp Leu Asn Gln Ala Trp Asp	1925	1930	
1925	1930	1935	5856
ttg tat tac act gtg ttc cgg aag atc agc cga cag cta cca cag cta	1930	1935	
Leu Tyr Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln Leu Pro Gln Leu	1940	1945	
1940	1945	1950	5904
tcg act ctc gat ctt aaa tac gtg tct cct cga ctc aag gat tgc gca	1945	1950	
Ser Thr Leu Asp Leu Lys Tyr Val Ser Pro Arg Leu Lys Asp Cys Ala	1955	1960	
1955	1960	1965	5952
gac ctt gac ctt gcc gtt cca gga aca tac cag agt ggc aag cca gtt	1960	1965	
Asp Leu Asp Leu Ala Val Pro Gly Thr Tyr Gln Ser Gly Lys Pro Val	1970	1975	
1970	1975	1980	6000
att cga atc atg agc ttc gac ccg atc ttg cat gtt ttg cag aca aag	1975	1980	
Ile Arg Ile Met Ser Phe Asp Pro Ile Leu His Val Leu Gln Thr Lys	1985	1990	
1985	1990	1995	6048
aaa cga ccg cgt gcg atg acg ctt aaa ggc agc aac ggt agc tct tac	1990	1995	
Lys Arg Pro Arg Arg Met Thr Leu Lys Gly Ser Asn Gly Ser Tyr	2005	2010	
2005	2010	2015	6096
atg tac ctt gtc aag ggc cat gaa gat atc cga caa gat gag cga gtc	2010	2015	
Met Tyr Leu Val Lys Gly His Glu Asp Ile Arg Gln Asp Glu Arg Val	2020	2025	
2020	2025	2030	6144
atg caa ctt ttc ggc ttg tgt aat acc ttg ctg gat aac gat ggc gag	2025	2030	
Met Gln Leu Phe Gly Leu Cys Asn Thr Leu Leu Asp Asn Asp Gly Glu	2035	2040	
2035	2040	2045	6192
agt ttc aag ccg cac ttg tcg gtc cag cgt ttc cct gcc att cca ttg	2040	2045	
Ser Phe Lys Arg His Leu Ser Val Gln Arg Phe Pro Ala Ile Pro Leu	2050	2055	
2050	2055	2060	6240
tct cag agc tct ggt ctc ctg gga tgg gtg tcc aac agt gat aca ttg	2055	2060	
Ser Gln Ser Ser Gly Leu Leu Gly Trp Val Ser Asn Ser Asp Thr Leu			

## PhoenixTemp32470.tmp.txt

2065 2070 2075 2080  
 cat gcc ttg atc aag gaa tac cgt gaa agc cgg aga atc cta ctc aac 6288  
 His Ala Leu Ile Lys Glu Tyr Arg Glu Ser Arg Arg Ile Leu Leu Asn  
 2085 2090 2095  
 atc gag cat cgg atc atg ctt caa atg gca ccc gac tac gat agc ctt 6336  
 Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr Asp Ser Leu  
 2100 2105 2110  
 act ctc atg cag aag gtc gaa gta ttc ggt tac gct atg gac aac acg 6384  
 Thr Leu Met Gln Lys Val Glu Val Phe Gly Tyr Ala Met Asp Asn Thr  
 2115 2120 2125  
 acc ggc aaa gat ctg tac cgc gtg cta tgg ctt aag agc aag agc tct 6432  
 Thr Gly Lys Asp Leu Tyr Arg Val Leu Trp Leu Lys Ser Lys Ser Ser  
 2130 2135 2140  
 gag gca tgg ctt gaa cgt cgt acg aac tac act cga tcg ctc ggt gtt 6480  
 Glu Ala Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Gly Val  
 2145 2150 2155 2160  
 atg tct atg gtc ggc tac atc ctt ggt ctg gga gac agg cat cca tcg 6528  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2165 2170 2175  
 aac ttg ctg ctg gat cgt ggt aat ggc cgt gtg gtt cat atc gac ttt 6576  
 Asn Leu Leu Leu Asp Arg Gly Asn Gly Arg Val Val His Ile Asp Phe  
 2180 2185 2190  
 ggt gat tgt ttc gag atc gca atg cac cga gag aaa tac cca gag cga 6624  
 Gly Asp Cys Phe Glu Ile Ala Met His Arg Glu Lys Tyr Pro Glu Arg  
 2195 2200 2205  
 gtt ccg ttc cga ctt act cgc atg ttg acg ttc gcc atg gaa gtc agc 6672  
 Val Pro Phe Arg Leu Thr Arg Met Leu Thr Phe Ala Met Glu Val Ser  
 2210 2215 2220  
 aac att gag ggt agc tac cgt atc act tgc gag gct gtc atg cgt gtt 6720  
 Asn Ile Glu Gly Ser Tyr Arg Ile Thr Cys Glu Ala Val Met Arg Val  
 2225 2230 2235 2240  
 cta cga gag cac aag gat tcc ctg atg gca gtt ttg gag gct ttc atc 6768  
 Leu Arg Glu His Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Ile  
 2245 2250 2255  
 cac gac cct cta atc aac tgg cgt ctg ggt aca caa gag tct ccc gac 6816  
 His Asp Pro Leu Ile Asn Trp Arg Leu Gly Thr Gln Glu Ser Pro Asp  
 2260 2265 2270  
 cga gtg tct ctc act gcg gat cgc cgc cag tcc atc atg gac ggt gtc 6864  
 Arg Val Ser Leu Thr Ala Asp Arg Arg Gln Ser Ile Met Asp Gly Val  
 2275 2280 2285  
 aat ttc gaa ccc ggc gcc cag ccg ccc ggc gat tat tcg cgt cgc cgc 6912  
 Asn Phe Glu Pro Gly Ala Gln Pro Pro Gly Asp Tyr Ser Arg Arg Arg  
 2290 2295 2300  
 cgc cca tcc atg ctt gaa ggt ggt atc ctc gac gcc ccg gaa ggc gtt 6960  
 Arg Pro Ser Met Leu Glu Gly Gly Ile Leu Asp Ala Pro Glu Gly Val  
 2305 2310 2315 2320  
 cca caa gaa gcc cgc gag gca cag aat gcc cgt gct ctc cag gtt ctc 7008  
 Pro Gln Glu Ala Arg Glu Ala Gln Asn Ala Arg Ala Leu Gln Val Leu  
 2325 2330 2335  
 gcc cga gtc aag gag aag ctc act gga cga gac ttc aga aat aac gaa 7056  
 Ala Arg Val Lys Glu Lys Leu Thr Gly Arg Asp Phe Arg Asn Asn Glu  
 2340 2345 2350  
 gag ctg agt gtc agc gac cag gtg gac aag ctc att gcg cag gca acc 7104  
 Glu Leu Ser Val Ser Asp Gln Val Asp Lys Leu Ile Ala Gln Ala Thr  
 2355 2360 2365  
 aat gtt gag aat atc tgt caa cac tgg att gga tgg tgt agt ttc tgg 7152  
 Asn Val Glu Asn Ile Cys Gln His Trp Ile Gly Trp Cys Ser Phe Trp  
 2370 2375 2380  
 taa 7155

<210> 2553  
 <211> 2384  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 2553  
 Met Ala Gln Ala Gly Ala Ile Thr Asp Val Thr Gln Arg Leu Phe Val  
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## PhoenixTemp32470.tmp.txt

1				5				10				15		
Glu	Leu	Lys	Ser	Lys	Asn	Glu	Glu	Ala	Arg	Ala	Arg	Ala	Ala	Tyr
			20					25				30		Glu
Leu	Tyr	Asp	Asn	Val	Leu	Ser	Val	Ser	Arg	Asp	Trp	Pro	Ser	Glu
		35					40					45		Lys
Phe	Val	Glu	Phe	Tyr	Asn	Ala	Val	Ser	Gln	Arg	Ile	Ala	Gln	Leu
	50					55					60			Val
Val	Asn	Gly	Ser	Asp	Ala	Asn	Glu	Arg	Ile	Gly	Gly	Leu	Leu	Ala
65					70					75				80
Asp	Arg	Leu	Ile	Asp	Phe	Asp	Gly	Val	Asp	Ala	Ala	Gln	Lys	Thr
				85					90					95
Arg	Phe	Ala	Ser	Tyr	Leu	Arg	Ser	Ala	Leu	Arg	Ser	Asn	Asp	Asn
			100					105					110	Val
Val	Leu	Val	Tyr	Ala	Ala	Arg	Ser	Leu	Gly	Arg	Leu	Ala	Lys	Pro
		115					120					125		Gly
Gly	Ala	Leu	Thr	Ala	Glu	Leu	Val	Glu	Ser	Glu	Ile	Gln	Ser	Ala
	130					135					140			Leu
Glu	Trp	Leu	Gln	Ser	Glu	Arg	Gln	Glu	Ser	Arg	Arg	Phe	Ala	Ala
145					150					155				160
Leu	Val	Ile	Arg	Glu	Leu	Ala	Lys	Gly	Ser	Pro	Thr	Leu	Leu	Tyr
				165					170					175
Phe	Val	Pro	Gln	Val	Phe	Glu	Leu	Val	Trp	Val	Ala	Leu	Arg	Asp
			180					185					190	Pro
Lys	Val	Leu	Ile	Arg	Glu	Thr	Ala	Glu	Ala	Val	Gly	Glu	Cys	Phe
		195					200				205			
Glu	Ile	Ile	Val	Ala	Arg	Asp	Ser	Gln	Val	Arg	Gln	Ser	Trp	Phe
	210					215					220			Ala
Arg	Ile	His	Asp	Glu	Ala	Leu	Leu	Gly	Leu	Lys	Ser	His	Asn	Ile
225					230					235				240
Trp	Ile	His	Gly	Ser	Ile	Leu	Ile	Ile	Lys	Glu	Leu	Ile	Leu	Lys
				245					250					255
Thr	Met	Phe	Met	Lys	Glu	His	Tyr	Arg	Asn	Ala	Cys	Glu	Ile	Ile
			260					265					270	Leu
Arg	Leu	Lys	Asp	His	Arg	Asp	Pro	Lys	Ile	Arg	Thr	Glu	Val	Val
		275					280					285		
Thr	Ile	Pro	Ile	Leu	Ala	Ser	Tyr	Ala	Pro	Thr	Asp	Phe	Thr	Glu
	290					295					300			Ile
Tyr	Leu	His	Lys	Phe	Met	Val	Tyr	Leu	Gln	Ala	Gln	Leu	Lys	Arg
305					310					315				320
Lys	Glu	Arg	Asn	Ser	Ala	Phe	Ile	Ala	Ile	Gly	Lys	Ile	Ala	Asn
				325					330					335
Val	Gly	Thr	Ala	Ile	Gly	Gln	Tyr	Leu	Asp	Gly	Ile	Ile	Ile	Tyr
			340					345					350	Ile
Arg	Glu	Gly	Leu	Ala	Met	Lys	Ala	Arg	Asn	Arg	Ser	Gly	Val	Asn
		355					360					365		Glu
Ala	Pro	Met	Phe	Glu	Cys	Ile	Ser	Met	Leu	Ser	Leu	Ala	Val	Gly
	370					375					380			Gln
Ala	Leu	Ser	Lys	Tyr	Met	Glu	Ala	Leu	Leu	Asp	Pro	Ile	Phe	Ala
385					390					395				Cys
Gly	Leu	Ser	Lys	Ser	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	His
				405					410					415
Ile	Pro	Pro	Ile	Lys	Pro	Met	Ile	Gln	Glu	Lys	Leu	Leu	Asp	Met
			420					425					430	Leu
Ser	Ile	Ile	Leu	Cys	Gly	Thr	Pro	Phe	Arg	Pro	Leu	Gly	Cys	Pro
		435					440					445		Glu
Asn	Arg	Leu	Pro	Pro	Met	Pro	Ser	Phe	Ala	Lys	Asp	Phe	Ala	Pro
	450					455					460			His
Glu	Leu	His	Ser	Asp	Ser	Asp	Ile	Ala	Leu	Ala	Leu	His	Thr	Leu
465					470					475				Gly
Ser	Phe	Asp	Phe	Ser	Gly	His	Ile	Leu	Asn	Glu	Phe	Val	Arg	Asp
				485					490					495
Ala	Ile	Asn	Tyr	Val	Glu	Asn	Asp	Asn	Pro	Glu	Ile	Arg	Lys	Ala
			500					505					510	Ser
Ala	Leu	Thr	Cys	Cys	Gln	Leu	Phe	Val	His	Asp	Pro	Ile	Ile	Asn
		515					520					525		Gln
Thr	Ser	Gly	His	Ser	Ile	Gln	Val	Val	Ser	Glu	Val	Ile	Asp	Lys
	530					535					540			Leu
Leu	Thr	Val	Gly	Ile	Gly	Asp	Pro	Asp	Pro	Glu	Ile	Arg	Arg	Thr
545					550					555				560

## PhoenixTemp32470.tmp.txt

Leu Trp Ser Leu Asp Arg Lys Phe Asp Arg His Leu Ala Arg Pro Glu  
 565 570 575  
 Asn Ile Arg Cys Phe Leu Ala Val Asn Asp Glu Val Phe Asp Val  
 580 585 590  
 Lys Glu Ala Ala Ile Cys Ile Ile Gly Arg Leu Ser Ser Val Asn Pro  
 595 600 605  
 Ala Tyr Val Phe Pro Pro Leu Arg Lys Leu Leu Val Asn Leu Leu Thr  
 610 615 620  
 Gly Leu Gly Phe Ala Asn Thr Ala Arg Gln Lys Glu Glu Thr Ala Gln  
 625 630 635 640  
 Leu Ile Ser Leu Phe Val Ser Asn Ala Thr Lys Leu Ile Arg Ser Tyr  
 645 650 655  
 Val Asp Pro Met Val Thr Ala Leu Leu Pro Lys Ser Thr Asp Ile Asn  
 660 665 670  
 Pro Gly Val Ala Ala Thr Thr Leu Lys Ala Val Gly Glu Leu Ala Ser  
 675 680 685  
 Val Gly Gly His Glu Met Arg Gln Tyr Leu Pro Gln Ile Met Pro Ile  
 690 700  
 Ile Leu Asp Ser Leu Gln Asp Leu Ser Ser His Asn Lys Arg Glu Ala  
 705 710 715 720  
 Ala Leu Arg Thr Leu Gly Gln Leu Ala Ser Asn Ser Gly Tyr Val Ile  
 725 730 735  
 Glu Pro Tyr Met Glu Tyr Pro His Leu Leu Ala Val Leu Ile Asn Ile  
 740 745 750  
 Ile Lys Thr Glu Gln Thr Gly Ser Leu Arg Lys Glu Thr Ile Lys Leu  
 755 760 765  
 Val Gly Val Leu Gly Ala Leu Asp Pro Tyr Lys Tyr Gln Gln Ile Ser  
 770 775 780  
 Glu Ile Glu Pro Asp Val His His Ile Asn Glu Ile Gln Asn Val Ser  
 785 790 795 800  
 Asp Val Ala Leu Ile Met Gln Gly Leu Thr Pro Ser Asn Glu Glu Tyr  
 805 810 815  
 Tyr Pro Thr Val Val Ile His Thr Leu Met Gln Asn Ile Leu Arg Glu  
 820 825 830  
 Asn Ser Leu Ala Gln Tyr His Ser Ala Val Ile Asp Ala Ile Val Thr  
 835 840 845  
 Ile Phe Lys Thr Leu Gly Leu Lys Cys Val Pro Phe Leu Gly Gln Ile  
 850 855 860  
 Ile Pro Gly Phe Ile Leu Val Ile Arg Ser Ala Pro Ala Ser Arg Leu  
 865 870 875 880  
 Glu Ser Tyr Phe Asn Gln Met Ala Ile Leu Val Asn Ile Val Arg Gln  
 885 890 895  
 His Ile Arg Thr Phe Leu Pro Glu Ile Ile Glu Val Ile Lys Asp Phe  
 900 905 910  
 Trp Asp Ala Ser Tyr Gln Ile Gln Gly Thr Ile Leu Ser Leu Val Glu  
 915 920 925  
 Ala Ile Ala Arg Ser Leu Glu Gly Glu Phe Arg Lys Tyr Leu Ala Gly  
 930 935 940  
 Leu Ile Pro Leu Met Leu Asp Thr Leu Asp Lys Asp Thr Ser Pro Arg  
 945 950 955 960  
 Arg Gln Pro Ser Glu Lys Ile Leu His Ala Leu Leu Ile Phe Gly Ser  
 965 970 975  
 Ser Gly Glu Glu Tyr Met His Leu Ile Ile Pro Ser Ile Val Arg Leu  
 980 985 990  
 Phe Asp Arg Pro Gln Asn Pro Gln Ser Ile Arg Lys Ser Ala Ile Asp  
 995 1000 1005  
 Ser Leu Thr Lys Leu Ser Arg Gln Val Asn Val Ser Asp Phe Ala Ser  
 1010 1015 1020  
 Leu Met Val His Ser Leu Ser Arg Val Val Ala Gly Gly Asp Arg Val  
 1025 1030 1035 1040  
 Leu Arg Gln Ala Ala Met Asp Cys Ile Cys Ala Leu Ile Phe Gln Leu  
 1045 1050 1055  
 Gly Gln Asp Phe Thr His Tyr Ile His Leu Leu Asn Lys Val Leu Lys  
 1060 1065 1070  
 Thr Asn Gln Ile Ala His Thr Asn Tyr Gln Ile Leu Val Thr Lys Leu  
 1075 1080 1085  
 Gln Lys Gly Asp Pro Leu Pro Gln Asp Leu Asn Pro Glu Glu Val Tyr  
 1090 1095 1100  
 Ser Phe Pro Thr Asp Asp Thr Asn Phe Ser Glu Ile Gly Gln Lys Lys



## PhoenixTemp32470.tmp.txt

```

1105      1110      1115      1120
Ile Val Val Asn Gln His Leu Lys Asn Ala Trp Asp Ala Ser Gln
      1125      1130      1135
Lys Ser Thr Arg Asp Asp Trp Gln Glu Trp Ile Arg Arg Phe Ser Ile
      1140      1145      1150
Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Ala Cys Ala Ser
      1155      1160      1165
Leu Ala Gly Ile Tyr Gln Pro Leu Ser Arg Asp Leu Phe Asn Ala Ala
      1170      1175      1180
Phe Val Ser Cys Trp Thr Glu Leu Tyr Asp Gln Tyr Gln Glu Glu Leu
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Val Arg Ser Ile Glu Lys Ala Leu Thr Ser Pro Asn Ile Ser Pro Glu
      1205      1210      1215
Ile Leu Gln Ile Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Asp
      1220      1225      1230
Lys Ala Leu Pro Ile Asp Ile Arg Thr Leu Gly Lys Tyr Ala Ala Lys
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Cys His Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Leu Glu Phe Glu
1250      1255      1260
Gln Asp Gln Asn Ser Gly Ala Val Glu Ala Leu Ile Thr Ile Asn Asn
1265      1270      1275      1280
Gln Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Arg Lys Ala Gln
      1285      1290      1295
Ala Tyr Arg Asp Val Glu Leu Lys Glu Thr Trp Phe Glu Lys Leu Gln
      1300      1305      1310
Arg Trp Asp Glu Ala Leu Ala Ala Tyr Lys Arg Arg Glu Lys Thr Asp
      1315      1320      1325
Pro Asp Ser Phe Gly Ile Thr Met Gly Lys Met Arg Cys Leu His Ala
1330      1335      1340
Leu Gly Glu Trp Lys Val Leu Ser Asp Leu Ala Gln Glu Lys Trp Asn
1345      1350      1355      1360
Gln Ala Ser Leu Glu His Arg Arg Ala Ile Ala Pro Leu Ala Ala Ala
      1365      1370      1375
Ala Ala Trp Gly Arg Gly Gln Trp Glu Leu Met Asp Ser Tyr Leu Gly
      1380      1385      1390
Val Met Lys Glu Gln Ser Pro Asp Arg Ser Phe Phe Gly Ala Ile Leu
      1395      1400      1405
Ala Ile His Arg Asn Gln Phe Asp Glu Ala Asn Met Tyr Ile Glu Lys
1410      1415      1420
Ala Arg Asn Gly Leu Asp Thr Glu Leu Ser Ala Leu Leu Gly Glu Ser
1425      1430      1435      1440
Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Val Gln Met Leu Ala Glu
      1445      1450      1455
Leu Glu Glu Ile Ile Thr Tyr Lys Gln Asn Ile Gly Asp Pro Glu Lys
      1460      1465      1470
Gln Asp Ala Met Arg Lys Thr Trp Asn Gln Arg Leu Leu Gly Cys Gln
      1475      1480      1485
Gln Asn Val Glu Val Trp Gln Arg Met Leu Lys Val Arg Ala Leu Val
1490      1495      1500
Thr Ala Pro Arg Glu Asn Leu Asp Met Ser Ile Lys Phe Ala Asn Leu
1505      1510      1515      1520
Cys Arg Lys Ser Asn Arg Met Gly Leu Ala Glu Arg Ser Leu Ala Ser
      1525      1530      1535
Leu Glu Thr Val Val Ser Asp Ala Asn Gly Thr Arg Thr Ile Ala Pro
      1540      1545      1550
Pro Glu Val Thr Tyr Ala Arg Leu Lys Phe Ser Trp Ala Asn Gly His
      1555      1560      1565
Gln Leu Glu Ser Leu Glu Met Lys Glu Phe Thr Ser Gly Leu Thr
1570      1575      1580
Asp Asp Phe Ser Arg Tyr Asn Thr Leu Met Val Ser Asn Gly Glu His
1585      1590      1595      1600
His Gly Ala Asn Gly Val Asn Gly Val Val Asp Gln Asn His Pro Asp
      1605      1610      1615
Ala Ile Ser Leu Asn Glu Arg Ile Gly Asp Val Asn Lys Phe Arg Lys
      1620      1625      1630
Leu Leu Ser Lys Ser Tyr Leu Arg Gln Gly Glu Trp Gln Thr Ala Leu
1635      1640      1645
Gln Arg Gly Asp Trp Arg Pro Glu His Val Arg Glu Val Leu Asn Ala
1650      1655      1660

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## PhoenixTemp32470.tmp.txt

Tyr Ser Ala Ala Thr Gln Tyr Asn Arg Asp Ser Tyr Lys Ala Trp His  
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 Ser Trp Ala Leu Ala Asn Phe Glu Val Val Thr Thr Ile Ala Asn Gln  
 1685 1690 1695  
 Ala Ser Arg Glu Gly Ile Pro Ala Pro Val Pro Ala His Ile Val Thr  
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 Glu His Val Ile Pro Ala Ile Arg Gly Phe Ile Arg Ser Ile Ala Leu  
 1715 1720 1725  
 Ser Leu Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp  
 1730 1735 1740  
 Phe Asn His Gly Gly Asp His Glu Val Asn Thr Val Val Thr Glu Gly  
 1745 1750 1755 1760  
 Phe Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val Thr Pro Gln Leu  
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 Ile Ala Arg Ile Asn Gln Pro Asn Ile Arg Val Arg Gly Ala Val His  
 1780 1785 1790  
 Arg Leu Leu Ala Glu Val Gly Lys Ala His Pro Gln Ala Leu Val Tyr  
 1795 1800 1805  
 Pro Leu Thr Val Ala Met Lys Ser Asn Val Thr Arg Arg Ser Gln Ser  
 1810 1815 1820  
 Ala Ser Asn Ile Met Glu Ser Met Arg Gln His Ser Ala Lys Leu Val  
 1825 1830 1835 1840  
 Glu Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg Val Ala Val Leu  
 1845 1850 1855  
 Trp His Glu Leu Trp His Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr  
 1860 1865 1870  
 Phe Gly Asp His Asn Val Glu Gly Met Phe Ser Thr Leu Ala Pro Phe  
 1875 1880 1885  
 His Asp Met Leu Asp Lys Gly Ala Glu Thr Leu Arg Glu Val Ser Phe  
 1890 1895 1900  
 Ala Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys His Tyr Cys Met  
 1905 1910 1915 1920  
 Met Tyr Arg Glu Ser Glu Glu Ile Gly Asp Leu Asn Gln Ala Trp Asp  
 1925 1930 1935  
 Leu Tyr Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln Leu Pro Gln Leu  
 1940 1945 1950  
 Ser Thr Leu Asp Leu Lys Tyr Val Ser Pro Arg Leu Lys Asp Cys Ala  
 1955 1960 1965  
 Asp Leu Asp Leu Ala Val Pro Gly Thr Tyr Gln Ser Gly Lys Pro Val  
 1970 1975 1980  
 Ile Arg Ile Met Ser Phe Asp Pro Ile Leu His Val Leu Gln Thr Lys  
 1985 1990 1995 2000  
 Lys Arg Pro Arg Arg Met Thr Leu Lys Gly Ser Asn Gly Ser Ser Tyr  
 2005 2010 2015  
 Met Tyr Leu Val Lys Gly His Glu Asp Ile Arg Gln Asp Glu Arg Val  
 2020 2025 2030  
 Met Gln Leu Phe Gly Leu Cys Asn Thr Leu Leu Asp Asn Asp Gly Glu  
 2035 2040 2045  
 Ser Phe Lys Arg His Leu Ser Val Gln Arg Phe Pro Ala Ile Pro Leu  
 2050 2055 2060  
 Ser Gln Ser Ser Gly Leu Leu Gly Trp Val Ser Asn Ser Asp Thr Leu  
 2065 2070 2075 2080  
 His Ala Leu Ile Lys Glu Tyr Arg Glu Ser Arg Arg Ile Leu Leu Asn  
 2085 2090 2095  
 Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr Asp Ser Leu  
 2100 2105 2110  
 Thr Leu Met Gln Lys Val Glu Val Phe Gly Tyr Ala Met Asp Asn Thr  
 2115 2120 2125  
 Thr Gly Lys Asp Leu Tyr Arg Val Leu Trp Leu Lys Ser Lys Ser Ser  
 2130 2135 2140  
 Glu Ala Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Gly Val  
 2145 2150 2155 2160  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2165 2170 2175  
 Asn Leu Leu Leu Asp Arg Gly Asn Gly Arg Val Val His Ile Asp Phe  
 2180 2185 2190  
 Gly Asp Cys Phe Glu Ile Ala Met His Arg Glu Lys Tyr Pro Glu Arg  
 2195 2200 2205  
 Val Pro Phe Arg Leu Thr Arg Met Leu Thr Phe Ala Met Glu Val Ser

## PhoenixTemp32470.tmp.txt

2210 Asn Ile Glu Gly Ser Tyr 2215 Arg Ile Thr Cys Glu 2220 Ala Val Met Arg Val  
 2225 Leu Arg Glu His Lys 2230 Asp Ser Leu Met 2235 Ala Val Leu Glu Ala Phe Ile  
 2245 His Asp Pro Leu Ile Asn Trp Arg Leu Gly Thr Gln Glu Ser Pro Asp  
 2260 Arg Val Ser Leu Thr Ala Asp Arg Arg Gln Ser Ile Met 2270 Asp Gly Val  
 2275 Asn Phe Glu Pro Gly Ala Gln Pro Pro Gly Asp Tyr Ser Arg Arg Arg  
 2290 Arg Pro Ser Met Leu Glu Gly Gly Ile Leu Asp Ala Pro Glu Gly Val  
 2305 Pro Gln Glu Ala Arg 2310 Glu Ala Gln Asn Ala Arg Ala Leu Gln Val Leu  
 2325 Ala Arg Val Lys Glu Lys Leu Thr Gly Arg Asp Phe Arg Asn Asn Glu  
 2340 Glu Leu Ser Val Ser Asp Gln Val Asp Lys Leu Ile Ala Gln Ala Thr  
 2355 Asn Val Glu Asn Ile Cys Gln His Trp Ile Gly Trp Cys Ser Phe Trp  
 2370 2375 2380

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 <212> DNA  
 <213> Vitis vinifera

<220>  
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 <222> (1)..(7185)

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 Met Ala Ser Thr Ala Gln Ser Ile Arg Phe Gly Ala Pro Ala Ala Gly  
 1 5 10 15  
 tcc agc ctc gac gcc ctt aac cgc att ctc gcc gac ctt tgc gct cgc 96  
 Ser Ser Leu Asp Ala Leu Asn Arg Ile Leu Ala Asp Leu Cys Ala Arg  
 20 25 30  
 ggc cct ccc aag gat ggg gct gca tta gct ttg aag ata cat ttg gag 144  
 Gly Pro Pro Lys Asp Gly Ala Ala Leu Ala Leu Lys Ile His Leu Glu  
 35 40 45  
 gaa gaa gct cgt gat ctt agt gga gaa gct ttc tcc cgt ttc atg gat 192  
 Glu Glu Ala Arg Asp Leu Ser Gly Glu Ala Phe Ser Arg Phe Met Asp  
 50 55 60  
 cag ttg tat gat cgc ata tct aat ctt tta gac agt aat gat gtt gct 240  
 Gln Leu Tyr Asp Arg Ile Ser Asn Leu Leu Asp Ser Asn Asp Val Ala  
 65 70 75 80  
 gaa aat atg gga gct tta aga gct att gat gag ttg ata gat gtg gca 288  
 Glu Asn Met Gly Ala Leu Arg Ala Ile Asp Glu Leu Ile Asp Val Ala  
 85 90 95  
 cta ggc gag agt gct tcc aaa gtt tca aaa ttc tct ggt tat gtg cgg 336  
 Leu Gly Glu Ser Ala Ser Lys Val Ser Lys Phe Ser Gly Tyr Val Arg  
 100 105 110  
 act gtg ttt gag gca aaa cgt gac cgt gat gtt tta atc ctt gct agt 384  
 Thr Val Phe Glu Ala Lys Arg Asp Arg Asp Val Leu Ile Leu Ala Ser  
 115 120 125  
 aca gtt ctt ggc cac ctg gct agg gct ggt gga gca atg act gca gat 432  
 Thr Val Leu Gly His Leu Ala Arg Ala Gly Gly Ala Met Thr Ala Asp  
 130 135 140  
 gaa gtg gag tgc cag gtg caa aat gca ttg gag tgg ctt cgt gga gaa 480  
 Glu Val Glu Cys Gln Val Gln Asn Ala Leu Glu Trp Leu Arg Gly Glu  
 145 150 155 160  
 agg ata gag tat cgt ttc gct gct gtg tta atc ttg aaa gaa atg 528  
 Arg Ile Glu Tyr Arg Arg Phe Ala Ala Val Leu Ile Leu Lys Glu Met  
 165 170 175  
 gca gaa aat gct tca act gtc ttc aat gtt cat gta cct gag ttt gtg 576  
 Ala Glu Asn Ala Ser Thr Val Phe Asn Val His Val Pro Glu Phe Val  
 180 185 190  
 gat gct atc tgg gtt gct ttg agg gat ccg aca ttg ccc att cgg gaa 624

PhoenixTemp32470.tmp.txt

Asp	Ala	Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	Thr	Leu	Pro	Ile	Arg	Glu	
cgg	gct	gta	gaa	gca	ttg	cgt	gct	tgt	ctt	cgt	ggt	att	gaa	aag	cgt	672
Arg	Ala	Val	Glu	Ala	Leu	Arg	Ala	Cys	Leu	Arg	Val	Ile	Glu	Lys	Arg	
	210					215					220					
gaa	aca	cgt	tgg	cgt	gtg	caa	tgg	tat	tat	cgt	atg	ttt	gag	gct	aca	720
Glu	Thr	Arg	Trp	Arg	Val	Gln	Trp	Tyr	Tyr	Arg	Met	Phe	Glu	Ala	Thr	
225					230					235					240	
caa	gat	gga	ttg	ggt	aga	aat	gct	cca	gta	cac	agt	ata	cat	ggc	tct	768
Gln	Asp	Gly	Leu	Gly	Arg	Asn	Ala	Pro	Val	His	Ser	Ile	His	Gly	Ser	
				245					250					255		
ctg	ctt	gca	ggt	gga	gag	ctt	ctg	agg	ttg	ggt	aag	atg	ttc	atg	atg	816
Leu	Leu	Ala	Val	Gly	Glu	Leu	Leu	Arg	Leu	Val	Lys	Met	Phe	Met	Met	
			260					265					270			
tca	agg	tac	aga	gaa	ggt	gca	gac	att	ggt	atc	acg	tac	cta	gag	cac	864
Ser	Arg	Tyr	Arg	Glu	Val	Ala	Asp	Ile	Val	Ile	Thr	Tyr	Leu	Glu	His	
		275					280					285				
aag	gac	cga	ctt	ggt	cgc	ctt	agt	att	acc	tca	ctg	tta	cct	cgc	att	912
Lys	Asp	Arg	Leu	Val	Arg	Leu	Ser	Ile	Thr	Ser	Leu	Leu	Pro	Arg	Ile	
	290					295					300					
gct	cat	ttc	ctg	cga	gat	cgg	ttt	ggt	act	aac	tat	ttg	aat	ata	tgc	960
Ala	His	Phe	Leu	Arg	Asp	Arg	Phe	Val	Thr	Asn	Tyr	Leu	Asn	Ile	Cys	
305					310					315					320	
atg	aat	cat	att	ctt	gca	ggt	tta	aga	cag	cca	gct	gaa	cgt	gat	agt	1008
Met	Asn	His	Ile	Leu	Ala	Val	Leu	Arg	Gln	Pro	Ala	Glu	Arg	Asp	Ser	
				325					330					335		
ggg	ttt	att	gct	cta	ggg	gag	atg	gct	ggt	gct	ttg	gat	ggg	gaa	ctt	1056
Gly	Phe	Ile	Ala	Leu	Gly	Glu	Met	Ala	Gly	Ala	Leu	Asp	Gly	Glu	Leu	
			340					345					350			
ggt	cac	tat	atg	ccg	aca	att	ata	tct	cat	tta	cgt	gat	gcg	atc	gct	1104
Val	His	Tyr	Met	Pro	Thr	Ile	Ile	Ser	His	Leu	Arg	Asp	Ala	Ile	Ala	
		355					360					365				
cct	cga	aga	ggc	aga	ccc	tct	ctt	gac	gct	ttg	act	tgt	ggt	ggg	agc	1152
Pro	Arg	Arg	Gly	Arg	Pro	Ser	Leu	Asp	Ala	Leu	Thr	Cys	Val	Gly	Ser	
	370					375					380					
att	gca	aag	gct	atg	gga	tct	ggt	atg	gaa	cct	tat	ggt	cgc	agc	ctt	1200
Ile	Ala	Lys	Ala	Met	Gly	Ser	Val	Met	Glu	Pro	Tyr	Val	Arg	Ser	Leu	
385					390					395					400	
tta	gat	ggt	atg	ttc	ttt	cct	ggt	ctt	tcc	cac	gca	ctt	ata	gaa	gcc	1248
Leu	Asp	Val	Met	Phe	Phe	Pro	Gly	Leu	Ser	His	Ala	Leu	Ile	Glu	Ala	
				405					410					415		
ctt	gaa	caa	ata	act	gcc	agt	att	cca	tct	ttg	cta	cct	act	att	caa	1296
Leu	Glu	Gln	Ile	Thr	Ala	Ser	Ile	Pro	Ser	Leu	Leu	Pro	Thr	Ile	Gln	
			420					425					430			
gat	cgc	ttg	ctt	gac	tgc	atc	tca	ata	gct	ctt	tca	aga	tct	cat	tat	1344
Asp	Arg	Leu	Asp	Cys	Ile	Ser	Ile	Ala	Leu	Ser	Arg	Ser	His	Tyr		
		435				440					445					
cct	tta	gca	agg	ccg	gcg	ggt	gcc	atg	gct	cga	gga	agc	act	gtg	aat	1392
Pro	Leu	Ala	Arg	Pro	Ala	Val	Ala	Met	Ala	Arg	Gly	Ser	Thr	Val	Asn	
	450				455					460						
act	gct	cag	caa	gtc	tta	gac	ttt	agc	agt	cct	gcc	cta	gtg	caa	ctt	1440
Thr	Ala	Gln	Gln	Val	Leu	Asp	Phe	Ser	Ser	Pro	Ala	Leu	Val	Gln	Leu	
465					470					475					480	
tct	ttg	cag	act	ctt	gct	cat	ttt	aat	ttc	aag	ggt	tgt	gta	ctt	aca	1488
Ser	Leu	Gln	Thr	Leu	Ala	His	Phe	Asn	Phe	Lys	Val	Cys	Val	Leu	Thr	
				485					490					495		
ttg	tct	aat	atg	aag	ctc	tca	aat	tcc	ttt	tct	ggc	act	act	tgt	cca	1536
Leu	Ser	Asn	Met	Lys	Leu	Ser	Asn	Ser	Phe	Ser	Gly	Thr	Thr	Cys	Pro	
			500					505					510			
caa	ttt	agt	tct	agt	agg	tcc	aat	cga	act	gga	gga	aaa	cgc	cgg	cgt	1584
Gln	Phe	Ser	Ser	Ser	Arg	Ser	Asn	Arg	Thr	Gly	Gly	Lys	Arg	Arg	Arg	
		515					520					525				
ctt	ggt	gag	gag	att	gtg	gaa	aaa	ctt	ctt	att	gca	gct	att	gca	gat	1632
Leu	Val	Glu	Glu	Ile	Val	Glu	Lys	Leu	Leu	Ile	Ala	Ala	Ile	Ala	Asp	
					535						540					
gct	gat	ggt	act	ggt	cgg	cgt	tca	atc	ttt	ttg	tct	ctg	cat	gaa	aat	1680
Ala	Asp	Val	Thr	Val	Arg	Arg	Ser	Ile	Phe	Leu	Ser	Leu	His	Glu	Asn	
545					550					555					560	
gga	ggt	ttt	gat	gaa	ttt	tta	gca	caa	gct	gat	agc	ttg	agt	gcg	gtc	1728

## PhoenixTemp32470.tmp.txt

Gly	Gly	Phe	Asp	Glu 565	Phe	Leu	Ala	Gln	Ala 570	Asp	Ser	Leu	Ser	Ala 575	Val		
ttt	gct	gct	tta	aat	gat	gag	gat	ttt	gat	ggt	cga	gaa	tat	gca	atc	1776	
Phe	Ala	Ala	Leu	Asn	Asp	Glu	Asp	Phe	Asp	Val	Arg	Glu	Tyr	Ala	Ile		
			580					585					590				
tca	ggt	tct	ggg	aga	tta	tca	gaa	aag	aat	cct	cga	tat	ggt	ctt	cca	1824	
Ser	Val	Ser	Gly	Arg	Leu	Ser	Glu	Lys	Asn	Pro	Ala	Tyr	Val	Leu	Pro		
		595					600					605					
gca	ctt	cgt	cgc	cat	ctc	ata	cag	ttg	ttg	aca	tat	cta	gag	cag	agt	1872	
Ala	Leu	Arg	Arg	His	Leu	Ile	Gln	Leu	Leu	Thr	Tyr	Leu	Glu	Gln	Ser		
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gca	gat	agc	aaa	tgt	aga	gaa	gaa	agt	gca	aaa	tta	ctc	ggt	tgc	tta	1920	
Ala	Asp	Ser	Lys	Cys	Arg	Glu	Glu	Ser	Ala	Lys	Leu	Leu	Gly	Cys	Leu		
	625				630					635					640		
att	cgc	aac	tgt	gaa	cga	cta	ata	ctt	cca	tac	att	gct	ccg	ata	cac	1968	
Ile	Arg	Asn	Cys	Glu	Arg	Leu	Ile	Leu	Pro	Tyr	Ile	Ala	Pro	Ile	His		
			645						650					655			
aag	gct	ctt	ggt	gca	aaa	ctt	gct	gag	ggc	tct	ggg	gtc	aat	gct	aat	2016	
Lys	Ala	Leu	Val	Ala	Lys	Leu	Ala	Glu	Gly	Ser	Gly	Val	Asn	Ala	Asn		
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Asn	Gly	Ile	Ile	Ser	Gly	Val	Leu	Val	Thr	Val	Gly	Asp	Leu	Ala	Arg		
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gtg	ggt	tct	gca	atg	aga	gat	aat	gta	act	gat	ctt	atg	cca	tta		2112	
Val	Gly	Gly	Ser	Ala	Met	Arg	Asp	Asn	Val	Thr	Asp	Leu	Met	Pro	Leu		
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att	ggt	gaa	gct	cta	atg	gat	gga	gct	gct	gtc	acc	aaa	cgt	gaa	gtg	2160	
Ile	Val	Glu	Ala	Leu	Met	Asp	Gly	Ala	Ala	Val	Thr	Lys	Arg	Glu	Val		
	705			710						715				720			
gct	ggt	gca	act	ctt	ggg	caa	ggt	gtg	caa	agc	act	ggg	tat	ggt	ata	2208	
Ala	Val	Ala	Thr	Leu	Gly	Gln	Val	Val	Gln	Ser	Thr	Gly	Tyr	Val	Ile		
				725					730					735			
gct	cca	tac	aat	gca	tac	cca	cag	ttg	ctt	ggc	tta	ctc	ttg	aag	ctg	2256	
Ala	Pro	Tyr	Asn	Ala	Tyr	Pro	Gln	Leu	Leu	Gly	Leu	Leu	Leu	Lys	Leu		
			740				745						750				
ctt	aat	ggt	gag	ttg	gcc	tgg	act	acc	agg	cga	gaa	gta	cta	aag	ggt	2304	
Leu	Asn	Gly	Glu	Leu	Ala	Trp	Thr	Thr	Arg	Arg	Glu	Val	Leu	Lys	Val		
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ctt	ggt	att	atg	gga	gct	ttg	gat	cca	cat	gtg	cat	aag	cga	aat	cag	2352	
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Gln	Cys	Leu	Pro	Gly	Leu	His	Gly	Glu	Val	Ala	Arg	Pro	Ala	Ser	Asp		
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aca	ggt	caa	cac	att	cgt	tcc	atg	gat	gaa	ctg	cct	atg	gac	ctt	tgg	2448	
Thr	Gly	Gln	His	Ile	Arg	Ser	Met	Asp	Glu	Leu	Pro	Met	Asp	Leu	Trp		
				805					810					815			
cca	tct	ttt	gca	aca	tct	gaa	gat	tat	tat	tca	acg	ggt	gct	atc	aat	2496	
Pro	Ser	Phe	Ala	Thr	Ser	Glu	Asp	Tyr	Tyr	Ser	Thr	Val	Ala	Ile	Asn		
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tcc	ctt	atg	cga	att	ctt	agg	gat	gct	tca	ctt	tct	agt	tac	cac	caa	2544	
Ser	Leu	Met	Arg	Ile	Leu	Arg	Asp	Ala	Ser	Leu	Ser	Ser	Tyr	His	Gln		
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aag	ggt	gtg	gga	tct	ctt	atg	ttt	ata	ttt	aag	tct	atg	ggt	ctt	ggt	2592	
Lys	Val	Val	Gly	Ser	Leu	Met	Phe	Ile	Phe	Lys	Ser	Met	Gly	Leu	Gly		
	850					855					860						
tgt	ggt	cca	tac	tta	cca	aag	ggt	ttg	cct	gat	ctt	ttt	ctc	act	ggt	2640	
Cys	Val	Pro	Tyr	Leu	Pro	Lys	Val	Leu	Pro	Asp	Leu	Phe	Leu	Thr	Val		
	865				870					875					880		
cgt	act	tgt	gaa	gat	ggc	cta	aaa	gaa	ttt	atc	acc	tgg	aag	ctt	gga	2688	
Arg	Thr	Cys	Glu	Asp	Gly	Leu	Lys	Glu	Phe	Ile	Thr	Trp	Lys	Leu	Gly		
				885					890					895			
act	cta	gtg	tct	att	ggt	cgc	cag	cat	att	cgt	aaa	tat	ctg	cca	gag	2736	
Thr	Leu	Val	Ser	Ile	Val	Arg	Gln	His	Ile	Arg	Lys	Tyr	Leu	Pro	Glu		
			900					905					910				
ttg	ctg	ttg	ctt	att	tct	gaa	tta	tgg	cca	tcc	ttc	agt	ttg	cca	tct	2784	
Leu	Leu	Leu	Leu	Ile	Ser	Glu	Leu	Trp	Pro	Ser	Phe	Ser	Leu	Pro	Ser		
		915					920					925					
agc	aat	cgc	cct	att	ctg	cac	cta	gtg	gaa	caa	ctt	tgc	ttg	gct	ctc	2832	

## PhoenixTemp32470.tmp.txt

Ser	Asn	Arg	Pro	Ile	Leu	His	Leu	Val	Glu	Gln	Leu	Cys	Leu	Ala	Leu	
930	930					935					940					
aat	gat	gaa	ttc	aga	aca	tat	ctt	cct	ctc	att	ctt	cca	tcg	tgt	att	2880
Asn	Asp	Glu	Phe	Arg	Thr	Tyr	Leu	Pro	Leu	Ile	Leu	Pro	Ser	Cys	Ile	
945					950					955					960	
caa	gtt	ctg	agt	gat	gca	gag	agg	tgt	aat	gat	tac	act	tat	gtt	ctt	2928
Gln	Val	Leu	Ser	Asp	Ala	Glu	Arg	Cys	Asn	Asp	Tyr	Thr	Tyr	Val	Leu	
				965					970					975		
gat	att	ctt	cac	acc	ctt	gaa	gtg	ttt	ggg	ggg	aca	ttg	gat	gaa	cat	2976
Asp	Ile	Leu	His	Thr	Leu	Glu	Val	Phe	Gly	Gly	Thr	Leu	Asp	Glu	His	
			980					985					990			
atg	cat	cta	cta	ctt	cct	gcg	ctc	att	cga	ttg	ttc	aaa	gtg	gat	gcg	3024
Met	His	Leu	Leu	Leu	Pro	Ala	Leu	Ile	Arg	Leu	Phe	Lys	Val	Asp	Ala	
			995			1000					1005					
tca	gtg	gct	ata	aga	cgt	gct	gcc	ttc	aaa	acc	ctg	acg	aga	tta	att	3072
Ser	Val	Ala	Ile	Arg	Arg	Ala	Ala	Phe	Lys	Thr	Leu	Thr	Arg	Leu	Ile	
1010					1015						1020					
cct	cgt	gtg	cag	gtc	act	ggc	cac	atc	tct	gct	ctc	gtg	cat	cat	ttg	3120
Pro	Arg	Val	Gln	Val	Thr	Gly	His	Ile	Ser	Ala	Leu	Val	His	His	Leu	
1025				1030					1035						1040	
aag	cta	gtc	ttg	gat	ggg	tca	aat	gac	gag	ctt	cga	aag	gat	gct	gtt	3168
Lys	Leu	Val	Leu	Asp	Gly	Ser	Asn	Asp	Glu	Leu	Arg	Lys	Asp	Ala	Val	
				1045				1050					1055			
gat	gca	cta	tgt	ctt	gct	cat	gcc	ctt	gga	gga	gac	ttc	acc	att		3216
Asp	Ala	Leu	Cys	Cys	Leu	Ala	His	Ala	Leu	Gly	Gly	Asp	Phe	Thr	Ile	
			1060			1065						1070				
ttt	att	cca	tcg	att	cat	aag	ctt	ttg	atg	aag	cat	cgc	ttg	cgg	cac	3264
Phe	Ile	Pro	Ser	Ile	His	Lys	Leu	Leu	Met	Lys	His	Arg	Leu	Arg	His	
		1075				1080					1085					
aaa	gaa	ttt	gaa	gaa	att	gaa	ggg	cgt	tta	cag	agg	cgt	gag	cca	cta	3312
Lys	Glu	Phe	Glu	Glu	Ile	Glu	Gly	Arg	Leu	Gln	Arg	Arg	Glu	Pro	Leu	
1090					1095					1100						
ata	ttg	gga	agc	act	gct	gct	caa	cga	tta	atc	agt	cgg	ttt	cca	gtg	3360
Ile	Leu	Gly	Ser	Thr	Ala	Ala	Gln	Arg	Leu	Ile	Ser	Arg	Phe	Pro	Val	
1105				1110					1115					1120		
gag	gtt	act	agt	gac	cct	tta	aat	gat	gtt	aat	gat	ggt	cga	ttg	cgc	3408
Glu	Val	Thr	Ser	Asp	Pro	Leu	Asn	Asp	Val	Asn	Asp	Gly	Arg	Leu	Arg	
				1125				1130				1135				
act	gct	gga	gag	gct	tct	cag	cgt	agt	acc	aag	gaa	gat	tgg	gca	gaa	3456
Thr	Ala	Gly	Glu	Ala	Ser	Gln	Arg	Ser	Thr	Lys	Glu	Asp	Trp	Ala	Glu	
		1140				1145						1150				
tgg	atg	agg	cat	ttt	agc	att	gaa	ctt	cta	aag	gaa	tca	ccc	tct	cct	3504
Trp	Met	Arg	His	Phe	Ser	Ile	Glu	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	
		1155				1160					1165					
gct	tta	cga	acc	tgt	gct	agg	ctt	gca	cag	ttg	cag	cct	ttt	gtg	ggg	3552
Ala	Leu	Arg	Thr	Cys	Ala	Arg	Leu	Ala	Gln	Leu	Gln	Pro	Phe	Val	Gly	
1170				1175					1180							
cgg	gag	ttg	ttt	gca	gct	ggg	ttt	gtt	agc	tgt	tgg	gca	cag	cta	aat	3600
Arg	Glu	Leu	Phe	Ala	Ala	Gly	Phe	Val	Ser	Cys	Trp	Ala	Gln	Leu	Asn	
1185				1190					1195					1200		
gat	act	agt	caa	aag	caa	tta	gtt	cgg	agt	tta	gag	atg	gca	ttt	tca	3648
Asp	Thr	Ser	Gln	Lys	Gln	Leu	Val	Arg	Ser	Leu	Glu	Met	Ala	Phe	Ser	
			1205					1210				1215				
tct	cca	aat	att	cct	cct	gag	att	ctt	gca	aca	ctt	ctt	aat	ttg	gct	3696
Ser	Pro	Asn	Ile	Pro	Pro	Glu	Ile	Leu	Ala	Thr	Leu	Leu	Asn	Leu	Ala	
		1220				1225						1230				
gag	ttc	atg	gaa	cat	gac	gag	aaa	ccc	ctc	cct	ata	gac	att	cgg	ctc	3744
Glu	Phe	Met	Glu	His	Asp	Glu	Lys	Pro	Leu	Pro	Ile	Asp	Ile	Arg	Leu	
		1235				1240					1245					
ctt	gga	gcc	ctt	gcg	gaa	aag	tgc	cgt	gca	ttt	gca	aag	gct	ttg	cat	3792
Leu	Gly	Ala	Leu	Ala	Glu	Lys	Cys	Arg	Ala	Phe	Ala	Lys	Ala	Leu	His	
1250				1255						1260						
tat	aaa	gaa	atg	gaa	ttt	gaa	ggg	gca	cgt	tcc	aag	aag	atg	gat	gca	3840
Tyr	Lys	Glu	Met	Glu	Phe	Glu	Gly	Ala	Arg	Ser	Lys	Lys	Met	Asp	Ala	
1265				1270				1275						1280		
aac	cca	gtt	gct	gta	gtt	gaa	gct	ctt	ata	cat	ata	aat	aat	caa	ttg	3888
Asn	Pro	Val	Ala	Val	Val	Glu	Ala	Leu	Ile	His	Ile	Asn	Asn	Gln	Leu	
			1285					1290				1295				
cac	caa	cat	gag	gct	gca	gtt	gga	ata	ttg	acc	tat	gcc	caa	caa	aat	3936

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His	Gln	His	Glu	Ala	Ala	Val	Gly	Ile	Leu	Thr	Tyr	Ala	Gln	Gln	Asn		
ttg	gat	gtc	caa	tta	aag	gag	tca	tgg	tat	gag	aaa	cta	cag	cgc	tgg	3984	
Leu	Asp	Val	Gln	Leu	Lys	Glu	Ser	Trp	Tyr	Glu	Lys	Leu	Gln	Arg	Trp		
gat	gat	gct	ctc	aag	gca	tac	aca	gct	aaa	gct	tct	cag	gca	tca	act	4032	
Asp	Asp	Ala	Leu	Lys	Ala	Tyr	Thr	Ala	Lys	Ala	Ser	Gln	Ala	Ser	Thr		
cca	cat	ctt	gtt	gca	tct	tat	ata	ggg	cgg	atg	cgg	tgc	ctt	gct	gca	4080	
Pro	His	Leu	Val	Ala	Ser	Tyr	Ile	Gly	Arg	Met	Arg	Cys	Leu	Ala	Ala		
ttg	gct	cga	tgg	gaa	gag	ctt	aac	aac	ctg	tgc	aag	gag	tac	tgg	acc	4128	
Leu	Ala	Arg	Trp	Glu	Glu	Leu	Asn	Asn	Leu	Cys	Lys	Glu	Tyr	Trp	Thr		
cca	gct	gaa	cca	gct	gca	cga	ctg	gag	atg	gca	cca	atg	gct	gct	aat	4176	
Pro	Ala	Glu	Pro	Ala	Ala	Arg	Leu	Glu	Met	Ala	Pro	Met	Ala	Ala	Asn		
gct	gca	tgg	aac	atg	gga	gag	tgg	gat	caa	atg	gca	gac	tat	gtt	tct	4224	
Ala	Ala	Trp	Asn	Met	Gly	Glu	Trp	Asp	Gln	Met	Ala	Asp	Tyr	Val	Ser		
cgg	ctg	gat	gat	ggt	gat	gaa	aca	aaa	ctg	agg	gtt	ttg	ggg	aat	act	4272	
Arg	Leu	Asp	Asp	Gly	Asp	Glu	Thr	Lys	Leu	Arg	Val	Leu	Gly	Asn	Thr		
act	gct	agt	ggt	gat	gga	agt	agt	aac	ggt	aca	ttc	agg	gca	gtt		4320	
Thr	Ala	Ser	Gly	Asp	Gly	Ser	Ser	Asn	Gly	Thr	Phe	Phe	Arg	Ala	Val		
tta	cta	gtt	cgt	cga	gga	aag	tat	gat	gaa	gcg	cgg	gag	ttt	gtt	gag	4368	
Leu	Leu	Val	Arg	Arg	Gly	Lys	Tyr	Asp	Glu	Ala	Arg	Glu	Phe	Val	Glu		
aga	gca	agg	aaa	tgt	ttg	gca	aca	gaa	ctt	gct	gct	ttg	gtt	cta	gag	4416	
Arg	Ala	Arg	Lys	Cys	Leu	Ala	Thr	Glu	Leu	Ala	Ala	Leu	Val	Leu	Glu		
agc	tat	gat	cgt	gcc	tac	agc	aac	atg	gtt	cgt	gtt	cag	cag	ctc	tca	4464	
Ser	Tyr	Asp	Arg	Ala	Tyr	Ser	Asn	Met	Val	Arg	Val	Gln	Gln	Leu	Ser		
gaa	tta	gag	gag	gtc	att	gat	tat	tgt	act	ctt	cct	gtg	gga	aac	ccc	4512	
Glu	Leu	Glu	Glu	Val	Ile	Asp	Tyr	Cys	Thr	Leu	Pro	Val	Gly	Asn	Pro		
gtt	gct	gaa	ggg	cga	cgg	gcc	ctt	att	cgc	aat	atg	tgg	act	gag	cgc	4560	
Val	Ala	Glu	Gly	Arg	Arg	Ala	Leu	Ile	Arg	Asn	Met	Trp	Thr	Glu	Arg		
ata	caa	ggg	gca	aag	cga	aat	gtt	gag	gtc	tgg	caa	gta	ctt	cta	gca	4608	
Ile	Gln	Gly	Ala	Lys	Arg	Asn	Val	Glu	Val	Trp	Gln	Val	Leu	Leu	Ala		
gtt	aga	gca	ctt	gtg	ctg	cct	cct	atc	gag	gac	atc	gaa	aat	tgg	ctc	4656	
Val	Arg	Ala	Leu	Val	Leu	Pro	Pro	Ile	Glu	Asp	Ile	Glu	Asn	Trp	Leu		
aag	ttt	tct	tat	ctt	tgc	cga	aag	aac	ggg	cgg	att	agc	cag	gct	agg	4704	
Lys	Phe	Ser	Tyr	Leu	Cys	Arg	Lys	Asn	Gly	Arg	Ile	Ser	Gln	Ala	Arg		
tct	acc	tta	att	aaa	ctt	cta	cag	tat	gat	ccc	gaa	aca	tct	cct	gaa	4752	
Ser	Thr	Leu	Ile	Lys	Leu	Gln	Tyr	Asp	Pro	Glu	Thr	Ser	Pro	Glu			
aat	gtg	cga	tac	cat	ggc	cct	cct	caa	gta	atg	gtg	gca	tat	ttg	aag	4800	
Asn	Val	Arg	Tyr	His	Gly	Pro	Pro	Gln	Val	Met	Val	Ala	Tyr	Leu	Lys		
tac	caa	tgg	tcc	ctt	ggg	gag	gat	ctt	aag	cgg	aag	gaa	gca	ttt	ggc	4848	
Tyr	Gln	Trp	Ser	Leu	Gly	Glu	Asp	Leu	Lys	Arg	Lys	Glu	Ala	Phe	Gly		
agg	ctg	cag	aat	tta	gcg	ata	gaa	cta	tca	agt	gca	aat	att	caa	tct	4896	
Arg	Leu	Gln	Asn	Leu	Ala	Ile	Glu	Leu	Ser	Ser	Ala	Asn	Ile	Gln	Ser		
gct	aca	tca	act	ggg	ctg	atg	agc	act	tca	agt	gtg	agt	gtc	cca	ctt	4944	
Ala	Thr	Ser	Thr	Gly	Leu	Met	Ser	Thr	Ser	Ser	Val	Ser	Val	Pro	Leu		
ctg	gcc	cgt	gta	tat	cgt	aga	ctt	gga	acc	tgg	cag	tgg	gca	ctt	tct	4992	
Leu	Ala	Arg	Val	Tyr	Arg	Arg	Leu	Gly	Thr	Trp	Gln	Trp	Ala	Leu	Ser		
cct	gca	tta	gat	gaa	gat	tct	ata	cag	gaa	att	ctt	tcc	gca	ttt	agg	5040	

## PhoenixTemp32470.tmp.txt

Pro	Ala	Leu	Asp	Glu	Asp	Ser	Ile	Gln	Glu	Ile	Leu	Ser	Ala	Phe	Arg		
1665					1670				1675						1680		
aat	gcg	act	caa	tgt	gca	aca	aaa	tgg	gct	aaa	gca	tgg	cat	tca	tgg	5088	
Asn	Ala	Thr	Gln	Cys	Ala	Thr	Lys	Trp	Ala	Lys	Ala	Trp	His	Ser	Trp		
			1685					1690					1695				
gca	ctc	ttt	aac	act	gca	gtc	atg	tct	cat	tat	act	tta	aga	ggt	ttt	5136	
Ala	Leu	Phe	Asn	Thr	Ala	Val	Met	Ser	His	Tyr	Thr	Leu	Arg	Gly	Phe		
			1700					1705					1710				
cct	aat	att	gca	gca	cag	ttt	gtt	gtt	gca	gcc	gtt	act	gga	tat	ttt	5184	
Pro	Asn	Ile	Ala	Ala	Gln	Phe	Val	Val	Ala	Ala	Val	Thr	Gly	Tyr	Phe		
			1715				1720					1725					
cat	tca	ata	gcg	ttt	gca	gca	aat	gcc	aaa	gga	gtg	gat	gat	agt	ttg	5232	
His	Ser	Ile	Ala	Phe	Ala	Asn	Ala	Lys	Gly	Val	Asp	Asp	Ser	Ser	Leu		
			1730			1735				1740							
cag	gat	ata	ctt	cga	ctc	ctc	act	ttg	tgg	ttc	aac	cat	gga	gct	act	5280	
Gln	Asp	Ile	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Asn	His	Gly	Ala	Thr		
1745				1750				1755					1760				
gct	gag	gtt	caa	atg	gca	tta	cat	aaa	gga	ttt	tct	tat	gtt	aat	att	5328	
Ala	Glu	Val	Gln	Met	Ala	Leu	His	Lys	Gly	Phe	Ser	Tyr	Val	Asn	Ile		
			1765					1770					1775				
gac	aca	tgg	ctg	gtt	gtt	tta	cct	caa	ata	att	gcc	agg	ata	cat	tca	5376	
Asp	Thr	Trp	Leu	Val	Val	Leu	Pro	Gln	Ile	Ile	Ala	Arg	Ile	His	Ser		
			1780				1785					1790					
aat	aac	cat	gct	gtg	aga	gaa	ttg	ata	caa	tct	ctt	ttg	gtg	cga	att	5424	
Asn	Asn	His	Ala	Val	Arg	Glu	Leu	Ile	Gln	Ser	Leu	Leu	Val	Arg	Ile		
			1795			1800					1805						
gga	gaa	agc	cat	cca	cag	gct	ctc	atg	tac	ccc	ctt	ctt	gta	gca	tgt	5472	
Gly	Glu	Ser	His	Pro	Gln	Ala	Leu	Met	Tyr	Pro	Leu	Leu	Val	Ala	Cys		
			1810		1815					1820							
aaa	tca	att	agc	aat	tta	cgc	aga	gca	gca	gct	caa	gaa	gtg	gtt	gac	5520	
Lys	Ser	Ile	Ser	Asn	Leu	Arg	Arg	Ala	Ala	Ala	Gln	Glu	Val	Val	Asp		
1825				1830				1835							1840		
aaa	gtc	cgg	cag	cat	agt	ggc	aca	ctt	gta	gat	cag	gca	caa	ctt	gta	5568	
Lys	Val	Arg	Gln	His	Ser	Gly	Thr	Leu	Val	Asp	Gln	Ala	Gln	Leu	Val		
			1845					1850				1855					
tcg	acg	gag	cta	atc	aga	gtg	gcg	ata	ctc	tgg	cat	gaa	atg	tgg	cat	5616	
Ser	Thr	Glu	Leu	Ile	Arg	Val	Ala	Ile	Leu	Trp	His	Glu	Met	Trp	His		
			1860				1865					1870					
gag	gca	ttg	gaa	gaa	gct	agt	cgt	tta	tat	ttt	ggt	gag	cat	aat	act	5664	
Glu	Ala	Leu	Glu	Glu	Ala	Ser	Arg	Leu	Tyr	Phe	Gly	Glu	His	Asn	Thr		
			1875			1880					1885						
gag	ggg	atg	cta	aaa	gca	ttg	gag	ccc	tta	cat	gaa	atg	ctc	gag	gaa	5712	
Glu	Gly	Met	Leu	Lys	Ala	Leu	Glu	Pro	Leu	His	Glu	Met	Leu	Glu	Glu		
			1890		1895			1900									
ggg	gct	atg	cgg	gac	gat	att	acc	gcc	aaa	gaa	agt	gcc	ttc	att	cag	5760	
Gly	Ala	Met	Arg	Asp	Asp	Ile	Thr	Ala	Lys	Glu	Ser	Ala	Phe	Ile	Gln		
			1905		1910			1915						1920			
gca	tat	cgc	cat	gaa	ttg	ttg	gag	gcc	tat	gaa	tgc	tgc	atg	aaa	ttt	5808	
Ala	Tyr	Arg	His	Glu	Leu	Leu	Glu	Ala	Tyr	Glu	Cys	Cys	Met	Lys	Phe		
			1925				1930					1935					
aag	agg	acc	gga	aaa	gat	gct	gaa	ctt	act	cag	gca	tgg	gat	cta	tac	5856	
Lys	Arg	Thr	Gly	Lys	Asp	Ala	Glu	Leu	Thr	Gln	Ala	Trp	Asp	Leu	Tyr		
			1940			1945						1950					
tat	cat	gtg	ttc	aga	cgg	ata	gat	aag	cag	ctc	caa	gct	ctt	act	acc	5904	
Tyr	His	Val	Phe	Arg	Arg	Ile	Asp	Lys	Gln	Leu	Gln	Ala	Leu	Thr	Thr		
			1955			1960					1965						
ctg	gac	ctg	cag	gca	aga	tgc	ttt	gaa	ttt	att	ctg	ttt	cac	cgc		5952	
Leu	Asp	Leu	Gln	Ala	Arg	Cys	Asn	Phe	Glu	Phe	Ile	Leu	Phe	His	Arg		
			1970		1975			1980									
aag	ctt	gct	gtt	cct	ggg	caa	tat	cgc	gca	gga	tca	ccg	ttg	gtc	aca	6000	
Lys	Leu	Ala	Val	Pro	Gly	Gln	Tyr	Arg	Ala	Gly	Ser	Pro	Leu	Val	Thr		
			1985		1990			1995						2000			
att	gaa	tat	ttt	gca	cat	caa	ctt	gtt	gtc	atc	aca	tct	aaa	cag	cgt	6048	
Ile	Glu	Tyr	Phe	Ala	His	Gln	Leu	Val	Val	Ile	Thr	Ser	Lys	Gln	Arg		
			2005				2010					2015					
ccc	cgg	aaa	tta	acc	ata	cgt	ggc	agt	gat	gga	gaa	gat	tat	gcc	ttc	6096	
Pro	Arg	Lys	Leu	Thr	Ile	Arg	Gly	Ser	Asp	Gly	Glu	Asp	Tyr	Ala	Phe		
			2020			2025						2030					
ttg	cta	aag	gga	cat	gaa	gat	tta	cgc	caa	gat	gaa	cgt	gtg	atg	cag	6144	



## PhoenixTemp32470.tmp.txt

Leu	Leu	Lys	Gly	His	Glu	Asp	Leu	Arg	Gln	Asp	Glu	Arg	Val	Met	Gln		
2035	2040	2045															
ctt	ttc	ggt	ctg	gtg	aat	act	cta	ctg	gag	aat	gaa	aga	aaa	acg	gca	6192	
Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu	Glu	Asn	Glu	Arg	Lys	Thr	Ala		
2050	2055	2060															
gaa	aag	gat	ctg	tct	att	caa	cga	tat	gct	ggt	att	cca	tta	tct	ccc	6240	
Glu	Lys	Asp	Leu	Ser	Ile	Gln	Arg	Tyr	Ala	Val	Ile	Pro	Leu	Ser	Pro		
2065	2070	2075															
aac	agt	ggg	tta	att	gga	tgg	gtc	cca	cat	tgt	gac	acc	ttg	cac	cat	6288	
Asn	Ser	Gly	Leu	Ile	Gly	Trp	Val	Pro	His	Cys	Asp	Thr	Leu	His	His		
2085	2090	2095															
ctc	att	cgg	gag	tac	agg	gat	gcc	agg	aag	att	acc	ctc	aac	caa	gag	6336	
Leu	Ile	Arg	Glu	Tyr	Arg	Asp	Ala	Arg	Lys	Ile	Thr	Leu	Asn	Gln	Glu		
2100	2105	2110															
cac	aaa	tac	atg	ctt	ggt	ttt	gct	cct	gat	tat	gat	cat	tta	cca	ctc	6384	
His	Lys	Tyr	Met	Leu	Gly	Phe	Ala	Pro	Asp	Tyr	Asp	His	Leu	Pro	Leu		
2115	2120	2125															
att	gct	aaa	gtg	gaa	gta	ttt	gag	tat	gca	ttg	caa	aat	act	gaa	gga	6432	
Ile	Ala	Lys	Val	Glu	Val	Phe	Glu	Tyr	Ala	Leu	Gln	Asn	Thr	Glu	Gly		
2130	2135	2140															
aat	gac	ctg	gca	agg	gtt	ctt	tgg	ttg	aaa	agt	cgc	act	tct	gag	gta	6480	
Asn	Asp	Leu	Ala	Arg	Val	Leu	Trp	Leu	Lys	Ser	Arg	Thr	Ser	Glu	Val		
2145	2150	2155															
tgg	ctt	gac	agg	agg	aca	aat	tat	act	aga	agt	ttg	gct	gtc	atg	agt	6528	
Trp	Leu	Asp	Arg	Arg	Thr	Asn	Tyr	Thr	Arg	Ser	Leu	Ala	Val	Met	Ser		
2165	2170	2175															
atg	gtg	ggc	tac	ctt	ctt	ggt	tta	ggt	gat	cga	cac	cca	agc	aat	ctt	6576	
Met	Val	Gly	Tyr	Leu	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser	Asn	Leu		
2180	2185	2190															
atg	ctt	cat	cgc	tat	agt	ggg	aag	atc	tta	cac	att	gat	ttt	ggt	gac	6624	
Met	Leu	His	Arg	Tyr	Ser	Gly	Lys	Ile	Leu	His	Ile	Asp	Phe	Gly	Asp		
2195	2200	2205															
tgc	ttt	gaa	gct	tca	atg	aac	cga	gag	aag	ttc	cct	gaa	aag	gtt	ccc	6672	
Cys	Phe	Glu	Ala	Ser	Met	Asn	Arg	Glu	Lys	Phe	Pro	Glu	Lys	Val	Pro		
2210	2215	2220															
ttc	cgc	ctg	aca	agg	atg	ctt	gtt	aaa	gct	atg	gag	gtt	agt	ggt	atc	6720	
Phe	Arg	Leu	Thr	Arg	Met	Leu	Val	Lys	Ala	Met	Glu	Val	Ser	Gly	Ile		
2225	2230	2235															
gag	ggc	aat	ttc	cgt	tca	act	tgt	gaa	aat	gta	atg	caa	gtg	ctc	cga	6768	
Glu	Gly	Asn	Phe	Arg	Ser	Thr	Cys	Glu	Asn	Val	Met	Gln	Val	Leu	Arg		
2245	2250	2255															
aca	cat	agg	gat	agt	gtc	atg	gct	atg	atg	gag	gcc	ttc	gtt	cat	gat	6816	
Thr	His	Arg	Asp	Ser	Val	Met	Ala	Met	Met	Glu	Ala	Phe	Val	His	Asp		
2260	2265	2270															
cct	ctc	atc	aat	tgg	cgt	ctt	ttc	aac	ttc	aat	gaa	gtc	cct	caa	atg	6864	
Pro	Leu	Ile	Asn	Trp	Arg	Leu	Phe	Asn	Phe	Asn	Glu	Val	Pro	Gln	Met		
2275	2280	2285															
tct	aca	ttt	gca	agc	act	cat	gta	gct	cct	gtt	gca	aat	agt	gaa	gaa	6912	
Ser	Thr	Phe	Ala	Ser	Thr	His	Val	Ala	Pro	Val	Ala	Asn	Ser	Glu	Glu		
2290	2295	2300															
tcc	gct	cca	aac	aga	gag	ctt	gct	caa	cct	caa	cgt	ggt	gct	cgg	gag	6960	
Ser	Ala	Pro	Asn	Arg	Glu	Leu	Ala	Gln	Pro	Gln	Arg	Gly	Ala	Arg	Glu		
2305	2310	2315															
aag	gag	ctt	ctt	cag	gct	gtc	aat	caa	ctt	ggt	gat	gct	aat	gaa	gtt	7008	
Lys	Glu	Leu	Leu	Gln	Ala	Val	Asn	Gln	Leu	Gly	Asp	Ala	Asn	Glu	Val		
2325	2330	2335															
cta	aat	gag	cgt	gct	gtg	gtg	gtc	atg	gct	cgg	atg	agt	aat	aaa	ctt	7056	
Leu	Asn	Glu	Arg	Ala	Val	Val	Val	Met	Ala	Arg	Met	Ser	Asn	Lys	Leu		
2340	2345	2350															
act	gga	cgt	gat	ttt	tct	act	ttt	gat	cat	ggt	tta	aat	gtt	aaa	gtg	7104	
Thr	Gly	Arg	Asp	Phe	Ser	Thr	Phe	Asp	His	Gly	Leu	Asn	Val	Lys	Val		
2355	2360	2365															
caa	gtc	caa	aag	ttg	att	acc	caa	gct	aga	tca	cac	gag	aat	ttg	tgc	7152	
Gln	Val	Gln	Lys	Leu	Ile	Thr	Gln	Ala	Arg	Ser	His	Glu	Asn	Leu	Cys		
2370	2375	2380															
caa	aac	tat	gtc	ggg	tgg	tgt	cct	ttt	tgg	tga						7185	
Gln	Asn	Tyr	Val	Gly	Trp	Cys	Pro	Phe	Trp								
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<210> 2555  
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 <212> PRT  
 <213> Vitis vinifera

<400> 2555  
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 Ser Ser Leu Asp Ala Leu Asn Arg Ile Leu Ala Asp Leu Cys Ala Arg  
 20 25 30  
 Gly Pro Pro Lys Asp Gly Ala Ala Leu Ala Leu Lys Ile His Leu Glu  
 35 40 45  
 Glu Glu Ala Arg Asp Leu Ser Gly Glu Ala Phe Ser Arg Phe Met Asp  
 50 55 60  
 Gln Leu Tyr Asp Arg Ile Ser Asn Leu Leu Asp Ser Asn Asp Val Ala  
 65 70 75 80  
 Glu Asn Met Gly Ala Leu Arg Ala Ile Asp Glu Leu Ile Asp Val Ala  
 85 90 95  
 Leu Gly Glu Ser Ala Ser Lys Val Ser Lys Phe Ser Gly Tyr Val Arg  
 100 105 110  
 Thr Val Phe Glu Ala Lys Arg Asp Arg Asp Val Leu Ile Leu Ala Ser  
 115 120 125  
 Thr Val Leu Gly His Leu Ala Arg Ala Gly Gly Ala Met Thr Ala Asp  
 130 135 140  
 Glu Val Glu Cys Gln Val Gln Asn Ala Leu Glu Trp Leu Arg Gly Glu  
 145 150 155 160  
 Arg Ile Glu Tyr Arg Arg Phe Ala Ala Val Leu Ile Leu Lys Glu Met  
 165 170 175  
 Ala Glu Asn Ala Ser Thr Val Phe Asn Val His Val Pro Glu Phe Val  
 180 185 190  
 Asp Ala Ile Trp Val Ala Leu Arg Asp Pro Thr Leu Pro Ile Arg Glu  
 195 200 205  
 Arg Ala Val Glu Ala Leu Arg Ala Cys Leu Arg Val Ile Glu Lys Arg  
 210 215 220  
 Glu Thr Arg Trp Arg Val Gln Trp Tyr Tyr Arg Met Phe Glu Ala Thr  
 225 230 235 240  
 Gln Asp Gly Leu Gly Arg Asn Ala Pro Val His Ser Ile His Gly Ser  
 245 250 255  
 Leu Leu Ala Val Gly Glu Leu Leu Arg Leu Val Lys Met Phe Met Met  
 260 265 270  
 Ser Arg Tyr Arg Glu Val Ala Asp Ile Val Ile Thr Tyr Leu Glu His  
 275 280 285  
 Lys Asp Arg Leu Val Arg Leu Ser Ile Thr Ser Leu Leu Pro Arg Ile  
 290 295 300  
 Ala His Phe Leu Arg Asp Arg Phe Val Thr Asn Tyr Leu Asn Ile Cys  
 305 310 315 320  
 Met Asn His Ile Leu Ala Val Leu Arg Gln Pro Ala Glu Arg Asp Ser  
 325 330 335  
 Gly Phe Ile Ala Leu Gly Glu Met Ala Gly Ala Leu Asp Gly Glu Leu  
 340 345 350  
 Val His Tyr Met Pro Thr Ile Ile Ser His Leu Arg Asp Ala Ile Ala  
 355 360 365  
 Pro Arg Arg Gly Arg Pro Ser Leu Asp Ala Leu Thr Cys Val Gly Ser  
 370 375 380  
 Ile Ala Lys Ala Met Gly Ser Val Met Glu Pro Tyr Val Arg Ser Leu  
 385 390 395 400  
 Leu Asp Val Met Phe Phe Pro Gly Leu Ser His Ala Leu Ile Glu Ala  
 405 410 415  
 Leu Glu Gln Ile Thr Ala Ser Ile Pro Ser Leu Leu Pro Thr Ile Gln  
 420 425 430  
 Asp Arg Leu Leu Asp Cys Ile Ser Ile Ala Leu Ser Arg Ser His Tyr  
 435 440 445  
 Pro Leu Ala Arg Pro Ala Val Ala Met Ala Arg Gly Ser Thr Val Asn  
 450 455 460  
 Thr Ala Gln Gln Val Leu Asp Phe Ser Ser Pro Ala Leu Val Gln Leu  
 465 470 475 480  
 Ser Leu Gln Thr Leu Ala His Phe Asn Phe Lys Val Cys Val Leu Thr  
 485 490 495  
 Leu Ser Asn Met Lys Leu Ser Asn Ser Phe Ser Gly Thr Thr Cys Pro

## PhoenixTemp32470.tmp.txt

			500					505					510			
Gln	Phe	Ser 515	Ser	Ser	Arg	Ser	Asn 520	Arg	Thr	Gly	Gly	Lys 525	Arg	Arg	Arg	
Leu	Val 530	Glu	Glu	Ile	Val	Glu 535	Lys	Leu	Leu	Ile	Ala 540	Ala	Ile	Ala	Asp	
Ala 545	Asp	Val	Thr	Val	Arg 550	Arg	Ser	Ile	Phe	Leu 555	Ser	Leu	His	Glu	Asn 560	
Gly	Gly	Phe	Asp	Glu 565	Phe	Leu	Ala	Gln	Ala 570	Asp	Ser	Leu	Ser	Ala 575	Val	
Phe	Ala	Ala	Leu 580	Asn	Asp	Glu	Asp	Phe 585	Asp	Val	Arg	Glu	Tyr 590	Ala	Ile	
Ser	Val	Ser 595	Gly	Arg	Leu	Ser	Glu 600	Lys	Asn	Pro	Ala	Tyr 605	Val	Leu	Pro	
Ala	Leu 610	Arg	Arg	His	Leu	Ile 615	Gln	Leu	Leu	Thr	Tyr 620	Leu	Glu	Gln	Ser	
Ala 625	Asp	Ser	Lys	Cys	Arg 630	Glu	Glu	Ser	Ala	Lys 635	Leu	Leu	Gly	Cys	Leu 640	
Ile	Arg	Asn	Cys	Glu 645	Arg	Leu	Ile	Leu	Pro 650	Tyr	Ile	Ala	Pro	Ile 655	His	
Lys	Ala	Leu	Val 660	Ala	Lys	Leu	Ala	Glu 665	Gly	Ser	Gly	Val	Asn 670	Ala	Asn	
Asn	Gly	Ile 675	Ile	Ser	Gly	Val	Leu 680	Val	Thr	Val	Gly	Asp 685	Leu	Ala	Arg	
Val	Gly 690	Gly	Ser	Ala	Met	Arg 695	Asp	Asn	Val	Thr	Asp 700	Leu	Met	Pro	Leu	
Ile 705	Val	Glu	Ala	Leu	Met 710	Asp	Gly	Ala	Ala	Val 715	Thr	Lys	Arg	Glu	Val 720	
Ala	Val	Ala	Thr	Leu 725	Gly	Gln	Val	Val	Gln 730	Ser	Thr	Gly	Tyr	Val 735	Ile	
Ala	Pro	Tyr	Asn 740	Ala	Tyr	Pro	Gln	Leu 745	Leu	Gly	Leu	Leu	Leu 750	Lys	Leu	
Leu	Asn	Gly 755	Glu	Leu	Ala	Trp	Thr 760	Thr	Arg	Arg	Glu	Val 765	Leu	Lys	Val	
Leu	Gly 770	Ile	Met	Gly	Ala	Leu 775	Asp	Pro	His	Val	His 780	Lys	Arg	Asn	Gln	
Gln 785	Cys	Leu	Pro	Gly	Leu 790	His	Gly	Glu	Val	Ala 795	Arg	Pro	Ala	Ser	Asp 800	
Thr	Gly	Gln	His	Ile 805	Arg	Ser	Met	Asp	Glu 810	Leu	Pro	Met	Asp	Leu 815	Trp	
Pro	Ser	Phe	Ala 820	Thr	Ser	Glu	Asp	Tyr 825	Tyr	Ser	Thr	Val	Ala 830	Ile	Asn	
Ser	Leu	Met 835	Arg	Ile	Leu	Arg	Asp 840	Ala	Ser	Leu	Ser	Ser 845	Tyr	His	Gln	
Lys	Val 850	Val	Gly	Ser	Leu	Met 855	Phe	Ile	Phe	Lys	Ser 860	Met	Gly	Leu	Gly	
Cys 865	Val	Pro	Tyr	Leu	Pro 870	Lys	Val	Leu	Pro	Asp 875	Leu	Phe	Leu	Thr	Val 880	
Arg	Thr	Cys	Glu	Asp 885	Gly	Leu	Lys	Glu	Phe 890	Ile	Thr	Trp	Lys	Leu 895	Gly	
Thr	Leu	Val	Ser 900	Ile	Val	Arg	Gln	His 905	Ile	Arg	Lys	Tyr	Leu 910	Pro	Glu	
Leu	Leu	Leu 915	Leu	Ile	Ser	Glu	Leu 920	Trp	Pro	Ser	Phe	Ser 925	Leu	Pro	Ser	
Ser	Asn 930	Arg	Pro	Ile	Leu	His 935	Leu	Val	Glu	Gln	Leu 940	Cys	Leu	Ala	Leu	
Asn 945	Asp	Glu	Phe	Arg	Thr 950	Tyr	Leu	Pro	Leu	Ile 955	Leu	Pro	Ser	Cys	Ile 960	
Gln	Val	Leu	Ser	Asp 965	Ala	Glu	Arg	Cys	Asn 970	Asp	Tyr	Thr	Tyr	Val 975	Leu	
Asp	Ile	Leu	His 980	Thr	Leu	Glu	Val	Phe 985	Gly	Gly	Thr	Leu	Asp 990	Glu	His	
Met	His	Leu 995	Leu	Leu	Pro	Ala	Leu 1000	Ile	Arg	Leu	Phe 1005	Lys	Val	Asp	Ala	
Ser	Val 1010	Ala	Ile	Arg	Arg	Ala	Ala	Phe	Lys	Thr	Leu 1020	Thr	Arg	Leu	Ile	

## PhoenixTemp32470.tmp.txt

Asp Ala Leu Cys Cys Leu Ala His Ala Leu Gly Gly Asp Phe Thr Ile  
 1060 1065 1070  
 Phe Ile Pro Ser Ile His Lys Leu Met Lys His Arg Leu Arg His  
 1075 1080 1085  
 Lys Glu Phe Glu Glu Ile Glu Gly Arg Leu Gln Arg Arg Glu Pro Leu  
 1090 1095 1100  
 Ile Leu Gly Ser Thr Ala Gln Arg Leu Ile Ser Arg Phe Pro Val  
 1105 1110 1115 1120  
 Glu Val Thr Ser Asp Pro Leu Asn Asp Val Asn Asp Gly Arg Leu Arg  
 1125 1130 1135  
 Thr Ala Gly Glu Ala Ser Gln Arg Ser Thr Lys Glu Asp Trp Ala Glu  
 1140 1145 1150  
 Trp Met Arg His Phe Ser Ile Glu Leu Leu Lys Glu Ser Pro Ser Pro  
 1155 1160 1165  
 Ala Leu Arg Thr Cys Ala Arg Leu Ala Gln Leu Gln Pro Phe Val Gly  
 1170 1175 1180  
 Arg Glu Leu Phe Ala Ala Gly Phe Val Ser Cys Trp Ala Gln Leu Asn  
 1185 1190 1195 1200  
 Asp Thr Ser Gln Lys Gln Leu Val Arg Ser Leu Glu Met Ala Phe Ser  
 1205 1210 1215  
 Ser Pro Asn Ile Pro Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala  
 1220 1225 1230  
 Glu Phe Met Glu His Asp Glu Lys Pro Leu Pro Ile Asp Ile Arg Leu  
 1235 1240 1245  
 Leu Gly Ala Leu Ala Glu Lys Cys Arg Ala Phe Ala Lys Ala Leu His  
 1250 1255 1260  
 Tyr Lys Glu Met Glu Phe Glu Gly Ala Arg Ser Lys Lys Met Asp Ala  
 1265 1270 1275 1280  
 Asn Pro Val Ala Val Glu Ala Leu Ile His Ile Asn Asn Gln Leu  
 1285 1290 1295  
 His Gln His Glu Ala Ala Val Gly Ile Leu Thr Tyr Ala Gln Gln Asn  
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 Leu Asp Val Gln Leu Lys Glu Ser Trp Tyr Glu Lys Leu Gln Arg Trp  
 1315 1320 1325  
 Asp Asp Ala Leu Lys Ala Tyr Thr Ala Lys Ala Ser Gln Ala Ser Thr  
 1330 1335 1340  
 Pro His Leu Val Ala Ser Tyr Ile Gly Arg Met Arg Cys Leu Ala Ala  
 1345 1350 1355 1360  
 Leu Ala Arg Trp Glu Glu Leu Asn Asn Leu Cys Lys Glu Tyr Trp Thr  
 1365 1370 1375  
 Pro Ala Glu Pro Ala Ala Arg Leu Glu Met Ala Pro Met Ala Ala Asn  
 1380 1385 1390  
 Ala Ala Trp Asn Met Gly Glu Trp Asp Gln Met Ala Asp Tyr Val Ser  
 1395 1400 1405  
 Arg Leu Asp Asp Gly Asp Glu Thr Lys Leu Arg Val Leu Gly Asn Thr  
 1410 1415 1420  
 Thr Ala Ser Gly Asp Gly Ser Ser Asn Gly Thr Phe Phe Arg Ala Val  
 1425 1430 1435 1440  
 Leu Leu Val Arg Arg Gly Lys Tyr Asp Glu Ala Arg Glu Phe Val Glu  
 1445 1450 1455  
 Arg Ala Arg Lys Cys Leu Ala Thr Glu Leu Ala Ala Leu Val Leu Glu  
 1460 1465 1470  
 Ser Tyr Asp Arg Ala Tyr Ser Asn Met Val Arg Val Gln Gln Leu Ser  
 1475 1480 1485  
 Glu Leu Glu Glu Val Ile Asp Tyr Cys Thr Leu Pro Val Gly Asn Pro  
 1490 1495 1500  
 Val Ala Glu Gly Arg Arg Ala Leu Ile Arg Asn Met Trp Thr Glu Arg  
 1505 1510 1515 1520  
 Ile Gln Gly Ala Lys Arg Asn Val Glu Val Trp Gln Val Leu Leu Ala  
 1525 1530 1535  
 Val Arg Ala Leu Val Leu Pro Pro Ile Glu Asp Ile Glu Asn Trp Leu  
 1540 1545 1550  
 Lys Phe Ser Tyr Leu Cys Arg Lys Asn Gly Arg Ile Ser Gln Ala Arg  
 1555 1560 1565  
 Ser Thr Leu Ile Lys Leu Leu Gln Tyr Asp Pro Glu Thr Ser Pro Glu  
 1570 1575 1580  
 Asn Val Arg Tyr His Gly Pro Pro Gln Val Met Val Ala Tyr Leu Lys  
 1585 1590 1595 1600  
 Tyr Gln Trp Ser Leu Gly Glu Asp Leu Lys Arg Lys Glu Ala Phe Gly

## PhoenixTemp32470.tmp.txt

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 1620 1625 1630  
 Ala Thr Ser Thr Gly Leu Met Ser Thr Ser Ser Val Ser Val Pro Leu  
 1635 1640 1645  
 Leu Ala Arg Val Tyr Arg Arg Leu Gly Thr Trp Gln Trp Ala Leu Ser  
 1650 1655 1660  
 Pro Ala Leu Asp Glu Asp Ser Ile Gln Glu Ile Leu Ser Ala Phe Arg  
 1665 1670 1675 1680  
 Asn Ala Thr Gln Cys Ala Thr Lys Trp Ala Lys Ala Trp His Ser Trp  
 1685 1690 1695  
 Ala Leu Phe Asn Thr Ala Val Met Ser His Tyr Thr Leu Arg Gly Phe  
 1700 1705 1710  
 Pro Asn Ile Ala Ala Gln Phe Val Val Ala Ala Val Thr Gly Tyr Phe  
 1715 1720 1725  
 His Ser Ile Ala Phe Ala Ala Asn Ala Lys Gly Val Asp Asp Ser Leu  
 1730 1735 1740  
 Gln Asp Ile Leu Arg Leu Thr Leu Trp Phe Asn His Gly Ala Thr  
 1745 1750 1755 1760  
 Ala Glu Val Gln Met Ala Leu His Lys Gly Phe Ser Tyr Val Asn Ile  
 1765 1770 1775  
 Asp Thr Trp Leu Val Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser  
 1780 1785 1790  
 Asn Asn His Ala Val Arg Glu Leu Ile Gln Ser Leu Leu Val Arg Ile  
 1795 1800 1805  
 Gly Glu Ser His Pro Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Cys  
 1810 1815 1820  
 Lys Ser Ile Ser Asn Leu Arg Arg Ala Ala Ala Gln Glu Val Val Asp  
 1825 1830 1835 1840  
 Lys Val Arg Gln His Ser Gly Thr Leu Val Asp Gln Ala Gln Leu Val  
 1845 1850 1855  
 Ser Thr Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His  
 1860 1865 1870  
 Glu Ala Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu His Asn Thr  
 1875 1880 1885  
 Glu Gly Met Leu Lys Ala Leu Glu Pro Leu His Glu Met Leu Glu Glu  
 1890 1895 1900  
 Gly Ala Met Arg Asp Asp Ile Thr Ala Lys Glu Ser Ala Phe Ile Gln  
 1905 1910 1915 1920  
 Ala Tyr Arg His Glu Leu Leu Glu Ala Tyr Glu Cys Cys Met Lys Phe  
 1925 1930 1935  
 Lys Arg Thr Gly Lys Asp Ala Glu Leu Thr Gln Ala Trp Asp Leu Tyr  
 1940 1945 1950  
 Tyr His Val Phe Arg Arg Ile Asp Lys Gln Leu Gln Ala Leu Thr Thr  
 1955 1960 1965  
 Leu Asp Leu Gln Ala Arg Cys Asn Phe Glu Phe Ile Leu Phe His Arg  
 1970 1975 1980  
 Lys Leu Ala Val Pro Gly Gln Tyr Arg Ala Gly Ser Pro Leu Val Thr  
 1985 1990 1995 2000  
 Ile Glu Tyr Phe Ala His Gln Leu Val Val Ile Thr Ser Lys Gln Arg  
 2005 2010 2015  
 Pro Arg Lys Leu Thr Ile Arg Gly Ser Asp Gly Glu Asp Tyr Ala Phe  
 2020 2025 2030  
 Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln  
 2035 2040 2045  
 Leu Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Glu Arg Lys Thr Ala  
 2050 2055 2060  
 Glu Lys Asp Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro  
 2065 2070 2075 2080  
 Asn Ser Gly Leu Ile Gly Trp Val Pro His Cys Asp Thr Leu His His  
 2085 2090 2095  
 Leu Ile Arg Glu Tyr Arg Asp Ala Arg Lys Ile Thr Leu Asn Gln Glu  
 2100 2105 2110  
 His Lys Tyr Met Leu Gly Phe Ala Pro Asp Tyr Asp His Leu Pro Leu  
 2115 2120 2125  
 Ile Ala Lys Val Glu Val Phe Glu Tyr Ala Leu Gln Asn Thr Glu Gly  
 2130 2135 2140  
 Asn Asp Leu Ala Arg Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val  
 2145 2150 2155 2160

## PhoenixTemp32470.tmp.txt

Trp Leu Asp Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val Met Ser  
 2165 2170 2175  
 Met Val Gly Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu  
 2180 2185 2190  
 Met Leu His Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp  
 2195 2200 2205  
 Cys Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro  
 2210 2215 2220  
 Phe Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile  
 2225 2230 2235 2240  
 Glu Gly Asn Phe Arg Ser Thr Cys Glu Asn Val Met Gln Val Leu Arg  
 2245 2250 2255  
 Thr His Arg Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp  
 2260 2265 2270  
 Pro Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Met  
 2275 2280 2285  
 Ser Thr Phe Ala Ser Thr His Val Ala Pro Val Ala Asn Ser Glu Glu  
 2290 2295 2300  
 Ser Ala Pro Asn Arg Glu Leu Ala Gln Pro Gln Arg Gly Ala Arg Glu  
 2305 2310 2315 2320  
 Lys Glu Leu Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val  
 2325 2330 2335  
 Leu Asn Glu Arg Ala Val Val Val Met Ala Arg Met Ser Asn Lys Leu  
 2340 2345 2350  
 Thr Gly Arg Asp Phe Ser Thr Phe Asp His Gly Leu Asn Val Lys Val  
 2355 2360 2365  
 Gln Val Gln Lys Leu Ile Thr Gln Ala Arg Ser His Glu Asn Leu Cys  
 2370 2375 2380  
 Gln Asn Tyr Val Gly Trp Cys Pro Phe Trp  
 2385 2390

&lt;210&gt; 2556

&lt;211&gt; 7083

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7083)

&lt;400&gt; 2556

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gcc agg tcg gaa gat gtc cgc gcc cag gcc ggc caa gat ctt gca gag	96
Ala Arg Ser Glu Asp Val Arg Ala Gln Ala Gly Gln Asp Ala Glu	
20 25 30	
cac gtc gta gct tac acc caa gaa tac ccg gga cat gat gct tcg aag	144
His Val Val Ala Tyr Thr Gln Glu Tyr Pro Gly His Asp Ala Ser Lys	
35 40 45	
ggt gta tgg gca cag gtc ttt cac aag aca ttc gag ttt act agg agc	192
Gly Val Trp Ala Gln Val Phe His Lys Thr Phe Glu Phe Thr Arg Ser	
50 55 60	
aac aat cag cta gag aga tta ggt gct att att gcc ata tcg caa ttg	240
Asn Asn Gln Leu Glu Arg Leu Gly Ala Ile Ile Ala Ile Ser Gln Leu	
65 70 75 80	
tta caa tta acc aag gat gac aca ccg gat cgt gct cag cag aag gtt	288
Leu Gln Leu Thr Lys Asp Asp Thr Pro Asp Arg Ala Gln Gln Lys Val	
85 90 95	
cta cgc ctc tat gaa tat ctt cga cct ctc aca aca tgc ggc gat tcg	336
Leu Arg Leu Tyr Glu Tyr Leu Arg Pro Leu Thr Thr Cys Gly Asp Ser	
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acc gtc atg ctt ccc gcc tct ctt gtc gtg gaa gat atg gtc cgc aat	384
Thr Val Met Leu Pro Ala Ser Leu Val Val Glu Asp Met Val Arg Asn	
115 120 125	
tcc ccc acg ctt cac acc gat act ttc ctt ggc aaa gaa gtt gga caa	432
Ser Pro Thr Leu His Thr Asp Thr Phe Leu Gly Lys Glu Val Gly Gln	
130 135 140	
gcg ctg gta atg att gat gac tca cgt caa gaa gtc ggc cgt ttc agt	480

## PhoenixTemp32470.tmp.txt

Ala 145	Leu	Val	Met	Ile	Asp 150	Asp	Ser	Arg	Gln	Glu 155	Val	Gly	Arg	Phe	Ser 160	
ggt Gly	gcc Ala	ctc Leu	ctt Leu	cta Leu 165	tat Tyr	gct Ala	ttc Phe	gct Ala	cgt Arg 170	gct Ala	gcc Ala	cca Pro	gga Gly	gta Val 175	ttc Phe	528
cat His	cag Gln	tac Tyr	atc Ile 180	tcc Ser	aag Lys	gtc Val	ttg Leu	gaa Glu 185	aag Lys	att Ile	tgg Trp	atc Ile	ccc Pro 190	ctt Leu	cgt Arg	576
gac Asp	tct Ser	aga Arg 195	tct Ser	gtc Val	gtt Val	cga Arg	gag Glu 200	cgc Arg	gcg Ala	agc Ser	atg Met	ctc Leu 205	tta Leu	tct Ser	acc Thr	624
tgc Cys	ctt Leu 210	gac Asp	act Thr	ctc Leu	aaa Lys	acc Thr 215	cga Arg	gga Gly	gac Asp	cga Arg	cca Pro 220	tcc Ser	acc Thr	gat Asp	acc Thr	672
tac Tyr 225	cgc Arg	aag Lys	atc Ile	ttt Phe	gaa Glu 230	gag Glu	gcc Ala	cgt Arg	ctt Leu	ggt Gly 235	ctc Leu	ctc Leu	aaa Lys	gcc Ala	agc Ser 240	720
tcg Ser	aca Thr	gag Glu	tct Ser	atc Ile 245	ttg Leu	ggt Gly	tct Ser	ctc Leu	ctt Leu 250	gcg Ala	ttc Phe	aat Asn	tcc Ser	atg Met 255	ctc Leu	768
caa Gln	aat Asn	caa Gln	cag Gln 260	ctt Leu	tcg Ser	atg Met	gcg Ala	gaa Glu 265	tat Tyr	tac Tyr	cgc Arg	tcc Ser	att Ile 270	tgc Cys	gaa Glu	816
cta Leu	acc Thr	ttc Phe 275	aaa Lys	tac Tyr	cgt Arg	gat Asp	tcg Ser 280	aag Lys	gaa Glu	gtc Val	tcc Ser	atc Ile 285	agg Arg	aag Lys	gct Ala	864
gtc Val	att Ile 290	gcc Ala	ctt Leu	ata Ile	cca Pro	tct Ser 295	atg Met	gcg Ala	aca Thr	tat Tyr	gac Asp 300	agc Ser	gac Asp	gac Asp	ttc Phe	912
gag Glu 305	gca Ala	cat His	tat Tyr	ttg Leu	cat His 310	agg Arg	ggt Gly	atg Met	gcg Ala	tat Tyr 315	ctg Leu	cta Leu	caa Gln	gct Ala	ttg Leu 320	960
aac Asn	aga Arg	ccg Pro	gca Ala	gac Asp 325	agg Arg	gac Asp	att Ile	tcg Ser	tat Tyr 330	gtg Val	gcg Ala	ttg Leu	ggt Gly	cat His 335	atg Met	1008
gct Ala	gta Val	cat His	ctt Leu 340	gga Gly	tcg Ser	aaa Lys	atg Met	aag Lys 345	cct Pro	ttt Phe	att Ile	gac Asp	gac Asp 350	att Ile	atg Met	1056
cga Arg	atc Ile	att Ile 355	cgg Arg	gat Asp	cat His	cta Leu	cgc Arg 360	atg Met	cga Arg	ggc Gly	aaa Lys	aaa Lys 365	aat Asn	gcc Ala	cca Pro	1104
tac Tyr	gaa Glu	gcc Ala	ccc Pro	atc Ile	ttc Phe	cag Gln 375	tgt Cys	ctt Leu	gcg Ala	atg Met	ctt Leu	gct Ala	acg Thr	tct Ser	gtc Val	1152
ggg Gly 385	cct Pro	atg Met	ctt Leu	acc Thr	cgc Arg 390	cag Gln	atg Met	cac His	gaa Glu	atc Ile 395	ctc Leu	gac Asp	ctc Leu	atg Met	ttc Phe 400	1200
ccc Pro	tgg Trp	ggc Gly	ctt Leu	tcc Ser 405	gaa Glu	ccc Pro	tta Leu	tgc Cys	aca Thr	gct Ala	ctt Leu	cag Gln	gcc Ala	acc Thr 415	gcc Ala	1248
tca Ser	cat His	atc Ile	cct Pro 420	cct Pro	cta Leu	ttg Leu	aga Arg	act Thr 425	atc Ile	caa Gln	gat Asp	agg Arg	ttg Leu	ttg Leu	gag Glu	1296
atg Met	ctt Leu	tcg Ser	cag Gln	acc Thr	ttg Leu	acc Thr	gga Gly 440	caa Gln	agc Ser	tat Tyr	aga Arg	ccg Pro	tta Leu	ggt Gly	gcg Ala	1344
cct Pro	gcc Ala 450	cca Pro	aga Arg	ggt Gly	gga Gly	gct Ala 455	cag Gln	atg Met	gat Asp	ctt Leu	aac Asn 460	ctt Leu	ttg Leu	caa Gln	tct Ser	1392
aca Thr	acc Thr	aac Asn	gcc Ala	cag Gln	tca Ser 470	aca Thr	gac Asp	act Thr	ctc Leu	aaa Lys 475	ctt Leu	gct Ala	ctt Leu	cgt Arg	ctc Leu 480	1440
ctt Leu	gcg Ala	cgc Arg	ttc Phe	gac Asp 485	ttc Phe	gtc Val	ggt Gly	cat His	acc Thr 490	ctt Leu	agc Ser	gag Glu	ttt Phe	gtc Val 495	cgt Arg	1488
gat Asp	gct Ala	gct Ala	ctt Leu	ccg Pro	tac Tyr	ctc Leu	gaa Glu	cac His 505	gac Asp	agc Ser	gtc Val	gag Glu	gtc Val 510	cga Arg	cgt Arg	1536
gaa	gct	gtg	ttg	gca	acc	aca	acc	ctg	ttt	atg	acg	gac	cca	atc	tgt	1584

## PhoenixTemp32470.tmp.txt

Glu	Ala	Val	Leu	Ala	Thr	Thr	Thr	Leu	Phe	Met	Thr	Asp	Pro	Ile	Cys	
cag	cag	acg	agc	agt	aac	tcg	gtc	gag	att	gta	aat	gat	gtg	ttg	agt	1632
Gln	Gln	Thr	Ser	Ser	Asn	Ser	Val	Glu	Ile	Val	Asn	Asp	Val	Leu	Ser	
	530					535					540					
aaa	ttg	tta	act	gta	gcc	att	acc	gat	cct	aat	gct	gga	atc	cgc	cgg	1680
Lys	Leu	Leu	Thr	Val	Ala	Ile	Thr	Asp	Pro	Asn	Ala	Gly	Ile	Arg	Arg	
545					550					555					560	
acg	gta	ctt	gat	cac	ctt	gaa	gac	aag	ttt	gat	cgc	cat	ctc	gct	cag	1728
Thr	Val	Leu	Asp	His	Leu	Glu	Asp	Lys	Phe	Asp	Arg	His	Leu	Ala	Gln	
				565					570					575		
gct	gcc	gat	atc	cga	tgt	ctc	ttt	atc	gct	ctc	aac	gat	gaa	gtg	ttt	1776
Ala	Ala	Asp	Ile	Arg	Cys	Leu	Phe	Ile	Ala	Leu	Asn	Asp	Glu	Val	Phe	
				580				585					590			
ggg	aat	cgt	gaa	agg	acc	atc	tcg	atc	att	ggg	aga	ttg	gca	cac	cat	1824
Gly	Asn	Arg	Glu	Arg	Thr	Ile	Ser	Ile	Ile	Gly	Arg	Leu	Ala	His	His	
		595					600					605				
aac	ccg	gct	tat	gtg	atg	cct	cat	ttg	aga	aag	agt	ttg	atc	aat	att	1872
Asn	Pro	Ala	Tyr	Val	Met	Pro	His	Leu	Arg	Lys	Ser	Leu	Ile	Asn	Ile	
	610					615					620					
gtc	act	gag	ttg	gag	tat	tct	acc	aat	gcg	cga	caa	aag	gaa	gag	agt	1920
Val	Thr	Glu	Leu	Glu	Tyr	Ser	Thr	Asn	Ala	Arg	Gln	Lys	Glu	Glu	Ser	
625					630					635					640	
gcc	aaa	ctg	ctc	tgt	ctt	atg	atc	ggc	gct	gcc	gct	ggg	ctc	gtt	aag	1968
Ala	Lys	Leu	Leu	Cys	Leu	Met	Ile	Gly	Ala	Ala	Ala	Gly	Leu	Val	Lys	
				645					650					655		
tct	tat	gcc	cct	acc	atc	ttg	tcc	gtt	ctc	ctc	cgc	act	gct	tcc	agc	2016
Ser	Tyr	Ala	Pro	Thr	Ile	Leu	Ser	Val	Leu	Leu	Arg	Thr	Ala	Ser	Ser	
			660					665					670			
ccc	gaa	tct	tct	atc	ggg	gtt	caa	gcc	gaa	tgc	ctc	aaa	tgt	att	ggc	2064
Pro	Glu	Ser	Ser	Ile	Gly	Val	Gln	Ala	Glu	Cys	Leu	Lys	Cys	Ile	Gly	
		675					680					685				
gag	ctc	gca	aga	gtt	gcg	ggc	gaa	gaa	ctc	gtc	cct	tcc	gtc	cga	gcc	2112
Glu	Leu	Ala	Arg	Val	Ala	Gly	Glu	Glu	Leu	Val	Pro	Ser	Val	Arg	Ala	
	690					695					700					
att	ctc	gac	ctc	gtc	att	gaa	atg	ctc	aac	gac	cag	tct	tcc	ccc	gcc	2160
Ile	Leu	Asp	Leu	Val	Ile	Glu	Met	Leu	Asn	Asp	Gln	Ser	Ser	Pro	Ala	
705					710					715					720	
aag	aga	gat	act	gcc	ctc	aag	acc	ttg	ggg	cag	att	gcg	agt	aac	aca	2208
Lys	Arg	Asp	Thr	Ala	Leu	Lys	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Thr	
				725					730					735		
gga	gag	gtt	atc	aag	ccc	tat	acg	gat	tac	cct	cag	tta	atg	ggg	gtg	2256
Gly	Glu	Val	Ile	Lys	Pro	Tyr	Thr	Asp	Tyr	Pro	Gln	Leu	Met	Gly	Val	
			740					745					750			
ctg	ttt	aag	ttt	ttg	aga	atg	gag	gcg	aat	tcg	agt	gtc	agg	caa	gag	2304
Leu	Phe	Lys	Phe	Leu	Arg	Met	Glu	Ala	Asn	Ser	Ser	Val	Arg	Gln	Glu	
		755					760					765				
act	atc	aag	acc	att	ggg	atg	ctg	ggg	gcc	ttg	gat	ccc	ttc	aag	cac	2352
Thr	Ile	Lys	Thr	Ile	Gly	Met	Leu	Gly	Ala	Leu	Asp	Pro	Phe	Lys	His	
					775						780					
aag	act	ttg	ttg	ggg	gat	gtg	gac	gac	cct	atc	gac	gaa	ggg	aca	acc	2400
Lys	Thr	Leu	Leu	Gly	Asp	Val	Asp	Asp	Pro	Ile	Asp	Glu	Gly	Thr	Thr	
785					790					795					800	
tcg	cga	gtc	aat	gac	att	gtg	ttg	ctc	aac	caa	cac	aac	tct	tca	gtc	2448
Ser	Arg	Val	Asn	Asp	Ile	Val	Leu	Leu	Asn	Gln	His	Asn	Ser	Ser	Val	
				805					810					815		
aac	gac	gag	ttc	ttc	cag	act	gtt	gtc	atc	cat	tct	tta	gtt	aac	gtc	2496
Asn	Asp	Glu	Phe	Phe	Gln	Thr	Val	Val	Ile	His	Ser	Leu	Val	Asn	Val	
			820					825					830			
ttg	cat	gac	tct	act	tac	aag	gat	cat	tat	caa	gcc	gtg	gaa	gcc	att	2544
Leu	His	Asp	Ser	Thr	Tyr	Lys	Asp	His	Tyr	Gln	Ala	Val	Glu	Ala	Ile	
		835					840					845				
atg	atg	att	ttt	agg	act	caa	cga	ttg	aga	tgt	gtc	aac	ttc	ctt	cct	2592
Met	Met	Ile	Phe	Arg	Thr	Gln	Arg	Leu	Arg	Cys	Val	Asn	Phe	Leu	Pro	
						855					860					
cag	att	gtc	cct	gca	ttc	ctc	aat	gtc	att	cgc	att	gca	cat	tcc	tct	2640
Gln	Ile	Val	Pro	Ala	Phe	Leu	Asn	Val	Ile	Arg	Ile	Ala	His	Ser	Ser	
865					870					875					880	
cgt	acc	gag	ctt	tac	ctc	aaa	caa	ctt	gcg	cag	ttt	att	aca	atc	gtt	2688



## PhoenixTemp32470.tmp.txt

Arg	Thr	Glu	Leu	Tyr 885	Leu	Lys	Gln	Leu	Ala 890	Gln	Phe	Ile	Thr	Ile 895	Val		
aag	ctg	cat	atc	cgc	aac	tac	ctc	aat	gat	gtc	ttt	gat	ctc	atc	cac	2736	
Lys	Leu	His	Ile 900	Arg	Asn	Tyr	Leu	Asn 905	Asp	Val	Phe	Asp	Leu 910	Ile	His		
gag	ttt	tgg	aac	ccc	aac	tct	acc	ctt	cag	atc	acc	atc	atc	tcc	ctc	2784	
Glu	Phe	Trp 915	Asn	Pro	Asn	Ser	Thr 920	Leu	Gln	Ile	Thr	Ile 925	Ile	Ser	Leu		
gtt	gag	gcc	att	gcg	aag	gcc	gtg	gaa	gga	gaa	ttc	aag	gca	tac	ttg	2832	
Val	Glu	Ala	Ile	Ala	Lys	Ala 935	Val	Glu	Gly	Glu	Phe 940	Lys	Ala	Tyr	Leu		
ccc	aag	ctt	ttg	cag	caa	att	ttg	aga	tcg	ttt	gat	gga	gac	ttg	tca	2880	
Pro	Lys	Leu	Leu	Gln	Gln 950	Ile	Leu	Arg	Ser	Phe 955	Asp	Gly	Asp	Leu	Ser 960		
gcc	aag	cac	ctt	ccg	gag	ctg	aaa	ctc	aac	act	ttg	ctt	cag	atc	ctg	2928	
Ala	Lys	His	Leu	Pro 965	Glu	Leu	Lys	Leu	Asn 970	Thr	Leu	Leu	Gln	Ile 975	Leu		
aaa	gcg	ttc	tac	gtc	ttt	ggc	gaa	tct	att	gaa	gac	tat	ctt	cac	ctt	2976	
Lys	Ala	Phe	Tyr 980	Val	Phe	Gly	Glu	Ser 985	Ile	Glu	Asp	Tyr	Leu 990	His	Leu		
gtg	ttg	ccc	gtc	att	gtt	cga	tct	ttt	gag	aac	ccg	gcc	gcc	ccc	gac	3024	
Val	Leu	Pro 995	Val	Ile	Val	Arg	Ser 1000	Phe	Glu	Asn	Pro 1005	Ala	Ala	Pro	Asp		
tct	ctc	cgc	att	gct	gct	ttg	cgc	act	aca	gga	caa	ctt	tgt	cgt	aaa	3072	
Ser	Leu	Arg	Ile	Ala	Ala 1015	Leu	Arg	Thr	Thr	Gly	Gln 1020	Leu	Cys	Arg	Lys		
gtc	aac	ttt	tcg	gac	cac	gca	agt	cag	atc	atc	cac	ccg	tta	gta	aga	3120	
Val	Asn	Phe	Ser	Asp	His 1030	Ala	Ser	Gln	Ile	Ile 1035	His	Pro	Leu	Val	Arg 1040		
act	ttg	ggt	aac	agc	tca	gag	gag	ttg	agg	cag	acc	gca	atg	gaa	aca	3168	
Thr	Leu	Gly	Asn 1045	Ser	Ser	Glu	Glu	Leu	Arg 1050	Gln	Thr	Ala	Met	Glu	Thr 1055		
ctt	tgt	gtt	ttg	gtg	ttg	cag	ttc	ggt	cca	gat	tat	gct	atc	ttc	att	3216	
Leu	Cys	Val 1060	Leu	Val	Leu	Gln	Phe 1065	Gly	Pro	Asp	Tyr	Ala 1070	Ile	Phe	Ile		
cct	atg	gta	aac	aaa	gcc	ttg	gtg	gaa	aac	aaa	ata	tca	cac	cct	ggt	3264	
Pro	Met	Val 1075	Asn	Lys	Ala	Leu	Val 1080	Glu	Asn	Lys	Ile 1085	Ser	His	Pro	Gly		
tac	gaa	gcc	ctc	ata	acc	aag	ttg	ctc	aac	cgc	gag	cgc	ctt	cct	cct	3312	
Tyr	Glu	Ala	Leu	Ile	Thr 1095	Leu	Leu	Leu	Asn	Arg 1100	Glu	Arg	Leu	Pro	Pro		
gac	ctt	ggt	cct	gtt	gaa	aga	tac	gcc	agc	gac	tct	gcc	gcc	gaa	gcc	3360	
Asp	Leu	Gly	Pro	Val	Glu 1110	Arg	Tyr	Ala	Ser 1115	Asp	Ser	Ala	Ala	Glu	Ala 1120		
tct	gcc	cca	gag	cct	gtt	gct	ctt	aag	gtc	aac	cag	cag	gct	ctt	aaa	3408	
Ser	Ala	Pro	Glu 1125	Pro	Val	Ala	Leu	Lys 1130	Val	Asn	Gln	Gln	Ala	Leu	Lys 1135		
ctg	gct	tgg	gac	tgt	tcc	cat	ttg	ctt	aac	acc	agc	agc	agg	acc	gag	3456	
Leu	Ala	Trp 1140	Asp	Cys	Ser	His	Leu 1145	Leu	Asn	Thr	Ser	Ser	Arg	Thr	Glu		
tgg	atc	tct	tgg	att	att	ggc	ttg	ggt	cat	gag	atg	atg	aga	gaa	agc	3504	
Trp	Ile	Ser 1155	Trp	Ile	Ile	Gly	Leu 1160	Gly	His	Glu	Met 1165	Met	Arg	Glu	Ser		
cct	agt	caa	gcc	ata	aga	gct	gcg	agg	agt	ttg	gcg	ttg	agt	agt	gtg	3552	
Pro	Ser	Gln 1170	Ala	Ile	Arg 1175	Ala	Ala	Arg	Ser	Leu 1180	Ala	Leu	Ser	Ser	Val		
gcc	ttc	acc	aaa	gaa	ctg	ttt	aat	gtt	gct	ttc	tac	tca	tgc	tgg	cag	3600	
Ala	Phe	Thr	Lys	Glu 1190	Leu	Phe	Asn	Val	Ala 1195	Phe	Tyr	Ser	Cys	Trp	Gln 1200		
gag	ctg	ttt	gag	agc	tac	cag	gag	gat	tta	tgg	cac	aat	ctt	gac	cga	3648	
Glu	Leu	Phe	Glu 1205	Ser	Tyr	Gln	Glu	Asp 1210	Leu	Trp	His	Asn	Leu	Asp	Arg 1215		
gca	atc	aaa	aaa	gat	gat	gtc	ccc	ggc	gat	gtt	gtc	aac	atg	att	ctc	3696	
Ala	Ile	Lys 1220	Lys	Asp	Asp	Val	Pro 1225	Gly	Asp	Val	Val	Asn	Met 1230	Ile	Leu		
ggg	gct	acc	cag	ttc	ttg	gaa	cac	gat	gaa	aag	gag	gta	gcg	atc	gaa	3744	
Gly	Ala	Thr 1235	Gln	Phe	Leu	Glu 1240	His	Asp	Glu	Lys	Glu	Val 1245	Ala	Ile	Glu		
agc	cgt	gtt	ttg	ggc	agc	gtc	gct	gcc	aat	tat	caa	gct	ctc	gca	gtc	3792	

## PhoenixTemp32470.tmp.txt

Ser	Arg	Val	Leu	Gly	Ser	Val	Ala	Ala	Asn	Tyr	Gln	Ala	Leu	Ala	Val		
1250					1255					1260							
gct	tta	cac	tac	aaa	gaa	cag	gaa	ttc	ttc	cta	gat	ccc	agc	aaa	gaa	3840	
Ala	Leu	His	Tyr	Lys	Glu	Gln	Glu	Phe	Phe	Leu	Asp	Pro	Ser	Lys	Glu		
1265					1270					1275					1280		
gtc	att	gaa	gac	ctc	att	gac	gtc	aac	cag	aaa	ctc	cag	caa	agc	gat	3888	
Val	Ile	Glu	Asp	Leu	Ile	Asp	Val	Asn	Gln	Lys	Leu	Gln	Gln	Ser	Asp		
				1285						1290					1295		
gct	gcc	tgg	ggt	acc	ctt	gaa	tgg	gcc	cag	aca	gag	atg	gga	atg	acc	3936	
Ala	Ala	Trp	Gly	Thr	Leu	Glu	Trp	Ala	Gln	Thr	Glu	Met	Gly	Met	Thr		
				1300						1305					1310		
act	gaa	gtc	gag	tgg	tac	gaa	aag	ctt	gga	agg	tgg	gag	gaa	gcg	tta	3984	
Thr	Glu	Val	Glu	Trp	Tyr	Glu	Lys	Leu	Gly	Arg	Trp	Glu	Glu	Ala	Leu		
				1315						1320					1325		
caa	gtg	tgg	aac	gag	cga	gat	gcc	gat	gcg	tcg	acc	act	ttc	tca	gag	4032	
Gln	Val	Trp	Asn	Glu	Arg	Asp	Ala	Asp	Ala	Ser	Thr	Thr	Phe	Ser	Glu		
				1330											1340		
tgg	gag	atc	act	gaa	ggc	aag	gtc	act	tgt	ctg	cac	gct	atg	ggc	gaa	4080	
Trp	Glu	Ile	Thr	Glu	Gly	Lys	Val	Thr	Cys	Leu	His	Ala	Met	Gly	Glu		
				1345											1360		
tgg	gaa	caa	ctc	tct	gat	ttt	gtc	cag	gct	cga	tgg	gcc	aac	agg	acg	4128	
Trp	Glu	Gln	Leu	Ser	Asp	Phe	Val	Gln	Ala	Arg	Trp	Ala	Asn	Arg	Thr		
				1365											1375		
gct	gag	gag	aag	ttg	ctt	tca	cca	ttg	gcg	gca	gcg	gct	agt	tgg		4176	
Ala	Glu	Glu	Lys	Leu	Leu	Ser	Pro	Leu	Ala	Ala	Ala	Ala	Ser	Trp			
				1380											1390		
tcg	ctg	aaa	cag	tgg	gat	ctg	atg	gat	gac	tac	atc	tct	gcc	atg	aag	4224	
Ser	Leu	Lys	Gln	Trp	Asp	Leu	Met	Asp	Asp	Tyr	Ile	Ser	Ala	Met	Lys		
				1395											1405		
ggc	gat	gga	gca	gat	cgc	gcg	ttc	ttc	aag	gct	atc	cta	gct	gtg	cac	4272	
Gly	Asp	Gly	Ala	Asp	Arg	Ala	Phe	Phe	Lys	Ala	Ile	Leu	Ala	Val	His		
				1410											1420		
aga	aac	caa	att	cct	gcc	gct	ttg	aag	cag	atc	tcc	aag	gca	cga	gaa	4320	
Arg	Asn	Gln	Ile	Pro	Ala	Ala	Leu	Lys	Gln	Ile	Ser	Lys	Ala	Arg	Glu		
				1425											1440		
agg	ttg	gat	cca	gag	ttg	act	acc	tta	act	ggt	gac	agc	tat	ggc	cga	4368	
Arg	Leu	Asp	Pro	Glu	Leu	Thr	Thr	Leu	Thr	Gly	Asp	Ser	Tyr	Gly	Arg		
				1445											1455		
gcg	tac	gac	act	gtc	gtg	agg	att	caa	atg	ctt	gct	gag	ctg	gag	gaa	4416	
Ala	Tyr	Asp	Thr	Val	Val	Arg	Ile	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu		
				1460											1470		
atc	att	gcc	tac	aag	gac	cac	gcc	gac	gag	cct	gcc	cga	cag	gag	atg	4464	
Ile	Ile	Ala	Tyr	Lys	Asp	His	Ala	Asp	Glu	Pro	Ala	Arg	Gln	Glu	Met		
				1475											1485		
caa	cga	cag	act	tgg	aag	aag	cgg	ctg	gcc	gga	tgt	cag	cgt	gat	gtt	4512	
Gln	Arg	Gln	Thr	Trp	Lys	Arg	Leu	Ala	Gly	Cys	Gln	Arg	Asp	Val			
				1490											1500		
gaa	gtt	tgg	cag	cgc	att	ctt	cag	gtc	aga	tcc	ctt	gtg	ctc	aag	cct	4560	
Glu	Val	Trp	Gln	Arg	Ile	Leu	Gln	Val	Arg	Ser	Leu	Val	Leu	Lys	Pro		
				1505											1520		
aat	gag	gat	atg	gac	act	tgg	att	gag	ttt	gcg	gat	ctc	tgt	cga	aca	4608	
Asn	Glu	Asp	Met	Asp	Thr	Trp	Ile	Glu	Phe	Ala	Asp	Leu	Cys	Arg	Thr		
				1525											1535		
tct	gac	agg	ctg	aac	ttg	gcc	gag	aaa	acg	ctg	aca	tct	ctt	gtt	ggc	4656	
Ser	Asp	Arg	Leu	Asn	Leu	Ala	Glu	Lys	Thr	Leu	Thr	Ser	Leu	Val	Gly		
				1540											1550		
ttc	caa	tac	cca	tca	atg	gaa	gac	act	cga	gga	cga	gcg	cca	cct	ccc	4704	
Phe	Gln	Tyr	Pro	Ser	Met	Glu	Asp	Thr	Arg	Gly	Arg	Ala	Pro	Pro	Pro		
				1555											1565		
atc	atc	ttc	gct	tac	ctc	cgt	atg	gct	tgg	gcg	aag	aac	cta	caa	atc	4752	
Ile	Ile	Phe	Ala	Tyr	Leu	Arg	Met	Ala	Trp	Ala	Lys	Asn	Leu	Gln	Ile		
				1570											1580		
gac	tct	cga	gaa	gaa	cgt	tac	gag	act	ctc	caa	cac	ctg	cgc	gac	ttc	4800	
Asp	Ser	Arg	Glu	Glu	Arg	Tyr	Glu	Thr	Leu	Gln	His	Leu	Arg	Asp	Phe		
				1585											1600		
acc	gac	cag	ctt	acc	gac	gac	gtt	ggt	att	gga	gcg	agg	gga	ccc	aac	4848	
Thr	Asp	Gln	Leu	Thr	Asp	Asp	Val	Gly	Ile	Gly	Ala	Arg	Gly	Pro	Asn		
				1605											1615		
ggc	aga	ctc	atg	tta	cct	gac	cag	aag	ttg	tat	gga	tct	tac	acc	aag	4896	

## PhoenixTemp32470.tmp.txt

Gly	Arg	Leu	Met	Leu	Pro	Asp	Gln	Lys	Leu	Tyr	Gly	Ser	Tyr	Thr	Lys	
ctg	ctg	gcg	cag	tgc	cac	gtt	gag	ttg	ggg	cag	tgg	caa	gcg	acc	ttg	4944
Leu	Leu	Ala	Gln	Cys	His	Val	Glu	Leu	Gly	Gln	Trp	Gln	Ala	Thr	Leu	
		1635					1640				1645					
agg	gaa	agc	caa	gga	tct	gct	gat	ccc	tcg	ggc	att	ctc	cac	gac	tac	4992
Arg	Glu	Ser	Gln	Gly	Ser	Ala	Asp	Pro	Ser	Gly	Ile	Leu	His	Asp	Tyr	
	1650					1655					1660					
tgt	ctc	gcc	act	gag	ctt	gac	cct	gag	tgg	tac	caa	gct	tgg	cac	act	5040
Cys	Leu	Ala	Thr	Glu	Leu	Asp	Pro	Glu	Trp	Tyr	Gln	Ala	Trp	His	Thr	
1665					1670					1675					1680	
tgg	gcc	ttg	gcc	aat	ttc	gag	gtc	att	acc	cag	ctt	gaa	gtg	tcg	cag	5088
Trp	Ala	Leu	Ala	Asn	Phe	Glu	Val	Ile	Thr	Gln	Leu	Glu	Val	Ser	Gln	
				1685					1690					1695		
caa	ggg	ctc	tca	cct	gtt	cac	ttt	acg	acc	tat	atc	att	cct	gct	gtc	5136
Gln	Gly	Leu	Ser	Pro	Val	His	Phe	Thr	Thr	Tyr	Ile	Ile	Pro	Ala	Val	
		1700					1705					1710				
gaa	ggg	ttc	ctc	aag	tct	atc	tcg	ctt	tct	ccc	ggc	aac	tcc	ttg	caa	5184
Glu	Gly	Phe	Leu	Lys	Ser	Ile	Ser	Leu	Ser	Pro	Gly	Asn	Ser	Leu	Gln	
		1715					1720				1725					
gat	act	ttg	agg	ctg	ttg	act	ctc	tgg	ttt	aca	tat	gga	tat	tct	agc	5232
Asp	Thr	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Thr	Tyr	Gly	Tyr	Ser	Ser	
		1730				1735				1740						
gga	gtc	act	gcg	gct	gtt	agc	caa	ggg	ctt	ccc	act	gtc	aac	att	gat	5280
Gly	Val	Thr	Ala	Ala	Val	Ser	Gln	Gly	Leu	Pro	Thr	Val	Asn	Ile	Asp	
1745					1750				1755						1760	
gtc	tgg	ctc	gag	gtt	att	cct	cag	atc	att	gcc	cgt	atc	cag	acg	cct	5328
Val	Trp	Leu	Glu	Val	Ile	Pro	Gln	Ile	Ile	Ala	Arg	Ile	Gln	Thr	Pro	
				1765					1770					1775		
cgc	cag	tct	ata	cag	cag	ctc	att	gta	caa	ttg	ttg	cat	gat	att	ggc	5376
Arg	Gln	Ser	Ile	Gln	Gln	Leu	Ile	Val	Gln	Leu	Leu	His	Asp	Ile	Gly	
		1780						1785					1790			
aaa	gcc	cat	ccc	caa	gcc	ctt	att	tac	cct	ctt	acc	gtc	gcc	tcc	aaa	5424
Lys	Ala	His	Pro	Gln	Ala	Leu	Ile	Tyr	Pro	Leu	Thr	Val	Ala	Ser	Lys	
		1795					1800					1805				
tct	aca	gtc	gct	gcc	cga	cgc	act	gtt	gcc	caa	aat	att	acg	cat	aaa	5472
Ser	Thr	Val	Ala	Ala	Arg	Arg	Thr	Val	Ala	Gln	Asn	Ile	Thr	His	Lys	
		1810				1815					1820					
atg	cga	gag	cac	tct	ccc	aag	att	gtt	gac	cag	gcc	gag	ctt	gtc	agt	5520
Met	Arg	Glu	His	Ser	Pro	Lys	Ile	Val	Asp	Gln	Ala	Glu	Leu	Val	Ser	
1825					1830				1835						1840	
aca	gag	ctc	atc	cga	gca	gct	atc	tta	tgg	cat	gag	atg	tgg	tat	gat	5568
Thr	Glu	Leu	Ile	Arg	Ala	Ala	Ile	Leu	Trp	His	Glu	Met	Trp	Tyr	Asp	
				1845					1850					1855		
ggg	ttg	gaa	gaa	gcg	tca	aag	cac	tac	ttt	ggg	gac	cac	gat	atc	cct	5616
Gly	Leu	Glu	Ala	Ser	Lys	His	Tyr	Phe	Gly	Asp	His	Asp	Ile	Pro		
		1860					1865						1870			
ggc	atg	tta	gga	gtc	ctt	gag	cct	ttg	cat	gag	att	gtc	gaa	aac	gga	5664
Gly	Met	Leu	Gly	Val	Leu	Glu	Pro	Leu	His	Glu	Ile	Val	Glu	Asn	Gly	
		1875					1880					1885				
cct	caa	acc	ttg	cgt	gag	aca	tcc	ttt	atc	caa	tcg	ttc	ggc	cat	gat	5712
Pro	Gln	Thr	Leu	Arg	Glu	Thr	Ser	Phe	Ile	Gln	Ser	Phe	Gly	His	Asp	
		1890				1895					1900					
ttg	cgt	atc	gct	cgg	gag	cat	ctc	aag	cgt	tac	cgt	ata	act	cag	gat	5760
Leu	Arg	Ile	Ala	Arg	Glu	His	Leu	Lys	Arg	Tyr	Arg	Ile	Thr	Gln	Asp	
1905					1910					1915					1920	
ggg	act	gaa	atc	caa	caa	gca	tgg	gat	gtc	tat	tat	tcc	gtc	ttc	cag	5808
Gly	Thr	Glu	Ile	Gln	Gln	Ala	Trp	Asp	Val	Tyr	Tyr	Ser	Val	Phe	Gln	
				1925					1930					1935		
cgt	ctg	ggc	aaa	cag	ctc	aag	ctc	ctc	aac	gtc	att	gag	ctg	caa	tat	5856
Arg	Leu	Gly	Lys	Gln	Leu	Lys	Leu	Leu	Asn	Val	Ile	Glu	Leu	Gln	Tyr	
		1940					1945						1950			
gtc	tcg	ccc	aag	tta	atg	gcc	gtt	cga	gac	ttg	gat	att	gca	gtt	cca	5904
Val	Ser	Pro	Lys	Leu	Met	Ala	Val	Arg	Asp	Leu	Asp	Ile	Ala	Val	Pro	
		1955					1960					1965				
ggg	acc	tac	cag	agt	ggc	aag	cct	atc	atc	ggg	att	aag	aac	gtt	atc	5952
Gly	Thr	Tyr	Gln	Ser	Gly	Lys	Pro	Ile	Ile	Gly	Ile	Lys	Asn	Val	Ile	
		1970				1975					1980					
cca	acc	ttc	aag	gtc	att	gct	tcc	aag	caa	aag	cca	aga	cag	tgc	agc	6000

## PhoenixTemp32470.tmp.txt

Pro	Thr	Phe	Lys	Val	Ile	Ala	Ser	Lys	Gln	Lys	Pro	Arg	Gln	Cys	Ser		
1985					1990					1995					2000		
atg	cg	ggt	atg	gat	ggc	aag	gaa	tat	gca	tat	tgc	ctc	aag	ggt	cac	6048	
Met	Arg	Gly	Met	Asp	Gly	Lys	Glu	Tyr	Ala	Tyr	Cys	Leu	Lys	Gly	His		
			2005					2010						2015			
gag	gac	ttg	cga	caa	gac	gag	cgt	gtc	atg	caa	ctc	ttt	ggt	ttg	gtc	6096	
Glu	Asp	Leu	Arg	Gln	Asp	Glu	Arg	Val	Met	Gln	Leu	Phe	Gly	Leu	Val		
			2020					2025					2030				
aac	act	ctt	ctt	aat	aat	gac	cac	gag	tct	gcc	aaa	cga	cat	ctc	agt	6144	
Asn	Thr	Leu	Leu	Asn	Asn	Asp	His	Glu	Ser	Ala	Lys	Arg	His	Leu	Ser		
		2035				2040				2045							
atc	cag	cga	ttt	tct	gtt	act	cct	ctt	tcc	cct	agt	gcc	ggt	tta	ctc	6192	
Ile	Gln	Arg	Phe	Ser	Val	Thr	Pro	Leu	Ser	Pro	Ser	Ala	Gly	Leu	Leu		
		2050			2055					2060							
ggt	tgg	gtt	acc	cac	agt	gat	aca	att	cat	gtt	ctc	atc	aaa	caa	tac	6240	
Gly	Trp	Val	Thr	His	Ser	Asp	Thr	Ile	His	Val	Leu	Ile	Lys	Gln	Tyr		
2065				2070				2075						2080			
cga	gac	caa	agg	aaa	atc	ttg	gtg	gat	att	gag	cac	aaa	ctt	atg	cag	6288	
Arg	Asp	Gln	Arg	Lys	Ile	Leu	Val	Asp	Ile	Glu	His	Lys	Leu	Met	Gln		
			2085					2090					2095				
cag	atg	tct	gat	gag	agc	tac	gat	tct	cta	ccg	ctc	ttg	cac	aag	gtc	6336	
Gln	Met	Ser	Asp	Glu	Ser	Tyr	Asp	Ser	Leu	Pro	Leu	Leu	His	Lys	Val		
		2100				2105				2110							
gag	atc	ttc	cag	tat	gct	ttg	gat	aac	acg	act	ggt	caa	gat	ttg	tac	6384	
Glu	Ile	Phe	Gln	Tyr	Ala	Leu	Asp	Asn	Thr	Thr	Gly	Gln	Asp	Leu	Tyr		
		2115			2120					2125							
cg	atc	ctg	tgg	ctc	aag	tct	cgt	aac	tca	gat	atc	tgg	ctt	gaa	aga	6432	
Arg	Ile	Leu	Trp	Leu	Lys	Ser	Arg	Asn	Ser	Asp	Ile	Trp	Leu	Glu	Arg		
		2130			2135					2140							
agg	acc	acc	tac	acc	aga	agt	ctg	ggt	ctc	aat	tcc	atg	gtc	ggg	tat	6480	
Arg	Thr	Thr	Tyr	Thr	Arg	Ser	Leu	Gly	Leu	Asn	Ser	Met	Val	Gly	Tyr		
2145				2150				2155						2160			
atc	ctt	ggt	ctg	ggt	gac	aga	cat	cct	tca	aac	ctg	ttg	ctc	gat	cag	6528	
Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser	Asn	Leu	Leu	Leu	Asp	Gln		
			2165					2170						2175			
att	acg	ggt	aaa	atg	gtg	cac	att	gac	ttt	ggt	gat	tgt	ttc	gag	gtt	6576	
Ile	Thr	Gly	Lys	Met	Val	His	Ile	Asp	Phe	Gly	Asp	Cys	Phe	Glu	Val		
		2180				2185				2190							
gct	caa	cag	aga	gac	aaa	tac	cct	gag	aaa	gta	cct	ttc	cga	ctt	acc	6624	
Ala	Gln	Gln	Arg	Asp	Lys	Tyr	Pro	Glu	Lys	Val	Pro	Phe	Arg	Leu	Thr		
		2195				2200				2205							
cga	atg	ctc	att	cat	gcc	atg	gag	gtc	tgc	ggt	atc	act	ggt	aac	ttt	6672	
Arg	Met	Leu	Ile	His	Ala	Met	Glu	Val	Cys	Gly	Ile	Thr	Gly	Asn	Phe		
		2210			2215			2220									
tcg	cga	agt	tgt	gaa	gtg	tcc	atg	gaa	gtc	ctt	cgt	gac	aac	agg	gaa	6720	
Ser	Arg	Ser	Cys	Glu	Val	Ser	Met	Glu	Val	Leu	Arg	Asp	Asn	Arg	Glu		
2225				2230				2235						2240			
tca	ctt	atg	gcc	gtc	ctt	gaa	gca	ttt	gtg	tac	gac	cct	ctt	att	gct	6768	
Ser	Leu	Met	Ala	Val	Leu	Glu	Ala	Phe	Val	Tyr	Asp	Pro	Leu	Ile	Ala		
			2245					2250						2255			
tgg	cgt	ctt	aca	gcg	acg	gac	aaa	cga	cct	ggt	ggt	gtt	ggc	gaa	gtc	6816	
Trp	Arg	Leu	Ala	Thr	Asp	Lys	Arg	Pro	Gly	Gly	Gly	Val	Gly	Glu	Val		
		2260				2265						2270					
aag	gac	ctg	gat	gac	ccg	gct	gtg	tac	gga	aag	cag	agg	aaa	aac	aag	6864	
Lys	Asp	Leu	Asp	Asp	Pro	Ala	Val	Tyr	Gly	Lys	Gln	Arg	Lys	Asn	Lys		
		2275			2280			2285									
gcg	aac	gag	acg	gag	att	ctc	aat	gat	gtg	gaa	aat	acc	gag	gtg	aag	6912	
Ala	Asn	Glu	Thr	Glu	Ile	Leu	Asn	Asp	Val	Glu	Asn	Thr	Glu	Val	Lys		
		2290			2295			2300									
aac	gac	aag	ggt	ctg	cag	gtc	att	gaa	cga	gta	cga	cga	aaa	ttg	acc	6960	
Asn	Asp	Lys	Gly	Leu	Gln	Val	Ile	Glu	Arg	Val	Arg	Arg	Lys	Leu	Thr		
2305				2310				2315						2320			
ggt	cga	gac	ttt	aag	ccc	gat	gtt	gta	ctc	gat	gtc	aag	tcc	cag	gtg	7008	
Gly	Arg	Asp	Phe	Lys	Pro	Asp	Val	Val	Leu	Asp	Val	Lys	Ser	Gln	Val		
			2325					2330					2335				
gag	aag	ttg	gtg	gtt	gag	gcg	aca	aag	aca	gag	aat	ctt	tgt	gta	gca	7056	
Glu	Lys	Leu	Val	Val	Glu	Ala	Thr	Lys	Thr	Glu	Asn	Leu	Cys	Val	Ala		
		2340					2345					2350					
ttc	ttg	gga	tgg	tgt	tcg	ttc	tgg	taa								7083	

Phe Leu Gly Trp Cys Ser Phe Trp  
 2355 2360

<210> 2557

<211> 2360

<212> PRT

<213> Cryptococcus neoformans var

<400> 2557

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 Ala Arg Ser Glu Asp Val Arg Ala Gln Ala Gly Gln Asp Leu Ala Glu  
 20 25 30  
 His Val Val Ala Tyr Thr Gln Glu Tyr Pro Gly His Asp Ala Ser Lys  
 35 40 45  
 Gly Val Trp Ala Gln Val Phe His Lys Thr Phe Glu Phe Thr Arg Ser  
 50 55 60  
 Asn Asn Gln Leu Glu Arg Leu Gly Ala Ile Ile Ala Ile Ser Gln Leu  
 65 70 75 80  
 Leu Gln Leu Thr Lys Asp Asp Thr Pro Asp Arg Ala Gln Gln Lys Val  
 85 90 95  
 Leu Arg Leu Tyr Glu Tyr Leu Arg Pro Leu Thr Thr Cys Gly Asp Ser  
 100 105 110  
 Thr Val Met Leu Pro Ala Ser Leu Val Val Glu Asp Met Val Arg Asn  
 115 120 125  
 Ser Pro Thr Leu His Thr Asp Thr Phe Leu Gly Lys Glu Val Gly Gln  
 130 135 140  
 Ala Leu Val Met Ile Asp Asp Ser Arg Gln Glu Val Gly Arg Phe Ser  
 145 150 155 160  
 Gly Ala Leu Leu Leu Tyr Ala Phe Ala Arg Ala Ala Pro Gly Val Phe  
 165 170 175  
 His Gln Tyr Ile Ser Lys Val Leu Glu Lys Ile Trp Ile Pro Leu Arg  
 180 185 190  
 Asp Ser Arg Ser Val Val Arg Glu Arg Ala Ser Met Leu Leu Ser Thr  
 195 200 205  
 Cys Leu Asp Thr Leu Lys Thr Arg Gly Asp Arg Pro Ser Thr Asp Thr  
 210 215 220  
 Tyr Arg Lys Ile Phe Glu Glu Ala Arg Leu Gly Leu Leu Lys Ala Ser  
 225 230 235 240  
 Ser Thr Glu Ser Ile Leu Gly Ser Leu Leu Ala Phe Asn Ser Met Leu  
 245 250 255  
 Gln Asn Gln Gln Leu Ser Met Ala Glu Tyr Tyr Arg Ser Ile Cys Glu  
 260 265 270  
 Leu Thr Phe Lys Tyr Arg Asp Ser Lys Glu Val Ser Ile Arg Lys Ala  
 275 280 285  
 Val Ile Ala Leu Ile Pro Ser Met Ala Thr Tyr Asp Ser Asp Asp Phe  
 290 295 300  
 Glu Ala His Tyr Leu His Arg Gly Met Ala Tyr Leu Leu Gln Ala Leu  
 305 310 315 320  
 Asn Arg Pro Ala Asp Arg Asp Ile Ser Tyr Val Ala Leu Gly His Met  
 325 330 335  
 Ala Val His Leu Gly Ser Lys Met Lys Pro Phe Ile Asp Asp Ile Met  
 340 345 350  
 Arg Ile Ile Arg Asp His Leu Arg Met Arg Gly Lys Lys Asn Ala Pro  
 355 360 365  
 Tyr Glu Ala Pro Ile Phe Gln Cys Leu Ala Met Leu Ala Thr Ser Val  
 370 375 380  
 Gly Pro Met Leu Thr Arg Gln Met His Glu Ile Leu Asp Leu Met Phe  
 385 390 395 400  
 Pro Trp Gly Leu Ser Glu Pro Leu Cys Thr Ala Leu Gln Ala Thr Ala  
 405 410 415  
 Ser His Ile Pro Leu Leu Arg Thr Ile Gln Asp Arg Leu Leu Glu  
 420 425 430  
 Met Leu Ser Gln Thr Leu Thr Gly Gln Ser Tyr Arg Pro Leu Gly Ala  
 435 440 445  
 Pro Ala Pro Arg Gly Gly Ala Gln Met Asp Leu Asn Leu Leu Gln Ser  
 450 455 460  
 Thr Thr Asn Ala Gln Ser Thr Asp Thr Leu Lys Leu Ala Leu Arg Leu  
 465 470 475 480

## PhoenixTemp32470.tmp.txt

Leu Ala Arg Phe Asp Phe Val Gly His Thr Leu Ser Glu Phe Val Arg  
 485 490 495  
 Asp Ala Ala Leu Pro Tyr Leu Glu His Asp Ser Val Glu Val Arg Arg  
 500 505 510  
 Glu Ala Val Leu Ala Thr Thr Thr Leu Phe Met Thr Asp Pro Ile Cys  
 515 520 525  
 Gln Gln Thr Ser Ser Asn Ser Val Glu Ile Val Asn Asp Val Leu Ser  
 530 535 540  
 Lys Leu Leu Thr Val Ala Ile Thr Asp Pro Asn Ala Gly Ile Arg Arg  
 545 550 555 560  
 Thr Val Leu Asp His Leu Glu Asp Lys Phe Asp Arg His Leu Ala Gln  
 565 570 575  
 Ala Ala Asp Ile Arg Cys Leu Phe Ile Ala Leu Asn Asp Glu Val Phe  
 580 585 590  
 Gly Asn Arg Glu Arg Thr Ile Ser Ile Ile Gly Arg Leu Ala His His  
 595 600 605  
 Asn Pro Ala Tyr Val Met Pro His Leu Arg Lys Ser Leu Ile Asn Ile  
 610 615 620  
 Val Thr Glu Leu Glu Tyr Ser Thr Asn Ala Arg Gln Lys Glu Glu Ser  
 625 630 635 640  
 Ala Lys Leu Leu Cys Leu Met Ile Gly Ala Ala Ala Gly Leu Val Lys  
 645 650 655  
 Ser Tyr Ala Pro Thr Ile Leu Ser Val Leu Leu Arg Thr Ala Ser Ser  
 660 665 670  
 Pro Glu Ser Ser Ile Gly Val Gln Ala Glu Cys Leu Lys Cys Ile Gly  
 675 680 685  
 Glu Leu Ala Arg Val Ala Gly Glu Glu Leu Val Pro Ser Val Arg Ala  
 690 695 700  
 Ile Leu Asp Leu Val Ile Glu Met Leu Asn Asp Gln Ser Ser Pro Ala  
 705 710 715 720  
 Lys Arg Asp Thr Ala Leu Lys Thr Leu Gly Gln Ile Ala Ser Asn Thr  
 725 730 735  
 Gly Glu Val Ile Lys Pro Tyr Thr Asp Tyr Pro Gln Leu Met Gly Val  
 740 745 750  
 Leu Phe Lys Phe Leu Arg Met Glu Ala Asn Ser Ser Val Arg Gln Glu  
 755 760 765  
 Thr Ile Lys Thr Ile Gly Met Leu Gly Ala Leu Asp Pro Phe Lys His  
 770 775 780  
 Lys Thr Leu Leu Gly Asp Val Asp Asp Pro Ile Asp Glu Gly Thr Thr  
 785 790 795 800  
 Ser Arg Val Asn Asp Ile Val Leu Leu Asn Gln His Asn Ser Ser Val  
 805 810 815  
 Asn Asp Glu Phe Phe Gln Thr Val Val Ile His Ser Leu Val Asn Val  
 820 825 830  
 Leu His Asp Ser Thr Tyr Lys Asp His Tyr Gln Ala Val Glu Ala Ile  
 835 840 845  
 Met Met Ile Phe Arg Thr Gln Arg Leu Arg Cys Val Asn Phe Leu Pro  
 850 855 860  
 Gln Ile Val Pro Ala Phe Leu Asn Val Ile Arg Ile Ala His Ser Ser  
 865 870 875 880  
 Arg Thr Glu Leu Tyr Leu Lys Gln Leu Ala Gln Phe Ile Thr Ile Val  
 885 890 895  
 Lys Leu His Ile Arg Asn Tyr Leu Asn Asp Val Phe Asp Leu Ile His  
 900 905 910  
 Glu Phe Trp Asn Pro Asn Ser Thr Leu Gln Ile Thr Ile Ile Ser Leu  
 915 920 925  
 Val Glu Ala Ile Ala Lys Ala Val Glu Gly Glu Phe Lys Ala Tyr Leu  
 930 935 940  
 Pro Lys Leu Leu Gln Gln Ile Leu Arg Ser Phe Asp Gly Asp Leu Ser  
 945 950 955 960  
 Ala Lys His Leu Pro Glu Leu Lys Leu Asn Thr Leu Leu Gln Ile Leu  
 965 970 975  
 Lys Ala Phe Tyr Val Phe Gly Glu Ser Ile Glu Asp Tyr Leu His Leu  
 980 985 990  
 Val Leu Pro Val Ile Val Arg Ser Phe Glu Asn Pro Ala Ala Pro Asp  
 995 1000 1005  
 Ser Leu Arg Ile Ala Ala Leu Arg Thr Thr Gly Gln Leu Cys Arg Lys  
 1010 1015 1020  
 Val Asn Phe Ser Asp His Ala Ser Gln Ile Ile His Pro Leu Val Arg

## PhoenixTemp32470.tmp.txt

1025 1030 1035 1040  
 Thr Leu Gly Asn Ser Glu Glu Leu Arg Gln Thr Ala Met Glu Thr  
 1045 1050 1055  
 Leu Cys Val Leu Val Leu Gln Phe Gly Pro Asp Tyr Ala Ile Phe Ile  
 1060 1065 1070  
 Pro Met Val Asn Lys Ala Leu Val Glu Asn Lys Ile Ser His Pro Gly  
 1075 1080 1085  
 Tyr Glu Ala Leu Ile Thr Lys Leu Leu Asn Arg Glu Arg Leu Pro Pro  
 1090 1095 1100  
 Asp Leu Gly Pro Val Glu Arg Tyr Ala Ser Asp Ser Ala Ala Glu Ala  
 1105 1110 1115 1120  
 Ser Ala Pro Glu Pro Val Ala Leu Lys Val Asn Gln Gln Ala Leu Lys  
 1125 1130 1135  
 Leu Ala Trp Asp Cys Ser His Leu Leu Asn Thr Ser Ser Arg Thr Glu  
 1140 1145 1150  
 Trp Ile Ser Trp Ile Ile Gly Leu Gly His Glu Met Met Arg Glu Ser  
 1155 1160 1165  
 Pro Ser Gln Ala Ile Arg Ala Arg Ser Leu Ala Leu Ser Ser Val  
 1170 1175 1180  
 Ala Phe Thr Lys Glu Leu Phe Asn Val Ala Phe Tyr Ser Cys Trp Gln  
 1185 1190 1195 1200  
 Glu Leu Phe Glu Ser Tyr Gln Glu Asp Leu Trp His Asn Leu Asp Arg  
 1205 1210 1215  
 Ala Ile Lys Lys Asp Asp Val Pro Gly Asp Val Val Asn Met Ile Leu  
 1220 1225 1230  
 Gly Ala Thr Gln Phe Leu Glu His Asp Glu Lys Glu Val Ala Ile Glu  
 1235 1240 1245  
 Ser Arg Val Leu Gly Ser Val Ala Ala Asn Tyr Gln Ala Leu Ala Val  
 1250 1255 1260  
 Ala Leu His Tyr Lys Glu Gln Glu Phe Phe Leu Asp Pro Ser Lys Glu  
 1265 1270 1275 1280  
 Val Ile Glu Asp Leu Ile Asp Val Asn Gln Lys Leu Gln Gln Ser Asp  
 1285 1290 1295  
 Ala Ala Trp Gly Thr Leu Glu Trp Ala Gln Thr Glu Met Gly Met Thr  
 1300 1305 1310  
 Thr Glu Val Glu Trp Tyr Glu Lys Leu Gly Arg Trp Glu Glu Ala Leu  
 1315 1320 1325  
 Gln Val Trp Asn Glu Arg Asp Ala Asp Ala Ser Thr Thr Phe Ser Glu  
 1330 1335 1340  
 Trp Glu Ile Thr Glu Gly Lys Val Thr Cys Leu His Ala Met Gly Glu  
 1345 1350 1355 1360  
 Trp Glu Gln Leu Ser Asp Phe Val Gln Ala Arg Trp Ala Asn Arg Thr  
 1365 1370 1375  
 Ala Glu Glu Lys Lys Leu Leu Ser Pro Leu Ala Ala Ala Ser Trp  
 1380 1385 1390  
 Ser Leu Lys Gln Trp Asp Leu Met Asp Asp Tyr Ile Ser Ala Met Lys  
 1395 1400 1405  
 Gly Asp Gly Ala Asp Arg Ala Phe Phe Lys Ala Ile Leu Ala Val His  
 1410 1415 1420  
 Arg Asn Gln Ile Pro Ala Ala Leu Lys Gln Ile Ser Lys Ala Arg Glu  
 1425 1430 1435 1440  
 Arg Leu Asp Pro Glu Leu Thr Thr Leu Thr Gly Asp Ser Tyr Gly Arg  
 1445 1450 1455  
 Ala Tyr Asp Thr Val Val Arg Ile Gln Met Leu Ala Glu Leu Glu Glu  
 1460 1465 1470  
 Ile Ile Ala Tyr Lys Asp His Ala Asp Glu Pro Ala Arg Gln Glu Met  
 1475 1480 1485  
 Gln Arg Gln Thr Trp Lys Lys Arg Leu Ala Gly Cys Gln Arg Asp Val  
 1490 1495 1500  
 Glu Val Trp Gln Arg Ile Leu Gln Val Arg Ser Leu Val Leu Lys Pro  
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 Asn Glu Asp Met Asp Thr Trp Ile Glu Phe Ala Asp Leu Cys Arg Thr  
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 Ser Asp Arg Leu Asn Leu Ala Glu Lys Thr Leu Thr Ser Leu Val Gly  
 1540 1545 1550  
 Phe Gln Tyr Pro Ser Met Glu Asp Thr Arg Gly Arg Ala Pro Pro Pro  
 1555 1560 1565  
 Ile Ile Phe Ala Tyr Leu Arg Met Ala Trp Ala Lys Asn Leu Gln Ile  
 1570 1575 1580

## PhoenixTemp32470.tmp.txt

Asp Ser Arg Glu Glu Arg Tyr Glu Thr Leu Gln His Leu Arg Asp Phe  
 1585 1590 1595 1600  
 Thr Asp Gln Leu Thr Asp Asp Val Gly Ile Gly Ala Arg Gly Pro Asn  
 1605 1610 1615  
 Gly Arg Leu Met Leu Pro Asp Gln Lys Leu Tyr Gly Ser Tyr Thr Lys  
 1620 1625 1630  
 Leu Leu Ala Gln Cys His Val Glu Leu Gly Gln Trp Gln Ala Thr Leu  
 1635 1640 1645  
 Arg Glu Ser Gln Gly Ser Ala Asp Pro Ser Gly Ile Leu His Asp Tyr  
 1650 1655 1660  
 Cys Leu Ala Thr Glu Leu Asp Pro Glu Trp Tyr Gln Ala Trp His Thr  
 1665 1670 1675 1680  
 Trp Ala Leu Ala Asn Phe Glu Val Ile Thr Gln Leu Glu Val Ser Gln  
 1685 1690 1695  
 Gln Gly Leu Ser Pro Val His Phe Thr Thr Tyr Ile Ile Pro Ala Val  
 1700 1705 1710  
 Glu Gly Phe Leu Lys Ser Ile Ser Leu Ser Pro Gly Asn Ser Leu Gln  
 1715 1720 1725  
 Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe Thr Tyr Gly Tyr Ser Ser  
 1730 1735 1740  
 Gly Val Thr Ala Ala Val Ser Gln Gly Leu Pro Thr Val Asn Ile Asp  
 1745 1750 1755 1760  
 Val Trp Leu Glu Val Ile Pro Gln Ile Ile Ala Arg Ile Gln Thr Pro  
 1765 1770 1775  
 Arg Gln Ser Ile Gln Gln Leu Ile Val Gln Leu Leu His Asp Ile Gly  
 1780 1785 1790  
 Lys Ala His Pro Gln Ala Leu Ile Tyr Pro Leu Thr Val Ala Ser Lys  
 1795 1800 1805  
 Ser Thr Val Ala Ala Arg Arg Thr Val Ala Gln Asn Ile Thr His Lys  
 1810 1815 1820  
 Met Arg Glu His Ser Pro Lys Ile Val Asp Gln Ala Glu Leu Val Ser  
 1825 1830 1835 1840  
 Thr Glu Leu Ile Arg Ala Ala Ile Leu Trp His Glu Met Trp Tyr Asp  
 1845 1850 1855  
 Gly Leu Glu Glu Ala Ser Lys His Tyr Phe Gly Asp His Asp Ile Pro  
 1860 1865 1870  
 Gly Met Leu Gly Val Leu Glu Pro Leu His Glu Ile Val Glu Asn Gly  
 1875 1880 1885  
 Pro Gln Thr Leu Arg Glu Thr Ser Phe Ile Gln Ser Phe Gly His Asp  
 1890 1895 1900  
 Leu Arg Ile Ala Arg Glu His Leu Lys Arg Tyr Arg Ile Thr Gln Asp  
 1905 1910 1915 1920  
 Gly Thr Glu Ile Gln Gln Ala Trp Asp Val Tyr Tyr Ser Val Phe Gln  
 1925 1930 1935  
 Arg Leu Gly Lys Gln Leu Lys Leu Leu Asn Val Ile Glu Leu Gln Tyr  
 1940 1945 1950  
 Val Ser Pro Lys Leu Met Ala Val Arg Asp Leu Asp Ile Ala Val Pro  
 1955 1960 1965  
 Gly Thr Tyr Gln Ser Gly Lys Pro Ile Ile Gly Ile Lys Asn Val Ile  
 1970 1975 1980  
 Pro Thr Phe Lys Val Ile Ala Ser Lys Gln Lys Pro Arg Gln Cys Ser  
 1985 1990 1995 2000  
 Met Arg Gly Met Asp Gly Lys Glu Tyr Ala Tyr Cys Leu Lys Gly His  
 2005 2010 2015  
 Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu Val  
 2020 2025 2030  
 Asn Thr Leu Leu Asn Asn Asp His Glu Ser Ala Lys Arg His Leu Ser  
 2035 2040 2045  
 Ile Gln Arg Phe Ser Val Thr Pro Leu Ser Pro Ser Ala Gly Leu Leu  
 2050 2055 2060  
 Gly Trp Val Thr His Ser Asp Thr Ile His Val Leu Ile Lys Gln Tyr  
 2065 2070 2075 2080  
 Arg Asp Gln Arg Lys Ile Leu Val Asp Ile Glu His Lys Leu Met Gln  
 2085 2090 2095  
 Gln Met Ser Asp Glu Ser Tyr Asp Ser Leu Pro Leu Leu His Lys Val  
 2100 2105 2110  
 Glu Ile Phe Gln Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu Tyr  
 2115 2120 2125  
 Arg Ile Leu Trp Leu Lys Ser Arg Asn Ser Asp Ile Trp Leu Glu Arg



## PhoenixTemp32470.tmp.txt

2130 2135 2140  
 Arg Thr Thr Tyr Thr Arg Ser Leu Gly Leu Asn Ser Met Val Gly Tyr  
 2145 2150 2155 2160  
 Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Leu Leu Asp Gln  
 2165 2170 2175  
 Ile Thr Gly Lys Met Val His Ile Asp Phe Gly Asp Cys Phe Glu Val  
 2180 2185 2190  
 Ala Gln Gln Arg Asp Lys Tyr Pro Glu Lys Val Pro Phe Arg Leu Thr  
 2195 2200 2205  
 Arg Met Leu Ile His Ala Met Glu Val Cys Gly Ile Thr Gly Asn Phe  
 2210 2215 2220  
 Ser Arg Ser Cys Glu Val Ser Met Glu Val Leu Arg Asp Asn Arg Glu  
 2225 2230 2235 2240  
 Ser Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro Leu Ile Ala  
 2245 2250 2255  
 Trp Arg Leu Thr Ala Thr Asp Lys Arg Pro Gly Gly Val Gly Glu Val  
 2260 2265 2270  
 Lys Asp Leu Asp Asp Pro Ala Val Tyr Gly Lys Gln Arg Lys Asn Lys  
 2275 2280 2285  
 Ala Asn Glu Thr Glu Ile Leu Asn Asp Val Glu Asn Thr Glu Val Lys  
 2290 2295 2300  
 Asn Asp Lys Gly Leu Gln Val Ile Glu Arg Val Arg Arg Lys Leu Thr  
 2305 2310 2315 2320  
 Gly Arg Asp Phe Lys Pro Asp Val Val Leu Asp Val Lys Ser Gln Val  
 2325 2330 2335  
 Glu Lys Leu Val Val Glu Ala Thr Lys Thr Glu Asn Leu Cys Val Ala  
 2340 2345 2350  
 Phe Leu Gly Trp Cys Ser Phe Trp  
 2355 2360

&lt;210&gt; 2558

&lt;211&gt; 7278

&lt;212&gt; DNA

&lt;213&gt; Gibberella fujikuroi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7278)

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1591)..(1591)

&lt;223&gt; y is t or c

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (5009)..(5009)

&lt;223&gt; r is g or a

&lt;400&gt; 2558

atg gcg caa gca cag cag gtc gcc ctg gac cgg ctg gac aac atc tcc	48
Met Ala Gln Ala Gln Val Ala Leu Asp Arg Leu Asp Asn Ile Ser	
1 5 10 15	
cgc gct cta aaa tca aga acg agc gat gat ttg cga aaa cga tcc gcc	96
Arg Ala Leu Lys Ser Arg Thr Ser Asp Asp Leu Arg Lys Arg Ser Ala	
20 25 30	
gtg cag ctt cgc gag ctt gtg gct gtc tgc cat cga gac cta agc ccc	144
Val Gln Leu Arg Glu Leu Val Ala Val Cys His Arg Asp Leu Ser Pro	
35 40 45	
gag caa ttc cag gtt ttc tac aac tca gtc aac aac agg atc aca cag	192
Glu Gln Phe Gln Val Phe Tyr Asn Ser Val Asn Asn Arg Ile Thr Gln	
50 55 60	
ctc atc aca cat gga aac gac tcg tcc gag cga ctc gga ggc atc tat	240
Leu Ile Thr His Gly Asn Asp Ser Ser Glu Arg Leu Gly Gly Ile Tyr	
65 70 75 80	
gcc ctc gat gcg ctc atc gat ttc gat ggc gtc gac gtc ggc gtc aaa	288
Ala Leu Asp Ala Leu Ile Asp Phe Asp Gly Val Asp Val Gly Val Lys	
85 90 95	
tac acg cgt ttc aca cag aac ctc aag acc att ctt cga ggc aaa gac	336

## PhoenixTemp32470.tmp.txt

Tyr	Thr	Arg	Phe	Thr	Gln	Asn	Leu	Lys	Thr	Ile	Leu	Arg	Gly	Lys	Asp	
atc	aac	cct	atg	caa	cca	gca	gcg	atc	gcg	ctg	ggg	aaa	tta	tgt	cgc	384
Ile	Asn	Pro	Met	Gln	Pro	Ala	Ala	Ile	Ala	Leu	Gly	Lys	Leu	Cys	Arg	
		115					120					125				
ccg	ggc	ggc	gcg	atg	ata	tca	gaa	gtg	gtg	gac	tca	gag	ggt	aat	acc	432
Pro	Gly	Gly	Ala	Met	Ile	Ser	Glu	Val	Val	Asp	Ser	Glu	Val	Asn	Thr	
		130				135					140					
gct	ctc	gag	tgg	cta	cag	aac	gac	cg	atc	gag	gaa	cga	aga	tat	agc	480
Ala	Leu	Glu	Trp	Leu	Gln	Asn	Asp	Arg	Ile	Glu	Glu	Arg	Arg	Tyr	Ser	
		145			150					155					160	
gct	gtc	ctc	ggt	ctc	cg	gaa	ctg	gcc	cgt	agt	gcc	cca	acg	ctt	atg	528
Ala	Val	Leu	Val	Leu	Arg	Glu	Leu	Ala	Arg	Ser	Ala	Pro	Thr	Leu	Met	
				165					170					175		
tac	caa	tat	ata	ccg	aca	atc	ttc	gac	tgg	atc	tgg	gta	gga	ctc	cga	576
Tyr	Gln	Tyr	Ile	Pro	Thr	Ile	Phe	Asp	Trp	Ile	Trp	Val	Gly	Leu	Arg	
			180					185					190			
gat	cct	cga	cag	ctt	att	cg	gca	aca	tca	gcg	gaa	aca	ggt	agc	gcc	624
Asp	Pro	Arg	Gln	Leu	Ile	Arg	Ala	Thr	Ser	Ala	Glu	Thr	Val	Ser	Ala	
		195					200					205				
tgt	ttc	cgt	atc	ctt	cgt	gaa	cga	gac	cag	gac	atg	aag	caa	cta	tgg	672
Cys	Phe	Arg	Ile	Leu	Arg	Glu	Arg	Asp	Gln	Asp	Met	Lys	Gln	Leu	Trp	
		210				215					220					
atg	gat	aag	atc	tat	aac	gaa	gcg	aga	tcc	ggt	ctc	aag	gtg	aac	act	720
Met	Asp	Lys	Ile	Tyr	Asn	Glu	Ala	Arg	Ser	Gly	Leu	Lys	Val	Asn	Thr	
		225			230					235					240	
gtc	gag	tcg	att	cac	ggc	tcg	ttg	ctg	gtc	ttg	aag	gaa	ctg	ctc	gag	768
Val	Glu	Ser	Ile	His	Gly	Ser	Leu	Leu	Val	Leu	Lys	Glu	Leu	Leu	Glu	
				245					250					255		
cag	gga	gct	atg	atg	cag	gag	cat	tac	caa	gag	gca	tgc	gaa	att		816
Gln	Gly	Ala	Met	Tyr	Met	Gln	Glu	His	Tyr	Gln	Glu	Cys	Glu	Ile		
			260					265				270				
gtc	ttc	aaa	cac	aag	gac	cat	aga	gac	ccg	act	att	cga	aag	acc	gtg	864
Val	Phe	Lys	His	Lys	Asp	His	Arg	Asp	Pro	Thr	Ile	Arg	Lys	Thr	Val	
		275					280					285				
gtt	ctt	tta	atc	cca	gac	ctt	gcc	agc	tac	tcg	cca	gct	gac	ttt	gca	912
Val	Leu	Leu	Ile	Pro	Asp	Leu	Ala	Ser	Tyr	Ser	Pro	Ala	Asp	Phe	Ala	
		290				295					300					
cac	act	tgg	ctg	cac	aag	ttc	atg	gta	tac	cta	tcc	ggc	atg	ctg	aag	960
His	Thr	Trp	Leu	His	Lys	Phe	Met	Val	Tyr	Leu	Ser	Gly	Met	Leu	Lys	
					310					315					320	
aag	gac	aaa	gag	cgt	aac	gat	gct	ttc	ctt	gcc	att	ggt	aac	ata	gcc	1008
Lys	Asp	Lys	Glu	Arg	Asn	Asp	Ala	Phe	Leu	Ala	Ile	Gly	Asn	Ile	Ala	
				325				330						335		
aat	tcg	gtg	aaa	agc	gct	att	gcc	ccg	tac	ctc	gat	ggt	gtc	ctt	att	1056
Asn	Ser	Val	Lys	Ser	Ala	Ile	Ala	Pro	Tyr	Leu	Asp	Gly	Val	Leu	Ile	
			340					345					350			
tac	gtg	cg	gaa	ggt	ctc	agc	ctc	cag	tcc	cg	aag	aga	ggt	tca	gtc	1104
Tyr	Val	Arg	Glu	Gly	Leu	Ser	Leu	Gln	Ser	Arg	Lys	Arg	Gly	Ser	Val	
		355					360					365				
gac	cct	gtc	ttt	gac	tgc	att	agt	cgt	ctt	gcc	gtc	gcg	ggt	ggt	cag	1152
Asp	Pro	Val	Phe	Asp	Cys	Ile	Ser	Arg	Leu	Ala	Val	Ala	Val	Gly	Gln	
		370				375					380					
act	ctc	agc	aaa	tac	atg	gag	gca	ctc	ttg	gat	cct	att	ttt	gcg	tgc	1200
Thr	Leu	Ser	Lys	Tyr	Met	Glu	Ala	Leu	Leu	Asp	Pro	Ile	Phe	Ala	Cys	
					390					395					400	
gat	ctc	acc	ccc	aag	ctc	aca	cag	gct	ctc	gtc	gat	atg	gcc	ttc	tac	1248
Asp	Leu	Thr	Pro	Lys	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	Phe	Tyr	
				405					410					415		
atc	ccc	ccc	gtc	aag	ccg	acc	atc	cag	gag	aga	cta	ctt	gat	atg	ctc	1296
Ile	Pro	Pro	Val	Lys	Pro	Thr	Ile	Gln	Glu	Arg	Leu	Leu	Asp	Met	Leu	
			420					425					430			
agc	gta	gtt	ctc	tgc	ggc	gaa	ccg	ttt	aaa	ccg	ctt	ggc	gct	cca	caa	1344
Ser	Val	Val	Leu	Cys	Gly	Glu	Pro	Phe	Lys	Pro	Leu	Gly	Ala	Pro	Gln	
		435					440					445				
ccg	aat	act	ctc	agc	tca	gtc	ccg	att	att	ccc	aaa	gac	gca	aaa	gac	1392
Pro	Asn	Thr	Leu	Ser	Ser	Val	Pro	Ile	Ile	Pro	Lys	Asp	Ala	Lys	Asp	
		450				455					460					
ccc	cac	gct	tac	gag	cac	cga	agg	gct	gag	gta	aaa	ttg	gcg	ctc	aac	1440

## PhoenixTemp32470.tmp.txt

Pro 465	His	Ala	Tyr	Glu	His 470	Arg	Arg	Ala	Glu	Val 475	Lys	Leu	Ala	Leu	Asn 480	
act	ctc	ggg	agc	ttc	gat	ttc	tcg	ggg	cat	gtt	ctg	aac	gag	ttc	gtc	1488
Thr	Leu	Gly	Ser	Phe 485	Asp	Phe	Ser	Gly	His 490	Val	Leu	Asn	Glu	Phe 495	Val	
cga	gat	gtc	gcg	atc	aag	tat	gtt	gaa	gac	gag	gat	cca	gaa	atc	cgc	1536
Arg	Asp	Val	Ala 500	Ile	Lys	Tyr	Val	Glu 505	Asp	Glu	Asp	Pro	Glu 510	Ile	Arg	
gag	gca	gcg	gcc	ttg	aca	tgc	tgc	caa	cta	tac	gtt	cgc	gat	cca	att	1584
Glu	Ala	Ala	Ala	Leu	Thr	Cys	Cys 520	Gln	Leu	Tyr	Val	Arg 525	Asp	Pro	Ile	
gtc	aac	yag	acg	agt	tac	cat	gcg	ctt	cag	gtt	gtg	ggt	gat	gtg	atc	1632
Val	Asn 530	Xaa	Thr	Ser	Tyr	His 535	Ala	Leu	Gln	Val	Val 540	Gly	Asp	Val	Ile	
gag	aaa	cta	ctc	aca	gtc	gga	gtc	tcc	gat	cct	gaa	ccg	aat	atc	agg	1680
Glu 545	Lys	Leu	Leu	Thr	Val 550	Gly	Val	Ser	Asp	Pro 555	Glu	Pro	Asn	Ile	Arg 560	
cgg	aca	gtt	ctg	gcg	gct	ctc	gac	gaa	cga	ttt	gac	aga	cac	ttg	gcc	1728
Arg	Thr	Val	Leu	Ala 565	Ala	Leu	Asp	Glu	Arg 570	Phe	Asp	Arg	His	Leu 575	Ala	
aag	gcc	gaa	aac	att	cgc	atc	cta	ttc	ttt	gcg	ctc	aac	gac	gag	gtt	1776
Lys	Ala	Glu	Asn 580	Ile	Arg	Ile	Leu	Phe 585	Phe	Ala	Leu	Asn	Asp 590	Glu	Val	
ttc	tcg	atc	aga	gaa	gtc	gcc	atc	tct	atc	atc	ggc	cgc	ttg	gct	aga	1824
Phe	Ser	Ile 595	Arg	Glu	Val	Ala 600	Ile	Ser	Ile	Ile	Gly	Arg 605	Leu	Ala	Arg	
tac	aac	cca	gca	tat	gtc	att	cct	tcg	cta	cga	aag	act	ctc	att	cag	1872
Tyr	Asn 610	Pro	Ala	Tyr	Val	Ile 615	Pro	Ser	Leu	Arg	Lys 620	Thr	Leu	Ile	Gln	
atg	ctt	act	gag	ctc	gag	gtt	tcc	gat	gtc	gcc	agg	aac	aag	gag	gaa	1920
Met 625	Leu	Thr	Glu	Leu	Glu 630	Phe	Ser	Asp	Val	Ala 635	Arg	Asn	Lys	Glu	Glu 640	
agc	gca	aag	ctg	ttg	agc	ctc	ttg	gtt	caa	aat	gcg	caa	tct	ctc	atc	1968
Ser	Ala	Lys	Leu	Leu 645	Ser	Leu	Leu	Val	Gln 650	Asn	Ala	Gln	Ser	Leu 655	Ile	
aag	ccc	tat	gtt	gag	ccc	atg	atc	tca	gta	ctt	ctc	ccc	aaa	gcc	aag	2016
Lys	Pro	Tyr	Val 660	Glu	Pro	Met	Ile	Ser 665	Val	Leu	Leu	Pro	Lys 670	Ala	Lys	
gac	ggc	aat	cct	tct	gtt	gct	gct	acc	att	ctt	aag	gcc	att	ggt	gag	2064
Asp	Gly	Asn 675	Pro	Ser	Val	Ala	Ala 680	Thr	Ile	Leu	Lys	Ala 685	Ile	Gly	Glu	
ctt	gcg	acc	gtg	ggc	ggt	gag	gat	atg	atg	ccg	tac	aag	gac	cga	ctg	2112
Leu	Ala	Thr	Val	Gly	Gly 695	Glu	Asp	Met	Met	Pro	Tyr 700	Lys	Asp	Arg	Leu	
atg	cca	att	att	ctt	gat	gcg	cta	cag	gat	cag	agc	tct	aac	gca	aaa	2160
Met 705	Pro	Ile	Ile	Leu	Asp 710	Ala	Leu	Gln	Asp	Gln 715	Ser	Ser	Asn	Ala	Lys 720	
cga	ggt	gcc	gct	cta	cat	gct	ctg	gga	cag	ctt	gcg	agc	aat	tca	gga	2208
Arg	Gly	Ala	Ala 725	Leu	His	Ala	Leu	Gly	Gln 730	Leu	Ala	Ser	Asn	Ser 735	Gly	
tac	gtt	att	ctg	cca	tac	atc	gaa	tac	cca	cag	ctg	ctc	gag	atc	ctg	2256
Tyr	Val	Ile 740	Leu	Pro	Tyr	Ile	Glu	Tyr 745	Pro	Gln	Leu	Leu	Glu 750	Ile	Leu	
cag	agc	atc	atc	cga	acc	gaa	ggg	caa	caa	gta	ccc	ctg	cga	cag	gag	2304
Gln	Ser	Ile 755	Ile	Arg	Thr	Glu	Gly 760	Gln	Gln	Val	Pro	Leu 765	Arg	Gln	Glu	
acg	atc	aaa	ctg	atg	ggt	att	ctt	ggc	gct	ctg	gat	cct	tac	aaa	cat	2352
Thr	Ile 770	Lys	Leu	Met	Gly 775	Ile	Leu	Gly	Ala	Leu	Asp 780	Pro	Tyr	Lys	His	
cag	gcc	gag	gaa	cga	acc	ccc	gat	tct	cga	cgc	ggc	gag	gcc	aac	caa	2400
Gln 785	Ala	Glu	Glu	Arg	Thr 790	Pro	Asp	Ser	Arg	Arg 795	Gly	Glu	Ala	Asn	Gln 800	
cta	aca	gac	att	tct	ctc	atg	atg	acc	gga	tta	aca	cct	tct	aac	aaa	2448
Leu	Thr	Asp	Ile 805	Ser	Leu	Met	Met	Thr	Gly 810	Leu	Thr	Pro	Ser	Asn 815	Lys	
gag	tac	ttc	ccg	act	gtt	gtg	att	aat	gct	ctt	ctc	gcg	atc	ctg	aag	2496
Glu	Tyr	Phe 820	Pro	Thr	Val	Val	Ile	Asn 825	Ala	Leu	Leu	Ala	Ile 830	Leu	Lys	
gac	tct	tcg	ttg	gtc	cag	cac	cac	gcc	gct	gtg	att	gaa	gcg	atc	atg	2544

## PhoenixTemp32470.tmp.txt

Asp	Ser	Ser	Leu	Val	Gln	His	His	Ala	Ala	Val	Ile	Glu	Ala	Ile	Met	
aac	atc	835	ttt	cgc	acc	ctt	ggc	ttg	gag	tgt	gtg	tcc	ttc	ctt	gat	aga
Asn	Ile	Phe	Arg	Thr	Leu	Gly	840	Leu	Glu	Cys	Val	Ser	Phe	Leu	Asp	Arg
850						855						860				
atc	ata	ccg	gca	ttc	cta	cag	gtg	ata	cga	tct	gcg	acc	tcg	aca	aga	
Ile	Ile	Pro	Ala	Phe	Leu	Gln	Val	Ile	Arg	Ser	Ala	Thr	Ser	Thr	Arg	
865					870					875					880	
ctc	gag	tct	tac	ttc	aat	caa	ctg	gcc	acc	ctc	gtc	agc	atc	gtg	cga	
Leu	Glu	Ser	Tyr	Phe	Asn	Gln	Leu	Ala	Thr	Leu	Val	Ser	Ile	Val	Arg	
				885				890						895		
caa	cac	ata	agg	aat	tac	cta	ccg	tca	att	gtt	gag	atc	ctg	cag	gag	
Gln	His	Ile	Arg	Asn	Tyr	Leu	Pro	Ser	Ile	Val	Glu	Ile	Leu	Gln	Glu	
			900					905					910			
tac	tgg	cat	acc	tca	cct	tca	cta	cag	act	acg	att	ttg	tcc	ctg	gtc	
Tyr	Trp	His	Thr	Ser	Pro	Ser	Leu	Gln	Thr	Thr	Ile	Leu	Ser	Leu	Val	
		915				920						925				
gag	gcc	atc	tcg	aga	tcg	ctt	gag	ggc	gaa	ttc	aaa	att	tac	ctg	gct	
Glu	Ala	Ile	Ser	Arg	Ser	Leu	Glu	Gly	Glu	Phe	Lys	Ile	Tyr	Leu	Ala	
	930					935					940					
gga	ctg	cta	cca	ctg	atg	ctc	ggt	gtt	ctt	gac	aag	gat	act	tcc	gcc	
Gly	Leu	Leu	Pro	Leu	Met	Leu	Gly	Val	Leu	Asp	Lys	Asp	Thr	Ser	Ala	
945					950					955					960	
aag	cgc	act	cca	tcg	gag	aga	gtg	atg	cac	gcc	ttc	ttg	gtg	ttt	ggt	
Lys	Arg	Thr	Pro	Ser	Glu	Arg	Val	Met	His	Ala	Phe	Leu	Val	Phe	Gly	
				965					970					975		
gcc	agt	gct	gag	gag	tac	atg	cat	ctc	atc	att	ccc	gtc	atc	gtc	agg	
Ala	Ser	Ala	Glu	Glu	Tyr	Met	His	Leu	Ile	Ile	Pro	Val	Ile	Val	Arg	
			980					985					990			
aca	ttc	gag	aag	cag	ggt	cag	cct	acg	ttc	atc	aga	aag	cag	gcc	atc	
Thr	Phe	Glu	Lys	Gln	Gly	Gln	Pro	Thr	Phe	Ile	Arg	Lys	Gln	Ala	Ile	
		995				1000					1005					
gac	acg	atc	ggc	aag	atc	tct	cgc	caa	gtg	aac	ctt	aac	gac	ttc	gct	
Asp	Thr	Ile	Gly	Lys	Ile	Ser	Arg	Gln	Val	Asn	Leu	Asn	Asp	Phe	Ala	
	1010				1015					1020						
gcg	aag	atc	atc	cac	cca	ctt	aca	cgc	gtc	ttg	gac	atg	ggt	gag	cct	
Ala	Lys	Ile	Ile	His	Pro	Leu	Thr	Arg	Val	Leu	Asp	Met	Gly	Glu	Pro	
1025				1030					1035					1040		
gtc	ctc	cgt	acc	gct	gcg	cta	gat	acg	ctc	tgc	gcg	ctc	atc	caa	cag	
Val	Leu	Arg	Thr	Ala	Ala	Leu	Asp	Thr	Leu	Cys	Ala	Leu	Ile	Gln	Gln	
				1045				1050					1055			
ctg	ggc	aaa	gac	tat	cta	cac	ttt	atg	ggt	aca	gtc	aac	aag	acc	atc	
Leu	Gly	Lys	Asp	Tyr	Leu	His	Phe	Met	Gly	Thr	Val	Asn	Lys	Thr	Ile	
		1060					1065					1070				
aat	cag	cac	cag	atc	cag	cac	tcc	aat	tac	gag	cta	ctt	gtg	agc	aag	
Asn	Gln	His	Gln	Ile	Gln	His	Ser	Asn	Tyr	Glu	Leu	Leu	Val	Ser	Lys	
		1075				1080					1085					
ctt	caa	aaa	ggg	gag	gta	ctg	cca	cag	gac	ttg	agc	tct	ggc	ggt	ggc	
Leu	Gln	Lys	Gly	Glu	Val	Leu	Pro	Gln	Asp	Leu	Ser	Ser	Gly	Val	Gly	
	1090				1095				1100							
ttt	gct	gat	ggc	gca	gac	gag	act	cct	ttt	gcg	gac	cag	ggc	act	aag	
Phe	Ala	Asp	Gly	Ala	Asp	Glu	Thr	Pro	Phe	Ala	Asp	Gln	Gly	Thr	Lys	
1105				1110					1115					1120		
aag	ctg	gag	atg	aat	gcc	att	cat	ttg	aag	gct	gct	tgg	gat	act	aaa	
Lys	Leu	Glu	Met	Asn	Ala	Ile	His	Leu	Lys	Ala	Ala	Trp	Asp	Thr	Lys	
				1125				1130				1135				
ggc	aaa	tcc	aca	aag	gag	gat	tgg	caa	gag	tgg	ctg	cga	cgc	ttc	agt	
Gly	Lys	Ser	Thr	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Leu	Arg	Arg	Phe	Ser	
		1140					1145					1150				
aca	aca	ttg	ctt	acc	gaa	tca	ccg	aac	cat	gct	ctc	cga	gct	tgt	gcc	
Thr	Thr	Leu	Leu	Thr	Glu	Ser	Pro	Asn	His	Ala	Leu	Arg	Ala	Cys	Ala	
		1155				1160				1165						
agc	ctc	ggc	agc	gtg	tat	cta	cct	ctg	gct	cga	gag	ctc	ttt	aac	tca	
Ser	Leu	Ala	Ser	Val	Tyr	Leu	Pro	Leu	Ala	Arg	Glu	Leu	Phe	Asn	Ser	
	1170				1175				1180							
gcg	ttc	gtg	tct	tgc	tgg	agc	gag	ctc	tat	gaa	caa	ttc	caa	gac	gaa	
Ala	Phe	Val	Ser	Cys	Trp	Ser	Glu	Leu	Tyr	Glu	Gln	Phe	Gln	Asp	Glu	
1185				1190					1195					1200		
ctc	atc	cag	aac	atc	gag	agc	gct	ata	aaa	tcc	gag	aac	gta	cca	ccc	

## PhoenixTemp32470.tmp.txt

Leu	Ile	Gln	Asn	Ile	Glu	Ser	Ala	Ile	Lys	Ser	Glu	Asn	Val	Pro	Pro			
																1205	1210	1215
gat	ctg	ctt	ggc	ctc	cta	ctc	aac	ctc	gcc	gag	ttt	atg	gag	cat	gac		3696	
Asp	Leu	Leu	Gly	Leu	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	Asp			
																1220	1225	1230
gac	aag	gct	tgt	ccg	atc	gac	att	cga	ggt	ctc	ggt	agg	gag	gca	gct		3744	
Asp	Lys	Ala	Leu	Pro	Ile	Asp	Ile	Arg	Val	Leu	Gly	Arg	Glu	Ala	Ala			
																1235	1240	1245
cgc	tgt	cac	gcg	tac	gcg	aag	gcc	ctg	cat	tac	aag	gag	ctc	gag	ttc		3792	
Arg	Cys	His	Ala	Tyr	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu	Phe			
																1250	1255	1260
ctg	caa	gac	cag	agc	agt	ggt	gcg	gtc	gag	gcc	ctg	atc	ggt	atc	aac		3840	
Leu	Gln	Asp	Gln	Ser	Ser	Gly	Ala	Val	Glu	Ala	Leu	Ile	Val	Ile	Asn			
																1265	1270	1275
aat	cag	ctc	caa	cag	tct	gat	gca	gct	atc	ggt	att	ctc	cgc	aaa	gct		3888	
Asn	Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile	Gly	Ile	Leu	Arg	Lys	Ala			
																1285	1290	1295
caa	ctg	tat	aag	gaa	ggc	atc	cag	ctg	cgg	gag	acc	tgg	ttc	gag	aag		3936	
Gln	Leu	Tyr	Lys	Glu	Gly	Ile	Gln	Leu	Arg	Glu	Thr	Trp	Phe	Glu	Lys			
																1300	1305	1310
ttg	gag	cgt	tgg	gaa	gag	gcg	ctg	gcg	ttt	tat	gaa	aag	cgt	gag	gag		3984	
Leu	Glu	Arg	Trp	Glu	Glu	Ala	Leu	Ala	Phe	Tyr	Glu	Lys	Arg	Glu	Glu			
																1315	1320	1325
gag	gtg	cct	gag	gat	cag	gcg	ata	ccc	ggt	gac	atc	gtc	atg	ggt	aag		4032	
Glu	Val	Pro	Glu	Asp	Gln	Ala	Ile	Pro	Val	Asp	Ile	Val	Met	Gly	Lys			
																1330	1335	1340
atg	cgt	tgt	ttg	cat	gct	ttg	gga	gag	tgg	gag	gct	ttg	gct	tca	ttg		4080	
Met	Arg	Cys	Leu	His	Ala	Leu	Gly	Glu	Trp	Glu	Ala	Leu	Ala	Ser	Leu			
																1345	1350	1355
act	ggg	agc	acc	tgg	gcc	aac	tct	acg	ccc	gag	ggt	cag	aga	atg	att		4128	
Thr	Gly	Ser	Thr	Trp	Ala	Asn	Ser	Thr	Pro	Glu	Val	Gln	Arg	Met	Ile			
																1365	1370	1375
gct	cct	ctt	gcc	acg	gct	gct	gca	tgg	ggt	ctg	aat	aag	tgg	gat	tcc		4176	
Ala	Pro	Leu	Ala	Thr	Ala	Ala	Ala	Trp	Gly	Leu	Asn	Lys	Trp	Asp	Ser			
																1380	1385	1390
atg	gac	aac	tat	ctt	tcg	tcg	ctc	aag	aga	tac	tca	ccc	gac	cga	tca		4224	
Met	Asp	Asn	Tyr	Leu	Ser	Ser	Leu	Lys	Arg	Tyr	Ser	Pro	Asp	Arg	Ser			
																1395	1400	1405
ttc	ttc	ggt	gcg	att	ttg	gcg	ctc	cac	cgc	aat	cag	ttc	cgc	gag	gcg		4272	
Phe	Phe	Gly	Ala	Ile	Leu	Ala	Leu	His	Arg	Asn	Gln	Phe	Arg	Glu	Ala			
																1410	1415	1420
att	gca	tgc	gtt	cag	caa	gct	cgt	gaa	ggc	ctg	gat	acc	gag	ttg	agt		4320	
Ile	Ala	Cys	Val	Gln	Gln	Ala	Arg	Glu	Gly	Leu	Asp	Thr	Glu	Leu	Ser			
																1425	1430	1435
gcg	ttg	gtt	agt	gag	tcg	tac	aac	cgg	gca	tac	cag	gtc	gtc	gtt	cgc		4368	
Ala	Leu	Val	Ser	Glu	Ser	Tyr	Asn	Arg	Ala	Tyr	Gln	Val	Val	Val	Arg			
																1445	1450	1455
gtg	cag	atg	ctt	gct	gag	ctt	gag	gag	ctc	atc	gtc	tac	aag	cag	tgc		4416	
Val	Gln	Met	Leu	Ala	Glu	Leu	Glu	Glu	Leu	Ile	Val	Tyr	Lys	Gln	Cys			
																1460	1465	1470
gac	gag	aag	aag	cag	gcc	ata	atg	cga	cga	act	tgg	gag	acc	cga	ctg		4464	
Asp	Glu	Lys	Lys	Gln	Ala	Ile	Met	Arg	Arg	Thr	Trp	Glu	Thr	Arg	Leu			
																1475	1480	1485
aag	ggt	tgt	cag	agg	aac	gtc	gag	ggt	tgg	cag	cgc	atg	ctc	aga	cta		4512	
Lys	Gly	Cys	Gln	Arg	Asn	Val	Glu	Val	Trp	Gln	Arg	Met	Leu	Arg	Leu			
																1490	1495	1500
cgg	gcc	ata	gtg	att	gca	ccg	acg	gag	aat	atg	cac	atg	tgg	atc	aag		4560	
Arg	Ala	Ile	Val	Ile	Ala	Pro	Thr	Glu	Asn	Met	His	Met	Trp	Ile	Lys			
																1505	1510	1515
ttt	gcc	aac	ctt	tgc	cgc	aag	tct	gga	cga	atg	gga	ctg	gcc	gag	aag		4608	
Phe	Ala	Asn	Leu	Cys	Arg	Lys	Ser	Gly	Arg	Met	Gly	Leu	Ala	Glu	Lys			
																1525	1530	1535
tct	ctc	aaa	caa	ctc	att	gga	acc	gac	gct	cct	ctc	ata	tca	gca	att		4656	
Ser	Leu	Lys	Gln	Leu	Ile	Gly	Thr	Asp	Ala	Pro	Leu	Ile	Ser	Ala	Ile			
																1540	1545	1550
cct	tat	tgg	aac	gag	cag	cga	cag	cca	gca	tcc	aac	ccc	aga	gct	gca		4704	
Pro	Tyr	Trp	Asn	Glu	Gln	Arg	Gln	Pro	Ala	Ser	Asn	Pro	Arg	Ala	Ala			
																1555	1560	1565
cca	gcc	gca	cag	gtc	atc	tat	gcc	gtg	ctc	aag	tac	cag	tgg	gag	ctt		4752	

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Pro	Ala	Ala	Gln	Val	Ile	Tyr	Ala	Val	Leu	Lys	Tyr	Gln	Trp	Glu	Leu	
1570						1575					1580					
gga	cag	cag	ctg	ccc	gtc	aac	aag	ggt	agc	ata	cca	gag	aag	acg	ctg	4800
Gly	Gln	Gln	Leu	Pro	Val	Asn	Lys	Gly	Ser	Ile	Pro	Glu	Lys	Thr	Leu	
1585					1590					1595					1600	
tat	tgc	ctg	cgc	aag	ttc	acc	aaa	cga	tgt	gcg	cac	cgt	ctc	gag	gtt	4848
Tyr	Cys	Leu	Arg	Lys	Phe	Thr	Lys	Arg	Cys	Ala	His	Arg	Leu	Glu	Val	
				1605					1610					1615		
gcc	agg	gcc	cac	ctt	gct	gca	caa	gct	ggt	aac	gat	gcc	agt	atc	act	4896
Ala	Arg	Ala	His	Leu	Ala	Ala	Gln	Ala	Gly	Asn	Asp	Ala	Ser	Ile	Thr	
			1620					1625					1630			
ggc	gac	tac	gga	ttc	cag	aac	ccg	atg	gaa	cct	gcc	ata	ata	agc	caa	4944
Gly	Asp	Tyr	Gly	Phe	Gln	Asn	Pro	Met	Glu	Pro	Ala	Ile	Ile	Ser	Gln	
		1635					1640					1645				
cat	aca	aaa	cga	gcg	ctg	tat	gac	caa	aca	gtc	ctc	ctt	gcc	aag	tgc	4992
His	Thr	Lys	Arg	Ala	Leu	Tyr	Asp	Gln	Thr	Val	Leu	Leu	Ala	Lys	Cys	
		1650				1655					1660					
tat	ctg	cgc	cag	gga	grg	tgg	ctg	att	gcg	ctc	aac	aag	gat	gat	tgg	5040
Tyr	Leu	Arg	Gln	Gly	Xaa	Trp	Leu	Ile	Ala	Leu	Asn	Lys	Asp	Asp	Trp	
1665					1670					1675					1680	
cag	tac	act	cag	gtt	caa	gac	att	ctt	ttg	tct	tac	tct	cag	gcg	acc	5088
Gln	Tyr	Thr	Gln	Val	Gln	Asp	Ile	Leu	Leu	Ser	Tyr	Ser	Gln	Ala	Thr	
				1685					1690				1695			
aag	tac	aat	cct	cga	tgg	tac	aaa	ggc	act	ggc	atg	gct	tgg	gcg	ctg	5136
Lys	Tyr	Asn	Pro	Arg	Trp	Tyr	Lys	Gly	Thr	Gly	Met	Ala	Trp	Ala	Leu	
			1700					1705					1710			
gcc	aat	ttt	gag	att	gtg	cag	aca	ctg	aca	gct	gga	aat	gaa	gga	cac	5184
Ala	Asn	Phe	Glu	Ile	Val	Gln	Thr	Leu	Thr	Ala	Gly	Asn	Glu	Gly	His	
		1715					1720					1725				
ttg	tcg	agg	aca	gac	cag	agt	atg	gtg	att	gat	cac	gtg	gtt	ccc	gct	5232
Leu	Ser	Arg	Thr	Asp	Gln	Ser	Met	Val	Ile	Asp	His	Val	Val	Pro	Ala	
		1730				1735					1740					
gtc	aag	ggc	ttc	ttc	aaa	tcc	atc	gca	ctt	tca	cag	gga	agc	tcc	ctt	5280
Val	Lys	Gly	Phe	Phe	Lys	Ser	Ile	Ala	Leu	Ser	Gln	Gly	Ser	Ser	Leu	
1745					1750					1755					1760	
cag	gat	act	ctt	cga	ctg	ttg	aca	ctc	tgg	ttt	act	cat	ggt	gga	agt	5328
Gln	Asp	Thr	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Thr	His	Gly	Gly	Ser	
				1765					1770				1775			
tca	gat	gtc	aac	gta	gcc	gtt	acc	gaa	ggt	ttc	gct	aat	gtc	agc	gtg	5376
Ser	Asp	Val	Asn	Val	Ala	Val	Thr	Glu	Gly	Phe	Ala	Asn	Val	Ser	Val	
			1780					1785					1790			
gac	aca	tgg	ctc	gag	gtc	att	cct	cag	ttg	atc	gcc	cgc	atc	aac	cag	5424
Asp	Thr	Trp	Leu	Glu	Val	Ile	Pro	Gln	Leu	Ile	Ala	Arg	Ile	Asn	Gln	
		1795					1800					1805				
cct	aac	aag	cga	gtt	cag	caa	tcg	gtg	cac	aac	ctt	ctt	gca	gat	gtc	5472
Pro	Asn	Lys	Arg	Val	Gln	Gln	Ser	Val	His	Asn	Leu	Leu	Ala	Asp	Val	
		1810				1815					1820					
gga	cga	gct	cat	cct	cag	gct	ctg	gtc	tac	cct	ctc	act	gtc	gcc	atg	5520
Gly	Arg	Ala	His	Pro	Gln	Ala	Leu	Val	Tyr	Pro	Leu	Thr	Val	Ala	Met	
1825					1830					1835					1840	
aaa	tct	tgg	cag	aac	acg	cgt	aga	tct	cgt	tct	gca	gct	caa	att	atg	5568
Lys	Ser	Trp	Gln	Asn	Thr	Arg	Arg	Ser	Arg	Ser	Ala	Ala	Gln	Ile	Met	
				1845					1850				1855			
gat	agc	atg	aga	cag	cac	agc	gca	aac	ctg	gtc	gct	cag	gcc	gac	acg	5616
Asp	Ser	Met	Arg	Gln	His	Ser	Ala	Asn	Leu	Val	Ala	Gln	Ala	Asp	Thr	
			1860					1865					1870			
gtc	agt	cat	gaa	ctg	att	cgt	gtc	gtc	ctg	tgg	cat	gag	ctt	tgg		5664
Val	Ser	His	Glu	Leu	Ile	Arg	Val	Ala	Val	Leu	Trp	His	Glu	Leu	Trp	
		1875				1880					1885					
cat	gag	gga	ttg	gag	gaa	gct	tcg	cga	ttg	tac	ttt	ggt	gat	agc	aac	5712
His	Glu	Gly	Leu	Glu	Glu	Ala	Ser	Arg	Leu	Tyr	Phe	Gly	Asp	Ser	Asn	
		1890				1895					1900					
att	gaa	ggc	atg	ttt	gca	aca	ctg	gcg	cct	ctc	cac	gaa	ctc	ctg	gag	5760
Ile	Glu	Gly	Met	Phe	Ala	Thr	Leu	Ala	Pro	Leu	His	Glu	Leu	Leu	Glu	
1905					1910					1915					1920	
cgt	gga	ccc	gag	acc	ctc	cgc	gag	atc	tcc	ttt	gca	cag	gct	ttc	ggt	5808
Arg	Gly	Pro	Glu	Thr	Leu	Arg	Glu	Ile	Ser	Phe	Ala	Gln	Ala	Phe	Gly	
				1925					1930					1935		
cgc	gat	ctt	aag	gag	gcg	caa	gac	tgg	tgc	cga	cag	tac	gag	aca	agc	5856

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Arg	Asp	Leu	Lys	Glu	Ala	Gln	Asp	Trp	Cys	Arg	Gln	Tyr	Glu	Thr	Ser		
caa	gac	gtc	aat	gac	ctg	aac	cag	gcg	tgg	gat	ctg	tat	tat	cag	gta	5904	
Gln	Asp	Val	Asn	Asp	Leu	Asn	Gln	Ala	Trp	Asp	Leu	Tyr	Tyr	Gln	Val		
		1955				1960						1965					
ttc	cgc	aga	ata	agt	agg	cag	cta	ccg	cag	gtg	acc	acg	ctg	gag	ttg	5952	
Phe	Arg	Arg	Ile	Ser	Arg	Gln	Leu	Pro	Gln	Val	Thr	Thr	Leu	Glu	Leu		
	1970					1975					1980						
acg	tac	tgc	tcg	cct	aag	ctt	ctt	aac	gcg	aag	aac	ttg	gac	ctg	gca	6000	
Thr	Tyr	Cys	Ser	Pro	Lys	Leu	Leu	Asn	Ala	Lys	Asn	Leu	Asp	Leu	Ala		
	1985				1990					1995					2000		
gtt	ccg	gga	aca	tac	aag	agc	gga	cag	ccc	atc	gtg	agg	ata	atg	tcc	6048	
Val	Pro	Gly	Thr	Tyr	Lys	Ser	Gly	Gln	Pro	Ile	Val	Arg	Ile	Met	Ser		
			2005						2010					2015			
ttt	gac	aca	acg	ttt	agt	gtt	atc	aac	tct	aag	caa	cgt	cca	cga	aag	6096	
Phe	Asp	Thr	Thr	Phe	Ser	Val	Ile	Asn	Ser	Lys	Gln	Arg	Pro	Arg	Lys		
		2020					2025					2030					
ctc	aac	gtc	aac	ggc	agt	gac	ggc	aag	tcg	tac	gcg	ttc	ctg	ctc	aag	6144	
Leu	Asn	Val	Asn	Gly	Ser	Asp	Gly	Lys	Ser	Tyr	Ala	Phe	Leu	Leu	Lys		
		2035				2040					2045						
ggc	cac	gag	gat	atc	cgc	cag	gac	gaa	cga	gtt	atg	cag	ctg	ttc	ggc	6192	
Gly	His	Glu	Asp	Ile	Arg	Gln	Asp	Glu	Arg	Val	Met	Gln	Leu	Phe	Gly		
	2050				2055					2060							
ctg	tgc	aac	acg	ctc	ctc	tcc	cac	gac	tcg	gag	tgc	ttc	aag	cgc	cac	6240	
Leu	Cys	Asn	Thr	Leu	Leu	Ser	His	Asp	Ser	Glu	Cys	Phe	Lys	Arg	His		
	2065			2070					2075					2080			
ctc	aac	atc	cag	cgc	tac	cct	gcc	atc	ccg	ctc	tcg	cag	aat	agc	ggt	6288	
Leu	Asn	Ile	Gln	Arg	Tyr	Pro	Ala	Ile	Pro	Leu	Ser	Gln	Asn	Ser	Gly		
			2085				2090						2095				
ctg	ctc	ggg	tgg	gtt	ccc	aac	agc	gac	acc	ctg	cac	gtt	ctt	att	agg	6336	
Leu	Leu	Gly	Trp	Val	Pro	Asn	Ser	Asp	Thr	Leu	His	Val	Leu	Ile	Arg		
		2100					2105					2110					
gag	tat	cgt	gag	agt	cgc	aag	atc	ctg	ctc	aac	att	gaa	cac	cgc	atc	6384	
Glu	Tyr	Arg	Glu	Ser	Arg	Lys	Ile	Leu	Leu	Asn	Ile	Glu	His	Arg	Ile		
	2115					2120					2125						
atg	ctc	cag	atg	gcc	ccc	gac	tac	gat	aac	ctc	acc	ttg	atg	cag	aaa	6432	
Met	Leu	Gln	Met	Ala	Pro	Asp	Tyr	Asp	Asn	Leu	Thr	Leu	Met	Gln	Lys		
	2130			2135					2140								
gtc	gag	gtg	ttt	ggc	tat	gcg	ctc	gac	aac	acc	acg	gga	cag	gac	ctg	6480	
Val	Glu	Val	Phe	Gly	Tyr	Ala	Leu	Asp	Asn	Thr	Thr	Gly	Gln	Asp	Leu		
	2145			2150					2155					2160			
tac	cgt	gtt	ctt	tgg	ctc	aag	tca	aag	tct	tct	gag	gct	tgg	ctt	gag	6528	
Tyr	Arg	Val	Leu	Trp	Leu	Lys	Ser	Lys	Ser	Ser	Glu	Ala	Trp	Leu	Glu		
			2165				2170						2175				
aga	cga	acc	aac	tac	act	cgt	tct	ctt	ggt	gtc	atg	tcg	atg	gtg	gga	6576	
Arg	Arg	Thr	Asn	Tyr	Thr	Arg	Ser	Leu	Gly	Val	Met	Ser	Met	Val	Gly		
		2180				2185					2190						
tac	att	ctg	gga	ctg	ggc	gat	cgt	cat	cct	tcc	aac	ttg	atg	ctt	gac	6624	
Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser	Asn	Leu	Met	Leu	Asp		
	2195				2200				2205								
cgc	gtc	act	gga	aag	att	att	cac	atc	gat	ttc	ggt	gat	tgt	ttc	gag	6672	
Arg	Val	Thr	Gly	Lys	Ile	Ile	His	Ile	Asp	Phe	Gly	Asp	Cys	Phe	Glu		
	2210				2215				2220								
gtg	gcg	atg	aag	aga	gag	aaa	tac	ccg	gag	agg	gtt	ccc	ttc	cga	ctc	6720	
Val	Ala	Met	Lys	Arg	Glu	Lys	Tyr	Pro	Glu	Arg	Val	Pro	Phe	Arg	Leu		
	2225			2230					2235					2240			
act	cgc	atg	ctg	acc	tat	gct	atg	gaa	gtt	agc	aac	att	gag	ggt	agc	6768	
Thr	Arg	Met	Leu	Thr	Tyr	Ala	Met	Glu	Val	Ser	Asn	Ile	Glu	Gly	Ser		
			2245				2250						2255				
ttt	aga	atc	acc	ttc	gag	aac	gtg	atg	agg	gtt	cta	cga	gac	aac	aaa	6816	
Phe	Arg	Ile	Thr	Phe	Glu	Asn	Val	Met	Arg	Val	Leu	Arg	Asp	Asn	Lys		
		2260				2265					2270						
gag	agc	gtc	atg	gct	gtt	ctc	gaa	gca	ttc	atc	cac	gat	cct	ctc	ctt	6864	
Glu	Ser	Val	Met	Ala	Val	Leu	Glu	Ala	Phe	Ile	His	Asp	Pro	Leu	Leu		
	2275					2280					2285						
acg	tgg	cgt	ctc	aca	agc	gcc	gca	tcc	cca	aca	ggc	ccc	aac	ttc	aac	6912	
Thr	Trp	Arg	Leu	Thr	Ser	Ala	Ala	Ser	Pro	Thr	Gly	Pro	Asn	Phe	Asn		
	2290				2295				2300								
tca	gac	cac	gac	aca	gcc	atg	ccc	gtc	ccc	ggc	gga	gtc	cgc	gca	cgt	6960	

## PhoenixTemp32470.tmp.txt

```

Ser Asp His Asp Thr Ala Met Pro Val Pro Gly Gly Val Arg Ala Arg
2305          2310          2315          2320
cgc caa tcc atc ctg gac agc gac gtc gcg ccc tcc gaa ctc ctc aac
Arg Gln Ser Ile Leu Asp Ser Asp Val Ala Pro Ser Glu Leu Leu Asn
          2325          2330          2335
gca ccc gag cca tca atc cag aca cgt gct cgc gcc cgc aca aac agc
Ala Pro Glu Pro Ser Ile Gln Thr Arg Ala Arg Ala Arg Thr Asn Ser
          2340          2345          2350
tca gcg ggt gaa gcc ttg acc aac ggc ggc gca cca gag gtg gag agc
Ser Ala Gly Glu Ala Leu Thr Asn Gly Gly Ala Pro Glu Val Glu Ser
          2355          2360          2365
cag aac gcg agg gcg gtg gag gtg ctg gac cgc gtg cag cag aag ctt
Gln Asn Ala Arg Ala Val Glu Val Leu Asp Arg Val Gln Gln Lys Leu
          2370          2375          2380
acg ggt cgg gac ttc aag acc aac gag gag ctg gat gtc att gcg cag
Thr Gly Arg Asp Phe Lys Thr Asn Glu Glu Leu Asp Val Ile Ala Gln
2385          2390          2395          2400
gtc aat aag ttg atc atg gag gct acg aag ctg gag aat ctg tgc cag
Val Asn Lys Leu Ile Met Glu Ala Thr Lys Leu Glu Asn Leu Cys Gln
          2405          2410          2415
cac tac ata gga tgg tgc agc ttc tgg tga
His Tyr Ile Gly Trp Cys Ser Phe Trp
          2420          2425

```

&lt;210&gt; 2559

&lt;211&gt; 2425

&lt;212&gt; PRT

&lt;213&gt; Gibberella fujikuroi

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (531)..(531)

&lt;223&gt; The Xaa at location 531 stands for Stop, or Gln.

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1670)..(1670)

&lt;223&gt; The Xaa at location 1670 stands for Glu, or Gly.

&lt;400&gt; 2559

```

Met Ala Gln Ala Gln Gln Val Ala Leu Asp Arg Leu Asp Asn Ile Ser
1          5          10          15
Arg Ala Leu Lys Ser Arg Thr Ser Asp Asp Leu Arg Lys Arg Ser Ala
          20          25          30
Val Gln Leu Arg Glu Leu Val Ala Val Cys His Arg Asp Leu Ser Pro
          35          40          45
Glu Gln Phe Gln Val Phe Tyr Asn Ser Val Asn Asn Arg Ile Thr Gln
          50          55          60
Leu Ile Thr His Gly Asn Asp Ser Ser Glu Arg Leu Gly Gly Ile Tyr
65          70          75          80
Ala Leu Asp Ala Leu Ile Asp Phe Asp Gly Val Asp Val Gly Val Lys
          85          90          95
Tyr Thr Arg Phe Thr Gln Asn Leu Lys Thr Ile Leu Arg Gly Lys Asp
          100          105          110
Ile Asn Pro Met Gln Pro Ala Ala Ile Ala Leu Gly Lys Leu Cys Arg
          115          120          125
Pro Gly Gly Ala Met Ile Ser Glu Val Val Asp Ser Glu Val Asn Thr
          130          135          140
Ala Leu Glu Trp Leu Gln Asn Asp Arg Ile Glu Glu Arg Arg Tyr Ser
145          150          155          160
Ala Val Leu Val Leu Arg Glu Leu Ala Arg Ser Ala Pro Thr Leu Met
          165          170          175
Tyr Gln Tyr Ile Pro Thr Ile Phe Asp Trp Ile Trp Val Gly Leu Arg
          180          185          190
Asp Pro Arg Gln Leu Ile Arg Ala Thr Ser Ala Glu Thr Val Ser Ala
          195          200          205
Cys Phe Arg Ile Leu Arg Glu Arg Asp Gln Asp Met Lys Gln Leu Trp
210          215          220
Met Asp Lys Ile Tyr Asn Glu Ala Arg Ser Gly Leu Lys Val Asn Thr

```



## PhoenixTemp32470.tmp.txt

225	Val	Glu	Ser	Ile	His	230	Gly	Ser	Leu	Leu	Val	235	Leu	Lys	Glu	Leu	Leu	240	Glu
					245							250					255		
	Gln	Gly	Ala	Met	Tyr	Met	Gln	Glu	His	Tyr	Gln	Glu	Ala	Cys	Glu	Ile			
				260					265						270				
	Val	Phe	Lys	His	Lys	Asp	His	Arg	Asp	Pro	Thr	Ile	Arg	Lys	Thr	Val			
			275					280					285						
	Val	Leu	Leu	Ile	Pro	Asp	Leu	Ala	Ser	Tyr	Ser	Pro	Ala	Asp	Phe	Ala			
		290					295					300							
	His	Thr	Trp	Leu	His	Lys	Phe	Met	Val	Tyr	Leu	Ser	Gly	Met	Leu	Lys			
305					310						315					320			
	Lys	Asp	Lys	Glu	Arg	Asn	Asp	Ala	Phe	Leu	Ala	Ile	Gly	Asn	Ile	Ala			
				325						330					335				
	Asn	Ser	Val	Lys	Ser	Ala	Ile	Ala	Pro	Tyr	Leu	Asp	Gly	Val	Leu	Ile			
			340						345					350					
	Tyr	Val	Arg	Glu	Gly	Leu	Ser	Leu	Gln	Ser	Arg	Lys	Arg	Gly	Ser	Val			
		355						360					365						
	Asp	Pro	Val	Phe	Asp	Cys	Ile	Ser	Arg	Leu	Ala	Val	Ala	Val	Gly	Gln			
		370					375					380							
	Thr	Leu	Ser	Lys	Tyr	Met	Glu	Ala	Leu	Leu	Asp	Pro	Ile	Phe	Ala	Cys			
385					390						395					400			
	Asp	Leu	Thr	Pro	Lys	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	Phe	Tyr			
				405						410					415				
	Ile	Pro	Pro	Val	Lys	Pro	Thr	Ile	Gln	Glu	Arg	Leu	Leu	Asp	Met	Leu			
			420						425					430					
	Ser	Val	Val	Leu	Cys	Gly	Glu	Pro	Phe	Lys	Pro	Leu	Gly	Ala	Pro	Gln			
		435						440					445						
	Pro	Asn	Thr	Leu	Ser	Ser	Val	Pro	Ile	Ile	Pro	Lys	Asp	Ala	Lys	Asp			
		450					455					460							
	Pro	His	Ala	Tyr	Glu	His	Arg	Arg	Ala	Glu	Val	Lys	Leu	Ala	Leu	Asn			
465					470						475					480			
	Thr	Leu	Gly	Ser	Phe	Asp	Phe	Ser	Gly	His	Val	Leu	Asn	Glu	Phe	Val			
			485							490					495				
	Arg	Asp	Val	Ala	Ile	Lys	Tyr	Val	Glu	Asp	Glu	Asp	Pro	Glu	Ile	Arg			
			500						505					510					
	Glu	Ala	Ala	Ala	Leu	Thr	Cys	Cys	Gln	Leu	Tyr	Val	Arg	Asp	Pro	Ile			
		515						520					525						
	Val	Asn	Xaa	Thr	Ser	Tyr	His	Ala	Leu	Gln	Val	Val	Gly	Asp	Val	Ile			
		530					535					540							
	Glu	Lys	Leu	Leu	Thr	Val	Gly	Val	Ser	Asp	Pro	Glu	Pro	Asn	Ile	Arg			
545					550						555					560			
	Arg	Thr	Val	Leu	Ala	Ala	Leu	Asp	Glu	Arg	Phe	Asp	Arg	His	Leu	Ala			
				565						570					575				
	Lys	Ala	Glu	Asn	Ile	Arg	Ile	Leu	Phe	Phe	Ala	Leu	Asn	Asp	Glu	Val			
			580						585					590					
	Phe	Ser	Ile	Arg	Glu	Val	Ala	Ile	Ser	Ile	Ile	Gly	Arg	Leu	Ala	Arg			
		595						600					605						
	Tyr	Asn	Pro	Ala	Tyr	Val	Ile	Pro	Ser	Leu	Arg	Lys	Thr	Leu	Ile	Gln			
		610					615					620							
	Met	Leu	Thr	Glu	Leu	Glu	Phe	Ser	Asp	Val	Ala	Arg	Asn	Lys	Glu	Glu			
625					630						635					640			
	Ser	Ala	Lys	Leu	Leu	Ser	Leu	Leu	Val	Gln	Asn	Ala	Gln	Ser	Leu	Ile			
				645						650					655				
	Lys	Pro	Tyr	Val	Glu	Pro	Met	Ile	Ser	Val	Leu	Leu	Pro	Lys	Ala	Lys			
			660						665					670					
	Asp	Gly	Asn	Pro	Ser	Val	Ala	Ala	Thr	Ile	Leu	Lys	Ala	Ile	Gly	Glu			
		675						680					685						
	Leu	Ala	Thr	Val	Gly	Gly	Glu	Asp	Met	Met	Pro	Tyr	Lys	Asp	Arg	Leu			
		690					695					700							
	Met	Pro	Ile	Ile	Leu	Asp	Ala	Leu	Gln	Asp	Gln	Ser	Ser	Asn	Ala	Lys			
705					710						715					720			
	Arg	Gly	Ala	Ala	Leu	His	Ala	Leu	Gly	Gln	Leu	Ala	Ser	Asn	Ser	Gly			
				725						730					735				
	Tyr	Val	Ile	Leu	Pro	Tyr	Ile	Glu	Tyr	Pro	Gln	Leu	Leu	Glu	Ile	Leu			
			740						745					750					
	Gln	Ser	Ile	Ile	Arg	Thr	Glu	Gly	Gln	Gln	Val	Pro	Leu	Arg	Gln	Glu			
		755						760					765						
	Thr	Ile	Lys	Leu	Met	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His			
		770					775					780							

## PhoenixTemp32470.tmp.txt

Gln Ala Glu Glu Arg Thr Pro Asp Ser Arg Arg Gly Glu Ala Asn Gln  
 785 790 795 800  
 Leu Thr Asp Ile Ser Leu Met Met Thr Gly Leu Thr Pro Ser Asn Lys  
 805 810 815  
 Glu Tyr Phe Pro Thr Val Val Ile Asn Ala Leu Leu Ala Ile Leu Lys  
 820 825 830  
 Asp Ser Ser Leu Val Gln His His Ala Ala Val Ile Glu Ala Ile Met  
 835 840 845  
 Asn Ile Phe Arg Thr Leu Gly Leu Glu Cys Val Ser Phe Leu Asp Arg  
 850 855 860  
 Ile Ile Pro Ala Phe Leu Gln Val Ile Arg Ser Ala Thr Ser Thr Arg  
 865 870 875 880  
 Leu Glu Ser Tyr Phe Asn Gln Leu Ala Thr Leu Val Ser Ile Val Arg  
 885 890 895  
 Gln His Ile Arg Asn Tyr Leu Pro Ser Ile Val Glu Ile Leu Gln Glu  
 900 905 910  
 Tyr Trp His Thr Ser Pro Ser Leu Gln Thr Thr Ile Leu Ser Leu Val  
 915 920 925  
 Glu Ala Ile Ser Arg Ser Leu Glu Gly Glu Phe Lys Ile Tyr Leu Ala  
 930 935 940  
 Gly Leu Leu Pro Leu Met Leu Gly Val Leu Asp Lys Asp Thr Ser Ala  
 945 950 955 960  
 Lys Arg Thr Pro Ser Glu Arg Val Met His Ala Phe Leu Val Phe Gly  
 965 970 975  
 Ala Ser Ala Glu Tyr Met His Leu Ile Ile Pro Val Ile Val Arg  
 980 985 990  
 Thr Phe Glu Lys Gln Gly Gln Pro Thr Phe Ile Arg Lys Gln Ala Ile  
 995 1000 1005  
 Asp Thr Ile Gly Lys Ile Ser Arg Gln Val Asn Leu Asn Asp Phe Ala  
 1010 1015 1020  
 Ala Lys Ile Ile His Pro Leu Thr Arg Val Leu Asp Met Gly Glu Pro  
 1025 1030 1035 1040  
 Val Leu Arg Thr Ala Ala Leu Asp Thr Leu Cys Ala Leu Ile Gln Gln  
 1045 1050 1055  
 Leu Gly Lys Asp Tyr Leu His Phe Met Gly Thr Val Asn Lys Thr Ile  
 1060 1065 1070  
 Asn Gln His Gln Ile Gln His Ser Asn Tyr Glu Leu Leu Val Ser Lys  
 1075 1080 1085  
 Leu Gln Lys Gly Glu Val Leu Pro Gln Asp Leu Ser Ser Gly Val Gly  
 1090 1095 1100  
 Phe Ala Asp Gly Ala Asp Glu Thr Pro Phe Ala Asp Gln Gly Thr Lys  
 1105 1110 1115 1120  
 Lys Leu Glu Met Asn Ala Ile His Leu Lys Ala Ala Trp Asp Thr Lys  
 1125 1130 1135  
 Gly Lys Ser Thr Lys Glu Asp Trp Gln Glu Trp Leu Arg Arg Phe Ser  
 1140 1145 1150  
 Thr Thr Leu Leu Thr Glu Ser Pro Asn His Ala Leu Arg Ala Cys Ala  
 1155 1160 1165  
 Ser Leu Ala Ser Val Tyr Leu Pro Leu Ala Arg Glu Leu Phe Asn Ser  
 1170 1175 1180  
 Ala Phe Val Ser Cys Trp Ser Glu Leu Tyr Glu Gln Phe Gln Asp Glu  
 1185 1190 1195 1200  
 Leu Ile Gln Asn Ile Glu Ser Ala Ile Lys Ser Glu Asn Val Pro Pro  
 1205 1210 1215  
 Asp Leu Leu Gly Leu Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp  
 1220 1225 1230  
 Asp Lys Ala Leu Pro Ile Asp Ile Arg Val Leu Gly Arg Glu Ala Ala  
 1235 1240 1245  
 Arg Cys His Ala Tyr Ala Lys Ala Leu His Tyr Lys Glu Leu Glu Phe  
 1250 1255 1260  
 Leu Gln Asp Gln Ser Ser Gly Ala Val Glu Ala Leu Ile Val Ile Asn  
 1265 1270 1275 1280  
 Asn Gln Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Arg Lys Ala  
 1285 1290 1295  
 Gln Leu Tyr Lys Glu Gly Ile Gln Leu Arg Glu Thr Trp Phe Glu Lys  
 1300 1305 1310  
 Leu Glu Arg Trp Glu Glu Ala Leu Ala Phe Tyr Glu Lys Arg Glu Glu  
 1315 1320 1325  
 Glu Val Pro Glu Asp Gln Ala Ile Pro Val Asp Ile Val Met Gly Lys

## PhoenixTemp32470.tmp.txt

1330 1335 1340  
 Met Arg Cys Leu His Ala Leu Gly Glu Trp Glu Ala Leu Ala Ser Leu  
 1345 1350 1355 1360  
 Thr Gly Ser Thr Trp Ala Asn Ser Thr Pro Glu Val Gln Arg Met Ile  
 1365 1370 1375  
 Ala Pro Leu Ala Thr Ala Ala Ala Trp Gly Leu Asn Lys Trp Asp Ser  
 1380 1385 1390  
 Met Asp Asn Tyr Leu Ser Ser Leu Lys Arg Tyr Ser Pro Asp Arg Ser  
 1395 1400 1405  
 Phe Phe Gly Ala Ile Leu Ala Leu His Arg Asn Gln Phe Arg Glu Ala  
 1410 1415 1420  
 Ile Ala Cys Val Gln Gln Ala Arg Glu Gly Leu Asp Thr Glu Leu Ser  
 1425 1430 1435 1440  
 Ala Leu Val Ser Glu Ser Tyr Asn Arg Ala Tyr Gln Val Val Val Arg  
 1445 1450 1455  
 Val Gln Met Leu Ala Glu Leu Glu Glu Leu Ile Val Tyr Lys Gln Cys  
 1460 1465 1470  
 Asp Glu Lys Lys Gln Ala Ile Met Arg Arg Thr Trp Glu Thr Arg Leu  
 1475 1480 1485  
 Lys Gly Cys Gln Arg Asn Val Glu Val Trp Gln Arg Met Leu Arg Leu  
 1490 1495 1500  
 Arg Ala Ile Val Ile Ala Pro Thr Glu Asn Met His Met Trp Ile Lys  
 1505 1510 1515 1520  
 Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg Met Gly Leu Ala Glu Lys  
 1525 1530 1535  
 Ser Leu Lys Gln Leu Ile Gly Thr Asp Ala Pro Leu Ile Ser Ala Ile  
 1540 1545 1550  
 Pro Tyr Trp Asn Glu Gln Arg Gln Pro Ala Ser Asn Pro Arg Ala Ala  
 1555 1560 1565  
 Pro Ala Ala Gln Val Ile Tyr Ala Val Leu Lys Tyr Gln Trp Glu Leu  
 1570 1575 1580  
 Gly Gln Gln Leu Pro Val Asn Lys Gly Ser Ile Pro Glu Lys Thr Leu  
 1585 1590 1595 1600  
 Tyr Cys Leu Arg Lys Phe Thr Lys Arg Cys Ala His Arg Leu Glu Val  
 1605 1610 1615  
 Ala Arg Ala His Leu Ala Ala Gln Ala Gly Asn Asp Ala Ser Ile Thr  
 1620 1625 1630  
 Gly Asp Tyr Gly Phe Gln Asn Pro Met Glu Pro Ala Ile Ile Ser Gln  
 1635 1640 1645  
 His Thr Lys Arg Ala Leu Tyr Asp Gln Thr Val Leu Ala Lys Cys  
 1650 1655 1660  
 Tyr Leu Arg Gln Gly Xaa Trp Leu Ile Ala Leu Asn Lys Asp Asp Trp  
 1665 1670 1675 1680  
 Gln Tyr Thr Gln Val Gln Asp Ile Leu Leu Ser Tyr Ser Gln Ala Thr  
 1685 1690 1695  
 Lys Tyr Asn Pro Arg Trp Tyr Lys Gly Thr Gly Met Ala Trp Ala Leu  
 1700 1705 1710  
 Ala Asn Phe Glu Ile Val Gln Thr Leu Thr Ala Gly Asn Glu Gly His  
 1715 1720 1725  
 Leu Ser Arg Thr Asp Gln Ser Met Val Ile Asp His Val Val Pro Ala  
 1730 1735 1740  
 Val Lys Gly Phe Phe Lys Ser Ile Ala Leu Ser Gln Gly Ser Ser Leu  
 1745 1750 1755 1760  
 Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe Thr His Gly Gly Ser  
 1765 1770 1775  
 Ser Asp Val Asn Val Ala Val Thr Glu Gly Phe Ala Asn Val Ser Val  
 1780 1785 1790  
 Asp Thr Trp Leu Glu Val Ile Pro Gln Leu Ile Ala Arg Ile Asn Gln  
 1795 1800 1805  
 Pro Asn Lys Arg Val Gln Gln Ser Val His Asn Leu Leu Ala Asp Val  
 1810 1815 1820  
 Gly Arg Ala His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Met  
 1825 1830 1835 1840  
 Lys Ser Trp Gln Asn Thr Arg Arg Ser Arg Ser Ala Ala Gln Ile Met  
 1845 1850 1855  
 Asp Ser Met Arg Gln His Ser Ala Asn Leu Val Ala Gln Ala Asp Thr  
 1860 1865 1870  
 Val Ser His Glu Leu Ile Arg Val Ala Val Leu Trp His Glu Leu Trp  
 1875 1880 1885

## PhoenixTemp32470.tmp.txt

His Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Asp Ser Asn  
 1890 1895 1900  
 Ile Glu Gly Met Phe Ala Thr Leu Ala Pro Leu His Glu Leu Leu Glu  
 1905 1910 1915 1920  
 Arg Gly Pro Glu Thr Leu Arg Glu Ile Ser Phe Ala Gln Ala Phe Gly  
 1925 1930 1935  
 Arg Asp Leu Lys Glu Ala Gln Asp Trp Cys Arg Gln Tyr Glu Thr Ser  
 1940 1945 1950  
 Gln Asp Val Asn Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr Gln Val  
 1955 1960 1965  
 Phe Arg Arg Ile Ser Arg Gln Leu Pro Gln Val Thr Thr Leu Glu Leu  
 1970 1975 1980  
 Thr Tyr Cys Ser Pro Lys Leu Leu Asn Ala Lys Asn Leu Asp Leu Ala  
 1985 1990 1995 2000  
 Val Pro Gly Thr Tyr Lys Ser Gly Gln Pro Ile Val Arg Ile Met Ser  
 2005 2010 2015  
 Phe Asp Thr Thr Phe Ser Val Ile Asn Ser Lys Gln Arg Pro Arg Lys  
 2020 2025 2030  
 Leu Asn Val Asn Gly Ser Asp Gly Lys Ser Tyr Ala Phe Leu Leu Lys  
 2035 2040 2045  
 Gly His Glu Asp Ile Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly  
 2050 2055 2060  
 Leu Cys Asn Thr Leu Leu Ser His Asp Ser Glu Cys Phe Lys Arg His  
 2065 2070 2075 2080  
 Leu Asn Ile Gln Arg Tyr Pro Ala Ile Pro Leu Ser Gln Asn Ser Gly  
 2085 2090 2095  
 Leu Leu Gly Trp Val Pro Asn Ser Asp Thr Leu His Val Leu Ile Arg  
 2100 2105 2110  
 Glu Tyr Arg Glu Ser Arg Lys Ile Leu Leu Asn Ile Glu His Arg Ile  
 2115 2120 2125  
 Met Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Met Gln Lys  
 2130 2135 2140  
 Val Glu Val Phe Gly Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu  
 2145 2150 2155 2160  
 Tyr Arg Val Leu Trp Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Glu  
 2165 2170 2175  
 Arg Arg Thr Asn Tyr Thr Arg Ser Leu Gly Val Met Ser Met Val Gly  
 2180 2185 2190  
 Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp  
 2195 2200 2205  
 Arg Val Thr Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys Phe Glu  
 2210 2215 2220  
 Val Ala Met Lys Arg Glu Lys Tyr Pro Glu Arg Val Pro Phe Arg Leu  
 2225 2230 2235 2240  
 Thr Arg Met Leu Thr Tyr Ala Met Glu Val Ser Asn Ile Glu Gly Ser  
 2245 2250 2255  
 Phe Arg Ile Thr Phe Glu Asn Val Met Arg Val Leu Arg Asp Asn Lys  
 2260 2265 2270  
 Glu Ser Val Met Ala Val Leu Glu Ala Phe Ile His Asp Pro Leu Leu  
 2275 2280 2285  
 Thr Trp Arg Leu Thr Ser Ala Ala Ser Pro Thr Gly Pro Asn Phe Asn  
 2290 2295 2300  
 Ser Asp His Asp Thr Ala Met Pro Val Pro Gly Gly Val Arg Ala Arg  
 2305 2310 2315 2320  
 Arg Gln Ser Ile Leu Asp Ser Asp Val Ala Pro Ser Glu Leu Leu Asn  
 2325 2330 2335  
 Ala Pro Glu Pro Ser Ile Gln Thr Arg Ala Arg Ala Arg Thr Asn Ser  
 2340 2345 2350  
 Ser Ala Gly Glu Ala Leu Thr Asn Gly Gly Ala Pro Glu Val Glu Ser  
 2355 2360 2365  
 Gln Asn Ala Arg Ala Val Glu Val Leu Asp Arg Val Gln Gln Lys Leu  
 2370 2375 2380  
 Thr Gly Arg Asp Phe Lys Thr Asn Glu Glu Leu Asp Val Ile Ala Gln  
 2385 2390 2395 2400  
 Val Asn Lys Leu Ile Met Glu Ala Thr Lys Leu Glu Asn Leu Cys Gln  
 2405 2410 2415  
 His Tyr Ile Gly Trp Cys Ser Phe Trp  
 2420 2425

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 <212> DNA  
 <213> Podospira anserina

<220>  
 <221> CDS  
 <222> (1)..(7302)

<400> 2560  
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 Met Ser Ala Val Lys 5 Asp Gln Thr Ala Thr 10 Ser Leu Asp Gln His 15 Ile  
 1  
 aag gag atc agg aat cga aac tat gat gaa aac caa agg aaa cgg gcc 96  
 Lys Glu Ile Arg Asn Arg Asn Tyr Asp Glu Asn Gln Arg Lys Arg Ala  
 20  
 gcg cgc caa atc aga gac ctg gtc aat gct gcc aag cag gag atg ggt 144  
 Ala Arg Gln 35 Ile Arg Asp Leu Val 40 Asn Ala Ala Lys 45 Gln Glu Met Gly  
 gcc gaa cag ttc cag cgc ttc ttc gat aat gtc aat cag cgt acg aat 192  
 Ala Glu Gln Phe Gln Arg Phe Phe Asp Asn Val Asn Gln Arg Thr Asn  
 50  
 cta ttg ata caa ggt ccc gat acg tat gac cgt ctt ggt gga att tac 240  
 Leu Leu Ile Gln Gly Pro 70 Asp Thr Tyr Asp Arg 75 Leu Gly Gly Ile Tyr  
 65  
 atc ctg gat gcg ttg gtc gat ttt gac ggc ata gaa cca gcc ttg aag 288  
 Ile Leu Asp Ala Leu Val Asp Phe Asp Gly Ile Glu Pro Ala Leu Lys  
 85  
 tac acc cgc ttc cag aac tac att ggc agc atc ctg cgt ggc cgc gat 336  
 Tyr Thr Arg Phe 100 Gln Asn Tyr Ile Gly 105 Ser Ile Leu Arg 110 Gly Arg Asp  
 atc aac tct atg cag ccg gcc gct gtc gtc ctt gga aaa cta tgc aag 384  
 Ile Asn Ser Met Gln Pro Ala Ala Val Val Leu Gly Lys 125 Leu Cys Lys  
 115  
 cca ggc ggt tcc ttg att tcc gaa ctg gtc gat tcc gaa gtt caa aca 432  
 Pro Gly Gly Ser Leu Ile Ser 135 Glu Leu Val Asp Ser 140 Glu Val Gln Thr  
 130  
 gcg ctt gag tgg cta cag tct gac cga atc gag gaa cgg cgg tac tcg 480  
 Ala Leu Glu Trp Leu Gln Ser Asp Arg Ile Glu Glu Arg Arg Tyr Ser  
 145  
 gca gtc ttg gtg ctt cgc gag ctg gcc aga aac acg cct acg ttg atg 528  
 Ala Val Leu Val Leu Arg Glu Leu Ala Arg 170 Asn Thr Pro Thr Leu Met  
 165  
 tat aac tat gtg ggc tac gtc ttt gaa cag att tgg att ggc ctt cgt 576  
 Tyr Asn Tyr Val Gly Tyr Val Phe Glu Gln Ile Trp Ile Gly Leu Arg  
 180  
 gac tcc cgt ctc ttg att cgc gag act gcc agc gag acc gtt agc gcc 624  
 Asp Ser Arg Leu Leu Ile Arg Glu Thr Ala Ser Glu Thr Val Ser Ala  
 195  
 tgt ttc aaa atc att cgt gag cga gac cag gag ctg aag aag gac tgg 672  
 Cys Phe Lys Ile Ile Arg Glu Arg Asp Gln Glu Leu Lys Lys Asp Trp  
 210  
 atg gac aag atg ctc aac gag gcg atc aag ggg ctc aag atc aac acg 720  
 Met Asp Lys Met Leu Asn Glu Ala Ile Lys Gly Leu Lys Ile Asn Thr  
 225  
 gtt gag ttt atc cat gcc tcg ctt ctt gtg ctc aag gag ctg ctt gaa 768  
 Val Glu Phe Ile His 245 Ala Ser Leu Leu Val Leu Lys Glu Leu 255 Gln Glu  
 cag ggt ggc atg tac atg cag gct cac tac caa gag gcc tgt gag att 816  
 Gln Gly Gly Met Tyr Met Gln Ala His 265 Tyr Gln Glu Ala Cys 270 Gln Glu Ile  
 260  
 gtc ttc cgc cac aaa gac gcg cgc gat ccc gcc atc cgc aag acg gtt 864  
 Val Phe Arg 275 His Lys Asp Ala Arg 280 Asp Pro Ala Ile Arg 285 Lys Thr Val  
 gtg ctt ttg atc ccg gac ctg gcc aac tat gca ccg aca gag ttc tcg 912  
 Val Leu Leu Ile Pro Asp Leu Ala Asn Tyr Ala Pro 300 Thr Glu Phe Ser  
 290  
 gcg agc tat ttg cac atg ttt atg gtg tat ctt ggg ggc atg ctg aag 960  
 Ala Ser Tyr Leu His Met Phe Met Val Tyr Leu Gly Gly Met Leu Lys

## PhoenixTemp32470.tmp.txt

305	aag	gac	aag	gac	cgc	310	aac	gac	gcc	ttt	315	gcc	att	ggc	aac	atc	320	gcc	1008
Lys	Asp	Lys	Asp	Arg	325	Asn	Asp	Ala	Phe	Leu	330	Ala	Ile	Gly	Asn	Ile	335	Ala	
aat	tcg	gtc	aag	agc	gca	atc	aca	ccc	tat	tta	gac	ggc	ggt	ctc	atc			1056	
Asn	Ser	Val	Lys	Ser	Ala	Ile	Thr	Pro	Tyr	Leu	Asp	Gly	Val	Leu	Ile				
cat	att	cgc	gag	ggg	ctc	agt	gta	tcc	cgg	aaa	cga	agc	tcg	gtc				1104	
His	Ile	Arg	Glu	Gly	Leu	Ser	Val	Gln	Ser	Arg	Lys	Arg	Ser	Ser	Val				
gat	cct	ggt	ttt	gac	tgc	atc	agt	cga	ttg	gcc	gtc	gcc	gtg	ggg	cag			1152	
Asp	Pro	Val	Phe	Asp	Cys	Ile	Ser	Arg	Leu	Ala	Val	Ala	Val	Gly	Gln				
aca	atg	agc	aag	tat	atg	gag	gag	ctt	ctt	gat	ccc	atc	ttc	gcc	tgc			1200	
Thr	Met	Ser	Lys	Tyr	Met	Glu	Ala	Leu	Leu	Asp	Pro	Ile	Phe	Ala	Cys				
gag	ctc	acg	cca	aaa	ctg	aca	cag	gcc	ctt	gtc	gat	atg	gcg	ttc	tac			1248	
Glu	Leu	Thr	Pro	Lys	Leu	Thr	Gln	Ala	Leu	Val	Asp	Met	Ala	Phe	Tyr				
atc	ccc	cca	gtc	aaa	gcc	acc	att	caa	gag	cgc	ctg	ttg	gac	atg	ctg			1296	
Ile	Pro	Pro	Val	Lys	Ala	Thr	Ile	Gln	Glu	Arg	Leu	Leu	Asp	Met	Leu				
agc	aaa	ggt	ctc	tgc	ggc	gaa	ccc	ttc	aga	cct	ctg	ggg	gca	ccc	cat			1344	
Ser	Lys	Val	Leu	Cys	Gly	Glu	Pro	Phe	Arg	Pro	Leu	Gly	Ala	Pro	His				
cca	aac	tcg	ctc	gct	tcc	ata	cct	cat	att	ccc	aaa	gac	cca	aag	gac			1392	
Pro	Asn	Ser	Leu	Ala	Ser	Ile	Pro	His	Ile	Pro	Lys	Asp	Pro	Lys	Asp				
ccc	ctt	gct	cac	cag	cgg	aca	aag	gat	gaa	gtc	aag	ttg	gcc	ctc	aac			1440	
Pro	Leu	Ala	His	Gln	Arg	Thr	Lys	Asp	Glu	Val	Lys	Leu	Ala	Leu	Asn				
acg	ctc	ggc	agc	ttt	gat	ttt	caa	ggc	cat	gtc	ttg	aac	gaa	ttc	gtc			1488	
Thr	Leu	Gly	Ser	Phe	Asp	Phe	Gln	Gly	His	Val	Leu	Asn	Glu	Phe	Val				
cgc	gac	gtc	gct	atc	aaa	tac	gtc	gaa	gat	gat	gac	cca	gaa	aca	cg			1536	
Arg	Asp	Val	Ala	Ile	Lys	Tyr	Val	Glu	Asp	Asp	Asp	Pro	Glu	Thr	Arg				
gag	gct	gct	gcc	ctc	acc	tgc	tgc	cag	ctc	tat	gtg	cg	gac	cca	atc			1584	
Glu	Ala	Ala	Ala	Leu	Thr	Cys	Cys	Gln	Leu	Tyr	Val	Arg	Asp	Pro	Ile				
gtc	aac	cag	aca	agc	tat	cat	gcc	ctc	caa	gtg	gtc	gcc	gat	gtc	atc			1632	
Val	Asn	Gln	Thr	Ser	Tyr	His	Ala	Leu	Gln	Val	Val	Ala	Asp	Val	Ile				
gag	aga	ctc	ctg	act	gtg	ggg	ggt	tcg	gat	ccc	gaa	ccc	aaa	ata	cgg			1680	
Glu	Arg	Leu	Leu	Thr	Val	Gly	Val	Ser	Asp	Pro	Glu	Pro	Lys	Ile	Arg				
cag	acg	ttg	cta	gca	gcc	ctt	gac	gag	cga	ttt	gac	cag	cat	ctc	gcc			1728	
Gln	Thr	Leu	Leu	Ala	Ala	Leu	Asp	Glu	Arg	Phe	Asp	Gln	His	Leu	Ala				
aag	gct	gag	aat	ata	cg	acc	ttg	ttc	ttc	gcg	ctc	cac	gat	gaa	cag			1776	
Lys	Ala	Glu	Asn	Ile	Arg	Thr	Leu	Phe	Phe	Ala	Leu	His	Asp	Glu	Gln				
ttt	gcc	gtc	agg	gag	gtg	gcc	gtg	tcc	atc	ata	ggc	cg	ttg	gct	cg			1824	
Phe	Ala	Val	Arg	Glu	Val	Ala	Val	Ser	Ile	Ile	Gly	Arg	Leu	Ala	Arg				
cac	aat	ccc	gcc	tat	ggt	atc	ccc	cag	ctg	cga	aaa	acc	atc	att	cag			1872	
His	Asn	Pro	Ala	Tyr	Val	Ile	Pro	Gln	Leu	Arg	Lys	Thr	Ile	Ile	Gln				
atg	ttg	aca	gag	ctt	gaa	tac	aca	gat	gtg	gct	cg	agc	aag	gag	gaa			1920	
Met	Leu	Thr	Glu	Leu	Glu	Tyr	Thr	Asp	Val	Ala	Arg	Ser	Lys	Glu	Glu				
agc	tcg	aga	tta	ctc	agt	ctt	ctc	aca	cg	cac	gct	cag	gag	ctg	gtc			1968	
Ser	Ser	Arg	Leu	Leu	Ser	Leu	Leu	Thr	Arg	His	Ala	Gln	Glu	Leu	Val				
aaa	cca	tac	gtc	aac	tcc	atc	acc	caa	gtg	ttg	ctg	cca	aaa	gct	cg			2016	
Lys	Pro	Tyr	Val	Asn	Ser	Ile	Thr	Gln	Val	Leu	Leu	Pro	Lys	Ala	Arg				
gac	ccg	atc	ccg	tcc	ggt	gct	gcg	act	gtc	ctc	caa	gca	ctc	ggg	gaa			2064	
Asp	Pro	Ile	Pro	Ser	Val	Ala	Ala	Thr	Val	Leu	Gln	Ala	Leu	Gly	Glu				

## PhoenixTemp32470.tmp.txt

ctg	675	acc	gtt	ggt	gga	680	gag	atg	cta	aac	tac	685	aag	gat	ctc	2112
Leu	cys	Thr	Val	Gly	Gly	Glu	Glu	Met	Leu	Asn	Tyr	Lys	Lys	Asp	Leu	
	690					695					700					
atg	ccc	atc	atc	att	gac	gca	tgt	cag	gat	caa	agc	gca	cca	ggt	aaa	2160
Met	Pro	Ile	Ile	Ile	Asp	Ala	Leu	Gln	Asp	Gln	Ser	Ala	Pro	Val	Lys	
705					710					715					720	
cgg	gag	gca	gcc	ctg	cat	acc	ctc	ggt	cag	ctg	gcc	agt	aac	aca	ggc	2208
Arg	Glu	Ala	Ala	Leu	His	Thr	Leu	Gly	Gln	Leu	Ala	Ser	Asn	Thr	Gly	
				725					730					735		
tat	gtc	atc	aaa	ccc	tac	ctc	gag	tat	ccc	caa	ctt	ctt	gag	atc	ctg	2256
Tyr	Val	Ile	Lys	Pro	Tyr	Leu	Glu	Tyr	Pro	Gln	Leu	Leu	Glu	Ile	Leu	
			740					745					750			
cag	tcc	atc	atc	cgg	ggc	gag	cct	cag	cgc	ggg	ctt	tta	cga	cag	gaa	2304
Gln	Ser	Ile	Ile	Arg	Gly	Glu	Pro	Gln	Arg	Gly	Leu	Leu	Arg	Gln	Glu	
		755					760					765				
acc	atc	aag	gtg	atg	ggc	atc	ctg	gga	gca	ctc	gat	ccc	tac	aaa	tat	2352
Thr	Ile	Lys	Val	Met	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	Tyr	
	770					775					780					
cag	cag	gtc	gaa	gat	cgc	gcg	ccg	cgc	aca	cag	aag	caa	acc	gaa	gca	2400
Gln	Gln	Val	Glu	Asp	Arg	Ala	Pro	Arg	Thr	Gln	Lys	Gln	Thr	Glu	Ala	
785				790						795					800	
acc	caa	ctc	act	gat	gtg	tcc	ctc	atg	atg	ggc	gga	cta	acc	cct	tca	2448
Thr	Gln	Leu	Thr	Asp	Val	Ser	Leu	Met	Met	Gly	Gly	Leu	Thr	Pro	Ser	
				805					810					815		
cag	gag	gac	tac	tac	cca	acc	gtt	gtt	att	aat	gcc	ctt	ctc	cag	atc	2496
Gln	Glu	Asp	Tyr	Tyr	Pro	Thr	Val	Val	Ile	Asn	Ala	Leu	Leu	Gln	Ile	
			820					825					830			
ctc	aaa	gac	cag	tcg	ttg	gtg	cag	tgg	cac	gga	aac	gtg	gtg	gat	gcc	2544
Leu	Lys	Asp	Gln	Ser	Leu	Val	Gln	Trp	His	Gly	Asn	Val	Val	Asp	Ala	
		835					840					845				
atc	atg	agc	atc	ttc	atc	acg	ctt	ggg	ctc	aag	tgt	gtc	cag	ttc	ctc	2592
Ile	Met	Ser	Ile	Phe	Ile	Thr	Leu	Gly	Leu	Lys	Cys	Val	Gln	Phe	Leu	
	850					855					860					
gac	cgt	gtg	gtg	cct	gcc	ttt	atc	gcc	gtg	atc	cgc	gcc	tcg	agc	caa	2640
Asp	Arg	Val	Val	Pro	Ala	Phe	Ile	Ala	Val	Ile	Arg	Ala	Ser	Ser	Gln	
865					870					875					880	
acg	cga	ctc	gac	ttc	tat	ttc	aac	cac	ctt	agt	agg	ctt	gtt	gga	att	2688
Thr	Arg	Leu	Asp	Phe	Tyr	Phe	Asn	His	Leu	Ser	Arg	Leu	Val	Gly	Ile	
				885					890					895		
gtc	cgt	cag	cat	agg	gtc	tac	ctc	ccg	gac	atc	atc	gag	gtt	ctc		2736
Val	Arg	Gln	His	Ile	Arg	Val	Tyr	Leu	Pro	Asp	Ile	Ile	Glu	Val	Leu	
			900					905					910			
cag	gag	tat	tgg	gac	acg	aca	tat	tcg	ctc	cag	acc	acc	atc	atg	tcg	2784
Gln	Glu	Tyr	Trp	Asp	Thr	Thr	Tyr	Ser	Leu	Gln	Thr	Thr	Ile	Met	Ser	
		915					920					925				
ttg	atc	gag	tcc	att	gca	cgc	tcc	cta	gag	ggc	gag	ttc	aag	gtc	tac	2832
Leu	Ile	Glu	Ser	Ile	Ala	Arg	Ser	Leu	Glu	Gly	Glu	Phe	Lys	Val	Tyr	
						935					940					
ctt	gcc	agt	ctc	ctc	ccg	atg	atg	ctc	ggc	ttg	ctg	gaa	aag	gac	acc	2880
Leu	Ala	Ser	Leu	Leu	Pro	Met	Met	Leu	Gly	Leu	Leu	Glu	Lys	Asp	Thr	
945					950					955					960	
acc	acc	aag	cgg	caa	ccg	acc	gaa	aag	atc	ttt	cat	gct	ttc	cta	gtg	2928
Thr	Thr	Lys	Arg	Gln	Pro	Thr	Glu	Lys	Ile	Phe	His	Ala	Phe	Leu	Val	
				965						970				975		
ttc	ggc	tca	agc	gcc	gag	gag	tat	atg	cac	ctc	atc	atc	ccc	gtg	ttg	2976
Phe	Gly	Ser	Ser	Ala	Glu	Glu	Tyr	Met	His	Leu	Ile	Ile	Pro	Val	Leu	
			980					985					990			
gta	cgt	ctc	ttc	gac	aac	tcg	gcc	caa	ccc	atg	ttt	ctg	cgc	aag	tct	3024
Val	Arg	Leu	Phe	Asp	Asn	Ser	Ala	Gln	Pro	Met	Phe	Leu	Arg	Lys	Ser	
			995				1000					1005				
gcc	att	gaa	acg	att	ggc	aag	ctc	tcg	agc	atg	gtg	aat	ctc	aac	gac	3072
Ala	Ile	Glu	Thr	Ile	Gly	Lys	Leu	Ser	Ser	Met	Val	Asn	Leu	Asn	Asp	
						1015					1020					
tat	gcg	tcc	aaa	atc	atc	cac	ccc	ctc	acc	cgg	gtc	ctt	gcc	agc	cac	3120
Tyr	Ala	Ser	Lys	Ile	Ile	His	Pro	Leu	Thr	Arg	Val	Leu	Ala	Ser	His	
						1030				1035					1040	
gaa	cca	agt	cta	aga	gtg	gct	gcc	ctc	gac	acg	cta	tgt	gcc	ctc	atg	3168
Glu	Pro	Ser	Leu	Arg	Val	Ala	Ala	Leu	Asp	Thr	Leu	Cys	Ala	Leu	Met	

## PhoenixTemp32470.tmp.txt

ttg	cag	ctg	ggg	cgt	gat	tat	ttg	cac	ttt	gaa	cac	acc	gtc	cac	aaa	3216
Leu	Gln	Leu	Gly	Arg	Asp	Tyr	Leu	His	Phe	Glu	His	Thr	Val	His	Lys	
acc	atc	tca	aca	tac	ggc	ctc	caa	cac	tcc	aac	tat	gac	aag	gcc	gtc	3264
Thr	Ile	Ser	Thr	Tyr	Gly	Leu	Gln	His	Ser	Asn	Tyr	Asp	Lys	Ala	Val	
gaa	aag	ctc	aag	aaa	ggg	gaa	aca	tta	ccg	cct	aac	ctc	gcg	ccg	cgc	3312
Glu	Lys	Leu	Lys	Lys	Gly	Glu	Thr	Leu	Pro	Pro	Asn	Leu	Ala	Pro	Arg	
ttc	gag	gac	aat	gca	gtc	gag	ctt	cat	gcc	tct	gaa	aac	agc	ccg	ccc	3360
Phe	Glu	Asp	Asn	Ala	Val	Glu	Leu	His	Ala	Ser	Glu	Asn	Ser	Pro	Pro	
aag	aag	ttg	gat	ctc	aac	ccc	atg	cat	tta	cgg	caa	gcc	tgg	gaa	acc	3408
Lys	Lys	Leu	Asp	Leu	Asn	Pro	Met	His	Leu	Arg	Gln	Ala	Trp	Glu	Thr	
aag	ggt	aag	tct	act	aaa	gac	gac	tgg	cac	gag	tgg	ttc	cgc	aag	ttt	3456
Lys	Gly	Lys	Ser	Thr	Lys	Asp	Asp	Trp	His	Glu	Trp	Phe	Arg	Lys	Phe	
agc	acg	acg	tta	ctt	tct	gag	tcc	ccg	aat	cac	tca	ctc	cga	gct	tgc	3504
Ser	Thr	Thr	Leu	Leu	Ser	Glu	Ser	Pro	Asn	His	Ser	Leu	Arg	Ala	Cys	
gcc	agt	ttg	gca	agc	act	tat	cag	cca	ctg	gca	agg	gag	ctc	ttc	aac	3552
Ala	Ser	Leu	Ala	Ser	Thr	Tyr	Gln	Pro	Leu	Ala	Arg	Glu	Leu	Phe	Asn	
tct	gcc	ttc	gtc	tca	tgc	tgg	agc	gag	ctg	tac	gaa	caa	ttt	cag	gag	3600
Ser	Ala	Phe	Val	Ser	Cys	Trp	Ser	Glu	Leu	Tyr	Glu	Gln	Phe	Gln	Glu	
gaa	ctg	atc	acc	aac	atc	gaa	aac	aca	atc	aaa	tcc	gag	aat	gtg	cct	3648
Glu	Leu	Ile	Thr	Asn	Ile	Glu	Asn	Thr	Ile	Lys	Ser	Glu	Asn	Val	Pro	
cct	gat	ctt	ctg	ggc	ctt	ttg	ctg	aac	ctt	gcc	gag	ttc	atg	gaa	cat	3696
Pro	Asp	Leu	Leu	Gly	Leu	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	
gat	gac	aag	gcc	cta	cca	atc	gac	att	cga	acc	ttg	gga	cgt	gag	gcg	3744
Asp	Asp	Lys	Ala	Leu	Pro	Ile	Asp	Ile	Arg	Thr	Leu	Gly	Arg	Glu	Ala	
gca	aga	tgt	cac	gcc	tat	gcc	aaa	gcg	ctg	cat	tac	aaa	gaa	ctc	gag	3792
Ala	Arg	Cys	His	Ala	Tyr	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu	
ttt	ctt	cag	gac	cac	aac	agt	cac	gcg	gtc	gaa	gcc	ctg	att	gtg	att	3840
Phe	Leu	Gln	Asp	His	Asn	Ser	His	Ala	Val	Glu	Ala	Leu	Ile	Val	Ile	
aac	aat	cag	ttg	cag	cag	tcc	gat	gcc	gcc	att	ggt	atc	ttg	act	aag	3888
Asn	Asn	Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile	Gly	Ile	Leu	Thr	Lys	
gtg	aag	gcg	tac	aag	gac	ggg	atc	acg	ctg	cgg	gaa	agc	tgg	ttc	gag	3936
Val	Lys	Ala	Tyr	Lys	Asp	Gly	Ile	Thr	Leu	Arg	Glu	Ser	Trp	Phe	Glu	
aag	ctg	gaa	cgc	tgg	gat	gag	gcg	ctt	aac	ttt	tac	tgc	caa	cgc	gaa	3984
Lys	Leu	Glu	Arg	Trp	Asp	Glu	Ala	Leu	Asn	Phe	Tyr	Cys	Gln	Arg	Glu	
cgc	gag	ctt	ccg	cct	gac	cag	ccc	aca	ccg	gtc	gac	att	gtc	atg	ggc	4032
Arg	Glu	Leu	Pro	Pro	Asp	Gln	Pro	Thr	Pro	Val	Asp	Ile	Val	Met	Gly	
aag	atg	cgt	tgc	tac	cat	gcg	ctg	ggt	gag	tgg	gat	tgc	cta	gcc	tgc	4080
Lys	Met	Arg	Cys	Tyr	His	Ala	Leu	Gly	Glu	Trp	Asp	Ser	Leu	Ala	Ser	
ctg	gct	ggc	aag	aca	tgg	tca	aac	tcg	gca	cca	gag	gtt	caa	cgc	atg	4128
Leu	Ala	Gly	Lys	Thr	Trp	Ser	Asn	Ser	Ala	Pro	Glu	Val	Gln	Arg	Met	
atc	gca	ggc	ctt	gcc	acc	acg	gct	gcc	tgg	ggg	ctc	ggg	aaa	tgg	gac	4176
Ile	Ala	Gly	Leu	Ala	Thr	Thr	Ala	Ala	Trp	Gly	Leu	Gly	Lys	Trp	Asp	
tct	atg	gat	aac	tac	ctg	cag	tct	atg	aaa	cga	ttc	tca	cca	gat	cgc	4224
Ser	Met	Asp	Asn	Tyr	Leu	Gln	Ser	Met	Lys	Arg	Phe	Ser	Pro	Asp	Arg	
gcc	ttc	ttc	ggc	gcc	atc	tta	gcc	ctc	cac	cgc	aat	cag	ttc	cga	gaa	4272
Ala	Phe	Phe	Gly	Ala	Ile	Leu	Ala	Leu	His	Arg	Asn	Gln	Phe	Arg	Glu	



## PhoenixTemp32470.tmp.txt

1410  
 gcc ctg ggc tgc atc gac 1415  
 Ala Leu Gly Cys Ile Asp Gln  
 1425  
 agc gcc ctc gtg agc gaa tcc tac aac agg gca tac caa gtt gtt gtg 1435 1440  
 Ser Ala Leu Val Ser Glu Ser Tyr Asn Arg Ala Tyr Gln Val Val Val  
 1445  
 cgc gtt cag atg ctt gca gag ttg gaa gaa ttg atc atc tac aag cag 1455  
 Arg Val Gln Met Leu Ala Glu Leu Glu Glu Leu Ile Ile Tyr Lys Gln  
 1460  
 tgc gat gct gaa aag caa gcc agt ttg cgg gca aca tgg gag act cgt 1465 1470  
 Cys Asp Ala Glu Lys Gln Ala Ser Leu Arg Ala Thr Trp Glu Thr Arg  
 1475  
 ctc aag ggg tgc cag cga aac gtt gag gta tgg cag cgc atg ctg cga 1485  
 Leu Lys Gly Cys Gln Arg Asn Val Glu Val Trp Gln Arg Met Leu Arg  
 1490  
 ctc cgg tcg ctc gtg ctc acg cca cca gag aac atg cac atg tgg act 1500  
 Leu Arg Ser Leu Val Thr Pro Pro Glu Asn Met His Met Trp Thr  
 1505  
 aag ttc gcc aac ttg tgc cgc aag tct gga cgg atg ggt ttg gcg gag 1515 1520  
 Lys Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg Met Gly Leu Ala Glu  
 1525  
 aag tca ctg aga cag ctt atc ggg tcg gat gtg ccg ctg gac aca gtg 1530 1535  
 Lys Ser Leu Arg Gln Leu Ile Gly Ser Asp Val Pro Leu Asp Thr Val  
 1540  
 atc cct cac tgg cac gac cgc ccc atg gac ccc gat gcc gag aga ctt 1545 1550  
 Ile Pro His Trp His Asp Arg Pro Met Asp Pro Asp Ala Glu Arg Leu  
 1555  
 gcg tct ccg gtt ctg tat gca gta ctc aag tac cag tgg gag gtc ggt 1560 1565  
 Ala Ser Pro Val Leu Tyr Ala Val Leu Lys Tyr Gln Trp Glu Val Gly  
 1570  
 ttg cag ccg gcg atg cga aac act gac cga acc atc gcc gag aga acg 1575 1580  
 Leu Gln Pro Ala Met Arg Asn Thr Asp Arg Thr Ile Ala Glu Arg Thr  
 1585  
 ctg tac tgc ctt cgc aag ttc act gac gag acg gcc cac agg gta gag 1590 1600  
 Leu Tyr Cys Leu Arg Lys Phe Thr Asp Glu Thr Ala His Arg Val Glu  
 1605  
 agc gca aga cac caa ata gcc gct tcc acc cag gcc ggt aac ggt gca 1610 1615  
 Ser Ala Arg His Gln Ile Ala Ala Ser Thr Gln Ala Gly Asn Gly Ala  
 1620  
 att gac ggc tta cat cag gcc tct acc ttt tcc gag ttc gac gag gcg 1625 1630  
 Ile Asp Gly Leu His Gln Ala Ser Thr Phe Ser Glu Phe Asp Glu Ala  
 1635  
 gca tta ctc agc ccg gat gtg cag cgt cac tgg aca gaa caa acg gtg 1640 1645  
 Ala Leu Leu Ser Pro Asp Val Gln Arg His Trp Thr Glu Gln Thr Val  
 1650  
 ctg ctt gcc aag tgc tac ctc cgc cag ggc gat tgg atg att gcc ctg 1655 1660  
 Leu Leu Ala Lys Cys Tyr Leu Arg Gln Gly Asp Trp Met Ile Ala Leu  
 1665  
 aac aag gac gat tgg caa tac aca cgg cgc aaa gac atc ctc tcc tgc 1670 1675 1680  
 Asn Lys Asp Asp Trp Gln Tyr Thr Arg Arg Lys Asp Ile Leu Ser Cys  
 1685  
 tac tac aag gcc acc tat tat cat cgc cac tgg tac aag gcc tgg cat 1690 1695  
 Tyr Tyr Lys Ala Thr Tyr Tyr His Arg His Trp Tyr Lys Ala Trp His  
 1700  
 gcc tgg gcc ttg gcc aac ttc gaa gtg gtg cag gcc ctt gga tct cgc 1705 1710  
 Ala Trp Ala Leu Ala Asn Phe Glu Val Val Gln Ala Leu Gly Ser Arg  
 1715  
 aag gac cta gac agc ggc gtc atc atc cag tat gcc gtg cct gct gtg 1720 1725  
 Lys Asp Leu Asp Ser Gly Val Ile Ile Gln Tyr Ala Val Pro Ala Val  
 1730  
 cat ggt ttt ttc gag tct att tcg ctc tct tcg gga agc tct ctg caa 1735 1740  
 His Gly Phe Phe Glu Ser Ile Ser Leu Ser Ser Gly Ser Ser Leu Gln  
 1745  
 gac acg ctg cgt ttg ctc aca ctc tgg ctt aca tat ggt ggc aac ccc 1750 1755 1760  
 Asp Thr Leu Arg Leu Leu Thr Leu Trp Leu Thr Tyr Gly Gly Asn Pro  
 1765  
 gat gtc gcc agt act gtg aca gag ggc ttc agt cgt gtc agc gtt gat 1770 1775  
 Asp Val Ala Ser Thr Val Thr Glu Gly Phe Ser Arg Val Ser Val Asp

## PhoenixTemp32470.tmp.txt

1780	1785	1790	
acc tgg ctt gtt gtc att cca cag ttg atc gct cgc att acc caa cct			5424
Thr Trp Leu Glu Val Ile Pro Gln Leu Ile Ala Arg Ile Thr Gln Pro			
1795	1800	1805	
aac aag aag gtt cag gcg tcg atc cat gct ctg ttg tct gat gtc ggt			5472
Asn Lys Lys Val Gln Ala Ser Ile His Ala Leu Leu Ser Asp Val Gly			
1810	1815	1820	
cgt gcg cac ccc cag gcg tta gtc tac ccc ttg acg gtt gcc atg aag			5520
Arg Ala His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Met Lys			
1825	1830	1835	
tcg cga caa agc acg gcg agg tcc aag acc gcc agc ctc att atg gag			5568
Ser Arg Gln Ser Thr Arg Arg Ser Lys Thr Ala Ser Leu Ile Met Glu			
1845	1850	1855	
aca atc cgt cag cac agt aat aag ctg gag cag gca gag acg gtg			5616
Thr Ile Arg Gln His Ser Asn Lys Leu Val Glu Gln Ala Glu Thr Val			
1860	1865	1870	
agc gcg gag ctt att agg acc gcg gtc ctc ttg cac gag cta ttg cat			5664
Ser Arg Glu Leu Ile Arg Thr Ala Val Leu Trp His Glu Leu Trp His			
1875	1880	1885	
gag ggt ctg gag gag gct tcc cgg ctc tac ttt ggc gat cac aat atc			5712
Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Asp His Asn Ile			
1890	1895	1900	
aag gga atg ttt gat gcc ctc gag ccc ctt cac gag ctg ctc gaa aag			5760
Lys Gly Met Phe Asp Ala Leu Glu Pro Leu His Asp Leu Leu Glu Lys			
1905	1910	1915	
ggc cct caa acc ctc cgg gag gtt tca ttt aca cag acg ttc ggc cgt			5808
Gly Pro Gln Thr Leu Arg Glu Val Ser Phe Thr Gln Thr Phe Gly Arg			
1925	1930	1935	
gat ctg ggt gag gct cgc gag tgg tgc cgg caa tat cgc gaa aca gag			5856
Asp Leu Gly Glu Ala Arg Glu Trp Cys Arg Gln Tyr Arg Glu Thr Glu			
1940	1945	1950	
gac gtc aat gac ctg aac caa gcc tgg gac ttg tac tac cag gtt ttc			5904
Asp Val Asn Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr Gln Val Phe			
1955	1960	1965	
cgt cgt atc agc cga cag ctt cca cag atg acc aca ctg gag ctg acc			5952
Arg Arg Ile Ser Arg Gln Leu Pro Gln Met Thr Thr Leu Glu Leu Thr			
1970	1975	1980	
tac tgc tct ccg gac ctg ctc cag gcc agg gac ctg gag ctc gcg gtg			6000
Tyr Cys Ser Pro Asp Leu Leu Gln Ala Arg Asp Leu Glu Leu Ala Val			
1985	1990	1995	
ccg gga acg tat cgc agt ggc caa gag gtt gtc cga atc atg tct ttt			6048
Pro Gly Thr Tyr Arg Ser Gly Gln Glu Val Val Arg Ile Met Ser Phe			
2005	2010	2015	
gac ggc acc ttt acg gtc atc agc agc aag caa cgt ccg cga aaa ctt			6096
Asp Gly Thr Phe Thr Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Leu			
2020	2025	2030	
gac att gtt gga agt gac ggt aag acg tac act ttc ttg ctc aaa ggt			6144
Asp Ile Val Gly Ser Asp Gly Lys Thr Tyr Thr Phe Leu Leu Lys Gly			
2035	2040	2045	
cat gag gac atc agg cag gat gag cgt gtc atg cag ctc ttc ggc ctc			6192
His Glu Asp Ile Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly Leu			
2050	2055	2060	
tgc aac acg ctc ttg gcc aac gac tcg gaa tgc tac aag cgc cat ctc			6240
Cys Asn Thr Leu Leu Ala Asn Asp Ser Glu Cys Tyr Lys Arg His Leu			
2065	2070	2075	
aac atc caa cgt tac ccg gct att ccg ctg tcg cag aat tcg ggt ctt			6288
Asn Ile Gln Arg Tyr Pro Ala Ile Pro Leu Ser Gln Asn Ser Gly Leu			
2085	2090	2095	
ctc ggc tgg gtc cca gac agc gac acg atc cac cag ctt atc cgt gat			6336
Leu Gly Trp Val Pro Asp Ser Asp Thr Ile His Gln Leu Ile Arg Asp			
2100	2105	2110	
tat cgg gag tca aga aag att ctc ctt aac atc gag cat cgg atc atg			6384
Tyr Arg Glu Ser Arg Lys Ile Leu Leu Asn Ile Glu His Arg Ile Met			
2115	2120	2125	
ctt cag atg gcg ccc gac tac gat aac ctc aca ctc atg cag aag gtg			6432
Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Met Gln Lys Val			
2130	2135	2140	
gaa gtg ttt ggg tat gcc ctt gat aac aca acg ggt cag gat ctg tac			6480
Glu Val Phe Gly Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu Tyr			

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2145 2150 2155 2160  
 cgg gtc tta tgg ctg aag agc tcc gaa gcc tgg tta gac agg 6528  
 Arg Val Leu Trp Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Asp Arg  
 2165 2170 2175  
 cga act aat tac acg cgt tcc ctc ggc gtc atg tgc atg gtc ggg tac 6576  
 Arg Thr Asn Tyr Thr Arg Ser Leu Gly Val Met Ser Met Val Gly Tyr  
 2180 2185 2190  
 atc ctg ggc ttg ggc gac cgt cat ccg agc aac ctg atg ctg gac cgc 6624  
 Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg  
 2195 2200 2205  
 atc acg ggc aag atc att cac att gac ttt ggc gac tgc ttt gag gtg 6672  
 Ile Thr Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys Phe Glu Val  
 2210 2215 2220  
 gcg atg aag cgt gag aag tac ccg gag cgg gtg cct ttt agg ctt acc 6720  
 Ala Met Lys Arg Glu Lys Tyr Pro Glu Arg Val Pro Phe Arg Leu Thr  
 2225 2230 2235 2240  
 cgc atg ctt act tat gcc atg gag gtt agc aac atc gag ggc agc ttc 6768  
 Arg Met Leu Thr Tyr Ala Met Glu Val Ser Asn Ile Glu Gly Ser Phe  
 2245 2250 2255  
 cgg att aca tgc gaa cac gtg atg aga gtc ttg cgt gac aat aag gag 6816  
 Arg Ile Thr Cys Glu His Val Met Arg Val Leu Arg Asp Asn Lys Glu  
 2260 2265 2270  
 agc gtt atg gcc gtt ctc gag gct ttc att cac gac ccg cta ctc acg 6864  
 Ser Val Met Ala Val Leu Glu Ala Phe Ile His Asp Pro Leu Leu Thr  
 2275 2280 2285  
 tgg cgt ctt acc aac ccg gcc agt ccc gct gga cca cat ttc aat tgc 6912  
 Trp Arg Leu Thr Asn Pro Ala Ser Pro Ala Gly Pro His Phe Asn Ser  
 2290 2295 2300  
 gag aga gag caa gct att gcc ggg ccc gag gca gca cgg gtg cgt cgg 6960  
 Glu Arg Glu Gln Ala Ile Ala Gly Pro Gln Ala Ala Arg Val Arg Arg  
 2305 2310 2315 2320  
 cct tcc ata ctg gag gct ccg atg gcc ccg act gag ttc ctg gca gct 7008  
 Pro Ser Ile Leu Glu Ala Pro Met Ala Pro Thr Glu Phe Leu Ala Ala  
 2325 2330 2335  
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 Gln Ala Gly Pro Glu Gly Leu Thr Gly Ala Arg Ser Arg Ala Arg Thr  
 2340 2345 2350  
 aac tca tcc gcc gcg ccg ctc cca agc ata acc aat gac ggt gtc cat 7104  
 Asn Ser Ser Ala Ala Pro Leu Pro Ser Ile Thr Asn Asp Gly Val His  
 2355 2360 2365  
 ggc ccc atc gag att gcg gag gtg caa aat gcg cgg gct gtc gaa gtg 7152  
 Gly Pro Ile Glu Ile Ala Glu Val Gln Asn Ala Arg Ala Val Glu Val  
 2370 2375 2380  
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 Leu Asp Arg Val Ser Gln Lys Leu Thr Gly Arg Asp Phe Lys Pro Asn  
 2385 2390 2400  
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 Glu Glu Leu Leu Val Lys Asp Gln Val Asn Lys Leu Ile Ile Glu Ala  
 2405 2410 2415  
 acc aag ctt gag aat ctc tgc cag cac tat ata ggg tgg tgc agc ttt 7296  
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 Trp

<210> 2561  
 <211> 2433  
 <212> PRT  
 <213> Podospora anserina

<400> 2561  
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 Lys Glu Ile Arg Asn Arg Asn Tyr Asp Glu Asn Gln Arg Lys Arg Ala  
 20 25 30  
 Ala Arg Gln Ile Arg Asp Leu Val Asn Ala Ala Lys Gln Glu Met Gly  
 35 40 45  
 Ala Glu Gln Phe Gln Arg Phe Phe Asp Asn Val Asn Gln Arg Thr Asn  
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50	55	60													
Leu 65	Ile 70	Gln 75	Gly 80	Pro 85	Asp 90	Thr 95	Tyr 100	Asp 105	Arg 110	Leu 115	Gly 120	Gly 125	Ile 130	Tyr 135	
Ile 140	Leu 145	Asp 150	Ala 155	Leu 160	Val 165	Asp 170	Phe 175	Asp 180	Gly 185	Ile 190	Glu 195	Pro 200	Ala 205	Leu 210	Lys 215
Tyr 220	Thr 225	Arg 230	Phe 235	Gln 240	Asn 245	Tyr 250	Ile 255	Gly 260	Ser 265	Ile 270	Leu 275	Arg 280	Gly 285	Arg 290	Asp 295
Ile 300	Asn 305	Ser 310	Met 315	Gln 320	Pro 325	Ala 330	Ala 335	Val 340	Val 345	Leu 350	Gly 355	Lys 360	Leu 365	Cys 370	Lys 375
Pro 380	Gly 385	Gly 390	Ser 395	Leu 400	Ile 405	Ser 410	Glu 415	Leu 420	Val 425	Asp 430	Ser 435	Glu 440	Arg 445	Arg 450	Tyr 455
Ala 460	Leu 465	Glu 470	Trp 475	Leu 480	Gln 485	Ser 490	Asp 495	Arg 500	Ile 505	Glu 510	Arg 515	Glu 520	Arg 525	Arg 530	Tyr 535
Ala 540	Val 545	Leu 550	Val 555	Leu 560	Arg 565	Glu 570	Ala 575	Arg 580	Asn 585	Thr 590	Pro 595	Thr 600	Thr 605	Leu 610	Met 615
Tyr 620	Asn 625	Tyr 630	Val 635	Gly 640	Tyr 645	Val 650	Phe 655	Glu 660	Ile 665	Trp 670	Ile 675	Gly 680	Leu 685	Arg 690	Leu 695
Asp 700	Ser 705	Arg 710	Leu 715	Ile 720	Ile 725	Arg 730	Glu 735	Arg 740	Asp 745	Gln 750	Glu 755	Leu 760	Lys 765	Lys 770	Asp 775
Cys 780	Phe 785	Lys 790	Ile 795	Ile 800	Arg 805	Glu 810	Arg 815	Asp 820	Gln 825	Glu 830	Leu 835	Lys 840	Lys 845	Asp 850	Trp 855
Met 860	Asp 865	Lys 870	Met 875	Leu 880	Asn 885	Glu 890	Ala 895	Ile 900	Lys 905	Gly 910	Leu 915	Lys 920	Ile 925	Asn 930	Thr 935
Val 940	Glu 945	Phe 950	Ile 955	His 960	Ala 965	Ser 970	Leu 975	Leu 980	Val 985	Leu 990	Lys 995	Glu 1000	Leu 1005	Leu 1010	Glu 1015
Gln 1020	Gly 1025	Gly 1030	Met 1035	Tyr 1040	Met 1045	Gln 1050	Ala 1055	His 1060	Tyr 1065	Gln 1070	Glu 1075	Ala 1080	Cys 1085	Glu 1090	Ile 1095
Val 1100	Phe 1105	Arg 1110	His 1115	Lys 1120	Asp 1125	Ala 1130	Arg 1135	Asp 1140	Pro 1145	Ala 1150	Ile 1155	Arg 1160	Lys 1165	Thr 1170	Val 1175
Val 1180	Leu 1185	Ile 1190	Pro 1195	Asp 1200	Leu 1205	Ala 1210	Asn 1215	Tyr 1220	Ala 1225	Pro 1230	Thr 1235	Glu 1240	Phe 1245	Ser 1250	
Ala 1255	Ser 1260	Tyr 1265	Leu 1270	His 1275	Met 1280	Phe 1285	Met 1290	Val 1295	Tyr 1300	Leu 1305	Gly 1310	Gly 1315	Met 1320	Leu 1325	Lys 1330
Lys 1335	Asp 1340	Lys 1345	Asp 1350	Arg 1355	Asn 1360	Asp 1365	Ala 1370	Phe 1375	Leu 1380	Ala 1385	Ile 1390	Gly 1395	Asn 1400	Ile 1405	Ala 1410
Asn 1415	Ser 1420	Val 1425	Lys 1430	Ser 1435	Ala 1440	Ile 1445	Thr 1450	Pro 1455	Tyr 1460	Leu 1465	Asp 1470	Gly 1475	Val 1480	Leu 1485	Ile 1490
His 1495	Ile 1500	Arg 1505	Glu 1510	Gly 1515	Leu 1520	Ser 1525	Val 1530	Gln 1535	Ser 1540	Arg 1545	Lys 1550	Arg 1555	Ser 1560	Ser 1565	Val 1570
Asp 1575	Pro 1580	Val 1585	Phe 1590	Asp 1595	Cys 1600	Ile 1605	Ser 1610	Arg 1615	Leu 1620	Ala 1625	Val 1630	Ala 1635	Val 1640	Gly 1645	Gln 1650
Thr 1655	Met 1660	Ser 1665	Lys 1670	Tyr 1675	Met 1680	Glu 1685	Ala 1690	Leu 1695	Leu 1700	Asp 1705	Pro 1710	Ile 1715	Phe 1720	Ala 1725	Cys 1730
Glu 1735	Leu 1740	Thr 1745	Pro 1750	Lys 1755	Leu 1760	Thr 1765	Gln 1770	Ala 1775	Leu 1780	Val 1785	Asp 1790	Met 1795	Ala 1800	Phe 1805	Tyr 1810
Ile 1815	Pro 1820	Pro 1825	Val 1830	Lys 1835	Ala 1840	Thr 1845	Ile 1850	Gln 1855	Glu 1860	Arg 1865	Leu 1870	Leu 1875	Asp 1880	Met 1885	Leu 1890
Ser 1895	Lys 1900	Val 1905	Leu 1910	Cys 1915	Gly 1920	Glu 1925	Pro 1930	Phe 1935	Arg 1940	Pro 1945	Leu 1950	Gly 1955	Ala 1960	Pro 1965	His 1970
Pro 1975	Asn 1980	Ser 1985	Leu 1990	Ala 1995	Ser 2000	Ile 2005	Pro 2010	His 2015	Ile 2020	Pro 2025	Lys 2030	Asp 2035	Pro 2040	Lys 2045	Asp 2050
Pro 2055	Leu 2060	Ala 2065	His 2070	Gln 2075	Arg 2080	Thr 2085	Lys 2090	Asp 2095	Glu 2100	Val 2105	Lys 2110	Leu 2115	Ala 2120	Leu 2125	Asn 2130
Thr 2135	Leu 2140	Gly 2145	Ser 2150	Phe 2155	Asp 2160	Phe 2165	Gln 2170	Gly 2175	His 2180	Val 2185	Leu 2190	Asn 2195	Glu 2200	Phe 2205	Val 2210
Arg 2215	Asp 2220	Val 2225	Ala 2230	Ile 2235	Lys 2240	Tyr 2245	Val 2250	Glu 2255	Asp 2260	Asp 2265	Asp 2270	Pro 2275	Glu 2280	Thr 2285	Arg 2290
Glu 2295	Ala 2300	Ala 2305	Ala 2310	Leu 2315	Thr 2320	Cys 2325	Cys 2330	Gln 2335	Leu 2340	Tyr 2345	Val 2350	Arg 2355	Asp 2360	Pro 2365	Ile 2370
Val 2375	Asn 2380	Gln 2385	Thr 2390	Ser 2395	Tyr 2400	His 2405	Ala 2410	Leu 2415	Gln 2420	Val 2425	Val 2430	Ala 2435	Asp 2440	Val 2445	Ile 2450
Glu 2455	Arg 2460	Leu 2465	Leu 2470	Thr 2475	Val 2480	Gly 2485	Val 2490	Ser 2495	Asp 2500	Pro 2505	Glu 2510	Pro 2515	Lys 2520	Ile 2525	Arg 2530
Gln 2535	Thr 2540	Leu 2545	Leu 2550	Ala 2555	Ala 2560	Leu 2565	Asp 2570	Glu 2575	Arg 2580	Phe 2585	Asp 2590	Gln 2595	His 2600	Leu 2605	Ala 2610
Lys 2615	Ala 2620	Glu 2625	Asn 2630	Ile 2635	Arg 2640	Thr 2645	Leu 2650	Phe 2655	Phe 2660	Ala 2665	Leu 2670	His 2675	Asp 2680	Glu 2685	Gln 2690
Phe 2695	Ala 2700	Val 2705	Arg 2710	Glu 2715	Val 2720	Ala 2725	Val 2730	Ser 2735	Ile 2740	Ile 2745	Gly 2750	Arg 2755	Leu 2760	Ala 2765	Arg 2770

## PhoenixTemp32470.tmp.txt

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 Met Leu Thr Glu Leu Glu Tyr Thr Asp Val Ala Arg Ser Lys Glu Glu  
 625 630 635 640  
 Ser Ser Arg Leu Leu Ser Leu Leu Thr Arg His Ala Gln Glu Leu Val  
 645 650 655  
 Lys Pro Tyr Val Asn Ser Ile Thr Gln Val Leu Leu Pro Lys Ala Arg  
 660 665 670  
 Asp Pro Ile Pro Ser Val Ala Ala Thr Val Leu Gln Ala Leu Gly Glu  
 675 680 685  
 Leu Cys Thr Val Gly Gly Glu Glu Met Leu Asn Tyr Lys Lys Asp Leu  
 690 695 700  
 Met Pro Ile Ile Ile Asp Ala Leu Gln Asp Gln Ser Ala Pro Val Lys  
 705 710 715 720  
 Arg Glu Ala Ala Leu His Thr Leu Gly Gln Leu Ala Ser Asn Thr Gly  
 725 730 735  
 Tyr Val Ile Lys Pro Tyr Leu Glu Tyr Pro Gln Leu Leu Glu Ile Leu  
 740 745 750  
 Gln Ser Ile Ile Arg Gly Glu Pro Gln Arg Gly Leu Leu Arg Gln Glu  
 755 760 765  
 Thr Ile Lys Val Met Gly Ile Leu Gly Ala Leu Asp Pro Tyr Lys Tyr  
 770 775 780  
 Gln Gln Val Glu Asp Arg Ala Pro Arg Thr Gln Lys Gln Thr Glu Ala  
 785 790 795 800  
 Thr Gln Leu Thr Asp Val Ser Leu Met Met Gly Gly Leu Thr Pro Ser  
 805 810 815  
 Gln Glu Asp Tyr Tyr Pro Thr Val Val Ile Asn Ala Leu Leu Gln Ile  
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 Leu Lys Asp Gln Ser Leu Val Gln Trp His Gly Asn Val Val Asp Ala  
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 Ile Met Ser Ile Phe Ile Thr Leu Gly Leu Lys Cys Val Gln Phe Leu  
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 Thr Arg Leu Asp Phe Tyr Phe Asn His Leu Ser Arg Leu Val Gly Ile  
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 Thr Thr Lys Arg Gln Pro Thr Glu Lys Ile Phe His Ala Phe Leu Val  
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 Glu Lys Leu Lys Lys Gly Glu Thr Leu Pro Pro Asn Leu Ala Pro Arg  
 1090 1095 1100  
 Phe Glu Asp Asn Ala Val Glu Leu His Ala Ser Glu Asn Ser Pro Pro  
 1105 1110 1115 1120  
 Lys Lys Leu Asp Leu Asn Pro Met His Leu Arg Gln Ala Trp Glu Thr  
 1125 1130 1135  
 Lys Gly Lys Ser Thr Lys Asp Asp Trp His Glu Trp Phe Arg Lys Phe  
 1140 1145 1150  
 Ser Thr Thr Leu Leu Ser Glu Ser Pro Asn His Ser Leu Arg Ala Cys

## PhoenixTemp32470.tmp.txt

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 Ser Ala Phe Val Ser Cys Trp Ser Glu Leu Tyr Glu Gln Phe Gln Glu  
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 Glu Leu Ile Thr Asn Ile Glu Asn Thr Ile Lys Ser Glu Asn Val Pro  
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 Pro Asp Leu Leu Gly Leu Leu Leu Asn Leu Ala Glu Phe Met Glu His  
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 Phe Leu Gln Asp His Asn Ser His Ala Val Glu Ala Leu Ile Val Ile  
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 Val Lys Ala Tyr Lys Asp Gly Ile Thr Leu Arg Glu Ser Trp Phe Glu  
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 Lys Leu Glu Arg Trp Asp Glu Ala Leu Asn Phe Tyr Cys Gln Arg Glu  
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 1330 1335 1340  
 Lys Met Arg Cys Tyr His Ala Leu Gly Glu Trp Asp Ser Leu Ala Ser  
 1345 1350 1355 1360  
 Leu Ala Gly Lys Thr Trp Ser Asn Ser Ala Pro Glu Val Gln Arg Met  
 1365 1370 1375  
 Ile Ala Gly Leu Ala Thr Thr Ala Ala Trp Gly Leu Gly Lys Trp Asp  
 1380 1385 1390  
 Ser Met Asp Asn Tyr Leu Gln Ser Met Lys Arg Phe Ser Pro Asp Arg  
 1395 1400 1405  
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 Ala Leu Gly Cys Ile Asp Gln Ala Arg Glu Gly Leu Asp Thr Glu Leu  
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 1445 1450 1455  
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 Cys Asp Ala Glu Lys Gln Ala Ser Leu Arg Ala Thr Trp Glu Thr Arg  
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 Leu Lys Gly Cys Gln Arg Asn Val Glu Val Trp Gln Arg Met Leu Arg  
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 1585 1590 1595 1600  
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 Ser Ala Arg His Gln Ile Ala Ala Ser Thr Gln Ala Gly Asn Gly Ala  
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 1650 1655 1660  
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 Asn Lys Asp Asp Trp Gln Tyr Thr Arg Arg Lys Asp Ile Leu Ser Cys  
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 Tyr Tyr Lys Ala Thr Tyr Tyr His Arg His Trp Tyr Lys Ala Trp His  
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 Asp Thr Leu Arg Leu Thr Leu Trp Leu Thr Tyr Gly Gly Asn Pro  
 1765 1770 1775  
 Asp Val Ala Ser Thr Val Thr Glu Gly Phe Ser Arg Val Ser Val Asp  
 1780 1785 1790  
 Thr Trp Leu Glu Val Ile Pro Gln Leu Ile Ala Arg Ile Thr Gln Pro  
 1795 1800 1805  
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 Arg Ala His Pro Gln Ala Leu Val Tyr Pro Leu Thr Val Ala Met Lys  
 1825 1830 1835 1840  
 Ser Arg Gln Ser Thr Arg Arg Ser Lys Thr Ala Ser Leu Ile Met Glu  
 1845 1850 1855  
 Thr Ile Arg Gln His Ser Asn Lys Leu Val Glu Gln Ala Glu Thr Val  
 1860 1865 1870  
 Ser Arg Glu Leu Ile Arg Thr Ala Val Leu Trp His Glu Leu Trp His  
 1875 1880 1885  
 Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Asp His Asn Ile  
 1890 1895 1900  
 Lys Gly Met Phe Asp Ala Leu Glu Pro Leu His Asp Leu Leu Glu Lys  
 1905 1910 1915 1920  
 Gly Pro Gln Thr Leu Arg Glu Val Ser Phe Thr Gln Thr Phe Gly Arg  
 1925 1930 1935  
 Asp Leu Gly Glu Ala Arg Glu Trp Cys Arg Gln Tyr Arg Glu Thr Glu  
 1940 1945 1950  
 Asp Val Asn Asp Leu Asn Gln Ala Trp Asp Leu Tyr Tyr Gln Val Phe  
 1955 1960 1965  
 Arg Arg Ile Ser Arg Gln Leu Pro Gln Met Thr Thr Leu Glu Leu Thr  
 1970 1975 1980  
 Tyr Cys Ser Pro Asp Leu Leu Gln Ala Arg Asp Leu Glu Leu Ala Val  
 1985 1990 1995 2000  
 Pro Gly Thr Tyr Arg Ser Gly Gln Glu Val Val Arg Ile Met Ser Phe  
 2005 2010 2015  
 Asp Gly Thr Phe Thr Val Ile Ser Ser Lys Gln Arg Pro Arg Lys Leu  
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 2085 2090 2095  
 Leu Gly Trp Val Pro Asp Ser Asp Thr Ile His Gln Leu Ile Arg Asp  
 2100 2105 2110  
 Tyr Arg Glu Ser Arg Lys Ile Leu Leu Asn Ile Glu His Arg Ile Met  
 2115 2120 2125  
 Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Met Gln Lys Val  
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 Glu Val Phe Gly Tyr Ala Leu Asp Asn Thr Thr Gly Gln Asp Leu Tyr  
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 Arg Val Leu Trp Leu Lys Ser Lys Ser Ser Glu Ala Trp Leu Asp Arg  
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 Arg Thr Asn Tyr Thr Arg Ser Leu Gly Val Met Ser Met Val Gly Tyr  
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 Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg  
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 Ile Thr Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys Phe Glu Val  
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 2225 2230 2235 2240  
 Arg Met Leu Thr Tyr Ala Met Glu Val Ser Asn Ile Glu Gly Ser Phe  
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 Arg Ile Thr Cys Glu His Val Met Arg Val Leu Arg Asp Asn Lys Glu

## PhoenixTemp32470.tmp.txt

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 2305 2310 2315 2320  
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 cct agg cat cag agc cct ttc gag tcg tat gtg gac aac aca gat act 96  
 Pro Arg His Gln Ser Pro Phe Glu Ser Tyr Val Asp Asn Thr Asp Thr  
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 Ser Lys Gly Leu Glu Glu Thr Gly Ala Lys Gln Phe Arg His Ser Gly  
 35 40 45  
 cct tgg ctg gct gga cag acg gaa gcc gaa ttc agt gcc tac ctg aag 192  
 Pro Trp Leu Ala Gly Gln Thr Glu Ala Glu Phe Ser Ala Tyr Leu Lys  
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 Lys Val Arg Ser Asn Lys Pro Glu Leu Leu Gln Lys Leu Arg Gln Leu  
 65 70 75 80  
 ttc tcc gaa aag cga act gct gaa cgg aga aag caa gct caa gat aac 288  
 Phe Ser Glu Lys Arg Thr Ala Glu Arg Arg Lys Gln Ala Gln Asp Asn  
 85 90 95  
 gga gag gat ttg gag gcg ctt gag cct gta aag gtt acg gaa gag gag 336  
 Gly Glu Asp Leu Glu Ala Leu Glu Pro Val Lys Val Thr Glu Glu Glu  
 100 105 110  
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 Phe Gln Thr Tyr Leu Lys Ser Leu His Trp Pro Pro Glu Lys Phe Leu  
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 Glu Phe Tyr Asn Ala Val Ser Gln Arg Ile Ala Gln Leu Val Val Thr  
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## PhoenixTemp32470.tmp.txt

PhoenixTemp32470.tmp.txt																
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ctt	act	gcg	gag	ctt	gtt	gag	agt	gaa	ata	caa	tcg	gct	tta	gag	tgg	672
Leu	Thr	Ala	Glu	Leu	Val	Glu	Ser	Glu	Ile	Gln	Ser	Ala	Leu	Glu	Trp	
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Leu	Gln	Ser	Glu	Arg	Gln	Glu	Ser	Arg	Arg	Val	Ala	Ala	Val	Leu	Val	
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Ile	Arg	Glu	Leu	Ala	Lys	Gly	Ser	Pro	Thr	Leu	Leu	Tyr	Gly	Phe	Val	
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Pro	Gln	Ile	Phe	Glu	Leu	Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	Lys	Val	
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Val	Ile	Arg	Glu	Thr	Ala	Ser	Glu	Ala	Val	Arg	Glu	Cys	Phe	Glu	Ile	
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Phe	Met	Asn	Glu	His	Tyr	Arg	Asn	Ala	Cys	Glu	Ile	Val	Leu	Arg	Leu	
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His	Arg	Phe	Met	Val	Tyr	Leu	Gln	Ala	Gln	Leu	Lys	Arg	Asp	Lys	Glu	
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Arg	Asn	Glu	Ala	Phe	Ile	Ala	Ile	Gly	Lys	Ile	Ala	Asn	Ala	Val	Gly	
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Gly	Leu	Ala	Met	Lys	Ala	Arg	Asn	Arg	Ala	Gly	Val	Asn	Glu	Ala	Pro	
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Met	Phe	Glu	Cys	Ile	Ser	Met	Leu	Ser	Leu	Ala	Val	Gly	Pro	Ala	Leu	
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Gln	Ile	Lys	Pro	Thr	Ile	Gln	Glu	Lys	Leu	Leu	Asp	Met	Leu	Ser	Leu	
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His	Ser	Asp	Ala	Glu	Ile	Ala	Leu	Ala	Leu	His	Thr	Leu	Gly	Ser	Phe	

## PhoenixTemp32470.tmp.txt

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Asn	Tyr	Val	Glu	Asn	Asp	Asn	Ser	Glu	Ile	Arg	Lys	Ala	Ser	Ala	Leu					
aca	tgc	tgt	cag	cta	ttt	gtc	cac	gat	cca	att	atc	aat	cag	act	agt					
Thr	Cys	Cys	Gln	Leu	Phe	Val	His	Asp	Pro	Ile	Ile	Asn	Gln	Thr	Ser					
agt	cac	tca	ata	cag	ggt	ggt	agt	gaa	gtc	att	gac	aag	ctt	ctg	acg					
Ser	His	Ser	Ile	Gln	Val	Val	Ser	Glu	Val	Ile	Asp	Lys	Leu	Leu	Thr					
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## PhoenixTemp32470.tmp.txt

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 Ser Phe Gly Val Thr Met Gly Lys Met Arg Cys Leu His Ala Leu Gly  
 1410 1415 1420  
 gag tgg aaa ata tta tct gat ctc gcc caa gag aag tgg aat cag gcc 4320  
 Glu Trp Lys Ile Leu Ser Asp Leu Ala Gln Glu Lys Trp Asn Gln Ala  
 1425 1430 1435 1440  
 tca tta gaa cat cgg aga gcc att gct cct ctc gct gct gcg gct gca 4368  
 Ser Leu Glu His Arg Ala Ile Ala Pro Leu Ala Ala Ala Ala  
 1445 1450 1455  
 tgg ggt cgt ggt caa tgg gaa ttg atg gat tcc tac ctg ggt gtt atg 4416  
 Trp Gly Arg Gly Gln Trp Glu Leu Met Asp Ser Tyr Leu Gly Val Met  
 1460 1465 1470  
 aaa gaa cag tca ccc gac agg tca ttc ttt ggt gcc att ctt gcc att 4464  
 Lys Glu Gln Ser Pro Asp Arg Ser Phe Phe Gly Ala Ile Leu Ala Ile  
 1475 1480 1485  
 cat cgg aac cag ttc gag gag gca acg atg tat atc gag aaa gcg cgg 4512  
 His Arg Asn Gln Phe Glu Glu Ala Thr Met Tyr Ile Glu Lys Ala Arg  
 1490 1495 1500  
 aat gga ctt gac acc gaa ctt tca gcc ttg ctt ggt gaa tca tat aac 4560  
 Asn Gly Leu Asp Thr Glu Leu Ser Ala Leu Leu Gly Glu Ser Tyr Asn  
 1505 1510 1515 1520  
 cgt gct tac aat gtc gtc gtc cgc gtt cag atg ctc gct gaa ctc gag 4608  
 Arg Ala Tyr Asn Val Val Val Arg Val Gln Met Leu Ala Glu Leu Glu  
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 Glu Ile Ile Thr Tyr Lys Gln Asn Ile Gly Asp Pro Glu Lys Gln Asp  
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 Ser Met Arg Gln Thr Trp Asn Lys Arg Leu Leu Gly Cys Gln Gln Asn  
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 Val Glu Val Trp Gln Arg Met Leu Lys Val Arg Ala Leu Val Thr Ser  
 1575 1580 1585  
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 Pro Arg Glu Asn Leu Asp Met Trp Ile Lys Phe Ala Asn Leu Cys Arg  
 1590 1595 1600  
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 Lys Ser Asn Arg Met Gly Leu Ala Glu Arg Ser Leu Ala Ser Leu Glu  
 1605 1610 1615  
 acc gtt gtt tct gac aac aat ggt acc cgg gct gta gct cct cca gag 4896  
 Thr Val Val Ser Asp Asn Asn Gly Thr Arg Ala Val Ala Pro Pro Glu  
 1620 1625 1630  
 gtc aca tat gct cgc cta aag ttc agc tgg gct act ggg cgg cag cgt 4944  
 Val Thr Tyr Ala Arg Leu Lys Phe Ser Trp Ala Thr Gly Arg Gln Arg  
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 gaa gct ctt cag atg ctt aag gag ttc act aca agt ctc acc gaa gac 4992  
 Glu Ala Leu Gln Met Leu Lys Glu Phe Thr Thr Ser Leu Thr Glu Asp

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1650	ttc acg aga ttc aat gct	1655	atg atc tct cag tca gag cat aat ggc	5040
	Phe Thr Arg Phe Asn Ala		Leu Met Ile Ser Gln Ser Glu His Asn Gly	
1665	att aat ggc gtt aac ggc	1670	atc caa gat aca aac cat gga gat ata atg	5088
	Ile Asn Gly Val Asn Gly		Ile Gln Asp Thr Asn His Gly Asp Ile Met	
	1685		1690	1695
ggg cta cga gag cgt att ggg gat gtg gcc aag ttc aga agg ctc ctt	5136			
Gly Leu Arg Glu Arg Ile Gly Asp Val Ala Lys Phe Arg Arg Leu Leu				
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gct aag agc tac ctt aga cag ggg gag tgg cag act tct cta caa aaa	5184			
Ala Lys Ser Tyr Leu Arg Gln Gly Glu Trp Gln Thr Ser Leu Gln Lys				
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Gly Asp Trp Lys Pro Glu His Val Arg Glu Val Leu Asn Ala Tyr Ser				
	1730		1735	1740
gcc gct acg aaa tac aac cgt gat tct tac aaa gct tgg cat tcg tgg	5280			
Ala Ala Thr Lys Tyr Asn Arg Asp Ser Tyr Lys Ala Trp His Ser Trp				
	1745		1750	1755
gca ttg gcc aac ttt gaa gtc gtt aca aca atc gca agc caa gct agc	5328			
Ala Leu Ala Asn Phe Glu Val Val Thr Thr Ile Ala Ser Gln Ala Ser				
	1765		1770	1775
aaa gat ggc gcg aca ttg gcc atg gtt cct ggg cac att gta aca gag	5376			
Lys Asp Gly Ala Thr Leu Ala Met Val Pro Gly His Ile Val Thr Glu				
	1780		1785	1790
cat gtg ata cca gct att cgt ggt ttc ctc agg tcc ata tcc ttg tcg	5424			
His Val Ile Pro Ala Ile Arg Gly Phe Leu Arg Ser Ile Ser Leu Ser				
	1795		1800	1805
tca acc tca tct ttg caa gat acc ctg agg tta ctt acc ctc tgg ttt	5472			
Ser Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe				
	1810		1815	1820
act cac ggt ggc gat cag gaa gta aat gcc gtt gtt aca gaa ggt ttc	5520			
Thr His Gly Gly Asp Gln Glu Val Asn Ala Val Val Thr Glu Gly Phe				
	1825		1830	1835
acg gcg gtg aat atc gac acc tgg ctc gcg gta aca ccg caa ctc ata	5568			
Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val Thr Pro Gln Leu Ile				
	1845		1850	1855
gca cga att aat caa ccg aat att cgg gtc cga agc gct gtc cat cga	5616			
Ala Arg Ile Asn Gln Pro Asn Ile Arg Val Arg Ser Ala Val His Arg				
	1860		1865	1870
cta ctt gct gag gtc ggt aag gtt cat cct cag gcg ctg gtg tat cca	5664			
Leu Leu Ala Glu Val Gly Lys Val His Pro Gln Ala Leu Val Tyr Pro				
	1875		1880	1885
ttg act gtt gcg atg aaa tca aac gtt gcc cga cgg tcg cag tct gca	5712			
Leu Thr Val Ala Met Lys Ser Asn Val Ala Arg Arg Ser Gln Ser Ala				
	1890		1895	1900
agt agc atc atg gac agt atg cgg caa cat agt gca aaa ctg gtc gaa	5760			
Ser Ser Ile Met Asp Ser Met Arg Gln His Ser Ala Lys Leu Val Glu				
	1905		1910	1915
caa gct gat ctt gta agt cat gaa ttg att cgg gtt gcc gtt cta tgg	5808			
Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg Val Ala Val Leu Trp				
	1925		1930	1935
cac gag ctc tgg cac gaa gga ttg gaa gaa gct tcc cgc ctc tat ttc	5856			
His Glu Leu Trp His Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe				
	1940		1945	1950
ggg gac cac aat gtc gaa gga atg ttt gca act cta gca cca ctc cat	5904			
Gly Asp His Asn Val Glu Gly Met Phe Ala Thr Leu Ala Pro Leu His				
	1955		1960	1965
gaa atg ctt gat aag ggg gcc gaa acg tta cgc gaa gta tcc ttc gca	5952			
Glu Met Leu Asp Lys Gly Ala Glu Thr Leu Arg Glu Val Ser Phe Ala				
	1970		1975	1980
cag gcg ttt ggt cgt gac ctt gca gag gca aag cat tac tgc atg cta	6000			
Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys His Tyr Cys Met Leu				
	1985		1990	1995
tac cgt gag acc gaa gag att ggt gac ctg aac caa gct tgg gat ctc	6048			
Tyr Arg Glu Thr Glu Glu Ile Gly Asp Leu Asn Gln Ala Trp Asp Leu				
	2005		2010	2015
tac tac acc gtg ttc cgg aag ata agc cag ctt ccg caa ttg tct	6096			
Tyr Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln Leu Pro Gln Leu Ser				

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2020																2025																2030																6144
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Thr	Leu	Asp	Leu	Lys	Tyr	Val	Ser	Pro	Lys	Leu	Lys	Asp	Cys	Val	Asp																																	
2035																2040																2045																6192
ctt	gat	ctt	gct	gtt	ccg	ggc	acc	tac	cag	agt	ggc	cga	ccg	atc	atc	6192																																
Leu	Asp	Leu	Ala	Val	Pro	Gly	Thr	Tyr	Gln	Ser	Gly	Arg	Pro	Ile	Ile																																	
2050																2055																2060																6240
cgt	atc	atg	agc	ttc	gat	cct	ata	ctt	cat	gtc	ctt	caa	acc	aag	aaa	6240																																
Arg	Ile	Met	Ser	Phe	Asp	Pro	Ile	Leu	His	Val	Leu	Gln	Thr	Lys	Lys																																	
2065																2070																2075																6288
cga	cca	cgc	aga	atg	acc	ctg	aaa	ggg	agc	gat	ggg	aat	tca	tac	atg	6288																																
Arg	Pro	Arg	Arg	Met	Thr	Leu	Lys	Gly	Ser	Asp	Gly	Asn	Ser	Tyr	Met																																	
2085																2090																2095																6336
tac	gca	ctt	aag	gga	cat	gaa	gat	att	aga	caa	gat	gag	cga	gtc	atg	6336																																
Tyr	Ala	Leu	Lys	Gly	His	Glu	Asp	Ile	Arg	Gln	Asp	Glu	Arg	Val	Met																																	
2100																2105																2110																6384
cag	ctc	ttt	ggc	ctc	gtg	aat	acg	ctc	ctt	gac	aat	gac	agt	gag	agc	6384																																
Gln	Leu	Phe	Gly	Leu	Val	Asn	Thr	Leu	Leu	Asp	Asn	Asp	Ser	Glu	Ser																																	
2115																2120																2125																6432
ttt	aaa	cgc	cat	ctt	tca	gtg	caa	cga	ttc	cca	gcc	att	cca	ttg	tct	6432																																
Phe	Lys	Arg	His	Leu	Ser	Val	Gln	Arg	Phe	Pro	Ala	Ile	Pro	Leu	Ser																																	
2130																2135																2140																6480
cag	agc	tct	ggg	atc	cta	ggc	tgg	gtc	tcg	aac	agt	gac	act	cta	cac	6480																																
Gln	Ser	Ser	Gly	Ile	Leu	Gly	Trp	Val	Ser	Asn	Ser	Asp	Thr	Leu	His																																	
2145																2150																2155																6528
gca	ttg	atc	aaa	gaa	tac	cgt	gag	agc	cgc	cga	att	ctc	ctg	aac	att	6528																																
Ala	Leu	Ile	Lys	Glu	Tyr	Arg	Glu	Ser	Arg	Arg	Ile	Leu	Leu	Asn	Ile																																	
2165																2170																2175																6576
gaa	cac	cgc	atc	atg	ttg	cag	atg	gcg	cca	gat	tat	gac	aac	ctt	act	6576																																
Glu	His	Arg	Ile	Met	Leu	Gln	Met	Ala	Pro	Asp	Tyr	Asp	Asn	Leu	Thr																																	
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ctc	atg	cag	aaa	gtg	gaa	gtc	ttt	gga	tat	gct	atg	gat	aac	acc	aca	6624																																
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2210																2215																2220																6720
gcg	tgg	ctg	gag	cga	cga	aca	aac	tac	act	cgg	tcc	ctt	ggg	gtt	atg	6720																																
Ala	Trp	Leu	Glu	Arg	Arg	Thr	Asn	Tyr	Thr	Arg	Ser	Leu	Gly	Val	Met																																	
2225																2230																2235																6768
tca	atg	gtg	ggg	tac	att	ctt	ggg	ctg	ggg	gat	cgt	cat	ccg	tcc	aat	6768																																
Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser	Asn																																	
2245																2250																2255																6816
ctt	ctt	ttg	gac	cga	att	act	gga	aga	gtg	gtt	cac	att	gat	ttt	ggg																																	

PhoenixTemp32470.tmp.txt

2385					2390					2395					2400	
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Glu Ala Arg Glu Ala																7248
				2405					2410					2415		
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Val Lys Glu Lys Leu Thr Gly Arg Asp Phe Lys Pro Ser Glu Glu Leu																7296
			2420					2425					2430			
aat gtc agt gat cag gtt gac aaa ctc ctt gcg cag gca act agc gtt																
Asn Val Ser Asp Gln Val Asp Lys Leu Leu Ala Gln Ala Thr Ser Val																7344
			2435				2440					2445				
gaa aat att tgt cag cac tgg att gga tgg tgc agt ttc tgg tga																
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<211> 2462
<212> PRT
<213> Aspergillus oryzae
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Pro	Arg	His	Gln 20	Ser	Pro	Phe	Glu	Ser 25	Tyr	Val	Asp	Asn	Thr 30	Asp	Thr
Ser	Lys	Gly 35	Leu	Glu	Glu	Thr	Gly 40	Ala	Lys	Gln	Phe	Arg 45	His	Ser	Gly
Pro	Trp 50	Leu	Ala	Gly	Gln	Thr 55	Glu	Ala	Glu	Phe	Ser 60	Ala	Tyr	Leu	Lys
Lys 65	Val	Arg	Ser	Asn	Lys 70	Pro	Glu	Leu	Leu	Gln 75	Lys	Leu	Arg	Gln	Leu 80
Phe	Ser	Glu	Lys	Arg 85	Thr	Ala	Glu	Arg	Arg 90	Lys	Gln	Ala	Gln	Asp 95	Asn
Gly	Glu	Asp	Leu 100	Glu	Ala	Leu	Glu	Pro 105	Val	Lys	Val	Thr	Glu 110	Glu	Glu
Phe	Gln	Thr 115	Tyr	Leu	Lys	Ser	Leu 120	His	Trp	Pro	Pro	Glu 125	Lys	Phe	Leu
Glu	Phe	Tyr	Asn	Ala	Val	Ser 135	Gln	Arg	Ile	Ala	Gln 140	Leu	Val	Val	Thr
Gly 145	Ser	Asp	Ala	His	Glu 150	Arg	Ile	Gly	Gly	Leu 155	Leu	Ala	Leu	Asp	Arg 160
Leu	Ile	Asp	Phe	Asp 165	Gly	Val	Asp	Ala	Ala 170	Gln	Lys	Thr	Thr	Arg 175	Phe
Ala	Ser	Tyr	Leu 180	Arg	Ser	Ala	Leu	Arg 185	Ser	Asn	Asp	Asn	Gly 190	Val	Leu
Glu	Tyr	Ala 195	Ala	Lys	Ala	Leu	Gly 200	Arg	Leu	Ala	Lys	Pro 205	Gly	Gly	Ala
Leu	Thr 210	Ala	Glu	Leu	Val	Glu 215	Ser	Glu	Ile	Gln	Ser 220	Ala	Leu	Glu	Trp
Leu 225	Gln	Ser	Glu	Arg	Gln 230	Glu	Ser	Arg	Arg	Val 235	Ala	Ala	Val	Leu	Val 240
Ile	Arg	Glu	Leu	Ala 245	Lys	Gly	Ser	Pro	Thr 250	Leu	Leu	Tyr	Gly	Phe 255	Val
Pro	Gln	Ile	Phe 260	Glu	Leu	Ile	Trp	Val 265	Ala	Leu	Arg	Asp	Pro 270	Lys	Val
Val	Ile	Arg 275	Glu	Thr	Ala	Ser	Glu 280	Ala	Val	Arg	Glu	Cys 285	Phe	Glu	Ile
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Tyr 305	Glu	Glu	Ala	Leu	Gln 310	Gly	Leu	Lys	Ser	Asn 315	Asn	Val	Asp	Trp	Ile 320
His	Gly	Ser	Leu	Leu 325	Val	Leu	Lys	Glu	Leu 330	Leu	Leu	Lys	Gly	Ala 335	Met
Phe	Met	Asn	Glu 340	His	Tyr	Arg	Asn	Ala 345	Cys	Glu	Ile	Val	Leu 350	Arg	Leu
Lys	Asp	His 355	Arg	Asp	Gln	Lys	Ile 360	Arg	Ala	Gln	Val	Val 365	Leu	Thr	Ile
Pro	Ile 370	Leu	Ala	Cys	Tyr	Ala 375	Pro	Val	Asp	Phe	Thr 380	Glu	Thr	Tyr	Leu
His	Arg	Phe	Met	Val	Tyr	Leu	Gln	Ala	Gln	Leu	Lys	Arg	Asp	Lys	Glu

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				405	Gln	Tyr	Leu	Asp	Gly	410	Ile	Ile	Val	Tyr	Ile	Arg	Glu		
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	Met	Phe	Glu	Cys	Ile	Ser	Met	Leu	Ser	455	Leu	Ala	Val	Gly	Pro	Ala	Leu		
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	Asn	Asn	Tyr	Met	Glu	Ser	Leu	Leu	Asp	Pro	Ile	Phe	Ala	Cys	Gly	Leu			
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	Thr	Cys	Cys	Gln	Leu	Phe	Val	His	Asp	Pro	Ile	Ile	Asn	Gln	Thr	Ser			
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	Gly	Gly	Glu	Met	Lys	Leu	Tyr	Leu	Pro	Gln	Leu	Met	Pro	Val	Ile	Leu			
		770					775					780							
	Asp	Ser	Leu	Gln	Asp	Leu	Ser	Ser	His	Ala	Lys	Arg	Glu	Ala	Ala	Leu			
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	Arg	Thr	Leu	Gly	Gln	Leu	Ala	Ser	Asn	Ser	Gly	Tyr	Val	Ile	Asp	Pro			
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## PhoenixTemp32470.tmp.txt

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 980 985 990  
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 995 1000 1005  
 Ala Lys Ser Leu Glu Gly Glu Phe Lys Lys Tyr Met Ala Gly Leu Ile  
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 Pro Met Met Leu Asp Thr Leu Glu Lys Asp Asn Thr Pro Arg Arg Gln  
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 Pro Ser Glu Arg Ile Leu His Thr Phe Leu Ile Phe Gly Thr Ser Gly  
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 Thr Lys Leu Ser Arg Gln Val Asn Val Ser Asp Phe Ala Ser Leu Met  
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 Val His Ser Leu Ser Arg Val Val Ala Gly Asn Asp Arg Met Leu Arg  
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 Asp Phe Ser His Tyr Ile His Leu Leu Asn Lys Val Leu Lys Arg His  
 1140 1145 1150  
 Gln Ile Thr His Val Asn Tyr His Ile Leu Val Thr Lys Leu Gln Lys  
 1155 1160 1165  
 Gly Asp Ser Leu Pro Gln Asp Leu Asn Pro Asp Glu Asn Tyr Ala Ala  
 1170 1175 1180  
 Leu Ala Asp Asp Thr Asn Phe Ala Glu Ile Gly Gln Lys Lys Met Val  
 1185 1190 1195 1200  
 Val Asn Gln Gln His Leu Lys Asn Ala Trp Asp Ala Ser Gln Lys Ser  
 1205 1210 1215  
 Thr Arg Glu Asp Trp Gln Glu Trp Ile Arg Arg Phe Ser Val Glu Leu  
 1220 1225 1230  
 Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Ala Cys Ala Ser Leu Ala  
 1235 1240 1245  
 Gly Ile Tyr Gln Pro Leu Ala Lys Asp Leu Phe Asn Ala Ala Phe Val  
 1250 1255 1260  
 Ser Cys Trp Thr Glu Leu Tyr Asp Gln Tyr Gln Glu Glu Leu Val Arg  
 1265 1270 1275 1280  
 Ser Ile Glu Lys Ala Leu Thr Ser Pro Asn Ile Pro Pro Glu Ile Leu  
 1285 1290 1295  
 Gln Val Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Asp Lys Ala  
 1300 1305 1310  
 Leu Pro Ile Asp Ile Arg Thr Leu Gly Lys Tyr Ala Ala Lys Cys His  
 1315 1320 1325  
 Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Leu Glu Phe Glu Gln Asp  
 1330 1335 1340  
 Gln Asn Ser Gly Ala Val Glu Ala Leu Ile Thr Ile Asn Asn Gln Leu  
 1345 1350 1355 1360  
 Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Arg Lys Ala Gln Ala Tyr  
 1365 1370 1375  
 Arg Asp Val Glu Leu Lys Glu Thr Trp Phe Glu Lys Leu Gln Arg Trp  
 1380 1385 1390  
 Glu Glu Ala Leu Ala Ala Tyr Lys Arg Arg Glu Lys Ile Asp Pro Asp  
 1395 1400 1405  
 Ser Phe Gly Val Thr Met Gly Lys Met Arg Cys Leu His Ala Leu Gly  
 1410 1415 1420  
 Glu Trp Lys Ile Leu Ser Asp Leu Ala Gln Glu Lys Trp Asn Gln Ala  
 1425 1430 1435 1440  
 Ser Leu Glu His Arg Ala Ile Ala Pro Leu Ala Ala Ala Ala Ala  
 1445 1450 1455  
 Trp Gly Arg Gly Gln Trp Glu Leu Met Asp Ser Tyr Leu Gly Val Met  
 1460 1465 1470  
 Lys Glu Gln Ser Pro Asp Arg Ser Phe Phe Gly Ala Ile Leu Ala Ile  
 1475 1480 1485  
 His Arg Asn Gln Phe Glu Glu Ala Thr Met Tyr Ile Glu Lys Ala Arg

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1490 1495 1500  
 Asn Gly Leu Asp Thr Glu Leu Ser Ala Leu Leu Gly Glu Ser Tyr Asn  
 1505 1510 1515 1520  
 Arg Ala Tyr Asn Val Val Val Arg Val Gln Met Leu Ala Glu Leu Glu  
 1525 1530 1535  
 Glu Ile Ile Thr Tyr Lys Gln Asn Ile Gly Asp Pro Glu Lys Gln Asp  
 1540 1545 1550  
 Ser Met Arg Gln Thr Trp Asn Lys Arg Leu Leu Gly Cys Gln Gln Asn  
 1555 1560 1565  
 Val Glu Val Trp Gln Arg Met Leu Lys Val Arg Ala Leu Val Thr Ser  
 1570 1575 1580  
 Pro Arg Glu Asn Leu Asp Met Trp Ile Lys Phe Ala Asn Leu Cys Arg  
 1585 1590 1595 1600  
 Lys Ser Asn Arg Met Gly Leu Ala Glu Arg Ser Leu Ala Ser Leu Glu  
 1605 1610 1615  
 Thr Val Val Ser Asp Asn Asn Gly Thr Arg Ala Val Ala Pro Pro Glu  
 1620 1625 1630  
 Val Thr Tyr Ala Arg Leu Lys Phe Ser Trp Ala Thr Gly Arg Gln Arg  
 1635 1640 1645  
 Glu Ala Leu Gln Met Leu Lys Glu Phe Thr Thr Ser Leu Thr Glu Asp  
 1650 1655 1660  
 Phe Thr Arg Phe Asn Ala Leu Met Ile Ser Gln Ser Glu His Asn Gly  
 1665 1670 1675 1680  
 Ile Asn Gly Val Asn Gly Ile Gln Asp Thr Asn His Gly Asp Ile Met  
 1685 1690 1695  
 Gly Leu Arg Glu Arg Ile Gly Asp Val Ala Lys Phe Arg Arg Leu Leu  
 1700 1705 1710  
 Ala Lys Ser Tyr Leu Arg Gln Gly Glu Trp Gln Thr Ser Leu Gln Lys  
 1715 1720 1725  
 Gly Asp Trp Lys Pro Glu His Val Arg Glu Val Leu Asn Ala Tyr Ser  
 1730 1735 1740  
 Ala Ala Thr Lys Tyr Asn Arg Asp Ser Tyr Lys Ala Trp His Ser Trp  
 1745 1750 1755 1760  
 Ala Leu Ala Asn Phe Glu Val Val Thr Thr Ile Ala Ser Gln Ala Ser  
 1765 1770 1775  
 Lys Asp Gly Ala Thr Leu Ala Met Val Pro Gly His Ile Val Thr Glu  
 1780 1785 1790  
 His Val Ile Pro Ala Ile Arg Gly Phe Leu Arg Ser Ile Ser Leu Ser  
 1795 1800 1805  
 Ser Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp Phe  
 1810 1815 1820  
 Thr His Gly Gly Asp Gln Glu Val Asn Ala Val Val Thr Glu Gly Phe  
 1825 1830 1835 1840  
 Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val Thr Pro Gln Leu Ile  
 1845 1850 1855  
 Ala Arg Ile Asn Gln Pro Asn Ile Arg Val Arg Ser Ala Val His Arg  
 1860 1865 1870  
 Leu Leu Ala Glu Val Gly Lys Val His Pro Gln Ala Leu Val Tyr Pro  
 1875 1880 1885  
 Leu Thr Val Ala Met Lys Ser Asn Val Ala Arg Arg Ser Gln Ser Ala  
 1890 1895 1900  
 Ser Ser Ile Met Asp Ser Met Arg Gln His Ser Ala Lys Leu Val Glu  
 1905 1910 1915 1920  
 Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg Val Ala Val Leu Trp  
 1925 1930 1935  
 His Glu Leu Trp His Glu Gly Leu Glu Ala Ser Arg Leu Tyr Phe  
 1940 1945 1950  
 Gly Asp His Asn Val Glu Gly Met Phe Ala Thr Leu Ala Pro Leu His  
 1955 1960 1965  
 Glu Met Leu Asp Lys Gly Ala Glu Thr Leu Arg Glu Val Ser Phe Ala  
 1970 1975 1980  
 Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys His Tyr Cys Met Leu  
 1985 1990 1995 2000  
 Tyr Arg Glu Thr Glu Glu Ile Gly Asp Leu Asn Gln Ala Trp Asp Leu  
 2005 2010 2015  
 Tyr Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln Leu Pro Gln Leu Ser  
 2020 2025 2030  
 Thr Leu Asp Leu Lys Tyr Val Ser Pro Lys Leu Lys Asp Cys Val Asp  
 2035 2040 2045

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Leu Asp Leu Ala Val Pro Gly Thr Tyr Gln Ser Gly Arg Pro Ile Ile  
 2050 2055 2060  
 Arg Ile Met Ser Phe Asp Pro Ile Leu His Val Leu Gln Thr Lys Lys  
 2065 2070 2075 2080  
 Arg Pro Arg Arg Met Thr Leu Lys Gly Ser Asp Gly Asn Ser Tyr Met  
 2085 2090 2095  
 Tyr Ala Leu Lys Gly His Glu Asp Ile Arg Gln Asp Glu Arg Val Met  
 2100 2105 2110  
 Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Asp Asn Asp Ser Glu Ser  
 2115 2120 2125  
 Phe Lys Arg His Leu Ser Val Gln Arg Phe Pro Ala Ile Pro Leu Ser  
 2130 2135 2140  
 Gln Ser Ser Gly Ile Leu Gly Trp Val Ser Asn Ser Asp Thr Leu His  
 2145 2150 2155 2160  
 Ala Leu Ile Lys Glu Tyr Arg Glu Ser Arg Arg Ile Leu Leu Asn Ile  
 2165 2170 2175  
 Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr  
 2180 2185 2190  
 Leu Met Gln Lys Val Glu Val Phe Gly Tyr Ala Met Asp Asn Thr Thr  
 2195 2200 2205  
 Gly Lys Asp Leu Tyr Arg Val Leu Trp Leu Lys Ser Lys Ser Ser Glu  
 2210 2215 2220  
 Ala Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu Gly Val Met  
 2225 2230 2235 2240  
 Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn  
 2245 2250 2255  
 Leu Leu Leu Asp Arg Ile Thr Gly Arg Val Val His Ile Asp Phe Gly  
 2260 2265 2270  
 Asp Cys Phe Glu Val Ala Met His Arg Glu Lys Tyr Pro Glu Arg Val  
 2275 2280 2285  
 Pro Phe Arg Leu Thr Arg Met Leu Thr Phe Ala Met Glu Val Ser Asn  
 2290 2295 2300  
 Ile Glu Gly Ser Tyr Arg Ile Thr Cys Glu Ala Val Met Arg Val Leu  
 2305 2310 2315 2320  
 Arg Glu Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Ile His  
 2325 2330 2335  
 Asp Pro Leu Ile Asn Trp Arg Leu Gly Ile Arg Glu Ser Pro Asp Arg  
 2340 2345 2350  
 Met Pro Phe Ser Ser Glu Arg Arg Gln Ser Ile Ile Gly Asn Ile Asn  
 2355 2360 2365  
 Ser Glu Gln Gly Val Gln Pro Ser Asn Phe Ser Arg His Arg Arg Pro  
 2370 2375 2380  
 Ser Ile Leu Glu Gly Gly Ile Leu Asp Ala Gln Glu Gly Ile Pro Asn  
 2385 2390 2395 2400  
 Glu Ala Arg Glu Ala Gln Asn Ala Arg Ala Leu Gln Val Leu Ala Arg  
 2405 2410 2415  
 Val Lys Glu Lys Leu Thr Gly Arg Asp Phe Lys Pro Ser Glu Glu Leu  
 2420 2425 2430  
 Asn Val Ser Asp Gln Val Asp Lys Leu Leu Ala Gln Ala Thr Ser Val  
 2435 2440 2445  
 Glu Asn Ile Cys Gln His Trp Ile Gly Trp Cys Ser Phe Trp  
 2450 2455 2460

&lt;210&gt; 2564

&lt;211&gt; 7572

&lt;212&gt; DNA

&lt;213&gt; Chlamydomonas reinhardtii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7572)

&lt;400&gt; 2564

atg atg ctg tcg gga gtg ggt ccg gtg ccc acc aaa ccg gct ttc aag  
 Met Met Leu Ser Gly Val Gly Pro Val Pro Thr Lys Pro Ala Phe Lys  
 1 5 10 15  
 gcc ggt ggc gac acg ctc tcg cgg cac ctg gag gag ctg tgc cgt tct  
 Ala Gly Gly Asp Thr Leu Ser Arg His Leu Glu Glu Leu Cys Arg Ser  
 20 25 30

48

96

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ggc	gca	tgg	gag	cgg	cgc	cac	aag	gat	ggt	gac	aaa	gca	tta	ttg	gag	144
Gly	Ala	Trp	Glu	Arg	Arg	His	Lys	Asp	Gly	Asp	Lys	Ala	Leu	Leu	Glu	
		35					40					45				
tac	atc	gag	gcg	gag	gct	cgg	gac	ctg	tcg	gtg	gag	gct	ttt	ggg	cgg	192
Tyr	Ile	Glu	Ala	Glu	Ala	Arg	Asp	Leu	Ser	Val	Glu	Ala	Phe	Gly	Arg	
	50					55					60					
cta	atg	acc	gac	gtg	tat	cag	cgc	atc	ggc	aac	atg	ctg	ctc	aaa	ggg	240
Leu	Met	Thr	Asp	Val	Tyr	Gln	Arg	Ile	Gly	Asn	Met	Leu	Leu	Lys	Gly	
65					70					75					80	
aac	gac	atc	acg	cgg	cgc	atg	ggt	ggc	gtg	ctg	gcg	att	gac	gag	ctt	288
Asn	Asp	Ile	Thr	Arg	Arg	Met	Gly	Gly	Val	Leu	Ala	Ile	Asp	Glu	Leu	
				85					90					95		
atc	gat	gtc	aag	ctc	tct	gga	gac	gac	gct	gcc	aag	acg	gcg	gag	ctg	336
Ile	Asp	Val	Lys	Leu	Ser	Gly	Asp	Asp	Ala	Ala	Lys	Thr	Ala	Arg	Leu	
			100					105					110			
tcg	ggg	ctg	ctg	tcg	cgg	gtg	ctg	gag	gag	agc	gag	gac	ccg	gtg	ctc	384
Ser	Gly	Leu	Leu	Ser	Arg	Val	Leu	Glu	Glu	Ser	Glu	Asp	Pro	Val	Leu	
		115					120					125				
agc	gag	tcg	gcc	tcg	cac	acg	ctg	gga	cac	ctg	gtg	cgc	agc	ggc	ggc	432
Ser	Glu	Ser	Ala	Ser	His	Thr	Leu	Gly	His	Leu	Val	Arg	Ser	Gly	Gly	
	130					135					140					
gcc	atg	acg	tcg	gac	atc	gtg	gag	aag	gag	atc	cgc	cgc	tcg	ctt	gcc	480
Ala	Met	Thr	Ser	Asp	Ile	Val	Glu	Lys	Glu	Ile	Arg	Arg	Ser	Leu	Ala	
145					150					155					160	
tgg	tgc	gac	ccc	cgc	aat	gag	ccc	aat	gag	tcg	cgg	cgg	ctg	act	cg	528
Trp	Cys	Asp	Pro	Arg	Asn	Glu	Pro	Asn	Glu	Ser	Arg	Arg	Leu	Thr	Ala	
				165					170					175		
ctg	ctg	gtg	ctg	acg	gag	gcg	gcg	gag	tcc	gcg	ccc	gcc	gtg	ttc	aac	576
Leu	Leu	Val	Leu	Thr	Glu	Ala	Ala	Glu	Ser	Ala	Pro	Ala	Val	Phe	Asn	
			180					185					190			
gtg	cac	gtc	aag	tcg	ttc	att	gac	gcg	gtg	tgg	ttc	ccg	ctg	cgc	gac	624
Val	His	Val	Lys	Ser	Phe	Ile	Asp	Ala	Val	Trp	Phe	Pro	Leu	Arg	Asp	
		195					200				205					
gcc	aag	cag	cat	atc	cgc	gag	gcg	gcg	gtg	cgg	gcg	ctc	aag	gct	tgc	672
Ala	Lys	Gln	His	Ile	Arg	Glu	Ala	Ala	Val	Arg	Ala	Leu	Lys	Ala	Cys	
	210					215					220					
ctg	tgc	ctg	gtg	gag	aag	cgc	gag	acg	cgc	tac	cgc	gtg	cag	tgg	tac	720
Leu	Cys	Leu	Val	Glu	Lys	Arg	Glu	Thr	Arg	Tyr	Arg	Val	Gln	Trp	Tyr	
225					230					235					240	
tac	aag	ctg	cac	gag	cag	acc	atg	cgc	ggc	atg	aag	cgc	gac	cac	cgc	768
Tyr	Lys	Leu	His	Glu	Gln	Thr	Met	Arg	Gly	Met	Lys	Arg	Asp	His	Arg	
				245					250					255		
acc	ggc	gcg	ctt	ccc	tcg	ccc	gag	tcc	atc	cac	ggc	tcg	ctg	ctg	gcg	816
Thr	Gly	Ala	Leu	Pro	Ser	Pro	Glu	Ser	Ile	His	Gly	Ser	Leu	Leu	Ala	
			260					265					270			
ctg	gcg	gag	ctg	cta	cag	cac	acc	ggc	gaa	ttc	atg	ctg	gcg	cgc	tac	864
Leu	Ala	Glu	Leu	Leu	Gln	His	Thr	Gly	Glu	Phe	Met	Leu	Ala	Arg	Tyr	
		275					280					285				
aag	gag	gtt	gtg	gag	aac	gtg	ttc	cgc	tac	aag	gac	agc	aag	gag	aaa	912
Lys	Glu	Val	Val	Glu	Asn	Val	Phe	Arg	Tyr	Lys	Asp	Ser	Lys	Glu	Lys	
	290					295					300					
aac	atc	cgc	cgg	gcg	gtc	atc	cac	ctg	ctg	ccg	cgc	atg	gcg	gcc	ttc	960
Asn	Ile	Arg	Arg	Ala	Val	Ile	His	Leu	Leu	Pro	Arg	Met	Ala	Ala	Phe	
305					310					315					320	
tcg	ccg	gag	cgc	ttt	gcg	tcg	gag	tac	ctg	gct	cgc	gcc	att	gcc	ttc	1008
Ser	Pro	Glu	Arg	Phe	Ala	Ser	Glu	Tyr	Leu	Ala	Arg	Ala	Ile	Ala	Phe	
				325					330					335		
ctg	ctg	atc	gtg	ctg	aag	aac	ccg	ccc	cgc	ggc	gcg	gcg	gcg	ttc	gcg	1056
Leu	Leu	Ile	Val	Leu	Lys	Asn	Pro	Pro	Glu	Arg	Gly	Ala	Ala	Phe	Ala	
			340					345					350			
gcg	ctg	gcg	gac	atg	gcg	gcg	gcc	ctg	gcg	cgg	ggc	tgc	ctg	tcg	ccc	1104
Ala	Leu	Ala	Asp	Met	Ala	Ala	Ala	Leu	Ala	Arg	Gly	Cys	Leu	Ser	Pro	
		355					360					365				
atc	tac	gtc	gcc	atc	cgg	gag	gcg	ctg	tcg	gcg	ccg	ccc	gcc	gcg	cgc	1152
Ile	Tyr	Val	Ala	Ile	Arg	Glu	Ala	Leu	Ser	Ala	Pro	Pro	Ala	Ala	Arg	
	370					375					380					
gcc	gcc	gcc	cgg	ccg	cgg	ccc	gcc	acc	tgc	tac	gag	gcc	ctg	cag	tgc	1200
Ala	Ala	Ala	Arg	Pro	Arg	Pro	Ala	Thr	Cys	Tyr	Glu	Ala	Leu	Gln	Cys	
385					390					395					400	

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gtg	ggc	atg	ctg	gcg	gtg	gcg	ctg	ggc	ccg	ctg	tgg	cgg	ccc	tac	gcg	1248
Val	Gly	Met	Leu	Ala	Val	Ala	Leu	Gly	Pro	Leu	Trp	Arg	Pro	Tyr	Ala	
				405					410					415		
gcg	gcg	ctg	gtg	gag	gcc	atg	gtg	ctc	aca	ggc	gtg	agc	gag	gtg	ctg	1296
Ala	Ala	Leu	Val	Glu	Ala	Met	Val	Leu	Thr	Gly	Val	Ser	Glu	Val	Leu	
			420					425					430			
gtg	cag	gcg	ctg	acg	cag	gtc	gcc	aac	gcg	ctg	ccg	gag	ctt	ctg	gag	1344
Val	Gln	Ala	Leu	Thr	Gln	Val	Ala	Asn	Ala	Leu	Pro	Glu	Leu	Leu	Glu	
			435				440					445				
gac	atc	cag	tac	cag	ctg	ctg	gac	ctg	ctg	agc	ctg	gtg	ctc	agc	aag	1392
Asp	Ile	Gln	Tyr	Gln	Leu	Leu	Asp	Leu	Leu	Ser	Leu	Val	Leu	Ser	Lys	
	450					455					460					
agg	ccc	ttc	aac	agc	agc	acc	acg	cag	ccc	aag	ttc	gcg	gcc	ctg	agt	1440
Arg	Pro	Phe	Asn	Ser	Ser	Thr	Thr	Gln	Pro	Lys	Phe	Ala	Ala	Leu	Ser	
465					470					475					480	
gcg	gcc	atc	gcg	gcg	ggc	gag	ctg	cag	ggc	aat	gca	ctc	acc	aag	ctg	1488
Ala	Ala	Ile	Ala	Ala	Gly	Glu	Leu	Gln	Gly	Asn	Ala	Leu	Thr	Lys	Leu	
			485					490					495			
gcg	ctg	cag	aca	ctg	ggc	acg	ttt	gac	ctg	ggc	ggc	atc	cag	ctt	ctg	1536
Ala	Leu	Gln	Thr	Leu	Gly	Thr	Phe	Asp	Leu	Gly	Gly	Ile	Gln	Leu	Leu	
			500					505					510			
gag	ttc	atg	cgc	gac	cac	atc	ctg	gcc	tac	acc	gac	gac	ccc	gac	aag	1584
Glu	Phe	Met	Arg	Asp	His	Ile	Leu	Ala	Tyr	Thr	Asp	Asp	Pro	Asp	Lys	
		515					520				525					
gag	atc	cgc	cag	gcc	gcg	gtg	ctg	gcc	gca	tgc	ccg	cgt	gct	gga	gcg	1632
Glu	Ile	Arg	Gln	Ala	Ala	Val	Leu	Ala	Ala	Cys	Pro	Arg	Ala	Gly	Ala	
	530					535					540					
gca	cgc	agc	agc	ctc	cgc	gtc	cgc	agc	ctc	cgc	agc	ggc	tgg	cgg	cgc	1680
Ala	Arg	Ser	Ser	Leu	Arg	Val	Arg	Ser	Leu	Arg	Ser	Gly	Trp	Arg	Arg	
545					550				555					560		
gcc	gcc	gcg	gct	gtg	tgg	cac	acg	cgc	gtg	gtg	gag	cgc	tgt	gtg	ggc	1728
Ala	Ala	Ala	Ala	Val	Trp	His	Thr	Arg	Val	Val	Glu	Arg	Cys	Val	Gly	
			565					570					575			
cgg	ctg	ctg	gtg	gtg	gcg	gtg	gcg	gac	ccc	agt	gag	cgc	gtg	cgc	aag	1776
Arg	Leu	Leu	Val	Val	Ala	Val	Ala	Asp	Pro	Ser	Glu	Arg	Val	Arg	Lys	
			580					585					590			
gag	gtg	ctg	cgg	gcg	ctg	gtg	gcc	acc	acg	gcc	ctg	gac	gac	tac	ctg	1824
Glu	Val	Leu	Arg	Ala	Leu	Val	Ala	Thr	Thr	Ala	Leu	Asp	Asp	Tyr	Leu	
		595					600				605					
gcg	cag	gcc	gac	tgc	ctg	cgc	gcg	ctg	ttc	gtg	ggc	atg	aac	gac	gag	1872
Ala	Gln	Ala	Asp	Cys	Leu	Arg	Ala	Leu	Phe	Val	Gly	Met	Asn	Asp	Glu	
	610					615					620					
agc	gtg	gcg	gtg	cgc	ggg	ctg	gcc	atc	cgg	ctg	gtg	ggg	cgg	ctg	gcg	1920
Ser	Val	Ala	Val	Arg	Gly	Leu	Ala	Ile	Arg	Leu	Val	Gly	Arg	Leu	Ala	
625				630					635					640		
gag	cgc	aac	ccg	gcg	cac	gtg	aac	ccg	gcg	ctg	cgc	aag	cac	ctg	ctg	1968
Glu	Arg	Asn	Pro	Ala	His	Val	Asn	Pro	Ala	Leu	Arg	Lys	His	Leu	Leu	
			645					650					655			
cag	ctg	ctg	cac	gac	atg	gag	ttc	agc	ccc	gac	aac	agg	gcc	agg	gag	2016
Gln	Leu	Leu	His	Asp	Met	Glu	Phe	Ser	Pro	Asp	Asn	Arg	Ala	Arg	Glu	
			660					665					670			
gag	tgc	gcc	ttc	ctg	ctg	gag	gtg	ctc	atc	acc	gcc	gcc	gcc	cgc	ctc	2064
Glu	Ser	Ala	Phe	Leu	Leu	Glu	Val	Leu	Ile	Thr	Ala	Ala	Ala	Arg	Leu	
		675					680					685				
atc	atg	ccc	tac	gtc	tgc	ccc	atc	cag	aag	gcg	ctg	gtg	tcc	aag	ctg	2112
Ile	Met	Pro	Tyr	Val	Ser	Pro	Ile	Gln	Lys	Ala	Leu	Val	Ser	Lys	Leu	
	690					695					700					
cgc	ggc	ggc	tgc	ggc	ccg	ggc	ata	act	gtg	tgc	acg	ctg	ggc	gcg		2160
Arg	Gly	Gly	Ser	Gly	Pro	Gly	Ile	Thr	Val	Leu	Ser	Thr	Leu	Gly	Ala	
705					710				715					720		
ctg	gct	gag	gtg	agc	ggc	acc	acg	ttc	cgc	ccc	ttc	atc	agc	gag	gtc	2208
Leu	Ala	Glu	Val	Ser	Gly	Thr	Thr	Phe	Arg	Pro	Phe	Ile	Ser	Glu	Val	
			725						730				735			
atg	ccg	ctg	gtc	atc	gag	gcc	att	cag	gac	aac	tgc	gac	ggg	cgg	cgg	2256
Met	Pro	Leu	Val	Ile	Glu	Ala	Ile	Gln	Asp	Asn	Ser	Asp	Gly	Arg	Arg	
			740					745					750			
cgt	gtg	gtg	gcc	gtc	aag	act	ctg	ggc	ttc	atc	gtg	agc	agc	tgc	ggc	2304
Arg	Val	Val	Ala	Val	Lys	Thr	Leu	Gly	Phe	Ile	Val	Ser	Ser	Cys	Gly	
		755					760					765				

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aat	gtg	atg	ggc	ccc	tac	ctg	gag	tac	cca	cag	ctg	ctg	tcg	gtg	ctg	2352
Asn	Val	Met	Gly	Pro	Tyr	Leu	Glu	Tyr	Pro	Gln	Leu	Leu	Ser	Val	Leu	
	770					775					780					
ctg	cgc	atg	ctg	cac	gag	gga	cac	ccc	gcg	caa	cgc	cgg	gag	gtc	atc	2400
Leu	Arg	Met	Leu	His	Glu	Gly	His	Pro	Ala	Gln	Arg	Arg	Glu	Val	Ile	
785					790					795					800	
aag	gtg	ctg	ggc	atc	atc	ggt	gcg	ctg	gac	ccg	cac	aca	cac	aag	ctc	2448
Lys	Val	Leu	Gly	Ile	Ile	Gly	Ala	Leu	Asp	Pro	His	Thr	His	Lys	Leu	
				805					810					815		
aac	cag	gcc	agc	ctg	agc	ggg	gag	ggc	aag	ctg	gag	aag	gag	ggg	gtg	2496
Asn	Gln	Ala	Ser	Leu	Ser	Gly	Glu	Gly	Lys	Leu	Glu	Lys	Glu	Gly	Val	
			820					825					830			
cgg	ccg	ctg	cgg	cac	ggc	ggc	ggc	ggc	gcg	ggc	ggc	gcc	ggc	ggc	ggc	2544
Arg	Pro	Leu	Arg	His	Gly	Gly	Gly	Gly	Ala	Gly	Gly	Ala	Gly	Gly	Gly	
			835				840					845				
gca	ggc	ggg	gga	ggc	gtc	ggc	ggc	ggc	gtg	gcg	ggc	gac	agc	aat	gac	2592
Ala	Gly	Gly	Gly	Gly	Val	Gly	Gly	Gly	Val	Ala	Gly	Asp	Ser	Asn	Asp	
	850					855					860					
ggc	ggc	atg	ggc	ccc	ggc	gac	ggc	ggc	ccc	ggc	ggc	gac	ctg	ctg		2640
Gly	Gly	Met	Gly	Pro	Gly	Asp	Asp	Gly	Gly	Pro	Gly	Gly	Asp	Leu	Leu	
865					870				875					880		
ccc	tcc	tcg	ggc	ctg	gtg	acc	agc	agc	gag	gac	tat	tac	ccc	acc	gtg	2688
Pro	Ser	Ser	Gly	Leu	Val	Thr	Ser	Ser	Glu	Asp	Tyr	Tyr	Pro	Thr	Val	
				885					890					895		
gcc	atc	aac	gcg	ctg	atg	cgg	gtg	ctg	cgc	gac	ccc	gcc	ctg	gcc	tcc	2736
Ala	Ile	Asn	Ala	Leu	Met	Arg	Val	Leu	Arg	Asp	Pro	Ala	Leu	Ala	Ser	
			900					905					910			
cag	cac	ctg	gcc	gtc	atc	cgg	gcg	ctg	gca	gcc	ata	ttc	cgc	gcg	ctg	2784
Gln	His	Leu	Ala	Val	Ile	Arg	Ala	Leu	Ala	Ala	Ile	Phe	Arg	Ala	Leu	
			915									925				
cag	ctc	agc	gta	gtg	ccc	tac	ctg	ccc	aag	gtc	ctg	ccc	atc	ctg	ctg	2832
Gln	Leu	Ser	Val	Val	Pro	Tyr	Leu	Pro	Lys	Val	Leu	Pro	Ile	Leu	Leu	
	930				935						940					
ggc	gtg	ctg	cgc	ggc	ggc	gac	gag	gcg	ctg	cgt	gag	gag	atc	ctg	gcc	2880
Gly	Val	Leu	Arg	Gly	Gly	Asp	Glu	Ala	Leu	Arg	Glu	Glu	Ile	Leu	Ala	
945					950					955					960	
tcg	ctg	cgc	gcg	ctg	gtg	ggc	tac	gtg	cgg	cag	cac	atg	cgc	cgc	ttc	2928
Ser	Leu	Arg	Ala	Leu	Val	Gly	Tyr	Val	Arg	Gln	His	Met	Arg	Arg	Phe	
				965					970					975		
ctg	ccc	gac	ctc	acg	cag	ctg	gtg	cac	gag	ttc	tgg	ccc	gcc	gcg	ccg	2976
Leu	Pro	Asp	Leu	Thr	Gln	Leu	Val	His	Glu	Phe	Trp	Pro	Ala	Ala	Pro	
			980					985					990			
cgc	acc	tgc	ctg	gcg	ctc	ata	gcg	gac	ctg	ggc	atg	gcg	ctg	agg	gac	3024
Arg	Thr	Cys	Leu	Ala	Leu	Ile	Ala	Asp	Leu	Gly	Met	Ala	Leu	Arg	Asp	
		995					1000					1005				
gac	ata	cgt	ggc	aaa	ccc	ctc	cct	ccc	ctc	cct	ctc	ctg	ccg	ccc	tcc	3072
Asp	Ile	Arg	Ala	Lys	Pro	Leu	Pro	Pro	Leu	Pro	Leu	Leu	Pro	Pro	Ser	
	1010				1015					1020						
tct	ccc	ccc	cgc	aca	ccc	cac	aac	agg	cag	tac	gtg	ccc	gag	ctg	ctg	3120
Ser	Pro	Pro	Arg	Thr	Pro	His	Asn	Arg	Gln	Tyr	Val	Pro	Glu	Leu	Leu	
1025				1030					1035					1040		
ccc	aag	ttc	gtg	gcg	gtg	ttc	agc	gag	gcc	gag	cgc	gcc	ggc	agc	tgg	3168
Pro	Lys	Phe	Val	Ala	Val	Phe	Ser	Glu	Ala	Glu	Arg	Ala	Gly	Ser	Trp	
			1045					1050					1055			
gac	ctg	gtg	cgg	ccc	gcc	ctg	ggc	gcc	ctg	gag	agc	ctg	ggc	agc	gcc	3216
Asp	Leu	Val	Arg	Pro	Ala	Leu	Gly	Ala	Leu	Glu	Ser	Leu	Gly	Ser	Ala	
			1060				1065					1070				
gtg	gac	gac	tcg	ctg	cac	ctg	ctg	ctg	ccc	tcc	atg	gtg	cgg	ctg	atc	3264
Val	Asp	Asp	Ser	Leu	His	Leu	Leu	Leu	Pro	Ser	Met	Val	Arg	Leu	Ile	
			1075			1080						1085				
agc	ccc	gcc	gcc	agc	tcc	acg	cca	gcc	gag	gtg	cgg	cgc	gcg	gcg	ctg	3312
Ser	Pro	Ala	Ala	Ser	Ser	Thr	Pro	Ala	Glu	Val	Arg	Ala	Ala	Ala	Leu	
	1090				1095					1100						
cgc	tcg	ctg	cgg	cgg	ctc	atc	ccg	cgc	atg	cag	ctg	ggc	ggc	tac	gcc	3360
Arg	Ser	Leu	Arg	Arg	Leu	Ile	Pro	Arg	Met	Gln	Leu	Gly	Gly	Tyr	Ala	
1105				1110					1115					1120		
tcg	gcg	gtg	ctg	cac	ccg	ctc	atc	aag	gtc	ctg	gac	ggc	cac	agc	gac	3408
Ser	Ala	Val	Leu	His	Pro	Leu	Ile	Lys	Val	Leu	Asp	Gly	His	Ser	Asp	
			1125					1130					1135			

## PhoenixTemp32470.tmp.txt

gag cag ctg cgg cgt gat gcg cta gac acc atc tgc gcc gtg gcc gtg 3456  
 Glu Gln Leu Arg Arg Asp Ala Leu Asp Thr Ile Cys Ala Val Ala Val  
 1140 1145 1150  
 tgc ctg ggg ccc gag ttc gcc atc ttc gtg ccc acc atc cgc aag gtg 3504  
 Cys Leu Gly Pro Glu Phe Ala Ile Phe Val Pro Thr Ile Arg Lys Val  
 1155 1160 1165  
 cgt gtg cgg cac cgc ctg cac gag tgg ttc gac cgg ctg gcc ggc 3552  
 Arg Val Arg His Arg Leu His Glu Trp Phe Asp Arg Leu Ala Gly  
 1170 1175 1180  
 aag gtg tgc gcc gtg tgc ccg ccc tgc atg tca gac gcg gag gac tgg 3600  
 Lys Val Cys Ala Val Ser Pro Pro Cys Met Ser Asp Ala Glu Asp Trp  
 1185 1190 1195 1200  
 gag ggc gcc gga ggc gcc gcc tcc ggc gcc ggc tcc gcc ggc gca gcc 3648  
 Glu Gly Ala Gly Ala Ala Ser Gly Ala Gly Ser Ala Gly Ala Ala  
 1205 1210 1215  
 ggc ggc tgg gcc gtg gag atc gac ctg ctc gcc cgc atg cag gcg gag 3696  
 Gly Gly Trp Ala Val Glu Ile Asp Leu Leu Ala Arg Met Gln Ala Glu  
 1220 1225 1230  
 ggc ggc ggc gcc ctg ggc ggc cag ccg ccg gtg ccg ccg ggt ccc gac 3744  
 Gly Gly Gly Ala Leu Gly Gly Gln Pro Pro Val Pro Pro Gly Pro Asp  
 1235 1240 1245  
 ggc ggc ccc tcc gcc aag ctg ccg gtg aac gcg gca gtg ctg cgg cgc 3792  
 Gly Gly Pro Ser Ala Lys Leu Pro Val Asn Ala Ala Val Leu Arg Arg  
 1250 1255 1260  
 gcc tgg gag agc agc cac cgc gtg acc aag gag gac tgg gcg gag tgg 3840  
 Ala Trp Glu Ser Ser His Arg Val Thr Lys Glu Asp Trp Ala Glu Trp  
 1265 1270 1275 1280  
 atg cgc aac ttc gcg gtg gag ctg ctc aag gag agc ccc tgc ccc gcg 3888  
 Met Arg Asn Phe Ala Val Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala  
 1285 1290 1295  
 ctg cgc gcc tgc cac ggc ctg gcg cag gtg cac ccc agc atg gcg cgc 3936  
 Leu Arg Ala Cys His Gly Leu Ala Gln Val His Pro Ser Met Ala Arg  
 1300 1305 1310  
 gag ctg ttc gcg gcg ggc ttc gtg agc tgc tgg gcg gag ctg gag cag 3984  
 Glu Leu Phe Ala Ala Gly Phe Val Ser Cys Trp Ala Glu Leu Glu Gln  
 1315 1320 1325  
 ggg ctg cag gag cag ctc gtg cgc agc ctg gag gct gcg ctg gcc tcc 4032  
 Gly Leu Gln Glu Gln Leu Val Arg Ser Leu Glu Ala Ala Leu Ala Ser  
 1330 1335 1340  
 ccc acc atc ccc ccc gag acg gtg act gcg ctg ctg aac ctg gcc gag 4080  
 Pro Thr Ile Pro Pro Glu Thr Val Thr Ala Leu Leu Asn Leu Ala Glu  
 1345 1350 1355 1360  
 ttc atg gag cac gac gac aag cgc ctg cct ctg gac aca cgc acg ctg 4128  
 Phe Met Glu His Asp Asp Lys Arg Leu Pro Leu Asp Thr Arg Thr Leu  
 1365 1370 1375  
 ggg gcg ctg gcg gag aag tgc cac gcc ttc gcc aag gcg ctg cac tac 4176  
 Gly Ala Leu Ala Glu Lys Cys His Ala Phe Ala Lys Ala Leu His Tyr  
 1380 1385 1390  
 aag gag ctg gag ttc cag acc agc ccg cag tcc gcc atc gag gcg ctc 4224  
 Lys Glu Leu Glu Phe Gln Thr Ser Pro Gln Ser Ala Ile Glu Ala Leu  
 1395 1400 1405  
 atc cac atc aac aac cag ctg cgg ccg gag gcg gcg gtg ggc gtg 4272  
 Ile His Ile Asn Asn Gln Leu Arg Gln Pro Glu Ala Ala Val Gly Val  
 1410 1415 1420  
 ctg gcg tac gcc cag aag cac ctg cac atg gag ctc aag gag ggc tgg 4320  
 Leu Ala Tyr Ala Gln Lys His Leu His Met Glu Leu Lys Glu Gly Trp  
 1425 1430 1435 1440  
 tat gag aag ctg tgc cgc tgg gac gag gca ctg gac gcc tac gag cgg 4368  
 Tyr Glu Lys Leu Cys Arg Trp Asp Glu Ala Leu Asp Ala Tyr Glu Arg  
 1445 1450 1455  
 agg ctg ctc aag gag gcg ccg ggc agc atg gag tac cac aca gcg ctg 4416  
 Arg Leu Leu Lys Glu Ala Pro Gly Ser Met Glu Tyr His Thr Ala Leu  
 1460 1465 1470  
 ctg ggc aag atg cgc tgc ctg gcc tgc ctg gcc gag tgg gag aac ctg 4464  
 Leu Gly Lys Met Arg Cys Leu Ala Ser Leu Ala Glu Trp Glu Asn Leu  
 1475 1480 1485  
 tcc aac ctg tgc cgc acc gag tgg cgc aag tgc gag ccg cac gtg cgc 4512  
 Ser Asn Leu Cys Arg Thr Glu Trp Arg Lys Ser Glu Pro His Val Arg  
 1490 1495 1500

## PhoenixTemp32470.tmp.txt

cgt gag atg gcg ctc atc gcg gcg cac gcg gcc tgg cac atg ggc gcc 4560  
 Arg Glu Met Ala Leu Ile Ala Ala His Ala Trp His Met Gly Ala  
 1505 1510 1515 1520  
 tgg gac gag atg gcc atg tac gtg gac acg gtg gac aac ccc gag gcc 4608  
 Trp Asp Glu Met Ala Met Tyr Val Asp Thr Val Asp Asn Pro Glu Ala  
 1525 1530 1535  
 gtg ggg ccc aac agc cac acc ccc acc ggc gcc ttc ctg cgc gcg gtg 4656  
 Val Gly Pro Asn Ser His Thr Pro Thr Gly Ala Phe Leu Arg Ala Val  
 1540 1545 1550  
 ctg tgc gtg cgc gcc aac cag gtg agc ggg gcg cag gcg cac gtg gag 4704  
 Leu Cys Val Arg Ala Asn Gln Val Ser Gly Ala Gln Ala His Val Glu  
 1555 1560 1565  
 cgc acc cgc gag ctg atg gtg gcg gac ctg gcg gcg ctg gtg ggc gag 4752  
 Arg Thr Arg Glu Leu Met Val Ala Asp Leu Ala Ala Leu Val Gly Glu  
 1570 1575 1580  
 agc tac gag cgc gcc tac acg gac atg gtg cgc gtg cag cag ctg gcg 4800  
 Ser Tyr Glu Arg Ala Tyr Thr Asp Met Val Arg Val Gln Gln Leu Ala  
 1585 1590 1595 1600  
 gag ctg gag gag gtg tgc gcc tac aag cag gcg ctg gac agg agg gca 4848  
 Glu Leu Glu Glu Val Cys Ala Tyr Lys Gln Ala Leu Asp Arg Arg Ala  
 1605 1610 1615  
 gcc gac ccg ggc ggc agc gag gct cgc atc ggc ttc atc cag cag ctg 4896  
 Ala Asp Pro Gly Gly Ser Glu Ala Arg Ile Gly Phe Ile Gln Gln Leu  
 1620 1625 1630  
 tgg cgc gac ccg ctc cgc ggc gtg cag cgc cac gtg gag gtg tgg cag 4944  
 Trp Arg Asp Arg Leu Arg Gly Val Gln Arg His Val Glu Val Trp Gln  
 1635 1640 1645  
 agc ctg ttc tcc atc cgc agc ctg gtg gtg ccc atg gcg cag gac gtg 4992  
 Ser Leu Phe Ser Ile Arg Ser Leu Val Val Pro Met Ala Gln Asp Val  
 1650 1655 1660  
 gac agc tgg ctc aag ttc gcc agc ctg tgc cgc aag agc ggc cgc agc 5040  
 Asp Ser Trp Leu Lys Phe Ala Ser Leu Cys Arg Lys Ser Gly Arg Ser  
 1665 1670 1675 1680  
 agg cag gcc tac cgc atg ctg ctg cag ctg ctg cgc tac aac cct atg 5088  
 Arg Gln Ala Tyr Arg Met Leu Leu Gln Leu Arg Tyr Asn Pro Met  
 1685 1690 1695  
 aac atc act cag gcc ggc aac ccc ggc tac ggc gcc ggc agc ggc gcg 5136  
 Asn Ile Thr Gln Ala Gly Asn Pro Gly Tyr Gly Ala Gly Ser Gly Ala  
 1700 1705 1710  
 ccg cac gtg atg ctg gcc ttc ctg aag cac ctg tgg acg cag ggc aac 5184  
 Pro His Val Met Leu Ala Phe Leu Lys His Leu Trp Thr Gln Gly Asn  
 1715 1720 1725  
 cgc aca gag gcc tac aac cgc atc aag gac ctg gcg tcg ctc aac ggc 5232  
 Arg Thr Glu Ala Tyr Asn Arg Ile Lys Asp Leu Ala Ser Leu Asn Gly  
 1730 1735 1740  
 cgg gcc ttc ctg cgg ctg ggc atc tgg cag tgg gcc atg aac gat ctg 5280  
 Arg Ala Phe Leu Arg Leu Gly Ile Trp Gln Trp Ala Met Asn Asp Leu  
 1745 1750 1755 1760  
 gac aac ccg ggt gtg att gcg gag aac ctg gct tcc ttc cgc gcg gcc 5328  
 Asp Asn Pro Gly Val Ile Ala Glu Asn Leu Ala Ser Phe Arg Ala Ala  
 1765 1770 1775  
 acc gag cac gcg ccc aat tgg gcc aag gcc tgg cac cag tgg gcg ctg 5376  
 Thr Glu His Ala Pro Asn Trp Ala Lys Ala Trp His Gln Trp Ala Leu  
 1780 1785 1790  
 ttc aat gtg gcg gtt tca gcg cac tac agg tgc gac ccc atg cgg gac 5424  
 Phe Asn Val Ala Val Ser Ala His Tyr Arg Cys Asp Pro Met Arg Asp  
 1795 1800 1805  
 gag aac cag gcc gtg tcg cac gtg ccg ccg gcg gtg cag ggc ttc ttc 5472  
 Glu Asn Gln Ala Val Ser His Val Pro Pro Ala Val Gln Gly Phe Phe  
 1810 1815 1820  
 cgc agc gtg gcg ctg ggg cag gcg gcg ggc gac cgc aca ggc aac ctg 5520  
 Arg Ser Val Ala Leu Gly Gln Ala Ala Gly Asp Arg Thr Gly Asn Leu  
 1825 1830 1835 1840  
 cag gac atc ctg cgg ctg ctg acg ctg tgg ttc aac ttc ggc gcg tac 5568  
 Gln Asp Ile Leu Arg Leu Leu Thr Leu Trp Phe Asn Phe Gly Ala Tyr  
 1845 1850 1855  
 gcc gag gtc cgc gcc gcg ctg acg gag ggc ttc cag ctg gtg tcc atc 5616  
 Ala Glu Val Arg Ala Ala Leu Thr Glu Gly Phe Gln Leu Val Ser Ile  
 1860 1865 1870



## PhoenixTemp32470.tmp.txt

gac acc tgg ctg ctg gtc atc ccg cag atc atc gcg cgc atc cac acc	5664
Asp Thr Trp Leu Leu Val Ile Pro Gln Ile Ile Ala Arg Ile His Thr	
1875 1880 1885	
cac aac aca gac gtg cgc cag ctc atc cac cac ctg ctg gtc aag atc	5712
His Asn Thr Asp Val Arg Gln Leu Ile His His Leu Leu Val Lys Ile	
1890 1895 1900	
ggg cgc cac cac ccg cag gct ctg atg tac ccg ctg ctg gtg gcc acc	5760
Gly Arg His His Pro Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Thr	
1905 1910 1915 1920	
aag tcc cag agc ccg gcc cgg cgc cag gcg gcc tac agc gtg ctg gag	5808
Lys Ser Gln Ser Pro Ala Arg Arg Gln Ala Ala Tyr Ser Val Leu Glu	
1925 1930 1935	
tgc atc cgg cag cac agc gcg gcg ctg gtg gag cag gcg cag ctg gtc	5856
Cys Ile Arg Gln His Ser Ala Ala Leu Val Glu Gln Ala Gln Leu Val	
1940 1945 1950	
agc ggc gag ctc atc cgc atg gcc atc ctg tgg cac gag atg tgg cac	5904
Ser Gly Glu Leu Ile Arg Met Ala Ile Leu Trp His Glu Met Trp His	
1955 1960 1965	
gag ggc ctg gag gag gcc agc cgc ctg tac ttc ggc gag agc aat gtg	5952
Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Ser Asn Val	
1970 1975 1980	
gag ggc atg ctg aac acg ctg ctg ccg ctg cac gag atg ctg gag aag	6000
Glu Gly Met Leu Asn Thr Leu Leu Pro Leu His Glu Met Leu Glu Lys	
1985 1990 2000	
gcg ggg ccc acc aca ctc aag gaa atc gcc ttc gtg cag agc tac ggc	6048
Ala Gly Pro Thr Thr Leu Lys Glu Ile Ala Phe Val Gln Ser Tyr Gly	
2005 2010 2015	
cgg gag ctg tcg gag gcg tac gag tgg ctg atg aag tac aag gcc agc	6096
Arg Glu Leu Ser Glu Ala Tyr Glu Trp Leu Met Lys Tyr Lys Ala Ser	
2020 2025 2030	
cgc aag gag gcg gag ctg cac cag gcc tgg gac ctg tac tac cac gtc	6144
Arg Lys Glu Ala Glu Leu His Gln Ala Trp Asp Leu Tyr Tyr His Val	
2035 2040 2045	
ttc aag cgc atc aac aag cag ctg cgc tcc cta acc acg ctg gag ctg	6192
Phe Lys Arg Ile Asn Lys Gln Leu Arg Ser Leu Thr Thr Leu Glu Leu	
2050 2055 2060	
cag tac gtc agc ccc gcg ctg gtg cgg gcg cag gac ctg gag ctg gca	6240
Gln Tyr Val Ser Pro Ala Leu Val Arg Ala Gln Asp Leu Glu Leu Ala	
2065 2070 2075 2080	
gtg ccc ggc acc tac att gcc ggg gag ccg ctg gtg acc atc gcc gcc	6288
Val Pro Gly Thr Tyr Ile Ala Gly Glu Pro Leu Val Thr Ile Ala Ala	
2085 2090 2095	
ttc gcg ccg cag ctg cac gtc atc agc tcc aag cag cgc ccg cgc aag	6336
Phe Ala Pro Gln Leu His Val Ile Ser Ser Lys Gln Arg Pro Arg Lys	
2100 2105 2110	
ctc acc ata cac ggc ggc gac ggc gag tac atg ttc ctg ctc aag	6384
Leu Thr Ile His Gly Gly Asp Gly Ala Glu Tyr Met Phe Leu Leu Lys	
2115 2120 2125	
ggc cac gag gac ctg cgc cag gac gag cgc gtg atg cag ctg ttt ggc	6432
Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly	
2130 2135 2140	
ctg gtg aac acc atg ttg gcg cac gac cgc atc acc gcc gag cgc gac	6480
Leu Val Asn Thr Met Leu Ala His Asp Arg Ile Thr Ala Glu Arg Asp	
2145 2150 2155 2160	
ctg tcc atc gcg cgc tac gcc gtc atc ccg ctg tcg ccc aac agc ggc	6528
Leu Ser Ile Ala Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn Ser Gly	
2165 2170 2175	
ctc atc ggc tgg gtg ccc aac tgc gac acg ctg cac gcg ctc atc cgg	6576
Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu Ile Arg	
2180 2185 2190	
gag tac agg gag gcc cgc aag atc ccg ctc aac tgg gag cac cgt ctg	6624
Glu Tyr Arg Glu Ala Arg Lys Ile Pro Leu Asn Trp Glu His Arg Leu	
2195 2200 2205	
atg ctg ggc atg gcg ccc gac tac gac cac ctg acg gtc ata cag aag	6672
Met Leu Gly Met Ala Pro Asp Tyr Asp His Leu Thr Val Ile Gln Lys	
2210 2215 2220	
gtg gag gtg ttc gag tac gcg ctg gac tcc acc agc ggc gag gac ctg	6720
Val Glu Val Phe Glu Tyr Ala Leu Asp Ser Thr Ser Gly Glu Asp Leu	
2225 2230 2235 2240	

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cac aag gtg ctg tgg ctc aag agc cgc aac agc gag gtt tgg ctg gac 6768  
 His Lys Val Leu Trp Leu Lys Ser Arg Asn Ser Glu Val Trp Leu Asp  
 2245 2250 2255  
 cgg cgc acc aac tac acc cgc tcc gcc gcc gtc atg tcc atg gtg ggc 6816  
 Arg Arg Thr Asn Tyr Thr Arg Ser Ala Ala Val Met Ser Met Val Gly  
 2260 2265 2270  
 tac atc ctg ggc ctg ggc gac cgc cac ccc tcc aac ctc atg ctg gac 6864  
 Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp  
 2275 2280 2285  
 cgc tac agc ggc aag ctg ctg cac atc gac ttt ggc gac tgc ttc gag 6912  
 Arg Tyr Ser Gly Lys Leu Leu His Ile Asp Phe Gly Asp Cys Phe Glu  
 2290 2295 2300  
 gcg tcc atg aac cgg gag aag ttc ccg gag aag gtg ccg ttc cgg ctc 6960  
 Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu  
 2305 2310 2315 2320  
 acg cgc atg atg atc aag gcc atg gag gtg tgc ggc atc gag ggc aac 7008  
 Thr Arg Met Met Ile Lys Ala Met Glu Val Ser Gly Ile Glu Gly Asn  
 2325 2330 2335  
 ttc cgc acc acg tgc gag aac gtg atg cgc gtg ctg cgc tcc aac aag 7056  
 Phe Arg Thr Thr Cys Glu Asn Val Met Arg Val Leu Arg Ser Asn Lys  
 2340 2345 2350  
 gag agc gtg acc gcc atg ctg gag gcc ttc gtg cac gac ccc ctc atc 7104  
 Glu Ser Val Thr Ala Met Leu Glu Ala Phe Val His Asp Pro Leu Ile  
 2355 2360 2365  
 aac tgg cgc ctg ctc aac acc acc gag gca gcc acg gag gcg gcg ctg 7152  
 Asn Trp Arg Leu Leu Asn Thr Thr Glu Ala Ala Thr Glu Ala Ala Leu  
 2370 2375 2380  
 gcg cgc acg gac ggc ggc ggc ggc ggc ggt ggc cac atg gac ggc ccc 7200  
 Ala Arg Thr Asp Gly Gly Gly Gly Gly Gly Gly His Met Asp Gly Pro  
 2385 2390 2395 2400  
 ggg ggg cac ccg ggg ggc cgg gac gcg ctg ggc ggc ggc ggc ggc ggc 7248  
 Gly Gly His Pro Gly Gly Arg Asp Ala Leu Gly Gly Gly Gly Gly Gly  
 2405 2410 2415  
 gcg ggc ggc ggc ggc ggc ggc gac ccg ggg gcc atg ccc agc ccg ccg 7296  
 Ala Gly Gly Gly Gly Gly Gly Asp Pro Gly Ala Met Pro Ser Pro Pro  
 2420 2425 2430  
 cgg cgc gag acg ccg gag aag gag ctc aag gag gcg ttt gtg aac ctg 7344  
 Arg Arg Glu Thr Arg Glu Lys Glu Leu Lys Glu Ala Phe Val Asn Leu  
 2435 2440 2445  
 ggc gat gcc aac gag gtg ttg aac acg cgc gcg gtg gag gtg atg aag 7392  
 Gly Asp Ala Asn Glu Val Leu Asn Thr Arg Ala Val Glu Val Met Lys  
 2450 2455 2460  
 cgc atg agc gac aag ctc atg ggc cgc gac tac gcc ccc gag cta tgt 7440  
 Arg Met Ser Asp Lys Leu Met Gly Arg Asp Tyr Ala Pro Glu Leu Cys  
 2465 2470 2475 2480  
 gtg ggc ggc ggc agc ggc gcc agc ggc atg gag ccg gac agc gtg ccg 7488  
 Val Gly Gly Gly Ser Gly Ala Ser Gly Met Glu Pro Asp Ser Val Pro  
 2485 2490 2495  
 gcg cag gtg ggg cgc ctc atc aac atg gcg gtc aac cac gag aac ctg 7536  
 Ala Gln Val Gly Arg Leu Ile Asn Met Ala Val Asn His Glu Asn Leu  
 2500 2505 2510  
 tgc cag agc tac atc ggc tgg tgc ccc ttc tgg tag 7572  
 Cys Gln Ser Tyr Ile Gly Trp Cys Pro Phe Trp  
 2515 2520

&lt;210&gt; 2565

&lt;211&gt; 2523

&lt;212&gt; PRT

&lt;213&gt; Chlamydomonas reinhardtii

&lt;400&gt; 2565

Met Met Leu Ser Gly Val Gly Pro Val Pro Thr Lys Pro Ala Phe Lys  
 1 5 10 15  
 Ala Gly Gly Asp Thr Leu Ser Arg His Leu Glu Glu Leu Cys Arg Ser  
 20 25 30  
 Gly Ala Trp Glu Arg Arg His Lys Asp Gly Asp Lys Ala Leu Leu Glu  
 35 40 45  
 Tyr Ile Glu Ala Glu Ala Arg Asp Leu Ser Val Glu Ala Phe Gly Arg  
 50 55 60

## PhoenixTemp32470.tmp.txt

Leu 65	Met	Thr	Asp	Val	Tyr 70	Gln	Arg	Ile	Gly	Asn 75	Met	Leu	Leu	Lys	Gly 80
Asn	Asp	Ile	Thr	Arg 85	Arg	Met	Gly	Gly	Val 90	Leu	Ala	Ile	Asp	Glu 95	Leu
Ile	Asp	Val	Lys 100	Leu	Ser	Gly	Asp	Asp 105	Ala	Ala	Lys	Thr	Ala	Arg	Leu
Ser	Gly	Leu 115	Leu	Ser	Arg	Val	Leu 120	Glu	Glu	Ser	Glu	Asp 125	Pro	Val	Leu
Ser	Glu 130	Ser	Ala	Ser	His	Thr 135	Leu	Gly	His	Leu	Val 140	Arg	Ser	Gly	Gly
Ala 145	Met	Thr	Ser	Asp	Ile 150	Val	Glu	Lys	Glu	Ile 155	Arg	Arg	Ser	Leu	Ala 160
Trp	Cys	Asp	Pro	Arg 165	Asn	Glu	Pro	Asn	Glu 170	Ser	Arg	Arg	Leu	Thr 175	Ala
Leu	Leu	Val	Leu 180	Thr	Glu	Ala	Ala	Glu	Ser 185	Ala	Pro	Ala	Val	Phe	Asn
Val	His	Val 195	Lys	Ser	Phe	Ile	Asp 200	Ala	Val	Trp	Phe	Pro 205	Leu	Arg	Asp
Ala	Lys 210	Gln	His	Ile	Arg	Glu 215	Ala	Ala	Val	Arg	Ala 220	Leu	Lys	Ala	Cys
Leu 225	Cys	Leu	Val	Glu	Lys 230	Arg	Glu	Thr	Arg	Tyr 235	Arg	Val	Gln	Trp	Tyr 240
Tyr	Lys	Leu	His	Glu 245	Gln	Thr	Met	Arg	Gly 250	Met	Lys	Arg	Asp	His 255	Arg
Thr	Gly	Ala	Leu 260	Pro	Ser	Pro	Glu	Ser 265	Ile	His	Gly	Ser	Leu 270	Leu	Ala
Leu	Ala	Glu 275	Leu	Leu	Gln	His	Thr 280	Gly	Glu	Phe	Met	Leu 285	Ala	Arg	Tyr
Lys	Glu 290	Val	Val	Glu	Asn 295	Val	Phe	Arg	Tyr	Lys	Asp 300	Ser	Lys	Glu	Lys
Asn 305	Ile	Arg	Arg	Ala	Val 310	Ile	His	Leu	Leu	Pro 315	Arg	Met	Ala	Ala	Phe 320
Ser	Pro	Glu	Arg	Phe 325	Ala	Ser	Glu	Tyr	Leu 330	Ala	Arg	Ala	Ile	Ala	Phe 335
Leu	Leu	Ile	Val 340	Leu	Lys	Asn	Pro	Pro 345	Glu	Arg	Gly	Ala	Ala	Phe	Ala
Ala	Leu	Ala 355	Asp	Met	Ala	Ala	Ala 360	Leu	Ala	Arg	Gly	Cys 365	Leu	Ser	Pro
Ile	Tyr 370	Val	Ala	Ile	Arg	Glu 375	Ala	Leu	Ser	Ala	Pro 380	Pro	Ala	Ala	Arg
Ala 385	Ala	Ala	Arg	Pro	Arg 390	Pro	Ala	Thr	Cys	Tyr 395	Glu	Ala	Leu	Gln	Cys 400
Val	Gly	Met	Leu	Ala 405	Val	Ala	Leu	Gly	Pro 410	Leu	Trp	Arg	Pro	Tyr 415	Ala
Ala	Ala	Leu	Val 420	Glu	Ala	Met	Val	Leu 425	Thr	Gly	Val	Ser	Glu 430	Val	Leu
Val	Gln	Ala 435	Leu	Thr	Gln	Val	Ala 440	Asn	Ala	Leu	Pro	Glu 445	Leu	Leu	Glu
Asp	Ile 450	Gln	Tyr	Gln	Leu 455	Leu	Asp	Leu	Leu	Ser	Leu 460	Val	Leu	Ser	Lys
Arg 465	Pro	Phe	Asn	Ser	Ser 470	Thr	Thr	Gln	Pro	Lys 475	Phe	Ala	Ala	Leu	Ser 480
Ala	Ala	Ile	Ala	Ala 485	Gly	Glu	Leu	Gln	Gly 490	Asn	Ala	Leu	Thr	Lys 495	Leu
Ala	Leu	Gln	Thr 500	Leu	Gly	Thr	Phe	Asp 505	Leu	Gly	Gly	Ile	Gln 510	Leu	Leu
Glu	Phe	Met 515	Arg	Asp	His	Ile	Leu 520	Ala	Tyr	Thr	Asp	Asp 525	Pro	Asp	Lys
Glu	Ile 530	Arg	Gln	Ala	Ala	Val 535	Leu	Ala	Ala	Cys	Pro 540	Arg	Ala	Gly	Ala
Ala 545	Arg	Ser	Ser	Leu	Arg 550	Val	Arg	Ser	Leu	Arg 555	Ser	Gly	Trp	Arg	Arg 560
Ala	Ala	Ala	Ala	Val 565	Trp	His	Thr	Arg	Val 570	Glu	Arg	Cys	Val 575	Arg	Gly
Arg	Leu	Leu	Val 580	Val	Ala	Val	Ala	Asp 585	Pro	Ser	Glu	Arg	Val 590	Arg	Lys
Glu	Val	Leu 595	Arg	Ala	Leu	Val	Ala 600	Thr	Thr	Ala	Leu	Asp 605	Asp	Tyr	Leu
Ala	Gln	Ala	Asp	Cys	Leu	Arg	Ala	Leu	Phe	Val	Gly	Met	Asn	Asp	Glu

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610	Ser	Val	Ala	Val	Arg	Gly	615	Leu	Ala	Ile	Arg	Leu	620	Val	Gly	Arg	Leu	Ala
625	Glu	Arg	Asn	Pro	Ala	His	630	Val	Asn	Pro	Ala	Leu	635	Arg	Lys	His	Leu	Leu
	Gln	Leu	Leu	His	645	Asp	Met	Glu	Phe	Ser	650	Pro	Asp	Asn	Arg	Ala	Arg	Glu
	Glu	Ser	Ala	660	Phe	Leu	Leu	Glu	Val	665	Ile	Thr	Ala	Ala	Ala	Arg	Leu	
	Ile	Met	Pro	Tyr	Val	Ser	Pro	Ile	Gln	Lys	Ala	Leu	685	Val	Ser	Lys	Leu	
	Arg	Gly	Gly	Ser	Gly	Pro	695	Gly	Ile	Thr	Val	Leu	700	Ser	Thr	Leu	Gly	Ala
705	Leu	Ala	Glu	Val	Ser	710	Gly	Thr	Thr	Phe	Arg	715	Pro	Phe	Ile	Ser	Glu	Val
	Met	Pro	Leu	Val	Ile	Glu	Ala	Ile	Gln	Asp	Asn	Ser	Asp	Gly	Arg	Arg		
	Arg	Val	Val	Ala	Val	Lys	Thr	Leu	745	Gly	Phe	Ile	Val	Ser	750	Cys	Gly	
	Asn	Val	Met	Gly	Pro	Tyr	Leu	Glu	Tyr	Pro	Gln	Leu	765	Leu	Ser	Val	Leu	
770	Leu	Arg	Met	Leu	His	Glu	775	Gly	His	Pro	Ala	Gln	780	Arg	Arg	Glu	Val	Ile
785	Lys	Val	Leu	Gly	Ile	805	Gly	Ala	Leu	Asp	810	Pro	His	Thr	His	Lys	Leu	
	Asn	Gln	Ala	Ser	Leu	Ser	Gly	Glu	Gly	Lys	Leu	Glu	Lys	Glu	Gly	Val		
	Arg	Pro	Leu	Arg	His	Gly	Gly	Gly	Gly	Ala	Gly	Gly	Ala	Gly	Gly	Gly		
	Ala	Gly	Gly	Gly	Val	Gly	855	Gly	Gly	Val	Ala	Gly	860	Asp	Ser	Asn	Asp	
865	Gly	Gly	Met	Gly	Pro	Gly	870	Asp	Asp	Gly	Gly	Pro	875	Gly	Gly	Asp	Leu	Leu
	Pro	Ser	Ser	Gly	Leu	Val	Thr	Ser	Ser	Glu	890	Asp	Tyr	Tyr	Pro	Thr	Val	
	Ala	Ile	Asn	Ala	Leu	Met	Arg	Val	Leu	905	Arg	Asp	Pro	Ala	Leu	Ala	Ser	
	Gln	His	Leu	Ala	Val	Ile	Arg	Ala	Leu	Ala	Ala	Ile	925	Phe	Arg	Ala	Leu	
	Gln	Leu	Ser	Val	Val	Pro	Tyr	Leu	Pro	Lys	Val	Leu	940	Pro	Ile	Leu	Leu	
945	Gly	Val	Leu	Arg	Gly	Gly	950	Asp	Glu	Ala	Leu	Arg	955	Gln	His	Met	Arg	Ala
	Ser	Leu	Arg	Ala	Leu	Val	Gly	Tyr	Val	Arg	970	Gln	His	Met	Arg	Arg	Phe	
	Leu	Pro	Asp	Leu	Thr	Gln	Leu	Val	His	985	Glu	Phe	Trp	Pro	Ala	Ala	Pro	
	Arg	Thr	Cys	Leu	Ala	Leu	Ile	Ala	Asp	Leu	Gly	Met	Ala	Leu	Arg	Asp		
	Asp	Ile	Arg	Ala	Lys	Pro	Leu	Pro	Pro	Leu	Pro	Leu	1005	Leu	Pro	Pro	Ser	
1010	Ser	Pro	Pro	Arg	Thr	Pro	His	Asn	Arg	Gln	Tyr	Val	1020	Pro	Glu	Leu	Leu	
1025	Pro	Lys	Phe	Val	Ala	Val	Phe	Ser	Glu	Ala	Glu	Arg	Ala	Gly	Ser	Trp		
	Asp	Leu	Val	Arg	Pro	Ala	Leu	Gly	Ala	Leu	Glu	Ser	Leu	Gly	Ser	Ala		
	Val	Asp	Asp	Ser	Leu	His	Leu	Leu	Pro	Ser	Met	Val	1070	Arg	Leu	Ile		
	Ser	Pro	Ala	Ala	Ser	Ser	Thr	Pro	Ala	Glu	Val	Arg	1085	Arg	Ala	Ala	Leu	
1090	Arg	Ser	Leu	Arg	Arg	Leu	Ile	Pro	Arg	Met	Gln	Leu	1100	Gly	Gly	Tyr	Ala	
1105	Ser	Ala	Val	Leu	His	Pro	Leu	Ile	Lys	Val	Leu	Asp	Gly	His	Ser	Asp		
	Glu	Gln	Leu	Arg	Arg	Asp	Ala	Leu	Asp	Thr	Ile	Cys	Ala	Val	Ala	Val		
	Cys	Leu	Gly	Pro	Glu	Phe	Ala	Ile	1145	Phe	Val	Pro	Thr	Ile	Arg	Lys	Val	
1155									1160									

## PhoenixTemp32470.tmp.txt

Arg Val Arg His Arg Leu His His Glu Trp Phe Asp Arg Leu Ala Gly  
 1170 1175 1180  
 Lys Val Cys Ala Val Ser Pro Pro Cys Met Ser Asp Ala Glu Asp Trp  
 1185 1190 1195 1200  
 Glu Gly Ala Gly Gly Ala Ala Ser Gly Ala Gly Ser Ala Gly Ala Ala  
 1205 1210 1215  
 Gly Gly Trp Ala Val Glu Ile Asp Leu Ala Arg Met Gln Ala Glu  
 1220 1225 1230  
 Gly Gly Gly Ala Leu Gly Gly Gln Pro Pro Val Pro Pro Gly Pro Asp  
 1235 1240 1245  
 Gly Gly Pro Ser Ala Lys Leu Pro Val Asn Ala Ala Val Leu Arg Arg  
 1250 1255 1260  
 Ala Trp Glu Ser Ser His Arg Val Thr Lys Glu Asp Trp Ala Glu Trp  
 1265 1270 1275 1280  
 Met Arg Asn Phe Ala Val Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala  
 1285 1290 1295  
 Leu Arg Ala Cys His Gly Leu Ala Gln Val His Pro Ser Met Ala Arg  
 1300 1305 1310  
 Glu Leu Phe Ala Ala Gly Phe Val Ser Cys Trp Ala Glu Leu Glu Gln  
 1315 1320 1325  
 Gly Leu Gln Glu Gln Leu Val Arg Ser Leu Glu Ala Ala Leu Ala Ser  
 1330 1335 1340  
 Pro Thr Ile Pro Pro Glu Thr Val Thr Ala Leu Asn Leu Ala Glu  
 1345 1350 1355 1360  
 Phe Met Glu His Asp Asp Lys Arg Leu Pro Leu Asp Thr Arg Thr Leu  
 1365 1370 1375  
 Gly Ala Leu Ala Glu Lys Cys His Ala Phe Ala Lys Ala Leu His Tyr  
 1380 1385 1390  
 Lys Glu Leu Glu Phe Gln Thr Ser Pro Gln Ser Ala Ile Glu Ala Leu  
 1395 1400 1405  
 Ile His Ile Asn Asn Gln Leu Arg Gln Pro Glu Ala Ala Val Gly Val  
 1410 1415 1420  
 Leu Ala Tyr Ala Gln Lys His Leu His Met Glu Leu Lys Glu Gly Trp  
 1425 1430 1435 1440  
 Tyr Glu Lys Leu Cys Arg Trp Asp Glu Ala Leu Asp Ala Tyr Glu Arg  
 1445 1450 1455  
 Arg Leu Leu Lys Glu Ala Pro Gly Ser Met Glu Tyr His Thr Ala Leu  
 1460 1465 1470  
 Leu Gly Lys Met Arg Cys Leu Ala Ser Leu Ala Glu Trp Glu Asn Leu  
 1475 1480 1485  
 Ser Asn Leu Cys Arg Thr Glu Trp Arg Lys Ser Glu Pro His Val Arg  
 1490 1495 1500  
 Arg Glu Met Ala Leu Ile Ala Ala His Ala Ala Trp His Met Gly Ala  
 1505 1510 1515 1520  
 Trp Asp Glu Met Ala Met Tyr Val Asp Thr Val Asp Asn Pro Glu Ala  
 1525 1530 1535  
 Val Gly Pro Asn Ser His Thr Pro Thr Gly Ala Phe Leu Arg Ala Val  
 1540 1545 1550  
 Leu Cys Val Arg Ala Asn Gln Val Ser Gly Ala Gln Ala His Val Glu  
 1555 1560 1565  
 Arg Thr Arg Glu Leu Met Val Ala Asp Leu Ala Ala Leu Val Gly Glu  
 1570 1575 1580  
 Ser Tyr Glu Arg Ala Tyr Thr Asp Met Val Arg Val Gln Gln Leu Ala  
 1585 1590 1595 1600  
 Glu Leu Glu Glu Val Cys Ala Tyr Lys Gln Ala Leu Asp Arg Arg Ala  
 1605 1610 1615  
 Ala Asp Pro Gly Gly Ser Glu Ala Arg Ile Gly Phe Ile Gln Gln Leu  
 1620 1625 1630  
 Trp Arg Asp Arg Leu Arg Gly Val Gln Arg His Val Glu Val Trp Gln  
 1635 1640 1645  
 Ser Leu Phe Ser Ile Arg Ser Leu Val Val Pro Met Ala Gln Asp Val  
 1650 1655 1660  
 Asp Ser Trp Leu Lys Phe Ala Ser Leu Cys Arg Lys Ser Gly Arg Ser  
 1665 1670 1675 1680  
 Arg Gln Ala Tyr Arg Met Leu Leu Gln Leu Leu Arg Tyr Asn Pro Met  
 1685 1690 1695  
 Asn Ile Thr Gln Ala Gly Asn Pro Gly Tyr Gly Ala Gly Ser Gly Ala  
 1700 1705 1710  
 Pro His Val Met Leu Ala Phe Leu Lys His Leu Trp Thr Gln Gly Asn

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1715 1720 1725  
 Arg Thr Glu Ala Tyr Asn Arg Ile Lys Asp Leu Ala Ser Leu Asn Gly  
 1730 1735 1740  
 Arg Ala Phe Leu Arg Leu Gly Ile Trp Gln Trp Ala Met Asn Asp Leu  
 1745 1750 1755 1760  
 Asp Asn Pro Gly Val Ile Ala Glu Asn Leu Ala Ser Phe Arg Ala Ala  
 1765 1770 1775  
 Thr Glu His Ala Pro Asn Trp Ala Lys Ala Trp His Gln Trp Ala Leu  
 1780 1785 1790  
 Phe Asn Val Ala Val Ser Ala His Tyr Arg Cys Asp Pro Met Arg Asp  
 1795 1800 1805  
 Glu Asn Gln Ala Val Ser His Val Pro Pro Ala Val Gln Gly Phe Phe  
 1810 1815 1820  
 Arg Ser Val Ala Leu Gly Gln Ala Ala Gly Asp Arg Thr Gly Asn Leu  
 1825 1830 1835 1840  
 Gln Asp Ile Leu Arg Leu Leu Thr Leu Trp Phe Asn Phe Gly Ala Tyr  
 1845 1850 1855  
 Ala Glu Val Arg Ala Ala Leu Thr Glu Gly Phe Gln Leu Val Ser Ile  
 1860 1865 1870  
 Asp Thr Trp Leu Leu Val Ile Pro Gln Ile Ile Ala Arg Ile His Thr  
 1875 1880 1885  
 His Asn Thr Asp Val Arg Gln Leu Ile His His Leu Leu Val Lys Ile  
 1890 1895 1900  
 Gly Arg His His Pro Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Thr  
 1905 1910 1915 1920  
 Lys Ser Gln Ser Pro Ala Arg Arg Gln Ala Ala Tyr Ser Val Leu Glu  
 1925 1930 1935  
 Cys Ile Arg Gln His Ser Ala Ala Leu Val Glu Gln Ala Gln Leu Val  
 1940 1945 1950  
 Ser Gly Glu Leu Ile Arg Met Ala Ile Leu Trp His Glu Met Trp His  
 1955 1960 1965  
 Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Ser Asn Val  
 1970 1975 1980  
 Glu Gly Met Leu Asn Thr Leu Leu Pro Leu His Glu Met Leu Glu Lys  
 1985 1990 1995 2000  
 Ala Gly Pro Thr Thr Leu Lys Glu Ile Ala Phe Val Gln Ser Tyr Gly  
 2005 2010 2015  
 Arg Glu Leu Ser Glu Ala Tyr Glu Trp Leu Met Lys Tyr Lys Ala Ser  
 2020 2025 2030  
 Arg Lys Glu Ala Glu Leu His Gln Ala Trp Asp Leu Tyr Tyr His Val  
 2035 2040 2045  
 Phe Lys Arg Ile Asn Lys Gln Leu Arg Ser Leu Thr Thr Leu Glu Leu  
 2050 2055 2060  
 Gln Tyr Val Ser Pro Ala Leu Val Arg Ala Gln Asp Leu Glu Leu Ala  
 2065 2070 2075 2080  
 Val Pro Gly Thr Tyr Ile Ala Gly Glu Pro Leu Val Thr Ile Ala Ala  
 2085 2090 2095  
 Phe Ala Pro Gln Leu His Val Ile Ser Ser Lys Gln Arg Pro Arg Lys  
 2100 2105 2110  
 Leu Thr Ile His Gly Gly Asp Gly Ala Glu Tyr Met Phe Leu Leu Lys  
 2115 2120 2125  
 Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly  
 2130 2135 2140  
 Leu Val Asn Thr Met Leu Ala His Asp Arg Ile Thr Ala Glu Arg Asp  
 2145 2150 2155 2160  
 Leu Ser Ile Ala Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn Ser Gly  
 2165 2170 2175  
 Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu Ile Arg  
 2180 2185 2190  
 Glu Tyr Arg Glu Ala Arg Lys Ile Pro Leu Asn Trp Glu His Arg Leu  
 2195 2200 2205  
 Met Leu Gly Met Ala Pro Asp Tyr Asp His Leu Thr Val Ile Gln Lys  
 2210 2215 2220  
 Val Glu Val Phe Glu Tyr Ala Leu Asp Ser Thr Ser Gly Glu Asp Leu  
 2225 2230 2235 2240  
 His Lys Val Leu Trp Leu Lys Ser Arg Asn Ser Glu Val Trp Leu Asp  
 2245 2250 2255  
 Arg Arg Thr Asn Tyr Thr Arg Ser Ala Ala Val Met Ser Met Val Gly  
 2260 2265 2270

## PhoenixTemp32470.tmp.txt

Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp  
 2275 2280 2285  
 Arg Tyr Ser Gly Lys Leu Leu His Ile Asp Phe Gly Asp Cys Phe Glu  
 2290 2295 2300  
 Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu  
 2305 2310 2315 2320  
 Thr Arg Met Met Ile Lys Ala Met Glu Val Ser Gly Ile Glu Gly Asn  
 2325 2330 2335  
 Phe Arg Thr Thr Cys Glu Asn Val Met Arg Val Leu Arg Ser Asn Lys  
 2340 2345 2350  
 Glu Ser Val Thr Ala Met Leu Glu Ala Phe Val His Asp Pro Leu Ile  
 2355 2360 2365  
 Asn Trp Arg Leu Leu Asn Thr Thr Glu Ala Ala Thr Glu Ala Ala Leu  
 2370 2375 2380  
 Ala Arg Thr Asp Gly Gly Gly Gly Gly Gly His Met Asp Gly Pro  
 2385 2390 2395 2400  
 Gly Gly His Pro Gly Gly Arg Asp Ala Leu Gly Gly Gly Gly Gly  
 2405 2410 2415  
 Ala Gly Gly Gly Gly Gly Gly Asp Pro Gly Ala Met Pro Ser Pro Pro  
 2420 2425 2430  
 Arg Arg Glu Thr Arg Glu Lys Glu Leu Lys Glu Ala Phe Val Asn Leu  
 2435 2440 2445  
 Gly Asp Ala Asn Glu Val Leu Asn Thr Arg Ala Val Glu Val Met Lys  
 2450 2455 2460  
 Arg Met Ser Asp Lys Leu Met Gly Arg Asp Tyr Ala Pro Glu Leu Cys  
 2465 2470 2475 2480  
 Val Gly Gly Gly Ser Gly Ala Ser Gly Met Glu Pro Asp Ser Val Pro  
 2485 2490 2495  
 Ala Gln Val Gly Arg Leu Ile Asn Met Ala Val Asn His Glu Asn Leu  
 2500 2505 2510  
 Cys Gln Ser Tyr Ile Gly Trp Cys Pro Phe Trp  
 2515 2520

&lt;210&gt; 2566

&lt;211&gt; 7395

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7395)

&lt;400&gt; 2566

atg aag ccc tcg ccg cac ttc ccg gag atc gga aag aag cct aaa gat	48
Met Lys Pro Ser Pro His Phe Pro Glu Ile Gly Lys Lys Pro Lys Asp	
1 5 10 15	
ttg att gct aag gac cac aca ttt aac atc gcg gct tac atc tcg tct	96
Leu Ile Ala Lys Asp His Thr Phe Asn Ile Ala Ala Tyr Ile Ser Ser	
20 25 30	
gga gcg gat gtt att gct gcc gcg ctc cgt aaa cat gtt gag gag gaa	144
Gly Ala Asp Val Ile Ala Ala Ala Leu Arg Lys His Val Glu Glu Glu	
35 40 45	
gcc cga gat ctc agc ggt gaa gct ttt tta agg ttt atg gat cag ctc	192
Ala Arg Asp Leu Ser Gly Glu Ala Phe Leu Arg Phe Met Asp Gln Leu	
50 55 60	
tat gag cag ata tct agt tta ctg cag agc aac gat gtt aat gaa aat	240
Tyr Glu Gln Ile Ser Ser Leu Leu Gln Ser Asn Asp Val Asn Glu Asn	
65 70 75 80	
tta ctg gct ctc cgt gct atc gat gcg tta att gat atg ccc ttt gga	288
Leu Leu Ala Leu Arg Ala Ile Asp Ala Leu Ile Asp Met Pro Phe Gly	
85 90 95	
gaa ggc gct tcc aaa gtt tct aag ttt gcc agc ttc ttg aga aac gta	336
Glu Gly Ala Ser Lys Val Ser Lys Phe Ala Ser Phe Leu Arg Asn Val	
100 105 110	
ttt gaa gtg aag cgc gac cct gaa atc cta gtt ccc gca agt gaa gtg	384
Phe Glu Val Lys Arg Asp Pro Glu Ile Leu Val Pro Ala Ser Glu Val	
115 120 125	
ctg ggt cat tta gca aaa gcg gga gga gca atg act gca gat gaa gtg	432
Leu Gly His Leu Ala Lys Ala Gly Gly Ala Met Thr Ala Asp Glu Val	

## PhoenixTemp32470.tmp.txt

130	gag	cgg	cag	att	aaa	acg	135	gct	ttg	ggg	tgg	ctt	140	act	ggt	gaa	cga	gtg	480
	Glu	Arg	Gln	Ile	Lys	Thr	Ala	Leu	Leu	Gly	Trp	Leu	Thr	Gly	Glu	Arg	Val		
145	gaa	tat	cgc	cga	ttt	gca	150	gct	gta	ctc	att	ctc	155	aaa	gag	atg	gca	gaa	528
	Glu	Tyr	Arg	Arg	Phe	Ala	Ala	Val	Val	Leu	Ile	Leu	Lys	Glu	Met	Ala	Glu		
					165						170					175			
	aat	gcg	tca	aca	gtt	ttc	aat	ggt	cat	ggt	cct	gag	ttt	ggt	gat	gct		576	
	Asn	Ala	Ser	Thr	Val	Phe	Asn	Val	His	Val	Pro	Glu	Phe	Val	Asp	Ala			
				180					185					190					
	ata	tgg	gta	gca	ctg	aga	gac	cct	aaa	caa	gct	ggt	cgt	gaa	aaa	gca		624	
	Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	Lys	Gln	Ala	Val	Arg	Glu	Lys	Ala			
			195					200					205						
	gtt	gaa	gcc	ttg	cgc	gct	tgt	ctc	cat	ggt	att	gaa	aaa	cgg	gag	aca		672	
	Val	Glu	Ala	Leu	Arg	Ala	Cys	Leu	His	Val	Ile	Glu	Lys	Arg	Glu	Thr			
		210				215						220							
	cgt	tgg	cgt	gta	caa	tgg	tat	tac	cgg	atg	tgt	gaa	gcc	gca	caa	gtt		720	
	Arg	Trp	Arg	Val	Gln	Trp	Tyr	Tyr	Arg	Met	Cys	Glu	Ala	Ala	Gln	Val			
						230					235					240			
	ggg	ctt	ggc	agg	aat	gct	tct	ggt	cat	agt	att	cat	gga	tca	tta	ttg		768	
	Gly	Leu	Gly	Arg	Asn	Ala	Ser	Val	His	Ser	Ile	His	Gly	Ser	Leu	Leu			
					245					250					255				
	gcc	gtt	gga	gaa	ttg	ctg	agg	aat	aca	ggg	gag	ttt	atg	atg	tct	cgg		816	
	Ala	Val	Gly	Glu	Leu	Leu	Arg	Asn	Thr	Gly	Glu	Phe	Met	Met	Ser	Arg			
				260					265				270						
	tac	aga	gaa	gtg	gct	gat	att	gtc	ctc	gat	tat	tta	aag	cat	cga	gat		864	
	Tyr	Arg	Glu	Val	Ala	Asp	Ile	Val	Leu	Asp	Tyr	Leu	Lys	His	Arg	Asp			
				275				280					285						
	cag	ctt	gtt	cga	cgt	agt	ata	aca	tca	ctt	ctt	cct	cga	att	gcc	cac		912	
	Gln	Leu	Val	Arg	Arg	Ser	Ile	Thr	Ser	Leu	Leu	Pro	Arg	Ile	Ala	His			
		290				295						300							
	ttc	ctg	cgt	gac	aga	ttt	gtg	act	aat	tac	ctg	aag	att	tgt	atg	gat		960	
	Phe	Leu	Arg	Asp	Arg	Phe	Val	Thr	Asn	Tyr	Leu	Lys	Ile	Cys	Met	Asp			
		305				310				315					320				
	cat	atc	ttg	ttt	gtt	cta	cgt	aca	cca	gac	gag	cgc	gct	agt	ggt	ttt		1008	
	His	Ile	Leu	Phe	Val	Leu	Arg	Thr	Pro	Asp	Glu	Arg	Ala	Ser	Gly	Phe			
					325					330					335				
	gtt	gcc	ctt	gga	gag	atg	gct	ggg	gct	ctg	ggt	gtt	gaa	ctt	gtg	cct		1056	
	Val	Ala	Leu	Gly	Glu	Met	Ala	Gly	Ala	Leu	Gly	Val	Glu	Leu	Val	Pro			
				340				345					350						
	tat	tta	cca	gca	att	acc	tca	cat	ttg	caa	gat	gcg	att	gct	cct	cgc		1104	
	Tyr	Leu	Pro	Ala	Ile	Thr	Ser	His	Leu	Gln	Asp	Ala	Ile	Ala	Pro	Arg			
			355					360				365							
	aga	gga	agg	cca	tct	ctt	gag	gca	att	tct	tgt	gta	gga	agc	ttt	gca		1152	
	Arg	Gly	Arg	Pro	Ser	Leu	Glu	Ala	Ile	Ser	Cys	Val	Gly	Ser	Phe	Ala			
		370				375						380							
	aaa	gct	atg	ggt	cct	gca	atg	gaa	cct	cat	att	cgt	agc	gga	ctt	cta		1200	
	Lys	Ala	Met	Gly	Pro	Ala	Met	Glu	Pro	His	Ile	Arg	Ser	Gly	Leu	Leu			
		385				390					395				400				
	gat	gct	atg	ttt	ttt	gct	ggt	ctt	tct	gat	aaa	ctt	ata	gat	gca	ctc		1248	
	Asp	Ala	Met	Phe	Phe	Ala	Gly	Leu	Ser	Asp	Lys	Leu	Ile	Asp	Ala	Leu			
					405					410					415				
	gag	tct	ata	agc	aca	agc	atc	ccg	tct	tta	cta	ccc	aca	ata	cag	gag		1296	
	Glu	Ser	Ile	Ser	Thr	Ser	Ile	Pro	Ser	Leu	Leu	Pro	Thr	Ile	Gln	Glu			
				420				425					430						
	cgt	tta	ttg	gat	tgt	ata	tct	caa	gca	cta	cca	aag	tca	tca	ata	agg		1344	
	Arg	Leu	Leu	Asp	Cys	Ile	Ser	Gln	Ala	Leu	Pro	Lys	Ser	Ser	Ile	Arg			
			435					440					445						
	cca	ggt	gct	tct	gtt	ggt	cga	gca	agc	agg	tca	aac	aat	ttg	caa	cag		1392	
	Pro	Gly	Ala	Ser	Val	Gly	Arg	Ala	Ser	Arg	Ser	Asn	Asn	Leu	Gln	Gln			
		450				455						460							
	ttt	gtg	gac	tct	aat	agt	cct	gtt	ctt	gtg	caa	ctt	gca	ctg	tgg	act		1440	
	Phe	Val	Asp	Ser	Asn	Ser	Pro	Val	Leu	Val	Gln	Leu	Ala	Leu	Trp	Thr			
		465				470				475					480				
	cta	gca	aac	ttc	aac	ttt	aag	ggc	cat	gaa	ctt	ctg	gaa	ttc	gct	aga		1488	
	Leu	Ala	Asn	Phe	Asn	Phe	Lys	Gly	His	Glu	Leu	Leu	Glu	Phe	Ala	Arg			
					485					490					495				
	gag	agt	gtc	ata	ctt	tat	ttg	gaa	gat	gaa	gat	agc	agt	acc	aga	aaa		1536	
	Glu	Ser	Val	Ile	Leu	Tyr	Leu	Glu	Asp	Glu	Asp	Ser	Ser	Thr	Arg	Lys			



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500																505																510															
gct Ala	gcc Ala	tct Ser 515	ttg Leu	tgc Cys	tgt Cys	tgc Cys	aaa Lys 520	tta Leu	gtt Val	gca Ala	cac His	tcc Ser 525	ctt Leu	tct Ser	gct Ala	1584																															
tct Ser	tca Ser 530	gct Ala	tca Ser	cag Gln	ttc Phe	ggt Gly 535	tca Ser	aat Asn	agg Arg	aca Thr	aat Asn 540	cgt Arg	att Ile	gga Gly	gga Gly	1632																															
gct Ala 545	aag Lys	cgc Arg	cgc Arg	cgg Arg	ctt Leu 550	gta Val	gag Glu	gag Glu	ata Ile	gtg Val 555	gag Glu	aaa Lys	ctt Leu	ctt Leu	atg Met 560	1680																															
gct Ala	gca Ala	gtt Val	gct Ala	gat Asp 565	gct Ala	gat Asp	gtt Val	ggt Gly	gtt Val 570	aga Arg	agt Ser	tca Ser	gtc Val	ttc Phe 575	aag Lys	1728																															
gct Ala	ttg Leu	tat Tyr	cga Arg 580	aat Asn	cca Pro	gct Ala	ttt Phe	gat Asp 585	gat Asp	ttc Phe	ttg Leu	gcc Ala	caa Gln 590	gct Ala	gac Asp	1776																															
atc Ile	ttg Leu	act Thr 595	tca Ser	att Ile	ttt Phe	gtt Val	gcc Ala 600	tta Leu	aat Asn	gat Asp	gag Glu	gaa Glu 605	tat Tyr	gat Asp	gtc Val	1824																															
aga Arg	gaa Glu 610	ttg Leu	gca Ala	att Ile	tct Ser	gtt Val 615	gct Ala	ggt Gly	cga Arg	ttg Leu	tct Ser 620	gaa Glu	aag Lys	aat Asn	cct Pro	1872																															
gca Ala 625	tat Tyr	gta Val	ctg Leu	cct Pro	gcc Ala 630	ctt Leu	cg Arg	cg Arg	tat Tyr	ctt Leu 635	ata Ile	caa Gln	ttg Leu	ctc Leu	aca Thr 640	1920																															
tat Tyr	ctt Leu	gac Asp	cag Gln	agt Ser 645	atg Met	gat Asp	agc Ser	aag Lys	tgt Cys 650	aga Arg	gag Glu	gaa Glu	agt Ser	gct Ala 655	aga Arg	1968																															
tta Leu	ttg Leu	ggt Gly	tgt Cys 660	tta Leu	att Ile	agg Arg	agc Ser	tgc Cys 665	gcg Ala	cg Arg	ctc Leu	att Ile	ctt Leu 670	cct Pro	tac Tyr	2016																															
att Ile	gct Ala	cca Pro 675	gtt Val	cac His	aag Lys	gca Ala	cta Leu 680	gtg Val	act Thr	aga Arg	ttg Leu	tgt Cys 685	gaa Glu	gga Gly	acg Thr	2064																															
gga Gly	cca Pro 690	aat Asn	gct Ala	aat Asn	aat Asn	gct Ala 695	ctt Leu	gct Ala	gcg Ala	gga Gly	gtg Val 700	ctt Leu	gcc Ala	act Thr	gtt Val	2112																															
gga Gly 705	gaa Glu	ctg Leu	gcc Ala	aaa Lys	gtg Val 710	ggt Gly	ggc Gly	ttt Phe	gct Ala 715	atg Met	agg Arg	caa Gln	tat Tyr	ctt Leu	cct Pro 720	2160																															
gag Glu	ctg Leu	atg Met	cct Pro	gta Val 725	gtt Val	gtg Val	gat Asp	tct Ser	ctt Leu 730	tta Leu	gat Asp	gga Gly	ggt Gly	gct Ala 735	gtt Val	2208																															
agt Ser	aaa Lys	agg Arg	gaa Glu 740	gtg Val	gca Ala	gtg Val	tca Ser	act Thr 745	ctg Leu	gga Gly	cag Gln	att Ile	atc Ile 750	cag Gln	agc Ser	2256																															
aca Thr	ggc Gly	tat Tyr 755	gtt Val	att Ile	gcc Ala	ccc Pro	tat Tyr 760	aat Asn	gag Glu	tac Tyr	ccc Pro	cca Pro 765	ttg Leu	ctt Leu	ggc Gly	2304																															
tta Leu	ctc Leu 770	ttg Leu	aag Lys	ttg Leu	ctt Leu	aat Asn 775	ggt Gly	gaa Glu	ttg Leu	gaa Glu	tgg Trp 780	tca Ser	act Thr	aga Arg	cta Leu	2352																															
gaa Glu 785	gtg Val	ctg Leu	aag Lys	gtt Val	tta Leu 790	ggg Gly	att Ile	atg Met	ggt Gly	gca Ala 795	ttg Leu	gac Asp	cct Pro	cac His	gca Ala 800	2400																															
cac His	aag Lys	cg Arg	aat Asn	cag Gln 805	cac His	aat Asn	cta Leu	cct Pro	ggt Gly 810	cag Gln	cat His	aga Arg	gag Glu	gtc Val 815	cta Leu	2448																															
cg Arg	cca Pro	aca Thr	tcg Ser 820	aaa Lys	ccg Pro	cac His	aac Asn	ata Ile 825	ttg Leu	ttt Phe	cca Pro	tgg Trp 830	aag Lys	aac Asn	cta Leu	2496																															
ccg Pro	act Thr	gac Asp 835	tac Tyr	tgg Trp	cct Pro	tct Ser	ttt Phe 840	cag Gln	cat His	ccg Pro	agg Arg	act Thr 845	att Thr	caa Gln		2544																															
cag Gln	ttg Leu 850	caa Gln	tta Leu																																												

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865	caa	tgg	gcc	ttg	gct	870	gtg	ttc	cca	tac	875	cca	aag	ggt	ctt	cct	880	gat		
Gln	Trp	Ala	Leu	Ala	Val	Val	Phe	Pro	Pro	Tyr	Leu	Pro	Lys	Val	Leu	Pro	Asp			2688
				885							890									
cta	ttc	cgt	gct	ggt	cg	atg	tgc	gag	gat	ggt	gct	tta	aaa	gag	ttc					2736
Leu	Phe	Arg	Ala	Val	Arg	Met	Cys	Glu	Asp	Gly	Ala	Leu	Lys	Glu	Phe					
			900					905					910							
ata	acc	tgg	aaa	ctt	gga	aca	ttg	tct	att	gtc	cgg	cag	cac	atc						2784
Ile	Thr	Trp	Lys	Leu	Gly	Thr	Leu	Ile	Ser	Val	Arg	Gln	His	Ile						
		915					920				925									
cga	aaa	tat	tta	caa	gac	ata	ctt	tcc	ctc	atc	tct	gag	ctg	tgg	act					2832
Arg	Lys	Tyr	Leu	Gln	Asp	Ile	Leu	Ser	Leu	Ile	Ser	Glu	Leu	Trp	Thr					
		930				935					940									
tcc	tca	ttc	agc	ttg	gct	gca	cca	aat	cgg	acc	ata	cag	ggc	cca	cag					2880
Ser	Ser	Phe	Ser	Leu	Ala	Ala	Pro	Asn	Arg	Thr	Ile	Gln	Gly	Pro	Gln					
945					950					955					960					
ggt	tca	ccg	ggt	ctt	cac	ctt	gtc	gag	caa	cta	tgc	tta	gct	tta	aat					2928
Gly	Ser	Pro	Val	Leu	His	Leu	Val	Glu	Gln	Leu	Cys	Leu	Ala	Leu	Asn					
				965				970						975						
gat	gag	ttc	aga	atg	tat	tta	ctt	cac	att	cta	ccg	agt	tgt	atc	caa					2976
Asp	Glu	Phe	Arg	Met	Tyr	Leu	Leu	His	Ile	Leu	Pro	Ser	Cys	Ile	Gln					
			980					985					990							
gtc	tta	ggt	gac	gct	gaa	cgt	tgc	aat	gat	tat	tac	tat	ggt	cct	gac					3024
Val	Leu	Gly	Asp	Ala	Glu	Arg	Cys	Asn	Asp	Tyr	Tyr	Tyr	Val	Pro	Asp					
		995				1000						1005								
ata	tta	cac	aca	ctt	gaa	ggt	ttt	ggc	gga	aat	ttg	gat	gag	cac	atg					3072
Ile	Leu	His	Thr	Leu	Glu	Val	Phe	Gly	Gly	Asn	Leu	Asp	Glu	His	Met					
		1010				1015					1020									
cac	ttg	ggt	gct	ccg	gtg	ctt	ggt	cgt	tta	ttt	aaa	gtg	gag	ctg	ggt					3120
His	Leu	Val	Ala	Pro	Val	Leu	Val	Arg	Leu	Phe	Lys	Val	Glu	Leu	Val					
1025					1030					1035				1040						
gat	atc	agg	cgg	cgt	gca	att	ggt	act	ttg	act	aat	ctt	ata	cct	aag					3168
Asp	Ile	Arg	Arg	Arg	Ala	Ile	Val	Thr	Leu	Thr	Asn	Leu	Ile	Pro	Lys					
				1045				1050					1055							
ggt	cag	ggt	ggt	act	cat	ggt	tcg	gct	tta	gtg	cat	cat	ctg	aag	ctt					3216
Val	Gln	Val	Gly	Thr	His	Val	Ser	Ala	Leu	Val	His	His	Leu	Lys	Leu					
			1060					1065					1070							
gtc	ttg	gat	ggc	aac	aac	gat	gat	ctg	cgg	aaa	gat	gct	gca	gaa	gcg					3264
Val	Leu	Asp	Gly	Asn	Asn	Asp	Asp	Leu	Arg	Lys	Asp	Ala	Ala	Glu	Ala					
		1075				1080					1085									
ctc	tgc	tgc	ctc	gcc	ctt	gga	gaa	gac	ttt	act	atc	ttc	ata	cca	tca					3312
Leu	Cys	Cys	Leu	Ala	Leu	Gly	Glu	Asp	Phe	Thr	Ile	Phe	Ile	Pro	Ser					
		1090			1095					1100										
ata	cgc	aaa	att	ctt	gtg	aag	cac	cac	ttg	cgg	tac	aga	aaa	tgg	gat					3360
Ile	Arg	Lys	Ile	Leu	Val	Lys	His	His	Leu	Arg	Tyr	Arg	Lys	Trp	Asp					
				1110					1115					1120						
gag	att	gaa	aat	cgg	cta	ctg	agg	cga	gag	cta	ctc	atc	act	gaa	aac					3408
Glu	Ile	Glu	Asn	Arg	Leu	Leu	Arg	Arg	Glu	Leu	Leu	Ile	Thr	Glu	Asn					
				1125				1130					1135							
ttg	tct	gtg	caa	aag	tac	aca	caa	tgt	cca	cct	gat	gtc	att	agt	gac					3456
Leu	Ser	Val	Gln	Lys	Tyr	Thr	Gln	Cys	Pro	Pro	Asp	Val	Ile	Ser	Asp					
			1140				1145					1150								
ccc	ctt	gat	gat	tgt	gat	ggt	aca	cct	tct	gag	ata	gct	gat	gaa	aca					3504
Pro	Leu	Asp	Asp	Cys	Asp	Gly	Thr	Pro	Ser	Glu	Ile	Ala	Asp	Glu	Thr					
		1155				1160				1165										
cag	cga	caa	gca	aga	agt	cat	caa	gtc	aat	gat	gtc	cgg	ttg	cgg	agt					3552
Gln	Arg	Gln	Ala	Arg	Ser	His	Gln	Val	Asn	Asp	Val	Arg	Leu	Arg	Ser					
		1170			1175				1180											
gcc	ggt	gag	gct	tct	caa	agg	agt	act	agg	gaa	gac	tgg	gct	gaa	tgg					3600
Ala	Gly	Glu	Ala	Ser	Gln	Arg	Ser	Thr	Arg	Glu	Asp	Trp	Ala	Glu	Trp					
1185				1190				1195					1200							
atg	agg	cat	ttc	agt	att	gcg	ctt	ctc	aaa	gag	tca	cca	tct	cca	gct					3648
Met	Arg	His	Phe	Ser	Ile	Ala	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala					
			1205					1210					1215							
tta	cgc	acc	tgt	gca	agg	cta	gct	cag	ctt	cag	cct	tct	ggt	ggc	cgc					3696
Leu	Arg	Thr	Cys	Ala	Arg	Leu	Ala	Gln	Leu	Gln	Pro	Ser	Val	Gly	Arg					
			1220				1225					1230								
gag	ttg	ttt	gct	gca	ggt	ttt	gca	agt	tgc	tgg	gcc	caa	atg	agt	gaa					3744
Glu	Leu	Phe	Ala	Ala	Gly	Phe	Ala	Ser	Cys	Trp	Ala	Gln	Met	Ser	Glu					

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1235	1240	1245	
tcc tcc cag gaa cag cta gtg aga agt ctc aag aca gcc ttc tca tct	1240	1245	3792
Ser Ser Gln Glu Gln Leu Val Arg Ser Leu Lys Thr Ala Phe Ser Ser			
1250	1255	1260	
cag aac att cct cct gaa att ctt gcc acg ctg ctg aac tta gca gaa			3840
Gln Asn Ile Pro Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu			
1265	1270	1275	1280
ttt atg gaa cat gat gag aag ccg ctt cct att gat aca aga ctg ctt			3888
Phe Met Glu His Asp Glu Lys Pro Leu Pro Ile Asp Thr Arg Leu Leu			
1285	1290	1295	
ggt gca ctt gct gag aag tgt cga gca ttt gca aag gca ctc cat tat			3936
Gly Ala Leu Ala Glu Lys Cys Arg Ala Phe Ala Lys Ala Leu His Tyr			
1300	1305	1310	
aaa gaa atg gaa ttt gaa gct gtg tgc acc aag aag atg ggt gca aat			3984
Lys Glu Met Glu Phe Glu Ala Val Cys Thr Lys Lys Met Gly Ala Asn			
1315	1320	1325	
cct gtt aca gtg gtt gaa tcc ctt att cat att aac aat caa cta cag			4032
Pro Val Thr Val Val Glu Ser Leu Ile His Ile Asn Asn Gln Leu Gln			
1330	1335	1340	
cag cat gag gca gct att ggc ata ttg act tac tca cag caa aat tcg			4080
Gln His Glu Ala Ala Ile Gly Ile Leu Thr Tyr Ser Gln Gln Asn Ser			
1345	1350	1355	1360
gaa gtt caa ttg aaa gaa tca tgg tat gaa aag ttg cac cgt tgg gat			4128
Glu Val Gln Leu Lys Glu Ser Trp Tyr Glu Lys Leu His Arg Trp Asp			
1365	1370	1375	
gag gct ctt aaa gca tac acc gtg aaa tca tct caa aca tct ggt cct			4176
Glu Ala Leu Lys Ala Tyr Thr Val Lys Ser Ser Gln Thr Ser Gly Pro			
1380	1385	1390	
tta caa aac ttg gat gct aca tta ggt cga atg agg tgt cta gca gct			4224
Leu Gln Asn Leu Asp Ala Thr Leu Gly Arg Met Arg Cys Leu Ala Ala			
1395	1400	1405	
ttg gct cgg tgg gaa gat tta agt gca ttg tgt aga gag caa tgg acg			4272
Leu Ala Arg Trp Glu Asp Leu Ser Ala Leu Cys Arg Glu Gln Trp Thr			
1410	1415	1420	
ggt gca gaa cca tct gct cga ctg gaa atg gct cca atg gct gca aat			4320
Gly Ala Glu Pro Ser Ala Arg Leu Glu Met Ala Pro Met Ala Ala Asn			
1425	1430	1435	1440
gct gct tgg cat atg ggt gag tgg gac cat atg gca gac tat gtt tct			4368
Ala Ala Trp His Met Gly Glu Trp Asp His Met Ala Asp Tyr Val Ser			
1445	1450	1455	
cgc ctg gat gat gca gat gaa aat aag ctc cgt atg ttg ggt aac gca			4416
Arg Leu Asp Asp Ala Asp Glu Asn Lys Leu Arg Met Leu Gly Asn Ala			
1460	1465	1470	
aca gct agt ggt gac gga agc agt aat ggt gct ttc ttc cgg gca gtt			4464
Thr Ala Ser Gly Asp Gly Ser Ser Asn Gly Ala Phe Phe Arg Ala Val			
1475	1480	1485	
ctt tta gtt cgt tac aaa aag tat gat gac gct cgg atg tat gtt gag			4512
Leu Leu Val Arg Tyr Lys Lys Tyr Asp Asp Ala Arg Met Tyr Val Glu			
1490	1495	1500	
cga gct cgg cgg tgt tta gct aca gaa ctt gca gca ctg gta ctt gag			4560
Arg Ala Arg Arg Cys Leu Ala Thr Glu Leu Ala Leu Val Leu Glu			
1505	1510	1515	1520
agt tat gag cga gcg tat aat aac atg gtg cgt gtt caa caa ctt tca			4608
Ser Tyr Glu Arg Ala Tyr Asn Asn Met Val Arg Val Gln Gln Leu Ser			
1525	1530	1535	
gaa ctg gaa gag gtg att gat tac tgc act ctt ccc atg gaa agc ccg			4656
Glu Leu Glu Glu Val Ile Asp Tyr Cys Thr Leu Pro Met Glu Ser Pro			
1540	1545	1550	
att gct gac gga cgg agg gaa ctt att cgc aat atg tgg aat gaa cgg			4704
Ile Ala Asp Gly Arg Arg Glu Leu Ile Arg Asn Met Trp Asn Glu Arg			
1555	1560	1565	
att aaa gga aca aaa cgg aat gtc gag gtg tgg caa gcc cta ctt gct			4752
Ile Lys Gly Thr Lys Arg Asn Val Glu Val Trp Gln Ala Leu Leu Ala			
1570	1575	1580	
gtc agg gag ttg gtt ctt ccc cct aac gaa gac aga gac acc tgg ata			4800
Val Arg Glu Leu Val Leu Pro Pro Asn Glu Asp Arg Asp Thr Trp Ile			
1585	1590	1595	1600
aag ttc gct gaa ctt tgc tgg aag aac ggt cgt att agt cag gct aga			4848
Lys Phe Ala Glu Leu Cys Trp Lys Asn Gly Arg Ile Ser Gln Ala Arg			

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tct	acg	tta	gtc	1605	aaa	ctt	tta	cag	1610	ttt	gat	cct	gaa	tct	tcc	cct	gaa	4896
Ser	Thr	Leu	Val	Lys	Leu	Leu	Gln	Phe	Asp	Pro	Glu	Ser	Ser	Pro	Glu			
ttg	aca	ctg	tat	1620	cat	gca	cat	cca	1625	caa	gta	gct	ctg	gct	tat	cta	aaa	4944
Leu	Thr	Leu	Tyr	His	Ala	His	Pro	Gln	Val	Ala	Leu	Ala	Tyr	Leu	Lys			
tac	cag	tat	gca	1635	ggt	gat	1640	gag	1645	aaa	agg	agg	gat	gca	ttt	tct		4992
Tyr	Gln	Tyr	Ala	Val	Gly	Asp	Glu	Leu	Lys	Arg	Arg	Asp	Ala	Phe	Ser			
aaa	ctg	caa	gag	1650	ttg	tct	1655	gtg	1660	acc	acc	atg	ggc	aat	tta			5040
Lys	Leu	Gln	Glu	Leu	Ser	Val	Gln	Val	Ala	Thr	Thr	Met	Gly	Asn	Leu			
cct	gga	aca	tca	1665	gca	aac	1670	cat	1675	ggc	acc	atg	tca	aat	gct	gga	gta	5088
Pro	Gly	Thr	Ser	Ala	Asn	His	Gly	Thr	Met	Ser	Asn	Ala	Gly	Val	Pro			
ctc	att	gct	cgt	1685	gtc	tac	1690	ttg	1695	aca	ctt	ggc	agg	tgg	aag	aag	gca	5136
Leu	Ile	Ala	Arg	Val	Tyr	Leu	Thr	Leu	Gly	Ser	Trp	Lys	Lys	Ala	Leu			
tca	cct	gca	tta	1700	gat	gac	1705	gat	1710	tcc	att	caa	gaa	att	ttg	att	tct	5184
Ser	Pro	Ala	Leu	Asp	Asp	Asp	Ser	Ile	Gln	Glu	Ile	Leu	Ile	Ser	Tyr			
cat	aat	gcc	acg	1715	cta	agt	1720	gca	1725	aag	gac	tgg	ggg	aag	gcc	tgg	cac	5232
His	Asn	Ala	Thr	Leu	Ser	Ala	Lys	Asp	Trp	Gly	Lys	Ala	Trp	His	Ile			
tgg	gct	ttg	ttc	1730	aac	aca	1735	gaa	1740	gtc	atg	tca	cgc	tat	act	ttc	cga	5280
Trp	Ala	Leu	Phe	Asn	Thr	Glu	Val	Met	Ser	Arg	Tyr	Thr	Phe	Arg	Gly			
cga	cca	gat	att	1745	gct	gga	1750	aaa	1755	tat	ggt	gca	gca	gta	act	ggg	tat	5328
Arg	Pro	Asp	Ile	Ala	Gly	Lys	Tyr	Val	Ala	Ala	Val	Thr	Gly	Tyr				
ttc	tat	tct	att	1765	gct	tgt	1770	gca	1775	tct	act	acg	aaa	ggg	gtc	gat	gat	5376
Phe	Tyr	Ser	Ile	Ala	Cys	Ala	Ser	Thr	Thr	Lys	Gly	Val	Asp	Asp	Ser			
ttg	cag	gat	atc	1780	ctt	cgt	1785	ctg	1790	tta	act	ctt	tgg	ttc	aac	cat	ggg	5424
Leu	Gln	Asp	Ile	Leu	Arg	Leu	Leu	Thr	Leu	Trp	Phe	Asn	His	Gly	Asp			
acc	tca	gaa	ggt	1795	caa	aca	1800	gcg	1805	ttg	cag	aaa	ggc	ttt	tcc	ctt	gtc	5472
Thr	Ser	Glu	Val	Gln	Thr	Ala	Leu	Gln	Lys	Gly	Phe	Ser	Leu	Val	Lys			
att	gag	atg	tgg	1810	ctg	ggt	1815	ctg	1820	ccc	cag	ata	att	gct	agg	att	cat	5520
Ile	Glu	Met	Trp	Leu	Val	Val	Leu	Pro	Gln	Ile	Ile	Ala	Arg	Ile	His			
tcg	aac	aat	aga	1825	gta	ggt	1830	aga	1835	gaa	ctg	ata	caa	tct	ttg	cta	ggt	5568
Ser	Asn	Asn	Arg	Val	Val	Arg	Glu	Leu	Ile	Gln	Ser	Leu	Leu	Val	Arg			
att	gga	aag	ggg	1845	cat	cca	1850	cag	1855	gct	ttg	atg	tat	cct	ctc	ttg	ggt	5616
Ile	Gly	Lys	Gly	His	Pro	Gln	Ala	Leu	Met	Tyr	Pro	Leu	Leu	Val	Ala			
tgc	aaa	tca	ata	1860	agt	ata	1865	ttg	1870	aga	caa	cgt	gca	gcg	cag	gag	gtc	5664
Cys	Lys	Ser	Ile	Ser	Ile	Leu	Arg	Gln	Arg	Ala	Ala	Gln	Glu	Val	Val			
gat	aag	atc	cgc	1875	cag	cac	1880	agt	1885	gga	ggt	ctt	ggt	gac	cag	gca	caa	5712
Asp	Lys	Ile	Arg	Gln	His	Ser	Gly	Gly	Leu	Val	Asp	Gln	Ala	Gln	Leu			
gtg	tcg	aag	gaa	1890	ctg	ata	1895	cgg	1900	gta	gca	att	ttg	tgg	cat	gaa	atg	5760
Val	Ser	Lys	Glu	Leu	Ile	Arg	Val	Ala	Ile	Leu	Trp	His	Glu	Met	Trp			
cat	gag	gca	ctc	1905	gag	gaa	1910	gct	1915	agc	agg	atg	tat	ttt	ggc	gag	cac	5808
His	Glu	Ala	Leu	Glu	Glu	Ala	Ser	Arg	Met	Tyr	Phe	Gly	Glu	His	Asn			
atc	gaa	gga	atg	1925	ctt	gct	1930	gta	1935	ctt	gag	cca	ttg	cat	gca	atg	ctt	5856
Ile	Glu	Gly	Met	Leu	Ala	Val	Leu	Glu	Pro	Leu	His	Ala	Met	Leu	Glu			
agg	ggg	gat	gag	1940	aca	att	1945	aaa	1950	gaa	aat	gcc	ttc	att	cag	gct	tat	5904
Arg	Gly	Asp	Glu	Thr	Ile	Lys	Glu	Asn	Ala	Phe	Ile	Gln	Ala	Tyr	Gly			
cat	gaa	tta	ctg	1955	gaa	gct	1960	cat	1965	gaa	tgc	tgt	ttg	aaa	tat	cgg	gct	5952
His	Glu	Leu	Leu	Glu	Ala	His	Glu	Cys	Cys	Leu	Lys	Tyr	Arg	Ala	Thr			

## PhoenixTemp32470.tmp.txt

1970	1975	1980	
gga gag gat gct gag cta act aag gcc tgg gat ttg tat tac cat gtt			6000
Gly Glu Asp Ala Glu Leu Thr Lys Ala Trp Asp Leu Tyr Tyr His Val			
1985	1990	1995	2000
ttc aga aga atc gac aaa cag ctt cca agt ctt acg acc ctc gat ctg			6048
Phe Arg Arg Ile Asp Lys Gln Leu Pro Ser Leu Thr Thr Leu Asp Leu			
2005	2010	2015	
cac tct gtt tcg cct gag cta ctc aaa tgt cga aag ttg gaa ctt gct			6096
His Ser Val Ser Pro Glu Leu Leu Lys Cys Arg Lys Leu Glu Leu Ala			
2020	2025	2030	
gtg cca gga act tat gct gca gat tca cca ctt gtg acg att gag tat			6144
Val Pro Gly Thr Tyr Ala Ala Asp Ser Pro Leu Val Thr Ile Glu Tyr			
2035	2040	2045	
ttt gtt ccc caa ttg att gtt ata acg tcc aaa caa aga cca aga aag			6192
Phe Val Pro Gln Leu Ile Val Ile Thr Ser Lys Gln Arg Pro Arg Lys			
2050	2055	2060	
ctg aca att cat gga agt gat ggc aat gat tat gca ttc ttg ctt aaa			6240
Leu Thr Ile His Gly Ser Asp Gly Asn Asp Tyr Ala Phe Leu Leu Lys			
2065	2070	2075	2080
ggc cac gaa gat ttg cgg caa gat gaa cga gta atg cag ctt ttt ggt			6288
Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly			
2085	2090	2095	
ttg gtg aat act ctc cta gag aac tca agg aaa aca tca gag aag gat			6336
Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ser Glu Lys Asp			
2100	2105	2110	
tta tca atc caa aga tat gct gtt ata cct ttg tca cct aac agt ggt			6384
Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn Ser Gly			
2115	2120	2125	
tta att gga tgg gtt cca aac tgt gac aca ctt cat gct ctg atc cgt			6432
Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu Ile Arg			
2130	2135	2140	
gaa tac aga gat gcc agg aag att ttc ttg aat cag gag cac aga ctt			6480
Glu Tyr Arg Asp Ala Arg Lys Ile Phe Leu Asn Gln Glu His Arg Leu			
2145	2150	2155	2160
atg ttg gct ttt gca ccc gat tat gat cac tta ccc ctc att gca aag			6528
Met Leu Ala Phe Ala Pro Asp Tyr Asp His Leu Pro Leu Ile Ala Lys			
2165	2170	2175	
gtg gaa gtg ttt cag cat gct ttg caa aat act gag gga aat gac ctt			6576
Val Glu Val Phe Gln His Ala Leu Gln Asn Thr Glu Gly Asn Asp Leu			
2180	2185	2190	
gcg aag gtt ctg tgg ctg aag agt cga act tcg gaa gta tgg ctt gag			6624
Ala Lys Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val Trp Leu Glu			
2195	2200	2205	
cgc cgc aca aac tac gct aga agc ctg gct gtt atg agc atg gtt ggg			6672
Arg Arg Thr Asn Tyr Ala Arg Ser Leu Ala Val Met Ser Met Val Gly			
2210	2215	2220	
tat ttg ctt ggt tta gga gat cgg cat cca agc aac ctt atg tta gat			6720
Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp			
2225	2230	2235	2240
cgc tat agt gga aaa ata tta cac atc gac ttc gga gat tgc ttt gag			6768
Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu			
2245	2250	2255	
gct tca atg aat cga gaa aag ttc cct gaa aaa gta cca ttc cgt ttg			6816
Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu			
2260	2265	2270	
act cga atg ctt gtg aaa gct atg gaa gtt agc ggt att gag ggt aca			6864
Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu Gly Thr			
2275	2280	2285	
ttc cga aca act tgt gaa aat gtg atg caa gtc ctt cgc aca aac aga			6912
Phe Arg Thr Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr Asn Arg			
2290	2295	2300	
gac agc gtt atg gcc atg atg gag gca ttt gta cat gac ccg tta atc			6960
Asp Ser Val Met Ala Met Glu Ala Phe Val His Asp Pro Leu Ile			
2305	2310	2315	2320
aat tgg cgt ctg ttc aat ttc aat gag gtt cct caa gtg tcg aac tat			7008
Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Val Ser Asn Tyr			
2325	2330	2335	
ggt aat gtt cat gct cac acg gtt gtc agt agt gaa gaa gca gtg gct			7056
Gly Asn Val His Ala His Thr Val Val Ser Ser Glu Ala Val Ala			

## PhoenixTemp32470.tmp.txt

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2340
aac cga gag ctc atg caa cct cag cga gga gca cgt gag agg gaa ctg 7104
Asn Arg Glu Leu Met Gln Pro Gln Arg Gly Ala Arg Glu Arg Glu Leu
2355
cta cag gct gtc aat caa ctc ggt gat gcc aat gag gtt ttg aat gag 7152
Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val Leu Asn Glu
2370
cgt gct gta gct gtg atg gca cgg atg agt gac aaa cta aca ggg cgt 7200
Arg Ala Val Ala Val Met Ala Arg Met Ser Asp Lys Leu Thr Gly Arg
2385
gac ttc tct tct ggg tca gct ttg gct gga gca ggt agc tct atc caa 7248
Asp Phe Ser Ser Gly Ser Ala Leu Ala Gly Ala Gly Ser Ser Ile Gln
2405
cat ggc agt gag cat ttg gct tca gga gat gcc cgg gat gcc caa cct 7296
His Gly Ser Glu His Leu Ala Ser Gly Asp Ala Arg Asp Ala Gln Pro
2420
ggt ctc tca gtg aag gtt cag gtt cag aag ctc ata ctc caa gcg act 7344
Gly Leu Ser Val Lys Val Gln Val Gln Lys Leu Ile Leu Gln Ala Thr
2435
tca cac gaa aat ttg tgc caa aac tat gtc ggg tgg tgt ccg ttc tgg 7392
Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe Trp
2450
tga 7395
2455
2460

```

<210> 2567  
 <211> 2464  
 <212> PRT  
 <213> Zea mays

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<400> 2567
Met Lys Pro Ser Pro His Phe Pro Glu Ile Gly Lys Lys Pro Lys Asp
1 5 10 15
Leu Ile Ala Lys Asp His Thr Phe Asn Ile Ala Ala Tyr Ile Ser Ser
20 25 30
Gly Ala Asp Val Ile Ala Ala Ala Leu Arg Lys His Val Glu Glu Glu
35 40 45
Ala Arg Asp Leu Ser Gly Glu Ala Phe Leu Arg Phe Met Asp Gln Leu
50 55 60
Tyr Glu Gln Ile Ser Ser Leu Leu Gln Ser Asn Asp Val Asn Glu Asn
65 70 75 80
Leu Leu Ala Leu Arg Ala Ile Asp Ala Leu Ile Asp Met Pro Phe Gly
85 90 95
Glu Gly Ala Ser Lys Val Ser Lys Phe Ala Ser Phe Leu Arg Asn Val
100 105 110
Phe Glu Val Lys Arg Asp Pro Glu Ile Leu Val Pro Ala Ser Glu Val
115 120 125
Leu Gly His Leu Ala Lys Ala Gly Gly Ala Met Thr Ala Asp Glu Val
130 135 140
Glu Arg Gln Ile Lys Thr Ala Leu Gly Trp Leu Thr Gly Glu Arg Val
145 150 155 160
Glu Tyr Arg Arg Phe Ala Ala Val Leu Ile Leu Lys Glu Met Ala Glu
165 170 175
Asn Ala Ser Thr Val Phe Asn Val His Val Pro Glu Phe Val Asp Ala
180 185 190
Ile Trp Val Ala Leu Arg Asp Pro Lys Gln Ala Val Arg Glu Lys Ala
195 200 205
Val Glu Ala Leu Arg Ala Cys Leu His Val Ile Glu Lys Arg Glu Thr
210 215 220
Arg Trp Arg Val Gln Trp Tyr Tyr Arg Met Cys Glu Ala Ala Gln Val
225 230 235 240
Gly Leu Gly Arg Asn Ala Ser Val His Ser Ile His Gly Ser Leu Leu
245 250 255
Ala Val Gly Glu Leu Leu Arg Asn Thr Gly Glu Phe Met Met Ser Arg
260 265 270
Tyr Arg Glu Val Ala Asp Ile Val Leu Asp Tyr Leu Lys His Arg Asp
275 280 285
Gln Leu Val Arg Arg Ser Ile Thr Ser Leu Leu Pro Arg Ile Ala His
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## PhoenixTemp32470.tmp.txt

290	Phe	Leu	Arg	Asp	Arg	295	Phe	Val	Thr	Asn	Tyr	300	Leu	Lys	Ile	Cys	Met	Asp
305	His	Ile	Leu	Phe	Val	310	Leu	Arg	Thr	Pro	Asp	315	Glu	Arg	Ala	Ser	Gly	Phe
					325		Met	Ala	Gly	Ala	330	Leu	Gly	Val	Glu	Leu	Val	Pro
					340		Ile	Thr	Ser	His	345	Leu	Gln	Asp	Ala	Ile	Ala	Pro
					355		Arg	Gly	Arg	Pro	360	Ser	Glu	Ala	Ile	Gly	Ser	Phe
					370		Lys	Ala	Met	Gly	Pro	375	Ala	Met	Glu	Pro	His	Ile
					385		Asp	Ala	Met	Phe	390	Ala	Gly	Leu	Ser	Asp	395	Lys
					405		Glu	Ser	Ile	Ser	410	Leu	Leu	Pro	Thr	Ile	Asp	Ala
					420		Arg	Leu	Leu	Asp	425	Cys	Val	Gly	Ser	Phe	Ala	
					435		Pro	Gly	Ala	Ser	440	Ala	Ser	Arg	Ser	Asn	Asn	Leu
					450		Phe	Val	Asp	Ser	455	Pro	Val	Leu	Val	Gln	Leu	Ala
					465		Leu	Ala	Asn	Phe	470	Asn	Phe	Lys	Gly	His	Glu	Leu
					485		Glu	Ser	Val	Ile	Leu	490	Tyr	Leu	Glu	Asp	Glu	Asp
					500		Ala	Ala	Ser	Leu	505	Cys	Cys	Cys	Lys	Leu	Val	Ala
					515		Ser	Ser	Ala	Ser	520	Gln	Phe	Gly	Ser	Asn	Arg	Thr
					530		Ala	Lys	Arg	Arg	535	Leu	Val	Glu	Glu	Ile	Val	Glu
					545		Ala	Ala	Val	Ala	550	Asp	Ala	Val	Gly	Val	Arg	Ser
					565		Ala	Leu	Tyr	Arg	570	Asn	Pro	Ala	Phe	Asp	Phe	Leu
					580		Ile	Leu	Thr	Ser	585	Ile	Phe	Val	Ala	Leu	Asn	Asp
					595		Arg	Glu	Leu	Ala	600	Val	Ala	Gly	Arg	Leu	Ser	Glu
					610		Ala	Tyr	Val	Leu	615	Pro	Ala	Leu	Arg	Arg	Tyr	Leu
					625		Tyr	Leu	Asp	Gln	630	Ser	Met	Asp	Ser	Lys	Cys	Arg
					645		Leu	Leu	Gly	Cys	650	Ile	Arg	Ser	Cys	Ala	Arg	Leu
					660		Ile	Ala	Pro	Val	665	His	Lys	Ala	Leu	Val	Thr	Arg
					675		Gly	Pro	Asn	Ala	680	Asn	Asn	Ala	Leu	Ala	Ala	Gly
					690		Gly	Glu	Leu	Ala	695	Val	Val	Val	Asp	Ser	Leu	Leu
					705		Glu	Leu	Met	Pro	710	Val	Val	Val	Asp	Ser	Leu	Leu
					725		Ser	Lys	Arg	Glu	730	Val	Ala	Val	Ser	Thr	Leu	Gly
					740		Thr	Gly	Tyr	Val	745	Ile	Ala	Pro	Tyr	Asn	Glu	Tyr
					755		Leu	Leu	Leu	Lys	760	Leu	Leu	Asn	Gly	Glu	Leu	Glu
					770		Glu	Val	Leu	Lys	775	Val	Leu	Gly	Ile	Met	Gly	Ala
					785		His	Lys	Arg	Asn	790	Gln	His	Asn	Leu	Pro	Gly	Gln
					805		Arg	Pro	Thr	Ser	810	Lys	Pro	His	Asn	Ile	Leu	Phe
					820		Pro	Thr	Asp	Tyr	825	Trp	Pro	Ser	Phe	Gln	His	Pro
					835						840							

## PhoenixTemp32470.tmp.txt

Gln Leu Gln Leu Ala Pro Ser Cys Glu Phe Phe Glu Ile Leu Leu Phe  
 850 855 860  
 Gln Val Ile Thr Lys Trp Trp Leu Ala Pro Leu Ser Leu Phe Leu Ser  
 865 870 875 880  
 Gln Trp Ala Leu Ala Val Phe Pro Tyr Leu Pro Lys Val Leu Pro Asp  
 885 890 895  
 Leu Phe Arg Ala Val Arg Met Cys Glu Asp Gly Ala Leu Lys Glu Phe  
 900 905 910  
 Ile Thr Trp Lys Leu Gly Thr Leu Ile Ser Ile Val Arg Gln His Ile  
 915 920 925  
 Arg Lys Tyr Leu Gln Asp Ile Leu Ser Leu Ile Ser Glu Leu Trp Thr  
 930 935 940  
 Ser Ser Phe Ser Leu Ala Ala Pro Asn Arg Thr Ile Gln Gly Pro Gln  
 945 950 955 960  
 Gly Ser Pro Val Leu His Leu Val Glu Gln Leu Cys Leu Ala Leu Asn  
 965 970 975  
 Asp Glu Phe Arg Met Tyr Leu Leu His Ile Leu Pro Ser Cys Ile Gln  
 980 985 990  
 Val Leu Gly Asp Ala Glu Arg Cys Asn Asp Tyr Tyr Tyr Val Pro Asp  
 995 1000 1005  
 Ile Leu His Thr Leu Glu Val Phe Gly Gly Asn Leu Asp Glu His Met  
 1010 1015 1020  
 His Leu Val Ala Pro Val Leu Val Arg Leu Phe Lys Val Glu Leu Val  
 1025 1030 1035 1040  
 Asp Ile Arg Arg Arg Ala Ile Val Thr Leu Thr Asn Leu Ile Pro Lys  
 1045 1050 1055  
 Val Gln Val Gly Thr His Val Ser Ala Leu Val His His Leu Lys Leu  
 1060 1065 1070  
 Val Leu Asp Gly Asn Asn Asp Asp Leu Arg Lys Asp Ala Glu Ala  
 1075 1080 1085  
 Leu Cys Cys Leu Ala Leu Gly Glu Asp Phe Thr Ile Phe Ile Pro Ser  
 1090 1095 1100  
 Ile Arg Lys Ile Leu Val Lys His His Leu Arg Tyr Arg Lys Trp Asp  
 1105 1110 1115 1120  
 Glu Ile Glu Asn Arg Leu Leu Arg Arg Glu Leu Leu Ile Thr Glu Asn  
 1125 1130 1135  
 Leu Ser Val Gln Lys Tyr Thr Gln Cys Pro Pro Asp Val Ile Ser Asp  
 1140 1145 1150  
 Pro Leu Asp Asp Cys Asp Gly Thr Pro Ser Glu Ile Ala Asp Glu Thr  
 1155 1160 1165  
 Gln Arg Gln Ala Arg Ser His Gln Val Asn Asp Val Arg Leu Arg Ser  
 1170 1175 1180  
 Ala Gly Glu Ala Ser Gln Arg Ser Thr Arg Glu Asp Trp Ala Glu Trp  
 1185 1190 1195 1200  
 Met Arg His Phe Ser Ile Ala Leu Leu Lys Glu Ser Pro Ser Pro Ala  
 1205 1210 1215  
 Leu Arg Thr Cys Ala Arg Leu Ala Gln Leu Gln Pro Ser Val Gly Arg  
 1220 1225 1230  
 Glu Leu Phe Ala Ala Gly Phe Ala Ser Cys Trp Ala Gln Met Ser Glu  
 1235 1240 1245  
 Ser Ser Gln Glu Gln Leu Val Arg Ser Leu Lys Thr Ala Phe Ser Ser  
 1250 1255 1260  
 Gln Asn Ile Pro Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu  
 1265 1270 1275 1280  
 Phe Met Glu His Asp Glu Lys Pro Leu Pro Ile Asp Thr Arg Leu Leu  
 1285 1290 1295  
 Gly Ala Leu Ala Glu Lys Cys Arg Ala Phe Ala Lys Ala Leu His Tyr  
 1300 1305 1310  
 Lys Glu Met Glu Phe Glu Ala Val Cys Thr Lys Lys Met Gly Ala Asn  
 1315 1320 1325  
 Pro Val Thr Val Val Glu Ser Leu Ile His Ile Asn Asn Gln Leu Gln  
 1330 1335 1340  
 Gln His Glu Ala Ala Ile Gly Ile Leu Thr Tyr Ser Gln Gln Asn Ser  
 1345 1350 1355 1360  
 Glu Val Gln Leu Lys Glu Ser Trp Tyr Glu Lys Leu His Arg Trp Asp  
 1365 1370 1375  
 Glu Ala Leu Lys Ala Tyr Thr Val Lys Ser Ser Gln Thr Ser Gly Pro  
 1380 1385 1390  
 Leu Gln Asn Leu Asp Ala Thr Leu Gly Arg Met Arg Cys Leu Ala Ala



## PhoenixTemp32470.tmp.txt

1395 1400 1405  
 Leu Ala Arg Trp Glu Asp Leu Ser Ala Leu Cys Arg Glu Gln Trp Thr  
 1410 1415 1420  
 Gly Ala Glu Pro Ser Ala Arg Leu Glu Met Ala Pro Met Ala Ala Asn  
 1425 1430 1435 1440  
 Ala Ala Trp His Met Gly Glu Trp Asp His Met Ala Asp Tyr Val Ser  
 1445 1450 1455  
 Arg Leu Asp Asp Ala Asp Glu Asn Lys Leu Arg Met Leu Gly Asn Ala  
 1460 1465 1470  
 Thr Ala Ser Gly Asp Gly Ser Ser Asn Gly Ala Phe Phe Arg Ala Val  
 1475 1480 1485  
 Leu Leu Val Arg Tyr Lys Lys Tyr Asp Asp Ala Arg Met Tyr Val Glu  
 1490 1495 1500  
 Arg Ala Arg Arg Cys Leu Ala Thr Glu Leu Ala Ala Leu Val Leu Glu  
 1505 1510 1515 1520  
 Ser Tyr Glu Arg Ala Tyr Asn Asn Met Val Arg Val Gln Gln Leu Ser  
 1525 1530 1535  
 Glu Leu Glu Glu Val Ile Asp Tyr Cys Thr Leu Pro Met Glu Ser Pro  
 1540 1545 1550  
 Ile Ala Asp Gly Arg Arg Glu Leu Ile Arg Asn Met Trp Asn Glu Arg  
 1555 1560 1565  
 Ile Lys Gly Thr Lys Arg Asn Val Glu Val Trp Gln Ala Leu Leu Ala  
 1570 1575 1580  
 Val Arg Glu Leu Val Leu Pro Pro Asn Glu Asp Arg Asp Thr Trp Ile  
 1585 1590 1595 1600  
 Lys Phe Ala Glu Leu Cys Trp Lys Asn Gly Arg Ile Ser Gln Ala Arg  
 1605 1610 1615  
 Ser Thr Leu Val Lys Leu Leu Gln Phe Asp Pro Glu Ser Ser Pro Glu  
 1620 1625 1630  
 Leu Thr Leu Tyr His Ala His Pro Gln Val Ala Leu Ala Tyr Leu Lys  
 1635 1640 1645  
 Tyr Gln Tyr Ala Val Gly Asp Glu Leu Lys Arg Arg Asp Ala Phe Ser  
 1650 1655 1660  
 Lys Leu Gln Glu Leu Ser Val Gln Val Ala Thr Met Gly Asn Leu  
 1665 1670 1675 1680  
 Pro Gly Thr Ser Ala Asn His Gly Thr Met Ser Asn Ala Gly Val Pro  
 1685 1690 1695  
 Leu Ile Ala Arg Val Tyr Leu Thr Leu Gly Ser Trp Lys Lys Ala Leu  
 1700 1705 1710  
 Ser Pro Ala Leu Asp Asp Asp Ser Ile Gln Glu Ile Leu Ile Ser Tyr  
 1715 1720 1725  
 His Asn Ala Thr Leu Ser Ala Lys Asp Trp Gly Lys Ala Trp His Ile  
 1730 1735 1740  
 Trp Ala Leu Phe Asn Thr Glu Val Met Ser Arg Tyr Thr Phe Arg Gly  
 1745 1750 1755 1760  
 Arg Pro Asp Ile Ala Gly Lys Tyr Val Val Ala Ala Val Thr Gly Tyr  
 1765 1770 1775  
 Phe Tyr Ser Ile Ala Cys Ala Ser Thr Thr Lys Gly Val Asp Asp Ser  
 1780 1785 1790  
 Leu Gln Asp Ile Leu Arg Leu Leu Thr Leu Trp Phe Asn His Gly Asp  
 1795 1800 1805  
 Thr Ser Glu Val Gln Thr Ala Leu Gln Lys Gly Phe Ser Leu Val Lys  
 1810 1815 1820  
 Ile Glu Met Trp Leu Val Val Leu Pro Gln Ile Ile Ala Arg Ile His  
 1825 1830 1835 1840  
 Ser Asn Asn Arg Val Val Arg Glu Leu Ile Gln Ser Leu Leu Val Arg  
 1845 1850 1855  
 Ile Gly Lys Gly His Pro Gln Ala Leu Met Tyr Pro Leu Leu Val Ala  
 1860 1865 1870  
 Cys Lys Ser Ile Ser Ile Leu Arg Gln Arg Ala Ala Gln Glu Val Val  
 1875 1880 1885  
 Asp Lys Ile Arg Gln His Ser Gly Gly Leu Val Asp Gln Ala Gln Leu  
 1890 1895 1900  
 Val Ser Lys Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu Met Trp  
 1905 1910 1915 1920  
 His Glu Ala Leu Glu Glu Ala Ser Arg Met Tyr Phe Gly Glu His Asn  
 1925 1930 1935  
 Ile Glu Gly Met Leu Ala Val Leu Glu Pro Leu His Ala Met Leu Glu  
 1940 1945 1950

## PhoenixTemp32470.tmp.txt

Arg Gly Asp Glu Thr Ile Lys Glu Asn Ala Phe Ile Gln Ala Tyr Gly  
 1955 1960 1965  
 His Glu Leu Leu Glu Ala His Glu Cys Cys Leu Lys Tyr Arg Ala Thr  
 1970 1975 1980  
 Gly Glu Asp Ala Glu Leu Thr Lys Ala Trp Asp Leu Tyr Tyr His Val  
 1985 1990 1995 2000  
 Phe Arg Arg Ile Asp Lys Gln Leu Pro Ser Ser Leu Thr Thr Leu Asp Leu  
 2005 2010 2015  
 His Ser Val Ser Pro Glu Leu Leu Lys Cys Arg Lys Leu Glu Leu Ala  
 2020 2025 2030  
 Val Pro Gly Thr Tyr Ala Ala Asp Ser Pro Leu Val Thr Ile Glu Tyr  
 2035 2040 2045  
 Phe Val Pro Gln Leu Ile Val Ile Thr Ser Lys Gln Arg Pro Arg Lys  
 2050 2055 2060  
 Leu Thr Ile His Gly Ser Asp Gly Asn Asp Tyr Ala Phe Leu Leu Lys  
 2065 2070 2075 2080  
 Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu Phe Gly  
 2085 2090 2095  
 Leu Val Asn Thr Leu Leu Glu Asn Ser Arg Lys Thr Ser Glu Lys Asp  
 2100 2105 2110  
 Leu Ser Ile Gln Arg Tyr Ala Val Ile Pro Leu Ser Pro Asn Ser Gly  
 2115 2120 2125  
 Leu Ile Gly Trp Val Pro Asn Cys Asp Thr Leu His Ala Leu Ile Arg  
 2130 2135 2140  
 Glu Tyr Arg Asp Ala Arg Lys Ile Phe Leu Asn Gln Glu His Arg Leu  
 2145 2150 2155 2160  
 Met Leu Ala Phe Ala Pro Asp Tyr Asp His Leu Pro Leu Ile Ala Lys  
 2165 2170 2175  
 Val Glu Val Phe Gln His Ala Leu Gln Asn Thr Glu Gly Asn Asp Leu  
 2180 2185 2190  
 Ala Lys Val Leu Trp Leu Lys Ser Arg Thr Ser Glu Val Trp Leu Glu  
 2195 2200 2205  
 Arg Arg Thr Asn Tyr Ala Arg Ser Leu Ala Val Met Ser Met Val Gly  
 2210 2215 2220  
 Tyr Leu Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp  
 2225 2230 2235 2240  
 Arg Tyr Ser Gly Lys Ile Leu His Ile Asp Phe Gly Asp Cys Phe Glu  
 2245 2250 2255  
 Ala Ser Met Asn Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu  
 2260 2265 2270  
 Thr Arg Met Leu Val Lys Ala Met Glu Val Ser Gly Ile Glu Gly Thr  
 2275 2280 2285  
 Phe Arg Thr Thr Cys Glu Asn Val Met Gln Val Leu Arg Thr Asn Arg  
 2290 2295 2300  
 Asp Ser Val Met Ala Met Met Glu Ala Phe Val His Asp Pro Leu Ile  
 2305 2310 2315 2320  
 Asn Trp Arg Leu Phe Asn Phe Asn Glu Val Pro Gln Val Ser Asn Tyr  
 2325 2330 2335  
 Gly Asn Val His Ala His Thr Val Val Ser Ser Glu Glu Ala Val Ala  
 2340 2345 2350  
 Asn Arg Glu Leu Met Gln Pro Gln Arg Gly Ala Arg Glu Arg Glu Leu  
 2355 2360 2365  
 Leu Gln Ala Val Asn Gln Leu Gly Asp Ala Asn Glu Val Leu Asn Glu  
 2370 2375 2380  
 Arg Ala Val Ala Val Met Ala Arg Met Ser Asp Lys Leu Thr Gly Arg  
 2385 2390 2395 2400  
 Asp Phe Ser Ser Gly Ser Ala Leu Ala Gly Ala Gly Ser Ser Ile Gln  
 2405 2410 2415  
 His Gly Ser Glu His Leu Ala Ser Gly Asp Ala Arg Asp Ala Gln Pro  
 2420 2425 2430  
 Gly Leu Ser Val Lys Val Gln Val Gln Lys Leu Ile Leu Gln Ala Thr  
 2435 2440 2445  
 Ser His Glu Asn Leu Cys Gln Asn Tyr Val Gly Trp Cys Pro Phe Trp  
 2450 2455 2460

&lt;210&gt; 2568

&lt;211&gt; 7335

&lt;212&gt; DNA

&lt;213&gt; Aedes aegypti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7335)

&lt;400&gt; 2568

atg	tcg	acg	gtg	gtg	cta	cag	ttc	gtg	agt	ggg	ctg	aaa	agc	cgc	aac	48
Met	Ser	Thr	Val	Val	Leu	Gln	Phe	Val	Ser	Gly	Leu	Lys	Ser	Arg	Asn	
1				5				10						15		
aag	gat	gca	cag	aat	aag	gcg	gcc	cag	gaa	ctg	tcg	ctg	tac	gtc	aag	96
Lys	Asp	Ala	Gln	Asn	Lys	Ala	Ala	Gln	Glu	Leu	Ser	Leu	Tyr	Val	Lys	
			20					25					30			
acg	gaa	ctg	cgc	gag	att	ccg	cag	gat	ctg	ctg	gcg	ttc	ttc	gag		144
Thr	Glu	Leu	Arg	Glu	Ile	Pro	Gln	Asp	Asp	Leu	Leu	Ala	Phe	Phe	Glu	
			35				40					45				
gac	ttc	aac	cag	tac	att	ttt	gag	atg	ttg	tcc	agt	gcc	gac	atc	aac	192
Asp	Phe	Asn	Gln	Tyr	Ile	Phe	Glu	Met	Leu	Ser	Ser	Ala	Asp	Ile	Asn	
	50					55				60						
gac	aag	aaa	gga	ggc	gtg	ctg	gcc	att	aat	tgc	ttg	ata	agt	ggc	gat	240
Asp	Lys	Lys	Gly	Gly	Val	Leu	Ala	Ile	Asn	Cys	Leu	Ile	Ser	Gly	Asp	
	65				70					75					80	
gtg	gtc	aac	acg	acg	act	cag	att	tcc	cgt	tat	tcg	aac	aat	ctc	cgg	288
Val	Val	Asn	Thr	Thr	Thr	Gln	Ile	Ser	Arg	Tyr	Ser	Asn	Asn	Leu	Arg	
				85					90					95		
aat	ctg	ctt	ccg	tcg	agt	gac	att	tcg	gtg	atg	gag	ctg	gca	gcg	aag	336
Asn	Leu	Leu	Pro	Ser	Ser	Asp	Ile	Ser	Val	Met	Glu	Leu	Ala	Ala	Lys	
			100					105					110			
gtg	ctc	gtc	aag	tta	gcc	ctg	cta	ccc	ggc	tcc	aag	ggc	gcc	gag	tcg	384
Val	Leu	Val	Lys	Leu	Ala	Leu	Leu	Pro	Gly	Ser	Lys	Gly	Ala	Glu	Ser	
			115				120					125				
ttc	gag	ttc	gac	atc	aaa	cgt	gcc	ttc	gag	tgg	ctg	atg	gag	gaa	cga	432
Phe	Glu	Phe	Asp	Ile	Lys	Arg	Ala	Phe	Glu	Trp	Leu	Met	Glu	Glu	Arg	
	130					135				140						
acc	gag	ggc	aaa	cgc	cat	gcc	gcc	gtt	ttg	gtg	ctg	cgt	gaa	ctg	gcc	480
Thr	Glu	Gly	Lys	Arg	His	Ala	Ala	Val	Leu	Val	Leu	Arg	Glu	Leu	Ala	
	145				150				155						160	
gtg	gcc	atg	ccg	acg	ttt	ttc	tac	cag	caa	gtt	gga	agc	ttt	ttc	gag	528
Val	Ala	Met	Pro	Thr	Phe	Phe	Tyr	Gln	Gln	Val	Gly	Ser	Phe	Phe	Glu	
				165					170					175		
cac	ata	ttc	gtc	gcc	atc	aag	gat	ccc	aag	ccg	atg	att	cgg	gag	gga	576
His	Ile	Phe	Val	Ala	Ile	Lys	Asp	Pro	Lys	Pro	Met	Ile	Arg	Glu	Gly	
			180					185					190			
gct	ggt	caa	gcc	ttg	cgg	gct	gta	ttg	att	gtc	act	tcg	cag	aga	gag	624
Ala	Gly	Gln	Ala	Leu	Arg	Ala	Val	Leu	Ile	Val	Thr	Ser	Gln	Arg	Glu	
		195					200				205					
gga	acc	aag	cag	aat	aat	aat	cca	caa	tgg	tac	aac	cac	ttg	tta	cga	672
Gly	Thr	Lys	Gln	Asn	Asn	Asn	Pro	Gln	Trp	Tyr	Asn	His	Leu	Leu	Arg	
	210				215						220					
caa	cgc	aat	gga	atg	ctt	cag	gga	gct	tcc	ttc	cgc	gag	aaa	ggt	ttc	720
Gln	Arg	Asn	Gly	Met	Leu	Gln	Gly	Ala	Ser	Phe	Arg	Glu	Lys	Gly	Phe	
	225				230					235					240	
aac	cga	gat	gat	cgc	atc	cac	gga	gca	ata	att	gtg	ttc	aat	gaa	atc	768
Asn	Arg	Asp	Asp	Arg	Ile	His	Gly	Ala	Ile	Ile	Val	Phe	Asn	Glu	Ile	
				245					250					255		
tta	cga	tgt	tca	aat	gca	gcc	tgg	gag	aaa	aag	tac	atg	cag	ttg	gag	816
Leu	Arg	Cys	Ser	Asn	Ala	Ala	Trp	Glu	Lys	Lys	Tyr	Met	Gln	Leu	Glu	
			260					265					270			
agt	ttg	aac	gtc	gat	cgc	agg	tct	cgt	cac	acg	gat	gaa	ggt	cac	agc	864
Ser	Leu	Asn	Val	Asp	Arg	Arg	Ser	Arg	His	Thr	Asp	Glu	Gly	His	Ser	
		275					280					285				
att	ttc	ccc	cgg	att	cgt	gtc	ccg	ttc	atg	gac	aag	cta	gga	gga	gga	912
Ile	Phe	Pro	Arg	Ile	Arg	Val	Pro	Phe	Met	Asp	Lys	Leu	Gly	Gly	Gly	
	290					295					300					
cat	agc	tct	gga	gcg	tct	cgt	acc	agt	gag	gga	agt	gat	gtc	aaa	ttc	960
His	Ser	Ser	Gly	Ala	Ser	Arg	Thr	Ser	Glu	Gly	Ser	Asp	Val	Lys	Phe	
	305				310					315					320	
ttc	cgc	cag	aat	agc	tcc	att	cag	gag	tct	gca	atc	tgc	cga	gcg	ttg	1008
Phe	Arg	Gln	Asn	Ser	Ser	Ile	Gln	Glu	Ser	Ala	Ile	Cys	Arg	Ala	Leu	
				325					330					335		

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acg	aac	gac	aac	tac	gaa	ttg	att	tgt	cag	aaa	gtg	ctt	gag	caa	cgc	1056
Thr	Asn	Asp	Asn	Tyr	Glu	Leu	Ile	Cys	Gln	Lys	Val	Leu	Glu	Gln	Arg	
			340					345					350			
aat	tca	aag	tca	ccc	tac	gtg	att	cag	tcg	ctg	ctg	acc	att	cta	cct	1104
Asn	Ser	Lys	Ser	Pro	Tyr	Val	Ile	Gln	Ser	Leu	Leu	Thr	Ile	Leu	Pro	
		355					360					365				
cga	ttg	gcc	gcc	ttc	aat	cgc	aga	gac	ttt	gtc	aat	aac	cat	ttg	aaa	1152
Arg	Leu	Ala	Ala	Phe	Asn	Arg	Arg	Asp	Phe	Val	Asn	Asn	His	Leu	Lys	
	370					375					380					
act	gtc	gtc	aac	tat	ctt	atc	cta	acg	att	aag	agc	aaa	gaa	aag	gaa	1200
Thr	Val	Val	Asn	Tyr	Leu	Ile	Leu	Thr	Ile	Lys	Ser	Lys	Glu	Lys	Glu	
	385				390					395					400	
cgg	aat	ctg	gcg	ttc	gtc	acg	ctt	ggc	tat	atc	gcc	gtg	gca	gtc	gag	1248
Arg	Asn	Leu	Ala	Phe	Val	Thr	Leu	Gly	Tyr	Ile	Ala	Val	Ala	Val	Glu	
				405					410					415		
aag	gat	att	gcc	ccc	ttc	agg	acc	agg	atc	atc	gag	gtg	atc	acg	gca	1296
Lys	Asp	Ile	Ala	Pro	Phe	Arg	Thr	Arg	Ile	Ile	Glu	Val	Ile	Thr	Ala	
			420					425					430			
gct	ctg	cct	ccg	aaa	gaa	acc	cca	agc	aag	aag	aaa	gtc	tgc	gtc	gat	1344
Ala	Leu	Pro	Pro	Lys	Glu	Thr	Pro	Ser	Lys	Lys	Lys	Val	Cys	Val	Asp	
		435					440					445				
ccg	tcg	gtg	ttc	atg	tgc	atc	acc	ctg	ttg	ggc	cat	gcg	tta	aaa	agt	1392
Pro	Ser	Val	Phe	Met	Cys	Ile	Thr	Leu	Leu	Gly	His	Ala	Leu	Lys	Ser	
						455					460					
gca	att	aca	acc	gat	gtc	agc	ttg	atc	ttg	cca	atg	ctt	tcg	act		1440
Ala	Ile	Thr	Thr	Asp	Val	Lys	Ser	Leu	Ile	Leu	Pro	Met	Leu	Ser	Thr	
					470					475					480	
gga	ctg	agc	aca	ggg	cta	acg	gtg	tgc	tta	cac	gag	ttg	agc	gag	aat	1488
Gly	Leu	Ser	Thr	Gly	Leu	Thr	Val	Cys	Leu	His	Glu	Leu	Ser	Glu	Asn	
				485					490					495		
gtg	ccg	cag	ctg	agg	cag	gaa	att	acc	agc	gga	ctg	ttg	aag	att	ttg	1536
Val	Pro	Gln	Leu	Arg	Gln	Glu	Ile	Thr	Ser	Gly	Leu	Leu	Lys	Ile	Leu	
			500					505					510			
tcc	tgc	gtg	ctg	atg	aat	aaa	cca	ttg	ccg	cag	ttt	ata	ccc	ggg	cgg	1584
Ser	Cys	Val	Leu	Met	Asn	Lys	Pro	Leu	Pro	Gln	Phe	Ile	Pro	Gly	Arg	
			515				520					525				
cct	caa	ggc	gga	atg	aac	acg	agc	ctc	tac	gag	caa	cag	att	caa	gat	1632
Pro	Gln	Gly	Gly	Met	Asn	Thr	Ser	Leu	Tyr	Glu	Gln	Gln	Ile	Gln	Asp	
						535					540					
acg	ccc	acc	aca	gtg	ctg	gcc	ctc	cgc	act	ctg	gga	acc	ttc	aat	ttc	1680
Thr	Pro	Thr	Thr	Val	Leu	Ala	Leu	Arg	Thr	Leu	Gly	Thr	Phe	Asn	Phe	
					550					555					560	
gaa	gga	cac	agc	ttg	cta	ccg	ttc	gtg	caa	cga	tgc	gcc	gat	cac	ttt	1728
Glu	Gly	His	Ser	Leu	Leu	Pro	Phe	Val	Gln	Arg	Cys	Ala	Asp	His	Phe	
				565					570					575		
ctg	ctc	agc	gag	cag	cag	gaa	att	cgc	atc	gaa	gcc	gtt	cag	acg	tgc	1776
Leu	Leu	Ser	Glu	Gln	Gln	Glu	Ile	Arg	Ile	Glu	Ala	Val	Gln	Thr	Cys	
			580					585					590			
act	ctg	ctg	ctg	aag	ctg	gct	ctc	caa	tcg	gtc	gat	tcg	gca	gac	gga	1824
Thr	Leu	Leu	Leu	Lys	Leu	Ala	Leu	Gln	Ser	Val	Asp	Ser	Ala	Asp	Gly	
						600						605				
tcg	gaa	acc	ctc	acc	cag	acc	gtt	gga	agc	gtg	ctg	gag	aag	att	ctg	1872
Ser	Glu	Thr	Leu	Thr	Gln	Thr	Val	Gly	Ser	Val	Leu	Glu	Lys	Ile	Leu	
						615					620					
atc	gtt	ggc	atc	acc	gac	gtt	gat	ccg	aat	gtg	cgt	ctg	agg	gtg	ctg	1920
Ile	Val	Gly	Ile	Thr	Asp	Val	Asp	Pro	Asn	Val	Arg	Leu	Arg	Val	Leu	
					630					635					640	
aaa	tct	ttg	gac	gac	agc	ttc	gat	tct	cag	ctg	gcg	caa	cca	tg	ttc	1968
Lys	Ser	Leu	Asp	Asp	Ser	Phe	Asp	Ser	Gln	Leu	Ala	Gln	Pro	Trp	Phe	
				645					650					655		
ctg	agc	tcg	ctg	ttg	atc	acg	atg	aat	gat	gag	gtg	ttt	gaa	atc	agg	2016
Leu	Ser	Ser	Leu	Leu	Ile	Thr	Met	Asn	Asp	Glu	Val	Phe	Glu	Ile	Arg	
				660				665					670			
gag	ttg	gcg	att	atc	atc	att	gga	aga	ctg	tcg	gcc	atc	aat	ccg	gct	2064
Glu	Leu	Ala	Ile	Ile	Ile	Ile	Gly	Arg	Leu	Ser	Ala	Ile	Asn	Pro	Ala	
						680						685				
tac	gtg	atg	cca	agc	ttg	agg	aaa	acg	atg	gta	cag	atc	cta	acg	gag	2112
Tyr	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Met	Val	Gln	Ile	Leu	Thr	Glu	
						695					700					

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ctg	gaa	cac	tcc	ggt	atg	agt	aga	aac	aag	gag	cag	agc	gcg	aga	atg	2160
Leu	Glu	His	Ser	Gly	Met	Ser	Arg	Asn	Lys	Glu	Gln	Ser	Ala	Arg	Met	
705					710					715					720	
ttg	gat	cat	ctg	ata	gtc	agc	act	ccg	agg	ttg	ata	tct	tcc	tat	atg	2208
Leu	Asp	His	Leu	Ile	Val	Ser	Thr	Pro	Arg	Leu	Ile	Ser	Ser	Tyr	Met	
				725					730					735		
cgt	ccg	atc	ttg	tcg	atc	ttg	gtt	ccg	aaa	ttg	aaa	gag	cct	gaa	tca	2256
Arg	Pro	Ile	Leu	Ser	Ile	Leu	Val	Pro	Lys	Leu	Lys	Glu	Pro	Glu	Ser	
				740					745				750			
aat	ccg	gga	gtg	gtg	ttg	aat	gtg	ttg	aga	gcc	ata	ggt	gat	ctt	gct	2304
Asn	Pro	Gly	Val	Val	Leu	Asn	Val	Leu	Arg	Ala	Ile	Gly	Asp	Leu	Ala	
		755					760					765				
gaa	gtt	aat	gga	ggt	cat	aat	gtt	ttg	gaa	aaa	tgg	tcg	gat	gag	ctg	2352
Glu	Val	Asn	Gly	Gly	His	Asn	Val	Leu	Glu	Lys	Trp	Ser	Asp	Glu	Leu	
	770					775					780					
ctg	gct	aca	ttg	cta	gag	atg	cta	agc	gat	gcc	gga	tca	acg	gaa	aag	2400
Leu	Ala	Thr	Leu	Leu	Glu	Met	Leu	Ser	Asp	Ala	Gly	Ser	Thr	Glu	Lys	
785					790					795					800	
cgc	ggc	gtg	gct	ttg	tggt	act	ctt	ggc	caa	ttg	gtc	agt	gcc	acg	ggg	2448
Arg	Gly	Val	Ala	Leu	Trp	Thr	Leu	Gly	Gln	Leu	Val	Ser	Ala	Thr	Gly	
				805					810					815		
caa	gca	gtc	aaa	ccg	tac	cac	aaa	tat	ccc	aat	ttg	atc	gat	ata	ttg	2496
Gln	Ala	Val	Lys	Pro	Tyr	His	Lys	Tyr	Pro	Asn	Leu	Ile	Asp	Ile	Leu	
			820					825					830			
atc	aac	ttt	ttg	aaa	acc	gaa	cag	caa	ccg	tac	gta	agg	cgg	gaa	acg	2544
Ile	Asn	Phe	Leu	Lys	Thr	Glu	Gln	Gln	Pro	Tyr	Val	Arg	Arg	Glu	Thr	
		835					840					845				
atc	cgt	gtc	ctc	ggg	ttg	ctc	ggt	gcc	ttg	gat	ccg	tac	aag	cac	aag	2592
Ile	Arg	Val	Leu	Gly	Leu	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	His	Lys	
		850									860					
atg	aat	cgt	ggc	ctg	att	gac	agc	cag	acc	aac	aat	atc	ctc	att	tcg	2640
Met	Asn	Arg	Gly	Leu	Ile	Asp	Ser	Gln	Thr	Asn	Asn	Ile	Leu	Ile	Ser	
865					870					875					880	
att	tcc	gac	agc	aag	aca	gag	gaa	tat	acc	gat	ttg	tcc	acg	tcg	gaa	2688
Ile	Ser	Asp	Ser	Lys	Thr	Glu	Glu	Tyr	Thr	Asp	Leu	Ser	Thr	Ser	Glu	
				885					890					895		
atg	ttg	atc	aat	atg	aac	aat	cag	ctg	gag	gag	tac	tac	ccg	gcg	gtg	2736
Met	Leu	Ile	Asn	Met	Asn	Asn	Gln	Leu	Glu	Glu	Tyr	Tyr	Pro	Ala	Val	
			900					905					910			
gcc	att	tca	acg	ctg	atg	aaa	atc	ctt	cgt	gat	cct	acg	tta	tcc	tcg	2784
Ala	Ile	Ser	Thr	Leu	Met	Lys	Ile	Leu	Arg	Asp	Pro	Thr	Leu	Ser	Ser	
		915					920					925				
cat	cac	acc	agc	gtt	gtc	cag	gcg	atc	acc	ttt	atc	ttc	aaa	agt	ttg	2832
His	His	Thr	Ser	Val	Val	Gln	Ala	Ile	Thr	Phe	Ile	Phe	Lys	Ser	Leu	
		930				935					940					
ggt	atc	aaa	tgct	gtt	cca	tat	ttg	tcc	cag	gtc	tta	ccc	agt	ctg	ctc	2880
Gly	Ile	Lys	Cys	Val	Pro	Tyr	Leu	Ser	Gln	Val	Leu	Pro	Ser	Leu	Leu	
945					950					955					960	
ggc	aat	att	cgct	aat	gcc	gaa	atg	aac	ttg	aag	gag	ttc	ttg	ttc	cag	2928
Gly	Asn	Ile	Arg	Asn	Ala	Glu	Met	Asn	Leu	Lys	Glu	Phe	Leu	Phe	Gln	
				965					970					975		
cag	cta	tcg	atc	ctg	atc	gag	ata	gtc	aaa	cag	cac	atc	atc	agc	ttc	2976
Gln	Leu	Ser	Ile	Leu	Ile	Glu	Ile	Val	Lys	Gln	His	Ile	Ile	Ser	Phe	
			980					985					990			
atg	gag	gaa	ata	ttc	cag	ctg	atc	aaa	acg	ttc	tgg	aac	agt	atc	tat	3024
Met	Glu	Glu	Ile	Phe	Gln	Leu	Ile	Lys	Thr	Phe	Trp	Asn	Ser	Ile	Tyr	
		995					1000					1005				
cct	ttg	cag	ccg	acc	ctc	atc	att	ttg	gtg	gaa	aag	atc	gcc	atc	gct	3072
Pro	Leu	Gln	Pro	Thr	Leu	Ile	Ile	Leu	Val	Glu	Lys	Ile	Ala	Ile	Ala	
						1015					1020					
ttg	gga	tgt	gag	ttc	aag	atc	tat	ctt	cct	cag	ttg	atg	ccg	cag	atc	3120
Leu	Gly	Cys	Glu	Phe	Lys	Ile	Tyr	Leu	Pro	Gln	Leu	Met	Pro	Gln	Ile	
					1030					1035					1040	
ttg	cga	gtt	ctc	ctt	cac	gat	gcg	tcc	acc	cat	cga	ata	gtc	acc	gtc	3168
Leu	Arg	Val	Leu	Leu	His	Asp	Ala	Ser	Thr	His	Arg	Ile	Val	Thr	Val	
				1045					1050					1055		
aag	ctc	ctc	aac	gct	ctg	cag	aag	ttc	ggg	aac	aat	ctg	gac	gac	tat	3216
Lys	Leu	Leu	Asn	Ala	Leu	Gln	Lys	Phe	Gly	Asn	Asn	Leu	Asp	Asp	Tyr	
			1060					1065					1070			

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ctt cac ttg atc att cca gcc att gtt aag ctg ttc gaa ccg atc gaa 3264  
 Leu His 1075 Leu Ile Ile Pro Ala 1080 Ile Val Lys Leu Phe 1085 Glu Pro Ile Glu  
 gtt cct tac cag gtg tct ctt gca gcc cta gaa acc atc aac tac ctt 3312  
 Val Pro Tyr Gln Val Ser Leu Ala Ala Leu Glu Thr Ile Asn Tyr Leu 1090 1095 1100  
 gcg gag atc ctt gat ttc acc gat ttc tcg tcg cgc atc att cat ccc 3360  
 Ala Glu Ile Leu Asp Phe Thr Asp Phe Ser Ser Arg Ile Ile His Pro 1105 1110 1115 1120  
 ttg gta cgc gtc ctg gac aac cac ccg ggt cag ctc caa acg gcc gcg 3408  
 Leu Val Arg Val Leu Asp Asn His Pro Gly Gln Leu Gln Thr Ala Ala 1125 1130 1135  
 ctg caa acc ctc tgc tcg atc atg atc caa ctg ggc aag aaa tac ctc 3456  
 Leu Gln Thr 1140 Cys Ser Ile Met Ile Gln Leu Gly Lys Lys Tyr Leu 1145 1150  
 gtt ttt gtc ccg cta gtc aac ccg gtc atg atc agg cac aaa ata tct 3504  
 Val Phe Val Pro Leu Val Asn Arg Val Met Ile Arg His Lys Ile Ser 1155 1160 1165  
 tac aca gag tac aac aaa ctc ctc tcc aag ctg caa agt cag agc acc 3552  
 Tyr Thr Glu Tyr Asn Lys Leu Leu Ser Lys Leu Gln Ser Gln Ser Thr 1170 1175 1180  
 ctc gcc ctg gac gat gaa ttc cga ctg cgc gct cgg ttc aag aat 3600  
 Leu Ala Leu Asp Asp Glu Phe Arg Leu Arg Gln Ala Arg Phe Lys Asn 1185 1190 1195 1200  
 cgc gaa atg tcc ctc gct ggg gac acc acc atc cgc aag ttg aac gtg 3648  
 Arg Glu Met Ser Leu Ala Gly Asp Thr Thr Ile Arg Lys Leu Asn Val 1205 1210 1215  
 tcc acc gcg gat ctc cag ctg gcg ttc aaa gcc aat cgc agg gta tcc 3696  
 Ser Thr Ala Asp Leu Gln Leu Ala Phe Lys Ala Asn Arg Arg Val Ser 1220 1225 1230  
 cgt gac gat tgg ctc gag tgg ctc cgt ccg ctc agc att ggt ctt ctg 3744  
 Arg Asp Asp Trp Leu Glu Trp Leu Arg Arg Leu Ser Ile Gly Leu Leu 1235 1240 1245  
 aag gag tcc aaa agc ccg gcg ctg cga tcc tgc cga acc ctg gcc caa 3792  
 Lys Glu Ser Lys Ser Pro Ala Leu Arg Ser Cys Arg Thr Leu Ala Gln 1250 1255 1260  
 aac tat ccc cag ctg ttg aag gat ctg ttc aac gca gcc ttc gtc agc 3840  
 Asn Tyr Pro Gln Leu Leu Lys Asp Leu Phe Asn Ala Ala Phe Val Ser 1265 1270 1275 1280  
 tgt tgg acc gat tta ccg gac agt ctc aaa gag gag cta tcg tcc agc 3888  
 Cys Trp Thr Asp Leu Pro Asp Ser Leu Lys Glu Glu Leu Ser Ser Ser 1285 1290 1295  
 ttg agg cag gct ctg atg gtg ccg gac ctt ccg gaa att acc caa acc 3936  
 Leu Arg Gln Ala Leu Met Val Pro Asp Leu Pro Glu Ile Thr Gln Thr 1300 1305 1310  
 att ctc aac ctg gcc gag ttt atg gaa cac tgc gag aac gat gcg ctg 3984  
 Ile Leu Asn Leu Ala Glu Phe Met Glu His Cys Glu Asn Asp Ala Leu 1315 1320 1325  
 agg atc gat ccg aag atc ttg ggc gag agg gcc atg gag tgc cga gcc 4032  
 Arg Ile Asp Pro Lys Ile Leu Gly Glu Arg Ala Met Glu Cys Arg Ala 1330 1335 1340  
 tat gcc aag gct ttg cac tac aag gag gaa gag ttc ctg aac atg aag 4080  
 Tyr Ala Lys Ala Leu His Tyr Lys Glu Glu Glu Phe Leu Asn Met Lys 1345 1350 1355 1360  
 gac aag gat cag agc gtg ttc gag tcg ttg att ttg atc aac aat aag 4128  
 Asp Lys Asp Gln Ser Val Phe Glu Ser Leu Ile Leu Ile Asn Asn Lys 1365 1370 1375  
 ctg cag cag aag gaa gcg gct gag ggg ctg ctg gag tac gcc atg gaa 4176  
 Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Glu Tyr Ala Met Glu 1380 1385 1390  
 cac agg agc gct tct gag gaa atg aaa gtc cag gtg agg tgg tac gag 4224  
 His Arg Ser Ala Ser Glu Glu Met Lys Val Gln Val Arg Trp Tyr Glu 1395 1400 1405  
 aag ctg cac agc tgg gag aaa gca ttg aac ttg tat cag gac aaa ttg 4272  
 Lys Leu His Ser Trp Glu Lys Ala Leu Asn Leu Tyr Gln Asp Lys Leu 1410 1415 1420  
 gag agc aat ccg ggt gat ctg gac tcg aga ctt ggt cag tgg agg tgt 4320  
 Glu Ser Asn Pro Gly Asp Leu Asp Ser Arg Leu Gly Gln Trp Arg Cys 1425 1430 1435 1440

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ttg gaa gcg cta ggg gag tgg tca acg ctg aat acg ctg acc aag gag	4368
Leu Glu Ala Leu Gly Glu Trp Ser Thr Leu Asn Thr Leu Thr Lys Glu	
1445 1450 1455	
acg tgg gaa tcg ctg gga acc gaa gga cag agt aag gcc ggt aga ctt	4416
Thr Trp Glu Ser Leu Gly Thr Glu Gly Gln Ser Lys Ala Gly Arg Leu	
1460 1465 1470	
gct gcc gct gca gcc tgg ggt ttg aag gat tgg gag gga atg cag gag	4464
Ala Ala Ala Ala Trp Gly Leu Lys Asp Trp Glu Gly Met Gln Glu	
1475 1480 1485	
ttt gtc aag ttc atc ccg gag gac acg cag gac ggg tcg ttc tat cgt	4512
Phe Val Lys Phe Ile Pro Glu Asp Thr Gln Asp Gly Ser Phe Tyr Arg	
1490 1495 1500	
gcc gta ctg gct gtg cat cac ggt gag tat gaa ctt gcc caa acc cta	4560
Ala Val Leu Ala Val His His Gly Glu Tyr Glu Leu Ala Gln Thr Leu	
1505 1510 1515 1520	
att gac gat acg aga gac ttg ttg gat acg gaa ttg acc gcg atg gcc	4608
Ile Asp Asp Thr Arg Asp Leu Leu Asp Thr Glu Leu Thr Ala Met Ala	
1525 1530 1535	
ggc gaa tcg tac gaa cgc gcg tac gga gca atg gtt tgc gtt caa atg	4656
Gly Glu Ser Tyr Glu Arg Ala Tyr Gly Ala Met Val Cys Val Gln Met	
1540 1545 1550	
ctg tcg gaa ttg gaa gaa gtc att cag tac aag ctg att ccc gag cgg	4704
Leu Ser Glu Leu Glu Glu Val Ile Gln Tyr Lys Leu Ile Pro Glu Arg	
1555 1560 1565	
cag gaa act atc aag gca atg tgg tgg gat cgc ttg ctc ggt ggc caa	4752
Gln Glu Thr Ile Lys Ala Met Trp Trp Asp Arg Leu Leu Gly Gly Gln	
1570 1575 1580	
cgt ttg gtg gaa gat tgg caa cga att ttg cag gtt cat act ttg gtt	4800
Arg Leu Val Glu Asp Trp Gln Arg Ile Leu Gln Val His Thr Leu Val	
1585 1590 1595 1600	
gtc cac ccc gca aat gac gtc aaa acg tgg ctg aag ttt gcc tca ctc	4848
Val His Pro Ala Asn Asp Val Lys Thr Trp Leu Lys Phe Ala Ser Leu	
1605 1610 1615	
tgt cgc aag agt gat tcg ttg aaa ctt tcc gag aag acc ctc gtc atg	4896
Cys Arg Lys Ser Asp Ser Leu Lys Leu Ser Glu Lys Thr Leu Val Met	
1620 1625 1630	
ctg ctt cgc tac aat ccc tcg gag tac ccg gat cac ccg ttg gaa ttc	4944
Leu Leu Arg Tyr Asn Pro Ser Glu Tyr Pro Asp His Pro Leu Glu Phe	
1635 1640 1645	
atg caa cca gac atc agc ttt gcc tac gcg aaa cat ctg tgg gca gct	4992
Met Gln Pro Asp Ile Ser Phe Ala Tyr Ala Lys His Leu Trp Ala Ala	
1650 1655 1660	
ggc gag caa gaa aag gct tac aat caa ctg aat cga cta gtc gcc gat	5040
Gly Glu Gln Glu Lys Ala Tyr Asn Gln Leu Asn Arg Leu Val Ala Asp	
1665 1670 1675 1680	
atg ggc atc gag ggt aac ttc gac gtc gag gaa aag gac gaa aac cgc	5088
Met Gly Ile Glu Gly Asn Phe Asp Val Glu Glu Lys Asp Glu Asn Arg	
1685 1690 1695	
cgt ctg ttg gcg cgt tgc tac atg aag ctc gga caa tgg cag aac caa	5136
Arg Leu Leu Ala Arg Cys Tyr Met Lys Leu Gly Gln Trp Gln Asn Gln	
1700 1705 1710	
cta caa gga ctc aac gag caa tcc atc aag ggc atc ttg gct tgc tac	5184
Leu Gln Gly Leu Asn Glu Gln Ser Ile Lys Gly Ile Leu Ala Cys Tyr	
1715 1720 1725	
gag aag gct acc aaa cac gac tcc aat tgg tac aag gcg tgg cat ctc	5232
Glu Lys Ala Thr Lys His Asp Ser Asn Trp Tyr Lys Ala Trp His Leu	
1730 1735 1740	
tgg gct tac atg aac ttc gag gtt gtt cag aat cag aaa caa cag gag	5280
Trp Ala Tyr Met Asn Phe Glu Val Val Gln Asn Gln Lys Gln Gln Glu	
1745 1750 1755 1760	
gac ctc atc aag aac cct ggc gga gac aaa gag aag tgt atg att cgg	5328
Asp Leu Ile Lys Asn Pro Gly Gly Asp Lys Glu Lys Cys Met Ile Arg	
1765 1770 1775	
cag tat gcc gtt ccc gcg gtt gaa ggc ttc ttc cgc tcg atc aat ctg	5376
Gln Tyr Ala Val Pro Ala Val Glu Gly Phe Phe Arg Ser Ile Asn Leu	
1780 1785 1790	
tca cac gga aac tcc ctc caa gac aca ctc cgt ctc cta acc ctc tgg	5424
Ser His Gly Asn Ser Leu Gln Asp Thr Leu Arg Leu Thr Leu Trp	
1795 1800 1805	

## PhoenixTemp32470.tmp.txt

ttc gac tac gga cag tat ccc aag gtg tac gaa gcc ctg gtc gaa gga	5472
Phe Asp Tyr Gly Gln Tyr Pro Lys Val Tyr Glu Ala Leu Val Glu Gly	
1810 1815 1820	
atg cgc gtc att gaa atc aac aca tgg ctt cag gtc atc cct cag ttg	5520
Met Arg Val Ile Glu Ile Asn Thr Trp Leu Gln Val Ile Pro Gln Leu	
1825 1830 1835 1840	
atc gcc cgc atc gat act ccg cgc aac cta gtt ggc caa cta atc cac	5568
Ile Ala Arg Ile Thr Pro Arg Asn Leu Val Gly Gln Leu Ile His	
1845 1850 1855	
cag ctg ttg aac gac atc gga aag tgt cat ccg cag gct ctt gtc tat	5616
Gln Leu Leu Asn Asp Ile Gly Lys Cys His Pro Gln Ala Leu Val Tyr	
1860 1865 1870	
ccg ctg acc gtt gct tcc aat tgc gca tcc agt gcg cga cga cag gcc	5664
Pro Leu Thr Val Ala Ser Asn Ser Ala Ser Ser Ala Arg Arg Gln Ala	
1875 1880 1885	
gct cac aag atc ttg ggc tcc atg ggt gaa cat tcg tcc aac ttg gtc	5712
Ala His Lys Ile Leu Gly Ser Met Gly Glu His Ser Ser Asn Leu Val	
1890 1895 1900	
aac caa gcg atc atg tgc agc gag gaa ctg atc gcg gtg acc att ctg	5760
Asn Gln Ala Ile Met Cys Ser Glu Glu Leu Ile Arg Val Thr Ile Leu	
1905 1910 1915 1920	
tgg cac gaa cag tgg cac gag ggc ttg gag gag gcg tcg cgg ctg tat	5808
Trp His Glu Gln Trp His Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr	
1925 1930 1935	
ttc ggc gac cgg aac atc aag gga atg ttc gaa act ttg gaa ccg ctg	5856
Phe Gly Asp Arg Asn Ile Lys Gly Met Phe Glu Thr Leu Glu Pro Leu	
1940 1945 1950	
cac caa atg ctt cag agg gga cct caa acc ttg aag gag acc tcg ttc	5904
His Gln Met Leu Gln Arg Gly Pro Gln Thr Leu Lys Glu Thr Ser Phe	
1955 1960 1965	
aat cag gcg tac ggt agg gat ctg aac gag gcg cag gag tgg tgc aaa	5952
Asn Gln Ala Tyr Gly Arg Asp Leu Asn Glu Ala Gln Glu Trp Cys Lys	
1970 1975 1980	
cat tat aag aac tcg ggc aac att cgt gac ttg aac caa gcg tgg gat	6000
His Tyr Lys Asn Ser Gly Asn Ile Arg Asp Leu Asn Gln Ala Trp Asp	
1985 1990 1995 2000	
ttg tac tat cac gta ttc cgc cga att tcc cgg cag ttg ccg cag ctt	6048
Leu Tyr Tyr His Val Phe Arg Arg Ile Ser Arg Gln Leu Pro Gln Leu	
2005 2010 2015	
acc tcc cta gaa cta caa tac gtc agt cct aag ctg cta gcc tgt cgt	6096
Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Ala Cys Arg	
2020 2025 2030	
gat cta gag cta gcc gtc ccc gga agc tac gcc ccc ggt cag gag ctg	6144
Asp Leu Glu Leu Ala Val Pro Gly Ser Tyr Ala Pro Gly Gln Glu Leu	
2035 2040 2045	
atc cgg atc gcc agc att caa tcg aac ctc cag gtg atc act tcg aag	6192
Ile Arg Ile Ala Ser Ile Gln Ser Asn Leu Gln Val Ile Thr Ser Lys	
2050 2055 2060	
caa aga ccg cga aaa ctt tgc atc cgt ggc tcc aac ggc aag gag tac	6240
Gln Arg Pro Arg Lys Leu Cys Ile Arg Gly Ser Asn Gly Lys Glu Tyr	
2065 2070 2075 2080	
atg ttc ctg ctg aag ggc cac gaa gat ttg cgc cag gac gaa cgc gtg	6288
Met Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val	
2085 2090 2095	
atg cag ctg ttt ggg ctg gtg aac acc ctg ctg cta aac gat ccg gac	6336
Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Leu Asn Asp Pro Asp	
2100 2105 2110	
acg ttc cgt cgg aat ctg acc att caa cgg tac gca ttc att ccg ttg	6384
Thr Phe Arg Arg Asn Leu Thr Ile Gln Arg Tyr Ala Phe Ile Pro Leu	
2115 2120 2125	
agc acc aat tcc ggc ttg atc ggt tgg gtg ccc cac tgc gat acg ctg	6432
Ser Thr Asn Ser Gly Leu Ile Gly Trp Val Pro His Cys Asp Thr Leu	
2130 2135 2140	
cac acg ctg act cga gat tac cgc gag aag aaa aag acc atg ctg aac	6480
His Thr Leu Thr Arg Asp Tyr Arg Glu Lys Lys Lys Thr Met Leu Asn	
2145 2150 2155 2160	
atc gag cat cgg att atg ttg cga atg gca acg gat tac gac cat ctg	6528
Ile Glu His Arg Ile Met Leu Arg Met Ala Thr Asp Tyr Asp His Leu	
2165 2170 2175	



## PhoenixTemp32470.tmp.txt

acg ttg atg caa aag gtc gaa gtc ttt gag tat gcg ttg gag ctc acc 6576  
 Thr Leu Met 2180 Lys Val Glu Val Phe 2185 Glu Tyr Ala Leu Glu 2190 Leu Thr  
 aaa gga gac gac ctg gcc aag ctg ctc tgg ctg aag agc ccc tcg tcg 6624  
 Lys Gly Asp Asp Leu Ala Lys Leu Leu Trp Leu Lys Ser Pro Ser Ser  
 2195 2200 2205  
 gag gtt tgg ttc gat aga aga acg aat tat acg cga tcc ctt gcg gtc 6672  
 Glu Val Trp Phe Asp Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val  
 2210 2215 2220  
 atg tcg atg gtt ggc tac att ctg gga ctg ggc gat cga cat ccg tcg 6720  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2225 2230 2235 2240  
 aac ttg atg ctg gat cga ttg agc ggc aaa att ctg cac atc gac ttt 6768  
 Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile Asp Phe  
 2245 2250 2255  
 ggc gat tgc ttc gag gtt gcg atg acc cgc gag aag ttc ccg gag aag 6816  
 Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro Glu Lys  
 2260 2265 2270  
 att ccc ttc cgt ttg acg cga atg ctg atc aac gcc atg gaa gtt acc 6864  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Thr  
 2275 2280 2285  
 ggc atc gag ggg acc tac cgc cgg acg tgt gaa agc gtc atg cac gtg 6912  
 Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met His Val  
 2290 2295 2300  
 ctc cgt cgc aac aag gat agt cta atg gcc gtg ctg gaa gct ttc gta 6960  
 Leu Arg Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Val  
 2305 2310 2315 2320  
 tac gat cca ttg ctg aac tgg cgc ctg ctg gat gtg gac aag aat cgc 7008  
 Tyr Asp Pro Leu Leu Asn Trp Arg Leu Leu Asp Val Asp Lys Asn Arg  
 2325 2330 2335  
 agg tcc aag aat gcc acc gac gtg gac agc aca acg gaa agc atg gaa 7056  
 Arg Ser Lys Asn Ala Thr Asp Val Asp Ser Thr Thr Glu Ser Met Glu  
 2340 2345 2350  
 gaa acg ttg gat ctt ctg atc aac gcc agg aac ctg cgg atg aac gaa 7104  
 Glu Thr Leu Asp Leu Leu Ile Asn Ala Arg Asn Leu Arg Met Asn Glu  
 2355 2360 2365  
 gcc aac gga ggc gga gac gtg gtg gat cag ggc agc aat tgc atc gcc 7152  
 Ala Asn Gly Gly Gly Asp Val Val Asp Gln Gly Ser Asn Cys Ile Ala  
 2370 2375 2380  
 aat ccg gcc gaa gct acc aac aat aaa gcc cgg gcc atc gtg gat cgt 7200  
 Asn Pro Ala Glu Ala Thr Asn Asn Lys Ala Arg Ala Ile Val Asp Arg  
 2385 2390 2395 2400  
 gtg aag cag aaa ctg acc gga aag gac ttc aac acg gtc gaa ccg gtg 7248  
 Val Lys Gln Lys Leu Thr Gly Lys Asp Phe Asn Thr Val Glu Pro Val  
 2405 2410 2415  
 caa cgg cag atc gat ctg ttg ata cgg cag gcg acg aac aat gaa aac 7296  
 Gln Arg Gln Ile Asp Leu Leu Ile Arg Gln Ala Thr Asn Asn Glu Asn  
 2420 2425 2430  
 ctc tgc cag tgc tac atc ggg tgg tgt cct ttc tgg tag 7335  
 Leu Cys Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp  
 2435 2440

&lt;210&gt; 2569

&lt;211&gt; 2444

&lt;212&gt; PRT

&lt;213&gt; Aedes aegypti

&lt;400&gt; 2569

Met Ser Thr Val Val Leu Gln Phe Val Ser Gly Leu Lys Ser Arg Asn  
 1 5 10 15  
 Lys Asp Ala Gln Asn Lys Ala Ala Gln Glu Leu Ser Leu Tyr Val Lys  
 20 25 30  
 Thr Glu Leu Arg Glu Ile Pro Gln Asp Asp Leu Leu Ala Phe Phe Glu  
 35 40 45  
 Asp Phe Asn Gln Tyr Ile Phe Glu Met Leu Ser Ser Ala Asp Ile Asn  
 50 55 60  
 Asp Lys Lys Gly Gly Val Leu Ala Ile Asn Cys Leu Ile Ser Gly Asp  
 65 70 75 80  
 Val Val Asn Thr Thr Thr Gln Ile Ser Arg Tyr Ser Asn Asn Leu Arg

## PhoenixTemp32470.tmp.txt

				85					90					95	
Asn	Leu	Leu	Pro	Ser	Ser	Asp	Ile	Ser	Val	Met	Glu	Leu	Ala	Ala	Lys
Val	Leu	Val	100	Leu	Ala	Leu	Leu	105	Gly	Ser	Lys	Gly	110	Glu	Ser
Phe	Glu	Phe	115	Ile	Lys	Arg	Ala	120	Glu	Trp	Leu	Met	Glu	Glu	Arg
Thr	Glu	Gly	130	Arg	His	Ala	Ala	135	Val	Val	Leu	Arg	Glu	Leu	Ala
145	Val	Ala	Met	Pro	Thr	Phe	Phe	150	Gln	Gln	Val	Gly	Ser	Phe	160
				165	Ile	Lys	Asp	170	Lys	Pro	Met	Ile	Arg	Glu	Gly
His	Ile	Phe	180	Ala	Leu	Arg	Ala	185	Leu	Ile	Val	Thr	Ser	Gln	Arg
Ala	Gly	Gln	195	Gln	Asn	Asn	Asn	200	Gln	Trp	Tyr	Asn	His	Leu	Leu
Gly	Thr	Lys	210	Gly	Met	Leu	Gln	215	Gly	Ala	Ser	Phe	Arg	Glu	Arg
Gln	Arg	Asn	225	Met	Ile	His	Gly	230	Ala	Ile	Ile	Val	Phe	Asn	Glu
Asn	Arg	Asp	245	Asp	Arg	Ala	Ala	250	Glu	Lys	Lys	Tyr	Met	Gln	255
Leu	Arg	Cys	260	Ser	Asn	Ala	Ala	265	Lys	Lys	Tyr	Met	Gln	Leu	Glu
Ser	Leu	Asn	275	Val	Asp	Arg	Arg	280	Arg	His	Thr	Asp	Glu	Gly	His
Ile	Phe	Pro	290	Arg	Ile	Arg	Val	295	Pro	Phe	Met	Asp	Lys	Gly	Gly
His	Ser	Ser	305	Gly	Ala	Ser	Arg	310	Thr	Ser	Glu	Gly	Ser	Asp	Val
Phe	Arg	Gln	325	Asn	Ser	Ser	Ile	330	Gln	Glu	Ser	Ala	Ile	Cys	Lys
Thr	Asn	Asp	340	Asn	Tyr	Glu	Leu	345	Gln	Lys	Val	Leu	Glu	Gln	350
Asn	Ser	Lys	355	Ser	Pro	Tyr	Val	360	Ser	Leu	Leu	Thr	Ile	Leu	Pro
Arg	Leu	Ala	370	Ala	Phe	Asn	Arg	375	Asp	Phe	Val	Asn	Asn	His	Leu
Thr	Val	Val	385	Asn	Tyr	Leu	Ile	390	Thr	Ile	Lys	Ser	Lys	Glu	Lys
Arg	Asn	Leu	400	Ala	Phe	Val	Thr	405	Gly	Tyr	Ile	Ala	Val	Ala	Glu
Lys	Asp	Ile	415	Ala	Pro	Phe	Arg	420	Arg	Ile	Ile	Glu	Val	Ile	Thr
Ala	Leu	Pro	430	Pro	Lys	Glu	Thr	435	Ser	Lys	Lys	Lys	Val	Cys	Val
Pro	Ser	Val	445	Phe	Met	Cys	Ile	450	Thr	Leu	Leu	Gly	His	Ala	Leu
Ala	Ile	Thr	460	Thr	Asp	Val	Lys	465	Ser	Leu	Ile	Leu	Pro	Met	Leu
Gly	Leu	Ser	470	Thr	Gly	Leu	Thr	475	Cys	Leu	His	Glu	Leu	Ser	Ser
Val	Pro	Gln	480	Leu	Arg	Gln	Glu	485	Thr	Ser	Gly	Leu	Leu	Glu	Asn
Ser	Cys	Val	495	Leu	Met	Asn	Lys	500	Leu	Pro	Gln	Phe	Ile	Pro	Ile
Pro	Gln	Gly	510	Gly	Met	Asn	Lys	515	Leu	Tyr	Glu	Gln	Ile	Gln	Arg
Thr	Pro	Thr	520	Thr	Val	Leu	Ala	525	Arg	Thr	Leu	Gly	Thr	Phe	Asn
Glu	Gly	His	530	Ser	Leu	Leu	Pro	535	Val	Gln	Arg	Cys	Ala	Asp	Phe
Leu	Leu	Ser	545	Glu	Gln	Gln	Glu	550	Arg	Ile	Glu	Ala	Val	Gln	Cys
Thr	Leu	Leu	555	Leu	Lys	Leu	Ala	560	Gln	Ser	Val	Asp	Ser	Ala	Asp
Ser	Glu	Thr	565	Leu	Thr	Gln	Thr	570	Gly	Ser	Val	Leu	Glu	Lys	Ile
Ile	Val	Gly	580	Ile	Thr	Asp	Val	585	Pro	Asn	Val	Arg	Leu	Arg	Leu
			595	Thr	Asp	600	Asp	605							
			610	Thr	615	Val	Asp	620							
			625	Thr	630	Val	Asp	635							

## PhoenixTemp32470.tmp.txt

Lys Ser Leu Asp Asp Ser Phe Asp Ser Gln Leu Ala Gln Pro Trp Phe  
 645 650 655  
 Leu Ser Ser Leu Leu Ile Thr Met Asn Asp Glu Val Phe Glu Ile Arg  
 660 665 670  
 Glu Leu Ala Ile Ile Ile Ile Gly Arg Leu Ser Ala Ile Asn Pro Ala  
 675 680 685  
 Tyr Val Met Pro Ser Leu Arg Lys Thr Met Val Gln Ile Leu Thr Glu  
 690 695 700  
 Leu Glu His Ser Gly Met Ser Arg Asn Lys Glu Gln Ser Ala Arg Met  
 705 710 715 720  
 Leu Asp His Leu Ile Val Ser Thr Pro Arg Leu Ile Ser Ser Tyr Met  
 725 730 735  
 Arg Pro Ile Leu Ser Ile Leu Val Pro Lys Leu Lys Glu Pro Glu Ser  
 740 745 750  
 Asn Pro Gly Val Val Leu Asn Val Leu Arg Ala Ile Gly Asp Leu Ala  
 755 760 765  
 Glu Val Asn Gly Gly His Asn Val Leu Glu Lys Trp Ser Asp Glu Leu  
 770 775 780  
 Leu Ala Thr Leu Leu Glu Met Leu Ser Asp Ala Gly Ser Thr Glu Lys  
 785 790 795 800  
 Arg Gly Val Ala Leu Trp Thr Leu Gly Gln Leu Val Ser Ala Thr Gly  
 805 810 815  
 Gln Ala Val Lys Pro Tyr His Lys Tyr Pro Asn Leu Ile Asp Ile Leu  
 820 825 830  
 Ile Asn Phe Leu Lys Thr Glu Gln Gln Pro Tyr Val Arg Arg Glu Thr  
 835 840 845  
 Ile Arg Val Leu Gly Leu Leu Gly Ala Leu Asp Pro Tyr Lys His Lys  
 850 855 860  
 Met Asn Arg Gly Leu Ile Asp Ser Gln Thr Asn Asn Ile Leu Ile Ser  
 865 870 875 880  
 Ile Ser Asp Ser Lys Thr Glu Glu Tyr Thr Asp Leu Ser Thr Ser Glu  
 885 890 895  
 Met Leu Ile Asn Met Asn Asn Gln Leu Glu Glu Tyr Tyr Pro Ala Val  
 900 905 910  
 Ala Ile Ser Thr Leu Met Lys Ile Leu Arg Asp Pro Thr Leu Ser Ser  
 915 920 925  
 His His Thr Ser Val Val Gln Ala Ile Thr Phe Ile Phe Lys Ser Leu  
 930 935 940  
 Gly Ile Lys Cys Val Pro Tyr Leu Ser Gln Val Leu Pro Ser Leu Leu  
 945 950 955 960  
 Gly Asn Ile Arg Asn Ala Glu Met Asn Leu Lys Glu Phe Leu Phe Gln  
 965 970 975  
 Gln Leu Ser Ile Leu Ile Glu Ile Val Lys Gln His Ile Ile Ser Phe  
 980 985 990  
 Met Glu Glu Ile Phe Gln Leu Ile Lys Thr Phe Trp Asn Ser Ile Tyr  
 995 1000 1005  
 Pro Leu Gln Pro Thr Leu Ile Ile Leu Val Glu Lys Ile Ala Ile Ala  
 1010 1015 1020  
 Leu Gly Cys Glu Phe Lys Ile Tyr Leu Pro Gln Leu Met Pro Gln Ile  
 1025 1030 1035 1040  
 Leu Arg Val Leu Leu His Asp Ala Ser Thr His Arg Ile Val Thr Val  
 1045 1050 1055  
 Lys Leu Leu Asn Ala Leu Gln Lys Phe Gly Asn Asn Leu Asp Asp Tyr  
 1060 1065 1070  
 Leu His Leu Ile Ile Pro Ala Ile Val Lys Leu Phe Glu Pro Ile Glu  
 1075 1080 1085  
 Val Pro Tyr Gln Val Ser Leu Ala Ala Leu Glu Thr Ile Asn Tyr Leu  
 1090 1095 1100  
 Ala Glu Ile Leu Asp Phe Thr Asp Phe Ser Ser Arg Ile Ile His Pro  
 1105 1110 1115 1120  
 Leu Val Arg Val Leu Asp Asn His Pro Gly Gln Leu Gln Thr Ala Ala  
 1125 1130 1135  
 Leu Gln Thr Leu Cys Ser Ile Met Ile Gln Leu Gly Lys Lys Tyr Leu  
 1140 1145 1150  
 Val Phe Val Pro Leu Val Asn Arg Val Met Ile Arg His Lys Ile Ser  
 1155 1160 1165  
 Tyr Thr Glu Tyr Asn Lys Leu Leu Ser Lys Leu Gln Ser Gln Ser Thr  
 1170 1175 1180  
 Leu Ala Leu Asp Asp Glu Phe Arg Leu Arg Gln Ala Arg Phe Lys Asn

## PhoenixTemp32470.tmp.txt

```

1185      1190      1195      1200
Arg Glu Met Ser Leu Ala Gly Asp Thr Thr Ile Arg Lys Leu Asn Val
      1205      1210      1215
Ser Thr Ala Asp Leu Gln Leu Ala Phe Lys Ala Asn Arg Arg Val Ser
      1220      1225      1230
Arg Asp Asp Trp Leu Glu Trp Leu Arg Arg Leu Ser Ile Gly Leu Leu
      1235      1240      1245
Lys Glu Ser Lys Ser Pro Ala Leu Arg Ser Cys Arg Thr Leu Ala Gln
      1250      1255      1260
Asn Tyr Pro Gln Leu Leu Lys Asp Leu Phe Asn Ala Ala Phe Val Ser
1265      1270      1275      1280
Cys Trp Thr Asp Leu Pro Asp Ser Leu Lys Glu Glu Leu Ser Ser Ser
      1285      1290      1295
Leu Arg Gln Ala Leu Met Val Pro Asp Leu Pro Glu Ile Thr Gln Thr
      1300      1305      1310
Ile Leu Asn Leu Ala Glu Phe Met Glu His Cys Glu Asn Asp Ala Leu
      1315      1320      1325
Arg Ile Asp Pro Lys Ile Leu Gly Glu Arg Ala Met Glu Cys Arg Ala
      1330      1335      1340
Tyr Ala Lys Ala Leu His Tyr Lys Glu Glu Glu Phe Leu Asn Met Lys
1345      1350      1355      1360
Asp Lys Asp Gln Ser Val Phe Glu Ser Leu Ile Leu Ile Asn Asn Lys
      1365      1370      1375
Leu Gln Gln Lys Glu Ala Ala Glu Gly Leu Leu Glu Tyr Ala Met Glu
      1380      1385      1390
His Arg Ser Ala Ser Glu Glu Met Lys Val Gln Val Arg Trp Tyr Glu
      1395      1400      1405
Lys Leu His Ser Trp Glu Lys Ala Leu Asn Leu Tyr Gln Asp Lys Leu
      1410      1415      1420
Glu Ser Asn Pro Gly Asp Leu Asp Ser Arg Leu Gly Gln Trp Arg Cys
1425      1430      1435      1440
Leu Glu Ala Leu Gly Glu Trp Ser Thr Leu Asn Thr Leu Thr Lys Glu
      1445      1450      1455
Thr Trp Glu Ser Leu Gly Thr Glu Gly Gln Ser Lys Ala Gly Arg Leu
      1460      1465      1470
Ala Ala Ala Ala Ala Trp Gly Leu Lys Asp Trp Glu Gly Met Gln Glu
      1475      1480      1485
Phe Val Lys Phe Ile Pro Glu Asp Thr Gln Asp Gly Ser Phe Tyr Arg
      1490      1495      1500
Ala Val Leu Ala Val His Gly Glu Tyr Glu Leu Ala Gln Thr Leu
1505      1510      1515      1520
Ile Asp Asp Thr Arg Asp Leu Leu Asp Thr Glu Leu Thr Ala Met Ala
      1525      1530      1535
Gly Glu Ser Tyr Glu Arg Ala Tyr Gly Ala Met Val Cys Val Gln Met
      1540      1545      1550
Leu Ser Glu Leu Glu Glu Val Ile Gln Tyr Lys Leu Ile Pro Glu Arg
      1555      1560      1565
Gln Glu Thr Ile Lys Ala Met Trp Trp Asp Arg Leu Leu Gly Gly Gln
      1570      1575      1580
Arg Leu Val Glu Asp Trp Gln Arg Ile Leu Gln Val His Thr Leu Val
1585      1590      1595      1600
Val His Pro Ala Asn Asp Val Lys Thr Trp Leu Lys Phe Ala Ser Leu
      1605      1610      1615
Cys Arg Lys Ser Asp Ser Leu Lys Leu Ser Glu Lys Thr Leu Val Met
      1620      1625      1630
Leu Leu Arg Tyr Asn Pro Ser Glu Tyr Pro Asp His Pro Leu Glu Phe
      1635      1640      1645
Met Gln Pro Asp Ile Ser Phe Ala Tyr Ala Lys His Leu Trp Ala Ala
      1650      1655      1660
Gly Glu Gln Glu Lys Ala Tyr Asn Gln Leu Asn Arg Leu Val Ala Asp
1665      1670      1675      1680
Met Gly Ile Glu Gly Asn Phe Asp Val Glu Lys Asp Glu Asn Arg
      1685      1690      1695
Arg Leu Leu Ala Arg Cys Tyr Met Lys Leu Gly Gln Trp Gln Asn Gln
      1700      1705      1710
Leu Gln Gly Leu Asn Glu Gln Ser Ile Lys Gly Ile Leu Ala Cys Tyr
      1715      1720      1725
Glu Lys Ala Thr Lys His Asp Ser Asn Trp Tyr Lys Ala Trp His Leu
1730      1735      1740

```

## PhoenixTemp32470.tmp.txt

Trp Ala Tyr Met Asn Phe Glu Val Val Gln Asn Gln Lys Gln Gln Glu  
 1745 1750 1755 1760  
 Asp Leu Ile Lys Asn Pro Gly Gly Asp Lys Glu Lys Cys Met Ile Arg  
 1765 1770 1775  
 Gln Tyr Ala Val Pro Ala Val Glu Gly Phe Phe Arg Ser Ile Asn Leu  
 1780 1785 1790  
 Ser His Gly Asn Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr Leu Trp  
 1795 1800 1805  
 Phe Asp Tyr Gly Gln Tyr Pro Lys Val Tyr Glu Ala Leu Val Glu Gly  
 1810 1815 1820  
 Met Arg Val Ile Glu Ile Asn Thr Trp Leu Gln Val Ile Pro Gln Leu  
 1825 1830 1835 1840  
 Ile Ala Arg Ile Asp Thr Pro Arg Asn Leu Val Gly Gln Leu Ile His  
 1845 1850 1855  
 Gln Leu Leu Asn Asp Ile Gly Lys Cys His Pro Gln Ala Leu Val Tyr  
 1860 1865 1870  
 Pro Leu Thr Val Ala Ser Asn Ser Ala Ser Ser Ala Arg Arg Gln Ala  
 1875 1880 1885  
 Ala His Lys Ile Leu Gly Ser Met Gly Glu His Ser Ser Asn Leu Val  
 1890 1895 1900  
 Asn Gln Ala Ile Met Cys Ser Glu Glu Leu Ile Arg Val Thr Ile Leu  
 1905 1910 1915 1920  
 Trp His Glu Gln Trp His Glu Gly Leu Glu Ala Ser Arg Leu Tyr  
 1925 1930 1935  
 Phe Gly Asp Arg Asn Ile Lys Gly Met Phe Glu Thr Leu Glu Pro Leu  
 1940 1945 1950  
 His Gln Met Leu Gln Arg Gly Pro Gln Thr Leu Lys Glu Thr Ser Phe  
 1955 1960 1965  
 Asn Gln Ala Tyr Gly Arg Asp Leu Asn Glu Ala Gln Glu Trp Cys Lys  
 1970 1975 1980  
 His Tyr Lys Asn Ser Gly Asn Ile Arg Asp Leu Asn Gln Ala Trp Asp  
 1985 1990 1995 2000  
 Leu Tyr Tyr His Val Phe Arg Arg Ile Ser Arg Gln Leu Pro Gln Leu  
 2005 2010 2015  
 Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Ala Cys Arg  
 2020 2025 2030  
 Asp Leu Glu Leu Ala Val Pro Gly Ser Tyr Ala Pro Gly Gln Glu Leu  
 2035 2040 2045  
 Ile Arg Ile Ala Ser Ile Gln Ser Asn Leu Gln Val Ile Thr Ser Lys  
 2050 2055 2060  
 Gln Arg Pro Arg Lys Leu Cys Ile Arg Gly Ser Asn Gly Lys Glu Tyr  
 2065 2070 2075 2080  
 Met Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val  
 2085 2090 2095  
 Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Leu Asn Asp Pro Asp  
 2100 2105 2110  
 Thr Phe Arg Arg Asn Leu Thr Ile Gln Arg Tyr Ala Phe Ile Pro Leu  
 2115 2120 2125  
 Ser Thr Asn Ser Gly Leu Ile Gly Trp Val Pro His Cys Asp Thr Leu  
 2130 2135 2140  
 His Thr Leu Thr Arg Asp Tyr Arg Glu Lys Lys Lys Thr Met Leu Asn  
 2145 2150 2155 2160  
 Ile Glu His Arg Ile Met Leu Arg Met Ala Thr Asp Tyr Asp His Leu  
 2165 2170 2175  
 Thr Leu Met Gln Lys Val Glu Val Phe Glu Tyr Ala Leu Glu Leu Thr  
 2180 2185 2190  
 Lys Gly Asp Asp Leu Ala Lys Leu Trp Leu Lys Ser Pro Ser Ser  
 2195 2200 2205  
 Glu Val Trp Phe Asp Arg Arg Thr Asn Tyr Thr Arg Ser Leu Ala Val  
 2210 2215 2220  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2225 2230 2235 2240  
 Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile Asp Phe  
 2245 2250 2255  
 Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro Glu Lys  
 2260 2265 2270  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Thr  
 2275 2280 2285  
 Gly Ile Glu Gly Thr Tyr Arg Arg Thr Cys Glu Ser Val Met His Val

## PhoenixTemp32470.tmp.txt

2290 2295 2300  
 Leu Arg Arg Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala Phe Val  
 2305 2310 2315 2320  
 Tyr Asp Pro Leu Leu Asn Trp Arg Leu Leu Asp Val Asp Lys Asn Arg  
 2325 2330 2335  
 Arg Ser Lys Asn Ala Thr Asp Val Asp Ser Thr Thr Glu Ser Met Glu  
 2340 2345 2350  
 Glu Thr Leu Asp Leu Leu Ile Asn Ala Arg Asn Leu Arg Met Asn Glu  
 2355 2360 2365  
 Ala Asn Gly Gly Gly Asp Val Val Asp Gln Gly Ser Asn Cys Ile Ala  
 2370 2375 2380  
 Asn Pro Ala Glu Ala Thr Asn Asn Lys Ala Arg Ala Ile Val Asp Arg  
 2385 2390 2395 2400  
 Val Lys Gln Lys Leu Thr Gly Lys Asp Phe Asn Thr Val Glu Pro Val  
 2405 2410 2415  
 Gln Arg Gln Ile Asp Leu Leu Ile Arg Gln Ala Thr Asn Asn Glu Asn  
 2420 2425 2430  
 Leu Cys Gln Cys Tyr Ile Gly Trp Cys Pro Phe Trp  
 2435 2440

&lt;210&gt; 2570

&lt;211&gt; 7158

&lt;212&gt; DNA

&lt;213&gt; Emericella nidulans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7158)

&lt;400&gt; 2570

atg gcg caa gca ggt ccg atc acg gac gtc acc cag agg ctc ttc atc	48
Met Ala Gln Ala Gly Pro Ile Thr Asp Val Thr Gln Arg Leu Phe Ile	
1 5 10 15	
gag ctg aag tct aag aac gag gaa acg cgg gtc cga gct gct tac gag	96
Glu Leu Lys Ser Lys Asn Glu Glu Thr Arg Val Arg Ala Ala Tyr Glu	
20 25 30	
ctt tac gaa aat gtt ctt gcc atc tca aga gac tgg cct ccc gag aag	144
Leu Tyr Glu Asn Val Leu Ala Ile Ser Arg Asp Trp Pro Pro Glu Lys	
35 40 45	
ttc att gaa ttc tat aac gcc gtt agt caa cgc atc gcc cag ctt gtt	192
Phe Ile Glu Phe Tyr Asn Ala Val Ser Gln Arg Ile Ala Gln Leu Val	
50 55 60	
gtc acc ggc agt gat gca cac gaa agg atc ggc ggt ctc cta gct ctt	240
Val Thr Gly Ser Asp Ala His Glu Arg Ile Gly Gly Leu Leu Ala Leu	
65 70 75 80	
gac cga cta ata gat ttc gat ggc gtg gac aat gcg cag aag aca acg	288
Asp Arg Leu Ile Asp Phe Asp Gly Val Asp Asn Ala Gln Lys Thr Thr	
85 90 95	
agg ttc gcc agc tat ttg cgg agc gcc ctg cgc agc agc gat aat gcc	336
Arg Phe Ala Ser Tyr Leu Arg Ser Ala Leu Arg Ser Ser Asp Asn Ala	
100 105 110	
gta ctt gtc tac gcc gct cgg gca ctt ggt cgc ctg gcg aag ccc ggt	384
Val Leu Val Tyr Ala Ala Arg Ala Leu Gly Arg Leu Ala Lys Pro Gly	
115 120 125	
ggt gcc ctt act gca gaa ttg gtt gag agt gaa ata cag tcg gca ctg	432
Gly Ala Leu Thr Ala Glu Leu Val Glu Ser Glu Ile Gln Ser Ala Leu	
130 135 140	
gaa tgg ctt cag tct gaa cga caa gaa ggt cga cgg ttt gct gcg gtg	480
Glu Trp Leu Gln Ser Glu Arg Gln Glu Gly Arg Arg Phe Ala Ala Val	
145 150 155 160	
ctg gtt att cgg gag ctc gct aaa ggg tcg ccc acg ctt ctt tac ggg	528
Leu Val Ile Arg Glu Leu Ala Lys Gly Ser Pro Thr Leu Leu Tyr Gly	
165 170 175	
ttc gtt cct cag atc ttc gaa ctc atc tgg gtt gct ctg aga gac ccc	576
Phe Val Pro Gln Ile Phe Glu Leu Ile Trp Val Ala Leu Arg Asp Pro	
180 185 190	
aag gta ctt atc cga gag act gct gca gaa gca gta agt gaa tgc ttc	624
Lys Val Leu Ile Arg Glu Thr Ala Ala Glu Ala Val Ser Glu Cys Phe	
195 200 205	

## PhoenixTemp32470.tmp.txt

gaa Glu	atc Ile	att Ile	gct Ala	gcg Ala	aga Arg	gat Asp	ata Ile	cag Gln	ggt Val	cgg Arg	cag Gln	cta Leu	tgg Trp	ttt Phe	gcg Ala	672
aga Arg	ata Ile	tac Tyr	gag Glu	gaa Glu	gcg Ala	ctc Leu	cag Gln	ggc Gly	ttg Leu	aag Lys	tcg Ser	aat Asn	aat Asn	gtg Val	gac Asp	720
tgg Trp	atc Ile	cat His	gga Gly	tca Ser	ctc Leu	ttg Leu	ggt Val	ctt Leu	aag Lys	gaa Glu	ctt Leu	ctc Leu	ctc Leu	aaa Lys	gga Gly	768
gcc Ala	atg Met	ttc Phe	atg Met	aat Asn	gaa Glu	cat His	tat Tyr	cga Arg	aat Asn	gcg Ala	tgt Cys	gaa Glu	atc Ile	gtg Val	ctt Leu	816
cgt Arg	ctc Leu	aag Lys	gac Asp	cac His	cga Arg	gac Asp	ccg Pro	aaa Lys	att Ile	cgg Arg	acg Thr	caa Gln	ggt Val	gtt Val	ctc Leu	864
aca Thr	att Ile	ccc Pro	att Ile	ctt Leu	gcc Ala	tcc Ser	tac Tyr	gct Ala	ccg Pro	ggt Val	gat Asp	ttc Phe	acc Thr	gaa Glu	aca Thr	912
tac Tyr	ctg Leu	cat His	aga Arg	ttc Phe	atg Met	gtg Val	tat Tyr	ctt Leu	caa Gln	gcc Ala	cag Gln	ctc Leu	aaa Lys	aag Lys	gac Asp	960
aag Lys	gag Glu	cg Arg	aat Asn	gct Ala	gct Ala	ttc Phe	ata Ile	gct Ala	atc Ile	gga Gly	aag Lys	att Ile	gca Ala	aat Asn	gcg Ala	1008
gtg Val	ggt Gly	gta Val	gct Ala	att Ile	gca Ala	caa Gln	tac Tyr	ctt Leu	gat Asp	ggt Gly	atc Ile	att Ile	gtt Val	tac Tyr	atc Ile	1056
cg Arg	gaa Glu	gga Gly	ctg Leu	gcc Ala	ctg Leu	aaa Lys	gcg Ala	aaa Lys	aat Asn	cga Arg	gct Ala	gcc Ala	att Ile	aat Asn	gaa Glu	1104
gcg Ala	cca Pro	atg Met	ttt Phe	gag Glu	tgt Cys	att Ile	agt Ser	atg Met	ctc Leu	tcg Ser	ctg Leu	gct Ala	gtt Val	ggg Gly	cag Gln	1152
gct Ala	ctc Leu	agc Ser	aaa Lys	tac Tyr	atg Met	gaa Glu	tcg Ser	ctc Leu	ctc Leu	gat Asp	ccc Pro	atc Ile	ttt Phe	gca Ala	tgt Cys	1200
ggc Gly	tta Leu	agt Ser	gaa Glu	tcc Ser	ctg Leu	aca Thr	cag Gln	gct Ala	ctt Leu	ggt Val	gat Asp	atg Met	gct Ala	cat His	tat Tyr	1248
att Ile	cca Pro	cca Pro	atc Ile	aag Lys	ccc Pro	acg Thr	att Ile	caa Gln	gta Val	aag Lys	ctg Leu	ctg Leu	gat Asp	atg Met	ctt Leu	1296
agc Ser	ctg Leu	att Ile	ctt Leu	gat Asp	ggg Gly	acg Thr	cct Pro	ttt Phe	cg Arg	ccc Pro	cta Leu	ggt Gly	tgt Cys	ccg Pro	gaa Glu	1344
agc Ser	agg Arg	cta Leu	cct Pro	ccg Pro	ctg Leu	ccg Pro	tct Ser	ttc Phe	gcc Ala	aaa Lys	gac Asp	ttc Phe	acc Thr	ctg Leu	caa Gln	1392
gaa Glu	ctg Leu	cat His	tct Ser	gac Asp	gct Ala	gaa Glu	att Ile	gcg Ala	ctg Leu	gct Ala	ctc Leu	cac His	acc Thr	ctg Leu	gga Gly	1440
agc Ser	ttc Phe	gat Asp	ttt Phe	tct Ser	ggt Gly	cat His	att Ile	ttg Leu	aat Asn	gaa Glu	ttt Phe	gtg Val	cg Arg	gac Asp	gtt Val	1488
gcc Ala	att Ile	cac His	tat Tyr	gtt Val	gaa Glu	aac Asn	gac Asp	aac Asn	cct Pro	gaa Glu	att Ile	cgg Arg	aag Lys	gct Ala	gcg Ala	1536
gct Ala	ctt Leu	acc Thr	tgc Cys	tgc Cys	cag Gln	cta Leu	ttt Phe	gtg Val	cat His	gac Asp	ccc Pro	att Ile	atc Ile	aat Asn	cag Gln	1584
acc Thr	agc Ser	agc Ser	cac His	tca Ser	ata Ile	cag Gln	gtt Val	gtt Val	agc Ser	gag Glu	gtc Val	atc Ile	gac Asp	aag Lys	cta Leu	1632
ttg Leu	acc Thr	gtt Val	ggt Gly	gtc Val	ggc Gly	gac Asp	cct Pro	gat Asp	cct Pro	gag Glu	att Ile	aga Arg	cg Arg	act Thr	gtg Val	1680
cta Leu	tgg Trp	tcc Ser	ttg Leu	gat Asp	cg Arg	aaa Lys	ttt Phe	gac Asp	cgg Arg	cac His	ctt Leu	gca Ala	cg Arg	cca Pro	gaa Glu	1728

## PhoenixTemp32470.tmp.txt

aat	atc	cga	tgc	ctc	ttc	ttg	gcc	gtg	aat	gat	gaa	gtg	ttc	gct	gtc	1776
Asn	Ile	Arg	Cys	Leu	Phe	Leu	Ala	Val	Asn	Asp	Glu	Val	Phe	Ala	Val	
			580					585					590			
aga	gag	gca	gcg	atc	tgc	ata	att	ggc	cgc	ctt	tcc	agt	gtc	aac	cca	1824
Arg	Glu	Ala	Ala	Ile	Cys	Ile	Ile	Gly	Arg	Leu	Ser	Ser	Val	Asn	Pro	
		595					600					605				
gcc	tac	gta	ttc	cct	ccc	cta	agg	aag	ttg	ctg	gtg	aac	ttg	ctc	act	1872
Ala	Tyr	Val	Phe	Pro	Pro	Leu	Arg	Lys	Leu	Leu	Val	Asn	Leu	Leu	Thr	
	610					615					620					
gga	ctt	ggg	ttc	gca	agc	act	gct	cgc	cag	aag	gaa	gaa	agt	gca	cag	1920
Gly	Leu	Gly	Phe	Ala	Ser	Thr	Ala	Arg	Gln	Lys	Glu	Glu	Ser	Ala	Gln	
625					630					635					640	
ctt	att	agc	ctt	ttt	gtt	tcg	aat	gcc	acg	aaa	ctt	atc	cgg	tcg	tac	1968
Leu	Ile	Ser	Leu	Phe	Val	Ser	Asn	Ala	Thr	Lys	Leu	Ile	Arg	Ser	Tyr	
			645						650					655		
gtc	gac	cct	atg	gtt	acg	act	ctg	cta	ccg	aaa	gca	gtt	gat	gcc	aat	2016
Val	Asp	Pro	Met	Val	Thr	Thr	Leu	Leu	Pro	Lys	Ala	Val	Asp	Ala	Asn	
			660					665					670			
cac	ggc	gtc	gcc	tcc	aca	aca	ctg	aaa	gct	gtc	gga	gaa	ctt	gca	agc	2064
His	Gly	Val	Ala	Ser	Thr	Thr	Leu	Lys	Ala	Val	Gly	Glu	Leu	Ala	Ser	
		675					680					685				
gtt	ggg	ggc	agc	gat	atg	aaa	gcc	tac	ctg	cct	aag	ctg	atg	cca	atc	2112
Val	Gly	Gly	Ser	Asp	Met	Lys	Ala	Tyr	Leu	Pro	Lys	Leu	Met	Pro	Ile	
	690					695					700					
gtt	ctg	gat	gcc	ttg	cag	gac	ctt	tca	tct	cat	gct	aag	aga	gaa	gcg	2160
Val	Leu	Asp	Ala	Leu	Gln	Asp	Leu	Ser	Ser	His	Ala	Lys	Arg	Glu	Ala	
705					710					715					720	
gct	ttg	cga	aca	ttg	ggc	cag	ata	gcc	agc	aac	tca	ggc	tac	gtt	atc	2208
Ala	Leu	Arg	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Ser	Gly	Tyr	Val	Ile	
				725					730					735		
gac	ccg	tac	acc	gac	cac	cct	cat	ctg	ctg	gcg	gtg	ctt	att	ggg	atc	2256
Asp	Pro	Tyr	Thr	Asp	His	Pro	His	Leu	Leu	Ala	Val	Leu	Ile	Gly	Ile	
			740					745					750			
atc	aag	acg	gag	cag	gca	gga	tcg	ctt	cgc	aag	gaa	acg	ata	aaa	gtt	2304
Ile	Lys	Thr	Glu	Gln	Ala	Gly	Ser	Leu	Arg	Lys	Glu	Thr	Ile	Lys	Val	
		755					760					765				
cta	gga	att	cta	ggg	gca	ctg	gac	cct	tat	aaa	tac	cag	caa	ata	agc	2352
Leu	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	Tyr	Gln	Gln	Ile	Ser	
	770					775					780					
gaa	acc	gca	cca	gac	gtc	cac	cat	atc	aac	gaa	gta	caa	gtg	gtg	tca	2400
Glu	Thr	Ala	Pro	Asp	Val	His	His	Ile	Asn	Glu	Val	Gln	Val	Val	Ser	
785					790					795					800	
gac	gtt	agt	ctt	att	atg	caa	ggc	ctt	gcc	cct	tcc	aat	gaa	gag	tac	2448
Asp	Val	Ser	Leu	Ile	Met	Gln	Gly	Leu	Ala	Pro	Ser	Asn	Glu	Glu	Tyr	
				805				810						815		
tac	cca	act	gtt	gtt	atc	cat	act	ctc	atg	cag	aac	ata	ctt	cgc	gag	2496
Tyr	Pro	Thr	Val	Val	Ile	His	Thr	Leu	Met	Gln	Asn	Ile	Leu	Arg	Glu	
			820					825					830			
aac	tcc	ctt	gcg	caa	tat	cat	tct	gct	gtc	atc	gac	gcg	att	gtt	acg	2544
Asn	Ser	Leu	Ala	Gln	Tyr	His	Ser	Ala	Val	Ile	Asp	Ala	Ile	Val	Thr	
		835					840					845				
atc	ttt	aag	acc	ctt	ggc	ttg	aag	tgt	gtc	ccc	ttc	ctt	ggc	cag	atc	2592
Ile	Phe	Lys	Thr	Leu	Gly	Leu	Lys	Cys	Val	Pro	Phe	Leu	Gly	Gln	Ile	
	850					855					860					
att	cct	ggg	ttc	att	tct	gtc	att	cga	ggg	tca	ccc	tca	agc	cgg	ctc	2640
Ile	Pro	Gly	Phe	Ile	Ser	Val	Ile	Arg	Gly	Ser	Pro	Ser	Ser	Arg	Leu	
865					870					875					880	
gaa	tct	tat	ttc	aac	caa	atg	gca	atc	ctt	gtc	aat	att	gtg	cgg	cag	2688
Glu	Ser	Tyr	Phe	Asn	Gln	Met	Ala	Ile	Leu	Val	Asn	Ile	Val	Arg	Gln	
				885					890					895		
cac	atc	aga	gcc	ttt	ctt	cct	gaa	ata	att	gag	gtc	att	cgg	gaa	ttc	2736
His	Ile	Arg	Ala	Phe	Leu	Pro	Glu	Ile	Ile	Glu	Val	Ile	Arg	Glu	Phe	
			900					905					910			
tgg	gac	acg	tca	tat	cag	gtt	caa	gcg	acc	att	ctc	tcg	ctt	gtg	gac	2784
Trp	Asp	Thr	Ser	Tyr	Gln	Val	Gln	Ala	Thr	Ile	Leu	Ser	Leu	Val	Asp	
		915					920					925				
gcg	ata	gcc	aag	tcc	ctt	gag	ggg	gaa	ttt	aag	aag	tac	ctt	gca	aat	2832
Ala	Ile	Ala	Lys	Ser	Leu	Glu	Gly	Glu	Phe	Lys	Lys	Tyr	Leu	Ala	Asn	
	930					935					940					



## PhoenixTemp32470.tmp.txt

ctc	att	cct	cca	atg	ctg	gac	aca	ctg	gaa	aag	gat	aat	act	ccg	cgc	2880
Leu	Ile	Pro	Pro	Met	Leu	Asp	Thr	Leu	Glu	Lys	Asp	Asn	Thr	Pro	Arg	
945					950					955					960	
cgc	cag	cct	tcc	gag	agg	att	ttg	cat	agc	ttc	tta	gta	ttc	ggc	tcc	2928
Arg	Gln	Pro	Ser	Glu	Arg	Ile	Leu	His	Ser	Phe	Leu	Val	Phe	Gly	Ser	
				965					970					975		
agt	ggc	gaa	gag	tac	atg	cat	ctg	att	gtg	ccc	tcc	att	gtg	cgt	ctg	2976
Ser	Gly	Glu	Glu	Tyr	Met	His	Leu	Ile	Val	Pro	Ser	Ile	Val	Arg	Leu	
			980					985					990			
ttt	gat	agg	tcc	cag	aac	cca	gcg	agc	atc	aga	aag	tca	gct	att	gac	3024
Phe	Asp	Arg	Ser	Gln	Asn	Pro	Ala	Ser	Ile	Arg	Lys	Ser	Ala	Ile	Asp	
		995					1000					1005				
agc	ttg	acc	aaa	ctt	tcg	cga	caa	gtg	aat	gtc	tcc	gat	ttt	gcg	tcc	3072
Ser	Leu	Thr	Lys	Leu	Ser	Arg	Gln	Val	Asn	Val	Ser	Asp	Phe	Ala	Ser	
	1010					1015					1020					
ttg	att	gta	cac	tcc	ctt	tct	cga	gtc	gtt	gcc	ggc	aac	gac	cgt	atg	3120
Leu	Ile	Val	His	Ser	Leu	Ser	Arg	Val	Val	Ala	Gly	Asn	Asp	Arg	Met	
	1025				1030					1035					1040	
tta	cga	cag	gct	gct	atg	gat	tgc	ata	tgc	tct	ttg	ata	ttc	cag	ctt	3168
Leu	Arg	Gln	Ala	Ala	Met	Asp	Cys	Ile	Cys	Ser	Leu	Ile	Phe	Gln	Leu	
			1045					1050					1055			
ggc	cag	gat	ttc	aac	cat	tat	att	cat	ctg	ctg	aac	aag	gtc	ttg	aag	3216
Gly	Gln	Asp	Phe	Asn	His	Tyr	Ile	His	Leu	Leu	Asn	Lys	Val	Leu	Lys	
			1060				1065					1070				
cat	cat	caa	gtc	aat	cac	gtg	aac	tat	cag	atc	ctt	gtc	aca	aag	ctc	3264
His	His	Gln	Val	Asn	His	Val	Asn	Tyr	Gln	Ile	Leu	Val	Thr	Lys	Leu	
		1075				1080					1085					
cag	aaa	gga	gac	ccg	ctc	cca	cag	gat	ctc	aat	cct	gac	gag	agc	tat	3312
Gln	Lys	Gly	Asp	Pro	Leu	Gln	Asp	Leu	Asn	Pro	Asp	Glu	Ser	Tyr		
	1090				1095					1100						
gcc	cca	ttg	gcg	gat	gac	gcg	aac	tat	gca	gag	atc	ggc	caa	aag	aag	3360
Ala	Pro	Leu	Ala	Asp	Asp	Ala	Asn	Tyr	Ala	Glu	Ile	Gly	Gln	Lys	Lys	
	1105			1110				1115					1120			
atg	gtg	gtc	aat	caa	caa	cat	ctt	aag	aac	gcc	tgg	gac	gct	tcg	caa	3408
Met	Val	Val	Asn	Gln	His	Leu	Lys	Asn	Ala	Trp	Asp	Ala	Ser	Gln		
			1125				1130					1135				
aag	tcg	act	cgc	gaa	gac	tgg	caa	gaa	tgg	atc	cgg	agg	ttc	agt	gta	3456
Lys	Ser	Thr	Arg	Glu	Asp	Trp	Gln	Glu	Trp	Ile	Arg	Arg	Phe	Ser	Val	
		1140				1145						1150				
gag	ctt	ttg	aaa	gaa	tca	cct	tcg	ccg	gcg	ctg	cgt	gct	tgt	gcc	agc	3504
Glu	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Ala	Cys	Ala	Ser	
	1155					1160					1165					
ctg	gcg	ggc	atc	tac	caa	ccc	ctc	gct	agg	gat	cta	ttc	aat	gcc	gct	3552
Leu	Ala	Gly	Ile	Tyr	Gln	Pro	Leu	Ala	Arg	Asp	Leu	Phe	Asn	Ala	Ala	
	1170				1175					1180						
ttc	gtc	tcc	tgt	tgg	acg	gaa	ttg	tac	gac	cag	tac	cag	gaa	gag	ctg	3600
Phe	Val	Ser	Cys	Trp	Thr	Glu	Leu	Tyr	Asp	Gln	Tyr	Gln	Glu	Glu	Leu	
	1185			1190				1195					1200			
gtt	cgg	tca	atc	gaa	aaa	gcc	ctc	acc	tcg	ccg	aac	att	cca	ccg	gaa	3648
Val	Arg	Ser	Ile	Glu	Lys	Ala	Leu	Thr	Ser	Pro	Asn	Ile	Pro	Pro	Glu	
			1205					1210				1215				
att	ctt	cag	atc	ttg	ctc	aat	ctt	gct	gag	ttt	atg	gag	cac	gac	gac	3696
Ile	Leu	Gln	Ile	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu	His	Asp	Asp	
		1220					1225					1230				
aag	gcg	ctg	ccg	att	gat	atc	gcg	act	ctt	gga	aaa	tat	gct	gcc	aaa	3744
Lys	Ala	Leu	Pro	Ile	Asp	Ile	Arg	Thr	Leu	Gly	Lys	Tyr	Ala	Ala	Lys	
	1235					1240					1245					
tgt	cac	gcg	ttc	gca	aag	gcg	ctc	cac	tac	aaa	gaa	ctc	gag	ttc	gag	3792
Cys	His	Ala	Phe	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu	Glu	Phe	Glu	
	1250			1255						1260						
caa	gat	cag	aac	tct	gga	gct	gta	gag	gca	ctc	att	act	atc	aac	aat	3840
Gln	Asp	Gln	Asn	Ser	Gly	Ala	Val	Glu	Ala	Leu	Ile	Thr	Ile	Asn	Asn	
	1265			1270				1275						1280		
cag	ctc	cag	caa	tcc	gat	gcc	gct	att	ggc	atc	ctt	cgg	aag	gct	cag	3888
Gln	Leu	Gln	Gln	Ser	Asp	Ala	Ala	Ile	Gly	Ile	Leu	Arg	Lys	Ala	Gln	
			1285					1290				1295				
gcg	tat	cgg	gat	gtt	gaa	ctg	aag	gag	acc	tgg	ttt	gag	aaa	ctt	cag	3936
Ala	Tyr	Arg	Asp	Val	Glu	Leu	Lys	Glu	Thr	Trp	Phe	Glu	Lys	Leu	Gln	
		1300					1305					1310				

## PhoenixTemp32470.tmp.txt

cga tgg gaa gaa gcc ctt gca gct tac aaa cgt cgt gag aag att gac 3984  
 Arg Trp 1315 Glu Ala Leu Ala Tyr Lys Arg Arg Glu Lys Ile Asp 1320 1325  
 ccc gac tct ttc ggt atc aca atg ggg aaa atg cgc tgt cta cat gct 4032  
 Pro Asp Ser Phe Gly Ile Thr Met Gly Lys Met Arg Cys Leu His Ala 1330 1335 1340  
 ctt gga gaa tgg aaa gtg ttg tct gac ctc gct gag aag tgg aac 4080  
 Leu Gly Glu Trp Lys Val Leu Ser Asp Leu Ala Gln Glu Lys Trp Asn 1345 1350 1355 1360  
 cag gcc tct cta gaa cac cgg aaa tca atc gct cct ctc gct gcg gca 4128  
 Gln Ala Ser Leu Glu His Arg Lys Ser Ile Ala Pro Leu Ala Ala Ala 1365 1370 1375  
 gct gca tgg ggt cgc ggt caa tgg gag ctg atg gat tcg tac cta gga 4176  
 Ala Ala Trp 1380 Arg Gly Gln Trp Glu Met Asp Ser Tyr Leu Gly 1385 1390  
 gtt atg aaa gaa caa tct cct gac cgt tcg ttc ttt ggg gca ata ctg 4224  
 Val Met Lys Glu Gln Ser Pro Asp Arg Ser Phe Phe Gly Ala Ile Leu 1395 1400 1405  
 gca att cat cgc aac caa ttt gat gaa gcc att atg tac atc gaa aag 4272  
 Ala Ile His Arg Asn Gln Phe Asp Glu Ala Ile Met Tyr Ile Glu Lys 1410 1415 1420  
 gcc cgg aac ggc ctt gac acg gaa ctc tca gca ctt ctc gga gag tca 4320  
 Ala Arg Asn Gly Leu Asp Thr Glu Leu Ser Ala Leu Leu Gly Glu Ser 1425 1430 1435 1440  
 tat aac cgt gcc tac aat gta gtt gtt cgc gtt caa atg ctt gct gaa 4368  
 Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Val Gln Met Leu Ala Glu 1445 1450 1455  
 ctc gag gag atc atc acc tac aaa cag aat gtt ggt gat ccc gag aga 4416  
 Leu Glu Glu Ile Ile Thr Tyr Lys Gln Asn Val Gly Asp Pro Glu Arg 1460 1465 1470  
 caa gag gca atg cgc cag acc tgg aac agg cga ctt ctc ggc tgc cag 4464  
 Gln Glu Ala Met Arg Gln Thr Trp Asn Arg Arg Leu Leu Gly Cys Gln 1475 1480 1485  
 cag aat gta gag gta tgg cag cgc atg ctc aag gtc aga gca ctt gtt 4512  
 Gln Asn Val Glu Val Trp 1490 Gln Arg Met Leu Lys Val Arg Ala Leu Val 1495 1500  
 aca aca ccg cga gag aac cta gac atg tgg atc aag ttt gcc aat ttg 4560  
 Thr Thr Pro Arg Glu Asn Leu Asp Met Trp Ile Lys Phe Ala Asn Leu 1505 1510 1515 1520  
 tgt cgc aaa tca aac cgc atg ggg tta gcg gaa cgt tct ctc gcc tct 4608  
 Cys Arg Lys Ser Asn Arg Met Gly Leu Ala Glu Arg Ser Leu Ala Ser 1525 1530 1535  
 cta gaa act gtc atc cct gac ggc aac ggc ggc act cgc act atc tcc 4656  
 Leu Glu Thr Val Ile Pro Asp Gly Asn Gly Gly Thr Arg Thr Ile Ser 1540 1545 1550  
 cca cca gaa gtc aca tat gct cgc ttg aag ttt agc tgg gca act ggc 4704  
 Pro Pro Glu Val Thr Tyr Ala Arg Leu Lys Phe Ser Trp Ala Thr Gly 1555 1560 1565  
 cgc caa cgc gag gcc ctt cat atg ctc cgt gaa ttt act gcc aac cta 4752  
 Arg Gln Arg Glu Ala Leu His Met Leu Arg Glu Phe Thr Ala Asn Leu 1570 1575 1580  
 aca gaa gac ttc act cgc ttg aat gca ctt gtt gcc tca caa tct gac 4800  
 Thr Glu Asp Phe Thr Arg Phe Asn Ala Leu Val Ala Ser Gln Ser Asp 1585 1590 1595 1600  
 cat aac ggt atc aac ggc gtt aat ggt atc gca gaa gga aac cat acc 4848  
 His Asn Gly Ile Asn Gly Val Asn Gly Ile Ala Glu Gly Asn His Thr 1605 1610 1615  
 gat atc atg gcc ctt cga gag cgc gtt ggt gat gtc aac aag ttt aga 4896  
 Asp Ile Met Ala Leu Arg Glu Arg Val Gly Asp Val Asn Lys Phe Arg 1620 1625 1630  
 aag ctc ctt gca aag agt tat cta aga ctt ggt gag tgg caa acg gct 4944  
 Lys Leu Leu Ala Lys Ser Tyr Leu Arg Leu Gly Glu Trp Gln Thr Ala 1635 1640 1645  
 cta caa cga ggg gac tgg cgg cca gag cat gtc cgc gaa gta ctc aac 4992  
 Leu Gln Arg Gly Asp Trp Arg Pro Glu His Val Arg Glu Val Leu Asn 1650 1655 1660  
 gca tat tca gca gcc acc agg tac aac cgc gat tcc tac aaa gcc tgg 5040  
 Ala Tyr Ser Ala Ala Thr Arg Tyr Asn Arg Asp Ser Tyr Lys Ala Trp 1665 1670 1675 1680

## PhoenixTemp32470.tmp.txt

cac tca tgg gcc ctg gcc aac ttt gag gtc gtg acg aca att gcc agc 5088  
 His Ser Trp Ala Leu Ala Asn Phe Glu Val Thr Thr Ile Ala Ser  
 1685 1690 1695  
 cag gca agt aag gac ggc gga aat ctg gca ttg gtt cca ggg cat atc 5136  
 Gln Ala Ser Lys Asp Gly Gly Asn Leu Ala Leu Val Pro Gly His Ile  
 1700 1705 1710  
 gta aca gaa cat gtg att cct gcg att cgc ggc ttt ttt agg tcc att 5184  
 Val Thr Glu His Val Ile Pro Ala Ile Arg Gly Phe Phe Arg Ser Ile  
 1715 1720 1725  
 gcc ctc tct tcg acg tcg tct ctt cag gat act ctt cgg ttg ctc act 5232  
 Ala Leu Ser Ser Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr  
 1730 1735 1740  
 ctc tgg ttc aac cat ggt ggt gac cag gag gtg aac tcg gtc gtt aca 5280  
 Leu Trp Phe Asn His Gly Gly Asp Gln Glu Val Asn Ser Val Val Thr  
 1745 1750 1755 1760  
 gag ggt ttc acg gct gtt aat atc gac acg tgg ctc gcc gtc act cct 5328  
 Glu Gly Phe Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val Thr Pro  
 1765 1770 1775  
 cag ctt att gcc cgc atc aat cag ccc aac ttc agg gtt cgc agc gcc 5376  
 Gln Leu Ile Ala Arg Ile Asn Gln Pro Asn Phe Arg Val Arg Ser Ala  
 1780 1785 1790  
 gtt cat cgc ttg ctt gct gaa gtt ggc aag gca cat ccc caa gcc ctc 5424  
 Val His Arg Leu Leu Ala Glu Val Gly Lys Ala His Pro Gln Ala Leu  
 1795 1800 1805  
 gtg tat ccg ctc aca gtt gcg atg aag tcg aat gtt gcc cga cga tca 5472  
 Val Tyr Pro Leu Thr Val Ala Met Lys Ser Asn Val Ala Arg Arg Ser  
 1810 1815 1820  
 cag tcc gca ggc aac att atg gag agc atg cgg aca cac agt gca aac 5520  
 Gln Ser Ala Gly Asn Ile Met Glu Ser Met Arg Thr His Ser Ala Asn  
 1825 1830 1835 1840  
 cta gtg gag cag gct gat ctt gta agt cat gag ctg att agg gtc gct 5568  
 Leu Val Glu Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg Val Ala  
 1845 1850 1855  
 gtt ctg tgg cac gaa ctc tgg cac gaa gga ctg gaa gag gcg tca cgt 5616  
 Val Leu Trp His Glu Leu Trp His Glu Gly Leu Glu Glu Ala Ser Arg  
 1860 1865 1870  
 ctc tat ttc ggt gac cat aac gtg gat ggg atg ttt gca act ctc gca 5664  
 Leu Tyr Phe Gly Asp His Asn Val Asp Gly Met Phe Ala Thr Leu Ala  
 1875 1880 1885  
 ccg ctt cat gaa atg ctt gat aaa ggt gct gaa acc ctg cgc gaa gta 5712  
 Pro Leu His Glu Met Leu Asp Lys Gly Ala Glu Thr Leu Arg Glu Val  
 1890 1895 1900  
 tcg ttt gcc caa gct ttc gga cgt gac ctg gct gag gcc aag cat tac 5760  
 Ser Phe Ala Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys His Tyr  
 1905 1910 1915 1920  
 tgc atg ctc tat cgc gag acg gaa gaa atc ggt gac cta aac caa gcg 5808  
 Cys Met Leu Tyr Arg Glu Thr Glu Glu Ile Gly Asp Leu Asn Gln Ala  
 1925 1930 1935  
 tgg gat ttg tat tac aca gtg ttc cgc aaa atc agc cga cag cta cca 5856  
 Trp Asp Leu Tyr Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln Leu Pro  
 1940 1945 1950  
 cag tta tca acc cta gat ctc aaa tac gtc tcg ccc aaa ctc aag gat 5904  
 Gln Leu Ser Thr Leu Asp Leu Lys Tyr Val Ser Pro Lys Leu Lys Asp  
 1955 1960 1965  
 tgc gtg gac ctt gat ctc gct gtt cct ggt acc tac caa agt ggc agg 5952  
 Cys Val Asp Leu Asp Leu Ala Val Pro Gly Thr Tyr Gln Ser Gly Arg  
 1970 1975 1980  
 ccc att atc cga atc atc agt ttc gat cca atc cta cat gtt ctt caa 6000  
 Pro Ile Ile Arg Ile Ile Ser Phe Asp Pro Ile Leu His Val Leu Gln  
 1985 1990 1995 2000  
 acg aag aag cga cca cgg agg atg act ttg aag ggc agt gac ggc agc 6048  
 Thr Lys Lys Arg Pro Arg Arg Met Thr Leu Lys Gly Ser Asp Gly Ser  
 2005 2010 2015  
 tcc tac atg tat gtg gtg aag ggc cac gaa gat atc cga caa gat gag 6096  
 Ser Tyr Met Tyr Val Val Lys Gly His Glu Asp Ile Arg Gln Asp Glu  
 2020 2025 2030  
 aga gtc atg cag tta ttc ggc ctg gtc aac act ctt ctc gat aac gat 6144  
 Arg Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Asp Asn Asp  
 2035 2040 2045

## PhoenixTemp32470.tmp.txt

```

agt gaa agc ttc aag cgg cat cta acg gtg cag cgc ttc ccg gcc att 6192
Ser Glu Ser Phe Lys Arg His 2055 Leu Thr Val Gln Arg Phe Pro Ala Ile
2050 2060
cct ctg tct cag aac tct ggt atc atc ggc tgg gtc acc aat agt gac 6240
Pro Leu Ser Gln Asn Ser Gly Ile Ile Gly Trp Val Thr Asn Ser Asp
2065 2070 2075 2080
acc ctc cat gct ttg ata aaa gaa tac cgg gaa acg cgg cgt att ctc 6288
Thr Leu His Ala Leu Ile Lys Glu Tyr Arg Glu Thr Arg Arg Ile Leu
2085 2090 2095
ctc aac atc gag cat agg atc atg tta cag atg gct cca gac tat gac 6336
Leu Asn Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr Asp
2100 2105 2110
aat cta acg ctc atg cag aag gtt gaa gta ttt ggc tat gcg atg gac 6384
Asn Leu Thr Leu Met Gln Lys Val Glu Val Phe Gly Tyr Ala Met Asp
2115 2120 2125
aac aca acc ggg aag gat ctg tac cgt gtt ctg tgg ttg aag agt aag 6432
Asn Thr Thr Gly Lys Asp Leu Tyr Arg Val Leu Trp Leu Lys Ser Lys
2130 2135 2140
agc tcc gaa gcc tgg ctt gag cgt cgt acc aac tac act cgt tca ctt 6480
Ser Ser Glu Ala Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu
2145 2150 2155 2160
gga gtc atg tcc atg gtc ggc tac atc ctt ggt cta ggt gac cgc cac 6528
Gly Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His
2165 2170 2175
ccg tcc aat ctt ctt ctg gac aga gtg acc ggc aaa gtg gtt cat att 6576
Pro Ser Asn Leu Leu Leu Asp Arg Val Thr Gly Lys Val Val His Ile
2180 2185 2190
gac ttt ggt gac tgc ttc gaa gtt gcc atg cat cgt gaa aag tat ccg 6624
Asp Phe Gly Asp Cys Phe Glu Val Ala Met His Arg Glu Lys Tyr Pro
2195 2200 2205
gag cgc gtg cca ttc cgt ttg acg cgt atg ttg acg ttt gcg atg gaa 6672
Glu Arg Val Pro Phe Arg Leu Thr Arg Met Leu Thr Phe Ala Met Glu
2210 2215 2220
gtc agc aac att gaa gga agc tac cgg atc act tgt gaa gct gtc atg 6720
Val Ser Asn Ile Glu Gly Ser Tyr Arg Ile Thr Cys Glu Ala Val Met
2225 2230 2235 2240
cgg gtg ata cgt gag aac aag gac tcg ctg atg gcc gtt ctg gag gct 6768
Arg Val Ile Arg Glu Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala
2245 2250 2255
ttt att cac gac cct cta atc aac tgg cgt ctg gga att cgc gag tct 6816
Phe Ile His Asp Pro Leu Ile Asn Trp Arg Leu Gly Ile Arg Glu Ser
2260 2265 2270
cct gac cga atg cca ttt aac gcg gag cgt cgt caa tcg att gtc tcc 6864
Pro Asp Arg Met Pro Phe Asn Ala Glu Arg Arg Gln Ser Ile Val Ser
2275 2280 2285
aat gtc aac ctc gag cac ggc gtc caa ccc agc aac ttc tct cgg cac 6912
Asn Val Asn Leu Glu His Gly Val Gln Pro Ser Asn Phe Ser Arg His
2290 2295 2300
cgt cgg cct tca atc ctt gaa ggt ggt att ctc gac gct caa gaa ggg 6960
Arg Arg Pro Ser Ile Leu Glu Gly Gly Ile Leu Asp Ala Gln Glu Gly
2305 2310 2315 2320
gtg cct aat gag gca cgt gag gct cag aat gca aga gcc tta cag gtg 7008
Val Pro Asn Glu Ala Arg Glu Ala Gln Asn Ala Arg Ala Leu Gln Val
2325 2330 2335
ctt gct cgg gtg cgg gag aag ctg acc ggc cgg gac ttt aag cct agc 7056
Leu Ala Arg Val Arg Glu Lys Leu Thr 2345 Gly Arg Asp Phe Lys Pro Ser
2340 2350
gaa gag ctc aat gtt agc gat caa gtt gac aag ctt ctt gca cag gca 7104
Glu Glu Leu Asn Val Ser Asp Gln Val Asp Lys Leu Leu Ala Gln Ala
2355 2360 2365
act agt gtt gag aac atc tgt cag cat tgg att gga tgg tgc agt ttc 7152
Thr Ser Val Glu Asn Ile Cys Gln His Trp Ile Gly Trp Cys Ser Phe
2370 2375 2380
tgg tga 7158
Trp
2385

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&lt;210&gt; 2571

&lt;211&gt; 2385

&lt;212&gt; PRT

&lt;213&gt; Emericella nidulans

&lt;400&gt; 2571

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Met Ala Gln Ala Gly Pro Ile Thr Asp Val Thr Gln Arg Leu Phe Ile
1      5      10      15
Glu Leu Lys Ser Lys Asn Glu Glu Thr Arg Val Arg Ala Ala Tyr Glu
20      25      30
Leu Tyr Glu Asn Val Leu Ala Ile Ser Arg Asp Trp Pro Pro Glu Lys
35      40      45
Phe Ile Glu Phe Tyr Asn Ala Val Ser Gln Arg Ile Ala Gln Leu Val
50      55      60
Val Thr Gly Ser Asp Ala His Glu Arg Ile Gly Gly Leu Leu Ala Leu
65      70      75      80
Asp Arg Leu Ile Asp Phe Asp Gly Val Asp Asn Ala Gln Lys Thr Thr
85      90      95
Arg Phe Ala Ser Tyr Leu Arg Ser Ala Leu Arg Ser Ser Asp Asn Ala
100     105     110
Val Leu Val Tyr Ala Ala Arg Ala Leu Gly Arg Leu Ala Lys Pro Gly
115     120     125
Gly Ala Leu Thr Ala Glu Leu Val Glu Ser Glu Ile Gln Ser Ala Leu
130     135     140
Glu Trp Leu Gln Ser Glu Arg Gln Glu Gly Arg Arg Phe Ala Ala Val
145     150     155     160
Leu Val Ile Arg Glu Leu Ala Lys Gly Ser Pro Thr Leu Leu Tyr Gly
165     170     175
Phe Val Pro Gln Ile Phe Glu Leu Ile Trp Val Ala Leu Arg Asp Pro
180     185     190
Lys Val Leu Ile Arg Glu Thr Ala Ala Glu Ala Val Ser Glu Cys Phe
195     200     205
Glu Ile Ile Ala Ala Arg Asp Ile Gln Val Arg Gln Leu Trp Phe Ala
210     215     220
Arg Ile Tyr Glu Glu Ala Leu Gln Gly Leu Lys Ser Asn Asn Val Asp
225     230     235     240
Trp Ile His Gly Ser Leu Leu Val Leu Lys Glu Leu Leu Lys Gly
245     250     255
Ala Met Phe Met Asn Glu His Tyr Arg Asn Ala Cys Glu Ile Val Leu
260     265     270
Arg Leu Lys Asp His Arg Asp Pro Lys Ile Arg Thr Gln Val Val Leu
275     280     285
Thr Ile Pro Ile Leu Ala Ser Tyr Ala Pro Val Asp Phe Thr Glu Thr
290     295     300
Tyr Leu His Arg Phe Met Val Tyr Leu Gln Ala Gln Leu Lys Lys Asp
305     310     315     320
Lys Glu Arg Asn Ala Ala Phe Ile Ala Ile Gly Lys Ile Ala Asn Ala
325     330     335
Val Gly Val Ala Ile Ala Gln Tyr Leu Asp Gly Ile Ile Val Tyr Ile
340     345     350
Arg Glu Gly Leu Ala Leu Lys Ala Lys Asn Arg Ala Ala Ile Asn Glu
355     360     365
Ala Pro Met Phe Glu Cys Ile Ser Met Leu Ser Leu Ala Val Gly Gln
370     375     380
Ala Leu Ser Lys Tyr Met Glu Ser Leu Leu Asp Pro Ile Phe Ala Cys
385     390     395     400
Gly Leu Ser Glu Ser Leu Thr Gln Ala Leu Val Asp Met Ala His Tyr
405     410     415
Ile Pro Pro Ile Lys Pro Thr Ile Gln Val Lys Leu Leu Asp Met Leu
420     425     430
Ser Leu Ile Leu Asp Gly Thr Pro Phe Arg Pro Leu Gly Cys Pro Glu
435     440     445
Ser Arg Leu Pro Pro Leu Pro Ser Phe Ala Lys Asp Phe Thr Leu Gln
450     455     460
Glu Leu His Ser Asp Ala Glu Ile Ala Leu Ala Leu His Thr Leu Gly
465     470     475     480
Ser Phe Asp Phe Ser Gly His Ile Leu Asn Glu Phe Val Arg Asp Val
485     490     495
Ala Ile His Tyr Val Glu Asn Asp Asn Pro Glu Ile Arg Lys Ala Ala
500     505     510
Ala Leu Thr Cys Cys Gln Leu Phe Val His Asp Pro Ile Ile Asn Gln

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PhoenixTemp32470.tmp.txt

		515					520				525				
Thr	Ser	Ser	His	Ser	Ile	Gln	Val	Val	Ser	Glu	Val	Ile	Asp	Lys	Leu
Leu	530	Val	Gly	Val	Gly	535	Pro	Asp	Pro	Glu	540	Ile	Arg	Arg	Val
545	Thr	Trp	Ser	Leu	Asp	550	Lys	Phe	Asp	Arg	555	His	Leu	Ala	Arg
Leu	Trp	Ser	Leu	Asp	655	Lys	Phe	Asp	Arg	570	His	Leu	Ala	Arg	Pro
Asn	Ile	Arg	Cys	Leu	Phe	Leu	Ala	Val	Asn	Asp	Glu	Val	Phe	Ala	Val
Arg	Glu	Ala	580	Ile	Cys	Ile	Ile	Gly	Arg	Leu	Ser	Ser	Val	Asn	Pro
Ala	Tyr	Val	Phe	Pro	Pro	Leu	600	Arg	Lys	Leu	Leu	Val	Asn	Leu	Thr
Gly	Leu	Gly	Phe	Ala	Ser	615	Thr	Ala	Arg	Gln	Lys	620	Glu	Glu	Gln
625	Leu	Ile	Ser	Leu	Phe	630	Val	Ser	Asn	Ala	Thr	635	Lys	Leu	Ile
Leu	Ile	Ser	Leu	Phe	645	Val	Ser	Asn	Ala	Thr	650	Lys	Leu	Ile	Arg
Val	Asp	Pro	Met	Val	Thr	Thr	Leu	Leu	Pro	Lys	Ala	Val	Asp	Ala	Asn
His	Gly	Val	Ala	Ser	Thr	Thr	Leu	Lys	Ala	Val	Gly	Glu	Leu	Ala	Ser
Val	Gly	Gly	Ser	Asp	Met	Lys	680	Ala	Tyr	Leu	Pro	Lys	Leu	Met	Pro
Val	Leu	Asp	Ala	Leu	Gln	Asp	Leu	Ser	Ser	His	Ala	Lys	Arg	Glu	Ala
705	Ala	Leu	Arg	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Ser	Gly	Tyr	Val
Ala	Leu	Arg	Thr	Leu	Gly	Gln	Ile	Ala	Ser	Asn	Ser	Gly	Tyr	Val	Ile
Asp	Pro	Tyr	Thr	Asp	His	Pro	His	Leu	Ala	Val	Leu	Ile	Gly	Ile	Ile
Ile	Lys	Thr	Glu	Gln	Ala	Gly	Ser	Leu	Arg	Lys	Glu	Thr	Ile	Lys	Val
Leu	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	Tyr	Gln	Gln	Ile	Ser
Glu	Thr	Ala	Pro	Asp	Val	His	His	Ile	Asn	Glu	Val	Gln	Val	Val	Ser
785	Asp	Val	Ser	Leu	Ile	Met	Gln	Gly	Leu	Ala	Pro	Ser	Asn	Glu	Glu
Asp	Val	Ser	Leu	Ile	Met	Gln	Gly	Leu	Ala	Pro	Ser	Asn	Glu	Glu	Tyr
Tyr	Pro	Thr	Val	Val	Ile	His	Thr	Leu	Met	Gln	Asn	Ile	Leu	Arg	Glu
Asn	Ser	Leu	Ala	Gln	Tyr	His	Ser	Ala	Val	Ile	Asp	Ala	Ile	Val	Thr
Ile	Phe	Lys	Thr	Leu	Gly	Leu	Lys	Cys	Val	Pro	Phe	Leu	Gly	Gln	Ile
Ile	Pro	Gly	Phe	Ile	Ser	Val	Ile	Arg	Gly	Ser	Pro	Ser	Ser	Arg	Leu
865	Glu	Ser	Tyr	Phe	Asn	Gln	Met	Ala	Ile	Leu	Val	Asn	Ile	Val	Arg
Glu	Ser	Tyr	Phe	Asn	885	Gln	Met	Ala	Ile	Leu	Val	Asn	Ile	Val	Arg
His	Ile	Arg	Ala	Phe	Leu	Pro	Glu	Ile	Ile	Glu	Val	Ile	Arg	Glu	Phe
Trp	Asp	Thr	Ser	Tyr	Gln	Val	Gln	Ala	Thr	Ile	Leu	Ser	Leu	Val	Asp
Ala	Ile	Ala	Lys	Ser	Leu	Glu	920	Gly	Glu	Phe	Lys	Lys	Tyr	Leu	Ala
Leu	Ile	Pro	Pro	Met	Leu	Asp	935	Thr	Leu	Glu	Lys	Asp	Asn	Thr	Pro
945	Arg	Gln	Pro	Ser	Glu	Arg	Ile	Leu	His	Ser	955	Phe	Leu	Phe	Gly
Arg	Gln	Pro	Ser	Glu	965	Arg	Ile	Leu	His	Ser	970	Phe	Leu	Phe	Ser
Ser	Gly	Glu	Glu	Tyr	Met	His	Leu	Ile	Val	Pro	Ser	Ile	Val	Arg	Leu
Phe	Asp	Arg	Ser	Gln	Asn	Pro	Ala	Ser	Ile	Arg	Lys	Ser	Ala	Ile	Asp
Ser	Leu	Thr	Lys	Leu	Ser	Arg	Gln	Val	Asn	Val	Ser	Asp	Phe	Ala	Ser
Leu	Ile	Val	His	Ser	Leu	Ser	Arg	Val	Val	Ala	Gly	Asn	Asp	Arg	

## PhoenixTemp32470.tmp.txt

His His Gln Val Asn His Val Asn Tyr Gln Ile Leu Val Thr Lys Leu  
 1075 1080 1085  
 Gln Lys Gly Asp Pro Leu Pro Gln Asp Leu Asn Pro Asp Glu Ser Tyr  
 1090 1095 1100  
 Ala Pro Leu Ala Asp Asp Ala Asn Tyr Ala Glu Ile Gly Gln Lys Lys  
 1105 1110 1115 1120  
 Met Val Val Asn Gln His Leu Lys Asn Ala Trp Asp Ala Ser Gln  
 1125 1130 1135  
 Lys Ser Thr Arg Glu Asp Trp Gln Glu Trp Ile Arg Arg Phe Ser Val  
 1140 1145 1150  
 Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Ala Cys Ala Ser  
 1155 1160 1165  
 Leu Ala Gly Ile Tyr Gln Pro Leu Ala Arg Asp Leu Phe Asn Ala Ala  
 1170 1175 1180  
 Phe Val Ser Cys Trp Thr Glu Leu Tyr Asp Gln Tyr Gln Glu Glu Leu  
 1185 1190 1195 1200  
 Val Arg Ser Ile Glu Lys Ala Leu Thr Ser Pro Asn Ile Pro Pro Glu  
 1205 1210 1215  
 Ile Leu Gln Ile Leu Leu Asn Leu Ala Glu Phe Met Glu His Asp Asp  
 1220 1225 1230  
 Lys Ala Leu Pro Ile Asp Ile Arg Thr Leu Gly Lys Tyr Ala Ala Lys  
 1235 1240 1245  
 Cys His Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Leu Glu Phe Glu  
 1250 1255 1260  
 Gln Asp Gln Asn Ser Gly Ala Val Glu Ala Leu Ile Thr Ile Asn Asn  
 1265 1270 1275 1280  
 Gln Leu Gln Gln Ser Asp Ala Ala Ile Gly Ile Leu Arg Lys Ala Gln  
 1285 1290 1295  
 Ala Tyr Arg Asp Val Glu Leu Lys Glu Thr Trp Phe Glu Lys Leu Gln  
 1300 1305 1310  
 Arg Trp Glu Glu Ala Leu Ala Ala Tyr Lys Arg Arg Glu Lys Ile Asp  
 1315 1320 1325  
 Pro Asp Ser Phe Gly Ile Thr Met Gly Lys Met Arg Cys Leu His Ala  
 1330 1335 1340  
 Leu Gly Glu Trp Lys Val Leu Ser Asp Leu Ala Gln Glu Lys Trp Asn  
 1345 1350 1355 1360  
 Gln Ala Ser Leu Glu His Arg Lys Ser Ile Ala Pro Leu Ala Ala Ala  
 1365 1370 1375  
 Ala Ala Trp Gly Arg Gly Gln Trp Glu Leu Met Asp Ser Tyr Leu Gly  
 1380 1385 1390  
 Val Met Lys Glu Gln Ser Pro Asp Arg Ser Phe Phe Gly Ala Ile Leu  
 1395 1400 1405  
 Ala Ile His Arg Asn Gln Phe Asp Glu Ala Ile Met Tyr Ile Glu Lys  
 1410 1415 1420  
 Ala Arg Asn Gly Leu Asp Thr Glu Leu Ser Ala Leu Leu Gly Glu Ser  
 1425 1430 1435 1440  
 Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Val Gln Met Leu Ala Glu  
 1445 1450 1455  
 Leu Glu Glu Ile Ile Thr Tyr Lys Gln Asn Val Gly Asp Pro Glu Arg  
 1460 1465 1470  
 Gln Glu Ala Met Arg Gln Thr Trp Asn Arg Arg Leu Leu Gly Cys Gln  
 1475 1480 1485  
 Gln Asn Val Glu Val Trp Gln Arg Met Leu Lys Val Arg Ala Leu Val  
 1490 1495 1500  
 Thr Thr Pro Arg Glu Asn Leu Asp Met Trp Ile Lys Phe Ala Asn Leu  
 1505 1510 1515 1520  
 Cys Arg Lys Ser Asn Arg Met Gly Leu Ala Glu Arg Ser Leu Ala Ser  
 1525 1530 1535  
 Leu Glu Thr Val Ile Pro Asp Gly Asn Gly Gly Thr Arg Thr Ile Ser  
 1540 1545 1550  
 Pro Pro Glu Val Thr Tyr Ala Arg Leu Lys Phe Ser Trp Ala Thr Gly  
 1555 1560 1565  
 Arg Gln Arg Glu Ala Leu His Met Leu Arg Glu Phe Thr Ala Asn Leu  
 1570 1575 1580  
 Thr Glu Asp Phe Thr Arg Phe Asn Ala Leu Val Ala Ser Gln Ser Asp  
 1585 1590 1595 1600  
 His Asn Gly Ile Asn Gly Val Asn Gly Ile Ala Glu Gly Asn His Thr  
 1605 1610 1615  
 Asp Ile Met Ala Leu Arg Glu Arg Val Gly Asp Val Asn Lys Phe Arg

## PhoenixTemp32470.tmp.txt

1620 1625 1630  
 Lys Leu Leu Ala Lys Ser Tyr Leu Arg Leu Gly Glu Trp Gln Thr Ala  
 1635 1640 1645  
 Leu Gln Arg Gly Asp Trp Arg Pro Glu His Val Arg Glu Val Leu Asn  
 1650 1655 1660  
 Ala Tyr Ser Ala Ala Thr Arg Tyr Asn Arg Asp Ser Tyr Lys Ala Trp  
 1665 1670 1675 1680  
 His Ser Trp Ala Leu Ala Asn Phe Glu Val Val Thr Thr Ile Ala Ser  
 1685 1690 1695  
 Gln Ala Ser Lys Asp Gly Gly Asn Leu Ala Leu Val Pro Gly His Ile  
 1700 1705 1710  
 Val Thr Glu His Val Ile Pro Ala Ile Arg Gly Phe Phe Arg Ser Ile  
 1715 1720 1725  
 Ala Leu Ser Ser Thr Ser Ser Leu Gln Asp Thr Leu Arg Leu Leu Thr  
 1730 1735 1740  
 Leu Trp Phe Asn His Gly Gly Asp Gln Glu Val Asn Ser Val Val Thr  
 1745 1750 1755 1760  
 Glu Gly Phe Thr Ala Val Asn Ile Asp Thr Trp Leu Ala Val Thr Pro  
 1765 1770 1775  
 Gln Leu Ile Ala Arg Ile Asn Gln Pro Asn Phe Arg Val Arg Ser Ala  
 1780 1785 1790  
 Val His Arg Leu Leu Ala Glu Val Gly Lys Ala His Pro Gln Ala Leu  
 1795 1800 1805  
 Val Tyr Pro Leu Thr Val Ala Met Lys Ser Asn Val Ala Arg Arg Ser  
 1810 1815 1820  
 Gln Ser Ala Gly Asn Ile Met Glu Ser Met Arg Thr His Ser Ala Asn  
 1825 1830 1835 1840  
 Leu Val Glu Gln Ala Asp Leu Val Ser His Glu Leu Ile Arg Val Ala  
 1845 1850 1855  
 Val Leu Trp His Glu Leu Trp His Glu Gly Leu Glu Glu Ala Ser Arg  
 1860 1865 1870  
 Leu Tyr Phe Gly Asp His Asn Val Asp Gly Met Phe Ala Thr Leu Ala  
 1875 1880 1885  
 Pro Leu His Glu Met Leu Asp Lys Gly Ala Glu Thr Leu Arg Glu Val  
 1890 1895 1900  
 Ser Phe Ala Gln Ala Phe Gly Arg Asp Leu Ala Glu Ala Lys His Tyr  
 1905 1910 1915 1920  
 Cys Met Leu Tyr Arg Glu Thr Glu Glu Ile Gly Asp Leu Asn Gln Ala  
 1925 1930 1935  
 Trp Asp Leu Tyr Thr Val Phe Arg Lys Ile Ser Arg Gln Leu Pro  
 1940 1945 1950  
 Gln Leu Ser Thr Leu Asp Leu Lys Tyr Val Ser Pro Lys Leu Lys Asp  
 1955 1960 1965  
 Cys Val Asp Leu Asp Leu Ala Val Pro Gly Thr Tyr Gln Ser Gly Arg  
 1970 1975 1980  
 Pro Ile Ile Arg Ile Ile Ser Phe Asp Pro Ile Leu His Val Leu Gln  
 1985 1990 1995 2000  
 Thr Lys Lys Arg Pro Arg Arg Met Thr Leu Lys Gly Ser Asp Gly Ser  
 2005 2010 2015  
 Ser Tyr Met Tyr Val Val Lys Gly His Glu Asp Ile Arg Gln Asp Glu  
 2020 2025 2030  
 Arg Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Asp Asn Asp  
 2035 2040 2045  
 Ser Glu Ser Phe Lys Arg His Leu Thr Val Gln Arg Phe Pro Ala Ile  
 2050 2055 2060  
 Pro Leu Ser Gln Asn Ser Gly Ile Ile Gly Trp Val Thr Asn Ser Asp  
 2065 2070 2075 2080  
 Thr Leu His Ala Leu Ile Lys Glu Tyr Arg Glu Thr Arg Arg Ile Leu  
 2085 2090 2095  
 Leu Asn Ile Glu His Arg Ile Met Leu Gln Met Ala Pro Asp Tyr Asp  
 2100 2105 2110  
 Asn Leu Thr Leu Met Gln Lys Val Glu Val Phe Gly Tyr Ala Met Asp  
 2115 2120 2125  
 Asn Thr Thr Gly Lys Asp Leu Tyr Arg Val Leu Trp Leu Lys Ser Lys  
 2130 2135 2140  
 Ser Ser Glu Ala Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu  
 2145 2150 2155 2160  
 Gly Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His  
 2165 2170 2175



## PhoenixTemp32470.tmp.txt

Pro Ser Asn Leu Leu Asp Arg Val Thr Gly Lys Val His Ile  
 2180 2185 2190  
 Asp Phe Gly Asp Cys Phe Glu Val Ala Met His Arg Glu Lys Tyr Pro  
 2195 2200 2205  
 Glu Arg Val Pro Phe Arg Leu Thr Arg Met Leu Thr Phe Ala Met Glu  
 2210 2215 2220  
 Val Ser Asn Ile Glu Gly Ser Tyr Arg Ile Thr Cys Glu Ala Val Met  
 2225 2230 2235 2240  
 Arg Val Ile Arg Glu Asn Lys Asp Ser Leu Met Ala Val Leu Glu Ala  
 2245 2250 2255  
 Phe Ile His Asp Pro Leu Ile Asn Trp Arg Leu Gly Ile Arg Glu Ser  
 2260 2265 2270  
 Pro Asp Arg Met Pro Phe Asn Ala Glu Arg Arg Gln Ser Ile Val Ser  
 2275 2280 2285  
 Asn Val Asn Leu Glu His Gly Val Gln Pro Ser Asn Phe Ser Arg His  
 2290 2295 2300  
 Arg Arg Pro Ser Ile Leu Glu Gly Gly Ile Leu Asp Ala Gln Glu Gly  
 2305 2310 2315 2320  
 Val Pro Asn Glu Ala Arg Glu Ala Gln Asn Ala Arg Ala Leu Gln Val  
 2325 2330 2335  
 Leu Ala Arg Val Arg Glu Lys Leu Thr Gly Arg Asp Phe Lys Pro Ser  
 2340 2345 2350  
 Glu Glu Leu Asn Val Ser Asp Gln Val Asp Lys Leu Leu Ala Gln Ala  
 2355 2360 2365  
 Thr Ser Val Glu Asn Ile Cys Gln His Trp Ile Gly Trp Cys Ser Phe  
 2370 2375 2380  
 Trp  
 2385

&lt;210&gt; 2572

&lt;211&gt; 7542

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7542)

&lt;400&gt; 2572

atg tct acc tcg tcg caa tct ttt gtg gct gga cgg cct gca tcc atg	48
Met Ser Thr Ser Ser Gln Ser Phe Val Ala Gly Arg Pro Ala Ser Met	
1 5 10 15	
gct tcc cct tcg caa tcg cac cgc ttt tgt ggt ccc tca gcc acc gct	96
Ala Ser Pro Ser Gln Ser His Arg Phe Cys Gly Pro Ser Ala Thr Ala	
20 25 30	
tct ggt ggc gga agc ttt gac act ttg aat cgt gtc atc gct gac ctt	144
Ser Gly Gly Ser Phe Asp Thr Leu Asn Arg Val Ile Ala Asp Leu	
35 40 45	
tgc agc cgt ggt aat cct aag gag gga gct cct tta gcg ttt agg aaa	192
Cys Ser Arg Gly Asn Pro Lys Glu Gly Ala Pro Leu Ala Phe Arg Lys	
50 55 60	
cac gta gag gaa gca gtt cgt gat ctt agt ggt gaa gct tcc tct agg	240
His Val Glu Glu Ala Val Arg Asp Leu Ser Gly Glu Ala Ser Ser Arg	
65 70 75 80	
ttc atg gag caa tta tat gac agg att gct aat tta att gag agc act	288
Phe Met Glu Gln Leu Tyr Asp Arg Ile Ala Asn Leu Ile Glu Ser Thr	
85 90 95	
gat gtg gcg gaa aac atg ggt gca ctc aga gcc att gat gag ttg acg	336
Asp Val Ala Glu Asn Met Gly Ala Leu Arg Ala Ile Asp Glu Leu Thr	
100 105 110	
gag att gga ttt ggt gag aat gct act aag gtt tct aga ttt gcg ggt	384
Glu Ile Gly Phe Gly Glu Asn Ala Thr Lys Val Ser Arg Phe Ala Gly	
115 120 125	
tac atg agg act gtg ttc gag ttg aag cgt gat cct gaa atc ttg gtg	432
Tyr Met Arg Thr Val Phe Glu Leu Lys Arg Asp Pro Glu Ile Leu Val	
130 135 140	
ctt gct agt aga gtt ttg ggg cac ctt gct cgg gca ggt gga gca atg	480
Leu Ala Ser Arg Val Leu Gly His Leu Ala Arg Ala Gly Gly Ala Met	
145 150 155 160	

## PhoenixTemp32470.tmp.txt

act	tct	gat	gaa	gtg	gag	ttt	cag	atg	aaa	aca	gct	ttt	gat	tgg	ctt	528
Thr	Ser	Asp	Glu	Val	Glu	Phe	Gln	Met	Lys	Thr	Ala	Phe	Asp	Trp	Leu	
				165					170					175		
cgc	gta	gac	agg	gtg	gaa	tat	cgt	cgt	ttc	gcc	gcc	ggt	tta	ata	tta	576
Arg	Val	Asp	Arg	Val	Glu	Tyr	Arg	Arg	Phe	Ala	Ala	Val	Leu	Ile	Leu	
			180					185					190			
aag	gag	atg	gcc	gaa	aat	gct	tct	act	gtc	ttt	aac	ggt	cat	gtc	cct	624
Lys	Glu	Met	Ala	Glu	Asn	Ala	Ser	Thr	Val	Phe	Asn	Val	His	Val	Pro	
		195					200					205				
gaa	ttt	gtg	gat	gct	atc	tgg	gtt	gca	ctt	agg	gac	ccc	cag	ttg	caa	672
Glu	Phe	Val	Asp	Ala	Ile	Trp	Val	Ala	Leu	Arg	Asp	Pro	Gln	Leu	Gln	
	210					215					220					
gtg	cga	gaa	cga	gct	gtt	gaa	gct	ttg	cgt	gca	tgc	ctt	cgt	gtt	att	720
Val	Arg	Glu	Arg	Ala	Val	Glu	Ala	Leu	Arg	Ala	Cys	Leu	Arg	Val	Ile	
225					230					235					240	
gag	aaa	agg	gag	act	cga	tgg	cga	gtg	cag	tgg	tac	tat	cga	atg	ttt	768
Glu	Lys	Arg	Glu	Thr	Arg	Trp	Arg	Val	Gln	Trp	Tyr	Tyr	Arg	Met	Phe	
				245					250					255		
gaa	gct	aca	cag	ggg	ttg	ggc	aga	aat	gct	ccg	ggt	cac	agt	att		816
Glu	Ala	Thr	Gln	Asp	Gly	Leu	Gly	Arg	Asn	Ala	Pro	Val	His	Ser	Ile	
			260				265					270				
cat	ggt	tct	tta	ctt	gcc	gtg	ggg	gag	ctg	ttg	aga	ggt	tac	agc	tta	864
His	Gly	Ser	Leu	Leu	Ala	Val	Gly	Glu	Leu	Leu	Arg	Val	Tyr	Ser	Leu	
		275					280					285				
atg	cta	gag	ttc	gtt	tgc	agg	aat	aca	ggt	gag	ttc	atg	atg	tct	agg	912
Met	Leu	Glu	Phe	Val	Cys	Arg	Asn	Thr	Gly	Glu	Phe	Met	Met	Ser	Arg	
	290					295					300					
tat	aga	gaa	gtt	gcc	gaa	att	gtc	ctc	aga	tac	ctt	gaa	cat	cgt	gat	960
Tyr	Arg	Glu	Val	Ala	Glu	Ile	Val	Leu	Arg	Tyr	Leu	Glu	His	Arg	Asp	
305					310					315					320	
cgc	ctt	gtt	cgc	ctt	agc	atc	acc	tcg	tta	ctg	cct	cgc	att	gct	cac	1008
Arg	Leu	Val	Arg	Leu	Ser	Ile	Thr	Ser	Leu	Leu	Pro	Arg	Ile	Ala	His	
				325					330					335		
ttt	ctc	cgt	gac	cgg	ttt	gtg	aca	aac	tat	tta	acg	ata	tgc	atg	aat	1056
Phe	Leu	Arg	Asp	Arg	Phe	Val	Thr	Asn	Tyr	Leu	Thr	Ile	Cys	Met	Asn	
			340					345					350			
cat	att	ctt	act	gtg	tta	aga	ata	ccg	gct	gaa	aga	gcc	agt	ggg	ttc	1104
His	Ile	Leu	Thr	Val	Leu	Arg	Ile	Pro	Ala	Glu	Arg	Ala	Ser	Gly	Phe	
		355					360					365				
atc	gcc	ctt	ggg	gaa	atg	gct	ggg	gct	ttg	gat	ggg	gag	ctt	atc	cat	1152
Ile	Ala	Leu	Gly	Glu	Met	Ala	Gly	Ala	Leu	Asp	Gly	Glu	Leu	Ile	His	
	370					375					380					
tat	ttg	ccg	aca	att	atg	tct	cat	ctg	cgg	gat	gcg	att	gct	cca	cgt	1200
Tyr	Leu	Pro	Thr	Ile	Met	Ser	His	Leu	Arg	Asp	Ala	Ile	Ala	Pro	Arg	
385					390				395						400	
aaa	ggc	aga	cct	ttg	ctt	gaa	gct	gtg	gct	tgt	ggt	ggg	aac	atc	gca	1248
Lys	Gly	Arg	Pro	Leu	Leu	Glu	Ala	Val	Ala	Cys	Val	Gly	Asn	Ile	Ala	
				405					410					415		
aag	gca	atg	gga	tcc	aca	gtg	gaa	act	cat	ggt	cga	gat	ctt	tta	gat	1296
Lys	Ala	Met	Gly	Ser	Thr	Val	Glu	Thr	His	Val	Arg	Asp	Leu	Leu	Asp	
			420					425					430			
gtt	atg	ttt	tca	tct	agt	ctc	tct	tcc	aca	ctt	ggt	gac	gct	ctt	gac	1344
Val	Met	Phe	Ser	Ser	Ser	Leu	Ser	Ser	Thr	Leu	Val	Asp	Ala	Leu	Asp	
			435				440					445				
cag	ata	acc	atc	agc	att	cct	tct	ttg	ctg	cca	aca	gta	caa	gat	cgg	1392
Gln	Ile	Thr	Ile	Ser	Ile	Pro	Ser	Leu	Leu	Pro	Thr	Val	Gln	Asp	Arg	
	450					455					460					
ctt	cta	gat	tgc	att	tcg	ttg	gtt	ctt	tca	aaa	tcc	cat	tat	tct	caa	1440
Leu	Leu	Asp	Cys	Ile	Ser	Leu	Val	Leu	Ser	Lys	Ser	His	Tyr	Ser	Gln	
465					470					475					480	
gca	aag	cct	cct	gtt	acc	att	gtc	cga	ggg	agt	aca	gtg	ggc	atg	gca	1488
Ala	Lys	Pro	Pro	Val	Thr	Ile	Val	Arg	Gly	Ser	Thr	Val	Gly	Met	Ala	
				485					490					495		
cca	cag	tct	tct	gac	cct	agt	tgt	tca	gct	caa	ggt	caa	cta	gcc	ctg	1536
Pro	Gln	Ser	Ser	Asp	Pro	Ser	Cys	Ser	Ala	Gln	Val	Gln	Leu	Ala	Leu	
			500				505						510			
cag	act	ctt	gct	cgt	ttc	aat	ttc	aag	gga	cat	gat	ctt	ctt	gaa	ttt	1584
Gln	Thr	Leu	Ala	Arg	Phe	Asn	Phe	Lys	Gly	His	Asp	Leu	Leu	Glu	Phe	
		515					520					525				

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gct Ala	cgg Arg 530	gag Glu	tca Ser	gtt Val	gtt Val	gtt Val 535	tat Tyr	ttg Leu	gat Asp	gat Asp	gag Glu 540	gat Asp	gca Ala	gcc Ala	aca Thr	1632
aga Arg 545	aaa Lys	gat Asp	gct Ala	gct Ala	ttg Leu 550	tgt Cys	tgt Cys	tgc Cys	aga Arg	cta Leu 555	att Ile	gca Ala	aat Asn	tct Ser	ctt Leu 560	1680
tct Ser	ggc Gly	atc Ile	aca Thr	caa Gln 565	ttt Phe	ggc Gly	tcg Ser	agc Ser	agg Arg 570	tca Ser	aca Thr	cga Arg	gca Ala	ggg Gly 575	ggg Gly	1728
aga Arg	cgc Arg	agg Arg	cgc Arg 580	ctt Leu	gtg Val	gaa Glu	gag Glu	att Ile 585	gtg Val	gaa Glu	aag Lys	ctt Leu	ctc Leu 590	agg Arg	aca Thr	1776
gcc Ala	gtt Val	gca Ala 595	gat Asp	gct Ala	gat Asp	gta Val	act Thr 600	gtt Val	cgc Arg	aaa Lys	tct Ser	ata Ile 605	ttc Phe	gtt Val	gct Ala	1824
tta Leu	ttt Phe 610	ggc Gly	aac Asn	caa Gln	tgt Cys	ttc Phe 615	gat Asp	gat Asp	tat Tyr	cta Leu	gca Ala 620	cag Gln	gct Ala	gat Asp	agt Ser	1872
ttg Leu 625	act Thr	gcc Ala	att Ile	ttt Phe	gct Ala 630	tcc Ser	tta Leu	aat Asn	gat Asp	gag Glu 635	gac Asp	ctt Leu	gat Asp	gtt Val	cga Arg 640	1920
gaa Glu	tat Tyr	gcc Ala	atc Ile	tca Ser 645	gtt Val	gct Ala	gga Gly	agg Arg	tta Leu 650	tcg Ser	gaa Glu	aaa Lys	aat Asn	cca Pro 655	gca Ala	1968
tac Tyr	gta Val	ctt Leu	cca Pro 660	gca Ala	ctt Leu	cgt Arg	cgc Arg	cat His 665	ctt Leu	ata Ile	cag Gln	ttg Leu	ttg Leu 670	acc Thr	tat Tyr	2016
ctt Leu	gag Glu	ctg Leu 675	agc Ser	agt Ser	gca Ala	gat Asp	aac Asn 680	aag Lys	tgc Cys	agg Arg	gaa Glu	gag Glu 685	agt Ser	gca Ala	aag Lys	2064
ctc Leu 690	ctt Leu	ggt Gly	tgt Cys	tta Leu	gtt Val	cga Arg 695	aat Asn	tgt Cys	gaa Glu	cgg Arg	ctc Leu 700	att Ile	ctt Leu	cca Pro	tac Tyr	2112
gta Val 705	gcc Ala	cct Pro	gtc Val	caa Gln	aag Lys 710	gca Ala	ctt Leu	gtt Val	gcg Ala	aga Arg 715	ctt Leu	agt Ser	gaa Glu	gga Gly	act Thr 720	2160
gga Gly	gtg Val	aat Asn	gct Ala	aac Asn 725	aat Asn	aat Asn	att Ile	gtc Val	act Thr 730	gga Gly	gtt Val	ctc Leu	gta Val	act Thr 735	gtt Val	2208
ggg Gly	gat Asp	ctt Leu	gca Ala 740	aga Arg	gtg Val	ggt Gly	ggc Gly	ttg Leu 745	gca Ala	atg Met	aga Arg	caa Gln 750	tat Tyr	att Ile	ccg Pro	2256
gag Glu	ctg Leu	atg Met 755	cct Pro	tta Leu	att Ile	gtt Val	gaa Glu 760	gct Ala	tta Leu	atg Met	gat Asp	gga Gly 765	gct Ala	gct Ala	gta Val	2304
gca Ala	aaa Lys 770	cgt Arg	gag Glu	gtg Val	gct Ala	gtt Val 775	tct Ser	act Thr	ctt Leu	ggt Gly	caa Gln 780	gtt Val	gtt Val	caa Gln	agt Ser	2352
aca Thr 785	ggg Gly	tat Tyr	gtt Val	gtg Val	act Thr 790	cca Pro	tac Tyr	aag Lys	gaa Glu	tac Tyr 795	cca Pro	ttg Leu	ttg Leu	ctt Leu	ggg Gly 800	2400
tta Leu	ctc Leu	ttg Leu	aaa Lys	ttg Leu 805	ctg Leu	aag Lys	ggt Gly	gac Asp	tta Leu 810	gtg Val	tgg Trp	tct Ser	acc Thr	aga Arg 815	cga Arg	2448
gaa Glu	gtg Val	ctc Leu	aag Lys 820	gtt Val	ctt Leu	gga Gly	att Ile	atg Met 825	ggc Gly	gct Ala	ttg Leu	gat Asp	cct Pro 830	cat His	gtg Val	2496
cat His	aaa Lys	cgt Arg 835	aac Asn	caa Gln	caa Gln	agt Ser	tta Leu 840	tca Ser	gga Gly	tca Ser	cat His	ggt Gly 845	gaa Glu	gtt Val	cct Pro	2544
cgc Arg	ggc Gly 850	act Thr	ggt Gly	gat Asp	tct Ser	ggt Gly 855	caa Gln	cct Pro	att Ile	cca Pro	tca Ser 860	att Ile	gat Asp	gag Glu	tta Leu	2592
cct Pro 865	gtc Val	gaa Glu	ctc Leu	cgg Arg	ccg Pro 870	tca Ser	ttt Phe	gct Ala	aca Thr	tct Ser 875	gag Glu	gat Asp	tat Tyr	tac Tyr	tca Ser 880	2640
acg Thr	gtt Val	gct Ala	atc Ile	aac Asn 885	tcg Ser	ctt Leu	atg Met	cga Arg	att Ile 890	ctt Leu	aga Arg	gat Asp	gca Ala	tca Ser 895	ctt Leu	2688

## PhoenixTemp32470.tmp.txt

ctt	agt	tac	cac	aaa	agg	ggt	ggt	aga	tct	ctg	atg	atc	att	ttc	aag	2736
Leu	Ser	Tyr	His	Lys	Arg	Val	Val	Arg	Ser	Leu	Met	Ile	Ile	Phe	Lys	
			900					905					910			
ggt	tta	cct	gag	ctt	ttt	cac	act	ggt	cga	aca	tct	gat	gag	aac	ctg	2784
Val	Leu	Pro	Glu	Leu	Phe	His	Thr	Val	Arg	Thr	Ser	Asp	Glu	Asn	Leu	
		915					920					925				
aag	gac	ttc	att	acg	tgg	ggt	ctt	ggg	act	ctt	ggt	tcc	att	ggt	cgc	2832
Lys	Asp	Phe	Ile	Thr	Trp	Gly	Leu	Gly	Thr	Leu	Val	Ser	Ile	Val	Arg	
	930					935					940					
cag	cac	ata	cgc	aag	tat	ctg	cca	gag	ctg	ctt	tca	tta	gtc	tct	gaa	2880
Gln	His	Ile	Arg	Lys	Tyr	Leu	Pro	Glu	Leu	Leu	Ser	Leu	Val	Ser	Glu	
945					950					955					960	
cta	tgg	tca	tcc	ttc	acc	ttg	ccc	ggt	ccc	ata	cgc	cca	tca	cgt	ggt	2928
Leu	Trp	Ser	Ser	Phe	Thr	Leu	Pro	Gly	Pro	Ile	Arg	Pro	Ser	Arg	Gly	
				965					970					975		
ctt	ccg	ata	tct	tat	ggg	gag	tac	ttc	gcc	tct	ctt	act	gat	aat	cag	2976
Leu	Pro	Ile	Ser	Tyr	Gly	Glu	Tyr	Phe	Ala	Ser	Leu	Thr	Asp	Asn	Gln	
			980					985					990			
ggt	ctg	cat	cta	ctg	gaa	cat	ctt	tgc	ttg	gca	ctt	aat	gat	gaa	ttc	3024
Val	Leu	His	Leu	Leu	Glu	His	Leu	Cys	Leu	Ala	Leu	Asn	Asp	Glu	Phe	
		995					1000					1005				
aga	act	tat	ctt	cca	gtc	atc	ctt	cca	tgt	ttc	atc	caa	gta	tta	ggt	3072
Arg	Thr	Tyr	Leu	Pro	Val	Ile	Leu	Pro	Cys	Phe	Ile	Gln	Val	Leu	Gly	
	1010				1015						1020					
gac	gcc	gag	cgg	ttt	aat	gat	tac	acc	tat	ggt	cct	gat	att	ctc	cac	3120
Asp	Ala	Glu	Arg	Phe	Asn	Asp	Tyr	Thr	Tyr	Val	Pro	Asp	Ile	Leu	His	
1025				1030					1035					1040		
aca	ctc	gaa	gtg	ttt	ggc	gga	act	ctt	gat	gag	cac	atg	cat	tta	ctc	3168
Thr	Leu	Glu	Val	Phe	Gly	Gly	Thr	Leu	Asp	Glu	His	Met	His	Leu	Leu	
			1045					1050					1055			
ctt	ccg	gca	ctt	att	cga	ttg	ttt	aaa	gta	gat	gct	cct	gta	gct	ata	3216
Leu	Pro	Ala	Leu	Ile	Arg	Leu	Phe	Lys	Val	Asp	Ala	Pro	Val	Ala	Ile	
		1060					1065					1070				
aga	cgc	gat	gcc	atc	aaa	act	ttg	aca	aga	gta	atc	ccg	tgt	ggt	cag	3264
Arg	Arg	Asp	Ala	Ile	Lys	Thr	Leu	Thr	Arg	Val	Ile	Pro	Cys	Val	Gln	
		1075				1080					1085					
ggt	act	ggt	cat	atc	tcc	gct	ctc	gtg	cat	cac	ttg	aag	cta	gta	tta	3312
Val	Thr	Gly	His	Ile	Ser	Ala	Leu	Val	His	His	Leu	Lys	Leu	Val	Leu	
	1090				1095					1100						
gat	ggg	aag	aat	gat	gag	ttg	cgg	aaa	gat	gct	gtc	gat	gca	cta	tgc	3360
Asp	Gly	Lys	Asn	Asp	Glu	Leu	Arg	Lys	Asp	Ala	Val	Asp	Ala	Leu	Cys	
1105				1110					1115					1120		
tgt	ttg	gct	cat	gca	ctt	gga	gag	gac	ttc	acc	ata	ttc	att	gaa	tca	3408
Cys	Leu	Ala	His	Ala	Leu	Gly	Glu	Asp	Phe	Thr	Ile	Phe	Ile	Glu	Ser	
			1125					1130				1135				
att	cac	aag	ctt	tta	ttg	aag	cat	cga	ttg	cgg	cat	aaa	gaa	ttt	gag	3456
Ile	His	Lys	Leu	Leu	Lys	His	Arg	Leu	Arg	His	Lys	Lys	Glu	Phe	Glu	
		1140			1145						1150					
gaa	att	cat	gct	cgc	tgg	cgg	aga	cgt	gaa	cca	ttg	att	gta	gct	aca	3504
Glu	Ile	His	Ala	Arg	Trp	Arg	Arg	Arg	Glu	Pro	Leu	Ile	Val	Ala	Thr	
		1155				1160					1165					
act	gca	acc	caa	caa	tta	agt	agg	cga	ctg	cca	ggt	gag	ggt	atc	agg	3552
Thr	Ala	Thr	Gln	Gln	Leu	Ser	Arg	Arg	Leu	Pro	Val	Glu	Val	Ile	Arg	
	1170				1175					1180						
gat	cct	gta	att	gag	aat	gag	atc	gat	cct	ttc	gaa	gaa	gga	act	gac	3600
Asp	Pro	Val	Ile	Glu	Asn	Glu	Ile	Asp	Pro	Phe	Glu	Glu	Gly	Thr	Asp	
1185				1190					1195					1200		
aga	aac	cat	cag	ggt	aat	gat	ggt	aga	cta	cgg	aca	gct	gga	gaa	gct	3648
Arg	Asn	His	Gln	Val	Asn	Asp	Gly	Arg	Leu	Arg	Thr	Ala	Gly	Glu	Ala	
			1205					1210				1215				
tct	caa	cgc	agc	acc	aaa	gaa	gat	tgg	gag	gaa	tgg	atg	aga	cat	ttt	3696
Ser	Gln	Arg	Ser	Thr	Lys	Glu	Asp	Trp	Glu	Glu	Trp	Met	Arg	His	Phe	
		1220					1225					1230				
agt	att	gaa	tta	ctt	aag	gag	tct	ccc	tct	cca	gca	tta	aga	act	tgt	3744
Ser	Ile	Glu	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Pro	Ala	Leu	Arg	Thr	Cys	
		1235				1240					1245					
gca	aaa	ctt	gct	cag	ttg	cag	cca	ttt	gtc	ggg	aga	gag	ttg	ttt	gct	3792
Ala	Lys	Leu	Ala	Gln	Leu	Gln	Pro	Phe	Val	Gly	Arg	Glu	Leu	Phe	Ala	
	1250				1255					1260						

## PhoenixTemp32470.tmp.txt

gct ggc ttt gtc agt tgc tgg gca cag cta aac gag tct agc caa aag 3840  
 Ala Gly Phe Val Ser Cys Trp Ala Gln Leu Asn Glu Ser Ser Gln Lys 1265 1270 1275 1280  
 cag tta gtt agg agc ttg gaa atg gcc ttt tca tct cca aat atc cct 3888  
 Gln Leu Val Arg Ser Leu Glu Met Ala Phe Ser Ser Pro Asn Ile Pro 1285 1290 1295  
 cca gaa att tta gct aca cta ctc aat ttg gca gag ttt atg gaa cat 3936  
 Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met Glu His 1300 1305 1310  
 gat gag aag cct ctt ccc att gat att cgt ctt ctg ggg gct ctt gct 3984  
 Asp Glu Lys Pro Leu Pro Ile Asp Ile Arg Leu Leu Gly Ala Leu Ala 1315 1320 1325  
 gaa aag tgc cgt gtt ttt gcc aaa gct ctg cat tat aaa gag atg gaa 4032  
 Glu Lys Cys Arg Val Phe Ala Lys Ala Leu His Tyr Lys Glu Met Glu 1330 1335 1340  
 ttt gaa ggt cca cga tcc aag agg atg gat gcc aac cca gtt gct gtt 4080  
 Phe Glu Gly Pro Arg Ser Lys Arg Met Asp Ala Asn Pro Val Ala Val 1345 1350 1355 1360  
 gtc gag gct ctt ata cac ata aat aat cag tta cac gag cat gag gct 4128  
 Val Glu Ala Leu Ile His Ile Asn Asn Gln Leu His Gln His Glu Ala 1365 1370 1375  
 gct gtc ggt ata cta acc tat gct caa caa cat ctt gat gtg caa tta 4176  
 Ala Val Gly Ile Leu Thr Tyr Ala Gln Gln His Leu Asp Val Gln Leu 1380 1385 1390  
 aaa gaa tca tgg tat gag aag ctg cag cgc tgg gac gat gca ctc aag 4224  
 Lys Glu Ser Trp Tyr Glu Lys Leu Gln Arg Trp Asp Asp Ala Leu Lys 1395 1400 1405  
 gcg tac act ttg aaa gca tct caa aca aca aat cct cat ctt gta tta 4272  
 Ala Tyr Thr Leu Lys Ala Ser Gln Thr Thr Asn Pro His Leu Val Leu 1410 1415 1420  
 gaa gcc aca tta gga caa atg aga tgt ctt gct gca ctt gca cga tgg 4320  
 Glu Ala Thr Leu Gly Gln Met Arg Cys Leu Ala Ala Leu Ala Arg Trp 1425 1430 1435 1440  
 gaa gag ctc aac aat ctc tgc aaa gag tac tgg agt cct gct gag cca 4368  
 Glu Glu Leu Asn Leu Cys Lys Glu Tyr Trp Ser Pro Ala Glu Pro 1445 1450 1455  
 tct gcg cgt ctg gaa atg gca cca atg gct gca caa gct gca tgg aac 4416  
 Ser Ala Arg Leu Glu Met Ala Pro Met Ala Ala Gln Ala Ala Trp Asn 1460 1465 1470  
 atg gga gag tgg gat caa atg gcc gaa tat gtg tct cgg cta gat gat 4464  
 Met Gly Glu Trp Asp Gln Met Ala Glu Tyr Val Ser Arg Leu Asp Asp 1475 1480 1485  
 ggt gat gaa aca aag ctt cgg ggt tta gca agc ccg gtt tct agt ggc 4512  
 Gly Asp Glu Thr Lys Leu Arg Gly Leu Ala Ser Pro Val Ser Ser Gly 1490 1495 1500  
 gat ggg agc agt aat ggc aca ttc ttc agg gct gtt ctg tta gtt cga 4560  
 Asp Gly Ser Ser Asn Gly Thr Phe Phe Arg Ala Val Leu Leu Val Arg 1505 1510 1515 1520  
 agg gca aag tac gac gag gca cgc gaa tat gtg gaa aga gct aga aaa 4608  
 Arg Ala Lys Tyr Asp Glu Ala Arg Glu Tyr Val Glu Arg Ala Arg Lys 1525 1530 1535  
 tgt ctt gcc aca gaa ctt gca gcg ctg gtt ttg gag agc tat gag cgt 4656  
 Cys Leu Ala Thr Glu Leu Ala Ala Leu Val Leu Glu Ser Tyr Glu Arg 1540 1545 1550  
 gcg tac agc aat atg gtt cgt gtt cag cag ctg tca gaa cta gag gag 4704  
 Ala Tyr Ser Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu Glu Glu 1555 1560 1565  
 gta att gaa tat tat acg ctg cct gtg gga aat act att gcc gaa gaa 4752  
 Val Ile Glu Tyr Tyr Thr Leu Pro Val Gly Asn Thr Ile Ala Glu Glu 1570 1575 1580  
 cgg aga gct cta att cgt aat atg tgg act cag cgg att cag gga tct 4800  
 Arg Arg Ala Leu Ile Arg Asn Met Trp Thr Gln Arg Ile Gln Gly Ser 1585 1590 1595 1600  
 aag cgt aat gtg gag gtg tgg caa gca ctt ttg gct gtc cgg gca ctt 4848  
 Lys Arg Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg Ala Leu 1605 1610 1615  
 gtg cta cct cct aca gaa gat gtg gaa act tgg ctc aag ttt gcc tcg 4896  
 Val Leu Pro Thr Glu Asp Val Glu Thr Trp Leu Lys Phe Ala Ser 1620 1625 1630

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ctt tgt cga aag agt ggg agg atc agt cag gcg aaa tct act cta ctc 4944  
 Leu Cys Arg Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr Leu Leu  
 1635 1640 1645  
 aag ctc tta ccg ttt gat cca gaa gta tca cca gaa aac atg caa tat 4992  
 Lys Leu Leu Pro Phe Asp Pro Glu Val Ser Pro Glu Asn Met Gln Tyr  
 1650 1655 1660  
 cac gga cct cca caa gtg atg ctt gga tac tta aaa tac caa tgg tca 5040  
 His Gly Pro Pro Gln Val Met Leu Gly Tyr Leu Lys Tyr Gln Trp Ser  
 1665 1670 1675 1680  
 ctt gga gag gaa cgt aag cgc aaa gag gca ttt acc aag ctg cag att 5088  
 Leu Gly Glu Glu Arg Lys Arg Lys Glu Ala Phe Thr Lys Leu Gln Ile  
 1685 1690 1695  
 cta acg aga gag ctc tca agt gtg cca cat tct caa tct gac ata ctg 5136  
 Leu Thr Arg Glu Leu Ser Ser Val Pro His Ser Gln Ser Asp Ile Leu  
 1700 1705 1710  
 gct agc atg gta tct agc aag ggc gca aat gtt cca ctt ctt gca cgt 5184  
 Ala Ser Met Val Ser Ser Lys Gly Ala Asn Val Pro Leu Leu Ala Arg  
 1715 1720 1725  
 gta aat ctc aaa ctg gga acg tgg cag tgg gca ctt tct tcc ggt ttg 5232  
 Val Asn Leu Lys Leu Gly Thr Trp Gln Trp Ala Leu Ser Ser Gly Leu  
 1730 1735 1740  
 aat gat ggg tct att caa gaa att cgt gat gcg ttt gac aaa tct act 5280  
 Asn Asp Gly Ser Ile Gln Glu Ile Arg Asp Ala Phe Asp Lys Ser Thr  
 1745 1750 1755 1760  
 tgc tat gct cct aaa tgg gct aaa gca tgg cac aca tgg gca tta ttc 5328  
 Cys Tyr Ala Pro Lys Trp Ala Lys Ala Trp His Thr Trp Ala Leu Phe  
 1765 1770 1775  
 aat aca gca gtg atg tcg cat tac att tca aga ggt caa att gct tcc 5376  
 Asn Thr Ala Val Met Ser His Tyr Ile Ser Arg Gly Gln Ile Ala Ser  
 1780 1785 1790  
 cag tac gtt gtt tct gca gtc act gga tat ttt tat tct ata gca tgt 5424  
 Gln Tyr Val Val Ser Ala Val Thr Gly Tyr Phe Tyr Ser Ile Ala Cys  
 1795 1800 1805  
 gca gca aat gcc aaa gga gtt gat gat agt tta cag gac ata ctg cgt 5472  
 Ala Ala Asn Ala Lys Gly Val Asp Asp Ser Leu Gln Asp Ile Leu Arg  
 1810 1815 1820  
 ctt ctg aca ttg tgg ttc aac cat gga gct aca gct gat gtc caa acc 5520  
 Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ala Asp Val Gln Thr  
 1825 1830 1835 1840  
 gca ttg aag aca gga ttc agt cat gtc aac att aac aca tgg ctt gtt 5568  
 Ala Leu Lys Thr Gly Phe Ser His Val Asn Ile Asn Thr Trp Leu Val  
 1845 1850 1855  
 gtg cta cct caa atc att gct agg ata cat tct aat aat cgt gct gtc 5616  
 Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Arg Ala Val  
 1860 1865 1870  
 agg gaa ctg att cag tct ctt ctc atc cgc ata ggc gaa aac cac cca 5664  
 Arg Glu Leu Ile Gln Ser Leu Leu Ile Arg Ile Gly Glu Asn His Pro  
 1875 1880 1885  
 cag gct ctg atg tat ccc ctt ctc gtt gca tgt aaa tca ata agc aat 5712  
 Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Cys Lys Ser Ile Ser Asn  
 1890 1895 1900  
 ctt cgg aga gct gcg gct caa gag gtg gtt gat aaa gtt cgc cag cac 5760  
 Leu Arg Arg Ala Ala Gln Glu Val Val Asp Lys Val Arg Gln His  
 1905 1910 1915 1920  
 agt ggt gca ctc gtg gat cag gcg caa ctt gta tca cat gaa ctt atc 5808  
 Ser Gly Ala Leu Val Asp Gln Ala Gln Leu Val Ser His Glu Leu Ile  
 1925 1930 1935  
 agg gtt gcc ata ctt tgg cat gaa atg tgg cat gaa gca cta gaa gaa 5856  
 Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Ala Leu Glu Glu  
 1940 1945 1950  
 gct agt cgc ttg tat ttt ggt gaa cat aac att gaa ggc atg ctg aaa 5904  
 Ala Ser Arg Leu Tyr Phe Gly Glu His Asn Ile Glu Gly Met Leu Lys  
 1955 1960 1965  
 gta ctt gaa ccc tta cat gac atg ctc gac gaa ggt gta aaa aag gac 5952  
 Val Leu Glu Pro Leu His Asp Met Leu Asp Glu Gly Val Lys Lys Asp  
 1970 1975 1980  
 agt acg acc ata cag gaa aga gca ttt ata gag gtt gga aat ttc aat 6000  
 Ser Thr Thr Ile Gln Glu Arg Ala Phe Ile Glu Val Gly Asn Phe Asn  
 1985 1990 1995 2000

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ccc gga ttt ttg gca tac cgt cac gaa cta aaa gag gca cat gaa tgc	6048
Pro Gly Phe Leu Ala Tyr Arg His Glu Leu Lys Glu Ala His Glu Cys	
2005 2010 2015	
tgt tgc aat tac aag ata act ggg aaa gat gct gaa ctt aca cag gct	6096
Cys Cys Asn Tyr Lys Ile Thr Gly Lys Asp Ala Glu Leu Thr Gln Ala	
2020 2025 2030	
tgg gat ctt tac tat cac gtt ttc aaa cgg att gac aaa cag cta gcc	6144
Trp Asp Leu Tyr Tyr His Val Phe Lys Arg Ile Asp Lys Gln Leu Ala	
2035 2040 2045	
agt ctc acg aca ttg gat ttg gaa tct gtt tct cct gag ttg ctg ctg	6192
Ser Leu Thr Thr Leu Asp Leu Glu Ser Val Ser Pro Glu Leu Leu Leu	
2050 2055 2060	
tgc cgt gac ttg gag cta gca gtt cct gga aca tat cgt gca gat gcc	6240
Cys Arg Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr Arg Ala Asp Ala	
2065 2070 2075 2080	
ccc gtc gtg act ata tca tct ttt tca cgc caa ctt gtt gtt ata acc	6288
Pro Val Val Thr Ile Ser Ser Phe Ser Arg Gln Leu Val Val Ile Thr	
2085 2090 2095	
tct aaa caa aga cca agg aaa ttg act att cac gga aat gac ggt gag	6336
Ser Lys Gln Arg Pro Arg Lys Leu Thr Ile His Gly Asn Asp Gly Glu	
2100 2105 2110	
gac tac gcc ttc ttg ttg aag gga cat gaa gat tta agg caa gat gag	6384
Asp Tyr Ala Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu	
2115 2120 2125	
cgt gtt atg cag ctt ttt ggt ttg gtg aac act ttg ctt gag aat tcc	6432
Arg Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Ser	
2130 2135 2140	
aga aaa aca gcc gaa aaa gat ctt tcc att caa cgc tat tct gta ata	6480
Arg Lys Thr Ala Glu Lys Asp Leu Ser Ile Gln Arg Tyr Ser Val Ile	
2145 2150 2155 2160	
cca cta tct ccc aat agt gga ctc atc gga tgg gtt ccg aac tgc gat	6528
Pro Leu Ser Pro Asn Ser Gly Leu Ile Gly Trp Val Pro Asn Cys Asp	
2165 2170 2175	
acc ctt cac cat ctt att cga gag cac aga gat gca aga aag atc att	6576
Thr Leu His Ile Leu Ile Arg Glu His Arg Asp Ala Arg Lys Ile Ile	
2180 2185 2190	
ctt aat caa gaa aat aag cat atg ttg agt ttt gct cca gac tat gac	6624
Leu Asn Gln Glu Asn Lys His Met Leu Ser Phe Ala Pro Asp Tyr Asp	
2195 2200 2205	
aat cta ccg ctt ata gca aag gtt gaa gta ttt gag tat gct cta gaa	6672
Asn Leu Pro Leu Ile Ala Lys Val Glu Val Phe Glu Tyr Ala Leu Glu	
2210 2215 2220	
aac aca gag gga aat gat cta tcc agg gtt ctc tgg tta aaa agt cgc	6720
Asn Thr Glu Gly Asn Asp Leu Ser Arg Val Leu Trp Leu Lys Ser Arg	
2225 2230 2235 2240	
tcg tca gaa gtt tgg cta gaa aga aga aca aac tat act aga agt tta	6768
Ser Ser Glu Val Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu	
2245 2250 2255	
gca gtt atg agt atg gtt ggt tat att ctt ggg tta ggt gat cga cac	6816
Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His	
2260 2265 2270	
cca agt aac ctt atg ctt cat aga tac agt gga aag atc ttg cat att	6864
Pro Ser Asn Leu Met Leu His Arg Tyr Ser Gly Lys Ile Leu His Ile	
2275 2280 2285	
gat ttt gga gat tgt ttt gag gct tct atg aat aga gag aag ttt cct	6912
Asp Phe Gly Asp Cys Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro	
2290 2295 2300	
gaa aag gtt cca ttc cgc ctg aca aga atg ctt gtc aaa gca atg gaa	6960
Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu	
2305 2310 2315 2320	
gtc agt ggc att gaa gga aac ttc cgc tca acc tgc gaa aac gtt atg	7008
Val Ser Gly Ile Glu Gly Asn Phe Arg Ser Thr Cys Glu Asn Val Met	
2325 2330 2335	
caa gtt ctc aga acc aat aaa gat agt gta atg gca atg atg gaa gcg	7056
Gln Val Leu Arg Thr Asn Lys Asp Ser Val Met Ala Met Met Glu Ala	
2340 2345 2350	
ttt gta cat gat cct tta atc aat tgg cgt ctt ttc aat ttc aat gaa	7104
Phe Val His Asp Pro Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu	
2355 2360 2365	

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gtc ccc caa tta gca ctg ctc ggt aac aac aac ccc aat gct cct gct 7152  
 Val Pro Gln Leu Ala Leu Leu Gly Asn Asn Asn Pro Asn Ala Pro Ala  
 2370 2375 2380  
 gat gtt gag cct gac gaa gaa gat gaa gat ccc gct gat ata gat ctt 7200  
 Asp Val Glu Pro Asp Glu Glu Asp Glu Asp Pro Ala Asp Ile Asp Leu  
 2385 2390 2395 2400  
 cct cag cct caa agg agt act cga gag aag gag att ctt cag gct gta 7248  
 Pro Gln Pro Gln Arg Ser Thr Arg Glu Lys Glu Ile Leu Gln Ala Val  
 2405 2410 2415  
 aat atg ctt gga gat gct aat gaa gtt tta aat gag cgt gcc gta gtt 7296  
 Asn Met Leu Gly Asp Ala Asn Glu Val Leu Asn Glu Arg Ala Val Val  
 2420 2425 2430  
 gtt atg gca cgt atg agt cat aag ctt aca ggg cgt gat ttt tct tcg 7344  
 Val Met Ala Arg Met Ser His Lys Leu Thr Gly Arg Asp Phe Ser Ser  
 2435 2440 2445  
 tct gca att ccg agc aat ccc att gct gat cat aat aac ttg ctc gga 7392  
 Ser Ala Ile Pro Ser Asn Pro Ile Ala Asp His Asn Asn Leu Leu Gly  
 2450 2455 2460  
 gga gat tct cat gaa gtc gaa cat ggt ttg tct gtg aaa gtt cag gtt 7440  
 Gly Asp Ser His Glu Val Glu His Gly Leu Ser Val Lys Val Gln Val  
 2465 2470 2475 2480  
 caa aaa cta atc aat caa gcc act tcc cat gag aat ctc tgt caa aac 7488  
 Gln Lys Leu Ile Asn Gln Ala Thr Ser His Glu Asn Leu Cys Gln Asn  
 2485 2490 2495  
 tat gtt ggg tat gtt cct cta cac ttc tac act cct aaa ccc cga ttg 7536  
 Tyr Val Gly Tyr Val Pro Leu His Phe Tyr Thr Pro Lys Pro Arg Leu  
 2500 2505 2510  
 ctt tag 7542  
 Leu

&lt;210&gt; 2573

&lt;211&gt; 2513

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2573

Met Ser Thr Ser Ser Gln Ser Phe Val Ala Gly Arg Pro Ala Ser Met  
 1 5 10 15  
 Ala Ser Pro Ser Gln Ser His Arg Phe Cys Gly Pro Ser Ala Thr Ala  
 20 25 30  
 Ser Gly Gly Gly Ser Phe Asp Thr Leu Asn Arg Val Ile Ala Asp Leu  
 35 40 45  
 Cys Ser Arg Gly Asn Pro Lys Glu Gly Ala Pro Leu Ala Phe Arg Lys  
 50 55 60  
 His Val Glu Glu Ala Val Arg Asp Leu Ser Gly Glu Ala Ser Ser Arg  
 65 70 75 80  
 Phe Met Glu Gln Leu Tyr Asp Arg Ile Ala Asn Leu Ile Glu Ser Thr  
 85 90 95  
 Asp Val Ala Glu Asn Met Gly Ala Leu Arg Ala Ile Asp Glu Leu Thr  
 100 105 110  
 Glu Ile Gly Phe Gly Glu Asn Ala Thr Lys Val Ser Arg Phe Ala Gly  
 115 120 125  
 Tyr Met Arg Thr Val Phe Glu Leu Lys Arg Asp Pro Glu Ile Leu Val  
 130 135 140  
 Leu Ala Ser Arg Val Leu Gly His Leu Ala Arg Ala Gly Gly Ala Met  
 145 150 155 160  
 Thr Ser Asp Glu Val Glu Phe Gln Met Lys Thr Ala Phe Asp Trp Leu  
 165 170 175  
 Arg Val Asp Arg Val Glu Tyr Arg Arg Phe Ala Ala Val Leu Ile Leu  
 180 185 190  
 Lys Glu Met Ala Glu Asn Ala Ser Thr Val Phe Asn Val His Val Pro  
 195 200 205  
 Glu Phe Val Asp Ala Ile Trp Val Ala Leu Arg Asp Pro Gln Leu Gln  
 210 215 220  
 Val Arg Glu Arg Ala Val Glu Ala Leu Arg Ala Cys Leu Arg Val Ile  
 225 230 235 240  
 Glu Lys Arg Glu Thr Arg Trp Arg Val Gln Trp Tyr Tyr Arg Met Phe  
 245 250 255



## PhoenixTemp32470.tmp.txt

Glu	Ala	Thr	Gln	Asp	Gly	Leu	Gly	Arg	Asn	Ala	Pro	Val	His	Ser	Ile
			260					265					270		
His	Gly	Ser	Leu	Leu	Ala	Val	Gly	Glu	Leu	Leu	Arg	Val	Tyr	Ser	Leu
		275					280					285			
Met	Leu	Glu	Phe	Val	Cys	Arg	Asn	Thr	Gly	Glu	Phe	Met	Met	Ser	Arg
	290					295					300				
Tyr	Arg	Glu	Val	Ala	Glu	Ile	Val	Leu	Arg	Tyr	Leu	Glu	His	Arg	Asp
	305				310					315					320
Arg	Leu	Val	Arg	Leu	Ser	Ile	Thr	Ser	Leu	Leu	Pro	Arg	Ile	Ala	His
			325						330					335	
Phe	Leu	Arg	Asp	Arg	Phe	Val	Thr	Asn	Tyr	Leu	Thr	Ile	Cys	Met	Asn
			340					345					350		
His	Ile	Leu	Thr	Val	Leu	Arg	Ile	Pro	Ala	Glu	Arg	Ala	Ser	Gly	Phe
		355					360					365			
Ile	Ala	Leu	Gly	Glu	Met	Ala	Gly	Ala	Leu	Asp	Gly	Glu	Leu	Ile	His
	370					375					380				
Tyr	Leu	Pro	Thr	Ile	Met	Ser	His	Leu	Arg	Asp	Ala	Ile	Ala	Pro	Arg
	385				390					395					400
Lys	Gly	Arg	Pro	Leu	Glu	Ala	Val	Ala	Cys	Val	Gly	Asn	Ile	Ala	
			405					410					415		
Lys	Ala	Met	Gly	Ser	Thr	Val	Glu	Thr	His	Val	Arg	Asp	Leu	Leu	Asp
			420					425					430		
Val	Met	Phe	Ser	Ser	Ser	Leu	Ser	Thr	Leu	Val	Asp	Ala	Leu	Asp	
		435					440				445				
Gln	Ile	Thr	Ile	Ser	Ile	Pro	Ser	Leu	Leu	Pro	Thr	Val	Gln	Asp	Arg
	450					455					460				
Leu	Leu	Asp	Cys	Ile	Ser	Leu	Val	Leu	Ser	Lys	Ser	His	Tyr	Ser	Gln
	465				470					475					480
Ala	Lys	Pro	Pro	Val	Thr	Ile	Val	Arg	Gly	Ser	Thr	Val	Gly	Met	Ala
			485						490					495	
Pro	Gln	Ser	Ser	Asp	Pro	Ser	Cys	Ser	Ala	Gln	Val	Gln	Leu	Ala	Leu
			500					505					510		
Gln	Thr	Leu	Ala	Arg	Phe	Asn	Phe	Lys	Gly	His	Asp	Leu	Leu	Glu	Phe
		515					520					525			
Ala	Arg	Glu	Ser	Val	Val	Val	Tyr	Leu	Asp	Asp	Glu	Asp	Ala	Ala	Thr
	530					535					540				
Arg	Lys	Asp	Ala	Ala	Leu	Cys	Cys	Cys	Arg	Leu	Ile	Ala	Asn	Ser	Leu
	545				550					555					560
Ser	Gly	Ile	Thr	Gln	Phe	Gly	Ser	Ser	Arg	Ser	Thr	Arg	Ala	Gly	Gly
			565						570					575	
Arg	Arg	Arg	Arg	Leu	Val	Glu	Glu	Ile	Val	Glu	Lys	Leu	Leu	Arg	Thr
			580					585					590		
Ala	Val	Ala	Asp	Ala	Asp	Val	Thr	Val	Arg	Lys	Ser	Ile	Phe	Val	Ala
		595					600					605			
Leu	Phe	Gly	Asn	Gln	Cys	Phe	Asp	Asp	Tyr	Leu	Ala	Gln	Ala	Asp	Ser
	610					615					620				
Leu	Thr	Ala	Ile	Phe	Ala	Ser	Leu	Asn	Asp	Glu	Asp	Leu	Asp	Val	Arg
	625				630					635					640
Glu	Tyr	Ala	Ile	Ser	Val	Ala	Gly	Arg	Leu	Ser	Glu	Lys	Asn	Pro	Ala
			645						650					655	
Tyr	Val	Leu	Pro	Ala	Leu	Arg	Arg	His	Leu	Ile	Gln	Leu	Leu	Thr	Tyr
			660					665					670		
Leu	Glu	Leu	Ser	Ser	Ala	Asp	Asn	Lys	Cys	Arg	Glu	Glu	Ser	Ala	Lys
		675					680					685			
Leu	Leu	Gly	Cys	Leu	Val	Arg	Asn	Cys	Glu	Arg	Leu	Ile	Leu	Pro	Tyr
	690					695					700				
Val	Ala	Pro	Val	Gln	Lys	Ala	Leu	Val	Ala	Arg	Leu	Ser	Glu	Gly	Thr
	705				710					715					720
Gly	Val	Asn	Ala	Asn	Asn	Asn	Ile	Val	Thr	Gly	Val	Leu	Val	Thr	Val
			725						730					735	
Gly	Asp	Leu	Ala	Arg	Val	Gly	Gly	Leu	Ala	Met	Arg	Gln	Tyr	Ile	Pro
			740					745					750		
Glu	Leu	Met	Pro	Leu	Ile	Val	Glu	Ala	Leu	Met	Asp	Gly	Ala	Ala	Val
		755					760					765			
Ala	Lys	Arg	Glu	Val	Ala	Val	Ser	Thr	Leu	Gly	Gln	Val	Val	Gln	Ser
	770					775					780				
Thr	Gly	Tyr	Val	Val	Thr	Pro	Tyr	Lys	Glu	Tyr	Pro	Leu	Leu	Leu	Gly
	785				790					795					800
Leu	Leu	Leu	Lys	Leu	Leu	Lys	Gly	Asp	Leu	Val	Trp	Ser	Thr	Arg	Arg

## PhoenixTemp32470.tmp.txt

805 810 815  
 Glu Val Leu Lys Val Leu Gly Ile Met Gly Ala Leu Asp Pro His Val  
 820 825 830  
 His Lys Arg Asn Gln Gln Ser Leu Ser Gly Ser His Gly Glu Val Pro  
 835 840 845  
 Arg Gly Thr Gly Asp Ser Gly Gln Pro Ile Pro Ser Ile Asp Glu Leu  
 850 855 860  
 Pro Val Glu Leu Arg Pro Phe Ala Thr Ser Glu Asp Tyr Tyr Ser  
 865 870 875 880  
 Thr Val Ala Ile Asn Ser Leu Met Arg Ile Leu Arg Asp Ala Ser Leu  
 885 890 895  
 Leu Ser Tyr His Lys Arg Val Val Arg Ser Leu Met Ile Ile Phe Lys  
 900 905 910  
 Val Leu Pro Glu Leu Phe His Thr Val Arg Thr Ser Asp Glu Asn Leu  
 915 920 925  
 Lys Asp Phe Ile Thr Trp Gly Leu Gly Thr Leu Val Ser Ile Val Arg  
 930 935 940  
 Gln His Ile Arg Lys Tyr Leu Pro Glu Leu Leu Ser Leu Val Ser Glu  
 945 950 955 960  
 Leu Trp Ser Ser Phe Thr Leu Pro Gly Pro Ile Arg Pro Ser Arg Gly  
 965 970 975  
 Leu Pro Ile Ser Tyr Gly Glu Tyr Phe Ala Ser Leu Thr Asp Asn Gln  
 980 985 990  
 Val Leu His Leu Leu Glu His Leu Cys Leu Ala Leu Asn Asp Glu Phe  
 995 1000 1005  
 Arg Thr Tyr Leu Pro Val Ile Leu Pro Cys Phe Ile Gln Val Leu Gly  
 1010 1015 1020  
 Asp Ala Glu Arg Phe Asn Asp Tyr Thr Tyr Val Pro Asp Ile Leu His  
 1025 1030 1035 1040  
 Thr Leu Glu Val Phe Gly Gly Thr Leu Asp Glu His Met His Leu Leu  
 1045 1050 1055  
 Leu Pro Ala Leu Ile Arg Leu Phe Lys Val Asp Ala Pro Val Ala Ile  
 1060 1065 1070  
 Arg Arg Asp Ala Ile Lys Thr Leu Thr Arg Val Ile Pro Cys Val Gln  
 1075 1080 1085  
 Val Thr Gly His Ile Ser Ala Leu Val His His Leu Lys Leu Val Leu  
 1090 1095 1100  
 Asp Gly Lys Asn Asp Glu Leu Arg Lys Asp Ala Val Asp Ala Leu Cys  
 1105 1110 1115 1120  
 Cys Leu Ala His Ala Leu Gly Glu Asp Phe Thr Ile Phe Ile Glu Ser  
 1125 1130 1135  
 Ile His Lys Leu Leu Leu Lys His Arg Leu Arg His Lys Glu Phe Glu  
 1140 1145 1150  
 Glu Ile His Ala Arg Trp Arg Arg Arg Glu Pro Leu Ile Val Ala Thr  
 1155 1160 1165  
 Thr Ala Thr Gln Gln Leu Ser Arg Arg Leu Pro Val Glu Val Ile Arg  
 1170 1175 1180  
 Asp Pro Val Ile Glu Asn Glu Ile Asp Pro Phe Glu Glu Gly Thr Asp  
 1185 1190 1195 1200  
 Arg Asn His Gln Val Asn Asp Gly Arg Leu Arg Thr Ala Gly Glu Ala  
 1205 1210 1215  
 Ser Gln Arg Ser Thr Lys Glu Asp Trp Glu Glu Trp Met Arg His Phe  
 1220 1225 1230  
 Ser Ile Glu Leu Leu Lys Glu Ser Pro Ser Pro Ala Leu Arg Thr Cys  
 1235 1240 1245  
 Ala Lys Leu Ala Gln Leu Gln Pro Phe Val Gly Arg Glu Leu Phe Ala  
 1250 1255 1260  
 Ala Gly Phe Val Ser Cys Trp Ala Gln Leu Asn Glu Ser Ser Gln Lys  
 1265 1270 1275 1280  
 Gln Leu Val Arg Ser Leu Glu Met Ala Phe Ser Ser Pro Asn Ile Pro  
 1285 1290 1295  
 Pro Glu Ile Leu Ala Thr Leu Leu Asn Leu Ala Glu Phe Met Glu His  
 1300 1305 1310  
 Asp Glu Lys Pro Leu Pro Ile Asp Ile Arg Leu Leu Gly Ala Leu Ala  
 1315 1320 1325  
 Glu Lys Cys Arg Val Phe Ala Lys Ala Leu His Tyr Lys Glu Met Glu  
 1330 1335 1340  
 Phe Glu Gly Pro Arg Ser Lys Arg Met Asp Ala Asn Pro Val Ala Val  
 1345 1350 1355 1360

## PhoenixTemp32470.tmp.txt

Val Glu Ala Leu Ile His Ile Asn Asn Gln Leu His Gln His Glu Ala  
 1365 1370 1375  
 Ala Val Gly Ile Leu Thr Tyr Ala Gln Gln His Leu Asp Val Gln Leu  
 1380 1385 1390  
 Lys Glu Ser Trp Tyr Glu Lys Leu Gln Arg Trp Asp Asp Ala Leu Lys  
 1395 1400 1405  
 Ala Tyr Thr Leu Lys Ala Ser Gln Thr Thr Asn Pro His Leu Val Leu  
 1410 1415 1420  
 Glu Ala Thr Leu Gly Gln Met Arg Cys Leu Ala Ala Leu Ala Arg Trp  
 1425 1430 1435 1440  
 Glu Glu Leu Asn Asn Leu Cys Lys Glu Tyr Trp Ser Pro Ala Glu Pro  
 1445 1450 1455  
 Ser Ala Arg Leu Glu Met Ala Pro Met Ala Ala Gln Ala Ala Trp Asn  
 1460 1465 1470  
 Met Gly Glu Trp Asp Gln Met Ala Glu Tyr Val Ser Arg Leu Asp Asp  
 1475 1480 1485  
 Gly Asp Glu Thr Lys Leu Arg Gly Leu Ala Ser Pro Val Ser Ser Gly  
 1490 1495 1500  
 Asp Gly Ser Ser Asn Gly Thr Phe Phe Arg Ala Val Leu Leu Val Arg  
 1505 1510 1515 1520  
 Arg Ala Lys Tyr Asp Glu Ala Arg Glu Tyr Val Glu Arg Ala Arg Lys  
 1525 1530 1535  
 Cys Leu Ala Thr Glu Leu Ala Ala Leu Val Leu Glu Ser Tyr Glu Arg  
 1540 1545 1550  
 Ala Tyr Ser Asn Met Val Arg Val Gln Gln Leu Ser Glu Leu Glu Glu  
 1555 1560 1565  
 Val Ile Glu Tyr Tyr Thr Leu Pro Val Gly Asn Thr Ile Ala Glu Glu  
 1570 1575 1580  
 Arg Arg Ala Leu Ile Arg Asn Met Trp Thr Gln Arg Ile Gln Gly Ser  
 1585 1590 1595 1600  
 Lys Arg Asn Val Glu Val Trp Gln Ala Leu Leu Ala Val Arg Ala Leu  
 1605 1610 1615  
 Val Leu Pro Pro Thr Glu Asp Val Glu Thr Trp Leu Lys Phe Ala Ser  
 1620 1625 1630  
 Leu Cys Arg Lys Ser Gly Arg Ile Ser Gln Ala Lys Ser Thr Leu Leu  
 1635 1640 1645  
 Lys Leu Leu Pro Phe Asp Pro Glu Val Ser Pro Glu Asn Met Gln Tyr  
 1650 1655 1660  
 His Gly Pro Pro Gln Val Met Leu Gly Tyr Leu Lys Tyr Gln Trp Ser  
 1665 1670 1675 1680  
 Leu Gly Glu Glu Arg Lys Arg Lys Glu Ala Phe Thr Lys Leu Gln Ile  
 1685 1690 1695  
 Leu Thr Arg Glu Leu Ser Ser Val Pro His Ser Gln Ser Asp Ile Leu  
 1700 1705 1710  
 Ala Ser Met Val Ser Ser Lys Gly Ala Asn Val Pro Leu Leu Ala Arg  
 1715 1720 1725  
 Val Asn Leu Lys Leu Gly Thr Trp Gln Trp Ala Leu Ser Ser Gly Leu  
 1730 1735 1740  
 Asn Asp Gly Ser Ile Gln Glu Ile Arg Asp Ala Phe Asp Lys Ser Thr  
 1745 1750 1755 1760  
 Cys Tyr Ala Pro Lys Trp Ala Lys Ala Trp His Thr Trp Ala Leu Phe  
 1765 1770 1775  
 Asn Thr Ala Val Met Ser His Tyr Ile Ser Arg Gly Gln Ile Ala Ser  
 1780 1785 1790  
 Gln Tyr Val Val Ser Ala Val Thr Gly Tyr Phe Tyr Ser Ile Ala Cys  
 1795 1800 1805  
 Ala Ala Asn Ala Lys Gly Val Asp Asp Ser Leu Gln Asp Ile Leu Arg  
 1810 1815 1820  
 Leu Leu Thr Leu Trp Phe Asn His Gly Ala Thr Ala Asp Val Gln Thr  
 1825 1830 1835 1840  
 Ala Leu Lys Thr Gly Phe Ser His Val Asn Ile Asn Thr Trp Leu Val  
 1845 1850 1855  
 Val Leu Pro Gln Ile Ile Ala Arg Ile His Ser Asn Asn Arg Ala Val  
 1860 1865 1870  
 Arg Glu Leu Ile Gln Ser Leu Leu Ile Arg Ile Gly Glu Asn His Pro  
 1875 1880 1885  
 Gln Ala Leu Met Tyr Pro Leu Leu Val Ala Cys Lys Ser Ile Ser Asn  
 1890 1895 1900  
 Leu Arg Arg Ala Ala Ala Gln Glu Val Val Asp Lys Val Arg Gln His

## PhoenixTemp32470.tmp.txt

1905 1910 1915 1920  
 Ser Gly Ala Leu Val Asp Gln Ala Gln Leu Val Ser His Glu Leu Ile  
 1925 1930 1935  
 Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Ala Leu Glu Glu  
 1940 1945 1950  
 Ala Ser Arg Leu Tyr Phe Gly Glu His Asn Ile Glu Gly Met Leu Lys  
 1955 1960 1965  
 Val Leu Glu Pro Leu His Asp Met Leu Asp Glu Gly Val Lys Lys Asp  
 1970 1975 1980  
 Ser Thr Thr Ile Gln Glu Arg Ala Phe Ile Glu Val Gly Asn Phe Asn  
 1985 1990 1995 2000  
 Pro Gly Phe Leu Ala Tyr Arg His Glu Leu Lys Glu Ala His Glu Cys  
 2005 2010 2015  
 Cys Cys Asn Tyr Lys Ile Thr Gly Lys Asp Ala Glu Leu Thr Gln Ala  
 2020 2025 2030  
 Trp Asp Leu Tyr Tyr His Val Phe Lys Arg Ile Asp Lys Gln Leu Ala  
 2035 2040 2045  
 Ser Leu Thr Thr Leu Asp Leu Glu Ser Val Ser Pro Glu Leu Leu Leu  
 2050 2055 2060  
 Cys Arg Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr Arg Ala Asp Ala  
 2065 2070 2075 2080  
 Pro Val Val Thr Ile Ser Ser Phe Ser Arg Gln Leu Val Val Ile Thr  
 2085 2090 2095  
 Ser Lys Gln Arg Pro Arg Lys Leu Thr Ile His Gly Asn Asp Gly Glu  
 2100 2105 2110  
 Asp Tyr Ala Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu  
 2115 2120 2125  
 Arg Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Glu Asn Ser  
 2130 2135 2140  
 Arg Lys Thr Ala Glu Lys Asp Leu Ser Ile Gln Arg Tyr Ser Val Ile  
 2145 2150 2155 2160  
 Pro Leu Ser Pro Asn Ser Gly Leu Ile Gly Trp Val Pro Asn Cys Asp  
 2165 2170 2175 2180  
 Thr Leu His His Leu Ile Arg Glu His Arg Asp Ala Arg Lys Ile Ile  
 2185 2190 2195  
 Leu Asn Gln Glu Asn Lys His Met Leu Ser Phe Ala Pro Asp Tyr Asp  
 2200 2205 2210  
 Asn Leu Pro Leu Ile Ala Lys Val Glu Val Phe Glu Tyr Ala Leu Glu  
 2215 2220 2225  
 Asn Thr Glu Gly Asn Asp Leu Ser Arg Val Leu Trp Leu Lys Ser Arg  
 2230 2235 2240  
 Ser Ser Glu Val Trp Leu Glu Arg Arg Thr Asn Tyr Thr Arg Ser Leu  
 2245 2250 2255  
 Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His  
 2260 2265 2270  
 Pro Ser Asn Leu Met Leu His Arg Tyr Ser Gly Lys Ile Leu His Ile  
 2275 2280 2285  
 Asp Phe Gly Asp Cys Phe Glu Ala Ser Met Asn Arg Glu Lys Phe Pro  
 2290 2295 2300  
 Glu Lys Val Pro Phe Arg Leu Thr Arg Met Leu Val Lys Ala Met Glu  
 2305 2310 2315 2320  
 Val Ser Gly Ile Glu Gly Asn Phe Arg Ser Thr Cys Glu Asn Val Met  
 2325 2330 2335  
 Gln Val Leu Arg Thr Asn Lys Asp Ser Val Met Ala Met Met Glu Ala  
 2340 2345 2350  
 Phe Val His Asp Pro Leu Ile Asn Trp Arg Leu Phe Asn Phe Asn Glu  
 2355 2360 2365  
 Val Pro Gln Leu Ala Leu Leu Gly Asn Asn Asn Pro Asn Ala Pro Ala  
 2370 2375 2380  
 Asp Val Glu Pro Asp Glu Glu Asp Glu Asp Pro Ala Asp Ile Asp Leu  
 2385 2390 2395 2400  
 Pro Gln Pro Gln Arg Ser Thr Arg Glu Lys Glu Ile Leu Gln Ala Val  
 2405 2410 2415  
 Asn Met Leu Gly Asp Ala Asn Glu Val Leu Asn Glu Arg Ala Val Val  
 2420 2425 2430  
 Val Met Ala Arg Met Ser His Lys Leu Thr Gly Arg Asp Phe Ser Ser  
 2435 2440 2445  
 Ser Ala Ile Pro Ser Asn Pro Ile Ala Asp His Asn Asn Leu Leu Gly  
 2450 2455 2460

## PhoenixTemp32470.tmp.txt

Gly Asp Ser His Glu Val Glu His Gly Leu Ser Val Lys Val Gln Val  
 2465 2470 2475 2480  
 Gln Lys Leu Ile Asn Gln Ala Thr Ser His Glu Asn Leu Cys Gln Asn  
 2485 2490 2495  
 Tyr Val Gly Tyr Val Pro Leu His Phe Tyr Thr Pro Lys Pro Arg Leu  
 2500 2505 2510  
 Leu

&lt;210&gt; 2574

&lt;211&gt; 7008

&lt;212&gt; DNA

&lt;213&gt; Schizosaccharomyces pombe

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7008)

&lt;400&gt; 2574

atg gag tat ttt agt gat cta aaa aac aaa aat gaa agc att caa cta	48
Met Glu Tyr Phe Ser Asp Leu Lys Asn Lys Asn Glu Ser Ile Gln Leu	
1 5 10 15	
gca gcc gct gat caa tta aaa gaa ttt gta cat agt tct act aag gaa	96
Ala Ala Ala Asp Gln Leu Lys Glu Phe Val His Ser Ser Thr Lys Glu	
20 25 30	
tta tca ggt gaa tcc ctt gcg cgt ttc aat aac gat atc aat cgt cga	144
Leu Ser Gly Glu Ser Leu Ala Arg Phe Asn Asn Asp Ile Asn Arg Arg	
35 40 45	
att ttt gag ctt att cat agc cat gat tcc cac gaa aga ttt gga gga	192
Ile Phe Glu Leu Ile His Ser His Asp Ser His Glu Arg Phe Gly Gly	
50 55 60	
atc ctt gcg ata ggc aag cta att gaa ttc gaa agt gag gga gat gtt	240
Ile Leu Ala Ile Gly Lys Leu Ile Glu Phe Glu Ser Glu Gly Asp Val	
65 70 75 80	
act aat ctt tcg cgg tat gca aat tac tta cga atg acc ctt cct agt	288
Thr Asn Leu Ser Arg Tyr Ala Asn Tyr Leu Arg Met Thr Leu Pro Ser	
85 90 95	
acg gat tgg cat tcg atg gaa cta tct gcg aag gtt ctt ggt cat ttg	336
Thr Asp Trp His Ser Met Glu Leu Ser Ala Lys Val Leu Gly His Leu	
100 105 110	
gct gcg tct ggt acc ctt gca gcc gaa ttc gtt gaa ttt gaa gtt	384
Ala Ala Ser Gly Gly Thr Leu Ala Ala Glu Phe Val Glu Phe Glu Val	
115 120 125	
cag cgt gct ttc gag tgg ctt caa gga gac cgt caa gag caa aaa cgg	432
Gln Arg Ala Phe Glu Trp Leu Gln Gly Asp Arg Gln Glu Gln Lys Arg	
130 135 140	
atg gcg gct att tta att att aag gct tta gca caa aat tct cct acc	480
Met Ala Ala Ile Leu Ile Ile Lys Ala Leu Ala Gln Asn Ser Pro Thr	
145 150 155 160	
tta gtt tac ttg tat att agt gaa att ttc caa aat ttg ttg act gga	528
Leu Val Tyr Leu Tyr Ile Ser Glu Ile Phe Gln Asn Leu Trp Thr Gly	
165 170 175	
ttg cgt gat cca aag cct ctt att cgg gaa act gct gct gat gct ttg	576
Leu Arg Asp Pro Lys Pro Leu Ile Arg Glu Thr Ala Ala Asp Ala Leu	
180 185 190	
ggt gct tct tta gac gtg gtt tgt caa aga gaa gct aaa gtt caa ttg	624
Gly Ala Ser Leu Asp Val Val Cys Gln Arg Glu Ala Lys Val Gln Leu	
195 200 205	
cag tgt ttt aat gaa gtt ctg ctt caa gct gaa cat ggt tta cga cag	672
Gln Cys Phe Asn Glu Val Leu Leu Gln Ala Glu His Gly Leu Arg Gln	
210 215 220	
tcg agt gtg gaa tat ctg cat gga agt ctt ctc gca tac aaa gag ctt	720
Ser Ser Val Glu Tyr Leu His Gly Ser Leu Leu Ala Tyr Lys Glu Leu	
225 230 235 240	
ttc gaa aaa tct ggc tct ttt att cgt gaa cat tac aca gaa ttt tgt	768
Phe Glu Lys Ser Gly Ser Phe Ile Arg Glu His Tyr Thr Glu Phe Cys	
245 250 255	
gat ttg gcg ctt cgt tta cga gag cat aga gat aac tct atc aga cgc	816
Asp Leu Ala Leu Arg Leu Arg Glu His Arg Asp Asn Ser Ile Arg Arg	

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## PhoenixTemp32470.tmp.txt

625	aag	cca	tat	atc	caa	630	tcg	atc	att	cat	gta	635	tta	ccg	aaa	gca	640	gca	1968
Lys	Pro	Tyr	Ile	Gln	645	Ser	Ile	Ile	His	Val	Ile	Leu	Pro	Lys	Ala	Ala			
	gat	acg	agt	cct	gga	650	ggt	tca	tct	gcc	att	ata	tca	gct	tta	ggt	gaa	2016	
Asp	Thr	Ser	Pro	Gly	Val	Ser	Val	Ser	Ser	Ala	Ile	Ile	Ser	Ala	Leu	Gly	Glu		
	ctc	gca	agt	ggt	gaa	660	gga	gaa	gat	atg	cct	gtg	gat	ggt	cgt	ggt	tcc	2064	
Leu	Ala	Ser	Val	Glu	Gly	Glu	Gly	Glu	Asp	Met	Pro	Val	Asp	Val	Arg	Gly	Ser		
	ttc	atg	aag	tta	ata	670	ctt	gtg	aat	tta	cag	gat	caa	agc	tct	aca	ttg	2112	
Phe	Met	Lys	Leu	Ile	Leu	Val	Leu	Val	Asn	Leu	Gln	Asp	Gln	Ser	Ser	Thr	Leu		
	aag	cga	ctt	gct	tct	680	ctt	aaa	tgt	tta	cga	aaa	ctt	tgt	ggt	cgt	tca	2160	
Lys	Arg	Leu	Ala	Ser	Leu	Lys	Lys	Cys	Leu	Arg	Lys	Leu	Cys	Gly	Arg	Ser			
	ggt	tat	gta	att	cag	690	cca	tat	tta	gat	tac	cct	cct	ttg	ttg	ggc	gcg	2208	
Gly	Tyr	Val	Ile	Gln	Pro	Tyr	Leu	Asp	Tyr	Pro	Pro	Pro	Leu	Leu	Gly	Ala			
	cta	att	ggt	att	ttg	700	caa	tca	gaa	caa	cca	aca	ccg	ata	aga	aga	gaa	2256	
Leu	Ile	Gly	Ile	Leu	Gln	Ser	Glu	Gln	Pro	Thr	Pro	Pro	Ile	Arg	Arg	Glu			
	gta	ctg	aga	aca	tta	710	ggt	gtg	tta	ggt	gct	tta	gat	cca	tat	acg	tat	2304	
Val	Leu	Arg	Thr	Leu	Gly	Val	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Thr	Tyr				
	tta	act	act	gag	gaa	720	ggt	tca	gat	gat	tta	caa	agt	agt	cat	aat	aat	2352	
Leu	Thr	Thr	Glu	Glu	Val	Ser	Asp	Asp	Leu	Gln	Ser	Ser	His	Asn	Asn				
	gcc	cat	ggt	gta	cct	730	caa	att	agt	gcc	gcg	cag	tac	ccg	tca	ttg	gaa	2400	
Ala	His	Gly	Val	Pro	Gln	Ile	Ser	Ala	Ala	Ala	Tyr	Tyr	Pro	Ser	Leu	Glu			
	aac	tac	gct	atg	ggt	740	gct	ggt	gtc	act	ttg	ata	ggt	att	tta	aaa	gac	2448	
Asn	Tyr	Ala	Met	Val	Ala	Val	Val	Thr	Thr	Leu	Ile	Gly	Ile	Leu	Lys	Asp			
	agt	tcg	ctc	tct	atg	750	cat	cac	tct	tct	ggt	caa	gca	gtg	atg	cat	2496		
Ser	Ser	Leu	Ser	Met	His	His	Ser	Ser	Ser	Val	Val	Gln	Ala	Val	Met	His			
	att	tgc	tct	caa	atg	760	gga	tct	aaa	tct	act	gta	ttt	tta	cct	caa	gtg	2544	
Ile	Cys	Ser	Gln	Met	Gly	Ser	Lys	Ser	Thr	Val	Phe	Leu	Pro	Gln	Val				
	gta	cca	acg	ttt	cta	770	caa	gta	atg	caa	tcc	tta	tcg	gct	tcc	tcg	gct	2592	
Val	Pro	Thr	Phe	Leu	Gln	Val	Met	Gln	Ser	Leu	Ser	Leu	Ser	Ala	Ser	Ser	Ala		
	gag	ttt	tat	ttt	cag	780	cag	tta	acg	act	tta	act	tct	att	att	gga	cca	2640	
Glu	Phe	Tyr	Phe	Gln	Gln	Leu	Thr	Thr	Thr	Leu	Thr	Ser	Ile	Ile	Gly	Pro			
	aac	att	agg	gat	tat	790	gta	tct	gat	att	ttt	aat	ctt	tca	aaa	gtc	ttt	2688	
Asn	Ile	Arg	Asp	Tyr	Val	Ser	Val	Ser	Asp	Ile	Phe	Asn	Leu	Ser	Lys	Val	Phe		
	tggt	gaa	tct	acc	aca	800	tct	cta	ttg	cta	ggt	att	ctt	gaa	ctc	atc	gat	2736	
Trp	Glu	Ser	Thr	Thr	Ser	Leu	Leu	Leu	Leu	Val	Ile	Leu	Glu	Leu	Ile	Asp			
	gcc	ata	gca	att	gca	810	ctg	cag	gat	gaa	ttt	aaa	ttt	tac	ttg	cct	caa	2784	
Ala	Ile	Ala	Ile	Ala	Leu	Gln	Asp	Glu	Phe	Lys	Phe	Tyr	Leu	Pro	Gln				
	ata	tta	tct	tgt	atg	820	ttg	aaa	gca	ttt	tcc	ctt	gat	aat	acg	tct	tcc	2832	
Ile	Leu	Ser	Cys	Met	Leu	Lys	Ala	Phe	Ser	Leu	Asp	Asn	Thr	Ser	Ser				
	cgt	tcc	ggt	tca	tac	830	aaa	ggt	tta	caa	tca	ttt	ggt	ata	ttt	ggt	tct	2880	
Arg	Ser	Val	Ser	Tyr	Lys	Val	Leu	Gln	Ser	Phe	Val	Ile	Phe	Gly	Ser				
	aat	att	gaa	gaa	tac	840	atg	cat	ctt	ggt	cta	cca	ggt	ata	att	aga	agt	2928	
Asn	Ile	Glu	Glu	Tyr	Met	His	Leu	Val	Leu	Val	Pro	Val	Ile	Ile	Arg	Ser			
	ttt	gag	cgt	gat	act	850	ata	ccc	ctt	gga	ttc	agg	aag	agt	gcc	ctc	aaa	2976	
Phe	Glu	Arg	Asp	Thr	Ile	Pro	Leu	Gly	Phe	Arg	Lys	Ser	Ala	Leu	Lys				
	tggt	att	gcc	caa	tta	860	ttt	caa	tct	ggt	aat	ttc	tcg	gat	cat	gcc	tct	3024	
Cys	Ile	Ala	Gln	Leu	Phe	Gln	Ser	Val	Asn	Phe	Ser	Asp	His	Ala	Ser				

## PhoenixTemp32470.tmp.txt

995 1000 1005  
 cga atc att cat cca ttg gtt cgc atg cta ggg aaa tct aat ggc gat 3072  
 Arg Ile Ile His Pro Leu Val Arg Met Leu Gly Lys Ser Asn Gly Asp  
 1010 1015 1020  
 ttg aga gca gtt att atg gat act ctt tgt gct ata gta tcg caa ctt 3120  
 Leu Arg Ala Val Ile Met Asp Thr Leu Cys Ala Ile Val Ser Gln Leu  
 1025 1030 1035 1040  
 ggg tat gat tat tcg att ttt ata ccg atg gtg aat aaa gtt ttg gtt 3168  
 Gly Tyr Asp Tyr Ser Ile Phe Ile Pro Met Val Asn Lys Val Leu Val  
 1045 1050 1055  
 agt cac aag ata agt cat ccg gct tac gaa ctt ttg gtt tca cga ctt 3216  
 Ser His Lys Ile Ser His Pro Ala Tyr Glu Leu Leu Val Ser Arg Leu  
 1060 1065 1070  
 ttg aaa ggt gag cct cta ccc aaa gat gtc gta gta aag gag ttt aag 3264  
 Leu Lys Gly Glu Pro Leu Pro Lys Asp Val Val Val Lys Glu Phe Lys  
 1075 1080 1085  
 ccg agg ccc tca aca aag cct ttt tct aca caa gat gaa gtc ttg aca 3312  
 Pro Arg Pro Ser Thr Lys Phe Ser Thr Gln Asp Glu Val Leu Thr  
 1090 1095 1100  
 aag ctt cct gtt gat caa gca tcc ttg aaa gca gca tgg gaa tca tca 3360  
 Lys Leu Pro Val Asp Gln Ala Ser Leu Lys Ala Ala Trp Glu Ser Ser  
 1105 1110 1115 1120  
 caa aaa ttg aca agg gat gat tgg cag gac tgg ata aga aga ata agt 3408  
 Gln Lys Leu Thr Arg Asp Asp Trp Gln Asp Trp Ile Arg Arg Ile Ser  
 1125 1130 1135  
 att gaa ctt ctg aag gaa tcc cct tct tcg gca ctt agg tct tgt tcg 3456  
 Ile Glu Leu Leu Lys Glu Ser Pro Ser Ser Ala Leu Arg Ser Cys Ser  
 1140 1145 1150  
 acc tta gct ggt ata tac cat cca ttg gct cgc gat tta ttt aat gtc 3504  
 Thr Leu Ala Gly Ile Tyr His Pro Leu Ala Arg Asp Leu Phe Asn Val  
 1155 1160 1165  
 agt ttt ttg tct tgt tgg gat gag tta act gaa agc aat aag aaa aat 3552  
 Ser Phe Leu Ser Cys Trp Asp Glu Leu Thr Glu Ser Asn Lys Lys Asn  
 1170 1175 1180  
 ctc gtt aaa tca ata gag ctc gct atg aat gcc cct aac att tca gta 3600  
 Leu Val Lys Ser Ile Glu Leu Ala Met Asn Ala Pro Asn Ile Ser Val  
 1185 1190 1195 1200  
 gaa ata tta cag act ctg tta aat ctt gct gag tat atg gag cgt gaa 3648  
 Glu Ile Leu Gln Thr Leu Leu Asn Leu Ala Glu Tyr Met Glu Arg Glu  
 1205 1210 1215  
 gat cat aca tta cca att cct atc aaa gta att agt gct cat gca tct 3696  
 Asp His Thr Leu Pro Ile Pro Ile Lys Val Ile Ser Ala His Ala Ser  
 1220 1225 1230  
 aag tgt aat gtt tat gcc aag gct ctg cat tat aca gaa tta caa ttc 3744  
 Lys Cys Asn Val Tyr Ala Lys Ala Leu His Tyr Thr Glu Leu Gln Phe  
 1235 1240 1245  
 gtt caa gag acg aaa gag gaa gtt agc att agc act atc gag tct ctc 3792  
 Val Gln Glu Thr Lys Glu Glu Val Ser Ile Ser Thr Ile Glu Ser Leu  
 1250 1255 1260  
 att acc ata aac aat cat ctg caa caa tcc gat gcc gct gta ggt atg 3840  
 Ile Thr Ile Asn Asn His Leu Gln Gln Ser Asp Ala Ala Val Gly Met  
 1265 1270 1275 1280  
 ctt caa tat acc aaa gaa cac aag cag ttt agt ttg aaa gaa act tgg 3888  
 Leu Gln Tyr Thr Lys Glu His Lys Gln Phe Ser Leu Lys Glu Thr Trp  
 1285 1290 1295  
 tat gaa aaa tta cat aga tgg gat gat gca tta gct gca tat gag cat 3936  
 Tyr Glu Lys Leu His Arg Trp Asp Asp Ala Leu Ala Ala Tyr Glu His  
 1300 1305 1310  
 cga gaa cgt gaa ggt gac tcg tct ttc gag ata aat atc gga aaa tta 3984  
 Arg Glu Arg Glu Gly Asp Ser Ser Phe Glu Ile Asn Ile Gly Lys Leu  
 1315 1320 1325  
 cgc tgt tat tat gct ttg ggt gac tgg gat cac ctt tcc gaa ttg gca 4032  
 Arg Cys Tyr Tyr Ala Leu Gly Asp Trp Asp His Leu Ser Glu Leu Ala  
 1330 1335 1340  
 caa aaa gct tgg gta acg tct gaa caa gaa cat cgt gaa gct att gct 4080  
 Gln Lys Ala Trp Val Thr Ser Glu Gln Glu His Arg Glu Ala Ile Ala  
 1345 1350 1355 1360  
 cca ctt gca gct gcc gct gct tgg ggt ttg ggt caa tgg aat tta att 4128  
 Pro Leu Ala Ala Ala Ala Trp Gly Leu Gly Gln Trp Asn Leu Ile



## PhoenixTemp32470.tmp.txt

1365	1370	1375	
agt gaa tat gtt agt gcc atg gac cgt gac cca caa gat aaa gag ttt			4176
Ser Glu Tyr Val Ser Ala Met Asp Arg Asp Pro Gln Asp Lys Glu Phe			
1380	1385	1390	
ttt tcc gct att agt gct gta cat ctt ggt caa tac aat aag gcg tat			4224
Phe Ser Ala Ile Ser Ala Val His Leu Gly Gln Tyr Asn Lys Ala Tyr			
1395	1400	1405	
ggc cat atc gag aga cat cgt gat ata tta gta aac gac ctt tct tcc			4272
Gly His Ile Glu Arg His Arg Asp Ile Leu Val Asn Asp Leu Ser Ser			
1410	1415	1420	
ata atc ggt gaa agc tat aat cgt gca tat ggt att atg gtc aaa tcc			4320
Ile Ile Gly Glu Ser Tyr Asn Arg Ala Tyr Gly Ile Met Val Lys Ser			
1425	1430	1435	
caa atg ctt tcg gaa ctt gaa gaa att att gac tat aaa aag aat atg			4368
Gln Met Leu Ser Glu Leu Glu Glu Ile Ile Asp Tyr Lys Lys Asn Met			
1445	1450	1455	
caa tat gaa aac aat ttg gac tct ctt aaa aaa acg tgg cgg aaa agg			4416
Gln Tyr Glu Asn Asn Leu Asp Ser Leu Lys Lys Thr Trp Arg Lys Arg			
1460	1465	1470	
ctt gaa gga tgt cag aaa aat gtg gat gtt tgg cat aat acg ctt cgg			4464
Leu Glu Gly Cys Gln Lys Asn Val Asp Val Trp His Asn Thr Leu Arg			
1475	1480	1485	
ttt agg gct ctg gta ttg tct cca caa gat tct cct gaa atg tgg ata			4512
Phe Arg Ala Leu Val Leu Ser Pro Gln Asp Ser Pro Glu Met Trp Ile			
1490	1495	1500	
aaa tta gct gat ctt tgc cgt cgt tct gac cgg ttg aag ctt tca aat			4560
Lys Leu Ala Asp Leu Cys Arg Arg Ser Asp Arg Leu Lys Leu Ser Asn			
1505	1510	1515	
cag tgt ctc aca tat ttg atg ggt cgc gat cct tca aat gct tac ccg			4608
Gln Cys Leu Thr Tyr Leu Met Gly Arg Asp Pro Ser Asn Ala Tyr Pro			
1525	1530	1535	
ctt gac tca ctt aag ctt ctc aat cct cat gtt gta tat acg tat tta			4656
Leu Asp Ser Leu Lys Leu Leu Asn Pro His Val Val Tyr Thr Tyr Leu			
1540	1545	1550	
aaa tat ttg tgg gct aca gat caa aaa aat att gcg gta tcg gag ctc			4704
Lys Tyr Leu Trp Ala Thr Asp Gln Lys Asn Ile Ala Val Ser Glu Leu			
1555	1560	1565	
gaa gag ttc acc tca tat cta tcg tca aaa cat ggg tat aaa atg ggt			4752
Glu Glu Phe Thr Ser Tyr Leu Ser Ser Lys His Gly Tyr Lys Met Gly			
1570	1575	1580	
gat tct tca aag ttg gtt gat att tta gcc tca tct gta agt tcg			4800
Asp Ser Ser Lys Leu Val Asp Ile Leu Ala Ser Ser Ser Val Ser Ser			
1585	1590	1595	
gaa gag cgt tcg ttt tta gca agg tgt ttt cat aaa ctt ggc aaa tgg			4848
Glu Glu Arg Ser Phe Leu Ala Arg Cys Phe His Lys Leu Gly Lys Trp			
1605	1610	1615	
aaa aag tct ctt caa gat agt gtt aat caa gaa agc gta agg gat att			4896
Lys Lys Ser Leu Gln Asp Ser Val Asn Gln Glu Ser Val Arg Asp Ile			
1620	1625	1630	
ttg aat tgt tat ttt tat gct act ttg ttc gat aaa tcg tgg tat aaa			4944
Leu Asn Cys Tyr Phe Tyr Ala Thr Leu Phe Asp Lys Ser Trp Tyr Lys			
1635	1640	1645	
gct tgg cac tct tgg gct ctc gca aat ttc gaa gtc gtt ggt tat tat			4992
Ala Trp His Ser Trp Ala Leu Ala Asn Phe Glu Val Val Gly Tyr Tyr			
1650	1655	1660	
gaa cag act gaa cat ggg gtt acc caa gat atg tat gaa caa tat att			5040
Glu Gln Thr Glu His Gly Val Thr Gln Asp Met Tyr Glu Gln Tyr Ile			
1665	1670	1675	
gta cct gct att aaa gga ttt ttt cac tct tct gtt tta aat caa aaa			5088
Val Pro Ala Ile Lys Gly Phe Phe His Ser Ser Val Leu Asn Gln Lys			
1685	1690	1695	
aac tca ctt cag gat ata ttg cgg tta ctt aat tta tgg ttt aaa ttc			5136
Asn Ser Leu Gln Asp Ile Leu Arg Leu Leu Asn Leu Trp Phe Lys Phe			
1700	1705	1710	
ggt gag cac agc gac gta gca gcc gca att gtt gaa gga ttt tcc aat			5184
Gly Glu His Ser Asp Val Ala Ala Ala Ile Val Glu Gly Phe Ser Asn			
1715	1720	1725	
gtt cca atg gat aca tgg tta gaa gtt ata cca caa cta att gca cga			5232
Val Pro Met Asp Thr Trp Leu Glu Val Ile Pro Gln Leu Ile Ala Arg			

## PhoenixTemp32470.tmp.txt

1730	ata cac act tca agt tct tca gtt aga gca tct gtt cat cag tta ctt	5280
1745	Ile His Thr Ser Ser Ser Val Arg Ala Ser Val His Gln Leu Leu	
1750	tcc gat att ggt agg gtg cat cct cag gca ttg gtg tat tca ctt act	5328
1765	Ser Asp Ile Gly Arg Val His Pro Gln Ala Leu Val Tyr Ser Leu Thr	
1780	gtg tcc tcc aaa tct aca aat ccg cag cag aag cat tca gca aaa tca	5376
1795	Val Ser Ser Lys Ser Thr Asn Pro Gln Gln Lys His Ser Ala Lys Ser	
1810	att atg gat agc atg ctt tcg cat agt gat acg ttg gtt cgt caa gct	5424
1825	Ile Met Asp Ser Met Leu Ser His Ser Asp Thr Leu Val Arg Gln Ala	
1840	cta ctt gtt agt caa gag cta att aga gtt gct ata ctt tgg cat gaa	5472
1855	Leu Leu Val Ser Gln Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu	
1870	tta tgg tat gaa gga tta gag gaa gct tct caa gct tat ttt tca gat	5520
1885	Leu Trp Tyr Glu Gly Leu Glu Glu Ala Ser Gln Ala Tyr Phe Ser Asp	
1900	cac gat ata tct tta atg att gat att gtg aaa ccc ctg cat gaa aca	5568
1915	His Asp Ile Ser Leu Met Ile Asp Ile Val Lys Pro Leu His Glu Thr	
1930	ttg gag aag ggt cct tcc acc ttg tct gag ata tca ttt gct cag aca	5616
1945	Leu Glu Lys Gly Pro Ser Thr Leu Ser Glu Ile Ser Phe Ala Gln Thr	
1960	ttt ggg tat gat tta cgt aaa gct aga agt tac tgg cag aaa ttt ttg	5664
1975	Phe Gly Tyr Asp Leu Arg Lys Ala Arg Ser Tyr Trp Gln Lys Phe Leu	
1990	caa gat ggt gac cct acg gaa tta aat cag tct tgg gat ttg tat tat	5712
2005	Gln Asp Gly Asp Pro Thr Glu Leu Asn Gln Ser Trp Asp Leu Tyr Tyr	
2020	caa gtc ttt aga cgt att caa aag caa tta cca cgg att aag cat ttg	5760
2035	Gln Val Phe Arg Arg Ile Gln Lys Gln Leu Pro Arg Ile Lys His Leu	
2050	gag cta caa tat gtt tcc cct aag tta ttg gat gct tgt gat ttg gaa	5808
2065	Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Asp Ala Cys Asp Leu Glu	
2080	cta gct gtg cct gga acc tat ggt cat aac aaa ccg gtc att cgg atc	5856
2095	Leu Ala Val Pro Gly Thr Tyr Gly His Asn Lys Pro Val Ile Arg Ile	
2110	tcg cat ttc cat cac act ttc gaa gtt att tct tct aag caa agg cca	5904
2125	Ser His Phe His His Thr Phe Glu Val Ile Ser Ser Lys Gln Arg Pro	
2140	aga aga ttg aca att cat ggt agt gat ggc aaa gat tat cag tat gtc	5952
2155	Arg Arg Leu Thr Ile His Gly Ser Asp Gly Lys Asp Tyr Gln Tyr Val	
2170	ctt aag ggt cat gaa gat ttg agg caa gat gaa cga gtt atg cag ctt	6000
2185	Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu	
2200	ttt ggt tta tgt aat acg tta ctg act acg gat tct gag aca ttc aaa	6048
2215	Phe Gly Leu Cys Asn Thr Leu Leu Thr Thr Asp Ser Glu Thr Phe Lys	
2230	cga cgt ctg aat ata gag cgt tat aca gtt att ccg cta tct ccc aat	6096
2245	Arg Arg Leu Asn Ile Glu Arg Tyr Thr Val Ile Pro Leu Ser Pro Asn	
2260	tct ggt ttg ctg ggg tgg gtt ccg cat agt gat aca tta cat ttc ctg	6144
2275	Ser Gly Leu Leu Gly Trp Val Pro His Ser Asp Thr Leu His Phe Leu	
2290	atc aaa gag ttt cgc tca aag cgt aac ata ttg tta aat tta gag cat	6192
2305	Ile Lys Glu Phe Arg Ser Lys Arg Asn Ile Leu Leu Asn Leu Glu His	
2320	cgc atg atg ctt caa atg gca ccc gac tgc gac agt tta aca tta ttg	6240
2335	Arg Met Met Leu Gln Met Ala Pro Asp Cys Asp Ser Leu Thr Leu Leu	
2350	caa aaa cta gaa gta ttc gaa tat gtt atg gct aat act gat ggt tat	6288
2365	Gln Lys Leu Glu Val Phe Glu Tyr Val Met Ala Asn Thr Asp Gly Tyr	
2380	gat ttg tat cat gtg ttg tgg ctt aaa agt cga agt tca gaa gca tgg	6336
2395	Asp Leu Tyr His Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Ala Trp	

## PhoenixTemp32470.tmp.txt

```

      2100      2105      2110
ctt gat agg aga acc agc tat act caa agc ttg gca gtc atg tca atg      6384
Leu Asp Arg Arg Thr Ser Tyr Thr Gln Ser Leu Ala Val Met Ser Met
      2115      2120      2125
gtt gga tat ata ctt gga ctt ggt gac cga cat cct tcc aat cta atg      6432
Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met
      2130      2135      2140
atg gat cgg tat tct ggt aag atc att cat att gac ttt ggt gat tgt      6480
Met Asp Arg Tyr Ser Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys
      2145      2150      2155      2160
ttt gag gtt gcc atg cat aga gaa aaa ttt cct gag aaa ata ccg ttt      6528
Phe Glu Val Ala Met His Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe
      2165      2170      2175
cga ctt act cga atg ctt att aat gct atg gag gtt agc ggt atc caa      6576
Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Ser Gly Ile Gln
      2180      2185      2190
ggt act tac aaa att act tgc gag ctt gtt atg cgt gtt tta aga tca      6624
Gly Thr Tyr Lys Ile Thr Cys Glu Leu Val Met Arg Val Leu Arg Ser
      2195      2200      2205
aat acg gag tct tta atg gca gtt ctt gaa gca ttt gtc tat gac cct      6672
Asn Thr Glu Ser Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro
      2210      2215      2220
ttg att aat tgg aga ctt atg act aaa agc tct ttc ggg gct tct acg      6720
Leu Ile Asn Trp Arg Leu Met Thr Lys Ser Ser Phe Gly Ala Ser Thr
      2225      2230      2235      2240
aca ctc cgg cct acc tca agt agt gta gaa gag aaa gga agg tcc tac      6768
Thr Leu Arg Pro Thr Ser Ser Ser Val Glu Glu Lys Gly Arg Ser Tyr
      2245      2250      2255
act cat cgt gcg cgt cac gct gat tat gca gct ctt agt gaa aca aat      6816
Thr His Arg Ala Arg His Ala Asp Tyr Ala Ala Leu Ser Glu Thr Asn
      2260      2265      2270
ggt gta aac gcc gaa gga ctc aac gag aga tct att caa gtc ttg aag      6864
Gly Val Asn Ala Glu Gly Leu Asn Glu Arg Ser Ile Gln Val Leu Lys
      2275      2280      2285
cgt gtc tca aat aag cta act ggt aaa gat ttc gat ttg aaa gag caa      6912
Arg Val Ser Asn Lys Leu Thr Gly Lys Asp Phe Asp Leu Lys Glu Gln
      2290      2295      2300
ttg cca gtc aaa gcg caa gtt gaa aag ctt atc caa caa gct aca gct      6960
Leu Pro Val Lys Ala Gln Val Glu Lys Leu Ile Gln Gln Ala Thr Ala
      2305      2310      2315      2320
ccc gaa aat ctt tgc cgt tgt tat gta gga tgg tgt agt ttt tgg      7005
Pro Glu Asn Leu Cys Arg Cys Tyr Val Gly Trp Cys Ser Phe Trp
      2325      2330      2335
taa
      7008

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&lt;210&gt; 2575

&lt;211&gt; 2335

&lt;212&gt; PRT

&lt;213&gt; Schizosaccharomyces pombe

&lt;400&gt; 2575

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Met Glu Tyr Phe Ser 5 Asp Leu Lys Asn Lys 10 Asn Glu Ser Ile Gln Leu 15
Ala Ala Ala Asp 20 Gln Leu Lys Glu Phe 25 Val His Ser Ser Thr 30 Lys Glu
Leu Ser Gly 35 Glu Ser Leu Ala Arg 40 Phe Asn Asn Asp Ile 45 Asn Arg Arg
Ile Phe 50 Glu Leu Ile His Ser 55 His Asp Ser His Glu 60 Arg Phe Gly Gly
Ile Leu Ala Ile Gly 70 Lys Leu Ile Glu Phe 75 Glu Ser Glu Gly Asp Val 80
Thr Asn Leu Ser Arg 85 Tyr Ala Asn Tyr Leu Arg Met Thr Leu Pro Ser 95
Thr Asp Trp His 100 Ser Met Glu Leu Ser 105 Ala Lys Val Leu Gly His Leu
Ala Ala Ser 115 Gly Gly Thr Leu Ala 120 Glu Phe Val Glu 125 Phe Glu Val

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## PhoenixTemp32470.tmp.txt

Gln	Arg	Ala	Phe	Glu	Trp	Leu	Gln	Gly	Asp	Arg	Gln	Glu	Gln	Lys	Arg
130	130					135	140				140				
Met	Ala	Ala	Ile	Leu	Ile	Ile	Lys	Ala	Leu	Ala	Gln	Asn	Ser	Pro	Thr
145					150					155					160
Leu	Val	Tyr	Leu	Tyr	Ile	Ser	Glu	Ile	Phe	Gln	Asn	Leu	Trp	Thr	Gly
				165					170					175	
Leu	Arg	Asp	Pro	Lys	Pro	Leu	Ile	Arg	Glu	Thr	Ala	Ala	Asp	Ala	Leu
			180					185					190		
Gly	Ala	Ser	Leu	Asp	Val	Val	Cys	Gln	Arg	Glu	Ala	Lys	Val	Gln	Leu
		195					200					205			
Gln	Cys	Phe	Asn	Glu	Val	Leu	Leu	Gln	Ala	Glu	His	Gly	Leu	Arg	Gln
	210					215					220				
Ser	Ser	Val	Glu	Tyr	Leu	His	Gly	Ser	Leu	Leu	Ala	Tyr	Lys	Glu	Leu
225					230					235					240
Phe	Glu	Lys	Ser	Gly	Ser	Phe	Ile	Arg	Glu	His	Tyr	Thr	Glu	Phe	Cys
				245					250					255	
Asp	Leu	Ala	Leu	Arg	Leu	Arg	Glu	His	Arg	Asp	Asn	Ser	Ile	Arg	Arg
			260					265					270		
Cys	Ile	Val	Phe	Leu	Leu	Pro	Thr	Leu	Ser	Glu	Tyr	Asn	Pro	Lys	Lys
		275					280					285			
Phe	Gln	Gln	Arg	Tyr	Leu	Asp	Ser	Phe	Met	Val	Tyr	Leu	Leu	Ser	His
	290					295					300				
Ile	Arg	Lys	Asp	Lys	Glu	Lys	Ser	Leu	Ala	Phe	Glu	Ala	Ile	Gly	Arg
305					310					315					320
Ile	Ala	Met	Ala	Val	Asn	Glu	Ala	Met	Ile	Pro	Tyr	Leu	Gln	Asn	Ile
				325					330					335	
Leu	Lys	Val	Ile	Arg	Asp	Thr	Leu	Thr	Ala	Lys	Val	Arg	Glu	Lys	Thr
			340					345					350		
Gln	Tyr	Glu	Lys	Pro	Val	Phe	Glu	Cys	Ile	Gly	Met	Leu	Ala	Ala	Ala
		355					360					365			
Val	Lys	Leu	Glu	Leu	Leu	Glu	Asp	Ser	Arg	Ser	Leu	Leu	Gly	Leu	Ile
	370					375					380				
Phe	Ser	Cys	Glu	Leu	Ser	Val	His	Leu	Arg	Gln	Ala	Leu	Val	Lys	Met
385					390					395					400
Ala	Glu	Asn	Ile	Pro	Pro	Leu	Leu	Ala	Pro	Ile	Gln	Glu	Arg	Leu	Leu
				405					410					415	
Asn	Met	Val	Ser	Gln	Ile	Leu	Thr	Gly	Lys	Asn	Phe	Glu	Ile	Arg	Thr
			420					425					430		
Asn	Asp	Thr	Tyr	Thr	Pro	Ser	Phe	Thr	Asn	Ile	Tyr	Ser	Ala	Arg	Glu
		435					440					445			
Pro	Asp	Gln	Arg	Ser	Lys	Ser	Thr	Glu	Ser	Ile	Ile	Leu	Ala	Leu	Glu
	450					455					460				
Thr	Leu	Gly	Thr	Phe	Asn	Phe	Thr	Gly	Tyr	Ser	Leu	Ile	Ser	Phe	Ile
465					470					475					480
Gln	Glu	Ser	Val	Leu	Ser	Tyr	Leu	Glu	Asn	Asp	Asn	Ser	Glu	Ile	Arg
				485					490					495	
Ile	Ala	Ala	Ala	Arg	Thr	Cys	Cys	Gln	Val	Phe	Ala	Arg	Asp	Pro	Ile
			500					505					510		
Cys	Arg	Lys	Thr	Asn	Pro	Leu	Ala	Val	Glu	Ser	Val	Ala	Glu	Val	Leu
		515					520					525			
Glu	Lys	Leu	Leu	Thr	Leu	Gly	Ile	Ala	Asp	Ser	Asp	Pro	Lys	Ile	Arg
	530					535					540				
Glu	Thr	Val	Leu	Ser	Leu	Leu	Asp	Glu	Arg	Phe	Asp	Arg	His	Leu	Ala
545					550					555					560
His	Pro	Asp	Asn	Ile	Arg	Cys	Leu	Phe	Ile	Ala	Leu	Asn	Asp	Glu	Val
			565						570					575	
Phe	Ser	Ile	Arg	Glu	Ile	Ala	Ile	Ile	Ile	Ile	Gly	Arg	Leu	Ala	Leu
			580					585					590		
Tyr	Asn	Pro	Ala	His	Val	Met	Pro	Ser	Leu	Arg	Lys	Thr	Ile	Ile	Gln
		595					600					605			
Leu	Leu	Ser	Asp	Met	Glu	Tyr	Ser	Gly	Asn	Ser	Arg	Gln	Lys	Glu	Glu
	610					615					620				
Ser	Ala	Gln	Leu	Leu	Lys	Leu	Leu	Val	Ser	Lys	Ala	Arg	Thr	Leu	Ile
625					630					635					640
Lys	Pro	Tyr	Ile	Gln	Ser	Ile	Ile	His	Val	Ile	Leu	Pro	Lys	Ala	Ala
			645						650					655	
Asp	Thr	Ser	Pro	Gly	Val	Ser	Ser	Ala	Ile	Ile	Ser	Ala	Leu	Gly	Glu
			660					665					670		
Leu	Ala	Ser	Val	Glu	Gly	Glu	Asp	Met	Pro	Val	Asp	Val	Arg	Gly	Ser

		675					680					685			
Phe	Met	Lys	Leu	Ile	Leu	Val	Asn	Leu	Gln	Asp	Gln	Ser	Ser	Thr	Leu
	690					695					700				
Lys	Arg	Leu	Ala	Ser	Leu	Lys	Cys	Leu	Arg	Lys	Leu	Cys	Gly	Arg	Ser
705					710					715					720
Gly	Tyr	Val	Ile	Gln	Pro	Tyr	Leu	Asp	Tyr	Pro	Pro	Leu	Leu	Gly	Ala
				725					730					735	
Leu	Ile	Gly	Ile	Leu	Gln	Ser	Glu	Gln	Pro	Thr	Pro	Ile	Arg	Arg	Glu
			740												
Val	Leu	Arg	Thr	Leu	Gly	Val	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Thr	Tyr
							760					765			
Leu	Thr	Thr	Glu	Glu	Val	Ser	Asp	Asp	Leu	Gln	Ser	Ser	His	Asn	Asn
						775					780				
Ala	His	Gly	Val	Pro	Gln	Ile	Ser	Ala	Ala	Gln	Tyr	Pro	Ser	Leu	Glu
785					790					795					800
Asn	Tyr	Ala	Met	Val	Ala	Val	Val	Thr	Leu	Ile	Gly	Ile	Leu	Lys	Asp
				805					810					815	
Ser	Ser	Leu	Ser	Met	His	His	Ser	Ser	Val	Val	Gln	Ala	Val	Met	His
			820					825					830		
Ile	Cys	Ser	Gln	Met	Gly	Ser	Lys	Ser	Thr	Val	Phe	Leu	Pro	Gln	Val
			835				840					845			
Val	Pro	Thr	Phe	Leu	Gln	Val	Met	Gln	Ser	Leu	Ser	Ala	Ser	Ser	Ala
						855					860				
Glu	Phe	Tyr	Phe	Gln	Gln	Leu	Thr	Thr	Leu	Thr	Ser	Ile	Ile	Gly	Pro
865					870					875					880
Asn	Ile	Arg	Asp	Tyr	Val	Ser	Asp	Ile	Phe	Asn	Leu	Ser	Lys	Val	Phe
				885					890					895	
Trp	Glu	Ser	Thr	Thr	Ser	Leu	Leu	Leu	Val	Ile	Leu	Glu	Leu	Ile	Asp
			900										910		
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Ile	Leu	Ser	Cys	Met	Leu	Lys	Ala	Phe	Ser	Leu	Asp	Asn	Thr	Ser	Ser
						935					940				
Arg	Ser	Val	Ser	Tyr	Lys	Val	Leu	Gln	Ser	Phe	Val	Ile	Phe	Gly	Ser
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Asn	Ile	Glu	Glu	Tyr	Met	His	Leu	Val	Leu	Pro	Val	Ile	Ile	Arg	Ser
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## PhoenixTemp32470.tmp.txt

Lys Cys Asn Val Tyr Ala Lys Ala Leu His Tyr Thr Glu Leu Gln Phe  
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 Val Gln Glu Thr Lys Glu Glu Val Ser Ile Ser Thr Ile Glu Ser Leu  
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 Ile Thr Ile Asn Asn His Leu Gln Gln Ser Asp Ala Ala Val Gly Met  
 1265 1270 1275 1280  
 Leu Gln Tyr Thr Lys Glu His Lys Gln Phe Ser Leu Lys Glu Thr Trp  
 1285 1290 1295  
 Tyr Glu Lys Leu His Arg Trp Asp Asp Ala Leu Ala Ala Tyr Glu His  
 1300 1305 1310  
 Arg Glu Arg Glu Gly Asp Ser Ser Phe Glu Ile Asn Ile Gly Lys Leu  
 1315 1320 1325  
 Arg Cys Tyr Tyr Ala Leu Gly Asp Trp Asp His Leu Ser Glu Leu Ala  
 1330 1335 1340  
 Gln Lys Ala Trp Val Thr Ser Glu Gln Glu His Arg Glu Ala Ile Ala  
 1345 1350 1355 1360  
 Pro Leu Ala Ala Ala Ala Ala Trp Gly Leu Gly Gln Trp Asn Leu Ile  
 1365 1370 1375  
 Ser Glu Tyr Val Ser Ala Met Asp Arg Asp Pro Gln Asp Lys Glu Phe  
 1380 1385 1390  
 Phe Ser Ala Ile Ser Ala Val His Leu Gly Gln Tyr Asn Lys Ala Tyr  
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 Gly His Ile Glu Arg His Arg Asp Ile Leu Val Asn Asp Leu Ser Ser  
 1410 1415 1420  
 Ile Ile Gly Glu Ser Tyr Asn Arg Ala Tyr Gly Ile Met Val Lys Ser  
 1425 1430 1435 1440  
 Gln Met Leu Ser Glu Leu Glu Glu Ile Ile Asp Tyr Lys Lys Asn Met  
 1445 1450 1455  
 Gln Tyr Glu Asn Leu Asp Ser Leu Lys Lys Thr Trp Arg Lys Arg  
 1460 1465 1470  
 Leu Glu Gly Cys Gln Lys Asn Val Asp Val Trp His Asn Thr Leu Arg  
 1475 1480 1485  
 Phe Arg Ala Leu Val Leu Ser Pro Gln Asp Ser Pro Glu Met Trp Ile  
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 Lys Leu Ala Asp Leu Cys Arg Arg Ser Asp Arg Leu Lys Leu Ser Asn  
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 Gln Cys Leu Thr Tyr Leu Met Gly Arg Asp Pro Ser Asn Ala Tyr Pro  
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 1540 1545 1550  
 Lys Tyr Leu Trp Ala Thr Asp Gln Lys Asn Ile Ala Val Ser Glu Leu  
 1555 1560 1565  
 Glu Glu Phe Thr Ser Tyr Leu Ser Ser Lys His Gly Tyr Lys Met Gly  
 1570 1575 1580  
 Asp Ser Ser Lys Leu Val Asp Ile Leu Ala Ser Ser Ser Val Ser Ser  
 1585 1590 1595 1600  
 Glu Glu Arg Ser Phe Leu Ala Arg Cys Phe His Lys Leu Gly Lys Trp  
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 Lys Lys Ser Leu Gln Asp Ser Val Asn Gln Glu Ser Val Arg Asp Ile  
 1620 1625 1630  
 Leu Asn Cys Tyr Phe Tyr Ala Thr Leu Phe Asp Lys Ser Trp Tyr Lys  
 1635 1640 1645  
 Ala Trp His Ser Trp Ala Leu Ala Asn Phe Glu Val Val Gly Tyr Tyr  
 1650 1655 1660  
 Glu Gln Thr Glu His Gly Val Thr Gln Asp Met Tyr Glu Gln Tyr Ile  
 1665 1670 1675 1680  
 Val Pro Ala Ile Lys Gly Phe Phe His Ser Ser Val Leu Asn Gln Lys  
 1685 1690 1695  
 Asn Ser Leu Gln Asp Ile Leu Arg Leu Leu Asn Leu Trp Phe Lys Phe  
 1700 1705 1710  
 Gly Glu His Ser Asp Val Ala Ala Ile Val Glu Gly Phe Ser Asn  
 1715 1720 1725  
 Val Pro Met Asp Thr Trp Leu Glu Val Ile Pro Gln Leu Ile Ala Arg  
 1730 1735 1740  
 Ile His Thr Ser Ser Ser Ser Val Arg Ala Ser Val His Gln Leu Leu  
 1745 1750 1755 1760  
 Ser Asp Ile Gly Arg Val His Pro Gln Ala Leu Val Tyr Ser Leu Thr  
 1765 1770 1775  
 Val Ser Ser Lys Ser Thr Asn Pro Gln Gln Lys His Ser Ala Lys Ser

## PhoenixTemp32470.tmp.txt

1780 1785 1790  
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 1795 1800 1805  
 Leu Leu Val Ser Gln Glu Leu Ile Arg Val Ala Ile Leu Trp His Glu  
 1810 1815 1820  
 Leu Trp Tyr Glu Gly Leu Glu Glu Ala Ser Gln Ala Tyr Phe Ser Asp  
 1825 1830 1835 1840  
 His Asp Ile Ser Leu Met Ile Asp Ile Val Lys Pro Leu His Glu Thr  
 1845 1850 1855  
 Leu Glu Lys Gly Pro Ser Thr Leu Ser Glu Ile Ser Phe Ala Gln Thr  
 1860 1865 1870  
 Phe Gly Tyr Asp Leu Arg Lys Ala Arg Ser Tyr Trp Gln Lys Phe Leu  
 1875 1880 1885  
 Gln Asp Gly Asp Pro Thr Glu Leu Asn Gln Ser Trp Asp Leu Tyr Tyr  
 1890 1895 1900  
 Gln Val Phe Arg Arg Ile Gln Lys Gln Leu Pro Arg Ile Lys His Leu  
 1905 1910 1915 1920  
 Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Asp Ala Cys Asp Leu Glu  
 1925 1930 1935  
 Leu Ala Val Pro Gly Thr Tyr Gly His Asn Lys Pro Val Ile Arg Ile  
 1940 1945 1950  
 Ser His Phe His His Thr Phe Glu Val Ile Ser Ser Lys Gln Arg Pro  
 1955 1960 1965  
 Arg Arg Leu Thr Ile His Gly Ser Asp Gly Lys Asp Tyr Gln Tyr Val  
 1970 1975 1980  
 Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu Arg Val Met Gln Leu  
 1985 1990 1995 2000  
 Phe Gly Leu Cys Asn Thr Leu Leu Thr Thr Asp Ser Glu Thr Phe Lys  
 2005 2010 2015  
 Arg Arg Leu Asn Ile Glu Arg Tyr Thr Val Ile Pro Leu Ser Pro Asn  
 2020 2025 2030  
 Ser Gly Leu Leu Gly Trp Val Pro His Ser Asp Thr Leu His Phe Leu  
 2035 2040 2045  
 Ile Lys Glu Phe Arg Ser Lys Arg Asn Ile Leu Leu Asn Leu Glu His  
 2050 2055 2060  
 Arg Met Met Leu Gln Met Ala Pro Asp Cys Asp Ser Leu Thr Leu Leu  
 2065 2070 2075 2080  
 Gln Lys Leu Glu Val Phe Glu Tyr Val Met Ala Asn Thr Asp Gly Tyr  
 2085 2090 2095  
 Asp Leu Tyr His Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Ala Trp  
 2100 2105 2110  
 Leu Asp Arg Arg Thr Ser Tyr Thr Gln Ser Leu Ala Val Met Ser Met  
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 Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met  
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 Met Asp Arg Tyr Ser Gly Lys Ile Ile His Ile Asp Phe Gly Asp Cys  
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 Phe Glu Val Ala Met His Arg Glu Lys Phe Pro Glu Lys Ile Pro Phe  
 2165 2170 2175  
 Arg Leu Thr Arg Met Leu Ile Asn Ala Met Glu Val Ser Gly Ile Gln  
 2180 2185 2190  
 Gly Thr Tyr Lys Ile Thr Cys Glu Leu Val Met Arg Val Leu Arg Ser  
 2195 2200 2205  
 Asn Thr Glu Ser Leu Met Ala Val Leu Glu Ala Phe Val Tyr Asp Pro  
 2210 2215 2220  
 Leu Ile Asn Trp Arg Leu Met Thr Lys Ser Ser Phe Gly Ala Ser Thr  
 2225 2230 2235 2240  
 Thr Leu Arg Pro Thr Ser Ser Ser Val Glu Glu Lys Gly Arg Ser Tyr  
 2245 2250 2255  
 Thr His Arg Ala Arg His Ala Asp Tyr Ala Ala Leu Ser Glu Thr Asn  
 2260 2265 2270  
 Gly Val Asn Ala Glu Gly Leu Asn Glu Arg Ser Ile Gln Val Leu Lys  
 2275 2280 2285  
 Arg Val Ser Asn Lys Leu Thr Gly Lys Asp Phe Asp Leu Lys Glu Gln  
 2290 2295 2300  
 Leu Pro Val Lys Ala Gln Val Glu Lys Leu Ile Gln Gln Ala Thr Ala  
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 2325 2330 2335

## PhoenixTemp32470.tmp.txt

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 <213> Schizosaccharomyces pombe

<220>  
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 1 5 10 15  
 aaa gcg gca aat gat ctt tat gaa tat gtt ata gct tat tct cga gaa 96  
 Lys Ala Ala Asn Asp Leu Tyr Glu Tyr Val Ile Ala Tyr Ser Arg Glu  
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 tta tcg ggc gaa gct tta gtt cag ttt aac aat gat gtt aac aag tac 144  
 Leu Ser Gly Glu Ala Leu Val Phe Asn Asn Asp Val Asn Lys Tyr  
 35 40 45  
 gtt tat act tta att cac agt acc gat cca ctc gat cgt ctg gca ggc 192  
 Val Tyr Thr Leu Ile His Ser Thr Asp Pro Leu Asp Arg Leu Ala Gly  
 50 55 60  
 gta act gcc ata aat cgt cta att gat tat gaa gga gaa gat act aca 240  
 Val Thr Ala Ile Asn Arg Leu Ile Asp Tyr Glu Gly Glu Asp Thr Thr  
 65 70 75 80  
 agg att act aga ttt gca aat tat ttg cgt att att ctt cca gga act 288  
 Arg Ile Thr Arg Phe Ala Asn Tyr Leu Arg Ile Ile Leu Pro Gly Thr  
 85 90 95  
 gac caa aaa gcc acc gtt ctt gct gca aaa gct tta ggg aga ctt gca 336  
 Asp Gln Lys Ala Thr Val Leu Ala Ala Lys Ala Leu Gly Arg Leu Ala  
 100 105 110  
 gtt cct gga ggt gct cta act tct gaa ttt gtg aac ttc gaa gtt aaa 384  
 Val Pro Gly Gly Ala Leu Thr Ser Glu Phe Val Asn Phe Glu Val Lys  
 115 120 125  
 cgc gct ttg gaa tgg ctt caa gga gaa cgt aat gaa aat cgt aga tat 432  
 Arg Ala Leu Glu Trp Leu Gln Gly Glu Arg Asn Glu Asn Arg Arg Tyr  
 130 135 140  
 gca gca gtg ctt ata ctt aag gag ctt gcc aaa aat acg tct aca tta 480  
 Ala Ala Val Leu Ile Leu Lys Glu Leu Ala Lys Asn Thr Ser Thr Leu  
 145 150 155 160  
 atc tat gct cat atc gat tca att ttt gag ctt tta tgg cat gga ctt 528  
 Ile Tyr Ala His Ile Asp Ser Ile Phe Glu Leu Leu Trp His Gly Leu  
 165 170 175  
 cgg gat cca aaa gtt act att cga ata gct tcg gct gat gcg ttg agt 576  
 Arg Asp Pro Lys Val Thr Ile Arg Ile Ala Ser Ala Asp Ala Leu Ser  
 180 185 190  
 gag ttc ttg aaa atc gtt agg caa agg gat tca tcc atc cgt ctc caa 624  
 Glu Phe Leu Lys Ile Val Arg Gln Arg Asp Ser Ser Ile Arg Leu Gln  
 195 200 205  
 tgg tat aca agt att ctc aat gaa gct caa cgt ggt gtt gca cag ggt 672  
 Trp Tyr Thr Ser Ile Leu Asn Glu Ala Gln Arg Gly Val Ala Gln Gly  
 210 215 220  
 tct tct gat tac att cat ggt agt tta cta gta tat cgc caa tta ttt 720  
 Ser Ser Asp Tyr Ile His Gly Ser Leu Leu Val Tyr Arg Gln Leu Phe  
 225 230 235 240  
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 Leu Lys Ala Gly Met Phe Met His Glu Arg Tyr Arg Glu Val Ser Asp  
 245 250 255  
 att ata ttg caa ttc aga gat cac aaa gat ttg ctt att cgc aaa acc 816  
 Ile Ile Leu Gln Phe Arg Asp His Lys Asp Leu Leu Ile Arg Lys Thr  
 260 265 270  
 gtt aca gaa ttg att gct aca ctc gca gct tat aat cca gat gaa ttt 864  
 Val Thr Glu Leu Ile Ala Thr Leu Ala Ala Tyr Asn Pro Asp Glu Phe  
 275 280 285  
 gtt tcc aat tat tta cac gtt tgt atg ctc cat cta ctt aat cta tta 912  
 Val Ser Asn Tyr Leu His Val Cys Met Leu His Leu Leu Asn Leu Leu  
 290 295 300  
 aaa aaa gaa aat gtt aag atg ttg gcg ttt gcc act att gga aaa gtt 960



## PhoenixTemp32470.tmp.txt

Lys 305	Lys 305	Glu 305	Asn 305	Val 305	Lys 310	Met 310	Leu 310	Ala 310	Phe 310	Ala 315	Thr 315	Ile 315	Gly 315	Lys 320	Val 320	
gcc Ala	gtg Val	gct Ala	att Ile	act Thr	aat Asn	agc Ser	ata Ile	atc Ile	cca Pro	tat Tyr	ctt Leu	gac Asp	ccc Pro	ata Ile	tgc Cys	1008
gat Asp	tca Ser	atc Ile	aag Lys	gaa Glu	agt Ser	cta Leu	aaa Lys	atc Ile	cat His	atc Ile	cgt Arg	aat Asn	aaa Lys	agt Ser	gct Ala	1056
tcg Ser	gat Asp	gct Ala	gca Ala	att Ile	ttt Phe	caa Gln	tgc Cys	att Ile	agc Ser	cta Leu	ctt Leu	tct Ser	ata Ile	gca Ala	cta Leu	1104
gga Gly	caa Gln	gcc Ala	ttt Phe	tca Ser	aac Asn	tat Tyr	gcg Ala	tat Tyr	gac Asp	ctc Leu	ttt Phe	gac Asp	tta Leu	ata Ile	ttt Phe	1152
gca Ala	agc Ser	gga Gly	ctt Leu	tct Ser	gag Glu	gct Ala	tct Ser	tac Tyr	cgt Arg	gct Ala	ctc Leu	tca Ser	gat Asp	ctg Leu	gcc Ala	1200
cat His	aat Asn	ata Ile	cct Pro	cca Pro	tta Leu	tta Leu	cca Pro	gtc Val	ata Ile	cag Gln	gaa Glu	cga Arg	cta Leu	tta Leu	gat Asp	1248
atg Met	ctc Leu	agc Ser	aaa Lys	att Ile	cta Leu	agt Ser	ggg Gly	cgt Arg	cct Pro	ttt Phe	att Ile	cct Pro	cca Pro	gga Gly	tgt Cys	1296
cct Pro	ccc Pro	caa Gln	tat Tyr	gta Val	gca Ala	aga Arg	tct Ser	tta Leu	aaa Lys	tct Ser	tca Ser	aag Lys	agt Ser	gct Ala	tcc Ser	1344
ctg Leu	aag Lys	aca Thr	gga Gly	ttt Phe	ttt Phe	ccc Pro	aat Asn	gac Asp	gtc Val	tat Tyr	att Ile	ttg Leu	gct Ala	cta Leu	aaa Lys	1392
gtt Val	ttg Leu	gga Gly	aat Asn	ttt Phe	gac Asp	ttc Phe	ggg Ser	tat Gly	att Tyr	ctt Ile	aat Leu	gaa Asn	ttt Glu	gtg Val		1440
aag Lys	gat Asp	tgt Cys	gta Val	gtt Val	gta Val	tac Tyr	ctt Leu	gaa Glu	aac Asn	aat Asn	gac Asp	ccg Pro	gaa Glu	gta Val	cgc Arg	1488
aaa Lys	acc Thr	gcc Ala	tcc Ser	ata Ile	acc Thr	tgc Cys	tcc Ser	caa Gln	cta Leu	ttt Phe	gct Ala	cgt Arg	gat Asp	cct Pro	att Ile	1536
tta Leu	tcg Ser	cag Gln	act Thr	agt Ser	gat Asp	cat His	gcg Ala	att Ile	caa Gln	gta Val	gtt Val	gcc Ala	gaa Glu	gtg Val	cta Leu	1584
gaa Glu	aag Lys	ctt Leu	cta Leu	aca Thr	gtt Val	ggg Gly	att Ile	tgc Cys	gat Asp	act Thr	gtt Val	cca Pro	gat Asp	att Ile	cgg Arg	1632
cta Leu	act Thr	gtt Val	ctt Leu	aat Asn	tct Ser	ctc Leu	gat Asp	tct Ser	cgc Arg	ttt Phe	aac Asn	aag Lys	cat His	tta Leu	gcc Ala	1680
caa Gln	gca Ala	gat Asp	aaa Lys	att Ile	cgt Arg	tta Leu	ctt Leu	ttt Phe	att Ile	gct Ala	att Ile	aat Asn	gat Asp	gaa Glu	aac Asn	1728
ttt Phe	gct Ala	gta Val	cga Glu	gaa Glu	tct Ser	gca Ala	tta Leu	cgg Arg	ata Ile	att Ile	gga Gly	aga Arg	cta Leu	aat Asn	gtc Val	1776
tat Tyr	aac Asn	cct Pro	gcc Ala	tat Tyr	gtg Val	atg Met	cca Pro	tat Tyr	tta Leu	agg Arg	aaa Lys	ata Ile	atg Met	tta Leu	aaa Lys	1824
act Thr	tta Leu	aca Thr	ata Ile	ttg Leu	gac Asp	tat Tyr	tct Ser	aca Thr	att Ile	atc Ile	aga Arg	act Thr	aaa Lys	gaa Glu	gag Glu	1872
aat Asn	gcc Ala	aag Lys	tta Leu	ttg Leu	tgt Cys	tta Leu	tta Leu	att Ile	gca Ala	gca Ala	gct Ala	cct Pro	cgc Arg	tta Leu	ata Ile	1920
gag Glu	tca Ser	cat His	gtg Val	gaa Glu	cca Pro	ata Ile	ctg Leu	caa Gln	ata Ile	ctt Leu	tta Leu	ccc Pro	aaa Lys	gct Ala	aaa Lys	1968
gat Asp	tct Ser	agt Ser	tca Ser	att Ile	gtg Val	gca Ala	gct Ala	agt Ser	att Ile	gtt Val	aat Asn	tcg Ser	ctt Leu	ggg Gly	gaa Glu	2016
ata Tgc	caa Tgc	atc Tgc	agc Tgc	ggg Tgc	gag Tgc	gtt Tgc	att Tgc	ggt Tgc	cct Tgc	ttt Tgc	att Tgc	aaa Tgc	gac Tgc	tta Tgc		2064

PhoenixTemp32470.tmp.txt

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Met	Pro	Leu	Ile	Ile	Glu	Ala	Leu	Gln	Asp	Gln	Ser	Ser	Pro	Ile	Arg	
aga	gca	gcg	gct	tta	aag	gct	ttg	ggt	aat	tta	tca	agc	agc	acc	gga	2160
Arg	Ala	Ala	Ala	Leu	Lys	Ala	Leu	Gly	Asn	Leu	Ser	Ser	Ser	Thr	Gly	
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tat	gta	att	gat	ccg	tat	att	gaa	ttc	cct	tct	tta	ctt	gat	ata	ctt	2208
Tyr	Val	Ile	Asp	Pro	Tyr	Ile	Glu	Phe	Pro	Ser	Leu	Leu	Asp	Ile	Leu	
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Ile	Gly	Ile	Thr	Lys	Thr	Glu	Gln	Asp	Ile	Thr	Ile	Arg	Arg	Glu	Thr	
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Ile	Lys	Leu	Ile	Gly	Thr	Leu	Gly	Ala	Leu	Asp	Pro	Asn	Arg	His	Arg	
		755					760						765			
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Val	Leu	Glu	Lys	Gly	Thr	Lys	Lys	Val	Val	Pro	Glu	Gln	Lys	Asn	Ile	
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cct	cct	gac	att	tct	ttg	ctg	atg	tcg	ggc	att	ggt	cca	tca	tcc	gat	2400
Pro	Pro	Asp	Ile	Ser	Leu	Leu	Met	Ser	Gly	Ile	Gly	Pro	Ser	Ser	Asp	
785					790					795					800	
gaa	tat	tac	ccc	aca	gtc	gtg	att	act	gct	ttg	atg	agt	ata	tta	aaa	2448
Glu	Tyr	Tyr	Pro	Thr	Val	Val	Ile	Thr	Ala	Leu	Met	Ser	Ile	Leu	Lys	
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gac	ccg	tcc	tta	act	att	cac	cat	act	gct	gtt	att	caa	gct	gta	atg	2496
Asp	Pro	Ser	Leu	Thr	Ile	His	His	Thr	Ala	Val	Ile	Gln	Ala	Val	Met	
			820					825					830			
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Tyr	Ile	Phe	Lys	Thr	Met	Gly	Leu	Arg	Cys	Ala	Pro	Phe	Leu	Ser	Gln	
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att	att	cca	gaa	ttt	atc	gca	gtt	atg	aga	acg	tgt	cct	acg	aac	ata	2592
Ile	Ile	Pro	Glu	Phe	Ile	Ala	Val	Met	Arg	Thr	Cys	Pro	Thr	Asn	Ile	
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Leu	Glu	Phe	Tyr	Phe	Gln	Gln	Leu	Ser	Ile	Leu	Val	Leu	Ile	Val	Arg	
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cag	cac	ata	cga	agt	ttt	tta	cca	gat	tta	ttt	aag	ctt	atc	aaa	gat	2688
Gln	His	Ile	Arg	Ser	Phe	Leu	Pro	Asp	Leu	Phe	Lys	Leu	Ile	Lys	Asp	
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ttt	tgg	aac	ccg	cat	tct	aat	tta	caa	ttt	aca	att	ttg	tcg	cta	att	2736
Phe	Trp	Asn	Pro	His	Ser	Asn	Leu	Gln	Phe	Thr	Ile	Leu	Ser	Leu	Ile	
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gaa	tca	ctg	gct	aga	gca	atg	cag	gga	gag	ttc	aag	cca	tac	tta	cca	2784
Glu	Ser	Leu	Ala	Arg	Ala	Met	Gln	Gly	Glu	Phe	Lys	Pro	Tyr	Leu	Pro	
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Ser	Leu	Leu	Val	Met	Met	Leu	Gln	Ile	Phe	Asp	Ser	Asp	Val	Ser	Val	
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Asp	Ser	Val	Ser	Thr	Lys	Lys	Val	Leu	His	Ala	Phe	Ile	Val	Phe	Gly	
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gat	aca	tta	gct	gat	tat	ttt	cat	atg	ctc	ttg	gat	cca	ata	ctt	cga	2928
Asp	Thr	Leu	Ala	Asp	Tyr	Phe	His	Met	Leu	Leu	Asp	Pro	Ile	Leu	Arg	
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Leu	Tyr	Glu	Arg	Asn	Asp	Val	Ser	Ile	Gly	Ile	Lys	Glu	Ser	Ile	Met	
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Ile	Thr	Ile	Gly	Arg	Leu	Ser	Met	Val	Ile	Asn	Leu	Ser	Glu	Tyr	Ala	
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Ser	Arg	Ile	Ile	His	Pro	Val	Met	Arg	Met	Leu	Ser	Cys	Asn	Asn	Ala	
						1015					1020					
tct	ctc	att	cgc	gtg	agt	atg	gat	act	gta	tgt	gcg	ctt	ata	tat	caa	3120
Ser	Leu	Ile	Arg	Val	Ser	Met	Asp	Thr	Val	Cys	Ala	Leu	Ile	Tyr	Gln	
1025					1030					1035					1040	
ctt	aat	gtt	gat	ttt	gct	att	ttc	att	cca	atg	att	gat	aag	tcg	ctt	3168

## PhoenixTemp32470.tmp.txt

Leu	Asn	Val	Asp	Phe	Ala	Ile	Phe	Ile	Pro	Met	Ile	Asp	Lys	Cys	Leu		
aag	atg	aat	ggc	gtt	act	cat	gaa	acc	tac	tcg	ata	ctt	gtt	gaa	caa	3216	
Lys	Met	Asn	Gly	Val	Thr	His	Glu	Thr	Tyr	Ser	Ile	Leu	Val	Glu	Gln		
ttt	tta	caa	gaa	cag	cct	ctt	cct	ata	aaa	ctc	aac	cct	tat	gaa	aaa	3264	
Phe	Leu	Gln	Glu	Gln	Pro	Leu	Pro	Ile	Lys	Leu	Asn	Pro	Tyr	Glu	Lys		
tac	gat	aag	cct	aaa	tta	gat	gtg	gta	gct	tcc	gct	gct	gat	ata	acc	3312	
Tyr	Asp	Lys	Pro	Lys	Leu	Asp	Val	Val	Ala	Ser	Ala	Ala	Asp	Ile	Thr		
tct	aaa	aag	ctt	cct	gta	aat	caa	gaa	atc	ctc	aga	aat	gcg	tgg	gaa	3360	
Ser	Lys	Lys	Leu	Pro	Val	Asn	Gln	Glu	Ile	Leu	Arg	Asn	Ala	Trp	Glu		
gca	tct	caa	cga	tcg	act	aag	gat	gac	tgg	caa	gaa	tgg	atc	cga	cga	3408	
Ala	Ser	Gln	Arg	Ser	Thr	Lys	Asp	Asp	Trp	Gln	Glu	Trp	Ile	Arg	Arg		
tta	ggc	gta	gct	ctc	tta	aga	gaa	tca	cct	tca	cat	gcc	tta	cga	gca	3456	
Leu	Gly	Val	Ala	Leu	Leu	Arg	Glu	Ser	Pro	Ser	His	Ala	Leu	Arg	Ala		
tgt	gct	gct	ttg	gct	gct	gcc	tat	caa	cct	tta	gcc	agg	gac	tta	ttt	3504	
Cys	Ala	Ala	Leu	Ala	Ala	Ala	Tyr	Gln	Pro	Leu	Ala	Arg	Asp	Leu	Phe		
aac	gct	agt	ttt	gtt	tct	tgt	tgg	tct	gaa	tta	tat	gat	cac	ttt	caa	3552	
Asn	Ala	Ser	Phe	Val	Ser	Cys	Trp	Ser	Glu	Leu	Tyr	Asp	His	Phe	Gln		
gaa	gaa	tta	gtt	aag	tcg	att	gag	ata	gct	tta	acg	tcg	cca	cac	ata	3600	
Glu	Glu	Leu	Val	Lys	Ser	Ile	Glu	Ile	Ala	Leu	Thr	Ser	Pro	His	Ile		
tct	cct	gaa	att	att	cag	att	tta	ctc	aat	ctt	gcg	gaa	ttt	atg	gag	3648	
Ser	Pro	Glu	Ile	Ile	Gln	Ile	Leu	Leu	Asn	Leu	Ala	Glu	Phe	Met	Glu		
cat	gat	gat	aaa	cca	ctt	ccg	att	gat	att	cg	act	ttg	ggt	gcc	tat	3696	
His	Asp	Asp	Lys	Pro	Leu	Pro	Ile	Asp	Ile	Arg	Thr	Leu	Gly	Ala	Tyr		
gca	gct	aaa	tcg	cat	gcg	ttt	gct	aag	gct	tta	cat	tac	aag	gag	cta	3744	
Ala	Ala	Lys	Cys	His	Ala	Phe	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Leu		
gaa	ttc	att	gaa	gaa	gaa	ttg	gtg	aca	aaa	cct	tcg	gtt	gat	aca	att	3792	
Glu	Phe	Ile	Glu	Glu	Glu	Leu	Val	Thr	Lys	Pro	Ser	Val	Asp	Thr	Ile		
gag	gcc	cta	att	tca	atc	aat	aat	caa	ctc	caa	caa	cca	gac	gca	gct	3840	
Glu	Ala	Leu	Ile	Ser	Ile	Asn	Asn	Gln	Leu	Gln	Gln	Pro	Asp	Ala	Ala		
att	gga	ata	ctt	aaa	cat	gct	cag	cag	cat	gac	aaa	atg	aat	ctt	aaa	3888	
Ile	Gly	Ile	Leu	Lys	His	Ala	Gln	Gln	His	Asp	Lys	Met	Asn	Leu	Lys		
gaa	act	tgg	tac	gaa	aag	tta	caa	agg	tgg	gaa	gat	gct	ctg	tca	gct	3936	
Glu	Thr	Trp	Tyr	Glu	Lys	Leu	Gln	Arg	Trp	Glu	Asp	Ala	Leu	Ser	Ala		
tat	gaa	aaa	aga	gaa	gct	gct	ggc	gct	ggc	aat	ttc	gaa	ata	acg	atg	3984	
Tyr	Glu	Lys	Arg	Glu	Ala	Ala	Gly	Ala	Gly	Asn	Phe	Glu	Ile	Thr	Met		
ggc	aaa	ctt	cg	tgt	tta	cac	gct	ttg	ggt	gaa	tgg	gat	cga	tta	tct	4032	
Gly	Lys	Leu	Arg	Cys	Leu	His	Ala	Leu	Gly	Glu	Trp	Asp	Arg	Leu	Ser		
cag	tta	gct	caa	gaa	aat	tgg	att	cat	gct	ggt	cat	gat	gcg	cga	cgg	4080	
Gln	Leu	Ala	Gln	Glu	Asn	Trp	Ile	His	Ala	Gly	His	Asp	Ala	Arg	Arg		
tat	att	gca	ccg	ctt	tcc	gta	gcc	gct	gct	tgg	ggg	tta	ggt	caa	tgg	4128	
Tyr	Ile	Ala	Pro	Leu	Ser	Val	Ala	Ala	Ala	Trp	Gly	Leu	Gly	Gln	Trp		
gag	caa	atg	gat	gaa	tat	att	tct	gtt	atg	aag	tct	gag	tca	cca	gat	4176	
Glu	Gln	Met	Asp	Glu	Tyr	Ile	Ser	Val	Met	Lys	Ser	Glu	Ser	Pro	Asp		
aaa	gct	ttt	ttt	aac	gcg	att	gtg	gct	cta	cat	cga	tca	caa	ttt	gaa	4224	
Lys	Ala	Phe	Phe	Asn	Ala	Ile	Val	Ala	Leu	His	Arg	Ser	Gln	Phe	Glu		
gaa	gca	gct	tct	tat	atc	acc	aga	gct	cga	gat	tta	ctt	gat	act	gag	4272	

## PhoenixTemp32470.tmp.txt

Glu	Ala	Ala	Ser	Tyr	Ile	Thr	Arg	Ala	Arg	Asp	Leu	Leu	Asp	Thr	Glu		
1410						1415					1420						
ctt	act	gcg	ctt	gtt	ggt	gaa	agt	tat	aat	agg	gct	tac	agc	ggt	gct		4320
Leu	Thr	Ala	Leu	Val	Gly	Glu	Ser	Tyr	Asn	Arg	Ala	Tyr	Ser	Val	Ala		
1425					1430					1435					1440		
gtc	cgt	gtt	caa	atg	tta	tcc	gaa	tta	gaa	gaa	atc	att	acc	tat	aaa		4368
Val	Arg	Val	Gln	Met	Leu	Ser	Glu	Leu	Glu	Glu	Ile	Ile	Thr	Tyr	Lys		
				1445					1450					1455			
aaa	gcc	gag	gac	aaa	ccc	gaa	ggt	cgt	gaa	atg	ata	aag	aag	aca	tgg		4416
Lys	Ala	Glu	Asp	Lys	Pro	Glu	Val	Arg	Glu	Met	Ile	Lys	Lys	Thr	Trp		
		1460						1465					1470				
gtt	aga	cgt	ttg	aaa	ggc	tgt	cag	aga	aat	gtg	gat	ggt	tgg	caa	aga		4464
Val	Arg	Arg	Leu	Lys	Gly	Cys	Gln	Arg	Asn	Val	Asp	Val	Trp	Gln	Arg		
		1475				1480						1485					
atg	tta	aga	ata	cga	tct	tta	gtt	att	tca	ccc	cgt	gat	aac	atg	gag		4512
Met	Leu	Arg	Ile	Arg	Ser	Leu	Val	Ile	Ser	Pro	Arg	Asp	Asn	Met	Glu		
1490					1495					1500							
atg	tgg	atc	aaa	ttc	gct	aat	ctc	tgc	aga	aaa	tct	ggt	agg	atc	agt		4560
Met	Trp	Ile	Lys	Phe	Ala	Asn	Leu	Cys	Arg	Lys	Ser	Gly	Arg	Ile	Ser		
1505				1510					1515					1520			
cta	gcg	aaa	aaa	tca	ctt	aat	tta	ctc	ctt	gaa	gac	gac	gaa	aac	tta		4608
Leu	Ala	Lys	Lys	Ser	Leu	Asn	Leu	Leu	Leu	Glu	Asp	Asp	Glu	Asn	Leu		
				1525				1530					1535				
gat	aat	tca	ctc	gtc	tta	aag	aag	act	cac	cct	tca	att	gtc	tat	gca		4656
Asp	Asn	Ser	Leu	Val	Leu	Lys	Lys	Thr	His	Pro	Ser	Ile	Val	Tyr	Ala		
		1540						1545				1550					
aat	cta	aag	ttt	ttg	tgg	gct	gtt	gac	gat	aaa	agg	aag	gct	ctt	aat		4704
Asn	Leu	Lys	Phe	Leu	Trp	Ala	Val	Asp	Asp	Lys	Arg	Lys	Ala	Leu	Asn		
		1555				1560				1565							
agc	atg	caa	gag	ttt	act	tct	cag	cta	att	tct	gac	att	aat	ggt	gac		4752
Ser	Met	Gln	Glu	Phe	Thr	Ser	Gln	Leu	Ile	Ser	Asp	Ile	Asn	Val	Asp		
1570					1575					1580							
cct	gct	ctt	ttt	gtt	caa	tct	aca	tca	gtt	aat	act	caa	aaa	tca	caa		4800
Pro	Ala	Leu	Phe	Val	Gln	Ser	Thr	Ser	Val	Asn	Thr	Gln	Lys	Ser	Gln		
1585				1590					1595					1600			
gaa	gaa	att	caa	tat	tat	ttt	cat	ctt	cta	gct	aga	tgt	tat	cac	aag		4848
Glu	Glu	Ile	Gln	Tyr	Tyr	Phe	His	Leu	Leu	Ala	Arg	Cys	Tyr	His	Lys		
				1605				1610					1615				
caa	ggt	caa	tgg	cag	caa	gaa	att	gag	aat	aat	tgg	tca	gaa	gga	tct		4896
Gln	Gly	Gln	Trp	Gln	Gln	Glu	Ile	Glu	Asn	Asn	Trp	Ser	Glu	Gly	Ser		
			1620					1625				1630					
ttt	gat	gga	gtt	ctt	caa	tca	tat	atg	tat	gct	acg	caa	ttt	gat	tct		4944
Phe	Asp	Gly	Val	Leu	Gln	Ser	Tyr	Met	Tyr	Ala	Thr	Gln	Phe	Asp	Ser		
		1635				1640				1645							
aaa	tgg	tat	aaa	gct	tgg	cac	tct	tgg	gca	tta	gct	aat	ttc	gaa	gct		4992
Lys	Trp	Tyr	Lys	Ala	Trp	His	Ser	Trp	Ala	Leu	Ala	Asn	Phe	Glu	Ala		
		1650			1655				1660								
gta	aag	ttt	ttg	gag	caa	tca	gag	gag	caa	atc	cca	agt	gct	gca	tat		5040
Val	Lys	Phe	Leu	Glu	Gln	Ser	Glu	Glu	Gln	Ile	Pro	Ser	Ala	Ala	Tyr		
1665				1670				1675					1680				
gag	cag	tat	att	att	cca	gca	gtc	aaa	ggc	ttt	ttt	aag	tca	att	gct		5088
Glu	Gln	Tyr	Ile	Ile	Pro	Ala	Val	Lys	Gly	Phe	Phe	Lys	Ser	Ile	Ala		
				1685				1690					1695				
tta	agc	aaa	ggt	aac	ctt	cag	gac	acc	ttg	cgc	ctt	ctt	aat	ctt	tgg		5136
Leu	Ser	Lys	Gly	Asn	Leu	Gln	Asp	Thr	Leu	Arg	Leu	Leu	Asn	Leu	Trp		
		1700						1705				1710					
ttt	aaa	ttc	ggc	aat	aat	agc	aat	gta	att	aat	act	ttg	aac	ggt	ggt		5184
Phe	Lys	Phe	Gly	Asn	Asn	Ser	Asn	Val	Ile	Asn	Thr	Leu	Asn	Val	Gly		
		1715			1720						1725						
ata	tcc	act	gtg	aac	atc	gat	atc	tgg	ctg	gac	gtt	ata	cct	cag	ctt		5232
Ile	Ser	Thr	Val	Asn	Ile	Asp	Ile	Trp	Leu	Asp	Val	Ile	Pro	Gln	Leu		
		1730			1735					1740							
att	gcg	aga	att	cat	gcc	tcc	tct	ttg	agt	gtt	cgt	aaa	tct	gtg	cat		5280
Ile	Ala	Arg	Ile	His	Ala	Ser	Ser	Leu	Ser	Val	Arg	Lys	Ser	Val	His		
1745				1750					1755					1760			
cag	ttg	ctt	tcc	gat	gta	ggt	cgc	gcg	cat	ccc	caa	gct	ctt	ggt	tat		5328
Gln	Leu	Leu	Ser	Asp	Val	Gly	Arg	Ala	His	Pro	Gln	Ala	Leu	Val	Tyr		
			1765					1770				1775					
cct	tta	act	gta	gca	gca	aaa	tcg	cag	agt	tct	gct	agg	caa	aac	gct		5376

## PhoenixTemp32470.tmp.txt

Pro	Leu	Thr	Val	Ala	Ala	Lys	Ser	Gln	Ser	Ser	Ala	Arg	Gln	Asn	Ala		
			1780					1785					1790				
gct	tta	gca	att	atg	gat	tcc	ttg	aaa	aca	cat	agt	cca	cgt	cta	gtt	5424	
Ala	Leu	Ala	Ile	Met	Asp	Ser	Leu	Lys	Thr	His	Ser	Pro	Arg	Leu	Val		
			1795					1800					1805				
gaa	caa	gca	aga	ctt	gtt	agt	cat	gag	ctt	atc	aga	gct	gca	atc	ctt	5472	
Glu	Gln	Ala	Arg	Leu	Val	Ser	His	Glu	Leu	Ile	Arg	Ala	Ala	Ile	Leu		
			1810					1815					1820				
tgg	cat	gaa	caa	tgg	cat	gaa	gga	ttg	gaa	gag	gct	tca	cga	ttg	tat	5520	
Trp	His	Glu	Gln	Trp	His	Glu	Gly	Leu	Glu	Glu	Ala	Ser	Arg	Leu	Tyr		
								1830					1835			1840	
ttt	ggt	gat	cat	aac	att	gag	ggt	atg	ttt	gcc	gtg	ttg	aga	cca	ttg	5568	
Phe	Gly	Asp	His	Asn	Ile	Glu	Gly	Met	Phe	Ala	Val	Leu	Arg	Pro	Leu		
				1845					1850					1855			
cat	gaa	atg	ttg	gaa	cgt	ggt	ccg	gaa	acg	ctt	cgt	gaa	att	tct	ttc	5616	
His	Glu	Met	Leu	Glu	Arg	Gly	Pro	Glu	Thr	Leu	Arg	Glu	Ile	Ser	Phe		
				1860				1865					1870				
caa	caa	gcc	ttt	gga	cgt	gac	tta	gtc	gaa	gca	agg	gat	tgt	tgt	atc	5664	
Gln	Gln	Ala	Phe	Gly	Arg	Asp	Leu	Val	Glu	Ala	Arg	Asp	Cys	Cys	Ile		
			1875					1880					1885				
cgt	ttt	gag	caa	act	ggt	gat	ata	tca	gac	tta	aat	cag	gcc	ttg	gac	5712	
Arg	Phe	Glu	Gln	Thr	Gly	Asp	Ile	Ser	Asp	Leu	Asn	Gln	Ala	Trp	Asp		
								1895					1900				
tta	tat	tac	caa	gtt	ttc	aag	aaa	att	cgt	aaa	cag	cta	cct	cag	ttg	5760	
Leu	Tyr	Tyr	Gln	Val	Phe	Lys	Lys	Ile	Arg	Lys	Gln	Leu	Pro	Gln	Leu		
													1915			1920	
aca	aca	tta	gat	tta	caa	tac	gtt	tct	cct	aaa	ctc	tta	cat	gta	cat	5808	
Thr	Thr	Leu	Asp	Leu	Gln	Tyr	Val	Ser	Pro	Lys	Leu	Leu	His	Val	His		
				1925					1930					1935			
gat	ctt	gag	tta	gct	gtt	ccg	gga	aca	tac	gtt	agc	ggg	aaa	cct	gtt	5856	
Asp	Leu	Glu	Leu	Ala	Val	Pro	Gly	Thr	Tyr	Val	Ser	Gly	Lys	Pro	Val		
				1940				1945					1950				
ata	aga	att	gta	aag	ttt	tac	cct	aca	ttc	aac	gtg	ata	aca	tct	aag	5904	
Ile	Arg	Ile	Val	Lys	Phe	Tyr	Pro	Thr	Phe	Asn	Val	Ile	Thr	Ser	Lys		
				1955				1960					1965				
caa	cgt	ccg	aga	cga	ctg	agt	att	aaa	ggc	agt	gat	gga	aaa	gat	tat	5952	
Gln	Arg	Pro	Arg	Arg	Leu	Ser	Ile	Lys	Gly	Ser	Asp	Gly	Lys	Asp	Tyr		
								1975					1980				
caa	tat	gtt	tta	aag	ggt	cac	gag	gac	atc	aga	caa	gat	gaa	cgt	gtt	6000	
Gln	Tyr	Val	Leu	Lys	Gly	His	Glu	Asp	Ile	Arg	Gln	Asp	Glu	Arg	Val		
															2000		
atg	cag	cta	ttt	ggg	ctt	tgt	aac	aat	ctg	tta	cta	gct	gac	ccg	gaa	6048	
Met	Gln	Leu	Phe	Gly	Leu	Cys	Asn	Asn	Leu	Leu	Leu	Ala	Asp	Pro	Glu		
				2005					2010					2015			
act	ttt	aag	cgc	tta	ctt	tca	atc	caa	agg	tat	cca	gtg	att	cct	tta	6096	
Thr	Phe	Lys	Arg	Leu	Leu	Ser	Ile	Gln	Arg	Tyr	Pro	Val	Ile	Pro	Leu		
				2020				2025					2030				
tca	ccg	gat	tca	ggc	ctt	tta	ggc	tgg	gtt	ttg	gat	agc	gat	act	ttg	6144	
Ser	Pro	Asp	Ser	Gly	Leu	Leu	Gly	Trp	Val	Leu	Asp	Ser	Asp	Thr	Leu		
								2040					2045				
cat	gtc	tta	att	cgt	gac	tac	aga	gaa	agc	aga	aag	att	tta	ctc	aac	6192	
His	Val	Leu	Ile	Arg	Asp	Tyr	Arg	Glu	Ser	Arg	Lys	Ile	Leu	Leu	Asn		
								2055				2060					
ata	gaa	cat	agg	ttg	atc	att	cag	atg	gct	cca	gat	tac	gat	cgt	ctc	6240	
Ile	Glu	His	Arg	Leu	Ile	Ile	Gln	Met	Ala	Pro	Asp	Tyr	Asp	Arg	Leu		
								2070					2075		2080		
act	ctc	ctt	cag	aaa	gtt	gaa	gtc	ttt	gaa	tat	gcc	cta	ctt	agt	act	6288	
Thr	Leu	Leu	Gln	Lys	Val	Glu	Val	Phe	Glu	Tyr	Ala	Leu	Leu	Ser	Thr		
									2090				2095				
acg	ggg	cag	gat	tta	tac	cgc	gtt	tta	tgg	ctg	aag	agt	cgt	agc	tca	6336	
Thr	Gly	Gln	Asp	Leu	Tyr	Arg	Val	Leu	Trp	Leu	Lys	Ser	Arg	Ser	Ser		
				2100				2105					2110				
gaa	gct	tgg	ctt	aat	agg	cga	act	aac	tat	tct	cgt	act	ctt	gcg	gtg	6384	
Glu	Ala	Trp	Leu	Asn	Arg	Arg	Thr	Asn	Tyr	Ser	Arg	Thr	Leu	Ala	Val		
				2115				2120					2125				
atg	tca	atg	gta	ggg	tac	atc	tta	ggt	ttg	ggc	gat	cgt	cat	cct	tcc	6432	
Met	Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Pro	Ser		
								2135				2140					
aat	ttg	atg	ctg	gac	agg	tat	aca	ggt	aat	atc	atc	cat	atc	gat	ttt	6480	

## PhoenixTemp32470.tmp.txt

Asn Leu Met Leu Asp Arg Tyr Thr Gly Asn Ile His Ile Asp Phe  
 2145 2150 2155 2160  
 gga gat tgt ttt gaa gta gca atg cat cga gaa aag ttt ccc gag aag 6528  
 Gly Asp Cys Phe Glu Val Ala Met His Arg Glu Lys Phe Pro Glu Lys  
 2165 2170 2175  
 att cct ttc cgc ctt acg cga atg ctt gtt aac gca atg gaa gtt agt 6576  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Val Asn Ala Met Glu Val Ser  
 2180 2185 2190  
 ggt ata gag ggg acg ttc cgg ata aca tgc gaa cat gtt atg cga gtt 6624  
 Gly Ile Glu Gly Thr Phe Arg Ile Thr Cys Glu His Val Met Arg Val  
 2195 2200 2205  
 ctt cgt act aat aag gag tct gtg atg gca gtt tta gaa gct ttc gtt 6672  
 Leu Arg Thr Asn Lys Glu Ser Val Met Ala Val Leu Glu Ala Phe Val  
 2210 2215 2220  
 tac gat cct ctt att aac tgg cgc ctt gct cct gca tat tca cct tct 6720  
 Tyr Asp Pro Leu Ile Asn Trp Arg Leu Ala Pro Ala Tyr Ser Pro Ser  
 2225 2230 2235 2240  
 atc gat gaa aag caa tct aac gaa cct aat aca ctt ctc ggt gag aca 6768  
 Ile Asp Glu Lys Gln Ser Asn Glu Pro Asn Thr Leu Leu Gly Glu Thr  
 2245 2250 2255  
 att gat ggt tta cac cgg aaa cgc tta aac gaa gaa gga att aca ctt 6816  
 Ile Asp Gly Leu His Arg Lys Arg Leu Asn Glu Glu Gly Ile Thr Leu  
 2260 2265 2270  
 gaa gaa cgt caa aaa ccc gag ata ctc aat caa aga gct ata acc gtt 6864  
 Glu Glu Arg Gln Lys Pro Glu Ile Leu Asn Gln Arg Ala Ile Thr Val  
 2275 2280 2285  
 ctt aat cgt gtg tcc aat aaa ctt act ggt cgg gat ttc aaa ccc caa 6912  
 Leu Asn Arg Val Ser Asn Lys Leu Thr Gly Arg Asp Phe Lys Pro Gln  
 2290 2295 2300  
 cag caa ttg gat gta cca agt caa gta gag aag ctg att tta caa gca 6960  
 Gln Gln Leu Asp Val Pro Ser Gln Val Glu Lys Leu Ile Leu Gln Ala  
 2305 2310 2315 2320  
 acc tct ata gag aac cta tgc ttg tgc tat att ggc tgg tgt agt ttc 7008  
 Thr Ser Ile Glu Asn Leu Cys Leu Cys Tyr Ile Gly Trp Cys Ser Phe  
 2325 2330 2335  
 tgg tag 7014  
 Trp

&lt;210&gt; 2577

&lt;211&gt; 2337

&lt;212&gt; PRT

&lt;213&gt; Schizosaccharomyces pombe

&lt;400&gt; 2577

Met Lys Glu Phe Pro Gly Leu Lys Ser Arg Asn Glu Glu Ile Arg Asn  
 1 5 10 15  
 Lys Ala Ala Asn Asp Leu Tyr Glu Tyr Val Ile Ala Tyr Ser Arg Glu  
 20 25 30  
 Leu Ser Gly Glu Ala Leu Val Gln Phe Asn Asn Asp Val Asn Lys Tyr  
 35 40 45  
 Val Tyr Thr Leu Ile His Ser Thr Asp Pro Leu Asp Arg Leu Ala Gly  
 50 55 60  
 Val Thr Ala Ile Asn Arg Leu Ile Asp Tyr Glu Gly Glu Asp Thr Thr  
 65 70 75 80  
 Arg Ile Thr Arg Phe Ala Asn Tyr Leu Arg Ile Ile Leu Pro Gly Thr  
 85 90 95  
 Asp Gln Lys Ala Thr Val Leu Ala Ala Lys Ala Leu Gly Arg Leu Ala  
 100 105 110  
 Val Pro Gly Gly Ala Leu Thr Ser Glu Phe Val Asn Phe Glu Val Lys  
 115 120 125  
 Arg Ala Leu Glu Trp Leu Gln Gly Glu Arg Asn Glu Asn Arg Arg Tyr  
 130 135 140  
 Ala Ala Val Leu Ile Leu Lys Glu Leu Ala Lys Asn Thr Ser Thr Leu  
 145 150 155 160  
 Ile Tyr Ala His Ile Asp Ser Ile Phe Glu Leu Leu Trp His Gly Leu  
 165 170 175  
 Arg Asp Pro Lys Val Thr Ile Arg Ile Ala Ser Ala Asp Ala Leu Ser  
 180 185 190

## PhoenixTemp32470.tmp.txt

Glu Phe Leu Lys Ile Val Arg Gln Arg Asp Ser Ser Ile Arg Leu Gln  
 195 200 205  
 Trp Tyr Thr Ser Ile Leu Asn Glu Ala Gln Arg Gly Val Ala Gln Gly  
 210 215 220  
 Ser Ser Asp Tyr Ile His Gly Ser Leu Leu Val Tyr Arg Gln Leu Phe  
 225 230 235 240  
 Leu Lys Ala Gly Met Phe Met His Glu Arg Tyr Arg Glu Val Ser Asp  
 245 250 255  
 Ile Ile Leu Gln Phe Arg Asp His Lys Asp Leu Leu Ile Arg Lys Thr  
 260 265 270  
 Val Thr Glu Leu Ile Ala Thr Leu Ala Ala Tyr Asn Pro Asp Glu Phe  
 275 280 285  
 Val Ser Asn Tyr Leu His Val Cys Met Leu His Leu Asn Leu Leu  
 290 295 300  
 Lys Lys Glu Asn Val Lys Met Leu Ala Phe Ala Thr Ile Gly Lys Val  
 305 310 315 320  
 Ala Val Ala Ile Thr Asn Ser Ile Ile Pro Tyr Leu Asp Pro Ile Cys  
 325 330 335  
 Asp Ser Ile Lys Glu Ser Leu Lys Ile His Ile Arg Asn Lys Ser Ala  
 340 345 350  
 Ser Asp Ala Ala Ile Phe Gln Cys Ile Ser Leu Leu Ser Ile Ala Leu  
 355 360 365  
 Gly Gln Ala Phe Ser Asn Tyr Ala Tyr Asp Leu Phe Asp Leu Ile Phe  
 370 375 380  
 Ala Ser Gly Leu Ser Glu Ala Ser Tyr Arg Ala Leu Ser Asp Leu Ala  
 385 390 395 400  
 His Asn Ile Pro Pro Leu Leu Pro Val Ile Gln Glu Arg Leu Leu Asp  
 405 410 415  
 Met Leu Ser Lys Ile Leu Ser Gly Arg Pro Phe Ile Pro Pro Gly Cys  
 420 425 430  
 Pro Pro Gln Tyr Val Ala Arg Ser Leu Lys Ser Ser Lys Ser Ala Ser  
 435 440 445  
 Leu Lys Thr Gly Phe Phe Pro Asn Asp Val Tyr Ile Leu Ala Leu Lys  
 450 455 460  
 Val Leu Gly Asn Phe Asp Phe Ser Gly Tyr Ile Leu Asn Glu Phe Val  
 465 470 475 480  
 Lys Asp Cys Val Val Val Tyr Leu Glu Asn Asn Asp Pro Glu Val Arg  
 485 490 495  
 Lys Thr Ala Ser Ile Thr Cys Ser Gln Leu Phe Ala Arg Asp Pro Ile  
 500 505 510  
 Leu Ser Gln Thr Ser Asp His Ala Ile Gln Val Val Ala Glu Val Leu  
 515 520 525  
 Glu Lys Leu Leu Thr Val Gly Ile Cys Asp Thr Val Pro Asp Ile Arg  
 530 535 540  
 Leu Thr Val Leu Asn Ser Leu Asp Ser Arg Phe Asn Lys His Leu Ala  
 545 550 555 560  
 Gln Ala Asp Lys Ile Arg Leu Leu Phe Ile Ala Ile Asn Asp Glu Asn  
 565 570 575  
 Phe Ala Val Arg Glu Ser Ala Leu Arg Ile Ile Gly Arg Leu Asn Val  
 580 585 590  
 Tyr Asn Pro Ala Tyr Val Met Pro Tyr Leu Arg Lys Ile Met Leu Lys  
 595 600 605  
 Thr Leu Thr Ile Leu Asp Tyr Ser Thr Ile Ile Arg Thr Lys Glu Glu  
 610 615 620  
 Asn Ala Lys Leu Leu Cys Leu Leu Ile Ala Ala Ala Pro Arg Leu Ile  
 625 630 635 640  
 Glu Ser His Val Glu Pro Ile Leu Gln Ile Leu Leu Pro Lys Ala Lys  
 645 650 655  
 Asp Ser Ser Ser Ile Val Ala Ala Ser Ile Val Asn Ser Leu Gly Glu  
 660 665 670  
 Ile Cys Gln Ile Ser Gly Glu Val Ile Val Pro Phe Ile Lys Asp Leu  
 675 680 685  
 Met Pro Leu Ile Ile Glu Ala Leu Gln Asp Gln Ser Ser Pro Ile Arg  
 690 695 700  
 Arg Ala Ala Ala Leu Lys Ala Leu Gly Asn Leu Ser Ser Ser Thr Gly  
 705 710 715 720  
 Tyr Val Ile Asp Pro Tyr Ile Glu Phe Pro Ser Leu Leu Asp Ile Leu  
 725 730 735  
 Ile Gly Ile Thr Lys Thr Glu Gln Asp Ile Thr Ile Arg Arg Glu Thr

## PhoenixTemp32470.tmp.txt

```

740
Ile Lys Leu 740 Ile Gly Thr Leu 745 Gly Ala Leu Asp Pro Asn 750 Arg His Arg
755
Val Leu Glu Lys Gly Thr Glu 760 Lys Val Val Pro Glu 765 Gln Lys Asn Ile
770
Pro Pro Asp Ile Ser Leu 775 Leu Met Ser Gly Ile 780 Gly Pro Ser Ser Asp
785
Glu Tyr Tyr Pro Thr 805 Val Val Ile Thr Ala 810 Leu Met Ser Ile Leu Lys
820
Asp Pro Ser Leu Thr Ile His His Thr 825 Ala Val Ile Gln Ala Val Met
835
Tyr Ile Phe Lys Thr Met Gly Leu 840 Arg Cys Ala Pro Phe 845 Leu Ser Gln
850
Ile Ile Pro Glu Phe Ile Ala 855 Val Met Arg Thr Cys 860 Pro Thr Asn Ile
865
Leu Glu Phe Tyr Phe Gln 870 Gln Leu Ser Ile Leu Val Leu Ile Val Arg
880
Gln His Ile Arg Ser 885 Phe Leu Pro Asp Leu 890 Phe Lys Leu Ile Lys Asp
895
Phe Trp Asn Pro 900 His Ser Asn Leu 905 Gln Phe Thr Ile Leu Ser Leu Ile
910
Glu Ser Leu Ala Arg Ala Met Gln 920 Gly Glu Phe Lys Pro Tyr Leu Pro
930
Ser Leu Leu Val Met Met Leu 935 Gln Ile Phe Asp Ser Asp Val Ser Val
945
Asp Ser Val Ser Thr Lys 950 Lys Val Leu His Ala Phe Ile Val Phe Gly
960
Asp Thr Leu Ala Asp Tyr Phe His Met Leu 970 Leu Asp Pro Ile Leu Arg
975
Leu Tyr Glu Arg 980 Asn Asp Val Ser Ile 985 Gly Ile Lys Glu Ser Ile Met
990
Ile Thr Ile Gly Arg Leu Ser Met Val Ile Asn Leu Ser Glu Tyr Ala
1000
Ser Arg Ile Ile His Pro Val Met Arg Met Leu Ser Cys Asn Asn Ala
1010
Ser Leu Ile Arg Val Ser 1015 Met Asp Thr Val Cys Ala Leu Ile Tyr Gln
1025
Leu Asn Val Asp Phe Ala Ile Phe Ile Pro Met Ile Asp Lys Cys Leu
1030
Lys Met Asn Gly Val Thr His Glu Thr Tyr Ser Ile Leu Val Glu Gln
1040
Phe Leu Gln Glu Gln Pro Leu Pro Ile Lys Leu Asn Pro Tyr Glu Lys
1050
Tyr Asp Lys Pro Lys Leu Asp Val Val Ala Ser Ala Ala Asp Ile Thr
1060
Ser Lys Lys Leu Pro Val Asn Gln Glu Ile Leu Arg Asn Ala Trp Glu
1070
Ala Ser Gln Arg Ser Thr Lys Asp Asp Trp Gln Glu Trp Ile Arg Arg
1080
Leu Gly Val Ala Leu Leu Arg Glu Ser Pro Ser His Ala Leu Arg Ala
1090
Cys Ala Ala Leu Ala Ala Tyr 1100 Gln Pro Leu Ala Arg Asp Leu Phe
1110
Asn Ala Ser Phe Val Ser Cys Trp Ser Glu Leu Tyr Asp His Phe Gln
1120
Glu Glu Leu Val Lys Ser Ile Glu Ile Ala Leu Thr Ser Pro His Ile
1130
Ser Pro Glu Ile Ile Gln Ile Leu Leu Asn Leu Ala Glu Phe Met Glu
1140
His Asp Asp Lys Pro Leu Pro Ile Asp Ile Arg Thr Leu Gly Ala Tyr
1150
Ala Ala Lys Cys His Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Leu
1160
Glu Phe Ile Glu Glu Glu Leu Val Thr Lys Pro Ser Val Asp Thr Ile
1170
Glu Ala Leu Ile Ser Ile Asn Asn Gln Leu Gln Gln Pro Asp Ala Ala
1180
Ile Gly Ile Leu Lys His Ala Gln Gln His Asp Lys Met Asn Leu Lys
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1285
1290
1295

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## PhoenixTemp32470.tmp.txt

Glu Thr Trp Tyr Glu Lys Leu Gln Arg Trp Glu Asp Ala Leu Ser Ala  
 1300 1305 1310  
 Tyr Glu Lys Arg Glu Ala Ala Gly Ala Gly Asn Phe Glu Ile Thr Met  
 1315 1320 1325  
 Gly Lys Leu Arg Cys Leu His Ala Leu Gly Glu Trp Asp Arg Leu Ser  
 1330 1335 1340  
 Gln Leu Ala Gln Glu Asn Trp Ile His Ala Gly His Asp Ala Arg Arg  
 1345 1350 1355 1360  
 Tyr Ile Ala Pro Leu Ser Val Ala Ala Ala Trp Gly Leu Gly Gln Trp  
 1365 1370 1375  
 Glu Gln Met Asp Glu Tyr Ile Ser Val Met Lys Ser Glu Ser Pro Asp  
 1380 1385 1390  
 Lys Ala Phe Phe Asn Ala Ile Val Ala Leu His Arg Ser Gln Phe Glu  
 1395 1400 1405  
 Glu Ala Ala Ser Tyr Ile Thr Arg Ala Arg Asp Leu Leu Asp Thr Glu  
 1410 1415 1420  
 Leu Thr Ala Leu Val Gly Glu Ser Tyr Asn Arg Ala Tyr Ser Val Ala  
 1425 1430 1435 1440  
 Val Arg Val Gln Met Leu Ser Glu Leu Glu Ile Ile Thr Tyr Lys  
 1445 1450 1455  
 Lys Ala Glu Asp Lys Pro Glu Val Arg Glu Met Ile Lys Lys Thr Trp  
 1460 1465 1470  
 Val Arg Arg Leu Lys Gly Cys Gln Arg Asn Val Asp Val Trp Gln Arg  
 1475 1480 1485  
 Met Leu Arg Ile Arg Ser Leu Val Ile Ser Pro Arg Asp Asn Met Glu  
 1490 1495 1500  
 Met Trp Ile Lys Phe Ala Asn Leu Cys Arg Lys Ser Gly Arg Ile Ser  
 1505 1510 1515 1520  
 Leu Ala Lys Lys Ser Leu Asn Leu Leu Glu Asp Asp Glu Asn Leu  
 1525 1530 1535  
 Asp Asn Ser Leu Val Leu Lys Lys Thr His Pro Ser Ile Val Tyr Ala  
 1540 1545 1550  
 Asn Leu Lys Phe Leu Trp Ala Val Asp Asp Lys Arg Lys Ala Leu Asn  
 1555 1560 1565  
 Ser Met Gln Glu Phe Thr Ser Gln Leu Ile Ser Asp Ile Asn Val Asp  
 1570 1575 1580  
 Pro Ala Leu Phe Val Gln Ser Thr Ser Val Asn Thr Gln Lys Ser Gln  
 1585 1590 1595 1600  
 Glu Glu Ile Gln Tyr Tyr Phe His Leu Leu Ala Arg Cys Tyr His Lys  
 1605 1610 1615  
 Gln Gly Gln Trp Gln Gln Glu Ile Glu Asn Asn Trp Ser Glu Gly Ser  
 1620 1625 1630  
 Phe Asp Gly Val Leu Gln Ser Tyr Met Tyr Ala Thr Gln Phe Asp Ser  
 1635 1640 1645  
 Lys Trp Tyr Lys Ala Trp His Ser Trp Ala Leu Ala Asn Phe Glu Ala  
 1650 1655 1660  
 Val Lys Phe Leu Glu Gln Ser Glu Glu Gln Ile Pro Ser Ala Ala Tyr  
 1665 1670 1675 1680  
 Glu Gln Tyr Ile Ile Pro Ala Val Lys Gly Phe Phe Lys Ser Ile Ala  
 1685 1690 1695  
 Leu Ser Lys Gly Asn Leu Gln Asp Thr Leu Arg Leu Leu Asn Leu Trp  
 1700 1705 1710  
 Phe Lys Phe Gly Asn Asn Ser Asn Val Ile Asn Thr Leu Asn Val Gly  
 1715 1720 1725  
 Ile Ser Thr Val Asn Ile Asp Ile Trp Leu Asp Val Ile Pro Gln Leu  
 1730 1735 1740  
 Ile Ala Arg Ile His Ala Ser Ser Leu Ser Val Arg Lys Ser Val His  
 1745 1750 1755 1760  
 Gln Leu Leu Ser Asp Val Gly Arg Ala His Pro Gln Ala Leu Val Tyr  
 1765 1770 1775  
 Pro Leu Thr Val Ala Ala Lys Ser Gln Ser Ser Ala Arg Gln Asn Ala  
 1780 1785 1790  
 Ala Leu Ala Ile Met Asp Ser Leu Lys Thr His Ser Pro Arg Leu Val  
 1795 1800 1805  
 Glu Gln Ala Arg Leu Val Ser His Glu Leu Ile Arg Ala Ala Ile Leu  
 1810 1815 1820  
 Trp His Glu Gln Trp His Glu Gly Leu Glu Glu Ala Ser Arg Leu Tyr  
 1825 1830 1835 1840  
 Phe Gly Asp His Asn Ile Glu Gly Met Phe Ala Val Leu Arg Pro Leu

## PhoenixTemp32470.tmp.txt

1845 1850 1855  
 His Glu Met Leu Glu Arg Gly Pro Glu Thr Leu Arg Glu Ile Ser Phe  
 1860 1865 1870  
 Gln Gln Ala Phe Gly Arg Asp Leu Val Glu Ala Arg Asp Cys Cys Ile  
 1875 1880 1885  
 Arg Phe Glu Gln Thr Gly Asp Ile Ser Asp Leu Asn Gln Ala Trp Asp  
 1890 1895 1900  
 Leu Tyr Tyr Gln Val Phe Lys Lys Ile Arg Lys Gln Leu Pro Gln Leu  
 1905 1910 1915 1920  
 Thr Thr Leu Asp Leu Gln Tyr Val Ser Pro Lys Leu Leu His Val His  
 1925 1930 1935  
 Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr Val Ser Gly Lys Pro Val  
 1940 1945 1950  
 Ile Arg Ile Val Lys Phe Tyr Pro Thr Phe Asn Val Ile Thr Ser Lys  
 1955 1960 1965  
 Gln Arg Pro Arg Arg Leu Ser Ile Lys Gly Ser Asp Gly Lys Asp Tyr  
 1970 1975 1980  
 Gln Tyr Val Leu Lys Gly His Glu Asp Ile Arg Gln Asp Glu Arg Val  
 1985 1990 1995 2000  
 Met Gln Leu Phe Gly Leu Cys Asn Asn Leu Leu Leu Ala Asp Pro Glu  
 2005 2010 2015  
 Thr Phe Lys Arg Leu Leu Ser Ile Gln Arg Tyr Pro Val Ile Pro Leu  
 2020 2025 2030  
 Ser Pro Asp Ser Gly Leu Leu Gly Trp Val Leu Asp Ser Asp Thr Leu  
 2035 2040 2045  
 His Val Leu Ile Arg Asp Tyr Arg Glu Ser Arg Lys Ile Leu Leu Asn  
 2050 2055 2060  
 Ile Glu His Arg Leu Ile Ile Gln Met Ala Pro Asp Tyr Asp Arg Leu  
 2065 2070 2075 2080  
 Thr Leu Leu Gln Lys Val Glu Val Phe Glu Tyr Ala Leu Leu Ser Thr  
 2085 2090 2095  
 Thr Gly Gln Asp Leu Tyr Arg Val Leu Trp Leu Lys Ser Arg Ser Ser  
 2100 2105 2110  
 Glu Ala Trp Leu Asn Arg Arg Thr Asn Tyr Ser Arg Thr Leu Ala Val  
 2115 2120 2125  
 Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser  
 2130 2135 2140  
 Asn Leu Met Leu Asp Arg Tyr Thr Gly Asn Ile Ile His Ile Asp Phe  
 2145 2150 2155 2160  
 Gly Asp Cys Phe Glu Val Ala Met His Arg Glu Lys Phe Pro Glu Lys  
 2165 2170 2175  
 Ile Pro Phe Arg Leu Thr Arg Met Leu Val Asn Ala Met Glu Val Ser  
 2180 2185 2190  
 Gly Ile Glu Gly Thr Phe Arg Ile Thr Cys Glu His Val Met Arg Val  
 2195 2200 2205  
 Leu Arg Thr Asn Lys Glu Ser Val Met Ala Val Leu Glu Ala Phe Val  
 2210 2215 2220  
 Tyr Asp Pro Leu Ile Asn Trp Arg Leu Ala Pro Ala Tyr Ser Pro Ser  
 2225 2230 2235 2240  
 Ile Asp Glu Lys Gln Ser Asn Glu Pro Asn Thr Leu Leu Gly Glu Thr  
 2245 2250 2255  
 Ile Asp Gly Leu His Arg Lys Arg Leu Asn Glu Glu Gly Ile Thr Leu  
 2260 2265 2270  
 Glu Glu Arg Gln Lys Pro Glu Ile Leu Asn Gln Arg Ala Ile Thr Val  
 2275 2280 2285  
 Leu Asn Arg Val Ser Asn Lys Leu Thr Gly Arg Asp Phe Lys Pro Gln  
 2290 2295 2300  
 Gln Gln Leu Asp Val Pro Ser Gln Val Glu Lys Leu Ile Leu Gln Ala  
 2305 2310 2315 2320  
 Thr Ser Ile Glu Asn Leu Cys Leu Cys Tyr Ile Gly Trp Cys Ser Phe  
 2325 2330 2335  
 Trp

&lt;210&gt; 2578

&lt;211&gt; 7425

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(7425)

&lt;400&gt; 2578

atg	aat	aaa	tac	att	aac	aaa	tac	acc	acg	cca	cct	aac	tta	ttg	tct	48
Met	Asn	Lys	Tyr	Ile	Asn	Lys	Tyr	Thr	Thr	Pro	Pro	Asn	Leu	Leu	Ser	
1				5					10					15		
tta	cga	caa	agg	gcc	gaa	ggc	aaa	cac	aga	aca	aga	aag	aaa	ctt	aca	96
Leu	Arg	Gln	Arg	Ala	Glu	Gly	Lys	His	Arg	Thr	Arg	Lys	Lys	Leu	Thr	
			20					25					30			
cac	aaa	tcg	cac	tcc	cac	gat	gat	gag	atg	tca	act	act	tca	aac	aca	144
His	Lys	Ser	His	Ser	His	Asp	Asp	Glu	Met	Ser	Thr	Thr	Ser	Asn	Thr	
			35				40					45				
gat	tcc	aat	cac	aat	ggg	ccc	aat	gac	tct	ggg	aga	gtg	atc	act	ggg	192
Asp	Ser	Asn	His	Asn	Gly	Pro	Asn	Asp	Ser	Gly	Arg	Val	Ile	Thr	Gly	
			50			55					60					
tct	gct	ggg	cat	att	ggg	aaa	ata	tcc	ttt	gta	gat	tca	gaa	cta	gat	240
Ser	Ala	Gly	His	Ile	Gly	Lys	Ile	Ser	Phe	Val	Asp	Ser	Glu	Leu	Asp	
					70					75					80	
aca	aca	ttt	tct	act	tta	aat	ttg	att	ttt	gat	aaa	ctt	aaa	agc	gat	288
Thr	Thr	Phe	Ser	Thr	Leu	Asn	Leu	Ile	Phe	Asp	Lys	Leu	Lys	Ser	Asp	
				85					90					95		
gtg	cca	caa	gaa	cga	gcc	tct	ggc	gct	aat	gaa	tta	agc	act	act	ttg	336
Val	Pro	Gln	Glu	Arg	Ala	Ser	Gly	Ala	Asn	Glu	Leu	Ser	Thr	Thr	Leu	
			100					105					110			
acc	tca	tta	gca	agg	gaa	gta	tct	gct	gag	caa	ttt	caa	agg	ttt	agc	384
Thr	Ser	Leu	Ala	Arg	Glu	Val	Ser	Ala	Glu	Gln	Phe	Gln	Arg	Phe	Ser	
			115				120					125				
aac	agt	tta	aac	aat	aag	ata	ttt	gaa	ctt	att	cac	ggg	ttt	act	tca	432
Asn	Ser	Leu	Asn	Asn	Lys	Ile	Phe	Glu	Leu	Ile	His	Gly	Phe	Thr	Ser	
						135					140					
agt	gag	aag	ata	ggg	ggg	att	ctt	gct	gtt	gat	act	ctg	atc	tca	ttc	480
Ser	Glu	Lys	Ile	Gly	Gly	Ile	Leu	Ala	Val	Asp	Thr	Leu	Ile	Ser	Phe	
				150						155					160	
tac	ctg	agt	aca	gag	gag	ctg	cca	aac	caa	act	tca	aga	ctg	gcg	aac	528
Tyr	Leu	Ser	Thr	Glu	Glu	Leu	Pro	Asn	Gln	Thr	Ser	Arg	Leu	Ala	Asn	
				165					170					175		
tat	tta	cgt	gtt	tta	att	cca	tcc	agt	gac	att	gaa	gtt	atg	aga	tta	576
Tyr	Leu	Arg	Val	Leu	Ile	Pro	Ser	Ser	Asp	Ile	Glu	Val	Met	Arg	Leu	
			180					185					190			
gcg	gct	aac	acc	tta	ggg	aga	ttg	acc	gtg	cca	ggg	ggg	aca	tta	aca	624
Ala	Ala	Asn	Thr	Leu	Gly	Arg	Leu	Thr	Val	Pro	Gly	Gly	Thr	Leu	Thr	
			195				200					205				
tca	gat	ttc	gtc	gaa	ttt	gag	gtc	aga	act	tgc	att	gat	tgg	ctt	act	672
Ser	Asp	Phe	Val	Glu	Phe	Glu	Val	Arg	Thr	Cys	Ile	Asp	Trp	Leu	Thr	
						215					220					
ctg	aca	gca	gat	aat	aac	tca	tcg	agc	tct	aag	ttg	gaa	tac	agg	aga	720
Leu	Thr	Ala	Asp	Asn	Asn	Ser	Ser	Ser	Ser	Lys	Leu	Glu	Tyr	Arg	Arg	
					230					235					240	
cat	gct	gcg	cta	tta	atc	ata	aag	gca	tta	gca	gac	aat	tca	ccc	tat	768
His	Ala	Ala	Leu	Leu	Ile	Ile	Lys	Ala	Leu	Ala	Asp	Asn	Ser	Pro	Tyr	
				245					250					255		
ctt	tta	tac	cct	tac	gtt	aac	tct	atc	tta	gac	aat	att	tgg	gtg	cca	816
Leu	Leu	Tyr	Pro	Tyr	Val	Asn	Ser	Ile	Leu	Asp	Asn	Ile	Trp	Val	Pro	
			260				265						270			
tta	agg	gat	gca	aag	tta	att	ata	cga	tta	gat	gcc	gca	gtg	gca	ttg	864
Leu	Arg	Asp	Ala	Lys	Leu	Ile	Ile	Arg	Leu	Asp	Ala	Ala	Val	Ala	Leu	
			275				280					285				
ggg	aaa	tgt	ctt	act	att	att	cag	gat	aga	gac	cct	gct	ttg	gga	aaa	912
Gly	Lys	Cys	Leu	Thr	Ile	Ile	Gln	Asp	Arg	Asp	Pro	Ala	Leu	Gly	Lys	
			290			295					300					
cag	tgg	ttt	caa	aga	tta	ttt	caa	ggg	tgt	aca	cat	ggc	tta	agt	ctc	960
Gln	Trp	Phe	Gln	Arg	Leu	Phe	Gln	Gly	Cys	Thr	His	Gly	Leu	Ser	Leu	
					310				315						320	
aat	acg	aat	gat	tca	gtg	cat	gct	act	ctg	ttg	gta	ttt	cga	gaa	tta	1008
Asn	Thr	Asn	Asp	Ser	Val	His	Ala	Thr	Leu	Leu	Val	Phe	Arg	Glu	Leu	
				325					330					335		
ctc	agc	ttg	aaa	gca	cct	tat	ctc	agg	gat	aaa	tat	gat	gat	att	tac	1056

## PhoenixTemp32470.tmp.txt

Leu	Ser	Leu	Lys 340	Ala	Pro	Tyr	Leu	Arg 345	Asp	Lys	Tyr	Asp	Asp 350	Ile	Tyr		
aaa	tct	act	atg	aag	tac	aag	gaa	tat	aaa	ttt	gat	gtt	ata	agg	aga	1104	
Lys	Ser	Thr 355	Met	Lys	Tyr	Lys	Glu 360	Tyr	Lys	Phe	Asp	Val 365	Ile	Arg	Arg		
gaa	gtt	tat	gct	att	tta	cct	ctt	tta	gct	gct	ttt	gac	cct	gcc	att	1152	
Glu	Val 370	Tyr	Ala	Ile	Leu	Pro 375	Leu	Leu	Ala	Ala	Phe 380	Asp	Pro	Ala	Ile		
ttc	aca	aag	aaa	tat	ctc	gat	agg	ata	atg	gtt	cat	tat	tta	aga	tat	1200	
Phe 385	Thr	Lys	Lys	Tyr	Leu 390	Asp	Arg	Ile	Met	Val 395	His	Tyr	Leu	Arg	Tyr 400		
ttg	aag	aac	atc	gat	atg	aat	gct	gca	aat	aat	tcg	gat	aaa	cct	ttt	1248	
Leu	Lys	Asn	Ile	Asp 405	Met	Asn	Ala	Ala	Asn 410	Asn	Ser	Asp	Lys	Pro	Phe 415		
ata	tta	gtt	tct	ata	ggg	gat	att	gca	ttt	gaa	gtt	ggg	tcg	agc	att	1296	
Ile	Leu	Val 420	Ser	Ile	Gly	Asp	Ile	Ala 425	Phe	Glu	Val	Gly	Ser 430	Ser	Ile		
tca	ccc	tat	atg	aca	ctt	att	ctg	gat	aat	att	agg	gaa	ggc	tta	aga	1344	
Ser	Pro	Tyr 435	Met	Thr	Leu	Ile	Leu 440	Asp	Asn	Ile	Arg	Glu 445	Gly	Leu	Arg		
acg	aaa	ttc	aaa	gtt	aga	aaa	caa	ttc	gag	aag	gat	tta	ttt	tat	tgc	1392	
Thr	Lys 450	Phe	Lys	Val	Arg	Lys 455	Gln	Phe	Glu	Lys	Asp 460	Leu	Phe	Tyr	Cys		
att	ggg	aaa	tta	gct	tgt	gct	ttg	ggc	cca	gct	ttt	gct	aag	cac	ttg	1440	
Ile 465	Gly	Lys	Leu	Ala	Cys 470	Ala	Leu	Gly	Pro	Ala 475	Phe	Ala	Lys	His	Leu 480		
aac	aaa	gat	ctt	ctt	aat	ttg	atg	tta	aac	tgt	cca	atg	tcc	gac	cat	1488	
Asn	Lys	Asp	Leu	Leu 485	Asn	Leu	Met	Leu	Asn 490	Cys	Pro	Met	Ser	Asp 495	His		
atg	cag	gag	act	tta	atg	atc	ctt	aac	gag	aaa	ata	ccc	tct	ttg	gaa	1536	
Met	Gln	Glu	Thr 500	Leu	Met	Ile	Leu	Asn 505	Glu	Lys	Ile	Pro	Ser 510	Leu	Glu		
tct	acc	gtt	aat	tcg	agg	ata	cta	aat	tta	ctg	tcg	ata	tcc	tta	tct	1584	
Ser	Thr	Val 515	Asn	Ser	Arg	Ile	Leu 520	Asn	Leu	Leu	Ser	Ile 525	Ser	Leu	Ser		
ggg	gaa	aaa	ttt	att	caa	tca	aac	caa	tac	gat	ttt	aat	aat	caa	ttt	1632	
Gly	Glu	Lys	Phe	Ile	Gln	Ser 535	Asn	Gln	Tyr	Asp	Phe 540	Asn	Asn	Gln	Phe		
tcc	att	gaa	aag	gct	cgt	aaa	tca	aga	aac	caa	agt	ttc	atg	aaa	aaa	1680	
Ser 545	Ile	Glu	Lys	Ala	Arg 550	Lys	Ser	Arg	Asn	Gln 555	Ser	Phe	Met	Lys	Lys 560		
act	ggg	gaa	tct	aat	gac	gat	att	aca	gat	gcc	caa	att	ttg	att	cag	1728	
Thr	Gly	Glu	Ser	Asn 565	Asp	Asp	Ile	Thr	Asp 570	Ala	Gln	Ile	Leu	Ile 575	Gln		
tgt	ttt	aaa	atg	ctg	caa	cta	att	cat	cat	caa	tat	tcc	ttg	acg	gag	1776	
Cys	Phe	Lys	Met 580	Leu	Gln	Leu	Ile	His 585	His	Gln	Tyr	Ser	Leu 590	Thr	Glu		
ttt	gtt	agg	ctt	ata	acc	att	tct	tac	att	gag	cat	gag	gat	tcg	tct	1824	
Phe	Val 595	Arg	Leu	Ile	Thr	Ile	Ser 600	Tyr	Ile	Glu	His 605	Glu	Asp	Ser	Ser		
gtc	aga	aaa	ttg	gca	gca	tta	acg	tcg	tgt	gat	tta	ttt	atc	aaa	gac	1872	
Val	Arg 610	Lys	Leu	Ala	Ala	Leu 615	Thr	Ser	Cys	Asp	Leu 620	Phe	Ile	Lys	Asp		
gat	ata	tgt	aaa	caa	aca	tca	gtt	cat	gct	tta	cac	tcg	gtt	tct	gaa	1920	
Asp 625	Ile	Cys	Lys	Gln	Thr 630	Ser	Val	His	Ala	Leu 635	His	Ser	Val	Ser	Glu 640		
gtg	cta	agt	aag	cta	tta	atg	atc	gca	ata	act	gat	ccg	gtt	gca	gaa	1968	
Val	Leu	Ser	Lys	Leu 645	Leu	Met	Ile	Ala	Ile 650	Thr	Asp	Pro	Val	Ala 655	Glu		
att	aga	ttg	gaa	att	ctt	cag	cat	ttg	ggg	tca	aat	ttt	gat	cct	caa	2016	
Ile	Arg	Leu	Glu 660	Ile	Leu	Gln	His	Leu 665	Gly	Ser	Asn	Phe	Asp 670	Pro	Gln		
ttg	gcc	caa	cca	gac	aat	tta	cgc	cta	ctt	ttc	atg	gcg	ctg	aac	gat	2064	
Leu	Ala 675	Gln	Pro	Asp	Asn	Leu	Arg 680	Leu	Leu	Phe	Met	Ala 685	Leu	Asn	Asp		
gag	att	ttt	ggg	att	caa	ttg	gaa	gct	atc	aaa	ata	ata	ggc	aga	ttg	2112	
Glu	Ile 690	Phe	Gly	Ile	Gln	Leu 695	Glu	Ala	Ile	Lys	Ile 700	Ile	Gly	Arg	Leu		
agt	tct	gtc	aac	ccc	gct	tat	gta	gtt	cct	tct	ttg	agg	aaa	act	tta	2160	

705	Ser	Val	Asn	Pro	Ala	Tyr	Val	Val	Pro	Ser	Leu	Arg	Lys	Thr	Leu	
ctg	gaa	cta	tta	acg	caa	ttg	aag	ttc	tca	aat	atg	cca	aaa	aaa	aag	2208
Leu	Glu	Leu	Leu	Thr	Gln	Leu	Lys	Phe	710 725	Asn	Met	Pro	Lys	Lys	Lys	
gag	gaa	agt	gca	act	cta	tta	tgt	acg	ctg	ata	aat	tcc	agc	gat	gaa	2256
Glu	Glu	Ser	Ala	Thr	Leu	Leu	Cys	Thr	Leu	Ile	Asn	Ser	Ser	Asp	Glu	
gta	gcg	aaa	cct	tat	att	gat	cct	att	cta	gac	gtc	att	ctt	cct	aaa	2304
Val	Ala	Lys	Pro	Tyr	Ile	Asp	Pro	Ile	Leu	Asp	Val	Ile	Leu	Pro	Lys	
tgc	cag	gat	gct	tca	tct	gcc	gta	gca	tcc	acc	gct	tta	aag	gtt	ttg	2352
Cys	Gln	Asp	Ala	Ser	Ser	Ala	Val	Ala	Ser	Thr	Ala	Leu	Lys	Val	Leu	
ggt	gaa	cta	tct	gtt	gtt	gga	gga	aaa	gaa	atg	acg	cgt	tac	tta	aag	2400
Gly	Glu	Leu	Ser	Val	Val	Gly	Gly	Lys	Glu	Met	Thr	Arg	Tyr	Leu	Lys	
gaa	ttg	atg	cca	ttg	atc	att	aac	aca	ttt	cag	gac	caa	tca	aac	tct	2448
Glu	Leu	Met	Pro	Leu	Ile	Ile	Asn	Thr	Phe	Gln	Asp	Gln	Ser	Asn	Ser	
ttt	aaa	aga	gat	gcc	gcc	tta	aca	aca	tta	gga	cag	ctg	gct	gct	tcc	2496
Phe	Lys	Arg	Asp	Ala	Ala	Leu	Thr	Thr	Leu	Gly	Gln	Leu	Ala	Ala	Ser	
tct	ggt	tat	gtt	gtt	ggc	cct	tta	cta	gac	tac	cca	gag	tta	ctt	ggc	2544
Ser	Gly	Tyr	Val	Val	Gly	Pro	Leu	Leu	Asp	Tyr	Pro	Glu	Leu	Leu	Gly	
att	ttg	ata	aat	att	ctt	aag	act	gaa	aac	aac	cct	cat	atc	agg	cgt	2592
Ile	Leu	Ile	Asn	Ile	Leu	Lys	Thr	Glu	Asn	Asn	Pro	His	Ile	Arg	Arg	
gga	act	gtt	cgt	ttg	att	ggt	ata	tta	ggc	gct	ctt	gat	cca	tat	aag	2640
Gly	Thr	Val	Arg	Leu	Ile	Gly	Ile	Leu	Gly	Ala	Leu	Asp	Pro	Tyr	Lys	
cac	aga	gaa	ata	gaa	gtc	aca	tca	aac	tca	aag	agt	tca	gta	gag	caa	2688
His	Arg	Glu	Ile	Glu	Val	Thr	Ser	Asn	Ser	Lys	Ser	Ser	Val	Glu	Gln	
aat	gct	cct	tca	atc	gac	atc	gca	ttg	cta	atg	caa	ggg	gta	tct	cca	2736
Asn	Ala	Pro	Ser	Ile	Asp	Ile	Ala	Leu	Leu	Met	Gln	Gly	Val	Ser	Pro	
tcc	aac	gat	gaa	tat	tac	ccc	act	gta	gtt	atc	cac	aat	ctg	atg	aag	2784
Ser	Asn	Asp	Glu	Tyr	Tyr	Pro	Thr	Val	Val	Ile	His	Asn	Leu	Met	Lys	
ata	ttg	aat	gat	cca	tcg	ttg	tca	atc	cat	cac	acg	gct	gct	att	caa	2832
Ile	Leu	Asn	Asp	Pro	Ser	Leu	Ser	Ile	His	His	Thr	Ala	Ala	Ile	Gln	
gct	att	atg	cat	att	ttt	caa	aac	ctt	ggt	tta	cga	tgt	gtc	tcc	ttt	2880
Ala	Ile	Met	His	Ile	Phe	Gln	Asn	Leu	Gly	Leu	Arg	Cys	Val	Ser	Phe	
ttg	gat	caa	att	att	cca	ggt	atc	att	tta	gtc	atg	cgt	tca	tgc	ccg	2928
Leu	Asp	Gln	Ile	Ile	Pro	Gly	Ile	Ile	Leu	Val	Met	Arg	Ser	Cys	Pro	
ccg	tcc	caa	ctt	gac	ttt	tat	ttt	cag	caa	ctg	gga	tct	ctc	atc	tca	2976
Pro	Ser	Gln	Leu	Asp	Phe	Tyr	Phe	Gln	Gln	Leu	Gly	Ser	Leu	Ile	Ser	
att	gtc	aag	caa	cat	att	agg	ccc	cat	gtc	gag	aaa	att	tat	ggt	gtg	3024
Ile	Val	Lys	Gln	His	Ile	Arg	Pro</									

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Phe	Gly	Pro	Asn	Leu	Glu	Asp	Tyr	Ser	His	Leu	Ile	Met	Pro	Ile	Val		
gtt	aga	atg	act	gag	tat	tct	gct	gga	agt	cta	aag	aaa	atc	tcc	att	3312	
Val	Arg	Met	Thr	Glu	Tyr	Ser	Ala	Gly	Ser	Leu	Lys	Lys	Ile	Ser	Ile		
	1090					1095					1100						
ata	act	ttg	ggt	aga	tta	gca	aag	aat	atc	aac	ctc	tct	gaa	atg	tca	3360	
Ile	Thr	Leu	Gly	Arg	Leu	Ala	Lys	Asn	Ile	Asn	Leu	Ser	Glu	Met	Ser		
	1105				1110					1115					1120		
tca	aga	att	gtt	cag	gcg	ttg	gta	aga	att	ttg	aat	aat	ggg	gat	aga	3408	
Ser	Arg	Ile	Val	Gln	Ala	Leu	Val	Arg	Ile	Leu	Asn	Asn	Gly	Asp	Arg		
				1125				1130					1135				
gaa	cta	aca	aaa	gca	acc	atg	aat	acg	cta	agt	ttg	ctc	ctt	tta	caa	3456	
Glu	Leu	Thr	Lys	Ala	Thr	Met	Asn	Thr	Leu	Ser	Leu	Leu	Leu	Leu	Gln		
			1140					1145					1150				
cta	ggt	acc	gac	ttt	gtg	gtc	ttt	gtg	cca	gtg	att	aac	aag	gcg	tta	3504	
Leu	Gly	Thr	Asp	Phe	Val	Val	Phe	Val	Pro	Val	Ile	Asn	Lys	Ala	Leu		
	1155					1160					1165						
ttg	agg	aat	agg	att	cag	cat	tca	gtg	tac	gat	caa	ctg	gtt	aat	aaa	3552	
Leu	Arg	Asn	Arg	Ile	Gln	His	Ser	Val	Tyr	Asp	Gln	Leu	Val	Asn	Lys		
	1170				1175					1180							
tta	ctg	aac	aat	gaa	tgc	ttg	cca	aca	aat	atc	ata	ttt	gac	aag	gag	3600	
Leu	Leu	Asn	Asn	Glu	Cys	Leu	Pro	Thr	Asn	Ile	Ile	Phe	Asp	Lys	Glu		
	1185				1190				1195						1200		
aac	gaa	gta	cct	gaa	agg	aaa	aat	tat	gaa	gac	gaa	atg	caa	gta	acg	3648	
Asn	Glu	Val	Pro	Glu	Arg	Lys	Asn	Tyr	Glu	Asp	Glu	Met	Gln	Val	Thr		
			1205					1210					1215				
aaa	tta	ccg	gta	aac	caa	aat	atc	cta	aag	aat	gca	tgg	tat	tgt	tct	3696	
Lys	Leu	Pro	Val	Asn	Gln	Asn	Ile	Leu	Lys	Asn	Ala	Trp	Tyr	Cys	Ser		
			1220				1225					1230					
caa	cag	aag	acc	aaa	gaa	gat	tgg	caa	gaa	tgg	ata	aga	agg	cta	tct	3744	
Gln	Gln	Lys	Thr	Lys	Glu	Asp	Trp	Gln	Glu	Trp	Ile	Arg	Arg	Leu	Ser		
	1235					1240					1245						
att	cag	ctt	cta	aag	gaa	tca	cct	tca	gct	tgt	cta	cga	tcc	tgt	tcg	3792	
Ile	Gln	Leu	Leu	Lys	Glu	Ser	Pro	Ser	Ala	Cys	Leu	Arg	Ser	Cys	Ser		
	1250				1255				1260								
agt	tta	gtc	agc	gtt	tat	tat	ccg	ttg	gcg	aga	gaa	ttg	ttt	aat	gct	3840	
Ser	Leu	Val	Ser	Val	Tyr	Tyr	Pro	Leu	Ala	Arg	Glu	Leu	Phe	Asn	Ala		
	1265			1270					1275						1280		
tca	ttc	tca	agt	tgc	tgg	gtt	gag	ctt	caa	acg	tca	tac	caa	gag	gat	3888	
Ser	Phe	Ser	Ser	Cys	Trp	Val	Glu	Leu	Gln	Thr	Ser	Tyr	Gln	Glu	Asp		
				1285				1290					1295				
ttg	att	caa	gca	tta	tgc	aag	gct	tta	tca	tcc	tct	gaa	aac	cca	ccc	3936	
Leu	Ile	Gln	Ala	Leu	Cys	Lys	Ala	Leu	Ser	Ser	Ser	Glu	Asn	Pro	Pro		
			1300				1305					1310					
gag	att	tat	caa	atg	ttg	tta	aat	tta	gtg	gaa	ttt	atg	gag	cac	gat	3984	
Glu	Ile	Tyr	Gln	Met	Leu	Leu	Asn	Leu	Val	Glu	Phe	Met	Glu	His	Asp		
	1315				1320				1325								
gac	aaa	cca	ttg	cct	atc	cca	atc	cat	aca	tta	ggt	aag	tat	gcc	caa	4032	
Asp	Lys	Pro	Leu	Pro	Ile	Pro	Ile	His	Thr	Leu	Gly	Lys	Tyr	Ala	Gln		
	1330				1335				1340								
aaa	tgt	cat	gct	ttt	gcg	aag	gca	cta	cat	tac	aaa	gag	gta	gaa	ttc	4080	
Lys	Cys	His	Ala	Phe	Ala	Lys	Ala	Leu	His	Tyr	Lys	Glu	Val	Glu	Phe		
	1345			1350				1355							1360		
tta	gaa	gag	ccg	aaa	aat	tca	aca	atc	gag	gca	ttg	att	agc	att	aat	4128	
Leu	Glu	Glu	Pro	Lys	Asn	Ser	Thr	Ile	Glu	Ala	Leu	Ile	Ser	Ile	Asn		
			1365					1370				1375					
aat	caa	ctt	cac	caa	act	gat	tct	gct	att	ggt	att	ttg	aag	cat	gcg	4176	
Asn	Gln	Leu	His	Gln	Thr	Asp	Ser	Ala	Ile	Gly	Ile	Leu	Lys	His	Ala		
			1380				1385					1390					
caa	caa	cac	aat	gaa	ttg	cag	ctg	aag	gaa	act	tgg	tat	gaa	aaa	ctt	4224	
Gln	Gln	His	Asn	Glu	Leu	Gln	Leu	Lys	Glu	Thr	Trp	Tyr	Glu	Lys	Leu		
		1395				1400					1405						
caa	cgt	tgg	gag	gat	gct	ctt	gca	gca	tat	aat	gag	aag	gag	gca	gca	4272	
Gln	Arg	Trp	Glu	Asp	Ala	Leu	Ala	Ala	Tyr	Asn	Glu	Lys	Glu	Ala	Ala		
	1410				1415				1420								
gga	gaa	gat	tcg	gtt	gaa	gtg	atg	atg	gga	aaa	tta	aga	tcg	tta	tat	4320	
Gly	Glu	Asp	Ser	Val	Glu	Val	Met	Met	Gly	Lys	Leu	Arg	Ser	Leu	Tyr		
	1425			1430					1435						1440		
gcc	ctt	gga	gag	tgg	gaa	gag	ctt	tct	aaa	ttg	gca	tct	gaa	aag	tgg	4368	

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Ala	Leu	Gly	Glu	Trp	Glu	Glu	Leu	Ser	Lys	Leu	Ala	Ser	Glu	Lys	Trp				
																1445	1450	1455	
ggc	acg	gca	aaa	ccc	gaa	gtg	aag	aag	gca	atg	gcg	cct	ttg	gct	gcc		4416		
Gly	Thr	Ala	Lys	Pro	Glu	Val	Lys	Lys	Ala	Met	Ala	Pro	Leu	Ala	Ala				
																1460	1465	1470	
ggc	gct	gcc	tgg	ggt	ttg	gag	caa	tgg	gat	gaa	ata	gcc	cag	tat	act		4464		
Gly	Ala	Ala	Trp	Gly	Leu	Glu	Gln	Trp	Asp	Glu	Ile	Ala	Gln	Tyr	Thr				
																1475	1480	1485	
agc	gtc	atg	aaa	tgc	cag	tct	cca	gat	aaa	gaa	ttc	tat	gat	gca	att		4512		
Ser	Val	Met	Lys	Ser	Gln	Ser	Pro	Asp	Lys	Glu	Phe	Tyr	Asp	Ala	Ile				
																1490	1495	1500	
tta	tgt	ttg	cat	agg	aat	aat	ttt	aag	aag	gcg	gaa	gtt	cac	atc	ttt		4560		
Leu	Cys	Leu	His	Arg	Asn	Asn	Phe	Lys	Lys	Ala	Glu	Val	His	Ile	Phe				
																1505	1510	1515	1520
aat	gca	agg	gat	ctt	cta	gtt	act	gaa	ttg	tca	gct	ctt	gtt	aat	gaa		4608		
Asn	Ala	Arg	Asp	Leu	Leu	Val	Thr	Glu	Leu	Ser	Ala	Leu	Val	Asn	Glu				
																1525	1530	1535	
agc	tac	aat	aga	gca	tat	aat	gtt	gtt	gtt	aga	gcg	cag	att	ata	gca		4656		
Ser	Tyr	Asn	Arg	Ala	Tyr	Asn	Val	Val	Val	Arg	Ala	Gln	Ile	Ile	Ala				
																1540	1545	1550	
gag	ttg	gag	gaa	atc	atc	aaa	tat	aag	aag	ttg	cca	caa	aat	tca	gat		4704		
Glu	Leu	Glu	Glu	Ile	Ile	Lys	Tyr	Lys	Lys	Leu	Pro	Gln	Asn	Ser	Asp				
																1555	1560	1565	
aaa	cgt	cta	act	atg	aga	gaa	act	tgg	aat	acc	aga	tta	ctg	ggc	tgt		4752		
Lys	Arg	Leu	Thr	Met	Arg	Glu	Thr	Trp	Asn	Thr	Arg	Leu	Leu	Gly	Cys				
																1570	1575	1580	
caa	aaa	aat	att	gat	gtg	tgg	caa	aga	att	ctg	cgt	gtc	aga	tca	ttg		4800		
Gln	Lys	Asn	Ile	Asp	Val	Trp	Gln	Arg	Ile	Leu	Arg	Val	Arg	Ser	Leu				
																1585	1590	1595	1600
gtg	ata	aag	cca	aag	gag	gat	gct	caa	gtg	agg	att	aag	ttt	gcc	aac		4848		
Val	Ile	Lys	Pro	Lys	Glu	Asp	Ala	Gln	Val	Arg	Ile	Lys	Phe	Ala	Asn				
																1605	1610	1615	
tta	tgc	aga	aaa	tgc	ggt	agg	atg	gcg	cta	gct	aaa	aaa	gtc	tta	aat		4896		
Leu	Cys	Arg	Lys	Ser	Gly	Arg	Met	Ala	Leu	Ala	Lys	Lys	Val	Leu	Asn				
																1620	1625	1630	
aca	ttg	ctt	gaa	gaa	aca	gat	gac	cca	gat	cat	cct	aat	act	gct	aag		4944		
Thr	Leu	Leu	Glu	Glu	Thr	Asp	Asp	Pro	Asp	His	Pro	Asn	Thr	Ala	Lys				
																1635	1640	1645	
gca	tcc	cct	cca	gtt	gtt	tat	gca	caa	ctg	aag	tac	ttg	tgg	gct	acg		4992		
Ala	Ser	Pro	Pro	Val	Val	Tyr	Ala	Gln	Leu	Lys	Tyr	Leu	Trp	Ala	Thr				
																1650	1655	1660	
ggg	ttg	caa	gat	gag	gct	ttg	aag	caa	tta	att	aat	ttc	aca	tct	aga		5040		
Gly	Leu	Gln	Asp	Glu	Ala	Leu	Lys	Gln	Leu	Ile	Asn	Phe	Thr	Ser	Arg				
																1665	1670	1675	1680
atg	gct	cat	gat	tta	ggt	ttg	gat	cca	aat	aat	atg	ata	gct	caa	agc		5088		
Met	Ala	His	Asp	Leu	Gly	Leu	Asp	Pro	Asn	Met	Ile	Ala	Gln	Ser					
																1685	1690	1695	
gtt	cct	caa	caa	agc	aaa	aga	gtc	cct	cgt	cac	gtt	gaa	gat	tat	act		5136		
Val	Pro	Gln	Gln	Ser	Lys	Arg	Val	Pro	Arg	His	Val	Glu	Asp	Tyr	Thr				
																1700	1705	1710	
aag	ctt	tta	gct	cgt	tgt	ttc	ttg	aag	caa	gga	gaa	tgg	aga	gtt	tgc		5184		
Lys	Leu	Leu	Ala	Arg	Cys	Phe	Leu	Lys	Gln	Gly	Glu	Trp	Arg	Val	Cys				
																1715	1720	1725	
tta	cag	cct	aaa	tgg	aga	ttg	agc	aat	cca	gat	tcg	atc	cta	ggc	tcc		5232		
Leu	Gln	Pro	Lys	Trp	Arg	Leu	Ser	Asn	Pro	Asp	Ser	Ile	Leu	Gly	Ser				
																1730	1735	1740	
tat	ttg	ctc	gct	aca	cat	ttt	gac	aac	aca	tgg	tac	aaa	gcg	tgg	cat		5280		
Tyr	Leu	Leu	Ala	Thr	His	Phe	Asp	Asn	Thr	Trp	Tyr	Lys	Ala	Trp	His				
																1745	1750	1755	1760
aac	tgg	gca	ctg	gcc	aat	ttt	gaa	gtc	att	tct	atg	cta	aca	tct	gtc		5328		
Asn	Trp	Ala	Leu	Ala	Asn	Phe	Glu	Val	Ile	Ser	Met	Leu	Thr	Ser	Val				
																1765	1770	1775	
tct	aaa	aag	aaa	cag	gaa	gga	agt	gat	gct	tcc	tcg	gta	act	gat	att		5376		
Ser	Lys	Lys	Lys	Gln	Glu	Gly	Ser	Asp	Ala	Ser	Ser	Val	Thr	Asp	Ile				
																1780	1785	1790	
aat	gag	ttt	gat	aat	ggc	atg	atc	ggc	gtc	aat	aca	ttt	gat	gct	aag		5424		
Asn	Glu	Phe	Asp	Asn	Gly	Met	Ile	Gly	Val	Asn	Thr	Phe	Asp	Ala	Lys				
																1795	1800	1805	
gaa	gtt	cat	tac	tct	tct	aat	tta	ata	cac	agg	cac	gta	att	cca	gca		5472		

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Glu Val His Tyr Ser Ser Asn Leu Ile His Arg His Val Ile Pro Ala	
1810 1815 1820	
att aag ggt ttt ttt cat tcc att tct tta tca gaa tca agc tct ctt	5520
Ile Lys Gly Phe Phe His Ser Ile Ser Leu Ser Glu Ser Ser Ser Leu	
1825 1830 1835 1840	
caa gat gca tta agg tta tta act tta tgg ttt act ttt ggt ggt att	5568
Gln Asp Ala Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Gly Ile	
1845 1850 1855	
cca gaa gca acc caa gct atg cac gag ggt ttc aac cta atc caa ata	5616
Pro Glu Ala Thr Gln Ala Met His Glu Gly Phe Asn Leu Ile Gln Ile	
1860 1865 1870	
ggc aca tgg tta gaa gtg ttg cca cag tta att tct aga att cat caa	5664
Gly Thr Trp Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln	
1875 1880 1885	
ccc aat caa att gtt agt agg tca tta ctc tcc cta tta tct gat cta	5712
Pro Asn Gln Ile Val Ser Arg Ser Leu Leu Ser Leu Leu Ser Asp Leu	
1890 1895 1900	
ggt aag gct cat ccg cag gca tta gtg tac ccc tta atg gtt gcg att	5760
Gly Lys Ala His Pro Gln Ala Leu Val Tyr Pro Leu Met Val Ala Ile	
1905 1910 1915 1920	
aaa tcc gaa tct ctc tca cga cag aaa gca gct ttg tcc atc ata gaa	5808
Lys Ser Glu Ser Leu Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu	
1925 1930 1935	
aag atg aga ata cat agt cca gtt ttg gtc gac cag gct gaa ctt gtc	5856
Lys Met Arg Ile His Ser Pro Val Leu Val Asp Gln Ala Glu Leu Val	
1940 1945 1950	
agc cac gaa ttg ata cgt atg gcg gtg ctt tgg cat gag caa tgg tat	5904
Ser His Glu Leu Ile Arg Met Ala Val Leu Trp His Glu Gln Trp Tyr	
1955 1960 1965	
gag ggt ctg gat gac gcc agt agg cag ttt ttt gga gaa cat aat acc	5952
Glu Gly Leu Asp Asp Ala Ser Arg Gln Phe Phe Gly Glu His Asn Thr	
1970 1975 1980	
gaa aaa atg ttt gct gct tta gag cct ctg tac gaa atg ctg aag aga	6000
Glu Lys Met Phe Ala Ala Leu Glu Pro Leu Tyr Glu Met Leu Lys Arg	
1985 1990 1995 2000	
gga ccg gaa act ttg agg gaa ata tcg ttc caa aat tct ttt ggt agg	6048
Gly Pro Glu Thr Leu Arg Glu Ile Ser Phe Gln Asn Ser Phe Gly Arg	
2005 2010 2015	
gac ttg aat gac gct tac gaa tgg ctg atg aat tac aaa aaa tct aaa	6096
Asp Leu Asn Asp Ala Tyr Glu Trp Leu Met Asn Tyr Lys Lys Ser Lys	
2020 2025 2030	
gat gtt agt aat tta aac caa gcg tgg gac att tac tat aat gtt ttc	6144
Asp Val Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val Phe	
2035 2040 2045	
agg aaa att ggt aaa cag ttg cca caa tta caa act ctt gaa cta caa	6192
Arg Lys Ile Gly Lys Gln Pro Gln Leu Gln Thr Leu Glu Leu Gln	
2050 2055 2060	
cat gtg tcg cca aaa cta cta tct gcg cat gat ttg gaa ttg gct gtc	6240
His Val Ser Pro Lys Leu Leu Ser Ala His Asp Leu Glu Leu Ala Val	
2065 2070 2075 2080	
ccc ggg acc cgt gca agt ggt gga aaa cca att gtt aaa ata tct aaa	6288
Pro Gly Thr Arg Ala Ser Gly Gly Lys Pro Ile Val Lys Ile Ser Lys	
2085 2090 2095	
ttc gag cca gta ttt tca gta atc tca tcc aaa caa aga ccg aga aag	6336
Phe Glu Pro Val Phe Ser Val Ile Ser Ser Lys Gln Arg Pro Arg Lys	
2100 2105 2110	
ttt tgt atc aag ggt agt gat ggt aaa gat tat aag tat gtg ttg aaa	6384
Phe Cys Ile Lys Gly Ser Asp Gly Lys Asp Tyr Lys Tyr Val Leu Lys	
2115 2120 2125	
gga cat gaa gac att aga cag gat agc ttg gtc atg caa tta ttc gga	6432
Gly His Glu Asp Ile Arg Gln Asp Ser Leu Val Met Gln Leu Phe Gly	
2130 2135 2140	
cta gtt aac acg ctt ttg caa aat gac gct gag tgc ttt aga agg cat	6480
Leu Val Asn Thr Leu Leu Gln Asn Asp Ala Glu Cys Phe Arg Arg His	
2145 2150 2155 2160	
cta gat atc cag caa tat cca gca atc cca tta tct ccg aag tct ggg	6528
Leu Asp Ile Gln Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly	
2165 2170 2175	
tta ctg ggt tgg gta ccg aat agt gac acg ttc cat gta tta att agg	6576



## PhoenixTemp32470.tmp.txt

Leu Leu Gly Trp Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg  
 2180 2185 2190  
 gag cat aga gaa gcc aaa aaa att cct tta aac att gag cat tgg gtc 6624  
 Glu His Arg Glu Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val  
 2195 2200 2205  
 atg tta caa atg gca cct gat tat gac aat tta acg ttg ttg cag aaa 6672  
 Met Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Leu Gln Lys  
 2210 2215 2220  
 gta gaa gtc ttc act tac gcc cta aat aat acg gag gga caa gat ctt 6720  
 Val Glu Val Phe Thr Tyr Ala Leu Asn Asn Thr Glu Gly Gln Asp Leu  
 2225 2230 2235 2240  
 tat aag gtg tta tgg ctg aag agt agg tca tcg gaa acg tgg ttg gag 6768  
 Tyr Lys Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Thr Trp Leu Glu  
 2245 2250 2255  
 cgt aga act act tac act cga tcg cta gcc gtg atg tcc atg acc ggt 6816  
 Arg Arg Thr Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly  
 2260 2265 2270  
 tat ata ttg ggg tta ggt gac cgc cac cct agt aat ttg atg ttg gat 6864  
 Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp  
 2275 2280 2285  
 aga atc act ggg aaa gtc att cat att gat ttt ggt gat tgt ttc gag 6912  
 Arg Ile Thr Gly Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu  
 2290 2295 2300  
 gct gct ata tta aga gaa aaa ttc ccc gaa aaa gta cct ttt aga tta 6960  
 Ala Ala Ile Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu  
 2305 2310 2315 2320  
 act aga atg tta aca tat gca atg gaa gtg agt gga att gaa ggt agc 7008  
 Thr Arg Met Leu Thr Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser  
 2325 2330 2335  
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 Phe Arg Ile Thr Cys Glu Asn Val Met Lys Val Leu Arg Asp Asn Lys  
 2340 2345 2350  
 ggt tca tta atg gca atc ctt gaa gct ttt gct ttc gat cct ttg atc 7104  
 Gly Ser Leu Met Ala Ile Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile  
 2355 2360 2365  
 aat tgg ggt ttt gac tta cca aca aag aaa att gag gaa gaa acg ggc 7152  
 Asn Trp Gly Phe Asp Leu Pro Thr Lys Lys Ile Glu Glu Glu Thr Gly  
 2370 2375 2380  
 att caa ctt ccc gtg atg aat gcc aat gag cta ttg agt aat ggg gct 7200  
 Ile Gln Leu Pro Val Met Asn Ala Asn Glu Leu Ser Asn Gly Ala  
 2385 2390 2400  
 att acc gaa gaa gaa gtt caa agg gtg gaa aac gag cac aag aat gcc 7248  
 Ile Thr Glu Glu Glu Val Gln Arg Val Glu Asn Glu His Lys Asn Ala  
 2405 2410 2415  
 att cga aat gca agg gcc atg ttg gta ttg aag cgc att act gac aaa 7296  
 Ile Arg Asn Ala Arg Ala Met Leu Val Leu Lys Arg Ile Thr Asp Lys  
 2420 2425 2430  
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 2435 2440 2445  
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 Gln Val Asp Lys Leu Ile Gln Ala Thr Ser Val Glu Asn Leu Cys  
 2450 2455 2460  
 caa cat tat atc ggt tgg tgt cca ttc tgg tag 7425  
 Gln His Tyr Ile Gly Trp Cys Pro Phe Trp  
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&lt;210&gt; 2579

&lt;211&gt; 2474

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2579

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 Leu Arg Gln Arg Ala Glu Gly Lys His Arg Thr Arg Lys Lys Leu Thr  
 20 25 30  
 His Lys Ser His Ser His Asp Asp Glu Met Ser Thr Thr Ser Asn Thr  
 35 40 45

## PhoenixTemp32470.tmp.txt

Asp	Ser	Asn	His	Asn	Gly	Pro	Asn	Asp	Ser	Gly	Arg	Val	Ile	Thr	Gly
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Ser	Ala	Gly	His	Ile	Gly	Lys	Ile	Ser	Phe	Val	Asp	Ser	Glu	Leu	Asp
65					70					75					80
Thr	Thr	Phe	Ser	Thr	Leu	Asn	Leu	Ile	Phe	Asp	Lys	Leu	Lys	Ser	Asp
				85					90					95	
Val	Pro	Gln	Glu	Arg	Ala	Ser	Gly	Ala	Asn	Glu	Leu	Ser	Thr	Thr	Leu
			100					105					110		
Thr	Ser	Leu	Ala	Arg	Glu	Val	Ser	Ala	Glu	Gln	Phe	Gln	Arg	Phe	Ser
		115					120					125			
Asn	Ser	Leu	Asn	Asn	Lys	Ile	Phe	Glu	Leu	Ile	His	Gly	Phe	Thr	Ser
	130					135					140				
Ser	Glu	Lys	Ile	Gly	Gly	Ile	Leu	Ala	Val	Asp	Thr	Leu	Ile	Ser	Phe
145					150					155					160
Tyr	Leu	Ser	Thr	Glu	Glu	Leu	Pro	Asn	Gln	Thr	Ser	Arg	Leu	Ala	Asn
				165					170					175	
Tyr	Leu	Arg	Val	Leu	Ile	Pro	Ser	Ser	Asp	Ile	Glu	Val	Met	Arg	Leu
			180					185					190		
Ala	Ala	Asn	Thr	Leu	Gly	Arg	Leu	Thr	Val	Pro	Gly	Gly	Thr	Leu	Thr
		195					200					205			
Ser	Asp	Phe	Val	Glu	Phe	Glu	Val	Arg	Thr	Cys	Ile	Asp	Trp	Leu	Thr
	210					215					220				
Leu	Thr	Ala	Asp	Asn	Asn	Ser	Ser	Ser	Ser	Lys	Leu	Glu	Tyr	Arg	Arg
225					230					235					240
His	Ala	Ala	Leu	Leu	Ile	Ile	Lys	Ala	Leu	Ala	Asp	Asn	Ser	Pro	Tyr
				245					250					255	
Leu	Leu	Tyr	Pro	Tyr	Val	Asn	Ser	Ile	Leu	Asp	Asn	Ile	Trp	Val	Pro
			260					265					270		
Leu	Arg	Asp	Ala	Lys	Leu	Ile	Ile	Arg	Leu	Asp	Ala	Ala	Val	Ala	Leu
		275						280				285			
Gly	Lys	Cys	Leu	Thr	Ile	Ile	Gln	Asp	Arg	Asp	Pro	Ala	Leu	Gly	Lys
	290					295					300				
Gln	Trp	Phe	Gln	Arg	Leu	Phe	Gln	Gly	Cys	Thr	His	Gly	Leu	Ser	Leu
305					310					315					320
Asn	Thr	Asn	Asp	Ser	Val	His	Ala	Thr	Leu	Val	Phe	Arg	Glu	Leu	Leu
				325					330				335		
Leu	Ser	Leu	Lys	Ala	Pro	Tyr	Leu	Arg	Asp	Lys	Tyr	Asp	Asp	Ile	Tyr
			340					345					350		
Lys	Ser	Thr	Met	Lys	Tyr	Lys	Glu	Tyr	Lys	Phe	Asp	Val	Ile	Arg	Arg
		355					360					365			
Glu	Val	Tyr	Ala	Ile	Leu	Pro	Leu	Leu	Ala	Ala	Phe	Asp	Pro	Ala	Ile
	370					375					380				
Phe	Thr	Lys	Lys	Tyr	Leu	Asp	Arg	Ile	Met	Val	His	Tyr	Leu	Arg	Tyr
385					390					395					400
Leu	Lys	Asn	Ile	Asp	Met	Asn	Ala	Ala	Asn	Asn	Ser	Asp	Lys	Pro	Phe
				405					410					415	
Ile	Leu	Val	Ser	Ile	Gly	Asp	Ile	Ala	Phe	Glu	Val	Gly	Ser	Ser	Ile
			420					425					430		
Ser	Pro	Tyr	Met	Thr	Leu	Ile	Leu	Asp	Asn	Ile	Arg	Glu	Gly	Leu	Arg
		435					440					445			
Thr	Lys	Phe	Lys	Val	Arg	Lys	Gln	Phe	Glu	Lys	Asp	Leu	Phe	Tyr	Cys
	450					455					460				
Ile	Gly	Lys	Leu	Ala	Cys	Ala	Leu	Gly	Pro	Ala	Phe	Ala	Lys	His	Leu
465					470					475					480
Asn	Lys	Asp	Leu	Leu	Asn	Leu	Met	Leu	Asn	Cys	Pro	Met	Ser	Asp	His
				485					490					495	
Met	Gln	Glu	Thr	Leu	Met	Ile	Leu	Asn	Glu	Lys	Ile	Pro	Ser	Leu	Glu
			500					505					510		
Ser	Thr	Val	Asn	Ser	Arg	Ile	Leu	Asn	Leu	Leu	Ser	Ile	Ser	Leu	Ser
		515					520					525			
Gly	Glu	Lys	Phe	Ile	Gln	Ser	Asn	Gln	Tyr	Asp	Phe	Asn	Asn	Gln	Phe
	530					535					540				
Ser	Ile	Glu	Lys	Ala	Arg	Lys	Ser	Arg	Asn	Gln	Ser	Phe	Met	Lys	Lys
545					550					555					560
Thr	Gly	Glu	Ser	Asn	Asp	Asp	Ile	Thr	Asp	Ala	Gln	Ile	Leu	Ile	Gln
				565					570					575	
Cys	Phe	Lys	Met	Leu	Gln	Leu	Ile	His	His	Gln	Tyr	Ser	Leu	Thr	Glu
			580					585					590		
Phe	Val	Arg	Leu	Ile	Thr	Ile	Ser	Tyr	Ile	Glu	His	Glu	Asp	Ser	Ser

## PhoenixTemp32470.tmp.txt

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595
Val Arg Lys Leu Ala Ala Leu 600 Thr Ser Cys Asp Leu 605 Phe Ile Lys Asp
610 615
Asp Ile Cys Lys Gln Thr Ser Val His Ala Leu His Ser Val Ser Glu
625 630 635 640
Val Leu Ser Lys Leu Leu Met Ile Ala Ile Thr Asp Pro Val Ala Glu
645 650 655
Ile Arg Leu Glu Ile Leu Gln His Leu Gly Ser Asn Phe Asp Pro Gln
660 665 670
Leu Ala Gln Pro Asp Asn Leu Arg Leu Leu Phe Met Ala Leu Asn Asp
675 680 685
Glu Ile Phe Gly Ile Gln Leu Glu Ala Ile Lys Ile Gly Arg Leu
690 695 700
Ser Ser Val Asn Pro Ala Tyr Val Val Pro Ser Leu Arg Lys Thr Leu
705 710 715 720
Leu Glu Leu Leu Thr Gln Leu Lys Phe Ser Asn Met Pro Lys Lys Lys
725 730 735
Glu Glu Ser Ala Thr Leu Leu Cys Thr Leu Ile Asn Ser Ser Asp Glu
740 745 750
Val Ala Lys Pro Tyr Ile Asp Pro Ile Leu Asp Val Ile Leu Pro Lys
755 760 765
Cys Gln Asp Ala Ser Ser Ala Val Ala Ser Thr Ala Leu Lys Val Leu
770 775 780
Gly Glu Leu Ser Val Val Gly Gly Lys Glu Met Thr Arg Tyr Leu Lys
785 790 795 800
Glu Leu Met Pro Leu Ile Ile Asn Thr Phe Gln Asp Gln Ser Asn Ser
805 810 815
Phe Lys Arg Asp Ala Ala Leu Thr Thr Leu Gly Gln Leu Ala Ala Ser
820 825 830
Ser Gly Tyr Val Val Gly Pro Leu Leu Asp Tyr Pro Glu Leu Leu Gly
835 840 845
Ile Leu Ile Asn Ile Leu Lys Thr Glu Asn Asn Pro His Ile Arg Arg
850 855 860
Gly Thr Val Arg Leu Ile Gly Ile Leu Gly Ala Leu Asp Pro Tyr Lys
865 870 875 880
His Arg Glu Ile Glu Val Thr Ser Asn Ser Lys Ser Ser Val Glu Gln
885 890 895
Asn Ala Pro Ser Ile Asp Ile Ala Leu Leu Met Gln Gly Val Ser Pro
900 905 910
Ser Asn Asp Glu Tyr Tyr Pro Thr Val Val Ile His Asn Leu Met Lys
915 920 925
Ile Leu Asn Asp Pro Ser Leu Ser Ile His His Thr Ala Ala Ile Gln
930 935 940
Ala Ile Met His Ile Phe Gln Asn Leu Gly Leu Arg Cys Val Ser Phe
945 950 955 960
Leu Asp Gln Ile Ile Pro Gly Ile Ile Leu Val Met Arg Ser Cys Pro
965 970 975
Pro Ser Gln Leu Asp Phe Tyr Phe Gln Gln Leu Gly Ser Leu Ile Ser
980 985 990
Ile Val Lys Gln His Ile Arg Pro His Val Glu Lys Ile Tyr Gly Val
995 1000 1005
Ile Arg Glu Phe Phe Pro Ile Ile Lys Leu Gln Ile Thr Ile Ile Ser
1010 1015 1020
Val Ile Glu Ser Ile Ser Lys Ala Leu Glu Gly Glu Phe Lys Arg Phe
1025 1030 1035 1040
Val Pro Glu Thr Leu Thr Phe Phe Leu Asp Ile Leu Glu Asn Asp Gln
1045 1050 1055
Ser Asn Lys Arg Ile Val Pro Ile Arg Ile Leu Lys Ser Leu Val Thr
1060 1065 1070
Phe Gly Pro Asn Leu Glu Asp Tyr Ser His Leu Ile Met Pro Ile Val
1075 1080 1085
Val Arg Met Thr Glu Tyr Ser Ala Gly Ser Leu Lys Lys Ile Ser Ile
1090 1095 1100
Ile Thr Leu Gly Arg Leu Ala Lys Asn Ile Asn Leu Ser Glu Met Ser
1105 1110 1115 1120
Ser Arg Ile Val Gln Ala Leu Val Arg Ile Leu Asn Asn Gly Asp Arg
1125 1130 1135
Glu Leu Thr Lys Ala Thr Met Asn Thr Leu Ser Leu Leu Leu Gln
1140 1145 1150

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Leu Gly Thr Asp Phe Val Val Phe Val Pro Val Ile Asn Lys Ala Leu  
 1155 1160 1165  
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 1170 1175 1180  
 Leu Leu Asn Asn Glu Cys Leu Pro Thr Asn Ile Ile Phe Asp Lys Glu  
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 Lys Leu Pro Val Asn Gln Asn Ile Leu Lys Asn Ala Trp Tyr Cys Ser  
 1220 1225 1230  
 Gln Gln Lys Thr Lys Glu Asp Trp Gln Glu Trp Ile Arg Arg Leu Ser  
 1235 1240 1245  
 Ile Gln Leu Leu Lys Glu Ser Pro Ser Ala Cys Leu Arg Ser Cys Ser  
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 Ser Phe Ser Ser Cys Trp Val Glu Leu Gln Thr Ser Tyr Gln Glu Asp  
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 Glu Ile Tyr Gln Met Leu Leu Asn Leu Val Glu Phe Met Glu His Asp  
 1315 1320 1325  
 Asp Lys Pro Leu Pro Ile Pro Ile His Thr Leu Gly Lys Tyr Ala Gln  
 1330 1335 1340  
 Lys Cys His Ala Phe Ala Lys Ala Leu His Tyr Lys Glu Val Glu Phe  
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 1365 1370 1375  
 Asn Gln Leu His Gln Thr Asp Ser Ala Ile Gly Ile Leu Lys His Ala  
 1380 1385 1390  
 Gln Gln His Asn Glu Leu Gln Leu Lys Glu Thr Trp Tyr Glu Lys Leu  
 1395 1400 1405  
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 Gly Thr Ala Lys Pro Glu Val Lys Lys Ala Met Ala Pro Leu Ala Ala  
 1460 1465 1470  
 Gly Ala Ala Trp Gly Leu Glu Gln Trp Asp Glu Ile Ala Gln Tyr Thr  
 1475 1480 1485  
 Ser Val Met Lys Ser Gln Ser Pro Asp Lys Glu Phe Tyr Asp Ala Ile  
 1490 1495 1500  
 Leu Cys Leu His Arg Asn Asn Phe Lys Lys Ala Glu Val His Ile Phe  
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 Ser Tyr Asn Arg Ala Tyr Asn Val Val Val Arg Ala Gln Ile Ile Ala  
 1540 1545 1550  
 Glu Leu Glu Glu Ile Ile Lys Tyr Lys Lys Leu Pro Gln Asn Ser Asp  
 1555 1560 1565  
 Lys Arg Leu Thr Met Arg Glu Thr Trp Asn Thr Arg Leu Leu Gly Cys  
 1570 1575 1580  
 Gln Lys Asn Ile Asp Val Trp Gln Arg Ile Leu Arg Val Arg Ser Leu  
 1585 1590 1595 1600  
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 1605 1610 1615  
 Leu Cys Arg Lys Ser Gly Arg Met Ala Leu Ala Lys Lys Val Leu Asn  
 1620 1625 1630  
 Thr Leu Leu Glu Glu Thr Asp Asp Pro Asp His Pro Asn Thr Ala Lys  
 1635 1640 1645  
 Ala Ser Pro Pro Val Val Tyr Ala Gln Leu Lys Tyr Leu Trp Ala Thr  
 1650 1655 1660  
 Gly Leu Gln Asp Glu Ala Leu Lys Gln Leu Ile Asn Phe Thr Ser Arg  
 1665 1670 1675 1680  
 Met Ala His Asp Leu Gly Leu Asp Pro Asn Asn Met Ile Ala Gln Ser  
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 Val Pro Gln Gln Ser Lys Arg Val Pro Arg His Val Glu Asp Tyr Thr

## PhoenixTemp32470.tmp.txt

1700 1705 1710  
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 Leu Gln Pro Lys Trp Arg Leu Ser Asn Pro Asp Ser Ile Leu Gly Ser  
 1730 1735 1740  
 Tyr Leu Leu Ala Thr His Phe Asp Asn Thr Trp Tyr Lys Ala Trp His  
 1745 1750 1755 1760  
 Asn Trp Ala Leu Ala Asn Phe Glu Val Ile Ser Met Leu Thr Ser Val  
 1765 1770 1775  
 Ser Lys Lys Lys Gln Glu Gly Ser Asp Ala Ser Ser Val Thr Asp Ile  
 1780 1785 1790  
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 Glu Val His Tyr Ser Ser Asn Leu Ile His Arg His Val Ile Pro Ala  
 1810 1815 1820  
 Ile Lys Gly Phe Phe His Ser Ile Ser Leu Ser Glu Ser Ser Ser Leu  
 1825 1830 1835 1840  
 Gln Asp Ala Leu Arg Leu Leu Thr Leu Trp Phe Thr Phe Gly Gly Ile  
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 Pro Glu Ala Thr Gln Ala Met His Glu Gly Phe Asn Leu Ile Gln Ile  
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 Gly Thr Trp Leu Glu Val Leu Pro Gln Leu Ile Ser Arg Ile His Gln  
 1875 1880 1885  
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 1890 1895 1900  
 Gly Lys Ala His Pro Gln Ala Leu Val Tyr Pro Leu Met Val Ala Ile  
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 Lys Ser Glu Ser Leu Ser Arg Gln Lys Ala Ala Leu Ser Ile Ile Glu  
 1925 1930 1935  
 Lys Met Arg Ile His Ser Pro Val Leu Val Asp Gln Ala Glu Leu Val  
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 2145 2150 2155 2160  
 Leu Asp Ile Gln Gln Tyr Pro Ala Ile Pro Leu Ser Pro Lys Ser Gly  
 2165 2170 2175  
 Leu Leu Gly Trp Val Pro Asn Ser Asp Thr Phe His Val Leu Ile Arg  
 2180 2185 2190  
 Glu His Arg Glu Ala Lys Lys Ile Pro Leu Asn Ile Glu His Trp Val  
 2195 2200 2205  
 Met Leu Gln Met Ala Pro Asp Tyr Asp Asn Leu Thr Leu Leu Gln Lys  
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 Val Glu Val Phe Thr Tyr Ala Leu Asn Asn Thr Glu Gly Gln Asp Leu  
 2225 2230 2235 2240  
 Tyr Lys Val Leu Trp Leu Lys Ser Arg Ser Ser Glu Thr Trp Leu Glu  
 2245 2250 2255

PhoenixTemp32470.tmp.txt

Arg Arg Thr Thr Tyr Thr Arg Ser Leu Ala Val Met Ser Met Thr Gly  
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 Tyr Ile Leu Gly Leu Gly Asp Arg His Pro Ser Asn Leu Met Leu Asp  
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 Arg Ile Thr Gly Lys Val Ile His Ile Asp Phe Gly Asp Cys Phe Glu  
 2290 2295 2300  
 Ala Ala Ile Leu Arg Glu Lys Phe Pro Glu Lys Val Pro Phe Arg Leu  
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 Thr Arg Met Leu Thr Tyr Ala Met Glu Val Ser Gly Ile Glu Gly Ser  
 2325 2330 2335  
 Phe Arg Ile Thr Cys Glu Asn Val Met Lys Val Leu Arg Asp Asn Lys  
 2340 2345 2350  
 Gly Ser Leu Met Ala Ile Leu Glu Ala Phe Ala Phe Asp Pro Leu Ile  
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 Asn Trp Gly Phe Asp Leu Pro Thr Lys Lys Ile Glu Glu Glu Thr Gly  
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 2385 2390 2395 2400  
 Ile Thr Glu Glu Glu Val Gln Arg Val Glu Asn Glu His Lys Asn Ala  
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 2420 2425 2430  
 Leu Thr Gly Asn Asp Ile Arg Arg Phe Asn Asp Leu Asp Val Pro Glu  
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23

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23

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 <222> (16)..(17)  
 <223> Xaa in position 16 to 17 is any or no amino acid

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<220>
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 20 25 30  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Xaa Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ile Xaa Xaa Xaa Xaa  
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 Xaa Xaa Leu Ile Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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 Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa Xaa Xaa Xaa  
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 Trp Xaa Xaa Leu Arg Asp Xaa Xaa Xaa Xaa Xaa Arg Xaa Xaa Ala Xaa  
 210 215 220  
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 Glu Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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 420 425 430



## PhoenixTemp32470.tmp.txt

Xaa	Xaa	Arg	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Xaa	Ala	Xaa	Xaa
		435					Xaa	Xaa	Xaa		Xaa	Xaa	445		
Xaa	Xaa		Xaa	Phe	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		450					Xaa	Xaa			Xaa	Xaa	460		
Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
465					470					475					480
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Ala	Xaa
				485					490					495	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				500					505				510		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		515						520					525		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		530						535					540		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
545					550					555					560
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				565					570						575
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Xaa	Cys	Xaa	Xaa
				580					585				590		
Xaa	Leu	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		595						600					605		
Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Ser	Xaa	Xaa	Xaa
		610						615			620				
Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Xaa	Xaa	Xaa
625					630					635					640
Xaa	Ile	Xaa	Xaa	Xaa	Leu	Leu	Xaa	Xaa	Xaa	Ser	Xaa	Xaa	Leu	Xaa	Xaa
				645					650						655
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				660					665						670
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		675						680					685		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		690						695					700		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
705					710					715					720
Ala	Leu	Xaa	Xaa	Leu	Xaa	Xaa	Phe	Xaa	Phe	Xaa	Xaa	Xaa	Xaa	Leu	Xaa
				725					730					735	
Xaa	Phe	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				740					745					750	
Xaa	Xaa	Arg	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		755						760					765		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		770						775					780		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Val	Xaa	Xaa	Val	Xaa	Xaa
785					790					795					800
Lys	Leu	Leu	Xaa	Xaa	Xaa	Xaa	Asp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Arg	Xaa
				805				810						815	
Xaa	Xaa	Leu	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Asp	Xaa	Xaa	Leu
				820				825					830		
Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Phe	Xaa	Xaa	Xaa	Asn	Asp	Glu
		835						840					845		
Xaa	Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Ala	Ile	Xaa	Xaa	Xaa	Gly	Arg	Leu	Xaa
		850					855					860			
Xaa	Xaa	Asn	Pro	Ala	Tyr	Val	Xaa	Pro	Xaa	Leu	Arg	Xaa	Xaa	Xaa	Xaa
865					870					875					880
Xaa	Xaa	Leu	Thr	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Lys
				885						890					895
Glu	Xaa	Xaa	Ala	Xaa	Leu	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			900						905					910	
Leu	Xaa	Xaa	Xaa	Tyr	Xaa	Xaa	Pro	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa
		915					920					925			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Val	Xaa	Xaa	Xaa
		930					935					940			
Xaa	Leu	Xaa	Xaa	Xaa	Gly	Xaa	Leu	Ala	Xaa	Val	Xaa	Xaa	Xaa	Gly	Xaa
945					950					955					960
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				965					970						975
Xaa	Xaa	Xaa	Asp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Lys	Arg	Xaa	Xaa

## PhoenixTemp32470.tmp.txt

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 Xaa Pro Xaa Xaa Xaa Tyr Pro Xaa Leu Leu Xaa Xaa Leu Xaa Xaa Xaa  
 1010 1015 1020  
 Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Xaa Arg Xaa Glu Xaa Xaa Xaa  
 1025 1030 1035 1040  
 Xaa Xaa Gly Xaa Leu Gly Ala Leu Asp Pro Xaa Xaa Xaa Xaa Xaa  
 1045 1050 1055  
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 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Tyr Xaa Xaa Val Xaa  
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 Ile Xaa Xaa Leu Xaa Xaa Xaa Ile Leu Xaa Asp Xaa Xaa Leu Xaa Xaa  
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 Xaa His Xaa Xaa Val Xaa Xaa Ala Xaa Xaa Xaa Ile Phe Xaa Xaa Xaa  
 1155 1160 1165  
 Gly Xaa Xaa Cys Val Xaa Xaa Leu Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa  
 1170 1175 1180  
 Xaa Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Xaa Xaa  
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 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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 1365 1370 1375  
 Arg Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1380 1385 1390  
 Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Leu Xaa Xaa  
 1395 1400 1405  
 Xaa Leu Gly Xaa Xaa Xaa Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1410 1415 1420  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa  
 1425 1430 1435 1440  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1445 1450 1455  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1460 1465 1470  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1475 1480 1485  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1490 1495 1500  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val Xaa Xaa Xaa Xaa Leu Xaa Xaa  
 1505 1510 1515 1520  
 Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Trp  
 1525 1530 1535

## PhoenixTemp32470.tmp.txt

Xaa Glu Trp Xaa Arg Xaa Xaa Ser Xaa Xaa Leu Leu Xaa Glu Ser Pro  
 1540 1545 1550  
 Ser Xaa Ala Leu Arg Xaa Cys Xaa Xaa Leu Ala Xaa Xaa Xaa Xaa  
 1555 1560 1565  
 Xaa Xaa Xaa Xaa Leu Phe Asn Xaa Xaa Phe Xaa Ser Cys Trp Xaa Xaa  
 1570 1575 1580  
 Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Ala  
 1585 1590 1595 1600  
 Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Glu Xaa Xaa Xaa Xaa Xaa Leu Asn  
 1605 1610 1615  
 Leu Xaa Glu Phe Met Glu His Xaa Xaa Lys Xaa Xaa Leu Pro Ile Xaa  
 1620 1625 1630  
 Xaa Xaa Xaa Leu Gly Xaa Xaa Ala Xaa Xaa Cys Xaa Ala Xaa Ala Lys  
 1635 1640 1645  
 Ala Leu His Tyr Lys Glu Xaa Glu Phe Xaa Xaa Xaa Xaa Xaa Xaa  
 1650 1655 1660  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa Leu Ile Xaa Ile Asn  
 1665 1670 1675 1680  
 Asn Xaa Leu Xaa Gln Xaa Xaa Ala Ala Xaa Gly Xaa Leu Xaa Xaa Xaa  
 1685 1690 1695  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1700 1705 1710  
 Xaa Trp Xaa Glu Lys Leu Xaa Arg Trp Xaa Xaa Ala Leu Xaa Xaa Tyr  
 1715 1720 1725  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1730 1735 1740  
 Xaa Xaa Xaa Gly Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys  
 1745 1750 1755 1760  
 Leu Xaa Ala Leu Gly Xaa Trp Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa  
 1765 1770 1775  
 Xaa Trp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1780 1785 1790  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1795 1800 1805  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1810 1815 1820  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Ala Xaa Ala Ala Trp Xaa  
 1825 1830 1835 1840  
 Xaa Xaa Xaa Trp Xaa Xaa Met Xaa Xaa Tyr Xaa Xaa Xaa Xaa Xaa  
 1845 1850 1855  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1860 1865 1870  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Xaa Xaa Ala Xaa Leu Xaa Xaa His  
 1875 1880 1885  
 Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Xaa Xaa Xaa Ala Arg Xaa  
 1890 1895 1900  
 Xaa Leu Xaa Thr Glu Leu Xaa Ala Xaa Xaa Xaa Glu Ser Tyr Xaa Arg  
 1905 1910 1915 1920  
 Ala Tyr Xaa Xaa Xaa Val Xaa Xaa Gln Xaa Leu Xaa Glu Leu Glu Glu  
 1925 1930 1935  
 Xaa Ile Xaa Tyr Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1940 1945 1950  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Trp Xaa Xaa Arg  
 1955 1960 1965  
 Leu Xaa Gly Xaa Gln Xaa Xaa Val Xaa Xaa Trp Gln Xaa Xaa Leu Xaa  
 1970 1975 1980  
 Val Arg Xaa Leu Val Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Trp Xaa  
 1985 1990 1995 2000  
 Lys Phe Ala Xaa Leu Cys Arg Lys Ser Xaa Arg Xaa Xaa Xaa Xaa  
 2005 2010 2015  
 Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Leu Xaa Xaa Xaa  
 2020 2025 2030  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2035 2040 2045  
 Xaa Xaa Xaa Pro Xaa Val Xaa Xaa Ala Xaa Leu Lys Xaa Xaa Trp Xaa  
 2050 2055 2060  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2065 2070 2075 2080  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

## PhoenixTemp32470.tmp.txt

2085 2090 2095  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2100 2105 2110  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2115 2120 2125  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2130 2135 2140  
 Xaa Xaa Leu Leu Ala Xaa Xaa Xaa Xaa Xaa Gly Xaa Trp Xaa Xaa  
 2145 2150 2155 2160  
 Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2165 2170 2175  
 Leu Xaa Xaa Tyr Xaa Xaa Ala Thr Xaa Xaa Xaa Xaa Xaa Trp Tyr Lys  
 2180 2185 2190  
 Xaa Ala Trp His Xaa Trp Ala Leu Xaa Asn Phe Glu Val Xaa Xaa Xaa  
 2195 2200 2205  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2210 2215 2220  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2225 2230 2235 2240  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2245 2250 2255  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Gly Phe  
 2260 2265 2270  
 Phe Xaa Ser Ile Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser  
 2275 2280 2285  
 Leu Gln Asp Xaa Leu Arg Leu Leu Thr Leu Trp Phe Xaa Xaa Gly Xaa  
 2290 2295 2300  
 Xaa Xaa Xaa Val Xaa Xaa Ala Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa  
 2305 2310 2315 2320  
 Xaa Xaa Xaa Trp Leu Xaa Val Xaa Pro Gln Xaa Ile Xaa Arg Ile Xaa  
 2325 2330 2335  
 Xaa Xaa Xaa Xaa Xaa Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Leu Xaa Xaa  
 2340 2345 2350  
 Xaa Gly Xaa Xaa His Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2355 2360 2365  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln Ala  
 2370 2375 2380  
 Leu Xaa Tyr Pro Leu Xaa Val Ala Xaa Lys Ser Xaa Xaa Xaa Xaa Xaa  
 2385 2390 2395 2400  
 Arg Xaa Xaa Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa His Ser  
 2405 2410 2415  
 Xaa Xaa Leu Val Xaa Gln Ala Xaa Xaa Val Ser Xaa Glu Leu Ile Arg  
 2420 2425 2430  
 Xaa Ala Xaa Leu Trp His Glu Xaa Trp Xaa Glu Gly Leu Glu Xaa Ala  
 2435 2440 2445  
 Ser Arg Xaa Xaa Phe Gly Xaa Xaa Asn Xaa Xaa Xaa Met Xaa Xaa Xaa  
 2450 2455 2460  
 Leu Xaa Pro Leu His Xaa Xaa Leu Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa  
 2465 2470 2475 2480  
 Xaa Thr Xaa Xaa Glu Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2485 2490 2495  
 Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Leu Xaa Xaa Ala Xaa Xaa Xaa Xaa  
 2500 2505 2510  
 Xaa Xaa Tyr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Gln Ala Trp  
 2515 2520 2525  
 Asp Xaa Tyr Tyr Xaa Val Phe Xaa Xaa Ile Xaa Xaa Gln Leu Pro Xaa  
 2530 2535 2540  
 Leu Xaa Xaa Xaa Xaa Leu Xaa Leu Xaa Xaa Val Ser Pro Xaa Leu Xaa  
 2545 2550 2555 2560  
 Xaa Xaa Xaa Xaa Leu Xaa Leu Ala Val Pro Gly Xaa Tyr Xaa Xaa Gly  
 2565 2570 2575  
 Xaa Xaa Xaa Xaa Xaa Ile Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val  
 2580 2585 2590  
 Ile Xaa Ser Lys Gln Arg Pro Arg Xaa Xaa Xaa Xaa Xaa Gly Ser Xaa  
 2595 2600 2605  
 Gly Xaa Xaa Tyr Xaa Xaa Xaa Leu Lys Gly His Glu Asp Xaa Arg Gln  
 2610 2615 2620  
 Asp Xaa Xaa Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Xaa  
 2625 2630 2635 2640

## PhoenixTemp32470.tmp.txt

Xaa Asp Xaa Xaa Xaa Xaa Arg Xaa Leu Xaa Ile Gln Xaa Tyr Xaa  
 2645 2650 2655  
 Xaa Ile Pro Leu Ser Xaa Xaa Ser Gly Leu Xaa Gly Trp Val Xaa Xaa  
 2660 2665 2670  
 Xaa Asp Thr Xaa His Xaa Leu Ile Xaa Xaa Xaa Arg Xaa Xaa Xaa Lys  
 2675 2680 2685  
 Ile Xaa Leu Asn Xaa Glu His Xaa Xaa Met Leu Xaa Met Ala Pro Xaa  
 2690 2695 2700  
 Asp Tyr Asp Xaa Leu Xaa Leu Xaa Xaa Lys Val Glu Val Phe Xaa Xaa  
 2705 2710 2715 2720  
 Ala Leu Xaa Xaa Thr Xaa Gly Xaa Asp Leu Xaa Xaa Xaa Leu Trp Leu  
 2725 2730 2735  
 Lys Ser Xaa Xaa Ser Glu Xaa Trp Leu Xaa Arg Arg Thr Xaa Tyr Thr  
 2740 2745 2750  
 Arg Ser Leu Xaa Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly  
 2755 2760 2765  
 Asp Arg His Pro Ser Asn Leu Met Leu Asp Arg Xaa Xaa Gly Lys Xaa  
 2770 2775 2780  
 Xaa His Ile Asp Phe Gly Asp Cys Phe Glu Xaa Ala Xaa Xaa Arg Glu  
 2785 2790 2795 2800  
 Lys Xaa Pro Glu Xaa Xaa Pro Phe Arg Leu Thr Arg Met Leu Xaa Xaa  
 2805 2810 2815  
 Ala Met Glu Val Xaa Gly Ile Glu Gly Xaa Xaa Arg Xaa Thr Cys Glu  
 2820 2825 2830  
 Xaa Val Met Xaa Val Leu Arg Xaa Asn Lys Xaa Ser Xaa Met Ala Xaa  
 2835 2840 2845  
 Leu Glu Ala Phe Xaa Xaa Asp Pro Leu Xaa Xaa Trp Xaa Xaa Xaa Xaa  
 2850 2855 2860  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2865 2870 2875 2880  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2885 2890 2895  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2900 2905 2910  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2915 2920 2925  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2930 2935 2940  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa  
 2945 2950 2955 2960  
 Ala Xaa Xaa Val Xaa Xaa Arg Xaa Xaa Xaa Lys Leu Thr Gly Xaa Asp  
 2965 2970 2975  
 Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2980 2985 2990  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2995 3000 3005  
 Leu Xaa Val Xaa Xaa Gln Val Xaa Xaa Leu Ile Xaa Gln Ala Thr Xaa  
 3010 3015 3020  
 Xaa Glu Asn Leu Cys Gln Xaa Xaa Xaa Gly Trp Cys Xaa Phe Trp  
 3025 3030 3035

&lt;210&gt; 2583

&lt;211&gt; 59

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; protein pattern

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (2)..(2)

&lt;223&gt; Xaa in position 2 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (7)..(7)

&lt;223&gt; Xaa in position 7 is Thr or Val

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<220>
<221> Variant
<222> (10)..(10)
<223> Xaa in position 10 is Ile or Leu

<220>
<221> Variant
<222> (22)..(22)
<223> Xaa in position 22 is Leu or Met

<220>
<221> Variant
<222> (24)..(24)
<223> Xaa in position 24 is any amino acid

<220>
<221> Variant
<222> (26)..(26)
<223> Xaa in position 26 is any amino acid

<220>
<221> Variant
<222> (27)..(27)
<223> Xaa in position 27 is Asn, Ser or Thr

<220>
<221> Variant
<222> (29)..(29)
<223> Xaa in position 29 is any amino acid

<220>
<221> Variant
<222> (30)..(30)
<223> Xaa in position 30 is Ile or Val

<220>
<221> Variant
<222> (31)..(31)
<223> Xaa in position 31 is Ile, Leu or Val

<220>
<221> Variant
<222> (41)..(41)
<223> Xaa in position 41 is Ala, Ile or Val

<220>
<221> Variant
<222> (42)..(42)
<223> Xaa in position 42 is Ala or Ser

<220>
<221> Variant
<222> (43)..(43)
<223> Xaa in position 43 is Ile or Met

<220>
<221> Variant
<222> (44)..(44)
<223> Xaa in position 44 is any amino acid

<220>
<221> Variant
<222> (48)..(48)
<223> Xaa in position 48 is Phe or Tyr

<220>
<221> Variant
<222> (51)..(51)

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<223> Xaa in position 51 is Lys or Arg

<220>

<221> Variant

<222> (52)..(52)

<223> Xaa in position 52 is Ile or Val

<400> 2583

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Leu Xaa Val Met Ser Met Xaa Gly Tyr Xaa Leu Gly Leu Gly Asp Arg
1      5      10      15
His Pro Ser Asn Leu Xaa Leu Xaa Arg Xaa Xaa Gly Xaa Xaa Xaa His
      20      25      30
Ile Asp Phe Gly Asp Cys Phe Glu Xaa Xaa Xaa Arg Glu Lys Xaa
      35      40      45
Pro Glu Xaa Xaa Pro Phe Arg Leu Thr Arg Met
      50      55

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<210> 2584

<211> 60

<212> PRT

<213> Artificial sequence

<220>

<223> protein pattern

<220>

<221> Variant

<222> (5)..(5)

<223> Xaa in position 5 is Ile or Leu

<220>

<221> Variant

<222> (9)..(9)

<223> Xaa in position 9 is Glu, Asn or Ser

<220>

<221> Variant

<222> (10)..(10)

<223> Xaa in position 10 is any amino acid

<220>

<221> Variant

<222> (18)..(18)

<223> Xaa in position 18 is Cys or Val

<220>

<221> Variant

<222> (23)..(24)

<223> Xaa in position 23 to 24 is any amino acid

<220>

<221> Variant

<222> (25)..(25)

<223> Xaa in position 25 is Asp, Glu, Asn or Ser

<220>

<221> Variant

<222> (26)..(26)

<223> Xaa in position 26 is any amino acid

<220>

<221> Variant

<222> (27)..(27)

<223> Xaa in position 27 is Asp, Glu or Lys

<220>

<221> Variant

<222> (28)..(28)

<223> Xaa in position 28 is Cys, Ser or Thr  
<220>  
<221> Variant  
<222> (29)..(30)  
<223> Xaa in position 29 to 30 is any amino acid  
  
<220>  
<221> Variant  
<222> (31)..(31)  
<223> Xaa in position 31 is Lys or Arg  
  
<220>  
<221> Variant  
<222> (32)..(32)  
<223> Xaa in position 32 is any amino acid  
  
<220>  
<221> Variant  
<222> (34)..(34)  
<223> Xaa in position 34 is Asp, Asn, Ser or Thr  
  
<220>  
<221> Variant  
<222> (35)..(35)  
<223> Xaa in position 35 is Ile or Val  
  
<220>  
<221> Variant  
<222> (37)..(37)  
<223> Xaa in position 37 is Gln or Arg  
  
<220>  
<221> Variant  
<222> (38)..(38)  
<223> Xaa in position 38 is Phe or Tyr  
  
<220>  
<221> Variant  
<222> (39)..(39)  
<223> Xaa in position 39 is Ala, Pro or Ser  
  
<220>  
<221> Variant  
<222> (40)..(41)  
<223> Xaa in position 40 to 41 is any amino acid  
  
<220>  
<221> Variant  
<222> (45)..(45)  
<223> Xaa in position 45 is Pro, Gln or Thr  
  
<220>  
<221> Variant  
<222> (46)..(46)  
<223> Xaa in position 46 is any amino acid  
  
<220>  
<221> Variant  
<222> (47)..(47)  
<223> Xaa in position 47 is Ala, Ser, Thr or Val  
  
<220>  
<221> Variant  
<222> (49)..(50)  
<223> Xaa in position 49 to 50 is Ile or Leu  
  
<220>  
<221> Variant



<222> (53)..(53)

<223> Xaa in position 53 is Leu or Val

<220>

<221> Variant

<222> (54)..(54)

<223> Xaa in position 54 is Pro, Ser or Thr

<220>

<221> Variant

<222> (55)..(55)

<223> Xaa in position 55 is any amino acid

<220>

<221> Variant

<222> (56)..(56)

<223> Xaa in position 56 is Cys or Ser

<220>

<221> Variant

<222> (59)..(59)

<223> Xaa in position 59 is Phe, Ile or Leu

<400> 2584

Gly	His	Glu	Asp	Xaa	Arg	Gln	Asp	Xaa	Xaa	Val	Met	Gln	Leu	Phe	Gly
1				5				10					15		
Leu	Xaa	Asn	Thr	Leu	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		20					25					30			
Leu	Xaa	Xaa	Gln	Xaa	Xaa	Xaa	Xaa	Pro	Leu	Ser	Xaa	Xaa	Xaa	Gly	
		35				40					45				
Xaa	Xaa	Gly	Trp	Xaa	Xaa	Xaa	Xaa	Asp	Thr	Xaa	His				
	50					55					60				

<210> 2585

<211> 38

<212> PRT

<213> Artificial sequence

<220>

<223> protein pattern

<220>

<221> Variant

<222> (2)..(3)

<223> Xaa in position 2 to 3 is any amino acid

<220>

<221> Variant

<222> (7)..(7)

<223> Xaa in position 7 is Asn, Ser or Thr

<220>

<221> Variant

<222> (8)..(8)

<223> Xaa in position 8 is Phe or Tyr

<220>

<221> Variant

<222> (10)..(10)

<223> Xaa in position 10 is any amino acid

<220>

<221> Variant

<222> (12)..(12)

<223> Xaa in position 12 is any amino acid

<220>

<221> Variant

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<222> (14)..(14)
<223> Xaa in position 14 is any amino acid

<220>
<221> Variant
<222> (17)..(17)
<223> Xaa in position 17 is any amino acid

<220>
<221> Variant
<222> (19)..(19)
<223> Xaa in position 19 is Ile or Leu

<220>
<221> Variant
<222> (20)..(20)
<223> Xaa in position 20 is His or Arg

<220>
<221> Variant
<222> (21)..(22)
<223> Xaa in position 21 to 22 is any amino acid

<220>
<221> Variant
<222> (23)..(23)
<223> Xaa in position 23 is Lys or Arg

<220>
<221> Variant
<222> (24)..(24)
<223> Xaa in position 24 is Asp, Glu or Gly

<220>
<221> Variant
<222> (26)..(26)
<223> Xaa in position 26 is Leu or Val

<220>
<221> Variant
<222> (27)..(27)
<223> Xaa in position 27 is any amino acid

<220>
<221> Variant
<222> (29)..(29)
<223> Xaa in position 29 is Ile, Met or Val

<220>
<221> Variant
<222> (30)..(30)
<223> Xaa in position 30 is Leu or Met

<220>
<221> Variant
<222> (34)..(34)
<223> Xaa in position 34 is Ala, Ile or Val

<220>
<221> Variant
<222> (35)..(35)
<223> Xaa in position 35 is any amino acid

<400> 2585
Val Xaa Xaa Ile Glu Gly Xaa Xaa Arg Xaa Thr Xaa Glu Xaa Val Met
1          5          10          15
Xaa Val Xaa Xaa Xaa Xaa Xaa Ser Xaa Xaa Ala Xaa Xaa Glu Ala
          20          25          30
Phe Xaa Xaa Asp Pro Leu

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<210> 2586  
<211> 41  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein pattern

<220>  
<221> Variant  
<222> (5)..(5)  
<223> Xaa in position 5 is any amino acid

<220>  
<221> Variant  
<222> (7)..(7)  
<223> Xaa in position 7 is Ile or Val

<220>  
<221> Variant  
<222> (12)..(12)  
<223> Xaa in position 12 is any amino acid

<220>  
<221> Variant  
<222> (14)..(14)  
<223> Xaa in position 14 is His or Tyr

<220>  
<221> Variant  
<222> (16)..(16)  
<223> Xaa in position 16 is Ala or Gly

<220>  
<221> Variant  
<222> (19)..(19)  
<223> Xaa in position 19 is Asp or Glu

<220>  
<221> Variant  
<222> (23)..(23)  
<223> Xaa in position 23 is any amino acid

<220>  
<221> Variant  
<222> (24)..(24)  
<223> Xaa in position 24 is Phe or Tyr

<220>  
<221> Variant  
<222> (26)..(26)  
<223> Xaa in position 26 is Gly, Thr or Val

<220>  
<221> Variant  
<222> (27)..(27)  
<223> Xaa in position 27 is Asp or Glu

<220>  
<221> Variant  
<222> (28)..(28)  
<223> Xaa in position 28 is any amino acid

<220>  
<221> Variant  
<222> (30)..(30)

<223> Xaa in position 30 is any amino acid

<220>

<221> Variant

<222> (31)..(31)

<223> Xaa in position 31 is Asp, Glu, Lys or Arg

<220>

<221> Variant

<222> (32)..(32)

<223> Xaa in position 32 is any amino acid

<220>

<221> Variant

<222> (34)..(34)

<223> Xaa in position 34 is Phe or Leu

<220>

<221> Variant

<222> (35)..(36)

<223> Xaa in position 35 to 36 is any amino acid

<220>

<221> Variant

<222> (38)..(38)

<223> Xaa in position 38 is any amino acid

<220>

<221> Variant

<222> (40)..(40)

<223> Xaa in position 40 is Phe or Leu

<400> 2586

Glu	Leu	Ile	Arg	Xaa	Ala	Xaa	Leu	Trp	His	Glu	Xaa	Trp	Xaa	Glu	Xaa
1				5				10				15			
Leu	Glu	Xaa	Ala	Ser	Arg	Xaa	Xaa	Phe	Xaa	Xaa	Xaa	Asn	Xaa	Xaa	Xaa
			20					25				30			
Met	Xaa	Xaa	Xaa	Leu	Xaa	Pro	Xaa	His							
			35				40								

<210> 2587

<211> 41

<212> PRT

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<220>

<223> protein pattern

<220>

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<222> (2)..(3)

<223> Xaa in position 2 to 3 is any amino acid

<220>

<221> Variant

<222> (6)..(6)

<223> Xaa in position 6 is Glu, Gly, Gln or Thr

<220>

<221> Variant

<222> (7)..(7)

<223> Xaa in position 7 is any amino acid

<220>

<221> Variant

<222> (9)..(9)

<223> Xaa in position 9 is Leu or Met

<220>  
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<223> Xaa in position 10 to 11 is any amino acid

<220>  
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<222> (13)..(13)  
<223> Xaa in position 13 is any amino acid

<220>  
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<223> Xaa in position 15 is any amino acid

<220>  
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<223> Xaa in position 18 is any amino acid

<220>  
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<223> Xaa in position 19 is Lys or Arg

<220>  
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<220>  
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 <223> Xaa in position 40 is any amino acid  
  
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 Lys Xaa Xaa Val Phe Xaa Xaa Ala Xaa Xaa Xaa Thr Xaa Gly Xaa Asp  
 1 5 10 15  
 Leu Xaa Xaa Xaa Leu Trp Leu Lys Ser Xaa Xaa Ser Xaa Glu Xaa Trp  
 20 25 30  
 Xaa Xaa Arg Arg Xaa Xaa Tyr Xaa Arg  
 35 40

<210> 2588  
 <211> 51  
 <212> PRT  
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<220>  
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 <223> Xaa in position 7 is His, Lys or Arg

<220>  
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 <222> (8)..(8)  
 <223> Xaa in position 8 is Asp or Glu

<220>  
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 <223> Xaa in position 19 is Phe or Tyr

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 <222> (20)..(20)  
 <223> Xaa in position 20 is Glu, Lys or Arg

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 <223> Xaa in position 21 to 27 is any amino acid

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<220>  
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 <223> Xaa in position 37 is any amino acid

<220>  
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 <223> Xaa in position 40 is any amino acid

<220>  
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 <223> Xaa in position 41 is Lys or Arg

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<220>  
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 <223> Xaa in position 47 is any amino acid

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 <222> (48)..(48)  
 <223> Xaa in position 48 is Ala, Gln or Ser

<220>  
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 <223> Xaa in position 49 to 50 is any amino acid

<220>  
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 <223> Xaa in position 51 is Asn, Ser or Thr

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 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Ala Trp  
 20 25 30

PhoenixTemp32470.tmp.txt

Asp	Xaa	Tyr	Tyr	Xaa	Val	Phe	Xaa	Xaa	Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		35					40					45				
Xaa	Xaa	Xaa														
	50															

<210> 2589  
 <211> 53  
 <212> PRT  
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<220>  
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<220>  
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 <222> (17)..(17)  
 <223> Xaa in position 17 is Ile or Leu

<220>  
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<220>  
 <221> Variant  
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 <223> Xaa in position 20 is His or Arg

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 <221> Variant  
 <222> (21)..(21)  
 <223> Xaa in position 21 is Ala, Glu, Ser or Thr



<220>  
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<223> Xaa in position 22 is Ile or Leu

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<222> (27)..(27)  
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<220>  
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<220>  
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<220>  
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<223> Xaa in position 37 is Ala or Ser

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 <222> (46)..(46)  
 <223> Xaa in position 46 is Ile, Leu or Met  
  
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 <221> Variant  
 <222> (47)..(48)  
 <223> Xaa in position 47 to 48 is any amino acid  
  
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 <223> Xaa in position 49 is Ala, Cys or Ser  
  
 <220>  
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 <223> Xaa in position 50 to 51 is any amino acid

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 <223> Xaa in position 52 is Ala, Ser or Thr  
  
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 Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val Xaa Xaa Trp Gln Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Val Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Trp Xaa Xaa Xaa Xaa Xaa Leu Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Xaa Xaa Xaa Xaa Leu  
 50

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 <211> 29  
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<220>  
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 <222> (5)..(5)  
 <223> Xaa in position 5 is Ile or Val

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 <222> (6)..(6)  
 <223> Xaa in position 6 is Asp, Glu, Asn or Gln

<220>  
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 <222> (7)..(7)  
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<220>
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<223> Xaa in position 11 is Asp, Glu or Gln

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<222> (14)..(15)
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<222> (17)..(17)
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<220>
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<222> (18)..(18)
<223> Xaa in position 18 is Ile or Leu

<220>
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<222> (20)..(21)
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<222> (22)..(22)
<223> Xaa in position 22 is Phe, Trp or Tyr

<220>
<221> Variant
<222> (23)..(23)
<223> Xaa in position 23 is Ile, Leu or Val

<220>
<221> Variant
<222> (27)..(27)
<223> Xaa in position 27 is Pro or Ser

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Val Xaa Xaa Gln Xaa Xaa Xaa Leu Xaa Xaa Xaa Ala Thr Xaa Xaa Glu  
1 5 10 15  
Xaa Xaa Cys Xaa Xaa Xaa Gly Trp Cys Xaa Phe Trp  
20 25

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<211> 30
<212> PRT
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<220>  
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<220>

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<222> (7)..(7)

<223> Xaa in position 7 is any or no amino acid

<220>

<221> Variant

<222> (9)..(9)

<223> Xaa in position 9 is any or no amino acid

<220>

<221> Variant

<222> (11)..(12)

<223> Xaa in position 11 to 12 is any amino acid

<220>

<221> Variant

<222> (14)..(14)

<223> Xaa in position 14 is any amino acid

<220>

<221> Variant

<222> (15)..(15)

<223> Xaa in position 15 is Glu, His, Lys or Arg

<220>

<221> Variant

<222> (16)..(16)

<223> Xaa in position 16 is any amino acid

<220>

<221> Variant

<222> (17)..(17)

<223> Xaa in position 17 is His or Arg

<220>

<221> Variant

<222> (18)..(18)

<223> Xaa in position 18 is Ala, Ser or Val

<220>

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<222> (19)..(19)

<223> Xaa in position 19 is Phe or Tyr

<220>

<221> Variant

<222> (26)..(26)

<223> Xaa in position 26 is any amino acid

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<221> Variant

<222> (28)..(28)

<223> Xaa in position 28 is any amino acid

<220>

<221> Variant

<222> (29)..(29)

<223> Xaa in position 29 is Glu or Lys

<220>

<221> Variant

<222> (30)..(30)

<223> Xaa in position 30 is Phe or Tyr

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Leu Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Gly Xaa Xaa Ala Xaa Xaa Xaa

1 Xaa Xaa Xaa Ala Lys Ala Leu His Tyr Xaa Glu Xaa Xaa Xaa 15  
                   20                  25                  30

<210> 2592  
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 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> protein pattern

<220>  
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 <223> Xaa in position 2 is any or no amino acid

<220>  
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 <222> (4)..(5)  
 <223> Xaa in position 4 to 5 is any amino acid

<220>  
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 <222> (7)..(7)  
 <223> Xaa in position 7 is Ala, Asp or Val

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 <221> Variant  
 <222> (8)..(8)  
 <223> Xaa in position 8 is Asn, Pro, Ser or Thr

<220>  
 <221> Variant  
 <222> (10)..(10)  
 <223> Xaa in position 10 is Ile, Leu or Met

<220>  
 <221> Variant  
 <222> (11)..(11)  
 <223> Xaa in position 11 is Ala, Ser or Thr

<220>  
 <221> Variant  
 <222> (12)..(12)  
 <223> Xaa in position 12 is Ala or Thr

<220>  
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 <222> (13)..(13)  
 <223> Xaa in position 13 is Leu or Met

<220>  
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 <222> (14)..(15)  
 <223> Xaa in position 14 to 15 is any amino acid

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 <221> Variant  
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 <223> Xaa in position 16 is Asp or Glu

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<220>

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<223> Xaa in position 24 to 25 is any amino acid
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<220>
<221> Variant
<222> (27)..(28)
<223> Xaa in position 27 to 28 is any amino acid
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<223> Xaa in position 30 is any amino acid
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<223> Xaa in position 31 is Ile, Leu or Val
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<222> (32)..(32)
<223> Xaa in position 32 is Ala, Ser or Thr
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<223> Xaa in position 34 is Phe or Leu
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<223> Xaa in position 37 is Ala, Ile, Leu or Val
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<223> Xaa in position 38 is Ile, Leu or Met
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<223> Xaa in position 39 is any amino acid
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<220>
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<222> (40)..(40)
<223> Xaa in position 40 is Phe or Tyr
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<400> 2592  
 Ala Xaa Arg Xaa Xaa<sup>5</sup> Leu Xaa Xaa Glu Xaa<sup>10</sup> Xaa Xaa Xaa Xaa Xaa Xaa Xaa<sup>15</sup>  
 1 Ser Tyr Xaa Arg<sup>20</sup> Ala Tyr Xaa Xaa Xaa<sup>25</sup> Val Xaa Xaa Gln Xaa<sup>30</sup> Xaa Xaa Xaa  
 Glu Xaa Glu<sup>35</sup> Glu Xaa Xaa Xaa Xaa<sup>40</sup>

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<211> 20
<212> PRT
<213> Artificial sequence
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 $\langle 220 \rangle$

<223> protein pattern

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<222> (2)..(2)

<223> Xaa in position 2 is Asn, Ser or Thr

<220>

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<222> (9)..(9)

<223> Xaa in position 9 is Lys or Arg

<220>

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<222> (10)..(10)

<223> Xaa in position 10 is Phe, Ile or Leu

<220>

<221> Variant

<222> (11)..(13)

<223> Xaa in position 11 to 13 is any amino acid

<220>

<221> Variant

<222> (15)..(15)

<223> Xaa in position 15 is Gly, Asn or Ser

<220>

<221> Variant

<222> (16)..(16)

<223> Xaa in position 16 is Asp or Asn

<220>

<221> Variant

<222> (18)..(19)

<223> Xaa in position 18 to 19 is any amino acid

<400> 2593

Ile	Xaa	Ser	Lys	Gln	Arg	Pro	Arg	Xaa	Xaa	Xaa	Xaa	Gly	Xaa	Xaa
1				5				10					15	
Gly	Xaa	Xaa	Tyr											
			20											

<210> 2594

<211> 59

<212> PRT

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<220>

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<222> (3)..(4)

<223> Xaa in position 3 to 4 is any amino acid

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<222> (7)..(7)

<223> Xaa in position 7 is any amino acid

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<221> Variant

<222> (8)..(8)

<223> Xaa in position 8 is Ala, Pro or Ser

<220>

<221> Variant

<222> (9)..(10)  
<223> Xaa in position 9 to 10 is any amino acid

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<220>  
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<222> (12)..(13)  
<223> Xaa in position 12 to 13 is any amino acid

<220>  
<221> Variant  
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<223> Xaa in position 14 is Ile, Leu or Val

<220>  
<221> Variant  
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<223> Xaa in position 15 is Phe or Leu

<220>  
<221> Variant  
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<223> Xaa in position 16 is any amino acid

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<223> Xaa in position 17 is Ala, Ser or Thr

<220>  
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<220>  
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<220>  
<221> Variant  
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<220>  
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<222> (31)..(33)  
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<220>  
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<220>



<221> Variant  
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<223> Xaa in position 47 is any amino acid

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<220>  
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<222> (50)..(51)  
<223> Xaa in position 50 to 51 is any amino acid

<220>  
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<222> (52)..(52)  
<223> Xaa in position 52 is Ile, Leu or Met

<220>  
<221> Variant  
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<223> Xaa in position 53 is Ile, Leu or Val

<220>  
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<223> Xaa in position 54 is Glu, Asn, Gln or Ser

<220>  
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<223> Xaa in position 55 is Phe, Ile, Leu or Met

<220>  
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<220>  
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<222> (57)..(57)  
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<220>  
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<220>  
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## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2594

Phe Asp Xaa Xaa Leu Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Asp Glu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Xaa Gly Arg Leu Xaa Xaa Xaa Asn Pro Ala Xaa Val Xaa Pro Xaa Xaa  
 35 40 45  
 Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55

&lt;210&gt; 2595

&lt;211&gt; 1707

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1707)

&lt;400&gt; 2595

atg ttt ctg gac tat tct gga tat gag gct ctt act gaa atc aac tct	48
Met Phe Leu Asp Tyr Ser Gly Tyr Glu Ala Leu Thr Glu Ile Asn Ser	
1 5 10 15	
tcc ttt gga aag tat gtt ctt cta ttg caa ttt gaa ggc tgt cga	96
Ser Phe Gly Lys Tyr Val Leu Leu Gln Gln Phe Glu Gly Cys Arg	
20 25 30	
agt ttg aaa gat cgg ctt caa atg ctt aag gat ctg ggg agg gaa ttt	144
Ser Leu Lys Asp Arg Leu Gln Met Leu Lys Asp Leu Gly Arg Glu Phe	
35 40 45	
atg ata ttc gag aac ttg aat gtg gaa gat ttc aga gaa tct aaa aat	192
Met Ile Phe Glu Asn Leu Asn Val Glu Asp Phe Arg Glu Ser Lys Asn	
50 55 60	
atg att cac aga ttt tat act atg gtt att tct tta aga cag att atg	240
Met Ile His Arg Phe Tyr Thr Met Val Ile Ser Leu Arg Gln Ile Met	
65 70 75 80	
gaa att ggg ccc tta gtc agg cgt agc cct gct gtt tta gtt gtg gaa	288
Glu Ile Gly Pro Leu Val Arg Arg Ser Pro Ala Val Leu Val Val Glu	
85 90 95	
ttc gat tgt ccg gta gag gat tgc cta gat gaa ctg gat ccg ttg cat	336
Phe Asp Cys Pro Val Glu Asp Cys Leu Asp Glu Leu Asp Pro Leu His	
100 105 110	
cca ttg aac agg gcc ttt ata ttt att cat aaa caa tgg acc tat tat	384
Pro Leu Asn Arg Ala Phe Ile Phe Ile His Lys Gln Trp Thr Tyr Tyr	
115 120 125	
cat caa tat tat ata gtt gaa aag gta aaa aag gtg att ctt gat atg	432
His Gln Tyr Tyr Ile Val Glu Lys Val Lys Lys Val Ile Leu Asp Met	
130 135 140	
gcc ccg gta aag gaa gat gat tgg agc atc ctt cac aag gtt gtt tat	480
Ala Pro Val Lys Glu Asp Asp Trp Ser Ile Leu His Lys Val Val Tyr	
145 150 155 160	
tca gaa ggt ttt gtc gaa aga cga tat aaa aag aag aaa tac ctc ggt	528
Ser Glu Gly Phe Val Glu Arg Arg Tyr Lys Lys Lys Tyr Leu Gly	
165 170 175	
gat att tac att cca caa cca tta atg aaa agc aat aaa atc act act	576
Asp Ile Tyr Ile Pro Gln Pro Leu Met Lys Ser Asn Lys Ile Thr Thr	
180 185 190	
atc tca aat ttt tcc caa ctt acc aaa att tcc aac gtc aga gtt tac	624
Ile Ser Asn Phe Ser Gln Leu Thr Lys Ile Ser Asn Val Arg Val Tyr	
195 200 205	
aga ttc aac gct aca gca gcg tgt gat ccg cag aac ttg aac aaa aaa	672
Arg Phe Asn Ala Thr Ala Ala Cys Asp Pro Gln Asn Leu Asn Lys Lys	
210 215 220	
aac ttg agt atc aaa gag gtt aaa gat aaa gac ctt cct aat ctt att	720
Asn Leu Ser Ile Lys Glu Leu Lys Asp Lys Asp Leu Pro Asn Leu Ile	
225 230 235 240	
tgg act tta gaa cca gaa aaa ttc tat gtt gac atg aga cct tac aag	768
Trp Thr Leu Glu Pro Glu Lys Phe Tyr Val Asp Met Arg Pro Tyr Lys	
245 250 255	
gaa cac gag gaa agg aaa aaa cgg aga gaa gaa gaa gcc aag gtg agg	816

## PhoenixTemp32470.tmp.txt

Glu	His	Glu	Glu	Arg	Lys	Lys	Arg	Arg	Glu	Glu	Glu	Ala	Lys	Val	Arg	
atg	caa	ggt	gag	gaa	cag	gag	aac	att	atg	ata	gag	aga	aaa	aaa	atg	864
Met	Gln	Gly	Glu	Glu	Gln	Glu	Asn	Ile	Met	Ile	Glu	Arg	Lys	Lys	Met	
		275					280					285				
gat	agt	att	gaa	gtt	gaa	gcg	tca	tca	gga	ttg	aaa	aat	atc	ata	aaa	912
Asp	Ser	Ile	Glu	Val	Glu	Ala	Ser	Ser	Gly	Leu	Lys	Asn	Ile	Ile	Lys	
	290					295					300					
aca	cct	ctc	gct	aat	agg	gtt	gtc	aat	act	ttt	aat	aac	tgc	gct	gct	960
Thr	Pro	Leu	Ala	Asn	Arg	Val	Val	Asn	Thr	Phe	Asn	Asn	Cys	Ala	Ala	
305					310					315					320	
gtg	gta	ata	ggc	tat	gta	aca	gaa	gtg	gat	aaa	gta	aag	gat	gac	aat	1008
Val	Val	Ile	Gly	Tyr	Val	Thr	Glu	Val	Asp	Lys	Val	Lys	Asp	Asp	Asn	
				325					330					335		
gaa	gag	aaa	aat	aac	gac	aga	cct	aaa	att	gcg	aac	gac	gga	ata	gct	1056
Glu	Glu	Lys	Asn	Asn	Asp	Arg	Pro	Lys	Ile	Ala	Asn	Asp	Gly	Ile	Ala	
			340					345					350			
caa	aag	tct	aga	agc	gaa	agt	gaa	gat	aat	gca	gga	aca	ccg	atg	gaa	1104
Gln	Lys	Ser	Arg	Ser	Glu	Ser	Glu	Asp	Asn	Ala	Gly	Thr	Pro	Met	Glu	
		355					360					365				
aac	gcg	tac	ttt	caa	cct	gaa	ccc	caa	gat	aat	gac	caa	aac	aac	ata	1152
Asn	Ala	Tyr	Phe	Gln	Pro	Glu	Pro	Gln	Asp	Asn	Asp	Gln	Asn	Asn	Ile	
	370					375					380					
tct	tgg	aat	acc	act	atg	aaa	gat	att	gat	cca	att	tac	atg	agt	gaa	1200
Ser	Trp	Asn	Thr	Thr	Met	Lys	Asp	Ile	Asp	Pro	Ile	Tyr	Met	Ser	Glu	
385					390					395					400	
aga	tgt	gct	aga	gtt	tgg	aga	aag	gag	caa	caa	atg	cta	gga	ttg	gag	1248
Arg	Cys	Ala	Arg	Val	Trp	Arg	Lys	Glu	Gln	Gln	Met	Leu	Gly	Leu	Glu	
				405					410				415			
aag	gct	cag	aca	ttt	gag	aaa	aaa	tat	tgt	aaa	gat	cag	atg	gtt	atg	1296
Lys	Ala	Gln	Thr	Phe	Glu	Lys	Lys	Tyr	Cys	Lys	Asp	Gln	Met	Val	Met	
			420					425					430			
gac	gaa	aat	cag	gtc	gaa	gaa	cct	ggt	aag	cac	tgc	gag	aga	cat	aca	1344
Asp	Glu	Asn	Gln	Val	Glu	Glu	Pro	Gly	Lys	His	Ser	Glu	Arg	His	Thr	
			435				440						445			
aaa	aat	cag	gta	gtt	aga	cct	agg	acc	aaa	ata	gca	tct	tcc	gcc	agt	1392
Lys	Asn	Gln	Val	Val	Arg	Pro	Arg	Thr	Lys	Ile	Ala	Ser	Ser	Ala	Ser	
	450					455					460					
aaa	aat	gat	aat	agt	aat	aat	aaa	aat	agt	aaa	tca	tgc	aaa	aat	tgc	1440
Lys	Asn	Asp	Asn	Ser	Asn	Asn	Lys	Asn	Ser	Lys	Ser	Cys	Lys	Asn	Cys	
465					470					475					480	
cat	aaa	gag	gaa	gcg	cac	ggt	cta	gtg	aga	gaa	tac	ctt	aag	att	aaa	1488
His	Lys	Glu	Glu	Ala	His	Gly	Leu	Val	Arg	Glu	Tyr	Leu	Lys	Ile	Lys	
				485				490					495			
ctc	aac	ata	tca	cct	cat	gga	gaa	agg	aat	cag	cga	aca	aag	gac	aag	1536
Leu	Asn	Ile	Ser	Pro	His	Gly	Glu	Arg	Asn	Gln	Arg	Thr	Lys	Asp	Lys	
			500					505					510			
aga	aaa	tgt	ata	atg	aaa	tac	aat	gcg	agc	agt	aac	aac	atc	aac	aaa	1584
Arg	Lys	Cys	Ile	Met	Lys	Tyr	Asn	Ala	Ser	Ser	Asn	Asn	Ile	Asn	Lys	
		515					520					525				
atg	cct	ggg	gag	agt	gaa	gta	ctt	ggg	tca	act	att	tta	aca	gat	atc	1632
Met	Pro	Gly	Glu	Ser	Glu	Val	Leu	Gly	Ser	Thr	Ile	Leu	Thr	Asp	Ile	
	530					535					540					
cac	ttt	aag	gat	gtc	gta	act	gtg	aaa	ttt	agg	gat	ttt	aaa	gcc	aaa	1680
His	Phe	Lys	Asp	Val	Val	Thr	Val	Lys	Phe	Arg	Asp	Phe	Lys	Ala	Lys	
545					550					555					560	
ttt	aga	aaa	gtc	aaa	ata	aac	gct	tga								1707
Phe	Arg	Lys	Val	Lys	Ile	Asn	Ala									
				565												

&lt;210&gt; 2596

&lt;211&gt; 568

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2596

Met	Phe	Leu	Asp	Tyr	Ser	Gly	Tyr	Glu	Ala	Leu	Thr	Glu	Ile	Asn	Ser
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Ser	Phe	Gly	Lys	Tyr	Val	Leu	Leu	Leu	Gln	Gln	Phe	Glu	Gly	Cys	Arg

## PhoenixTemp32470.tmp.txt

			20					25					30		
Ser	Leu	Lys	Asp	Arg	Leu	Gln	Met	Leu	Lys	Asp	Leu	Gly	Arg	Glu	Phe
		35					40					45			
Met	Ile	Phe	Glu	Asn	Leu	Asn	Val	Glu	Asp	Phe	Arg	Glu	Ser	Lys	Asn
	50					55					60				
Met	Ile	His	Arg	Phe	Tyr	Thr	Met	Val	Ile	Ser	Leu	Arg	Gln	Ile	Met
65					70					75					80
Glu	Ile	Gly	Pro	Leu	Val	Arg	Arg	Ser	Pro	Ala	Val	Leu	Val	Val	Glu
			85						90					95	
Phe	Asp	Cys	Pro	Val	Glu	Asp	Cys	Leu	Asp	Glu	Leu	Asp	Pro	Leu	His
			100					105					110		
Pro	Leu	Asn	Arg	Ala	Phe	Ile	Phe	Ile	His	Lys	Gln	Trp	Thr	Tyr	Tyr
		115					120					125			
His	Gln	Tyr	Tyr	Ile	Val	Glu	Lys	Val	Lys	Lys	Val	Ile	Leu	Asp	Met
	130					135					140				
Ala	Pro	Val	Lys	Glu	Asp	Asp	Trp	Ser	Ile	Leu	His	Lys	Val	Val	Tyr
145					150					155					160
Ser	Glu	Gly	Phe	Val	Glu	Arg	Arg	Tyr	Lys	Lys	Lys	Lys	Tyr	Leu	Gly
			165						170					175	
Asp	Ile	Tyr	Ile	Pro	Gln	Pro	Leu	Met	Lys	Ser	Asn	Lys	Ile	Thr	Thr
			180					185					190		
Ile	Ser	Asn	Phe	Ser	Gln	Leu	Thr	Lys	Ile	Ser	Asn	Val	Arg	Val	Tyr
		195					200					205			
Arg	Phe	Asn	Ala	Thr	Ala	Ala	Cys	Asp	Pro	Gln	Asn	Leu	Asn	Lys	Lys
	210					215					220				
Asn	Leu	Ser	Ile	Lys	Glu	Leu	Lys	Asp	Lys	Asp	Leu	Pro	Asn	Leu	Ile
225					230					235					240
Trp	Thr	Leu	Glu	Pro	Glu	Lys	Phe	Tyr	Val	Asp	Met	Arg	Pro	Tyr	Lys
			245						250					255	
Glu	His	Glu	Glu	Arg	Lys	Lys	Arg	Arg	Glu	Glu	Glu	Ala	Lys	Val	Arg
			260					265					270		
Met	Gln	Gly	Glu	Glu	Gln	Glu	Asn	Ile	Met	Ile	Glu	Arg	Lys	Lys	Met
		275					280					285			
Asp	Ser	Ile	Glu	Val	Glu	Ala	Ser	Ser	Gly	Leu	Lys	Asn	Ile	Ile	Lys
	290					295					300				
Thr	Pro	Leu	Ala	Asn	Arg	Val	Val	Asn	Thr	Phe	Asn	Asn	Cys	Ala	Ala
305					310					315					320
Val	Val	Ile	Gly	Tyr	Val	Thr	Glu	Val	Asp	Lys	Val	Lys	Asp	Asp	Asn
			325						330					335	
Glu	Glu	Lys	Asn	Asp	Arg	Pro	Lys	Ile	Ala	Asn	Asp	Gly	Ile	Ala	
			340					345					350		
Gln	Lys	Ser	Arg	Ser	Glu	Ser	Glu	Asp	Asn	Ala	Gly	Thr	Pro	Met	Glu
		355					360					365			
Asn	Ala	Tyr	Phe	Gln	Pro	Glu	Pro	Gln	Asp	Asn	Asp	Gln	Asn	Asn	Ile
	370					375									

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 <211> 25  
 <212> DNA  
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<220>  
 <223> primer

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25

<210> 2598  
 <211> 27  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2598  
 tcaagcgttt attttgactt ttctaaa

27

<210> 2599  
 <211> 972  
 <212> DNA  
 <213> SACCHAROMYCES CEREVISIAE

<220>  
 <221> CDS  
 <222> (1)..(972)

<400> 2599  
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 Met Ser Gly Ser Phe Trp Thr Ser Thr Gln Arg His His Trp Gln Tyr  
 1 5 10 15  
 acc aag gca tca ttg gct aaa gag agg cag aag tta tgg cta ttg gag 96  
 Thr Lys Ala Ser Leu Ala Lys Glu Arg Gln Lys Leu Trp Leu Leu Glu  
 20 25 30  
 tgc cag ctg ttt cct caa ggt ttg aat att gta atg gat tcg aag caa 144  
 Cys Gln Leu Phe Pro Gln Gly Leu Asn Ile Val Met Asp Ser Lys Gln  
 35 40 45  
 aac ggc atc gaa caa tcc atc aca aag aat ata cca ata act cac cga 192  
 Asn Gly Ile Glu Gln Ser Ile Thr Lys Asn Ile Pro Ile Thr His Arg  
 50 55 60  
 gac tta cac tat gat aaa gat tat aat cta agg atc tac tgc tat ttc 240  
 Asp Leu His Tyr Asp Lys Asp Tyr Asn Leu Arg Ile Tyr Cys Tyr Phe  
 65 70 75 80  
 ctg ata atg aag ctt gga agg aga cta aat ata aga cag tat gca ctg 288  
 Leu Ile Met Lys Leu Gly Arg Arg Leu Asn Ile Arg Gln Tyr Ala Leu  
 85 90 95  
 gct aca gca cat att tat cta tca agg ttt tta ata aag gct tca gtt 336  
 Ala Thr Ala His Ile Tyr Leu Ser Arg Phe Leu Ile Lys Ala Ser Val  
 100 105 110  
 aga gaa ata aac cta tat atg ctg gtt act acg tgt gta tat tta gca 384  
 Arg Glu Ile Asn Leu Tyr Met Leu Val Thr Thr Cys Val Tyr Leu Ala  
 115 120 125  
 tgc aaa gtt gaa gaa tgc ccg caa tat atc aga act ttg gta agt gaa 432  
 Cys Lys Val Glu Glu Cys Pro Gln Tyr Ile Arg Thr Leu Val Ser Glu  
 130 135 140  
 gcc cgt acc tta tgg ccc gaa ttt att cct cct gac cct act aaa gtt 480  
 Ala Arg Thr Leu Trp Pro Glu Phe Ile Pro Pro Asp Pro Thr Lys Val  
 145 150 155 160  
 act gag ttt gag ttc tac tta cta gaa gaa ttg gaa agt tac tta att 528  
 Thr Glu Phe Glu Phe Tyr Leu Leu Glu Glu Leu Glu Ser Tyr Leu Ile  
 165 170 175  
 gtc cac cac cct tat caa tcc tta aag caa att gtt caa gtc tta aag 576  
 Val His His Pro Tyr Gln Ser Leu Lys Gln Ile Val Gln Val Leu Lys  
 180 185 190

## PhoenixTemp32470.tmp.txt

caa	ccg	cca	ttt	caa	ata	aca	cta	tcg	tca	gat	gat	cta	caa	aac	tgt	624
Gln	Pro	Pro	Phe	Gln	Ile	Thr	Leu	Ser	Ser	Asp	Asp	Leu	Gln	Asn	Cys	
		195					200					205				
tgg	tcc	tta	atc	aac	gac	agt	tat	ata	aat	gat	ggt	cat	ttg	ctt	tac	672
Trp	Ser	Leu	Ile	Asn	Asp	Ser	Tyr	Ile	Asn	Asp	Val	His	Leu	Leu	Tyr	
	210					215					220					
cct	cct	cat	att	atc	gct	ggt	gca	tgt	tta	ttc	att	acg	att	tcc	att	720
Pro	Pro	His	Ile	Ile	Ala	Val	Ala	Cys	Leu	Phe	Ile	Thr	Ile	Ser	Ile	
	225				230					235					240	
cat	ggg	aaa	cca	acc	aaa	gga	tca	tcg	tta	gca	tct	gcg	gct	tct	gaa	768
His	Gly	Lys	Pro	Thr	Lys	Gly	Ser	Ser	Leu	Ala	Ser	Ala	Ala	Ser	Glu	
			245						250					255		
gcc	atc	aga	gat	cct	aaa	aat	tct	agt	tct	cct	ggt	caa	ata	gct	ttt	816
Ala	Ile	Arg	Asp	Pro	Lys	Asn	Ser	Ser	Ser	Pro	Val	Gln	Ile	Ala	Phe	
			260					265					270			
aat	cgt	ttt	atg	gca	gaa	tct	ctt	gta	gat	ctt	gag	gag	ggt	atg	gat	864
Asn	Arg	Phe	Met	Ala	Glu	Ser	Leu	Val	Asp	Leu	Glu	Glu	Val	Met	Asp	
	275						280				285					
acg	att	caa	gag	caa	att	aca	tta	tac	gat	cat	tgg	gac	aag	tac	cac	912
Thr	Ile	Gln	Glu	Gln	Ile	Thr	Leu	Tyr	Asp	His	Trp	Asp	Lys	Tyr	His	
	290					295					300					
gaa	caa	tgg	ata	aag	ttt	ctg	cta	cat	act	ttg	tat	ctt	aga	cca	gca	960
Glu	Gln	Trp	Ile	Lys	Phe	Leu	Leu	His	Thr	Leu	Tyr	Leu	Arg	Pro	Ala	
	305				310					315					320	
tct	gca	att	taa													972
Ser	Ala	Ile														

&lt;210&gt; 2600

&lt;211&gt; 323

&lt;212&gt; PRT

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;400&gt; 2600

Met	Ser	Gly	Ser	Phe	Trp	Thr	Ser	Thr	Gln	Arg	His	His	Trp	Gln	Tyr	
1				5					10					15		
Thr	Lys	Ala	Ser	Leu	Ala	Lys	Glu	Arg	Gln	Lys	Leu	Trp	Leu	Leu	Glu	
			20					25					30			
Cys	Gln	Leu	Phe	Pro	Gln	Gly	Leu	Asn	Ile	Val	Met	Asp	Ser	Lys	Gln	
		35					40					45				
Asn	Gly	Ile	Glu	Gln	Ser	Ile	Thr	Lys	Asn	Ile	Pro	Ile	Thr	His	Arg	
	50					55					60					
Asp	Leu	His	Tyr	Asp	Lys	Asp	Tyr	Asn	Leu	Arg	Ile	Tyr	Cys	Tyr	Phe	
65					70					75					80	
Leu	Ile	Met	Lys	Leu	Gly	Arg	Arg	Leu	Asn	Ile	Arg	Gln	Tyr	Ala	Leu	
				85					90					95		
Ala	Thr	Ala	His	Ile	Tyr	Leu	Ser	Arg	Phe	Leu	Ile	Lys	Ala	Ser	Val	
			100					105					110			
Arg	Glu	Ile	Asn	Leu	Tyr	Met	Leu	Val	Thr	Thr	Cys	Val	Tyr	Leu	Ala	
		115					120					125				
Cys	Lys	Val	Glu	Glu	Cys	Pro	Gln	Tyr	Ile	Arg	Thr	Leu	Val	Ser	Glu	
	130					135					140					
Ala	Arg	Thr	Leu	Trp	Pro	Glu	Phe	Ile	Pro	Pro	Asp	Pro	Thr	Lys	Val	
145					150					155					160	
Thr	Glu	Phe	Glu	Phe	Tyr	Leu	Leu	Glu	Glu	Leu	Glu	Ser	Tyr	Leu	Ile	
				165					170					175		
Val	His	His	Pro	Tyr	Gln	Ser	Leu	Lys	Gln	Ile	Val	Gln	Val	Leu	Lys	
			180					185					190			
Gln	Pro	Pro	Phe	Gln	Ile	Thr	Leu	Ser	Ser	Asp	Asp	Leu	Gln	Asn	Cys	
		195					200						205			
Trp	Ser	Leu	Ile	Asn	Asp	Ser	Tyr	Ile	Asn	Asp	Val	His	Leu	Leu	Tyr	
	210					215					220					
Pro	Pro	His	Ile	Ile	Ala	Val	Ala	Cys	Leu	Phe	Ile	Thr	Ile	Ser	Ile	
	225				230					235					240	
His	Gly	Lys	Pro	Thr	Lys	Gly	Ser	Ser	Leu	Ala	Ser	Ala	Ala	Ser	Glu	
				245					250					255		
Ala	Ile	Arg	Asp	Pro	Lys	Asn	Ser	Ser	Ser	Pro	Val	Gln	Ile	Ala	Phe	
			260					265					270			
Asn	Arg	Phe	Met	Ala	Glu	Ser	Leu	Val	Asp	Leu	Glu	Glu	Val	Met	Asp	

## PhoenixTemp32470.tmp.txt

275  
 Thr Ile Gln Glu Gln Ile Thr 280  
 290 Leu Tyr Asp His Trp 285  
 Glu Gln Trp Ile Lys Phe Leu 300  
 305 310 Leu Tyr Leu Arg Pro Ala 315 320  
 Ser Ala Ile

<210> 2601  
 <211> 909  
 <212> DNA  
 <213> Aspergillus fumigatus

<220>  
 <221> CDS  
 <222> (1)..(909)

<400> 2601  
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 aca aga gaa aaa ttg gcg gag att cgg gaa atc ttt cgt gaa ggc gat 96  
 Thr Arg Glu Lys Leu Ala Glu Ile Arg Glu Ile Phe Arg Glu Gly Asp  
 20 25 30  
 aaa gtt gct cat tcc cag ttc cct cta ccg gac cag aga cta ctc aat 144  
 Lys Val Ala His Ser Gln Phe Pro Leu Pro Asp Gln Arg Leu Leu Asn  
 35 40 45  
 atc tat ttc agt cag caa ctt ata aag ctt gga aag cga atg tca act 192  
 Ile Tyr Phe Ser Gln Gln Leu Ile Lys Leu Gly Lys Arg Met Ser Thr  
 50 55 60  
 aga cag caa gct ctt gcg act gct caa gtg tat atc aag cga ttc tat 240  
 Arg Gln Gln Ala Leu Ala Thr Ala Gln Val Tyr Ile Lys Arg Phe Tyr  
 65 70 75 80  
 acg aag aat gag atc agg cat aca aat ccg tac cta gtt ctt acg act 288  
 Thr Lys Asn Glu Ile Arg His Thr Asn Pro Tyr Leu Val Leu Thr Thr  
 85 90 95  
 gcc ttc tat ctc gct tgc aaa atg gaa gag tgt cca caa cat atc cgt 336  
 Ala Phe Tyr Leu Ala Cys Lys Met Glu Glu Cys Pro Gln His Ile Arg  
 100 105 110  
 ttt gtt gtc ggt gaa gcc cgg agc ctc tgg cca gaa ttc att acc ccg 384  
 Phe Val Val Gly Glu Ala Arg Ser Leu Trp Pro Glu Phe Ile Thr Pro  
 115 120 125  
 gat gtt tca aaa cta ggc gag tgt gaa ttt tcc ttg ata tca gaa atg 432  
 Asp Val Ser Lys Leu Gly Glu Cys Glu Phe Ser Leu Ile Ser Glu Met  
 130 135 140  
 aac tcg caa ctc att gtg cac cat cca tat cga aca tta tca gag ctt 480  
 Asn Ser Gln Leu Ile Val His His Pro Tyr Arg Thr Leu Ser Glu Leu  
 145 150 155 160  
 cag ccc gaa ctg tca ctc aca tca gat gag gtt gct ctt gca tgg tct 528  
 Gln Pro Glu Leu Ser Leu Thr Ser Asp Glu Val Ala Leu Ala Trp Ser  
 165 170 175  
 gtg atc aat gat cat tac ctg acg gac cta cct ctc cta tat gct cct 576  
 Val Ile Asn Asp His Tyr Leu Thr Asp Leu Pro Leu Leu Tyr Ala Pro  
 180 185 190  
 cat gtc att gct gtt atg gcg atc att gtt gca gtt gtc ttc aag cca 624  
 His Val Ile Ala Val Met Ala Ile Ile Val Ala Val Val Phe Lys Pro  
 195 200 205  
 aat tcc gga aat ttc cac ggg tct gcg gcg cct gtc ctt gcc ggc gca 672  
 Asn Ser Gly Asn Phe His Gly Ser Ala Ala Pro Val Leu Ala Gly Ala  
 210 215 220  
 atg agg gat ggt gga atg aat gtg ctg gct gca tta gga gac cgg act 720  
 Met Arg Asp Gly Gly Met Asn Val Leu Ala Ala Leu Gly Asp Arg Thr  
 225 230 235 240  
 ggt tct ggg cct cct ctc aaa att cag aaa ctc atc aat tgg ctt gct 768  
 Gly Ser Gly Pro Pro Leu Lys Ile Gln Lys Leu Ile Asn Trp Leu Ala  
 245 250 255  
 gag agt gaa gtt gac att aaa ggt gtc att gag tgc acc cag gaa ttg 816  
 Glu Ser Glu Val Asp Ile Lys Gly Val Ile Glu Cys Thr Gln Glu Leu  
 260 265 270

## PhoenixTemp32470.tmp.txt

gtg	tcg	ctc	tat	gaa	gtt	tgg	gag	cag	tac	agt	gag	aag	act	tgc	aag	864
Val	Ser	Leu	Tyr	Glu	Val	Trp	Glu	Gln	Tyr	Ser	Glu	Lys	Thr	Cys	Lys	
		275					280					285				
gag	cta	ctt	ggg	cgg	atg	gtc	aaa	gct	aaa	aat	ctg	gac	aaa	tga		909
Glu	Leu	Leu	Gly	Arg	Met	Val	Lys	Ala	Lys	Asn	Leu	Asp	Lys			
	290					295					300					

<210> 2602  
 <211> 302  
 <212> PRT  
 <213> *Aspergillus fumigatus*

<400> 2602  
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 1 5 10 15  
 Thr Arg Glu Lys Leu Ala Glu Ile Arg Glu Ile Phe Arg Glu Gly Asp  
 20 25 30  
 Lys Val Ala His Ser Gln Phe Pro Leu Pro Asp Gln Arg Leu Leu Asn  
 35 40 45  
 Ile Tyr Phe Ser Gln Gln Leu Ile Lys Leu Gly Lys Arg Met Ser Thr  
 50 55 60  
 Arg Gln Gln Ala Leu Ala Thr Ala Gln Val Tyr Ile Lys Arg Phe Tyr  
 65 70 75 80  
 Thr Lys Asn Glu Ile Arg His Thr Asn Pro Tyr Leu Val Leu Thr Thr  
 85 90 95  
 Ala Phe Tyr Leu Ala Cys Lys Met Glu Glu Cys Pro Gln His Ile Arg  
 100 105 110  
 Phe Val Val Gly Glu Ala Arg Ser Leu Trp Pro Glu Phe Ile Thr Pro  
 115 120 125  
 Asp Val Ser Lys Leu Gly Glu Cys Glu Phe Ser Leu Ile Ser Glu Met  
 130 135 140  
 Asn Ser Gln Leu Ile Val His His Pro Tyr Arg Thr Leu Ser Glu Leu  
 145 150 155 160  
 Gln Pro Glu Leu Ser Leu Thr Ser Asp Glu Val Ala Leu Ala Trp Ser  
 165 170 175  
 Val Ile Asn Asp His Tyr Leu Thr Asp Leu Pro Leu Leu Tyr Ala Pro  
 180 185 190  
 His Val Ile Ala Val Met Ala Ile Ile Val Ala Val Val Phe Lys Pro  
 195 200 205  
 Asn Ser Gly Asn Phe His Gly Ser Ala Ala Pro Val Leu Ala Gly Ala  
 210 215 220  
 Met Arg Asp Gly Gly Met Asn Val Leu Ala Ala Leu Gly Asp Arg Thr  
 225 230 235 240  
 Gly Ser Gly Pro Pro Leu Lys Ile Gln Lys Leu Ile Asn Trp Leu Ala  
 245 250 255  
 Glu Ser Glu Val Asp Ile Lys Gly Val Ile Glu Cys Thr Gln Glu Leu  
 260 265 270  
 Val Ser Leu Tyr Glu Val Trp Glu Gln Tyr Ser Glu Lys Thr Cys Lys  
 275 280 285  
 Glu Leu Leu Gly Arg Met Val Lys Ala Lys Asn Leu Asp Lys  
 290 295 300

<210> 2603  
 <211> 927  
 <212> DNA  
 <213> *Aedes aegypti*

<220>  
 <221> CDS  
 <222> (130)..(927)

<400> 2603  
 cgctcgccgc ttcaacaaga caaaacaaaa atctaaacaa attttaatca gccaaagtgt 60

ctcagtttac ttgcgtctag aattaaat ttaaattttt atagtgaatt caattaatta 120

gtgttgaaa atg gct gga aac ttt tgg caa agc tcc cac cat cag cag tgg 171



## PhoenixTemp32470.tmp.txt

Met	Ala	Gly	Asn	Phe	Trp	Gln	Ser	Ser	His	His	Gln	Gln	Trp			
1				5				10								
ata	ttg	gac	aag	caa	gac	ctc	atc	cgc	gag	cga	cag	cac	gat	ctg	aaa	219
Ile	Leu	Asp	Lys	Gln	Asp	Leu	Ile	Arg	Glu	Arg	Gln	His	Asp	Leu	Lys	
15				20					25						30	
aat	ctc	acc	gaa	gag	gag	tac	cag	aag	atc	ttc	atg	ttt	ttc	gcc	aat	267
Asn	Leu	Thr	Glu	Glu	Glu	Tyr	Gln	Lys	Ile	Phe	Met	Phe	Phe	Ala	Asn	
				35					40						45	
gtt	att	caa	gtg	cta	ggg	gag	cag	cta	aag	ctt	cgc	cag	cag	gtc	att	315
Val	Ile	Gln	Val	Leu	Gly	Glu	Gln	Leu	Lys	Leu	Arg	Gln	Gln	Val	Ile	
				50				55								
gcc	act	gcc	acg	gtc	tat	ttc	aag	cgg	ttc	tac	gcc	cgg	aac	tcg	ctc	363
Ala	Thr	Ala	Thr	Val	Tyr	Phe	Lys	Arg	Phe	Tyr	Ala	Arg	Asn	Ser	Leu	
				65			70					75				
aaa	tgt	ata	gac	ccg	tta	ctg	ttg	gcc	ccg	act	tgt	att	ctg	ctg	gcc	411
Lys	Cys	Ile	Asp	Pro	Leu	Leu	Leu	Ala	Pro	Thr	Cys	Ile	Leu	Leu	Ala	
				80			85				90					
tcc	aaa	gtg	gaa	gaa	ttc	ggg	gtc	att	tct	aac	tcc	cgg	ctc	atc	aca	459
Ser	Lys	Val	Glu	Glu	Phe	Gly	Val	Ile	Ser	Asn	Ser	Arg	Leu	Ile	Thr	
95					100					105					110	
acc	tgc	caa	acg	gtg	atc	aag	aac	aaa	ttt	agc	tat	gcc	tat	cag	cag	507
Thr	Cys	Gln	Thr	Val	Ile	Lys	Asn	Lys	Phe	Ser	Tyr	Ala	Tyr	Gln	Gln	
				115					120					125		
gag	ttc	ccc	tac	agg	acc	aac	cac	atc	ctg	gag	tgt	gag	ttt	tat	ttg	555
Glu	Phe	Pro	Tyr	Arg	Thr	Asn	His	Ile	Leu	Glu	Cys	Glu	Phe	Tyr	Leu	
				130				135						140		
ctg	gag	aac	ttg	gac	tgc	tgc	ctg	atc	gtg	tat	caa	ccg	tac	cgt	ccg	603
Leu	Glu	Asn	Leu	Asp	Cys	Cys	Leu	Ile	Val	Tyr	Gln	Pro	Tyr	Arg	Pro	
				145			150					155				
ttg	ctg	cag	ctg	atc	cag	gac	att	ggc	cag	gag	gat	caa	ttg	ctg	acg	651
Leu	Leu	Gln	Leu	Ile	Gln	Asp	Ile	Gly	Gln	Glu	Asp	Gln	Leu	Leu	Thr	
				160		165					170					
ctt	acc	tgg	cgt	ctg	atc	aac	gat	tcc	ctg	agg	acc	gat	gtc	agt	ctg	699
Leu	Thr	Trp	Arg	Leu	Ile	Asn	Asp	Ser	Leu	Arg	Thr	Asp	Val	Ser	Leu	
				180						185					190	
ctg	tat	ccg	cca	tat	caa	att	gca	ata	ggc	tgc	ctg	cag	ata	gca	tgt	747
Leu	Tyr	Pro	Pro	Tyr	Gln	Ile	Ala	Ile	Gly	Cys	Leu	Gln	Ile	Ala	Cys	
				195					200					205		
gtg	atc	ctg	caa	aag	gaa	ttg	aag	gcg	tgg	ttt	gcc	gaa	ctg	aac	gta	795
Val	Ile	Leu	Gln	Lys	Glu	Leu	Lys	Ala	Trp	Phe	Ala	Glu	Leu	Asn	Val	
				210				215					220			
gac	atg	gag	aaa	gtg	cag	gaa	att	gcc	cgg	gcc	att	ttg	aac	gtt	ttc	843
Asp	Met	Glu	Lys	Val	Gln	Glu	Ile	Ala	Arg	Ala	Ile	Leu	Asn	Val	Phe	
				225			230				235					
gag	ctg	tgg	aaa	agc	tac	gac	gaa	aag	gaa	ata	cag	gga	ctg	ctg	gaa	891
Glu	Leu	Trp	Lys	Ser	Tyr	Asp	Glu	Lys	Glu	Ile	Gln	Gly	Leu	Leu	Glu	
				240		245					250					
aag	atg	cca	aaa	cca	aag	ccg	gcc	cct	caa	cgg	tga					927
Lys	Met	Pro	Lys	Pro	Lys	Pro	Ala	Pro	Gln	Arg						
255					260				265							

&lt;210&gt; 2604

&lt;211&gt; 265

&lt;212&gt; PRT

&lt;213&gt; Aedes aegypti

&lt;400&gt; 2604

Met	Ala	Gly	Asn	Phe	Trp	Gln	Ser	Ser	His	His	Gln	Gln	Trp	Ile	Leu	
1				5					10					15		
Asp	Lys	Gln	Asp	Leu	Ile	Arg	Glu	Arg	Gln	His	Asp	Leu	Lys	Asn	Leu	
				20					25					30		
Thr	Glu	Glu	Glu	Tyr	Gln	Lys	Ile	Phe	Met	Phe	Phe	Ala	Asn	Val	Ile	
				35				40					45			
Gln	Val	Leu	Gly	Glu	Gln	Leu	Lys	Leu	Arg	Gln	Gln	Val	Ile	Ala	Thr	
				50			55					60				
Ala	Thr	Val	Tyr	Phe	Lys	Arg	Phe	Tyr	Ala	Arg	Asn	Ser	Leu	Lys	Cys	
65					70					75					80	
Ile	Asp	Pro	Leu	Leu	Ala	Pro	Thr	Cys	Ile	Leu	Leu	Ala	Ser	Lys		
				85					90					95		

## PhoenixTemp32470.tmp.txt

Val Glu Glu Phe Gly Val Ile Ser Asn Ser Arg Leu Ile Thr Thr Cys  
 100 110  
 Gln Thr Val Ile Lys Asn Lys Phe Ser Tyr Ala Tyr Gln Gln Glu Phe  
 115 120 125  
 Pro Tyr Arg Thr Asn His Ile Leu Glu Cys Glu Phe Tyr Leu Leu Glu  
 130 135 140  
 Asn Leu Asp Cys Cys Leu Ile Val Tyr Gln Pro Tyr Arg Pro Leu Leu  
 145 150 155 160  
 Gln Leu Ile Gln Asp Ile Gly Gln Glu Asp Gln Leu Leu Thr Leu Thr  
 165 170 175  
 Trp Arg Leu Ile Asn Asp Ser Leu Arg Thr Asp Val Ser Leu Leu Tyr  
 180 185 190  
 Pro Pro Tyr Gln Ile Ala Ile Gly Cys Leu Gln Ile Ala Cys Val Ile  
 195 200 205  
 Leu Gln Lys Glu Leu Lys Ala Trp Phe Ala Glu Leu Asn Val Asp Met  
 210 215 220  
 Glu Lys Val Gln Glu Ile Ala Arg Ala Ile Leu Asn Val Phe Glu Leu  
 225 230 235 240  
 Trp Lys Ser Tyr Asp Glu Lys Glu Ile Gln Gly Leu Leu Glu Lys Met  
 245 250 255  
 Pro Lys Pro Lys Pro Ala Pro Gln Arg  
 260 265

&lt;210&gt; 2605

&lt;211&gt; 1039

&lt;212&gt; DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (17)..(817)

&lt;400&gt; 2605

gcagcattca acgaag atg gca gga aac ttc tgg caa agc tca cac cac cag 52  
 Met Ala Gly Asn Phe Trp Gln Ser Ser His His Gln  
 1 5 10  
 cag tgg att ctg gac aag cag gat ctg atc cgg gag cgt cag cac gac 100  
 Gln Trp Ile Leu Asp Lys Gln Asp Leu Ile Arg Glu Arg Gln His Asp  
 15 20 25  
 ctg aaa acg ctc tcc gaa gaa gag tac cag aaa ctc ttc atg ttc ttt 148  
 Leu Lys Thr Leu Ser Glu Glu Glu Tyr Gln Lys Leu Phe Met Phe Phe  
 30 35 40  
 gcc aac atc ata cag gtg ctg gga gag cag ttg aag ctg cgc cag cag 196  
 Ala Asn Ile Ile Gln Val Leu Gly Glu Gln Leu Lys Leu Arg Gln Gln  
 45 50 55 60  
 gtc att gct acg gcc acc gtg tac ttc aag cgg ttc tac gcg cgc aac 244  
 Val Ile Ala Thr Ala Thr Val Tyr Phe Lys Arg Phe Tyr Ala Arg Asn  
 65 70 75  
 tca ctg aag tgc atc gat ccg ctg ctg ctg gca ccg aca tgc ata ctg 292  
 Ser Leu Lys Cys Ile Asp Pro Leu Leu Leu Ala Pro Thr Cys Ile Leu  
 80 85 90  
 ctc tcg tcc aag gtg gaa gag ttc ggt gtg ata tcg aac tcg cga ctc 340  
 Leu Ser Ser Lys Val Glu Glu Phe Gly Val Ile Ser Asn Ser Arg Leu  
 95 100 105  
 atc acc acg tgc cag acg gtg atc aag aat aag ttc agc tac gcc tac 388  
 Ile Thr Thr Cys Gln Thr Val Ile Lys Asn Lys Phe Ser Tyr Ala Tyr  
 110 115 120  
 cag cag gag ttc ccg tac cgc acc aac cac atc ctg gag tgt gaa ttc 436  
 Gln Gln Glu Phe Pro Tyr Arg Thr Asn His Ile Leu Glu Cys Glu Phe  
 125 130 135 140  
 tac ctg ctc gaa aat ttg gac tgc tgt ttg att gtg tac caa ccg tac 484  
 Tyr Leu Leu Glu Asn Leu Asp Cys Cys Leu Ile Val Tyr Gln Pro Tyr  
 145 150 155  
 cgc ccg ctg ctg cag ctc atg cag gac att ggc cag gag gaa cag ttg 532  
 Arg Pro Leu Leu Gln Leu Met Gln Asp Ile Gly Gln Glu Glu Gln Leu  
 160 165 170  
 ctc act ctt acc tgg cgg ctc atc aat gac tcc cta cgc acg gac gtg 580  
 Leu Thr Leu Thr Trp Arg Leu Ile Asn Asp Ser Leu Arg Thr Asp Val  
 175 180 185

## PhoenixTemp32470.tmp.txt

```

agt ctt ttg tat ccc ccg tat cag atc gct atc ggt tgt ctg cag ata 628
Ser Leu Leu Tyr Pro Pro Tyr Gln Ile Ala Ile Gly Cys Leu Gln Ile
190 195 200
gcg tgt gtc att cta cag aaa gag cta aaa tcc tgg ttt gcc gag cta 676
Ala Cys Val Ile Leu Gln Lys Glu Leu Lys Ser Trp Phe Ala Glu Leu
205 210 215 220
aac gtc gac atg gac aag gtg cag gag atc gca cgc gca atc gtt aat 724
Asn Val Asp Met Asp Lys Val Gln Glu Ile Ala Arg Ala Ile Val Asn
225 230 235
ctg ttc gag ctg tgg aaa gga tac gat gag aag aag gag atc cag gcg 772
Leu Phe Glu Leu Trp Lys Gly Tyr Asp Glu Lys Lys Glu Ile Gln Ala
240 245 250
ttg ttg gaa aaa atg ccc aaa ccg aag ccg cat cct cag cgg tgatttggtg 824
Leu Leu Glu Lys Met Pro Lys Pro Lys Pro His Pro Gln Arg
255 260 265
tcgaccctag cagcgatctc gtacggactg gcctagactg aatgccagtc aatcgcgttc 884

acctttccat actaaataat cacgcacgcc cgctcgatag aggtaacaga actgattccg 944

tacatcgtag cggtagcttg taatgaaact tgtgattccg agacttctat gggggaaaca 1004

catccttgta tcaccttgaa cgaataataa tttat 1039

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&lt;210&gt; 2606

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Anopheles gambiae str. PEST

&lt;400&gt; 2606

```

Met Ala Gly Asn Phe Trp Gln Ser Ser His His Gln Gln Trp Ile Leu
1 5 10 15
Asp Lys Gln Asp Leu Ile Arg Glu Arg Gln His Asp Leu Lys Thr Leu
20 25 30
Ser Glu Glu Glu Tyr Gln Lys Leu Phe Met Phe Phe Ala Asn Ile Ile
35 40 45
Gln Val Leu Gly Glu Gln Leu Lys Leu Arg Gln Gln Val Ile Ala Thr
50 55 60
Ala Thr Val Tyr Phe Lys Arg Phe Tyr Ala Arg Asn Ser Leu Lys Cys
65 70 75 80
Ile Asp Pro Leu Leu Ala Pro Thr Cys Ile Leu Leu Ser Ser Lys
85 90 95
Val Glu Glu Phe Gly Val Ile Ser Asn Ser Arg Leu Ile Thr Thr Cys
100 105 110
Gln Thr Val Ile Lys Asn Lys Phe Ser Tyr Ala Tyr Gln Gln Glu Phe
115 120 125
Pro Tyr Arg Thr Asn His Ile Leu Glu Cys Glu Phe Tyr Leu Leu Glu
130 135 140
Asn Leu Asp Cys Cys Leu Ile Val Tyr Gln Pro Tyr Arg Pro Leu Leu
145 150 155 160
Gln Leu Met Gln Asp Ile Gly Gln Glu Glu Gln Leu Leu Thr Leu Thr
165 170 175
Trp Arg Leu Ile Asn Asp Ser Leu Arg Thr Asp Val Ser Leu Leu Tyr
180 185 190
Pro Pro Tyr Gln Ile Ala Ile Gly Cys Leu Gln Ile Ala Cys Val Ile
195 200 205
Leu Gln Lys Glu Leu Lys Ser Trp Phe Ala Glu Leu Asn Val Asp Met
210 215 220
Asp Lys Val Gln Glu Ile Ala Arg Ala Ile Val Asn Leu Phe Glu Leu
225 230 235 240
Trp Lys Gly Tyr Asp Glu Lys Lys Glu Ile Gln Ala Leu Leu Glu Lys
245 250 255
Met Pro Lys Pro Lys Pro His Pro Gln Arg
260 265

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<210> 2607  
 <211> 1092  
 <212> DNA  
 <213> Magnaporthe grisea 70-15

<220>  
 <221> CDS  
 <222> (1)..(1092)

<400> 2607  
 atg gcg gcc aat ttt tgg gag tca acc cag cgt cgg aac tgg ctc ttc 48  
 Met Ala Ala Asn Phe Trp Glu Ser Thr Gln Arg Arg Asn Trp Leu Phe  
 1 5 10 15  
 acc aaa gag gag ctg gca gcc aga cga cag caa ctg gaa aat gag gac 96  
 Thr Lys Glu Glu Leu Ala Ala Arg Arg Gln Gln Leu Glu Asn Glu Asp  
 20 25 30  
 cct tcc ttg gtg acc atg tat cca ttg cct gaa tgg aga cat tta tat 144  
 Pro Ser Leu Val Thr Met Tyr Pro Leu Pro Glu Trp Arg His Leu Tyr  
 35 40 45  
 aac tac ttc aac tac caa atg ctc cgc ctc gcc aaa aac ctc tcg atc 192  
 Asn Tyr Phe Asn Tyr Gln Met Leu Arg Leu Ala Lys Asn Leu Ser Ile  
 50 55 60  
 cgt caa caa gcc att gcc aca gcc cag gtc tac atg aag cgc ttc tac 240  
 Arg Gln Gln Ala Ile Ala Thr Ala Gln Val Tyr Met Lys Arg Phe Tyr  
 65 70 75 80  
 acg cgt gtc gag att cga agc acg aac cca acc ctt gtt ctc gtc acg 288  
 Thr Arg Val Glu Ile Arg Ser Thr Asn Pro Thr Leu Val Leu Val Thr  
 85 90 95  
 gcc gtc tac ctc gcc tgc aag atg gag gag atg ccg ctc cac ata cgc 336  
 Ala Val Tyr Leu Ala Cys Lys Met Glu Glu Met Pro Leu His Ile Arg  
 100 105 110  
 aac gtc tcg ctc gag gcg aag aag gtc tgg cca atg gag acg ccc tcg 384  
 Asn Val Ser Leu Glu Ala Lys Lys Val Trp Pro Met Glu Thr Pro Ser  
 115 120 125  
 ctc gag atc gca aag att ggc gag tgt gag ttc tgg ctg atc tcg gag 432  
 Leu Glu Ile Ala Lys Ile Gly Glu Cys Glu Phe Trp Leu Ile Ser Glu  
 130 135 140  
 atg agc gcc cag ctc atc gtc cac cag ccc tac cgc act ctc acc gcc 480  
 Met Ser Ala Gln Leu Ile Val His Gln Pro Tyr Arg Thr Leu Thr Ala  
 145 150 155 160  
 ctg cag cag gac ttt ctc gct aat gac gac cac gtc ctg gct gtg 528  
 Leu Gln Gln Asp Phe Gln Leu Ala Asn Asp Asp His Val Leu Ala Val  
 165 170 175  
 tct ttc ctc aac gat cac ttc atg acc gac ttg cca ctg ctg tat gcc 576  
 Ser Phe Leu Asn Asp His Phe Met Thr Asp Leu Pro Leu Leu Tyr Ala  
 180 185 190  
 ccc cac acc atc gcg ctg gct gcc atc atg ctg gct ctt gtg ctt agg 624  
 Pro His Thr Ile Ala Leu Ala Ala Ile Met Leu Ala Leu Val Leu Arg  
 195 200 205  
 ttg tcc aag gcc tca agc agc aat aat gcc gcc gcc ggg cag cag ggc 672  
 Leu Ser Lys Ala Ser Ser Ser Asn Asn Ala Ala Ala Gly Gln Gln Gly  
 210 215 220  
 ggc gca caa gcc ggc ccg ctg ggc atc acc ctg gca tct ggg ctg tcc 720  
 Gly Ala Gln Ala Gly Pro Leu Gly Ile Thr Leu Ala Ser Gly Leu Ser  
 225 230 235 240  
 atg ttc caa cag gcc gta gcg gcc aaa gcc atg aca cct ggc ggg agc 768  
 Met Phe Gln Gln Val Ala Ala Lys Ala Met Thr Pro Gly Gly Ser  
 245 250 255  
 ggc tcc ccc gca atg tct tcg ccc atc cag cag aat cca cca aac cag 816  
 Gly Ser Pro Ala Met Ser Ser Pro Ile Gln Gln Asn Pro Pro Asn Gln  
 260 265 270  
 gct tac cag ctc acg ccg cag caa cag gag atg ttc cgc cag caa caa 864  
 Ala Tyr Gln Leu Thr Pro Gln Gln Gln Glu Met Phe Arg Gln Gln Gln  
 275 280 285  
 atg cag cag cag aac aga cag cca gaa acc cag gcc aag gac tcg ccg 912  
 Met Gln Gln Gln Asn Arg Gln Pro Glu Thr Gln Ala Lys Asp Ser Pro  
 290 295 300  
 cag aag gag aag agc aaa ctc caa cgt ttt gcc gca tgg ctc tcg gag 960  
 Gln Lys Glu Lys Ser Lys Leu Gln Arg Phe Ala Ala Trp Leu Ser Glu

## PhoenixTemp32470.tmp.txt

305	agc ggt gtc gac atc	310	gag gcc atg atc gat	315	tgc acg cag gag ctg	320	atc	1008
Ser Gly Val Asp	Ile	Glu Ala Met Ile	Asp	Cys Thr Gln Glu	Leu	Ile		
	325		330		335			
gcg ttt tac gag tgc	caa gag tcg tac	aac gaa cag att	acg cgt gac	1056				
Ala Phe Tyr Glu Cys	Gln Glu Ser Tyr	Asn Glu Gln Ile Thr	Arg Asp					
	340		345		350			
caa atc aac cgg ttc	gtc aag gct	cgg ggc ctt tag		1092				
Gln Ile Asn Arg	Phe Val Lys Ala	Arg Gly Leu						
	355		360					

&lt;210&gt; 2608

&lt;211&gt; 363

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 2608

Met Ala Ala Asn Phe Trp Glu Ser Thr	Gln Arg Arg Asn Trp Leu Phe
1	5 10 15
Thr Lys Glu Glu Leu Ala Ala Arg Arg	Gln Gln Leu Glu Asn Glu Asp
	20 25 30
Pro Ser Leu Val Thr Met Tyr Pro Leu	Pro Glu Trp Arg His Leu Tyr
	35 40 45
Asn Tyr Phe Asn Tyr Gln Met Leu Arg	Leu Ala Lys Asn Leu Ser Ile
	50 55 60
Arg Gln Gln Ala Ile Ala Thr Ala Gln	Val Tyr Met Lys Arg Phe Tyr
65	70 75 80
Thr Arg Val Glu Ile Arg Ser Thr Asn	Pro Thr Leu Val Leu Val Thr
	85 90 95
Ala Val Tyr Leu Ala Cys Lys Met Glu	Glu Met Pro Leu His Ile Arg
	100 105 110
Asn Val Ser Leu Glu Ala Lys Lys Val	Trp Pro Met Glu Thr Pro Ser
	115 120 125
Leu Glu Ile Ala Lys Ile Gly Glu Cys	Glu Phe Trp Leu Ile Ser Glu
130	135 140
Met Ser Ala Gln Leu Ile Val His Gln	Pro Tyr Arg Thr Leu Thr Ala
145	150 155 160
Leu Gln Gln Asp Phe Gln Leu Ala Asn	Asp Asp His Val Leu Ala Val
	165 170 175
Ser Phe Leu Asn Asp His Phe Met Thr	Asp Leu Pro Leu Leu Tyr Ala
	180 185 190
Pro His Thr Ile Ala Leu Ala Ala Ile	Met Leu Ala Leu Val Leu Arg
	195 200 205
Leu Ser Lys Ala Ser Ser Ser Asn Asn	Ala Ala Ala Gly Gln Gln Gly
	210 215 220
Gly Ala Gln Ala Gly Pro Leu Gly Ile	Thr Leu Ala Ser Gly Leu Ser
225	230 235 240
Met Phe Gln Gln Ala Val Ala Ala Lys	Ala Met Thr Pro Gly Gly Ser
	245 250 255
Gly Ser Pro Ala Met Ser Ser Pro Ile	Gln Gln Asn Pro Pro Asn Gln
	260 265 270
Ala Tyr Gln Leu Thr Pro Gln Gln Glu	Met Phe Arg Gln Gln Gln
	275 280 285
Met Gln Gln Gln Asn Arg Gln Pro Glu	Thr Gln Ala Lys Asp Ser Pro
	290 295 300
Gln Lys Glu Lys Ser Lys Leu Gln Arg	Phe Ala Ala Trp Leu Ser Glu
305	310 315 320
Ser Gly Val Asp Ile Glu Ala Met Ile	Asp Cys Thr Gln Glu Leu Ile
	325 330 335
Ala Phe Tyr Glu Cys Gln Glu Ser Tyr	Asn Glu Gln Ile Thr Arg Asp
	340 345 350
Gln Ile Asn Arg Phe Val Lys Ala	Arg Gly Leu
	355 360

&lt;210&gt; 2609

&lt;211&gt; 963

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(963)

&lt;400&gt; 2609

atg tcc gcc agt tat tgg cag tca acg caa tgt cgc ttc tgg acc ttc	48
Met Ser Ala Ser Tyr Trp Gln Ser Thr Gln Cys Arg Phe Trp Thr Phe	
1 5 10 15	
acc aag gaa cag ctg gcg aca atg cga cag aag ctt gag gaa gac aat	96
Thr Lys Glu Gln Leu Ala Thr Met Arg Gln Lys Leu Glu Glu Asp Asn	
20 25 30	
gca gag ctc gtg cgc atg ttc ccg ctc ccg cag caa cgc cat tta aac	144
Ala Glu Leu Val Arg Met Phe Pro Leu Pro Gln Gln Arg His Leu Asn	
35 40 45	
ata tac ttt aac cag cgt ttg ata agg ttg gcg aaa cga ctg acg att	192
Ile Tyr Phe Asn Gln Arg Leu Ile Arg Leu Ala Lys Arg Leu Thr Ile	
50 55 60	
cga caa caa tcc atg gcc acg gcg cag gtc tac atg aaa cga ttc tac	240
Arg Gln Gln Ser Met Ala Thr Ala Gln Val Tyr Met Lys Arg Phe Tyr	
65 70 75 80	
tca aaa gtt gag atc cgc cga acg aat ccg tat ctc gta ata gcg aca	288
Ser Lys Val Glu Ile Arg Arg Thr Asn Pro Tyr Leu Val Ile Ala Thr	
85 90 95	
gca ata tac ctc gcg tgc aag ata gaa gag tcg ccc cag cac atc cga	336
Ala Ile Tyr Leu Ala Cys Lys Ile Glu Glu Ser Pro Gln His Ile Arg	
100 105 110	
ctt atc gtt aca gag gcg cga cag atg tgg gga gac ctt gtc gcc atc	384
Leu Ile Val Thr Glu Ala Arg Gln Met Trp Gly Asp Leu Val Ala Ile	
115 120 125	
gac acc tct aaa ctg gga gag tgc gag ttc ttc atg ata agc gaa atg	432
Asp Thr Ser Lys Leu Gly Glu Cys Glu Phe Phe Met Ile Ser Glu Met	
130 135 140	
cgg tca caa ctt atc gta tac cag cca tac cga acg gtc gta gcc ctg	480
Arg Ser Gln Leu Ile Val Tyr Gln Pro Tyr Arg Thr Val Val Ala Leu	
145 150 155 160	
cga agc gaa ctt gga ttg caa gag gac gag gtg cag ctt gct cgg tcg	528
Arg Ser Glu Leu Gly Leu Gln Glu Asp Glu Val Gln Leu Ala Arg Ser	
165 170 175	
gtg att aac gat cac ttc atg aca gat ctc ccg ctg cta tac ccc cct	576
Val Ile Asn Asp His Phe Met Thr Asp Leu Pro Leu Leu Tyr Pro Pro	
180 185 190 195	
cac gtt atc gca atg gta gcc atg ctt ctg gct ttg gtt ctc aga cct	624
His Val Ile Ala Met Val Ala Met Leu Leu Ala Leu Val Leu Arg Pro	
200 205 210	
aat aat tct gga cca ggc cag aac ccc tca gga gca gcg gcg gca gca	672
Asn Asn Ser Gly Pro Gly Gln Asn Pro Ser Gly Ala Ala Ala Ala	
215 220 225	
gga ctg gca gca gct caa cag gcg ctg atg cgt gcg cag ggc cag cag	720
Gly Leu Ala Ala Ala Gln Gln Ala Leu Met Arg Ala Gln Gly Gln Gln	
230 235 240	
act tca ggg gga gga gct aca gat gct gca act gca gag cct aag gag	768
Thr Ser Gly Gly Ala Thr Asp Ala Thr Ala Glu Pro Lys Glu	
245 250 255	
cga cag cag caa gca cga gtg tct cga gtg cag aag ttt gcc aag tgg	816
Arg Gln Gln Gln Ala Arg Val Ser Arg Val Gln Lys Phe Ala Lys Trp	
260 265 270 275	
ttg gtt gat agt aac gtg gaa atc gca tcg atg gtg gat gcc acg cag	864
Leu Val Asp Ser Asn Val Glu Ile Ala Ser Met Val Asp Ala Thr Gln	
280 285 290	
gag att atc tcc ttt tac gaa tgt tac gag cat tac aac gac aag ctc	912
Glu Ile Ile Ser Phe Tyr Glu Cys Tyr Glu His Tyr Asn Asp Lys Leu	
295 300 305	
acc cga gaa caa att aac aga ttt gtt aag gcg cga ggg ctt gat aag	960
Thr Arg Glu Gln Ile Asn Arg Phe Val Lys Ala Arg Gly Leu Asp Lys	
310 315 320	
tga	963

## PhoenixTemp32470.tmp.txt

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 <211> 320  
 <212> PRT  
 <213> Gibberella zeae PH-1

<400> 2610  
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 Ala Glu Leu Val Arg Met Phe Pro Leu Pro Gln Gln Arg His Leu Asn  
 35 40 45  
 Ile Tyr Phe Asn Gln Arg Leu Ile Arg Leu Ala Lys Arg Leu Thr Ile  
 50 55 60  
 Arg Gln Gln Ser Met Ala Thr Ala Gln Val Tyr Met Lys Arg Phe Tyr  
 65 70 75 80  
 Ser Lys Val Glu Ile Arg Arg Thr Asn Pro Tyr Leu Val Ile Ala Thr  
 85 90 95  
 Ala Ile Tyr Leu Ala Cys Lys Ile Glu Ser Pro Gln His Ile Arg  
 100 105 110  
 Leu Ile Val Thr Glu Ala Arg Gln Met Trp Gly Asp Leu Val Ala Ile  
 115 120 125  
 Asp Thr Ser Lys Leu Gly Glu Cys Glu Phe Phe Met Ile Ser Glu Met  
 130 135 140  
 Arg Ser Gln Leu Ile Val Tyr Gln Pro Tyr Arg Thr Val Val Ala Leu  
 145 150 155 160  
 Arg Ser Glu Leu Gly Leu Gln Glu Asp Glu Val Gln Leu Ala Arg Ser  
 165 170 175  
 Val Ile Asn Asp His Phe Met Thr Asp Leu Pro Leu Leu Tyr Pro Pro  
 180 185 190  
 His Val Ile Ala Met Val Ala Met Leu Leu Ala Leu Val Leu Arg Pro  
 195 200 205  
 Asn Asn Ser Gly Pro Gly Gln Asn Pro Ser Gly Ala Ala Ala Ala Ala  
 210 215 220  
 Gly Leu Ala Ala Ala Gln Gln Ala Leu Met Arg Ala Gln Gly Gln Gln  
 225 230 235 240  
 Thr Ser Gly Gly Gly Ala Thr Asp Ala Ala Thr Ala Glu Pro Lys Glu  
 245 250 255  
 Arg Gln Gln Gln Ala Arg Val Ser Arg Val Gln Lys Phe Ala Lys Trp  
 260 265 270  
 Leu Val Asp Ser Asn Val Glu Ile Ala Ser Met Val Asp Ala Thr Gln  
 275 280 285  
 Glu Ile Ile Ser Phe Tyr Glu Cys Tyr Glu His Tyr Asn Asp Lys Leu  
 290 295 300  
 Thr Arg Glu Gln Ile Asn Arg Phe Val Lys Ala Arg Gly Leu Asp Lys  
 305 310 315 320

<210> 2611  
 <211> 804  
 <212> DNA  
 <213> Apis mellifera

<220>  
 <221> CDS  
 <222> (1)..(804)

<400> 2611  
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 Met Ala Gly Asn Phe Trp Gln Ser Ser His His Gln Gln Trp Leu Leu  
 1 5 10 15  
 gat aaa caa gac tta gtg cga gaa cga caa cat gat ctt tca att ttt 96  
 Asp Lys Gln Asp Leu Val Arg Glu Arg Gln His Asp Leu Ser Ile Phe  
 20 25 30  
 aca gaa gaa gaa tat caa aaa tta ttc atc ttt ttc tcc aat tta ata 144  
 Thr Glu Glu Glu Tyr Gln Lys Leu Phe Ile Phe Phe Ser Asn Leu Ile  
 35 40 45  
 caa gta ttg ggg gaa caa tta aaa ctc aga caa caa gtt ata gct act 192  
 Gln Val Leu Gly Glu Gln Leu Lys Leu Arg Gln Gln Val Ile Ala Thr  
 50 55 60

## PhoenixTemp32470.tmp.txt

gca	act	gtt	tat	ttt	aaa	aga	ttt	tat	gct	cgt	aat	agt	tta	aaa	tgt	240
Ala	Thr	Val	Tyr	Phe	Lys	Arg	Phe	Tyr	Ala	Arg	Asn	Ser	Leu	Lys	Cys	
65					70					75					80	
ata	gat	cca	tta	tta	tta	gca	cct	aca	tct	gtt	ttc	tta	gct	tca	aaa	288
Ile	Asp	Pro	Leu	Leu	Leu	Ala	Pro	Thr	Ser	Val	Phe	Leu	Ala	Ser	Lys	
				85					90					95		
gta	gaa	gaa	ttt	gga	gtt	att	tct	cat	aat	aga	tta	att	gca	gca	tgt	336
Val	Glu	Glu	Phe	Gly	Val	Ile	Ser	His	Asn	Arg	Leu	Ile	Ala	Ala	Cys	
			100					105					110			
caa	act	gta	gta	aaa	aat	aaa	ttc	aat	tat	gct	tat	tca	caa	gaa	ttt	384
Gln	Thr	Val	Val	Lys	Asn	Lys	Phe	Asn	Tyr	Ala	Tyr	Ser	Gln	Glu	Phe	
		115					120					125				
cct	tat	cgt	gga	agt	cat	att	tcc	gaa	tgt	gaa	ttt	tat	ctt	ttg	gaa	432
Pro	Tyr	Arg	Gly	Ser	His	Ile	Ser	Glu	Cys	Glu	Phe	Tyr	Leu	Leu	Glu	
		130				135					140					
cat	tta	gat	tgt	tgt	tta	ata	gta	tat	caa	cca	tat	cgg	cct	tta	tta	480
His	Leu	Asp	Cys	Cys	Leu	Ile	Val	Tyr	Gln	Pro	Tyr	Arg	Pro	Leu	Leu	
145					150					155					160	
att	ctt	att	caa	gat	ata	ggg	cca	gat	gaa	caa	tta	ctt	aca	ttg	gca	528
Ile	Leu	Ile	Gln	Asp	Ile	Gly	Pro	Asp	Glu	Gln	Leu	Leu	Thr	Leu	Ala	
				165					170					175		
tggt	cgt	ata	att	aat	gat	agt	tta	cgt	aca	gat	gta	tgt	tta	tta	tat	576
Trp	Arg	Ile	Ile	Asn	Asp	Ser	Leu	Arg	Thr	Asp	Val	Cys	Leu	Leu	Tyr	
			180					185					190			
cca	cca	cat	caa	ata	gct	att	gga	tgt	ttg	caa	ata	gct	tgt	gtt	ata	624
Pro	Pro	His	Gln	Ile	Ala	Ile	Gly	Cys	Leu	Gln	Ile	Ala	Cys	Val	Ile	
		195					200					205				
tta	caa	aaa	gat	tta	aaa	gca	tggt	ttt	gct	gaa	tta	aat	gct	gat	atg	672
Leu	Gln	Lys	Asp	Leu	Lys	Ala	Trp	Phe	Ala	Glu	Leu	Asn	Ala	Asp	Met	
		210				215					220					
gaa	aaa	att	caa	gaa	atc	gca	cga	tat	atc	att	aat	tta	tat	gaa	cta	720
Glu	Lys	Ile	Gln	Glu	Ile	Ala	Arg	Tyr	Ile	Ile	Asn	Leu	Tyr	Glu	Leu	
225					230					235					240	
tggt	aaa	aca	tat	gat	gaa	aag	aaa	gaa	att	caa	ggg	tta	tta	tcc	aaa	768
Trp	Lys	Thr	Tyr	Asp	Glu	Lys	Lys	Glu	Ile	Gln	Gly	Leu	Leu	Ser	Lys	
				245					250					255		
atg	cca	aag	cct	aca	cca	tca	cca	cca	cag	cac	tga					804
Met	Pro	Lys	Pro	Thr	Pro	Ser	Pro	Pro	Gln	His						
			260					265								

&lt;210&gt; 2612

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Apis mellifera

&lt;400&gt; 2612

Met	Ala	Gly	Asn	Phe	Trp	Gln	Ser	Ser	His	His	Gln	Gln	Trp	Leu	Leu	
1				5					10					15		
Asp	Lys	Gln	Asp	Leu	Val	Arg	Glu	Arg	Gln	His	Asp	Leu	Ser	Ile	Phe	
			20					25					30			
Thr	Glu	Glu	Glu	Tyr	Gln	Lys	Leu	Phe	Ile	Phe	Phe	Ser	Asn	Leu	Ile	
		35					40					45				
Gln	Val	Leu	Gly	Glu	Gln	Leu	Lys	Leu	Arg	Gln	Gln	Val	Ile	Ala	Thr	
		50				55					60					
Ala	Thr	Val	Tyr	Phe	Lys	Arg	Phe	Tyr	Ala	Arg	Asn	Ser	Leu	Lys	Cys	
65					70					75					80	
Ile	Asp	Pro	Leu	Leu	Ala	Pro	Thr	Ser	Val	Phe	Leu	Ala	Ser	Lys		
			85					90					95			
Val	Glu	Glu	Phe	Gly	Val	Ile	Ser	His	Asn	Arg	Leu	Ile	Ala	Ala	Cys	
			100					105					110			
Gln	Thr	Val	Val	Lys	Asn	Lys	Phe	Asn	Tyr	Ala	Tyr	Ser	Gln	Glu	Phe	
		115					120					125				
Pro	Tyr	Arg	Gly	Ser	His	Ile	Ser	Glu	Cys	Glu	Phe	Tyr	Leu	Leu	Glu	
		130				135					140					
His	Leu	Asp	Cys	Cys	Leu	Ile	Val	Tyr	Gln	Pro	Tyr	Arg	Pro	Leu	Leu	
145					150					155					160	
Ile	Leu	Ile	Gln	Asp	Ile	Gly	Pro	Asp	Glu	Gln	Leu	Leu	Thr	Leu	Ala	
			165						170					175		
Trp	Arg	Ile	Ile	Asn	Asp	Ser	Leu	Arg	Thr	Asp	Val	Cys	Leu	Leu	Tyr	



## PhoenixTemp32470.tmp.txt

180  
 Pro Pro His Gln Ile Ala Ile Gly Cys Leu Gln Ile Ala Cys Val Ile  
 195  
 Leu Gln Lys Asp Leu Lys Ala Trp Phe Ala Glu Leu Asn Ala Asp Met  
 210  
 Glu Lys Ile Gln Glu Ile Ala Arg Tyr Ile Ile Asn Leu Tyr Glu Leu  
 225  
 Trp Lys Thr Tyr Asp Glu Lys Lys Glu Ile Gln Gly Leu Leu Ser Lys  
 245  
 Met Pro Lys Pro Thr Pro Ser Pro Pro Gln His  
 260  
 265

&lt;210&gt; 2613

&lt;211&gt; 1020

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1020)

&lt;400&gt; 2613

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Met	Ser	Gly	Ser	Tyr	Trp	Thr	Ser	Met	Gln	Arg	Gln	Lys	Trp	Gln	His	
1				5				10					15			
acc	aag	cct	agc	ttg	gcg	cgc	gag	cga	cag	agg	ctg	tgg	gtt	atg	gag	96
Thr	Lys	Pro	Ser	Leu	Ala	Arg	Glu	Arg	Gln	Arg	Leu	Trp	Val	Met	Glu	
			20				25					30				
tgc	cag	tta	ttt	cca	caa	ggt	ctg	aat	att	ata	gtg	gat	tcc	aag	ccc	144
Cys	Gln	Leu	Phe	Pro	Gln	Gly	Leu	Asn	Ile	Ile	Val	Asp	Ser	Lys	Pro	
		35				40					45					
aac	tcc	gca	gat	agt	tcc	aac	gga	aat	gct	gct	aat	aat	gga	ggt	ggc	192
Asn	Ser	Ala	Asp	Ser	Ser	Asn	Gly	Asn	Ala	Ala	Asn	Asn	Gly	Gly	Gly	
	50				55			60								
aat	ggt	agg	tca	caa	ttg	gta	gcc	acg	act	aag	aat	atc	cct	ata	aca	240
Asn	Gly	Arg	Ser	Gln	Leu	Val	Ala	Thr	Thr	Lys	Asn	Ile	Pro	Ile	Thr	
	65			70				75						80		
cat	aga	gat	ttg	cat	tac	gat	aag	gat	tat	aat	ttg	agg	att	tac	tgt	288
His	Arg	Asp	Leu	His	Tyr	Asp	Lys	Asp	Tyr	Asn	Leu	Arg	Ile	Tyr	Cys	
			85					90					95			
tat	ttc	ctc	ata	atg	aaa	ctg	ggc	aga	cgg	tta	aac	ata	cgg	caa	tat	336
Tyr	Phe	Leu	Ile	Met	Lys	Leu	Gly	Arg	Arg	Leu	Asn	Ile	Arg	Gln	Tyr	
			100				105					110				
gcc	ttg	gct	act	gca	cat	ata	tat	ctt	tca	cga	ttt	cta	tta	aaa	gct	384
Ala	Leu	Ala	Thr	Ala	His	Ile	Tyr	Leu	Ser	Arg	Phe	Leu	Leu	Lys	Ala	
		115					120					125				
tcc	gtc	aga	gag	gtc	aat	tta	tat	cta	ttg	gtc	act	aca	tgc	gtt	tat	432
Ser	Val	Arg	Glu	Val	Asn	Leu	Tyr	Leu	Leu	Val	Thr	Thr	Cys	Val	Tyr	
	130			135				140								
ttg	gct	tgt	aaa	gtg	gaa	gag	tgt	cca	caa	tat	atc	agg	aca	tta	gta	480
Leu	Ala	Cys	Lys	Val	Glu	Glu	Cys	Pro	Gln	Tyr	Ile	Arg	Thr	Leu	Val	
	145			150				155						160		
agc	gag	gca	aga	tca	tta	tgg	ccg	gag	ttt	ata	cct	cct	gat	cct	aca	528
Ser	Glu	Ala	Arg	Ser	Leu	Trp	Pro	Glu	Phe	Ile	Pro	Pro	Asp	Pro	Thr	
			165				170						175			
aag	gta	aca	gaa	ttc	gaa	ttt	tac	ctg	ata	gaa	gaa	cta	caa	tgc	tac	576
Lys	Val	Thr	Phe	Glu	Phe	Tyr	Tyr	Leu	Ile	Glu	Glu	Leu	Gln	Cys	Tyr	
		180					185					190				
tta	att	gta	cac	cac	cct	tat	aag	tct	atg	gaa	cag	ata	gtg	gaa	gct	624
Leu	Ile	Val	His	His	Pro	Tyr	Lys	Ser	Met	Glu	Gln	Ile	Val	Glu	Ala	
	195					200						205				
ttg	aaa	gaa	gag	cct	ttc	aaa	cta	act	ttt	acg	tca	gat	gag	cta	caa	672
Leu	Lys	Glu	Glu	Pro	Phe	Lys	Leu	Thr	Phe	Thr	Ser	Asp	Glu	Leu	Gln	
	210				215						220					
aac	tgc	tgg	tca	ctt	ata	aat	gat	agc	ttt	atc	aat	gac	gta	cat	tta	720
Asn	Cys	Trp	Ser	Leu	Ile	Asn	Asp	Ser	Phe	Ile	Asn	Asp	Val	His	Leu	
	225			230				235							240	
act	tac	gca	cct	cac	atc	att	gct	atg	gca	tgt	cta	ttc	att	acc	gtc	768
Thr	Tyr	Ala	Pro	His	Ile	Ile	Ala	Met	Ala	Cys	Leu	Phe	Ile	Thr	Val	

## PhoenixTemp32470.tmp.txt

tcc	ata	cag	ggg	245	tca	aat	act	aag	gaa	250	ttg	tca	ttg	act	tct	gcg	gta	816
Ser	Ile	Gln	Gly	260	Ser	Asn	Thr	Lys	Glu	265	Leu	Ser	Leu	Thr	Ser	Ala	Val	
act	gag	act	tta	260	acg	tct	cag	tcc	tcc	270	ttg	acc	cct	caa	caa	caa	act	864
Thr	Glu	Thr	Leu	275	Thr	Ser	Gln	Ser	Ser	280	Leu	Thr	Pro	Gln	Gln	Gln	Thr	
ttt	ttc	aga	ttt	285	ttg	gct	gaa	tca	cac	290	gtt	gac	cta	gaa	gta	atg	912	
Phe	Phe	Arg	Phe	295	Leu	Ala	Glu	Ser	His	300	Val	Asp	Leu	Glu	Glu	Val	Met	
gat	acc	atc	caa	305	caa	cag	atc	att	ctt	310	tat	gac	cat	tggt	gat	cgt	tac	960
Asp	Thr	Ile	Gln	315	Gln	Gln	Ile	Ile	Leu	320	Tyr	Asp	His	Trp	Asp	Arg	Tyr	
cat	gag	cca	tggt	325	att	aag	tat	ctc	cta	330	cat	aca	ctt	tac	cta	aga	cca	1008
His	Glu	Pro	Trp	335	Ile	Lys	Tyr	Leu	Leu	340	His	Thr	Leu	Tyr	Leu	Arg	Pro	
cta	tct	gcc	tga															1020
Leu	Ser	Ala																

&lt;210&gt; 2614

&lt;211&gt; 339

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2614

Met	Ser	Gly	Ser	Tyr	Trp	Thr	Ser	Met	Gln	Arg	Gln	Lys	Trp	Gln	His		
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Thr	Lys	Pro	Ser	Leu	Ala	Arg	Glu	Arg	Gln	Arg	Leu	Trp	Val	Met	Glu		
			20					25					30				
Cys	Gln	Leu	Phe	Pro	Gln	Gly	Leu	Asn	Ile	Ile	Val	Asp	Ser	Lys	Pro		
		35					40					45					
Asn	Ser	Ala	Asp	Ser	Ser	Asn	Gly	Asn	Ala	Ala	Asn	Asn	Gly	Gly	Gly		
		50				55				60							
Asn	Gly	Arg	Ser	Gln	Leu	Val	Ala	Thr	Thr	Lys	Asn	Ile	Pro	Ile	Thr		
65				70					75						80		
His	Arg	Asp	Leu	His	Tyr	Asp	Lys	Asp	Tyr	Asn	Leu	Arg	Ile	Tyr	Cys		
				85					90					95			
Tyr	Phe	Leu	Ile	Met	Lys	Leu	Gly	Arg	Arg	Leu	Asn	Ile	Arg	Gln	Tyr		
			100					105					110				
Ala	Leu	Ala	Thr	Ala	His	Ile	Tyr	Leu	Ser	Arg	Phe	Leu	Leu	Lys	Ala		
		115					120					125					
Ser	Val	Arg	Glu	Val	Asn	Leu	Tyr	Leu	Leu	Val	Thr	Thr	Cys	Val	Tyr		
		130			135					140							
Leu	Ala	Cys	Lys	Val	Glu	Glu	Cys	Pro	Gln	Tyr	Ile	Arg	Thr	Leu	Val		
145				150					155					160			
Ser	Glu	Ala	Arg	Ser	Leu	Trp	Pro	Glu	Phe	Ile	Pro	Pro	Asp	Pro	Thr		
				165					170					175			
Lys	Val	Thr	Glu	Phe	Glu	Phe	Tyr	Leu	Ile	Glu	Glu	Leu	Gln	Cys	Tyr		
			180					185					190				
Leu	Ile	Val	His	His	Pro	Tyr	Lys	Ser	Met	Glu	Gln	Ile	Val	Glu	Ala		
		195					200					205					
Leu	Lys	Glu	Glu	Pro	Phe	Lys	Leu	Thr	Phe	Thr	Ser	Asp	Glu	Leu	Gln		
		210				215					220						
Asn	Cys	Trp	Ser	Leu	Ile	Asn	Asp	Ser	Phe	Ile	Asn	Asp	Val	His	Leu		
225				230					235					240			
Thr	Tyr	Ala	Pro	His	Ile	Ile	Ala	Met	Ala	Cys	Leu	Phe	Ile	Thr	Val		
				245					250					255			
Ser	Ile	Gln	Gly	Ser	Asn	Thr	Lys	Glu	Leu	Ser	Leu	Thr	Ser	Ala	Val		
			260					265					270				
Thr	Glu	Thr	Leu	Thr	Ser	Gln	Ser	Ser	Leu	Thr	Pro	Gln	Gln	Gln	Thr		
		275					280					285					
Phe	Phe	Arg	Phe	Leu	Ala	Glu	Ser	His	Val	Asp	Leu	Glu	Glu	Val	Met		
		290				295					300						
Asp	Thr	Ile	Gln	Gln	Gln	Ile	Ile	Leu	Tyr	Asp	His	Trp	Asp	Arg	Tyr		
305				310					315					320			
His	Glu	Pro	Trp	Ile	Lys	Tyr	Leu	Leu	His	Thr	Leu	Tyr	Leu	Arg	Pro		
				325					330					335			
Leu	Ser	Ala															

<210> 2615  
 <211> 915  
 <212> DNA  
 <213> Kluyveromyces fragilis NRRL Y-1140

<220>  
 <221> CDS  
 <222> (1)..(915)

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Met Ser Ala Ser Tyr Trp Asp Ser Ser Gln Arg His Lys Trp Lys Tyr
  1                               5                               10          15
act agg gaa tcc ttg gct aag gag aag cag aaa ctc tgg ctg ttg gaa      96
Thr Arg Glu Ser Leu Ala Lys Glu Lys Gln Lys Leu Trp Leu Leu Glu
                               20          25          30
tgc caa tta ttc cca caa ggt ttg aat gtt acg att cac gat tcg aag     144
Cys Gln Leu Phe Pro Gln Gly Leu Asn Val Thr Ile His Asp Ser Lys
                               35          40          45
gcg aac aag cag gtg acg aca aac att ccg gtt aca cag cga gat ctg     192
Ala Asn Lys Gln Val Thr Thr Asn Ile Pro Val Thr Gln Arg Asp Leu
                               50          55          60
cat tat gat cga gac tac aat ttg agg ata tac tgc tat ttc ctt ata     240
His Tyr Asp Arg Asp Tyr Asn Leu Arg Ile Tyr Cys Tyr Phe Leu Ile
                               65          70          75          80
atg aag ttg ggc agg agg ctc aat ata cgg cag tgt gca ctt gtt aca     288
Met Lys Leu Gly Arg Arg Leu Asn Ile Arg Gln Cys Ala Leu Val Thr
                               85          90          95
gca cat gtt tat ttg agc cga ttt ttg ctt cga gct agt gtc agg gaa     336
Ala His Val Tyr Leu Ser Arg Phe Leu Leu Arg Ala Ser Val Arg Glu
                               100          105          110
gtg aac ctg tat ctt tta atc acc tgc atc tat ttg gct tgc aaa     384
Val Asn Leu Tyr Leu Leu Ile Thr Cys Ile Tyr Leu Ala Cys Lys
                               115          120          125
gtg gaa gaa tgt ccg cag cat ata aga acg cta gtc aac gag gcg agg     432
Val Glu Glu Cys Pro Gln His Ile Arg Thr Leu Val Asn Glu Ala Arg
                               130          135          140
tct cta tgg cca gag ttt att cca ccg gat gtg aca aaa gtg acc gag     480
Ser Leu Trp Pro Glu Phe Ile Pro Pro Asp Val Thr Lys Val Thr Glu
                               145          150          155          160
ttt gag ttt tat tta atc gag gaa ttg caa tca tat ttg att gta cac     528
Phe Glu Phe Tyr Leu Ile Glu Glu Leu Gln Ser Tyr Leu Ile Val His
                               165          170          175          180
cat ccg tac cgg tct cta gaa cag atc gag aag gca tta tca tcc gaa     576
His Pro Tyr Arg Ser Leu Glu Gln Ile Glu Lys Ala Leu Ser Ser Glu
                               185          190          195
aag tac aac tat aaa ctc tca gac gat gag ctt cag aaa ata tgg tcg     624
Lys Tyr Asn Tyr Lys Leu Ser Asp Asp Glu Leu Gln Lys Ile Trp Ser
                               200          205          210
ttg att aac gat agt tat acg acc gat gtc cat tta ctc tat tca ccg     672
Leu Ile Asn Asp Ser Tyr Thr Thr Asp Val His Leu Leu Tyr Ser Pro
                               215          220          225
cac gtg atc gcc ata agt tgt cta ttt gca gtg tct tgc atc att cac     720
His Val Ile Ala Ile Ser Cys Leu Phe Ala Val Ser Cys Ile Ile His
                               230          235          240
aag cca gag gac agt aca aag cgt gct aac atc aac atg ttc atc gct     768
Lys Pro Glu Asp Ser Thr Lys Arg Ala Asn Ile Asn Met Phe Ile Ala
                               245          250          255          260
gaa act caa gtt aat ttg gaa caa gtg atg ttt atc ctt caa gaa ctc     816
Glu Thr Gln Val Asn Leu Glu Gln Val Met Phe Ile Leu Gln Glu Leu
                               265          270          275
ata tca cta tac gac cat tgg gac aaa tac aat gaa ctg cgg atc aga     864
Ile Ser Leu Tyr Asp His Trp Asp Lys Tyr Asn Glu Leu Arg Ile Arg
                               280          285          290
gcg ctc cta cac gag tta tac ctc cgt caa caa aca cca gca att cag     912
Ala Leu Leu His Glu Leu Leu Leu Arg Gln Gln Thr Pro Ala Ile Gln
                               295          300

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tga

915

<210> 2616  
 <211> 304  
 <212> PRT  
 <213> Kluyveromyces lactis NRRL Y-1140

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 Cys Gln Leu Phe Pro Gln Gly Leu Asn Val Thr Ile His Asp Ser Lys  
 35 40 45  
 Ala Asn Lys Gln Val Thr Thr Asn Ile Pro Val Thr Gln Arg Asp Leu  
 50 55 60  
 His Tyr Asp Arg Asp Tyr Asn Leu Arg Ile Tyr Cys Tyr Phe Leu Ile  
 65 70 75 80  
 Met Lys Leu Gly Arg Arg Leu Asn Ile Arg Gln Cys Ala Leu Val Thr  
 85 90 95  
 Ala His Val Tyr Leu Ser Arg Phe Leu Leu Arg Ala Ser Val Arg Glu  
 100 105 110  
 Val Asn Leu Tyr Leu Leu Ile Thr Thr Cys Ile Tyr Leu Ala Cys Lys  
 115 120 125  
 Val Glu Glu Cys Pro Gln His Ile Arg Thr Leu Val Asn Glu Ala Arg  
 130 135 140  
 Ser Leu Trp Pro Glu Phe Ile Pro Pro Asp Val Thr Lys Val Thr Glu  
 145 150 155 160  
 Phe Glu Phe Tyr Leu Ile Glu Glu Leu Gln Ser Tyr Leu Ile Val His  
 165 170 175  
 His Pro Tyr Arg Ser Leu Glu Gln Ile Glu Lys Ala Leu Ser Ser Glu  
 180 185 190  
 Lys Tyr Asn Tyr Lys Leu Ser Asp Glu Leu Gln Lys Ile Trp Ser  
 195 200 205  
 Leu Ile Asn Asp Ser Tyr Thr Thr Asp Val His Leu Leu Tyr Ser Pro  
 210 215 220  
 His Val Ile Ala Ile Ser Cys Leu Phe Ala Val Ser Cys Ile Ile His  
 225 230 235 240  
 Lys Pro Glu Asp Ser Thr Lys Arg Ala Asn Ile Asn Met Phe Ile Ala  
 245 250 255  
 Glu Thr Gln Val Asn Leu Glu Gln Val Met Phe Ile Leu Gln Glu Leu  
 260 265 270  
 Ile Ser Leu Tyr Asp His Trp Asp Lys Tyr Asn Glu Leu Arg Ile Arg  
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 <212> DNA  
 <213> Debaryomyces hansenii CBS767

<220>  
 <221> CDS  
 <222> (1)..(1038)

<400> 2617  
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 1 5 10  
 acc agg cat tct ttg ttg gaa tcg agg cga aaa ctc ctc ttg ctt gag 96  
 Thr Arg His Ser Leu Leu Glu Ser Arg Arg Lys Leu Leu Leu Leu Glu 20 25 30  
 20 25  
 aaa aaa atg att cag aat gga ttt atc aag gat tac cca aat gtc gaa 144  
 Lys Lys Met Ile Gln Asn Gly Phe Ile Lys Asp Tyr Pro Asn Val Glu 35 40 45  
 35 40  
 tat gat gcc aat aca aga ata tat ttg cat aat tta ctt att aaa cta 192  
 290 295 300  
 Page 2245

## PhoenixTemp32470.tmp.txt

Tyr	Asp	Ala	Asn	Thr	Arg	Ile	Tyr	Leu	His	Asn	Leu	Leu	Ile	Lys	Leu		
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Gly	Arg	Arg	Leu	Asn	Val	Arg	Gln	Ile	Ala	Leu	Ala	Thr	Ala	Glu	Ile	80	
65	70	75															
tac	atg	agc	agg	ttc	ctc	atc	aaa	gtg	ctg	ttg	aag	gaa	ata	aat	gta	288	
Tyr	Met	Ser	Arg	Phe	Leu	Ile	Lys	Val	Leu	Leu	Lys	Glu	Ile	Asn	Val	95	
85	90																
tat	ttg	ctc	gta	aca	acg	tgt	cta	tat	gct	gct	tgt	aaa	att	gaa	gaa	336	
Tyr	Leu	Leu	Val	Thr	Thr	Cys	Leu	Tyr	Ala	Ala	Cys	Lys	Ile	Glu	Glu	110	
100	105																
tgt	ccc	cag	cat	ata	cgg	ctt	att	aca	tcg	gag	gca	cgg	aat	cta	tgg	384	
Cys	Pro	Gln	His	Ile	Arg	Leu	Ile	Thr	Ser	Glu	Ala	Arg	Asn	Leu	Trp	125	
115	120																
ccg	gaa	tac	atc	ccc	cag	gac	gta	acc	aag	cta	gcc	gag	ttt	gag	ttc	432	
Pro	Glu	Tyr	Ile	Pro	Gln	Asp	Val	Thr	Lys	Leu	Ala	Glu	Phe	Glu	Phe	140	
130	135																
tat	ttg	atc	gaa	gag	atg	gac	ctg	ttc	ttg	gtt	cta	cat	cat	cca	tat	480	
Tyr	Leu	Ile	Glu	Glu	Met	Asp	Leu	Phe	Leu	Val	Leu	His	His	Pro	Tyr	155	
145	150																
cgc	tca	ctc	cta	cag	atc	agg	gac	tac	ttg	aac	gag	aac	ttc	gct	ctc	528	
Arg	Ser	Leu	Leu	Gln	Ile	Arg	Asp	Tyr	Leu	Asn	Glu	Asn	Phe	Ala	Leu	170	
165	170																
tac	gga	ttc	tcg	ttg	tca	gac	gac	gaa	ttg	cag	aat	tca	tgg	tcc	ctt	576	
Tyr	Gly	Phe	Ser	Leu	Ser	Asp	Asp	Glu	Leu	Gln	Asn	Ser	Trp	Ser	Leu	185	
180	185																
ata	aac	gat	agc	tac	atc	acc	gac	ctc	cat	ctc	cta	tta	cca	ccg	cac	624	
Ile	Asn	Asp	Ser	Tyr	Ile	Thr	Asp	Leu	His	Leu	Leu	Leu	Pro	Pro	His	200	
195	200																
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Ile	Ile	Ala	Ile	Ala	Thr	Ile	Tyr	Ile	Thr	Ile	Val	Leu	Lys	Lys	Asn	210	
210	215																
atc	agt	tcg	ttg	cgt	ctt	ggt	gca	aat	tcc	atg	tcc	aat	gat	aca	gta	720	
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225	230																
ggc	atg	gac	ccg	cat	aca	aaa	ccc	aac	tcc	aac	tcc	atc	cac	gcc	gaa	768	
Gly	Met	Asp	Pro	His	Thr	Lys	Pro	Asn	Ser	Asn	Ser	Ile	His	Ala	Glu	245	
245	250																
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Asp	Leu	Met	Ala	Leu	Ala	Thr	Gly	Gly	Ser	Ala	Ile	Asn	Asp	Ile	Gly	260	
260	265																
aac	cca	tcc	tct	ggc	acg	aat	ggt	ttc	cac	gac	ata	gaa	cta	gac	gaa	864	
Asn	Pro	Ser	Ser	Gly	Thr	Asn	Gly	Phe	His	Asp	Ile	Glu	Leu	Asp	Glu	275	
275	280																
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290	295																
gta	aat	ttg	aac	gaa	gtc	gtt	gag	gct	ata	cag	gac	atc	atc	acc	ttg	960	
Val	Asn	Leu	Asn	Glu	Val	Val	Glu	Ala	Ile	Gln	Asp	Ile	Ile	Thr	Leu	305	
305	310																
tat	gct	att	tgg	aac	agg	tac	aat	gaa	atg	tcc	gtg	aaa	aaa	gtg	cta	1008	
Tyr	Ala	Ile	Trp	Asn	Arg	Tyr	Asn	Glu	Met	Ser	Val	Lys	Lys	Val	Leu	315	
315	320																
caa	gat	atg	cta	tta	aat	aga	tct	gta	taa							1038	
Gln	Asp	Met	Leu	Leu	Asn	Arg	Ser	Val								340	
340	345																

&lt;210&gt; 2618

&lt;211&gt; 345

&lt;212&gt; PRT

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;400&gt; 2618

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1 Thr Arg His Ser Leu Leu Glu Ser Arg Arg Lys Leu Leu Leu Leu Glu

20 Lys Lys Met Ile Gln Asn Gly Phe Ile Lys Asp Tyr Pro Asn Val Glu

35 40 45

## PhoenixTemp32470.tmp.txt

Tyr Asp Ala Asn Thr Arg Ile Tyr Leu His Asn Leu Leu Ile Lys Leu  
 50 55 60  
 Gly Arg Arg Leu Asn Val Arg Gln Ile Ala Leu Ala Thr Ala Glu Ile  
 65 70 75 80  
 Tyr Met Ser Arg Phe Leu Ile Lys Val Leu Leu Lys Glu Ile Asn Val  
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 Tyr Leu Leu Val Thr Thr Cys Leu Tyr Ala Ala Cys Lys Ile Glu Glu  
 100 105 110  
 Cys Pro Gln His Ile Arg Leu Ile Thr Ser Glu Ala Arg Asn Leu Trp  
 115 120 125  
 Pro Glu Tyr Ile Pro Gln Asp Val Thr Lys Leu Ala Glu Phe Glu Phe  
 130 135 140  
 Tyr Leu Ile Glu Glu Met Asp Leu Phe Leu Val Leu His His Pro Tyr  
 145 150 155 160  
 Arg Ser Leu Leu Gln Ile Arg Asp Tyr Leu Asn Glu Asn Phe Ala Leu  
 165 170 175  
 Tyr Gly Phe Ser Leu Ser Asp Asp Glu Leu Gln Asn Ser Trp Ser Leu  
 180 185 190  
 Ile Asn Asp Ser Tyr Ile Thr Asp Leu His Leu Leu Leu Pro Pro His  
 195 200 205  
 Ile Ile Ala Ile Ala Thr Ile Tyr Ile Thr Ile Val Leu Lys Lys Asn  
 210 215 220  
 Ile Ser Ser Leu Arg Leu Gly Ala Asn Ser Met Ser Asn Asp Thr Val  
 225 230 235 240  
 Gly Met Asp Pro His Thr Lys Pro Asn Ser Asn Ser Ile His Ala Glu  
 245 250 255  
 Asp Leu Met Ala Leu Ala Thr Gly Gly Ser Ala Ile Asn Asp Ile Gly  
 260 265 270  
 Asn Pro Ser Ser Gly Thr Asn Gly Phe His Asp Ile Glu Leu Asp Glu  
 275 280 285  
 Asn Thr Ile Lys Ile Asn Lys Phe Met Thr Phe Leu Asp His Ser His  
 290 295 300  
 Val Asn Leu Asn Glu Val Val Glu Ala Ile Gln Asp Ile Ile Thr Leu  
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 Tyr Ala Ile Trp Asn Arg Tyr Asn Glu Met Ser Val Lys Lys Val Leu  
 325 330 335  
 Gln Asp Met Leu Leu Asn Arg Ser Val  
 340 345

&lt;210&gt; 2619

&lt;211&gt; 843

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

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&lt;222&gt; (1)..(843)

&lt;400&gt; 2619

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1				5					10					15		
acc	aag	gaa	acg	ctt	gca	gag	cga	aga	aaa	ggc	ctg	gaa	gac	ata	ttc	96
Thr	Lys	Glu	Thr	Leu	Ala	Glu	Arg	Arg	Lys	Gly	Leu	Glu	Asp	Ile	Phe	
			20					25					30			
gac	cca	ggg	aag	ctg	caa	acc	atc	aag	gcg	ctc	aat	ccg	tgg	cat	gtt	144
Asp	Pro	Gly	Lys	Leu	Gln	Thr	Ile	Lys	Ala	Leu	Asn	Pro	Trp	His	Val	
		35					40				45					
cgt	gtc	tac	ttg	cac	acc	ctg	att	cat	ctt	ttg	ggt	cag	aat	ctg	tcg	192
Arg	Val	Tyr	Leu	His	Thr	Leu	Ile	His	Leu	Leu	Gly	Gln	Asn	Leu	Ser	
		50				55				60						
att	cga	caa	cgg	att	ttg	gcc	acg	gca	gag	gtg	tat	ctc	act	cga	ttt	240
Ile	Arg	Gln	Arg	Ile	Leu	Ala	Thr	Ala	Glu	Val	Tyr	Leu	Thr	Arg	Phe	
		65			70				75					80		
cat	aca	aag	gtg	cct	ttt	ggc	gaa	atc	aac	ccg	tac	ctg	gtg	gta	gcc	288
His	Thr	Lys	Val	Pro	Phe	Gly	Glu	Ile	Asn	Pro	Tyr	Leu	Val	Val	Ala	
			85						90					95		
acg	gcg	gtc	tac	gtg	gca	tgc	aaa	gtc	gag	gaa	cat	cca	cag	cat	atc	336
Thr	Ala	Val	Tyr	Val	Ala	Cys	Lys	Val	Glu	Glu	His	Pro	Gln	His	Ile	

## PhoenixTemp32470.tmp.txt

cgg	act	atc	acc	tca	gag	gct	cga	tct	tta	tgg	ccc	gac	tac	atc	tcg	384
Arg	Thr	Ile	Thr	Ser	Glu	Ala	Arg	Ser	Leu	Trp	Pro	Asp	Tyr	Ile	Ser	
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His	Asp	Pro	Thr	Lys	Ile	Ala	Glu	Cys	Glu	Phe	Tyr	Leu	Ile	Glu	Glu	
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Leu	Gly	Thr	Tyr	Leu	Val	Ile	Phe	His	Pro	Tyr	Lys	Ser	Leu	Met	Gln	
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Ile	Ser	Asp	Ala	Met	Ala	Arg	Ser	Asn	Ala	Gln	Ile	Thr	Met	Ala	Pro	
gag	gag	atc	cag	gta	aca	tgg	tcc	atg	atc	aac	gac	agc	tac	atc	acc	576
Glu	Glu	Ile	Gln	Val	Thr	Trp	Ser	Met	Ile	Asn	Asp	Ser	Tyr	Ile	Thr	
gac	ctg	cat	ctg	ctc	aac	ccg	cca	cac	att	gtc	gcc	atg	gct	tgc	atc	624
Asp	Leu	His	Leu	Leu	Asn	Pro	Pro	His	Ile	Val	Ala	Met	Ala	Cys	Ile	
tac	atg	acg	gtg	gtg	ctg	cgg	tcg	cac	att	atg	cgc	atg	act	atg	ccc	672
Tyr	Met	Thr	Val	Val	Leu	Arg	Ser	His	Ile	Met	Arg	Met	Thr	Met	Pro	
tca	gag	gcg	gtc	aaa	agc	cga	atc	gag	gcg	ttc	atg	acg	ttc	ttc	gga	720
Ser	Glu	Ala	Val	Lys	Ser	Arg	Ile	Glu	Ala	Phe	Met	Thr	Phe	Phe	Gly	
gag	tcg	aac	gtg	gac	ttg	gaa	cag	acg	att	gat	tgt	gtg	cag	gaa	atg	768
Glu	Ser	Asn	Val	Asp	Leu	Glu	Gln	Thr	Ile	Asp	Cys	Val	Gln	Glu	Met	
att	tcg	ctg	tac	gtc	aac	tgg	gac	aca	tat	tcg	gaa	aag	cag	tgt	cgg	816
Ile	Ser	Leu	Tyr	Val	Asn	Trp	Asp	Thr	Tyr	Ser	Glu	Lys	Gln	Cys	Arg	
gtg	gag	att	gcc	aaa	gta	att	aca	taa								843
Val	Glu	Ile	Ala	Lys	Val	Ile	Thr									

<210> 2620

$\langle 211 \rangle$  280

<212> PRT

<213> Yarrowia lipolytica CLIB122

<400> 2620

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Thr	Lys	Glu	Thr 20	Leu	Ala	Glu	Arg	Arg 25	Lys	Gly	Leu	Glu	Asp 30	Ile	Phe
Asp	Pro	Gly 35	Lys	Leu	Gln	Thr	Ile 40	Lys	Ala	Leu	Asn	Pro 45	Trp	His	Val
Arg	Val 50	Tyr	Leu	His	Thr	Leu 55	Ile	His	Leu	Leu	Gly 60	Gln	Asn	Leu	Ser
Ile 65	Arg	Gln	Arg	Ile	Leu 70	Ala	Thr	Ala	Glu	Val 75	Tyr	Leu	Thr	Arg	Phe 80
His	Thr	Lys	Val	Pro 85	Phe	Gly	Glu	Ile	Asn 90	Pro	Tyr	Leu	Val	Val 95	Ala
Thr	Ala	Val	Tyr 100	Val	Ala	Cys	Lys	Val 105	Glu	Glu	His	Pro	Gln 110	His	Ile
Arg	Thr	Ile 115	Thr	Ser	Glu	Ala	Arg 120	Ser	Leu	Trp	Pro	Asp 125	Tyr	Ile	Ser
His	Asp 130	Pro	Thr	Lys	Ile	Ala 135	Glu	Cys	Glu	Phe	Tyr 140	Leu	Ile	Glu	Glu
Leu 145	Gly	Thr	Tyr	Leu	Val 150	Ile	Phe	His	Pro	Tyr 155	Lys	Ser	Leu	Met	Gln 160
Ile	Ser	Asp	Ala	Met 165	Ala	Arg	Ser	Asn	Ala 170	Gln	Ile	Thr	Met	Ala 175	Pro
Glu	Glu	Ile	Gln 180	Val	Thr	Trp	Ser	Met 185	Ile	Asn	Asp	Ser	Tyr 190	Ile	Thr
Asp	Leu	His 195	Leu	Leu	Asn	Pro	Pro 200	His	Ile	Val	Ala	Met 205	Ala	Cys	Ile
Tyr	Met 210	Thr	Val	Val	Leu	Arg 215	Ser	His	Ile	Met	Arg 220	Met	Thr	Met	Pro

## PhoenixTemp32470.tmp.txt

Ser Glu Ala Val Lys Ser Arg Ile Glu Ala Phe Met Thr Phe Phe Gly  
 225 230 235 240  
 Glu Ser Asn Val Asp Leu Glu Gln Thr Ile Asp Cys Val Gln Glu Met  
 245 250 255  
 Ile Ser Leu Tyr Val Asn Trp Asp Thr Tyr Ser Glu Lys Gln Cys Arg  
 260 265 270  
 Val Glu Ile Ala Lys Val Ile Thr  
 275 280

&lt;210&gt; 2621

&lt;211&gt; 1182

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1182)

&lt;400&gt; 2621

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gat cga ccg cag ctc gag ttg gcg cgc aag gaa gat ctg cgc tat gcg	96
Asp Arg Pro Gln Leu Glu Leu Ala Arg Lys Glu Asp Leu Arg Tyr Ala	
20 25 30	
act cga ctc gag tgt gct gct ttg ggc gtg ttc ttt tcc aac ttg cta	144
Thr Arg Leu Glu Cys Ala Ala Leu Gly Val Phe Phe Ser Asn Leu Leu	
35 40 45	
tcg ctc atc tgc aag cgg ctc aat ctg cga caa cga gtg acg gcg tcg	192
Ser Leu Ile Cys Lys Arg Leu Asn Leu Arg Gln Arg Val Thr Ala Ser	
50 55 60	
gcc aac gtc ttc ttc cga cgc ttc ttt gcc aaa aac tcg tac tcg gcg	240
Ala Asn Val Phe Phe Arg Arg Phe Phe Ala Lys Asn Ser Tyr Ser Ala	
65 70 75 80	
ctc gac ccc ttc ctc gtg tgc gcc acg tgc gtc tat gtg gca gcc aag	288
Leu Asp Pro Phe Leu Val Cys Ala Thr Cys Val Tyr Val Ala Ala Lys	
85 90 95	
gtg gaa gag tcg ccg atc cac atc aaa tcc gcc gtg gca gaa gcc aca	336
Val Glu Glu Ser Pro Ile His Ile Lys Ser Ala Val Ala Glu Ala Thr	
100 105 110	
cgt agc ttc aca gaa cac ggc ttc cga ggc atg ccc acc gac cat tcg	384
Arg Ser Phe Thr Glu His Gly Phe Arg Gly Met Pro Thr Asp His Ser	
115 120 125	
agc ctg gca gag atg gaa ttt tat ctg ctg gaa gag atg gag ttt gac	432
Ser Leu Ala Glu Met Glu Phe Tyr Leu Leu Glu Glu Met Glu Phe Asp	
130 135 140	
atg gtg ctc ttt cac agt tat cga agt ttg atc gtc atg ttt gag gat	480
Met Val Leu Phe His Ser Tyr Arg Ser Leu Ile Val Met Phe Glu Asp	
145 150 155 160	
tat ggc tca ggt agc gcg gta ggt agc ggt aac agt ata cat gag cgt	528
Tyr Gly Ser Gly Ser Ala Val Gly Ser Gly Asn Ser Ile His Glu Arg	
165 170 175	
tcc gct ggc gcc gct ggc agc gga agc gga agc ggc ggt agt ggg atg	576
Ser Ala Gly Ala Ala Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser	
180 185 190	
atg ata ggg ttg gga atc gaa gca gcc gca ttt ggc gtc acc aaa ggg	624
Met Ile Gly Leu Gly Ile Glu Ala Ala Phe Gly Val Thr Lys Gly	
195 200 205	
cta gcg agt gtc gag gag ggc gac gct gcc tca gcg atc gcc gag gag	672
Leu Ala Ser Val Glu Glu Gly Asp Ala Ala Ser Ala Ile Ala Glu Glu	
210 215 220	
gac aaa gta caa ctc aac gag ttc aac gac gaa gtg ctg ctc atg tgt	720
Asp Lys Val Gln Leu Asn Glu Phe Asn Asp Glu Val Leu Leu Met Cys	
225 230 235 240	
tgg ttc ata ctc aac gac acg tac aag acc gac atc cca ctc atg tac	768
Trp Phe Ile Leu Asn Asp Thr Tyr Lys Thr Asp Ile Pro Leu Met Tyr	
245 250 255	
cct ccc tac atg gtg gcg ctc gcc tcg atc tgg ctc ggt cta agc ctt	816
Pro Pro Tyr Met Val Ala Leu Ala Ser Ile Trp Leu Gly Leu Ser Leu	



## 265

Met 1	Ser	Ala	Asn	Tyr 5	Trp	Ala	Ser	Thr	Gln 10	Cys	Asn	Asn	Trp	Leu 15	Leu
Asp	Arg	Pro	Gln 20	Leu	Glu	Leu	Ala	Arg 25	Lys	Glu	Asp	Leu	Arg 30	Tyr	Ala
Thr	Arg	Leu 35	Glu	Cys	Ala	Ala	Leu 40	Gly	Val	Phe	Phe	Ser 45	Asn	Leu	Leu
Ser	Leu 50	Ile	Cys	Lys	Arg	Leu 55	Asn	Leu	Arg	Gln	Arg 60	Val	Thr	Ala	Ser
Ala 65	Asn	Val	Phe	Phe	Arg 70	Arg	Phe	Phe	Ala	Lys 75	Asn	Ser	Tyr	Ser	Ala 80
Leu	Asp	Pro	Phe 85	Leu	Val	Cys	Ala	Thr	Cys 90	Val	Tyr	Val	Ala	Ala 95	Lys
Val	Glu	Glu	Ser 100	Pro	Ile	His	Ile	Lys 105	Ser	Ala	Val	Ala	Glu	Ala	Thr
Arg	Ser	Phe 115	Thr	Glu	His	Gly	Phe 120	Arg	Gly	Met	Pro	Thr 125	Asp	His	Ser
Ser	Leu 130	Ala	Glu	Met	Glu	Phe 135	Tyr	Leu	Leu	Glu	Glu 140	Met	Glu	Phe	Asp
Met 145	Val	Leu	Phe	His	Ser 150	Tyr	Arg	Ser	Leu	Ile 155	Val	Met	Phe	Glu	Asp 160
Tyr	Gly	Ser	Gly	Ser 165	Ala	Val	Gly	Ser	Gly 170	Asn	Ser	Ile	His	Glu 175	Arg
Ser	Ala	Gly	Ala 180	Ala	Gly	Ser	Gly	Ser 185	Gly	Ser	Gly	Gly	Ser 190	Gly	Met
Met	Ile	Gly 195	Leu	Gly	Ile	Glu	Ala 200	Ala	Ala	Phe	Gly	Val 205	Thr	Lys	Gly
Leu	Ala 210	Ser	Val	Glu	Glu	Gly 215	Asp	Ala	Ala	Ser	Ala 220	Ile	Ala	Glu	Glu
Asp 225	Lys	Val	Gln	Leu	Asn 230	Glu	Phe	Asn	Asp	Glu 235	Val	Leu	Leu	Met	Cys 240
Trp	Phe	Ile	Leu	Asn 245	Asp	Thr	Tyr	Lys	Thr 250	Asp	Ile	Pro	Leu	Met 255	Tyr
Pro	Pro	Tyr	Met 260	Val	Ala	Leu	Ala	Ser 265	Ile	Trp	Leu	Gly	Leu 270	Ser	Leu
His	Pro	Pro 275	Ser	Phe	Asp	Lys	Ile 280	Thr	Ala	Ser	Leu	His 285	Thr	Met	Gln
Thr	Arg	Arg	Asp	Glu	His	His	Leu	Ser	Ile	Gln	Arg	Ile	Leu	Asp	Asn

## PhoenixTemp32470.tmp.txt

290  
 Pro Ala Ser Thr Pro Ala 295  
 305  
 Pro Pro Ser Gln Asp 310  
 325  
 Leu Pro Leu Leu Ala Glu Ile Val Gln 330  
 340  
 Val Gln His 355  
 355  
 Lys Leu Leu Glu Arg Met Arg 360  
 370  
 Asp Arg Asp Gln Thr Arg 375  
 385  
 390

&lt;210&gt; 2623

&lt;211&gt; 1320

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1320)

&lt;400&gt; 2623

atg	tct	tcc	aac	ttc	tat	acc	tcc	tct	cat	aac	cgc	tat	tgg	ctc	ctg	48
Met	Ser	Ser	Asn	Phe	Tyr	Thr	Ser	Ser	His	Asn	Arg	Tyr	Trp	Leu	Leu	
1				5					10					15		
act	cgg	ccg	tct	ctt	ctg	gaa	tct	cgg	caa	aca	gac	ctc	aaa	tac	tgc	96
Thr	Arg	Pro	Ser	Leu	Leu	Glu	Ser	Arg	Gln	Thr	Asp	Leu	Lys	Tyr	Cys	
			20					25					30			
acc	tct	cgc	cag	cta	tat	tgc	ctc	ttc	atc	ttc	ttc	tct	caa	ctc	atc	144
Thr	Ser	Arg	Gln	Leu	Tyr	Cys	Leu	Phe	Ile	Phe	Phe	Ser	Gln	Leu	Ile	
			35			40						45				
caa	aaa	ctc	ggt	aaa	cga	ctg	ctg	ctg	agg	caa	ata	ccg	ata	gcc	acc	192
Gln	Lys	Leu	Gly	Lys	Arg	Leu	Leu	Leu	Arg	Gln	Ile	Pro	Ile	Ala	Thr	
			50			55					60					
gca	tgt	gtg	ttt	ttc	aag	cgg	ttc	tac	ttc	aag	aac	agt	ttg	tgc	gaa	240
Ala	Cys	Val	Phe	Phe	Lys	Arg	Phe	Tyr	Phe	Lys	Asn	Ser	Leu	Cys	Glu	
					70					75					80	
acg	aat	cca	tat	ctg	gtg	ctc	gcg	gct	tgc	att	tat	gtg	gca	gcc	aaa	288
Thr	Asn	Pro	Tyr	Leu	Val	Leu	Ala	Ala	Cys	Ile	Tyr	Val	Ala	Ala	Lys	
				85					90					95		
gta	gag	gag	act	ccg	gta	cat	atc	aag	agt	gtc	gta	agt	gag	gcc	aag	336
Val	Glu	Glu	Thr	Pro	Val	His	Ile	Lys	Ser	Val	Val	Ser	Glu	Ala	Lys	
			100					105					110			
ttg	gtt	ttc	cat	gaa	cac	aac	atc	aaa	atg	ttc	cct	gct	gag	acc	aat	384
Leu	Val	Phe	His	Glu	His	Asn	Ile	Lys	Met	Phe	Pro	Ala	Glu	Thr	Asn	
			115				120					125				
aag	ctt	gga	gaa	atg	gag	ttt	tat	cta	ctg	gag	gat	ctc	gat	ttc	cac	432
Lys	Leu	Gly	Glu	Met	Glu	Phe	Tyr	Leu	Leu	Glu	Asp	Leu	Asp	Phe	His	
			130			135					140					
tta	gtg	gtc	ttc	cac	cca	tat	cgg	gcg	cta	ctc	cat	ctc	acc	ggg	agg	480
Leu	Val	Val	Phe	His	Pro	Tyr	Arg	Ala	Leu	Leu	His	Leu	Thr	Gly	Arg	
					150					155					160	
gag	tct	gca	gac	atg	gga	aaa	ttt	gag	aag	tcc	aga	gtt	caa	gaa	gat	528
Glu	Ser	Ala	Asp	Met	Gly	Lys	Phe	Glu	Lys	Ser	Arg	Val	Gln	Glu	Asp	
				165					170					175		
atg	gaa	ata	cga	aaa	aaa	gaa	gga	gat	gcc	aaa	aag	atg	cga	gaa	gaa	576
Met	Glu	Ile	Arg	Lys	Lys	Glu	Gly	Asp	Ala	Lys	Lys	Met	Arg	Glu	Glu	
			180					185					190			
gag	gcg	aag	aag	gcg	agc	agt	aag	gga	cag	caa	cca	aca	gtt	gga	cag	624
Glu	Ala	Lys	Lys	Ala	Ser	Ser	Lys	Gly	Gln	Gln	Pro	Thr	Val	Gly	Gln	
			195				200					205				
gca	ctt	gaa	aaa	gag	ggg	gag	cgc	ctc	gaa	gag	gct	gag	gaa	acc	agg	672
Ala	Leu	Glu	Lys	Glu	Gly	Glu	Arg	Leu	Glu	Glu	Ala	Glu	Glu	Thr	Arg	
			210			215					220					
ata	agg	cgt	cta	atg	agt	aga	ggg	aca	ggc	gaa	ggt	atg	atg	gaa	gtg	720
Ile	Arg	Arg	Leu	Met	Ser	Arg	Gly	Thr	Gly	Glu	Gly	Met	Met	Glu	Val	
					230					235					240	

## PhoenixTemp32470.tmp.txt

gac	gag	ggt	gtt	ttg	caa	ata	tca	tgg	ttc	atc	ctc	aac	gac	tcc	tat	768
Asp	Glu	Gly	Val	Leu	Gln	Ile	Ser	Trp	Phe	Ile	Leu	Asn	Asp	Ser	Tyr	
				245					250					255		
cgc	acc	gat	gcc	cct	ctg	cta	tat	cct	cct	tat	ata	atc	gct	ctc	tcg	816
Arg	Thr	Asp	Ala	Pro	Leu	Leu	Tyr	Pro	Pro	Tyr	Ile	Ile	Ala	Leu	Ser	
			260					265					270			
gca	ata	tat	atc	gcc	ttc	tgc	cta	aca	tcc	atg	tcg	aat	tcc	tct	gcc	864
Ala	Ile	Tyr	Ile	Ala	Phe	Cys	Leu	Thr	Ser	Met	Ser	Asn	Ser	Ser	Ala	
		275					280					285				
cgc	acc	cgt	gcg	tct	tcc	act	cag	cga	ccg	gaa	ctc	ttg	cag	tcg	gct	912
Arg	Thr	Arg	Ala	Ser	Ser	Thr	Gln	Arg	Pro	Glu	Leu	Leu	Gln	Ser	Ala	
	290					295				300						
tcg	att	aat	gaa	gga	ttg	aat	ttg	ctt	cca	ccg	cct	aaa	aat	gcc	gca	960
Ser	Ile	Asn	Glu	Gly	Leu	Asn	Leu	Leu	Pro	Pro	Pro	Lys	Asn	Ala	Ala	
	305				310				315						320	
gaa	ttt	ctg	gct	ggg	ttt	caa	gtc	agt	tta	cca	atg	ctg	ttt	ggt	tgc	1008
Glu	Phe	Leu	Ala	Gly	Phe	Gln	Val	Ser	Leu	Pro	Met	Leu	Phe	Gly	Cys	
				325					330					335		
gtg	caa	gag	att	att	gga	ctg	tat	ccc	gta	tgg	gag	gca	ttt	gag	cca	1056
Val	Gln	Glu	Ile	Ile	Gly	Leu	Tyr	Pro	Val	Trp	Glu	Ala	Phe	Glu	Pro	
			340					345					350			
acg	gtg	atg	agg	aat	tcc	caa	gca	caa	gcc	aaa	acg	ggg	aat	gca	gca	1104
Thr	Val	Met	Arg	Asn	Ser	Gln	Ala	Gln	Ala	Lys	Thr	Gly	Asn	Ala	Ala	
			355				360					365				
gca	cct	gtc	ccg	gct	gca	act	ggg	aca	aaa	acc	ggg	cag	aac	aac	gat	1152
Ala	Pro	Val	Pro	Ala	Ala	Thr	Gly	Thr	Lys	Thr	Gly	Gln	Asn	Asn	Asp	
	370					375					380					
tta	gtc	caa	gac	aaa	aag	gac	aag	ttc	ggt	ttg	gag	gag	gct	gaa	tct	1200
Leu	Val	Gln	Asp	Lys	Lys	Asp	Lys	Phe	Gly	Leu	Glu	Glu	Ala	Glu	Ser	
	385				390				395						400	
ctg	gta	cgg	aaa	atg	atc	gag	gaa	agg	atg	ata	gat	tta	ggt	cat	cca	1248
Leu	Val	Arg	Lys	Met	Ile	Glu	Glu	Arg	Met	Ile	Asp	Leu	Gly	His	Pro	
				405				410						415		
gat	aat	gcg	ggt	gtt	gaa	aag	gct	tca	ggt	acc	ggc	ccc	tcc	aat	gta	1296
Asp	Asn	Ala	Gly	Val	Glu	Lys	Ala	Ser	Gly	Thr	Gly	Pro	Ser	Asn	Val	
			420					425					430			
gcg	ggt	aaa	aag	gcg	gca	aga	tag									1320
Ala	Gly	Lys	Lys	Arg	Ala	Arg										
			435													

&lt;210&gt; 2624

&lt;211&gt; 439

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 2624

Met	Ser	Ser	Asn	Phe	Tyr	Thr	Ser	Ser	His	Asn	Arg	Tyr	Trp	Leu	Leu	
1				5					10					15		
Thr	Arg	Pro	Ser	Leu	Leu	Glu	Ser	Arg	Gln	Thr	Asp	Leu	Lys	Tyr	Cys	
			20					25					30			
Thr	Ser	Arg	Gln	Leu	Tyr	Cys	Leu	Phe	Ile	Phe	Phe	Ser	Gln	Leu	Ile	
		35					40					45				
Gln	Lys	Leu	Gly	Lys	Arg	Leu	Leu	Leu	Arg	Gln	Ile	Pro	Ile	Ala	Thr	
	50					55				60						
Ala	Cys	Val	Phe	Phe	Lys	Arg	Phe	Tyr	Phe	Lys	Asn	Ser	Leu	Cys	Glu	
65					70				75					80		
Thr	Asn	Pro	Tyr	Leu	Val	Leu	Ala	Ala	Cys	Ile	Tyr	Val	Ala	Ala	Lys	
				85					90					95		
Val	Glu	Glu	Thr	Pro	Val	His	Ile	Lys	Ser	Val	Val	Ser	Glu	Ala	Lys	
			100					105					110			
Leu	Val	Phe	His	Glu	His	Asn	Ile	Lys	Met	Phe	Pro	Ala	Glu	Thr	Asn	
		115					120					125				
Lys	Leu	Gly	Glu	Met	Glu	Phe	Tyr	Leu	Leu	Glu	Asp	Leu	Asp	Phe	His	
	130					135				140						
Leu	Val	Val	Phe	His	Pro	Tyr	Arg	Ala	Leu	Leu	His	Leu	Thr	Gly	Arg	
145					150				155						160	
Glu	Ser	Ala	Asp	Met	Gly	Lys	Phe	Glu	Lys	Ser	Arg	Val	Gln	Glu	Asp	
			165						170					175		
Met	Glu	Ile	Arg	Lys	Lys	Glu	Gly	Asp	Ala	Lys	Lys	Met	Arg	Glu	Glu	

## PhoenixTemp32470.tmp.txt

180 185 190  
 Glu Ala Lys Lys Ala Ser Ser Lys Gly Gln Gln Pro Thr Val Gly Gln  
 195 200 205  
 Ala Leu Glu Lys Glu Gly Glu Arg Leu Glu Glu Ala Glu Glu Thr Arg  
 210 215 220  
 Ile Arg Arg Leu Met Ser Arg Gly Thr Gly Glu Gly Met Met Glu Val  
 225 230 235 240  
 Asp Glu Gly Val Leu Gln Ile Ser Trp Phe Ile Leu Asn Asp Ser Tyr  
 245 250 255  
 Arg Thr Asp Ala Pro Leu Leu Tyr Pro Pro Tyr Ile Ile Ala Leu Ser  
 260 265 270  
 Ala Ile Tyr Ile Ala Phe Cys Leu Thr Ser Met Ser Asn Ser Ser Ala  
 275 280 285  
 Arg Thr Arg Ala Ser Ser Thr Gln Arg Pro Glu Leu Leu Gln Ser Ala  
 290 295 300  
 Ser Ile Asn Glu Gly Leu Asn Leu Leu Pro Pro Pro Lys Asn Ala Ala  
 305 310 315 320  
 Glu Phe Leu Ala Gly Phe Gln Val Ser Leu Pro Met Leu Phe Gly Cys  
 325 330 335  
 Val Gln Glu Ile Ile Gly Leu Tyr Pro Val Trp Glu Ala Phe Glu Pro  
 340 345 350  
 Thr Val Met Arg Asn Ser Gln Ala Gln Ala Lys Thr Gly Asn Ala Ala  
 355 360 365  
 Ala Pro Val Pro Ala Ala Thr Gly Thr Lys Thr Gly Gln Asn Asn Asp  
 370 375 380  
 Leu Val Gln Asp Lys Lys Asp Lys Phe Gly Leu Glu Glu Ala Glu Ser  
 385 390 395 400  
 Leu Val Arg Lys Met Ile Glu Glu Arg Met Ile Asp Leu Gly His Pro  
 405 410 415  
 Asp Asn Ala Gly Val Glu Lys Ala Ser Gly Thr Gly Pro Ser Asn Val  
 420 425 430  
 Ala Gly Lys Lys Arg Ala Arg  
 435

&lt;210&gt; 2625

&lt;211&gt; 955

&lt;212&gt; DNA

&lt;213&gt; Tribolium castaneum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (44)..(844)

&lt;400&gt; 2625

agttattgcc tgtgatttaa ttcaactcag attagtttgt gca atg gct gga aat 55  
 Met Ala Gly Asn  
 1  
 ttt tgg caa agc tca cac cac cag cag tgg ctt ttg gac aaa caa gat 103  
 Phe Trp Gln Ser Ser His His Gln Gln Trp Leu Leu Asp Lys Gln Asp  
 5 10 15 20  
 tta att agg gag cgc caa cat gat ctc caa ctc ctc acg gag gag gag 151  
 Leu Ile Arg Glu Arg Gln His Asp Leu Gln Leu Leu Thr Glu Glu Glu  
 25 30 35  
 tac caa aaa ata ttt ata ttt ttt gct agc gtc att caa aca cta ggc 199  
 Tyr Gln Lys Ile Phe Ile Phe Phe Ala Ser Val Ile Gln Thr Leu Gly  
 40 45 50  
 gaa cag ttg aag cta cgc cag caa gtt ata gca acc gca acg gtt tat 247  
 Glu Gln Leu Lys Leu Arg Gln Val Ile Ala Thr Ala Thr Val Tyr  
 55 60 65  
 ttt aag agg ttt tat gca aaa aac tca ctt aag tgc atc gat ccg tta 295  
 Phe Lys Arg Phe Tyr Ala Lys Asn Ser Leu Lys Cys Ile Asp Pro Leu  
 70 75 80  
 ttg tta gcc ccc act tgc att ttt cta gcc tcc aaa gta gaa gaa ttt 343  
 Leu Leu Ala Pro Thr Cys Ile Phe Leu Ala Ser Lys Val Glu Glu Phe  
 85 90 95 100  
 ggg gtg att tcc aat tct agg tta att aca acg tgt cag aca gtc att 391  
 Gly Val Ile Ser Asn Ser Arg Leu Ile Thr Thr Cys Gln Thr Val Ile  
 105 110 115  
 aaa aat aag ttt agt tac gcc tat agt cag gaa ttt cca tat cgt acg 439  
 Page 2253

## PhoenixTemp32470.tmp.txt

Lys	Asn	Lys	Phe	Ser	Tyr	Ala	Tyr	Ser	Gln	Glu	Phe	Pro	Tyr	Arg	Thr		
aac	cac	atc	cta	gag	tgt	gaa	ttc	tac	ttg	tta	gaa	aac	ctc	gac	tgt		487
Asn	His	Ile	Leu	Glu	Cys	Glu	Phe	Tyr	Leu	Leu	Glu	Asn	Leu	Asp	Cys		
		135					140					145					
tgc	ttg	atc	gtc	tat	cag	cct	tat	aga	cct	ctc	tta	caa	cta	gtg	caa		535
Cys	Leu	Ile	Val	Tyr	Gln	Pro	Tyr	Arg	Pro	Leu	Leu	Gln	Leu	Val	Gln		
		150				155					160						
gac	atg	ggc	caa	gaa	gat	caa	ctt	ttg	act	ctc	gcc	tggt	agg	ata	gtg		583
Asp	Met	Gly	Gln	Glu	Asp	Gln	Leu	Leu	Thr	Leu	Ala	Trp	Arg	Ile	Val		
165					170					175					180		
aac	gat	tct	ctt	agg	act	gat	gtg	tgt	ttg	ctt	tat	cca	cca	tat	caa		631
Asn	Asp	Ser	Leu	Arg	Thr	Asp	Val	Cys	Leu	Leu	Tyr	Pro	Pro	Tyr	Gln		
				185					190					195			
att	gca	att	ggc	tgt	ctt	caa	ata	gct	tgt	gtc	atc	ttg	caa	aag	gac		679
Ile	Ala	Ile	Gly	Cys	Leu	Gln	Ile	Ala	Cys	Val	Ile	Leu	Gln	Lys	Asp		
			200				205						210				
cac	aag	gct	tgg	ttt	gcc	gaa	ctg	aac	gtg	gac	ata	gaa	cga	att	caa		727
His	Lys	Ala	Trp	Phe	Ala	Glu	Leu	Asn	Val	Asp	Ile	Glu	Arg	Ile	Gln		
		215					220					225					
gaa	att	gca	aga	tac	gtt	att	aat	tta	ttc	gag	ctg	tgg	aag	act	tac		775
Glu	Ile	Ala	Arg	Tyr	Val	Ile	Asn	Leu	Phe	Glu	Leu	Trp	Lys	Thr	Tyr		
		230				235					240						
gac	gag	aag	aaa	gaa	att	caa	gga	ctg	ttg	aat	aaa	atg	cct	aaa	cca		823
Asp	Glu	Lys	Lys	Glu	Ile	Gln	Gly	Leu	Leu	Asn	Lys	Met	Pro	Lys	Pro		
245					250					255					260		
aaa	cct	gcc	cct	caa	aga	tag	aaatc	gga	acg	atttcta	cg	tgact	ttta				871
Lys	Pro	Ala	Pro	Gln	Arg												
				265													
cgcttataac	tatcacttaa	atatttattc	tttgattcaa	ttcaacataa	ctgtgcta	at											931
ttcagaataa	agttcctaga	ttta															955

&lt;210&gt; 2626

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Tribolium castaneum

&lt;400&gt; 2626

Met	Ala	Gly	Asn	Phe	Trp	Gln	Ser	Ser	His	His	Gln	Gln	Trp	Leu	Leu		
1				5					10					15			
Asp	Lys	Gln	Asp	Leu	Ile	Arg	Glu	Arg	Gln	His	Asp	Leu	Gln	Leu	Leu		
			20					25					30				
Thr	Glu	Glu	Glu	Tyr	Gln	Lys	Ile	Phe	Ile	Phe	Phe	Ala	Ser	Val	Ile		
		35					40					45					
Gln	Thr	Leu	Gly	Glu	Gln	Leu	Lys	Leu	Arg	Gln	Gln	Val	Ile	Ala	Thr		
		50				55					60						
Ala	Thr	Val	Tyr	Phe	Lys	Arg	Phe	Tyr	Ala	Lys	Asn	Ser	Leu	Lys	Cys		
65					70					75					80		
Ile	Asp	Pro	Leu	Leu	Leu	Ala	Pro	Thr	Cys	Ile	Phe	Leu	Ala	Ser	Lys		
			85						90					95			
Val	Glu	Glu	Phe	Gly	Val	Ile	Ser	Asn	Ser	Arg	Leu	Ile	Thr	Thr	Cys		
			100					105					110				
Gln	Thr	Val	Ile	Lys	Asn	Lys	Phe	Ser	Tyr	Ala	Tyr	Ser	Gln	Glu	Phe		
		115					120					125					
Pro	Tyr	Arg	Thr	Asn	His	Ile	Leu	Glu	Cys	Glu	Phe	Tyr	Leu	Leu	Glu		
		130				135					140						
Asn	Leu	Asp	Cys	Cys	Leu	Ile	Val	Tyr	Gln	Pro	Tyr	Arg	Pro	Leu	Leu		
145					150					155					160		
Gln	Leu	Val	Gln	Asp	Met	Gly	Gln	Glu	Asp	Gln	Leu	Leu	Thr	Leu	Ala		
			165						170					175			
Trp	Arg	Ile	Val	Asn	Asp	Ser	Leu	Arg	Thr	Asp	Val	Cys	Leu	Leu	Tyr		
			180					185					190				
Pro	Pro	Tyr	Gln	Ile	Ala	Ile	Gly	Cys	Leu	Gln	Ile	Ala	Cys	Val	Ile		
		195					200					205					
Leu	Gln	Lys	Asp	His	Lys	Ala	Trp	Phe	Ala	Glu	Leu	Asn	Val	Asp	Ile		

## PhoenixTemp32470.tmp.txt

210 215 220  
 Glu Arg Ile Gln Glu Ile Ala Arg Tyr Val Ile Asn Leu Phe Glu Leu  
 225 230 235 240  
 Trp Lys Thr Tyr Asp Glu Lys Lys Glu Ile Gln Gly Leu Leu Asn Lys  
 245 250 255  
 Met Pro Lys Pro Lys Pro Ala Pro Gln Arg  
 260 265

&lt;210&gt; 2627

&lt;211&gt; 930

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(930)

&lt;400&gt; 2627

atg gcc gcc aac ttc tgg acg tcg tcg cac tgc gag ggc agc aag cag	48
Met Ala Ala Asn Phe Trp Thr Ser Ser His Cys Glu Gly Ser Lys Gln	
1 5 10 15	
ctg ctg gac cag gag gac gtg gac aag gtc ccc cag gcg gac agc gac	96
Leu Leu Asp Gln Glu Asp Val Asp Lys Val Pro Gln Ala Asp Ser Asp	
20 25 30	
cgg ggc atc acg ccg gag gag ttc cgc ctc gtc aag atc cac atg tcc	144
Arg Gly Ile Thr Pro Glu Glu Phe Arg Leu Val Lys Ile His Met Ser	
35 40 45	
ttc ctc cta caa att aag gca aat cat ttg atg att tca gat atc tgg	192
Phe Leu Leu Gln Ile Lys Ala Asn His Leu Met Ile Ser Asp Ile Trp	
50 55 60	
cga ttg gca caa cag gtg aaa gtt aga caa agg gtg ata gct act gct	240
Arg Leu Ala Gln Gln Val Lys Val Arg Gln Arg Val Ile Ala Thr Ala	
65 70 75 80	
gtt act tat ttc agg cgt gta tac aca aga tgg cct tac ttt ccc att	288
Val Thr Tyr Phe Arg Arg Val Tyr Thr Arg Trp Pro Tyr Phe Pro Ile	
85 90 95	
aag cta att aat gcc cta aga att atg tgg aac atc aag cta tta gaa	336
Lys Leu Ile Asn Ala Leu Arg Ile Met Trp Asn Ile Lys Leu Leu Glu	
100 105 110	
ttt tgt tct gat gct gga tat gtt tac aga aag agc atg act gaa tat	384
Phe Cys Ser Asp Ala Gly Tyr Val Tyr Arg Lys Ser Met Thr Glu Tyr	
115 120 125	
gat cct cgt ctg gta gca cca acc tgt ttg tat ttg gca tca aag gtg	432
Asp Pro Arg Leu Val Ala Pro Thr Cys Leu Tyr Leu Ala Ser Lys Val	
130 135 140	
gaa gag agc aca gtg caa gca aga ctt ctt gtc ttt tac ata aaa aag	480
Glu Glu Ser Thr Val Gln Ala Arg Leu Leu Val Phe Tyr Ile Lys Lys	
145 150 155 160	
atg tgt gct tct gat gag aag tac cgg ttt gaa atc aag gat atc ctt	528
Met Cys Ala Ser Asp Glu Lys Tyr Arg Phe Glu Ile Lys Asp Ile Leu	
165 170 175	
gaa atg gga atg aag ctc ctg gag gca ctt gac tat tat tta gtt gtt	576
Glu Met Gly Met Lys Leu Leu Glu Ala Leu Asp Tyr Tyr Leu Val Val	
180 185 190	
tac cac cca tat cgt cct ctt tta caa tgc ttt gat ttt agg tta ttg	624
Tyr His Pro Tyr Arg Pro Leu Leu Gln Cys Phe Asp Phe Arg Leu Leu	
195 200 205	
cag gat gct ggc ata aca gat ctg aca caa ttt gcc tgg gga att gtc	672
Gln Asp Ala Gly Ile Thr Asp Leu Thr Gln Phe Ala Trp Gly Ile Val	
210 215 220	
aat gat act tac aag atg gat ctt att ctc ata cac cca cca tat atg	720
Asn Asp Thr Tyr Lys Met Asp Leu Ile Leu Ile His Pro Pro Tyr Met	
225 230 235 240	
ata gca tta gcc tgc atc tac att gca agc gtt ctt aaa gac aag gac	768
Ile Ala Leu Ala Cys Ile Tyr Ile Ala Ser Val Leu Lys Asp Lys Asp	
245 250 255	
ata act ctg tgg ttt gaa gag ctc cgt gtt gac atg aac att gtc aag	816
Ile Thr Leu Trp Phe Glu Glu Leu Arg Val Asp Met Asn Ile Val Lys	
260 265 270	

## PhoenixTemp32470.tmp.txt

```

aat atc tcg atg gaa att ttg gac ttc tat gac acc tac aag att gat      864
Asn Ile Ser Met Glu Ile Leu Asp Phe Tyr Asp Thr Tyr Lys Ile Asp
      275      280      285
cct caa aga ggg ctc cca gag gac aaa ata gcc cct gtg atg aac aaa      912
Pro Gln Arg Gly Leu Pro Glu Asp Lys Ile Ala Pro Val Met Asn Lys
      290      295      300
ctg cct tca aag gcc taa
Leu Pro Ser Lys Ala
305

```

&lt;210&gt; 2628

&lt;211&gt; 309

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2628

```

Met Ala Ala Asn Phe Trp Thr Ser Ser His Cys Glu Gly Ser Lys Gln
1      5      10      15
Leu Leu Asp Gln Glu Asp Val Asp Lys Val Pro Gln Ala Asp Ser Asp
      20      25      30
Arg Gly Ile Thr Pro Glu Glu Phe Arg Leu Val Lys Ile His Met Ser
      35      40      45
Phe Leu Leu Gln Ile Lys Ala Asn His Leu Met Ile Ser Asp Ile Trp
      50      55      60
Arg Leu Ala Gln Gln Val Lys Val Arg Gln Arg Val Ile Ala Thr Ala
65      70      75      80
Val Thr Tyr Phe Arg Arg Val Tyr Thr Arg Trp Pro Tyr Phe Pro Ile
      85      90      95
Lys Leu Ile Asn Ala Leu Arg Ile Met Trp Asn Ile Lys Leu Leu Glu
      100      105      110
Phe Cys Ser Asp Ala Gly Tyr Val Tyr Arg Lys Ser Met Thr Glu Tyr
      115      120      125
Asp Pro Arg Leu Val Ala Pro Thr Cys Leu Tyr Leu Ala Ser Lys Val
      130      135      140
Glu Glu Ser Thr Val Gln Ala Arg Leu Leu Val Phe Tyr Ile Lys Lys
145      150      155      160
Met Cys Ala Ser Asp Glu Lys Tyr Arg Phe Glu Ile Lys Asp Ile Leu
      165      170      175
Glu Met Gly Met Lys Leu Leu Glu Ala Leu Asp Tyr Tyr Leu Val Val
      180      185      190
Tyr His Pro Tyr Arg Pro Leu Leu Gln Cys Phe Asp Phe Arg Leu Leu
      195      200      205
Gln Asp Ala Gly Ile Thr Asp Leu Thr Gln Phe Ala Trp Gly Ile Val
      210      215      220
Asn Asp Thr Tyr Lys Met Asp Leu Ile Leu Ile His Pro Pro Tyr Met
225      230      235      240
Ile Ala Leu Ala Cys Ile Tyr Ile Ala Ser Val Leu Lys Asp Lys Asp
      245      250      255
Ile Thr Leu Trp Phe Glu Glu Leu Arg Val Asp Met Asn Ile Val Lys
      260      265      270
Asn Ile Ser Met Glu Ile Leu Asp Phe Tyr Asp Thr Tyr Lys Ile Asp
      275      280      285
Pro Gln Arg Gly Leu Pro Glu Asp Lys Ile Ala Pro Val Met Asn Lys
      290      295      300
Leu Pro Ser Lys Ala
305

```

&lt;210&gt; 2629

&lt;211&gt; 948

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(948)

&lt;400&gt; 2629

```

atg gct gcc aat tat tgg gcg tcg act caa cgt cga cat tgg ttg ttt
Met Ala Ala Asn Tyr Trp Ala Ser Thr Gln Arg Arg His Trp Leu Phe

```

48

## PhoenixTemp32470.tmp.txt

1	5	10	15	
acg	aaa	gaa	aga	ttg
Thr	Lys	Glu	Arg	Leu
			20	
aag	gcc	gcg	cat	tcg
Lys	Ala	Ala	His	Ser
			35	
atc	tac	ttc	agc	caa
Ile	Tyr	Phe	Ser	Gln
			50	
aga	caa	caa	gca	ctc
Arg	Gln	Gln	Ala	Leu
			65	
act	aag	aac	gag	ata
Thr	Lys	Asn	Glu	Ile
			85	
gca	ttc	tat	ctc	gcc
Ala	Phe	Tyr	Leu	Ala
			100	
ttt	gtg	gtc	gca	gag
Phe	Val	Val	Ala	Glu
			115	
gat	gtg	tca	aag	cta
Asp	Val	Ser	Lys	Leu
			130	
aac	tca	cag	ctc	atc
Asn	Ser	Gln	Leu	Ile
			145	
caa	ccg	gag	cta	tcg
Gln	Pro	Glu	Leu	Ser
			165	
gtc	atc	aat	gat	cat
Val	Ile	Asn	Asp	His
			180	
cat	gtg	att	gcg	gtc
His	Val	Ile	Ala	Val
			195	
agc	cag	acg	agc	ttc
Ser	Gln	Thr	Ser	Phe
			210	
cga	gat	gga	ggg	atg
Arg	Asp	Gly	Gly	Met
			225	
gct	ggt	ccg	cct	ccc
Ala	Gly	Pro	Pro	Pro
			245	
agt	gag	gtt	gat	att
Ser	Glu	Val	Asp	Ile
			260	
tct	ctg	tat	gag	atc
Ser	Leu	Tyr	Glu	Ile
			275	
cta	ctc	ggc	cga	atg
Leu	Leu	Gly	Arg	Met
			290	
gtt	tgc	ttt	tgc	gtt
Val	Cys	Phe	Cys	Val
			305	
				310

&lt;210&gt; 2630

&lt;211&gt; 315

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 2630

Met	Ala	Ala	Asn	Tyr	Trp	Ala	Ser	Thr	Gln	Arg	Arg	His	Trp	Leu	Phe
1				5					10				15		
Thr	Lys	Glu	Arg	Leu	Ala	Asp	Ile	Arg	Glu	Ser	Phe	Arg	Glu	Arg	Asp
			20					25					30		



## PhoenixTemp32470.tmp.txt

Lys Ala Ala His Ser Gln Phe Pro Leu Pro Asp Gln Arg Leu Leu Asn  
 Ile Tyr Phe Ser Gln Gln Leu Ile Lys Leu Gly Lys Arg Met Ser Thr  
 Arg Gln Gln Ala Leu Ala Thr Ala Gln Val Tyr Ile Lys Arg Phe Tyr  
 Thr Lys Asn Glu Ile Arg His Thr Asn Pro Tyr Leu Val Val Thr Thr  
 Ala Phe Tyr Leu Ala Cys Lys Met Glu Glu Cys Pro Gln His Ile Arg  
 Phe Val Val Ala Glu Ala Arg Asn Phe Trp Pro Glu Phe Ile Ala Pro  
 Asp Val Ser Lys Leu Gly Glu Cys Glu Phe Ala Leu Ile Ser Glu Met  
 Asn Ser Gln Leu Ile Val His His Pro Tyr Arg Thr Leu Ser Glu Leu  
 Gln Pro Glu Leu Ser Leu Thr Ser Asp Glu Val Ala Leu Ala Trp Ser  
 Val Ile Asn Asp His Tyr Leu Thr Asp Leu Pro Leu Leu Tyr Pro Pro  
 His Val Ile Ala Val Met Ala Ile Ile Val Ala Val Val Phe Lys Pro  
 Ser Gln Thr Ser Phe His Gly Thr Ala Ala Pro Leu Ala Gly Ala Met  
 Arg Asp Gly Gly Met Asn Ile Leu Ala Ala Leu Gly Asp Lys Asn Gly  
 Ala Gly Pro Pro Pro Arg Ile Gln Lys Leu Val Gly Trp Leu Ala Glu  
 Ser Glu Val Asp Ile Arg Ala Val Ile Glu Cys Thr Gln Glu Leu Val  
 Ser Leu Tyr Glu Ile Trp Glu Asn Tyr Ser Glu Lys His Cys Lys Glu  
 Leu Leu Gly Arg Met Val Lys Ser Lys Asn Leu Asp Lys Ile Gly Ala  
 Val Cys Phe Cys Val Ala Phe Arg Glu Phe Gly

&lt;210&gt; 2631

&lt;211&gt; 960

&lt;212&gt; DNA

&lt;213&gt; Gibberella moniliformis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(960)

&lt;400&gt; 2631

atg tca gcc aat tat tgg cac tcg aca caa tgt cgc ttc tgg agc ttc	48
Met Ser Ala Asn Tyr Trp His Ser Thr Gln Cys Arg Phe Trp Ser Phe	
1 5 10 15	
acc aag gag cag ctc gtg aca atg cga cag aag ctt gaa gag gac aat	96
Thr Lys Glu Gln Leu Val Thr Met Arg Gln Lys Leu Glu Asp Asn	
20 25 30	
gcc gaa ttg gtg cga atg ttt ccg ctt ccg cag caa cgg cgt tta tac	144
Ala Glu Leu Val Arg Met Phe Pro Leu Pro Gln Gln Arg Arg Leu Tyr	
35 40 45	
ata tac ttt aat caa caa ctg ata cgg ctg gcg aaa cga tta acg atc	192
Ile Tyr Phe Asn Gln Gln Leu Ile Arg Leu Ala Lys Arg Leu Thr Ile	
50 55 60	
cga caa caa tcc atg gcc acg gcg cag gtc tac atg aag cga ttc tac	240
Arg Gln Gln Ser Met Ala Thr Ala Gln Val Tyr Met Lys Arg Phe Tyr	
65 70 75 80	
tcc aaa gtc gag att cgt cga acg aac cca tac ctc gtc ata gcg acc	288
Ser Lys Val Glu Ile Arg Arg Thr Asn Pro Tyr Leu Val Ile Ala Thr	
85 90 95	
gct ata tac tta gcc tgc aaa ata gaa gag tct cct caa cac att cga	336
Ala Ile Tyr Leu Ala Cys Lys Ile Glu Glu Ser Pro Gln His Ile Arg	
100 105 110	
ctc atc gtg aca gag gcg cga cag atg tgg gga gat ctc gtg gcc atc	384

PhoenixTemp32470.tmp.txt

Leu	Ile	Val	Thr	Glu	Ala	Arg	Gln	Met	Trp	Gly	Asp	Leu	Val	Ala	Ile		
gac	acg	tcc	aag	ctg	ggc	gag	tgt	gag	ttc	ttc	atg	ata	agc	gag	atg		432
Asp	Thr	Ser	Lys	Leu	Gly	Glu	Cys	Glu	Phe	Phe	Met	Ile	Ser	Glu	Met		
130					135						140						
cga	tca	cag	ttg	att	gta	ttc	caa	ccg	tat	cga	acg	atc	aca	gca	ttg		480
Arg	Ser	Gln	Leu	Ile	Val	Phe	Gln	Pro	Tyr	Arg	Thr	Ile	Thr	Ala	Leu		
145					150					155					160		
cga	aat	gaa	cta	tcg	ttg	gtg	gac	gac	gaa	gtg	caa	ctg	gct	cgc	tcg		528
Arg	Asn	Glu	Leu	Ser	Leu	Val	Asp	Asp	Glu	Val	Gln	Leu	Ala	Arg	Ser		
				165					170					175			
gtc	atc	aac	gat	cac	ttc	atg	aca	gac	ctt	ccg	ctc	cta	tac	cct	cca		576
Val	Ile	Asn	Asp	His	Phe	Met	Thr	Asp	Leu	Pro	Leu	Leu	Tyr	Pro	Pro		
			180					185					190				
cat	att	atc	gcc	atg	gtt	gcc	atc	cta	ctg	gcc	ttg	gtg	ttg	agg	cct		624
His	Ile	Ile	Ala	Met	Val	Ala	Ile	Leu	Leu	Ala	Leu	Val	Leu	Arg	Pro		
			195				200					205					
aac	aac	tca	ggt	cct	ggc	cag	agc	act	tca	gga	gca	gcc	gcc	gca	gca		672
Asn	Asn	Ser	Gly	Pro	Gly	Gln	Ser	Thr	Ser	Gly	Ala	Ala	Ala	Ala	Ala		
			210			215					220						
gga	ctg	gca	gcc	gct	caa	cag	gcg	ctg	atg	cga	gca	cag	ggc	caa	caa		720
Gly	Leu	Ala	Ala	Ala	Gln	Gln	Ala	Leu	Met	Arg	Ala	Gln	Gly	Gln	Gln		
225					230					235					240		
gca	caa	ggc	gga	atg	ccc	gag	ccc	gct	gct	gca	gaa	cct	aag	gag	aag		768
Ala	Gln	Gly	Gly	Met	Pro	Glu	Pro	Ala	Ala	Ala	Glu	Pro	Lys	Glu	Lys		
				245					250					255			
cgg	caa	caa	gat	cgg	gtg	tcg	cgg	gtg	caa	aag	ttt	gcg	aaa	tgg	ctg		816
Arg	Gln	Gln	Asp	Arg	Val	Ser	Arg	Val	Gln	Lys	Phe	Ala	Lys	Trp	Leu		
			260					265					270				
gtt	gac	agc	aac	gtg	gag	att	gca	tct	atg	gtg	gat	gct	act	cag	gag		864
Val	Asp	Ser	Asn	Val	Glu	Ile	Ala	Ser	Met	Val	Asp	Ala	Thr	Gln	Glu		
			275				280					285					
ata	ata	tca	ttc	tat	gag	tgc	tat	gaa	cat	tac	aac	gac	aag	ctc	act		912
Ile	Ile	Ser	Phe	Tyr	Glu	Cys	Tyr	Glu	His	Tyr	Asn	Asp	Lys	Leu	Thr		
			290			295					300						
cgc	gaa	cag	atc	aac	agg	ttt	gtt	aag	gca	aga	ggc	tta	gat	aag			957
Arg	Glu	Gln	Ile	Asn	Arg	Phe	Val	Lys	Ala	Arg	Gly	Leu	Asp	Lys			
305					310					315							
tga																	960

<210> 2632  
 <211> 319  
 <212> PRT  
 <213> Gibberella moniliformis

<400> 2632

Met	Ser	Ala	Asn	Tyr	Trp	His	Ser	Thr	Gln	Cys	Arg	Phe	Trp	Ser	Phe		
1				5					10					15			
Thr	Lys	Glu	Gln	Leu	Val	Thr	Met	Arg	Gln	Lys	Leu	Glu	Glu	Asp	Asn		
			20					25					30				
Ala	Glu	Leu	Val	Arg	Met	Phe	Pro	Leu	Pro	Gln	Gln	Arg	Arg	Leu	Tyr		
			35				40					45					
Ile	Tyr	Phe	Asn	Gln	Gln	Leu	Ile	Arg	Leu	Ala	Lys	Arg	Leu	Thr	Ile		
			50			55					60						
Arg	Gln	Gln	Ser	Met	Ala	Thr	Ala	Gln	Val	Tyr	Met	Lys	Arg	Phe	Tyr		
65				70						75					80		
Ser	Lys	Val	Glu	Ile	Arg	Arg	Thr	Asn	Pro	Tyr	Leu	Val	Ile	Ala	Thr		
				85					90					95			
Ala	Ile	Tyr	Leu	Ala	Cys	Lys	Ile	Glu	Glu	Ser	Pro	Gln	His	Ile	Arg		
			100					105					110				
Leu	Ile	Val	Thr	Glu	Ala	Arg	Gln	Met	Trp	Gly	Asp	Leu	Val	Ala	Ile		
			115				120					125					
Asp	Thr	Ser	Lys	Leu	Gly	Glu	Cys	Glu	Phe	Phe	Met	Ile	Ser	Glu	Met		
					135						140						
Arg	Ser	Gln	Leu	Ile	Val	Phe	Gln	Pro	Tyr	Arg	Thr	Ile	Thr	Ala	Leu		
145					150					155					160		
Arg	Asn	Glu	Leu	Ser	Leu	Val	Asp	Asp	Glu	Val	Gln	Leu	Ala	Arg	Ser		

## PhoenixTemp32470.tmp.txt

Val Ile Asn Asp 165 His Phe Met Thr Asp 170 Leu Pro Leu Leu Tyr 175 Pro Pro  
 180  
 His Ile Ile Ala Met Val Ala Ile Leu Leu Ala Leu Val Leu Arg Pro  
 195  
 Asn Asn Ser Gly Pro Gly Gln Ser Thr Ser Gly Ala Ala Ala Ala Ala  
 210  
 Gly Leu Ala Ala Ala Gln Gln Ala Leu Met Arg Ala Gln Gly Gln Gln  
 225  
 Ala Gln Gly Gly Met Pro Glu Pro Ala Ala Ala Glu Pro Lys Glu Lys  
 245  
 Arg Gln Gln Asp Arg Val Ser Arg Val Gln Lys Phe Ala Lys Trp Leu  
 260  
 Val Asp Ser Asn Val Glu Ile Ala Ser Met Val Asp Ala Thr Gln Glu  
 275  
 Ile Ile Ser Phe Tyr Glu Cys Tyr Glu His Tyr Asn Asp Lys Leu Thr  
 290  
 Arg Glu Gln Ile Asn Arg Phe Val Lys Ala Arg Gly Leu Asp Lys  
 305  
 310  
 315

&lt;210&gt; 2633

&lt;211&gt; 804

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(804)

&lt;400&gt; 2633

atg gcg ggc aat ttt tgg cag agt tcg cac tcg cag cag tgg att ttg	48
Met Ala Gly Asn Phe Trp Gln Ser Ser His Ser Gln Gln Trp Ile Leu	
1 5 10 15	
gac aaa ccc gat ctg ctc cgg gag cgt cag cac gat ttg ttg gcc ctt	96
Asp Lys Pro Asp Leu Leu Arg Glu Arg Gln His Asp Leu Leu Ala Leu	
20 25 30	
aac gag gat gaa tac caa aag gtg ttt att ttc ttc gca aat gtg atc	144
Asn Glu Asp Glu Tyr Gln Lys Val Phe Ile Phe Phe Ala Asn Val Ile	
35 40 45	
cag gtg ctc ggc gag cag cta aag ctg agg caa cag gtc atc gcc acg	192
Gln Val Leu Gly Glu Gln Leu Lys Leu Arg Gln Gln Val Ile Ala Thr	
50 55 60	
gcg acg gtt tac ttc aag aga ttc tat gcg agg aac tcc ctg aag aac	240
Ala Thr Val Tyr Phe Lys Arg Phe Tyr Ala Arg Asn Ser Leu Lys Asn	
65 70 75 80	
atc gat cct ctg ctg gcg ccc act tgc atc ttg ctg gcc tcg aag	288
Ile Asp Pro Leu Leu Ala Pro Thr Cys Ile Leu Leu Ala Ser Lys	
85 90 95	
gtg gag gag ttc ggt gtc att tcc aat tca cga ctg atc tcg atc tgc	336
Val Glu Glu Phe Gly Val Ile Ser Asn Ser Arg Leu Ile Ser Ile Cys	
100 105 110	
cag tcg gcc att aag aca aag ttc agc tat gcg tac gct cag gag ttt	384
Gln Ser Ala Ile Lys Thr Lys Phe Ser Tyr Ala Tyr Ala Gln Glu Phe	
115 120 125	
ccc tac cgc acc aat cac atc ctg gag tgc gag ttt tac ctg ctg gag	432
Pro Tyr Arg Thr Asn His Ile Leu Glu Cys Glu Phe Tyr Leu Leu Glu	
130 135 140	
aac ctg gat tgc tgc ttg att gtc tac cag ccg tac aga ccg ctg ctg	480
Asn Leu Asp Cys Cys Leu Ile Val Tyr Gln Pro Tyr Arg Pro Leu Leu	
145 150 155 160	
cag ctg gtt cag gac atg ggc cag gag gac cag ttg ctc acc ctg agc	528
Gln Leu Val Gln Asp Met Gly Gln Glu Asp Gln Leu Leu Thr Leu Ser	
165 170 175	
tgg cgt atc gta aac gat tcc ctg cgc acc gat gtc tgc ctg ctc tat	576
Trp Arg Ile Val Asn Asp Ser Leu Arg Thr Asp Val Cys Leu Leu Tyr	
180 185 190	
cct cct tac cag atc gct ata gcc tgc ctt caa atc gcc tgc gtc atc	624
Pro Pro Tyr Gln Ile Ala Ile Ala Cys Leu Gln Ile Ala Cys Val Ile	
195 200 205	

## PhoenixTemp32470.tmp.txt

ctg	caa	aag	gac	gcc	acg	aag	cag	tgg	ttc	gca	gaa	ttg	aat	gtt	gat	672
Leu	Gln	Lys	Asp	Ala	Thr	Lys	Gln	Trp	Phe	Ala	Glu	Leu	Asn	Val	Asp	
	210					215					220					
tta	gac	aag	gtc	cag	gag	atc	gtg	cgc	gcc	att	gta	aat	ctg	tac	gag	720
Leu	Asp	Lys	Val	Gln	Glu	Ile	Val	Arg	Ala	Ile	Val	Asn	Leu	Tyr	Glu	
225					230					235					240	
ttg	tgg	aag	gac	tgg	aag	gaa	aag	gac	gag	att	cag	atg	ctg	ctg	tcc	768
Leu	Trp	Lys	Asp	Trp	Lys	Glu	Lys	Asp	Glu	Ile	Gln	Met	Leu	Leu	Ser	
				245					250					255		
aag	att	ccg	aaa	ccg	aaa	cca	ccg	cct	cag	cg	tag					804
Lys	Ile	Pro	Lys	Pro	Lys	Pro	Pro	Pro	Gln	Arg						
			260					265								

<210> 2634  
 <211> 267  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 2634  
 Met Ala Gly Asn Phe Trp Gln Ser Ser His Ser Gln Gln Trp Ile Leu  
 1 5 10 15  
 Asp Lys Pro Asp Leu Leu Arg Glu Arg Gln His Asp Leu Leu Ala Leu  
 20 25 30  
 Asn Glu Asp Glu Tyr Gln Lys Val Phe Ile Phe Phe Ala Asn Val Ile  
 35 40 45  
 Gln Val Leu Gly Glu Gln Leu Lys Leu Arg Gln Gln Val Ile Ala Thr  
 50 55 60  
 Ala Thr Val Tyr Phe Lys Arg Phe Tyr Ala Arg Asn Ser Leu Lys Asn  
 65 70 75 80  
 Ile Asp Pro Leu Leu Ala Pro Thr Cys Ile Leu Leu Ala Ser Lys  
 85 90 95  
 Val Glu Glu Phe Gly Val Ile Ser Asn Ser Arg Leu Ile Ser Ile Cys  
 100 105 110  
 Gln Ser Ala Ile Lys Thr Lys Phe Ser Tyr Ala Tyr Ala Gln Glu Phe  
 115 120 125  
 Pro Tyr Arg Thr Asn His Ile Leu Glu Cys Glu Phe Tyr Leu Leu Glu  
 130 135 140  
 Asn Leu Asp Cys Cys Leu Ile Val Tyr Gln Pro Tyr Arg Pro Leu Leu  
 145 150 155 160  
 Gln Leu Val Gln Asp Met Gly Gln Glu Asp Gln Leu Leu Thr Leu Ser  
 165 170 175  
 Trp Arg Ile Val Asn Asp Ser Leu Arg Thr Asp Val Cys Leu Leu Tyr  
 180 185 190  
 Pro Pro Tyr Gln Ile Ala Ile Ala Cys Leu Gln Ile Ala Cys Val Ile  
 195 200 205  
 Leu Gln Lys Asp Ala Thr Lys Gln Trp Phe Ala Glu Leu Asn Val Asp  
 210 215 220  
 Leu Asp Lys Val Gln Glu Ile Val Arg Ala Ile Val Asn Leu Tyr Glu  
 225 230 235 240  
 Leu Trp Lys Asp Trp Lys Glu Lys Asp Glu Ile Gln Met Leu Leu Ser  
 245 250 255  
 Lys Ile Pro Lys Pro Lys Pro Pro Gln Arg  
 260 265

<210> 2635  
 <211> 762  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(762)

atg	gct	gcc	aat	ttc	tgg	aca	tca	tct	cat	tac	aag	cat	ctt	ctg	gat	48
Met	Ala	Ala	Asn	Phe	Trp	Thr	Ser	Ser	His	Tyr	Lys	His	Leu	Leu	Asp	
1			5					10					15			
cag	gaa	gat	gtg	gat	gtg	gtg	aat	aca	ctc	gac	aag	gaa	aag	ggg	att	96
Gln	Glu	Asp	Val	Asp	Val	Val	Asn	Thr	Leu	Asp	Lys	Glu	Lys	Gly	Ile	

## PhoenixTemp32470.tmp.txt

			20				25		30									
aca	ctg	gag	gat	ttt	aag	ctt	att	aag	atg	cac	atg	gct	aat	tat	att			144
Thr	Leu	Glu	Asp	Phe	Lys	Leu	Ile	Lys	Met	His	Met	Ala	Asn	Tyr	Ile			
		35					40					45						
ttg	aaa	ttg	gct	caa	caa	gta	aaa	gtg	agg	cag	agg	gtt	gtg	gcc	aca			192
Leu	Lys	Leu	Ala	Gln	Gln	Val	Lys	Val	Arg	Gln	Arg	Val	Val	Ala	Thr			
	50					55					60							
gca	ggt	aca	tac	atg	agg	cgt	ggt	tac	acc	agg	aag	agt	atg	gct	gaa			240
Ala	Val	Thr	Tyr	Met	Arg	Arg	Val	Tyr	Thr	Arg	Lys	Ser	Met	Ala	Glu			
	65				70					75					80			
tat	gat	cca	cgc	ttg	gta	gct	cca	aca	tgc	ttg	tac	ctg	gca	tca	aaa			288
Tyr	Asp	Pro	Arg	Leu	Val	Ala	Pro	Thr	Cys	Leu	Tyr	Leu	Ala	Ser	Lys			
				85					90					95				
gca	gaa	gaa	agc	aca	gtg	cag	gct	cgg	ctt	ctt	gta	ttt	tac	att	aaa			336
Ala	Glu	Glu	Ser	Thr	Val	Gln	Ala	Arg	Leu	Leu	Val	Phe	Tyr	Ile	Lys			
			100					105					110					
aaa	tta	tac	act	gat	gac	aag	tat	aga	tat	gaa	atc	aag	gac	ata	ctt			384
Lys	Leu	Tyr	Thr	Asp	Asp	Lys	Tyr	Arg	Tyr	Glu	Ile	Lys	Asp	Ile	Leu			
		115					120					125						
gaa	atg	gaa	atg	aag	att	tta	gaa	gct	ctt	aat	tat	tac	ctg	ggt	gta			432
Glu	Met	Glu	Met	Lys	Ile	Leu	Glu	Ala	Leu	Asn	Tyr	Tyr	Leu	Val	Val			
	130					135					140							
tac	cat	cca	tac	cgt	tca	cta	tct	ccg	ttg	ctt	cag	gat	gca	ggt	ctg			480
Tyr	His	Pro	Tyr	Arg	Ser	Leu	Ser	Pro	Leu	Leu	Gln	Asp	Ala	Gly	Leu			
	145				150				155					160				
aat	gat	cta	aac	atg	act	caa	cta	act	tgg	ggg	ctt	gta	aat	gac	aca			528
Asn	Asp	Leu	Asn	Met	Thr	Gln	Leu	Thr	Trp	Gly	Leu	Val	Asn	Asp	Thr			
				165					170					175				
tac	aag	atg	gac	cta	att	ctt	gta	cat	cct	ccg	cat	ttg	att	gct	tta			576
Tyr	Lys	Met	Asp	Leu	Ile	Leu	Val	His	Pro	Pro	His	Leu	Ile	Ala	Leu			
			180					185					190					
gct	tgc	ata	tac	att	gct	agt	gtg	ctc	agg	gag	aaa	gac	acc	act	gct			624
Ala	Cys	Ile	Tyr	Ile	Ala	Ser	Val	Leu	Arg	Glu	Lys	Asp	Thr	Thr	Ala			
	195						200					205						
tgg	ttt	gaa	gaa	ctt	cgt	gtt	gat	atg	aat	gtg	gtt	aaa	aac	ata	tca			672
Trp	Phe	Glu	Glu	Leu	Arg	Val	Asp	Met	Asn	Val	Val	Lys	Asn	Ile	Ser			
	210					215					220							
atg	gag	ata	ctt	gat	ttt	tat	gaa	agc	aat	aga	atg	ttc	act	gat	gag			720
Met	Glu	Ile	Leu	Asp	Phe	Tyr	Glu	Ser	Asn	Arg	Met	Phe	Thr	Asp	Glu			
	225				230					235					240			
aga	atc	aat	gct	gct	ctt	cag	aag	ttg	agc	ctg	aga	ccc	tag					762
Arg	Ile	Asn	Ala	Ala	Leu	Gln	Lys	Leu	Ser	Leu	Arg	Pro						
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 Thr Leu Glu Asp Phe Lys Leu Ile Lys Met His Met Ala Asn Tyr Ile  
 35 40 45  
 Leu Lys Leu Ala Gln Gln Val Lys Val Arg Gln Arg Val Val Ala Thr  
 50 55 60  
 Ala Val Thr Tyr Met Arg Arg Val Tyr Thr Arg Lys Ser Met Ala Glu  
 65 70 75 80  
 Tyr Asp Pro Arg Leu Val Ala Pro Thr Cys Leu Tyr Leu Ala Ser Lys  
 85 90 95  
 Ala Glu Glu Ser Thr Val Gln Ala Arg Leu Leu Val Phe Tyr Ile Lys  
 100 105 110  
 Lys Leu Tyr Thr Asp Asp Lys Tyr Arg Tyr Glu Ile Lys Asp Ile Leu  
 115 120 125  
 Glu Met Glu Met Lys Ile Leu Glu Ala Leu Asn Tyr Tyr Leu Val Val  
 130 135 140  
 Tyr His Pro Tyr Arg Ser Leu Ser Pro Leu Leu Gln Asp Ala Gly Leu

## PhoenixTemp32470.tmp.txt

145 Asn Asp Leu Asn Met 150 Thr Gln Leu Thr Trp 155 Gly Leu Val Asn Asp 160 Thr  
 Tyr Lys Met Asp 165 Leu Ile Leu Val His 170 Pro Pro His Leu Ile Ala Leu  
 Ala Cys Ile Tyr 180 Ile Ala Ser Val 185 Leu Arg Glu Lys Asp 190 Thr Thr Ala  
 Trp Phe 195 Glu Glu Leu Arg Val 200 Asp Met Asn Val Val 205 Lys Asn Ile Ser  
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 cag gaa gat gtg gat atg gtg aat cca ctt gac aag gaa aag ggt atc 96  
 Gln Glu Asp Val 20 Asp Met Val Asn Pro 25 Leu Asp Lys Glu Lys 30 Gly Ile  
 aca ctg gag gat ttt aag ctt att aag atg cac atg gct aat tat att 144  
 Thr Leu Glu Asp Phe Lys Leu Ile Lys Met His Met Ala Asn Tyr Ile  
 35 40 45  
 ttg aaa ttg gct caa caa gta aaa gtg agg cag agg gtt gtg gcc aca 192  
 Leu Lys 50 Leu Ala Gln Gln Val Lys Val Arg Gln Arg Val Val Ala Thr  
 55 60  
 gca att aca tac atg agg cgt gtt tac acc agg aag agt atg gct gaa 240  
 Ala Ile Thr Tyr Met Arg Arg Val Tyr Thr Arg Lys Ser Met Ala Glu  
 65 70 75 80  
 tat gat cca cgc ttg gta gct cca aca tgc ttg tac ctg gca tca aaa 288  
 Tyr Asp Pro Arg 85 Val Ala Pro Thr Cys 90 Leu Tyr Leu Ala Ser Lys  
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 gca gaa gaa agc aca gtg cag gct cgg ctt ctt gta ttt tac att aaa 336  
 Ala Glu Glu Ser Thr Val Gln Ala Arg 105 Leu Leu Val Phe Tyr Ile Lys  
 100 110  
 aaa tta tac act gat gac aag tat aga tat gaa atc aag gac ata ctt 384  
 Lys Leu Tyr 115 Thr Asp Asp Lys Tyr 120 Arg Tyr Glu Ile Lys Asp Ile Leu  
 125  
 gaa atg gaa atg aag att tta gaa gct ctt aat tat tac ctg ggt gta 432  
 Glu Met Glu Met Lys Ile Leu Glu Ala Leu Asn Tyr 140 Tyr Leu Gly Val  
 130 135 140  
 tac cat cca tac cgt tca cta tct ccg ttg ctt cag gat gca ggt ctg 480  
 Tyr His Pro Tyr Arg Ser Leu Ser Pro Leu Leu Gln Asp Ala Gly Leu  
 145 150 155 160  
 aat gat cta aac atg act caa cta act tgg ggg ctt gta aat gac aca 528  
 Asn Asp Leu Asn Met Thr Gln Leu Thr Trp Gly Leu Val Asn Asp Thr  
 165 170 175  
 tac aag atg gac cta att ctt gta cat cct ccg cat ttg att gct tta 576  
 Tyr Lys Met Asp Leu Ile Leu Val His Pro Pro His Leu Ile Ala Leu  
 180 185 190  
 gct tgc ata tac att gct agt gtg ctc agg gag aaa gac acc act gct 624  
 Ala Cys Ile Tyr Ile Ala Ser Val Leu Arg Glu Lys Asp Thr Thr Ala  
 195 200 205  
 tgg ttt gaa gaa ctt cgt gtt gat atg aat gtg gtt aaa aac ata tca 672  
 Trp Phe Glu Glu Leu Arg Val Asp Met Asn Val Val Lys Asn Ile Ser  
 210 215 220  
 atg gag ata ctt gat ttt tat gaa agc aat aga atg ttc act gat gag 720  
 Met Glu Ile Leu Asp Phe Tyr Glu Ser Asn Arg Met Phe Thr Asp Glu  
 225 230 235 240

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762

245

250

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&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 2638

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 Gln Glu Asp Val Asp Met Val Asn Pro Leu Asp Lys Glu Lys Gly Ile  
 20 25 30  
 Thr Leu Glu Asp Phe Lys Leu Ile Lys Met His Met Ala Asn Tyr Ile  
 35 40 45  
 Leu Lys Leu Ala Gln Gln Val Lys Val Arg Gln Arg Val Val Ala Thr  
 50 55 60  
 Ala Ile Thr Tyr Met Arg Arg Val Tyr Thr Arg Lys Ser Met Ala Glu  
 65 70 75 80  
 Tyr Asp Pro Arg Leu Val Ala Pro Thr Cys Leu Tyr Leu Ala Ser Lys  
 85 90 95  
 Ala Glu Glu Ser Thr Val Gln Ala Arg Leu Leu Val Phe Tyr Ile Lys  
 100 105 110  
 Lys Leu Tyr Thr Asp Asp Lys Tyr Arg Tyr Glu Ile Lys Asp Ile Leu  
 115 120 125  
 Glu Met Glu Met Lys Ile Leu Glu Ala Leu Asn Tyr Tyr Leu Gly Val  
 130 135 140  
 Tyr His Pro Tyr Arg Ser Leu Ser Pro Leu Leu Gln Asp Ala Gly Leu  
 145 150 155 160  
 Asn Asp Leu Asn Met Thr Gln Leu Thr Trp Gly Leu Val Asn Asp Thr  
 165 170 175  
 Tyr Lys Met Asp Leu Ile Leu Val His Pro Pro His Leu Ile Ala Leu  
 180 185 190  
 Ala Cys Ile Tyr Ile Ala Ser Val Leu Arg Glu Lys Asp Thr Thr Ala  
 195 200 205  
 Trp Phe Glu Glu Leu Arg Val Asp Met Asn Val Val Lys Asn Ile Ser  
 210 215 220  
 Met Glu Ile Leu Asp Phe Tyr Glu Ser Asn Arg Met Phe Thr Asp Glu  
 225 230 235 240  
 Arg Ile Asn Ala Ala Leu Gln Lys Leu Ser Leu Arg Pro  
 245 250

&lt;210&gt; 2639

&lt;211&gt; 22

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 2639

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22

&lt;210&gt; 2640

&lt;211&gt; 25

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 2640

ttaaattgca gatgctgggtc taaga

25

&lt;210&gt; 2641

&lt;211&gt; 503

&lt;212&gt; PRT

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<223> Xaa in position 9 to 12 is any amino acid

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<223> Xaa in position 13 to 15 is any or no amino acid

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<223> Xaa in position 17 to 22 is any amino acid

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<222> (24)..(26)

<223> Xaa in position 24 to 26 is any amino acid

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<222> (28)..(52)

<223> Xaa in position 28 to 52 is any amino acid

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<222> (53)..(104)

<223> Xaa in position 53 to 104 is any or no amino acid

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<223> Xaa in position 106 to 111 is any amino acid

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<222> (114)..(116)

<223> Xaa in position 114 to 116 is any amino acid

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<222> (120)..(121)

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<222> (127)..(136)

<223> Xaa in position 127 to 136 is any amino acid



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<223> Xaa in position 263 to 339 is any or no amino acid

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<222> (341)..(343)

<223> Xaa in position 341 to 343 is any amino acid

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<400> 2641

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Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			20				25						30		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			35				40						45		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			50				55						60		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
65					70				75						80
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				85					90					95	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Arg
			100					105						110	
Gln	Xaa	Xaa	Xaa	Ala	Thr	Ala	Xaa	Tyr	Xaa	Xaa	Arg	Phe	Xaa	Xaa	
			115				120				125				

## PhoenixTemp32470.tmp.txt

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 145 150 155 160  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Leu Xaa Xaa Xaa Thr Xaa  
 165 170 175  
 Xaa Xaa Leu Ala Xaa Lys Xaa Glu Glu Xaa Xaa Xaa Xaa Xaa Xaa  
 180 185 190  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 195 200 205  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Xaa  
 210 215 220  
 Glu Phe Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Val Xaa Xaa  
 225 230 235 240  
 Pro Tyr Arg Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 245 250 255  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 260 265 270  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 275 280 285  
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 Xaa Xaa Xaa Trp Xaa Xaa Xaa Asn Asp Xaa Xaa Xaa Xaa Asp Xaa Xaa  
 340 345 350  
 Leu Xaa Xaa Pro Pro Xaa Xaa Ile Ala Xaa Xaa Xaa Xaa Xaa Xaa  
 355 360 365  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 370 375 380  
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 385 390 395 400  
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 450 455 460  
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 485 490 495  
 Xaa Xaa Xaa Xaa Xaa Tyr  
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<220>

<221> Variant  
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<223> Xaa in position 12 is Ala, Leu or Val

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<223> Xaa in position 22 is any or no amino acid

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<222> (26)..(26)  
<223> Xaa in position 26 is Ala, Cys or Thr

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<223> Xaa in position 27 is Ile or Leu

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<222> (28)..(29)  
<223> Xaa in position 28 to 29 is any amino acid

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 <223> Xaa in position 30 is Ala, Thr or Val  
  
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 <223> Xaa in position 8 is any or no amino acid  
  
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 <223> Xaa in position 23 is Ala, Pro, Ser or Thr

<220>  
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 <223> Xaa in position 24 is Ile, Leu, Met or Val

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 Xaa Xaa Xaa Pro Tyr Xaa Xaa Xaa  
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<220>  
 <221> Variant  
 <222> (8)..(8)  
 <223> Xaa in position 8 is Leu, Met or Val

<220>  
 <221> Variant  
 <222> (9)..(10)  
 <223> Xaa in position 9 to 10 is any amino acid

<220>  
 <221> Variant  
 <222> (13)..(14)  
 <223> Xaa in position 13 to 14 is any amino acid

<220>  
 <221> Variant  
 <222> (15)..(15)

<223> Xaa in position 15 is Ile, Leu, Met or Val

<220>

<221> Variant

<222> (19)..(20)

<223> Xaa in position 19 to 20 is any amino acid

<220>

<221> Variant

<222> (22)..(22)

<223> Xaa in position 22 is Phe, Ile, Leu or Met

<220>

<221> Variant

<222> (23)..(23)

<223> Xaa in position 23 is any amino acid

<220>

<221> Variant

<222> (25)..(25)

<223> Xaa in position 25 is Phe or Val

<400> 2644

Ile Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Arg Gln Xaa Xaa Xaa Ala  
 1 5 10 15  
 Thr Ala Xaa Xaa Tyr Xaa Xaa Arg Xaa  
 20 25

<210> 2645

<211> 969

<212> DNA

<213> *Saccharomyces cerevisiae*

<220>

<221> CDS

<222> (1)..(969)

<400> 2645

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cta gcc atg atc acg acg ctt gtg gtt ccc tta gtt gcc tcg att gca	96
Leu Ala Met Ile Thr Thr Leu Val Val Pro Leu Val Ala Ser Ile Ala	
20 25 30	
agt tac aaa cat ata ttt cta ttg caa tat gat cct ttt ctg cag acc	144
Ser Tyr Lys His Ile Phe Leu Leu Gln Tyr Asp Pro Phe Leu Gln Thr	
35 40 45	
tac cat caa tac tac cgt ctg ctc ata ttc cag ttc tgc gcc atc aat	192
Tyr His Gln Tyr Tyr Arg Leu Leu Ile Phe Gln Phe Cys Ala Ile Asn	
50 55 60	
gaa tcc gat aca gta ata ctg gcg ttg ata tgg tat ctg ttt agg cat	240
Glu Ser Asp Thr Val Ile Leu Ala Leu Ile Trp Tyr Leu Phe Arg His	
65 70 75 80	
tta gaa cgg cta cta gga tcc cac aag tac ttg acc ttg att gtt ttg	288
Leu Glu Arg Leu Leu Gly Ser His Lys Tyr Leu Thr Leu Ile Val Leu	
85 90 95	
tca tgg gcc tac acc acc tta gga att tgg gga ttg aat ctg atc tgg	336
Ser Trp Ala Tyr Thr Thr Leu Gly Ile Trp Gly Leu Asn Leu Ile Trp	
100 105 110	
aac gca ttt att gga cag tac aag tgg ctt caa tgg aac aat ttt agt	384
Asn Ala Phe Ile Gly Gln Tyr Lys Trp Leu Gln Trp Asn Asn Phe Ser	
115 120 125	
aca ggt tca ctg ccc att gtt tta agc tta gta cat ttt tac aaa gaa	432
Thr Gly Ser Leu Pro Ile Val Leu Ser Leu Val His Phe Tyr Lys Glu	
130 135 140	
tac acc cct cag att tac gaa tgg aat ata aga tta cta gga cct cga	480
Tyr Thr Pro Gln Ile Tyr Glu Trp Asn Ile Arg Leu Leu Gly Pro Arg	
145 150 155 160	
gga gga gca tca agt cac aat gat aac aag cga gaa gac aag agc gcc	528

## PhoenixTemp32470.tmp.txt

Gly	Gly	Ala	Ser	Ser 165	His	Asn	Asp	Asn	Lys 170	Arg	Glu	Asp	Lys	Ser 175	Ala		
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Val	Glu	Trp	Lys 180	Ile	Asn	Asp	Gln	Phe 185	Leu	Leu	Asn	Gly	Leu	Ile	Leu		
ctg	ctt	ata	tta	aat	cag	ggg	ttt	gca	gga	ata	cta	tgc	gga	ttc	ata		624
Leu	Leu	Ile 195	Leu	Asn	Gln	Gly	Phe 200	Ala	Gly	Ile	Leu	Cys 205	Gly	Phe	Ile		
agc	tgg	atg	tgt	ggt	att	ttc	atc	gat	aag	ggc	ctg	tta	ccg	gga	tta		672
Ser	Trp	Met	Cys	Gly	Ile	Phe 215	Ile	Asp	Lys	Gly	Leu	Leu	Pro	Gly	Leu		
gac	cat	tgg	aga	ata	ccg	ttt	gta	tcc	tat	ttc	atc	tct	caa	ggc	cca		720
Asp	His	Trp	Arg	Ile	Pro 230	Phe	Val	Ser	Tyr 235	Phe	Ile	Ser	Gln	Gly	Pro 240		
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Pro	Thr	Arg	Ala	Asn 245	Val	Ala	Ile	Ala	Ala 250	Asn	Ala	Ala	Thr	Asn 255	Thr		
gca	gca	gca	aga	gcc	act	gta	gaa	gca	gct	act	gct	gct	aca	gga	aat		816
Ala	Ala	Ala	Arg 260	Ala	Thr	Val	Glu	Ala 265	Ala	Thr	Ala	Ala	Thr 270	Gly	Asn		
gga	aat	aca	ggc	aac	tct	ggg	cct	aca	agc	cta	ccg	ctt	cgt	ggt	tca		864
Gly	Asn	Thr 275	Gly	Asn	Ser	Gly	Pro 280	Thr	Ser	Leu	Pro	Leu	Arg	Gly	Ser		
agc	acc	acc	cct	aca	aat	acc	tct	agc	gct	ggt	gat	gac	gag	cct	ggt		912
Ser	Thr 290	Thr	Pro	Thr	Asn	Thr 295	Ser	Ser	Ala	Gly	Asp 300	Asp	Glu	Pro	Gly		
gcc	gat	gaa	cct	gca	aga	cca	ctg	gga	gtc	caa	ttt	ttg	gat	acc	ttt		960
Ala	Asp	Glu	Pro	Ala	Arg 310	Pro	Leu	Gly	Val	Gln 315	Phe	Leu	Asp	Thr	Phe 320		
agg	aga	tga															969
Arg	Arg																

&lt;210&gt; 2646

&lt;211&gt; 322

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2646

Met	Ser	Met	Glu	Pro 5	Pro	Val	Gly	Leu	Thr 10	Ala	Met	Pro	Val	Thr 15	Lys		
Leu	Ala	Met	Ile	Thr	Thr	Leu	Val	Val	Pro	Leu	Val	Ala	Ser	Ile	Ala		
Ser	Tyr	Lys 35	His	Ile	Phe	Leu	Leu 40	Gln	Tyr	Asp	Pro	Phe 45	Leu	Gln	Thr		
Tyr	His 50	Gln	Tyr	Tyr	Arg	Leu 55	Ile	Phe	Gln	Phe 60	Cys	Ala	Ile	Asn			
Glu	Ser	Asp	Thr	Val	Ile	Leu	Ala	Leu	Ile	Trp	Tyr	Leu	Phe	Arg	His 80		
Leu	Glu	Arg	Leu	Leu 85	Gly	Ser	His	Lys	Tyr 90	Leu	Thr	Leu	Ile	Val 95	Leu		
Ser	Trp	Ala	Tyr 100	Thr	Thr	Leu	Gly	Ile 105	Trp	Gly	Leu	Asn	Leu 110	Ile	Trp		
Asn	Ala	Phe 115	Ile	Gly	Gln	Tyr	Lys 120	Trp	Leu	Gln	Trp	Asn	Asn 125	Phe	Ser		
Thr	Gly 130	Ser	Leu	Pro	Ile	Val 135	Leu	Ser	Leu	Val	His 140	Phe	Tyr	Lys	Glu		
Tyr	Thr	Pro	Gln	Ile	Tyr 150	Glu	Trp	Asn	Ile	Arg 155	Leu	Leu	Gly	Pro	Arg 160		
Gly	Gly	Ala	Ser	Ser 165	His	Asn	Asp	Asn	Lys 170	Arg	Glu	Asp	Lys	Ser 175	Ala		
Val	Glu	Trp	Lys 180	Ile	Asn	Asp	Gln	Phe 185	Leu	Leu	Asn	Gly	Leu 190	Ile	Leu		
Leu	Leu	Ile 195	Leu	Asn	Gln	Gly	Phe 200	Ala	Gly	Ile	Leu	Cys 205	Gly	Phe	Ile		
Ser	Trp 210	Met	Cys	Gly	Ile	Phe 215	Ile	Asp	Lys	Gly	Leu 220	Leu	Pro	Gly	Leu		
Asp	His	Trp	Arg	Ile	Pro 230	Phe	Val	Ser	Tyr 235	Phe	Ile	Ser	Gln	Gly	Pro 240		



## PhoenixTemp32470.tmp.txt

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 Gly Asn Thr 260 Gly Asn Ser Gly Pro 265 Thr Ser Leu Pro Leu Arg Gly Ser  
 Ser Thr Thr 275 Pro Thr Asn Thr 280 Ser Ser Ala Gly Asp 285 Glu Pro Gly  
 Ala 290 Asp Glu Pro Ala Arg 295 Pro Leu Gly Val Gln 300 Phe Leu Asp Thr Phe  
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&lt;210&gt; 2647

&lt;211&gt; 912

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(912)

&lt;400&gt; 2647

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ctg	tgt	atg	gtt	act	ggt	ata	gtt	gtg	cct	gtg	gtg	gcg	gcg	ctt	acg	96
Leu	Cys	Met	Val	Thr	Gly	Ile	Val	Val	Pro	Val	Val	Ala	Ala	Leu	Thr	
			20				25					30				
gag	acg	aag	tat	gtg	ttt	aag	gcg	acc	tac	gat	ccg	ttt	atc	aaa	gag	144
Glu	Thr	Lys	Tyr	Val	Phe	Lys	Ala	Thr	Tyr	Asp	Pro	Phe	Ile	Lys	Glu	
		35					40					45				
tat	ggg	cag	tac	tac	cgg	tac	ctg	acg	tac	cag	ctc	agc	agt	gtc	aat	192
Tyr	Gly	Gln	Tyr	Tyr	Arg	Tyr	Leu	Thr	Tyr	Gln	Leu	Ser	Ser	Val	Asn	
	50					55					60					
gag	aca	gat	gtg	gcg	ctg	ata	gtg	ttg	ctg	ttc	tac	cag	tat	cgg	cag	240
Glu	Thr	Asp	Val	Ala	Leu	Ile	Val	Leu	Leu	Phe	Tyr	Gln	Tyr	Arg	Gln	
	65				70					75					80	
cta	gag	agg	tta	ttt	ggg	aac	gag	aag	tat	ctg	agc	atg	ctg	gcc	atg	288
Leu	Glu	Arg	Leu	Phe	Gly	Asn	Glu	Lys	Tyr	Leu	Ser	Met	Leu	Ala	Met	
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ttg	atc	ttc	tac	caa	ggg	tta	gcc	aca	gtt	tcc	gtg	cac	cta	ctg	ttt	336
Leu	Ile	Phe	Tyr	Gln	Gly	Leu	Ala	Thr	Val	Ser	Val	His	Leu	Leu	Phe	
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aac	aac	ttg	gtg	ggg	ccc	tgg	ctt	ggg	acg	cag	tgg	aat	gag	ctc	gcg	384
Asn	Asn	Leu	Val	Gly	Pro	Trp	Leu	Gly	Thr	Gln	Trp	Asn	Glu	Leu	Ala	
		115				120					125					
agt	ggt	gcg	ttt	gga	gtg	gtg	ata	gga	ctg	ttc	cat	ttc	tac	aag	cag	432
Ser	Gly	Ala	Phe	Gly	Val	Val	Ile	Gly	Leu	Phe	His	Phe	Tyr	Lys	Gln	
	130			135						140						
tat	acg	cct	atc	gtt	tat	gag	ttt	gac	att	gtg	ctg	ggt	gcg	cca	ttg	480
Tyr	Thr	Pro	Ile	Val	Tyr	Glu	Phe	Asp	Ile	Val	Leu	Gly	Ala	Pro	Leu	
	145			150					155						160	
tgg	tcg	cag	ttg	ttc	cac	aag	ggc	gtg	ata	cga	agg	ttt	gat	aac	gag	528
Trp	Ser	Gln	Leu	Phe	His	Lys	Gly	Val	Ile	Arg	Arg	Phe	Asp	Asn	Glu	
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aac	aag	agt	atg	aaa	gtg	cgg	ttg	aat	gac	cag	ttc	atg	gtg	aat	gtg	576
Asn	Lys	Ser	Met	Lys	Val	Arg	Leu	Asn	Asp	Gln	Phe	Met	Val	Asn	Val	
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Leu	Val	Ile	Ile	Leu	Ile	Cys	Asn	Gln	Gly	Ala	Trp	Gly	Pro	Leu	Gln	
	195					200					205					
gcg	ctt	gtg	gcg	tgg	tta	tcg	ggg	ctg	ttc	ctg	gat	atc	ggg	atc	ttg	672
Ala	Leu	Val	Ala	Trp	Leu	Ser	Gly	Leu	Phe	Leu	Asp	Ile	Gly	Ile	Leu	
	210				215					220						
ccc	ggc	ctg	gac	aag	tgg	aga	gtg	ccc	ttt	gcg	cac	tac	atg	ttg	ttt	720
Pro	Gly	Leu	Asp	Lys	Trp	Arg	Val	Pro	Phe	Ala	His	Tyr	Met	Leu	Phe	
	225			230					235						240	
gga	gag	gtc	aaa	aga	ctg	gaa	gtg	ggc	agc	acg	agc	gct	aac	acg	agt	768

PhoenixTemp32470.tmp.txt

Gly	Glu	Val	Lys	Arg	Leu	Glu	Val	Gly	Ser	Thr	Ser	Ala	Asn	Thr	Ser		
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gca	tca	ctg	ggc	ggg	aac	agc	gtc	acg	cag	ctg	gca	aac	aac	tct	gcg		816
Ala	Ser	Leu	Gly	Gly	Asn	Ser	Val	Thr	Gln	Leu	Ala	Asn	Asn	Ser	Ala		
			260					265					270				
tcg	tcg	caa	ctt	gaa	gag	gac	aat	gag	aac	gac	gag	ccc	aac	gac	gag		864
Ser	Ser	Gln	Leu	Glu	Glu	Asp	Asn	Glu	Asn	Asp	Glu	Pro	Asn	Asp	Glu		
		275					280					285					
ccc	gcc	agg	cca	ctt	ggt	gtg	caa	ttc	cta	gac	gca	ttc	aga	cgt			909
Pro	Ala	Arg	Pro	Leu	Gly	Val	Gln	Phe	Leu	Asp	Ala	Phe	Arg	Arg			
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tag																	912

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 <211> 303  
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 <213> Candida glabrata CBS 138

<400> 2648

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			20				25					30					
Glu	Thr	Lys	Tyr	Val	Phe	Lys	Ala	Thr	Tyr	Asp	Pro	Phe	Ile	Lys	Glu		
		35					40					45					
Tyr	Gly	Gln	Tyr	Tyr	Arg	Tyr	Leu	Thr	Tyr	Gln	Leu	Ser	Ser	Val	Asn		
	50					55					60						
Glu	Thr	Asp	Val	Ala	Leu	Ile	Val	Leu	Leu	Phe	Tyr	Gln	Tyr	Arg	Gln		
65					70					75					80		
Leu	Glu	Arg	Leu	Phe	Gly	Asn	Glu	Lys	Tyr	Leu	Ser	Met	Leu	Ala	Met		
				85					90					95			
Leu	Ile	Phe	Tyr	Gln	Gly	Leu	Ala	Thr	Val	Ser	Val	His	Leu	Leu	Phe		
			100					105				110					
Asn	Asn	Leu	Val	Gly	Pro	Trp	Leu	Gly	Thr	Gln	Trp	Asn	Glu	Leu	Ala		
		115					120					125					
Ser	Gly	Ala	Phe	Gly	Val	Val	Ile	Gly	Leu	Phe	His	Phe	Tyr	Lys	Gln		
	130					135					140						
Tyr	Thr	Pro	Ile	Val	Tyr	Glu	Phe	Asp	Ile	Val	Leu	Gly	Ala	Pro	Leu		
145					150					155					160		
Trp	Ser	Gln	Leu	Phe	His	Lys	Gly	Val	Ile	Arg	Arg	Phe	Asp	Asn	Glu		
				165					170					175			
Asn	Lys	Ser	Met	Lys	Val	Arg	Leu	Asn	Asp	Gln	Phe	Met	Val	Asn	Val		
			180					185					190				
Leu	Val	Ile	Ile	Leu	Ile	Cys	Asn	Gln	Gly	Ala	Trp	Gly	Pro	Leu	Gln		
		195					200					205					
Ala	Leu	Val	Ala	Trp	Leu	Ser	Gly	Leu	Phe	Leu	Asp	Ile	Gly	Ile	Leu		
	210					215					220						
Pro	Gly	Leu	Asp	Lys	Trp	Arg	Val	Pro	Phe	Ala	His	Tyr	Met	Leu	Phe		
225					230					235					240		
Gly	Glu	Val	Lys	Arg	Leu	Glu	Val	Gly	Ser	Thr	Ser	Ala	Asn	Thr	Ser		
				245					250					255			
Ala	Ser	Leu	Gly	Gly	Asn	Ser	Val	Thr	Gln	Leu	Ala	Asn	Asn	Ser	Ala		
			260					265					270				
Ser	Ser	Gln	Leu	Glu	Glu	Asp	Asn	Glu	Asn	Asp	Glu	Pro	Asn	Asp	Glu		
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Pro	Ala	Arg	Pro	Leu	Gly	Val	Gln	Phe	Leu	Asp	Ala	Phe	Arg	Arg			
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 <211> 837  
 <212> DNA  
 <213> Kluyveromyces lactis NRRL Y-1140

<220>  
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 <222> (1)..(837)

## PhoenixTemp32470.tmp.txt

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caa ttc cca ata aca aag ata ctg atg att tgt tgt gta ggg gtt gcc      96
Gln Phe Pro Ile Thr Lys Ile Leu Met Ile Cys Cys Val Gly Val Ala
20      25      30
cta aca gca tca tta ttc aat atg aag tat ctg ttc ctt tta caa tat      144
Leu Thr Ala Ser Leu Phe Asn Met Lys Tyr Leu Phe Leu Leu Gln Tyr
35      40      45
gac cca ttt atc gtt gaa tat gga caa tat tgg agg tat ttt acg ttt      192
Asp Pro Phe Ile Val Glu Tyr Gly Gln Tyr Trp Arg Tyr Phe Thr Phe
50      55      60
cag tta ggg agt tta aat gaa agc gat gtt gcc ata atg acc ttg att      240
Gln Leu Gly Ser Leu Asn Glu Ser Asp Val Ala Ile Met Thr Leu Ile
65      70      75
tgg tat cag ttt aga tcg tta gag agg cta ttt gga tca agg aag tac      288
Trp Tyr Gln Phe Arg Ser Leu Glu Arg Leu Phe Gly Ser Arg Lys Tyr
85      90      95
ctt aat atc gtg ata tta tca tgg gct tat aca aca gtg gta ata ttt      336
Leu Asn Ile Val Ile Leu Ser Trp Ala Tyr Thr Thr Val Val Ile Phe
100      105      110
ttg att tcg aat cta ctt aac aag ctt ttg cct gga att tgg tgg gat      384
Leu Ile Ser Asn Leu Leu Asn Lys Leu Leu Pro Gly Ile Trp Trp Asp
115      120      125
caa tac aca aat ggc cca cta cca gta ata ttg tgt ttg act cat ttc      432
Gln Tyr Thr Asn Gly Pro Leu Pro Val Ile Leu Cys Leu Thr His Phe
130      135      140
tac aaa cag tat aca cca agg tta tac gaa ttc aat ata ata atc aac      480
Tyr Lys Gln Tyr Thr Pro Arg Leu Tyr Glu Phe Asn Ile Ile Ile Asn
145      150      155
caa cct ttt ctt ctt cat tct aac acg atc gtt tgg aag ctg aca gat      528
Gln Pro Phe Leu Leu His Ser Asn Thr Ile Val Trp Lys Leu Thr Asp
160      165      170
caa ttt ttc atc cat ggc ctg tta ttc ctt gcc atg gta aat caa ggc      576
Gln Phe Phe Ile His Gly Leu Leu Phe Leu Ala Met Val Asn Gln Gly
175      180      185
gca aca ggg ttg gta atc gga cta ata agt tgg att tgt gct atc ttg      624
Ala Thr Gly Leu Val Ile Gly Leu Ile Ser Trp Ile Cys Ala Ile Leu
190      200      205
atg gat aat ggg cta cta cca ggt act gac tcc ttc caa ttg gcg cct      672
Met Asp Asn Gly Leu Leu Pro Gly Thr Asp Ser Phe Gln Leu Ala Pro
210      215      220
ttc aaa gac agc tgg aac aga agt tct agc aca tta aac aga cca agc      720
Phe Lys Asp Ser Trp Asn Arg Ser Ser Ser Thr Leu Asn Arg Pro Ser
225      230      235
gca gtt atg aca aac gat atg aca tcg gaa gat cta aat gag gaa gag      768
Ala Val Met Thr Asn Asp Met Thr Ser Glu Asp Leu Asn Glu Glu Glu
240      245      250
gcc gaa gaa cct caa gat gaa cct cag cgc act tta ggg gtc cag ttc      816
Ala Glu Glu Pro Gln Asp Glu Pro Gln Arg Thr Leu Gly Val Gln Phe
255      260      265
ttg gat act ttt aga agg tga
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270      275

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<210> 2650

<211> 278

<212> PRT

<213> Kluyveromyces lactis NRRL Y-1140

<400> 2650

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Gln Phe Pro Ile Thr Lys Ile Leu Met Ile Cys Cys Val Gly Val Ala
20      25      30
Leu Thr Ala Ser Leu Phe Asn Met Lys Tyr Leu Phe Leu Gln Tyr
35      40      45
Asp Pro Phe Ile Val Glu Tyr Gly Gln Tyr Trp Arg Tyr Phe Thr Phe

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## PhoenixTemp32470.tmp.txt

50 55 60  
 Gln Leu Gly Ser Leu Asn Glu Ser Asp Val Ala Ile Met Thr Leu Ile  
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 85 90 95  
 Leu Asn Ile Val Ile Leu Ser Trp Ala Tyr Thr Thr Val Val Ile Phe  
 100 105 110  
 Leu Ile Ser Asn Leu Leu Asn Lys Leu Leu Pro Gly Ile Trp Trp Asp  
 115 120 125  
 Gln Tyr Thr Asn Gly Pro Leu Pro Val Ile Leu Cys Leu Thr His Phe  
 130 135 140  
 Tyr Lys Gln Tyr Thr Pro Arg Leu Tyr Glu Phe Asn Ile Ile Ile Asn  
 145 150 155 160  
 Gln Pro Phe Leu Leu His Ser Asn Thr Ile Val Trp Lys Leu Thr Asp  
 165 170 175  
 Gln Phe Phe Ile His Gly Leu Leu Phe Leu Ala Met Val Asn Gln Gly  
 180 185 190  
 Ala Thr Gly Leu Val Ile Gly Leu Ile Ser Trp Ile Cys Ala Ile Leu  
 195 200 205  
 Met Asp Asn Gly Leu Leu Pro Gly Thr Asp Ser Phe Gln Leu Ala Pro  
 210 215 220  
 Phe Lys Asp Ser Trp Asn Arg Ser Ser Ser Thr Leu Asn Arg Pro Ser  
 225 230 235 240  
 Ala Val Met Thr Asn Asp Met Thr Ser Glu Asp Leu Asn Glu Glu Glu  
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 260 265 270  
 Leu Asp Thr Phe Arg Arg  
 275

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 <212> DNA  
 <213> Debaryomyces hansenii CBS767

<220>  
 <221> CDS  
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 1 5 10 15  
 aag aca ata tgt ata gtc agc acg ttg gtg gca ttg ggg ctt tct ata 96  
 Lys Thr Ile Cys Ile Val Ser Thr Leu Val Ala Leu Gly Leu Ser Ile  
 20 25 30  
 ttc cag atg aaa cat tat gtt cgg tta tcg ata gat cca tat ata ttg 144  
 Phe Gln Met Lys His Tyr Val Arg Leu Ser Ile Asp Pro Tyr Ile Leu  
 35 40 45  
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 Glu Tyr Ala Gln Tyr Trp Arg Val Leu Thr Tyr Glu Met Ser Val Ile  
 50 55 60  
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 Asn Glu Ser Asp Tyr Met Leu Cys Val Leu Leu Trp Phe Gln Tyr Lys  
 65 70 75 80  
 aac ttg gag agg ttc tat ggg tcg cgg aaa tac gtg tcg ttg ata gtg 288  
 Asn Leu Glu Arg Phe Tyr Gly Ser Arg Lys Tyr Val Ser Leu Ile Val  
 85 90 95  
 gtg ttt gcg ttg tac aat tcg ata gtg tgt ttt ctt atc atg aat ttg 336  
 Val Phe Ala Leu Tyr Asn Ser Ile Val Cys Phe Leu Ile Met Asn Leu  
 100 105 110  
 ggg caa ttg ggg gtg aat ttt gtg tac tta gta tcg tta att gct 384  
 Gly Gln Leu Gly Val Asn Phe Val Val Tyr Leu Val Ser Leu Ile Ala  
 115 120 125  
 agt ggg gga aag ggg gat att gaa tat aat aca acc gtg ttc aac cag 432  
 Ser Gly Gly Lys Gly Asp Ile Glu Tyr Asn Thr Thr Val Phe Asn Gln  
 130 135 140  
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 Val Ala Leu Gly Pro Leu Gly Ile Leu Ser Ser Phe Tyr Ile Cys Tyr

## PhoenixTemp32470.tmp.txt

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Gly	Ala	Asn	Ile	Pro	Thr	165	Thr	Ser	Tyr	Lys	170	Lys	Ile	Leu	Leu	Ser	175	Lys	
cct	acg	tta	ctg	gac	gat	ggg	gag	gta	cat	cca	tct	aat	tca	agc	aag	576			
Pro	Thr	Leu	Leu	Asp	Asp	180	Gly	Val	His	Pro	Ser	Asn	Ser	Ser	Lys				
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Glu	Leu	Val	Leu	Thr	Asn	His	Phe	Gln	Ile	His	Ile	Ile	Tyr	Thr	Leu				
195							200				205								
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aac	tg	cta	att	ccc	gta	cgt	gtc	ttt	gag	gca	ttc	atg	cat	cct	cgc	768			
Asn	Trp	Leu	Ile	Pro	Val	Arg	Val	Phe	Glu	Ala	Phe	Met	His	Pro	Arg				
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Lys	Phe	Gly	Ser	Ser	Leu	Leu	Ser	Ser	Thr	Arg	Gly	Ile	Arg	Ser	Gly				
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ggc	tac	cag	acc	atc	aac	aat	gct	aac	gct	aat	gca	aat	gag	ctg	att	864			
Gly	Tyr	Gln	Thr	Ile	Asn	Asn	Ala	Asn	Ala	Asn	Ala	Asn	Glu	Leu	Ile				
275							280					285							
gcc	gat	gag	gat	gca	gag	gaa	gtt	cta	gat	gaa	ggc	agg	agc	aat	aac	912			
Ala	Asp	Glu	Asp	Ala	Glu	Glu	Val	Leu	Asp	Glu	Gly	Arg	Ser	Asn	Asn				
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Arg	Ala	His	Glu	Ile	Arg	Ala	Glu	Thr	Pro	Val	Arg	Pro	Leu	Gly	Ser				
305					310					315				320					
cag	ttc	ttg	gac	aca	ttc	aga	acg	tga								987			
Gln	Phe	Leu	Asp	Thr	Phe	Arg	Thr												
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&lt;210&gt; 2652

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;400&gt; 2652

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Phe	Gln	Met	Lys	His	Tyr	Val	Arg	Leu	Ser	Ile	Asp	Pro	Tyr	Ile	Leu
		35					40					45			
Glu	Tyr	Ala	Gln	Tyr	Trp	Arg	Val	Leu	Thr	Tyr	Glu	Met	Ser	Val	Ile
		50				55					60				
Asn	Glu	Ser	Asp	Tyr	Met	Leu	Cys	Val	Leu	Leu	Trp	Phe	Gln	Tyr	Lys
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Asn	Leu	Glu	Arg	Phe	Tyr	Gly	Ser	Arg	Lys	Tyr	Val	Ser	Leu	Ile	Val
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Val	Phe	Ala	Leu	Tyr	Asn	Ser	Ile	Val	Cys	Phe	Leu	Ile	Met	Asn	Leu
		100						105					110		
Gly	Gln	Leu	Gly	Val	Asn	Phe	Val	Val	Tyr	Leu	Val	Ser	Leu	Ile	Ala
		115					120					125			
Ser	Gly	Gly	Lys	Gly	Asp	Ile	Glu	Tyr	Asn	Thr	Thr	Val	Phe	Asn	Gln
		130				135					140				
Val	Ala	Leu	Gly	Pro	Leu	Gly	Ile	Leu	Ser	Ser	Phe	Tyr	Ile	Cys	Tyr
145					150				155					160	
Gly	Ala	Asn	Ile	Pro	Thr	Ser	Tyr	Lys	Phe	Lys	Ile	Leu	Leu	Ser	Lys
				165					170					175	
Pro	Thr	Leu	Leu	Asp	Asp	Gly	Glu	Val	His	Pro	Ser	Asn	Ser	Ser	Lys
			180					185					190		
Glu	Leu	Val	Leu	Thr	Asn	His	Phe	Gln	Ile	His	Ile	Ile	Tyr	Thr	Leu
		195					200					205			
Leu	Leu	Leu	Asn	Asn	Gly	Leu	Gly	Ser	Ile	Ile	Pro	Cys	Leu	Val	Gly
210					215						220				

## PhoenixTemp32470.tmp.txt

Ile Val Ile Gly Lys Leu Tyr Ser Asn Glu Leu Leu Pro Gly Ala Lys  
 225 230 235 240  
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 245 250 255  
 Lys Phe Gly Ser Ser Leu Leu Ser Ser Thr Arg Gly Ile Arg Ser Gly  
 260 265 270  
 Gly Tyr Gln Thr Ile Asn Asn Ala Asn Ala Asn Glu Leu Ile  
 275 280 285  
 Ala Asp Glu Asp Ala Glu Glu Val Leu Asp Glu Gly Arg Ser Asn Asn  
 290 295 300  
 Arg Ala His Glu Ile Arg Ala Glu Thr Pro Val Arg Pro Leu Gly Ser  
 305 310 315 320  
 Gln Phe Leu Asp Thr Phe Arg Thr  
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&lt;210&gt; 2653

&lt;211&gt; 1002

&lt;212&gt; DNA

&lt;213&gt; Candida albicans SC5314

&lt;220&gt;

&lt;221&gt; CDS

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1 5 10 15	
cga tcg ata tgt atg ata tcg act gtt gtg ccg ata atg cta tcg gtg	96
Arg Ser Ile Cys Met Ile Ser Thr Val Val Pro Ile Met Leu Ser Val	
20 25 30	
ttg gct ata aaa tat gtt gtc aag ttt gct atc gat cct tac atc att	144
Leu Ala Ile Lys Tyr Val Val Lys Phe Ala Ile Asp Pro Tyr Ile Ile	
35 40 45	
caa tac aac caa ttc tgg aga gtg act tac caa tta tca gta gtc	192
Gln Tyr Asn Gln Phe Trp Arg Val Val Thr Tyr Gln Leu Ser Val Val	
50 55 60	
aat gaa tca gac tac ttg att aca gta tta tta tgg ttt cag ttc aaa	240
Asn Glu Ser Asp Tyr Leu Ile Thr Val Leu Leu Trp Phe Gln Phe Lys	
65 70 75 80	
gtt tta gag aga ttc tac gga tca cgg aag tat tta agt att ata aca	288
Val Leu Glu Arg Phe Tyr Gly Ser Arg Lys Tyr Leu Ser Ile Ile Thr	
85 90 95	
ttg ttc act gtt tat aat gcg gtt gca tgc cta ttt atc atg agt tta	336
Leu Phe Thr Val Tyr Asn Ala Val Ala Cys Leu Phe Ile Met Ser Leu	
100 105 110	
ggg caa tta ttg ctt tat tac ata tta ttt gtt atc aag gtt ttc att	384
Gly Gln Leu Leu Leu Tyr Tyr Ile Leu Phe Val Ile Lys Val Phe Ile	
115 120 125	
atg ggg tat gat caa ggt agc att cat tat aat gta act ttt tta aat	432
Met Gly Tyr Asp Gln Gly Ser Ile His Tyr Asn Val Thr Phe Leu Asn	
130 135 140	
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Glu Ile Ile Pro Gly Pro Leu Gly Ile Leu Ser Ser Leu Tyr Val Cys	
145 150 155 160	
tac gga gca aac atc ccg gta tca tac tat ttc aag ata tta ttg aag	528
Tyr Gly Ala Asn Ile Pro Val Ser Tyr Tyr Phe Lys Ile Leu Leu Lys	
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gat cca aga aat gca gat caa cct gag aca agc tct cca agt aag gaa	576
Asp Pro Arg Asn Ala Asp Gln Pro Glu Thr Ser Ser Pro Ser Lys Glu	
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tta aat ttg acc aat ctt ttt cct ata cac ata tta tac act att ttg	624
Leu Asn Leu Thr Asn Leu Phe Pro Ile His Ile Leu Tyr Thr Ile Leu	
195 200 205	
ata cta aac aac ggg ttg cgt tca ata att cca tgt cta gtt ggt tta	672
Ile Leu Asn Asn Gly Leu Arg Ser Ile Ile Pro Cys Leu Val Gly Leu	
210 215 220	
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## PhoenixTemp32470.tmp.txt

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Arg	Ala	Gly	Val 260	Trp	Leu	Glu	Ala	Val 265	Arg	Arg	Arg	Leu	Ser 270	Ile	Arg	
tac	gaa	aga	ttg	agc	agt	ggc	gac	tcg	caa	gaa	gca	ctt	gaa	gaa	gaa	864
Tyr	Glu	Arg	Leu	Ser	Ser	Gly	Asp 280	Ser	Gln	Glu	Ala	Leu	Glu	Glu	Glu	
gaa	ctt	aat	gaa	aac	aac	gac	gag	cct	gat	gat	aat	gat	gaa	att	ttg	912
Glu	Leu	Asn	Glu	Asn	Asn	Asp 295	Glu	Pro	Asp	Asp	Asn	Asp	Glu	Ile	Leu	
gat	gag	aca	aga	caa	caa	gag	aac	caa	atc	aga	gca	gaa	act	ccg	gtt	960
Asp	Glu	Thr	Arg	Gln	Gln	Glu	Asn	Gln	Ile	Arg	Ala	Glu	Thr	Pro	Val 320	
305																
cga	cct	ttg	ggc	agt	caa	ttt	ctc	gac	acc	ttc	aga	acg	taa			1002
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&lt;210&gt; 2654

&lt;211&gt; 333

&lt;212&gt; PRT

&lt;213&gt; Candida albicans SC5314

&lt;400&gt; 2654

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Val	Leu	Glu	Arg	Phe 85	Tyr	Gly	Ser	Arg	Lys 90	Tyr	Leu	Ser	Ile	Ile	Thr 95	
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Gly	Gln	Leu	Leu	Leu	Tyr	Tyr	Ile 120	Leu	Phe	Val	Ile	Lys	Val	Phe	Ile	
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Glu 145	Ile	Ile	Pro	Gly	Pro 150	Leu	Gly	Ile	Leu	Ser 155	Ser	Leu	Tyr	Val	Cys 160	
Tyr	Gly	Ala	Asn	Ile 165	Pro	Val	Ser	Tyr	Tyr	Phe 170	Lys	Ile	Leu	Leu	Lys 175	
Asp	Pro	Arg	Asn 180	Ala	Asp	Gln	Pro	Glu 185	Thr	Ser	Ser	Pro	Ser	Lys	Glu	
Leu	Asn	Leu 195	Thr	Asn	Leu	Phe	Pro 200	Ile	His	Ile	Leu	Tyr 205	Thr	Ile	Leu	
Ile	Leu	Asn	Asn	Gly	Leu	Arg 215	Ser	Ile	Ile	Pro	Cys 220	Leu	Val	Gly	Leu	
Leu 225	Ile	Gly	Lys	Leu	Tyr 230	Val	Tyr	Glu	Leu	Leu 235	Pro	Gly	Gly	Ser	Ser 240	
Trp	Leu	Leu	Ser	Asn 245	Thr	Val	Phe	Arg	Leu 250	Phe	Ile	Asn	Pro	Val 255	Lys	
Arg	Ala	Gly	Val 260	Trp	Leu	Glu	Ala	Val 265	Arg	Arg	Arg	Leu	Ser 270	Ile	Arg	
Tyr	Glu	Arg	Leu	Ser	Ser	Gly	Asp 280	Ser	Gln	Glu	Ala	Leu	Glu	Glu	Glu	
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Asp 305	Glu	Thr	Arg	Gln	Gln 310	Glu	Asn	Gln	Ile	Arg 315	Ala	Glu	Thr	Pro	Val 320	
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PhoenixTemp32470.tmp.txt

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Xaa Xaa Xaa Asp Pro Xaa Ile Xaa Xaa Tyr Xaa Gln Tyr Xaa Arg Xaa
35      40      45
Xaa Thr Xaa Gln Xaa Xaa Xaa Xaa Asn Glu Ser Asp Xaa Xaa Xaa Xaa
50      55      60
Xaa Leu Xaa Trp Xaa Gln Xaa Xaa Xaa Xaa Leu Glu Arg Xaa Xaa Gly Ser
65      70      75      80
Xaa Lys Tyr Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Xaa
85      90      95
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165     170     175
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Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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Trp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
245     250     255
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## PhoenixTemp32470.tmp.txt

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Cys Ser Leu Gln Leu Cys Asp	Asp Cys Leu Glu Lys Arg	Ser Thr Thr	
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acc tta tca ttt ctc ata aag	aaa tta aag aga caa aaa	gaa tac caa	4320
Thr Leu Ser Phe Leu Ile Lys	Lys Lys Leu Lys Arg Gln	Lys Glu Tyr Gln	
1425	1430	1435	1440
aca cta aag acc gtg tgc agg	acg tgc agt tat cgt tac	act tcc gat	4368
Thr Leu Lys Thr Val Cys Arg	Thr Cys Ser Tyr Arg Tyr	Thr Ser Asp	

## PhoenixTemp32470.tmp.txt

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      1445      1450      1455
gca ggc atc gaa aat gac cat ata gct agt aaa tgc aat tca tat gac 4416
Ala Gly Ile Glu Asn Asp His Ile Ala Ser Lys Cys Asn Ser Tyr Asp
      1460      1465      1470
tgt cca gta ttt tac tct cgt gtc aaa gca gaa aga tac ttg aga gat 4464
Cys Pro Val Phe Tyr Ser Arg Val Lys Ala Glu Arg Tyr Leu Arg Asp
      1475      1480      1485
aat caa tct gtt caa agg gaa gaa gca tta ata tct cta aat gat tgg 4512
Asn Gln Ser Val Gln Arg Glu Glu Ala Leu Ile Ser Leu Asn Asp Trp
      1490      1495      1500
taa
4515

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&lt;210&gt; 2662

&lt;211&gt; 1504

&lt;212&gt; PRT

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;400&gt; 2662

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Met Ser Arg Glu Ser Asn Asp Thr Ile Gln Ser Asp Thr Val Arg Ser
1      5      10      15
Ser Ser Lys Ser Asp Tyr Phe Arg Ile Gln Leu Asn Asn Gln Asp Tyr
20      25      30
Tyr Met Ser Lys Pro Thr Phe Leu Asp Pro Ser His Gly Glu Ser Leu
35      40      45
Pro Leu Asn Gln Phe Ser Gln Val Pro Asn Ile Arg Val Phe Gly Ala
50      55      60
Leu Pro Thr Gly His Gln Val Leu Cys His Val His Gly Ile Leu Pro
65      70      75      80
Tyr Met Phe Ile Lys Tyr Asp Gly Gln Ile Thr Asp Thr Ser Thr Leu
85      90      95
Arg His Gln Arg Cys Ala Gln Val His Lys Thr Leu Glu Val Lys Ile
100      105      110
Arg Ala Ser Phe Lys Arg Lys Lys Asp Asp Lys His Asp Leu Ala Gly
115      120      125
Asp Lys Leu Gly Asn Leu Asn Phe Val Ala Asp Val Ser Val Val Lys
130      135      140
Gly Ile Pro Phe Tyr Gly Tyr His Val Gly Trp Asn Leu Phe Tyr Lys
145      150      155      160
Ile Ser Leu Leu Asn Pro Ser Cys Leu Ser Arg Ile Ser Glu Leu Ile
165      170      175
Arg Asp Gly Lys Ile Phe Gly Lys Lys Phe Glu Ile Tyr Glu Ser His
180      185      190      195
Ile Pro Tyr Leu Leu Gln Trp Thr Ala Asp Phe Asn Leu Phe Gly Cys
200      205      210
Ser Trp Ile Asn Val Asp Arg Cys Tyr Phe Arg Ser Pro Val Leu Asn
215      220      225
Ser Ile Leu Asp Ile Asp Lys Leu Thr Ile Asn Asp Asp Leu Gln Leu
230      235      240
Leu Leu Asp Arg Phe Cys Asp Phe Lys Cys Asn Val Leu Ser Arg Arg
245      250      255
Asp Phe Pro Arg Val Gly Asn Gly Leu Ile Glu Ile Asp Ile Leu Pro
260      265      270
Gln Phe Ile Lys Asn Arg Glu Lys Leu Gln His Arg Asp Ile His His
275      280      285
Asp Phe Leu Glu Lys Leu Gly Asp Ile Ser Asp Ile Pro Val Lys Pro
290      295      300
Tyr Val Ser Ser Ala Arg Asp Met Ile Asn Glu Leu Thr Met Gln Arg
305      310      315      320
Glu Glu Leu Ser Leu Lys Glu Tyr Lys Glu Pro Pro Glu Thr Lys Arg
325      330      335
His Val Ser Gly His Gln Trp Gln Ser Gly Glu Phe Glu Ala Phe
340      345      350
Tyr Lys Lys Ala Gln His Lys Thr Ser Thr Phe Asp Gly Gln Ile Pro
355      360      365
Asn Phe Glu Asn Phe Ile Asp Lys Asn Gln Lys Phe Ser Ala Ile Asn
370      375      380
Thr Pro Tyr Glu Ala Leu Pro Gln Leu Trp Pro Arg Leu Pro Gln Ile

```

## PhoenixTemp32470.tmp.txt

385	Glu	Ile	Asn	Asn	Asn	390	Ser	Met	Gln	Asp	Lys	395	Lys	Asn	Asp	Asp	Gln	400	Val
					405						410						415		
	Asn	Ala	Ser	Phe	Thr	Glu	Tyr	Glu	Ile	Cys	Gly	Val	Asp	Asn	Asp	Asn	Glu	Asn	
				420					425							430			
	Glu	Gly	Val	Lys	Gly	Ser	Asn	Ile	Lys	Ser	Arg	Ser	Tyr	Ser	Trp	Leu			
			435					440											
	Pro	Glu	Ser	Ile	Ala	Ser	Pro	Lys	Asp	Ser	Thr	Ile	Leu	Leu	Asp	His			
		450					455					460							
	Gln	Thr	Lys	Tyr	His	Asn	Thr	Ile	Asn	Phe	Ser	Met	Asp	Cys	Ala	Met			
	465					470					475					480			
	Thr	Gln	Asn	Met	Ala	Ser	Lys	Arg	Lys	Leu	Arg	Ser	Ser	Val	Ser	Ala			
				485						490						495			
	Asn	Lys	Thr	Ser	Leu	Leu	Ser	Arg	Lys	Arg	Lys	Lys	Val	Met	Ala	Ala			
				500						505									
	Gly	Leu	Arg	Tyr	Gly	Lys	Arg	Ala	Phe	Val	Tyr	Gly	Glu	Pro	Pro	Phe			
			515					520					525						
	Gly	Tyr	Gln	Asp	Ile	Leu	Asn	Lys	Leu	Glu	Asp	Glu	Gly	Phe	Pro	Lys			
							535					540							
	Ile	Asp	Tyr	Lys	Asp	Pro	Phe	Phe	Ser	Asn	Pro	Val	Asp	Leu	Glu	Asn			
	545					550					555					560			
	Lys	Pro	Tyr	Ala	Tyr	Ala	Gly	Lys	Arg	Phe	Glu	Ile	Ser	Ser	Thr	His			
				565						570						575			
	Val	Ser	Thr	Arg	Ile	Pro	Val	Gln	Phe	Gly	Gly	Glu	Thr	Val	Ser	Val			
				580					585					590					
	Tyr	Asn	Lys	Pro	Thr	Phe	Asp	Met	Phe	Ser	Ser	Trp	Lys	Tyr	Ala	Leu			
			595					600					605						
	Lys	Pro	Pro	Thr	Tyr	Asp	Ala	Val	Gln	Lys	Trp	Tyr	Asn	Lys	Val	Pro			
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	625					630					635					640			
	His	Ser	Lys	Phe	Leu	Tyr	Lys	Phe	Ala	Ser	Asp	Val	Ser	Gly	Lys	Gln			
				645						650					655				
	Lys	Arg	Lys	Lys	Ser	Ser	Val	His	Asp	Ser	Leu	Thr	His	Leu	Thr	Leu			
				660					665					670					
	Glu	Ile	His	Ala	Asn	Thr	Arg	Ser	Asp	Lys	Ile	Pro	Asp	Pro	Ala	Ile			
			675					680					685						
	Asp	Glu	Val	Ser	Met	Ile	Ile	Trp	Cys	Leu	Glu	Glu	Glu	Thr	Phe	Pro			
		690				695					700								
	Leu	Asp	Leu	Asp	Ile	Ala	Tyr	Glu	Gly	Ile	Met	Ile	Val	His	Lys	Ala			
	705					710					715					720			
	Ser	Glu	Asp	Ser	Thr	Phe	Pro	Thr	Lys	Ile	Gln	His	Cys	Ile	Asn	Glu			
				725						730					735				
	Ile	Pro	Val	Met	Phe	Tyr	Glu	Ser	Glu	Phe	Glu	Met	Phe	Glu	Ala	Leu			
				740					745					750					
	Thr	Asp	Leu	Val	Leu	Leu	Leu	Asp	Pro	Asp	Ile	Leu	Ser	Gly	Phe	Glu			
			755					760					765						
	Ile	His	Asn	Phe	Ser	Trp	Gly	Tyr	Ile	Ile	Glu	Arg	Cys	Gln	Lys	Ile			
						775					780								
	His	Gln	Phe	Asp	Ile	Val	Arg	Glu	Leu	Ala	Arg	Val	Lys	Cys	Gln	Ile			
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	Lys	Thr	Lys	Leu	Ser	Asp	Thr	Trp	Gly	Tyr	Ala	His	Ser	Ser	Gly	Ile			
				805						810					815				
	Met	Ile	Thr	Gly	Arg	His	Met	Ile	Asn	Ile	Trp	Arg	Ala	Leu	Arg	Ser			
				820					825					830					
	Asp	Val	Asn	Leu	Thr	Gln	Tyr	Thr	Ile	Glu	Ser	Ala	Ala	Phe	Asn	Ile			
			835					840					845						
	Leu	His	Lys	Arg	Leu	Pro	His	Phe	Ser	Phe	Glu	Ser	Leu	Thr	Asn	Met			
						855						860							
	Trp	Asn	Ala	Lys	Lys	Ser	Thr	Thr	Glu	Leu	Lys	Thr	Val	Leu	Asn	Tyr			
	865					870					875					880			
	Trp	Leu	Ser	Arg	Ala	Gln	Ile	Asn	Ile	Gln	Leu	Leu	Arg	Lys	Gln	Asp			
				885						890					895				
	Tyr	Ile	Ala	Arg	Asn	Ile	Glu	Gln	Ala	Arg	Leu	Ile	Gly	Ile	Asp	Phe			
				900					905					910					
	His	Ser	Val	Tyr	Tyr	Arg	Gly	Ser	Gln	Phe	Lys	Val	Glu	Ser	Phe	Leu			
			915					920					925						
	Ile	Arg	Ile	Cys	Lys	Ser	Glu	Ser	Phe	Ile	Leu	Leu	Ser	Pro	Gly	Lys			
						935						940							

## PhoenixTemp32470.tmp.txt

Lys Asp Val Arg Lys Gln Lys Ala Leu Glu Cys Val Pro Leu Val Met  
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 Glu Pro Glu Ser Ala Phe Tyr Lys Ser Pro Leu Ile Val Leu Asp Phe  
 965 970 975  
 Gln Ser Leu Tyr Pro Ser Ile Met Ile Gly Tyr Asn Tyr Cys Tyr Ser  
 980 985 990  
 Thr Met Ile Gly Arg Val Arg Glu Ile Asn Leu Thr Glu Asn Asn Leu  
 995 1000 1005  
 Gly Val Ser Lys Phe Ser Leu Pro Arg Asn Ile Leu Ala Leu Leu Lys  
 1010 1015 1020  
 Asn Asp Val Thr Ile Ala Pro Asn Gly Val Val Tyr Ala Lys Thr Ser  
 1025 1030 1035 1040  
 Val Arg Lys Ser Thr Leu Ser Lys Met Leu Thr Asp Ile Leu Asp Val  
 1045 1050 1055  
 Arg Val Met Ile Lys Lys Thr Met Asn Glu Ile Gly Asp Asp Asn Thr  
 1060 1065 1070  
 Thr Leu Lys Arg Leu Leu Asn Asn Lys Gln Leu Ala Leu Lys Leu Leu  
 1075 1080 1085  
 Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met  
 1090 1095 1100  
 Pro Cys Ser Asp Leu Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr  
 1105 1110 1115 1120  
 Leu Glu Lys Ala Ile Asp Ile Ile Glu Lys Asp Glu Thr Trp Asn Ala  
 1125 1130 1135  
 Lys Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu Pro Gly  
 1140 1145 1150  
 Lys Thr Ala Ile Glu Ala Phe Ser Ile Gly His Ala Met Ala Glu Arg  
 1155 1160 1165  
 Val Thr Gln Asn Asn Pro Lys Pro Ile Phe Leu Lys Phe Glu Lys Val  
 1170 1175 1180  
 Tyr His Pro Ser Ile Leu Ile Ser Lys Lys Arg Tyr Val Gly Phe Ser  
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 Tyr Glu Ser Pro Ser Gln Thr Leu Pro Ile Phe Asp Ala Lys Gly Ile  
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 Glu Thr Val Arg Asp Gly Ile Pro Ala Gln Gln Lys Ile Ile Glu  
 1220 1225 1230  
 Lys Cys Ile Arg Leu Leu Phe Gln Thr Lys Asp Leu Ser Lys Ile Lys  
 1235 1240 1245  
 Lys Tyr Leu Gln Asn Glu Phe Phe Lys Ile Gln Ile Gly Lys Val Ser  
 1250 1255 1260  
 Ala Gln Asp Phe Cys Phe Ala Lys Glu Val Lys Leu Gly Ala Tyr Lys  
 1265 1270 1275 1280  
 Ser Glu Lys Thr Ala Pro Ala Gly Ala Val Val Val Lys Arg Arg Ile  
 1285 1290 1295  
 Asn Glu Asp His Arg Ala Glu Pro Gln Tyr Lys Glu Arg Ile Pro Tyr  
 1300 1305 1310  
 Leu Val Val Lys Gly Lys Gln Gly Gln Leu Leu Arg Glu Arg Cys Val  
 1315 1320 1325  
 Ser Pro Glu Glu Phe Leu Glu Gly Glu Asn Leu Glu Leu Asp Ser Glu  
 1330 1335 1340  
 Tyr Tyr Ile Asn Lys Ile Leu Ile Pro Pro Leu Asp Arg Leu Phe Asn  
 1345 1350 1355 1360  
 Leu Ile Gly Ile Asn Val Gly Asn Trp Ala Gln Glu Ile Val Lys Ser  
 1365 1370 1375  
 Lys Arg Ala Ser Thr Thr Thr Thr Lys Val Glu Asn Ile Thr Arg Val  
 1380 1385 1390  
 Gly Thr Ser Ala Thr Cys Cys Asn Cys Gly Glu Glu Leu Thr Lys Ile  
 1395 1400 1405  
 Cys Ser Leu Gln Leu Cys Asp Asp Cys Leu Glu Lys Arg Ser Thr Thr  
 1410 1415 1420  
 Thr Leu Ser Phe Leu Ile Lys Lys Leu Lys Arg Gln Lys Glu Tyr Gln  
 1425 1430 1435 1440  
 Thr Leu Lys Thr Val Cys Arg Thr Cys Ser Tyr Arg Tyr Thr Ser Asp  
 1445 1450 1455  
 Ala Gly Ile Glu Asn Asp His Ile Ala Ser Lys Cys Asn Ser Tyr Asp  
 1460 1465 1470  
 Cys Pro Val Phe Tyr Ser Arg Val Lys Ala Glu Arg Tyr Leu Arg Asp  
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 Asn Gln Ser Val Gln Arg Glu Glu Ala Leu Ile Ser Leu Asn Asp Trp

1490

1495

1500

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<220>  
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 gtc atc gcg gat ttc tat atg gag aag ccg cag ttc gga atg gat ccg 96  
 Val Ile Ala Asp Phe Tyr Met Glu Lys Pro Gln Phe Gly Met Asp Pro  
 20 25 30  
 tgc tat tcg gag ctg cgc ggc aaa gaa atc aag cgg gtg cca gtg att 144  
 Cys Tyr Ser Glu Leu Arg Gly Lys Glu Ile Lys Arg Val Pro Val Ile  
 35 40 45  
 cga gtg ttt ggc ggc aac tcc aga ggc cag aag acc tgc atg cat gta 192  
 Arg Val Phe Gly Gly Asn Ser Arg Gly Gln Lys Thr Cys Met His Val  
 50 55 60  
 cac gga gtt ttc ccc tat cta tac att ccg tat gac aag aag gat ttt 240  
 His Gly Val Phe Pro Tyr Leu Tyr Ile Pro Tyr Asp Lys Lys Asp Phe  
 65 70 75 80  
 gag tcc ctg gag cgg ggc atc ctg cag atg gcc atg cac ctg gac aag 288  
 Glu Ser Leu Glu Arg Gly Ile Leu Gln Met Ala Met His Leu Asp Lys  
 85 90 95  
 gcc atc aac ata tcc ttg ggt caa ggc agc tcc aac gcc cag cat gtg 336  
 Ala Ile Asn Ile Ser Leu Gly Gln Gly Ser Ser Asn Ala Gln His Val  
 100 105 110  
 ttc aaa att cag ctg gtc aag ggc ata ccc ttc tat ggc tac cat cga 384  
 Phe Lys Ile Gln Leu Val Lys Gly Ile Pro Phe Tyr Gly Tyr His Arg  
 115 120 125  
 gtg gaa cac cag ttc ctc aag atc tac atg ttc aat ccc cgg ttc gta 432  
 Val Glu His Gln Phe Leu Lys Ile Tyr Met Phe Asn Pro Arg Phe Val  
 130 135 140  
 cgc cgc gcc gcc aac ctt ctc caa agc ggc gcc att ctg agc aag aac 480  
 Arg Arg Ala Ala Asn Leu Leu Gln Ser Gly Ala Ile Leu Ser Lys Asn  
 145 150 155 160  
 ttc agt ccg cac gag tcg cat gtg ccc tac att ctg cag ttt atg atc 528  
 Phe Ser Pro His Glu Ser His Val Pro Tyr Ile Leu Gln Phe Met Ile  
 165 170 175  
 gac tac aat ctg tac ggt atg agc tat gtg cat gtc ccg ctg gag caa 576  
 Asp Tyr Asn Leu Tyr Gly Met Ser Tyr Val His Val Pro Leu Glu Gln  
 180 185 190  
 gcg cag ctt ctg gac atc aca acc gct aag aaa gtg gcc tgc agt gct 624  
 Ala Gln Leu Leu Asp Ile Thr Thr Ala Lys Lys Val Ala Cys Ser Ala  
 195 200 205  
 tta gag gtg gat gtc agc tcg aac ttc ata ctg aat cgg ttc cag ctg 672  
 Leu Glu Val Asp Val Ser Ser Asn Phe Ile Leu Asn Arg Phe Gln Leu  
 210 215 220  
 gtg gcg aag agt aag agc aac cac act aac ccc ggc atc gag gcc atc 720  
 Val Ala Lys Ser Lys Ser Asn His Thr Asn Pro Gly Ile Glu Ala Ile  
 225 230 235 240  
 tgg aat gat gag aaa ttg cgc cga cag aaa ctt gtc gag aag cac acc 768  
 Trp Asn Asp Glu Lys Leu Arg Arg Gln Lys Leu Val Glu Lys His Thr  
 245 250 255  
 gat gct ggc gat gag gag aag gct gaa gcg gtg cca gta ttg gag tta 816  
 Asp Ala Gly Asp Glu Glu Lys Ala Glu Ala Val Pro Val Leu Glu Leu  
 260 265 270  
 ccg cca aca cag gag cgg cat caa att gaa atc gcc gaa agc gat atc 864  
 Pro Pro Thr Gln Glu Arg His Gln Ile Glu Ile Ala Glu Ser Asp Ile  
 275 280 285  
 ttc tac cgc acc gct ctg gag agc aag ctg atg aca ctg gag cag tcc 912  
 Phe Tyr Arg Thr Ala Leu Ser Lys Leu Met Thr Leu Glu Gln Ser  
 290 295 300

## PhoenixTemp32470.tmp.txt

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Thr	Leu	Ser	Glu	Gln	Thr	Leu	Ser	Asp	Gln	Thr	Ile	Leu	Pro	Gln	Ala	
305					310					315					320	
acc	atg	cag	acc	acc	atg	ccc	ggc	aca	aag	gca	cag	aaa	cgc	agg	ttt	1008
Thr	Met	Gln	Thr	Thr	Met	Pro	Gly	Thr	Lys	Ala	Gln	Lys	Arg	Arg	Phe	
				325					330					335		
aac	ttg	caa	aaa	ctt	cta	gcc	aac	gcc	ggt	tat	ccg	gag	gaa	tgc	tca	1056
Asn	Leu	Gln	Lys	Leu	Leu	Ala	Asn	Ala	Val	Tyr	Pro	Glu	Glu	Cys	Ser	
			340					345					350			
cag	gat	cag	cag	caa	ctg	ctg	ggt	aat	gct	tcc	ttc	ata	caa	aac	cat	1104
Gln	Asp	Gln	Gln	Gln	Leu	Leu	Val	Asn	Ala	Ser	Phe	Ile	Gln	Asn	His	
			355				360					365				
ggt	acc	tgc	ggc	tac	agc	agc	agt	gtc	agt	ttg	tca	acc	tcc	aag	gat	1152
Val	Thr	Cys	Gly	Tyr	Ser	Ser	Ser	Val	Ser	Leu	Ser	Thr	Ser	Lys	Asp	
	370					375					380					
gag	tcc	gat	gac	ttg	gac	gaa	act	gta	gtg	gat	gag	gaa	cta	ata	ctg	1200
Glu	Ser	Asp	Asp	Leu	Asp	Glu	Thr	Val	Val	Asp	Glu	Glu	Leu	Ile	Leu	
385					390					395					400	
agc	ctc	aca	cag	cct	cat	gga	gcg	ata	ccc	cat	gat	gcc	acc	ttg	agg	1248
Ser	Leu	Thr	Gln	Pro	His	Gly	Ala	Ile	Pro	His	Asp	Ala	Thr	Leu	Arg	
				405					410					415		
gag	gag	gat	ttg	gaa	ctt	ttg	gac	gcg	ttg	cag	ctg	ttg	gag	gag	cag	1296
Glu	Glu	Asp	Leu	Glu	Leu	Leu	Asp	Ala	Leu	Gln	Leu	Leu	Glu	Glu	Gln	
			420					425					430			
aat	gaa	agt	gaa	tcg	cat	gtg	gac	tta	gac	agt	tcg	ttg	gct	cca	ttg	1344
Asn	Glu	Ser	Glu	Ser	His	Val	Asp	Leu	Asp	Ser	Ser	Leu	Ala	Pro	Leu	
			435			440						445				
tcg	caa	cat	aaa	aag	ttc	gaa	ctt	aca	ccc	gaa	ttg	ttg	gac	aag	gag	1392
Ser	Gln	His	Lys	Lys	Phe	Glu	Leu	Thr	Pro	Glu	Leu	Leu	Asp	Lys	Glu	
			450			455					460					
acc	gca	gct	act	gct	gct	ctt	ttc	gac	gaa	gat	ggt	gac	tcc	gac	gag	1440
Thr	Ala	Ala	Thr	Ala	Ala	Leu	Phe	Asp	Glu	Asp	Val	Asp	Ser	Asp	Glu	
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gat	gcc	gac	caa	gaa	acc	cga	cat	gac	ttc	tct	acc	gtc	cta	gac	gat	1488
Asp	Ala	Asp	Gln	Glu	Thr	Arg	His	Asp	Phe	Ser	Thr	Val	Leu	Asp	Asp	
				485					490					495		
gtc	gat	gag	ttg	ttg	ctt	aag	tta	aca	caa	agt	cag	cct	gcg	gaa	tcg	1536
Val	Asp	Glu	Leu	Leu	Leu	Lys	Leu	Thr	Gln	Ser	Gln	Pro	Ala	Glu	Ser	
			500				505						510			
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Lys	Glu	Leu	Lys	Ala	Ser	Ser	Lys	Leu	Pro	Gln	Ile	Asp	Gly	Ala	Asp	
			515				520					525				
gat	cgc	cta	caa	agg	acc	ccc	att	aaa	tcg	atc	agc	tct	aag	tca	aag	1632
Asp	Arg	Leu	Gln	Arg	Thr	Pro	Ile	Lys	Ser	Ile	Ser	Ser	Lys	Ser	Lys	
			530			535					540					
tca	agt	cct	tca	aag	act	cca	aca	acg	cca	ata	ggt	cag	aaa	agt	ctt	1680
Ser	Ser	Pro	Ser	Lys	Thr	Pro	Thr	Thr	Pro	Ile	Gly	Gln	Lys	Ser	Leu	
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ccc	aaa	tcg	cca	cgt	act	ccg	aaa	acc	agt	gca	gcc	aag	aaa	tat	gcg	1728
Pro	Lys	Ser	Pro	Arg	Thr	Pro	Lys	Thr	Ser	Ala	Ala	Lys	Lys	Tyr	Ala	
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Pro	Leu	Ala	Leu	Thr	Ile	Gly	Ser	Ser	Ser	Lys	Lys	Ser	Pro	His		
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Gln	Gln	Glu	Asn	Ser	Val	Ser	Glu	Gln	Ile	Glu	Tyr	Leu	Glu	Ser	Lys	
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cca	aaa	aag	tct	gat	gaa	act	gca	cga	agc	tgt	gac	aag	tta	caa		1872
Pro	Lys	Lys	Ser	Asp	Glu	Thr	Ala	Arg	Ser	Cys	Asp	Glu	Lys	Leu	Gln	
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cgt	gag	cta	att	cca	cag	gaa	cca	gct	ggt	att	tcg	cct	gga	gat	tca	1920
Arg	Glu	Leu	Ile	Pro	Gln	Glu	Pro	Ala	Gly	Ile	Ser	Pro	Gly	Asp	Ser	
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gca	aac	tcc	acg	gag	gag	atc	aca	ttt	agt	cca	tgc	cat	gat	gag	gct	1968
Ala	Asn	Ser	Thr	Glu	Glu	Ile	Thr	Phe	Ser	Pro	Cys	His	Asp	Glu	Ala	
				645					650					655		
atc	gaa	tcc	gac	acg	gaa	agc	gat	tat	ata	gtc	acc	aaa	ctt	cgt	aaa	2016
Ile	Glu	Ser	Asp	Thr	Glu	Ser	Asp	Tyr	Ile	Val	Thr	Lys	Leu	Arg	Lys	
			660					665					670			



## PhoenixTemp32470.tmp.txt

aca	ccc	aac	ttg	aaa	cg	ctt	cga	tgg	agc	att	cgg	tcg	gag	ttg	ctg	2064
Thr	Pro	Asn	Leu	Lys	Arg	Leu	Arg	Trp	Ser	Ile	Arg	Ser	Glu	Leu	Leu	
		675					680					685				
aac	aaa	caa	ttt	act	ccc	agt	tca	ggc	ata	aga	ccc	cct	gag	act	gag	2112
Asn	Lys	Gln	Phe	Thr	Pro	Ser	Ser	Gly	Ile	Arg	Pro	Pro	Glu	Thr	Glu	
	690					695					700					
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Thr	Thr	Pro	Gln	Leu	Ser	Pro	Lys	Ser	Asn	Glu	Ser	Asn	Thr	Pro	Glu	
705					710					715					720	
ctg	atg	cga	agt	ttc	tat	gag	cat	tcg	ctg	att	gtg	aac	agt	ccg	tcg	2208
Leu	Met	Arg	Ser	Phe	Tyr	Glu	His	Ser	Leu	Ile	Val	Asn	Ser	Pro	Ser	
				725					730					735		
gtc	ttc	agt	gac	ttc	ttg	gat	agc	ccc	gag	ata	cat	atg	gat	tct	cct	2256
Val	Phe	Ser	Asp	Phe	Leu	Asp	Ser	Pro	Glu	Ile	His	Met	Asp	Ser	Pro	
			740					745					750			
agg	tct	gct	cct	cca	tct	ccc	gat	agc	aac	tcg	ttc	gtg	att	gcc	ccc	2304
Arg	Ser	Ala	Pro	Pro	Ser	Pro	Asp	Ser	Asn	Ser	Phe	Val	Ile	Ala	Pro	
		755					760					765				
ttg	gag	ctg	cct	cca	tcc	tac	gat	gaa	gtg	ggt	agc	ggg	agc	cg	aaa	2352
Leu	Glu	Leu	Pro	Pro	Ser	Tyr	Asp	Glu	Val	Val	Ser	Gly	Ser	Arg	Lys	
	770					775					780					
atg	gac	ata	ccc	gag	tac	gag	ttc	caa	aag	cca	tac	tac	agc	aat	ccc	2400
Met	Asp	Ile	Pro	Glu	Tyr	Glu	Phe	Gln	Lys	Pro	Tyr	Tyr	Ser	Asn	Pro	
785					790					795					800	
tcc	gat	gtg	agc	aag	gtg	acg	gag	gtg	ggc	ttc	ctg	gtg	ctc	cac	att	2448
Ser	Asp	Val	Ser	Lys	Val	Thr	Glu	Val	Gly	Phe	Leu	Val	Leu	His	Ile	
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ccg	ggg	aac	aag	cta	aat	gac	tgt	gat	ccc	ttc	cag	agc	ata	ctg	ggc	2496
Pro	Gly	Asn	Lys	Leu	Asn	Asp	Cys	Asp	Pro	Phe	Gln	Ser	Ile	Leu	Gly	
			820					825					830			
aat	gat	cgt	ggc	ctg	gcc	tcc	tgg	cgt	cgt	cgg	caa	ctg	ata	gcc	att	2544
Asn	Asp	Arg	Gly	Leu	Ala	Ser	Trp	Arg	Arg	Arg	Gln	Leu	Ile	Ala	Ile	
		835					840					845				
ggt	ggc	ctg	gca	atg	ttg	cag	cga	cat	cgg	gga	gaa	caa	aaa	gta	cgg	2592
Gly	Gly	Leu	Ala	Met	Leu	Gln	Arg	His	Arg	Gly	Glu	Gln	Lys	Val	Arg	
	850					855					860					
gag	tat	ttc	agc	acg	caa	caa	aga	ata	gca	atc	gag	cca	gca	caa	cta	2640
Glu	Tyr	Phe	Ser	Thr	Gln	Gln	Arg	Ile	Ala	Ile	Glu	Pro	Ala	Gln	Leu	
865					870				875						880	
gca	ccc	acc	tgg	cag	gaa	gcc	aag	atc	tgg	ttg	aaa	gcc	aag	gaa	ctc	2688
Ala	Pro	Thr	Trp	Gln	Glu	Ala	Lys	Ile	Trp	Leu	Lys	Ala	Lys	Glu	Leu	
				885					890					895		
ctt	cgt	caa	cga	gag	gaa	cca	aaa	aag	tcc	tct	gat	gac	ata	gac	agc	2736
Leu	Arg	Gln	Arg	Glu	Glu	Pro	Lys	Lys	Ser	Ser	Asp	Asp	Ile	Asp	Ser	
			900					905					910			
ccc	atc	aag	atc	aag	cgg	cag	aag	atc	act	atg	atg	ctg	cag	gct	gag	2784
Pro	Ile	Lys	Ile	Lys	Arg	Gln	Lys	Ile	Thr	Met	Met	Leu	Gln	Ala	Glu	
		915					920					925				
gaa	ggc	gat	ggc	gga	agt	ggc	gat	gaa	gat	gct	ggt	gag	gaa	ctc	gat	2832
Glu	Gly	Asp	Gly	Gly	Ser	Gly	Asp	Glu	Asp	Ala	Gly	Glu	Glu	Leu	Asp	
	930					935					940					
tgc	agt	cta	agt	cta	acg	ccc	ttg	tcc	caa	gct	aag	gat	aaa	tgc	aag	2880
Cys	Ser	Leu	Ser	Leu	Thr	Pro	Leu	Ser	Gln	Ala	Lys	Asp	Lys	Cys	Lys	
945					950					955					960	
gca	acc	cct	acc	agt	agc	aaa	gcc	aga	gaa	aca	gga	aag	agt	cg	ctt	2928
Ala	Thr	Pro	Thr	Ser	Ser	Lys	Ala	Arg	Glu	Thr	Gly	Lys	Ser	Arg	Leu	
				965					970					975		
aag	cg	gga	act	agg	ctc	agc	ttc	ata	gga	agc	cag	gac	gag	gaa	cca	2976
Lys	Arg	Gly	Thr	Arg	Leu	Ser	Phe	Ile	Gly	Ser	Gln	Asp	Glu	Glu	Pro	
			980					985					990			
cca	agc	tcg	cag	tcc	agc	gaa	cag	agc	gtc	tcc	agt	agt	gcg	gcc	cag	3024
Pro	Ser	Ser	Gln	Ser	Ser	Glu	Gln	Ser	Val	Ser	Ser	Ser	Ala	Ala	Gln	
			995				1000					1005				
gcg	gag	cta	gat	cgt	agt	tcc	ttt	ctg	cg	cag	tta	gag	ggc	agt	agc	3072
Ala	Glu	Leu	Asp	Arg	Ser	Ser	Phe	Leu	Arg	Gln	Leu	Glu	Gly	Ser	Ser	
	1010					1015					1020					
cag	gat	agg	cag	cac	gac	ctc	agc	ttt	gga	ctt	agc	cac	gct	acc	ttg	3120
Gln	Asp	Arg	Gln	His	Asp	Leu	Ser	Phe	Gly	Leu	Ser	His	Ala	Thr	Leu	
1025					1030					1035					1040	

## PhoenixTemp32470.tmp.txt

gac aac acg ttc ggg ttc aag gtt aat ttg gag aat ctg cag cag gcc 3168  
 Asp Asn Thr Phe Gly Phe Lys Val Asn Leu Glu Asn Leu Gln Gln Ala  
 1045 1050 1055  
 aaa gcc gac att gat tgc aac cac ctg aca atc ata acg tta gag gtg 3216  
 Lys Ala Asp Ile Asp Cys Asn His Leu Thr Ile Ile Thr Leu Glu Val  
 1060 1065 1070  
 ttt gtg tcc acg cga ggt gat ctc caa cca gat ccg atg cac gac gag 3264  
 Phe Val Ser Thr Arg Gly Asp Leu Gln Pro Asp Pro Met His Asp Glu  
 1075 1080 1085  
 att cgg tgt ttg ttt tat gct atc gaa cac agt ttg ccg gat gaa aag 3312  
 Ile Arg Cys Leu Phe Tyr Ala Ile Glu His Ser Leu Pro Asp Glu Lys  
 1090 1095 1100  
 ctg cct agc aaa gcc tgc ggc tat ata atg gtg aac act gtc cag gat 3360  
 Leu Pro Ser Lys Ala Cys Gly Tyr Ile Met Val Asn Thr Val Gln Asp  
 1105 1110 1115 1120  
 ttg cta agt gaa gga cct ttt cat ggt ata gat cgc gat att gag gtg 3408  
 Leu Leu Ser Glu Gly Pro Phe His Gly Ile Asp Arg Asp Ile Glu Val  
 1125 1130 1135  
 caa gta gtg acc agt gaa gcg gag gca ttt gag gcg ttg ctg gct ttg 3456  
 Gln Val Val Thr Ser Glu Ala Glu Ala Phe Glu Ala Leu Leu Ala Leu  
 1140 1145 1150  
 tgt gaa cgg tgg gat gcg gac ata tac gca ggg tac gaa atc gag atg 3504  
 Cys Glu Arg Trp Asp Ala Asp Ile Tyr Ala Gly Tyr Glu Ile Glu Met  
 1155 1160 1165  
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 Ser Ser Trp Gly Tyr Val Ile Asp Arg Ala Lys His Leu Cys Phe Asn  
 1170 1175 1180  
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 Ile Ala Pro Leu Leu Ser Arg Val Pro Thr Gln Lys Val Arg Asp Phe  
 1185 1190 1195 1200  
 gtg gac gag gat cgg gag cag ttc acc gat ttg gat gtg gaa atg aag 3648  
 Val Asp Glu Asp Arg Glu Gln Phe Thr Asp Leu Asp Val Glu Met Lys  
 1205 1210 1215  
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 Leu Cys Gly Arg Ile Leu Leu Asp Arg Cys Pro Trp His Thr Ala Lys  
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 Ser Leu Thr Glu Trp Phe Gly Ser Pro Cys Thr Arg Trp Ile Val Met  
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 Glu Tyr Tyr Leu Glu Arg Val Arg Gly Thr Leu Thr Leu Asp Gln  
 1250 1255 1260  
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 1265 1270 1275 1280  
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 Gln Phe Tyr Glu Val Leu Ser Arg Gly Ser Gln Phe Arg Val Glu Ser  
 1285 1290 1295  
 atg atg ctg aga atc gcc aag cca aag aac ctg gtg cca ctt tca ccc 3936  
 Met Met Leu Arg Ile Ala Lys Pro Lys Asn Leu Val Pro Leu Ser Pro  
 1300 1305 1310  
 agc gtc cag gct cgc gct cat atg aga gct ccc gag tac ttg gcg cta 3984  
 Ser Val Gln Ala Arg Ala His Met Arg Ala Pro Glu Tyr Leu Ala Leu  
 1315 1320 1325  
 ata atg gaa ccg cag tca cga ttc tat gcc gat ccc cta atc gtg ctt 4032  
 Ile Met Glu Pro Gln Ser Arg Phe Tyr Ala Asp Pro Leu Ile Val Leu  
 1330 1335 1340  
 gat ttt cag agc ttg tac ccc agc atg atc atc gcc tac aac tac tgc 4080  
 Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Tyr Cys  
 1345 1350 1355 1360  
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 Phe Ser Thr Cys Leu Gly Arg Val Glu His Leu Gly Gly Ser Ser Pro  
 1365 1370 1375  
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 Phe Glu Phe Gly Ala Ser Gln Leu Arg Val Ser Arg Gln Met Leu Gln  
 1380 1385 1390  
 aag ttg ctg gag cac gat ctg gtt act gtt tcg cca tgc ggc gtt gtg 4224  
 Lys Leu Leu Glu His Asp Leu Val Thr Val Ser Pro Cys Gly Val Val  
 1395 1400 1405

## PhoenixTemp32470.tmp.txt

ttc	gtg	aag	cgt	gaa	gtg	cgc	gag	ggc	atc	ctg	ccg	cgc	atg	ctc	acc	4272
Phe	Val	Lys	Arg	Glu	Val	Arg	Glu	Gly	Ile	Leu	Pro	Arg	Met	Leu	Thr	
1410						1415				1420						
gag	atc	ttg	gac	acg	cgc	caa	atg	gtc	aaa	cag	tgc	atg	aag	ctc	cat	4320
Glu	Ile	Leu	Asp	Thr	Arg	Gln	Met	Val	Lys	Gln	Ser	Met	Lys	Leu	His	
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aag	gac	agc	tct	gca	ctt	cag	cgg	atc	ctt	cac	tca	cgg	cag	ctg	ggc	4368
Lys	Asp	Ser	Ser	Ala	Leu	Gln	Arg	Ile	Leu	His	Ser	Arg	Gln	Leu	Gly	
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Leu	Lys	Leu	Met	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ala	Ala	Asn	Phe	
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Ser	Gly	Arg	Met	Pro	Ser	Val	Glu	Val	Gly	Asp	Ser	Val	Val	Ser	Lys	
		1475				1480				1485						
gga	cgg	gag	acc	ctg	gag	cg	gct	atc	aaa	cta	gtg	gag	aac	aac	gag	4512
Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Lys	Leu	Val	Glu	Asn	Asn	Glu	
1490					1495				1500							
gag	tgg	aag	gtg	cgt	gtc	tat	ggc	gac	acg	gac	tcc	atg	ttc	gtt		4560
Glu	Trp	Lys	Val	Arg	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Met	Phe	Val		
1505				1510				1515					1520			
ctt	gtg	ccg	ggt	cga	aat	cga	gct	gaa	gct	ttt	cga	atc	ggc	gag	gag	4608
Leu	Val	Pro	Gly	Arg	Asn	Arg	Ala	Glu	Ala	Phe	Arg	Ile	Gly	Glu	Glu	
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atc	gcc	aag	gcg	gtc	acc	gaa	atg	aat	cca	cag	cca	gtg	aag	cta	aaa	4656
Ile	Ala	Lys	Ala	Val	Thr	Glu	Met	Asn	Pro	Gln	Pro	Val	Lys	Leu	Lys	
			1540			1545			1550				1555			
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Leu	Glu	Lys	Val	Tyr	Gln	Pro	Cys	Met	Leu	Gln	Thr	Lys	Lys	Arg	Tyr	
		1555				1560			1565							
gtg	ggt	tac	atg	tat	gag	aca	gcc	gat	cag	gag	cag	ccc	gtt	tac	gag	4752
Val	Gly	Tyr	Met	Tyr	Glu	Thr	Ala	Asp	Gln	Glu	Gln	Pro	Val	Tyr	Glu	
1570				1575				1580								
gcg	aag	gga	ata	gaa	act	gtg	cg	cga	gat	ggt	tgt	ccg	gcg	gtg	gcc	4800
Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Cys	Pro	Ala	Val	Ala	
1585				1590				1595					1600			
aag	atg	ctg	gaa	aag	gtg	ctg	cg	ata	ttg	ttc	gag	acg	caa	gac	gtc	4848
Lys	Met	Leu	Glu	Lys	Val	Leu	Arg	Ile	Leu	Phe	Glu	Thr	Gln	Asp	Val	
			1605			1610			1615				1620			
agc	aag	atc	aag	gcg	tac	gtg	tgc	cg	cag	ttc	acc	aag	ctg	ctg	tcg	4896
Ser	Lys	Ile	Lys	Ala	Tyr	Val	Cys	Arg	Gln	Phe	Thr	Lys	Leu	Leu	Ser	
		1620				1625			1630				1635			
ggc	agg	gcc	aat	ctg	cag	gac	ctg	att	ttc	gcc	aag	gag	ttc	agg	ggt	4944
Gly	Arg	Ala	Asn	Leu	Gln	Asp	Leu	Ile	Phe	Ala	Lys	Glu	Phe	Arg	Gly	
		1635			1640			1645								
ctc	aat	ggc	tac	aag	ccc	acg	gct	tgt	gtg	cca	gca	ctg	gag	ctc	acg	4992
Leu	Asn	Gly	Tyr	Lys	Pro	Thr	Ala	Cys	Val	Pro	Ala	Leu	Glu	Leu	Thr	
1650				1655				1660								
cgt	aaa	tgg	atg	caa	aaa	gac	cca	cga	cat	gtg	ccg	cgt	cgt	ggc	gaa	5040
Arg	Lys	Trp	Met	Gln	Lys	Asp	Pro	Arg	His	Val	Pro	Arg	Arg	Gly	Glu	
1665				1670				1675					1680			
cgc	gtc	ccc	ttc	ata	ata	gtc	aac	ggc	ccg	ccg	ggc	atg	cag	cta	atc	5088
Arg	Val	Pro	Phe	Ile	Ile	Val	Asn	Gly	Pro	Pro	Gly	Met	Gln	Leu	Ile	
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cgc	ctg	gtg	cg	agc	ccg	cac	gac	atc	ctg	gcc	aac	gag	ggt	cac	aag	5136
Arg	Leu	Val	Arg	Ser	Pro	His	Asp	Ile	Leu	Ala	Asn	Glu	Gly	His	Lys	
			1700			1705			1710				1715			
ata	aac	gcc	atc	tac	tac	att	acc	aag	gcg	att	att	ccg	ccg	ctg	aat	5184
Ile	Asn	Ala	Ile	Tyr	Tyr	Ile	Thr	Lys	Ala	Ile	Ile	Pro	Pro	Leu	Asn	
		1715				1720			1725							
cgc	tgc	ctg	ctg	ctc	ata	ggc	gcc	aat	gtg	cac	gac	tgg	ttt	gcc	agt	5232
Arg	Cys	Leu	Leu	Leu	Ile	Gly	Ala	Asn	Val	His	Asp	Trp	Phe	Ala	Ser	
1730				1735				1740								
ctg	ccg	agg	aag	ttg	ctc	atg	acg	ccg	gcc	gtt	gga	acc	gcc	aac	gaa	5280
Leu	Pro	Arg	Lys	Leu	Leu	Met	Thr	Pro	Ala	Val	Gly	Thr	Ala	Asn	Glu	
1745				1750				1755					1760			
ttg	gcg	ggt	gca	cg	ggt	gcc	aag	tcc	acc	atc	tcc	cag	tat	ttc	tct	5328
Leu	Ala	Gly	Ala	Arg	Gly	Ala	Lys	Ser	Thr	Ile	Ser	Gln	Tyr	Phe	Ser	
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## PhoenixTemp32470.tmp.txt

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 Cys Pro Asp Cys Leu Lys Asn Ala Thr Thr Cys Val Val Val Leu Ser  
 1795 1800 1805  
 gat aag aca gcg cgt ctg gag agg ggc tac caa cta act cgg cag ata 5472  
 Asp Lys Thr Ala Arg Leu Glu Arg Gly Tyr Gln Leu Thr Arg Gln Ile  
 1810 1815 1820  
 tgc cag gct tgt tgc gga cgc ctg ggt agc cta cag tgt gat tcc ctc 5520  
 Cys Gln Ala Cys Cys Gly Arg Leu Gly Ser Leu Gln Cys Asp Ser Leu  
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 Asp Cys Pro Val Leu Tyr Val Leu Glu Gly Lys Arg Arg Glu Leu Gln  
 1845 1850 1855  
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 Gln Ile Glu His Trp Asn Lys Leu Leu Glu His His Phe  
 1860 1865

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 <212> PRT  
 <213> DROSOPHILA

<400> 2664  
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 Val Ile Ala Asp Phe Tyr Met Glu Lys Pro Gln Phe Gly Met Asp Pro  
 20 25 30  
 Cys Tyr Ser Glu Leu Arg Gly Lys Glu Ile Lys Arg Val Pro Val Ile  
 35 40 45  
 Arg Val Phe Gly Gly Asn Ser Arg Gly Gln Lys Thr Cys Met His Val  
 50 55 60  
 His Gly Val Phe Pro Tyr Leu Tyr Ile Pro Tyr Asp Lys Lys Asp Phe  
 65 70 75 80  
 Glu Ser Leu Glu Arg Gly Ile Leu Gln Met Ala Met His Leu Asp Lys  
 85 90 95  
 Ala Ile Asn Ile Ser Leu Gly Gln Gly Ser Ser Asn Ala Gln His Val  
 100 105 110  
 Phe Lys Ile Gln Leu Val Lys Gly Ile Pro Phe Tyr Gly Tyr His Arg  
 115 120 125  
 Val Glu His Gln Phe Leu Lys Ile Tyr Met Phe Asn Pro Arg Phe Val  
 130 135 140  
 Arg Arg Ala Ala Asn Leu Leu Gln Ser Gly Ala Ile Leu Ser Lys Asn  
 145 150 155 160  
 Phe Ser Pro His Glu Ser His Val Pro Tyr Ile Leu Gln Phe Met Ile  
 165 170 175  
 Asp Tyr Asn Leu Tyr Gly Met Ser Tyr Val His Val Pro Leu Glu Gln  
 180 185 190  
 Ala Gln Leu Leu Asp Ile Thr Thr Ala Lys Lys Val Ala Cys Ser Ala  
 195 200 205  
 Leu Glu Val Asp Val Ser Ser Asn Phe Ile Leu Asn Arg Phe Gln Leu  
 210 215 220  
 Val Ala Lys Ser Lys Ser Asn His Thr Asn Pro Gly Ile Glu Ala Ile  
 225 230 235 240  
 Trp Asn Asp Glu Lys Leu Arg Arg Gln Lys Leu Val Glu Lys His Thr  
 245 250 255  
 Asp Ala Gly Asp Glu Glu Lys Ala Glu Ala Val Pro Val Leu Glu Leu  
 260 265 270  
 Pro Pro Thr Gln Glu Arg His Gln Ile Glu Ile Ala Glu Ser Asp Ile  
 275 280 285  
 Phe Tyr Arg Thr Ala Leu Glu Ser Lys Leu Met Thr Leu Glu Gln Ser  
 290 295 300  
 Thr Leu Ser Glu Gln Thr Leu Ser Asp Gln Thr Ile Leu Pro Gln Ala  
 305 310 315 320  
 Thr Met Gln Thr Thr Met Pro Gly Thr Lys Ala Gln Lys Arg Arg Phe  
 325 330 335  
 Asn Leu Gln Lys Leu Leu Ala Asn Ala Val Tyr Pro Glu Glu Cys Ser  
 340 345 350

## PhoenixTemp32470.tmp.txt

Gln Asp Gln Gln Gln Leu Leu Val Asn Ala Ser Phe Ile Gln Asn His  
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Val Thr Cys Gly Tyr Ser Ser Val Ser Leu Ser Thr Ser Lys Asp  
 Ser Leu Thr Gln Pro His Gly Ala Ile Pro His Asp Ala Thr Leu Arg  
 Glu Glu Asp Leu Glu Leu Leu Asp Ala Leu Gln Leu Leu Glu Glu Gln  
 Asn Glu Ser Glu Ser His Val Asp Leu Asp Ser Ser Leu Ala Pro Leu  
 Ser Gln His Lys Lys Phe Glu Leu Thr Pro Glu Leu Leu Asp Lys Glu  
 Thr Ala Ala Thr Ala Ala Leu Phe Asp Glu Asp Val Asp Ser Asp Glu  
 Asp Ala Asp Gln Glu Thr Arg His Asp Phe Ser Thr Val Leu Asp Asp  
 Val Asp Glu Leu Leu Lys Leu Thr Gln Ser Gln Pro Ala Glu Ser  
 Lys Glu Leu Lys Ala Ser Ser Lys Leu Pro Gln Ile Asp Gly Ala Asp  
 Asp Arg Leu Gln Arg Thr Pro Ile Lys Ser Ile Ser Ser Lys Ser Lys  
 Ser Ser Pro Ser Lys Thr Pro Thr Thr Pro Ile Gly Gln Lys Ser Leu  
 Pro Lys Ser Pro Arg Thr Pro Lys Thr Ser Ala Ala Lys Lys Tyr Ala  
 Pro Leu Ala Leu Thr Ile Gly Ser Ser Ser Ser Lys Lys Ser Pro His  
 Gln Gln Glu Asn Ser Val Ser Glu Gln Ile Glu Tyr Leu Glu Ser Lys  
 Pro Lys Lys Ser Asp Glu Thr Ala Arg Ser Cys Asp Glu Lys Leu Gln  
 Arg Glu Leu Ile Pro Gln Glu Glu Ile Thr Phe Ser Pro Cys His Asp Glu Ala  
 Ala Asn Ser Thr Glu Glu Ile Thr Phe Ser Pro Cys His Asp Glu Ala  
 Ile Glu Ser Asp Thr Glu Ser Asp Tyr Ile Val Thr Lys Leu Arg Lys  
 Thr Pro Asn Leu Lys Arg Leu Arg Trp Ser Ile Arg Ser Glu Leu Leu  
 Asn Lys Gln Phe Thr Pro Ser Ser Gly Ile Arg Pro Pro Glu Thr Glu  
 Thr Thr Pro Gln Leu Ser Pro Lys Ser Asn Glu Ser Asn Thr Pro Glu  
 Leu Met Arg Ser Phe Tyr Glu His Ser Leu Ile Val Asn Ser Pro Ser  
 Val Phe Ser Asp Phe Leu Asp Ser Pro Glu Ile His Met Asp Ser Pro  
 Arg Ser Ala Pro Pro Ser Pro Asp Ser Asn Ser Phe Val Ile Ala Pro  
 Leu Glu Leu Pro Pro Ser Tyr Asp Glu Val Val Ser Gly Ser Arg Lys  
 Met Asp Ile Pro Glu Tyr Glu Phe Gln Lys Pro Tyr Tyr Ser Asn Pro  
 Ser Asp Val Ser Lys Val Thr Glu Val Gly Phe Leu Val Leu His Ile  
 Pro Gly Asn Lys Leu Asn Asp Cys Asp Pro Phe Gln Ser Ile Leu Gly  
 Asn Asp Arg Gly Leu Ala Ser Trp Arg Arg Arg Gln Leu Ile Ala Ile  
 Gly Gly Leu Ala Met Leu Gln Arg His Arg Gly Glu Gln Lys Val Arg  
 Glu Tyr Phe Ser Thr Gln Gln Arg Ile Ala Ile Glu Pro Ala Gln Leu  
 Ala Pro Thr Trp Gln Glu Ala Lys Ile Trp Leu Lys Ala Lys Glu Leu  
 Leu Arg Gln Arg Glu Glu Pro Lys Lys Ser Ser Asp Asp Ile Asp Ser

## PhoenixTemp32470.tmp.txt

900 905 910  
 Pro Ile Lys Ile Lys Arg Gln Lys Ile Thr Met Met Leu Gln Ala Glu  
 915 920 925  
 Glu Gly Asp Gly Gly Ser Gly Asp Glu Asp Ala Gly Glu Glu Leu Asp  
 930 935 940  
 Cys Ser Leu Ser Leu Thr Pro Leu Ser Gln Ala Lys Asp Lys Cys Lys  
 945 950 955 960  
 Ala Thr Pro Thr Ser Lys Ala Arg Glu Thr Gly Lys Ser Arg Leu  
 965 970 975  
 Lys Arg Gly Thr Arg Leu Ser Phe Ile Gly Ser Gln Asp Glu Glu Pro  
 980 985 990  
 Pro Ser Ser Gln Ser Ser Glu Gln Ser Val Ser Ser Ala Ala Gln  
 995 1000 1005  
 Ala Glu Leu Asp Arg Ser Ser Phe Leu Arg Gln Leu Glu Gly Ser Ser  
 1010 1015 1020  
 Gln Asp Arg Gln His Asp Leu Ser Phe Gly Leu Ser His Ala Thr Leu  
 1025 1030 1035 1040  
 Asp Asn Thr Phe Gly Phe Lys Val Asn Leu Glu Asn Leu Gln Gln Ala  
 1045 1050 1055  
 Lys Ala Asp Ile Asp Cys Asn His Leu Thr Ile Ile Thr Leu Glu Val  
 1060 1065 1070  
 Phe Val Ser Thr Arg Gly Asp Leu Gln Pro Asp Pro Met His Asp Glu  
 1075 1080 1085  
 Ile Arg Cys Leu Phe Tyr Ala Ile Glu His Ser Leu Pro Asp Glu Lys  
 1090 1095 1100  
 Leu Pro Ser Lys Ala Cys Gly Tyr Ile Met Val Asn Thr Val Gln Asp  
 1105 1110 1115 1120  
 Leu Leu Ser Glu Gly Pro Phe His Gly Ile Asp Arg Asp Ile Glu Val  
 1125 1130 1135  
 Gln Val Val Thr Ser Glu Ala Glu Ala Phe Glu Ala Leu Leu Ala Leu  
 1140 1145 1150  
 Cys Glu Arg Trp Asp Ala Asp Ile Tyr Ala Gly Tyr Glu Ile Glu Met  
 1155 1160 1165  
 Ser Ser Trp Gly Tyr Val Ile Asp Arg Ala Lys His Leu Cys Phe Asn  
 1170 1175 1180  
 Ile Ala Pro Leu Leu Ser Arg Val Pro Thr Gln Lys Val Arg Asp Phe  
 1185 1190 1195 1200  
 Val Asp Glu Asp Arg Glu Gln Phe Thr Asp Leu Asp Val Glu Met Lys  
 1205 1210 1215  
 Leu Cys Gly Arg Ile Leu Leu Asp Arg Cys Pro Trp His Thr Ala Lys  
 1220 1225 1230  
 Ser Leu Thr Glu Trp Phe Gly Ser Pro Cys Thr Arg Trp Ile Val Met  
 1235 1240 1245  
 Glu Tyr Tyr Leu Glu Arg Val Arg Gly Thr Leu Thr Leu Leu Asp Gln  
 1250 1255 1260  
 Leu Asp Leu Leu Gly Arg Thr Ser Glu Met Ala Lys Leu Ile Gly Ile  
 1265 1270 1275 1280  
 Gln Phe Tyr Glu Val Leu Ser Arg Gly Ser Gln Phe Arg Val Glu Ser  
 1285 1290 1295  
 Met Met Leu Arg Ile Ala Lys Pro Lys Asn Leu Val Pro Leu Ser Pro  
 1300 1305 1310  
 Ser Val Gln Ala Arg Ala His Met Arg Ala Pro Glu Tyr Leu Ala Leu  
 1315 1320 1325  
 Ile Met Glu Pro Gln Ser Arg Phe Tyr Ala Asp Pro Leu Ile Val Leu  
 1330 1335 1340  
 Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Tyr Cys  
 1345 1350 1355 1360  
 Phe Ser Thr Cys Leu Gly Arg Val Glu His Leu Gly Gly Ser Ser Pro  
 1365 1370 1375  
 Phe Glu Phe Gly Ala Ser Gln Leu Arg Val Ser Arg Gln Met Leu Gln  
 1380 1385 1390  
 Lys Leu Leu Glu His Asp Leu Val Thr Val Ser Pro Cys Gly Val Val  
 1395 1400 1405  
 Phe Val Lys Arg Glu Val Arg Glu Gly Ile Leu Pro Arg Met Leu Thr  
 1410 1415 1420  
 Glu Ile Leu Asp Thr Arg Gln Met Val Lys Gln Ser Met Lys Leu His  
 1425 1430 1435 1440  
 Lys Asp Ser Ser Ala Leu Gln Arg Ile Leu His Ser Arg Gln Leu Gly  
 1445 1450 1455

## PhoenixTemp32470.tmp.txt

Leu Lys Leu Met Ala Asn Val Thr Tyr Gly Tyr Thr Ala Ala Asn Phe  
 1460 1465 1470  
 Ser Gly Arg Met Pro Ser Val Glu Val Gly Asp Ser Val Val Ser Lys  
 1475 1480 1485  
 Gly Arg Glu Thr Leu Glu Arg Ala Ile Lys Leu Val Glu Asn Asn Glu  
 1490 1495 1500  
 Glu Trp Lys Val Arg Val Val Tyr Gly Asp Thr Asp Ser Met Phe Val  
 1505 1510 1515 1520  
 Leu Val Pro Gly Arg Asn Arg Ala Glu Ala Phe Arg Ile Gly Glu Glu  
 1525 1530 1535  
 Ile Ala Lys Ala Val Thr Glu Met Asn Pro Gln Pro Val Lys Leu Lys  
 1540 1545 1550  
 Leu Glu Lys Val Tyr Gln Pro Cys Met Leu Gln Thr Lys Lys Arg Tyr  
 1555 1560 1565  
 Val Gly Tyr Met Tyr Glu Thr Ala Asp Gln Glu Gln Pro Val Tyr Glu  
 1570 1575 1580  
 Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Cys Pro Ala Val Ala  
 1585 1590 1595 1600  
 Lys Met Leu Glu Lys Val Leu Arg Ile Leu Phe Glu Thr Gln Asp Val  
 1605 1610 1615  
 Ser Lys Ile Lys Ala Tyr Val Cys Arg Gln Phe Thr Lys Leu Leu Ser  
 1620 1625 1630  
 Gly Arg Ala Asn Leu Gln Asp Leu Ile Phe Ala Lys Glu Phe Arg Gly  
 1635 1640 1645  
 Leu Asn Gly Tyr Lys Pro Thr Ala Cys Val Pro Ala Leu Glu Leu Thr  
 1650 1655 1660  
 Arg Lys Trp Met Gln Lys Asp Pro Arg His Val Pro Arg Arg Gly Glu  
 1665 1670 1675 1680  
 Arg Val Pro Phe Ile Val Asn Gly Pro Pro Gly Met Gln Leu Ile  
 1685 1690 1695  
 Arg Leu Val Arg Ser Pro His Asp Ile Leu Ala Asn Glu Gly His Lys  
 1700 1705 1710  
 Ile Asn Ala Ile Tyr Tyr Ile Thr Lys Ala Ile Ile Pro Pro Leu Asn  
 1715 1720 1725  
 Arg Cys Leu Leu Leu Ile Gly Ala Asn Val His Asp Trp Phe Ala Ser  
 1730 1735 1740  
 Leu Pro Arg Lys Leu Leu Met Thr Pro Ala Val Gly Thr Ala Asn Glu  
 1745 1750 1755 1760  
 Leu Ala Gly Ala Arg Gly Ala Lys Ser Thr Ile Ser Gln Tyr Phe Ser  
 1765 1770 1775  
 Thr Thr Ser Cys Val Ile Asp Cys Gly Arg Gln Thr Lys Ala Gly Ile  
 1780 1785 1790  
 Cys Pro Asp Cys Leu Lys Asn Ala Thr Thr Cys Val Val Val Leu Ser  
 1795 1800 1805  
 Asp Lys Thr Ala Arg Leu Glu Arg Gly Tyr Gln Leu Thr Arg Gln Ile  
 1810 1815 1820  
 Cys Gln Ala Cys Cys Gly Arg Leu Gly Ser Leu Gln Cys Asp Ser Leu  
 1825 1830 1835 1840  
 Asp Cys Pro Val Leu Tyr Val Leu Glu Gly Lys Arg Arg Glu Leu Gln  
 1845 1850 1855  
 Gln Ile Glu His Trp Asn Lys Leu Leu Glu His His Phe  
 1860 1865

&lt;210&gt; 2665

&lt;211&gt; 5673

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5673)

&lt;400&gt; 2665

atg gct gat tct caa tcc ggt tcc aat gtt ttc agt tta cgg ata gtt  
 Met Ala Asp Ser Gln Ser Gly Ser Asn Val Phe Ser Leu Arg Ile Val  
 1 5 10 15  
 tca atc gat tat tac atg gct tct cca atc cct ggt tat aat att tgc  
 Ser Ile Asp Tyr Tyr Met Ala Ser Pro Ile Pro Gly Tyr Asn Ile Cys  
 20 25 30

48

96

## PhoenixTemp32470.tmp.txt

tac	agt	agc	ttc	caa	ggt	agt	gag	gta	aat	gaa	gtc	cct	ggt	ata	agg	144
Tyr	Ser	Ser	Phe	Gln	Gly	Ser	Glu	Val	Asn	Glu	Val	Pro	Val	Ile	Arg	
		35					40					45				
ata	tac	ggc	tct	aca	cct	gct	ggt	cag	aag	act	tgc	ttg	cac	att	cat	192
Ile	Tyr	Gly	Ser	Thr	Pro	Ala	Gly	Gln	Lys	Thr	Cys	Leu	His	Ile	His	
	50					55					60					
cgt	gct	tta	cca	tat	ctc	tat	att	ccg	tgc	tca	gaa	att	cca	ctt	gag	240
Arg	Ala	Leu	Pro	Tyr	Leu	Tyr	Ile	Pro	Cys	Ser	Glu	Ile	Pro	Leu	Glu	
	65				70					75					80	
cat	cat	aaa	gga	gtg	gat	gga	agt	aca	ctt	gct	tta	tcc	ctt	gag	tta	288
His	His	Lys	Gly	Val	Asp	Gly	Ser	Thr	Leu	Ala	Leu	Ser	Leu	Glu	Leu	
			85						90					95		
gag	aag	gct	cta	aag	ctt	aag	gga	aat	gct	gct	tca	aaa	agg	caa	cat	336
Glu	Lys	Ala	Leu	Lys	Leu	Lys	Gly	Asn	Ala	Ala	Ser	Lys	Arg	Gln	His	
			100					105					110			
atc	cat	gat	tgt	gag	att	gta	aga	gca	aag	aag	ttt	tat	ggg	tac	cac	384
Ile	His	Asp	Cys	Glu	Ile	Val	Arg	Ala	Lys	Lys	Phe	Tyr	Gly	Tyr	His	
		115					120					125				
tca	aca	gag	gag	gct	ttt	gtg	aag	att	tat	ctt	agc	tac	cat	cca	ccc	432
Ser	Thr	Glu	Glu	Ala	Phe	Val	Lys	Ile	Tyr	Leu	Ser	Tyr	His	Pro	Pro	
	130					135					140					
gat	gtg	gct	cgt	gct	gcc	agt	ctt	ctt	ctg	gca	ggg	gct	ggt	ctt	ggg	480
Asp	Val	Ala	Arg	Ala	Ala	Ser	Leu	Leu	Leu	Ala	Gly	Ala	Val	Leu	Gly	
	145				150					155					160	
aaa	agt	ttg	cag	cct	tac	gag	tct	cat	att	ccc	ttt	att	ctc	cag	ttt	528
Lys	Ser	Leu	Gln	Pro	Tyr	Glu	Ser	His	Ile	Pro	Phe	Ile	Leu	Gln	Phe	
				165					170					175		
ctg	gtt	gat	tat	aat	ttg	tat	gga	atg	ggg	cat	gtg	cat	ata	tca	aag	576
Leu	Val	Asp	Tyr	Asn	Leu	Tyr	Gly	Met	Gly	His	Val	His	Ile	Ser	Lys	
			180					185					190			
atg	aag	ttc	cgt	agc	cca	gtg	cct	cac	cat	ttc	cgg	cca	agg	aga	ttt	624
Met	Lys	Phe	Arg	Ser	Pro	Val	Pro	His	His	Phe	Arg	Pro	Arg	Arg	Phe	
		195					200					205				
gat	ttg	gat	gat	tgt	ccg	gga	caa	agg	att	gac	gaa	gtg	gct	att	aca	672
Asp	Leu	Asp	Asp	Cys	Pro	Gln	Gln	Arg	Ile	Asp	Glu	Val	Ala	Ile	Thr	
	210					215					220					
aag	gca	aat	tca	agt	gct	gct	gca	agc	gtc	agt	ttt	cct	ggt	tgg	agc	720
Lys	Ala	Asn	Ser	Ser	Ala	Ala	Ala	Ser	Val	Ser	Phe	Pro	Val	Trp	Ser	
	225				230				235					240		
ttg	tca	aca	atc	cca	ggg	cag	tgg	atg	tgg	aat	ctc	tct	gaa	gaa	tct	768
Leu	Ser	Thr	Ile	Pro	Gly	Gln	Trp	Met	Trp	Asn	Leu	Ser	Glu	Glu	Ser	
				245				250						255		
gat	aca	ccg	ttg	agc	cag	agc	cag	cat	agg	cac	caa	cac	cat	tac	aga	816
Asp	Thr	Pro	Leu	Ser	Gln	Ser	Gln	His	Arg	His	Gln	His	His	Tyr	Arg	
			260					265					270			
cgt	cag	agt	ctc	tgt	gaa	ctt	gag	gga	gat	gct	act	agt	agt	gat	att	864
Arg	Gln	Ser	Leu	Cys	Glu	Leu	Glu	Gly	Asp	Ala	Thr	Ser	Ser	Asp	Ile	
		275					280					285				
ctc	aat	caa	cag	ttt	aaa	atg	tac	aac	tcc	ctt	tca	caa	gcc	cag	tct	912
Leu	Asn	Gln	Gln	Phe	Lys	Met	Tyr	Asn	Ser	Leu	Ser	Gln	Ala	Gln	Ser	
	290				295						300					
gat	act	aac	atg	gtt	cag	tcg	ctt	gtg	gca	att	tgg	gag	gag	gag	tat	960
Asp	Thr	Asn	Met	Val	Gln	Ser	Leu	Val	Ala	Ile	Trp	Glu	Glu	Glu	Tyr	
	305			310						315					320	
gaa	agg	act	ggt	gtg	cat	gat	gca	cct	ata	cct	cct	gat	cct	ggg	aaa	1008
Glu	Arg	Thr	Gly	Val	His	Asp	Ala	Pro	Ile	Pro	Pro	Asp	Pro	Gly	Lys	
				325					330					335		
ccc	tct	gca	gct	gat	gtg	ttg	cag	act	atg	tca	gat	tat	ggt	ggg	ttt	1056
Pro	Ser	Ala	Ala	Asp	Val	Leu	Gln	Thr	Met	Ser	Asp	Tyr	Val	Gly	Phe	
			340					345					350			
ggg	aat	atg	ctt	aaa	gaa	atg	cta	aac	aaa	ggt	gaa	ttg	tct	ccg	cct	1104
Gly	Asn	Met	Leu	Lys	Glu	Met	Leu	Asn	Lys	Val	Glu	Leu	Ser	Pro	Pro	
		355					360					365				
ggt	atg	aag	cct	act	gca	gta	tct	tca	gct	ggg	cca	gat	atg	cat	gcc	1152
Gly	Met	Lys	Pro	Thr	Ala	Val	Ser	Ser	Ala	Gly	Pro	Asp	Met	His	Ala	
	370				375					380						
aaa	cct	gaa	att	act	gat	cta	cag	gct	ttg	aat	cat	atg	ggt	ggg	aca	1200
Lys	Pro	Glu	Ile	Thr	Asp	Leu	Gln	Ala	Leu	Asn	His	Met	Val	Gly	Thr	
					390				395						400	



## PhoenixTemp32470.tmp.txt

tgc	agt	gag	ttt	cct	gca	tca	gaa	cag	ctt	tct	cca	ctt	ggc	gag	aag	1248
Cys	Ser	Glu	Phe	Pro	Ala	Ser	Glu	Gln	Leu	Ser	Pro	Leu	Gly	Glu	Lys	
				405					410					415		
agt	gaa	gaa	gca	tca	atg	gaa	aat	gat	gaa	tat	atg	aaa	aca	ccc	acg	1296
Ser	Glu	Glu	Ala	Ser	Met	Glu	Asn	Asp	Glu	Tyr	Met	Lys	Thr	Pro	Thr	
			420					425					430			
gac	aga	gat	aca	cct	gct	caa	ata	caa	gat	gct	gaa	gcc	ttg	ggg	ctc	1344
Asp	Arg	Asp	Thr	Pro	Ala	Gln	Ile	Gln	Asp	Ala	Glu	Ala	Leu	Gly	Leu	
			435					440				445				
ttt	aag	tgg	ttt	gcc	tca	tct	cag	gct	gca	gag	gac	ata	aac	tca	gat	1392
Phe	Lys	Trp	Phe	Ala	Ser	Ser	Gln	Ala	Ala	Glu	Asp	Ile	Asn	Ser	Asp	
	450					455					460					
gat	gag	att	ctc	cgg	gaa	act	atc	ctt	agt	cct	ctt	ttg	cct	tta	gcg	1440
Asp	Glu	Ile	Leu	Arg	Glu	Thr	Ile	Leu	Ser	Pro	Leu	Leu	Pro	Leu	Ala	
	465				470					475					480	
tct	att	aac	aag	gtt	ctt	gaa	atg	gct	agt	aca	gat	tat	gtg	agc	caa	1488
Ser	Ile	Asn	Lys	Val	Leu	Glu	Met	Ala	Ser	Thr	Asp	Tyr	Val	Ser	Gln	
				485					490					495		
tcc	caa	aag	gaa	tgt	caa	gac	att	ctt	gat	tct	cag	gaa	aat	ctt	cca	1536
Ser	Gln	Lys	Glu	Cys	Gln	Asp	Ile	Leu	Asp	Ser	Gln	Glu	Asn	Leu	Pro	
			500					505					510			
gac	ttt	ggg	agt	tcg	act	aag	aga	gct	tta	cct	agt	aat	cct	gat	agc	1584
Asp	Phe	Gly	Ser	Ser	Thr	Lys	Arg	Ala	Leu	Pro	Ser	Asn	Pro	Asp	Ser	
		515					520					525				
cag	aat	ctt	aga	act	tca	tcc	gac	aaa	caa	tct	ctt	gaa	ata	gaa	gtc	1632
Gln	Asn	Leu	Arg	Thr	Ser	Ser	Asp	Lys	Gln	Ser	Leu	Glu	Ile	Glu	Val	
	530					535					540					
gct	agt	gat	gtt	cca	gat	agc	tcc	act	tca	aat	gga	gca	agc	gaa	aat	1680
Ala	Ser	Asp	Val	Pro	Asp	Ser	Ser	Thr	Ser	Asn	Gly	Ala	Ser	Glu	Asn	
	545				550					555					560	
tca	ttc	cgg	aga	tac	aga	aag	agt	gat	tta	cat	acg	agt	gaa	gta	atg	1728
Ser	Phe	Arg	Arg	Tyr	Arg	Lys	Ser	Asp	Leu	His	Thr	Ser	Glu	Val	Met	
				565					570					575		
gag	tat	aag	aac	agg	agc	ttc	tct	aag	agc	aac	aag	cct	agc	aac	tca	1776
Glu	Tyr	Lys	Asn	Arg	Ser	Phe	Ser	Lys	Ser	Asn	Lys	Pro	Ser	Asn	Ser	
			580					585					590			
gta	tgg	gga	cct	tta	cct	ttt	aca	ctg	acc	aaa	aat	ctt	cag	aag	gac	1824
Val	Trp	Gly	Pro	Leu	Pro	Phe	Thr	Leu	Thr	Lys	Asn	Leu	Gln	Lys	Asp	
	595					600						605				
ttt	gac	agt	aca	aat	gct	agt	gat	aaa	ctt	ggg	tta	aca	aag	att	agt	1872
Phe	Asp	Ser	Thr	Asn	Ala	Ser	Asp	Lys	Leu	Gly	Leu	Thr	Lys	Ile	Ser	
	610					615					620					
tct	tac	ccc	atg	aat	gag	atg	aca	gac	aat	tat	att	gtt	cca	gtc	aaa	1920
Ser	Tyr	Pro	Met	Asn	Glu	Met	Thr	Asp	Asn	Tyr	Ile	Val	Pro	Val	Lys	
	625				630				635						640	
gaa	cat	caa	gca	gat	gtt	tgt	aat	aca	att	gac	aga	aac	gtt	ttg	gct	1968
Glu	His	Gln	Ala	Asp	Val	Cys	Asn	Thr	Ile	Asp	Arg	Asn	Val	Leu	Ala	
				645					650					655		
gga	tgt	tct	ctg	cgg	gac	ttg	atg	aga	aaa	aaa	cgg	tta	tgc	cat	gga	2016
Gly	Cys	Ser	Leu	Arg	Asp	Leu	Met	Arg	Lys	Lys	Arg	Leu	Cys	His	Gly	
			660					665					670			
gaa	tcg	cct	gtt	tca	cag	cat	atg	aag	tct	agg	aag	gtt	aga	gat	tcc	2064
Glu	Ser	Pro	Val	Ser	Gln	His	Met	Lys	Ser	Arg	Lys	Val	Arg	Asp	Ser	
		675					680					685				
cga	cac	ggg	gaa	aaa	aat	gag	tgc	acc	ttg	aga	tgt	gag	gcc	aaa	aaa	2112
Arg	His	Gly	Glu	Lys	Asn	Glu	Cys	Thr	Leu	Arg	Cys	Glu	Ala	Lys	Lys	
						695					700					
caa	ggt	cct	gct	ctt	tct	gca	gaa	ttt	agc	gaa	ttt	gtt	tgt	ggc	gat	2160
Gln	Gly	Pro	Ala	Leu	Ser	Ala	Glu	Phe	Ser	Glu	Phe	Val	Cys	Gly	Asp	
	705				710					715					720	
act	cca	aat	tta	tct	cct	ata	gat	tct	gga	aat	tgc	gag	tgt	aat	ata	2208
Thr	Pro	Asn	Leu	Ser	Pro	Ile	Asp	Ser	Gly	Asn	Cys	Glu	Cys	Asn	Ile	
				725					730					735		
tcc	act	gag	tca	tct	gaa	ctt	cat	tct	gtt	gat	aga	tgt	tca	gct	aaa	2256
Ser	Thr	Glu	Ser	Ser	Glu	Leu	His	Ser	Val	Asp	Arg	Cys	Ser	Ala	Lys	
			740					745					750			
gag	aca	gca	agt	caa	aac	agt	gat	gaa	gtt	tta	agg	aat	ttg	tca	tct	2304
Glu	Thr	Ala	Ser	Gln	Asn	Ser	Asp	Glu	Val	Leu	Arg	Asn	Leu	Ser	Ser	
			755				760					765				

## PhoenixTemp32470.tmp.txt

acc	act	gtt	cca	ttt	ggt	aag	gat	cca	caa	act	gtg	gaa	tca	gga	aca	2352
Thr	Thr	Val	Pro	Phe	Gly	Lys	Asp	Pro	Gln	Thr	Val	Glu	Ser	Gly	Thr	
	770					775					780					
cta	gtg	tct	agc	aat	ata	cat	ggt	ggg	att	gaa	ata	gat	agt	gtc	caa	2400
Leu	Val	Ser	Ser	Asn	Ile	His	Val	Gly	Ile	Glu	Ile	Asp	Ser	Val	Gln	
785					790					795					800	
aaa	tcg	ggg	agg	gag	caa	gag	tca	act	gcc	aat	gaa	act	gat	gag	acg	2448
Lys	Ser	Gly	Arg	Glu	Gln	Glu	Ser	Thr	Ala	Asn	Glu	Thr	Asp	Glu	Thr	
				805					810					815		
gga	aga	tta	ata	tgc	cta	acc	tta	agc	aag	aag	cct	cct	tct	ctc	gat	2496
Gly	Arg	Leu	Ile	Cys	Leu	Thr	Leu	Ser	Lys	Lys	Pro	Pro	Ser	Leu	Asp	
			820					825						830		
tgc	cta	agt	gct	gga	ctg	cag	gat	tct	gca	cat	tct	cat	gaa	att	cat	2544
Cys	Leu	Ser	Ala	Gly	Leu	Gln	Asp	Ser	Ala	His	Ser	His	Glu	Ile	His	
		835					840						845			
gcc	agg	gaa	aaa	cag	cat	gat	gaa	tat	gag	gga	aat	tcc	aac	gac	atc	2592
Ala	Arg	Glu	Lys	Gln	His	Asp	Glu	Tyr	Glu	Gly	Asn	Ser	Asn	Asp	Ile	
	850					855					860					
ccg	ttt	ttt	ccc	ttg	gag	gac	aac	aag	gag	gaa	aag	aaa	cac	ttt	ttc	2640
Pro	Phe	Phe	Pro	Leu	Glu	Asp	Asn	Lys	Glu	Glu	Lys	Lys	His	Phe	Phe	
865					870					875					880	
caa	gga	act	tcc	ctt	ggt	att	ccc	ttg	cat	cat	ctc	aat	gac	ggc	tcc	2688
Gln	Gly	Thr	Ser	Leu	Gly	Ile	Pro	Leu	His	His	Leu	Asn	Asp	Gly	Ser	
				885					890					895		
aat	ctt	tac	cta	ctg	acc	cct	gcc	ttt	tca	ccc	cct	tct	gtg	gat	tct	2736
Asn	Leu	Tyr	Leu	Leu	Thr	Pro	Ala	Phe	Ser	Pro	Pro	Ser	Val	Asp	Ser	
			900					905						910		
gtt	tta	caa	tgg	ata	tcg	aat	gac	aaa	gga	gac	tct	aat	att	gat	tca	2784
Val	Leu	Gln	Trp	Ile	Ser	Asn	Asp	Lys	Gly	Asp	Ser	Asn	Ile	Asp	Ser	
		915											925			
gaa	aaa	caa	cca	tta	cga	gat	aat	cat	aat	gat	cgt	gga	gca	agt	ttc	2832
Glu	Lys	Gln	Pro	Leu	Arg	Asp	Asn	His	Asn	Asp	Arg	Gly	Ala	Ser	Phe	
	930					935					940					
act	gat	ctt	gct	tct	gca	tct	aat	gtg	gtg	tct	gtg	tct	gag	cac	gtg	2880
Thr	Asp	Leu	Ala	Ser	Ala	Ser	Asn	Val	Val	Ser	Val	Ser	Glu	His	Val	
945					950					955					960	
gag	cag	cat	aat	aac	ctt	ttt	gtg	aat	tca	gaa	tca	aat	gct	tat	aca	2928
Glu	Gln	His	Asn	Asn	Leu	Phe	Val	Asn	Ser	Glu	Ser	Asn	Ala	Tyr	Thr	
				965					970					975		
gag	tcg	gag	ata	gat	ctg	aaa	ccc	aaa	gga	acg	ttt	ctt	aat	ctt	aac	2976
Glu	Ser	Glu	Ile	Asp	Leu	Lys	Pro	Lys	Gly	Thr	Phe	Leu	Asn	Leu	Asn	
			980					985					990			
ttg	cag	gcc	agt	gtt	tcc	caa	gag	ctg	tct	cag	att	tca	ggc	cct	gat	3024
Leu	Gln	Ala	Ser	Val	Ser	Gln	Glu	Leu	Ser	Gln	Ile	Ser	Gly	Pro	Asp	
		995					1000				1005					
ggg	aaa	tct	ggg	ccc	act	ccc	tta	agt	caa	atg	gga	ttc	cga	gat	cct	3072
Gly	Lys	Ser	Gly	Pro	Thr	Pro	Leu	Ser	Gln	Met	Gly	Phe	Arg	Asp	Pro	
	1010				1015					1020						
gcg	agc	atg	ggt	gcg	ggg	caa	cag	ctt	aca	att	ctg	agt	ata	gag	gtt	3120
Ala	Ser	Met	Gly	Ala	Gly	Gln	Gln	Leu	Thr	Ile	Leu	Ser	Ile	Glu	Val	
				1030					1035					1040		
cat	gca	gag	tct	aga	ggg	gac	ctg	cga	cct	gat	cca	cga	ttt	gat	tct	3168
His	Ala	Glu	Ser	Arg	Gly	Asp	Leu	Arg	Pro	Asp	Pro	Arg	Phe	Asp	Ser	
				1045					1050					1055		
gtc	aat	gtt	ata	gct	ctc	gtc	gtg	cag	aat	gac	gat	agt	ttt	gta	gct	3216
Val	Asn	Val	Ile	Ala	Leu	Val	Val	Gln	Asn	Asp	Asp	Ser	Phe	Val	Ala	
			1060					1065					1070			
gaa	gta	ttt	gtg	ctt	tta	ttt	agt	cca	gat	agc	att	gat	cag	aga	aat	3264
Glu	Val	Phe	Val	Leu	Leu	Phe	Ser	Pro	Asp	Ser	Ile	Asp	Gln	Arg	Asn	
		1075				1080						1085				
gtt	gat	ggc	cta	tct	gga	tgc	aag	ttg	tct	gta	ttc	ctt	gaa	gag	agg	3312
Val	Asp	Gly	Leu	Ser	Gly	Cys	Lys	Leu	Ser	Val	Phe	Leu	Glu	Glu	Arg	
	1090				1095					1100						
caa	cta	ttc	aga	tat	ttt	att	gag	act	tta	tgt	aaa	tgg	gat	cca	gat	3360
Gln	Leu	Phe	Arg	Tyr	Phe	Ile	Glu	Thr	Leu	Cys	Lys	Trp	Asp	Pro	Asp	
				1110					1115					1120		
gtt	ctt	ctg	ggc	tgg	gat	ata	cag	ggc	gga	tcc	att	ggt	ttt	cta	gct	3408
Val	Leu	Leu	Gly	Trp	Asp	Ile	Gln	Gly	Gly	Ser	Ile	Gly	Phe	Leu	Ala	
				1125					1130					1135		

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gaa aga gct gca cag ctt ggt ata aga ttt ctc aat aat ata tct agg 3456  
 Glu Arg Ala Ala Gln Leu Gly Ile Arg Phe Leu Asn Asn Ile Ser Arg  
 1140 1145 1150  
 acg cca tct ccg acc aca aca aac aat tca gat aat aag aga aaa ctt 3504  
 Thr Pro Ser Pro Thr Thr Thr Asn Asn Ser Asp Asn Lys Arg Lys Leu  
 1155 1160 1165  
 ggt aat aat ctg ctg cca gat ccg ttg gta gct aat cct gct caa gta 3552  
 Gly Asn Asn Leu Leu Pro Asp Pro Leu Val Ala Asn Pro Ala Gln Val  
 1170 1175 1180  
 gaa gaa gtg gta att gag gac gag tgg ggc cgc aca cat gct agt ggt 3600  
 Glu Glu Val Val Ile Glu Asp Glu Trp Gly Arg Thr His Ala Ser Gly  
 1185 1190 1195 1200  
 gtt cat gtt gga ggt aga att gtt ctc aat gca tgg cgt ttg att cgc 3648  
 Val His Val Gly Gly Arg Ile Val Leu Asn Ala Trp Arg Leu Ile Arg  
 1205 1210 1215  
 ggg gaa gtt aaa ctc aac atg tac acg att gaa gct gtg tca gag gct 3696  
 Gly Glu Val Lys Leu Asn Met Tyr Thr Ile Glu Ala Val Ser Glu Ala  
 1220 1225 1230  
 gtt ttg agg cag aag gtt cca tca atc ccc tat aag gta ttg aca gaa 3744  
 Val Leu Arg Gln Lys Val Pro Ser Ile Pro Tyr Lys Val Leu Thr Glu  
 1235 1240 1245  
 tgg ttt tca agt ggt cct gcg ggt gca aga tat aga tgc ata gaa tat 3792  
 Trp Phe Ser Ser Gly Pro Ala Gly Ala Arg Tyr Arg Cys Ile Glu Tyr  
 1250 1255 1260  
 gtg att cgg cga gca aat ttg aac ctt gag ata atg agc caa ctt gac 3840  
 Val Ile Arg Arg Ala Asn Leu Asn Leu Glu Ile Met Ser Gln Leu Asp  
 1265 1270 1275 1280  
 atg ata aat cgt acg tca gaa ctt gct cgt gtt ttt ggt ata gac ttt 3888  
 Met Ile Asn Arg Thr Ser Glu Leu Ala Arg Val Phe Gly Ile Asp Phe  
 1285 1290 1295  
 ttc tca gtt ctc tcc cga ggt tca cag tac aga gtg gaa tcc atg ctt 3936  
 Phe Ser Val Leu Ser Arg Gly Ser Gln Tyr Arg Val Glu Ser Met Leu  
 1300 1305 1310  
 ctg aga tta gca cat aca caa aat tat ctt gct att tct cca gga aac 3984  
 Leu Arg Leu Ala His Thr Gln Asn Tyr Leu Ala Ile Ser Pro Gly Asn  
 1315 1320 1325  
 caa cag gtt gcc tct cag cca gct atg gaa tgt gta cct ctt gtg atg 4032  
 Gln Gln Val Ala Ser Gln Pro Ala Met Glu Cys Val Pro Leu Val Met  
 1330 1335 1340  
 gaa cca gaa tct gcc ttt tac gat gat cct gtt att gtg ttg gat ttt 4080  
 Glu Pro Glu Ser Ala Phe Tyr Asp Asp Pro Val Ile Val Leu Asp Phe  
 1345 1350 1355 1360  
 caa tct ctt tac cct tca atg att ata gca tat aat ctg tgc ttt tct 4128  
 Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Leu Cys Phe Ser  
 1365 1370 1375  
 aca tgt ctc gga aaa ctt gca cat ttg aag atg aac acc ctt ggg gtc 4176  
 Thr Cys Leu Gly Lys Leu Ala His Leu Lys Met Asn Thr Leu Gly Val  
 1380 1385 1390  
 agc tca tac tct cta gac ctc gat gtt ctt cag gat tta aat cag atc 4224  
 Ser Ser Tyr Ser Leu Asp Leu Asp Val Leu Gln Asp Leu Asn Gln Ile  
 1395 1400 1405  
 cta cag acc cca aac agt gtg atg tac gtg cca cca gag gtg cgt aga 4272  
 Leu Gln Thr Pro Asn Ser Val Met Tyr Val Pro Pro Glu Val Arg Arg  
 1410 1415 1420  
 gga att tta cct agg ctg cta gag gag att ctg tct aca aga ata atg 4320  
 Gly Ile Leu Pro Arg Leu Leu Glu Glu Ile Leu Ser Thr Arg Ile Met  
 1425 1430 1435 1440  
 gtg aaa aaa gca atg aaa aag ttg act cct tca gaa gca gtt ctt cac 4368  
 Val Lys Lys Ala Met Lys Lys Leu Thr Pro Ser Glu Ala Val Leu His  
 1445 1450 1455  
 cgg ata ttt aat gcg agg cag ctt gct tta aag ctg ata gca aat gtg 4416  
 Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val  
 1460 1465 1470  
 act tat ggt tat act gct gct ggc ttc agt ggt cga atg cct tgt gca 4464  
 Thr Tyr Gly Tyr Thr Ala Ala Gly Phe Ser Gly Arg Met Pro Cys Ala  
 1475 1480 1485  
 gag ctg gca gat agt att gtc cag tgt ggt cgt agc aca ctt gag aag 4512  
 Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Ser Thr Leu Glu Lys  
 1490 1495 1500

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gct att tca ttc gtc aat gcc aat gat aat tgg aac gct aga gtt gta	4560
Ala Ile Ser Phe Val Asn Ala Asn Asp Asn Trp Asn Ala Arg Val Val	
1505 1510 1515 1520	
tat ggt gac act gat agt atg ttt gtc ctc cta aaa gga cga act gta	4608
Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys Gly Arg Thr Val	
1525 1530 1535	
aaa gaa gct ttt gta gtc gga caa gag att gca tct gca ata act gaa	4656
Lys Glu Ala Phe Val Val Gly Gln Glu Ile Ala Ser Ala Ile Thr Glu	
1540 1545 1550	
atg aac cca cac cca gtc act tta aag atg gag aaa gtc tat cac cct	4704
Met Asn Pro His Pro Val Thr Leu Lys Met Glu Lys Val Tyr His Pro	
1555 1560 1565	
tgt ttc ctt ctt acg aag aag cgt tat gtt ggg tac agt tat gaa agt	4752
Cys Phe Leu Leu Thr Lys Lys Arg Tyr Val Gly Tyr Ser Tyr Glu Ser	
1570 1575 1580	
ccc aat cag aga gag cct ata ttt gat gca aaa ggt att gaa act gtt	4800
Pro Asn Gln Arg Glu Pro Ile Phe Asp Ala Lys Gly Ile Glu Thr Val	
1585 1590 1595 1600	
cga aga gac act tgt gaa gct gtt gcg aaa act atg gag caa tcg ttg	4848
Arg Arg Asp Thr Cys Glu Ala Val Ala Lys Thr Met Glu Gln Ser Leu	
1605 1610 1615	
aga ctc ttt ttt gaa cag aag aac atc tct aag gtt aag tcg tac ttg	4896
Arg Leu Phe Phe Glu Gln Lys Asn Ile Ser Lys Val Lys Ser Tyr Leu	
1620 1625 1630	
tat aga cag tgg aag cgg ata cta tca ggg aga gtg tct ctt caa gat	4944
Tyr Arg Gln Trp Lys Arg Ile Leu Ser Gly Arg Val Ser Leu Gln Asp	
1635 1640 1645	
ttt atc ttt gca aaa gaa gtt cgg ttg ggt act tac agc aca aga gac	4992
Phe Ile Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr Ser Thr Arg Asp	
1650 1655 1660	
tct tca ctc ctt cct cca gca gct att gtg gca acc aaa tca atg aaa	5040
Ser Ser Leu Leu Pro Pro Ala Ala Ile Val Ala Thr Lys Ser Met Lys	
1665 1670 1675 1680	
gca gac cct cgg aca gag cca cgc tat gct gaa cga gtg cct tat gtt	5088
Ala Asp Pro Arg Thr Glu Pro Arg Tyr Ala Glu Arg Val Pro Tyr Val	
1685 1690 1695	
gtg att cat ggg gag cca gga gct cga ctt gtt gat atg gtt gtt gat	5136
Val Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp Met Val Val Asp	
1700 1705 1710	
cca ctg gtt ctt ttg gac gtc gat aca ccc tac cga ctg aat gac tta	5184
Pro Leu Val Leu Leu Asp Val Asp Thr Pro Tyr Arg Leu Asn Asp Leu	
1715 1720 1725	
tac tac atc aac aaa caa att ata cca gct ttg caa agg gta ttt gga	5232
Tyr Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln Arg Val Phe Gly	
1730 1735 1740	
ctc gtg ggt gca gac tta aac cag tgg ttt ttg gag atg ccc cgt ctc	5280
Leu Val Gly Ala Asp Leu Asn Gln Trp Phe Leu Glu Met Pro Arg Leu	
1745 1750 1755 1760	
acc aga agc tcc ctt ggt caa cgt ccc tta aac tct aaa aac tca cac	5328
Thr Arg Ser Ser Leu Gly Gln Arg Pro Leu Asn Ser Lys Asn Ser His	
1765 1770 1775	
aaa aca agg att gat tat ttt tat cta tcg aaa cat tgc atc ttg tgt	5376
Lys Thr Arg Ile Asp Tyr Phe Tyr Leu Ser Lys His Cys Ile Leu Cys	
1780 1785 1790	
ggg gaa gtt gtt caa gaa tct gct caa cta tgc aac cgg tgc ctt caa	5424
Gly Glu Val Val Gln Glu Ser Ala Gln Leu Cys Asn Arg Cys Leu Gln	
1795 1800 1805	
aat aaa agt gct gct gct gca acc att gtt tgg aag act tca aag ttg	5472
Asn Lys Ser Ala Ala Ala Ala Thr Ile Val Trp Lys Thr Ser Lys Leu	
1810 1815 1820	
gag aga gag atg caa cac cta gcc acg ata tgc aga cac tgt ggt ggg	5520
Glu Arg Glu Met Gln His Leu Ala Thr Ile Cys Arg His Cys Gly Gly	
1825 1830 1835 1840	
gga gac tgg gtg gtg caa agc gga gtg aaa tgc aat tcc ctt gcg tgc	5568
Gly Asp Trp Val Val Gln Ser Gly Val Lys Cys Asn Ser Leu Ala Cys	
1845 1850 1855	
tca gtc ttt tac gag aga cgg aaa gtt cag aaa gag ctt cgt ggc ctc	5616
Ser Val Phe Tyr Glu Arg Arg Lys Val Gln Lys Glu Leu Arg Gly Leu	
1860 1865 1870	

## PhoenixTemp32470.tmp.txt

tcc tcc att gct act gag agt gag ctt tac cct aaa tgc atg gct gag  
 Ser Ser Ile Ala Thr Glu Ser Glu Leu Tyr Pro Lys Cys Met Ala Glu  
 1875 1880 1885  
 tgg ttc taa  
 Trp Phe  
 1890

5664

5673

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 <211> 1890  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 2666  
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 1 5 10 15  
 Ser Ile Asp Tyr Tyr Met Ala Ser Pro Ile Pro Gly Tyr Asn Ile Cys  
 20 25 30  
 Tyr Ser Ser Phe Gln Gly Ser Glu Val Asn Glu Val Pro Val Ile Arg  
 35 40 45  
 Ile Tyr Gly Ser Thr Pro Ala Gly Gln Lys Thr Cys Leu His Ile His  
 50 55 60  
 Arg Ala Leu Pro Tyr Leu Tyr Ile Pro Cys Ser Glu Ile Pro Leu Glu  
 65 70 75 80  
 His His Lys Gly Val Asp Gly Ser Thr Leu Ala Leu Ser Leu Glu Leu  
 85 90 95  
 Glu Lys Ala Leu Lys Leu Lys Gly Asn Ala Ala Ser Lys Arg Gln His  
 100 105 110  
 Ile His Asp Cys Glu Ile Val Arg Ala Lys Lys Phe Tyr Gly Tyr His  
 115 120 125  
 Ser Thr Glu Glu Ala Phe Val Lys Ile Tyr Leu Ser Tyr His Pro Pro  
 130 135 140  
 Asp Val Ala Arg Ala Ala Ser Leu Leu Leu Ala Gly Ala Val Leu Gly  
 145 150 155 160  
 Lys Ser Leu Gln Pro Tyr Glu Ser His Ile Pro Phe Ile Leu Gln Phe  
 165 170 175  
 Leu Val Asp Tyr Asn Leu Tyr Gly Met Gly His Val His Ile Ser Lys  
 180 185 190  
 Met Lys Phe Arg Ser Pro Val Pro His His Phe Arg Pro Arg Arg Phe  
 195 200 205  
 Asp Leu Asp Asp Cys Pro Gly Gln Arg Ile Asp Glu Val Ala Ile Thr  
 210 215 220  
 Lys Ala Asn Ser Ser Ala Ala Ala Ser Val Ser Phe Pro Val Trp Ser  
 225 230 235 240  
 Leu Ser Thr Ile Pro Gly Gln Trp Met Trp Asn Leu Ser Glu Glu Ser  
 245 250 255  
 Asp Thr Pro Leu Ser Gln Ser Gln His Arg His Gln His His Tyr Arg  
 260 265 270  
 Arg Gln Ser Leu Cys Glu Leu Glu Gly Asp Ala Thr Ser Ser Asp Ile  
 275 280 285  
 Leu Asn Gln Gln Phe Lys Met Tyr Asn Ser Leu Ser Gln Ala Gln Ser  
 290 295 300  
 Asp Thr Asn Met Val Gln Ser Leu Val Ala Ile Trp Glu Glu Glu Tyr  
 305 310 315 320  
 Glu Arg Thr Gly Val His Asp Ala Pro Ile Pro Pro Asp Pro Gly Lys  
 325 330 335  
 Pro Ser Ala Ala Asp Val Leu Gln Thr Met Ser Asp Tyr Val Gly Phe  
 340 345 350  
 Gly Asn Met Leu Lys Glu Met Leu Asn Lys Val Glu Leu Ser Pro Pro  
 355 360 365  
 Gly Met Lys Pro Thr Ala Val Ser Ser Ala Gly Pro Asp Met His Ala  
 370 375 380  
 Lys Pro Glu Ile Thr Asp Leu Gln Ala Leu Asn His Met Val Gly Thr  
 385 390 395 400  
 Cys Ser Glu Phe Pro Ala Ser Glu Gln Leu Ser Pro Leu Gly Glu Lys  
 405 410 415  
 Ser Glu Glu Ala Ser Met Glu Asn Asp Glu Tyr Met Lys Thr Pro Thr  
 420 425 430  
 Asp Arg Asp Thr Pro Ala Gln Ile Gln Asp Ala Glu Ala Leu Gly Leu  
 435 440 445

## PhoenixTemp32470.tmp.txt

Phe	Lys	Trp	Phe	Ala	Ser	Ser	Gln	Ala	Ala	Glu	Asp	Ile	Asn	Ser	Asp
450	460					455					460				
Asp	Glu	Ile	Leu	Arg	Glu	Thr	Ile	Leu	Ser	Pro	Leu	Leu	Pro	Leu	Ala
465					470					475					480
Ser	Ile	Asn	Lys	Val	Leu	Glu	Met	Ala	Ser	Thr	Asp	Tyr	Val	Ser	Gln
				485					490					495	
Ser	Gln	Lys	Glu	Cys	Gln	Asp	Ile	Leu	Asp	Ser	Gln	Glu	Asn	Leu	Pro
			500					505					510		
Asp	Phe	Gly	Ser	Ser	Thr	Lys	Arg	Ala	Leu	Pro	Ser	Asn	Pro	Asp	Ser
		515					520					525			
Gln	Asn	Leu	Arg	Thr	Ser	Ser	Asp	Lys	Gln	Ser	Leu	Glu	Ile	Glu	Val
	530					535					540				
Ala	Ser	Asp	Val	Pro	Asp	Ser	Ser	Thr	Ser	Asn	Gly	Ala	Ser	Glu	Asn
545					550					555					560
Ser	Phe	Arg	Arg	Tyr	Arg	Lys	Ser	Asp	Leu	His	Thr	Ser	Glu	Val	Met
				565					570					575	
Glu	Tyr	Lys	Asn	Arg	Ser	Phe	Ser	Lys	Ser	Asn	Lys	Pro	Ser	Asn	Ser
			580					585					590		
Val	Trp	Gly	Pro	Leu	Pro	Phe	Thr	Leu	Thr	Lys	Asn	Leu	Gln	Lys	Asp
		595					600					605			
Phe	Asp	Ser	Thr	Asn	Ala	Ser	Asp	Lys	Leu	Gly	Leu	Thr	Lys	Ile	Ser
	610					615					620				
Ser	Tyr	Pro	Met	Asn	Glu	Met	Thr	Asp	Asn	Tyr	Ile	Val	Pro	Val	Lys
625					630					635					640
Glu	His	Gln	Ala	Asp	Val	Cys	Asn	Thr	Ile	Asp	Arg	Asn	Val	Leu	Ala
				645					650					655	
Gly	Cys	Ser	Leu	Arg	Asp	Leu	Met	Arg	Lys	Lys	Arg	Leu	Cys	His	Gly
			660					665					670		
Glu	Ser	Pro	Val	Ser	Gln	His	Met	Lys	Ser	Arg	Lys	Val	Arg	Asp	Ser
		675					680					685			
Arg	His	Gly	Glu	Lys	Asn	Glu	Cys	Thr	Leu	Arg	Cys	Glu	Ala	Lys	Lys
	690					695					700				
Gln	Gly	Pro	Ala	Leu	Ser	Ala	Glu	Phe	Ser	Glu	Phe	Val	Cys	Gly	Asp
705					710					715					720
Thr	Pro	Asn	Leu	Ser	Pro	Ile	Asp	Ser	Gly	Asn	Cys	Glu	Cys	Asn	Ile
				725					730					735	
Ser	Thr	Glu	Ser	Ser	Glu	Leu	His	Ser	Val	Asp	Arg	Cys	Ser	Ala	Lys
			740					745					750		
Glu	Thr	Ala	Ser	Gln	Asn	Ser	Asp	Glu	Val	Leu	Arg	Asn	Leu	Ser	Ser
		755					760					765			
Thr	Thr	Val	Pro	Phe	Gly	Lys	Asp	Pro	Gln	Thr	Val	Glu	Ser	Gly	Thr
	770					775					780				
Leu	Val	Ser	Ser	Asn	Ile	His	Val	Gly	Ile	Glu	Ile	Asp	Ser	Val	Gln
785					790					795					800
Lys	Ser	Gly	Arg	Glu	Gln	Glu	Ser	Thr	Ala	Asn	Glu	Thr	Asp	Glu	Thr
				805					810					815	
Gly	Arg	Leu	Ile	Cys	Leu	Thr	Leu	Ser	Lys	Lys	Pro	Pro	Ser	Leu	Asp
			820					825					830		
Cys	Leu	Ser	Ala	Gly	Leu	Gln	Asp	Ser	Ala	His	Ser	His	Glu	Ile	His
		835					840					845			
Ala	Arg	Glu	Lys	Gln	His	Asp	Glu	Tyr	Glu	Gly	Asn	Ser	Asn	Asp	Ile
	850					855					860				
Pro	Phe	Phe	Pro	Leu	Glu	Asp	Asn	Lys	Glu	Glu	Lys	Lys	His	Phe	Phe
865					870					875					880
Gln	Gly	Thr	Ser	Leu	Gly	Ile	Pro	Leu	His	His	Leu	Asn	Asp	Gly	Ser
				885					890					895	
Asn	Leu	Tyr	Leu	Leu	Thr	Pro	Ala	Phe	Ser	Pro	Pro	Ser	Val	Asp	Ser
			900					905					910		
Val	Leu	Gln	Trp	Ile	Ser	Asn	Asp	Lys	Gly	Asp	Ser	Asn	Ile	Asp	Ser
		915					920					925			
Glu	Lys	Gln	Pro	Leu	Arg	Asp	Asn	His	Asn	Asp	Arg	Gly	Ala	Ser	Phe
	930					935					940				
Thr	Asp	Leu	Ala	Ser	Ala	Ser	Asn	Val	Val	Ser	Val	Ser	Glu	His	Val
945					950					955					960
Glu	Gln	His	Asn	Asn	Leu	Phe	Val	Asn	Ser	Glu	Ser	Asn	Ala	Tyr	Thr
				965					970					975	
Glu	Ser	Glu	Ile	Asp	Leu	Lys	Pro	Lys	Gly	Thr	Phe	Leu	Asn	Leu	Asn
			980					985					990		
Leu	Gln	Ala	Ser	Val	Ser	Gln	Glu	Leu	Ser	Gln	Ile	Ser	Gly	Pro	Asp

## PhoenixTemp32470.tmp.txt

995 1000 1005  
 Gly Lys Ser Gly Pro Thr Pro Leu Ser Gln Met Gly Phe Arg Asp Pro  
 1010 1015 1020  
 Ala Ser Met Gly Ala Gly Gln Gln Leu Thr Ile Leu Ser Ile Glu Val  
 1025 1030 1035 1040  
 His Ala Glu Ser Arg Gly Asp Leu Arg Pro Asp Pro Arg Phe Asp Ser  
 1045 1050 1055  
 Val Asn Val Ile Ala Leu Val Val Gln Asn Asp Asp Ser Phe Val Ala  
 1060 1065 1070  
 Glu Val Phe Val Leu Leu Phe Ser Pro Asp Ser Ile Asp Gln Arg Asn  
 1075 1080 1085  
 Val Asp Gly Leu Ser Gly Cys Lys Leu Ser Val Phe Leu Glu Glu Arg  
 1090 1095 1100  
 Gln Leu Phe Arg Tyr Phe Ile Glu Thr Leu Cys Lys Trp Asp Pro Asp  
 1105 1110 1115 1120  
 Val Leu Leu Gly Trp Asp Ile Gln Gly Gly Ser Ile Gly Phe Leu Ala  
 1125 1130 1135  
 Glu Arg Ala Ala Gln Leu Gly Ile Arg Phe Leu Asn Asn Ile Ser Arg  
 1140 1145 1150  
 Thr Pro Ser Pro Thr Thr Thr Asn Asn Ser Asp Asn Lys Arg Lys Leu  
 1155 1160 1165  
 Gly Asn Asn Leu Leu Pro Asp Pro Leu Val Ala Asn Pro Ala Gln Val  
 1170 1175 1180  
 Glu Glu Val Val Ile Glu Asp Glu Trp Gly Arg Thr His Ala Ser Gly  
 1185 1190 1195 1200  
 Val His Val Gly Gly Arg Ile Val Leu Asn Ala Trp Arg Leu Ile Arg  
 1205 1210 1215  
 Gly Glu Val Lys Leu Asn Met Tyr Thr Ile Glu Ala Val Ser Glu Ala  
 1220 1225 1230  
 Val Leu Arg Gln Lys Val Pro Ser Ile Pro Tyr Lys Val Leu Thr Glu  
 1235 1240 1245  
 Trp Phe Ser Ser Gly Pro Ala Gly Ala Arg Tyr Arg Cys Ile Glu Tyr  
 1250 1255 1260  
 Val Ile Arg Arg Ala Asn Leu Asn Leu Glu Ile Met Ser Gln Leu Asp  
 1265 1270 1275 1280  
 Met Ile Asn Arg Thr Ser Glu Leu Ala Arg Val Phe Gly Ile Asp Phe  
 1285 1290 1295  
 Phe Ser Val Leu Ser Arg Gly Ser Gln Tyr Arg Val Glu Ser Met Leu  
 1300 1305 1310  
 Leu Arg Leu Ala His Thr Gln Asn Tyr Leu Ala Ile Ser Pro Gly Asn  
 1315 1320 1325  
 Gln Gln Val Ala Ser Gln Pro Ala Met Glu Cys Val Pro Leu Val Met  
 1330 1335 1340  
 Glu Pro Glu Ser Ala Phe Tyr Asp Asp Pro Val Ile Val Leu Asp Phe  
 1345 1350 1355 1360  
 Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Leu Cys Phe Ser  
 1365 1370 1375  
 Thr Cys Leu Gly Lys Leu Ala His Leu Lys Met Asn Thr Leu Gly Val  
 1380 1385 1390  
 Ser Ser Tyr Ser Leu Asp Leu Asp Val Leu Gln Asp Leu Asn Gln Ile  
 1395 1400 1405  
 Leu Gln Thr Pro Asn Ser Val Met Tyr Val Pro Pro Glu Val Arg Arg  
 1410 1415 1420  
 Gly Ile Leu Pro Arg Leu Leu Glu Glu Ile Leu Ser Thr Arg Ile Met  
 1425 1430 1435 1440  
 Val Lys Lys Ala Met Lys Lys Leu Thr Pro Ser Glu Ala Val Leu His  
 1445 1450 1455  
 Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val  
 1460 1465 1470  
 Thr Tyr Gly Tyr Thr Ala Ala Gly Phe Ser Gly Arg Met Pro Cys Ala  
 1475 1480 1485  
 Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Ser Thr Leu Glu Lys  
 1490 1495 1500  
 Ala Ile Ser Phe Val Asn Ala Asn Asp Asn Trp Asn Ala Arg Val Val  
 1505 1510 1515 1520  
 Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys Gly Arg Thr Val  
 1525 1530 1535  
 Lys Glu Ala Phe Val Val Gly Gln Glu Ile Ala Ser Ala Ile Thr Glu  
 1540 1545 1550

## PhoenixTemp32470.tmp.txt

Met Asn Pro His Pro Val Thr Leu Lys Met Glu Lys Val Tyr His Pro  
 1555 1560 1565  
 Cys Phe Leu Leu Thr Lys Lys Arg Tyr Val Gly Tyr Ser Tyr Glu Ser  
 1570 1575 1580  
 Pro Asn Gln Arg Glu Pro Ile Phe Asp Ala Lys Gly Ile Glu Thr Val  
 1585 1590 1595 1600  
 Arg Arg Asp Thr Cys Glu Ala Val Ala Lys Thr Met Glu Gln Ser Leu  
 1605 1610 1615  
 Arg Leu Phe Phe Glu Gln Lys Asn Ile Ser Lys Val Lys Ser Tyr Leu  
 1620 1625 1630  
 Tyr Arg Gln Trp Lys Arg Ile Leu Ser Gly Arg Val Ser Leu Gln Asp  
 1635 1640 1645  
 Phe Ile Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr Ser Thr Arg Asp  
 1650 1655 1660  
 Ser Ser Leu Leu Pro Pro Ala Ala Ile Val Ala Thr Lys Ser Met Lys  
 1665 1670 1675 1680  
 Ala Asp Pro Arg Thr Glu Pro Arg Tyr Ala Glu Arg Val Pro Tyr Val  
 1685 1690 1695  
 Val Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp Met Val Val Asp  
 1700 1705 1710  
 Pro Leu Val Leu Leu Asp Val Asp Thr Pro Tyr Arg Leu Asn Asp Leu  
 1715 1720 1725  
 Tyr Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln Arg Val Phe Gly  
 1730 1735 1740  
 Leu Val Gly Ala Asp Leu Asn Gln Trp Phe Leu Glu Met Pro Arg Leu  
 1745 1750 1755 1760  
 Thr Arg Ser Ser Leu Gly Gln Arg Pro Leu Asn Ser Lys Asn Ser His  
 1765 1770 1775  
 Lys Thr Arg Ile Asp Tyr Phe Tyr Leu Ser Lys His Cys Ile Leu Cys  
 1780 1785 1790  
 Gly Glu Val Val Gln Glu Ser Ala Gln Leu Cys Asn Arg Cys Leu Gln  
 1795 1800 1805  
 Asn Lys Ser Ala Ala Ala Ala Thr Ile Val Trp Lys Thr Ser Lys Leu  
 1810 1815 1820  
 Glu Arg Glu Met Gln His Leu Ala Thr Ile Cys Arg His Cys Gly Gly  
 1825 1830 1835 1840  
 Gly Asp Trp Val Val Gln Ser Gly Val Lys Cys Asn Ser Leu Ala Cys  
 1845 1850 1855  
 Ser Val Phe Tyr Glu Arg Arg Lys Val Gln Lys Glu Leu Arg Gly Leu  
 1860 1865 1870  
 Ser Ser Ile Ala Thr Glu Ser Glu Leu Tyr Pro Lys Cys Met Ala Glu  
 1875 1880 1885  
 Trp Phe  
 1890

&lt;210&gt; 2667

&lt;211&gt; 6393

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(6393)

&lt;400&gt; 2667

atg gca gcc gca gga gag gca atc gat gga gtc tac tcc gtc cgg ctg	48
Met Ala Ala Ala Gly Glu Ala Ile Asp Gly Val Tyr Ser Val Arg Leu	
1 5 10 15	
gtc atc gcg gat ttc tat atg gag aag ccg cag ttc gga atg gat ccg	96
Val Ile Ala Asp Phe Tyr Met Glu Lys Pro Gln Phe Gly Met Asp Pro	
20 25 30	
tgc tat tcg gag ctg cgc ggc aaa gaa atc aag cgg gtg cca gtg att	144
Cys Tyr Ser Glu Leu Arg Gly Lys Glu Ile Lys Arg Val Pro Val Ile	
35 40 45	
cga gtg ttt ggc ggc aac tcc aga ggc cag aag acc tgc atg cat gta	192
Arg Val Phe Gly Gly Asn Ser Arg Gly Gln Lys Thr Cys Met His Val	
50 55 60	
cac gga gtt ttc ccc tat cta tac att ccg tat gac aag aag gat ttt	240
His Gly Val Phe Pro Tyr Leu Tyr Ile Pro Tyr Asp Lys Lys Asp Phe	



## PhoenixTemp32470.tmp.txt

65	gag	tcc	ctg	gag	cgg	70	atc	ctg	cag	atg	75	gcc	atg	cac	ctg	gac	80	aag		288
Glu	Ser	Leu	Glu	Arg	Gly	Ile	Leu	Gln	Met	Ala	Met	His	Leu	Asp	Lys					
				85					90											
gcc	atc	aac	ata	tcc	ttg	ggt	caa	ggc	agc	tcc	aac	gcc	cag	cat	gtg					336
Ala	Ile	Asn	Ile	Ser	Leu	Gly	Gln	Gly	Ser	Ser	Asn	Ala	Gln	His	Val					
			100					105												
ttc	aaa	att	cag	ctg	gtc	aag	ggc	ccc	ttc	tat	ggc	tac	cat	cga						384
Phe	Lys	Ile	Gln	Leu	Val	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Tyr	His	Arg					
		115					120					125								
gtg	gaa	cac	cag	ttc	ctc	aag	atc	tac	atg	ttc	aat	ccc	cgg	ttc	gta					432
Val	Glu	His	Gln	Phe	Leu	Lys	Ile	Tyr	Met	Phe	Asn	Pro	Arg	Phe	Val					
	130					135														
cgc	cgc	gcc	gcc	aac	ctt	ctc	caa	agc	ggc	gcc	att	ctg	agc	aag	aac					480
Arg	Arg	Ala	Ala	Asn	Leu	Leu	Gln	Ser	Gly	Ala	Ile	Leu	Ser	Lys	Asn					
					150				155						160					
ttc	agt	ccg	cac	gag	tcg	cat	gtg	ccc	tac	att	ctg	cag	ttt	atg	atc					528
Phe	Ser	Pro	His	Glu	Ser	His	Val	Pro	Tyr	Ile	Leu	Gln	Phe	Met	Ile					
				165					170					175						
gac	tac	aat	ctg	tac	ggt	atg	agc	tat	gtg	cat	gtc	ccg	ctg	gag	gtt					576
Asp	Tyr	Asn	Leu	Tyr	Gly	Met	Ser	Tyr	Val	His	Val	Pro	Leu	Glu	Val					
			180					185					190							
ctc	aag	ttc	cgg	cgc	aac	cat	gac	gat	gac	gta	atc	ccc	tat	gca	aat					624
Leu	Lys	Phe	Arg	Arg	Asn	His	Asp	Asp	Asp	Val	Ile	Pro	Tyr	Ala	Asn					
		195					200					205								
gtc	aag	caa	gcg	cag	ctt	ctg	gac	atc	aca	acc	gct	aag	aaa	gtg	gcc					672
Val	Lys	Gln	Ala	Gln	Leu	Leu	Asp	Ile	Thr	Thr	Ala	Lys	Lys	Val	Ala					
	210				215						220									
tgc	agt	gct	tta	gag	gtg	gat	gtc	agc	tcg	aac	ttc	ata	ctg	aat	cgg					720
Cys	Ser	Ala	Leu	Glu	Val	Asp	Val	Ser	Ser	Asn	Phe	Ile	Leu	Asn	Arg					
				230					235						240					
ttc	cag	ctg	gtg	gcg	aag	agt	aag	agc	aac	cac	act	aac	ccc	ggc	atc					768
Phe	Gln	Leu	Val	Ala	Lys	Ser	Lys	Ser	Asn	His	Thr	Asn	Pro	Gly	Ile					
				245					250					255						
gag	gcc	atc	tgg	aat	gat	gag	aaa	ttg	cgc	cga	cag	aaa	ctt	gtc	gag					816
Glu	Ala	Ile	Trp	Asn	Asp	Glu	Lys	Leu	Arg	Arg	Gln	Lys	Leu	Val	Glu					
			260					265					270							
aag	cac	acc	gat	gct	ggc	gat	gag	gag	aag	gct	gaa	gcg	gtg	cca	gta					864
Lys	His	Thr	Asp	Ala	Gly	Asp	Glu	Glu	Lys	Ala	Glu	Ala	Val	Pro	Val					
		275					280					285								
ttg	gag	tta	ccg	cca	aca	cag	gag	cgg	cat	caa	att	gaa	atc	gcc	gaa					912
Leu	Glu	Leu	Pro	Pro	Thr	Gln	Glu	Arg	His	Gln	Ile	Glu	Ile	Ala	Glu					
	290					295					300									
agc	gat	atc	ttc	tac	cgc	acc	gct	ctg	gag	agc	aag	ctg	atg	aca	ctg					960
Ser	Asp	Ile	Phe	Tyr	Arg	Thr	Ala	Leu	Glu	Ser	Lys	Leu	Met	Thr	Leu					
					310					315					320					
gag	cag	tcc	aca	ctg	tcc	gag	caa	acg	ttg	tcg	gat	cag	aca	atc	ctt					1008
Glu	Gln	Ser	Thr	Leu	Ser	Glu	Gln	Thr	Leu	Ser	Asp	Gln	Thr	Ile	Leu					
				325					330					335						
ccc	caa	gca	acc	atg	cag	acc	acc	atg	ccc	ggc	aca	aag	gca	cag	aaa					1056
Pro	Gln	Ala	Thr	Met	Gln	Thr	Thr	Met	Pro	Gly	Thr	Lys	Ala	Gln	Lys					
			340					345					350							
cgc	agg	ttt	aac	ttg	caa	aaa	ctt	cta	gcc	aac	gcc	gtt	tat	ccg	gag					1104
Arg	Arg	Phe	Asn	Leu	Gln	Lys	Leu	Leu	Ala	Asn	Ala	Val	Tyr	Pro	Glu					
		355					360					365								
gaa	tgc	tca	cag	gat	cag	cag	caa	ctg	ctg	gtt	aat	gct	tcc	ttc	ata					1152
Glu	Cys	Ser	Gln	Asp	Gln	Gln	Gln	Leu	Leu	Val	Asn	Ala	Ser	Phe	Ile					
	370					375					380									
caa	aac	cat	gtt	acc	tgc	ggc	tac	agc	agc	agt	gtc	agt	ttg	tca	acc					1200
Gln	Asn	His	Val	Thr	Cys	Gly	Tyr	Ser	Ser	Ser	Val	Ser	Leu	Ser	Thr					
	385				390				395					400						
tcc	aag	gat	gag	tcc	gat	gac	ttg	gac	gaa	act	gta	gtg	gat	gag	gaa					1248
Ser	Lys	Asp	Glu	Ser	Asp	Asp	Leu	Asp	Glu	Thr	Val	Val	Asp	Glu	Glu					
				405					410					415						
cta	ata	ctg	agc	ctc	aca	cag	cct	cat	gga	gcg	ata	ccc	cat	gat	gcc					1296
Leu	Ile	Leu	Ser	Leu	Thr	Gln	Pro	His	Gly	Ala	Ile	Pro	His	Asp	Ala					
			420					425					430							
acc	ttg	agg	gag	gag	gat	ttg	gaa	ctt	ttg	gac	gcg	ttg	cag	ctg	ttg					1344
Thr	Leu	Arg	Glu	Glu	Asp	Leu	Glu	Leu	Leu	Asp	Ala	Leu	Gln	Leu	Leu					

				gag Glu	gag Glu	cag Gln	aat Asn	gaa Glu	agt Ser	gaa Glu	tgc Ser	cat His	gtg Val	gac Asp	tta Leu	gac Asp	agt Ser	tcg Ser	ttg Leu		1392
				gct Ala	cca Pro	ttg Leu	tcg Ser	caa Gln	cat His	aaa Lys	aag Lys	ttc Phe	gaa Glu	ctt Leu	aca Thr	ccc Pro	gaa Glu	ttg Leu	ttg Leu		1440
				gac Asp	aag Lys	gag Glu	acc Thr	gca Ala	gct Ala	act Thr	gct Ala	gct Ala	ctt Leu	ttc Phe	gac Asp	gaa Glu	gat Asp	gtt Val	gac Asp		1488
				tcc Ser	gac Asp	gag Glu	gat Asp	gcc Ala	gac Asp	caa Gln	gaa Glu	acc Thr	cga Arg	cat His	gac Asp	ttc Phe	tct Ser	acc Thr	gtc Val		1536
				cta Leu	gac Asp	gat Asp	gtc Val	gat Asp	gag Glu	ttg Leu	ttg Leu	ctt Leu	aag Lys	tta Leu	aca Thr	caa Gln	agt Ser	cag Gln	cct Pro		1584
				gcg Ala	gaa Glu	tcg Ser	aag Lys	gaa Glu	ctg Leu	aaa Lys	gca Ala	tct Ser	agt Ser	aaa Lys	ctg Leu	ccc Pro	caa Gln	att Ile	gat Asp		1632
				ggf Gly	gct Ala	gat Asp	gat Asp	cgf Arg	cta Leu	caa Gln	agg Arg	acc Thr	ccc Pro	att Ile	aaa Lys	tcg Ser	atc Ile	agc Ser	tct Ser		1680
				aag Lys	tca Ser	aag Lys	tca Ser	agt Ser	cct Pro	tca Ser	aag Lys	act Thr	cca Pro	aca Thr	acg Thr	cca Pro	ata Ile	ggf Gly	cag Gln		1728
				aaa Lys	agt Ser	ctt Leu	ccc Pro	aaa Lys	tcg Ser	cca Pro	cgt Arg	act Thr	ccg Pro	aaa Lys	acc Thr	agt Ser	gca Ala	gcc Ala	aag Lys		1776
				aaa Lys	tat Tyr	gcg Ala	ccg Pro	ctg Leu	gct Ala	ttg Leu	aca Thr	att Ile	gga Gly	agc Ser	agt Ser	tca Ser	tca Ser	aag Lys	aaa Lys		1824
				agc Ser	aac Asn	gat Asp	gaa Glu	ttc Phe	gca Ala	ggg Gly	aga Arg	cca Pro	tct Ser	aat Asn	cca Pro	cgf Arg	ctc Leu	agt Ser	ttg Leu		1872
				cag Gln	cta Leu	gac Asp	caa Gln	gga Gly	acc Thr	gga Gly	acg Thr	gga Gly	aca Thr	ctt Leu	cgg Arg	cca Pro	gaa Glu	atc Ile	tca Ser		1920
				ttg Leu	cgf Arg	aaa Lys	aaa Lys	cta Leu	gcc Ala	atg Met	tcg Ser	gag Glu	atg Met	cga Arg	cgg Arg	aaa Lys	agt Ser	ttc Phe	gag Glu		1968
				gac Asp	agt Ser	ttt Phe	gtg Val	ctc Leu	tta Leu	aag Lys	aac Asn	gat Asp	tgt Cys	act Thr	cca Pro	gtt Val	agg Arg	agt Ser	acc Thr		2016
				aga Arg	cga Arg	tca Ser	act Thr	agc Ser	aat Asn	ctg Leu	gac Asp	aaa Lys	aca Thr	cac His	att Ile	att Ile	tgt Cys	tcc Ser	ctt Leu		2064
				acg Thr	ccg Pro	agg Arg	gac Asp	aga Arg	aat Asn	cct Pro	ggc Gly	ttg Leu	agc Ser	gac Asp	atg Met	ttc Phe	gaa Glu	aca Thr	gag Glu		2112
				gac Asp	ggc Gly	aag Lys	caa Gln	tta Leu	cca Pro	cca Pro	aag Lys	aaa Lys	gta Val	gta Val	aga Arg	aag Lys	acg Thr	cga Arg	tgg Trp		2160
				agc Ser	act Thr	cgg Arg	aat Asn	caa Gln	gat Asp	ata Ile	gaa Glu	agt Ser	cta Leu	ccc Pro	aag Lys	gcc Ala	ggf Gly	tgt Cys	gag Glu		2208
				ata Ile	gag Glu	aga Arg	ccc Pro	cac His	agg Arg	tca Ser	gaa Glu	gga Gly	agt Ser	gcc Ala	ttg Leu	gat Asp	gag Glu	ctg Leu	aag Lys		2256
				ccg Pro	cgt Arg	cgf Arg	agt Ser	gct Ala	cgf Arg	cat His	aag Lys	gtt Val	aat Asn	tcg Ser	gca Ala	aat Asn	cca Pro	gat Asp	gag Glu		2304
				tgt Cys	tcc Ser	agc Ser	gaa Glu	ata Ile	caa Gln	aca Thr	act Thr	ggg Gly	cca Pro	cga Arg	gtg Val	act Thr	aca Thr	agt Ser			2352
				ttg Leu	gat Asp	aga Arg</															

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## PhoenixTemp32470.tmp.txt

1170	acg ccc ttg tcc caa gct	1175	aag gat aaa tgc aag gca acc cct acc agt	1180	3600
Thr Pro Leu Ser Gln	Ala Lys Asp Lys Cys Lys	Ala Thr Pro Thr Ser			
1185	agc aaa gcc aga gaa aca gga aag agt cgc ctt aag cgc gga act agg	1190	1195	1200	3648
Ser Lys Ala Arg Glu Thr Gly	Lys Ser Arg Leu Lys Arg Gly Thr Arg				
1205	ctc agc ttc ata gga agc cag gac gag gaa cca cca agc tcg cag tcc	1210	1215	1220	3696
Leu Ser Phe Ile Gly Ser Gln Asp Glu Glu Pro Pro Ser Ser Gln Ser					
1220	agc gaa cag agc gtc tcc agt agt gcg gcc cag gcg gag cta gat cgt	1225	1230	1235	3744
Ser Glu Gln Ser Val Ser Ser Ser Ala Ala Gln Ala Glu Leu Asp Arg					
1240	agt tcc ttt ctg cgc cag tta gag ggc agt agc cag gat agg cag cac	1245	1250	1255	3792
Ser Ser Phe Leu Arg Gln Leu Glu Gly Ser Ser Gln Asp Arg Gln His					
1260	gac ctc agc ttt gga ctt agc cac gct acc ttg gac aac acg ttc ggg	1265	1270	1275	3840
Asp Leu Ser Phe Gly Leu Ser His Ala Thr Leu Asp Asn Thr Phe Gly					
1285	ttc aag gtt aat ttg gag aat ctg cag cag gcc aaa gcc gac att gat	1290	1295	1300	3888
Phe Lys Val Asn Leu Glu Asn Leu Gln Gln Ala Lys Ala Asp Ile Asp					
1305	tgc aac cac ctg aca atc ata acg tta gag gtg ttt gtg tcc acg cga	1310	1315	1320	3936
Cys Asn His Leu Thr Ile Ile Thr Leu Glu Val Phe Val Ser Thr Arg					
1325	ggt gat ctc caa cca gat ccg atg cac gac gag att cgg tgt ttg ttt	1330	1335	1340	3984
Gly Asp Leu Gln Pro Asp Pro Met His Asp Glu Ile Arg Cys Leu Phe					
1345	tat gct atc gaa cac agt ttg ccg gat gaa aag ctg cct agc aaa gcc	1350	1355	1360	4032
Tyr Ala Ile Glu His Ser Leu Pro Asp Glu Lys Leu Pro Ser Lys Ala					
1365	tgc ggc tat ata atg gtg aac act gtc cag gat ttg cta agt gaa gga	1370	1375	1380	4080
Cys Gly Tyr Ile Met Val Asn Thr Val Gln Asp Leu Leu Ser Glu Gly					
1385	cct ttt cat ggt ata gat cgc gat att gag gtg caa gta gtg acc agt	1390	1395	1400	4128
Pro Phe His Gly Ile Asp Arg Asp Ile Glu Val Gln Val Val Thr Ser					
1405	gaa gcg gag gca ttt gag gcg ttg ctg gct ttg tgt gaa cgg tgg gat	1410	1415	1420	4176
Glu Ala Glu Ala Phe Glu Ala Leu Leu Ala Leu Cys Glu Arg Trp Asp					
1425	gcg gac ata tac gca ggg tac gaa atc gag atg tcc tct tgg ggc tat	1430	1435	1440	4224
Ala Asp Ile Tyr Ala Gly Tyr Glu Ile Glu Met Ser Ser Trp Gly Tyr					
1445	gtg att gat cgg gcc aag cat ctg tgc ttc aac atc gct cct ctg ctg	1450	1455	1460	4272
Val Ile Asp Arg Ala Lys His Leu Cys Phe Asn Ile Ala Pro Leu Leu					
1465	tcc cga gtg ccc aca cag aag gtc cgg gac ttt gtg gac gag gat cgg	1470	1475	1480	4320
Ser Arg Val Pro Thr Gln Lys Val Arg Asp Phe Val Asp Glu Asp Arg					
1485	gag cag ttc acc gat ttg gat gtg gaa atg aag ctc tgc ggc cgc att	1490	1495	1500	4368
Glu Gln Phe Thr Asp Leu Asp Val Glu Met Lys Leu Cys Gly Arg Ile					
1505	ctg ctg gac gta tgg cgc ctg atg cgc tcc gag att gca ctg acg tcg	1510	1515	1520	4416
Leu Leu Asp Val Trp Arg Leu Met Arg Ser Glu Ile Ala Leu Thr Ser					
1525	tac acc ttc gaa aac gta atg tac cac att ttg cat aag aga tgt ccc	1530	1535	1540	4464
Tyr Thr Phe Glu Asn Val Met Tyr His Ile Leu His Lys Arg Cys Pro					
1545	tgg cac act gcc aaa tcc ctc acc gaa tgg ttc ggc tca ccc tgc acc	1550	1555	1560	4512
Trp His Thr Ala Lys Ser Leu Thr Glu Trp Phe Gly Ser Pro Cys Thr					
1565	cgc tgg ata gta atg gaa tat tac ttg gag cgt gtg cgt ggc acc tta	1570	1575	1580	4560
Arg Trp Ile Val Met Glu Tyr Tyr Leu Glu Val Arg Gly Thr Leu					
1585	act ctc ctg gat cag ctg gac tta ctg gga cgg act agc gaa atg gcc	1590	1595	1600	4608
Thr Leu Leu Asp Gln Leu Asp Leu Leu Gly Arg Thr Ser Glu Met Ala					
1605	aag ctc att ggc att cag ttc tac gag gtg ctg tcg cgc ggc tca cag	1610	1615	1620	4656
Lys Leu Ile Gly Ile Gln Phe Tyr Glu Val Leu Ser Arg Gly Ser Gln					

## PhoenixTemp32470.tmp.txt

1540	1545	1550	
ttt cgc gtg gaa agc atg atg ctg aga atc gcc aag cca aag aac ctg	1545	1550	4704
Phe Arg Val Glu Ser Met Met Leu Arg Ile Ala Lys Pro Lys Asn Leu			
1555	1560	1565	
gtg cca ctt tca ccc agc gtc cag gct cgc gct cat atg aga gct ccc	1560	1565	4752
Val Pro Leu Ser Pro Ser Val Gln Ala Arg Ala His Met Arg Ala Pro			
1570	1575	1580	
gag tac ttg gcg cta ata atg gaa ccg cag tca cga ttc tat gcc gat	1575	1580	4800
Glu Tyr Leu Ala Leu Ile Met Glu Pro Gln Ser Arg Phe Tyr Ala Asp			
1585	1590	1595	
ccc cta atc gtg ctt gat ttt cag agc ttg tac ccc agc atg atc atc	1590	1595	4848
Pro Leu Ile Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile			
1605	1610	1615	
gcc tac aac tac tgc ttc tcc acg tgc ttg ggt aga gta gag cac ctg	1610	1615	4896
Ala Tyr Asn Tyr Cys Phe Ser Thr Cys Leu Gly Arg Val Glu His Leu			
1620	1625	1630	
ggt gga agt tgc ccc ttt gaa ttt ggc gcg tgc cag ctc cga gtt tcg	1625	1630	4944
Gly Gly Ser Ser Pro Phe Glu Phe Gly Ala Ser Gln Leu Arg Val Ser			
1635	1640	1645	
cgg cag atg ctg cag aag ttg ctg gag cac gat ctg gtt act gtt tcg	1640	1645	4992
Arg Gln Met Leu Gln Lys Leu Leu Glu His Asp Leu Val Thr Val Ser			
1650	1655	1660	
cca tgc ggc gtt gtg ttc gtg aag cgt gaa gtg cgc gag ggc atc ctg	1655	1660	5040
Pro Cys Gly Val Val Phe Val Lys Arg Glu Val Arg Glu Gly Ile Leu			
1665	1670	1675	
ccg cgc atg ctc acc gag atc ttg gac acg cgc caa atg gtc aaa cag	1670	1675	5088
Pro Arg Met Leu Thr Glu Ile Leu Asp Thr Arg Gln Met Val Lys Gln			
1685	1690	1695	
tcg atg aag ctc cat aag gac agc tct gca ctt cag cgg atc ctt cac	1690	1695	5136
Ser Met Lys Leu His Lys Asp Ser Ser Ala Leu Gln Arg Ile Leu His			
1700	1705	1710	
tca cgg cag ctg ggc ctt aag ctg atg gcc aat gtt acc tat ggc tac	1705	1710	5184
Ser Arg Gln Leu Gly Leu Lys Leu Met Ala Asn Val Thr Tyr Gly Tyr			
1715	1720	1725	
acc gcc gct aac ttc agt ggc cga atg cct tca gtg gaa gtg ggc gat	1720	1725	5232
Thr Ala Ala Asn Phe Ser Gly Arg Met Pro Ser Val Glu Val Gly Asp			
1730	1735	1740	
tct gta gtt tcc aaa gga cgg gag acc ctg gag cgt gct atc aaa cta	1735	1740	5280
Ser Val Val Ser Lys Gly Arg Glu Thr Leu Glu Arg Ala Ile Lys Leu			
1745	1750	1755	
gtg gag aac aac gag gag tgg aag gtg cgt gtc tat ggc gac acg	1750	1755	5328
Val Glu Asn Asn Glu Glu Trp Lys Val Arg Val Val Tyr Gly Asp Thr			
1765	1770	1775	
gac tcc atg ttc gtt ctt gtg ccg ggt cga aat cga gct gaa gct ttt	1770	1775	5376
Asp Ser Met Phe Val Leu Val Pro Gly Arg Asn Arg Ala Glu Ala Phe			
1780	1785	1790	
cga atc ggc gag gag atc gcc aag ggc gtc acc gaa atg aat cca cag	1785	1790	5424
Arg Ile Gly Glu Glu Ile Ala Lys Ala Val Thr Glu Met Asn Pro Gln			
1795	1800	1805	
cca gtg aag cta aaa ctg gag aag gtc tac caa cct tgc atg ctg cag	1800	1805	5472
Pro Val Lys Leu Lys Leu Glu Lys Val Tyr Gln Pro Cys Met Leu Gln			
1810	1815	1820	
acc aag aag cgc tac gtg ggt tac atg tat gag aca gcc gat cag gag	1815	1820	5520
Thr Lys Lys Arg Tyr Val Gly Tyr Met Tyr Glu Thr Ala Asp Gln Glu			
1825	1830	1835	
cag ccc gtt tac gag gcg aag gga ata gaa act gtg cgg cga gat ggt	1830	1835	5568
Gln Pro Val Tyr Glu Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly			
1845	1850	1855	
tgt ccg gcg gtg gcc aag atg ctg gaa aag gtg ctg cgc ata ttg ttc	1850	1855	5616
Cys Pro Ala Val Ala Lys Met Leu Glu Lys Val Leu Arg Ile Leu Phe			
1860	1865	1870	
gag acg caa gac gtc agc aag atc aag gcg tac gtg tgc cgg cag ttc	1865	1870	5664
Glu Thr Gln Asp Val Ser Lys Ile Lys Ala Tyr Val Cys Arg Gln Phe			
1875	1880	1885	
acc aag ctg ctg tcg ggc agg gcc aat ctg cag gac ctg att ttc gcc	1880	1885	5712
Thr Lys Leu Leu Ser Gly Arg Ala Asn Leu Gln Asp Leu Ile Phe Ala			
1890	1895	1900	
aag gag ttc agg ggt ctc aat ggc tac aag ccc acg gct tgt gtg cca	1895	1900	5760
Lys Glu Phe Arg Gly Leu Asn Gly Tyr Lys Pro Thr Ala Cys Val Pro			

## PhoenixTemp32470.tmp.txt

1905 1910 1915 1920  
 gca ctg gag ctc acg cgt aaa tgg atg caa aaa gac cca cga cat gtg 5808  
 Ala Leu Glu Leu Thr Arg Lys Trp Met Gln Lys Asp Pro Arg His Val  
 1925 1930 1935  
 ccg cgt cgt ggc gaa cgc gtc ccc ttc ata ata gtc aac ggc ccg ccg 5856  
 Pro Arg Arg Gly Glu Arg Val Pro Phe Ile Ile Val Asn Gly Pro Pro  
 1940 1945 1950  
 ggc atg cag cta atc cgc ctg gtg cgc agc ccg cac gac atc ctg gcc 5904  
 Gly Met Gln Leu Ile Arg Leu Val Arg Ser Pro His Asp Ile Leu Ala  
 1955 1960 1965  
 aac gag ggt cac aag ata aac gcc atc tac tac att acc aag gcg att 5952  
 Asn Glu Gly His Lys Ile Asn Ala Ile Tyr Tyr Ile Thr Lys Ala Ile  
 1970 1975 1980  
 att ccg ccg ctg aat cgc tgc ctg ctg ctc ata ggc aat gtg cac 6000  
 Ile Pro Pro Leu Asn Arg Cys Leu Leu Leu Ile Gly Ala Asn Val His  
 1985 1990 1995 2000  
 gac tgg ttt gcc agt ctg ccg agg aag ttg ctc atg acg ccg gcc gtt 6048  
 Asp Trp Phe Ala Ser Leu Pro Arg Lys Leu Leu Met Thr Pro Ala Val  
 2005 2010 2015  
 gga acc gcc aac gaa ttg gcg ggt gca cgc ggt gcc aag tcc acc atc 6096  
 Gly Thr Ala Asn Glu Leu Ala Gly Ala Arg Gly Ala Lys Ser Thr Ile  
 2020 2025 2030  
 tcc cag tat ttc tct acc acc agc tgc gtg atc gac tgt ggc cgc caa 6144  
 Ser Gln Tyr Phe Ser Thr Thr Ser Cys Val Ile Asp Cys Gly Arg Gln  
 2035 2040 2045  
 acc aag gcg ggc att tgc cca gac tgc ctg aaa aac gcc acc acg tgc 6192  
 Thr Lys Ala Gly Ile Cys Pro Asp Cys Leu Lys Asn Ala Thr Thr Cys  
 2050 2055 2060  
 gta gtt gtg ctc tca gat aag aca gcg cgt ctg gag agg ggc tac caa 6240  
 Val Val Val Leu Ser Asp Lys Thr Ala Arg Leu Glu Arg Gly Tyr Gln  
 2065 2070 2075 2080  
 cta act cgg cag ata tgc cag gct tgt tgc gga cgc ctg ggt agc cta 6288  
 Leu Thr Arg Gln Ile Cys Gln Ala Cys Cys Gly Arg Leu Gly Ser Leu  
 2085 2090 2095  
 cag tgt gat tcc ctc gac tgc cca gtg ctg tat gtc ttg gag gga aag 6336  
 Gln Cys Asp Ser Leu Asp Cys Pro Val Leu Tyr Val Leu Glu Gly Lys  
 2100 2105 2110  
 cga agg gaa ctc cag caa atc gag cac tgg aac aaa ctc ctt gaa cac 6384  
 Arg Arg Glu Leu Gln Gln Ile Glu His Trp Asn Lys Leu Leu Glu His  
 2115 2120 2125  
 cac ttc taa 6393  
 His Phe  
 2130

<210> 2668  
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 <212> PRT  
 <213> Drosophila melanogaster

<400> 2668  
 Met Ala Ala Ala Gly Glu Ala Ile Asp Gly Val Tyr Ser Val Arg Leu  
 1 5 10 15  
 Val Ile Ala Asp Phe Tyr Met Glu Lys Pro Gln Phe Gly Met Asp Pro  
 20 25 30  
 Cys Tyr Ser Glu Leu Arg Gly Lys Glu Ile Lys Arg Val Pro Val Ile  
 35 40 45  
 Arg Val Phe Gly Gly Asn Ser Arg Gly Gln Lys Thr Cys Met His Val  
 50 55 60  
 His Gly Val Phe Pro Tyr Leu Tyr Ile Pro Tyr Asp Lys Lys Asp Phe  
 65 70 75 80  
 Glu Ser Leu Glu Arg Gly Ile Leu Gln Met Ala Met His Leu Asp Lys  
 85 90 95  
 Ala Ile Asn Ile Ser Leu Gly Gln Gly Ser Ser Asn Ala Gln His Val  
 100 105 110  
 Phe Lys Ile Gln Leu Val Lys Gly Ile Pro Phe Tyr Gly Tyr His Arg  
 115 120 125  
 Val Glu His Gln Phe Leu Lys Ile Tyr Met Phe Asn Pro Arg Phe Val  
 130 135 140  
 Arg Arg Ala Ala Asn Leu Leu Gln Ser Gly Ala Ile Leu Ser Lys Asn

## PhoenixTemp32470.tmp.txt

145	Phe	Ser	Pro	His	Glu	150	Ser	His	Val	Pro	Tyr	155	Ile	Leu	Gln	Phe	Met	160	Ile
				165	Tyr	Gly	Met	Ser	Tyr	170	Val	His	Val	Pro	Leu	Glu	175	Val	
Asp	Tyr	Asn	Leu	180	Arg	Arg	Asn	His	Asp	185	Asp	Val	Ile	Pro	190	Tyr	Ala	Asn	
Leu	Lys	Phe	195	Ala	Gln	Leu	Leu	215	Asp	Ile	Thr	Thr	Ala	220	Lys	Lys	Val	Ala	
Val	210	Lys	Gln	Ala	Gln	Leu	230	Val	Ser	Ser	Asn	235	Phe	Ile	Leu	Asn	Arg	240	
Cys	225	Ser	Ala	Leu	Glu	Val	245	Lys	Ser	Lys	Ser	Asn	250	His	Thr	Asn	Pro	Gly	Ile
Phe	Gln	Leu	Val	Ala	260	Asn	Asp	Glu	Lys	Leu	265	Arg	Arg	Gln	Lys	Leu	Val	Glu	
Glu	Ala	Ile	Trp	270	Asp	Ala	Gly	Asp	Glu	Glu	Lys	Ala	Glu	Ala	285	Val	Pro	Val	
Lys	His	Thr	275	Asp	Ala	Gly	Asp	Glu	Glu	Lys	Ala	Glu	Ala	285	Val	Pro	Val		
Leu	Glu	Leu	Pro	Pro	Thr	Gln	295	Glu	Arg	His	Gln	Ile	Glu	Ile	Ala	Glu			
Ser	305	Asp	Ile	Phe	Tyr	Arg	310	Thr	Ala	Leu	Glu	Ser	315	Lys	Leu	Met	Thr	Leu	
Glu	Gln	Ser	Thr	Leu	325	Ser	Glu	Gln	Thr	Leu	330	Ser	Asp	Gln	Thr	Ile	Leu		
Pro	Gln	Ala	Thr	340	Met	Gln	Thr	Thr	Met	345	Pro	Gly	Thr	Lys	Ala	Gln	Lys		
Arg	Arg	Phe	Asn	Leu	Gln	Lys	Leu	Leu	Ala	Asn	Ala	Val	365	Tyr	Pro	Glu			
Glu	Cys	370	Ser	Gln	Asp	Gln	Gln	Gln	Leu	Leu	Val	Asn	380	Ala	Ser	Phe	Ile		
Gln	Asn	His	Val	Thr	Cys	390	Gly	Tyr	Ser	Ser	Ser	Val	395	Ser	Leu	Ser	Thr		
385	Ser	Lys	Asp	Glu	Ser	405	Asp	Asp	Leu	Asp	Glu	Thr	Val	Val	Asp	Glu	Glu		
Leu	Ile	Leu	Ser	420	Leu	Thr	Gln	Pro	His	425	Gly	Ala	Ile	Pro	His	Asp	Ala		
Thr	Leu	Arg	Glu	Glu	Asp	Leu	Glu	Leu	Leu	Asp	Ala	Leu	445	Gln	Leu	Leu			
Glu	Glu	Gln	Asn	Glu	Ser	Glu	455	Ser	His	Val	Asp	Leu	460	Asp	Ser	Ser	Leu		
Ala	Pro	Leu	Ser	Gln	His	470	Lys	Lys	Phe	Glu	Leu	Thr	Pro	Glu	Leu	Leu			
465	Asp	Lys	Glu	Thr	Ala	485	Ala	Thr	Ala	Leu	Phe	Asp	Glu	Asp	Val	Asp			
Ser	Asp	Glu	Asp	Ala	Asp	Gln	Glu	Thr	Arg	His	Asp	Phe	510	Ser	Thr	Val			
Leu	Asp	Asp	Val	Asp	Glu	Leu	Leu	Leu	Lys	Leu	Thr	Gln	525	Ser	Gln	Pro			
Ala	Glu	Ser	Lys	Glu	Leu	Lys	535	Ala	Ser	Ser	Lys	Leu	540	Pro	Gln	Ile	Asp		
Gly	545	Ala	Asp	Asp	Arg	Leu	550	Gln	Arg	Thr	Pro	Ile	555	Lys	Ser	Ile	Ser	Ser	
Lys	Ser	Lys	Ser	Ser	565	Pro	Ser	Lys	Thr	Pro	Thr	Thr	Pro	Ile	Gly	Gln			
Lys	Ser	Leu	Pro	Lys	Ser	Pro	Arg	Thr	Pro	Lys	Thr	Ser	590	Ala	Ala	Lys			
Lys	Tyr	Ala	Pro	Leu	Ala	Leu	Thr	Ile	Gly	Ser	Ser	Ser	605	Ser	Lys	Lys			
Ser	Asn	610	Asp	Glu	Phe	Ala	Gly	615	Arg	Pro	Ser	Asn	Pro	620	Arg	Leu	Ser	Leu	
Gln	Leu	Asp	Gln	Gly	Thr	Gly	Thr	Gly	Thr	Leu	Arg	Pro	Glu	Ile	Ser				
625	Leu	Arg	Lys	Lys	Leu	630	Ala	Met	Ser	Glu	Met	Arg	Arg	Lys	Ser	Phe	Glu		
Asp	Ser	Phe	Val	Leu	Leu	Lys	Asn	Asp	Cys	Thr	Pro	Val	Arg	670	Ser	Thr			
Arg	Arg	Ser	Thr	Ser	Asn	Leu	Asp	680	Lys	Thr	His	Ile	Ile	Cys	Ser	Leu			
Thr	Pro	Arg	Asp	Arg	Asn	Pro	Gly	Leu	Ser	Asp	Met	Phe	Glu	Thr	Glu				
	690					695													

## PhoenixTemp32470.tmp.txt

Asp Gly Lys Gln Leu Pro Pro Lys Lys Val Val Arg Lys Thr Arg Trp  
 705 710 715 720  
 Ser Thr Arg Asn Gln Asp Ile Glu Ser Leu Pro Lys Ala Gly Cys Glu  
 725 730 735  
 Ile Glu Arg Pro His Arg Ser Glu Gly Ser Ala Leu Asp Glu Leu Lys  
 740 745 750  
 Pro Arg Arg Ser Ala Arg His Lys Val Asn Ser Ala Asn Pro Asp Glu  
 755 760 765  
 Cys Ser Ser Glu Ile Gln Thr Thr Gly Pro Arg Val Thr Thr Thr Ser  
 770 775 780  
 Leu Asp Arg Pro Gln Lys Lys Ala Arg Leu Ser Gln Ser Pro Lys Glu  
 785 790 800  
 Asn Thr Lys Thr Ser Met Asn Gly Thr Val Ala Leu Glu Lys Ala Thr  
 805 810 815  
 Lys Asp Ser Ser Ser Asn Ser Glu Ser Pro His Gln Gln Glu Asn Ser  
 820 825 830  
 Val Ser Glu Gln Ile Glu Tyr Leu Glu Ser Lys Pro Lys Lys Ser Asp  
 835 840 845  
 Glu Thr Ala Arg Ser Cys Asp Glu Lys Leu Gln Arg Glu Leu Ile Pro  
 850 855 860  
 Gln Glu Pro Ala Gly Ile Ser Pro Gly Asp Ser Ala Asn Ser Thr Glu  
 865 870 875 880  
 Glu Ile Thr Phe Ser Pro Cys His Asp Glu Ala Ile Glu Ser Asp Thr  
 885 890 895  
 Glu Ser Asp Tyr Ile Val Thr Lys Leu Arg Lys Thr Pro Asn Leu Lys  
 900 905 910  
 Arg Leu Arg Trp Ser Ile Arg Ser Glu Leu Leu Asn Lys Gln Phe Thr  
 915 920 925  
 Pro Ser Ser Gly Ile Arg Pro Pro Glu Thr Glu Thr Pro Gln Leu  
 930 935 940  
 Ser Pro Lys Ser Asn Glu Ser Asn Thr Pro Glu Leu Met Arg Ser Phe  
 945 950 955 960  
 Tyr Glu His Ser Leu Ile Val Asn Ser Pro Ser Val Phe Ser Asp Phe  
 965 970 975  
 Leu Asp Ser Pro Glu Ile His Met Asp Ser Pro Arg Ser Ala Pro Pro  
 980 985 990  
 Ser Pro Asp Ser Asn Ser Phe Val Ile Ala Pro Leu Glu Leu Pro Pro  
 995 1000 1005  
 Ser Tyr Asp Glu Val Val Ser Gly Ser Arg Lys Met Asp Ile Pro Glu  
 1010 1015 1020  
 Tyr Glu Phe Gln Lys Pro Tyr Tyr Ser Asn Pro Ser Asp Val Ser Lys  
 1025 1030 1035 1040  
 Val Thr Glu Val Gly Phe Leu Val Leu His Ile Pro Gly Asn Lys Leu  
 1045 1050 1055  
 Asn Asp Cys Asp Pro Phe Gln Ser Ile Leu Gly Asn Asp Arg Gly Leu  
 1060 1065 1070  
 Ala Ser Trp Arg Arg Arg Gln Leu Ile Ala Ile Gly Gly Leu Ala Met  
 1075 1080 1085  
 Leu Gln Arg His Arg Gly Glu Gln Lys Val Arg Glu Tyr Phe Ser Thr  
 1090 1095 1100  
 Gln Gln Arg Ile Ala Ile Glu Pro Ala Gln Leu Ala Pro Thr Trp Gln  
 1105 1110 1115 1120  
 Glu Ala Lys Ile Trp Leu Lys Ala Lys Glu Leu Leu Arg Gln Arg Glu  
 1125 1130 1135  
 Glu Pro Lys Lys Ser Ser Asp Asp Ile Asp Ser Pro Ile Lys Ile Lys  
 1140 1145 1150  
 Arg Gln Lys Ile Thr Met Met Leu Gln Ala Glu Glu Gly Asp Gly Gly  
 1155 1160 1165  
 Ser Gly Asp Glu Asp Ala Gly Glu Glu Leu Asp Cys Ser Leu Ser Leu  
 1170 1175 1180  
 Thr Pro Leu Ser Gln Ala Lys Asp Lys Cys Lys Ala Thr Pro Thr Ser  
 1185 1190 1195 1200  
 Ser Lys Ala Arg Glu Thr Gly Lys Ser Arg Leu Lys Arg Gly Thr Arg  
 1205 1210 1215  
 Leu Ser Phe Ile Gly Ser Gln Asp Glu Glu Pro Pro Ser Ser Gln Ser  
 1220 1225 1230  
 Ser Glu Gln Ser Val Ser Ser Ser Ala Ala Gln Ala Glu Leu Asp Arg  
 1235 1240 1245  
 Ser Ser Phe Leu Arg Gln Leu Glu Gly Ser Ser Gln Asp Arg Gln His



## PhoenixTemp32470.tmp.txt

1250 1255 1260  
 Asp Leu Ser Phe Gly Leu Ser His Ala Thr Leu Asp Asn Thr Phe Gly  
 1265 1270 1275 1280  
 Phe Lys Val Asn Leu Glu Asn Leu Gln Gln Ala Lys Ala Asp Ile Asp  
 1285 1290 1295  
 Cys Asn His Leu Thr Ile Ile Thr Leu Glu Val Phe Val Ser Thr Arg  
 1300 1305 1310  
 Gly Asp Leu Gln Pro Asp Pro Met His Asp Glu Ile Arg Cys Leu Phe  
 1315 1320 1325  
 Tyr Ala Ile Glu His Ser Leu Pro Asp Glu Lys Leu Pro Ser Lys Ala  
 1330 1335 1340  
 Cys Gly Tyr Ile Met Val Asn Thr Val Gln Asp Leu Leu Ser Glu Gly  
 1345 1350 1355 1360  
 Pro Phe His Gly Ile Asp Arg Asp Ile Glu Val Gln Val Val Thr Ser  
 1365 1370 1375  
 Glu Ala Glu Ala Phe Glu Ala Leu Leu Ala Leu Cys Glu Arg Trp Asp  
 1380 1385 1390  
 Ala Asp Ile Tyr Ala Gly Tyr Glu Ile Glu Met Ser Ser Trp Gly Tyr  
 1395 1400 1405  
 Val Ile Asp Arg Ala Lys His Leu Cys Phe Asn Ile Ala Pro Leu Leu  
 1410 1415 1420  
 Ser Arg Val Pro Thr Gln Lys Val Arg Asp Phe Val Asp Glu Asp Arg  
 1425 1430 1435 1440  
 Glu Gln Phe Thr Asp Leu Asp Val Glu Met Lys Leu Cys Gly Arg Ile  
 1445 1450 1455  
 Leu Leu Asp Val Trp Arg Leu Met Arg Ser Glu Ile Ala Leu Thr Ser  
 1460 1465 1470  
 Tyr Thr Phe Glu Asn Val Met Tyr His Ile Leu His Lys Arg Cys Pro  
 1475 1480 1485  
 Trp His Thr Ala Lys Ser Leu Thr Glu Trp Phe Gly Ser Pro Cys Thr  
 1490 1495 1500  
 Arg Trp Ile Val Met Glu Tyr Tyr Leu Glu Arg Val Arg Gly Thr Leu  
 1505 1510 1515 1520  
 Thr Leu Leu Asp Gln Leu Asp Leu Leu Gly Arg Thr Ser Glu Met Ala  
 1525 1530 1535  
 Lys Leu Ile Gly Ile Gln Phe Tyr Glu Val Leu Ser Arg Gly Ser Gln  
 1540 1545 1550  
 Phe Arg Val Glu Ser Met Met Leu Arg Ile Ala Lys Pro Lys Asn Leu  
 1555 1560 1565  
 Val Pro Leu Ser Pro Ser Val Gln Ala Arg Ala His Met Arg Ala Pro  
 1570 1575 1580  
 Glu Tyr Leu Ala Leu Ile Met Glu Pro Gln Ser Arg Phe Tyr Ala Asp  
 1585 1590 1595 1600  
 Pro Leu Ile Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile  
 1605 1610 1615  
 Ala Tyr Asn Tyr Cys Phe Ser Thr Cys Leu Gly Arg Val Glu His Leu  
 1620 1625 1630  
 Gly Gly Ser Ser Pro Phe Glu Phe Gly Ala Ser Gln Leu Arg Val Ser  
 1635 1640 1645  
 Arg Gln Met Leu Gln Lys Leu Leu Glu His Asp Leu Val Thr Val Ser  
 1650 1655 1660  
 Pro Cys Gly Val Val Phe Val Lys Arg Glu Val Arg Glu Gly Ile Leu  
 1665 1670 1675 1680  
 Pro Arg Met Leu Thr Glu Ile Leu Asp Thr Arg Gln Met Val Lys Gln  
 1685 1690 1695  
 Ser Met Lys Leu His Lys Asp Ser Ser Ala Leu Gln Arg Ile Leu His  
 1700 1705 1710  
 Ser Arg Gln Leu Gly Leu Lys Leu Met Ala Asn Val Thr Tyr Gly Tyr  
 1715 1720 1725  
 Thr Ala Ala Asn Phe Ser Gly Arg Met Pro Ser Val Glu Val Gly Asp  
 1730 1735 1740  
 Ser Val Val Ser Lys Gly Arg Glu Thr Leu Glu Arg Ala Ile Lys Leu  
 1745 1750 1755 1760  
 Val Glu Asn Asn Glu Glu Trp Lys Val Arg Val Val Tyr Gly Asp Thr  
 1765 1770 1775  
 Asp Ser Met Phe Val Leu Val Pro Gly Arg Asn Arg Ala Glu Ala Phe  
 1780 1785 1790  
 Arg Ile Gly Glu Glu Ile Ala Lys Ala Val Thr Glu Met Asn Pro Gln  
 1795 1800 1805

## PhoenixTemp32470.tmp.txt

Pro Val Lys Leu Lys Leu Glu Lys Val Tyr Gln Pro Cys Met Leu Gln  
 1810 1815 1820  
 Thr Lys Lys Arg Tyr Val Gly Tyr Met Tyr Glu Thr Ala Asp Gln Glu  
 1825 1830 1835 1840  
 Gln Pro Val Tyr Glu Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly  
 1845 1850 1855  
 Cys Pro Ala Val Ala Lys Met Leu Glu Lys Val Leu Arg Ile Leu Phe  
 1860 1865 1870  
 Glu Thr Gln Asp Val Ser Lys Ile Lys Ala Tyr Val Cys Arg Gln Phe  
 1875 1880 1885  
 Thr Lys Leu Leu Ser Gly Arg Ala Asn Leu Gln Asp Leu Ile Phe Ala  
 1890 1895 1900  
 Lys Glu Phe Arg Gly Leu Asn Gly Tyr Lys Pro Thr Ala Cys Val Pro  
 1905 1910 1915 1920  
 Ala Leu Glu Leu Thr Arg Lys Trp Met Gln Lys Asp Pro Arg His Val  
 1925 1930 1935  
 Pro Arg Arg Gly Glu Arg Val Pro Phe Ile Ile Val Asn Gly Pro Pro  
 1940 1945 1950  
 Gly Met Gln Leu Ile Arg Leu Val Arg Ser Pro His Asp Ile Leu Ala  
 1955 1960 1965  
 Asn Glu Gly His Lys Ile Asn Ala Ile Tyr Tyr Ile Thr Lys Ala Ile  
 1970 1975 1980  
 Ile Pro Pro Leu Asn Arg Cys Leu Leu Leu Ile Gly Ala Asn Val His  
 1985 1990 1995 2000  
 Asp Trp Phe Ala Ser Leu Pro Arg Lys Leu Leu Met Thr Pro Ala Val  
 2005 2010 2015  
 Gly Thr Ala Asn Glu Leu Ala Gly Ala Arg Gly Ala Lys Ser Thr Ile  
 2020 2025 2030  
 Ser Gln Tyr Phe Ser Thr Thr Ser Cys Val Ile Asp Cys Gly Arg Gln  
 2035 2040 2045  
 Thr Lys Ala Gly Ile Cys Pro Asp Cys Leu Lys Asn Ala Thr Thr Cys  
 2050 2055 2060  
 Val Val Val Leu Ser Asp Lys Thr Ala Arg Leu Glu Arg Gly Tyr Gln  
 2065 2070 2075 2080  
 Leu Thr Arg Gln Ile Cys Gln Ala Cys Cys Gly Arg Leu Gly Ser Leu  
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 Gln Cys Asp Ser Leu Asp Cys Pro Val Leu Tyr Val Leu Glu Gly Lys  
 2100 2105 2110  
 Arg Arg Glu Leu Gln Gln Ile Glu His Trp Asn Lys Leu Leu Glu His  
 2115 2120 2125  
 His Phe  
 2130

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&lt;211&gt; 4443

&lt;212&gt; DNA

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&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4443)

&lt;400&gt; 2669

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cca	gct	tat	gat	ttc	gta	ggg	aaa	gat	ttg	ccg	act	gca	aat	gaa	gag	96
Pro	Ala	Tyr	Asp	Phe	Val	Gly	Lys	Asp	Leu	Pro	Thr	Ala	Asn	Glu	Glu	
			20					25				30				
tta	acc	act	gtt	cca	gtt	att	cga	gtt	ttt	gga	ttg	aat	gaa	gaa	gca	144
Leu	Thr	Thr	Val	Pro	Val	Ile	Arg	Val	Phe	Gly	Leu	Asn	Glu	Glu	Ala	
		35				40						45				
gaa	act	gtt	tgc	tgc	ttt	atc	cac	aac	gtt	ttc	cca	tat	att	tat	gtc	192
Glu	Thr	Val	Cys	Cys	Phe	Ile	His	Asn	Val	Phe	Pro	Tyr	Ile	Tyr	Val	
	50				55			60								
gaa	tac	tct	agt	ttt	gca	gaa	acg	tta	gat	ctt	gaa	gtt	cca	gat	ttt	240
Glu	Tyr	Ser	Ser	Phe	Ala	Glu	Thr	Leu	Asp	Leu	Glu	Val	Pro	Asp	Phe	
	65				70			75					80			
tta	agc	caa	tta	caa	aca	tca	att	aat	tat	gct	tta	gca	tta	gcg	gca	288

## PhoenixTemp32470.tmp.txt

Leu	Ser	Gln	Leu	Gln 85	Thr	Ser	Ile	Asn	Tyr 90	Ala	Leu	Ala	Leu	Ala 95	Ala		
aga	gca	aat	cca	gaa	act	tac	aaa	cct	gct	gta	caa	agc	ggt	cag	ctt	336	
Arg	Ala	Asn	Pro	Glu	Thr	Tyr	Lys	Pro	Ala	Val	Gln	Ser	Val	Gln	Leu		
			100					105					110				
gtg	aag	gga	att	ccg	ttt	tat	ggg	tac	tcc	ttc	tgt	ttt	cag	aaa	ttc	384	
Val	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Tyr	Ser	Phe	Cys	Phe	Gln	Lys	Phe		
		115					120					125					
tta	aag	atc	tgt	ctt	ttt	agt	ccg	aaa	aac	aga	gat	aga	cta	gtc	gat	432	
Leu	Lys	Ile	Cys	Leu	Phe	Ser	Pro	Lys	Asn	Arg	Asp	Arg	Leu	Val	Asp		
	130					135					140						
tta	ttc	agg	caa	ggt	gct	ata	tta	aac	aaa	ggt	att	caa	ggt	tac	gaa	480	
Leu	Phe	Arg	Gln	Gly	Ala	Ile	Leu	Asn	Lys	Val	Ile	Gln	Val	Tyr	Glu		
	145				150					155					160		
tcc	cat	ctt	cct	tac	tta	cta	caa	ttt	atg	gtc	gat	cat	aat	cta	tat	528	
Ser	His	Leu	Pro	Tyr	Leu	Leu	Gln	Phe	Met	Val	Asp	His	Asn	Leu	Tyr		
			165						170					175			
ggt	tgt	gct	cca	ata	gat	tta	gat	gac	tcc	att	ata	aag	aga	gac	gat	576	
Gly	Cys	Ala	Pro	Ile	Asp	Leu	Asp	Asp	Ser	Ile	Ile	Lys	Arg	Asp	Asp		
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ctc	ttg	agt	ttt	tgt	aac	gtc	gag	ggt	cac	gtg	tct	cca	aat	gct	att	624	
Leu	Leu	Ser	Phe	Cys	Asn	Val	Glu	Val	His	Val	Ser	Pro	Asn	Ala	Ile		
		195					200					205					
ctc	aat	gcc	tgc	tgg	ttg	agt	gaa	cgt	aat	atc	cat	act	gat	tta	tat	672	
Leu	Asn	Ala	Cys	Trp	Leu	Ser	Glu	Arg	Asn	Ile	His	Thr	Asp	Leu	Tyr		
	210					215					220						
gaa	act	cat	gct	tca	agt	cca	aat	tca	cta	ttg	gta	act	agt	tta	gct	720	
Glu	Thr	His	Ala	Ser	Ser	Pro	Asn	Ser	Leu	Leu	Val	Thr	Ser	Leu	Ala		
	225			230						235					240		
gaa	att	tgg	aaa	tcg	gaa	gct	tct	cgg	agg	aat	tta	acc	agt	agc	gat	768	
Glu	Ile	Trp	Lys	Ser	Glu	Ala	Ser	Arg	Arg	Asn	Leu	Thr	Ser	Ser	Asp		
			245					250						255			
gag	act	aat	agt	ttt	tct	aaa	ttg	cac	caa	agt	cag	ttc	ggt	ctc	aaa	816	
Glu	Thr	Asn	Ser	Phe	Ser	Lys	Leu	His	Gln	Ser	Gln	Phe	Gly	Leu	Lys		
		260						265					270				
gaa	gag	agt	agc	cat	gaa	ccg	cga	agt	tcc	cag	cac	tgg	aaa	aat	gaa	864	
Glu	Glu	Ser	Ser	His	Glu	Pro	Arg	Ser	Ser	Gln	His	Trp	Lys	Asn	Glu		
		275				280						285					
gtt	gcc	atg	aaa	gat	ctg	tta	aaa	aac	ttg	atc	aaa	agt	aaa	tta	gaa	912	
Val	Ala	Met	Lys	Asp	Leu	Leu	Lys	Asn	Leu	Ile	Lys	Ser	Lys	Leu	Glu		
	290					295					300						
tct	tct	tcc	gat	gtc	aat	act	cca	ctc	atc	ttt	gat	ccg	tgg	cct	gag	960	
Ser	Ser	Ser	Asp	Val	Asn	Thr	Pro	Leu	Ile	Phe	Asp	Pro	Trp	Pro	Glu		
			305		310					315				320			
ctg	cct	acc	att	tat	tct	gca	atc	cac	acc	aaa	gat	tac	gta	cgc	cca	1008	
Leu	Pro	Thr	Ile	Tyr	Ser	Ala	Ile	His	Thr	Lys	Asp	Tyr	Val	Arg	Pro		
			325						330					335			
tcc	caa	aat	gat	att	tca	gtt	tct	caa	ata	tct	gta	gat	gag	aaa	atc	1056	
Ser	Gln	Asn	Asp	Ile	Ser	Val	Ser	Gln	Ile	Ser	Val	Asp	Glu	Lys	Ile		
		340				345						350					
tgt	act	tct	tat	gaa	agc	ctg	cca	aag	att	caa	ctt	gaa	caa	aac	act	1104	
Cys	Thr	Ser	Tyr	Glu	Ser	Leu	Pro	Lys	Ile	Gln	Leu	Glu	Gln	Asn	Thr		
		355				360						365					
gca	ccc	gtc	ata	gaa	tct	tct	ttt	gaa	caa	ctg	gac	tct	gag	ctc	gag	1152	
Ala	Pro	Val	Ile	Glu	Ser	Ser	Phe	Glu	Gln	Leu	Asp	Ser	Glu	Leu	Glu		
	370					375					380						
cgt	ata	ttg	gga	gat	aca	ctt	ttt	gat	tca	ttt	cct	tat	gta	gaa	ccc	1200	
Arg	Ile	Leu	Gly	Asp	Thr	Leu	Phe	Asp	Ser	Phe	Pro	Tyr	Val	Glu	Pro		
	385				390					395					400		
aat	gtt	gat	aga	tct	aaa	ttt	ccc	aaa	agt	cct	ctt	aat	tct	tct	caa	1248	
Asn	Val	Asp	Arg	Ser	Lys	Phe	Pro	Lys	Ser	Pro	Leu	Asn	Ser	Ser	Gln		
			405						410					415			
gaa	gtt	acc	att	cac	tct	tca	caa	gat	aga	caa	tca	cct	ccc	tct	tcg	1296	
Glu	Val	Thr	Ile	His	Ser	Ser	Gln	Asp	Arg	Gln	Ser	Pro	Pro	Ser	Ser		
			420					425					430				
ccc	tta	aaa	gat	gta	cct	tct	caa	ata	aat	cca	ttt	tcc	ccc	agc	ctt	1344	
Pro	Leu	Lys	Asp	Val	Pro	Ser	Gln	Ile	Asn	Pro	Phe	Ser	Pro	Ser	Leu		
		435					440					445					
aga	tta	aaa	ggg	ggt	tca	ccc	ata	act	aaa	agg	gaa	att	gaa	ttt	tgt	1392	

## PhoenixTemp32470.tmp.txt

Arg	Leu	Lys	Gly	Gly	Ser	Pro	Ile	Thr	Lys	Arg	Glu	Ile	Glu	Phe	Cys	
450	450					455					460					
cga	gat	ctg	ccg	aat	cgt	ccc	acc	agc	tct	gaa	ccg	aat	caa	ggg	gat	1440
Arg	Asp	Leu	Pro	Asn	Arg	Pro	Thr	Ser	Ser	Glu	Pro	Asn	Gln	Gly	Asp	
465					470					475					480	
act	aga	aaa	gca	gga	aag	aga	cta	aaa	tat	tct	aga	aat	ctt	gat	gat	1488
Thr	Arg	Lys	Ala	Gly	Lys	Arg	Leu	Lys	Tyr	Ser	Arg	Asn	Leu	Asp	Asp	
				485					490					495		
tat	cat	att	tgt	act	caa	att	cct	gaa	gac	tac	tcc	cca	aaa	ttc	tta	1536
Tyr	His	Ile	Cys	Thr	Gln	Ile	Pro	Glu	Asp	Tyr	Ser	Pro	Lys	Phe	Leu	
			500					505					510			
tct	caa	cat	gaa	tct	ttt	gtt	tac	aaa	caa	caa	cct	cct	tcg	acg	gat	1584
Ser	Gln	His	Glu	Ser	Phe	Val	Tyr	Lys	Gln	Gln	Pro	Pro	Ser	Thr	Asp	
		515					520					525				
gat	ctt	tat	ggg	act	atg	aaa	aaa	ttg	aaa	atc	cca	ttt	tca	ata	ccg	1632
Asp	Leu	Tyr	Gly	Thr	Met	Lys	Lys	Leu	Lys	Ile	Pro	Phe	Ser	Ile	Pro	
	530					535				540						
aca	aat	gtt	cac	tat	agt	tcg	gag	aag	gac	att	ccc	tct	tac	tcc	caa	1680
Thr	Asn	Val	His	Tyr	Ser	Ser	Glu	Lys	Asp	Ile	Pro	Ser	Tyr	Ser	Gln	
					550					555					560	
gaa	tat	tta	gga	aaa	tct	cat	tat	ccg	atc	ggg	gtt	tct	tct	aga	tat	1728
Glu	Tyr	Leu	Gly	Lys	Ser	His	Tyr	Pro	Ile	Gly	Val	Ser	Ser	Arg	Tyr	
				565					570					575		
ttg	cca	gaa	ttt	caa	tca	gat	gga	tcg	gta	agc	gaa	aaa	gtt	cga	cta	1776
Leu	Pro	Glu	Phe	Gln	Ser	Asp	Gly	Ser	Val	Ser	Glu	Lys	Val	Arg	Leu	
			580					585					590			
aat	cca	ctt	aag	ctt	agt	aat	ttt	cac	gga	gaa	cgg	acg	tgg	caa	tat	1824
Asn	Pro	Leu	Lys	Leu	Ser	Asn	Phe	His	Gly	Glu	Arg	Thr	Trp	Gln	Tyr	
		595					600					605				
ata	aaa	cct	gca	cca	ctt	gct	gta	gat	tta	tca	aat	ctt	gaa	tcg	aaa	1872
Ile	Lys	Pro	Ala	Pro	Leu	Ala	Val	Asp	Leu	Ser	Asn	Leu	Glu	Ser	Lys	
	610					615					620					
gaa	gcc	gtt	tca	gag	gaa	ata	caa	agc	cca	caa	agg	tta	tcc	aga	agt	1920
Glu	Ala	Val	Ser	Glu	Glu	Ile	Gln	Ser	Pro	Gln	Arg	Leu	Ser	Arg	Ser	
	625				630					635					640	
aag	gtt	ttt	aga	aaa	gat	cct	tat	tca	tgt	gtg	cgc	atc	tta	gcg	ctt	1968
Lys	Val	Phe	Arg	Lys	Asp	Pro	Tyr	Ser	Cys	Val	Arg	Ile	Leu	Ala	Leu	
				645					650					655		
gaa	ttg	ttt	tgc	tgt	agc	cat	ggg	gga	ttg	acc	cca	gat	ccc	act	aaa	2016
Glu	Leu	Phe	Cys	Cys	Ser	His	Gly	Gly	Leu	Thr	Pro	Asp	Pro	Thr	Lys	
			660					665					670			
gac	tct	ata	gag	tgt	tgt	ttc	tgg	gca	tat	caa	gaa	gat	gta	aac	agc	2064
Asp	Ser	Ile	Glu	Cys	Cys	Phe	Trp	Ala	Tyr	Gln	Glu	Asp	Val	Asn	Ser	
		675					680					685				
agt	atg	att	gac	aga	gtt	ggg	ttt	att	gtg	gtc	gac	aaa	tct	gcg	tcg	2112
Ser	Met	Ile	Asp	Arg	Val	Gly	Phe	Ile	Val	Val	Asp	Lys	Ser	Ala	Ser	
	690					695					700					
aac	tct	tct	ttt	ggg	cga	agt	ttt	cca	agc	tgc	acc	gtt	tta	gtt	gta	2160
Asn	Ser	Ser	Phe	Gly	Arg	Ser	Phe	Pro	Ser	Cys	Thr	Val	Leu	Val	Val	
	705				710					715					720	
aat	tcc	gaa	ctt	gaa	ctt	att	aat	gaa	gtt	ata	gga	tta	aat	cgc	cag	2208
Asn	Ser	Glu	Leu	Glu	Leu	Ile	Asn	Glu	Val	Ile	Gly	Leu	Asn	Arg	Gln	
				725					730					735		
ctt	gat	ccg	acc	atc	gta	tgt	ggg	tac	gaa	gtt	cat	aat	agc	tca	tgg	2256
Leu	Asp	Pro	Thr	Ile	Val	Cys	Gly	Tyr	Glu	Val	His	Asn	Ser	Ser	Trp	
			740					745					750			
ggg	tat	tta	ata	gaa	cga	gca	tct	tat	cga	ttt	aat	tat	gac	ttg	cct	2304
Gly	Tyr	Leu	Ile	Glu	Arg	Ala	Ser	Tyr	Arg	Phe	Asn	Tyr	Asp	Leu	Pro	
		755					760					765				
gaa	caa	ttg	tcc	cga	ctt	aag	tgc	act	tcg	aaa	gca	aat	ttt	gca	aag	2352
Glu	Gln	Leu	Ser	Arg	Leu	Lys	Cys	Thr	Ser	Lys	Ala	Asn	Phe	Ala	Lys	
	770					775				780						
aaa	gag	aat	gca	tgg	aaa	tat	aca	act	act	tca	tcc	atc	aat	att	gtg	2400
Lys	Glu	Asn	Ala	Trp	Lys	Tyr	Thr	Thr	Thr	Ser	Ser	Ile	Asn	Ile	Val	
					790					795					800	
ggc	cgg	cat	gtt	ttg	aat	ata	tgg	aga	att	ctc	cgt	ggg	gaa	gtt	aat	2448
Gly	Arg	His	Val	Leu	Asn	Ile	Trp	Arg	Ile	Leu	Arg	Gly	Glu	Val	Asn	
				805					810					815		
tta	ctt	aac	tat	tcc	ctc	gaa	aat	gtt	gtt	ctt	aac	att	ttt	aaa	aag	2496

## PhoenixTemp32470.tmp.txt

Leu	Leu	Asn	Tyr	Ser	Leu	Glu	Asn	Val	Val	Leu	Asn	Ile	Phe	Lys	Lys	
cag	acc	cct	tat	tat	aat	caa	gct	gat	aaa	gtg	cat	ctt	tgg	cag	agc	2544
Gln	Thr	Pro	Tyr	Tyr	Asn	Gln	Ala	Asp	Lys	Val	His	Leu	Trp	Gln	Ser	
		835					840					845				
tct	cgt	ttt	cat	gag	aag	caa	atc	ctt	tta	aat	tat	atg	tta	aac	agg	2592
Ser	Arg	Phe	His	Glu	Lys	Gln	Ile	Leu	Leu	Asn	Tyr	Met	Leu	Asn	Arg	
	850					855					860					
act	aga	tat	tgt	ttg	gaa	ata	tta	tca	gcc	tgt	gcc	att	gtc	act	aaa	2640
Thr	Arg	Tyr	Cys	Leu	Glu	Ile	Leu	Ser	Ala	Cys	Ala	Ile	Val	Thr	Lys	
865					870					875					880	
att	cgt	gaa	caa	gca	aga	att	atc	gga	att	gac	ttc	atg	tca	gta	att	2688
Ile	Arg	Glu	Gln	Ala	Arg	Ile	Ile	Gly	Ile	Asp	Phe	Met	Ser	Val	Ile	
				885					890					895		
tct	agg	ggg	tcc	cag	ttt	aaa	gtt	gaa	tct	att	atg	ttt	cga	att	gca	2736
Ser	Arg	Gly	Ser	Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala	
			900				905						910			
aag	cct	gaa	aat	tac	ata	ttt	cca	tca	cct	agc	gct	aag	caa	gtt	gct	2784
Lys	Pro	Glu	Asn	Tyr	Ile	Phe	Pro	Ser	Pro	Ser	Ala	Lys	Gln	Val	Ala	
		915					920					925				
gag	caa	aat	gct	tta	gaa	gcg	tta	cct	ctt	gtt	atg	gag	ccg	aag	tct	2832
Glu	Gln	Asn	Ala	Leu	Glu	Ala	Leu	Pro	Leu	Val	Met	Glu	Pro	Lys	Ser	
	930					935					940					
gat	tta	tac	aat	aat	ccg	gta	gtt	gta	cta	gat	ttt	cag	tca	cta	tac	2880
Asp	Leu	Tyr	Asn	Asn	Pro	Val	Val	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	
945					950					955					960	
ccc	tct	att	ata	att	gca	tat	aat	ctt	tgt	tat	tcc	aca	tgt	ctt	gga	2928
Pro	Ser	Ile	Ile	Ile	Ala	Tyr	Asn	Leu	Cys	Tyr	Ser	Thr	Cys	Leu	Gly	
				965					970					975		
cct	gtg	aaa	ata	aat	gga	aaa	gtt	aag	ctt	gga	ttt	atg	ttt	cat		2976
Pro	Val	Lys	Ile	Val	Asn	Gly	Lys	Val	Lys	Leu	Gly	Phe	Met	Phe	His	
			980				985					990				
tca	agc	aat	cca	aac	att	gtg	aat	tta	ata	aaa	aat	gat	gta	tat	atc	3024
Ser	Ser	Asn	Pro	Asn	Ile	Val	Asn	Leu	Ile	Lys	Asn	Asp	Val	Tyr	Ile	
		995					1000				1005					
tcc	cct	aat	ggt	tat	gca	tac	gtt	aaa	gag	aat	gtt	aga	aag	tct	ttg	3072
Ser	Pro	Asn	Gly	Tyr	Ala	Tyr	Val	Lys	Glu	Asn	Val	Arg	Lys	Ser	Leu	
	1010				1015						1020					
ctc	gct	aaa	atg	cta	gag	gaa	ctt	att	gaa	acc	aga	aat	atg	gtg	aaa	3120
Leu	Ala	Lys	Met	Leu	Glu	Glu	Leu	Ile	Glu	Thr	Arg	Asn	Met	Val	Lys	
1025					1030				1035					1040		
aga	ggc	atg	aaa	gat	tgt	gac	tcg	gac	tat	gtc	aac	aaa	gta	ttg	aat	3168
Arg	Gly	Met	Lys	Asp	Cys	Asp	Ser	Asp	Tyr	Val	Asn	Lys	Val	Leu	Asn	
			1045					1050					1055			
agt	cgg	caa	ctg	gcc	cta	aaa	ttg	att	gca	aac	gta	act	tac	gga	tat	3216
Ser	Arg	Gln	Leu	Ala	Leu	Lys	Leu	Ile	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	
		1060					1065					1070				
act	tca	gcg	tca	ttt	tca	gga	aga	atg	ccg	tgt	tca	gaa	atc	gca	gat	3264
Thr	Ser	Ala	Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Glu	Ile	Ala	Asp	
	1075				1080					1085						
act	att	gtg	gaa	aca	gga	cgt	gag	ata	ctt	agc	tat	tca	cta	gaa	tac	3312
Thr	Ile	Val	Glu	Thr	Gly	Arg	Glu	Ile	Leu	Ser	Tyr	Ser	Leu	Glu	Tyr	
	1090				1095					1100						
ata	aat	act	tta	gat	ttt	tgt	cat	gca	aag	gtc	gtt	tat	ggt	gat	acc	3360
Ile	Asn	Thr	Leu	Asp	Phe	Cys	His	Ala	Lys	Val	Val	Tyr	Gly	Asp	Thr	
1105				1110					1115					1120		
gat	agc	tta	ttt	gtt	gaa	tta	cct	gga	gcg	act	aaa	gag	caa	gct	ttc	3408
Asp	Ser	Leu	Phe	Val	Glu	Leu	Pro	Gly	Ala	Thr	Lys	Glu	Gln	Ala	Phe	
			1125					1130					1135			
gac	atc	gga	cag	cag	cta	gca	aac	aac	att	act	tcc	aga	ttt	cct	tct	3456
Asp	Ile	Gly	Gln	Gln	Leu	Ala	Asn	Asn	Ile	Thr	Ser	Arg	Phe	Pro	Ser	
		1140					1145					1150				
cca	att	cga	ctt	aaa	ttt	gaa	aaa	att	tac	ttt	cct	tgt	ttc	ttg	tta	3504
Pro	Ile	Arg	Leu	Lys	Phe	Glu	Lys	Ile	Tyr	Phe	Pro	Cys	Phe	Leu	Leu	
	1155					1160					1165					
gcg	aaa	aaa	aga	tat	gta	ggg	ttc	aaa	ttt	gaa	tca	gtt	agt	caa	aaa	3552
Ala	Lys	Lys	Arg	Tyr	Val	Gly	Phe	Lys	Phe	Glu	Ser	Val	Ser	Gln	Lys	
	1170				1175					1180						
gct	cca	att	ttt	gaa	gcg	aaa	ggc	att	gag	aca	gtt	cga	agg	gat	ggt	3600

## PhoenixTemp32470.tmp.txt

Ala Pro Ile Phe Glu Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly  
 1185 1190 1195 1200  
 act cct gtt caa cag cag ctc ctt cgt cgt tgc ctt gaa ata ctt ttt 3648  
 Thr Pro Val Gln Gln Gln Leu Leu Arg Arg Cys Leu Glu Ile Leu Phe  
 1205 1210 1215  
 aag aca aag gat ttg tca acg gtc aaa aaa gaa ttt cag aac gta tgt 3696  
 Lys Thr Lys Asp Leu Ser Thr Val Lys Lys Glu Phe Gln Asn Val Cys  
 1220 1225 1230  
 tat caa att atg agt gga aac gtt cct gtt atg gat ttt tgt ttt tca 3744  
 Tyr Gln Ile Met Ser Gly Asn Val Pro Val Met Asp Phe Cys Phe Ser  
 1235 1240 1245  
 aaa gaa gtt cgt cta gaa aaa tat aaa gaa tta agt act gct cct cct 3792  
 Lys Glu Val Arg Leu Glu Lys Tyr Lys Glu Leu Ser Thr Ala Pro Pro  
 1250 1255 1260  
 gga gca gtt atg gct aga cgg ttg atg acc aaa gat cct agg agg gaa 3840  
 Gly Ala Val Met Ala Arg Arg Leu Met Thr Lys Asp Pro Arg Arg Glu  
 1265 1270 1275 1280  
 cct caa tat gga gaa cgt gtt cca tat ttg att atc gct gct gct cct 3888  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Leu Ile Ile Ala Ala Ala Pro  
 1285 1290 1295  
 ggt acc acc ttg gcg aac cgc tca gtt gca ccc gaa gaa ttt ctg tct 3936  
 Gly Thr Thr Leu Ala Asn Arg Ser Val Ala Pro Glu Glu Phe Leu Ser  
 1300 1305 1310  
 tcg agt ttt tct caa ctt gat ata aat tat tat atc aac aat agt ttg 3984  
 Ser Ser Phe Ser Gln Leu Asp Ile Asn Tyr Tyr Ile Asn Asn Ser Leu  
 1315 1320 1325  
 ata cct cca tta gat cga ttt cta aac ttg tta ggg gct agt gcc cag 4032  
 Ile Pro Pro Leu Asp Arg Phe Leu Asn Leu Leu Gly Ala Ser Ala Gln  
 1330 1335 1340  
 tca tgg tat cat gaa atg ccc aaa cca cgt acc agt tta aaa ttg act 4080  
 Ser Trp Tyr His Glu Met Pro Lys Pro Arg Thr Ser Leu Lys Leu Thr  
 1345 1350 1355 1360  
 gaa aca gtg aaa gga ggt att caa aaa aag act ttg gac act ttt ctg 4128  
 Glu Thr Val Lys Gly Gly Ile Gln Lys Lys Thr Leu Asp Thr Phe Leu  
 1365 1370 1375  
 atg gag aag ctt tgc tct tct tgc ttg aag aat aat att gaa att att 4176  
 Met Glu Lys Leu Cys Ser Ser Cys Leu Lys Asn Asn Ile Glu Ile Ile  
 1380 1385 1390  
 cct gat aaa att aac tcc ctc tgc agt gat tgc tta aaa aat cct tgt 4224  
 Pro Asp Lys Ile Asn Ser Leu Cys Ser Asp Cys Leu Lys Asn Pro Cys  
 1395 1400 1405  
 gct act att tct aaa gct gtt acg cag cac aat gct tat aac aaa aaa 4272  
 Ala Thr Ile Ser Lys Ala Val Thr Gln His Asn Ala Tyr Asn Lys Lys  
 1410 1415 1420  
 ctt tcc ttg cta ttt gat att tgt cga ggc tgc agt aag ctt tca tct 4320  
 Leu Ser Leu Leu Phe Asp Ile Cys Arg Gly Cys Ser Lys Leu Ser Ser  
 1425 1430 1435 1440  
 agt gat cca gtt ctt tgc aag tca aat agc tgt aag gtg tac tat gat 4368  
 Ser Asp Pro Val Leu Cys Lys Ser Asn Ser Cys Lys Val Tyr Tyr Asp  
 1445 1450 1455  
 agg gcg aaa act gag aat tat gcg aaa gta cag gca gaa atg tta acg 4416  
 Arg Ala Lys Thr Glu Asn Tyr Ala Lys Val Gln Ala Glu Met Leu Thr  
 1460 1465 1470  
 aag act ctt ggt tct tta gac tgg taa 4443  
 Lys Thr Leu Gly Ser Leu Asp Trp  
 1475 1480

&lt;210&gt; 2670

&lt;211&gt; 1480

&lt;212&gt; PRT

&lt;213&gt; Schizosaccharomyces pombe 972h-

&lt;400&gt; 2670

Met Arg Phe Ser Ile Glu Tyr Ile Asp Trp Glu Leu Ser Pro Cys Asp  
 1 5 10 15  
 Pro Ala Tyr Asp Phe Val Gly Lys Asp Leu Pro Thr Ala Asn Glu Glu  
 20 25 30  
 Leu Thr Thr Val Pro Val Ile Arg Val Phe Gly Leu Asn Glu Glu Ala  
 35 40 45

## PhoenixTemp32470.tmp.txt

Glu	Thr	Val	Cys	Cys	Phe	Ile	His	Asn	Val	Phe	Pro	Tyr	Ile	Tyr	Val
65	50					55				60					
Glu	Tyr	Ser	Ser	Phe	Ala	Glu	Thr	Leu	Asp	Leu	Glu	Val	Pro	Asp	Phe
70					70					75					80
Leu	Ser	Gln	Leu	Gln	Thr	Ser	Ile	Asn	Tyr	Ala	Leu	Ala	Leu	Ala	Ala
				85					90					95	
Arg	Ala	Asn	Pro	Glu	Thr	Tyr	Lys	Pro	Ala	Val	Gln	Ser	Val	Gln	Leu
			100					105					110		
Val	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Tyr	Ser	Phe	Cys	Phe	Gln	Lys	Phe
		115					120					125			
Leu	Lys	Ile	Cys	Leu	Phe	Ser	Pro	Lys	Asn	Arg	Asp	Arg	Leu	Val	Asp
130						135					140				
Leu	Phe	Arg	Gln	Gly	Ala	Ile	Leu	Asn	Lys	Val	Ile	Gln	Val	Tyr	Glu
145					150					155					160
Ser	His	Leu	Pro	Tyr	Leu	Leu	Gln	Phe	Met	Val	Asp	His	Asn	Leu	Tyr
				165					170					175	
Gly	Cys	Ala	Pro	Ile	Asp	Leu	Asp	Asp	Ser	Ile	Ile	Lys	Arg	Asp	Asp
			180					185					190		
Leu	Leu	Ser	Phe	Cys	Asn	Val	Glu	Val	His	Val	Ser	Pro	Asn	Ala	Ile
		195					200					205			
Leu	Asn	Ala	Cys	Trp	Leu	Ser	Glu	Arg	Asn	Ile	His	Thr	Asp	Leu	Tyr
210						215					220				
Glu	Thr	His	Ala	Ser	Ser	Pro	Asn	Ser	Leu	Leu	Val	Thr	Ser	Leu	Ala
225					230					235					240
Glu	Ile	Trp	Lys	Ser	Glu	Ala	Ser	Arg	Arg	Asn	Leu	Thr	Ser	Ser	Asp
				245					250					255	
Glu	Thr	Asn	Ser	Phe	Ser	Lys	Leu	His	Gln	Ser	Gln	Phe	Gly	Leu	Lys
			260					265					270		
Glu	Glu	Ser	Ser	His	Glu	Pro	Arg	Ser	Ser	Gln	His	Trp	Lys	Asn	Glu
		275					280					285			
Val	Ala	Met	Lys	Asp	Leu	Leu	Lys	Asn	Leu	Ile	Lys	Ser	Lys	Leu	Glu
		290				295					300				
Ser	Ser	Ser	Asp	Val	Asn	Thr	Pro	Leu	Ile	Phe	Asp	Pro	Trp	Pro	Glu
305					310					315					320
Leu	Pro	Thr	Ile	Tyr	Ser	Ala	Ile	His	Thr	Lys	Asp	Tyr	Val	Arg	Pro
				325					330					335	
Ser	Gln	Asn	Asp	Ile	Ser	Val	Ser	Gln	Ile	Ser	Val	Asp	Glu	Lys	Ile
			340					345					350		
Cys	Thr	Ser	Tyr	Glu	Ser	Leu	Pro	Lys	Ile	Gln	Leu	Glu	Gln	Asn	Thr
		355					360					365			
Ala	Pro	Val	Ile	Glu	Ser	Ser	Phe	Glu	Gln	Leu	Asp	Ser	Glu	Leu	Glu
		370				375					380				
Arg	Ile	Leu	Gly	Asp	Thr	Leu	Phe	Asp	Ser	Phe	Pro	Tyr	Val	Glu	Pro
385					390					395					400
Asn	Val	Asp	Arg	Ser	Lys	Phe	Pro	Lys	Ser	Pro	Leu	Asn	Ser	Ser	Gln
				405					410					415	
Glu	Val	Thr	Ile	His	Ser	Ser	Gln	Asp	Arg	Gln	Ser	Pro	Pro	Ser	Ser
			420					425					430		
Pro	Leu	Lys	Asp	Val	Pro	Ser	Gln	Ile	Asn	Pro	Phe	Ser	Pro	Ser	Leu
		435					440					445			
Arg	Leu	Lys	Gly	Gly	Ser	Pro	Ile	Thr	Lys	Arg	Glu	Ile	Glu	Phe	Cys
		450				455					460				
Arg	Asp	Leu	Pro	Asn	Arg	Pro	Thr	Ser	Ser	Glu	Pro	Asn	Gln	Gly	Asp
465					470					475					480
Thr	Arg	Lys	Ala	Gly	Lys	Arg	Leu	Lys	Tyr	Ser	Arg	Asn	Leu	Asp	Asp
				485					490					495	
Tyr	His	Ile	Cys	Thr	Gln	Ile	Pro	Glu	Asp	Tyr	Ser	Pro	Lys	Phe	Leu
			500					505					510		
Ser	Gln	His	Glu	Ser	Phe	Val	Tyr	Lys	Gln	Gln	Pro	Pro	Ser	Thr	Asp
		515					520					525			
Asp	Leu	Tyr	Gly	Thr	Met	Lys	Lys	Leu	Lys	Ile	Pro	Phe	Ser	Ile	Pro
		530				535					540				
Thr	Asn	Val	His	Tyr	Ser	Ser	Glu	Lys	Asp	Ile	Pro	Ser	Tyr	Ser	Gln
545					550					555					560
Glu	Tyr	Leu	Gly	Lys	Ser	His	Tyr	Pro	Ile	Gly	Val	Ser	Ser	Arg	Tyr
				565					570					575	
Leu	Pro	Glu	Phe	Gln	Ser	Asp	Gly	Ser	Val	Ser	Glu	Lys	Val	Arg	Leu
			580					585					590		
Asn	Pro	Leu	Lys	Leu	Ser	Asn	Phe	His	Gly	Glu	Arg	Thr	Trp	Gln	Tyr

## PhoenixTemp32470.tmp.txt

Ile	Lys	595	Pro	Ala	Pro	Leu	Ala	600	Val	Asp	Leu	Ser	Asn	605	Leu	Glu	Ser	Lys
610	Ala	Val	Ser	Glu	Glu	615	Ile	Gln	Ser	Pro	Gln	Arg	Leu	Ser	Arg	Ser		
625	Val	Phe	Arg	Lys	630	Asp	Pro	Tyr	Ser	Cys	635	Val	Arg	Ile	Leu	Ala	Leu	
	Leu	Phe	Cys	645	Ser	His	Gly	Gly	650	Leu	Thr	Pro	Asp	Pro	Thr	Lys		
	Asp	Ser	Ile	660	Cys	Cys	Phe	Trp	665	Ala	Tyr	Gln	Glu	Asp	Val	Asn	Ser	
	Ser	Met	Ile	675	Asp	Arg	Val	Gly	680	Phe	Ile	Val	Val	Asp	Lys	Ser	Ala	Ser
	Asn	690	Ser	Phe	Gly	Arg	710	Ser	Phe	Pro	Ser	Cys	715	Thr	Val	Leu	Val	Val
705	Asn	Ser	Glu	Leu	Glu	Leu	Ile	Asn	Glu	Val	Ile	Gly	Leu	Asn	Arg	Gln		
	Leu	Asp	Pro	Thr	725	Ile	Val	Cys	Gly	Tyr	730	Glu	Val	His	Asn	Ser	Trp	
	Gly	Tyr	Leu	Ile	740	Glu	Arg	Ala	Ser	Tyr	745	Arg	Phe	Asn	Tyr	Asp	Leu	Pro
	Glu	Gln	Leu	Ser	Arg	Leu	Lys	775	Cys	Thr	Ser	Lys	Ala	Asn	Phe	Ala	Lys	
	Lys	770	Glu	Asn	Ala	Trp	Lys	790	Tyr	Thr	Thr	Thr	Ser	795	Ile	Asn	Ile	Val
785	Gly	Arg	His	Val	Leu	Asn	Ile	Trp	Arg	Ile	Leu	Arg	Gly	Glu	Val	Asn		
	Leu	Leu	Asn	Tyr	805	Ser	Leu	Glu	Asn	Val	810	Val	Leu	Asn	Ile	Phe	Lys	Lys
	Gln	Thr	Pro	Tyr	820	Tyr	Asn	Gln	Ala	Asp	825	Lys	Val	His	Leu	Trp	Gln	Ser
	Ser	Arg	Phe	His	Glu	Lys	Gln	840	Ile	Leu	Leu	Asn	Tyr	845	Met	Leu	Asn	Arg
	Thr	Arg	Tyr	Cys	Leu	Glu	Ile	855	Leu	Ser	Ala	Cys	860	Ala	Ile	Val	Thr	Lys
865	Ile	Arg	Glu	Gln	Ala	Arg	Ile	Ile	Gly	Ile	875	Asp	Phe	Met	Ser	Val	Ile	
	Ser	Arg	Gly	Ser	Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala		
	Lys	Pro	Glu	Asn	Tyr	Ile	Phe	Pro	905	Ser	Pro	Ser	Ala	Lys	Gln	Val	Ala	
	Glu	Gln	Asn	Ala	Leu	Glu	Ala	935	Leu	Pro	Leu	Val	Met	940	Glu	Pro	Lys	Ser
	Asp	Leu	Tyr	Asn	Asn	Pro	Val	Val	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr		
945	Pro	Ser	Ile	Ile	Ile	Ala	Tyr	Asn	Leu	Cys	955	Tyr	Ser	Thr	Cys	Leu	Gly	
	Pro	Val	Lys	Ile	Val	Asn	Gly	Lys	Val	Lys	Leu	Gly	Phe	Met	Phe	His		
	Ser	Ser	Asn	Pro	Asn	Ile	Val	Asn	Leu	Ile	Lys	Asn	Asp	Val	Tyr	Ile		
	Ser	Pro	Asn	Gly	Tyr	Ala	Tyr	1000	Val	Lys	Glu	Asn	Val	1005	Arg	Lys	Ser	Leu
	Leu	Ala	Lys	Met	Leu	Glu	Glu	1015	Leu	Ile	Glu	Thr	Arg	1020	Asn	Met	Val	Lys
1025	Arg	Gly	Met	Lys	Asp	Cys	Asp	Ser	Asp	Tyr	1035	Val	Asn	Lys	Val	Leu	Asn	
	Ser	Arg	Gln	Leu	Ala	Leu	Lys	Leu	Ile	Ala	Asn	Val	Thr	1050	Tyr	Gly	Tyr	
	Thr	Ser	Ala	Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Glu	1065	Ile	Ala	Asp	
	Thr	Ile	Val	Glu	Thr	Gly	Arg	Glu	Ile	Leu	Ser	Tyr	1080	Ser	Leu	Glu	Tyr	
	Ile	Asn	Thr	Leu	Asp	Phe	Cys	His	Ala	Lys	Val	Val	Tyr	1100	Gly	Asp	Thr	
1105	Asp	Ser	Leu	Phe	Val	Glu	Leu	Pro	Gly	Ala	Thr	Lys	Glu	Gln	Ala	Phe		
	Asp	Ile	Gly	Gln	Leu	Ala	Asn	Asn	Ile	Thr	Ser	Arg	Phe	1135	Pro	Ser		
				1140					1145					1150				



## PhoenixTemp32470.tmp.txt

Pro Ile Arg Leu Lys Phe Glu Lys Ile Tyr Phe Pro Cys Phe Leu Leu  
 1155 1160 1165  
 Ala Lys Lys Arg Tyr Val Gly Phe Lys Phe Glu Ser Val Ser Gln Lys  
 1170 1175 1180  
 Ala Pro Ile Phe Glu Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly  
 1185 1190 1195 1200  
 Thr Pro Val Gln Gln Leu Leu Arg Arg Cys Leu Glu Ile Leu Phe  
 1205 1210 1215  
 Lys Thr Lys Asp Leu Ser Thr Val Lys Lys Glu Phe Gln Asn Val Cys  
 1220 1225 1230  
 Tyr Gln Ile Met Ser Gly Asn Val Pro Val Met Asp Phe Cys Phe Ser  
 1235 1240 1245  
 Lys Glu Val Arg Leu Glu Lys Tyr Lys Glu Leu Ser Thr Ala Pro Pro  
 1250 1255 1260  
 Gly Ala Val Met Ala Arg Arg Leu Met Thr Lys Asp Pro Arg Arg Glu  
 1265 1270 1275 1280  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Leu Ile Ile Ala Ala Ala Pro  
 1285 1290 1295  
 Gly Thr Thr Leu Ala Asn Arg Ser Val Ala Pro Glu Glu Phe Leu Ser  
 1300 1305 1310  
 Ser Ser Phe Ser Gln Leu Asp Ile Asn Tyr Tyr Ile Asn Asn Ser Leu  
 1315 1320 1325  
 Ile Pro Pro Leu Asp Arg Phe Leu Asn Leu Leu Gly Ala Ser Ala Gln  
 1330 1335 1340  
 Ser Trp Tyr His Glu Met Pro Lys Pro Arg Thr Ser Leu Lys Leu Thr  
 1345 1350 1355 1360  
 Glu Thr Val Lys Gly Gly Ile Gln Lys Lys Thr Leu Asp Thr Phe Leu  
 1365 1370 1375  
 Met Glu Lys Leu Cys Ser Ser Cys Leu Lys Asn Asn Ile Glu Ile Ile  
 1380 1385 1390  
 Pro Asp Lys Ile Asn Ser Leu Cys Ser Asp Cys Leu Lys Asn Pro Cys  
 1395 1400 1405  
 Ala Thr Ile Ser Lys Ala Val Thr Gln His Asn Ala Tyr Asn Lys Lys  
 1410 1415 1420  
 Leu Ser Leu Leu Phe Asp Ile Cys Arg Gly Cys Ser Lys Leu Ser Ser  
 1425 1430 1435 1440  
 Ser Asp Pro Val Leu Cys Lys Ser Asn Ser Cys Lys Val Tyr Tyr Asp  
 1445 1450 1455  
 Arg Ala Lys Thr Glu Asn Tyr Ala Lys Val Gln Ala Glu Met Leu Thr  
 1460 1465 1470  
 Lys Thr Leu Gly Ser Leu Asp Trp  
 1475 1480

&lt;210&gt; 2671

&lt;211&gt; 5349

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5349)

&lt;400&gt; 2671

atg gac gtg ttc aag gtg cgt ctg aac tgc atc gat cac tac caa gcc	48
Met Asp Val Phe Lys Val Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg ccc acg caa tat gac ccc tgt ctc aac gat gtt cgg cat tcc	96
Thr Pro Thr Gln Tyr Asp Pro Cys Leu Arg Asn Asp Val Arg His Ser	
20 25 30	
caa cta ttc aag gag ccc aag gtt ccg gtg att cgc gtc ttt ggc tca	144
Gln Leu Phe Lys Glu Pro Lys Val Pro Val Ile Arg Val Phe Gly Ser	
35 40 45	
acc cag act ggt caa aaa gtc tgc gcg cat ata cat ggc gcg ttt ccc	192
Thr Gln Thr Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro	
50 55 60	
tat ctc ttc att gag tat aat ggg aag ttg gat caa gaa gaa gtt ggc	240
Tyr Leu Phe Ile Glu Tyr Asn Gly Lys Leu Asp Gln Glu Glu Val Gly	
65 70 75 80	
gca ttt tca tac cga ctg cat ctg tgc att gac cat gcc ctc gct gtc	288

## PhoenixTemp32470.tmp.txt

Ala	Phe	Ser	Tyr	Arg 85	Leu	His	Leu	Ser	Ile 90	Asp	His	Ala	Leu	Ala 95	Val		
agc	tat	agg	cag	gat	gcc	tat	gct	cgg	gac	acc	ccc	aag	tat	gtg	gcg	336	
Ser	Tyr	Arg	Gln 100	Asp	Ala	Tyr	Ala	Arg 105	Asp	Thr	Pro	Lys	Tyr 110	Val	Ala		
cgt	ata	acg	ctc	gtt	aag	ggc	gtt	ccc	ttc	tat	ggc	ttc	cat	gtt	ggc	384	
Arg	Ile	Thr 115	Leu	Val	Lys	Gly	Val 120	Pro	Phe	Tyr	Gly	Phe 125	His	Val	Gly		
tac	aag	tat	tat	ctc	aag	att	tat	atg	ctc	aac	ccc	gtt	gtc	atg	acg	432	
Tyr	Lys 130	Tyr	Tyr	Leu	Lys	Ile 135	Tyr	Met	Leu	Asn	Pro 140	Val	Val	Met	Thr		
cga	ctg	gcc	gat	ctg	ctg	cac	caa	ggc	gtc	att	atg	aaa	cga	aaa	ttt	480	
Arg	Leu	Ala	Asp	Leu	Leu 150	His	Gln	Gly	Val	Ile 155	Met	Lys	Arg	Lys	Phe 160		
caa	cca	tac	gag	gct	cat	ttg	cag	tac	atc	ttg	caa	ttc	atg	acc	gac	528	
Gln	Pro	Tyr	Glu 165	Ala	His	Leu	Gln	Tyr	Ile 170	Leu	Gln	Phe	Met	Thr 175	Asp		
tac	aac	ctt	tat	ggc	tgc	ggg	tac	atc	gag	gcc	agc	agt	gtc	aaa	ttc	576	
Tyr	Asn	Leu 180	Tyr	Gly	Cys	Gly	Tyr	Ile 185	Glu	Ala	Ser	Ser	Val 190	Lys	Phe		
cgt	gcc	cca	gtg	cct	cag	ata	gac	gac	gat	gac	atg	gac	agc	gtc	atg	624	
Arg	Ala	Pro 195	Val	Pro	Gln	Ile	Asp 200	Asp	Asp	Asp	Met	Asp 205	Ser	Val	Met		
act	ccc	cat	atc	tgg	cac	aac	cag	tcg	ata	tcc	caa	aag	cag	atc	aca	672	
Thr	Pro 210	His	Ile	Trp	His	Asn 215	Gln	Ser	Ile	Ser	Gln 220	Lys	Gln	Ile	Thr		
gat	cat	cac	tct	ctg	cct	agg	gcc	agt	cat	tgc	ccc	atc	gaa	gtt	gat	720	
Asp	His	His	Ser	Leu	Pro 230	Arg	Ala	Ser	His	Cys 235	Pro	Ile	Glu	Val	Asp 240		
ata	tgc	gta	cag	gac	atc	ctc	aat	cgt	aaa	gat	gtc	aag	gaa	cgc	aga	768	
Ile	Cys	Val	Gln 245	Asp	Ile	Leu	Asn	Arg	Lys 250	Asp	Val	Lys	Glu	Arg 255	Arg		
ctt	cat	cat	gat	ttt	gtc	gag	cgg	ctg	aac	ccc	tta	cct	acc	gat	atg	816	
Leu	His	His	Asp 260	Phe	Val	Glu	Arg	Leu 265	Asn	Pro	Leu	Pro	Thr 270	Asp	Met		
aag	ctg	gta	gct	agc	atg	gca	ggg	ctg	tgg	agg	gac	gaa	acg	aaa	cgt	864	
Lys	Leu	Val 275	Ala	Ser	Met	Ala	Gly 280	Leu	Trp	Arg	Asp	Glu 285	Thr	Lys	Arg		
cga	aaa	aga	cag	ctg	ggc	atc	tcc	gat	ccg	aaa	agc	agt	cca	ttt	cct	912	
Arg	Lys 290	Arg	Gln	Leu	Gly	Ile 295	Ser	Asp	Pro	Lys	Ser 300	Ser	Pro	Phe	Pro		
gct	gag	gcg	ctt	gtc	tcc	atg	tcg	cac	gat	ccg	cga	gac	tcg	cag	cct	960	
Ala	Glu	Ala	Leu	Val	Ser 310	Met	Ser	His	Asp	Pro 315	Arg	Asp	Ser	Gln 320	Pro		
gcc	ggc	tgg	cta	cac	gag	gaa	gag	ttc	cgt	gca	gag	att	gaa	gag	ctc	1008	
Ala	Gly	Trp	Leu 325	His	Glu	Glu	Glu	Phe	Arg 330	Ala	Glu	Ile	Glu	Glu 335	Leu		
ata	aca	acc	gag	aga	gcc	aat	gac	gac	aca	gac	atc	aca	ttc	gac	tcg	1056	
Ile	Thr	Thr	Glu 340	Arg	Ala	Asn	Asp	Asp 345	Thr	Asp	Ile	Thr	Phe 350	Asp	Ser		
ttt	gtg	cca	gaa	ccg	cct	cct	ctt	gat	tcg	gcc	atc	aag	act	gta	ctt	1104	
Phe	Val 355	Glu	Pro	Pro	Pro	Pro	Leu 360	Asp	Ser	Ala	Ile	Lys 365	Thr	Val	Leu		
gag	tct	gtc	gag	gat	ctc	tac	cct	caa	cac	ttg	gag	gca	tcc	ttg	ggg	1152	
Glu	Ser 370	Val	Glu	Asp	Leu	Tyr 375	Pro	Gln	His	Leu	Glu 380	Ala	Ser	Leu	Gly		
gag	atg	tcg	act	att	tcg	gtt	gat	ttt	gac	cct	gca	agc	agt	att	gac	1200	
Glu	Met	Ser	Thr	Ile	Ser 390	Val	Asp	Phe	Asp	Pro 395	Ala	Ser	Ser	Ile	Asp 400		
gtt	gat	gag	aga	ggt	gcg	cg	cgg	cta	ggc	aga	ccg	gag	act	atg	gac	1248	
Val	Asp	Glu	Arg 405	Gly	Ala	Arg	Arg	Leu	Gly 410	Arg	Pro	Glu	Thr	Met 415	Asp		
gaa	gac	cct	tgt	ccg	gat	gat	tct	gat	gaa	gaa	aga	ctg	cga	gaa	gcc	1296	
Glu	Asp	Pro 420	Cys	Pro	Asp	Asp	Ser	Asp 425	Glu	Glu	Arg	Leu	Arg 430	Glu	Ala		
cag	cgt	ttg	gag	gag	gca	aag	aaa	gaa	aag	gct	ttg	cag	gac	tat	ccc	1344	
Gln	Arg	Leu 435	Glu	Glu	Ala	Lys	Lys 440	Glu	Lys	Ala	Leu	Gln 445	Asp	Tyr	Pro		
acc	aca	gct	tcg	ata	aac	gga	ctg	gtt	gga	ctt	gat	acc	agt	agt	ctg	1392	

## PhoenixTemp32470.tmp.txt

Thr	Thr	Ala	Ser	Ile	Asn	Gly	Leu	Val	Gly	Leu	Asp	Thr	Ser	Ser	Leu	
450	450					455					460					
att	act	gga	aag	cga	cca	gag	ata	ccc	ata	aca	cag	gag	ctc	atc	gat	1440
Ile	Thr	Gly	Lys	Arg	Pro	Glu	Ile	Pro	Ile	Thr	Gln	Glu	Leu	Ile	Asp	
465					470					475					480	
gct	gct	att	gag	gaa	gat	ctg	ttg	agc	gag	ggt	cca	gct	cct	ttg	caa	1488
Ala	Ala	Ile	Glu	Glu	Asp	Leu	Leu	Ser	Glu	Val	Pro	Ala	Pro	Leu	Gln	
				485					490					495		
acg	cca	atc	ttg	cga	gag	gga	ttg	aag	cga	cat	gcc	cac	cca	aaa	tat	1536
Thr	Pro	Ile	Leu	Arg	Glu	Gly	Leu	Lys	Arg	His	Ala	His	Pro	Lys	Tyr	
			500					505					510			
gag	gat	cat	cct	tca	aaa	cga	cca	agg	ata	cga	cca	gct	cgc	ata	aac	1584
Glu	Asp	His	Pro	Ser	Lys	Arg	Pro	Arg	Ile	Arg	Pro	Ala	Arg	Ile	Asn	
		515					520					525				
aac	ttg	aca	ttt	gtc	ccc	cct	gag	gac	ggt	cta	cga	gcc	cgg	tat	gaa	1632
Asn	Leu	Thr	Phe	Val	Pro	Pro	Glu	Asp	Gly	Leu	Arg	Ala	Arg	Tyr	Glu	
	530				535					540						
cgc	cgt	gct	gcg	aat	gtg	gcc	aaa	gcc	gaa	agc	caa	ccc	cca	tcg	tct	1680
Arg	Arg	Ala	Ala	Asn	Val	Ala	Lys	Ala	Glu	Ser	Gln	Pro	Pro	Ser	Ser	
545				550					555						560	
tcc	caa	cga	cag	aca	gtg	gat	gag	gcc	gcc	ccg	ttc	cgt	acg	cct	ttg	1728
Ser	Gln	Arg	Gln	Thr	Val	Asp	Glu	Ala	Ala	Pro	Phe	Arg	Thr	Pro	Leu	
				565				570						575		
ccg	cgc	aag	tca	tct	atg	atg	cac	aac	tcg	gca	tcc	aag	tct	gtt	aat	1776
Pro	Arg	Lys	Ser	Ser	Met	Met	His	Asn	Ser	Ala	Ser	Lys	Ser	Val	Asn	
			580					585					590			
cgt	aag	ctc	agt	ttt	gct	gtc	gtc	aaa	gat	ccg	aat	gac	cct	gag	aca	1824
Arg	Lys	Leu	Ser	Phe	Ala	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Glu	Thr	
		595				600						605				
aag	ctt	cga	ttg	agc	caa	aat	tcc	aac	tcg	caa	ggc	agc	gac	aca	tct	1872
Lys	Leu	Arg	Leu	Ser	Gln	Asn	Ser	Asn	Ser	Gln	Gly	Ser	Asp	Thr	Ser	
	610				615					620						
gaa	acc	ccg	aag	ctt	ctt	tct	ttt	gat	tcg	tcg	ttg	cca	gat	ccg	gag	1920
Glu	Thr	Pro	Lys	Leu	Leu	Ser	Phe	Asp	Ser	Ser	Leu	Pro	Asp	Pro	Glu	
625				630					635						640	
gag	gcc	tca	ccg	cag	aag	gaa	gaa	aac	caa	gaa	ttc	tac	cag	gtg	ggc	1968
Glu	Ala	Ser	Pro	Gln	Lys	Glu	Glu	Asn	Gln	Glu	Phe	Tyr	Gln	Val	Gly	
				645					650					655		
cag	ttg	cca	aat	ccc	ttt	gga	ccc	tcc	gac	aag	tct	cag	gaa	cat	gac	2016
Gln	Leu	Pro	Asn	Pro	Phe	Gly	Pro	Ser	Asp	Lys	Ser	Gln	Glu	His	Asp	
			660					665					670			
cac	tca	gaa	gat	gaa	gtc	ttt	gca	cat	acc	tca	atg	gta	cct	gtt	agc	2064
His	Ser	Glu	Asp	Glu	Val	Phe	Ala	His	Thr	Ser	Met	Val	Pro	Val	Ser	
		675				680						685				
cat	gtt	ctc	ccc	ccg	acc	gca	gag	gag	gtc	tg	gca	act	atg	gcg	gac	2112
His	Val	Leu	Pro	Pro	Thr	Ala	Glu	Glu	Val	Cys	Ala	Thr	Met	Ala	Asp	
	690					695				700						
tac	gga	ata	ccc	gat	gtt	gta	tac	cgg	gac	gca	tat	tac	agt	aaa	gag	2160
Tyr	Gly	Ile	Pro	Asp	Val	Val	Tyr	Arg	Asp	Ala	Tyr	Tyr	Ser	Lys	Glu	
705				710					715						720	
aaa	gat	gtg	cca	ctt	cgt	cca	aga	gag	ttt	gct	ggg	cgt	caa	ttt	cgg	2208
Lys	Asp	Val	Pro	Leu	Arg	Pro	Arg	Glu	Phe	Ala	Gly	Arg	Gln	Phe	Arg	
				725					730					735		
ctc	cgg	ggt	aac	acg	tta	cca	tac	cta	ccc	gag	ttc	act	gct	gat	agg	2256
Leu	Arg	Gly	Asn	Thr	Leu	Pro	Tyr	Leu	Pro	Glu	Phe	Thr	Ala	Asp	Arg	
			740					745				750				
gct	gca	ccg	gat	gca	tgg	gcc	gtt	cca	gag	gca	cga	cta	cca	gac	aaa	2304
Ala	Ala	Pro	Asp	Ala	Trp	Ala	Val	Pro	Glu	Ala	Arg	Leu	Pro	Asp	Lys	
		755					760					765				
tca	aaa	ctt	aaa	att	gag	gag	gag	ata	cgc	cgg	aat	aaa	tgt	aca	atc	2352
Ser	Lys	Leu	Lys	Ile	Glu	Glu	Glu	Ile	Arg	Arg	Asn	Lys	Cys	Thr	Ile	
	770				775						780					
aag	aca	tgg	gaa	att	gca	caa	cca	cct	ccg	acg	ttt	gaa	gaa	gta	tcg	2400
Lys	Thr	Trp	Glu	Ile	Ala	Gln	Pro	Pro	Pro	Thr	Phe	Glu	Glu	Val	Ser	
				790					795						800	
ggc	tgg	tgg	gag	gaa	aag	gag	att	aag	aag	aaa	gag	tcc	gga	tcg	agg	2448
Gly	Trp	Trp	Glu	Glu	Lys	Glu	Ile	Lys	Lys	Lys	Glu	Ser	Gly	Ser	Arg	
				805					810					815		
cca	aag	agc	cat	ccg	gcc	tct	cca	cag	tcg	aca	cag	ttg	gct	cgt	cgc	2496

## PhoenixTemp32470.tmp.txt

Pro	Lys	Ser	His	Pro	Ala	Ser	Pro	Gln	Ser	Thr	Gln	Leu	Ala	Arg	Arg	
			820					825					830			
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Gln	Leu	Ser	Gln	Ile	Glu	Gly	Ala	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe	
		835					840					845				
agg	tac	tcg	cag	aag	caa	aag	act	acc	agc	ggt	cag	cat	gag	ggt	gct	2592
Arg	Tyr	Ser	Gln	Lys	Gln	Lys	Thr	Thr	Ser	Val	Gln	His	Glu	Val	Ala	
	850					855					860					
tac	atg	agc	aca	atg	agt	atc	gag	atc	cat	ggt	aac	acc	agg	gga	aaa	2640
Tyr	Met	Ser	Thr	Met	Ser	Ile	Glu	Ile	His	Val	Asn	Thr	Arg	Gly	Lys	
865					870					875					880	
ctt	gtc	cct	gat	ccg	gag	aag	gac	gag	gtc	aag	tgc	ata	ttc	tggt	tcg	2688
Leu	Val	Pro	Asp	Pro	Glu	Lys	Asp	Glu	Val	Lys	Cys	Ile	Phe	Trp	Cys	
				885					890					895		
ggt	agg	tca	gat	gat	aaa	tct	aac	gag	gct	agc	agc	cag	gct	cct	gat	2736
Val	Arg	Ser	Asp	Asp	Lys	Ser	Asn	Glu	Ala	Ser	Ser	Gln	Ala	Pro	Asp	
			900				905						910			
ggt	tta	caa	tcg	ggc	gtc	gtg	gtt	cta	tct	gaa	gaa	ggc	acc	ctg	gct	2784
Gly	Leu	Gln	Ser	Gly	Val	Val	Val	Leu	Ser	Glu	Glu	Gly	Thr	Leu	Ala	
		915					920					925				
gaa	cg	atc	aag	cac	caa	ata	aag	ggt	gag	cta	ttg	gaa	gaa	aca	tcc	2832
Glu	Arg	Ile	Lys	His	Gln	Ile	Lys	Gly	Glu	Leu	Leu	Glu	Glu	Thr	Ser	
	930					935					940					
gag	ctc	gac	ctc	atg	gtt	cgt	atg	gtt	gag	att	gtt	cga	acg	cac	gac	2880
Glu	Leu	Asp	Leu	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Thr	His	Asp	
945					950					955					960	
cca	gat	atc	ctg	aca	ggc	tac	gag	gtc	cat	ggg	ggc	tct	tggt	ggc	tat	2928
Pro	Asp	Ile	Leu	Thr	Gly	Tyr	Glu	Val	His	Gly	Gly	Ser	Trp	Gly	Tyr	
				965					970					975		
ttg	att	gag	cg	gca	aga	tgc	atg	tac	gac	tat	aat	ctc	tgt	gac	gag	2976
Leu	Ile	Glu	Arg	Ala	Arg	Cys	Met	Tyr	Asp	Tyr	Asn	Leu	Cys	Asp	Glu	
			980					985					990			
ttc	tcc	cgt	atg	aag	tcg	cag	tct	cat	gga	aga	tat	ggc	aaa	gac	gca	3024
Phe	Ser	Arg	Met	Lys	Ser	Gln	Ser	His	Gly	Arg	Tyr	Gly	Lys	Asp	Ala	
		995				1000						1005				
gac	cga	tggt	ggt	ttc	aac	act	act	tcg	aca	atc	cga	gtg	acg	ggg	aga	3072
Asp	Arg	Trp	Gly	Phe	Asn	Thr	Thr	Ser	Thr	Ile	Arg	Val	Thr	Gly	Arg	
	1010				1015						1020					
cac	atg	atc	aac	atc	tcg	cgt	gcg	atg	cga	gga	gag	ctc	aac	cta	ctt	3120
His	Met	Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu	
	1025				1030					1035					1040	
caa	tat	aca	atg	gaa	aat	gtc	gtc	tcg	cat	ctg	cta	cac	cgt	cgg	ata	3168
Gln	Tyr	Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile	
				1045					1050					1055		
cca	cac	tac	tcg	tcg	cag	acg	ctc	acc	acg	tcg	tat	ggg	agt	gga	cgg	3216
Pro	His	Tyr	Trp	Trp	Gln	Thr	Leu	Thr	Thr	Trp	Tyr	Gly	Ser	Gly	Arg	
			1060				1065						1070			
cac	ggc	gat	ctt	gat	aaa	cta	cta	cg	tac	tac	caa	aca	agg	acg	agg	3264
His	Gly	Asp	Leu	Asp	Lys	Leu	Leu	Arg	Tyr	Tyr	Gln	Thr	Arg	Thr	Arg	
		1075				1080						1085				
ctt	gat	att	gag	atc	ctt	gag	gag	aat	ggg	ctg	atc	tcg	cga	acg	agc	3312
Leu	Asp	Ile	Glu	Ile	Leu	Glu	Glu	Asn	Gly	Leu	Ile	Ser	Arg	Thr	Ser	
	1090				1095					1100						
gag	cag	gca	aga	ttg	ctt	ggc	gtc	gac	ttc	ttt	tca	gtg	ttc	tca	cgt	3360
Glu	Gln	Ala	Arg	Leu	Leu	Gly	Val	Asp	Phe	Phe	Ser	Val	Phe	Ser	Arg	
	1105			1110					1115						1120	
gga	tca	cag	ttc	aag	ggt	gag	tct	atc	atg	ttt	cgg	atc	gcc	aag	ccc	3408
Gly	Ser	Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala	Lys	Pro	
				1125					1130					1135		
gaa	aac	ttt	atg	ctc	gta	tca	ccg	agt	cga	aag	cag	ggt	ggc	ggg	caa	3456
Glu	Asn	Phe	Met	Leu	Val	Ser	Pro	Ser	Arg	Lys	Gln	Val	Gly	Gly	Gln	
		1140					1145						1150			
aat	gca	tta	gag	tgt	ttg	ccg	ctg	gtg	atg	gag	cca	caa	agt	gca	ttt	3504
Asn	Ala	Leu	Glu	Cys	Leu	Pro	Leu	Val	Met	Glu	Pro	Gln	Ser	Ala	Phe	
		1155				1160						1165				
tat	aac	agt	cca	gtg	ctg	gtg	cta	gac	ttc	cag	agt	ttg	tat	ccc	agc	3552
Tyr	Asn	Ser	Pro	Val	Leu	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	
	1170				1175					1180						
gtc	atg	att	gcc	tac	aac	tac	tgc	tac	tcg	acg	ttc	ctg	ggg	cgg	atc	3600

## PhoenixTemp32470.tmp.txt

Val	Met	Ile	Ala	Tyr	Asn	Tyr	Cys	Tyr	Ser	Thr	Phe	Leu	Gly	Arg	Ile		
1185					1190				1195						1200		
gtg	gat	tgg	cgt	gga	acc	aac	aag	atg	gga	ttt	gcc	gag	tat	aga	agg		3648
Val	Asp	Trp	Arg	Gly	Thr	Asn	Lys	Met	Gly	Phe	Ala	Glu	Tyr	Arg	Arg		
				1205					1210					1215			
cga	aag	cgg	cta	ctc	gag	ttg	ttg	caa	gag	cac	atc	aac	att	gca	cca		3696
Arg	Lys	Arg	Leu	Leu	Glu	Leu	Leu	Gln	Glu	His	Ile	Asn	Ile	Ala	Pro		
				1220					1225					1230			
aac	ggc	gtc	atg	tat	acc	aaa	cct	gag	atc	agg	aag	tcg	ctg	ctt	gcc		3744
Asn	Gly	Val	Met	Tyr	Thr	Lys	Pro	Glu	Ile	Arg	Lys	Ser	Leu	Leu	Ala		
				1235				1240						1245			
aag	atg	ttg	aca	gag	att	ctg	gaa	aca	aga	gtc	atg	gtc	aag	agt	ggc		3792
Lys	Met	Leu	Thr	Glu	Ile	Leu	Glu	Thr	Arg	Val	Met	Val	Lys	Ser	Gly		
				1250				1255						1260			
atg	aaa	caa	gac	aaa	gac	gac	aaa	acc	ctc	cag	caa	ttg	cta	aac	aat		3840
Met	Lys	Gln	Asp	Lys	Asp	Asp	Lys	Thr	Leu	Gln	Gln	Leu	Leu	Asn	Asn		
				1265					1270					1275			
agg	caa	ctg	gct	ctc	aag	ctg	ctg	gca	aac	gtc	aca	tat	ggc	tac	acg		3888
Arg	Gln	Leu	Ala	Leu	Lys	Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr		
				1285					1290					1295			
tct	gcg	tca	ttc	tcg	ggc	agg	ctt	ccg	tgt	tcg	gag	att	gcc	gat	agc		3936
Ser	Ala	Ser	Phe	Ser	Gly	Arg	Leu	Pro	Cys	Ser	Glu	Ile	Ala	Asp	Ser		
				1300				1305						1310			
att	gta	cag	aca	ggc	cgt	gaa	act	ctg	gag	cga	gcc	att	gcc	ttc	att		3984
Ile	Val	Gln	Thr	Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Ala	Phe	Ile		
				1315				1320						1325			
cac	tct	gtc	ccg	aga	tgg	ggc	gct	gaa	ggt	gtc	tac	ggg	gac	aca	gac		4032
His	Ser	Val	Pro	Arg	Trp	Gly	Ala	Glu	Val	Val	Tyr	Gly	Asp	Thr	Asp		
				1330				1335						1340			
agc	ctt	ttt	atc	cac	ctc	aag	ggt	cg	aca	aaa	gag	cag	gcc	ttt	gag		4080
Ser	Leu	Phe	Ile	His	Leu	Lys	Gly	Arg	Thr	Lys	Glu	Gln	Ala	Phe	Glu		
				1345					1350					1355			
att	gga	aac	gaa	atg	gcc	aag	gca	att	act	gac	atg	aac	ccg	cgg	ccc		4128
Ile	Gly	Asn	Glu	Met	Ala	Lys	Ala	Ile	Thr	Asp	Met	Asn	Pro	Arg	Pro		
				1365					1370					1375			
atg	aag	ctc	aag	ttt	gag	aag	gtc	tac	cta	cca	tgc	ggt	ttg	cta	gcc		4176
Met	Lys	Leu	Lys	Phe	Glu	Lys	Val	Tyr	Leu	Pro	Cys	Val	Leu	Leu	Ala		
				1380				1385						1390			
aaa	aag	cg	tac	gtt	ggg	tac	aag	tac	gaa	cac	gtc	gat	caa	caa	ggt		4224
Lys	Lys	Arg	Tyr	Val	Gly	Tyr	Lys	Tyr	Glu	His	Val	Asp	Gln	Gln	Val		
				1395				1400						1405			
ccc	gat	ttt	gat	gcc	aag	ggc	ata	gag	aca	gtc	cg	cgt	gac	ggg	acg		4272
Pro	Asp	Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Thr		
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cca	gcg	gag	caa	aag	atc	gag	gaa	aag	gcg	ctg	cg	ctg	ctc	ttt	gag		4320
Pro	Ala	Glu	Gln	Lys	Ile	Glu	Glu	Lys	Ala	Leu	Arg	Leu	Leu	Phe	Glu		
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acg	gcg	gac	cta	agc	caa	atc	aag	gag	tac	ttt	caa	cga	caa	tgc	aac		4368
Thr	Ala	Asp	Leu	Ser	Gln	Ile	Lys	Glu	Tyr	Phe	Gln	Arg	Gln	Cys	Asn		
				1445					1450					1455			
aaa	atc	atg	cgt	ggt	caa	gtg	tca	atc	caa	gac	ttt	tgc	ttc	gcc	aag		4416
Lys	Ile	Met	Arg	Gly	Gln	Val	Ser	Ile	Gln	Asp	Phe	Cys	Phe	Ala	Lys		
				1460				1465						1470			
gag	gtc	aag	ctg	ggc	aca	tat	agc	gac	cg	aac	ggt	gta	ggc	ccc	gca		4464
Glu	Val	Lys	Leu	Gly	Thr	Tyr	Ser	Asp	Arg	Asn	Gly	Val	Gly	Pro	Ala		
				1475				1480						1485			
ccg	cct	ggc	gcg	ctc	att	agc	aca	aag	aag	atg	ctg	gcc	gat	ccg	cga		4512
Pro	Pro	Gly	Ala	Leu	Ile	Ser	Thr	Lys	Lys	Met	Leu	Ala	Asp	Pro	Arg		
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gcg	gaa	cca	caa	tac	ggc	gaa	cgt	ggt	ctt	tat	gtc	gtc	gtc	aca	ggc		4560
Ala	Glu	Pro	Gln	Tyr	Gly	Glu	Arg	Val	Leu	Tyr	Val	Val	Val	Thr	Gly		
				1505				1510						1515			
gcc	cct	ggc	gcg	agg	ctt	ggc	gac	agg	tgc	gtc	ccg	ccc	gaa	gac	atg		4608
Ala	Pro	Gly	Ala	Arg	Leu	Ala	Asp	Arg	Cys	Val	Pro	Pro	Glu	Asp	Met		
				1525				1530						1535			
cta	tcg	ccc	gcc	ggt	gcg	cac	cta	cga	ctt	gat	gcc	gac	tac	tac	ata		4656
Leu	Ser	Pro	Ala	Gly	Ala	His	Leu	Arg	Leu	Asp	Ala	Asp	Tyr	Tyr	Ile		
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tcc	aag	aac	ctg	att	ccg	ccg	ctg	gag	cg	atc	ttc	aac	ttg	gtc	gga		4704

## PhoenixTemp32470.tmp.txt

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1555 1560 1565
gcg cac atc aga ggt tgg tac gat gag ctt ccc aaa gtg cag cag gta 4752
Ala His Ile Arg Gly Trp Tyr Asp Glu Leu Pro Lys Val Gln Gln Val
1570 1575 1580
agg cgc gtc gtg gtc gat tct ggg aac ggg cac aac agc tgg ttc ggg 4800
Arg Arg Val Val Val Asp Ser Gly Asn Gly His Asn Ser Trp Phe Gly
1585 1590 1595 1600
agc atc atg ggg aac aat ggc gca caa aag gcc aaa aag gtc acg ctt 4848
Ser Ile Met Gly Asn Asn Gly Ala Gln Lys Ala Lys Lys Val Thr Leu
1605 1610 1615
gaa agc tat ctg caa gtg atg aac tgt gca gta tgc aat gtc cgc atc 4896
Glu Ser Tyr Leu Gln Val Met Asn Cys Ala Val Cys Asn Val Arg Ile
1620 1625 1630
cgc ccc gct acc cag aaa aag aaa acg ccg gca ccc cgg cag caa cta 4944
Arg Pro Ala Thr Gln Lys Lys Lys Thr Pro Ala Pro Arg Gln Gln Leu
1635 1640 1645
cca cca gta cag tac cac ccc ctg ttt ggg ttc ggc cgt ttt ggg ccg 4992
Pro Pro Val Gln Tyr His Pro Leu Phe Gly Phe Arg Phe Gly Pro
1650 1655 1660
cga cct cca cct caa ccg gca ccc aag aag aag aag aag aag aac cct 5040
Arg Pro Pro Pro Gln Pro Ala Pro Lys Lys Lys Lys Lys Lys Asn Pro
1665 1670 1675 1680
gca aac gat gtc gtg gta tgc gga cga tgc acg cgc cac gct cag gaa 5088
Ala Asn Asp Val Val Val Cys Gly Arg Cys Thr Arg His Ala Gln Glu
1685 1690 1695
tcg ctc ctc aag ctc cac agt agg ctg gcg cac gag cgc aag cgg ttt 5136
Ser Leu Leu Lys Leu His Ser Arg Leu Ala His Glu Arg Lys Arg Phe
1700 1705 1710
tcc gag gtg gca gat gtg tgt cgg agc tgt gcc ggc ttg gca ccg ggc 5184
Ser Glu Val Ala Asp Val Cys Arg Ser Cys Ala Gly Leu Ala Pro Gly
1715 1720 1725
gac gtc gca agt gta cat gac tgc gat agc aag gac tgt ccg gtc ttt 5232
Asp Val Ala Ser Val His Asp Cys Asp Ser Lys Asp Cys Pro Val Phe
1730 1735 1740
tac acg cgg gtc aaa cag gcc acg aag ctt cga acg gaa atg agt att 5280
Tyr Thr Arg Val Lys Gln Ala Thr Lys Leu Arg Thr Glu Met Ser Ile
1745 1750 1755 1760
gtc gag ccg gtg atc aag caa ttg gaa gcg agg gtt gcc aaa atg agg 5328
Val Glu Pro Val Ile Lys Gln Leu Glu Ala Arg Val Ala Lys Met Arg
1765 1770 1775
aaa cag gct tgg gaa tgg tag 5349
Lys Gln Ala Trp Glu Trp
1780

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&lt;210&gt; 2672

&lt;211&gt; 1782

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 2672

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Met Asp Val Phe Lys Val Arg Leu Asn Cys Ile Asp His Tyr Gln Ala
1 5 10 15
Thr Pro Thr Gln Tyr Asp Pro Cys Leu Arg Asn Asp Val Arg His Ser
20 25 30
Gln Leu Phe Lys Glu Pro Lys Val Pro Val Ile Arg Val Phe Gly Ser
35 40 45
Thr Gln Thr Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
50 55 60
Tyr Leu Phe Ile Glu Tyr Asn Gly Lys Leu Asp Gln Glu Glu Val Gly
65 70 75 80
Ala Phe Ser Tyr Arg Leu His Leu Ser Ile Asp His Ala Leu Ala Val
85 90 95
Ser Tyr Arg Gln Asp Ala Tyr Ala Arg Asp Thr Pro Lys Tyr Val Ala
100 105 110
Arg Ile Thr Leu Val Lys Gly Val Pro Phe Tyr Gly Phe His Val Gly
115 120 125
Tyr Lys Tyr Tyr Leu Lys Ile Tyr Met Leu Asn Pro Val Val Met Thr
130 135 140

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## PhoenixTemp32470.tmp.txt

Arg 145	Leu	Ala	Asp	Leu	Leu 150	His	Gln	Gly	Val	Ile 155	Met	Lys	Arg	Lys	Phe 160
Gln	Pro	Tyr	Glu	Ala 165	His	Leu	Gln	Tyr	Ile 170	Leu	Gln	Phe	Met	Thr 175	Asp
Tyr	Asn	Leu	Tyr 180	Gly	Cys	Gly	Tyr	Ile 185	Glu	Ala	Ser	Ser	Val 190	Lys	Phe
Arg	Ala	Pro 195	Val	Pro	Gln	Ile	Asp 200	Asp	Asp	Met	Asp 205	Ser	Val	Met	
Thr	Pro 210	His	Ile	Trp	His	Asn 215	Gln	Ser	Ile	Ser	Gln 220	Lys	Gln	Ile	Thr
Asp 225	His	His	Ser	Leu	Pro 230	Arg	Ala	Ser	His	Cys 235	Pro	Ile	Glu	Val	Asp 240
Ile	Cys	Val	Gln	Asp 245	Ile	Leu	Asn	Arg	Lys 250	Asp	Val	Lys	Glu	Arg 255	Arg
Leu	His	His	Asp 260	Phe	Val	Glu	Arg	Leu 265	Asn	Pro	Leu	Pro	Thr 270	Asp	Met
Lys	Leu	Val 275	Ala	Ser	Met	Ala	Gly 280	Leu	Trp	Arg	Asp	Glu 285	Thr	Lys	Arg
Arg	Lys 290	Arg	Gln	Leu	Gly	Ile 295	Ser	Asp	Pro	Lys	Ser 300	Ser	Pro	Phe	Pro
Ala 305	Glu	Ala	Leu	Val	Ser 310	Met	Ser	His	Asp	Pro 315	Arg	Asp	Ser	Gln	Pro 320
Ala	Gly	Trp	Leu	His 325	Glu	Glu	Glu	Phe	Arg 330	Ala	Glu	Ile	Glu	Glu 335	Leu
Ile	Thr	Thr	Glu 340	Arg	Ala	Asn	Asp	Asp 345	Thr	Asp	Ile	Thr	Phe 350	Asp	Ser
Phe	Val 355	Pro	Glu	Pro	Pro	Pro	Leu 360	Asp	Ser	Ala	Ile	Lys 365	Thr	Val	Leu
Glu	Ser 370	Val	Glu	Asp	Leu	Tyr 375	Pro	Gln	His	Leu	Glu 380	Ala	Ser	Leu	Gly
Glu 385	Met	Ser	Thr	Ile	Ser 390	Val	Asp	Phe	Asp	Pro 395	Ala	Ser	Ser	Ile	Asp 400
Val	Asp	Glu	Arg	Gly 405	Ala	Arg	Arg	Leu	Gly 410	Arg	Pro	Glu	Thr	Met 415	Asp
Glu	Asp	Pro	Cys 420	Pro	Asp	Asp	Ser	Asp 425	Glu	Glu	Arg	Leu	Arg 430	Glu	Ala
Gln	Arg	Leu 435	Glu	Glu	Ala	Lys	Lys 440	Glu	Lys	Ala	Leu	Gln 445	Asp	Tyr	Pro
Thr	Thr 450	Ala	Ser	Ile	Asn	Gly 455	Leu	Val	Gly	Leu	Asp 460	Thr	Ser	Ser	Leu
Ile 465	Thr	Gly	Lys	Arg	Pro 470	Glu	Ile	Pro	Ile	Thr 475	Gln	Glu	Leu	Ile	Asp 480
Ala	Ala	Ile	Glu	Glu 485	Asp	Leu	Leu	Ser	Glu 490	Val	Pro	Ala	Pro	Leu 495	Gln
Thr	Pro	Ile 500	Leu	Arg	Glu	Gly	Leu	Lys 505	Arg	His	Ala	His	Pro 510	Lys	Tyr
Glu	Asp	His 515	Pro	Ser	Lys	Arg	Pro 520	Arg	Ile	Arg	Pro	Ala 525	Arg	Ile	Asn
Asn 530	Leu	Thr	Phe	Val	Pro	Pro 535	Glu	Asp	Gly	Leu	Arg 540	Ala	Arg	Tyr	Glu
Arg 545	Arg	Ala	Ala	Asn 550	Val	Ala	Lys	Ala	Glu	Ser 555	Gln	Pro	Pro	Ser	Ser 560
Ser	Gln	Arg	Gln	Thr 565	Val	Asp	Glu	Ala	Ala 570	Pro	Phe	Arg	Thr	Pro 575	Leu
Pro	Arg	Lys	Ser 580	Ser	Met	Met	His	Asn 585	Ser	Ala	Ser	Lys	Ser 590	Val	Asn
Arg	Lys	Leu 595	Ser	Phe	Ala	Val	Val 600	Lys	Asp	Pro	Asn	Asp 605	Pro	Glu	Thr
Lys	Leu 610	Arg	Leu	Ser	Gln	Asn 615	Ser	Asn	Ser	Gln	Gly	Ser	Asp	Thr	Ser
Glu 625	Thr	Pro	Lys	Leu	Leu 630	Ser	Phe	Asp	Ser	Ser 635	Leu	Pro	Asp	Pro	Glu 640
Glu	Ala	Ser	Pro	Gln 645	Lys	Glu	Glu	Asn	Gln 650	Glu	Phe	Tyr	Gln	Val 655	Gly
Gln	Leu	Pro	Asn 660	Pro	Phe	Gly	Pro	Ser 665	Asp	Lys	Ser	Gln	Glu	His 670	Asp
His	Ser	Glu 675	Asp	Glu	Val	Phe	Ala 680	His	Thr	Ser	Met	Val 685	Pro	Val	Ser
His	Val	Leu	Pro	Pro	Thr	Ala	Glu	Val	Cys	Ala	Thr	Met	Ala	Asp	

## PhoenixTemp32470.tmp.txt

690	Tyr	Gly	Ile	Pro	Asp	Val	695	Val	Tyr	Arg	Asp	Ala	700	Tyr	Tyr	Ser	Lys	Glu	
705	Lys	Asp	Val	Pro	Leu	Arg	710	Pro	Arg	Glu	Phe	715	Ala	Gly	Arg	Gln	Phe	720	Arg
	Leu	Arg	Gly	Asn	Thr	Leu	725	Pro	Tyr	Leu	730	Pro	Glu	Phe	Thr	Ala	Asp	735	Arg
	Ala	Ala	Pro	Asp	Ala	Trp	740	Ala	Val	Pro	745	Glu	Ala	Arg	Leu	750	Pro	Asp	Lys
	Ser	Lys	Leu	Lys	Ile	Glu	755	Glu	Glu	Ile	760	Arg	Arg	Asn	Lys	Cys	Thr	765	Ile
	Lys	Thr	Trp	Glu	Ile	Ala	770	Gln	Pro	Pro	775	Pro	Thr	Phe	Glu	Glu	Val	780	Ser
	Gly	Trp	Trp	Glu	Glu	Lys	785	Glu	Ile	Lys	790	Lys	Lys	Glu	Ser	Gly	Ser	800	Arg
	Pro	Lys	Ser	His	Pro	Ala	805	Ser	Pro	Gln	810	Ser	Thr	Gln	Leu	Ala	Arg	815	Arg
	Gln	Leu	Ser	Gln	Ile	Glu	820	Gly	Ala	Thr	825	Pro	Lys	Asn	Lys	His	Gly	830	Phe
	Arg	Tyr	Ser	Gln	Lys	Gln	835	Lys	Thr	Thr	840	Ser	Val	Gln	His	Glu	Val	845	Ala
	Tyr	Met	Ser	Thr	Met	Ser	850	Ile	Glu	Ile	855	His	Val	Asn	Thr	Arg	Gly	860	Lys
	Leu	Val	Pro	Asp	Pro	Glu	865	Lys	Asp	Glu	870	Val	Lys	Cys	Ile	Phe	Trp	875	Cys
	Val	Arg	Ser	Asp	Asp	Lys	885	Ser	Asn	Glu	890	Ala	Ser	Ser	Gln	Ala	Pro	895	Asp
	Gly	Leu	Gln	Ser	Gly	Val	900	Val	Val	Val	905	Leu	Ser	Glu	Glu	Gly	Thr	910	Ala
	Glu	Arg	Ile	Lys	His	Gln	915	Ile	Lys	Gly	920	Glu	Leu	Leu	Glu	Glu	Thr	925	Ser
	Glu	Leu	Asp	Leu	Met	Val	930	Arg	Met	Val	935	Glu	Ile	Val	Arg	Thr	His	940	Asp
	Pro	Asp	Ile	Leu	Thr	Gly	945	Tyr	Glu	Val	950	His	Gly	Gly	Ser	Trp	Gly	955	Tyr
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	His	Met	Ile	Asn	Ile	Trp	1010	Arg	Ala	Met	1015	Arg	Gly	Glu	Leu	Asn	Leu	1020	Leu
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	Gly	Ser	Gln	Phe	Lys	Val	1105	Glu	Ser	Ile	1110	Met	Phe	Arg	Ile	Ala	Lys	1115	Pro
	Glu	Asn	Phe	Met	Leu	Val	1125	Ser	Pro	Ser	1130	Arg	Lys	Gln	Val	Gly	Gly	1135	Gln
	Asn	Ala	Leu	Glu	Cys	Leu	1140	Pro	Leu	Val	1145	Met	Glu	Pro	Gln	Ser	Ala	1150	Phe
	Tyr	Asn	Ser	Pro	Val	Leu	1155	Val	Leu	Asp	1160	Phe	Gln	Ser	Leu	Tyr	Pro	1165	Ser
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## PhoenixTemp32470.tmp.txt

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 Tyr Thr Arg Val Lys Gln Ala Thr Lys Leu Arg Thr Glu Met Ser Ile  
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Ile Pro Glu Val Asp Pro Thr Phe Ser Gln Phe Arg Gly Ser Asp Ile
      20      25      30
aaa cag gtt cct gtt tta cga att ttt gga acc aca caa aat ggt gaa      144
Lys Gln Val Pro Val Leu Arg Ile Phe Gly Thr Thr Gln Asn Gly Glu
      35      40      45
aaa gtt tgc ttg cac att cac gga gtc ttt cct tac ttg tac gtg cct      192
Lys Val Cys Leu His Ile His Gly Val Phe Pro Tyr Leu Tyr Val Pro
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tac tca ggt caa atc aaa gca gat att tta gca tat cgt ctt gct gct      240
Tyr Ser Gly Gln Ile Lys Ala Asp Ile Leu Ala Tyr Arg Leu Ala Ala
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gca tta gat aca gct atc aat ata tca tta ggt tcg gct aaa gca aac      288
Ala Leu Asp Thr Ala Ile Asn Ile Ser Leu Gly Ser Ala Lys Ala Asn
      85      90      95
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Thr Gln His Val Tyr Lys Val His Gln Val Ser Gly Ile Pro Phe Tyr
      100      105      110
ggg tac cac agg aag aat cac cat ttc ttc aag att tat ttc tac aat      384
Gly Tyr His Arg Lys Asn His His Phe Phe Lys Ile Tyr Phe Tyr Asn
      115      120      125
cct gcc atg ata aaa cga gcc aca gat tta tta cag aat gga tgt att      432
Pro Ala Met Ile Lys Arg Ala Thr Asp Leu Leu Gln Asn Gly Cys Ile
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ctg gat caa gta ttt caa cca cac gaa gct cac ata cca ttt aca atg      480
Leu Asp Gln Val Phe Gln Pro His Glu Ala His Ile Pro Phe Thr Met
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Gln Phe Met Ile Asp Tyr Asn Ile Tyr Gly Met Ser Met Ile Asn Leu
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Arg Asn Val Lys His Arg His Ser Ala Thr Val Ser Gln Thr Glu Glu
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Lys Glu Tyr Leu Pro Tyr Ser Val Lys Lys Gln Ser Val Cys Lys Leu
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Glu Ile Asp Ala Trp Ala Ser Asp Ile Leu Asn Arg Glu Val Ile Asp
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Lys Gly Met Asp Leu Asn Pro Gly Ile Asp Ala Ile Trp Glu Glu Glu
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cat cct agt agc cct gag agg tct caa gca gca cgt att tta aca gat      864
His Pro Ser Ser Pro Glu Arg Ser Gln Ala Ala Arg Ile Leu Thr Asp
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Asn Asp Ile Tyr His Gln Lys Arg Leu Ala Gln Arg Leu Cys Val Ile
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Glu Ser Gln Gly Asp Glu Ser Ser Leu Ser Pro Asn Ser Gln Asn Ser

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## PhoenixTemp32470.tmp.txt

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	Ser	Ile	Asn	Gln	Ser	Asp	Ser	Asp	Leu	Asn	Asn	Glu	Ser	Ile	Met	Leu				
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	Ser	Trp	Gln	Ser	Gln	Ala	Ser	Phe	Ser	Asp	Ile	Ser	Leu	Asn	Ser	Ser				
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	Asp	Leu	Glu	Val	Val	Asp	Leu	Leu	Ala	Asn	Leu	Ala	Lys	Asp	Gln	Glu				
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	Asp	Ile	Pro	Ser	Ser	Ile	Asp	Ser	Asn	Ser	Ile	Leu	Gly	Ser	Gln	Lys				
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	Ser	Gln	Arg	Asn	Leu	Glu	Asp	Leu	Gly	Val	Glu	Gln	Asp	Asn	Pro	Ala				
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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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Ala	Lys	Glu	Lys	Arg	Glu	Gln	Lys	Glu	Lys	Glu	Glu	Lys	Glu	Lys	Val		
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gag	aag	gaa	atg	gag	aaa	agc	agt	ata	gca	acg	1100	gac	gtt	tcg	cta		
Glu	Lys	Glu	Met	Glu	Lys	Ser	Ser	Ile	Ala	Thr	Pro	Asp	Val	Ser	Leu		
																3408	
agt	ttg	tca	aag	ata	ttt	cat	cct	gaa	gat	ttc	tca	cat	cac	ttg	ggt		
Ser	Leu	Ser	Lys	Ile	Phe	His	Pro	Glu	Asp	Phe	Ser	His	His	Leu	Gly		
																3456	
gta	tct	tgt	gga	caa	att	gag	ttt	aat	tca	agg	tcg	agt	gta	gtt	gat		
Val	Ser	Cys	Gly	Gln	Ile	Glu	Phe	Asn	Ser	Arg	Ser	Ser	Val	Val	Asp		
																3504	
att	gaa	gat	ggt	aat	ctc	gga	aag	gca	aag	gct	ttg	aca	acg	tat	caa		
Ile	Glu	Asp	Gly	Asn	Leu	Gly	Lys	Ala	Lys	Ala	Leu	Thr	Thr	Tyr	Gln		
																3552	
ttt	ttg	acg	gtt	ctc	tgc	ttg	gac	gta	cat	ccc	atc	acg	aga	cca	aat		
Phe	Leu	Thr	Val	Leu	Cys	Leu	Asp	Val	His	Pro	Ile	Thr	Arg	Pro	Asn		
																3600	
ttg	ttg	cct	gat	cct	cga	caa	gat	cga	att	gcg	gct	gtc	ttc	tac	gct		
Leu	Leu	Pro	Asp	Pro	Arg	Gln	Asp	Arg	Ile	Ala	Ala	Val	Phe	Tyr	Ala		
																3648	
ata	cac	aat	gac	gta	cct	cca	gac	tgg	aat	caa	gca	aaa	cct	ctg	gac		
Ile	His	Asn	Asp	Val	Pro	Pro	Asp	Trp	Asn	Gln	Ala	Lys	Pro	Leu	Asp		
																3696	
tgt	ggt	gtg	att	atc	gtg	gat	cca	gaa	aaa	gtc	aac	tcc	aaa	ata	aaa		
Cys	Gly	Val	Ile	Ile	Val	Asp	Pro	Glu	Lys	Val	Asn	Ser	Lys	Ile	Lys		
																3744	
aag	ctt	aac	ggc	gga	act	gaa	caa	gaa	cag	tca	ttg	atc	tat	gtg	gaa		
Lys	Leu	Asn	Gly	Gly	Thr	Glu	Gln	Glu	Gln	Ser	Leu	Ile	Tyr	Val	Glu		
																3792	
aaa	gaa	gag	gac	gta	ttt	gaa	gaa	gta	gtg	tcg	ctt	ata	caa	cgt	tgt		
Lys	Glu	Glu	Asp	Val	Phe	Glu	Glu	Val	Val	Ser	Leu	Ile	Gln	Arg	Cys		
																3840	
gat	cca	gaa	att	tta	atc	ggc	tgg	gat	atc	gag	ttt	ctg	tcg	tgg	ggc		
Asp	Pro	Glu	Ile	Leu	Ile	Gly	Trp	Asp	Ile	Glu	Phe	Leu	Ser	Trp	Gly		
																3888	
tac	cta	ttt	caa	cga	gca	tct	gtt	ttc	gga	aaa	aat	ttg	agc	gga	aaa		
Tyr	Leu	Phe	Gln	Arg	Ala	Ser	Val	Phe	Gly	Lys	Asn	Leu	Ser	Gly	Lys		
																3936	
att	tcc	cgc	att	cca	agc	gct	aaa	tgc	aat	tgg	gaa	act	aga	gca	cac		
Ile	Ser	Arg	Ile	Pro	Ser	Ala	Lys	Cys	Asn	Trp	Glu	Thr	Arg	Ala	His		
																3984	
gat	gag	tct	aca	acg	gag	cta	cac	ttg	gag	act							

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1410	tct cga ggc tca cag ttt	1415	cga gtc gag tcg atg atg ttg cgt cta gcc	4320			
	Ser Arg Gly Ser Gln Phe		Arg Val Glu Ser Met Met Leu Arg Leu Ala				
1425	aaa ccc atg aac tac ata gct gtt tca ccg tcg gca cat caa cgg ggc	1430		1435	1440	4368	
	Lys Pro Met Asn Tyr Ile Ala Val Ser Pro Ser Ala His Gln Arg Gly						
	1445	1450	1455	1460	1465	1470	4416
	tgt atg cga gca ccc gag tcg ttg cct ctc atc atg gaa ccg gaa tca						
	Cys Met Arg Ala Pro Glu Ser Leu Pro Leu Ile Met Glu Pro Glu Ser						
	1475	1480	1485	1490	1495	1500	4464
	aca atg tat ctc gat ccc gtt gtc gta ctt gac ttc caa agt tta tat						
	Thr Met Tyr Leu Asp Pro Val Val Val Leu Asp Phe Gln Ser Leu Tyr						
	1505	1510	1515	1520	1525	1530	4512
	cca agc atc atc atc gct tac aat tac tgc ttc tcc act tgt ctt ggg						
	Pro Ser Ile Ile Ile Ala Tyr Asn Tyr Cys Phe Ser Thr Cys Leu Gly						
	1535	1540	1545	1550	1555	1560	4560
	cgc atc gaa cac att ggc tct ccc cat cca ttt gaa ttt ggc gca acg						
	Arg Ile Glu His Ile Gly Ser Pro His Pro Phe Glu Phe Gly Ala Thr						
	1565	1570	1575	1580	1585	1590	4608
	act ctt aaa gta caa aag aat ctg gca aag aag cta caa aat aaa atg						
	Thr Leu Lys Val Gln Lys Asn Leu Ala Lys Lys Leu Gln Asn Lys Met						
	1595	1600	1605	1610	1615	1620	4656
	aat ttc gct cct tgt ggt gtt gca ttt gta aaa tcg gat gtt cgt cgg						
	Asn Phe Ala Pro Cys Gly Val Ala Phe Val Lys Ser Asp Val Arg Arg						
	1625	1630	1635	1640	1645	1650	4704
	gga att tta cct cgt atg ctt act gaa ata ctt gag acc cga tta atg						
	Gly Ile Leu Pro Arg Met Leu Thr Glu Ile Leu Glu Thr Arg Leu Met						
	1655	1660	1665	1670	1675	1680	4752
	gtg aag aag gcc ata aag gat cat tca aag gaa gat cgc gct ttg caa						
	Val Lys Lys Ala Ile Lys Asp His Ser Lys Glu Asp Arg Ala Leu Gln						
	1685	1690	1695	1700	1705	1710	4800
	aga gct ctg cat tcg agg cag ctt gga ctc aag ttg atc gcg aat gta						
	Arg Ala Leu His Ser Arg Gln Leu Gly Leu Lys Leu Ile Ala Asn Val						
	1715	1720	1725	1730	1735	1740	4848
	act tat ggt tac acg gct gca aat ttt agt gga agg atg cct tgc att						
	Thr Tyr Gly Tyr Thr Ala Ala Asn Phe Ser Gly Arg Met Pro Cys Ile						
	1745	1750	1755	1760	1765	1770	4896
	gaa gtt ggc gat agc gtt gtt agt aaa gga aag gaa act tta gaa cga						
	Glu Val Gly Asp Ser Val Val Ser Lys Gly Lys Glu Thr Leu Glu Arg						
	1775	1780	1785	1790	1795	1800	4944
	gcc ata aaa atg gta gaa tcg act ccg gaa tgg gga gcg cga gtt gtt						
	Ala Ile Lys Met Val Glu Ser Thr Pro Glu Trp Gly Ala Arg Val Val						
	1805	1810	1815	1820	1825	1830	4992
	tac ggt gat acc gac tcg ttg ttt att tta tta aaa ggt aag acc aga						
	Tyr Gly Asp Thr Asp Ser Leu Phe Ile Leu Leu Lys Gly Lys Thr Arg						
	1835	1840	1845	1850	1855	1860	5040
	gaa gag gca ttt gca atc gga gca gaa atg gct gat gca gtt aca gca						
	Glu Glu Ala Phe Ala Ile Gly Ala Glu Met Ala Asp Ala Val Thr Ala						
	1865	1870	1875	1880	1885	1890	5088
	gcg aat cca aag ccg gtg aaa cta aag ttt gaa aaa gtt atg cag cct						
	Ala Asn Pro Lys Pro Val Lys Leu Lys Phe Glu Lys Val Met Gln Pro						
	1895	1900	1905	1910	1915	1920	5136
	tgc ata ctc cag aca aag aaa agg tat tgt gga tat atg tac gaa aat						
	Cys Ile Leu Gln Thr Lys Lys Arg Tyr Cys Gly Tyr Met Tyr Glu Asn						
	1925	1930	1935	1940	1945	1950	5184
	ttg aac gac aaa cca gta tat ttg gcc aag ggt atc gaa act gtt cgc						
	Leu Asn Asp Lys Pro Val Tyr Leu Ala Lys Gly Ile Glu Thr Val Arg						
	1955	1960	1965	1970	1975	1980	5232
	cga gac ggc tgc cct gct gta gcc aag atc ctt gaa aaa agt cta agg						
	Arg Asp Gly Cys Pro Ala Val Ala Lys Ile Leu Glu Lys Ser Leu Arg						
	1985	1990	1995	2000	2005	2010	5280
	ata cta ttc gat act aac aat atg tcg atg gtt aaa caa tat gtc acc						
	Ile Leu Phe Asp Thr Asn Met Ser Met Val Lys Gln Tyr Val Thr						
	2015	2020	2025	2030	2035	2040	5328
	cga cag ttg gac aaa gtt ctt agt gga aga gca tct ata caa gat ttg						
	Arg Gln Leu Asp Lys Val Leu Ser Gly Arg Ala Ser Ile Gln Asp Leu						
	2045	2050	2055	2060	2065	2070	5376
	aca ttt gct aag gag ttt cgc ggt atg aaa gga tac aaa gct gca gct						
	Thr Phe Ala Lys Glu Phe Arg Gly Met Lys Gly Tyr Lys Ala Ala Ala						

## PhoenixTemp32470.tmp.txt

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1780      1785      1790
tgt gta ccg gct tta gaa ctt aca aaa aga ctg att cag aaa gat ccg      5424
Cys Val Pro Ala Leu Glu Leu Thr Lys Arg Leu Ile Gln Lys Asp Pro
1795      1800      1805
cgc gcc gtt ccg aga aca ggt gcc aga gtg cct tac att atc gtt gca      5472
Arg Ala Val Pro Arg Thr Gly Ala Arg Val Pro Tyr Ile Ile Val Ala
1810      1815      1820
ggt gct cct aat gaa gca ctt att cgg tgt gta cga gcg ccg atg gaa      5520
Gly Ala Pro Asn Glu Ala Leu Ile Arg Cys Val Arg Ala Pro Met Glu
1825      1830      1835      1840
ttg att ctg gac cct ggt ttg agg ccg aat gct acg tat tat gtt acg      5568
Leu Ile Leu Asp Pro Gly Leu Arg Pro Asn Ala Thr Tyr Tyr Val Thr
1845      1850      1855
aaa gtt atc att cca cct cta aac aga tgt ctc aag ttg att gga gtt      5616
Lys Val Ile Ile Pro Pro Leu Asn Arg Cys Leu Lys Leu Ile Gly Val
1860      1865      1870
gac gct tac act tgg tac atg gaa atg cca cac cgt caa gct ctt aat      5664
Asp Ala Tyr Thr Trp Tyr Met Glu Met Pro His Arg Gln Ala Leu Asn
1875      1880      1885
aga ttg caa ggt cca gca tta tta aat gct aat cgc aag caa aaa acg      5712
Arg Leu Gln Gly Pro Ala Leu Leu Asn Ala Asn Arg Lys Gln Lys Thr
1890      1895      1900
acg att tct cag tat tta tgc aat gca act tgt cca tcc tgt ggg caa      5760
Thr Ile Ser Gln Tyr Leu Cys Asn Ala Thr Cys Pro Ser Cys Gly Gln
1905      1910      1915      1920
tca tgt gat aga ggt ata tgt gct gag tgc gtt aat aat caa agt caa      5808
Ser Cys Asp Arg Gly Ile Cys Ala Glu Cys Val Asn Asn Gln Ser Gln
1925      1930      1935
aca ctt gtt gta ctt cat gaa aaa tgt aga caa tac gaa aga att tat      5856
Thr Leu Val Val Leu His Glu Lys Cys Arg Gln Tyr Glu Arg Ile Tyr
1940      1945      1950
tct aat att aag atg ctc tgc gaa tct tgt att ggt gtg aag gac gct      5904
Ser Asn Ile Lys Met Leu Cys Glu Ser Cys Ile Gly Val Lys Asp Ala
1955      1960      1965
gat agt tgc act tct ctc gac tgt cca ata ttt tat cga aga agc cag      5952
Asp Ser Cys Thr Ser Leu Asp Cys Pro Ile Phe Tyr Arg Arg Ser Gln
1970      1975      1980
gca cag aga gac aat aca caa act tca tat tta tat aat tta atg cag      6000
Ala Gln Arg Asp Asn Thr Gln Thr Ser Tyr Leu Tyr Asn Leu Met Gln
1985      1990      2000
tgc atg gaa cat ttg aac tga
Cys Met Glu His Leu Asn
2005

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&lt;210&gt; 2674

&lt;211&gt; 2006

&lt;212&gt; PRT

&lt;213&gt; Nasonia vitripennis

&lt;400&gt; 2674

```

Met Tyr Ser Val Arg Leu Ile Cys Ala Asp Ser Tyr Gln Ala Thr Pro
1      5      10      15
Ile Pro Glu Val Asp Pro Thr Phe Ser Gln Phe Arg Gly Ser Asp Ile
20      25      30
Lys Gln Val Pro Val Leu Arg Ile Phe Gly Thr Thr Gln Asn Gly Glu
35      40      45
Lys Val Cys Leu His Ile His Gly Val Phe Pro Tyr Leu Tyr Val Pro
50      55      60
Tyr Ser Gly Gln Ile Lys Ala Asp Ile Leu Ala Tyr Arg Leu Ala Ala
65      70      75      80
Ala Leu Asp Thr Ala Ile Asn Ile Ser Leu Gly Ser Ala Lys Ala Asn
85      90      95
Thr Gln His Val Tyr Lys Val His Gln Val Ser Gly Ile Pro Phe Tyr
100      105      110
Gly Tyr His Arg Lys Asn His His Phe Phe Lys Ile Tyr Phe Tyr Asn
115      120      125
Pro Ala Met Ile Lys Arg Ala Thr Asp Leu Leu Gln Asn Gly Cys Ile
130      135      140
Leu Asp Gln Val Phe Gln Pro His Glu Ala His Ile Pro Phe Thr Met

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## PhoenixTemp32470.tmp.txt

145	Gln	Phe	Met	Ile	Asp	150	Tyr	Asn	Ile	Tyr	Gly	155	Met	Ser	Met	Ile	Asn	160	Leu
				165	His	Arg	His	Ser	Ala	Thr	Val	170	Ser	Gln	Thr	175	Glu	Glu	
Arg	Asn	Val	Lys	180	Asn	Ser	Asn	Asn	185	Leu	Ser	Asp	Phe	Glu	190	Ser	Glu	Val	
Lys	Leu	Ser	195	Leu	Pro	Tyr	Ser	200	Val	Lys	Lys	Gln	Ser	205	Val	Cys	Lys	Leu	
	210	Tyr	Leu	Pro	Tyr	Ser	215	Val	Lys	Lys	Gln	Ser	220	Val	Cys	Lys	Leu		
Glu	Ile	Asp	Ala	Trp	Ala	Ser	Asp	Ile	Leu	Asn	Arg	Glu	Val	Ile	Asp	240	Glu	Glu	
225	Lys	Gly	Met	Asp	245	Asn	Pro	Gly	Ile	Asp	250	Ala	Ile	Trp	Glu	255	Glu	Glu	
				260	Ala	Gln	Ala	Gly	Leu	265	Val	Gly	Glu	Ser	Gln	270	Leu	Thr	
Lys	Ala	Arg	Arg	260	Ala	Gln	Ala	Gly	Leu	265	Val	Gly	Glu	Ser	Gln	270	Leu	Thr	
His	Pro	Ser	Ser	Pro	Glu	Arg	Ser	280	Gln	Ala	Ala	Arg	Ile	Leu	Thr	Asp			
	275	Tyr	His	Gln	Lys	295	Arg	Leu	Ala	Gln	Arg	300	Cys	Val	Ile				
Asn	Asp	Ile	Tyr	His	Gln	Lys	295	Arg	Leu	Ala	Gln	Arg	300	Cys	Val	Ile			
	290	Gln	Gly	Asp	Glu	Ser	Ser	Leu	Ser	Pro	315	Asn	Ser	Gln	Asn	Ser			
Glu	Ser	Gln	Gly	Asp	Glu	Ser	Ser	Leu	Ser	Pro	315	Asn	Ser	Gln	Asn	Ser			
305	Ser	Tyr	Pro	Leu	Pro	325	Val	Pro	Asp	Asp	Ser	330	Asn	Leu	Leu	Asn	Ala	Ser	
				340	His	Ala	Gly	Pro	Leu	345	Gly	Thr	Ser	Ala	Ile	Gln	Gln		
Arg	Leu	Glu	Ile	340	His	Ala	Gly	Pro	Leu	345	Gly	Thr	Ser	Ala	Ile	Gln	Gln		
Ser	Ile	Asn	Gln	Ser	Asp	Ser	Asp	Leu	Asn	Asn	Glu	Ser	365	Ile	Met	Leu			
	355	Gln	Ser	Gln	Ala	Ser	375	Phe	Ser	Asp	Ile	Ser	380	Leu	Asn	Ser	Ser		
Ser	Trp	Gln	Ser	Gln	Ala	Ser	375	Phe	Ser	Asp	Ile	Ser	380	Leu	Asn	Ser	Ser		
	370	Gln	Ser	Gln	Ala	Ser	375	Phe	Ser	Asp	Ile	Ser	380	Leu	Asn	Ser	Ser		
Asp	Leu	Glu	Val	Val	Asp	390	Leu	Leu	Ala	Asn	Leu	395	Ala	Lys	Asp	Gln	Glu		
385	Asp	Ile	Pro	Ser	Ser	Ile	Asp	Ser	Asn	Ser	Ile	Leu	Gly	Ser	Gln	Lys			
				405	Glu	Asp	Leu	Gly	Val	Glu	Gln	Asp	Asn	Pro	Ala				
Ser	Gln	Arg	Asn	Leu	Glu	Asp	Leu	Gly	Val	Glu	Gln	Asp	Asn	Pro	Ala				
			420	Glu	Gly	Glu	Glu	Val	Thr	Asp	Leu	Asn	445	Leu	Thr	Asn			
Asp	Val	Glu	Asp	Glu	Gly	Glu	Glu	Val	Thr	Asp	Leu	Asn	445	Leu	Thr	Asn			
	435	Asp	Glu	Gly	Glu	Glu	Glu	Val	Thr	Asp	Leu	Asn	445	Leu	Thr	Asn			
Leu	Glu	Leu	Asp	Leu	Leu	Asn	Phe	Ser	Ser	Trp	Glu	Thr	Asn	Val	Asp				
	450	Leu	Asp	Leu	Leu	Asn	Phe	Ser	Ser	Trp	Glu	Thr	Asn	Val	Asp				
Lys	Ser	Gln	Pro	Pro	Ser	470	Lys	Thr	Asn	Glu	Ser	475	Gln	Ile	Glu	Leu	Val		
465	Leu	Glu	Ser	Leu	Asn	Pro	His	Thr	Pro	Ser	Arg	Thr	Asp	Asn	Ile	Pro			
				485	Pro	Ile	Asp	Asp	Glu	505	Asn	Ala	Arg	Thr	Ser	Ala	Glu		
Gln	Leu	Asp	Gly	Pro	Ile	Asp	Asp	Glu	505	Asn	Ala	Arg	Thr	Ser	Ala	Glu			
			500	Thr	Ile	Glu	Arg	520	Arg	Glu	Phe	Val	Ile	Cys	Glu	Tyr			
Asp	Pro	Asp	Met	Thr	Ile	Glu	Arg	520	Arg	Glu	Phe	Val	Ile	Cys	Glu	Tyr			
	515	Arg	Gly	Arg	Gly	Gly	Arg	535	Arg	Ser	Thr	Ala	Val	Thr	Pro	Gly	Lys		
Arg	Gln	Gly	Arg	Gly	Gly	Arg	535	Arg	Ser	Thr	Ala	Val	Thr	Pro	Gly	Lys			
	530	Arg	Val	Ser	Ser	Ser	Asp	Asp	Asp	Asp	555	Ser	Arg	Gly	Ser	Glu			
Arg	Lys	Arg	Val	Ser	Ser	Ser	Asp	Asp	Asp	Asp	555	Ser	Arg	Gly	Ser	Glu			
545	Lys	Lys	Lys	Thr	565	Lys	Asp	Ser	Leu	Pro	570	Lys	Thr	Pro	Arg	Arg	Ser		
				565	Lys	Asp	Ser	Leu	Pro	570	Lys	Thr	Pro	Arg	Arg	Arg	Ser		
Pro	Ser	Lys	Arg	Met	Asn	Lys	Leu	Thr	Ser	Pro	Ser	Cys	Pro	Asn	Arg				
	580	Pro	Leu	Ser	Leu	Glu	600	Ile	Ser	Cys	Gly	Gln	Lys	Thr	Pro				
Thr	Tyr	Ser	Pro	Leu	Ser	Leu	Glu	600	Ile	Ser	Cys	Gly	Gln	Lys	Thr	Pro			
	595	Pro	Leu	Ser	Leu	Glu	600	Ile	Ser	Cys	Gly	Gln	Lys	Thr	Pro				
Lys	Ser	Pro	Leu	Lys	Ser	615	Arg	Arg	Lys	Arg	Ile	Phe	Ser	Pro	Val	Lys			
	610	Arg	Glu	Ala	Phe	630	Glu	Glu	His	Asp	Glu	Gly	Thr	Ser	Asn	Ala	Ser		
Lys	Met	Arg	Glu	Ala	Phe	630	Glu	Glu	His	Asp	Glu	Gly	Thr	Ser	Asn	Ala	Ser		
625	Glu	Ser	Asn	Leu	Glu	645	Ser	Ile	Phe	Asp	Glu	Lys	Leu	Asn	Leu	Pro	Ile		
				660	Ser	Ile	Phe	Asp	Glu	Lys	Leu	Asn	Leu	Pro	Ile				
Lys	Lys	Pro	Ser	Ala	Ser	Ile	Phe	Asp	Glu	Lys	Leu	Asn	Leu	Pro	Ile				
				660	Ser	Ile	Phe	Asp	Glu	Lys	Leu	Asn	Leu	Pro	Ile				
Pro	Ser	Asn	Lys	Ser	Pro	Ser	Ser	680	Glu	Ser	Asp	Glu	Gln	Leu	Thr	Pro			
	675	Gln	Ile	His	Asn	695	Ser	Asn	Glu	Ser	Pro	700	Ser	Glu	Ala	Leu			
Ile	Ile	Glu	Gln	Ile	His	Asn	695	Ser	Asn	Glu	Ser	Pro	700	Ser	Glu	Ala	Leu		
	690	Glu	Gln	Ile	His	Asn	695	Ser	Asn	Glu	Ser	Pro	700	Ser	Glu	Ala	Leu		



## PhoenixTemp32470.tmp.txt

His 705 Asp Gln Ala Ser Pro 710 Leu Leu Leu Glu Gln 715 Pro His Ile Ser Pro 720  
 Leu 725 Asp Phe Ala Ser Ile 725 Lys Ala Pro Ser 730 Glu Ala Ser Glu Glu 735 Gln  
 Ser 740 Pro Leu Lys Thr Pro Val Asp Gln 745 Pro Leu Val Ser Pro Ile Asp 750  
 Leu 755 Ala Ser Ile Lys Ala Leu Ser 760 Glu Thr Ser Glu Pro Ser Ser Pro 765  
 Thr 770 Ile Glu Gln Arg Arg Ile 775 Ser Pro Val Phe Gly 780 Ser Met Lys Lys  
 Ser 785 Ser Lys Thr Pro Leu 790 Lys Leu Phe Ile Ser 795 Asn Leu Glu Gln Gln 800  
 His 805 Thr Ser Ser Ser Asp Ser Ile Pro 810 Ser Asn Gln Leu Gly 815 Gln  
 Glu 820 Ile Phe Thr Phe Asp Met Lys Thr 825 Pro Asp Ser Asp Arg Thr Leu 830  
 Val 835 Glu Asp Ser Asp Glu Ser Leu 840 Glu Thr Leu Thr Pro Ser Ser Pro 845  
 Glu 850 Asn Pro Ala Ile Ile Asn 855 Glu Ser Asp Thr Asn 860 Asp Thr Glu Gly  
 Ser 865 Gln Glu Lys Lys Ser 870 Thr Leu Ser Ser Tyr 875 Asn Phe Pro His Asp 880  
 Val 885 Leu His Thr Val Ala Glu Lys Glu 890 Gly Ser Ser Leu Glu Phe 895  
 Gln 900 Val Ser Phe Thr Gln Val Glu 905 Val Ser Glu Phe Met Met Thr 910  
 Phe 915 Thr Pro Thr Ser Ile Glu His 920 Ile Glu Asn Ser Ser Lys Ser Gln 925  
 Lys 930 Ile Pro Lys Pro Lys Glu 935 Glu Glu Leu Ser Asp 940 Ser Ser Glu Asp  
 Asp 945 Glu Asn Leu Asp Asn 950 Lys Glu Glu Pro Lys Thr Pro Pro Gly Phe 960  
 Gly 965 Ser Trp Arg Asn Met Glu Phe Thr Asp 970 Asn Arg Gln Leu Gly Glu 975  
 Asn 980 Gln Lys Thr Ser Asp Gln Gly Cys 985 Ser Ser Ser Ser Lys Gly Thr 990  
 Glu 995 Phe Val Met Thr Phe Lys Pro 1000 Pro Ser Phe Glu His Ile Lys Asn 1005  
 Ser 1010 Ala Lys Ser Gln Glu Ile Pro Lys Ser Lys Glu Glu Glu Leu Ser 1020  
 Asp 1025 Ser Ser Glu Asp Asp 1030 Glu Asn Leu Asn Asn 1035 Lys Glu Asp Pro Lys 1040  
 Thr 1045 Pro Pro Gly Phe Gly Ser Trp Arg Lys Phe Thr Gly Asn Ala Asp 1055  
 Thr 1060 Val Phe Gln Phe Asp Glu His Glu 1065 Glu Gly Leu Ile Ala Ile Arg 1070  
 Pro 1075 Leu Tyr Ser Pro Pro Ser Arg Glu Ser Val Glu Ser Trp Leu Lys 1085  
 Ala 1090 Lys Glu Lys Arg Glu Gln Lys Glu Lys Glu Lys Glu Lys Val 1100  
 Glu 1105 Lys Glu Met Glu Lys Ser Ser Ile Ala Thr Pro Asp Val Ser Leu 1120  
 Ser 1125 Leu Ser Lys Ile Phe His Pro Glu Asp Phe Ser His His Leu Gly 1135  
 Val 1140 Ser Cys Gly Gln Ile Glu Phe Asn Ser Arg Ser Ser Val Val Asp 1150  
 Ile 1155 Glu Asp Gly Asn Leu Gly Lys Ala Lys Ala Leu Thr Thr Tyr Gln 1165  
 Phe 1170 Leu Thr Val Leu Cys Leu Asp Val His Pro Ile Thr Arg Pro Asn 1180  
 Leu 1185 Leu Pro Asp Pro Arg Gln Asp Arg Ile Ala Ala Val Phe Tyr Ala 1200  
 Ile 1205 His Asn Asp Val Pro Pro Asp Trp Asn Gln Ala Lys Pro Leu Asp 1215  
 Cys 1220 Gly Val Ile Ile Val Asp Pro Glu Lys Val Asn Ser Lys Ile Lys 1230  
 Lys 1235 Leu Asn Gly Gly Thr Glu Gln Glu Gln Ser Leu Ile Tyr Val Glu 1245  
 Lys Glu Glu Asp Val Phe Glu Glu Val Val Ser Leu Ile Gln Arg Cys

## PhoenixTemp32470.tmp.txt

1250 1255 1260  
 Asp Pro Glu Ile Leu Ile Gly Trp Asp Ile Glu Phe Leu Ser Trp Gly  
 1265 1270 1275 1280  
 Tyr Leu Phe Gln Arg Ala Ser Val Phe Gly Lys Asn Leu Ser Gly Lys  
 1285 1290 1295  
 Ile Ser Arg Ile Pro Ser Ala Lys Cys Asn Trp Glu Thr Arg Ala His  
 1300 1305 1310  
 Asp Glu Ser Thr Thr Glu Leu His Leu Glu Thr Leu Val Glu Val Lys  
 1315 1320 1325  
 Leu Pro Gly Arg Ile Val Leu Asp Ile Trp Arg Ile Met Arg Ser Glu  
 1330 1335 1340  
 Ile Ala Leu Thr Gly Tyr Thr Tyr Glu Asn Val Met Tyr Asn Val Met  
 1345 1350 1355 1360  
 Asn Glu Arg Ile Pro Asn Pro Ser Phe Asp Thr Leu Thr Lys Trp Trp  
 1365 1370 1375  
 Asn Ser Ser Asn Thr Gln Trp Arg Val Ile Asp Asn Tyr Ser Asn Lys  
 1380 1385 1390  
 Val Ile Gly Val His Arg Leu Leu His His Leu Asp Ile Ile Asn Arg  
 1395 1400 1405  
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 Ser Arg Gly Ser Gln Phe Arg Val Glu Ser Met Met Leu Arg Leu Ala  
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 Lys Pro Met Asn Tyr Ile Ala Val Ser Pro Ser Ala His Gln Arg Gly  
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 Cys Met Arg Ala Pro Glu Ser Leu Pro Leu Ile Met Glu Pro Glu Ser  
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 Thr Met Tyr Leu Asp Pro Val Val Val Leu Asp Phe Gln Ser Leu Tyr  
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 Pro Ser Ile Ile Ile Ala Tyr Asn Tyr Cys Phe Ser Thr Cys Leu Gly  
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 Val Lys Lys Ala Ile Lys Asp His Ser Lys Glu Asp Arg Ala Leu Gln  
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 Tyr Gly Asp Thr Asp Ser Leu Phe Ile Leu Leu Lys Gly Lys Thr Arg  
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 Lys Val Ile Ile Pro Pro Leu Asn Arg Cys Leu Lys Leu Ile Gly Val  
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 Asp Ala Tyr Thr Trp Tyr Met Glu Met Pro His Arg Gln Ala Leu Asn  
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 1890 1895 1900  
 Thr Ile Ser Gln Tyr Leu Cys Asn Ala Thr Cys Pro Ser Cys Gly Gln  
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 Ser Cys Asp Arg Gly Ile Cys Ala Glu Cys Val Asn Asn Gln Ser Gln  
 1925 1930 1935  
 Thr Leu Val Val Leu His Glu Lys Cys Arg Gln Tyr Glu Arg Ile Tyr  
 1940 1945 1950  
 Ser Asn Ile Lys Met Leu Cys Glu Ser Cys Ile Gly Val Lys Asp Ala  
 1955 1960 1965  
 Asp Ser Cys Thr Ser Leu Asp Cys Pro Ile Phe Tyr Arg Arg Ser Gln  
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 Val Asp His Tyr Met His Lys Pro Glu Pro Arg Phe Asp Thr Cys Tyr  
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 Ser Glu Phe Arg Gly Ser Asn Val Lys Gln Val Pro Val Ile Arg Leu  
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 Phe Gly Ser Thr Ala Asp Gly Thr His Ser Cys Val His Ile His Gly  
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 Val Phe Pro Tyr Leu Tyr Val Pro Phe Asp Gly Asn Thr Ala Asp Arg  
 65 70 75 80  
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 Thr Ala Val Asp Arg Leu Met Tyr Gln Ile Ala Ser Ser Leu Asp Lys  
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 Ala Ile Asn Val Ser Leu Gly Asn Ala Asn Ser Ala Ala Thr His Val  
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 Phe Arg Ile Ala Leu Val Lys Gly Ile Pro Ile Tyr Gly Tyr His Arg  
 115 120 125  
 aag gaa cat cag ttt ttc aaa atc tac atg tac aac ccg tat ttg att 432  
 Lys Glu His Gln Phe Phe Lys Ile Tyr Met Tyr Asn Pro Tyr Leu Ile  
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 cgg aag gcc aac aat ctg ctg atg aat gga gtg att ctg tcg cga gtg 480  
 Arg Lys Ala Asn Asn Leu Leu Met Asn Gly Val Ile Leu Ser Arg Val  
 145 150 155 160  
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att Ile	cgg Arg	cct Pro 195	acg Arg	acg Thr	gaa Glu	act Thr	gga Gly 200	gag Glu	gaa Glu	ggg Gly	cat His	tta Leu 205	cag Gln	aag Lys	atg Met		624		
tcc Ser	act Thr 210	tcg Ser	gag Glu	tac Tyr	gag Glu	att Ile 215	gac Asp	att Ile	ttg Leu	gcc Ala	gga Gly 220	gat Asp	ata Ile	ttg Leu	aat Asn		672		
cgc Arg 225	cac His	acg Thr	ttg Leu	gag Glu	cag Gln 230	gag Glu	aag Lys	cgt Arg	tcg Ser	gaa Glu 235	tat Tyr	gct Ala	aat Asn	ccg Pro	ggt Gly 240		720		
att Ile	gcg Ala	tcg Ser	att Ile	tgg Trp 245	aat Asn	gac Asp	gag Glu	atc Ile	gct Ala 250	agg Arg	agg Arg	aag Lys	ttg Leu	ctg Leu 255	ggg Gly		768		
atg Met	gag Glu	caa Gln 260	cca Pro	gaa Glu	gca Ala	ctg Leu	agt Ser	ttg Leu 265	tcg Ser	caa Gln	agc Ser	gga Gly 270	aag Lys	gtg Val	gaa Glu		816		
atc Ile	gtg Val	acg Thr 275	gag Glu	agt Ser	gat Asp	cgc Arg	ttc Phe 280	ttt Phe	cga Arg	tca Ser	gtg Val	ttg Leu 285	gct Ala	tcg Ser	aag Lys		864		
ctt Leu	acc Thr 290	ggt Gly	tca Ser	aat Asn	aac Asn	gca Ala 295	aac Asn	aga Arg	ccg Pro	gtc Val	gaa Glu 300	ggg Gly	gaa Glu	gag Glu	act Thr		912		
cga Arg 305	tta Leu	aag Lys	ccg Pro	ccc Pro	ggt Val 310	tca Ser	ttt Phe	tat Tyr	cca Pro	tcg Ser 315	gaa Glu	gtg Val	gca Ala	gat Asp	gac Asp 320		960		
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cag Gln	tat Tyr	tcg Ser	tcg Ser 340	ttc Phe	aat Asn	atg Met	tcc Ser	aac Asn 345	acg Thr	gtt Val	tac Tyr	gat Asp	ttc Phe 350	gat Asp	ggg Gly		1056		
agc Ser	cag Gln	gta Val 355	gat Asp	gag Glu	gat Asp	cgg Arg	ata Ile 360	gta Val	agc Ser	atg Met	tct Ser	cag Gln 365	aat Asn	cct Pro	gac Asp		1104		
gcc Ala	acg Thr 370	ttt Phe	gcc Ala	gaa Glu	gag Glu	gat Asp 375	cac His	caa Gln	ttg Leu	ttg Leu	gac Asp 380	att Ile	atg Met	cga Arg	gag Glu		1152		
ctg Leu 385	gag Glu	gaa Glu	cac His	gaa Glu	aat Asn 390	cgc Arg	gat Asp	gta Val	gag Glu	aac Asn 395	gac Asp	agt Ser	ctt Leu	ctc Leu	gct Ala 400		1200		
cct Pro	ttg Leu	aca Thr	cag Gln	caa Gln 405	aat Asn	gaa Glu	cgt Arg	aga Arg	att Ile 410	aca Thr	tct Ser	act Thr	ggg Gly 415	gga Gly 415	agt Ser		1248		
ggg Gly	tta Leu	agc Ser	tta Leu 420	tct Ser	caa Gln	tcg Ser	agt Ser	aac Asn 425	aaa Lys	cga Arg	ctt Leu	aat Asn	gct Ala 430	act Thr	ttg Leu		1296		
agt Ser	gga Gly	gac Asp 435	ttg Leu	gaa Glu	atg Met	ctt Leu	tcg Ser 440	ttg Leu	atg Met	ggt Gly	gac Asp	gac Asp 445	aag Lys	aag Lys	aat Asn		1344		
gat Asp	gat Asp 450	gga Gly	att Ile	caa Gln	gta Val	cag Gln 455	ctt Leu	cag Gln	gac Asp	aac Asn	agt Ser 460	acg Thr	ttg Leu	gat Asp	tcg Ser		1392		
gat Asp 465	gat Asp	gaa Glu	ttt Phe	ctg Leu	ttg Leu 470	gat Asp	tac Tyr	act Thr	atg Met	aag Lys 475	gat Met	ccg Pro	aag Lys	acg Thr 480		1440			
gct Ala	gaa Glu	gac Asp	ttg Leu 485	ttg Leu	aac Asn	gac Asp	agc Ser	gac Asp	gac Asp 490	gat Asp	att Ile	ctc Leu	aat Asn	tcg Ser 495	agt Ser		1488		
gtg Val	att Ile	cca Pro 500	caa Gln	ctg Leu	gac Asp	ggc Gly	gct Ala	gac Asp 505	gat Asp	gga G									

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cat His 545	gtt Val	cta Leu	gtg Val	acc Thr	aag Lys 550	535 atg Met	tca Ser	aac Asn	gag Glu	ttc Phe 555	540 gaa Glu	atg Met	cac His	aac Asn	gtt Val 560	1680
cca Pro	acg Thr	tta Leu	aca Thr	aat Asn 565	ggg Gly	gtg Val	cat His	aag Lys	gta Val 570	aag Lys	cct Pro	ttg Leu	tcg Ser	aag Lys 575	ccg Pro	1728
agg Arg	aaa Lys	aag Lys	atc Ile 580	aaa Lys	ctg Leu	gat Asp	caa Gln	tcg Ser 585	aac Asn	acc Thr	acc Thr	att Ile	ccc Pro 590	tct Ser	gag Glu	1776
acc Thr	agg Arg	agc Ser 595	agc Ser	gtc Val	aaa Lys	ccc Pro	cag Gln 600	ctc Leu	ttt Phe	tta Leu	gag Glu	ctc Leu 605	caa Gln	aga Arg	gtt Val	1824
gct Ala 610	aga Arg	ttt Phe	ttc Phe	aca Thr	atc Ile	gac Asp 615	gct Ala	tgc Cys	ctc Leu	ctt Leu	cgc Arg 620	tca Ser	att Ile	cac His	ctc Leu	1872
aag Lys 625	tac Tyr	agt Ser	cca Pro	ccg Pro	ccg Pro 630	tca Ser	acc Thr	gtt Val	cgc Arg	ccc Pro 635	agc Ser	gcg Ala	aac Asn	ttc Phe	ttt Phe 640	1920
ttg Leu	gtc Val	cat His	acc Thr	gaa Glu 645	ccg Pro	gat Asp	cac His	ggg Gly 650	cat His	ccg Pro	aaa Lys	aga Arg	ctt Leu 655	tcg Ser		1968
ccg Pro	aga Arg	aag Lys	ttc Phe 660	ccc Pro	cag Gln	tgc Cys	cgt Arg	tca Ser 665	act Thr	gag Glu	cgg Arg	cag Gln	aag Lys 670	cca Pro	ttc Phe	2016
ccg Pro	ccg Pro	aag Lys 675	aga Arg	aaa Lys	acg Thr	acg Thr	cgc Arg 680	tac Tyr	gct Ala	aaa Lys	aaa Lys	agt Ser 685	gct Ala	gtg Val	ccc Pro	2064
aac Asn	caa Gln 690	aac Asn	aac Asn	tgc Cys	ttc Phe	cgt Arg 695	tgc Cys	tac Tyr	gaa Glu	tgt Cys	gaa Glu 700	tcg Ser	atg Met	ccg Pro	gaa Glu	2112
tcg Ser 705	cca Pro	gta Val	aag Lys	aaa Lys	ccc Pro 710	gct Ala	aaa Lys	act Thr	cca Pro	aac Asn 715	gca Ala	tca Ser	ccc Pro	ctc Leu	aag Lys 720	2160
gaa Glu	cga Arg	gat Asp	cca Pro	tca Ser 725	ccg Pro	ttc Phe	gat Asp	gtt Val	tgt Cys 730	aaa Lys	ttg Leu	gct Ala	cgc Arg	gag Glu 735	tac Tyr	2208
gat Asp	ctg Leu	gcc Ala 740	aac Asn	aat Asn	tac Tyr	gat Asp	cct Pro	cag Gln 745	gaa Glu	gga Gly	ctg Leu	tct Ser	cga Arg 750	ggg Gly	ccc Pro	2256
gtt Val	cgg Arg 755	cga Arg	ggg Gly	cgt Arg	agt Ser	cga Arg	gga Gly 760	agg Arg	ggg Gly	cgt Arg	ggg Gly	agt Ser 765	cgc Arg	aga Arg	gga Gly	2304
cgc Arg	cct Pro 770	gtc Val	cga Arg	aaa Lys	caa Gln	cca Pro 775	tct Ser	cct Pro	gag Glu	ccg Pro	gta Val 780	ccc Pro	gaa Glu	cca Pro	gaa Glu	2352
ccc Pro 785	gaa Glu	ccg Pro	gat Asp	cct Pro	gag Glu 790	cag Gln	caa Gln	atc Ile	ccg Pro	cca Pro 795	caa Gln	ccg Pro	gaa Glu	ccg Pro	gaa Glu 800	2400
atc Ile	gat Asp	gtg Val	atc Ile	ctg Leu 805	tcg Ser	cag Gln	aaa Lys	ttt Phe	cag Gln 810	agc Ser	atc Ile	att Ile	aaa Lys	ctg Leu 815	tct Ser	2448
cca Pro	aaa Lys	gtg Val	ttg Leu 820	ata Ile	acg Thr	gcg Ala	cta Leu	agc Ser 825	caa Gln	tcg Ser	gag Glu	gta Val 830	aca Thr	aac Asn	ttg Leu	2496
cag Gln	gtc Val 835	aag Lys	aaa Lys	gcc Ala	gat Asp	cca Pro	acg Thr 840	tca Ser	atg Met	gag Glu	acg Thr	att Ile 845	gaa Glu	att Ile	tcc Ser	2544
agc Ser 850	gag Glu	tcg Ser	gaa Glu	gta Val	atc Ile	cac His 855	atc Ile	agt Ser	gat Asp	gaa Glu	gaa Glu 860	tcg Ser	cgc Arg	tct Ser	tcc Ser	2592
gga Gly 865	gaa Glu	cag Gln	aaa Lys	cgc Arg	ctt Leu 870	tcc Ser	att Ile	ccg Pro	gaa Glu	ata Ile 875	tcg Ser	cag Gln	gaa Glu	gca Ala	gcc Ala 880	2640
cag Gln	gtg Val	gca Ala	aat Asn	cgt Arg 885	tca Ser	ccc Pro	att Ile	tcg Ser	aca Thr 890	aag Lys	gca Ala	atg Met	acg Thr	gag Glu 895	gat Asp	2688
gac Asp	gag Glu	ggg Gly	gaa Glu	gat Asp	gaa Glu	gat Asp	ctc Leu	aac Asn	att Ile	aaa Lys	agt Ser	ttt Phe	tac Tyr	gaa Glu	cat His	2736

## PhoenixTemp32470.tmp.txt

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Ser	Met	Met	Glu	Leu	Gly	Cys	Asp	Asn	His	Val	Glu	Asp	Asp	Thr	Lys				
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Val	Ile	Ser	Thr	Leu	Gln	Glu	Lys	Pro	Pro	Ser	Met	Ala	Asp	Ala	Leu				
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Lys	Ala	Ile	Gln	Glu	Phe	Thr	Ile	Pro	Gln	Val	Ile	His	Gln	Glu	Pro				
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Phe	Tyr	Ser	Asn	Pro	Val	Asp	Val	Thr	Gly	Arg	Lys	Glu	Val	Gly	His				
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Ile	Val	Leu	Asn	Ile	Gly	Gly	Asn	Ser	Leu	Asn	Asp	Met	Glu	Glu	Phe				
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cat	agc	gtt	gtg	agc	gat	atg	aac	tcg	atc	aac	aac	ttt	cgc	cat	aaa				3072
His	Ser	Val	Val	Ser	Asp	Met	Asn	Ser	Ile	Asn	Asn	Phe	Arg	His	Lys				
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Lys	Leu	Ser	Ala	Ile	Tyr	Gly	Asp	Ser	Leu	Ser	Ala	Ile	Leu	Gly	Asp				
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tca	tct	cgc	cca	gac	gct	ggg	aaa	atg	aga	gaa	ctg	ttg	gca	acg	gaa				3168
Ser	Ser	Arg	Pro	Asp	Ala	Gly	Lys	Met	Arg	Glu	Leu	Leu	Ala	Thr	Glu				
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cag	tcg	gtt	atc	gtg	gta	ccg	gct	gca	aag	ccc	cca	tca	aaa	cat	gaa				3216
Gln	Ser	Val	Ile	Val	Val	Pro	Ala	Ala	Lys	Pro	Pro	Ser	Lys	His	Glu				
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gcc	aaa	gtt	tgg	ctg	aaa	gcc	atg	gag	aaa	att	aag	act	gaa	gaa	gct				3264
Ala	Lys	Val	Trp	Leu	Lys	Ala	Met	Glu	Lys	Ile	Lys	Thr	Glu	Glu	Ala				
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gtt	cct	gtg	gag	caa	gac	agc	ccg	atc	aaa	att	aag	aaa	atg	caa	gca				3312
Val	Pro	Val	Glu	Gln	Asp	Ser	Pro	Ile	Lys	Ile	Lys	Lys	Met	Gln	Ala				
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att	atg	gtc	ggg	gag	gga	aca	acc	tcc	acg	cag	gaa	gca	caa	agc	atc				3360
Ile	Met	Val	Gly	Glu	Gly	Thr	Thr	Ser	Thr	Gln	Glu	Ala	Gln	Ser	Ile				
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aaa	atc	gat	cac	gac	agc	aca	ctc	aat	cta	agc	tct	ctg	att	aca	gcg				3408
Lys	Ile	Asp	His	Asp	Ser	Thr	Leu	Asn	Leu	Ser	Ser	Leu	Ile	Thr	Ala				
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gat	aat	ccc	gta	gat	agc	agt	gcg	aga	agc	acg	ctg	gtt	tcg	aaa	att				3456
Asp	Asn	Pro	Val	Asp	Ser	Ser	Ala	Arg	Ser	Thr	Leu	Val	Ser	Lys	Ile				
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ttc	tcc	atg	aac	aca	aaa	tcc	tcc	ccc	gca	atg	cga	ttg	gac	cac	gag				3504
Phe	Ser	Met	Asn	Thr	Lys	Ser	Ser	Pro	Ala	Met	Arg	Leu	Asp	His	Glu				
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aac	gga	tca	cca	tct	gtt	tct	agc	gga	aag	gaa	cat	ctc	gag	ctg	ctc				3552
Asn	Gly	Ser	Pro	Ser	Val	Ser	Ser	Gly	Lys	Glu	His	Leu	Glu	Leu	Leu				
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Ser	Tyr	Ser	Ala	Arg	Arg	Lys	Arg	Arg	Lys	Thr	Met	Lys	Ala	Arg	Leu				
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tcg	cta	aaa	cat	tcc	ggg	aat	att	tcc	gcc	gtg	acg	ccg	aac	aac	aac				3648
Ser	Leu	Lys	His	Ser	Gly	Asn	Ile	Ser	Ala	Val	Thr	Pro	Asn	Asn	Asn				
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Thr	Tyr	Gly	Phe	Lys	Val	Asn	Tyr	Glu	Asn	Leu	Gln	Lys	Ala	Lys	Ala				
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Thr	Cys	Glu	Tyr	Asn	Phe	Leu	Thr	Ile	Met	Ser	Val	Glu	Val	His	Ile				
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Gln	Thr	Arg	Gly	Glu	Leu	Arg	Pro	Asn	Pro	Glu	Ile	Asp	Pro	Ile	Ser				
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gca	atc	ttc	tat	cgc	atc	cat	aat	gat	gtg	ccg	gaa	gat	cac	cgt	cgg				3840
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		1285	1290	1295	
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Ala Thr Asp Arg Leu Asp Pro Tyr Lys Tyr Asn Lys Cys Asn Tyr Met					
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gcc gat gtg gta acg gtg tgc aac gag agg gag ttg tac gag aaa ttt					3984
Ala Asp Val Val Thr Val Ser Asn Glu Arg Glu Leu Tyr Glu Lys Phe					
		1315	1320	1325	
ctg atg ttg atc tgc ttt tgg gac ccg gat atc ttc gcc ggg tat gag					4032
Leu Met Leu Ile Ser Phe Trp Asp Pro Asp Ile Phe Ala Gly Tyr Glu					
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Ile Glu Gln Ala Ser Trp Gly Tyr Ile Ile Gln Arg Gly Tyr Ser Leu					
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gag atg aac ctt atg aaa atg ttg tgc agg gtg ccg acg gcg gag aaa					4128
Glu Met Asn Leu Met Lys Met Leu Ser Arg Val Pro Thr Ala Glu Lys					
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gtt cac gtt tcc gag gaa gaa gag caa gag ctg ctg gag atg cat gaa					4176
Val His Val Ser Glu Glu Glu Glu Gln Glu Leu Leu Glu Met His Glu					
		1380	1385	1390	
tac agt gcg gga tta aag att ccc ggg agg ata tta ctg gat att tgg					4224
Tyr Ser Ala Gly Leu Lys Ile Pro Gly Arg Ile Leu Leu Asp Ile Trp					
		1395	1400	1405	
cgc ctg atg aga cac gag ata gcg ttg acg tgc tac act ttc gaa aat					4272
Arg Leu Met Arg His Glu Ile Ala Leu Thr Ser Tyr Thr Phe Glu Asn					
		1410	1415	1420	
att gtg ttc cat att tta cac agg cga gtt tca tgc cat gct ttc aag					4320
Ile Val Phe His Ile Leu His Arg Arg Val Ser Cys His Ala Phe Lys					
		1425	1430	1435	
caa ttg acg aga ctg tgg aac aaa ccg tac tcc aag tgg atc gta ctg					4368
Gln Leu Thr Arg Leu Trp Asn Lys Pro Tyr Ser Lys Trp Ile Val Leu					
		1445	1450	1455	
gaa tat tat ctg gag agg gtt aac ggt aat ctt gaa ctg ttg cat cag					4416
Glu Tyr Tyr Leu Glu Arg Val Asn Gly Asn Leu Glu Leu Leu His Gln					
		1460	1465	1470	
ttg gat ttg atc ggt aga aca gcc gaa ttg gcc aag ctt ttt ggg att					4464
Leu Asp Leu Ile Gly Arg Thr Ala Glu Leu Ala Lys Leu Phe Gly Ile					
		1475	1480	1485	
cag ttc tac gaa gtg ctc tgc cgt ggc tct cag ttc cga gtg gag agt					4512
Gln Phe Tyr Glu Val Leu Ser Arg Gly Ser Gln Phe Arg Val Glu Ser					
		1490	1495	1500	
atg atg ctg aga ata gcg aag ccg agg aat ttc gtg tcc gtg tca ccg					4560
Met Met Leu Arg Ile Ala Lys Pro Arg Asn Phe Val Ser Val Ser Pro					
		1505	1510	1515	
agc ata cag caa cga gcg cat atg agg gct ccg gag tat cta ccg ttg					4608
Ser Ile Gln Gln Arg Ala His Met Arg Ala Pro Glu Tyr Leu Pro Leu					
		1525	1530	1535	
ata ttg gaa cct gag tgc agg ttc tat gcg gat cca ttg ata gtg ttg					4656
Ile Leu Glu Pro Glu Ser Arg Phe Tyr Ala Asp Pro Leu Ile Val Leu					
		1540	1545	1550	
gat ttc cag agc ttg tat cca agc atg atc att gca tac aat tac tgc					4704
Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Tyr Cys					
		1555	1560	1565	
ttt tgc acg tgc ctc ggt agg gtt gaa cat ttg gga caa tcc gag cca					4752
Phe Ser Thr Cys Leu Gly Arg Val Glu His Leu Gly Gln Ser Glu Pro					
		1570	1575	1580	
ttc gaa ttc ggt gct tct cat ctt cgg ctg tct cct cga atg ctt aaa					4800
Phe Glu Phe Gly Ala Ser His Leu Arg Leu Ser Pro Arg Met Leu Lys					
		1585	1590	1595	
gta ctc gta gag aag aat ctt atc acc atc tca cca tgt ggc att gcg					4848
Val Leu Val Glu Lys Asn Leu Ile Thr Ile Ser Pro Cys Gly Ile Ala					
		1605	1610	1615	
ttc gtg aaa tca tcc gtg cga gag ggc atc ctt ccc agg atg ttg aat					4896
Phe Val Lys Ser Ser Val Arg Glu Gly Ile Leu Pro Arg Met Leu Asn					
		1620	1625	1630	
gaa att ttg acc act cgt ctc atg gtg aaa ggt tcc atg aag ctg cac					4944
Glu Ile Leu Thr Thr Arg Leu Met Val Lys Gly Ser Met Lys Leu His					

## PhoenixTemp32470.tmp.txt

```

1635      1640      1645
aag gag aac agt att ctc caa cga gtg ctc cat tct cgg caa ctc ggg      4992
Lys Glu Asn Ser Ile Leu Gln Arg Val Leu His Ser Arg Gln Leu Gly
1650      1655      1660
ctg aag ctg atc gcc aat gtc acg tat ggg tac acg gcg gct aat ttc      5040
Leu Lys Leu Ile Ala Asn Val Thr Tyr Gly Tyr Thr Ala Ala Asn Phe
1665      1670      1675      1680
agc ggt cga atg ccc tgc gtc gag gtg ggc gat agc gtt gta agt aaa      5088
Ser Gly Arg Met Pro Cys Val Glu Val Gly Asp Ser Val Val Ser Lys
1685      1690      1695
ggt cgt gaa acg ttg gaa cgg gcc atc aaa atg gtt gag acc agc gag      5136
Gly Arg Glu Thr Leu Glu Arg Ala Ile Lys Met Val Glu Thr Ser Glu
1700      1705      1710
cgg tgg ggt gcc aaa gta gtg tac ggc gat acg gat tcg ttg ttc gtg      5184
Arg Trp Gly Ala Lys Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val
1715      1720      1725
ctt tgt ccg ggc cga acc aag gag caa gcg ttt aaa atc gga gca gaa      5232
Leu Cys Pro Gly Arg Thr Lys Glu Gln Ala Phe Lys Ile Gly Ala Glu
1730      1735      1740
att gcc gat gcc gtg acg aag gat aat cct cca ccg gtg aaa ctc aag      5280
Ile Ala Asp Ala Val Thr Lys Asp Asn Pro Pro Pro Val Lys Leu Lys
1745      1750      1755      1760
ctg gag aag gtt tac cag ccg tcg ata tta cag aca aag aaa cgc tac      5328
Leu Glu Lys Val Tyr Gln Pro Ser Ile Leu Gln Thr Lys Lys Arg Tyr
1765      1770      1775
gtg ggt tac atg tac gaa aca ccg gac cag gag aaa cct gtt tat gag      5376
Val Gly Tyr Met Tyr Glu Thr Pro Asp Gln Glu Lys Pro Val Tyr Glu
1780      1785      1790
gca aag gga atc gaa acg gta cgc cgc gat ggc tgt ccc gtg gtc agt      5424
Ala Lys Gly Ile Glu Thr Val Arg Asp Gly Cys Pro Val Val Ser
1795      1800      1805
aaa atg ctc gaa aag gtc ctg cgc atc ctg ttc gaa acg cgg gac gtt      5472
Lys Met Leu Glu Lys Val Leu Arg Ile Leu Phe Glu Thr Arg Asp Val
1810      1815      1820
tcc aaa gtt aaa gag tac acc tgt cgg cag ttc tcc aaa att ctc gaa      5520
Ser Lys Val Lys Glu Tyr Thr Cys Arg Gln Phe Ser Lys Ile Leu Glu
1825      1830      1835      1840
gga cgg gtc aat ctg cag gac ttt ata tat gcc aaa gag ttt cgc ggc      5568
Gly Arg Val Asn Leu Gln Asp Phe Ile Tyr Ala Lys Glu Phe Arg Gly
1845      1850      1855
gag gat ggg tac aag ccg gga gca tgt gta cca gct ttg gaa ctg acg      5616
Glu Asp Gly Tyr Lys Pro Gly Ala Cys Val Pro Ala Leu Glu Leu Thr
1860      1865      1870
cgc cgc tgg aaa gtg gtt gat cct aga cga gaa cca cgc cgg ggt caa      5664
Arg Arg Trp Lys Val Val Asp Pro Arg Arg Glu Pro Arg Gly Gln
1875      1880      1885
cgt gtt ccg tac gtg att atc aac ggt ccg ccc ttg gtg cca ttg att      5712
Arg Val Pro Tyr Val Ile Ile Asn Gly Pro Pro Leu Val Pro Leu Ile
1890      1895      1900
cga ctg gtc aga agt cct gat gag ttg ctg gcg gat aat gga ttg aaa      5760
Arg Leu Val Arg Ser Pro Asp Glu Leu Leu Ala Asp Asn Gly Leu Lys
1905      1910      1915      1920
atc aac tct aat tac tat att ggg aag gca atc att ccg ccc ctt aat      5808
Ile Asn Ser Asn Tyr Tyr Ile Gly Lys Ala Ile Ile Pro Pro Leu Asn
1925      1930      1935
aga tgt ctg ctt ctg att ggt gca gac gtg aac caa tgg tat aac gat      5856
Arg Cys Leu Leu Ile Gly Ala Asp Val Asn Gln Trp Tyr Asn Asp
1940      1945      1950
atg cca cga aag tac caa ctg tta cac aat acc ggc gga aag cgt tcg      5904
Met Pro Arg Lys Tyr Gln Leu Leu His Asn Thr Gly Gly Lys Arg Ser
1955      1960      1965
tcg ctt gca agc gaa ttg cag tta ccg aaa aag agt acg atc tca cag      5952
Ser Leu Ala Ser Glu Leu Gln Leu Pro Lys Lys Ser Thr Ile Ser Gln
1970      1975      1980
tac ttc tcc acc act agc tgc atc gga gat tgc ggc aat cag agc cac      6000
Tyr Phe Ser Thr Thr Ser Cys Ile Gly Asp Cys Gly Asn Gln Ser His
1985      1990      1995      2000
agt gga gtg tgc act gaa tgt cgc aag cgt ccc caa aga act gtt acc      6048
Ser Gly Val Cys Thr Glu Cys Arg Lys Arg Pro Gln Arg Thr Val Thr

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## PhoenixTemp32470.tmp.txt

				2005					2010					2015				
tat	gtg	atg	gat	aag	att	aac	cgg	ttg	gaa	agg	cga	ggt	gaa	ctt	tgc			
Tyr	Val	Met	Asp	Lys	Ile	Asn	Arg	Leu	Glu	Arg	Arg	Val	Glu	Leu	Cys			6096
				2020				2025					2030					
gaa	aag	atg	tgt	cga	tcc	tgc	tgt	cag	cgg	aat	ttt	gaa	acg	gca	tgc			6144
Glu	Lys	Met	Cys	Arg	Ser	Cys	Cys	Gln	Arg	Asn	Phe	Glu	Thr	Ala	Cys			
				2035				2040					2045					
att	tct	ctg	gat	tgc	cct	gtg	tta	ttt	gtg	ctg	aac	caa	cgc	act	cga			6192
Ile	Ser	Leu	Asp	Cys	Pro	Val	Leu	Phe	Val	Leu	Asn	Gln	Arg	Thr	Arg			
				2050				2055					2060					
gag	tac	gct	cag	gtt	cag	tat	tat	cgt	gat	ctt	ctc	gaa	cag	atg	ttc			6240
Glu	Tyr	Ala	Gln	Val	Gln	Tyr	Tyr	Arg	Asp	Leu	Leu	Glu	Gln	Met	Phe			
2065					2070				2075						2080			6243
tga																		

<210> 2676  
 <211> 2080  
 <212> PRT  
 <213> Aedes aegypti

<400> 2676  
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 1 Val Asp His Tyr Met His Lys Pro Glu Pro Arg Phe Asp Thr Cys Tyr  
 Ser Glu Phe Arg Gly Ser Asn Val Lys Gln Val Pro Val Ile Arg Leu  
 Phe Gly Ser Thr Ala Asp Gly Thr His Ser Cys Val His Ile His Gly  
 Val Phe Pro Tyr Leu Tyr Val Pro Phe Asp Gly Asn Thr Ala Asp Arg  
 65 Thr Ala Val Asp Arg Leu Met Tyr Gln Ile Ala Ser Ser Leu Asp Lys  
 Ala Ile Asn Val Ser Leu Gly Asn Ala Asn Ser Ala Ala Thr His Val  
 Phe Arg Ile Ala Leu Val Lys Gly Ile Pro Ile Tyr Gly Tyr His Arg  
 Lys Glu His Gln Phe Phe Lys Ile Tyr Met Tyr Asn Pro Tyr Leu Ile  
 Arg Lys Ala Asn Asn Leu Leu Met Asn Gly Val Ile Leu Ser Arg Val  
 145 Phe Gln Thr Phe Glu Ser His Val Pro Tyr Ile Leu Gln Phe Phe Ile  
 Asp Tyr Asn Leu Tyr Gly Met Ser Leu Leu Asp Val Leu Glu Ser Ala  
 Ile Arg Pro Arg Thr Glu Thr Gly Glu Glu Gly His Leu Gln Lys Met  
 Ser Thr Ser Glu Tyr Glu Ile Asp Ile Leu Ala Gly Asp Ile Leu Asn  
 Arg His Thr Leu Glu Gln Glu Lys Arg Ser Glu Tyr Ala Asn Pro Gly  
 225 Ile Ala Ser Ile Trp Asn Asp Glu Ile Ala Arg Arg Lys Leu Leu Gly  
 Met Glu Gln Pro Glu Ala Leu Ser Leu Ser Gln Ser Gly Lys Val Glu  
 Ile Val Thr Glu Ser Asp Arg Phe Phe Arg Ser Val Leu Ala Ser Lys  
 Leu Thr Gly Ser Asn Asn Ala Asn Arg Pro Val Glu Gly Glu Glu Thr  
 Arg Leu Lys Pro Pro Val Ser Phe Tyr Pro Ser Glu Val Ala Asp Asp  
 305 Glu Arg Leu Leu Glu Ala Ser Cys Val Gln Asp His Lys His Phe Ser  
 Gln Tyr Ser Ser Phe Asn Met Ser Asn Thr Val Tyr Asp Phe Asp Gly  
 ser Gln Val Asp Glu Asp Arg Ile Val Ser Met Ser Gln Asn Pro Asp  
 355 360

## PhoenixTemp32470.tmp.txt

Ala Thr Phe Ala Glu Glu Asp His Gln Leu Leu Asp Ile Met Arg Glu  
 370 380  
 Leu Glu Glu His Glu Asn Arg Asp Val Glu Asn Asp Ser Leu Leu Ala  
 385 390 400  
 Pro Leu Thr Gln Gln Asn Glu Arg Arg Ile Thr Ser Thr Gly Gly Ser  
 405 415  
 Gly Leu Ser Leu Ser Gln Ser Ser Asn Lys Arg Leu Asn Ala Thr Leu  
 420 430  
 Ser Gly Asp Leu Glu Met Leu Ser Leu Met Gly Asp Asp Lys Lys Asn  
 435 445  
 Asp Asp Gly Ile Gln Val Gln Leu Gln Asp Asn Ser Thr Leu Asp Ser  
 450 460  
 Asp Asp Glu Phe Leu Leu Asp Tyr Thr Met Lys Met Asp Pro Lys Thr  
 465 475 480  
 Ala Glu Asp Leu Leu Asn Asp Ser Asp Asp Ile Leu Asn Ser Ser  
 485 495  
 Val Ile Pro Gln Leu Asp Gly Ala Asp Asp Gly Gln Leu Pro Met Leu  
 500 510  
 Arg Ser Lys Arg Thr Ser Gln Asn Arg Ser Pro Ser Gly Ala Leu Ser  
 515 525  
 Asn Gly Lys Leu Asn Gly His Asp Glu Pro Gly Ile Lys Arg Leu Lys  
 530 540  
 His Val Leu Val Thr Lys Met Ser Asn Glu Phe Glu Met His Asn Val  
 545 555 560  
 Pro Thr Leu Thr Asn Gly Val His Lys Val Lys Pro Leu Ser Lys Pro  
 565 575  
 Arg Lys Lys Ile Lys Leu Asp Gln Ser Asn Thr Thr Ile Pro Ser Glu  
 580 590  
 Thr Arg Ser Ser Val Lys Pro Gln Leu Phe Leu Glu Leu Gln Arg Val  
 595 605  
 Ala Arg Phe Phe Thr Ile Asp Ala Cys Leu Leu Arg Ser Ile His Leu  
 610 620  
 Lys Tyr Ser Pro Pro Pro Ser Thr Val Arg Pro Ser Ala Asn Phe Phe  
 625 635 640  
 Leu Val His Thr Glu Pro Asp His Gly Gly His Pro Lys Arg Leu Ser  
 645 655  
 Pro Arg Lys Phe Pro Gln Cys Arg Ser Thr Glu Arg Gln Lys Pro Phe  
 660 670  
 Pro Pro Lys Arg Lys Thr Thr Arg Tyr Ala Lys Lys Ser Ala Val Pro  
 675 685  
 Asn Gln Asn Asn Cys Phe Arg Cys Tyr Glu Cys Glu Ser Met Pro Glu  
 690 700  
 Ser Pro Val Lys Lys Pro Ala Lys Thr Pro Asn Ala Ser Pro Leu Lys  
 705 715 720  
 Glu Arg Asp Pro Ser Pro Phe Asp Val Cys Lys Leu Ala Arg Glu Tyr  
 725 735  
 Asp Leu Ala Asn Tyr Asp Pro Gln Glu Gly Leu Ser Arg Gly Pro  
 740 750  
 Val Arg Arg Gly Arg Ser Arg Gly Arg Gly Arg Gly Ser Arg Arg Gly  
 755 765  
 Arg Pro Val Arg Lys Gln Pro Ser Pro Glu Pro Val Pro Glu Pro Glu  
 770 780  
 Pro Glu Pro Asp Pro Glu Gln Gln Ile Pro Pro Gln Pro Glu Pro Glu  
 785 795 800  
 Ile Asp Val Ile Leu Ser Gln Lys Phe Gln Ser Ile Ile Lys Leu Ser  
 805 815  
 Pro Lys Val Leu Ile Thr Ala Leu Ser Gln Ser Glu Val Thr Asn Leu  
 820 830  
 Gln Val Lys Lys Ala Asp Pro Thr Ser Met Glu Thr Ile Glu Ile Ser  
 835 845  
 Ser Glu Ser Glu Val Ile His Ile Ser Asp Glu Glu Ser Arg Ser Ser  
 850 860  
 Gly Glu Gln Lys Arg Leu Ser Ile Pro Glu Ile Ser Gln Glu Ala Ala  
 865 875 880  
 Gln Val Ala Asn Arg Ser Pro Ile Ser Thr Lys Ala Met Thr Glu Asp  
 885 895  
 Asp Glu Gly Glu Asp Glu Asp Leu Asn Ile Lys Ser Phe Tyr Glu His  
 900 910  
 Thr Leu Val Phe Asp Asp Phe Asp Glu Leu Gly Ser Gly Ser Asp Gly

## PhoenixTemp32470.tmp.txt

915 920 925  
 Ser Met Met Glu Leu Gly Cys Asp Asn His Val Glu Asp Asp Thr Lys  
 930 935 940  
 Val Ile Ser Thr Leu Gln Glu Lys Pro Pro Ser Met Ala Asp Ala Leu  
 945 950 955 960  
 Lys Ala Ile Gln Glu Phe Thr Ile Pro Gln Val Ile His Gln Glu Pro  
 965 970 975  
 Phe Tyr Ser Asn Pro Val Asp Val Thr Gly Arg Lys Glu Val Gly His  
 980 985 990  
 Ile Val Leu Asn Ile Gly Gly Asn Ser Leu Asn Asp Met Glu Glu Phe  
 995 1000 1005  
 His Ser Val Val Ser Asp Met Asn Ser Ile Asn Asn Phe Arg His Lys  
 1010 1015 1020  
 Lys Leu Ser Ala Ile Tyr Gly Asp Ser Leu Ser Ala Ile Leu Gly Asp  
 1025 1030 1035 1040  
 Ser Ser Arg Pro Asp Ala Gly Lys Met Arg Glu Leu Leu Ala Thr Glu  
 1045 1050 1055  
 Gln Ser Val Ile Val Val Pro Ala Ala Lys Pro Pro Ser Lys His Glu  
 1060 1065 1070  
 Ala Lys Val Trp Leu Lys Ala Met Glu Lys Ile Lys Thr Glu Glu Ala  
 1075 1080 1085  
 Val Pro Val Glu Gln Asp Ser Pro Ile Lys Ile Lys Lys Met Gln Ala  
 1090 1095 1100  
 Ile Met Val Gly Glu Gly Thr Thr Ser Thr Gln Glu Ala Gln Ser Ile  
 1105 1110 1115 1120  
 Lys Ile Asp His Asp Ser Thr Leu Asn Leu Ser Ser Leu Ile Thr Ala  
 1125 1130 1135  
 Asp Asn Pro Val Asp Ser Ser Ala Arg Ser Thr Leu Val Ser Lys Ile  
 1140 1145 1150  
 Phe Ser Met Asn Thr Lys Ser Ser Pro Ala Met Arg Leu Asp His Glu  
 1155 1160 1165  
 Asn Gly Ser Pro Ser Val Ser Ser Gly Lys Glu His Leu Glu Leu Leu  
 1170 1175 1180  
 Ser Tyr Ser Ala Arg Arg Lys Arg Arg Lys Thr Met Lys Ala Arg Leu  
 1185 1190 1195 1200  
 Ser Leu Lys His Ser Gly Asn Ile Ser Ala Val Thr Pro Asn Asn Asn  
 1205 1210 1215  
 Thr Tyr Gly Phe Lys Val Asn Tyr Glu Asn Leu Gln Lys Ala Lys Ala  
 1220 1225 1230  
 Thr Cys Glu Tyr Asn Phe Leu Thr Ile Met Ser Val Glu Val His Ile  
 1235 1240 1245  
 Gln Thr Arg Gly Glu Leu Arg Pro Asn Pro Glu Ile Asp Pro Ile Ser  
 1250 1255 1260  
 Ala Ile Phe Tyr Arg Ile His Asn Asp Val Pro Glu Asp His Arg Arg  
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 Ala Pro Ser Val Cys Gly Ile Ile Leu Asn His Glu His Gly Leu Ala  
 1285 1290 1295  
 Ala Thr Asp Arg Leu Asp Pro Tyr Lys Tyr Asn Lys Cys Asn Tyr Met  
 1300 1305 1310  
 Ala Asp Val Val Thr Val Ser Asn Glu Arg Glu Leu Tyr Glu Lys Phe  
 1315 1320 1325  
 Leu Met Leu Ile Ser Phe Trp Asp Pro Asp Ile Phe Ala Gly Tyr Glu  
 1330 1335 1340  
 Ile Glu Gln Ala Ser Trp Gly Tyr Ile Ile Gln Arg Gly Tyr Ser Leu  
 1345 1350 1355 1360  
 Glu Met Asn Leu Met Lys Met Leu Ser Arg Val Pro Thr Ala Glu Lys  
 1365 1370 1375  
 Val His Val Ser Glu Glu Glu Glu Gln Glu Leu Leu Glu Met His Glu  
 1380 1385 1390  
 Tyr Ser Ala Gly Leu Lys Ile Pro Gly Arg Ile Leu Leu Asp Ile Trp  
 1395 1400 1405  
 Arg Leu Met Arg His Glu Ile Ala Leu Thr Ser Tyr Thr Phe Glu Asn  
 1410 1415 1420  
 Ile Val Phe His Ile Leu His Arg Arg Val Ser Cys His Ala Phe Lys  
 1425 1430 1435 1440  
 Gln Leu Thr Arg Leu Trp Asn Lys Pro Tyr Ser Lys Trp Ile Val Leu  
 1445 1450 1455  
 Glu Tyr Tyr Leu Glu Arg Val Asn Gly Asn Leu Glu Leu Leu His Gln  
 1460 1465 1470

Leu Asp Leu Ile Gly Arg Thr Ala Glu Leu Ala Lys Leu Phe Gly Ile  
 1475 1480 1485  
 Gln Phe Tyr Glu Val Leu Ser Arg Gly Ser Gln Phe Arg Val Glu Ser  
 1490 1495 1500  
 Met Met Leu Arg Ile Ala Lys Pro Arg Asn Phe Val Ser Val Ser Pro  
 1505 1510 1515 1520  
 Ser Ile Gln Gln Arg Ala His Met Arg Ala Pro Glu Tyr Leu Pro Leu  
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 Ile Leu Glu Pro Glu Ser Arg Phe Tyr Ala Asp Pro Leu Ile Val Leu  
 1540 1545 1550  
 Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Tyr Cys  
 1555 1560 1565  
 Phe Ser Thr Cys Leu Gly Arg Val Glu His Leu Gly Gln Ser Glu Pro  
 1570 1575 1580  
 Phe Glu Phe Gly Ala Ser His Leu Arg Leu Ser Pro Arg Met Leu Lys  
 1585 1590 1595 1600  
 Val Leu Val Glu Lys Asn Leu Ile Thr Ile Ser Pro Cys Gly Ile Ala  
 1605 1610 1615  
 Phe Val Lys Ser Ser Val Arg Glu Gly Ile Leu Pro Arg Met Leu Asn  
 1620 1625 1630  
 Glu Ile Leu Thr Thr Arg Leu Met Val Lys Gly Ser Met Lys Leu His  
 1635 1640 1645  
 Lys Glu Asn Ser Ile Leu Gln Arg Val Leu His Ser Arg Gln Leu Gly  
 1650 1655 1660  
 Leu Lys Leu Ile Ala Asn Val Thr Tyr Gly Tyr Thr Ala Ala Asn Phe  
 1665 1670 1675 1680  
 Ser Gly Arg Met Pro Cys Val Glu Val Gly Asp Ser Val Val Ser Lys  
 1685 1690 1695  
 Gly Arg Glu Thr Leu Glu Arg Ala Ile Lys Met Val Glu Thr Ser Glu  
 1700 1705 1710  
 Arg Trp Gly Ala Lys Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val  
 1715 1720 1725  
 Leu Cys Pro Gly Arg Thr Lys Glu Gln Ala Phe Lys Ile Gly Ala Glu  
 1730 1735 1740  
 Ile Ala Asp Ala Val Thr Lys Asp Asn Pro Pro Val Lys Leu Lys  
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 Leu Glu Lys Val Tyr Gln Pro Ser Ile Leu Gln Thr Lys Lys Arg Tyr  
 1765 1770 1775  
 Val Gly Tyr Met Tyr Glu Thr Pro Asp Gln Glu Lys Pro Val Tyr Glu  
 1780 1785 1790  
 Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Cys Pro Val Val Ser  
 1795 1800 1805  
 Lys Met Leu Glu Lys Val Leu Arg Ile Leu Phe Glu Thr Arg Asp Val  
 1810 1815 1820  
 Ser Lys Val Lys Glu Tyr Thr Cys Arg Gln Phe Ser Lys Ile Leu Glu  
 1825 1830 1835 1840  
 Gly Arg Val Asn Leu Gln Asp Phe Ile Tyr Ala Lys Glu Phe Arg Gly  
 1845 1850 1855  
 Glu Asp Gly Tyr Lys Pro Gly Ala Cys Val Pro Ala Leu Glu Leu Thr  
 1860 1865 1870  
 Arg Arg Trp Lys Val Val Asp Pro Arg Arg Glu Pro Arg Gly Gln  
 1875 1880 1885  
 Arg Val Pro Tyr Val Ile Ile Asn Gly Pro Pro Leu Val Pro Leu Ile  
 1890 1895 1900  
 Arg Leu Val Arg Ser Pro Asp Glu Leu Leu Ala Asp Asn Gly Leu Lys  
 1905 1910 1915 1920  
 Ile Asn Ser Asn Tyr Tyr Ile Gly Lys Ala Ile Ile Pro Pro Leu Asn  
 1925 1930 1935  
 Arg Cys Leu Leu Leu Ile Gly Ala Asp Val Asn Gln Trp Tyr Asn Asp  
 1940 1945 1950  
 Met Pro Arg Lys Tyr Gln Leu Leu His Asn Thr Gly Gly Lys Arg Ser  
 1955 1960 1965  
 Ser Leu Ala Ser Glu Leu Gln Leu Pro Lys Lys Ser Thr Ile Ser Gln  
 1970 1975 1980  
 Tyr Phe Ser Thr Thr Ser Cys Ile Gly Asp Cys Gly Asn Gln Ser His  
 1985 1990 1995 2000  
 Ser Gly Val Cys Thr Glu Cys Arg Lys Arg Pro Gln Arg Thr Val Thr  
 2005 2010 2015  
 Tyr Val Met Asp Lys Ile Asn Arg Leu Glu Arg Arg Val Glu Leu Cys

## PhoenixTemp32470.tmp.txt

2020 2025 2030  
 Glu Lys Met Cys Arg Ser Cys Cys Gln Arg Asn Phe Glu Thr Ala Cys  
 2035 2040 2045  
 Ile Ser Leu Asp Cys Pro Val Leu Phe Val Leu Asn Gln Arg Thr Arg  
 2050 2055 2060  
 Glu Tyr Ala Gln Val Gln Tyr Tyr Arg Asp Leu Leu Glu Gln Met Phe  
 2065 2070 2075 2080

&lt;210&gt; 2677

&lt;211&gt; 5148

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5148)

&lt;400&gt; 2677

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Met	Asp	Val	Phe	Lys	Val	Arg	Leu	Asn	Cys	Ile	Asp	His	Tyr	Gln	Ala	
1				5				10						15		
acg	ccc	acg	caa	tat	gac	ccc	tgt	ctc	cga	aac	gat	gtt	cgg	cat	tcc	96
Thr	Pro	Thr	Gln	Tyr	Asp	Pro	Cys	Leu	Arg	Asn	Asp	Val	Arg	His	Ser	
			20					25					30			
caa	cta	ttc	aag	gag	ccc	aag	gtt	ccg	gtg	att	cgc	gtc	ttt	ggc	tca	144
Gln	Leu	Phe	Lys	Glu	Pro	Lys	Val	Pro	Val	Ile	Arg	Val	Phe	Gly	Ser	
		35					40					45				
acc	cag	act	ggt	caa	aaa	gtc	tgc	gcg	cat	ata	cat	ggc	gcg	ttt	ccc	192
Thr	Gln	Thr	Gly	Gln	Lys	Val	Cys	Ala	His	Ile	His	Gly	Ala	Phe	Pro	
		50				55					60					
tat	ctc	ttc	att	gag	tat	aat	ggg	aag	ttg	gat	caa	gaa	gaa	gtt	ggc	240
Tyr	Leu	Phe	Ile	Glu	Tyr	Asn	Gly	Lys	Leu	Asp	Gln	Glu	Glu	Val	Gly	
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gca	ttt	tca	tac	cga	ctg	cat	ctg	tcg	att	gac	cat	gcc	ctc	gct	gtc	288
Ala	Phe	Ser	Tyr	Arg	Leu	His	Leu	Ser	Ile	Asp	His	Ala	Leu	Ala	Val	
				85					90					95		
agc	tat	agg	cag	gat	gcc	tat	gct	cgg	gac	acg	ccc	aag	tat	gtg	gcg	336
Ser	Tyr	Arg	Gln	Asp	Ala	Tyr	Ala	Arg	Asp	Thr	Pro	Lys	Tyr	Val	Ala	
			100					105				110				
cgt	ata	acg	ctc	gtt	aag	ggc	gtt	ccc	ttc	tat	ggc	ttc	cat	gtt	ggc	384
Arg	Ile	Thr	Leu	Val	Lys	Gly	Val	Pro	Phe	Tyr	Gly	Phe	His	Val	Gly	
		115					120					125				
tac	aag	tat	tat	ctc	aag	att	tat	atg	ctc	aac	ccc	gtt	gtc	atg	acg	432
Tyr	Lys	Tyr	Tyr	Leu	Lys	Ile	Tyr	Met	Leu	Asn	Pro	Val	Val	Met	Thr	
				130		135					140					
cga	ctg	gcc	gat	ctg	ctg	cac	caa	ggc	gtc	att	atg	aaa	cga	aaa	ttt	480
Arg	Leu	Ala	Asp	Leu	Leu	His	Gln	Gly	Val	Ile	Met	Lys	Arg	Lys	Phe	
				145		150				155					160	
caa	cca	tac	gag	gct	cat	ttg	cag	tac	atc	ttg	caa	ttc	atg	acc	gac	528
Gln	Pro	Tyr	Glu	Ala	His	Leu	Gln	Tyr	Ile	Leu	Gln	Phe	Met	Thr	Asp	
				165					170					175		
tac	aac	ctt	tat	ggc	tgc	ggg	tac	atc	gag	gcc	agc	agt	gtc	aaa	ttc	576
Tyr	Asn	Leu	Tyr	Gly	Cys	Gly	Tyr	Ile	Glu	Ala	Ser	Ser	Val	Lys	Phe	
			180					185					190			
cgt	gcc	cca	gtg	cct	cag	ata	gac	gac	gat	gac	atg	gac	agc	gtc	atg	624
Arg	Ala	Pro	Val	Pro	Gln	Ile	Asp	Asp	Asp	Asp	Met	Asp	Ser	Val	Met	
			195				200					205				
act	ccc	cat	atc	tgg	cac	aac	cag	tcg	ata	tcc	caa	aag	cag	atc	aca	672
Thr	Pro	His	Ile	Trp	His	Asn	Gln	Ser	Ile	Ser	Gln	Lys	Gln	Ile	Thr	
			210			215					220					
gat	cat	cac	tct	ctg	cct	agg	gcc	agt	cat	tgc	ccc	atc	gaa	gtt	gat	720
Asp	His	His	Ser	Leu	Pro	Arg	Ala	Ser	His	Cys	Pro	Ile	Glu	Val	Asp	
				225		230				235				240		
ata	tgc	gta	cag	gac	atc	ctc	aat	cgt	aaa	gat	gtc	aag	gaa	cgc	aga	768
Ile	Cys	Val	Gln	Asp	Ile	Leu	Asn	Arg	Lys	Asp	Val	Lys	Glu	Arg	Arg	
				245					250					255		
ctt	cat	cat	gat	ttt	gtc	gag	cgg	ctg	aac	ccc	tta	cct	acc	gat	atg	816
Leu	His	His	Asp	Phe	Val	Glu	Arg	Leu	Asn	Pro	Leu	Pro	Thr	Asp	Met	
			260					265					270			

## PhoenixTemp32470.tmp.txt

aag	ctg	gta	gct	agc	atg	gca	ggg	ctg	tgg	agg	gac	gaa	acg	aaa	cgt	864
Lys	Leu	Val	Ala	Ser	Met	Ala	Gly	Leu	Trp	Arg	Asp	Glu	Thr	Lys	Arg	
		275					280					285				
cga	aaa	aga	cag	ctg	ggc	atc	tcc	gat	ccg	aaa	agc	agt	cca	ttt	cct	912
Arg	Lys	Arg	Gln	Leu	Gly	Ile	Ser	Asp	Pro	Lys	Ser	Ser	Pro	Phe	Pro	
	290					295					300					
gct	gag	gcg	ctt	gtc	tcc	atg	tcg	cac	gat	ccg	cga	gac	tcg	cag	cct	960
Ala	Glu	Ala	Leu	Val	Ser	Met	Ser	His	Asp	Pro	Arg	Asp	Ser	Gln	Pro	
305					310					315					320	
gcc	ggc	tgg	cta	cac	gag	gaa	gag	ttc	cgt	gca	gag	att	gaa	gag	ctc	1008
Ala	Gly	Trp	Leu	His	Glu	Glu	Glu	Phe	Arg	Ala	Glu	Ile	Glu	Glu	Leu	
				325					330					335		
ata	aca	acc	gag	aga	gcc	aat	gac	gac	aca	gac	atc	aca	ttc	gac	tcg	1056
Ile	Thr	Thr	Glu	Arg	Ala	Asn	Asp	Asp	Thr	Asp	Ile	Thr	Phe	Asp	Ser	
			340					345					350			
ttt	gtg	cca	gaa	ccg	cct	cct	ctt	gat	tcg	gcc	atc	aag	act	gta	ctt	1104
Phe	Val	Pro	Glu	Pro	Pro	Pro	Leu	Asp	Ser	Ala	Ile	Lys	Thr	Val	Leu	
		355					360					365				
gag	tct	gtc	gag	gat	ctc	tac	cct	caa	cac	ttg	gag	gca	tcc	ttg	ggg	1152
Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Gln	His	Leu	Glu	Ala	Ser	Leu	Gly	
	370					375				380						
gag	atg	tcg	act	att	tcg	gtt	gat	ttt	gac	cct	gca	agc	agt	att	gac	1200
Glu	Met	Ser	Thr	Ile	Ser	Val	Asp	Phe	Asp	Pro	Ala	Ser	Ser	Ile	Asp	
385					390					395					400	
gtt	gat	gag	aga	ggt	gcg	cg	cg	cta	ggc	aga	ccg	gag	act	atg	gac	1248
Val	Asp	Glu	Arg	Gly	Ala	Arg	Arg	Leu	Gly	Arg	Pro	Glu	Thr	Met	Asp	
				405					410					415		
gaa	gac	cct	tgt	ccg	gat	gat	tct	gat	gaa	gaa	aga	ctg	cga	gaa	gcc	1296
Glu	Asp	Pro	Cys	Pro	Asp	Asp	Ser	Asp	Glu	Glu	Arg	Leu	Arg	Glu	Ala	
			420					425					430			
cag	cgt	ttg	gag	gag	gca	aag	aaa	gaa	aag	gct	ttg	cag	gac	tat	ccc	1344
Gln	Arg	Leu	Glu	Glu	Ala	Lys	Lys	Glu	Lys	Ala	Leu	Gln	Asp	Tyr	Pro	
		435					440					445				
acc	aca	gct	tcg	ata	aac	gga	ctg	gtt	gga	ctt	gat	acc	agt	agt	ctg	1392
Thr	Thr	Ala	Ser	Ile	Asn	Gly	Leu	Val	Gly	Leu	Asp	Thr	Ser	Ser	Leu	
		450				455				460						
att	act	gga	aag	cga	cca	gag	ata	ccc	ata	aca	cag	gag	ctc	atc	gat	1440
Ile	Thr	Gly	Lys	Arg	Pro	Glu	Ile	Pro	Ile	Thr	Gln	Glu	Leu	Ile	Asp	
465					470				475						480	
gct	gct	att	gag	gaa	gat	ctg	ttg	agc	gag	gtt	cca	gct	cct	ttg	caa	1488
Ala	Ala	Ile	Glu	Glu	Asp	Leu	Leu	Ser	Glu	Val	Pro	Ala	Pro	Leu	Gln	
				485					490					495		
acg	cca	atc	ttg	cga	gag	gga	ttg	aag	cga	cat	gcc	cac	cca	aaa	tat	1536
Thr	Pro	Ile	Leu	Arg	Glu	Gly	Leu	Lys	Arg	His	Ala	His	Pro	Lys	Tyr	
			500					505					510			
gag	gat	cat	cct	tca	aaa	cga	cca	agg	ata	cga	cca	gct	cg	ata	aac	1584
Glu	Asp	His	Pro	Ser	Lys	Arg	Pro	Arg	Ile	Arg	Pro	Ala	Arg	Ile	Asn	
		515					520					525				
aac	ttg	aca	ttt	gtc	ccc	cct	gag	gac	ggt	cta	cga	gcc	cg	tat	gaa	1632
Asn	Leu	Thr	Phe	Val	Pro	Pro	Glu	Asp	Gly	Leu	Arg	Ala	Arg	Tyr	Glu	
		530				535					540					
cg	cgt	gct	gcg	aat	gtg	gcc	aaa	gcc	gaa	agc	caa	ccc	cca	tcg	tct	1680
Arg	Arg	Ala	Ala	Asn	Val	Ala	Lys	Ala	Glu	Ser	Gln	Pro	Pro	Ser	Ser	
545					550					555					560	
tcc	caa	cga	cag	aca	gtg	gat	gag	gcc	gcc	ccg	ttc	cgt	acg	cct	ttg	1728
Ser	Gln	Arg	Gln	Thr	Val	Asp	Glu	Ala	Ala	Pro	Phe	Arg	Thr	Pro	Leu	
				565					570					575		
ccg	cg	aag	tca	tct	atg	atg	cac	aac	tcg	gca	tcc	aag	tct	gtt	aat	1776
Pro	Arg	Lys	Ser	Ser	Met	Met	His	Asn	Ser	Ala	Ser	Lys	Ser	Val	Asn	
			580					585					590			
cgt	aag	ctc	agt	ttt	gct	gtc	gtc	aaa	gat	ccg	aat	gac	cct	gag	aca	1824
Arg	Lys	Leu	Ser	Phe	Ala	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Glu	Thr	
		595					600					605				
aag	ctt	cga	ttg	agc	caa	aat	tcc	aac	tcg	caa	ggc	agc	gac	aca	tct	1872
Lys	Leu	Arg	Leu	Ser	Gln	Asn	Ser	Asn	Ser	Gln	Gly	Ser	Asp	Thr	Ser	
		610				615					620					
gaa	acc	ccg	aag	ctt	ctt	tct	ttt	gat	tcg	tcg	ttg	cca	gat	ccg	gag	1920
Glu	Thr	Pro	Lys	Leu	Leu	Ser	Phe	Asp	Ser	Ser	Leu	Pro	Asp	Pro	Glu	
625					630					635					640	

## PhoenixTemp32470.tmp.txt

gag Glu	gcc Ala	tca Ser	ccg Pro	cag Gln 645	aag Lys	gaa Glu	gaa Glu	aac Asn	caa Gln 650	gaa Glu	ttc Phe	tac Tyr	cag Gln	gtg Val 655	ggc Gly	1968
cag Gln	ttg Leu	cca Pro	aat Asn 660	ccc Pro	ttt Phe	gga Gly	ccc Pro	tcc Ser 665	gac Asp	aag Lys	tct Ser	cag Gln	gaa Glu 670	cat His	gac Asp	2016
cac His	tca Ser	gaa Glu 675	gat Asp	gaa Glu	gtc Val	ttt Phe	gca Ala 680	cat His	acc Thr	tca Ser	atg Met	gta Val 685	cct Pro	gtt Val	agc Ser	2064
cat His	gtt Val 690	ctc Leu	ccc Pro	ccg Pro	acc Thr	gca Ala 695	gag Glu	gag Glu	gtc Val	tgc Cys	gca Ala 700	act Thr	atg Met	gcg Ala	gac Asp	2112
tac Tyr 705	gga Gly	ata Ile	ccc Pro	gat Asp	gtt Val 710	gta Val	tac Tyr	cgg Arg	gac Asp	gca Ala 715	tat Tyr	tac Tyr	agt Ser	aaa Lys	gag Glu 720	2160
aaa Lys	gat Asp	gtg Val	cca Pro	ctt Leu 725	cgt Arg	cca Pro	aga Arg	gag Glu	ttt Phe 730	gct Ala	ggg Gly	cgt Arg	caa Gln	ttt Phe 735	cgg Arg	2208
ctc Leu	cgg Arg	ggt Gly	aac Asn 740	acg Thr	tta Leu	cca Pro	tac Tyr	cta Leu 745	ccc Pro	gag Glu	ttc Phe	act Thr	gct Ala 750	gat Asp	agg Arg	2256
gct Ala	gca Ala	ccg Pro 755	gat Asp	gca Ala	tgg Trp	gcc Ala	gtt Val 760	cca Pro	gag Glu	gca Ala	cga Arg	cta Leu 765	cca Pro	gac Asp	aaa Lys	2304
tca Ser	aaa Lys 770	ctt Leu	aaa Lys	att Ile	gag Glu	gag Glu 775	gag Glu	ata Ile	cgc Arg	cgg Arg	aat Asn 780	aaa Lys	tgt Cys	aca Thr	atc Ile	2352
aag Lys 785	aca Thr	tgg Trp	gaa Glu	att Ile	gca Ala 790	caa Gln	cca Pro	cct Pro	ccg Pro	acg Thr 795	ttt Phe	gaa Glu	gaa Glu	gta Val	tcg Ser 800	2400
ggc Gly	tgg Trp	tgg Trp	gag Glu	gaa Glu 805	aag Lys	gag Glu	att Ile	aag Lys	aag Lys 810	aaa Lys	gag Glu	tcc Ser	gga Gly	tcg Ser 815	agg Arg	2448
cca Pro	aag Lys	agc Ser	cat His 820	ccg Pro	gcc Ala	tct Ser	cca Pro	cag Gln 825	tcg Ser	aca Thr	cag Gln	ttg Leu 830	gct Ala	cgt Arg	cgc Arg	2496
cag Gln	ctt Leu 835	tca Ser	cag Gln	atc Ile	gaa Glu	gga Gly	gcg Ala 840	acg Thr	ccc Pro	aag Lys	aac Asn	aaa Lys 845	cat His	ggc Gly	ttc Phe	2544
agg Arg	tac Tyr 850	tcg Ser	cag Gln	aag Lys	caa Gln	aag Lys 855	act Thr	acc Thr	agc Ser	gtt Val	cag Gln 860	cat His	gag Glu	gtt Val	gct Ala	2592
tac Tyr 865	atg Met	agc Ser	aca Thr	atg Met	agt Ser 870	atc Ile	gag Glu	atc Ile	cat His	gtt Val 875	aac Asn	acc Thr	agg Arg	gga Gly	aaa Lys 880	2640
ctt Leu	gtc Val	cct Pro	gat Asp	ccg Pro 885	gag Glu	aag Lys	gac Asp	gag Glu	gtc Val 890	aag Lys	tgc Cys	ata Ile	ttc Phe	tgg Trp 895	tgc Cys	2688
gtt Val	agg Arg	tca Ser	gat Asp 900	gat Asp	aaa Lys	tct Ser	aac Asn	gag Glu 905	gct Ala	agc Ser	agc Ser	cag Gln	gct Ala 910	cct Pro	gat Asp	2736
ggt Gly	tta Leu	caa Gln 915	tcg Ser	ggc Gly	gtc Val	gtg Val 920	gtt Val	cta Leu	tct Ser	gaa Glu	gaa Glu	ggc Gly 925	acc Thr	ctg Leu	gct Ala	2784
gaa Glu	cgc Arg 930	atc Ile	aag Lys	cac His	caa Gln	ata Ile 935	aag Lys	ggt Gly	gag Glu	cta Leu	ttg Leu 940	gaa Glu	gaa Glu	aca Thr	tcc Ser	2832
gag Glu 945	ctc Leu	gac Asp	ctc Leu	atg Met	gtt Val 950	cgt Arg	atg Met	gtt Val	gag Glu	att Ile 955	gtt Val	cga Arg	acg Thr	cac His	gac Asp 960	2880
cca Pro	gat Asp	atc Ile	ctg Leu	aca Thr 965	ggc Gly	tac Tyr	gag Glu	gtc Val	cat His 970	ggt Gly	ggc Gly	tct Ser	tgg Trp	ggc Gly 975	tat Tyr	2928
ttg Leu	att Ile	gag Glu	cgc Arg 980	gca Ala	aga Arg	tgc Cys	atg Met	tac Tyr 985	gac Asp	tat Tyr	aat Asn	ctc Leu	tgt Cys 990	gac Asp	gag Glu	2976
ttc Phe	tcc Ser	cgt Arg 995	atg Met	aag Lys	tcg Ser	cag Gln	tct Ser	cat His	gga Gly	aga Arg	tat Tyr	ggc Gly 1005	aaa Lys	gac Asp	gca Ala	3024

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gac cga tgg ggt ttc aac act act tcg aca atc cga gtg acg ggt aga 3072  
 Asp Arg Trp Gly Phe Asn Thr Ser Thr Ile Arg Val Thr Gly Arg  
 1010 1015 1020  
 cac atg atc aac atc tgg cgt gcg atg cga gga gag ctc aac cta ctt 3120  
 His Met Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu  
 1025 1030 1035 1040  
 caa tat aca atg gaa aat gtc gtc tgg cat ctg cta cac cgt cgg ata 3168  
 Gln Tyr Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile  
 1045 1050 1055  
 cca cac tac tcg tgg cag acg ctc acc acg tgg tat ggt agt gga cgg 3216  
 Pro His Tyr Ser Trp Gln Thr Leu Thr Thr Trp Tyr Gly Ser Gly Arg  
 1060 1065 1070  
 cac ggc gat ctt gat aaa cta cta cgc tac tac caa aca agg acg agg 3264  
 His Gly Asp Leu Asp Lys Leu Leu Arg Tyr Tyr Gln Thr Arg Thr Arg  
 1075 1080 1085  
 ctt gat att gag atc ctt gag gag aat ggg ctg atc tcg cga acg agc 3312  
 Leu Asp Ile Glu Ile Leu Glu Glu Asn Gly Leu Ile Ser Arg Thr Ser  
 1090 1095 1100  
 gag cag gca aga ttg ctt ggc gtc gac ttc ttt tca gtg ttc tca cgt 3360  
 Glu Gln Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg  
 1105 1110 1115 1120  
 gga tca cag ttc aag gtt gag tct atc atg ttt cgg atc gcc aag ccc 3408  
 Gly Ser Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro  
 1125 1130 1135  
 gaa aac ttt atg ctc gta tca ccg agt cga aag cag gtt ggc ggg caa 3456  
 Glu Asn Phe Met Leu Val Ser Pro Ser Arg Lys Gln Val Gly Gly Gln  
 1140 1145 1150  
 aat gca tta gag tgt ttg ccg ctg gtg atg gag cca caa agt gca ttt 3504  
 Asn Ala Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe  
 1155 1160 1165  
 tat aac agt cca gtg ctg gtg cta gac ttc cag agt ttg tat ccc agc 3552  
 Tyr Asn Ser Pro Val Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser  
 1170 1175 1180  
 gtc atg att gcc tac aac tac tgc tac tcg acg ttc ctg ggg cgg atc 3600  
 Val Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile  
 1185 1190 1195 1200  
 gtg gat tgg cgt gga acc aac aag atg gga ttt gcc gag tat aga agg 3648  
 Val Asp Trp Arg Gly Thr Asn Lys Met Gly Phe Ala Glu Tyr Arg Arg  
 1205 1210 1215  
 cga aag cgg cta ctc gag ttg ttg caa gag cac atc aac att gca cca 3696  
 Arg Lys Arg Leu Leu Glu Leu Leu Gln Glu His Ile Asn Ile Ala Pro  
 1220 1225 1230  
 aac ggc gtc atg tat acc aaa cct gag atc agg aag tcg ctg ctt gcc 3744  
 Asn Gly Val Met Tyr Thr Lys Pro Glu Ile Arg Lys Ser Leu Leu Ala  
 1235 1240 1245  
 aag atg ttg aca gag att ctg gaa aca aga gtc atg gtc aag agt ggc 3792  
 Lys Met Leu Thr Glu Ile Leu Glu Thr Arg Val Met Val Lys Ser Gly  
 1250 1255 1260  
 atg aaa caa gac aaa gac gac aaa acc ctc cag caa ttg cta aac aat 3840  
 Met Lys Gln Asp Lys Asp Asp Lys Thr Leu Gln Gln Leu Leu Asn Asn  
 1265 1270 1275 1280  
 agg caa ctg gct ctc aag ctg ctg gca aac gtc aca tat ggc tac acg 3888  
 Arg Gln Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr  
 1285 1290 1295  
 tct gcg tca ttc tcg ggc agg ctt ccg tgt tcg gag att gcc gat agc 3936  
 Ser Ala Ser Phe Ser Gly Arg Leu Pro Cys Ser Glu Ile Ala Asp Ser  
 1300 1305 1310  
 att gta cag aca ggc cgt gaa act ctg gag cga gcc att gcc ttc att 3984  
 Ile Val Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile  
 1315 1320 1325  
 cac tct gtc ccg aga tgg ggc gct gaa gtt gtc tac ggg gac aca gac 4032  
 His Ser Val Pro Arg Trp Gly Ala Glu Val Val Tyr Gly Asp Thr Asp  
 1330 1335 1340  
 agc ctt ttt atc cac ctc aag ggt cgc aca aaa gag cag gcc ttt gag 4080  
 Ser Leu Phe Ile His Leu Lys Gly Arg Thr Lys Glu Gln Ala Phe Glu  
 1345 1350 1355 1360  
 att gga aac gaa atg gcc aag gca att act gac atg aac ccg cgg ccc 4128  
 Ile Gly Asn Glu Met Ala Lys Ala Ile Thr Asp Met Asn Pro Arg Pro  
 1365 1370 1375



## PhoenixTemp32470.tmp.txt

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atg aag ctc aag ttt gag aag gtc tac cta cca tgc gtt ttg cta gcc 4176
Met Lys Leu 1380 Phe Glu Lys Val Tyr 1385 Leu Pro Cys Val 1390 Leu Ala
aaa aag cgc tac gtt ggg tac aag tac gaa cac gtc gat caa caa gtt 4224
Lys Lys Arg Tyr Val Gly Tyr Lys Tyr Glu His Val Asp Gln Gln Val
1395 1400 1405
ccc gat ttt gat gcc aag ggc ata gag aca gtc cgc cgt gac ggg acg 4272
Pro Asp Phe Asp Ala Lys 1415 Ile Glu Thr Val Arg Arg Asp Gly Thr
1410 1420
cca gcg gag caa aag atc gag gaa aag gcg ctg cgg ctg ctc ttt gag 4320
Pro Ala Glu Gln Lys 1430 Ile Glu Glu Lys Ala Leu Arg Leu Leu Phe Glu
1425 1435 1440
acg gcg gac cta agc caa atc aag gag tac ttt caa cga caa tgc aac 4368
Thr Ala Asp Leu Ser 1445 Gln Ile Lys Glu Tyr Phe Gln Arg Gln Cys Asn
1450 1455
aaa atc atg cgt ggt caa gtg tca atc caa gac ttt tgc ttc gcc aag 4416
Lys Ile Met Arg Gly Gln Val Ser Ile Gln Asp Phe Cys Phe Ala Lys
1460 1465 1470
gag gtc aag ctg ggc aca tat agc gac cgc aac ggt gta ggc ccc gca 4464
Glu Val Lys Leu Gly Thr Tyr Ser Asp Arg Asn Gly Val Gly Pro Ala
1475 1480 1485
ccg cct ggc gcg ctc att agc aca aag aag atg ctg gcc gat ccg cga 4512
Pro Pro Gly Ala Leu Ile Ser Thr Lys Lys Met Leu Ala Asp Pro Arg
1490 1495 1500
gcg gaa cca caa tac ggc gaa cgt gtt ctt tat gtc gtc gtc aca ggc 4560
Ala Glu Pro Gln Tyr Gly Glu Arg Val Leu Tyr Val Val Val Thr Gly
1505 1510 1515 1520
gcc cct ggc gcg agg ctt gcc gac agg tgc gtc ccg ccc gaa gac atg 4608
Ala Pro Gly Ala Arg Leu Ala Asp Arg Cys Val Pro Pro Glu Asp Met
1525 1530 1535
cta tcg ccc gcc ggt gcg cac cta cga ctt gat gcc gac tac tac ata 4656
Leu Ser Pro Ala Gly Ala His Leu Arg Leu Asp Ala Asp Tyr Tyr Ile
1540 1545 1550
tcc aag aac ctg att ccg ccg ctg gag cgc atc ttc aac ttg gtc gga 4704
Ser Lys Asn Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly
1555 1560 1565
gcg cac atc aga ggt tgg tac gat gag ctt ccc aaa gtg cag cag gta 4752
Ala His Ile Arg Gly Trp Tyr Asp Glu Leu Pro Lys Val Gln Gln Val
1570 1575 1580
agg cgc gtc gtg gtc gat tct ggg aac ggg cac aac agc tgg ttc ggg 4800
Arg Arg Val Val Val Ser Gly Asn Gly His Asn Ser Trp Phe Gly
1585 1590 1595 1600
agc atc atg ggg aac aat ggc gca caa aag gcc aaa aag gtc acg ctt 4848
Ser Ile Met Gly Asn Asn Gly Ala Gln Lys Ala Lys Lys Val Thr Leu
1605 1610 1615
gaa agc tat ctg caa gtg atg aac tgt gca gta tgc aat gtc cgc atc 4896
Glu Ser Tyr Leu Gln Val Met Asn Cys Ala Val Cys Asn Val Arg Ile
1620 1625 1630
cgc ccc gct acc cag aaa aag aaa acg ccg gca ccc cgg cag caa cta 4944
Arg Pro Ala Thr Gln Lys Lys Lys Thr Pro Ala Pro Arg Gln Gln Leu
1635 1640 1645
cca cca gta cag tac cac ccc ctg ttt ggg ttc ggc cgt ttt ggg ccg 4992
Pro Pro Val Gln Tyr His Pro Leu Phe Gly Phe Gly Arg Phe Gly Pro
1650 1655 1660
cga cct cca cct caa ccg gca ccc aag aag aag aag aag aag aac cct 5040
Arg Pro Pro Pro Gln Pro Ala Pro Lys Lys Lys Lys Lys Lys Asn Pro
1665 1670 1675 1680
gca aac gat gtc gtg gct ggc gca cga gcg caa gcg gtt ttc cga ggt 5088
Ala Asn Asp Val Val Ala Gly Ala Arg Ala Gln Ala Val Phe Arg Gly
1685 1690 1695
ggc aga tgt gtg tcg gag ctg tgc ccg ctt ggc acc ggg cga cgt cgc 5136
Gly Arg Cys Val Ser Glu Leu Cys Arg Leu Gly Thr Gly Arg Arg
1700 1705 1710
aag tgt aca tga 5148
Lys Cys Thr
1715

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&lt;210&gt; 2678

&lt;211&gt; 1715

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 2678

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Met Asp Val Phe Lys Val Arg Leu Asn Cys Ile Asp His Tyr Gln Ala
1      5      10      15
Thr Pro Thr Gln Tyr Asp Pro Cys Leu Arg Asn Asp Val Arg His Ser
20      25      30
Gln Leu Phe Lys Glu Pro Lys Val Pro Val Ile Arg Val Phe Gly Ser
35      40      45
Thr Gln Thr Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
50      55      60
Tyr Leu Phe Ile Glu Tyr Asn Gly Lys Leu Asp Gln Glu Glu Val Gly
65      70      75      80
Ala Phe Ser Tyr Arg Leu His Leu Ser Ile Asp His Ala Leu Ala Val
85      90      95
Ser Tyr Arg Gln Asp Ala Tyr Ala Arg Asp Thr Pro Lys Tyr Val Ala
100     105     110
Arg Ile Thr Leu Val Lys Gly Val Pro Phe Tyr Gly Phe His Val Gly
115     120     125
Tyr Lys Tyr Tyr Leu Lys Ile Tyr Met Leu Asn Pro Val Val Met Thr
130     135     140
Arg Leu Ala Asp Leu Leu His Gln Gly Val Ile Met Lys Arg Lys Phe
145     150     155     160
Gln Pro Tyr Glu Ala His Leu Gln Tyr Ile Leu Gln Phe Met Thr Asp
165     170     175
Tyr Asn Leu Tyr Gly Cys Gly Tyr Ile Glu Ala Ser Ser Val Lys Phe
180     185     190
Arg Ala Pro Val Pro Gln Ile Asp Asp Asp Met Asp Ser Val Met
195     200     205
Thr Pro His Ile Trp His Asn Gln Ser Ile Ser Gln Lys Gln Ile Thr
210     215     220
Asp His His Ser Leu Pro Arg Ala Ser His Cys Pro Ile Glu Val Asp
225     230     235     240
Ile Cys Val Gln Asp Ile Leu Asn Arg Lys Asp Val Lys Glu Arg Arg
245     250     255
Leu His His Asp Phe Val Glu Arg Leu Asn Pro Leu Pro Thr Asp Met
260     265     270
Lys Leu Val Ala Ser Met Ala Gly Leu Trp Arg Asp Glu Thr Lys Arg
275     280     285
Arg Lys Arg Gln Leu Gly Ile Ser Asp Pro Lys Ser Ser Pro Phe Pro
290     295     300
Ala Glu Ala Leu Val Ser Met Ser His Asp Pro Arg Asp Ser Gln Pro
305     310     315     320
Ala Gly Trp Leu His Glu Glu Glu Phe Arg Ala Glu Ile Glu Glu Leu
325     330     335
Ile Thr Thr Glu Arg Ala Asn Asp Asp Thr Asp Ile Thr Phe Asp Ser
340     345     350
Phe Val Pro Glu Pro Pro Pro Leu Asp Ser Ala Ile Lys Thr Val Leu
355     360     365
Glu Ser Val Glu Asp Leu Tyr Pro Gln His Leu Glu Ala Ser Leu Gly
370     375     380
Glu Met Ser Thr Ile Ser Val Asp Phe Asp Pro Ala Ser Ser Ile Asp
385     390     395     400
Val Asp Glu Arg Gly Ala Arg Arg Leu Gly Arg Pro Glu Thr Met Asp
405     410     415
Glu Asp Pro Cys Pro Asp Asp Ser Asp Glu Glu Arg Leu Arg Glu Ala
420     425     430
Gln Arg Leu Glu Glu Ala Lys Lys Glu Lys Ala Leu Gln Asp Tyr Pro
435     440     445
Thr Thr Ala Ser Ile Asn Gly Leu Val Gly Leu Asp Thr Ser Ser Leu
450     455     460
Ile Thr Gly Lys Arg Pro Glu Ile Pro Ile Thr Gln Glu Leu Ile Asp
465     470     475     480
Ala Ala Ile Glu Glu Asp Leu Leu Ser Glu Val Pro Ala Pro Leu Gln
485     490     495
Thr Pro Ile Leu Arg Glu Gly Leu Lys Arg His Ala His Pro Lys Tyr
500     505     510
Glu Asp His Pro Ser Lys Arg Pro Arg Ile Arg Pro Ala Arg Ile Asn

```

## PhoenixTemp32470.tmp.txt

Asn	Leu	515	Phe	Val	Pro	Pro	520	Glu	Asp	Gly	Leu	Arg	525	Ala	Arg	Tyr	Glu
530	Thr					535							540				
Arg	Arg	Ala	Ala	Asn	Val	Ala	Lys	Ala	Glu	Ser	Gln	Pro	Pro	Ser	Ser		
545				550						555					560		
Ser	Gln	Arg	Gln	Thr	Val	Asp	Glu	Ala	Ala	Pro	Phe	Arg	Thr	Pro	Leu		
			565						570					575			
Pro	Arg	Lys	Ser	Ser	Met	Met	His	Asn	Ser	Ala	Ser	Lys	Ser	Val	Asn		
			580					585					590				
Arg	Lys	Leu	Ser	Phe	Ala	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Glu	Thr		
		595					600					605					
Lys	Leu	Arg	Leu	Ser	Gln	Asn	Ser	Asn	Ser	Gln	Gly	Ser	Asp	Thr	Ser		
610						615					620						
Glu	Thr	Pro	Lys	Leu	Leu	Ser	Phe	Asp	Ser	Ser	Leu	Pro	Asp	Pro	Glu		
625					630					635					640		
Glu	Ala	Ser	Pro	Gln	Lys	Glu	Glu	Asn	Gln	Glu	Phe	Tyr	Gln	Val	Gly		
				645					650					655			
Gln	Leu	Pro	Asn	Pro	Phe	Gly	Pro	Ser	Asp	Lys	Ser	Gln	Glu	His	Asp		
			660					665					670				
His	Ser	Glu	Asp	Glu	Val	Phe	Ala	His	Thr	Ser	Met	Val	Pro	Val	Ser		
		675					680					685					
His	Val	Leu	Pro	Pro	Thr	Ala	Glu	Glu	Val	Cys	Ala	Thr	Met	Ala	Asp		
		690				695					700						
Tyr	Gly	Ile	Pro	Asp	Val	Val	Tyr	Arg	Asp	Ala	Tyr	Tyr	Ser	Lys	Glu		
705					710					715					720		
Lys	Asp	Val	Pro	Leu	Arg	Pro	Arg	Glu	Phe	Ala	Gly	Arg	Gln	Phe	Arg		
				725					730					735			
Leu	Arg	Gly	Asn	Thr	Leu	Pro	Tyr	Leu	Pro	Glu	Phe	Thr	Ala	Asp	Arg		
			740					745					750				
Ala	Ala	Pro	Asp	Ala	Trp	Ala	Val	Pro	Glu	Ala	Arg	Leu	Pro	Asp	Lys		
		755					760					765					
Ser	Lys	Leu	Lys	Ile	Glu	Glu	Glu	Ile	Arg	Arg	Asn	Lys	Cys	Thr	Ile		
		770				775					780						
Lys	Thr	Trp	Glu	Ile	Ala	Gln	Pro	Pro	Pro	Thr	Phe	Glu	Glu	Val	Ser		
785					790					795					800		
Gly	Trp	Trp	Glu	Glu	Lys	Glu	Ile	Lys	Lys	Lys	Glu	Ser	Gly	Ser	Arg		
				805					810					815			
Pro	Lys	Ser	His	Pro	Ala	Ser	Pro	Gln	Ser	Thr	Gln	Leu	Ala	Arg	Arg		
			820					825					830				
Gln	Leu	Ser	Gln	Ile	Glu	Gly	Ala	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe		
		835					840					845					
Arg	Tyr	Ser	Gln	Lys	Gln	Lys	Thr	Thr	Ser	Val	Gln	His	Glu	Val	Ala		
						855					860						
Tyr	Met	Ser	Thr	Met	Ser	Ile	Glu	Ile	His	Val	Asn	Thr	Arg	Gly	Lys		
865					870					875					880		
Leu	Val	Pro	Asp	Pro	Glu	Lys	Asp	Glu	Val	Lys	Cys	Ile	Phe	Trp	Cys		
				885					890					895			
Val	Arg	Ser	Asp	Asp	Lys	Ser	Asn	Glu	Ala	Ser	Ser	Gln	Ala	Pro	Asp		
			900					905					910				
Gly	Leu	Gln	Ser	Gly	Val	Val	Val	Leu	Ser	Glu	Glu	Gly	Thr	Leu	Ala		
		915					920					925					
Glu	Arg	Ile	Lys	His	Gln	Ile	Lys	Gly	Glu	Leu	Leu	Glu	Glu	Thr	Ser		
		930				935					940						
Glu	Leu	Asp	Leu	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Thr	His	Asp		
945					950					955					960		
Pro	Asp	Ile	Leu	Thr	Gly	Tyr	Glu	Val	His	Gly	Gly	Ser	Trp	Gly	Tyr		
				965					970					975			
Leu	Ile	Glu	Arg	Ala	Arg	Cys	Met	Tyr	Asp	Tyr	Asn	Leu	Cys	Asp	Glu		
			980					985					990				
Phe	Ser	Arg	Met	Lys	Ser	Gln	Ser	His	Gly	Arg	Tyr	Gly	Lys	Asp	Ala		
		995				1000						1005					
Asp	Arg	Trp	Gly	Phe	Asn	Thr	Ser	Thr	Ile	Arg	Val	Thr	Gly	Arg			
						1015											
His	Met	Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu		
1025					1030					1035					1040		
Gln	Tyr	Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile		
				1045					1050					1055			
Pro	His	Tyr	Ser	Trp	Gln	Thr	Leu	Thr	Trp	Tyr	Gly	Ser	Gly	Arg			
			1060				1065					1070					

## PhoenixTemp32470.tmp.txt

His Gly Asp Leu Asp Lys Leu Leu Arg Tyr Tyr Gln Thr Arg Thr Arg  
 1075 1080 1085  
 Leu Asp Ile Glu Ile Leu Glu Asn Gly Leu Ile Ser Arg Thr Ser  
 1090 1095 1100  
 Glu Gln Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg  
 1105 1110 1115 1120  
 Gly Ser Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro  
 1125 1130 1135  
 Glu Asn Phe Met Leu Val Ser Pro Ser Arg Lys Gln Val Gly Gly Gln  
 1140 1145 1150  
 Asn Ala Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe  
 1155 1160 1165  
 Tyr Asn Ser Pro Val Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser  
 1170 1175 1180  
 Val Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile  
 1185 1190 1195 1200  
 Val Asp Trp Arg Gly Thr Asn Lys Met Gly Phe Ala Glu Tyr Arg Arg  
 1205 1210 1215  
 Arg Lys Arg Leu Leu Glu Leu Leu Gln Glu His Ile Asn Ile Ala Pro  
 1220 1225 1230  
 Asn Gly Val Met Tyr Thr Lys Pro Glu Ile Arg Lys Ser Leu Leu Ala  
 1235 1240 1245  
 Lys Met Leu Thr Glu Ile Leu Glu Thr Arg Val Met Val Lys Ser Gly  
 1250 1255 1260  
 Met Lys Gln Asp Lys Asp Lys Thr Leu Gln Gln Leu Leu Asn Asn  
 1265 1270 1275 1280  
 Arg Gln Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr  
 1285 1290 1295  
 Ser Ala Ser Phe Ser Gly Arg Leu Pro Cys Ser Glu Ile Ala Asp Ser  
 1300 1305 1310  
 Ile Val Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile  
 1315 1320 1325  
 His Ser Val Pro Arg Trp Gly Ala Glu Val Val Tyr Gly Asp Thr Asp  
 1330 1335 1340  
 Ser Leu Phe Ile His Leu Lys Gly Arg Thr Lys Glu Gln Ala Phe Glu  
 1345 1350 1355 1360  
 Ile Gly Asn Glu Met Ala Lys Ala Ile Thr Asp Met Asn Pro Arg Pro  
 1365 1370 1375  
 Met Lys Leu Lys Phe Glu Lys Val Tyr Leu Pro Cys Val Leu Leu Ala  
 1380 1385 1390  
 Lys Lys Arg Tyr Val Gly Tyr Lys Tyr Glu His Val Asp Gln Gln Val  
 1395 1400 1405  
 Pro Asp Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr  
 1410 1415 1420  
 Pro Ala Glu Gln Lys Ile Glu Glu Lys Ala Leu Arg Leu Leu Phe Glu  
 1425 1430 1435 1440  
 Thr Ala Asp Leu Ser Gln Ile Lys Glu Tyr Phe Gln Arg Gln Cys Asn  
 1445 1450 1455  
 Lys Ile Met Arg Gly Gln Val Ser Ile Gln Asp Phe Cys Phe Ala Lys  
 1460 1465 1470  
 Glu Val Lys Leu Gly Thr Tyr Ser Asp Arg Asn Gly Val Gly Pro Ala  
 1475 1480 1485  
 Pro Pro Gly Ala Leu Ile Ser Thr Lys Lys Met Leu Ala Asp Pro Arg  
 1490 1495 1500  
 Ala Glu Pro Gln Tyr Gly Glu Arg Val Leu Tyr Val Val Val Thr Gly  
 1505 1510 1515 1520  
 Ala Pro Gly Ala Arg Leu Ala Asp Arg Cys Val Pro Pro Glu Asp Met  
 1525 1530 1535  
 Leu Ser Pro Ala Gly Ala His Leu Arg Leu Asp Ala Asp Tyr Tyr Ile  
 1540 1545 1550  
 Ser Lys Asn Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly  
 1555 1560 1565  
 Ala His Ile Arg Gly Trp Tyr Asp Glu Leu Pro Lys Val Gln Gln Val  
 1570 1575 1580  
 Arg Arg Val Val Val Asp Ser Gly Asn Gly His Asn Ser Trp Phe Gly  
 1585 1590 1595 1600  
 Ser Ile Met Gly Asn Asn Gly Ala Gln Lys Ala Lys Lys Val Thr Leu  
 1605 1610 1615  
 Glu Ser Tyr Leu Gln Val Met Asn Cys Ala Val Cys Asn Val Arg Ile

## PhoenixTemp32470.tmp.txt

1620 1625 1630  
 Arg Pro Ala Thr Gln Lys Lys Lys Thr Pro Ala Pro Arg Gln Gln Leu  
 1635 1640 1645  
 Pro Pro Val Gln Tyr His Pro Leu Phe Gly Phe Gly Arg Phe Gly Pro  
 1650 1655 1660  
 Arg Pro Pro Pro Gln Pro Ala Pro Lys Lys Lys Lys Lys Asn Pro  
 1665 1670 1675 1680  
 Ala Asn Asp Val Val Ala Gly Ala Arg Ala Gln Ala Val Phe Arg Gly  
 1685 1690 1695  
 Gly Arg Cys Val Ser Glu Leu Cys Arg Leu Gly Thr Gly Arg Arg Arg  
 1700 1705 1710  
 Lys Cys Thr  
 1715

&lt;210&gt; 2679

&lt;211&gt; 5046

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5046)

&lt;400&gt; 2679

atg gac ttg ttc cgg atc aga ctg aac tgt atc gac cac tat caa gcg	48
Met Asp Leu Phe Arg Ile Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg gca acc cag tac gac cct cag ctt cgt aac gat ata cgt cct tcc	96
Thr Ala Thr Gln Tyr Asp Pro Gln Leu Arg Asn Asp Ile Arg Pro Ser	
20 25 30	
cag att tcc aag ggc ccc aaa gtt cct ata gtt cgc att ttt gga gct	144
Gln Ile Ser Lys Gly Pro Lys Val Pro Ile Val Arg Ile Phe Gly Ala	
35 40 45	
act gaa aca ggc cag aaa gta tgc gct cat atc cat ggc gcg ttc ccg	192
Thr Glu Thr Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro	
50 55 60	
tac ttg tac gtg gaa tac gaa gga ggt tta tct ccc gat gaa gtc ggt	240
Tyr Leu Tyr Val Glu Tyr Glu Gly Gly Leu Ser Pro Asp Glu Val Gly	
65 70 75 80	
gct tat atc tat cgt ttg cat cta tcc atc gat cat gcg tta gct gta	288
Ala Tyr Ile Tyr Arg Leu His Leu Ser Ile Asp His Ala Leu Ala Val	
85 90 95	
agc tac cgc aga gat caa aag aac gat aat gcg agg ttc gtg gcg agg	336
Ser Tyr Arg Arg Asp Gln Lys Asn Asp Asn Ala Arg Phe Val Ala Arg	
100 105 110	
att acc ctt gtc aag ggt att ccc ttc tac ggg ttt cat gtc ggc tat	384
Ile Thr Leu Val Lys Gly Ile Pro Phe Tyr Gly Phe His Val Gly Tyr	
115 120 125	
cgg ttc ttc tta aag atc tac atg ttc aac ccc gtc gtc atg act cgt	432
Arg Phe Phe Leu Lys Ile Tyr Met Phe Asn Pro Val Val Met Thr Arg	
130 135 140	
ttg gca gat ctc ctt caa cag ggt gtc ata atg aag cac aag ttt cag	480
Leu Ala Asp Leu Leu Gln Gln Gly Val Ile Met Lys His Lys Phe Gln	
145 150 155 160	
ccg tac gaa gca cat ctc caa ttc ctt ctt caa ttc atg aca gac ttc	528
Pro Tyr Glu Ala His Leu Gln Phe Leu Leu Gln Phe Met Thr Asp Phe	
165 170 175	
aat ctg tat ggt tgc gac tat cta gag tca tcc agt acg ggg ttc cgg	576
Asn Leu Tyr Gly Cys Asp Tyr Leu Glu Ser Ser Ser Thr Gly Phe Arg	
180 185 190	
tcc cca gtt cct gaa tat ggt gaa gaa acg aat tcc tcg cat ctt tgg	624
Ser Pro Val Pro Glu Tyr Gly Glu Glu Thr Asn Ser Ser His Leu Trp	
195 200 205	
cac agc gaa tca ata ccc cag gag gac gtt acc gac gaa act aca ctc	672
His Ser Glu Ser Ile Pro Gln Glu Asp Val Thr Asp Glu Thr Thr Leu	
210 215 220	
cct cga agc agt cac tgt tca ctt gag gtt gat ata tgt gtc cag aat	720
Pro Arg Ser Ser His Cys Ser Leu Glu Val Asp Ile Cys Val Gln Asn	
225 230 235 240	

## PhoenixTemp32470.tmp.txt

ata	ctc	aac	agg	cac	cga	gtt	caa	gaa	aga	cca	ctt	cat	cat	gac	ttt	768
Ile	Leu	Asn	Arg	His	Arg	Val	Gln	Glu	Arg	Pro	Leu	His	His	Asp	Phe	
				245					250					255		
act	gag	cgg	acc	aac	ccc	ctt	ccc	tcg	gat	atg	aag	ctc	gtt	tac	agc	816
Thr	Glu	Arg	Thr	Asn	Pro	Leu	Pro	Ser	Asp	Met	Lys	Leu	Val	Tyr	Ser	
			260					265					270			
atg	gcc	agc	ctg	tgg	aaa	gat	gag	act	aaa	agg	cgc	aaa	caa	aaa	atg	864
Met	Ala	Ser	Leu	Trp	Lys	Asp	Glu	Thr	Lys	Arg	Arg	Lys	Gln	Lys	Met	
			275				280					285				
caa	gac	cct	agt	gaa	ggc	agc	agc	ccg	ttt	ccg	cca	gaa	gtt	ctt	gta	912
Gln	Asp	Pro	Ser	Glu	Gly	Ser	Ser	Pro	Phe	Pro	Pro	Glu	Val	Leu	Val	
			290			295				300						
tcg	atg	tcg	gca	aac	ccg	cgc	gac	tca	cag	cca	caa	ggg	tgg	att	cat	960
Ser	Met	Ser	Ala	Asn	Pro	Arg	Asp	Ser	Gln	Pro	Gln	Gly	Trp	Ile	His	
					310					315					320	
gag	gag	ggg	cat	cga	att	gag	att	cag	aac	ctc	atc	tca	gag	gag	cag	1008
Glu	Glu	Gly	His	Arg	Ile	Glu	Ile	Gln	Asn	Leu	Ile	Ser	Glu	Glu	Gln	
				325					330					335		
gtt	tct	att	gac	gga	gat	gag	ctt	act	ttc	gag	acc	ttt	gcg	aag	cac	1056
Val	Ser	Ile	Asp	Gly	Asp	Glu	Leu	Thr	Phe	Glu	Thr	Phe	Ala	Lys	His	
			340					345					350			
cac	ccc	tat	gaa	gcg	aat	atc	agc	act	gcg	ttg	gag	tca	gtt	gag	gac	1104
His	Pro	Tyr	Glu	Ala	Asn	Ile	Ser	Thr	Ala	Leu	Glu	Ser	Val	Glu	Asp	
			355									365				
ctt	ttc	ccg	tcc	aaa	ctc	gca	ctc	gct	ttg	gga	cta	ccc	tca	ggg	ttg	1152
Leu	Phe	Pro	Ser	Lys	Leu	Ala	Leu	Ala	Leu	Gly	Leu	Pro	Ser	Gly	Leu	
						375					380					
cag	ccc	aat	cag	gat	ccg	gaa	agt	agc	atc	ctt	gtt	gat	gag	ggc	aaa	1200
Gln	Pro	Asn	Gln	Asp	Pro	Glu	Ser	Ser	Ile	Leu	Val	Asp	Glu	Gly	Lys	
					390					395				400		
gtg	cgc	caa	gtc	aga	gag	gcc	gat	gac	gac	ttc	ttg	cct	gat	gat	tca	1248
Val	Arg	Gln	Val	Arg	Glu	Ala	Asp	Asp	Asp	Phe	Leu	Pro	Asp	Asp	Ser	
				405				410						415		
gac	gaa	gaa	gcc	atc	act	gca	ttg	gtg	gca	atg	gaa	aaa	gct	gcc	gca	1296
Asp	Glu	Glu	Ala	Ile	Thr	Ala	Leu	Val	Ala	Met	Glu	Lys	Ala	Ala	Ala	
			420					425					430			
aag	ggg	ttt	cga	gat	ccc	aca	aac	caa	ttg	cta	gaa	gaa	gac	ctg	gaa	1344
Lys	Gly	Phe	Arg	Asp	Pro	Thr	Asn	Gln	Leu	Leu	Glu	Glu	Asp	Leu	Glu	
			435				440					445				
caa	gcg	gca	gca	ctc	gat	atc	agc	ctc	ggg	gaa	tta	ggg	cag	aga	ccg	1392
Gln	Ala	Ala	Ala	Leu	Asp	Ile	Ser	Leu	Gly	Glu	Leu	Gly	Gln	Arg	Pro	
			450			455					460					
ttc	tgg	tca	tca	atc	att	ggc	gtc	ggg	cga	agc	ggc	ctg	gcc	tct	ggc	1440
Phe	Trp	Ser	Ser	Ile	Ile	Gly	Val	Gly	Arg	Ser	Gly	Leu	Ala	Ser	Gly	
					470				475						480	
aag	ttg	ccc	gat	att	ccc	ttg	ggc	cca	gaa	ttg	ttt	gat	tat	gca	gag	1488
Lys	Leu	Pro	Asp	Ile	Pro	Leu	Gly	Pro	Glu	Leu	Phe	Asp	Tyr	Ala	Glu	
				485					490					495		
gat	cag	ggg	tcg	aca	caa	ctc	aaa	cgg	ccg	atg	cct	gac	gtc	tca	tca	1536
Asp	Gln	Gly	Ser	Thr	Gln	Leu	Lys	Arg	Pro	Met	Pro	Asp	Val	Ser	Ser	
			500					505					510			
gtc	caa	atg	tcc	aac	aaa	agg	ctt	cga	ttt	gat	gag	cag	ctg	atg	att	1584
Val	Gln	Met	Ser	Asn	Lys	Arg	Leu	Arg	Phe	Asp	Glu	Gln	Leu	Met	Ile	
			515				520					525				
gac	gag	aac	gat	atg	gac	ttg	gtc	cct	att	cct	tca	aca	gat	ctg	aat	1632
Asp	Glu	Asn	Asp	Met	Asp	Leu	Val	Pro	Ile	Pro	Ser	Thr	Asp	Leu	Asn	
						535					540					
aaa	cca	ctc	gta	tcc	tct	ttc	agg	gga	tca	tcc	att	ctt	aaa	ggc	cct	1680
Lys	Pro	Leu	Val	Ser	Ser	Phe	Arg	Gly	Ser	Ser	Ile	Leu	Lys	Gly	Pro	
					550				555						560	
tct	agt	atc	agc	aaa	agc	att	gcc	tct	gtc	ttg	aaa	ggg	gct	gcc	ggg	1728
Ser	Ser	Ile	Ser	Lys	Ser	Ile	Ala	Ser	Val	Leu	Lys	Gly	Ala	Ala	Gly	
				565					570					575		
tca	aac	cag	aaa	ctg	aac	ttc	cct	act	gtc	aaa	gac	cag	aac	gac	ccc	1776
Ser	Asn	Gln	Lys	Leu	Asn	Phe	Pro	Thr	Val	Lys	Asp	Gln	Asn	Asp	Pro	
				580				585					590			
aac	acg	agg	ctc	cgt	ctc	agt	caa	ctg	agt	caa	aag	tcc	gcc	tcg	caa	1824
Asn	Thr	Arg	Leu	Arg	Leu	Ser	Gln	Leu	Ser	Gln	Lys	Ser	Ala	Ser	Gln	
				595			600					605				

## PhoenixTemp32470.tmp.txt

caa	gcc	gat	gat	ggc	cat	cat	acc	aag	cat	gtc	tcc	ttt	gat	ccc	agc	1872
Gln	Ala	Asp	Asp	Gly	His	His	Thr	Lys	His	Val	Ser	Phe	Asp	Pro	Ser	
	610					615					620					
agc	ttt	ctg	ccc	gct	gag	gca	gga	ccc	tcc	caa	atg	act	ttg	tca	tca	1920
Ser	Phe	Leu	Pro	Ala	Glu	Ala	Gly	Pro	Ser	Gln	Met	Thr	Leu	Ser	Ser	
625				630						635					640	
tcc	ttg	ata	tca	tct	gga	gga	gat	gaa	gag	gag	aag	gat	agc	caa	cag	1968
Ser	Leu	Ile	Ser	Ser	Gly	Gly	Asp	Glu	Glu	Glu	Lys	Asp	Ser	Gln	Gln	
				645					650					655		
tct	aag	atc	cag	cga	gct	atg	cgc	aga	ttc	gcc	agt	cct	caa	gta	cat	2016
Ser	Lys	Ile	Gln	Arg	Ala	Met	Arg	Arg	Phe	Ala	Ser	Pro	Gln	Val	His	
			660					665					670			
ttg	ctt	ttt	tct	ctg	ccc	cca	tct	gcg	gct	tct	gtg	gtt	tcc	tct	ttg	2064
Leu	Leu	Phe	Ser	Leu	Pro	Pro	Ser	Ala	Ala	Ser	Val	Val	Ser	Ser	Leu	
		675					680					685				
aag	ggc	cac	atg	cta	cct	gat	gtc	atc	tat	caa	gat	gca	tat	tat	agt	2112
Lys	Gly	His	Met	Leu	Pro	Asp	Val	Ile	Tyr	Gln	Asp	Ala	Tyr	Tyr	Ser	
	690					695				700						
aag	gag	aaa	gat	gtt	cct	ggc	cga	aca	cgt	gag	tac	gcc	ggg	aaa	gag	2160
Lys	Glu	Lys	Asp	Val	Pro	Gly	Arg	Thr	Arg	Glu	Tyr	Ala	Gly	Lys	Glu	
705				710						715					720	
ttc	cgt	ttg	gaa	ggt	aac	act	ttg	cca	ttt	ctt	cct	gaa	ttc	gat	cca	2208
Phe	Arg	Leu	Glu	Gly	Asn	Thr	Leu	Pro	Phe	Leu	Pro	Glu	Phe	Asp	Pro	
				725					730					735		
aca	gct	aca	tcg	cca	gcc	agc	tac	gga	ctg	aaa	tat	gaa	tct	ctt	gac	2256
Thr	Ala	Thr	Ser	Pro	Ala	Ser	Tyr	Gly	Leu	Lys	Tyr	Glu	Ser	Leu	Asp	
			740					745					750			
agg	gtc	acc	gct	gaa	ctt	cag	tat	gaa	cga	caa	gga	aag	ggg	tgt	tcc	2304
Arg	Val	Thr	Ala	Glu	Leu	Gln	Tyr	Glu	Arg	Gln	Gly	Lys	Gly	Cys	Ser	
		755					760					765				
tgg	agg	agc	tgg	gag	ttt	gca	agc	ctc	cca	ccg	aca	tac	aag	gag	gtt	2352
Trp	Arg	Ser	Trp	Glu	Phe	Ala	Ser	Leu	Pro	Pro	Thr	Tyr	Lys	Glu	Val	
	770					775					780					
gag	gat	tgg	ggg	ctt	gaa	cag	gag	cgc	aaa	gcc	aat	acg	cca	gac	gga	2400
Glu	Asp	Trp	Gly	Leu	Glu	Gln	Glu	Arg	Lys	Ala	Asn	Thr	Pro	Asp	Gly	
785				790						795					800	
tcc	ggg	ttg	ccg	tca	act	cat	aga	aac	tgt	cac	tct	caa	atc	gaa	gga	2448
Ser	Gly	Leu	Pro	Ser	Thr	His	Arg	Asn	Cys	His	Ser	Gln	Ile	Glu	Gly	
				805					810					815		
cca	acg	cca	aag	aat	agg	cac	ggc	ttc	aag	tac	acg	cca	ggc	aag	aaa	2496
Pro	Thr	Pro	Lys	Asn	Arg	His	Gly	Phe	Lys	Tyr	Thr	Pro	Gly	Lys	Lys	
			820					825					830			
gcg	aca	agt	gtc	aag	cac	gag	gtt	caa	tac	atg	agc	acc	atg	agt	ctg	2544
Ala	Thr	Ser	Val	Lys	His	Glu	Val	Gln	Tyr	Met	Ser	Thr	Met	Ser	Leu	
		835					840					845				
gaa	gtt	cat	gtg	aac	acg	aga	ggg	aat	ttc	gtg	cca	aac	cca	gag	gaa	2592
Glu	Val	His	Val	Asn	Thr	Arg	Gly	Asn	Phe	Val	Pro	Asn	Pro	Glu	Glu	
	850					855					860					
gat	gaa	gtc	cag	tgt	gct	ttc	tgg	gca	atc	aaa	tcc	gac	gga	act	tcc	2640
Asp	Glu	Val	Gln	Cys	Ala	Phe	Trp	Ala	Ile	Lys	Ser	Asp	Gly	Thr	Ser	
865				870						875					880	
acc	gac	agt	cag	agc	tca	gca	ggg	act	gtc	cag	acg	ggg	atc	ttg	cta	2688
Thr	Asp	Ser	Gln	Ser	Ser	Ala	Gly	Thr	Val	Gln	Thr	Gly	Ile	Leu	Leu	
				885					890					895		
ttg	tct	aac	gat	gct	gag	ttt	aca	cag	cgt	gtt	cag	cgc	cag	aca	tct	2736
Leu	Ser	Asn	Asp	Ala	Glu	Phe	Thr	Gln	Arg	Val	Gln	Arg	Gln	Thr	Ser	
			900					905					910			
gcc	gat	atc	att	gag	gaa	acg	tcg	gaa	ctg	gat	ctc	atg	gtc	cgg	atg	2784
Ala	Asp	Ile	Ile	Glu	Glu	Thr	Ser	Glu	Leu	Asp	Leu	Met	Val	Arg	Met	
		915					920					925				
gta	gag	ata	gtg	agg	aac	cac	gat	cca	gat	atc	ctg	aca	ggg	tat	gaa	2832
Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp	Ile	Leu	Thr	Gly	Tyr	Glu	
	930					935					940					
gtt	cat	ggc	agt	tca	tgg	ggc	tat	cta	att	gag	aga	gca	cgc	ttg	aaa	2880
Val	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile	Glu	Arg	Ala	Arg	Leu	Lys	
945				950						955					960	
tac	gac	tat	aat	ctt	tgc	gac	gag	ttt	tct	cgc	atg	aaa	aca	gag	tca	2928
Tyr	Asp	Tyr	Asn	Leu	Cys	Asp	Glu	Phe	Ser	Arg	Met	Lys	Thr	Glu	Ser	
				965					970					975		

## PhoenixTemp32470.tmp.txt

cat ggc aga ttc ggc aaa gac aac gac cga tgg ggt ttc aat acc aca	2976
His Gly Arg Phe 980 Gly Lys Asp Asn 985 Asp Arg Trp Gly Phe 990 Asn Thr Thr	
tct aca att cga gtc aca ggt cga cac atg gtc aat gtc tgg cgt gcg	3024
Ser Thr Ile Arg Val Thr Gly 1000 Arg His Met Val Asn Val Trp Arg Ala	
atg cga ggg gag ttg aat ctt caa tac acg atg gaa aac gtc gct	3072
Met Arg Gly Glu Leu Asn 1015 Leu Gln Tyr Thr Met Glu Asn Val Ala	
tgg cat ctt ctc cat aag cgg ata ccc cat tac tct tgg aaa tca ttg	3120
Trp His Leu Leu His 1030 Lys Arg Ile Pro His Tyr Ser Trp Lys Ser Leu	
aca agt tgg tac aaa agt ggc aag cat cga gag ctc aac agg atg ttg	3168
Thr Ser Trp Tyr 1045 Lys Ser Gly Lys His 1050 Arg Glu Leu Asn Arg Met Leu	
aga tac tac cag aac cgc acc aaa ctt gat att gag ata ttg gac gcc	3216
Arg Tyr Tyr 1060 Gln Asn Arg Thr Lys 1065 Leu Asp Ile Glu Ile 1070 Leu Asp Ala	
aac gaa ttg att gcc aga act agt gag gct cga ctc ctt ggc gta	3264
Asn Glu Leu Ile Ala Arg Thr Ser 1080 Glu Gln Ala Arg Leu Leu Gly Val	
gat ttc ttc tcg gtt ttc tcg cga gga tcg caa ttc aag gtc gaa tcg	3312
Asp Phe Phe Ser Val Phe 1095 Ser Arg Gly Ser Gln Phe Lys Val Glu Ser	
atc atg ttc agg att gcc aag cca gag aac ttt ctt ctt gtg tcg cct	3360
Ile Met Phe Arg Ile Ala Lys Pro Glu Asn Phe Leu Leu Val Ser Pro	
tct cgc aaa caa gtc ggt ggc cag aac gct ctc gag tgt ttg cca ctc	3408
Ser Arg Lys Gln Val 1125 Gly Gly Gln Asn Ala Leu Glu Cys Leu Pro Leu	
gtt atg gaa ccg cag agc gcc ttc tac aac agc cct ctc ctc gtg ctt	3456
Val Met Glu Pro Gln Ser Ala Phe Tyr Asn Ser Pro Leu Leu Val Leu	
gac ttt cag agc ctc tat cca agt gtc atg atc gcc tac aat tat tgc	3504
Asp Phe 1155 Gln Ser Leu Tyr Pro Ser Val Met Ile Ala Tyr Asn Tyr Cys	
tat tcg acc ttc ttg ggt cga gtc act aat tgg aga ggc acg agc aag	3552
Tyr Ser Thr Phe Leu Gly Arg Val Thr Asn Trp Arg Gly Thr Ser Lys	
atg ggt ttt acc gag tat aaa cgt cag caa ggt ctt ctc aca ctc ttg	3600
Met Gly Phe Thr Glu Tyr Lys Arg Gln Gln Gly Leu Leu Thr Leu Leu	
aag gat tac atc aac atc gca ccg aat ggt atg atg tat gca aag acg	3648
Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly Met Met Tyr Ala Lys Thr	
gaa atc cgc aag tca ctc ctt gcc aag atg cta act gag atc ctc gaa	3696
Glu Ile Arg Lys Ser Leu Leu Ala Lys Met Leu Thr Glu Ile Leu Glu	
acc cga gtc atg gtc aaa agt ggc atg aag caa gat aaa gat gac aag	3744
Thr Arg Val Met Val Lys Ser Gly Met Lys Gln Asp Lys Asp Asp Lys	
act ctt caa caa ctt ctc aac aat cga cag ctt gcc ctc aag ctg ctc	3792
Thr Leu Gln Gln Leu Leu Asn Asn Arg Gln Leu Ala Leu Lys Leu Leu	
gct aac gtc acc tat ggc tat act tca gct tcg ttc tct ggt cgt atg	3840
Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met	
cct tgc tca gag att gcg gac agc atc gtg caa acg ggt cgg gag act	3888
Pro Cys Ser Glu Ile Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr	
ctt gaa aga gca atc gcc tat att cac tct gtc gag aaa tgg ggc gcg	3936
Leu Glu Arg Ala Ile Ala Tyr Ile His 1305 Ser Val Glu Lys Trp Gly Ala	
gag gtt gtg tat ggc gac act gat agt ctg ttc att tcc ctg aaa ggc	3984
Glu Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Ile Ser Leu Lys Gly	
cga acg aaa gat gaa gca ttc gac att gga aac gag atc tcc aag gca	4032
Arg Thr Lys Asp Glu Ala 1335 Phe Asp Ile Gly Asn Glu Ile Ser Lys Ala	



## PhoenixTemp32470.tmp.txt

atc acc gag atg aac cca caa cca atc aaa ctc aag ttc gag aaa gtc 4080  
 Ile Thr Glu Met Asn Pro Gln Pro Ile Lys Leu Lys Phe Glu Lys Val  
 1345 1350 1355 1360  
 tac cac cct tgt gtc ctc ctc gcc aag aaa aga tac gtc ggc tac aag 4128  
 Tyr His Pro Cys Val Leu Leu Ala Lys Lys Arg Tyr Val Gly Tyr Lys  
 1365 1370 1375  
 tac gaa agc aag gac cag gtg aag cct gag ttt gac gcc aag ggg att 4176  
 Tyr Glu Ser Lys Asp Gln Val Lys Pro Glu Phe Asp Ala Lys Gly Ile  
 1380 1385 1390  
 gag act gtc cgc cga gac ggc acg cct gcg gag caa atg atc gag gaa 4224  
 Glu Thr Val Arg Arg Asp Gly Thr Pro Ala Glu Gln Met Ile Glu Glu  
 1395 1400 1405  
 aag gct ctc cgt cta cta ttc gag acg gca gat ctg agc cag gtg aag 4272  
 Lys Ala Leu Arg Leu Leu Phe Glu Thr Ala Asp Leu Ser Gln Val Lys  
 1410 1415 1420  
 gag tac ttc caa aag caa tgc caa aag atc atg cgc aac aat gtt tcg 4320  
 Glu Tyr Phe Gln Lys Gln Cys Gln Lys Ile Met Arg Asn Asn Val Ser  
 1425 1430 1435 1440  
 gtc cag gac ttt tgc ttt gcg aaa gaa gtt cgt cta ggc acg tac tct 4368  
 Val Gln Asp Phe Cys Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr Ser  
 1445 1450 1455  
 gat aaa ggc gca ccg cct gct ggt gcc ctc atc agc acc aag cgc atg 4416  
 Asp Lys Gly Ala Pro Pro Ala Gly Ala Leu Ile Ser Thr Lys Arg Met  
 1460 1465 1470  
 ctt cag gat gct cgt gca gaa cca caa tat ggc gag aga gtt cct tac 4464  
 Leu Gln Asp Ala Arg Ala Glu Pro Gln Tyr Gly Glu Arg Val Pro Tyr  
 1475 1480 1485  
 gtt gtc atc acc ggt gcg ccc ggt gcc cga ctt atc gac cgg tgt gtt 4512  
 Val Val Ile Thr Gly Ala Pro Gly Ala Arg Leu Ile Asp Arg Cys Val  
 1490 1495 1500  
 gcc ccc gaa gag ctt ctc gac aat ccg cat tgg cag ctg gac gcc gag 4560  
 Ala Pro Glu Glu Leu Leu Asp Asn Pro His Trp Gln Leu Asp Ala Glu  
 1505 1510 1515 1520  
 tac tac atc tcc aag aat ctc ata ccc cct ctc gaa cgc atc ttc aat 4608  
 Tyr Tyr Ile Ser Lys Asn Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn  
 1525 1530 1535  
 ctc gtt ggt gca aac gtg cgt caa tgg tat gat gag atg ccg aag gtg 4656  
 Leu Val Gly Ala Asn Val Arg Gln Trp Tyr Asp Glu Met Pro Lys Val  
 1540 1545 1550  
 cag cgt gtc cat cat gca act aca ctg agc aat aag aaa acg act ctc 4704  
 Gln Arg Val His His Ala Thr Leu Ser Asn Lys Lys Thr Thr Leu  
 1555 1560 1565  
 gag tcg tac atg aag tcc acg cac tgt ctt gtc tgc aac atc aaa ttc 4752  
 Glu Ser Tyr Met Lys Ser Thr His Cys Leu Val Cys Asn Ile Lys Phe  
 1570 1575 1580  
 tca cag gaa ggc aat ccc ctc tgc cca acc tgt cgc aca aac att ccc 4800  
 Ser Gln Glu Gly Asn Pro Leu Cys Pro Thr Cys Arg Thr Asn Ile Pro  
 1585 1590 1595 1600  
 tcg gcg tta ctc tcg ctt caa acg cga tta act acc gag gag cgt tgt 4848  
 Ser Ala Leu Leu Ser Leu Gln Thr Arg Leu Thr Thr Glu Glu Arg Cys  
 1605 1610 1615  
 ttg cag gag ata ctc tcc ctt tgt gcg agc tgc tct ggt gtt ggg cct 4896  
 Leu Gln Glu Ile Leu Ser Leu Cys Arg Ser Cys Ser Gly Val Gly Pro  
 1620 1625 1630  
 gtg gag gat gtt cag tgc gat agc aag gat tgt cct gta ttc tgg aca 4944  
 Val Glu Asp Val Gln Cys Asp Ser Lys Asp Cys Pro Val Phe Trp Thr  
 1635 1640 1645  
 cgc atg aaa caa atc agc aaa aca aga ggg gtg cgg agt acc aac caa 4992  
 Arg Met Lys Gln Ile Ser Lys Thr Arg Gly Val Arg Ser Thr Asn Gln  
 1650 1655 1660  
 cct gtg att caa tct ctg ata gag gat gtt gag aat tta tcg ctg gat 5040  
 Pro Val Ile Gln Ser Leu Ile Glu Asp Val Glu Asn Leu Ser Leu Asp  
 1665 1670 1675 1680  
 tgg taa  
 Trp 5046

&lt;210&gt; 2680

&lt;211&gt; 1681

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 2680

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Met Asp Leu Phe Arg Ile Arg Leu Asn Cys Ile Asp His Tyr Gln Ala
1      5      10      15
Thr Ala Thr Gln Tyr Asp Pro Gln Leu Arg Asn Asp Ile Arg Pro Ser
20      25      30
Gln Ile Ser Lys Gly Pro Lys Val Pro Ile Val Arg Ile Phe Gly Ala
35      40      45
Thr Glu Thr Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
50      55      60
Tyr Leu Tyr Val Glu Tyr Glu Gly Gly Leu Ser Pro Asp Glu Val Gly
65      70      75      80
Ala Tyr Ile Tyr Arg Leu His Leu Ser Ile Asp His Ala Leu Ala Val
85      90      95
Ser Tyr Arg Arg Asp Gln Lys Asn Asp Asn Ala Arg Phe Val Ala Arg
100     105     110
Ile Thr Leu Val Lys Gly Ile Pro Phe Tyr Gly Phe His Val Gly Tyr
115     120     125
Arg Phe Phe Leu Lys Ile Tyr Met Phe Asn Pro Val Val Met Thr Arg
130     135     140
Leu Ala Asp Leu Leu Gln Gln Gly Val Ile Met Lys His Lys Phe Gln
145     150     155     160
Pro Tyr Glu Ala His Leu Gln Phe Leu Leu Gln Phe Met Thr Asp Phe
165     170     175
Asn Leu Tyr Gly Cys Asp Tyr Leu Glu Ser Ser Ser Thr Gly Phe Arg
180     185     190
Ser Pro Val Pro Glu Tyr Gly Glu Glu Thr Asn Ser Ser His Leu Trp
195     200     205
His Ser Glu Ser Ile Pro Gln Glu Asp Val Thr Asp Glu Thr Thr Leu
210     215     220
Pro Arg Ser Ser His Cys Ser Leu Glu Val Asp Ile Cys Val Gln Asn
225     230     235     240
Ile Leu Asn Arg His Arg Val Gln Glu Arg Pro Leu His His Asp Phe
245     250     255
Thr Glu Arg Thr Asn Pro Leu Pro Ser Asp Met Lys Leu Val Tyr Ser
260     265     270
Met Ala Ser Leu Trp Lys Asp Glu Thr Lys Arg Arg Lys Gln Lys Met
275     280     285
Gln Asp Pro Ser Glu Gly Ser Pro Phe Pro Pro Glu Val Leu Val
290     295     300
Ser Met Ser Ala Asn Pro Arg Asp Ser Gln Pro Gln Gly Trp Ile His
305     310     315     320
Glu Glu Gly His Arg Ile Glu Ile Gln Asn Leu Ile Ser Glu Glu Gln
325     330     335
Val Ser Ile Asp Gly Asp Glu Leu Thr Phe Glu Thr Phe Ala Lys His
340     345     350
His Pro Tyr Glu Ala Asn Ile Ser Thr Ala Leu Glu Ser Val Glu Asp
355     360     365
Leu Phe Pro Ser Lys Leu Ala Leu Ala Leu Gly Leu Pro Ser Gly Leu
370     375     380
Gln Pro Asn Gln Asp Pro Glu Ser Ser Ile Leu Val Asp Glu Gly Lys
385     390     395     400
Val Arg Gln Val Arg Glu Ala Asp Asp Asp Phe Leu Pro Asp Asp Ser
405     410     415
Asp Glu Glu Ala Ile Thr Ala Leu Val Ala Met Glu Lys Ala Ala Ala
420     425     430
Lys Gly Phe Arg Asp Pro Thr Asn Gln Leu Leu Glu Glu Asp Leu Glu
435     440     445
Gln Ala Ala Ala Leu Asp Ile Ser Leu Gly Glu Leu Gly Gln Arg Pro
450     455     460
Phe Trp Ser Ser Ile Ile Gly Val Gly Arg Ser Gly Leu Ala Ser Gly
465     470     475     480
Lys Leu Pro Asp Ile Pro Leu Gly Pro Glu Leu Phe Asp Tyr Ala Glu
485     490     495
Asp Gln Gly Ser Thr Gln Leu Lys Arg Pro Met Pro Asp Val Ser Ser
500     505     510
Val Gln Met Ser Asn Lys Arg Leu Arg Phe Asp Glu Gln Leu Met Ile

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## PhoenixTemp32470.tmp.txt

Asp	Glu	515	Asn	Asp	Met	Asp	Leu	520	Val	Pro	Ile	Pro	Ser	525	Thr	Asp	Leu	Asn
Lys	Pro	530	Leu	Val	Ser	Ser	535	Phe	Arg	Gly	Ser	Ser	540	Ile	Leu	Lys	Gly	Pro
545	Ser	Ser	Ile	Ser	Lys	Ser	550	Ile	Ala	Ser	Val	Leu	555	Lys	Gly	Ala	Ala	Gly
Ser	Asn	Gln	Lys	565	Leu	Asn	Phe	Pro	Thr	570	Val	Lys	Asp	Gln	Asn	575	Asp	Pro
Asn	Thr	Arg	Leu	580	Arg	Leu	Ser	Gln	Leu	585	Ser	Gln	Lys	Ser	Ala	Ser	Gln	
Gln	Ala	595	Asp	Asp	Gly	His	His	600	Thr	Lys	His	Val	Ser	605	Phe	Asp	Pro	Ser
Ser	610	Phe	Leu	Pro	Ala	Glu	615	Ala	Gly	Pro	Ser	Gln	620	Met	Thr	Leu	Ser	Ser
625	Ser	Leu	Ile	Ser	Ser	630	Gly	Gly	Asp	Glu	Glu	Glu	635	Lys	Asp	Ser	Gln	Gln
Ser	Lys	Ile	Gln	645	Arg	Ala	Met	Arg	Arg	650	Phe	Ala	Ser	Pro	Gln	Val	His	
Leu	Leu	Phe	Ser	660	Leu	Pro	Pro	Ser	Ala	665	Ala	Ser	Val	Val	Ser	Ser	Leu	
Lys	Gly	675	His	Met	Leu	Pro	Asp	680	Val	Ile	Tyr	Gln	Asp	685	Ala	Tyr	Tyr	Ser
Lys	690	Glu	Lys	Asp	Val	Pro	Gly	695	Arg	Thr	Arg	Glu	700	Tyr	Ala	Gly	Lys	Glu
705	Phe	Arg	Leu	Glu	Gly	Asn	Thr	Leu	Pro	Phe	Leu	Pro	Glu	715	Phe	Asp	Pro	
Thr	Ala	Thr	Ser	725	Pro	Ala	Ser	Tyr	Gly	730	Leu	Lys	Tyr	Glu	Ser	Leu	Asp	
Arg	Val	Thr	740	Ala	Glu	Leu	Gln	Tyr	745	Glu	Arg	Gln	Gly	750	Gly	Cys	Ser	
Trp	Arg	Ser	755	Trp	Glu	Phe	Ala	Ser	Leu	Pro	Pro	Thr	Tyr	765	Lys	Glu	Val	
Glu	770	Asp	Trp	Gly	Leu	Glu	Gln	Glu	Arg	Lys	Ala	Asn	Thr	780	Pro	Asp	Gly	
785	Ser	Gly	Leu	Pro	Ser	790	Thr	His	Arg	Asn	Cys	His	Ser	795	Gln	Ile	Glu	
Pro	Thr	Pro	Lys	805	Asn	Arg	His	Gly	Phe	810	Lys	Tyr	Thr	815	Pro	Gly	Lys	Lys
Ala	Thr	Ser	820	Val	Lys	His	Glu	Val	825	Gln	Tyr	Met	Ser	830	Thr	Met	Ser	Leu
Glu	835	Val	His	Val	Asn	Thr	Arg	Gly	840	Asn	Phe	Val	Pro	845	Asn	Pro	Glu	Glu
Asp	850	Glu	Val	Gln	Cys	Ala	Phe	Trp	Ala	Ile	Lys	Ser	Asp	860	Gly	Thr	Ser	
865	Thr	Asp	Ser	Gln	Ser	870	Ala	Gly	Thr	Val	Gln	Thr	Gly	875	Ile	Leu	Leu	
Leu	Ser	Asn	Asp	885	Ala	Glu	Phe	Thr	Gln	Arg	Val	Gln	Arg	890	Gln	Thr	Ser	
Ala	Asp	Ile	Ile	900	Glu	Glu	Thr	Ser	905	Glu	Leu	Asp	Leu	910	Met	Val	Arg	Met
Val	Glu	Ile	Val	915	Arg	Asn	His	920	Asp	Pro	Asp	Ile	Leu	925	Thr	Gly	Tyr	Glu
Val	930	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile	Glu	Arg	Ala	935	Arg	Leu	Lys	
945	Tyr	Asp	Tyr	Asn	Leu	Cys	Asp	Glu	Phe	Ser	Arg	Met	Lys	940	Thr	Glu	Ser	
His	Gly	Arg	Phe	950	Gly	Lys	Asp	Asn	Asp	955	Arg	Trp	Gly	960	Phe	Asn	Thr	Thr
Ser	Thr	Ile	Arg	965	Val	Thr	Gly	Arg	His	970	Met	Val	Asn	975	Val	Trp	Arg	Ala
Met	Arg	Gly	Glu	980	Leu	Asn	Leu	Gln	Tyr	1000	Thr	Met	Glu	1005	Asn	Val	Ala	
1010	Trp	His	Leu	Leu	His	Lys	Arg	Ile	Pro	His	Tyr	Ser	Trp	1015	Lys	Ser	Leu	
1025	Thr	Ser	Trp	Tyr	Lys	Ser	Gly	Lys	His	1030	Arg	Glu	Leu	1035	Asn	Arg	Met	Leu
Arg	Tyr	Tyr	Gln	1045	Asn	Arg	Thr	Lys	Leu	1050	Asp	Ile	Glu	1055	Ile	Leu	Asp	Ala
			1060							1065								

## PhoenixTemp32470.tmp.txt

Asn Glu Leu Ile Ala Arg Thr Ser Glu Gln Ala Arg Leu Leu Gly Val  
 1075 1080 1085  
 Asp Phe Phe Ser Val Phe Ser Arg Gly Ser Gln Phe Lys Val Glu Ser  
 1090 1095 1100  
 Ile Met Phe Arg Ile Ala Lys Pro Glu Asn Phe Leu Leu Val Ser Pro  
 1105 1110 1115 1120  
 Ser Arg Lys Gln Val Gly Gly Gln Asn Ala Leu Glu Cys Leu Pro Leu  
 1125 1130 1135  
 Val Met Glu Pro Gln Ser Ala Phe Tyr Asn Ser Pro Leu Leu Val Leu  
 1140 1145 1150  
 Asp Phe Gln Ser Leu Tyr Pro Ser Val Met Ile Ala Tyr Asn Tyr Cys  
 1155 1160 1165  
 Tyr Ser Thr Phe Leu Gly Arg Val Thr Asn Trp Arg Gly Thr Ser Lys  
 1170 1175 1180  
 Met Gly Phe Thr Glu Tyr Lys Arg Gln Gln Gly Leu Leu Thr Leu Leu  
 1185 1190 1195 1200  
 Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly Met Met Tyr Ala Lys Thr  
 1205 1210 1215  
 Glu Ile Arg Lys Ser Leu Leu Ala Lys Met Leu Thr Glu Ile Leu Glu  
 1220 1225 1230  
 Thr Arg Val Met Val Lys Ser Gly Met Lys Gln Asp Lys Asp Asp Lys  
 1235 1240 1245  
 Thr Leu Gln Gln Leu Leu Asn Asn Arg Gln Leu Ala Leu Lys Leu Leu  
 1250 1255 1260  
 Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met  
 1265 1270 1275 1280  
 Pro Cys Ser Glu Ile Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr  
 1285 1290 1295  
 Leu Glu Arg Ala Ile Ala Tyr Ile His Ser Val Glu Lys Trp Gly Ala  
 1300 1305 1310  
 Glu Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Ile Ser Leu Lys Gly  
 1315 1320 1325  
 Arg Thr Lys Asp Glu Ala Phe Asp Ile Gly Asn Glu Ile Ser Lys Ala  
 1330 1335 1340  
 Ile Thr Glu Met Asn Pro Gln Pro Ile Lys Leu Lys Phe Glu Lys Val  
 1345 1350 1355 1360  
 Tyr His Pro Cys Val Leu Leu Ala Lys Lys Arg Tyr Val Gly Tyr Lys  
 1365 1370 1375  
 Tyr Glu Ser Lys Asp Gln Val Lys Pro Glu Phe Asp Ala Lys Gly Ile  
 1380 1385 1390  
 Glu Thr Val Arg Arg Asp Gly Thr Pro Ala Glu Gln Met Ile Glu Glu  
 1395 1400 1405  
 Lys Ala Leu Arg Leu Leu Phe Glu Thr Ala Asp Leu Ser Gln Val Lys  
 1410 1415 1420  
 Glu Tyr Phe Gln Lys Gln Cys Gln Lys Ile Met Arg Asn Asn Val Ser  
 1425 1430 1435 1440  
 Val Gln Asp Phe Cys Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr Ser  
 1445 1450 1455  
 Asp Lys Gly Ala Pro Pro Ala Gly Ala Leu Ile Ser Thr Lys Arg Met  
 1460 1465 1470  
 Leu Gln Asp Ala Arg Ala Glu Pro Gln Tyr Gly Glu Arg Val Pro Tyr  
 1475 1480 1485  
 Val Val Ile Thr Gly Ala Pro Gly Ala Arg Leu Ile Asp Arg Cys Val  
 1490 1495 1500  
 Ala Pro Glu Glu Leu Leu Asp Asn Pro His Trp Gln Leu Asp Ala Glu  
 1505 1510 1515 1520  
 Tyr Tyr Ile Ser Lys Asn Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn  
 1525 1530 1535  
 Leu Val Gly Ala Asn Val Arg Gln Trp Tyr Asp Glu Met Pro Lys Val  
 1540 1545 1550  
 Gln Arg Val His His Ala Thr Thr Leu Ser Asn Lys Lys Thr Thr Leu  
 1555 1560 1565  
 Glu Ser Tyr Met Lys Ser Thr His Cys Leu Val Cys Asn Ile Lys Phe  
 1570 1575 1580  
 Ser Gln Glu Gly Asn Pro Leu Cys Pro Thr Cys Arg Thr Asn Ile Pro  
 1585 1590 1595 1600  
 Ser Ala Leu Leu Ser Leu Gln Thr Arg Leu Thr Thr Glu Glu Arg Cys  
 1605 1610 1615  
 Leu Gln Glu Ile Leu Ser Leu Cys Arg Ser Cys Ser Gly Val Gly Pro

## PhoenixTemp32470.tmp.txt

1620 1625 1630  
 Val Glu Asp Val Gln Cys Asp Ser Lys Asp Cys Pro Val Phe Trp Thr  
 1635 1640 1645  
 Arg Met Lys Gln Ile Ser Lys Thr Arg Gly Val Arg Ser Thr Asn Gln  
 1650 1655 1660  
 Pro Val Ile Gln Ser Leu Ile Glu Asp Val Glu Asn Leu Ser Leu Asp  
 1665 1670 1675 1680  
 Trp

&lt;210&gt; 2681

&lt;211&gt; 4446

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4446)

&lt;400&gt; 2681

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Val	Glu	Phe	Asp	Ser	Phe	Asp	Leu	Gln	Leu	Asn	Asn	Tyr	Asp	His	Tyr	
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Gly	Lys	Ser	Gly	Gln	Ile	Leu	Arg	Glu	Arg	Cys	Val	Ser	Val	Ser	Glu		
			1300					1305					1310				
tat	ttt	tca	aat	gac	cat	ttt	gcc	ctc	gat	tcg	gaa	tac	tat	ata	aca	3984	
Tyr	Phe	Ser	Asn	Asp	His	Phe	Ala	Leu	Asp	Ser	Glu	Tyr	Tyr	Ile	Thr		
			1315			1320						1325					
aaa	acg	ctg	att	ccc	cca	ctc	gat	cgg	ttg	ttt	aat	ata	gtt	ggt	ata	4032	
Lys	Thr	Leu	Ile	Pro	Pro	Leu	Asp	Arg	Leu	Phe	Asn	Ile	Val	Gly	Ile		
	1330					1335				1340							
agt	gta	tcc	gat	tgg	aat	caa	gag	ggg	cct	atg	ttt	gtt	gag	ggt	tcc	4080	
Ser	Val	Ser	Asp	Trp	Asn	Gln	Glu	Gly	Pro	Met	Phe	Val	Glu	Gly	Ser		
	1345				1350				1355						1360		
att	aaa	cca	tat	act	ggc	gca	gac	aat	atc	ccc	act	tcg	act	aga	tgt	4128	



## PhoenixTemp32470.tmp.txt

Ile Lys Pro Tyr Thr Gly Ala Asp Asn Ile Pro Thr Ser Thr Arg Cys  
 1365 1370 1375  
 aaa gcc tgt gaa caa aac aca gtt tct ggt gat agc tat ctt tgt gac 4176  
 Lys Ala Cys Glu Gln Asn Thr Val Ser Gly Asp Ser Tyr Leu Cys Asp  
 1380 1385 1390  
 aat tgt gtt tct aat gag aaa atg gct gca tca aag ctt att att aag 4224  
 Asn Cys Val Ser Asn Glu Lys Met Ala Ala Ser Lys Leu Ile Ile Lys  
 1395 1400 1405  
 att caa gcc agc gct agt aag tta aag gta cta aat gat ata tgc aga 4272  
 Ile Gln Ala Ser Ala Ser Lys Leu Lys Val Leu Asn Asp Ile Cys Arg  
 1410 1415 1420  
 ata tgc agt aga caa tat aca gga gac atg ggg cta ctg agc tcc aat 4320  
 Ile Cys Ser Arg Gln Tyr Thr Gly Asp Met Gly Leu Leu Ser Ser Asn  
 1425 1430 1435 1440  
 aat gca ttg aag tgt gta tct tat gat tgt cct aat tat tat tcc aag 4368  
 Asn Ala Leu Lys Cys Val Ser Tyr Asp Cys Pro Asn Tyr Tyr Ser Lys  
 1445 1450 1455  
 ctt aaa gct cag aga tta atg caa tct aag cac tat tat tct tgg aat 4416  
 Leu Lys Ala Gln Arg Leu Met Gln Ser Lys His Tyr Tyr Ser Trp Asn  
 1460 1465 1470  
 gag ctg ttg cac aat atg gat cat tgg taa 4446  
 Glu Leu Leu His Asn Met Asp His Trp  
 1475 1480

&lt;210&gt; 2682

&lt;211&gt; 1481

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 2682

Met Ile Ser Gly Glu Glu Thr Asp Ser Ile Gln Asp Gly Ala Asn Glu  
 1 5 10 15  
 Val Glu Phe Asp Ser Phe Asp Leu Gln Leu Asn Asn Tyr Asp His Tyr  
 20 25 30  
 Met Ala Tyr Pro Thr Ser Leu Asp Arg Thr His Gly Ser Ser Leu Pro  
 35 40 45  
 Leu Lys Lys Phe His Lys Val Pro Val Ile Arg Ile Phe Gly Cys Leu  
 50 55 60  
 Arg Thr Gly His Gln Leu Leu Cys His Val His Gly Ile Phe Pro Tyr  
 65 70 75 80  
 Phe Phe Val Lys Tyr Asp Gly Lys Glu Asp Asp Thr Ser Ile Ile Ile  
 85 90 95  
 Asn Glu Lys Cys Ala Lys Leu His Gln Leu Leu Glu Gln Ile Leu Arg  
 100 105 110  
 Asp Lys Met Lys Ser Lys Gly Ser Arg Asn Asp Lys Gln Asp Glu Thr  
 115 120 125  
 Asn Leu Asn Glu Leu Val Tyr Ile Ala Asn Val Ser Val Val Lys Gly  
 130 135 140  
 Val Pro Phe Tyr Gly Tyr His Val Gly Trp Thr Pro Phe Tyr Lys Ile  
 145 150 155 160  
 Ser Leu Leu Asn Pro Ser Leu Ser Glu Gln Val Cys Asn Ile Ile Arg  
 165 170 175  
 Glu Gln Asn Val Leu Gln Asn Gly Gln Asn Glu Val Tyr Glu Ser Gln  
 180 185 190  
 Phe Pro Tyr Leu Leu Lys Phe Thr Ala Asp Phe Asn Leu Phe Ala Cys  
 195 200 205  
 Ser Trp Ile Asn Phe Lys Lys Val Tyr Phe Arg Ala Pro Val Leu Asn  
 210 215 220  
 Glu Met Leu Asn Met Asp Glu Ile Met Met Thr Lys Glu Leu Arg Val  
 225 230 235 240  
 Leu Leu Asp Arg Phe His Ser Lys Asp Thr Val Leu Lys Lys Thr Met  
 245 250 255  
 Phe Pro Arg Ile Gly Asn Gly Leu Leu Glu Ile Asp Val Ile Pro Gln  
 260 265 270  
 Phe Ile Lys Asn Ile Asp Gln Ile Lys Ile Arg Asn Ile His His Asp  
 275 280 285  
 Leu Ser Glu Lys Lys Glu Ser Val Asn Tyr Leu Asp Asp Gly Pro Tyr  
 290 295 300  
 Val Ser Ser Thr Lys Asn Met Leu Lys Asp Val Glu Ile Gln Arg Lys

## PhoenixTemp32470.tmp.txt

305	Leu	Tyr	Ser	Leu	Glu	310	Glu	Tyr	Lys	Lys	Ala	315	Ala	Asp	Ile	Ser	Arg	320	Asn
	Glu	Asn	Asp	Met	Ile	325	Trp	Asn	Ser	Ser	His	330	Gln	Phe	Glu	Met	Phe	335	Leu
	Arg	Lys	Ala	Leu	Ser	340	Ser	Val	Lys	Val	Ser	345	Asp	Lys	Asp	Ser	Asn	350	Phe
	Leu	Ser	Gly	His	Phe	355	Asn	Ala	Asn	Asp	Phe	360	Leu	Lys	Thr	Pro	Phe	365	Glu
	Met	Ile	Asp	Glu	Leu	370	Trp	Pro	Thr	Lys	Phe	375	Glu	Ser	Ser	Ile	Asp	380	Leu
385	Asn	Asp	Glu	Asn	Glu	390	Arg	His	Asp	Lys	Asn	395	Asp	Gln	Leu	Leu	Asp	400	Val
	Gly	Glu	Asp	Phe	Asp	405	Lys	Ala	Glu	Glu	Arg	410	Asp	Glu	Asp	Ile	Leu	415	Gly
	Glu	Pro	Asn	Glu	Asp	420	Asp	Tyr	Ile	Glu	Lys	425	Glu	Met	His	Ser	Gln	430	Asp
	Asn	Gly	Gln	Phe	Ile	435	Asn	Val	Ser	Thr	Ser	440	Val	Ile	Ser	Thr	Thr	445	Gln
	Ser	Leu	Asp	Lys	Leu	450	Leu	Thr	Gln	Ser	Ile	455	Val	Lys	Asn	Gln	Arg	460	Lys
465	Leu	Lys	Ile	Gly	Asn	470	Val	Leu	Ser	Asp	Leu	475	Gly	Asn	Val	Ala	Thr	480	Asn
	Tyr	His	Asn	Tyr	Phe	485	Pro	Ser	Asn	Ile	Lys	490	Lys	Tyr	Tyr	Arg	Tyr	495	Lys
	Gln	Cys	Asn	Ile	Ser	500	Tyr	Ser	Ser	Met	Asn	505	Glu	Asp	Leu	Gln	Asp	510	Asn
	Gly	Leu	Pro	Ile	Asn	515	Asp	Tyr	Met	Gly	Pro	520	Phe	Phe	Ser	Asp	Pro	525	Cys
	Asp	Leu	His	Lys	Lys	530	Asp	Tyr	Gln	Tyr	Ala	535	Gly	Lys	Gln	Phe	Asp	540	Ile
545	Thr	Ser	Thr	His	Leu	545	Met	Lys	Arg	Tyr	Pro	550	Leu	Asp	Phe	Lys	Glu	555	Asp
	Leu	Val	Arg	Leu	Thr	560	Lys	Gln	Arg	Leu	Asp	565	Asn	Asp	Val	Leu	Phe	570	Ala
	Ser	Trp	Lys	Tyr	Leu	575	Lys	Met	Pro	Ser	Phe	580	Asn	Asp	Val	Ala	Glu	585	Glu
	Ser	Val	Thr	Arg	Lys	590	Glu	Arg	Ala	Arg	His	595	Ser	Ile	Ser	Gln	Ile	600	Lys
	Lys	Pro	Thr	Ala	Thr	605	Lys	Ser	Leu	Gly	Asn	610	Thr	Ser	Ser	Ile	Lys	615	Arg
625	Ser	Glu	Ser	Ile	His	620	Asp	Asn	Leu	Thr	His	625	Phe	Ser	Leu	Glu	Ile	630	His
	Val	Asn	Thr	Arg	Gly	635	Asp	Leu	Leu	Pro	Asp	640	Pro	Arg	Lys	Asp	Glu	645	Val
	Ser	Val	Ile	Phe	Trp	650	Lys	Val	Asp	Ser	Thr	655	Asp	Thr	Phe	Pro	Phe	660	Ile
	Asp	Leu	Gln	Leu	Glu	665	Gly	Ile	Met	Tyr	Thr	670	Asn	Lys	Leu	Glu	Arg	675	Glu
	Asn	Leu	Ile	Glu	Thr	680	Leu	Glu	Ser	Ile	Ser	685	Gly	Gly	Val	Pro	Ile	690	Met
705	Glu	Tyr	Glu	Asp	Glu	695	Phe	Ser	Met	Phe	Asp	700	Ala	Leu	Thr	Asp	Leu	705	Ile
	Leu	Leu	Phe	Asp	Pro	710	Asp	Leu	Leu	Ser	Gly	715	Tyr	Glu	Ile	His	Asn	720	Ser
	Ser	Trp	Gly	Tyr	Ile	725	Phe	Glu	Arg	Ser	Leu	730	Ser	Val	His	Lys	Phe	735	Asn
	Ile	Ala	Asn	Glu	Ile	740	Ser	Arg	Val	Asn	Met	745	Gly	Ala	Gln	Phe	Lys	750	Leu
	Arg	Asp	Ser	Trp	Gly	755	Phe	Lys	Lys	Ser	Ser	760	Gly	Ile	Ser	Ile	Thr	765	Gly
785	Arg	Tyr	Val	Leu	Asn	770	Ile	Trp	Arg	Leu	Leu	775	Arg	Lys	Glu	Ile	Ala	780	Val
	Thr	Gln	Tyr	Ser	Phe	785	Glu	Asn	Met	Val	His	790	Leu	Leu	Leu	Lys	Ile	795	Arg
	Leu	Pro	Lys	Tyr	Ser	800	Cys	Ser	His	Leu	Thr	805	Ser	Leu	Trp	Ser	Asn	810	Phe
	Lys	Thr	Gly	Asn	Glu	815	Leu	Lys	Thr	Phe	Leu	820	Asn	Tyr	Tyr	Leu	Thr	825	Arg
						830						835						840	
						845						850						855	

## PhoenixTemp32470.tmp.txt

Val Arg Leu Asn Ile Gly Ile Leu Lys Lys Ile Ser Phe Thr Leu Asn  
 865 870 875 880  
 Val Met Glu Glu Ala Arg Leu Ile Gly Ile Asp Phe Gln Ser Val Tyr  
 885 890 895  
 Asn Arg Gly Ser Gln Tyr Lys Val Glu Ser Phe Leu Ile Arg Ile Cys  
 900 905 910  
 Lys Ser Glu Asn Tyr Ile Leu Leu Ser Pro Ser Lys Val Ala Val Gln  
 915 920 925  
 Lys Gln Lys Pro Leu Glu Cys Val Pro Leu Val Met Glu Pro Glu Ser  
 930 935 940  
 Ala Phe Tyr Lys Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr  
 945 950 955 960  
 Pro Ser Ile Met Ser Gly Tyr Asn Tyr Cys Tyr Ser Thr Met Met Gly  
 965 970 975  
 Arg Val Arg Glu Leu Asp Gly Thr Lys Arg Thr Leu Gly Val Thr Asn  
 980 985 990  
 Phe Glu Leu Lys Ser Glu Leu Leu Lys Lys Leu Arg Asp Asp Ile Arg  
 995 1000 1005  
 Ile Ala Pro Asn Gly Val Ile Tyr Ala Lys Glu His Leu Arg Lys Ser  
 1010 1015 1020  
 Thr Leu Ser Lys Met Leu Ser Glu Ile Leu Glu Ile Arg Phe Met Ile  
 1025 1030 1035 1040  
 Lys Lys Thr Ile Ser Asp Leu Gly Ser Asp His Gln Ala Leu Lys Lys  
 1045 1050 1055  
 Leu Leu Glu Ser Lys Gln Leu Ala Leu Lys Leu Leu Ala Asn Val Thr  
 1060 1065 1070  
 Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Asp  
 1075 1080 1085  
 Leu Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr Leu Glu Lys Ala  
 1090 1095 1100  
 Val Lys Met Ile Glu Ser Thr Ala Ser Trp Gly Ala Lys Val Val Tyr  
 1105 1110 1115 1120  
 Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu Pro Gly Lys Thr Lys Glu  
 1125 1130 1135  
 Asp Ala Phe Arg Ile Gly Ala Glu Ile Ser Asn Ser Ile Thr Ala Ser  
 1140 1145 1150  
 Asn Pro Lys Pro Ile Thr Leu Lys Phe Glu Lys Val Tyr Phe Pro Cys  
 1155 1160 1165  
 Ile Leu Leu Ser Lys Lys Arg Tyr Val Gly Tyr Ser Tyr Leu Ser Ser  
 1170 1175 1180  
 Ser Gln Leu Asn Pro His Phe Asp Ala Lys Gly Ile Glu Thr Val Arg  
 1185 1190 1195 1200  
 Arg Asp Gly Thr Pro Ala Gln Gln Lys Val Val Glu Asn Ala Leu Arg  
 1205 1210 1215  
 Ile Leu Phe Glu Thr Lys Asp Leu Ser Lys Val Lys Asn Tyr Val Val  
 1220 1225 1230  
 Asp Thr Phe Thr Lys Ile Arg Ser Gly Asn Ile Ser Ile Gln Asp Phe  
 1235 1240 1245  
 Cys Phe Ala Lys Glu Ile Lys Leu Gly His Tyr Lys Ser Glu Ser Thr  
 1250 1255 1260  
 Met Pro Pro Gly Ala Val Val Ala Lys Arg Leu Lys Lys Gln Asp Ser  
 1265 1270 1275 1280  
 Arg Ala Glu Pro Gln Tyr Lys Glu Arg Leu Ser Tyr Leu Val Val Lys  
 1285 1290 1295  
 Gly Lys Ser Gly Gln Ile Leu Arg Glu Arg Cys Val Ser Val Ser Glu  
 1300 1305 1310  
 Tyr Phe Ser Asn Asp His Phe Ala Leu Asp Ser Glu Tyr Tyr Ile Thr  
 1315 1320 1325  
 Lys Thr Leu Ile Pro Pro Leu Asp Arg Leu Phe Asn Ile Val Gly Ile  
 1330 1335 1340  
 Ser Val Ser Asp Trp Asn Gln Glu Gly Pro Met Phe Val Glu Gly Ser  
 1345 1350 1355 1360  
 Ile Lys Pro Tyr Thr Gly Ala Asp Asn Ile Pro Thr Ser Thr Arg Cys  
 1365 1370 1375  
 Lys Ala Cys Glu Gln Asn Thr Val Ser Gly Asp Ser Tyr Leu Cys Asp  
 1380 1385 1390  
 Asn Cys Val Ser Asn Glu Lys Met Ala Ala Ser Lys Leu Ile Ile Lys  
 1395 1400 1405  
 Ile Gln Ala Ser Ala Ser Lys Leu Lys Val Leu Asn Asp Ile Cys Arg

## PhoenixTemp32470.tmp.txt

1410 1415 1420  
 Ile Cys Ser Arg Gln Tyr Thr Gly Asp Met Gly Leu Leu Ser Ser Asn  
 1425 1430 1435 1440  
 Asn Ala Leu Lys Cys Val Ser Tyr Asp Cys Pro Asn Tyr Tyr Ser Lys  
 1445 1450 1455  
 Leu Lys Ala Gln Arg Leu Met Gln Ser Lys His Tyr Tyr Ser Trp Asn  
 1460 1465 1470  
 Glu Leu Leu His Asn Met Asp His Trp  
 1475 1480

&lt;210&gt; 2683

&lt;211&gt; 4356

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces fragilis NRRL Y-1140

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4356)

&lt;400&gt; 2683

atg agt gat att ttt ggt tct tta gac tcc agc tta gac tcc aat gaa	48
Met Ser Asp Ile Phe Gly Ser Leu Asp Ser Ser Leu Asp Ser Asn Glu	
1 5 10 15	
atc aac ata cag att aat aat tca gac agc tat caa tgc ttc cca act	96
Ile Asn Ile Gln Ile Asn Asn Ser Asp Ser Tyr Gln Cys Phe Pro Thr	
20 25 30	
cta ttg gat tgt aaa act agt aag agc ctt cct gga ctt cga ttt gtt	144
Leu Leu Asp Cys Lys Thr Ser Lys Ser Leu Pro Gly Leu Arg Phe Val	
35 40 45	
cag gtg cca gta cta agg ttc tat gga tgt tta tct acc gga cac aaa	192
Gln Val Pro Val Leu Arg Phe Tyr Gly Cys Leu Ser Thr Gly His Lys	
50 55 60	
gtt cta att cat tgc cat ggc att ttc cct tac ata ttc atc aaa tat	240
Val Leu Ile His Cys His Gly Ile Phe Pro Tyr Ile Phe Ile Lys Tyr	
65 70 75 80	
gac gga cat tcg aat gat aaa gca tca gta ata cgg aat aga tgt acc	288
Asp Gly His Ser Asn Asp Lys Ala Ser Val Ile Arg Asn Arg Cys Thr	
85 90 95	
agt ttg cac aaa ata ctt gag aca cgg atg att gaa act ttt acc aaa	336
Ser Leu His Lys Ile Leu Glu Thr Arg Met Ile Glu Thr Phe Thr Lys	
100 105 110	
aca gat ttt aaa gag aag cta act tcc ctg aaa tac att gct aat gtg	384
Thr Asp Phe Lys Glu Lys Leu Thr Ser Leu Lys Tyr Ile Ala Asn Val	
115 120 125	
tcc gtt gtc aaa ggc gtt cca ttt tac gga tac cac gta gga tat gaa	432
Ser Val Val Lys Gly Val Pro Phe Tyr Gly Tyr His Val Gly Tyr Glu	
130 135 140	
cct tac tat aaa att act ctt ttg aat ggt tca tat agt aat aaa ctc	480
Pro Tyr Tyr Lys Ile Thr Leu Leu Asn Gly Ser Tyr Ser Asn Lys Leu	
145 150 155 160	
tct gaa tta ctt aga gat ggc aga ata ttc acc tca aaa gtg gat gtc	528
Ser Glu Leu Leu Arg Asp Gly Arg Ile Phe Thr Ser Lys Val Asp Val	
165 170 175	
ttt gag gct cat ata cct tat tta ttg caa atg atg gct gac tat aac	576
Phe Glu Ala His Ile Pro Tyr Leu Leu Gln Met Met Ala Asp Tyr Asn	
180 185 190	
tta ttt ggt tgc gga tgg tta aaa cta tcc aaa tgc tat ttt cgg caa	624
Leu Phe Gly Cys Gly Trp Leu Lys Leu Ser Lys Cys Tyr Phe Arg Gln	
195 200 205	
cct gtt ctg tta act gat cta gat atg aat gaa ata ttg cac acg gac	672
Pro Val Leu Leu Thr Asp Leu Asp Met Asn Glu Ile Leu His Thr Asp	
210 215 220	
tct ttg gaa cgt ttt ttg aaa cac ttg cat ccg aat caa aat gtt	720
Ser Leu Glu Arg Phe Leu Lys Lys His Leu His Pro Asn Gln Asn Val	
225 230 235 240	
tta gac ata gat cca ttt cat cga att gga aag acc ttt ctt gaa atg	768
Leu Asp Ile Asp Pro Phe His Arg Ile Gly Lys Thr Phe Leu Glu Met	
245 250 255	
gat att att cca cag ttc att tta aac aga gaa gaa att caa ttc agg	816

## PhoenixTemp32470.tmp.txt

Asp	Ile	Ile	Pro 260	Gln	Phe	Ile	Leu	Asn 265	Arg	Glu	Glu	Ile	Gln 270	Phe	Arg	
gat	tta	cac	cat	gat	ttt	gtt	gag	ctt	aag	aaa	gac	ctt	caa	aca	tca	864
Asp	Leu	His 275	His	Asp	Phe	Val	Glu 280	Leu	Lys	Lys	Asp	Leu	Gln	Thr	Ser	
gat	caa	gga	tat	gtt	aat	tct	aca	aaa	gat	ata	tgg	aaa	gag	ata	caa	912
Asp	Gln 290	Gly	Tyr	Val	Asn	Ser 295	Thr	Lys	Asp	Ile	Trp 300	Lys	Glu	Ile	Gln	
ctg	ctt	agg	aaa	agg	aaa	ggg	ctt	gct	gaa	tat	gaa	gga	tta	aaa	gaa	960
Leu	Leu	Arg	Lys	Arg	Lys	Gly 310	Leu	Ala	Glu	Tyr 315	Glu	Gly	Leu	Lys	Glu 320	
305	ata	ttt	cga	gaa	tct	caa	tta	caa	tat	aat	tgg	aaa	gaa	gat	gaa	agg
Ile	Phe	Arg	Glu	Ser 325	Gln	Leu	Gln	Tyr	Asn 330	Trp	Lys	Glu	Asp	Glu	Arg 335	1008
ttg	gtg	aaa	cac	ttt	gat	gaa	gct	aag	aaa	cga	atg	tct	tcc	ctt	ttt	1056
Leu	Val	Lys	His 340	Phe	Asp	Glu	Ala	Lys 345	Lys	Arg	Met	Ser	Ser 350	Leu	Phe	
aac	aaa	gaa	aaa	gct	tta	aat	ttt	gac	aac	ttt	gtg	gat	cct	ttc	att	1104
Asn	Lys	Glu 355	Lys	Ala	Leu	Asn	Phe 360	Asp	Asn	Phe	Val	Asp 365	Pro	Phe	Ile	
aat	gag	aat	ttt	ttt	gca	agt	acc	aaa	gac	gcc	ctt	caa	gaa	tta	tgg	1152
Asn	Glu 370	Asn	Phe	Phe	Ala	Ser 375	Thr	Lys	Asp	Ala	Leu 380	Gln	Glu	Leu	Trp	
ccc	aaa	ata	cca	agg	aat	gct	agt	agt	aaa	gta	ttc	tgt	tgg	tca	gaa	1200
Pro	Lys	Ile	Pro	Arg	Asn 390	Ala	Ser	Ser	Lys	Val 395	Phe	Cys	Trp	Ser	Glu 400	
385	gta	gaa	ttc	aaa	ttg	aac	aac	caa	tat	act	tct	ggt	cgt	gaa	caa	aaa
Val	Glu	Phe	Lys	Leu 405	Asn	Asn	Gln	Tyr	Thr 410	Ser	Val	Arg	Glu	Gln 415	Lys	1248
gta	gcg	tct	aca	act	aaa	aat	att	ccc	att	ttg	cta	aat	att	tcc		1296
Val	Ala	Ser	Thr 420	Asn	Thr	Lys	Asn	Ile 425	Pro	Ile	Leu	Leu 430	Asn	Ile	Ser	
tcc	aat	gaa	tcg	cac	tct	tca	cat	gtc	agt	tcc	aaa	cgt	gcg	gag	gaa	1344
Ser	Asn	Glu 435	Ser	His	Ser	Ser	His 440	Val	Ser	Ser	Lys	Arg 445	Ala	Glu	Glu	
tct	tca	tgt	cat	gac	gat	att	gct	aat	gaa	gca	att	gct	agg	aaa	ctg	1392
Ser	Ser	Cys	His	Asp	Asp	Ile 455	Ala	Asn	Glu	Ala	Ile 460	Ala	Arg	Lys	Leu	
450	gca	aaa	cga	aaa	aca	tct	gct	att	aga	aag	tca	aca	ttt	cgc	ccg	atg
Ala	Lys	Arg	Lys	Thr	Ser 470	Ala	Ile	Arg	Lys	Ser 475	Thr	Phe	Arg	Pro	Met 480	1440
465	atc	aga	cct	agc	gta	aca	cac	gct	aac	atc	aag	gag	agt	tta	tct	gct
Ile	Arg	Pro	Ser	Val 485	Thr	His	Ala	Asn	Ile 490	Lys	Glu	Ser	Leu	Ser 495	Ala	1488
aac	caa	att	gaa	gaa	gtt	cag	tat	aac	gat	cca	ttt	ttc	tcc	aat	cca	1536
Asn	Gln	Ile	Glu 500	Glu	Val	Gln	Tyr	Asn 505	Asp	Pro	Phe	Phe	Ser 510	Asn	Pro	
ctt	gat	tgt	aaa	agg	cta	caa	acg	gaa	atg	gct	ggg	cga	gtg	ttc	aag	1584
Leu	Asp	Cys 515	Lys	Arg	Leu	Gln	Thr 520	Glu	Met	Ala	Gly	Arg 525	Val	Phe	Lys	
cta	tca	agt	gat	cat	atc	ctc	ttt	aaa	aga	agc	atc	cgt	agt	aac	gat	1632
Leu	Ser 530	Ser	Asp	His	Ile	Leu 535	Phe	Lys	Arg	Ser	Ile 540	Arg	Ser	Asn	Asp	
aca	aca	gca	aca	tta	act	tct	tca	gga	agt	gta	tat	gca	aga	agc	aga	1680
Thr	Thr	Ala	Thr	Leu	Thr 550	Ser	Ser	Gly	Ser	Val 555	Tyr	Ala	Arg	Ser	Arg 560	
545	tgg	aaa	tat	ata	aga	cca	aag	ccg	tct	ttt	aaa	aga	ata	gcc	aat	gcg
Trp	Lys	Tyr	Ile	Arg 565	Pro	Lys	Pro	Ser	Phe 570	Lys	Arg	Ile	Ala	Asn 575	Ala	1728
atg	aag	cct	ttc	aaa	ggg	aaa	ttc	tcg	atg	gtg	gag	ggg	aaa	aca	cca	1776
Met	Lys	Pro	Phe 580	Lys	Gly	Lys	Phe	Ser 585	Met	Val	Glu	Gly	Lys 590	Thr	Pro	
gaa	cta	cca	ttc	gga	tac	aag	ttc	aag	agc	aat	aaa	ata	gaa	aaa	aat	1824
Glu	Leu	Pro 595	Phe	Gly	Tyr	Lys	Phe 600	Lys	Ser	Asn	Lys	Ile 605	Glu	Lys	Asn	
aat	aac	gct	tct	aat	aga	atg	acc	cat	ttc	acc	atg	gaa	att	cac	gtc	1872
Asn	Asn 610	Ala	Ser	Asn	Arg	Met 615	Thr	His	Phe	Thr	Met 620	Glu	Ile	His	Val	
aat	act	cgt	gaa	gat	aag	ttt	cca	gat	cct	aaa	tat	gat	gct	gtc	agg	1920

## PhoenixTemp32470.tmp.txt

Asn 625	Thr	Arg	Glu	Asp	Lys 630	Phe	Pro	Asp	Pro	Lys 635	Tyr	Asp	Ala	Val	Arg 640	
atg	ata	ttt	tgg	aaa	gtg	caa	gat	gga	act	ttt	cca	ttc	gac	ctg	gat	1968
Met	Ile	Phe	Trp	Lys 645	Val	Gln	Asp	Gly	Thr 650	Phe	Pro	Phe	Asp	Leu 655	Asp	
att	act	caa	gaa	ggt	gtt	ttg	ata	ttt	cta	gac	gat	gtc	tcg	aca	gaa	2016
Ile	Thr	Gln	Arg 660	Gly	Val	Leu	Ile	Phe 665	Leu	Asp	Asp	Val	Thr 670	Thr	Glu	
aat	tca	tgg	aaa	act	gcc	gat	cct	agt	gtt	cat	ata	act	gct	tat	tac	2064
Asn	Ser	Trp 675	Lys	Thr	Ala	Asp	Pro 680	Ser	Val	His	Ile	Thr 685	Ala	Tyr	Tyr	
gat	gaa	ttg	gaa	atg	ata	tat	gca	tta	gaa	gat	tta	gtg	agg	ttt	ttc	2112
Asp	Glu 690	Leu	Glu	Met	Ile	Tyr 695	Ala	Leu	Glu	Asp	Leu 700	Val	Arg	Phe	Phe	
gat	cct	gat	atc	ttg	tca	gga	tac	gaa	ata	cac	tct	tcc	tcg	tgg	ggc	2160
Asp	Pro	Asp	Ile	Leu	Ser 710	Gly	Tyr	Glu	Ile	His 715	Ser	Ser	Ser	Trp	Gly 720	
705	tac	ttg	att	gat	aga	tgt	cac	aag	gga	cat	gat	tat	gat	gtg	gaa	2208
Tyr	Leu	Ile	Asp	Arg 725	Cys	His	Lys	Gly	His 730	Asp	Tyr	Asp	Val	Glu 735	Asp	
gaa	ctc	tct	cga	gtc	gat	tat	aac	cag	agt	agc	aaa	aaa	aaa	gac	aga	2256
Glu	Leu	Ser	Arg 740	Val	Asp	Tyr	Asn	Gln 745	Ser	Ser	Lys	Lys	Lys 750	Asp	Arg	
tgg	ggt	tac	act	cac	gca	aca	gca	ttt	tcg	ata	acg	gga	aga	caa	atg	2304
Trp	Gly 755	Tyr	Thr	His	Ala	Thr	Ala 760	Phe	Ser	Ile	Thr 765	Gly	Arg	Gln	Met	
cta	aac	ata	tgg	agg	cct	ctc	cg	tct	tct	ttg	aat	ctt	ctc	gat	tat	2352
Leu	Asn 770	Ile	Trp	Arg	Pro	Leu 775	Arg	Ser	Ser	Leu	Asn 780	Leu	Leu	Asp	Tyr	
aca	tta	gaa	aat	att	gca	Ala 790	Phe	His	Val	Leu	cac	caa	cgg	tta	ctt	2400
Thr 785	Leu	Glu	Asn	Ile	Ala 790	Phe	His	Val	Leu	His 795	Gln	Arg	Leu	Pro	Phe 800	
tat	tcg	tac	aaa	acc	agg	aca	gag	ttc	tat	gaa	tct	atg	gac	gaa	act	2448
Tyr	Ser	Tyr	Lys	Thr 805	Arg	Thr	Glu	Phe	Tyr 810	Glu	Ser	Met	Asp	Glu 815	Thr	
tca	aaa	agg	tgt	ctc	cta	ttt	tac	tgg	atc	aca	aga	ctt	cga	gta	aat	2496
Ser	Lys	Arg	Cys 820	Leu	Leu	Phe	Tyr	Trp 825	Ile	Thr	Arg	Leu	Arg 830	Val	Asn	
ttc	aag	ctt	tta	gag	act	cag	aat	ata	att	gga	aaa	acc	atc	gag	caa	2544
Phe	Lys	Leu 835	Leu	Glu	Thr	Gln	Asn 840	Ile	Ile	Gly	Lys	Thr 845	Ile	Glu	Gln	
gca	aga	ctt	atc	ggg	att	gac	ttt	tat	tct	gtc	ctt	tac	cgt	ggc	tca	2592
Ala	Arg 850	Leu	Ile	Gly	Ile	Asp 855	Phe	Tyr	Ser	Val	Leu 860	Tyr	Arg	Gly	Ser	
caa	tac	aag	gtt	gaa	tcc	ttt	tta	att	aga	ctt	tgc	aaa	tca	gaa	caa	2640
Gln 865	Tyr	Lys	Val	Glu	Ser 870	Phe	Leu	Ile	Arg	Leu 875	Cys	Lys	Ser	Glu	Gln 880	
ttc	att	ctg	att	tct	cca	agc	cga	atg	cag	gtc	cgt	aac	caa	aaa	gca	2688
Phe	Ile	Leu	Ile	Ser 885	Pro	Ser	Arg	Met	Gln 890	Val	Arg	Asn	Gln	Lys 895	Ala	
ctc	gaa	tgt	ata	cca	ctt	gtg	atg	gaa	cct	tca	tct	gcc	ttt	tac	aag	2736
Leu	Glu	Cys	Ile 900	Pro	Leu	Val	Met	Glu 905	Pro	Ser	Ser	Ala	Phe 910	Tyr	Lys	
agt	cct	tta	tta	gtt	tta	gac	ttt	caa	tca	tta	tac	cca	tcc	att	gtt	2784
Ser	Pro	Leu 915	Leu	Val	Leu	Asp	Phe 920	Gln	Ser	Leu	Tyr	Pro 925	Ser	Ile	Val	
atg	gca	tat	aat	tat	tgt	tac	agc	act	att	atc	gga	aga	gtt	gaa	tca	2832
Met	Ala 930	Tyr	Asn	Tyr	Cys	Tyr 935	Ser	Thr	Ile	Ile	Gly 940	Arg	Val	Glu	Ser	
tta	aat	act	aaa	aat	aat	gaa	ata	ggt	atc	aca	agg	tat	gat	atc	cct	2880
Leu 945	Asn	Thr	Lys	Asn	Asn 950	Glu	Ile	Gly	Ile	Thr 955	Arg	Tyr	Asp	Ile	Pro 960	
gaa	gat	tta	cta	act	tta	ata	tct	gat	tat	atc	acc	atc	tca	cca	aat	2928
Glu	Asp	Leu	Leu	Thr 965	Leu	Ile	Ser	Asp	Tyr 970	Ile	Thr	Ile	Ser	Pro 975	Asn	
ggt	atc	gtc	ttt	gtc	aaa	aaa	gaa	ctg	aga	aag	tca	gtt	ttg	gct	aag	2976
Gly	Ile	Val	Phe 980	Val	Lys	Lys	Glu	Leu 985	Arg	Lys	Ser	Val	Leu 990	Ala	Lys	
atg	tta	aag	gac	att	ctt	gat	acg	aga	ttt	cta	atg	aaa	agt	act	atg	3024

## PhoenixTemp32470.tmp.txt

Met	Leu	Lys	Asp	Ile	Leu	Asp	Thr	Arg	Phe	Leu	Met	Lys	Ser	Thr	Met		
		995					1000					1005					
aag	gaa	ctt	aat	gat	gaa	cat	aac	ctt	att	aat	atg	ttg	gat	aat	agg	3072	
Lys	Glu	Leu	Asn	Asp	Glu	His	Asn	Leu	Ile	Asn	Met	Leu	Asp	Asn	Arg		
	1010					1015					1020						
cag	gaa	gcc	tta	aaa	tta	ctt	gct	aat	gtc	acg	tac	gga	tac	aca	tct	3120	
Gln	Glu	Ala	Leu	Lys	Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser		
	1025				1030					1035					1040		
gct	tca	ttc	tct	ggg	cgt	atg	cca	tgt	tcc	gac	att	gca	gat	agt	ata	3168	
Ala	Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Asp	Ile	Ala	Asp	Ser	Ile		
			1045					1050					1055				
gtt	cag	act	ggc	agg	gaa	aca	tta	gag	agg	gcg	atc	gag	gtt	ata	gaa	3216	
Val	Gln	Thr		Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Glu	Val	Ile		
			1060					1065					1070				
act	act	aaa	gaa	tgg	ggg	gct	aaa	gta	gtt	tat	gga	gat	aca	gat	agt	3264	
Thr	Thr	Lys	Glu	Trp	Gly	Ala	Lys	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser		
		1075				1080					1085						
tta	ttt	gtt	tac	ctt	cca	ggg	aaa	tcg	aaa	gat	gaa	gca	ttt	gta	atc	3312	
Leu	Phe	Val	Tyr	Leu	Pro	Gly	Lys	Ser	Lys	Asp	Gln	Ala	Phe	Val	Ile		
	1090					1095					1100						
gga	agg	cag	atc	gct	gaa	gaa	ata	aca	aga	cag	aat	ccg	aaa	ccc	ata	3360	
Gly	Arg	Gln	Ile	Ala	Glu	Glu	Ile	Thr	Arg	Gln	Asn	Pro	Lys	Pro	Ile		
	1105				1110				1115					1120			
gag	ttg	aag	ttt	gag	aaa	gtg	tat	cat	ccg	tgc	ttt	tta	gta	acc	aag	3408	
Glu	Leu	Lys	Phe	Glu	Lys	Val	Tyr	His	Pro	Cys	Phe	Leu	Val	Thr	Lys		
			1125					1130					1135				
aaa	cgt	tat	gta	ggc	ttt	tcc	tat	gag	tct	gaa	tat	caa	aaa	gaa	cca	3456	
Lys	Arg	Tyr	Val	Gly	Phe	Ser	Tyr	Glu	Ser	Glu	Tyr	Gln	Lys	Glu	Pro		
		1140					1145					1150					
aaa	ttc	gat	gca	aag	ggt	ata	gaa	act	gtt	cga	agg	gat	gga	aca	cca	3504	
Lys	Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Thr	Pro		
		1155				1160						1165					
gca	caa	caa	aaa	atc	gtg	gaa	aag	gca	ctt	aga	att	atg	ttt	gaa	acc	3552	
Ala	Gln	Gln	Lys	Ile	Val	Glu	Lys	Ala	Leu	Arg	Ile	Met	Phe	Glu	Thr		
	1170					1175					1180						
act	gat	tta	tcc	atg	gta	aaa	gaa	tac	tta	att	gga	gaa	ttt	gac	aaa	3600	
Thr	Asp	Leu	Ser	Met	Val	Lys	Glu	Tyr	Leu	Ile	Gly	Glu	Phe	Asp	Lys		
	1185				1190					1195					1200		
att	atc	acc	ggc	aga	gtt	aat	att	caa	gat	ttc	tgt	ttc	gct	aga	gaa	3648	
Ile	Ile	Thr	Gly	Arg	Val	Asn	Ile	Gln	Asp	Phe	Cys	Phe	Ala	Arg	Glu		
			1205					1210					1215				
gtt	aag	cta	ggc	cat	tat	aaa	agt	gaa	aag	act	gct	ccc	cct	ggt	gcc	3696	
Val	Lys	Leu	Gly	His	Tyr	Lys	Ser	Glu	Lys	Thr	Ala	Pro	Pro	Gly	Ala		
		1220					1225					1230					
caa	att	gcc	atg	caa	atg	atg	gaa	gaa	gat	gca	cgt	aca	gaa	ccc	caa	3744	
Gln	Ile	Ala	Met	Gln	Met	Met	Glu	Glu	Asp	Ala	Arg	Thr	Glu	Pro	Gln		
		1235				1240					1245						
tac	aag	cag	aga	gta	ccg	tat	gtc	gtg	aaa	atg	gga	aaa	ata	ggt	gaa	3792	
Tyr	Lys	Gln	Arg	Val	Pro	Tyr	Val	Val	Lys	Met	Gly	Lys	Ile	Gly	Glu		
	1250					1255					1260						
act	ttg	agc	tct	aga	tgc	ctc	tca	ccg	gag	gct	ttc	tta	agg	tct	aaa	3840	
Thr	Leu	Ser	Ser	Arg	Cys	Leu	Ser	Pro	Glu	Ala	Phe	Leu	Arg	Ser	Lys		
	1265				1270				1275						1280		
acg	tct	agg	ttg	gat	tat	aca	tac	tac	att	gtc	aaa	aac	att	ata	cct	3888	
Thr	Ser	Arg	Leu	Asp	Tyr	Thr	Tyr	Tyr	Ile	Val	Lys	Asn	Ile	Ile	Pro		
			1285					1290					1295				
cct	ctt	cag	cgg	ttt	ttc	cag	tta	gta	gga	gtt	gat	atc	atg	gat	tgg	3936	
Pro	Leu	Gln	Arg	Phe	Phe	Gln	Leu	Val	Gly	Val	Asp	Ile	Met	Asp	Trp		
		1300					1305					1310					
tat	ata	tcg	atg	aaa	cat	act	ctt	aat	cct	cta	aaa	gta	gac	tct	gat	3984	
Tyr	Ile	Ser	Met	Lys	His	Thr	Leu	Asn	Pro	Leu	Lys	Val	Asp	Ser	Asp		
		1315				1320					1325						
gac	ggc	agc	cat	gaa	gga	agg	tct	ttg	act	tca	atc	gtc	aaa	ggc	aaa	4032	
Asp	Gly	Ser	His	Glu	Gly	Arg	Ser	Leu	Thr	Ser	Ile	Val	Lys	Gly	Lys		
	1330				1335					1340							
tct	tgt	ctg	cgc	tgt	cgc	aag	aaa	gtt	cac	cca	aaa	ttc	att	agt	cct	4080	
Ser	Cys	Leu	Arg	Cys	Arg	Lys	Lys	Val	His	Pro	Lys	Phe	Ile	Ser	Pro		
	1345				1350				1355						1360		
ata	tgt	ggt	gaa	tgc	agg	atc	gat	aaa	agc	aac	acc	acc	ctt	ttt	ttg	4128	

## PhoenixTemp32470.tmp.txt

Ile Cys Gly Glu Cys Arg Ile Asp Lys Ser Asn Thr Thr Leu Phe Leu  
 1365 1370 1375  
 gaa gag tca gtc aga cta aaa cag tct aag atg cat tct gtt atg agg 4176  
 Glu Glu Ser Val Arg Leu Lys Gln Ser Lys Met His Ser Val Met Arg  
 1380 1385 1390  
 acc tgt caa acc tgt tca tac aag ttt cat aaa gat gct atg gca cct 4224  
 Thr Cys Gln Thr Cys Ser Tyr Lys Phe His Lys Asp Ala Met Ala Pro  
 1395 1400 1405  
 ttg gac caa att gca ctc aag tgc caa tct aaa gac tgt ccg gta tac 4272  
 Leu Asp Gln Ile Ala Leu Lys Cys Gln Ser Lys Asp Cys Pro Val Tyr  
 1410 1415 1420  
 ttc agt aaa ttc aaa tac atg aac ggt ctc aag gat aat gat atg aga 4320  
 Phe Ser Lys Phe Lys Tyr Met Asn Gly Leu Lys Asp Asn Asp Met Arg  
 1425 1430 1435 1440  
 gat ctc ttg atg gga ctg ata gat ttg gac tat tga 4356  
 Asp Leu Leu Met Gly Leu Ile Asp Leu Asp Tyr  
 1445 1450

&lt;210&gt; 2684

&lt;211&gt; 1451

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;400&gt; 2684

Met Ser Asp Ile Phe Gly Ser Leu Asp Ser Ser Leu Asp Ser Asn Glu  
 1 5 10 15  
 Ile Asn Ile Gln Ile Asn Asn Ser Asp Ser Tyr Gln Cys Phe Pro Thr  
 20 25 30  
 Leu Leu Asp Cys Lys Thr Ser Lys Ser Leu Pro Gly Leu Arg Phe Val  
 35 40 45  
 Gln Val Pro Val Leu Arg Phe Tyr Gly Cys Leu Ser Thr Gly His Lys  
 50 55 60  
 Val Leu Ile His Cys His Gly Ile Phe Pro Tyr Ile Phe Ile Lys Tyr  
 65 70 75 80  
 Asp Gly His Ser Asn Asp Lys Ala Ser Val Ile Arg Asn Arg Cys Thr  
 85 90 95  
 Ser Leu His Lys Ile Leu Glu Thr Arg Met Ile Glu Thr Phe Thr Lys  
 100 105 110  
 Thr Asp Phe Lys Glu Lys Leu Thr Ser Leu Lys Tyr Ile Ala Asn Val  
 115 120 125  
 Ser Val Val Lys Gly Val Pro Phe Tyr Gly Tyr His Val Gly Tyr Glu  
 130 135 140  
 Pro Tyr Tyr Lys Ile Thr Leu Leu Asn Gly Ser Tyr Ser Asn Lys Leu  
 145 150 155 160  
 Ser Glu Leu Leu Arg Asp Gly Arg Ile Phe Thr Ser Lys Val Asp Val  
 165 170 175  
 Phe Glu Ala His Ile Pro Tyr Leu Leu Gln Met Met Ala Asp Tyr Asn  
 180 185 190  
 Leu Phe Gly Cys Gly Trp Leu Lys Leu Ser Lys Cys Tyr Phe Arg Gln  
 195 200 205  
 Pro Val Leu Leu Thr Asp Leu Asp Met Asn Glu Ile Leu His Thr Asp  
 210 215 220  
 Ser Leu Glu Arg Phe Leu Lys Lys His Leu His Pro Asn Gln Asn Val  
 225 230 235 240  
 Leu Asp Ile Asp Pro Phe His Arg Ile Gly Lys Thr Phe Leu Glu Met  
 245 250 255  
 Asp Ile Ile Pro Gln Phe Ile Leu Asn Arg Glu Glu Ile Gln Phe Arg  
 260 265 270  
 Asp Leu His His Asp Phe Val Glu Leu Lys Lys Asp Leu Gln Thr Ser  
 275 280 285  
 Asp Gln Gly Tyr Val Asn Ser Thr Lys Asp Ile Trp Lys Glu Ile Gln  
 290 295 300  
 Leu Leu Arg Lys Arg Lys Gly Leu Ala Glu Tyr Glu Gly Leu Lys Glu  
 305 310 315 320  
 Ile Phe Arg Glu Ser Gln Leu Gln Tyr Asn Trp Lys Glu Asp Glu Arg  
 325 330 335  
 Leu Val Lys His Phe Asp Glu Ala Lys Lys Arg Met Ser Ser Leu Phe  
 340 345 350  
 Asn Lys Glu Lys Ala Leu Asn Phe Asp Asn Phe Val Asp Pro Phe Ile  
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## PhoenixTemp32470.tmp.txt

Asn	Glu	355	Asn	Phe	Phe	Ala	Ser	360	Thr	Lys	Asp	Ala	Leu	365	Gln	Glu	Leu	Trp
Pro	Lys	370	Ile	Pro	Arg	Asn	375	Ala	Ser	Ser	Lys	Val	Phe	380	Cys	Trp	Ser	Glu
385	Val	Glu	Phe	Lys	Leu	390	Asn	Asn	Gln	Tyr	Thr	Ser	Val	395	Arg	Glu	Gln	Lys
Val	Ala	Ser	Thr	405	Asn	Thr	Lys	Asn	Ile	410	Pro	Ile	Leu	415	Leu	Asn	Ile	Ser
Ser	Asn	Glu	Ser	His	Ser	Ser	His	Val	Ser	Ser	Lys	Arg	Ala	425	Ala	Glu	Glu	
Ser	Ser	Cys	His	Asp	Asp	Ile	435	Ala	Asn	Glu	Ala	Ile	440	Ala	Arg	Lys	Leu	
Ala	Lys	Arg	Lys	Thr	Ser	445	Ala	Ile	Arg	Lys	Ser	Thr	Phe	450	Arg	Pro	Met	
465	Ile	Arg	Pro	Ser	Val	455	Thr	His	Ala	Asn	Ile	Lys	Glu	460	Ser	Leu	Ser	Ala
Asn	Gln	Ile	Glu	Val	Gln	470	Tyr	Asn	Asp	Pro	Phe	Phe	Ser	475	Asn	Pro		
Leu	Asp	Cys	Lys	Arg	Leu	485	Thr	Glu	Met	Ala	Gly	Arg	Val	490	Val	Phe	Lys	
Leu	Ser	Ser	Asp	His	Ile	500	Phe	Lys	Arg	Ser	Ile	Arg	Ser	505	Asn	Asp		
Thr	Thr	Ala	Thr	Leu	Thr	515	Ser	Ser	Gly	Ser	Val	Tyr	Ala	520	Arg	Ser	Arg	
545	Trp	Lys	Tyr	Ile	Arg	525	Pro	Lys	Pro	Ser	Phe	Lys	Arg	530	Ile	Ala	Asn	Ala
Met	Lys	Pro	Phe	Lys	Gly	535	Lys	Phe	Ser	Met	Val	Glu	Gly	540	Lys	Thr	Pro	
Glu	Leu	Pro	Phe	Gly	Tyr	545	Lys	Ser	Asn	Lys	Ile	Glu	Lys	550	Glu	Lys	Asn	
Asn	Asn	Ala	Ser	Asn	Arg	555	Met	Thr	His	Phe	Thr	Met	Glu	560	Ile	His	Val	
Asn	Thr	Arg	Glu	Asp	Lys	565	Phe	Pro	Asp	Pro	Lys	Tyr	Asp	570	Ala	Val	Arg	
625	Met	Ile	Phe	Trp	Lys	575	Val	Gln	Asp	Gly	Thr	Phe	Pro	580	Phe	Asp	Leu	Asp
Ile	Thr	Gln	Glu	Gly	Val	585	Leu	Ile	Phe	Leu	Asp	Asp	Val	590	Ser	Thr	Glu	
Asn	Ser	Trp	Lys	Thr	Ala	595	Asp	Pro	Ser	Val	His	Ile	Thr	600	Ala	Tyr	Tyr	
Asp	Glu	Leu	Glu	Met	Ile	605	Tyr	Ala	Leu	Glu	Asp	Leu	Val	610	Arg	Phe	Phe	
Asp	Pro	Asp	Ile	Leu	Ser	615	Gly	Tyr	Glu	Ile	His	Ser	Ser	620	Ser	Trp	Gly	
705	Tyr	Leu	Ile	Asp	Arg	625	Cys	His	Lys	Gly	His	Asp	Tyr	630	Val	Glu	Asp	
Glu	Leu	Ser	Arg	Val	Asp	635	Tyr	Asn	Gln	Ser	Ser	Lys	Lys	640	Lys	Asp	Arg	
Trp	Gly	Tyr	Thr	His	Ala	645	Ala	Thr	Phe	Ser	Ile	Thr	Gly	650	Arg	Gln	Met	
Leu	Asn	Ile	Trp	Arg	Pro	655	Arg	Ser	Ser	Leu	Asn	Leu	Leu	660	Leu	Asp	Tyr	
Thr	Leu	Glu	Asn	Ile	Ala	665	Phe	His	Val	Leu	His	Gln	Arg	670	Leu	Pro	Phe	
785	Tyr	Ser	Tyr	Lys	Thr	675	Arg	Thr	Glu	Phe	Tyr	Glu	Ser	680	Met	Asp	Glu	Thr
Ser	Lys	Arg	Cys	Leu	Leu	685	Phe	Tyr	Trp	Ile	Thr	Arg	Leu	690	Val	Asn		
Phe	Lys	Leu	Leu	Glu	Thr	695	Gln	Asn	Ile	Ile	Gly	Lys	Thr	700	Ile	Glu	Gln	
Ala	Arg	Leu	Ile	Gly	Ile	705	Phe	Tyr	Ser	Val	Leu	Tyr	Arg	710	Arg	Gly	Ser	
Gln	Tyr	Lys	Val	Glu	Ser	715	Phe	Leu	Ile	Arg	Leu	Cys	Lys	720	Ser	Glu	Gln	
865	Phe	Ile	Leu	Ile	Ser	725	Pro	Ser	Arg	Met	Gln	Val	Arg	730	Asn	Gln	Lys	Ala
Leu	Glu	Cys	Ile	Pro	Leu	735	Val	Met	Glu	Pro	Ser	Ser	Ala	740	Phe	Tyr	Lys	
			900			745			905					750				

## PhoenixTemp32470.tmp.txt

Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Ile Val  
 915 920 925  
 Met Ala Tyr Asn Tyr Cys Tyr Ser Thr Ile Ile Gly Arg Val Glu Ser  
 930 935 940  
 Leu Asn Thr Lys Asn Asn Glu Ile Gly Ile Thr Arg Tyr Asp Ile Pro  
 945 950 955 960  
 Glu Asp Leu Leu Thr Leu Ile Ser Asp Tyr Ile Thr Ile Ser Pro Asn  
 965 970 975  
 Gly Ile Val Phe Val Lys Lys Glu Leu Arg Lys Ser Val Leu Ala Lys  
 980 985 990  
 Met Leu Lys Asp Ile Leu Asp Thr Arg Phe Leu Met Lys Ser Thr Met  
 995 1000 1005  
 Lys Glu Leu Asn Asp Glu His Asn Leu Ile Asn Met Leu Asp Asn Arg  
 1010 1015 1020  
 Gln Glu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser  
 1025 1030 1035 1040  
 Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Asp Ile Ala Asp Ser Ile  
 1045 1050 1055  
 Val Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Glu Val Ile Glu  
 1060 1065 1070  
 Thr Thr Lys Glu Trp Gly Ala Lys Val Val Tyr Gly Asp Thr Asp Ser  
 1075 1080 1085  
 Leu Phe Val Tyr Leu Pro Gly Lys Ser Lys Asp Glu Ala Phe Val Ile  
 1090 1095 1100  
 Gly Arg Gln Ile Ala Glu Ile Thr Arg Gln Asn Pro Lys Pro Ile  
 1105 1110 1115 1120  
 Glu Leu Lys Phe Glu Lys Val Tyr His Pro Cys Phe Leu Val Thr Lys  
 1125 1130 1135  
 Lys Arg Tyr Val Gly Phe Ser Tyr Glu Ser Glu Tyr Gln Lys Glu Pro  
 1140 1145 1150  
 Lys Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro  
 1155 1160 1165  
 Ala Gln Gln Lys Ile Val Glu Lys Ala Leu Arg Ile Met Phe Glu Thr  
 1170 1175 1180  
 Thr Asp Leu Ser Met Val Lys Glu Tyr Leu Ile Gly Glu Phe Asp Lys  
 1185 1190 1195 1200  
 Ile Ile Thr Gly Arg Val Asn Ile Gln Asp Phe Cys Phe Ala Arg Glu  
 1205 1210 1215  
 Val Lys Leu Gly His Tyr Lys Ser Glu Lys Thr Ala Pro Pro Gly Ala  
 1220 1225 1230  
 Gln Ile Ala Met Gln Met Met Glu Asp Ala Arg Thr Glu Pro Gln  
 1235 1240 1245  
 Tyr Lys Gln Arg Val Pro Tyr Val Val Lys Met Gly Lys Ile Gly Glu  
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 Thr Leu Ser Ser Arg Cys Leu Ser Pro Glu Ala Phe Leu Arg Ser Lys  
 1265 1270 1275 1280  
 Thr Ser Arg Leu Asp Tyr Thr Tyr Tyr Ile Val Lys Asn Ile Ile Pro  
 1285 1290 1295  
 Pro Leu Gln Arg Phe Phe Gln Leu Val Gly Val Asp Ile Met Asp Trp  
 1300 1305 1310  
 Tyr Ile Ser Met Lys His Thr Leu Asn Pro Leu Lys Val Asp Ser Asp  
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 Asp Gly Ser His Glu Gly Arg Ser Leu Thr Ser Ile Val Lys Gly Lys  
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 Ser Cys Leu Arg Cys Arg Lys Lys Val His Pro Lys Phe Ile Ser Pro  
 1345 1350 1355 1360  
 Ile Cys Gly Glu Cys Arg Ile Asp Lys Ser Asn Thr Thr Leu Phe Leu  
 1365 1370 1375  
 Glu Glu Ser Val Arg Leu Lys Gln Ser Lys Met His Ser Val Met Arg  
 1380 1385 1390  
 Thr Cys Gln Thr Cys Ser Tyr Lys Phe His Lys Asp Ala Met Ala Pro  
 1395 1400 1405  
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 Gln Thr His Thr Leu Lys Leu Asp Gln Leu Tyr Asn Asp Val Val Gln  
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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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210 215 220

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## PhoenixTemp32470.tmp.txt

Asp 225	Phe	Asn	Leu	Phe	Gly 230	Cys	Gly	Trp	Leu	Glu 235	Ile	Asp	Asn	Thr	Tyr 240
Phe	Arg	Tyr	Pro	Ile 245	Leu	Asn	Asp	Asn	Thr 250	Asp	Ile	Asp	Thr	Thr 255	His
Leu	Lys	Ser	Tyr 260	Leu	Lys	Leu	Phe	Ile 265	Asn	His	Asn	Asn	Ile 270	Leu	Glu
Gly	Leu	Lys 275	Phe	Ala	Arg	Ile	Gly 280	Arg	Ser	Leu	Leu	Glu 285	Phe	Asp	Ile
Lys	Thr 290	Glu	Ser	Ile	His	Asn 295	Arg	Ser	Tyr	Ile	Lys 300	Gln	Arg	His	Leu
His 305	His	Glu	Phe	Val 310	Glu	Asn	Arg	Ser	Phe	Asn 315	Ser	Gly	Ile	Pro	Asn 320
Asn	Glu	Ile	Tyr	Leu 325	Ser	Ser	Leu	Asn	His 330	Ile	Tyr	Lys	Asp	Leu 335	Lys
Tyr	Gln	Cys	Glu 340	Ser	Arg	Gly	Ser	Lys 345	Met	Thr	Glu	Ser	Gln 350	Phe	Ser
Gln	Asn	Asn 355	Leu	Gly	Leu	Gly	Gly 360	Thr	Phe	Trp	Glu	Asn 365	Gln	Ser	Asp
Leu	Asn 370	Asp	Leu	Met	Asn	Tyr 375	Val	Ile	Ser	Leu	Thr 380	Lys	Pro	Ser	Pro
Thr 385	Asn	Lys	Leu	Asp	Ala 390	Tyr	Phe	Lys	Lys	Phe 395	Ile	Glu	Ser	Asp	Lys 400
Leu	Ser	Lys	Phe	Pro 405	Thr	Ala	Phe	Glu	Leu 410	Ile	Asp	Ile	Glu	Lys 415	Ile
Ser	Ser	Ser	Ser 420	Gly	Gly	Ile	Ser	Leu 425	Leu	Asn	Phe	Asn	Asp 430	Asp	Leu
Ile	Lys	Trp 435	Asn	Val	Tyr	Ser	Phe 440	Leu	Phe	Glu	Asp	Ala 445	Val	Ile	Leu
Lys	Asp 450	Ile	Ala	Thr	Arg	Glu 455	Glu	Ser	Ala	Val	Ile 460	Arg	Glu	Asp	Asp
Ile 465	Val	Pro	Asp	Ser	Lys 470	Pro	Ser	Leu	Asp	Leu 475	Glu	Phe	Asp	Ser	Asp 480
Asp	Phe	Thr	Asp	Ser 485	Glu	His	Val	Asn	Pro 490	Asp	Asp	Arg	Val	Glu 495	Lys
Asn	Asp	Ile	Asp 500	Pro	Ala	Glu	His	Glu 505	Arg	Ala	Trp	Ser	Gln 510	Pro	Asn
Lys	Ser	Asp 515	His	Glu	Ile	Met	Phe 520	Glu	Val	Ser	Gln	Arg 525	Lys	Arg	Arg
Arg	Thr 530	Ser	Leu	Ser	Gln	Thr 535	Leu	Glu	Glu	Gly	Asp 540	Ser	Ile	Leu	Gln
Val 545	Pro	Ser	Ser	Pro	His 550	His	Leu	Phe	Asn	Lys 555	Ile	Thr	Asn	Pro	Lys 560
Gln	Thr	Asn	Lys	Leu 565	Pro	Asp	Leu	Met	His 570	Ser	Ser	His	Gly	Arg 575	His
Phe	Tyr	Glu	Val 580	Leu	Lys	Pro	Gln	Ala 585	Leu	Asp	Arg	Asn	Arg 590	Ile	Met
Lys	Thr	Phe 595	Asp	Asp	Gln	His	Leu 600	Lys	Val	Asn	Tyr 605	Thr	Asp	Pro	
Tyr	Tyr 610	Asp	Lys	Glu	Ser	Asp 615	Met	Pro	Ser	Arg	Pro 620	Met	Ile	Phe	Ala
Asn 625	Lys	Lys	Ile	Ser	Ile 630	Pro	Leu	Ile	Asn	Tyr 635	Asn	Thr	Leu	Glu	Ala 640
Phe	Lys	Val	Lys	Ala 645	Gly	Ser	Ser	Ser	Leu 650	Pro	Met	Ser	Leu	Met 655	Ile
Gln	Gln	Thr	Leu 660	Ser	Asp	Ser	Ser	Ser 665	Ser	Lys	Ile	Arg	Ala 670	Cys	Ala
Arg	Asn	Ile 675	Cys	Ser	Trp	Arg	Tyr 680	Val	Ala	Glu	Pro	Pro 685	Ser	Lys	Val
Glu	Ile	Gln	Lys	Trp	Val	Ala 695	Val	Glu	Glu	Ala	Lys 700	Met	Lys	Tyr	Lys
Arg 705	Ser	Lys	Phe	Arg	Ser 710	Gln	Ile	Glu	Pro	Pro 715	Ile	Thr	Gln	Thr	Asn 720
Asp	Tyr	Lys	Phe	Ser 725	Tyr	Arg	Ser	Glu	Lys 730	Ile	Ser	Arg	Arg	Pro 735	Asn
Ser	Phe	Asn	Ser 740	Leu	Thr	Asn	Phe	His 745	Leu	Glu	Ile	His	Val 750	Asn	Thr
His	Asn	Asp 755	Leu	Leu	Pro	Asn	Pro 760	Asp	Val	Asp	Pro	Ile 765	Ser	Val	Ile
Phe	Tyr	Thr	Phe	Ser	Asp	Ser	Asn	His	Met	Phe	Asp	Lys	Asn	Asn	Asn



## PhoenixTemp32470.tmp.txt

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770      775      780
Lys Val Gly Ile Leu Ile Tyr His Glu Pro Gly Ser Gln Arg Glu Asp
785 Phe Ala Lys Gln Leu Glu Lys Val Ser Ser Phe Leu Val Glu Lys Pro
805      810      815
Ala Val Ala Ile Phe Ser Asp Glu Lys Ser Met Ile Asn Gln Leu Ile
820      825      830
Arg Leu Val Glu Cys Phe Asp Pro Asp Ile Leu Ser Gly Tyr Glu Ile
835      840      845
Asn Ala Leu Ser Trp Gly Tyr Val Ile Glu Arg Phe Arg Asn Ala Tyr
850      855      860
Asp Ile Asn Leu Leu Phe Glu Phe Ser Arg Cys Lys Phe Lys Ser Asn
865      870      875
Gly Lys Phe Gly Asp Arg Trp Gly Tyr Thr His Thr Ser Ala Phe Lys
885      890      895
Ile Asn Gly Arg His Ile Leu Asn Val Trp Arg Leu Leu Arg Ser Glu
900      905      910
Leu Ser Leu Thr Asn Tyr Ser Leu Glu Asn Met Ser Tyr His Leu Leu
915      920      925
His Gln Thr Leu Pro Arg Tyr Leu Asn Phe Gln Leu Ser Gln Trp Tyr
930      935      940
Tyr Gly Asn Asp Phe Leu Glu Leu Leu Ser Val Phe Lys Tyr Tyr Leu
945      950      955
Arg Arg Val Gln Leu Ile Met Lys Ile Ile Asp Ile Gln Glu Leu Ile
965      970      975
Thr Arg Asn Val Glu Gln Ser Arg Leu Ile Gly Ile Asp Phe Asn Ser
980      985      990
Asn Phe Tyr Arg Gly Ser Gln Phe Lys Val Glu Ser Ile Leu Cys Arg
995      1000      1005
Leu Thr Lys Ala Glu Asn Ile Leu Leu Asn Ser Val Ser Lys Gln Gln
1010      1015      1020
Val His Glu Met Arg Pro Leu Glu Cys Ile Pro Leu Ile Met Glu Pro
1025      1030      1035
Asp Ser Asn Phe Tyr Lys Ser Pro Leu Ile Val Leu Asp Phe Gln Ser
1045      1050      1055
Leu Tyr Pro Ser Ile Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Ile
1060      1065      1070
Leu Gly Lys Leu His Gly Phe Ser Pro Arg Lys Asn Ile Ile Gly Tyr
1075      1080      1085
Leu Lys Asn Leu Lys Leu Pro Pro Gly Leu Val Asp Leu Phe Ala Lys
1090      1095      1100
Asn Asp Gly Leu Asn Ile Ser Pro Asn Gly Tyr Val Phe Val Lys Ser
1105      1110      1115
Ser Ile Arg Lys Ser Met Leu Ala Lys Met Leu Glu Glu Ile Leu Asn
1125      1130      1135
Ala Arg Ile Asn Val Lys Ser Val Met Lys Leu Phe Lys Asp Asp Pro
1140      1145      1150
Glu Leu Ile Lys Leu Tyr Asn Ser Arg Gln Leu Ala Leu Lys Leu Ile
1155      1160      1165
Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Thr Phe Ser Gly Arg Met
1170      1175      1180
Pro Asn Ser Asp Ile Ala Asp Ala Ile Val Ser Thr Gly Arg Glu Ile
1185      1190      1195
Leu Ser Gln Ser Val Asn Leu Ile Glu Leu Thr Asn Tyr Gly Ala Lys
1205      1210      1215
Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu Pro Gly Lys
1220      1225      1230
Thr Lys Gln Asp Ala Phe Lys Ile Gly Asn Glu Leu Ala Ser Phe Ile
1235      1240      1245
Thr Asp Lys Phe Pro Asp Pro Ile Lys Leu Lys Phe Glu Lys Val Tyr
1250      1255      1260
His Pro Cys Val Leu Leu Ala Lys Lys Arg Tyr Val Gly Tyr Ser Tyr
1265      1270      1275
Glu Tyr Glu Asp Gln Gln Glu Pro Lys Phe Asp Ala Lys Gly Ile Glu
1285      1290      1295
Thr Ile Arg Arg Asp Gly Ile Pro Ala Gln Gln Lys Met Val Glu Lys
1300      1305      1310
Thr Ile Arg Ile Leu Phe Asp Thr Lys Asn Leu Ser Leu Ile Lys Lys
1315      1320      1325

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## PhoenixTemp32470.tmp.txt

Tyr Thr Met Glu Gln Phe Tyr Lys Ile Leu Ile Asn Lys Val Ser Ile  
 1330 1335 1340  
 Lys Asp Phe Cys Phe Ala Lys Glu Val Arg Phe Gly Thr Tyr Lys Asn  
 1345 1350 1355 1360  
 Glu Ala His Leu Pro Pro Gly Ala Ile Val Ala Asn Arg Asn Val Asn  
 1365 1370 1375  
 Lys Asp Pro Arg Asn Glu Pro Gln Tyr Arg Glu Arg Val Pro Tyr Val  
 1380 1385 1390  
 Val Phe Gln Asp Ser Ser Lys Ile Arg Val Lys Asp Arg Cys Ile Ser  
 1395 1400 1405  
 Pro Glu Asp Phe Ile Lys Ser Tyr Asn Thr Leu Lys Pro Leu Ser Leu  
 1410 1415 1420  
 Asp Asn Glu Tyr Tyr Ile Thr Arg Val Leu Ile Pro Pro Leu Glu Arg  
 1425 1430 1435 1440  
 Val Phe Asn Leu Ile Gly Val Asp Ile Lys Gly Trp Tyr Lys Glu Leu  
 1445 1450 1455  
 Pro Lys Phe Asn His Glu Leu Phe Glu Thr Lys Asn Asn Ile Phe Gln  
 1460 1465 1470  
 Phe Ala Lys Phe Ile Lys Leu Asn Ser Cys Ala Cys Cys Gly Ser Lys  
 1475 1480 1485  
 Leu Lys Glu Tyr Ser Arg Ser Lys Tyr Ile Cys Gly Gln Cys Leu Asn  
 1490 1495 1500  
 Asn Glu Leu Glu Leu Ile Ala Asn Leu Ser Met Ser Ser Lys Phe Gly  
 1505 1510 1515 1520  
 Glu Phe Lys Glu Leu Val Ala Asp Lys Thr Cys Glu Leu Cys Val Asn  
 1525 1530 1535  
 Met Asn Tyr Glu Ser Leu Gly Ser Arg Thr Ile Arg Asn Cys Met Asn  
 1540 1545 1550  
 Glu Cys Val Asn Asn Ser Cys Leu Val Tyr Tyr Asn Lys Ile Arg Val  
 1555 1560 1565  
 Thr Lys Glu Lys Val Gln Leu Asp Gln Lys His Leu His Leu Leu Ser  
 1570 1575 1580  
 Asp Leu Glu Trp  
 1585

&lt;210&gt; 2687

&lt;211&gt; 4017

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4017)

&lt;400&gt; 2687

atg	tcg	gga	ctg	cgc	atc	cag	ata	aat	tac	atc	gac	tat	gta	atg	gct	48
Met	Ser	Gly	Leu	Arg	Ile	Gln	Ile	Asn	Tyr	Ile	Asp	Tyr	Val	Met	Ala	
1				5					10					15		
cct	ccg	ggg	ccg	ctg	gac	tgg	tcc	aag	gtg	cct	gaa	acg	gta	tct	tgc	96
Pro	Pro	Gly	Pro	Leu	Asp	Trp	Ser	Lys	Val	Pro	Glu	Thr	Val	Ser	Cys	
			20					25					30			
gaa	tgc	gac	tac	aaa	gat	cta	cac	cgg	gtt	cca	gtg	ctg	cgg	ata	ttt	144
Glu	Cys	Asp	Tyr	Lys	Asp	Leu	His	Arg	Val	Pro	Val	Leu	Arg	Ile	Phe	
			35				40					45				
gga	ggc	acc	tcg	gac	ggt	ctt	tcg	tct	tgc	gca	cat	gtg	cac	aac	gtc	192
Gly	Gly	Thr	Ser	Asp	Gly	Leu	Ser	Ser	Cys	Ala	His	Val	His	Asn	Val	
			50			55					60					
ttc	caa	tac	ttt	tac	ata	ccc	tac	acc	ggt	cct	tcc	tta	agt	ccg	gcg	240
Phe	Gln	Tyr	Phe	Tyr	Ile	Pro	Tyr	Thr	Gly	Pro	Ser	Leu	Ser	Pro	Ala	
			65		70				75					80		
gat	tcg	gag	ccg	ttc	ata	gca	gac	atg	tat	cgc	cga	atc	aac	ctg	caa	288
Asp	Ser	Glu	Pro	Phe	Ile	Ala	Asp	Met	Tyr	Arg	Arg	Ile	Asn	Leu	Gln	
				85				90						95		
ctc	cgt	tcc	aag	agg	aca	cgt	ggc	gag	aag	tta	ccc	gag	gag	tgt	agt	336
Leu	Arg	Ser	Lys	Arg	Thr	Arg	Gly	Glu	Lys	Leu	Pro	Glu	Glu	Cys	Ser	
			100				105					110				
ttt	ctg	gcc	aac	att	gtg	cta	tgc	aaa	gct	aca	cca	ttc	tac	gga	tac	384
Phe	Leu	Ala	Asn	Ile	Val	Leu	Cys	Lys	Ala	Thr	Pro	Phe	Tyr	Gly	Tyr	
			115				120					125				

## PhoenixTemp32470.tmp.txt

cat	gag	gga	tgg	aga	tac	tac	ctg	aag	atc	gtg	gtg	gtg	gac	cct	agt	432
His	Glu	Gly	Trp	Arg	Tyr	Tyr	Leu	Lys	Ile	Val	Val	Val	Asp	Pro	Ser	
	130					135					140					
cat	gtt	gga	atg	ctg	gtg	gac	atg	ttc	agg	aac	ggg	gtg	ttt	gga	tgg	480
His	Val	Gly	Met	Leu	Val	Asp	Met	Phe	Arg	Asn	Gly	Val	Phe	Gly	Trp	
	145				150					155					160	
gac	cac	tcg	cgt	gtg	ttt	gag	agc	cac	ttg	tct	tac	att	ttg	caa	ttc	528
Asp	His	Ser	Arg	Val	Phe	Glu	Ser	His	Leu	Ser	Tyr	Ile	Leu	Gln	Phe	
				165					170					175		
ttt	tgc	gac	tac	aat	ttg	cat	ggg	tgt	gga	tgg	atg	gag	gag	tcc	agg	576
Phe	Cys	Asp	Tyr	Asn	Leu	His	Gly	Cys	Gly	Trp	Met	Glu	Ala	Ser	Arg	
			180					185					190			
tac	atg	atg	aga	agg	gaa	ggg	atg	atc	tcc	aag	tcg	gag	ttt	gag	gtt	624
Tyr	Met	Met	Arg	Arg	Glu	Gly	Met	Ile	Ser	Lys	Ser	Glu	Phe	Glu	Val	
			195				200					205				
gac	ttg	cag	gcc	gaa	tac	atc	tta	aac	cga	ctg	gtg	att	tcg	acc	aac	672
Asp	Leu	Gln	Ala	Glu	Tyr	Ile	Leu	Asn	Arg	Leu	Val	Ile	Ser	Thr	Asn	
	210					215					220					
aag	aag	cca	ggg	gac	aag	ttc	cat	tca	ctg	aaa	gag	ctg	tgg	acg		720
Lys	Lys	Pro	Gly	Asp	Lys	Ala	Phe	His	Ser	Lys	Glu	Leu	Trp	Thr		
	225				230				235					240		
agc	tta	cag	agc	att	aga	gac	aag	ttc	agc	aaa	ggc	gag	tac	aag	agt	768
Ser	Leu	Gln	Ser	Ile	Arg	Asp	Lys	Phe	Ser	Lys	Gly	Glu	Tyr	Lys	Ser	
				245					250					255		
gac	tat	gga	gaa	agg	act	gta	aat	gac	ccg	cgg	gag	cag	tgg	ttt	tca	816
Asp	Tyr	Gly	Glu	Arg	Thr	Val	Asn	Asp	Pro	Arg	Glu	Gln	Trp	Phe	Ser	
			260					265					270			
gcc	cag	tcc	atg	ttc	tcg	gag	ttg	gag	gag	aag	gtg	agc	aag	gca	gac	864
Ala	Gln	Ser	Met	Phe	Ser	Glu	Leu	Glu	Glu	Lys	Val	Ser	Lys	Ala	Asp	
		275					280					285				
tcg	gcc	cat	tca	tac	gtg	cag	ttc	tgg	ccc	aaa	agg	cca	tac	gac	aat	912
Ser	Ala	His	Ser	Tyr	Val	Gln	Phe	Trp	Pro	Lys	Arg	Pro	Tyr	Asp	Asn	
	290				295						300					
ctc	gtt	ccc	aca	gcg	ttt	gaa	acg	aca	aaa	tgc	atg	ttc	aag	gga	gag	960
Leu	Val	Pro	Thr	Ala	Phe	Glu	Thr	Thr	Lys	Cys	Met	Phe	Lys	Gly	Glu	
	305				310					315				320		
ggg	gcc	tca	gaa	gtg	gac	agt	ttt	gtg	ttt	gat	gtg	tcc	ttt	gac	gat	1008
Gly	Ala	Ser	Glu	Val	Asp	Ser	Phe	Val	Phe	Asp	Val	Ser	Phe	Asp	Asp	
			325					330						335		
ctt	cct	tcc	atg	tcc	cag	gaa	aag	aga	agc	agt	gca	aca	aga	aaa	cac	1056
Leu	Pro	Ser	Met	Ser	Gln	Glu	Lys	Arg	Ser	Ser	Ala	Thr	Arg	Lys	His	
			340					345					350			
agt	tcc	act	cct	ccc	cca	tca	acc	agg	aaa	caa	aag	gga	ctc	aac	ttc	1104
Ser	Ser	Thr	Pro	Pro	Pro	Ser	Thr	Arg	Lys	Gln	Lys	Gly	Leu	Asn	Phe	
		355					360					365				
aag	gtg	acc	aaa	ccc	aag	ttt	gat	ggt	cca	aat	act	gca	aag	acg	agt	1152
Lys	Val	Thr	Lys	Pro	Lys	Phe	Asp	Val	Pro	Asn	Thr	Ala	Lys	Thr	Ser	
	370					375					380					
act	gct	gtt	gct	act	gct	act	tta	act	aca	aca	gtc	tac	act	ttc	aag	1200
Thr	Ala	Val	Ala	Thr	Ala	Thr	Leu	Thr	Thr	Thr	Val	Tyr	Thr	Phe	Lys	
	385				390				395					400		
cca	cct	cca	tcg	cgt	gga	ctg	tgt	att	acc	gat	tta	gac	gac	aac	aac	1248
Pro	Pro	Pro	Ser	Arg	Gly	Leu	Cys	Ile	Thr	Asp	Leu	Asp	Asp	Asn	Asn	
				405					410					415		
atg	gca	cag	aaa	gtc	tac	cca	aag	ccg	cac	tac	tca	cgt	gat	tca	gac	1296
Met	Ala	Gln	Lys	Val	Tyr	Pro	Lys	Pro	His	Tyr	Ser	Arg	Asp	Ser	Asp	
			420					425					430			
gtc	ccc	aca	aaa	aca	atg	aca	cac	gga	ggc	gtc	act	ttt	cga	att	ctg	1344
Val	Pro	Thr	Lys	Thr	Met	Thr	His	Gly	Gly	Val	Thr	Phe	Arg	Ile	Leu	
		435					440					445				
ggg	tct	tcc	gta	aag	tat	cta	cca	acg	gga	ttc	ccc	gaa	aag	ccc	tca	1392
Gly	Ser	Ser	Val	Lys	Tyr	Leu	Pro	Thr	Gly	Phe	Pro	Glu	Lys	Pro	Ser	
		450				455					460					
aac	tat	gct	ctt	aag	ggc	gtt	gtt	gag	ctg	gca	aag	tct	cct	cca	tcg	1440
Asn	Tyr	Ala	Leu	Lys	Gly	Val	Val	Glu	Leu	Ala	Lys	Ser	Pro	Pro	Ser	
	465				470				475					480		
cgt	gat	gac	gta	ctc	aag	tgg	ata	gga	aag	act	acc	aac	aat	gct	gat	1488
Arg	Asp	Asp	Val	Leu	Lys	Trp	Ile	Gly	Lys	Thr	Thr	Asn	Asn	Ala	Asp	
				485					490					495		

## PhoenixTemp32470.tmp.txt

ctg	ttt	ctg	tcc	cag	ata	gcg	cct	cct	acc	cag	aag	ccc	aag	tac	tct	1536
Leu	Phe	Leu	Ser	Gln	Ile	Ala	Pro	Pro	Thr	Gln	Lys	Pro	Lys	Tyr	Ser	
			500													
ttc	ccc	agt	caa	aac	aca	ctc	tcc	cag	cga	cac	gag	tcg	gct	gct	tta	1584
Phe	Pro	Ser	Gln	Asn	Thr	Leu	Ser	Gln	Arg	His	Glu	Ser	Ala	Ala	Leu	
		515					520					525				
acg	gtc	atg	agc	atg	gag	gtt	cat	gtg	aac	act	cga	aaa	ggt	ctc	aat	1632
Thr	Val	Met	Ser	Met	Glu	Val	His	Val	Asn	Thr	Arg	Lys	Gly	Leu	Asn	
	530					535					540					
cca	gac	cca	gat	ctt	gac	cca	atc	ctg	ttc	gtt	gtc	tgg	cac	atg	ttg	1680
Pro	Asp	Pro	Asp	Leu	Asp	Pro	Ile	Leu	Phe	Val	Val	Trp	His	Met	Leu	
545					550					555					560	
ggt	ggt	ccc	agt	gga	gtg	att	atc	aac	gcc	gag	gat	tgc	cca	gac	ttc	1728
Gly	Gly	Pro	Ser	Gly	Val	Ile	Ile	Asn	Ala	Glu	Asp	Cys	Pro	Asp	Phe	
				565					570					575		
aca	aac	atc	atc	gaa	gca	cct	tcc	act	gtc	gtc	aaa	aca	gag	tgt	gaa	1776
Thr	Asn	Ile	Ile	Glu	Ala	Pro	Ser	Thr	Val	Val	Lys	Thr	Glu	Cys	Glu	
			580					585					590			
atg	atc	act	cat	ctt	cag	aaa	atg	gtg	gag	aac	ttt	gat	cct	gac	att	1824
Met	Ile	Thr	His	Leu	Gln	Lys	Met	Val	Glu	Asn	Phe	Asp	Pro	Asp	Ile	
		595					600					605				
ctg	act	ggc	ttt	gaa	gtc	caa	gct	tct	tcc	tgg	ggc	tat	gtt	caa	gac	1872
Leu	Thr	Gly	Phe	Glu	Val	Gln	Ala	Ser	Ser	Trp	Gly	Tyr	Val	Gln	Asp	
	610					615					620					
cgt	tgc	aag	acc	atg	ttg	tac	cca	tgt	gaa	ttt	gga	agg	gtt	cag	cat	1920
Arg	Cys	Lys	Thr	Met	Leu	Tyr	Pro	Cys	Glu	Phe	Gly	Arg	Val	Gln	His	
625					630					635					640	
cat	aag	atg	agc	tcg	aaa	att	gac	act	tgg	ggc	gca	cga	aag	gct	tct	1968
His	Lys	Met	Ser	Ser	Lys	Ile	Asp	Thr	Trp	Gly	Ala	Arg	Lys	Ala	Ser	
				645					650					655		
gga	gtc	aaa	gta	gtt	ggc	cgt	cat	gtg	ctc	aac	ttg	tgg	cgt	atg	att	2016
Gly	Val	Lys	Val	Val	Gly	Arg	His	Val	Leu	Asn	Leu	Trp	Arg	Met	Ile	
			660					665					670			
cgt	ggg	gag	gtt	tct	ttg	ttg	aaa	tac	acg	ctt	gag	aat	gtc	gtc	ttc	2064
Arg	Gly	Glu	Val	Ser	Leu	Leu	Lys	Tyr	Thr	Leu	Glu	Asn	Val	Val	Phe	
		675					680					685				
cac	gtt	cta	cac	gaa	cgc	att	ccc	ttc	tac	aca	cac	gat	acg	ctc	aca	2112
His	Val	Leu	His	Glu	Arg	Ile	Pro	Phe	Tyr	Thr	His	Asp	Thr	Leu	Thr	
	690					695					700					
gaa	atg	tgt	gtg	ggc	agt	ctg	tct	gac	cgg	aaa	tta	ctt	gtg	gag	tac	2160
Glu	Met	Cys	Val	Gly	Ser	Leu	Ser	Asp	Arg	Lys	Leu	Leu	Val	Glu	Tyr	
705					710					715					720	
aaa	tgc	acg	cgg	tcc	aat	tac	aat	ctg	cag	ctc	ttg	agc	act	ctg	gag	2208
Lys	Cys	Thr	Arg	Ser	Asn	Tyr	Asn	Leu	Gln	Leu	Leu	Ser	Thr	Leu	Glu	
				725					730					735		
att	gtt	tca	cga	aca	gct	gag	cag	gct	cga	gtg	gtg	gga	atc	gac	ttt	2256
Ile	Val	Ser	Arg	Thr	Ala	Glu	Gln	Ala	Arg	Val	Val	Gly	Ile	Asp	Phe	
			740					745					750			
tcg	tcc	gtc	tac	acc	cgc	ggc	agt	cag	tac	aaa	gtc	gag	tcg	ttt	ctt	2304
Ser	Ser	Val	Tyr	Thr	Arg	Gly	Ser	Gln	Tyr	Lys	Val	Glu	Ser	Phe	Leu	
		755					760					765				
gct	cgc	ctg	aca	aaa	agt	gag	aac	ttc	atg	ctg	gca	agc	ccc	agt	aga	2352
Ala	Arg	Leu	Thr	Lys	Ser	Glu	Asn	Phe	Met	Leu	Ala	Ser	Pro	Ser	Arg	
						775					780					
gaa	cag	gtt	ggt	cag	cag	aat	gcc	ctg	gag	tgc	att	gct	ttg	gta	atg	2400
Glu	Gln	Val	Gly	Gln	Gln	Asn	Ala	Leu	Glu	Cys	Ile	Ala	Leu	Val	Met	
785					790					795					800	
gag	ccc	gaa	tct	cga	ctt	tat	acg	agc	ccc	gtt	ctt	gtt	ctg	gac	ttt	2448
Glu	Pro	Glu	Ser	Arg	Leu	Tyr	Thr	Ser	Pro	Val	Leu	Val	Leu	Asp	Phe	
				805					810					815		
cag	tct	ctt	tat	cct	tcc	gtc	atc	tta	gcc	cac	aat	tac	tgc	tac	tcc	2496
Gln	Ser	Leu	Tyr	Pro	Ser	Val	Ile	Leu	Ala	His	Asn	Tyr	Cys	Tyr	Ser	
			820					825					830			
acc	tgt	ttg	ggc	aaa	tgg	act	gat	ttt	gaa	aag	gac	gga	aac	act	ttg	2544
Thr	Cys	Leu	Gly	Lys	Trp	Thr	Asp	Phe	Glu	Lys	Asp	Gly	Asn	Thr	Leu	
		835					840					845				
gga	acg	gag	aaa	ctg	ttc	tac	aag	ccg	tct	ttg	gta	aaa	cgg	ttg	ctg	2592
Gly	Thr	Glu	Lys	Leu	Phe	Tyr	Lys	Pro	Ser	Leu	Val	Lys	Arg	Leu	Leu	
	850					855					860					

## PhoenixTemp32470.tmp.txt

act	aaa	gac	gat	gtg	acc	atc	tct	cca	aat	ggc	ctg	gtg	ttt	gtg	aaa	2640
Thr	Lys	Asp	Asp	Val	Thr	Ile	Ser	Pro	Asn	Gly	Leu	Val	Phe	Val	Lys	
865					870					875					880	
ccc	cat	att	cga	gtt	tct	ctg	tta	gct	cga	atg	ctg	ggt	gag	att	ctg	2688
Pro	His	Ile	Arg	Val	Ser	Leu	Leu	Ala	Arg	Met	Leu	Gly	Glu	Ile	Leu	
				885					890					895		
gag	acc	aga	ttc	atg	gtc	aag	gat	act	gcc	aag	ctc	gat	aga	gac	aat	2736
Glu	Thr	Arg	Phe	Met	Val	Lys	Asp	Thr	Ala	Lys	Leu	Asp	Arg	Asp	Asn	
			900					905					910			
gtg	tcg	ttc	cag	aga	ctc	aac	cat	aac	cga	cag	ctt	gct	ctg	aag	ctc	2784
Val	Ser	Phe	Gln	Arg	Leu	Asn	His	Asn	Arg	Gln	Leu	Ala	Leu	Lys	Leu	
		915					920					925				
gtg	gcc	aac	gtc	aca	tat	gga	tac	act	tct	gcc	tcc	ttc	tct	gga	cgt	2832
Val	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser	Ala	Ser	Phe	Ser	Gly	Arg	
	930					935					940					
atg	ccc	tgt	gcc	gaa	atc	gct	gac	gca	ata	gtt	caa	agt	gga	cgt	gag	2880
Met	Pro	Cys	Ala	Glu	Ile	Ala	Asp	Ala	Ile	Val	Gln	Ser	Gly	Arg	Glu	
945					950					955					960	
acg	ctc	gaa	aag	tgc	att	gac	gtg	atc	cat	gga	tcg	gac	aaa	tgg	gca	2928
Thr	Leu	Glu	Lys	Cys	Ile	Asp	Val	Ile	His	Gly	Ser	Asp	Lys	Trp	Ala	
				965					970					975		
gcc	aag	gtc	gtc	tac	ggc	gat	aca	gac	tcg	ttg	ttt	gta	tgt	cta	cct	2976
Ala	Lys	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Leu	Phe	Val	Cys	Leu	Pro	
			980					985					990			
ggt	cgt	acc	aag	gat	gaa	gca	ttc	aag	att	ggt	act	gag	atc	gct	gat	3024
Gly	Arg	Thr	Lys	Asp	Glu	Ala	Phe	Lys	Ile	Gly	Thr	Glu	Ile	Ala	Asp	
		995				1000						1005				
acc	ata	aca	tct	gcc	aat	cca	gca	ccc	atg	aaa	ttg	cag	ttt	gaa	aag	3072
Thr	Ile	Thr	Ser	Ala	Asn	Pro	Ala	Pro	Met	Lys	Leu	Gln	Phe	Glu	Lys	
	1010					1015					1020					
gtc	tat	ctt	cct	tgc	atg	ctc	ata	tcc	aag	aag	cga	tac	gtg	ggc	tac	3120
Val	Tyr	Leu	Pro	Cys	Met	Leu	Ile	Ser	Lys	Lys	Arg	Tyr	Val	Gly	Tyr	
1025					1030					1035					1040	
aag	tgg	gag	tac	tcg	aag	cag	atg	tat	ccc	att	ttc	gac	gcc	aag	gga	3168
Lys	Trp	Glu	Tyr	Ser	Lys	Gln	Met	Tyr	Pro	Ile	Phe	Asp	Ala	Lys	Gly	
				1045					1050					1055		
atc	gaa	act	gtg	cga	cga	gac	ggc	acc	cct	gct	gcc	cag	aag	att	gag	3216
Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Thr	Pro	Ala	Ala	Gln	Lys	Ile	Glu	
			1060				1065						1070			
gag	aag	gct	ctt	cgt	atc	ttg	ttt	gac	act	gct	gat	tta	tct	ctg	gtc	3264
Glu	Lys	Ala	Leu	Arg	Ile	Leu	Phe	Asp	Thr	Ala	Asp	Leu	Ser	Leu	Val	
		1075				1080						1085				
aaa	tcg	tac	ctc	tac	gag	cag	tgg	acg	aag	att	cta	act	ggt	aag	gtc	3312
Lys	Ser	Tyr	Leu	Tyr	Glu	Gln	Trp	Thr	Lys	Ile	Leu	Thr	Gly	Lys	Val	
	1090					1095					1100					
tcg	att	cag	gac	ttt	tgt	ttt	gcc	aag	gaa	gtc	aag	tta	ggc	cag	tac	3360
Ser	Ile	Gln	Asp	Phe	Cys	Phe	Ala	Lys	Glu	Val	Lys	Leu	Gly	Gln	Tyr	
1105				1110						1115					1120	
aag	gaa	ggg	gga	gtg	ttg	ccc	gcg	ggt	gcg	aag	atc	tcg	gct	gag	aaa	3408
Lys	Glu	Gly	Gly	Val	Leu	Pro	Ala	Gly	Ala	Lys	Ile	Ser	Ala	Glu	Lys	
			1125					1130						1135		
atg	gca	gtc	gac	atg	cgc	ttt	gaa	ccc	cag	tac	aag	gaa	cgt	atc	cca	3456
Met	Ala	Val	Asp	Met	Arg	Phe	Glu	Pro	Gln	Tyr	Lys	Glu	Arg	Ile	Pro	
			1140					1145					1150			
tat	gtg	gtt	gtt	gct	ggt	cct	ccc	aaa	agt	cgg	ctg	att	gac	cga	tgt	3504
Tyr	Val	Val	Val	Ala	Gly	Pro	Pro	Lys	Ser	Arg	Leu	Ile	Asp	Arg	Cys	
		1155				1160						1165				
gtt	tct	cct	gaa	gaa	cta	gtc	agg	aac	gcc	aac	tct	ctc	att	ctc	gac	3552
Val	Ser	Pro	Glu	Glu	Leu	Val	Arg	Asn	Ala	Asn	Ser	Leu	Ile	Leu	Asp	
		1170				1175					1180					
gcc	gac	tac	tac	att	cac	aag	act	ctg	att	ccc	cct	ctg	gat	cgg	ttc	3600
Ala	Asp	Tyr	Tyr	Ile	His	Lys	Thr	Leu	Ile	Pro	Pro	Leu	Asp	Arg	Phe	
1185					1190					1195					1200	
ttt	aac	tgt	gtg	ggt	gct	tct	gtt	ctc	aag	tgg	tac	gag	gag	atg	ccc	3648
Phe	Asn	Cys	Val	Gly	Ala	Ser	Val	Leu	Lys	Trp	Tyr	Glu	Glu	Met	Pro	
			1205						1210					1215		
aag	aag	cgg	cgg	tac	gag	ttt	tac	cag	act	gtt	tct	cga	gca	aag	acc	3696
Lys	Lys	Arg	Arg	Tyr	Glu	Phe	Tyr	Gln	Thr	Val	Ser	Arg	Ala	Lys	Thr	
			1220					1225					1230			

## PhoenixTemp32470.tmp.txt

```

aac caa acc acg ctc aag tcg tac gct gtg tcc aac tcg tgc atc gtc      3744
Asn Gln Thr Thr Leu Lys Ser Tyr Ala Val Ser Asn Ser Cys Ile Val
      1235      1240      1245
tgc aag act gcc cag acg tct ggc ttg tct aaa ctt tgc gcc acg tgc      3792
Cys Lys Thr Ala Gln Thr Ser Gly Leu Ser Lys Leu Cys Ala Thr Cys
      1250      1255      1260
gag agt gat cct ggt cat gca aca ttc gtg ctt aac tcc gat ctg agg      3840
Glu Ser Asp Pro Gly His Ala Thr Phe Val Leu Asn Ser Asp Leu Arg
1265      1270      1275      1280
tac agg gag aag cgg ctg gat gag ctc aac aca atc tgc gcg cag tgc      3888
Tyr Arg Glu Lys Arg Leu Asp Glu Leu Asn Thr Ile Cys Ala Gln Cys
      1285      1290      1295
tca ggc gac ttt gag act agg tgc gag tct cag gac tgt cct att tac      3936
Ser Gly Asp Phe Glu Thr Arg Cys Glu Ser Gln Asp Cys Pro Ile Tyr
      1300      1305      1310
tac tca cgg gtc aag gca gtg agt aag gcg gaa gat gca agt gag agg      3984
Tyr Ser Arg Val Lys Ala Val Ser Lys Ala Glu Asp Ala Ser Glu Arg
      1315      1320      1325
cta gtg gag tgg act gag ggg ctg gag tgg tga      4017
Leu Val Glu Trp Thr Glu Gly Leu Glu Trp
      1330      1335

```

&lt;210&gt; 2688

&lt;211&gt; 1338

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;400&gt; 2688

```

Met Ser Gly Leu Arg Ile Gln Ile Asn Tyr Ile Asp Tyr Val Met Ala
1      5      10      15
Pro Pro Gly Pro Leu Asp Trp Ser Lys Val Pro Glu Thr Val Ser Cys
      20      25      30
Glu Cys Asp Tyr Lys Asp Leu His Arg Val Pro Val Leu Arg Ile Phe
      35      40      45
Gly Gly Thr Ser Asp Gly Leu Ser Ser Cys Ala His Val His Asn Val
      50      55      60
Phe Gln Tyr Phe Tyr Ile Pro Tyr Thr Gly Pro Ser Leu Ser Pro Ala
65      70      75      80
Asp Ser Glu Pro Phe Ile Ala Asp Met Tyr Arg Arg Ile Asn Leu Gln
      85      90      95
Leu Arg Ser Lys Arg Thr Arg Gly Glu Lys Leu Pro Glu Glu Cys Ser
      100      105      110
Phe Leu Ala Asn Ile Val Leu Cys Lys Ala Thr Pro Phe Tyr Gly Tyr
      115      120      125
His Glu Gly Trp Arg Tyr Tyr Leu Lys Ile Val Val Asp Pro Ser
130      135      140
His Val Gly Met Leu Val Asp Met Phe Arg Asn Gly Val Phe Gly Trp
145      150      155      160
Asp His Ser Arg Val Phe Glu Ser His Leu Ser Tyr Ile Leu Gln Phe
      165      170      175
Phe Cys Asp Tyr Asn Leu His Gly Cys Gly Trp Met Glu Ala Ser Arg
      180      185      190
Tyr Met Met Arg Arg Glu Gly Met Ile Ser Lys Ser Glu Phe Glu Val
195      200      205
Asp Leu Gln Ala Glu Tyr Ile Leu Asn Arg Leu Val Ile Ser Thr Asn
210      215      220
Lys Lys Pro Gly Asp Lys Ala Phe His Ser Leu Lys Glu Leu Trp Thr
225      230      235
Ser Leu Gln Ser Ile Arg Asp Lys Phe Ser Lys Gly Glu Tyr Lys Ser
      240      245      250
Asp Tyr Gly Glu Arg Thr Val Asn Asp Pro Arg Glu Gln Trp Phe Ser
255      260      265
Ala Gln Ser Met Phe Ser Glu Leu Glu Glu Lys Val Ser Lys Ala Asp
270      275      280
Ser Ala His Ser Tyr Val Gln Phe Trp Pro Lys Arg Pro Tyr Asp Asn
285      290      295
Leu Val Pro Thr Ala Phe Glu Thr Thr Lys Cys Met Phe Lys Gly Glu
300      305      310
Gly Ala Ser Glu Val Asp Ser Phe Val Phe Asp Val Ser Phe Asp Asp
      315      320

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## PhoenixTemp32470.tmp.txt

Leu	Pro	Ser	Met	325	Ser	Gln	Glu	Lys	Arg	330	Ser	Ser	Ala	Thr	Arg	335	Lys	His
Ser	Ser	Thr	340	Pro	Pro	Ser	Thr	360	Arg	Lys	Gln	Lys	Gly	365	Leu	Asn	Phe	
Lys	Val	Thr	355	Lys	Pro	Lys	Phe	375	Asp	Val	Pro	Asn	Thr	380	Ala	Lys	Thr	Ser
Thr	Ala	Val	Ala	Thr	Ala	Thr	Leu	Thr	Thr	Thr	Thr	Val	Tyr	Thr	Phe	Lys	400	
Pro	Pro	Pro	Ser	Arg	405	Gly	Leu	Cys	Ile	Thr	410	Asp	Leu	Asp	Asp	Asn	415	
Met	Ala	Gln	Lys	Val	Tyr	Pro	Lys	Pro	425	His	Tyr	Ser	Arg	Asp	Ser	Asp		
Val	Pro	Thr	Lys	Thr	Met	Thr	His	Gly	Gly	Val	Thr	Phe	Arg	Ile	Leu			
Gly	Ser	Ser	Val	Lys	Tyr	Leu	455	Pro	Thr	Gly	Phe	Pro	460	Glu	Lys	Pro	Ser	
Asn	Tyr	Ala	Leu	Lys	Gly	Val	Val	Glu	Leu	Ala	Lys	Ser	Pro	Pro	Ser	480		
Arg	Asp	Asp	Val	Leu	Lys	Trp	Ile	Gly	Lys	Thr	Thr	Asn	Asn	Ala	Asp	495		
Leu	Phe	Leu	Ser	Gln	Ile	Ala	Pro	Pro	505	Thr	Gln	Lys	Pro	Lys	Tyr	Ser		
Phe	Pro	Ser	Gln	Asn	Thr	Leu	Ser	Gln	Arg	His	Glu	Ser	Ala	Ala	Leu			
Thr	Val	Met	Ser	Met	Glu	Val	His	Val	Asn	Thr	Arg	Lys	Gly	Leu	Asn			
Pro	Asp	Pro	Asp	Leu	Asp	550	Ile	Leu	Phe	Val	555	Trp	His	Met	Leu	560		
Gly	Gly	Pro	Ser	Gly	Val	Ile	Ile	Asn	Ala	Glu	Asp	Cys	Pro	Asp	Phe	575		
Thr	Asn	Ile	Ile	Glu	Ala	Pro	Ser	Thr	Val	Val	Lys	Thr	Glu	Cys	Glu			
Met	Ile	Thr	His	Leu	Gln	Lys	Met	Val	Glu	Asn	Phe	Asp	Tyr	Val	Gln	Asp		
Leu	Thr	Gly	Phe	Glu	Val	Gln	Ala	Ser	Ser	Trp	Gly	Tyr	Val	Gln	Asp			
Arg	Cys	Lys	Thr	Met	Leu	Tyr	Pro	Cys	Glu	Phe	Gly	Arg	Val	Gln	His			
His	Lys	Met	Ser	Ser	Lys	Ile	Asp	Thr	Trp	Gly	Ala	Arg	Lys	Ala	Ser			
Gly	Val	Lys	Val	Val	Gly	Arg	His	Val	Leu	Asn	Leu	Trp	Arg	Met	Ile			
Arg	Gly	Glu	Val	Ser	Leu	Leu	Lys	Tyr	Thr	Leu	Glu	Asn	Val	Val	Phe			
His	Val	Leu	His	Glu	Arg	Ile	Pro	Phe	Tyr	Thr	His	Asp	Thr	Leu	Thr			
Glu	Met	Cys	Val	Gly	Ser	Leu	Ser	Asp	Arg	Lys	Leu	Leu	Val	Glu	Tyr			
Lys	Cys	Thr	Arg	Ser	Asn	Tyr	Asn	Leu	Gln	Leu	Leu	Ser	Thr	Leu	Glu			
Ile	Val	Ser	Arg	Thr	Ala	Glu	Gln	Ala	Arg	Val	Val	Gly	Ile	Asp	Phe			
Ser	Ser	Val	Tyr	Thr	Arg	Gly	Ser	Gln	Tyr	Lys	Val	Glu	Ser	Phe	Leu			
Ala	Arg	Leu	Thr	Lys	Ser	Glu	Asn	Phe	Met	Leu	Ala	Ser	Pro	Ser	Arg			
Glu	Gln	Val	Gly	Gln	Gln	Asn	Ala	Leu	Glu	Cys	Ile	Ala	Leu	Val	Met			
Glu	Pro	Glu	Ser	Arg	Leu	Tyr	Thr	Ser	Pro	Val	Leu	Val	Leu	Asp	Phe			
Gln	Ser	Leu	Tyr	Pro	Ser	Val	Ile	Leu	Ala	His	Asn	Tyr	Cys	Tyr	Ser			
Thr	Cys	Leu	Gly	Lys	Trp	Thr	Asp	Phe	Glu	Lys	Asp	Gly	Asn	Thr	Leu			
Gly	Thr	Glu	Lys	Leu	Phe	Tyr	Lys	Pro	Ser	Leu	Val	Lys	Arg	Leu	Leu			
Thr	Lys	Asp	Asp	Val	Thr	Ile	Ser	Pro	Asn	Gly	Val	Phe	Val	Lys	Lys			

## PhoenixTemp32470.tmp.txt

Pro His Ile Arg Val Ser Leu Leu Ala Arg Met Leu Gly Glu Ile Leu  
 885 890 895  
 Glu Thr Arg Phe Met Val Lys Asp Thr Ala Lys Leu Asp Arg Asp Asn  
 900 905 910  
 Val Ser Phe Gln Arg Leu Asn His Asn Arg Gln Leu Ala Leu Lys Leu  
 915 920 925  
 Val Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg  
 930 935 940  
 Met Pro Cys Ala Glu Ile Ala Asp Ala Ile Val Gln Ser Gly Arg Glu  
 945 950 955 960  
 Thr Leu Glu Lys Cys Ile Asp Val Ile His Gly Ser Asp Lys Trp Ala  
 965 970 975  
 Ala Lys Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val Cys Leu Pro  
 980 985 990  
 Gly Arg Thr Lys Asp Glu Ala Phe Lys Ile Gly Thr Glu Ile Ala Asp  
 995 1000 1005  
 Thr Ile Thr Ser Ala Asn Pro Ala Pro Met Lys Leu Gln Phe Glu Lys  
 1010 1015 1020  
 Val Tyr Leu Pro Cys Met Leu Ile Ser Lys Lys Arg Tyr Val Gly Tyr  
 1025 1030 1035 1040  
 Lys Trp Glu Tyr Ser Lys Gln Met Tyr Pro Ile Phe Asp Ala Lys Gly  
 1045 1050 1055  
 Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala Ala Gln Lys Ile Glu  
 1060 1065 1070  
 Glu Lys Ala Leu Arg Ile Leu Phe Asp Thr Ala Asp Leu Ser Leu Val  
 1075 1080 1085  
 Lys Ser Tyr Leu Tyr Glu Gln Trp Thr Lys Ile Leu Thr Gly Lys Val  
 1090 1095 1100  
 Ser Ile Gln Asp Phe Cys Phe Ala Lys Glu Val Lys Leu Gly Gln Tyr  
 1105 1110 1115 1120  
 Lys Glu Gly Gly Val Leu Pro Ala Gly Ala Lys Ile Ser Ala Glu Lys  
 1125 1130 1135  
 Met Ala Val Asp Met Arg Phe Glu Pro Gln Tyr Lys Glu Arg Ile Pro  
 1140 1145 1150  
 Tyr Val Val Val Ala Gly Pro Pro Lys Ser Arg Leu Ile Asp Arg Cys  
 1155 1160 1165  
 Val Ser Pro Glu Glu Leu Val Arg Asn Ala Asn Ser Leu Ile Leu Asp  
 1170 1175 1180  
 Ala Asp Tyr Tyr Ile His Lys Thr Leu Ile Pro Pro Leu Asp Arg Phe  
 1185 1190 1195 1200  
 Phe Asn Cys Val Gly Ala Ser Val Leu Lys Trp Tyr Glu Glu Met Pro  
 1205 1210 1215  
 Lys Lys Arg Arg Tyr Glu Phe Tyr Gln Thr Val Ser Arg Ala Lys Thr  
 1220 1225 1230  
 Asn Gln Thr Thr Leu Lys Ser Tyr Ala Val Ser Asn Ser Cys Ile Val  
 1235 1240 1245  
 Cys Lys Thr Ala Gln Thr Ser Gly Leu Ser Lys Leu Cys Ala Thr Cys  
 1250 1255 1260  
 Glu Ser Asp Pro Gly His Ala Thr Phe Val Leu Asn Ser Asp Leu Arg  
 1265 1270 1275 1280  
 Tyr Arg Glu Lys Arg Leu Asp Glu Leu Asn Thr Ile Cys Ala Gln Cys  
 1285 1290 1295  
 Ser Gly Asp Phe Glu Thr Arg Cys Glu Ser Gln Asp Cys Pro Ile Tyr  
 1300 1305 1310  
 Tyr Ser Arg Val Lys Ala Val Ser Lys Ala Glu Asp Ala Ser Glu Arg  
 1315 1320 1325  
 Leu Val Glu Trp Thr Glu Gly Leu Glu Trp  
 1330 1335

&lt;210&gt; 2689

&lt;211&gt; 5046

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5046)

&lt;400&gt; 2689



## PhoenixTemp32470.tmp.txt

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aat Asn	cca Pro	tca Ser	gaa Glu 20	ttc Phe	gat Asp	cct Pro	cct Pro	cta Leu 25	cct Pro	tac Tyr	cgt Arg	gac Asp	ggg Gly 30	aat Asn	aat Asn	96
gag Glu	aaa Lys	ggc Gly 35	tac Tyr	atg Met	cct Pro	aag Lys	ggt Val 40	ccc Pro	gtc Val	att Ile	agg Arg	ata Ile 45	ttc Phe	ggg Gly	act Thr	144
aca Thr 50	gaa Glu	act Thr	ggc Gly	caa Gln	aag Lys	ata Ile 55	tgt Cys	gtc Val	cat His	gtc Val	cat His 60	ggc Gly	gcc Ala	ttt Phe	cct Pro	192
tat Tyr 65	ctc Leu	tac Tyr	gtt Val	cag Gln	tat Tyr 70	gac Asp	ggg Gly	gat Asp	ctg Leu	agc Ser 75	ccc Pro	gat Asp	tca Ser	gtg Val	cgc Arg 80	240
tct Ser	gca Ala	gca Ala	agg Arg	agt Ser 85	cta Leu	cac His	ctg Leu	tcc Ser	ata Ile 90	gac Asp	cat His	gcg Ala	ctt Leu	gca Ala 95	gtc Val	288
agc Ser	tat Tyr	cgc Arg	cgc Arg 100	aat Asn	gca Ala	cac His	gac Asp	aag Lys 105	aag Lys	aca Thr	ggt Val	ttt Phe 110	gtt Val	gcg Ala	cat His	336
atc Ile	acc Thr	tta Leu 115	gta Val	aag Lys	ggg Gly	gtc Val	cct Pro 120	ttc Phe	tac Tyr	ggc Gly	tat Tyr	cat His 125	gtc Val	gga Gly	tac Tyr	384
cga Arg 130	ttt Phe	ttt Phe	ttc Phe	aag Lys	ata Ile	tac Tyr 135	tta Leu	ctg Leu	aat Asn	ccc Pro	ata Ile 140	tat Tyr	att Ile	aca Thr	agg Arg	432
tta Leu 145	gcg Ala	gat Asp	ctg Leu	ctg Leu	ctt Leu 150	caa Gln	gga Gly	gct Ala	ggt Val	atg Met 155	aaa Lys	cgc Arg	cct Pro	att Ile	caa Gln 160	480
cca Pro	tac Tyr	gag Glu	agc Ser	cac His 165	cta Leu	cag Gln	tat Tyr	gtc Val	cca Pro 170	caa Gln	tgg Trp	atg Met	tgc Cys	gat Asp 175	tac Tyr	528
aat Asn	ctg Leu	ttt Phe	ggc Gly 180	tgc Cys	gcg Ala	ttc Phe	atg Met	aag Lys 185	tgt Cys	ggc Gly	aag Lys	gcc Ala	aaa Lys 190	ttc Phe	cg Arg	576
tct Ser	cct Pro	ata Ile 195	ccg Pro	gag Glu	tat Tyr	ttg Leu	gat Asp 200	ctc Leu	cct Pro	gat Asp	ctg Leu	tcc Ser 205	cat His	cg Arg	tgg Trp	624
cat His 210	gac Asp	cga Arg	tca Ser	att Ile	cca Pro	cct Pro 215	ggc Gly	tgg Trp	atc Ile	tta Leu	gat Asp 220	gag Glu	agt Ser	gtc Val	cta Leu	672
ccc Pro 225	aaa Lys	cag Gln	agc Ser	cat His	tgt Cys 230	cct Pro	ctg Leu	gaa Glu	gcc Ala	gac Asp 235	ggt Val	tgc Cys	gtt Val	caa Gln	gat Asp 240	720
att Ile	cta Leu	aac Asn	agg Arg	cta Leu 245	gaa Glu	att Ile	agc Ser	gag Glu	cg Arg 250	tca Ser	att Ile	cac His	cat His	gac Asp 255	ttt Phe	768
agg Arg	gag Glu	ttt Phe	tta Leu 260	aat Asn	ccc Pro	ctg Leu	aca Thr	tcg Ser 265	aat Asn	gaa Glu	aag Lys	ctt Leu	gtt Val 270	cca Pro	agt Ser	816
atg Met	gcg Ala	gga Gly 275	tta Leu	tgg Trp	gag Glu	gat Asp	gaa Glu 280	cg Lys	cg Arg	cga Arg	aag Lys 285	aaa Lys	aaa Lys	ctt Leu		864
ggg Gly	ctt Leu 290	gat Asp	gat Asp	ccg Pro	gat Asp	agc Ser 295	agc Ser	cca Pro	ttc Phe	agc Ser	act Thr 300	gaa Glu	gat Asp	ctc Leu	gtt Val	912
tca Ser 305	ttc Phe	tca Ser	tct Ser	gat Asp	cca Pro 310	cg Arg	aag Lys	gct Ala	tcg Ser	cag Gln 315	ggg Gly	gat Asp	tgg Trp	att Ile	cat His 320	960
aaa Lys	gat Asp	gaa Glu	ctt Leu	cag Gln 325	cta Leu	ttg Leu	gtg Val	cg Arg	cag Gln 330	atc Ile	act Thr	gca Ala	gag Glu	gag Glu 335	agg Arg	1008
gag Glu	cga Arg	gat Asp	aac Asn 340	aat Asn	cg Arg	gat Asp	atg Met	acg Thr 345	ctg Leu	gat Asp	gcg Ala	cat His	tta Leu 350	caa Gln	gag Glu	1056
aat Asn	cct Pro	tat Tyr 355	gcg Ala	aag Lys	gat Asp	gtc Val	aag Lys 360	act Thr	gct Ala	tta Leu	caa Gln	agc Ser 365	att Ile	gaa Glu	gat Asp	1104

## PhoenixTemp32470.tmp.txt

ttc	ttc	act	gac	gct	gat	ggt	ttg	act	aac	tta	caa	ctt	cct	tat	aat	1152
Phe	Phe	Thr	Asp	Ala	Asp	Gly	Leu	Thr	Asn	Leu	Gln	Leu	Pro	Tyr	Asn	
	370					375					380					
tcc	ggg	att	gat	tat	tca	gaa	gag	caa	gcc	gtt	gat	tat	gtc	gac	gaa	1200
Ser	Gly	Ile	Asp	Tyr	Ser	Glu	Glu	Gln	Ala	Val	Asp	Tyr	Val	Asp	Glu	
385					390					395					400	
gat	gct	gtt	cga	gcc	acc	gaa	tcg	aat	tcg	ggt	ctt	tac	tcc	tcc	gat	1248
Asp	Ala	Val	Arg	Ala	Thr	Glu	Ser	Asn	Ser	Gly	Leu	Tyr	Ser	Ser	Asp	
				405					410					415		
gag	gat	ggc	atg	att	gac	ata	ttt	tct	gat	gat	gat	tat	gac	aat	agt	1296
Glu	Asp	Gly	Met	Ile	Asp	Ile	Phe	Ser	Asp	Asp	Asp	Tyr	Asp	Asn	Ser	
			420					425					430			
gag	aac	gag	atg	gcg	caa	gtt	gac	ttg	gag	aat	gat	tta	caa	cag	gat	1344
Glu	Asn	Glu	Met	Ala	Gln	Val	Asp	Leu	Glu	Asn	Asp	Leu	Gln	Gln	Asp	
		435					440					445				
gaa	aga	tcc	aat	gct	atc	tcc	aag	acc	cat	ggg	cct	cgg	gtt	tcc	gcc	1392
Glu	Arg	Ser	Asn	Ala	Ile	Ser	Lys	Thr	His	Gly	Pro	Arg	Val	Ser	Ala	
	450					455					460					
ccg	tca	gtt	gat	ggt	ctt	gct	ggg	aac	agt	tcc	gga	cta	gaa	gga	cct	1440
Pro	Ser	Val	Asp	Gly	Leu	Ala	Gly	Asn	Ser	Ser	Gly	Leu	Glu	Gly	Pro	
465				470						475					480	
cga	agt	gat	gct	ctc	gag	gcc	agg	aat	gca	ata	agt	ttc	aaa	gct	ccc	1488
Arg	Ser	Asp	Ala	Leu	Glu	Ala	Arg	Asn	Ala	Ile	Ser	Phe	Lys	Ala	Pro	
				485					490					495		
act	caa	caa	aat	gtg	caa	tca	ggt	cga	tcg	tca	gtc	act	aga	tca	aag	1536
Thr	Gln	Gln	Asn	Val	Gln	Ser	Gly	Arg	Ser	Ser	Val	Thr	Arg	Ser	Lys	
			500					505					510			
tac	gag	gag	aat	ttg	gat	aaa	tct	tct	cag	agc	cag	gag	agt	tct	agc	1584
Tyr	Glu	Glu	Asn	Leu	Asp	Lys	Ser	Ser	Gln	Ser	Gln	Glu	Ser	Ser	Ser	
		515					520					525				
ctc	gtt	cag	ttt	tgg	acg	gcg	aat	gcg	gac	agc	agt	aac	aag	aag	atc	1632
Leu	Val	Gln	Phe	Trp	Thr	Ala	Asn	Ala	Asp	Ser	Ser	Asn	Lys	Lys	Ile	
	530					535					540					
cgc	atg	ccg	agt	cgt	gcc	acg	gaa	cca	tcc	tct	tca	gac	gga	cag	agc	1680
Arg	Met	Pro	Ser	Arg	Ala	Thr	Glu	Pro	Ser	Ser	Ser	Asp	Gly	Gln	Ser	
545					550					555					560	
att	tct	tcc	cag	aaa	acg	atc	cgc	ctc	aaa	gcc	ctt	agc	caa	tat	ggc	1728
Ile	Ser	Ser	Gln	Lys	Thr	Ile	Arg	Leu	Lys	Ala	Leu	Ser	Gln	Tyr	Gly	
				565					570					575		
aca	cta	aac	ttc	cca	gtt	gtg	aaa	gat	cct	aac	gac	ccc	atg	aca	att	1776
Thr	Leu	Asn	Phe	Pro	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Met	Thr	Ile	
			580					585					590			
cta	cgt	ttt	agc	cag	gaa	gcg	tcg	ggt	tca	aaa	gaa	ttg	atg	gac	gtg	1824
Leu	Arg	Phe	Ser	Gln	Glu	Ala	Ser	Gly	Ser	Lys	Glu	Leu	Met	Asp	Val	
		595					600					605				
gta	gcg	aag	gag	gcc	agc	agt	tct	ggg	aaa	agt	tct	agc	act	ctt	cag	1872
Val	Ala	Lys	Glu	Ala	Ser	Ser	Ser	Gly	Lys	Ser	Ser	Ser	Thr	Leu	Gln	
	610					615					620					
ccg	cgt	tcg	tcc	gac	gag	aag	gag	ctt	agt	agt	tcg	tca	gat	aac	atc	1920
Pro	Arg	Ser	Ser	Asp	Glu	Lys	Glu	Leu	Ser	Ser	Ser	Ser	Asp	Asn	Ile	
625				630						635					640	
gca	act	gac	ttt	gca	gga	ctt	ata	tct	gat	gct	ttt	aac	ata	cca	cca	1968
Ala	Thr	Asp	Phe	Ala	Gly	Leu	Ile	Ser	Asp	Ala	Phe	Asn	Ile	Pro	Pro	
				645					650					655		
agc	acc	cgc	ttg	tgc	tgc	ttt	cgg	cgg	gcc	tgt	cca	agc	ccc	aag	gag	2016
Ser	Thr	Arg	Leu	Cys	Cys	Phe	Arg	Arg	Ala	Cys	Pro	Ser	Pro	Lys	Glu	
			660					665					670			
gtt	tcc	tct	aca	ata	aac	gcc	tac	ggc	ctt	tca	gat	atc	atc	tat	caa	2064
Val	Ser	Ser	Thr	Ile	Asn	Ala	Tyr	Gly	Leu	Ser	Asp	Ile	Ile	Tyr	Gln	
			675				680					685				
aat	gca	cac	tac	agt	ata	gat	gct	gac	gtt	ccg	gat	cgc	cct	cgt	gac	2112
Asn	Ala	His	Tyr	Ser	Ile	Asp	Ala	Asp	Val	Pro	Asp	Arg	Pro	Arg	Asp	
						695					700					
tac	gca	gga	aag	gag	ttt	cag	ctg	ggc	ggt	atc	ggc	ata	cgc	tac	ctc	2160
Tyr	Ala	Gly	Lys	Glu	Phe	Gln	Leu	Gly	Gly	Ile	Gly	Ile	Arg	Tyr	Leu	
705				710					715						720	
ccc	gat	ttt	gat	cct	tct	ggt	cgt	tta	cct	gca	atg	cta	gcg	gag	gag	2208
Pro	Asp	Phe	Asp	Pro	Ser	Gly	Arg	Leu	Pro	Ala	Met	Leu	Ala	Glu	Glu	
				725					730					735		

## PhoenixTemp32470.tmp.txt

aat	ata	ggc	caa	aaa	gag	aaa	cgt	gac	tgg	caa	gaa	ctg	gac	cat	caa	2256
Asn	Ile	Gly	Gln	Lys	Glu	Lys	Arg	Asp	Trp	Gln	Glu	Leu	Asp	His	Gln	
			740					745					750			
ttg	cgg	gtt	ggg	tcc	acg	gcc	aga	ttc	tgg	gag	ttt	act	cct	gtc	cct	2304
Leu	Arg	Val	Gly	Ser	Thr	Ala	Arg	Phe	Trp	Glu	Phe	Thr	Pro	Val	Pro	
		755					760					765				
ccg	agc	cgc	tca	gag	gtc	atc	aca	tgg	tat	aac	ggc	gaa	cag	cag	aaa	2352
Pro	Ser	Arg	Ser	Glu	Val	Ile	Thr	Trp	Tyr	Asn	Gly	Glu	Gln	Gln	Lys	
		770				775					780					
tct	ttg	gca	gca	aca	acg	aaa	aca	gaa	gag	caa	tac	gag	gag	aaa	gag	2400
Ser	Leu	Ala	Ala	Thr	Thr	Lys	Thr	Glu	Glu	Gln	Tyr	Glu	Glu	Lys	Glu	
785					790					795					800	
tat	cga	gga	aag	gta	ctt	tct	cag	att	gag	ggg	cct	aca	caa	aag	aat	2448
Tyr	Arg	Gly	Lys	Val	Leu	Ser	Gln	Ile	Glu	Gly	Pro	Thr	Gln	Lys	Asn	
				805					810					815		
gaa	cat	ggc	ttc	aaa	tac	tca	caa	cat	aaa	aag	tcc	aca	agt	gtc	gag	2496
Glu	His	Gly	Phe	Lys	Tyr	Ser	Gln	His	Lys	Lys	Ser	Thr	Ser	Val	Glu	
			820					825					830			
cat	cag	act	cag	tat	atg	agc	act	atg	agc	ttg	gag	gtt	cat	gtg	aat	2544
His	Gln	Thr	Gln	Tyr	Met	Ser	Thr	Met	Ser	Leu	Glu	Val	His	Val	Asn	
		835					840					845				
acc	cgc	ggt	gtg	cta	ttg	cca	aat	cca	gag	gaa	gat	gaa	ata	gcc	gcg	2592
Thr	Arg	Gly	Val	Leu	Leu	Pro	Asn	Pro	Glu	Glu	Asp	Glu	Ile	Ala	Ala	
		850				855					860					
ttc	ttt	tgg	tgt	gtt	aac	tcc	gaa	gat	gaa	cct	cag	gag	gaa	gat	gat	2640
Phe	Phe	Trp	Cys	Val	Asn	Ser	Glu	Asp	Glu	Pro	Gln	Glu	Glu	Asp	Asp	
865					870					875					880	
tct	tta	tca	gtt	gtc	aat	atg	ggg	gtc	gta	ttc	caa	gga	gaa	gaa	gag	2688
Ser	Leu	Ser	Val	Val	Asn	Met	Gly	Val	Val	Phe	Gln	Gly	Glu	Glu	Glu	
				885					890					895		
tac	ccg	gag	tcg	aaa	atc	tca	aag	gcg	ctg	agg	ttt	gag	tgc	gag	cat	2736
Tyr	Pro	Glu	Ser	Lys	Ile	Ser	Lys	Ala	Leu	Arg	Phe	Glu	Cys	Glu	His	
			900					905					910			
gaa	tcg	aca	gaa	tta	gac	ctg	atc	aac	cgt	cta	gtc	gat	atc	gtt	cga	2784
Glu	Ser	Thr	Glu	Leu	Asp	Leu	Ile	Asn	Arg	Leu	Val	Asp	Ile	Val	Arg	
		915					920					925				
ctc	cac	gac	cct	gat	att	ata	acc	gga	tac	gaa	gtg	cat	aat	agt	tct	2832
Leu	His	Asp	Pro	Asp	Ile	Ile	Thr	Gly	Tyr	Glu	Val	His	Asn	Ser	Ser	
		930				935					940					
tgg	ggc	ttc	atc	atc	gag	aga	gcc	agg	aag	aag	tac	gac	ttc	gat	cta	2880
Trp	Gly	Phe	Ile	Ile	Glu	Arg	Ala	Arg	Lys	Lys	Tyr	Asp	Phe	Asp	Leu	
945					950					955					960	
tgt	gac	gag	tta	tcg	cga	gtg	aaa	tcg	cac	gct	cat	gga	cga	ttt	ggc	2928
Cys	Asp	Glu	Leu	Ser	Arg	Val	Lys	Ser	His	Ala	His	Gly	Arg	Phe	Gly	
				965					970					975		
aaa	gaa	gct	gat	aaa	tgg	ggc	ttc	gac	aca	tca	tcc	att	cga	att		2976
Lys	Glu	Ala	Asp	Lys	Trp	Gly	Phe	Asp	His	Thr	Ser	Ser	Ile	Arg	Ile	
			980					985					990			
act	ggg	cgg	cac	ata	atc	aac	ata	tgg	cgc	gcc	atg	aga	agt	gag	atg	3024
Thr	Gly	Arg	His	Ile	Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Ser	Glu	Met	
		995				1000						1005				
aat	ttg	ctc	cag	tat	acc	atg	gaa	aac	gtt	gtc	ttc	cat	ctc	ctg	cac	3072
Asn	Leu	Leu	Gln	Tyr	Thr	Met	Glu	Asn	Val	Val	Phe	His	Leu	Leu	His	
		1010				1015					1020					
cgg	cga	ata	cca	cat	tat	tcg	ttc	cgc	gac	ctc	acg	gca	tgg	tac	caa	3120
Arg	Arg	Ile	Pro	His	Tyr	Ser	Phe	Arg	Asp	Leu	Thr	Ala	Trp	Tyr	Gln	
		1025			1030					1035					1040	
agt	gat	aaa	ccg	cga	gac	ttc	atg	aaa	gtc	att	aac	tac	tat	acg	tca	3168
Ser	Asp	Lys	Pro	Arg	Asp	Phe	Met	Lys	Val	Ile	Asn	Tyr	Tyr	Thr	Ser	
			1045						1050					1055		
cgc	gtc	caa	atg	aac	atc	gag	att	cta	aat	gcg	aac	gaa	tta	ata	cca	3216
Arg	Val	Gln	Met	Asn	Ile	Glu	Ile	Leu	Asn	Ala	Asn	Glu	Leu	Ile	Pro	
		1060						1065					1070			
agg	acc	agt	gaa	cag	gca	agg	ctg	ctt	ggc	att	gat	ttt	tac	tct	gtg	3264
Arg	Thr	Ser	Glu	Gln	Ala	Arg	Leu	Leu	Gly	Ile	Asp	Phe	Tyr	Ser	Val	
		1075				1080						1085				
ttc	tct	cga	ggc	tct	cag	ttt	aag	gtt	gag	tct	ctg	atg	ttt	cga	att	3312
Phe	Ser	Arg	Gly	Ser	Gln	Lys	Lys	Val	Glu	Ser	Leu	Met	Phe	Arg	Ile	
		1090				1095					1100					

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gca aag ccg gag aac ttt ata ctc gtt tcg cca agc aga aag cag gtt 3360  
Ala Lys Pro Glu Asn Phe Ile Leu Val Ser Pro Arg Lys Gln Val  
1105 1110 1115 1120

ggt caa cag aat gcc ctg gag tgc ctt ccc ttg gtt atg gaa ccc cag 3408  
Gly Gln Gln Asn Ala Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln  
1125 1130 1135

agt gat ttc tac acc agt cct ctt att gtg ctg gat ttc caa tct tta 3456  
Ser Asp Phe Tyr Thr Ser Pro Leu Ile Val Leu Asp Phe Gln Ser Leu  
1140 1145 1150

tac cct agc atc atg atc gcc tac aac tat tgt tat tct acc ttt ctt 3504  
Tyr Pro Ser Ile Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu  
1155 1160 1165

ggg aga gtc cag tca tgg agg gga cgc aat aaa atg ggt ttc ttg gac 3552  
Gly Arg Val Gln Ser Trp Arg Gly Arg Asn Lys Met Gly Phe Leu Asp  
1170 1175 1180

tat aac cgg ccg cct agg ctg ctt gag cta ctc aaa gat cat atc aac 3600  
Tyr Asn Arg Pro Pro Arg Leu Leu Glu Leu Leu Lys Asp His Ile Asn  
1185 1190 1195 1200

att gcg cct aac ggc atg atc tac gca cga tcc gaa gtg cga aag tcg 3648  
Ile Ala Pro Asn Gly Met Ile Tyr Ala Arg Ser Glu Val Arg Lys Ser  
1205 1210 1215

ctc ctt gcg aaa atg ctt acg gag ata ttg gag acc cgc gta atg gta 3696  
Leu Leu Ala Lys Met Leu Thr Glu Ile Leu Glu Thr Arg Val Met Val  
1220 1225 1230

aag act gga atg aaa gtt gac aaa gat gac cga gca ttg cag cgc ttg 3744  
Lys Thr Gly Met Lys Val Asp Lys Asp Asp Arg Ala Leu Gln Arg Leu  
1235 1240 1245

ctc aac aac cga cag ctt gca ctg aaa cta atc gcg aat gtg act tac 3792  
Leu Asn Asn Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val Thr Tyr  
1250 1255 1260

gga tat acc tcg gcc tct ttt tct ggg aga atg cct tgc tct gaa atc 3840  
Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile  
1265 1270 1275 1280

gcc gac agc atc gtt caa tcg ggc cgg gaa act ttg gaa aaa gcg atc 3888  
Ala Asp Ser Ile Val Gln Ser Gly Arg Glu Thr Leu Glu Lys Ala Ile  
1285 1290 1295

gcc ttc att cat tcg gtt gag cga tgg ggt gct gaa gtg gtt tac gga 3936  
Ala Phe Ile His Ser Val Glu Arg Trp Gly Ala Glu Val Val Tyr Gly  
1300 1305 1310

gac acg gac agt ttg ttc gtc tat ctc aaa gga cgg act cga gac cag 3984  
Asp Thr Asp Ser Leu Phe Val Tyr Leu Lys Gly Arg Thr Arg Asp Gln  
1315 1320 1325

gcc ttt gac att ggc gag gaa atc gct caa gct gtt acc aac atg aac 4032  
Ala Phe Asp Ile Gly Glu Glu Ile Ala Gln Ala Val Thr Asn Met Asn  
1330 1335 1340

ccc cat ccg gta aag ctc aaa ttc gaa aaa gta tat cac cca tgt gtg 4080  
Pro His Pro Val Lys Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val  
1345 1350 1355 1360

ctg ctc gca aag aaa cga tac gtc ggt ttt aag tac gaa cac aga aac 4128  
Leu Leu Ala Lys Lys Arg Tyr Val Gly Phe Lys Tyr Glu His Arg Asn  
1365 1370 1375

cag aag gaa ccc gaa ttc gac gcg aag ggc att gaa aca gtc cgt cgc 4176  
Gln Lys Glu Pro Glu Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg  
1380 1385 1390

gat ggt acc cct gct gag cag aag att gaa gag aaa gcc ctc aag ctg 4224  
Asp Gly Thr Pro Ala Glu Gln Lys Ile Glu Glu Lys Ala Leu Lys Leu  
1395 1400 1405

ctc ttc aga aca gca gat ctg agc caa gtg aag agc tat ttt cag agc 4272  
Leu Phe Arg Thr Ala Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Ser  
1410 1415 1420

caa tgc acg aag atc atg caa gga cgg gtg tcc gtt caa gac ttc tgc 4320  
Gln Cys Thr Lys Ile Met Gln Gly Arg Val Ser Val Gln Asp Phe Cys  
1425 1430 1435 1440

ttt gct cga gca gta aag ctc gga aca tac agc gag aac gga acg ctc 4368  
Phe Ala Arg Ala Val Lys Leu Gly Thr Tyr Ser Glu Asn Gly Thr Leu  
1445 1450 1455

ccc gcc gga gct ctc att agc aca aag aag atg cta gag gac cct cgc 4416  
Pro Ala Gly Ala Leu Ile Ser Thr Lys Lys Met Leu Glu Asp Pro Arg  
1460 1465 1470

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gca gaa ccc cag tat gga gag cgc gtc cct tat gtc gtt gtc aca ggt 4464  
Ala Glu Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Val Thr Gly  
1475 1480 1485

gcg cca ggg tca cga ttg atc gac cgc tgt gta ccc ccc gaa acc ctt 4512  
Ala Pro Gly Ser Arg Leu Ile Asp Arg Cys Val Pro Pro Glu Thr Leu  
1490 1495 1500

ctc cag gat gcg caa ctt gac ctt gac gcc gag tac tat atc act aaa 4560  
Leu Gln Asp Ala Gln Leu Asp Leu Asp Ala Glu Tyr Tyr Ile Thr Lys  
1505 1510 1515 1520

aac atc att cct cct cta gag cgt atc ttc aac cta gtc gga gct aat 4608  
Asn Ile Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn  
1525 1530 1535

gtg cgt cag tgg tat gac gag atg ccg aaa gtt cat cgc att cgc cgt 4656  
Val Arg Gln Trp Tyr Asp Glu Met Pro Lys Val His Arg Ile Arg Arg  
1540 1545 1550

gta gaa ggg aca tct tct ctg gct ggt gga aaa agc agc atc cgg acc 4704  
Val Glu Gly Thr Ser Ser Leu Ala Gly Gly Lys Ser Ser Ile Arg Thr  
1555 1560 1565

ctc gaa tca tac atg aaa gct tca tcc tgc gtc gta tgt aag gca aag 4752  
Leu Glu Ser Tyr Met Lys Ala Ser Ser Cys Val Val Cys Lys Ala Lys  
1570 1575 1580

ctc tat gat gcc gaa atc cct gtc tgc tgc gat tgc gta cgg cag ccc 4800  
Leu Tyr Asp Ala Glu Ile Pro Val Cys Ser Asp Cys Val Arg Gln Pro  
1585 1590 1595 1600

cat gtc tcc ttg ctt gag ctt gtc tcc cgc cag cgt cat gcc gag cag 4848  
His Val Ser Leu Leu Glu Leu Val Ser Arg Gln Arg His Ala Glu Gln  
1605 1610 1615

aga gtt gct act ctc gag cgt atc tgc cgg tcc tgc atg gat gta ccg 4896  
Arg Val Ala Thr Leu Glu Arg Ile Cys Arg Ser Cys Met Asp Val Pro  
1620 1625 1630

ttt ggt gat gaa gtg aaa tgc gac agc ctt gac tgc cca gtt ttc tat 4944  
Phe Gly Asp Glu Val Lys Cys Asp Ser Leu Asp Cys Pro Val Phe Tyr  
1635 1640 1645

gca aga acg aga ggt ctt gcc cat tgg aga cat aca aat tcc gtg ctc 4992  
Ala Arg Thr Arg Gly Leu Ala His Trp Arg His Thr Asn Ser Val Leu  
1650 1655 1660

ggc cct gtt att aaa ctt tta cag gac aat tgc agc gat agc ctg gaa 5040  
Gly Pro Val Ile Lys Leu Leu Gln Asp Asn Cys Ser Asp Ser Leu Glu  
1665 1670 1675 1680

tgg tag 5046  
Trp

&lt;210&gt; 2690

&lt;211&gt; 1681

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 2690

Met Glu Pro Phe Gln Val Arg Leu Asn Cys Val Asp His Tyr Gln Ala  
1 5 10 15

Asn Pro Ser Glu Phe Asp Pro Pro Leu Pro Tyr Arg Asp Gly Asn Asn  
20 25 30

Glu Lys Gly Tyr Met Pro Lys Val Pro Val Ile Arg Ile Phe Gly Thr  
35 40 45

Thr Glu Thr Gly Gln Lys Ile Cys Val His Val His Gly Ala Phe Pro  
50 55 60

Tyr Leu Tyr Val Gln Tyr Asp Gly Asp Leu Ser Pro Asp Ser Val Arg  
65 70 75 80

Ser Ala Ala Arg Ser Leu His Leu Ser Ile Asp His Ala Leu Ala Val  
85 90 95

Ser Tyr Arg Arg Asn Ala His Asp Lys Thr Val Phe Val Ala His  
100 105 110

Ile Thr Leu Val Lys Gly Val Pro Phe Tyr Gly Tyr His Val Gly Tyr  
115 120 125

Arg Phe Phe Phe Lys Ile Tyr Leu Leu Asn Pro Ile Tyr Ile Thr Arg  
130 135 140

Leu Ala Asp Leu Leu Leu Gln Gly Ala Val Met Lys Arg Pro Ile Gln  
145 150 155 160

## PhoenixTemp32470.tmp.txt

Pro	Tyr	Glu	Ser	His	Leu	Gln	Tyr	Val	Pro	Gln	Trp	Met	Cys	Asp	Tyr
				165					170					175	
Asn	Leu	Phe	Gly	Cys	Ala	Phe	Met	Lys	Cys	Gly	Lys	Ala	Lys	Phe	Arg
			180					185					190		
Ser	Pro	Ile	Pro	Glu	Tyr	Leu	Asp	Leu	Pro	Asp	Leu	Ser	His	Arg	Trp
		195					200					205			
His	Asp	Arg	Ser	Ile	Pro	Pro	Gly	Trp	Ile	Leu	Asp	Glu	Ser	Val	Leu
	210					215					220				
Pro	Lys	Gln	Ser	His	Cys	Pro	Leu	Glu	Ala	Asp	Val	Cys	Val	Gln	Asp
225					230					235					240
Ile	Leu	Asn	Arg	Leu	Glu	Ile	Ser	Glu	Arg	Ser	Ile	His	His	Asp	Phe
				245					250					255	
Arg	Glu	Phe	Leu	Asn	Pro	Leu	Thr	Ser	Asn	Glu	Lys	Leu	Val	Pro	Ser
			260					265					270		
Met	Ala	Gly	Leu	Trp	Glu	Asp	Glu	Lys	Arg	Arg	Arg	Lys	Lys	Lys	Leu
		275					280					285			
Gly	Leu	Asp	Asp	Pro	Asp	Ser	Ser	Pro	Phe	Ser	Thr	Glu	Asp	Leu	Val
	290					295					300				
Ser	Phe	Ser	Ser	Asp	Pro	Arg	Lys	Ala	Ser	Gln	Gly	Asp	Trp	Ile	His
305					310					315					320
Lys	Asp	Glu	Leu	Gln	Leu	Leu	Val	Arg	Gln	Ile	Thr	Ala	Glu	Glu	Arg
				325					330					335	
Glu	Arg	Asp	Asn	Asn	Arg	Asp	Met	Thr	Leu	Asp	Ala	His	Leu	Gln	Glu
			340					345					350		
Asn	Pro	Tyr	Ala	Lys	Asp	Val	Lys	Thr	Ala	Leu	Gln	Ser	Ile	Glu	Asp
		355					360					365			
Phe	Phe	Thr	Asp	Ala	Asp	Gly	Leu	Thr	Asn	Leu	Gln	Leu	Pro	Tyr	Asn
	370					375					380				
Ser	Gly	Ile	Asp	Tyr	Ser	Glu	Glu	Gln	Ala	Val	Asp	Tyr	Val	Asp	Glu
385					390					395					400
Asp	Ala	Val	Arg	Ala	Thr	Glu	Ser	Asn	Ser	Gly	Leu	Tyr	Ser	Ser	Asp
				405					410					415	
Glu	Asp	Gly	Met	Ile	Asp	Ile	Phe	Ser	Asp	Asp	Asp	Tyr	Asp	Asn	Ser
			420					425					430		
Glu	Asn	Glu	Met	Ala	Gln	Val	Asp	Leu	Glu	Asn	Asp	Leu	Gln	Gln	Asp
		435					440					445			
Glu	Arg	Ser	Asn	Ala	Ile	Ser	Lys	Thr	His	Gly	Pro	Arg	Val	Ser	Ala
	450					455					460				
Pro	Ser	Val	Asp	Gly	Leu	Ala	Gly	Asn	Ser	Ser	Gly	Leu	Glu	Gly	Pro
465					470					475					480
Arg	Ser	Asp	Ala	Leu	Glu	Ala	Arg	Asn	Ala	Ile	Ser	Phe	Lys	Ala	Pro
				485					490					495	
Thr	Gln	Gln	Asn	Val	Gln	Ser	Gly	Arg	Ser	Ser	Val	Thr	Arg	Ser	Lys
			500					505					510		
Tyr	Glu	Glu	Asn	Leu	Asp	Lys	Ser	Ser	Gln	Ser	Gln	Glu	Ser	Ser	Ser
		515					520					525			
Leu	Val	Gln	Phe	Trp	Thr	Ala	Asn	Ala	Asp	Ser	Ser	Asn	Lys	Lys	Ile
	530					535					540				
Arg	Met	Pro	Ser	Arg	Ala	Thr	Glu	Pro	Ser	Ser	Ser	Asp	Gly	Gln	Ser
545					550					555					560
Ile	Ser	Ser	Gln	Lys	Thr	Ile	Arg	Leu	Lys	Ala	Leu	Ser	Gln	Tyr	Gly
				565					570					575	
Thr	Leu	Asn	Phe	Pro	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Met	Thr	Ile
			580					585					590		
Leu	Arg	Phe	Ser	Gln	Glu	Ala	Ser	Gly	Ser	Lys	Glu	Leu	Met	Asp	Val
		595					600					605			
Val	Ala	Lys	Glu	Ala	Ser	Ser	Ser	Gly	Lys	Ser	Ser	Ser	Thr	Leu	Gln
	610					615					620				
Pro	Arg	Ser	Ser	Asp	Glu	Lys	Glu	Leu	Ser	Ser	Ser	Ser	Asp	Asn	Ile
625					630					635					640
Ala	Thr	Asp	Phe	Ala	Gly	Leu	Ile	Ser	Asp	Ala	Phe	Asn	Ile	Pro	Pro
				645					650					655	
Ser	Thr	Arg	Leu	Cys	Cys	Phe	Arg	Arg	Ala	Cys	Pro	Ser	Pro	Lys	Glu
			660					665					670		
Val	Ser	Ser	Thr	Ile	Asn	Ala	Tyr	Gly	Leu	Ser	Asp	Ile	Ile	Tyr	Gln
		675					680					685			
Asn	Ala	His	Tyr	Ser	Ile	Asp	Ala	Asp	Val	Pro	Asp	Arg	Pro	Arg	Asp
	690					695					700				
Tyr	Ala	Gly	Lys	Glu	Phe	Gln	Leu	Gly	Gly	Ile	Gly	Ile	Arg	Tyr	Leu

## PhoenixTemp32470.tmp.txt

```

705          710          715          720
Pro Asp Phe Asp Pro Ser Gly Arg Leu Pro Ala Met Leu Ala Glu Glu
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Asn Ile Gly Gln Lys Glu Lys Arg Asp Trp Gln Glu Leu Asp His Gln
740
Leu Arg Val Gly Ser Thr Ala Arg Phe Trp Glu Phe Thr Pro Val Pro
755
Pro Ser Arg Ser Glu Val Ile Thr Trp Tyr Asn Gly Glu Gln Gln Lys
770
Ser Leu Ala Ala Thr Thr Lys Thr Glu Glu Gln Tyr Glu Glu Lys Glu
785
Tyr Arg Gly Lys Val Leu Ser Gln Ile Glu Gly Pro Thr Gln Lys Asn
805
Glu His Gly Phe Lys Tyr Ser Gln His Lys Lys Ser Thr Ser Val Glu
820
His Gln Thr Gln Tyr Met Ser Thr Met Ser Leu Glu Val His Val Asn
835
Thr Arg Gly Val Leu Leu Pro Asn Pro Glu Glu Asp Glu Ile Ala Ala
850
Phe Phe Trp Cys Val Asn Ser Glu Asp Glu Pro Gln Glu Glu Asp Asp
865
Ser Leu Ser Val Val Asn Met Gly Val Val Phe Gln Gly Glu Glu Glu
885
Tyr Pro Glu Ser Lys Ile Ser Lys Ala Leu Arg Phe Glu Cys Glu His
900
Glu Ser Thr Glu Leu Asp Leu Ile Asn Arg Leu Val Asp Ile Val Arg
915
Leu His Asp Pro Asp Ile Ile Thr Gly Tyr Glu Val His Asn Ser Ser
930
Trp Gly Phe Ile Ile Glu Arg Ala Arg Lys Lys Tyr Asp Phe Asp Leu
945
Cys Asp Glu Leu Ser Arg Val Lys Ser His Ala His Gly Arg Phe Gly
965
Lys Glu Ala Asp Lys Trp Gly Phe Asp His Thr Ser Ser Ile Arg Ile
980
Thr Gly Arg His Ile Ile Asn Ile Trp Arg Ala Met Arg Ser Glu Met
995
Asn Leu Leu Gln Tyr Thr Met Glu Asn Val Val Phe His Leu Leu His
1010
Arg Arg Ile Pro His Tyr Ser Phe Arg Asp Leu Thr Ala Trp Tyr Gln
1025
Ser Asp Lys Pro Arg Asp Phe Met Lys Val Ile Asn Tyr Tyr Thr Ser
1045
Arg Val Gln Met Asn Ile Glu Ile Leu Asn Ala Asn Glu Leu Ile Pro
1060
Arg Thr Ser Glu Gln Ala Arg Leu Glu Gly Ile Asp Phe Tyr Ser Val
1075
Phe Ser Arg Gly Ser Gln Phe Lys Val Glu Ser Leu Met Phe Arg Ile
1090
Ala Lys Pro Glu Asn Phe Ile Leu Val Ser Pro Ser Arg Lys Gln Val
1105
Gly Gln Gln Asn Ala Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln
1125
Ser Asp Phe Tyr Thr Ser Pro Leu Ile Val Leu Asp Phe Gln Ser Leu
1140
Tyr Pro Ser Ile Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu
1155
Gly Arg Val Gln Ser Trp Arg Gly Arg Asn Lys Met Gly Phe Leu Asp
1170
Tyr Asn Arg Pro Pro Arg Leu Leu Glu Leu Leu Lys Asp His Ile Asn
1185
Ile Ala Pro Asn Gly Met Ile Tyr Ala Arg Ser Glu Val Arg Lys Ser
1205
Leu Leu Ala Lys Met Leu Thr Glu Ile Leu Glu Thr Arg Val Met Val
1220
Lys Thr Gly Met Lys Val Asp Lys Asp Asp Arg Ala Leu Gln Arg Leu
1235
Leu Asn Asn Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val Thr Tyr
1250
1255
1260

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## PhoenixTemp32470.tmp.txt

Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile  
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 Ala Asp Ser Ile Val Gln Ser Gly Arg Glu Thr Leu Glu Lys Ala Ile  
 1285 1290 1295  
 Ala Phe Ile His Ser Val Glu Arg Trp Gly Ala Glu Val Val Tyr Gly  
 1300 1305 1310  
 Asp Thr Asp Ser Leu Phe Val Tyr Leu Lys Gly Arg Thr Arg Asp Gln  
 1315 1320 1325  
 Ala Phe Asp Ile Gly Glu Glu Ile Ala Gln Ala Val Thr Asn Met Asn  
 1330 1335 1340  
 Pro His Pro Val Lys Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val  
 1345 1350 1355 1360  
 Leu Leu Ala Lys Lys Arg Tyr Val Gly Phe Lys Tyr Glu His Arg Asn  
 1365 1370 1375  
 Gln Lys Glu Pro Glu Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg  
 1380 1385 1390  
 Asp Gly Thr Pro Ala Glu Gln Lys Ile Glu Glu Lys Ala Leu Lys Leu  
 1395 1400 1405  
 Leu Phe Arg Thr Ala Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Ser  
 1410 1415 1420  
 Gln Cys Thr Lys Ile Met Gln Gly Arg Val Ser Val Gln Asp Phe Cys  
 1425 1430 1435 1440  
 Phe Ala Arg Ala Val Lys Leu Gly Thr Tyr Ser Glu Asn Gly Thr Leu  
 1445 1450 1455  
 Pro Ala Gly Ala Leu Ile Ser Thr Lys Lys Met Leu Glu Asp Pro Arg  
 1460 1465 1470  
 Ala Glu Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Thr Gly  
 1475 1480 1485  
 Ala Pro Gly Ser Arg Leu Ile Asp Arg Cys Val Pro Pro Glu Thr Leu  
 1490 1495 1500  
 Leu Gln Asp Ala Gln Leu Asp Leu Asp Ala Glu Tyr Tyr Ile Thr Lys  
 1505 1510 1515 1520  
 Asn Ile Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn  
 1525 1530 1535  
 Val Arg Gln Trp Tyr Asp Glu Met Pro Lys Val His Arg Ile Arg Arg  
 1540 1545 1550  
 Val Glu Gly Thr Ser Ser Leu Ala Gly Gly Lys Ser Ser Ile Arg Thr  
 1555 1560 1565  
 Leu Glu Ser Tyr Met Lys Ala Ser Ser Cys Val Val Cys Lys Ala Lys  
 1570 1575 1580  
 Leu Tyr Asp Ala Glu Ile Pro Val Cys Ser Asp Cys Val Arg Gln Pro  
 1585 1590 1595 1600  
 His Val Ser Leu Leu Glu Leu Val Ser Arg Gln Arg His Ala Glu Gln  
 1605 1610 1615  
 Arg Val Ala Thr Leu Glu Arg Ile Cys Arg Ser Cys Met Asp Val Pro  
 1620 1625 1630  
 Phe Gly Asp Glu Val Lys Cys Asp Ser Leu Asp Cys Pro Val Phe Tyr  
 1635 1640 1645  
 Ala Arg Thr Arg Gly Leu Ala His Trp Arg His Thr Asn Ser Val Leu  
 1650 1655 1660  
 Gly Pro Val Ile Lys Leu Leu Gln Asp Asn Cys Ser Asp Ser Leu Glu  
 1665 1670 1675 1680  
 Trp

&lt;210&gt; 2691

&lt;211&gt; 5037

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5037)

&lt;400&gt; 2691

atg aca tcg ttg gaa agt gcg gaa cag agc gat cct tct gcg caa cag  
 Met Thr Ser Leu Glu Ser Ala Glu Gln Ser Asp Pro Ser Ala Gln Gln  
 1 5 10 15  
 acc gcg caa cag acc gaa aag atc gac tcg gct tca gct tcg tcc gac  
 Page 2409

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96



Thr	Ala	Gln	Gln	Thr	Glu	Lys	Ile	Asp	Ser	Ala	Ser	Ala	Ser	Ser	Asp	
cca	ttc	ttt	cg	gtg	cg	ctc	atc	aat	att	gat	cac	atc	ctc	aca	gtg	144
Pro	Phe	Phe	Arg	Val	Arg	Leu	Ile	Asn	Ile	Asp	His	Ile	Leu	Thr	Val	
		35					40					45				
ccg	acg	ccg	ttt	gac	cg	acc	tca	tgc	gct	ttc	aat	gcc	gaa	gga	cag	192
Pro	Thr	Pro	Phe	Asp	Arg	Thr	Ser	Cys	Ala	Phe	Asn	Ala	Glu	Gly	Gln	
	50					55					60					
ccg	ctt	cg	aag	gtg	cct	gtc	ctc	cg	cta	ttt	ggc	gct	act	cct	gca	240
Pro	Leu	Arg	Lys	Val	Pro	Val	Leu	Arg	Leu	Phe	Gly	Ala	Thr	Pro	Ala	
	65				70					75					80	
ggg	cag	cg	gtc	tgc	ctg	tac	atc	cac	aat	gtc	tat	cca	tat	tgt	tat	288
Gly	Gln	Arg	Val	Cys	Leu	Tyr	Ile	His	Asn	Val	Tyr	Pro	Tyr	Cys	Tyr	
				85					90					95		
atc	caa	tac	aag	ggc	tcc	ctc	gat	ccc	gac	aat	gtc	ctc	aga	tac	atc	336
Ile	Gln	Tyr	Lys	Gly	Ser	Leu	Asp	Pro	Asp	Asn	Val	Leu	Arg	Tyr	Ile	
			100					105					110			
cat	cg	ctg	ggg	cg	gg	ctg	aat	gct	gcc	atg	gct	gca	tcg	ctc	cg	384
His	Arg	Leu	Gly	Arg	Gly	Leu	Asn	Ala	Ala	Met	Ala	Ala	Ser	Leu	Arg	
		115					120					125				
cg	aat	ctg	cac	gac	acg	gac	gcc	aac	cag	ttc	att	gcc	gct	att	cac	432
Arg	Asn	Leu	His	Asp	Thr	Asp	Ala	Asn	Gln	Phe	Ile	Ala	Ala	Ile	His	
	130					135					140					
ctc	tgc	aaa	ggg	gtc	aac	ttc	tac	ggc	tac	cat	gtc	gga	tac	tcg	tac	480
Leu	Cys	Lys	Gly	Val	Asn	Phe	Tyr	Gly	Tyr	His	Val	Gly	Tyr	Ser	Tyr	
	145				150					155					160	
tat	ctc	aag	att	tcg	ttt	gtg	gat	cca	gcg	cat	aat	tat	cg	ata	gca	528
Tyr	Leu	Lys	Ile	Ser	Phe	Val	Asp	Pro	Ala	His	Asn	Tyr	Arg	Ile	Ala	
				165					170					175		
gcc	ata	ctt	gag	tcg	gga	ggg	gtc	atg	aag	acg	gtc	ttt	cag	cct	ttt	576
Ala	Ile	Leu	Glu	Ser	Gly	Gly	Val	Met	Lys	Thr	Val	Phe	Gln	Pro	Phe	
			180					185					190			
gag	att	cac	att	cg	tac	cag	ctt	caa	ttc	atg	ctc	gat	tat	aac	atc	624
Glu	Ile	His	Ile	Arg	Tyr	Gln	Leu	Gln	Phe	Met	Leu	Asp	Tyr	Asn	Ile	
		195					200					205				
ttc	ggg	tgc	gac	tat	gtc	gac	ttg	gac	gac	atc	cg	ttt	cga	ctt	ccg	672
Phe	Gly	Cys	Asp	Tyr	Val	Asp	Leu	Asp	Asp	Ile	Arg	Phe	Arg	Leu	Pro	
	210					215					220					
att	cca	gaa	gga	aat	ctg	gtt	gcc	aac	gat	gac	ttg	tct	ccc	ctc	gac	720
Ile	Pro	Glu	Gly	Asn	Leu	Val	Ala	Asn	Asp	Asp	Leu	Ser	Pro	Leu	Asp	
	225				230					235				240		
tct	cg	agc	aag	att	tgg	aat	cgt	aac	tcg	ata	cct	tat	gcc	cac	gtg	768
Ser	Arg	Ser	Lys	Ile	Trp	Asn	Arg	Asn	Ser	Ile	Pro	Tyr	Ala	His	Val	
				245					250					255		
cag	gcc	cca	gac	gta	cat	cgt	ggc	tca	tac	tgc	gag	ctc	gaa	gcc	gat	816
Gln	Ala	Pro	Asp	Val	His	Arg	Gly	Ser	Tyr	Cys	Glu	Leu	Glu	Ala	Asp	
			260					265					270			
gcg	agt	gct	ccg	tgg	atc	atc	aat	cga	cg	aga	ttt	aaa	cag	aga	gac	864
Ala	Ser	Ala	Pro	Trp	Ile	Ile	Asn	Arg	Arg	Arg	Phe	Lys	Gln	Arg	Asp	
		275					280					285				
att	cac	agc	aac	ttt	gat	gag	act	tct	acc	act	cca	tcc	gac	caa	gat	912
Ile	His	Ser	Asn	Phe	Asp	Glu	Thr	Ser	Thr	Thr	Pro	Ser	Asp	Gln	Asp	
		290				295					300					
atc	ctt	gtt	cca	agc	ttg	tca	gga	ctc	tgg	gag	gat	gaa	atg	aag	cga	960
Ile	Leu	Val	Pro	Ser	Leu	Ser	Gly	Leu	Trp	Glu	Asp	Glu	Met	Lys	Arg	
	305				310					315					320	
cg	aaa	gca	gct	gga	ttg	ccg	cct	tcg	ata	ccg	aga	gaa	gat	cca	gct	1008
Arg	Lys	Ala	Ala	Gly	Leu	Pro	Pro	Ser	Ile	Pro	Arg	Glu	Asp	Pro	Ala	
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cg	gat	cct	cg	cta	tat	gct	agc	gga	gat	tct	cca	aca	tgg	atg	tca	1056
Arg	Asp	Pro	Arg	Leu	Tyr	Ala	Ser	Gly	Asp	Ser	Pro	Thr	Trp	Met	Ser	
			340					345					350			
gag	gaa	cg	atg	cga	ctt	cta	ctc	gaa	aaa	cg	ctg	atc	gag	gag	aag	1104
Glu	Glu	Arg	Met	Arg	Leu	Leu	Leu	Glu	Lys	Arg	Leu	Ile	Glu	Glu	Lys	
		355					360					365				
caa	aag	acg	cta	cca	cg	gag	cg	aat	gct	agc	cac	ttt	acc	gat	cg	1152
Gln	Lys	Thr	Leu	Pro	Arg	Glu	Arg	Asn	Ala	Ser	His	Phe	Thr	Asp	Arg	
		370				375					380					
ccc	ggg	ctg	gat	gaa	tat	atc	atg	acc	aca	ttt	gac	gct	gtg	gag	gtg	1200

## PhoenixTemp32470.tmp.txt

Pro 385	Gly	Leu	Asp	Glu	Tyr 390	Ile	Met	Thr	Thr	Phe 395	Asp	Ala	Val	Glu	Val 400	
ttt	cac	cca	tat	caa	gat	cag	att	cac	gct	gct	gat	cct	tac	tct	caa	1248
Phe	His	Pro	Tyr	Gln 405	Asp	Gln	Ile	His	Ala 410	Ala	Asp	Pro	Tyr	Ser 415	Gln	
cgc	aca	ggc	ccc	tct	gcc	tct	tct	agg	ctg	tac	gac	ttg	cag	cac	gcc	1296
Arg	Thr	Gly	Pro 420	Ser	Ala	Ser	Ser	Arg 425	Leu	Tyr	Asp	Leu	Gln 430	His	Ala	
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Ile	Ser	Gln 435	Thr	Gln	Gln	Ser	Pro 440	Pro	Asp	Gln	Met	Glu 445	Pro	Thr	Gln	
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Leu	Thr 450	Gln	Gln	Leu	Lys	Glu 455	Glu	Glu	Asp	Asp	Phe 460	Asp	Asp	Glu	Phe	
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Phe 465	Gln	Ser	Gln	Asp	Phe 470	Asn	His	Arg	Leu	Gln 475	Ser	Ala	Glu	Lys	Glu 480	
gcg	atg	tca	gcc	aac	caa	gat	cca	cca	tcg	gat	caa	gag	gat	gac	gcc	1488
Ala	Met	Ser	Ala	Asn 485	Gln	Asp	Pro	Pro	Ser 490	Asp	Gln	Glu	Asp	Asp 495	Ala	
aac	gat	gcc	gat	cag	gtc	gag	ccg	gca	tgg	gcg	cag	cct	gat	ggc	cca	1536
Asn	Asp	Ala	Asp 500	Gln	Val	Glu	Pro	Ala 505	Trp	Ala	Gln	Pro	Asp 510	Gly	Pro	
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Gly	Thr	Pro 515	Cys	Lys	Trp	His	Arg 520	Thr	Glu	Ser	Ser	His 525	Ser	Asn	Ser	
aac	acc	gca	tct	agt	agc	acc	ttc	agc	aaa	agc	cct	tcc	tct	acg	ccc	1632
Asn	Thr 530	Ala	Ser	Ser	Ser	Thr 535	Phe	Ser	Lys	Ser	Pro 540	Ser	Ser	Thr	Pro	
aaa	agg	cgt	cat	cac	gcc	gat	gtt	ctc	gga	agc	gat	aag	aca	acg	tca	1680
Lys 545	Arg	Arg	His	His	Ala 550	Asp	Val	Leu	Gly	Ser 555	Asp	Lys	Thr	Thr	Ser 560	
aca	gca	agc	cct	tcg	tcc	aag	cca	tca	aaa	gag	ggt	cac	gaa	gac	agc	1728
Thr	Ala	Ser	Pro	Ser 565	Ser	Lys	Pro	Ser	Lys 570	Glu	Val	His	Glu	Asp 575	Ser	
gta	cgc	aga	ttc	aaa	aaa	gcc	aag	cat	gag	cat	tcg	acg	gcc	agt	acg	1776
Val	Arg	Arg	Phe 580	Lys	Lys	Ala	Lys	His 585	Glu	His	Ser	Thr	Ala 590	Ser	Thr	
aat	gca	act	agt	gga	agc	cgt	tct	ggt	cat	gcg	ata	aac	tct	gtc	cga	1824
Asn	Ala	Thr 595	Ser	Gly	Ser	Arg	Ser 600	Gly	His	Ala	Ile	Asn 605	Ser	Val	Arg	
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Ser	Thr 610	Lys	Val	Arg	Phe 615	Val	Glu	Ala	Gly	Ser	Ser 620	Ala	Pro	Ala	Ala	
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Arg	Leu	Arg	Gln	Gln	Glu 630	Thr	Ser	Ser	Leu	Gln 635	His	Ser	Ser	Ala	Ser 640	
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Arg	Thr	Arg	Phe 645	Leu	Thr	Phe	His	Glu	Ser 650	Ala	Pro	Ser	Leu	Arg 655	Asp	
gtc	gtc	ggg	acc	ttt	ccg	ctc	ttc	tcc	atc	gcc	cgc	caa	atc	cat	ccc	2016
Val	Val	Gly 660	Thr	Phe	Pro	Leu	Phe	Ser 665	Ile	Ala	Arg	Gln 670	Ile	His	Pro	
gag	cct	ttt	ttc	agc	aac	cca	agt	gat	ctg	cca	gca	cgt	cca	cga	gaa	2064
Glu	Pro	Phe 675	Phe	Ser	Asn	Pro	Ser 680	Asp	Leu	Pro	Ala	Arg 685	Pro	Arg	Glu	
tac	gcc	ggc	cgt	atg	ttc	cat	ttt	caa	tct	cat	tcg	ttg	cct	tac	cta	2112
Tyr	Ala 690	Gly	Arg	Met	Phe 695	His	Phe	Gln	Ser	His	Ser 700	Leu	Pro	Tyr	Leu	
cgc	tcg	ttc	gat	cat	tgg	gac	cag	aaa	agc	gaa	cat	ggt	gcg	tcc	act	2160
Arg	Ser	Phe	Asp	His	Trp 710	Asp	Gln	Lys	Ser	Glu 715	His	Val	Ala	Ser	Thr 720	
cag	aag	gac	aag	cca	ccg	aaa	cgc	ctc	tac	tgg	cag	ttc	gga	cca	cca	2208
Gln	Lys	Asp	Lys	Pro 725	Pro	Lys	Arg	Leu	Tyr 730	Trp	Gln	Phe	Gly	Pro	Pro	
cct	cca	acg	ttg	ctc	gaa	gct	cgg	gcg	tgg	cgg	caa	aag	gag	aag	gtg	2256
Pro	Pro	Thr	Leu 740	Leu	Glu	Ala	Arg	Ala 745	Trp	Arg	Gln	Lys	Glu 750	Lys	Val	
att	gaa	agg	cag	cgt	tca	aaa	cga	cga	cga	cga	ctt	ctc	tct	cag		2304

PhoenixTemp32470.tmp.txt

Ile	Glu	Arg	Gln	Arg	Ser	Lys	Arg	Arg	Arg	Ala	Arg	Leu	Leu	Ser	Gln		
att	gag	agg	ctg	acc	cag	gcc	aat	gac	ttt	gga	ttc	aag	atc	tcg	cag	2352	
Ile	Glu	Arg	Leu	Thr	Gln	Ala	Asn	Asp	Phe	Gly	Phe	Lys	Ile	Ser	Gln		
	770					775					780						
cac	aag	gcg	act	gcg	ctg	gtg	aag	cgg	gac	aaa	cag	cac	atg	acg	acg	2400	
His	Lys	Ala	Thr	Ala	Leu	Val	Lys	Arg	Asp	Lys	Gln	His	Met	Thr	Thr		
	785					790					795				800		
ctc	gct	gtt	gag	gta	atg	act	act	acg	cgt	gac	agc	ctc	ttc	cca	gac	2448	
Leu	Ala	Val	Glu	Val	Met	Thr	Thr	Thr	Arg	Asp	Ser	Leu	Phe	Pro	Asp		
				805					810					815			
ccg	gcc	ttg	gac	gcc	ata	cag	tcc	atc	gtc	tac	tcc	ttc	cag	aac	gag	2496	
Pro	Ala	Leu	Asp	Ala	Ile	Gln	Ser	Ile	Val	Tyr	Ser	Phe	Gln	Asn	Glu		
				820				825					830				
gac	gaa	aat	ttg	cag	gac	act	ggc	agt	cga	cct	gat	ctc	cgc	acc	ggc	2544	
Asp	Glu	Asn	Leu	Gln	Asp	Thr	Gly	Ser	Arg	Pro	Asp	Leu	Arg	Thr	Gly		
		835					840					845					
ctc	atc	atc	gtc	agt	ggg	gac	gaa	atc	aac	ttc	gac	cgt	ctt	ggc	ctg	2592	
Leu	Ile	Ile	Val	Ser	Gly	Asp	Glu	Ile	Asn	Phe	Asp	Arg	Leu	Gly	Leu		
	850					855					860						
tcg	cac	ctg	gct	gtg	gag	gtg	gtt	gaa	gat	gag	ctg	gag	cta	ttc	aat	2640	
Ser	His	Leu	Ala	Val	Glu	Val	Val	Glu	Asp	Glu	Leu	Glu	Leu	Phe	Asn		
	865				870					875					880		
act	ctg	atc	gac	ctt	gtg	cgc	gcg	ttt	gat	ccg	gag	att	ctc	gtt	ggc	2688	
Thr	Leu	Ile	Asp	Leu	Val	Arg	Ala	Phe	Asp	Pro	Glu	Ile	Leu	Val	Gly		
				885					890					895			
tgg	gaa	att	cat	tcc	tcc	tcg	tgg	ggc	tac	atc	gtt	gaa	cgc	gcc	agc	2736	
Trp	Glu	Ile	His	Ser	Ser	Ser	Trp	Gly	Tyr	Ile	Val	Glu	Arg	Ala	Ser		
			900					905					910				
aaa	gag	tac	gac	tat	gat	ctc	gtc	cct	cag	atc	ggc	cga	gca	atc	atc	2784	
Lys	Glu	Tyr	Asp	Tyr	Asp	Leu	Val	Pro	Gln	Ile	Gly	Arg	Ala	Ile	Ile		
		915					920					925					
cac	aat	acc	ggg	cgg	gcg	ggg	ggc	aag	tcg	gac	aat	tat	gcg	tat	act	2832	
His	Asn	Thr	Gly	Arg	Ala	Gly	Gly	Lys	Ser	Asp	Asn	Tyr	Ala	Tyr	Thr		
		930				935					940						
caa	tcg	tcc	gcc	ctt	cgc	ttt	act	ggc	cga	cac	acg	ctc	aat	ctc	tgg	2880	
Gln	Ser	Ser	Ala	Leu	Arg	Phe	Thr	Gly	Arg	His	Thr	Leu	Asn	Leu	Trp		
	945				950					955					960		
cgt	ctc	atg	aag	gga	gag	ctt	aca	ctg	aat	ctg	tac	acg	ctt	gaa	aat	2928	
Arg	Leu	Met	Lys	Gly	Glu	Leu	Thr	Leu	Asn	Leu	Tyr	Thr	Leu	Glu	Asn		
				965					970					975			
gtc	tgt	tac	cac	cta	ctt	cac	cgt	cgt	ata	cca	aaa	tac	tcg	cat	cag	2976	
Val	Cys	Tyr	His	Leu	Leu	His	Arg	Arg	Ile	Pro	Lys	Tyr	Ser	His	Gln		
			980					985					990				
acg	ttg	acg	cag	tgg	tac	aag	tcc	gga	cgc	gcc	gag	ctg	atc	aga	aga	3024	
Thr	Leu	Thr	Gln	Trp	Tyr	Lys	Ser	Gly	Arg	Ala	Glu	Leu	Ile	Arg	Arg		
			995			1000						1005					
gca	ctg	ctg	tac	tat	gtc	gac	atg	gtt	gaa	ttg	gag	ctt	gag	att	atc	3072	
Ala	Leu	Leu	Tyr	Tyr	Val	Asp	Met	Val	Glu	Leu	Glu	Leu	Glu	Ile	Ile		
					1010		1015				1020						
gcg	gaa	tcg	gag	ttc	gtc	ctg	cga	acc	gcc	gaa	ttc	gcg	agg	atc	tat	3120	
Ala	Glu	Ser	Glu	Phe	Val	Leu	Arg	Thr	Ala	Glu	Phe	Ala	Arg	Ile	Tyr		
	1025				1030				1035					1040			
ggg	atc	gac	ttc	ttt	tcg	gtg	ata	tcc	aga	ggc	agt	cag	ttc	aag	gtg	3168	
Gly	Ile	Asp	Phe	Phe	Ser	Val	Ile	Ser	Arg	Gly	Ser	Gln	Phe	Lys	Val		
				1045					1050				1055				
gag	agt	atc	atg	ctt	cgc	atc	gca	aaa	cca	gaa	aac	ttt	gtg	ctc	atc	3216	
Glu	Ser	Ile	Met	Leu	Arg	Ile	Ala	Lys	Pro	Glu	Asn	Phe	Val	Leu	Ile		
			1060				1065					1070					
tca	ccg	agc	cga	gcg	cag	gtg	ggc	aaa	caa	aat	gca	gcg	gaa	tgt	ctt	3264	
Ser	Pro	Ser	Arg	Ala	Gln	Val	Gly	Lys	Gln	Asn	Ala	Ala	Glu	Cys	Leu		
		1075				1080						1085					
ccg	ctc	atc	atg	gaa	ccc	cag	tcg	cgc	ttc	tac	aag	ggg	ccg	ttg	atc	3312	
Pro	Leu	Ile	Met	Glu	Pro	Gln	Ser	Ala	Phe	Tyr	Lys	Gly	Pro	Leu	Ile		
		1090			1095				1100								
gta	ctg	gat	ttc	cag	tcg	ctc	tat	cct	tcg	atc	atg	atc	gcg	tac	aac	3360	
Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Ile	Met	Ile	Ala	Tyr	Asn		
				1110					1115					1120			
ctg	tgc	tac	tcg	acc	tgt	ctc	ggc	cgt	gtc	gca	ggc	ttc	aaa	ggg	act	3408	

## PhoenixTemp32470.tmp.txt

Leu	Cys	Tyr	Ser	Thr	Cys	Leu	Gly	Arg	Val	Ala	Gly	Phe	Lys	Gly	Thr		
agc	aaa	ttt	ggt	gtc	acc	gaa	tac	gcg	cca	ccc	aaa	ggc	ctg	ctg	agt		3456
Ser	Lys	Phe	Gly	Val	Thr	Glu	Tyr	Ala	Pro	Pro	Lys	Gly	Leu	Leu	Ser		
			1140				1145					1150					
ctg	tta	caa	gac	gac	gtt	aac	atc	tct	agc	aat	gga	ttg	cta	ttt	gtc		3504
Leu	Leu	Gln	Asp	Asp	Val	Asn	Ile	Ser	Ser	Asn	Gly	Leu	Leu	Phe	Val		
			1155				1160					1165					
aag	ccg	agc	gtg	cgc	aag	tcg	ctg	ctg	gct	aag	atg	ctt	tcc	gag	atc		3552
Lys	Pro	Ser	Val	Arg	Lys	Ser	Leu	Leu	Ala	Lys	Met	Leu	Ser	Glu	Ile		
			1170				1175				1180						
ctg	gac	acg	cgt	gtc	atg	gtc	aaa	agc	tcg	atg	aaa	gct	acc	aaa	tcg		3600
Leu	Asp	Thr	Arg	Val	Met	Val	Lys	Ser	Ser	Met	Lys	Ala	Thr	Lys	Ser		
			1185				1190				1195				1200		
gac	aag	tcg	ttc	cag	cgc	att	cag	aac	gcg	agg	caa	atc	tcg	ctc	aaa		3648
Asp	Lys	Ser	Phe	Gln	Arg	Ile	Gln	Asn	Ala	Arg	Gln	Ile	Ser	Leu	Lys		
			1205				1210					1215					
ctg	ctt	gct	aat	gtg	acg	tat	ggc	tac	aca	tct	gcg	agc	ttt	tct	ggc		3696
Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser	Ala	Ser	Phe	Ser	Gly		
			1220				1225					1230					
cgc	atg	ccg	tgc	gtc	gag	atc	gct	gat	gcg	att	gtt	cag	aca	gga	cga		3744
Arg	Met	Pro	Cys	Val	Glu	Ile	Ala	Asp	Ala	Ile	Val	Gln	Thr	Gly	Arg		
			1235				1240					1245					
gag	acg	ttg	gaa	aaa	gcg	atg	gac	ctg	atc	aac	ggg	aca	gaa	gag	tgg		3792
Glu	Thr	Leu	Glu	Lys	Ala	Met	Asp	Leu	Ile	Asn	Gly	Thr	Glu	Glu	Trp		
			1250				1255				1260						
ggt	gcg	caa	gtc	gtg	tac	ggc	gat	acc	gat	tct	ctc	ttt	gtc	tac	ctt		3840
Gly	Ala	Gln	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Leu	Phe	Val	Tyr	Leu		
			1265				1270				1275				1280		
cca	gga	agg	acc	aag	gag	gaa	gcg	ttt	aca	ttg	ggc	aac	gtt	att	gct		3888
Pro	Gly	Arg	Thr	Lys	Glu	Glu	Ala	Phe	Thr	Leu	Gly	Asn	Val	Ile	Ala		
			1285				1290					1295					
gac	aaa	gtc	aca	agc	ctg	aat	ccg	cgt	cca	gtc	aag	ctc	aaa	ttc	gaa		3936
Asp	Lys	Val	Thr	Ser	Leu	Asn	Pro	Arg	Pro	Val	Lys	Leu	Lys	Phe	Glu		
			1300				1305					1310					
aag	gtc	tat	ctt	ccc	tct	gtg	ctt	ctg	gcc	aag	aaa	cgg	tat	gtg	ggc		3984
Lys	Val	Tyr	Leu	Pro	Ser	Val	Leu	Leu	Ala	Lys	Lys	Arg	Tyr	Val	Gly		
			1315				1320					1325					
ttc	aag	tac	gag	acg	ctc	gac	gag	cgc	gag	cct	ggg	ttt	gat	gcc	aaa		4032
Phe	Lys	Tyr	Glu	Thr	Leu	Asp	Glu	Arg	Glu	Pro	Gly	Phe	Asp	Ala	Lys		
			1330				1335				1340						
ggg	att	gag	aca	gta	cga	cgc	gat	ttc	cat	cct	gcc	att	cag	cgc	atg		4080
Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Phe	His	Pro	Ala	Ile	Gln	Arg	Met		
			1345				1350				1355				1360		
ctc	gaa	gcg	tgc	att	cgg	att	ctc	ttc	cgt	tct	cgc	gat	ctg	agt	ctg		4128
Leu	Glu	Ala	Cys	Ile	Arg	Ile	Leu	Phe	Arg	Ser	Arg	Asp	Leu	Ser	Leu		
			1365				1370					1375					
gtg	aaa	agt	tac	ctg	cag	cgt	cag	tgg	cga	aag	atc	ctc	gag	ggg	cgt		4176
Val	Lys	Ser	Tyr	Leu	Gln	Arg	Gln	Trp	Arg	Lys	Ile	Leu	Glu	Gly	Arg		
			1380				1385					1390					
gtc	agc	gca	caa	gac	ttt	atc	ttt	gcc	aaa	gag	gtg	cga	ctc	gga	tca		4224
Val	Ser	Ala	Gln	Asp	Phe	Ile	Phe	Ala	Lys	Glu	Val	Arg	Leu	Gly	Ser		
			1395				1400				1405						
tat	agc	gat	aaa	gtg	gcg	ccg	ccg	ccg	ggc	gct	gct	gtg	gcg	tcg	aga		4272
Tyr	Ser	Asp	Lys	Val	Ala	Pro	Pro	Pro	Gly	Ala	Ala	Val	Ala	Ser	Arg		
			1410				1415				1420						
cgc	atg	tta	gcg	gat	ccg	cga	tcc	gag	ccg	cag	tac	gga	gag	cgt	gtg		4320
Arg	Met	Leu	Ala	Asp	Pro	Arg	Ser	Glu	Pro	Gln	Tyr	Gly	Glu	Arg	Val		
			1425				1430				1435				1440		
cca	tac	atc	att	tct	cag	gga	gag	cca	agg	gcc	aag	ttg	aac	caa	cag		4368
Pro	Tyr	Ile	Ile	Ser	Gln	Gly	Glu	Pro	Arg	Ala	Lys	Leu	Asn	Gln	Gln		
			1445				1450					1455					
gcc	gtc	tca	ccg	gag	gcg	ttt	ctc	aaa	gac	cca	cag	ctt	cag	atc	aac		4416
Ala	Val	Ser	Pro	Glu	Ala	Phe	Leu	Lys	Asp	Pro	Gln	Leu	Gln	Ile	Asn		
			1460				1465				1470						
gcg	ctg	tac	tac	atc	acc	cgc	aca	atc	atc	cca	ccg	cta	gct	cgc	gtg		4464
Ala	Leu	Tyr	Tyr	Ile	Thr	Arg	Thr	Ile	Ile	Pro	Pro	Leu	Ala	Arg	Val		
			1475				1480					1485					
ttt	aat	ctg	ctg	ggc	gcc	gat	gtc	gaa	gcg	tgg	ttt	cac	cac	atg	ccg		4512

## PhoenixTemp32470.tmp.txt

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Phe Asn Leu Leu Gly Ala Asp Val Glu Ala Trp Phe His His Met Pro
1490      1495      1500
aag ccc aac aat gcc tac tgg aac aaa cgg ccc act gct gct ctg tta      4560
Lys Pro Asn Asn Ala Tyr Trp Asn Lys Arg Pro Thr Ala Ala Leu Leu
1505      1510      1515      1520
tct gcc ctt ctc gct caa cag gac cca tcg agc tcg acg cac gag atc      4608
Ser Ala Leu Leu Ala Gln Gln Asp Pro Ser Ser Thr His Glu Ile
      1525      1530      1535
ggt tcc gac tcg gcc gct tct aaa gcg acg agc agc aca gca att gcg      4656
Gly Ser Asp Ser Ala Ala Ser Lys Ala Thr Ser Ser Thr Ala Ile Ala
      1540      1545      1550
acg ctc aac tcc cac tac gcc acc gag aca tgc ttg ctc tgc tca tcg      4704
Thr Leu Asn Ser His Tyr Ala Thr Glu Thr Cys Leu Leu Cys Ser Ser
      1555      1560      1565
cgt acc gag gca ctc gtc tgt ctc gac tgc cgc caa tcg ccc ctc gaa      4752
Arg Thr Glu Ala Leu Val Cys Leu Asp Cys Arg Gln Ser Pro Leu Glu
      1570      1575      1580
agc atc cac gcc aca tcg tcc aag ttg cac aag ctc gaa gcg cag gta      4800
Ser Ile His Ala Thr Ser Lys Leu His Lys Leu Glu Ala Gln Val
      1585      1590      1595      1600
gct gcc atc gac agc atc tgc tcc acc tgc gca cac atg gaa cga ccc      4848
Ala Ala Ile Asp Ser Ile Cys Ser Thr Cys Ala His Met Glu Arg Pro
      1605      1610      1615
ggc ccc gtc gac tgc gtc agc ttc gac tgc ccg tac aca tat caa aag      4896
Gly Pro Val Asp Cys Val Ser Phe Asp Cys Pro Tyr Thr Tyr Gln Lys
      1620      1625      1630
acc aaa gtg cac aag tcg ctc caa gat acc gct ctg gtg cac aca tat      4944
Thr Lys Val His Lys Ser Leu Gln Asp Thr Ala Leu Val His Thr Tyr
      1635      1640      1645
atc tca cga ctg ttt gac tca gag ccg caa cgt cag gct gtg gtg gat      4992
Ile Ser Arg Leu Phe Asp Ser Glu Pro Gln Arg Gln Ala Val Val Asp
      1650      1655      1660
gac gca tgg acc gga acc aag aac ctc aac gac ggc atc agt tga      5037
Asp Ala Trp Thr Gly Thr Lys Asn Leu Asn Asp Gly Ile Ser
1665      1670      1675

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&lt;210&gt; 2692

&lt;211&gt; 1678

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 2692

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Met Thr Ser Leu Glu Ser Ala Glu Gln Ser Asp Pro Ser Ala Gln Gln
1      5      10      15
Thr Ala Gln Gln Thr Glu Lys Ile Asp Ser Ala Ser Ala Ser Asp
      20      25      30
Pro Phe Phe Arg Val Arg Leu Ile Asn Ile Asp His Ile Leu Thr Val
      35      40      45
Pro Thr Pro Phe Asp Arg Thr Ser Cys Ala Phe Asn Ala Glu Gly Gln
      50      55      60
Pro Leu Arg Lys Val Pro Val Leu Arg Leu Phe Gly Ala Thr Pro Ala
65      70      75      80
Gly Gln Arg Val Cys Leu Tyr Ile His Asn Val Tyr Pro Tyr Cys Tyr
      85      90      95
Ile Gln Tyr Lys Gly Ser Leu Asp Pro Asp Asn Val Leu Arg Tyr Ile
      100      105      110
His Arg Leu Gly Arg Gly Leu Asn Ala Ala Met Ala Ala Ser Leu Arg
      115      120      125
Arg Asn Leu His Asp Thr Asp Ala Asn Gln Phe Ile Ala Ala Ile His
      130      135      140
Leu Cys Lys Gly Val Asn Phe Tyr Gly Tyr His Val Gly Tyr Ser Tyr
145      150      155      160
Tyr Leu Lys Ile Ser Phe Val Asp Pro Ala His Asn Tyr Arg Ile Ala
      165      170      175
Ala Ile Leu Glu Ser Gly Gly Val Met Lys Thr Val Phe Gln Pro Phe
      180      185      190
Glu Ile His Ile Arg Tyr Gln Leu Gln Phe Met Leu Asp Tyr Asn Ile
      195      200      205
Phe Gly Cys Asp Tyr Val Asp Leu Asp Asp Ile Arg Phe Arg Leu Pro

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## PhoenixTemp32470.tmp.txt

Ile 210	Pro	Glu	Gly	Asn	Leu 215	Val	Ala	Asn	Asp	Asp 220	Leu	Ser	Pro	Leu	Asp
225	Ser	Arg	Ser	Lys	Ile 230	Trp	Asn	Arg	Asn	Ser 235	Ile	Pro	Tyr	Ala	His 240
	Gln	Ala	Pro	Asp 245	Val	His	Arg	Gly	Ser 250	Tyr	Cys	Glu	Leu	Glu 255	Ala
	Ala	Ser	Ala 260	Pro	Trp	Ile	Ile	Asn 265	Arg	Arg	Arg	Phe	Lys 270	Gln	Arg
	Ile	His 275	Ser	Asn	Phe	Asp	Glu 280	Thr	Ser	Thr	Thr	Pro	Ser 285	Asp	Gln
	Ile 290	Leu	Val	Pro	Ser	Leu 295	Ser	Gly	Leu	Trp	Glu 300	Asp	Glu	Met	Lys
305	Arg	Lys	Ala	Ala	Gly 310	Leu	Pro	Pro	Ser	Ile 315	Pro	Arg	Glu	Asp	Pro
	Arg	Asp	Pro	Arg 325	Leu	Tyr	Ala	Ser	Gly 330	Asp	Ser	Pro	Thr	Trp 335	Met
	Glu	Glu	Arg 340	Met	Arg	Leu	Leu	Leu 345	Glu	Lys	Arg	Leu	Ile 350	Glu	Glu
	Gln 355	Lys	Thr	Leu	Pro	Arg	Glu 360	Arg	Asn	Ala	Ser	His 365	Phe	Thr	Asp
	Pro 370	Gly	Leu	Asp	Glu 375	Tyr	Ile	Met	Thr	Thr	Phe 380	Asp	Ala	Val	Glu
385	Phe	His	Pro	Tyr	Gln 390	Asp	Gln	Ile	His	Ala 395	Ala	Asp	Pro	Tyr	Ser
	Arg	Thr	Gly	Pro 405	Ser	Ala	Ser	Ser	Arg 410	Leu	Tyr	Asp	Leu	Gln 415	His
	Ile	Ser	Gln 420	Thr	Gln	Gln	Ser	Pro 425	Pro	Asp	Gln	Met	Glu 430	Pro	Thr
	Leu 435	Thr	Gln	Gln	Leu	Lys	Glu 440	Glu	Asp	Asp	Phe 445	Asp	Asp	Glu	Phe
	Phe 450	Gln	Ser	Gln	Asp	Phe 455	Asn	His	Arg	Leu	Gln 460	Ser	Ala	Glu	Lys
465	Ala	Met	Ser	Ala 470	Gln	Asp	Pro	Pro	Ser 475	Asp	Gln	Glu	Asp	Asp 480	Ala
	Asn	Asp	Ala 485	Asp	Gln	Val	Glu	Pro	Ala 490	Trp	Ala	Gln	Pro	Asp 495	Gly
	Gly	Thr	Pro 500	Cys	Lys	Trp	His	Arg 505	Thr	Glu	Ser	Ser	His 510	Ser	Asn
	Asn 515	Thr	Ala	Ser	Ser	Ser	Thr 520	Phe	Ser	Lys	Ser	Pro 525	Ser	Ser	Thr
	Lys 530	Arg	Arg	His	His	Ala 535	Asp	Val	Leu	Gly	Ser 540	Asp	Lys	Thr	Thr
545	Thr	Ala	Ser	Pro	Ser 550	Ser	Lys	Pro	Ser	Lys 555	Glu	Val	His	Glu	Asp
	Val	Arg	Arg	Phe 565	Lys	Lys	Ala	Lys	His 570	Glu	His	Ser	Thr	Ala 575	Ser
	Asn	Ala	Thr 580	Ser	Gly	Ser	Arg	Ser 585	Gly	His	Ala	Ile	Asn 590	Ser	Val
	Ser 595	Thr	Lys	Val	Arg	Phe	Val 600	Glu	Ala	Gly	Ser	Ser 605	Ala	Pro	Ala
	Arg 610	Leu	Arg	Gln	Gln	Glu 615	Thr	Ser	Ser	Leu	Gln 620	His	Ser	Ser	Ala
625	Arg	Thr	Arg	Phe	Leu 630	Thr	Phe	His	Glu	Ser 635	Ala	Pro	Ser	Leu	Arg
	Val	Val	Gly	Thr 645	Phe	Pro	Leu	Phe	Ser 650	Ile	Ala	Arg	Gln	Ile 655	His
	Glu	Pro	Phe 660	Phe	Ser	Asn	Pro	Ser 665	Asp	Leu	Pro	Ala	Arg 670	Pro	Arg
	Tyr	Ala 675	Gly	Arg	Met	Phe	His 680	Phe	Gln	Ser	His	Ser 685	Leu	Pro	Tyr
	Arg 690	Ser	Phe	Asp	His	Trp 695	Asp	Gln	Lys	Ser	Glu 700	His	Val	Ala	Ser
705	Gln	Lys	Asp	Lys	Pro 710	Pro	Lys	Arg	Leu	Tyr 715	Trp	Gln	Phe	Gly	Pro
	Pro	Pro	Thr	Leu 725	Leu	Glu	Ala	Arg	Ala 730	Trp	Arg	Gln	Lys	Glu 735	Lys
	Ile	Glu	Arg 740	Gln	Arg	Ser	Lys	Arg 745	Arg	Ala	Arg	Leu 750	Ser	Gln	
			755					760							

## PhoenixTemp32470.tmp.txt

Ile Glu Arg Leu Thr Gln Ala Asn Asp Phe Gly Phe Lys Ile Ser Gln  
 770 775  
 His Lys Ala Thr Ala Leu Val Lys Arg Asp Lys Gln His Met Thr Thr  
 785 790 800  
 Leu Ala Val Glu Val Met Thr Thr Thr Arg Asp Ser Leu Phe Pro Asp  
 805 810 815  
 Pro Ala Leu Asp Ala Ile Gln Ser Ile Val Tyr Ser Phe Gln Asn Glu  
 820 825 830  
 Asp Glu Asn Leu Gln Asp Thr Gly Ser Arg Pro Asp Leu Arg Thr Gly  
 835 840 845  
 Leu Ile Ile Val Ser Gly Asp Glu Ile Asn Phe Asp Arg Leu Gly Leu  
 850 855 860  
 Ser His Leu Ala Val Glu Val Val Glu Asp Glu Leu Glu Leu Phe Asn  
 865 870 875 880  
 Thr Leu Ile Asp Leu Val Arg Ala Phe Asp Pro Glu Ile Leu Val Gly  
 885 890 895  
 Trp Glu Ile His Ser Ser Ser Trp Gly Tyr Ile Val Glu Arg Ala Ser  
 900 905 910  
 Lys Glu Tyr Asp Tyr Asp Leu Val Pro Gln Ile Gly Arg Ala Ile Ile  
 915 920 925  
 His Asn Thr Gly Arg Ala Gly Gly Lys Ser Asp Asn Tyr Ala Tyr Thr  
 930 935 940  
 Gln Ser Ser Ala Leu Arg Phe Thr Gly Arg His Thr Leu Asn Leu Trp  
 945 950 955 960  
 Arg Leu Met Lys Gly Glu Leu Thr Leu Asn Leu Tyr Thr Leu Glu Asn  
 965 970 975  
 Val Cys Tyr His Leu Leu His Arg Arg Ile Pro Lys Tyr Ser His Gln  
 980 985 990  
 Thr Leu Thr Gln Trp Tyr Lys Ser Gly Arg Ala Glu Leu Ile Arg Arg  
 995 1000 1005  
 Ala Leu Leu Tyr Tyr Val Asp Met Val Glu Leu Glu Leu Glu Ile Ile  
 1010 1015 1020  
 Ala Glu Ser Glu Phe Val Leu Arg Thr Ala Glu Phe Ala Arg Ile Tyr  
 1025 1030 1035 1040  
 Gly Ile Asp Phe Phe Ser Val Ile Ser Arg Gly Ser Gln Phe Lys Val  
 1045 1050 1055  
 Glu Ser Ile Met Leu Arg Ile Ala Lys Pro Glu Asn Phe Val Leu Ile  
 1060 1065 1070  
 Ser Pro Ser Arg Ala Gln Val Gly Lys Gln Asn Ala Ala Glu Cys Leu  
 1075 1080 1085  
 Pro Leu Ile Met Glu Pro Gln Ser Ala Phe Tyr Lys Gly Pro Leu Ile  
 1090 1095 1100  
 Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Ile Met Ile Ala Tyr Asn  
 1105 1110 1115 1120  
 Leu Cys Tyr Ser Thr Cys Leu Gly Arg Val Ala Gly Phe Lys Gly Thr  
 1125 1130 1135  
 Ser Lys Phe Gly Val Thr Glu Tyr Ala Pro Pro Lys Gly Leu Leu Ser  
 1140 1145 1150  
 Leu Leu Gln Asp Asp Val Asn Ile Ser Ser Asn Gly Leu Leu Phe Val  
 1155 1160 1165  
 Lys Pro Ser Val Arg Lys Ser Leu Leu Ala Lys Met Leu Ser Glu Ile  
 1170 1175 1180  
 Leu Asp Thr Arg Val Met Val Lys Ser Ser Met Lys Ala Thr Lys Ser  
 1185 1190 1195 1200  
 Asp Lys Ser Phe Gln Arg Ile Gln Asn Ala Arg Gln Ile Ser Leu Lys  
 1205 1210 1215  
 Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly  
 1220 1225 1230  
 Arg Met Pro Cys Val Glu Ile Ala Asp Ala Ile Val Gln Thr Gly Arg  
 1235 1240 1245  
 Glu Thr Leu Glu Lys Ala Met Asp Leu Ile Asn Gly Thr Glu Glu Trp  
 1250 1255 1260  
 Gly Ala Gln Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu  
 1265 1270 1275 1280  
 Pro Gly Arg Thr Lys Glu Glu Ala Phe Thr Leu Gly Asn Val Ile Ala  
 1285 1290 1295  
 Asp Lys Val Thr Ser Leu Asn Pro Arg Pro Val Lys Leu Lys Phe Glu  
 1300 1305 1310  
 Lys Val Tyr Leu Pro Ser Val Leu Leu Ala Lys Lys Arg Tyr Val Gly

## PhoenixTemp32470.tmp.txt

1315 1320 1325  
 Phe Lys Tyr Glu Thr Leu Asp Glu Arg Glu Pro Gly Phe Asp Ala Lys  
 1330 1335 1340  
 Gly Ile Glu Thr Val Arg Arg Asp Phe His Pro Ala Ile Gln Arg Met  
 1345 1350 1355 1360  
 Leu Glu Ala Cys Ile Arg Ile Leu Phe Arg Ser Arg Asp Leu Ser Leu  
 1365 1370 1375  
 Val Lys Ser Tyr Leu Gln Arg Gln Trp Arg Lys Ile Leu Glu Gly Arg  
 1380 1385 1390  
 Val Ser Ala Gln Asp Phe Ile Phe Ala Lys Glu Val Arg Leu Gly Ser  
 1395 1400 1405  
 Tyr Ser Asp Lys Val Ala Pro Pro Gly Ala Ala Val Ala Ser Arg  
 1410 1415 1420  
 Arg Met Leu Ala Asp Pro Arg Ser Glu Pro Gln Tyr Gly Glu Arg Val  
 1425 1430 1435 1440  
 Pro Tyr Ile Ile Ser Gln Gly Glu Pro Arg Ala Lys Leu Asn Gln Gln  
 1445 1450 1455  
 Ala Val Ser Pro Glu Ala Phe Leu Lys Asp Pro Gln Leu Gln Ile Asn  
 1460 1465 1470  
 Ala Leu Tyr Tyr Ile Thr Arg Thr Ile Ile Pro Pro Leu Ala Arg Val  
 1475 1480 1485  
 Phe Asn Leu Leu Gly Ala Asp Val Glu Ala Trp Phe His His Met Pro  
 1490 1495 1500  
 Lys Pro Asn Asn Ala Tyr Trp Asn Lys Arg Pro Thr Ala Ala Leu Leu  
 1505 1510 1515 1520  
 Ser Ala Leu Leu Ala Gln Gln Asp Pro Ser Ser Ser Thr His Glu Ile  
 1525 1530 1535  
 Gly Ser Asp Ser Ala Ala Ser Lys Ala Thr Ser Ser Thr Ala Ile Ala  
 1540 1545 1550  
 Thr Leu Asn Ser His Tyr Ala Thr Glu Thr Cys Leu Leu Cys Ser Ser  
 1555 1560 1565  
 Arg Thr Glu Ala Leu Val Cys Leu Asp Cys Arg Gln Ser Pro Leu Glu  
 1570 1575 1580  
 Ser Ile His Ala Thr Ser Lys Leu His Lys Leu Glu Ala Gln Val  
 1585 1590 1595 1600  
 Ala Ala Ile Asp Ser Ile Cys Ser Thr Cys Ala His Met Glu Arg Pro  
 1605 1610 1615  
 Gly Pro Val Asp Cys Val Ser Phe Asp Cys Pro Tyr Thr Tyr Gln Lys  
 1620 1625 1630  
 Thr Lys Val His Lys Ser Leu Gln Asp Thr Ala Leu Val His Thr Tyr  
 1635 1640 1645  
 Ile Ser Arg Leu Phe Asp Ser Glu Pro Gln Arg Gln Ala Val Val Asp  
 1650 1655 1660  
 Asp Ala Trp Thr Gly Thr Lys Asn Leu Asn Asp Gly Ile Ser  
 1665 1670 1675

&lt;210&gt; 2693

&lt;211&gt; 5922

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5922)

&lt;400&gt; 2693

atg gaa gac acc gcg gtc gtc aat caa gga ccg tcg tcc tct ttg ccc	48
Met Glu Asp Thr Ala Val Val Asn Gln Gly Pro Ser Ser Ser Leu Pro	
1 5 10 15	
gtc gga tcg agc caa tct ttg agt ctc agc agt ccc cgt cta cgt gtc	96
Val Gly Ser Ser Gln Ser Leu Ser Leu Ser Ser Pro Arg Leu Arg Val	
20 25 30	
aaa att acc cat atc atc tcg gat cag gcg gca ccc att cct act ctt	144
Lys Ile Thr His Ile Ile Ser Asp Gln Ala Ala Pro Ile Pro Thr Leu	
35 40 45	
cgt cag cac tat gct ccg tct cga ctc gca acc gcc ata ccg ttg ggt	192
Arg Gln His Tyr Ala Pro Ser Arg Leu Ala Thr Ala Ile Pro Leu Gly	
50 55 60	
aat cta cca cac agc gta cct gtt atc cgg ata ttt ggg acc acg tcc	240



## PhoenixTemp32470.tmp.txt

Asn 65	Leu	Pro	His	Ser	Val 70	Pro	Val	Ile	Arg	Ile 75	Phe	Gly	Thr	Thr	Ser 80	
tct Ser	tcg Ser	cag Gln	aaa Lys	att Ile 85	tgt Cys	gcc Ala	aac Asn	ata Ile	cac His 90	ttg Leu	tgc Cys	tac Tyr	cca Pro	tac Tyr 95	ttt Phe	288
ttt Phe	gta Val	ccc Pro	tat Tyr 100	ccc Pro	atg Met	gac Asp	tct Ser	caa Gln 105	gat Asp	ccg Pro	ttg Leu	cgg Arg	cca Pro 110	gag Glu	agg Arg	336
gtg Val	gtc Val	aaa Lys 115	ctt Leu	tgt Cys	caa Gln	aga Arg	ttc Phe 120	gcc Ala	gtc Val	tct Ser	ctc Leu	aac Asn 125	tat Tyr	gcg Ala	att Ile	384
tgt Cys	ctc Leu 130	gca Ala	ctt Leu	cgg Arg	caa Gln	aat Asn 135	ccg Pro	aca Thr	tct Ser	gca Ala 140	gcc Ala	aac Asn	aac Asn	act Thr	aac Asn	432
tac Tyr 145	ggc Gly	ggg Gly	ggg Gly	gtg Val 150	gac Asp	cca Pro	aag Lys	cat His	ttg Leu	cat His 155	gtc Val	gtc Val	tct Ser	gtg Val	atc Ile 160	480
ctt Leu	gta Val	aag Lys	gga Gly	aca Thr 165	cca Pro	ttc Phe	tat Tyr	gga Gly	tat Tyr 170	cat His	ctt Leu	gga Gly	ttt Phe	gac Asp 175	tac Tyr	528
ttt Phe	ctc Leu	aaa Lys 180	atc Ile	aat Asn	ctg Leu	gca Ala	aat Asn	ccg Pro 185	gca Ala	aga Arg	ctg Leu	cat His	ata Ile 190	gca Ala	ctc Leu	576
gag Glu	caa Gln 195	cta Leu	cga Arg	aag Lys	ccg Pro	aat Asn	gtg Val 200	cta Leu	gga Gly	aga Arg	gaa Glu	tgg Trp 205	caa Gln	ccg Pro	cac His	624
gaa Glu 210	gca Ala	cat His	ctc Leu	aat Asn	cac His	gtt Val 215	cta Leu	cag Gln	ttt Phe	atg Met	tgt Cys 220	gac Asp	ttt Phe	gac Asp	ctg Leu	672
tat Tyr 225	ggt Gly	tgc Cys	gga Gly	tgg Trp	ttg Leu 230	gag Glu	ctg Leu	gga Gly	gga Gly	ggt Gly 235	acc Thr	ttc Phe	agg Arg	gaa Glu	ccc Pro 240	720
gtg Val	cca Pro	gaa Glu	gca Ala	gat Asp 245	ccg Pro	ttt Phe	gac Asp	tcc Ser	ctg Leu 250	tca Ser	gag Glu	aca Thr	gtt Val 255	acc Thr	gat Asp	768
ggt Gly	act Thr	ctt Leu	ggc Gly 260	tta Leu	ctt Leu	aac Asn	tgt Cys	cg Arg 265	acg Thr	ata Ile	ccc Pro	act Thr	tcc Ser 270	atg Met	tta Leu	816
tac Tyr	ccc Pro	cca Pro 275	ggc Gly	ctc Leu	tct Ser	cct Pro	gcg Ala 280	aag Lys	gat Asp	tca Ser	ttt Phe	act Thr 285	tcc Ser	ctt Leu	gaa Glu	864
ttt Phe 290	gac Asp	att Ile	ctt Leu	cct Pro	cac His	cag Gln 295	atc Ile	cta Leu	aat Asn	cga Arg 300	cag Gln	cga Arg	ctt Leu	atg Met	ccc Pro	912
cgt Arg 305	cta Leu	ctg Leu	cat His	cat His	gat Asp 310	ttc Phe	att Ile	gag Glu	ctg Leu	tta Leu 315	cat His	aag Lys	cct Pro	ttg Leu	gat Asp 320	960
ccc Pro	aac Asn	gaa Glu	aag Lys	ctt Leu 325	gtg Val	cct Pro	gcg Ala	gtt Val	gca Ala 330	gaa Glu	ttg Leu	tgg Trp	gaa Glu	gat Asp 335	gaa Glu	1008
agg Arg	cga Arg	agg Arg	aga Arg 340	gcg Ala	gct Ala	aaa Lys	gga Gly	tta Leu 345	ggc Gly	act Thr	gga Gly	aca Thr	aat Asn 350	gat Asp	atg Met	1056
atg Met	cca Pro	ggt Gly 355	agc Ser	ggc Gly	ggg Gly	atg Met	gat Asp 360	gga Gly	aga Arg	tca Ser	atg Met	gag Glu 365	gaa Glu	ctt Leu	ggg Gly	1104
tat Tyr	aga Arg 370	ggc Gly	aat Asn	caa Gln	gtg Val	gat Asp 375	ggg Gly	aag Lys	aag Lys	aac Asn 380	aag Lys 380	gga Gly	ggt Gly	gat Asp	tgg Trp	1152
aag Lys 385	atc Ile	tca Ser	gac Asp	gag Glu	ctt Leu 390	tgg Trp	gca Ala	ata Ile	ctg Leu	gaa Glu 395	gag Glu	cgt Arg	atg Met	ggc Gly 400	gct Ala	1200
gag Glu	agg Arg	aag Lys	aga Arg	aaa Lys 405	ggg Gly	aag Lys	ctg Leu	aca Thr	ttc Phe 410	cag Gln	aaa Lys	tac Tyr	tct Ser	cg Arg 415	gat Asp	1248
gtt Val	tca Ser	gct Ala	ggc Gly 420	agg Arg	gaa Glu	ggg Gly	gaa Glu	aaa Lys 425	ttg Leu	caa Gln	tgg Trp	gat Asp 430	aag Lys	tgg Trp	atc Ile	1296
atg	acc	acc	ttt	gat	gct	tta	tca	gct	cat	tgg	ccc	aag	caa	gct	aag	1344

PhoenixTemp32470.tmp.txt

Met	Thr	Thr	Phe	Asp	Ala	Leu	Ser	Ala	His	Trp	Pro	Lys	Gln	Ala	Lys	
aag	gtc	acc	aag	act	acc	caa	atg	tcc	agg	aag	tct	cac	atg	act	ctg	1392
Lys	Val	Thr	Lys	Thr	Thr	Gln	Met	Ser	Arg	Lys	Ser	His	Met	Thr	Leu	
cca	gcc	gac	act	tca	tct	ata	tac	tac	ggt	tct	tct	cag	gat	aag	aat	1440
Pro	Ala	Asp	Thr	Ser	Ser	Ile	Tyr	Tyr	Gly	Ser	Ser	Gln	Asp	Lys	Asn	
465					470					475					480	
gcc	ctg	ttc	ggc	gag	tca	aca	tct	ggt	act	ttg	gag	gaa	ccg	gga	atg	1488
Ala	Leu	Phe	Gly	Glu	Ser	Thr	Ser	Val	Thr	Leu	Glu	Glu	Pro	Gly	Met	
			485					490						495		
gat	tca	agg	ttg	gag	aaa	gaa	gac	gaa	gag	ata	aac	ccc	ttt	gag	gcg	1536
Asp	Ser	Arg	Leu	Glu	Lys	Glu	Asp	Glu	Glu	Ile	Asn	Pro	Phe	Glu	Ala	
			500					505					510			
ttc	gcc	atg	act	cag	gct	tct	caa	cat	ccg	caa	cca	gta	cca	gag	ctt	1584
Phe	Ala	Met	Thr	Gln	Ala	Ser	Gln	His	Pro	Gln	Pro	Val	Pro	Glu	Leu	
		515					520					525				
tcc	caa	cat	gtt	caa	gca	gtc	cca	ttt	aaa	gaa	gtt	gag	gat	tct	gac	1632
Ser	Gln	His	Val	Gln	Ala	Val	Pro	Phe	Lys	Glu	Val	Glu	Asp	Ser	Asp	
	530					535					540					
caa	tat	tat	gtc	ggc	gag	gac	gag	ggt	gat	ata	gac	gag	tac	aaa	caa	1680
Gln	Tyr	Tyr	Val	Gly	Glu	Asp	Glu	Gly	Asp	Ile	Asp	Glu	Tyr	Lys	Gln	
545				550					555						560	
gct	gag	ggg	gct	cga	gtg	cat	gcc	caa	gag	acc	gac	aag	ata	cgc	gcc	1728
Ala	Glu	Gly	Ala	Arg	Val	His	Ala	Gln	Glu	Thr	Asp	Lys	Ile	Arg	Ala	
				565					570					575		
aca	caa	atg	gcg	tct	gag	atg	gaa	ggt	cat	tat	gac	gag	tac	gat	gac	1776
Thr	Gln	Met	Ala	Ser	Glu	Met	Glu	Gly	His	Tyr	Asp	Glu	Tyr	Asp	Asp	
			580					585					590			
aaa	gag	ctt	gaa	gag	ttg	ttc	aga	cag	aca	gtg	gca	gct	ggc	ttg	gga	1824
Lys	Glu	Leu	Glu	Glu	Leu	Phe	Arg	Gln	Thr	Val	Ala	Ala	Gly	Leu	Gly	
		595					600					605				
gtc	cag	agc	gtg	ccc	act	aca	cca	cac	aga	cct	aaa	gat	caa	gac	cag	1872
Val	Gln	Ser	Val	Pro	Thr	Thr	Pro	His	Arg	Pro	Lys	Asp	Gln	Asp	Gln	
	610					615					620					
gaa	ggg	aat	agt	cga	tgg	tct	ggg	tgg	act	ccg	aca	agc	aaa	gga	tct	1920
Glu	Gly	Asn	Ser	Arg	Trp	Ser	Gly	Trp	Thr	Pro	Thr	Ser	Lys	Gly	Ser	
625					630				635						640	
agc	aaa	tca	agc	gtg	ggc	act	ttc	gag	tca	cgt	aaa	cgt	aaa	aga	aat	1968
Ser	Lys	Ser	Ser	Val	Gly	Thr	Phe	Glu	Ser	Arg	Lys	Arg	Lys	Arg	Asn	
				645					650					655		
cag	cga	tta	tta	gag	gac	gct	gga	ttg	gga	gat	ctc	agt	aca	atc	att	2016
Gln	Arg	Leu	Leu	Glu	Asp	Ala	Gly	Leu	Gly	Asp	Leu	Ser	Thr	Ile	Ile	
			660				665						670			
gat	cgc	tct	tca	ctt	tct	ctg	tcg	cct	ctc	aaa	aac	cca	tac	gat	gaa	2064
Asp	Arg	Ser	Ser	Leu	Ser	Leu	Ser	Pro	Leu	Lys	Asn	Pro	Tyr	Asp	Glu	
		675					680					685				
aga	ggt	cat	ggc	gtt	tct	acg	cct	gaa	aac	gcg	aac	aca	cct	tcc	aga	2112
Arg	Gly	His	Gly	Val	Ser	Thr	Pro	Glu	Asn	Ala	Asn	Thr	Pro	Ser	Arg	
	690				695				700							
gag	atg	gca	act	cct	agc	tcc	ctc	atg	cgt	aat	gca	ttc	gcc	aaa	agc	2160
Glu	Met	Ala	Thr	Pro	Ser	Ser	Leu	Met	Arg	Asn	Ala	Phe	Ala	Lys	Ser	
705					710				715						720	
cgc	caa	caa	tcg	ccg	aac	ctg	tct	ccc	gcg	aag	aga	agc	gag	tca	tcc	2208
Arg	Gln	Gln	Ser	Pro	Asn	Leu	Ser	Pro	Ala	Lys	Arg	Ser	Glu	Ser	Ser	
				725					730					735		
cga	agt	aaa	cat	ctt	cgt	tct	gat	act	ggt	att	ctg	ccc	ttg	gag	aga	2256
Arg	Ser	Lys	His	Leu	Arg	Ser	Asp	Thr	Val	Ile	Leu	Pro	Leu	Glu	Arg	
			740					745					750			
aag	aac	cct	gga	gct	att	aca	tcc	tct	cca	tcg	ctc	tct	ccc	aga	gat	2304
Lys	Asn	Pro	Gly	Ala	Ile	Thr	Ser	Ser	Pro	Ser	Leu	Ser	Pro	Arg	Asp	
		755					760					765				
aaa	gtt	atc	gat	ggt	gac	cat	gga	aac	tta	caa	aga	aaa	tta	gct	gag	2352
Lys	Val	Ile	Asp	Gly	Asp	His	Gly	Asn	Leu	Gln	Arg	Lys	Leu	Ala	Glu	
	770					775					780					
gcg	aag	aaa	ccg	ctg	cag	gga	caa	ttt	cct	tcg	gca	tcg	gcg	aaa	aaa	2400
Ala	Lys	Lys	Pro	Leu	Gln	Gly	Gln	Phe	Pro	Ser	Ala	Ser	Ala	Lys	Lys	
785				790					795						800	
aat	ctc	gtt	gtt	ggc	cca	gag	cca	ggt	caa	gaa	gta	gtc	caa	tta	tca	2448

## PhoenixTemp32470.tmp.txt

Asn	Leu	Val	Val	Gly 805	Pro	Glu	Pro	Gly	Gln 810	Glu	Val	Val	Gln	Leu 815	Ser		
ctt	cct	cca	gcc	ggt	gct	ggt	ctg	tac	gaa	cca	ggt	gcg	aat	ggt	ggt	2496	
Leu	Pro	Pro	Ala 820	Gly	Ala	Gly	Leu	Tyr 825	Glu	Pro	Val	Ala	Asn 830	Val	Val		
tcg	ccg	gtc	gtg	tct	aac	agt	tca	cg	ccc	atc	ggg	cta	gtc	gaa	tct	2544	
Ser	Pro	Val 835	Val	Ser	Asn	Ser	Ser 840	Arg	Pro	Ile	Gly	Leu 845	Val	Glu	Ser		
cac	ctt	agt	tcc	act	ttg	ctc	aac	ccg	tcc	ttc	aga	gac	aaa	acc	tca	2592	
His	Leu	Ser	Ser	Thr	Leu	Leu 855	Asn	Pro	Ser	Phe 860	Arg	Asp	Lys	Thr	Ser		
gac	tta	cct	ctc	tct	gca	acc	ctt	ctg	aac	gca	ccc	tcc	gcc	aaa	ccc	2640	
Asp 865	Leu	Pro	Leu	Ser	Ala 870	Thr	Leu	Leu	Asn	Ala 875	Pro	Ser	Ala	Lys	Pro 880		
gct	ttg	agc	cct	act	ttt	caa	gac	cct	tcc	gcc	aac	gat	gaa	cg	ctc	2688	
Ala	Leu	Ser	Pro	Thr 885	Phe	Gln	Asp	Pro	Ser 890	Ala	Asn	Asp	Glu	Arg 895	Leu		
cct	ata	tcc	cca	tcc	atc	ggt	gcg	aca	cat	cg	gat	gac	cg	gag	gca	2736	
Pro	Ile	Ser	Pro 900	Ser	Ile	Val	Ala	Thr 905	His	Arg	Asp	Asp	Arg 910	Glu	Ala		
aag	gtg	cg	ccg	cac	aaa	cg	gtc	aaa	ctc	aca	gaa	cca	ggt	cat	gcg	2784	
Lys	Val	Arg 915	Pro	His	Lys	Arg	Val 920	Lys	Leu	Thr	Glu	Pro 925	Gly	His	Ala		
agc	cag	gag	tcg	ctt	ttg	ccc	ctc	att	agt	aat	ttc	tca	cat	cct	tcg	2832	
Ser	Gln 930	Glu	Ser	Leu	Leu	Pro 935	Leu	Ile	Ser	Asn	Phe 940	Ser	His	Pro	Ser		
cat	gga	gac	aga	cat	cg	tcg	cca	caa	aat	gct	gca	tca	gac	cac	cag	2880	
His 945	Gly	Asp	Arg	His	Arg 950	Ser	Pro	Gln	Asn	Ala 955	Ala	Ser	Asp	His	Gln 960		
gag	aat	ctt	tcg	tct	tgt	ttg	gca	agc	aaa	gca	tgg	caa	tat	tac	atc	2928	
Glu	Asn	Leu	Ser	Ser 965	Cys	Leu	Ala	Ser	Lys 970	Ala	Trp	Gln	Tyr 975	Tyr	Ile		
ctt	cct	cct	cag	cg	cat	gag	att	gct	gat	act	atg	gag	ttg	cac	ggc	2976	
Leu	Pro	Pro	Gln 980	Arg	His	Glu	Ile	Ala 985	Asp	Thr	Met	Glu	Leu 990	His	Gly		
gta	tct	act	gtt	gac	tac	caa	ccg	ccg	ttc	ttt	ggt	caa	ctg	gcc	gat	3024	
Val	Ser	Thr 995	Val	Asp	Tyr	Gln	Pro 1000	Pro	Phe	Phe	Gly	Gln 1005	Leu	Ala	Asp		
gta	ccc	aag	aga	tca	aaa	acg	ctg	gcg	ggc	agg	gtg	ttc	aat	ctc	aaa	3072	
Val 1010	Pro	Lys	Arg	Ser	Lys 1015	Leu	Ala	Gly	Arg	Val 1020	Phe	Asn	Leu	Lys			
tcc	cat	tca	gtg	aga	aat	ttg	caa	aaa	ttt	gaa	tct	acg	atc	ggc	agt	3120	
Ser 1025	His	Ser	Val	Arg 1030	Asn	Leu	Gln	Lys	Phe 1035	Glu	Ser	Thr	Ile 1040	Gly	Ser		
gga	ccc	ctg	cta	gaa	aat	gca	aag	ggc	aag	gag	agg	gca	aag	gct	ggt	3168	
Gly	Pro	Leu	Leu 1045	Glu	Asn	Ala	Lys	Gly 1050	Lys	Glu	Arg	Ala	Lys 1055	Ala	Gly		
tgg	cta	aaa	aca	aat	agt	gac	aac	gat	agt	ggt	ggg	aaa	aga	gaa	gtc	3216	
Trp	Leu	Lys 1060	Thr	Asn	Ser	Asp	Asn 1065	Asp	Ser	Val	Gly	Lys 1070	Arg	Glu	Val		
aaa	cgt	tgg	tgt	gaa	aaa	atc	gaa	gac	aag	gcg	aag	ata	gcc	aga	gaa	3264	
Lys	Arg 1075	Trp	Cys	Glu	Lys 1080	Ile	Glu	Asp	Lys 1085	Ala	Lys	Ile 1090	Ala	Arg	Glu		
aaa	tac	gag	gaa	aag	acg	tca	cag	cta	gca	cat	ccg	acc	caa	aag	agc	3312	
Lys 1090	Tyr	Glu	Glu	Lys 1095	Thr	Ser	Gln	Leu	Ala 1100	His	Pro	Thr	Gln	Lys	Ser		
aaa	tat	ggc	ttc	aaa	tat	tct	cag	aaa	ggg	aaa	gtg	agg	gat	tct	tcc	3360	
Lys 1105	Tyr	Gly	Phe 1110	Lys	Tyr 1115	Ser	Gln	Lys 1120	Gly	Lys 1125	Val	Arg	Asp	Ser	Ser		
ggc	gat	ccc	cag	aac	atg	tcg	atc	ttg	acc	atg	gaa	gta	ttt	gct	caa	3408	
Gly	Asp	Pro	Gln 1125	Asn	Met 1130	Ser	Ile 1135	Leu 1140	Thr 1145	Met 1150	Glu	Val 1155	Phe 1160	Ala 1165	Gln		
tcg	cga	ggt	act	ctc	ctc	ccc	gac	ccc	gaa	gac	gca	gtc	act	gcc	3456		
Ser	Arg	Gly 1140	Thr 1145	Leu 1150	Leu 1155	Pro	Asp 1160	Pro 1165	Glu	Lys	Asp	Ala	Val	Thr	Ala		
atc	ttc	tat	tgt	tat	tcc	aat	acc	gat	gat	gac	ctt	cct	gat	aca	act	3504	
Ile	Phe 1155	Tyr	Cys 1160	Tyr 1165	Ser	Asn 1170	Thr 1175	Asp 1180	Asp 1185	Asp 1190	Leu 1195	Pro 1200	Asp 1205	Thr 1210	Thr		
atc	tat	cct	ggt	tat	cat	gct	ggt	tat	gtc	gta	act	gct	ctg	gcg	3552		

## PhoenixTemp32470.tmp.txt

Ile Tyr Pro Gly Tyr His Ala	Gly Tyr Val Val Thr Ser Ala Leu Ala	
1170	1175	1180
aat ccc gca cgg ttg cgc ctc	gac gac att cca ttt gaa gtc gtt gag	3600
Asn Pro Ala Arg Leu Arg Leu	Asp Asp Ile Pro Phe Glu Val Val Glu	
1185	1190	1200
gat gag ctt gca ttg atc aat tgg gta att gac att gta aaa ttt tgg	3648	
Asp Glu Leu Ala Leu Ile Asn Trp Val Ile Asp Ile Val Lys Phe Trp		
1205	1210	1215
gat ccg gac gtc ctg gct gga tgg gaa ctc cac aac tcc tct tgg ggt	3696	
Asp Pro Asp Val Leu Ala Gly Trp Glu Leu His Asn Ser Ser Trp Gly		
1220	1225	1230
tac ctt gct gcg cgt gcg agt gga gaa ttc gct atg gat atg atg gat	3744	
Tyr Leu Ala Ala Arg Ala Ser Gly Glu Phe Ala Met Asp Met Met Asp		
1235	1240	1245
caa atc tcc aga ata ata tct gga agg acc ggc cca cgc aat gac ggc	3792	
Gln Ile Ser Arg Ile Ile Ser Gly Arg Thr Gly Pro Arg Asn Asp Gly		
1250	1255	1260
tac tct gcc cac cac tca tcg aca ttt aag gtc gtt ggt aga cat act	3840	
Tyr Ser Ala His His Ser Thr Phe Lys Val Val Gly Arg His Thr		
1265	1270	1275
ttg aat ata tgg cgt ata tgc cgt tcg gaa atc aat ctt acc caa tat	3888	
Leu Asn Ile Trp Arg Ile Cys Arg Ser Glu Ile Asn Leu Thr Gln Tyr		
1285	1290	1295
act ttt gag aac gtc gtt ttc cac ctg cta cat caa cga atc cca cat	3936	
Thr Phe Glu Asn Val Val Phe His Leu Leu His Gln Arg Ile Pro His		
1300	1305	1310
tac tca ccc tct agt ctg aca gct tta tgg aaa agc aaa tat cct agc	3984	
Tyr Ser Pro Ser Ser Leu Thr Ala Leu Trp Lys Ser Lys Tyr Pro Ser		
1315	1320	1325
cat gct tgt cgt gtc ctc aaa tac ttc ttt caa aga acg gta atg tgt	4032	
His Ala Cys Arg Val Leu Lys Tyr Phe Phe Gln Arg Thr Val Met Cys		
1330	1335	1340
atg gag ata ctt gac caa gca gag ata att aca aag act gcg gag ttt	4080	
Met Glu Ile Leu Asp Gln Ala Glu Ile Ile Thr Lys Thr Ala Glu Phe		
1345	1350	1355
gct cgc gtg ttt gga gta gac ttc gct tct gtc ttg acc cga ggc tct	4128	
Ala Arg Val Phe Gly Val Asp Phe Ala Ser Val Leu Thr Arg Gly Ser		
1365	1370	1375
caa tac aaa gtt gaa tca ttt atc ttc cgt atc gcc aag cct gaa agc	4176	
Gln Tyr Lys Val Glu Ser Phe Ile Phe Arg Ile Ala Lys Pro Glu Ser		
1380	1385	1390
ttt gta ttg gta tct cct tcg aaa cag cag gtt ggt ttg caa aac gcc	4224	
Phe Val Leu Val Ser Pro Ser Lys Gln Gln Val Gly Leu Gln Asn Ala		
1395	1400	1405
ccg ttc gct gtg cca ctc att gca gaa ccg gag tcc aaa tac tac act	4272	
Pro Phe Ala Val Pro Leu Ile Ala Glu Pro Glu Ser Lys Tyr Tyr Thr		
1410	1415	1420
cat ccg gtc att gtc ctg gat ttc cag tca ttg tac cca tcc atc atg	4320	
His Pro Val Ile Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Ile Met		
1425	1430	1435
att gca tat aac ata tgt tac tcg aca tgc ttg ggg aga gtt gag atg	4368	
Ile Ala Tyr Asn Ile Cys Tyr Ser Thr Cys Leu Gly Arg Val Glu Met		
1445	1450	1455
ttc aaa ggg act aac aaa ttc ggt ttt aca aat cta aag gtc aca gag	4416	
Phe Lys Gly Thr Asn Lys Phe Gly Phe Thr Asn Leu Lys Val Thr Glu		
1460	1465	1470
ggc ctc ttg gaa ctg ttg aaa gat tac ctc acc gtg act cca aat gga	4464	
Gly Leu Leu Glu Leu Leu Lys Asp Tyr Leu Thr Val Thr Pro Asn Gly		
1475	1480	1485
atg att ttc gtc aaa cct gct att aga aaa agc ctc ctt gct aaa atg	4512	
Met Ile Phe Val Lys Pro Ala Ile Arg Lys Ser Leu Leu Ala Lys Met		
1490	1495	1500
ctc ggc gag ata ctt gat aca agg gtc atg atc aaa cac gct atg aaa	4560	
Leu Gly Glu Ile Leu Asp Thr Arg Val Met Ile Lys His Ala Met Lys		
1505	1510	1515
ggt gca aga ggt gat aag tca tta acc gcc atg cat aat gcc agg cag	4608	
Gly Ala Arg Gly Asp Lys Ser Leu Thr Ala Met His Asn Ala Arg Gln		
1525	1530	1535
ctt ggt ttg aag ctc atg gcg aac gtc act tac ggc tat acg agc gca	4656	

## PhoenixTemp32470.tmp.txt

Leu	Gly	Leu	Lys	Leu	Met	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser	Ala		
acc	tac	tct	ggc	aga	atg	cct	tgc	att	gaa	ata	gcc	gac	tca	atc	gta		4704
Thr	Tyr	Ser	Gly	Arg	Met	Pro	Cys	Ile	Glu	Ile	Ala	Asp	Ser	Ile	Val		
caa	aca	ggt	cgg	gag	act	ctt	gag	aag	gct	caa	gaa	ctg	att	cat	tcg		4752
Gln	Thr	Gly	Arg	Glu	Thr	Leu	Glu	Lys	Ala	Gln	Glu	Leu	Ile	His	Ser		
cgc	gtt	gat	tgg	gat	gct	cgc	gtt	gtc	tat	gga	gac	acg	gac	tcc	ctt		4800
Arg	Val	Asp	Trp	Asp	Ala	Arg	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Leu		
ttt	gtt	gcc	tta	cca	ggt	cgt	tca	aag	gag	cag	gct	ttc	aaa	att	gga		4848
Phe	Val	Ala	Leu	Pro	Gly	Arg	Ser	Lys	Glu	Gln	Ala	Phe	Lys	Ile	Gly		
tat	gac	ata	gct	aat	gct	gtg	acc	gca	ctc	aat	ccg	aag	cct	gtc	aag		4896
Tyr	Asp	Ile	Ala	Asn	Ala	Val	Thr	Ala	Leu	Asn	Pro	Lys	Pro	Val	Lys		
ctc	aaa	ttt	gaa	aaa	gtc	tac	atg	ggc	tca	gta	ttg	atg	gct	aag	aaa		4944
Leu	Lys	Phe	Glu	Lys	Val	Tyr	Met	Gly	Ser	Val	Leu	Met	Ala	Lys	Lys		
cgt	tac	gtg	gga	ttt	aaa	tac	gag	cat	cca	gac	gat	aca	gag	ccg	tct		4992
Arg	Tyr	Val	Gly	Phe	Lys	Tyr	Glu	His	Pro	Asp	Asp	Thr	Glu	Pro	Ser		
ttt	gat	gca	aag	ggt	att	gaa	acc	atc	agg	aga	gat	ggc	ttt	ccc	gct		5040
Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Ile	Arg	Arg	Asp	Gly	Phe	Pro	Ala		
cag	cag	aag	atg	gaa	gag	gtt	tgt	cta	aag	cta	ctt	ttc	cgc	acg	cag		5088
Gln	Gln	Lys	Met	Glu	Glu	Val	Cys	Leu	Lys	Leu	Leu	Phe	Arg	Thr	Gln		
gat	cta	tct	aaa	gtg	aaa	gaa	ttc	tgc	ttg	aaa	gaa	tgg	aca	aag	att		5136
Asp	Leu	Ser	Lys	Val	Lys	Glu	Phe	Cys	Leu	Lys	Glu	Trp	Thr	Lys	Ile		
ctc	cag	ggt	cat	gta	tct	atg	cag	gac	ttc	atc	atc	gca	aag	gaa	gta		5184
Leu	Gln	Gly	His	Val	Ser	Met	Gln	Asp	Phe	Ile	Ile	Ala	Lys	Glu	Val		
cgg	ttg	ggg	acg	tat	tcc	gaa	aaa	ggt	atc	cct	ccc	cct	gga	gca	gcc		5232
Arg	Leu	Gly	Thr	Tyr	Ser	Glu	Lys	Gly	Ile	Pro	Pro	Pro	Gly	Ala	Ala		
gta	gcc	tat	cga	cgt	atc	ctc	aag	gac	cct	cgc	gac	gaa	cct	caa	tac		5280
Val	Ala	Tyr	Arg	Arg	Ile	Leu	Lys	Asp	Pro	Arg	Asp	Glu	Pro	Gln	Tyr		
gcc	gag	cga	gtt	ccg	tac	ctt	att	tct	aat	gct	gat	ggg	cga	cgc	cta		5328
Ala	Glu	Arg	Val	Pro	Tyr	Leu	Ile	Ser	Asn	Ala	Asp	Gly	Arg	Arg	Leu		
att	gac	cgc	gct	cgc	atg	ccc	gag	gag	ctc	ctt	tcc	agt	aga	tca	ttg		5376
Ile	Asp	Arg	Ala	Arg	Met	Pro	Glu	Glu	Leu	Leu	Ser	Ser	Arg	Ser	Leu		
agc	att	gat	gct	gaa	tac	tat	att	cgt	aat	ctg	cta	atc	cca	ccc	tta		5424
Ser	Ile	Asp	Ala	Glu	Tyr	Tyr	Ile	Arg	Asn	Leu	Leu	Ile	Pro	Pro	Leu		
tcg	agg	atc	ttc	aat	ctt	gtt	gga	gca	gat	gta	gaa	gag	tgg	tat	gac		5472
Ser	Arg	Ile	Phe	Asn	Leu	Val	Gly	Ala	Asp	Val	Glu	Glu	Trp	Tyr	Asp		
aat	atg	cca	aag	acc	aag	aga	ttg	gga	aag	tac	gac	aaa	gct	ggg	ggc		5520
Asn	Met	Pro	Lys	Thr	Lys	Arg	Leu	Gly	Lys	Tyr	Asp	Lys	Ala	Gly	Gly		
aag	atg	acc	aac	aga	gga	aat	ggg	aaa	ggg	aag	cag	gga	gaa	gca	aaa		5568
Lys	Met	Thr	Asn	Arg	Gly	Asn	Gly	Lys	Lys	Lys	Gln	Gly	Glu	Ala	Lys		
gga	cgg	ggc	tcg	aga	ata	gac	tcc	cat	ttt	agg	tcg	agt	cac	tgc	gtt		5616
Gly	Arg	Gly	Ser	Arg	Ile	Asp	Ser	His	Phe	Arg	Ser	Ser	His	Cys	Val		
gtg	tgt	ggt	ata	gag	tct	tca	gac	gta	cta	tgc	cac	ccc	tgt	cgt	ctg		5664
Val	Cys	Gly	Ile	Glu	Ser	Ser	Asp	Val	Leu	Cys	His	Pro	Cys	Arg	Leu		
gac	ccc	tcc	acg	aca	tca	cat	gcc	ctt	cta	tct	cga	ctt	cat	atc	gcc		5712
Asp	Pro	Ser	Thr	Thr	Ser	His	Ala	Leu	Leu	Ser	Arg	Leu	His	Ile	Ala		
caa	gac	aaa	ctc	att	gtt	ttg	caa	aag	ata	tgc	gct	tct	tgc	tcc	tca		5760

## PhoenixTemp32470.tmp.txt

Gln	Asp	Lys	Leu	Ile	Val	Leu	Gln	Lys	Ile	Cys	Ala	Ser	Cys	Ser	Ser		
1905				1910					1915					1920			
gtg	cct	ccc	gcc	gaa	aaa	att	ctg	tgt	gac	tct	att	gac	tgt	ccc	aat		5808
Val	Pro	Pro	Ala	Glu	Lys	Ile	Leu	Cys	Asp	Ser	Ile	Asp	Cys	Pro	Asn		
			1925					1930					1935				
acc	ttt	gct	aga	gtg	gcg	gct	gaa	aga	gag	gtg	gaa	gat	ctg	gaa	gac		5856
Thr	Phe	Ala	Arg	Val	Ala	Ala	Glu	Arg	Glu	Val	Glu	Asp	Leu	Glu	Asp		
			1940					1945				1950					
gtc	ggc	gag	ttg	tta	ttg	gaa	ttg	aag	cta	gag	gat	gag	agg	ccg	gaa		5904
Val	Gly	Glu	Leu	Leu	Leu	Glu	Leu	Lys	Leu	Glu	Asp	Glu	Arg	Pro	Glu		
		1955				1960					1965						
ata	gat	ctc	agt	tgg	taa												5922
Ile	Asp	Leu	Ser	Trp													
1970																	

&lt;210&gt; 2694

&lt;211&gt; 1973

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 2694

Met	Glu	Asp	Thr	Ala	Val	Val	Asn	Gln	Gly	Pro	Ser	Ser	Ser	Leu	Pro		
1				5				10						15			
Val	Gly	Ser	Ser	Gln	Ser	Leu	Ser	Leu	Ser	Ser	Pro	Arg	Leu	Arg	Val		
			20				25					30					
Lys	Ile	Thr	His	Ile	Ile	Ser	Asp	Gln	Ala	Ala	Pro	Ile	Pro	Thr	Leu		
		35				40					45						
Arg	Gln	His	Tyr	Ala	Pro	Ser	Arg	Leu	Ala	Thr	Ala	Ile	Pro	Leu	Gly		
	50				55					60							
Asn	Leu	Pro	His	Ser	Val	Pro	Val	Ile	Arg	Ile	Phe	Gly	Thr	Thr	Ser		
65				70				75						80			
Ser	Ser	Gln	Lys	Ile	Cys	Ala	Asn	Ile	His	Leu	Cys	Tyr	Pro	Tyr	Phe		
			85				90							95			
Phe	Val	Pro	Tyr	Pro	Met	Asp	Ser	Gln	Asp	Pro	Leu	Arg	Pro	Glu	Arg		
			100				105						110				
Val	Val	Lys	Leu	Cys	Gln	Arg	Phe	Ala	Val	Ser	Leu	Asn	Tyr	Ala	Ile		
		115					120					125					
Cys	Leu	Ala	Leu	Arg	Gln	Asn	Pro	Thr	Ser	Ala	Ala	Asn	Asn	Thr	Asn		
	130				135					140							
Tyr	Gly	Gly	Gly	Val	Asp	Pro	Lys	His	Leu	His	Val	Val	Ser	Val	Ile		
145				150				155						160			
Leu	Val	Lys	Gly	Thr	Pro	Phe	Tyr	Gly	Tyr	His	Leu	Gly	Phe	Asp	Tyr		
			165				170						175				
Phe	Leu	Lys	Ile	Asn	Leu	Ala	Asn	Pro	Ala	Arg	Leu	His	Ile	Ala	Leu		
		180				185						190					
Glu	Gln	Leu	Arg	Lys	Pro	Asn	Val	Leu	Gly	Arg	Glu	Trp	Gln	Pro	His		
	195					200						205					
Glu	Ala	His	Leu	Asn	His	Val	Leu	Gln	Phe	Met	Cys	Asp	Phe	Asp	Leu		
	210			215						220							
Tyr	Gly	Cys	Gly	Trp	Leu	Glu	Leu	Gly	Gly	Gly	Thr	Phe	Arg	Glu	Pro		
225				230				235						240			
Val	Pro	Glu	Ala	Asp	Pro	Phe	Asp	Ser	Leu	Ser	Glu	Thr	Val	Thr	Asp		
			245					250					255				
Gly	Thr	Leu	Gly	Leu	Leu	Asn	Cys	Arg	Thr	Ile	Pro	Thr	Ser	Met	Leu		
		260				265						270					
Tyr	Pro	Pro	Gly	Leu	Ser	Pro	Ala	Lys	Asp	Ser	Phe	Thr	Ser	Leu	Glu		
	275					280						285					
Phe	Asp	Ile	Leu	Pro	His	Gln	Ile	Leu	Asn	Arg	Gln	Arg	Leu	Met	Pro		
	290				295					300							
Arg	Leu	Leu	His	His	Asp	Phe	Ile	Glu	Leu	Leu	His	Lys	Pro	Leu	Asp		
305				310				315						320			
Pro	Asn	Glu	Lys	Leu	Val	Pro	Ala	Val	Ala	Glu	Leu	Trp	Glu	Asp	Glu		
			325					330				335					
Arg	Arg	Arg	Arg	Ala	Ala	Lys	Gly	Leu	Gly	Thr	Gly	Thr	Asn	Asp	Met		
		340				345						350					
Met	Pro	Gly	Ser	Gly	Gly	Met	Asp	Gly	Arg	Ser	Met	Glu	Glu	Leu	Gly		
	355					360					365						
Tyr	Arg	Gly	Asn	Gln	Val	Asp	Gly	Lys	Lys	Asn	Lys	Gly	Gly	Asp	Trp		
	370				375					380							

## PhoenixTemp32470.tmp.txt

Lys Ile Ser Asp Glu Leu Trp Ala Ile Leu Glu Glu Arg Met Gly Ala  
 385 390 395 400  
 Glu Arg Lys Arg Lys Gly Lys Leu Thr Phe Gln Lys Tyr Ser Arg Asp  
 405 410 415  
 Val Ser Ala Gly Arg Glu Gly Glu Lys Leu Gln Trp Asp Lys Trp Ile  
 420 425 430  
 Met Thr Thr Phe Asp Ala Leu Ser Ala His Trp Pro Lys Gln Ala Lys  
 435 440 445  
 Lys Val Thr Lys Thr Thr Gln Met Ser Arg Lys Ser His Met Thr Leu  
 450 455 460  
 Pro Ala Asp Thr Ser Ser Ile Tyr Tyr Gly Ser Ser Gln Asp Lys Asn  
 465 470 475 480  
 Ala Leu Phe Gly Glu Ser Thr Ser Val Thr Leu Glu Glu Pro Gly Met  
 485 490 495  
 Asp Ser Arg Leu Glu Lys Glu Asp Glu Glu Ile Asn Pro Phe Glu Ala  
 500 505 510  
 Phe Ala Met Thr Gln Ala Ser Gln His Pro Gln Pro Val Pro Glu Leu  
 515 520 525  
 Ser Gln His Val Gln Ala Val Phe Lys Glu Val Glu Asp Ser Asp  
 530 535 540  
 Gln Tyr Tyr Val Gly Glu Asp Glu Gly Asp Ile Asp Glu Tyr Lys Gln  
 545 550 555 560  
 Ala Glu Gly Ala Arg Val His Ala Gln Glu Thr Asp Lys Ile Arg Ala  
 565 570 575  
 Thr Gln Met Ala Ser Glu Met Glu Gly His Tyr Asp Glu Tyr Asp Asp  
 580 585 590  
 Lys Glu Leu Glu Glu Leu Phe Arg Gln Thr Val Ala Ala Gly Leu Gly  
 595 600 605  
 Val Gln Ser Val Pro Thr Thr Pro His Arg Pro Lys Asp Gln Asp Gln  
 610 615 620  
 Glu Gly Asn Ser Arg Trp Ser Gly Trp Thr Pro Thr Ser Lys Gly Ser  
 625 630 635 640  
 Ser Lys Ser Ser Val Gly Thr Phe Glu Ser Arg Lys Arg Lys Arg Asn  
 645 650 655  
 Gln Arg Leu Leu Glu Asp Ala Gly Leu Gly Asp Leu Ser Thr Ile Ile  
 660 665 670  
 Asp Arg Ser Ser Leu Ser Leu Ser Pro Leu Lys Asn Pro Tyr Asp Glu  
 675 680 685  
 Arg Gly His Gly Val Ser Thr Pro Glu Asn Ala Asn Thr Pro Ser Arg  
 690 695 700  
 Glu Met Ala Thr Pro Ser Ser Leu Met Arg Asn Ala Phe Ala Lys Ser  
 705 710 715 720  
 Arg Gln Gln Ser Pro Asn Leu Ser Pro Ala Lys Arg Ser Glu Ser Ser  
 725 730 735  
 Arg Ser Lys His Leu Arg Ser Asp Thr Val Ile Leu Pro Leu Glu Arg  
 740 745 750  
 Lys Asn Pro Gly Ala Ile Thr Ser Ser Pro Ser Leu Ser Pro Arg Asp  
 755 760 765  
 Lys Val Ile Asp Gly Asp His Gly Asn Leu Gln Arg Lys Leu Ala Glu  
 770 775 780  
 Ala Lys Lys Pro Leu Gln Gly Gln Phe Pro Ser Ala Ser Ala Lys Lys  
 785 790 795 800  
 Asn Leu Val Val Gly Pro Glu Pro Gly Gln Glu Val Val Gln Leu Ser  
 805 810 815  
 Leu Pro Pro Ala Gly Ala Gly Leu Tyr Glu Pro Val Ala Asn Val Val  
 820 825 830  
 Ser Pro Val Val Ser Asn Ser Ser Arg Pro Ile Gly Leu Val Glu Ser  
 835 840 845  
 His Leu Ser Ser Thr Leu Leu Asn Pro Ser Phe Arg Asp Lys Thr Ser  
 850 855 860  
 Asp Leu Pro Leu Ser Ala Thr Leu Leu Asn Ala Pro Ser Ala Lys Pro  
 865 870 875 880  
 Ala Leu Ser Pro Thr Phe Gln Asp Pro Ser Ala Asn Asp Glu Arg Leu  
 885 890 895  
 Pro Ile Ser Pro Ser Ile Val Ala Thr His Arg Asp Asp Arg Glu Ala  
 900 905 910  
 Lys Val Arg Pro His Lys Arg Val Lys Leu Thr Glu Pro Gly His Ala  
 915 920 925  
 Ser Gln Glu Ser Leu Leu Pro Leu Ile Ser Asn Phe Ser His Pro Ser

## PhoenixTemp32470.tmp.txt

930 935 940  
 His Gly Asp Arg His Arg Ser Pro Gln Asn Ala Ser Asp His Gln  
 945 950 955 960  
 Glu Asn Leu Ser Ser Cys Leu Ala Ser Lys Ala Trp Gln Tyr Tyr Ile  
 965 970 975  
 Leu Pro Pro Gln Arg His Glu Ile Ala Asp Thr Met Glu Leu His Gly  
 980 985 990  
 Val Ser Thr Val Asp Tyr Gln Pro Phe Phe Gly Gln Leu Ala Asp  
 995 1000 1005  
 Val Pro Lys Arg Ser Lys Thr Leu Ala Gly Arg Val Phe Asn Leu Lys  
 1010 1015 1020  
 Ser His Ser Val Arg Asn Leu Gln Lys Phe Glu Ser Thr Ile Gly Ser  
 1025 1030 1035 1040  
 Gly Pro Leu Leu Glu Asn Ala Lys Gly Lys Glu Arg Ala Lys Ala Gly  
 1045 1050 1055  
 Trp Leu Lys Thr Asn Ser Asp Asn Asp Ser Val Gly Lys Arg Glu Val  
 1060 1065 1070  
 Lys Arg Trp Cys Glu Lys Ile Glu Asp Lys Ala Lys Ile Ala Arg Glu  
 1075 1080 1085  
 Lys Tyr Glu Glu Lys Thr Ser Gln Leu Ala His Pro Thr Gln Lys Ser  
 1090 1095 1100  
 Lys Tyr Gly Phe Lys Tyr Ser Gln Lys Gly Lys Val Arg Asp Ser Ser  
 1105 1110 1115 1120  
 Gly Asp Pro Gln Asn Met Ser Ile Leu Thr Met Glu Val Phe Ala Gln  
 1125 1130 1135  
 Ser Arg Gly Thr Leu Leu Pro Asp Pro Glu Lys Asp Ala Val Thr Ala  
 1140 1145 1150  
 Ile Phe Tyr Cys Tyr Ser Asn Thr Asp Asp Asp Leu Pro Asp Thr Thr  
 1155 1160 1165  
 Ile Tyr Pro Gly Tyr His Ala Gly Tyr Val Val Thr Ser Ala Leu Ala  
 1170 1175 1180  
 Asn Pro Ala Arg Leu Arg Leu Asp Asp Ile Pro Phe Glu Val Val Glu  
 1185 1190 1195 1200  
 Asp Glu Leu Ala Leu Ile Asn Trp Val Ile Asp Ile Val Lys Phe Trp  
 1205 1210 1215  
 Asp Pro Asp Val Leu Ala Gly Trp Glu Leu His Asn Ser Ser Trp Gly  
 1220 1225 1230  
 Tyr Leu Ala Ala Arg Ala Ser Gly Glu Phe Ala Met Asp Met Met Asp  
 1235 1240 1245  
 Gln Ile Ser Arg Ile Ile Ser Gly Arg Thr Gly Pro Arg Asn Asp Gly  
 1250 1255 1260  
 Tyr Ser Ala His His Ser Ser Thr Phe Lys Val Val Gly Arg His Thr  
 1265 1270 1275 1280  
 Leu Asn Ile Trp Arg Ile Cys Arg Ser Glu Ile Asn Leu Thr Gln Tyr  
 1285 1290 1295  
 Thr Phe Glu Asn Val Val Phe His Leu His Gln Arg Ile Pro His  
 1300 1305 1310  
 Tyr Ser Pro Ser Ser Leu Thr Ala Leu Trp Lys Ser Lys Tyr Pro Ser  
 1315 1320 1325  
 His Ala Cys Arg Val Leu Lys Tyr Phe Phe Gln Arg Thr Val Met Cys  
 1330 1335 1340  
 Met Glu Ile Leu Asp Gln Ala Glu Ile Ile Thr Lys Thr Ala Glu Phe  
 1345 1350 1355 1360  
 Ala Arg Val Phe Gly Val Asp Phe Ala Ser Val Leu Thr Arg Gly Ser  
 1365 1370 1375  
 Gln Tyr Lys Val Glu Ser Phe Ile Phe Arg Ile Ala Lys Pro Glu Ser  
 1380 1385 1390  
 Phe Val Leu Val Ser Pro Ser Lys Gln Gln Val Gly Leu Gln Asn Ala  
 1395 1400 1405  
 Pro Phe Ala Val Pro Leu Ile Ala Glu Pro Glu Ser Lys Tyr Tyr Thr  
 1410 1415 1420  
 His Pro Val Ile Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Ile Met  
 1425 1430 1435 1440  
 Ile Ala Tyr Asn Ile Cys Tyr Ser Thr Cys Leu Gly Arg Val Glu Met  
 1445 1450 1455  
 Phe Lys Gly Thr Asn Lys Phe Gly Phe Thr Asn Leu Lys Val Thr Glu  
 1460 1465 1470  
 Gly Leu Leu Glu Leu Leu Lys Asp Tyr Leu Thr Val Thr Pro Asn Gly  
 1475 1480 1485



## PhoenixTemp32470.tmp.txt

Met Ile Phe Val Lys Pro Ala Ile Arg Lys Ser Leu Leu Ala Lys Met  
 1490 1495 1500  
 Leu Gly Glu Ile Leu Asp Thr Arg Val Met Ile Lys His Ala Met Lys  
 1505 1510 1515 1520  
 Gly Ala Arg Gly Asp Lys Ser Leu Thr Ala Met His Asn Ala Arg Gln  
 1525 1530 1535  
 Leu Gly Leu Lys Leu Met Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
 1540 1545 1550  
 Thr Tyr Ser Gly Arg Met Pro Cys Ile Glu Ile Ala Asp Ser Ile Val  
 1555 1560 1565  
 Gln Thr Gly Arg Glu Thr Leu Glu Lys Ala Gln Glu Leu Ile His Ser  
 1570 1575 1580  
 Arg Val Asp Trp Asp Ala Arg Val Val Tyr Gly Asp Thr Asp Ser Leu  
 1585 1590 1595 1600  
 Phe Val Ala Leu Pro Gly Arg Ser Lys Glu Gln Ala Phe Lys Ile Gly  
 1605 1610 1615  
 Tyr Asp Ile Ala Asn Ala Val Thr Ala Leu Asn Pro Lys Pro Val Lys  
 1620 1625 1630  
 Leu Lys Phe Glu Lys Val Tyr Met Gly Ser Val Leu Met Ala Lys Lys  
 1635 1640 1645  
 Arg Tyr Val Gly Phe Lys Tyr Glu His Pro Asp Asp Thr Glu Pro Ser  
 1650 1655 1660  
 Phe Asp Ala Lys Gly Ile Glu Thr Ile Arg Arg Asp Gly Phe Pro Ala  
 1665 1670 1675 1680  
 Gln Gln Lys Met Glu Glu Val Cys Leu Lys Leu Leu Phe Arg Thr Gln  
 1685 1690 1695  
 Asp Leu Ser Lys Val Lys Glu Phe Cys Leu Lys Glu Trp Thr Lys Ile  
 1700 1705 1710  
 Leu Gln Gly His Val Ser Met Gln Asp Phe Ile Ile Ala Lys Glu Val  
 1715 1720 1725  
 Arg Leu Gly Thr Tyr Ser Glu Lys Gly Ile Pro Pro Pro Gly Ala Ala  
 1730 1735 1740  
 Val Ala Tyr Arg Arg Ile Leu Lys Asp Pro Arg Asp Glu Pro Gln Tyr  
 1745 1750 1755 1760  
 Ala Glu Arg Val Pro Tyr Leu Ile Ser Asn Ala Asp Gly Arg Arg Leu  
 1765 1770 1775  
 Ile Asp Arg Ala Arg Met Pro Glu Glu Leu Leu Ser Ser Arg Ser Leu  
 1780 1785 1790  
 Ser Ile Asp Ala Glu Tyr Tyr Ile Arg Asn Leu Leu Ile Pro Pro Leu  
 1795 1800 1805  
 Ser Arg Ile Phe Asn Leu Val Gly Ala Asp Val Glu Glu Trp Tyr Asp  
 1810 1815 1820  
 Asn Met Pro Lys Thr Lys Arg Leu Gly Lys Tyr Asp Lys Ala Gly Gly  
 1825 1830 1835 1840  
 Lys Met Thr Asn Arg Gly Asn Gly Lys Gly Lys Gln Gly Glu Ala Lys  
 1845 1850 1855  
 Gly Arg Gly Ser Arg Ile Asp Ser His Phe Arg Ser Ser His Cys Val  
 1860 1865 1870  
 Val Cys Gly Ile Glu Ser Ser Asp Val Leu Cys His Pro Cys Arg Leu  
 1875 1880 1885  
 Asp Pro Ser Thr Thr Ser His Ala Leu Leu Ser Arg Leu His Ile Ala  
 1890 1895 1900  
 Gln Asp Lys Leu Ile Val Leu Gln Lys Ile Cys Ala Ser Cys Ser Ser  
 1905 1910 1915 1920  
 Val Pro Pro Ala Glu Lys Ile Leu Cys Asp Ser Ile Asp Cys Pro Asn  
 1925 1930 1935  
 Thr Phe Ala Arg Val Ala Ala Glu Arg Glu Val Glu Asp Leu Glu Asp  
 1940 1945 1950  
 Val Gly Glu Leu Leu Leu Glu Leu Lys Leu Glu Asp Glu Arg Pro Glu  
 1955 1960 1965  
 Ile Asp Leu Ser Trp  
 1970

&lt;210&gt; 2695

&lt;211&gt; 5196

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(5196)

&lt;400&gt; 2695

atg	gcc	gcc	gcc	gcc	tcc	tcc	tcc	tcc	ccg	ccg	ggg	acc	gcc	tcc	ccg	48
Met	Ala	Ala	Ala	Ala	Ser	Ser	Ser	Ser	Pro	Pro	Gly	Thr	Ala	Ser	Pro	
1				5					10					15		
gtg	ctc	agc	gtg	cgg	atc	gtc	tcc	ctc	gac	tac	tac	atg	gcg	ccg	ccc	96
Val	Leu	Ser	Val	Arg	Ile	Val	Ser	Leu	Asp	Tyr	Tyr	Met	Ala	Pro	Pro	
			20					25					30			
ctc	ccc	gga	ttc	gac	ttc	tcc	tac	agc	cac	ttc	cac	ggc	gga	gag	gtg	144
Leu	Pro	Gly	Phe	Asp	Phe	Ser	Tyr	Ser	His	Phe	His	Gly	Gly	Glu	Val	
		35					40					45				
gag	gag	gtg	ccg	gtg	atc	agg	atc	tac	ggc	tcc	acc	ccc	gcg	ggg	cag	192
Glu	Glu	Val	Pro	Val	Ile	Arg	Ile	Tyr	Gly	Ser	Thr	Pro	Ala	Gly	Gln	
	50					55					60					
aag	act	tgc	ctc	cac	atc	cat	cgg	cta	att	tgc	ctc	gtc	att	ttt	gat	240
Lys	Thr	Cys	Leu	His	Ile	His	Arg	Leu	Ile	Ser	Leu	Val	Ile	Phe	Asp	
	65				70					75				80		
tca	aga	ctt	caa	ccg	agt	ctg	cgt	gtg	ttt	gat	gct	ttg	agc	gtg	agt	288
Ser	Arg	Leu	Gln	Pro	Ser	Leu	Arg	Val	Phe	Asp	Ala	Leu	Ser	Val	Ser	
				85					90					95		
gtc	ctt	cca	ttt	ctg	tat	gta	cct	tgc	aaa	gag	gac	ctt	ctt	cat	aac	336
Val	Leu	Pro	Phe	Leu	Tyr	Val	Pro	Cys	Lys	Glu	Asp	Leu	Leu	His	Asn	
			100					105					110			
gtc	gaa	aaa	ggg	aat	tca	ttt	ata	tct	ggg	cta	ttg	agt	gat	ctt	gag	384
Val	Glu	Lys	Gly	Asn	Ser	Phe	Ile	Ser	Gly	Leu	Leu	Ser	Asp	Leu	Glu	
	115					120					125					
aaa	gct	ttg	cag	gat	ggg	gct	gct	ctt	aat	aga	gta	ttc	caa	cct	tat	432
Lys	Ala	Leu	Gln	Asp	Gly	Ala	Val	Leu	Asn	Arg	Val	Phe	Gln	Pro	Tyr	
	130				135						140					
gag	tcc	cac	att	cca	tat	ctt	ctt	cac	ttt	ttg	att	gac	tac	aac	ttg	480
Glu	Ser	His	Ile	Pro	Tyr	Leu	Leu	His	Phe	Leu	Ile	Asp	Tyr	Asn	Leu	
	145				150				155						160	
tat	gga	atg	ggc	tat	gta	cat	gtt	aca	gac	ttc	aag	ttc	cgc	cct	cca	528
Tyr	Gly	Met	Gly	Tyr	Val	His	Val	Thr	Asp	Phe	Lys	Phe	Arg	Pro	Pro	
				165					170					175		
ttg	cca	gat	gat	ttt	cat	cca	aag	tca	tct	ctt	cac	agc	aag	gtg	gac	576
Leu	Pro	Asp	Asp	Phe	His	Pro	Lys	Ser	Ser	Leu	His	Ser	Lys	Val	Asp	
			180					185					190			
tgc	tcc	act	gaa	tca	ggg	cat	aag	gta	cat	ccg	gat	aat	gtc	gca	att	624
Cys	Ser	Thr	Glu	Ser	Gly	His	Lys	Val	His	Pro	Asp	Asn	Val	Ala	Ile	
		195					200					205				
aga	aaa	ccg	aca	atc	tgg	ata	tct	tca	aca	gta	cca	cat	tct	tta	ata	672
Arg	Lys	Pro	Thr	Ile	Trp	Ile	Ser	Ser	Thr	Val	Pro	His	Ser	Leu	Ile	
	210				215						220					
ctg	gct	agt	tca	gcc	act	tcc	cat	tgc	atg	gaa	gga	aca	aat	tgg	aac	720
Leu	Ala	Ser	Ser	Ala	Thr	Ser	His	Cys	Met	Glu	Gly	Thr	Asn	Trp	Asn	
	225				230				235					240		
gtc	act	aat	cga	cat	agt	tct	ttg	atg	ctt	gaa	gct	gac	tcg	aga	ata	768
Val	Thr	Asn	Arg	His	Ser	Ser	Leu	Met	Leu	Glu	Ala	Asp	Ser	Arg	Ile	
				245				250						255		
gaa	ggc	atc	cta	aat	gaa	aag	tat	aag	atg	tac	act	tcc	ctt	tca	caa	816
Glu	Gly	Ile	Leu	Asn	Glu	Lys	Tyr	Lys	Met	Tyr	Thr	Ser	Leu	Ser	Gln	
		260						265					270			
gct	aca	gca	gat	agc	aaa	ata	gtt	cgg	tca	ctt	tta	tca	att	tgg	gag	864
Ala	Thr	Ala	Asp	Ser	Lys	Ile	Val	Arg	Ser	Leu	Leu	Ser	Ile	Trp	Glu	
		275					280					285				
gaa	ctc	gag	cac	tta	aga	ttg	ttg	gag	gaa	gca	aaa	cct	gtt	gat	atg	912
Glu	Leu	Glu	His	Leu	Arg	Leu	Leu	Glu	Glu	Ala	Lys	Pro	Val	Asp	Met	
	290				295				300							
ggc	aga	cct	ttg	cgg	gat	tct	gtt	ctt	aga	agt	ttt	ctt	cat	gga	att	960
Gly	Arg	Pro	Leu	Arg	Asp	Ser	Val	Leu	Arg	Ser	Phe	Leu	His	Gly	Ile	
	305				310				315					320		
aaa	tat	gag	act	gcc	ctt	tct	atg	cta	tgt	cca	aag	gag	gaa	gtg	tcc	1008
Lys	Tyr	Glu	Thr	Ala	Leu	Ser	Met	Leu	Cys	Pro	Lys	Glu	Glu	Val	Ser	
				325					330					335		
tat	cac	aga	gtt	cca	acc	atg	gaa	gaa	tct	gaa	aag	ctc	gaa	gaa	tgc	1056
Tyr	His	Arg	Val	Pro	Thr	Met	Glu	Glu	Ser	Glu	Lys	Leu	Glu	Glu	Cys	

## 345

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## PhoenixTemp32470.tmp.txt

705	gag	ggc	tct	tca	gca	710	ggg	agt	gag	ctg	cct	715	tct	tcc	aaa	ctg	720	gga		
Glu	Gly	Ser	Ser	Ala	725	Gly	Ser	Glu	Leu	Pro	730	Gln	Ser	Ser	Lys	Leu	735	Gly		2208
ttt	gcc	gat	atc	cct	ccg	ttt	ttt	aat	cag	acc	gct	gaa	gag	aat	aag					2256
Phe	Ala	Asp	Ile	Pro	Pro	Phe	Phe	Asn	Gln	Thr	Ala	Glu	Glu	Asn	Lys					
			740					745				750								
cag	aat	gaa	tca	ttt	caa	cg	atg	gga	agt	tca	tgg	gat	aca	ttg	ggg					2304
Gln	Asn	Glu	Ser	Phe	Gln	Arg	Met	Gly	Ser	Ser	Trp	Asp	Thr	Leu	Gly					
		755					760				765									
gtt	cca	act	cat	ttc	caa	aat	gat	gga	tca	gcc	tta	tat	ttg	ctg	aca					2352
Val	Pro	Thr	His	Phe	Gln	Asn	Asp	Gly	Ser	Ala	Leu	Tyr	Leu	Leu	Thr					
		770				775					780									
cat	gca	ttt	tcg	cca	cca	tcc	act	gta	gcc	gtg	ggc	cag	tgg	cta	acc					2400
His	Ala	Phe	Ser	Pro	Pro	Ser	Thr	Val	Ala	Val	Gly	Gln	Trp	Leu	Thr					
				790					795						800					
caa	caa	tct	tgt	tct	gtt	agt	gtc	tct	ggt	ata	ggt	cat	tcc	aac	tat					2448
Gln	Gln	Ser	Cys	Ser	Val	Ser	Val	Ser	Gly	Ile	Gly	His	Ser	Asn	Tyr					
				805					810					815						
ggc	gag	aaa	gtg	tct	gtt	gat	cag	gag	gga	gca	aac	aat	tct	act	ctt					2496
Gly	Glu	Lys	Val	Ser	Val	Asp	Gln	Glu	Gly	Ala	Asn	Asn	Ser	Thr	Leu					
			820					825					830							
tca	cca	tat	atg	gga	ggg	cct	gct	ttg	atg	gat	gat	tct	cct	gca	tct					2544
Ser	Pro	Tyr	Met	Gly	Gly	Pro	Ala	Leu	Met	Asp	Asp	Ser	Pro	Ala	Ser					
		835					840					845								
aaa	atg	gct	ttg	gag	cat	agc	att	acg	aca	ttt	cct	gat	gat	aca	gtt					2592
Lys	Met	Ala	Leu	Glu	His	Ser	Ile	Thr	Thr	Phe	Pro	Asp	Asp	Thr	Val					
						855				860										
atg	ata	gaa	cca	gat	ctt	tcc	aac	caa	gaa	att	aaa	aat	ctg	gct	gat					2640
Met	Ile	Glu	Pro	Asp	Leu	Ser	Asn	Gln	Glu	Ile	Lys	Asn	Leu	Ala	Asp					
					870				875						880					
tgg	cat	gac	ttt	tcc	cag	atc	tct	ggt	gga	gat	gag	aag	gat	aaa	ctt					2688
Trp	His	Asp	Phe	Ser	Gln	Ile	Ser	Gly	Gly	Asp	Glu	Lys	Asp	Lys	Leu					
				885				890					895							
aca	cct	ctc	agt	caa	att	gga	ttc	tgt	gat	cct	gct	agt	att	ggg	ggc					2736
Thr	Pro	Leu	Ser	Gln	Ile	Gly	Phe	Cys	Asp	Pro	Ala	Ser	Ile	Gly	Gly					
			900					905					910							
gga	cag	caa	ctg	act	ata	att	agc	ata	gag	gta	ata	aca	gaa	agc	aga					2784
Gly	Gln	Gln	Leu	Thr	Ile	Ile	Ser	Ile	Glu	Val	Ile	Thr	Glu	Ser	Arg					
			915				920					925								
gga	gag	ctg	cgt	cct	gat	cca	tgt	gat	gcc	atc	aat	gct	gta	tcg						2832
Gly	Glu	Leu	Arg	Pro	Asp	Pro	Arg	Phe	Asp	Ala	Ile	Asn	Ala	Val	Ser					
						935			940											
ctg	gcc	gtt	gag	gat	gat	gct	gac	aat	act	att	gaa	gtt	cat	gtg	ctt					2880
Leu	Ala	Val	Glu	Asp	Asp	Ala	Asp	Asn	Thr	Ile	Glu	Val	His	Val	Leu					
					950				955						960					
ata	cgt	gga	aac	aat	gac	agt	tca	cac	agg	agg	aga	aac	ctg	gat	gga					2928
Ile	Arg	Gly	Asn	Asn	Asp	Ser	Ser	His	Arg	Arg	Arg	Asn	Leu	Asp	Gly					
				965				970					975							
gtt	tcc	ggg	tgt	gac	gta	aat	gta	ttt	cct	gga	gag	agg	gaa	ctt	ttg					2976
Val	Ser	Gly	Cys	Asp	Val	Asn	Val	Phe	Pro	Gly	Glu	Arg	Glu	Leu	Leu					
			980					985					990							
aac	cat	ctt	att	aat	gca	ata	tgt	tca	att	gat	cca	gat	att	ata	gtt					3024
Asn	His	Leu	Ile	Asn	Ala	Ile	Cys	Ser	Ile	Asp	Pro	Asp	Ile	Ile	Val					
							1000					1005								
gga	tgg	gag	att	cag	tta	gga	tct	tta	gga	ttc	ctt	gct	gaa	aga	gct					3072
Gly	Trp	Glu	Ile	Gln	Leu	Gly	Ser	Leu	Gly	Phe	Leu	Ala	Glu	Arg	Ala					
						1015			1020											
gct	cat	ctg	ggg	ata	ggc	tta	ctg	aaa	aga	att	tca	agg	aca	cca	ccg					3120
Ala	His	Leu	Gly	Ile	Gly	Leu	Leu	Lys	Arg	Ile	Ser	Arg	Thr	Pro	Pro					
					1030				1035						1040					
cat	cag	atg	aaa	cat	cca	cct	atg	aac	cca	gtg	gac	gaa	tct	agt	cag					3168
His	Gln	Met	Lys	His	Pro	Pro	Met	Asn	Pro	Val	Asp	Glu	Ser	Gln						
				1045				1050					1055							
gag	ctt	cct	gga	gca	tct	tca	gct	gat	gat	gtt	att	gat	gat	gcc	agt					3216
Glu	Leu	Pro	Gly	Ala	Ser	Ser	Ala	Asp	Asp	Val	Ile	Asp	Asp	Ala	Ser					
			1060					1065				1070								
gaa	aac	aat	tgg	agt	cat	gct	cat	gct	agt	ggg	ata	cat	gtt	gat	gga					3264
Glu	Asn	Asn	Trp	Ser	His	Ala	His	Ala	Ser	Gly	Ile	His	Val	Asp	Gly					

## PhoenixTemp32470.tmp.txt

1075	1080	1085	
cga atc ata ctg aac tta tgg cgt ctc atg cgt gca gaa gtt aaa ctt	3312		
Arg Ile Ile Leu Asn Leu Trp Arg Leu Met Arg Ala Glu Val Lys Leu			
1090	1095	1100	
aat aat tac tcc ctc gag gct gta gct aat gaa gtc ttg agg agg aag	3360		
Asn Asn Tyr Ser Leu Glu Ala Val Ala Asn Glu Val Leu Arg Arg Lys			
1105	1110	1115	1120
gta cca tta gta cca act aag ata ttg aat cga tgg ttt gca aca ggt	3408		
Val Pro Leu Val Pro Thr Lys Ile Leu Asn Arg Trp Phe Ala Thr Gly			
1125	1130	1135	
tct gga cga gga aga tat cga tgc ata gaa tat gtt aat aag aga tct	3456		
Ser Gly Arg Gly Arg Tyr Arg Cys Ile Glu Tyr Val Asn Lys Arg Ser			
1140	1145	1150	
tct ctc aac ctt gaa ata tta aat caa ctt gac ctg gta aac cgg aca	3504		
Ser Leu Asn Leu Glu Ile Leu Asn Gln Leu Asp Leu Val Asn Arg Thr			
1155	1160	1165	
tct gaa ctt gcc cgt gta ttt ggt att gat ttc ttc tct gtt ctt tct	3552		
Ser Glu Leu Ala Arg Val Phe Gly Ile Asp Phe Ser Val Leu Ser			
1170	1175	1180	
cga ggt tct cag ttt cgt gtt gaa tct atg ctc ttg aga ttg gtt cat	3600		
Arg Gly Ser Gln Phe Arg Val Glu Ser Met Leu Leu Arg Leu Val His			
1185	1190	1195	1200
aca caa aac tac ctt gca att tcc cct gga aat caa cag gtt gct tct	3648		
Thr Gln Asn Tyr Leu Ala Ile Ser Pro Gly Asn Gln Gln Val Ala Ser			
1205	1210	1215	
cag cca gcc atg gaa tgc ttg cca ctt gta atg gaa cca gag tca gct	3696		
Gln Pro Ala Met Glu Cys Leu Pro Leu Val Met Glu Pro Glu Ser Ala			
1220	1225	1230	
ttc tac tct gac cca gtt gtt gta ttg gat ttt caa tcc ctt tat ccc	3744		
Phe Tyr Ser Asp Pro Val Val Leu Asp Phe Gln Ser Leu Tyr Pro			
1235	1240	1245	
tcc atg ata ata gca tat aac tta tgt tat tcc aca tgc ttg ggt aaa	3792		
Ser Met Ile Ile Ala Tyr Asn Leu Cys Tyr Ser Thr Cys Leu Gly Lys			
1250	1255	1260	
ggt ttc ccg tca aag tca agt gta ctt ggt gtc agc tca tat tca gca	3840		
Val Phe Pro Ser Lys Ser Val Leu Gly Val Ser Ser Tyr Ser Ala			
1265	1270	1275	1280
gat cca cag aaa att gct gac ctg aaa aat cag ctg ctg ctg act cca	3888		
Asp Pro Gln Lys Ile Ala Asp Leu Lys Asn Gln Leu Leu Leu Thr Pro			
1285	1290	1295	
aat ggt gtc ctg tac gtg caa cct gag gtc agg aaa ggt gtg ctt cct	3936		
Asn Gly Val Leu Tyr Val Gln Pro Glu Val Arg Lys Gly Val Leu Pro			
1300	1305	1310	
cgc ctt ctc gaa gag ata cta tca aca aga att atg gtg aag aaa gca	3984		
Arg Leu Leu Glu Glu Ile Leu Ser Thr Arg Ile Met Val Lys Lys Ala			
1315	1320	1325	
atg aaa aag ctg tct gca tct cag aag gtt ctg cag cgg att ttt aat	4032		
Met Lys Lys Leu Ser Ala Ser Gln Lys Val Leu Gln Arg Ile Phe Asn			
1330	1335	1340	
gca cgc caa ctt gct ctg aag ctg ata gct aat gta aca tat ggt tac	4080		
Ala Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val Thr Tyr Gly Tyr			
1345	1350	1355	1360
aca gct gct gga ttc agt ggt cgt atg ccc tgt gca gag att gca gac	4128		
Thr Ala Ala Gly Phe Ser Gly Arg Met Pro Cys Ala Glu Ile Ala Asp			
1365	1370	1375	
agc att gtt cag tgt ggc cgt aga aca ctt gaa aca gct ata tca ttc	4176		
Ser Ile Val Gln Cys Gly Arg Arg Thr Leu Glu Thr Ala Ile Ser Phe			
1380	1385	1390	
ggt aac cag cac cct ttg tgg aaa gct aga gtt gta tat ggt gat act	4224		
Val Asn Gln His Pro Leu Trp Lys Ala Arg Val Val Tyr Gly Asp Thr			
1395	1400	1405	
gac agc tac gag agt cct gaa cag aaa gag ccc atc ttt gat gca aag	4272		
Asp Ser Tyr Glu Ser Pro Glu Gln Lys Glu Pro Ile Phe Asp Ala Lys			
1410	1415	1420	
gga att gaa aca gtg cgg aga gat aca tgc cca gca gtt gca aag att	4320		
Gly Ile Glu Thr Val Arg Arg Asp Thr Cys Pro Ala Val Ala Lys Ile			
1425	1430	1435	1440
tta gag caa tct att aga ata atg ttt gaa gaa caa gac tta gcc aaa	4368		
Leu Glu Gln Ser Ile Arg Ile Met Phe Glu Glu Gln Asp Leu Ala Lys			

## PhoenixTemp32470.tmp.txt

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1445      1450      1455
gtt agg tca tat ttg gag cgt caa tgg aca cgg ata cta tca ggg aaa 4416
Val Arg Ser Tyr Leu Glu Arg Gln Trp Thr Arg Ile Leu Ser Gly Lys
1460      1465      1470
att tct att caa gat ttc gtt ttt gct aag gag gtt cgc cta ggt act 4464
Ile Ser Ile Gln Asp Phe Val Phe Ala Lys Glu Val Arg Leu Gly Thr
1475      1480      1485
tat agt gca agg gct tcc tcg ctg cca ccc gca gca att gtt gca aca 4512
Tyr Ser Ala Arg Ala Ser Ser Leu Pro Pro Ala Ala Ile Val Ala Thr
1490      1495      1500
aaa gca att cta tct gat cct agg gca gaa cct cgc tat ggg gag aga 4560
Lys Ala Ile Leu Ser Asp Pro Arg Ala Glu Pro Arg Tyr Gly Glu Arg
1505      1510      1515      1520
gtg cca tat gtt gta atc cat gga gaa cca ggt gct cgg ctt gta gat 4608
Val Pro Tyr Val Val Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp
1525      1530      1535
atg gtt att gat cct tat ggc ctg cta gaa gtt gga tct cca tat aga 4656
Met Val Ile Asp Pro Tyr Gly Leu Glu Val Gly Ser Pro Tyr Arg
1540      1545      1550
tta aat gca cta tat tac ata acc aaa cag ata atc cct gca ttg caa 4704
Leu Asn Ala Leu Tyr Tyr Ile Thr Lys Gln Ile Ile Pro Ala Leu Gln
1555      1560      1565
cgt gtt ttt gga ctc gtt ggt gct gac ctg aat aag tgg ttt aat gag 4752
Arg Val Phe Gly Leu Val Gly Ala Asp Leu Asn Lys Trp Phe Asn Glu
1570      1575      1580
atg cct cgc cca ata agg gaa aca ctt gct aaa cga cag tca gca tct 4800
Met Pro Arg Pro Ile Arg Glu Thr Leu Ala Lys Arg Gln Ser Ala Ser
1585      1590      1595      1600
ggt cat ggt agc ttt agc cga tta gga ttg aat aag aaa ggg gtt ggc 4848
Gly His Gly Ser Phe Ser Arg Leu Gly Leu Asn Lys Lys Gly Val Gly
1605      1610      1615
aaa gga agc agg ata gat act tac tat atg tca agc cac tgt ata att 4896
Lys Gly Ser Arg Ile Asp Thr Tyr Tyr Met Ser Ser His Cys Ile Ile
1620      1625      1630
tgt ggt gaa ata att caa gga tca gac aca ttt tgc aac aac tgc ttg 4944
Cys Gly Glu Ile Ile Gln Gly Ser Asp Thr Phe Cys Asn Asn Cys Leu
1635      1640      1645
aga aat gaa gct gtt gtc ggc aca ata gtt gct ggc aga act tcc aaa 4992
Arg Asn Glu Ala Val Val Gly Thr Ile Val Ala Gly Arg Thr Ser Lys
1650      1655      1660
ttg gag cgg gaa att cag cat ctt gct gct ata tgt ggt cac tgc gga 5040
Leu Glu Arg Glu Ile Gln His Leu Ala Ala Ile Cys Gly His Cys Gly
1665      1670      1675      1680
ggg gca gat tgg att gtt gaa agt ggg atc aag tgc att tcc ctt gca 5088
Gly Ala Asp Trp Ile Val Glu Ser Gly Ile Lys Cys Ile Ser Leu Ala
1685      1690      1695
tgc cca gtg ttc ttt gag cgg aga aag att caa agg gag ttg agg ggt 5136
Cys Pro Val Phe Phe Glu Arg Arg Lys Ile Gln Arg Glu Leu Arg Gly
1700      1705      1710
gtt tca gaa tca gca ata gaa gct ggg tat tat ccc ttc tgt tgt cca 5184
Val Ser Glu Ser Ala Ile Glu Ala Gly Tyr Tyr Pro Phe Cys Cys Pro
1715      1720      1725
gaa ctc ttc tga
Glu Leu Phe
1730

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&lt;210&gt; 2696

&lt;211&gt; 1731

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2696

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Met Ala Ala Ala Ala Ser Ser Ser Ser Pro Pro Gly Thr Ala Ser Pro
1      5      10      15
Val Leu Ser Val Arg Ile Val Ser Leu Asp Tyr Tyr Met Ala Pro Pro
20      25      30
Leu Pro Gly Phe Asp Phe Ser Tyr Ser His Phe His Gly Glu Val
35      40      45
Glu Glu Val Pro Val Ile Arg Ile Tyr Gly Ser Thr Pro Ala Gly Gln

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## PhoenixTemp32470.tmp.txt

	50					55			60					
Lys	Thr	Cys	Leu	His	Ile	His	Arg	Leu	Ile	Ser	Leu	Val	Ile	Phe
65					70					75				80
Ser	Arg	Leu	Gln	Pro	Ser	Leu	Arg	Val	Phe	Asp	Ala	Leu	Ser	Val
				85					90					95
Val	Leu	Pro	Phe	Leu	Tyr	Val	Pro	Cys	Lys	Glu	Asp	Leu	Leu	His
			100					105					110	Asn
Val	Glu	Lys	Gly	Asn	Ser	Phe	Ile	Ser	Gly	Leu	Leu	Ser	Asp	Leu
		115					120					125		Glu
Lys	Ala	Leu	Gln	Asp	Gly	Ala	Val	Leu	Asn	Arg	Val	Phe	Gln	Pro
	130					135					140			Tyr
Glu	Ser	His	Ile	Pro	Tyr	Leu	Leu	His	Phe	Leu	Ile	Asp	Tyr	Asn
145					150					155				160
Tyr	Gly	Met	Gly	Tyr	Val	His	Val	Thr	Asp	Phe	Lys	Phe	Arg	Pro
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Leu	Pro	Asp	Asp	Phe	His	Pro	Lys	Ser	Ser	Leu	His	Ser	Lys	Val
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Cys	Ser	Thr	Glu	Ser	Gly	His	Lys	Val	His	Pro	Asp	Asn	Val	Ala
		195					200					205		Ile
Arg	Lys	Pro	Thr	Ile	Trp	Ile	Ser	Ser	Thr	Val	Pro	His	Ser	Leu
	210					215					220			Ile
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Val	Thr	Asn	Arg	His	Ser	Ser	Leu	Met	Leu	Glu	Ala	Asp	Ser	Arg
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Glu	Gly	Ile	Leu	Asn	Glu	Lys	Tyr	Lys	Met	Tyr	Thr	Ser	Leu	Ser
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Ala	Thr	Ala	Asp	Ser	Lys	Ile	Val	Arg	Ser	Leu	Leu	Ser	Ile	Trp
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Glu	Leu	Glu	His	Leu	Arg	Leu	Glu	Glu	Ala	Lys	Pro	Val	Asp	Met
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Lys	Tyr	Glu	Thr	Ala	Leu	Ser	Met	Leu	Cys	Pro	Lys	Glu	Glu	Val
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Tyr	His	Arg	Val	Pro	Thr	Met	Glu	Glu	Ser	Glu	Lys	Leu	Glu	Glu
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Leu	Lys	Ser	Leu	Asn	Asp	Ile	Ile	Gly	Thr	Ile	Thr	Phe	Ser	Gln
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Gln	Leu	Phe	Glu	His	Glu	Lys	Leu	Val	Asp	Ala	Glu	Ala	Leu	Gly
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Asp	Asp	Glu	Leu	Val	Asn	Glu	Ala	Ile	Leu	Ser	Pro	Leu	Phe	Ser
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Ala	Ser	Gln	Gln	Glu	Cys	Gln	Asp	Ile	Leu	Asp	Ser	Ile	Gly	Pro
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Gly	Ser	Ser	Asp	Glu	Asn	Lys	Glu	Val	Pro	Gln	Glu	Asp	Gly	Lys
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Lys	Ile	Asp	Arg	Lys	Arg	Ala	Gly	Leu	Pro	Ser	Tyr	Ser	Ser	Pro
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Ser	Ser	Ser	Lys	Ala	Ser	Lys	Arg	Gly	Gly	Asn	Glu	Leu	Leu	Trp
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His	Ser	Gly	Gly	Ala	Met	Pro	Thr	Glu	Lys	Val	Leu	Ser	Ala	Ser
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## PhoenixTemp32470.tmp.txt

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Val	Arg	Asp	Leu	Met	Arg	Arg	Arg	Arg	Arg	Ser	Phe	Arg	Ser	Glu	Gln
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Ser	Glu	Val	Gly	Asn	Ser	Gly	Asp	Ala	Ala	Tyr	Ile	Val	Arg	Lys	Glu
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Trp	His	Asp	Phe	Ser	Gln	Ile	Ser	Gly	Gly	Asp	Glu	Lys	Asp	Lys	Leu
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Ile	Arg	Gly	Asn	Asn	Asp	Ser	Ser	His	Arg	Arg	Arg	Asn	Leu	Asp	Gly
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	1090					1095					1100				
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Ser	Gly	Arg	Gly	Arg	Tyr	Arg	Cys	Ile	Glu	Tyr	Val	Asn	Lys	Arg	Ser
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## PhoenixTemp32470.tmp.txt

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Thr Gln Asn Tyr Leu Ala Ile Ser Pro Gly Asn Gln Gln Val Ala Ser
1205      1210      1215
Gln Pro Ala Met Glu Cys Leu Pro Leu Val Met Glu Pro Glu Ser Ala
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Phe Tyr Ser Asp Pro Val Val Val Leu Asp Phe Gln Ser Leu Tyr Pro
1235      1240      1245
Ser Met Ile Ile Ala Tyr Asn Leu Cys Tyr Ser Thr Cys Leu Gly Lys
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Val Phe Pro Ser Lys Ser Ser Val Leu Gly Val Ser Ser Tyr Ser Ala
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Asp Pro Gln Lys Ile Ala Asp Leu Lys Asn Gln Leu Leu Leu Thr Pro
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Arg Leu Leu Glu Glu Ile Leu Ser Thr Arg Ile Met Val Lys Lys Ala
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Met Lys Lys Leu Ser Ala Ser Gln Lys Val Leu Gln Arg Ile Phe Asn
1330      1335      1340
Ala Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val Thr Tyr Gly Tyr
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Thr Ala Ala Gly Phe Ser Gly Arg Met Pro Cys Ala Glu Ile Ala Asp
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Ser Ile Val Gln Cys Gly Arg Arg Thr Leu Glu Thr Ala Ile Ser Phe
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Val Asn Gln His Pro Leu Trp Lys Ala Arg Val Val Tyr Gly Asp Thr
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Asp Ser Tyr Glu Ser Pro Glu Gln Lys Glu Pro Ile Phe Asp Ala Lys
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Leu Glu Gln Ser Ile Arg Ile Met Phe Glu Glu Gln Asp Leu Ala Lys
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Val Arg Ser Tyr Leu Glu Arg Gln Trp Thr Arg Ile Leu Ser Gly Lys
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Ile Ser Ile Gln Asp Phe Val Phe Ala Lys Glu Val Arg Leu Gly Thr
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Tyr Ser Ala Arg Ala Ser Ser Leu Pro Pro Ala Ala Ile Val Ala Thr
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1570      1575      1580
Met Pro Arg Pro Ile Arg Glu Thr Leu Ala Lys Arg Gln Ser Ala Ser
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1665      1670      1675      1680
Gly Ala Asp Trp Ile Val Glu Ser Gly Ile Lys Cys Ile Ser Leu Ala
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Cys Pro Val Phe Glu Arg Arg Lys Ile Gln Arg Glu Leu Arg Gly
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 1 5 10 15  
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 Ser Met Asp Tyr Tyr Met Ala Pro Pro Ile Pro Asp Leu Asp Ile Cys  
 20 25 30  
 tac agt agc ttt caa ggt ggt atg gtg aag gaa gtt cct gta ata agg 144  
 Tyr Ser Ser Phe Gln Gly Gly Met Val Lys Glu Val Pro Val Ile Arg  
 35 40 45  
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 Ile Tyr Gly Ser Thr Pro Val Gly Gln Lys Thr Cys Leu His Val His  
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 Arg Ala Leu Pro Tyr Leu Tyr Val Pro Cys Thr Asp Leu Met Pro Gln  
 65 70 75 80  
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 Ser Pro Gln Glu Val Ile Asp Lys Gln Thr Leu Ile Ile Lys Cys Gly  
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 Thr Tyr Asn Asn Tyr Asn Pro Gln Asp Phe Val Ser Leu Trp Phe Tyr  
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 Ser Asp Thr Tyr Thr His Ala Val Ser Leu Gly Val Glu Lys Ala Leu  
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 Lys Leu Lys Gly Asn Ala Gly Ser Lys Arg Gln His Val His Gly Cys  
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 Ala Asn Leu Leu Leu Gly Gly Ser Val Leu Asp Lys Ser Leu Gln Pro  
 180 185 190  
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 His Glu Ser His Ile Pro Phe Leu Leu Gln Phe Leu Ile Asp Tyr Asn  
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 225 230 235 240  
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 Gln Lys Leu Glu Pro Asp Asp Phe Ala Cys Ile Ser Ala His Leu Gln  
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 260 265 270  
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## PhoenixTemp32470.tmp.txt

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PhoenixTemp32470.tmp.txt

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			660					665					670			
gat	gtc	aat	gat	tta	aaa	gaa	gca	agt	act	tta	gtt	gga	tgc	tct	atg	2064
Asp	Val	Asn	Asp	Leu	Lys	Glu	Ala	Ser	Thr	Leu	Val	Gly	Cys	Ser	Met	
		675					680					685				
cgg	gac	ttg	atg	agg	aga	aaa	aga	tgc	cac	cgg	gtt	gag	cca	tct	gaa	2112
Arg	Asp	Leu	Met	Arg	Arg	Lys	Arg	Cys	His	Arg	Val	Glu	Pro	Ser	Glu	
	690					695					700					
tgt	gtg	att	cat	act	aaa	aag	gtg	cga	gat	tct	gca	gct	tcc	atg	gtc	2160
Cys	Val	Ile	His	Thr	Lys	Lys	Val	Arg	Asp	Ser	Ala	Ala	Ser	Met	Val	
705					710					715					720	
gat	ttt	gaa	ttt	tct	aat	tgc	aaa	gag	tat	gct	tgc	aaa	cct	gat	cct	2208
Asp	Phe	Glu	Phe	Ser	Asn	Cys	Lys	Glu	Tyr	Ala	Cys	Lys	Pro	Asp	Pro	
				725					730					735		
tca	act	gat	gtt	cag	ttt	ttg	aag	ttt	gat	act	ggt	gat	aaa	cat	ttt	2256
Ser	Thr	Asp	Val	Gln	Phe	Leu	Lys	Phe	Asp	Thr	Gly	Asp	Lys	His	Phe	
			740					745					750			
gtt	gat	gag	aga	ttg	aag	caa	act	aaa	gca	tct	gct	tca	agc	tgt	ttg	2304
Val	Asp	Glu	Arg	Leu	Lys	Gln	Thr	Lys	Ala	Ser	Ala	Ser	Ser	Cys	Leu	
		755					760					765				
tca	aat	tca	cct	ttt	gaa	cat	gaa	atg	gta	tgt	cga	gat	ggg	tac	act	2352
Ser	Asn	Ser	Pro	Phe	Glu	His	Glu	Met	Val	Cys	Arg	Asp	Gly	Tyr	Thr	
	770					775					780					
tgc	aaa	agt	ggc	cgt	gac	tgc	agg	acc	tcc	att	gag	tgt	ttg	cct	gaa	2400
Cys	Lys	Ser	Gly	Arg	Asp	Cys	Arg	Thr	Ser	Ile	Glu	Cys	Leu	Pro	Glu	
785					790					795					800	
ata	tct	tct	gag	aat	ctt	gaa	ggt	tgg	gat	ggt	gct	act	ggc	aca	aca	2448
Ile	Ser	Ser	Glu	Asn	Leu	Glu	Gly	Trp	Asp	Gly	Ala	Thr	Gly	Thr	Thr	
				805					810					815		
ctt	tca	caa	ttt	aag	aat	tgt	ggt	ggt	gga	gat	tgg	gga	aat	gat	gct	2496
Leu	Ser	Gln	Phe	Lys	Asn	Cys	Gly	Gly	Gly	Asp	Trp	Gly	Asn	Asp	Ala	
			820				825						830			
ggc	ttg	tct	ggg	act	cac	aat	tta	gta	tcc	aca	gtt	gtc	aac	atg	gaa	2544
Gly	Leu	Ser	Gly	Thr	His	Asn	Leu	Val	Ser	Thr	Val	Val	Asn	Met	Glu	
		835					840					845				
gca	aaa	cct	gtg	gaa	ctt	att	ggc	atg	acc	ttc	cac	cag	aag	cct	ccc	2592
Ala	Lys	Pro	Val	Glu	Leu	Ile	Gly	Met	Thr	Phe	His	Gln	Lys	Pro	Pro	
	850					855				860						
act	gta	gac	tgg	acg	gat	ggg	act	ttt	gat	aat	gcc	ttg	ttg	tca	cct	2640
Thr	Val	Asp	Trp	Thr	Asp	Gly	Thr	Phe	Asp	Asn	Ala	Leu	Leu	Ser	Pro	
865					870					875					880	
gct	atc	ccc	aat	tgc	tct	tct	ctt	gag	aat	gag	gaa	att	caa	ggc	aca	2688
Ala	Ile	Pro	Asn	Cys	Ser	Ser	Leu	Glu	Asn	Glu	Glu	Ile	Gln	Gly	Thr	
				885					890					895		
att	ctg	gat	gaa	ttc	atc	cca	ttt	ttt	gtg	ggg	gac	tgc	cag	gaa	gag	2736
Ile	Leu	Asp	Glu	Phe	Ile	Pro	Phe	Phe	Val	Gly	Asp	Cys	Gln	Glu	Glu	
			900				905						910			
aaa	aaa	gtt	tgg	aac	aag	tgc	tat	aat	gac	tta	aat	aat	cac	caa	gaa	2784
Lys	Lys	Val	Trp	Asn	Lys	Cys	Tyr	Asn	Asp	Leu	Asn	Asn	His	Gln	Glu	
		915					920					925				
gtt	ggc	atg	ggg	gtg	cct	acc	cac	tat	caa	aat	gat	ggc	tca	ttc	ttg	2832
Val	Gly	Met	Gly	Val	Pro	Thr	His	Tyr	Gln	Asn	Asp	Gly	Ser	Phe	Leu	
	930					935					940					
tac	ttg	ttg	aca	cca	gta	ttt	tca	cct	cca	tcc	gca	gat	tgt	gtt	cat	2880
Tyr	Leu	Leu	Thr	Pro	Val	Phe	Ser	Pro	Pro	Ser	Ala	Asp	Cys	Val	His	
945					950					955					960	
aga	tgg	ctg	ttg	cat	gat	gac	acg	gtg	ctc	att	gca	gat	acc	tct	gct	2928
Arg	Trp	Leu	Leu	His	Asp	Asp	Thr	Val	Leu	Ile	Ala	Asp	Thr	Ser	Ala	
				965				970						975		
gag	cct	ttg	cct	gtg	ggg	tct	gtg	tct	cac	gtg	aaa	cct	gtc	ctg	gat	2976
Glu	Pro	Leu	Pro	Val	Gly	Ser	Val	Ser	His	Val	Lys	Pro	Val	Leu	Asp	
			980					985					990			
caa	cag	aat	cat	gaa	att	cat	gac	aac	ctc	aat	gca	aaa	aag	aat	gct	3024
Gln	Gln	Asn	His	Glu	Ile	His	Asp	Asn	Leu	Asn	Ala	Lys	Lys	Asn	Ala	
		995					1000					1005				
ttt	cat	gat	aag	gtg	cca	gaa	aaa	aca	cag	gtc	aaa	ggg	aat	att	atg	3072
Phe	His	Asp	Lys	Val	Pro	Glu	Lys	Thr	Gln	Val	Lys	Gly	Asn	Ile	Met	
	1010					1015						1020				

## PhoenixTemp32470.tmp.txt

aaa gta aaa aaa tgc act aat tgc tca cag gat atc tct cag att tca 3120  
 Lys Val Lys Lys Cys Thr Asn Cys Ser Gln Asp Ile Ser Gln Ile Cys  
 1025 1030 1035 1040  
 ggc cca gag gag aaa tca aaa cct act cct ctt agt caa att gga ttt 3168  
 Gly Pro Glu Glu Lys Ser Lys Pro Thr Pro Leu Ser Gln Ile Gly Phe  
 1045 1050 1055  
 cgg gac ccg gca agt gtt ggt gga cag caa gta aca ttg tta agc 3216  
 Arg Asp Pro Ala Ser Val Gly Gly Gln Gln Val Thr Leu Leu Ser  
 1060 1065 1070  
 ata gag att caa gca gaa tct aga gga gat ctc cga cct gac cct cga 3264  
 Ile Glu Ile Gln Ala Glu Ser Arg Gly Asp Leu Arg Pro Asp Pro Arg  
 1075 1080 1085  
 tat gat gcc atc aat gtg att gtt ctt ctg att cag gaa gat gat gat 3312  
 Tyr Asp Ala Ile Asn Val Ile Val Leu Leu Ile Gln Glu Asp Asp Asp  
 1090 1095 1100  
 tct gct ctt gaa gtt ttt gtg ctt tgt cga agt aat att gaa cct tgt 3360  
 Ser Ala Leu Glu Val Phe Val Leu Cys Arg Ser Asn Ile Glu Pro Cys  
 1105 1110 1115 1120  
 cag aga aaa ctt gac gga ata tct ggt tgc aag gtg ttg gtt tcc tct 3408  
 Gln Arg Lys Leu Asp Gly Ile Ser Gly Cys Lys Val Leu Val Ser Ser  
 1125 1130 1135  
 gaa gag aaa ctc tta ttt gac gac ttt att aat att ata tgt tca ttt 3456  
 Glu Glu Lys Leu Leu Phe Asp Asp Phe Ile Asn Ile Ile Cys Ser Phe  
 1140 1145 1150  
 gat cca gat att ttg att ggc tgg gat att caa ggt ggc tcc ctt ggt 3504  
 Asp Pro Asp Ile Leu Ile Gly Trp Asp Ile Gln Gly Gly Ser Leu Gly  
 1155 1160 1165  
 ttc ttg gct gaa agg gct tca cat ctt ggt ata ggt tta ctt aat aaa 3552  
 Phe Leu Ala Glu Arg Ala Ser His Leu Gly Ile Gly Leu Leu Asn Lys  
 1170 1175 1180  
 ata tct agg aca cca tct gaa acc aag aca gct tct aga aat ttt gaa 3600  
 Ile Ser Arg Thr Pro Ser Glu Thr Lys Thr Ala Ser Arg Asn Phe Glu  
 1185 1190 1195 1200  
 att cct gag aaa aga gat gaa tgg ggt cgg act cat gca agt ggt gtc 3648  
 Ile Pro Glu Lys Arg Asp Glu Trp Gly Arg Thr His Ala Ser Gly Val  
 1205 1210 1215  
 cat gtc ggt ggt aga att gtc ctt aat gtt tgg cga ctg atg cgt ggt 3696  
 His Val Gly Gly Arg Ile Val Leu Asn Val Trp Arg Leu Met Arg Gly  
 1220 1225 1230  
 gaa att aaa ctt aat atg tac act gct gaa tct gta gca gaa gct gtt 3744  
 Glu Ile Lys Leu Asn Met Tyr Thr Ala Glu Ser Val Ala Glu Ala Val  
 1235 1240 1245  
 ttg agg caa aaa att cca tca att cgt aat aga gta ttg act aag tgg 3792  
 Leu Arg Gln Lys Ile Pro Ser Ile Arg Asn Arg Val Leu Thr Lys Trp  
 1250 1255 1260  
 ttt tca agt ggt cct gga agg gca aga tat cgt agt att gaa tat gtc 3840  
 Phe Ser Ser Gly Pro Gly Arg Ala Arg Tyr Arg Ser Ile Glu Tyr Val  
 1265 1270 1275 1280  
 ata cag aga gca aag ctg aat ttt gag ata atg aac caa ctt gac atg 3888  
 Ile Gln Arg Ala Lys Leu Asn Phe Glu Ile Met Asn Gln Leu Asp Met  
 1285 1290 1295  
 ata aac cgg aca tcg gag ctt gct cgt gtt ttt gga att gat ttt ttt 3936  
 Ile Asn Arg Thr Ser Glu Leu Ala Arg Val Phe Gly Ile Asp Phe Phe  
 1300 1305 1310  
 tct gtt ctc tcc cga ggt tcg cag tac cat gtt gaa tca atg ttt cta 3984  
 Ser Val Leu Ser Arg Gly Ser Gln Tyr His Val Glu Ser Met Phe Leu  
 1315 1320 1325  
 aga ctg gca cat act cag aac ttc ctt gcg att tct cct ggg ccc caa 4032  
 Arg Leu Ala His Thr Gln Asn Phe Leu Ala Ile Ser Pro Gly Pro Gln  
 1330 1335 1340  
 cag gtt gct act caa cct gct atg gag tgc ctg cct ctt gta atg gag 4080  
 Gln Val Ala Thr Gln Pro Ala Met Glu Cys Leu Pro Leu Val Met Glu  
 1345 1350 1355 1360  
 cca gaa tct ggt ttt tat gcc gat cca gta gtg gtt ttg gat ttt cag 4128  
 Pro Glu Ser Gly Phe Tyr Ala Asp Pro Val Val Val Leu Asp Phe Gln  
 1365 1370 1375  
 tct ctt tat cca tct atg ata att gca tac aac ctc tgc tat tct aca 4176  
 Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Leu Cys Tyr Ser Thr  
 1380 1385 1390

## PhoenixTemp32470.tmp.txt

tgc ctt gga aaa gtt gca cct tca aag gca gat gta ctt ggt gtt agc	4224
Cys Leu Gly Lys Val Ala Pro Ser Lys Ala Asp Val Leu Gly Val Ser	
1395 1400 1405	
ata tat tca cca gat ccg cat gct tta cat gat tta aaa gat caa ata	4272
Ile Tyr Ser Pro Asp Pro His Ala Leu His Asp Leu Lys Asp Gln Ile	
1410 1415 1420	
ctg ctc act cca aat ggt gtt atg tat gtg cct tca aag gca cgt aaa	4320
Leu Leu Thr Pro Asn Gly Val Met Tyr Val Pro Ser Lys Ala Arg Lys	
1425 1430 1435 1440	
ggc gtg ctg cct cgt ttg ttg gaa gaa ata ttg tca act aga ata atg	4368
Gly Val Leu Pro Arg Leu Leu Glu Glu Ile Leu Ser Thr Arg Ile Met	
1445 1450 1455	
gtg aaa aaa gca atg aag aag ttg gtt cct tcc cag cag gtt ctt caa	4416
Val Lys Lys Ala Met Lys Lys Leu Val Pro Ser Gln Gln Val Leu Gln	
1460 1465 1470	
agg ata ttt aat gca aga cag ctt gct ttg aag ctg ata gca aat gta	4464
Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val	
1475 1480 1485	
aca tat ggt tat aca gct gct gga tat agt ggt cgt atg cct tgt gca	4512
Thr Tyr Gly Tyr Thr Ala Ala Gly Tyr Ser Gly Arg Met Pro Cys Ala	
1490 1495 1500	
gag ctt gca gac agc att gtt caa tgt ggc cgt agg aca ctg gaa aat	4560
Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Thr Leu Glu Asn	
1505 1510 1515 1520	
gct att tca ctt gta aat aca cat gat aaa tgg aaa gct aaa gtt att	4608
Ala Ile Ser Leu Val Asn Thr His Asp Lys Trp Lys Ala Lys Val Ile	
1525 1530 1535	
tat ggt gat act gac agc atg ttt gtc ctc ctt aaa ggc cgc act gtc	4656
Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys Gly Arg Thr Val	
1540 1545 1550	
aaa gaa tct ttc caa att gga cat gag att gca tct gca gta act gca	4704
Lys Glu Ser Phe Gln Ile Gly His Glu Ile Ala Ser Ala Val Thr Ala	
1555 1560 1565	
atg aac cct aat cca gtt aca ttg aaa atg gag aaa gtc tat cat cct	4752
Met Asn Pro Asn Pro Val Thr Leu Lys Met Glu Lys Val Tyr His Pro	
1570 1575 1580	
tgc ttc ctt ctt acc aag aaa cgt tac gtt ggt tac agt tat gag agc	4800
Cys Phe Leu Leu Thr Lys Lys Arg Tyr Val Gly Tyr Ser Tyr Glu Ser	
1585 1590 1595 1600	
cct gat caa att gaa ccc acc ttt gat gct aaa ggt att gag aca gta	4848
Pro Asp Gln Ile Glu Pro Thr Phe Asp Ala Lys Gly Ile Glu Thr Val	
1605 1610 1615	
cgt aga gac aca tgt ggc gct gtt gct aag aca atg gag caa tcc ctg	4896
Arg Arg Asp Thr Cys Gly Ala Val Ala Lys Thr Met Glu Gln Ser Leu	
1620 1625 1630	
aga ctt ttt ttt gaa cat caa gac att tcc aag gtt aaa gta tac ttg	4944
Arg Leu Phe Phe Glu His Gln Asp Ile Ser Lys Val Lys Val Tyr Leu	
1635 1640 1645	
cag aga cag tgg aga agg att cta tct ggt agg gtg tct ctt cag gat	4992
Gln Arg Gln Trp Arg Arg Ile Leu Ser Gly Arg Val Ser Leu Gln Asp	
1650 1655 1660	
ttt gtt ttt gca aag gag gtt cgc tta ggt aca tac agt tca aga gct	5040
Phe Val Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr Ser Ser Arg Ala	
1665 1670 1675 1680	
tct tca ctc cca ccg gcg gca att gtg gcc atc aaa gca atg aga gcc	5088
Ser Ser Leu Pro Ala Ala Ile Val Ala Ile Lys Ala Met Arg Ala	
1685 1690 1695	
gat ccc agg gct gaa cca tgc tat gcg gag aga gta cct tat gtt gta	5136
Asp Pro Arg Ala Glu Pro Cys Tyr Ala Glu Arg Val Pro Tyr Val Val	
1700 1705 1710	
atc cat ggg gag cct gga gct cgc ctg gtt gat ttg gtt gtg gat cca	5184
Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp Leu Val Asp Pro	
1715 1720 1725	
ttg gat ctt ttg gca att gat tct ccc tac aga tta aat gat caa tac	5232
Leu Asp Leu Leu Ala Ile Asp Ser Pro Tyr Arg Leu Asn Asp Gln Tyr	
1730 1735 1740	
tac atc aac aag cag ata atc cca gct ttg caa agg gta ttt gga ctt	5280
Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln Arg Val Phe Gly Leu	
1745 1750 1755 1760	

## PhoenixTemp32470.tmp.txt

gtt gga gct gat ttg tac cag tgg ttt tca gag atg cct cgc cca gtt 5328  
 Val Gly Ala Asp Leu Tyr Gln Trp Phe Ser Glu Met Pro Arg Pro Val  
 1765 1770 1775  
 agg gaa gtt tat gct aaa cac aag tct cat gct cca aat cca tac cgg 5376  
 Arg Glu Val Tyr Ala Lys His Lys Ser His Ala Pro Asn Pro Tyr Arg  
 1780 1785 1790  
 acc aga att gat ttt tac tat ctc tca aaa cac tgt atc cta tgt ggt 5424  
 Thr Arg Ile Asp Phe Tyr Tyr Leu Ser Lys His Cys Ile Leu Cys Gly  
 1795 1800 1805  
 gag ctg tcc ccg gca tca gcc cat ata tgc gat aaa tgt tct aaa gat 5472  
 Glu Leu Ser Pro Ala Ser Ala His Ile Cys Asp Lys Cys Ser Lys Asp  
 1810 1815 1820  
 gga act gct gtt gct gca gct gtg att gga aga act gca aaa tta gag 5520  
 Gly Thr Ala Val Ala Ala Val Ile Gly Arg Thr Ala Lys Leu Glu  
 1825 1830 1835 1840  
 aga gat att caa cac ctt gca gct ata tgc cga cat tgc gga ggt gga 5568  
 Arg Asp Ile Gln His Leu Ala Ala Ile Cys Arg His Cys Gly Gly Gly  
 1845 1850 1855  
 gat tgg atc gtg gaa agc ggg gtg aag tgc aca tca ctt gca tgc tca 5616  
 Asp Trp Ile Val Glu Ser Gly Val Lys Cys Thr Ser Leu Ala Cys Ser  
 1860 1865 1870  
 gtg ttc tat gaa aga cgg aaa gtt cag aaa gac ctg cag ggt ctc tct 5664  
 Val Phe Tyr Glu Arg Arg Lys Val Gln Lys Asp Leu Gln Gly Leu Ser  
 1875 1880 1885  
 tct gtt gct aca gaa gca ggc ttt tac ccc aag tgt atg gtt gag tgg 5712  
 Ser Val Ala Thr Glu Ala Gly Phe Tyr Pro Lys Cys Met Val Glu Trp  
 1890 1895 1900  
 ttc tga 5718  
 Phe  
 1905

&lt;210&gt; 2698

&lt;211&gt; 1905

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 2698

Met Glu Asn Ser Gln Asp Asp Ala Lys Ile Phe Ser Val Arg Ile Val  
 1 5 10 15  
 Ser Met Asp Tyr Met Ala Pro Pro Ile Pro Asp Leu Asp Ile Cys  
 20 25 30  
 Tyr Ser Ser Phe Gln Gly Gly Met Val Lys Glu Val Pro Val Ile Arg  
 35 40 45  
 Ile Tyr Gly Ser Thr Pro Val Gly Gln Lys Thr Cys Leu His Val His  
 50 55 60  
 Arg Ala Leu Pro Tyr Leu Tyr Val Pro Cys Thr Asp Leu Met Pro Gln  
 65 70 75 80  
 Ser Pro Gln Glu Val Ile Asp Lys Gln Thr Leu Ile Ile Lys Cys Gly  
 85 90 95  
 Thr Tyr Asn Asn Tyr Asn Pro Gln Asp Phe Val Ser Leu Trp Phe Tyr  
 100 105 110  
 Ser Asp Thr Tyr Thr His Ala Val Ser Leu Gly Val Glu Lys Ala Leu  
 115 120 125  
 Lys Leu Lys Gly Asn Ala Gly Ser Lys Arg Gln His Val His Gly Cys  
 130 135 140  
 Ser Leu Val Arg Ala Lys Asn Phe Tyr Gly Tyr His Ser Ser Glu Glu  
 145 150 155 160  
 Leu Phe Val Lys Ile Tyr Leu Tyr His Pro His Asp Val Ser Arg Ala  
 165 170 175  
 Ala Asn Leu Leu Leu Gly Gly Ser Val Leu Asp Lys Ser Leu Gln Pro  
 180 185 190  
 His Glu Ser His Ile Pro Phe Leu Leu Gln Phe Leu Ile Asp Tyr Asn  
 195 200 205  
 Leu Tyr Gly Met Gly His Leu His Leu Ser Lys Met Lys Phe Arg His  
 210 215 220  
 Pro Val Pro Asp Val Phe Ser Ser Arg Lys Val Asn Tyr Asn Gly Gln  
 225 230 235 240  
 Gln Lys Leu Glu Pro Asp Asp Phe Ala Cys Ile Ser Ala His Leu Gln  
 245 250 255

## PhoenixTemp32470.tmp.txt

Ala	Asp	Ser	Ser	Gly	Asp	Thr	Cys	Leu	Ser	Ser	Pro	Val	Trp	Ile	Ser
			260					265					270		
Ser	Thr	Ile	Pro	Gly	Gly	Trp	Met	Trp	Gln	Phe	Ser	Ser	Gln	Leu	Asp
		275					280					285			
Ala	Ser	Pro	Gly	Gln	Gly	Ile	Cys	Ser	Pro	Lys	Arg	Gln	Ser	Thr	Cys
	290					295					300				
Glu	Leu	Glu	Gly	Asp	Ala	Ile	Val	Glu	Glu	Ile	Leu	Asn	Gln	Gln	Phe
	305				310					315					320
Lys	Leu	Tyr	Ser	Ser	Leu	Ser	Gln	Thr	His	Ser	Asp	Val	Lys	Met	Val
				325					330					335	
Arg	Ser	Leu	Ile	Pro	Ile	Trp	Glu	Glu	Glu	Phe	Glu	Arg	Thr	Gly	Met
			340					345					350		
His	Glu	Val	Ala	Met	Pro	Pro	Asp	Pro	Gly	Lys	Pro	Leu	Pro	Glu	Asp
		355					360					365			
Val	Leu	Arg	Ser	Leu	Ser	His	Gly	Leu	Glu	Phe	Glu	Asn	Lys	Leu	Gly
	370					375					380				
Glu	Leu	Cys	Asn	Gln	Ala	Gly	Asp	Ser	Leu	Ala	Phe	Thr	Pro	Leu	Glu
	385				390					395					400
Lys	Asp	Glu	Arg	Phe	Met	Gln	Ser	Ile	Thr	Ser	Ser	Ala	Asp	Glu	Arg
				405					410					415	
Asn	Leu	Val	Gly	Asp	Val	Leu	Val	Arg	Pro	Asn	Asp	Asn	Asp	Gly	Glu
			420					425					430		
Pro	Ser	Lys	Cys	Phe	Lys	Asp	Gln	Asn	Lys	Asn	Ile	Ser	Pro	Val	Ser
		435					440					445			
Gln	Gly	Ser	Leu	Cys	Glu	Glu	Asp	Asp	Asp	Ala	Ile	Pro	Ser	Glu	Gly
	450					455					460				
Arg	Asp	Asn	Glu	Ala	Leu	Gly	Leu	Leu	Ser	Trp	Leu	Ala	Ser	Ser	Gln
	465				470					475					480
Ala	Ala	Glu	Asp	Ile	Asn	Ser	Asp	Asp	Glu	Leu	Val	Cys	Gln	Thr	Ile
				485					490					495	
Leu	Ser	Pro	Leu	Leu	Pro	Thr	Val	Thr	Ile	Asp	Lys	Val	Leu	Glu	Lys
			500					505					510		
Ala	Asn	Met	Asp	Tyr	Glu	Asn	Glu	Ser	Gln	Gln	Glu	Cys	Gln	Asp	Ile
		515					520					525			
Leu	Asp	Ser	Val	Glu	Asp	Leu	Ala	Asp	Phe	Lys	Gly	Leu	Lys	Glu	Arg
	530					535					540				
Ala	Ser	Cys	Ser	Thr	Asp	His	Ser	His	Ser	Pro	Gln	Thr	Ser	Leu	Glu
	545				550					555					560
Lys	Met	Ile	Pro	Gln	Val	Asp	Gly	Ser	Gly	Asp	Asp	Pro	Asn	Asp	Cys
				565					570					575	
Ser	Gly	Asn	Ser	Ser	Glu	Thr	Glu	Met	Lys	Ser	Glu	Thr	Lys	Arg	Phe
			580					585					590		
Ser	Gln	His	Gln	Val	Leu	Gln	Asp	Thr	Gly	Ala	Ser	Phe	Ser	Asn	Lys
		595					600					605			
His	Lys	Arg	Asn	Gln	Ser	Leu	Trp	Gly	Ser	Leu	Pro	Leu	Thr	Thr	Thr
	610					615					620				
Gln	Lys	Val	Asn	Asp	Asn	Leu	Lys	Ser	Val	Ser	Leu	Asn	Met	Ala	Lys
	625				630					635					640
Lys	Asp	Ala	Ser	Glu	Val	Lys	Asp	Gly	Ala	Asp	Lys	Ser	Phe	Leu	Ala
				645					650					655	
Arg	Asn	Glu	Glu	Glu	Lys	Cys	Cys	Glu	Ala	Leu	Cys	Asn	Val	Arg	Thr
			660					665					670		
Asp	Val	Asn	Asp	Leu	Lys	Glu	Ala	Ser	Thr	Leu	Val	Gly	Cys	Ser	Met
		675					680					685			
Arg	Asp	Leu	Met	Arg	Arg	Lys	Arg	Cys	His	Arg	Val	Glu	Pro	Ser	Glu
	690					695					700				
Cys	Val	Ile	His	Thr	Lys	Lys	Val	Arg	Asp	Ser	Ala	Ala	Ser	Met	Val
	705				710					715					720
Asp	Phe	Glu	Phe	Ser	Asn	Cys	Lys	Glu	Tyr	Ala	Cys	Lys	Pro	Asp	Pro
				725					730					735	
Ser	Thr	Asp	Val	Gln	Phe	Leu	Lys	Phe	Asp	Thr	Gly	Asp	Lys	His	Phe
			740					745					750		
Val	Asp	Glu	Arg	Leu	Lys	Gln	Thr	Lys	Ala	Ser	Ala	Ser	Ser	Cys	Leu
		755					760					765			
Ser	Asn	Ser	Pro	Phe	Glu	His	Glu	Met	Val	Cys	Arg	Asp	Gly	Tyr	Thr
	770					775					780				
Cys	Lys	Ser	Gly	Arg	Asp	Cys	Arg	Thr	Ser	Ile	Glu	Cys	Leu	Pro	Glu
	785				790					795					800
Ile	Ser	Ser	Glu	Asn	Leu	Glu	Gly	Trp	Asp	Gly	Ala	Thr	Gly	Thr	Thr



## PhoenixTemp32470.tmp.txt

805 810 815  
 Leu Ser Gln Phe Lys Asn Cys Gly Gly Asp Trp Gly Asn Asp Ala  
 820 825 830  
 Gly Leu Ser Gly Thr His Asn Leu Val Ser Thr Val Val Asn Met Glu  
 835 840 845  
 Ala Lys Pro Val Glu Leu Ile Gly Met Thr Phe His Gln Lys Pro Pro  
 850 855 860  
 Thr Val Asp Trp Thr Asp Gly Thr Phe Asp Asn Ala Leu Leu Ser Pro  
 865 870 875 880  
 Ala Ile Pro Asn Cys Ser Ser Leu Glu Asn Glu Glu Ile Gln Gly Thr  
 885 890 895  
 Ile Leu Asp Glu Phe Ile Pro Phe Val Gly Asp Cys Gln Glu Glu  
 900 905 910  
 Lys Lys Val Trp Asn Lys Cys Tyr Asn Asp Leu Asn Asn His Gln Glu  
 915 920 925  
 Val Gly Met Gly Val Pro Thr His Tyr Gln Asn Asp Gly Ser Phe Leu  
 930 935 940  
 Tyr Leu Leu Thr Pro Val Phe Ser Pro Pro Ser Ala Asp Cys Val His  
 945 950 955 960  
 Arg Trp Leu Leu His Asp Asp Thr Val Leu Ile Ala Asp Thr Ser Ala  
 965 970 975  
 Glu Pro Leu Pro Val Gly Ser Val Ser His Val Lys Pro Val Leu Asp  
 980 985 990  
 Gln Gln Asn His Glu Ile His Asp Asn Leu Asn Ala Lys Lys Asn Ala  
 995 1000 1005  
 Phe His Asp Lys Val Pro Glu Lys Thr Gln Val Lys Gly Asn Ile Met  
 1010 1015 1020  
 Lys Val Lys Lys Cys Thr Asn Cys Ser Gln Asp Ile Ser Gln Ile Ser  
 1025 1030 1035 1040  
 Gly Pro Glu Glu Lys Ser Lys Pro Thr Pro Leu Ser Gln Ile Gly Phe  
 1045 1050 1055  
 Arg Asp Pro Ala Ser Val Gly Gly Gly Gln Gln Val Thr Leu Leu Ser  
 1060 1065 1070  
 Ile Glu Ile Gln Ala Glu Ser Arg Gly Asp Leu Arg Pro Asp Pro Arg  
 1075 1080 1085  
 Tyr Asp Ala Ile Asn Val Ile Val Leu Leu Ile Gln Glu Asp Asp Asp  
 1090 1095 1100  
 Ser Ala Leu Glu Val Phe Val Leu Cys Arg Ser Asn Ile Glu Pro Cys  
 1105 1110 1115 1120  
 Gln Arg Lys Leu Asp Gly Ile Ser Gly Cys Lys Val Leu Val Ser Ser  
 1125 1130 1135  
 Glu Glu Lys Leu Leu Phe Asp Asp Phe Ile Asn Ile Ile Cys Ser Phe  
 1140 1145 1150  
 Asp Pro Asp Ile Leu Ile Gly Trp Asp Ile Gln Gly Gly Ser Leu Gly  
 1155 1160 1165  
 Phe Leu Ala Glu Arg Ala Ser His Leu Gly Ile Gly Leu Leu Asn Lys  
 1170 1175 1180  
 Ile Ser Arg Thr Pro Ser Glu Thr Lys Thr Ala Ser Arg Asn Phe Glu  
 1185 1190 1195 1200  
 Ile Pro Glu Lys Arg Asp Glu Trp Gly Arg Thr His Ala Ser Gly Val  
 1205 1210 1215  
 His Val Gly Gly Arg Ile Val Leu Asn Val Trp Arg Leu Met Arg Gly  
 1220 1225 1230  
 Glu Ile Lys Leu Asn Met Tyr Thr Ala Glu Ser Val Ala Glu Ala Val  
 1235 1240 1245  
 Leu Arg Gln Lys Ile Pro Ser Ile Arg Asn Arg Val Leu Thr Lys Trp  
 1250 1255 1260  
 Phe Ser Ser Gly Pro Gly Arg Ala Arg Tyr Arg Ser Ile Glu Tyr Val  
 1265 1270 1275 1280  
 Ile Gln Arg Ala Lys Leu Asn Phe Glu Ile Met Asn Gln Leu Asp Met  
 1285 1290 1295  
 Ile Asn Arg Thr Ser Glu Leu Ala Arg Val Phe Gly Ile Asp Phe Phe  
 1300 1305 1310  
 Ser Val Leu Ser Arg Gly Ser Gln Tyr His Val Glu Ser Met Phe Leu  
 1315 1320 1325  
 Arg Leu Ala His Thr Gln Asn Phe Leu Ala Ile Ser Pro Gly Pro Gln  
 1330 1335 1340  
 Gln Val Ala Thr Gln Pro Ala Met Glu Cys Leu Pro Leu Val Met Glu  
 1345 1350 1355 1360

## PhoenixTemp32470.tmp.txt

Pro Glu Ser Gly Phe Tyr Ala Asp Pro Val Val Val Leu Asp Phe Gln  
 1365 1370 1375  
 Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn Leu Cys Tyr Ser Thr  
 1380 1385 1390  
 Cys Leu Gly Lys Val Ala Pro Ser Lys Ala Asp Val Leu Gly Val Ser  
 1395 1400 1405  
 Ile Tyr Ser Pro Asp Pro His Ala Leu His Asp Leu Lys Asp Gln Ile  
 1410 1415 1420  
 Leu Leu Thr Pro Asn Gly Val Met Tyr Val Pro Ser Lys Ala Arg Lys  
 1425 1430 1435 1440  
 Gly Val Leu Pro Arg Leu Leu Glu Glu Ile Leu Ser Thr Arg Ile Met  
 1445 1450 1455  
 Val Lys Lys Ala Met Lys Lys Leu Val Pro Ser Gln Gln Val Leu Gln  
 1460 1465 1470  
 Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val  
 1475 1480 1485  
 Thr Tyr Gly Tyr Thr Ala Ala Gly Tyr Ser Gly Arg Met Pro Cys Ala  
 1490 1495 1500  
 Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Arg Thr Leu Glu Asn  
 1505 1510 1515 1520  
 Ala Ile Ser Leu Val Asn Thr His Asp Lys Trp Lys Ala Lys Val Ile  
 1525 1530 1535  
 Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys Gly Arg Thr Val  
 1540 1545 1550  
 Lys Glu Ser Phe Gln Ile Gly His Glu Ile Ala Ser Ala Val Thr Ala  
 1555 1560 1565  
 Met Asn Pro Asn Pro Val Thr Leu Lys Met Glu Lys Val Tyr His Pro  
 1570 1575 1580  
 Cys Phe Leu Leu Thr Lys Lys Arg Tyr Val Gly Tyr Ser Tyr Glu Ser  
 1585 1590 1595 1600  
 Pro Asp Gln Ile Glu Pro Thr Phe Asp Ala Lys Gly Ile Glu Thr Val  
 1605 1610 1615  
 Arg Arg Asp Thr Cys Gly Ala Val Ala Lys Thr Met Glu Gln Ser Leu  
 1620 1625 1630  
 Arg Leu Phe Phe Glu His Gln Asp Ile Ser Lys Val Lys Val Tyr Leu  
 1635 1640 1645  
 Gln Arg Gln Trp Arg Arg Ile Leu Ser Gly Arg Val Ser Leu Gln Asp  
 1650 1655 1660  
 Phe Val Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr Ser Ser Arg Ala  
 1665 1670 1675 1680  
 Ser Ser Leu Pro Pro Ala Ala Ile Val Ala Ile Lys Ala Met Arg Ala  
 1685 1690 1695  
 Asp Pro Arg Ala Glu Pro Cys Tyr Ala Glu Arg Val Pro Tyr Val Val  
 1700 1705 1710  
 Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp Leu Val Asp Pro  
 1715 1720 1725  
 Leu Asp Leu Leu Ala Ile Asp Ser Pro Tyr Arg Leu Asn Asp Gln Tyr  
 1730 1735 1740  
 Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln Arg Val Phe Gly Leu  
 1745 1750 1755 1760  
 Val Gly Ala Asp Leu Tyr Gln Trp Phe Ser Glu Met Pro Arg Pro Val  
 1765 1770 1775  
 Arg Glu Val Tyr Ala Lys His Lys Ser His Ala Pro Asn Pro Tyr Arg  
 1780 1785 1790  
 Thr Arg Ile Asp Phe Tyr Tyr Leu Ser Lys His Cys Ile Leu Cys Gly  
 1795 1800 1805  
 Glu Leu Ser Pro Ala Ser Ala His Ile Cys Asp Lys Cys Ser Lys Asp  
 1810 1815 1820  
 Gly Thr Ala Val Ala Ala Ala Val Ile Gly Arg Thr Ala Lys Leu Glu  
 1825 1830 1835 1840  
 Arg Asp Ile Gln His Leu Ala Ala Ile Cys Arg His Cys Gly Gly Gly  
 1845 1850 1855  
 Asp Trp Ile Val Glu Ser Gly Val Lys Cys Thr Ser Leu Ala Cys Ser  
 1860 1865 1870  
 Val Phe Tyr Glu Arg Arg Lys Val Gln Lys Asp Leu Gln Gly Leu Ser  
 1875 1880 1885  
 Ser Val Ala Thr Glu Ala Gly Phe Tyr Pro Lys Cys Met Val Glu Trp  
 1890 1895 1900  
 Phe

1905

&lt;210&gt; 2699

&lt;211&gt; 5685

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5685)

&lt;400&gt; 2699

atg gct gat tct caa tcc ggt tcc aat gtt ttc agt tta cgg ata gtt	48
Met Ala Asp Ser Gln Ser Gly Ser Asn Val Phe Ser Leu Arg Ile Val	
1 5 10 15	
tca atc gat tat tac atg gct tct cca atc cct ggt tat aat att tgc	96
Ser Ile Asp Tyr Tyr Met Ala Ser Pro Ile Pro Gly Tyr Asn Ile Cys	
20 25 30	
tac agt agc ttc caa ggt agt gag gta aat gaa gtc cct gtt ata agg	144
Tyr Ser Ser Phe Gln Gly Ser Glu Val Asn Glu Val Pro Val Ile Arg	
35 40 45	
ata tac ggc tct aca cct gct ggt cag aag act tgc ttg cac att cat	192
Ile Tyr Gly Ser Thr Pro Ala Gly Gln Lys Thr Cys Leu His Ile His	
50 55 60	
cgt gct tta cca tat ctc tat att ccg tgc tca gaa att cca ctt gag	240
Arg Ala Leu Pro Tyr Leu Tyr Ile Pro Cys Ser Glu Ile Pro Leu Glu	
65 70 75 80	
cat cat aaa gga gtg gat gga agt aca ctt gct tta tcc ctt gag tta	288
His His Lys Gly Val Asp Gly Ser Thr Leu Ala Leu Ser Leu Glu Leu	
85 90 95	
gag aag gct cta aag ctt aag gga aat gct gct tca aaa agg caa cat	336
Glu Lys Ala Leu Lys Leu Lys Gly Asn Ala Ala Ser Lys Arg Gln His	
100 105 110	
atc cat gat tgt gag att gta aga gca aag aag ttt tat ggg tac cac	384
Ile His Asp Cys Glu Ile Val Arg Ala Lys Lys Phe Tyr Gly Tyr His	
115 120 125	
tca aca gag gag gct ttt gtg aag att tat ctg tat cct tat agt agc	432
Ser Thr Glu Glu Ala Phe Val Lys Ile Tyr Leu Tyr Pro Tyr Ser Ser	
130 135 140	
tac cat cca ccc gat gtg gct cgt gct gcc agt ctt ctt ctg gca ggt	480
Tyr His Pro Pro Asp Val Ala Arg Ala Ala Ser Leu Leu Leu Ala Gly	
145 150 155 160	
gct gtt ctt ggt aaa agt ttg cag cct tac gag tct cat att ccc ttt	528
Ala Val Leu Gly Lys Ser Leu Gln Pro Tyr Glu Ser His Ile Pro Phe	
165 170 175	
att ctc cag ttt ctg gtt gat tat aat ttg tat gga atg ggt cat gtg	576
Ile Leu Gln Phe Leu Val Asp Tyr Asn Leu Tyr Gly Met Gly His Val	
180 185 190	
cat ata tca aag atg aag ttc cgt agc cca gtg cct cac cat ttc cgg	624
His Ile Ser Lys Met Lys Phe Arg Ser Pro Val Pro His His Phe Arg	
195 200 205	
cca agg aga ttt gat ttg gat gtt tgt ccg gga caa agg att gac gaa	672
Pro Arg Arg Phe Asp Leu Asp Asp Cys Pro Gly Gln Arg Ile Asp Glu	
210 215 220	
gtg gct att aca aag gca aat tca agt gct gct gca agc gtc agt ttt	720
Val Ala Ile Thr Lys Ala Asn Ser Ser Ala Ala Ala Ser Val Ser Phe	
225 230 235 240	
cct gtt tgg agc ttg tca aca atc cca ggt cag tgg atg tgg aat ctc	768
Pro Val Trp Ser Leu Ser Thr Ile Pro Gly Gln Trp Met Trp Asn Leu	
245 250 255	
tct gaa gaa tct gat aca ccg ttg agc cag agc cag cat agg cac caa	816
Ser Glu Glu Ser Asp Thr Pro Leu Ser Gln Ser Gln His Arg His Gln	
260 265 270	
cac cat tac aga cgt cag agt ctc tgt gaa ctt gag gga gat gct act	864
His His Tyr Arg Arg Gln Ser Leu Cys Glu Leu Glu Gly Asp Ala Thr	
275 280 285	
agt agt gat att ctc aat caa cag ttt aaa atg tac aac tcc ctt tca	912
Ser Ser Asp Ile Leu Asn Gln Phe Lys Met Tyr Asn Ser Leu Ser	
290 295 300	

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caa	gcc	cag	tct	gat	act	aac	atg	gtt	cag	tcg	ctt	gtg	gca	att	tgg	960
Gln	Ala	Gln	Ser	Asp	Thr	Asn	Met	Val	Gln	Ser	Leu	Val	Ala	Ile	Trp	
305					310					315					320	
gag	gag	gag	tat	gaa	agg	act	ggt	gtg	cat	gat	gca	cct	ata	cct	cct	1008
Glu	Glu	Glu	Tyr	Glu	Arg	Thr	Gly	Val	His	Asp	Ala	Pro	Ile	Pro	Pro	
				325					330					335		
gat	cct	ggt	aaa	ccc	tct	gca	gct	gat	gtg	ttg	cag	act	atg	tca	gat	1056
Asp	Pro	Gly	Lys	Pro	Ser	Ala	Ala	Asp	Val	Leu	Gln	Thr	Met	Ser	Asp	
			340					345					350			
tat	gtt	ggg	ttt	ggg	aat	atg	ctt	aaa	gaa	atg	cta	aac	aaa	ggt	gaa	1104
Tyr	Val	Gly	Phe	Gly	Asn	Met	Leu	Lys	Glu	Met	Leu	Asn	Lys	Val	Glu	
		355					360					365				
ttg	tct	ccg	cct	ggt	atg	aag	cct	act	gca	gta	tct	tca	gct	ggt	cca	1152
Leu	Ser	Pro	Pro	Gly	Met	Lys	Pro	Thr	Ala	Val	Ser	Ser	Ala	Gly	Pro	
	370					375					380					
gat	atg	cat	gcc	aaa	cct	gaa	att	act	gat	cta	cag	gct	ttg	aat	cat	1200
Asp	Met	His	Ala	Lys	Pro	Glu	Ile	Thr	Asp	Leu	Gln	Ala	Leu	Asn	His	
					390					395					400	
atg	gtt	ggt	aca	tgc	agt	gag	ttt	cct	gca	tca	gaa	cag	ctt	tct	cca	1248
Met	Val	Gly	Thr	Cys	Ser	Glu	Phe	Pro	Ala	Ser	Glu	Gln	Leu	Ser	Pro	
				405					410					415		
ctt	ggc	gag	aag	agt	gaa	gaa	gca	tca	atg	gaa	aat	gat	gaa	tat	atg	1296
Leu	Gly	Glu	Lys	Ser	Glu	Glu	Ala	Ser	Met	Glu	Asn	Asp	Glu	Tyr	Met	
			420					425					430			
aaa	aca	ccc	acg	gac	aga	gat	aca	cct	gct	caa	ata	caa	gat	gct	gaa	1344
Lys	Thr	Pro	Thr	Asp	Arg	Asp	Thr	Pro	Ala	Gln	Ile	Gln	Asp	Ala	Glu	
		435					440					445				
gcc	ttg	ggt	ctc	ttt	aag	tgg	ttt	gcc	tca	tct	cag	gct	gca	gag	gac	1392
Ala	Leu	Gly	Leu	Phe	Lys	Trp	Phe	Ala	Ser	Ser	Gln	Ala	Ala	Glu	Asp	
		450				455					460					
ata	aac	tca	gat	gat	gag	att	ctc	cgg	gaa	act	atc	ctt	agt	cct	ctt	1440
Ile	Asn	Ser	Asp	Asp	Glu	Ile	Leu	Arg	Glu	Thr	Ile	Leu	Ser	Pro	Leu	
				470					475						480	
ttg	cct	tta	gcg	tct	att	aac	aag	gtt	ctt	gaa	atg	gct	agt	aca	gat	1488
Leu	Pro	Leu	Ala	Ser	Ile	Asn	Lys	Val	Leu	Glu	Met	Ala	Ser	Thr	Asp	
				485					490					495		
tat	gtg	agc	caa	tcc	caa	aag	gaa	tgt	caa	gac	att	ctt	gat	tct	cag	1536
Tyr	Val	Ser	Gln	Ser	Gln	Lys	Glu	Cys	Gln	Asp	Ile	Leu	Asp	Ser	Gln	
			500					505					510			
gaa	aat	ctt	cca	gac	ttt	ggg	agt	tcg	act	aag	aga	gct	tta	cct	agt	1584
Glu	Asn	Leu	Pro	Asp	Phe	Gly	Ser	Ser	Thr	Lys	Arg	Ala	Leu	Pro	Ser	
		515					520					525				
aat	cct	gat	agc	cag	aat	ctt	aga	act	tca	tcc	gac	aaa	caa	tct	ctt	1632
Asn	Pro	Asp	Ser	Gln	Asn	Leu	Arg	Thr	Ser	Ser	Asp	Lys	Gln	Ser	Leu	
		530				535					540					
gaa	ata	gaa	gtc	gct	agt	gat	gtt	cca	gat	agc	tcc	act	tca	aat	gga	1680
Glu	Ile	Glu	Val	Ala	Ser	Asp	Val	Pro	Asp	Ser	Ser	Thr	Ser	Asn	Gly	
					550					555					560	
gca	agc	gaa	aat	tca	ttc	cgg	aga	tac	aga	aag	agt	gat	tta	cat	acg	1728
Ala	Ser	Glu	Asn	Ser	Phe	Arg	Arg	Tyr	Arg	Lys	Ser	Asp	Leu	His	Thr	
				565				570						575		
agt	gaa	gta	atg	gag	tat	aag	aac	agg	agc	ttc	tct	aag	agc	aac	aag	1776
Ser	Glu	Val	Met	Glu	Tyr	Lys	Asn	Arg	Ser	Phe	Ser	Lys	Ser	Asn	Lys	
			580					585					590			
cct	agc	aac	tca	gta	tgg	gga	cct	tta	cct	ttt	aca	ctg	acc	aaa	aat	1824
Pro	Ser	Asn	Ser	Val	Trp	Gly	Pro	Leu	Pro	Phe	Thr	Leu	Thr	Lys	Asn	
		595					600					605				
ctt	cag	aag	gac	ttt	gac	agt	aca	aat	gct	agt	gat	aaa	ctt	ggt	tta	1872
Leu	Gln	Lys	Asp	Phe	Asp	Ser	Thr	Asn	Ala	Ser	Asp	Lys	Leu	Gly	Leu	
		610				615					620					
aca	aag	att	agt	tct	tac	ccc	atg	aat	gag	atg	aca	gac	aat	tat	att	1920
Thr	Lys	Ile	Ser	Ser	Tyr	Pro	Met	Asn	Glu	Met	Thr	Asp	Asn	Tyr	Ile	
				625		630				635					640	
gtt	cca	gtc	aaa	gaa	cat	caa	gca	gat	gtt	tgt	aat	aca	att	gac	aga	1968
Val	Pro	Val	Lys	Glu	His	Gln	Ala	Asp	Val	Cys	Asn	Thr	Ile	Asp	Arg	
				645					650					655		
aac	gtt	ttg	gct	gga	tgt	tct	ctg	cgg	gac	ttg	atg	aga	aaa	aaa	cgg	2016
Asn	Val	Leu	Gly	Gly	Cys	Ser	Leu	Arg	Asp	Leu	Met	Arg	Lys	Lys	Arg	
			660					665					670			

## PhoenixTemp32470.tmp.txt

tta	tgc	cat	gga	gaa	tcg	cct	ggt	tca	cag	cat	atg	aag	tct	agg	aag	2064
Leu	Cys	His	Gly	Glu	Ser	Pro	Val	Ser	Gln	His	Met	Lys	Ser	Arg	Lys	
		675					680					685				
ggt	aga	gat	tcc	cga	cac	ggg	gaa	aaa	aat	gag	tgc	acc	ttg	aga	tgt	2112
Val	Arg	Asp	Ser	Arg	His	Gly	Glu	Lys	Asn	Glu	Cys	Thr	Leu	Arg	Cys	
	690					695					700					
gag	gcc	aaa	aaa	caa	ggt	cct	gct	ctt	tct	gca	gaa	ttt	agc	gaa	ttt	2160
Glu	Ala	Lys	Lys	Gln	Gly	Pro	Ala	Leu	Ser	Ala	Glu	Phe	Ser	Glu	Phe	
705					710					715					720	
ggt	tgt	ggc	gat	act	cca	aat	tta	tct	cct	ata	gat	tct	gga	aat	tgc	2208
Val	Cys	Gly	Asp	Thr	Pro	Asn	Leu	Ser	Pro	Ile	Asp	Ser	Gly	Asn	Cys	
				725					730					735		
gag	tgt	aat	ata	tcc	act	gag	tca	tct	cct	gaa	cat	tct	ggt	gat	aga	2256
Glu	Cys	Asn	Ile	Ser	Thr	Glu	Ser	Ser	Glu	Leu	His	Ser	Val	Asp	Arg	
				740				745					750			
tgt	tca	gct	aaa	gag	aca	gca	agt	caa	aac	agt	gat	gaa	ggt	tta	agg	2304
Cys	Ser	Ala	Lys	Glu	Thr	Ala	Ser	Gln	Asn	Ser	Asp	Glu	Val	Leu	Arg	
		755					760					765				
aat	ttg	tca	tct	acc	act	ggt	cca	ttt	ggg	aag	gat	cca	act	gtg		2352
Asn	Leu	Ser	Ser	Thr	Thr	Val	Pro	Phe	Gly	Lys	Asp	Pro	Gln	Thr	Val	
	770					775					780					
gaa	tca	gga	aca	cta	gtg	tct	agc	aat	ata	cat	ggt	ggg	att	gaa	ata	2400
Glu	Ser	Gly	Thr	Leu	Val	Ser	Ser	Asn	Ile	His	Val	Gly	Ile	Glu	Ile	
785					790					795					800	
gat	agt	gtc	caa	aaa	tcg	ggg	agg	gag	caa	gag	tca	act	gcc	aat	gaa	2448
Asp	Ser	Val	Gln	Lys	Ser	Gly	Arg	Glu	Gln	Glu	Ser	Thr	Ala	Asn	Glu	
				805					810					815		
act	gat	gag	acg	gga	aga	tta	ata	tgc	cta	acc	tta	agc	aag	aag	cct	2496
Thr	Asp	Glu	Thr	Gly	Arg	Leu	Ile	Cys	Leu	Thr	Leu	Ser	Lys	Lys	Pro	
				820				825					830			
cct	tct	ctc	gat	tgc	cta	agt	gct	gga	ctg	cag	gat	tct	gca	cat	tct	2544
Pro	Ser	Leu	Asp	Cys	Leu	Ser	Ala	Gly	Leu	Gln	Asp	Ser	Ala	His	Ser	
		835					840					845				
cat	gaa	att	cat	gcc	agg	gaa	aaa	cag	cat	gat	gaa	tat	gag	gga	aat	2592
His	Glu	Ile	His	Ala	Arg	Glu	Lys	Gln	His	Asp	Glu	Tyr	Glu	Gly	Asn	
	850					855					860					
tcc	aac	gac	atc	ccg	ttt	ttt	ccc	ttg	gag	gac	aac	aag	gag	gaa	aag	2640
Ser	Asn	Asp	Ile	Pro	Phe	Phe	Pro	Leu	Glu	Asp	Asn	Lys	Glu	Glu	Lys	
865					870					875					880	
aaa	cac	ttt	ttc	caa	gga	act	tcc	ctt	ggg	att	ccc	ttg	cat	cat	ctc	2688
Lys	His	Phe	Phe	Gln	Gly	Thr	Ser	Leu	Gly	Ile	Pro	Leu	His	His	Leu	
				885					890					895		
aat	gac	ggc	tcc	aat	ctt	tac	cta	ctg	acc	cct	gcc	ttt	tca	ccc	cct	2736
Asn	Asp	Gly	Ser	Asn	Leu	Tyr	Leu	Leu	Thr	Pro	Ala	Phe	Ser	Pro	Pro	
			900					905					910			
tct	gtg	gat	tct	ggt	tta	caa	tgg	ata	tcg	aat	gac	aaa	gga	gac	tct	2784
Ser	Val	Asp	Ser	Val	Leu	Gln	Trp	Ile	Ser	Asn	Asp	Lys	Gly	Asp	Ser	
		915					920					925				
aat	att	gat	tca	gaa	aaa	caa	cca	tta	cga	gat	aat	cat	aat	gat	cgt	2832
Asn	Ile	Asp	Ser	Glu	Lys	Gln	Pro	Leu	Arg	Asp	Asn	His	Asn	Asp	Arg	
	930					935					940					
gga	gca	agt	ttc	act	gat	ctt	gct	tct	gca	tct	aat	gtg	gtg	tct	gtg	2880
Gly	Ala	Ser	Phe	Thr	Asp	Leu	Ala	Ser	Ala	Ser	Asn	Val	Val	Ser	Val	
945					950					955					960	
tct	gag	cac	gtg	gag	cag	cat	aat	aac	ctt	ttt	gtg	aat	tca	gaa	tca	2928
Ser	Glu	His	Val	Glu	Gln	His	Asn	Asn	Leu	Phe	Val	Asn	Ser	Glu	Ser	
				965					970					975		
aat	gct	tat	aca	gag	tcg	gag	ata	gat	ctg	aaa	ccc	aaa	gga	acg	ttt	2976
Asn	Ala	Tyr	Thr	Glu	Ser	Glu	Ile	Asp	Leu	Lys	Pro	Lys	Gly	Thr	Phe	
			980					985					990			
ctt	aat	ctt	aac	ttg	cag	gcc	agt	ggt	tcc	caa	gag	ctg	tct	cag	att	3024
Leu	Asn	Leu	Asn	Leu	Gln	Ala	Ser	Val	Ser	Gln	Glu	Leu	Ser	Gln	Ile	
			995				1000					1005				
tca	ggc	cct	gat	ggg	aaa	tct	ggg	ccc	act	ccc	tta	agt	caa	atg	gga	3072
Ser	Gly	Pro	Asp	Gly	Lys	Ser	Gly	Pro	Thr	Pro	Leu	Ser	Gln	Met	Gly	
	1010					1015					1020					
ttc	cga	gat	cct	gcg	agc	atg	ggg	gcg	ggg	caa	cag	ctt	aca	att	ctg	3120
Phe	Arg	Asp	Pro	Ala	Ser	Met	Gly	Ala	Gly	Gln	Gln	Leu	Thr	Ile	Leu	
1025					1030				1035						1040	

## PhoenixTemp32470.tmp.txt

agt	ata	gag	ggt	cat	gca	gag	tct	aga	ggg	gac	ctg	cga	cct	gat	cca	3168
Ser	Ile	Glu	Val	His	Ala	Glu	Ser	Arg	Gly	Asp	Leu	Arg	Pro	Asp	Pro	
				1045					1050					1055		
cga	ttt	gat	tct	gtc	aat	ggt	ata	gct	ctc	gtc	gtg	cag	aat	gac	gat	3216
Arg	Phe	Asp	Ser	Val	Asn	Val	Ile	Ala	Leu	Val	Val	Gln	Asn	Asp	Asp	
				1060				1065						1070		
agt	ttt	gta	gct	gaa	gta	ttt	gtg	ctt	tta	ttt	agt	cca	gat	agc	att	3264
Ser	Phe	Val	Ala	Glu	Val	Phe	Val	Leu	Leu	Phe	Ser	Pro	Asp	Ser	Ile	
				1075			1080					1085				
gat	cag	aga	aat	ggt	gat	ggc	cta	tct	gga	tgc	aag	ttg	tct	gta	ttc	3312
Asp	Gln	Arg	Asn	Val	Asp	Gly	Leu	Ser	Gly	Cys	Lys	Leu	Ser	Val	Phe	
	1090					1095					1100					
ctt	gaa	gag	agg	caa	cta	ttc	aga	tat	ttt	att	gag	act	tta	tgt	aaa	3360
Leu	Glu	Glu	Arg	Gln	Leu	Phe	Arg	Tyr	Phe	Ile	Glu	Thr	Leu	Cys	Lys	
	1105				1110				1115						1120	
tgg	gat	cca	gat	ggt	ctt	ctg	ggc	tgg	gat	ata	cag	ggc	gga	tcc	att	3408
Trp	Asp	Pro	Asp	Val	Leu	Leu	Gly	Trp	Asp	Ile	Gln	Gly	Gly	Ser	Ile	
				1125				1130						1135		
ggt	ttt	cta	gct	gaa	aga	gct	gca	cag	ctt	ggt	ata	aga	ttt	ctc	aat	3456
Gly	Phe	Leu	Ala	Glu	Arg	Ala	Ala	Gln	Leu	Gly	Ile	Arg	Phe	Leu	Asn	
				1140			1145						1150			
aat	ata	tct	agg	acg	cca	tct	ccg	acc	aca	aca	aac	aat	tca	gat	aat	3504
Asn	Ile	Ser	Arg	Thr	Pro	Ser	Pro	Thr	Thr	Thr	Asn	Asn	Ser	Asp	Asn	
				1155			1160					1165				
aag	aga	aaa	ctt	ggt	aat	aat	ctg	ctg	cca	gat	ccg	ttg	gta	gct	aat	3552
Lys	Arg	Lys	Leu	Gly	Asn	Asn	Leu	Leu	Pro	Asp	Pro	Leu	Val	Ala	Asn	
	1170				1175						1180					
cct	gct	caa	gta	gaa	gaa	gtg	gta	att	gag	gac	gag	tgg	ggc	cgc	aca	3600
Pro	Ala	Gln	Val	Glu	Glu	Val	Val	Ile	Glu	Asp	Glu	Trp	Gly	Arg	Thr	
	1185			1190					1195						1200	
cat	gct	agt	ggt	ggt	cat	ggt	gga	ggt	aga	att	ggt	ctc	aat	gca	tgg	3648
His	Ala	Ser	Gly	Val	His	Val	Gly	Gly	Arg	Ile	Val	Leu	Asn	Ala	Trp	
				1205				1210						1215		
cgt	ttg	att	cgc	ggg	gaa	ggt	aaa	ctc	aac	atg	tac	acg	att	gaa	gct	3696
Arg	Leu	Ile	Arg	Gly	Glu	Val	Lys	Leu	Asn	Met	Tyr	Thr	Ile	Glu	Ala	
				1220			1225						1230			
gtg	tca	gag	gct	ggt	ttg	agg	cag	aag	ggt	cca	tca	atc	ccc	tat	aag	3744
Val	Ser	Glu	Ala	Val	Leu	Arg	Gln	Lys	Val	Pro	Ser	Ile	Pro	Tyr	Lys	
				1235			1240					1245				
gta	ttg	aca	gaa	tgg	ttt	tca	agt	ggt	cct	gcg	ggt	gca	aga	tat	aga	3792
Val	Leu	Thr	Glu	Trp	Phe	Ser	Ser	Gly	Pro	Ala	Gly	Ala	Arg	Tyr	Arg	
	1250				1255				1260							
tgc	ata	gaa	tat	gtg	att	cgg	cga	gca	aat	ttg	aac	ctt	gag	ata	atg	3840
Cys	Ile	Glu	Tyr	Val	Ile	Arg	Arg	Ala	Asn	Leu	Asn	Leu	Glu	Ile	Met	
	1265			1270					1275						1280	
agc	caa	ctt	gac	atg	ata	aat	cgt	acg	tca	gaa	ctt	gct	cgt	ggt	ttt	3888
Ser	Gln	Leu	Asp	Met	Ile	Asn	Arg	Thr	Ser	Glu	Leu	Ala	Arg	Val	Phe	
				1285			1290						1295			
ggt	ata	gac	ttt	ttc	tca	ggt	ctc	tcc	cga	ggt	tca	cag	tac	aga	gtg	3936
Gly	Ile	Asp	Phe	Phe	Ser	Val	Leu	Ser	Arg	Gly	Ser	Gln	Tyr	Arg	Val	
				1300			1305						1310			
gaa	tcc	atg	ctt	ctg	aga	tta	gca	cat	aca	caa	aat	tat	ctt	gct	att	3984
Glu	Ser	Met	Leu	Leu	Arg	Leu	Ala	His	Thr	Gln	Asn	Tyr	Leu	Ala	Ile	
				1315			1320					1325				
tct	cca	gga	aac	caa	cag	ggt	gcc	tct	cag	cca	gct	atg	gaa	tgt	gta	4032
Ser	Pro	Gly	Asn	Gln	Gln	Val	Ala	Ser	Gln	Pro	Ala	Met	Glu	Cys	Val	
	1330				1335						1340					
cct	ctt	gtg	atg	gaa	cca	gaa	tct	gcc	ttt	tac	gat	gat	cct	ggt	att	4080
Pro	Leu	Val	Met	Glu	Pro	Glu	Ser	Ala	Phe	Tyr	Asp	Asp	Pro	Val	Ile	
	1345			1350					1355						1360	
gtg	ttg	gat	ttt	caa	tct	ctt	tac	cct	tca	atg	att	ata	gca	tat	aat	4128
Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Met	Ile	Ile	Ala	Tyr	Asn	
				1365			1370						1375			
ctg	tgc	ttt	tct	aca	tgt	ctc	gga	aaa	ctt	gca	cat	ttg	aag	atg	aac	4176
Leu	Cys	Phe	Ser	Thr	Cys	Leu	Gly	Lys	Leu	Ala	His	Leu	Lys	Met	Asn	
				1380			1385					1390				
acc	ctt	ggg	gtc	agc	tca	tac	tct	cta	gac	ctc	gat	ggt	ctt	cag	gat	4224
Thr	Leu	Gly	Val	Ser	Ser	Tyr	Ser	Leu	Asp	Leu	Asp	Val	Leu	Gln	Asp	
		1395				1400					1405					

## PhoenixTemp32470.tmp.txt

tta aat cag atc cta cag acc cca aac agt gtg atg tac gtg cca cca	4272
Leu Asn Gln Ile Leu Gln Thr Pro Asn Ser Val Met Tyr Val Pro Pro	
1410 1415 1420	
gag gtg cgt aga gga att tta cct agg ctg cta gag gag att ctg tct	4320
Glu Val Arg Arg Gly Ile Leu Pro Arg Leu Leu Glu Glu Ile Leu Ser	
1425 1430 1435 1440	
aca aga ata atg gtg aaa aaa gca atg aaa aag ttg act cct tca gaa	4368
Thr Arg Ile Met Val Lys Lys Ala Met Lys Lys Leu Thr Pro Ser Glu	
1445 1450 1455	
gca gtt ctt cac cgg ata ttt aat gcg agg cag ctt gct tta aag ctg	4416
Ala Val Leu His Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu	
1460 1465 1470	
ata gca aat gtg act tat ggt tat act gct gct ggc ttc agt ggt cga	4464
Ile Ala Asn Val Thr Tyr Gly Tyr Thr Ala Ala Gly Phe Ser Gly Arg	
1475 1480 1485	
atg cct tgt gca gag ctg gca gat agt att gtc cag tgt ggt cgt agc	4512
Met Pro Cys Ala Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Ser	
1490 1495 1500	
aca ctt gag aag gct att tca ttc gtc aat gcc aat gat aat tgg aac	4560
Thr Leu Glu Lys Ala Ile Ser Phe Val Asn Ala Asn Asp Asn Trp Asn	
1505 1510 1515 1520	
gct aga gtt gta tat ggt gac act gat agt atg ttt gtc ctc cta aaa	4608
Ala Arg Val Val Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys	
1525 1530 1535	
gga cga act gta aaa gaa gct ttt gta gtc gga caa gag att gca tct	4656
Gly Arg Thr Val Lys Glu Ala Phe Val Val Gly Gln Glu Ile Ala Ser	
1540 1545 1550	
gca ata act gaa atg aac cca cac cca gtc act tta aag atg gag aaa	4704
Ala Ile Thr Glu Met Asn Pro His Pro Val Thr Leu Lys Met Glu Lys	
1555 1560 1565	
gtc tat cac cct tgt ttc ctt ctt acg aag aag cgt tat gtt ggg tac	4752
Val Tyr His Pro Cys Phe Leu Leu Thr Lys Lys Arg Tyr Val Gly Tyr	
1570 1575 1580	
agt tat gaa agt ccc aat cag aga gag cct ata ttt gat gca aaa ggt	4800
Ser Tyr Glu Ser Pro Asn Gln Arg Glu Pro Ile Phe Asp Ala Lys Gly	
1585 1590 1595 1600	
att gaa act gtt cga aga gac act tgt gaa gct gtt gcg aaa act atg	4848
Ile Glu Thr Val Arg Arg Asp Thr Cys Glu Ala Val Ala Lys Thr Met	
1605 1610 1615	
gag caa tcg ttg aga ctc ttt ttt gaa cag aag aac atc tct aag gtt	4896
Glu Gln Ser Leu Arg Leu Phe Phe Glu Gln Lys Asn Ile Ser Lys Val	
1620 1625 1630	
aag tcg tac ttg tat aga cag tgg aag cgg ata cta tca ggg aga gtg	4944
Lys Ser Tyr Leu Tyr Arg Gln Trp Lys Arg Ile Leu Ser Gly Arg Val	
1635 1640 1645	
tct ctt caa gat ttt atc ttt gca aaa gaa gtt cgg ttg ggt act tac	4992
Ser Leu Gln Asp Phe Ile Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr	
1650 1655 1660	
agc aca aga gac tct tca ctc ctt cct cca gca gct att gtg gca acc	5040
Ser Thr Arg Asp Ser Ser Leu Leu Pro Pro Ala Ala Ile Val Ala Thr	
1665 1670 1675 1680	
aaa tca atg aaa gca gac cct cgg aca gag cca cgc tat gct gaa cga	5088
Lys Ser Met Lys Ala Asp Pro Arg Thr Glu Pro Arg Tyr Ala Glu Arg	
1685 1690 1695	
gtg cct tat gtt gtg att cat ggg gag cca gga gct cga ctt gtt gat	5136
Val Pro Tyr Val Val Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp	
1700 1705 1710	
atg gtt gtt gat cca ctg gtt ctt ttg gac gtc gat aca ccc tac cga	5184
Met Val Val Asp Pro Leu Val Leu Leu Asp Val Asp Thr Pro Tyr Arg	
1715 1720 1725	
ctg aat gac tta tac tac atc aac aaa caa att ata cca gct ttg caa	5232
Leu Asn Asp Leu Tyr Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln	
1730 1735 1740	
agg gta ttt gga ctc gtg ggt gca gac tta aac cag tgg ttt ttg gag	5280
Arg Val Phe Gly Leu Val Gly Ala Asp Leu Asn Gln Trp Phe Leu Glu	
1745 1750 1755 1760	
atg ccc cgt ctc acc aga agc tcc ctt ggt caa cgt ccc tta aac tct	5328
Met Pro Arg Leu Thr Arg Ser Ser Leu Gly Gln Arg Pro Leu Asn Ser	
1765 1770 1775	

## PhoenixTemp32470.tmp.txt

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aaa aac tca cac aaa aca agg att gat tat ttt tat cta tcg aaa cat 5376
Lys Asn Ser His 1780 Lys Thr Arg Ile Asp Tyr Phe Tyr Leu Ser Lys His 1790
tgc atc ttg tgt ggg gaa gtt gtt caa gaa tct gct caa cta tgc aac 5424
Cys Ile Leu Cys Gly Glu Val Val Gln Glu Ser Ala Gln Leu Cys Asn 1800
cgg tgc ctt caa aat aaa agt gct gct gct gca acc att gtt tgg aag 5472
Arg Cys Leu Gln Asn Lys Ser Ala Ala Ala Thr Ile Val Trp Lys 1810
act tca aag ttg gag aga gag atg caa cac cta gcc acg ata tgc aga 5520
Thr Ser Lys Leu Glu Arg Glu Met Gln His Leu Ala Thr Ile Cys Arg 1825
cac tgt ggt ggg gga gac tgg gtg gtg caa agc gga gtg aaa tgc aat 5568
His Cys Gly Gly Asp Trp Val Val Gln Ser Gly Val Lys Cys Asn 1845
tcc ctt gcg tgc tca gtc ttt tac gag aga cgg aaa gtt cag aaa gag 5616
Ser Leu Ala Cys Ser Val Phe Tyr Glu Arg Arg Lys Val Gln Lys Glu 1860
ctt cgt ggc ctc tcc tcc att gct act gag agt gag ctt tac cct aaa 5664
Leu Arg Gly Leu Ser Ser Ile Ala Thr Glu Ser Glu Leu Tyr Pro Lys 1875
tgc atg gct gag tgg ttc taa 5685
Cys Met Ala Glu Trp Phe 1890

```

&lt;210&gt; 2700

&lt;211&gt; 1894

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2700

```

Met Ala Asp Ser Gln Ser Gly Ser Asn Val Phe Ser Leu Arg Ile Val
1 5 10 15
Ser Ile Asp Tyr Tyr Met Ala Ser Pro Ile Pro Gly Tyr Asn Ile Cys
20 25 30
Tyr Ser Ser Phe Gln Gly Ser Glu Val Asn Glu Val Pro Val Ile Arg
35 40 45
Ile Tyr Gly Ser Thr Pro Ala Gly Gln Lys Thr Cys Leu His Ile His
50 55 60
Arg Ala Leu Pro Tyr Leu Tyr Ile Pro Cys Ser Glu Ile Pro Leu Glu
65 70 75 80
His His Lys Gly Val Asp Gly Ser Thr Leu Ala Leu Ser Leu Glu Leu
85 90 95
Glu Lys Ala Leu Lys Leu Lys Gly Asn Ala Ala Ser Lys Arg Gln His
100 105 110
Ile His Asp Cys Glu Ile Val Arg Ala Lys Lys Phe Tyr Gly Tyr His
115 120 125
Ser Thr Glu Glu Ala Phe Val Lys Ile Tyr Leu Tyr Pro Tyr Ser Ser
130 135 140
Tyr His Pro Pro Asp Val Ala Arg Ala Ala Ser Leu Leu Leu Ala Gly
145 150 155 160
Ala Val Leu Gly Lys Ser Leu Gln Pro Tyr Glu Ser His Ile Pro Phe
165 170 175
Ile Leu Gln Phe Leu Val Asp Tyr Asn Leu Tyr Gly Met Gly His Val
180 185 190
His Ile Ser Lys Met Lys Phe Arg Ser Pro Val Pro His His Phe Arg
195 200 205
Pro Arg Arg Phe Asp Leu Asp Cys Pro Gly Gln Arg Ile Asp Glu
210 215 220
Val Ala Ile Thr Lys Ala Asn Ser Ser Ala Ala Ala Ser Val Ser Phe
225 230 235 240
Pro Val Trp Ser Leu Ser Thr Ile Pro Gly Gln Trp Met Trp Asn Leu
245 250 255
Ser Glu Glu Ser Asp Thr Pro Leu Ser Gln Ser Gln His Arg His Gln
260 265 270
His His Tyr Arg Arg Gln Ser Leu Cys Glu Leu Glu Gly Asp Ala Thr
275 280 285
Ser Ser Asp Ile Leu Asn Gln Phe Lys Met Tyr Asn Ser Leu Ser
290 295 300

```



## PhoenixTemp32470.tmp.txt

Gln 305	Ala	Gln	Ser	Asp	Thr 310	Asn	Met	Val	Gln	Ser 315	Leu	Val	Ala	Ile	Trp 320
Glu	Glu	Glu	Tyr	Glu 325	Arg	Thr	Gly	Val	His 330	Asp	Ala	Pro	Ile	Pro 335	Pro
Asp	Pro	Gly	Lys 340	Pro	Ser	Ala	Ala	Asp 345	Val	Leu	Gln	Thr	Met 350	Ser	Asp
Tyr	Val	Gly 355	Phe	Gly	Asn	Met	Leu 360	Lys	Glu	Met	Leu	Asn 365	Lys	Val	Glu
Leu	Ser 370	Pro	Pro	Gly	Met	Lys 375	Pro	Thr	Ala	Val	Ser 380	Ser	Ala	Gly	Pro
Asp 385	Met	His	Ala	Lys	Pro 390	Glu	Ile	Thr	Asp	Leu 395	Gln	Ala	Leu	Asn	His 400
Met	Val	Gly	Thr	Cys 405	Ser	Glu	Phe	Pro	Ala 410	Ser	Glu	Gln	Leu	Ser 415	Pro
Leu	Gly	Glu	Lys 420	Ser	Glu	Glu	Ala	Ser 425	Met	Glu	Asn	Asp	Glu 430	Tyr	Met
Lys	Thr	Pro 435	Thr	Asp	Arg	Asp	Thr 440	Pro	Ala	Gln	Ile	Gln 445	Asp	Ala	Glu
Ala	Leu 450	Gly	Leu	Phe	Lys	Trp 455	Phe	Ala	Ser	Ser	Gln 460	Ala	Ala	Glu	Asp
Ile 465	Asn	Ser	Asp	Asp	Glu 470	Ile	Leu	Arg	Glu	Thr 475	Ile	Leu	Ser	Pro	Leu 480
Leu	Pro	Leu	Ala	Ser 485	Ile	Asn	Lys	Val	Leu 490	Glu	Met	Ala	Ser	Thr 495	Asp
Tyr	Val	Ser	Gln 500	Ser	Gln	Lys	Glu	Cys 505	Gln	Asp	Ile	Leu	Asp 510	Ser	Gln
Glu	Asn 515	Leu	Pro	Asp	Phe	Gly	Ser 520	Ser	Thr	Lys	Arg	Ala 525	Leu	Pro	Ser
Asn	Pro 530	Asp	Ser	Gln	Asn	Leu 535	Arg	Thr	Ser	Ser	Asp 540	Lys	Gln	Ser	Leu
Glu 545	Ile	Glu	Val	Ala	Ser 550	Asp	Val	Pro	Asp	Ser 555	Ser	Thr	Ser	Asn	Gly 560
Ala	Ser	Glu	Asn	Ser 565	Phe	Arg	Arg	Tyr	Arg 570	Lys	Ser	Asp	Leu	His 575	Thr
Ser	Glu	Val	Met 580	Glu	Tyr	Lys	Asn	Arg 585	Ser	Phe	Ser	Lys	Ser 590	Asn	Lys
Pro	Ser	Asn 595	Ser	Val	Trp	Gly	Pro 600	Leu	Pro	Phe	Thr	Leu 605	Thr	Lys	Asn
Leu 610	Gln	Lys	Asp	Phe	Asp	Ser 615	Thr	Asn	Ala	Ser	Asp 620	Lys	Leu	Gly	Leu
Thr 625	Lys	Ile	Ser	Ser	Tyr 630	Pro	Met	Asn	Glu	Met 635	Thr	Asp	Asn	Tyr	Ile 640
Val	Pro	Val	Lys	Glu 645	His	Gln	Ala	Asp	Val 650	Cys	Asn	Thr	Ile	Asp 655	Arg
Asn	Val	Leu	Ala 660	Gly	Cys	Ser	Leu	Arg 665	Asp	Leu	Met	Arg	Lys 670	Lys	Arg
Leu	Cys	His 675	Gly	Glu	Ser	Pro	Val 680	Ser	Gln	His	Met	Lys 685	Ser	Arg	Lys
Val	Arg 690	Asp	Ser	Arg	His	Gly 695	Glu	Lys	Asn	Glu	Cys 700	Thr	Leu	Arg	Cys
Glu 705	Ala	Lys	Lys	Gln	Gly 710	Pro	Ala	Leu	Ser	Ala 715	Glu	Phe	Ser	Glu	Phe 720
Val	Cys	Gly	Asp	Thr 725	Pro	Asn	Leu	Ser	Pro 730	Ile	Asp	Ser	Gly	Asn 735	Cys
Glu	Cys	Asn	Ile 740	Ser	Thr	Glu	Ser	Ser 745	Glu	Leu	His	Ser	Val 750	Asp	Arg
Cys	Ser	Ala 755	Lys	Glu	Thr	Ala	Ser 760	Gln	Asn	Ser	Asp	Glu 765	Val	Leu	Arg
Asn	Leu 770	Ser	Ser	Thr	Thr	Val 775	Pro	Phe	Gly	Lys	Asp 780	Pro	Gln	Thr	Val
Glu 785	Ser	Gly	Thr	Leu	Val 790	Ser	Ser	Asn	Ile	His 795	Val	Gly	Ile	Glu	Ile 800
Asp	Ser	Val	Gln	Lys 805	Ser	Gly	Arg	Glu	Gln 810	Glu	Ser	Thr	Ala	Asn 815	Glu
Thr	Asp	Glu	Thr 820	Gly	Arg	Leu	Ile	Cys 825	Leu	Thr	Leu	Ser	Lys 830	Lys	Pro
Pro	Ser	Leu 835	Asp	Cys	Leu	Ser	Ala 840	Gly	Leu	Gln	Asp	Ser 845	Ala	His	Ser
His	Glu	Ile	His	Ala	Arg	Glu	Lys	Gln	His	Asp	Glu	Tyr	Glu	Gly	Asn

## PhoenixTemp32470.tmp.txt

850 855 860  
 Ser Asn Asp Ile Pro Phe Phe Pro Leu Glu Asp Asn Lys Glu Glu Lys  
 865 870 875 880  
 Lys His Phe Phe Gln Gly Thr Ser Leu Gly Ile Pro Leu His His Leu  
 885 890 895  
 Asn Asp Gly Ser Asn Leu Tyr Leu Leu Thr Pro Ala Phe Ser Pro Pro  
 900 905 910  
 Ser Val Asp Ser Val Leu Gln Trp Ile Ser Asn Asp Lys Gly Asp Ser  
 915 920 925  
 Asn Ile Asp Ser Glu Lys Gln Pro Leu Arg Asp Asn His Asn Asp Arg  
 930 935 940  
 Gly Ala Ser Phe Thr Asp Leu Ala Ser Ala Ser Asn Val Val Ser Val  
 945 950 955 960  
 Ser Glu His Val Glu Gln His Asn Asn Leu Phe Val Asn Ser Glu Ser  
 965 970 975  
 Asn Ala Tyr Thr Glu Ser Glu Ile Asp Leu Lys Pro Lys Gly Thr Phe  
 980 985 990  
 Leu Asn Leu Asn Leu Gln Ala Ser Val Ser Gln Glu Leu Ser Gln Ile  
 995 1000 1005  
 Ser Gly Pro Asp Gly Lys Ser Gly Pro Thr Pro Leu Ser Gln Met Gly  
 1010 1015 1020  
 Phe Arg Asp Pro Ala Ser Met Gly Ala Gly Gln Gln Leu Thr Ile Leu  
 1025 1030 1035 1040  
 Ser Ile Glu Val His Ala Glu Ser Arg Gly Asp Leu Arg Pro Asp Pro  
 1045 1050 1055  
 Arg Phe Asp Ser Val Asn Val Ile Ala Leu Val Val Gln Asn Asp Asp  
 1060 1065 1070  
 Ser Phe Val Ala Glu Val Phe Val Leu Leu Phe Ser Pro Asp Ser Ile  
 1075 1080 1085  
 Asp Gln Arg Asn Val Asp Gly Leu Ser Gly Cys Lys Leu Ser Val Phe  
 1090 1095 1100  
 Leu Glu Glu Arg Gln Leu Phe Arg Tyr Phe Ile Glu Thr Leu Cys Lys  
 1105 1110 1115 1120  
 Trp Asp Pro Asp Val Leu Leu Gly Trp Asp Ile Gln Gly Gly Ser Ile  
 1125 1130 1135  
 Gly Phe Leu Ala Glu Arg Ala Ala Gln Leu Gly Ile Arg Phe Leu Asn  
 1140 1145 1150  
 Asn Ile Ser Arg Thr Pro Ser Pro Thr Thr Thr Asn Asn Ser Asp Asn  
 1155 1160 1165  
 Lys Arg Lys Leu Gly Asn Asn Leu Leu Pro Asp Pro Leu Val Ala Asn  
 1170 1175 1180  
 Pro Ala Gln Val Glu Glu Val Val Ile Glu Asp Glu Trp Gly Arg Thr  
 1185 1190 1195 1200  
 His Ala Ser Gly Val His Val Gly Gly Arg Ile Val Leu Asn Ala Trp  
 1205 1210 1215  
 Arg Leu Ile Arg Gly Glu Val Lys Leu Asn Met Tyr Thr Ile Glu Ala  
 1220 1225 1230  
 Val Ser Glu Ala Val Leu Arg Gln Lys Val Pro Ser Ile Pro Tyr Lys  
 1235 1240 1245  
 Val Leu Thr Glu Trp Phe Ser Ser Gly Pro Ala Gly Ala Arg Tyr Arg  
 1250 1255 1260  
 Cys Ile Glu Tyr Val Ile Arg Arg Ala Asn Leu Asn Leu Glu Ile Met  
 1265 1270 1275 1280  
 Ser Gln Leu Asp Met Ile Asn Arg Thr Ser Glu Leu Ala Arg Val Phe  
 1285 1290 1295  
 Gly Ile Asp Phe Phe Ser Val Leu Ser Arg Gly Ser Gln Tyr Arg Val  
 1300 1305 1310  
 Glu Ser Met Leu Leu Arg Leu Ala His Thr Gln Asn Tyr Leu Ala Ile  
 1315 1320 1325  
 Ser Pro Gly Asn Gln Gln Val Ala Ser Gln Pro Ala Met Glu Cys Val  
 1330 1335 1340  
 Pro Leu Val Met Glu Pro Glu Ser Ala Phe Tyr Asp Asp Pro Val Ile  
 1345 1350 1355 1360  
 Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn  
 1365 1370 1375  
 Leu Cys Phe Ser Thr Cys Leu Gly Lys Leu Ala His Leu Lys Met Asn  
 1380 1385 1390  
 Thr Leu Gly Val Ser Ser Tyr Ser Leu Asp Leu Asp Val Leu Gln Asp  
 1395 1400 1405

## PhoenixTemp32470.tmp.txt

Leu Asn Gln Ile Leu Gln Thr Pro Asn Ser Val Met Tyr Val Pro Pro  
 1410 1415 1420  
 Glu Val Arg Arg Gly Ile Leu Pro Arg Leu Leu Glu Ile Leu Ser  
 1425 1430 1435 1440  
 Thr Arg Ile Met Val Lys Lys Ala Met Lys Lys Leu Thr Pro Ser Glu  
 1445 1450 1455  
 Ala Val Leu His Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu  
 1460 1465 1470  
 Ile Ala Asn Val Thr Tyr Gly Tyr Thr Ala Ala Gly Phe Ser Gly Arg  
 1475 1480 1485  
 Met Pro Cys Ala Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Ser  
 1490 1495 1500  
 Thr Leu Glu Lys Ala Ile Ser Phe Val Asn Ala Asn Asp Asn Trp Asn  
 1505 1510 1515 1520  
 Ala Arg Val Val Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys  
 1525 1530 1535  
 Gly Arg Thr Val Lys Glu Ala Phe Val Val Gly Gln Glu Ile Ala Ser  
 1540 1545 1550  
 Ala Ile Thr Glu Met Asn Pro His Pro Val Thr Leu Lys Met Glu Lys  
 1555 1560 1565  
 Val Tyr His Pro Cys Phe Leu Leu Thr Lys Lys Arg Tyr Val Gly Tyr  
 1570 1575 1580  
 Ser Tyr Glu Ser Pro Asn Gln Arg Glu Pro Ile Phe Asp Ala Lys Gly  
 1585 1590 1595 1600  
 Ile Glu Thr Val Arg Asp Thr Cys Glu Ala Val Ala Lys Thr Met  
 1605 1610 1615  
 Glu Gln Ser Leu Arg Leu Phe Phe Glu Gln Lys Asn Ile Ser Lys Val  
 1620 1625 1630  
 Lys Ser Tyr Leu Tyr Arg Gln Trp Lys Arg Ile Leu Ser Gly Arg Val  
 1635 1640 1645  
 Ser Leu Gln Asp Phe Ile Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr  
 1650 1655 1660  
 Ser Thr Arg Asp Ser Ser Leu Leu Pro Pro Ala Ala Ile Val Ala Thr  
 1665 1670 1675 1680  
 Lys Ser Met Lys Ala Asp Pro Arg Thr Glu Pro Arg Tyr Ala Glu Arg  
 1685 1690 1695  
 Val Pro Tyr Val Val Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp  
 1700 1705 1710  
 Met Val Val Asp Pro Leu Val Leu Leu Asp Val Asp Thr Pro Tyr Arg  
 1715 1720 1725  
 Leu Asn Asp Leu Tyr Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln  
 1730 1735 1740  
 Arg Val Phe Gly Leu Val Gly Ala Asp Leu Asn Gln Trp Phe Leu Glu  
 1745 1750 1755 1760  
 Met Pro Arg Leu Thr Arg Ser Ser Leu Gly Gln Arg Pro Leu Asn Ser  
 1765 1770 1775  
 Lys Asn Ser His Lys Thr Arg Ile Asp Tyr Phe Tyr Leu Ser Lys His  
 1780 1785 1790  
 Cys Ile Leu Cys Gly Glu Val Val Gln Glu Ser Ala Gln Leu Cys Asn  
 1795 1800 1805  
 Arg Cys Leu Gln Asn Lys Ser Ala Ala Ala Thr Ile Val Trp Lys  
 1810 1815 1820  
 Thr Ser Lys Leu Glu Arg Glu Met Gln His Leu Ala Thr Ile Cys Arg  
 1825 1830 1835 1840  
 His Cys Gly Gly Gly Asp Trp Val Val Gln Ser Gly Val Lys Cys Asn  
 1845 1850 1855  
 Ser Leu Ala Cys Ser Val Phe Tyr Glu Arg Arg Lys Val Gln Lys Glu  
 1860 1865 1870  
 Leu Arg Gly Leu Ser Ser Ile Ala Thr Glu Ser Glu Leu Tyr Pro Lys  
 1875 1880 1885  
 Cys Met Ala Glu Trp Phe  
 1890

&lt;210&gt; 2701

&lt;211&gt; 5781

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5781)

&lt;400&gt; 2701

atg	gaa	ttt	tta	aga	ctt	cga	ttg	aac	tgt	att	gat	cac	tac	caa	gcc	48
Met	Glu	Phe	Leu	Arg	Leu	Arg	Leu	Asn	Cys	Ile	Asp	His	Tyr	Gln	Ala	
1				5				10						15		
acg	cca	act	aga	tat	gat	ccc	cag	ttt	gac	caa	gat	gtg	cgc	ttt	tcg	96
Thr	Pro	Thr	Arg	Tyr	Asp	Pro	Gln	Phe	Asp	Gln	Asp	Val	Arg	Phe	Ser	
			20					25					30			
cgt	tcg	cgg	aag	gcc	gcc	aaa	gtc	cct	gta	att	cgg	gtg	ttc	gga	tcg	144
Arg	Ser	Arg	Lys	Ala	Ala	Lys	Val	Pro	Val	Ile	Arg	Val	Phe	Gly	Ser	
			35				40					45				
acc	gac	aag	ggc	cag	aaa	gtc	tgc	gct	cat	att	cat	ggt	gcc	ttt	ccc	192
Thr	Asp	Lys	Gly	Gln	Lys	Val	Cys	Ala	His	Ile	His	Gly	Ala	Phe	Pro	
	50					55				60						
tat	ctg	tat	gtc	gag	tat	gac	gga	aat	cta	gaa	ccc	agc	aag	gat	cat	240
Tyr	Leu	Tyr	Val	Glu	Tyr	Asp	Gly	Asn	Leu	Glu	Pro	Ser	Lys	Asp	His	
	65				70					75					80	
gcg	tta	gct	atc	agc	tac	cgg	aaa	gat	ccc	att	cgc	gat	cgg	ccc	aaa	288
Ala	Leu	Ala	Ile	Ser	Tyr	Arg	Lys	Asp	Pro	Ile	Arg	Asp	Arg	Pro	Lys	
				85					90					95		
tat	gta	gca	cgg	att	tcg	ctg	aca	aaa	ggt	ata	ccc	ttt	tat	ggc	ttc	336
Tyr	Val	Ala	Arg	Ile	Ser	Leu	Thr	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Phe	
			100					105					110			
cat	gtg	ggt	tat	cgc	ttc	tat	ctc	aaa	att	tac	ctg	ttc	aac	ccg	gtg	384
His	Val	Gly	Tyr	Arg	Phe	Tyr	Leu	Lys	Ile	Tyr	Leu	Phe	Asn	Pro	Val	
	115					120						125				
gtc	atg	tcg	cgt	ctc	gtc	gat	ctc	ctt	cag	caa	ggt	ggt	att	atg	agt	432
Val	Met	Ser	Arg	Leu	Val	Asp	Leu	Leu	Gln	Gln	Gly	Val	Ile	Met	Ser	
	130					135					140					
cgg	aaa	ttt	caa	ccc	tac	gag	gcc	cat	ctg	cag	tat	ctc	ctt	caa	ttc	480
Arg	Lys	Phe	Gln	Pro	Tyr	Glu	Ala	His	Leu	Gln	Tyr	Leu	Leu	Gln	Phe	
	145				150				155						160	
atg	gct	gat	tac	aac	ctg	tac	ggc	tgt	aac	tac	ctg	gat	gcg	gcg	atg	528
Met	Ala	Asp	Tyr	Asn	Leu	Tyr	Gly	Cys	Asn	Tyr	Leu	Asp	Ala	Ala	Met	
				165					170					175		
gcc	acc	ttt	cga	gca	cct	gta	ccg	aag	cat	gac	agc	aac	att	gaa	ggc	576
Ala	Thr	Phe	Arg	Ala	Pro	Val	Pro	Lys	His	Asp	Ser	Asn	Ile	Glu	Gly	
			180					185					190			
cgt	gag	gct	gaa	cat	cac	tgg	gac	gat	aca	acg	atc	ccg	cca	gag	ctg	624
Arg	Glu	Ala	Glu	His	His	Trp	Asp	Asp	Thr	Thr	Ile	Pro	Pro	Glu	Leu	
		195					200					205				
att	acg	gat	aat	tac	agc	ctt	ccc	cgg	gct	agc	cac	tgc	tcc	ctt	gaa	672
Ile	Thr	Asp	Asn	Tyr	Ser	Leu	Pro	Arg	Ala	Ser	His	Cys	Ser	Leu	Glu	
	210					215					220					
gtg	gac	atc	tgc	gtc	gaa	gac	atc	ctg	aat	aga	aaa	caa	gtc	aaa	gag	720
Val	Asp	Ile	Cys	Val	Glu	Asp	Ile	Leu	Asn	Arg	Lys	Gln	Val	Lys	Glu	
	225				230					235					240	
cga	agg	ctt	cat	cat	gat	ttt	atc	gaa	aag	gag	cag	ccg	gtg	tca	agc	768
Arg	Arg	Leu	His	His	Asp	Phe	Ile	Glu	Lys	Glu	Gln	Pro	Val	Ser	Ser	
				245					250					255		
caa	gaa	aag	ctg	gtg	cac	agc	atg	gct	gga	ctc	tgg	acg	gat	gag	aca	816
Gln	Glu	Lys	Leu	Val	His	Ser	Met	Ala	Gly	Leu	Trp	Thr	Asp	Glu	Thr	
			260					265					270			
aac	cgc	agg	aaa	aag	cgt	atg	gga	ata	acg	gac	cct	gaa	gtc	aac	cct	864
Asn	Arg	Arg	Lys	Lys	Arg	Met	Gly	Ile	Thr	Asp	Pro	Glu	Val	Asn	Pro	
			275				280					285				
ttt	cct	ccg	gaa	gtc	ttg	gta	tca	atg	tct	gcg	gac	cca	cgt	caa	tca	912
Phe	Pro	Pro	Glu	Val	Leu	Val	Ser	Met	Ser	Ala	Asp	Pro	Arg	Gln	Ser	
	290					295					300					
cag	gtg	atg	ggg	tgg	gtt	cat	gaa	gct	gag	tac	cgt	gct	ggt	att	caa	960
Gln	Val	Met	Gly	Trp	Val	His	Glu	Ala	Glu	Tyr	Arg	Ala	Gly	Ile	Gln	
	305				310					315					320	
caa	ttg	gtt	gct	cag	gaa	cag	aac	aac	aca	gat	gga	cgt	cag	gag	act	1008
Gln	Leu	Val	Ala	Gln	Glu	Gln	Asn	Asn	Thr	Asp	Gly	Arg	Gln	Glu	Thr	
				325					330					335		
ttc	tcc	agc	ttt	gtg	caa	cca	gtt	cca	ttt	gaa	gaa	act	atc	aag	act	1056
Phe	Ser	Ser	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr	

## 345

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## PhoenixTemp32470.tmp.txt

705	gcg	aaa	ccc	ggt	cag	710	act	aaa	ccc	aac	cta	715	aaa	tcg	tcg	tcc	agg	720	ccc		
Ala	Lys	Pro	Gly	Gln	Thr	Lys	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Ser	Arg	Pro				
				725						730											
ctt	gac	tcg	gcc	cct	gtg	gct	tcg	gct	ccg	gca	ctc	ttg	tgg	agt	ggc						
Leu	Asp	Ser	Ala	Pro	Val	Ala	Ser	Ala	Pro	Ala	Leu	Leu	Trp	Ser	Gly						
			740					745													
tca	aag	aac	atg	ttt	gtc	ttg	aac	aat	aaa	cct	cca	tcc	ctg	agc	gaa						
Ser	Lys	Asn	Met	Phe	Val	Leu	Asn	Asn	Lys	Pro	Pro	Ser	Leu	Ser	Glu						
		755					760					765									
gtc	cgc	tgt	acc	atg	cag	gta	cat	ggc	cta	cct	gat	gtc	atc	tat	aaa						
Val	Arg	Cys	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Lys						
		770				775						780									
gac	gca	tat	tac	agt	aag	gat	gag	gac	ggt	ccc	tcc	aga	ccg	aga	gaa						
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu						
					790					795					800						
tat	gca	ggc	agg	gaa	tac	cga	ctt	gac	ggc	agg	tct	ggt	cct	tgg	ctc						
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu						
				805					810					815							
ccc	gat	ttc	gac	ccg	act	ggc	aca	tct	tcg	gcg	aca	tat	gga	gag	aaa						
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys						
			820					825					830								
cca	acc	tcc	ggt	gcc	gac	tgg	cca	atg	ctg	gag	gca	atc	tat	gag	gct						
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala						
		835					840					845									
caa	caa	gag	gaa	tgt	gcg	atg	agg	ggt	tgg	gaa	ata	gca	gat	cct	cct						
Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro						
		850				855					860										
cct	tct	ttc	aag	gaa	gtc	agt	aat	tgg	tgg	aca	gat	gaa	caa	aac	gat						
Pro	Ser	Phe	Lys	Glu	Val	Ser	Asn	Trp	Trp	Thr	Asp	Glu	Gln	Asn	Asp						
					870					875					880						
cgc	aat	cca	aaa	cga	tgc	cat	tcc	aca	ccc	cta	agg	ttt	aaa	acc	tac						
Arg	Asn	Pro	Lys	Arg	Cys	His	Ser	Thr	Pro	Leu	Arg	Phe	Lys	Thr	Tyr						
				885				890						895							
cgc	tcc	caa	atc	gcg	ggc	gtg	acg	cca	aag	aac	aga	cat	ggc	ttc	gaa						
Arg	Ser	Gln	Ile	Ala	Gly	Val	Thr	Pro	Lys	Asn	Arg	His	Gly	Phe	Glu						
			900					905					910								
cat	ccc	gaa	aag	aca	aaa	tct	gaa	agc	aaa	cag	gat	cag	gca	cag	tac						
His	Pro	Glu	Lys	Thr	Lys	Ser	Glu	Ser	Lys	Gln	Asp	Gln	Ala	Gln	Tyr						
		915					920					925									
atg	agc	gcc	atg	agc	cta	gag	gta	cat	ggt	aac	acc	cgg	ggc	aag	cta						
Met	Ser	Ala	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly	Lys	Leu						
		930				935					940										
gta	ccg	gat	cct	gaa	gaa	gac	gaa	gtg	cag	tgt	gtg	ttt	tgg	tat	ctg						
Val	Pro	Asp	Pro	Glu	Glu	Asp	Glu	Val	Gln	Cys	Val	Phe	Trp	Tyr	Leu						
				950						955					960						
cgg	tcc	gaa	gta	aac	gct	ctc	tgc	gga	act	cag	gcg	ccg	gat	gat	acg						
Arg	Ser	Glu	Val	Asn	Ala	Leu	Cys	Gly	Thr	Gln	Ala	Pro	Asp	Asp	Thr						
				965				970						975							
gca	cgg	ggc	att	atc	ggt	ttc	tca	gag	gat	agt	ctg	ctt	gca	gat	aga						
Ala	Arg	Gly	Ile	Ile	Val	Phe	Ser	Glu	Asp	Ser	Leu	Leu	Ala	Asp	Arg						
			980					985					990								
atc	cga	aag	cac	aca	tcc	gtg	ccg	gtg	ggt	caa	gag	aca	aca	gaa	ctt						
Ile	Arg	Lys	His	Thr	Ser	Val	Pro	Val	Val	Gln	Glu	Thr	Thr	Glu	Leu						
		995				1000						1005									
gat	atg	atg	gtc	cgg	atg	gtc	gag	att	gtg	cgg	aac	cat	gat	ccc	gat						
Asp	Met	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp						
		1010			1015					1020											
atc	ttc	acg	gga	tat	gag	gta	cat	ggc	agt	tca	tgg	ggc	tac	ctt	att						
Ile	Phe	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile						
				1025		1030				1035				1040							
gag	cga	gcg	aga	ata	aag	tat	gag	ctc	gac	ctc	tgt	gat	gag	ttc	tca						
Glu	Arg	Ala	Arg	Ile	Lys	Tyr	Glu	Leu	Asp	Leu	Cys	Asp	Glu	Phe	Ser						
				1045					1050				1055								
cgc	atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggt	aag	gat	gcg	gat	cgc						
Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Ala	Asp	Arg						
			1060				1065					1070									
tgg	ggc	ttc	aac	acg	aca	tcc	tcg	att	cga	att	aca	gga	cgg	cac	atg						
Trp	Gly	Phe	Asn	Thr	Thr	Ser	Ser	Ile	Arg	Ile	Thr	Gly	Arg	His	Met						

## PhoenixTemp32470.tmp.txt

1075	1080	1085	
atc aac att tgg aga gcc atg aga ggc gaa ctc aat ctt cta cag tat			3312
Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr			
1090	1095	1100	
acc atg gag aat gtt gtt tgg cat ctg cta cac cgt cgg att cct cat			3360
Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His			
1105	1110	1115	1120
tac agt tgg aag aca tta tcg gat tgg tat ctg agc gat cga ccg aag			3408
Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys			
1125	1130	1135	
gat ctg gat aaa gtt ctc cga tat tac ctg acg aga acg cgg ctt gat			3456
Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp			
1140	1145	1150	
att gaa atc ctg gaa aag aac gag ctc att cct agg aca agc gag caa			3504
Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln			
1155	1160	1165	
gca aga ctg ctt ggt gtt gac ttt ttt tct gtc ttc tcc aga gga tcg			3552
Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser			
1170	1175	1180	
cag ttc aag gta gag tcc atc atg ttc agg ata gcc aaa ccc gag aac			3600
Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn			
1185	1190	1195	1200
ttc ctt ctc cct tcg cca agc aga aag caa gtg ggt gca caa aac gct			3648
Phe Leu Leu Pro Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala			
1205	1210	1215	
ctg gag tgt tta ccc tta gtg atg gaa ccg cag agt gca ttc tac agc			3696
Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser			
1220	1225	1230	
agt cct ttg att gtc ctt gac ttt cag agt ctg tat ccc agt gtc atg			3744
Ser Pro Leu Ile Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met			
1235	1240	1245	
atc gcc tac aac tac tgc tac tcg acc ttc ctt ggg cgt atc gtc agc			3792
Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser			
1250	1255	1260	
tgg cga ggt aca aac aaa atg ggt ttc atg gac tac aag agg caa gag			3840
Trp Arg Gly Thr Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu			
1265	1270	1275	1280
ggg ctt ctt agt cta ctc aaa gat tac atc aac atc gcc cca aac ggc			3888
Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly			
1285	1290	1295	
atg atg tac aca aag cct cat att cgc aag tca ctt ctt gca aag atg			3936
Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met			
1300	1305	1310	
ctt acc gag att ctc gaa act cgt atc atg gtc aag tcc ggt atg aag			3984
Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys			
1315	1320	1325	
caa gac aag gat gat agg gcg att cag caa ctg ctg aat aac cgg cag			4032
Gln Asp Lys Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln			
1330	1335	1340	
ctg gcg ctg aag ctc ctc gcc aac gtc aca tac ggt tac aca tcg gcc			4080
Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala			
1345	1350	1355	1360
tcg ttc tca ggt cgt atg ccc tgc tcc gaa att gcc gac agc atc gtc			4128
Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val			
1365	1370	1375	
caa acc ggt cgc gaa acc ctt gag cgg gcc ata gcc ttc att cat agc			4176
Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser			
1380	1385	1390	
gtc caa aaa tgg gac gcc gag gtt gtc tac ggc gac acc gac agt ctt			4224
Val Gln Lys Trp Asp Ala Glu Val Val Tyr Gly Asp Thr Asp Ser Leu			
1395	1400	1405	
ttc gtc tct ctc aag ggc gcg acc cgc gaa cag gcc ttt gag atc ggc			4272
Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly			
1410	1415	1420	
caa gag atc gcc gac gct gtc acc aag ttg aat ccg cgg ccc gtc aag			4320
Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys			
1425	1430	1435	1440
ctc aag ttt gaa aag gtc tac cac cca tgc ata ctc ctc gcc aaa aag			4368
Leu Lys Phe Glu Lys Val Tyr His Pro Cys Ile Leu Leu Ala Lys Lys			

## PhoenixTemp32470.tmp.txt

1445  
 cgc tac gtc ggc tac aag tac gag agt 1450 cgg gac cag acc gtg ccc gtg 4416  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
 1460  
 ttc gac gcc aag ggc atc gag acg gtc cgg cgc gac ggc aca ccc gcc 4464  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475  
 gag caa cgg atc gag gag aag gcg ctc aaa atc ctc ttt gag act gcc 4512  
 Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490  
 gat ctc agc cag gtc aaa agt tac ttc cag gag cag tgc cac aag atc 4560  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505  
 atg cgc ggc gcc gtg tcc gtg cag gac ttt tgc ttc gcg cgc gag gtc 4608  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525  
 aag ctg ggc acg tac agc acg tcc ggt cgc ggc ggc ccg gct ccc gct 4656  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540  
 ggc gcg ctc att gcc acc aaa aag atg aag gag gac gcg cgg gcg gag 4704  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555  
 ccg caa tat ggc gaa cgg gtg cca tat gtg gtg atg gcc ggc gcg ccg 4752  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570  
 ggg atg agg ctg gta gac cgg tgc gtg gaa cgg gag gag ctg ttg aac 4800  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
 1585  
 aac gca cat gct acg ttg gat gcg gac tac tac att aac aag aac atc 4848  
 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Ile Asn Lys Asn Ile  
 1605  
 att ccg ccg cta gag agg att ttc aac ttg gtc ggc gcg aac gtg agg 4896  
 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
 1620  
 act tgg tat gag gag atg ccc aag gtt caa gtc ttg cgg aag gtg gcg 4944  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
 1635  
 gag gat gaa gac gct gct gac gat gct tcc aaa ggc cca ctg ctg gga 4992  
 Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly  
 1650  
 ctg cta ggg gcg tca cca agc aaa aag ggt gcg gca gcg gca gaa gca 5040  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Ala Ala Ala Ala Glu Ala  
 1665  
 gct gca gca gct gca gaa cta gag atg gaa gat atg ttg gga gaa gac 5088  
 Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
 1685  
 ggc gag ctc ctc cct cct gac gtc gca gct gcc caa gcc caa gcg cgc 5136  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg  
 1700  
 aag acc ctc gaa gcc ttc ctc aat acc acc atc tgc aca gcc tgc ggc 5184  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715  
 gtc aag atc aag cgg ccg ctc ggg gta ggg ctt gcg cgc gag ctg ggc 5232  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
 1730  
 atg ctt gag gag ggc gag ggc gcc gtg gac cga ggc ctg ccg ctc tgt 5280  
 Met Leu Glu Glu Gly Glu Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745  
 cac cgg tgc gct tcg gat cca ccc acg ctt atg gtc gac atg cag gcc 5328  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
 1765  
 aag gtc agc aga gcc gag aaa agc tgc gtg gag att atg aag gtg tgt 5376  
 Lys Val Ser Arg Ala Glu Lys Ser Cys Val Glu Ile Met Lys Val Cys  
 1780  
 cag agc tgt gcg ggc ttt gcg tta tcc gag gag gtg ccc tgc gat agc 5424  
 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
 1795  
 aag gat tgc cct gtc ttt tac tcg agg gtg aag cag agg acg aag gta 5472  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val



## PhoenixTemp32470.tmp.txt

```

1810      1815      1820
acg acg gta aag agg gtg atg gag ccg cta atc aag ttg ttt gga gag      5520
Thr Thr Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu
1825      1830      1835      1840
ttg gaa ttg gat aag gcg agt agt gag gat gag ggt ggc gac gag gag      5568
Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu
      1845      1850      1855
ggt aat tgg gat ctg gaa ggg aga ggt gag gtg gtt gac gaa agt ggt      5616
Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly
      1860      1865      1870
gta gaa atg caa gaa gac gca aga gta agg tat gag gag gag aaa gtg      5664
Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val
      1875      1880      1885
aga ttc gag acc att gtc aag ggc aag gtt aga gcc atg agt gag gag      5712
Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu
      1890      1895      1900
ttg gcg gag agg aaa gag att att gac aac agt tat aag agc ctg aag      5760
Leu Ala Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys
1905      1910      1915      1920
gcg gca tcg ttg gaa tgg tag
Ala Ala Ser Leu Glu Trp
      1925

```

&lt;210&gt; 2702

&lt;211&gt; 1926

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 2702

```

Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala
1      5      10      15
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser
      20      25      30
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser
      35      40      45
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
      50      55      60
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Ser Lys Asp His
65      70      75      80
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys
      85      90      95
Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe
      100      105      110
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val
      115      120      125
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser
      130      135      140
Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe
145      150      155      160
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met
      165      170      175
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly
      180      185      190
Arg Glu Ala Glu His His Trp Asp Asp Thr Thr Ile Pro Pro Glu Leu
      195      200      205
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu
210      215      220
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu
225      230      235      240
Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser
      245      250      255
Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr
      260      265      270
Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro
      275      280      285
Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser
290      295      300
Gln Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile Gln
305      310      315      320

```

## PhoenixTemp32470.tmp.txt

Gln Leu Val Ala Gln Glu Gln Asn Asn Thr Asp Gly Arg Gln Glu Thr  
 325 330  
 Phe Ser Ser Phe Val Gln Pro Val Pro Phe Glu Glu Thr Ile Lys Thr  
 340 345 350  
 Thr Leu Glu Ser Val Glu Asp Leu Tyr Pro Asp Asn Leu Ser Gln Ala  
 355 360 365  
 Leu Gln Ile Glu Ala Gln Phe Phe His Met Asn Ala His His Pro Ile  
 370 375 380  
 Ser Ile Asp Val Asp Glu Arg Ser Ile Ile Gln Leu Thr Arg Glu Pro  
 385 390 400  
 Tyr Ala Lys His Thr Arg His Glu Tyr Ala Gly Arg Ile Ser Pro Glu  
 405 410 415  
 Glu Ser Leu Asn Gly Val Gly Glu Gly Phe Gly Val Gly Asp Ser Met  
 420 425 430  
 Ile Tyr Pro Met Asp Gly Arg Ile Arg Val Tyr Gln Pro Arg Ala Ser  
 435 440 445  
 Ile Arg His Lys Leu Leu Lys Ile Ala Gln Thr Tyr Ser Ser Asn Ile  
 450 455 460  
 Pro Ala Asn Thr Gly Arg Gln Ala Gly Ile Leu Gly Pro Gly Glu Arg  
 465 470 475 480  
 Gln Arg Arg Ser Leu Lys His Pro Arg Pro Pro Gly Glu Val Asp His  
 485 490 495 495  
 Gly Ala Pro Ala Lys Arg Gln Val Leu Gln Ala Glu Tyr Ser Arg Glu  
 500 505 510  
 Ser Leu His Ile Lys Ala Asp Pro Gln Arg Ala Leu Arg Lys Ala  
 515 520 525  
 Pro Arg Asn Ala His Glu Gln Thr Gln Ser Ala Gly Arg Pro Gly Pro  
 530 535 540  
 Gln Arg Lys Leu Gln Ser Asn Pro Pro Glu Arg Val Tyr Glu Glu Pro  
 545 550 555 560  
 Asn Lys Arg Val His Glu Glu Ala Gln Pro Asn Val His Arg Lys Ala  
 565 570 575 575  
 Gln Gln Arg Ser Arg Glu His Asp Gln Lys Gln Gly Gln Gln Ile Ile  
 580 585 590  
 Gln Glu Pro Thr Gln Asp His Asp Gln Gly Gly Cys Gln Lys Glu Val  
 595 600 605  
 Pro Ala Asp Ser Ala Phe Thr Thr Pro Ala Leu Thr Ile Gln Pro Met  
 610 615 620  
 Lys Pro Asn Asn Gln Asp Pro Thr Gly Glu Glu Leu Leu Val Asn Ser  
 625 630 635 640  
 Leu Leu Val Glu Pro Lys Pro Lys Thr Ser Gln Pro Met Lys Ser  
 645 650 655  
 Ala Met Lys Gln Ser Phe Thr Gln Glu Phe Gln Asn Arg Thr Ile Asn  
 660 665 670  
 Phe Pro Val Val Lys Asp Pro Gln Asp Pro Asn Thr Arg Ala Arg Leu  
 675 680 685  
 Ser Gln Lys Ser Gly Ser Gln Lys Asn Glu Gly Asn Val Thr Arg Lys  
 690 695 700  
 Gln Leu Ala Phe Asp Pro Gln Pro Thr Ile Leu Gly Pro Ser Ala Gln  
 705 710 715 720  
 Ala Lys Pro Gly Gln Thr Lys Pro Asn Leu Lys Ser Ser Ser Arg Pro  
 725 730 735  
 Leu Asp Ser Ala Pro Val Ala Ser Ala Pro Ala Leu Leu Trp Ser Gly  
 740 745 750  
 Ser Lys Asn Met Phe Val Leu Asn Asn Lys Pro Pro Ser Leu Ser Glu  
 755 760 765  
 Val Arg Cys Thr Met Gln Val His Gly Leu Pro Asp Val Ile Tyr Lys  
 770 775 780  
 Asp Ala Tyr Tyr Ser Lys Asp Glu Asp Val Pro Ser Arg Pro Arg Glu  
 785 790 795 800  
 Tyr Ala Gly Arg Glu Tyr Arg Leu Asp Gly Ser Ser Val Pro Trp Leu  
 805 810 815  
 Pro Asp Phe Asp Pro Thr Gly Thr Ser Ala Thr Tyr Gly Glu Lys  
 820 825 830  
 Pro Thr Ser Gly Ala Asp Trp Pro Met Leu Glu Ala Ile Tyr Glu Ala  
 835 840 845  
 Gln Gln Glu Glu Cys Ala Met Arg Gly Trp Glu Ile Ala Asp Pro Pro  
 850 855 860  
 Pro Ser Phe Lys Glu Val Ser Asn Trp Trp Thr Asp Glu Gln Asn Asp

## PhoenixTemp32470.tmp.txt

865 Arg Asn Pro Lys Arg 870 Cys His Ser Thr Pro 875 Leu Arg Phe Lys Thr 880 Tyr  
 Arg Ser Gln Ile Ala 885 Gly Val Thr Pro 890 Lys Asn Arg His Gly Phe Glu  
 His Pro Glu 900 Lys Thr Lys Ser Glu 905 Ser Lys Gln Asp Gln Ala Gln Tyr  
 Met Ser 915 Ala Met Ser Leu Glu 920 Val His Val Asn Thr Arg Gly Lys Leu  
 Val Pro Asp Pro Glu Glu 935 Asp Glu Val Gln Cys Val Phe Trp Tyr Leu  
 945 Arg Ser Glu Val Asn 950 Ala Leu Cys Gly Thr Gln Ala Pro Asp Asp Thr  
 Ala Arg Gly Ile 965 Ile Val Phe Ser Glu 970 Asp Ser Leu Leu Ala Asp Arg  
 Ile Arg Lys His Thr Ser Val Pro 985 Val Val Gln Glu Thr Thr Glu Leu  
 Asp Met Met Val Arg Met Val 1000 Glu Ile Val Arg Asn His Asp Pro Asp  
 1010 Ile Phe Thr Gly Tyr Glu Val His Gly Ser Ser Trp Gly Tyr Leu Ile  
 1025 Glu Arg Ala Arg Ile 1030 Lys Tyr Glu Leu Asp Leu Cys Asp Glu Phe Ser  
 Arg Met Lys Ser Gln Ser Asn Gly Arg 1050 Ile Gly Lys Asp Ala Asp Arg  
 Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met  
 Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
 1090 Thr Met Glu Asn Val Val 1095 Trp His Leu Leu His Arg Arg Ile Pro His  
 1105 Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
 Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser  
 1170 Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn  
 1185 Phe Leu Leu Pro Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala  
 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
 Ser Pro Leu Ile Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
 1250 Trp Arg Gly Thr Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu  
 1265 Gly Leu Leu Ser Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
 Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met  
 Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys  
 Gln Asp Lys Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
 1330 Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
 1345 Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val  
 Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser  
 Val Gln Lys Trp Asp Ala Glu Val Val Tyr Gly Asp Thr Asp Ser Leu  
 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410

## PhoenixTemp32470.tmp.txt

Gln Glu Ile Ala Asp Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Ile Leu Leu Ala Lys Lys  
 1445 1450 1455  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
 1460 1465 1470  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
 Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490 1495 1500  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505 1510 1515 1520  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525 1530 1535  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540 1545 1550  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555 1560 1565  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570 1575 1580  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
 1585 1590 1595 1600  
 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Ile Asn Lys Asn Ile  
 1605 1610 1615  
 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
 1620 1625 1630  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
 1635 1640 1645  
 Glu Asp Glu Asp Ala Ala Asp Ala Ser Lys Gly Pro Leu Leu Gly  
 1650 1655 1660  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Ala Ala Ala Ala Glu Ala  
 1665 1670 1675 1680  
 Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
 1685 1690 1695  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Gln Ala Gln Ala Arg  
 1700 1705 1710  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715 1720 1725  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
 1730 1735 1740  
 Met Leu Glu Glu Gly Glu Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745 1750 1755 1760  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
 1765 1770 1775  
 Lys Val Ser Arg Ala Glu Lys Ser Cys Val Glu Ile Met Lys Val Cys  
 1780 1785 1790  
 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
 1795 1800 1805  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
 1810 1815 1820  
 Thr Thr Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
 1825 1830 1835 1840  
 Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
 1845 1850 1855  
 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
 1860 1865 1870  
 Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
 1875 1880 1885  
 Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
 1890 1895 1900  
 Leu Ala Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys  
 1905 1910 1915 1920  
 Ala Ala Ser Leu Glu Trp  
 1925

&lt;210&gt; 2703

&lt;211&gt; 5781

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5781)

&lt;400&gt; 2703

atg gaa ttt tta aga ctt cga ttg aac tgt att gat cac tac caa gcc	48
Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg cca acc aga tat gat ccc cag ttt gac caa gat gtg cgc ttt tcg	96
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser	
20 25 30	
cgt tcg cgg aag gcc gcc aaa gtc cct gta att cgg gtg ttc gga tcg	144
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser	
35 40 45	
acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc ttt ccc	192
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro	
50 55 60	
tat ctg tat gtc gag tat gac gga aat cta gaa ccc aac aag gat cat	240
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His	
65 70 75 80	
gcg tta gct atc agc tac cgg aaa gat ccc att cgc gat cgg ccc aaa	288
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys	
85 90 95	
tat gta gca cgg att tcg ctg aca aaa ggt ata ccc ttt tat ggc ttc	336
Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe	
100 105 110	
cat gtg ggt tat cgc ttc tat ctc aaa att tac ctg ttc aac ccg gtg	384
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val	
115 120 125	
gtc atg tcg cgt ctc gtc gat ctc ctt cag caa ggt gtt att atg agt	432
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser	
130 135 140	
cgg aaa ttt caa ccc tac gag gcc cat ctg cag tat ctc ctt cag ttc	480
Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe	
145 150 155 160	
atg gct gat tac aac ctg tac ggc tgt aac tac ctg gat gcg gcg atg	528
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met	
165 170 175	
gcc acc ttt cga gca cct gta ccg aag cat gac agc aac att gaa ggc	576
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly	
180 185 190	
cgt gag gct gaa cat cac tgg gac gat aca acg atc ccg cca gaa ctg	624
Arg Glu Ala Glu His His Trp Asp Asp Thr Thr Ile Pro Pro Glu Leu	
195 200 205	
att acg gat aat tac agc ctt ccc cgg gct agc cac tgc tcc ctt gaa	672
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu	
210 215 220	
gtg gac atc tgc gtc gaa gac atc ctg aat cga aag caa gtc aaa gag	720
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu	
225 230 235 240	
cga agg ctt cat cat gat ttt atc gaa aag gag cag ccg gtg tca agc	768
Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser	
245 250 255	
caa gaa aag ctg gtg cac agc atg gct gga ctc tgg acg gat gag aca	816
Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr	
260 265 270	
aac cgc agg aaa aag cgt atg gga ata acg gac cct gaa gtc aac cct	864
Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro	
275 280 285	
ttt cct ccg gaa gtc ttg gta tca atg tct gcg gac cca cgt caa tca	912
Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser	
290 295 300 305	
cag gtg atg ggg tgg gtt cat gaa gct gag tac cgt gct ggt att caa	960
Gln Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile Gln	
310 315 320	
caa ttg gtt gct cag gaa cag aac aac aca gat gga cgt cag gag act	1008
Gln Leu Val Ala Gln Glu Gln Asn Asn Thr Asp Gly Arg Gln Glu Thr	
325 330 335	

## PhoenixTemp32470.tmp.txt

ttc	tcc	agc	ttt	gtg	caa	cca	gtt	cca	ttt	gaa	gaa	act	atc	aag	act	1056
Phe	Ser	Ser	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr	
			340						345				350			
act	tta	gag	tca	gtg	gaa	gac	tta	tac	cca	gac	aac	ttg	agc	caa	gct	1104
Thr	Leu	Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Asp	Asn	Leu	Ser	Gln	Ala	
		355					360					365				
ctg	caa	atc	gaa	gca	caa	ttt	ttc	cac	atg	aat	gca	cac	cat	ccc	atc	1152
Leu	Gln	Ile	Glu	Ala	Gln	Phe	Phe	His	Met	Asn	Ala	His	His	Pro	Ile	
		370				375					380					
agt	atc	gat	gtc	gac	gaa	cga	agc	att	ttt	cag	ctg	aca	cgc	gag	ccc	1200
Ser	Ile	Asp	Val	Asp	Glu	Arg	Ser	Ile	Phe	Gln	Leu	Thr	Arg	Glu	Pro	
385					390					395					400	
tat	gca	aaa	cac	act	cga	cac	gaa	tac	gcg	ggc	aga	atc	tca	ccg	ggg	1248
Tyr	Ala	Lys	His	Thr	Arg	His	Glu	Tyr	Ala	Gly	Arg	Ile	Ser	Pro	Gly	
				405					410					415		
gag	cct	ttg	aat	ggt	ggt	gga	gaa	gga	ttt	ggt	gta	ggg	gat	tca	atg	1296
Glu	Pro	Leu	Asn	Gly	Val	Gly	Glu	Gly	Phe	Gly	Val	Gly	Asp	Ser	Met	
			420				425					430				
att	tat	cct	atg	gat	ggg	cgg	atc	gta	tac	caa	ccc	aga	gct	tcc		1344
Ile	Tyr	Pro	Met	Asp	Gly	Arg	Ile	Arg	Val	Tyr	Gln	Pro	Arg	Ala	Ser	
		435					440				445					
atc	cgt	cat	aaa	ctt	ttg	aag	att	gcc	cag	act	tac	tct	tcc	aac	ata	1392
Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Gln	Thr	Tyr	Ser	Ser	Asn	Ile	
		450				455					460					
cca	gcc	aat	aca	ggt	aga	caa	gcc	ggg	att	ctt	ggt	cct	gga	gag	cga	1440
Pro	Ala	Asn	Thr	Gly	Arg	Gln	Ala	Gly	Ile	Leu	Gly	Pro	Gly	Glu	Arg	
465					470					475					480	
caa	cga	aga	tct	ctc	aag	cat	ccc	agg	ccg	ccg	gga	gaa	ggt	gat	cat	1488
Gln	Arg	Arg	Ser	Leu	Lys	His	Pro	Arg	Pro	Pro	Gly	Glu	Val	Asp	His	
				485					490					495		
ggt	gca	cct	gca	aaa	cgt	cag	gtg	ctc	caa	gct	gag	tac	tca	agg	gag	1536
Gly	Ala	Pro	Ala	Lys	Arg	Gln	Val	Leu	Gln	Ala	Glu	Tyr	Ser	Arg	Glu	
			500				505					510				
tca	ctt	cac	ata	aaa	gcc	gac	cct	ccg	caa	aga	gct	ttg	aga	aag	gct	1584
Ser	Leu	His	Ile	Lys	Ala	Asp	Pro	Pro	Gln	Arg	Ala	Leu	Arg	Lys	Ala	
		515					520					525				
ccg	aga	aac	gcc	cat	gaa	caa	act	caa	ggt	gca	ggt	cag	cca	ggg	cct	1632
Pro	Arg	Asn	Ala	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro	
		530				535					540					
cag	aga	aag	ctc	cag	agt	aac	cct	ccg	gaa	agg	ggt	tac	gag	gag	cca	1680
Gln	Arg	Lys	Leu	Gln	Ser	Asn	Pro	Pro	Glu	Arg	Val	Tyr	Glu	Glu	Pro	
545					550					555					560	
aac	aag	agg	gtt	cac	gag	gag	gct	caa	cca	aag	gtc	cat	cga	aag	gcc	1728
Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Lys	Val	His	Arg	Lys	Ala	
				565					570					575		
cag	caa	agg	tct	cgg	gaa	cat	gac	cag	aaa	cag	ggc	caa	cag	ata	ata	1776
Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Ile	Ile	
			580				585					590				
cag	gaa	caa	act	caa	gat	cat	gat	cag	gga	gga	tgc	cag	aag	gaa	gtt	1824
Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	Gln	Gly	Gly	Cys	Gln	Lys	Glu	Val	
		595					600					605				
cca	gaa	gat	tcg	gca	ttc	acg	cca	gct	ctg	aca	gtc	cag	cca	atg		1872
Pro	Glu	Asp	Ser	Ala	Phe	Thr	Thr	Pro	Ala	Leu	Thr	Val	Gln	Pro	Met	
		610				615					620					
aaa	ccc	aat	aat	caa	gat	cca	gca	gga	gag	gaa	cta	tcg	gtg	aat	agt	1920
Lys	Pro	Asn	Asn	Gln	Asp	Pro	Ala	Gly	Glu	Glu	Leu	Ser	Val	Asn	Ser	
625					630					635					640	
ctg	cgg	gtc	gag	cca	cca	aaa	cct	aag	aca	tct	cag	ccc	atg	aag	tct	1968
Leu	Arg	Val	Glu	Pro	Pro	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Met	Lys	Ser	
				645					650					655		
gct	atg	aag	cag	agc	ttc	aca	caa	gag	ttc	caa	aac	cgt	acg	atc	aac	2016
Ala	Met	Lys	Gln	Ser	Phe	Thr	Gln	Glu	Phe	Gln	Asn	Arg	Thr	Ile	Asn	
			660				665					670				
ttt	ccc	gtc	gtc	aaa	gat	cca	caa	gat	cct	aac	aca	agg	gcg	cga	ctg	2064
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu	
		675					680					685				
agc	caa	aag	agt	ggt	tcg	cag	aaa	aac	gag	ggt	aac	gtc	acc	aga	aag	2112
Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys	
		690				695					700					

## PhoenixTemp32470.tmp.txt

caa	ctt	gcc	ttc	gac	cct	caa	ccc	acc	att	ttg	ggg	cca	tcg	gct	cag	2160
Gln	Leu	Ala	Phe	Asp	Pro	Gln	Pro	Thr	Ile	Leu	Gly	Pro	Ser	Ala	Gln	
705					710					715					720	
gcg	aaa	ccc	ggt	cag	act	aaa	ccc	aac	cta	aaa	tcg	tcg	tcc	agg	ccc	2208
Ala	Lys	Pro	Gly	Gln	Thr	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Arg	Pro	
				725					730					735		
ctt	gac	tcg	gcc	cct	gtg	gct	tcg	gct	ccg	gca	ctc	ttg	tgg	agt	ggc	2256
Leu	Asp	Ser	Ala	Pro	Val	Ala	Ser	Ala	Pro	Ala	Leu	Leu	Trp	Ser	Gly	
			740					745					750			
tca	aag	aaa	atg	ttt	gtc	ttg	aac	aag	aaa	cct	cca	tcc	ctg	agc	gaa	2304
Ser	Lys	Lys	Met	Phe	Val	Leu	Asn	Lys	Lys	Pro	Pro	Ser	Leu	Ser	Glu	
		755					760					765				
gtc	cg	tgt	acc	atg	cag	gta	cat	ggc	cta	cct	gat	gtc	atc	tat	caa	2352
Val	Arg	Cys	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Gln	
	770					775					780					
gac	gca	tat	tac	agt	aag	gat	gag	gat	gtt	ccc	tcc	aga	ccg	aga	gaa	2400
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu	
785					790					795					800	
tat	gca	ggc	agg	gaa	tac	cga	ctt	gac	ggc	agc	tct	gtt	cct	tgg	ctc	2448
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu	
				805					810					815		
ccc	gat	ttc	gac	ccg	act	ggc	aca	tct	tcg	gcg	aca	tat	ggc	gag	aaa	2496
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys	
			820					825					830			
cca	acc	tcc	ggt	gcc	gac	tgg	ccg	atg	ctg	gag	gca	atc	tat	gag	gct	2544
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala	
		835					840					845				
caa	caa	gag	gaa	tgt	gcg	atg	agg	ggc	tgg	gaa	ata	gca	gat	cct	cct	2592
Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro	
	850					855					860					
cct	tct	ttc	aag	gaa	gtc	agt	aat	tgg	tgg	aca	gat	gaa	caa	aac	gat	2640
Pro	Ser	Phe	Lys	Glu	Val	Ser	Asn	Trp	Trp	Thr	Asp	Glu	Gln	Asn	Asp	
865					870					875					880	
cg	aat	cca	aaa	cga	tgc	cat	tcc	aca	ccc	cta	agg	att	aaa	acc	tac	2688
Arg	Asn	Pro	Lys	Arg	Cys	His	Ser	Thr	Pro	Leu	Arg	Ile	Lys	Thr	Tyr	
				885					890					895		
cg	tcc	caa	att	gcg	ggc	gtg	acg	cca	aag	aac	aag	cat	ggc	ttc	gaa	2736
Arg	Ser	Gln	Ile	Ala	Gly	Val	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe	Glu	
			900					905					910			
cat	ccc	gaa	aag	aca	aaa	tct	gaa	agc	aaa	cag	gat	cag	gca	cag	tac	2784
His	Pro	Glu	Lys	Thr	Lys	Ser	Glu	Ser	Lys	Gln	Asp	Gln	Ala	Gln	Tyr	
		915					920					925				
atg	agc	gcc	atg	agc	cta	gag	gta	cat	gtt	aac	acc	cgg	ggc	aag	cta	2832
Met	Ser	Ala	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly	Lys	Leu	
	930					935				940						
gta	ccg	gat	cct	gaa	gaa	gac	gaa	gtg	cag	tgt	gtg	ttt	tgg	tat	ctg	2880
Val	Pro	Asp	Pro	Glu	Glu	Asp	Glu	Val	Gln	Cys	Val	Phe	Trp	Tyr	Leu	
945					950					955					960	
cgg	tcc	gaa	gta	aac	gct	ctc	cg	gga	act	cag	acg	ccg	gat	gat	acg	2928
Arg	Ser	Glu	Val	Asn	Ala	Leu	Arg	Gly	Thr	Gln	Thr	Pro	Asp	Asp	Thr	
				965					970					975		
gca	cgg	ggc	att	atc	gtt	ttc	tca	gag	gat	agt	ctg	ctt	gca	gat	aga	2976
Ala	Arg	Gly	Ile	Ile	Val	Phe	Ser	Glu	Asp	Ser	Leu	Leu	Ala	Asp	Arg	
			980					985					990			
atc	cga	aag	cac	aca	tcc	gtg	ccg	gtg	gtt	caa	gag	aca	aca	gaa	ctt	3024
Ile	Arg	Lys	His	Thr	Ser	Val	Pro	Val	Val	Gln	Glu	Thr	Thr	Glu	Leu	
		995					1000					1005				
gat	atg	atg	gtc	cg	atg	gtc	gag	att	gtg	cg	aac	cat	gat	ccc	gat	3072
Asp	Met	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp	
					1015					1020						
atc	ttc	acg	gga	tat	gag	gta	cat	ggc	agt	tca	tgg	ggc	tac	ctt	att	3120
Ile	Phe	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile	
					1030					1035					1040	
gag	cga	gcg	aga	ata	aag	tat	gag	ctc	gac	ctc	tgt	gat	gag	ttc	tca	3168
Glu	Arg	Ala	Arg	Ile	Lys	Tyr	Glu	Leu	Asp	Leu	Cys	Asp	Glu	Phe	Ser	
				1045					1050					1055		
cg	atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggc	aag	gat	gcg	gat	cg	3216
Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Ala	Asp	Arg	
			1060					1065					1070			

## PhoenixTemp32470.tmp.txt

tgg ggc ttc aac acg aca tcc tcg att cga att aca gga cgg cac atg 3264  
 Trp Gly Phe Asn Thr Thr Ser Ile Arg Ile Thr Gly Arg His Met  
 1075 1080 1085  
 atc aac att tgg aga gcc atg aga ggc gaa ctc aat ctt cta cag tat 3312  
 Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
 1090 1095 1100  
 acc atg gag aat gtt gtt tgg cat ctg cta cac cgt cgg att cct cat 3360  
 Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His  
 1105 1110 1115 1120  
 tac agt tgg aag aca tta tcg gat tgg tat ctg agc gat cga ccg aag 3408  
 Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
 1125 1130 1135  
 gat ctg gat aaa gtt ctc cga tat tac ctg acg aga acg cgg ctt gat 3456  
 Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp  
 1140 1145 1150  
 att gaa atc ctg gaa aag aac gag ctc att cct agg aca agc gag caa 3504  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 1155 1160 1165  
 gca aga ctg ctt ggt gtt gac ttt tct gtc ttc tcc aga gga tcg 3552  
 Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser  
 1170 1175 1180  
 cag ttc aag gta gag tcc atc atg ttc agg ata gcc aaa ccc gag aac 3600  
 Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn  
 1185 1190 1200  
 ttc ctt ctc cct tct cca agc aga aag caa gtg ggt gca caa aac gct 3648  
 Phe Leu Leu Pro Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala  
 1205 1210 1215  
 ctg gag tgt cta ccc tta gtg atg gaa ccg cag agt gca ttc tac agc 3696  
 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
 1220 1225 1230  
 agt cct ttg ctt gtt ctt gac ttt cag agt ctg tat ccc agt gtc atg 3744  
 Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
 1235 1240 1245  
 atc gcc tac aac tac tgc tac tcg acc ttc ctt ggg cgt atc gtc agc 3792  
 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
 1250 1255 1260  
 tgg cga ggt aga aac aaa atg ggt ttc atg gac tac aag agg caa gag 3840  
 Trp Arg Gly Arg Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu  
 1265 1270 1275 1280  
 ggg ctt ctt agt cta ctc aaa gat tac atc aac atc gcc cca aac ggc 3888  
 Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
 1285 1290 1295  
 atg atg tac aca aag cct cat att cgc aag tca ctt ctt gca aag atg 3936  
 Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met  
 1300 1305 1310  
 ctt acc gag att ctc gaa act cgt atc atg gtc aag tcc ggt atg aag 3984  
 Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys  
 1315 1320 1325  
 caa gac atg gat gat agg gcg att cag caa ctg ctg aat aac cgg cag 4032  
 Gln Asp Met Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
 1330 1335 1340  
 ctg gcg ctg aag ctc ctc gcc aac gtc acc tac ggt tac aca tcg gcc 4080  
 Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
 1345 1350 1355 1360  
 tcg ttc tca ggt cgt atg ccc tgc tcc gag att gcc gac agc atc gtc 4128  
 Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val  
 1365 1370 1375  
 caa acc ggt cgc gaa acc ctt gag cgg gcc ata gcc ttc att cat agc 4176  
 Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser  
 1380 1385 1390  
 gtc caa aaa tgg gac gcc gaa gtt gtc tac gga gac acc gac agt ctt 4224  
 Val Gln Lys Trp Asp Ala Glu Val Val Tyr Gly Asp Thr Asp Ser Leu  
 1395 1400 1405  
 ttc gtc tct ctc aag ggt cgc acc cgc gaa cag gcc ttt gag atc ggc 4272  
 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410 1415 1420  
 caa gag atc gcc gac gct gtc acc aag ttg aat ccg cgg ccc gtc aag 4320  
 Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440



## PhoenixTemp32470.tmp.txt

ctc aag ttc gaa aag gtc tac cac cca tgc gta ctc ctc gcc aaa aag 4368  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu Ala Lys Lys  
 1445 1450 1455  
 cgc tac gtc ggc tac aag tac gag agt cgg gac cag aac gtg ccc gtg 4416  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Asn Val Pro Val  
 1460 1465 1470  
 ttc gac gcc aag ggc atc gag acg gtc cgg cgc gac ggc aca ccc gcc 4464  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
 gag caa cgg atc gag gag cag gcg ctc aaa atc ctc ttt gag act gcc 4512  
 Glu Gln Arg Ile Glu Glu Gln Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490 1495 1500  
 gat ctc agc cag gtc aag agt tac ttc cag gag cag tgc cac aag att 4560  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505 1510 1515 1520  
 atg cgc ggc gcc gtg tcc gtg cag gat ttt tgc ttc gcg cgt gag gtc 4608  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525 1530 1535  
 aag ctg ggc acg tac agc acg tcc ggt cgc ggc ggc ccg gct ccc gct 4656  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540 1545 1550  
 ggc gcg ctc att gcc acc aaa aag atg aag gag gac gcg cgg gcg gag 4704  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555 1560 1565  
 ccg caa tat ggc gaa cgg gtg cca tat gtg gtg atg gcc ggc gcg ccg 4752  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570 1575 1580  
 ggg atg agg ctg gta gac cgg tgc gtg gaa ccc gag gag ctg ttg aat 4800  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
 1585 1590 1595 1600  
 aac gca cat gct acg ttg gat gcg gac tac tac att aac aag aac atc 4848  
 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Lys Asn Ile  
 1605 1610 1615  
 att ccg cca cta gag agg atc ttc aac ttg gtc ggc gcg aac gtg agg 4896  
 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
 1620 1625 1630  
 act tgg tat gag gag atg ccc aag gtt caa gtc ttg ccg aag gtg gcg 4944  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
 1635 1640 1645  
 gag gat gaa gac gct gct gac gat gct tcc aaa ggc cca ctg ctg gga 4992  
 Glu Asp Glu Asp Ala Ala Asp Ala Ser Lys Gly Pro Leu Leu Gly  
 1650 1655 1660  
 ctg cta ggg gcg tca cca agc aaa aag ggt acg gca gcg gca gaa gca 5040  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala  
 1665 1670 1675 1680  
 gct gca gca gct gca gaa cta gag atg gaa gat atg ttg gga gaa gac 5088  
 Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
 1685 1690 1695  
 ggc gag ctc ctc cct cct gac gtc gca gct gcc caa gcc caa gcg cgc 5136  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg  
 1700 1705 1710  
 aag acc ctc gaa gcc ttc ctc aat acc atc tgc aca gcc tgc ggc 5184  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715 1720 1725  
 gtc aag atc aag cgg ccg ctc ggg gta ggg ctt gcg cgc gag ctg ggc 5232  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Arg Glu Leu Gly  
 1730 1735 1740  
 atg ctt gag gag ggc gag ggc gcc gtg gac cga ggc ctg ccg ctc tgt 5280  
 Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745 1750 1755 1760  
 cac cgg tgc gct tcg gat cca ccc acg ctt atg gtc gac atg cag gcc 5328  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
 1765 1770 1775  
 aag gtc aac aga gcc gag aaa agc tac gtg gag att atg aag gtg tgt 5376  
 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
 1780 1785 1790  
 cag agc tgt gcg ggc ttt gcg tta tcc gag gag gtg ccc tgc gat agc 5424  
 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
 1795 1800 1805

## PhoenixTemp32470.tmp.txt

aag gat tgc cct gtc ttt tac tcg agg gtg aag cag agg acg aag gta 5472  
Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
1810 1815 1820  
acg gcg gta aag agg gtg atg gag ccg ttg atc aag ttg ttt gga gag 5520  
Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
1825 1830 1835 1840  
ttg gaa ttg gat aag gcg agt agt gag gat gag ggt ggc gac gag gag 5568  
Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
1845 1850 1855  
ggt aat tgg gat ctg gaa ggg aga ggt gag gtg gtt gac gaa agt ggt 5616  
Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
1860 1865 1870  
gta gaa atg caa gaa gac gca aga gta agg tat gag gag gag aaa gtg 5664  
Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
1875 1880 1885  
aga ttc gag acc att gtc aag ggc aag gtt aga gcc atg agt gag gag 5712  
Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
1890 1895 1900  
ttg gtg gag agg aaa gag att att gac aac agt tat aag agc ctg aag 5760  
Leu Val Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys  
1905 1910 1915 1920  
gcg gca tcg ttg gaa tgg tag  
Ala Ala Ser Leu Glu Trp  
1925 5781

&lt;210&gt; 2704

&lt;211&gt; 1926

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 2704

Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala  
1 5 10 15  
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser  
20 25 30  
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser  
35 40 45  
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro  
50 55 60  
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His  
65 70 75 80  
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys  
85 90 95  
Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe  
100 105 110  
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val  
115 120 125  
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser  
130 135 140  
Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe  
145 150 155 160  
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met  
165 170 175  
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly  
180 185 190  
Arg Glu Ala Glu His His Trp Asp Asp Thr Thr Ile Pro Pro Glu Leu  
195 200 205  
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu  
210 215 220  
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu  
225 230 235 240  
Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser  
245 250 255  
Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr  
260 265 270  
Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro  
275 280 285  
Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser  
290 295 300

## PhoenixTemp32470.tmp.txt

Gln Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile Gln  
 305 310  
 Gln Leu Val Ala Gln Glu Gln Asn Asn Thr Asp Gly Arg Gln Glu Thr  
 325 330  
 Phe Ser Ser Phe Val Gln Pro Val Pro Phe Glu Glu Thr Ile Lys Thr  
 340 345  
 Thr Leu Glu Ser Val Glu Asp Leu Tyr Pro Asp Asn Leu Ser Gln Ala  
 355 360  
 Leu Gln Ile Glu Ala Gln Phe Phe His Met Asn Ala His His Pro Ile  
 370 375  
 Ser Ile Asp Val Asp Glu Arg Ser Ile Phe Gln Leu Thr Arg Glu Pro  
 385 390  
 Tyr Ala Lys His Thr Arg His Glu Tyr Ala Gly Arg Ile Ser Pro Gly  
 405 410  
 Glu Pro Leu Asn Gly Val Gly Glu Gly Phe Gly Val Gly Asp Ser Met  
 420 425  
 Ile Tyr Pro Met Asp Gly Arg Ile Arg Val Tyr Gln Pro Arg Ala Ser  
 435 440  
 Ile Arg His Lys Leu Leu Lys Ile Ala Gln Thr Tyr Ser Ser Asn Ile  
 450 455  
 Pro Ala Asn Thr Gly Arg Gln Ala Gly Ile Leu Gly Pro Gly Glu Arg  
 465 470  
 Gln Arg Arg Ser Leu Lys His Pro Arg Pro Gly Glu Val Asp His  
 485 490  
 Gly Ala Pro Ala Lys Arg Gln Val Leu Gln Ala Glu Tyr Ser Arg Glu  
 500 505  
 Ser Leu His Ile Lys Ala Asp Pro Pro Gln Arg Ala Leu Arg Lys Ala  
 515 520  
 Pro Arg Asn Ala His Glu Gln Thr Gln Gly Ala Gly Gln Pro Gly Pro  
 530 535  
 Gln Arg Lys Leu Gln Ser Asn Pro Pro Glu Arg Val Tyr Glu Glu Pro  
 545 550  
 Asn Lys Arg Val His Glu Glu Ala Gln Pro Lys Val His Arg Lys Ala  
 565 570  
 Gln Gln Arg Ser Arg Glu His Asp Gln Lys Gln Gly Gln Gln Ile Ile  
 580 585  
 Gln Glu Gln Thr Gln Asp His Asp Gln Gly Gly Cys Gln Lys Glu Val  
 595 600  
 Pro Glu Asp Ser Ala Phe Thr Thr Pro Ala Leu Thr Val Gln Pro Met  
 610 615  
 Lys Pro Asn Asn Gln Asp Pro Ala Gly Glu Glu Leu Ser Val Asn Ser  
 625 630  
 Leu Arg Val Glu Pro Pro Lys Pro Lys Thr Ser Gln Pro Met Lys Ser  
 645 650  
 Ala Met Lys Gln Ser Phe Thr Gln Glu Phe Gln Asn Arg Thr Ile Asn  
 660 665  
 Phe Pro Val Val Lys Asp Pro Gln Asp Pro Asn Thr Arg Ala Arg Leu  
 675 680  
 Ser Gln Lys Ser Gly Ser Gln Lys Asn Glu Gly Asn Val Thr Arg Lys  
 690 695  
 Gln Leu Ala Phe Asp Pro Gln Pro Thr Ile Leu Gly Pro Ser Ala Gln  
 705 710  
 Ala Lys Pro Gly Gln Thr Lys Pro Asn Leu Lys Ser Ser Ser Arg Pro  
 725 730  
 Leu Asp Ser Ala Pro Val Ala Ser Ala Pro Ala Leu Leu Trp Ser Gly  
 740 745  
 Ser Lys Lys Met Phe Val Leu Asn Lys Lys Pro Pro Ser Leu Ser Glu  
 755 760  
 Val Arg Cys Thr Met Gln Val His Gly Leu Pro Asp Val Ile Tyr Gln  
 770 775  
 Asp Ala Tyr Tyr Ser Lys Asp Glu Asp Val Pro Ser Arg Pro Arg Glu  
 785 790  
 Tyr Ala Gly Arg Glu Tyr Arg Leu Asp Gly Ser Ser Val Pro Trp Leu  
 805 810  
 Pro Asp Phe Asp Pro Thr Gly Thr Ser Ser Ala Thr Tyr Gly Glu Lys  
 820 825  
 Pro Thr Ser Gly Ala Asp Trp Pro Met Leu Glu Ala Ile Tyr Glu Ala  
 835 840  
 Gln Gln Glu Glu Cys Ala Met Arg Gly Trp Glu Ile Ala Asp Pro Pro  
 845

## PhoenixTemp32470.tmp.txt

```

      850      855      860
Pro Ser Phe Lys Glu Val Ser Asn Trp Trp Thr Asp Glu Gln Asn Asp
865      870      875      880
Arg Asn Pro Lys Arg Cys His Ser Thr Pro Leu Arg Ile Lys Thr Tyr
      885      890      895
Arg Ser Gln Ile Ala Gly Val Thr Pro Lys Asn Lys His Gly Phe Glu
      900      905      910
His Pro Glu Lys Thr Lys Ser Glu Ser Lys Gln Asp Gln Ala Gln Tyr
      915      920      925
Met Ser Ala Met Ser Leu Glu Val His Val Asn Thr Arg Gly Lys Leu
      930      935      940
Val Pro Asp Pro Glu Glu Asp Glu Val Gln Cys Val Phe Trp Tyr Leu
945      950      955      960
Arg Ser Glu Val Asn Ala Leu Arg Gly Thr Gln Thr Pro Asp Asp Thr
      965      970      975
Ala Arg Gly Ile Ile Val Phe Ser Glu Asp Ser Leu Leu Ala Asp Arg
      980      985      990
Ile Arg Lys His Thr Ser Val Pro Val Val Gln Glu Thr Thr Glu Leu
      995      1000      1005
Asp Met Met Val Arg Met Val Glu Ile Val Arg Asn His Asp Pro Asp
1010      1015      1020
Ile Phe Thr Gly Tyr Glu Val His Gly Ser Ser Trp Gly Tyr Leu Ile
1025      1030      1035      1040
Glu Arg Ala Arg Ile Lys Tyr Glu Leu Asp Leu Cys Asp Glu Phe Ser
      1045      1050      1055
Arg Met Lys Ser Gln Ser Asn Gly Arg Ile Gly Lys Asp Ala Asp Arg
      1060      1065      1070
Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met
      1075      1080      1085
Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr
      1090      1095      1100
Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His
1105      1110      1115      1120
Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys
      1125      1130      1135
Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp
      1140      1145      1150
Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln
      1155      1160      1165
Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser
      1170      1175      1180
Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn
1185      1190      1195      1200
Phe Leu Leu Pro Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala
      1205      1210      1215
Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser
      1220      1225      1230
Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met
      1235      1240      1245
Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser
      1250      1255      1260
Trp Arg Gly Arg Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu
1265      1270      1275      1280
Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly
      1285      1290      1295
Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met
      1300      1305      1310
Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys
      1315      1320      1325
Gln Asp Met Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln
      1330      1335      1340
Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala
1345      1350      1355      1360
Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val
      1365      1370      1375
Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser
      1380      1385      1390
Val Gln Lys Trp Asp Ala Glu Val Val Tyr Gly Asp Thr Asp Ser Leu
      1395      1400      1405

```

## PhoenixTemp32470.tmp.txt

Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410 1415 1420  
 Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu Ala Lys Lys  
 1445 1450 1455  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Asn Val Pro Val  
 1460 1465 1470  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
 Glu Gln Arg Ile Glu Glu Gln Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490 1495 1500  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505 1510 1515 1520  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525 1530 1535  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540 1545 1550  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555 1560 1565  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570 1575 1580  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
 1585 1590 1595 1600  
 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Lys Asn Ile  
 1605 1610 1615  
 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
 1620 1625 1630  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
 1635 1640 1645  
 Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly  
 1650 1655 1660  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala  
 1665 1670 1675 1680  
 Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
 1685 1690 1695  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg  
 1700 1705 1710  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715 1720 1725  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
 1730 1735 1740  
 Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745 1750 1755 1760  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
 1765 1770 1775  
 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
 1780 1785 1790  
 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
 1795 1800 1805  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
 1810 1815 1820  
 Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
 1825 1830 1835 1840  
 Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
 1845 1850 1855  
 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
 1860 1865 1870  
 Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
 1875 1880 1885  
 Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
 1890 1895 1900  
 Leu Val Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys  
 1905 1910 1915 1920  
 Ala Ala ser Leu Glu Trp  
 1925

&lt;210&gt; 2705

&lt;211&gt; 5781

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5781)

&lt;400&gt; 2705

atg gaa ttt tta aga ctt cga ttg aac tgt att gat cac tac caa gcc	48
Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg cca acc aga tat gat ccc cag ttt gac caa gat gtg cgc ttt tcg	96
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser	
20 25 30	
cgt tcg cgg aag gcc gcc aaa gtc cct gta att cgg gtg ttc gga tcg	144
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser	
35 40 45	
acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc ttt ccc	192
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro	
50 55 60	
tat ctg tat gtc gag tat gac gga aat cta gaa ccc aac aag gat cat	240
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His	
65 70 75 80	
gcg tta gct atc agc tac cgg aaa gat ccc att cgc gat cgg ccc aaa	288
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys	
85 90 95	
tat gta gca cgg att tcg ctg aca aaa ggt ata ccc ttt tat ggc ttc	336
Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe	
100 105 110	
cat gtg ggt tat cgc ttc tat ctc aaa att tac ctg ttc aac ccg gtg	384
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val	
115 120 125	
gtc atg tcg cgt ctc gtc gat ctc ctt cag caa ggt gtt att atg agt	432
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser	
130 135 140	
cgg aaa ttt caa ccc tac gag gcc cat ctg cag tat ctc ctt cag ttc	480
Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe	
145 150 155 160	
atg gct gat tac aac ctg tac ggc tgt aac tac ctg gat gcg gcg atg	528
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met	
165 170 175	
gcc acc ttt cga gca cct gta ccg aag cat gac agc aac att gaa ggc	576
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly	
180 185 190	
cgt gag gct gaa cat cac tgg gac gat aca acg atc ccg cca gaa ctg	624
Arg Glu Ala Glu His His Trp Asp Thr Thr Ile Pro Pro Glu Leu	
195 200 205	
att acg gat aat tac agc ctt ccc cgg gct agc cac tgc tcc ctt gaa	672
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu	
210 215 220	
gtg gac atc tgc gtc gaa gac atc ctg aat cga aag caa gtc aaa gag	720
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu	
225 230 235 240	
cga agg ctt cat cat gat ttt atc gaa aag gag cag ccg gtg tca agc	768
Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser	
245 250 255	
caa gaa aag ctg gtg cac agc atg gct gga ctc tgg acg gat gag aca	816
Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr	
260 265 270	
aac cgc agg aaa aag cgt atg gga ata acg gac cct gaa gtc aac cct	864
Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro	
275 280 285	
ttt cct ccg gaa gtc ttg gta tca atg tct gcg gac cca cgt caa tca	912
Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser	
290 295 300	
cag gtg atg ggg tgg gtt cat gaa gct gag tac cgt gct ggt att caa	960
Gln Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile Gln	
305 310 315 320	
caa ttg gtt gct cag gaa cag aac aac aca gat gga cgt cag gag act	1008

## PhoenixTemp32470.tmp.txt

Gln	Leu	Val	Ala	Gln	Glu	Gln	Asn	Asn	Thr	Asp	Gly	Arg	Gln	Glu	Thr	
ttc	tcc	agc	ttt	gtg	caa	cca	ggt	cca	ttt	gaa	gaa	act	atc	aag	act	1056
Phe	Ser	Ser	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr	
			340					345					350			
act	tta	gag	tca	gtg	gaa	gac	tta	tac	cca	gac	aac	ttg	agc	caa	gct	1104
Thr	Leu	Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Asp	Asn	Leu	Ser	Gln	Ala	
			355				360					365				
ctg	caa	atc	gaa	gca	caa	ttt	ttc	cac	atg	aat	gca	cac	cat	ccc	atc	1152
Leu	Gln	Ile	Glu	Ala	Gln	Phe	Phe	His	Met	Asn	Ala	His	His	Pro	Ile	
			370			375					380					
agt	atc	gat	gtc	gac	gaa	cga	agc	att	ttt	cag	ctg	aca	cgc	gag	ccc	1200
Ser	Ile	Asp	Val	Asp	Glu	Arg	Ser	Ile	Phe	Gln	Leu	Thr	Arg	Glu	Pro	
					390					395					400	
tat	gca	aaa	cac	act	cga	cac	gaa	tac	gcg	ggc	aga	atc	tca	ccg	ggg	1248
Tyr	Ala	Lys	His	Thr	Arg	His	Glu	Tyr	Ala	Gly	Arg	Ile	Ser	Pro	Gly	
				405					410					415		
gag	cct	ttg	aat	ggt	ggt	gga	gaa	gga	ttt	ggt	gta	ggg	gat	tca	atg	1296
Glu	Pro	Leu	Asn	Gly	Val	Gly	Glu	Gly	Phe	Gly	Val	Gly	Asp	Ser	Met	
			420				425						430			
att	tat	cct	atg	gat	ggg	cgg	atc	cgt	gta	tac	caa	ccc	aga	gct	tcc	1344
Ile	Tyr	Pro	Met	Asp	Gly	Arg	Ile	Arg	Val	Tyr	Gln	Pro	Arg	Ala	Ser	
			435				440					445				
atc	cgt	cat	aaa	ctt	ttg	aag	att	gcc	cag	act	tac	tct	tcc	aac	ata	1392
Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Gln	Thr	Tyr	Ser	Ser	Asn	Ile	
			450			455					460					
cca	gcc	aat	aca	ggt	aga	caa	gcc	ggg	att	ctt	ggt	cct	gga	gag	cga	1440
Pro	Ala	Asn	Thr	Gly	Arg	Gln	Ala	Gly	Ile	Leu	Gly	Pro	Gly	Glu	Arg	
				470						475				480		
caa	cga	aga	tct	ctc	aag	cat	ccc	agg	ccg	ccg	gga	gaa	ggt	gat	cat	1488
Gln	Arg	Arg	Ser	Leu	Lys	His	Pro	Arg	Pro	Pro	Gly	Glu	Val	Asp	His	
				485					490					495		
ggt	gca	cct	gca	aaa	cgt	cag	gtg	ctc	caa	gct	gag	tac	tca	agg	gag	1536
Gly	Ala	Pro	Ala	Lys	Arg	Gln	Val	Leu	Gln	Ala	Glu	Tyr	Ser	Arg	Glu	
			500					505					510			
tca	ctt	cac	ata	aaa	gcc	gac	cct	ccg	caa	aga	gct	ttg	aga	aag	gct	1584
Ser	Leu	His	Ile	Lys	Ala	Asp	Pro	Pro	Gln	Arg	Ala	Leu	Arg	Lys	Ala	
			515				520					525				
ccg	aga	aac	gcc	cat	gaa	caa	act	caa	ggt	gca	ggt	cag	cca	ggg	cct	1632
Pro	Arg	Asn	Ala	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro	
			530			535					540					
cag	aga	aag	ctc	cag	agt	aac	cct	ccg	gaa	agg	ggt	tac	gag	gag	cca	1680
Gln	Arg	Lys	Leu	Gln	Ser	Asn	Pro	Pro	Glu	Arg	Val	Tyr	Glu	Glu	Pro	
				550					555					560		
aac	aag	agg	ggt	cac	gag	gag	gct	caa	cca	aag	gtc	cat	cga	aag	gcc	1728
Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Lys	Val	His	Arg	Lys	Ala	
				565					570					575		
cag	caa	agg	tct	cgg	gaa	cat	gac	cag	aaa	cag	ggc	caa	cag	ata	ata	1776
Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Ile	Ile	
			580				585					590				
cag	gaa	caa	act	caa	gat	cat	gat	cag	gga	gga	tgc	cag	aag	gaa	ggt	1824
Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	Gln	Gly	Gly	Cys	Gln	Lys	Glu	Val	
			595				600					605				
cca	gaa	gat	tcg	gca	ttc	acg	acg	cca	gct	ctg	aca	gtc	cag	cca	atg	1872
Pro	Glu	Asp	Ser	Ala	Phe	Thr	Thr	Pro	Ala	Leu	Thr	Val	Gln	Pro	Met	
						615				620						
aaa	ccc	aat	aat	caa	gat	cca	gca	gga	gag	gaa	cta	tcg	gtg	aat	agt	1920
Lys	Pro	Asn	Asn	Gln	Asp	Pro	Ala	Gly	Glu	Glu	Leu	Ser	Val	Asn	Ser	
					630				635						640	
ctg	cgg	gtc	gag	cca	cca	aaa	cct	aag	aca	tct	cag	ccc	atg	aag	tct	1968
Leu	Arg	Val	Glu	Pro	Pro	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Met	Lys	Ser	
				645					650					655		
gct	atg	aag	cag	agc	ttc	aca	caa	gag	ttc	caa	aac	cgt	acg	atc	aac	2016
Ala	Met	Lys	Gln	Ser	Phe	Thr	Gln	Glu	Phe	Gln	Asn	Arg	Thr	Ile	Asn	
			660					665				670				
ttt	ccc	gtc	gtc	aaa	gat	cca	caa	gat	cct	aac	aca	agg	gcg	cga	ctg	2064
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu	
			675				680					685				
agc	caa	aag	agt	ggt	tcg	cag	aaa	aac	gag	ggt	aac	gtc	acc	aga	aag	2112

## PhoenixTemp32470.tmp.txt

Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys	
caa Gln 705	ctt Leu	gcc Ala	ttc Phe	gac Asp	cct Pro 710	caa Gln 695	ccc Pro	acc Thr	att Ile	ttg Leu 715	ggg Gly 700	cca Pro	tcg Ser	gct Ala	cag Gln 720	2160
gcg Ala	aaa Lys	ccc Pro	ggt Gly	cag Gln 725	act Thr	aaa Lys	ccc Pro	aac Asn	cta Leu 730	aaa Lys	tcg Ser	tcg Ser	tcc Ser	agg Arg 735	ccc Pro	2208
ctt Leu	gac Asp	tcg Ser	gcc Ala 740	cct Pro	gtg Val	gct Ala	tcg Ser	gct Ala 745	ccg Pro	gca Ala	ctc Leu	ttg Leu 750	tgg Trp	agt Ser	ggc Gly	2256
tca Ser	aag Lys	aaa Lys 755	atg Met	ttt Phe	gtc Val	ttg Leu	aac Asn 760	aag Lys	aaa Lys	cct Pro	cca Pro	tcc Ser 765	ctg Leu	agc Ser	gaa Glu	2304
gtc Val 770	cgc Arg	tgt Cys	acc Thr	atg Met	cag Gln 775	gta Val	cat His	ggc Gly	cta Leu	cct Pro	gat Asp 780	gtc Val	atc Ile	tat Tyr	caa Gln	2352
gac Asp 785	gca Ala	tat Tyr	tac Tyr	agt Ser	aag Lys 790	gat Asp	gag Glu	gat Asp	ggt Val	ccc Pro 795	tcc Ser	aga Arg	ccg Pro	aga Arg	gaa Glu 800	2400
tat Tyr	gca Ala	ggc Gly	agg Arg	gaa Glu 805	tac Tyr	cga Arg	ctt Leu	gac Asp	ggt Gly 810	agc Ser	tct Ser	ggt Val	cct Pro	tgg Trp 815	ctc Leu	2448
ccc Pro	gat Asp	ttc Phe	gac Asp 820	ccg Pro	act Thr	ggc Gly	aca Thr	tct Ser 825	tcg Ser	gcg Ala	aca Thr	tat Tyr	ggc Gly 830	gag Glu	aaa Lys	2496
cca Pro	acc Thr	tcc Ser 835	ggt Gly	gcc Ala	gac Asp	tgg Trp	ccg Pro 840	atg Met	ctg Leu	gag Glu	gca Ala	atc Ile 845	tat Tyr	gag Glu	gct Ala	2544
caa Gln 850	caa Gln	gag Glu	gaa Glu	tgt Cys	gcg Ala	atg Met 855	agg Arg	ggc Gly	tgg Trp	gaa Glu	ata Ile 860	gca Ala	gat Asp	cct Pro	cct Pro	2592
cct Pro 865	tct Ser	ttc Phe	aag Lys	gaa Glu	gtc Val 870	agt Ser	aat Asn	tgg Trp	tgg Trp	aca Thr 875	gat Asp	gaa Glu	caa Gln	aac Asn	gat Asp 880	2640
cgc Arg	aat Asn	cca Pro	aaa Lys	cga Arg 885	tgc Cys	cat His	tcc Ser	aca Thr	ccc Pro 890	cta Leu	agg Arg	att Ile	aaa Lys	acc Thr 895	tac Tyr	2688
cgc Arg	tcc Ser	caa Gln	att Ile 900	gcg Ala	ggc Gly	gtg Val	acg Thr	cca Pro 905	aag Lys	aac Asn	aag Lys	cat His	ggc Gly 910	ttc Phe	gaa Glu	2736
cat His	ccc Pro	gaa Glu 915	aag Lys	aca Thr	aaa Lys	tct Ser	gaa Glu 920	agc Ser	aaa Lys	cag Gln	gat Asp 925	cag Gln	gca Ala	cag Gln	tac Tyr	2784
atg Met	agc Ser	gcc Ala	atg Met	agc Ser	cta Leu	gag Val 935	gta Val	cat His	ggt Val	aac Asn	acc Thr 940	cgg Arg	ggc Gly	aag Lys	cta Leu	2832
gta Val 945	ccg Pro	gat Asp	cct Pro	gaa Glu	gaa Glu 950	gac Asp	gaa Glu	gtg Val	cag Gln	tgt Cys 955	gtg Val	ttt Phe	tgg Trp	tat Tyr	ctg Leu 960	2880
cgg Arg	tcc Ser	gaa Glu	gta Val	aac Asn 965	gct Ala	ctc Leu	cgc Arg	gga Gly	act Thr 970	cag Gln	acg Thr	ccg Pro	gat Asp 975	gat Asp	acg Thr	2928
gca Ala	cgg Arg	ggc Gly	att Ile 980	atc Ile	gtt Val	ttc Phe	tca Ser	gag Glu 985	gat Asp	agt Ser	ctg Leu	ctt Leu	gca Ala 990	gat Asp	aga Arg	2976
atc Ile	cga Arg	aag Lys 995	cac His	aca Thr	tcc Ser	gtg Val 1000	ccg Pro	gta Val	ggt Val	caa Gln	gag Glu	aca Thr 1005	aca Thr	gaa Glu	ctt Leu	3024
gat Asp 1010	atg Met	atg Met	gtc Val	cgg Arg	atg Met 1015	gtc Val	gag Glu	att Ile	gtg Val	cgg Arg 1020	aac Asn	cat His	gat Asp	ccc Pro	gat Asp	3072
atc Ile 1025	ttc Phe	acg Thr	gga Gly	tat Tyr	gag Glu 1030	gta Val	cat His	ggc Gly	agt Ser	tca Ser 1035	tgg Trp	ggc Gly	tac Tyr	ctt Leu	att Ile 1040	3120
gag Glu	cga Arg	gcg Ala	aga Arg 1045	ata Ile	aag Lys	tat Tyr	gag Glu	ctc Leu	gac Asp 1050	ctc Leu	tgt Cys	gat Asp	gag Glu	ttc Phe 1055	tca Ser	3168
cgc atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggg	aag	gat	gcg	gat	cg	cg	3216



## PhoenixTemp32470.tmp.txt

Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Ala	Asp	Arg		
tgg	ggc	ttc	aac	acg	aca	tcc	tcg	att	cga	att	aca	gga	cgg	cac	atg	3264	
Trp	Gly	Phe	Asn	Thr	Thr	Ser	Ser	Ile	Arg	Ile	Thr	Gly	Arg	His	Met		
		1075				1080						1085					
atc	aac	att	tgg	aga	gcc	atg	aga	ggc	gaa	ctc	aat	ctt	cta	cag	tat	3312	
Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu	Gln	Tyr		
	1090					1095					1100						
acc	atg	gag	aat	gtt	gtt	tgg	cat	ctg	cta	cac	cgt	cgg	att	cct	cat	3360	
Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile	Pro	His		
	1105				1110					1115				1120			
tac	agt	tgg	aag	aca	tta	tcg	gat	tgg	tat	ctg	agc	gat	cga	ccg	aag	3408	
Tyr	Ser	Trp	Lys	Thr	Leu	Ser	Asp	Trp	Tyr	Leu	Ser	Asp	Arg	Pro	Lys		
			1125					1130					1135				
gat	ctg	gat	aaa	gtt	ctc	cga	tat	tac	ctg	acg	aga	acg	cgg	ctt	gat	3456	
Asp	Leu	Asp	Lys	Val	Leu	Arg	Tyr	Tyr	Leu	Thr	Arg	Thr	Arg	Leu	Asp		
		1140					1145					1150					
att	gaa	atc	ctg	gaa	aag	aac	gag	ctc	att	cct	agg	aca	agc	gag	caa	3504	
Ile	Glu	Ile	Leu	Glu	Lys	Asn	Glu	Leu	Ile	Pro	Arg	Thr	Ser	Glu	Gln		
	1155					1160				1165							
gca	aga	ctg	ctt	ggt	gtt	gac	ttt	ttt	tct	gtc	ttc	tcc	aga	gga	tcg	3552	
Ala	Arg	Leu	Leu	Gly	Val	Asp	Phe	Phe	Ser	Val	Phe	Ser	Arg	Gly	Ser		
	1170				1175				1180								
cag	ttc	aag	gta	gag	tcc	atc	atg	ttc	agg	ata	gcc	aaa	ccc	gag	aac	3600	
Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala	Lys	Pro	Glu	Asn		
	1185				1190				1195					1200			
ttc	ctt	ctc	cct	tct	cca	agc	aga	aag	caa	gtg	ggt	gca	caa	aac	gct	3648	
Phe	Leu	Leu	Pro	Ser	Pro	Ser	Arg	Lys	Gln	Val	Gly	Ala	Gln	Asn	Ala		
			1205					1210					1215				
ctg	gag	tgt	cta	ccc	tta	gtg	atg	gaa	ccg	cag	agt	gca	ttc	tac	agc	3696	
Leu	Glu	Cys	Leu	Pro	Leu	Val	Met	Glu	Pro	Gln	Ser	Ala	Phe	Tyr	Ser		
		1220					1225					1230					
agt	cct	tgg	ctt	gtt	ctt	gac	ttt	cag	agt	ctg	tat	ccc	agt	gtc	atg	3744	
Ser	Pro	Leu	Leu	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Val	Met		
	1235					1240					1245						
atc	gcc	tac	aac	tac	tgc	tac	tcg	acc	ttc	ctt	ggg	cgt	atc	gtc	agc	3792	
Ile	Ala	Tyr	Asn	Tyr	Cys	Tyr	Ser	Thr	Phe	Leu	Gly	Arg	Ile	Val	Ser		
	1250				1255						1260						
tgg	cga	ggt	aga	aac	aaa	atg	ggt	ttc	atg	gac	tac	aag	agg	caa	gag	3840	
Trp	Arg	Gly	Arg	Asn	Lys	Met	Gly	Phe	Met	Asp	Tyr	Lys	Arg	Gln	Glu		
	1265				1270				1275					1280			
ggg	ctt	ctt	agt	cta	ctc	aaa	gat	tac	atc	aac	atc	gcc	cca	aac	ggc	3888	
Gly	Leu	Leu	Ser	Leu	Leu	Lys	Asp	Tyr	Ile	Asn	Ile	Ala	Pro	Asn	Gly		
			1285					1290				1295					
atg	atg	tac	aca	aag	cct	cat	att	cgc	aag	tca	ctt	ctt	gca	aag	atg	3936	
Met	Met	Tyr	Thr	Lys	Pro	His	Ile	Arg	Lys	Ser	Leu	Leu	Ala	Lys	Met		
		1300					1305					1310					
ctt	acc	gag	att	ctc	gaa	act	cgt	atc	atg	gtc	aag	tcc	ggt	atg	aag	3984	
Leu	Thr	Glu	Ile	Leu	Glu	Thr	Arg	Ile	Met	Val	Lys	Ser	Gly	Met	Lys		
	1315					1320					1325						
caa	gac	aag	gat	gat	agg	gcg	att	cag	caa	ctg	ctg	aat	aac	cgg	cag	4032	
Gln	Asp	Lys	Asp	Asp	Arg	Ala	Ile	Gln	Gln	Leu	Leu	Asn	Asn	Arg	Gln		
	1330				1335					1340							
ctg	gcg	ctg	aag	ctc	ctc	gcc	aac	gtc	acc	tac	ggt	tac	aca	tcg	gcc	4080	
Leu	Ala	Leu	Lys	Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser	Ala		
	1345				1350				1355					1360			
tcg	ttc	tca	ggt	cgt	atg	ccc	tgc	tcc	gag	att	gcc	gac	agc	atc	gtc	4128	
Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Glu	Ile	Ala	Asp	Ser	Ile	Val		
			1365					1370					1375				
caa	acc	ggt	gcg	gaa	acc	ctt	gag	cgg	gcc	ata	gcc	ttc	att	cat	agc	4176	
Gln	Thr	Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Ala	Phe	Ile	His	Ser		
		1380				1385				1390							
gtc	caa	aaa	tgg	gac	gcc	gat	gtt	gtc	tac	gga	gac	acc	gac	agt	ctt	4224	
Val	Gln	Lys	Trp	Asp	Ala	Asp	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Leu		
		1395				1400					1405						
ttc	gtc	tct	ctc	aag	ggc	gcg	acc	gcg	gaa	cag	gcc	ttt	gag	atc	ggc	4272	
Phe	Val	Ser	Leu	Lys	Gly	Arg	Thr	Arg	Glu	Gln	Ala	Phe	Glu	Ile	Gly		
	1410				1415				1420								
caa	gag	atc	gcc	gac	gct	gtc	acc	aag	ttg	aat	ccg	cgg	ccc	gtc	aag	4320	

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Gln	Glu	Ile	Ala	Asp	Ala	Val	Thr	Lys	Leu	Asn	Pro	Arg	Pro	Val	Lys		
1425					1430					1435					1440		
ctc	aag	ttc	gaa	aag	gtc	tac	cac	cca	tgc	gta	ctc	ctc	gcc	aaa	aag		4368
Leu	Lys	Phe	Glu	Lys	Val	Tyr	His	Pro	Cys	Val	Leu	Leu	Ala	Lys	Lys		
			1445						1450					1455			
cgc	tac	gtc	ggc	tac	aag	tac	gag	agt	cgg	gac	cag	acc	gtg	ccc	gtg		4416
Arg	Tyr	Val	Gly	Tyr	Lys	Tyr	Glu	Ser	Arg	Asp	Gln	Thr	Val	Pro	Val		
			1460					1465					1470				
ttc	gac	gcc	aag	ggc	atc	gag	acg	gtc	cgg	cgc	gac	ggc	aca	ccc	gcc		4464
Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Thr	Pro	Ala		
			1475				1480					1485					
gag	caa	cgg	atc	gag	gag	aag	gcg	ctc	aaa	atc	ctc	ttt	gag	act	gcc		4512
Glu	Gln	Arg	Ile	Glu	Glu	Lys	Ala	Leu	Lys	Ile	Leu	Phe	Glu	Thr	Ala		
			1490			1495				1500							
gat	ctc	agc	cag	gtc	aag	agt	tac	ttc	cag	gag	cag	tgc	cac	aag	att		4560
Asp	Leu	Ser	Gln	Val	Lys	Ser	Tyr	Phe	Gln	Glu	Gln	Cys	His	Lys	Ile		
					1510				1515						1520		
atg	cgc	ggc	gcc	gtg	tcc	gtg	cag	gat	ttt	tgc	ttc	gcg	cgt	gag	gtc		4608
Met	Arg	Gly	Ala	Val	Ser	Val	Gln	Asp	Phe	Cys	Phe	Ala	Arg	Glu	Val		
				1525				1530						1535			
aag	ctg	ggc	acg	tac	agc	acg	tcc	ggt	cgc	ggc	ggc	ccg	gct	ccc	gct		4656
Lys	Leu	Gly	Thr	Tyr	Ser	Thr	Ser	Gly	Arg	Gly	Gly	Pro	Ala	Pro	Ala		
			1540				1545					1550					
ggc	gcg	ctc	att	gcc	acc	aaa	aag	atg	aag	gag	gac	gcg	cgg	gcg	gag		4704
Gly	Ala	Leu	Ile	Ala	Thr	Lys	Lys	Met	Lys	Glu	Asp	Ala	Arg	Ala	Glu		
			1555			1560				1565							
ccg	caa	tat	ggc	gaa	cgg	gtg	cca	tat	gtg	gtg	atg	gct	ggc	gcg	ccg		4752
Pro	Gln	Tyr	Gly	Glu	Arg	Val	Pro	Tyr	Val	Val	Met	Ala	Gly	Ala	Pro		
			1570			1575				1580							
ggg	atg	agg	ctg	gta	gac	cgg	tgc	gtg	gaa	cgg	gag	gag	ctg	ttg	aat		4800
Gly	Met	Arg	Leu	Val	Asp	Arg	Cys	Val	Glu	Pro	Glu	Glu	Leu	Leu	Asn		
					1590				1595						1600		
aac	gca	cat	gct	acg	ttg	gat	gcg	gac	tac	tac	att	aac	aag	aac	atc		4848
Asn	Ala	His	Ala	Thr	Leu	Asp	Ala	Asp	Tyr	Tyr	Ile	Asn	Lys	Asn	Ile		
				1605				1610						1615			
att	ccg	ccg	cta	gag	agg	atc	ttc	aac	ttg	gtc	ggc	gcg	aac	gtg	agg		4896
Ile	Pro	Pro	Leu	Glu	Arg	Ile	Phe	Asn	Leu	Val	Gly	Ala	Asn	Val	Arg		
			1620				1625					1630					
act	tgg	tat	gag	gag	atg	ccc	aag	ggt	caa	ggt	ttg	cgg	aag	gtg	gcg		4944
Thr	Trp	Tyr	Glu	Glu	Met	Pro	Lys	Val	Gln	Val	Leu	Arg	Lys	Val	Ala		
			1635			1640					1645						
gag	gat	gaa	gac	gct	gct	gac	gat	gct	tcc	aaa	ggc	cca	ctg	ctg	gga		4992
Glu	Asp	Glu	Asp	Ala	Ala	Asp	Asp	Ala	Ser	Lys	Gly	Pro	Leu	Leu	Gly		
			1650			1655				1660							
ctg	cta	ggg	gcg	tca	cca	agc	aaa	aag	ggt	acg	gca	gcg	gca	gaa	gca		5040
Leu	Leu	Gly	Ala	Ser	Pro	Ser	Lys	Lys	Gly	Thr	Ala	Ala	Ala	Glu	Ala		
				1670					1675					1680			
gct	gca	gca	gct	gca	gaa	cta	gag	atg	gaa	gat	atg	ttg	gga	gaa	gac		5088
Ala	Ala	Ala	Ala	Ala	Glu	Leu	Glu	Met	Glu	Asp	Met	Leu	Gly	Glu	Asp		
				1685				1690					1695				
ggc	gag	ctc	ctc	cct	cct	gac	gtc	gca	gct	gcc	caa	gcc	caa	gcg	cgc		5136
Gly	Glu	Leu	Leu	Pro	Pro	Asp	Val	Ala	Ala	Ala	Gln	Ala	Gln	Ala	Arg		
			1700				1705					1710					
aag	acc	ctc	gaa	gcc	ttc	ctc	aat	acc	acc	atc	tgc	aca	gcc	tgc	ggc		5184
Lys	Thr	Leu	Glu	Ala	Phe	Leu	Asn	Thr	Thr	Ile	Cys	Thr	Ala	Cys	Gly		
			1715				1720					1725					
gtc	aag	atc	aag	cgg	ccg	ctc	ggg	gta	ggg	ctt	gcg	cgc	gag	ctg	ggc		5232
Val	Lys	Ile	Lys	Arg	Pro	Leu	Gly	Val	Gly	Leu	Ala	Arg	Glu	Leu	Gly		
			1730			1735				1740							
atg	ctt	gag	gag	ggc	gag	ggc	gcc	gtg	gac	cga	ggc	ctg	ccg	ctc	tgt		5280
Met	Leu	Glu	Glu	Gly	Glu	Gly	Ala	Val	Asp	Arg	Gly	Leu	Pro	Leu	Cys		
				1750				1755						1760			
cac	cgg	tgc	gct	tcg	gat	cca	ccc	acg	ctt	atg	gtc	gac	atg	cag	gcc		5328
His	Arg	Cys	Ala	Ser	Asp	Pro	Pro	Thr	Leu	Met	Val	Asp	Met	Gln	Ala		
				1765				1770					1775				
aag	gtc	aac	aga	gcc	gag	aaa	agc	tac	gtg	gag	att	atg	aag	gtg	tgt		5376
Lys	Val	Asn	Arg	Ala	Glu	Lys	Ser	Tyr	Val	Glu	Ile	Met	Lys	Val	Cys		
			1780				1785					1790					
cag	agc	tgt	gcg	ggc	ttt	gcg	tta	tcc	gag	gag	gtg	ccc	tgc	gat	agc		5424

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Gln	Ser	Cys	Ala	Gly	Phe	Ala	Leu	Ser	Glu	Glu	Val	Pro	Cys	Asp	Ser		
aag	gat	tgc	cct	gtc	ttt	tac	tcg	agg	gtg	aag	cag	agg	acg	aag	gta		5472
Lys	Asp	Cys	Pro	Val	Phe	Tyr	Ser	Arg	Val	Lys	Gln	Arg	Thr	Lys	Val		
1810					1815					1820							
acg	gcg	gta	aag	agg	gtg	atg	gag	ccg	ttg	atc	aag	ttg	ttt	gga	gag		5520
Thr	Ala	Val	Lys	Arg	Val	Met	Glu	Pro	Leu	Ile	Lys	Leu	Phe	Gly	Glu		
1825					1830					1835					1840		
ttg	gaa	ttg	gat	aag	gcg	agt	agt	gag	gat	gag	ggt	ggc	gac	gag	gag		5568
Leu	Glu	Leu	Asp	Lys	Ala	Ser	Ser	Glu	Asp	Glu	Gly	Gly	Asp	Glu	Glu		
			1845						1850					1855			
ggt	aat	tgg	gat	ctg	gaa	ggg	aga	ggt	gag	gtg	ggt	gac	gaa	agt	ggt		5616
Gly	Asn	Trp	Asp	Leu	Glu	Gly	Arg	Gly	Glu	Val	Val	Asp	Glu	Ser	Gly		
			1860					1865					1870				
gta	gaa	atg	caa	gaa	gac	gca	aga	gta	agg	tat	gag	gag	gag	aaa	gtg		5664
Val	Glu	Met	Gln	Glu	Asp	Ala	Arg	Val	Arg	Tyr	Glu	Glu	Glu	Lys	Val		
		1875				1880					1885						
aga	ttc	gag	acc	att	gtc	aag	ggc	aag	ggt	aga	gcc	atg	agt	gag	gag		5712
Arg	Phe	Glu	Thr	Ile	Val	Lys	Gly	Lys	Val	Arg	Ala	Met	Ser	Glu	Glu		
1890					1895					1900							
ttg	gtg	gag	agg	aaa	gag	att	att	gac	aac	agt	tat	aag	agc	ctg	aag		5760
Leu	Val	Glu	Arg	Lys	Glu	Ile	Ile	Asp	Asn	Ser	Tyr	Lys	Ser	Leu	Lys		
1905					1910					1915					1920		
gcg	gca	tcg	ttg	gaa	tgg	tag											5781
Ala	Ala	Ser	Leu	Glu	Trp												
			1925														

&lt;210&gt; 2706

&lt;211&gt; 1926

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 2706

Met	Glu	Phe	Leu	Arg	Leu	Arg	Leu	Asn	Cys	Ile	Asp	His	Tyr	Gln	Ala		
1				5					10					15			
Thr	Pro	Thr	Arg	Tyr	Asp	Pro	Gln	Phe	Asp	Gln	Asp	Val	Arg	Phe	Ser		
			20					25					30				
Arg	Ser	Arg	Lys	Ala	Ala	Lys	Val	Pro	Val	Ile	Arg	Val	Phe	Gly	Ser		
		35					40					45					
Thr	Asp	Lys	Gly	Gln	Lys	Val	Cys	Ala	His	Ile	His	Gly	Ala	Phe	Pro		
	50				55						60						
Tyr	Leu	Tyr	Val	Glu	Tyr	Asp	Gly	Asn	Leu	Glu	Pro	Asn	Lys	Asp	His		
65					70					75					80		
Ala	Leu	Ala	Ile	Ser	Tyr	Arg	Lys	Asp	Pro	Ile	Arg	Asp	Arg	Pro	Lys		
			85						90					95			
Tyr	Val	Ala	Arg	Ile	Ser	Leu	Thr	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Phe		
		100						105					110				
His	Val	Gly	Tyr	Arg	Phe	Tyr	Leu	Lys	Ile	Tyr	Leu	Phe	Asn	Pro	Val		
	115						120					125					
Val	Met	Ser	Arg	Leu	Val	Asp	Leu	Leu	Gln	Gln	Gly	Val	Ile	Met	Ser		
	130					135				140							
Arg	Lys	Phe	Gln	Pro	Tyr	Glu	Ala	His	Leu	Gln	Tyr	Leu	Leu	Gln	Phe		
145					150					155					160		
Met	Ala	Asp	Tyr	Asn	Leu	Tyr	Gly	Cys	Asn	Tyr	Leu	Asp	Ala	Ala	Met		
			165						170					175			
Ala	Thr	Phe	Arg	Ala	Pro	Val	Pro	Lys	His	Asp	Ser	Asn	Ile	Glu	Gly		
		180						185					190				
Arg	Glu	Ala	Glu	His	His	Trp	Asp	Asp	Thr	Thr	Ile	Pro	Pro	Glu	Leu		
	195						200					205					
Ile	Thr	Asp	Asn	Tyr	Ser	Leu	Pro	Arg	Ala	Ser	His	Cys	Ser	Leu	Glu		
	210				215						220						
Val	Asp	Ile	Cys	Val	Glu	Asp	Ile	Leu	Asn	Arg	Lys	Gln	Val	Lys	Glu		
225					230					235					240		
Arg	Arg	Leu	His	His	Asp	Phe	Ile	Glu	Lys	Glu	Gln	Pro	Val	Ser	Ser		
			245						250					255			
Gln	Glu	Lys	Leu	Val	His	Ser	Met	Ala	Gly	Leu	Trp	Thr	Asp	Glu	Thr		
		260						265					270				
Asn	Arg	Arg	Lys	Lys	Arg	Met	Gly	Ile	Thr	Asp	Pro	Glu	Val	Asn	Pro		
		275					280					285					

## PhoenixTemp32470.tmp.txt

Phe	Pro	Pro	Glu	Val	Leu	Val	Ser	Met	Ser	Ala	Asp	Pro	Arg	Gln	Ser
290	290					295					300				
Gln	Val	Met	Gly	Trp	Val	His	Glu	Ala	Glu	Tyr	Arg	Ala	Gly	Ile	Gln
305					310					315					320
Gln	Leu	Val	Ala	Gln	Glu	Gln	Asn	Asn	Thr	Asp	Gly	Arg	Gln	Glu	Thr
				325					330					335	
Phe	Ser	Ser	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr
			340					345					350		
Thr	Leu	Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Asp	Asn	Leu	Ser	Gln	Ala
		355					360					365			
Leu	Gln	Ile	Glu	Ala	Gln	Phe	Phe	His	Met	Asn	Ala	His	His	Pro	Ile
370						375					380				
Ser	Ile	Asp	Val	Asp	Glu	Arg	Ser	Ile	Phe	Gln	Leu	Thr	Arg	Glu	Pro
385					390					395					400
Tyr	Ala	Lys	His	Thr	Arg	His	Glu	Tyr	Ala	Gly	Arg	Ile	Ser	Pro	Gly
				405					410					415	
Glu	Pro	Leu	Asn	Gly	Val	Gly	Glu	Gly	Phe	Gly	Val	Gly	Asp	Ser	Met
			420					425					430		
Ile	Tyr	Pro	Met	Asp	Gly	Arg	Ile	Arg	Val	Tyr	Gln	Pro	Arg	Ala	Ser
		435					440					445			
Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Gln	Thr	Tyr	Ser	Ser	Asn	Ile
	450					455					460				
Pro	Ala	Asn	Thr	Gly	Arg	Gln	Ala	Gly	Ile	Leu	Gly	Pro	Gly	Glu	Arg
465					470					475					480
Gln	Arg	Arg	Ser	Leu	Lys	His	Pro	Arg	Pro	Gly	Glu	Val	Asp	His	
				485					490				495		
Gly	Ala	Pro	Ala	Lys	Arg	Gln	Val	Leu	Gln	Ala	Glu	Tyr	Ser	Arg	Glu
			500					505					510		
Ser	Leu	His	Ile	Lys	Ala	Asp	Pro	Gln	Arg	Ala	Leu	Arg	Lys	Ala	
		515					520					525			
Pro	Arg	Asn	Ala	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro
	530					535					540				
Gln	Arg	Lys	Leu	Gln	Ser	Asn	Pro	Pro	Glu	Arg	Val	Tyr	Glu	Glu	Pro
545					550					555					560
Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Lys	Val	His	Arg	Lys	Ala
				565					570					575	
Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Ile	Ile
			580					585					590		
Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	Gln	Gly	Gly	Cys	Gln	Lys	Glu	Val
		595					600					605			
Pro	Glu	Asp	Ser	Ala	Phe	Thr	Thr	Pro	Ala	Leu	Thr	Val	Gln	Pro	Met
	610					615					620				
Lys	Pro	Asn	Asn	Gln	Asp	Pro	Ala	Gly	Glu	Glu	Leu	Ser	Val	Asn	Ser
625					630					635					640
Leu	Arg	Val	Glu	Pro	Pro	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Met	Lys	Ser
				645					650					655	
Ala	Met	Lys	Gln	Ser	Phe	Thr	Gln	Glu	Phe	Gln	Asn	Arg	Thr	Ile	Asn
			660					665					670		
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu
		675					680					685			
Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys
	690					695					700				
Gln	Leu	Ala	Phe	Asp	Pro	Gln	Pro	Thr	Ile	Leu	Gly	Pro	Ser	Ala	Gln
705					710					715					720
Ala	Lys	Pro	Gly	Gln	Thr	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Arg	Pro
				725					730					735	
Leu	Asp	Ser	Ala	Pro	Val	Ala	Ser	Ala	Pro	Ala	Leu	Leu	Trp	Ser	Gly
			740					745					750		
Ser	Lys	Lys	Met	Phe	Val	Leu	Asn	Lys	Lys	Pro	Pro	Ser	Leu	Ser	Glu
		755					760					765			
Val	Arg	Cys	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Gln
	770					775					780				
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu
785					790					795					800
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu
				805					810					815	
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys
			820					825					830		
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala

## PhoenixTemp32470.tmp.txt

835  
 Gln Gln Glu Glu Cys Ala Met 840 Arg Gly Trp Glu Ile 845 Ala Asp Pro Pro  
 850  
 Pro Ser Phe Lys Glu Val Ser 855 Asn Trp Trp Thr 860 Asp Glu Gln Asn Asp  
 865  
 Arg Asn Pro Lys Arg 870 Cys His Ser Thr 875 Pro Leu Arg Ile Lys Thr Tyr  
 885  
 Arg Ser Gln Ile 890 Ala Gly Val Thr 905 Lys Asn Lys His Gly 895 Phe Glu  
 900  
 His Pro Glu Lys Thr Lys Ser 915 Glu Ser Lys Gln Asp Gln Ala Gln Tyr  
 920  
 Met Ser Ala Met Ser Leu 925 Glu Val His Val Asn Thr 930 Arg Gly Lys Leu  
 935  
 Val Pro Asp Pro Glu 940 Glu Asp Glu Val Gln Cys 945 Val Phe Trp Tyr Leu  
 950  
 Arg Ser Glu Val Asn 955 Ala Leu Arg Gly Thr Gln Thr Pro Asp Asp Thr  
 965  
 Ala Arg Gly Ile 970 Val Phe Ser Glu Asp Ser Leu Leu Ala Asp Arg  
 980  
 Ile Arg Lys His Thr Ser Val Pro Val Val Gln Glu Thr Thr Glu Leu  
 995  
 Asp Met Met Val Arg Met 1000 Glu Ile Val Arg Asn His Asp Pro Asp  
 1010  
 Ile Phe Thr Gly Tyr Glu 1015 Val His Gly Ser Ser Trp Gly Tyr Leu Ile  
 1025  
 Glu Arg Ala Arg Ile 1030 Lys Tyr Glu Leu Asp Leu Cys Asp Glu Phe Ser  
 1045  
 Arg Met Lys Ser Gln Ser Asn Gly Arg 1050 Ile Gly Lys Asp Ala Asp Arg  
 1060  
 Trp Gly Phe Asn Thr Thr Ser Ser 1065 Ile Arg Ile Thr Gly Arg His Met  
 1075  
 Ile Asn Ile Trp Arg Ala Met 1080 Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
 1090  
 Thr Met Glu Asn Val Val 1095 Trp His Leu Leu His Arg Arg Ile Pro His  
 1105  
 Tyr Ser Trp Lys Thr 1110 Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
 1125  
 Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp  
 1140  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 1155  
 Ala Arg Leu Leu Gly Val Asp 1160 Phe Phe Ser Val Phe Ser Arg Gly Ser  
 1170  
 Gln Phe Lys Val Glu Ser 1175 Ile Met Phe Arg Ile Ala Lys Pro Glu Asn  
 1185  
 Phe Leu Leu Pro Ser 1190 Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala  
 1205  
 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
 1220  
 Ser Pro Leu Leu Val Leu Asp 1225 Phe Gln Ser Leu Tyr Pro Ser Val Met  
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 Ile Ala Tyr Asn Tyr Cys Tyr 1240 Ser Thr Phe Leu Gly Arg Ile Val Ser  
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 Trp Arg Gly Arg Asn Lys Met 1255 Gly Phe Met Asp Tyr Lys Arg Gln Glu  
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 Gly Leu Leu Ser Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
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 Met Met Tyr Thr Lys Pro His Ile Arg 1290 Lys Ser Leu Leu Ala Lys Met  
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 Leu Thr Glu Ile Leu Glu Thr Arg 1305 Ile Met Val Lys Ser Gly Met Lys  
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 Gln Asp Lys Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
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 Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
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 Ser Phe Ser Gly Arg Met Pro Cys Ser 1350 Glu Ile Ala Asp Ser Ile Val  
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 Gln Thr Gly Arg Glu Thr Leu Glu Arg 1370 Ala Ile Ala Phe Ile His Ser  
 1380  
 1385  
 1390

## PhoenixTemp32470.tmp.txt

Val Gln Lys Trp Asp Ala Asp Val Val Tyr Gly Asp Thr Asp Ser Leu  
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 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
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 Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
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 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
 1460 1465 1470  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
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 Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala  
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 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
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 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
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 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
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 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
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 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
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 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
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 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Lys Asn Ile  
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 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
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 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
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 Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly  
 1650 1655 1660  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala  
 1665 1670 1675 1680  
 Ala Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
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 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg  
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 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
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 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
 1730 1735 1740  
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 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
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 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
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 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
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 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
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 1845 1850 1855  
 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
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 Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
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 Ala Ala Ser Leu Glu Trp  
 1925

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 <222> (1)..(5781)

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acg cca acc aga tat gat ccc cag ttt gac caa gat gtg cgc ttt tcg      96
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser
          20          25          30
cgt tcg cgg aag gcc gcc aaa gtc cct gta att cgg gtg ttc gga tcg     144
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser
          35          40          45
acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc ttt ccc     192
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
          50          55          60
tat ctg tat gtc gag tat gac gga aat cta gaa ccc aac aag gat cat     240
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His
          65          70          75          80
gcg tta gct atc agc tac cgg aaa gat ccc att cgc gat cgg ccc aaa     288
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys
          85          90          95
tat gta aca cgg att tcg ctg aca aaa ggt ata ccc ttt tat ggc ttc     336
Tyr Val Thr Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe
          100          105          110
cat gtg ggt tat cgc ttc tat ctc aag att tac ctg ttc aac ccg gtg     384
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val
          115          120          125
gtc atg tcg cgt ctc gtc gat ctc ctt cag caa ggt gtt att atg agt     432
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser
          130          135          140
cgg aaa ttt caa cca tac gag gcc cat ctg cag tat ctc ctt cag ttc     480
Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe
          145          150          155          160
atg gct gat tac aac ctg tac ggc tgt aac tac ctg gat gcg gcg atg     528
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met
          165          170          175          180
gcc acc ttt cga gca cct gta ccg aag cat gac agc aac att gaa ggc     576
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly
          180          185          190          195
cgt gag gct gaa cat cac tgg gac gat aca acg atc ccg tca gag ctg     624
Arg Glu Ala Glu His His Trp Asp Asp Thr Thr Ile Pro Ser Glu Leu
          195          200          205          210
att acg gat aat tac agc ctt ccc cgg gct agc cac tgc tcc ctt gaa     672
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu
          210          215          220          225
gtg gac atc tgc gtc gaa gac atc ctg aat cga aag caa gtc aaa gag     720
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu
          225          230          235          240
cga agg ctt cat cat gat ttt atc gaa aag gag cag ccg gtg tca agc     768
Arg Arg Leu His Asp Phe Ile Glu Lys 250 Glu Gln Pro Val Ser
          245          250          255          260
caa gaa aag ctg gtg cac agc atg gct gga ctc tgg acg gat gag aca     816
Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr
          260          265          270          275
aac cgc agg aaa aag cgt atg gga ata acg gac cct gaa gtc aac cct     864
Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro
          275          280          285          290
ttt cct ccg gaa gtc ttg gta tca atg tct gcg gac cca cgt caa tca     912
Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser
          290          295          300
cag gtg atg ggg tgg gtt cat gaa gct gag tac cgt gct ggt att caa     960
Gln Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile Gln

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## PhoenixTemp32470.tmp.txt

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Gln	Leu	Val	Ala	Gln	325	Glu	Gln	Asn	Asn	Thr	330	Asp	Gly	Arg	Gln	Glu	Thr	1008			
ttc	tcc	agc	ttt	gtg	caa	cca	gtt	cca	ttt	gaa	gag	act	atc	aag	act			1056			
Phe	Ser	Ser	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr						
act	tta	gag	tca	gtg	gaa	gac	tta	tac	cca	gac	aac	ttg	agc	caa	gct			1104			
Thr	Leu	Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Asp	Asn	Leu	Ser	Gln	Ala						
ctg	caa	atc	gaa	gca	caa	ttt	ttc	cac	atg	aat	gca	cac	cat	ccc	atc			1152			
Leu	Gln	Ile	Glu	Ala	Gln	Phe	Phe	His	Met	Asn	Ala	His	His	Pro	Ile						
agt	atc	gat	gtc	gac	gaa	cga	agc	att	ttt	cag	ctg	aca	cgc	gag	ccg			1200			
Ser	Ile	Asp	Val	Asp	Glu	Arg	Ser	Ile	Phe	Gln	Leu	Thr	Arg	Glu	Pro						
385					390					395					400						
tat	gca	aaa	cac	act	cga	cac	gaa	tac	gcg	ggc	aga	atc	tca	ccg	gag			1248			
Tyr	Ala	Lys	His	Thr	Arg	His	Glu	Tyr	Ala	Gly	Arg	Ile	Ser	Pro	Glu						
				405					410					415							
gag	cct	ttg	aat	ggt	gtt	gga	gaa	gga	ttt	ggt	gtg	ggg	gat	tca	atg			1296			
Glu	Pro	Leu	Asn	Gly	Val	Gly	Glu	Gly	Phe	Gly	Val	Gly	Asp	Ser	Met						
			420					425					430								
att	tat	cct	atg	gat	ggg	cgg	atc	cgt	gta	tac	caa	ccc	aga	gct	tcc			1344			
Ile	Tyr	Pro	Met	Asp	Gly	Arg	Ile	Arg	Val	Tyr	Gln	Pro	Arg	Ala	Ser						
		435					440					445									
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Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Gln	Thr	Tyr	Ser	Ser	Asn	Ile						
	450					455				460											
cca	gcc	aat	aca	ggt	aga	caa	gcc	ggg	att	ctt	ggt	cct	gga	gag	cga			1440			
Pro	Ala	Asn	Thr	Gly	Arg	Gln	Ala	Gly	Ile	Leu	Gly	Pro	Gly	Glu	Arg						
465					470					475					480						
caa	cga	aga	tct	ctc	aag	cat	ccc	agg	ccg	ccg	gga	gaa	gtt	gat	cat			1488			
Gln	Arg	Arg	Ser	Leu	Lys	His	Pro	Arg	Pro	Pro	Gly	Glu	Val	Asp	His						
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ggt	gca	cct	gca	aaa	cgt	cag	gtg	ctc	caa	gct	gag	tac	tca	agg	gag			1536			
Gly	Ala	Pro	Ala	Lys	Arg	Gln	Val	Leu	Gln	Ala	Glu	Tyr	Ser	Arg	Glu						
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Ser	Leu	His	Ile	Lys	Ala	Asp	Pro	Pro	Gln	Arg	Ala	Leu	Arg	Lys	Ala						
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ccg	aga	aac	gca	cat	gaa	caa	act	caa	ggt	gca	ggt	cag	cca	ggg	cct			1632			
Pro	Arg	Asn	Ala	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro						
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Gln	Arg	Lys	Leu	Gln	Ser	Asn	Pro	Pro	Glu	Arg	Val	Tyr	Glu	Glu	Pro						
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Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Lys	Val	His	Arg	Lys	Ala						
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Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Met	Ile						
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Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	His	Gly	Gly	Cys	Gln	Lys	Glu	Val						
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cca	gaa	gat	tcg	gca	ttc	acg	acg	cca	gct	ctg	aca	gtc	cag	cca	atg			1872			
Pro	Glu	Asp	Ser	Ala	Phe	Thr	Thr	Pro	Ala	Leu	Thr	Val	Gln	Pro	Met						
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aaa	ccc	aat	aat	caa	gat	cca	gca	gga	gag	gaa	cta	tcg	gtg	aat	agt			1920			
Lys	Pro	Asn	Asn	Gln	Asp	Pro	Ala	Gly	Glu	Glu	Leu	Ser	Val	Asn	Ser						
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ctg	cgg	gtc	gag	cca	cca	aaa	cct	aag	aca	tct	cag	ccc	atg	aag	tct			1968			
Leu	Arg	Val	Glu	Pro	Pro	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Met	Lys	Ser						
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gct	atg	aag	cag	agc	ttc	aca	caa	gag	ttc	caa	aac	cgt	acg	atc	aac			2016			
Ala	Met	Lys	Gln	Ser	Phe	Thr	Gln	Glu	Phe	Gln	Asn	Arg	Thr	Ile	Asn						
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ttt	ccc	gtc	gtc	aaa	gat	cca	caa	gat	cct	aac	aca	agg	gcg	cga	ctg			2064			
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu						



		675					680					685					
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caa Gln 705	ctt Leu	gcc Ala	ttc Phe	gac Asp	cct Pro 710	caa Gln	ccc Pro	acc Thr	att Ile	ttg Leu 715	ggg Gly	cca Pro	tcg Ser	gct Ala	cag Gln 720		2160
gcg Ala	aaa Lys	ccc Pro	ggt Gly	cag Gln 725	aca Thr	aaa Lys	ccc Pro	aac Asn	cta Leu 730	aaa Lys	tca Ser	tcg Ser	tcc Ser	agg Arg 735	ccc Pro		2208
ctt Leu	gac Asp	tcg Ser	gcc Ala 740	cct Pro	gtg Val	gct Ala	ttg Leu 745	gct Ala	cca Pro	gca Ala	ctc Leu	ttg Leu	tgg Trp 750	agt Ser	ggc Gly		2256
tca Ser	aag Lys	aaa Lys 755	atg Met	ttt Phe	gtc Val	ttg Leu	aac Asn 760	aac Asn	aaa Lys	cct Pro	cca Pro	tcc Ser 765	ctg Leu	agc Ser	gaa Glu		2304
gtc Val	cgc Arg 770	tgt Cys	acc Thr	atg Met	cag Gln	gta Val 775	cat His	ggc Gly	cta Leu	cct Pro	gat Asp 780	gtc Val	atc Ile	tat Tyr	caa Gln		2352
gac Asp 785	gca Ala	tat Tyr	tac Tyr	agt Ser	aag Lys 790	gat Asp	gag Glu	gat Asp	gtt Val	ccc Pro 795	tcc Ser	aga Arg	ccg Pro	aga Arg	gaa Glu 800		2400
tat Tyr	gca Ala	ggc Gly	agg Arg	gaa Glu 805	tac Tyr	cga Arg	ctt Leu	gac Asp	ggg Gly 810	agc Ser	tct Ser	gtt Val	cct Pro	tgg Trp 815	ctc Leu		2448
ccc Pro	gat Asp	ttc Phe	gac Asp 820	ccg Pro	act Thr	ggc Gly	aca Thr	tct Ser 825	tcg Ser	gcg Ala	aca Thr	tat Tyr	ggc Gly 830	gag Glu	aaa Lys		2496
cca Pro	acc Thr	tcc Ser 835	ggt Gly	gcc Ala	gac Asp	tgg Trp	ccg Pro	atg Met	ctg Leu	gag Glu	gta Val	atc Ile	tat Tyr	gag Glu	gct Ala		2544
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cgc Arg	aat Asn	cca Pro	aaa Lys	cga Arg 885	tgc Cys	cat His	tcc Ser	aca Thr	ccc Pro 890	cta Leu	agg Arg	att Ile	aaa Lys	acc Thr 895	tac Tyr		2688
cgc Arg	tcc Ser	caa Gln	att Ile 900	gcg Ala	ggc Gly	gtg Val	acg Thr	cca Pro 905	aag Lys	atc Ile	aag Lys	cat His	ggc Gly 910	ttc Phe	gaa Glu		2736
cat His	ccc Pro	gaa Glu 915	aag Lys	aca Thr	aaa Lys	tct Ser	gaa Glu 920	agc Ser	aaa Lys	cag Gln	gat Asp	cag Gln 925	gca Ala	cag Gln	tac Tyr		2784
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gta Val	ccg Pro	gat Asp	cct Pro	gaa Glu	gaa Glu 950	gac Asp	gaa Glu	gtg Val	cag Gln	tgt Cys 955	gtg Val	ttt Phe	tgg Trp	tat Tyr	ctg Leu 960		2880
cgg Arg	tcc Ser	gaa Glu	gta Val	aac Asn 965	gct Ala	ctc Leu	cgc Arg	gga Gly	act Thr 970	cag Gln	acg Thr	ccg Pro	gat Asp	gat Asp 975	acg Thr		2928
gca Ala	cgg Arg	ggc Gly	att Ile 980	atc Ile	gtt Val	ttc Phe	tca Ser	gag Glu 985	gat Asp	agt Ser	ctg Leu	ctt Leu	gca Ala 990	gat Asp	aga Arg		2976
atc Ile	cga Arg	aag Lys 995	cac His	aca Thr	tcc Ser	gtg Val	ccg Pro	gtg Val	gtt Val	caa Gln	gag Glu	aca Thr	aca Thr	gaa Glu	ctt Leu		3024
gat Asp	atg Met	gtc Val	gac Arg	atg Met	gtc Val	gag Glu	att Ile	gtg Val	cgg Arg	aac Asn	cat His	gat Asp	ccc Pro	gat Asp			3072
atc Ile	ttc Phe	acg Thr	gga Gly	tat Tyr	gag Glu	gta Val	cat His	ggc Gly	agt Ser	tca Ser	tgg Trp	ggc Gly	tac Tyr	ctt Leu	att Ile		3120
gag Glu	cga Arg	gcg Ala	aga Arg	ata Ile	aag Lys	tat Tyr	gag Glu	ctc Leu	gac Asp	ctc Leu	tgt Cys	gat Asp	gag Glu	ttc Phe	tca Ser		3168

## PhoenixTemp32470.tmp.txt

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Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met			
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Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr			
1090	1095	1100	
acc atg gag aat gtt gtt tgg cat ctg cta cac cgt cgg att cct cat			3360
Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His			
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Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys			
1125	1130	1135	
gat ctg gat aaa gtt ctc cga tat tac ctg acg aga acg cgg ctt gat			3456
Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Leu Asp			
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Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser			
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Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn			
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Phe Leu Leu Pro Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala			
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Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser			
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Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met			
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Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser			
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Trp Arg Gly Arg Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu			
1265	1270	1275	
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Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly			
1285	1290	1295	
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Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met			
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Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys			
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Gln Asp Met Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln			
1330	1335	1340	
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Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala			
1345	1350	1355	
tcg ttc tca ggt cgt atg ccc tgc tcc gag att gcc gac agc atc gtc			4128
Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val			
1365	1370	1375	
caa acc ggt cg c gaa acc ctt gag cg g gcc ata gcc ttc att cat agc			4176
Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser			
1380	1385	1390	
gtc caa aaa tgg gac gcc gaa gtt gtc tac gga gac acc gac agt ctt			4224
Val Gln Lys Trp Asp Ala Glu Val Val Tyr Gly Asp Thr Asp Ser Leu			
1395	1400	1405	
ttc gtc tct ctc aag ggt cg c acc cg c gaa cag gcc ttt gag atc ggc			4272
Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly			

## PhoenixTemp32470.tmp.txt

1410	caa gag atc gcc gac gct	1415	acc aag ttg aat	1420	ccg cgg ccc gtc aag	4320
Gln Glu Ile Ala Asp Val	Thr Lys Leu Asn Pro Arg Pro Val Lys					
1425	ctc aag ttc gaa aag gtc	1430	tac cac cca tgc gta	1435	ctc ctc gcc aaa aag	4368
Leu Lys Phe Glu Lys Val Tyr	His Pro Cys Val Leu Leu Ala Lys Lys					
1445	cgc tac gtc ggc tac aag	1450	tac gag agt cgg gac	1455	cag acc gtg ccc gtg	4416
Arg Tyr Val Gly Tyr Lys Tyr	Glu Ser Arg Asp Gln Thr Val Pro Val					
1460	ttc gac gcc aag ggc atc	1465	gag acg gtc cgg cgc	1470	gac ggc aca ccc gcc	4464
Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala						
1475	gag caa cgg atc gag gag	1480	aag gcg ctc aaa atc	1485	ctc ttt gag act gcc	4512
Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala						
1490	gat ctc agc cag gtc aag	1495	agt tac ttc cag gag	1500	cag tgc cac aag att	4560
Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile						
1505	atg cgc ggc gcc gtg tcc	1510	gtg cag gat ttt tgc	1515	ttc gcg cgt gag gtc	4608
Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val						
1525	aag ctg ggc acg tac agc	1530	acg tct ggt cgc ggc	1535	ggc ccg gct ccc gct	4656
Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala						
1540	ggc gcg ctc att gcc acc	1545	aaa aag atg aag gag	1550	gac gcg cgg gcg gag	4704
Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu						
1555	ccg caa tat ggc gaa cgg	1560	gtg aca tat gtg gtg	1565	atg gcc ggc gcg ccg	4752
Pro Gln Tyr Gly Glu Arg Val Thr Tyr Val Val Met Ala Gly Ala Pro						
1570	ggg atg agg ctg gta gac	1575	cgg tgc gtg gaa ccc	1580	gag gag ctg ttg aat	4800
Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn						
1585	aac gca cat gct acg ttg	1590	gat gcg gac tac att	1595	aac aag aac atc	4848
Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Ile Asn Lys Asn Ile						
1605	att ccg ccg cta gag agg	1610	atc ttc aac ttg gtc	1615	ggc gcg aac gtg agg	4896
Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg						
1620	act tgg tat gag gag atg	1625	ccc aag gtt caa gtc	1630	ttg cgg aag gtg gcg	4944
Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala						
1635	gag gat gaa gac gct gat	1640	gac gat gct tcc aaa	1645	ggc cca ctg ctg gga	4992
Glu Asp Glu Asp Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly						
1650	ctg cta ggg gcg tca cca	1655	agg aaa aag ggt acg	1660	gca gcg gca gaa gca	5040
Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala						
1665	gct gca gca gct gca gaa	1670	cta gag atg gaa gat	1675	atg ttg gga gaa gac	5088
Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp						
1685	ggc gag ctc ctc cct cct	1690	gac gtc gca gct gcc	1695	caa gcc caa gcg cgc	5136
Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg						
1700	aag acc ctc gaa gcc ttc	1705	ctc aat acc acc atc	1710	tgc aca gcc tgc ggc	5184
Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly						
1715	gtc aag atc aag cgg ccg	1720	ctc ggg gta ggg ctt	1725	gcg cgc gag ctg ggc	5232
Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly						
1730	atg ctt gag gag ggc gag	1735	ggc gcc gtg gac cga	1740	ggc ctg ccg ctc tgt	5280
Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys						
1745	cac cgg tgc gct tcg gat	1750	cca ccc acg ctt atg	1755	gtc gac atg cag gcc	5328
His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala						
1765	aag gtc aac aga gcc gag	1770	aaa agc tac gtg gag	1775	att atg aag gtg tgt	5376
Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys						

## PhoenixTemp32470.tmp.txt

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cag agc tgt gcg ggc ttt gcg tta tcc gag gag gtg ccc tgc gat agc 5424
Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser
1795      1800      1805
aag gat tgc cct gtc ttt tac tcg agg gtg aag cag agg acg aag gta 5472
Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val
1810      1815      1820
acg gcg gta aag agg gtg atg gag ccg ttg atc aag ttg ttt gga gag 5520
Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu
1825      1830      1835      1840
ttg gaa ttg gat aag gcg agt agt gag gat gag ggt ggc gac gag gag 5568
Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu
1845      1850      1855
ggt att tgg gat ctg gaa ggg aga ggt gag gtg gtt gac gaa agt ggt 5616
Gly Ile Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly
1860      1865      1870
gta gaa atg caa gaa gac gca aga gta agg tat gag gag gag aaa gtg 5664
Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Lys Val
1875      1880      1885
aga ttc gag acc att gtc aag ggc aag gtt aga gcc atg agt gag gag 5712
Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu
1890      1895      1900
ttg gtg gag agg aaa gag att att gac aac agt tat aag agc ctg aag 5760
Leu Val Glu Arg Lys Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys
1905      1910      1915      1920
gcg gca tcg ttg gaa tgg tag 5781
Ala Ala Ser Leu Glu Trp
1925

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&lt;210&gt; 2708

&lt;211&gt; 1926

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 2708

```

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Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser
20      25      30
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser
35      40      45
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
50      55      60
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His
65      70      75      80
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys
85      90      95
Tyr Val Thr Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe
100      105      110
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val
115      120      125
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser
130      135      140
Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe
145      150      155      160
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met
165      170      175      180
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly
185      190      195
Arg Glu Ala Glu His His Trp Asp Asp Thr Thr Ile Pro Ser Glu Leu
200      205      210
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu
215      220      225
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu
230      235      240
Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser
245      250      255
Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr
260      265      270

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Asn	Arg	Arg	Lys	Lys	Arg	Met	Gly	Ile	Thr	Asp	Pro	Glu	Val	Asn	Pro
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Phe	Pro	Pro	Glu	Val	Leu	Val	Ser	Met	Ser	Ala	Asp	Pro	Arg	Gln	Ser
	290					295					300				
Gln	Val	Met	Gly	Trp	Val	His	Glu	Ala	Glu	Tyr	Arg	Ala	Gly	Ile	Gln
305					310					315					320
Gln	Leu	Val	Ala	Gln	Glu	Gln	Asn	Asn	Thr	Asp	Gly	Arg	Gln	Glu	Thr
				325					330					335	
Phe	Ser	Ser	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr
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Thr	Leu	Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Asp	Asn	Leu	Ser	Gln	Ala
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Leu	Gln	Ile	Glu	Ala	Gln	Phe	Phe	His	Met	Asn	Ala	His	His	Pro	Ile
	370					375					380				
Ser	Ile	Asp	Val	Asp	Glu	Arg	Ser	Ile	Phe	Gln	Leu	Thr	Arg	Glu	Pro
385					390					395					400
Tyr	Ala	Lys	His	Thr	Arg	His	Glu	Tyr	Ala	Gly	Arg	Ile	Ser	Pro	Glu
				405					410					415	
Glu	Pro	Leu	Asn	Gly	Val	Gly	Glu	Gly	Phe	Gly	Val	Gly	Asp	Ser	Met
			420					425					430		
Ile	Tyr	Pro	Met	Asp	Gly	Arg	Ile	Arg	Val	Tyr	Gln	Pro	Arg	Ala	Ser
		435					440					445			
Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Gln	Thr	Tyr	Ser	Ser	Asn	Ile
	450					455					460				
Pro	Ala	Asn	Thr	Gly	Arg	Gln	Ala	Gly	Ile	Leu	Gly	Pro	Gly	Glu	Arg
465					470					475					480
Gln	Arg	Arg	Ser	Leu	Lys	His	Pro	Arg	Pro	Pro	Gly	Glu	Val	Asp	His
				485					490					495	
Gly	Ala	Pro	Ala	Lys	Arg	Gln	Val	Leu	Gln	Ala	Glu	Tyr	Ser	Arg	Glu
			500					505					510		
Ser	Leu	His	Ile	Lys	Ala	Asp	Pro	Pro	Gln	Arg	Ala	Leu	Arg	Lys	Ala
		515					520					525			
Pro	Arg	Asn	Ala	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro
	530					535					540				
Gln	Arg	Lys	Leu	Gln	Ser	Asn	Pro	Pro	Glu	Arg	Val	Tyr	Glu	Glu	Pro
545					550					555					560
Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Lys	Val	His	Arg	Lys	Ala
				565					570					575	
Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Met	Ile
			580					585					590		
Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	His	Gly	Gly	Cys	Gln	Lys	Glu	Val
		595					600					605			
Pro	Glu	Asp	Ser	Ala	Phe	Thr	Thr	Pro	Ala	Leu	Thr	Val	Gln	Pro	Met
	610					615					620				
Lys	Pro	Asn	Asn	Gln	Asp	Pro	Ala	Gly	Glu	Glu	Leu	Ser	Val	Asn	Ser
625					630					635					640
Leu	Arg	Val	Glu	Pro	Pro	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Met	Lys	Ser
				645					650					655	
Ala	Met	Lys	Gln	Ser	Phe	Thr	Gln	Glu	Phe	Gln	Asn	Arg	Thr	Ile	Asn
			660					665					670		
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu
		675					680					685			
Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys
	690					695					700				
Gln	Leu	Ala	Phe	Asp	Pro	Gln	Pro	Thr	Ile	Leu	Gly	Pro	Ser	Ala	Gln
705					710					715					720
Ala	Lys	Pro	Gly	Gln	Thr	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Arg	Pro
				725					730					735	
Leu	Asp	Ser	Ala	Pro	Val	Ala	Leu	Ala	Pro	Ala	Leu	Leu	Trp	Ser	Gly
			740					745					750		
Ser	Lys	Lys	Met	Phe	Val	Leu	Asn	Asn	Lys	Pro	Pro	Ser	Leu	Ser	Glu
		755					760					765			
Val	Arg	Cys	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Gln
	770					775					780				
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu
785					790					795					800
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu
				805					810					815	
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys

## PhoenixTemp32470.tmp.txt

820 825 830  
 Pro Thr Ser Gly Ala Asp Trp Pro Met Leu Glu Val Ile Tyr Glu Ala  
 835 840 845  
 Gln Gln Glu Glu Cys Ala Met Arg Gly Trp Glu Ile Ala Asp Pro Pro  
 850 855 860  
 Pro Ser Phe Lys Glu Val Ser Asn Trp Trp Thr Asp Glu Gln Asn Asp  
 865 870 875 880  
 Arg Asn Pro Lys Arg Cys His Ser Thr Pro Leu Arg Ile Lys Thr Tyr  
 885 890 895  
 Arg Ser Gln Ile Ala Gly Val Thr Pro Lys Ile Lys His Gly Phe Glu  
 900 905 910  
 His Pro Glu Lys Thr Lys Ser Glu Ser Lys Gln Asp Gln Ala Gln Tyr  
 915 920 925  
 Met Ser Ala Met Ser Leu Glu Val His Val Asn Thr Arg Gly Lys Leu  
 930 935 940  
 Val Pro Asp Pro Glu Glu Asp Glu Val Gln Cys Val Phe Trp Tyr Leu  
 945 950 955 960  
 Arg Ser Glu Val Asn Ala Leu Arg Gly Thr Gln Thr Pro Asp Asp Thr  
 965 970 975  
 Ala Arg Gly Ile Ile Val Phe Ser Glu Asp Ser Leu Leu Ala Asp Arg  
 980 985 990  
 Ile Arg Lys His Thr Ser Val Pro Val Val Gln Glu Thr Thr Glu Leu  
 995 1000 1005  
 Asp Met Met Val Arg Met Val Glu Ile Val Arg Asn His Asp Pro Asp  
 1010 1015 1020  
 Ile Phe Thr Gly Tyr Glu Val His Gly Ser Ser Trp Gly Tyr Leu Ile  
 1025 1030 1035 1040  
 Glu Arg Ala Arg Ile Lys Tyr Glu Leu Asp Leu Cys Asp Glu Phe Ser  
 1045 1050 1055  
 Arg Met Lys Ser Gln Ser Asn Gly Arg Ile Gly Lys Asp Ala Asp Arg  
 1060 1065 1070  
 Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met  
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 Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
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 Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His  
 1105 1110 1115 1120  
 Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
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 1140 1145 1150  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 1155 1160 1165  
 Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser  
 1170 1175 1180  
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 1185 1190 1195 1200  
 Phe Leu Leu Pro Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala  
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 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
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 Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
 1235 1240 1245  
 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
 1250 1255 1260  
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 Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
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 Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met  
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 Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys  
 1315 1320 1325  
 Gln Asp Met Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
 1330 1335 1340  
 Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
 1345 1350 1355 1360  
 Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val  
 1365 1370 1375

## PhoenixTemp32470.tmp.txt

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 1395 1400 1405  
 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410 1415 1420  
 Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu Ala Lys Lys  
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 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
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 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
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 1490 1495 1500  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
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 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
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 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
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 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
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 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Ile Asn Lys Asn Ile  
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 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
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 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
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 1650 1655 1660  
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 1665 1670 1675 1680  
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 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Gln Ala Gln Ala Arg  
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 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715 1720 1725  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
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 1795 1800 1805  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
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 Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
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 Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
 1845 1850 1855  
 Gly Ile Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
 1860 1865 1870  
 Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
 1875 1880 1885  
 Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
 1890 1895 1900  
 Leu Val Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys  
 1905 1910 1915 1920  
 Ala Ala Ser Leu Glu Trp

1925

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 Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser 20  
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 cgt tcg cgg aag gcc gcc aaa gtc cct gta att cgg gtg ttc gga tcg 144  
 Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser 35  
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 acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc ttt ccc 192  
 Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro 50  
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 Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His 65  
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 Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys 85  
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 tat gta gca cgg att tcg ctg aca aaa ggt ata ccc ttt tat ggc ttc 336  
 Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe 100  
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 cat gtg ggt tat cgc ttc tat ctc aag att tac ctg ttc aac ccg gtg 384  
 His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val 115  
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 Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser 130  
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 cgg ata ttt caa ccc tac gag gcc cat ctg cag tat ctc ctt cag ttc 480  
 Arg Ile Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe 145  
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 Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met 165  
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 gcc acc ttt cga gca cct gta ccg aag cat gac agc aac att gaa ggc 576  
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 Arg Glu Ser Glu His Tyr Trp Asp Asp Thr Thr Ile Pro Pro Glu Leu 195  
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 Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu 210  
 210  
 gtg gac atc tgc gtc gaa gac atc ctg aat cga aag caa gtc aaa gag 720  
 Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu 225  
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 Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser 245  
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 Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr 260  
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 Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro 275  
 275  
 ttt cct ccg gaa gtc ttg gta tca atg tct gcg gac cca cgt caa tca 912  
 Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser 290  
 290



## PhoenixTemp32470.tmp.txt

cag Gln 305	gtg Val	atg Met	ggg Gly	tgg Trp	ggt Val 310	cat His	gaa Glu	gct Ala	gag Glu	tac Tyr 315	cgt Arg	gct Ala	ggt Gly	att Ile	caa Gln 320	960
caa Gln	ttg Leu	gtt Val	gct Ala 325	cag Gln	gaa Glu	cag Gln	aac Asn	aac Asn	aca Thr 330	gat Asp	gga Gly	cgt Arg	cag Gln	gag Glu 335	act Thr	1008
ttc Phe	tcc Ser	agc Ser	ttt Phe 340	gtg Val	caa Gln	cca Pro	ggt Val	cca Pro 345	ttt Phe	gaa Glu	gaa Glu	act Thr	atc Ile 350	aag Lys	act Thr	1056
act Thr	tca Ser	gag Glu 355	tca Ser	gtg Val	gaa Glu	gac Asp	tta Leu 360	tac Tyr	cca Pro	gac Asp	aac Asn 365	ttg Leu	agc Ser	caa Gln	gct Ala	1104
ctg Leu	caa Gln 370	atc Ile	gaa Glu	gca Ala	caa Gln	ttt Phe 375	ttt Phe	cac His	atg Met	aat Asn 380	gca Ala	cac His	cat His	ccc Pro	atc Ile	1152
ttt Phe 385	atc Ile	gat Asp	gtc Val	gac Asp	gaa Glu 390	cga Arg	agc Ser	att Ile	ttt Phe	cag Gln 395	ctg Leu	aca Thr	cgc Arg	gag Glu	ccg Pro 400	1200
tat Tyr	gca Ala	aaa Lys	cac His	act Thr 405	cga Arg	cac His	gaa Glu	tac Tyr	gcg Ala 410	ggc Gly	aga Arg	atc Ile	tca Ser	ccg Pro 415	gag Glu	1248
gag Glu	cct Pro	ttg Leu	aat Asn 420	ggt Gly	ggt Val	gga Gly	gaa Glu	gga Gly 425	ttt Phe	ggt Gly	gtg Val	ggg Gly	gat Asp 430	tca Ser	atg Met	1296
att Ile	tat Tyr	gct Ala 435	atg Met	gat Asp	ggg Gly	cgg Arg	atc Ile 440	cgt Arg	gta Val	tac Tyr	caa Gln	ccc Pro 445	aga Arg	gct Ala	tcc Ser	1344
ctc Leu	cgt Arg 450	cat His	aaa Lys	ctt Leu	ttg Leu	aag Lys 455	att Ile	gcc Ala	cag Gln	act Thr 460	tac Tyr	tct Ser	tcc Ser	aac Asn	ata Ile	1392
cca Pro 465	gcc Ala	aat Asn	aca Thr	ggt Gly 470	aga Arg	caa Gln	gcc Ala	ggg Gly	att Ile 475	ctt Leu	ggt Gly	cct Pro	gga Gly	gag Glu	cga Arg 480	1440
caa Gln	cga Arg	aga Arg	tct Ser 485	ctc Leu	aag Lys	cat His	ccc Pro	agg Arg	ccg Pro 490	ccg Pro	gga Gly	gaa Glu	ggt Val	gat Asp 495	cat His	1488
ggt Gly	gca Ala	cct Pro	gca Ala 500	aaa Lys	cgt Arg	cag Gln	gtg Val 505	ctc Leu	caa Gln	gct Ala	gag Glu	tac Tyr 510	tca Ser	agg Arg	gag Glu	1536
tca Ser	ctt Leu	cac His 515	ata Ile	aaa Lys	gcc Ala	gac Asp	cct Pro 520	ccg Pro	caa Gln	aga Arg	gct Ala	ttg Leu 525	aga Arg	aag Lys	gct Ala	1584
ccg Pro 530	aga Arg	aac Asn	gca Ala	cat His	gaa Glu	caa Gln 535	act Thr	caa Gln	ggt Gly	gca Ala 540	ggt Gly	cag Gln	cca Pro	ggg Gly	cct Pro	1632
cag Gln 545	aga Arg	aag Lys	ctc Leu	cag Gln	agt Ser 550	aac Asn	cct Pro	ccg Pro	gaa Glu	agg Val 555	ggt Val	tac Tyr	gag Glu	gaa Glu	cca Pro 560	1680
aac Asn	aag Lys	agg Arg	gtt Val 565	cac His	gag Glu	gag Glu	gct Ala	caa Gln 570	cca Pro	aag Lys	gtc Val	cat His	cga Arg	aag Lys 575	gcc Ala	1728
cag Gln	caa Gln	agg Arg	tct Ser 580	ctg Leu	gaa Glu	cat His	gac Asp	cag Gln 585	aaa Lys	cag Gln	ggc Gly	caa Gln 590	cag Gln	gta Val	ata Ile	1776
cag Gln	gaa Glu	caa Gln 595	act Thr	caa Gln	gat Asp	cat His	gat Asp 600	cac His	gga Gly	gga Gly	tgc Cys	cag Gln 605	aag Lys	gaa Glu	gtt Val	1824
tca Ser	gaa Glu 610	gat Asp	tcg Ser	gca Ala	ttc Phe 615	acg Thr	acg Thr	cca Pro	gct Ala	ctg Leu	aca Thr 620	gtc Val	cag Gln	cca Pro	att Ile	1872
aaa Lys 625	ccc Pro	aat Asn	aat Asn	caa Gln	gat Asp 630	cca Pro	gca Ala	gta Val	gag Glu	gaa Glu 635	cta Leu	tcg Ser	gtg Val	aat Asn	agt Ser 640	1920
ctg Leu	cgg Arg	gtc Val	gag Glu 645	cca Pro	cca Pro	aaa Lys	cct Pro	aag Lys	aca Thr 650	tct Ser	cag Gln	ccc Pro	atg Met	aag Lys 655	tct Ser	1968
gct Ala	atg Met	aag Lys	cag Gln 660	agc Ser	ttc Phe	aca Thr	caa Gln	gag Glu 665	ttc Phe	caa Gln	aac Asn	cgt Arg	acg Thr 670	atc Ile	aac Asn	2016

## PhoenixTemp32470.tmp.txt

ttt	ccc	gtc	gtc	aaa	gat	cca	caa	gat	cct	aac	aca	agg	gcg	cga	ctg	2064
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu	
		675					680					685				
agc	caa	aag	agt	ggc	tcg	cag	aaa	aac	gag	ggc	aac	gtc	acc	aga	aag	2112
Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys	
	690					695				700						
caa	ctt	gcc	ttc	gac	cct	caa	ccc	acc	att	ttg	ggg	cca	tcg	gct	cag	2160
Gln	Leu	Ala	Phe	Asp	Pro	Gln	Pro	Thr	Ile	Leu	Gly	Pro	Ser	Ala	Gln	
705					710					715					720	
gcg	aaa	ccc	ggc	cag	act	aaa	ccc	aac	cta	aaa	tcg	tcg	tcc	agg	ccc	2208
Ala	Lys	Pro	Gly	Gln	Thr	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Arg	Pro	
				725					730					735		
ctt	gac	tcg	gcc	cct	gtg	gct	ttg	gct	ccg	gca	ctc	ttg	tgg	agt	ggc	2256
Leu	Asp	Ser	Ala	Pro	Val	Ala	Leu	Ala	Pro	Ala	Leu	Leu	Trp	Ser	Gly	
			740					745					750			
tca	aag	aaa	atg	ttt	gtc	ttg	aac	aat	aaa	cct	cca	tcc	ctg	agc	gaa	2304
Ser	Lys	Lys	Met	Phe	Val	Leu	Asn	Asn	Lys	Pro	Pro	Ser	Leu	Ser	Glu	
		755					760					765				
gtc	cg	tgt	acc	atg	cag	gta	cat	ggc	cta	cct	gat	gtc	atc	tat	caa	2352
Val	Arg	Cys	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Gln	
	770					775					780					
gac	gca	tat	tac	agt	aag	gat	gag	gat	gtt	ccc	tcc	aga	ccg	aga	gaa	2400
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu	
785					790					795					800	
tat	gca	ggc	agg	gaa	tac	cga	ctt	gac	ggc	agc	tct	gtt	cct	tgg	ctc	2448
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu	
				805					810					815		
ccc	gat	ttc	gac	ccg	act	ggc	aca	tct	tcg	gcg	aca	tat	ggc	gag	aaa	2496
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys	
			820					825					830			
cca	acc	tcc	ggc	gcc	gac	tgg	ccg	atg	ctg	gag	gta	atc	tat	gag	gct	2544
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Val	Ile	Tyr	Glu	Ala	
		835					840					845				
caa	caa	gag	gaa	tgt	gcg	atg	agg	ggc	tgg	gaa	ata	gca	gat	cct	cct	2592
Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro	
	850					855					860					
cct	tct	ttc	aag	gaa	gtc	agt	aat	tgg	tgg	aca	gat	gaa	caa	aat	gat	2640
Pro	Ser	Phe	Lys	Glu	Val	Ser	Asn	Trp	Trp	Thr	Asp	Glu	Gln	Asn	Asp	
865					870					875					880	
cg	aat	cca	aaa	cga	tgc	cat	tcc	aca	ccc	cta	agg	att	aaa	acc	tac	2688
Arg	Asn	Pro	Lys	Arg	Cys	His	Ser	Thr	Pro	Leu	Arg	Ile	Lys	Thr	Tyr	
				885					890					895		
cg	tcc	caa	att	gcg	ggc	gtg	acg	cca	aag	atc	aag	cat	ggc	ttc	gaa	2736
Arg	Ser	Gln	Ile	Ala	Gly	Val	Thr	Pro	Lys	Ile	Lys	His	Gly	Phe	Glu	
			900					905					910			
cat	ccc	gaa	aag	aca	aaa	tct	gaa	agc	aaa	cag	gat	cag	gca	cag	tac	2784
His	Pro	Glu	Lys	Thr	Lys	Ser	Glu	Ser	Lys	Gln	Asp	Gln	Ala	Gln	Tyr	
		915					920					925				
atg	agc	gcc	atg	agc	cta	gag	gta	cat	gtt	aac	acc	cgg	ggc	aag	cta	2832
Met	Ser	Ala	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly	Lys	Leu	
	930					935				940						
gta	ccg	gat	cct	gaa	gaa	gac	gaa	gtg	cag	tgt	gtg	ttt	tgg	tat	ctg	2880
Val	Pro	Asp	Pro	Glu	Glu	Asp	Glu	Val	Gln	Cys	Val	Phe	Trp	Tyr	Leu	
					950					955					960	
cg	tcc	gaa	gta	aac	gct	ctc	cg	gga	act	cag	acg	ccg	gat	gat	acg	2928
Arg	Ser	Glu	Val	Asn	Ala	Leu	Arg	Gly	Thr	Gln	Thr	Pro	Asp	Asp	Thr	
				965					970					975		
gca	cg	ggc	att	atc	gtt	ttc	tca	gag	gat	agt	ctg	ctt	gca	gat	aga	2976
Ala	Arg	Gly	Ile	Ile	Val	Phe	Ser	Glu	Asp	Ser	Leu	Leu	Ala	Asp	Arg	
			980					985					990			
atc	cga	aag	cac	aca	tcc	gtg	ccg	gtg	gtt	caa	gag	aca	aca	gaa	ctt	3024
Ile	Arg	Lys	His	Thr	Ser	Val	Pro	Val	Val	Gln	Glu	Thr	Thr	Glu	Leu	
		995					1000					1005				
gat	atg	atg	gtc	cg	atg	gtc	gag	att	gtg	cg	aac	cat	gat	ccc	gat	3072
Asp	Met	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp	
	1010					1015				1020						
atc	ttc	acg	gga	tat	gag	gta	cat	ggc	agt	tca	tgg	ggc	tac	ctt	att	3120
Ile	Phe	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Trp	Gly	Tyr	Leu	Ile		
	1025				1030					1035				1040		

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gag	cga	gcg	aga	ata	aag	tat	gag	ctc	gac	ctc	tgt	gat	gag	ttc	tca	3168
Glu	Arg	Ala	Arg	Ile	Lys	Tyr	Glu	Leu	Asp	Leu	Cys	Asp	Glu	Phe	Ser	
				1045					1050					1055		
cgc	atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggg	aag	gat	gag	gat	cgc	3216
Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Ala	Asp	Arg	
			1060					1065						1070		
tgg	ggc	ttc	aac	acg	aca	tcc	tcg	att	cga	att	aca	gga	cgg	cac	atg	3264
Trp	Gly	Phe	Asn	Thr	Thr	Ser	Ser	Ile	Arg	Ile	Thr	Gly	Arg	His	Met	
		1075					1080					1085				
atc	aac	att	tgg	aga	gcc	atg	aga	ggc	gaa	ctc	aat	ctt	cta	cag	tat	3312
Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu	Gln	Tyr	
	1090					1095					1100					
acc	atg	gag	aat	gtt	gtt	tgg	cat	ctg	cta	cac	cgt	cgg	att	cct	cat	3360
Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile	Pro	His	
	1105			1110						1115				1120		
tac	agt	tgg	aag	aca	tta	tcg	gat	tgg	tat	ctg	agc	gat	cga	ccg	aag	3408
Tyr	Ser	Trp	Lys	Thr	Leu	Ser	Asp	Trp	Tyr	Leu	Ser	Asp	Arg	Pro	Lys	
			1125					1130						1135		
gat	ctg	gat	aaa	gtt	ctc	cga	tat	tac	ctg	acg	aga	acg	cgg	ctt	gat	3456
Asp	Leu	Asp	Lys	Val	Leu	Arg	Tyr	Tyr	Leu	Thr	Arg	Thr	Arg	Leu	Asp	
			1140					1145						1150		
att	gaa	atc	ctg	gaa	aag	aac	gag	ctc	att	cct	agg	aca	agc	gag	caa	3504
Ile	Glu	Ile	Leu	Glu	Lys	Asn	Glu	Leu	Ile	Pro	Arg	Thr	Ser	Glu	Gln	
	1155						1160					1165				
gca	aga	ctg	ctt	ggg	gtt	gac	ttt	ttt	tct	gtc	ttc	tcc	aga	gga	tcg	3552
Ala	Arg	Leu	Leu	Gly	Val	Asp	Phe	Phe	Ser	Val	Phe	Ser	Arg	Gly	Ser	
	1170				1175						1180					
cag	ttc	aag	gta	gag	tcc	atc	atg	ttc	agg	ata	gcc	aaa	ccc	gag	aac	3600
Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala	Lys	Pro	Glu	Asn	
	1185			1190					1195					1200		
ttc	ctt	ctc	cct	tct	cca	agc	aga	aag	cac	gtg	ggg	gca	caa	aac	gct	3648
Phe	Leu	Leu	Pro	Ser	Pro	Ser	Arg	Lys	His	Val	Gly	Ala	Gln	Asn	Ala	
			1205					1210						1215		
ctg	gag	tgt	cta	ccc	tta	gtg	atg	gaa	ccg	cag	agt	gca	ttc	tac	agc	3696
Leu	Glu	Cys	Leu	Pro	Leu	Val	Met	Glu	Pro	Gln	Ser	Ala	Phe	Tyr	Ser	
			1220				1225						1230			
agt	cct	ttg	ctt	gtt	ctt	gac	ttt	cag	agt	ctg	tat	ccc	agt	gtc	atg	3744
Ser	Pro	Leu	Leu	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Val	Met	
	1235					1240						1245				
atc	gcc	tac	aac	tac	tgc	tac	tcg	acc	ttc	ctt	ggg	cgt	atc	gtc	agc	3792
Ile	Ala	Tyr	Asn	Tyr	Cys	Tyr	Ser	Thr	Phe	Leu	Gly	Arg	Ile	Val	Ser	
	1250				1255						1260					
tgg	cga	ggg	aga	aac	aaa	atg	ggg	ttc	atg	gac	tac	aag	agg	caa	gag	3840
Trp	Arg	Gly	Arg	Asn	Lys	Met	Gly	Phe	Met	Asp	Tyr	Lys	Arg	Gln	Glu	
	1265			1270					1275					1280		
ggg	ctt	ctt	agt	cta	ctc	aaa	gat	tac	atc	aac	atc	gcc	cca	aac	ggc	3888
Gly	Leu	Leu	Ser	Leu	Leu	Lys	Asp	Tyr	Ile	Asn	Ile	Ala	Pro	Asn	Gly	
			1285					1290					1295			
atg	atg	tac	aca	aag	cct	cat	att	cgc	aag	tca	ctt	ctt	gca	aag	atg	3936
Met	Met	Tyr	Thr	Lys	Pro	His	Ile	Arg	Lys	Ser	Leu	Leu	Ala	Lys	Met	
			1300				1305						1310			
tct	acc	gag	att	ctc	gaa	act	cgt	atc	atg	gtc	aag	tcc	ggg	atg	aag	3984
Ser	Thr	Glu	Ile	Leu	Glu	Thr	Arg	Ile	Met	Val	Lys	Ser	Gly	Met	Lys	
			1315				1320					1325				
caa	gac	aag	gat	gat	agg	gag	att	cag	caa	ctg	ctg	aat	aac	cgg	cag	4032
Gln	Asp	Lys	Asp	Asp	Arg	Ala	Ile	Gln	Gln	Leu	Leu	Asn	Asn	Arg	Gln	
	1330				1335						1340					
ctg	gag	ctg	aag	ctc	ctc	gcc	aac	gtc	acc	tac	ggg	tac	aca	tcg	gcc	4080
Leu	Ala	Leu	Lys	Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser	Ala	
	1345			1350					1355					1360		
tcg	ttc	tca	ggg	cgt	atg	ccc	tgc	tcc	gag	att	gcc	gac	agc	atc	gtc	4128
Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Glu	Ile	Ala	Asp	Ser	Ile	Val	
			1365				1370						1375			
caa	acc	ggg	cgc	gaa	acc	ctt	gag	cgg	gcc	ata	gcc	ttc	att	cat	agc	4176
Gln	Thr	Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Ala	Phe	Ile	His	Ser	
			1380				1385					1390				
gtc	caa	aaa	tgg	gac	gcc	gat	gtt	gtc	tac	gga	gac	acc	gac	agt	ctt	4224
Val	Gln	Lys	Trp	Asp	Ala	Asp	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Leu	
		1395				1400					1405					

## PhoenixTemp32470.tmp.txt

ttc gtc tct ctc aag ggc cgc acc cgc gaa cag gcc ttt gag atc ggc	4272
Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly	
1410 1415 1420	
caa gag atc gcc gac gct gtc acc aag ttg aat ccg cgg ccc gtc aag	4320
Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys	
1425 1430 1435 1440	
ctc aag ttc gaa aag gtc tac cac cca tgc gta ctc ctc gcc aaa aag	4368
Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu Ala Lys Lys	
1445 1450 1455	
cgc tac gtc ggc tac aag tac gag agt cgg gac cag acc gtg ccc gtg	4416
Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val	
1460 1465 1470	
ttc gac gcc aag ggc atc gag acg gtc cgg cgc gac ggc aca ccc gcc	4464
Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala	
1475 1480 1485	
gag caa cgg atc gag gag aag gcg ctc aaa atc ctc ttt gag act gcc	4512
Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala	
1490 1495 1500	
gat ctc agc cag gtc aag agt tac ttc cag gag cag tgc cac aag att	4560
Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile	
1505 1510 1515 1520	
atg cgc ggc gcc gtg tcc gtg cag gat ttt tgc ttc gcg cgt gag gtc	4608
Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val	
1525 1530 1535	
aag ctg ggc acg tac agc acg tcc ggt cgc ggc ggc ccg gct ccc gct	4656
Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala	
1540 1545 1550	
ggc gcg ctc att gcc acc aaa aag atg aag gag gac gcg cgg gcg gag	4704
Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu	
1555 1560 1565	
ccg caa tat ggc gaa cgg gtg cca tat gtg gtg atg gcc ggc gcg ccg	4752
Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro	
1570 1575 1580	
ggg atg agg ctg gta gac cgg tgc gtg gaa ccc gag gag ctg ttg aat	4800
Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn	
1585 1590 1595 1600	
aac gca cat gct acg ttg gat gcg gac tac tac att aac aag aac atc	4848
Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Lys Asn Ile	
1605 1610 1615	
att ccg cca cta gag agg atc ttc aac ttg gtc ggc gcg aac gtg agg	4896
Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg	
1620 1625 1630	
act tgg tat gag gag atg ccc aag gtt caa gtc ttg cgg aag gtg gcg	4944
Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala	
1635 1640 1645	
gag gat gaa gac gct gct gac gat gct tcc aaa ggc cca ctg ctg gga	4992
Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly	
1650 1655 1660	
ctg cta ggg gcg tca cca agc aaa aag ggt acg gca gcg gca gaa gca	5040
Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala	
1665 1670 1675 1680	
gct gca gca gct gca gaa cta gag atg gaa gat atg ttg gga gaa gac	5088
Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp	
1685 1690 1695	
ggc gag ctc ctc cct cct gac gtc gca gct gcc caa gcc caa gcg cgc	5136
Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Gln Ala Gln Ala Arg	
1700 1705 1710	
aag acc ctc gaa gcc ttc ctc aat acc atc tgc aca gcc tgc ggc	5184
Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly	
1715 1720 1725	
gtc aag atc aag cgg ccg ctc ggg gta ggg ctt gcg cgc gag ctg ggc	5232
Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly	
1730 1735 1740	
atg ctt gag gag ggc gag ggc gcc gtg gac cga ggc ctg ccg ctc tgt	5280
Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys	
1745 1750 1755 1760	
cac cgg tgc gct tgc gat cca ccc acg ctt atg gtc gac atg cag gcc	5328
His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala	
1765 1770 1775	

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aag gtc aac aga gcc gag aaa agc tac gtg gag att atg aag gtg tgt 5376  
Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
1780 1785 1790  
cag agc tgt gcg ggc ttt gcg tta tcc gag gag gtg ccc tgc gat agc 5424  
Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
1795 1800 1805  
aag gat tgc cct gtc ttt tac tcg agg gtg aag cag agg acg aag gta 5472  
Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
1810 1815 1820  
acg gcg gta aag agg gtg atg gag ccg ttg atc aag ttg ttt gga gag 5520  
Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
1825 1830 1835 1840  
ttg gaa ttg gat aag gcg agt agt gag gat gag ggt ggc gac gag gag 5568  
Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
1845 1850 1855  
ggt aat tgg gat ctg gaa ggg aga ggt gag gtg gtt gac gaa agt ggt 5616  
Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
1860 1865 1870  
gta gaa atg caa gaa gac gca aga gta agg tat gag gag gag aaa gtg 5664  
Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
1875 1880 1885  
aga ttc gag acc att gtc aag ggc aag gtt aga gcc atg agt gag gag 5712  
Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
1890 1895 1900  
ttg gcg gag agg aaa gag att att gac aac agt tat aag acc ctg aag 5760  
Leu Ala Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Thr Leu Lys  
1905 1910 1915 1920  
gcg gca tcg ttg gaa tgg taa  
Ala Ala Ser Leu Glu Trp  
1925 5781

&lt;210&gt; 2710

&lt;211&gt; 1926

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 2710

Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala  
1 5 10 15  
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser  
20 25 30  
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser  
35 40 45  
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro  
50 55 60  
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His  
65 70 75 80  
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys  
85 90 95  
Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe  
100 105 110  
His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val  
115 120 125  
Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser  
130 135 140  
Arg Ile Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe  
145 150 155 160  
Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met  
165 170 175  
Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly  
180 185 190  
Arg Glu Ser Glu His Tyr Trp Asp Thr Thr Ile Pro Pro Glu Leu  
195 200 205  
Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu  
210 215 220  
Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu  
225 230 235 240  
Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser  
245 250 255

## PhoenixTemp32470.tmp.txt

Gln	Glu	Lys	Leu	Val	His	Ser	Met	Ala	Gly	Leu	Trp	Thr	Asp	Glu	Thr
Asn	Arg	Arg	260	Lys	Lys	Arg	Met	Gly	265	Ile	Thr	Asp	Pro	Glu	Val
Phe	Pro	Pro	275	Glu	Val	Leu	Val	Ser	280	Met	Ser	Ala	Asp	Pro	Arg
Gln	Val	Met	290	Gly	Trp	Val	His	Glu	295	Ala	Glu	Tyr	Arg	Ala	Gly
305	Leu	Val	310	Ala	Gln	Glu	Gln	Asn	315	Thr	Asp	Gly	Arg	Gln	Glu
Gln	Leu	Val	325	Ala	Gln	Glu	Gln	Asn	330	Thr	Asp	Gly	Arg	Gln	Glu
Phe	Ser	Ser	340	Phe	Val	Gln	Pro	Val	345	Phe	Glu	Glu	Thr	Ile	Lys
Thr	Ser	Glu	355	Ser	Val	Glu	Asp	Leu	360	Tyr	Pro	Asp	Asn	Leu	Ser
Leu	Gln	Ile	370	Glu	Ala	Gln	Phe	Phe	375	His	Met	Asn	Ala	His	His
Phe	Ile	Asp	385	Val	Asp	Glu	Arg	Ser	390	Ile	Phe	Gln	Leu	Thr	Arg
Tyr	Ala	Lys	405	His	Thr	Arg	His	Glu	410	Tyr	Ala	Gly	Arg	Ile	Ser
Glu	Pro	Leu	420	Asn	Gly	Val	Gly	Glu	425	Gly	Phe	Gly	Val	Gly	Asp
Ile	Tyr	Ala	435	Met	Asp	Gly	Arg	Ile	440	Arg	Val	Tyr	Gln	Pro	Arg
Leu	Arg	His	450	Lys	Leu	Leu	Lys	Ile	455	Ala	Gln	Thr	Tyr	Ser	Ser
Pro	Ala	Asn	465	Thr	Gly	Arg	Gln	Ala	470	Gly	Ile	Leu	Gly	Pro	Gly
Gln	Arg	Arg	485	Ser	Leu	Lys	His	Pro	490	Arg	Pro	Gly	Glu	Val	Asp
Gly	Ala	Pro	500	Ala	Lys	Arg	Gln	Val	505	Leu	Gln	Ala	Glu	Tyr	Ser
Ser	Leu	His	515	Ile	Lys	Ala	Asp	Pro	520	Pro	Gln	Arg	Ala	Leu	Arg
Pro	Arg	Asn	530	Ala	His	Glu	Gln	Thr	535	Gln	Gly	Ala	Gly	Gln	Pro
Gln	Arg	Lys	545	Leu	Gln	Ser	Asn	Pro	550	Pro	Glu	Arg	Val	Tyr	Glu
Asn	Lys	Arg	565	Val	His	Glu	Glu	Ala	570	Gln	Pro	Lys	Val	His	Arg
Gln	Gln	Arg	580	Ser	Leu	Glu	His	Asp	585	Gln	Lys	Gln	Gly	Gln	Gln
Gln	Glu	Gln	595	Thr	Gln	Asp	His	Asp	600	His	Gly	Gly	Cys	Gln	Lys
Ser	Glu	Asp	610	Ser	Ala	Phe	Thr	Thr	615	Pro	Ala	Leu	Thr	Val	Gln
Lys	Pro	Asn	625	Asn	Gln	Asp	Pro	Ala	630	Pro	Val	Glu	Glu	Ser	Val
Leu	Arg	Val	645	Glu	Pro	Pro	Lys	Pro	650	Lys	Thr	Ser	Gln	Pro	Met
Ala	Met	Lys	660	Gln	Ser	Phe	Thr	Gln	665	Glu	Phe	Gln	Asn	Arg	Thr
Phe	Pro	Val	675	Val	Lys	Asp	Pro	Gln	680	Asp	Pro	Asn	Thr	Arg	Ala
Ser	Gln	Lys	690	Ser	Gly	Ser	Gln	Lys	695	Asn	Glu	Gly	Asn	Val	Thr
Gln	Leu	Ala	705	Phe	Asp	Pro	Gln	Pro	710	Thr	Ile	Leu	Gly	Pro	Ser
Ala	Lys	Pro	725	Gly	Gln	Thr	Lys	Pro	730	Asn	Leu	Lys	Ser	Ser	Ser
Leu	Asp	Ser	740	Ala	Pro	Val	Ala	Leu	745	Ala	Pro	Ala	Leu	Leu	Trp
Ser	Lys	Lys	755	Met	Phe	Val	Leu	Asn	760	Asn	Lys	Pro	Pro	Ser	Leu
Val	Arg	Cys	770	Thr	Met	Gln	Val	His	775	Gly	Leu	Pro	Asp	Val	Ile
Asp	Ala	Tyr	785	Tyr	Ser	Lys	Asp	Glu	790	Asp	Val	Pro	Ser	Arg	Pro
Tyr	Ala	Gly	800	Arg	Glu	Tyr	Arg	Leu	805	Asp	Gly	Ser	Ser	Val	Pro

## PhoenixTemp32470.tmp.txt

805 810 815  
 Pro Asp Phe Asp 820 Pro Thr Gly Thr Ser 825 Ser Ala Thr Tyr Gly 830 Glu Lys  
 Pro Thr Ser Gly Ala Asp Trp Pro Met Leu Glu Val Ile Tyr Glu Ala  
 835 840 845  
 Gln Gln Glu Glu Cys Ala Met Arg Gly Trp Glu Ile Ala Asp Pro Pro  
 850 855 860  
 Pro Ser Phe Lys Glu Val Ser Asn Trp Trp Thr Asp Glu Gln Asn Asp  
 865 870 875 880  
 Arg Asn Pro Lys Arg Cys His Ser Thr Pro Leu Arg Ile Lys Thr Tyr  
 885 890 895  
 Arg Ser Gln Ile Ala Gly Val Thr Pro Lys Ile Lys His Gly Phe Glu  
 900 905 910  
 His Pro Glu Lys Thr Lys Ser Glu Val His Val Asn Thr Arg Gly Lys Leu  
 915 920 925  
 Met Ser Ala Met Ser Leu Glu Val His Val Asn Thr Arg Gly Lys Leu  
 930 935 940  
 Val Pro Asp Pro Glu Glu Asp Glu Val Gln Cys Val Phe Trp Tyr Leu  
 945 950 955 960  
 Arg Ser Glu Val Asn Ala Leu Arg Gly Thr Gln Thr Pro Asp Asp Thr  
 965 970 975  
 Ala Arg Gly Ile Ile Val Phe Ser Glu Asp Ser Leu Leu Ala Asp Arg  
 980 985 990  
 Ile Arg Lys His Thr Ser Val Pro Val Val Gln Glu Thr Thr Glu Leu  
 995 1000 1005  
 Asp Met Met Val Arg Met Val Glu Ile Val Arg Asn His Asp Pro Asp  
 1010 1015 1020  
 Ile Phe Thr Gly Tyr Glu Val His Gly Ser Ser Trp Gly Tyr Leu Ile  
 1025 1030 1035 1040  
 Glu Arg Ala Arg Ile Lys Tyr Glu Leu Asp Leu Cys Asp Glu Phe Ser  
 1045 1050 1055  
 Arg Met Lys Ser Gln Ser Asn Gly Arg Ile Gly Lys Asp Ala Asp Arg  
 1060 1065 1070  
 Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met  
 1075 1080 1085  
 Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
 1090 1095 1100  
 Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His  
 1105 1110 1115 1120  
 Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
 1125 1130 1135  
 Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp  
 1140 1145 1150  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 1155 1160 1165  
 Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser  
 1170 1175 1180  
 Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn  
 1185 1190 1195 1200  
 Phe Leu Leu Pro Ser Pro Ser Arg Lys His Val Gly Ala Gln Asn Ala  
 1205 1210 1215  
 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
 1220 1225 1230  
 Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
 1235 1240 1245  
 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
 1250 1255 1260  
 Trp Arg Gly Arg Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu  
 1265 1270 1275 1280  
 Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
 1285 1290 1295  
 Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met  
 1300 1305 1310  
 Ser Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys  
 1315 1320 1325  
 Gln Asp Lys Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
 1330 1335 1340  
 Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
 1345 1350 1355 1360

## PhoenixTemp32470.tmp.txt

Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val  
 1365 1370 1375  
 Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser  
 1380 1385 1390  
 Val Gln Lys Trp Asp Ala Asp Val Val Tyr Gly Asp Thr Asp Ser Leu  
 1395 1400 1405  
 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410 1415 1420  
 Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu Ala Lys Lys  
 1445 1450 1455  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
 1460 1465 1470  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
 Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490 1495 1500  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505 1510 1515 1520  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525 1530 1535  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540 1545 1550  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555 1560 1565  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570 1575 1580  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
 1585 1590 1595 1600  
 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Lys Asn Ile  
 1605 1610 1615  
 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
 1620 1625 1630  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
 1635 1640 1645  
 Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly  
 1650 1655 1660  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala  
 1665 1670 1675 1680  
 Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
 1685 1690 1695  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg  
 1700 1705 1710  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715 1720 1725  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
 1730 1735 1740  
 Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745 1750 1755 1760  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
 1765 1770 1775  
 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
 1780 1785 1790  
 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
 1795 1800 1805  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
 1810 1815 1820  
 Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
 1825 1830 1835 1840  
 Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
 1845 1850 1855  
 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
 1860 1865 1870  
 Val Glu Met Gln Glu Asp Ala Arg Val Arg Tyr Glu Glu Glu Lys Val  
 1875 1880 1885  
 Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
 1890 1895 1900  
 Leu Ala Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Thr Leu Lys



1905                      1910                      1915                      1920  
Ala Ala Ser Leu Glu Trp  
                                 1925

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<210> 2711
<211> 5211
<212> DNA
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 $\langle 222 \rangle$  (1) .. (5211)

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Met	Asp	Val	Phe	Lys	Val	Arg	Leu	Asn	Cys	Ile	Asp	His	Tyr	Gln	Ala	
1				5					10					15		
acg	ccc	acg	caa	tat	gac	ccc	tgt	ctc	cga	aac	gat	gtt	cgg	cat	tcc	96
Thr	Pro	Thr	Gln	Tyr	Asp	Pro	Cys	Leu	Arg	Asn	Asp	Val	Arg	His	Ser	
			20					25					30			
caa	cta	ttc	aag	gag	ccc	aag	gtt	ccg	gtg	att	cgc	gtc	ttt	ggc	tca	144
Gln	Leu	Phe	Lys	Glu	Pro	Lys	Val	Pro	Val	Ile	Arg	Val	Phe	Gly	Ser	
			35				40					45				
acc	cag	act	ggt	caa	aaa	gtc	tgc	gcg	cat	ata	cat	ggc	gcg	ttt	ccc	192
Thr	Gln	Thr	Gly	Gln	Lys	Val	Cys	Ala	His	Ile	His	Gly	Ala	Phe	Pro	
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tat	ctc	ttc	att	gag	tat	aat	ggg	aag	ttg	gat	caa	gaa	gaa	gtt	ggc	240
Tyr	Leu	Phe	Ile	Glu	Tyr	Asn	Gly	Lys	Leu	Asp	Gln	Glu	Glu	Val	Gly	
	65				70					75					80	
gca	ttt	tca	tac	cga	ctg	cat	ctg	tcg	att	gac	cat	gcc	ctc	gct	gtc	288
Ala	Phe	Ser	Tyr	Arg	Leu	His	Leu	Ser	Ile	Asp	His	Ala	Leu	Ala	Val	
				85					90					95		
agc	tat	agg	cag	gat	gcc	tat	gct	cgg	gac	acg	ccc	aag	tat	gtg	gcg	336
Ser	Tyr	Arg	Gln	Asp	Ala	Tyr	Ala	Arg	Asp	Thr	Pro	Lys	Tyr	Val	Ala	
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cgt	ata	acg	ctc	gtt	aag	ggc	gtt	ccc	ttc	tat	ggc	ttc	cat	gtt	ggc	384
Arg	Ile	Thr	Leu	Val	Lys	Gly	Val	Pro	Phe	Tyr	Gly	Phe	His	Val	Gly	
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tac	aag	tat	tat	ctc	aag	att	tat	atg	ctc	aac	ccc	gtt	gtc	atg	acg	432
Tyr	Lys	Tyr	Tyr	Leu	Lys	Ile	Tyr	Met	Leu	Asn	Pro	Val	Val	Met	Thr	
							135				140					
cga	ctg	gcc	gat	ctg	ctg	cac	caa	ggc	gtc	att	atg	aaa	cga	aaa	ttt	480
Arg	Leu	Ala	Asp	Leu	Leu	His	Gln	Gly	Val	Ile	Met	Lys	Arg	Lys	Phe	
				150					155						160	
caa	cca	tac	gag	gct	cat	ttg	cag	tac	atc	ttg	caa	ttc	atg	acc	gac	528
Gln	Pro	Tyr	Glu	Ala	His	Leu	Gln	Tyr	Ile	Leu	Gln	Phe	Met	Thr	Asp	
				165					170					175		
tac	aac	ctt	tat	ggc	tgc	ggg	tac	atc	gag	gcc	agc	agt	gtc	aaa	ttc	576
Tyr	Asn	Leu	Tyr	Gly	Cys	Gly	Tyr	Ile	Glu	Ala	Ser	Ser	Val	Lys	Phe	
				180				185					190			
cgt	gcc	cca	gtg	cct	cag	ata	gac	gat	gat	gat	atg	gac	agc	gtc	atg	624
Arg	Ala	Pro	Val	Pro	Gln	Ile	Asp	Asp	Asp	Asp	Met	Asp	Ser	Val	Met	
		195					200					205				
act	ccc	cat	atc	tgg	cac	aac	cag	tcg	ata	tcc	caa	aag	cag	atc	aca	672
Thr	Pro															

## PhoenixTemp32470.tmp.txt

Arg	Lys	Arg	Gln	Leu	Gly	Ile	Ser	Asp	Pro	Lys	Ser	Ser	Pro	Phe	Pro	
gct	gag	gcg	ctt	gtc	tcc	atg	tcg	cac	gat	ccg	cga	gac	tcg	cag	cct	960
Ala	Glu	Ala	Leu	Val	Ser	Met	Ser	His	Asp	Pro	Arg	Asp	Ser	Gln	Pro	
305					310					315					320	
gcc	ggc	tggt	cta	cac	gag	gaa	gag	ttc	cgt	gca	gag	att	gaa	gag	ctc	1008
Ala	Gly	Trp	Leu	His	Glu	Glu	Glu	Phe	Arg	Ala	Glu	Ile	Glu	Glu	Leu	
				325					330					335		
ata	aca	acc	gag	aga	gcc	aat	gac	gac	aca	gac	atc	aca	ttc	gac	tcg	1056
Ile	Thr	Thr	Glu	Arg	Ala	Asn	Asp	Asp	Thr	Asp	Ile	Thr	Phe	Asp	Ser	
			340				345						350			
ttt	gtg	cca	gaa	ccg	cct	cct	ctt	gat	tcg	gcc	atc	aag	act	gta	ctt	1104
Phe	Val	Pro	Glu	Pro	Pro	Pro	Leu	Asp	Ser	Ala	Ile	Lys	Thr	Val	Leu	
		355					360					365				
gag	tct	gtc	gag	gat	ctc	tac	cct	caa	cac	ttg	gag	gca	tcc	ttg	ggg	1152
Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Gln	His	Leu	Glu	Ala	Ser	Leu	Gly	
	370					375				380						
gag	atg	tcg	act	att	tcg	gtt	gat	ttt	gac	cct	gca	agc	agt	att	gac	1200
Glu	Met	Ser	Thr	Ile	Ser	Val	Asp	Phe	Asp	Pro	Ala	Ser	Ser	Ile	Asp	
	385				390					395					400	
gtt	gat	gag	aga	ggt	gcg	cg	cg	cta	ggc	aga	ccg	gag	act	atg	gac	1248
Val	Asp	Glu	Arg	Gly	Ala	Arg	Arg	Leu	Gly	Arg	Pro	Glu	Thr	Met	Asp	
			405						410					415		
gaa	gac	cct	tgt	ccg	gat	gat	tct	gat	gaa	gaa	aga	ctg	cga	gaa	gcc	1296
Glu	Asp	Pro	Cys	Pro	Asp	Asp	Ser	Asp	Glu	Glu	Arg	Leu	Arg	Glu	Ala	
			420					425					430			
cag	cgt	ttg	gag	gag	gca	aag	aaa	gaa	aag	gct	ttg	cag	gac	tat	ccc	1344
Gln	Arg	Leu	Glu	Glu	Ala	Lys	Lys	Glu	Lys	Ala	Leu	Gln	Asp	Tyr	Pro	
		435					440					445				
acc	aca	gct	tcg	ata	aac	gga	ctg	ggt	gga	ctt	gat	acc	agt	agt	ctg	1392
Thr	Thr	Ala	Ser	Ile	Asn	Gly	Leu	Val	Gly	Leu	Asp	Thr	Ser	Ser	Leu	
	450				455					460						
att	act	gga	aag	cga	cca	gag	ata	ccc	ata	aca	cag	gag	ctc	atc	gat	1440
Ile	Thr	Gly	Lys	Arg	Pro	Glu	Ile	Pro	Ile	Thr	Gln	Glu	Leu	Ile	Asp	
	465				470					475					480	
gct	gct	att	gag	gaa	gat	ctg	ttg	agc	gag	gtt	cca	gct	cct	ttg	caa	1488
Ala	Ala	Ile	Glu	Glu	Asp	Leu	Leu	Ser	Glu	Val	Pro	Ala	Pro	Leu	Gln	
			485						490					495		
acg	cca	atc	ttg	cga	gag	gga	ttg	aag	cga	cat	gcc	cac	cca	aaa	tat	1536
Thr	Pro	Ile	Leu	Arg	Glu	Gly	Leu	Lys	Arg	His	Ala	His	Pro	Lys	Tyr	
			500					505					510			
gag	gat	cat	cct	tca	aaa	cga	cca	agg	ata	cga	cca	gct	cg	ata	aac	1584
Glu	Asp	His	Pro	Ser	Lys	Arg	Pro	Arg	Ile	Arg	Pro	Ala	Arg	Ile	Asn	
		515					520					525				
aac	ttg	aca	ttt	gtc	ccc	cct	gag	gac	ggt	cta	cga	gcc	cg	tat	gaa	1632
Asn	Leu	Thr	Phe	Val	Pro	Pro	Glu	Asp	Gly	Leu	Arg	Ala	Arg	Tyr	Glu	
	530					535				540						
cg	cgt	gct	gcg	aat	gtg	gcc	aaa	gcc	gaa	agc	caa	ccc	cca	tcg	tct	1680
Arg	Arg	Ala	Ala	Asn	Val	Ala	Lys	Ala	Glu	Ser	Gln	Pro	Pro	Ser	Ser	
	545			550					555					560		
tcc	caa	cga	cag	aca	gtg	gat	gag	gcc	gcc	ccg	ttc	cgt	acg	cct	ttg	1728
Ser	Gln	Arg	Gln	Thr	Val	Asp	Glu	Ala	Ala	Pro	Phe	Arg	Thr	Pro	Leu	
			565					570						575		
ccg	cg	aag	tca	tct	atg	atg	cac	aac	tcg	gca	tcc	aag	tct	gtt	aat	1776
Pro	Arg	Lys	Ser	Ser	Met	Met	His	Asn	Ser	Ala	Ser	Lys	Ser	Val	Asn	
		580					585					590				
cgt	aag	ctc	agt	ttt	gct	gtc	gtc	aaa	gat	ccg	aat	gac	cct	gag	aca	1824
Arg	Lys	Leu	Ser	Phe	Ala	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Glu	Thr	
		595				600						605				
aag	ctt	cga	ttg	agc	caa	aat	tcc	aac	tcg	caa	ggc	agc	gac	aca	tct	1872
Lys	Leu	Arg	Leu	Ser	Gln	Asn	Ser	Asn	Ser	Gln	Gly	Ser	Asp	Thr	Ser	
	610				615					620						
gaa	acc	ccg	aag	ctt	ctt	ttt	gat	tcg	tcg	cca	gat	ccg	gag			1920
Glu	Thr	Pro	Lys	Leu	Leu	Ser	Phe	Asp	Ser	Ser	Leu	Pro	Asp	Pro	Glu	
	625				630				635					640		
gag	gcc	tca	ccg	cag	aag	gaa	gaa	aac	caa	gaa	ttc	tac	cag	gtg	ggc	1968
Glu	Ala	Ser	Pro	Gln	Lys	Glu	Glu	Asn	Gln	Glu	Phe	Tyr	Gln	Val	Gly	
			645						650					655		
cag	ttg	cca	aat	ccc	ttt	gga	ccc	tcc	gac	aag	tct	cag	gaa	cat	gac	2016

## PhoenixTemp32470.tmp.txt

Gln	Leu	Pro	Asn	Pro	Phe	Gly	Pro	Ser	Asp	Lys	Ser	Gln	Glu	His	Asp	
cac	tca	gaa	gat	gaa	gtc	ttt	gca	cat	acc	tca	atg	gta	cct	gtt	agc	2064
His	Ser	Glu	Asp	Glu	Val	Phe	Ala	His	Thr	Ser	Met	Val	Pro	Val	Ser	
		675					680					685				
cat	gtt	ctc	ccc	ccg	acc	gca	gag	gag	gtc	tgc	gca	act	atg	gcg	gac	2112
His	Val	Leu	Pro	Pro	Thr	Ala	Glu	Glu	Val	Cys	Ala	Thr	Met	Ala	Asp	
	690					695					700					
tac	gga	ata	ccc	gat	gtt	gta	tac	cgg	gac	gca	tat	tac	agt	aaa	gag	2160
Tyr	Gly	Ile	Pro	Asp	Val	Val	Tyr	Arg	Asp	Ala	Tyr	Tyr	Ser	Lys	Glu	
705					710					715					720	
aaa	gat	gtg	cca	ctt	cgt	cca	aga	gag	ttt	gct	ggg	cgt	caa	ttt	cgg	2208
Lys	Asp	Val	Pro	Leu	Arg	Pro	Arg	Glu	Phe	Ala	Gly	Arg	Gln	Phe	Arg	
				725					730					735		
ctc	cgg	ggt	aac	acg	tta	cca	tac	cta	ccc	gag	ttc	act	gct	gat	agg	2256
Leu	Arg	Gly	Asn	Thr	Leu	Pro	Tyr	Leu	Pro	Glu	Phe	Thr	Ala	Asp	Arg	
			740					745					750			
gct	gca	ccg	gat	gca	tgg	gcc	gtt	cca	gag	gca	cga	cta	cca	gac	aaa	2304
Ala	Ala	Pro	Asp	Ala	Trp	Ala	Val	Pro	Glu	Ala	Arg	Leu	Pro	Asp	Lys	
		755					760					765				
tca	aaa	ctt	aaa	att	gag	gag	gag	ata	cgc	cgg	aat	aaa	tgt	aca	atc	2352
Ser	Lys	Leu	Lys	Ile	Glu	Glu	Glu	Ile	Arg	Arg	Asn	Lys	Cys	Thr	Ile	
	770				775						780					
aag	aca	tgg	gaa	att	gca	caa	cca	cct	ccg	acg	ttt	gaa	gaa	gta	tcg	2400
Lys	Thr	Trp	Glu	Ile	Ala	Gln	Pro	Pro	Pro	Thr	Phe	Glu	Glu	Val	Ser	
785					790				795						800	
ggc	tgg	tgg	gag	gaa	aag	gag	att	aag	aag	aaa	gag	tcc	gga	tcg	agg	2448
Gly	Trp	Trp	Glu	Glu	Lys	Glu	Ile	Lys	Lys	Lys	Glu	Ser	Gly	Ser	Arg	
			805						810				815			
cca	aag	agc	cat	ccg	gcc	tct	cca	cag	tcg	aca	cag	ttg	gct	cgt	cgc	2496
Pro	Lys	Ser	His	Pro	Ala	Ser	Pro	Gln	Ser	Thr	Gln	Leu	Ala	Arg	Arg	
			820					825					830			
cag	ctt	tca	cag	atc	gaa	gga	gcg	acg	ccc	aag	aac	aaa	cat	ggc	ttc	2544
Gln	Leu	Ser	Gln	Ile	Glu	Gly	Ala	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe	
		835					840					845				
agg	tac	tcg	cag	aag	caa	aag	act	acc	agc	gtt	cag	cat	gag	gtt	gct	2592
Arg	Tyr	Ser	Gln	Lys	Gln	Lys	Thr	Thr	Ser	Val	Gln	His	Glu	Val	Ala	
	850				855						860					
tac	atg	agc	aca	atg	agt	atc	gag	atc	cat	gtt	aac	acc	agg	gga	aaa	2640
Tyr	Met	Ser	Thr	Met	Ser	Ile	Glu	Ile	His	Val	Asn	Thr	Arg	Gly	Lys	
	865				870					875					880	
ctt	gtc	cct	gat	ccg	gag	aag	gac	gag	gtc	aag	tgc	ata	ttc	tgg	tgc	2688
Leu	Val	Pro	Asp	Pro	Glu	Lys	Asp	Glu	Val	Lys	Cys	Ile	Phe	Trp	Cys	
			885						890					895		
gtt	agg	tca	gat	gat	aaa	tct	aac	gag	gct	agc	agc	cag	gct	cct	gat	2736
Val	Arg	Ser	Asp	Asp	Lys	Ser	Asn	Glu	Ala	Ser	Ser	Gln	Ala	Pro	Asp	
			900					905					910			
ggt	tta	caa	tcg	ggc	gtc	gtg	gtt	cta	tct	gaa	gaa	ggc	acc	ctg	gct	2784
Gly	Leu	Gln	Ser	Gly	Val	Val	Val	Leu	Ser	Glu	Glu	Gly	Thr	Leu	Ala	
		915				920						925				
gaa	cgc	atc	aag	cac	caa	ata	aag	ggt	gag	cta	ttg	gaa	gaa	aca	tcc	2832
Glu	Arg	Ile	Lys	His	Gln	Ile	Lys	Gly	Glu	Leu	Leu	Glu	Glu	Thr	Ser	
	930					935					940					
gag	ctc	gac	ctc	atg	gtt	cgt	atg	gtt	gag	att	gtt	cga	acg	cac	gac	2880
Glu	Leu	Asp	Leu	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Thr	His	Asp	
	945				950				955						960	
cca	gat	atc	ctg	aca	ggc	tac	gag	gtc	cat	ggg	ggc	tct	tgg	ggc	tat	2928
Pro	Asp	Ile	Leu	Thr	Gly	Tyr	Glu	Val	His	Gly	Gly	Ser	Trp	Gly	Tyr	
				965					970					975		
ttg	att	gag	cgc	gca	aga	tgc	atg	tac	gac	tat	aat	ctc	tgt	gac	gag	2976
Leu	Ile	Glu	Arg	Ala	Arg	Cys	Met	Tyr	Asp	Tyr	Asn	Leu	Cys	Asp	Glu	
			980					985					990			
ttc	tcc	cgt	atg	aag	tcg	cag	tct	gga	aga	tat	ggc	aaa	gac	gca		3024
Phe	Ser	Arg	Met	Lys	Ser	Gln	Ser	His	Gly	Arg	Tyr	Gly	Lys	Asp	Ala	
		995				1000					1005					
gac	cga	tgg	ggt	ttc	aac	act	act	tcg	aca	atc	cga	gtg	acg	ggt	aga	3072
Asp	Arg	Trp	Gly	Phe	Asn	Thr	Thr	Ser	Thr	Ile	Arg	Val	Thr	Gly	Arg	
	1010				1015						1020					
cac	atg	atc	aac	atc	tgg	cgt	gcg	atg	cga	gga	gag	ctc	aac	cta	ctt	3120

## PhoenixTemp32470.tmp.txt

His Met Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu  
 1025 1030 1035 1040  
 caa tat aca atg gaa aat gtc gtc tgg cat ctg cta cac cgt cgg ata 3168  
 Gln Tyr Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile  
 1045 1050 1055  
 cca cac tac tcg tgg cag acg ctc acc acg tgg tat ggt agt gga cgg 3216  
 Pro His Tyr Ser Trp Gln Thr Leu Thr Trp Tyr Gly Ser Gly Arg  
 1060 1065 1070  
 cac ggc gat ctt gat aaa cta cta cgc tac tac caa aca agg acg agg 3264  
 His Gly Asp Leu Asp Lys Leu Leu Arg Tyr Tyr Gln Thr Arg Thr Arg  
 1075 1080 1085  
 ctt gat att gag atc ctt gag gag aat ggg ctg atc tcg cga acg agc 3312  
 Leu Asp Ile Glu Ile Leu Glu Asn Gly Leu Ile Ser Arg Thr Ser  
 1090 1095 1100  
 gag cag gca aga ttg ctt ggc gtc gac ttc ttt tca gtg ttc tca cgt 3360  
 Glu Gln Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg  
 1105 1110 1115 1120  
 gga tca cag ttc aag gtt gag tct atc atg ttt cgg atc gcc aag ccc 3408  
 Gly Ser Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro  
 1125 1130 1135  
 gaa aac ttt atg ctc gta tca ccg agt cga aag cag gtt ggc ggg caa 3456  
 Glu Asn Phe Met Leu Val Ser Pro Ser Arg Lys Gln Val Gly Gly Gln  
 1140 1145 1150  
 aat gca tta gag tgt ttg ccg ctg atg gag cca caa agt gca ttt 3504  
 Asn Ala Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe  
 1155 1160 1165  
 tat aac agt cca gtg ctg gtg cta gac ttc cag agt ttg tat ccc agc 3552  
 Tyr Asn Ser Pro Val Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser  
 1170 1175 1180  
 gtc atg att gcc tac aac tac tgc tac tcg acg ttc ctg ggg cgg atc 3600  
 Val Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile  
 1185 1190 1195 1200  
 gtg gat tgg cgt gga acc aac aag atg gga ttt gcc gag tat aga agg 3648  
 Val Asp Trp Arg Gly Thr Asn Lys Met Gly Phe Ala Glu Tyr Arg Arg  
 1205 1210 1215  
 cga aag cgg cta ctc gag ttg ttg caa gag cac atc aac att gca cca 3696  
 Arg Lys Arg Leu Leu Glu Leu Leu Gln Glu His Ile Asn Ile Ala Pro  
 1220 1225 1230  
 aac ggc gtc atg tat acc aaa cct gag atc agg aag tcg ctg ctt gcc 3744  
 Asn Gly Val Met Tyr Thr Lys Pro Glu Ile Arg Lys Ser Leu Leu Ala  
 1235 1240 1245  
 aag atg ttg aca gag att ctg gaa aca aga gtc atg gtc aag agt ggc 3792  
 Lys Met Leu Thr Glu Ile Leu Glu Thr Arg Val Met Val Lys Ser Gly  
 1250 1255 1260  
 atg aaa caa gac aaa gac gac aaa acc ctc cag caa ttg cta aac aat 3840  
 Met Lys Gln Asp Lys Asp Lys Thr Leu Gln Leu Leu Asn Asn  
 1265 1270 1275 1280  
 agg caa ctg gct ctc aag ctg ctg gca aac gtc aca tat ggc tac acg 3888  
 Arg Gln Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr  
 1285 1290 1295  
 tct gcg tca ttc tcg ggc agg ctt ccg tgt tcg gag att gcc gat agc 3936  
 Ser Ala Ser Ser Gly Arg Leu Pro Cys Ser Glu Ile Ala Asp Ser  
 1300 1305 1310  
 att gta cag aca ggc cgt gaa act ctg gag cga gcc att gcc ttc att 3984  
 Ile Val Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile  
 1315 1320 1325  
 cac tct gtc ccg aga tgg ggc gct gaa gtt gtc tac ggg gac aca gac 4032  
 His Ser Val Pro Arg Trp Gly Ala Glu Val Val Tyr Gly Asp Thr Asp  
 1330 1335 1340  
 agc ctt ttt atc cac ctc aag ggt cgc aca aaa gag cag gcc ttt gag 4080  
 Ser Leu Phe Ile His Leu Lys Gly Arg Thr Lys Glu Gln Ala Phe Glu  
 1345 1350 1355 1360  
 att gga aac gaa atg gcc aag gca att act gac atg aac ccg cgg ccc 4128  
 Ile Gly Asn Glu Met Ala Lys Ala Ile Thr Asp Met Asn Pro Arg Pro  
 1365 1370 1375  
 atg aag ctc aag ttt gag aag gtc tac cta cca tgc gtt ttg cta gcc 4176  
 Met Lys Leu Lys Phe Glu Lys Val Tyr Leu Pro Cys Val Leu Leu Ala  
 1380 1385 1390  
 aaa aag cgc tac gtt ggg tac aag tac gaa cac gtc gat caa caa gtt 4224

## PhoenixTemp32470.tmp.txt

Lys Lys Arg Tyr Val Gly Tyr Lys Tyr Glu His Val Asp Gln Gln Val  
 1395 1400 1405  
 ccc gat ttt gat gcc aag ggc ata gag aca gtc cgc cgt gac ggg acg 4272  
 Pro Asp Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr  
 1410 1415 1420  
 cca gcg gag caa aag atc gag gaa aag gcg ctg cgg ctg ctc ttt gag 4320  
 Pro Ala Glu Gln Lys Ile Glu Glu Lys Ala Leu Arg Leu Leu Phe Glu  
 1425 1430 1435 1440  
 acg gcg gac cta agc caa atc aag gag tac ttt caa cga caa tgc aac 4368  
 Thr Ala Asp Leu Ser Gln Ile Lys Glu Tyr Phe Gln Arg Gln Cys Asn  
 1445 1450 1455  
 aaa atc atg cgt ggt caa gtg tca atc caa gac ttt tgc ttc gcc aag 4416  
 Lys Ile Met Arg Gly Gln Val Ser Ile Gln Asp Phe Cys Phe Ala Lys  
 1460 1465 1470  
 gag gtc aag ctg ggc aca tat agc gac cgc aac ggt gta ggc ccc gca 4464  
 Glu Val Lys Leu Gly Thr Tyr Ser Asp Arg Asn Gly Val Gly Pro Ala  
 1475 1480 1485  
 ccg cct ggc gcg ctc att agc aca aag aag atg ctg gcc gat ccg cga 4512  
 Pro Pro Gly Ala Leu Ile Ser Thr Lys Lys Met Leu Ala Asp Pro Arg  
 1490 1495 1500  
 gcg gaa cca caa tac ggc gaa cgt gtt ctt tat gtc gtc gtc aca ggc 4560  
 Ala Glu Pro Gln Tyr Gly Glu Arg Val Leu Tyr Val Val Val Thr Gly  
 1505 1510 1515 1520  
 gcc cct ggc gcg agg ctt gcc gac agg tgc gtc ccg ccc gaa gac atg 4608  
 Ala Pro Gly Ala Arg Leu Ala Asp Arg Cys Val Pro Pro Glu Asp Met  
 1525 1530 1535  
 cta tcg ccc gcc ggt gcg cac cta cga ctt gat gcc gac tac tac ata 4656  
 Leu Ser Pro Ala Gly Ala His Leu Arg Leu Asp Ala Asp Tyr Tyr Ile  
 1540 1545 1550  
 tcc aag aac ctg att ccg ccg ctg gag gcg atc ttc aac ttg gtc gga 4704  
 Ser Lys Asn Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly  
 1555 1560 1565  
 gcg cac atc aga ggt tgg tac gat gag ctt ccc aaa gtg cag cag gta 4752  
 Ala His Ile Arg Gly Trp Tyr Asp Glu Leu Pro Lys Val Gln Gln Val  
 1570 1575 1580  
 agg gcg gtc gtg gtc gat tct ggg aac ggg cac aac agc tgg ttc ggg 4800  
 Arg Arg Val Val Val Asp Ser Gly Asn Gly His Asn Ser Trp Phe Gly  
 1585 1590 1595 1600  
 agc atc atg ggg aac aat ggc gca caa aag gcc aaa aag gtc acg ctt 4848  
 Ser Ile Met Gly Asn Asn Gly Ala Gln Lys Ala Lys Lys Val Thr Leu  
 1605 1610 1615  
 gaa agc tat ctg caa gtg atg aac tgt gca gta tgc aat gtc cgc atc 4896  
 Glu Ser Tyr Leu Gln Val Met Asn Cys Ala Val Cys Asn Val Arg Ile  
 1620 1625 1630  
 cgc ccc gct acc cag aaa aag aaa acg ccg gca ccc ccg cag caa cta 4944  
 Arg Pro Ala Thr Gln Lys Lys Thr Pro Ala Pro Arg Gln Gln Leu  
 1635 1640 1645  
 cca cca gta cag tac cac ccc ctg ttt ggg ctg gcg cac gag cgc aag 4992  
 Pro Pro Val Gln Tyr His Pro Leu Phe Gly Leu Ala His Glu Arg Lys  
 1650 1655 1660  
 cgg ttt tcc gag gtg gca gat gtg tgt cgg agc tgt gcc ggc ttg gca 5040  
 Arg Phe Ser Glu Val Ala Asp Val Cys Arg Ser Cys Ala Gly Leu Ala  
 1665 1670 1675 1680  
 ccg ggc gac gtc gca agt gta cat gac tgc gat agc aag gac tgt ccg 5088  
 Pro Gly Asp Val Ala Ser Val His Asp Cys Asp Ser Lys Asp Cys Pro  
 1685 1690 1695  
 gtc ttt tac acg cgg gtc aaa cag gcc aag ctt cga acg gaa atg 5136  
 Val Phe Tyr Thr Arg Val Lys Gln Ala Thr Lys Leu Arg Thr Glu Met  
 1700 1705 1710  
 agt att gtc gag ccg gtg atc aag caa ttg gaa gcg agg gtt gcc aaa 5184  
 Ser Ile Val Glu Pro Val Ile Lys Gln Leu Glu Ala Arg Val Ala Lys  
 1715 1720 1725  
 atg agg aaa cag gct tgg gaa tgg tag  
 Met Arg Lys Gln Ala Trp Glu Trp  
 1730 1735

&lt;210&gt; 2712

&lt;211&gt; 1736

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70

&lt;400&gt; 2712

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Met Asp Val Phe Lys Val Arg Leu Asn Cys Ile Asp His Tyr Gln Ala
1      5      10      15
Thr Pro Thr Gln Tyr Asp Pro Cys Leu Arg Asn Asp Val Arg His Ser
20      25      30
Gln Leu Phe Lys Glu Pro Lys Val Pro Val Ile Arg Val Phe Gly Ser
35      40      45
Thr Gln Thr Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro
50      55      60
Tyr Leu Phe Ile Glu Tyr Asn Gly Lys Leu Asp Gln Glu Glu Val Gly
65      70      75      80
Ala Phe Ser Tyr Arg Leu His Leu Ser Ile Asp His Ala Leu Ala Val
85      90      95
Ser Tyr Arg Gln Asp Ala Tyr Ala Arg Asp Thr Pro Lys Tyr Val Ala
100      105      110
Arg Ile Thr Leu Val Lys Gly Val Pro Phe Tyr Gly Phe His Val Gly
115      120      125
Tyr Lys Tyr Tyr Leu Lys Ile Tyr Met Leu Asn Pro Val Val Met Thr
130      135      140
Arg Leu Ala Asp Leu Leu His Gln Gly Val Ile Met Lys Arg Lys Phe
145      150      155      160
Gln Pro Tyr Glu Ala His Leu Gln Tyr Ile Leu Gln Phe Met Thr Asp
165      170      175
Tyr Asn Leu Tyr Gly Cys Gly Tyr Ile Glu Ala Ser Ser Val Lys Phe
180      185      190
Arg Ala Pro Val Pro Gln Ile Asp Asp Asp Asp Met Asp Ser Val Met
195      200      205
Thr Pro His Ile Trp His Asn Gln Ser Ile Ser Gln Lys Gln Ile Thr
210      215      220
Asp His His Ser Leu Pro Arg Ala Ser His Cys Pro Ile Glu Val Asp
225      230      235      240
Ile Cys Val Gln Asp Ile Leu Asn Arg Lys Asp Val Lys Glu Arg Arg
245      250      255
Leu His His Asp Phe Val Glu Arg Leu Asn Pro Leu Pro Thr Asp Met
260      265      270
Lys Leu Val Ala Ser Met Ala Gly Leu Trp Arg Asp Glu Thr Lys Arg
275      280      285
Arg Lys Arg Gln Leu Gly Ile Ser Asp Pro Lys Ser Ser Pro Phe Pro
290      295      300
Ala Glu Ala Leu Val Ser Met Ser His Asp Pro Arg Asp Ser Gln Pro
305      310      315      320
Ala Gly Trp Leu His Glu Glu Glu Phe Arg Ala Glu Ile Glu Glu Leu
325      330      335
Ile Thr Thr Glu Arg Ala Asn Asp Asp Thr Asp Ile Thr Phe Asp Ser
340      345      350
Phe Val Pro Glu Pro Pro Pro Leu Asp Ser Ala Ile Lys Thr Val Leu
355      360      365
Glu Ser Val Glu Asp Leu Tyr Pro Gln His Leu Glu Ala Ser Leu Gly
370      375      380
Glu Met Ser Thr Ile Ser Val Asp Phe Asp Pro Ala Ser Ser Ile Asp
385      390      395      400
Val Asp Glu Arg Gly Ala Arg Arg Leu Gly Arg Pro Glu Thr Met Asp
405      410      415
Glu Asp Pro Cys Pro Asp Asp Ser Asp Glu Glu Arg Leu Arg Glu Ala
420      425      430
Gln Arg Leu Glu Glu Ala Lys Lys Glu Lys Ala Leu Gln Asp Tyr Pro
435      440      445
Thr Thr Ala Ser Ile Asn Gly Leu Val Gly Leu Asp Thr Ser Ser Leu
450      455      460
Ile Thr Gly Lys Arg Pro Glu Ile Pro Ile Thr Gln Glu Leu Ile Asp
465      470      475      480
Ala Ala Ile Glu Glu Asp Leu Leu Ser Glu Val Pro Ala Pro Leu Gln
485      490      495
Thr Pro Ile Leu Arg Glu Gly Leu Lys Arg His Ala His Pro Lys Tyr
500      505      510
Glu Asp His Pro Ser Lys Arg Pro Arg Ile Arg Pro Ala Arg Ile Asn
515      520      525

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## PhoenixTemp32470.tmp.txt

Asn	Leu	Thr	Phe	Val	Pro	Pro	Glu	Asp	Gly	Leu	Arg	Ala	Arg	Tyr	Glu
530						535				540					
Arg	Arg	Ala	Ala	Asn	Val	Ala	Lys	Ala	Glu	Ser	Gln	Pro	Pro	Ser	Ser
545					550					555					560
Ser	Gln	Arg	Gln	Thr	Val	Asp	Glu	Ala	Ala	Pro	Phe	Arg	Thr	Pro	Leu
				565					570					575	
Pro	Arg	Lys	Ser	Ser	Met	Met	His	Asn	Ser	Ala	Ser	Lys	Ser	Val	Asn
			580					585					590		
Arg	Lys	Leu	Ser	Phe	Ala	Val	Val	Lys	Asp	Pro	Asn	Asp	Pro	Glu	Thr
		595					600					605			
Lys	Leu	Arg	Leu	Ser	Gln	Asn	Ser	Asn	Ser	Gln	Gly	Ser	Asp	Thr	Ser
610						615					620				
Glu	Thr	Pro	Lys	Leu	Leu	Ser	Phe	Asp	Ser	Ser	Leu	Pro	Asp	Pro	Glu
625					630					635					640
Glu	Ala	Ser	Pro	Gln	Lys	Glu	Glu	Asn	Gln	Glu	Phe	Tyr	Gln	Val	Gly
				645					650					655	
Gln	Leu	Pro	Asn	Pro	Phe	Gly	Pro	Ser	Asp	Lys	Ser	Gln	Glu	His	Asp
			660					665					670		
His	Ser	Glu	Asp	Glu	Val	Phe	Ala	His	Thr	Ser	Met	Val	Pro	Val	Ser
		675					680					685			
His	Val	Leu	Pro	Pro	Thr	Ala	Glu	Glu	Val	Cys	Ala	Thr	Met	Ala	Asp
		690				695					700				
Tyr	Gly	Ile	Pro	Asp	Val	Val	Tyr	Arg	Asp	Ala	Tyr	Tyr	Ser	Lys	Glu
705					710					715					720
Lys	Asp	Val	Pro	Leu	Arg	Pro	Arg	Glu	Phe	Ala	Gly	Arg	Gln	Phe	Arg
				725					730					735	
Leu	Arg	Gly	Asn	Thr	Leu	Pro	Tyr	Leu	Pro	Glu	Phe	Thr	Ala	Asp	Arg
			740					745					750		
Ala	Ala	Pro	Asp	Ala	Trp	Ala	Val	Pro	Glu	Ala	Arg	Leu	Pro	Asp	Lys
		755					760					765			
Ser	Lys	Leu	Lys	Ile	Glu	Glu	Glu	Ile	Arg	Arg	Asn	Lys	Cys	Thr	Ile
	770					775					780				
Lys	Thr	Trp	Glu	Ile	Ala	Gln	Pro	Pro	Pro	Thr	Phe	Glu	Glu	Val	Ser
785					790					795					800
Gly	Trp	Trp	Glu	Glu	Lys	Glu	Ile	Lys	Lys	Lys	Glu	Ser	Gly	Ser	Arg
				805					810					815	
Pro	Lys	Ser	His	Pro	Ala	Ser	Pro	Gln	Ser	Thr	Gln	Leu	Ala	Arg	Arg
			820					825					830		
Gln	Leu	Ser	Gln	Ile	Glu	Gly	Ala	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe
		835					840					845			
Arg	Tyr	Ser	Gln	Lys	Gln	Lys	Thr	Thr	Ser	Val	Gln	His	Glu	Val	Ala
	850					855					860				
Tyr	Met	Ser	Thr	Met	Ser	Ile	Glu	Ile	His	Val	Asn	Thr	Arg	Gly	Lys
865					870					875					880
Leu	Val	Pro	Asp	Pro	Glu	Lys	Asp	Glu	Val	Lys	Cys	Ile	Phe	Trp	Cys
				885					890					895	
Val	Arg	Ser	Asp	Lys	Ser	Asn	Glu	Ala	Ser	Ser	Gln	Ala	Pro	Asp	
			900				905					910			
Gly	Leu	Gln	Ser	Gly	Val	Val	Val	Leu	Ser	Glu	Glu	Gly	Thr	Leu	Ala
		915					920					925			
Glu	Arg	Ile	Lys	His	Gln	Ile	Lys	Gly	Glu	Leu	Leu	Glu	Glu	Thr	Ser
	930					935					940				
Glu	Leu	Asp	Leu	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Thr	His	Asp
945					950					955					960
Pro	Asp	Ile	Leu	Thr	Gly	Tyr	Glu	Val	His	Gly	Gly	Ser	Trp	Gly	Tyr
				965					970					975	
Leu	Ile	Glu	Arg	Ala	Arg	Cys	Met	Tyr	Asp	Tyr	Asn	Leu	Cys	Asp	Glu
			980					985					990		
Phe	Ser	Arg	Met	Lys	Ser	Gln	Ser	His	Gly	Arg	Tyr	Gly	Lys	Asp	Ala
		995				1000						1005			
Asp	Arg	Trp	Gly	Phe	Asn	Thr	Thr	Ser	Thr	Ile	Arg	Val	Thr	Gly	Arg
1010					1015						1020				
His	Met	Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu
1025					1030					1035					1040
Gln	Tyr	Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile
			1045						1050					1055	
Pro	His	Tyr	Ser	Trp	Gln	Thr	Leu	Thr	Thr	Trp	Tyr	Gly	Ser	Gly	Arg
			1060				1065					1070			
His	Gly	Asp	Leu	Asp	Lys	Leu	Leu	Arg	Tyr	Tyr	Gln	Thr	Arg	Thr	Arg

## PhoenixTemp32470.tmp.txt

1075 1080 1085  
 Leu Asp Ile Glu Ile Leu Glu Asn Gly Leu Ile Ser Arg Thr Ser  
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 Glu Gln Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg  
 1105 1110 1115 1120  
 Gly Ser Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro  
 1125 1130 1135  
 Glu Asn Phe Met Leu Val Ser Pro Ser Arg Lys Gln Val Gly Gly Gln  
 1140 1145 1150  
 Asn Ala Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe  
 1155 1160 1165  
 Tyr Asn Ser Pro Val Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser  
 1170 1175 1180  
 Val Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile  
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 Val Asp Trp Arg Gly Thr Asn Lys Met Gly Phe Ala Glu Tyr Arg Arg  
 1205 1210 1215  
 Arg Lys Arg Leu Glu Leu Leu Gln His Ile Asn Ile Ala Pro  
 1220 1225 1230  
 Asn Gly Val Met Tyr Thr Lys Pro Glu Ile Arg Lys Ser Leu Leu Ala  
 1235 1240 1245  
 Lys Met Leu Thr Glu Ile Leu Glu Thr Arg Val Met Val Lys Ser Gly  
 1250 1255 1260  
 Met Lys Gln Asp Lys Asp Lys Thr Leu Gln Gln Leu Leu Asn Asn  
 1265 1270 1275 1280  
 Arg Gln Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr  
 1285 1290 1295  
 Ser Ala Ser Phe Ser Gly Arg Leu Pro Cys Ser Glu Ile Ala Asp Ser  
 1300 1305 1310  
 Ile Val Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile  
 1315 1320 1325  
 His Ser Val Pro Arg Trp Gly Ala Glu Val Val Tyr Gly Asp Thr Asp  
 1330 1335 1340  
 Ser Leu Phe Ile His Leu Lys Gly Arg Thr Lys Glu Gln Ala Phe Glu  
 1345 1350 1355 1360  
 Ile Gly Asn Glu Met Ala Lys Ala Ile Thr Asp Met Asn Pro Arg Pro  
 1365 1370 1375  
 Met Lys Leu Lys Phe Glu Lys Val Tyr Leu Pro Cys Val Leu Leu Ala  
 1380 1385 1390  
 Lys Lys Arg Tyr Val Gly Tyr Lys Tyr Glu His Val Asp Gln Gln Val  
 1395 1400 1405  
 Pro Asp Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr  
 1410 1415 1420  
 Pro Ala Glu Gln Lys Ile Glu Glu Lys Ala Leu Arg Leu Leu Phe Glu  
 1425 1430 1435 1440  
 Thr Ala Asp Leu Ser Gln Ile Lys Glu Tyr Phe Gln Arg Gln Cys Asn  
 1445 1450 1455  
 Lys Ile Met Arg Gly Gln Val Ser Ile Gln Asp Phe Cys Phe Ala Lys  
 1460 1465 1470  
 Glu Val Lys Leu Gly Thr Tyr Ser Asp Arg Asn Gly Val Gly Pro Ala  
 1475 1480 1485  
 Pro Pro Gly Ala Leu Ile Ser Thr Lys Lys Met Leu Ala Asp Pro Arg  
 1490 1495 1500  
 Ala Glu Pro Gln Tyr Gly Glu Arg Val Leu Tyr Val Val Val Thr Gly  
 1505 1510 1515 1520  
 Ala Pro Gly Ala Arg Leu Ala Asp Arg Cys Val Pro Pro Glu Asp Met  
 1525 1530 1535  
 Leu Ser Pro Ala Gly Ala His Leu Arg Leu Asp Ala Asp Tyr Tyr Ile  
 1540 1545 1550  
 Ser Lys Asn Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly  
 1555 1560 1565  
 Ala His Ile Arg Gly Trp Tyr Asp Glu Leu Pro Lys Val Gln Gln Val  
 1570 1575 1580  
 Arg Arg Val Val Val Asp Ser Gly Asn Gly His Asn Ser Trp Phe Gly  
 1585 1590 1595 1600  
 Ser Ile Met Gly Asn Asn Gly Ala Gln Lys Ala Lys Lys Val Thr Leu  
 1605 1610 1615  
 Glu Ser Tyr Leu Gln Val Met Asn Cys Ala Val Cys Asn Val Arg Ile  
 1620 1625 1630



## PhoenixTemp32470.tmp.txt

Arg Pro Ala Thr Gln Lys Lys Lys Thr Pro Ala Pro Arg Gln Gln Leu  
 1635 1640 1645  
 Pro Pro Val Gln Tyr His Pro Leu Phe Gly Leu Ala His Glu Arg Lys  
 1650 1655 1660  
 Arg Phe Ser Glu Val Ala Asp Val Cys Arg Ser Cys Ala Gly Leu Ala  
 1665 1670 1675 1680  
 Pro Gly Asp Val Ala Ser Val His Asp Cys Asp Ser Lys Asp Cys Pro  
 1685 1690 1695  
 Val Phe Tyr Thr Arg Val Lys Gln Ala Thr Lys Leu Arg Thr Glu Met  
 1700 1705 1710  
 Ser Ile Val Glu Pro Val Ile Lys Gln Leu Glu Ala Arg Val Ala Lys  
 1715 1720 1725  
 Met Arg Lys Gln Ala Trp Glu Trp  
 1730 1735

&lt;210&gt; 2713

&lt;211&gt; 4701

&lt;212&gt; DNA

<213> *Aspergillus oryzae*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4701)

&lt;400&gt; 2713

atg gag cct ttt caa gtg cgc ctt aat tgc gtg gat cat tac caa gcc	48
Met Glu Pro Phe Gln Val Arg Leu Asn Cys Val Asp His Tyr Gln Ala	
1 5 10 15	
gcc cca tcc gaa ttt gat cct ccg ttt cct tac agg gat cca tca acc	96
Ala Pro Ser Glu Phe Asp Pro Pro Phe Pro Tyr Arg Asp Pro Ser Thr	
20 25 30	
gag aaa tat gat aga ccc aaa gtg cct gta att agg ata ttc ggc gct	144
Glu Lys Tyr Asp Arg Pro Lys Val Pro Val Ile Arg Ile Phe Gly Ala	
35 40 45	
acg gaa aca ggc caa aga gta tgc gtc cat gtt cac ggc gcg ttt ccg	192
Thr Glu Thr Gly Gln Arg Val Cys Val His Val His Gly Ala Phe Pro	
50 55 60	
tac ctt tat gtc cca tac gac ggt gat tta agc cca gaa gaa gtc cgc	240
Tyr Leu Tyr Val Pro Tyr Asp Gly Asp Leu Ser Pro Glu Glu Val Arg	
65 70 75 80	
cgt gct att agg gat ctg cac atc tca att gac cac gca ttg gct tta	288
Arg Ala Ile Arg Asp Leu His Ile Ser Ile Asp His Ala Leu Ala Leu	
85 90 95	
agc tat cgt cgc aat gca tat gat aag aag gcc gcc ttt gtt gct cat	336
Ser Tyr Arg Arg Asn Ala Tyr Asp Lys Lys Ala Ala Phe Val Ala His	
100 105 110	
att acc cta gta aag ggc gtc ccc ttc tat ggc tat cat gtc ggc tat	384
Ile Thr Leu Val Lys Gly Val Pro Phe Tyr Gly Tyr His Val Gly Tyr	
115 120 125	
cgt ttc ttc ttc aag gtc tat ctt ctc agc cct atc tat acg aca aga	432
Arg Phe Phe Phe Lys Val Tyr Leu Leu Ser Pro Ile Tyr Thr Thr Arg	
130 135 140	
gta gcg gac cta ttg ctt caa gga gct ata ctg aag cgt tct ttg cag	480
Val Ala Asp Leu Leu Leu Gln Gly Ala Ile Leu Lys Arg Ser Leu Gln	
145 150 155 160	
cct tac gaa agc cac tta caa tat atc ccg caa tgg atg tgt gat tat	528
Pro Tyr Glu Ser His Leu Gln Tyr Ile Pro Gln Trp Met Cys Asp Tyr	
165 170 175	
agt ttg tac ggc tgt gcg tat atg aag tgt agc aaa gtc aag ttt cga	576
Ser Leu Tyr Gly Cys Ala Tyr Met Lys Cys Ser Lys Val Lys Phe Arg	
180 185 190	
tct cca gta cca gag tat ctc gaa ttg act aat cta tcg cat cgc tgg	624
Ser Pro Val Pro Glu Tyr Leu Glu Leu Thr Asn Leu Ser His Arg Trp	
195 200 205	
cat gat cga tct ata caa cca gat agt atc tcg gat gcg tca gaa ctc	672
His Asp Arg Ser Ile Gln Pro Asp Ser Ile Ser Asp Ala Ser Glu Leu	
210 215 220	
ccg aag caa agt cac tgt ccc cta gaa gtg gat att tgc gtg caa gat	720
Pro Lys Gln Ser His Cys Pro Leu Glu Val Asp Ile Cys Val Gln Asp	

## PhoenixTemp32470.tmp.txt

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Ile	Leu	Asn	Arg	Leu	245	Glu	Val	Arg	Arg	Glu	Arg	250	Pro	Ile	His	His	Asp	255	Phe		768
acg	gag	ttt	ctg	aag	cca	gtc	gac	cag	aca	aat	gaa	aaa	ctt	ggt	ccg	agc					816
Thr	Glu	Phe	Leu	Lys	Pro	Val	Asp	Gln	Asn	Glu	Lys	Leu	Val	Pro	Ser						
atg	gaa	gga	ctg	tgg	aag	gat	gag	aca	cac	agg	cga	aag	aaa	cgt	ctg						864
Met	Glu	Gly	Leu	Trp	Lys	Asp	Glu	Thr	His	Arg	Arg	Lys	Lys	Arg	Leu						
gga	cta	gct	gat	cct	gac	agt	agc	ccg	ttt	gac	ccc	gag	gag	cta	ggt						912
Gly	Leu	Ala	Asp	Pro	Asp	Ser	Ser	Pro	Phe	Asp	Pro	Glu	Glu	Leu	Val						
tcg	cta	tca	gct	gct	aca	agg	gaa	cag	tat	aaa	gga	gag	tgg	atc	cat						960
Ser	Leu	Ser	Ala	Ala	Thr	Arg	Glu	Gln	Tyr	Lys	Gly	Glu	Trp	Ile	His						
305					310					315					320						
gag	gag	gaa	tat	cgt	cag	ttg	acg	ctc	cgt	gca	gtc	gct	gag	gaa	agg						1008
Glu	Glu	Glu	Tyr	Arg	Gln	Leu	Thr	Leu	Arg	Ala	Val	Ala	Glu	Glu	Arg						
cgt	caa	tat	ggt	ggt	ggc	gac	ggt	aat	gtc	gat	gat	ttt	ctc	gta	cag						1056
Arg	Gln	Tyr	Gly	Gly	Gly	Asp	Val	Asn	Val	Asp	Asp	Phe	Leu	Val	Gln						
gac	ccc	ctc	ggg	aaa	gat	gtc	aag	act	gta	tta	gag	agt	ggt	gag	gat						1104
Asp	Pro	Leu	Gly	Lys	Asp	Val	Lys	Thr	Val	Leu	Glu	Ser	Val	Glu	Asp						
ctt	tat	ccc	gac	aac	aat	aac	ttc	ccg	ggt	tta	caa	gca	cct	cag	gat						1152
Leu	Tyr	Pro	Asp	Asn	Asn	Asn	Phe	Pro	Gly	Leu	Gln	Ala	Pro	Gln	Asp						
370					375					380											
ctc	gaa	ata	ggt	gaa	tct	gcg	aat	gaa	ggt	gcc	tat	act	gat	gaa	aat						1200
Leu	Glu	Ile	Gly	Glu	Ser	Ala	Asn	Glu	Gly	Ala	Tyr	Thr	Asp	Glu	Asn						
385					390					395					400						
gcg	gcc	tta	cct	gta	gcg	tcc	gat	agt	tca	gat	gac	gat	aac	att	gcc						1248
Ala	Ala	Leu	Pro	Val	Ala	Ser	Asp	Ser	Ser	Asp	Asp	Asp	Asn	Ile	Ala						
gat	ctt	ttc	tcg	gaa	ggt	aac	gat	gaa	gag	gaa	aga	gat	ggt	ttt	gac						1296
Asp	Leu	Phe	Ser	Glu	Gly	Asn	Asp	Glu	Glu	Glu	Arg	Asp	Val	Phe	Asp						
gac	cct	ctg	gca	gat	gta	ttt	tct	gag	cta	ccc	tct	gac	gaa	cac	cga						1344
Asp	Pro	Leu	Ala	Asp	Val	Phe	Ser	Glu	Leu	Pro	Ser	Asp	Glu	His	Arg						
435					440					445											
gag	ccg	aat	gcg	ccc	ctg	gct	cac	act	tcc	acc	gat	tat	aag	cca	ttc						1392
Glu	Pro	Asn	Ala	Pro	Leu	Ala	His	Thr	Ser	Thr	Asp	Tyr	Lys	Pro	Phe						
450					455					460											
ttc	gac	cgg	aca	gaa	ggc	tct	tca	agc	aga	cat	agt	act	aac	tct	tat						1440
Phe	Asp	Arg	Thr	Glu	Gly	Ser	Ser	Ser	Arg	His	Ser	Thr	Asn	Ser	Tyr						
465					470					475					480						
gca	caa	ggt	cag	ctg	gaa	cat	atc	aat	agc	cag	gcg	aag	atc	aga	gag						1488
Ala	Gln	Gly	Gln	Leu	Glu	His	Ile	Asn	Ser	Gln	Ala	Lys	Ile	Arg	Glu						
485					490					495					495						
gac	ata	cgg	agg	gca	gag	aga	acc	ctc	aag	cgt	tca	gaa	agt	gaa	gta						1536
Asp	Ile	Arg	Arg	Ala	Glu	Arg	Thr	Leu	Lys	Arg	Ser	Glu	Ser	Glu	Val						
500					505					510											
att	gat	cat	gtc	cac	ttt	aac	aag	ccg	ccg	aac	tct	ttt	cta	tca	gtg						1584
Ile	Asp	His	Val	His	Phe	Asn	Lys	Arg	Pro	Asn	Ser	Phe	Leu	Ser	Val						
515					520					525											
atg	gca	ccg	atg	atc	tat	gaa	act	ttc	aac	ata	cca	cag	aac	acg	cgg						1632
Met	Ala	Pro	Met	Ile	Tyr	Glu	Thr	Phe	Asn	Ile	Pro	Gln	Asn	Thr	Arg						
530					535					540											
ata	tgc	tgt	tta	cgg	gcg	ccc	tgc	ccc	agt	cct	agt	gag	gtg	ttg	tct						1680
Ile	Cys	Cys	Leu	Arg	Arg	Pro	Cys	Pro	Ser	Pro	Ser	Glu	Val	Leu	Ser						
545					550					555					560						
acc	ctt	agc	gat	tat	gac	tat	ccg	gct	ggt	atc	tat	gac	aaa	gcc	cat						1728
Thr	Leu	Ser	Asp	Tyr	Asp	Tyr	Pro	Ala	Val	Ile	Tyr	Asp	Lys	Ala	His						
565					570					575					575						
tac	agt	gac	cag	ggt	gat	gtg	cca	gat	cgt	cca	cga	gac	tat	gca	ggc						1776
Tyr	Ser	Asp	Gln	Gly	Asp	Val	Pro	Asp	Arg	Pro	Arg	Asp	Tyr	Ala	Gly						
580					585					590											
agg	gaa	ttc	gcg	tta	caa	ggc	agt	ggg	ata	cat	tat	ctc	cct	gac	ttt						1824
Arg	Glu	Phe	Arg	Leu	Gln	Gly	Ser	Gly	Ile	His	Tyr	Leu	Pro	Asp	Phe						

## PhoenixTemp32470.tmp.txt

		595					600				605							
gat	ccc	acc	ggc	cgg	tca	cct	gcg	atg	ctt	ggc	gaa	act	tcg	ata				1872
Asp	Pro	Thr	Gly	Arg	Ser	Pro	Ala	Met	Leu	Gly	Glu	Gln	Thr	Ser	Ile			
	610					615					620							
cta	aga	gat	aga	caa	gag	caa	gag	caa	att	gac	cag	cat	ctc	agg	gag			1920
Leu	Arg	Asp	Arg	Gln	Glu	Gln	Glu	Gln	Ile	Asp	Gln	His	Leu	Arg	Glu			
625					630					635					640			
tct	tgt	acc	tct	aga	gtg	tgg	gag	ttc	gcc	ccc	gtg	ccg	cca	agc	cgc			1968
Ser	Cys	Thr	Ser	Arg	Val	Trp	Glu	Phe	Ala	Pro	Val	Pro	Pro	Ser	Arg			
				645					650					655				
tcc	gaa	gtt	ata	cag	tgg	ttc	gag	agc	aga	caa	caa	gaa	ccg	aag	gct			2016
Ser	Glu	Val	Ile	Gln	Trp	Phe	Glu	Ser	Arg	Gln	Gln	Glu	Pro	Lys	Ala			
			660					665					670					
gaa	act	gtg	cag	cca	gag	agg	cat	tta	cac	gaa	ccg	aac	aca	aag	ctt			2064
Glu	Thr	Val	Gln	Pro	Glu	Arg	His	Leu	His	Glu	Pro	Asn	Thr	Lys	Leu			
		675					680					685						
aac	gtc	ctc	tca	cag	atc	gag	ggc	cca	acg	caa	aag	aac	gaa	tat	gga			2112
Asn	Val	Leu	Ser	Gln	Ile	Glu	Gly	Pro	Thr	Gln	Lys	Asn	Glu	Tyr	Gly			
	690					695					700							
ttt	aag	tat	tca	cag	aaa	gga	agg	tct	act	agt	gtc	gaa	cat	cag	acc			2160
Phe	Lys	Tyr	Ser	Gln	Lys	Gly	Arg	Ser	Thr	Ser	Val	Glu	His	Gln	Thr			
705					710					715					720			
cag	tat	atg	agc	ata	atg	agc	tta	gag	gtt	cat	gtt	aat	acg	cgt	gga			2208
Gln	Tyr	Met	Ser	Ile	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly			
				725					730					735				
gta	ctt	gcc	cca	aac	cca	gaa	gag	gat	gag	ata	tcc	tgc	atc	tct	tgg			2256
Val	Leu	Ala	Pro	Asn	Pro	Glu	Glu	Asp	Glu	Ile	Ser	Cys	Ile	Ser	Trp			
			740					745					750					
tgt	ata	cag	tca	gat	gac	gag	gat	ctc	gac	gtt	aat	agt	cac	ctt	tcg			2304
Cys	Ile	Gln	Ser	Asp	Asp	Glu	Asp	Leu	Asp	Val	Asn	Ser	His	Leu	Ser			
		755					760					765						
ggt	gtc	cgt	gtt	ggt	atg	gta	ttt	cag	ggt	gaa	tat	gac	aaa	ccc	gaa			2352
Gly	Val	Arg	Val	Gly	Met	Val	Phe	Gln	Gly	Glu	Tyr	Asp	Lys	Pro	Glu			
	770					775					780							
gaa	acg	ctt	tct	aag	gct	ttg	aga	atc	gac	ttg	gaa	cat	gag	cca	acg			2400
Glu	Thr	Leu	Ser	Lys	Ala	Leu	Arg	Ile	Asp	Leu	Glu	His	Glu	Pro	Thr			
					790					795					800			
gag	ctg	gac	ttg	att	aac	aga	cta	gtg	gat	ctt	gtt	aga	ctg	tat	gac			2448
Glu	Leu	Asp	Leu	Ile	Asn	Arg	Leu	Val	Asp	Leu	Val	Arg	Leu	Tyr	Asp			
				805					810					815				
cca	gac	att	atc	ggg	tat	gaa	gtt	cac	aac	ggc	tct	tgg	gga	tac				2496
Pro	Asp	Ile	Ile	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Trp	Gly	Tyr				
			820					825				830						
gtg	att	gag	aga	gct	aga	aag	aag	tat	gat	ttt	gac	ata	tgt	gac	gaa			2544
Val	Ile	Glu	Arg	Ala	Arg	Lys	Lys	Tyr	Asp	Phe	Asp	Ile	Cys	Asp	Glu			
		835					840					845						
cta	tcg	aga	gtg	aag	tca	cag	gcg	cac	ggc	agg	ttt	ggg	aag	gat	gct			2592
Leu	Ser	Arg	Val	Lys	Ser	Gln	Ala	His	Gly	Arg	Phe	Gly	Lys	Asp	Ala			
		850				855					860							
gac	cga	tgg	gga	ttc	aac	cac	aca	tct	tcc	att	cga	gta	agc	gga	cga			2640
Asp	Arg	Trp	Gly	Phe	Asn	His	Thr	Ser	Ser	Ile	Arg	Val	Ser	Gly	Arg			
					870					875					880			
cat	atg	atc	aat	atc	tgg	cga	gcc	atg	agg	agt	gag	ctg	aac	ctg	ctt			2688
His	Met	Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Ser	Glu	Leu	Asn	Leu	Leu			
				885					890					895				
caa	tat	agc	atg	gag	aac	gtc	gta	ttc	cac	cta	ttg	cat	cga	cga	ata			2736
Gln	Tyr	Ser	Met	Glu	Asn	Val	Val	Phe	His	Leu	Leu	His	Arg	Arg	Ile			
			900					905					910					
cct	cat	tac	tcg	ttt	cgc	gat	ctc	act	gaa	tgg	tac	cag	agt	gga	aag			2784
Pro	His	Tyr	Ser	Phe	Arg	Asp	Leu	Thr	Glu	Trp	Tyr	Gln	Ser	Gly	Lys			
		915					920					925						
cct	cgc	gat	cta	atg	aaa	gtc	gtc	gac	tat	ttc	gtc	tct	cga	gtg	caa			2832
Pro	Arg	Asp	Leu	Met	Lys	Val	Val	Asp	Tyr	Phe	Val	Ser	Arg	Val	Gln			
		930				935					940							
atg	aat	ctt	gag	atc	cta	gaa	tca	aat	gag	cta	gta	ccg	aga	atc	agt			2880
Met	Asn	Leu	Glu	Ile	Leu	Glu	Ser	Asn	Glu	Leu	Val	Pro	Arg	Ile	Ser			
					950					955					960			
gag	cag	gca	cga	ctg	cta	ggc	atc	gac	ttc	tcg	gtg	ttt	tct	cga				2928
Glu	Gln	Ala	Arg	Leu	Leu	Gly	Ile	Asp	Phe	Tyr	Val	Phe	Ser	Arg				

## PhoenixTemp32470.tmp.txt

965	970	975	
ggt tcc cag ttc	aaa gtc gag tct ttg	ttc cgg att gca	aaa ccc
Gly Ser Gln Phe	Lys Val Glu Ser Leu	Met Phe Arg Ile Ala	Lys Pro
980	985	990	
gag aac ttc cta	ctc gtt tca ccg agc	aag aaa caa gtt	ggc cag caa
Glu Asn Phe Leu	Leu Val Ser Pro Ser	Lys Lys Gln Val Gly	Gln Gln
995	1000	1005	
aat gct ctc gaa	tgt ctt cca ttg gta	atg gaa ccc cag	agt gac ttc
Asn Ala Leu Glu	Cys Leu Pro Leu Val	Met Glu Pro Gln Ser	Asp Phe
1010	1015	1020	
tat acc agt ccc	ctc ata gtc ttg gat	ttc caa tca ctg	tat cct agc
Tyr Thr Ser Pro	Leu Ile Val Leu Asp	Phe Gln Ser Leu Tyr	Pro Ser
1025	1030	1035	1040
atc atg att gcc	tat aat tac tgc	tac tgc acc ttc	ctg gga cga gta
Ile Met Ile Ala	Tyr Asn Tyr Cys Tyr	Ser Thr Phe Leu Gly	Arg Val
1045	1050	1055	
cat caa tgg cga	ggc cga gac aag	atg gga ttt aca	gaa tac caa aga
His Gln Trp Arg	Gly Arg Asp Lys	Met Gly Phe Thr Glu	Tyr Gln Arg
1060	1065	1070	
cag cca cga ctg	cta gaa cta ttc	aag gac aag atc	aac atc gca cca
Gln Pro Arg Leu	Leu Glu Leu Phe	Lys Asp Lys Ile Asn	Ile Ala Pro
1075	1080	1085	
aac ggc atg atg	tac gcg aag ccc	gaa gta cgt aga	tcg ctg ctc gca
Asn Gly Met Met	Tyr Ala Lys Pro	Glu Val Arg Arg Ser	Leu Leu Ala
1090	1095	1100	
agg atg ctc gcc	gag atc ctc gag	aca cgg gtc atg	gtc aag acc gga
Arg Met Leu Ala	Glu Ile Leu Glu Thr	Arg Val Met Val	Lys Thr Gly
1105	1110	1115	1120
atg aag atg gac	aag gac gac aag	gcg ctg caa cgt	ctt ctc aac aac
Met Lys Met Asp	Lys Asp Asp Lys	Ala Leu Gln Arg	Leu Leu Asn Asn
1125	1130	1135	
aga caa ctc gcc	ctc aaa tta ata	gcg aac gtc acg	tac ggc tac aca
Arg Gln Leu Ala	Leu Lys Leu Ile Ala	Asn Val Thr Tyr Gly	Tyr Thr
1140	1145	1150	
tca gca tca ttt	tca ggg cga atg	ccc tgt tcc gaa	ata gca gac agc
Ser Ala Ser Phe	Ser Gly Arg Met Pro	Cys Ser Glu Ile Ala	Asp Ser
1155	1160	1165	
atc gtc caa tcg	ggg cga gag aca	cta gaa aaa gcc	att gcc ctg atc
Ile Val Gln Ser	Gly Arg Glu Thr Leu	Glu Lys Ala Ile Ala	Leu Ile
1170	1175	1180	
cat tct gta gag	cgc tgg ggc gag	gtc gta tac gga	gac aca gac
His Ser Val Glu	Arg Trp Gly Ala Glu	Val Val Tyr Gly	Asp Thr Asp
1185	1190	1195	1200
agt ctc ttc gtc	tac ctc aaa gga	cgc act cgc gac	gaa gcc ttc gac
Ser Leu Phe Val	Tyr Leu Lys Gly Arg	Thr Arg Asp Glu	Ala Phe Asp
1205	1210	1215	
atc ggc gaa gaa	atc gcc aaa gcc	gta aca gaa acg	aac ccc tcg cca
Ile Gly Glu Glu	Ile Ala Lys Ala Val	Thr Glu Thr Asn	Pro Ser Pro
1220	1225	1230	
gtc aaa ctc aag	ttc gaa aaa gtc	tac cac cca tgc	gtt ctt cta gcc
Val Lys Leu Lys	Phe Glu Lys Val Tyr	His Pro Cys Val	Leu Leu Ala
1235	1240	1245	
aag aaa cgc tac	gtc ggc ttc aaa	tac gag cac aga	gac cag aaa gaa
Lys Lys Arg Tyr	Val Gly Phe Lys Tyr	Glu His Arg Asp	Gln Lys Glu
1250	1255	1260	
ccc gag ttc gac	gca aag ggt atc	gaa aca gtc cgc	cga gac ggc aca
Pro Glu Phe Asp	Ala Lys Gly Ile Glu	Thr Val Arg Arg	Asp Gly Thr
1265	1270	1275	1280
cca gcc gag cag	aag atc gaa gaa	aag gcc ctg aag	ctc ctc ttc cgc
Pro Ala Glu Gln	Lys Ile Glu Glu Lys	Ala Leu Lys Leu	Leu Phe Arg
1285	1290	1295	
acg gca gat cta	agc caa gtg aaa	cgc tac ttc cag	aaa cag tgc acg
Thr Ala Asp Ser	Gln Val Lys Arg Tyr	Phe Gln Lys Gln	Cys Thr
1300	1305	1310	
aag atc ctc caa	gga cga gtc tcc	att caa gac ttc	tgc ttc gct aga
Lys Ile Leu Gln	Gly Arg Val Ser Ile	Gln Asp Phe Cys	Phe Ala Arg
1315	1320	1325	
gaa gta aag ctc	ggc aca tat agc	gag cga ggc cta	cct ccc ccg ggc
Glu Val Lys Leu	Gly Thr Tyr Ser Glu	Arg Gly Leu Pro	Pro Pro Gly

## PhoenixTemp32470.tmp.txt

1330 1335 1340  
 gcc tta atc agc acc aag aaa atg ctc gaa gat ccc cgt cta gag ccc 4080  
 Ala Leu Ile Ser Thr Lys Lys Met Leu Glu Asp Pro Arg Leu Glu Pro  
 1345 1350 1355 1360  
 cag tat gga gaa cga gta cct tac gtc gtc gta aca ggt gct cca ggt 4128  
 Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Val Thr Gly Ala Pro Gly  
 1365 1370 1375  
 tca agg ttg atc gac cgc tgc gta cca ccc gag aca ctc cta cat gat 4176  
 Ser Arg Leu Ile Asp Arg Cys Val Pro Pro Glu Thr Leu Leu His Asp  
 1380 1385 1390  
 gca caa tta gaa ctc gat gcc gaa tac tac att act aag aac atc atc 4224  
 Ala Gln Leu Glu Leu Asp Ala Glu Tyr Tyr Ile Thr Lys Asn Ile Ile  
 1395 1400 1405  
 ccg cct cta gaa cga atc ttc aac ctc gtg ggc gcc aac gtc cgc cag 4272  
 Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg Gln  
 1410 1415 1420  
 tgg tat gat gaa atg ccc aaa gtg caa cgt att cgc cgg gta gaa gga 4320  
 Trp Tyr Asp Glu Met Lys Val Gln Arg Ile Arg Arg Val Glu Gly  
 1425 1430 1435 1440  
 acg gta act tct acc ggc aag gac gcc aga aag act acc ctt gaa tca 4368  
 Thr Val Thr Ser Thr Gly Lys Asp Ala Arg Lys Thr Thr Leu Glu Ser  
 1445 1450 1455  
 tat atg aaa tct tca acc tgt atc gtc tgc aaa gcc aag ctg gat gat 4416  
 Tyr Met Lys Ser Thr Cys Ile Val Cys Lys Ala Lys Leu Asp Asp  
 1460 1465 1470  
 act gat gtt ccg gtc tgt gct gag tgc ata cga cag ccg cat atc tct 4464  
 Thr Asp Val Pro Val Cys Ala Glu Cys Ile Arg Gln Pro His Ile Ser  
 1475 1480 1485  
 ttg ctt gat ttg gtt act cgc caa cga cat gcg gag aag agc gtt tct 4512  
 Leu Leu Asp Leu Val Thr Arg Gln Arg His Ala Glu Lys Ser Val Ser  
 1490 1495 1500  
 gat ctt ctg cgt gtt tgc cgg tct tgt atg ggt gtt ccg ttt ggt gat 4560  
 Asp Leu Leu Arg Val Cys Arg Ser Cys Met Gly Val Pro Phe Gly Asp  
 1505 1510 1515 1520  
 gag gtg aag tgt gat agc aag gat tgt cct gtt ttc tat tcg agg act 4608  
 Glu Val Lys Cys Asp Ser Lys Asp Cys Pro Val Phe Tyr Ser Arg Thr  
 1525 1530 1535  
 aga tat gtg gct aat tgg agg cat act aag gcc gtt ttg gac ccc gtg 4656  
 Arg Tyr Val Ala Asn Trp Arg His Thr Lys Ala Val Leu Asp Pro Val  
 1540 1545 1550  
 atc aag tta ttg cag gat aag agt gag agt gag cta gaa tgg tag 4701  
 Ile Lys Leu Leu Gln Asp Lys Ser Glu Ser Glu Leu Glu Trp  
 1555 1560 1565

&lt;210&gt; 2714

&lt;211&gt; 1566

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 2714

Met Glu Pro Phe Gln Val Arg Leu Asn Cys Val Asp His Tyr Gln Ala  
 1 5 10 15  
 Ala Pro Ser Glu Phe Asp Pro Pro Phe Pro Tyr Arg Asp Pro Ser Thr  
 20 25 30  
 Glu Lys Tyr Asp Arg Pro Lys Val Pro Val Ile Arg Ile Phe Gly Ala  
 35 40 45  
 Thr Glu Thr Gly Gln Arg Val Cys Val His Val His Gly Ala Phe Pro  
 50 55 60  
 Tyr Leu Tyr Val Pro Tyr Asp Gly Asp Leu Ser Pro Glu Glu Val Arg  
 65 70 75 80  
 Arg Ala Ile Arg Asp Leu His Ile Ser Ile Asp His Ala Leu Ala Leu  
 85 90 95  
 Ser Tyr Arg Arg Asn Ala Tyr Asp Lys Lys Ala Ala Phe Val Ala His  
 100 105 110  
 Ile Thr Leu Val Lys Gly Val Pro Phe Tyr Gly Tyr His Val Gly Tyr  
 115 120 125  
 Arg Phe Phe Phe Lys Val Tyr Leu Leu Ser Pro Ile Tyr Thr Thr Arg  
 130 135 140  
 Val Ala Asp Leu Leu Leu Gln Gly Ala Ile Leu Lys Arg Ser Leu Gln

## PhoenixTemp32470.tmp.txt

145	Pro	Tyr	Glu	Ser	His	150	Leu	Gln	Tyr	Ile	Pro	155	Gln	Trp	Met	Cys	Asp	160	Tyr
					165							170					175		
	Ser	Leu	Tyr	Gly	Cys	Ala	Tyr	Met	Lys	Cys	Ser	Lys	Val	Lys	Phe	Arg			
				180						185						190			
	Ser	Pro	Val	Pro	Glu	Tyr	Leu	Glu	Leu	Thr	Asn	Leu	Ser	His	Arg	Trp			
			195					200						205					
	His	Asp	Arg	Ser	Ile	Gln	Pro	Asp	Ser	Ile	Ser	Asp	Ala	Ser	Glu	Leu			
		210					215					220							
	Pro	Lys	Gln	Ser	His	Cys	Pro	Leu	Glu	Val	Asp	Ile	Cys	Val	Gln	Asp			
		225				230					235					240			
	Ile	Leu	Asn	Arg	Leu	Glu	Val	Arg	Glu	Arg	Pro	Ile	His	His	Asp	Phe			
				245						250					255				
	Thr	Glu	Phe	Leu	Lys	Pro	Val	Asp	Gln	Asn	Glu	Lys	Leu	Val	Pro	Ser			
			260						265					270					
	Met	Glu	Gly	Leu	Trp	Lys	Asp	Glu	Thr	His	Arg	Arg	Lys	Lys	Arg	Leu			
			275					280					285						
	Gly	Leu	Ala	Asp	Pro	Asp	Ser	Ser	Pro	Phe	Asp	Pro	Glu	Glu	Leu	Val			
		290					295					300							
	Ser	Leu	Ser	Ala	Ala	Thr	Arg	Glu	Gln	Tyr	Lys	Gly	Glu	Trp	Ile	His			
		305				310					315					320			
	Glu	Glu	Glu	Tyr	Arg	Gln	Leu	Thr	Leu	Arg	Ala	Val	Ala	Glu	Glu	Arg			
				325						330					335				
	Arg	Gln	Tyr	Gly	Gly	Asp	Val	Asn	Val	Asp	Asp	Phe	Leu	Val	Gln				
			340					345					350						
	Asp	Pro	Leu	Gly	Lys	Asp	Val	Lys	Thr	Val	Leu	Glu	Ser	Val	Glu	Asp			
			355					360					365						
	Leu	Tyr	Pro	Asp	Asn	Asn	Asn	Phe	Pro	Gly	Leu	Gln	Ala	Pro	Gln	Asp			
		370				375						380							
	Leu	Glu	Ile	Gly	Glu	Ser	Ala	Asn	Glu	Gly	Ala	Tyr	Thr	Asp	Glu	Asn			
		385				390					395					400			
	Ala	Ala	Leu	Pro	Val	Ala	Ser	Asp	Ser	Ser	Asp	Asp	Asp	Asn	Ile	Ala			
			405						410						415				
	Asp	Leu	Phe	Ser	Glu	Gly	Asn	Asp	Glu	Glu	Arg	Asp	Val	Phe	Asp				
			420						425				430						
	Asp	Pro	Leu	Ala	Asp	Val	Phe	Ser	Glu	Leu	Pro	Ser	Asp	Glu	His	Arg			
			435					440					445						
	Glu	Pro	Asn	Ala	Pro	Leu	Ala	His	Thr	Ser	Thr	Asp	Tyr	Lys	Pro	Phe			
		450				455						460							
	Phe	Asp	Arg	Thr	Glu	Gly	Ser	Ser	Ser	Arg	His	Ser	Thr	Asn	Ser	Tyr			
		465				470					475					480			
	Ala	Gln	Gly	Gln	Leu	Glu	His	Ile	Asn	Ser	Gln	Ala	Lys	Ile	Arg	Glu			
			485						490						495				
	Asp	Ile	Arg	Arg	Ala	Glu	Arg	Thr	Leu	Lys	Arg	Ser	Glu	Ser	Glu	Val			
			500						505					510					
	Ile	Asp	His	Val	His	Phe	Asn	Lys	Arg	Pro	Asn	Ser	Phe	Leu	Ser	Val			
			515					520					525						
	Met	Ala	Pro	Met	Ile	Tyr	Glu	Thr	Phe	Asn	Ile	Pro	Gln	Asn	Thr	Arg			
			530				535					540							
	Ile	Cys	Cys	Leu	Arg	Arg	Pro	Cys	Pro	Ser	Pro	Ser	Glu	Val	Leu	Ser			
		545				550					555					560			
	Thr	Leu	Ser	Asp	Tyr	Asp	Tyr	Pro	Ala	Val	Ile	Tyr	Asp	Lys	Ala	His			
				565					570						575				
	Tyr	Ser	Asp	Gln	Gly	Asp	Val	Pro	Asp	Arg	Pro	Arg	Asp	Tyr	Ala	Gly			
			580						585					590					
	Arg	Glu	Phe	Arg	Leu	Gln	Gly	Ser	Gly	Ile	His	Tyr	Leu	Pro	Asp	Phe			
			595					600					605						
	Asp	Pro	Thr	Gly	Arg	Ser	Pro	Ala	Met	Leu	Gly	Glu	Gln	Thr	Ser	Ile			
		610					615					620							
	Leu	Arg	Asp	Arg	Gln	Glu	Gln	Glu	Gln	Ile	Asp	Gln	His	Leu	Arg	Glu			
		625				630					635					640			
	Ser	Cys	Thr	Ser	Arg	Val	Trp	Glu	Phe	Ala	Pro	Val	Pro	Pro	Ser	Arg			
				645						650					655				
	Ser	Glu	Val	Ile	Gln	Trp	Phe	Glu	Ser	Arg	Gln	Gln	Glu	Pro	Lys	Ala			
			660						665					670					
	Glu	Thr	Val	Gln	Pro	Glu	Arg	His	Leu	His	Glu	Pro	Asn	Thr	Lys	Leu			
			675					680					685						
	Asn	Val	Leu	Ser	Gln	Ile	Glu	Gly	Pro	Thr	Gln	Lys	Asn	Glu	Tyr	Gly			
		690					695					700							

## PhoenixTemp32470.tmp.txt

Phe 705 Lys Tyr Ser Gln 710 Lys Gly Arg Ser Thr 715 Ser Val Glu His Gln Thr 720  
 Gln Tyr Met Ser Ile 725 Met Ser Leu Glu Val 730 His Val Asn Thr Arg Gly 735  
 Val Leu Ala Pro 740 Asn Pro Glu Glu Asp 745 Glu Ile Ser Cys Ile Ser Trp 750  
 Cys Ile 755 Gln Ser Asp Asp Glu Asp 760 Leu Asp Val Asn Ser 765 His Leu Ser  
 Gly Val 770 Arg Val Gly Met Val 775 Phe Gln Gly Glu Tyr 780 Asp Lys Pro Glu  
 Glu Thr 785 Leu Ser Lys Ala 790 Leu Arg Ile Asp Leu 795 Glu His Glu Pro Thr 800  
 Glu Leu Asp Leu Ile 805 Asn Arg Leu Val Asp 810 Leu Val Arg Leu Tyr 815 Asp  
 Pro Asp Ile Ile Thr Gly Tyr Glu Val 825 His Asn Gly Ser Trp 830 Gly Tyr  
 Val Ile 835 Glu Arg Ala Arg Lys Lys 840 Tyr Asp Phe Asp Ile 845 Cys Asp Glu  
 Leu Ser 850 Arg Val Lys Ser Gln 855 Ala His Gly Arg Phe 860 Gly Lys Asp Ala  
 Asp Arg Trp Gly Phe Asn 870 His Thr Ser Ser Ile 875 Arg Val Ser Gly Arg 880  
 His Met Ile Asn Ile 885 Trp Arg Ala Met Arg 890 Ser Glu Leu Asn Leu 895  
 Gln Tyr Ser Met 900 Glu Asn Val Val Phe 905 His Leu Leu His Arg 910 Arg Ile  
 Pro His Tyr Ser Phe Arg Asp Leu 920 Thr Glu Trp Tyr Gln 925 Ser Gly Lys  
 Pro Arg Asp Leu Met Lys Val 935 Val Asp Tyr Phe Val 940 Ser Arg Val Gln  
 Met Asn Leu Glu Ile Leu 950 Glu Ser Asn Glu Leu Val 955 Pro Arg Ile Ser 960  
 Glu Gln Ala Arg Leu 965 Leu Gly Ile Asp Phe 970 Tyr Ser Val Phe Ser Arg 975  
 Gly Ser Gln Phe 980 Lys Val Glu Ser Leu 985 Met Phe Arg Ile Ala Lys Pro 990  
 Glu Asn Phe Leu Leu Val Ser Pro 1000 Ser Lys Lys Gln Val Gly Gln Gln 1005  
 Asn Ala Leu Glu Cys Leu Pro 1015 Leu Val Met Glu Pro Gln Ser Asp Phe 1020  
 Tyr Thr Ser Pro Leu Ile 1030 Val Leu Asp Phe Gln 1035 Ser Leu Tyr Pro Ser 1040  
 Ile Met Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Val 1055  
 His Gln Trp Arg Gly Arg Asp Lys Met 1065 Gly Phe Thr Glu Tyr Gln Arg 1070  
 Gln Pro Arg Leu Leu Glu Leu Phe 1080 Lys Asp Lys Ile Asn Ile Ala Pro 1085  
 Asn Gly Met Met Tyr Ala Lys 1095 Pro Glu Val Arg Arg Ser Leu Leu Ala 1100  
 Arg Met Leu Ala Glu Ile Leu Glu Thr Arg Val Met Val Lys Thr Gly 1120  
 Met Lys Met Asp Lys Asp Asp Lys Ala Leu Gln Arg Leu Leu Asn Asn 1135  
 Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val Thr Tyr Gly Tyr Thr 1150  
 Ser Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser 1165  
 Ile Val Gln Ser Gly Arg Glu Thr Leu Glu Lys Ala Ile Ala Leu Ile 1180  
 His Ser Val Glu Arg Trp Gly Ala Glu Val Val Tyr Gly Asp Thr Asp 1200  
 Ser Leu Phe Val Tyr Leu Lys Gly Arg Thr 1210 Arg Asp Glu Ala Phe Asp 1215  
 Ile Gly Glu Glu Ile Ala Lys Ala Val Thr Glu Thr Asn Pro Ser Pro 1230  
 Val Lys Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu Ala 1245  
 Lys Lys Arg Tyr Val Gly Phe Lys Tyr Glu His Arg Asp Gln Lys Glu

## PhoenixTemp32470.tmp.txt

1250 1255 1260  
 Pro Glu Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr  
 1265 1270 1275 1280  
 Pro Ala Glu Gln Lys Ile Glu Glu Lys Ala Leu Lys Leu Leu Phe Arg  
 1285 1290 1295  
 Thr Ala Asp Leu Ser Gln Val Lys Arg Tyr Phe Gln Lys Gln Cys Thr  
 1300 1305 1310  
 Lys Ile Leu Gln Gly Arg Val Ser Ile Gln Asp Phe Cys Phe Ala Arg  
 1315 1320 1325  
 Glu Val Lys Leu Gly Thr Tyr Ser Glu Arg Gly Leu Pro Pro Pro Gly  
 1330 1335 1340  
 Ala Leu Ile Ser Thr Lys Lys Met Leu Glu Asp Pro Arg Leu Glu Pro  
 1345 1350 1355 1360  
 Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Val Thr Gly Ala Pro Gly  
 1365 1370 1375  
 Ser Arg Leu Ile Asp Arg Cys Val Pro Pro Glu Thr Leu Leu His Asp  
 1380 1385 1390  
 Ala Gln Leu Glu Leu Asp Ala Glu Tyr Tyr Ile Thr Lys Asn Ile Ile  
 1395 1400 1405  
 Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg Gln  
 1410 1415 1420  
 Trp Tyr Asp Glu Met Pro Lys Val Gln Arg Ile Arg Arg Val Glu Gly  
 1425 1430 1435 1440  
 Thr Val Thr Ser Thr Gly Lys Asp Ala Arg Lys Thr Thr Leu Glu Ser  
 1445 1450 1455  
 Tyr Met Lys Ser Ser Thr Cys Ile Val Cys Lys Ala Lys Leu Asp Asp  
 1460 1465 1470  
 Thr Asp Val Pro Val Cys Ala Glu Cys Ile Arg Gln Pro His Ile Ser  
 1475 1480 1485  
 Leu Leu Asp Leu Val Thr Arg Gln Arg His Ala Glu Lys Ser Val Ser  
 1490 1495 1500  
 Asp Leu Leu Arg Val Cys Arg Ser Cys Met Gly Val Pro Phe Gly Asp  
 1505 1510 1515 1520  
 Glu Val Lys Cys Asp Ser Lys Asp Cys Pro Val Phe Tyr Ser Arg Thr  
 1525 1530 1535  
 Arg Tyr Val Ala Asn Trp Arg His Thr Lys Ala Val Leu Asp Pro Val  
 1540 1545 1550  
 Ile Lys Leu Leu Gln Asp Lys Ser Glu Ser Glu Leu Glu Trp  
 1555 1560 1565

&lt;210&gt; 2715

&lt;211&gt; 5781

&lt;212&gt; DNA

&lt;213&gt; Neurospora tetrasperma

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5781)

&lt;400&gt; 2715

atg gaa ttt tta aga ctt cga ttg aac tgt ata gat cac tac caa gcc	48
Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg tca acc gga tat gat ccc cag ttt gac caa gat gtg cgc ttt tcg	96
Thr Ser Thr Gly Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser	
20 25 30	
cgt tcg cgg aag gcc gcc aaa gtc cct gta att cgg gtg ttc gga tcg	144
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser	
35 40 45	
acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc ttt ccc	192
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro	
50 55 60	
tat ctg tat gtc gag tat gac gga aat cta gaa ccc aac aag gat cat	240
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His	
65 70 75 80	
gcg tta gct atc agc tac cgg aaa gat ccc att cgc gat cgg ccc ata	288
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Ile	
85 90 95	
tat gta gca cgg att acg ctg aca aaa ggt ata ccc ttt tat ggc ttc	336



## PhoenixTemp32470.tmp.txt

Tyr	Val	Ala	Arg	Ile	Thr	Leu	Thr	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Phe	
cat	gtg	ggt	tat	cgc	ttc	tat	ctc	aaa	att	tac	ctg	ttc	aac	ccg	gtg	384
His	Val	Gly	Tyr	Arg	Phe	Tyr	Leu	Lys	Ile	Tyr	Leu	Phe	Asn	Pro	Val	
		115					120					125				
gtc	atg	tcg	cgt	ctc	gtc	gat	ctc	ctt	cag	caa	ggt	ggt	att	atg	agt	432
Val	Met	Ser	Arg	Leu	Val	Asp	Leu	Leu	Gln	Gln	Gly	Val	Ile	Met	Ser	
		130					135					140				
cgg	aaa	ttt	caa	cct	tac	gag	gcc	cat	ctg	cag	tat	ctc	ctt	cag	ttc	480
Arg	Lys	Phe	Gln	Pro	Tyr	Glu	Ala	His	Leu	Gln	Tyr	Leu	Leu	Gln	Phe	
					150						155				160	
atg	gct	gat	tac	aac	ctg	tac	ggc	tgt	aac	tac	ctg	gat	gcg	gcg	atg	528
Met	Ala	Asp	Tyr	Asn	Leu	Tyr	Gly	Cys	Asn	Tyr	Leu	Asp	Ala	Ala	Met	
				165					170					175		
gcc	acc	ttt	cga	gcg	cct	gta	ccg	aag	cat	gac	agc	aac	atc	gaa	ggc	576
Ala	Thr	Phe	Arg	Ala	Pro	Val	Pro	Lys	His	Asp	Ser	Asn	Ile	Glu	Gly	
			180					185					190			
cgt	gag	act	gaa	cat	cac	tgg	gac	gat	gca	acg	atc	ccg	cca	gag	ctg	624
Arg	Glu	Thr	Glu	His	His	Trp	Asp	Asp	Ala	Thr	Ile	Pro	Pro	Glu	Leu	
		195					200					205				
att	acg	gat	gat	tac	agc	ctt	ccc	cgg	gct	agc	cac	tgc	tcc	ctt	gaa	672
Ile	Thr	Asp	Asp	Tyr	Ser	Leu	Pro	Arg	Ala	Ser	His	Cys	Ser	Leu	Glu	
		210				215					220					
gtg	gac	atc	tgc	gtc	gaa	gac	atc	ctg	aat	cga	aag	caa	gtc	gaa	gag	720
Val	Asp	Ile	Cys	Val	Glu	Asp	Ile	Leu	Asn	Arg	Lys	Gln	Val	Glu	Glu	
					230					235					240	
cga	agg	ctt	cat	cat	gat	ttc	atc	gaa	aag	gag	cag	ccg	gtg	tca	agc	768
Arg	Arg	Leu	His	His	Asp	Phe	Ile	Glu	Lys	Glu	Gln	Pro	Val	Ser	Ser	
				245					250					255		
caa	gaa	aag	ctg	gtg	cac	agc	atg	gct	gga	ctc	tgg	acg	gat	gag	aca	816
Gln	Glu	Lys	Leu	Val	His	Ser	Met	Ala	Gly	Leu	Trp	Thr	Asp	Glu	Thr	
			260					265					270			
aac	cgc	agg	aaa	aag	cgt	atg	gga	ata	acg	gac	cct	gaa	ggt	aac	ccc	864
Asn	Arg	Arg	Lys	Lys	Arg	Met	Gly	Ile	Thr	Asp	Pro	Glu	Val	Asn	Pro	
		275					280					285				
ttt	cct	ccg	gaa	gtc	ttg	gta	tca	atg	tct	gcg	gac	cca	cgt	caa	tca	912
Phe	Pro	Pro	Glu	Val	Leu	Val	Ser	Met	Ser	Ala	Asp	Pro	Arg	Gln	Ser	
		290				295					300					
cag	gtg	atg	ggg	tgg	gtt	cat	gaa	gct	gag	tac	cgt	gct	ggt	att	caa	960
Gln	Val	Met	Gly	Trp	Val	His	Glu	Ala	Glu	Tyr	Arg	Ala	Gly	Ile	Gln	
					310					315					320	
caa	ttg	gtt	gct	cag	gaa	cag	aac	aac	aca	gat	gga	cgt	cag	cag	act	1008
Gln	Leu	Val	Ala	Gln	Glu	Gln	Asn	Asn	Thr	Asp	Gly	Arg	Gln	Gln	Thr	
				325					330					335		
ttc	tcc	ggc	ttt	gtg	caa	cca	gtt	cca	ttt	gaa	gaa	act	atc	aag	act	1056
Phe	Ser	Gly	Phe	Val	Gln	Pro	Val	Pro	Phe	Glu	Glu	Thr	Ile	Lys	Thr	
			340					345					350			
act	tta	gag	tca	gtg	gaa	gac	tta	tac	cca	gac	aac	ttg	agc	caa	gct	1104
Thr	Leu	Glu	Ser	Val	Glu	Asp	Leu	Tyr	Pro	Asp	Asn	Leu	Ser	Gln	Ala	
			355				360					365				
ctg	caa	att	gaa	gca	caa	ttt	ttt	cac	acg	aat	gca	cag	cat	ctc	atc	1152
Leu	Gln	Ile	Glu	Ala	Gln	Phe	Phe	His	Thr	Asn	Ala	Gln	His	Leu	Ile	
		370				375					380					
agt	atc	gat	gtc	gac	gaa	cga	agc	atc	ttt	cag	cta	ata	cgc	gag	cca	1200
Ser	Ile	Asp	Val	Asp	Glu	Arg	Ser	Ile	Phe	Gln	Leu	Ile	Arg	Glu	Pro	
					390					395					400	
tat	gca	aaa	cac	act	cga	cac	gaa	tac	gcg	ggc	aga	atc	tca	ccg	gag	1248
Tyr	Ala	Lys	His	Thr	Arg	His	Glu	Tyr	Ala	Gly	Arg	Ile	Ser	Pro	Glu	
				405					410					415		
gag	cct	ttg	aat	ggt	gtt	gga	gaa	gga	ttt	ggt	gtg	ggg	gat	tca	atg	1296
Glu	Pro	Leu	Asn	Gly	Val	Gly	Glu	Gly	Phe	Gly	Val	Gly	Asp	Ser	Met	
			420					425					430			
att	tat	cct	atg	gat	ggg	cgg	atc	cgt	gta	tac	caa	ccc	aga	gct	tcc	1344
Ile	Tyr	Pro	Met	Asp	Gly	Arg	Ile	Arg	Val	Tyr	Gln	Pro	Arg	Ala	Ser	
		435					440					445				
atc	cgt	cat	aaa	ctt	ttg	aag	att	gcc	cag	act	tac	tct	tcc	aat	caa	1392
Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Gln	Thr	Tyr	Ser	Ser	Asn	Gln	
		450				455					460					
cca	gcc	aat	aca	ggt	aga	caa	gcc	ggg	gtt	ctt	ggt	cct	gga	gag	cga	1440

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Pro 465	Ala	Asn	Thr	Gly	Arg 470	Gln	Ala	Gly	Val	Leu 475	Gly	Pro	Gly	Glu	Arg 480	
caa	cga	aga	tct	ctc	aag	cat	ccc	agg	ccg	ccg	gga	gaa	gtt	gat	cat	1488
Gln	Arg	Arg	Ser	Leu 485	Lys	His	Pro	Arg	Pro 490	Pro	Gly	Glu	Val	Asp 495	His	
ggt	gca	cct	gca	aaa	cat	cag	gtg	ctc	caa	gct	gag	gac	tca	agg	gag	1536
Gly	Ala	Pro	Ala 500	Lys	His	Gln	Val	Leu 505	Gln	Ala	Glu	Asp	Ser 510	Arg	Glu	
tca	ctt	cac	atg	aaa	gcc	gac	cct	ccg	caa	aga	gct	ttg	gaa	gag	gct	1584
Ser	Leu	His 515	Met	Lys	Ala	Asp	Pro 520	Pro	Gln	Arg	Ala	Leu 525	Glu	Glu	Ala	
ccg	aga	aac	gcc	cat	gaa	caa	act	caa	ggt	gca	ggt	cag	cca	ggg	cct	1632
Pro	Arg 530	Asn	Ala	His	Glu	Gln 535	Thr	Gln	Gly	Ala	Gly 540	Gln	Pro	Gly	Pro	
cag	aga	aag	ctc	cag	agt	aac	cct	ccc	gaa	agg	gtt	tac	gag	gag	cca	1680
Gln 545	Arg	Lys	Leu	Gln	Ser 550	Asn	Pro	Pro	Glu	Arg 555	Val	Tyr	Glu	Glu	Pro 560	
aac	aag	agg	gtt	cac	gag	gag	gct	caa	cca	aag	gtc	cat	cga	aag	gcc	1728
Asn	Lys	Arg	Val	His 565	Glu	Glu	Ala	Gln	Pro 570	Lys	Val	His	Arg	Lys 575	Ala	
cag	caa	agg	tct	cgg	gaa	cat	gac	cag	aaa	cag	ggc	caa	cag	aaa	ata	1776
Gln	Gln	Arg	Ser 580	Arg	Glu	His	Asp	Gln 585	Lys	Gln	Gly	Gln	Gln 590	Lys	Ile	
cag	gaa	caa	act	caa	gat	cat	gat	cag	gga	gga	tac	cag	aag	gaa	gtt	1824
Gln	Glu	Gln 595	Thr	Gln	Asp	His	Asp 600	Gln	Gly	Gly	Tyr	Gln 605	Lys	Glu	Val	
cca	gaa	gat	tcg	gca	ttt	acg	acg	cca	gct	cgg	aca	gtc	cag	cca	atg	1872
Pro	Glu 610	Asp	Ser	Ala	Phe	Thr 615	Thr	Pro	Ala	Arg	Thr 620	Val	Gln	Pro	Met	
aaa	ccc	aat	aat	cag	gat	cca	gca	gga	gag	gaa	cta	ttg	gtg	aat	agt	1920
Lys 625	Pro	Asn	Asn	Gln	Asp 630	Pro	Ala	Gly	Glu	Glu 635	Leu	Leu	Val	Asn	Ser 640	
ctg	cgg	gtc	gag	cca	cca	aaa	cct	aag	aca	tct	cag	ccc	atg	aag	tct	1968
Leu	Arg	Val	Glu	Pro 645	Pro	Lys	Pro	Lys	Thr 650	Ser	Gln	Pro	Met	Lys 655	Ser	
gct	atg	aag	cag	agc	ttt	gca	caa	gag	tcc	caa	agc	cgt	acg	atc	aac	2016
Ala	Met	Lys	Gln 660	Ser	Phe	Ala	Gln	Glu 665	Ser	Gln	Ser	Arg	Thr 670	Ile	Asn	
ttt	ccc	gtc	gtc	aaa	gat	cca	caa	gat	cct	aac	aca	agg	gcg	cga	ctg	2064
Phe	Pro	Val 675	Val	Lys	Asp	Pro	Gln 680	Asp	Pro	Asn	Thr 685	Arg	Ala	Arg	Leu	
agc	caa	aag	agt	ggt	tcg	cag	aag	aac	gag	ggt	aac	gtc	acc	aga	aag	2112
Ser	Gln 690	Lys	Ser	Gly	Ser	Gln 695	Lys	Asn	Glu	Gly 700	Asn	Val	Thr	Arg	Lys	
caa	ctt	gcc	ttc	gac	cct	caa	ccc	acc	att	ttg	ggg	cca	tcg	gct	cag	2160
Gln 705	Leu	Ala	Phe	Asp	Pro 710	Gln	Pro	Thr	Ile	Leu 715	Gly	Pro	Ser	Ala	Gln 720	
gcg	agg	ccc	gat	cag	act	aaa	ccc	aac	cta	aaa	tcg	tcg	tcc	aga	ccc	2208
Ala	Arg	Pro	Asp	Gln 725	Thr	Lys	Pro	Asn	Leu 730	Lys	Ser	Ser	Ser	Arg 735	Pro	
ctt	gac	tcg	gcc	cct	gtg	gct	tcg	gct	gcg	gca	ctc	ttg	tggt	agt	ggc	2256
Leu	Asp	Ser	Ala 740	Pro	Val	Ala	Ser	Ala 745	Ala	Ala	Leu	Leu	Trp 750	Ser	Gly	
tca	aag	aaa	atg	ttt	gtc	ctg	aac	aat	aaa	cct	cca	tcc	ctg	agc	gaa	2304
Ser	Lys	Lys 755	Met	Phe	Val	Leu	Asn 760	Asn	Lys	Pro	Pro	Ser 765	Leu	Ser	Glu	
gtc	cg	tgt	acc	atg	cag	gta	cat	ggc	cta	cct	gat	atc	tat	caa		2352
Val	Arg 770	Cys	Thr	Met	Gln	Val 775	His	Gly	Leu	Pro	Asp 780	Val	Ile	Tyr	Gln	
gac	gca	tat	tac	agt	aag	gat	gag	gat	gtt	ccc	tcc	aga	ccg	aga	gaa	2400
Asp 785	Ala	Tyr	Tyr	Ser	Lys 790	Asp	Glu	Asp	Val	Pro 795	Ser	Arg	Pro	Arg	Glu 800	
tat	gca	ggc	agg	gaa	tac	cga	ctt	gac	ggt	agc	tct	gtt	cct	tggt	ctc	2448
Tyr	Ala	Gly	Arg	Glu 805	Tyr	Arg	Leu	Asp	Gly 810	Ser	Ser	Val	Pro	Trp 815	Leu	
ccc	gat	ttc	gac	ccg	act	ggc	aca	tcg	tcg	gcg	aca	tat	ggc	gag	aaa	2496
Pro	Asp	Phe 820	Asp	Pro	Thr	Gly	Thr	Ser 825	Ser	Ala	Thr	Tyr	Gly 830	Glu	Lys	
ccg	acc	tcc	ggt	gcc	gac	tgg	ccg	atg	ctg	gag	gca	atc	tat	gag	gct	2544

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Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala		
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Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro		
850						855				860							
cct	tct	ttc	aag	gaa	gtc	agt	aat	tgg	tgg	aca	gat	gaa	caa	aac	aat	2640	
Pro	Ser	Phe	Lys	Glu	Val	Ser	Asn	Trp	Trp	Thr	Asp	Glu	Gln	Asn	Asn		
865					870					875					880		
cgc	aat	cca	aaa	cga	tgc	cat	tcc	aca	ccc	ctc	agg	att	aaa	acc	tac	2688	
Arg	Asn	Pro	Lys	Arg	Cys	His	Ser	Thr	Pro	Leu	Arg	Ile	Lys	Thr	Tyr		
				885					890					895			
cgc	tcc	caa	att	gcg	ggc	gtg	acg	cca	aag	aac	aag	cat	ggc	ttc	gaa	2736	
Arg	Ser	Gln	Ile	Ala	Gly	Val	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe	Glu		
			900					905					910				
cat	ccc	gaa	aag	aca	aaa	tct	gaa	agc	aaa	cag	gat	cag	gca	cag	tac	2784	
His	Pro	Glu	Lys	Thr	Lys	Ser	Glu	Ser	Lys	Gln	Asp	Gln	Ala	Gln	Tyr		
		915					920					925					
atg	agc	gcc	atg	agc	cta	gag	gta	cat	ggt	aac	acc	cgg	ggc	aag	cta	2832	
Met	Ser	Ala	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly	Lys	Leu		
		930				935					940						
gta	ccg	gat	cct	gaa	gaa	gac	gaa	gtg	cag	tgt	gtg	ttt	tgg	tat	ttg	2880	
Val	Pro	Asp	Pro	Glu	Glu	Asp	Glu	Val	Gln	Cys	Val	Phe	Trp	Tyr	Leu		
945					950					955					960		
cgg	tcc	gaa	gta	aac	gct	ctc	cgc	gga	act	cag	acg	ccg	gat	gat	acg	2928	
Arg	Ser	Glu	Val	Asn	Ala	Leu	Arg	Gly	Thr	Gln	Thr	Pro	Asp	Asp	Thr		
				965					970					975			
gca	cgg	ggc	att	gtc	gtt	ttc	tca	gag	gat	ggg	ctg	ctt	gca	gat	aga	2976	
Ala	Arg	Gly	Ile	Val	Val	Phe	Ser	Glu	Asp	Gly	Leu	Leu	Ala	Asp	Arg		
			980					985					990				
atc	cga	aag	cac	aca	tcc	gtg	ccg	gtg	gtt	caa	gag	aca	aca	gaa	ctt	3024	
Ile	Arg	Lys	His	Thr	Ser	Val	Pro	Val	Val	Gln	Glu	Thr	Thr	Glu	Leu		
		995				1000					1005						
gat	atg	atg	gtc	cgg	atg	gtc	gag	att	gtg	cgg	aac	cat	gat	ccc	gat	3072	
Asp	Met	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp		
		1010				1015					1020						
atc	ttc	aca	gga	tat	gag	gtg	cat	ggc	agt	tca	tgg	ggc	tac	ctt	att	3120	
Ile	Phe	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile		
					1030					1035					1040		
gag	cga	gcg	agg	ata	aag	tat	gat	ctc	gac	ctc	tgt	gat	gag	ttc	tca	3168	
Glu	Arg	Ala	Arg	Ile	Lys	Tyr	Asp	Leu	Asp	Leu	Cys	Asp	Glu	Phe	Ser		
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cgc	atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggg	aag	gat	gtg	gat	cg	3216	
Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Val	Asp	Arg		
			1060				1065						1070				
tgg	ggc	ttc	aac	acg	aca	tcc	tcg	ata	cga	ata	aca	gga	cga	cac	atg	3264	
Trp	Gly	Phe	Asn	Thr	Thr	Ser	Ser	Ile	Arg	Ile	Thr	Gly	Arg	His	Met		
		1075					1080					1085					
atc	aac	att	tgg	aga	gcc	atg	aga	ggc	gaa	ctc	aat	ctt	cta	cag	tat	3312	
Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu	Gln	Tyr		
					1095						1100						
acc	atg	gag	aat	gtt	gtt	tgg	cat	ctg	cta	cac	cgt	cg	att	cct	cat	3360	
Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile	Pro	His		
					1110					1115				1120			
tac	agt	tgg	aag	act	tta	tcg	gat	tgg	tat	ctg	agc	gat	cga	ccg	aag	3408	
Tyr	Ser	Trp	Lys	Thr	Leu	Ser	Asp	Trp	Tyr	Leu	Ser	Asp	Arg	Pro	Lys		
				1125					1130					1135			
gat	ctc	gat	aaa	gtt	ctc	cga	tat	tac	ctg	acg	aga	acg	cga	ctt	gat	3456	
Asp	Leu	Asp	Lys	Val	Leu	Arg	Tyr	Tyr	Leu	Thr	Arg	Thr	Arg	Leu	Asp		
			1140				1145						1150				
att	gaa	att	ctg	gaa	aag	aat	gag	ctc	att	cct	agg	aca	agc	gag	caa	3504	
Ile	Glu	Ile	Leu	Glu	Lys	Asn	Glu	Leu	Ile	Pro	Arg	Thr	Ser	Glu	Gln		
		1155					1160					1165					
gta	aga	ctg	ctt	ggg	gtt	gac	ttt	ttt	tct	gtc	ttc	aga	gga	tcg		3552	
Val	Arg	Leu	Leu	Gly	Val	Asp	Phe	Phe	Ser	Val	Phe	Ser	Arg	Gly	Ser		
		1170				1175					1180						
caa	ttc	aag	gta	gag	tcc	atc	atg	ttc	agg	ata	gcc	aaa	ccc	gag	aac	3600	
Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala	Lys	Pro	Glu	Asn		
				1190					1195					1200			
ttc	ctt	ctc	gct	tct	cca	agc	agg	aag	caa	gtg	ggg	gca	caa	aac	gct	3648	

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Phe	Leu	Leu	Ala	Ser	Pro	Ser	Arg	Lys	Gln	Val	Gly	Ala	Gln	Asn	Ala		
				1205					1210					1215			
ttg	gag	tgt	cta	ccc	tta	gtg	atg	gaa	ccg	cag	agt	gca	ttc	tac	agc		3696
Leu	Glu	Cys	Leu	Pro	Leu	Val	Met	Glu	Pro	Gln	Ser	Ala	Phe	Tyr	Ser		
				1220					1225					1230			
tgt	cct	ttg	ctt	gtt	ctt	gac	ttt	cag	agt	ctg	tat	ccc	agt	gtc	atg		3744
Cys	Pro	Leu	Leu	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Val	Met		
				1235					1240					1245			
atc	gcc	tac	aac	tac	tgc	tac	tcg	acc	ttc	ctt	ggg	cgt	atc	gtc	agc		3792
Ile	Ala	Tyr	Asn	Tyr	Cys	Tyr	Ser	Thr	Phe	Leu	Gly	Arg	Ile	Val	Ser		
				1250					1255					1260			
tgg	cga	ggg	aaa	aac	aaa	atg	ggg	ttc	atg	gac	tac	aag	agg	caa	gag		3840
Trp	Arg	Gly	Lys	Asn	Lys	Met	Gly	Phe	Met	Asp	Tyr	Lys	Arg	Gln	Glu		
					1270					1275					1280		
ggg	ctt	ctt	agt	cta	ctc	aaa	gat	tac	atc	aac	atc	gcc	cca	aac	ggg		3888
Gly	Leu	Leu	Ser	Leu	Leu	Lys	Asp	Tyr	Ile	Asn	Ile	Ala	Pro	Asn	Gly		
				1285					1290						1295		
atg	atg	tac	aca	aag	cct	cat	att	cgc	aag	tca	ctt	ctt	gca	aag	atg		3936
Met	Met	Tyr	Thr	Lys	Pro	His	Ile	Arg	Lys	Ser	Leu	Leu	Ala	Lys	Met		
				1300					1305					1310			
ctt	acc	gag	att	ctt	gaa	act	cgt	atc	atg	gtc	aag	tcc	ggg	atg	aag		3984
Leu	Thr	Glu	Ile	Leu	Glu	Thr	Arg	Ile	Met	Val	Lys	Ser	Gly	Met	Lys		
				1315					1320					1325			
caa	gac	aag	gat	gat	agg	gag	att	cag	caa	ctg	ctg	aat	aac	cgg	cag		4032
Gln	Asp	Lys	Asp	Asp	Arg	Ala	Ile	Gln	Gln	Leu	Leu	Asn	Asn	Arg	Gln		
				1330					1335					1340			
ctg	gag	ctg	aag	ctc	ctc	gcc	aac	gtc	acc	tac	ggg	tac	aca	tcg	gcc		4080
Leu	Ala	Leu	Lys	Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser	Ala		
				1345					1350						1360		
tcg	ttc	tca	ggg	cgt	atg	ccc	tgc	tcc	gag	att	gcc	gac	agc	atc	gtc		4128
Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Glu	Ile	Ala	Asp	Ser	Ile	Val		
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caa	acc	ggg	cgc	gaa	acc	ctt	gag	cgg	gcc	ata	gcc	ttc	att	cat	agc		4176
Gln	Thr	Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Ala	Phe	Ile	His	Ser		
				1380					1385					1390			
gtc	cag	aag	ttg	gac	gcc	gag	gtt	gtc	tac	ggc	gac	acc	gac	agt	ctt		4224
Val	Gln	Lys	Trp	Asp	Ala	Glu	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Leu		
				1395					1400					1405			
ttc	gtc	tct	ctc	aag	ggc	cgc	acc	cgc	gaa	cag	gcc	ttt	gag	atc	ggc		4272
Phe	Val	Ser	Leu	Lys	Gly	Arg	Thr	Arg	Glu	Gln	Ala	Phe	Glu	Ile	Gly		
				1410					1415					1420			
caa	gag	atc	gcc	gac	gct	gtc	agc	aag	ttg	aat	ccg	cgg	ccc	gtc	aag		4320
Gln	Glu	Ile	Ala	Asp	Ala	Val	Ser	Lys	Leu	Asn	Pro	Arg	Pro	Val	Lys		
				1425					1430						1440		
ctc	aag	ttt	gaa	aag	gtc	tat	cac	cca	tgc	ata	ctc	ctc	gcc	aaa	aag		4368
Leu	Lys	Phe	Glu	Lys	Val	Tyr	His	Pro	Cys	Ile	Leu	Leu	Ala	Lys	Lys		
				1445					1450					1455			
cgc	tac	gtc	ggc	tac	aag	tac	gag	agt	cgg	gac	cag	acc	gtg	ccc	gtg		4416
Arg	Tyr	Val	Gly	Tyr	Lys	Tyr	Glu	Ser	Arg	Asp	Gln	Thr	Val	Pro	Val		
				1460					1465					1470			
ttc	gac	gcc	aag	ggc	atc	gag	acg	gtc	cgg	cgc	gac	ggc	aca	ccc	gcc		4464
Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Thr	Pro	Ala		
				1475					1480					1485			
gag	caa	cgg	atc	gag	gag	aag	gag	ctc	aaa	atc	ctc	ttt	gag	act	gcc		4512
Glu	Gln	Arg	Ile	Glu	Glu	Lys	Ala	Leu	Lys	Ile	Leu	Phe	Glu	Thr	Ala		
				1490					1495					1500			
gat	ctc	agc	cag	gtc	aag	agt	tac	ttc	caa	gag	cag	tgc	cac	aag	att		4560
Asp	Leu	Ser	Gln	Val	Lys	Ser	Tyr	Phe	Gln	Glu	Gln	Cys	His	Lys	Ile		
				1505					1510					1515			
atg	cgc	ggc	gcc	gtg	tcc	gtg	cag	gac	ttt	tgc	ttc	gag	cgc	gaa	gtc		4608
Met	Arg	Gly	Ala	Val	Ser	Val	Gln	Asp	Phe	Cys	Phe	Ala	Arg	Glu	Val		
				1525					1530						1535		
aaa	ctg	ggc	acg	tac	agc	acg	tcc	ggg	cgc	ggc	ggc	ccg	gct	ccc	gct		4656
Lys	Leu	Gly	Thr	Tyr	Ser	Thr	Ser	Gly	Arg	Gly	Gly	Pro	Ala	Pro	Ala		
				1540					1545					1550			
ggc	gag	ctg	att	gcc	acc	aaa	aag	atg	aag	gag	gac	gag	cgg	gag	gag		4704
Gly	Ala	Leu	Ile	Ala	Thr	Lys	Lys	Met	Lys	Glu	Asp	Ala	Arg	Ala	Glu		
				1555					1560					1565			
ccg	caa	tat	ggc	gaa	cgg	gtg	cca	tat	gtg	gtg	atg	gcc	ggc	gag	ccg		4752

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Pro	Gln	Tyr	Gly	Glu	Arg	Val	Pro	Tyr	Val	Val	Met	Ala	Gly	Ala	Pro		
1570						1575					1580						
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Gly	Met	Arg	Leu	Val	Asp	Arg	Cys	Val	Glu	Pro	Glu	Glu	Leu	Leu	Asn		
1585					1590					1595					1600		
aac	gca	cat	gct	acg	tgt	gat	gca	gag	tac	tac	att	aac	aag	aac	atc	4848	
Asn	Ala	His	Ala	Thr	Leu	Asp	Ala	Glu	Tyr	Ile	Asn	Lys	Asn	Ile			
				1605					1610					1615			
att	ccg	ccg	cta	gag	agg	att	ttc	aac	ttg	gtc	ggc	gcg	aac	gtg	agg	4896	
Ile	Pro	Pro	Leu	Glu	Arg	Ile	Phe	Asn	Leu	Val	Gly	Ala	Asn	Val	Arg		
			1620				1625						1630				
act	tgg	tat	gag	gag	atg	ccc	aag	gtt	caa	gtc	ttg	cgg	aag	gtg	gtg	4944	
Thr	Trp	Tyr	Glu	Glu	Met	Pro	Lys	Val	Gln	Val	Leu	Arg	Lys	Val	Val		
			1635				1640						1645				
gag	gat	gaa	gac	gct	gct	gac	gat	gct	tcc	aga	ggc	cca	cta	ctg	gga	4992	
Glu	Asp	Glu	Asp	Ala	Ala	Asp	Asp	Ala	Ser	Arg	Gly	Pro	Leu	Leu	Gly		
1650					1655						1660						
ctg	cta	ggg	gcg	tca	cca	agc	aaa	aag	ggg	acg	gca	gcg	gca	gaa	gca	5040	
Leu	Leu	Gly	Ala	Ser	Pro	Ser	Lys	Lys	Gly	Thr	Ala	Ala	Ala	Glu	Ala		
1665					1670					1675					1680		
gct	gca	gca	gct	gca	gaa	cta	gag	atg	gaa	gat	atg	ttg	gga	gaa	gac	5088	
Ala	Ala	Ala	Ala	Ala	Glu	Leu	Glu	Met	Glu	Asp	Met	Leu	Gly	Glu	Asp		
				1685					1690					1695			
ggc	gag	ctc	ctc	cct	cct	gac	gtc	gca	gct	gcc	caa	gcc	caa	gcg	cgc	5136	
Gly	Glu	Leu	Leu	Pro	Pro	Asp	Val	Ala	Ala	Gln	Ala	Gln	Ala	Ala	Arg		
			1700				1705						1710				
aag	acc	ctc	gaa	gcc	ttc	ctc	aat	acc	acc	att	tgc	aca	gcc	tgc	ggc	5184	
Lys	Thr	Leu	Glu	Ala	Phe	Leu	Asn	Thr	Thr	Ile	Cys	Thr	Ala	Cys	Gly		
			1715				1720					1725					
gtc	aag	atc	aag	cgg	ccg	ctc	ggg	gta	ggg	ctt	gcg	cgc	gag	ctg	ggc	5232	
Val	Lys	Ile	Lys	Arg	Pro	Leu	Gly	Val	Gly	Leu	Ala	Arg	Glu	Leu	Gly		
			1730			1735					1740						
atg	ctt	gag	gag	ggc	gag	ggc	gcc	gtg	gac	cga	ggc	ctg	ccg	ctc	tgt	5280	
Met	Leu	Glu	Glu	Gly	Glu	Gly	Ala	Val	Asp	Arg	Gly	Leu	Pro	Leu	Cys		
1745					1750					1755					1760		
cac	cgg	tgc	gct	tcg	gat	cca	ccc	acg	ctt	atg	gtc	gac	atg	cag	gcc	5328	
His	Arg	Cys	Ala	Ser	Asp	Pro	Pro	Thr	Leu	Met	Val	Asp	Met	Gln	Ala		
				1765					1770					1775			
aag	gtc	aac	aga	gcc	gag	aaa	agc	tac	gtg	gag	att	atg	aag	gtg	tgt	5376	
Lys	Val	Asn	Arg	Ala	Glu	Lys	Ser	Tyr	Val	Glu	Ile	Met	Lys	Val	Cys		
				1780				1785					1790				
cag	agc	tgt	gcg	ggc	ttt	gcg	tca	tcc	gag	gag	gtg	ccc	tgc	gat	agc	5424	
Gln	Ser	Cys	Ala	Gly	Phe	Ala	Ser	Ser	Glu	Glu	Val	Pro	Cys	Asp	Ser		
			1795				1800					1805					
aag	gat	tgc	cct	gtc	ttt	tac	tcg	agg	gtg	aag	cag	agg	acg	aag	gta	5472	
Lys	Asp	Cys	Pro	Val	Phe	Tyr	Ser	Arg	Val	Lys	Gln	Arg	Thr	Lys	Val		
					1815						1820						
acg	gcg	gta	aag	agg	gtg	atg	gag	ccg	cta	atc	aag	ttg	ttt	gga	gag	5520	
Thr	Ala	Val	Lys	Arg	Val	Met	Glu	Pro	Leu	Ile	Lys	Leu	Phe	Gly	Glu		
1825					1830					1835					1840		
ttg	gaa	ttg	gat	aag	gcg	agt	agt	gag	gat	gag	ggg	ggc	gac	gag	gag	5568	
Leu	Glu	Leu	Asp	Lys	Ala	Ser	Ser	Glu	Asp	Glu	Gly	Gly	Asp	Glu	Glu		
				1845					1850					1855			
ggg	aat	tgg	gat	ctg	gaa	ggg	aga	ggg	gag	gtg	ggt	gac	gaa	agt	ggg	5616	
Gly	Asn	Trp	Asp	Leu	Glu	Gly	Arg	Gly	Glu	Val	Val	Asp	Glu	Ser	Gly		
				1860				1865					1870				
gta	gaa	atg	caa	gaa	gac	gca	gga	gta	agg	tat	gag	gag	gag	aaa	gtg	5664	
Val	Glu	Met	Gln	Glu	Asp	Ala	Gly	Val	Arg	Tyr	Glu	Glu	Glu	Lys	Val		
				1875			1880					1885					
aga	ttc	gaa	acc	att	gtc	aag	ggc	aag	ggt	aga	gcc	atg	agt	gag	gag	5712	
Arg	Phe	Glu	Thr	Ile	Val	Lys	Gly	Lys	Val	Arg	Ala	Met	Ser	Glu	Glu		
					1895						1900						
ttg	gcg	gag	agg	aaa	gag	att	gac	aac	agt	tat	aag	agc	ctg	aag		5760	
Leu	Ala	Glu	Arg	Lys	Glu	Ile	Ile	Asp	Asn	Ser	Tyr	Lys	Ser	Leu	Lys		
1905					1910				1915						1920		
gcg	gca	tcg	ttg	gaa	tgg	taa										5781	
Ala	Ala	Ser	Leu	Glu	Trp												
				1925													

<210> 2716  
 <211> 1926  
 <212> PRT  
 <213> Neurospora tetrasperma

<400> 2716  
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 1 Thr Ser Thr Gly Tyr Asp Pro Gln Phe<sub>25</sub> Asp Gln Asp Val Arg<sub>30</sub> Phe Ser  
 Arg Ser Arg<sub>35</sub> Lys Ala Ala Lys Val<sub>40</sub> Pro Val Ile Arg Val<sub>45</sub> Phe Gly Ser  
 Thr Asp<sub>50</sub> Lys Gly Gln Lys Val<sub>55</sub> Cys Ala His Ile His<sub>60</sub> Gly Ala Phe Pro  
 Tyr Leu Tyr Val Glu Tyr<sub>70</sub> Asp Gly Asn Leu Glu<sub>75</sub> Pro Asn Lys Asp His  
 65 Ala Leu Ala Ile Ser<sub>85</sub> Tyr Arg Lys Asp Pro<sub>90</sub> Ile Arg Asp Arg Pro<sub>95</sub> Ile  
 Tyr Val Ala Arg<sub>100</sub> Ile Thr Leu Thr Lys<sub>105</sub> Gly Ile Pro Phe Tyr<sub>110</sub> Gly Phe  
 His Val Gly Tyr Arg Phe Tyr Leu<sub>120</sub> Lys Ile Tyr Leu Phe<sub>125</sub> Asn Pro Val  
 Val Met<sub>130</sub> Ser Arg Leu Val Asp<sub>135</sub> Leu Leu Gln Gln Gly<sub>140</sub> Val Ile Met Ser  
 Arg<sub>145</sub> Lys Phe Gln Pro Tyr<sub>150</sub> Glu Ala His Leu Gln<sub>155</sub> Tyr Leu Leu Gln Phe  
 Met Ala Asp Tyr Asn<sub>165</sub> Leu Tyr Gly Cys Asn<sub>170</sub> Tyr Leu Asp Ala Ala Met  
 Ala Thr Phe Arg<sub>180</sub> Ala Pro Val Pro Lys<sub>185</sub> His Asp Ser Asn<sub>190</sub> Ile Glu Gly  
 Arg Glu Thr Glu His His Trp Asp<sub>200</sub> Asp Ala Thr Ile Pro<sub>205</sub> Pro Glu Leu  
 Ile Thr Asp Asp Tyr Ser Leu<sub>215</sub> Pro Arg Ala Ser His<sub>220</sub> Cys Ser Leu Glu  
 Val Asp Ile Cys Val Glu<sub>230</sub> Asp Ile Leu Asn Arg<sub>235</sub> Lys Gln Val Glu Glu  
 225 Arg Arg Leu His His<sub>245</sub> Asp Phe Ile Glu Lys<sub>250</sub> Glu Gln Pro Val Ser Ser  
 Gln Glu Lys Leu<sub>260</sub> Val His Ser Met Ala<sub>265</sub> Gly Leu Trp Thr Asp<sub>270</sub> Glu Thr  
 Asn Arg Arg<sub>275</sub> Lys Lys Arg Met Gly<sub>280</sub> Ile Thr Asp Pro Glu<sub>285</sub> Val Asn Pro  
 Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp<sub>300</sub> Pro Arg Gln Ser  
 Gln Val Met Gly Trp Val His Glu Ala Glu Tyr<sub>315</sub> Arg Ala Gly Ile Gln  
 305 Gln Leu Val Ala Gln<sub>325</sub> Glu Gln Asn Asn Thr<sub>330</sub> Asp Gly Arg Gln Gln Thr  
 Phe Ser Gly Phe Val Gln Pro Val Pro<sub>345</sub> Phe Glu Glu Thr Ile<sub>350</sub> Lys Thr  
 Thr Leu Glu Ser Val Glu Asp Leu Tyr Pro Asp Asn Leu<sub>365</sub> Ser Gln Ala  
 Leu Gln Ile Glu Ala Gln Phe<sub>375</sub> Phe His Thr Asn Ala Gln His Leu Ile  
 Ser Ile Asp Val Asp Glu Arg Ser Ile Phe Gln Leu Ile Arg Glu Pro  
 385 Tyr Ala Lys His Thr Arg His Glu Tyr Ala Gly Arg Ile Ser Pro Glu  
 Glu Pro Leu Asn Gly Val Gly Glu Gly Phe Gly Val Gly Asp Ser Met  
 Ile Tyr Pro Met Asp Gly Arg Ile Arg Val Tyr Gln Pro Arg Ala Ser  
 435 Ile Arg His Lys Leu Leu Lys<sub>455</sub> Ile Ala Gln Thr Tyr<sub>460</sub> Ser Ser Asn Gln  
 Pro Ala Asn Thr Gly Arg Gln Ala Gly Val Leu Gly Pro Gly Glu Arg  
 465 Gln Arg Arg Ser Leu Lys His Pro Arg Pro Gly Glu Val Asp His  
 Gly Ala Pro Ala Lys His Gln Val Leu Gln Ala Glu Asp Ser Arg Glu

## PhoenixTemp32470.tmp.txt

			500					505					510		
Ser	Leu	His	Met	Lys	Ala	Asp	Pro	Pro	Gln	Arg	Ala	Leu	Glu	Glu	Ala
		515					520					525			
Pro	Arg	Asn	Ala	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro
	530					535					540				
Gln	Arg	Lys	Leu	Gln	Ser	Asn	Pro	Pro	Glu	Arg	Val	Tyr	Glu	Glu	Pro
	545				550					555					560
Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Lys	Val	His	Arg	Lys	Ala
				565					570					575	
Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Lys	Ile
			580					585					590		
Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	Gln	Gly	Gly	Tyr	Gln	Lys	Glu	Val
		595					600					605			
Pro	Glu	Asp	Ser	Ala	Phe	Thr	Thr	Pro	Ala	Arg	Thr	Val	Gln	Pro	Met
	610					615					620				
Lys	Pro	Asn	Asn	Gln	Asp	Pro	Ala	Gly	Glu	Glu	Leu	Leu	Val	Asn	Ser
	625				630					635					640
Leu	Arg	Val	Glu	Pro	Pro	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Met	Lys	Ser
				645					650					655	
Ala	Met	Lys	Gln	Ser	Phe	Ala	Gln	Glu	Ser	Gln	Ser	Arg	Thr	Ile	Asn
			660					665					670		
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu
		675					680					685			
Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys
	690					695					700				
Gln	Leu	Ala	Phe	Asp	Pro	Gln	Pro	Thr	Ile	Leu	Gly	Pro	Ser	Ala	Gln
	705				710					715					720
Ala	Arg	Pro	Asp	Gln	Thr	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Arg	Pro
			725						730					735	
Leu	Asp	Ser	Ala	Pro	Val	Ala	Ser	Ala	Ala	Ala	Leu	Leu	Trp	Ser	Gly
			740					745					750		
Ser	Lys	Lys	Met	Phe	Val	Leu	Asn	Asn	Lys	Pro	Pro	Ser	Leu	Ser	Glu
		755					760					765			
Val	Arg	Cys	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Gln
	770					775					780				
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu
	785				790					795					800
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu
			805						810					815	
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys
			820					825					830		
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala
		835					840					845			
Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro
	850					8									

## PhoenixTemp32470.tmp.txt

Arg Met Lys Ser Gln Ser Asn Gly Arg Ile Gly Lys Asp Val Asp Arg  
 1060 1065 1070  
 Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met  
 1075 1080 1085  
 Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
 1090 1095 1100  
 Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His  
 1105 1110 1115 1120  
 Tyr Ser Trp Lys Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
 1125 1130 1135  
 Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp  
 1140 1145 1150  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 1155 1160 1165  
 Val Arg Leu Leu Gly Val Asp Phe Phe Ser Val Phe Ser Arg Gly Ser  
 1170 1175 1180  
 Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Asn  
 1185 1190 1195 1200  
 Phe Leu Leu Ala Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala  
 1205 1210 1215  
 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
 1220 1225 1230  
 Cys Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
 1235 1240 1245  
 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
 1250 1255 1260  
 Trp Arg Gly Lys Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu  
 1265 1270 1275 1280  
 Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
 1285 1290 1295  
 Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met  
 1300 1305 1310  
 Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys  
 1315 1320 1325  
 Gln Asp Lys Asp Asp Arg Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
 1330 1335 1340  
 Leu Ala Leu Lys Leu Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala  
 1345 1350 1355 1360  
 Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val  
 1365 1370 1375  
 Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser  
 1380 1385 1390  
 Val Gln Lys Trp Asp Ala Glu Val Val Tyr Gly Asp Thr Asp Ser Leu  
 1395 1400 1405  
 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410 1415 1420  
 Gln Glu Ile Ala Asp Ala Val Ser Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Ile Leu Leu Ala Lys Lys  
 1445 1450 1455  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
 1460 1465 1470  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
 Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490 1495 1500  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505 1510 1515 1520  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525 1530 1535  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540 1545 1550  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555 1560 1565  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570 1575 1580  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn  
 1585 1590 1595 1600  
 Asn Ala His Ala Thr Leu Asp Ala Glu Tyr Tyr Ile Asn Lys Asn Ile



## PhoenixTemp32470.tmp.txt

1605 1610 1615  
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 1620 1625 1630  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Val  
 1635 1640 1645  
 Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Arg Gly Pro Leu Leu Gly  
 1650 1655 1660  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala  
 1665 1670 1675 1680  
 Ala Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
 1685 1690 1695  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Gln Ala Gln Ala Arg  
 1700 1705 1710  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
 1715 1720 1725  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
 1730 1735 1740  
 Met Leu Glu Glu Gly Glu Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745 1750 1755 1760  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
 1765 1770 1775  
 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
 1780 1785 1790  
 Gln Ser Cys Ala Gly Phe Ala Ser Ser Glu Glu Val Pro Cys Asp Ser  
 1795 1800 1805  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
 1810 1815 1820  
 Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
 1825 1830 1835 1840  
 Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Asp Glu Glu  
 1845 1850 1855  
 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
 1860 1865 1870  
 Val Glu Met Gln Glu Asp Ala Gly Val Arg Tyr Glu Glu Glu Lys Val  
 1875 1880 1885  
 Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
 1890 1895 1900  
 Leu Ala Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys  
 1905 1910 1915 1920  
 Ala Ala Ser Leu Glu Trp  
 1925

&lt;210&gt; 2717

&lt;211&gt; 5781

&lt;212&gt; DNA

&lt;213&gt; Neurospora tetrasperma

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5781)

&lt;400&gt; 2717

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Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg tca acc gga tat gat ccc cag ttt gac caa gat gtg cgc ttt tcg	96
Thr Ser Thr Gly Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser	
20 25 30	
cgt tcg cgg aag gcc gcc aaa gtc cct gtg att cgg gtg ttc gga tcg	144
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser	
35 40 45	
acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc tct ccc	192
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Ser Pro	
50 55 60	
tat ctg tat gtc gag tat gac gga aat cta gaa ccc gac aag gat cat	240
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asp Lys Asp His	
65 70 75 80	
gcg tta gct atc agc tac cgg aaa gat ccc att cgc gat cgg ccc aaa	288
Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys	

## PhoenixTemp32470.tmp.txt

																85																	90																	95																
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cat His	gtg Val	ggg Gly 115	tat Tyr	cgc Arg	ttc Phe	tat Tyr	ctc Leu 120	aaa Lys	att Ile	tac Tyr	ctg Leu	ttc Phe 125	aac Asn	ccg Pro	gtg Val																																																			
gtc Val	atg Met 130	tcg Ser	cgt Arg	ctc Leu	gtc Val	gat Asp 135	ctc Leu	ctt Leu	cag Gln	caa Gln	ggg Gly 140	ggt Val	att Ile	atg Met	agt Ser																																																			
cgg Arg 145	aaa Lys	ttt Phe	caa Gln	ccc Pro	tac Tyr 150	gag Glu	gcc Ala	cat His	ctg Leu	cag Gln 155	tat Tyr	ctc Leu	ctt Leu	cag Gln	ttc Phe 160																																																			
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gcc Ala	acc Thr	ttt Phe	cga Arg 180	gca Ala	cct Pro	gta Val	ccg Pro	aag Lys 185	cat His	gac Asp	agc Ser	aac Asn	atc Ile 190	gaa Glu	ggc Gly																																																			
cgc Arg	gag Glu	act Thr 195	gaa Glu	cat His	cac His	tgg Trp	gac Asp 200	gat Asp	gca Ala	acg Thr	atc Ile	ccg Pro 205	cca Pro	gag Glu	ctg Leu																																																			
att Ile	acg Thr 210	gat Asp	gat Asp	tac Tyr	agc Ser	ctt Leu 215	ccc Pro	cgg Arg	gct Ala	agc Ser	cac His 220	tgc Cys	tcc Ser	ctt Leu	gaa Glu																																																			
gtg Val 225	gac Asp	atc Ile	tgc Cys	gtc Val	gaa Glu 230	gac Asp	atc Ile	ctg Leu	aat Asn	cga Arg 235	aag Lys	caa Gln	gtc Val	aaa Lys	gag Glu 240																																																			
cga Arg	agg Arg	ctt Leu	cat His	cat His 245	gat Asp	ttc Phe	atc Ile	gaa Glu 250	aag Lys	gag Glu	cag Gln	ccg Pro	gtg Val	tca Ser 255	agc Ser																																																			
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aac Asn	cgc Arg	agg Arg 275	aaa Lys	aag Lys	cgt Arg	atg Met	gga Gly 280	ata Ile	acg Thr	gac Asp	cct Pro	gaa Glu 285	gtc Val	aac Asn	cct Pro																																																			
ttt Phe	cct Pro 290	ccg Pro	gaa Glu	gtc Val	ttg Leu	gta Val 295	tca Ser	atg Met	tct Ser	gcg Ala	gac Asp 300	cca Pro	cgt Arg	caa Gln	tca Ser																																																			
cgg Arg 305	gtg Val	atg Met	ggg Gly	tgg Trp	gtt Val 310	cat His	gaa Glu	gct Ala	gag Glu 315	tac Tyr	cgt Arg	gct Ala	ggg Gly	att Ile	cat His 320																																																			
cga Arg	ttg Leu	gtt Val	gct Ala 325	cag Gln	gaa Glu	cag Gln	aac Asn	aac Asn	aca Thr 330	gat Asp	gga Gly	cgt Arg	cag Gln	gag Glu 335	act Thr																																																			
ttc Phe	tcc Ser	agc Ser	ttt Phe 340	gtg Val	caa Gln	cca Pro	gtt Val 345	cca Pro	ttt Phe	gaa Glu	gaa Glu	act Thr 350	atc Ile	aag Lys	act Thr																																																			
act Thr	tta Leu	gag Glu 355	tcg Ser	gtg Val	gaa Glu	gac Asp	tta Leu 360	tac Tyr	cca Pro	gac Asp	aac Asn	ttg Leu 365	agc Ser	caa Gln	gct Ala																																																			
ctg Leu	caa Gln 370	atc Ile	gaa Glu	gca Ala	caa Gln	ttt Phe 375	ttt Phe	cac His	atg Met	aat Asn	gca Ala 380	cag Gln	cat His	ctc Leu	atc Ile																																																			
agt Ser 385	atc Ile	gat Asp	gtc Val	gac Asp	gaa Glu 390	cga Arg	acc Thr	att Ile	ttt Phe	cag Gln 395	cta Leu	ata Ile	cgc Arg	gag Glu	cca Pro 400																																																			
cat His	gca Ala	aaa Lys	cag Gln	act Thr 405	cga Arg	cac His	gaa Glu	tgc Cys	gcg Ala 410	ggc Gly	aga Arg	atc Ile	tca Ser	ccg Pro 415	gag Glu																																																			
gag Glu	cct Pro	ttg Leu	aat Asn 420	ggg Gly	gtt Val	gga Gly	gaa Glu	gga Gly 425	ttt Phe	gat Asp	gtg Val	ggg Gly	gat Asp 430	tca Ser	atg Met																																																			
act Thr	tat Tyr	cct Pro 435	atg 																																																															

## PhoenixTemp32470.tmp.txt

cca Pro 465	gcc Ala	aat Asn	aca Thr	ggt Gly	aga Arg 470	caa Gln	gcc Ala	ggg Gly	ggt Val	ctt Leu 475	ggg Gly	cct Pro	gga Gly	gag Glu	cga Arg 480	1440
cga Arg	cga Arg	aga Arg	tct Ser	ctc Leu 485	aag Lys	cat His	ccc Pro	agg Arg	ccg Pro 490	ccg Pro	gga Gly	gaa Glu	ggt Val	gat Asp 495	cat His	1488
ggt Gly	gca Ala	cct Pro	gca Ala 500	aaa Lys	cgt Arg	cag Gln	gtg Val	ctc Leu 505	caa Gln	gcc Ala	gag Glu	gac Asp	tca Ser 510	agg Arg	gag Glu	1536
tca Ser	ctt Leu	cac His 515	atg Met	aaa Lys	gcc Ala	gac Asp	cct Pro 520	ccg Pro	caa Gln	aga Arg	gct Ala	ttg Leu 525	gaa Glu	aag Lys	gct Ala	1584
ccg Pro	aga Arg 530	aac Asn	gcc Ala	cat His	gaa Glu	caa Gln 535	act Thr	caa Gln	ggt Gly	gca Ala	ggg Gly 540	cag Gln	cca Pro	ggg Gly	cct Pro	1632
cag Gln 545	aga Arg	aag Lys	ctc Leu	cag Gln	agt Ser 550	aac Asn	cct Pro	ccg Pro	gaa Glu	agg Arg 555	ggt Val	tac Tyr	gag Glu	gag Glu	cca Pro 560	1680
aac Asn	aag Lys	agg Arg	ggt Val	cac His 565	gag Glu	gag Glu	gct Ala	caa Gln	cca Pro 570	aag Lys	gtc Val	cat His	cga Arg	aag Lys 575	gcc Ala	1728
cag Gln	caa Gln	agg Arg	tct Ser 580	cgg Arg	gaa Glu	cat His	gac Asp	cag Gln 585	aaa Lys	cag Gln	ggc Gly	caa Gln 590	cag Gln	gaa Glu	atc Ile	1776
cag Gln	gaa Glu 595	caa Gln	act Thr	caa Gln	gat Asp	cat His	gat Asp 600	cag Gln	gga Gly	gga Gly	gac Asp 605	cag Gln	aag Lys	gaa Glu	ggt Val	1824
cca Pro	gaa Glu 610	aat Asn	tcg Ser	aca Thr	ttt Phe 615	acg Thr	acg Thr	cca Pro	gct Ala	cgg Arg	aca Thr 620	gtc Val	cag Gln	cca Pro	gtg Val	1872
aaa Lys 625	ccc Pro	aat Asn	aat Asn	cag Gln	gat Asp 630	cca Pro	gca Ala	gga Gly	gag Glu	gaa Glu 635	cta Leu	ttg Leu	gtg Val	aat Asn	agt Ser 640	1920
ctg Leu	cag Gln	gtc Val	gag Glu	cca Pro 645	cca Pro	aaa Lys	cat His	aag Lys	aca Thr 650	tct Ser	cag Gln	ccc Pro	atg Met	aag Lys 655	tct Ser	1968
gct Ala	atg Met	aag Lys	cag Gln 660	agc Ser	ttt Phe	gca Ala	caa Gln	gag Glu 665	tcc Ser	caa Gln	agc Ser	cgt Arg 670	acg Thr	atc Ile	aac Asn	2016
ttt Phe	cct Pro	gtc Val 675	gtc Val	aaa Lys	gat Asp	cca Pro	caa Gln 680	gat Asp	cct Pro	aac Asn	aca Thr	agg Arg 685	gcg Ala	cga Arg	ctg Leu	2064
agc Ser	caa Gln 690	aag Lys	agt Ser	ggt Gly	tcg Ser	cag Gln 695	aaa Lys	aac Asn	gag Glu	ggt Gly	aac Asn 700	gtc Val	acc Thr	aga Arg	aag Lys	2112
caa Gln 705	ctt Leu	gcc Ala	ttc Phe	gac Asp	cct Pro 710	caa Gln	ccc Pro	acc Thr	att Ile	ttg Leu 715	ggg Gly	cca Pro	tcg Ser	gct Ala	cag Gln 720	2160
gcg Ala	agg Arg	cct Pro	ggt Gly	cag Gln 725	act Thr	aaa Lys	ccc Pro	aac Asn	cca Pro 730	aaa Lys	tcg Ser	tcg Ser	tcc Ser	agg Arg 735	ccc Pro	2208
ctt Leu	gac Asp	tcg Ser	gcc Ala 740	cct Pro	gtg Val	gct Ala	tcg Ser	gct Ala 745	ccg Pro	gca Ala	ctc Leu	ttg Leu 750	tgg Trp	agg Arg	ggc Gly	2256
tca Ser	aag Lys 755	aaa Lys	atg Met	ttt Phe	gtc Val	ctg Leu	aac Asn 760	aat Asn	aaa Lys	cct Pro	cca Pro	tcc Ser 765	ctg Leu	agc Ser	gaa Glu	2304
gtc Val 770	cgc Arg	tgt Cys	acc Thr	atg Met	cag Gln	gta Val 775	cat His	ggc Gly	cta Leu	cct Pro	gat Asp 780	gtc Val	atc Ile	tat Tyr	caa Gln	2352
gac Asp 785	gca Ala	tat Tyr	tac Tyr	agt Ser	aag Lys 790	gat Asp	gag Glu	gat Asp	ggt Val	ccc Pro 795	tcc Ser	aga Arg	ccg Pro	aga Arg	gaa Glu 800	2400
tat Tyr	gca Ala	ggc Gly	agg Arg	gaa Glu 805	tac Tyr	cga Arg	ctt Leu	gac Asp	ggt Gly 810	agc Ser	tct Ser	ggt Val	cct Pro	tgg Trp 815	ctc Leu	2448
ccc Pro	gat Asp	ttc Phe	gac Asp	ccg Pro	act Thr	ggc Gly	aca Thr	tct Ser	tcg Ser	aca Thr	tat Tyr	ggc Gly	gag Glu	aaa Lys		2496

## PhoenixTemp32470.tmp.txt

cca	acc	tcc	820	ggt	gcc	gac	tgg	825	atg	ctg	gag	gca	atc	830	tat	gag	gct	2544
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala			
		835					840						845					
caa	caa	gag	gaa	tgt	gcc	atg	agg	ggt	tgg	gaa	ata	gca	gat	cct	cct			2592
Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro			
	850					855					860							
cct	tct	ttc	aag	gaa	gtc	agt	aat	tgg	tgg	aca	gat	gaa	caa	aac	gat			2640
Pro	Ser	Phe	Lys	Glu	Val	Ser	Asn	Trp	Trp	Thr	Asp	Glu	Gln	Asn	Asp			
865					870					875					880			
cgc	aat	cca	aaa	cga	tgc	cat	ttc	aca	ccc	cta	agg	att	aaa	acc	tac			2688
Arg	Asn	Pro	Lys	Arg	Cys	His	Phe	Thr	Pro	Leu	Arg	Ile	Lys	Thr	Tyr			
			885						890					895				
cgc	tcc	caa	att	gcg	ggc	gtg	acg	cca	aag	aac	aag	cat	ggc	ttc	gaa			2736
Arg	Ser	Gln	Ile	Ala	Gly	Val	Thr	Pro	Lys	Asn	Lys	His	Gly	Phe	Glu			
		900						905					910					
cat	ccc	gaa	aag	aca	aaa	tct	gaa	agc	aaa	cag	aat	cag	gca	cag	tac			2784
His	Pro	Glu	Lys	Thr	Lys	Ser	Glu	Ser	Lys	Gln	Asn	Gln	Ala	Gln	Tyr			
		915					920					925						
atg	agt	gcc	atg	agc	cta	gag	gtg	cat	gtt	aac	acc	cgg	gga	aag	cta			2832
Met	Ser	Ala	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly	Lys	Leu			
	930					935					940							
gta	ccg	gat	cct	gaa	gaa	gac	gaa	gtg	cag	tgt	gtg	ttt	ttg	tat	ctg			2880
Val	Pro	Asp	Pro	Glu	Glu	Asp	Glu	Val	Gln	Cys	Val	Phe	Leu	Tyr	Leu			
945					950					955					960			
cgg	tcc	gaa	gta	aac	gct	ctc	cgc	gga	act	cag	acg	ccg	gat	gat	acg			2928
Arg	Ser	Glu	Val	Asn	Ala	Leu	Arg	Gly	Thr	Gln	Thr	Pro	Asp	Asp	Thr			
			965					970						975				
gca	cgg	ggc	att	atc	gtt	ttc	tca	gag	gat	agt	ctg	ctt	gca	gat	aga			2976
Ala	Arg	Gly	Ile	Ile	Val	Phe	Ser	Glu	Asp	Ser	Leu	Leu	Ala	Asp	Arg			
		980						985					990					
atc	cga	aag	cac	aca	tcc	gtg	ccg	gtg	gtt	caa	gag	aca	aca	gaa	ctt			3024
Ile	Arg	Lys	His	Thr	Ser	Val	Pro	Val	Val	Gln	Glu	Thr	Thr	Glu	Leu			
		995				1000					1005							
gat	atg	atg	gtc	cgg	atg	gtc	gag	att	gtg	cgg	aac	cat	gat	ccc	gat			3072
Asp	Met	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp			
	1010				1015					1020								
atc	ttt	acg	gga	tat	gag	gtg	cat	ggc	agt	tca	tgg	ggc	tac	ctt	att			3120
Ile	Phe	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile			
1025				1030				1035						1040				
gag	cgg	gcg	aga	ata	aag	tat	gag	ctc	gac	ctc	tgt	gat	gag	ttc	tca			3168
Glu	Arg	Ala	Arg	Ile	Lys	Tyr	Glu	Leu	Asp	Leu	Cys	Asp	Glu	Phe	Ser			
			1045					1050					1055					
cgc	atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggt	aag	gat	gcg	gat	cgc			3216
Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Ala	Asp	Arg			
		1060					1065					1070						
tgg	ggc	ttc	aac	acg	aca	tcc	tcg	att	cga	att	aca	gga	cgg	cat	atg			3264
Trp	Gly	Phe	Asn	Thr	Thr	Ser	Ser	Ile	Arg	Ile	Thr	Gly	Arg	His	Met			
		1075				1080					1085							
atc	aac	att	tgg	aga	gcc	atg	aga	ggc	gaa	ctc	aat	ctt	cta	cag	tat			3312
Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu	Gln	Tyr			
	1090				1095					1100								
acc	atg	gag	aat	gtt	gtt	tgg	cat	ctg	cta	cac	cgt	cgg	att	cct	cat			3360
Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile	Pro	His			
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tac	agc	tgg	atg	act	tta	tcg	gat	tgg	tat	ctg	agc	gat	cga	ccg	aag			3408
Tyr	Ser	Trp	Met	Thr	Leu	Ser	Asp	Trp	Tyr	Leu	Ser	Asp	Arg	Pro	Lys			
			1125					1130					1135					
gat	ctg	gat	aaa	gtt	ctc	cga	tat	tac	ctg	acg	aga	acg	cga	ctt	gat			3456
Asp	Leu	Asp	Lys	Val	Leu	Arg	Tyr	Tyr	Leu	Thr	Arg	Thr	Arg	Leu	Asp			
		1140					1145					1150						
att	gaa	att	ctg	gag	aag	aac	gag	ctc	att	cca	agg	aca	agc	gag	caa			3504
Ile	Glu	Ile	Leu	Glu	Lys	Asn	Glu	Leu	Ile	Pro	Arg	Thr	Ser	Glu	Gln			
		1155				1160					1165							
gca	agg	ctg	ctt	ggt	gtt	gac	ttt	ttt	tct	gtc	gtc	tcc	aga	gga	tcg			3552
Ala	Arg	Leu	Leu	Gly	Val	Asp	Phe	Phe	Ser	Val	Val	Ser	Arg	Gly	Ser			
	1170				1175				1180									
cag	ttc	aag	gta	gag	tcc	atc	atg	ttc	agg	ata	gcc	aaa	ccc	gag	aag			3600
Gln	Phe	Lys	Val	Glu	Ser	Ile	Met	Phe	Arg	Ile	Ala	Lys	Pro	Glu	Lys			

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1185	ttc ctt ctc gct tct	1190	cca agc aga aag caa	1195	gtg ggt gca caa aac	1200	gct gct	3648
	Phe Leu Leu Ala Ser		Pro Ser Arg Lys Gln Val		Gly Ala Gln Asn Ala			
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	ctg gag tgt cta ccc		tta gtc atg gaa ccg		cag agt gca ttc		tac agc	3696
	Leu Glu Cys Leu Pro		Leu Val Met Glu Pro		Gln Ser Ala Phe Tyr		Ser	
	1220		1225		1230			
	agt cct ttg ctt gtt		ctt gac ttt cag agt		ctg tat ccc agt		gtc atg	3744
	Ser Pro Leu Leu Val		Leu Asp Phe Gln Ser		Leu Tyr Pro Ser		Val Met	
	1235		1240		1245			
	atc gcc tac aac tac		tgc tac tcg acc ttc		ctt ggg cgt atc		gtc agc	3792
	Ile Ala Tyr Asn Tyr		Cys Tyr Ser Thr Phe		Leu Gly Arg Ile Val		Ser	
	1250		1255		1260			
	tgg cga ggt aaa aac		aaa atg ggt ttc atg		gac tac aag agg		caa gag	3840
	Trp Arg Gly Lys Asn		Lys Met Gly Phe Met		Asp Tyr Lys Arg		Gln Glu	
	1265		1270		1275		1280	
	ggg ctt ctt agt cta		ctc aaa gat tac atc		aac atc gcc cca		aac ggt	3888
	Gly Leu Leu Ser Leu		Leu Lys Asp Tyr Ile		Asn Ile Ala Pro		Asn Gly	
	1285		1290		1295			
	atg atg tac aca aag		cct cat att cgc aag		tca ctt ctt gca		aag atg	3936
	Met Met Tyr Thr Lys		Pro His Ile Arg Lys		Ser Leu Leu Ala		Lys Met	
	1300		1305		1310			
	ctt acc gag att ctc		gaa act cgt atc atg		gtc aag tcc ggt		atg aag	3984
	Leu Thr Glu Ile Leu		Glu Thr Arg Ile Met		Val Lys Ser Gly		Met Lys	
	1315		1320		1325			
	caa gac aag gat gat		aag gcg att cag caa		ctg ctg aat aac		cgg cag	4032
	Gln Asp Lys Asp Asp		Lys Ala Ile Gln Gln		Leu Leu Asn Asn		Arg Gln	
	1330		1335		1340			
	ctg gcg ctg aag ctc		ctc gcc aac gtc aac		tac ggt tac aca		tcg gcc	4080
	Leu Ala Leu Lys Leu		Leu Ala Asn Val Asn		Tyr Gly Tyr Thr		Ser Ala	
	1345		1350		1355		1360	
	tcg ttc tca ggt cgt		atg ccc tgc tcc gag		att gcc gac agc		atc gtc	4128
	Ser Phe Ser Gly Arg		Met Pro Cys Ser Glu		Ile Ala Asp Ser		Ile Val	
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	caa acc ggt cgc gaa		acc ctt gag cgg gcc		ata gcc ttc att		cat agc	4176
	Gln Thr Gly Arg Glu		Thr Leu Glu Arg Ala		Ile Ala Phe Ile		His Ser	
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	gtc cga aag tgg gac		gcc gag gtt gtc tac		ggc gac acc gac		agt ctt	4224
	Val Arg Lys Trp Asp		Ala Glu Val Val Tyr		Gly Asp Thr Asp		Ser Leu	
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	ttc gtc tct ctc aag		ggc gcg acc cgc gaa		cag gcc ttt gag		atc ggc	4272
	Phe Val Ser Leu Lys		Gly Arg Thr Arg Glu		Gln Ala Phe Glu		Ile Gly	
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	caa gag att gcc gac		gct gtc acc aag ttg		aat ccg cgg ccc		gtc aag	4320
	Gln Glu Ile Ala Asp		Ala Val Thr Lys Leu		Asn Pro Arg Pro		Val Lys	
	1425		1430		1435		1440	
	ctc aag ttt gaa aag		gtc tac cac cca tgc		ata ctc ctc gcc		aaa aag	4368
	Leu Lys Phe Glu Lys		Val Tyr His Pro Cys		Ile Leu Leu Ala		Lys Lys	
	1445		1450		1455			
	cgc tac gtc ggc tac		aag tac gag agt cgg		gac cag acc gtg		ccc gtg	4416
	Arg Tyr Val Gly Tyr		Lys Tyr Glu Ser Arg		Asp Gln Thr Val		Pro Val	
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	ttc gac gcc aag ggc		atc gag aca gtc cgg		cgc gac ggc aca		ccc gcc	4464
	Phe Asp Ala Lys Gly		Ile Glu Thr Val Arg		Arg Arg Asp Gly		Thr Pro	
	1475		1480		1485			
	gag caa cgg atc gag		gag aag gcg ctc aaa		atc ctc ttt gag		act gcc	4512
	Glu Gln Arg Ile Glu		Glu Lys Ala Leu Lys		Ile Leu Phe Glu		Thr Ala	
	1490		1495		1500			
	gat ctc agc cag gtc		aag agt tac ttc cag		gag cag tgc cac		aag att	4560
	Asp Leu Ser Gln Val		Lys Ser Tyr Phe Gln		Glu Gln Cys His		Lys Ile	
	1505		1510		1515		1520	
	atg cgc ggc gcc gtg		tcc gtg cag gac ttt		tgc ttc gcg cgc		gaa gtc	4608
	Met Arg Gly Ala Val		Ser Val Gln Asp Phe		Cys Phe Ala Arg		Glu Val	
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	aag ctg ggc acg tac		agc acg tcc ggt cgc		ggc ggc ccg gct		ccc gct	4656
	Lys Leu Gly Thr Tyr		Ser Thr Ser Gly Arg		Gly Gly Pro Ala		Pro Ala	
	1540		1545		1550			
	ggg gcg ctg att gcc		act aaa aag atg aag		gag gag gac gcg		cgg gag	4704
	Gly Ala Leu Ile Ala		Thr Lys Lys Met Lys		Glu Asp Ala Arg		Ala Glu	

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Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro
1570      1575      1580
ggg atg agg ctg gta gac cgg tgc gtg gaa ccc gag gag ctg ttg aat      4800
Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn
1585      1590      1595      1600
aac gca cat gct acg ttg gat gcg gac tac tac att aac atg aac atc      4848
Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Met Asn Ile
1605      1610      1615
att ccg ccg cta gag agg atc ttc aac ttg gtc ggc gcg aac gtg agg      4896
Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg
1620      1625      1630
act tgg tat gag gag atg ccc aag gtt caa gtc ttg cgg aag gtg gcg      4944
Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala
1635      1640      1645
gag gat gaa gac gct gat gac gat gct tcc aaa ggc cca ctg ctg gga      4992
Glu Asp Glu Asp Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly
1650      1655      1660
ctg cta ggg gcg tca cca agc aaa aag ggt acg gca gcg gca gaa gca      5040
Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala
1665      1670      1675      1680
gct gca gca gct gca gaa cta gag atg gaa gat atg ttg gga gaa gac      5088
Ala Ala Ala Ala Glu Leu Glu Met Asp Met Leu Gly Glu Asp
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ggc gag ctc ctc cct cct gac gtc gca gct gcc caa gcc caa gcg cgc      5136
Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg
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Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly
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Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly
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Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys
1745      1750      1755      1760
cac cgg tgc gct tcg gat cca ccc acg ctt atg gtc gac atg cag gcc      5328
His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala
1765      1770      1775
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Lys Val Ser Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys
1780      1785      1790
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Gln Ser Cys Ala Gly Phe Ala Ser Ser Glu Glu Val Pro Cys Asp Ser
1795      1800      1805
aag gat tgc cct gtc ttt tac tcg agg gtg aag cag agg acg aag gta      5472
Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val
1810      1815      1820
acg gcg gta aag agg gtg atg gag ccg cta atc aag ttg ttt gga gag      5520
Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu
1825      1830      1835      1840
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Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu
1845      1850      1855
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Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly
1860      1865      1870
gta gaa atg caa gaa gac gca gga gta agg tat gag gag gag aaa gtg      5664
Val Glu Met Gln Glu Asp Ala Gly Val Arg Tyr Glu Glu Glu Lys Val
1875      1880      1885
aga ttc gaa acc att gtc aag ggc aag gtt aga gcc atg agt gag gag      5712
Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu
1890      1895      1900
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Leu Val Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys
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Ala Ala Ser Leu Glu Trp

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1925

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 <211> 1926  
 <212> PRT  
 <213> Neurospora tetrasperma

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 Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser  
 35 40 45  
 Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Ser Pro  
 50 55 60  
 Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asp Lys Asp His  
 65 70 75 80  
 Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys  
 85 90 95  
 Tyr Val Ala Arg Ile Thr Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe  
 100 105 110  
 His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val  
 115 120 125  
 Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser  
 130 135 140  
 Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe  
 145 150 155 160  
 Met Ala Asp Tyr Asn Leu Tyr Gly Cys Asn Tyr Leu Asp Ala Ala Met  
 165 170 175  
 Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly  
 180 185 190  
 Arg Glu Thr Glu His His Trp Asp Asp Ala Thr Ile Pro Pro Glu Leu  
 195 200 205  
 Ile Thr Asp Asp Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu  
 210 215 220  
 Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu  
 225 230 235 240  
 Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser  
 245 250 255  
 Gln Glu Lys Leu Val His Ser Met Ala Gly Leu Trp Thr Asp Glu Thr  
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 Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser  
 290 295 300  
 Arg Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile His  
 305 310 315 320  
 Arg Leu Val Ala Gln Glu Gln Asn Asn Thr Asp Gly Arg Gln Glu Thr  
 325 330 335  
 Phe Ser Ser Phe Val Gln Pro Val Pro Phe Glu Glu Thr Ile Lys Thr  
 340 345 350  
 Thr Leu Glu Ser Val Glu Asp Leu Tyr Pro Asp Asn Leu Ser Gln Ala  
 355 360 365  
 Leu Gln Ile Glu Ala Gln Phe Phe His Met Asn Ala Gln His Leu Ile  
 370 375 380  
 Ser Ile Asp Val Asp Glu Arg Thr Ile Phe Gln Leu Ile Arg Glu Pro  
 385 390 395 400  
 His Ala Lys Gln Thr Arg His Glu Cys Ala Gly Arg Ile Ser Pro Glu  
 405 410 415  
 Glu Pro Leu Asn Gly Val Gly Glu Gly Phe Asp Val Gly Asp Ser Met  
 420 425 430  
 Thr Tyr Pro Met Asp Gly Gly Ile Arg Val Tyr Gln Pro Arg Thr Ser  
 435 440 445  
 Ile Arg His Lys Leu Leu Lys Ile Ala Gln Thr Tyr Ser Ser Asn Gln  
 450 455 460  
 Pro Ala Asn Thr Gly Arg Gln Ala Gly Val Leu Gly Pro Gly Glu Arg  
 465 470 475 480  
 Arg Arg Arg Ser Leu Lys His Pro Arg Pro Pro Gly Glu Val Asp His

## PhoenixTemp32470.tmp.txt

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 Gly Ala Pro Ala Lys Arg Gln Val Leu Gln Ala Glu Asp Ser Arg Glu  
 500 505 510  
 Ser Leu His Met Lys Ala Asp Pro Pro Gln Arg Ala Leu Glu Lys Ala  
 515 520 525  
 Pro Arg Asn Ala His Glu Gln Thr Gln Gly Ala Gly Gln Pro Gly Pro  
 530 535 540  
 Gln Arg Lys Leu Gln Ser Asn Pro Pro Glu Arg Val Tyr Glu Glu Pro  
 545 550 555  
 Asn Lys Arg Val His Glu Glu Ala Gln Pro Lys Val His Arg Lys Ala  
 560 565 570  
 Gln Gln Arg Ser Arg Glu His Asp Gln Lys Gln Gly Gln Gln Glu Ile  
 580 585 590  
 Gln Glu Gln Thr Gln Asp His Asp Gln Gly Gly Asp Gln Lys Glu Val  
 595 600 605  
 Pro Glu Asn Ser Thr Phe Thr Thr Pro Ala Arg Thr Val Gln Pro Val  
 610 615 620  
 Lys Pro Asn Asn Gln Asp Pro Ala Gly Glu Glu Leu Val Asn Ser  
 625 630 635  
 Leu Gln Val Glu Pro Pro Lys His Lys Thr Ser Gln Pro Met Lys Ser  
 640 645 650 655  
 Ala Met Lys Gln Ser Phe Ala Gln Glu Ser Gln Ser Arg Thr Ile Asn  
 660 665 670  
 Phe Pro Val Val Lys Asp Pro Gln Asp Pro Asn Thr Arg Ala Arg Leu  
 675 680 685  
 Ser Gln Lys Ser Gly Ser Gln Lys Asn Glu Gly Asn Val Thr Arg Lys  
 690 695 700  
 Gln Leu Ala Phe Asp Pro Gln Pro Thr Ile Leu Gly Pro Ser Ala Gln  
 705 710 715 720  
 Ala Arg Pro Gly Gln Thr Lys Pro Asn Pro Lys Ser Ser Ser Arg Pro  
 725 730 735  
 Leu Asp Ser Ala Pro Val Ala Ser Ala Pro Ala Leu Leu Trp Arg Gly  
 740 745 750  
 Ser Lys Lys Met Phe Val Leu Asn Asn Lys Pro Pro Ser Leu Ser Glu  
 755 760 765  
 Val Arg Cys Thr Met Gln Val His Gly Leu Pro Asp Val Ile Tyr Gln  
 770 775 780  
 Asp Ala Tyr Tyr Ser Lys Asp Glu Asp Val Pro Ser Arg Pro Arg Glu  
 785 790 795 800  
 Tyr Ala Gly Arg Glu Tyr Arg Leu Asp Gly Ser Ser Val Pro Trp Leu  
 805 810 815  
 Pro Asp Phe Asp Pro Thr Gly Thr Ser Ser Ala Thr Tyr Gly Glu Lys  
 820 825 830  
 Pro Thr Ser Gly Ala Asp Trp Pro Met Leu Glu Ala Ile Tyr Glu Ala  
 835 840 845  
 Gln Gln Glu Glu Cys Ala Met Arg Gly Trp Glu Ile Ala Asp Pro Pro  
 850 855 860  
 Pro Ser Phe Lys Glu Val Ser Asn Trp Trp Thr Asp Glu Gln Asn Asp  
 865 870 875 880  
 Arg Asn Pro Lys Arg Cys His Phe Thr Pro Leu Arg Ile Lys Thr Tyr  
 885 890 895  
 Arg Ser Gln Ile Ala Gly Val Thr Pro Lys Asn Lys His Gly Phe Glu  
 900 905 910  
 His Pro Glu Lys Thr Lys Ser Glu Ser Lys Gln Asn Gln Ala Gln Tyr  
 915 920 925  
 Met Ser Ala Met Ser Leu Glu Val His Val Asn Thr Arg Gly Lys Leu  
 930 935 940  
 Val Pro Asp Pro Glu Glu Asp Glu Val Gln Cys Val Phe Leu Tyr Leu  
 945 950 955 960  
 Arg Ser Glu Val Asn Ala Leu Arg Gly Thr Gln Thr Pro Asp Asp Thr  
 965 970 975  
 Ala Arg Gly Ile Ile Val Phe Ser Glu Asp Ser Leu Leu Ala Asp Arg  
 980 985 990  
 Ile Arg Lys His Thr Ser Val Pro Val Val Gln Glu Thr Thr Glu Leu  
 995 1000 1005  
 Asp Met Met Val Arg Met Val Glu Ile Val Arg Asn His Asp Pro Asp  
 1010 1015 1020  
 Ile Phe Thr Gly Tyr Glu Val His Gly Ser Ser Trp Gly Tyr Leu Ile  
 1025 1030 1035 1040



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Glu Arg Ala Arg Ile Lys Tyr Glu Leu Asp Leu Cys Asp Glu Phe Ser  
 1045 1050 1055  
 Arg Met Lys Ser Gln Ser Asn Gly Arg Ile Gly Lys Asp Ala Asp Arg  
 1060 1065 1070  
 Trp Gly Phe Asn Thr Thr Ser Ser Ile Arg Ile Thr Gly Arg His Met  
 1075 1080 1085  
 Ile Asn Ile Trp Arg Ala Met Arg Gly Glu Leu Asn Leu Leu Gln Tyr  
 1090 1095 1100  
 Thr Met Glu Asn Val Val Trp His Leu Leu His Arg Arg Ile Pro His  
 1105 1110 1115 1120  
 Tyr Ser Trp Met Thr Leu Ser Asp Trp Tyr Leu Ser Asp Arg Pro Lys  
 1125 1130 1135  
 Asp Leu Asp Lys Val Leu Arg Tyr Tyr Leu Thr Arg Thr Arg Leu Asp  
 1140 1145 1150  
 Ile Glu Ile Leu Glu Lys Asn Glu Leu Ile Pro Arg Thr Ser Glu Gln  
 1155 1160 1165  
 Ala Arg Leu Leu Gly Val Asp Phe Phe Ser Val Val Ser Arg Gly Ser  
 1170 1175 1180  
 Gln Phe Lys Val Glu Ser Ile Met Phe Arg Ile Ala Lys Pro Glu Lys  
 1185 1190 1195 1200  
 Phe Leu Leu Ala Ser Pro Ser Arg Lys Gln Val Gly Ala Gln Asn Ala  
 1205 1210 1215  
 Leu Glu Cys Leu Pro Leu Val Met Glu Pro Gln Ser Ala Phe Tyr Ser  
 1220 1225 1230  
 Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
 1235 1240 1245  
 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
 1250 1255 1260  
 Trp Arg Gly Lys Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu  
 1265 1270 1275 1280  
 Gly Leu Leu Ser Leu Leu Lys Asp Tyr Ile Asn Ile Ala Pro Asn Gly  
 1285 1290 1295  
 Met Met Tyr Thr Lys Pro His Ile Arg Lys Ser Leu Leu Ala Lys Met  
 1300 1305 1310  
 Leu Thr Glu Ile Leu Glu Thr Arg Ile Met Val Lys Ser Gly Met Lys  
 1315 1320 1325  
 Gln Asp Lys Asp Asp Lys Ala Ile Gln Gln Leu Leu Asn Asn Arg Gln  
 1330 1335 1340  
 Leu Ala Leu Lys Leu Leu Ala Asn Val Asn Tyr Gly Tyr Thr Ser Ala  
 1345 1350 1355 1360  
 Ser Phe Ser Gly Arg Met Pro Cys Ser Glu Ile Ala Asp Ser Ile Val  
 1365 1370 1375  
 Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Ala Phe Ile His Ser  
 1380 1385 1390  
 Val Arg Lys Trp Asp Ala Glu Val Tyr Gly Asp Thr Asp Ser Leu  
 1395 1400 1405  
 Phe Val Ser Leu Lys Gly Arg Thr Arg Glu Gln Ala Phe Glu Ile Gly  
 1410 1415 1420  
 Gln Glu Ile Ala Asp Ala Val Thr Lys Leu Asn Pro Arg Pro Val Lys  
 1425 1430 1435 1440  
 Leu Lys Phe Glu Lys Val Tyr His Pro Cys Ile Leu Leu Ala Lys Lys  
 1445 1450 1455  
 Arg Tyr Val Gly Tyr Lys Tyr Glu Ser Arg Asp Gln Thr Val Pro Val  
 1460 1465 1470  
 Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro Ala  
 1475 1480 1485  
 Glu Gln Arg Ile Glu Glu Lys Ala Leu Lys Ile Leu Phe Glu Thr Ala  
 1490 1495 1500  
 Asp Leu Ser Gln Val Lys Ser Tyr Phe Gln Glu Gln Cys His Lys Ile  
 1505 1510 1515 1520  
 Met Arg Gly Ala Val Ser Val Gln Asp Phe Cys Phe Ala Arg Glu Val  
 1525 1530 1535  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
 1540 1545 1550  
 Gly Ala Leu Ile Ala Thr Lys Lys Met Lys Glu Asp Ala Arg Ala Glu  
 1555 1560 1565  
 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro  
 1570 1575 1580  
 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn

## PhoenixTemp32470.tmp.txt

1585                      1590                      1595                      1600  
 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Met Asn Ile  
                                  1605                      1610                      1615  
 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg  
                                  1620                      1625                      1630  
 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala  
                                  1635                      1640                      1645  
 Glu Asp Glu Asp Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly  
                                  1650                      1655                      1660  
 Leu Leu Gly Ala Ser Pro Ser Lys Lys Gly Thr Ala Ala Ala Glu Ala  
 1665                      1670                      1675                      1680  
 Ala Ala Ala Ala Glu Leu Glu Met Glu Asp Met Leu Gly Glu Asp  
                                  1685                      1690                      1695  
 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Ala Gln Ala Gln Ala Arg  
                                  1700                      1705                      1710  
 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
                                  1715                      1720                      1725  
 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
                                  1730                      1735                      1740  
 Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys  
 1745                      1750                      1755                      1760  
 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
                                  1765                      1770                      1775  
 Lys Val Ser Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
                                  1780                      1785                      1790  
 Gln Ser Cys Ala Gly Phe Ala Ser Ser Glu Glu Val Pro Cys Asp Ser  
                                  1795                      1800                      1805  
 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
                                  1810                      1815                      1820  
 Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu  
 1825                      1830                      1835                      1840  
 Leu Glu Leu Asp Lys Ala Ser Ser Glu Asp Glu Gly Gly Asp Glu Glu  
                                  1845                      1850                      1855  
 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly  
                                  1860                      1865                      1870  
 Val Glu Met Gln Glu Asp Ala Gly Val Arg Tyr Glu Glu Glu Lys Val  
                                  1875                      1880                      1885  
 Arg Phe Glu Thr Ile Val Lys Gly Lys Val Arg Ala Met Ser Glu Glu  
                                  1890                      1895                      1900  
 Leu Val Glu Arg Lys Glu Ile Ile Asp Asn Ser Tyr Lys Ser Leu Lys  
 1905                      1910                      1915                      1920  
 Ala Ala Ser Leu Glu Trp  
                                  1925

&lt;210&gt; 2719

&lt;211&gt; 5781

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(5781)

&lt;400&gt; 2719

atg gaa ttt tta aga ctt cga ttg aac tgt att gat cac tac caa gcc	48
Met Glu Phe Leu Arg Leu Arg Leu Asn Cys Ile Asp His Tyr Gln Ala	
1 5 10 15	
acg cca acc aga tat gat ccc cag ttt gac caa gat gtg cgc ttt tcg	96
Thr Pro Thr Arg Tyr Asp Pro Gln Phe Asp Gln Asp Val Arg Phe Ser	
20 25 30	
cgt tcg cgg aag gcc gcc aaa gtc cct gta att cgg gtg ttt gga tcg	144
Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser	
35 40 45	
acc gac aag ggc cag aaa gtc tgc gct cat att cat ggt gcc ttt ccc	192
Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro	
50 55 60	
tat ctg tat gtc gag tat gac gga aat cta gaa ccc aat aag gat cat	240
Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His	
65 70 75 80	

## PhoenixTemp32470.tmp.txt

gcg tta gct atc agc tac cgg aaa gat ccc att cgc gat cgg ccc aaa	288
Ala Leu Ala Ile Ser 85 Tyr Arg Lys Asp Pro 90 Ile Arg Asp Arg Pro 95 Lys	
tat gta gca cgg att tcg ctg aca aaa ggt ata ccc ttt tat ggc ttc	336
Tyr Val Ala Arg 100 Ile Ser Leu Thr Lys 105 Gly Ile Pro Phe Tyr 110 Gly Phe	
cat gtg ggt tat cgc ttc tat ctc aag att tac ctg ttc aac ccg gtg	384
His Val Gly 115 Tyr Arg Phe Tyr Leu 120 Lys Ile Tyr Leu 125 Phe Asn Pro Val	
gtc atg tcg cgt ctc gtc gat ctc ctt cag caa ggt gtt att atg agt	432
Val Met Ser Arg Leu Val Asp 135 Leu Leu Gln Gln Gly Val Ile Met Ser	
cgg aaa ttt caa ccc tac gag gcc cat ctg cag tat ctc ctt cag ttc	480
Arg Lys Phe Gln Pro Tyr 150 Glu Ala His Leu 155 Tyr Leu Leu Gln Phe 160	
atg gct gat tac aac ctg tac ggc tgt aac tac ctg gat gcg gcg atg	528
Met Ala Asp Tyr Asn 165 Leu Tyr Gly Cys Asn 170 Tyr Leu Asp Ala Ala Met 175	
gcc acc ttt cga gca cct gta ccg aag cat gac agc aac att gaa ggc	576
Ala Thr Phe Arg 180 Ala Pro Val Pro Lys 185 His Asp Ser Asn 190 Ile Glu Gly	
cgt gag gct gaa cat cac tgg gac gat aca acg atc ccg cca gag ctg	624
Arg Glu Ala 195 Glu His His Trp Asp 200 Asp Thr Thr Ile Pro 205 Pro Glu Leu	
att acg gat aat tac agc ctt ccc cgg gct agc cac tgc tcc ctt gaa	672
Ile Thr Asp Asn Tyr Ser Leu 215 Pro Arg Ala Ser His 220 Cys Ser Leu Glu	
gtg gac atc tgc gtc gaa gac atc ctg aat cga aag caa gtc aaa gag	720
Val Asp Ile Cys Val Glu 230 Asp Ile Leu Asn Arg 235 Lys Gln Val Lys Glu 240	
cga agg ctt cat cat gat ttt atc gaa aag gag cag ccg gtg tca agc	768
Arg Arg Leu His His Asp Phe Ile Glu Lys 250 Glu Gln Pro Val Ser Ser 255	
caa gaa aag ctg gtg cac agc atg gct gga ctc tgg acg gat gag aca	816
Gln Glu Lys Leu Val His Ser Met Ala 265 Gly Leu Trp Thr Asp Glu Thr 270	
aac cgc agg aaa aag cgt atg gga ata acg gac cct gaa gtc aac cct	864
Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro 285 Glu Val Asn Pro 285	
ttt cct ccg gaa gtc ttg gta tca atg tct gcg gac cca cgt caa tca	912
Phe Pro 290 Pro Glu Val Leu 295 Ser Met Ser Ala Asp 300 Pro Arg Gln Ser	
cag gtg atg ggg tgg gtt cat gaa gct gag tac cgt gct ggt atc cag	960
Gln Val Met Gly Trp Val His Glu Ala Glu Tyr 315 Arg Ala Gly Ile Glu 320	
caa ttg gtt gct cag gaa cag aac aac aca gat gga cgt cag gag act	1008
Gln Leu Val Ala 325 Glu Gln Asn Asn Thr 330 Asp Gly Arg Gln Glu Thr 335	
ttc tcc agc ttt gtg caa cca gtt cca ttt gaa gaa act atc aag act	1056
Phe Ser Ser Phe 340 Val Gln Pro Val Pro Phe Glu Glu Thr Ile Lys Thr 350	
act tta gag gtg gaa gac tta tac cca gac aac ttg agc caa gct	1104
Thr Leu Glu Ser Val Glu Asp Leu Tyr Pro Asp Asn Leu Ser Gln Ala 365	
ctg caa atc gaa gca caa ttt ttt cac ccg aat gca cag cat ctc atc	1152
Leu Gln Ile Glu Ala Gln Phe 375 Phe His Pro Asn Ala Gln His Leu Ile 380	
agt atc gat gtc gac gaa cga agc att ttt ctg cta aca cgc gag cca	1200
Ser Ile Asp Val Asp Glu Arg Ser Ile Phe Leu Leu Thr Arg Glu Pro 400	
ctt gca aaa cag act cga cac gaa tac gcg ggc aga atc tca ccg gag	1248
Leu Ala Lys Gln Thr 405 Arg His Glu Tyr Ala 410 Gly Arg Ile Ser Pro Glu 415	
gag cct ttg aat ggt gtt gga gaa gga ttt ggt gtg ggg gat tca atg	1296
Glu Pro Leu Asn Gly Val Gly Glu Gly Phe Gly Val Gly Asp Ser Met 430	
act tat cgt gtg gat ggg cgg atc cgt gta tac caa ccc aga act tcc	1344
Thr Tyr Arg Val Asp Gly Arg Ile 440 Arg Val Tyr Gln Pro 445 Thr Ser	

## PhoenixTemp32470.tmp.txt

atc	cgt	cat	aaa	ctt	ctg	aag	att	gcc	cgg	act	tac	tct	tcc	aat	caa	1392
Ile	Arg	His	Lys	Leu	Leu	Lys	Ile	Ala	Arg	Thr	Tyr	Ser	Ser	Asn	Gln	
450	450					455					460					
cca	gtc	aat	aca	ggg	aga	caa	gcc	ggg	ggt	ctt	ggg	cct	gga	gag	cga	1440
Pro	Val	Asn	Thr	Gly	Arg	Gln	Ala	Gly	Val	Leu	Gly	Pro	Gly	Glu	Arg	
465				470						475					480	
caa	caa	aga	tct	ctc	aag	cat	ccc	agg	ccg	ccg	gga	gaa	ggt	gat	cat	1488
Gln	Gln	Arg	Ser	Leu	Lys	His	Pro	Arg	Pro	Pro	Gly	Glu	Val	Asp	His	
				485					490					495		
ggg	gca	cca	gca	aaa	cgt	cag	gtg	ctc	caa	gct	gag	gac	tcg	agg	gag	1536
Gly	Ala	Pro	Ala	Lys	Arg	Gln	Val	Leu	Gln	Ala	Glu	Asp	Ser	Arg	Glu	
			500					505					510			
tta	ctt	cac	atg	aaa	gcc	gac	cct	ccg	caa	aga	gct	ctg	gaa	aag	gct	1584
Leu	Leu	His	Met	Lys	Ala	Asp	Pro	Pro	Gln	Arg	Ala	Leu	Glu	Lys	Ala	
		515					520					525				
ccg	aga	aac	gtc	cat	gaa	caa	act	caa	ggg	gca	ggg	cag	cca	ggg	cct	1632
Pro	Arg	Asn	Val	His	Glu	Gln	Thr	Gln	Gly	Ala	Gly	Gln	Pro	Gly	Pro	
	530					535					540					
cag	aga	aag	ctc	cag	agt	gac	cct	acg	gaa	agg	ggt	tac	gag	gag	cca	1680
Gln	Arg	Lys	Leu	Gln	Ser	Asp	Pro	Thr	Glu	Arg	Val	Tyr	Glu	Glu	Pro	
545					550				555						560	
aac	aag	agg	ggt	cac	gag	gag	gct	caa	cca	gag	gtc	gat	cga	aag	gcc	1728
Asn	Lys	Arg	Val	His	Glu	Glu	Ala	Gln	Pro	Glu	Val	Asp	Arg	Lys	Ala	
				565					570					575		
cag	caa	agg	tct	cgg	gaa	cat	gac	cag	aaa	cag	ggc	caa	cag	aaa	atc	1776
Gln	Gln	Arg	Ser	Arg	Glu	His	Asp	Gln	Lys	Gln	Gly	Gln	Gln	Lys	Ile	
			580					585					590			
cag	gaa	caa	act	caa	gat	cat	gat	cag	gga	gga	ggc	cag	aag	gaa	gct	1824
Gln	Glu	Gln	Thr	Gln	Asp	His	Asp	Gln	Gly	Gly	Gly	Gln	Lys	Glu	Ala	
		595					600					605				
cca	gaa	aat	tcg	aca	ttt	acg	acg	cca	ggt	cgg	aca	gtc	cag	cca	atg	1872
Pro	Glu	Asn	Ser	Thr	Phe	Thr	Thr	Pro	Val	Arg	Thr	Val	Gln	Pro	Met	
	610				615						620					
aaa	ccc	aac	aat	cag	gat	tca	gca	gga	gag	gaa	caa	tcg	atg	aat	agt	1920
Lys	Pro	Asn	Asn	Gln	Asp	Ser	Ala	Gly	Glu	Glu	Gln	Ser	Met	Asn	Ser	
625					630					635					640	
cta	cag	gtc	gag	cca	cca	aaa	cct	aga	aca	tct	cag	ccc	atg	aag	tct	1968
Leu	Gln	Val	Glu	Pro	Pro	Lys	Pro	Arg	Thr	Ser	Gln	Pro	Met	Lys	Ser	
				645					650					655		
gct	atg	aag	cag	agc	ttc	gta	caa	gag	tcc	caa	agc	cgt	acg	atc	aac	2016
Ala	Met	Lys	Gln	Ser	Phe	Val	Gln	Glu	Ser	Gln	Ser	Arg	Thr	Ile	Asn	
			660					665					670			
ttt	ccc	gtc	gtc	aaa	gat	cca	caa	gat	ccc	aac	aca	agg	gcg	cga	ctg	2064
Phe	Pro	Val	Val	Lys	Asp	Pro	Gln	Asp	Pro	Asn	Thr	Arg	Ala	Arg	Leu	
		675					680					685				
agc	caa	aag	agt	ggg	tcg	cag	aag	aac	gag	ggc	aac	gtc	acc	aga	aag	2112
Ser	Gln	Lys	Ser	Gly	Ser	Gln	Lys	Asn	Glu	Gly	Asn	Val	Thr	Arg	Lys	
	690					695				700						
caa	ttt	gcc	ttc	gcc	cct	caa	ccc	acc	att	ttg	ggg	cca	ttg	gct	cag	2160
Gln	Phe	Ala	Phe	Ala	Pro	Gln	Pro	Thr	Ile	Leu	Gly	Pro	Leu	Ala	Gln	
705					710					715					720	
gcg	agg	ccc	ggg	cag	act	aaa	ccc	aac	cta	aaa	tcg	tcg	tcc	agg	ccc	2208
Ala	Arg	Pro	Gly	Gln	Thr	Lys	Pro	Asn	Leu	Lys	Ser	Ser	Ser	Arg	Pro	
				725					730					735		
ctt	gac	acg	gcc	cct	gtg	gct	tcg	gct	ccg	gca	ctc	ttg	tgg	agt	ggc	2256
Leu	Asp	Thr	Ala	Pro	Val	Ala	Ser	Ala	Pro	Ala	Leu	Leu	Trp	Ser	Gly	
			740					745					750			
tca	aag	aaa	atg	ttt	gtc	ctg	aac	aat	aaa	cct	cca	tcc	ctg	agc	gag	2304
Ser	Lys	Lys	Met	Phe	Val	Leu	Asn	Asn	Lys	Pro	Pro	Ser	Leu	Ser	Glu	
		755					760					765				
gtc	agc	ggg	acc	atg	cag	gta	cat	ggc	cta	cct	gat	gtc	atc	tat	caa	2352
Val	Ser	Gly	Thr	Met	Gln	Val	His	Gly	Leu	Pro	Asp	Val	Ile	Tyr	Gln	
		770				775					780					
gac	gca	tat	tat	agt	aag	gat	gag	gat	ggt	ccc	tcc	aga	ccg	aga	gaa	2400
Asp	Ala	Tyr	Tyr	Ser	Lys	Asp	Glu	Asp	Val	Pro	Ser	Arg	Pro	Arg	Glu	
					790				795						800	
tat	gca	ggc	cgg	gaa	tac	cga	ctt	gac	ggg	agc	tct	ggt	cct	tgg	ctc	2448
Tyr	Ala	Gly	Arg	Glu	Tyr	Arg	Leu	Asp	Gly	Ser	Ser	Val	Pro	Trp	Leu	
				805					810					815		

## PhoenixTemp32470.tmp.txt

ccc	gat	ttc	gac	ccg	act	ggc	aca	tct	tcg	gcg	aca	tat	ggc	gag	aaa	2496
Pro	Asp	Phe	Asp	Pro	Thr	Gly	Thr	Ser	Ser	Ala	Thr	Tyr	Gly	Glu	Lys	
			820					825					830			
cca	acc	tcc	ggt	gcc	gac	tgg	ccg	atg	ctg	gag	gca	atc	tat	gag	gct	2544
Pro	Thr	Ser	Gly	Ala	Asp	Trp	Pro	Met	Leu	Glu	Ala	Ile	Tyr	Glu	Ala	
		835					840					845				
caa	caa	gag	gaa	tgt	gcc	atg	agg	ggg	tgg	gaa	ata	gca	gat	cct	cct	2592
Gln	Gln	Glu	Glu	Cys	Ala	Met	Arg	Gly	Trp	Glu	Ile	Ala	Asp	Pro	Pro	
	850					855					860					
cct	tct	ttc	aag	gaa	gtc	agt	gat	tgg	tgg	aca	gat	aaa	caa	aaa	gat	2640
Pro	Ser	Phe	Lys	Glu	Val	Ser	Asp	Trp	Trp	Thr	Asp	Lys	Gln	Lys	Asp	
865					870					875					880	
cgc	aat	cca	aaa	cga	tgc	cat	ttc	aca	ccc	cta	aag	agt	aaa	acc	tac	2688
Arg	Asn	Pro	Lys	Arg	Cys	His	Phe	Thr	Pro	Leu	Lys	Ser	Lys	Thr	Tyr	
				885					890					895		
cgc	tcc	caa	gtc	gcg	ggc	gtg	acg	cca	cag	aag	aag	cat	ggc	ttc	gaa	2736
Arg	Ser	Gln	Val	Ala	Gly	Val	Thr	Pro	Gln	Lys	Lys	His	Gly	Phe	Glu	
		900						905					910			
cat	ccc	gaa	aag	aca	aaa	cct	gaa	agc	gca	cag	gat	cag	gca	cag	tac	2784
His	Pro	Glu	Lys	Thr	Lys	Pro	Glu	Ser	Ala	Gln	Asp	Gln	Ala	Gln	Tyr	
		915					920					925				
atg	agc	gcc	atg	agc	cta	gag	gtg	cat	gtt	aac	acc	cgg	ggc	aag	cta	2832
Met	Ser	Ala	Met	Ser	Leu	Glu	Val	His	Val	Asn	Thr	Arg	Gly	Lys	Leu	
	930					935					940					
gta	ccg	gat	cct	gaa	gaa	gac	gaa	gtg	cag	tgt	gtg	ttt	tgg	tat	ctg	2880
Val	Pro	Asp	Pro	Glu	Glu	Asp	Glu	Val	Gln	Cys	Val	Phe	Trp	Tyr	Leu	
945					950					955					960	
cgg	tcc	gaa	gta	aac	gct	ctc	ggc	gga	act	cag	gca	ccg	gat	gat	acg	2928
Arg	Ser	Glu	Val	Asn	Ala	Leu	Gly	Gly	Thr	Gln	Ala	Pro	Asp	Asp	Thr	
				965					970					975		
gca	cgg	ggc	att	gtt	gtt	ttc	tca	gag	gac	gat	ctg	ctt	gca	gat	aga	2976
Ala	Arg	Gly	Ile	Val	Val	Phe	Ser	Glu	Asp	Asp	Leu	Leu	Ala	Asp	Arg	
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atc	cga	aag	cac	aca	tcc	gtg	ccg	gtg	gtt	caa	gag	aca	aca	gaa	ctt	3024
Ile	Arg	Lys	His	Thr	Ser	Val	Pro	Val	Val	Gln	Glu	Thr	Thr	Glu	Leu	
		995				1000						1005				
gat	atg	atg	gtc	cgc	atg	gtc	gag	att	gtg	cgg	aac	cat	gat	ccc	gat	3072
Asp	Met	Met	Val	Arg	Met	Val	Glu	Ile	Val	Arg	Asn	His	Asp	Pro	Asp	
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atc	ttc	acg	gga	tat	gag	gtg	cat	ggc	agt	tca	tgg	ggc	tac	ctt	att	3120
Ile	Phe	Thr	Gly	Tyr	Glu	Val	His	Gly	Ser	Ser	Trp	Gly	Tyr	Leu	Ile	
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gag	cga	gcg	agg	ata	aaa	tat	gag	ctc	gac	ctc	tgt	gat	gag	ttc	tca	3168
Glu	Arg	Ala	Arg	Ile	Lys	Tyr	Glu	Leu	Asp	Leu	Cys	Asp	Glu	Phe	Ser	
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cgc	atg	aag	tct	cag	tca	aat	ggg	cgt	atc	ggg	aag	gat	gag	gat	cgc	3216
Arg	Met	Lys	Ser	Gln	Ser	Asn	Gly	Arg	Ile	Gly	Lys	Asp	Ala	Asp	Arg	
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Trp	Gly	Phe	Asn	Thr	Thr	Ser	Ser	Ile	Arg	Ile	Thr	Gly	Arg	His	Met	
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Ile	Asn	Ile	Trp	Arg	Ala	Met	Arg	Gly	Glu	Leu	Asn	Leu	Leu	Gln	Tyr	
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acc	atg	gag	aat	gtt	gtt	tgg	cat	ctg	cta	cac	cgt	cgg	att	cct	cat	3360
Thr	Met	Glu	Asn	Val	Val	Trp	His	Leu	Leu	His	Arg	Arg	Ile	Pro	His	
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tac	agc	tgg	aag	act	tta	tcg	gat	tgg	tat	ctg	agc	gat	cga	ccg	aag	3408
Tyr	Ser	Trp	Lys	Thr	Leu	Ser	Asp	Trp	Tyr	Leu	Ser	Asp	Arg	Pro	Lys	
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gat	ctg	gat	aaa	gtt	ctc	cga	tac	tac	ctg	acg	aga	acg	cga	ctt	gat	3456
Asp	Leu	Asp	Lys	Val	Leu	Arg	Tyr	Tyr	Leu	Thr	Arg	Thr	Arg	Leu	Asp	
			1140				1145					1150				
att	gaa	atc	ctg	gaa	aag	aac	gag	ctc	att	cct	agg	aca	agc	gag	caa	3504
Ile	Glu	Ile	Leu	Glu	Lys	Asn	Glu	Leu	Ile	Pro	Arg	Thr	Ser	Glu	Gln	
	1155					1160					1165					
gca	aga	ctg	ctt	ggg	gtt	gac	ttt	ttt	tct	gtc	ttc	tca	aga	gga	tcg	3552
Ala	Arg	Leu	Leu	Gly	Val	Asp	Phe	Phe	Ser	Val	Phe	Ser	Arg	Gly	Ser	
	1170				1175					1180						

## PhoenixTemp32470.tmp.txt

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 Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Val Met  
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 Ile Ala Tyr Asn Tyr Cys Tyr Ser Thr Phe Leu Gly Arg Ile Val Ser  
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 Trp Arg Gly Arg Asn Lys Met Gly Phe Met Asp Tyr Lys Arg Gln Glu  
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 aag ctg ggc acg tac agc acg tcc ggt cgc ggc ggc ccg gct ccc gct 4656  
 Lys Leu Gly Thr Tyr Ser Thr Ser Gly Arg Gly Gly Pro Ala Pro Ala  
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 Pro Gln Tyr Gly Glu Arg Val Pro Tyr Val Val Met Ala Gly Ala Pro 1570 1575 1580  
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 Gly Met Arg Leu Val Asp Arg Cys Val Glu Pro Glu Glu Leu Leu Asn 1585 1590 1595 1600  
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 Asn Ala His Ala Thr Leu Asp Ala Asp Tyr Tyr Ile Asn Lys Asn Ile 1605 1610 1615  
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 Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly Ala Asn Val Arg 1620 1625 1630  
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 Thr Trp Tyr Glu Glu Met Pro Lys Val Gln Val Leu Arg Lys Val Ala 1635 1640 1645  
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 Glu Asp Glu Asp Ala Ala Asp Asp Ala Ser Lys Gly Pro Leu Leu Gly 1650 1655 1660  
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 Gly Glu Leu Leu Pro Pro Asp Val Ala Ala Gln Ala Gln Ala Arg 1700 1705 1710  
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 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly 1715 1720 1725  
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 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly 1730 1735 1740  
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 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys 1780 1785 1790  
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 Thr Ala Val Lys Arg Val Met Glu Pro Leu Ile Lys Leu Phe Gly Glu 1825 1830 1835 1840  
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 Gly Asn Trp Asp Leu Glu Gly Arg Gly Glu Val Val Asp Glu Ser Gly 1860 1865 1870  
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 <213> Neurospora crassa

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 Arg Ser Arg Lys Ala Ala Lys Val Pro Val Ile Arg Val Phe Gly Ser  
 35 40 45  
 Thr Asp Lys Gly Gln Lys Val Cys Ala His Ile His Gly Ala Phe Pro  
 50 55 60  
 Tyr Leu Tyr Val Glu Tyr Asp Gly Asn Leu Glu Pro Asn Lys Asp His  
 65 70 75 80  
 Ala Leu Ala Ile Ser Tyr Arg Lys Asp Pro Ile Arg Asp Arg Pro Lys  
 85 90 95  
 Tyr Val Ala Arg Ile Ser Leu Thr Lys Gly Ile Pro Phe Tyr Gly Phe  
 100 105 110  
 His Val Gly Tyr Arg Phe Tyr Leu Lys Ile Tyr Leu Phe Asn Pro Val  
 115 120 125  
 Val Met Ser Arg Leu Val Asp Leu Leu Gln Gln Gly Val Ile Met Ser  
 130 135 140  
 Arg Lys Phe Gln Pro Tyr Glu Ala His Leu Gln Tyr Leu Leu Gln Phe  
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 165 170 175  
 Ala Thr Phe Arg Ala Pro Val Pro Lys His Asp Ser Asn Ile Glu Gly  
 180 185 190  
 Arg Glu Ala Glu His His Trp Asp Thr Thr Ile Pro Pro Glu Leu  
 195 200 205  
 Ile Thr Asp Asn Tyr Ser Leu Pro Arg Ala Ser His Cys Ser Leu Glu  
 210 215 220  
 Val Asp Ile Cys Val Glu Asp Ile Leu Asn Arg Lys Gln Val Lys Glu  
 225 230 235 240  
 Arg Arg Leu His His Asp Phe Ile Glu Lys Glu Gln Pro Val Ser Ser  
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 260 265 270  
 Asn Arg Arg Lys Lys Arg Met Gly Ile Thr Asp Pro Glu Val Asn Pro  
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 Phe Pro Pro Glu Val Leu Val Ser Met Ser Ala Asp Pro Arg Gln Ser  
 290 295 300  
 Gln Val Met Gly Trp Val His Glu Ala Glu Tyr Arg Ala Gly Ile Gln  
 305 310 315 320  
 Gln Leu Val Ala Gln Glu Gln Asn Asn Thr Asp Gly Arg Gln Glu Thr  
 325 330 335  
 Phe Ser Ser Phe Val Gln Pro Val Pro Phe Glu Glu Thr Ile Lys Thr  
 340 345 350  
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 355 360 365  
 Leu Gln Ile Glu Ala Gln Phe Phe His Pro Asn Ala Gln His Leu Ile  
 370 375 380  
 Ser Ile Asp Val Asp Glu Arg Ser Ile Phe Leu Leu Thr Arg Glu Pro  
 385 390 395 400  
 Leu Ala Lys Gln Thr Arg His Glu Tyr Ala Gly Arg Ile Ser Pro Glu  
 405 410 415  
 Glu Pro Leu Asn Gly Val Gly Glu Gly Phe Gly Val Gly Asp Ser Met  
 420 425 430  
 Thr Tyr Arg Val Asp Gly Arg Ile Arg Val Tyr Gln Pro Arg Thr Ser  
 435 440 445  
 Ile Arg His Lys Leu Leu Lys Ile Ala Arg Thr Tyr Ser Ser Asn Gln  
 450 455 460  
 Pro Val Asn Thr Gly Arg Gln Ala Gly Val Leu Gly Pro Gly Glu Arg  
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	Leu	Leu	His	Met	500	Lys	Ala	Asp	Pro	505	Pro	Gln	Arg	Ala	Leu	510	Glu
	Pro	Arg	Asn	Val	515	His	Glu	Gln	Thr	520	Gln	Gly	Ala	Gly	Gln	525	Pro
	Gln	Arg	Lys	Leu	530	Gln	Ser	Asp	Pro	535	Thr	Glu	Arg	Val	Tyr	540	Glu
545	Asn	Lys	Arg	Val	550	His	Glu	Glu	Ala	555	Pro	Gln	Glu	Val	Asp	560	Arg
	Gln	Gln	Arg	Ser	565	Arg	Glu	His	Asp	570	Lys	Gln	Gly	Gln	Gln	575	Lys
	Gln	Glu	Gln	Thr	580	Gln	Asp	His	Asp	585	Gln	Gly	Gly	Gly	Gln	590	Glu
	Pro	Glu	Asn	Ser	595	Thr	Phe	Thr	Thr	600	Pro	Val	Arg	Thr	Val	605	Pro
	Lys	Pro	Asn	Asn	610	Gln	Asp	Ser	Ala	615	Gly	Glu	Glu	Gln	Ser	620	Met
625	Leu	Gln	Val	Glu	630	Pro	Pro	Lys	Pro	635	Arg	Thr	Ser	Gln	Pro	640	Met
	Ala	Met	Lys	Gln	645	Ser	Phe	Val	Gln	650	Glu	Ser	Gln	Ser	Arg	655	Asn
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	Ser	Gln	Lys	Ser	675	Gly	Ser	Gln	Lys	680	Asn	Glu	Gly	Asn	Val	685	Arg
	Gln	Phe	Ala	Phe	690	Ala	Pro	Gln	Pro	695	Thr	Ile	Leu	Gly	Pro	700	Lys
705	Ala	Arg	Pro	Gly	710	Gln	Thr	Lys	Pro	715	Leu	Lys	Ser	Ser	Ser	720	Arg
	Leu	Asp	Thr	Ala	725	Pro	Val	Ala	Ser	730	Leu	Pro	Ala	Leu	Leu	735	Pro
	Ser	Lys	Lys	Met	740	Phe	Val	Leu	Asn	745	Asn	Lys	Pro	Pro	Ser	750	Gly
	Val	Ser	Gly	Thr	755	Met	Gln	Val	His	760	Gly	Leu	Pro	Asp	Val	765	Ser
	Asp	Ala	Tyr	Tyr	770	Ser	Lys	Asp	Glu	775	Val	Pro	Asp	Val	Ile	780	Tyr
785	Tyr	Ala	Gly	Arg	785	Glu	Tyr	Arg	Leu	790	Asp	Gly	Ser	Ser	Val	795	Arg
	Pro	Asp	Phe	Asp	800	Pro	Thr	Gly	Thr	805	Ser	Ser	Ala	Thr	Tyr	810	Pro
	Pro	Thr	Ser	Gly	815	Ala	Asp	Trp	Pro	820	Met	Leu	Glu	Ala	Ile	825	Trp
	Gln	Gln	Glu	Glu	830	Cys	Ala	Met	Arg	835	Gly	Trp	Glu	Ile	Ala	840	Glu
	Pro	Ser	Phe	Lys	845	Val	Ser	Asp	Trp	850	Trp	Trp	Thr	Asp	Lys	855	Pro
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	Ile	Arg	Lys	His	965	Thr	Ser	Val	Pro	970	Val	Val	Gln	Glu	Thr	975	Arg
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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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 Lys Thr Leu Glu Ala Phe Leu Asn Thr Thr Ile Cys Thr Ala Cys Gly  
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 Val Lys Ile Lys Arg Pro Leu Gly Val Gly Leu Ala Arg Glu Leu Gly  
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 Met Leu Glu Glu Gly Glu Gly Ala Val Asp Arg Gly Leu Pro Leu Cys  
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 His Arg Cys Ala Ser Asp Pro Pro Thr Leu Met Val Asp Met Gln Ala  
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 Lys Val Asn Arg Ala Glu Lys Ser Tyr Val Glu Ile Met Lys Val Cys  
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 Gln Ser Cys Ala Gly Phe Ala Leu Ser Glu Glu Val Pro Cys Asp Ser  
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 Lys Asp Cys Pro Val Phe Tyr Ser Arg Val Lys Gln Arg Thr Lys Val  
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 Tyr Ser Ser Phe Gln Gly Ser Glu Val Asn Glu Val Pro Val Ile Arg  
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 Ile Tyr Gly Ser Thr Pro Ala Gly Gln Lys Thr Cys Leu His Ile His  
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 Page 2540

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atc Ile	cat His	gat Asp 115	tgt Cys	gag Glu	att Ile	gta Val	aga Arg 120	gca Ala	aag Lys	aag Lys	ttt Phe	tat Tyr 125	ggg Gly	tac Tyr	cac His	384
tca Ser	aca Thr 130	gag Glu	gag Glu	gct Ala	ttt Phe	gtg Val 135	aag Lys	att Ile	tat Tyr	ctg Leu	tat Tyr 140	cct Pro	tat Tyr	agt Ser	agc Ser	432
tac Tyr 145	cat His	cca Pro	ccc Pro	gat Asp 150	gtg Val 150	gct Ala	cgt Arg	gct Ala	gcc Ala	agt Ser 155	ctt Leu	ctt Leu	ctg Leu	gca Ala	ggt Gly 160	480
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cat His	ata Ile	tca Ser 195	aag Lys	atg Met	aag Lys	ttc Phe	cgt Arg 200	agc Ser	cca Pro	gtg Val	cct Pro	cac His 205	cat His	ttc Phe	cgg Arg	624
cca Pro	agg Arg 210	aga Arg	ttt Phe	gat Asp	ttg Leu	gat Asp 215	gat Asp	tgt Cys	ccg Pro	gga Gly	caa Gln 220	agg Arg	att Ile	gac Asp	gaa Glu	672
gtg Val 225	gct Ala	att Ile	aca Thr	aag Lys	gca Ala 230	aat Asn	tca Ser	agt Ser	gct Ala	gct Ala 235	gca Ala	agc Ser	gtc Val	agt Ser	ttt Phe 240	720
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ctt Leu	ggc Gly	gag Glu	aag Lys 420	agt Ser	gaa Glu	gaa Glu	gca Ala	tca Ser 425	atg Met	gaa Glu	aat Asn	gat Asp	gaa Glu 430	tat Tyr	atg Met	1296
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## PhoenixTemp32470.tmp.txt

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cct	ctt	gtg	atg	gaa	cca	gaa	tct	gcc	ttt	tac	gat	gat	cct	gtt	att		4080
Pro	Leu	Val	Met	Glu	Pro	Glu	Ser	Ala	Phe	Tyr	Asp	Asp	Pro	Val	Ile		
1345				1350					1355					1360			
gtg	ttg	gat	ttt	caa	tct	ctt	tac	cct	tca	atg	att	ata	gca	tat	aat		4128
Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Met	Ile	Ile	Ala	Tyr	Asn		
			1365					1370					1375				
ctg	tgc	ttt	tct	aca	tgt	ctc	gga	aaa	ctt	gca	cat	ttg	aag	atg	aac		4176
Leu	Cys	Phe	Ser	Thr	Cys	Leu	Gly	Lys	Leu	Ala	His	Leu	Lys	Met	Asn		
			1380				1385					1390					
acc	ctt	ggg	gtc	agc	tca	tac	tct	cta	gac	ctc	gat	gtt	ctt	cag	gat		4224
Thr	Leu	Gly	Val	Ser	Ser	Tyr	Ser	Leu	Asp	Leu	Asp	Val	Leu	Gln	Asp		
			1395			1400					1405						
tta	aat	cag	atc	cta	cag	acc	cca	aac	agt	gtg	atg	tac	gtg	cca	cca		4272
Leu	Asn	Gln	Ile	Leu	Gln	Thr	Pro	Asn	Ser	Val	Met	Tyr	Val	Pro	Pro		
			1410			1415					1420						
gag	gtg	cgt	aga	gga	att	tta	cct	agg	ctg	cta	gag	gag	att	ctg	tct		4320
Glu	Val	Arg	Arg	Gly	Ile	Leu	Pro	Arg	Leu	Leu	Glu	Glu	Ile	Leu	Ser		
1425				1430					1435					1440			
aca	aga	ata	atg	gtg	aaa	aaa	gca	atg	aaa	aag	ttg	act	cct	tca	gaa		4368
Thr	Arg	Ile	Met	Val	Lys	Lys	Ala	Met	Lys	Lys	Leu	Thr	Pro	Ser	Glu		
			1445				1450					1455					
gca	gtt	ctt	cac	cgg	ata	ttt	aat	gcg	agg	cag	ctt	gct	tta	aag	ctg		4416
Ala	Val	Leu	His	Arg	Ile	Phe	Asn	Ala	Arg	Gln	Leu	Ala	Leu	Lys	Leu		
			1460			1465						1470					
ata	gca	aat	gtg	act	tat	ggt	tat	act	gct	gct	ggc	ttc	agt	ggt	cga		4464
Ile	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ala	Ala	Gly	Phe	Ser	Gly	Arg		
			1475			1480					1485						
atg	cct	tgt	gca	gag	ctg	gca	gat	agt	att	gtc	cag	tgt	ggt	cgt	agc		4512
Met	Pro	Cys	Ala	Glu	Leu	Ala	Asp	Ser	Ile	Val	Gln	Cys	Gly	Arg	Ser		
			1490			1495				1500							
aca	ctt	gag	aag	gct	att	tca	ttc	gtc	aat	gcc	aat	gat	aat	tgg	aac		4560
Thr	Leu	Glu	Lys	Ala	Ile	Ser	Phe	Val	Asn	Ala	Asn	Asp	Asn	Trp	Asn		
				1510					1515					1520			
gct	aga	gtt	gta	tat	ggt	gac	act	gat	agt	atg	ttt	gtc	ctc	cta	aaa		4608
Ala	Arg	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser	Met	Phe	Val	Leu	Leu	Lys		
			1525					1530					1535				
gga	cga	act	gta	aaa	gaa	gct	ttt	gta	gtc	gga	caa	gag	att	gca	tct		4656

## PhoenixTemp32470.tmp.txt

Gly	Arg	Thr	Val	Lys	Glu	Ala	Phe	Val	Val	Gly	Gln	Glu	Ile	Ala	Ser		
			1540					1545					1550				
gca	ata	act	gaa	atg	aac	cca	cac	cca	gtc	act	tta	aag	atg	gag	aaa	4704	
Ala	Ile	Thr	Glu	Met	Asn	Pro	His	Pro	Val	Thr	Leu	Lys	Met	Glu	Lys		
			1555				1560					1565					
gtc	tat	cac	cct	tgt	ttc	ctt	ctt	acg	aag	aag	cgt	tat	ggt	ggg	tac	4752	
Val	Tyr	His	Pro	Cys	Phe	Leu	Leu	Thr	Lys	Lys	Arg	Tyr	Val	Gly	Tyr		
			1570			1575					1580						
agt	tat	gaa	agt	ccc	aat	cag	aga	gag	cct	ata	ttt	gat	gca	aaa	ggt	4800	
Ser	Tyr	Glu	Ser	Pro	Asn	Gln	Arg	Glu	Pro	Ile	Phe	Asp	Ala	Lys	Gly		
				1590				1595							1600		
att	gaa	act	gtt	cga	aga	gac	act	tgt	gaa	gct	gtt	gcg	aaa	act	atg	4848	
Ile	Glu	Thr	Val	Arg	Arg	Asp	Thr	Cys	Glu	Ala	Val	Ala	Lys	Thr	Met		
			1605					1610						1615			
gag	caa	tcg	ttg	aga	ctc	ttt	ttt	gaa	cag	aag	aac	atc	tct	aag	gtt	4896	
Glu	Gln	Ser	Leu	Arg	Leu	Phe	Phe	Glu	Gln	Lys	Asn	Ile	Ser	Lys	Val		
			1620				1625						1630				
aag	tcg	tac	ttg	tat	aga	cag	tgg	aag	cgg	ata	cta	tca	ggg	aga	gtg	4944	
Lys	Ser	Tyr	Leu	Tyr	Arg	Gln	Trp	Lys	Arg	Ile	Leu	Ser	Gly	Arg	Val		
			1635			1640					1645						
tct	ctt	caa	gat	ttt	atc	ttt	gca	aaa	gaa	gtt	cgg	ttg	ggt	act	tac	4992	
Ser	Leu	Gln	Asp	Phe	Ile	Phe	Ala	Lys	Glu	Val	Arg	Leu	Gly	Thr	Tyr		
			1650		1655			1660									
agc	aca	aga	gac	tct	tca	ctc	ctt	cct	cca	gca	gct	att	gtg	gca	acc	5040	
Ser	Thr	Arg	Asp	Ser	Ser	Leu	Leu	Pro	Pro	Ala	Ala	Ile	Val	Ala	Thr		
			1665		1670			1675						1680			
aaa	tca	atg	aaa	gca	gac	cct	cgg	aca	gag	cca	cgc	tat	gct	gaa	cga	5088	
Lys	Ser	Met	Lys	Ala	Asp	Pro	Arg	Thr	Glu	Pro	Arg	Tyr	Ala	Glu	Arg		
			1685				1690						1695				
gtg	cct	tat	gtt	gtg	att	cat	ggg	gag	cca	gga	gct	cga	ctt	gtt	gat	5136	
Val	Pro	Tyr	Val	Val	Ile	His	Gly	Glu	Pro	Gly	Ala	Arg	Leu	Val	Asp		
			1700				1705						1710				
atg	gtt	gtt	gat	cca	ctg	gtt	ctt	ttg	gac	gtc	gat	aca	ccc	tac	cga	5184	
Met	Val	Val	Asp	Pro	Leu	Val	Leu	Leu	Asp	Val	Asp	Thr	Pro	Tyr	Arg		
			1715			1720						1725					
ctg	aat	gac	tta	tac	tac	atc	aac	aaa	caa	att	ata	cca	gct	ttg	caa	5232	
Leu	Asn	Asp	Leu	Tyr	Tyr	Ile	Asn	Lys	Gln	Ile	Ile	Pro	Ala	Leu	Gln		
			1730			1735				1740							
agg	gta	ttt	gga	ctc	gtg	ggt	gca	gac	tta	aac	cag	tgg	ttt	ttg	gag	5280	
Arg	Val	Phe	Gly	Leu	Val	Gly	Ala	Asp	Leu	Asn	Gln	Trp	Phe	Leu	Glu		
			1745		1750			1755					1760				
atg	ccc	cgt	ctc	acc	aga	agc	tcc	ctt	ggt	caa	cgt	ccc	tta	aac	tct	5328	
Met	Pro	Arg	Leu	Thr	Arg	Ser	Ser	Leu	Gly	Gln	Arg	Pro	Leu	Asn	Ser		
			1765				1770					1775					
aaa	aac	tca	cac	aaa	aca	agg	att	gat	tat	ttt	tat	cta	tcg	aaa	cat	5376	
Lys	Asn	Ser	His	Lys	Thr	Arg	Ile	Asp	Tyr	Phe	Tyr	Leu	Ser	Lys	His		
			1780				1785					1790					
tgc	atc	ttg	tgt	ggg	gaa	gtt	gtt	caa	gaa	tct	gct	caa	cta	tgc	aac	5424	
Cys	Ile	Leu	Cys	Gly	Glu	Val	Val	Gln	Glu	Ser	Ala	Gln	Leu	Cys	Asn		
			1795			1800						1805					
cgg	tgc	ctt	caa	aat	aaa	agt	gct	gct	gct	gca	acc	att	gtt	tgg	aag	5472	
Arg	Cys	Leu	Gln	Asn	Lys	Ser	Ala	Ala	Ala	Ala	Thr	Ile	Val	Trp	Lys		
			1810		1815			1820									
act	tca	aag	ttg	gag	aga	gag	atg	caa	cac	cta	gcc	acg	gta	agt	act	5520	
Thr	Ser	Lys	Leu	Glu	Arg	Glu	Met	Gln	His	Leu	Ala	Thr	Val	Ser	Thr		
			1825		1830			1835						1840			
cca	aaa	tct	aac	gtt	tat	gaa	ctg	tta	cag	aac	ttg	gta	acg	ttt	aca	5568	
Pro	Lys	Ser	Asn	Val	Tyr	Glu	Leu	Leu	Gln	Asn	Leu	Val	Thr	Phe	Thr		
			1845				1850					1855					
acc	atc	atc	tta	ctg	tct	tta	ctt	tcc	aag	aga	tcg	tgt	gct	tca		5613	
Thr	Ile	Ile	Leu	Leu	Ser	Leu	Leu	Ser	Lys	Arg	Ser	Cys	Ala	Ser			
			1860				1865					1870					
tag																5616	

&lt;210&gt; 2722

&lt;211&gt; 1871

&lt;212&gt; PRT



&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2722

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Ser Ile Asp Tyr Tyr Met Ala Ser Pro Ile Pro Gly Tyr Asn Ile Cys
20      25      30
Tyr Ser Ser Phe Gln Gly Ser Glu Val Asn Glu Val Pro Val Ile Arg
35      40      45
Ile Tyr Gly Ser Thr Pro Ala Gly Gln Lys Thr Cys Leu His Ile His
50      55      60
Arg Ala Leu Pro Tyr Leu Tyr Ile Pro Cys Ser Glu Ile Pro Leu Glu
65      70      75
His His Lys Gly Val Asp Gly Ser Thr Leu Ala Leu Ser Leu Glu Leu
85      90      95
Glu Lys Ala Leu Lys Leu Lys Gly Asn Ala Ala Ser Lys Arg Gln His
100     105     110
Ile His Asp Cys Glu Ile Val Arg Ala Lys Lys Phe Tyr Gly Tyr His
115     120     125
Ser Thr Glu Glu Ala Phe Val Lys Ile Tyr Leu Tyr Pro Tyr Ser Ser
130     135     140
Tyr His Pro Pro Asp Val Ala Arg Ala Ala Ser Leu Leu Leu Ala Gly
145     150     155
Ala Val Leu Gly Lys Ser Leu Gln Pro Tyr Glu Ser His Ile Pro Phe
165     170     175
Ile Leu Gln Phe Leu Val Asp Tyr Asn Leu Tyr Gly Met Gly His Val
180     185     190
His Ile Ser Lys Met Lys Phe Arg Ser Pro Val Pro His His Phe Arg
195     200     205
Pro Arg Arg Phe Asp Leu Asp Cys Pro Gly Gln Arg Ile Asp Glu
210     215     220
Val Ala Ile Thr Lys Ala Asn Ser Ser Ala Ala Ala Ser Val Ser Phe
225     230     235
Pro Val Trp Ser Leu Ser Thr Ile Pro Gly Gln Trp Met Trp Asn Leu
245     250     255
Ser Glu Glu Ser Asp Thr Pro Leu Ser Gln Ser Gln His Arg His Gln
260     265     270
His His Tyr Arg Arg Gln Ser Leu Cys Glu Leu Glu Gly Asp Ala Thr
275     280     285
Ser Ser Asp Ile Leu Asn Gln Phe Lys Met Tyr Asn Ser Leu Ser
290     295     300
Gln Ala Gln Ser Asp Thr Asn Met Val Gln Ser Leu Val Ala Ile Trp
305     310     315
Glu Glu Glu Tyr Glu Arg Thr Gly Val His Asp Ala Pro Ile Pro Pro
325     330     335
Asp Pro Gly Lys Pro Ser Ala Ala Asp Val Leu Gln Thr Met Ser Asp
340     345     350
Tyr Val Gly Phe Gly Asn Met Leu Lys Glu Met Leu Asn Lys Val Glu
355     360     365
Leu Ser Pro Pro Gly Met Lys Pro Thr Ala Val Ser Ser Ala Gly Pro
370     375     380
Asp Met His Ala Lys Pro Glu Ile Thr Asp Leu Gln Ala Leu Asn His
385     390     395
Met Val Gly Thr Cys Ser Glu Phe Pro Ala Ser Glu Gln Leu Ser Pro
405     410     415
Leu Gly Glu Lys Ser Glu Glu Ala Ser Met Glu Asn Asp Glu Tyr Met
420     425     430
Lys Thr Pro Thr Asp Arg Asp Thr Pro Ala Gln Ile Gln Asp Ala Glu
435     440     445
Ala Leu Gly Leu Phe Lys Trp Phe Ala Ser Ser Gln Ala Ala Glu Asp
450     455     460
Ile Asn Ser Asp Asp Glu Ile Leu Arg Glu Thr Ile Leu Ser Pro Leu
465     470     475
Leu Pro Leu Ala Ser Ile Asn Lys Val Leu Glu Met Ala Ser Thr Asp
485     490     495
Tyr Val Ser Gln Ser Gln Lys Glu Cys Gln Asp Ile Leu Asp Ser Gln
500     505     510
Glu Asn Leu Pro Asp Phe Gly Ser Thr Lys Arg Ala Leu Pro Ser
515     520     525

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## PhoenixTemp32470.tmp.txt

Asn	Pro	Asp	Ser	Gln	Asn	Leu	Arg	Thr	Ser	Ser	Asp	Lys	Gln	Ser	Leu
530	530					535					540				
Glu	Ile	Glu	Val	Ala	Ser	Asp	Val	Pro	Asp	Ser	Ser	Thr	Ser	Asn	Gly
545					550					555					560
Ala	Ser	Glu	Asn	Ser	Phe	Arg	Arg	Tyr	Arg	Lys	Ser	Asp	Leu	His	Thr
				565					570					575	
Ser	Glu	Val	Met	Glu	Tyr	Lys	Asn	Arg	Ser	Phe	Ser	Lys	Ser	Asn	Lys
			580					585					590		
Pro	Ser	Asn	Ser	Val	Trp	Gly	Pro	Leu	Pro	Phe	Thr	Leu	Thr	Lys	Asn
		595					600					605			
Leu	Gln	Lys	Asp	Phe	Asp	Ser	Thr	Asn	Ala	Ser	Asp	Lys	Leu	Gly	Leu
610						615					620				
Thr	Lys	Ile	Ser	Ser	Tyr	Pro	Met	Asn	Glu	Met	Thr	Asp	Asn	Tyr	Ile
625					630					635					640
Val	Pro	Val	Lys	Glu	His	Gln	Ala	Asp	Val	Cys	Asn	Thr	Ile	Asp	Arg
				645					650					655	
Asn	Val	Leu	Ala	Gly	Cys	Ser	Leu	Arg	Asp	Leu	Met	Arg	Lys	Lys	Arg
			660					665					670		
Leu	Cys	His	Gly	Glu	Ser	Pro	Val	Ser	Gln	His	Met	Lys	Ser	Arg	Lys
		675					680					685			
Val	Arg	Asp	Ser	Arg	His	Gly	Glu	Lys	Asn	Glu	Cys	Thr	Leu	Arg	Cys
	690					695					700				
Glu	Ala	Lys	Lys	Gln	Gly	Pro	Ala	Leu	Ser	Ala	Glu	Phe	Ser	Glu	Phe
705					710					715					720
Val	Cys	Gly	Asp	Thr	Pro	Asn	Leu	Ser	Pro	Ile	Asp	Ser	Gly	Asn	Cys
				725					730					735	
Glu	Cys	Asn	Ile	Ser	Thr	Glu	Ser	Ser	Glu	Leu	His	Ser	Val	Asp	Arg
			740					745					750		
Cys	Ser	Ala	Lys	Glu	Thr	Ala	Ser	Gln	Asn	Ser	Asp	Glu	Val	Leu	Arg
		755					760					765			
Asn	Leu	Ser	Ser	Thr	Thr	Val	Pro	Phe	Gly	Lys	Asp	Pro	Gln	Thr	Val
	770					775					780				
Glu	Ser	Gly	Thr	Leu	Val	Ser	Ser	Asn	Ile	His	Val	Gly	Ile	Glu	Ile
785					790					795					800
Asp	Ser	Val	Gln	Lys	Ser	Gly	Arg	Glu	Gln	Glu	Ser	Thr	Ala	Asn	Glu
				805					810					815	
Thr	Asp	Glu	Thr	Gly	Arg	Leu	Ile	Cys	Leu	Thr	Leu	Ser	Lys	Lys	Pro
			820					825					830		
Pro	Ser	Leu	Asp	Cys	Leu	Ser	Ala	Gly	Leu	Gln	Asp	Ser	Ala	His	Ser
		835					840					845			
His	Glu	Ile	His	Ala	Arg	Glu	Lys	Gln	His	Asp	Glu	Tyr	Glu	Gly	Asn
	850					855					860				
Ser	Asn	Asp	Ile	Pro	Phe	Phe	Pro	Leu	Glu	Asp	Asn	Lys	Glu	Glu	Lys
865					870					875					880
Lys	His	Phe	Phe	Gln	Gly	Thr	Ser	Leu	Gly	Ile	Pro	Leu	His	His	Leu
				885					890					895	
Asn	Asp	Gly	Ser	Asn	Leu	Tyr	Leu	Leu	Thr	Pro	Ala	Phe	Ser	Pro	Pro
			900					905					910		
Ser	Val	Asp	Ser	Val	Leu	Gln	Trp	Ile	Ser	Asn	Asp	Lys	Gly	Asp	Ser
		915					920					925			
Asn	Ile	Asp	Ser	Glu	Lys	Gln	Pro	Leu	Arg	Asp	Asn	His	Asn	Asp	Arg
	930					935					940				
Gly	Ala	Ser	Phe	Thr	Asp	Leu	Ala	Ser	Ala	Ser	Asn	Val	Val	Ser	Val
945					950					955					960
Ser	Glu	His	Val	Glu	Gln	His	Asn	Asn	Leu	Phe	Val	Asn	Ser	Glu	Ser
				965					970					975	
Asn	Ala	Tyr	Thr	Glu	Ser	Glu	Ile	Asp	Leu	Lys	Pro	Lys	Gly	Thr	Phe
			980					985					990		
Leu	Asn	Leu	Asn	Leu	Gln	Ala	Ser	Val	Ser	Gln	Glu	Leu	Ser	Gln	Ile
		995				1000						1005			
Ser	Gly	Pro	Asp	Gly	Lys	Ser	Gly	Pro	Thr	Pro	Leu	Ser	Gln	Met	Gly
	1010					1015					1020				
Phe	Arg	Asp	Pro	Ala	Ser	Met	Gly	Ala	Gly	Gln	Gln	Leu	Thr	Ile	Leu
1025					1030					1035					1040
Ser	Ile	Glu	Val	His	Ala	Glu	Ser	Arg	Gly	Asp	Leu	Arg	Pro	Asp	Pro
				1045					1050					1055	
Arg	Phe	Asp	Ser	Val	Asn	Val	Ile	Ala	Leu	Val	Val	Gln	Asn	Asp	Asp
			1060					1065				1070			
Ser	Phe	Val	Ala	Glu	Val	Phe	Val	Leu	Phe	Ser	Pro	Asp	Ser	Ile	

## PhoenixTemp32470.tmp.txt

1075 1080 1085  
 Asp Gln Arg Asn Val Asp Gly Leu Ser Gly Cys Lys Leu Ser Val Phe  
 1090 1095 1100  
 Leu Glu Glu Arg Gln Leu Phe Arg Tyr Phe Ile Glu Thr Leu Cys Lys  
 1105 1110 1115 1120  
 Trp Asp Pro Asp Val Leu Leu Gly Trp Asp Ile Gln Gly Gly Ser Ile  
 1125 1130 1135  
 Gly Phe Leu Ala Glu Arg Ala Ala Gln Leu Gly Ile Arg Phe Leu Asn  
 1140 1145 1150  
 Asn Ile Ser Arg Thr Pro Ser Pro Thr Thr Thr Asn Asn Ser Asp Asn  
 1155 1160 1165  
 Lys Arg Lys Leu Gly Asn Asn Leu Leu Pro Asp Pro Leu Val Ala Asn  
 1170 1175 1180  
 Pro Ala Gln Val Glu Glu Val Val Ile Glu Asp Glu Trp Gly Arg Thr  
 1185 1190 1195 1200  
 His Ala Ser Gly Val His Val Gly Gly Arg Ile Val Leu Asn Ala Trp  
 1205 1210 1215  
 Arg Leu Ile Arg Gly Glu Val Lys Leu Asn Met Tyr Thr Ile Glu Ala  
 1220 1225 1230  
 Val Ser Glu Ala Val Leu Arg Gln Lys Val Pro Ser Ile Pro Tyr Lys  
 1235 1240 1245  
 Val Leu Thr Glu Trp Phe Ser Ser Gly Pro Ala Gly Ala Arg Tyr Arg  
 1250 1255 1260  
 Cys Ile Glu Tyr Val Ile Arg Arg Ala Asn Leu Asn Leu Glu Ile Met  
 1265 1270 1275 1280  
 Ser Gln Leu Asp Met Ile Asn Arg Thr Ser Glu Leu Ala Arg Val Phe  
 1285 1290 1295  
 Gly Ile Asp Phe Phe Ser Val Leu Ser Arg Gly Ser Gln Tyr Arg Val  
 1300 1305 1310  
 Glu Ser Met Leu Leu Arg Leu Ala His Thr Gln Asn Tyr Leu Ala Ile  
 1315 1320 1325  
 Ser Pro Gly Asn Gln Gln Val Ala Ser Gln Pro Ala Met Glu Cys Val  
 1330 1335 1340  
 Pro Leu Val Met Glu Pro Glu Ser Ala Phe Tyr Asp Asp Pro Val Ile  
 1345 1350 1355 1360  
 Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Met Ile Ile Ala Tyr Asn  
 1365 1370 1375  
 Leu Cys Phe Ser Thr Cys Leu Gly Lys Leu Ala His Leu Lys Met Asn  
 1380 1385 1390  
 Thr Leu Gly Val Ser Ser Tyr Ser Leu Asp Leu Asp Val Leu Gln Asp  
 1395 1400 1405  
 Leu Asn Gln Ile Leu Gln Thr Pro Asn Ser Val Met Tyr Val Pro Pro  
 1410 1415 1420  
 Glu Val Arg Arg Gly Ile Leu Pro Arg Leu Leu Glu Glu Ile Leu Ser  
 1425 1430 1435 1440  
 Thr Arg Ile Met Val Lys Lys Ala Met Lys Lys Leu Thr Pro Ser Glu  
 1445 1450 1455  
 Ala Val Leu His Arg Ile Phe Asn Ala Arg Gln Leu Ala Leu Lys Leu  
 1460 1465 1470  
 Ile Ala Asn Val Thr Tyr Gly Tyr Thr Ala Ala Gly Phe Ser Gly Arg  
 1475 1480 1485  
 Met Pro Cys Ala Glu Leu Ala Asp Ser Ile Val Gln Cys Gly Arg Ser  
 1490 1495 1500  
 Thr Leu Glu Lys Ala Ile Ser Phe Val Asn Ala Asn Asp Asn Trp Asn  
 1505 1510 1515 1520  
 Ala Arg Val Val Tyr Gly Asp Thr Asp Ser Met Phe Val Leu Leu Lys  
 1525 1530 1535  
 Gly Arg Thr Val Lys Glu Ala Phe Val Val Gly Gln Glu Ile Ala Ser  
 1540 1545 1550  
 Ala Ile Thr Glu Met Asn Pro His Pro Val Thr Leu Lys Met Glu Lys  
 1555 1560 1565  
 Val Tyr His Pro Cys Phe Leu Thr Lys Lys Arg Tyr Val Gly Tyr  
 1570 1575 1580  
 Ser Tyr Glu Ser Pro Asn Gln Arg Glu Pro Ile Phe Asp Ala Lys Gly  
 1585 1590 1595 1600  
 Ile Glu Thr Val Arg Arg Asp Thr Cys Glu Ala Val Ala Lys Thr Met  
 1605 1610 1615  
 Glu Gln Ser Leu Arg Leu Phe Phe Glu Gln Lys Asn Ile Ser Lys Val  
 1620 1625 1630

## PhoenixTemp32470.tmp.txt

Lys Ser Tyr Leu Tyr Arg Gln Trp Lys Arg Ile Leu Ser Gly Arg Val  
 1635 1640 1645  
 Ser Leu Gln Asp Phe Ile Phe Ala Lys Glu Val Arg Leu Gly Thr Tyr  
 1650 1655 1660  
 Ser Thr Arg Asp Ser Ser Leu Leu Pro Pro Ala Ala Ile Val Ala Thr  
 1665 1670 1675 1680  
 Lys Ser Met Lys Ala Asp Pro Arg Thr Glu Pro Arg Tyr Ala Glu Arg  
 1685 1690 1695  
 Val Pro Tyr Val Val Ile His Gly Glu Pro Gly Ala Arg Leu Val Asp  
 1700 1705 1710  
 Met Val Val Asp Pro Leu Val Leu Leu Asp Val Asp Thr Pro Tyr Arg  
 1715 1720 1725  
 Leu Asn Asp Leu Tyr Tyr Ile Asn Lys Gln Ile Ile Pro Ala Leu Gln  
 1730 1735 1740  
 Arg Val Phe Gly Leu Val Gly Ala Asp Leu Asn Gln Trp Phe Leu Glu  
 1745 1750 1755 1760  
 Met Pro Arg Leu Thr Arg Ser Ser Leu Gly Gln Arg Pro Leu Asn Ser  
 1765 1770 1775  
 Lys Asn Ser His Lys Thr Arg Ile Asp Tyr Phe Tyr Leu Ser Lys His  
 1780 1785 1790  
 Cys Ile Leu Cys Gly Glu Val Val Gln Glu Ser Ala Gln Leu Cys Asn  
 1795 1800 1805  
 Arg Cys Leu Gln Asn Lys Ser Ala Ala Ala Ala Thr Ile Val Trp Lys  
 1810 1815 1820  
 Thr Ser Lys Leu Glu Arg Glu Met Gln His Leu Ala Thr Val Ser Thr  
 1825 1830 1835 1840  
 Pro Lys Ser Asn Val Tyr Glu Leu Leu Gln Asn Leu Val Thr Phe Thr  
 1845 1850 1855  
 Thr Ile Ile Leu Leu Ser Leu Leu Ser Lys Arg Ser Cys Ala Ser  
 1860 1865 1870

&lt;210&gt; 2723

&lt;211&gt; 6393

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(6393)

&lt;400&gt; 2723

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Met Ala Ala Ala Gly Glu Ala Ile Asp Gly Val Tyr Ser Val Arg Leu	
1 5 10 15	
gtc atc gcg gat ttc tat atg gag aag ccg cag ttc gga atg gat ccg	96
Val Ile Ala Asp Phe Tyr Met Glu Lys Pro Gln Phe Gly Met Asp Pro	
20 25 30	
tgc tat tcg gag ctg cgc ggc aaa gaa atc aag cgg gtg cca gtg att	144
Cys Tyr Ser Glu Leu Arg Gly Lys Glu Ile Lys Arg Val Pro Val Ile	
35 40 45	
cga gtg ttt ggc ggc aac tcc aga ggc cag aag acc tgc atg cat gta	192
Arg Val Phe Gly Gly Asn Ser Arg Gly Gln Lys Thr Cys Met His Val	
50 55 60	
cac gga gtt ttc ccc tat cta tac att ccg tat gac aag aag gat ttt	240
His Gly Val Phe Pro Tyr Leu Tyr Ile Pro Tyr Asp Lys Lys Asp Phe	
65 70 75 80	
gag tcc ctg gag cgg ggc atc ctg cag atg gcc gtg cac ctg gac aag	288
Glu Ser Leu Glu Arg Gly Ile Leu Gln Met Ala Val His Leu Asp Lys	
85 90 95	
gcc atc aac ata tcc ttg ggt caa ggc agc tcc aac gcc cag cat gtg	336
Ala Ile Asn Ile Ser Leu Gly Gln Gly Ser Ser Asn Ala Gln His Val	
100 105 110	
ttc aaa att cag ctg gtc aag ggc ata ccc ttc tat ggc tac cat cga	384
Phe Lys Ile Gln Leu Val Lys Gly Ile Pro Phe Tyr Gly Tyr His Arg	
115 120 125	
gtg gaa cac cag ttc ctc aag atc tac atg ttc aat ccc cgg ttc gta	432
Val Glu His Gln Phe Leu Lys Ile Tyr Met Phe Asn Pro Arg Phe Val	
130 135 140	
cgc cgc gcc gcc aac ctt ctc caa agc ggc gcc att ctg agc aag aac	480

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Arg 145	Arg	Ala	Ala	Asn	Leu 150	Leu	Gln	Ser	Gly	Ala 155	Ile	Leu	Ser	Lys	Asn 160	
ttc	agt	ccg	cac	gag	tcg	cat	gtg	ccc	tac	att	ctg	cag	ttt	atg	atc	528
Phe	Ser	Pro	His	Glu 165	Ser	His	Val	Pro	Tyr 170	Ile	Leu	Gln	Phe	Met 175	Ile	
gac	tac	aat	ctg	tac	ggt	atg	agc	tat	gtg	cat	gtc	ccg	ctg	gag	gtt	576
Asp	Tyr	Asn	Leu 180	Tyr	Gly	Met	Ser	Tyr 185	Val	His	Val	Pro	Leu 190	Glu	Val	
ctc	aag	ttc	cgg	cgc	aac	cat	gac	gat	gac	gta	atc	ccc	tat	gca	aat	624
Leu	Lys	Phe 195	Arg	Arg	Asn	His	Asp 200	Asp	Asp	Val	Ile	Pro 205	Tyr	Ala	Asn	
gtc	aag	caa	gcg	cag	ctt	ctg	gac	atc	aca	acc	gct	aag	aaa	gtg	gcc	672
Val	Lys 210	Gln	Ala	Gln	Leu	Leu 215	Asp	Ile	Thr	Thr	Ala 220	Lys	Lys	Val	Ala	
tgc	agt	gct	tta	gag	gtg	gat	gtc	agc	tcg	aac	ttc	ata	ctg	aat	cgg	720
Cys 225	Ser	Ala	Leu	Glu	Val 230	Asp	Val	Ser	Ser	Asn 235	Phe	Ile	Leu	Asn	Arg 240	
ttc	cag	ctg	gtg	gcg	aag	agt	aag	agc	aac	cac	act	aac	ccc	ggc	atc	768
Phe	Gln	Leu	Val	Ala 245	Lys	Ser	Lys	Ser	Asn 250	His	Thr	Asn	Pro	Gly 255	Ile	
gag	gcc	atc	tgg	aat	gat	gag	aaa	ttg	cgc	cga	cag	aaa	ctt	gtc	gag	816
Glu	Ala	Ile	Trp 260	Asn	Asp	Glu	Lys	Leu 265	Arg	Arg	Gln	Lys	Leu 270	Val	Glu	
aag	cac	acc	gat	gct	ggc	gat	gag	gag	aag	gct	gaa	gcg	gtg	cca	gta	864
Lys	His	Thr 275	Asp	Ala	Gly	Asp	Glu 280	Glu	Lys	Ala	Glu	Ala 285	Val	Pro	Val	
ttg	gag	tta	ccg	cca	aca	cag	gag	cgg	cat	caa	att	gaa	atc	gcc	gaa	912
Leu	Glu 290	Leu	Pro	Pro	Thr	Gln 295	Glu	Arg	His	Gln	Ile 300	Glu	Ile	Ala	Glu	
agc	gat	atc	ttc	tac	cgc	gct	ctg	gag	agc	aag	ctg	atg	aca	ctg		960
Ser 305	Asp	Ile	Phe	Tyr	Arg 310	Thr	Ala	Leu	Ser 315	Lys	Leu	Met	Thr	Leu 320		
gag	cag	tcc	aca	ctg	tcc	gag	caa	acg	ttg	tcg	gat	cag	aca	atc	ctt	1008
Glu	Gln	Ser	Thr	Leu 325	Ser	Glu	Gln	Thr	Leu 330	Ser	Asp	Gln	Thr	Ile 335	Leu	
ccc	caa	gta	acc	atg	cag	acc	acc	atg	ccc	ggc	aca	aag	gca	cag	aaa	1056
Pro	Gln	Val	Thr 340	Met	Gln	Thr	Thr	Met 345	Pro	Gly	Thr	Lys	Ala 350	Gln	Lys	
cgc	agg	ttt	aac	ttg	caa	aaa	ctt	cta	gcc	aac	gcc	gtt	tat	ccg	gag	1104
Arg	Arg	Phe 355	Asn	Leu	Gln	Lys	Leu 360	Leu	Ala	Asn	Ala	Val 365	Tyr	Pro	Glu	
gaa	tgc	tca	caa	gat	cag	cag	caa	ctg	ctg	gtt	aat	gct	tcc	ttc	ata	1152
Glu	Cys 370	Ser	Gln	Asp	Gln	Gln 375	Gln	Leu	Leu	Val	Asn 380	Ala	Ser	Phe	Ile	
caa	aac	cat	gtt	acc	tgc	ggc	tac	agc	aac	agt	gtc	agt	ttg	tca	acc	1200
Gln 385	Asn	His	Val	Thr	Cys 390	Gly	Tyr	Ser	Asn 395	Val	Ser	Leu	Ser	Thr 400		
tcc	aag	gat	gag	tcc	gat	gac	ttg	gac	gaa	act	gta	gtg	gat	gag	gaa	1248
Ser	Lys	Asp	Glu	Ser 405	Asp	Asp	Leu	Asp	Glu 410	Thr	Val	Val	Asp	Glu 415	Glu	
cta	ata	ctg	agc	ctc	aca	cag	cct	cat	gga	gcg	ata	ccc	cat	gat	gcc	1296
Leu	Ile	Leu	Ser 420	Leu	Thr	Gln	Pro	His 425	Gly	Ala	Ile	Pro	His 430	Asp	Ala	
acc	ttg	agg	gag	gag	gat	ttg	gaa	ctt	ttg	gac	gcg	ttg	cag	ctg	ttg	1344
Thr	Leu 435	Arg	Glu	Glu	Asp	Leu	Glu 440	Leu	Leu	Asp	Ala	Leu 445	Gln	Leu	Leu	
gag	gag	cag	aat	gaa	agt	gaa	tcg	cat	gtg	gac	tta	gac	agt	tcg	ttg	1392
Glu	Glu 450	Gln	Asn	Glu	Ser	Glu 455	Ser	His	Val	Asp	Leu 460	Asp	Ser	Ser	Leu	
gct	cca	ttg	tcg	caa	cat	aaa	aag	ttc	gaa	ctt	aca	ccc	gaa	ttg	ttg	1440
Ala 465	Pro	Leu	Ser	Gln 470	His	Lys	Lys	Phe	Glu	Leu 475	Thr	Pro	Glu	Leu 480	Leu	
gac	aag	gag	acc	gca	gct	act	gct	gct	ctt	ttc	gac	gaa	gat	gtt	gac	1488
Asp	Lys	Glu	Thr	Ala 485	Ala	Thr	Ala	Ala	Leu 490	Phe	Asp	Glu	Asp	Val 495	Asp	
tcc	gac	gag	gat	gcc	gac	caa	gaa	acc	cga	cat	gac	ttc	tct	acc	gtc	1536
Ser	Asp	Glu	Asp 500	Ala	Asp	Gln	Glu	Thr 505	Arg	His	Asp	Phe	Ser 510	Thr	Val	
cta	gac	gat	gtc	gat	gag	ttg	ttg	ctt	aag	tta	aca	caa	agt	cag	cct	1584

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Leu	Asp	Asp	Val	Asp	Glu	Leu	Leu	Leu	Lys	Leu	Thr	Gln	Ser	Gln	Pro	
gcg	gaa	tcg	aag	gaa	ctg	aaa	gta	tct	agt	aaa	ctg	ccc	caa	att	gat	1632
Ala	Glu	Ser	Lys	Glu	Leu	Lys	Val	Ser	Ser	Lys	Leu	Pro	Gln	Ile	Asp	
530						535					540					
ggt	gct	gat	gat	cg	cta	caa	agg	acc	ccc	att	aaa	tcg	atc	agc	tct	1680
Gly	Ala	Asp	Asp	Arg	Leu	Gln	Arg	Thr	Pro	Ile	Lys	Ser	Ile	Ser	Ser	
545					550					555					560	
aag	tca	aag	tcg	agt	cct	tca	aag	act	cca	aca	acg	cca	ata	ggt	cag	1728
Lys	Ser	Lys	Ser	Ser	Pro	Ser	Lys	Thr	Pro	Thr	Thr	Pro	Ile	Gly	Gln	
				565					570					575		
aaa	agc	ctt	ccc	aaa	tcg	cca	cat	act	ccg	aaa	acc	agt	gca	gcc	aag	1776
Lys	Ser	Leu	Pro	Lys	Ser	Pro	His	Thr	Pro	Lys	Thr	Ser	Ala	Ala	Lys	
			580					585					590			
aaa	tat	gcg	ccg	ctg	gct	ttg	aca	att	gga	agc	agt	tca	tca	aag	aaa	1824
Lys	Tyr	Ala	Pro	Leu	Ala	Leu	Thr	Ile	Gly	Ser	Ser	Ser	Ser	Lys	Lys	
		595				600						605				
agc	aac	gat	gaa	ttc	gca	ggg	aga	cca	tct	aat	cca	cg	ctc	agt	ttg	1872
Ser	Asn	Asp	Glu	Phe	Ala	Gly	Arg	Pro	Ser	Asn	Pro	Arg	Leu	Ser	Leu	
	610					615					620					
cag	cta	gac	caa	gga	acc	gga	acg	gga	aca	ctt	cg	cca	gaa	atc	tca	1920
Gln	Leu	Asp	Gln	Gly	Thr	Gly	Thr	Gly	Thr	Leu	Arg	Pro	Glu	Ile	Ser	
625				630						635					640	
ttg	cg	aag	aaa	cta	gcc	atg	tcg	gag	atg	cga	cg	aaa	agt	ttc	gag	1968
Leu	Arg	Lys	Lys	Leu	Ala	Met	Ser	Glu	Met	Arg	Arg	Lys	Ser	Phe	Glu	
				645					650					655		
gac	agt	ttt	gtg	ctc	tta	aag	aac	gat	tgt	act	cca	gtt	agg	agt	acc	2016
Asp	Ser	Phe	Val	Leu	Leu	Lys	Asn	Asp	Cys	Thr	Pro	Val	Arg	Ser	Thr	
			660					665					670			
aga	cga	tca	act	cg	aat	ctg	gac	aaa	aca	cac	att	att	tgt	tcc	ctt	2064
Arg	Arg	Ser	Thr	Arg	Asn	Leu	Asp	Lys	Thr	His	Ile	Ile	Cys	Ser	Leu	
		675					680					685				
acg	ccg	agg	gac	aga	aat	cct	ggc	ttg	agc	gac	atg	ttc	gaa	aca	gag	2112
Thr	Pro	Arg	Asp	Arg	Asn	Pro	Gly	Leu	Ser	Asp	Met	Phe	Glu	Thr	Glu	
	690					695					700					
gac	ggc	aag	caa	tta	cca	cca	aag	aaa	gta	gta	aga	aag	acg	cga	tgg	2160
Asp	Gly	Lys	Gln	Leu	Pro	Pro	Lys	Lys	Val	Val	Arg	Lys	Thr	Arg	Trp	
					710				715						720	
agc	act	cg	aat	caa	gat	ata	gaa	agt	cta	ccc	aag	gcc	ggt	tgt	gag	2208
Ser	Thr	Arg	Asn	Gln	Asp	Ile	Glu	Ser	Leu	Pro	Lys	Ala	Gly	Cys	Glu	
				725					730					735		
ata	gag	aga	ccc	cac	agg	tca	gaa	gga	agt	gcc	ttg	gat	gag	ctg	aag	2256
Ile	Glu	Arg	Pro	His	Arg	Ser	Glu	Gly	Ser	Ala	Leu	Asp	Glu	Leu	Lys	
			740					745					750			
ccg	cgt	cg	agt	gct	cg	cat	aag	gtt	aat	tcg	gca	aat	cca	gat	gag	2304
Pro	Arg	Arg	Ser	Ala	Arg	His	Lys	Val	Asn	Ser	Ala	Asn	Pro	Asp	Glu	
		755					760						765			
tgt	tcc	agc	gaa	ata	caa	aca	act	ggg	cca	cga	gtg	acg	act	aca	agt	2352
Cys	Ser	Ser	Glu	Ile	Gln	Thr	Thr	Gly	Pro	Arg	Val	Thr	Thr	Thr	Ser	
		770				775					780					
ttg	gat	aga	cct	caa	aag	aaa	gcc	aga	cta	tcc	caa	agt	ccc	aaa	gaa	2400
Leu	Asp	Arg	Pro	Gln	Lys	Ala	Arg	Leu	Ser	Ser	Gln	Ser	Pro	Lys	Glu	
				790					795						800	
aat	act	aaa	aca	agc	atg	aat	gga	act	gtt	gca	ttg	gaa	aaa	gca	aca	2448
Asn	Thr	Lys	Thr	Ser	Met	Asn	Gly	Thr	Val	Ala	Leu	Glu	Lys	Ala	Thr	
				805					810					815		
aaa	gat	agt	tca	tct	aac	tca	gag	agt	ccg	cat	cag	cag	gaa	aac	tct	2496
Lys	Asp	Ser	Ser	Ser	Asn	Ser	Glu	Ser	Pro	His	Gln	Gln	Glu	Asn	Ser	
				820				825					830			
gtt	tct	gaa	caa	atc	gaa	tat	ctc	gaa	agt	aaa	cca	aaa	aag	tct	gat	2544
Val	Ser	Glu	Gln	Ile	Glu	Tyr	Leu	Glu	Ser	Lys	Pro	Lys	Lys	Ser	Asp	
		835				840						845				
gaa	act	gca	cga	agc	cgt	gac	gaa	aag	tta	caa	cgt	gag	cta	att	cca	2592
Glu	Thr	Ala	Arg	Ser	Arg	Asp	Glu	Lys	Leu	Gln	Arg	Glu	Leu	Ile	Pro	
					855						860					
cag	gaa	cca	gct	ggt	att	tcg	cct	gga	gat	tca	gca	aac	tcc	acg	gag	2640
Gln	Glu	Pro	Ala	Gly	Ile	Ser	Pro	Gly	Asp	Ser	Ala	Asn	Ser	Thr	Glu	
				870					875						880	
gag	atc	aca	ttt	agt	cca	agc	cat	gat	gag	gct	atc	gaa	tcc	gac	acg	2688

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Glu	Ile	Thr	Phe	Ser	Pro	Ser	His	Asp	Glu	Ala	Ile	Glu	Ser	Asp	Thr	
				885					890					895		
gaa	agc	gat	tat	ata	gtc	acc	aaa	ctt	cgt	aaa	aca	ccc	aac	ttg	aaa	2736
Glu	Ser	Asp	Tyr	Ile	Val	Thr	Lys	Leu	Arg	Lys	Thr	Pro	Asn	Leu	Lys	
			900					905					910			
cgt	ctt	cga	tgg	agc	att	cgg	tcg	gag	ttg	ctg	aac	aaa	caa	ttt	act	2784
Arg	Leu	Arg	Trp	Ser	Ile	Arg	Ser	Glu	Leu	Leu	Asn	Lys	Gln	Phe	Thr	
			915					920					925			
ccc	agt	tca	ggc	ata	aga	ccc	cct	gag	act	gag	acc	act	cct	cag	cta	2832
Pro	Ser	Ser	Gly	Ile	Arg	Pro	Pro	Glu	Thr	Glu	Thr	Thr	Pro	Gln	Leu	
			930				935					940				
agt	ccc	aaa	agc	aat	gag	agc	aac	aca	ccg	gag	ctg	atg	cga	agt	ttc	2880
Ser	Pro	Lys	Ser	Asn	Glu	Ser	Asn	Thr	Pro	Glu	Leu	Met	Arg	Ser	Phe	
					950					955					960	
tat	gag	cat	tcg	ctg	att	gtg	aac	agt	ccg	tcg	gtc	ttc	agt	gac	ttc	2928
Tyr	Glu	His	Ser	Leu	Ile	Val	Asn	Ser	Pro	Ser	Val	Phe	Ser	Asp	Phe	
				965					970					975		
ttg	gat	agc	ccc	gag	ata	cat	atg	gat	tct	cct	agg	tct	gct	cct	cca	2976
Leu	Asp	Ser	Pro	Glu	Ile	His	Met	Asp	Ser	Pro	Arg	Ser	Ala	Pro	Pro	
				980				985					990			
tct	ccc	gat	agc	aac	tcg	ttt	gtg	att	gcc	ccc	ttg	gag	ctg	cct	cca	3024
Ser	Pro	Asp	Ser	Asn	Ser	Phe	Val	Ile	Ala	Pro	Leu	Glu	Leu	Pro	Pro	
							1000					1005				
tcc	tac	gat	gag	gtg	gtt	agc	ggt	agc	cgt	aaa	atg	ggc	ata	ccc	gag	3072
Ser	Tyr	Asp	Glu	Val	Val	Ser	Gly	Ser	Arg	Lys	Met	Gly	Ile	Pro	Glu	
							1010									
							1015									
tac	gag	ttc	caa	aag	ccc	tac	tac	agc	aat	ccc	tcc	gat	gtg	agc	aag	3120
Tyr	Glu	Phe	Gln	Lys	Pro	Tyr	Tyr	Ser	Asn	Pro	Ser	Asp	Val	Ser	Lys	
							1025								1040	
							1030									
gtg	acg	gag	gtg	ggc	ttc	ctg	gtg	ctc	cac	att	ccg	ggg	aac	aag	cta	3168
Val	Thr	Glu	Val	Gly	Phe	Leu	Val	Leu	His	Ile	Pro	Gly	Asn	Lys	Leu	
							1045									
							1050									
aat	gac	tgt	gat	ccc	ttc	cag	agc	ata	ctg	ggc	aat	gat	cgt	ggc	ctg	3216
Asn	Asp	Cys	Asp	Pro	Phe	Gln	Ser	Ile	Leu	Gly	Asn	Asp	Arg	Gly	Leu	
								1065					1070			
gcc	tcc	tgg	cgt	cgt	cgg	caa	ctg	ata	gac	att	ggt	ggc	ctg	gca	atg	3264
Ala	Ser	Trp	Arg	Arg	Arg	Gln	Leu	Ile	Ala	Ile	Gly	Gly	Leu	Ala	Met	
								1080					1085			
ttg	cag	cga	cat	cgg	gga	gaa	caa	aaa	gta	cgg	gag	tat	ttc	agc	acg	3312
Leu	Gln	Arg	His	Arg	Gly	Gln	Lys	Val	Arg	Glu	Tyr	Phe	Ser	Thr		
							1095					1100				
caa	caa	aga	ata	gca	atc	gag	cca	gca	caa	cta	gca	ccc	acc	tgg	cag	3360
Gln	Gln	Arg	Ile	Ala	Ile	Glu	Pro	Ala	Gln	Leu	Ala	Pro	Thr	Trp	Gln	
															1120	
gaa	gcc	aag	atc	tgg	ttg	aaa	gcc	aag	gaa	ctc	ctt	cgt	caa	cga	gag	3408
Glu	Ala	Lys	Ile	Trp	Leu	Lys	Ala	Lys	Glu	Leu	Leu	Arg	Gln	Arg	Glu	
gaa	cca	aaa	aag	tcc	tct	gat	gac	ata	gac	agc	ccc	atc	aag	atc	aag	3456
Glu	Pro	Lys	Lys	Ser	Ser	Asp	Asp	Ile	Asp	Ser	Pro	Ile	Lys	Ile	Lys	
cgg	cag	aag	atc	act	atg	atg	ctg	cag	gct	gag	gaa	ggc	gat	ggc	gga	3504
Arg	Gln	Lys	Ile	Thr	Met	Met	Leu	Gln	Ala	Glu	Glu	Gly	Asp	Gly	Gly	
agt	ggc	gat	gaa	gat	gct	ggt	gat	gaa	ctc	gat	tgc	agt	cta	agc	cta	3552
Ser	Gly	Asp	Glu	Asp	Ala	Gly	Asp	Glu	Leu	Asp	Cys	Ser	Leu	Ser	Leu	
acg	ccc	ttg	tcc	caa	gct	aag	gat	aaa	tgc	aag	gca	acc	cct	acc	agt	3600
Thr	Pro	Leu	Ser	Gln	Ala	Lys	Asp	Lys	Cys	Lys	Ala	Thr	Pro	Thr	Ser	
															1200	
agc	aaa	gcc	aga	gaa	aga	gga	aag	agt	cgc	ctt	aag	ccc	gga	act	agg	3648
Ser	Lys	Ala	Arg	Glu	Arg	Gly	Lys	Ser	Arg	Leu	Lys	Pro	Gly	Thr	Arg	
ctc	agc	ttc	ata	gga	agc	cag	gac	gag	gaa	cca	cca	agc	tcg	cag	tcc	3696
Leu	Ser	Phe	Ile	Gly	Ser	Gln	Asp	Glu	Glu	Pro	Pro	Ser	Ser	Gln	Ser	
agc	gaa	cag	agc	gtc	ttc	agt	agt	gcg	gcc	cag	gcg	gag	cta	gat	cgt	3744
Ser	Glu	Gln	Ser	Val	Phe	Ser	Ser	Ala	Ala	Gln	Ala	Glu	Leu	Asp	Arg	
agt	tcc	ttt	ctg	cgc	cag	tta	gag	ggc	agt	agc	cag	gat	agg	cag	cac	3792

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Ser	Ser	Phe	Leu	Arg	Gln	Leu	Glu	Gly	Ser	Ser	Gln	Asp	Arg	Gln	His	
1250						1255					1260					
gat	ctc	agc	ttt	gga	ctt	agc	cac	gct	acc	ttg	gac	aac	acg	ttc	ggg	3840
Asp	Leu	Ser	Phe	Gly	Leu	Ser	His	Ala	Thr	Leu	Asp	Asn	Thr	Phe	Gly	
1265					1270					1275					1280	
ttc	aag	gtt	aat	ttg	gag	aat	ctg	caa	cag	gcc	aaa	gcc	gac	att	gat	3888
Phe	Lys	Val	Asn	Leu	Glu	Asn	Leu	Gln	Ala	Lys	Ala	Asp	Ile	Asp		
				1285					1290					1295		
tgc	aac	cac	ctg	aca	atc	ata	acg	tta	gag	gtg	ttt	gtg	tcc	acg	cga	3936
Cys	Asn	His	Leu	Thr	Ile	Ile	Thr	Leu	Glu	Val	Phe	Val	Ser	Thr	Arg	
			1300				1305					1310				
ggt	gat	ctc	caa	cca	gat	ccg	atg	cac	gac	gag	att	cgg	tgt	ttg	ttt	3984
Gly	Asp	Leu	Gln	Pro	Asp	Pro	Met	His	Asp	Glu	Ile	Arg	Cys	Leu	Phe	
			1315				1320					1325				
tat	gct	atc	gaa	cac	agt	ttg	ccg	gat	gaa	aag	ctg	cct	agc	aaa	gcc	4032
Tyr	Ala	Ile	Glu	His	Ser	Leu	Pro	Asp	Glu	Lys	Leu	Pro	Ser	Lys	Ala	
	1330					1335					1340					
tgc	ggc	tat	ata	atg	gtg	aac	act	gtc	cag	gat	ttg	cta	agt	gaa	gga	4080
Cys	Gly	Tyr	Ile	Met	Val	Asn	Thr	Val	Gln	Asp	Leu	Leu	Ser	Glu	Gly	
	1345				1350				1355						1360	
cct	ttt	cat	ggc	ata	gat	cgc	gat	att	gag	gtg	caa	gta	gtg	acc	agt	4128
Pro	Phe	His	Gly	Ile	Asp	Arg	Asp	Ile	Glu	Val	Gln	Val	Val	Thr	Ser	
			1365					1370						1375		
gaa	gcg	gag	gca	ttt	gag	gcg	ttg	ctg	gct	ttg	tgt	gaa	cgg	tgg	gat	4176
Glu	Ala	Glu	Ala	Phe	Glu	Ala	Leu	Leu	Ala	Leu	Cys	Glu	Arg	Trp	Asp	
			1380				1385					1390				
gcg	gac	ata	tac	gca	ggg	tac	gaa	atc	gag	atg	tcc	tct	tgg	ggc	tat	4224
Ala	Asp	Ile	Tyr	Ala	Gly	Tyr	Glu	Ile	Glu	Met	Ser	Ser	Trp	Gly	Tyr	
	1395					1400					1405					
gtg	att	gat	cgg	gcc	aag	cat	ctg	tgc	ttc	aac	atc	gct	cct	ctg	ctg	4272
Val	Ile	Asp	Arg	Ala	Lys	His	Leu	Cys	Phe	Asn	Ile	Ala	Pro	Leu	Leu	
	1410				1415						1420					
tcc	cga	gtg	ccc	aca	cag	aag	gtc	cgg	gac	ttt	gtg	gac	gag	gat	cgg	4320
Ser	Arg	Val	Pro	Thr	Gln	Lys	Val	Arg	Asp	Phe	Val	Asp	Glu	Asp	Arg	
	1425				1430					1435					1440	
gag	cag	ttc	acc	gat	ttg	gat	gtg	gaa	atg	aag	ctt	tgc	ggc	cgc	att	4368
Glu	Gln	Phe	Thr	Asp	Leu	Asp	Val	Glu	Met	Lys	Leu	Cys	Gly	Arg	Ile	
			1445				1450						1455			
ctg	ctg	gac	gta	tgg	cgc	ctg	atg	cgc	tcc	gag	att	gca	ctg	acg	tcg	4416
Leu	Leu	Asp	Val	Trp	Arg	Leu	Met	Arg	Ser	Glu	Ile	Ala	Leu	Thr	Ser	
			1460				1465					1470				
tac	acc	ttc	gaa	aac	gta	atg	tac	cac	att	ttg	cat	aag	aga	tgt	ccc	4464
Tyr	Thr	Phe	Glu	Asn	Val	Met	Tyr	His	Ile	Leu	His	Lys	Arg	Cys	Pro	
	1475					1480					1485					
tgg	cac	act	gcc	aaa	tcc	ctc	acc	gaa	tgg	ttc	ggc	tca	ccc	tgc	acc	4512
Trp	His	Thr	Ala	Lys	Ser	Leu	Thr	Glu	Trp	Phe	Gly	Ser	Pro	Cys	Thr	
	1490				1495					1500						
cgc	tgg	ata	gta	atg	gaa	tat	tac	ttg	gag	cgt	gtg	cgt	ggc	acc	tta	4560
Arg	Trp	Ile	Val	Met	Glu	Tyr	Tyr	Leu	Glu	Arg	Val	Arg	Gly	Thr	Leu	
	1505				1510				1515						1520	
act	ctc	ctg	gag	cag	ctg	gac	tta	ctg	gga	cgg	act	agc	gaa	atg	gcc	4608
Thr	Leu	Leu	Glu	Gln	Leu	Asp	Leu	Leu	Gly	Arg	Thr	Ser	Glu	Met	Ala	
			1525					1530					1535			
aag	ctc	att	ggc	att	cag	ttc	tac	gag	gtg	ctg	tcg	cgc	ggc	tca	cag	4656
Lys	Leu	Ile	Gly	Ile	Gln	Phe	Tyr	Glu	Val	Leu	Ser	Arg	Gly	Ser	Gln	
		1540					1545					1550				
ttt	cgc	gtg	gaa	agc	atg	atg	ctg	aga	atc	gcc	aag	cca	aag	aac	ctg	4704
Phe	Arg	Val	Glu	Ser	Met	Met	Leu	Arg	Ile	Ala	Lys	Pro	Lys	Asn	Leu	
	1555					1560					1565					
gtg	cca	ctt	tca	ccc	agc	gtc	cag	gct	cgc	gct	cat	atg	aga	gct	ccc	4752
Val	Pro	Leu	Ser	Pro	Ser	Val	Gln	Ala	Arg	Ala	His	Met	Arg	Ala	Pro	
	1570				1575					1580						
gag	tac	ttg	gcg	cta	ata	atg	gaa	ccg	cag	tca	cga	ttc	tat	gcc	gat	4800
Glu	Tyr	Leu	Ala	Leu	Ile	Met	Glu	Pro	Gln	Ser	Arg	Phe	Tyr	Ala	Asp	
	1585				1590				1595						1600	
ccc	cta	atc	gtg	ctt	gat	ttt	cag	agc	ttg	cac	ccc	agc	atg	atc	atc	4848
Pro	Leu	Ile	Val	Leu	Asp	Phe	Gln	Ser	Leu	His	Pro	Ser	Met	Ile	Ile	
			1605					1610					1615			
gcc	tac	aac	tac	tgc	ttc	tcc	acg	tgc	ttg	ggc	aga	gta	gag	cac	ctg	4896



## PhoenixTemp32470.tmp.txt

Ala	Tyr	Asn	Tyr	Cys	Phe	Ser	Thr	Cys	Leu	Gly	Arg	Val	Glu	His	Leu		
ggt	gga	agt	tcg	ccc	ttt	gaa	ttt	ggc	gcg	tcg	cag	ctc	cga	ggt	tcg	4944	
Gly	Gly	Ser	Ser	Pro	Phe	Glu	Phe	Gly	Ala	Ser	Gln	Leu	Arg	Val	Ser		
		1635					1640					1645					
cgg	cag	atg	ctg	cag	aag	ttg	ctg	gag	cac	gat	ctg	ggt	act	ggt	tcg	4992	
Arg	Gln	Met	Leu	Gln	Lys	Leu	Leu	Glu	His	Asp	Leu	Val	Thr	Val	Ser		
		1650				1655					1660						
cca	tgc	ggc	ggt	gtg	ttc	gtg	aag	cgt	gaa	gtg	cgc	gag	ggc	atc	ctg	5040	
Pro	Cys	Gly	Val	Val	Phe	Val	Lys	Arg	Glu	Val	Arg	Glu	Gly	Ile	Leu		
1665					1670					1675					1680		
ccg	cgc	atg	ctc	acc	gag	atc	ttg	gac	acg	cgc	caa	atg	gtc	aaa	cag	5088	
Pro	Arg	Met	Leu	Thr	Glu	Ile	Leu	Asp	Thr	Arg	Gln	Met	Val	Lys	Gln		
				1685						1690					1695		
tcg	atg	aag	ctc	cat	aag	gac	agc	tct	gca	ctt	cag	cgg	atc	ctt	cac	5136	
Ser	Met	Lys	Leu	His	Lys	Asp	Ser	Ser	Ala	Leu	Gln	Arg	Ile	Leu	His		
			1700					1705					1710				
tca	cgg	cag	ctg	ggc	ctt	aag	ctg	atg	gcc	aat	ggt	acc	tat	ggc	tac	5184	
Ser	Arg	Gln	Leu	Gly	Leu	Lys	Leu	Met	Ala	Asn	Val	Thr	Tyr	Gly	Tyr		
		1715					1720					1725					
acc	gcc	gct	aac	ttc	agt	ggc	cga	atg	cct	tca	gtg	gaa	gtg	ggc	gat	5232	
Thr	Ala	Ala	Asn	Phe	Ser	Gly	Arg	Met	Pro	Ser	Val	Glu	Val	Gly	Asp		
		1730				1735				1740							
tct	gta	ggt	tcc	aaa	gga	cgg	gag	acc	ctg	gag	cgt	gct	atc	aaa	cta	5280	
Ser	Val	Val	Ser	Lys	Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Lys	Leu		
		1745			1750				1755						1760		
gtg	gag	aac	aac	gag	gag	tgg	aag	gtg	cgt	gtc	gtc	tat	ggc	gac	acg	5328	
Val	Glu	Asn	Asn	Glu	Glu	Trp	Lys	Val	Arg	Val	Val	Tyr	Gly	Asp	Thr		
				1765					1770					1775			
gac	tcc	atg	ttc	gtt	ctt	gtg	ccg	ggt	cga	aat	cga	gct	gaa	gct	ttt	5376	
Asp	Ser	Met	Phe	Val	Leu	Val	Pro	Gly	Arg	Asn	Arg	Ala	Glu	Ala	Phe		
			1780					1785					1790				
cga	atc	ggc	gag	gag	atc	gcc	aag	gcg	gtc	acc	gaa	atg	aat	cca	cag	5424	
Arg	Ile	Gly	Glu	Glu	Ile	Ala	Lys	Ala	Val	Thr	Glu	Met	Asn	Pro	Gln		
		1795					1800					1805					
cca	gtg	aag	cta	aaa	ctg	gag	aag	gtc	tac	caa	cct	tgc	atg	ctg	cag	5472	
Pro	Val	Lys	Leu	Lys	Leu	Glu	Lys	Val	Tyr	Gln	Pro	Cys	Met	Leu	Gln		
		1810			1815					1820							
acc	aag	aag	cgc	tac	gtg	ggt	tac	atg	tat	gag	aca	gcc	gat	cag	gag	5520	
Thr	Lys	Lys	Arg	Tyr	Val	Gly	Tyr	Met	Tyr	Glu	Thr	Ala	Asp	Gln	Glu		
				1830					1835					1840			
cag	ccc	ggt	tac	gag	gcg	aag	ggc	ata	gaa	act	gag	cgg	cga	gat	ggt	5568	
Gln	Pro	Val	Tyr	Glu	Ala	Lys	Gly	Ile	Glu	Thr	Glu	Arg	Arg	Asp	Gly		
				1845				1850						1855			
tgt	ccg	gcg	gtg	gcc	aag	atg	ctg	gaa	aag	gtg	ctg	cgc	ata	ttg	ttc	5616	
Cys	Pro	Ala	Val	Ala	Lys	Met	Leu	Glu	Lys	Val	Leu	Arg	Ile	Leu	Phe		
			1860				1865						1870				
gag	acg	caa	gac	gtc	agc	aag	atc	aag	gcg	tac	gtg	tgc	cgg	cag	ttc	5664	
Glu	Thr	Gln	Asp	Val	Ser	Lys	Ile	Lys	Ala	Tyr	Val	Cys	Arg	Gln	Phe		
		1875					1880					1885					
acc	aag	ctg	ctg	tcg	ggc	agg	gcc	aat	ctg	cag	gac	ctg	att	ttc	gcc	5712	
Thr	Lys	Leu	Leu	Ser	Gly	Arg	Ala	Asn	Leu	Gln	Asp	Leu	Ile	Phe	Ala		
		1890			1895				1900								
aag	gag	ttc	agg	ggt	ctc	aat	ggc	tac	aag	ccc	acg	gct	tgt	gtg	cca	5760	
Lys	Glu	Phe	Arg	Gly	Leu	Asn	Gly	Tyr	Lys	Pro	Thr	Ala	Cys	Val	Pro		
		1905		1910				1915						1920			
gca	ctg	gag	ctc	acg	cgt	aaa	tgg	atg	caa	aaa	gac	cca	cga	cat	gtg	5808	
Ala	Leu	Glu	Leu	Thr	Arg	Lys	Trp	Met	Gln	Lys	Asp	Pro	Arg	His	Val		
			1925				1930							1935			
ccg	cgt	cgt	ggc	gaa	cgc	gtc	ccc	ttc	ata	ata	gtc	aac	ggc	ccg	ccg	5856	
Pro	Arg	Arg	Gly	Glu	Arg	Val	Pro	Phe	Ile	Ile	Val	Asn	Gly	Pro	Pro		
			1940				1945					1950					
ggc	atg	cag	cta	atc	cgc	ctg	gtg	cgc	agc	ccg	cac	gac	atc	ctg	gcc	5904	
Gly	Met	Gln	Leu	Ile	Arg	Leu	Val	Arg	Ser	Pro	His	Asp	Ile	Leu	Ala		
		1955				1960					1965						
aac	gag	ggt	cac	aag	ata	aac	gcc	atc	tac	tac	att	acc	aag	gcg	att	5952	
Asn	Glu	Gly	His	Lys	Ile	Asn	Ala	Ile	Tyr	Tyr	Ile	Thr	Lys	Ala	Ile		
		1970			1975				1980								
att	ccg	ccg	ctg	aat	cgc	tgc	ctg	ctg	ctc	ata	ggc	gcc	aat	gtg	cac	6000	

## PhoenixTemp32470.tmp.txt

Ile	Pro	Pro	Leu	Asn	Arg	Cys	Leu	Leu	Leu	Ile	Gly	Ala	Asn	Val	His	
1985				1990					1995					2000		
gac	tgg	ttt	gcc	agt	ctg	ccg	agg	aag	tgt	ctc	atg	acg	ccg	gct	gtt	6048
Asp	Trp	Phe	Ala	Ser	Leu	Pro	Arg	Lys	Leu	Leu	Met	Thr	Pro	Ala	Val	
			2005					2010					2015			
gga	acc	gcc	aac	gaa	ttg	gcg	ggt	cca	cgc	ggt	gcc	aag	tcc	acc	atc	6096
Gly	Thr	Ala	Asn	Glu	Leu	Ala	Gly	Pro	Arg	Gly	Ala	Lys	Ser	Thr	Ile	
			2020				2025					2030				
tcc	cag	tat	ttc	tct	acc	acc	agc	tgc	gtg	atc	gac	tgt	ggc	cgc	caa	6144
Ser	Gln	Tyr	Phe	Ser	Thr	Thr	Ser	Cys	Val	Ile	Asp	Cys	Gly	Arg	Gln	
		2035				2040				2045						
acc	aag	gcg	ggc	att	tgc	cca	gac	tgc	ctg	aaa	aac	gcc	acc	acg	tgc	6192
Thr	Lys	Ala	Gly	Ile	Cys	Pro	Asp	Cys	Leu	Lys	Asn	Ala	Thr	Thr	Cys	
	2050				2055					2060						
gta	gtt	gtg	ctc	tca	gat	aag	aca	gcg	cgt	ctg	gag	agg	ggc	tac	caa	6240
Val	Val	Val	Leu	Ser	Asp	Lys	Thr	Ala	Arg	Leu	Glu	Arg	Gly	Tyr	Gln	
2065				2070				2075						2080		
cta	act	cgg	cag	ata	tgc	cag	gct	tgt	tgc	gga	cgc	ctg	ggt	agc	cta	6288
Leu	Thr	Arg	Gln	Ile	Cys	Gln	Ala	Cys	Gly	Arg	Leu	Gly	Ser	Leu		
			2085					2090				2095				
cag	tgt	gat	tcc	ctc	gac	tgc	cca	gtg	ctg	tat	gtc	ttg	gag	gga	aag	6336
Gln	Cys	Asp	Ser	Leu	Asp	Cys	Pro	Val	Leu	Tyr	Val	Leu	Glu	Gly	Lys	
		2100				2105				2110						
cga	agg	gaa	ctc	cag	caa	atc	gag	cac	tgg	aac	aaa	ctc	ctt	gaa	cac	6384
Arg	Arg	Glu	Leu	Gln	Gln	Ile	Glu	His	Trp	Asn	Lys	Leu	Leu	Glu	His	
		2115				2120					2125					
cac	ttc	taa														6393
His	Phe															
	2130															

&lt;210&gt; 2724

&lt;211&gt; 2130

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2724

Met	Ala	Ala	Ala	Gly	Glu	Ala	Ile	Asp	Gly	Val	Tyr	Ser	Val	Arg	Leu	
1				5					10					15		
Val	Ile	Ala	Asp	Phe	Tyr	Met	Glu	Lys	Pro	Gln	Phe	Gly	Met	Asp	Pro	
			20					25					30			
Cys	Tyr	Ser	Glu	Leu	Arg	Gly	Lys	Glu	Ile	Lys	Arg	Val	Pro	Val	Ile	
		35					40					45				
Arg	Val	Phe	Gly	Gly	Asn	Ser	Arg	Gly	Gln	Lys	Thr	Cys	Met	His	Val	
		50				55					60					
His	Gly	Val	Phe	Pro	Tyr	Leu	Tyr	Ile	Pro	Tyr	Asp	Lys	Lys	Asp	Phe	
65					70					75				80		
Glu	Ser	Leu	Glu	Arg	Gly	Ile	Leu	Gln	Met	Ala	Val	His	Leu	Asp	Lys	
			85						90					95		
Ala	Ile	Asn	Ile	Ser	Leu	Gly	Gln	Gly	Ser	Ser	Asn	Ala	Gln	His	Val	
		100						105					110			
Phe	Lys	Ile	Gln	Leu	Val	Lys	Gly	Ile	Pro	Phe	Tyr	Gly	Tyr	His	Arg	
		115					120					125				
Val	Glu	His	Gln	Phe	Leu	Lys	Ile	Tyr	Met	Phe	Asn	Pro	Arg	Phe	Val	
	130					135					140					
Arg	Arg	Ala	Ala	Asn	Leu	Leu	Gln	Ser	Gly	Ala	Ile	Leu	Ser	Lys	Asn	
145				150						155				160		
Phe	Ser	Pro	His	Glu	Ser	His	Val	Pro	Tyr	Ile	Leu	Gln	Phe	Met	Ile	
			165						170					175		
Asp	Tyr	Asn	Leu	Tyr	Gly	Met	Ser	Tyr	Val	His	Val	Pro	Leu	Glu	Val	
		180						185					190			
Leu	Lys	Phe	Arg	Arg	Asn	His	Asp	Asp	Asp	Val	Ile	Pro	Tyr	Ala	Asn	
		195					200					205				
Val	Lys	Gln	Ala	Gln	Leu	Leu	Asp	Ile	Thr	Thr	Ala	Lys	Lys	Val	Ala	
	210					215					220					
Cys	Ser	Ala	Leu	Glu	Val	Asp	Val	Ser	Ser	Asn	Phe	Ile	Leu	Asn	Arg	
225					230					235				240		
Phe	Gln	Leu	Val	Ala	Lys	Ser	Lys	Ser	Asn	His	Thr	Asn	Pro	Gly	Ile	
			245						250					255		
Glu	Ala	Ile	Trp	Asn	Asp	Glu	Lys	Leu	Arg	Arg	Gln	Lys	Leu	Val	Glu	

## PhoenixTemp32470.tmp.txt

			260					265			270				
Lys	His	Thr	Asp	Ala	Gly	Asp	Glu	Glu	Lys	Ala	Glu	Ala	Val	Pro	Val
		275					280					285			
Leu	Glu	Leu	Pro	Pro	Thr	Gln	Glu	Arg	His	Gln	Ile	Glu	Ile	Ala	Glu
	290					295					300				
Ser	Asp	Ile	Phe	Tyr	Arg	Thr	Ala	Leu	Glu	Ser	Lys	Leu	Met	Thr	Leu
305					310					315					320
Glu	Gln	Ser	Thr	Leu	Ser	Glu	Gln	Thr	Leu	Ser	Asp	Gln	Thr	Ile	Leu
				325					330					335	
Pro	Gln	Val	Thr	Met	Gln	Thr	Thr	Met	Pro	Gly	Thr	Lys	Ala	Gln	Lys
			340					345					350		
Arg	Arg	Phe	Asn	Leu	Gln	Lys	Leu	Leu	Ala	Asn	Ala	Val	Tyr	Pro	Glu
		355					360					365			
Glu	Cys	Ser	Gln	Asp	Gln	Gln	Gln	Leu	Leu	Val	Asn	Ala	Ser	Phe	Ile
	370					375					380				
Gln	Asn	His	Val	Thr	Cys	Gly	Tyr	Ser	Asn	Ser	Val	Ser	Leu	Ser	Thr
385					390					395					400
Ser	Lys	Asp	Glu	Ser	Asp	Asp	Leu	Asp	Glu	Thr	Val	Val	Asp	Glu	Glu
				405					410					415	
Leu	Ile	Leu	Ser	Leu	Thr	Gln	Pro	His	Gly	Ala	Ile	Pro	His	Asp	Ala
			420					425					430		
Thr	Leu	Arg	Glu	Glu	Asp	Leu	Glu	Leu	Leu	Asp	Ala	Leu	Gln	Leu	Leu
		435					440					445			
Glu	Glu	Gln	Asn	Glu	Ser	Glu	Ser	His	Val	Asp	Leu	Asp	Ser	Ser	Leu
	450					455					460				
Ala	Pro	Leu	Ser	Gln	His	Lys	Lys	Phe	Glu	Leu	Thr	Pro	Glu	Leu	Leu
465					470					475					480
Asp	Lys	Glu	Thr	Ala	Ala	Thr	Ala	Ala	Leu	Phe	Asp	Glu	Asp	Val	Asp
				485					490					495	
Ser	Asp	Glu	Asp	Ala	Asp	Gln	Glu	Thr	Arg	His	Asp	Phe	Ser	Thr	Val
			500					505					510		
Leu	Asp	Asp	Val	Asp	Glu	Leu	Leu	Leu	Lys	Leu	Thr	Gln	Ser	Gln	Pro
		515					520					525			
Ala	Glu	Ser	Lys	Glu	Leu	Lys	Val	Ser	Ser	Lys	Leu	Pro	Gln	Ile	Asp
	530					535					540				
Gly	Ala	Asp	Asp	Arg	Leu	Gln	Arg	Thr	Pro	Ile	Lys	Ser	Ile	Ser	Ser
545					550					555					560
Lys	Ser	Lys	Ser	Ser	Pro	Ser	Lys	Thr	Pro	Thr	Thr	Pro	Ile	Gly	Gln
				565					570					575	
Lys	Ser	Leu	Pro	Lys	Ser	Pro	His	Thr	Pro	Lys	Thr	Ser	Ala	Ala	Lys
			580					585					590		
Lys	Tyr	Ala	Pro	Leu	Ala	Leu	Thr	Ile	Gly	Ser	Ser	Ser	Ser	Lys	Lys
		595					600					605			
Ser	Asn	Asp	Glu	Phe	Ala	Gly	Arg	Pro	Ser	Asn	Pro	Arg	Leu	Ser	Leu
	610					615					620				
Gln	Leu	Asp	Gln	Gly	Thr	Gly	Thr	Gly	Thr	Leu	Arg	Pro	Glu	Ile	Ser
625					630					635					640
Leu	Arg	Lys	Lys	Leu	Ala	Met	Ser	Glu	Met	Arg	Arg	Lys	Ser	Phe	Glu
				645					650					655	
Asp	Ser	Phe	Val	Leu	Leu	Lys	Asn	Asp	Cys	Thr	Pro	Val	Arg	Ser	Thr
			660					665					670		
Arg	Arg	Ser	Thr	Arg	Asn	Leu	Asp	Lys	Thr	His	Ile	Ile	Cys	Ser	Leu
		675					680					685			
Thr	Pro	Arg	Asp	Arg	Asn	Pro	Gly	Leu	Ser	Asp	Met	Phe	Glu	Thr	Glu
	690					695					700				
Asp	Gly	Lys	Gln	Leu	Pro	Pro	Lys	Lys	Val	Val	Arg	Lys	Thr	Arg	Trp
705					710					715					720
Ser	Thr	Arg	Asn	Gln	Asp	Ile	Glu	Ser	Leu	Pro	Lys	Ala	Gly	Cys	Glu
				725					730					735	
Ile	Glu	Arg	Pro	His	Arg	Ser	Glu	Gly	Ser	Ala	Leu	Asp	Glu	Leu	Lys
			740					745					750		
Pro	Arg	Arg	Ser	Ala	Arg	His	Lys	Val	Asn	Ser	Ala	Asn	Pro	Asp	Glu
		755					760					765			
Cys	Ser	Ser	Glu	Ile	Gln	Thr	Thr	Gly	Pro	Arg	Val	Thr	Thr	Thr	Ser
	770					775					780				
Leu	Asp	Arg	Pro	Gln	Lys	Lys	Ala	Arg	Leu	Ser	Gln	Ser	Pro	Lys	Glu
785					790					795					800
Asn	Thr	Lys	Thr	Ser	Met	Asn	Gly	Thr	Val	Ala	Leu	Glu	Lys	Ala	Thr
				805					810					815	

## PhoenixTemp32470.tmp.txt

Lys Asp Ser Ser Ser Asn Ser Glu Ser Pro His Gln Gln Glu Asn Ser  
 Val Ser Glu 820 Gln Ile Glu Tyr Leu 825 Glu Ser Lys Pro Lys 830 Lys Ser Asp  
 Glu Thr 835 Ala Arg Ser Arg Asp 840 Glu Lys Leu Gln Arg 845 Glu Leu Ile Pro  
 Gln 850 Glu Pro Ala Gly Ile Ser Pro Gly Asp Ser 860 Ala Asn Ser Thr Glu  
 865 Glu Ile Thr Phe Ser 870 Pro Ser His Asp Glu 875 Ala Ile Glu Ser Asp Thr  
 Glu Ser Asp Tyr 885 Ile Val Thr Lys Leu 890 Arg Lys Thr Pro Asn Leu Lys  
 Arg Leu Arg 900 Trp Ser Ile Arg Ser 905 Glu Leu Leu Asn Lys 910 Gln Phe Thr  
 Pro Ser Ser Gly Ile Arg Pro 915 Glu Thr Glu Thr Thr Pro Gln Leu  
 Ser 920 Pro Lys Ser Asn Glu Ser Asn Thr Pro Glu Leu Met Arg Ser Phe  
 945 Tyr Glu His Ser Leu 950 Ile Val Asn Ser Pro Ser Val Phe Ser Asp Phe  
 Leu Asp Ser Pro Glu Ile His Met Asp Ser Pro Arg Ser Ala Pro Pro  
 Ser Pro Asp Ser Asn Ser Phe Val 965 Ile Ala Pro Leu Glu Leu Pro Pro  
 Ser Tyr 970 Asp Glu Val Val Ser 980 Gly Ser Arg Lys Met Gly Ile Pro Glu  
 Tyr Glu Phe Gln Lys Pro Tyr Tyr Ser Asn Pro Ser Asp Val Ser Lys  
 1025 Val Thr Glu Val Gly Phe Leu Val Leu His 1030 Ile Pro Gly Asn Lys Leu  
 Asn Asp Cys Asp Pro Phe Gln Ser Ile Leu Gly Asn Asp Arg Gly Leu  
 Ala Ser Trp Arg Arg Arg Gln Leu Ile Ala Ile Gly Gly Leu Ala Met  
 Leu Gln Arg His Arg Gly Glu Gln Lys Val Arg Glu Tyr Phe Ser Thr  
 1090 Gln Gln Arg Ile Ala Ile Glu Pro Ala Gln Leu Ala Pro Thr Trp Gln  
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 Tyr Ala Ile Glu His Ser Leu Pro Asp Glu Lys Leu Pro Ser Lys Ala  
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PhoenixTemp32470.tmp.txt

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 Ile Pro Pro Leu Asn Arg Cys Leu Leu Leu Ile Gly Ala Asn Val His  
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 Val Pro Val Ile Arg Xaa Phe Gly Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa  
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 50 55 60  
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 Xaa Xaa Pro Tyr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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 100 105 110  
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## PhoenixTemp32470.tmp.txt

			180					185			190				
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		195					200					205			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
		210					215					220			
Xaa	Xaa	Xaa	Glu	Xaa	His	Xaa	Xaa	Xaa	Xaa	Leu	Gln	Phe	Xaa	Xaa	Asp
225					230					235					240
Tyr	Asn	Leu	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				245						250					255
Arg	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				260						265					270
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				275						280					285
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				290						295					300
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705					710					715					720
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
					725					730					735

## PhoenixTemp32470.tmp.txt

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
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## PhoenixTemp32470.tmp.txt

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 Ser Thr Xaa Leu Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1795 1800 1805  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1810 1815 1820  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro Asn Gly Xaa Xaa Xaa  
 1825 1830 1835 1840



## PhoenixTemp32470.tmp.txt

Xaa Lys Xaa Xaa Xaa Arg Xaa Xaa Xaa Leu Xaa Xaa Met Leu Xaa Glu  
 1845 1850 1855  
 Ile Leu Xaa Thr Arg Xaa Met Val Lys Xaa Met Lys Xaa Xaa Xaa  
 1860 1865 1870  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Arg Gln Leu Xaa  
 1875 1880 1885  
 Leu Lys Leu Xaa Ala Asn Val Thr Tyr Gly Tyr Thr Xaa Ala Xaa Phe  
 1890 1895 1900  
 Ser Gly Arg Met Pro Cys Xaa Glu Xaa Ala Asp Ser Ile Val Xaa Xaa  
 1905 1910 1915 1920  
 Gly Arg Glu Thr Leu Glu Xaa Ala Ile Xaa Xaa Xaa Xaa Xaa Xaa  
 1925 1930 1935  
 Xaa Trp Xaa Ala Xaa Val Val Tyr Gly Asp Thr Asp Ser Xaa Phe Val  
 1940 1945 1950  
 Xaa Leu Xaa Gly Xaa Thr Xaa Xaa Xaa Ala Phe Xaa Ile Gly Xaa Glu  
 1955 1960 1965  
 Xaa Ala Xaa Xaa Xaa Thr Xaa Xaa Asn Pro Xaa Pro Xaa Xaa Leu Lys  
 1970 1975 1980  
 Xaa Glu Lys Val Tyr Xaa Pro Cys Xaa Leu Xaa Xaa Lys Lys Arg Tyr  
 1985 1990 1995 2000  
 Val Gly Xaa Xaa Tyr Glu Xaa Xaa Xaa Gln Xaa Xaa Pro Xaa Phe Asp  
 2005 2010 2015  
 Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Xaa Pro Ala Xaa Xaa  
 2020 2025 2030  
 Xaa Xaa Xaa Glu Xaa Xaa Leu Xaa Xaa Leu Phe Xaa Thr Xaa Asp Xaa  
 2035 2040 2045  
 Ser Xaa Xaa Lys Xaa Tyr Xaa Xaa Xaa Gln Xaa Xaa Lys Ile Xaa Xaa  
 2050 2055 2060  
 Gly Xaa Val Ser Xaa Gln Asp Phe Xaa Phe Ala Xaa Glu Val Xaa Leu  
 2065 2070 2075 2080  
 Gly Xaa Tyr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Ala  
 2085 2090 2095  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Arg Xaa Glu Pro Xaa  
 2100 2105 2110  
 Tyr Xaa Glu Arg Val Pro Tyr Xaa Xaa Xaa Gly Xaa Pro Gly Xaa  
 2115 2120 2125  
 Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Leu Xaa Xaa Xaa  
 2130 2135 2140  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Tyr Ile Xaa Lys  
 2145 2150 2155 2160  
 Xaa Xaa Ile Pro Pro Leu Xaa Arg Xaa Phe Xaa Leu Xaa Gly Ala Xaa  
 2165 2170 2175  
 Xaa Xaa Xaa Trp Xaa Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2180 2185 2190  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2195 2200 2205  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2210 2215 2220  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Xaa Xaa Xaa Xaa  
 2225 2230 2235 2240  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2245 2250 2255  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2260 2265 2270  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2275 2280 2285  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2290 2295 2300  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2305 2310 2315 2320  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2325 2330 2335  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2340 2345 2350  
 Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 2355 2360 2365  
 Xaa Xaa Xaa Xaa Xaa Cys Xaa Ser Xaa Xaa Cys  
 2370 2375

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 <212> PRT  
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<220>  
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<220>  
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 <222> (2)..(2)  
 <223> Xaa in position 2 is any amino acid

<220>  
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 <222> (11)..(11)  
 <223> Xaa in position 11 is Ile or Val

<220>  
 <221> Variant  
 <222> (15)..(17)  
 <223> Xaa in position 15 to 17 is any amino acid

<220>  
 <221> Variant  
 <222> (19)..(23)  
 <223> Xaa in position 19 to 23 is any or no amino acid

<220>  
 <221> Variant  
 <222> (25)..(25)  
 <223> Xaa in position 25 is any amino acid

<220>  
 <221> Variant  
 <222> (26)..(26)  
 <223> Xaa in position 26 is Ala, Cys, Ser, Thr or Val

<220>  
 <221> Variant  
 <222> (27)..(27)  
 <223> Xaa in position 27 is Ile or Leu

<220>  
 <221> Variant  
 <222> (28)..(28)  
 <223> Xaa in position 28 is Lys or Arg

<220>  
 <221> Variant  
 <222> (29)..(29)  
 <223> Xaa in position 29 is Ile or Leu

<220>  
 <221> Variant  
 <222> (30)..(30)  
 <223> Xaa in position 30 is Phe, Leu or Met

<400> 2728  
 Pro Xaa Phe Asp Ala Lys Gly Ile Glu Thr Xaa Arg Arg Asp Xaa Xaa  
 1 5 10 15  
 Xaa Ala Xaa Xaa Xaa Xaa Glu Xaa Xaa Xaa Xaa Xaa Phe  
 20 25 30

<210> 2729  
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<213> Artificial sequence

<220>

<223> protein pattern

<220>

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<222> (2)..(4)

<223> Xaa in position 2 to 4 is any amino acid

<220>

<221> Variant

<222> (5)..(6)

<223> Xaa in position 5 to 6 is any or no amino acid

<220>

<221> Variant

<222> (8)..(8)

<223> Xaa in position 8 is any amino acid

<220>

<221> Variant

<222> (9)..(10)

<223> Xaa in position 9 to 10 is any or no amino acid

<220>

<221> Variant

<222> (12)..(13)

<223> Xaa in position 12 to 13 is any amino acid

<220>

<221> Variant

<222> (16)..(16)

<223> Xaa in position 16 is any amino acid

<220>

<221> Variant

<222> (18)..(18)

<223> Xaa in position 18 is Ile, Met or Val

<220>

<221> Variant

<222> (19)..(19)

<223> Xaa in position 19 is any amino acid

<220>

<221> Variant

<222> (22)..(22)

<223> Xaa in position 22 is Phe, Leu or Met

<220>

<221> Variant

<222> (26)..(27)

<223> Xaa in position 26 to 27 is any amino acid

<220>

<221> Variant

<222> (28)..(28)

<223> Xaa in position 28 is Gly or Pro

<220>

<221> Variant

<222> (29)..(29)

<223> Xaa in position 29 is Cys or Ser

<220>

<221> Variant

<222> (30)..(30)

<223> Xaa in position 30 is Phe, Ile, Met or Val

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<220>
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<222> (32)..(32)
<223> Xaa in position 32 is any amino acid

<220>
<221> Variant
<222> (33)..(33)
<223> Xaa in position 33 is Ala, Ser or Thr

<220>
<221> Variant
<222> (38)..(38)
<223> Xaa in position 38 is Cys or Val

<220>
<221> Variant
<222> (40)..(40)
<223> Xaa in position 40 is Phe or Tyr

<220>
<221> Variant
<222> (41)..(41)
<223> Xaa in position 41 is any amino acid

<400> 2729
Gly Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Xaa Thr Xaa Xaa Asn Pro Xaa
1      5      10      15
Pro Xaa Xaa Leu Lys Xaa Glu Lys Val Xaa Xaa Xaa Xaa Xaa Leu Xaa
      20      25      30
Xaa Lys Lys Arg Tyr Xaa Gly Xaa Xaa Tyr Glu
      35      40

<210> 2730
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<212> PRT
<213> Artificial sequence

<220>
<223> protein pattern

<220>
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<222> (2)..(4)
<223> Xaa in position 2 to 4 is any amino acid

<220>
<221> Variant
<222> (5)..(5)
<223> Xaa in position 5 is any or no amino acid

<220>
<221> Variant
<222> (7)..(7)
<223> Xaa in position 7 is any or no amino acid

<220>
<221> Variant
<222> (9)..(11)
<223> Xaa in position 9 to 11 is any amino acid

<220>
<221> Variant
<222> (13)..(13)
<223> Xaa in position 13 is Phe, His or Tyr

<220>

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<221> Variant  
 <222> (15)..(15)  
 <223> Xaa in position 15 is Ile or Leu  
  
 <220>  
 <221> Variant  
 <222> (16)..(16)  
 <223> Xaa in position 16 is Phe, His or Tyr  
  
 <400> 2730  
 His Xaa Xaa Xaa Xaa Leu Xaa Gln Xaa Xaa Xaa Asp Xaa Asn Xaa Xaa  
 1 5 10 15  
 Gly

<210> 2731  
 <211> 15  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> protein pattern

<220>  
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 <222> (2)..(2)  
 <223> Xaa in position 2 is any amino acid

<220>  
 <221> Variant  
 <222> (3)..(3)  
 <223> Xaa in position 3 is Ala or Val

<220>  
 <221> Variant  
 <222> (4)..(4)  
 <223> Xaa in position 4 is Asp, Glu, Lys or Arg

<220>  
 <221> Variant  
 <222> (13)..(13)  
 <223> Xaa in position 13 is Leu or Met

<220>  
 <221> Variant  
 <222> (15)..(15)  
 <223> Xaa in position 15 is Ile or Val

<400> 2731  
 Trp Xaa Xaa Xaa Val Val Tyr Gly Asp Thr Asp Ser Xaa Phe Xaa  
 1 5 10 15

<210> 2732  
 <211> 29  
 <212> PRT  
 <213> Artificial sequence

<220>  
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<220>  
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 <222> (4)..(4)  
 <223> Xaa in position 4 is any amino acid

<220>  
 <221> Variant

<222> (6)..(6)  
<223> Xaa in position 6 is any amino acid

<220>  
<221> Variant  
<222> (7)..(7)  
<223> Xaa in position 7 is any or no amino acid

<220>  
<221> Variant  
<222> (9)..(9)  
<223> Xaa in position 9 is Ile or Pro

<220>  
<221> Variant  
<222> (11)..(11)  
<223> Xaa in position 11 is any or no amino acid

<220>  
<221> Variant  
<222> (13)..(13)  
<223> Xaa in position 13 is Asp, Glu, Asn or Gln

<220>  
<221> Variant  
<222> (15)..(15)  
<223> Xaa in position 15 is any amino acid

<220>  
<221> Variant  
<222> (16)..(16)  
<223> Xaa in position 16 is Phe or Leu

<220>  
<221> Variant  
<222> (17)..(18)  
<223> Xaa in position 17 to 18 is any amino acid

<220>  
<221> Variant  
<222> (19)..(19)  
<223> Xaa in position 19 is Ile or Val

<220>  
<221> Variant  
<222> (21)..(21)  
<223> Xaa in position 21 is Ala, Ile or Val

<220>  
<221> Variant  
<222> (22)..(22)  
<223> Xaa in position 22 is any amino acid

<220>  
<221> Variant  
<222> (23)..(23)  
<223> Xaa in position 23 is Ile, Leu or Val

<220>  
<221> Variant  
<222> (24)..(25)  
<223> Xaa in position 24 to 25 is any amino acid

<220>  
<221> Variant  
<222> (27)..(28)  
<223> Xaa in position 27 to 28 is any amino acid

<220>

<221> Variant  
 <222> (29)..(29)  
 <223> Xaa in position 29 is Asp, Glu or Ser  
  
 <400> 2732  
 Tyr Tyr Ile Xaa Lys Xaa Xaa Ile Xaa Pro Xaa Leu Xaa Arg Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Trp Xaa Xaa Xaa  
 20 25  
  
 <210> 2733  
 <211> 21  
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 <223> protein pattern  
  
 <220>  
 <221> Variant  
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 <223> Xaa in position 2 is Ala or Pro  
  
 <220>  
 <221> Variant  
 <222> (3)..(3)  
 <223> Xaa in position 3 is Asp, Glu or Thr  
  
 <220>  
 <221> Variant  
 <222> (4)..(4)  
 <223> Xaa in position 4 is Ile, Leu or Val  
  
 <220>  
 <221> Variant  
 <222> (5)..(6)  
 <223> Xaa in position 5 to 6 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (8)..(8)  
 <223> Xaa in position 8 is Phe, Trp or Tyr  
  
 <220>  
 <221> Variant  
 <222> (9)..(9)  
 <223> Xaa in position 9 is Asp or Glu  
  
 <220>  
 <221> Variant  
 <222> (10)..(10)  
 <223> Xaa in position 10 is Ile, Leu or Val  
  
 <220>  
 <221> Variant  
 <222> (11)..(13)  
 <223> Xaa in position 11 to 13 is any amino acid  
  
 <220>  
 <221> Variant  
 <222> (18)..(18)  
 <223> Xaa in position 18 is Ile, Leu or Val  
  
 <220>  
 <221> Variant  
 <222> (19)..(19)  
 <223> Xaa in position 19 is any amino acid

<220>  
 <221> Variant  
 <222> (20)..(20)  
 <223> Xaa in position 20 is Ala, Asp, Glu or Gln  
  
 <400> 2733  
 Asp Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Ser Trp Gly  
 1 5 10 15  
 Tyr Xaa Xaa Xaa Arg  
 20

<210> 2734  
 <211> 28  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> protein pattern

<220>  
 <221> Variant  
 <222> (2)..(10)  
 <223> Xaa in position 2 to 10 is any amino acid

<220>  
 <221> Variant  
 <222> (11)..(12)  
 <223> Xaa in position 11 to 12 is any or no amino acid

<220>  
 <221> Variant  
 <222> (14)..(14)  
 <223> Xaa in position 14 is any amino acid

<220>  
 <221> Variant  
 <222> (16)..(16)  
 <223> Xaa in position 16 is any amino acid

<220>  
 <221> Variant  
 <222> (19)..(19)  
 <223> Xaa in position 19 is any amino acid

<220>  
 <221> Variant  
 <222> (21)..(21)  
 <223> Xaa in position 21 is any amino acid

<220>  
 <221> Variant  
 <222> (24)..(24)  
 <223> Xaa in position 24 is Ile, Leu or Val

<220>  
 <221> Variant  
 <222> (25)..(25)  
 <223> Xaa in position 25 is any amino acid

<220>  
 <221> Variant  
 <222> (27)..(27)  
 <223> Xaa in position 27 is Ile, Leu or Val

<220>  
 <221> Variant  
 <222> (28)..(28)  
 <223> Xaa in position 28 is Ile or Val



&lt;400&gt; 2734

Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Arg Xaa  
 1 5 10 15  
 Glu Pro Xaa Tyr Xaa Glu Arg Xaa Xaa Tyr Xaa Xaa  
 20 25

&lt;210&gt; 2735

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; protein pattern

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (2)..(2)

&lt;223&gt; Xaa in position 2 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (3)..(4)

&lt;223&gt; Xaa in position 3 to 4 is any or no amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (8)..(8)

&lt;223&gt; Xaa in position 8 is Phe or Tyr

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (10)..(10)

&lt;223&gt; Xaa in position 10 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (11)..(11)

&lt;223&gt; Xaa in position 11 is Gly, Ser, Thr or Val

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (12)..(14)

&lt;223&gt; Xaa in position 12 to 14 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (15)..(15)

&lt;223&gt; Xaa in position 15 is Phe or Tyr

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (16)..(16)

&lt;223&gt; Xaa in position 16 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (19)..(19)

&lt;223&gt; Xaa in position 19 is any amino acid

&lt;220&gt;

&lt;221&gt; Variant

&lt;222&gt; (20)..(20)

&lt;223&gt; Xaa in position 20 is Phe, Leu, Met or Val

&lt;400&gt; 2735

Lys Xaa Xaa Xaa Phe Tyr Gly Xaa His Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Lys Ile Xaa Xaa  
20

<210> 2736  
<211> 507  
<212> DNA  
<213> SACCHAROMYCES CEREVISIAE

<220>  
<221> CDS  
<222> (1)..(507)

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Met Ser Asn Leu Leu Asn Lys Phe Ala Asp Lys Leu His Gly Asn Asp  
1 5 10 15  
cat gat gaa cgt tac gaa gac gac aat gac gac cag act aga caa cag 96  
His Asp Glu Arg Tyr Glu Asp Asp Asn Asp Asp Gln Thr Arg Gln Gln  
20 25 30  
cgt cat gaa aaa cat caa cag agg gaa ttc agg aat caa gga tcc aag 144  
Arg His Glu Lys His Gln Gln Arg Glu Phe Arg Asn Gln Gly Ser Lys  
35 40 45  
gcc gat ccc tac ggc gaa gaa aac caa ggg aat ttc cct caa cgc cag 192  
Ala Asp Pro Tyr Gly Glu Glu Asn Gln Gly Asn Phe Pro Gln Arg Gln  
50 55 60  
cag cca cag tct aat cta ggc ggt aac acg cag ttt ggc ggt aac gac 240  
Gln Pro Gln Ser Asn Leu Gly Gly Asn Thr Gln Phe Gly Gly Asn Asp  
65 70 75 80  
ttc cag caa caa act act gac tac act gcc ggc act ggt ggt ggc act 288  
Phe Gln Gln Gln Thr Asp Tyr Thr Ala Gly Thr Gly Gly Gly Thr  
85 90 95  
tat acc caa act tac cgc gaa act aac act caa ggt cag ttg gac gac 336  
Tyr Thr Gln Thr Tyr Arg Glu Thr Asn Thr Gln Gly Gln Leu Asp Asp  
100 105 110  
gat gaa gac gat gac ttc ttg act tcg ggc caa cag caa aaa caa ggt 384  
Asp Glu Asp Asp Phe Leu Thr Ser Gly Gln Gln Lys Lys Gln Gly  
115 120 125  
cgt aca aga ggt gct caa agt aac cgc tac caa tcc tct aat atc ggc 432  
Arg Thr Arg Gly Ala Gln Ser Asn Arg Tyr Gln Ser Ser Asn Ile Gly  
130 135 140  
agc ggt aga cgc gat ctg tct ggg tca gga aac gat gaa tat gat gat 480  
Ser Gly Arg Arg Asp Leu Ser Gly Ser Gly Asn Asp Glu Tyr Asp Asp  
145 150 155 160  
gat agt ggg aac caa ggc gtc tgg tag 507  
Asp Ser Gly Asn Gln Gly Val Trp  
165

<210> 2737  
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<212> PRT  
<213> SACCHAROMYCES CEREVISIAE

<400> 2737  
Met Ser Asn Leu Leu Asn Lys Phe Ala Asp Lys Leu His Gly Asn Asp  
1 5 10 15  
His Asp Glu Arg Tyr Glu Asp Asp Asn Asp Asp Gln Thr Arg Gln Gln  
20 25 30  
Arg His Glu Lys His Gln Gln Arg Glu Phe Arg Asn Gln Gly Ser Lys  
35 40 45  
Ala Asp Pro Tyr Gly Glu Glu Asn Gln Gly Asn Phe Pro Gln Arg Gln  
50 55 60  
Gln Pro Gln Ser Asn Leu Gly Gly Asn Thr Gln Phe Gly Gly Asn Asp  
65 70 75 80  
Phe Gln Gln Gln Thr Thr Asp Tyr Thr Ala Gly Thr Gly Gly Gly Thr  
85 90 95  
Tyr Thr Gln Thr Tyr Arg Glu Thr Asn Thr Gln Gly Gln Leu Asp Asp  
100 105 110  
Asp Glu Asp Asp Phe Leu Thr Ser Gly Gln Gln Gln Lys Gln Gly  
115 120 125

## PhoenixTemp32470.tmp.txt

Arg Thr Arg Gly Ala Gln Ser Asn Arg Tyr Gln Ser Ser Asn Ile Gly  
 130 140  
 Ser Gly Arg Arg Asp Leu Ser Gly Ser Gly Asn Asp Glu Tyr Asp Asp  
 145 150 155 160  
 Asp Ser Gly Asn Gln Gly Val Trp  
 165

&lt;210&gt; 2738

&lt;211&gt; 678

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(678)

&lt;400&gt; 2738

atg ggt ctc ttg gac aag gtc act gac aag gtt acc ggc cac tct cat	48
Met Gly Leu Leu Asp Lys Val Thr Asp Lys Val Thr Gly His Ser His	
1 5 10 15	
ggc aaa aat tct gat aac tac gac cag agc ggc aac gag tcc tat ggc	96
Gly Lys Asn Ser Asp Asn Tyr Asp Gln Ser Gly Asn Glu Ser Tyr Gly	
20 25 30	
tct ggc ggt cag ggc aat aac tct ttc ggt gct ggt aag gac tct tac	144
Ser Gly Gln Gly Asn Asn Ser Phe Gly Ala Gly Lys Asp Ser Tyr	
35 40 45	
ggg tcc tcc ggc caa ggt ggt gat acc tat ggc tct ggt ggc cag cct	192
Gly Ser Ser Gly Gln Gly Gly Asp Thr Tyr Gly Ser Gly Gly Gln Pro	
50 55 60	
ggt ggc cag tct ggt ggc cag tct ggt ggc ttt ggc tcc agt ggt aac	240
Gly Gly Gln Ser Gly Gly Gln Ser Gly Gly Phe Gly Ser Ser Gly Asn	
65 70 75 80	
aac tct tac ggc tcc tct ggc caa ggt ggt ggc act tac ggc tcc ggt	288
Asn Ser Tyr Gly Ser Ser Gly Gln Gly Gly Thr Tyr Gly Ser Gly	
85 90 95	
ggc cag tct cac ggt agc agc ggt ttg ggt tct tcc ggc aac gac tcc	336
Gly Gln Ser His Gly Ser Ser Gly Leu Gly Ser Ser Gly Asn Asp Ser	
100 105 110	
tat ggc tct tcc ggc ggc gac tct tac ggt tcc ggt ggt ctt tcc ggt	384
Tyr Gly Ser Ser Gly Gly Asp Ser Tyr Gly Ser Gly Leu Ser Gly	
115 120 125	
ggc cag cct ggc ggc ttc ggt ggt aac cag agc ggc ggt ggc ttg ggc	432
Gly Gln Pro Gly Gly Phe Gly Gly Asn Gln Ser Gly Gly Gly Leu Gly	
130 135 140	
ggc ggt aac tct ggc ggc ttt ggt gga agt ggc ggt aat gac tcc tac	480
Gly Gly Asn Ser Gly Gly Phe Gly Gly Ser Gly Asn Asp Ser Tyr	
145 150 155 160	
ggc tct ggc ggc aat gct ggt ggc ttc ggc ggc ggt cga ggt gat gac	528
Gly Ser Gly Gly Asn Ala Gly Gly Phe Gly Gly Gly Arg Gly Asp Asp	
165 170 175	
tcc tat ggc tct gga ggc aag ccc ggt ggc ttc gcc gga ggt aac aac	576
Ser Tyr Gly Ser Gly Gly Lys Pro Gly Phe Ala Gly Gly Asn Asn	
180 185 190	
gac gcc ttc ggc tcc gga ggc aac cct ggt ggt ctc ggt ggc ggc ggc	624
Asp Ala Phe Gly Ser Gly Gly Asn Pro Gly Gly Leu Gly Gly Gly Gly	
195 200 205	
gtg cga ggt tcc gag cag ggt ggc ttc ggt ggt act ggc aga agt gga	672
Val Arg Gly Ser Glu Gln Gly Gly Phe Gly Gly Thr Gly Arg Ser Gly	
210 215 220	
tac tga	678
Tyr	
225	

&lt;210&gt; 2739

&lt;211&gt; 225

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 2739

## PhoenixTemp32470.tmp.txt

Met Gly Leu Leu Asp Lys Val Thr Asp Lys Val Thr Gly His Ser His  
 1 5 10 15  
 Gly Lys Asn Ser Asp Asn Tyr Asp Gln Ser Gly Asn Glu Ser Tyr Gly  
 20 25 30  
 Ser Gly Gly Gln Gly Asn Asn Ser Phe Gly Ala Gly Lys Asp Ser Tyr  
 35 40 45  
 Gly Ser Ser Gly Gln Gly Gly Asp Thr Tyr Gly Ser Gly Gly Gln Pro  
 50 55 60  
 Gly Gly Gln Ser Gly Gly Gln Ser Gly Gly Phe Gly Ser Ser Gly Asn  
 65 70 75 80  
 Asn Ser Tyr Gly Ser Ser Gly Gln Gly Gly Gly Thr Tyr Gly Ser Gly  
 85 90 95  
 Gly Gln Ser His Gly Ser Ser Gly Leu Gly Ser Ser Gly Asn Asp Ser  
 100 105 110  
 Tyr Gly Ser Ser Gly Gly Asp Ser Tyr Gly Ser Gly Gly Leu Ser Gly  
 115 120 125  
 Gly Gln Pro Gly Gly Phe Gly Gly Asn Gln Ser Gly Gly Gly Leu Gly  
 130 135 140  
 Gly Gly Asn Ser Gly Gly Phe Gly Gly Ser Gly Gly Asn Asp Ser Tyr  
 145 150 155 160  
 Gly Ser Gly Gly Asn Ala Gly Gly Phe Gly Gly Gly Arg Gly Asp Asp  
 165 170 175  
 Ser Tyr Gly Ser Gly Gly Lys Pro Gly Gly Phe Ala Gly Gly Asn Asn  
 180 185 190  
 Asp Ala Phe Gly Ser Gly Gly Asn Pro Gly Gly Leu Gly Gly Gly  
 195 200 205  
 Val Arg Gly Ser Glu Gln Gly Gly Phe Gly Gly Thr Gly Arg Ser Gly  
 210 215 220  
 Tyr  
 225

<210> 2740  
 <211> 26  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2740  
 atgtccaatc tattaacaa gtttgc

26

<210> 2741  
 <211> 22  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2741  
 ctaccagacg ccttggttcc ca

22

<210> 2742  
 <211> 303  
 <212> DNA  
 <213> SACCHAROMYCES CEREVISIAE

<220>  
 <221> CDS  
 <222> (1)..(303)

<400> 2742  
 atg gct gtc aag act ggt atc gct att ggt ttg aac aag ggt aag aaa  
 Met Ala Val Lys Thr Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys  
 1 5 10 15  
 gtc acc caa atg act cca gcc cca aag atc tcc tac aag aag ggt gct  
 Val Thr Gln Met Thr Pro Ala Pro Lys Ile Ser Tyr Lys Lys Gly Ala  
 20 25 30

48

96

## PhoenixTemp32470.tmp.txt

```

gcc tcc aac aga acc aag ttc gtc aga tct ttg gtt aga gaa atc gcc      144
Ala Ser Asn 35 Arg Thr Lys Phe 40 Val Arg Ser Leu Val 45 Arg Glu Ile Ala
ggg ttg tcc cca tat gaa aga aga ttg atc gat ttg atc aga aac tcc      192
Gly Leu Ser Pro Tyr Glu Arg 55 Arg Leu Ile Asp Leu Ile Arg Asn Ser
ggg gaa aag aga gcc aga aag gtc gcc aag aag aga ttg ggt tct ttc      240
Gly 65 Glu Lys Arg Ala Arg 70 Lys Val Ala Lys 75 Arg Leu Gly Ser Phe 80
acc aga gcc aag gct aag gtc gaa gaa atg aac aac atc att gct gcc      288
Thr Arg Ala Lys Ala 85 Lys Val Glu Glu Met 90 Asn Asn Ile Ile Ala Ala 95
tct cgt cgt cat taa
Ser Arg Arg His 100

```

&lt;210&gt; 2743

&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;400&gt; 2743

```

Met Ala Val Lys Thr 5 Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys
1 Val Thr Gln Met Thr 20 Pro Ala Pro Lys 25 Ile Ser Tyr Lys Lys 30 Gly Ala
Ala Ser Asn 35 Arg Thr Lys Phe Val 40 Arg Ser Leu Val Arg 45 Glu Ile Ala
Gly Leu Ser Pro Tyr Glu Arg 55 Arg Leu Ile Asp Leu Ile Arg Asn Ser
65 Gly Glu Lys Arg Ala Arg 70 Lys Val Ala Lys Lys 75 Arg Leu Gly Ser Phe 80
Thr Arg Ala Lys Ala 85 Lys Val Glu Glu Met 90 Asn Asn Ile Ile Ala Ala 95
Ser Arg Arg His 100

```

&lt;210&gt; 2744

&lt;211&gt; 397

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (5)..(325)

&lt;400&gt; 2744

```

cacg atg ccg aag gaa gtc aag cag aag tct ggt ctc atc gtt ggc ctc      49
Met Pro Lys Glu Val 5 Lys Gln Lys Ser Gly Leu Ile Val Gly Leu 15
aac gcc ggc cac aag gtc acc ccc agg acc ccc gct ccc agg atc tcg      97
Asn Ala Gly His Lys 20 Val Thr Pro Arg 25 Thr Pro Ala Pro Arg Ile Ser
agg agg aag ggt ttc ctc tcc aag cgc act gcg ttt gtc cgt gag atc      145
Arg Arg Lys Gly 35 Phe Leu Ser Lys Arg 40 Thr Ala Phe Val Arg 45 Glu Ile
acc aag gag gtt gct ggt ctt gcc cca tac gag aag cgc atc atc gaa      193
Thr Lys Glu Val Ala Gly Leu 55 Pro Tyr Glu Lys Arg 60 Ile Ile Glu
ttg ctt cgc aac tcc aag gac aag cgt gcc cgc cgt cta gcg aag aag      241
Leu Leu Arg Asn Ser Lys Asp 70 Lys Arg Ala Arg 75 Arg Leu Ala Lys Lys
agg ctc ggt acc ttc ggt cgc tca aag aga aag gtc gac gag atg acc      289
Arg Leu Gly Thr Phe 85 Arg Ser Lys Arg Lys 90 Val Asp Glu Met Thr 95
aag gtc atc gcc gag tcg agg cgc gct ggt cac taaacggttt cacgatttgc      342
Lys Val Ile Ala Glu Ser Arg Arg Ala Gly His 105
ggtggatgaa gcaacacggc gaacgaacga ccgacttact tttcgatttt attct      397

```

<210> 2745  
 <211> 106  
 <212> PRT  
 <213> Glycine max

<400> 2745  
 Met Pro Lys Glu Val Lys Gln Lys Ser Gly Leu Ile Val Gly Leu Asn  
 1 5 10 15  
 Ala Gly His Lys Val Thr Pro Arg Thr Pro Ala Pro Arg Ile Ser Arg  
 20 25 30  
 Arg Lys Gly Phe Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Ile Thr  
 35 40 45  
 Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Lys Arg Ile Ile Glu Leu  
 50 55 60  
 Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Arg Leu Ala Lys Lys Arg  
 65 70 75 80  
 Leu Gly Thr Phe Gly Arg Ser Lys Arg Lys Val Asp Glu Met Thr Lys  
 85 90 95  
 Val Ile Ala Glu Ser Arg Arg Ala Gly His  
 100 105

<210> 2746  
 <211> 333  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(333)

<400> 2746  
 atg gct ccc aaa ccg cct agt acg ggt ctg ttt gtt gga ctg aac aag 48  
 Met Ala Pro Lys Pro Pro Ser Thr Gly Leu Phe Val Gly Leu Asn Lys 15  
 1 5 10  
 ggt cac gtc gtc acc aag aag gaa ttg ccc cca cgc ccc tca gat cgt 96  
 Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg 20 25 30  
 aag ggg aaa aca agc aag agg gtg cac ttt gtg agg aac ctc ata aga 144  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg 35 40 45  
 gag gtt gct ggt ttt gca ccc tat gaa aag cgt ata act gag ttg ctg 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu 50 55 60  
 aag gtt ggg aag gat aag agg gca ctg aag gtt gca aag aga aag ctc 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu 65 70 75 80  
 gga aca cac aaa cgc gca aag aag aag cgt gag gaa atg tcc agt gtt 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val 85 90 95  
 ctc agg aag atg agg gct ggt ggt gct gga gac aag aag aaa taa 333  
 Leu Arg Lys Met Arg Ala Gly Gly Ala Gly Asp Lys Lys Lys 100 105 110

<210> 2747  
 <211> 110  
 <212> PRT  
 <213> Glycine max

<400> 2747  
 Met Ala Pro Lys Pro Pro Ser Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu

PhoenixTemp32470.tmp.txt

Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu
65					70					75					80
Gly	Thr	His	Lys	Arg	Ala	Lys	Lys	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val
				85					90					95	
Leu	Arg	Lys	Met	Arg	Ala	Gly	Gly	Ala	Gly	Asp	Lys	Lys	Lys		
			100					105					110		

<210>	2748
<211>	589
<212>	DNA
<213>	Glycine max

<220>  
<221> CDS  
<222> (94) .. (426)

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<220>
<221> misc_feature
<222> (585)..(585)
<223> n is a, g, c or t
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<220>
<221> misc_feature
<222> (587)..(587)
<223> n i s a , g , c o r t
```

```
<220>
<221> misc_feature
<222> (588)..(588)
<223> n i s a , g , c o r t
```

<400> 2748  
cgagatgacg acagaagggg accctagttt ctgttctccc tctttcaccg cagtgttagg 60

gtttctgtag cctccaacca gaaagagagg gaa atg gct ccc aaa cat cct agt 114  
Met Ala Pro Lys His Pro Ser  
1 5

acg ggt ttg ttt gtt gga ttg aac aag ggt cac gtt gtc acc aag aag 162  
Thr Gly Leu Phe Val Gly Leu Asn Lys Gly His Val Val Thr Lys Lys  
10 15 20

gag ttg cct cca cgc cct tca gat cgt aag ggg aaa acg agc aag cga  
Glu Leu Pro Pro Arg Pro Ser Asp Arg Lys Gly Lys Thr Ser Lys Arg 210

gtg cac ttt gtg agg aac ctc att cga gag gtt gcc ggc ttt gca cct 258  
Val His Phe Val Arg Asn Leu Ile Arg Glu Val Ala Gly Phe Ala Pro  
40 45 50 55

tat gaa aag cga ata act gag ttg ctc aag gtt gga aaa gat aag agg 306  
Tyr Glu Lys Arg Ile Thr Glu Leu Leu Lys Val Gly Lys Asp Lys Arg  
60 65 70

gca ctg aaa gtt gcc aag aga aag ctt gga acc cat aag cgc gca aag 354  
Ala Leu Lys Val Ala Lys Arg Lys Leu Gly Thr His Lys Arg Ala Lys

aag aag aga gag atg tcc aat gtt ctc cgg aag atg agg gct ggt 402  
Lys Lys Arg Glu Glu Met Ser Asn Val Leu Arg Lys Met Arg Ala Gly  
90 95 100

gga gct gga gac aag aag aaa taagtcttgt ttactttttc tagtttcact 453  
Gly Ala Gly Asp Lys Lys Lys  
105 110

agactgtttc gatgtacgag ttgtcttatt tttgtttttag ttcaagattt tgctttgaga 513

aatatgtttt acctaatcga gacatgattt actccaaaag tacaattggc ttatttttcga 573

catgcattcc cnanna 589

## PhoenixTemp32470.tmp.txt

<210> 2749  
 <211> 110  
 <212> PRT  
 <213> Glycine max

<400> 2749  
 Met Ala Pro Lys His Pro Ser Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Asn Val  
 85 90 95  
 Leu Arg Lys Met Arg Ala Gly Gly Ala Gly Asp Lys Lys Lys  
 100 105 110

<210> 2750  
 <211> 405  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (17)..(361)

<400> 2750  
 gtaaactcga gtagaa atg gcg ccg cgc tac gaa atg gct gtg ggc ctc cac 52  
 Met Ala Pro Arg Tyr Glu Met Ala Val Gly Leu His  
 1 5 10  
 aag ggg cac aaa acc acc aaa atc cgt acc ctc aag aca gtt gct gct 100  
 Lys Gly His Lys Thr Thr Lys Ile Arg Thr Leu Lys Thr Val Ala Ala  
 15 20 25  
 act gtt gac aag aga aac agg atg cgt ccc tcc agg acc aag ggt ctc 148  
 Thr Val Asp Lys Arg Asn Arg Met Arg Pro Ser Arg Thr Lys Gly Leu  
 30 35 40  
 cag acc aag cac acc aaa ttt gtg cga gac ctg atc cgt gaa gtt gtt 196  
 Gln Thr Lys His Thr Lys Phe Val Arg Asp Leu Ile Arg Glu Val Val  
 45 50 55 60  
 gga cac gct ccc tat gaa aag agg gct atg gaa ttg ttg aag gtt tcc 244  
 Gly His Ala Pro Tyr Glu Lys Arg Ala Met Glu Leu Leu Lys Val Ser  
 65 70 75  
 aag gat aag aga gct ctg aag tac ctt aag agg agg ttg ggc acc cac 292  
 Lys Asp Lys Arg Ala Leu Lys Tyr Leu Lys Arg Arg Leu Gly Thr His  
 80 85 90  
 atc cgt gcc aag agg aag cgt gaa gag ctc tcc aac att ctc acc cag 340  
 Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu Ser Asn Ile Leu Thr Gln  
 95 100 105  
 atg cgt aag cac gcc aag taatctgtcc ttttctaagc cattaactt 388  
 Met Arg Lys His Ala Lys  
 110  
 taaaaaaccc aaaaaaa 405

<210> 2751  
 <211> 114  
 <212> PRT  
 <213> Glycine max

<400> 2751  
 Met Ala Pro Arg Tyr Glu Met Ala Val Gly Leu His Lys Gly His Lys  
 1 5 10 15  
 Thr Thr Lys Ile Arg Thr Leu Lys Thr Val Ala Ala Thr Val Asp Lys  
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## PhoenixTemp32470.tmp.txt

20 25 30  
 Arg Asn Arg Met Arg Pro Ser Arg Thr Lys Gly Leu Gln Thr Lys His  
 35 40 45  
 Thr Lys Phe Val Arg Asp Leu Ile Arg Glu Val Val Gly His Ala Pro  
 50 55 60  
 Tyr Glu Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg  
 65 70 75 80  
 Ala Leu Lys Tyr Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys  
 85 90 95  
 Arg Lys Arg Glu Glu Leu Ser Asn Ile Leu Thr Gln Met Arg Lys His  
 100 105 110  
 Ala Lys

<210> 2752  
 <211> 663  
 <212> DNA  
 <213> Sorghum bicolor

<220>  
 <221> CDS  
 <222> (67)..(402)

<400> 2752  
 gcgccggccg ggccgggctc cgtagcagcc ggttcacttc tacaggtaag gaaagggttc 60  
  
 gtcctc atg gcg ccg ccg cag ccg aag tcg ggc ctc ttc gtg ggc atc 108  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile  
 1 5 10  
 aac aag ggc cat gtc gtc acc aag cgc gag ctg cct ccg cgc ccg tcc 156  
 Asn Lys Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser  
 15 20 25 30  
 cac cgc aag ggg aaa gca acg aag agg gtg tcc atg gtc agg ggc ctg 204  
 His Arg Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu  
 35 40 45  
 atc aga gag gtt gct ggc ttt gct cct tat gag aag cgt atc act gag 252  
 Ile Arg Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu  
 50 55 60  
 ctt ctg aag gtt ggc aag gac aag cgt gct ctg aag gtt gcc aag aga 300  
 Leu Leu Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg  
 65 70 75  
 aag ctt gga act cac aag agg gca aag aag aag aga gag gag atg gct 348  
 Lys Leu Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala  
 80 85 90  
 ggt gtc ctc agg aag atg aga tcg gct ggt acg cac aca gac aag aag 396  
 Gly Val Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys  
 95 100 105 110  
 aaa tagagcattt caagtttatg aagctggcgg ccagagattc tgttccggtg 449  
 Lys  
 tctgtttttc ctacttgtag aacgtaatag acatgtcaaa gtatctgtca gcgaaatatt 509  
  
 gtgttgtag ttatgtatcg aaccacctca tggggatttt gcaacaactt tcaatgtatc 569  
  
 catggtttgt taatcttttg ctttggtttt gcaaaaagaa aacaaaaaat gattactgcg 629  
  
 tattgaatgc tatggttgca atccaaaaaa aaaa 663

<210> 2753  
 <211> 111  
 <212> PRT  
 <213> Sorghum bicolor

## PhoenixTemp32470.tmp.txt

<400> 2753  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser His Arg  
 20 25 30  
 Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2754  
 <211> 321  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(321)

<400> 2754  
 atg ccg aaa gaa gtc aag caa aag tca ggc ctc atc gtt ggc att aac 48  
 Met Pro Lys Glu Val Lys Gln Lys Ser Gly Leu Ile Val Gly Ile Asn 15  
 1 5 10 15  
 gcc ggc cac aag gtc act ccc agg act cct gct ccc agg atc tcc agg 96  
 Ala Gly His Lys Val Thr Pro Arg Thr Pro Ala Pro Arg Ile Ser Arg 20 25 30  
 agg aag ggt ttc ctg tcc aag cgc act gct ttc gtc cgt gag atc acc 144  
 Arg Lys Gly Phe Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Ile Thr 35 40 45  
 aag gag gtt gct ggt ctt gcc ccc tac gag aag cgc atc att gaa ttg 192  
 Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Lys Arg Ile Ile Glu Leu 50 55 60  
 ctc cga aac tcc aag gac aag cgt gct cgt cgt cta gct aag aag agg 240  
 Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Arg Leu Ala Lys Lys Arg 65 70 75 80  
 ctc ggt acc ttc ggc cgc tca aag aga aag gtc gac gag atg acc aag 288  
 Leu Gly Thr Phe Gly Arg Ser Lys Arg Lys Val Asp Glu Met Thr Lys 85 90 95  
 gtc atc gcc gag tcg agg cgc gcg ggt cac taa 321  
 Val Ile Ala Glu Ser Arg Arg Ala Gly His 100 105

<210> 2755  
 <211> 106  
 <212> PRT  
 <213> Zea mays

<400> 2755  
 Met Pro Lys Glu Val Lys Gln Lys Ser Gly Leu Ile Val Gly Ile Asn  
 1 5 10 15  
 Ala Gly His Lys Val Thr Pro Arg Thr Pro Ala Pro Arg Ile Ser Arg  
 20 25 30  
 Arg Lys Gly Phe Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Ile Thr  
 35 40 45  
 Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Lys Arg Ile Ile Glu Leu  
 50 55 60  
 Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Arg Leu Ala Lys Lys Arg  
 65 70 75 80  
 Leu Gly Thr Phe Gly Arg Ser Lys Arg Lys Val Asp Glu Met Thr Lys  
 85 90 95  
 Val Ile Ala Glu Ser Arg Arg Ala Gly His  
 100 105

## PhoenixTemp32470.tmp.txt

<210> 2756  
 <211> 631  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (62)..(400)

<400> 2756  
 atttcgcggc ggcttagggg tttaactcgc ttccattctc aaggtagca ggagaccggc 60

c atg gcg ccg tgc cag ccc aag tca ggg ctc ttc gtg ggc atc aac aag 109  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggc cac gtc gtc acc aag cgc gag ctg ccg cca cgc ccg tcc gac cgg 157  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 aag ggg aaa ggt acc aag agg gtg ctg ttt gtc cgg aac ttg att agg 205  
 Lys Gly Lys Gly Thr Lys Arg Val Leu Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 gag gtt gct gga ttt gct ccc tat gag aag cgt atc act gag ctt ctt 253  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt gga aag gac aag cgt gca ctc aag gtc gcc aag agg aag ctt 301  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 ggt act cac aag aga gca aag aag aag agg gag gag atg tca agt gtc 349  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 ctc agg aag atg agg tct ggt ggt ggt ggt gct gcg gac aag aag aaa 397  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Ala Ala Asp Lys Lys Lys  
 100 105 110  
 tagaacttgg cttagctggtg aattttatcc ggaagcaaag tcctgtatta ccagtcgcga 457

cctatagagc tatggccatt gtgttgacac tatcttttagc ccgtgggttc tattttgaga 517

agaccaatct cttaagatt ttacatgag tctggtgcct ttgtttgatt acttggtact 577

ctgctgttta ttcagttatg tagcttgtct gggttttgta cctgcgattg ttat 631

<210> 2757  
 <211> 112  
 <212> PRT  
 <213> Zea mays

<400> 2757  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Gly Thr Lys Arg Val Leu Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Ala Ala Asp Lys Lys Lys  
 100 105 110

<210> 2758

<211> 430  
<212> DNA  
<213> Zea mays

[illegible]

<400> 2759  
Met Val Ala Ala Lys Ser Gly Ile Ala Val Gly Ile Asn Lys Gly His  
1               5               10               15  
Ile Thr Ala Arg Glu Leu Lys Ala Lys Pro Ser Asn Lys Ile Gly  
                20               25               30  
Ala Ser Lys Arg Thr Thr Phe Val Lys Ser Ile Val Arg Glu Val Ala  
            35               40               45  
Gly Tyr Ala Pro Tyr Glu Arg Arg Leu Met Glu Leu Ile Lys Asn Ser  
           50               55               60  
Lys Asp Lys Arg Ala Lys Lys Leu Cys Lys Ser Lys Leu Gly Thr Phe  
65               70               75               80  
Val Arg Ala Lys Lys Lys Ile Glu Glu Leu Gln Gly Val Ile Ala Ala  
                85               90               95  
Ser Arg Arg His  
            100

<400> 2760  
ctcgtgcccc ccccgcgcg cccgactcgc cacgtcgcac gacttgtacg ca atg gca 58

## PhoenixTemp32470.tmp.txt

Met Ala  
1

```

gcc gaa cgc aaa gag cgc agc gga atc gct gta ggc ctc aac aaa gga      106
Ala Glu Arg 5  Lys Glu Arg Ser Gly 10 Ile Ala Val Gly 15 Leu Asn Lys Gly
cac aaa act gag gca cga gtc ccc aag cct cga gtt agt aga acc aag      154
His Lys 20 Thr Glu Ala Arg Val 25 Pro Lys Pro Arg Val 30 Ser Arg Thr Lys
ggt cac ttg agc aag cgg act gca ttt gtg cgt gaa att gtc aaa gaa      202
Gly His Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Ile Val Lys Glu 50
gta tcg gga ctt gcc cca tat gaa cga agg gta atc gaa tta ctt cgc      250
Val Ser Gly Leu Ala 55 Pro Tyr Glu Arg Arg 60 Val Ile Glu Leu Leu Arg 65
aac agc aaa gac aaa cgt gcc cgc aag ttg gct aag aag agg ctc ggg      298
Asn Ser Lys 70 Asp Lys Arg Ala Arg Lys 75 Leu Ala Lys Lys Arg 80 Leu Gly
aca ttt ggc cgc gca aag gca aag gta gac gag ctt cag cgt gta atc      346
Thr Phe 85 Gly Arg Ala Lys Ala Lys 90 Val Asp Glu Leu 95 Arg Val Ile
gcc gag tca cga aga gcc ggt cac tagagatatata aaaatattga atgaaaaatt      400
Ala Glu Ser Arg Arg Ala Gly 105 His
aaactataa      409

```

<210> 2761  
 <211> 106  
 <212> PRT  
 <213> Triticum aestivum

```

<400> 2761
Met Ala Ala Glu Arg 5 Lys Glu Arg Ser Gly 10 Ile Ala Val Gly Leu Asn
1  Lys Gly His 20 Thr Glu Ala Arg Val 25 Pro Lys Pro Arg Val 30 Ser Arg
Thr Lys Gly 35 His Leu Ser Lys Arg Thr Ala Phe Val Arg 45 Glu Ile Val
Lys Glu Val 50 Ser Gly Leu Ala 55 Pro Tyr Glu Arg Arg Val 60 Ile Glu Leu
Leu Arg Asn Ser Lys Asp 70 Lys Arg Ala Arg Lys 75 Leu Ala Lys Lys Arg
65 Leu Gly Thr Phe Gly 85 Arg Ala Lys Ala Lys 90 Val Asp Glu Leu Gln Arg
Val Ile Ala Glu 100 Ser Arg Arg Ala Gly 105 His

```

<210> 2762  
 <211> 336  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> CDS  
 <222> (1)..(336)

```

<400> 2762
atg gcg ccg tcg cag ccc aag tca ggg ctc ttc gtg ggc atc aac aag      48
Met Ala Pro Ser Gln 5 Pro Lys Ser Gly 10 Leu Phe Val Gly 15 Ile Asn Lys
ggc cac gtc gtc acc aag cgc gag ctg ccg cca cgc ccg tcc gac cgc      96
Gly His Val 20 Thr Lys Arg Glu Leu 25 Pro Pro Arg Pro 30 Ser Asp Arg
aag ggg aaa ggt acc aag agg gtg ctg ttt gtc agg aac ttg att agg      144
Lys Gly Lys 35 Gly Thr Lys Arg Val 40 Leu Phe Val Arg Asn 45 Leu Ile Arg
gag gtt gct gga ttt gct ccc tat gag aag cgt atc act gag ctt ctt      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu

```

## PhoenixTemp32470.tmp.txt

```

      50      55      60
aag gtt gga aag gac aag cgt gca ctc aag gtc gcc aag agg aag ctt 240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
ggt act cac aag aga gca acg aag aag agg gag gag atg tca agt gtc 288
Gly Thr His Lys Arg Ala Thr Lys Lys Arg Glu Glu Met Ser Ser Val
85      90      95
ctc agg aag aaa aat aag act tcc aaa tcc cag cta ata aaa ccg 333
Leu Arg Lys Lys Asn Lys Thr Ser Lys Ser Gln Leu Ile Lys Pro
100      105      110
tga 336

```

<210> 2763  
 <211> 111  
 <212> PRT  
 <213> Triticum aestivum

```

<400> 2763
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20      25      30
Lys Gly Lys Gly Thr Lys Arg Val Leu Phe Val Arg Asn Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Thr Lys Lys Arg Glu Glu Met Ser Ser Val
85      90      95
Leu Arg Lys Lys Asn Lys Thr Ser Lys Ser Gln Leu Ile Lys Pro
100      105      110

```

<210> 2764  
 <211> 403  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> CDS  
 <222> (23)..(358)

```

<400> 2764
gaggtaaagg aaaggttcgc cc atg gct ccg tcg cag ccc aag tcg ggc ctc 52
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu
1      5      10
ttc gtg ggc atc aac aag ggc cac gtc gtc acc aag cgc gag ctg ccg 100
Phe Val Gly Ile Asn Lys Gly His Val Val Thr Lys Arg Glu Leu Pro
15      20      25
ccg cgc ccg tcc gac cgc aag ggg aaa ggt acc aag agg gtg cat ttc 148
Pro Arg Pro Ser Asp Arg Lys Gly Lys Gly Thr Lys Arg Val His Phe
30      35      40
gtc agg aac ttg atc agg gag gta gct ggg ttt gct ccg tat gag aag 196
Val Arg Asn Leu Ile Arg Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys
45      50      55
cgt atc act gag ctt ctc aag gtt ggc aag gac aag cgt gcc ctg aag 244
Arg Ile Thr Glu Leu Leu Lys Val Gly Lys Asp Lys Arg Ala Leu Lys
60      65      70
gtg gcg aag cga aag ttg ggt acc cac aag agg gcg aag aag aag aga 292
Val Ala Lys Arg Lys Leu Gly Thr His Lys Arg Ala Lys Lys Lys Arg
75      80      85      90
gag gag atg tcc agt gtc ctc agg aag atg aga tct gcc gga act gga 340
Glu Glu Met Ser Ser Val Leu Arg Lys Met Arg Ser Ala Gly Thr Gly
95      100      105
acc gag aag aag aaa tagagcatcc caagctcatg aaattgatgg caatcttctg 395
Thr Glu Lys Lys Lys
110

```

ttctggtg

403

<210> 2765  
 <211> 111  
 <212> PRT  
 <213> Triticum aestivum

<400> 2765  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr Gly Thr Glu Lys Lys Lys  
 100 105 110

<210> 2766  
 <211> 586  
 <212> DNA  
 <213> Gossypium hirsutum

<220>  
 <221> CDS  
 <222> (76)..(408)

<400> 2766  
 tcgcccacgc gttcgccac gcgtgcggct tcgagttctt ttaggtgatt ttctgttagg 60  
  
 gctggttggt aggtg atg gct cca agt caa cct aaa act ggc ctt tct gtg 111  
 Met Ala Pro Ser Gln Pro Lys Thr Gly Leu Ser Val  
 1 5 10  
 ggc tta aac aaa gga cat gtt gtt acc aag aag gaa ttg gct ccc cac 159  
 Gly Leu Asn Lys Gly His Val Val Thr Lys Lys Glu Leu Ala Pro His  
 15 20 25  
 cct tct aat aga aag ggg aaa act agc aag aga gtc cac ttt gtg agg 207  
 Pro Ser Asn Arg Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg  
 30 35 40  
 agc cta att cgg gag gtt gct ggt ttc gct ccg tat gag aag agg ata 255  
 Ser Leu Ile Arg Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile  
 45 50 55 60  
 act gaa ctt ctc aaa gtt ggg aaa gat aag cgt gct ttg aag gtg gcg 303  
 Thr Glu Leu Leu Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala  
 65 70 75  
 aag aga aag cta ggc act cac aag cgg gcc aag aag aag cgt gag gag 351  
 Lys Arg Lys Leu Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu  
 80 85 90  
 atg tct agc gtt ctc cgc aag atg agg tca gct gga ggt ggg gag aaa 399  
 Met Ser Ser Val Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Glu Lys  
 95 100 105  
 aag aag tgagttgcc tgcggttggt cttcaaagca agtattgagt ttttagattt 455  
 Lys Lys  
 110  
 gttaaatttt ctcttcagtt ttgttttgag agtttgaggt actgattcgg atagcattct 515  
  
 ttacttgtg ttggatattt aaaaaaaca tgaaatttgc atcacttaat tgcaatctag 575  
  
 attcgattat g 586

<210> 2767  
 <211> 110  
 <212> PRT  
 <213> Gossypium hirsutum

<400> 2767  
 Met Ala Pro Ser Gln Pro Lys Thr Gly Leu Ser Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Ala Pro His Pro Ser Asn Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Ser Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Glu Lys Lys Lys  
 100 105 110

<210> 2768  
 <211> 504  
 <212> DNA  
 <213> Gossypium hirsutum

<220>  
 <221> CDS  
 <222> (19)..(357)

<400> 2768  
 atcgccgtct cgagaggc atg gcc acc aag cag cca aat aca ggc ctt ttt 51  
 Met Ala Thr Lys Gln Pro Asn Thr Gly Leu Phe 10  
 1  
 gta gga cta aac aag ggc cat gtt gta acc aag aag gaa ttg gct cca 99  
 Val Gly Leu Asn Lys Gly His Val Val Thr Lys Lys Glu Leu Ala Pro 20 25  
 15  
 cgt cca tct aac aga aaa gga aaa act agc aaa aga gtc cat ttt gtg 147  
 Arg Pro Ser Asn Arg Lys Gly Lys Thr Ser Lys Arg Val His Phe Val 30 35 40  
 30  
 agg aac ttg ata agg gaa gtt gct ggt ttt gca ccg tat gag aag agg 195  
 Arg Asn Leu Ile Arg Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg 45 50 55  
 45  
 att acg gag ctt ttg aag gtt ggt aag gac aag cga gct ctc aag gta 243  
 Ile Thr Glu Leu Leu Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val 60 65 70 75  
 60  
 gct aaa aga aaa ttg gga act cac aag aga gcc aag aag aag cgt gaa 291  
 Ala Lys Arg Lys Leu Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu 80 85 90  
 80  
 gag atg tcg agt gtt ctc cgc aag atg agg gct cat cat cct gga ggt 339  
 Glu Met Ser Ser Val Leu Arg Lys Met Arg Ala His His Pro Gly Gly 95 100 105  
 95  
 gga gac aag aag aag tgaagctttt atttttgttg atttatggac aagcttgaag 394  
 Gly Asp Lys Lys Lys 110  
 gtttgattta gtagctgtta gagattttgt ttagcacttt gtttgagact gaaaatcatg 454  
 cactcaaatt tgctgcttta catgaattac tgcaagtttt tttttttttt 504

<210> 2769  
 <211> 112  
 <212> PRT  
 <213> Gossypium hirsutum



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2769

```

Met Ala Thr Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asn Arg
      20      25      30
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
      35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
      85      90      95
Leu Arg Lys Met Arg Ala His His Pro Gly Gly Gly Asp Lys Lys Lys
      100      105      110

```

&lt;210&gt; 2770

&lt;211&gt; 336

&lt;212&gt; DNA

&lt;213&gt; Gossypium hirsutum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(336)

&lt;400&gt; 2770

```

atg gct acc aag cag cca aat act ggc ctc ttt gtg gga ctg aac aag      48
Met Ala Thr Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
ggc cat gtt gta acc aag aag gag ttg gct cca cgc ccc tct aat cgg      96
Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asn Arg
      20      25      30
aaa gga aaa acg agc aaa aga gtc cat ttc gtg agg aac ttg atc agg      144
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
      35      40      45
gaa gtt gct ggt ttt gca ccg tat gag aag agg atc act gag ctt ttg      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
aaa gtc ggt aag gac aag cga gct ctt aag gta gct aaa aga aag ttg      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
gga act cac aaa agg gca aag aag aag cgt gaa gag atg tcc agc gtt      288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
      85      90      95
ctc cgc aag atg aga gcc cac ggt gga ggt gca gaa aag aag aaa      333
Leu Arg Lys Met Arg Ala His Gly Gly Gly Ala Glu Lys Lys Lys
      100      105      110
taa      336

```

&lt;210&gt; 2771

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Gossypium hirsutum

&lt;400&gt; 2771

```

Met Ala Thr Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asn Arg
      20      25      30
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
      35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val

```

## PhoenixTemp32470.tmp.txt

Leu Arg Lys Met Arg Ala His Gly Gly Ala Glu Lys Lys Lys  
 100 85 90 95  
 105 110

<210> 2772  
 <211> 408  
 <212> DNA  
 <213> Gossypium hirsutum

<220>  
 <221> CDS  
 <222> (4)..(339)

<400> 2772  
 gga atg gct acc aag cag cca aat act ggc ctc ttt gtg gga ctg aac 48  
 Met Ala Thr Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn  
 1 5 10 15  
 aag ggc cat gtt gta acc aag aag gag ttg gct cca cgt ccc tct aat 96  
 Lys Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asn  
 20 25 30  
 cgg aaa gga aaa act agc aaa aga gtc cat ttt gtg agg aac ttg att 144  
 Arg Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile  
 35 40 45  
 agg gaa gtt gct ggt ttt gca cca tat gag aag agg att act gaa ctt 192  
 Arg Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu  
 50 55 60  
 ctg aaa gtt ggt aag gac aaa cga gcg ctc aag gtt gct aaa aga aag 240  
 Leu Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys  
 65 70 75  
 ttg gga act cac aaa agg gca aag aag aag cgt gag gag atg tct agt 288  
 Leu Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser  
 80 85 90 95  
 gtg ctc cgc aag atg agg gct cac cct gga ggt gga gaa aag aag aag 336  
 Val Leu Arg Lys Met Arg Ala His Pro Gly Gly Gly Glu Lys Lys Lys  
 100 105 110  
 tgaagctctc tggtgacaag tcaccttgat gatttcatta gagaactttt gttagcatat 396  
 atttcaactt at 408

<210> 2773  
 <211> 111  
 <212> PRT  
 <213> Gossypium hirsutum

<400> 2773  
 Met Ala Thr Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asn Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ala His Pro Gly Gly Gly Glu Lys Lys Lys  
 100 105 110

<210> 2774  
 <211> 360  
 <212> DNA  
 <213> Bombyx mori

<220>

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(360)

&lt;400&gt; 2774

atg gct cct cgt ttt gaa atc gca gta ggc ctg cga aaa ggc cac aaa	48
Met Ala Pro Arg Phe Glu Ile Ala Val Gly Leu Arg Lys Gly His Lys	
1 5 10 15	
aca act aaa ata tcc gct ggc cgc aag ggt atc aca gac aaa gcc atc	96
Thr Thr Lys Ile Ser Ala Gly Arg Lys Gly Ile Thr Asp Lys Ala Ile	
20 25 30	
aga att agg cca gct aga cta aag ggt ctt caa acg aaa cac tcc aag	144
Arg Ile Arg Pro Ala Arg Leu Lys Gly Leu Gln Thr Lys His Ser Lys	
35 40 45	
ttt gtc cgt gat tta gta cgc gaa gtt gtc gga cac gct caa tat gag	192
Phe Val Arg Asp Leu Val Arg Glu Val Val Gly His Ala Gln Tyr Glu	
50 55 60	
aag agg gct atg gag tta ctt aag gtg tca aaa gac aag cgt gct ctg	240
Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu	
65 70 75 80	
aag ttc ttg aag cga cga ttg ggc aca cac atc cgc gcc aag agg aag	288
Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys	
85 90 95	
cgt gaa gaa ctt agc aac gtg ctc gct cag atg agg aag gca gcc gcc	336
Arg Glu Glu Leu Ser Asn Val Leu Ala Gln Met Arg Lys Ala Ala Ala	
100 105 110	
cag gct cat cac cat cac cat taa	360
Gln Ala His His His His	
115	

&lt;210&gt; 2775

&lt;211&gt; 119

&lt;212&gt; PRT

&lt;213&gt; Bombyx mori

&lt;400&gt; 2775

Met Ala Pro Arg Phe Glu Ile Ala Val Gly Leu Arg Lys Gly His Lys
1 5 10 15
Thr Thr Lys Ile Ser Ala Gly Arg Lys Gly Ile Thr Asp Lys Ala Ile
20 25 30
Arg Ile Arg Pro Ala Arg Leu Lys Gly Leu Gln Thr Lys His Ser Lys
35 40 45
Phe Val Arg Asp Leu Val Arg Glu Val Val Gly His Ala Gln Tyr Glu
50 55 60
Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu
65 70 75 80
Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys
85 90 95
Arg Glu Glu Leu Ser Asn Val Leu Ala Gln Met Arg Lys Ala Ala Ala
100 105 110
Gln Ala His His His His His
115

&lt;210&gt; 2776

&lt;211&gt; 312

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(312)

&lt;400&gt; 2776

atg aca act cca caa gtg aag acc ggt ttg ttc gtt ggg ttg aac aag	48
Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys	
1 5 10 15	
gga cat gtt gtt acc aga cgt gaa tta gct cct cgt cct cgt tct cgc	96
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ser Arg	
20 25 30	
aaa gga aaa acg agc aag agg aca atc ttt atc aga aac ttg ata aag	144

PhoenixTemp32470.tmp.txt

Lys	Gly	Lys <sub>35</sub>	Thr	Ser	Lys	Arg	Thr <sub>40</sub>	Ile	Phe	Ile	Arg	Asn <sub>45</sub>	Leu	Ile	Lys		
gaa	gtt	gct	ggt	caa	gct	ccc	tat	gag	aag	aga	atc	act	gag	ctt	ttg		192
Glu	Val	Ala	Gly	Gln	Ala	Pro <sub>55</sub>	Tyr	Glu	Lys	Arg	Ile <sub>60</sub>	Thr	Glu	Leu	Leu		
aag	gtt	gct	aag	agg	aag	ttg	gga	acc	cac	aag	aga	gcc	aag	cga	aag		240
Lys	Val	Ala	Lys	Arg	Lys <sub>70</sub>	Leu	Gly	Thr	His	Lys <sub>75</sub>	Arg	Ala	Lys	Arg	Lys <sub>80</sub>		
aga	gag	gag	atg	tcc	agt	gtt	ctc	cgc	aag	atg	agg	tct	ggc	ggg	ggg		288
Arg	Glu	Glu	Met	Ser <sub>85</sub>	Ser	Val	Leu	Arg	Lys <sub>90</sub>	Met	Arg	Ser	Gly	Gly <sub>95</sub>	Gly		
ggt	gca	act	gag	aag	aag	aag	tga										312
Gly	Ala	Thr		Glu	Lys	Lys											

<210> 2777  
 <211> 103  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 2777

Met	Thr	Thr	Pro	Gln	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys		
1				5					10					15			
Gly	His	Val	Val	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Arg	Ser	Arg		
			20					25					30				
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Thr	Ile	Phe	Ile	Arg	Asn	Leu	Ile	Lys		
		35					40					45					
Glu	Val	Ala	Gly	Gln	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu		
	50					55					60						
Lys	Val	Ala	Lys	Arg	Lys	Leu	Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys		
65					70					75					80		
Arg	Glu	Glu	Met	Ser	Ser	Val	Leu	Arg	Lys	Met	Arg	Ser	Gly	Gly	Gly		
			85						90					95			
Gly	Ala	Thr		Glu	Lys	Lys											
			100														

<210> 2778  
 <211> 624  
 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (14)..(355)

<400> 2778

gaaattcgaa	aac	atg	gcg	att	cga	cat	gag	atg	gcc	gtt	ggc	ctc	aac				49
		Met	Ala	Ile	Arg	His	Glu	Met	Ala	Val	Gly	Leu	Asn				
		1				5					10						
aag	ggg	cac	aag	atg	acc	aag	aac	agc	acc	gtc	aag	aaa	gca	acc	agg		97
Lys	Gly	His	Lys	Met	Thr	Lys	Asn	Ser	Thr	Val	Lys	Lys	Ala	Thr	Arg		
		15					20					25					
aaa	ggg	att	aac	aag	cat	gct	aag	ttc	gtg	cgt	gac	ctg	att	cgt	gag		145
Lys	Gly	Ile	Asn	Lys	His	Ala	Lys	Phe	Val	Arg	Asp	Leu	Ile	Arg	Glu		
		30				35					40						
gtg	act	gga	ctt	gct	cca	tac	gag	aag	agg	tgc	atg	gag	ttc	ctc	agg		193
Val	Thr	Gly	Leu	Ala	Pro	Tyr	Glu	Lys	Arg	Cys	Met	Glu	Phe	Leu	Arg		
		45			50					55					60		
gtt	ggc	aag	gac	aag	aag	gct	ctc	aag	ttc	tgc	aag	agg	agg	ttg	gga		241
Val	Gly	Lys	Asp	Lys	Lys	Ala	Leu	Lys	Phe	Cys	Lys	Arg	Arg	Leu	Gly		
				65					70					75			
act	ctt	ggc	cgt	ggc	cgc	aga	aag	cgt	gag	gag	atg	aac	gcc	atc	tta		289
Thr	Leu	Gly	Arg	Gly	Arg	Arg	Lys	Arg	Glu	Glu	Met	Asn	Ala	Ile	Leu		
			80					85					90				
gcc	gcc	cag	agg	aag	gcc	gcc	tcc	gct	gct	gca	caa	gcc	gcc	tcc	gca		337
Ala	Ala	Gln	Arg	Lys	Ala	Ala	Ser	Ala	Ala	Ala	Gln	Ala	Ala	Ser	Ala		
		95					100					105					
gcc	gag	aag	gcc	aag	taaaccaaca	atgactcatg	tgaacaggat	atatgtggac									392
Ala	Glu	Lys	Ala	Lys													

## PhoenixTemp32470.tmp.txt

110  
tctgtatata tcctaggacc tgttttattc ccatcatggg ccaatatgga agaacttcta 452  
gtagtcctt gtaaatgtgc ggttttacga gagctgcatg gggctttcat attcttcaag 512  
ctccgatagt tgacagaggg gtatgatgtc attttgcaaa ctgattggta gatcttcagg 572  
tattgatgtg atcattttgt gaataaaaga gagcgggata ttaacagaga aa 624

<210> 2779  
<211> 113  
<212> PRT  
<213> Strongylocentrotus purpuratus

<400> 2779  
Met Ala Ile Arg His Glu Met Ala Val Gly Leu Asn Lys Gly His Lys  
1 5 10 15  
Met Thr Lys Asn Ser Thr Val Lys Lys Ala Thr Arg Lys Gly Ile Asn  
20 25 30  
Lys His Ala Lys Phe Val Arg Asp Leu Ile Arg Glu Val Thr Gly Leu  
35 40 45  
Ala Pro Tyr Glu Lys Arg Cys Met Glu Phe Leu Arg Val Gly Lys Asp  
50 55 60  
Lys Lys Ala Leu Lys Phe Cys Lys Arg Arg Leu Gly Thr Leu Gly Arg  
65 70 75 80  
Gly Arg Arg Lys Arg Glu Glu Met Asn Ala Ile Leu Ala Ala Gln Arg  
85 90 95  
Lys Ala Ala Ser Ala Ala Ala Gln Ala Ala Ser Ala Ala Glu Lys Ala  
100 105 110  
Lys

<210> 2780  
<211> 417  
<212> DNA  
<213> Nasonia vitripennis

<220>  
<221> CDS  
<222> (9)..(359)

<400> 2780  
tccacagg atg gca ccc agg tac gaa ttg gcc atc ggc ctc aac aag ggt 50  
Met Ala Pro Arg Tyr Glu Leu Ala Ile Gly Leu Asn Lys Gly  
1 5 10  
cac aaa acc acc aag att agg gtg gcg aaa aac aaa tcc gag aag gag 98  
His Lys Thr Thr Lys Ile Arg Val Ala Lys Asn Lys Ser Glu Lys Glu  
15 20 25 30  
aag acc gtt gcc atc aga cca gcc agg cta aag ggg cgt cag acc aaa 146  
Lys Thr Val Ala Ile Arg Pro Ala Arg Leu Lys Gly Arg Gln Thr Lys  
35 40 45  
cac agc aaa ttt gtg cga gac ttg atc cgt gaa gtc act gga cat gct 194  
His Ser Lys Phe Val Arg Asp Leu Ile Arg Glu Val Thr Gly His Ala  
50 55 60  
ccc tat gag aag cgc gct atg gag ttg ttg aag gtt tca aag gat aag 242  
Pro Tyr Glu Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys  
65 70 75  
cgt gcc ctc aaa ttc ttg aaa agg ttg ggt act cac att cgc gct 290  
Arg Ala Leu Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala  
80 85 90  
aag agg aag cgt gag gag ctt gga aac atc ctt gta caa atg agg aag 338  
Lys Arg Lys Arg Glu Glu Leu Gly Asn Ile Leu Val Gln Met Arg Lys  
95 100 105 110  
gcc gcc gca cag cat cat taagtgtgt tttgtattta taaggattat 386

Ala Ala Ala Gln His His  
115

ttactggatc aataaacacc ttgacacaa g

417

<210> 2781

<211> 116

<212> PRT

<213> Nasonia vitripennis

<400> 2781

Met Ala Pro Arg Tyr Glu Leu Ala Ile Gly Leu Asn Lys Gly His Lys  
1 5 10 15  
Thr Thr Lys Ile Arg Val Ala Lys Asn Lys Ser Glu Lys Glu Lys Thr  
20 25 30  
Val Ala Ile Arg Pro Ala Arg Leu Lys Gly Arg Gln Thr Lys His Ser  
35 40 45  
Lys Phe Val Arg Asp Leu Ile Arg Glu Val Thr Gly His Ala Pro Tyr  
50 55 60  
Glu Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala  
65 70 75 80  
Leu Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg  
85 90 95  
Lys Arg Glu Glu Leu Gly Asn Ile Leu Val Gln Met Arg Lys Ala Ala  
100 105 110  
Ala Gln His His  
115

<210> 2782

<211> 524

<212> DNA

<213> Aedes aegypti

<220>

<221> CDS

<222> (38)..(379)

<400> 2782

ttcttttccg gctgtcattt acaccgagga ggaaaac atg gct ccc cga tac gaa 55  
Met Ala Pro Arg Tyr Glu  
1 5  
atc tgt gtc ggt ctt aac aaa ggc cac aag acc acg aag ctg agg cag 103  
Ile Cys Val Gly Leu Asn Lys Gly His Lys Thr Thr Lys Leu Arg Gln  
10 15 20  
ctg cag tac cgc ggc gat cgc aag gtc aag gga atc cgc ccg tcc cgt 151  
Leu Gln Tyr Arg Gly Asp Arg Lys Val Lys Gly Ile Arg Pro Ser Arg  
25 30 35  
aca aag gga atc caa acc aag cac acc aag ttc gtc cgc gat ttg gtc 199  
Thr Lys Gly Ile Gln Thr Lys His Thr Lys Phe Val Arg Asp Leu Val  
40 45 50  
cgg gag gtc gtt ggt cat gcc ccg tac gag aag cgc ggt atg gaa ttg 247  
Arg Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg Gly Met Glu Leu  
55 60 65 70  
ctg aag gtg tcc aag gat aag cgc gcc ctg aag ttc ctg aag cgt cgc 295  
Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Arg Arg  
75 80 85  
ctc gga acg cac atc cgc gcc aag agg aag cgt gag gaa ctg tcc aac 343  
Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu Ser Asn  
90 95 100  
atc ctg gcc cat atg cgt aag gcc gcc cac aag taagctgctg cagcattggc 396  
Ile Leu Ala His Met Arg Lys Ala Ala His Lys  
105 110  
ttgtgcgtga gaactttaca ccgttcgctc tgtttgtaat ttaaggatta ctacatccca 456  
aaaaccttct gtgaagaaaa agtacccttt aaaatataaa caaaatcggt tactgaatca 516

gctatgct

524

<210> 2783  
 <211> 113  
 <212> PRT  
 <213> Aedes aegypti

<400> 2783  
 Met Ala Pro Arg Tyr Glu Ile Cys Val Gly Leu Asn Lys Gly His Lys  
 1 5 10 15  
 Thr Thr Lys Leu Arg Gln Leu Gln Tyr Arg Gly Asp Arg Lys Val Lys  
 20 25 30  
 Gly Ile Arg Pro Ser Arg Thr Lys Gly Ile Gln Thr Lys His Thr Lys  
 35 40 45  
 Phe Val Arg Asp Leu Val Arg Gly Val Val Gly His Ala Pro Tyr Glu  
 50 55 60  
 Lys Arg Gly Met Glu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu  
 65 70 75 80  
 Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys  
 85 90 95  
 Arg Glu Glu Leu Ser Asn Ile Leu Ala His Met Arg Lys Ala Ala His  
 100 105 110  
 Lys

<210> 2784  
 <211> 490  
 <212> DNA  
 <213> Aedes aegypti

<220>  
 <221> CDS  
 <222> (35)..(376)

<400> 2784  
 tattccggct gtcatttaca ccgaggagga aaac atg gct ccc cga tac gaa atc 55  
 Met Ala Pro Arg Tyr Glu Ile  
 1 5  
 tgt gtc ggt ctt aac aaa ggc cac aag acc acg aag ctg agg cag ctg 103  
 Cys Val Gly Leu Asn Lys Gly His Lys Thr Thr Lys Leu Arg Gln Leu  
 10 15 20  
 cag tac cgc ggc gat cgc aag gtc aag gga atc cgc ccg tcc cgt aca 151  
 Gln Tyr Arg Gly Asp Arg Lys Val Lys Gly Ile Arg Pro Ser Arg Thr  
 25 30 35  
 aag gga atc caa acc aag cac acc aag ttc ttc cgc gat ttg gtc cgg 199  
 Lys Gly Ile Gln Thr Lys His Thr Lys Phe Phe Arg Asp Leu Val Arg  
 40 45 50 55  
 gag gtc gtt ggt cat gcc ccg tac gag aag cgc ggt atg gaa ttg ctg 247  
 Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg Gly Met Glu Leu Leu  
 60 65 70  
 aag gtg tcc aag gat aag cgc gcc ctg aag ttc ctg aag cgt cgc ctc 295  
 Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Arg Arg Leu  
 75 80 85  
 gga acg cac atc cgc gcc aag agg aag cgt gag gaa ctg tcc aac atc 343  
 Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu Ser Asn Ile  
 90 95 100  
 ctg gcc cat atg cgt aag gcc gcc cac aag taagctgctg cagcattggc 393  
 Leu Ala His Met Arg Lys Ala Ala His Lys  
 105 110  
 ttgtgtgtga gaactttaca ccgttcgctc tgtttgtaat ttaaggatta ctacatccca 453  
 aaaaccttct gtgaagaaaa agtacccttt aaaatat 490

<210> 2785

<211> 113  
 <212> PRT  
 <213> Aedes aegypti

<400> 2785  
 Met Ala Pro Arg Tyr Glu Ile Cys Val Gly Leu Asn Lys Gly His Lys  
 1 5 10 15  
 Thr Thr Lys Leu Arg Gln Leu Gln Tyr Arg Gly Asp Arg Lys Val Lys  
 20 25 30  
 Gly Ile Arg Pro Ser Arg Thr Lys Gly Ile Gln Thr Lys His Thr Lys  
 35 40 45  
 Phe Phe Arg Asp Leu Val Arg Glu Val Val Gly His Ala Pro Tyr Glu  
 50 55 60  
 Lys Arg Gly Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu  
 65 70 75 80  
 Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys  
 85 90 95  
 Arg Glu Glu Leu Ser Asn Ile Leu Ala His Met Arg Lys Ala Ala His  
 100 105 110  
 Lys

<210> 2786  
 <211> 330  
 <212> DNA  
 <213> Magnaporthe grisea 70-15

<220>  
 <221> CDS  
 <222> (1)..(330)

<400> 2786  
 atg gct ccc acc aag aag ggc gag gtc ccc cgt acc ggt ctt gct acc 48  
 Met Ala Pro Thr Lys Lys Gly Glu Val Pro Arg Thr Gly Leu Ala Thr  
 1 5 10 15  
 ggc ctt aac cgc ggc ttc aaa acc acc gcc agg gtc acc aag ccc cgc 96  
 Gly Leu Asn Arg Gly Phe Lys Thr Thr Ala Arg Val Thr Lys Pro Arg  
 20 25 30  
 gtt agc acc acc aag ggc cac ctc agc aag agg act gct ttc gtc cgc 144  
 Val Ser Thr Thr Lys Gly His Leu Ser Lys Arg Thr Ala Phe Val Arg  
 35 40 45  
 gag ctc gtc aaa gag gtc gct ggc ctt gcc ccc tat gag cgc cgt gtt 192  
 Glu Leu Val Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Arg Arg Val  
 50 55 60  
 atc gag ctg ctg agg aac ggc aag gac aag cgt gcc cgc aag ctg gcc 240  
 Ile Glu Leu Leu Arg Asn Gly Lys Asp Lys Arg Ala Arg Lys Leu Ala  
 65 70 75 80  
 aag aag cgc ctc ggt act ttt ggc cgc gcc aag gcc aag gtt gag cag 288  
 Lys Lys Arg Leu Gly Thr Phe Gly Arg Ala Lys Ala Lys Val Glu Gln  
 85 90 95  
 ctc cag acc gtc att gct gag gcc cgt cgt gcc gcc cac taa 330  
 Leu Gln Thr Val Ile Ala Glu Ala Arg Arg Ala Gly His  
 100 105

<210> 2787  
 <211> 109  
 <212> PRT  
 <213> Magnaporthe grisea 70-15

<400> 2787  
 Met Ala Pro Thr Lys Lys Gly Glu Val Pro Arg Thr Gly Leu Ala Thr  
 1 5 10 15  
 Gly Leu Asn Arg Gly Phe Lys Thr Thr Ala Arg Val Thr Lys Pro Arg  
 20 25 30  
 Val Ser Thr Thr Lys Gly His Leu Ser Lys Arg Thr Ala Phe Val Arg  
 35 40 45  
 Glu Leu Val Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Arg Arg Val  
 50 55 60  
 Ile Glu Leu Leu Arg Asn Gly Lys Asp Lys Arg Ala Arg Lys Leu Ala  
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65 Lys Lys Arg Leu Gly Thr Phe Gly Arg Ala Lys Ala Lys Val Glu Gln  
70  
75  
80  
85  
90  
95  
100  
105

<210> 2788  
<211> 321  
<212> DNA  
<213> Gibberella zeae PH-1

$\langle 220 \rangle$   
 $\langle 221 \rangle$  CDS  
 $\langle 222 \rangle$  (1) .. (321)

<400>	atg	gcc	gct	gat	acc	ccc	gcg	aag	tcc	ggc	ctg	gcc	gtt	ggc	ctc	aac	
Met	Ala	Ala	Asp	Thr	Pro	Pro	Ala	Lys	Ser	Gly	Leu	Ala	Val	Gly	Leu	Asn	48
1				5						10					15		
aag	ggc	cac	aaa	act	acc	ccc	cgt	gtt	gtc	aag	ccc	cgt	gtt	tcc	cga		
Lys	Gly	His	Lys	Thr	Thr	Pro	Arg	Val	Val	Lys	Pro	Arg	Val	Ser	Arg		96
			20					25						30			
acc	aag	ggc	cac	ctg	agc	aag	cgc	acc	gct	ttc	gtt	cgc	gag	gtt	gtc		
Thr	Lys	Gly	His	Leu	Ser	Lys	Arg	Thr	Ala	Phe	Val	Arg	Glu	Val	Val		144
			35				40					45					
aag	gag	gtt	gct	ggc	ctc	gcc	ccc	tac	gag	cgc	cga	gtc	atc	gag	ttg		
Lys	Glu	Val	Ala	Gly	Leu	Ala	Pro	Tyr	Glu	Arg	Arg	Val	Ile	Glu	Leu		192
	50					55					60						
ctc	cgc	aac	tcc	aag	gac	aag	cgt	gcc	cgt	aag	ctc	gct	aag	aag	aga		
Leu	Arg	Asn	Ser	Lys	Asp	Lys	Arg	Ala	Arg	Lys	Leu	Ala	Lys	Lys	Arg		240
	65				70					75					80		
ctc	ggc	acc	ttc	ggc	cgt	gcc	aag	gcc	aag	gtc	gac	gag	ctc	cag	cgt		
Leu	Gly	Thr	Phe	Gly	Arg	Ala	Lys	Ala	Lys	Val	Asp	Glu	Leu	Gln	Arg		288
				85					90					95			
gtc	atc	gct	gag	tct	cgc	cgt	gct	ggc	cac	taa							
Val	Ile	Ala	Glu	Ser	Arg	Arg	Ala	Gly	His								321
			100					105									

```
<210> 2789
<211> 106
<212> PRT
<213> Gibberella zeae PH-1
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<400>	2789															
Met	Ala	Ala	Asp	Thr	Pro	Ala	Lys	Ser	Gly	Leu	Ala	Val	Gly	Leu	Asn	
1				5					10					15		
Lys	Gly	His	Lys	Thr	Thr	Pro	Arg	Val	Val	Lys	Pro	Arg	Val	Ser	Arg	
			20					25					30			
Thr	Lys	Gly	His	Leu	Ser	Lys	Arg	Thr	Ala	Phe	Val	Arg	Glu	Val	Val	
		35					40					45				
Lys	Glu	Val	Ala	Gly	Leu	Ala	Pro	Tyr	Glu	Arg	Arg	Val	Ile	Glu	Leu	
	50					55					60					
Leu	Arg	Asn	Ser	Lys	Asp	Lys	Arg	Ala	Arg	Lys	Leu	Ala	Lys	Lys	Arg	
65				70						75					80	
Leu	Gly	Thr	Phe	Gly	Arg	Ala	Lys	Ala	Lys	Val	Asp	Glu	Leu	Gln	Arg	
			85						90					95		
Val	Ile	Ala	Glu	Ser	Arg	Arg	Ala	Gly	His							
			100					105								

```
<210> 2790
<211> 303
<212> DNA
<213> Kluyveromyces lactis NRRL Y-1140
```

<220>  
<221> CDS  
<222> (1)..(303)

<400> 2790

## PhoenixTemp32470.tmp.txt

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atg gcc gtt aag tca ggt att gct gtt ggt ttg aac aaa ggt aag aag      48
Met Ala Val Lys Ser Gly Ile Ala Val Gly Leu Asn Lys Gly Lys Lys
 1      5      10      15
gtc aac caa ttg acc cca gcc cca aag att tct tac aga aag ggt gct      96
Val Asn Gln Leu Thr Pro Ala Pro Lys Ile Ser Tyr Arg Lys Gly Ala
      20      25      30
gct tcc caa aga acc act ttc gtc aga tct atc gtt aag gaa gtc gct      144
Ala Ser Gln Arg Thr Thr Phe Val Arg Ser Ile Val Lys Glu Val Ala
      35      40      45
tct ttg gct cca tac gaa aga aga ttg atc gaa ttg atc aga aac gct      192
Ser Leu Ala Pro Tyr Glu Arg Arg Leu Ile Glu Leu Ile Arg Asn Ala
      50      55      60
ggt gaa aag aga gct aga aag gtc gca aag aag aga ttg gga act ttc      240
Gly Glu Lys Arg Ala Arg Lys Val Ala Lys Lys Arg Leu Gly Thr Phe
      65      70      75      80
ggt aga gct aag gct aag gtt gaa gaa atg aac gaa atc att acc gct      288
Gly Arg Ala Lys Ala Lys Val Glu Glu Met Asn Glu Ile Ile Thr Ala
      85      90      95
tct cgt cgt cat taa
Ser Arg Arg His
      100

```

&lt;210&gt; 2791

&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;400&gt; 2791

```

Met Ala Val Lys Ser Gly Ile Ala Val Gly Leu Asn Lys Gly Lys Lys
 1      5      10      15
Val Asn Gln Leu Thr Pro Ala Pro Lys Ile Ser Tyr Arg Lys Gly Ala
      20      25      30
Ala Ser Gln Arg Thr Thr Phe Val Arg Ser Ile Val Lys Glu Val Ala
      35      40      45
Ser Leu Ala Pro Tyr Glu Arg Arg Leu Ile Glu Leu Ile Arg Asn Ala
      50      55      60
Gly Glu Lys Arg Ala Arg Lys Val Ala Lys Lys Arg Leu Gly Thr Phe
      65      70      75      80
Gly Arg Ala Lys Ala Lys Val Glu Glu Met Asn Glu Ile Ile Thr Ala
      85      90      95
Ser Arg Arg His
      100

```

&lt;210&gt; 2792

&lt;211&gt; 300

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(300)

&lt;400&gt; 2792

```

atg gct aga tca ggt att gct gtt gga tta aac aag gga cac aag gtt      48
Met Ala Arg Ser Gly Ile Ala Val Gly Leu Asn Lys Gly His Lys Val
 1      5      10      15
gtc gcc aag gaa gtt gct cca aag gtc tct tac aga aag ggt gct tta      96
Val Ala Lys Glu Val Ala Pro Lys Val Ser Tyr Arg Lys Gly Ala Leu
      20      25      30
tcc aag aga act gaa ttc gtt aga aac atc gtc aag gaa gtt tcc gga      144
Ser Lys Arg Thr Glu Phe Val Arg Asn Ile Val Lys Glu Val Ser Gly
      35      40      45
tta gct cca tat gaa aga aga ttg atc gaa ttg atc aga aat gct ggt      192
Leu Ala Pro Tyr Glu Arg Arg Leu Ile Glu Leu Ile Arg Asn Ala Gly
      50      55      60
gaa aag aga gct aag aag ttg gct aag aag aga tta ggt acc cac aag      240
Glu Lys Arg Ala Lys Lys Leu Ala Lys Lys Arg Leu Gly Thr His Lys
      65      70      75      80
aga gcc ctt aga aag atc gaa gaa atg aac aag gtc att gct gaa tca      288

```

Arg Ala Leu Arg Lys Ile Glu Glu Met Asn Lys Val Ile Ala Glu Ser  
                   85                  90                  95  
 aga aga cat taa  
 Arg Arg His

300

<210> 2793  
 <211> 99  
 <212> PRT  
 <213> Debaryomyces hansenii CBS767

<400> 2793  
 Met Ala Arg Ser Gly Ile Ala Val Gly Leu Asn Lys Gly His Lys Val  
 1                  5                  10                  15  
 Val Ala Lys Glu Val Ala Pro Lys Val Ser Tyr Arg Lys Gly Ala Leu  
                   20                  25                  30  
 Ser Lys Arg Thr Glu Phe Val Arg Asn Ile Val Lys Glu Val Ser Gly  
                   35                  40                  45  
 Leu Ala Pro Tyr Glu Arg Arg Leu Ile Glu Leu Ile Arg Asn Ala Gly  
                   50                  55                  60  
 Glu Lys Arg Ala Lys Lys Leu Ala Lys Lys Arg Leu Gly Thr His Lys  
 65                  70                  75                  80  
 Arg Ala Leu Arg Lys Ile Glu Glu Met Asn Lys Val Ile Ala Glu Ser  
                   85                  90                  95  
 Arg Arg His

<210> 2794  
 <211> 348  
 <212> DNA  
 <213> Apis mellifera

<220>  
 <221> CDS  
 <222> (1)..(348)

<400> 2794  
 atg gct cca aga ttt gaa tta gca att ggt ctt aat aga ggc cat aaa  
 Met Ala Pro Arg Phe Glu Leu Ala Ile Gly Leu Asn Arg Gly His Lys  
 1                  5                  10                  15  
 aca act aaa att cgt gtg gca aaa aat aaa aat gag aag aaa aaa aca  
 Thr Thr Lys Ile Arg Val Ala Lys Asn Lys Asn Glu Lys Lys Lys Thr  
                   20                  25                  30  
 gta tgt gtt tta cca gca aga tta aaa ggg aga caa act aaa cat agc  
 Val Cys Val Leu Pro Ala Arg Leu Lys Gly Arg Gln Thr Lys His Ser  
                   35                  40                  45  
 aaa ttt gtc aga gac tta att cgt gaa gta act ggt cat gca cca tat  
 Lys Phe Val Arg Asp Leu Ile Arg Glu Val Thr Gly His Ala Pro Tyr  
                   50                  55                  60  
 gaa aag cgt gct atg gaa tta tta aaa gtt tcc aaa gat aaa cgt gca  
 Glu Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala  
 65                  70                  75                  80  
 ttg aaa ttt tta aaa aga agg ttg ggt aca cat atc aga gct aaa agg  
 Leu Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg  
                   85                  90                  95  
 aag cgt gaa gaa ctt gga aat att ctt gtc caa atg agg aaa gct gct  
 Lys Arg Glu Glu Leu Gly Asn Ile Leu Val Gln Met Arg Lys Ala Ala  
                   100                  105                  110  
 gca cat cat taa  
 Ala His His  
 115

<210> 2795  
 <211> 115  
 <212> PRT  
 <213> Apis mellifera

<400> 2795  
 Met Ala Pro Arg Phe Glu Leu Ala Ile Gly Leu Asn Arg Gly His Lys

## PhoenixTemp32470.tmp.txt

1 5 10 15  
 Thr Thr Lys Ile Arg Val Ala Lys Asn Lys Asn Glu Lys Lys Lys Thr  
 20  
 Val Cys Val Leu Pro Ala Arg Leu Lys Gly Arg Gln Thr Lys His Ser  
 35  
 Lys Phe Val Arg Asp Leu Ile Arg Glu Val Thr Gly His Ala Pro Tyr  
 50  
 Glu Lys Arg Ala Met Glu Leu Lys Val Ser Lys Asp Lys Arg Ala  
 65 70  
 Leu Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg  
 85  
 Lys Arg Glu Glu Leu Gly Asn Ile Leu Val Gln Met Arg Lys Ala Ala  
 100 105 110  
 Ala His His  
 115

&lt;210&gt; 2796

&lt;211&gt; 424

&lt;212&gt; DNA

&lt;213&gt; Tribolium castaneum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (48)..(383)

&lt;400&gt; 2796

atttgggtgaa cacgcgtttg ttggtgaatt atttccaata aaccatc atg gca ccg 56  
 Met Ala Pro  
 1  
 cgt tac gaa ctc gct atc ggt ctc caa agg ggc cac aaa acc aca aaa 104  
 Arg Tyr Glu Leu Ala Ile Gly Leu Gln Arg Gly His Lys Thr Thr Lys  
 5 10 15  
 att ccc tct gga aag acc aaa gcc gac aag gtc cgt cct gca cgg ttg 152  
 Ile Pro Ser Gly Lys Thr Lys Ala Asp Lys Val Arg Pro Ala Arg Leu  
 20 25 30 35  
 aag ggg cac caa acc aaa cac acg aaa ttc gtc cgc gac ctc att cgt 200  
 Lys Gly His Gln Thr Lys His Thr Lys Phe Val Arg Asp Leu Ile Arg  
 40 45 50  
 gaa gtc gtg ggc cac gct ccg tac gaa aaa cgt gct atg gaa ttg ctg 248  
 Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg Ala Met Glu Leu Leu  
 55 60 65  
 aaa gtg tcg aaa gac aag cgc gcc ctc aag ttc ttg aag cgc cgt ctt 296  
 Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Arg Arg Leu  
 70 75 80  
 ggc acc cac att cgt gcc aag agg aag cgt gaa gag ttg tcc aac att 344  
 Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Leu Ser Asn Ile  
 85 90 95  
 ctg aca caa atg cgt aaa gca caa gct cac gct aag taaatgtatt 390  
 Leu Thr Gln Met Arg Lys Ala Gln Ala His Ala Lys  
 100 105 110  
 ttttaagtttt tgacattaaa aacataacag taaa 424

&lt;210&gt; 2797

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Tribolium castaneum

&lt;400&gt; 2797

Met Ala Pro Arg Tyr Glu Leu Ala Ile Gly Leu Gln Arg Gly His Lys  
 1 5 10 15  
 Thr Thr Lys Ile Pro Ser Gly Lys Thr Lys Ala Asp Lys Val Arg Pro  
 20 25 30  
 Ala Arg Leu Lys Gly His Gln Thr Lys His Thr Lys Phe Val Arg Asp  
 35 40 45  
 Leu Ile Arg Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg Ala Met  
 50 55 60  
 Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys

## PhoenixTemp32470.tmp.txt

65	Arg	Arg	Leu	Gly	Thr	70	His	Ile	Arg	Ala	Lys	75	Arg	Lys	Arg	Glu	Glu	80	Leu
					85						90							95	
Ser	Asn	Ile	Leu	Thr	Gln	Met	Arg	Lys	Lys	Ala	Gln	Ala	His	Ala	His	Ala	Lys		
			100					105						110					

<210> 2798  
<211> 354  
<212> DNA  
<213> *Maconellicoccus hirsutus*

<220>  
<221> CDS  
<222> (1) .. (354)

[illegible]

<210> 2799  
<211> 117  
<212> PRT  
<213> Maconellicoccus hirsutus

[illegible]

```
<210> 2800
<211> 333
<212> DNA
<213> Oryza sativa subsp
```

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(333)

&lt;400&gt; 2800

atg gcg ccg ccg cag ccc aag tcg ggg ctc ttc gtc ggc atc aac aag	48
Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys	
1 5 10 15	
ggc cac gtc gtc acc aag cgc gag ctg cca cct cgc ccg tcc gac cgc	96
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg	
20 25 30	
aag ggg aaa agt acc aag agg gtg aat ttt gtc agg ggc ttg att agg	144
Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg	
35 40 45	
gag gtt gtg gga ttt gct cca tat gag aaa cga atc act gag ctt ctg	192
Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu	
50 55 60	
aag gtt gga aag gac aag cgt gca ctg aag gtc gct aag aga aag ctc	240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu	
65 70 75 80	
ggt acc cac aag aga gca aag aag aag aga gag gag atg gtg ggt gtc	288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Val Gly Val	
85 90 95	
atc agg aag atg atg tct gct ggt act act gac aag aag aaa tag	333
Ile Arg Lys Met Arg Ser Ala Gly Thr Thr Asp Lys Lys Lys	
100 105 110	

&lt;210&gt; 2801

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2801

Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1 5 10 15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20 25 30
Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg
35 40 45
Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50 55 60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65 70 75 80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Val Gly Val
85 90 95
Ile Arg Lys Met Arg Ser Ala Gly Thr Thr Asp Lys Lys Lys
100 105 110

&lt;210&gt; 2802

&lt;211&gt; 432

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(432)

&lt;400&gt; 2802

atg gcg ccg ccg cag ccc aag tcg ggg ctc ttc gtc ggc atc aac aag	48
Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys	
1 5 10 15	
ggc cac gtc gtc acc aag cgc gag ctg cca cct cgc ccg tcc gac cgc	96
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg	
20 25 30	
aag ggg aaa agt acc aag aga gtg aat ttt gtc agg ggc ttg att agg	144
Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg	
35 40 45	
gag gtt gtg gga ttt gct cca tat gag aaa cga atc act gag ctt ctg	192
Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu	

## PhoenixTemp32470.tmp.txt

50	55	60	
aag gtt gga aag gac aag cgt gca ctg aag gtc gct aag aga aag ctc	240		
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu			
65	70	75	80
ggt acc cac aag aga gca aag aag aag aga gag gag atg gcg ggt gtc	288		
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val			
85	90	95	
atc agg aag atg aga atg ggt tct act ccc tct ggt ttc ata att ttt	336		
Ile Arg Lys Met Arg Met Gly Ser Thr Pro Ser Gly Phe Ile Ile Phe			
100	105	110	
gac ttt ttg aac aat gac acg cta tgt agg ggt gca agt gga caa tac	384		
Asp Phe Leu Asn Asn Asp Thr Leu Cys Arg Gly Ala Ser Gly Gln Tyr			
115	120	125	
cac tat ttg cat aaa tac ctt ctt gct agt tca ttt ccc aca tgg	429		
His Tyr Leu His Lys Tyr Leu Leu Ala Ser Ser Phe Pro Thr Trp			
130	135	140	
tag	432		

&lt;210&gt; 2803

&lt;211&gt; 143

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 2803

Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys			
1	5	10	15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg			
20	25	30	
Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg			
35	40	45	
Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu			
50	55	60	
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu			
65	70	75	80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val			
85	90	95	
Ile Arg Lys Met Arg Met Gly Ser Thr Pro Ser Gly Phe Ile Ile Phe			
100	105	110	
Asp Phe Leu Asn Asn Asp Thr Leu Cys Arg Gly Ala Ser Gly Gln Tyr			
115	120	125	
His Tyr Leu His Lys Tyr Leu Leu Ala Ser Ser Phe Pro Thr Trp			
130	135	140	

&lt;210&gt; 2804

&lt;211&gt; 333

&lt;212&gt; DNA

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(333)

&lt;400&gt; 2804

atg gct cca aaa cag cca aat act ggc ctc ttc gtg ggc cta aac aaa	48		
Met Ala Pro Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys			
1	5	10	15
gga cat gtg gtg aca aag aag gaa ctc cct cca cgc cct tct gat aga	96		
Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg			
20	25	30	
aag ggg aaa acc agt aaa aga gtt cac ttt gtg cgg aat atc atc agg	144		
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Ile Ile Arg			
35	40	45	
gaa gta gct ggt ttt gct cct tat gag aag aga atc act gaa ctt ctt	192		
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu			
50	55	60	
aag gtt ggg aaa gac aag cga gcc ttg aaa gtt gcg aag aga aag tta	240		
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu			

PhoenixTemp32470.tmp.txt

```

65          70          75          80
ggc aca cac aag aga gca aaa aag aag cgt gag gag atg tcc agt gtc      288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
85
cta cgc aag atg agg tct ggt gga gtt gga gag aag aag aag tga      333
Leu Arg Lys Met Arg Ser Gly Gly Val Gly Glu Lys Lys Lys
100          105          110

<210> 2805
<211> 110
<212> PRT
<213> Vitis vinifera

<400> 2805
Met Ala Pro Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys
1          5          10          15
Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg
20          25          30
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Ile Ile Arg
35          40          45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50          55          60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65          70          75          80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
85          90          95
Leu Arg Lys Met Arg Ser Gly Gly Val Gly Glu Lys Lys Lys
100          105          110

<210> 2806
<211> 553
<212> DNA
<213> Spadella cephaloptera

<220>
<221> CDS
<222> (80)..(400)

<400> 2806
ggaagcttat aattgagtag tttcaatttg tttaaagttt tattttgtga caggaaaagg      60

ttattcttaa actagaact atg gct ccc aaa tac gct atg gct att ggt cgc      112
Met Ala Pro Lys Tyr Ala Met Ala Ile Gly Arg
1          5          10
gtc agg gat aag ggc ttt cgc acc acc aaa aac aag gct acg gtg aaa      160
Val Arg Asp Lys Gly Phe Arg Thr Thr Lys Asn Lys Ala Thr Val Lys
15          20          25
cct tcg agg aga aag ggc gtc caa cac aag cat gtc cga ttc gtt cgg      208
Pro Ser Arg Arg Lys Gly Val Gln His Lys His Val Arg Phe Val Arg
30          35          40
gat acg gtt aga gaa atc gcc ggt ttc gcc ccc tac gaa aag cga tgc      256
Asp Thr Val Arg Glu Ile Ala Gly Phe Ala Pro Tyr Glu Lys Arg Cys
45          50          55
ctc gag ttg ctc aag gta tcc aag gat aag cgg tgc ttg aag ttc gcc      304
Leu Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Cys Leu Lys Phe Ala
60          65          70          75
aag aaa cgt ctc ggg gcc cac atc cgc ggc aag aga aag cgg gaa gag      352
Lys Lys Arg Leu Gly Ala His Ile Arg Gly Lys Arg Lys Arg Glu Glu
80          85          90
atg cag gcc gtg ctc cag gcg caa cgc aaa gcc gct acc aag cag      397
Met Gln Ala Val Leu Gln Ala Gln Arg Lys Ala Ala Thr Lys Gln
95          100          105
tgatcctcgc gactttttac taattcacac ttcatcttag gagcgtgggt gccatttga      457

ttaaaactgt ttcaatgacc cgttaaactg ttttcaatcg cttcagtaag gttgtttttt      517

```



tttcctattc ccgtttctat attaaaaaaa atgttt

553

&lt;210&gt; 2807

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Spadella cephaloptera

&lt;400&gt; 2807

Met Ala Pro Lys Tyr Ala Met Ala Ile Gly Arg Val Arg Asp Lys Gly  
 1 5 10 15  
 Phe Arg Thr Thr Lys Asn Lys Ala Thr Val Lys Pro Ser Arg Arg Lys  
 20 25 30  
 Gly Val Gln His Lys His Val Arg Phe Val Arg Asp Thr Val Arg Glu  
 35 40 45  
 Ile Ala Gly Phe Ala Pro Tyr Glu Lys Arg Cys Leu Glu Leu Leu Lys  
 50 55 60  
 Val Ser Lys Asp Lys Arg Cys Leu Lys Phe Ala Lys Lys Arg Leu Gly  
 65 70 75 80  
 Ala His Ile Arg Gly Lys Arg Lys Arg Glu Glu Met Gln Ala Val Leu  
 85 90 95  
 Gln Ala Gln Arg Lys Ala Ala Thr Lys Gln  
 100 105

&lt;210&gt; 2808

&lt;211&gt; 598

&lt;212&gt; DNA

&lt;213&gt; Spadella cephaloptera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (88)..(405)

&lt;400&gt; 2808

ggaagcttat aattgagtag tttcaatttg tttaaattat aagatacttt ttcgttaaaa 60

ccaaagtttt aagagcgaaa cgtcgag atg gct ccc aaa tac gct atg gcg atc 114

Met Ala Pro Lys Tyr Ala Met Ala Ile  
 1 5

gga cgg gtc cgg gac aag gga ttc cgg acg acg aaa cac gaa gca ccc 162

Gly Arg Val Arg Asp Lys Gly Phe Arg Thr Thr Lys His Glu Ala Pro  
 10 15 20 25

gtc aag ccc tcc cgg cga aag ggt gtc caa cac aag cac gtc aag ttt 210

Val Lys Pro Ser Arg Lys Gly Val Gln His Lys His Val Lys Phe  
 30 35 40

gta aga gaa tta gtg agg gaa atc gga gga ttc gct cct tac gag aag 258

Val Arg Glu Leu Val Arg Glu Ile Gly Gly Phe Ala Pro Tyr Glu Lys  
 45 50 55

cga tgc ttg gag ttg ttg aag gtt tca aag gac aag cgc tgt ctc aaa 306

Arg Cys Leu Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Cys Leu Lys  
 60 65 70

ttt gcc aag aag cgt ctc gga gct cac atc cgt gga aag cgg aag cgc 354

Phe Ala Lys Lys Arg Leu Gly Ala His Ile Arg Gly Lys Arg Lys Arg  
 75 80 85

gag gag atg caa tcc gtg ctc caa gcg cag agg aag gcc gcc aac aag 402

Glu Glu Met Gln Ser Val Leu Gln Ala Gln Arg Lys Ala Ala Asn Lys  
 90 95 100 105

tagactcccg cctctgccgt tcgtttcggt aaccgtcggg atatctgcct ctttcgctcg 462

tcgaaccgtt tttttgtgaa gctgacgttg agcttttgtc tcttccagtt ccttcgagcc 522

atctcgattt gattcgctga ttatttgttt tttttattat ctcaggaaaa aaaaaaaaaa 582

aaaaaaaaaa aaaaaa

598

<210> 2809  
 <211> 105  
 <212> PRT  
 <213> Spadella cephaloptera

<400> 2809  
 Met Ala Pro Lys Tyr Ala Met Ala Ile Gly Arg Val Arg Asp Lys Gly  
 1 5 10 15  
 Phe Arg Thr Thr Lys His Glu Ala Pro Val Lys Pro Ser Arg Arg Lys  
 20 25 30  
 Gly Val Gln His Lys His Val Lys Phe Val Arg Glu Leu Val Arg Glu  
 35 40 45  
 Ile Gly Gly Phe Ala Pro Tyr Glu Lys Arg Cys Leu Glu Leu Leu Lys  
 50 55 60  
 Val Ser Lys Asp Lys Arg Cys Leu Lys Phe Ala Lys Lys Arg Leu Gly  
 65 70 75 80  
 Ala His Ile Arg Gly Lys Arg Lys Arg Glu Glu Met Gln Ser Val Leu  
 85 90 95  
 Gln Ala Gln Arg Lys Ala Ala Asn Lys  
 100 105

<210> 2810  
 <211> 306  
 <212> DNA  
 <213> Ostreococcus tauri

<220>  
 <221> CDS  
 <222> (1)..(306)

<400> 2810  
 atg tcg gtt ggt ttg gat aag ggt cac gct gtt acg aag cga gag atc 48  
 Met Ser Val Gly Leu Asp Lys Gly His Ala Val Thr Lys Arg Glu Ile  
 1 5 10 15  
 gcg ccg aga cca ggg tcg aga aag ggg cgt tgt ggc aaa cgt gtc ggc 96  
 Ala Pro Arg Pro Gly Ser Arg Lys Gly Arg Cys Gly Lys Arg Val Gly  
 20 25 30  
 atg att cgc tcg ctt att cga gat gtc gct ggt tct gcg ccg tac gaa 144  
 Met Ile Arg Ser Leu Ile Arg Asp Val Ala Gly Ser Ala Pro Tyr Glu  
 35 40 45  
 agg cgg tta atc gag ttg ctg aag aac ggt cgg gac aag cgc gca ttg 192  
 Arg Arg Leu Ile Glu Leu Leu Lys Asn Gly Arg Asp Lys Arg Ala Leu  
 50 55 60  
 aaa ctt gca aag aga aag ctt ggg act cac ttg cgc ggt aag aag aag 240  
 Lys Leu Ala Lys Arg Lys Leu Gly Thr His Leu Arg Gly Lys Lys Lys  
 65 70 75 80  
 cgc gaa gaa atg ggc aac atc atg cgc aag tcg tcg cga aaa gcc aca 288  
 Arg Glu Glu Met Gly Asn Ile Met Arg Lys Ser Ser Arg Lys Ala Thr  
 85 90 95  
 gcc ccg gaa agc aag tga 306  
 Ala Pro Glu Ser Lys  
 100

<210> 2811  
 <211> 101  
 <212> PRT  
 <213> Ostreococcus tauri

<400> 2811  
 Met Ser Val Gly Leu Asp Lys Gly His Ala Val Thr Lys Arg Glu Ile  
 1 5 10 15  
 Ala Pro Arg Pro Gly Ser Arg Lys Gly Arg Cys Gly Lys Arg Val Gly  
 20 25 30  
 Met Ile Arg Ser Leu Ile Arg Asp Val Ala Gly Ser Ala Pro Tyr Glu  
 35 40 45  
 Arg Arg Leu Ile Glu Leu Leu Lys Asn Gly Arg Asp Lys Arg Ala Leu  
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## PhoenixTemp32470.tmp.txt

50 55 60  
 Lys Leu Ala Lys Arg Lys Leu Gly Thr His Leu Arg Gly Lys Lys Lys  
 65 70 75 80  
 Arg Glu Glu Met Gly Asn Ile Met Arg Lys Ser Ser Arg Lys Ala Thr  
 85 90 95  
 Ala Pro Glu Ser Lys  
 100

<210> 2812  
 <211> 318  
 <212> DNA  
 <213> Artemia sanfranciscana

<220>  
 <221> CDS  
 <222> (1)..(318)

<400> 2812  
 atg gtg aag aaa aac ttt gat ttg gca gtt ggc tta aac aaa ggt cat 48  
 Met Val Lys Lys Asn Phe Asp Leu Ala Val Gly Leu Asn Lys Gly His  
 1 5 10 15  
 aag act acc aag aat gtc cag gcc cca aga cct tcc aga agg ata ggc 96  
 Lys Thr Thr Lys Asn Val Gln Ala Pro Arg Pro Ser Arg Arg Ile Gly  
 20 25 30  
 aaa cag tca aag cac aat aag ttc att aaa agt ata gtg act gaa gtt 144  
 Lys Gln Ser Lys His Asn Lys Phe Ile Lys Ser Ile Val Thr Glu Val  
 35 40 45  
 gtt ggg cat gca ccg tat gag aaa cgt gcc atg gag ctg ctg aaa gtt 192  
 Val Gly His Ala Pro Tyr Glu Lys Arg Ala Met Glu Leu Leu Lys Val  
 50 55 60  
 tcc aaa gat aag agg gcg ctg aaa ttc ctg aaa aag agg ctt ggt act 240  
 Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Lys Arg Leu Gly Thr  
 65 70 75 80  
 cat att cgt gcc aag aag aga gaa gaa ctt gga aat gtc ctc aca 288  
 His Ile Arg Ala Lys Lys Lys Arg Glu Glu Leu Gly Asn Val Leu Thr  
 85 90 95  
 caa atg cgt aag gcg caa gct gct aaa taa 318  
 Gln Met Arg Lys Ala Gln Ala Ala Lys  
 100 105

<210> 2813  
 <211> 105  
 <212> PRT  
 <213> Artemia sanfranciscana

<400> 2813  
 Met Val Lys Lys Asn Phe Asp Leu Ala Val Gly Leu Asn Lys Gly His  
 1 5 10 15  
 Lys Thr Thr Lys Asn Val Gln Ala Pro Arg Pro Ser Arg Arg Ile Gly  
 20 25 30  
 Lys Gln Ser Lys His Asn Lys Phe Ile Lys Ser Ile Val Thr Glu Val  
 35 40 45  
 Val Gly His Ala Pro Tyr Glu Lys Arg Ala Met Glu Leu Leu Lys Val  
 50 55 60  
 Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Lys Arg Leu Gly Thr  
 65 70 75 80  
 His Ile Arg Ala Lys Lys Lys Arg Glu Glu Leu Gly Asn Val Leu Thr  
 85 90 95  
 Gln Met Arg Lys Ala Gln Ala Ala Lys  
 100 105

<210> 2814  
 <211> 321  
 <212> DNA  
 <213> Phaeosphaeria nodorum

<220>  
 <221> CDS  
 <222> (1)..(321)

## PhoenixTemp32470.tmp.txt

```

<400> 2814
atg ccg aag gaa gtc aag cag aag tcc ggc ctc atc gtc ggc ctc aac      48
Met Pro Lys Glu Val Lys Gln Lys Ser Gly Leu Ile Val Gly Leu Asn
1      5      10      15
gct ggc cac aag gtc acc ccg agg acc ccc gcc ccc agg atc tcc agg      96
Ala Gly His Lys Val Thr Pro Arg Thr Pro Ala Pro Arg Ile Ser Arg
20      25      30
agg aag ggt ttc cta tcc aag cgc acc gct ttc gtc cgc gag atc acc      144
Arg Lys Gly Phe Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Ile Thr
35      40      45
cgt gag gtc gct gga ctt gcc cca tac gag aag cgt gtc atc gaa ttg      192
Arg Glu Val Ala Gly Leu Ala Pro Tyr Glu Lys Arg Val Ile Glu Leu
50      55      60
ctc cgt aac tcc aag gac aag cgt gcc cgt cgt ctt gcg aag aag agg      240
Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Arg Leu Ala Lys Lys Arg
65      70      75      80
ctc ggt acc ttc ggt cgt gct aag agg aag gtt gag gag atg acc aac      288
Leu Gly Thr Phe Gly Arg Ala Lys Arg Lys Val Glu Glu Met Thr Asn
85      90      95
gtc atc gcc gag tcg agg cgt gcg ggt cac taa
Val Ile Ala Glu Ser Arg Arg Ala Gly His
100      105

```

```

<210> 2815
<211> 106
<212> PRT
<213> Phaeosphaeria nodorum

```

```

<400> 2815
Met Pro Lys Glu Val Lys Gln Lys Ser Gly Leu Ile Val Gly Leu Asn
1      5      10      15
Ala Gly His Lys Val Thr Pro Arg Thr Pro Ala Pro Arg Ile Ser Arg
20      25      30
Arg Lys Gly Phe Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Ile Thr
35      40      45
Arg Glu Val Ala Gly Leu Ala Pro Tyr Glu Lys Arg Val Ile Glu Leu
50      55      60
Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Arg Leu Ala Lys Lys Arg
65      70      75      80
Leu Gly Thr Phe Gly Arg Ala Lys Arg Lys Val Glu Glu Met Thr Asn
85      90      95
Val Ile Ala Glu Ser Arg Arg Ala Gly His
100      105

```

```

<210> 2816
<211> 318
<212> DNA
<213> Aspergillus oryzae

```

```

<220>
<221> CDS
<222> (1)..(318)

```

```

<400> 2816
atg gcc cag gaa cgc tcc gga att gtg gtc ggt ctg aac aag ggc cat      48
Met Ala Gln Glu Arg Ser Gly Ile Val Val Gly Leu Asn Lys Gly His
1      5      10      15
aaa acc acc ccc ctc aac acc ccc aag acc cgt gtc agc cgc acc aag      96
Lys Thr Thr Pro Leu Asn Thr Pro Lys Thr Arg Val Ser Arg Thr Lys
20      25      30
ggc cag tcc tcc cgc cgt act gcc ttt gtt cgt gac atc gct cgt gag      144
Gly Gln Ser Ser Arg Arg Thr Ala Phe Val Arg Asp Ile Ala Arg Glu
35      40      45
gtt gtc ggt ctt gcc ccc tat gag cgc cgt atc atc gaa ctc ctg aga      192
Val Val Gly Leu Ala Pro Tyr Glu Arg Arg Ile Ile Glu Leu Leu Arg
50      55      60
aac act cag gac aag cgt gct cgt aag ctc gcc aag aag agg ctc ggt      240
Asn Thr Gln Asp Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg Leu Gly

```

## PhoenixTemp32470.tmp.txt

65 70 75 80  
 acc ttc ggc cgt gga aag aga aag gtt gag gac atg cag cgc gtc atc 288  
 Thr Phe Gly Arg Gly Lys Arg Lys Val Glu Asp Met Gln Arg Val Ile  
 85 90 95  
 gct gag tcc cgt cgt gtc act ggt cac taa 318  
 Ala Glu Ser Arg Arg Val Thr Gly His 105

<210> 2817  
 <211> 105  
 <212> PRT  
 <213> *Aspergillus oryzae*

<400> 2817  
 Met Ala Gln Glu Arg Ser Gly Ile Val Val Gly Leu Asn Lys Gly His  
 1 5 10 15  
 Lys Thr Thr Pro Leu Asn Thr Pro Lys Thr Arg Val Ser Arg Thr Lys  
 20 25 30  
 Gly Gln Ser Arg Arg Thr Ala Phe Val Arg Asp Ile Ala Arg Glu  
 35 40 45  
 Val Val Gly Leu Ala Pro Tyr Glu Arg Arg Ile Ile Glu Leu Leu Arg  
 50 55 60  
 Asn Thr Gln Asp Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg Leu Gly  
 65 70 75 80  
 Thr Phe Gly Arg Gly Lys Arg Lys Val Glu Asp Met Gln Arg Val Ile  
 85 90 95  
 Ala Glu Ser Arg Arg Val Thr Gly His 105

<210> 2818  
 <211> 333  
 <212> DNA  
 <213> *Timarcha balearica*

<220>  
 <221> CDS  
 <222> (1)..(333)

<400> 2818  
 atg gcc cca agg tac gaa ata gcc gcg ggt ctg caa aaa ggc cat aaa 48  
 Met Ala Pro Arg Tyr Glu Ile Ala Ala Gly Leu Gln Lys Gly His Lys  
 1 5 10 15  
 act acg aaa atc tct gaa aag tcg aag ctt cat aaa gtc cgt ccc gcc 96  
 Thr Thr Lys Ile Ser Glu Lys Ser Lys Leu His Lys Val Arg Pro Ala  
 20 25 30  
 agg ttg aag ggg atc caa acc aaa cat acg aaa ttc gtt cgt gac ctg 144  
 Arg Leu Lys Gly Ile Gln Thr Lys His Thr Lys Phe Val Arg Asp Leu  
 35 40 45  
 atc cgg gaa gtt gta gga cat gct cca tat gaa aag aga gct atg gag 192  
 Ile Arg Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg Ala Met Glu  
 50 55 60  
 ttg ttg aaa gta tcc aag gat aaa agg gcg ctt aaa ttc ctc aaa cgt 240  
 Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Arg  
 65 70 75 80  
 cgt cta ggt acg cac atc cgt gcc aag agg aag cgt gaa gaa tta tcc 288  
 Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu Ser  
 85 90 95  
 aat atc ctt aca cag atg cga aag gca caa gct acc cat aag tag 333  
 Asn Ile Leu Thr Gln Met Arg Lys Ala Gln Ala Thr His Lys 110  
 100 105 110

<210> 2819  
 <211> 110  
 <212> PRT  
 <213> *Timarcha balearica*

<400> 2819  
 Met Ala Pro Arg Tyr Glu Ile Ala Ala Gly Leu Gln Lys Gly His Lys  
 1 5 10 15

## PhoenixTemp32470.tmp.txt

Thr Thr Lys Ile Ser Glu Lys Ser Lys Leu His Lys Val Arg Pro Ala  
 20 25 30  
 Arg Leu Lys Gly Ile Gln Thr Lys His Thr Lys Phe Val Arg Asp Leu  
 35 40 45  
 Ile Arg Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg Ala Met Glu  
 50 55 60  
 Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys Arg  
 65 70 75 80  
 Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu Ser  
 85 90 95  
 Asn Ile Leu Thr Gln Met Arg Lys Ala Gln Ala Thr His Lys  
 100 105 110

&lt;210&gt; 2820

&lt;211&gt; 336

&lt;212&gt; DNA

<213> *Cicindela littoralis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(336)

&lt;400&gt; 2820

atg gca ccg agg tac gaa gtg gcg gtg ggt ctc aat aag ggc cat aaa	48
Met Ala Pro Arg Tyr Glu Val Ala Val Gly Leu Asn Lys Gly His Lys	
1 5 10 15	
aca aca aaa atc ccc gct ggt aaa aca aaa gca gac aaa gtg agt cca	96
Thr Thr Lys Ile Pro Ala Gly Lys Thr Lys Ala Asp Lys Val Ser Pro	
20 25 30	
tcc agg ttg aag ggg atc caa act aag cac acc aag ttc gtg cgc gaa	144
Ser Arg Leu Lys Gly Ile Gln Thr Lys His Thr Lys Phe Val Arg Glu	
35 40 45	
ttg atc cgt gag gtt tgt ggt cat gct cca tat gag aag cgc gct atg	192
Leu Ile Arg Glu Val Cys Gly His Ala Pro Tyr Glu Lys Arg Ala Met	
50 55 60	
gaa tta ctg aaa gta tca aaa gac aag cgt gca ctc aag ttt ttg aag	240
Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys	
65 70 75 80	
cga cgt ctt ggc acc cac atc cgt gcg aag agg aag cgt gaa gaa ctg	288
Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu	
85 90 95	
tcc aac atc atc acc caa atg cgc aag gca caa gca cat ggg aaa	333
Ser Asn Ile Ile Thr Gln Met Arg Lys Ala Gln Ala His Gly Lys	
100 105 110	
taa	336

&lt;210&gt; 2821

&lt;211&gt; 111

&lt;212&gt; PRT

<213> *Cicindela littoralis*

&lt;400&gt; 2821

Met Ala Pro Arg Tyr Glu Val Ala Val Gly Leu Asn Lys Gly His Lys  
 1 5 10 15  
 Thr Thr Lys Ile Pro Ala Gly Lys Thr Lys Ala Asp Lys Val Ser Pro  
 20 25 30  
 Ser Arg Leu Lys Gly Ile Gln Thr Lys His Thr Lys Phe Val Arg Glu  
 35 40 45  
 Leu Ile Arg Glu Val Cys Gly His Ala Pro Tyr Glu Lys Arg Ala Met  
 50 55 60  
 Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Leu Lys  
 65 70 75 80  
 Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu  
 85 90 95  
 Ser Asn Ile Ile Thr Gln Met Arg Lys Ala Gln Ala His Gly Lys  
 100 105 110

<210> 2822  
 <211> 342  
 <212> DNA  
 <213> Biphyllus lunatus

<220>  
 <221> CDS  
 <222> (1)..(342)

```
<400> 2822
atg gcc cct agg tac gaa ata gcg gtg ggc ctc caa aga ggc cat aaa      48
Met Ala Pro Arg Tyr Glu Ile Ala Val Gly Leu Gln Arg Gly His Lys
  1          5          10          15
aca act aaa ata ccc acg aag aca aac aag gaa ggt aaa ccc att cca      96
Thr Thr Lys Ile Pro Thr Lys Thr Asn Lys Glu Gly Lys Pro Ile Pro
          20          25          30
aga cct gca agg ttg aag ggg atc caa acc aaa cac tca aaa ttt gtc     144
Arg Pro Ala Arg Leu Lys Gly Ile Gln Thr Lys His Ser Lys Phe Val
          35          40          45
cgt gat ctc att aga gaa gtt gta gga cat gct cct tac gaa aaa aga     192
Arg Asp Leu Ile Arg Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg
          50          55          60
gcc atg gaa ttg ttg aaa gtg tcc aag gat aag agg gct ttg aaa ttc     240
Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe
          65          70          75
ttg aaa cgt cgt ctt ggc aca cac atc cgt gcc aaa agg aag cgt gaa     288
Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu
          85          90          95
gaa tta tca aac atc ctt aca caa atg cgt aag gct caa gct acc cac     336
Glu Leu Ser Asn Ile Leu Thr Gln Met Arg Lys Ala Gln Ala Thr His
          100          105          110
aaa taa
Lys
342
```

<210> 2823  
 <211> 113  
 <212> PRT  
 <213> Biphyllus lunatus

```
<400> 2823
Met Ala Pro Arg Tyr Glu Ile Ala Val Gly Leu Gln Arg Gly His Lys
  1          5          10          15
Thr Thr Lys Ile Pro Thr Lys Thr Asn Lys Glu Gly Lys Pro Ile Pro
          20          25          30
Arg Pro Ala Arg Leu Lys Gly Ile Gln Thr Lys His Ser Lys Phe Val
          35          40          45
Arg Asp Leu Ile Arg Glu Val Val Gly His Ala Pro Tyr Glu Lys Arg
          50          55          60
Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe
          65          70          75
Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu
          85          90          95
Glu Leu Ser Asn Ile Leu Thr Gln Met Arg Lys Ala Gln Ala Thr His
          100          105          110
Lys
```

<210> 2824  
 <211> 333  
 <212> DNA  
 <213> Ixodes scapularis

<220>  
 <221> CDS  
 <222> (1)..(333)

```
<400> 2824
atg ggg gtg cag tac aaa ctc gcc gta ggc ctc gga aag ggc cac aaa      48
```

## PhoenixTemp32470.tmp.txt

Met	Gly	Val	Gln	Tyr	Lys	Leu	Ala	Val	Gly	Leu	Gly	Lys	Gly	His	Lys	
1				5					10					15		
gtc	acg	aag	aac	gag	tat	aag	cct	cgg	cct	tcg	cga	agg	aag	gga	gcg	96
Val	Thr	Lys	Asn	Glu	Tyr	Lys	Pro	Arg	Pro	Ser	Arg	Arg	Lys	Gly	Ala	
			20					25					30			
ctt	tct	aag	cac	acc	cgc	ttc	gtc	cgc	gac	ctg	atc	cgc	gag	gtg	tgc	144
Leu	Ser	Lys	His	Thr	Arg	Phe	Val	Arg	Asp	Leu	Ile	Arg	Glu	Val	Cys	
		35					40					45				
ggc	ttc	gcg	cct	ttc	gaa	agg	cgg	gcc	atg	gag	ttg	ctc	aag	gtg	tcc	192
Gly	Phe	Ala	Pro	Phe	Glu	Arg	Arg	Ala	Met	Glu	Leu	Leu	Lys	Val	Ser	
	50					55				60						
aag	gac	aag	cgt	gcc	ctc	aag	ttc	atc	aag	aag	agg	ttg	ggc	acc	cac	240
Lys	Asp	Lys	Arg	Ala	Leu	Lys	Phe	Ile	Lys	Lys	Arg	Leu	Gly	Thr	His	
	65				70				75						80	
ctc	cgc	ggc	aag	agg	aag	agg	gac	gag	ttg	agc	aac	gtc	ctg	gtg	gcc	288
Leu	Arg	Gly	Lys	Arg	Lys	Arg	Asp	Glu	Leu	Ser	Asn	Val	Leu	Val	Ala	
			85					90					95			
cag	agg	aag	gcg	gcc	gcc	cac	aag	gag	aag	acg	gaa	cac	aag	tag		333
Gln	Arg	Lys	Ala	Ala	Ala	His	Lys	Glu	Lys	Thr	Glu	His	Lys			
			100					105					110			

&lt;210&gt; 2825

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Ixodes scapularis

&lt;400&gt; 2825

Met	Gly	Val	Gln	Tyr	Lys	Leu	Ala	Val	Gly	Leu	Gly	Lys	Gly	His	Lys	
1				5					10					15		
Val	Thr	Lys	Asn	Glu	Tyr	Lys	Pro	Arg	Pro	Ser	Arg	Arg	Lys	Gly	Ala	
			20					25					30			
Leu	Ser	Lys	His	Thr	Arg	Phe	Val	Arg	Asp	Leu	Ile	Arg	Glu	Val	Cys	
		35					40					45				
Gly	Phe	Ala	Pro	Phe	Glu	Arg	Arg	Ala	Met	Glu	Leu	Leu	Lys	Val	Ser	
	50					55				60						
Lys	Asp	Lys	Arg	Ala	Leu	Lys	Phe	Ile	Lys	Lys	Arg	Leu	Gly	Thr	His	
	65				70				75						80	
Leu	Arg	Gly	Lys	Arg	Lys	Arg	Asp	Glu	Leu	Ser	Asn	Val	Leu	Val	Ala	
			85					90					95			
Gln	Arg	Lys	Ala	Ala	Ala	His	Lys	Glu	Lys	Thr	Glu	His	Lys			
			100					105					110			

&lt;210&gt; 2826

&lt;211&gt; 351

&lt;212&gt; DNA

&lt;213&gt; Lysiphlebus testaceipes

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(351)

&lt;400&gt; 2826

atg	gca	cct	agg	tac	gaa	att	gct	gtt	ggt	ctc	aac	aaa	ggt	cac	aag	48
Met	Ala	Pro	Arg	Tyr	Glu	Ile	Ala	Val	Gly	Leu	Asn	Lys	Gly	His	Lys	
	1			5					10					15		
acc	tca	aaa	att	cgt	gta	gcc	aaa	acc	aag	gct	gaa	caa	gct	aaa	act	96
Thr	Ser	Lys	Ile	Arg	Val	Ala	Lys	Thr	Lys	Ala	Glu	Gln	Ala	Lys	Thr	
			20					25					30			
gtt	gct	ctc	aga	cca	gct	cgt	ctc	aag	gga	cgt	att	acc	aaa	cac	aac	144
Val	Ala	Leu	Arg	Pro	Ala	Arg	Leu	Lys	Gly	Arg	Ile	Thr	Lys	His	Asn	
		35					40					45				
aaa	ttt	gtt	cgt	gat	ttg	gtt	cgt	gaa	gtc	act	gga	cat	gca	cca	tat	192
Lys	Phe	Val	Arg	Asp	Leu	Val	Arg	Glu	Val	Thr	Gly	His	Ala	Pro	Tyr	
	50					55			60							
gaa	aaa	cgt	gct	atg	gaa	ttg	ttg	aaa	gtc	tca	aaa	gac	aaa	cgt	gct	240
Glu	Lys	Arg	Ala	Met	Glu	Leu	Leu	Lys	Val	Ser	Lys	Asp	Lys	Arg	Ala	
	65				70				75						80	
ctt	aaa	ttc	ttg	aaa	aga	cga	ttg	ggt	aca	cac	att	cgt	gcc	aag	agg	288
Leu	Lys	Phe	Leu	Lys	Arg	Arg	Leu	Gly	Thr	His	Ile	Arg	Ala	Lys	Arg	



## PhoenixTemp32470.tmp.txt

```

      85      90      95
aag cgt gaa gaa ctt gga act gtt ctt gtc caa atg aga aaa gca gca 336
Lys Arg Glu Glu Leu Gly Thr Val Leu Val Gln Met Arg Lys Ala Ala
      100      105      110
gca gct cat cat taa
Ala Ala His His
      115

```

```

<210> 2827
<211> 116
<212> PRT
<213> Lysiphlebus testaceipes

```

```

<400> 2827
Met Ala Pro Arg Tyr Glu Ile Ala Val Gly Leu Asn Lys Gly His Lys
1      5      10      15
Thr Ser Lys Ile Arg Val Ala Lys Thr Lys Ala Glu Gln Ala Lys Thr
      20      25      30
Val Ala Leu Arg Pro Ala Arg Leu Lys Gly Arg Ile Thr Lys His Asn
      35      40      45
Lys Phe Val Arg Asp Leu Val Arg Glu Val Thr Gly His Ala Pro Tyr
      50      55      60
Glu Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala
65      70      75      80
Leu Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg
      85      90      95
Lys Arg Glu Glu Leu Gly Thr Val Leu Val Gln Met Arg Lys Ala Ala
      100      105      110
Ala Ala His His
      115

```

```

<210> 2828
<211> 339
<212> DNA
<213> Triticum aestivum

```

```

<220>
<221> CDS
<222> (1)..(339)

```

```

<400> 2828
atg gcg ccg tcg cag ccc aag tca ggg ctc ttc gtg ggc atc aac aag 48
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
ggc cac gtc gtc acc aag cgc gag ctg ccg cct cgc ccg tcc gac cgc 96
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
      20      25      30
aag ggg aaa ggt aca aag agg gtg cat ttt gtc agg aac ttg atc agg 144
Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
      35      40      45
gag gtt gct gga ttt gct ccc tat gag aag cgt atc act gag ctt ctt 192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
aag gtt gga aag gac aag cgt gca ctc aag gtc gcc aag aga aag ctt 240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
      65      70      75      80
ggt act cac aag aga gca aag aag aag aga gag gag atg tca agt gtc 288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
      85      90      95
ctt agg aag atg agg tct gct ggt ggt ggt gct ggt gac aag aag aaa 336
Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Ala Gly Asp Lys Lys Lys
      100      105      110
tag 339

```

```

<210> 2829
<211> 112
<212> PRT

```

&lt;213&gt; Triticum aestivum

&lt;400&gt; 2829

```

Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20      25      30
Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
85      90      95
Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Ala Gly Asp Lys Lys Lys
100     105     110

```

&lt;210&gt; 2830

&lt;211&gt; 336

&lt;212&gt; DNA

&lt;213&gt; Saccharum officinarum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(336)

&lt;400&gt; 2830

```

atg gcg ccg ccg cag ccg aag tcg ggc ctc ttc gtg ggc atc aac aag      48
Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
ggc cat gtc gtc acc aag cgc gag ctg cct ccg cgc ccg tcc cac cgc      96
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser His Arg
20      25      30
aag ggg aaa gca acg aag agg gtg tcc atg gtc agg ggc ctg atc aga      144
Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg
35      40      45
gag gtt gct ggg ttt gct cct tat gag aag cgt atc act gag ctt ctt      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
aag gtt ggc aag gac aag cgt gct ttg aag gtt gcc aag aga aag ctt      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
gga act cac aag agg gca aag aag aag aga gag gag atg gcg ggt gtc      288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val
85      90      95
ctc aag aaa atg aga tcg gct ggt acg cac act gac aag aag aaa      333
Leu Lys Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys
100     105     110
tag
336

```

&lt;210&gt; 2831

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Saccharum officinarum

&lt;400&gt; 2831

```

Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser His Arg
20      25      30
Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80

```

## PhoenixTemp32470.tmp.txt

Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Leu Lys Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2832  
 <211> 357  
 <212> DNA  
 <213> *Plutella xylostella*

<220>  
 <221> CDS  
 <222> (1)..(357)

<400> 2832  
 atg gct ccg cgg ttt gaa atc gca gtt ggt ctg cgt aaa ggc cac aaa 48  
 Met Ala Pro Arg Phe Glu Ile Ala Val Gly Leu Arg Lys Gly His Lys  
 1 5 10 15  
 act acc aag atc tca gct ggt aga aaa ggc att aca gac aaa gcc atc 96  
 Thr Thr Lys Ile Ser Ala Gly Arg Lys Gly Ile Thr Asp Lys Ala Ile  
 20 25 30  
 aaa atc cgc ccc gcc agg cta aag ggt ctg caa acc aag cac tcc aag 144  
 Lys Ile Arg Pro Ala Arg Leu Lys Gly Leu Gln Thr Lys His Ser Lys  
 35 40 45  
 ttt gtc cgt gac ctg gtc cgc gag gtc gtc ggt cac gct cag tat gag 192  
 Phe Val Arg Asp Leu Val Arg Glu Val Val Gly His Ala Gln Tyr Glu  
 50 55 60  
 aag agg gct atg gaa ttg ttg aag gtc tcc aag gac aag cgc gcc ctg 240  
 Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu  
 65 70 75 80  
 aag ttc ctg aag cgt cgc ctg ggc acc cac atc cgc gcc aag agg aag 288  
 Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys  
 85 90 95  
 cgt gag gag ctc agc aac gtt ctc aca cag atg agg aag gcc gcc gcc 336  
 Arg Glu Glu Leu Ser Asn Val Leu Thr Gln Met Arg Lys Ala Ala Ala  
 100 105 110  
 cag gct cac cac cac cac taa 357  
 Gln Ala His His His His  
 115

<210> 2833  
 <211> 118  
 <212> PRT  
 <213> *Plutella xylostella*

<400> 2833  
 Met Ala Pro Arg Phe Glu Ile Ala Val Gly Leu Arg Lys Gly His Lys  
 1 5 10 15  
 Thr Thr Lys Ile Ser Ala Gly Arg Lys Gly Ile Thr Asp Lys Ala Ile  
 20 25 30  
 Lys Ile Arg Pro Ala Arg Leu Lys Gly Leu Gln Thr Lys His Ser Lys  
 35 40 45  
 Phe Val Arg Asp Leu Val Arg Glu Val Val Gly His Ala Gln Tyr Glu  
 50 55 60  
 Lys Arg Ala Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu  
 65 70 75 80  
 Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys  
 85 90 95  
 Arg Glu Glu Leu Ser Asn Val Leu Thr Gln Met Arg Lys Ala Ala Ala  
 100 105 110  
 Gln Ala His His His His  
 115

<210> 2834  
 <211> 312  
 <212> DNA  
 <213> *Branchiostoma belcheri*

<220>

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(312)

&lt;400&gt; 2834

atg	ggg	atc	aga	tac	gac	atg	tgt	gtc	ggc	ctc	aac	aag	ggc	cat	aag		48
Met	Gly	Ile	Arg	Tyr	Asp	Met	Cys	Val	Gly	Leu	Asn	Lys	Gly	His	Lys		
1				5				10					15				
atc	acc	aaa	aat	gtg	cag	aaa	cca	cgg	cca	tct	cgc	agg	aaa	ggg	aaa		96
Ile	Thr	Lys	Asn	Val	Gln	Lys	Pro	Arg	Pro	Ser	Arg	Arg	Lys	Gly	Lys		
			20					25					30				
ctg	acg	aag	cac	gtg	aag	ttt	gtt	cgt	gac	ctg	gtg	cga	gag	gtg	aca		144
Leu	Thr	Lys	His	Val	Lys	Phe	Val	Arg	Asp	Leu	Val	Arg	Glu	Val	Thr		
			35				40					45					
ggc	ttt	gct	cct	tac	gaa	aga	cgt	acc	atg	gag	ttg	ctg	aag	gtc	agc		192
Gly	Phe	Ala	Pro	Tyr	Glu	Arg	Arg	Thr	Met	Glu	Leu	Leu	Lys	Val	Ser		
	50					55				60							
aag	gac	aag	cgg	gcg	ctc	aag	ttc	ctg	aag	aaa	agg	ggt	gga	act	ctg		240
Lys	Asp	Lys	Arg	Ala	Leu	Lys	Phe	Leu	Lys	Lys	Arg	Val	Gly	Thr	Leu		
	65				70					75					80		
cag	cgt	gcc	aag	aga	aag	cgt	gag	gag	atg	cag	aac	gtc	atc	gct	gcc		288
Gln	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Gln	Asn	Val	Ile	Ala	Ala		
				85					90					95			
cag	agg	aag	gct	caa	aga	tct	tag										312
Gln	Arg	Lys	Ala	Gln	Arg	Ser											
			100														

&lt;210&gt; 2835

&lt;211&gt; 103

&lt;212&gt; PRT

&lt;213&gt; Branchiostoma belcheri

&lt;400&gt; 2835

Met	Gly	Ile	Arg	Tyr	Asp	Met	Cys	Val	Gly	Leu	Asn	Lys	Gly	His	Lys		
1				5					10				15				
Ile	Thr	Lys	Asn	Val	Gln	Lys	Pro	Arg	Pro	Ser	Arg	Arg	Lys	Gly	Lys		
			20					25					30				
Leu	Thr	Lys	His	Val	Lys	Phe	Val	Arg	Asp	Leu	Val	Arg	Glu	Val	Thr		
			35				40					45					
Gly	Phe	Ala	Pro	Tyr	Glu	Arg	Arg	Thr	Met	Glu	Leu	Leu	Lys	Val	Ser		
	50					55				60							
Lys	Asp	Lys	Arg	Ala	Leu	Lys	Phe	Leu	Lys	Lys	Arg	Val	Gly	Thr	Leu		
	65				70					75					80		
Gln	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Gln	Asn	Val	Ile	Ala	Ala		
				85					90					95			
Gln	Arg	Lys	Ala	Gln	Arg	Ser											
			100														

&lt;210&gt; 2836

&lt;211&gt; 369

&lt;212&gt; DNA

&lt;213&gt; Spodoptera frugiperda

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(369)

&lt;400&gt; 2836

atg	gct	cct	cga	ttt	gag	tta	gcg	gtc	ggt	ctc	cga	aag	gga	cac	aaa		48
Met	Ala	Pro	Arg	Phe	Glu	Leu	Ala	Val	Gly	Leu	Arg	Lys	Gly	His	Lys		
1				5					10				15				
aca	ctt	aaa	atc	tcc	gct	ggc	aag	aag	ggt	att	act	gac	aaa	gcc	atc		96
Thr	Leu	Lys	Ile	Ser	Ala	Gly	Lys	Lys	Gly	Ile	Thr	Asp	Lys	Ala	Ile		
			20					25					30				
aaa	atc	agg	cct	gct	agg	cta	aag	ggt	ctc	caa	acc	aag	cac	tca	aaa		144
Lys	Ile	Arg	Pro	Ala	Arg	Leu	Lys	Gly	Leu	Gln	Thr	Lys	His	Ser	Lys		
			35				40					45					
ttc	gtg	cgc	gat	ttg	gtc	cgt	gag	gtc	ggt	gga	cac	gct	cag	tat	gag		192
Phe	Val	Arg	Asp	Leu	Val	Arg	Glu	Val	Val	Gly	His	Ala	Gln	Tyr	Glu		
	50					55				60							

PhoenixTemp32470.tmp.txt

aag	agg	gct	atg	gaa	ttg	ttg	aag	gtg	tca	aaa	gac	aag	cgc	gcc	ctg	240
Lys	Arg	Ala	Met	Glu	Leu	Leu	Lys	Val	Ser	Lys	Asp	Lys	Arg	Ala	Leu	
65					70					75					80	
aag	ttc	ttg	aag	cgt	cgt	ctg	ggc	aca	cac	atc	cg	gcc	aag	agg	aag	288
Lys	Phe	Leu	Lys	Arg	Arg	Leu	Gly	Thr	His	Ile	Arg	Ala	Lys	Arg	Lys	
				85					90					95		
cgt	gaa	gag	ctg	agc	aac	gta	ctg	aca	cag	atg	agg	aag	gcg	gcc	gca	336
Arg	Glu	Glu	Leu	Ser	Asn	Val	Leu	Thr	Gln	Met	Arg	Lys	Ala	Ala	Ala	
			100					105					110			
caa	gca	cac	cac	gcc	cct	aca	cac	act	aag	tga						369
Gln	Ala	His	His	Ala	Pro	Thr	His	Thr	Lys							
		115					120									

<210> 2837  
 <211> 122  
 <212> PRT  
 <213> Spodoptera frugiperda

<400> 2837

Met	Ala	Pro	Arg	Phe	Glu	Leu	Ala	Val	Gly	Leu	Arg	Lys	Gly	His	Lys	
1				5					10					15		
Thr	Leu	Lys	Ile	Ser	Ala	Gly	Lys	Lys	Gly	Ile	Thr	Asp	Lys	Ala	Ile	
			20					25					30			
Lys	Ile	Arg	Pro	Ala	Arg	Leu	Lys	Gly	Leu	Gln	Thr	Lys	His	Ser	Lys	
		35					40					45				
Phe	Val	Arg	Asp	Leu	Val	Arg	Glu	Val	Val	Gly	His	Ala	Gln	Tyr	Glu	
	50				55					60						
Lys	Arg	Ala	Met	Glu	Leu	Leu	Lys	Val	Ser	Lys	Asp	Lys	Arg	Ala	Leu	
65					70					75					80	
Lys	Phe	Leu	Lys	Arg	Arg	Leu	Gly	Thr	His	Ile	Arg	Ala	Lys	Arg	Lys	
				85					90					95		
Arg	Glu	Glu	Leu	Ser	Asn	Val	Leu	Thr	Gln	Met	Arg	Lys	Ala	Ala	Ala	
			100					105					110			
Gln	Ala	His	His	Ala	Pro	Thr	His	Thr	Lys							
		115					120									

<210> 2838  
 <211> 342  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(342)

<400> 2838

atg	aca	act	cca	gca	gtg	aag	acc	ggt	ttg	ttc	gtt	gga	ttg	aac	aaa	48
Met	Thr	Thr	Pro	Ala	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys	
1				5					10					15		
gga	cac	gtc	gtc	acc	aga	cgt	gag	cta	gct	cct	cg	ccc	aat	tct	cg	96
Gly	His	Val	Val	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Asn	Ser	Arg	
			20					25					30			
aaa	ggg	aaa	acg	agc	aag	agg	acc	ata	ttc	ata	aga	aaa	ctg	att	agg	144
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Thr	Ile	Phe	Ile	Arg	Lys	Leu	Ile	Arg	
		35				40						45				
gaa	gta	gct	gga	atg	gct	cct	tat	gag	aag	aga	atc	act	gag	ctt	ctc	192
Glu	Val	Ala	Gly	Met	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu	
	50				55					60						
aag	gtt	ggg	aaa	gac	aag	cgt	gct	ctt	aag	gtt	gct	aag	agg	aag	ttg	240
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu	
				70					75						80	
ggt	act	cac	aag	aga	gct	aag	agg	aag	aga	gag	gag	atg	tct	agt	gtt	288
Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val	
				85					90					95		
ctc	cg	aag	atg	agg	tct	ctt	ggt	ggt	gct	gct	gct	gct	gag	aag	aag	336
Leu	Arg	Lys	Met	Arg	Ser	Leu	Gly	Gly	Ala	Ala	Ala	Ala	Glu	Lys	Lys	
			100					105					110			
atg	tag															342
Met																

<210> 2839  
 <211> 113  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 2839  
 Met Thr Thr Pro Ala Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Thr Ile Phe Ile Arg Lys Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Met Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Leu Gly Gly Ala Ala Ala Ala Glu Lys Lys  
 100 105 110  
 Met

<210> 2840  
 <211> 339  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(339)

<400> 2840  
 atg aca act cca caa gtg aag acc ggt ttg ttc gtt ggg ttg aac aag 48  
 Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys 15  
 1 5 10 15  
 gga cat gtt gtt acc aga cgt gaa tta gct cct cgt cct cgt tct cgc 96  
 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ser Arg 20 25 30  
 aaa gga aaa acg agc aag agg aca atc ttt atc aga aac ttg ata aag 144  
 Lys Gly Lys Thr Ser Lys Arg Thr Ile Phe Ile Arg Asn Leu Ile Lys 35 40 45  
 gaa gtt gct ggt caa gct ccc tat gag aag aga atc act gag ctt ttg 192  
 Glu Val Ala Gly Gln Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu 50 55 60  
 aag gtt ggt aaa gac aaa cgt gct ctt aag gtt gct aag agg aag ttg 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu 65 70 75 80  
 gga acc cac aag aga gcc aag cga aag aga gag gag atg tcc agt gtt 288  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val 85 90 95  
 ctc cgc aag atg agg tct ggc ggt ggt ggt gca act gag aag aag aag 336  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Ala Thr Glu Lys Lys Lys 100 105 110  
 tga 339

<210> 2841  
 <211> 112  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 2841  
 Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ser Arg  
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## PhoenixTemp32470.tmp.txt

20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Thr Ile Phe Ile Arg Asn Leu Ile Lys  
 35 40 45  
 Glu Val Ala Gly Gln Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Ala Thr Glu Lys Lys Lys  
 100 105 110

<210> 2842  
 <211> 327  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(327)

<400> 2842  
 atg gtg gcg aca ggc tta ttc gtg ggg cta aac aaa gga cac gtt gtt 48  
 Met Val Ala Thr Gly Leu Phe Val Gly Leu Asn Lys Gly His Val Val  
 1 5 10 15  
 acc aaa cgc gag caa cct cct cgc cct aac aac aga aaa ggg aaa aca 96  
 Thr Lys Arg Glu Gln Pro Pro Arg Pro Asn Asn Arg Lys Gly Lys Thr  
 20 25 30  
 agc aaa agg act att ttt atc agg aat ctc atc aag gaa gtt gcg ggt 144  
 Ser Lys Arg Thr Ile Phe Ile Arg Asn Leu Ile Lys Glu Val Ala Gly  
 35 40 45  
 caa gct ccc tat gag aag agg atc act gag ctt ttg aag gtt ggt aaa 192  
 Gln Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu Lys Val Gly Lys  
 50 55 60  
 gac aag aga gct ctt aaa gtt gcc aag cga aag ttg gga act cac aag 240  
 Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu Gly Thr His Lys  
 65 70 75 80  
 aga gct aaa cga aag aga gag gag atg tcc agt gtt ctc cgc aag atg 288  
 Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val Leu Arg Lys Met  
 85 90 95  
 agg tct ggt ggt gct ggt gca tcc gag aag aag tga 327  
 Arg Ser Gly Gly Ala Gly Ala Ser Glu Lys Lys Lys  
 100 105

<210> 2843  
 <211> 108  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 2843  
 Met Val Ala Thr Gly Leu Phe Val Gly Leu Asn Lys Gly His Val Val  
 1 5 10 15  
 Thr Lys Arg Glu Gln Pro Pro Arg Pro Asn Asn Arg Lys Gly Lys Thr  
 20 25 30  
 Ser Lys Arg Thr Ile Phe Ile Arg Asn Leu Ile Lys Glu Val Ala Gly  
 35 40 45  
 Gln Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu Lys Val Gly Lys  
 50 55 60  
 Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu Gly Thr His Lys  
 65 70 75 80  
 Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val Leu Arg Lys Met  
 85 90 95  
 Arg Ser Gly Gly Ala Gly Ala Ser Glu Lys Lys Lys  
 100 105

<210> 2844  
 <211> 300  
 <212> DNA  
 <213> Schizosaccharomyces pombe

## PhoenixTemp32470.tmp.txt

<220>  
 <221> CDS  
 <222> (1)..(300)

<400> 2844  
 atg gca cct ggt ctg gtt gtt ggt tta aac aaa gga aag gtt ttg acc 48  
 Met Ala Pro Gly Leu Val Val Gly Leu Asn Lys Gly Lys Val Leu Thr  
 1 5 10 15  
 aag cgt caa ctt cct gag cgt cct tct cgc cgt aag gga caa ttg tcc 96  
 Lys Arg Gln Leu Pro Glu Arg Pro Ser Arg Arg Lys Gly Gln Leu Ser  
 20 25 30  
 aag cgt act tct ttt gtc cgt tct atc gtt cgt gag gtt gct gga ttc 144  
 Lys Arg Thr Ser Phe Val Arg Ser Ile Val Arg Glu Val Ala Gly Phe  
 35 40 45  
 gct ccc tat gag cgt cgt gtc atg gaa ttg atc cgt aac tcc caa gac 192  
 Ala Pro Tyr Glu Arg Arg Val Met Glu Leu Ile Arg Asn Ser Gln Asp  
 50 55 60  
 aag cgt gcc cgc aaa ttg gcc aag aag agg ctc ggt acc ctt aag cgt 240  
 Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg Leu Gly Thr Leu Lys Arg  
 65 70 75 80  
 gcc aag gga aag att gaa gag ctt acc tct gtc atc caa agc tct cgt 288  
 Ala Lys Gly Lys Ile Glu Glu Leu Thr Ser Val Ile Gln Ser Ser Arg  
 85 90 95  
 ttg gct cac taa 300  
 Leu Ala His

<210> 2845  
 <211> 99  
 <212> PRT  
 <213> Schizosaccharomyces pombe

<400> 2845  
 Met Ala Pro Gly Leu Val Val Gly Leu Asn Lys Gly Lys Val Leu Thr  
 1 5 10 15  
 Lys Arg Gln Leu Pro Glu Arg Pro Ser Arg Arg Lys Gly Gln Leu Ser  
 20 25 30  
 Lys Arg Thr Ser Phe Val Arg Ser Ile Val Arg Glu Val Ala Gly Phe  
 35 40 45  
 Ala Pro Tyr Glu Arg Arg Val Met Glu Leu Ile Arg Asn Ser Gln Asp  
 50 55 60  
 Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg Leu Gly Thr Leu Lys Arg  
 65 70 75 80  
 Ala Lys Gly Lys Ile Glu Glu Leu Thr Ser Val Ile Gln Ser Ser Arg  
 85 90 95  
 Leu Ala His

<210> 2846  
 <211> 303  
 <212> DNA  
 <213> Saccharomyces cerevisiae

<220>  
 <221> CDS  
 <222> (1)..(303)

<400> 2846  
 atg acc gtt aag aca gga att gct att ggt tta aac aaa ggt aag aag 48  
 Met Thr Val Lys Thr Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys  
 1 5 10 15  
 gtc act agc atg acc cca gct cca aaa atc tct tac aag aaa ggt gct 96  
 Val Thr Ser Met Thr Pro Ala Pro Lys Ile Ser Tyr Lys Lys Gly Ala  
 20 25 30  
 gct tcc aac aga acc aag ttc gta aga tct ttg gtc aga gaa atc gct 144  
 Ala Ser Asn Arg Thr Lys Phe Val Arg Ser Leu Val Arg Glu Ile Ala  
 35 40 45  
 ggt ttg tct cca tac gaa aga aga ttg att gat cta ata aga aac tct 192  
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PhoenixTemp32470.tmp.txt

Gly	Leu	Ser	Pro	Tyr	Glu	Arg	Arg	Leu	Ile	Asp	Leu	Ile	Arg	Asn	Ser		
50						55					60						
ggt	gaa	aag	aga	gct	aga	aag	gtc	gcc	aag	aag	aga	ttg	ggt	tct	ttc		240
Gly	Glu	Lys	Arg	Ala	Arg	Lys	Val	Ala	Lys	Lys	Arg	Leu	Gly	Ser	Phe		
65					70					75					80		
acc	aga	gcc	aag	gct	aag	gtc	gaa	gaa	atg	aac	aac	atc	att	gct	gct		288
Thr	Arg	Ala	Lys	Ala	Lys	Val	Glu	Glu	Met	Asn	Asn	Ile	Ile	Ala	Ala		
				85					90					95			
tct	cgt	cgt	cac	taa													303
Ser	Arg	Arg	His														
			100														

<210> 2847  
 <211> 100  
 <212> PRT  
 <213> Saccharomyces cerevisiae

<400> 2847

Met	Thr	Val	Lys	Thr	Gly	Ile	Ala	Ile	Gly	Leu	Asn	Lys	Gly	Lys	Lys		
1				5					10					15			
Val	Thr	Ser	Met	Thr	Pro	Ala	Pro	Lys	Ile	Ser	Tyr	Lys	Lys	Gly	Ala		
			20					25					30				
Ala	Ser	Asn	Arg	Thr	Lys	Phe	Val	Arg	Ser	Leu	Val	Arg	Glu	Ile	Ala		
		35					40					45					
Gly	Leu	Ser	Pro	Tyr	Glu	Arg	Arg	Leu	Ile	Asp	Leu	Ile	Arg	Asn	Ser		
	50					55					60						
Gly	Glu	Lys	Arg	Ala	Arg	Lys	Val	Ala	Lys	Lys	Arg	Leu	Gly	Ser	Phe		
65					70					75					80		
Thr	Arg	Ala	Lys	Ala	Lys	Val	Glu	Glu	Met	Asn	Asn	Ile	Ile	Ala	Ala		
				85					90					95			
Ser	Arg	Arg	His														
			100														

<210> 2848  
 <211> 300  
 <212> DNA  
 <213> Schizosaccharomyces pombe

<220>  
 <221> CDS  
 <222> (1)..(300)

<400> 2848

atg	gca	cct	gga	ctg	gtt	gtt	ggt	tta	aac	aag	gga	aag	act	ttg	act		48
Met	Ala	Pro	Gly	Leu	Val	Val	Gly	Leu	Asn	Lys	Gly	Lys	Thr	Leu	Thr		
1				5					10					15			
aag	cgt	caa	ctt	cct	gag	cgt	cct	tct	cgc	cgc	aag	gga	cat	ttg	tcc		96
Lys	Arg	Gln	Leu	Pro	Glu	Arg	Pro	Ser	Arg	Arg	Lys	Gly	His	Leu	Ser		
			20					25					30				
aag	cgt	act	gct	ttc	gtc	cga	tct	att	gtg	cgt	gaa	gtt	gct	gga	ttt		144
Lys	Arg	Thr	Ala	Phe	Val	Arg	Ser	Ile	Val	Arg	Glu	Val	Ala	Gly	Phe		
		35					40					45					
gct	cct	tat	gaa	cgc	cgt	gtc	atg	gaa	ttg	atc	cgt	aac	tcc	caa	gac		192
Ala	Pro	Tyr	Glu	Arg	Arg	Val	Met	Glu	Leu	Ile	Arg	Asn	Ser	Gln	Asp		
	50				55						60						
aag	cgt	gct	cgc	aag	ctt	gcc	aag	aag	aga	ctc	ggt	act	ttg	aag	cgt		240
Lys	Arg	Ala	Arg	Lys	Leu	Ala	Lys	Lys	Arg	Leu	Gly	Thr	Leu	Lys	Arg		
	65				70					75					80		
gcc	aag	ggt	aaa	atc	gaa	gag	ctc	act	agt	gtc	atc	cag	agc	tcc	aga		288
Ala	Lys	Gly	Lys	Ile	Glu	Glu	Leu	Thr	Ser	Val	Ile	Gln	Ser	Ser	Arg		
				85					90					95			
ttg	gcc	cat	taa														300
Leu	Ala	His															

<210> 2849  
 <211> 99  
 <212> PRT  
 <213> Schizosaccharomyces pombe

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2849

```

Met Ala Pro Gly Leu Val Val Gly Leu Asn Lys Gly Lys Thr Leu Thr
1      5      10
Lys Arg Gln Leu Pro Glu Arg Pro Ser Arg Arg Lys Gly His Leu Ser
20      25      30
Lys Arg Thr Ala Phe Val Arg Ser Ile Val Arg Glu Val Ala Gly Phe
35      40      45
Ala Pro Tyr Glu Arg Arg Val Met Glu Leu Ile Arg Asn Ser Gln Asp
50      55      60
Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg Leu Gly Thr Leu Lys Arg
65      70      75      80
Ala Lys Gly Lys Ile Glu Glu Leu Thr Ser Val Ile Gln Ser Ser Arg
85      90      95
Leu Ala His

```

&lt;210&gt; 2850

&lt;211&gt; 300

&lt;212&gt; DNA

&lt;213&gt; Candida albicans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(300)

&lt;223&gt; transl\_table=12

&lt;400&gt; 2850

```

atg gct aag tca gga att gct gca ggt gtt aac aaa ggt aga aaa act      48
Met Ala Lys Ser Gly Ile Ala Ala Gly Val Asn Lys Gly Arg Lys Thr
1      5      10
act gcc aaa gaa gtt gcc cca aaa atc tca tac aga aaa ggt gct tca      96
Thr Ala Lys Glu Val Ala Pro Lys Ile Ser Tyr Arg Lys Gly Ala Ser
20      25      30
tct caa aga acc gtt ttc gtt aga tca atc gtc aaa gaa gtt gct ggt      144
Ser Gln Arg Thr Val Phe Val Arg Ser Ile Val Lys Glu Val Ala Gly
35      40      45
tta gct cca tac gaa aga aga ttg att gaa ttg att aga aat gct ggt      192
Leu Ala Pro Tyr Glu Arg Arg Leu Ile Glu Leu Ile Arg Asn Ala Gly
50      55      60
gaa aag aga gct aag aaa ttg gct aag aag aga tta ggt act cat aag      240
Glu Lys Arg Ala Lys Lys Leu Ala Lys Lys Arg Leu Gly Thr His Lys
65      70      75      80
aga gct tta aga aaa gtt gaa gaa atg act caa gtt att gct gaa tct      288
Arg Ala Leu Arg Lys Val Glu Glu Met Thr Gln Val Ile Ala Glu Ser
85      90      95
aga aga cat taa
Arg Arg His
300

```

&lt;210&gt; 2851

&lt;211&gt; 99

&lt;212&gt; PRT

&lt;213&gt; Candida albicans

&lt;400&gt; 2851

```

Met Ala Lys Ser Gly Ile Ala Ala Gly Val Asn Lys Gly Arg Lys Thr
1      5      10
Thr Ala Lys Glu Val Ala Pro Lys Ile Ser Tyr Arg Lys Gly Ala Ser
20      25      30
Ser Gln Arg Thr Val Phe Val Arg Ser Ile Val Lys Glu Val Ala Gly
35      40      45
Leu Ala Pro Tyr Glu Arg Arg Leu Ile Glu Leu Ile Arg Asn Ala Gly
50      55      60
Glu Lys Arg Ala Lys Lys Leu Ala Lys Lys Arg Leu Gly Thr His Lys
65      70      75      80
Arg Ala Leu Arg Lys Val Glu Glu Met Thr Gln Val Ile Ala Glu Ser
85      90      95
Arg Arg His

```

<210> 2852  
 <211> 348  
 <212> DNA  
 <213> *Drosophila melanogaster*

<220>  
 <221> CDS  
 <222> (1)..(348)

```

<400> 2852
atg gca gtg cgc tac gag ctg gct att ggc ctg aac aag ggc cac aag      48
Met Ala Val Arg Tyr Glu Leu Ala Ile Gly Leu Asn Lys Gly His Lys
1      5      10      15
acc tcg aag atc agg aat gtg aag tac acc ggc gac aag aag gtc aag      96
Thr Ser Lys Ile Arg Asn Val Lys Tyr Thr Gly Asp Lys Lys Val Lys
20      25      30
ggt ctg cgc gga tcg cgc ttg aag aac atc caa acc cgc cac acc aag      144
Gly Leu Arg Gly Ser Arg Leu Lys Asn Ile Gln Thr Arg His Thr Lys
35      40      45
ttc atg cgc gac ttg gtc cgc gag gtc gtt ggc cac gct ccc tat gag      192
Phe Met Arg Asp Leu Val Arg Glu Val Val Gly His Ala Pro Tyr Glu
50      55      60
aag cgc acc atg gag ttg ctg aag gtg tcc aag gat aag agg gcc ctg      240
Lys Arg Thr Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu
65      70      75      80
aag ttc ctc aag cgc cgc ctg ggc acc cac atc cgt gcc aag agg aag      288
Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys
85      90      95
cgt gag gag ttg tcc aac atc ctc acc cag ctg agg aag gcc cag acc      336
Arg Glu Glu Leu Ser Asn Ile Leu Thr Gln Leu Arg Lys Ala Gln Thr
100      105      110
cac gcc aag taa
His Ala Lys
115

```

<210> 2853  
 <211> 115  
 <212> PRT  
 <213> *Drosophila melanogaster*

```

<400> 2853
Met Ala Val Arg Tyr Glu Leu Ala Ile Gly Leu Asn Lys Gly His Lys
1      5      10      15
Thr Ser Lys Ile Arg Asn Val Lys Tyr Thr Gly Asp Lys Lys Val Lys
20      25      30
Gly Leu Arg Gly Ser Arg Leu Lys Asn Ile Gln Thr Arg His Thr Lys
35      40      45
Phe Met Arg Asp Leu Val Arg Glu Val Val Gly His Ala Pro Tyr Glu
50      55      60
Lys Arg Thr Met Glu Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu
65      70      75      80
Lys Phe Leu Lys Arg Arg Leu Gly Thr His Ile Arg Ala Lys Arg Lys
85      90      95
Arg Glu Glu Leu Ser Asn Ile Leu Thr Gln Leu Arg Lys Ala Gln Thr
100      105      110
His Ala Lys
115

```

<210> 2854  
 <211> 306  
 <212> DNA  
 <213> *Enteromorpha compressa*

<220>  
 <221> CDS  
 <222> (1)..(306)

## PhoenixTemp32470.tmp.txt

```

<400> 2854
atg ggg gag atc gct gta ggc ctc aac aag ggt cac cag gtg aca aag      48
Met Gly Glu Ile Ala Val Gly Leu Asn Lys Gly His Gln Val Thr Lys
  1          5          10          15
aag gct ggc aca ccc cgg cct tca agg aga aag gga ttc ttg tca caa      96
Lys Ala Gly Thr Pro Arg Pro Ser Arg Arg Lys Gly Phe Leu Ser Gln
          20          25          30
cgt gtc aag aag gtc agg gca gtt gtc cgt gag gtt gct ggc tgg gca      144
Arg Val Lys Lys Val Arg Ala Val Val Arg Glu Val Ala Gly Trp Ala
          35          40          45
cca tat gag cgt cgc gtg atg gag ctc ttg aag gtt ggt aag gac aag      192
Pro Tyr Glu Arg Arg Val Met Glu Leu Leu Lys Val Gly Lys Asp Lys
          50          55          60
cgt gct ttg aag atg tgc aag cgc aaa ttg ggc aca cag atg cgc ggc      240
Arg Ala Leu Lys Met Cys Lys Arg Lys Leu Gly Thr His Met Arg Gly
          65          70          75          80
aag aag aag agg gag gag atg gct ggt gtt ctc cgt aag atg cag gct      288
Lys Lys Lys Arg Glu Glu Met Ala Gly Val Leu Arg Lys Met Gln Ala
          85          90          95
gcc agc aag gga gag tag
Ala Ser Lys Gly Glu
          100

```

```

<210> 2855
<211> 101
<212> PRT
<213> Enteromorpha compressa

```

```

<400> 2855
Met Gly Glu Ile Ala Val Gly Leu Asn Lys Gly His Gln Val Thr Lys
  1          5          10          15
Lys Ala Gly Thr Pro Arg Pro Ser Arg Arg Lys Gly Phe Leu Ser Gln
          20          25          30
Arg Val Lys Lys Val Arg Ala Val Val Arg Glu Val Ala Gly Trp Ala
          35          40          45
Pro Tyr Glu Arg Arg Val Met Glu Leu Leu Lys Val Gly Lys Asp Lys
          50          55          60
Arg Ala Leu Lys Met Cys Lys Arg Lys Leu Gly Thr His Met Arg Gly
          65          70          75          80
Lys Lys Lys Arg Glu Glu Met Ala Gly Val Leu Arg Lys Met Gln Ala
          85          90          95
Ala Ser Lys Gly Glu
          100

```

```

<210> 2856
<211> 318
<212> DNA
<213> Trichoderma hamatum

```

```

<220>
<221> CDS
<222> (1)..(318)

```

```

<400> 2856
atg gct aag gaa gcg cct gca aag acc ggt ctg gcc gtt ggc ctg aac      48
Met Ala Lys Glu Ala Pro Ala Lys Thr Gly Leu Ala Val Gly Leu Asn
  1          5          10          15
aag ggc cac aag act acc gct cgt gtc gtc aag ccc cgt gtt tcc cgc      96
Lys Gly His Lys Thr Thr Ala Arg Val Val Lys Pro Arg Val Ser Arg
          20          25          30
acc aag gga cac ctg agc aag cgc acc gcc ttt gtt cgt gag gtc gtc      144
Thr Lys Gly His Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Val Val
          35          40          45
aag gag gtt gct ggc ctc gct ccc tat gag cgt cgt gtt atc gaa ctt      192
Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Arg Arg Val Ile Glu Leu
          50          55          60
ctc cgc aac agc aag gac aag cgt gcc cgt aag ctg gcc aag aag agg      240
Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg
          65          70          75          80

```

## PhoenixTemp32470.tmp.txt

ctc ggt acc ttt ggc cgt gcc aag aga aag gtc gat gag ctc cag cgc 288  
 Leu Gly Thr Phe Gly 85 Arg Ala Lys Arg Lys Val Asp Glu Leu Gln Arg 95  
 gtc atc gcc gag tcc cgt cgt gct cac taa 318  
 Val Ile Ala Glu Ser Arg Arg Ala His 105  
 100

<210> 2857  
 <211> 105  
 <212> PRT  
 <213> Trichoderma hamatum

<400> 2857  
 Met Ala Lys Glu Ala Pro Ala Lys Thr Gly Leu Ala Val Gly Leu Asn  
 1 5 10 15  
 Lys Gly His Lys Thr Thr Ala Arg Val Val Lys Pro Arg Val Ser Arg  
 20 25 30  
 Thr Lys Gly His Leu Ser Lys Arg Thr Ala Phe Val Arg Glu Val Val  
 35 40 45  
 Lys Glu Val Ala Gly Leu Ala Pro Tyr Glu Arg Arg Val Ile Glu Leu  
 50 55 60  
 Leu Arg Asn Ser Lys Asp Lys Arg Ala Arg Lys Leu Ala Lys Lys Arg  
 65 70 75 80  
 Leu Gly Thr Phe Gly 85 Arg Ala Lys Arg Lys Val Asp Glu Leu Gln Arg 95  
 Val Ile Ala Glu Ser Arg Arg Ala His 105  
 100

<210> 2858  
 <211> 333  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(333)

<400> 2858  
 atg gcg ccg ccg cag ccc aag tcg ggg ctc ttc gtc ggc atc aac aag 48  
 Met Ala Pro Pro Gln 5 Pro Lys Ser Gly Leu 10 Phe Val Gly Ile Asn Lys 15  
 ggc cac gtc gtc acc aag cgc gag ctg cca cct cgc ccg tcc gac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu 25 Pro Pro Arg Pro Ser Asp Arg 30  
 aag ggg aaa agt acc aag aga gtg aat ttt gtc agg ggc ttg att agg 144  
 Lys Gly Lys 35 Ser Thr Lys Arg Val 40 Asn Phe Val Arg Gly Leu Ile Arg 45  
 gag gtt gtg gga ttt gct cca tat gag aaa cga atc act gag ctt ctg 192  
 Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu 50 55 60  
 aag gtt gga aag gac aag cgt gca ctg aag gtc gct aag aga aag ctc 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val 75 Ala Lys Arg Lys Leu 80  
 ggt acc cac aag aga gca aag aag aag aga gag gag atg gcg ggt gtc 288  
 Gly Thr His Lys Arg 85 Ala Lys Lys Lys Arg 90 Glu Glu Met Ala Gly Val 95  
 atc agg aag atg agg tct gct ggt act act gac aag aag aaa tag 333  
 Ile Arg Lys Met Arg Ser Ala Gly Thr 105 Thr Asp Lys Lys Lys 110  
 100

<210> 2859  
 <211> 110  
 <212> PRT  
 <213> Oryza sativa

<400> 2859  
 Met Ala Pro Pro Gln 5 Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys 15  
 1 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 10

## PhoenixTemp32470.tmp.txt

20 25 30  
 Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Ile Arg Lys Met Arg Ser Ala Gly Thr Thr Asp Lys Lys Lys  
 100 105 110

<210> 2860  
 <211> 342  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(342)

<400> 2860  
 atg gcg ccg tcg cag ccg aag tcc ggg ctc ttc gtg ggc atc aac aag 48  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys 15  
 1 5 10  
 ggc cac gtc gtc acc aag cgc gag ctg ccg cct cgc ccg tcc gac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg 20 25 30  
 aag ggg aaa tcc acc aag agg gtg acc ttt gtc agg aac ttg atc agg 144  
 Lys Gly Lys Ser Thr Lys Arg Val Thr Phe Val Arg Asn Leu Ile Arg 35 40 45  
 gag gtt gct gga ttt gct ccc tat gag aag cgt atc act gag ctt ctc 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu 50 55 60  
 aaa gtt ggc aag gac aag cgt gca ctg aag gtg gca aag aga aag ctt 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu 65 70 75 80  
 ggc acc cac aag agg gcc aag aag aag aga gag gag atg gct ggt gtc 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val 85 90 95  
 ctc agg aag atg agg tct ggt ggc ggt cac gct cac acc gag aag aag 336  
 Leu Arg Lys Met Arg Ser Gly Gly Gly His Ala His Thr Glu Lys Lys 100 105 110  
 aaa tag 342  
 Lys

<210> 2861  
 <211> 113  
 <212> PRT  
 <213> Oryza sativa

<400> 2861  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Ser Thr Lys Arg Val Thr Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Gly Gly Gly His Ala His Thr Glu Lys Lys  
 100 105 110  
 Lys

## PhoenixTemp32470.tmp.txt

<210> 2862  
 <211> 324  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(324)

```

<400> 2862
atg gcg ccg tcg cag ccg aag tcc ggg ctc ttc gtg ggc atc aac aag      48
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
  1          5          10          15
ggc cac gtc gtc acc aag cgc gag ctg ccg cct cgc ccg tcc gac cgc      96
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
          20          25          30
aag ggg aaa tcc acc aag agg gtg acc ttt gtc agg aac ttg atc agg      144
Lys Gly Lys Ser Thr Lys Arg Val Thr Phe Val Arg Asn Leu Ile Arg
          35          40          45
gag gtt gct gga ttt gct ccc tat gag aag cgt atc act gag ctt ctc      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
          50          55          60
aaa gtt ggc aag gac aag cgt gca ctg aag gtg gca aag aga aag ctt      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
          65          70          75          80
ggc acc cac aag agg gcc aag aag aag aga gag gag atg gct ggt gtc      288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val
          85          90          95
ctc agg aag atg agg tgt gta atc ttc cag cct tga      324
Leu Arg Lys Met Arg Cys Val Ile Phe Gln Pro
          100          105

```

<210> 2863  
 <211> 107  
 <212> PRT  
 <213> Oryza sativa

```

<400> 2863
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1          5          10          15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
          20          25          30
Lys Gly Lys Ser Thr Lys Arg Val Thr Phe Val Arg Asn Leu Ile Arg
          35          40          45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
          50          55          60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65          70          75          80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val
          85          90          95
Leu Arg Lys Met Arg Cys Val Ile Phe Gln Pro
          100          105

```

<210> 2864  
 <211> 348  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(348)

```

<400> 2864
atg aca gct cct caa gtg aag acc ggt ttg ttc gtg ggg ttg aac aag      48
Met Thr Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
  1          5          10          15
gga cat gtt gtc acc aga cgc gag ttg gct cct cgt ccc cgt gct cgc      96
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg

```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
aaa gga caa acg agc aag agg aca ctc ttt atc aga tca ttg ata agg 144
Lys Gly Gln Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
      35      40      45
gaa gtt gcc ggt ttt gct ccc tac gag aag aga atc act gag ctt ctt 192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
aag gtt ggt aaa gac aaa cgt gct ctc aag gtg gct aag cga aag ttg 240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
      65      70      75      80
gga aca cac aag aga gcc aag agg aag aga gag gag atg tct agc gtt 288
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
      85      90      95
ctc cgc aag atg agg tct ggt ggt ggt ggt ggt ggc ggt gct act gag 336
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Gly Gly Ala Thr Glu
      100      105      110
aag aag aag tga 348
Lys Lys Lys
      115

```

&lt;210&gt; 2865

&lt;211&gt; 115

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2865

```

Met Thr Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg
      20      25      30
Lys Gly Gln Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
      35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
      85      90      95
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Gly Gly Ala Thr Glu
      100      105      110
Lys Lys Lys
      115

```

&lt;210&gt; 2866

&lt;211&gt; 339

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(339)

&lt;400&gt; 2866

```

atg aca act ccg caa gta aag acc ggt ttg ttt gtc ggt ttg aac aag 48
Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
gga cat gtt gtc acc aga cgc gag ttg gct cct cgt ccc cgt gct cgc 96
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg
      20      25      30
aaa gga aaa aca agc aag agg aca ctt ttc atc aga tct ttg atc agg 144
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
      35      40      45
gaa gtt gct ggt ttt gct ccc tac gag aag aga atc act gag ctt cta 192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
aag gtt ggt aaa gac aag cgt gct ctt aag gtg gct aag cga aag ttg 240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
      65      70      75      80
ggt acc cac aag aga gcc aag agg aag aga gag gtg atg tct agc gtc 288

```



PhoenixTemp32470.tmp.txt

Gly	Thr	His	Lys	Arg <sup>85</sup>	Ala	Lys	Arg	Lys	Arg <sup>90</sup>	Glu	Val	Met	Ser	Val		
ctc	cgc	aag	atg	agg	tct	ggt	ggt	ggt	ggt	gta	acc	gag	aag	aag	aaa	336
Leu	Arg	Lys	Met <sup>100</sup>	Arg	Ser	Gly	Gly	Gly <sup>105</sup>	Gly	Val	Thr	Glu	Lys <sup>110</sup>	Lys	Lys	
tga																339

<210> 2867  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

<400> 2867

Met	Thr	Thr	Pro	Gln <sup>5</sup>	Val	Lys	Thr	Gly	Leu <sup>10</sup>	Phe	Val	Gly	Leu	Asn <sup>15</sup>	Lys	
1																
Gly	His	Val	Val <sup>20</sup>	Thr	Arg	Arg	Glu	Leu <sup>25</sup>	Ala	Pro	Arg	Pro	Arg <sup>30</sup>	Ala	Arg	
Lys	Gly	Lys <sup>35</sup>	Thr	Ser	Lys	Arg	Thr <sup>40</sup>	Leu	Phe	Ile	Arg	Ser <sup>45</sup>	Leu	Ile	Arg	
Glu	Val	Ala <sup>50</sup>	Gly	Phe	Ala	Pro <sup>55</sup>	Tyr	Glu	Lys	Arg	Ile <sup>60</sup>	Thr	Glu	Leu	Leu	
Lys	Val	Gly	Lys	Asp <sup>70</sup>	Lys	Arg	Ala	Leu	Lys	Val <sup>75</sup>	Ala	Lys	Arg	Lys	Leu <sup>80</sup>	
65																
Gly	Thr	His	Lys	Arg <sup>85</sup>	Ala	Lys	Arg	Lys	Arg <sup>90</sup>	Glu	Val	Met	Ser	Ser <sup>95</sup>	Val	
Leu	Arg	Lys	Met <sup>100</sup>	Arg	Ser	Gly	Gly	Gly <sup>105</sup>	Gly	Val	Thr	Glu	Lys <sup>110</sup>	Lys	Lys	

<210> 2868  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(339)

<400> 2868

atg	gca	gca	cca	caa	gtg	aag	act	ggt	ttg	ttc	ggt	ggt	ctg	aac	aaa	48
Met	Ala	Ala	Pro	Gln <sup>5</sup>	Val	Lys	Thr	Gly	Leu <sup>10</sup>	Phe	Val	Gly	Leu	Asn <sup>15</sup>	Lys	
1																
gga	cac	ggt	gtc	acc	aga	cgc	gag	ttg	gct	cct	cg	cct	aac	tct	cg	96
Gly	His	Val	Val <sup>20</sup>	Thr	Arg	Arg	Glu	Leu <sup>25</sup>	Ala	Pro	Arg	Pro	Asn <sup>30</sup>	Ser	Arg	
aaa	ggg	aaa	acg	agc	aag	agg	acg	ttg	ttc	atc	agg	tca	ctg	atc	aga	144
Lys	Gly	Lys <sup>35</sup>	Thr	Ser	Lys	Arg	Thr <sup>40</sup>	Leu	Phe	Ile	Arg	Ser <sup>45</sup>	Leu	Ile	Arg	
gaa	ggt	gct	gga	ttt	gct	ccc	tac	gag	aag	aga	atc	act	gag	ctt	ctc	192
Glu	Val	Ala <sup>50</sup>	Gly	Phe	Ala	Pro <sup>55</sup>	Tyr	Glu	Lys	Arg	Ile <sup>60</sup>	Thr	Glu	Leu	Leu	
aag	ggt	ggt	aaa	gac	aag	agg	gct	ctt	aag	ggt	gct	aag	agg	aag	ttg	240
Lys	Val	Gly	Lys	Asp <sup>70</sup>	Lys	Arg	Ala	Leu	Lys	Val <sup>75</sup>	Ala	Lys	Arg	Lys	Leu <sup>80</sup>	
65																
ggt	acc	cac	aag	aga	gcc	aag	agg	aag	aga	gag	gag	atg	tct	agt	ggt	288
Gly	Thr	His	Lys	Arg <sup>85</sup>	Ala	Lys	Arg	Lys	Arg <sup>90</sup>	Glu	Glu	Met	Ser	Ser <sup>95</sup>	Val	
ctc	cg	aag	atg	agg	tct	ggt	gga	ggt	gct	act	act	gag	aag	aag	aag	336
Leu	Arg	Lys	Met <sup>100</sup>	Arg	Ser	Gly	Gly	Gly <sup>105</sup>	Ala	Thr	Thr	Glu	Lys <sup>110</sup>	Lys	Lys	
taa																339

<210> 2869  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2869

```

Met Ala Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg
20      25      30
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
85      90      95
Leu Arg Lys Met Arg Ser Gly Gly Gly Ala Thr Thr Glu Lys Lys Lys
100      105      110

```

&lt;210&gt; 2870

&lt;211&gt; 333

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(333)

&lt;400&gt; 2870

```

atg gct cct gct cag gcg aag agt ggt ctg ttc gtc gga ctg aac aaa      48
Met Ala Pro Ala Gln Ala Lys Ser Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
gga cac atc gtc act aag cgc gag ctg cca cct cgt cct tcc gat aga      96
Gly His Ile Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20      25      30
aag ggg aaa aca agc aag agg gtg cac ctt gtg agg aac ctt atc agg      144
Lys Gly Lys Thr Ser Lys Arg Val His Leu Val Arg Asn Leu Ile Arg
35      40      45
gaa gta gct ggt ttt gct cca tat gag aag aga gtt att gag ctc ctg      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Val Ile Glu Leu Leu
50      55      60
aag gtt gga aag gac aag cga gct ctg aaa ctt tct aag aga aag ctc      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ser Lys Arg Lys Leu
65      70      75      80
ggt acc cac aag agg ggc aag aag aag aga gag gag ctg gcc acc gca      288
Gly Thr His Lys Arg Gly Lys Lys Lys Arg Glu Glu Leu Ala Thr Ala
85      90      95
ctc cgc aag atg agg gct gca gga gga ggc gag aag aag aag tga      333
Leu Arg Lys Met Arg Ala Ala Gly Gly Gly Glu Lys Lys Lys
100      105      110

```

&lt;210&gt; 2871

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 2871

```

Met Ala Pro Ala Gln Ala Lys Ser Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
Gly His Ile Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20      25      30
Lys Gly Lys Thr Ser Lys Arg Val His Leu Val Arg Asn Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Val Ile Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ser Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Gly Lys Lys Lys Arg Glu Glu Leu Ala Thr Ala
85      90      95
Leu Arg Lys Met Arg Ala Ala Gly Gly Gly Glu Lys Lys Lys
100      105      110

```

## PhoenixTemp32470.tmp.txt

<210> 2872  
 <211> 336  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 2872  
 atg gcg ccg ccg cag cca aag tcg ggc ctc ttc gtt ggc atc aac aag 48  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggt cat gtc gtc acc aag cgc gag ctg cct ccc cgc ccg tgc cac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Cys His Arg  
 20 25 30  
 aag ggg aaa tca acg aag agg gtg tct atg gtc agg ggc ctg atc aga 144  
 Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 gag gtt gct ggg ttt gct cct tat gag aag cgt atc act gag ctt ctg 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt ggc aag gac aag cgt gcc ctg aag ctt gct aag aga aag ctt 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 gga act cac aag agg gca aag aag aag aga gag gag atg ggc ggc gtc 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 ctc agg aag atg agg tcg gct ggt acg cac act gac aag aag aaa tag 336  
 Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2873  
 <211> 111  
 <212> PRT  
 <213> Zea mays

<400> 2873  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Cys His Arg  
 20 25 30  
 Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2874  
 <211> 342  
 <212> DNA  
 <213> Hordeum vulgare

<220>  
 <221> CDS  
 <222> (1)..(342)

<400> 2874  
 atg gcg ccg tcg cag ccc aag tca ggg ctc ttc gtg ggc atc aac aag 48  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggc cac gtc atc acc aag cgc gag ctg ccc cgc ccg tcc gac cgc 96  
 Gly His Val Ile Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg

## PhoenixTemp32470.tmp.txt

```

      20      25      30
aag ggg aaa ggc aca aag agg gtg cat ttt gtc agg aac ttg atc agg 144
Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
      35      40      45
gag gtt gct gga ttc gct cca tat gag aaa cgc atc act gag ctt ctt 192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      50      55      60
aag gtt gga aag gac aag cgt gca ctc aag gtc gcc aag aga aag ctt 240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
      65      70      75      80
ggt act cac aag aga gca aag aag aag aga gag gag atg tca agt gtc 288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
      85      90      95
ctg agg aag atg agg tct gct ggt ggt ggt ggt gct ggt gac aag aag 336
Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Gly Ala Gly Asp Lys Lys
      100      105      110
aaa tag 342
Lys

```

<210> 2875  
 <211> 113  
 <212> PRT  
 <213> Hordeum vulgare

```

<400> 2875
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
Gly His Val Ile Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
      20      25      30      35      40      45
Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
      50      55      60      65      70      75      80
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      85      90      95      100      105      110
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
      115      120      125      130      135      140
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
      145      150      155      160      165      170
Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Gly Ala Gly Asp Lys Lys
      175      180      185      190      195      200
Lys

```

<210> 2876  
 <211> 333  
 <212> DNA  
 <213> Helianthus annuus

<220>  
 <221> CDS  
 <222> (1)..(333)

```

<400> 2876
atg gcg ccc aag cag cct aac aca ggc ctc ttt gtt gga ttg aac aag 48
Met Ala Pro Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
ggc cat gtt gtc acc aag aag gag ttg gcc cct cgt cca tct gac agg 96
Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asp Arg
      20      25      30      35      40      45
aaa ggc aaa aca agc aaa agg gtt cat ttt gtg agg agt ttg atc cgt 144
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Ser Leu Ile Arg
      50      55      60      65      70      75      80
gaa gta gct gga ttt gcg cca tat gag aag agg att act gag ctg ttg 192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
      85      90      95      100      105      110
aag gtt gga aag gac aag cgg gca ttg aag gtc gct aag aga aag ttg 240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
      115      120      125      130      135      140
ggc acc cac aag agg gca aag aag aag aga gag gag atg tcc agc gtt 288

```

## PhoenixTemp32470.tmp.txt

Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 ctc cgc aag atg aga gct ggt gga ggt gca gaa aag aag aag tga 333  
 Leu Arg Lys Met Arg Ala Gly Gly Gly Ala Glu Lys Lys Lys  
 85 90 95 100 105 110

<210> 2877  
 <211> 110  
 <212> PRT  
 <213> Helianthus annuus

<400> 2877  
 Met Ala Pro Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Ser Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ala Gly Gly Gly Ala Glu Lys Lys Lys  
 100 105 110

<210> 2878  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(339)

<400> 2878  
 atg gca aca cca caa gtg aag act ggt ttg ttc gtt ggt ctg aac aaa 48  
 Met Ala Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 gga cac gtc gtc acc aga cgc gag ttg gct cct cgt cct aac tct cgc 96  
 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg  
 20 25 30  
 aaa ggg aaa acg agc aag agg aca ttg ttc atc aga tca ctg atc agg 144  
 Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg  
 35 40 45  
 gaa gtt gct gga ttt gct cct tac gag aag aga atc act gag ctt ctc 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt ggt aaa gac aag agg gct ctt aag gtt gct aag agg aag ttg 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 ggc acc cac aag aga gcc aag cga aag aga gag gag atg tct agt gtt 288  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 ctc cgc aag atg agg tct ggt gga ggt gct act act gag aag aag aaa 336  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Ala Thr Thr Glu Lys Lys Lys  
 100 105 110  
 taa 339

<210> 2879  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

<400> 2879  
 Met Ala Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 Page 2646

## PhoenixTemp32470.tmp.txt

```

1          5          10          15
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg
20
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
35
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
80
Leu Arg Lys Met Arg Ser Gly Gly Gly Ala Thr Thr Glu Lys Lys Lys
100      105      110

```

<210> 2880  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(339)

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<400> 2880
atg aca gct cct caa gtg aag acc ggt ttg ttc gtg ggg ttg aac aag      48
Met Thr Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1          5          10          15
gga cat gtt gtc acc aga cgc gag ctg gct cct cgt ccc cgt gct cgc      96
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg
20
aaa gga caa acg agc aag agg aca ctc ttt atc aga tcc ttg ata agg      144
Lys Gly Gln Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
35
gaa gtt gcc ggt ttt gcc ccc tac gag aag aga atc act gag ctt tta      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50
aag gtt ggt aaa gac aag cgt gct ctc aag gtg gct aag cga aag ttg      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65
gga acc cac aag aga gcc aag agg aag aga gag gag atg tct agc gtt      288
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
80
ctc cgc aag atg agg tct ggt ggt ggt ggt gct act gag aag aag aaa      336
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Ala Thr Glu Lys Lys Lys
100      105      110
tga
339

```

<210> 2881  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

```

<400> 2881
Met Thr Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1          5          10          15
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg
20
Lys Gly Gln Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
35
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
80
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Ala Thr Glu Lys Lys Lys
100      105      110

```

## PhoenixTemp32470.tmp.txt

<210> 2882  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(339)

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<400> 2882
atg gca gca cca caa gta aag act ggt ctg ttc gtg ggg ttg aac aaa      48
Met Ala Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
gga cac gtg acg aca aga cgc gag cta gct cct cgt ccc aac tct cgc      96
Gly His Val Thr Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg
20      25      30
aaa ggg aaa acg agc aag agg aca ctg ttc atc aga tct ttg atc agg      144
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
35      40      45
gaa gtt gct gga ttc gct cct tac gag aag aga atc act gag ctt ctc      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
aag gtt ggt aaa gac aag agg gct ctc aag gtt gcc aag agg aag ttg      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
ggt act cac aag aga gcc aag cga aag aga gag gag atg tct agt gtt      288
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
85      90      95
ctc cgc aag atg agg tct ggt ggt ggt ggt gtt act gag aag aag aag      336
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Val Thr Glu Lys Lys Lys
100      105      110
taa
339

```

<210> 2883  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

```

<400> 2883
Met Ala Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys
1      5      10      15
Gly His Val Thr Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg
20      25      30
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val
85      90      95
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Val Thr Glu Lys Lys Lys
100      105      110

```

<210> 2884  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(339)

```

<400> 2884
atg aca act ccg caa gta aag acc ggt ttg ttt gtc ggt ttg aac aag      48
Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys

```

## PhoenixTemp32470.tmp.txt

1	5	10	15	
gga cat gtt gtc acc aga cgc gag ttg gct cct cgt ccc cgt gct cgc				96
Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg				
aaa gga aaa aca agc aag agg aca ctt ttc atc aga tct ttg atc agg				144
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg				
gaa gtt gct ggt ttt gct ccc tac gag aag aga atc act gag ctt cta				192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu				
aag gtt ggt aaa gac aag cgt gct ctt aag gtg gct aag cga aag ttg				240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu				
ggt acc cac aag aga gcc aag agg aag aga gag gag atg tct agc gtc				288
Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val				
ctc cgc aag atg agg tct ggt ggt ggt ggt gta acc gag aag aag aaa				336
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Val Thr Glu Lys Lys Lys				
tga				339

<210> 2885  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

<400> 2885	
Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys	
1 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg	
Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg	
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu	
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu	
65 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val	
Leu Arg Lys Met Arg Ser Gly Gly Gly Gly Val Thr Glu Lys Lys Lys	

<210> 2886  
 <211> 333  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(333)

<400> 2886	
atg gct ccc aaa cat ctt agt acg ggt ttg ttt gtt gga ttg aac aag	48
Met Ala Pro Lys His Leu Ser Thr Gly Leu Phe Val Gly Leu Asn Lys	
ggt cac gtt gtc acc aag aag gag ttg cct cca cgc cct tca gat cgt	96
Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg	
aag ggg aaa aca agc aag cga gtg cac ttt gtg agg aac ctc att cga	144
Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg	
gag gtt gcc ggc ttt gca cct tat gaa aag cga ata act gag ttg ctc	192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu	
aag gtt gga aaa gat aag agg gca ctg aaa gtt gcc aag aga aag ctt	240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu	



## PhoenixTemp32470.tmp.txt

gga acc cat aag cgc gca aag aag aag aga gag gag atg tcc aat gtt 288  
 Gly Thr His Lys Arg 85 Ala Lys Lys Lys Arg 90 Glu Glu Met Ser Asn Val 95  
 ctc cgg aag atg agg gct ggt gga gct gga gac aag aag aaa taa 333  
 Leu Arg Lys Met 100 Arg Ala Gly Gly Ala 105 Gly Asp Lys Lys Lys 110

<210> 2887  
 <211> 110  
 <212> PRT  
 <213> Glycine max

<400> 2887  
 Met Ala Pro Lys His Leu Ser Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg 85 Ala Lys Lys Lys Arg 90 Glu Glu Met Ser Asn Val 95  
 Leu Arg Lys Met 100 Arg Ala Gly Gly Ala 105 Gly Asp Lys Lys Lys 110

<210> 2888  
 <211> 336  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 2888  
 atg gcg ccg ccg cag ccg aag tcg ggc ctc ttc gtg ggc atc aac aag 48  
 Met Ala Pro Pro Gln 5 Pro Lys Ser Gly Leu 10 Phe Val Gly Ile Asn Lys 15  
 ggc cat gtc gtc acc aag cgc gag ctg cct ctg cgc ccg tcc cac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu 25 Pro Leu Arg Pro Ser His Arg 30  
 aag ggg aaa gca acg aag agg gtg tcc atg gtc agg ggc ctg atc aga 144  
 Lys Gly Lys 35 Ala Thr Lys Arg 40 Ser Met Val Arg 45 Gly Leu Ile Arg 45  
 gag gtt gct ggc ttt gct cct tat gag aag cgt atc acc gag ctt ctg 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu 50 55 60  
 aag gtt ggc aag gac aag cgc gct ctg aag ctt gcc aag aga aag ctt 240  
 Lys Val Gly Lys Asp 70 Arg Ala Leu Lys 75 Ala Lys Arg Lys Leu 80  
 gga act cac aag agg gca aag aag aag aga gag gag atg atg ggc gtc 288  
 Gly Thr His Lys Arg 85 Ala Lys Lys Lys Arg 90 Glu Glu Met Met Gly Val 95  
 ctc agg aag atg aga tcg gct ggt acg cac act gac aag aag aaa taa 336  
 Leu Arg Lys Met 100 Arg Ser Ala Gly Thr 105 His Thr Asp Lys Lys Lys 110

<210> 2889  
 <211> 111  
 <212> PRT  
 <213> Zea mays

<400> 2889  
 Met Ala Pro Pro Gln 5 Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Leu Arg Pro Ser His Arg  
 Page 2650

## PhoenixTemp32470.tmp.txt

20 25 30  
 Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Met Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2890  
 <211> 336  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 2890  
 atg gcg ccg cag cag ccg aag tgc ggc ctc ttc gtg ggc atc aac aag 48  
 Met Ala Pro Gln Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggc cat gtc gtc aca aag cgc gag ctg cct ctg cgc ccg tcc cac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Leu Arg Pro Ser His Arg  
 20 25 30  
 aag ggg aaa gca acg aag agg gtg tcc atg gta agg ggc ctg ata aga 144  
 Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 gag gtt gct ggc ttt gct cct tat gag aag cgt atc acc gag ctt ctg 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt ggc aag gaa aag cgc gct ctg aag ctt gcc aag aga aag ctt 240  
 Lys Val Gly Lys Glu Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 gga act cac aag agg gca aag aag aag aga gag gag atg atg ggc gtc 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Met Gly Val  
 85 90 95  
 ctc agg aag atg aga tgc gct ggt acg aaa act gac aag aag aaa taa 336  
 Leu Arg Lys Met Arg Ser Ala Gly Thr Lys Thr Asp Lys Lys Lys  
 100 105 110

<210> 2891  
 <211> 111  
 <212> PRT  
 <213> Zea mays

<400> 2891  
 Met Ala Pro Gln Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Leu Arg Pro Ser His Arg  
 20 25 30  
 Lys Gly Lys Ala Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Glu Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Met Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr Lys Thr Asp Lys Lys Lys  
 100 105 110

<210> 2892  
 <211> 336  
 <212> DNA  
 <213> Zea mays

## PhoenixTemp32470.tmp.txt

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 2892  
 atg gcg ccg ccg caa cca aag tcg ggc ctt ttc gtt ggc atc aac aag 48  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggt cat gtc gtc gcc aag cac gag ctg cct ccc cgc ccg tgc ccc cgc 96  
 Gly His Val Val Ala Lys His Glu Leu Pro Pro Arg Pro Cys Pro Arg  
 20 25 30  
 aag ggg aaa tca acg aag agg gtg tct atg gtc agg ggc ctg atc aga 144  
 Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 gag gtt gct ggg ttt gct cct tat gag aag cgt atc act gag ctt ctg 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt ggc aag gac aag cgt gcc ctg aag ctt gct aag aga aag ctt 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 gga act ccc aag agg gca aag aag aag aga gag gag atg gcg ggc gtc 288  
 Gly Thr Pro Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 ctc agg aag atg agg tcg gct ggt acg cac act gac aaa aag aaa tag 336  
 Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2893  
 <211> 111  
 <212> PRT  
 <213> Zea mays

<400> 2893  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Ala Lys His Glu Leu Pro Pro Arg Pro Cys Pro Arg  
 20 25 30  
 Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr Pro Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys  
 100 105 110

<210> 2894  
 <211> 336  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 2894  
 atg gcg ccc ccg caa cca aag tcg ggc ctt ttc gtt ggc atc gac aag 48  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asp Lys  
 1 5 10 15  
 ggt cat gtc gtc acc aag cgc gag ctg cct ccc cgc ccg tgc cac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Cys His Arg  
 20 25 30  
 aag ggg aaa tca acg aag agg gtg tct atg gtc agg ggc ctg atc aga 144  
 Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg  
 35 40 45  
 gag gtt gct ggg ttt gct cct tat gag aag cgt atc act gag ctt ctg 192

PhoenixTemp32470.tmp.txt

Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu		
	50					55					60						
aag	gtt	ggc	aag	gac	aag	cgt	gcc	ctg	aag	ctt	gct	aag	aga	aag	ctt		240
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Leu	Ala	Lys	Arg	Lys	Leu		
	65				70					75					80		
gga	act	cac	aag	agg	gca	aag	aag	aag	aga	gag	gag	atg	gcg	ggc	gtc		288
Gly	Thr	His	Lys	Arg	Ala	Lys	Lys	Lys	Arg	Glu	Glu	Met	Ala	Gly	Val		
				85					90					95			
ctc	agg	aag	atg	agg	tcg	gct	ggt	acg	cac	act	gac	aaa	aag	aaa	tag		336
Leu	Arg	Lys	Met	Arg	Ser	Ala	Gly	Thr	His	Thr	Asp	Lys	Lys	Lys			
			100					105					110				

<210> 2895  
 <211> 111  
 <212> PRT  
 <213> Zea mays

<400> 2895

Met	Ala	Pro	Pro	Gln	Pro	Lys	Ser	Gly	Leu	Phe	Val	Gly	Ile	Asp	Lys		
				5					10					15			
Gly	His	Val	Val	Thr	Lys	Arg	Glu	Leu	Pro	Pro	Arg	Pro	Cys	His	Arg		
			20					25					30				
Lys	Gly	Lys	Ser	Thr	Lys	Arg	Val	Ser	Met	Val	Arg	Gly	Leu	Ile	Arg		
		35					40					45					
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu		
	50					55					60						
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Leu	Ala	Lys	Arg	Lys	Leu		
	65				70					75					80		
Gly	Thr	His	Lys	Arg	Ala	Lys	Lys	Lys	Arg	Glu	Glu	Met	Ala	Gly	Val		
				85					90					95			
Leu	Arg	Lys	Met	Arg	Ser	Ala	Gly	Thr	His	Thr	Asp	Lys	Lys	Lys			
			100					105					110				

<210> 2896  
 <211> 24  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2896  
 atggctgtca agactggtat cgct 24

<210> 2897  
 <211> 24  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 2897  
 ttaatgacga cgagaggcag caat 24

<210> 2898  
 <211> 119  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> consensus sequence

<220>  
 <221> variant  
 <222> (2)..(8)  
 <223> Xaa in position 2 to 8 is any amino acid

<220>  
<221> Variant  
<222> (9)..(15)  
<223> Xaa in position 9 to 15 is any or no amino acid

<220>  
<221> Variant  
<222> (18)..(18)  
<223> Xaa in position 18 is any amino acid

<220>  
<221> Variant  
<222> (19)..(20)  
<223> Xaa in position 19 to 20 is any or no amino acid

<220>  
<221> Variant  
<222> (25)..(26)  
<223> Xaa in position 25 to 26 is any amino acid

<220>  
<221> Variant  
<222> (28)..(33)  
<223> Xaa in position 28 to 33 is any amino acid

<220>  
<221> Variant  
<222> (34)..(45)  
<223> Xaa in position 34 to 45 is any or no amino acid

<220>  
<221> Variant  
<222> (48)..(49)  
<223> Xaa in position 48 to 49 is any amino acid

<220>  
<221> Variant  
<222> (50)..(50)  
<223> Xaa in position 50 is any or no amino acid

<220>  
<221> Variant  
<222> (53)..(54)  
<223> Xaa in position 53 to 54 is any amino acid

<220>  
<221> Variant  
<222> (55)..(55)  
<223> Xaa in position 55 is any or no amino acid

<220>  
<221> Variant  
<222> (57)..(59)  
<223> Xaa in position 57 to 59 is any amino acid

<220>  
<221> Variant  
<222> (61)..(61)  
<223> Xaa in position 61 is any amino acid

<220>  
<221> Variant  
<222> (63)..(65)  
<223> Xaa in position 63 to 65 is any amino acid

<220>  
<221> Variant  
<222> (69)..(69)  
<223> Xaa in position 69 is any amino acid

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<220>
<221> Variant
<222> (71)..(71)
<223> Xaa in position 71 is any amino acid

<220>
<221> Variant
<222> (76)..(76)
<223> Xaa in position 76 is any amino acid

<220>
<221> Variant
<222> (78)..(79)
<223> Xaa in position 78 to 79 is any amino acid

<220>
<221> Variant
<222> (83)..(84)
<223> Xaa in position 83 to 84 is any amino acid

<220>
<221> Variant
<222> (85)..(85)
<223> Xaa in position 85 is any or no amino acid

<220>
<221> Variant
<222> (91)..(91)
<223> Xaa in position 91 is any amino acid

<220>
<221> Variant
<222> (93)..(93)
<223> Xaa in position 93 is any amino acid

<220>
<221> Variant
<222> (94)..(94)
<223> Xaa in position 94 is any or no amino acid

<220>
<221> Variant
<222> (96)..(97)
<223> Xaa in position 96 to 97 is any amino acid

<220>
<221> Variant
<222> (101)..(102)
<223> Xaa in position 101 to 102 is any amino acid

<220>
<221> Variant
<222> (106)..(106)
<223> Xaa in position 106 is any amino acid

<220>
<221> Variant
<222> (108)..(108)
<223> Xaa in position 108 is any amino acid

<220>
<221> Variant
<222> (111)..(118)
<223> Xaa in position 111 to 118 is any amino acid

<400> 2898
Met Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val
1          5          10          15

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PhoenixTemp32470.tmp.txt

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		35					40					45			
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Leu	Leu	Xaa	Xaa	Xaa	Lys	Asp	Lys	Arg	Ala	Xaa	Lys	Xaa	Xaa	Lys	Xaa
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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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5

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15

## PhoenixTemp32470.tmp.txt

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Thr  
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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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<212> DNA
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## PhoenixTemp32470.tmp.txt

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&lt;223&gt; plasmid VC-MME489-1QCZ

&lt;400&gt; 2906

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```

## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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tactcttccg agcaaaggac gccatcggcc tcactcatga gcagattgct ccagccatca 8280  
tgccgttcaa agtgcaggac ctttggaaca ggcagctttc cttccagcca tagcatcatg 8340  
tccttttccc gttccacatc ataggtggtc cttttataacc ggctgtccgt cttttttaaa 8400  
tatagggtttt ctttttctcc caccagctta tataccttag caggagacat tccttccgta 8460  
tcttttacgc agcgggtattt ttcgatcagt tttttcaatt ccggtgatat tctcatttta 8520  
gccatttatt atttccttcc tcttttctac agtattttaaa gataccccaa gaagctaatt 8580  
ataacaagac gaactccaat tcaactgttcc ttgcattcta aaaccttaaa taccagaaaa 8640  
cagctttttc aaagttgttt tcaaagttgg cgtataacat agtatcgacg gagccgattt 8700  
tgaaaccgcg gtgatcacag gcagcaacgc tctgtcatcg ttacaatcaa catgctaccc 8760  
tccgcgagat catccgtgtt tcaaaccgag cagcttagtt gccgttcttc cgaatagcat 8820  
cggtaacatg agcaaagtct gccgccttac aacggctctc ccgctgacgc cgtcccgagc 8880  
tgatgggctg cctgtatcga gtgggtgattt tgtgccgagc tgccggtcgg ggagctgttg 8940  
gctggctggg ggcaggatat attgtgggtg aaacaaattg acgcttagac aacttaataa 9000  
cacattgcgg acgtttttta tgtactgaat taacgccgaa tta 9043

&lt;210&gt; 2907

&lt;211&gt; 858

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(858)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2907

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Met Phe Ile Leu Tyr Phe Gln Arg Glu Trp Ser Val Thr Leu Cys Ile  
1 5 10 15  
aac aag gag agc att aaa atg ggt aaa ctc acg ggc aag aca gca ctg 96  
Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu  
20 25 30  
att acg ggc gca ttg cag gga att ggc gaa gga att gcc aga act ttt 144  
Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe  
35 40 45  
gca cgt cat ggc gcg aac cta atc ttg ctg gat atc tcc cct gag atc 192  
Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile  
50 55 60  
gaa aag ctg gcg gac gaa ctg tgt ggt cgt ggt cat cgc tgt acg gcg 240  
Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala  
65 70 75 80  
gtt gtc gcc gat gtg cgt gac ccg gcg tcg gta gcc gca gct atc aaa 288  
Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys  
85 90 95  
cgc gcg aag gaa aaa gaa ggg cgc att gat atc ctg gtg aat aac gca 336  
Arg Ala Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala  
100 105 110  
ggc gtt tgt cgt ctg ggc agt ttc ctc gat atg agc gat gac gat cgc 384  
Gly Val Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Asp Asp Arg  
115 120 125  
gat ttc cat att gac atc aat att aaa ggc gta tgg aac gtc acg aag 432  
Asp Phe His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys

## PhoenixTemp32470.tmp.txt

130	135	140	
gcg gtg ctg ccg gag atg	att gcc cgc aaa gat ggt cgc att gtg atg		480
Ala Val Leu Pro Glu Met	Ile Ala Arg Lys Asp Gly Arg Ile Val Met		
145	150	155	160
atg tct tca gtc act ggt gat atg gtg gcc gat cct ggc gaa acg gcg			528
Met Ser Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala			
165	170	175	
tac gcc tta acg ggc ggc att gtt ggc ctg aca aaa tcg ctg gcg			576
Tyr Ala Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala			
180	185	190	
gtg gag tac gcg cag tct ggt att cgc gtt aac gcc att tgc ccg gga			624
Val Glu Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly			
195	200	205	
cac gtg cgc aca cca atg ggc gaa agc att gcc cgc cag tcg aac ccg			672
His Val Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro			
210	215	220	
gaa gat cca gag tcg gtg ctg act gaa atg gcg aaa gca atc ccg atg			720
Glu Asp Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met			
225	230	235	240
cgt cgc ctc gcc gat ccg ctg gaa gtc ggc gaa ctg gcg gcc ttc ctc			768
Arg Arg Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu			
245	250	255	
gca tcg gat gaa tcc agc tat tta acc ggt aca cag aat gtg att gat			816
Ala Ser Asp Glu Ser Ser Tyr Leu Thr Thr Gly Thr Gln Asn Val Ile Asp			
260	265	270	
ggc ggc agc aca ctg ccg gag acg gtt agc gtc ggt atc taa			858
Gly Gly Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile			
275	280	285	

&lt;210&gt; 2908

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 2908

Met Phe Ile Leu Tyr Phe Gln Arg Glu Trp Ser Val Thr Leu Cys Ile	
1 5 10 15	
Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu	
20 25 30	
Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe	
35 40 45	
Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile	
50 55 60	
Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala	
65 70 75 80	
Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys	
85 90 95	
Arg Ala Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala	
100 105 110	
Gly Val Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Asp Asp Arg	
115 120 125	
Asp Phe His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys	
130 135 140	
Ala Val Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met	
145 150 155 160	
Met Ser Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala	
165 170 175	
Tyr Ala Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala	
180 185 190	
Val Glu Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly	
195 200 205	
His Val Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro	
210 215 220	
Glu Asp Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met	
225 230 235 240	
Arg Arg Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu	
245 250 255	
Ala Ser Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp	
260 265 270	

PhoenixTemp32470.tmp.txt  
 Gly Gly Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile  
           275                          280                          285

<210> 2909  
 <211> 858  
 <212> DNA  
 <213> ESCHERICHIA COLI

<220>  
 <221> CDS  
 <222> (1)..(858)  
 <223> transl\_table=11

<400> 2909  
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   1                  5                  10                  15  
 aac aag gag agc att aaa atg ggt aaa ctc acg ggc aag aca gca ctg 96  
 Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu  
                   20                  25                  30  
 att acg ggc gca ttg cag gga att ggc gaa gga att gcc aga act ttt 144  
 Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe  
                   35                  40                  45  
 gca cgt cat ggc gcg aac cta atc ttg ctg gat atc tcc cct gag atc 192  
 Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile  
                   50                  55                  60  
 gaa aag ctg gcg gac gaa ctg tgt ggt cgt ggt cat cgc tgt acg gcg 240  
 Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala  
                   65                  70                  75                  80  
 gtt gtc gcc gat gtg cgt gac ccg gcg tgc gta gcc gca gct atc aaa 288  
 Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys  
                   85                  90                  95  
 cgc gcg aag gaa aaa gaa ggg cgc att gat atc ctg gtg aat aac gca 336  
 Arg Ala Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala  
                   100                  105  
 ggc gtt tgt cgt ctg ggc agt ttc ctc gat atg agc gat gac gat cgc 384  
 Gly Val Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Asp Asp Arg  
                   115                  120                  125  
 gat ttc cat att gac atc aat att aaa ggc gta tgg aac gtc acg aag 432  
 Asp Phe His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys  
                   130                  135                  140  
 gcg gtg ctg ccg gag atg att gcc cgc aaa gat ggt cgc att gtg atg 480  
 Ala Val Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met  
                   145                  150                  155                  160  
 atg tct tca gtc act ggt gat atg gtg gcc gat cct ggc gaa acg gcg 528  
 Met Ser Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala  
                   165                  170                  175  
 tac gcc tta acg aaa gcg gcg att gtt ggc ctg aca aaa tcg ctg gcg 576  
 Tyr Ala Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala  
                   180                  185                  190  
 gtg gag tac gcg cag tct ggt att cgc gtt aac gcc att tgc ccg gga 624  
 Val Glu Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly  
                   195                  200                  205  
 tac gtg cgc aca cca atg gcg gaa agc att gcc cgc cag tcg aac ccg 672  
 Tyr Val Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro  
                   210                  215                  220  
 gaa gat cca gag tcg gtg ctg act gaa atg gcg aaa gca atc ccg atg 720  
 Glu Asp Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met  
                   225                  230                  235                  240  
 cgt cgc ctc gcc gat ccg ctg gaa gtc ggc gaa ctg gcg gcc ttc ctc 768  
 Arg Arg Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu  
                   245                  250                  255  
 gca tcg gat gaa tcc agc tat tta acc ggt aca cag aat gtg att gat 816  
 Ala Ser Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp  
                   260                  265                  270  
 ggc ggc agc aca ctg ccg gag acg gtt agc gtc ggt atc taa 858  
 Gly Gly Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile  
                   275                  280                  285

<210> 2910  
 <211> 285  
 <212> PRT  
 <213> ESCHERICHIA COLI

<400> 2910  
 Met Phe Ile Leu Tyr Phe Gln Arg Glu Trp Ser Val Thr Leu Cys Ile  
 1 5 10 15  
 Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu  
 20 25 30  
 Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe  
 35 40 45  
 Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile  
 50 55 60  
 Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala  
 65 70 75 80  
 Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys  
 85 90 95  
 Arg Ala Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala  
 100 105 110  
 Gly Val Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Asp Asp Arg  
 115 120 125  
 Asp Phe His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys  
 130 135 140  
 Ala Val Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met  
 145 150 155 160  
 Met Ser Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala  
 165 170 175  
 Tyr Ala Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala  
 180 185 190  
 Val Glu Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly  
 195 200 205  
 Tyr Val Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro  
 210 215 220  
 Glu Asp Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met  
 225 230 235 240  
 Arg Arg Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu  
 245 250 255  
 Ala Ser Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp  
 260 265 270  
 Gly Gly Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile  
 275 280 285

<210> 2911  
 <211> 792  
 <212> DNA  
 <213> Unknown

<220>  
 <223> Unidentified

<220>  
 <221> CDS  
 <222> (1)..(792)

<400> 2911  
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 Met Gly Lys Leu Thr Gly Lys Thr Ala Leu Ile Thr Gly Ala Leu Gln 15  
 gga att ggc gaa gga att gcc aga act ttt gca cgt cat ggc gcg aac 96  
 Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe Ala Arg His Gly Ala Asn 20 25 30  
 cta atc ttg ctg gat atc tcc cct gag atc gaa aag cta gcg gac gaa 144  
 Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile Glu Lys Leu Ala Asp Glu 35 40 45  
 ctg tgt ggt cgt ggt cat cgc tgt acg gcg gtt gtc gcc gat gtg cgt 192  
 Leu Cys Gly Arg Gly His Arg Cys Thr Ala Val Val Ala Asp Val Arg 50 55 60  
 gac ccg gcg tcg gta gcc gca gct atc aaa cgc gcg aag gaa aaa gaa 240  
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## PhoenixTemp32470.tmp.txt

Asp 65	Pro	Ala	Ser	Val	Ala 70	Ala	Ala	Ile	Lys	Arg 75	Ala	Lys	Glu	Lys	Glu 80	
ggg	cgc	att	gat	atc	ctg	gtg	aat	aac	gca	ggc	gtt	tgt	cgt	ctg	ggc	288
Gly	Arg	Ile	Asp	Ile 85	Leu	Val	Asn	Asn	Ala 90	Gly	Val	Cys	Arg	Leu 95	Gly	
agt	ttc	ctc	gat	atg	agc	gat	gaa	gat	cgc	gat	ttc	cat	att	gat	atc	336
Ser	Phe	Leu	Asp 100	Met	Ser	Asp	Glu	Asp 105	Arg	Asp	Phe	His 110	Ile	Asp	Ile	
aat	att	aaa	ggc	gta	tgg	aac	gtc	acg	aag	gcg	gtg	ctg	ccg	gag	atg	384
Asn	Ile	Lys 115	Gly	Val	Trp	Asn	Val 120	Thr	Lys	Ala	Val 125	Leu	Pro	Glu	Met	
att	gcg	cgc	aaa	gat	ggg	cgc	att	gtg	atg	atg	tct	tca	gtc	act	ggg	432
Ile	Ala	Arg	Lys	Asp	Gly	Arg 135	Ile	Val	Met	Met	Ser 140	Ser	Val	Thr	Gly	
gat	atg	gtg	gcc	gat	cct	ggc	gaa	acg	gcg	tat	gcc	tta	acg	aaa	gcg	480
Asp	Met	Val	Ala	Asp 150	Pro	Gly	Glu	Thr	Ala	Tyr 155	Ala	Leu	Thr	Lys	Ala 160	
gcg	att	gtt	ggc	ctg	act	aaa	tcg	ctg	gcg	gtg	gag	tac	gcg	caa	tcc	528
Ala	Ile	Val	Gly 165	Leu	Thr	Lys	Ser	Leu 170	Ala	Val 175	Glu	Tyr	Ala	Gln	Ser	
ggg	att	cgc	gtt	aac	gcc	atc	tgc	ccg	gga	tac	gtc	cgc	acg	cca	atg	576
Gly	Ile	Arg	Val 180	Asn	Ala	Ile	Cys	Pro 185	Gly	Tyr	Val 190	Arg	Thr	Pro	Met	
gcg	gaa	agc	att	gcc	cgc	cag	tcg	aac	ccg	gaa	gat	cca	gaa	tcg	gtg	624
Ala	Glu	Ser 195	Ile	Ala	Arg	Gln	Ser 200	Asn	Pro	Glu	Asp 205	Pro	Glu	Ser	Val	
ctg	act	gaa	atg	gca	aaa	gca	atc	ccg	ctg	tgt	cgc	ctc	gcc	gat	ccg	672
Leu	Thr	Glu	Met	Ala 210	Lys	Ala 215	Ile	Pro	Leu	Cys 220	Arg	Leu	Ala	Asp	Pro	
ctg	gaa	gtc	ggc	gaa	ctg	gcg	ttc	ctc	gca	tcg	gat	gaa	tcc	agc		720
Leu	Glu	Val	Gly	Glu 225	Leu 230	Ala	Phe	Leu	Ala 235	Ser	Asp	Glu	Ser	Ser 240		
tat	tta	acc	ggg	aca	cag	aat	gtg	att	gat	ggc	ggc	agc	aca	ctg	ccg	768
Tyr	Leu	Thr	Gly 245	Thr	Gln	Asn	Val	Ile	Asp 250	Gly	Gly	Ser	Thr	Leu 255	Pro	
gag	acg	gtt	agc	gtc	ggg	atc	tga									792
Glu	Thr	Val	Ser 260	Val	Gly	Ile										

&lt;210&gt; 2912

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Unidentified

&lt;400&gt; 2912

Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Gly	Ala	Leu	Gln
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Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Thr	Phe	Ala	Arg	His	Gly	Ala	Asn
			20					25					30		
Leu	Ile	Leu	Leu	Asp	Ile	Ser	Pro	Glu	Ile	Glu	Lys	Leu	Ala	Asp	Glu
		35					40					45			
Leu	Cys	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Val	Ala	Asp	Val	Arg
	50					55				60					
Asp	Pro	Ala	Ser	Val	Ala	Ala	Ile	Lys	Arg	Ala	Lys	Glu	Lys	Glu	
65					70				75					80	
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Cys	Arg	Leu	Gly
			85					90						95	
Ser	Phe	Leu	Asp 100	Met	Ser	Asp	Glu	Asp 105	Arg	Asp	Phe	His 110	Ile	Asp	Ile
Asn	Ile	Lys 115	Gly	Val	Trp	Asn	Val 120	Thr	Lys	Ala	Val 125	Leu	Pro	Glu	Met
Ile	Ala	Arg	Lys	Asp	Gly	Arg 135	Ile	Val	Met	Met	Ser 140	Ser	Val	Thr	Gly
	130														
Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	Tyr 155	Ala	Leu	Thr	Lys	Ala
145					150										160
Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Val	Glu	Tyr	Ala	Gln	Ser

## PhoenixTemp32470.tmp.txt

Gly Ile Arg Val 165 Asn Ala Ile Cys Pro 170 Gly Tyr Val Arg Thr 175  
 Ala Glu Ser Ile 180 Ala Arg Gln Ser 185 Asn Pro Glu Asp Pro 190 Glu Ser Val  
 Leu Thr Glu Met 195 Ala Lys Ala 200 Ile Pro Leu Cys Arg 205 Leu Ala Asp Pro  
 Leu 210 Glu Val Gly Glu Leu 215 Ala Ala Phe Leu Ala 220 Ser Asp Glu Ser Ser  
 225 Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp 235 Gly Gly Ser Thr Leu Pro  
 Glu Thr Val Ser 245 Val Gly Ile 250 255

&lt;210&gt; 2913

&lt;211&gt; 846

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(846)

&lt;400&gt; 2913

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Met Ser Ala Ala Ala Ala Ala Ala Ser Ser Pro Ala Pro Arg Leu	
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gaa agc aag gtt gcg ctg gtt acc ggt ggt gct tca ggt att ggt gaa	96
Glu Ser Lys Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Glu	
20 25 30 35 40 45	
gca att gtt cgc ctc ttt aga gag cat ggt gca aag gta tgt att gca	144
Ala Ile Val Arg Leu Phe Arg Glu His Gly Ala Lys Val Cys Ile Ala	
50 55 60 65 70 75 80	
gat atc caa gat gaa gca ggt cag aag ctc cgg gac tcc ctt gga ggt	192
Asp Ile Gln Asp Glu Ala Gly Gln Lys Leu Arg Asp Ser Leu Gly Gly	
85 90 95	
gac caa gat gtc tta ttt gtc cac tgc gat gtt tcg gtg gaa gag gat	240
Asp Gln Asp Val Leu Phe Val His Cys Asp Val Ser Val Glu Glu Asp	
100 105 110 115 120 125 130	
gta gcc cga gcg gtc gat gca aca gct gaa aag ttt ggt act ctt gac	288
Val Ala Arg Ala Val Asp Ala Thr Ala Glu Lys Phe Gly Thr Leu Asp	
135 140 145 150 155 160 165	
atc atg gtc aac aat gct ggc ttt aca ggc cag aaa atc aca gat atc	336
Ile Met Val Asn Asn Ala Gly Phe Thr Gly Gln Lys Ile Thr Asp Ile	
170 175 180 185 190 195 200	
cga aac atc gac ttt tct gaa gtc agg gta atc gac atc aat tta	384
Arg Asn Ile Asp Phe Ser Glu Val Arg Lys Val Ile Asp Ile Asn Leu	
205 210 215 220 225 230 235	
gtt ggt gta ttc cac ggg atg aaa cac gca gcg cgc atc atg atc ccc	432
Val Gly Val Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro	
240 245 250 255 260 265 270	
aat aag aag ggg tcc atc atc tca ttg gga agt gtt tct agt gtc att	480
Asn Lys Lys Gly Ser Ile Ile Ser Leu Gly Ser Val Ser Ser Val Ile	
275 280 285 290 295 300 305	
gga ggg ttg gga cct cat tca tac aca gca acc aag cat gct gtg gtg	528
Gly Gly Leu Gly Pro His Ser Tyr Thr Ala Thr Lys His Ala Val Val	
310 315 320 325 330 335 340	
ggt cta acc aag aat gta gct ggg gaa ttg ggg aag cat ggg ata cgc	576
Gly Leu Thr Lys Asn Val Ala Gly Glu Leu Gly Lys His Gly Ile Arg	
345 350 355 360 365 370 375	
gtg aac tgc gta tct ccc tat gca gtg ccc acg gct ctc tcc atg ccg	624
Val Asn Cys Val Ser Pro Tyr Ala Val Pro Thr Ala Leu Ser Met Pro	
380 385 390 395 400 405 410	
tat ctg ccc cag ggc gag cgc aag gat gat gcc ctg aaa gac ttt ttc	672
Tyr Leu Pro Gln Gly Glu Arg Lys Asp Asp Ala Leu Lys Asp Phe Phe	
415 420 425 430 435 440 445	
gcc ttt gtt ggt ggt gaa gca aac ctg aaa ggt gtg gat ctg cta cct	720
Ala Phe Val Gly Gly Glu Ala Asn Leu Lys Gly Val Asp Leu Leu Pro	
450 455 460 465 470 475 480	

## PhoenixTemp32470.tmp.txt

aag	gat	gtt	gct	caa	gca	gtg	ctc	tac	ttg	gca	agc	gat	gaa	gcg	agg	768
Lys	Asp	Val	Ala	Gln	Ala	Val	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Arg	
				245					250					255		
tac	atc	agc	gcg	ctc	aac	ctc	atg	gtg	gat	ggg	ggc	ttt	acc	tct	gtg	816
Tyr	Ile	Ser	Ala	Leu	Asn	Leu	Met	Val	Asp	Gly	Gly	Phe	Thr	Ser	Val	
			260					265					270			
aat	cac	aat	ttg	aga	gca	ttt	gaa	gat	taa							846
Asn	His	Asn	Leu	Arg	Ala	Phe	Glu	Asp								
		275					280									

&lt;210&gt; 2914

&lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2914

Met	Ser	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ser	Ser	Pro	Ala	Pro	Arg	Leu	
1				5					10					15		
Glu	Ser	Lys	Val	Ala	Leu	Val	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			
Ala	Ile	Val	Arg	Leu	Phe	Arg	Glu	His	Gly	Ala	Lys	Val	Cys	Ile	Ala	
			35				40					45				
Asp	Ile	Gln	Asp	Glu	Ala	Gly	Gln	Lys	Leu	Arg	Asp	Ser	Leu	Gly	Gly	
	50					55				60						
Asp	Gln	Asp	Val	Leu	Phe	Val	His	Cys	Asp	Val	Ser	Val	Glu	Glu	Asp	
65					70				75						80	
Val	Ala	Arg	Ala	Val	Asp	Ala	Thr	Ala	Glu	Lys	Phe	Gly	Thr	Leu	Asp	
				85				90						95		
Ile	Met	Val	Asn	Asn	Ala	Gly	Phe	Thr	Gly	Gln	Lys	Ile	Thr	Asp	Ile	
			100					105					110			
Arg	Asn	Ile	Asp	Phe	Ser	Glu	Val	Arg	Lys	Val	Ile	Asp	Ile	Asn	Leu	
		115					120					125				
Val	Gly	Val	Phe	His	Gly	Met	Lys	His	Ala	Ala	Arg	Ile	Met	Ile	Pro	
	130				135				140							
Asn	Lys	Lys	Gly	Ser	Ile	Ile	Ser	Leu	Gly	Ser	Val	Ser	Ser	Val	Ile	
145					150				155						160	
Gly	Gly	Leu	Gly	Pro	His	Ser	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Val	
				165					170					175		
Gly	Leu	Thr	Lys	Asn	Val	Ala	Gly	Glu	Leu	Gly	Lys	His	Gly	Ile	Arg	
			180					185					190			
Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Pro	Thr	Ala	Leu	Ser	Met	Pro	
		195					200					205				
Tyr	Leu	Pro	Gln	Gly	Glu	Arg	Lys	Asp	Asp	Ala	Leu	Lys	Asp	Phe	Phe	
	210					215				220						
Ala	Phe	Val	Gly	Gly	Glu	Ala	Asn	Leu	Lys	Gly	Val	Asp	Leu	Leu	Pro	
225					230					235					240	
Lys	Asp	Val	Ala	Gln	Ala	Val	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Arg	
				245					250					255		
Tyr	Ile	Ser	Ala	Leu	Asn	Leu	Met	Val	Asp	Gly	Gly	Phe	Thr	Ser	Val	
			260					265					270			
Asn	His	Asn	Leu	Arg	Ala	Phe	Glu	Asp								
		275					280									

&lt;210&gt; 2915

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 2915

atg	gca	ggc	agc	tcc	cat	gtt	tct	gct	gat	gca	agg	aag	ctg	gtg	ggc	48
Met	Ala	Gly	Ser	Ser	His	Val	Ser	Ala	Asp	Ala	Arg	Lys	Leu	Val	Gly	
				5					10					15		
aag	gtg	gcg	gtg	atc	acc	ggc	ggc	gcg	agc	ggc	atc	ggc	gcg	tgc	acg	96
Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Cys	Thr	
			20					25					30			

## PhoenixTemp32470.tmp.txt

gcg	cgg	ctg	ttc	gtg	aag	cac	ggc	gcc	cgc	gtc	gtg	gtc	gcc	gac	atc	144
Ala	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Arg	Val	Val	Val	Ala	Asp	Ile	
		35					40					45				
cag	gac	gag	ctg	gga	gct	agc	ctc	gtc	cgc	gag	ctc	ggc	ccg	gac	gcc	192
Gln	Asp	Glu	Leu	Gly	Ala	Ser	Leu	Val	Ala	Glu	Leu	Gly	Pro	Asp	Ala	
	50					55					60					
tcc	agc	tac	gtg	cac	tgc	gac	gtc	acg	aac	gag	ggc	gac	gtc	gcc	gcc	240
Ser	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Glu	Gly	Asp	Val	Ala	Ala	
	65				70					75					80	
gcg	gtc	gac	cac	gcc	gtc	gcc	acg	ttc	ggg	aag	ctc	gac	gtc	atg	ttc	288
Ala	Val	Asp	His	Ala	Val	Ala	Thr	Phe	Gly	Lys	Leu	Asp	Val	Met	Phe	
			85						90					95		
aac	aac	gcc	ggc	gtc	acc	ggc	ccg	ccg	tgc	agg	atc	acc	gag	agc		336
Asn	Asn	Ala	Gly	Val	Thr	Gly	Pro	Pro	Cys	Phe	Arg	Ile	Thr	Glu	Ser	
			100					105				110				
acc	aag	gag	gac	ttc	gag	cgc	gtg	ctg	gcc	gtg	aac	ctg	atc	ggc	ccg	384
Thr	Lys	Glu	Asp	Phe	Glu	Arg	Val	Leu	Ala	Val	Asn	Leu	Ile	Gly	Pro	
		115					120					125				
ttc	ctc	ggc	acc	aag	cac	cgc	cgc	gtg	atg	cgc	ccg	gcg	cgc	cgt		432
Phe	Leu	Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Ala	Arg	Arg	
	130					135				140						
ggc	agc	atc	atc	tcg	acg	cgc	agc	ctg	tcg	tcg	tcg	gtg	tcc	ggc	acg	480
Gly	Ser	Ile	Ile	Ser	Thr	Ala	Ser	Leu	Ser	Ser	Ser	Val	Ser	Gly	Thr	
	145			150					155						160	
gcg	tcg	cac	cgc	tac	acg	acg	tcg	aag	cgc	gcc	ctg	gtg	ggg	ttc	acg	528
Ala	Ser	His	Ala	Tyr	Thr	Thr	Ser	Lys	Arg	Ala	Leu	Val	Gly	Phe	Thr	
			165					170						175		
gag	aac	cgc	gcc	ggc	gag	ttg	ggc	cgc	cac	ggg	atc	cgc	gtc	aac	tgc	576
Glu	Asn	Ala	Ala	Gly	Glu	Leu	Gly	Arg	His	Gly	Ile	Arg	Val	Asn	Cys	
			180					185					190			
gtt	tcc	ccc	gcc	cgc	gtc	gcc	acg	ccg	ctg	gct	agg	gct	gcc	atg	ggt	624
Val	Ser	Pro	Ala	Ala	Val	Ala	Thr	Pro	Leu	Ala	Arg	Ala	Ala	Met	Gly	
		195					200				205					
atg	gac	atg	gac	gac	gag	acc	att	gag	cgc	atc	atg	gag	aag	tcg	cgc	672
Met	Asp	Met	Asp	Asp	Glu	Thr	Ile	Glu	Ala	Ile	Met	Glu	Lys	Ser	Ala	
	210					215					220					
aac	cta	aag	ggc	gtt	gga	ctc	aag	gtg	gac	gac	atc	gcc	gcc	cgc	cgc	720
Asn	Leu	Lys	Gly	Val	Gly	Leu	Lys	Val	Asp	Asp	Ile	Ala	Ala	Ala	Ala	
	225			230					235					240		
ctg	ttc	ctc	gcc	agc	gac	gac	ggg	cgc	tac	gtg	agc	ggc	cag	aac	ctg	768
Leu	Phe	Leu	Ala	Ser	Asp	Asp	Gly	Arg	Tyr	Val	Ser	Gly	Gln	Asn	Leu	
				245					250					255		
cgc	gtc	gac	ggc	ggc	gtg	tcc	gtc	gtc	aac	tcg	agc	ttt	ggt	ttc	ttc	816
Arg	Val	Asp	Gly	Gly	Val	Ser	Val	Val	Asn	Ser	Ser	Phe	Gly	Phe	Phe	
			260				265						270			
agg	gac	tga														825
Arg	Asp															

&lt;210&gt; 2916

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2916

Met	Ala	Gly	Ser	Ser	His	Val	Ser	Ala	Asp	Ala	Arg	Lys	Leu	Val	Gly	
1				5					10					15		
Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Cys	Thr	
			20					25					30			
Ala	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Arg	Val	Val	Val	Ala	Asp	Ile	
		35					40					45				
Gln	Asp	Glu	Leu	Gly	Ala	Ser	Leu	Val	Ala	Glu	Leu	Gly	Pro	Asp	Ala	
	50					55					60					
Ser	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Glu	Gly	Asp	Val	Ala	Ala	
	65				70					75					80	
Ala	Val	Asp	His	Ala	Val	Ala	Thr	Phe	Gly	Lys	Leu	Asp	Val	Met	Phe	
				85					90					95		
Asn	Asn	Ala	Gly	Val	Thr	Gly	Pro	Pro	Cys	Phe	Arg	Ile	Thr	Glu	Ser	
			100					105					110			



## PhoenixTemp32470.tmp.txt

Thr Lys Glu Asp Phe Glu Arg Val Leu Ala Val Asn Leu Ile Gly Pro  
 115 120 125  
 Phe Leu Gly Thr Lys His Ala Arg Val Met Ala Pro Ala Arg Arg  
 130 135 140  
 Gly Ser Ile Ile Ser Thr Ala Ser Leu Ser Ser Val Ser Gly Thr  
 145 150 155 160  
 Ala Ser His Ala Tyr Thr Thr Ser Lys Arg Ala Leu Val Gly Phe Thr  
 165 170 175  
 Glu Asn Ala Ala Gly Glu Leu Gly Arg His Gly Ile Arg Val Asn Cys  
 180 185 190  
 Val Ser Pro Ala Ala Val Ala Thr Pro Leu Ala Arg Ala Ala Met Gly  
 195 200 205  
 Met Asp Met Asp Asp Glu Thr Ile Glu Ala Ile Met Glu Lys Ser Ala  
 210 215 220  
 Asn Leu Lys Gly Val Gly Leu Lys Val Asp Asp Ile Ala Ala Ala Ala  
 225 230 235 240  
 Leu Phe Leu Ala Ser Asp Asp Gly Arg Tyr Val Ser Gly Gln Asn Leu  
 245 250 255  
 Arg Val Asp Gly Val Ser Val Val Asn Ser Ser Phe Gly Phe Phe  
 260 265 270  
 Arg Asp

&lt;210&gt; 2917

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 2917

atg gca gct gga agc tcc cat gtt tct gct gat gca agg aag ctg gtg	48
Met Ala Ala Gly Ser Ser His Val Ser Ala Asp Ala Arg Lys Leu Val	
1 5 10 15	
ggc aag gtg gcg gtg atc acc ggc ggc gcg agc ggc atc ggc gcg tgc	96
Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Cys	
20 25 30	
acg gcg cgg ctg ttc gtg aag cac ggc gcc cgc gtc gtg gtc gcc gac	144
Thr Ala Arg Leu Phe Val Lys His Gly Ala Arg Val Val Val Ala Asp	
35 40 45	
atc cag gac gag ctg gga gct agc ctc gtc gcc gag ctc ggc ccg gac	192
Ile Gln Asp Glu Leu Gly Ala Ser Leu Val Ala Glu Leu Gly Pro Asp	
50 55 60	
gcg tcc agc tac gtg cac tgc gac gtc acg aac gag ggc gac gtc gcc	240
Ala Ser Ser Tyr Val His Cys Asp Val Thr Asn Glu Gly Asp Val Ala	
65 70 75 80	
gcc gcg gtc gac cac gcc gtc gcc agg ttc ggg aag ctc gac gtc atg	288
Ala Ala Val Asp His Ala Val Ala Arg Phe Gly Lys Leu Asp Val Met	
85 90 95	
ttc aac aac gcc ggc gtc agt ggc ccg ccg tgc ttc agg atg agc gag	336
Phe Asn Asn Ala Gly Val Ser Gly Pro Pro Cys Phe Arg Met Ser Glu	
100 105 110	
tgc acc aag gag gac ttc gag cgc gtg ctc gcc gtg aac ctg gtc ggc	384
Cys Thr Lys Glu Asp Phe Glu Arg Val Leu Ala Val Asn Leu Val Gly	
115 120 125	
ccg ttc ctg ggc acc aag cac gcg gcg ccg gtg atg gcg ccg gcg cgc	432
Pro Phe Leu Gly Thr Lys His Ala Ala Arg Val Met Ala Pro Ala Arg	
130 135 140	
cgc ggc agc atc atc tcg acg gcg agc ctg tcg tcg tcg gtg tcc ggc	480
Arg Gly Ser Ile Ile Ser Thr Ala Ser Leu Ser Ser Ser Val Ser Gly	
145 150 155 160	
gcg gcg tcg cac gcg tac acg acg tcg aag cac gcg ctg gtg ggg ttc	528
Ala Ala Ser His Ala Tyr Thr Thr Ser Lys His Ala Leu Val Gly Phe	
165 170 175	
acg gag aac gcg gcc ggc gag ctg ggc ccg cac ggg atc cgc gtc aac	576
Thr Glu Asn Ala Ala Gly Glu Leu Gly Arg His Gly Ile Arg Val Asn	
180 185 190	

## PhoenixTemp32470.tmp.txt

tgc	gtt	tcg	ccc	gcc	ggg	gtc	gcc	acg	ccg	ctg	gcg	agg	gct	gcc	atg	624
Cys	Val	Ser	Pro	Ala	Gly	Val	Ala	Thr	Pro	Leu	Ala	Arg	Ala	Ala	Met	
		195					200					205				
ggc	atg	gac	gac	gag	gca	atc	gag	gcg	atc	atg	gcg	aac	tcg	gcg	aac	672
Gly	Met	Asp	Asp	Glu	Ala	Ile	Glu	Ala	Ile	Met	Ala	Asn	Ser	Ala	Asn	
	210					215					220					
ctg	aag	ggc	gca	ggc	gca	ctc	aag	gcg	gac	gac	atc	gcc	gcc	gcg	gcg	720
Leu	Lys	Gly	Ala	Gly	Ala	Leu	Lys	Ala	Asp	Asp	Ile	Ala	Ala	Ala	Ala	
	225				230					235					240	
ctg	ttc	ctc	gcc	agc	gac	gac	ggc	cgg	tac	gtg	agc	ggc	cag	aac	ctg	768
Leu	Phe	Leu	Ala	Ser	Asp	Asp	Gly	Arg	Tyr	Val	Ser	Gly	Gln	Asn	Leu	
				245					250					255		
cgc	gtc	gac	ggc	ggc	ttg	tcc	gtc	gtc	aac	agc	agc	ttt	ggt	ttc	ttc	816
Arg	Val	Asp	Gly	Gly	Leu	Ser	Val	Val	Asn	Ser	Ser	Phe	Gly	Phe	Phe	
			260					265					270			
agg	gac	tga														825
Arg	Asp															

&lt;210&gt; 2918

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2918

Met	Ala	Ala	Gly	Ser	Ser	His	Val	Ser	Ala	Asp	Ala	Arg	Lys	Leu	Val	
1				5					10					15		
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Cys	
			20					25					30			
Thr	Ala	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Arg	Val	Val	Val	Ala	Asp	
		35					40					45				
Ile	Gln	Asp	Glu	Leu	Gly	Ala	Ser	Leu	Val	Ala	Glu	Leu	Gly	Pro	Asp	
	50				55						60					
Ala	Ser	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Glu	Gly	Asp	Val	Ala	
65					70					75					80	
Ala	Ala	Val	Asp	His	Ala	Val	Ala	Arg	Phe	Gly	Lys	Leu	Asp	Val	Met	
				85					90					95		
Phe	Asn	Asn	Ala	Gly	Val	Ser	Gly	Pro	Pro	Cys	Phe	Arg	Met	Ser	Glu	
			100					105					110			
Cys	Thr	Lys	Glu	Asp	Phe	Glu	Arg	Val	Leu	Ala	Val	Asn	Leu	Val	Gly	
		115					120					125				
Pro	Phe	Leu	Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Ala	Arg	
	130				135						140					
Arg	Gly	Ser	Ile	Ile	Ser	Thr	Ala	Ser	Leu	Ser	Ser	Ser	Val	Ser	Gly	
145					150					155					160	
Ala	Ala	Ser	His	Ala	Tyr	Thr	Thr	Ser	Lys	His	Ala	Leu	Val	Gly	Phe	
			165						170					175		
Thr	Glu	Asn	Ala	Ala	Gly	Glu	Leu	Gly	Arg	His	Gly	Ile	Arg	Val	Asn	
			180					185					190			
Cys	Val	Ser	Pro	Ala	Gly	Val	Ala	Thr	Pro	Leu	Ala	Arg	Ala	Ala	Met	
		195					200					205				
Gly	Met	Asp	Asp	Glu	Ala	Ile	Glu	Ala	Ile	Met	Ala	Asn	Ser	Ala	Asn	
	210					215					220					
Leu	Lys	Gly	Ala	Gly	Ala	Leu	Lys	Ala	Asp	Asp	Ile	Ala	Ala	Ala	Ala	
	225				230					235					240	
Leu	Phe	Leu	Ala	Ser	Asp	Asp	Gly	Arg	Tyr	Val	Ser	Gly	Gln	Asn	Leu	
				245					250					255		
Arg	Val	Asp	Gly	Gly	Leu	Ser	Val	Val	Asn	Ser	Ser	Phe	Gly	Phe	Phe	
			260					265					270			
Arg	Asp															

&lt;210&gt; 2919

&lt;211&gt; 828

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;400&gt; 2919

atg	gcg	ggt	agc	agc	tac	ggc	gac	gtt	cat	gag	tct	gca	aga	aag	ttg	48
Met	Ala	Gly	Ser	Ser	Tyr	Gly	Asp	Val	His	Glu	Ser	Ala	Arg	Lys	Leu	
1				5				10						15		
gtg	ggc	aag	gtg	gcg	ctg	atc	acc	ggc	ggc	gcg	agc	ggc	atc	ggg	gag	96
Val	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
			20					25					30			
tgc	acg	gcg	cgg	ctg	ttc	gtg	aag	cac	ggg	gcg	caa	gtc	gtg	gtc	gcc	144
Cys	Thr	Ala	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Gln	Val	Val	Val	Ala	
			35				40					45				
gac	atc	cag	gac	gag	gcg	ggg	gcg	cgg	ctg	tgc	gcc	gag	ctc	ggg	agc	192
Asp	Ile	Gln	Asp	Glu	Ala	Gly	Ala	Arg	Leu	Cys	Ala	Glu	Leu	Gly	Ser	
	50					55					60					
gcc	acc	gcc	agc	tac	gtg	cgg	tgc	gac	gtg	acg	agc	gag	gac	gac	gtc	240
Ala	Thr	Ala	Ser	Tyr	Val	Arg	Cys	Asp	Val	Thr	Ser	Glu	Asp	Asp	Val	
	65				70					75					80	
gcg	gcc	gcg	gtg	gac	cac	gcc	gtg	gcg	agg	tac	ggg	aag	ctg	gac	gtc	288
Ala	Ala	Ala	Val	Asp	His	Ala	Val	Ala	Arg	Tyr	Gly	Lys	Leu	Asp	Val	
				85					90					95		
atg	ttc	aac	aac	gcc	ggg	atc	ggc	ggc	gcg	gcg	tgc	cac	agc	atc	ctg	336
Met	Phe	Asn	Asn	Ala	Gly	Ile	Gly	Gly	Ala	Ala	Cys	His	Ser	Ile	Leu	
			100					105					110			
gag	agc	acc	aag	gcc	gac	ttt	gac	cgc	gtg	ctg	gcc	gtg	aac	ctg	acg	384
Glu	Ser	Thr	Lys	Ala	Asp	Phe	Asp	Arg	Val	Leu	Ala	Val	Asn	Leu	Thr	
			115				120					125				
ggc	ccg	ttc	ctg	ggc	acg	aag	cac	gcg	gcg	cgg	gtg	atg	gtg	gcc	gcg	432
Gly	Pro	Phe	Leu	Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Val	Ala	Ala	
	130					135					140					
ggg	cgc	ggc	ggg	tgc	atc	atc	ggg	acg	gcg	agc	ctc	gcg	tcg	gcg	gtg	480
Gly	Arg	Gly	Gly	Cys	Ile	Ile	Gly	Thr	Ala	Ser	Leu	Ala	Ser	Ala	Val	
	145			150						155					160	
gcc	ggc	acg	gcg	tcg	cac	gcg	tac	acg	tgc	gcc	aag	cgc	gcg	ctg	gtg	528
Ala	Gly	Thr	Ala	Ser	His	Ala	Tyr	Thr	Cys	Ala	Lys	Arg	Ala	Leu	Val	
				165					170					175		
ggg	ctg	acg	gag	aac	gcg	gcg	gcg	gag	ctg	ggc	cgc	cac	ggg	atc	cgc	576
Gly	Leu	Thr	Glu	Asn	Ala	Ala	Ala	Glu	Leu	Gly	Arg	His	Gly	Ile	Arg	
			180					185					190			
gtc	aac	tgc	gtg	tcg	ccc	gcc	gcg	gcg	acg	ccg	ctg	gcc	acg	ggg		624
Val	Asn	Cys	Val	Ser	Pro	Ala	Ala	Ala	Thr	Pro	Leu	Ala	Thr	Gly		
		195				200					205					
tac	gtg	ggc	ctg	gag	ggg	gag	gcg	ttc	gag	gcc	gcc	atg	gag	gcc	gtg	672
Tyr	Val	Gly	Leu	Glu	Gly	Glu	Ala	Phe	Glu	Ala	Ala	Met	Glu	Ala	Val	
	210				215					220						
gcc	aac	ctc	aag	ggc	gtg	cgc	ctc	cga	gtg	gag	gac	atc	gcc	gcc	gcc	720
Ala	Asn	Leu	Lys	Gly	Val	Arg	Leu	Arg	Val	Glu	Asp	Ile	Ala	Ala	Ala	
	225				230				235						240	
gtg	ctg	ttc	ctc	gcc	agc	gac	gac	gcg	cgc	tac	gtc	agc	ggc	cac	aac	768
Val	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Arg	Tyr	Val	Ser	Gly	His	Asn	
				245					250					255		
ctg	ctc	atc	gac	ggc	tgc	tcc	atc	gtc	aac	ccg	tcc	ttt	ggc	atc		816
Leu	Leu	Ile	Asp	Gly	Gly	Cys	Ser	Ile	Val	Asn	Pro	Ser	Phe	Gly	Ile	
			260					265					270			
ttc	aag	gac	tga													828
Phe	Lys	Asp														
		275														

&lt;210&gt; 2920

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2920

Met	Ala	Gly	Ser	Ser	Tyr	Gly	Asp	Val	His	Glu	Ser	Ala	Arg	Lys	Leu
1				5					10					15	
Val	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu
			20					25					30		
Cys	Thr	Ala	Arg	Leu	Phe	Val	Lys	His	Gly	Ala	Gln	Val	Val	Val	Ala

## PhoenixTemp32470.tmp.txt

35 40 45  
 Asp Ile Gln Asp Glu Ala Gly Ala Arg Leu Cys Ala Glu Leu Gly Ser  
 50 55 60  
 Ala Thr Ala Ser Tyr Val Arg Cys Asp Val Thr Ser Glu Asp Asp Val  
 65 70 75 80  
 Ala Ala Ala Val Asp His Ala Val Ala Arg Tyr Gly Lys Leu Asp Val  
 85 90 95  
 Met Phe Asn Asn Ala Gly Ile Gly Gly Ala Ala Cys His Ser Ile Leu  
 100 105 110  
 Glu Ser Thr Lys Ala Asp Phe Asp Arg Val Leu Ala Val Asn Leu Thr  
 115 120 125  
 Gly Pro Phe Leu Gly Thr Lys His Ala Ala Arg Val Met Val Ala Ala  
 130 135 140  
 Gly Arg Gly Gly Cys Ile Ile Gly Thr Ala Ser Leu Ala Ser Ala Val  
 145 150 155 160  
 Ala Gly Thr Ala Ser His Ala Tyr Thr Cys Ala Lys Arg Ala Leu Val  
 165 170 175  
 Gly Leu Thr Glu Asn Ala Ala Ala Glu Leu Gly Arg His Gly Ile Arg  
 180 185 190  
 Val Asn Cys Val Ser Pro Ala Ala Ala Ala Thr Pro Leu Ala Thr Gly  
 195 200 205  
 Tyr Val Gly Leu Glu Gly Glu Ala Phe Glu Ala Ala Met Glu Ala Val  
 210 215 220  
 Ala Asn Leu Lys Gly Val Arg Leu Arg Val Glu Asp Ile Ala Ala Ala  
 225 230 235 240  
 Val Leu Phe Leu Ala Ser Asp Asp Ala Arg Tyr Val Ser Gly His Asn  
 245 250 255  
 Leu Leu Ile Asp Gly Gly Cys Ser Ile Val Asn Pro Ser Phe Gly Ile  
 260 265 270  
 Phe Lys Asp  
 275

&lt;210&gt; 2921

&lt;211&gt; 903

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(903)

&lt;400&gt; 2921

atg ttg aga gca acg caa ctc gtt gtc agg agg gag aag agc gga gct	48
Met Leu Arg Ala Thr Gln Leu Val Val Arg Arg Glu Lys Ser Gly Ala	
1 5 10 15	
atg gga gct ctg tgt ggt ttg ggc agc ttc tcg act gcc tcg agt	96
Met Gly Ala Cys Gly Leu Gly Ser His Phe Ser Thr Ala Ser Ser	
20 25 30	
tgc cag agg tta ccc ggc aag gtc gcg gtg atc acc ggc gcg gcc agc	144
Cys Gln Arg Leu Pro Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser	
35 40 45	
ggc atc ggc aag gcg acg gcc ggc gag ttc atc cgc aac ggc gcc aag	192
Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Ile Arg Asn Gly Ala Lys	
50 55 60	
gtc atc ctg gcc gat ata cag gac gac ctc ggc cgc gcc gtc gcg gcc	240
Val Ile Leu Ala Asp Ile Gln Asp Asp Leu Gly Arg Ala Val Ala Ala	
65 70 75 80	
gag ctg ggc ccg gac gcc gcg tac acc cgc tgc gac gtc acc gac gag	288
Glu Leu Gly Pro Asp Ala Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu	
85 90 95	
gcg cag atc gcc gcg gcg gtg gac ctc gcc gtg gcg cgg cac ggc cgc	336
Ala Gln Ile Ala Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg	
100 105 110	
ctc gac atc ctc tac agc aac gcc ggc atc tcg ggc tcc tcg gcg ccc	384
Leu Asp Ile Leu Tyr Ser Asn Ala Gly Ile Ser Gly Ser Ser Ala Pro	
115 120 125	
gcg ccg ctc gcg tcg ctc gac ctc gcg gac ttc gac cgc gtc atg gcg	432
Ala Pro Leu Ala Ser Leu Asp Leu Ala Asp Phe Arg Val Met Ala	
130 135 140	

## PhoenixTemp32470.tmp.txt

gcc	aac	gcg	cgg	tcc	gcg	gtg	gcg	gcc	gtc	aag	cac	gcc	gcg	cgc	gtc	480
Ala	Asn	Ala	Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	
145					150					155					160	
atg	gtg	ccc	cgg	cgc	ggc	ggc	tgc	gtc	ctc	tgc	acg	ggg	agc	acc	acg	528
Met	Val	Pro	Arg	Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	
				165					170						175	
ggc	atg	ctc	ggc	ggg	ctc	gcg	gcg	ctg	ccg	tac	agc	ctc	tcg	aag	gcg	576
Gly	Met	Leu	Gly	Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	
			180					185					190			
gcg	gtg	gtg	ggc	gtg	gtg	cgg	ctg	gcg	gcg	gcc	gag	ctg	gcg	cgc	tcc	624
Ala	Val	Val	Gly	Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	
		195					200					205				
ggc	gtg	cgc	gtg	aac	gcc	atc	tcg	ccg	cac	gcc	atc	gcg	acg	ccg	ctg	672
Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	
	210					215					220					
ctg	gtc	cgg	tcg	ctg	gcg	agg	atg	aac	ccg	ggg	gtc	agc	gac	gag	cag	720
Leu	Val	Arg	Ser	Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	
225					230					235					240	
ctg	aag	gag	atg	gtg	gag	agg	ggg	atg	agc	gag	ctc	cat	ggc	gcg	gtg	768
Leu	Lys	Glu	Met	Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	
				245					250					255		
ctg	gag	ctg	gag	gac	gtg	gcg	agg	gcg	gcc	gtc	tac	ctg	gcg	tcc	gac	816
Leu	Glu	Leu	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	
			260					265					270			
gag	gcc	aag	ttc	gtc	acc	ggg	cag	aac	cac	gtc	atc	gac	ggc	ggg	ttc	864
Glu	Ala	Lys	Phe	Val	Thr	Gly	Gln	Asn	His	Val	Ile	Asp	Gly	Gly	Phe	
		275					280					285				
acg	gtc	ggg	aag	ccg	atg	gac	atg	cgg	gtt	cca	cgt	tga				903
Thr	Val	Gly	Lys	Pro	Met	Asp	Met	Arg	Val	Pro	Arg					
	290					295					300					

&lt;210&gt; 2922

&lt;211&gt; 300

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2922

Met	Leu	Arg	Ala	Thr	Gln	Leu	Val	Val	Arg	Arg	Glu	Lys	Ser	Gly	Ala	
1				5					10					15		
Met	Gly	Ala	Leu	Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	
			20					25					30			
Cys	Gln	Arg	Leu	Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	
		35					40					45				
Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	
	50					55				60						
Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	
65					70					75					80	
Glu	Leu	Gly	Pro	Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	
			85						90					95		
Ala	Gln	Ile	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	
		100						105					110			
Leu	Asp	Ile	Leu	Tyr	Ser	Asn	Ala	Gly	Ile	Ser	Gly	Ser	Ser	Ala	Pro	
		115					120					125				
Ala	Pro	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	
	130					135					140					
Ala	Asn	Ala	Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	
145					150					155					160	
Met	Val	Pro	Arg	Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	
				165					170						175	
Gly	Met	Leu	Gly	Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	
			180					185					190			
Ala	Val	Val	Gly	Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	
		195					200					205				
Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	
	210					215					220					
Leu	Val	Arg	Ser	Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	
225					230					235					240	
Leu	Lys	Glu	Met	Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	
				245					250					255		

## PhoenixTemp32470.tmp.txt

Leu Glu Leu Glu Asp Val Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp  
 260 270  
 Glu Ala Lys Phe Val Thr Gly Gln Asn His Val Ile Asp Gly Gly Phe  
 275 285  
 Thr Val Gly Lys Pro Met Asp Met Arg Val Pro Arg  
 290 295 300

&lt;210&gt; 2923

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;400&gt; 2923

atg	gag	aag	aag	aag	cag	aag	aga	cag	atc	aaa	gat	caa	gat	gtt	cag	48
Met	Glu	Lys	Lys	Lys	Gln	Lys	Arg	Gln	Ile	Lys	Asp	Gln	Asp	Val	Gln	
1				5				10						15		
agc	att	gca	gat	cgt	cct	cag	ggg	tgt	gct	ggg	aag	gtg	gcg	gtg	atc	96
Ser	Ile	Ala	Asp	Arg	Pro	Gln	Gly	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	
			20				25					30				
acc	ggc	gcg	gcg	agc	ggc	atc	ggc	aag	gcg	acc	gcg	gcg	gag	ttc	gtc	144
Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Val	
		35				40					45					
agg	aat	ggc	gcc	aag	gtc	atc	ctc	gcc	gac	gtc	cag	gac	gac	gtc	ggc	192
Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Val	Gln	Asp	Asp	Val	Gly	
	50				55			60								
cgc	gcc	gtc	gcc	tcg	gag	ctc	ggc	gcg	gac	gcg	gcg	tcg	tac	acc	cgc	240
Arg	Ala	Val	Ala	Ser	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	Arg	
	65				70			75							80	
tgc	gac	gtc	acc	gac	gag	gcg	cag	gtc	gcg	gcg	gcc	gtg	gac	ctc	gcc	288
Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	
				85				90						95		
gtg	gcg	cgg	cac	ggg	cag	ctc	gac	gtc	atg	gtc	aac	aac	gcc	ggc	atc	336
Val	Ala	Arg	His	Gly	Gln	Leu	Asp	Val	Met	Val	Asn	Asn	Ala	Gly	Ile	
			100				105						110			
gtg	ggc	tcc	ctg	tcg	cgc	ccc	ccg	ctc	ggc	gcc	ctc	gac	ctc	gcc	gac	384
Val	Gly	Ser	Leu	Ser	Arg	Pro	Pro	Leu	Gly	Ala	Leu	Asp	Leu	Ala	Asp	
			115				120					125				
ttc	gac	gcc	gtc	atg	gcg	gtg	aac	acg	cgc	ggc	gtc	ctc	gcg	ggc	gtc	432
Phe	Asp	Ala	Val	Met	Ala	Val	Asn	Thr	Arg	Gly	Val	Leu	Ala	Gly	Val	
	130				135						140					
aag	cac	gcc	gcg	cgc	gtc	atg	gcg	ccg	cgc	cgc	ggc	agg	atc	atc		480
Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Arg	Gly	Ser	Ile	Ile	
	145				150				155					160		
tgc	gtg	gcg	agc	gtc	gcc	ggg	gtg	ctc	ggc	agg	gtg	acc	ccg	cac	ccg	528
Cys	Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Ser	Val	Thr	Pro	His	Pro	
				165				170						175		
tac	agc	gtg	tcc	aag	gcc	gcc	gtg	ctc	ggc	gcg	gtc	cgc	gcc	gcc	gcc	576
Tyr	Ser	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Ala	Val	Arg	Ala	Ala	Ala	
			180				185					190				
ggc	gag	atg	gcg	cgc	tcc	ggc	gtg	cgc	gtg	aac	gcc	atc	tcc	ccc	aac	624
Gly	Glu	Met	Ala	Arg	Ser	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	Asn	
		195				200					205					
tac	atc	ccc	acc	ccg	ctg	gtg	atg	cgc	atc	atg	gcg	gag	tgg	tac	ccc	672
Tyr	Ile	Pro	Thr	Pro	Leu	Val	Met	Arg	Ile	Met	Ala	Glu	Trp	Tyr	Pro	
	210				215						220					
ggg	gcg	agc	gcc	gac	gag	cac	cgc	cgc	gtc	gtg	gag	cgg	gag	atc	aac	720
Gly	Ala	Ser	Ala	Asp	Glu	His	Arg	Arg	Val	Val	Glu	Arg	Glu	Ile	Asn	
	225			230					235					240		
gag	atg	gag	ggc	gcg	acg	ctg	gag	ccc	gag	gac	atc	gcg	agg	gcg	gcg	768
Glu	Met	Glu	Gly	Ala	Thr	Leu	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Ala	Ala	
				245				250						255		
gtg	tac	ctg	gcc	tcc	gac	gag	gcc	aag	tac	gtg	aac	ggc	cac	aac	ctc	816
Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	
			260				265					270				
gtc	gtc	gac	ggc	ggg	tac	acc	gtc	ggc	aag	gcg	ccc	aac	ctg	ccg	gcg	864

Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu Pro Ala  
 275 280 285  
 ccg ccg caa taa  
 Pro Pro Gln  
 290

876

<210> 2924  
 <211> 291  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 2924  
 Met Glu Lys Lys Lys Gln Lys Arg Gln Ile Lys Asp Gln Asp Val Gln  
 1 5 10 15  
 Ser Ile Ala Asp Arg Pro Gln Gly Leu Ala Gly Lys Val Ala Val Ile  
 20 25 30  
 Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Val  
 35 40 45  
 Arg Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp Val Gly  
 50 55 60  
 Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ala Ser Tyr Thr Arg  
 65 70 75 80  
 Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala  
 85 90 95  
 Val Ala Arg His Gly Gln Leu Asp Val Met Val Asn Asn Ala Gly Ile  
 100 105 110  
 Val Gly Ser Leu Ser Arg Pro Pro Leu Gly Ala Leu Asp Leu Ala Asp  
 115 120 125  
 Phe Asp Ala Val Met Ala Val Asn Thr Arg Gly Val Leu Ala Gly Val  
 130 135 140  
 Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Arg Gly Ser Ile Ile  
 145 150 155 160  
 Cys Val Ala Ser Val Ala Gly Val Leu Gly Ser Val Thr Pro His Pro  
 165 170 175  
 Tyr Ser Val Ser Lys Ala Ala Val Leu Gly Ala Val Arg Ala Ala Ala  
 180 185 190  
 Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser Pro Asn  
 195 200 205  
 Tyr Ile Pro Thr Pro Leu Val Met Arg Ile Met Ala Glu Trp Tyr Pro  
 210 215 220  
 Gly Ala Ser Ala Asp Glu His Arg Arg Val Val Glu Arg Glu Ile Asn  
 225 230 235 240  
 Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg Ala Ala  
 245 250 255  
 Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu  
 260 265 270  
 Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu Pro Ala  
 275 280 285  
 Pro Pro Gln  
 290

<210> 2925  
 <211> 909  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(909)

<400> 2925  
 atg ttc aca gcg atg cat cgc atc ctc agc agg ggg agg agg aca cct  
 Met Phe Thr Ala Met His Arg Ile Leu Ser Arg Gly Arg Arg Thr Pro  
 1 5 10 15  
 gca gct tcg tct tcc tcc gtc act gcc ttc gcc acc gcc tcc gat tca  
 Ala Ala Ser Ser Ser Ser Val Thr Ala Phe Ala Thr Ala Ser Asp Ser  
 20 25 30  
 cag agg ttg gcc ggg aag gtc gcc gtc atc acc ggc ggc gcc agc ggc  
 Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly  
 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995





## PhoenixTemp32470.tmp.txt

100  
 Leu Asp Val Val Phe Asn Asn Ala Gly Ile Pro Gly Asp Leu Thr Pro  
 115  
 Thr Pro Val Gly Ala Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala  
 130  
 Val Asn Thr Arg Ala Val Val Ala Gly Val Lys His Ala Ala Arg Val  
 145  
 Met Val Pro Arg Arg Arg Gly Ser Ile Ile Cys Thr Ala Ser Thr Ala  
 165  
 Gly Val Ile Gly Gly Val Ala Val Pro His Tyr Ser Val Ser Lys Ala  
 180  
 Ala Val Leu Gly Leu Val Arg Ala Val Ala Gly Glu Met Ala Arg Ser  
 195  
 Gly Val Arg Val Asn Ala Ile Ser Pro Asn Tyr Ile Trp Thr Pro Met  
 210  
 Ala Ala Val Ala Phe Ala Arg Trp Tyr Pro Ser Arg Ser Ala Asp Asp  
 225  
 His Arg Arg Ile Val Glu Asn Asp Ile Asn Glu Met Asp Gly Val Thr  
 245  
 Leu Glu Ala Glu Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp  
 260  
 Glu Ala Lys Tyr Val Asn Gly His Asn Leu Val Val Asp Gly Gly Tyr  
 275  
 Thr Val Gly Lys Val Pro Asn Met Pro Val Pro Asp Gly His  
 290  
 295  
 300

&lt;210&gt; 2927

&lt;211&gt; 903

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(903)

&lt;400&gt; 2927

atg	ttc	aga	gct	gcg	cag	ctc	ctc	ctc	agg	gag	acg	aac	aga	gct	ctt	48
Met	Phe	Arg	Ala	Ala	Gln	Leu	Leu	Leu	Arg	Glu	Thr	Asn	Arg	Ala	Leu	
1				5				10						15		
ggg	gca	gca	act	tcg	cct	gca	ggc	ttc	gtc	agt	ggc	ttc	tcc	acg	gct	96
Gly	Ala	Ala	Thr	Ser	Pro	Ala	Gly	Phe	Val	Ser	Gly	Phe	Ser	Thr	Ala	
			20					25					30			
tcc	aac	tct	gcg	cag	agg	ttg	gct	ggc	aag	gtg	gct	gtc	ata	acc	ggt	144
Ser	Asn	Ser	Ala	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	
		35				40					45					
gga	gct	agc	ggc	atc	ggc	aaa	gcg	aca	gcc	aag	gag	ttc	atc	gag	aat	192
Gly	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Glu	Asn	
	50					55					60					
ggc	gcc	aag	gtc	atc	atg	gcc	gat	gtc	cag	gat	gac	ctc	ggc	cac	tcc	240
Gly	Ala	Lys	Val	Ile	Met	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Ser	
	65				70				75						80	
acc	gca	gcg	gag	ctc	ggc	ccg	gac	gcc	tcg	tac	acg	cgc	tgc	gac	gtc	288
Thr	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Ser	Tyr	Thr	Arg	Cys	Asp	Val	
			85						90					95		
acc	gac	gag	gca	cag	gtc	gcg	gcg	gcc	gtc	gac	ctc	gcc	gtg	aag	cgg	336
Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Lys	Arg	
			100					105					110			
cac	ggc	cac	ctc	gac	atc	ctc	tac	aac	gcc	ggt	gtc	atg	ggc	gcc		384
His	Gly	His	Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Val	Met	Gly	Ala	
	115					120					125					
atg	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ctc	gcc	aac	ttc	gac	cgc	432
Met	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asn	Phe	Asp	Arg	
	130					135					140					
atg	atg	gcg	atc	aac	gcc	cgg	gcg	gcg	ctt	gtc	ggc	atc	aag	cac	gcc	480
Met	Met	Ala	Ile	Asn	Ala	Arg	Ala	Ala	Leu	Val	Gly	Ile	Lys	His	Ala	
	145				150					155					160	
gcg	cgc	gtc	atg	tcg	ccc	cgc	cgc	agc	ggc	gtc	atc	ctc	tgc	acg	gcc	528
Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ser	Gly	Val	Ile	Leu	Cys	Thr	Ala	
				165					170					175		

## PhoenixTemp32470.tmp.txt

agc	gac	acg	ggc	gtc	atg	ccc	atg	ccc	aac	atc	gcc	tgt	tac	gcc	gtc	576
Ser	Asp	Thr	Gly	Val	Met	Pro	Met	Pro	Asn	Ile	Ala	Leu	Tyr	Ala	Val	
			180					185					190			
tcc	aag	gca	acc	acc	atc	gcc	atc	gtg	cgc	gcc	gcg	gag	ccg	ctg		624
Ser	Lys	Ala	Thr	Thr	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	Leu	
		195					200					205				
tcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	cac	ggc	acc	agg	672
Ser	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Gly	Thr	Arg	
	210					215					220					
acg	ccg	atg	gcg	atg	cac	gtg	tta	tct	cag	atg	tac	ccc	ggc	gta	agc	720
Thr	Pro	Met	Ala	Met	His	Val	Leu	Ser	Gln	Met	Tyr	Pro	Gly	Val	Ser	
225					230					235					240	
aaa	gat	gat	ttg	gag	aag	atg	gcg	gac	gcc	atg	gac	gcc	gga	gag		768
Lys	Asp	Asp	Leu	Glu	Lys	Met	Ala	Asp	Ala	Ala	Met	Asp	Ala	Gly	Glu	
				245					250				255			
gtg	atg	gaa	cct	aag	tac	gtc	gct	agg	gcg	gcg	ctg	tat	ttg	gct	tcg	816
Val	Met	Glu	Pro	Lys	Tyr	Val	Ala	Arg	Ala	Ala	Leu	Tyr	Leu	Ala	Ser	
			260					265					270			
gac	gag	gct	aag	tat	gtc	aac	ggg	cac	aac	ctc	gtc	gtt	gac	ggc	ggc	864
Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	
		275					280					285				
ttc	acg	tcg	cac	aaa	gga	tcc	gac	aca	cgt	ttg	aat	tag				903
Phe	Thr	Ser	His	Lys	Gly	Ser	Asp	Thr	Arg	Leu	Asn					
	290					295					300					

&lt;210&gt; 2928

&lt;211&gt; 300

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2928

Met	Phe	Arg	Ala	Ala	Gln	Leu	Leu	Leu	Arg	Glu	Thr	Asn	Arg	Ala	Leu	
1				5					10					15		
Gly	Ala	Ala	Thr	Ser	Pro	Ala	Gly	Phe	Val	Ser	Gly	Phe	Ser	Thr	Ala	
			20					25					30			
Ser	Asn	Ser	Ala	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	
		35					40					45				
Gly	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Glu	Asn	
		50				55					60					
Gly	Ala	Lys	Val	Ile	Met	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Ser	
65					70					75					80	
Thr	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Ser	Tyr	Thr	Arg	Cys	Asp	Val	
			85						90					95		
Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Lys	Arg	
		100						105					110			
His	Gly	His	Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Val	Met	Gly	Ala	
		115					120					125				
Met	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asn	Phe	Asp	Arg	
	130					135					140					
Met	Met	Ala	Ile	Asn	Ala	Arg	Ala	Ala	Leu	Val	Gly	Ile	Lys	His	Ala	
145					150				155						160	
Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ser	Gly	Val	Ile	Leu	Cys	Thr	Ala	
			165						170					175		
Ser	Asp	Thr	Gly	Val	Met	Pro	Met	Pro	Asn	Ile	Ala	Leu	Tyr	Ala	Val	
		180						185					190			
Ser	Lys	Ala	Thr	Thr	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	Leu	
		195					200					205				
Ser	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Gly	Thr	Arg	
	210					215					220					
Thr	Pro	Met	Ala	Met	His	Val	Leu	Ser	Gln	Met	Tyr	Pro	Gly	Val	Ser	
225					230					235					240	
Lys	Asp	Asp	Leu	Glu	Lys	Met	Ala	Asp	Ala	Ala	Met	Asp	Ala	Gly	Glu	
				245					250					255		
Val	Met	Glu	Pro	Lys	Tyr	Val	Ala	Arg	Ala	Ala	Leu	Tyr	Leu	Ala	Ser	
			260					265					270			
Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	
		275					280					285				
Phe	Thr	Ser	His	Lys	Gly	Ser	Asp	Thr	Arg	Leu	Asn					
	290					295					300					

## PhoenixTemp32470.tmp.txt

<210> 2929  
 <211> 813  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(813)

<400> 2929  
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 1 5 10 15  
 acc ggt gga gcc agt ggc atc gga aag gtt aca gca aag gag ttc atc 96  
 Thr Gly Gly Ala Ser Gly Ile Gly Lys Val Thr Ala Lys Glu Phe Ile  
 20 25 30  
 aag aat ggt gcc aag gtc atc atc gcc gat gtc cag gac gag ctc ggc 144  
 Lys Asn Gly Ala Lys Val Ile Ile Ala Asp Val Gln Asp Glu Leu Gly  
 35 40 45  
 cac tct gcg gcg gcc aag ctc ggc ccg gac gcc tcg tac acg cac tgc 192  
 His Ser Ala Ala Ala Lys Leu Gly Pro Asp Ala Ser Tyr Thr His Cys  
 50 55 60  
 gat gtc acc gac gag gcg cag gtc gag gcg gcc gtg gac ctc gct gtg 240  
 Asp Val Thr Asp Glu Ala Gln Val Glu Ala Val Asp Leu Ala Val  
 65 70 75 80  
 agg ctc cac ggc cac ctc gac atc ctc tac aac aac gct ggc atc atc 288  
 Arg Leu His Gly His Leu Asp Ile Leu Tyr Asn Asn Ala Gly Ile Ile  
 85 90 95  
 ggc gcc atg ccg cag gac gac atg gcg tcc gtc gac ctc gcc aac ttc 336  
 Gly Ala Met Pro Gln Asp Asp Met Ala Ser Val Asp Leu Ala Asn Phe  
 100 105 110  
 gac cgc atg atg gcg atc aac gcc ccg gcg gcg ctc gtc ggc atc aag 384  
 Asp Arg Met Met Ala Ile Asn Ala Arg Ala Ala Leu Val Gly Ile Lys  
 115 120 125  
 cac gcc gcg gcg gtc atg gcg ccg cgc cgc agc ggc gtc atc ctc tgc 432  
 His Ala Ala Arg Val Met Ala Pro Arg Arg Ser Gly Val Ile Leu Cys  
 130 135 140  
 acg gcg agc gac gcg ggc gtc atg ccc atc ccg aac atc gcc atg tac 480  
 Thr Ala Ser Asp Ala Gly Val Met Pro Ile Pro Asn Ile Ala Met Tyr  
 145 150 155 160  
 tcc gtc tcc aag gcg acc acc atc gcc atc gtg cgc gcc gcg gcg gag 528  
 Ser Val Ser Lys Ala Thr Thr Ile Ala Ile Val Arg Ala Ala Ala Glu  
 165 170 175  
 ccg ctg tcg cgc cac ggc ctg ccg gtg aac gcc atc tcg ccg acg ggc 576  
 Pro Leu Ser Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Thr Gly  
 180 185 190  
 acc agg acg ccg atg atg atg cat atc atc tcc cag atg acc ccc ggc 624  
 Thr Arg Thr Pro Met Met Met His Ile Ile Ser Gln Met Thr Pro Gly  
 195 200 205  
 gtg ggc gag gac gac ctg gag ccg atg gcg gac gcc gcc atc agc gcc 672  
 Val Gly Glu Asp Asp Leu Glu Arg Met Ala Asp Ala Ala Ile Ser Ala  
 210 215 220  
 ggc gtg gcc atc gag ccg gag tac gtc gcg agg gcg gcg gtg tac ctc 720  
 Gly Val Ala Ile Glu Pro Glu Tyr Val Ala Arg Ala Ala Val Tyr Leu  
 225 230 235 240  
 gcc tcc gac gag gcc aag tac gtc aac ggc cat aac ctc gtc gtc gac 768  
 Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu Val Val Asp  
 245 250 255  
 ggc ggc ttc aca acg cat aaa gga gac gac aat cgc atg aat taa 813  
 Gly Gly Phe Thr Thr His Lys Gly Asp Asp Asn Arg Met Asn  
 260 265 270

<210> 2930  
 <211> 270  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 2930

## PhoenixTemp32470.tmp.txt

Met Asp Ser Asn Ser Ile Gln Arg Leu Ala Gly Lys Val Ala Ile Ile  
 1 Thr Gly Gly Ala Ser Gly Ile Gly Lys Val Thr Ala Lys Glu Phe Ile  
 20 Lys Asn Gly Ala Lys Val Ile Ile Ala Asp Val Gln Asp Glu Leu Gly  
 35 His Ser Ala Ala Ala Lys Leu Gly Pro Asp Ala Ser Tyr Thr His Cys  
 50 Asp Val Thr Asp Glu Ala Gln Val Glu Ala Ala Val Asp Leu Ala Val  
 65 Arg Leu His Gly His Leu Asp Ile Leu Tyr Asn Asn Ala Gly Ile Ile  
 85 Gly Ala Met Pro Gln Asp Asp Met Ala Ser Val Asp Leu Ala Asn Phe  
 100 Asp Arg Met Met Ala Ile Asn Ala Arg Ala Ala Leu Val Gly Ile Lys  
 115 His Ala Ala Arg Val Met Ala Pro Arg Arg Ser Gly Val Ile Leu Cys  
 130 Thr Ala Ser Asp Ala Gly Val Met Pro Ile Pro Asn Ile Ala Met Tyr  
 145 Ser Val Ser Lys Ala Thr Thr Ile Ala Ile Val Arg Ala Ala Ala Glu  
 165 Pro Leu Ser Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Thr Gly  
 180 Thr Arg Thr Pro Met Met Met His Ile Ile Ser Gln Met Thr Pro Gly  
 195 Val Gly Glu Asp Asp Leu Glu Arg Met Ala Asp Ala Ala Ile Ser Ala  
 210 Gly Val Ala Ile Glu Pro Glu Tyr Val Ala Arg Ala Ala Val Tyr Leu  
 225 Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu Val Val Asp  
 245 Gly Gly Phe Thr Thr His Lys Gly Asp Asp Asn Arg Met Asn  
 260 270

&lt;210&gt; 2931

&lt;211&gt; 906

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(906)

&lt;400&gt; 2931

atg tgg gag acg aag aga gtg gtt ggc cca agg atg acg acg atg acg	48
Met Trp Glu Thr Lys Arg Val Val Gly Pro Arg Met Thr Thr Met Thr	
1 5 10 15	
tcg act tcg cct gaa agt cta atc gcc ggt gga ttc tcc acg gcg gcg	96
Ser Thr Ser Pro Glu Ser Leu Ile Ala Gly Gly Phe Ser Thr Ala Ala	
20 25 30	
agc tcc cac cag agg ttg gcc ggc aag gtg gcc gtc atc acc ggc gcc	144
Ser Ser His Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Ala	
35 40 45	
gcc agc ggc atc ggc aag gcg acc gcc gcg gag ttc atc agg aac ggc	192
Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Ile Arg Asn Gly	
50 55 60	
gcc aag gtg atc atc acc gac gtc aac gac gac ctc ggc cac gcc gcg	240
Ala Lys Val Ile Ile Thr Asp Val Asn Asp Asp Leu Gly His Ala Ala	
65 70 75 80	
gcg gcg gag ctc ggc ccg gac gcc acg tac gcg cgc tgc gac gtc gcc	288
Ala Ala Glu Leu Gly Pro Asp Ala Thr Tyr Ala Arg Cys Asp Val Ala	
85 90 95	
gac gag gcg cag gtc gcc gcc gcc gtc gac ctc gcc gtg gcg cgc cac	336
Asp Glu Ala Gln Val Ala Ala Ala Val Asp Leu Ala Val Ala Arg His	
100 105 110	
ggc cgc ctc gac gtc atg cac aac aac gcc gcc atc ccg ggg agg ttc	384
Gly Arg Leu Asp Val Met His Asn Asn Ala Ala Ile Pro Gly Arg Phe	
115 120 125	

## PhoenixTemp32470.tmp.txt

ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ctc	gcc	gac	ttc	gac	gcc	atg	432
Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asp	Phe	Asp	Ala	Met	
	130					135					140					
atg	gcg	gtg	aac	gcc	cgc	gcg	tcg	ctc	gcc	ggc	atc	aag	cac	gcc	gcg	480
Met	Ala	Val	Asn	Ala	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	
145					150					155					160	
cgc	gtc	atg	gcg	ccc	cgc	cgc	gcc	ggc	gtc	atc	ctc	tgc	acg	gcc	agc	528
Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	Ala	Ser	
				165					170					175		
gcc	gtc	ggc	gtc	ctc	ccg	ctc	ccg	gcg	gtc	gcc	acg	cac	tcc	atc	acc	576
Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	Ile	Thr	
			180					185					190			
aag	gcc	acc	atc	atc	gcc	atc	gtg	cgc	gca	gcg	gag	gag	ccc	ctg	gcg	624
Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	Leu	Ala	
		195					200					205				
cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	ggc	gcc	gtc	agg	acg	672
Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	Arg	Thr	
	210					215					220					
ccg	gtc	ctg	cag	ggc	aag	gtg	tcg	gtg	atg	tcg	gcg	tcg	tct	cct	acc	720
Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	Pro	Thr	
225					230					235					240	
atg	agc	gac	gag	ctg	aag	cag	atg	atc	gac	gtc	gac	gcg	aac	gac	atg	768
Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	Asp	Met	
				245					250					255		
atg	atg	ggg	ccg	gag	gag	gtg	gcc	atg	gcg	gcg	gtg	tac	ctc	gcc	tcc	816
Met	Met	Gly	Pro	Glu	Glu	Val	Ala	Met	Ala	Ala	Val	Tyr	Leu	Ala	Ser	
			260				265						270			
gac	gag	gcc	agg	tac	gtg	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggg	864
Asp	Glu	Ala	Arg	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	
		275					280						285			
tac	acc	gtg	cac	aaa	gga	gct	gac	aca	ccg	gcg	gcg	cgt	tga			906
Tyr	Thr	Val	His	Lys	Gly	Ala	Asp	Thr	Pro	Ala	Ala	Arg				
	290					295					300					

&lt;210&gt; 2932

&lt;211&gt; 301

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2932

Met	Trp	Glu	Thr	Lys	Arg	Val	Val	Gly	Pro	Arg	Met	Thr	Thr	Met	Thr	
1				5					10					15		
Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	Ala	Ala	
			20					25					30			
Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	
		35					40					45				
Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	
	50					55				60						
Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	Ala	Ala	
65					70				75					80		
Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	Val	Ala	
			85						90					95		
Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	
			100					105					110			
Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	Arg	Phe	
		115					120					125				
Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asp	Phe	Asp	Ala	Met	
	130					135					140					
Met	Ala	Val	Asn	Ala	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	
145					150					155					160	
Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	Ala	Ser	
			165						170					175		
Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	Ile	Thr	
			180					185					190			
Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	Leu	Ala	
		195					200					205				
Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	Arg	Thr	
	210					215					220					
Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	Pro	Thr	

## PhoenixTemp32470.tmp.txt

225 Met Ser Asp Glu Leu 230 Lys Gln Met Ile Asp 235 Val Asp Ala Asn Asp 240 Met  
 Met Met Gly Pro Glu Glu Val Ala Met Ala Val Tyr Leu Ala Ser  
 Asp Glu Ala Arg Tyr Val Thr Gly His Asn Leu Val Val Asp Gly Gly  
 Tyr Thr Val His Lys Gly Ala Asp Thr Pro Ala Ala Arg  
 290 295 300

&lt;210&gt; 2933

&lt;211&gt; 888

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(888)

&lt;400&gt; 2933

atg	atg	cag	aga	aca	atg	cag	ctc	gtt	ctc	agg	gtg	aag	aga	tcg	tcg	48
Met	Met	Gln	Arg	Thr	Met	Gln	Leu	Val	Leu	Arg	Val	Lys	Arg	Ser	Ser	
1				5				10						15		
ggt	tta	cta	cac	caa	ttc	tcc	act	gcg	gcg	aac	tcg	cag	agg	ttg	gcc	96
Gly	Leu	Leu	His	Gln	Phe	Ser	Thr	Ala	Ala	Asn	Ser	Gln	Arg	Leu	Ala	
			20					25					30			
ggg	aag	gtg	gcc	gtc	atc	acc	ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	144
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	
		35					40					45				
tcg	gcg	aag	gag	ttc	atc	ggc	aat	ggc	gcc	aag	gtt	ata	ctc	gcc	gac	192
Ser	Ala	Lys	Glu	Phe	Ile	Gly	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	
	50					55					60					
gtc	cag	gac	gac	ctc	ggc	cgc	gcc	gtc	gcc	gcc	gag	ctc	ggc	cct	ggc	240
Val	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Gly	
65				70				75						80		
gcg	acg	tac	acg	cgg	tgc	gac	gtc	acg	gac	gag	gcg	cag	gtc	gcc	gcg	288
Ala	Thr	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	
			85			90								95		
gcg	gtg	gac	ctc	gcc	gtg	gcg	cgc	cac	ggg	gcg	ctc	gac	gtg	ttc	tac	336
Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Ala	Leu	Asp	Val	Phe	Tyr	
			100					105					110			
agc	aac	gcc	ggc	gtc	ctg	ggc	tcc	atc	gcg	ccg	gcg	ccg	ctc	gcc	tcc	384
Ser	Asn	Ala	Gly	Val	Leu	Gly	Ser	Ile	Ala	Pro	Ala	Pro	Leu	Ala	Ser	
		115				120						125				
ctg	gac	ctg	ggc	gag	ttc	gac	cgc	gtc	atg	gcc	gtg	aac	gcc	cgc	gcc	432
Leu	Asp	Leu	Gly	Glu	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	
	130					135				140						
gcc	gtc	gcc	gcc	gcc	aag	cac	gcg	gcg	cgc	gcc	atg	gtg	ccg	cgc	cgg	480
Ala	Val	Ala	Ala	Ala	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	
145				150				155							160	
agc	ggg	tgc	gtc	ctc	ttc	acg	ggg	agc	gtg	tcg	ggc	gtg	gtg	ggc	ggc	528
Ser	Gly	Cys	Val	Leu	Phe	Thr	Gly	Ser	Val	Ser	Gly	Val	Val	Gly	Gly	
			165					170						175		
acg	ggg	ccg	acg	tcg	tac	ggc	gtg	tcg	aag	gcg	gcc	gtg	ctg	ggc	gtg	576
Thr	Gly	Pro	Thr	Ser	Tyr	Gly	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Val	
			180					185					190			
gtg	cgc	gcc	gtg	gcc	ggg	gag	ctg	gcg	cgc	cac	ggc	gtg	cgg	gcg	aac	624
Val	Arg	Ala	Val	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Ala	Asn	
		195				200						205				
gcc	gtc	tcg	ccg	tgc	ggc	gtc	gcg	acg	ccg	ctg	tcc	atg	gtg	cag	gtc	672
Ala	Val	Ser	Pro	Cys	Gly	Val	Ala	Thr	Pro	Leu	Ser	Met	Val	Gln	Val	
	210				215						220					
ctt	gag	gcc	tac	ccc	ggg	atg	agc	ttc	gag	gag	ctc	aag	aac	gcc	atg	720
Leu	Glu	Ala	Tyr	Pro	Gly	Met	Ser	Phe	Glu	Glu	Leu	Lys	Asn	Ala	Met	
225				230				235							240	
gcg	gcg	tcc	atg	gag	cag	atg	gaa	gct	ggc	ccg	ttg	atc	gac	ccc	gag	768
Ala	Ala	Ser	Met	Glu	Gln	Met	Glu	Ala	Gly	Pro	Leu	Ile	Asp	Pro	Glu	
			245					250						255		
gac	gtg	gcg	agg	gcg	gcc	gtc	ttc	ctg	gcg	tcc	gac	gag	gcc	agg	tac	816

PhoenixTemp32470.tmp.txt

Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr		
			260					265					270				
atc	aac	ggc	cat	aac	ctc	gtc	gtc	gac	ggc	ggc	ttc	acg	gtg	ggg	aag	864	
Ile	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys		
		275					280					285					
ctg	ctc	aaa	atc	ccc	aag	gag	tag									888	
Leu	Leu	Lys	Ile	Pro	Lys	Glu											
	290					295											

<210> 2934  
 <211> 295  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 2934

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1				5					10					15			
Gly	Leu	Leu	His	Gln	Phe	Ser	Thr	Ala	Ala	Asn	Ser	Gln	Arg	Leu	Ala		
			20					25					30				
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala		
		35					40					45					
Ser	Ala	Lys	Glu	Phe	Ile	Gly	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp		
	50					55					60						
Val	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Gly		
65					70				75						80		
Ala	Thr	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala		
			85					90					95				
Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Ala	Leu	Asp	Val	Phe	Tyr		
			100					105					110				
Ser	Asn	Ala	Gly	Val	Leu	Gly	Ser	Ile	Ala	Pro	Ala	Pro	Leu	Ala	Ser		
	115						120					125					
Leu	Asp	Leu	Gly	Glu	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala		
	130					135					140						
Ala	Val	Ala	Ala	Ala	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg		
145					150				155						160		
Ser	Gly	Cys	Val	Leu	Phe	Thr	Gly	Ser	Val	Ser	Gly	Val	Val	Gly	Gly		
			165						170					175			
Thr	Gly	Pro	Thr	Ser	Tyr	Gly	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Val		
			180					185					190				
Val	Arg	Ala	Val	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Ala	Asn		
	195						200					205					
Ala	Val	Ser	Pro	Cys	Gly	Val	Ala	Thr	Pro	Leu	Ser	Met	Val	Gln	Val		
	210					215					220						
Leu	Glu	Ala	Tyr	Pro	Gly	Met	Ser	Phe	Glu	Glu	Leu	Lys	Asn	Ala	Met		
225					230					235					240		
Ala	Ala	Ser	Met	Glu	Gln	Met	Glu	Ala	Gly	Pro	Leu	Ile	Asp	Pro	Glu		
			245						250				255				
Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr		
			260					265					270				
Ile	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys		
	275						280					285					
Leu	Leu	Lys	Ile	Pro	Lys	Glu											
	290					295											

<210> 2935  
 <211> 1026  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(1026)

<400> 2935

atg	gcc	aac	gtc	gtt	ttc	ttt	ctc	ccg	gcg	cca	tct	ccg	caa	cca	tgc	48	
Met	Ala	Asn	Val	Val	Phe	Phe	Leu	Pro	Ala	Pro	Ser	Pro	Gln	Pro	Cys		
1				5					10					15			
cga	gct	acc	gtg	ctt	ctg	ggc	ctg	att	gaa	cga	gga	ctg	gag	acc	gga	96	
Arg	Ala	Thr	Val	Leu	Leu	Gly	Leu	Ile	Glu	Arg	Gly	Leu	Glu	Thr	Gly		

## PhoenixTemp32470.tmp.txt

20																	25																	30																	
aaa	tgg	gcg	ctg	tcg	tca	gat	gct	gga	aga	aac	ggc	gat	tct	gcg	ttc		144																																		
Lys	Trp	Ala	Leu	Ser	Ser	Asp	Ala	Gly	Arg	Asn	Gly	Asp	Ser	Ala	Phe																																				
35																	40																	45																	
tac	ttc	gct	atg	acg	ggc	aag	agc	aga	gca	ggg	ttg	acg	atg	ttg	act		192																																		
Tyr	Phe	Ala	Met	Thr	Gly	Lys	Ser	Arg	Ala	Gly	Leu	Thr	Met	Leu	Thr																																				
50																	55																	60																	
gga	ttc	gtc	aac	cgc	ttc	tct	tcc	gtg	tca	aga	ccc	gaa	agg	ttg	gct		240																																		
Gly	Phe	Val	Asn	Arg	Phe	Ser	Ser	Val	Ser	Arg	Pro	Glu	Arg	Leu	Ala																																				
65																	70																	75																	
gga	aag	gtg	gcc	gtg	atc	acc	ggc	ggc	gca	agc	ggc	atc	ggc	gag	gcg		288																																		
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala																																				
85																	90																	95																	
acg	gcc	aag	gag	ttc	atc	cgc	aat	ggc	gcc	aaa	gtc	atc	atc	gcc	gac		336																																		
Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp																																				
100																	105																	110																	
gta	caa	gac	gat	ctc	ggc	cac	gcc	gtc	gcc	gcc	gag	ctc	ggc	cca	gat		384																																		
Val	Gln	Asp	Asp	Leu	Gly	His	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Asp																																				
115																	120																	125																	
gcg	gcc	tac	acc	cgc	tgc	gat	gtc	acc	gac	gag	gcg	cag	atc	gcg	gcg		432																																		
Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	Ala																																				
130																	140																	150																	
gcc	gtg	gac	ctc	gcc	gtg	gcg	tgc	cac	ggc	cgc	ctc	gac	gtc	ctg	cac		480																																		
Ala	Val	Asp	Leu	Ala	Val	Ala	Cys	His	Gly	Arg	Leu	Asp	Val	Leu	His																																				
145																	155																	160																	
aac	aac	gcc	ggg	gtc	acg	tgc	tcc	tac	gtg	ggg	ccc	ctc	gcc	tcc	cta		528																																		
Asn	Asn	Ala	Gly	Val	Thr	Cys	Ser	Tyr	Val	Gly	Pro	Leu	Ala	Ser	Leu																																				
165																	170																	175																	
gac	ctc	gcc	gac	ttc	gac	cgc	gtc	atg	gcg	gtg	aac	gcc	cgg	gcg	gtg		576																																		
Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	Val																																				
180																	185																	190																	
ctc	gcc	ggc	atc	aag	cac	gcg	gcg	gtg	atg	gcg	cca	cgg	cgc	gcc		624																																			
Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala																																				
195																	200																	205																	
ggc	tcc	atc	ctc	tgc	acg	gcc	agc	gtg	gcg	ggc	gtg	atc	ggc	agc	gat		672																																		
Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	Val	Ile	Gly	Ser	Asp																																				
210																	215																	220																	
gtc	ccc	cac	gcg	tac	agc	gtc	tcc	aag	gcg	gca	gcc	atc	ggc	gtg	gtg		720																																		
Val	Pro	His	Ala	Tyr	Ser	Val	Ser	Lys	Ala	Ala	Ala	Ile	Gly	Val	Val																																				
225																	230																	235																	
agg	tcc	gcc	gcc	ggc	gag	ctg	gcg	cgc	cac	ggc	gtg	cgg	ctg	aac	gcc		768																																		
Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Leu	Asn	Ala																																				
245																	250																	255																	
atc	tcg	ccg	cac	ggc	atc	gcg	acg	ccg	ctg	gcg	atg	cgc	ggg	ttc	ggc		816																																		
Ile	Ser	Pro	His	Gly																																															

<211> 341

<212> PRT

<213> Ory:

1000

Met Ala Asn

Page 2705



## PhoenixTemp32470.tmp.txt

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1          5          10          15
Arg Ala Thr Val Leu Leu Gly Leu Ile Glu Arg Gly Leu Glu Thr Gly
20
Lys Trp Ala Leu Ser Ser Asp Ala Gly Arg Asn Gly Asp Ser Ala Phe
35
Tyr Phe Ala Met Thr Gly Lys Ser Arg Ala Gly Leu Thr Met Leu Thr
50
Gly Phe Val Asn Arg Phe Ser Ser Val Ser Arg Pro Glu Arg Leu Ala
65
Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala
80
Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Ile Ala Asp
100
Val Gln Asp Asp Leu Gly His Ala Val Ala Ala Glu Leu Gly Pro Asp
115
Ala Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Ile Ala Ala
130
Ala Val Asp Leu Ala Val Ala Cys His Gly Arg Leu Asp Val Leu His
145
Asn Asn Ala Gly Val Thr Cys Ser Tyr Val Gly Pro Leu Ala Ser Leu
160
Asp Leu Ala Asp Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala Val
175
Leu Ala Gly Ile Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Ala
190
Gly Ser Ile Leu Cys Thr Ala Ser Val Ala Gly Val Ile Gly Ser Asp
205
Val Pro His Ala Tyr Ser Val Ser Lys Ala Ala Ala Ile Gly Val Val
220
Arg Ser Ala Ala Gly Glu Leu Ala Arg His Gly Val Arg Leu Asn Ala
235
Ile Ser Pro His Gly Ile Ala Thr Pro Leu Ala Met Arg Gly Phe Gly
250
Asp Val Leu Ala Trp Ala Asp Ala Glu Arg Leu Lys Arg Val Ile Glu
265
Glu Asp Met Asn Glu Leu Glu Gly Ala Lys Leu Glu Ala Glu Asp Ile
280
Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Ile Thr
300
Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Arg Leu
315
Asn Phe Ala His Ala
330
340

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&lt;210&gt; 2937

&lt;211&gt; 897

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(897)

&lt;400&gt; 2937

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atg tac agc gcc att cac ctc gtt cag agg ggc aag aac aga gca ggg      48
Met Tyr Ser Ala Ile His Leu Val Gln Arg Gly Lys Asn Arg Ala Gly
1          5
ttg acg atg ttg act gga ttc gtc aac agt ttc tcc tct gtg tca aga      96
Leu Thr Met Leu Thr Gly Phe Val Asn Ser Phe Ser Ser Val Ser Arg
20
ccc gaa agg ttg gct gga aag gtg gcc gtg atc acc ggt ggc gca agc      144
Pro Glu Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Ala Ser
35
ggc atc ggc gag gcg acg gcc aag gag ttc atc cgc aat ggc gcc aag      192
Gly Ile Gly Glu Ala Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys
50
gtc atc atc gcc gac gta caa gac gat ctc ggc cac acc gtc gct gcc      240
Val Ile Ile Ala Asp Val Gln Asp Asp Leu Gly His Thr Val Ala Ala
65          70          80

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## PhoenixTemp32470.tmp.txt

gag	ctc	ggc	ccg	ggc	tcg	gcc	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	288
Glu	Leu	Gly	Pro	Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	
				85					90					95		
gcg	cag	atc	gcg	gcg	acc	gtg	gac	ctt	gcc	gtg	gcg	cgc	cac	ggc	cac	336
Ala	Gln	Ile	Ala	Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	
			100					105					110			
ctt	gac	atc	ctg	tac	aac	aac	gcc	ggg	atc	aca	agc	tcc	tct	gtg	ggg	384
Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	
		115					120					125				
cac	ctt	gcc	tcc	ctc	gac	ctc	gcc	gac	ttc	gac	cgc	gtc	atg	gcg	gtg	432
His	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	
	130					135					140					
aac	gcc	cgg	gcg	gtg	ctc	gcc	ggc	atc	aag	cac	gcc	gcg	gcg	gtg	atg	480
Asn	Ala	Arg	Ala	Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	
145					150					155					160	
gca	cca	cga	cgc	acc	ggc	tcc	atc	ctc	tgc	acg	gcc	agc	gtg	gcg	ggc	528
Ala	Pro	Arg	Arg	Thr	Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	
				165					170					175		
atg	atg	ggc	ggc	gag	atg	ccc	cac	gcg	tac	gac	tcc	aag	gcg	gcg	gag	576
Met	Met	Gly	Gly	Glu	Met	Pro	His	Ala	Tyr	Asn	Val	Ser	Lys	Ala	Ala	
			180					185				190				
gtc	ata	ggt	gtg	gtg	cgg	tcc	gcc	gcc	ggc	gag	ctg	gca	cgc	cac	ggc	624
Val	Ile	Gly	Val	Val	Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	
		195					200					205				
gtg	cgg	ctg	aac	gcg	atc	tcg	ccg	ctc	ggc	atc	gcg	acg	cca	ctg	gcg	672
Val	Arg	Leu	Asn	Ala	Ile	Ser	Pro	Leu	Gly	Ile	Ala	Thr	Pro	Leu	Ala	
	210					215					220					
atg	cgc	ggg	ttc	ggc	gac	atg	ctg	gcg	tgg	gcg	gac	gcc	gag	cgg	gtg	720
Met	Arg	Gly	Phe	Gly	Asp	Met	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Val	
225					230				235						240	
agg	cgg	ctc	atc	gag	gag	gac	atg	aac	gag	cta	gag	ggc	gcg	acg	ctg	768
Arg	Arg	Leu	Ile	Glu	Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Thr	Leu	
				245					250					255		
gag	gcg	gag	gac	atc	gcg	agg	gcg	gcg	gtg	tac	ctc	gcc	tcc	gac	gag	816
Glu	Ala	Glu	Asp	Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	
			260				265						270			
gcc	aag	tac	gtc	acc	ggg	cat	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acc	864
Ala	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	
		275					280					285				
gtc	ggg	aag	cgg	ctc	aac	gtg	gcg	cgt	gct	tga						897
Val	Gly	Lys	Arg	Leu	Asn	Val	Ala	Arg	Ala							
	290					295										

&lt;210&gt; 2938

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2938

Met	Tyr	Ser	Ala	Ile	His	Leu	Val	Gln	Arg	Gly	Lys	Asn	Arg	Ala	Gly	
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Leu	Thr	Met	Leu	Thr	Gly	Phe	Val	Asn	Ser	Phe	Ser	Ser	Val	Ser	Arg	
			20					25					30			
Pro	Glu	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	
		35					40					45				
Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	
	50					55				60						
Val	Ile	Ile	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Ala	
65				70						75					80	
Glu	Leu	Gly	Pro	Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	
			85						90					95		
Ala	Gln	Ile	Ala	Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	
			100				105					110				
Leu	Asp	Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	
		115					120					125				
His	Leu	Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	
	130					135					140					
Asn	Ala	Arg	Ala	Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	
145					150					155					160	

## PhoenixTemp32470.tmp.txt

Ala Pro Arg Arg Thr Gly Ser Ile Leu Cys Thr Ala Ser Val Ala Gly  
 165 170 175  
 Met Met Gly Gly Glu Met Pro His Ala Tyr Asn Val Ser Lys Ala Ala  
 180 185 190  
 Val Ile Gly Val Val Arg Ser Ala Ala Gly Glu Leu Ala Arg His Gly  
 195 200 205  
 Val Arg Leu Asn Ala Ile Ser Pro Leu Gly Ile Ala Thr Pro Leu Ala  
 210 215 220  
 Met Arg Gly Phe Gly Asp Met Leu Ala Trp Ala Asp Ala Glu Arg Val  
 225 230 235 240  
 Arg Arg Leu Ile Glu Glu Asp Met Asn Glu Leu Glu Gly Ala Thr Leu  
 245 250 255  
 Glu Ala Glu Asp Ile Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu  
 260 265 270  
 Ala Lys Tyr Val Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr  
 275 280 285  
 Val Gly Lys Arg Leu Asn Val Ala Arg Ala  
 290 295

&lt;210&gt; 2939

&lt;211&gt; 924

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(924)

&lt;400&gt; 2939

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Met	Met	Ser	Val	Ala	Ala	Asn	Lys	Ile	Leu	Arg	Gly	Arg	Ser	Arg	Gly	
1				5					10					15		
gtt	cgt	ccg	atg	ttc	tct	tcc	ggc	tgt	gcc	gat	cgc	ctc	ttc	tcc	tcg	96
Val	Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	
			20					25					30			
tcg	gcg	tca	agc	tcc	aaa	agg	tgt	gaa	ggg	aaa	gtg	gcc	gtg	atc	acc	144
Ser	Ala	Ser	Ser	Ser	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	
		35					40					45				
ggc	gcg	gtg	ggc	ggc	atc	ggc	gag	gcc	acg	gcg	aag	gag	ttc	gtc	agg	192
Gly	Ala	Val	Gly	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	
	50					55					60					
aat	ggc	gcc	aag	gtc	atc	ctc	gcc	gat	atc	cag	gac	gac	ctt	ggc	cgc	240
Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	
	65			70					75					80		
gcc	atg	gcc	gcc	gag	ctc	ggc	gcg	gac	gcc	gcg	tcg	tac	acg	cac	tgc	288
Ala	Met	Ala	Ala	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	
				85				90						95		
gac	gtc	acc	gtc	gag	gcg	gac	gtc	gcc	gcg	gcc	gtc	gac	ctc	gcc	gtg	336
Asp	Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	
			100				105					110				
gcg	cgc	cac	ggc	cgc	ctc	gac	gtc	tac	agc	aac	gcc	ggc	atc	gcc		384
Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala		
		115					120				125					
ggc	gcc	gcg	gcc	ccg	ccc	acg	ctc	tcg	gcg	ctc	gac	ctc	gac	gac	tac	432
Gly	Ala	Ala	Ala	Pro	Pro	Thr	Leu	Ser	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	
	130					135					140					
gac	cgc	gtc	atg	gcc	gtc	aac	gcc	cgg	tcc	atg	gtg	gcc	tgc	ctc	aag	480
Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	
	145				150					155				160		
cac	gcg	gcg	cgc	gtc	atg	tcc	ccg	cgc	cgc	gcc	ggc	tgc	atc	ctc	tgc	528
His	Ala	Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	
				165					170					175		
acg	gcg	agc	tcc	acg	gcg	ctg	atc	ggc	gac	ctg	gcg	gcg	ccg	gcg	tac	576
Thr	Ala	Ser	Ser	Thr	Ala	Leu	Ile	Gly	Asp	Leu	Ala	Ala	Pro	Ala	Tyr	
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tgc	atc	tcg	aag	gcg	gcc	gtc	gtc	gga	atg	gtg	cgg	acg	gtg	gca	agg	624
Cys	Ile	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	
		195				200						205				
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## PhoenixTemp32470.tmp.txt

Gln	Leu	Ala	Arg	Asp	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ile	
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Ile	Pro	Thr	Ala	Leu	Val	Thr	Arg	Val	Ile	Ser	Glu	Thr	Phe	Pro	Ala	
225					230					235					240	
gcc	acc	gcg	gag	gag	gtg	agg	agg	atg	gtg	acg	agg	gac	atg	cag	gag	768
Ala	Thr	Ala	Glu	Glu	Val	Arg	Arg	Met	Val	Thr	Arg	Asp	Met	Gln	Glu	
				245					250					255		
ctg	gaa	ggg	gcg	tcg	ctg	gag	gtg	gag	gac	gtg	gcg	agg	gcg	gcc	gtc	816
Leu	Glu	Gly	Ala	Ser	Leu	Glu	Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	
			260					265					270			
ttc	ttg	gcg	tcc	gac	gag	gcc	aag	ttc	gtc	acc	ggc	cac	aac	ctc	gtc	864
Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	
			275				280					285				
gtc	gat	ggc	ggc	ttc	acg	gtc	ggc	aag	gac	ctc	ctc	cgg	aat	cca	ccg	912
Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	
	290					295					300					
agc	ttt	gct	tga													924
Ser	Phe	Ala														
305																

&lt;210&gt; 2940

&lt;211&gt; 307

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2940

Met	Met	Ser	Val	Ala	Ala	Asn	Lys	Ile	Leu	Arg	Gly	Arg	Ser	Arg	Gly	
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Val	Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	
			20					25					30			
Ser	Ala	Ser	Ser	Ser	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	
		35					40					45				
Gly	Ala	Val	Gly	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	
	50					55					60					
Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	
65					70					75					80	
Ala	Met	Ala	Ala	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	
				85					90					95		
Asp	Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	
			100					105					110			
Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala	
		115					120					125				
Gly	Ala	Ala	Ala	Pro	Pro	Thr	Leu	Ser	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	
	130					135					140					
Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	
145					150					155					160	
His	Ala	Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	
				165					170					175		
Thr	Ala	Ser	Ser	Thr	Ala	Leu	Ile	Gly	Asp	Leu	Ala	Ala	Pro	Ala	Tyr	
			180					185					190			
Cys	Ile	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	
		195					200					205				
Gln	Leu	Ala	Arg	Asp	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ile	
	210					215					220					
Ile	Pro	Thr	Ala	Leu	Val	Thr	Arg	Val	Ile	Ser	Glu	Thr	Phe	Pro	Ala	
225					230					235					240	
Ala	Thr	Ala	Glu	Glu	Val	Arg	Arg	Met	Val	Thr	Arg	Asp	Met	Gln	Glu	
				245					250					255		
Leu	Glu	Gly	Ala	Ser	Leu	Glu	Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	
			260					265					270			
Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	
			275				280					285				
Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	
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Ser	Phe	Ala														
305																

&lt;210&gt; 2941

&lt;211&gt; 933

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(933)

&lt;400&gt; 2941

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ggg aag agc ata gct gct cag gtg ttc aac ggc ttg gcc gat cgc	96
Gly Lys Ser Ile Ala Ala Gln Val Phe Ser Asn Gly Leu Ala Asp Arg	
20 25 30	
ctc ttc tcc tcg tcg tca agc tcc aga aag ttg gat ggc aaa gtg gcc	144
Leu Phe Ser Ser Ser Ser Ser Ser Arg Lys Leu Asp Gly Lys Val Ala	
35 40 45	
gtg atc acc ggc gcg gcg agc ggc atc ggc gag gcc acg gcg aag gag	192
Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala Thr Ala Lys Glu	
50 55 60	
ttc gtc agg aac ggc gcc aag gtt atc att gcc gat atc cag gac gac	240
Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp Ile Gln Asp Asp	
65 70 75 80	
ctc ggc cgc gcc gtg gcc gcc gag ctc ggc gcc gac gcc gcg tcg tac	288
Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Ala Asp Ala Ala Ser Tyr	
85 90 95	
acg cac tgc gac gtc acc gtc gag aag gat gtc gcc gcg gcc gtc gac	336
Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala Ala Val Asp	
100 105 110	
ctc gcc gtg gcg cgc cac ggc cgc ctc gac gtc gtc tac agc aac gcc	384
Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala	
115 120 125	
ggc gtc ata gga gca ccg gct ccg gcc tcg ctc gcg gcg ctc gac ctc	432
Gly Val Ile Gly Ala Pro Ala Pro Ala Ser Leu Ala Ala Leu Asp Leu	
130 135 140	
gac gag tac gac cgc gtc atg gcc gtc aac gcc ccg tcg atg ttg gcg	480
Asp Glu Tyr Asp Arg Val Met Ala Val Asn Ala Arg Ser Met Leu Ala	
145 150 155 160	
tgc gtc aag cac gcg gcg cgc gtc atg gcg ccg cgc cgc gcc ggc tgc	528
Cys Val Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Cys	
165 170 175	
atc ctc tgc acg gcc agc tcg gcg gcg gtg ctc ggc ggc gtg gcg tcg	576
Ile Leu Cys Thr Ala Ser Ser Ala Ala Val Leu Gly Gly Val Ala Ser	
180 185 190	
ccg gtg tac tcc atg tcg aag gcg gcc atc gtc ggc atg gtg cgc gcg	624
Pro Val Tyr Ser Met Ser Lys Ala Ala Ile Val Gly Met Val Arg Ala	
195 200 205	
gtg gcg agg cag ctg gcg cgc gac ggc gtg ccg gtg aac gcc atc tcg	672
Val Ala Arg Gln Leu Ala Arg Asp Gly Val Arg Val Asn Ala Ile Ser	
210 215 220	
ccg cac gcc atc ccg acg atg gcg cta ggc atc atc gcc gag acg	720
Pro His Ala Ile Pro Thr Pro Met Ala Leu Gly Ile Ile Ala Glu Thr	
225 230 235 240	
ttc ccg gcg gcc acc gcg gag gag gtg agg agg atg gtg acg agg gag	768
Phe Pro Ala Ala Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Glu	
245 250 255	
atg cag gag ctg gaa ggg aca tcg ctg gag gtg gaa gac gtg gcg agg	816
Met Gln Glu Leu Glu Gly Thr Ser Leu Glu Val Glu Asp Val Ala Arg	
260 265 270	
gcg gcc gtg ttc ttg gcg tcc gac gag gcc aag ttc gtc acc ggc cac	864
Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His	
275 280 285	
aac ctc gtc gtc gac ggc ggc ttc acg gtg ggc aaa gac ctc ctc cga	912
Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg	
290 295 300	
aat cca ccg agc tct act tga	933
Asn Pro Pro Ser Ser Thr	
305 310	

<210> 2942  
 <211> 310  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 2942  
 Met Ala Lys Trp Ala Ala Gln Pro Gly Thr Ala Cys Ser Thr Ala Gly  
 1 5 10 15  
 Gly Lys Ser Ile Ala Ala Gln Val Phe Ser Asn Gly Leu Ala Asp Arg  
 20 25 30  
 Leu Phe Ser Ser Ser Ser Ser Arg Lys Leu Asp Gly Lys Val Ala  
 35 40 45  
 Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala Thr Ala Lys Glu  
 50 55 60  
 Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp Ile Gln Asp Asp  
 65 70 75 80  
 Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Ala Asp Ala Ala Ser Tyr  
 85 90 95  
 Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala Ala Ala Val Asp  
 100 105 110  
 Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val Tyr Ser Asn Ala  
 115 120 125  
 Gly Val Ile Gly Ala Pro Ala Pro Ala Ser Leu Ala Ala Leu Asp Leu  
 130 135 140  
 Asp Glu Tyr Asp Arg Val Met Ala Val Asn Ala Arg Ser Met Leu Ala  
 145 150 155 160  
 Cys Val Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Cys  
 165 170 175  
 Ile Leu Cys Thr Ala Ser Ser Ala Ala Val Leu Gly Gly Val Ala Ser  
 180 185 190  
 Pro Val Tyr Ser Met Ser Lys Ala Ala Ile Val Gly Met Val Arg Ala  
 195 200 205  
 Val Ala Arg Gln Leu Ala Arg Asp Gly Val Arg Val Asn Ala Ile Ser  
 210 215 220  
 Pro His Ala Ile Pro Thr Pro Met Ala Leu Gly Ile Ile Ala Glu Thr  
 225 230 235 240  
 Phe Pro Ala Ala Thr Ala Glu Glu Val Arg Arg Met Val Thr Arg Glu  
 245 250 255  
 Met Gln Glu Leu Glu Gly Thr Ser Leu Glu Val Glu Asp Val Ala Arg  
 260 265 270  
 Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe Val Thr Gly His  
 275 280 285  
 Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Asp Leu Leu Arg  
 290 295 300  
 Asn Pro Pro Ser Ser Thr  
 305 310

<210> 2943  
 <211> 795  
 <212> DNA  
 <213> Oryza sativa Japonica Group

<220>  
 <221> CDS  
 <222> (1)..(795)

<400> 2943  
 atg gcg gcc gcc gca gct cgc agc atc ccg gac cgg tgg acc ctc gcc 48  
 Met Ala Ala Ala Ala Ala Arg Ser Ile Pro Asp Arg Trp Thr Leu Ala  
 1 5 10 15  
 ggc gcg acg gcg ctc gtc acc ggc ggc agc aaa ggc atc ggg cat gcg 96  
 Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala  
 20 25 30  
 ata gtg gag gag ctc gcc gga ttc ggg gcg cgc gtg cac acg tgc gcc 144  
 Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala  
 35 40 45  
 cgg aac gcg gcg gag ctg gag gcg agc cgg cgg cgg tgg gag gag cgg 192  
 Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg

## PhoenixTemp32470.tmp.txt

50	55	60		
ggg ctc cgc gtc acc gcc acc gtc tgc gac gtc tcc gcg cgc ggc gac				240
Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp				
65	70	75	80	
cgg gag agg ctg gtc gcc gcc gcg gcg ggg gag ttc ggc ggc agg ctg				288
Arg Glu Arg Leu Val Ala Ala Ala Ala Gly Glu Phe Gly Gly Arg Leu				
85	90	95		
gac atc ctc gtc aac gtc ggc cgg acc atg ttc cgg gcg gcg gcg				336
Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala				
100	105	110		
gcg tgc tcc ggc gag gac ttc gcc ctg ctc gtg gcc acc aac ctc gag				384
Ala Cys Ser Gly Glu Asp Phe Ala Leu Leu Val Ala Thr Asn Leu Glu				
115	120	125		
tcc tgc ttc cac ctc tcc cag ctc gcg cac ccg ctc ctg ctc gcc gcc				432
Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Ala Ala				
130	135	140		
ggc ggc gga ggc ggc tgc gtg gtg aac atc tcc tcc gtc gcc ggc acc				480
Gly Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser Val Ala Gly Thr				
145	150	155	160	
gtc ggc ata ccg gcg ctg gcc gtg tac tcc atg acc aag ggc ggc atg				528
Val Gly Ile Pro Ala Leu Ala Val Tyr Ser Met Thr Lys Gly Gly Met				
165	170	175		
aac cag ctc acc ccg agc ctc gcc gcc gag tgg gcc ggc gac ggc ata				576
Asn Gln Leu Thr Arg Ser Leu Ala Ala Glu Trp Ala Gly Asp Gly Ile				
180	185	190		
cgt gtc aac tgc gtc gcg ccg gga ggc gtc aag act gac atc tgc caa				624
Arg Val Asn Cys Val Ala Pro Gly Gly Val Lys Thr Asp Ile Cys Gln				
195	200	205		
gac gag acg ata gac ccg gag ctg atc aag agc gag atg gac ccg ctg				672
Asp Glu Thr Ile Asp Pro Glu Leu Ile Lys Ser Glu Met Asp Arg Leu				
210	215	220		
ccg atg ccg ccg ctg gcg gag ccg gag gag gtg gcg gcg acg gtg gcg				720
Pro Met Arg Arg Leu Ala Glu Pro Glu Glu Val Ala Ala Thr Val Ala				
225	230	235	240	
ttc ctc tgc atg ccg gcg gcc tcc tac atc acc ggc cag gtc gtc ggc				768
Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Val Gly				
245	250	255		
gtc gac ggc gga cgc acc att acc tag				795
Val Asp Gly Gly Arg Thr Ile Thr				
260				

&lt;210&gt; 2944

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa Japonica Group

&lt;400&gt; 2944

Met Ala Ala Ala Ala Ala Arg Ser Ile Pro Asp Arg Trp Thr Leu Ala	
1	5
Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala	
	20
Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala	
	35
Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg	
	50
Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp	
65	70
Arg Glu Arg Leu Val Ala Ala Ala Ala Gly Glu Phe Gly Gly Arg Leu	
	85
Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala	
	100
Ala Cys Ser Gly Glu Asp Phe Ala Leu Leu Val Ala Thr Asn Leu Glu	
	115
Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Ala Ala	
	130
Gly Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser Val Ala Gly Thr	
145	150
Val Gly Ile Pro Ala Leu Ala Val Tyr Ser Met Thr Lys Gly Gly Met	
	165
	170
	175

## PhoenixTemp32470.tmp.txt

Asn Gln Leu Thr Arg Ser Leu Ala Ala Glu Trp Ala Gly Asp Gly Ile  
 180 185 190  
 Arg Val Asn Cys Val Ala Pro Gly Gly Val Lys Thr Asp Ile Cys Gln  
 195 200 205  
 Asp Glu Thr Ile Asp Pro Glu Leu Ile Lys Ser Glu Met Asp Arg Leu  
 210 215 220  
 Pro Met Arg Arg Leu Ala Glu Pro Glu Glu Val Ala Ala Thr Val Ala  
 225 230 235 240  
 Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Val Gly  
 245 250 255  
 Val Asp Gly Gly Arg Thr Ile Thr  
 260

&lt;210&gt; 2945

&lt;211&gt; 807

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa Japonica Group

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(807)

&lt;400&gt; 2945

atg gcg gcc gcc gca gct cgc agc atc ccc tac cgg tgg acc ctc gcc	48
Met Ala Ala Ala Ala Ala Arg Ser Ile Pro Tyr Arg Trp Thr Leu Ala	
1 5 10 15	
ggc gcg acg gcg ctc gtc acc ggc ggc agc aaa ggc atc ggg cat gcg	96
Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala	
20 25 30	
ata gtg gag gag ctc gcc gga ttc ggg gcg cgc gtg cac acg tgc gcc	144
Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala	
35 40 45	
cgg aac gcg gcg gag ctg gag gcg agc cgg cgg cgg tgg gag gag cgg	192
Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg	
50 55 60	
ggg ctc cgc gtc acc gcc acc gtc tgc gac gtc tcc gcg cgc ggc gac	240
Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp	
65 70 75 80	
cgg gag agg ctg gtc gcc gcg gcg gcg gcg gag ttc ggc ggc agg ctg	288
Arg Glu Arg Leu Val Ala Ala Ala Ala Ala Glu Phe Gly Gly Arg Leu	
85 90 95	
gac atc ctc gtc aac aac gtc ggc cgg acc atg ttc cgg gcg gcg gcg	336
Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala	
100 105 110	
gcg tgc tcc ggc gag gac ttc gcc gtg ctc gtg gcc acc aac ctc gag	384
Ala Cys Ser Gly Glu Asp Phe Ala Val Leu Val Ala Thr Asn Leu Glu	
115 120 125	
tcc tgc ttc cac ctc tcc cag ctc gcg cac ccg ctc ctg ctc gcc gcc	432
Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Ala Ala	
130 135 140	
ggc ggc gcc cgc ggc ggc gga ggc ggc tgc gtg aac atc tcc tcc	480
Gly Gly Ala Arg Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser	
145 150 155 160	
gtc gcc ggc agc gtc ggc atg ccg gcg ctg gcc gtg tac tcc atg acc	528
Val Ala Gly Ser Val Gly Met Pro Ala Leu Ala Val Tyr Ser Met Thr	
165 170 175	
aag ggc ggc atg aac cag ctc acg cgg agc ctc gcc gcc gag tgg gcc	576
Lys Gly Gly Met Asn Gln Leu Thr Arg Ser Leu Ala Ala Glu Trp Ala	
180 185 190	
ggc gac ggc att cgt gtc aac tgc gtc gcg ccg gga ggc gtc aag act	624
Gly Asp Gly Ile Arg Val Asn Cys Val Ala Pro Gly Gly Val Lys Thr	
195 200 205	
gat atc tgc caa gac gag acg ata gac ccg gag ctg atc aag agc gag	672
Asp Ile Cys Gln Asp Glu Thr Ile Asp Pro Glu Leu Ile Lys Ser Glu	
210 215 220	
atg gac cgg ctg ccg atg ccg ccg ctg gcg gag ccg gag gag gtg gcg	720
Met Asp Arg Leu Pro Met Arg Arg Leu Ala Glu Pro Glu Glu Val Ala	
225 230 235 240	
gcc acg gtg gcg ttc ctc tgc atg ccg gcg gcc tcc tac atc acc ggc	768



Ala Thr Val Ala Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly  
 245 250 255  
 cag gtc gtc ggc gtc gac ggc gga cgc acc att tcc tag  
 Gln Val Val Gly Val Asp Gly Gly Arg Thr Ile Ser  
 260 265

807

<210> 2946  
 <211> 268  
 <212> PRT  
 <213> Oryza sativa Japonica Group

<400> 2946  
 Met Ala Ala Ala Ala Arg Ser Ile Pro Tyr Arg Trp Thr Leu Ala  
 1 5 10 15  
 Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly His Ala  
 20 25 30  
 Ile Val Glu Glu Leu Ala Gly Phe Gly Ala Arg Val His Thr Cys Ala  
 35 40 45  
 Arg Asn Ala Ala Glu Leu Glu Ala Ser Arg Arg Arg Trp Glu Glu Arg  
 50 55 60  
 Gly Leu Arg Val Thr Ala Thr Val Cys Asp Val Ser Ala Arg Gly Asp  
 65 70 75 80  
 Arg Glu Arg Leu Val Ala Ala Ala Ala Glu Phe Gly Gly Arg Leu  
 85 90 95  
 Asp Ile Leu Val Asn Asn Val Gly Arg Thr Met Phe Arg Ala Ala Ala  
 100 105 110  
 Ala Cys Ser Gly Glu Asp Phe Ala Val Leu Val Ala Thr Asn Leu Glu  
 115 120 125  
 Ser Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Ala Ala  
 130 135 140  
 Gly Gly Ala Arg Gly Gly Gly Gly Cys Val Val Asn Ile Ser Ser  
 145 150 155 160  
 Val Ala Gly Ser Val Gly Met Pro Ala Leu Ala Val Tyr Ser Met Thr  
 165 170 175  
 Lys Gly Gly Met Asn Gln Leu Thr Arg Ser Leu Ala Ala Glu Trp Ala  
 180 185 190  
 Gly Asp Gly Ile Arg Val Asn Cys Val Ala Pro Gly Gly Val Lys Thr  
 195 200 205  
 Asp Ile Cys Gln Asp Glu Thr Ile Asp Pro Glu Leu Ile Lys Ser Glu  
 210 215 220  
 Met Asp Arg Leu Pro Met Arg Arg Leu Ala Glu Pro Glu Glu Val Ala  
 225 230 235 240  
 Ala Thr Val Ala Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly  
 245 250 255  
 Gln Val Val Gly Val Asp Gly Gly Arg Thr Ile Ser  
 260 265

<210> 2947  
 <211> 777  
 <212> DNA  
 <213> Mesorhizobium loti MAFF303099

<220>  
 <221> CDS  
 <222> (1)..(777)  
 <223> transl\_table=11

<400> 2947  
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 Met Gly Arg Phe Asp Gly Ala Thr Val Leu Ile Thr Gly Ala Ala Gly  
 1 5 10 15  
 ggg ctc ggc cgg ggt gcc gcg aaa ggc ttt gcc agc gag gcc gcg cgg  
 Gly Leu Gly Arg Gly Ala Ala Lys Gly Phe Ala Ser Glu Gly Ala Arg  
 20 25 30  
 ctg gtg ctg tcg gac atc gac gaa aag gcg ctc gcc gat ctt gcc gca  
 Leu Val Leu Ser Asp Ile Asp Glu Lys Ala Leu Ala Asp Leu Ala Ala  
 35 40 45  
 acg ctg ccg gcc gaa acg gcg atc ctg gcc gcc aac gta gcc gac gaa  
 Thr Leu Pro Ala Glu Thr Ala Ile Leu Ala Gly Asn Val Ala Asp Glu  
 192

## PhoenixTemp32470.tmp.txt

50	55	60		
aaa	ctg	tcc	gag	gat
Lys	Leu	Ser	Glu	Asp
65	70	75	80	
ctg	gat	gtc	acc	gtc
Leu	Asp	Val	Thr	Val
				85
ctg	ccg	cag	gtt	cct
Leu	Pro	Gln	Val	Pro
				100
ctg	ctt	ggc	gtc	ttc
Leu	Leu	Gly	Val	Phe
				115
cgg	cag	ttc	agg	gct
Arg	Gln	Phe	Arg	Ala
				130
tcg	gtt	gcc	gga	ctg
Ser	Val	Ala	Gly	Leu
				145
gcc	aag	cat	ggc	gtc
Ala	Lys	His	Gly	Val
				165
gca	acc	aag	ggt	gtg
Ala	Thr	Lys	Gly	Val
				180
acg	gca	atg	gtg	gac
Thr	Ala	Met	Val	Asp
				195
gag	gcg	ttg	gcc	gaa
Glu	Ala	Leu	Ala	Glu
				210
gaa	gtc	gac	gaa	atc
Glu	Val	Asp	Glu	Ile
				225
aac	tcc	ttc	atg	acc
Asn	Ser	Phe	Met	Thr
				245
gcc	atc	tga		
Ala	Ile			

240

288

336

384

432

480

528

576

624

672

720

768

777

&lt;210&gt; 2948

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;400&gt; 2948

Met	Gly	Arg	Phe	Asp	Gly	Ala	Thr	Val	Leu	Ile	Thr	Gly	Ala	Ala	Gly
1				5					10					15	
Gly	Leu	Gly	Arg	Gly	Ala	Ala	Lys	Gly	Phe	Ala	Ser	Glu	Gly	Ala	Arg
			20					25					30		
Leu	Val	Leu	Ser	Asp	Ile	Asp	Glu	Lys	Ala	Leu	Ala	Asp	Leu	Ala	Ala
		35					40					45			
Thr	Leu	Pro	Ala	Glu	Thr	Ala	Ile	Leu	Ala	Gly	Asn	Val	Ala	Asp	Glu
		50				55					60				
Lys	Leu	Ser	Glu	Asp	Leu	Val	Arg	Leu	Ala	Val	Glu	Lys	Phe	Gly	Arg
65					70					75				80	
Leu	Asp	Val	Thr	Val	Asn	Asn	Ala	Gly	Ile	Val	Gln	Ser	Phe	Val	Arg
				85					90					95	
Leu	Pro	Gln	Val	Pro	Ser	Asp	Glu	Ala	Arg	Arg	Val	Leu	Glu	Ile	Asp
		100						105					110		
Leu	Leu	Gly	Val	Phe	Tyr	Ala	Met	Lys	His	Gln	Ile	Pro	Gln	Met	Glu
		115					120					125			
Arg	Gln	Phe	Arg	Ala	Thr	Ala	Lys	Gly	Gly	Ala	Ile	Val	Asn	Ile	Ala
	130					135					140				
Ser	Val	Ala	Gly	Leu	Val	Gly	Ala	Pro	Lys	Leu	Ser	Val	Tyr	Ala	Ala
145				150						155				160	
Ala	Lys	His	Gly	Val	Val	Gly	Leu	Thr	Lys	Ser	Ala	Ala	Ala	Glu	Tyr
				165					170					175	

## PhoenixTemp32470.tmp.txt

Ala Thr Lys Gly Val Arg Ile Asn Ala Ile Cys Pro Ala His Thr Arg  
 180 185 190  
 Thr Ala Met Val Asp Ser Phe Val Arg Ala Ser Gly Ala Pro Glu Ala  
 195 200 205  
 Glu Ala Leu Ala Glu Leu Thr Arg Gly Val Pro Met Lys Arg Val Ala  
 210 215 220  
 Glu Val Asp Glu Ile Thr Thr Ala Ile Leu Phe Ala Ala Asp Pro Ala  
 225 230 235 240  
 Asn Ser Phe Met Thr Gly His Ala Leu Ala Val Asp Gly Gly Val Gly  
 245 250 255  
 Ala Ile

&lt;210&gt; 2949

&lt;211&gt; 732

&lt;212&gt; DNA

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(732)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2949

atg gcg gat ctg gca ggc aag gtc gtt gtc atc acg gcg gcg gcg caa	48
Met Ala Asp Leu Ala Gly Lys Val Val Val Ile Thr Ala Ala Ala Gln	
1 5 10 15	
ggc atc ggc aag gcg agc gcg ctg gcc ttc gcc aag act gga gcc acc	96
Gly Ile Gly Lys Ala Ser Ala Leu Ala Phe Ala Lys Thr Gly Ala Thr	
20 25 30	
gtc cac gcc acc gac atc aac gag acg ctt ctc gcc gaa ctc gcc aag	144
Val His Ala Thr Asp Ile Asn Glu Thr Leu Leu Ala Glu Leu Ala Lys	
35 40 45	
acg cca ggg atc aag acc cgc aag ctg gat gtg ctc aac gac gag gcc	192
Thr Pro Gly Ile Lys Thr Arg Lys Leu Asp Val Leu Asn Asp Glu Ala	
50 55 60	
gtc aac acc acc ttc gcc gag atc ggc cgc gtc gac gtg ctg ttc aac	240
Val Asn Thr Thr Phe Ala Glu Ile Gly Arg Val Asp Val Leu Phe Asn	
65 70 75 80	
tgc gcc ggc ttc gtc cat tcc ggc tcg atc ctg gag atg aag gat ggc	288
Cys Ala Gly Phe Val His Ser Gly Ser Ile Leu Glu Met Lys Asp Gly	
85 90 95	
gat ctc gat ttc gcc ttc aac ctc aat gtc cgc gcc atg atc cgc acc	336
Asp Leu Asp Phe Ala Phe Asn Leu Asn Val Arg Ala Met Ile Arg Thr	
100 105 110	
atc agg gcc gtg ctg ccc ggc atg ctg gaa cga ggc gac gga tcg atc	384
Ile Arg Ala Val Leu Pro Gly Met Leu Glu Arg Gly Asp Gly Ser Ile	
115 120 125	
gtc aac atg tct tcc gtc gcc ggc gcc ggc aaa ggc gtg ccg aac cgc	432
Val Asn Met Ser Ser Val Ala Gly Ala Gly Lys Gly Val Pro Asn Arg	
130 135 140	
ttc gcc tat ggc gtc acc aag gcc gcc gtc atc ggc ctg acc aag gcg	480
Phe Ala Tyr Gly Val Thr Lys Ala Val Ile Gly Leu Thr Lys Ala	
145 150 155 160	
att gcc gcc gac tat gtc ggc aag ggc ata cgc tgc aac gcc atc tgc	528
Ile Ala Ala Asp Tyr Val Gly Lys Gly Ile Arg Cys Asn Ala Ile Cys	
165 170 175	
ccc ggc acg gtc gaa agc ccg tcg ctg cag gac cgc atg cat gcg caa	576
Pro Gly Thr Val Glu Ser Pro Ser Leu Gln Asp Arg Met His Ala Gln	
180 185 190	
ggc gac tac gaa gcc gcc cgc gcc gcc ttc atc gcc cgc cag cca atg	624
Gly Asp Tyr Glu Ala Ala Arg Ala Ala Phe Ile Ala Arg Gln Pro Met	
195 200 205	
ggc cgg ctc ggc acg cct gag gaa atc gcc gat ctc gcg gtc tat ctg	672
Gly Arg Leu Gly Thr Pro Glu Glu Ile Ala Asp Leu Ala Val Tyr Leu	
210 215 220	
gcc gcc gcg acc tac acg tcc ggg cag gcc tat aat atc gac ggc ggc	720
Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala Tyr Asn Ile Asp Gly Gly	
225 230 235 240	

tgg tcg atc tga  
Trp Ser Ile

<210> 2950  
<211> 243  
<212> PRT  
<213> Mesorhizobium loti MAFF303099

<400> 2950  
Met Ala Asp Leu Ala Gly Lys Val Val Val Ile Thr Ala Ala Ala Gln  
1 5 10 15  
Gly Ile Gly Lys Ala Ser Ala Leu Ala Phe Ala Lys Thr Gly Ala Thr  
20 25 30  
Val His Ala Thr Asp Ile Asn Glu Thr Leu Leu Ala Glu Leu Ala Lys  
35 40 45  
Thr Pro Gly Ile Lys Thr Arg Lys Leu Asp Val Leu Asn Asp Glu Ala  
50 55 60  
Val Asn Thr Thr Phe Ala Glu Ile Gly Arg Val Asp Val Leu Phe Asn  
65 70 75 80  
Cys Ala Gly Phe Val His Ser Gly Ser Ile Leu Glu Met Lys Asp Gly  
85 90 95  
Asp Leu Asp Phe Ala Phe Asn Leu Asn Val Arg Ala Met Ile Arg Thr  
100 105 110  
Ile Arg Ala Val Leu Pro Gly Met Leu Glu Arg Gly Asp Gly Ser Ile  
115 120 125  
Val Asn Met Ser Ser Val Ala Gly Ala Gly Lys Gly Val Pro Asn Arg  
130 135 140  
Phe Ala Tyr Gly Val Thr Lys Ala Ala Val Ile Gly Leu Thr Lys Ala  
145 150 155 160  
Ile Ala Ala Asp Tyr Val Gly Lys Gly Ile Arg Cys Asn Ala Ile Cys  
165 170 175  
Pro Gly Thr Val Glu Ser Pro Ser Leu Gln Asp Arg Met His Ala Gln  
180 185 190  
Gly Asp Tyr Glu Ala Ala Arg Ala Ala Phe Ile Ala Arg Gln Pro Met  
195 200 205  
Gly Arg Leu Gly Thr Pro Glu Glu Ile Ala Asp Leu Ala Val Tyr Leu  
210 215 220  
Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala Tyr Asn Ile Asp Gly Gly  
225 230 235 240  
Trp Ser Ile

<210> 2951  
<211> 777  
<212> DNA  
<213> Mesorhizobium loti MAFF303099

<220>  
<221> CDS  
<222> (1)..(777)  
<223> transl\_table=11

<400> 2951  
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Met Thr Gly Arg Leu Gln Gly Lys Ile Ala Ile Val Thr Gly Ala Gly  
1 5 10 15  
cag ggc att ggt gca gcc act gcc cgg gcc ttt gcg atg cag gga gca 96  
Gln Gly Ile Gly Ala Ala Thr Ala Arg Ala Phe Ala Met Gln Gly Ala  
20 25 30  
aag acc gtg att gcc gag ctc aat gcg gca acc ggc aag gcg gcc gcc 144  
Lys Thr Val Ile Ala Glu Leu Asn Ala Ala Thr Gly Lys Ala Ala Ala  
35 40 45  
gac gaa ttg cgt gcc aac ggc gcc gac gcc ctt ttc gtc gaa acc gat 192  
Asp Glu Leu Arg Ala Asn Gly Ala Asp Ala Leu Phe Val Glu Thr Asp  
50 55 60  
gtc acc gac aca gcg gca gtg gcc gac atg gtg gcg aag acg atc gcg 240  
Val Thr Asp Thr Ala Ala Val Ala Asp Met Val Ala Lys Thr Ile Ala  
65 70 75 80

## PhoenixTemp32470.tmp.txt

gcc	tat	ggc	ggc	gtc	aac	gtg	ctc	gtc	aac	aat	gca	ggc	gcc	aac	gtc	288
Ala	Tyr	Gly	Gly	Val	Asn	Val	Leu	Val	Asn	Asn	Ala	Gly	Ala	Asn	Val	
				85					90					95		
ttt	tac	gag	ccc	ttg	tct	atg	ccg	gac	gcg	gaa	tgg	gac	cgt	tgc	ctc	336
Phe	Tyr	Glu	Pro	Leu	Ser	Met	Pro	Asp	Ala	Glu	Trp	Asp	Arg	Cys	Leu	
			100					105					110			
agg	ctc	gac	ctc	cag	gcc	gcg	tgg	tcc	tgt	gcc	aag	gcg	gtg	ttg	ccg	384
Arg	Leu	Asp	Leu	Gln	Ala	Ala	Trp	Ser	Cys	Ala	Lys	Ala	Val	Leu	Pro	
		115					120					125				
acg	atg	ctg	gcg	aac	ggg	tcg	gga	tcg	atc	gtc	aac	ata	gcc	agc	tgc	432
Thr	Met	Leu	Ala	Asn	Gly	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Cys	
		130				135					140					
cac	gcc	ttc	aag	atc	att	ccc	cac	aca	ttt	ccc	tat	ccg	gtc	gcc	aag	480
His	Ala	Phe	Lys	Ile	Ile	Pro	His	Thr	Phe	Pro	Tyr	Pro	Val	Ala	Lys	
					150					155					160	
cat	gcg	ctt	gtc	ggc	ctg	acc	cgc	tcg	ctc	ggc	atc	gaa	tat	gcg	gcg	528
His	Ala	Leu	Val	Gly	Leu	Thr	Arg	Ser	Leu	Gly	Ile	Glu	Tyr	Ala	Ala	
				165					170					175		
cgc	ggc	atc	cgc	gtg	aat	gcg	atc	gcc	ccc	ggc	tac	atc	gag	acg	ccg	576
Arg	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Pro	
			180					185					190			
atc	gcg	gaa	gcc	tat	tgg	aac	acg	ttt	ccg	gac	ccg	gcc	gag	gag	aag	624
Ile	Ala	Glu	Ala	Tyr	Trp	Asn	Thr	Phe	Pro	Asp	Pro	Ala	Glu	Glu	Lys	
			195				200					205				
cgg	cgg	gcc	tac	gac	ctt	cat	ccg	ccc	aag	cgc	att	ggc	cgg	ccg	gac	672
Arg	Arg	Ala	Tyr	Asp	Leu	His	Pro	Pro	Lys	Arg	Ile	Gly	Arg	Pro	Asp	
		210				215					220					
gaa	gtt	gca	atg	acg	gcg	gtt	ttc	ctc	gct	tcg	gac	gaa	gcg	ccg	ttc	720
Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe	
					230				235						240	
atc	aat	gcc	gag	acg	atc	acc	atc	gat	ggg	gga	cgc	tcg	gtt	ctc	tac	768
Ile	Asn	Ala	Glu	Thr	Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Leu	Tyr	
				245				250						255		
cat	gac	tga														777
His	Asp															

&lt;210&gt; 2952

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium loti MAFF303099

&lt;400&gt; 2952

Met	Thr	Gly	Arg	Leu	Gln	Gly	Lys	Ile	Ala	Ile	Val	Thr	Gly	Ala	Gly	
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Gln	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	Ala	Phe	Ala	Met	Gln	Gly	Ala	
			20					25					30			
Lys	Thr	Val	Ile	Ala	Glu	Leu	Asn	Ala	Ala	Thr	Gly	Lys	Ala	Ala	Ala	
		35					40					45				
Asp	Glu	Leu	Arg	Ala	Asn	Gly	Ala	Asp	Ala	Leu	Phe	Val	Glu	Thr	Asp	
	50				55					60						
Val	Thr	Asp	Thr	Ala	Ala	Val	Ala	Asp	Met	Val	Ala	Lys	Thr	Ile	Ala	
				70					75					80		
Ala	Tyr	Gly	Gly	Val	Asn	Val	Leu	Val	Asn	Asn	Ala	Gly	Ala	Asn	Val	
				85					90					95		
Phe	Tyr	Glu	Pro	Leu	Ser	Met	Pro	Asp	Ala	Glu	Trp	Asp	Arg	Cys	Leu	
			100					105					110			
Arg	Leu	Asp	Leu	Gln	Ala	Ala	Trp	Ser	Cys	Ala	Lys	Ala	Val	Leu	Pro	
		115					120					125				
Thr	Met	Leu	Ala	Asn	Gly	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Cys	
	130				135						140					
His	Ala	Phe	Lys	Ile	Ile	Pro	His	Thr	Phe	Pro	Tyr	Pro	Val	Ala	Lys	
				150						155					160	
His	Ala	Leu	Val	Gly	Leu	Thr	Arg	Ser	Leu	Gly	Ile	Glu	Tyr	Ala	Ala	
				165					170					175		
Arg	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Pro	
			180					185					190			
Ile	Ala	Glu	Ala	Tyr	Trp	Asn	Thr	Phe	Pro	Asp	Pro	Ala	Glu	Glu	Lys	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Arg Arg Ala Tyr Asp Leu His Pro Pro Lys Arg Ile Gly Arg Pro Asp  
 210 215 220  
 Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe  
 225 230 235 240  
 Ile Asn Ala Glu Thr Ile Thr Ile Asp Gly Gly Arg Ser Val Leu Tyr  
 245 250 255  
 His Asp

&lt;210&gt; 2953

&lt;211&gt; 912

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(912)

&lt;400&gt; 2953

atg	cct	gcc	caa	gtg	atc	gct	gag	cag	acc	acc	ttt	cac	tcc	gtc	cac	48
Met	Pro	Ala	Gln	Val	Ile	Ala	Glu	Gln	Thr	Thr	Phe	His	Ser	Val	His	
1				5				10					15			
gac	acc	att	atg	gag	gag	acg	aat	aca	act	tta	tat	cct	aag	agg	ttg	96
Asp	Thr	Ile	Met	Glu	Glu	Thr	Asn	Thr	Thr	Leu	Tyr	Pro	Lys	Arg	Leu	
			20				25						30			
gaa	gga	aaa	gta	gcc	atc	ata	acc	gga	ggc	gca	cat	gga	ata	ggc	aaa	144
Glu	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	His	Gly	Ile	Gly	Lys	
		35					40					45				
gca	acc	gtc	atg	tta	ttc	gct	aga	cac	ggt	gcc	aca	gtg	gtg	att	gct	192
Ala	Thr	Val	Met	Leu	Phe	Ala	Arg	His	Gly	Ala	Thr	Val	Val	Ile	Ala	
		50				55					60					
gac	gtg	gac	aac	gta	gct	ggc	tct	tcc	ctg	gct	aag	tca	ctc	tca	tcc	240
Asp	Val	Asp	Asn	Val	Ala	Gly	Ser	Ser	Leu	Ala	Lys	Ser	Leu	Ser	Ser	
		65			70				75						80	
cac	aaa	acc	tcc	ccg	atg	gtg	gca	ttc	att	agc	tgc	gat	gtc	tcc	gta	288
His	Lys	Thr	Ser	Pro	Met	Val	Ala	Phe	Ile	Ser	Cys	Asp	Val	Ser	Val	
				85					90					95		
gaa	gcc	gac	gtg	gaa	aac	ctt	gtg	aac	gta	acc	ggt	gca	cgg	tac	ggt	336
Glu	Ala	Asp	Val	Glu	Asn	Leu	Val	Asn	Val	Thr	Val	Ala	Arg	Tyr	Gly	
			100					105					110			
agg	ctt	gac	att	cta	ttc	aac	aac	gcg	gga	ggt	ctc	gga	gat	cag	aag	384
Arg	Leu	Asp	Ile	Leu	Phe	Asn	Asn	Ala	Gly	Val	Leu	Gly	Asp	Gln	Lys	
		115					120					125				
aaa	cac	aaa	agc	ata	tta	gac	ttc	gac	gcg	gac	gag	ttt	gac	cac	gtg	432
Lys	His	Lys	Ser	Ile	Leu	Asp	Phe	Asp	Ala	Asp	Glu	Phe	Asp	His	Val	
		130				135					140					
atg	cgt	gtg	aac	gta	cgt	ggc	gta	gga	ctc	ggc	atg	aaa	cac	ggg	gca	480
Met	Arg	Val	Asn	Val	Arg	Gly	Val	Gly	Leu	Gly	Met	Lys	His	Gly	Ala	
				150					155						160	
cgc	gct	atg	atc	aag	aga	gga	ttc	aaa	ggc	tgc	ata	atc	tcc	acg	gcg	528
Arg	Ala	Met	Ile	Lys	Arg	Gly	Phe	Lys	Gly	Cys	Ile	Ile	Ser	Thr	Ala	
				165					170					175		
agt	gta	gcc	ggt	gtg	atg	ggt	gga	atg	gga	cca	cac	gct	tac	aca	gcc	576
Ser	Val	Ala	Gly	Val	Met	Gly	Gly	Met	Gly	Pro	His	Ala	Tyr	Thr	Ala	
			180				185						190			
tcg	aaa	cat	gcg	atc	gtt	ggt	ttg	acc	aag	aac	gca	gcg	tgt	gag	cta	624
Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	Leu	
		195					200					205				
ggc	aag	tat	ggg	att	agg	gtt	aat	tgt	ata	tca	ccg	ttt	gga	gtt	gcc	672
Gly	Lys	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	Val	Ala	
		210				215					220					
acg	tcg	atg	ctg	gtt	aac	gcg	tgg	cga	aag	acg	agt	ggt	ggt	gac	gtg	720
Thr	Ser	Met	Leu	Val	Asn	Ala	Trp	Arg	Lys	Thr	Ser	Gly	Gly	Asp	Val	
					230				235						240	
gaa	gat	gat	gac	gtg	gag	gag	atg	gag	gag	ttt	gtg	agg	agt	ttg	gct	768
Glu	Asp	Asp	Asp	Val	Glu	Glu	Met	Glu	Glu	Phe	Val	Arg	Ser	Leu	Ala	
				245					250					255		
aat	ttg	aaa	gga	gag	aca	ttg	aga	gcg	aat	gat	ata	gct	gaa	gca	gcg	816
Asn	Leu	Lys	Gly	Glu	Thr	Leu	Arg	Ala	Asn	Asp	Ile	Ala	Glu	Ala	Ala	

## PhoenixTemp32470.tmp.txt

tta	tat	ttg	260	gcg	agt	gat	gag	tct	265	aag	tat	gtg	aac	gga	270	cat	aat	ctt	864
Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Lys	Tyr	Val	Asn	Gly	Gly	His	Asn	Leu		
gtc	ggt	gac	275	ggt	ggt	ggt	acg	act	280	gca	aga	aac	tgt	ggt	ggt	ttg			909
Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ala	Ala	Arg	Asn	Cys	Val	Gly	Gly	Leu			
tga			290				295					300							912

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 <211> 303  
 <212> PRT  
 <213> Arabidopsis thaliana

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 1 5 10 15  
 Asp Thr Ile Met Glu Glu Thr Asn Thr Thr Leu Tyr Pro Lys Arg Leu  
 20 25 30  
 Glu Gly Lys Val Ala Ile Ile Thr Gly Gly Ala His Gly Ile Gly Lys  
 35 40 45  
 Ala Thr Val Met Leu Phe Ala Arg His Gly Ala Thr Val Val Ile Ala  
 50 55 60  
 Asp Val Asp Asn Val Ala Gly Ser Ser Leu Ala Lys Ser Leu Ser Ser  
 65 70 75 80  
 His Lys Thr Ser Pro Met Val Ala Phe Ile Ser Cys Asp Val Ser Val  
 85 90 95  
 Glu Ala Asp Val Glu Asn Leu Val Asn Val Thr Val Ala Arg Tyr Gly  
 100 105 110  
 Arg Leu Asp Ile Leu Phe Asn Asn Ala Gly Val Leu Gly Asp Gln Lys  
 115 120 125  
 Lys His Lys Ser Ile Leu Asp Phe Asp Ala Asp Glu Phe Asp His Val  
 130 135 140  
 Met Arg Val Asn Val Arg Gly Val Gly Leu Gly Met Lys His Gly Ala  
 145 150 155 160  
 Arg Ala Met Ile Lys Arg Gly Phe Lys Gly Cys Ile Ile Ser Thr Ala  
 165 170 175  
 Ser Val Ala Gly Val Met Gly Gly Met Gly Pro His Ala Tyr Thr Ala  
 180 185 190  
 Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu  
 195 200 205  
 Gly Lys Tyr Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala  
 210 215 220  
 Thr Ser Met Leu Val Asn Ala Trp Arg Lys Thr Ser Gly Gly Asp Val  
 225 230 235 240  
 Glu Asp Asp Asp Val Glu Glu Met Glu Glu Phe Val Arg Ser Leu Ala  
 245 250 255 260  
 Asn Leu Lys Gly Glu Thr Leu Arg Ala Asn Asp Ile Ala Glu Ala Ala  
 265 270 275  
 Leu Tyr Leu Ala Ser Asp Glu Ser Lys Tyr Val Asn Gly His Asn Leu  
 280 285  
 Val Val Asp Gly Gly Val Thr Thr Ala Arg Asn Cys Val Gly Leu  
 290 295 300

<210> 2955  
 <211> 774  
 <212> DNA  
 <213> Thermotoga maritima MSB8

<220>  
 <221> CDS  
 <222> (1)..(774)  
 <223> transl\_table=11

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 Met Asn Ile Leu Glu Lys Leu Phe Ser Leu Lys Arg Lys Val Ala Leu  
 Page 2720

## PhoenixTemp32470.tmp.txt

1	5	10	15	
gtg act ggt gga gga cag ggc atc ggg aag gcc atc gcc cag gcg ctg				96
Val Thr Gly Gly Gly Gln Gly Ile Gly Lys Ala Ile Ala Gln Ala Leu				
gca gcg gcg ggt gca gct gtt ttg atc atg gac ata aac gaa gaa aca				144
Ala Ala Ala Gly Ala Ala Val Leu Ile Met Asp Ile Asn Glu Glu Thr				
gcc aga aga acg gtc gaa gag ata aaa gag aaa ggt ggc gaa gca gat				192
Ala Arg Arg Thr Val Glu Glu Ile Lys Glu Lys Gly Gly Glu Ala Asp				
ttc tat gtt ggg gat gtg acg aaa gaa gaa gat tgt ttt gga gcg gtc				240
Phe Tyr Val Gly Asp Val Thr Lys Glu Glu Asp Cys Phe Gly Ala Val				
aaa aag gcg ctg gat agg tgg ggg aaa ctc gac ata gga gtc aac aac				288
Lys Lys Ala Leu Asp Arg Trp Gly Lys Leu Asp Ile Gly Val Asn Asn				
gcg gga ata gga gac tgg tgt gaa gcg gag aat tat ccg gtt gag aag				336
Ala Gly Ile Gly Asp Trp Cys Glu Ala Glu Asn Tyr Pro Val Glu Lys				
tgg aaa aag gtc ata gac gtg aat ctg gtt ggg gtg ttt ctt tcc gca				384
Trp Lys Lys Val Ile Asp Val Asn Leu Val Gly Val Phe Leu Ser Ala				
aaa gcg gag ttc cac gct atg aag gaa aga aaa tac gga aag atc ata				432
Lys Ala Glu Phe His Ala Met Lys Glu Arg Lys Tyr Gly Lys Ile Ile				
aac atc gcg tcc atg tcc gga cac atc gtg aac aaa cct cag aag cag				480
Asn Ile Ala Ser Met Ser Gly His Ile Val Asn Lys Pro Gln Lys Gln				
aca gct tac aac gct tcg aaa gcg ggt gtg atc cat ctc acc aga tct				528
Thr Ala Tyr Asn Ala Ser Lys Ala Gly Val Ile His Leu Thr Arg Ser				
ctg gcc gcc gag tgg gcc ccg tac gga atc agg gtg aac agc ata agc				576
Leu Ala Ala Glu Trp Ala Pro Tyr Gly Ile Arg Val Asn Ser Ile Ser				
ccc gga tac atc aga aca cct ctc ata gaa tct cca aac gtg aaa gat				624
Pro Gly Tyr Ile Arg Thr Pro Leu Ile Glu Ser Pro Asn Val Lys Asp				
ctt gtt ccc ctc tgg ctc gac atg atc cct ctt gga aga ctg gga gag				672
Leu Val Pro Leu Trp Leu Asp Met Ile Pro Leu Gly Arg Leu Gly Glu				
gtg gac gat ctg ata gga gct gct atc ttc ctt gca agt ccc gcc tca				720
Val Asp Asp Leu Ile Gly Ala Ala Ile Phe Leu Ala Ser Pro Ala Ser				
gat tac atg aca ggg cac gat ctt gtg ata gac gga ggc tac acc gtc				768
Asp Tyr Met Thr Gly His Asp Leu Val Ile Asp Gly Gly Tyr Thr Val				
tgg tga				774
Trp				

&lt;210&gt; 2956

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Thermotoga maritima MSB8

&lt;400&gt; 2956

Met Asn Ile Leu Glu Lys Leu Phe Ser Leu Lys Arg Lys Val Ala Leu	
1 Val Thr Gly Gly Gly Gln Gly Ile Gly Lys Ala Ile Ala Gln Ala Leu	
Ala Ala Ala Gly Ala Ala Val Leu Ile Met Asp Ile Asn Glu Glu Thr	
Ala Arg Arg Thr Val Glu Glu Ile Lys Glu Lys Gly Gly Glu Ala Asp	
Phe Tyr Val Gly Asp Val Thr Lys Glu Glu Asp Cys Phe Gly Ala Val	
65 Lys Lys Ala Leu Asp Arg Trp Gly Lys Leu Asp Ile Gly Val Asn Asn	
Ala Gly Ile Gly Asp Trp Cys Glu Ala Glu Asn Tyr Pro Val Glu Lys	



## PhoenixTemp32470.tmp.txt

100 105 110  
 Trp Lys Lys Val Ile Asp Val Asn Leu Val Gly Val Phe Leu Ser Ala  
 115 120 125  
 Lys Ala Glu Phe His Ala Met Lys Glu Arg Lys Tyr Gly Lys Ile Ile  
 130 135 140  
 Asn Ile Ala Ser Met Ser Gly His Ile Val Asn Lys Pro Gln Lys Gln  
 145 150 155  
 Thr Ala Tyr Asn Ala Ser Lys Ala Gly Val Ile His Leu Thr Arg Ser  
 160 165 170 175  
 Leu Ala Ala Glu Trp Ala Pro Tyr Gly Ile Arg Val Asn Ser Ile Ser  
 180 185 190  
 Pro Gly Tyr Ile Arg Thr Pro Leu Ile Glu Ser Pro Asn Val Lys Asp  
 195 200 205  
 Leu Val Pro Leu Trp Leu Asp Met Ile Pro Leu Gly Arg Leu Gly Glu  
 210 215 220  
 Val Asp Asp Leu Ile Gly Ala Ala Ile Phe Leu Ala Ser Pro Ala Ser  
 225 230 235 240  
 Asp Tyr Met Thr Gly His Asp Leu Val Ile Asp Gly Gly Tyr Thr Val  
 245 250 255  
 Trp

&lt;210&gt; 2957

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Bacillus halodurans C-125

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2957

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ggc cga gca aca gcg atg gaa ctg gca cgt cat gga gcg aat gtc gtg	96
Gly Arg Ala Thr Ala Met Glu Leu Ala Arg His Gly Ala Asn Val Val	
20 25 30 35	
gtc aat tat gca ggg aat aag gag aaa gcg gaa aaa gtc gtt gct gag	144
Val Asn Tyr Ala Gly Asn Lys Glu Lys Ala Glu Lys Val Val Ala Glu	
40 45 50 55 60	
att aaa gaa ctc gga gtg gag gca att gcg atc caa gcc gat gta gct	192
Ile Lys Glu Leu Gly Val Glu Ala Ile Ala Ile Gln Ala Asp Val Ala	
65 70 75 80	
gac agt gag tcg gtc caa gca atg gtc aaa gag acg atc gat act ttc	240
Asp Ser Glu Ser Val Gln Ala Met Val Lys Glu Thr Ile Asp Thr Phe	
85 90 95	
ggt gca gtc gat att ctc gtc aac aac gca ggg att aca aga gac aac	288
Gly Ala Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn	
100 105 110	
cta ttt atg cgc atg aaa gaa gaa gat tgg gat gcg gtg atc gat acg	336
Leu Phe Met Arg Met Lys Glu Glu Asp Trp Asp Ala Val Ile Asp Thr	
115 120 125	
aat tta aaa gga gtt ttc cac tgt tcg aaa gct gtt aca cga ccg atg	384
Asn Leu Lys Gly Val Phe His Cys Ser Lys Ala Val Thr Arg Pro Met	
130 135 140 145	
atg aag cag cgg ttt ggg cga atc att aac gta tcg tct gtt gtt ggt	432
Met Lys Gln Arg Phe Gly Arg Ile Ile Asn Val Ser Ser Val Val Gly	
150 155 160	
gcc att ggg aat gct gga caa gcg aac tat gtt gcg gcc aaa gca ggt	480
Ala Ile Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ala Gly	
165 170 175	
gtc att ggc tta acg aaa aca ctt gcc cgt gag ctt gct aac cgt aat	528
Val Ile Gly Leu Thr Lys Thr Leu Ala Arg Glu Leu Ala Asn Arg Asn	
180 185 190	
att acg gta aat gcg gtc gct cca ggg ttt atc gaa aca gat atg acc	576
Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Asp Met Thr	

## PhoenixTemp32470.tmp.txt

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ggt gaa ttg ccg gaa gat gtc aaa gca caa atg cta ggg caa atc ccc      624
Gly Glu      195 Leu Pro Glu Asp Val Lys Ala Gln Met Leu Gly Gln Ile Pro
ctt gct cgt cta gga cag cct gag gaa gtg gca aaa gcg gtt cgt ttc      672
Leu Ala Arg Leu Gly Gln Pro Glu Glu Val Ala Lys Ala Val Arg Phe
tta gcg tcc gac gat gct tct tac tta aca gga cag acg atc cat gta      720
Leu Ala Ser Asp Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile His Val
225 235 240
aat ggc gga atg gtc atg taa      741
Asn Gly Gly Met Val Met
245

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&lt;210&gt; 2958

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Bacillus halodurans C-125

&lt;400&gt; 2958

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20      25      30
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35      40      45
Ile Lys Glu Leu Gly Val Glu Ala Ile Ala Ile Gln Ala Asp Val Ala
50      55      60
Asp Ser Glu Ser Val Gln Ala Met Val Lys Glu Thr Ile Asp Thr Phe
65      70      75      80
Gly Ala Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn
85      90      95
Leu Phe Met Arg Met Lys Glu Glu Asp Trp Asp Ala Val Ile Asp Thr
100      105      110
Asn Leu Lys Gly Val Phe His Cys Ser Lys Ala Val Thr Arg Pro Met
115      120      125
Met Lys Gln Arg Phe Gly Arg Ile Ile Asn Val Ser Ser Val Val Gly
130      135      140
Ala Ile Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ala Gly
145      150      155      160
Val Ile Gly Leu Thr Lys Thr Leu Ala Arg Glu Leu Ala Asn Arg Asn
165      170      175
Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Asp Met Thr
180      185      190
Gly Glu Leu Pro Glu Asp Val Lys Ala Gln Met Leu Gly Gln Ile Pro
195      200      205
Leu Ala Arg Leu Gly Gln Pro Glu Glu Val Ala Lys Ala Val Arg Phe
210      215      220
Leu Ala Ser Asp Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile His Val
225      230      235      240
Asn Gly Gly Met Val Met
245

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&lt;210&gt; 2959

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Bacillus halodurans C-125

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2959

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1      5      10      15
ata ggg gca gca acg gct aaa aaa ttt gct aga gaa ggg gca aaa gtg
Ile Gly Ala Ala Thr Ala Lys Lys Phe Ala Arg Glu Gly Ala Lys Val
20      25      30

```

96

PhoenixTemp32470.tmp.txt

atc	gtt	tgt	gat	gtg	cgg	gaa	gaa	gag	gtg	gca	aag	acg	gtg	gcc	gaa	144
Ile	Val	Cys	Asp	Val	Arg	Glu	Glu	Glu	Val	Ala	Lys	Thr	Val	Ala	Glu	
		35					40					45				
att	caa	gac	gga	ggt	ggt	gag	gcg	tta	gga	tcg	gtc	gtt	gat	gtt	acg	192
Ile	Gln	Asp	Gly	Gly	Gly	Glu	Ala	Leu	Gly	Ser	Val	Val	Asp	Val	Thr	
	50					55					60					
caa	cgc	aag	gat	gtg	aaa	aac	ggt	ata	aat	caa	gtg	att	gag	cga	ttt	240
Gln	Arg	Lys	Asp	Val	Lys	Asn	Val	Ile	Asn	Gln	Val	Ile	Glu	Arg	Phe	
	65				70					75					80	
gag	acg	cta	gat	gtg	gtc	gtg	aac	aat	gcg	gga	atc	aca	gcc	gat	gcc	288
Glu	Thr	Leu	Asp	Val	Val	Val	Asn	Asn	Ala	Gly	Ile	Thr	Ala	Asp	Ala	
				85					90					95		
cag	tta	acg	aac	atg	act	gat	gct	cag	tgg	gac	gat	gtg	atc	gat	gtt	336
Gln	Leu	Thr	Asn	Met	Thr	Asp	Ala	Gln	Trp	Asp	Asp	Val	Ile	Asp	Val	
			100					105					110			
aac	tta	aag	ggg	gtg	ttt	att	gtt	aca	caa	gag	gtg	acg	acc	att	atg	384
Asn	Leu	Lys	Gly	Val	Phe	Ile	Val	Thr	Gln	Glu	Val	Thr	Thr	Ile	Met	
		115					120					125				
aaa	gag	cag	aaa	cga	ggg	gtc	att	tta	aac	gcc	tca	tcc	ggt	gta	ggc	432
Lys	Glu	Gln	Lys	Arg	Gly	Val	Ile	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly	
	130					135					140					
tct	tac	gga	aac	ttt	ggc	cag	acg	aat	tat	gcc	gct	tcc	aaa	tgg	gga	480
Ser	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Trp	Gly	
	145				150					155					160	
gtg	aat	ggg	atg	acg	aaa	acg	tgg	gcg	aaa	gag	ctc	ggc	cgt	tat	aac	528
Val	Asn	Gly	Met	Thr	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Gly	Arg	Tyr	Asn	
				165					170					175		
att	cgt	gtc	aat	gct	gtg	gca	cca	gga	ttc	att	ctc	aca	ccg	atg	aca	576
Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Leu	Thr	Pro	Met	Thr	
			180					185					190			
gaa	aag	atg	cca	gaa	aaa	gta	tta	aag	gtg	atg	gaa	gaa	aaa	gcg	gta	624
Glu	Lys	Met	Pro	Glu	Lys	Val	Leu	Lys	Val	Met	Glu	Glu	Lys	Ala	Val	
		195					200					205				
ctc	aac	cga	cta	ggc	aca	gta	gag	gaa	gtg	gcg	aac	ggc	tat	gcc	ttt	672
Leu	Asn	Arg	Leu	Gly	Thr	Val	Glu	Glu	Val	Ala	Asn	Gly	Tyr	Ala	Phe	
	210					215					220					
ctt	gca	tcc	gat	gaa	gcg	tcg	ttt	att	aca	gga	acg	att	ttg	gcc	atc	720
Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe	Ile	Thr	Gly	Thr	Ile	Leu	Ala	Ile	
	225				230					235					240	
gat	ggc	ggt	gtc	gtt	ata	tag										741
Asp	Gly	Gly	Val	Val	Ile											
				245												

<210> 2960

<211> 246

<212> PRT

<213> Bacillus halodurans C-125

<400> 2960

Met	Arg	Leu	Asn	Gly	Lys	Val	Ala	Met	Ile	Thr	Gly	Ala	Gly	Arg	Gly	
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Ile	Gly	Ala	Ala	Thr	Ala	Lys	Lys	Phe	Ala	Arg	Glu	Gly	Ala	Lys	Val	
			20					25					30			
Ile	Val	Cys	Asp	Val	Arg	Glu	Glu	Glu	Val	Ala	Lys	Thr	Val	Ala	Glu	
		35					40					45				
Ile	Gln	Asp	Gly	Gly	Gly	Glu	Ala	Leu	Gly	Ser	Val	Val	Asp	Val	Thr	
	50					55					60					
Gln	Arg	Lys	Asp	Val	Lys	Asn	Val	Ile	Asn	Gln	Val	Ile	Glu	Arg	Phe	
	65				70					75					80	
Glu	Thr	Leu	Asp	Val	Val	Val	Asn	Asn	Ala	Gly	Ile	Thr	Ala	Asp	Ala	
				85					90					95		
Gln	Leu	Thr	Asn	Met	Thr	Asp	Ala	Gln	Trp	Asp	Asp	Val	Ile	Asp	Val	
			100					105					110			
Asn	Leu	Lys	Gly	Val	Phe	Ile	Val	Thr	Gln	Glu	Val	Thr	Thr	Ile	Met	
		115					120					125				
Lys	Glu	Gln	Lys	Arg	Gly	Val	Ile	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly	
	130					135					140					
Ser	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Trp	Gly	
	145				150					155					160	

## PhoenixTemp32470.tmp.txt

Val Asn Gly Met Thr Lys Thr Trp Ala Lys Glu Leu Gly Arg Tyr Asn  
 165 170 175  
 Ile Arg Val Asn Ala Val Ala Pro Gly Phe Ile Leu Thr Pro Met Thr  
 180 185 190  
 Glu Lys Met Pro Glu Lys Val Leu Lys Val Met Glu Glu Lys Ala Val  
 195 200 205  
 Leu Asn Arg Leu Gly Thr Val Glu Glu Val Ala Asn Gly Tyr Ala Phe  
 210 215 220  
 Leu Ala Ser Asp Glu Ala Ser Phe Ile Thr Gly Thr Ile Leu Ala Ile  
 225 230 235 240  
 Asp Gly Gly Val Val Ile  
 245

&lt;210&gt; 2961

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas aeruginosa PAO1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2961

atg aat gac ttt tcg aag tgg aca ggt cag gtc gcg ctc atc agc ggc	48
Met Asn Asp Phe Ser Lys Trp Thr Gly Gln Val Ala Leu Ile Ser Gly	
1 5 10 15	
gcc ggc agc gaa ctc ggc atc ggt ttc gcc att gcc cgg cgg ctg gcc	96
Ala Gly Ser Glu Leu Gly Ile Gly Phe Ala Ile Ala Arg Arg Leu Ala	
20 25 30	
cgc gaa ggc gtg cgc ctg ctg atc acc gcc agc agc gag cgg att agg	144
Arg Glu Gly Val Arg Leu Leu Ile Thr Ala Ser Ser Glu Arg Ile Arg	
35 40 45	
caa cga gcg gag gaa ctg agc gca tgt ggt cac gac gtg cgc gcc gcg	192
Gln Arg Ala Glu Glu Leu Ser Ala Cys Gly His Asp Val Arg Ala Ala	
50 55 60	
agc gcc gac ctg acc gac gaa gcc cag gtg cag ggc ctg ctg gac tgg	240
Ser Ala Asp Leu Thr Asp Glu Ala Gln Val Gln Gly Leu Leu Asp Trp	
65 70 75 80	
gcc gaa gcc cag tgg gga cgg gtc gac atc ctg gtg aac aat gcc ggc	288
Ala Glu Ala Gln Trp Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly	
85 90 95	
atg gcc cag ttg gac agc gcg gag ccc ttc agc gca gtg gaa gcg acc	336
Met Ala Gln Leu Asp Ser Ala Glu Pro Phe Ser Ala Val Glu Ala Thr	
100 105 110	
tcg ctg cgg gat tgg caa ctg tcc ctg tcg cgc aac ctg acc agc gct	384
Ser Leu Arg Asp Trp Gln Leu Ser Leu Ser Arg Asn Leu Thr Ser Ala	
115 120 125	
ttc ctg ctc acc cgc ggc ctg ctg ccg ggc atg cgc gag cgc ggc tac	432
Phe Leu Leu Thr Arg Gly Leu Leu Pro Gly Met Arg Glu Arg Gly Tyr	
130 135 140	
ggg cgg atc gtc aac gtc tcc acc acc gga acc cgc ggc agc aac	480
Gly Arg Ile Val Asn Val Ala Ser Thr Thr Gly Thr Arg Gly Ser Asn	
145 150 155 160	
ccg ggc gaa gcc gcg tat agc gcg gcc aag gcc ggt ctg gtc ggc tgg	528
Pro Gly Glu Ala Ala Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Trp	
165 170 175	
agc atg ggc ctc gcg ctg gag gtg gcg aag agc ggc atc acg gtg aac	576
Ser Met Gly Leu Ala Leu Glu Val Ala Lys Ser Gly Ile Thr Val Asn	
180 185 190	
agc gtc gcg ccg ggc tgg atc gcc acc gcc tcg agc acc gcc gaa gaa	624
Ser Val Ala Pro Gly Trp Ile Ala Thr Ala Ser Ser Thr Ala Glu Glu	
195 200 205	
cgc cag gcc gcc ctg gcc agc ccc agc gga cgt gcc ggc cgg ccc gaa	672
Arg Gln Ala Ala Leu Ala Ser Pro Ser Gly Arg Ala Gly Arg Pro Glu	
210 215 220	
gag gtg gcc gcc gcg gtg gcc ttc ctc gcc tcg ccc gaa gcc agc ttc	720
Glu Val Ala Ala Ala Val Ala Phe Leu Ala Ser Pro Glu Ala Ser Phe	
225 230 235 240	

## PhoenixTemp32470.tmp.txt

gtc aac ggc gaa ctg ctg gtg gtg gat ggc ggc aac tgc ctg atc gaa 768  
 Val Asn Gly Glu Leu 245 Val Val Asp Gly Gly Asn Cys Leu Ile Glu 255  
 aac aaa cgg agc tga 783  
 Asn Lys Arg Ser 260

<210> 2962  
 <211> 260  
 <212> PRT  
 <213> Pseudomonas aeruginosa PA01

<400> 2962  
 Met Asn Asp Phe Ser Lys Trp Thr Gly Gln Val Ala Leu Ile Ser Gly  
 1 5 10 15  
 Ala Gly Ser Glu Leu Gly Ile Gly Phe Ala Ile Ala Arg Arg Leu Ala  
 20 25 30  
 Arg Glu Gly Val Arg Leu Leu Ile Thr Ala Ser Ser Glu Arg Ile Arg  
 35 40 45  
 Gln Arg Ala Glu Glu Leu Ser Ala Cys Gly His Asp Val Arg Ala Ala  
 50 55 60  
 Ser Ala Asp Leu Thr Asp Glu Ala Gln Val Gln Gly Leu Leu Asp Trp  
 65 70 75 80  
 Ala Glu Ala Gln Trp Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly  
 85 90 95  
 Met Ala Gln Leu Asp Ser Ala Glu Pro Phe Ser Ala Val Glu Ala Thr  
 100 105 110  
 Ser Leu Arg Asp Trp Gln Leu Ser Leu Ser Arg Asn Leu Thr Ser Ala  
 115 120 125  
 Phe Leu Leu Thr Arg Gly Leu Leu Pro Gly Met Arg Glu Arg Gly Tyr  
 130 135 140  
 Gly Arg Ile Val Asn Val Ala Ser Thr Thr Gly Thr Arg Gly Ser Asn  
 145 150 155 160  
 Pro Gly Glu Ala Ala Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Trp  
 165 170 175  
 Ser Met Gly Leu Ala Leu Glu Val Ala Lys Ser Gly Ile Thr Val Asn  
 180 185 190  
 Ser Val Ala Pro Gly Trp Ile Ala Thr Ala Ser Ser Thr Ala Glu Glu  
 195 200 205  
 Arg Gln Ala Ala Leu Ala Ser Pro Ser Gly Arg Ala Gly Arg Pro Glu  
 210 215 220  
 Glu Val Ala Ala Ala Val Ala Phe Leu Ala Ser Pro Glu Ala Ser Phe  
 225 230 235 240  
 Val Asn Gly Glu Leu Leu Val Val Asp Gly Gly Asn Cys Leu Ile Glu  
 245 250 255  
 Asn Lys Arg Ser 260

<210> 2963  
 <211> 786  
 <212> DNA  
 <213> Agrobacterium tumefaciens str. C58

<220>  
 <221> CDS  
 <222> (1)..(786)  
 <223> transl\_table=11

<400> 2963  
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 Met Arg Arg Phe Glu Gly Gln Ser Val Phe Val Thr Gly Gly Asn Lys 15  
 1 5 10  
 ggc atc ggt tac ggc atc gcc cgc cgt ttt gcc gaa gaa ggc gcg aaa 96  
 Gly Ile Gly Tyr Gly Ile Ala Arg Arg Phe Ala Glu Glu Gly Ala Lys 20 25 30  
 gtc gcc atc gcc tct gtc gac aaa gac aca cat gac gcc gct aaa aaa 144  
 Val Ala Ile Ala Ser Val Asp Lys Asp Thr His Asp Ala Ala Lys Lys 35 40 45  
 ctg gcg gac gaa acc ggc acc gtc acc cat ggc gtc atc ctc gac gtt 192  
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## PhoenixTemp32470.tmp.txt

Leu	Ala	Asp	Glu	Thr	Gly	Thr	Val	Thr	His	Gly	Val	Ile	Leu	Asp	Val		
agg	gat	gcg	gcg	gcg	gtg	cgt	gac	gcc	tat	ggc	gct	gcg	gaa	gac	gcg	240	
Arg	Asp	Ala	Ala	Ala	Val	Arg	Asp	Ala	Tyr	Gly	Ala	Ala	Glu	Asp	Ala		
65					70					75					80		
atc	ggc	gcg	ctt	tcc	atc	tcc	gtc	cag	aac	gcc	ggc	gtc	atc	act	atc	288	
Ile	Gly	Ala	Leu	Ser	Ile	Ser	Val	Gln	Asn	Ala	Gly	Val	Ile	Thr	Ile		
				85					90					95			
tca	aag	atc	gag	gat	ctg	acg	caa	gaa	cag	tgg	gat	ttg	aac	ctc	gac	336	
Ser	Lys	Ile	Glu	Asp	Leu	Thr	Gln	Glu	Gln	Trp	Asp	Leu	Asn	Leu	Asp		
			100					105					110				
gtc	aac	acc	aag	ggc	gcg	ttc	ctc	tgc	tgc	cag	gag	gca	atc	cgt	cgc	384	
Val	Asn	Thr	Lys	Gly	Ala	Phe	Leu	Cys	Cys	Gln	Glu	Ala	Ile	Arg	Arg		
			115				120					125					
ttc	cgc	gca	agc	ggc	acc	aag	ggc	cgc	ctc	gtc	aac	acc	gcc	tcc	ggc	432	
Phe	Arg	Ala	Ser	Gly	Thr	Lys	Gly	Arg	Leu	Val	Asn	Thr	Ala	Ser	Gly		
						135					140						
caa	gcg	cgt	cag	ggc	ttc	atc	tac	acg	ccg	cat	tat	gct	gcg	tcc	aaa	480	
Gln	Ala	Arg	Gln	Gly	Phe	Ile	Tyr	Thr	Pro	His	Tyr	Ala	Ala	Ser	Lys		
145					150					155					160		
ttc	ggc	ggt	atc	ggc	ctg	acg	caa	agc	ctc	gcc	aag	gaa	ctt	gca	cct	528	
Phe	Gly	Val	Ile	Gly	Leu	Thr	Gln	Ser	Leu	Ala	Lys	Glu	Leu	Ala	Pro		
				165					170					175			
gag	ggc	atc	acc	gtc	aac	gcc	atc	tgc	ccc	ggc	atc	atc	cac	acc	gaa	576	
Glu	Gly	Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Ile	Ile	His	Thr	Glu		
			180					185					190				
atg	tgg	gat	tac	aac	gac	cgc	gtc	tgg	ggc	cag	atg	ctg	ggc	gaa	tac	624	
Met	Trp	Asp	Tyr	Asn	Asp	Arg	Val	Trp	Gly	Gln	Met	Leu	Gly	Glu	Tyr		
							200					205					
aag	ccc	ggc	gag	ttg	atg	gcc	gaa	tgg	gtg	cgc	aac	atc	ccc	atg	cgt	672	
Lys	Pro	Gly	Glu	Leu	Met	Ala	Glu	Trp	Val	Arg	Asn	Ile	Pro	Met	Arg		
						215					220						
cgc	gcc	gga	acg	ccc	gcc	gaa	gtg	gcg	gcg	ctg	gtg	gca	ttt	ctg	gca	720	
Arg	Ala	Gly	Thr	Pro	Ala	Glu	Val	Ala	Ala	Leu	Val	Ala	Phe	Leu	Ala		
225					230					235				240			
tca	gag	gat	gcg	gcc	tat	atc	acg	gcc	cag	acg	atc	aac	gtc	gat	ggc	768	
Ser	Glu	Asp	Ala	Ala	Tyr	Ile	Thr	Ala	Gln	Thr	Ile	Asn	Val	Asp	Gly		
				245					250					255			
ggg	ttg	atc	atg	tct	tga											786	
Gly	Leu	Ile	Met	Ser													
			260														

&lt;210&gt; 2964

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 2964

Met	Arg	Arg	Phe	Glu	Gly	Gln	Ser	Val	Phe	Val	Thr	Gly	Gly	Asn	Lys		
1				5					10					15			
Gly	Ile	Gly	Tyr	Gly	Ile	Ala	Arg	Arg	Phe	Ala	Glu	Glu	Gly	Ala	Lys		
			20					25					30				
Val	Ala	Ile	Ala	Ser	Val	Asp	Lys	Asp	Thr	His	Asp	Ala	Ala	Lys	Lys		
			35				40					45					
Leu	Ala	Asp	Glu	Thr	Gly	Thr	Val	Thr	His	Gly	Val	Ile	Leu	Asp	Val		
						55					60						
Arg	Asp	Ala	Ala	Ala	Val	Arg	Asp	Ala	Tyr	Gly	Ala	Ala	Glu	Asp	Ala		
65					70					75					80		
Ile	Gly	Ala	Leu	Ser	Ile	Ser	Val	Gln	Asn	Ala	Gly	Val	Ile	Thr	Ile		
				85					90					95			
Ser	Lys	Ile	Glu	Asp	Leu	Thr	Gln	Glu	Gln	Trp	Asp	Leu	Asn	Leu	Asp		
			100					105					110				
Val	Asn	Thr	Lys	Gly	Ala	Phe	Leu	Cys	Cys	Gln	Glu	Ala	Ile	Arg	Arg		
			115				120					125					
Phe	Arg	Ala	Ser	Gly	Thr	Lys	Gly	Arg	Leu	Val	Asn	Thr	Ala	Ser	Gly		
						135					140						
Gln	Ala	Arg	Gln	Gly	Phe	Ile	Tyr	Thr	Pro	His	Tyr	Ala	Ala	Ser	Lys		
145					150					155					160		
Phe	Gly	Val	Ile	Gly	Leu	Thr	Gln	Ser	Leu	Ala	Lys	Glu	Leu	Ala	Pro		

## PhoenixTemp32470.tmp.txt

Glu Gly Ile Thr Val Asn Ala Ile Cys Pro Gly Ile Ile His Thr Glu  
 Met Trp Asp Tyr Asn Asp Arg Val Trp Gly Gln Met Leu Gly Glu Tyr  
 Lys Pro Gly Glu Leu Met Ala Glu Trp Val Arg Asn Ile Pro Met Arg  
 Arg Ala Gly Thr Pro Ala Glu Val Ala Ala Leu Val Ala Phe Leu Ala  
 Ser Glu Asp Ala Ala Tyr Ile Thr Ala Gln Thr Ile Asn Val Asp Gly  
 Gly Leu Ile Met Ser

&lt;210&gt; 2965

&lt;211&gt; 918

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(918)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2965

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Met Gly Ala Ala Gly Phe Thr Thr Pro Pro Pro Phe Pro Glu Val Ala	
1 5 10 15	
ccc gaa atc acg ccc gaa atc acg att gcc agc ccg ccc cct ttg ggc	96
Pro Glu Ile Thr Pro Glu Ile Thr Ile Ala Ser Pro Pro Pro Leu Gly	
20 25 30	
ata acc tgc tta aat atg tgc gaa gta atg caa aaa ggg gaa agc atg	144
Ile Thr Cys Leu Asn Met Cys Glu Val Met Gln Lys Gly Glu Ser Met	
35 40 45	
cat cgg aca gtt atc gtg aca gcc tcc aca agc ggc atc ggc ctt ggc	192
His Arg Thr Val Ile Val Thr Gly Ser Thr Ser Gly Ile Gly Leu Gly	
50 55 60	
att gcg caa aga ttt gcg cgg gag ggc gcc aat atc gtg ctg aac ggt	240
Ile Ala Gln Arg Phe Ala Arg Glu Gly Ala Asn Ile Val Leu Asn Gly	
65 70 75 80	
ttt ggc gac gac gac gag atc gaa aaa ctg cgc ctt ctg ctg gaa gcc	288
Phe Gly Asp Asp Asp Glu Ile Glu Lys Leu Arg Leu Leu Leu Glu Ala	
85 90 95	
gaa agc ggc ggg cgg gtg ctt tac cat ccc gcc gat atg acg aaa ccg	336
Glu Ser Gly Gly Arg Val Leu Tyr His Pro Ala Asp Met Thr Lys Pro	
100 105 110	
gac gag atc gcc gat ctc atc cag tcc tca cac gaa aaa ctc ggc tcg	384
Asp Glu Ile Ala Asp Leu Ile Gln Ser Ser His Glu Lys Leu Gly Ser	
115 120 125	
gtg gat gtg ctc atc aac aat gcc ggt att cag cac atc gcg ccc atc	432
Val Asp Val Leu Ile Asn Asn Ala Gly Ile Gln His Ile Ala Pro Ile	
130 135 140	
gag gag ttc ccg acg gaa aaa tgg gac tgg atc atc gcc atc aat ctg	480
Glu Glu Phe Pro Thr Glu Lys Trp Asp Trp Ile Ile Ala Ile Asn Leu	
145 150 155 160	
acc agt tct ttt cac acc atg cgt gcc gcg ata ccg ctg atg aaa aag	528
Thr Ser Ser Phe His Thr Met Arg Ala Ala Ile Pro Leu Met Lys Lys	
165 170 175	
gca ggc aaa ggc cgc atc atc aac att tcc tca gcc cac ggc ctt gtc	576
Ala Gly Lys Gly Arg Ile Ile Asn Ile Ser Ser Ala His Gly Leu Val	
180 185 190	
gcc tcg ccg ttc aaa tcg gcc tat gtg gcg gcc aaa cac ggc atc atg	624
Ala Ser Pro Phe Lys Ser Ala Tyr Val Val Ala Ala Lys His Gly Ile Met	
195 200 205	
ggc ttg acg aaa acg gca gcg ctc gaa ctt gcg caa acg ggc gtc acc	672
Gly Leu Thr Lys Thr Ala Ala Leu Glu Leu Ala Gln Thr Gly Val Thr	
210 215 220	
gtc aac gcc atc tgt ccc ggt tac gtg ctg acg ccg ctg gtg gaa aag	720
Val Asn Ala Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu Lys	

## PhoenixTemp32470.tmp.txt

225	cag	ata	ccg	gaa	atg	gcc	aag	gtg	cgc	ggc	atc	agc	gaa	gcg	gcg	gtg	768
	Gln	Ile	Pro	Glu	Met	Ala	Lys	Val	Arg	Gly	Ile	Ser	Glu	Ala	Ala	Val	
					245					250					255		
	aag	aac	gac	gtg	atg	ctg	gaa	ttg	cag	gcg	acc	aaa	caa	ttc	gtc	acc	816
	Lys	Asn	Asp	Val	Met	Leu	Glu	Leu	Gln	Ala	Thr	Lys	Gln	Phe	Val	Thr	
				260					265					270			
	gtc	gat	gac	gtc	gcc	gcc	gct	gcg	ata	ttt	ctg	gca	agc	gac	gcc	gca	864
	Val	Asp	Asp	Val	Ala	Ala	Ala	Ala	Ile	Phe	Leu	Ala	Ser	Asp	Ala	Ala	
				275				280					285				
	agc	aac	atc	acc	ggc	acc	cat	att	tcc	gta	gac	ggc	ggc	tggt	acg	gca	912
	Ser	Asn	Ile	Thr	Gly	Thr	His	Ile	Ser	Val	Asp	Gly	Gly	Trp	Thr	Ala	
		290					295					300					
	caa	taa															918
	Gln																
	305																

&lt;210&gt; 2966

&lt;211&gt; 305

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 2966

Met	Gly	Ala	Ala	Gly	Phe	Thr	Thr	Pro	Pro	Pro	Phe	Pro	Glu	Val	Ala	
1				5				10					15			
Pro	Glu	Ile	Thr	Pro	Glu	Ile	Thr	Ile	Ala	Ser	Pro	Pro	Pro	Leu	Gly	
			20					25					30			
Ile	Thr	Cys	Leu	Asn	Met	Cys	Glu	Val	Met	Gln	Lys	Gly	Glu	Ser	Met	
		35					40					45				
His	Arg	Thr	Val	Ile	Val	Thr	Gly	Ser	Thr	Ser	Gly	Ile	Gly	Leu	Gly	
	50					55					60					
Ile	Ala	Gln	Arg	Phe	Ala	Arg	Glu	Gly	Ala	Asn	Ile	Val	Leu	Asn	Gly	
65				70						75				80		
Phe	Gly	Asp	Asp	Asp	Glu	Ile	Glu	Lys	Leu	Arg	Leu	Leu	Leu	Glu	Ala	
			85					90						95		
Glu	Ser	Gly	Gly	Arg	Val	Leu	Tyr	His	Pro	Ala	Asp	Met	Thr	Lys	Pro	
			100					105					110			
Asp	Glu	Ile	Ala	Asp	Leu	Ile	Gln	Ser	Ser	His	Glu	Lys	Leu	Gly	Ser	
		115					120					125				
Val	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	Ile	Gln	His	Ile	Ala	Pro	Ile	
	130					135					140					
Glu	Glu	Phe	Pro	Thr	Glu	Lys	Trp	Asp	Trp	Ile	Ile	Ala	Ile	Asn	Leu	
145					150					155				160		
Thr	Ser	Ser	Phe	His	Thr	Met	Arg	Ala	Ala	Ile	Pro	Leu	Met	Lys	Lys	
				165				170						175		
Ala	Gly	Lys	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Ala	His	Gly	Leu	Val	
			180					185					190			
Ala	Ser	Pro	Phe	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Ile	Met	
		195					200					205				
Gly	Leu	Thr	Lys	Thr	Ala	Ala	Leu	Glu	Leu	Ala	Gln	Thr	Gly	Val	Thr	
	210				215						220					
Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Leu	Thr	Pro	Leu	Val	Glu	Lys	
225				230						235				240		
Gln	Ile	Pro	Glu	Met	Ala	Lys	Val	Arg	Gly	Ile	Ser	Glu	Ala	Ala	Val	
				245					250					255		
Lys	Asn	Asp	Val	Met	Leu	Glu	Leu	Gln	Ala	Thr	Lys	Gln	Phe	Val	Thr	
			260					265					270			
Val	Asp	Asp	Val	Ala	Ala	Ala	Ala	Ile	Phe	Leu	Ala	Ser	Asp	Ala	Ala	
		275					280					285				
Ser	Asn	Ile	Thr	Gly	Thr	His	Ile	Ser	Val	Asp	Gly	Gly	Trp	Thr	Ala	
	290					295					300					
Gln																
305																

&lt;210&gt; 2967

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58



&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(816)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2967

atg	gag	act	gct	ttg	aca	ggt	cgc	ctg	acg	gga	aaa	cgc	gcg	ctt	gtg	48
Met	Glu	Thr	Ala	Leu	Thr	Gly	Arg	Leu	Thr	Gly	Lys	Arg	Ala	Leu	Val	
1				5				10					15			
ttt	ggc	gca	gga	tca	tcg	ggg	ccg	gga	ttt	ggc	aac	ggc	aag	gct	gcg	96
Phe	Gly	Ala	Gly	Ser	Ser	Gly	Pro	Gly	Phe	Gly	Asn	Gly	Lys	Ala	Ala	
			20				25					30				
gcc	gtg	caa	ttt	gcc	cgc	gaa	ggc	gcg	cgc	gta	gcc	tgt	gtc	gat	ctc	144
Ala	Val	Gln	Phe	Ala	Arg	Glu	Gly	Ala	Arg	Val	Ala	Cys	Val	Asp	Leu	
		35				40					45					
tgc	gct	gac	gca	gcc	gaa	gag	acg	gct	gag	atc	att	cgc	gga	gaa	ggc	192
Cys	Ala	Asp	Ala	Ala	Glu	Glu	Thr	Ala	Glu	Ile	Ile	Arg	Gly	Glu	Gly	
	50				55					60						
ttg	gag	gcg	att	gcg	gct	gcc	gat	gtc	act	gaa	cta	cag	tcc	gta		240
Leu	Glu	Ala	Ile	Ala	Ala	Ala	Ala	Asp	Val	Thr	Glu	Leu	Gln	Ser	Val	
	65			70				75						80		
tcg	gcc	acc	gtt	gac	cgc	acc	tgc	gag	gcc	ttt	ggg	ggc	atc	gat	att	288
Ser	Ala	Thr	Val	Asp	Arg	Thr	Cys	Glu	Ala	Phe	Gly	Gly	Ile	Asp	Ile	
				85				90						95		
ctg	cac	aat	aat	gtc	ggc	gtg	acc	cat	atg	ggc	ggg	ccg	gtt	gag	ctg	336
Leu	His	Asn	Asn	Val	Gly	Val	Thr	His	Met	Gly	Gly	Pro	Val	Glu	Leu	
			100				105					110				
gat	gag	gaa	agc	ttt	cgc	gcc	tcg	gtc	gat	ctc	aat	atc	ggc	tcc	gtt	384
Asp	Glu	Glu	Ser	Phe	Arg	Ala	Ser	Val	Asp	Leu	Asn	Ile	Gly	Ser	Val	
		115					120				125					
tat	cgc	acc	tcc	aag	gct	gtg	ttg	ccg	gtg	atg	ttg	gcg	cag	ggc	ggc	432
Tyr	Arg	Thr	Ser	Lys	Ala	Val	Leu	Pro	Val	Met	Leu	Ala	Gln	Gly	Gly	
	130			135				140								
ggg	gcc	att	gtc	aat	atc	tcg	tcg	ctc	gcc	tcc	att	cgc	tgg	acc	ggc	480
Gly	Ala	Ile	Val	Asn	Ile	Ser	Ser	Leu	Ala	Ser	Ile	Arg	Trp	Thr	Gly	
	145			150				155						160		
tat	cca	tat	ttt	gcc	tat	tac	gcc	atg	aag	gca	gct	gta	aat	cag	gcg	528
Tyr	Pro	Tyr	Phe	Ala	Tyr	Tyr	Ala	Met	Lys	Ala	Ala	Val	Asn	Gln	Ala	
			165				170						175			
act	gtg	gcg	ctg	gcc	atg	caa	tat	gcc	cgg	cag	ggc	att	cgc	gcc	aat	576
Thr	Val	Ala	Leu	Ala	Met	Gln	Tyr	Ala	Arg	Gln	Gly	Ile	Arg	Ala	Asn	
			180				185					190				
tgc	att	ctt	ccg	gga	atg	atc	gac	acc	cca	ctg	atc	tac	aag	cag	atc	624
Cys	Ile	Leu	Pro	Gly	Met	Ile	Asp	Thr	Pro	Leu	Ile	Tyr	Lys	Gln	Ile	
		195					200				205					
agc	aat	caa	tat	gcg	tct	gtc	gag	gaa	atg	gtg	gcg	gcg	cgc	aat	gcg	672
Ser	Asn	Gln	Tyr	Ala	Ser	Val	Glu	Glu	Met	Val	Ala	Ala	Arg	Asn	Ala	
	210					215				220						
gct	gtc	ccg	gtg	ggt	cgc	atg	ggc	gat	gcc	ttt	gat	att	gcc	cgc	gcc	720
Ala	Val	Pro	Val	Gly	Arg	Met	Gly	Asp	Ala	Phe	Asp	Ile	Ala	Arg	Ala	
	225			230			235							240		
gcc	gtt	ttt	ctc	gca	tct	gat	gag	gct	aag	ttc	atc	acc	ggc	gtc	tgt	768
Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Ile	Thr	Gly	Val	Cys	
			245				250						255			
ttg	ccg	gtc	gat	ggc	ggg	caa	agc	tgt	gcg	gtg	ggg	gcg	ttt	tcc		813
Leu	Pro	Val	Asp	Gly	Gly	Gln	Ser	Cys	Ala	Val	Gly	Ala	Phe	Ser		
			260				265						270			
taa																816

&lt;210&gt; 2968

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;400&gt; 2968

Met	Glu	Thr	Ala	Leu	Thr	Gly	Arg	Leu	Thr	Gly	Lys	Arg	Ala	Leu	Val
1				5				10						15	

## PhoenixTemp32470.tmp.txt

Phe Gly Ala Gly Ser Ser Gly Pro Gly Phe Gly Asn Gly Lys Ala Ala  
 20 25 30  
 Ala Val Gln Phe Ala Arg Glu Gly Ala Arg Val Ala Cys Val Asp Leu  
 35 40 45  
 Cys Ala Asp Ala Ala Glu Glu Thr Ala Glu Ile Ile Arg Gly Glu Gly  
 50 55 60  
 Leu Glu Ala Ile Ala Ala Ala Asp Val Thr Glu Leu Gln Ser Val  
 65 70 75 80  
 Ser Ala Thr Val Asp Arg Thr Cys Glu Ala Phe Gly Gly Ile Asp Ile  
 85 90 95  
 Leu His Asn Asn Val Gly Val Thr His Met Gly Gly Pro Val Glu Leu  
 100 105 110  
 Asp Glu Glu Ser Phe Arg Ala Ser Val Asp Leu Asn Ile Gly Ser Val  
 115 120 125  
 Tyr Arg Thr Ser Lys Ala Val Leu Pro Val Met Leu Ala Gln Gly Gly  
 130 135 140  
 Gly Ala Ile Val Asn Ile Ser Ser Leu Ala Ser Ile Arg Trp Thr Gly  
 145 150 155 160  
 Tyr Pro Tyr Phe Ala Tyr Tyr Ala Met Lys Ala Ala Val Asn Gln Ala  
 165 170 175  
 Thr Val Ala Leu Ala Met Gln Tyr Ala Arg Gln Gly Ile Arg Ala Asn  
 180 185 190  
 Cys Ile Leu Pro Gly Met Ile Asp Thr Pro Leu Ile Tyr Lys Gln Ile  
 195 200 205  
 Ser Asn Gln Tyr Ala Ser Val Glu Glu Met Val Ala Ala Arg Asn Ala  
 210 215 220  
 Ala Val Pro Val Gly Arg Met Gly Asp Ala Phe Asp Ile Ala Arg Ala  
 225 230 235 240  
 Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe Ile Thr Gly Val Cys  
 245 250 255  
 Leu Pro Val Asp Gly Gly Gln Ser Cys Ala Val Gly Ala Phe Ser  
 260 265 270

&lt;210&gt; 2969

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens str. C58

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2969

atg acg gag atc gac atg aga ttg aac aac aag gtc gcg ctg atc acc	48
Met Thr Glu Ile Asp Met Arg Leu Asn Asn Lys Val Ala Leu Ile Thr	
1 5 10 15	
ggc gcc gcc cgc ggc atc ggc ctt ggt ttc gcc cag gct ttc gct gct	96
Gly Ala Ala Arg Gly Ile Gly Leu Gly Phe Ala Gln Ala Phe Ala Ala	
20 25 30	
gag ggc gca aag gtc atc atc gcc gac atc gat atc gcc cgc gca act	144
Glu Gly Ala Lys Val Ile Ile Ala Asp Ile Asp Ile Ala Arg Ala Thr	
35 40 45	
acc tcg gct gcg gcc atc ggc ccc gca gcc aag gcc gtg aag ctg gat	192
Thr Ser Ala Ala Ile Gly Pro Ala Ala Lys Ala Val Lys Leu Asp	
50 55 60	
gtg acc gac ctt gcc cag atc gac gcg gtg gta aag gcg gtg gat gag	240
Val Thr Asp Leu Ala Gln Ile Asp Ala Val Val Lys Ala Val Asp Glu	
65 70 75 80	
gaa ttc ggc ggc atc gac att ctc gtc aac aat gcg gcg atc ttc gat	288
Glu Phe Gly Gly Ile Asp Ile Leu Val Asn Asn Ala Ala Ile Phe Asp	
85 90 95	
atg gcg ccg atc aac ggc att acc gaa gag agc tat gag cgg gtg ttc	336
Met Ala Pro Ile Asn Gly Ile Thr Glu Glu Ser Tyr Glu Arg Val Phe	
100 105 110	
gac atc aat ctc aag ggc ccg atg ttc atg atg aag gcc gtc tcc aat	384
Asp Ile Asn Leu Lys Gly Pro Met Phe Met Met Lys Ala Val Ser Asn	
115 120 125	
gtc atg atc gcc cgc gca cgc ggc ggc aag atc atc aat atg gct agc	432

PhoenixTemp32470.tmp.txt

Val	Met	Ile	Ala	Arg	Ala	Arg	Gly	Gly	Lys	Ile	Ile	Asn	Met	Ala	Ser	
	130					135				140						
cag	gcc	ggc	cgg	cgc	ggc	gag	gcg	ctg	gtg	acg	ctt	tat	tgc	gcc	tcc	480
Gln	Ala	Gly	Arg	Arg	Gly	Glu	Ala	Leu	Val	Thr	Leu	Tyr	Cys	Ala	Ser	
145					150					155					160	
aag	gcg	gcg	atc	att	tcc	gcc	acg	caa	tcg	gcg	gcg	ctg	gcg	ctc	gtc	528
Lys	Ala	Ala	Ile	Ile	Ser	Ala	Thr	Gln	Ser	Ala	Ala	Leu	Ala	Leu	Val	
				165					170						175	
aag	cat	ggc	atc	aat	gtc	aac	gcc	ata	gcg	ccg	ggt	gtg	gtg	gat	ggc	576
Lys	His	Gly	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	Val	Val	Asp	Gly	
			180					185					190			
gag	cat	tgg	gaa	gtg	gtc	gat	gcg	cat	ttc	gcc	aag	tgg	gaa	ggt	ttg	624
Glu	His	Trp	Glu	Val	Val	Asp	Ala	His	Phe	Ala	Lys	Trp	Glu	Gly	Leu	
		195					200					205				
aag	ccg	ggt	gag	aaa	aag	gcc	gcg	gtg	gcc	aaa	tcc	gtg	ccg	atc	ggc	672
Lys	Pro	Gly	Glu	Lys	Lys	Ala	Ala	Val	Ala	Lys	Ser	Val	Pro	Ile	Gly	
	210					215					220					
cgt	ttt	gcg	acg	cca	gac	gac	atc	aag	gga	ctg	gcg	gtg	ttc	ctc	gcc	720
Arg	Phe	Ala	Thr	Pro	Asp	Asp	Ile	Lys	Gly	Leu	Ala	Val	Phe	Leu	Ala	
225					230					235					240	
tcc	gcc	gac	agc	gac	tat	att	ctc	gcc	cag	aca	tat	aat	gtc	gac	ggc	768
Ser	Ala	Asp	Ser	Asp	Tyr	Ile	Leu	Ala	Gln	Thr	Tyr	Asn	Val	Asp	Gly	
				245					250					255		
ggc	aac	tgg	atg	agc	tga											786
Gly	Asn	Trp	Met	Ser												
			260													

<210> 2970

<211> 261

<212> PRT

<213> Agrobacterium tumefaciens str. C58

<400> 2970

Met	Thr	Glu	Ile	Asp	Met	Arg	Leu	Asn	Asn	Lys	Val	Ala	Leu	Ile	Thr
1				5				10						15	
Gly	Ala	Ala	Arg	Gly	Ile	Gly	Leu	Gly	Phe	Ala	Gln	Ala	Phe	Ala	Ala
			20					25					30		
Glu	Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	Ile	Asp	Ile	Ala	Arg	Ala	Thr
		35					40				45				
Thr	Ser	Ala	Ala	Ala	Ile	Gly	Pro	Ala	Ala	Lys	Ala	Val	Lys	Leu	Asp
	50					55					60				
Val	Thr	Asp	Leu	Ala	Gln	Ile	Asp	Ala	Val	Val	Lys	Ala	Val	Asp	Glu
65					70					75				80	
Glu	Phe	Gly	Gly	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Ala	Ile	Phe	Asp
			85						90					95	
Met	Ala	Pro	Ile	Asn	Gly	Ile	Thr	Glu	Ser	Tyr	Glu	Arg	Val	Phe	
		100						105				110			
Asp	Ile	Asn	Leu	Lys	Gly	Pro	Met	Phe	Met	Met	Lys	Ala	Val	Ser	Asn
		115					120					125			
Val	Met	Ile	Ala	Arg	Ala	Arg	Gly	Gly	Lys	Ile	Ile	Asn	Met	Ala	Ser
	130					135					140				
Gln	Ala	Gly	Arg	Arg	Gly	Glu	Ala	Leu	Val	Thr	Leu	Tyr	Cys	Ala	Ser
145					150					155					160
Lys	Ala	Ala	Ile	Ile	Ser	Ala	Thr	Gln	Ser	Ala	Ala	Leu	Ala	Leu	Val
				165					170					175	
Lys	His	Gly	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	Val	Val	Asp	Gly
			180					185					190		
Glu	His	Trp	Glu	Val	Val	Asp	Ala	His	Phe	Ala	Lys	Trp	Glu	Gly	Leu
		195					200					205			
Lys	Pro	Gly	Glu	Lys	Lys	Ala	Ala	Val	Ala	Lys	Ser	Val	Pro	Ile	Gly
	210					215					220				
Arg	Phe	Ala	Thr	Pro	Asp	Asp	Ile	Lys	Gly	Leu	Ala	Val	Phe	Leu	Ala
225					230					235					240
Ser	Ala	Asp	Ser	Asp	Tyr	Ile	Leu	Ala	Gln	Thr	Tyr	Asn	Val	Asp	Gly
				245					250					255	
Gly	Asn	Trp	Met	Ser											
			260												

<210> 2971

<211> 735  
 <212> DNA  
 <213> Sinorhizobium meliloti 1021

<220>  
 <221> CDS  
 <222> (1)..(735)  
 <223> transl\_table=11

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<400> 2971
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Met Thr Ala Asn Leu 5 Ala Gly Lys Val Val 10 Leu Val Thr Ala Ala Ala
1                               15
cag ggc ata gga cgc gca acc gca ctt gcc ttc gcc aag gcc ggt gcc      96
Gln Gly Ile Gly Arg Ala Thr Ala Leu 25 Ala Phe Ala Lys Ala Gly Ala
20                               30
aag gtc cat gcg acc gat atc aac gcg gac gcc gtt ggt agc ctt gaa      144
Lys Val His 35 Ala Thr Asp Ile Asn 40 Ala Asp Ala Val Gly Ser Leu Glu
35                               45
ggt gag gcg ggc atc agc acc cac cgg ctg gac gtc ctc gac acc gct      192
Gly Glu Ala Gly Ile Ser Thr His Arg Leu Asp Val Leu Asp Thr Ala
50                               55
gcg gtc gaa gcg ctg gtc gcg gag atc ggg gcc gtg gac gtg ctt ttc      240
Ala Val Glu Ala Leu 70 Ala Glu Ile Gly Ala Val Asp Val Leu Phe
65                               75
aac tgc gcc ggt ttc gtc cat gca ggc tcg gtg ctc acg atg aag gac      288
Asn Cys Ala Gly Phe 85 Val His Ala Gly Ser 90 Val Leu Thr Met Lys Asp
85                               95
gag gac ctc gat ttc gcc ttc gat ctg aac gtg aag tcg atg atc cgc      336
Glu Asp Leu 100 Phe Ala Phe Asp Leu 105 Asn Val Lys Ser Met Ile Arg
100                              110
acc atc cgt gcg gtg ctg ccc ggc atg atc gca cgc aag gac ggg tcg      384
Thr Ile Arg Ala Val Leu Pro Gly Met Ile Ala Arg Lys Asp Gly Ser
115                              125
atc gtc aat atg gcc tcg gtg gcc tcc agc att aaa ggc gtg ccg aac      432
Ile Val Asn Met Ala Ser Val 135 Ala Ser Ser Ile Lys 140 Gly Val Pro Asn
130                              140
cgc ttc gcc tat ggc gtg acc aaa gca gcc gtc atc ggg ctg acg aaa      480
Arg Phe Ala Tyr Gly Val 150 Thr Lys Ala Ala Val Ile Gly Leu Thr Lys
145                              155
gcc gtt gcg gcg gat tat gta gga gac ggc att cgc tgc aat gcg atc      528
Ala Val Ala Ala Asp Tyr Val Gly Asp Gly Ile Arg Cys Asn Ala Ile
165                              175
tgc ccg gga acg gtc gaa agc ccg tcg ctc gaa agc cgc atg cgg gca      576
Cys Pro Gly Thr 180 Val Glu Ser Pro Ser 185 Leu Glu Ser Arg Met Arg Ala
180                              190
cag gga gac tac gaa acg gcg cgt gcg gcc ttt atc tcc cgc cag ccg      624
Gln Gly Asp Tyr Glu Thr Ala Arg Ala Ala Phe Ile Ser Arg Gln Pro
195                              205
atg ggc cgc ctc ggc acg ccc gaa gag atc gcc gac ctt gcc gtc tat      672
Met Gly Arg Leu Gly Thr Pro 215 Glu Glu Ile Ala Asp Leu Ala Val Tyr
210                              220
ctc gcc ggc gcc acc tac acc tcc ggc cag gcc tac gcc atc gac ggc      720
Leu Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala Tyr Ala Ile Asp Gly
225                              235
ggc tgg acc att tga
Gly Trp Thr Ile
235                              240
735

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<210> 2972  
 <211> 244  
 <212> PRT  
 <213> Sinorhizobium meliloti 1021

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<400> 2972
Met Thr Ala Asn Leu 5 Ala Gly Lys Val Val 10 Leu Val Thr Ala Ala Ala
1                               15
Gln Gly Ile Gly Arg Ala Thr Ala Leu 25 Ala Phe Ala Lys Ala Gly Ala
20                               30

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## PhoenixTemp32470.tmp.txt

Lys Val His<sub>35</sub> Ala Thr Asp Ile Asn<sub>40</sub> Ala Asp Ala Val Gly<sub>45</sub> Ser Leu Glu  
 Gly Glu<sub>50</sub> Ala Gly Ile Ser Thr<sub>55</sub> His Arg Leu Asp Val<sub>60</sub> Leu Asp Thr Ala  
 Ala Val<sub>65</sub> Glu Ala Leu Val<sub>70</sub> Ala Glu Ile Gly Ala<sub>75</sub> Val Asp Val Leu Phe<sub>80</sub>  
 Asn Cys Ala Gly<sub>85</sub> Phe Val His Ala Gly Ser<sub>90</sub> Val Leu Thr Met Lys<sub>95</sub> Asp  
 Glu Asp Leu Asp<sub>100</sub> Phe Ala Phe Asp Leu<sub>105</sub> Asn Val Lys Ser Met Ile Arg  
 Thr Ile Arg<sub>115</sub> Ala Val Leu Pro Gly<sub>120</sub> Met Ile Ala Arg Lys<sub>125</sub> Asp Gly Ser  
 Ile Val<sub>130</sub> Asn Met Ala Ser Val<sub>135</sub> Ala Ser Ser Ile Lys<sub>140</sub> Gly Val Pro Asn  
 Arg Phe<sub>145</sub> Ala Tyr Gly Val<sub>150</sub> Thr Lys Ala Ala Val<sub>155</sub> Ile Gly Leu Thr Lys<sub>160</sub>  
 Ala Val<sub>165</sub> Ala Ala Asp Tyr Val Gly Asp Gly<sub>170</sub> Ile Arg Cys Asn Ala<sub>175</sub> Ile  
 Cys Pro Gly<sub>180</sub> Thr Val Glu Ser Pro Ser<sub>185</sub> Leu Glu Ser Arg Met Arg Ala  
 Gln Gly Asp<sub>195</sub> Tyr Glu Thr Ala Arg<sub>200</sub> Ala Ala Phe Ile Ser Arg Gln Pro  
 Met Gly<sub>210</sub> Arg Leu Gly Thr Pro<sub>215</sub> Glu Glu Ile Ala Asp<sub>220</sub> Leu Ala Val Tyr  
 Leu<sub>225</sub> Ala Gly Ala Thr Tyr<sub>230</sub> Thr Ser Gly Gln Ala<sub>235</sub> Tyr Ala Ile Asp Gly<sub>240</sub>  
 Gly Trp Thr Ile

&lt;210&gt; 2973

&lt;211&gt; 798

&lt;212&gt; DNA

&lt;213&gt; Ralstonia solanacearum GMI1000

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(798)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2973

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Met	Thr	Ala	Pro	Pro	Thr	Ser	Phe	Pro	Pro	Arg	Leu	Ala	Gly	Lys	Val	
1				5				10						15		
gcg	ctg	gtg	acc	ggc	gcc	acg	cag	ggc	atc	ggc	gcc	gcc	acc	gcg	cgg	96
Ala	Leu	Val	Thr	Gly	Ala	Thr	Gln	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	
			20					25					30			
ctg	ttc	gcg	cgg	cac	ggc	gcg	cgc	gtg	atc	gtc	aat	gcg	ctg	gtg	cgc	144
Leu	Phe	Ala	Arg	His	Gly	Ala	Arg	Val	Ile	Val	Asn	Ala	Leu	Val	Arg	
			35				40					45				
gac	gcc	gcc	gcc	gag	gcc	ttc	gcc	gcg	tcc	atc	ggc	cac	gac	ggc	aac	192
Asp	Ala	Ala	Ala	Glu	Ala	Phe	Ala	Ala	Ser	Ile	Gly	His	Asp	Gly	Asn	
			50			55					60					
gtg	ctg	ctg	gtg	cag	gcc	gac	gtg	cgc	tat	cgc	gac	cag	gcc	gat	gcc	240
Val	Leu	Leu	Val	Gln	Ala	Asp	Val	Arg	Tyr	Arg	Asp	Gln	Ala	Asp	Ala	
			65		70				75					80		
atg	gtc	gcg	gcg	ggc	gtc	gcg	cgc	ttc	ggc	ggc	atc	gac	gtg	ctg	gtc	288
Met	Val	Ala	Ala	Gly	Val	Ala	Arg	Phe	Gly	Gly	Ile	Asp	Val	Leu	Val	
				85					90					95		
aac	aat	gcc	ggc	atc	aat	gtc	ttc	tcc	gat	ccg	ctc	gcg	ctg	tcc	gag	336
Asn	Asn	Ala	Gly	Ile	Asn	Val	Phe	Ser	Asp	Pro	Leu	Ala	Leu	Ser	Glu	
			100				105					110				
gcg	gat	tgg	gcg	cgc	tgc	ctg	tcg	gtc	gac	ctg	gaa	ggc	gca	tgg	cat	384
Ala	Asp	Trp	Ala	Arg	Cys	Leu	Ser	Val	Asp	Leu	Glu	Gly	Ala	Trp	His	
			115				120					125				
tgc	gcg	cgc	gcc	gtg	ctg	ccg	cac	atg	ctg	gcg	cgc	ggc	gcc	ggc	agc	432
Cys	Ala	Arg	Ala	Val	Leu	Pro	His	Met	Leu	Ala	Arg	Gly	Ala	Gly	Ser	
			130			135					140					
atc	gtc	aac	atc	gct	tcg	gtg	cac	ggg	cat	aag	atc	atc	ccg	ggg	gcg	480
Ile	Val	Asn	Ile	Ala	Ser	Val	His	Gly	His	Lys	Ile	Ile	Pro	Gly	Ala	

## PhoenixTemp32470.tmp.txt

145	ttt ccg tat ccg gtg	150	gcc aag cat ggc ctg	155	ggg ctc acg cgg gcg	160		
Phe Pro Tyr Pro Val	165	Ala Lys His Gly Leu	170	atc Ile Gly Leu Thr	175	Arg Ala	528	
ctg ggc atc gag tac	180	gcg gcg cgc ggc atc	185	cggtgtc aat tcg atc	190	tcg Ser Ile Ser	576	
Leu Gly Ile Glu Tyr	195	Ala Ala Arg Gly Ile	200	Arg Val Asn Ser	205	Ile Ser	624	
ccg ggg ctg atc ctc	210	acg ccg atc gcc gag	215	gcc ggc ttt gcc gcg	220	Ala Ala Ala	672	
Pro Gly Leu Ile Leu	225	Thr Pro Ile Ala Glu	230	Ala Gly Phe Ala	235	Pro Cys	720	
ccc gac ccc gag gcc	240	gaa cgc cgc cag gcc	245	gac ctg ctg ccg tgc	250		768	
Pro Asp Pro Glu Ala	255	Glu Arg Arg Gln Ala	260	Asp Leu Leu Pro	265		798	
aag cgc atc ggc gag	265	ccg gag gag gtg gcc	270	tac acc gcg ctg ttc	275	ctc		
Lys Arg Ile Gly Glu	280	Pro Glu Glu Val Ala	285	Tyr Thr Ala Leu	290	Phe Leu		
gcc tcc gac gag gcg	295	cgc ttc atc aac gcc	300	gcc gcc gac atc ctg	305	atc gat		
Ala Ser Asp Glu Ala	310	Arg Phe Ile Asn Ala	315	Ala Asp Ile Leu	320	Ile Asp		
ggc gct cgc tcg cag	325	ctg tat cac gaa tga	330		335			
Gly Ala Arg Ser Gln	340	Leu Tyr His Glu	345		350			

&lt;210&gt; 2974

&lt;211&gt; 265

&lt;212&gt; PRT

&lt;213&gt; Ralstonia solanacearum GMI1000

&lt;400&gt; 2974

Met Thr Ala Pro Pro	5	Thr Ser Phe Pro	10	Arg Leu Ala Gly	15	Lys Val
Ala Leu Val Thr Gly	20	Ala Thr Gln Gly	25	Ile Gly Ala Ala	30	Thr Ala Arg
Leu Phe Ala Arg His	35	Gly Ala Arg Val	40	Ile Val Asn Ala	45	Leu Val Arg
Asp Ala Ala Ala Glu	50	Ala Phe Ala Ala	55	Ser Ile Gly His	60	Asp Gly Asn
Val Leu Leu Val Gln	65	Ala Asp Val Arg	70	Tyr Arg Asp Gln	75	Ala Asp Ala
Met Val Ala Ala Gly	80	Val Ala Arg Phe	85	Gly Gly Ile Asp	90	Val Leu Val
Asn Asn Ala Gly Ile	95	Asn Val Phe Ser	100	Asp Pro Leu Ala	105	Leu Ser Glu
Ala Asp Trp Ala Arg	110	Cys Leu Ser Val	115	Asp Leu Glu Gly	120	Ala Trp His
Cys Ala Arg Ala Val	125	Leu Pro His Met	130	Leu Ala Arg Gly	135	Ala Gly Ser
Ile Val Asn Ile Ala	140	Ser Val His Gly	145	His Lys Ile Ile	150	Pro Gly Ala
Phe Pro Tyr Pro Val	155	Ala Lys His Gly	160	Leu Ile Gly Leu	165	Thr Arg Ala
Leu Gly Ile Glu Tyr	170	Ala Ala Arg Gly	175	Ile Arg Val Asn	180	Ser Ile Ser
Pro Gly Leu Ile Leu	185	Thr Pro Ile Ala	190	Glu Ala Gly Phe	195	Ala Ala Ala
Pro Asp Pro Glu Ala	200	Glu Arg Arg Gln	205	Ala Asp Leu Leu	210	Pro Cys
Lys Arg Ile Gly Glu	215	Pro Glu Glu Val	220	Ala Tyr Thr Ala	225	Leu Phe Leu
Ala Ser Asp Glu Ala	230	Arg Phe Ile Asn	235	Ala Ala Asp Ile	240	Leu Ile Asp
Gly Ala Arg Ser Gln	245	Leu Tyr His Glu	250		255	
	260		265			

&lt;210&gt; 2975

&lt;211&gt; 921

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(921)

&lt;400&gt; 2975

atg gcg gcc ata gta ctg atc aga tct atc gtc aga aac ttt aaa cgg	48
Met Ala Ala Ile Val Leu Ile Arg Ser Ile Val Arg Asn Phe Lys Arg	
1 5 10 15	
cca gcc acc gca gcc tca gcc gct tac tcg aca ggt ggt ggt ggc ggc	96
Pro Ala Thr Ala Ala Ser Ala Ala Tyr Ser Thr Gly Gly Gly Gly Gly	
20 25 30	
ggt tgt act tgt acg agt aaa aag cta gaa ggc aaa gta gct ctc ata	144
Gly Cys Thr Cys Thr Ser Lys Lys Leu Glu Gly Lys Val Ala Leu Ile	
35 40 45	
act ggt ggt gct agc ggg ctc ggt aag gcc acg gcc agc gag ttt ctc	192
Thr Gly Gly Ala Ser Gly Leu Gly Lys Ala Thr Ala Ser Glu Phe Leu	
50 55 60	
cgc cat ggt gcc cga gtc gtg atc gcc gac tta gac gcg gaa acc ggg	240
Arg His Gly Ala Arg Val Ile Ala Asp Leu Asp Ala Glu Thr Gly	
65 70 75 80	
aca aaa acc gct aaa gaa cta ggc tcg gag gca gag ttt gtg cgg tgt	288
Thr Lys Thr Ala Lys Glu Leu Gly Ser Glu Ala Glu Phe Val Arg Cys	
85 90 95	
gat gtc acg gtg gag gct gat atc gct gga gcc gtg gaa atg acg gtg	336
Asp Val Thr Val Glu Ala Asp Ile Ala Gly Ala Val Glu Met Thr Val	
100 105 110	
gag cgg tat ggg aag cta gac gtg atg tac aat aac gct ggg att gtt	384
Glu Arg Tyr Gly Lys Leu Asp Val Met Tyr Asn Asn Ala Gly Ile Val	
115 120 125	
gga cct atg act cca gcg agc ata tcg cag ctt gat atg aca gaa ttc	432
Gly Pro Met Thr Pro Ala Ser Ile Ser Gln Leu Asp Met Thr Glu Phe	
130 135 140	
gag aga gta atg agg att aat gtt ttt ggt gtt gtc tcc ggc atc aaa	480
Glu Arg Val Met Arg Ile Asn Val Phe Gly Val Val Ser Gly Ile Lys	
145 150 155 160	
cac gcc gct aag ttt atg att ccg gct agg tct gga tgc att ttg tgc	528
His Ala Ala Lys Phe Met Ile Pro Ala Arg Ser Gly Cys Ile Leu Cys	
165 170 175	
aca tca agc gtt gca ggc gtg act gga ggg ttg gct cca cat tca tac	576
Thr Ser Ser Val Ala Gly Val Thr Gly Leu Ala Pro His Ser Tyr	
180 185 190	
aca atc tca aag ttc aca act ccc gga ata gtc aag tcg gca gca agc	624
Thr Ile Ser Lys Phe Thr Thr Pro Gly Ile Val Lys Ser Ala Ala Ser	
195 200 205	
gag ctc tgc gaa cac ggc gtg cgt ata aac tgt atc tca ccg ggt acg	672
Glu Leu Cys Glu His Gly Val Arg Ile Asn Cys Ile Ser Pro Gly Thr	
210 215 220	
gtg gct aca ccg ctc act ctc agt tac ctt cag aaa gtg ttt ccg aag	720
Val Ala Thr Pro Leu Thr Leu Ser Tyr Leu Gln Lys Val Phe Pro Lys	
225 230 235 240	
gta tcg gag gag aag cta cgc gaa aca gtg aaa gga atg ggt gag tta	768
Val Ser Glu Glu Lys Leu Arg Glu Thr Val Lys Gly Met Gly Glu Leu	
245 250 255	
aaa gga gct gag tgt gaa gaa gct gac gtg gct aag gct gct ttg tat	816
Lys Gly Ala Glu Cys Glu Glu Ala Asp Val Ala Lys Ala Ala Leu Tyr	
260 265 270	
ttg gct tcc aac gac ggt aaa tac gtt act ggc cat aac ttg gtc gtg	864
Leu Ala Ser Asn Asp Gly Lys Tyr Val Thr Gly His Asn Leu Val Val	
275 280 285	
gat ggt ggc atg act gct ttc aaa ata gct ggt ttt cct ttt cct tcg	912
Asp Gly Gly Met Thr Ala Phe Lys Ile Ala Gly Phe Pro Phe Pro Ser	
290 295 300	
gat tca tga	921
Asp Ser	
305	

&lt;210&gt; 2976

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 2976

Met Ala Ala Ile Val Leu Ile Arg Ser Ile Val Arg Asn Phe Lys Arg  
 1 5 10 15  
 Pro Ala Thr Ala Ala Ser Ala Ala Tyr Ser Thr Gly Gly Gly Gly Gly  
 20 25 30  
 Gly Cys Thr Cys Thr Ser Lys Lys Leu Glu Gly Lys Val Ala Leu Ile  
 35 40 45  
 Thr Gly Gly Ala Ser Gly Leu Gly Lys Ala Thr Ala Ser Glu Phe Leu  
 50 55 60  
 Arg His Gly Ala Arg Val Val Ile Ala Asp Leu Asp Ala Glu Thr Gly  
 65 70 75 80  
 Thr Lys Thr Ala Lys Glu Leu Gly Ser Glu Ala Glu Phe Val Arg Cys  
 85 90 95  
 Asp Val Thr Val Glu Ala Asp Ile Ala Gly Ala Val Glu Met Thr Val  
 100 105 110  
 Glu Arg Tyr Gly Lys Leu Asp Val Met Tyr Asn Asn Ala Gly Ile Val  
 115 120 125  
 Gly Pro Met Thr Pro Ala Ser Ile Ser Gln Leu Asp Met Thr Glu Phe  
 130 135 140  
 Glu Arg Val Met Arg Ile Asn Val Phe Gly Val Val Ser Gly Ile Lys  
 145 150 155 160  
 His Ala Ala Lys Phe Met Ile Pro Ala Arg Ser Gly Cys Ile Leu Cys  
 165 170 175  
 Thr Ser Ser Val Ala Gly Val Thr Gly Gly Leu Ala Pro His Ser Tyr  
 180 185 190  
 Thr Ile Ser Lys Phe Thr Thr Pro Gly Ile Val Lys Ser Ala Ala Ser  
 195 200 205  
 Glu Leu Cys Glu His Gly Val Arg Ile Asn Cys Ile Ser Pro Gly Thr  
 210 215 220  
 Val Ala Thr Pro Leu Thr Leu Ser Tyr Leu Gln Lys Val Phe Pro Lys  
 225 230 235 240  
 Val Ser Glu Glu Lys Leu Arg Glu Thr Val Lys Gly Met Gly Glu Leu  
 245 250 255  
 Lys Gly Ala Glu Cys Glu Glu Ala Asp Val Ala Lys Ala Ala Leu Tyr  
 260 265 270  
 Leu Ala Ser Asn Asp Gly Lys Tyr Val Thr Gly His Asn Leu Val Val  
 275 280 285  
 Asp Gly Met Thr Ala Phe Lys Ile Ala Gly Phe Pro Phe Pro Ser  
 290 295 300  
 Asp Ser  
 305

&lt;210&gt; 2977

&lt;211&gt; 1282

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (71)..(1102)

&lt;400&gt; 2977

atgctagtat gcttcagggtt caatcaccgc cccattagat tctctctccc tctctaaaga 60

ccacaccttt atg ttc cct cta tat cta tat aag acg caa aca cag gga 109  
 Met Phe Pro Leu Tyr Leu Tyr Lys Thr Gln Thr Gln Gly

cca ttc tct tca aag acg aga aat tat aag tta gga aac gac aaa gac 157  
 Pro Phe Ser Ser Lys Thr Arg Asn Tyr Lys Leu Gly Asn Asp Lys Asp

cga tct ata tat ata tct cgg agc aat ata gct agc aca aac atg ttt 205  
 Arg Ser Ile Tyr Ile Ser Arg Ser Asn Ile Ala Ser Thr Asn Met Phe

cag att gga aaa aac gca tta ttc aag aat gtg agc aag aac ttc ctt 253  
 Gln Ile Gly Lys Asn Ala Leu Phe Lys Asn Val Ser Lys Asn Phe Leu



PhoenixTemp32470.tmp.txt

atc aag gga ata tcc tca tcc tca tca tct cat tca act tca agg aag	301
Ile Lys Gly Ile 65 Ser Ser Ser Ser 70 Ser His Ser Thr 75 Arg Lys	
cta gaa ggt aaa gta gca ctc atc act gga gga gca agt ggg att ggc	349
Leu Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser 90 Gly Ile Gly	
aaa gca aca gcc gga aaa ttc atc agt cat gga gcc aaa gtt atc att	397
Lys 95 Ala Thr Ala Gly Lys 100 Phe 105 Ile Ser His Gly 105 Lys Val Ile Ile	
gcc gat atc caa ccg cag att ggg cga gaa acc gag caa gaa ctc ggt	445
Ala Asp Ile Gln Pro Gln 115 Ile Gly Arg Glu Thr 120 Glu Gln Glu Leu Gly 125	
ccc agt tgt gct tac ttc cca tgc gat gtg acc aaa gaa tca gac att	493
Pro Ser Cys Ala Tyr 130 Phe Pro Cys Asp Val Thr 135 Lys Glu Ser Asp 140 Ile	
gct aac gca gtt gac ttc gct gtc tcg ctc cat aca aag ctc gac att	541
Ala Asn Ala Val 145 Asp Phe Ala Val Ser 150 Leu His Thr Lys 155 Leu Asp Ile	
atg tac aac aat gct ggt att ccc tgc aaa acg cct cct agt atc gtt	589
Met Tyr Asn Asn Ala Gly Ile Pro 165 Cys Lys Thr Pro 170 Ser Ile Val	
gat ctt gat ctc aat gtt ttc gac aag gta atc aac aca aat gtc cgt	637
Asp Leu Asp Leu Asn Val Phe 180 Asp Lys Val Ile Asn Thr Asn Val Arg	
gga gtc atg gca gga atc aaa cat gct gct cgt gtg atg atc ccg cgt	685
Gly Val Met Ala Gly Ile Lys His Ala Ala Arg Val Met Ile Pro Arg 205	
aac tct gga tcc atc att tgt gca ggg agt gtc acg ggg atg atg ggc	733
Asn Ser Gly Ser Ile 210 Cys Ala Gly Ser Val Thr Gly Met Met Gly 220	
ggt tta gcc caa cat act tac agc gtc tca aaa tcc gct gtt atc gga	781
Gly Leu Ala Gln His Thr Tyr Ser Val Ser Lys Ser Ala Val Ile Gly 235	
att gta aga tca aca gct tca gaa cta tgc aag cac agg atc cgg gtc	829
Ile Val Arg 240 Ser Thr Ala Ser Glu Leu Cys Lys His Arg Ile Arg Val 250	
aac tgc att tct cct ttt gcg atc aca aca tca ttc gtg atg gat gag	877
Asn Cys Ile Ser Pro Phe 260 Ala Ile Thr Thr Ser Phe 265 Val Met Asp Glu	
atg cga cag att tac ccc ggt gtt gat gac tca agg ctg atc cag ata	925
Met Arg Gln Ile Tyr 275 Gly Val Asp Asp Ser Arg Leu Ile Gln Ile 285	
gtg cag agt aca gga gtg tta aat gga gag gtt tgt gaa cca acc gat	973
Val Gln Ser Thr Gly Val Leu Asn Gly Glu Val Cys Glu Pro Thr Asp 300	
gta gct aat gca gcg gtg tat ctc gct gat gat tca aag tat gta	1021
Val Ala Asn 305 Ala Val Tyr Leu Ala 310 Ser Asp Asp Ser Lys Tyr Val 315	
aat ggg cat aat ctg gtg gta gat gga gga ttc aca act gta aag acg	1069
Asn Gly His Asn Leu Val Val Asp 325 Gly Gly Phe Thr 330 Thr Val Lys Thr	
tta gat ttc cct gca cct gac caa gtg aag taacaaaact cataatatac	1119
Leu Asp Phe Pro Ala Pro Asp Gln Val Lys 340	
aaagaaaact gttcttgaaa cttcaagtga actagactgc actagactag actagactag	1179
gccggtttct attctgtcaa caatcaaatt tatagctgca ttagcggatg tgaaagctcc	1239
atggaagctt tcttggtatg aaatggaagt taaatcttga gcc	1282

<210> 2978  
 <211> 343  
 <212> PRT  
 <213> Arabidopsis thaliana

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2978

Met Phe Pro Leu Tyr Leu Tyr Lys Thr Gln Thr Gln Gly Pro Phe Ser  
 1 10 15  
 Ser Lys Thr Arg Asn Tyr Lys Leu Gly Asn Asp Lys Asp Arg Ser Ile  
 20 25 30  
 Tyr Ile Ser Arg Ser Asn Ile Ala Ser Thr Asn Met Phe Gln Ile Gly  
 35 40 45  
 Lys Asn Ala Leu Phe Lys Asn Val Ser Lys Asn Phe Leu Ile Lys Gly  
 50 55 60  
 Ile Ser Ser Ser Ser Ser Ser His Ser Thr Ser Arg Lys Leu Glu Gly  
 65 70 75 80  
 Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Lys Ala Thr  
 85 90 95  
 Ala Gly Lys Phe Ile Ser His Gly Ala Lys Val Ile Ile Ala Asp Ile  
 100 105 110  
 Gln Pro Gln Ile Gly Arg Glu Thr Glu Gln Glu Leu Gly Pro Ser Cys  
 115 120 125  
 Ala Tyr Phe Pro Cys Asp Val Thr Lys Glu Ser Asp Ile Ala Asn Ala  
 130 135 140  
 Val Asp Phe Ala Val Ser Leu His Thr Lys Leu Asp Ile Met Tyr Asn  
 145 150 155 160  
 Asn Ala Gly Ile Pro Cys Lys Thr Pro Pro Ser Ile Val Asp Leu Asp  
 165 170 175  
 Leu Asn Val Phe Asp Lys Val Ile Asn Thr Asn Val Arg Gly Val Met  
 180 185 190  
 Ala Gly Ile Lys His Ala Ala Arg Val Met Ile Pro Arg Asn Ser Gly  
 195 200 205  
 Ser Ile Ile Cys Ala Gly Ser Val Thr Gly Met Met Gly Gly Leu Ala  
 210 215 220  
 Gln His Thr Tyr Ser Val Ser Lys Ser Ala Val Ile Gly Ile Val Arg  
 225 230 235 240  
 Ser Thr Ala Ser Glu Leu Cys Lys His Arg Ile Arg Val Asn Cys Ile  
 245 250 255  
 Ser Pro Phe Ala Ile Thr Thr Ser Phe Val Met Asp Glu Met Arg Gln  
 260 265 270  
 Ile Tyr Pro Gly Val Asp Asp Ser Arg Leu Ile Gln Ile Val Gln Ser  
 275 280 285  
 Thr Gly Val Leu Asn Gly Glu Val Cys Glu Pro Thr Asp Val Ala Asn  
 290 295 300  
 Ala Ala Val Tyr Leu Ala Ser Asp Asp Ser Lys Tyr Val Asn Gly His  
 305 310 315 320  
 Asn Leu Val Val Asp Gly Gly Phe Thr Thr Val Lys Thr Leu Asp Phe  
 325 330 335  
 Pro Ala Pro Asp Gln Val Lys  
 340

&lt;210&gt; 2979

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;400&gt; 2979

atg agt ctc agc aac aag gtg gtg atc gtg acg gga gct agc agc gga	48
Met Ser Leu Ser Asn Lys Val Val Ile Val Thr Gly Ala Ser Ser Gly	
1 5 10 15	
att ggt gcc gcc atc gcc caa gtt ctt gct cgc gaa ggt gcc act ttg	96
Ile Gly Ala Ala Ile Ala Gln Val Leu Ala Arg Glu Gly Ala Thr Leu	
20 25 30	
gcg ctg gtg ggt cgc aat gtg gcc aat ctg gag gcc acg aag agc	144
Ala Leu Val Gly Arg Asn Val Ala Asn Leu Glu Ala Thr Lys Lys Ser	
35 40 45	
ctg aag ggc acg cag gca gaa atc gtg gtg gcc gat gtg acc aag gat	192
Leu Lys Gly Thr Gln Ala Glu Ile Val Val Ala Asp Val Thr Lys Asp	
50 55 60	
gcg gac gcg att gtc cag caa acg ttg gcc aag ttc gga cgc atc gac	240

## PhoenixTemp32470.tmp.txt

Ala 65	Asp	Ala	Ile	Val	Gln 70	Gln	Thr	Leu	Ala	Lys 75	Phe	Gly	Arg	Ile	Asp 80	
gtg	ctt	gtc	aac	aat	gcc	ggc	att	ctg	ggc	aag	ggg	ggc	ctc	atc	gat	288
Val	Leu	Val	Asn	Asn 85	Ala	Gly	Ile	Leu	Gly 90	Lys	Gly	Gly	Leu	Ile 95	Asp	
ctg	gac	atc	gag	gaa	ttc	gac	gcg	gtg	ctc	aat	acc	aat	ctg	cgt	ggg	336
Leu	Asp	Ile	Glu	Glu	Phe	Asp	Ala	Val 105	Leu	Asn	Thr	Asn	Leu	Arg	Gly	
gtc	att	ctg	ttg	acc	aag	gag	gtg	ctc	ccg	cac	ctc	ctg	aag	acc	aag	384
Val	Ile	Leu	Leu	Thr	Lys	Ala	Val 120	Leu	Pro	His	Leu	Leu	Lys	Thr	Lys	
gga	gcc	gtg	gtc	aac	gtg	agc	tgt	gcc	ggc	att	cgt	ccc	ttc	gcc		432
Gly	Ala	Val	Val	Asn	Val	Ser 135	Ser	Cys	Ala	Gly	Ile 140	Arg	Pro	Phe	Ala	
gga	gca	ctg	agc	tat	gga	gtt	tcg	aag	gcc	ggc	ctc	gat	cag	ttc	acc	480
Gly	Ala	Leu	Ser	Tyr	Gly 150	Val	Ser	Lys	Ala	Ala 155	Leu	Asp	Gln	Phe	Thr 160	
aag	att	gtg	gcc	ctc	gaa	atg	gag	cct	cag	ggg	gtg	cgc	gtg	aac	tcg	528
Lys	Ile	Val	Ala	Leu 165	Glu	Met	Ala	Pro	Gln 170	Gly	Val	Arg	Val	Asn 175	Ser	
gtg	aat	ccc	ggc	ttc	gtg	gtg	acc	aac	atc	cat	cgg	aac	att	ggc	atc	576
Val	Asn	Pro	Gly 180	Phe	Val	Val	Thr	Asn 185	Ile	His	Arg	Asn	Ile 190	Gly	Ile	
gtc	gac	gag	gag	tac	aac	gga	atg	ctc	cag	cgg	gcc	atc	aat	tcg	cat	624
Val	Asp	Glu 195	Glu	Tyr	Asn	Gly	Met 200	Leu	Gln	Arg	Ala	Ile 205	Asn	Ser	His	
ccc	atg	ggc	cgt	gta	ggc	gac	gtc	acc	gaa	gtg	gcc	gag	gca	gtg	gcc	672
Pro	Met 210	Gly	Arg	Val	Gly 215	Asp	Val	Thr	Glu	Val	Ala 220	Glu	Ala	Val	Ala	
ttt	ttg	gcc	agc	tcc	aag	gca	agt	ttc	acc	acc	ggc	gcc	ctc	ttc	ccc	720
Phe 225	Leu	Ala	Ser	Ser	Lys 230	Ala	Ser	Phe	Thr	Thr 235	Gly	Ala	Leu	Phe	Pro 240	
atc	gat	ggg	ggc	aag	cac	aat	ctg	acg	cct	cgt	taa					756
Ile	Asp	Gly	Gly	Lys 245	His	Asn	Leu	Thr	Pro 250	Arg						

&lt;210&gt; 2980

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2980

Met	Ser	Leu	Ser	Asn 5	Lys	Val	Val	Ile	Val 10	Thr	Gly	Ala	Ser	Ser	Gly 15	
Ile	Gly	Ala	Ala	Ile 20	Ala	Gln	Val	Leu 25	Ala	Arg	Glu	Gly	Ala 30	Thr	Leu	
Ala	Leu	Val	Gly	Arg	Asn	Val	Ala 40	Asn	Leu	Glu	Ala	Thr 45	Lys	Lys	Ser	
Leu	Lys	Gly	Thr	Gln	Ala	Glu 55	Ile	Val	Val	Ala	Asp 60	Val	Thr	Lys	Asp	
Ala	Asp	Ala	Ile	Val	Gln 70	Gln	Thr	Leu	Ala	Lys 75	Phe	Gly	Arg	Ile	Asp 80	
Val	Leu	Val	Asn	Asn 85	Ala	Gly	Ile	Leu	Gly 90	Lys	Gly	Gly	Leu	Ile 95	Asp	
Leu	Asp	Ile	Glu	Glu	Phe	Asp	Ala	Val 105	Leu	Asn	Thr	Asn	Leu	Arg	Gly	
Val	Ile	Leu	Thr	Lys	Ala	Val	Val 120	Leu	Pro	His	Leu	Leu 125	Lys	Thr	Lys	
Gly	Ala	Val	Val	Asn	Val	Ser 135	Ser	Cys	Ala	Gly	Ile 140	Arg	Pro	Phe	Ala	
Gly	Ala	Leu	Ser	Tyr	Gly 150	Val	Ser	Lys	Ala	Ala 155	Leu	Asp	Gln	Phe	Thr 160	
Lys	Ile	Val	Ala	Leu 165	Glu	Met	Ala	Pro	Gln 170	Gly	Val	Arg	Val	Asn 175	Ser	
Val	Asn	Pro	Gly	Phe	Val	Val	Thr	Asn 185	Ile	His	Arg	Asn	Ile 190	Gly	Ile	
Val	Asp	Glu	Glu	Tyr	Asn	Gly	Met 200	Leu	Gln	Arg	Ala	Ile 205	Asn	Ser	His	
Pro	Met	Gly	Arg	Val	Gly	Asp	Val	Thr	Glu	Val	Ala	Glu	Ala	Val	Ala	

## PhoenixTemp32470.tmp.txt

210	Phe	Leu	Ala	Ser	Ser	Lys	215	Ala	Ser	Phe	Thr	Thr	220	Gly	Ala	Leu	Phe	Pro
225	Ile	Asp	Gly	Gly	Lys	230	His	Asn	Leu	Thr	Pro	235	Arg					240
					245						250							

<210> 2981  
 <211> 750  
 <212> DNA  
 <213> Drosophila melanogaster

<220>  
 <221> CDS  
 <222> (1)..(750)

<400> 2981

atg	tca	gtg	gga	gta	cta	gct	gga	aaa	gta	gcc	ctg	gta	aca	ggt	gcc		48
Met	Ser	Val	Gly	Val	Leu	Ala	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Ala		
1				5					10					15			
gga	tca	gga	att	ggt	cgt	gcc	acc	tgc	cgc	ctt	ttg	gcc	aga	gat	ggt		96
Gly	Ser	Gly	Ile	Gly	Arg	Ala	Thr	Cys	Arg	Leu	Leu	Ala	Arg	Asp	Gly		
			20					25					30				
gcc	aaa	gtg	atc	gcc	gtt	gac	cgc	aat	cta	aag	gcg	gcc	caa	gaa	acc		144
Ala	Lys	Val	Ile	Ala	Val	Asp	Arg	Asn	Leu	Lys	Ala	Ala	Gln	Glu	Thr		
			35				40					45					
gta	cag	gaa	ttg	ggc	tct	gag	cga	tct	gcc	gcc	ctg	gag	gtg	gac	gtt		192
Val	Gln	Glu	Leu	Gly	Ser	Glu	Arg	Ser	Ala	Ala	Leu	Glu	Val	Asp	Val		
			50			55					60						
tcc	tct	gcc	cag	agt	gtt	caa	ttc	tcg	gtg	gcc	gag	gcc	cta	aag	aaa		240
Ser	Ser	Ala	Gln	Ser	Val	Gln	Phe	Ser	Val	Ala	Glu	Ala	Leu	Lys	Lys		
					70				75						80		
ttc	cag	cag	gca	ccc	act	att	gtg	gtc	aat	tcg	gct	gga	ata	acc	cga		288
Phe	Gln	Gln	Ala	Pro	Thr	Ile	Val	Val	Asn	Ser	Ala	Gly	Ile	Thr	Arg		
				85					90				95				
gat	ggt	tat	ctg	ctc	aag	atg	ccc	gaa	cgg	gac	tac	gat	gac	gta	tac		336
Asp	Gly	Tyr	Leu	Leu	Lys	Met	Pro	Glu	Arg	Asp	Tyr	Asp	Asp	Val	Tyr		
			100					105					110				
ggg	gtc	aat	ctg	aag	ggc	acc	ttt	ctg	gtt	acc	cag	gcc	tat	gcc	aag		384
Gly	Val	Asn	Leu	Lys	Gly	Thr	Phe	Leu	Val	Thr	Gln	Ala	Tyr	Ala	Lys		
			115				120					125					
gcc	atg	atc	gag	cag	aaa	ctg	gaa	aac	ggc	acc	att	gtg	aac	ctc	tca		432
Ala	Met	Ile	Glu	Gln	Lys	Leu	Glu	Asn	Gly	Thr	Ile	Val	Asn	Leu	Ser		
			130			135					140						
agc	atc	gtg	gcc	aag	atg	aac	aac	gtg	ggc	cag	gcc	aac	tat	gcg	gcc		480
Ser	Ile	Val	Ala	Lys	Met	Asn	Asn	Val	Gly	Gln	Ala	Asn	Tyr	Ala	Ala		
					150					155					160		
acc	aag	gcg	ggc	gtg	atc	tcc	ttc	acg	gag	gtg	gcc	tcc	aag	gag	ttc		528
Thr	Lys	Ala	Gly	Val	Ile	Ser	Phe	Thr	Glu	Val	Ala	Ser	Lys	Glu	Phe		
				165					170					175			
gga	aag	ttt	ggc	atc	cgt	gtg	aac	tgc	atc	ctg	cca	ggc	tac	ata	gac		576
Gly	Lys	Phe	Gly	Ile	Arg	Val	Asn	Cys	Ile	Leu	Pro	Gly	Tyr	Ile	Asp		
			180					185					190				
acg	ccc	atg	gta	gcg	gtt	gtg	ccc	gat	tct	gta	aag	cag	gag	gtg	gta		624
Thr	Pro	Met	Val	Ala	Val	Val	Pro	Asp	Ser	Val	Lys	Gln	Glu	Val	Val		
							200					205					
caa	cga	tgc	ccc	ttg	ggc	cga	ttg	ggt	cag	ccg	gag	gag	atc	gcc	gag		672
Gln	Arg	Cys	Pro	Leu	Gly	Arg	Leu	Gly	Gln	Pro	Glu	Glu	Ile	Ala	Glu		
			210			215					220						
gtc	att	gcc	ttt	ttg	gcc	tcc	ccg	caa	tcg	tca	tac	gtc	aat	ggg	gct		720
Val	Ile	Ala	Phe	Leu	Ala	Ser	Pro	Gln	Ser	Ser	Tyr	Val	Asn	Gly	Ala		
					230					235					240		
gcc	atc	gag	gtc	acc	ggg	ggc	ctt	aaa	taa								750
Ala	Ile	Glu	Val	Thr	Gly	Gly	Leu	Lys									
				245													

<210> 2982  
 <211> 249  
 <212> PRT  
 <213> Drosophila melanogaster

## PhoenixTemp32470.tmp.txt

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<400> 2982
Met Ser Val Gly Val Leu Ala Gly Lys Val Ala Leu Val Thr Gly Ala
1      5      10      15
Gly Ser Gly Ile Gly Arg Ala Thr Cys Arg Leu Leu Ala Arg Asp Gly
20      25      30
Ala Lys Val Ile Ala Val Asp Arg Asn Leu Lys Ala Ala Gln Glu Thr
35      40      45
Val Gln Glu Leu Gly Ser Glu Arg Ser Ala Ala Leu Glu Val Asp Val
50      55      60
Ser Ser Ala Gln Ser Val Gln Phe Ser Val Ala Glu Ala Leu Lys Lys
65      70      75      80
Phe Gln Gln Ala Pro Thr Ile Val Val Asn Ser Ala Gly Ile Thr Arg
85      90      95
Asp Gly Tyr Leu Leu Lys Met Pro Glu Arg Asp Tyr Asp Asp Val Tyr
100     105     110
Gly Val Asn Leu Lys Gly Thr Phe Leu Val Thr Gln Ala Tyr Ala Lys
115     120     125
Ala Met Ile Glu Gln Lys Leu Glu Asn Gly Thr Ile Val Asn Leu Ser
130     135     140
Ser Ile Val Ala Lys Met Asn Asn Val Gly Gln Ala Asn Tyr Ala Ala
145     150     155     160
Thr Lys Ala Gly Val Ile Ser Phe Thr Glu Val Ala Ser Lys Glu Phe
165     170     175
Gly Lys Phe Gly Ile Arg Val Asn Cys Ile Leu Pro Gly Tyr Ile Asp
180     185     190
Thr Pro Met Val Ala Val Val Pro Asp Ser Val Lys Gln Glu Val Val
195     200     205
Gln Arg Cys Pro Leu Gly Arg Leu Gly Gln Pro Glu Ile Ala Glu
210     215     220
Val Ile Ala Phe Leu Ala Ser Pro Gln Ser Ser Tyr Val Asn Gly Ala
225     230     235     240
Ala Ile Glu Val Thr Gly Gly Leu Lys
245

```

```

<210> 2983
<211> 777
<212> DNA
<213> Methanosarcina acetivorans C2A

```

```

<220>
<221> CDS
<222> (1)..(777)
<223> transl_table=11

```

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<400> 2983
atg agc caa gca ttt aaa ata ata gaa aac gaa ttc gaa gga aaa gtt      48
Met Ser Gln Ala Phe Lys Ile Ile Glu Asn Glu Phe Glu Gly Lys Val
1      5      10      15
gct att gta acc gga gca gga aca ggc aat ggc gag tct att gct gag      96
Ala Ile Val Thr Gly Ala Gly Thr Gly Asn Gly Glu Ser Ile Ala Glu
20      25      30
aga ctt tat gca ggg gga gct tct gtt gcg ctt gtt agt cgt cat atc      144
Arg Leu Tyr Ala Gly Gly Ala Ser Val Ala Leu Val Ser Arg His Ile
35      40      45
gca cca ctt gat gac ata tgt aat aga att gat tcg tca gga aaa cgc      192
Ala Pro Leu Asp Asp Ile Cys Asn Arg Ile Asp Ser Ser Gly Lys Arg
50      55      60
act ttt ccc ata gaa gtt gac gtt cga gat cca cac agt gtt caa ata      240
Thr Phe Pro Ile Glu Val Asp Val Arg Asp Pro His Ser Val Gln Ile
65      70      75      80
gca gtg agc tcc ata atc gaa aga ttc gga aag att gat att gct gtc      288
Ala Val Ser Ser Ile Glu Arg Phe Gly Lys Ile Asp Ile Ala Val
85      90      95
aac aat gcc gga att aca gga cca gca aac act cca ctt caa gat ctt      336
Asn Asn Ala Gly Ile Thr Gly Pro Ala Asn Thr Pro Leu Gln Asp Leu
100     105     110
gat atc gaa ata tgg cga gat gtt ata gaa acc gat cta act ggt gtt      384
Asp Ile Glu Ile Trp Arg Asp Val Ile Glu Thr Asp Leu Thr Gly Val

```

PhoenixTemp32470.tmp.txt

[illegible]

<210> 2984  
<211> 258  
<212> PRT  
<213> Methanosarcina acetivorans C2A

[illegible]

<210> 2985  
 <211> 801  
 <212> DNA  
 <213> Streptomyces coelicolor A3(2)

<220>  
 <221> CDS  
 <222> (1)..(801)  
 <223> transl\_table=11

```

<400> 2985
atg acg gac acc agg cga ttc acc gat tac gcg gca ctc gtg acg ggc      48
Met Thr Asp Thr Arg Arg Phe Thr Asp Tyr Ala Ala Leu Val Thr Gly
  1      5      10      15
gcg gcc cgg ggc atc ggc gcg gcc acc gca cgc cgg ctc gcc acg gag      96
Ala Ala Arg Gly Ile Gly Ala Ala Thr Ala Arg Arg Leu Ala Thr Glu
      20      25      30
gga gcc cgg gta ctg ctg acc gac gtg gac ctc gtg ggg gcg cgg cgg      144
Gly Ala Arg Val Leu Leu Thr Asp Val Asp Leu Val Gly Ala Arg Arg
      35      40      45
acc gcg gcg gaa ctg gcg gac gac ggg ctc gac gcg acc gcg ttc gcc      192
Thr Ala Ala Glu Leu Ala Asp Asp Gly Leu Asp Ala Thr Ala Phe Ala
      50      55      60
tgc gac gtg agc gac cgg gag tcc gtg gag acg gcc gtc gcc cat gcc      240
Cys Asp Val Ser Asp Arg Glu Ser Val Glu Thr Ala Val Ala His Ala
      65      70      75      80
gtg gaa acc ttc ggc ggt ctg gac gta ctg gtc aac aac gcc ttc gcc      288
Val Glu Thr Phe Gly Gly Leu Asp Val Leu Val Asn Asn Ala Phe Ala
      85      90      95
tgt acg ccg gac gcc ccg ctc ttc gag gac gaa ccg gac gac gtc tgg      336
Cys Thr Pro Asp Ala Pro Leu Phe Glu Asp Glu Pro Asp Asp Val Trp
      100      105      110
gcc cgc gac ctc gat gtc acc ctc acc ggc gcc caa cgc tgc tgc cgg      384
Ala Arg Asp Leu Asp Val Thr Leu Thr Gly Ala Gln Arg Cys Cys Arg
      115      120      125
gcc gcg ctg ccc cac ctc gcg gcc tcc ggc cgc ggc gcg atc gtg agc      432
Ala Ala Leu Pro His Leu Ala Ala Ser Gly Arg Gly Ala Ile Val Ser
      130      135      140
atc ggt tcg gtc aat ggg gtc cag gac ttc ggc aac cac gcc tac agc      480
Ile Gly Ser Val Asn Gly Val Gln Asp Phe Gly Asn His Ala Tyr Ser
      145      150      155      160
gcg gca aag gcg ggt ctc gcc tcg ctg acc cgc acc ctc gcc gga cac      528
Ala Ala Lys Ala Gly Leu Ala Ser Leu Thr Arg Thr Leu Ala Gly His
      165      170      175
gcg ggc ccg cgc ggc gtc cgc gtc aac ctc gtc acg ccg ggc acg gtg      576
Ala Gly Pro Arg Gly Val Arg Val Asn Asn Leu Val Thr Pro Gly Thr Val
      180      185      190
cgc acc acg gcc tgg gag ggc cgg gac gag gaa ctg gcc gcg gtg cgg      624
Arg Thr Thr Ala Trp Glu Gly Arg Asp Glu Glu Leu Ala Ala Val Arg
      195      200      205
ggg ctg tac ccg ctg ggg cgg gtc ggc gag ccc gag gac gtc gcg gcg      672
Gly Leu Tyr Pro Leu Gly Arg Val Gly Glu Pro Glu Asp Val Ala Ala
      210      215      220
gcc gtc gcc ttc ctc gcc tcg cgc gac gcc gcc tgg atc acc ggg acc      720
Ala Val Ala Phe Leu Ala Ser Arg Asp Ala Ala Trp Ile Thr Gly Thr
      225      230      235
acc ctg gcc gtc gac ggc ggt ctg acc gcg gtc aac acc ggc ttc cgg      768
Thr Leu Ala Val Asp Gly Gly Leu Thr Ala Val Asn Thr Gly Phe Arg
      245      250      255
cag gcg atc gcg cgg gcg gag ggc tcg gac tga
Gln Ala Ile Ala Arg Ala Glu Gly Ser Asp
      260      265

```

<210> 2986  
 <211> 266  
 <212> PRT  
 <213> Streptomyces coelicolor A3(2)

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 2986

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Met Thr Asp Thr Arg Arg Phe Thr Asp Tyr Ala Ala Leu Val Thr Gly
1      5      10      15
Ala Ala Arg Gly Ile Gly Ala Ala Thr Ala Arg Arg Leu Ala Thr Glu
20      25      30
Gly Ala Arg Val Leu Leu Thr Asp Val Asp Leu Val Gly Ala Arg Arg
35      40      45
Thr Ala Ala Glu Leu Ala Asp Asp Gly Leu Asp Ala Thr Ala Phe Ala
50      55      60
Cys Asp Val Ser Asp Arg Glu Ser Val Glu Thr Ala Val Ala His Ala
65      70      75      80
Val Glu Thr Phe Gly Gly Leu Asp Val Leu Val Asn Asn Ala Phe Ala
85      90      95
Cys Thr Pro Asp Ala Pro Leu Phe Glu Asp Glu Pro Asp Asp Val Trp
100     105     110
Ala Arg Asp Leu Asp Val Thr Leu Thr Gly Ala Gln Arg Cys Cys Arg
115     120     125
Ala Ala Leu Pro His Leu Ala Ala Ser Gly Arg Gly Ala Ile Val Ser
130     135     140
Ile Gly Ser Val Asn Gly Val Gln Asp Phe Gly Asn His Ala Tyr Ser
145     150     155     160
Ala Ala Lys Ala Gly Leu Ala Ser Leu Thr Arg Thr Leu Ala Gly His
165     170     175
Ala Gly Pro Arg Gly Val Arg Val Asn Leu Val Thr Pro Gly Thr Val
180     185     190
Arg Thr Thr Ala Trp Glu Gly Arg Asp Glu Glu Leu Ala Ala Val Arg
195     200     205
Gly Leu Tyr Pro Leu Gly Arg Val Gly Glu Pro Glu Asp Val Ala Ala
210     215     220
Ala Val Ala Phe Leu Ala Ser Arg Asp Ala Ala Trp Ile Thr Gly Thr
225     230     235     240
Thr Leu Ala Val Asp Gly Gly Leu Thr Ala Val Asn Thr Gly Phe Arg
245     250     255
Gln Ala Ile Ala Arg Ala Glu Gly Ser Asp
260     265

```

&lt;210&gt; 2987

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Streptomyces coelicolor A3(2)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2987

```

atg acc acc cag cgc ttc acc ggc aaa acc gcc ctc gtc acc ggc gcg      48
Met Thr Thr Gln Arg Phe Thr Gly Lys Thr Ala Leu Val Thr Gly Ala
1      5      10      15
ggc tcc ggc atc gga cgg gcc gtc gcc ctc gcc ctg gcc gcc gag ggc      96
Gly Ser Gly Ile Gly Arg Ala Val Ala Leu Ala Leu Ala Glu Gly
20      25      30
gcg cac gtc gtc gtc gcc ggg cgc gcg agg gga ccg ctc gac gag acg      144
Ala His Val Val Val Ala Gly Arg Ala Arg Gly Pro Leu Asp Glu Thr
35      40      45
gcg gcc ctg gtc gag cag gcg ggc aag gca ctg gcc gtc acc gcg      192
Ala Ala Leu Val Glu Gln Ala Gly Gly Lys Ala Leu Ala Val Thr Ala
50      55      60
gac gtc acc cgg cgc gaa gac gtg gac gcc ctg gtg tcc gcc gcg gtg      240
Asp Val Thr Arg Arg Glu Asp Val Asp Ala Leu Val Ser Ala Ala Val
65      70      75      80
gag cac ttc ggc tcc ctc gac gtg gcg gtg aac gca aac gcg ggc gtc ttc      288
Glu His Phe Gly Ser Leu Asp Val Ala Val Asn Asn Ala Gly Val Phe
85      90      95
cgc ggc ggg gta ccc gtc gcg gac ctg tcc gag gag gac tgg cac acg      336
Arg Gly Gly Val Pro Val Ala Asp Leu Ser Glu Glu Asp Trp His Thr
100     105
cag ctc gac atc aac gtc acc ggc gtg ttc ctc gcc ctg cgc gcc gag      384

```



PhoenixTemp32470.tmp.txt

Gln	Leu	Asp	Ile	Asn	Val	Thr	Gly	Val	Phe	Leu	Ala	Leu	Arg	Ala	Glu		
gtc	cgg	cac	atg	cgc	gcc	cag	ccg	ggc	ggc	ggc	acg	atc	gtg	aac	atc	432	
Val	Arg	His	Met	Arg	Ala	Gln	Pro	Gly	Gly	Gly	Thr	Ile	Val	Asn	Ile		
130						135					140						
gcc	tcc	acc	ttc	ggc	gca	cac	aag	cgc	agc	ccc	ggc	gcc	acg	gcc	tac	480	
Ala	Ser	Thr	Phe	Gly	Ala	His	Lys	Arg	Ser	Pro	Gly	Ala	Thr	Ala	Tyr		
145					150					155					160		
gcg	gcg	acc	aag	gcg	gcc	gtc	tcg	gcc	ctc	acc	cgg	ggc	gcc	gcc	ctg	528	
Ala	Ala	Thr	Lys	Ala	Ala	Val	Ser	Ala	Leu	Thr	Arg	Gly	Ala	Ala	Leu		
				165				170						175			
gac	cac	atc	ggg	gac	ggg	gtc	cgc	atc	aac	gcc	gtc	agc	ccc	ggc	gcc	576	
Asp	His	Ile	Gly	Asp	Gly	Val	Arg	Ile	Asn	Ala	Val	Ser	Pro	Gly	Ala		
			180					185					190				
acg	gcg	acc	tcc	atg	tcc	ctg	cga	ccg	ggc	gag	acg	gag	gcc	ggg	cgg	624	
Thr	Ala	Thr	Ser	Met	Ser	Leu	Arg	Pro	Gly	Glu	Thr	Glu	Ala	Gly	Arg		
			195				200					205					
gcc	gag	cgg	atg	cgg	cag	gag	acg	ccg	ctc	ggc	cgg	gtc	tcg	gcg	gtg	672	
Ala	Glu	Arg	Met	Arg	Gln	Glu	Thr	Pro	Leu	Gly	Arg	Val	Ser	Ala	Val		
210					215					220							
gcg	gag	gtc	gcg	gcg	gcc	gtg	ctg	tac	ctg	gcg	tcc	gac	gac	gcg	gcg	720	
Ala	Glu	Val	Ala	Ala	Ala	Val	Leu	Tyr	Leu	Ala	Ser	Asp	Asp	Ala	Ala		
225					230					235					240		
tcg	gtg	gtg	ggg	acc	gac	ctc	gtg	gtg	gac	ggc	cag	acg	gcc			765	
Ser	Val	Val	Gly	Thr	Asp	Leu	Val	Val	Asp	Gly	Gly	Gln	Thr	Ala			
				245					250					255			
tga																768	

<210> 2988  
 <211> 255  
 <212> PRT  
 <213> Streptomyces coelicolor A3(2)

<400> 2988

Met	Thr	Thr	Gln	Arg	Phe	Thr	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ala		
1				5				10						15			
Gly	Ser	Gly	Ile	Gly	Arg	Ala	Val	Ala	Leu	Ala	Leu	Ala	Ala	Glu	Gly		
			20					25					30				
Ala	His	Val	Val	Val	Ala	Gly	Arg	Ala	Arg	Gly	Pro	Leu	Asp	Glu	Thr		
		35					40					45					
Ala	Ala	Leu	Val	Glu	Gln	Ala	Gly	Gly	Lys	Ala	Leu	Ala	Val	Thr	Ala		
		50				55					60						
Asp	Val	Thr	Arg	Arg	Glu	Asp	Val	Asp	Ala	Leu	Val	Ser	Ala	Ala	Val		
65					70					75				80			
Glu	His	Phe	Gly	Ser	Leu	Asp	Val	Ala	Val	Asn	Asn	Ala	Gly	Val	Phe		
				85					90					95			
Arg	Gly	Gly	Val	Pro	Val	Ala	Asp	Leu	Ser	Glu	Glu	Asp	Trp	His	Thr		
			100					105					110				
Gln	Leu	Asp	Ile	Asn	Val	Thr	Gly	Val	Phe	Leu	Ala	Leu	Arg	Ala	Glu		
		115					120					125					
Val	Arg	His	Met	Arg	Ala	Gln	Pro	Gly	Gly	Gly	Thr	Ile	Val	Asn	Ile		
130						135					140						
Ala	Ser	Thr	Phe	Gly	Ala	His	Lys	Arg	Ser	Pro	Gly	Ala	Thr	Ala	Tyr		
145					150					155					160		
Ala	Ala	Thr	Lys	Ala	Ala	Val	Ser	Ala	Leu	Thr	Arg	Gly	Ala	Ala	Leu		
				165					170					175			
Asp	His	Ile	Gly	Asp	Gly	Val	Arg	Ile	Asn	Ala	Val	Ser	Pro	Gly	Ala		
			180					185					190				
Thr	Ala	Thr	Ser	Met	Ser	Leu	Arg	Pro	Gly	Glu	Thr	Glu	Ala	Gly	Arg		
		195					200					205					
Ala	Glu	Arg	Met	Arg	Gln	Glu	Thr	Pro	Leu	Gly	Arg	Val	Ser	Ala	Val		
		210				215					220						
Ala	Glu	Val	Ala	Ala	Ala	Val	Leu	Tyr	Leu	Ala	Ser	Asp	Asp	Ala	Ala		
225					230					235					240		
Ser	Val	Val	Gly	Thr	Asp	Leu	Val	Val	Asp	Gly	Gly	Gln	Thr	Ala			
				245					250					255			

<210> 2989  
 <211> 795  
 <212> DNA  
 <213> Streptomyces coelicolor A3(2)

<220>  
 <221> CDS  
 <222> (1)..(795)  
 <223> transl\_table=11

<400> 2989  
 atg acg ccc gcg ccc cgt tcc gcc gcc tcc aca cac ctg ctc gac gga 48  
 Met Thr Pro Ala Pro Arg Ser Ala Ala Ser Thr His Leu Leu Asp Gly  
 1 5 10 15  
 cgg atc gcc ctg gtc acc ggc gcg ggc ggc ggc atc ggc cgg ggg atc 96  
 Arg Ile Ala Leu Val Thr Gly Ala Gly Gly Gly Ile Gly Arg Gly Ile  
 20 25 30  
 gca ctg cgc ttc gcc gag gag ggc gcg gcg gtg gcg gtg cac tgc cgt 144  
 Ala Leu Arg Phe Ala Glu Glu Gly Ala Ala Val Ala Val His Cys Arg  
 35 40 45  
 acg acg gtg gag tcg gcg cgg gag gtg gcg gaa cgc atc cgc ggc cgg 192  
 Thr Thr Val Glu Ser Ala Arg Glu Val Ala Glu Arg Ile Arg Gly Arg  
 50 55 60  
 ggc gga cgc gcc acc gtc ctg cgc gcc gac ctc acc gac gag gac gcc 240  
 Gly Gly Arg Ala Thr Val Leu Arg Ala Asp Leu Thr Asp Glu Asp Ala  
 65 70 75 80  
 tgc cgt cgc ctg gtc ggg gag gcc gcc gag tgg ggc ggc gga cgg ctc 288  
 Cys Arg Arg Leu Val Gly Glu Ala Ala Glu Trp Gly Gly Gly Arg Leu  
 85 90 95  
 gac gcg ctg gtc aac aac gcg ggc gtg cag ccg ctg cgg gaa ctg ccc 336  
 Asp Ala Leu Val Asn Asn Ala Gly Val Gln Pro Leu Arg Glu Leu Pro  
 100 105 110  
 ggc atg acg gcg acc gag tgg cgg gcg gtg gtg gac acc aac ctg acc 384  
 Gly Met Thr Ala Thr Glu Trp Arg Ala Val Val Asp Thr Asn Leu Thr  
 115 120 125  
 ggc gtc ttc gcg tgc acg cag gcc gcg gcc gcc gtc atg cgc gcc cag 432  
 Gly Val Phe Ala Cys Thr Gln Ala Ala Ala Ala Val Met Arg Ala Gln  
 130 135 140  
 gac ggc ggc ggc acg gtc acc cac atc gcc tcc atc gag gcc cgc gcc 480  
 Asp Gly Gly Gly Thr Val Thr His Ile Ala Ser Ile Glu Ala Arg Ala  
 145 150 155 160  
 ccc gct ccc gcg cac gcg cac tac agc gcc tcc aag gcg gcg gtg gtg 528  
 Pro Ala Pro Ala His Ala His Tyr Ser Ala Ser Lys Ala Ala Val Val  
 165 170 175  
 atg cac gcc cgg tcg gcg gcg ctg gag tac ggc ccg tgg ggc gtg cgg 576  
 Met His Ala Arg Ser Ala Ala Leu Glu Tyr Gly Pro Trp Gly Val Arg  
 180 185 190  
 gtg aac tcc gtc tcc ccc ggc ctc gtc gac gcg gag gga ctc gcc gag 624  
 Val Asn Ser Val Ser Pro Gly Leu Val Asp Arg Glu Gly Leu Ala Glu  
 195 200 205  
 gcc tgg ccg gag ggc gta cgg cgg tgg cgg cgg gcg gca ccg acg gga 672  
 Ala Trp Pro Glu Gly Val Arg Trp Arg Arg Ala Ala Pro Thr Gly  
 210 215 220  
 cgg ctc gga cgc ccg gag gac gtg ggc gac gcg tgc gtg ttc ctg gcc 720  
 Arg Leu Gly Arg Pro Glu Asp Val Gly Asp Ala Cys Val Phe Leu Ala  
 225 230 235 240  
 tcg cgg ctg gcg tcc tgg gtg acg ggt cac gac ctc gtg gtg gac ggc 768  
 Ser Arg Leu Ala Ser Trp Val Thr Gly His Asp Leu Val Val Asp Gly  
 245 250 255  
 ggg gtg acg gcc cgc ccg tcg tgg tga 795  
 Gly Val Thr Ala Arg Pro Ser Trp  
 260

<210> 2990  
 <211> 264  
 <212> PRT  
 <213> Streptomyces coelicolor A3(2)

<400> 2990

## PhoenixTemp32470.tmp.txt

Met Thr Pro Ala Pro Arg Ser Ala Ala Ser Thr His Leu Leu Asp Gly  
 1 5 10 15  
 Arg Ile Ala Leu Val Thr Gly Ala Gly Gly Ile Gly Arg Gly Ile  
 20 25 30  
 Ala Leu Arg Phe Ala Glu Glu Gly Ala Ala Val Ala Val His Cys Arg  
 35 40 45  
 Thr Thr Val Glu Ser Ala Arg Glu Val Ala Glu Arg Ile Arg Gly Arg  
 50 55 60  
 Gly Gly Arg Ala Thr Val Leu Arg Ala Asp Leu Thr Asp Glu Asp Ala  
 65 70 75 80  
 Cys Arg Arg Leu Val Gly Glu Ala Ala Glu Trp Gly Gly Gly Arg Leu  
 85 90 95  
 Asp Ala Leu Val Asn Asn Ala Gly Val Gln Pro Leu Arg Glu Leu Pro  
 100 105 110  
 Gly Met Thr Ala Thr Glu Trp Arg Ala Val Val Asp Thr Asn Leu Thr  
 115 120 125  
 Gly Val Phe Ala Cys Thr Gln Ala Ala Ala Val Met Arg Ala Gln  
 130 135 140  
 Asp Gly Gly Gly Thr Val Thr His Ile Ala Ser Ile Glu Ala Arg Ala  
 145 150 155 160  
 Pro Ala Pro Ala His Ala His Tyr Ser Ala Ser Lys Ala Ala Val Val  
 165 170 175  
 Met His Ala Arg Ser Ala Ala Leu Glu Tyr Gly Pro Trp Gly Val Arg  
 180 185 190  
 Val Asn Ser Val Ser Pro Gly Leu Val Asp Arg Glu Gly Leu Ala Glu  
 195 200 205  
 Ala Trp Pro Glu Gly Val Arg Arg Trp Arg Arg Ala Ala Pro Thr Gly  
 210 215 220  
 Arg Leu Gly Arg Pro Glu Asp Val Gly Asp Ala Cys Val Phe Leu Ala  
 225 230 235 240  
 Ser Arg Leu Ala Ser Trp Val Thr Gly His Asp Leu Val Val Asp Gly  
 245 250 255  
 Gly Val Thr Ala Arg Pro Ser Trp  
 260

&lt;210&gt; 2991

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Drosophila melanogaster

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;400&gt; 2991

atg ccc agt ttc aag gat aaa gtt ata atc gtg acc gga gcc agt tcg	48
Met Pro Ser Phe Lys Asp Lys Val Ile Ile Val Thr Gly Ala Ser Ser	
1 5 10 15	
gga att gga gcg ggt act tcg gtg ctc ttg gct aaa ctg gga ggc ctg	96
Gly Ile Gly Ala Gly Thr Ser Val Leu Leu Ala Lys Leu Gly Gly Leu	
20 25 30	
ctc acc atc gtg ggc agg aat ttg gat aag ctc aac gag acc gcg gag	144
Leu Thr Ile Val Gly Arg Asn Leu Asp Lys Leu Asn Glu Thr Ala Glu	
35 40 45	
cag ata gtg gca gct gga gga gcg cca gca ctc cag gtg gcg gcg gac	192
Gln Ile Val Ala Ala Gly Gly Ala Pro Ala Leu Gln Val Ala Ala Asp	
50 55 60	
ata aac agc gag tcc gac gtc cag ggc atc gtc tcc gcc aca ttg gcc	240
Ile Asn Ser Glu Ser Asp Val Gln Gly Ile Val Ser Ala Thr Leu Ala	
65 70 75 80	
aag cac ggt cgc atc gac gtg ctg gtg aac aac gcc gga atc ttg gag	288
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Leu Gly Ser Ile Glu Asn Thr Ser Leu Glu Gln Phe Asp Arg Val Met	
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aac acc aac gtc cgg tcg ctc tac cag ctg acc cac ctg gtc aca ccg	384
Asn Thr Asn Val Arg Ser Leu Tyr Gln Leu Thr His Leu Val Thr Pro	
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Gln	Arg	Arg	Gly	Gly	Leu	Asp	Gln	Glu	Ala	Tyr	Val	Lys	Phe	Leu	Glu	
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His	Ala	Lys	Val	Thr	His	Ala	Leu	Gly	Arg	Pro	Gly	Glu	Val	Lys	Glu	
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Thr	Gly	Ile	Ser	Leu	Pro	Val	Asp	Gly	Gly	Arg	His	Ala	Met	Cys	Pro	
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&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Drosophila melanogaster

&lt;400&gt; 2992

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 Thr Ala Val Ser Leu Asp Val Thr Asp Thr Leu Ala Ile Asn Asp Val  
 50 55 60  
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 Ala Gln Ala Ile Gly Pro Ile Asp Val Leu Phe Asn Cys Ala Gly Val  
 65 70 75 80  
 gta cac agc ggc gat att ctc acc tgt agc gag cag gag tgg cag ttc 288  
 Val His Ser Gly Asp Ile Leu Thr Cys Ser Glu Gln Glu Trp Gln Phe  
 85 90 95  
 gcg cta gac ctc aac gtc acc gct atg ttc cat atg atc cgt gcc ttt 336  
 Ala Leu Asp Leu Asn Val Thr Ala Met Phe His Met Ile Arg Ala Phe  
 100 105 110  
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 Leu Pro Gly Met Ile Ala Cys Gln Gln Gly Ser Ile Ile Asn Met Ser  
 115 120 125  
 tcg gtg gct tca agt att aaa ggg gta ccg aat cgt ttt gcc tat agc 432  
 Ser Val Ala Ser Ser Ile Lys Gly Val Pro Asn Arg Phe Ala Tyr Ser  
 130 135 140  
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 Glu Ser Pro Ser Leu Arg Gln Arg Ile Ala Val Gln Ala His Ala Glu  
 180 185 190  
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 Gly Arg Ser Glu Ala Asp Val Phe Gln Ala Phe Ala Ala Arg Gln Pro  
 195 200 205  
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 Ile Gly Arg Ile Gly Lys Ala Glu Glu Ile Ala Gln Leu Ala Leu Tyr  
 210 215 220  
 ctg gcc tcg gat gcc agc gct tac acc acc ggc acg ata cat att atc 720  
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 Page 2750

## PhoenixTemp32470.tmp.txt

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Val His Ser Gly Asp Ile Leu Thr Cys Ser Glu Gln Glu Trp Gln Phe
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Ala Leu Asp Leu Asn Val Thr Ala Met Phe His Met Ile Arg Ala Phe
      100      105      110
Leu Pro Gly Met Ile Ala Cys Gln Gln Gly Ser Ile Ile Asn Met Ser
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Thr Ser Lys Ala Ala Val Ile Gly Leu Thr Arg Ser Val Ala Ala Asp
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&lt;211&gt; 780

&lt;212&gt; DNA

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&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 2995

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Thr Gly Ala Ala Ser Pro Arg Gly Leu Gly Arg Ala Ile Ala Asn Thr
      20      25      30
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Ile Ala Lys Glu Gly Gly Asp Ile Val Leu Val Asp Leu Asn Lys Glu
      35      40      45
cag ata gaa caa gcg gcg gct gat gta gcc aaa gaa ttt gga gta aaa      192
Gln Ile Glu Gln Ala Ala Ala Asp Val Ala Lys Glu Phe Gly Val Lys
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Thr Leu Gly Leu Ser Cys Asn Val Thr Lys Pro Glu Asp Cys Asp Ser
      65      70      75
gtc att gcc gga gta aaa gaa aaa ttt gga aaa cta gac ttc ctc gtt      288
Val Ile Ala Gly Val Lys Glu Lys Phe Gly Lys Leu Asp Phe Leu Val
      80      85      90
aac aat gcc gga gtt ctc aag gat aat ctt ttt ata cgt atg tcc gaa      336
Asn Asn Ala Gly Val Leu Lys Asp Asn Leu Phe Ile Arg Met Ser Glu
      100      105      110
caa gaa ttt gat ttt gtt tta gac gta aac ttg aaa ggc gtt ttt ttg      384
Gln Glu Phe Asp Phe Val Leu Asp Val Asn Leu Lys Gly Val Phe Leu
      115      120      125
atg act aag tat gct tct aaa ctt ctt ctt aaa gca gag tct gga agg      432
Met Thr Lys Tyr Ala Ser Lys Leu Leu Leu Lys Ala Glu Ser Gly Arg
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PhoenixTemp32470.tmp.txt

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			20					25					30				
Ile	Ala	Lys	Glu	Gly	Gly	Asp	Ile	Val	Leu	Val	Asp	Leu	Asn	Lys	Glu		
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Gln	Ile	Glu	Gln	Ala	Ala	Ala	Asp	Val	Ala	Lys	Glu	Phe	Gly	Val	Lys		
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Thr	Leu	Gly	Leu	Ser	Cys	Asn	Val	Thr	Lys	Pro	Glu	Asp	Cys	Asp	Ser		
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		180						185					190				
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Gln	Lys	Lys	Leu	Thr	Asp	Pro	Ala	Phe	Ile	Pro	Leu	Arg	Arg	Pro	Gly		
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 Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe Ala Arg  
 65 70 75 80  
 His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile Glu Lys  
 85 90 95  
 Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala Val Val  
 100 105 110  
 Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys Arg Ala  
 115 120 125  
 Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Val  
 130 135 140  
 Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Glu Asp Arg Asp Phe  
 145 150 155 160  
 His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val  
 165 170 175  
 Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met Met Ser  
 180 185 190  
 Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala  
 195 200 205  
 Leu Thr Lys Ala Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu  
 210 215 220  
 Tyr Ala Gln Ser Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val  
 225 230 235 240  
 Arg Thr Pro Met Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp  
 245 250 255  
 Pro Glu Ser Val Leu Thr Glu Met Ala Lys Ala Ile Pro Met Arg Arg  
 260 265 270  
 Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu Ala Ser  
 275 280 285  
 Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp Gly Gly  
 290 295 300  
 Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile  
 305 310 315

<210> 2999  
 <211> 747  
 <212> DNA  
 <213> Bradyrhizobium japonicum USDA 110

<220>  
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 <223> transl\_table=11

<400> 2999  
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 ggg att gga gcc gcg att gcg cga ctg ttt gcc gtc gag ggg gcg aaa 96  
 Gly Ile Gly Ala Ile Ala Arg Leu Phe Ala Val Glu Gly Ala Lys  
 20 25 30  
 gtc ttg ctc ggt gat ctc gcc gaa ggc gga gcc gcg ctt gcg gcc ggg 144  
 Val Leu Leu Gly Asp Leu Ala Glu Gly Gly Ala Ala Leu Ala Ala Gly  
 35 40 45  
 ctt gcc gcc gat ggt cac gcg gcg ggc ttc cag cat gtc gac gtc acc 192  
 Leu Ala Ala Asp Gly His Ala Ala Gly Phe Gln His Val Asp Val Thr  
 50 55 60

## PhoenixTemp32470.tmp.txt

gat	gag	gcc	tca	gtt	gcc	gag	ctg	atg	cag	gca	gcc	gtc	acg	ctg	ttc	240
Asp	Glu	Ala	Ser	Val	Ala	Glu	Leu	Met	Gln	Ala	Ala	Val	Thr	Leu	Phe	
65					70					75					80	
ggc	cgg	ctc	gac	atc	ctc	gtc	gcc	aat	gcc	ggc	att	ccc	gag	cgc	aag	288
Gly	Arg	Leu	Asp	Ile	Leu	Val	Ala	Asn	Ala	Gly	Ile	Pro	Glu	Arg	Lys	
				85					90					95		
tcg	cca	atc	cac	gag	ctc	gat	ctc	gtc	gac	tgg	cgc	cgc	gtg	atc	gac	336
Ser	Pro	Ile	His	Glu	Leu	Asp	Leu	Val	Asp	Trp	Arg	Arg	Val	Ile	Asp	
			100					105					110			
gtc	gat	ctc	acc	ggg	gtg	gcg	atc	tgc	aac	aag	ttc	gcc	gca	ggc	atc	384
Val	Asp	Leu	Thr	Gly	Val	Ala	Ile	Cys	Asn	Lys	Phe	Ala	Ala	Gly	Ile	
			115				120					125				
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Met	Arg	Ala	Thr	Gly	Gly	Gly	Ala	Ile	Val	Asn	Met	Ala	Ser	Ile	Leu	
	130					135					140					
gct	cac	gtc	ggg	cag	gag	aac	agc	aac	gcc	tat	tcg	gcc	gcg	aaa	gcc	480
Ala	His	Val	Gly	Gln	Glu	Asn	Ser	Asn	Ala	Tyr	Ser	Ala	Ala	Lys	Ala	
145				150						155					160	
gcg	gtg	gtc	aat	ctc	acg	cgc	tca	gtt	gcg	ttg	acc	tat	gcg	ctc	cag	528
Ala	Val	Val	Asn	Leu	Thr	Arg	Ser	Val	Ala	Leu	Thr	Tyr	Ala	Leu	Gln	
				165					170					175		
ggg	att	cgc	gcg	aac	tgc	gtt	tct	ccg	ggc	tat	gtc	gat	acg	ccg	ttg	576
Gly	Ile	Arg	Ala	Asn	Cys	Val	Ser	Pro	Gly	Tyr	Val	Asp	Thr	Pro	Leu	
			180					185					190			
ctg	gcc	aag	ttg	ccg	gag	gcg	acc	cgc	cag	gcg	atg	ctg	gtg	cgg	cag	624
Leu	Ala	Lys	Leu	Pro	Glu	Ala	Thr	Arg	Gln	Ala	Met	Leu	Val	Arg	Gln	
		195					200					205				
ccg	atc	ggg	cgc	ttg	gcg	cgg	cct	ggg	gag	att	gct	gag	gtt	gtg	gcc	672
Pro	Ile	Gly	Arg	Leu	Ala	Arg	Pro	Gly	Glu	Ile	Ala	Glu	Val	Val	Ala	
		210				215					220					
ttt	ctt	gcg	agc	gac	aag	gcc	tcg	atc	atc	acg	ggc	gcg	tgt	gtc	aat	720
Phe	Leu	Ala	Ser	Asp	Lys	Ala	Ser	Ile	Ile	Thr	Gly	Ala	Cys	Val	Asn	
225				230						235					240	
gcc	gac	ggc	ggc	tac	acg	gca	atc	taa								747
Ala	Asp	Gly	Gly	Tyr	Thr	Ala	Ile									
				245												

&lt;210&gt; 3000

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium japonicum USDA 110

&lt;400&gt; 3000

Met	Val	Leu	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Gly	Ser	
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Gly	Ile	Gly	Ala	Ile	Ala	Arg	Leu	Phe	Ala	Val	Glu	Gly	Ala	Lys		
			20				25					30				
Val	Leu	Leu	Gly	Asp	Leu	Ala	Glu	Gly	Gly	Ala	Ala	Leu	Ala	Ala	Gly	
		35				40						45				
Leu	Ala	Ala	Asp	Gly	His	Ala	Ala	Gly	Phe	Gln	His	Val	Asp	Val	Thr	
	50				55				60							
Asp	Glu	Ala	Ser	Val	Ala	Glu	Leu	Met	Gln	Ala	Ala	Val	Thr	Leu	Phe	
65				70					75					80		
Gly	Arg	Leu	Asp	Ile	Leu	Val	Ala	Asn	Ala	Gly	Ile	Pro	Glu	Arg	Lys	
				85				90						95		
Ser	Pro	Ile	His	Glu	Leu	Asp	Leu	Val	Asp	Trp	Arg	Arg	Val	Ile	Asp	
			100					105					110			
Val	Asp	Leu	Thr	Gly	Val	Ala	Ile	Cys	Asn	Lys	Phe	Ala	Ala	Gly	Ile	
		115					120					125				
Met	Arg	Ala	Thr	Gly	Gly	Gly	Ala	Ile	Val	Asn	Met	Ala	Ser	Ile	Leu	
	130					135					140					
Ala	His	Val	Gly	Gln	Glu	Asn	Ser	Asn	Ala	Tyr	Ser	Ala	Ala	Lys	Ala	
145				150						155				160		
Ala	Val	Val	Asn	Leu	Thr	Arg	Ser	Val	Ala	Leu	Thr	Tyr	Ala	Leu	Gln	
			165						170					175		
Gly	Ile	Arg	Ala	Asn	Cys	Val	Ser	Pro	Gly	Tyr	Val	Asp	Thr	Pro	Leu	
			180					185					190			
Leu	Ala	Lys	Leu	Pro	Glu	Ala	Thr	Arg	Gln	Ala	Met	Leu	Val	Arg	Gln	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Pro Ile Gly Arg Leu Ala Arg Pro Gly Glu Ile Ala Glu Val Val Ala  
 210 215 220  
 Phe Leu Ala Ser Asp Lys Ala Ser Ile Ile Thr Gly Ala Cys Val Asn  
 225 230 235 240  
 Ala Asp Gly Gly Tyr Thr Ala Ile  
 245

<210> 3001  
 <211> 810  
 <212> DNA  
 <213> Bradyrhizobium japonicum USDA 110

<220>  
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 <223> transl\_table=11

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 acg aca aaa aat tca aag gag aac aag aaa atg gca gac cgc ctc aag 96  
 Thr Thr Lys Asn Ser Lys Glu Asn Lys Lys Met Ala Asp Arg Leu Lys  
 20 25 30  
 gga aag cgc gcc gtc atc acg gct gcg gca gca ggc atc ggg cgc gca 144  
 Gly Lys Arg Ala Val Ile Thr Ala Ala Ala Ala Gly Ile Gly Arg Ala  
 35 40 45  
 tgc gcc atc gca ttc gcg cgt gaa ggc gcg acc gtg atc gcc acc gac 192  
 Cys Ala Ile Ala Phe Ala Arg Glu Gly Ala Thr Val Ile Ala Thr Asp  
 50 55 60  
 atc aac gag agc ggc atc gcg ggc ctt gcc aag gaa ggc atc gcc gaa 240  
 Ile Asn Glu Ser Gly Ile Ala Gly Leu Ala Lys Glu Gly Ile Ala Glu  
 65 70 75 80  
 acc gca aag ctc gac gtg cgc aac acc gcc gac gtc aat gct ttt gca 288  
 Thr Ala Lys Leu Asp Val Arg Asn Thr Ala Asp Val Asn Ala Phe Ala  
 85 90 95  
 aaa cgc gtc ggc aag atc gac atc ctg ctc aat gcg gcc ggc ttc gtg 336  
 Lys Arg Val Gly Lys Ile Asp Ile Leu Leu Asn Ala Ala Gly Phe Val  
 100 105 110  
 cac cac ggc acc atc ctg gaa tgc tcg gaa gag gat ttc gac ttt tcg 384  
 His His Gly Thr Ile Leu Glu Cys Ser Glu Glu Asp Phe Asp Phe Ser  
 115 120 125  
 ttc gac ctc aac gtc aag tcg atg cac cgg acc atc agg gcc ttc ctg 432  
 Phe Asp Leu Asn Val Lys Ser Met His Arg Thr Ile Arg Ala Phe Leu  
 130 135 140  
 ccg gac atg ctc gcg ggc ggc ggt ggc agc atc gtc aac atc tcg tcc 480  
 Pro Asp Met Leu Ala Gly Gly Gly Ser Ile Val Asn Ile Ser Ser  
 145 150 155 160  
 tgc gcc gcg ctg ccg ccg ccc gcc aac cgc tat gtc tat agc gcg tcg 528  
 Cys Ala Ala Leu Arg Pro Pro Ala Asn Arg Tyr Val Tyr Ser Ala Ser  
 165 170 175  
 aag gct gcg gtg tcg ctg ctg acc cgc gcg gtc gcg ctc gac ttc atc 576  
 Lys Ala Ala Val Ser Leu Leu Thr Arg Ala Val Ala Leu Asp Phe Ile  
 180 185 190  
 acc aag ggc atc cgc tgc aac agc atc tgc ccg ggc acc gtt gag acg 624  
 Thr Lys Gly Ile Arg Cys Asn Ser Ile Cys Pro Gly Thr Val Glu Thr  
 195 200 205  
 ccc tcg atg ctc gac cgc gcc gcc gcg caa gga ccg cag ggc aag gag 672  
 Pro Ser Met Leu Asp Arg Ala Ala Ala Gln Gly Pro Gln Gly Lys Glu  
 210 215 220  
 atg ttc atc tcc cgc cag aag atg ggc cgc ctc ggc acc gcc gac gag 720  
 Met Phe Ile Ser Arg Gln Lys Met Gly Arg Leu Gly Thr Ala Asp Glu  
 225 230 235 240  
 atc gcc tcc atg gcg gtc tat ctc ggc agc gac gag agc gcg ttc acc 768  
 Ile Ala Ser Met Ala Val Tyr Leu Gly Ser Asp Glu Ser Ala Phe Thr  
 245 250 255  
 acc ggc gtc gac ctc gtc gtc gac ggc ggc tac atg ctc tga 810  
 Thr Gly Val Asp Leu Val Val Asp Gly Tyr Met Leu  
 260 265

<210> 3002  
 <211> 269  
 <212> PRT  
 <213> Bradyrhizobium japonicum USDA 110

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 20 25 30  
 Gly Lys Arg Ala Val Ile Thr Ala Ala Ala Gly Ile Gly Arg Ala  
 35 40 45  
 Cys Ala Ile Ala Phe Ala Arg Glu Gly Ala Thr Val Ile Ala Thr Asp  
 50 55 60  
 Ile Asn Glu Ser Gly Ile Ala Gly Leu Ala Lys Glu Gly Ile Ala Glu  
 65 70 75 80  
 Thr Ala Lys Leu Asp Val Arg Asn Thr Ala Asp Val Asn Ala Phe Ala  
 85 90 95  
 Lys Arg Val Gly Lys Ile Asp Ile Leu Leu Asn Ala Ala Gly Phe Val  
 100 105 110  
 His His Gly Thr Ile Leu Glu Cys Ser Glu Glu Asp Phe Asp Phe Ser  
 115 120 125  
 Phe Asp Leu Asn Val Lys Ser Met His Arg Thr Ile Arg Ala Phe Leu  
 130 135 140  
 Pro Asp Met Leu Ala Gly Gly Gly Gly Ser Ile Val Asn Ile Ser Ser  
 145 150 155 160  
 Cys Ala Ala Leu Arg Pro Pro Ala Asn Arg Tyr Val Tyr Ser Ala Ser  
 165 170 175  
 Lys Ala Ala Val Ser Leu Leu Thr Arg Ala Val Ala Leu Asp Phe Ile  
 180 185 190  
 Thr Lys Gly Ile Arg Cys Asn Ser Ile Cys Pro Gly Thr Val Glu Thr  
 195 200 205  
 Pro Ser Met Leu Asp Arg Ala Ala Ala Gln Gly Pro Gln Gly Lys Glu  
 210 215 220  
 Met Phe Ile Ser Arg Gln Lys Met Gly Arg Leu Gly Thr Ala Asp Glu  
 225 230 235 240  
 Ile Ala Ser Met Ala Val Tyr Leu Gly Ser Asp Glu Ser Ala Phe Thr  
 245 250 255  
 Thr Gly Val Asp Leu Val Val Asp Gly Tyr Met Leu  
 260 265

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 <211> 750  
 <212> DNA  
 <213> Clostridium tetani E88

<220>  
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 <222> (1)..(750)  
 <223> transl\_table=11

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 1 5 10 15  
 tct aga ggt att gga aga gga att gca att gaa tta gca gat aag gga 96  
 Ser Arg Gly Ile Gly Arg Gly Ile Ala Ile Glu Leu Ala Asp Lys Gly  
 20 25 30  
 gct tgt gtt att gta aat tat aga aaa gat tta aaa gga gca gaa gaa 144  
 Ala Cys Val Ile Val Asn Tyr Arg Lys Asp Leu Lys Gly Ala Glu Glu  
 35 40 45  
 aca aaa aag aca ata gaa gaa aga ggt gga tat tgt aga ata att aaa 192  
 Thr Lys Lys Thr Ile Glu Glu Arg Gly Gly Tyr Cys Arg Ile Ile Lys  
 50 55 60  
 tgt gat gta agt tca tat gaa gat act aaa cta atg att gaa aag ata 240  
 Cys Asp Val Ser Ser Tyr Glu Asp Thr Lys Leu Met Ile Glu Lys Ile  
 65 70 75 80  
 att aga gat ttt ggg aaa ata gac att ctt ata aat aat gct ggt ata 288

## PhoenixTemp32470.tmp.txt

Ile	Arg	Asp	Phe	Gly <sub>85</sub>	Lys	Ile	Asp	Ile	Leu <sub>90</sub>	Ile	Asn	Asn	Ala	Gly <sub>95</sub>	Ile		
tcc	aag	att	gga	ttg	ttt	ata	gat	atg	gag	gaa	gag	gat	tgg	gat	aat	336	
Ser	Lys	Ile	Gly <sub>100</sub>	Leu	Phe	Ile	Asp	Met <sub>105</sub>	Glu	Glu	Glu	Asp	Trp <sub>110</sub>	Asp	Asn		
ata	ata	aat	aca	aat	tta	aag	ggt	ggt	ttt	aat	tgt	tct	aga	aat	gtt	384	
Ile	Ile	Asn <sub>115</sub>	Thr	Asn	Leu	Lys	Gly <sub>120</sub>	Val	Phe	Asn	Cys <sub>125</sub>	Ser	Arg	Asn	Val		
cta	cct	tat	atg	att	ggt	gaa	aaa	aat	gga	ggt	ata	ata	aat	ata	tct	432	
Leu	Pro	Tyr	Met	Ile	Gly <sub>135</sub>	Glu	Lys	Asn	Gly	Val	Ile <sub>140</sub>	Ile	Asn	Ile	Ser		
tct	atg	tgg	gga	agc	ggt	gga	gct	tct	tgc	gag	gta	att	tat	tcc	gct	480	
Ser	Met	Trp	Gly	Ser	Val <sub>150</sub>	Gly	Ala	Ser	Cys	Glu	Val <sub>155</sub>	Ile	Tyr	Ser	Ala <sub>160</sub>		
tca	aag	gga	gga	gta	gat	tcc	ttt	act	aaa	gct	tta	gca	aaa	gaa	gta	528	
Ser	Lys	Gly	Gly	Val <sub>165</sub>	Asp	Ser	Phe	Thr	Lys <sub>170</sub>	Ala	Leu	Ala	Lys	Glu <sub>175</sub>	Val		
ggg	cca	tcc	aac	ata	aga	gta	aat	gca	att	tca	cca	gga	ggt	ata	aac	576	
Gly	Pro	Ser	Asn <sub>180</sub>	Ile	Arg	Val	Asn	Ala <sub>185</sub>	Ile	Ser	Pro	Gly	Val <sub>190</sub>	Ile	Asn		
act	tca	atg	aat	gag	tgg	atg	agt	tgt	gag	gaa	aag	gat	agc	tta	aaa	624	
Thr	Ser	Met <sub>195</sub>	Asn	Glu	Trp	Met	Ser <sub>200</sub>	Cys	Glu	Glu	Lys	Asp <sub>205</sub>	Ser	Leu	Lys		
gat	gaa	att	cca	tta	tgt	aga	ttt	ggt	gaa	tgt	gaa	gat	ata	ggt	aag	672	
Asp	Glu <sub>210</sub>	Ile	Pro	Leu	Cys	Arg <sub>215</sub>	Phe	Gly	Glu	Cys	Glu <sub>220</sub>	Asp	Ile	Gly	Lys		
gct	gta	gta	ttt	tta	tgt	agc	gat	aac	gca	aag	tac	ata	aca	ggt	caa	720	
Ala	Val	Val	Phe	Leu	Cys <sub>230</sub>	Ser	Asp	Asn	Ala	Lys <sub>235</sub>	Tyr	Ile	Thr	Gly	Gln <sub>240</sub>		
atc	tta	aca	ata	gac	ggt	ggg	atg	ata	taa							750	
Ile	Leu	Thr	Ile	Asp <sub>245</sub>	Gly	Gly	Met	Ile									

&lt;210&gt; 3004

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Clostridium tetani E88

&lt;400&gt; 3004

Met	Lys	Asn	Lys	Phe <sub>5</sub>	Leu	Asn	Gly	Lys	Val <sub>10</sub>	Ala	Leu	Ile	Thr	Gly <sub>15</sub>	Ala		
Ser	Arg	Gly	Ile	Gly <sub>20</sub>	Arg	Gly	Ile	Ala <sub>25</sub>	Ile	Glu	Leu	Ala	Asp <sub>30</sub>	Lys	Gly		
Ala	Cys	Val <sub>35</sub>	Ile	Val	Asn	Tyr	Arg <sub>40</sub>	Lys	Asp	Leu	Lys	Gly <sub>45</sub>	Ala	Glu	Glu		
Thr	Lys	Lys	Thr	Ile	Glu	Glu <sub>55</sub>	Arg	Gly	Gly	Tyr	Cys <sub>60</sub>	Arg	Ile	Ile	Lys		
Cys	Asp	Val	Ser	Ser	Tyr	Glu	Asp	Thr	Lys	Leu	Met	Ile	Glu	Lys	Ile		
65					70					75					80		
Ile	Arg	Asp	Phe	Gly <sub>85</sub>	Lys	Ile	Asp	Ile	Leu <sub>90</sub>	Ile	Asn	Asn	Ala	Gly <sub>95</sub>	Ile		
Ser	Lys	Ile	Gly <sub>100</sub>	Leu	Phe	Ile	Asp	Met <sub>105</sub>	Glu	Glu	Glu	Asp	Trp <sub>110</sub>	Asp	Asn		
Ile	Ile	Asn <sub>115</sub>	Thr	Asn	Leu	Lys	Gly <sub>120</sub>	Val	Phe	Asn	Cys <sub>125</sub>	Ser	Arg	Asn	Val		
Leu	Pro	Tyr	Met	Ile	Gly	Glu	Lys	Asn	Gly	Val	Ile <sub>140</sub>	Ile	Asn	Ile	Ser		
Ser	130																
145	Met	Trp	Gly	Ser	Val <sub>150</sub>	Gly	Ala	Ser	Cys	Glu	Val <sub>155</sub>	Ile	Tyr	Ser	Ala <sub>160</sub>		
Ser	Lys	Gly	Gly	Val <sub>165</sub>	Asp	Ser	Phe	Thr	Lys <sub>170</sub>	Ala	Leu	Ala	Lys	Glu <sub>175</sub>	Val		
Gly	Pro	Ser	Asn <sub>180</sub>	Ile	Arg	Val	Asn	Ala <sub>185</sub>	Ile	Ser	Pro	Gly	Val <sub>190</sub>	Ile	Asn		
Thr	Ser	Met <sub>195</sub>	Asn	Glu	Trp	Met	Ser <sub>200</sub>	Cys	Glu	Glu	Lys	Asp <sub>205</sub>	Ser	Leu	Lys		
Asp	Glu <sub>210</sub>	Ile	Pro	Leu	Cys	Arg <sub>215</sub>	Phe	Gly	Glu	Cys	Glu <sub>220</sub>	Asp	Ile	Gly	Lys		
Ala	Val	Val	Phe	Leu	Cys <sub>230</sub>	Ser	Asp	Asn	Ala	Lys <sub>235</sub>	Tyr	Ile	Thr	Gly	Gln <sub>240</sub>		
225																	

Ile Leu Thr Ile Asp Gly Gly Met Ile  
245

<210> 3005  
<211> 747  
<212> DNA  
<213> Bacteroides thetaiotaomicron VPI-5482

<220>  
<221> CDS  
<222> (1)..(747)  
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ggt att ggc aag gct atc gct ctg aag ttt gct gcc gaa ggt gca aac 96  
Gly Ile Gly Lys Ala Ile Ala Leu Lys Phe Ala Ala Glu Gly Ala Asn  
20 25 30  
att gca ttt act gac ctg gtc att gac gaa aat gca gaa aaa aca agg 144  
Ile Ala Phe Thr Asp Leu Val Ile Asp Glu Asn Ala Glu Lys Thr Arg  
35 40 45  
gta gaa ctg gaa gca atg ggt gta gaa gaa atc cat aag 192  
Val Glu Leu Glu Ala Met Gly Val Lys Ala Lys Gly Tyr Ala Ser Asn  
50 55 60  
gct gct aac ttt gaa gat act gca aag gtc gta gaa gaa atc cat aag 240  
Ala Ala Asn Phe Glu Asp Thr Ala Lys Val Val Glu Glu Ile His Lys  
65 70 75 80  
gac ttc gga cgt atc gat att ctg gtg aac aat gcc ggt atc act cgt 288  
Asp Phe Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg  
85 90 95  
gac ggt ctg atg atg cgt atg agc gaa caa caa tgg gat atg gta atc 336  
Asp Gly Leu Met Met Arg Met Ser Glu Gln Gln Trp Asp Met Val Ile  
100 105 110  
aat gtg aac ctg aag tct gca ttt aac ttc atc cac gct tgt aca cct 384  
Asn Val Asn Leu Lys Ser Ala Phe Asn Phe Ile His Ala Cys Thr Pro  
115 120 125  
gtt atg atg cgt cag aaa gct ggt agc att atc aac atg gca tct gta 432  
Val Met Met Arg Gln Lys Ala Gly Ser Ile Ile Asn Met Ala Ser Val  
130 135 140  
gtg ggt gtt cac ggt aat gcg gga cag gct aac tat gct gct tcc aaa 480  
Val Gly Val His Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ser Lys  
145 150 155 160  
gcc ggc atg att gca ttg gcc aag tct atc gca caa gaa ctg ggc tct 528  
Ala Gly Met Ile Ala Leu Ala Lys Ser Ile Ala Gln Glu Leu Gly Ser  
165 170 175  
cgt ggc atc cgt gcc aac gcc att gct ccg gga ttc atc ctg aca gat 576  
Arg Gly Ile Arg Ala Asn Ala Ile Ala Pro Gly Phe Ile Leu Thr Asp  
180 185 190  
atg act gct gct ctt tct gac gaa gtg aga gct gaa tgg gca aag aaa 624  
Met Thr Ala Ala Leu Ser Asp Glu Val Arg Ala Glu Trp Ala Lys Lys  
195 200 205  
att cct ttg cgt cgt ggc ggt act cct gaa gat gtg gca aac atc gct 672  
Ile Pro Leu Arg Arg Gly Gly Thr Pro Glu Asp Val Ala Asn Ile Ala  
210 215 220  
acc ttc ctg gca tca gat atg tct tct tac gta tca ggt cag gtg att 720  
Thr Phe Leu Ala Ser Asp Met Ser Ser Tyr Val Ser Gly Gln Val Ile  
225 230 235 240  
cag gta gat ggt ggt atg aat atg taa 747  
Gln Val Asp Gly Gly Met Asn Met  
245

<210> 3006  
<211> 248  
<212> PRT  
<213> Bacteroides thetaiotaomicron VPI-5482

<400> 3006

## PhoenixTemp32470.tmp.txt

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Met Gly Leu Leu Asp Gly Lys Thr Ala Ile Val Thr Gly Ala Ala Arg
1      5      10      15
Gly Ile Gly Lys Ala Ile Ala Leu Lys Phe Ala Ala Glu Gly Ala Asn
20      25      30
Ile Ala Phe Thr Asp Leu Val Ile Asp Glu Asn Ala Glu Lys Thr Arg
35      40      45
Val Glu Leu Glu Ala Met Gly Val Lys Ala Lys Gly Tyr Ala Ser Asn
50      55      60
Ala Ala Asn Phe Glu Asp Thr Ala Lys Val Val Glu Glu Ile His Lys
65      70      75      80
Asp Phe Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg
85      90      95
Asp Gly Leu Met Met Arg Met Ser Glu Gln Gln Trp Asp Met Val Ile
100      105      110
Asn Val Asn Leu Lys Ser Ala Phe Asn Phe Ile His Ala Cys Thr Pro
115      120      125
Val Met Met Arg Gln Lys Ala Gly Ser Ile Ile Asn Met Ala Ser Val
130      135      140
Val Gly Val His Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ser Lys
145      150      155      160
Ala Gly Met Ile Ala Leu Ala Lys Ser Ile Ala Gln Glu Leu Gly Ser
165      170      175
Arg Gly Ile Arg Ala Asn Ala Ile Ala Pro Gly Phe Ile Leu Thr Asp
180      185      190
Met Thr Ala Ala Leu Ser Asp Glu Val Arg Ala Glu Trp Ala Lys Lys
195      200      205
Ile Pro Leu Arg Arg Gly Gly Thr Pro Glu Asp Val Ala Asn Ile Ala
210      215      220
Thr Phe Leu Ala Ser Asp Met Ser Ser Tyr Val Ser Gly Gln Val Ile
225      230      235      240
Gln Val Asp Gly Gly Met Asn Met
245

```

&lt;210&gt; 3007

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Enterococcus faecalis V583

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3007

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atg cca aaa gaa ttt gaa aca aaa cgg gtg ctt gta acc ggt gca gct      48
Met Pro Lys Glu Phe Glu Thr Lys Arg Val Leu Val Thr Gly Ala Ala
1      5      10      15
tca ggg att ggc caa gca caa gca att gcc ttt gct gag caa ggt gct      96
Ser Gly Ile Gly Gln Ala Gln Ala Ile Ala Phe Ala Glu Gln Gly Ala
20      25      30
gaa gtt att ggc atc gac cta gac gaa acg ggg tta aag cag aca gcc      144
Glu Val Ile Gly Ile Asp Leu Asp Glu Thr Gly Leu Lys Gln Thr Ala
35      40      45
gca ctg gtt gac cca gat tct gct aag tcg ttt act tat ttt gtc ggt      192
Ala Leu Val Asp Pro Asp Ser Ala Lys Ser Phe Thr Tyr Phe Val Gly
50      55      60
gat gtg tct tct ccc tca ttt gtg caa gcc acg atg aaa caa att gtg      240
Asp Val Ser Ser Pro Ser Phe Val Gln Ala Thr Met Lys Gln Ile Val
65      70      75      80
aaa aac aac ggc caa att gat att tta tta aat acg gca ggt att tta      288
Lys Asn Asn Gly Gln Ile Asp Ile Leu Leu Asn Thr Ala Gly Ile Leu
85      90      95
gat gat tat cgc cct tct cta gaa act tca gaa gct tta tgg gat caa      336
Asp Asp Tyr Arg Pro Ser Leu Glu Thr Ser Glu Ala Leu Trp Asp Gln
100      105      110
att tta gca acc aat tta aaa agt gtc ttt tta gtg acc aat gcc ata      384
Ile Leu Ala Thr Asn Leu Lys Ser Val Phe Leu Val Thr Asn Ala Ile
115      120      125
tta cct tat ttc ctc caa caa aaa gga gta atc gtt aat atg gca      432

```

## PhoenixTemp32470.tmp.txt

Leu	Pro	Tyr	Phe	Leu	Gln	Gln	Lys	Lys	Gly	Val	Ile	Val	Asn	Met	Ala		
130					135					140							
tct	atc	gct	ggc	tta	gta	gct	ggg	ggc	ggc	ggc	gca	gcg	tac	act	gcc	480	
Ser	Ile	Ala	Gly	Leu	Val	Ala	Gly	Gly	Gly	Gly	Ala	Ala	Tyr	Thr	Ala		
145				150						155					160		
tcc	aaa	cac	gca	atc	atc	ggg	tat	aca	aaa	caa	ctt	tcc	tac	gat	tat	528	
Ser	Lys	His	Ala	Ile	Ile	Gly	Tyr	Thr	Lys	Gln	Leu	Ser	Tyr	Asp	Tyr		
				165					170					175			
gcc	aaa	tta	ggc	att	cga	gca	aat	gcg	att	gcg	cca	ggt	gcc	atc	caa	576	
Ala	Lys	Leu	Gly	Ile	Arg	Ala	Asn	Ala	Ile	Ala	Pro	Gly	Ala	Ile	Gln		
			180					185					190				
aca	ccc	atg	aac	gca	gct	gat	ttt	gca	gga	gaa	ggt	gaa	atg	gct	gct	624	
Thr	Pro	Met	Asn	Ala	Ala	Asp	Phe	Ala	Gly	Glu	Gly	Glu	Met	Ala	Ala		
		195					200					205					
tgg	gta	gca	cgt	gaa	aca	ccc	gcg	ggc	cgt	tgg	gca	cag	cca	caa	gag	672	
Trp	Val	Ala	Arg	Glu	Thr	Pro	Ala	Gly	Arg	Trp	Ala	Gln	Pro	Gln	Glu		
	210					215					220						
gta	gca	aaa	ctt	tca	tta	ttt	cta	gct	agt	gat	gac	gct	gat	tat	atc	720	
Val	Ala	Lys	Leu	Ser	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Asp	Tyr	Ile		
225					230					235					240		
cat	ggc	aca	gtt	atg	acc	att	gat	ggg	ggg	tgg	acc	atg	aaa	taa		765	
His	Gly	Thr	Val	Met	Thr	Ile	Asp	Gly	Gly	Trp	Thr	Met	Lys				
				245					250								

&lt;210&gt; 3008

&lt;211&gt; 254

&lt;212&gt; PRT

&lt;213&gt; Enterococcus faecalis V583

&lt;400&gt; 3008

Met	Pro	Lys	Glu	Phe	Glu	Thr	Lys	Arg	Val	Leu	Val	Thr	Gly	Ala	Ala		
1				5					10					15			
Ser	Gly	Ile	Gly	Gln	Ala	Gln	Ala	Ile	Ala	Phe	Ala	Glu	Gln	Gly	Ala		
			20					25					30				
Glu	Val	Ile	Gly	Ile	Asp	Leu	Asp	Glu	Thr	Gly	Leu	Lys	Gln	Thr	Ala		
		35					40					45					
Ala	Leu	Val	Asp	Pro	Asp	Ser	Ala	Lys	Ser	Phe	Thr	Tyr	Phe	Val	Gly		
	50					55				60							
Asp	Val	Ser	Ser	Pro	Ser	Phe	Val	Gln	Ala	Thr	Met	Lys	Gln	Ile	Val		
65				70					75					80			
Lys	Asn	Asn	Gly	Gln	Ile	Asp	Ile	Leu	Leu	Asn	Thr	Ala	Gly	Ile	Leu		
			85					90					95				
Asp	Asp	Tyr	Arg	Pro	Ser	Leu	Glu	Thr	Ser	Glu	Ala	Leu	Trp	Asp	Gln		
		100					105					110					
Ile	Leu	Ala	Thr	Asn	Leu	Lys	Ser	Val	Phe	Leu	Val	Thr	Asn	Ala	Ile		
	115					120						125					
Leu	Pro	Tyr	Phe	Leu	Gln	Gln	Lys	Lys	Gly	Val	Ile	Val	Asn	Met	Ala		
	130				135					140							
Ser	Ile	Ala	Gly	Leu	Val	Ala	Gly	Gly	Gly	Gly	Ala	Ala	Tyr	Thr	Ala		
145				150					155						160		
Ser	Lys	His	Ala	Ile	Ile	Gly	Tyr	Thr	Lys	Gln	Leu	Ser	Tyr	Asp	Tyr		
				165					170					175			
Ala	Lys	Leu	Gly	Ile	Arg	Ala	Asn	Ala	Ile	Ala	Pro	Gly	Ala	Ile	Gln		
		180					185						190				
Thr	Pro	Met	Asn	Ala	Ala	Asp	Phe	Ala	Gly	Glu	Gly	Glu	Met	Ala	Ala		
		195					200					205					
Trp	Val	Ala	Arg	Glu	Thr	Pro	Ala	Gly	Arg	Trp	Ala	Gln	Pro	Gln	Glu		
	210					215					220						
Val	Ala	Lys	Leu	Ser	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Asp	Tyr	Ile		
225					230					235					240		
His	Gly	Thr	Val	Met	Thr	Ile	Asp	Gly	Gly	Trp	Thr	Met	Lys				
				245					250								

&lt;210&gt; 3009

&lt;211&gt; 831

&lt;212&gt; DNA

&lt;213&gt; Streptomyces avermitilis MA-4680

&lt;220&gt;



## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(831)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3009

atg acc ccg cga ctg tcc ggc aag acc gct gtc atc acg ggc gcc gcc	48
Met Thr Pro Arg Leu Ser Gly Lys Thr Ala Val Ile Thr Gly Ala Ala	
1 5 10 15	
cgc ggt ctg gga cgc gcc acc gcg gtg gcg ttc gcc cgc gag ggt gcc	96
Arg Gly Leu Gly Arg Ala Thr Ala Val Ala Phe Ala Arg Glu Gly Ala	
20 25 30	
gac ctg atg ctg ctc gac ctg gcg gcg gac ctg ccg ggc gtc ccc tac	144
Asp Leu Met Leu Leu Asp Leu Ala Ala Asp Leu Pro Gly Val Pro Tyr	
35 40 45	
ccg ctg ggc tcc gag agc cag ctg gcc cac acc gcc gag ttg tgc cgc	192
Pro Leu Gly Ser Glu Ser Gln Leu Ala His Thr Ala Glu Leu Cys Arg	
50 55 60	
gag caa ggc gtc gcc gcc tgc acg gcc cgg ctc gac gtg cgt gac ctc	240
Glu Gln Gly Val Ala Ala Ser Thr Ala Arg Leu Asp Val Arg Asp Leu	
65 70 75 80	
gac gcg gtg gag gcc gcg atg gcc acc acc cgc gag cgg ttc gga cgg	288
Asp Ala Val Glu Ala Ala Met Ala Thr Thr Arg Glu Arg Phe Gly Arg	
85 90 95	
atc gac gta ctc gtc aac aac gcc ggg atc gcc gcc cct tcg ggc aag	336
Ile Asp Val Leu Val Asn Asn Ala Gly Ile Ala Ala Pro Ser Gly Lys	
100 105 110	
gcc gcc cat gag atc gac gag cgt gag tgg cag ctg atg atc gac gtc	384
Ala Ala His Glu Ile Asp Glu Arg Glu Trp Gln Leu Met Ile Asp Val	
115 120 125	
gac ctc tcc gga gcc tgg cgg acc atc cgc gcg gta ggc ggt cac atg	432
Asp Leu Ser Gly Ala Trp Arg Thr Ile Arg Ala Val Gly Gly His Met	
130 135 140	
gcc gag cag cgc tcg ggc agc atc atc aac atc gcc tcc acc gcg ggc	480
Ala Glu Gln Arg Ser Gly Ser Ile Ile Asn Ile Ala Ser Thr Ala Gly	
145 150 155 160	
ctg gtg ggc tac cgc cac ttc gcc ggc tac gtg gcc gcc aag cac ggc	528
Leu Val Gly Tyr Arg His Phe Ala Gly Tyr Val Ala Ala Lys His Gly	
165 170 175	
ctg gtc ggt ctg acc aag gcc gtc gcg ctc gac tac gca ccg ctc aag	576
Leu Val Gly Leu Thr Lys Ala Val Ala Leu Asp Tyr Ala Pro Leu Lys	
180 185 190	
gtg cgg gtg aac gcc ctc tgc ccc ggc tcg gtc cgg gac gac tcg cag	624
Val Arg Val Asn Ala Leu Cys Pro Gly Ser Val Arg Asp Asp Ser Gln	
195 200 205	
gtc gag ggc cgg atg ctg tcc gaa atc gcg cgt tgc ctg gac gtg ccg	672
Val Glu Gly Arg Met Leu Ser Glu Ile Ala Arg Cys Leu Asp Val Pro	
210 215 220	
gtg gcc gag cac gag gag acc ttc gtg cag gcc cag ccg atg aac tcc	720
Val Ala Glu His Glu Glu Thr Phe Val Gln Ala Gln Pro Met Asn Ser	
225 230 235 240	
ctg atc gag ccc gag gac atc gcg tcg gca gcc gtg tgg ctg gcc tcc	768
Leu Ile Glu Pro Glu Asp Ile Ala Ser Ala Val Trp Leu Ala Ser	
245 250 255	
gac gag tcc cgc cag gtc acc ggc agc gtc ctc gcg gtg gac ggc ggc	816
Asp Glu Ser Arg Gln Val Thr Gly Ser Val Leu Ala Val Asp Gly Gly	
260 265 270	
ttc acc gcc cgt tag	831
Phe Thr Ala Arg	
275	

&lt;210&gt; 3010

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces avermitilis MA-4680

&lt;400&gt; 3010

Met Thr Pro Arg Leu Ser Gly Lys Thr Ala Val Ile Thr Gly Ala Ala
1 5 10 15
Arg Gly Leu Gly Arg Ala Thr Ala Val Ala Phe Ala Arg Glu Gly Ala

## PhoenixTemp32470.tmp.txt

20 25 30  
 Asp Leu Met Leu Leu Asp Leu Ala Ala Asp Leu Pro Gly Val Pro Tyr  
 35 40 45  
 Pro Leu Gly Ser Glu Ser Gln Leu Ala His Thr Ala Glu Leu Cys Arg  
 50 55 60  
 Glu Gln Gly Val Ala Ala Ser Thr Ala Arg Leu Asp Val Arg Asp Leu  
 65 70 75  
 Asp Ala Val Glu Ala Ala Met Ala Thr Thr Arg Glu Arg Phe Gly Arg  
 85 90 95  
 Ile Asp Val Leu Val Asn Asn Ala Gly Ile Ala Ala Pro Ser Gly Lys  
 100 105 110  
 Ala Ala His Glu Ile Asp Glu Arg Glu Trp Gln Leu Met Ile Asp Val  
 115 120 125  
 Asp Leu Ser Gly Ala Trp Arg Thr Ile Arg Ala Val Gly Gly His Met  
 130 135 140  
 Ala Glu Gln Arg Ser Gly Ser Ile Ile Asn Ile Ala Ser Thr Ala Gly  
 145 150 155 160  
 Leu Val Gly Tyr Arg His Phe Ala Gly Tyr Val Ala Ala Lys His Gly  
 165 170 175  
 Leu Val Gly Leu Thr Lys Ala Val Ala Leu Asp Tyr Ala Pro Leu Lys  
 180 185 190  
 Val Arg Val Asn Ala Leu Cys Pro Gly Ser Val Arg Asp Asp Ser Gln  
 195 200 205  
 Val Glu Gly Arg Met Leu Ser Glu Ile Ala Arg Cys Leu Asp Val Pro  
 210 215 220  
 Val Ala Glu His Glu Glu Thr Phe Val Gln Ala Gln Pro Met Asn Ser  
 225 230 235 240  
 Leu Ile Glu Pro Glu Asp Ile Ala Ser Ala Ala Val Trp Leu Ala Ser  
 245 250 255  
 Asp Glu Ser Arg Gln Val Thr Gly Ser Val Leu Ala Val Asp Gly Gly  
 260 265 270  
 Phe Thr Ala Arg  
 275

&lt;210&gt; 3011

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Streptomyces rochei

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3011

atg ggt acg ctg gca ggc aag acg gcc ctg gtc aca ggg gcg gga cgg	48
Met Gly Thr Leu Ala Gly Lys Thr Ala Leu Val Thr Gly Ala Gly Arg	
1 5 10 15	
ggc ata ggc cgg ggc atc gcc cgt cgc ctg gcg gcg gac ggc gcg ctg	96
Gly Ile Gly Arg Gly Ile Ala Arg Arg Leu Ala Ala Asp Gly Ala Leu	
20 25 30	
gtc gcc gtc cac tac cgg gcc gac gag acc gcg gca cgc agc acc gtc	144
Val Ala Val His Tyr Arg Ala Asp Glu Thr Ala Ala Arg Ser Thr Val	
35 40 45	
gcg atg atc acg gac agc ggt ggt cgc gcc gtc atg gtg cac gcc ccg	192
Ala Met Ile Thr Asp Ser Gly Gly Arg Ala Val Met Val His Ala Pro	
50 55 60	
ctc ggc gtg ccc gac gac gcg cgg cac ctg tac gag cga ttc gac gcg	240
Leu Gly Val Pro Asp Asp Ala Arg His Leu Tyr Glu Arg Phe Asp Ala	
65 70 75 80	
gcg ctg agg gag cag ggc gcg gaa ccg gcc ctc gac atc ctg gtc aac	288
Ala Leu Arg Glu Gln Gly Ala Glu Pro Ala Leu Asp Ile Leu Val Asn	
85 90 95	
aac gcg ggg acc aac aca cgg ggc tgc gtg tcc gat gtg acg ccg ccg	336
Asn Ala Gly Thr Asn Thr Arg Gly Ser Val Ser Asp Val Thr Pro Pro	
100 105 110	
gac ttc gac gag ctg atg gcc ctg cac gcc aag gcg ccg ctt ttc ctc	384
Asp Phe Asp Glu Leu Met Ala Leu His Ala Lys Ala Pro Leu Phe Leu	
115 120 125	

PhoenixTemp32470.tmp.txt

gtc	cag	cac	gcg	ctg	ggc	cgg	ctg	cgc	gac	ggc	gga	cgg	atc	gtc	aac	432
Val	Gln	His	Ala	Leu	Gly	Arg	Leu	Arg	Asp	Gly	Gly	Arg	Ile	Val	Asn	
	130					135					140					
atc	agt	tcc	gcc	gcg	acc	agg	gtg	gcc	ctt	ccc	gag	tcc	atc	gcc	tac	480
Ile	Ser	Ser	Ala	Ala	Thr	Arg	Val	Ala	Leu	Pro	Glu	Ser	Ile	Ala	Tyr	
	145				150					155					160	
tgc	atg	gcg	aag	gcg	gcc	gtc	gag	gcc	atg	act	cgc	gcg	ctg	gcc	aag	528
Cys	Met	Ala	Lys	Ala	Ala	Val	Glu	Ala	Met	Thr	Arg	Ala	Leu	Ala	Lys	
				165					170						175	
gac	ctg	ggc	cgg	cgc	ggc	atc	acg	gtg	aac	gcc	gtg	gcg	ccc	gga	ttc	576
Asp	Leu	Gly	Arg	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	
			180					185					190			
gtg	aag	acg	gac	atg	aac	gcc	gga	cgc	tgg	gcc	aca	ccc	gag	ggc	gag	624
Val	Lys	Thr	Asp	Met	Asn	Ala	Gly	Arg	Trp	Ala	Thr	Pro	Glu	Gly	Glu	
		195					200					205				
gcc	gcg	cac	gcg	gcc	ctc	tcg	gtc	ttc	cgg	cgc	atg	gga	gag	acc	gcg	672
Ala	Ala	His	Ala	Ala	Leu	Ser	Val	Phe	Arg	Arg	Met	Gly	Glu	Thr	Ala	
		210				215					220					
gac	atc	gcc	gac	atc	gtc	gcc	ttc	ctc	gcc	tcg	gac	tcc	cgg	tgg		720
Asp	Ile	Ala	Asp	Ile	Val	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Arg	Trp	
					230					235					240	
atc	acc	ggt	cag	tgc	ctg	gac	gcc	tcg	ggc	ggc	ggg	ggc	ctg	tag		765
Ile	Thr	Gly	Gln	Cys	Leu	Asp	Ala	Ser	Gly	Gly	Gly	Gly	Leu			
				245					250							

<210> 3012  
 <211> 254  
 <212> PRT  
 <213> Streptomyces rochei

<400> 3012

Met	Gly	Thr	Leu	Ala	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ala	Gly	Arg	
1				5					10					15		
Gly	Ile	Gly	Arg	Gly	Ile	Ala	Arg	Arg	Leu	Ala	Ala	Asp	Gly	Ala	Leu	
			20					25					30			
Val	Ala	Val	His	Tyr	Arg	Ala	Asp	Glu	Thr	Ala	Ala	Arg	Ser	Thr	Val	
		35					40					45				
Ala	Met	Ile	Thr	Asp	Ser	Gly	Gly	Arg	Ala	Val	Met	Val	His	Ala	Pro	
	50				55						60					
Leu	Gly	Val	Pro	Asp	Asp	Ala	Arg	His	Leu	Tyr	Glu	Arg	Phe	Asp	Ala	
				70						75					80	
Ala	Leu	Arg	Glu	Gln	Gly	Ala	Glu	Pro	Ala	Leu	Asp	Ile	Leu	Val	Asn	
				85					90					95		
Asn	Ala	Gly	Thr	Asn	Thr	Arg	Gly	Ser	Val	Ser	Asp	Val	Thr	Pro	Pro	
		100						105					110			
Asp	Phe	Asp	Glu	Leu	Met	Ala	Leu	His	Ala	Lys	Ala	Pro	Leu	Phe	Leu	
		115					120					125				
Val	Gln	His	Ala	Leu	Gly	Arg	Leu	Arg	Asp	Gly	Gly	Arg	Ile	Val	Asn	
	130				135						140					
Ile	Ser	Ser	Ala	Ala	Thr	Arg	Val	Ala	Leu	Pro	Glu	Ser	Ile	Ala	Tyr	
					150					155					160	
Cys	Met	Ala	Lys	Ala	Ala	Val	Glu	Ala	Met	Thr	Arg	Ala	Leu	Ala	Lys	
				165					170					175		
Asp	Leu	Gly	Arg	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	
			180					185					190			
Val	Lys	Thr	Asp	Met	Asn	Ala	Gly	Arg	Trp	Ala	Thr	Pro	Glu	Gly	Glu	
		195					200					205				
Ala	Ala	His	Ala	Ala	Leu	Ser	Val	Phe	Arg	Arg	Met	Gly	Glu	Thr	Ala	
	210					215					220					
Asp	Ile	Ala	Asp	Ile	Val	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Arg	Trp	
				230						235					240	
Ile	Thr	Gly	Gln	Cys	Leu	Asp	Ala	Ser	Gly	Gly	Gly	Gly	Leu			
				245					250							

<210> 3013  
 <211> 753  
 <212> DNA  
 <213> Bordetella parapertussis 12822

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3013

ttg ttc gat ttg agc gga aag acc gcc ctc gtc acc ggg gca agc cgt	48
Met Phe Asp Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Arg	
1 5 10 15	
ggc atc ggc cag aat gtc gcg ctg tgc ctg gcg cag gcg ggc gcg aac	96
Gly Ile Gly Gln Asn Val Ala Leu Cys Leu Ala Gln Ala Gly Ala Asn	
20 25 30	
gtc gtg ctg tgg gga cgc gac cag gcg gaa ctg gaa cag acg cgc gta	144
Val Val Leu Trp Gly Arg Asp Gln Ala Glu Leu Glu Gln Thr Arg Val	
35 40 45	
cgg atc gac gaa tac ggc gtc cag tcc acc atc gac gcc ttc gac att	192
Arg Ile Asp Glu Tyr Gly Val Gln Ser Thr Ile Asp Ala Phe Asp Ile	
50 55 60	
acc gag gcc gaa tcg gtg cgg cgc gcc acg gcc cag gcc atc gag cgt	240
Thr Glu Ala Glu Ser Val Arg Arg Ala Thr Ala Gln Ala Ile Glu Arg	
65 70 75 80	
ttc ggc cac ctg gac gtg ctg gtc gtc aac gcc ggc gtc aat gtg ctg	288
Phe Gly His Leu Asp Val Leu Val Val Asn Ala Gly Val Asn Val Leu	
85 90 95	
cgc ccc ttc ctg gac tgg acc ccg cag caa tgg gac cac atg atc ggc	336
Arg Pro Phe Leu Asp Trp Thr Pro Gln Gln Trp Asp His Met Ile Gly	
100 105 110	
gtg aac ctg gtc ggc gcg atg cac acg ctg cag gcc gtc ggc cgg cac	384
Val Asn Leu Val Gly Ala Met His Thr Leu Gln Ala Val Gly Arg His	
115 120 125	
atg acc gag cgc aag cag ggc agc atc atc acc atg tcg tcc atc tac	432
Met Thr Glu Arg Lys Gln Gly Ser Ile Ile Thr Met Ser Ser Ile Tyr	
130 135 140	
agc cat gtg ggc gcg ccc gac aac agc ttc tat tgc ctc acc aag ggc	480
Ser His Val Gly Ala Pro Asp Asn Ser Phe Tyr Cys Leu Thr Lys Gly	
145 150 155 160	
ggc ttg ctg caa ctg acg aaa agc ctg gcg atg gaa tgg gcc cgc cac	528
Gly Leu Leu Gln Leu Thr Lys Ser Leu Ala Met Glu Trp Ala Arg His	
165 170 175	
aag gtg cgc gtc aac gcg atc tgc ccg ggc tgg atc gag acc gac ctg	576
Lys Val Arg Val Asn Ala Ile Cys Pro Gly Trp Ile Glu Thr Asp Leu	
180 185 190	
acc gcg ccg tac atg cag gac gca cag gtg gcg gcg gcc ggg ctg aaa	624
Thr Ala Pro Tyr Met Gln Asp Ala Gln Val Arg Ala Ala Gly Leu Lys	
195 200 205	
cag att ccc ttg cgc cgc ttc ggc cag ccc gcc gat atc ggt ccg atc	672
Gln Ile Pro Leu Arg Arg Phe Gly Gln Pro Ala Asp Ile Gly Pro Ile	
210 215 220	
gcc gtc tac ctg gcc tcg gac gag gcg caa tgg acg acc ggc cag agt	720
Ala Val Tyr Leu Ala Ser Asp Glu Ala Gln Trp Thr Thr Gly Gln Ser	
225 230 235 240	
ttc gtg gtc gac ggc ggc ggc cag atc gcc cgc tga	753
Phe Val Val Asp Gly Gly Gln Ile Ala Arg	
245 250	

&lt;210&gt; 3014

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Bordetella parapertussis 12822

&lt;400&gt; 3014

Met Phe Asp Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Arg
1 5 10 15
Gly Ile Gly Gln Asn Val Ala Leu Cys Leu Ala Gln Ala Gly Ala Asn
20 25 30
Val Val Leu Trp Gly Arg Asp Gln Ala Glu Leu Glu Gln Thr Arg Val
35 40 45
Arg Ile Asp Glu Tyr Gly Val Gln Ser Thr Ile Asp Ala Phe Asp Ile
50 55 60

## PhoenixTemp32470.tmp.txt

Thr Glu Ala Glu Ser Val Arg Arg Ala Thr Ala Gln Ala Ile Glu Arg  
 65 70 75 80  
 Phe Gly His Leu Asp Val Leu Val Val Asn Ala Gly Val Asn Val Leu  
 85 90 95  
 Arg Pro Phe Leu Asp Trp Thr Pro Gln Gln Trp Asp His Met Ile Gly  
 100 105 110  
 Val Asn Leu Val Gly Ala Met His Thr Leu Gln Ala Val Gly Arg His  
 115 120 125  
 Met Thr Glu Arg Lys Gln Gly Ser Ile Ile Thr Met Ser Ser Ile Tyr  
 130 135 140  
 Ser His Val Gly Ala Pro Asp Asn Ser Phe Tyr Cys Leu Thr Lys Gly  
 145 150 155 160  
 Gly Leu Leu Gln Leu Thr Lys Ser Leu Ala Met Glu Trp Ala Arg His  
 165 170 175  
 Lys Val Arg Val Asn Ala Ile Cys Pro Gly Trp Ile Glu Thr Asp Leu  
 180 185 190  
 Thr Ala Pro Tyr Met Gln Asp Ala Gln Val Arg Ala Ala Gly Leu Lys  
 195 200 205  
 Gln Ile Pro Leu Arg Arg Phe Gly Gln Pro Ala Asp Ile Gly Pro Ile  
 210 215 220  
 Ala Val Tyr Leu Ala Ser Asp Glu Ala Gln Trp Thr Thr Gly Gln Ser  
 225 230 235 240  
 Phe Val Val Asp Gly Gly Gln Ile Ala Arg  
 245 250

&lt;210&gt; 3015

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Bordetella parapertussis 12822

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3015

atg gca ggc cgc acc gat tgc gcg ccg gcg gct ggc agg ctg gcg ggg	48
Met Ala Gly Arg Thr 5 Asp Cys Ala Pro Ala 10 Ala Gly Arg Leu Ala 15 Gly	
cgg gtc gcc ctg atc acc ggc gcg gcc ggc ggc ata ggc agc gcc gcc	96
Arg Val Ala 20 Ile Thr Gly Ala 25 Gly Gly Ile Gly 30 Ala Ala	
gcg ctg cgc ttc gcg gcc gaa ggc gcc gcg ctg gcg ctg ctg gat cgg	144
Ala Leu Arg 35 Phe Ala Ala Glu Gly 40 Ala Ala Leu Ala 45 Leu Asp Arg	
cgc ccc gac gcc atc gag caa ctg gcc ggc cgg atc tgc ggc cag ggc	192
Arg Pro 50 Asp Ala Ile Glu 55 Gln Leu Ala Gly Arg 60 Cys Gly Gln Gly	
ggg cag gcg atc ggc gtg gcc gcc gac gtg acc gac gac gac agc gtg	240
Gly Gln Ala 65 Ile Gly Val 70 Ala Ala Asp Val 75 Thr Asp Asp Asp Ser Val 80	
cgc cag gcc gta cgg cga gtc gag cat ttc ggc agg atc gat acg	288
Arg Gln Ala 85 Val Arg Arg Ala Val Glu His 90 Phe Gly Arg Ile Asp Thr	
ctg ttc aac tgc gcc ggc gga tgc gtg gcg ggc gat acg gcg gtg gac	336
Leu Phe Asn 100 Cys Ala Gly Gly Ser Val 105 Ala Gly Asp Thr 110 Ala Val Asp	
aag gtg gac ctg gcg ctg tgg aac cgc acc ctg cgc ctg gac ctg gac	384
Lys Val Asp 115 Leu Ala Leu Trp Asn Arg Thr Leu Arg Leu Asp Leu Asp	
agc acc atg ctg tgc tgc cgc cac gcc gtg ccg gcg att gtg cgc gcc	432
Ser Thr 130 Met Leu Cys Cys Arg 135 His Ala Val Pro 140 Ile Val Arg Ala	
ggc ggc ggc gcg gtc gtc aac atg tcc ggg gcc ggc ctg cgc ggc	480
Gly Gly Gly Ala Val 150 Val Asn Met Ser Ser 155 Gly Ala Gly Leu Arg Gly	
145 150 155 160	
agc ttc ggc ggc cat gcc tac acg gcc gcc aag ggc gcg gtg att gcc	528
Ser Phe Gly Gly 165 Ala Tyr Thr Ala 170 Lys Gly Ala Val 175 Ile Ala	

## PhoenixTemp32470.tmp.txt

ctg	acc	cgc	gcg	ctg	gcc	gcc	gaa	tac	gcg	ccg	cat	gga	gtg	cgg	gtc	576
Leu	Thr	Arg	Ala	Leu	Ala	Ala	Glu	Tyr	Ala	Pro	His	Gly	Val	Arg	Val	
			180					185					190			
aac	gcc	atc	tgc	gcg	ggc	cgc	atc	cgc	acc	gaa	cgc	ata	ctg	cgc	aac	624
Asn	Ala	Ile	Cys	Ala	Gly	Arg	Ile	Arg	Thr	Glu	Arg	Ile	Leu	Arg	Asn	
		195					200					205				
ctg	gac	gcc	ggc	gca	ccg	gcg	caa	gcc	ggc	gcg	gcg	caa	cgc	tat	ccg	672
Leu	Asp	Ala	Gly	Ala	Pro	Ala	Gln	Ala	Gly	Ala	Ala	Gln	Arg	Tyr	Pro	
	210					215					220					
tgc	cgc	gag	ggc	gac	ccg	atc	gac	att	gcc	cac	atc	gcg	ctg	ttc	ctg	720
Cys	Arg	Glu	Gly	Asp	Pro	Ile	Asp	Ile	Ala	His	Ile	Ala	Leu	Phe	Leu	
225					230					235					240	
gcc	agc	cac	gag	tcg	cgc	atg	atc	acc	ggc	gag	gcc	atc	gcc	gcc	aat	768
Ala	Ser	His	Glu	Ser	Arg	Met	Ile	Thr	Gly	Glu	Ala	Ile	Ala	Ala	Asn	
				245					250					255		
ggc	ggg	tac	tcg	gcg	ttc	tga										789
Gly	Gly	Tyr	Ser	Ala	Phe											
			260													

&lt;210&gt; 3016

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Bordetella parapertussis 12822

&lt;400&gt; 3016

Met	Ala	Gly	Arg	Thr	Asp	Cys	Ala	Pro	Ala	Ala	Gly	Arg	Leu	Ala	Gly	
1				5					10					15		
Arg	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Gly	Gly	Ile	Gly	Ser	Ala	Ala	
			20					25					30			
Ala	Leu	Arg	Phe	Ala	Ala	Glu	Gly	Ala	Ala	Leu	Ala	Leu	Leu	Asp	Arg	
		35					40					45				
Arg	Pro	Asp	Ala	Ile	Glu	Gln	Leu	Ala	Gly	Arg	Ile	Cys	Gly	Gln	Gly	
	50					55					60					
Gly	Gln	Ala	Ile	Gly	Val	Ala	Ala	Asp	Val	Thr	Asp	Asp	Asp	Ser	Val	
65					70					75					80	
Arg	Gln	Ala	Val	Arg	Arg	Ala	Val	Glu	His	Phe	Gly	Arg	Ile	Asp	Thr	
				85					90					95		
Leu	Phe	Asn	Cys	Ala	Gly	Gly	Ser	Val	Ala	Gly	Asp	Thr	Ala	Val	Asp	
		100						105					110			
Lys	Val	Asp	Leu	Ala	Leu	Trp	Asn	Arg	Thr	Leu	Arg	Leu	Asp	Leu	Asp	
		115					120					125				
Ser	Thr	Met	Leu	Cys	Cys	Arg	His	Ala	Val	Pro	Ala	Ile	Val	Arg	Ala	
	130					135					140					
Gly	Gly	Gly	Ala	Val	Val	Asn	Met	Ser	Ser	Gly	Ala	Gly	Leu	Arg	Gly	
145					150					155					160	
Ser	Phe	Gly	Gly	His	Ala	Tyr	Thr	Ala	Ala	Lys	Gly	Ala	Val	Ile	Ala	
				165					170					175		
Leu	Thr	Arg	Ala	Leu	Ala	Ala	Glu	Tyr	Ala	Pro	His	Gly	Val	Arg	Val	
			180					185					190			
Asn	Ala	Ile	Cys	Ala	Gly	Arg	Ile	Arg	Thr	Glu	Arg	Ile	Leu	Arg	Asn	
		195					200					205				
Leu	Asp	Ala	Gly	Ala	Pro	Ala	Gln	Ala	Gly	Ala	Ala	Gln	Arg	Tyr	Pro	
	210					215					220					
Cys	Arg	Glu	Gly	Asp	Pro	Ile	Asp	Ile	Ala	His	Ile	Ala	Leu	Phe	Leu	
225					230					235					240	
Ala	Ser	His	Glu	Ser	Arg	Met	Ile	Thr	Gly	Glu	Ala	Ile	Ala	Ala	Asn	
				245					250					255		
Gly	Gly	Tyr	Ser	Ala	Phe											
			260													

&lt;210&gt; 3017

&lt;211&gt; 753

&lt;212&gt; DNA

&lt;213&gt; Bordetella bronchiseptica RB50

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;223&gt; transl\_table=11

## PhoenixTemp32470.tmp.txt

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<400> 3017
ttg ttc gat ttg agc gga aag acc gcc ctc gtc acc ggg gca agc cgt      48
Met Phe Asp Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Arg
  1          5          10          15
ggc atc ggc cag aat gtc gcg ctg tgc ctg gcg cag gcg ggc gcg aac      96
Gly Ile Gly Gln Asn Val Ala Leu Cys Leu Ala Gln Ala Gly Ala Asn
          20          25          30
gtc gtg ctg tgg gga cgc gac cag gcg gaa ctg gaa cag act cgc gta     144
Val Val Leu Trp Gly Arg Asp Gln Ala Glu Leu Glu Gln Thr Arg Val
          35          40          45
cgg atc gac gaa tac ggc gtc cag tcc acc atc gac gcc ttc gac att     192
Arg Ile Asp Glu Tyr Gly Val Gln Ser Thr Ile Asp Ala Phe Asp Ile
          50          55          60
acc gag gcc gaa tcg gtg cgg cgc gcc acg gcc cag gcc atc gag cgt     240
Thr Glu Ala Glu Ser Val Arg Arg Ala Thr Ala Gln Ala Ile Glu Arg
          65          70          75
ttc ggc cac ctg gac gtg ctg gtc gtc aac gcc ggc gtc aat gtg ctg     288
Phe Gly His Leu Asp Val Leu Val Val Asn Ala Gly Val Asn Val Leu
          80          85          90
cgc ccc ttc ctg gac tgg acc ccg cag caa tgg gac cac atg atc ggc     336
Arg Pro Phe Leu Asp Trp Thr Pro Gln Gln Trp Asp His Met Ile Gly
          100          105          110
gtg aac ctg gtc ggc gcg atg cac acg ctg cag gcc gtc ggc cgg cac     384
Val Asn Leu Val Gly Ala Met His Thr Leu Gln Ala Val Gly Arg His
          115          120          125
atg acc gag cgc aag cag ggc agc atc atc acc atg tcg tcc atc tac     432
Met Thr Glu Arg Lys Gln Gly Ser Ile Ile Thr Met Ser Ser Ile Tyr
          130          135          140
agc cat gtg ggc gcg ccc gac asp aac agc gtc tat tgc ctc acc aag ggc     480
Ser His Val Gly Ala Pro Asp Asn Ser Val Tyr Cys Leu Thr Lys Gly
          145          150          155
ggc ttg ctg caa ctg acg aaa agc ctg gcg atg gaa tgg gcc cgc cac     528
Gly Leu Leu Gln Leu Thr Lys Ser Leu Ala Met Glu Trp Ala Arg His
          160          165          170
aag gtg cgc gtc aac gcg atc tgc ccg ggc tgg atc gag acc gac ctg     576
Lys Val Arg Val Asn Ala Ile Cys Pro Gly Trp Ile Glu Thr Asp Leu
          180          185          190
acc gcg ccg tac atg cag gac gaa cag gtg cgc gcg gcc ggg ctg aaa     624
Thr Ala Pro Tyr Met Gln Asp Glu Gln Val Arg Ala Ala Gly Leu Lys
          195          200          205
cag att ccc ttg cgc cgc ttc ggc cag ccc gcc gat atc ggt ccg atc     672
Gln Ile Pro Leu Arg Arg Phe Gly Gln Pro Ala Asp Ile Gly Pro Ile
          210          215          220
gcc gtc tac ctg gcc tcg gac gag gcg caa tgg acg acc ggc cag agt     720
Ala Val Tyr Leu Ala Ser Asp Glu Ala Gln Trp Thr Thr Gly Gln Ser
          225          230          235
ttc gtg gtc gac ggc ggg cag atc gcc cgc tga
Phe Val Val Asp Gly Gly Gln Ile Ala Arg
          240          245          250

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&lt;210&gt; 3018

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Bordetella bronchiseptica RB50

&lt;400&gt; 3018

```

Met Phe Asp Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Arg
1          5          10          15
Gly Ile Gly Gln Asn Val Ala Leu Cys Leu Ala Gln Ala Gly Ala Asn
          20          25          30
Val Val Leu Trp Gly Arg Asp Gln Ala Glu Leu Glu Gln Thr Arg Val
          35          40          45
Arg Ile Asp Glu Tyr Gly Val Gln Ser Thr Ile Asp Ala Phe Asp Ile
          50          55          60
Thr Glu Ala Glu Ser Val Arg Arg Ala Thr Ala Gln Ala Ile Glu Arg
          65          70          75
Phe Gly His Leu Asp Val Leu Val Val Asn Ala Gly Val Asn Val Leu
          80          85          90

```

## PhoenixTemp32470.tmp.txt

Arg Pro Phe Leu Asp Trp Thr Pro Gln Gln Trp Asp His Met Ile Gly  
 100 110  
 Val Asn Leu Val Gly Ala Met His Thr Leu Gln Ala Val Gly Arg His  
 115 125  
 Met Thr Glu Arg Lys Gln Gly Ser Ile Ile Thr Met Ser Ser Ile Tyr  
 130 140  
 Ser His Val Gly Ala Pro Asp Asn Ser Val Tyr Cys Leu Thr Lys Gly  
 145 155 160  
 Gly Leu Leu Gln Leu Thr Lys Ser Leu Ala Met Glu Trp Ala Arg His  
 165 175  
 Lys Val Arg Val Asn Ala Ile Cys Pro Gly Trp Ile Glu Thr Asp Leu  
 180 190  
 Thr Ala Pro Tyr Met Gln Asp Glu Gln Val Arg Ala Ala Gly Leu Lys  
 195 205  
 Gln Ile Pro Leu Arg Arg Phe Gly Gln Pro Ala Asp Ile Gly Pro Ile  
 210 220  
 Ala Val Tyr Leu Ala Ser Asp Glu Ala Gln Trp Thr Thr Gly Gln Ser  
 225 235 240  
 Phe Val Val Asp Gly Gly Gln Ile Ala Arg  
 245 250

&lt;210&gt; 3019

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Bordetella bronchiseptica RB50

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3019

atg gca ggc cgc acc gat tgc gcg ccg gcg gcc ggc agg ctg gcg ggg	48
Met Ala Gly Arg Thr Asp Cys Ala Pro Ala Ala Gly Arg Leu Ala Gly	
1 5 10 15	
cgg gtc gcc ctg atc acc ggc gcg gcc ggc ggc ata ggc agc gcc gcc	96
Arg Val Ala Leu Ile Thr Gly Ala Ala Gly Gly Ile Gly Ser Ala Ala	
20 25 30	
gcg ctg cgc ttc gcg gcc gaa ggc gcc gcg ctg gcg ctg ctg gat cgg	144
Ala Leu Arg Phe Ala Ala Glu Gly Ala Ala Leu Ala Leu Asp Arg	
35 40 45	
cgc ccc gac gcc atc gag caa ctg gcc ggc cgg atc tgc ggc cag gcc	192
Arg Pro Asp Ala Ile Glu Gln Leu Ala Gly Arg Ile Cys Gly Gln Gly	
50 55 60	
ggg cag gcg ata ggc gtg gcc gcc gac gtg acc gac gac gac agc gtg	240
Gly Gln Ala Ile Gly Val Ala Ala Asp Val Thr Asp Asp Asp Ser Val	
65 70 75 80	
cgc cag gcc gta cgg cgg gca gtc gag cat ttc ggc agg atc gat acg	288
Arg Gln Ala Val Arg Arg Ala Val Glu His Phe Gly Arg Ile Asp Thr	
85 90 95	
ctg ttc aac tgc gcc ggc gga tgc gtg gcg ggc gat acg gcg gtg gac	336
Leu Phe Asn Cys Ala Gly Gly Ser Val Ala Gly Asp Thr Ala Val Asp	
100 105 110	
aag gtg gag ctg gcg ctg tgg aac cgc acc ctg gcg ctg gac ctg gac	384
Lys Val Glu Leu Ala Leu Trp Asn Arg Thr Leu Arg Leu Asp Leu Asp	
115 120 125	
ggc acc atg ctg tgc tgc cgc cac gcc gtg ccg gcg att gtg cgc gcc	432
Gly Thr Met Leu Cys Cys Arg His Ala Val Pro Ala Ile Val Arg Ala	
130 135 140	
ggc ggc ggc gcg gtc gtc aac atg tgc tcc ggg gcc ggc ctg cgc gcc	480
Gly Gly Gly Ala Val Val Asn Met Ser Ser Gly Ala Gly Leu Arg Gly	
145 150 155 160	
agc ttc ggc ggc cat gcc tac acg gcc gcc aag ggc gcg gtg att gcc	528
Ser Phe Gly Gly His Ala Tyr Thr Ala Ala Lys Gly Ala Val Ile Ala	
165 170 175	
ctg acc cgc gcg ctg gcc gcc gaa tac gcg ccg cat gga gtg cgg gtc	576
Leu Thr Arg Ala Leu Ala Ala Glu Tyr Ala Pro His Gly Val Arg Val	
180 185 190	
aac gcc atc tgc gcg ggc cgc atc cgc acc gaa cgc ata ctg cgc aac	624



PhoenixTemp32470.tmp.txt

Asn	Ala	Ile	Cys	Ala	Gly	Arg	Ile	Arg	Thr	Glu	Arg	Ile	Leu	Arg	Asn		
ctg	gac	gcc	ggc	gca	ccg	gcg	caa	gcc	ggc	gcg	gcg	caa	cgc	tat	cca		672
Leu	Asp	Ala	Gly	Ala	Pro	Ala	Gln	Ala	Gly	Ala	Ala	Gln	Arg	Tyr	Pro		
	210					215				220							
tgc	cgc	gag	ggc	gac	ccg	atc	gac	atc	gcc	cac	atc	gcg	ctg	ttc	ctg		720
Cys	Arg	Glu	Gly	Asp	Pro	Ile	Asp	Ile	Ala	His	Ile	Ala	Leu	Phe	Leu		
	225				230					235					240		
gcc	agc	cac	gag	tcg	cgc	atg	atc	acc	ggc	gag	gcc	atc	gcc	gcc	aat		768
Ala	Ser	His	Glu	Ser	Arg	Met	Ile	Thr	Gly	Glu	Ala	Ile	Ala	Ala	Asn		
				245					250					255			
ggc	ggg	tac	tcg	gcg	ttc	tga											789
Gly	Gly	Tyr	Ser	Ala	Phe												
				260													

<210> 3020  
 <211> 262  
 <212> PRT  
 <213> Bordetella bronchiseptica RB50

<400> 3020

Met	Ala	Gly	Arg	Thr	Asp	Cys	Ala	Pro	Ala	Ala	Gly	Arg	Leu	Ala	Gly		
1				5					10					15			
Arg	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Gly	Gly	Ile	Gly	Ser	Ala	Ala		
			20				25						30				
Ala	Leu	Arg	Phe	Ala	Ala	Glu	Gly	Ala	Ala	Leu	Ala	Leu	Leu	Asp	Arg		
		35					40					45					
Arg	Pro	Asp	Ala	Ile	Glu	Gln	Leu	Ala	Gly	Arg	Ile	Cys	Gly	Gln	Gly		
	50					55					60						
Gly	Gln	Ala	Ile	Gly	Val	Ala	Ala	Asp	Val	Thr	Asp	Asp	Asp	Ser	Val		
65				70						75					80		
Arg	Gln	Ala	Val	Arg	Arg	Ala	Val	Glu	His	Phe	Gly	Arg	Ile	Asp	Thr		
			85						90					95			
Leu	Phe	Asn	Cys	Ala	Gly	Gly	Ser	Val	Ala	Gly	Asp	Thr	Ala	Val	Asp		
		100						105					110				
Lys	Val	Glu	Leu	Ala	Leu	Trp	Asn	Arg	Thr	Leu	Arg	Leu	Asp	Leu	Asp		
	115						120					125					
Gly	Thr	Met	Leu	Cys	Cys	Arg	His	Ala	Val	Pro	Ala	Ile	Val	Arg	Ala		
	130					135				140							
Gly	Gly	Gly	Ala	Val	Val	Asn	Met	Ser	Ser	Gly	Ala	Gly	Leu	Arg	Gly		
145					150					155					160		
Ser	Phe	Gly	Gly	His	Ala	Tyr	Thr	Ala	Ala	Lys	Gly	Ala	Val	Ile	Ala		
			165						170					175			
Leu	Thr	Arg	Ala	Leu	Ala	Ala	Glu	Tyr	Ala	Pro	His	Gly	Val	Arg	Val		
		180						185					190				
Asn	Ala	Ile	Cys	Ala	Gly	Arg	Ile	Arg	Thr	Glu	Arg	Ile	Leu	Arg	Asn		
	195						200					205					
Leu	Asp	Ala	Gly	Ala	Pro	Ala	Gln	Ala	Gly	Ala	Ala	Gln	Arg	Tyr	Pro		
	210					215					220						
Cys	Arg	Glu	Gly	Asp	Pro	Ile	Asp	Ile	Ala	His	Ile	Ala	Leu	Phe	Leu		
225					230					235					240		
Ala	Ser	His	Glu	Ser	Arg	Met	Ile	Thr	Gly	Glu	Ala	Ile	Ala	Ala	Asn		
				245					250					255			
Gly	Gly	Tyr	Ser	Ala	Phe												
			260														

<210> 3021  
 <211> 738  
 <212> DNA  
 <213> Bordetella bronchiseptica RB50

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

<400> 3021

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Met	Ser	Gly	Lys	Leu	Ala	Tyr	Val	Thr	Gly	Gly	Met	Gly	Gly	Ile	Gly		

## PhoenixTemp32470.tmp.txt

1	5	10	15	
acc gcg atc tgc cag cgg ttg gcc aag gac ggc ttc cgg gtg gtg gcg				96
Thr Ala Ile Cys Gln Arg Leu Ala Lys Asp Gly Phe Arg Val Val Ala				
20	25	30		
ggg tgc ggc ccc agc cgc aac tat cag cag tgg ctc gac gag cag gcg				144
Gly Cys Gly Pro Ser Arg Asn Tyr Gln Gln Trp Leu Asp Glu Gln Ala				
35	40	45		
gcc cag ggc tat acg ttc tac gca tcg gtg ggc aac gtg tcc gac tgg				192
Ala Gln Gly Tyr Thr Phe Tyr Ala Ser Val Gly Asn Val Ser Asp Trp				
50	55	60		
gag tcc acc gtc aag gct ttc gag cgc gtc acg gcc gac ctg ggc cag				240
Glu Ser Thr Val Lys Ala Phe Glu Arg Val Thr Ala Asp Leu Gly Gln				
65	70	75		
gtc gac gtg ctg gtc aac aac gcc ggc atc acg cgt gac ggc ctg ttc				288
Val Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Phe				
85	90	95		
cgc aag atg tgc gtg gac gac tgg cgc gcg gtg atc gac acc aac ctg				336
Arg Lys Met Ser Val Asp Asp Trp Arg Ala Val Ile Asp Thr Asn Leu				
100	105	110		
aac agc ctg ttc aac gtg acc aag cag gtg ctc gac ggg atg gtg gag				384
Asn Ser Leu Phe Asn Val Thr Lys Gln Val Leu Asp Gly Met Val Glu				
115	120	125		
cgc caa tgg ggc cgc atc gtc aac atc agc tcg gtc aac ggc cag aaa				432
Arg Gln Trp Gly Arg Ile Val Asn Ile Ser Ser Val Asn Gly Gln Lys				
130	135	140		
ggg cag ttc ggc cag acc aac tac tcg acc gcc aag gcg ggc atc cat				480
Gly Gln Phe Gly Gln Thr Asn Tyr Ser Thr Ala Lys Ala Gly Ile His				
145	150	155		
ggt ttc acc atg gcc ctg gcc cag gag gtc gcc agc aag ggc att acc				528
Gly Phe Thr Met Ala Leu Ala Gln Glu Val Ala Ser Lys Gly Ile Thr				
165	170	175		
gtc aac acc att tcg ccg ggc tac atc ggg acc gac atg gtg cgg gcc				576
Val Asn Thr Ile Ser Pro Gly Tyr Ile Gly Thr Asp Met Val Arg Ala				
180	185	190		
atc cgt ccc gac gtg ctg gag aaa atc gtc gcg acg att ccg gtg cgc				624
Ile Arg Pro Asp Val Leu Glu Lys Ile Val Ala Thr Ile Pro Val Arg				
195	200	205		
cgg ctg ggt acg ccc gag gaa atc gcg tcc atg acg tcc tgg ctg gcg				672
Arg Leu Gly Thr Pro Glu Glu Ile Ala Ser Met Thr Ser Trp Leu Ala				
210	215	220		
tcg gac gag tcg ggt ttt acg ggc gcg gat ttc tcg ctc aat ggc				720
Ser Asp Glu Ser Gly Phe Ala Thr Gly Ala Asp Phe Ser Leu Asn Gly				
225	230	235		
ggc ctg cac atg ggt tga				738
Gly Leu His Met Gly				
245				

&lt;210&gt; 3022

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Bordetella bronchiseptica RB50

&lt;400&gt; 3022

Met Ser Gly Lys Leu Ala Tyr Val Thr Gly Gly Met Gly Gly Ile Gly	
1	5
Thr Ala Ile Cys Gln Arg Leu Ala Lys Asp Gly Phe Arg Val Val Ala	
20	25
Gly Cys Gly Pro Ser Arg Asn Tyr Gln Gln Trp Leu Asp Glu Gln Ala	
35	40
Ala Gln Gly Tyr Thr Phe Tyr Ala Ser Val Gly Asn Val Ser Asp Trp	
50	55
Glu Ser Thr Val Lys Ala Phe Glu Arg Val Thr Ala Asp Leu Gly Gln	
65	70
Val Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Phe	
85	90
Arg Lys Met Ser Val Asp Asp Trp Arg Ala Val Ile Asp Thr Asn Leu	
100	105
Asn Ser Leu Phe Asn Val Thr Lys Gln Val Leu Asp Gly Met Val Glu	
115	120
	125

## PhoenixTemp32470.tmp.txt

Arg Gln Trp Gly Arg Ile Val Asn Ile Ser Ser Val Asn Gly Gln Lys  
 130 135 140  
 Gly Gln Phe Gly Gln Thr Asn Tyr Ser Thr Ala Lys Ala Gly Ile His  
 145 150 155 160  
 Gly Phe Thr Met Ala Leu Ala Gln Glu Val Ala Ser Lys Gly Ile Thr  
 165 170 175  
 Val Asn Thr Ile Ser Pro Gly Tyr Ile Gly Thr Asp Met Val Arg Ala  
 180 185 190  
 Ile Arg Pro Asp Val Leu Glu Lys Ile Val Ala Thr Ile Pro Val Arg  
 195 200 205  
 Arg Leu Gly Thr Pro Glu Glu Ile Ala Ser Met Thr Ser Trp Leu Ala  
 210 215 220  
 Ser Asp Glu Ser Gly Phe Ala Thr Gly Ala Asp Phe Ser Leu Asn Gly  
 225 230 235 240  
 Gly Leu His Met Gly  
 245

&lt;210&gt; 3023

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Chromobacterium violaceum ATCC 12472

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3023

atg	cgt	ttg	aaa	ggg	aaa	gta	tcc	atc	atc	acc	ggc	tcg	gcc	agc	ggc	48
Met	Arg	Leu	Lys	Gly	Lys	Val	Ser	Ile	Ile	Thr	Gly	Ser	Ala	Ser	Gly	
1				5				10						15		
atc	ggc	aag	gcg	acg	gcg	gag	aag	ttc	gtc	aag	gag	ggc	gcc	atc	gtc	96
Ile	Gly	Lys	Ala	Thr	Ala	Glu	Lys	Phe	Val	Lys	Glu	Gly	Ala	Ile	Val	
			20					25					30			
gcg	gtg	tgc	gac	ctg	aac	ccg	gac	gcg	gtc	aaa	acc	gtc	gtc	gac	gaa	144
Ala	Val	Cys	Asp	Leu	Asn	Pro	Asp	Ala	Val	Lys	Thr	Val	Val	Asp	Glu	
		35					40					45				
ctg	aaa	gcc	ctg	ggc	gga	gaa	gct	tac	ggc	tac	aag	gtg	gat	gtg	act	192
Leu	Lys	Ala	Leu	Gly	Gly	Glu	Ala	Tyr	Gly	Tyr	Lys	Val	Asp	Val	Thr	
	50					55					60					
gac	aag	ggc	cag	atc	gcc	gag	atg	gtg	gcc	gac	ctg	aag	aac	cgt	tgc	240
Asp	Lys	Gly	Gln	Ile	Ala	Glu	Met	Val	Ala	Asp	Leu	Lys	Asn	Arg	Cys	
	65				70					75					80	
ggc	cgc	atc	gac	gtg	ctg	gtc	aac	aac	gcc	ggc	atc	gtc	cag	gat	gcc	288
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Val	Gln	Asp	Ala	
				85					90					95		
cag	ctg	atc	aag	atg	agc	gaa	gac	cag	ttc	gac	aag	gtg	atc	gac	atc	336
Gln	Leu	Ile	Lys	Met	Ser	Glu	Asp	Gln	Phe	Asp	Lys	Val	Ile	Asp	Ile	
			100					105					110			
aac	ctg	aag	ggc	gtt	tac	aac	tgt	gcc	cgc	gcc	gtg	gtg	gat	act	atg	384
Asn	Leu	Lys	Gly	Val	Tyr	Asn	Cys	Ala	Arg	Ala	Val	Val	Asp	Thr	Met	
		115					120					125				
gtg	gag	cag	ggc	ggc	ggc	gtg	atc	ctc	aac	gcc	tcg	tcg	gtg	gtg	ggc	432
Val	Glu	Gln	Gly	Gly	Gly	Val	Ile	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly	
	130					135					140					
gtt	tac	ggc	aat	ttc	ggc	cag	acc	aac	tac	gcg	gcg	gcc	aag	ttc	ggc	480
Val	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ala	Lys	Phe	Gly	
	145				150					155					160	
gtg	atc	ggc	ttc	gtc	aag	acc	tgg	gcc	aag	gaa	ttg	ggc	aag	aag	ggc	528
Val	Ile	Gly	Phe	Val	Lys	Thr	Trp	Ala	Lys	Glu	Leu	Gly	Lys	Lys	Gly	
				165				170						175		
atc	cgc	gcc	aac	gcg	gtg	tgt	ccg	ggc	ttc	gtc	gcc	acc	ccc	atc	ctg	576
Ile	Arg	Ala	Asn	Ala	Val	Cys	Pro	Gly	Phe	Val	Ala	Thr	Pro	Ile	Leu	
			180					185					190			
aag	gcc	atg	ccg	gaa	aaa	gtg	ctg	cag	gcg	atg	gaa	gac	aag	gtg	ccg	624
Lys	Ala	Met	Pro	Glu	Lys	Val	Leu	Gln	Ala	Met	Glu	Asp	Lys	Val	Pro	
		195					200					205				
atg	cgc	cgg	atg	gcc	gat	ccg	gcc	gag	atc	gcc	aac	gtc	tac	gcc	ttc	672
Met	Arg	Arg	Met	Ala	Asp	Pro	Ala	Glu	Ile	Ala	Asn	Val	Tyr	Ala	Phe	

## PhoenixTemp32470.tmp.txt

210	ctg gcg tcg gac gag gcc	215	agc tac atc aac ggc	220	gcc gcc atc gag gtg	720
Leu Ala Ser Asp Glu	Ala Ser Tyr Ile Asn Gly	Ala Ala Ile Glu Val				
225	acc ggc ggt ttg acg	ctg taa				741
Thr Gly Gly Leu Thr	Leu					
	245					

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 <211> 246  
 <212> PRT  
 <213> Chromobacterium violaceum ATCC 12472

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 35 40 45  
 Leu Lys Ala Leu Gly Gly Glu Ala Tyr Gly Tyr Lys Val Asp Val Thr  
 50 55 60  
 Asp Lys Gly Gln Ile Ala Glu Met Val Ala Asp Leu Lys Asn Arg Cys  
 65 70 75 80  
 Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Val Gln Asp Ala  
 85 90 95  
 Gln Leu Ile Lys Met Ser Glu Asp Gln Phe Asp Lys Val Ile Asp Ile  
 100 105 110  
 Asn Leu Lys Gly Val Tyr Asn Cys Ala Arg Ala Val Val Asp Thr Met  
 115 120 125  
 Val Glu Gln Gly Gly Gly Val Ile Leu Asn Ala Ser Ser Val Val Gly  
 130 135 140  
 Val Tyr Gly Asn Phe Gly Gln Thr Asn Tyr Ala Ala Ala Lys Phe Gly  
 145 150 155 160  
 Val Ile Gly Phe Val Lys Thr Trp Ala Lys Glu Leu Gly Lys Lys Gly  
 165 170 175  
 Ile Arg Ala Asn Ala Val Cys Pro Gly Phe Val Ala Thr Pro Ile Leu  
 180 185 190  
 Lys Ala Met Pro Glu Lys Val Leu Gln Ala Met Glu Asp Lys Val Pro  
 195 200 205  
 Met Arg Arg Met Ala Asp Pro Ala Glu Ile Ala Asn Val Tyr Ala Phe  
 210 215 220  
 Leu Ala Ser Asp Glu Ala Ser Tyr Ile Asn Gly Ala Ala Ile Glu Val  
 225 230 235 240  
 Thr Gly Gly Leu Thr Leu  
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<210> 3025  
 <211> 735  
 <212> DNA  
 <213> Rhodopseudomonas palustris CGA009

<220>  
 <221> CDS  
 <222> (1)..(735)  
 <223> transl\_table=11

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gcg ggg atc ggg cgg gca tcg gcg atc gct ttt gct cgc gag ggc gcc	20 25 30	96
Ala Gly Ile Gly Arg Ala Ser Ala Phe Ala Arg Glu Gly Ala		
gaa gta ttc gcc acc gat atc gat gag gcc ggg ctt gcc tcg ctc gcc	35 40 45	144
Glu Val Phe Ala Thr Asp Ile Asp Glu Ala Gly Leu Ala Ser Leu Ala		
gag cac ggc att gcg cgg acc gcc aag ctc gac gtc cgc gac acc gcc		192
Glu His Gly Ile Ala Arg Thr Ala Lys Leu Asp Val Arg Asp Thr Ala		

## PhoenixTemp32470.tmp.txt

50	55	60		
gcg gtc gaa gcg atc gcc	cgc gag gcc ggc acc gtc gac atc ctg ctc			240
Ala Val Glu Ala Ile Ala	Arg Glu Ala Gly Thr Val Asp Ile Leu Leu			
65	70	75	80	
aac gct gcc ggc ttc gtg cat cat ggc acg gtg ctc gac tgc tcg gat				288
Asn Ala Ala Gly Phe Val His His Gly Thr Val Leu Asp Cys Ser Asp				
85	90	95		
acg gat tgg gac ttt tcg ttc gac ctc aac gtc aag tcg atg cac cgc				336
Thr Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg				
100	105	110		
acc atc cgc gcg ttt ctt cct gca atg ctg gaa gcc ggc cgc ggc tcg				384
Thr Ile Arg Ala Phe Leu Pro Ala Met Leu Glu Ala Gly Arg Gly Ser				
115	120	125		
atc gtc aac atc tcg tcg gcc gcc ggc gtg ttc aag gcg gca ccg aac				432
Ile Val Asn Ile Ser Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn				
130	135	140		
cgc tac gtc tat ggc gcc acc aaa gcc gca gtg gcg gcg ctg acc cgc				480
Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg				
145	150	155	160	
gcg gtc gcg gtg gac ttc atc act cgc ggc atc cgc tgc aac gcg atc				528
Ala Val Ala Val Asp Phe Ile Thr Arg Gly Ile Arg Cys Asn Ala Ile				
165	170	175		
tgc ccg ggg acg atc gaa acc ccg tcg atg ctc ggc cgt gcc gcc gcg				576
Cys Pro Gly Thr Ile Glu Thr Pro Ser Met Leu Gly Arg Ala Ala Ala				
180	185	190		
ctc ggg ccg cag ggc cgc gag atg ttc gtg tca cgc cag ccg atg ggc				624
Leu Gly Pro Gln Gly Arg Glu Met Phe Val Ser Arg Gln Pro Met Gly				
195	200	205		
cgt ctc ggc aac gcc gag gag atc gcc gcg ctg gcg gtg tac ctc gcc				672
Arg Leu Gly Asn Ala Glu Glu Ile Ala Ala Leu Val Tyr Leu Ala				
210	215	220		
tcc gac gaa agc gcc ttc acc acc ggc gtc gcg cac atc atc gac ggc				720
Ser Asp Glu Ser Ala Phe Thr Thr Gly Val Ala His Ile Ile Asp Gly				
225	230	235	240	
ggc tgg acg ttg taa				735
Gly Trp Thr Leu				

&lt;210&gt; 3026

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Rhodopseudomonas palustris CGA009

&lt;400&gt; 3026

Met Ser Asp Arg Leu Thr Gly Lys Arg Ala Phe Val Thr Ala Ala Ala	
1 5 10 15	
Ala Gly Ile Gly Arg Ala Ser Ala Ile Ala Phe Ala Arg Glu Gly Ala	
20 25 30	
Glu Val Phe Ala Thr Asp Ile Asp Glu Ala Gly Leu Ala Ser Leu Ala	
35 40 45	
Glu His Gly Ile Ala Arg Thr Ala Lys Leu Asp Val Arg Asp Thr Ala	
50 55 60	
Ala Val Glu Ala Ile Ala Arg Glu Ala Gly Thr Val Asp Ile Leu Leu	
65 70 75 80	
Asn Ala Ala Gly Phe Val His His Gly Thr Val Leu Asp Cys Ser Asp	
85 90 95	
Thr Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg	
100 105 110	
Thr Ile Arg Ala Phe Leu Pro Ala Met Leu Glu Ala Gly Arg Gly Ser	
115 120 125	
Ile Val Asn Ile Ser Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn	
130 135 140	
Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg	
145 150 155 160	
Ala Val Ala Val Asp Phe Ile Thr Arg Gly Ile Arg Cys Asn Ala Ile	
165 170 175	
Cys Pro Gly Thr Ile Glu Thr Pro Ser Met Leu Gly Arg Ala Ala Ala	
180 185 190	
Leu Gly Pro Gln Gly Arg Glu Met Phe Val Ser Arg Gln Pro Met Gly	

## PhoenixTemp32470.tmp.txt

195  
 Arg Leu Gly Asn Ala Glu Glu 200 Ile Ala Ala Leu Ala 205 Val Tyr Leu Ala  
 210 Ser Asp Glu Ser Ala Phe Thr Thr Gly Val Ala 220 His Ile Ile Asp Gly  
 225 Gly Trp Thr Leu 230 235 240

&lt;210&gt; 3027

&lt;211&gt; 750

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium avium subsp. paratuberculosis K-10

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(750)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3027

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1 5 10 15	
ggc gca caa ggt ttg ggg ttc gcg atc gcc gaa cgg ttc gtc gcc gaa	96
Gly Ala Gln Gly Leu Gly Phe Ala Ile Ala Glu Arg Phe Val Ala Glu	
20 25 30	
ggg gcg cgg gtc gtc ctc ggc gac gtc aat ctg gag gcg acg caa acc	144
Gly Ala Arg Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Gln Thr	
35 40 45	
gcg gcc aaa cag ctg ggc ggt gac cag gtg gcg ctg gcc gtg cgc tgc	192
Ala Ala Lys Gln Leu Gly Gly Asp Gln Val Ala Leu Ala Val Arg Cys	
50 55 60	
gac gtc acc aag tcg tcc gag gtc gaa acg ctg atc cag acc gcc gtc	240
Asp Val Thr Lys Ser Ser Glu Val Glu Thr Leu Ile Gln Thr Ala Val	
65 70 75 80	
gag cgg ttc ggc ggc ctg gac atc atg gtc aac gcc ggg atc acc	288
Glu Arg Phe Gly Gly Leu Asp Ile Met Val Asn Asn Ala Gly Ile Thr	
85 90 95	
cgg gac gcc acc atg cgc aag atg acc gag gag cag ttc gat cag gtc	336
Arg Asp Ala Thr Met Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val	
100 105 110	
atc gcc gtg cac ttg aag ggc acc tgg aac ggc acc cga ttg gcg gcg	384
Ile Ala Val His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala	
115 120 125	
gcg atc atg cgg gaa aac aag cgc ggc gcc atc atc aac atg tcg tcg	432
Ala Ile Met Arg Glu Asn Lys Arg Gly Ala Ile Ile Asn Met Ser Ser	
130 135 140	
gtg tcg ggc aag gtc ggc atg gtc ggc cag acc aac tac tcg gcg gcc	480
Val Ser Gly Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala	
145 150 155 160	
aag gcc ggc atc gtg ggc atg acc aag gcg gcc gcc aag gag ctg gcc	528
Lys Ala Gly Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala	
165 170 175	
tac ctg ggt gtg cgg gtg aac gcg atc gcc ccc ggt ttg atc cgc tcg	576
Tyr Leu Gly Val Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser	
180 185 190	
gcg atg aca gag gcc atg ccg caa cgc att tgg gac tcc aag gtg gcc	624
Ala Met Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Ser Lys Val Ala	
195 200 205	
gag gtg tcg atg ggc cgg gcc ggc gag ccc agc gag gtc gcc agc gtg	672
Glu Val Ser Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val	
210 215 220	
gcg ctg ttt ttg gcc tcc gac atg tcg tcg tac atg acc ggc acc gtc	720
Ala Leu Phe Leu Ala Ser Asp Met Ser Ser Tyr Met Thr Gly Thr Val	
225 230 235 240	
atg gag atc acg ggc ggc cgg cac ctg tga	750
Met Glu Ile Thr Gly Gly Arg His Leu	
245	

&lt;210&gt; 3028

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium avium subsp. paratuberculosis K-10

&lt;400&gt; 3028

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Met Val Gln Val Ser Leu Leu Ser Gly Gln Thr Ala Val Ile Thr Gly
1      5      10      15
Gly Ala Gln Gly Leu Gly Phe Ala Ile Ala Glu Arg Phe Val Ala Glu
20      25      30
Gly Ala Arg Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Gln Thr
35      40      45
Ala Ala Lys Gln Leu Gly Gly Asp Gln Val Ala Leu Ala Val Arg Cys
50      55      60
Asp Val Thr Lys Ser Ser Glu Val Glu Thr Leu Ile Gln Thr Ala Val
65      70      75      80
Glu Arg Phe Gly Gly Leu Asp Ile Met Val Asn Asn Ala Gly Ile Thr
85      90      95
Arg Asp Ala Thr Met Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val
100     105     110
Ile Ala Val His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala
115     120     125
Ala Ile Met Arg Glu Asn Lys Arg Gly Ala Ile Ile Asn Met Ser Ser
130     135     140
Val Ser Gly Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala
145     150     155     160
Lys Ala Gly Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala
165     170     175
Tyr Leu Gly Val Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser
180     185     190
Ala Met Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Ser Lys Val Ala
195     200     205
Glu Val Ser Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val
210     215     220
Ala Leu Phe Leu Ala Ser Asp Met Ser Ser Tyr Met Thr Gly Thr Val
225     230     235     240
Met Glu Ile Thr Gly Gly Arg His Leu
245

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&lt;210&gt; 3029

&lt;211&gt; 795

&lt;212&gt; DNA

&lt;213&gt; Bacillus cereus ATCC 10987

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(795)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3029

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1      5      10      15
ggg aac gga gct gga att gct cat gta ttt gca gag cta ggg gcg aaa      96
Gly Asn Gly Ala Gly Ile Ala His Val Phe Ala Glu Leu Gly Ala Lys
20      25      30
gta tta ctt gtt gat att tca gag aca gtt cat gag aca gcc aaa aat      144
Val Leu Leu Val Asp Ile Ser Glu Thr Val His Glu Thr Ala Lys Asn
35      40      45
att gta agt aaa ggg tta gat gct gca agt tat gta gtc gat gta gct      192
Ile Val Ser Lys Gly Leu Asp Ala Ala Ser Tyr Val Val Asp Val Ala
50      55      60
gat atg gat gct gtt aaa gaa gta gcg aaa gat gca tat gag aag tac      240
Asp Met Asp Ala Val Lys Glu Val Ala Lys Asp Ala Tyr Glu Lys Tyr
65      70      75      80
gga aag att gat gtg tta gta aat aac gcc ggt gtt att cga ctt gca      288
Gly Lys Ile Asp Val Leu Val Asn Asn Ala Gly Val Ile Arg Leu Ala
85      90      95
aat ttt tta gat atg tca gat gaa atg gat ttt caa ttt caa gta      336
Asn Phe Leu Asp Met Ser Asp Glu Met Arg Asp Phe Gln Phe Gln Val

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## PhoenixTemp32470.tmp.txt

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ggt	gag	aaa	115	aat	tac	gga	aag	att	gtg	aat	atg	tct	tct	gta	aca	gga	432	
Val	Glu	Lys	Asn	Tyr	Gly	Lys	Ile	Val	Asn	Met	Ser	Ser	Val	Thr	Gly			
aca	ttg	ggt	gct	gat	gaa	ggt	gaa	act	gca	tat	gca	acg	acg	aaa	gca	480		
Thr	Leu	Val	Ala	Asp	Glu	Gly	Glu	Thr	Ala	Tyr	Ala	Thr	Thr	Lys	Ala			
gca	att	tgg	gga	ttt	aca	aaa	gcg	tta	gca	cga	gaa	ggt	gca	aaa	cat	528		
Ala	Ile	Trp	Gly	Phe	Thr	Lys	Ala	Leu	Ala	Arg	Glu	Val	Ala	Lys	His			
cat	att	acc	gta	aat	gca	att	tgt	cca	ggt	tac	att	atg	aca	cca	atg	576		
His	Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Ile	Met	Thr	Pro	Met			
gca	gag	caa	ata	gca	aat	gaa	tct	gat	cca	aat	gag	ccg	agt	aat	gta	624		
Ala	Glu	Gln	Ile	Ala	Asn	Glu	Ser	Asp	Pro	Asn	Glu	Pro	Ser	Asn	Val			
atc	gat	gga	att	gct	tca	ggt	ggt	cct	tta	gga	cgt	tta	ggg	aaa	att	672		
Ile	Asp	Gly	Ile	Ala	Ser	Gly	Val	Pro	Leu	Gly	Arg	Leu	Gly	Lys	Ile			
gaa	gaa	gta	ggt	cag	tta	gca	ggt	ttt	tta	gca	tcc	gat	gaa	tca	agc	720		
Glu	Glu	Val	Gly	Gln	Leu	Ala	Gly	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser			
tac	ata	aca	ggt	aca	cac	att	gtc	att	gat	ggt	ggt	agt	aca	ttg	cca	768		
Tyr	Ile	Thr	Gly	Thr	His	Ile	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro			
gaa	acg	ggt	tca	gtg	ggt	gta	aag	taa								795		
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<210> 3030

<211> 264

<212> PRT

<213> Bacillus cereus ATCC 10987

<400> 3030

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Val	Leu	Leu 35	Val	Asp	Ile	Ser	Glu 40	Thr	Val	His	Glu	Thr 45	Ala	Lys	Asn
Ile	Val 50	Ser	Lys	Gly	Leu	Asp 55	Ala	Ala	Ser	Tyr	Val 60	Val	Asp	Val	Ala
Asp 65	Met	Asp	Ala	Val	Lys 70	Glu	Val	Ala	Lys	Asp 75	Ala	Tyr	Glu	Lys	Tyr 80
Gly	Lys	Ile	Asp	Val 85	Leu	Val	Asn	Asn	Ala 90	Gly	Val	Ile	Arg	Leu 95	Ala
Asn	Phe	Leu	Asp 100	Met	Ser	Asp	Glu	Met 105	Arg	Asp	Phe	Gln	Phe 110	Gln	Val
Asn	Ile	Asn 115	Gly	Val	Trp	Asn	Phe 120	Ser	Lys	Ala	Val	Leu 125	Pro	Tyr	Met
Val	Glu 130	Lys	Asn	Tyr	Gly	Lys 135	Ile	Val	Asn	Met	Ser 140	Ser	Val	Thr	Gly
Thr 145	Leu	Val	Ala	Asp	Glu 150	Gly	Glu	Thr	Ala	Tyr 155	Ala	Thr	Thr	Lys	Ala 160
Ala	Ile	Trp	Gly	Phe 165	Thr	Lys	Ala	Leu	Ala 170	Arg	Glu	Val	Ala	Lys 175	His
His	Ile	Thr	Val 180	Asn	Ala	Ile	Cys	Pro 185	Gly	Tyr	Ile	Met	Thr 190	Pro	Met
Ala	Glu	Gln 195	Ile	Ala	Asn	Glu	Ser 200	Asp	Pro	Asn	Glu	Pro 205	Ser	Asn	Val
Ile	Asp 210	Gly	Ile	Ala	Ser	Gly 215	Val	Pro	Leu	Gly	Arg 220	Leu	Gly	Lys	Ile
Glu 225	Glu	Val	Gly	Gln	Leu 230	Ala	Gly	Phe	Leu	Ala 235	Ser	Asp	Glu	Ser	Ser 240
Tyr	Ile	Thr	Gly	Thr	His	Ile	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro



Glu Thr Val Ser Val Gly Val Lys  
 245  
 250  
 255

<210> 3031  
 <211> 871  
 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (119)..(871)

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 atg gaa gga aaa gtt gct ctc att aca gga tcc agt tcg ggt ata ggt 166  
 Met Glu Gly Lys Val Ala Leu Ile Thr Gly Ser Ser Ser Gly Ile Gly  
 1 5 10 15  
 gct ggt atc gca gag cgt ttc gct gag att ggt tgc cgc ctt gct ctc 214  
 Ala Gly Ile Ala Glu Arg Phe Ala Glu Ile Gly Cys Arg Leu Ala Leu  
 20 25 30  
 act gga aga gac gca gaa aaa ctg aaa gat gtc ggg aaa tca tgc tgt 262  
 Thr Gly Arg Asp Ala Glu Lys Leu Lys Asp Val Gly Lys Ser Cys Cys  
 35 40 45  
 gaa cgt ggg ctc agc gaa aaa gag atc tta gtt att gct gcc gat ttg 310  
 Glu Arg Gly Leu Ser Glu Lys Glu Ile Leu Val Ile Ala Ala Asp Leu  
 50 55 60  
 act gaa gat gaa gac ttg gaa agg ata ttt tca aag aca ata gaa aag 358  
 Thr Glu Asp Glu Asp Leu Glu Arg Ile Phe Ser Lys Thr Ile Glu Lys  
 65 70 75 80  
 ttt gga cgc ctc gat atc ctt ata aat aac gca ggt cgt cca gct aaa 406  
 Phe Gly Arg Leu Asp Ile Leu Ile Asn Asn Ala Gly Arg Pro Ala Lys  
 85 90 95  
 gga aga ttc cat gac ctg cag atg aca ttc ttt gat gac gtc atg agg 454  
 Gly Arg Phe His Asp Leu Gln Met Thr Phe Phe Asp Asp Val Met Arg  
 100 105 110  
 ctg aat ctg agg tca gct att tac ctt tcc aag ctg gcc atc cca tat 502  
 Leu Asn Leu Arg Ser Ala Ile Tyr Leu Ser Lys Leu Ala Ile Pro Tyr  
 115 120 125  
 ttg aaa gaa tca aaa ggc tgc gtg aac atg tcg agt gtt gct tcc 550  
 Leu Lys Glu Ser Lys Gly Cys Val Val Asn Met Ser Ser Val Ala Ser  
 130 135 140  
 aaa act aca tgc gat tac aac cct aca tat tca ata tcg aag gtc gct 598  
 Lys Thr Thr Cys Asp Tyr Asn Pro Thr Tyr Ser Ile Ser Lys Val Ala  
 145 150 155 160  
 ctt gat cag ttc aca aaa agc ctt gca gtt gaa ctg gga ccg tac ggc 646  
 Leu Asp Gln Phe Thr Lys Ser Leu Ala Val Glu Leu Gly Pro Tyr Gly  
 165 170 175  
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 Val Arg Val Asn Ser Leu Asn Pro Gly Val Ile Leu Thr Pro Leu Tyr  
 180 185 190  
 cga aac ctc ggg aag agc gac gct caa gtg atc acg tgg tcc aag tca 742  
 Arg Asn Leu Gly Lys Ser Asp Ala Gln Val Ile Thr Trp Ser Lys Ser  
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 Met His Pro Ile Gly Arg His Gly Thr Val Asp Glu Val Val Lys Ala  
 210 215 220  
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 Thr Glu Tyr Leu Val Ser Asp Ala Ser Arg Cys Val Thr Gly Thr Leu  
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<210> 3032  
 <211> 250  
 <212> PRT  
 <213> Strongylocentrotus purpuratus

<400> 3032  
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 Thr Gly Arg Asp Ala Glu Lys Leu Lys Asp Val Gly Lys Ser Cys Cys  
 35 40 45  
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 50 55 60  
 Thr Glu Asp Glu Asp Leu Glu Arg Ile Phe Ser Lys Thr Ile Glu Lys  
 65 70 75 80  
 Phe Gly Arg Leu Asp Ile Leu Ile Asn Asn Ala Gly Arg Pro Ala Lys  
 85 90 95  
 Gly Arg Phe His Asp Leu Gln Met Thr Phe Phe Asp Asp Val Met Arg  
 100 105 110  
 Leu Asn Leu Arg Ser Ala Ile Tyr Leu Ser Lys Leu Ala Ile Pro Tyr  
 115 120 125  
 Leu Lys Glu Ser Lys Gly Cys Val Val Asn Met Ser Val Ala Ser  
 130 135 140  
 Lys Thr Thr Cys Asp Tyr Asn Pro Thr Tyr Ser Ile Ser Lys Val Ala  
 145 150 155 160  
 Leu Asp Gln Phe Thr Lys Ser Leu Ala Val Glu Leu Gly Pro Tyr Gly  
 165 170 175  
 Val Arg Val Asn Ser Leu Asn Pro Gly Val Ile Leu Thr Pro Leu Tyr  
 180 185 190  
 Arg Asn Leu Gly Lys Ser Asp Ala Gln Val Ile Thr Trp Ser Lys Ser  
 195 200 205  
 Met His Pro Ile Gly Arg His Gly Thr Val Asp Glu Val Val Lys Ala  
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 Leu Ser Ile Asp Gly Gly Arg Phe Leu Met  
 245 250

<210> 3033  
 <211> 833  
 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (81)..(833)

<400> 3033  
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 Met Glu Gly Lys Val Ala Leu Ile Thr Gly Ser  
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 Ser Ser Gly Ile Gly Ala Gly Ile Ala Glu Arg Phe Ala Glu Leu Gly  
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 Cys Arg Leu Ala Leu Thr Gly Arg Asp Ala Glu Lys Leu Lys Asp Val  
 30 35 40  
 ggg aaa tca tgc tgt gaa cgt ggg ctc agc gaa aaa gag att tta ctt 257  
 Gly Lys Ser Cys Cys Glu Arg Gly Leu Ser Glu Lys Glu Ile Leu Leu  
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 att gct gcc gat ttg act gaa gat gaa gac tta gaa agg ata ttt tca 305  
 Ile Ala Ala Asp Leu Thr Glu Asp Glu Asp Leu Glu Arg Ile Phe Ser  
 60 65 70 75  
 aag aca ata gaa aag ttt gga cgc ctt gat atc ctt ata aat aac gca 353  
 Lys Thr Ile Glu Lys Phe Gly Arg Leu Asp Ile Leu Ile Asn Asn Ala

## PhoenixTemp32470.tmp.txt

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gat	gac	gtc	atg	agg	ctg	aat	ctg	aga	tca	gct	att	tac	ctt	tcc	aag																																														
Asp	Asp	Val	Met	Arg	Leu	Asn	Leu	Arg	Ser	Ala	Ile	Tyr	Leu	Ser	Lys																																														
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ctg	gcc	atc	cca	tat	ttg	aaa	gaa	tca	aaa	ggc	tgc	gtc	gtg	aac	atg																																														
Leu	Ala	Ile	Pro	Tyr	Leu	Lys	Glu	Ser	Lys	Gly	Cys	Val	Val	Asn	Met																																														
															125																130																135														
tcg	agt	gtt	gct	tcc	aaa	act	aca	tgc	gac	tac	aac	cct	aca	tat	tca																																														
Ser	Ser	Val	Ala	Ser	Lys	Thr	Thr	Cys	Asp	Tyr	Asn	Pro	Thr	Tyr	Ser																																														
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Leu	Gly	Pro	Tyr	Gly	Val	Arg	Val	Asn	Ser	Leu	Asn	Pro	Gly	Val	Ile																																														
															175																180																185														
tta	act	cct	ctc	tac	cga	aac	ctc	ggg	aag	agc	gac	gcc	caa	gtg	atc																																														
Leu	Thr	Pro	Leu	Tyr	Arg	Asn	Leu	Gly	Lys	Ser	Asp	Ala	Gln	Val	Ile																																														
															190																195																200														
aca	tgg	tcc	aag	tca	atg	cat	ccc	att	ggt	cgc	cac	ggg	act	gtg	gat																																														
Thr	Trp	Ser	Lys	Ser	Met	His	Pro	Ile	Gly	Arg	His	Gly	Thr	Val	Asp																																														
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gag	gtc	gtc	aag	gca	acc	gaa	tat	ttg	gtg	tcg	gat	act	tca	aga	tgt																																														
Glu	Val	Val	Lys	Ala	Thr	Glu	Tyr	Leu	Val	Ser	Asp	Thr	Ser	Arg	Cys																																														
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&lt;210&gt; 3034

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Strongylocentrotus purpuratus

&lt;400&gt; 3034

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Thr	Gly	Arg	Asp	Ala	Glu	Lys	Leu	Lys	Asp	Val	Gly	Lys	Ser	Cys	Cys	
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Glu	Arg	Gly	Leu	Ser	Glu	Lys	Glu	Ile	Leu	Leu	Ile	Ala	Ala	Asp	Leu	
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Thr	Glu	Asp	Glu	Asp	Leu	Glu	Arg	Ile	Phe	Ser	Lys	Thr	Ile	Glu	Lys	
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Phe	Gly	Arg	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Arg	Pro	Ala	Lys	
				85					90					95		
Gly	Arg	Phe	His	Asp	Leu	Gln	Met	Thr	Phe	Phe	Asp	Asp	Val	Met	Arg	
			100					105					110			
Leu	Asn	Leu	Arg	Ser	Ala	Ile	Tyr	Leu	Ser	Lys	Leu	Ala	Ile	Pro	Tyr	
		115					120					125				
Leu	Lys	Glu	Ser	Lys	Gly	Cys	Val	Val	Asn	Met	Ser	Ser	Val	Ala	Ser	
	130					135					140					
Lys	Thr	Thr	Cys	Asp	Tyr	Asn	Pro	Thr	Tyr	Ser	Ile	Ser	Lys	Val	Ala	
145					150					155				160		
Leu	Asp	Gln	Phe	Thr	Lys	Ser	Leu	Ala	Val	Glu	Leu	Gly	Pro	Tyr	Gly	
				165					170					175		
Val	Arg	Val	Asn	Ser	Leu	Asn	Pro	Gly	Val	Ile	Leu	Thr	Pro	Leu	Tyr	
			180					185					190			
Arg	Asn	Leu	Gly	Lys	Ser	Asp	Ala	Gln	Val	Ile	Thr	Trp	Ser	Lys	Ser	
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Met	His	Pro	Ile	Gly	Arg	His	Gly	Thr	Val	Asp	Glu	Val	Val	Lys	Ala	
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Thr Glu Tyr Leu Val Ser Asp Thr Ser Arg Cys Val Thr Gly Thr Leu  
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 Leu Ser Ile Asp Gly Arg Phe Leu Met  
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&lt;210&gt; 3035

&lt;211&gt; 768

&lt;212&gt; DNA

<213> *Drosophila pseudoobscura*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;400&gt; 3035

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Ile	Gly	Ala	Ala	Ile	Ala	Gln	Val	Leu	Ala	Arg	Glu	Gly	Ala	Leu	Leu	
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gcg	ctg	gtg	ggg	cgc	aac	gta	gct	aac	ctg	gag	gcc	acc	cgg	aag	acc	144
Ala	Leu	Val	Gly	Arg	Asn	Val	Ala	Asn	Leu	Glu	Ala	Thr	Arg	Lys	Thr	
			35				40					45				
cta	cag	cag	cag	gtg	aag	ggc	att	cgg	gcg	gag	atc	ata	gcc	gcg	gac	192
Leu	Gln	Gln	Gln	Val	Lys	Gly	Ile	Arg	Ala	Glu	Ile	Ile	Ala	Ala	Asp	
	50					55					60					
gtg	acc	aag	gat	gca	gcg	gcc	att	gtc	cag	cag	acg	atc	act	cag	ttc	240
Val	Thr	Lys	Asp	Ala	Ala	Ala	Ile	Val	Gln	Gln	Thr	Ile	Thr	Gln	Phe	
	65				70				75						80	
ggc	cgc	atc	gat	gtg	ctg	gta	aac	aac	gcc	gga	atc	ctg	ggc	aag	ggc	288
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Leu	Gly	Lys	Gly	
				85					90					95		
ggc	ctc	att	gac	ctg	gac	atc	gag	gaa	ttc	gac	tcg	gtg	cta	aac	acg	336
Gly	Leu	Ile	Asp	Leu	Asp	Ile	Glu	Phe	Asp	Ser	Val	Leu	Asn	Thr		
			100				105						110			
aac	ctg	cgc	ggc	gtc	gtc	ctc	ctc	acc	aag	gcg	gtg	ctg	cca	cat	ctc	384
Asn	Leu	Arg	Gly	Val	Val	Leu	Leu	Thr	Lys	Ala	Val	Leu	Pro	His	Leu	
			115				120					125				
ctg	cag	acc	aag	gga	gcc	gtg	gtc	aat	gtg	agc	agc	tgt	gcc	ggg	ctg	432
Leu	Gln	Thr	Lys	Gly	Ala	Val	Val	Asn	Val	Ser	Ser	Cys	Ala	Gly	Leu	
	130					135					140					
cga	ccc	ttt	gcg	ggc	gct	ctc	agc	tac	ggg	gta	tcc	aag	gcg	gcc	ctc	480
Arg	Pro	Phe	Ala	Gly	Ala	Leu	Ser	Tyr	Gly	Val	Ser	Lys	Ala	Ala	Leu	
				150					155						160	
gac	cag	ttc	acc	cgg	atc	gtg	gcc	ctc	gag	atg	gcc	cca	cag	gga	gtg	528
Asp	Gln	Phe	Thr	Arg	Ile	Val	Ala	Leu	Glu	Met	Ala	Pro	Gln	Gly	Val	
				165					170					175		
cgc	gtc	aac	tcg	gtg	aat	ccc	ggc	ttt	gtg	gtg	acc	aac	atc	cac	cag	576
Arg	Val	Asn	Ser	Val	Asn	Pro	Gly	Phe	Val	Val	Thr	Asn	Ile	His	Gln	
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cgc	att	ggc	atc	gtc	gat	gag	gaa	tac	aac	ggc	atg	ctg	cag	cgg	gct	624
Arg	Ile	Gly	Ile	Val	Asp	Glu	Glu	Tyr	Asn	Gly	Met	Leu	Gln	Arg	Ala	
		195				200						205				
atc	gcc	tcc	cat	ccc	atg	ggc	cgt	gtt	ggg	gac	gtg	ttc	gag	gtg	gcc	672
Ile	Ala	Ser	His	Pro	Met	Gly	Arg	Val	Gly	Asp	Val	Phe	Glu	Val	Ala	
			210			215					220					
gag	gcc	gta	gcc	ttc	ctg	gcc	agc	tcc	aag	gcc	agc	ttc	acc	acc	ggc	720
Glu	Ala	Val	Ala	Phe	Leu	Ala	Ser	Ser	Lys	Ala	Ser	Phe	Thr	Thr	Gly	
	225				230					235					240	
gct	ctc	ttc	ccc	atc	gac	ggc	ggc	aag	cac	aat	ctg	acg	cct	cggt		765
Ala	Leu	Phe	Pro	Ile	Asp	Gly	Gly	Lys	His	Asn	Leu	Thr	Pro	Arg		
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taa																768

&lt;210&gt; 3036

&lt;211&gt; 255

&lt;212&gt; PRT

<213> *Drosophila pseudoobscura*

&lt;400&gt; 3036

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20      25      30
Ala Leu Val Gly Arg Asn Val Ala Asn Leu Glu Ala Thr Arg Lys Thr
35      40      45
Leu Gln Gln Gln Val Lys Gly Ile Arg Ala Glu Ile Ile Ala Ala Asp
50      55      60
Val Thr Lys Asp Ala Ala Ile Val Gln Gln Thr Ile Thr Gln Phe
65      70      75
Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Leu Gly Lys Gly
85      90      95
Gly Leu Ile Asp Leu Asp Ile Glu Glu Phe Asp Ser Val Leu Asn Thr
100     105     110
Asn Leu Arg Gly Val Val Leu Leu Thr Lys Ala Val Leu Pro His Leu
115     120     125
Leu Gln Thr Lys Gly Ala Val Val Asn Val Ser Ser Cys Ala Gly Leu
130     135     140
Arg Pro Phe Ala Gly Ala Leu Ser Tyr Gly Val Ser Lys Ala Ala Leu
145     150     155
Asp Gln Phe Thr Arg Ile Val Ala Leu Glu Met Ala Pro Gln Gly Val
165     170     175
Arg Val Asn Ser Val Asn Pro Gly Phe Val Val Thr Asn Ile His Gln
180     185     190
Arg Ile Gly Ile Val Asp Glu Glu Tyr Asn Gly Met Leu Gln Arg Ala
195     200     205
Ile Ala Ser His Pro Met Gly Arg Val Gly Asp Val Phe Glu Val Ala
210     215     220
Glu Ala Val Ala Phe Leu Ala Ser Ser Lys Ala Ser Phe Thr Thr Gly
225     230     235
Ala Leu Phe Pro Ile Asp Gly Gly Lys His Asn Leu Thr Pro Arg
245     250     255

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&lt;210&gt; 3037

&lt;211&gt; 819

&lt;212&gt; DNA

<213> *Magnaporthe grisea* 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 3037

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tcg ggc atc ggg cgc gcg acg gcc ctg ctg atg gcc cgc gag ggc gcc      96
Ser Gly Ile Gly Arg Ala Thr Ala Leu Met Ala Arg Glu Gly Ala
20      25      30
gcc gtc gtg tgc agc gac atc cga cag gcc ccg ccg acg gac tcc aac      144
Ala Val Val Cys Ser Asp Ile Arg Gln Gly Pro Pro Thr Asp Ser Asn
35      40      45
agc agc agc agc atc agc acg cac gag gag att cag cgc ctc ggc ggc      192
Ser Ser Ser Ser Ile Ser Thr His Glu Glu Ile Gln Arg Leu Gly Gly
50      55      60
cgg gcc act ttt gtg tgc gac acg tca gac tcg gcg cag gtg cag      240
Arg Ala Thr Phe Val Ser Cys Asp Thr Ser Asp Ser Ala Gln Val Gln
65      70      75
gcg ctc gtc aag tcg gcc gtg gcc gag ttt ggg cgc ctc gac atc atg      288
Ala Leu Val Lys Ser Ala Val Ala Glu Phe Gly Arg Leu Asp Ile Met
85      90      95
ttc aac aac gcc ggc gtc ggc aag gag ggg gac aat tac ccc gac acc      336
Phe Asn Asn Ala Gly Val Gly Lys Glu Gly Asp Asn Tyr Pro Asp Thr
100
atg att tgg cag tac gac gag gac gac ttt gac ctc acc atg gcc gtc      384

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PhoenixTemp32470.tmp.txt

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Asn	Val	Lys	Gly	Val	Phe	Leu	Gly	Cys	Lys	Tyr	Ala	Ala	Ala	Gln	Met		
130						135					140						
aag	gac	cag	gag	ccg	ctc	gtc	ccc	ggc	ggc	gat	cgt	ggt	tgg	atc	gtc		480
Lys	Asp	Gln	Glu	Pro	Leu	Val	Pro	Gly	Gly	Asp	Arg	Gly	Trp	Ile	Val		
145					150					155					160		
aac	acg	ggg	tcc	ata	ctg	ggg	ggt	aat	gcc	atc	aag	ggc	gtc	acg	gcc		528
Asn	Thr	Gly	Ser	Ile	Leu	Gly	Val	Asn	Ala	Ile	Lys	Gly	Val	Thr	Ala		
				165					170						175		
tat	gcg	gcg	tcg	aag	cat	gcc	gtc	ttg	ggt	atc	acc	aag	gcg	gcg	gct		576
Tyr	Ala	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Ile	Thr	Lys	Ala	Ala	Ala		
			180					185					190				
ttg	gat	tgc	gcc	cct	ttt	aat	att	cac	gtc	aac	gcg	ggt	aac	ccc	ggc		624
Leu	Asp	Cys	Ala	Pro	Phe	Asn	Ile	His	Val	Asn	Ala	Val	Asn	Pro	Gly		
		195				200						205					
ttt	gtc	aag	acg	gta	atg	aca	aag	aat	atg	ttg	gag	gat	agc	ggt	ggc		672
Phe	Val	Lys	Thr	Val	Met	Thr	Lys	Asn	Met	Leu	Glu	Asp	Ser	Val	Gly		
210						215					220						
agt	gag	gcc	ttg	gct	gcg	cgg	cat	ccg	ttc	aag	ggg	ata	gga	aac	gtc		720
Ser	Glu	Ala	Leu	Ala	Ala	Arg	His	Pro	Phe	Lys	Gly	Ile	Gly	Asn	Val		
225				230						235					240		
gag	gac	ata	gcc	aag	acg	gtg	ctg	ttc	ctt	gtc	agc	gac	gat	gcg	tcc		768
Glu	Asp	Ile	Ala	Lys	Thr	Val	Leu	Phe	Leu	Val	Ser	Asp	Asp	Ala	Ser		
				245					250					255			
tgg	atc	acg	ggt	acg	agc	ctt	tgt	gtc	gat	ggt	gga	tac	act	aca	atg		816
Trp	Ile	Thr	Gly	Thr	Ser	Leu	Cys	Val	Asp	Gly	Gly	Tyr	Thr	Thr	Met		
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tga																	819

<210> 3038

<211> 272

<212> PRT

<213> Magnaporthe grisea 70-15

<400> 3038

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			20					25					30				
Ala	Val	Val	Cys	Ser	Asp	Ile	Arg	Gln	Gly	Pro	Pro	Thr	Asp	Ser	Asn		
		35					40					45					
Ser	Ser	Ser	Ser	Ile	Ser	Thr	His	Glu	Glu	Ile	Gln	Arg	Leu	Gly	Gly		
	50					55				60							
Arg	Ala	Thr	Phe	Val	Ser	Cys	Asp	Thr	Ser	Asp	Ser	Ala	Gln	Val	Gln		
65				70						75					80		
Ala	Leu	Val	Lys	Ser	Ala	Val	Ala	Glu	Phe	Gly	Arg	Leu	Asp	Ile	Met		
			85						90					95			
Phe	Asn	Asn	Ala	Gly	Val	Gly	Lys	Glu	Gly	Asp	Asn	Tyr	Pro	Asp	Thr		
		100						105					110				
Met	Ile	Trp	Gln	Tyr	Asp	Glu	Asp	Asp	Phe	Asp	Leu	Thr	Met	Ala	Val		
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Asn	Val	Lys	Gly	Val	Phe	Leu	Gly	Cys	Lys	Tyr	Ala	Ala	Ala	Gln	Met		
	130					135					140						
Lys	Asp	Gln	Glu	Pro	Leu	Val	Pro	Gly	Gly	Asp	Arg	Gly	Trp	Ile	Val		
145					150					155					160		
Asn	Thr	Gly	Ser	Ile	Leu	Gly	Val	Asn	Ala	Ile	Lys	Gly	Val	Thr	Ala		
				165					170					175			
Tyr	Ala	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Ile	Thr	Lys	Ala	Ala	Ala		
		180						185					190				
Leu	Asp	Cys	Ala	Pro	Phe	Asn	Ile	His	Val	Asn	Ala	Val	Asn	Pro	Gly		
		195				200						205					
Phe	Val	Lys	Thr	Val	Met	Thr	Lys	Asn	Met	Leu	Glu	Asp	Ser	Val	Gly		
	210					215					220						
Ser	Glu	Ala	Leu	Ala	Ala	Arg	His	Pro	Phe	Lys	Gly	Ile	Gly	Asn	Val		
225				230						235					240		

## PhoenixTemp32470.tmp.txt

Glu Asp Ile Ala Lys Thr Val Leu Phe Leu Val Ser Asp Asp Ala Ser  
 245 250 255  
 Trp Ile Thr Gly Thr Ser Leu Cys Val Asp Gly Gly Tyr Thr Thr Met  
 260 265 270

&lt;210&gt; 3039

&lt;211&gt; 1119

&lt;212&gt; DNA

&lt;213&gt; Nasonia vitripennis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (234)..(968)

&lt;400&gt; 3039

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aatttacagc agcttagaac gctacatttg ctgcgagata attgttcaat tgaagtcgta 180

gagacttgaa gacgacttgt tcattacctg ttctgcaagc acacggcgca gtc atg 236  
 Met  
 1

aac atc act ttt gaa gga aag cgg att ctc gtt acc ggt gct ggt caa 284  
 Asn Ile Thr Phe 5 Glu Gly Lys Arg Ile 10 Leu Val Thr Gly Ala Gly Gln 15

ggc atc ggt aga gaa aca gct ctg cgt cta tcc aaa ttt ggc ggc aca 332  
 Gly Ile Gly Arg Glu Thr Ala Leu Arg Leu Ser Lys Phe Gly Gly Thr 20 25 30

gtt ata gcc ctc tcg aaa acc aaa gcc aat ctc gac tcc ctg gta aag 380  
 Val Ile Ala Leu Ser Lys 40 Thr Lys Ala Asn Leu Asp 45 Ser Leu Val Lys 35

gaa gat ccg aaa atc caa act gtc tgc gct gac ctg cag gac tgg aat 428  
 Glu Asp Pro Lys Ile Gln Thr Val Cys Ala Asp Leu Gln Asp Trp Asn 50 55 60 65

aaa gcg cga gca gct gtt aag agc gtt ttg ccc ata gat ttg ctt gtc 476  
 Lys Ala Arg Ala 70 Val Lys Ser Val 75 Leu Pro Ile Asp Leu Leu Val 80

aat aat gcc ggg att gcg ata ctg gat cct ttt ctc tct ctc aaa ccc 524  
 Asn Asn Ala Gly 85 Ile Ala Ile Leu Asp 90 Pro Phe Leu Ser Leu Lys Pro 95

gag gac ttt gat caa gtc ttc aat gta aat tta aaa tcg atc atc aac 572  
 Glu Asp Phe 100 Asp Gln Val Phe Asn 105 Val Asn Leu Lys Ser Ile Ile Asn 110

gtc tct caa gtt gtg gcg gag aat atg atc caa aga aaa gtt gct gga 620  
 Val Ser Gln Val Val Ala Glu Asn Met Ile Gln Arg Lys Val Ala Gly 115 120 125

agc atc gtc aat cta tcg tcg gtg gcc agt ttg gta gct gtc aaa gat 668  
 Ser Ile Val Asn Leu Ser Ser Val Ala Ser Leu Val Ala Val Lys Asp 130 135 140 145

cac gct att tat tgc tcg gcg aaa gca gct ttg gac atg ctg aca aag 716  
 His Ala Ile Tyr Cys 150 Ser Ala Lys Ala 155 Leu Asp Met Leu Thr Lys 160

gtc atg gct ttg gaa ctg gga cca cat aac att cgc gtc aac acc gtc 764  
 Val Met Ala Leu Glu Leu Gly Pro His Asn Ile Arg Val Asn Thr Val 165 170 175

aac ccg acc ctt gtc atg acg gcc atg ggc aag gcc aat tgg agc gac 812  
 Asn Pro Thr 180 Leu Val Met Thr Ala Met Gly Lys Ala Asn Trp Ser Asp 190

ccg gca aag gcg gcc acg ttg cga gaa aaa att cca ctg gac cgt ttt 860  
 Pro Ala Lys Ala Ala Thr Leu Arg Glu Lys Ile Pro Leu Asp Arg Phe 195 200 205

gca gag cct caa gaa gtg gtg gat tcc att tgc ttc ctt ctt agt gac 908  
 Ala Glu Pro Gln Glu Val Val Asp Ser Ile Cys Phe Leu Leu Ser Asp 210 215 220 225

## PhoenixTemp32470.tmp.txt

aag agc gca atg acc acc ggt gtt ggg ctt acg atc gac gga gga tac 956  
 Lys Ser Ala Met Thr Thr Gly Val Gly Leu Thr Ile Asp Gly Gly Tyr  
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 acc act cat taaaaaact tgtatacgta tttcaagctt tacaaaatat aagcttactc 1015  
 Thr Thr His  
 tgccttttgta tattataatc acgcaaacag aatgaataaa aaaagctttt taataattgt 1075  
 acagctagtg attcgaataa aattattgaa tccaccgaca gcta 1119

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 <211> 244  
 <212> PRT  
 <213> Nasonia vitripennis

<400> 3040  
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 Gln Gly Ile Gly Arg Glu Thr Ala Leu Arg Leu Ser Lys Phe Gly Gly  
                   20                  25                  30  
 Thr Val Ile Ala Leu Ser Lys Thr Lys Ala Asn Leu Asp Ser Leu Val  
                   35                  40                  45  
 Lys Glu Asp Pro Lys Ile Gln Thr Val Cys Ala Asp Leu Gln Asp Trp  
                   50                  55                  60  
 Asn Lys Ala Arg Ala Ala Val Lys Ser Val Leu Pro Ile Asp Leu Leu  
 65                  70                  75                  80  
 Val Asn Asn Ala Gly Ile Ala Ile Leu Asp Pro Phe Leu Ser Leu Lys  
                   85                  90                  95  
 Pro Glu Asp Phe Asp Gln Val Phe Asn Val Asn Leu Lys Ser Ile Ile  
                   100                  105                  110  
 Asn Val Ser Gln Val Val Ala Glu Asn Met Ile Gln Arg Lys Val Ala  
                   115                  120                  125  
 Gly Ser Ile Val Asn Leu Ser Val Ala Ser Leu Val Ala Val Lys  
                   130                  135                  140  
 Asp His Ala Ile Tyr Cys Ser Ala Lys Ala Ala Leu Asp Met Leu Thr  
 145                  150                  155                  160  
 Lys Val Met Ala Leu Glu Leu Gly Pro His Asn Ile Arg Val Asn Thr  
                   165                  170                  175  
 Val Asn Pro Thr Leu Val Met Thr Ala Met Gly Lys Ala Asn Trp Ser  
                   180                  185                  190  
 Asp Pro Ala Lys Ala Ala Thr Leu Arg Glu Lys Ile Pro Leu Asp Arg  
                   195                  200                  205  
 Phe Ala Glu Pro Gln Glu Val Val Asp Ser Ile Cys Phe Leu Leu Ser  
                   210                  215                  220  
 Asp Lys Ser Ala Met Thr Thr Gly Val Gly Leu Thr Ile Asp Gly Gly  
 225                  230                  235                  240  
 Tyr Thr Thr His

<210> 3041  
 <211> 815  
 <212> DNA  
 <213> Nasonia vitripennis

<220>  
 <221> CDS  
 <222> (1)..(753)

<400> 3041  
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 Met Thr Pro Gly Leu Leu Ala Gly Lys Leu Ala Ile Val Thr Gly Ala  
                   1                  5                  10                  15  
 ggc agt ggc atc ggc agg gca gtc tgc aga ctg ttc gcg cgc gaa ggt 96  
 Gly Ser Gly Ile Gly Arg Ala Val Cys Arg Leu Phe Ala Arg Glu Gly  
                   20                  25                  30  
 gcc aag gtc ata gcc gct gat caa aat gtc aag gcc gcc gag gaa aca 144  
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PhoenixTemp32470.tmp.txt

Ala	Lys	Val	Ile	Ala	Ala	Asp	Gln	Asn	Val	Lys	Ala	Ala	Glu	Glu	Thr		
		35					40					45					
gcc	gac	aca	ctc	gaa	gga	tcg	gaa	cac	gtg	ccg	gtg	gaa	atc	gac	gtg		192
Ala	Asp	Thr	Leu	Glu	Gly	Ser	Glu	His	Val	Pro	Val	Glu	Ile	Asp	Val		
		50				55					60						
aag	agc	ccg	gag	agc	atc	gag	aat	gcc	ttc	acc	cac	gcg	aaa	aag	cac		240
Lys	Ser	Pro	Glu	Ser	Ile	Glu	Asn	Ala	Phe	Thr	His	Ala	Lys	Lys	His		
		65			70					75					80		
ttc	ttg	gta	ccg	ccg	acc	atc	gtc	gtc	aac	tcg	gct	ggg	atc	acc	aga		288
Phe	Leu	Val	Pro	Pro	Thr	Ile	Val	Val	Asn	Ser	Ala	Gly	Ile	Thr	Arg		
				85				90						95			
gac	aac	ttt	ttg	ctg	aag	ctc	agc	gag	gag	gac	ttc	gat	gct	gta	ctc		336
Asp	Asn	Phe	Leu	Leu	Lys	Leu	Ser	Glu	Glu	Asp	Phe	Asp	Ala	Val	Leu		
			100					105					110				
aat	gtc	aat	ctc	aaa	ggg	acg	ttc	ctc	ata	acg	cag	tat	gct	gcc	aag		384
Asn	Val	Asn	Leu	Lys	Gly	Thr	Phe	Leu	Ile	Thr	Gln	Tyr	Ala	Ala	Lys		
		115				120						125					
gta	atg	ata	aac	tcc	gga	ata	tcg	gag	ggc	ggc	tcg	gtg	atc	aac	gta		432
Val	Met	Ile	Asn	Ser	Gly	Ile	Ser	Glu	Gly	Gly	Ser	Val	Ile	Asn	Val		
		130				135					140						
gct	tcg	atc	att	gga	aaa	act	gga	aac	atc	ggc	cag	agt	aac	tat	gcg		480
Ala	Ser	Ile	Ile	Gly	Lys	Thr	Gly	Asn	Ile	Gly	Gln	Ser	Asn	Tyr	Ala		
				150				155							160		
gcg	tcc	aag	gct	ggg	gtc	gag	gct	ttc	acg	aaa	act	gcg	gcg	atg	gag		528
Ala	Ser	Lys	Ala	Gly	Val	Glu	Ala	Phe	Thr	Lys	Thr	Ala	Ala	Met	Glu		
				165				170						175			
ttt	gga	cag	ttt	ggc	att	cga	gtg	aac	gct	gtg	cta	cct	ggc	ttc	ata		576
Phe	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Ala	Val	Leu	Pro	Gly	Phe	Ile		
			180					185					190				
gaa	aca	cca	atg	act	gac	atg	gtt	cct	gac	aaa	gtg	aag	caa	atg	ttt		624
Glu	Thr	Pro	Met	Thr	Asp	Met	Val	Pro	Asp	Lys	Val	Lys	Gln	Met	Phe		
		195				200						205					
gtt	gag	agg	atc	cca	ttg	aga	cgt	atg	gga	aaa	cca	atc	gaa	gtg	gca		672
Val	Glu	Arg	Ile	Pro	Leu	Arg	Arg	Met	Gly	Lys	Pro	Ile	Glu	Val	Ala		
		210				215					220						
gaa	ttg	att	ctg	ttt	ttg	gcc	tcg	gta	aag	agc	tcc	tac	atc	aat	ggg		720
Glu	Leu	Ile	Leu	Phe	Leu	Ala	Ser	Val	Lys	Ser	Ser	Tyr	Ile	Asn	Gly		
		225			230					235					240		
gct	tcc	atc	gat	gtc	act	ggg	ggg	ttg	cac	taagcgaata cttttttcat							770
Ala	Ser	Ile	Asp	Val	Thr	Gly	Gly	Leu	His								
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ttttgtactt acgaactttt aataaacaaa tttcttacgt tactt																	815

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 <212> PRT  
 <213> Nasonia vitripennis

<400> 3042

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Gly	Ser	Gly	Ile	Gly	Arg	Ala	Val	Cys	Arg	Leu	Phe	Ala	Arg	Glu	Gly		
			20					25					30				
Ala	Lys	Val	Ile	Ala	Ala	Asp	Gln	Asn	Val	Lys	Ala	Ala	Glu	Glu	Thr		
		35					40					45					
Ala	Asp	Thr	Leu	Glu	Gly	Ser	Glu	His	Val	Pro	Val	Glu	Ile	Asp	Val		
		50				55					60						
Lys	Ser	Pro	Glu	Ser	Ile	Glu	Asn	Ala	Phe	Thr	His	Ala	Lys	Lys	His		
					70					75				80			
Phe	Leu	Val	Pro	Pro	Thr	Ile	Val	Val	Asn	Ser	Ala	Gly	Ile	Thr	Arg		
				85					90					95			
Asp	Asn	Phe	Leu	Leu	Lys	Leu	Ser	Glu	Glu	Asp	Phe	Asp	Ala	Val	Leu		
			100					105					110				
Asn	Val	Asn	Leu	Lys	Gly	Thr	Phe	Leu	Ile	Thr	Gln	Tyr	Ala	Ala	Lys		
		115					120					125					
Val	Met	Ile	Asn	Ser	Gly	Ile	Ser	Glu	Gly	Gly	Ser	Val	Ile	Asn	Val		
		130				135					140						

## PhoenixTemp32470.tmp.txt

Ala Ser Ile Ile Gly Lys Thr Gly Asn Ile Gly Gln Ser Asn Tyr Ala  
 145 150 155 160  
 Ala Ser Lys Ala Gly Val Glu Ala Phe Thr Lys Thr Ala Ala Met Glu  
 165 170 175  
 Phe Gly Gln Phe Gly Ile Arg Val Asn Ala Val Leu Pro Gly Phe Ile  
 180 185 190  
 Glu Thr Pro Met Thr Asp Met Val Pro Asp Lys Val Lys Gln Met Phe  
 195 200 205  
 Val Glu Arg Ile Pro Leu Arg Arg Met Gly Lys Pro Ile Glu Val Ala  
 210 215 220  
 Glu Leu Ile Leu Phe Leu Ala Ser Val Lys Ser Ser Tyr Ile Asn Gly  
 225 230 235 240  
 Ala Ser Ile Asp Val Thr Gly Gly Leu His  
 245 250

&lt;210&gt; 3043

&lt;211&gt; 1152

&lt;212&gt; DNA

&lt;213&gt; Aedes aegypti

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (59)..(787)

&lt;400&gt; 3043

gttgaggatt aaaacaaaaa tctcgggtata agtagttagt accttggttag cttttaac 58

atg gaa ttg tgt ctc gcg gat aaa aag att gta gtt act ggt gca ggc 106  
 Met Glu Leu Cys Leu Ala Asp Lys Lys Ile Val Val Thr Gly Ala Gly  
 1 5 10 15

cag ggt atc ggc aat gag ttg tgc aaa acg ttg gtc aaa ttg ggc gct 154  
 Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala  
 20 25 30

aag gtg att gcg gtt tcc cga tca cca ggt cca ctg gaa acg ctg aag 202  
 Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Thr Leu Lys  
 35 40 45

acg gaa tgt ccc tcc gtg caa att att caa gtg gat ttg agt gat tgg 250  
 Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp  
 50 55 60

agt gcc act aga act gca ctg gag aag atc gac cgc gtt gat ggc ctt 298  
 Ser Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu  
 65 70 75 80

gtt aat aat gct gga atc gct atc atc aaa ccg tat gac gaa ctg acc 346  
 Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr  
 85 90 95

gag aag gac ttt gat gac aca ttc aat atc aat atc aaa gct gcg ttc 394  
 Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe  
 100 105 110

aac gtg tgt caa atc ctg atc ccg aag atg ggc ccg ggt gca agc att 442  
 Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile  
 115 120 125

gtt aac ttg tcc tcc ttg gcg gga ttg aag tcc ttc caa ggg cat agc 490  
 Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser  
 130 135 140

gta tat tcg atg acg aaa gct gcc atc gac tcc atg acg aaa agc tta 538  
 Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu  
 145 150 155 160

gct ctg gaa ttg ggc gag cgg cga att cga gtg aac agc gtc aac cca 586  
 Ala Leu Glu Leu Gly Glu Arg Arg Ile Arg Val Asn Ser Val Asn Pro  
 165 170 175

acg gtc atc cta acc cgg atg ggg cgc gac aac tgg agc gat ccg gct 634  
 Thr Val Ile Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala  
 180 185 190

aag gcc ggt cca ctg ata gcg aaa ata ccg gct gga cgt ttc ggc gag 682  
 Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu  
 195 200 205

gtc aac gaa gtg gtg gag ccg att ata ttc cta ctg agt gac aag tct 730  
 Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser

## PhoenixTemp32470.tmp.txt

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      210      215      220
gcg tac atc aat ggc cac tgc atg cca ctg gag ggt tat ttg gca      778
Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Gly Tyr Leu Ala
225      230      235      240
gga aat tgatgggcat tgcatatgga caatagaagc gttgtgttcg gatgagcatc      834
Gly Asn

tatttttttc caaagaagta taaagctcgt agctattgag tgtcttgaaa aaaggaactt      894

tgggacctca caggaaccag aaagagatta aataggtacc aaactatcag gaatcaaaat      954

aaaagatatt tattccctaa aaaatcgtgc cagacatttc tataacaata tttttaggcc      1014

ttttttcgag aattatattc gtatttctgt ttgcattttg tcattatttt ctttaagtat      1074

taattcagat atttccttta gatgtaactc caaggatttc ttcaaaagtt catttagcaa      1134

ttttttacgg acttccta      1152

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<210> 3044
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<212> PRT
<213> Aedes aegypti

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Met Glu Leu Cys Leu Ala Asp Lys Lys Ile Val Val Thr Gly Ala Gly
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Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala
20      25      30
Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Thr Leu Lys
35      40      45
Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp
50      55      60
Ser Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu
65      70      75      80
Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr
85      90      95
Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe
100      105      110
Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile
115      120      125
Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser
130      135      140
Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu
145      150      155      160
Ala Leu Glu Leu Gly Glu Arg Arg Ile Arg Val Asn Ser Val Asn Pro
165      170      175
Thr Val Ile Leu Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala
180      185      190
Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu
195      200      205
Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser
210      215      220
Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Gly Tyr Leu Ala
225      230      235      240
Gly Asn

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<210> 3045
<211> 1014
<212> DNA
<213> Aedes aegypti

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&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (112)..(951)

&lt;400&gt; 3045

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cggctaaaaaa gttgatttaa ttttgaaaat ttgcatctgc gacggcggag a atg ttc      117
                                   Met Phe
                                   1
ctt cgt gca cta gct cgg caa tcg aac act gtc gtt ggg atg tcc ggt      165
Leu Arg Ala Leu Ala Arg Gln Ser Asn Thr Val Val Gly Met Ser Gly
                                   5
                                   10
                                   15
cag aga aat ttg tgc agc cag att agt tcc tcc cga ctg cag ggg aaa      213
Gln Arg Asn Leu Cys Ser Gln Ile Ser Ser Ser Arg Leu Gln Gly Lys
                                   20
                                   25
                                   30
gtc gca gtg gtc aca gca tcc acc gat ggc atc ggt tat gcc atc gcg      261
Val Ala Val Val Thr Ala Ser Thr Asp Gly Ile Gly Tyr Ala Ile Ala
                                   35
                                   40
                                   45
gaa cgt ctg ggc cag gac gga gcc aaa gtg gtc atc agc agt cgc aaa      309
Glu Arg Leu Gly Gln Asp Gly Ala Lys Val Val Ile Ser Ser Arg Lys
                                   55
                                   60
                                   65
gaa cag aac gta gcc aag gcg gtg agt caa ctg acc aag agt ggc ctg      357
Glu Gln Asn Val Ala Lys Ala Val Ser Gln Leu Thr Lys Ser Gly Leu
                                   70
                                   75
                                   80
gac gtc gtt gga gtc aag tgt cac gtg gcc aat gcc gat gat cgg aag      405
Asp Val Val Gly Val Lys Cys His Val Ala Asn Ala Asp Asp Arg Lys
                                   85
                                   90
                                   95
gca ctg ttc gaa aag gct gtg gaa aag tac ggc gga atc gac att ctg      453
Ala Leu Phe Glu Lys Ala Val Glu Lys Tyr Gly Gly Ile Asp Ile Leu
                                   100
                                   105
                                   110
gtc tcg aac gcg gcg gtc aat cct gag gtt ggt ggc gtg ctg gac gcc      501
Val Ser Asn Ala Ala Val Asn Pro Glu Val Gly Gly Val Leu Asp Ala
                                   115
                                   120
                                   125
agc gaa gca gct tgg gat aaa att ttc gag gtg aac gtc aaa tgt tcg      549
Ser Glu Ala Ala Trp Asp Lys Ile Phe Glu Val Asn Val Lys Cys Ser
                                   135
                                   140
                                   145
ttc ctg ctg gcc aag gaa gtt cta ccg tac att cgt cag aga aag aat      597
Phe Leu Leu Ala Lys Glu Val Leu Pro Tyr Ile Arg Gln Arg Lys Asn
                                   150
                                   155
                                   160
gga agt att gta ttt gtg tct tcg atc gcc gga ttc caa ccg ttt tca      645
Gly Ser Ile Val Phe Val Ser Ser Ile Ala Gly Phe Gln Pro Phe Ser
                                   165
                                   170
                                   175
ttg ttg gga gct tac tcg gtg agc aag acg gcg ctt ttc gga ttg acc      693
Leu Leu Gly Ala Tyr Ser Val Ser Lys Thr Ala Leu Phe Gly Leu Thr
                                   180
                                   185
                                   190
aaa gcc gcc agt caa gat ttg gcc gct gaa ggc att cgg gtg aat tgt      741
Lys Ala Ala Ser Gln Asp Leu Ala Ala Glu Gly Ile Arg Val Asn Cys
                                   195
                                   200
                                   205
atc gca cca ggc atc gtg cga acc aag ttt gct gct gcc ctt cat gaa      789
Ile Ala Pro Gly Ile Val Arg Thr Lys Phe Ala Ala Ala Leu His Glu
                                   215
                                   220
                                   225
tcg gaa tcg gct cgg gac acc gct ctg gct caa ata ccc atg gga cga      837
Ser Glu Ser Ala Arg Asp Thr Ala Leu Ala Gln Ile Pro Met Gly Arg
                                   230
                                   235
                                   240
ttt gct cag cct ccg gag att gca ggt gtt tgt gcc ttc ctg gta tcc      885
Phe Ala Gln Pro Pro Glu Ile Ala Gly Val Cys Ala Phe Leu Val Ser
                                   245
                                   250
                                   255
gac gat gcc agc tat att acg gga gaa act att gtg gca tcc ggt gga      933
Asp Asp Ala Ser Tyr Ile Thr Gly Glu Thr Ile Val Ala Ser Gly Gly
                                   260
                                   265
                                   270
atg cct tcc cgt ctc tgaacttctt ttattttttgt gtatgggaca tggaattacg      988
Met Pro Ser Arg Leu
275
aaataaagtt attggtttgt tagata      1014

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 <212> PRT  
 <213> Aedes aegypti

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 Ser Gly Gln Arg Asn Leu Cys Ser Gln Ile Ser Ser Ser Arg Leu Gln  
 20 25 30  
 Gly Lys Val Ala Val Val Thr Ala Ser Thr Asp Gly Ile Gly Tyr Ala  
 35 40 45  
 Ile Ala Glu Arg Leu Gly Gln Asp Gly Ala Lys Val Val Ile Ser Ser  
 50 55 60  
 Arg Lys Glu Gln Asn Val Ala Lys Ala Val Ser Gln Leu Thr Lys Ser  
 65 70 75 80  
 Gly Leu Asp Val Val Gly Val Lys Cys His Val Ala Asn Ala Asp Asp  
 85 90 95  
 Arg Lys Ala Leu Phe Glu Lys Ala Val Glu Lys Tyr Gly Gly Ile Asp  
 100 105 110  
 Ile Leu Val Ser Asn Ala Ala Val Asn Pro Glu Val Gly Gly Val Leu  
 115 120 125  
 Asp Ala Ser Glu Ala Ala Trp Asp Lys Ile Phe Glu Val Asn Val Lys  
 130 135 140  
 Cys Ser Phe Leu Leu Ala Lys Glu Val Leu Pro Tyr Ile Arg Gln Arg  
 145 150 155 160  
 Lys Asn Gly Ser Ile Val Phe Val Ser Ser Ile Ala Gly Phe Gln Pro  
 165 170 175  
 Phe Ser Leu Leu Gly Ala Tyr Ser Val Ser Lys Thr Ala Leu Phe Gly  
 180 185 190  
 Leu Thr Lys Ala Ala Ser Gln Asp Leu Ala Ala Glu Gly Ile Arg Val  
 195 200 205  
 Asn Cys Ile Ala Pro Gly Ile Val Arg Thr Lys Phe Ala Ala Ala Leu  
 210 215 220  
 His Glu Ser Glu Ser Ala Arg Asp Thr Ala Leu Ala Gln Ile Pro Met  
 225 230 235 240  
 Gly Arg Phe Ala Gln Pro Pro Glu Ile Ala Gly Val Cys Ala Phe Leu  
 245 250 255  
 Val Ser Asp Asp Ala Ser Tyr Ile Thr Gly Glu Thr Ile Val Ala Ser  
 260 265 270  
 Gly Gly Met Pro Ser Arg Leu  
 275

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 <212> DNA  
 <213> Aedes aegypti

<220>  
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 <222> (59)..(787)

<400> 3047  
 gttgaggatt aaaacaaaaa tctcggata agtagttagt accttggttag cttttaac 58

atg gaa ttg tgt ctc gcg gat aaa aag att gta gtt act ggt gca ggc 106  
 Met Glu Leu Cys Leu Ala Asp Lys Lys Ile Val Val Thr Gly Ala Gly  
 1 5 10 15

cag ggt att ggc aat gag ttg tgc aaa acg ctg gtc aaa ttg ggc gct 154  
 Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala  
 20 25 30

aag gtg att gcg gtc tcc cga tca cca ggt cca ctt gaa gcg ctg aag 202  
 Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Ala Leu Lys  
 35 40 45

acg gaa tgt ccc tcc gtg caa att att caa gtg gat ttg agt gat tgg 250  
 Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp  
 50 55 60

## PhoenixTemp32470.tmp.txt

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ggc gcc acc aga act gca ctg gag aag atc gat cgc gtt gat ggg ctt      298
Gly Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu
65 70 75 80
gtg aat aat gcc gga atc gct att atc aaa ccg tat gat gaa ctg acc      346
Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr
85 90 95
gag aag gac ttc gat gac aca ttc aac atc aat atc aag gct gcg ttc      394
Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe
100 105 110
aac gtg tgt caa atc ctg atc ccg aag atg ggc cca ggt gca agc att      442
Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile
115 120 125
gtt aac ttg tcc tcc ttg gca ggg ttg aag tcc ttc caa ggg cat agc      490
Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser
130 135 140
gta tat tcg atg acg aaa gct gcc atc gac tcc atg acg aaa agc tta      538
Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu
145 150 155 160
gct ctg gaa ttg ggc gag cgg caa att cga gtg aac agc gtc aac cca      586
Ala Leu Glu Leu Gly Glu Arg Gln Ile Arg Val Asn Ser Val Asn Pro
165 170 175
acg gtc atc cta acg cgg atg ggg cgc gac aac tgg agc gat cca gct      634
Thr Val Ile Leu Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala
180 185 190
aag gcc ggt cca ctg ata gcg aaa ata ccg gct gga cgt ttc ggc gag      682
Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu
195 200 205
gtc aac gaa gtg gtg gag cct att ata ttc cta ctg agt gac aag tct      730
Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser
210 215 220
gcg tac atc aat ggc cac tgc atg cca ctg gag ggt ggt tat ttg gca      778
Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Gly Tyr Leu Ala
225 230 235 240
gga aat tga
Gly Asn
787

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<210> 3048  
 <211> 242  
 <212> PRT  
 <213> Aedes aegypti

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<400> 3048
Met Glu Leu Cys Leu Ala Asp Lys Lys Ile Val Val Thr Gly Ala Gly
1 5 10 15
Gln Gly Ile Gly Asn Glu Leu Cys Lys Thr Leu Val Lys Leu Gly Ala
20 25 30
Lys Val Ile Ala Val Ser Arg Ser Pro Gly Pro Leu Glu Ala Leu Lys
35 40 45
Thr Glu Cys Pro Ser Val Gln Ile Ile Gln Val Asp Leu Ser Asp Trp
50 55 60
Gly Ala Thr Arg Thr Ala Leu Glu Lys Ile Asp Arg Val Asp Gly Leu
65 70 75 80
Val Asn Asn Ala Gly Ile Ala Ile Ile Lys Pro Tyr Asp Glu Leu Thr
85 90 95
Glu Lys Asp Phe Asp Asp Thr Phe Asn Ile Asn Ile Lys Ala Ala Phe
100 105 110
Asn Val Cys Gln Ile Leu Ile Pro Lys Met Gly Pro Gly Ala Ser Ile
115 120 125
Val Asn Leu Ser Ser Leu Ala Gly Leu Lys Ser Phe Gln Gly His Ser
130 135 140
Val Tyr Ser Met Thr Lys Ala Ala Ile Asp Ser Met Thr Lys Ser Leu
145 150 155 160
Ala Leu Glu Leu Gly Glu Arg Gln Ile Arg Val Asn Ser Val Asn Pro
165 170 175
Thr Val Ile Leu Thr Arg Met Gly Arg Asp Asn Trp Ser Asp Pro Ala
180 185 190
Lys Ala Gly Pro Leu Ile Ala Lys Ile Pro Ala Gly Arg Phe Gly Glu
195 200 205

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## PhoenixTemp32470.tmp.txt

Val Asn Glu Val Val Glu Pro Ile Ile Phe Leu Leu Ser Asp Lys Ser  
 210 215 220  
 Ala Tyr Ile Asn Gly His Cys Met Pro Leu Glu Gly Tyr Leu Ala  
 225 230 235 240  
 Gly Asn

&lt;210&gt; 3049

&lt;211&gt; 849

&lt;212&gt; DNA

&lt;213&gt; Anopheles gambiae str. PEST

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(849)

&lt;400&gt; 3049

atg ttc cgc tca att gcc ggc agc gct aca ctc acg caa aca atc cgc	48
Met Phe Arg Ser Ile Ala Gly Ser Ala Thr Leu Thr Gln Thr Ile Arg	
1 5 10 15	
aag acg atg gag cgc aat ctt tgc agc ggt tcc gcc att gca gcc aag	96
Lys Thr Met Glu Arg Asn Leu Cys Ser Gly Ser Ala Ile Ala Ala Lys	
20 25 30	
cgt ctg acg ggc aaa gtg gcc gtc gta acc gcc tct aca gag ggt atc	144
Arg Leu Thr Gly Lys Val Ala Val Thr Ala Ser Thr Glu Gly Ile	
35 40 45	
ggt tac gcc atc gcg gaa cgg ttg ggc cag gaa gga gcc aaa gtg gtt	192
Gly Tyr Ala Ile Ala Glu Arg Leu Gly Gln Glu Gly Ala Lys Val Val	
50 55 60	
gtc agc agc cga aag cag caa aat gtt gac cgc gcc gtg aac gac ctg	240
Val Ser Ser Arg Lys Gln Gln Asn Val Asp Arg Ala Val Asn Asp Leu	
65 70 75 80	
cga acc gcc ggg ctc gag gtg tcc ggg atc aag tgt cac gtt gcc aac	288
Arg Thr Ala Gly Leu Glu Val Ser Gly Ile Lys Cys His Val Ala Asn	
85 90 95	
gcc acc gac cgg aag gcg ctg ttc gag cat gcg gcc caa aag ttc ggt	336
Ala Thr Asp Arg Lys Ala Leu Phe Glu His Ala Ala Gln Lys Phe Gly	
100 105 110	
ggc atc gac att ctc gtg tgc aac gcg gcc gtc aat ccg gag gtg ggc	384
Gly Ile Asp Ile Leu Val Ser Asn Ala Ala Val Asn Pro Glu Val Gly	
115 120 125	
ggt gtg ctg gaa tgt agt gaa tgc gcc tgg gat aag att ttc gac gtg	432
Gly Val Leu Glu Cys Ser Glu Ser Ala Trp Asp Lys Ile Phe Asp Val	
130 135 140	
aac gta aag tgt tgc tat ctg ctg gcc aag gaa gtg ttg ccg ttc ata	480
Asn Val Lys Cys Ser Tyr Leu Leu Ala Lys Glu Val Leu Pro Phe Ile	
145 150 155 160	
cgg gag cgc aag ggt ggc agc att gtg ttc att tcg tcc att gcc ggc	528
Arg Glu Arg Lys Gly Gly Ser Ile Val Phe Ile Ser Ser Ile Ala Gly	
165 170 175	
ttt caa ccg ttc tcg ctg ttg ggc gca tac tcc gtc agc aag acg gca	576
Phe Gln Pro Phe Ser Leu Leu Gly Ala Tyr Ser Val Ser Lys Thr Ala	
180 185 190	
ctg ttc gga ttg acg aag gca gcc agc caa gag ttg gcg gcg gag aac	624
Leu Phe Gly Leu Thr Lys Ala Ala Ser Gln Glu Leu Ala Ala Glu Asn	
195 200 205	
atc cgc gtg aac tgc att gct ccg ggt gtg gtg cag acg aaa ttt gcc	672
Ile Arg Val Asn Cys Ile Ala Pro Gly Val Val Gln Thr Lys Phe Ala	
210 215 220	
gga gcg cta caa gaa tcc gat gcc gcc aaa gag gaa aca ctg tcc cga	720
Gly Ala Leu Gln Glu Ser Asp Ala Ala Lys Glu Glu Thr Leu Ser Arg	
225 230 235 240	
att ccg atg gga cgg att gca caa ccg aag gaa att tcc ggc gtg tgt	768
Ile Pro Met Gly Arg Ile Ala Gln Pro Lys Glu Ile Ser Gly Val Cys	
245 250 255	
gcg ttc ctc gtt tcg gac gac gcg agc tac att acc ggt gaa acg att	816
Ala Phe Leu Val Ser Asp Asp Ala Ser Tyr Ile Thr Gly Glu Thr Ile	
260 265 270	
gta gct tcc gga ggc atg gct tcc cgg tta taa	849

Val Ala Ser Gly Gly Met Ala Ser Arg Leu  
275 280

<210> 3050

<211> 282

<212> PRT

<213> Anopheles gambiae str. PEST

<400> 3050

Met Phe Arg Ser Ile Ala Gly Ser Ala Thr Leu Thr Gln Thr Ile Arg  
1 5 10 15  
Lys Thr Met Glu Arg Asn Leu Cys Ser Gly Ser Ala Ile Ala Lys  
20 25 30  
Arg Leu Thr Gly Lys Val Ala Val Thr Ala Ser Thr Glu Gly Ile  
35 40 45  
Gly Tyr Ala Ile Ala Glu Arg Leu Gly Gln Glu Gly Ala Lys Val Val  
50 55 60  
Val Ser Ser Arg Lys Gln Gln Asn Val Asp Arg Ala Val Asn Asp Leu  
65 70 75 80  
Arg Thr Ala Gly Leu Glu Val Ser Gly Ile Lys Cys His Val Ala Asn  
85 90 95  
Ala Thr Asp Arg Lys Ala Leu Phe Glu His Ala Ala Gln Lys Phe Gly  
100 105 110  
Gly Ile Asp Ile Leu Val Ser Asn Ala Ala Val Asn Pro Glu Val Gly  
115 120 125  
Gly Val Leu Glu Cys Ser Glu Ser Ala Trp Asp Lys Ile Phe Asp Val  
130 135 140  
Asn Val Lys Cys Ser Tyr Leu Leu Ala Lys Glu Val Leu Pro Phe Ile  
145 150 155 160  
Arg Glu Arg Lys Gly Gly Ser Ile Val Phe Ile Ser Ser Ile Ala Gly  
165 170 175  
Phe Gln Pro Phe Ser Leu Leu Gly Ala Tyr Ser Val Ser Lys Thr Ala  
180 185 190  
Leu Phe Gly Leu Thr Lys Ala Ala Ser Gln Glu Leu Ala Ala Glu Asn  
195 200 205  
Ile Arg Val Asn Cys Ile Ala Pro Gly Val Val Gln Thr Lys Phe Ala  
210 215 220  
Gly Ala Leu Gln Glu Ser Asp Ala Ala Lys Glu Glu Thr Leu Ser Arg  
225 230 235 240  
Ile Pro Met Gly Arg Ile Ala Gln Pro Lys Glu Ile Ser Gly Val Cys  
245 250 255  
Ala Phe Leu Val Ser Asp Asp Ala Ser Tyr Ile Thr Gly Glu Thr Ile  
260 265 270  
Val Ala Ser Gly Gly Met Ala Ser Arg Leu  
275 280

<210> 3051

<211> 825

<212> DNA

<213> Magnaporthe grisea 70-15

<220>

<221> CDS

<222> (1)..(825)

<400> 3051

atg aac acc acg ggt tcc gcg ttt gtg att gga gcg agc ggt atc gga	48
Met Asn Thr Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly	
1 5 10 15	
agg gcg tgc gcg ttg gca ttt gca cgc cgt ggc gtc agc ggc ctg gtg	96
Arg Ala Cys Ala Leu Ala Phe Ala Arg Arg Gly Val Ser Gly Leu Val	
20 25 30	
gtg gct gac gtg gat ctg cag gcc gcc gag tcc cta gct gcc gaa tgc	144
Val Ala Asp Val Asp Leu Gln Ala Ala Glu Ser Leu Ala Ala Glu Cys	
35 40 45	
agg gct gag gcg ggg tct gcc ggt act gcg gac gcc cta ggg tgt gca	192
Arg Ala Glu Ala Gly Ser Ala Gly Thr Ala Asp Ala Leu Gly Cys Ala	
50 55 60	
gaa gcc acg agg gtc gac gtt gca gac gag cgt tcc gtc gag ttg gcc	240



## PhoenixTemp32470.tmp.txt

Glu 65	Ala	Thr	Arg	Val	Asp 70	Val	Ala	Asp	Glu	Arg 75	Ser	Val	Glu	Leu	Ala 80		
gta	tct	ttc	gca	cgg	cgt	gtg	ctg	ggt	cgg	ggt	gac	tat	tgc	gtc	aac	288	
Val	Ser	Phe	Ala	Arg 85	Arg	Val	Leu	Gly	Arg 90	Val	Asp	Tyr	Cys	Val 95	Asn		
agc	gcg	ggg	ctg	gcc	aac	gag	atc	gcc	gat	gcc	agc	ccc	gtg	gag	ttc	336	
Ser	Ala	Gly	Leu	Ala	Asn	Glu	Ile	Ala 105	Asp	Ala	Ser	Pro	Val 110	Glu	Phe		
gag	gcc	atg	ttc	caa	gtc	aac	gtc	aaa	ggc	acc	ttt	ctc	gtc	aca	cgg	384	
Glu	Ala	Met	Phe	Gln	Val	Asn	Val 120	Lys	Gly	Thr	Phe	Leu	Val 125	Thr	Arg		
gcc	gtg	tcg	gcg	ctc	atg	aag	acg	cag	gat	cct	gtg	cca	gtg	ttg	cgc	432	
Ala	Val 130	Ser	Ala	Leu	Met	Lys 135	Thr	Gln	Asp	Pro	Val 140	Pro	Val	Leu	Arg		
gac	tcg	ccc	ggt	agg	gga	acc	acc	cga	ggt	tgc	atc	gtc	atc	ttg	gga	480	
Asp 145	Ser	Pro	Gly	Arg	Gly 150	Thr	Thr	Arg	Gly	Cys 155	Ile	Val	Ile	Leu	Gly 160		
tct	gca	gcg	gca	ttt	gct	gcg	acg	ccc	aag	atg	gtc	cag	tac	acg	acg	528	
Ser	Ala	Ala	Ala	Phe 165	Ala	Ala	Thr	Pro	Lys 170	Met	Val	Gln	Tyr	Thr 175	Thr		
gcc	aag	cat	gcg	gtg	cta	ggc	ctg	acc	aag	agc	gcc	gct	ctt	gat	aac	576	
Ala	Lys	His	Ala 180	Val	Leu	Gly	Leu	Thr 185	Lys	Ser	Ala	Ala	Leu 190	Asp	Asn		
gcc	gct	cac	ggc	atc	cgt	gtc	aac	agc	gtc	tgc	ccg	tct	tgg	gtc	gac	624	
Ala	Ala	His 195	Gly	Ile	Arg	Val	Asn 200	Ser	Val	Cys	Pro	Ser 205	Trp	Val	Asp		
acc	ccc	atg	gtg	cgc	agg	gcg	ctg	cag	gac	gtg	ccc	gag	ctg	gag	cag	672	
Thr	Pro 210	Met	Val	Arg	Arg	Ala 215	Leu	Gln	Asp	Val	Pro 220	Glu	Leu	Glu	Gln		
acg	att	cgt	acc	tcg	gtg	ccg	atg	ggc	agg	att	gca	ctg	gcc	gag	gag	720	
Thr 225	Ile	Arg	Thr	Ser	Val 230	Pro	Met	Gly	Arg	Ile 235	Ala	Leu	Ala	Glu	Glu 240		
gtg	gcc	gac	gcc	gtc	atg	ttc	ctc	tgc	agc	ccc	ggc	gcg	agc	tat	gcc	768	
Val	Ala	Asp	Ala	Val 245	Met	Phe	Leu	Cys	Ser 250	Pro	Gly	Ala	Ser	Tyr 255	Ala		
act	ggc	tgc	aac	atg	att	ctg	gat	ggc	ggc	acc	act	ctc	acc	acg	cat	816	
Thr	Gly	Cys	Asn 260	Met	Ile	Leu	Asp	Gly 265	Gly	Thr	Thr	Leu	Thr 270	Thr	His		
ctg	gga	tga														825	
Leu	Gly																

&lt;210&gt; 3052

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 3052

Met	Asn	Thr	Thr	Gly 5	Ser	Ala	Phe	Val	Ile 10	Gly	Ala	Ser	Gly	Ile 15	Gly		
Arg	Ala	Cys	Ala 20	Leu	Ala	Phe	Ala	Arg 25	Arg	Gly	Val	Ser	Gly 30	Leu	Val		
Val	Ala	Asp	Val 35	Asp	Leu	Gln	Ala 40	Ala	Glu	Ser	Leu	Ala 45	Ala	Glu	Cys		
Arg	Ala	Glu	Ala 50	Gly	Ser	Ala 55	Gly	Thr	Ala	Asp	Ala 60	Leu	Gly	Cys	Ala		
Glu	Ala	Thr	Arg	Val 65	Asp 70	Val	Ala	Asp	Glu	Arg 75	Ser	Val	Glu	Leu	Ala 80		
Val	Ser	Phe	Ala	Arg 85	Arg	Val	Leu	Gly	Arg 90	Val	Asp	Tyr	Cys	Val 95	Asn		
Ser	Ala	Gly	Leu 100	Ala	Asn	Glu	Ile	Ala 105	Asp	Ala	Ser	Pro	Val 110	Glu	Phe		
Glu	Ala	Met 115	Phe	Gln	Val	Asn	Val 120	Lys	Gly	Thr	Phe	Leu 125	Val	Thr	Arg		
Ala	Val 130	Ser	Ala	Leu	Met	Lys 135	Thr	Gln	Asp	Pro	Val 140	Pro	Val	Leu	Arg		
Asp 145	Ser	Pro	Gly	Arg	Gly 150	Thr	Thr	Arg	Gly	Cys 155	Ile	Val	Ile	Leu	Gly 160		
Ser	Ala	Ala	Ala	Phe	Ala	Ala	Thr	Pro	Lys	Met	Val	Gln	Tyr	Thr	Thr		

## PhoenixTemp32470.tmp.txt

Ala Lys His Ala 165 Val Leu Gly Leu Thr 170 Lys Ser Ala Ala Leu 175 Asn  
 Ala Ala His Gly 180 Ile Arg Val Asn 185 Ser Val Cys Pro Ser 190 Trp Val Asp  
 Thr Pro Met Val Arg Arg Ala 200 Leu Gln Asp Val Pro 205 Glu Leu Glu Gln  
 Thr 210 Ile Arg Thr Ser Val 215 Pro Met Gly Arg Ile 220 Ala Leu Ala Glu Glu  
 225 Val Ala Asp Ala Val 230 Met Phe Leu Cys Ser 235 Pro Gly Ala Ser Tyr Ala  
 Thr Gly Cys Asn 245 Met Ile Leu Asp Gly 250 Gly Thr Thr Leu Thr 255 Thr His  
 Leu Gly 260 270

&lt;210&gt; 3053

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(816)

&lt;400&gt; 3053

atg	cct	cca	aca	aac	ctc	ctc	gca	ggc	aag	acg	gcc	atc	atc	acc	ggc	48
Met	Pro	Pro	Thr	Asn	Leu	Leu	Ala	Gly	Lys	Thr	Ala	Ile	Ile	Thr	Gly	
1				5				10					15			
ggc	aca	aca	ggc	atc	ggc	cg	tcc	atc	gcc	ctc	gag	ttc	ctc	cgg	cag	96
Gly	Thr	Thr	Gly	Ile	Gly	Arg	Ser	Ile	Ala	Leu	Glu	Phe	Leu	Arg	Gln	
			20					25					30			
ggc	tgc	agc	gtc	gcc	gtg	aac	cac	ctg	ggg	ctg	gag	agc	gac	cg	gca	144
Gly	Cys	Ser	Val	Ala	Val	Asn	His	Leu	Gly	Leu	Glu	Ser	Asp	Arg	Ala	
			35				40					45				
cac	ctc	gag	tcc	ctc	gtc	gcc	gag	gcc	gag	gcc	atc	tcg	tcc	tcc	tcc	192
His	Leu	Glu	Ser	Leu	Val	Ala	Glu	Ala	Glu	Ala	Ile	Ser	Ser	Ser	Ser	
			50			55					60					
gcc	acg	gcc	ggg	cg	cta	acg	cac	ctg	ccg	ggc	gac	gtg	cg	gag	ccc	240
Ala	Thr	Ala	Gly	Arg	Leu	Thr	His	Leu	Pro	Gly	Asp	Val	Arg	Glu	Pro	
			65		70					75					80	
gcg	acc	ggc	acg	gcg	ctg	gtg	tcg	cac	gcg	ctg	acg	gcc	ttg	agc	tcg	288
Ala	Thr	Gly	Thr	Ala	Leu	Val	Ser	His	Ala	Leu	Thr	Ala	Leu	Ser	Ser	
			85					90						95		
tcg	cgg	ctc	gac	ata	tgc	gtc	agc	aac	gcg	ggc	atc	tgc	acg	ttt	gcc	336
Ser	Arg	Leu	Asp	Ile	Cys	Val	Ser	Asn	Ala	Gly	Ile	Cys	Thr	Phe	Ala	
			100					105				110				
gag	ttc	ctg	gac	ctg	gac	gcg	gcg	ctg	tac	gac	aag	acg	gcg	cg	acc	384
Glu	Phe	Leu	Asp	Leu	Asp	Ala	Ala	Leu	Tyr	Asp	Lys	Thr	Ala	Arg	Thr	
			115			120					125					
aac	ctc	gac	ggg	tgc	ttc	tac	gtg	gtg	cag	gcg	gcg	gcg	cgg	cag	atg	432
Asn	Leu	Asp	Gly	Cys	Phe	Tyr	Val	Val	Gln	Ala	Ala	Ala	Arg	Gln	Met	
			130			135				140						
gcg	agg	ggc	cag	acg	ccg	ccg	gga	ggg	tcc	atc	atc	ggc	gtc	tcg	tcc	480
Ala	Arg	Gly	Gln	Thr	Pro	Pro	Gly	Gly	Ser	Ile	Ile	Gly	Val	Ser	Ser	
			145		150					155					160	
atc	tcg	gcc	ctc	gtc	ggc	ggg	ctg	cag	acc	acc	cac	tac	acg	ccc	acc	528
Ile	Ser	Ala	Leu	Val	Gly	Gly	Gly	Leu	Gln	Thr	His	Tyr	Thr	Pro	Thr	
			165					170						175		
aag	gcc	ggc	gtg	ctg	tcg	ctg	atg	cag	tcc	acc	gcc	gtc	gcg	ctg	ggc	576
Lys	Ala	Gly	Val	Leu	Ser	Leu	Met	Gln	Ser	Thr	Ala	Val	Ala	Leu	Gly	
			180					185					190			
agg	tac	ggc	atc	agg	tgc	aac	tcc	ctg	ccg	ggc	acc	gtg	cgg	acg		624
Arg	Tyr	Gly	Ile	Arg	Cys	Asn	Ser	Leu	Leu	Pro	Gly	Thr	Val	Arg	Thr	
			195				200				205					
cag	ctc	aac	gag	gag	gac	ctg	cg	gac	gac	aag	aag	agg	gag	tac	atg	672
Gln	Leu	Asn	Glu	Glu	Asp	Leu	Arg	Asp	Asp	Lys	Lys	Arg	Glu	Tyr	Met	
			210			215					220					
gag	ggc	agg	ata	ccg	ctc	ggg	agg	acc	ggg	gag	cca	aag	gac	ctg	gcg	720

## PhoenixTemp32470.tmp.txt

Glu	Gly	Arg	Ile	Pro	Leu	Gly	Arg	Thr	Gly	Glu	Pro	Lys	Asp	Leu	Ala		
225					230				235						240		
ggc	ccg	gcg	gtg	ttt	ttg	gct	tgt	gaa	gag	ctc	agt	ggc	tac	gtc	acg		768
Gly	Pro	Ala	Val	Phe	Leu	Ala	Cys	Glu	Glu	Leu	Ser	Gly	Tyr	Val	Thr		
				245					250					255			
ggc	gcg	cag	ctg	ctt	gtc	gat	gga	ggg	ttg	ttt	gtg	aat	ctt	caa			813
Gly	Ala	Gln	Leu	Leu	Val	Asp	Gly	Gly	Leu	Phe	Val	Asn	Leu	Gln			
			260					265					270				
tga																	816

<210> 3054  
 <211> 271  
 <212> PRT  
 <213> Magnaporthe grisea 70-15

<400> 3054  
 Met Pro Pro Thr Asn Leu Leu Ala Gly Lys Thr Ala Ile Ile Thr Gly  
 1 5 10 15  
 Gly Thr Thr Gly Ile Gly Arg Ser Ile Ala Leu Glu Phe Leu Arg Gln  
 20 25 30  
 Gly Cys Ser Val Ala Val Asn His Leu Gly Leu Glu Ser Asp Arg Ala  
 35 40 45  
 His Leu Glu Ser Leu Val Ala Glu Ala Glu Ala Ile Ser Ser Ser Ser  
 50 55 60  
 Ala Thr Ala Gly Arg Leu Thr His Leu Pro Gly Asp Val Arg Glu Pro  
 65 70 75 80  
 Ala Thr Gly Thr Ala Leu Val Ser His Ala Leu Thr Ala Leu Ser Ser  
 85 90 95  
 Ser Arg Leu Asp Ile Cys Val Ser Asn Ala Gly Ile Cys Thr Phe Ala  
 100 105 110  
 Glu Phe Leu Asp Leu Asp Ala Ala Leu Tyr Asp Lys Thr Ala Arg Thr  
 115 120 125  
 Asn Leu Asp Gly Cys Phe Tyr Val Val Gln Ala Ala Arg Gln Met  
 130 135 140  
 Ala Arg Gly Gln Thr Pro Pro Gly Gly Ser Ile Ile Gly Val Ser Ser  
 145 150 155 160  
 Ile Ser Ala Leu Val Gly Gly Gly Leu Gln Thr His Tyr Thr Pro Thr  
 165 170 175  
 Lys Ala Gly Val Leu Ser Leu Met Gln Ser Thr Ala Val Ala Leu Gly  
 180 185 190  
 Arg Tyr Gly Ile Arg Cys Asn Ser Leu Leu Pro Gly Thr Val Arg Thr  
 195 200 205  
 Gln Leu Asn Glu Glu Asp Leu Arg Asp Asp Lys Lys Arg Glu Tyr Met  
 210 215 220  
 Glu Gly Arg Ile Pro Leu Gly Arg Thr Gly Glu Pro Lys Asp Leu Ala  
 225 230 235 240  
 Gly Pro Ala Val Phe Leu Ala Cys Glu Glu Leu Ser Gly Tyr Val Thr  
 245 250 255  
 Gly Ala Gln Leu Leu Val Asp Gly Gly Leu Phe Val Asn Leu Gln  
 260 265 270

<210> 3055  
 <211> 837  
 <212> DNA  
 <213> Magnaporthe grisea 70-15

<220>  
 <221> CDS  
 <222> (1)..(837)

atg	aca	tcc	act	aac	gga	gat	ccc	tca	gag	ggt	ccc	aaa	acc	atc	tcg		48
Met	Thr	Ser	Thr	Asn	Gly	Asp	Pro	Ser	Glu	Gly	Pro	Lys	Thr	Ile	Ser		
1				5					10					15			
aca	ctg	ccc	gga	cct	gac	cat	gac	tat	aag	atc	acg	ctc	aag	gac	aag		96
Thr	Leu	Pro	Gly	Pro	Asp	His	Asp	Tyr	Lys	Ile	Thr	Leu	Lys	Asp	Lys		
			20					25					30				

## PhoenixTemp32470.tmp.txt

gtc	atc	gcc	atc	tct	ggc	gca	aac	caa	ggt	atc	ggc	cta	ggc	atc	gcc	144
Val	Ile	Ala	Ile	Ser	Gly	Ala	Asn	Gln	Gly	Ile	Gly	Leu	Gly	Ile	Ala	
		35					40					45				
gag	gtc	tgc	cta	gcg	aat	gat	gcc	gct	tgc	ata	tac	tcc	ctc	gac	att	192
Glu	Val	Cys	Leu	Ala	Asn	Asp	Ala	Ala	Cys	Ile	Tyr	Ser	Leu	Asp	Ile	
	50					55				60						
tca	gaa	cct	ggc	cct	gcc	ttt	gcc	gag	tta	tcc	aaa	aag	tac	ccc	ggc	240
Ser	Glu	Pro	Gly	Pro	Ala	Phe	Ala	Glu	Leu	Ser	Lys	Lys	Tyr	Pro	Gly	
	65				70					75					80	
cgt	ttc	gcc	ttt	cac	cac	tgc	gac	gtg	acg	gcg	tac	gaa	tcc	gtc	gac	288
Arg	Phe	Ala	Phe	His	His	Cys	Asp	Val	Thr	Ala	Tyr	Glu	Ser	Val	Asp	
				85				90						95		
aag	gcc	ctg	gac	gcc	atc	atc	gag	gcc	agg	ggc	cgg	ctc	gac	ggc	atg	336
Lys	Ala	Leu	Asp	Ala	Ile	Ile	Glu	Ala	Arg	Gly	Arg	Leu	Asp	Gly	Met	
			100					105					110			
gtg	gca	aac	gcg	ggc	gcc	acc	aaa	cac	aaa	gca	gcg	ctc	gat	ttt	acc	384
Val	Ala	Asn	Ala	Gly	Ala	Thr	Lys	His	Lys	Ala	Ala	Leu	Asp	Phe	Thr	
		115					120					125				
ccc	gag	gag	ttt	gac	ttt	ttg	ttc	aag	ctc	aac	gta	gtc	ggc	ggc	tgg	432
Pro	Glu	Glu	Phe	Asp	Phe	Leu	Phe	Lys	Leu	Asn	Val	Val	Gly	Gly	Trp	
	130					135					140					
aac	tgc	gcg	acg	gcg	gcg	gct	aga	aag	ttt	atc	aag	ctg	ggc	tgc	aag	480
Asn	Cys	Ala	Thr	Ala	Ala	Ala	Arg	Lys	Phe	Ile	Lys	Leu	Gly	Cys	Lys	
	145				150					155					160	
ggc	agc	atc	gtc	ttt	acc	gcc	agc	atg	acg	tcg	tac	agg	ccg	aac	cgc	528
Gly	Ser	Ile	Val	Phe	Thr	Ala	Ser	Met	Thr	Ser	Tyr	Arg	Pro	Asn	Arg	
				165					170					175		
gcc	gcc	ccc	agc	gcg	ccg	tac	ggt	gcc	acc	aag	gcc	gcc	atc	cgc	aat	576
Ala	Ala	Pro	Ser	Ala	Pro	Tyr	Gly	Ala	Thr	Lys	Ala	Ala	Ile	Arg	Asn	
			180					185					190			
tat	acc	cac	acg	ttg	gcc	atg	gag	tgg	tcg	cag	tac	ggc	atc	cgc	gtc	624
Tyr	Thr	His	Thr	Leu	Ala	Met	Glu	Trp	Ser	Gln	Tyr	Gly	Ile	Arg	Val	
		195					200					205				
aac	agc	atc	agc	cct	ggg	ttt	gtc	aag	acg	gcg	ctg	acg	tac	tat	gtc	672
Asn	Ser	Ile	Ser	Pro	Gly	Phe	Val	Lys	Thr	Ala	Leu	Thr	Tyr	Tyr	Val	
		210				215					220					
gag	acg	agc	ccg	gat	tgg	gac	acc	aag	atg	aag	tac	tat	ggg	ggc	atg	720
Glu	Thr	Ser	Pro	Asp	Trp	Asp	Thr	Lys	Met	Lys	Tyr	Tyr	Gly	Gly	Met	
	225				230					235					240	
ccg	agg	ttg	gcg	ctg	ccg	caa	gag	ctg	ggt	ggc	gca	tat	gtg	tac	ctg	768
Pro	Arg	Leu	Ala	Leu	Pro	Gln	Glu	Leu	Gly	Gly	Ala	Tyr	Val	Tyr	Leu	
				245					250					255		
ttg	agt	gag	cag	gcg	acg	tac	acg	aca	ggt	att	gat	atc	cct	att	gcg	816
Leu	Ser	Glu	Gln	Ala	Thr	Tyr	Thr	Thr	Gly	Ile	Asp	Ile	Pro	Ile	Ala	
			260					265					270			
ggt	att	gtt	ggt	gct	tgg	tag										837
Gly	Ile	Val	Gly	Ala	Trp											
		275														

&lt;210&gt; 3056

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 3056

Met	Thr	Ser	Thr	Asn	Gly	Asp	Pro	Ser	Glu	Gly	Pro	Lys	Thr	Ile	Ser	
1				5					10					15		
Thr	Leu	Pro	Gly	Pro	Asp	His	Asp	Tyr	Lys	Ile	Thr	Leu	Lys	Asp	Lys	
			20					25					30			
Val	Ile	Ala	Ile	Ser	Gly	Ala	Asn	Gln	Gly	Ile	Gly	Leu	Gly	Ile	Ala	
		35					40					45				
Glu	Val	Cys	Leu	Ala	Asn	Asp	Ala	Ala	Cys	Ile	Tyr	Ser	Leu	Asp	Ile	
	50				55					60						
Ser	Glu	Pro	Gly	Pro	Ala	Phe	Ala	Glu	Leu	Ser	Lys	Lys	Tyr	Pro	Gly	
	65				70					75				80		
Arg	Phe	Ala	Phe	His	His	Cys	Asp	Val	Thr	Ala	Tyr	Glu	Ser	Val	Asp	
				85					90					95		
Lys	Ala	Leu	Asp	Ala	Ile	Ile	Glu	Ala	Arg	Gly	Arg	Leu	Asp	Gly	Met	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Val Ala Asn Ala Gly Ala Thr Lys His Lys Ala Ala Leu Asp Phe Thr  
 115 120 125  
 Pro Glu Glu Phe Asp Phe Leu Phe Lys Leu Asn Val Val Gly Gly Trp  
 130 135 140  
 Asn Cys Ala Thr Ala Ala Ala Arg Lys Phe Ile Lys Leu Gly Cys Lys  
 145 150 155 160  
 Gly Ser Ile Val Phe Thr Ala Ser Met Thr Ser Tyr Arg Pro Asn Arg  
 165 170 175  
 Ala Ala Pro Ser Ala Pro Tyr Gly Ala Thr Lys Ala Ala Ile Arg Asn  
 180 185 190  
 Tyr Thr His Thr Leu Ala Met Glu Trp Ser Gln Tyr Gly Ile Arg Val  
 195 200 205  
 Asn Ser Ile Ser Pro Gly Phe Val Lys Thr Ala Leu Thr Tyr Tyr Val  
 210 215 220  
 Glu Thr Ser Pro Asp Trp Asp Thr Lys Met Lys Tyr Tyr Gly Gly Met  
 225 230 235 240  
 Pro Arg Leu Ala Leu Pro Gln Glu Leu Gly Gly Ala Tyr Val Tyr Leu  
 245 250 255  
 Leu Ser Glu Gln Ala Thr Tyr Thr Thr Gly Ile Asp Ile Pro Ile Ala  
 260 265 270  
 Gly Ile Val Gly Ala Trp  
 275

&lt;210&gt; 3057

&lt;211&gt; 861

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(861)

&lt;400&gt; 3057

atg tcc tcc gat atc cca gac caa ccg ccc tcc cgc tcc cta cgc ggt	48
Met Ser Ser Asp Ile Pro Asp Gln Pro Pro Ser Arg Ser Leu Arg Gly	
1 5 10 15	
cgc gtc gcc atc gtc acg gga gcc gga tgt gca ggt tcc gga atc ggc	96
Arg Val Ala Ile Val Thr Gly Ala Gly Cys Ala Gly Ser Gly Ile Gly	
20 25 30	
aac gga cga gcc atc tct att ctc cta gcc gac gac ggc tgc aat gtc	144
Asn Gly Arg Ala Ile Ser Ile Leu Ala Asp Asp Gly Cys Asn Val	
35 40 45	
gtg tgc ctc gac atg aac ctc gac tgg gcg aac aag acc gtg gac atg	192
Val Cys Leu Asp Met Asn Leu Asp Trp Ala Asn Lys Thr Val Asp Met	
50 55 60	
gtc aac gcc aag ccc ggt cgc ggc aca gcc atc gcc atg cag gga gac	240
Val Asn Ala Lys Pro Gly Arg Gly Thr Ala Ile Ala Met Gln Gly Asp	
65 70 75 80	
gtc acg aag cag gcc gac tgc gac gcc gcc gtg cag ctc gcc ctg gac	288
Val Thr Lys Gln Ala Asp Cys Asp Ala Ala Val Gln Leu Ala Leu Asp	
85 90 95	
aag ttc ggc cgg ctg gac gtc ctg gtc aac aac gtc ggc gtg ggc ggc	336
Lys Phe Gly Arg Leu Asp Val Leu Val Asn Asn Val Gly Val Gly Gly	
100 105 110	
gcg ccg ggc acg gcg gtc gag gtg gac ttg gaa aag ttt gcg cag agc	384
Ala Pro Gly Thr Ala Val Glu Val Asp Leu Glu Lys Phe Ala Gln Ser	
115 120 125	
ctc gag gtc aac gtg tcg agc atg gtg cgc atg gcc aag gct gcc atc	432
Leu Glu Val Asn Val Ser Ser Met Val Arg Met Ala Lys Ala Ala Ile	
130 135 140	
cct gcc atg gtg cgc gac aag gac ggc gtg gag atc aag ggc agc ata	480
Pro Ala Met Val Arg Asp Lys Asp Gly Val Glu Ile Lys Gly Ser Ile	
145 150 155 160	
gtc aac atg ggc tcg gtc gcg ggc atg ctc ggg ggc act ccg cac ctt	528
Val Asn Met Gly Ser Val Ala Gly Met Leu Gly Gly Thr Pro His Leu	
165 170 175	
ttg tac cct acc agc aaa ggt gcc gtc gtc aac atg acg agg gct atg	576
Leu Tyr Pro Thr Ser Lys Gly Ala Val Val Asn Met Thr Arg Ala Met	
180 185 190	

## PhoenixTemp32470.tmp.txt

gcg gct cat cat gcc aag gat ggt att cgc gtg aac tgc gtg tgt cca	624
Ala Ala His 195 Ala Lys Asp 200 Gly Ile Arg Val Asn 205 Cys Val Cys Pro	
ggg atg cta tat act ccg atg atg tac gct ggt ggg atg agt gag gag	672
Gly Met Leu Tyr Thr Pro Met 215 Met Tyr Ala Gly Gly Met Ser Glu Glu	
gtc aga gag gcc cgc aag ggc agg agt ctg ctg ggt act gag ggt agc	720
Val Arg Glu Ala Arg Lys 230 Gly Arg Ser Leu 235 Gly Thr Glu Gly Ser	
ggg tgg gat gca gca tgc gca gtc gtg ttt ctt gct tcg gat cat tcc	768
Gly Trp Asp Ala Ala Cys Ala Val Val Phe 250 Leu Ala Ser Asp His Ser	
aga tgg atc acg ggt gcc att ttg cct gtg gac gca ggg acc acc gct	816
Arg Trp Ile Thr 260 Gly Ala Ile Leu 265 Pro Val Asp Ala Gly Thr Thr Ala	
gcg act tct ata acg ctg ccc aaa gga gcg agc gtc aat ggt tga	861
Ala Thr Ser 275 Ile Thr Leu Pro Lys 280 Gly Ala Ser Val Asn 285 Gly	

&lt;210&gt; 3058

&lt;211&gt; 286

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 3058

Met Ser Ser Asp Ile Pro Asp Gln Pro Pro Ser Arg Ser Leu Arg Gly	
1 Arg Val Ala Ile Val Thr Gly Ala Gly Cys Ala Gly Ser Gly Ile Gly	
Asn Gly Arg 20 Ala Ile Ser Ile Leu 25 Ala Asp Asp Gly Cys Asn Val	
Val Cys Leu Asp Met Asn Leu 40 Asp Trp Ala Asn Lys Thr Val Asp Met	
Val Asn Ala Lys Pro Gly 50 Arg Gly Thr Ala Ile Ala Met Gln Gly Asp	
65 Val Thr Lys Gln Ala 70 Asp Cys Asp Ala Ala Val Gln Leu Ala Leu Asp	
Lys Phe Gly Arg Leu Asp Val Leu Val Asn Asn Val Gly Val Gly Gly	
Ala Pro Gly Thr Ala Val Glu Val Asp Leu Glu Lys Phe Ala Gln Ser	
Leu Glu Val Asn Val Ser Ser Met Val Arg Met Ala Lys Ala Ala Ile	
Pro Ala Met Val Arg Asp Lys Asp Gly Val Glu Ile Lys Gly Ser Ile	
145 Val Asn Met Gly Ser Val Ala Gly Met Leu 155 Gly Gly Thr Pro His 160	
Leu Tyr Pro Thr Ser Lys Gly Ala Val Val Asn Met Thr Arg Ala Met	
Ala Ala His 180 His Ala Lys Asp Gly Ile Arg Val Asn Cys Val Cys Pro	
Gly Met 195 Leu Tyr Thr Pro Met 200 Met Tyr Ala Gly Gly Met Ser Glu Glu	
Val Arg Glu Ala Arg Lys 215 Gly Arg Ser Leu Leu Gly Thr Glu Gly Ser	
225 Gly Trp Asp Ala Ala Cys Ala Val Val Phe 235 Leu Ala Ser Asp His Ser	
Arg Trp Ile Thr 245 Gly Ala Ile Leu Pro 250 Val Asp Ala Gly Thr Thr Ala	
Ala Thr Ser 260 Ile Thr Leu Pro Lys 270 Gly Ala Ser Val Asn 285 Gly	
275	

&lt;210&gt; 3059

&lt;211&gt; 1110

&lt;212&gt; DNA

&lt;213&gt; Magnaporthe grisea 70-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1110)

&lt;400&gt; 3059

atg gtt gct gca cgc tcc gtc atg cgc ctg gca ggt att ccc tgc cgt	48
Met Val Ala Ala Arg Ser Val Met Arg Leu Ala Gly Ile Pro Cys Arg	
1 5 10 15	
gct gcc gcc tcg atg ccc atg cca gca gct cgc ttc gct ccc gtt gcc	96
Ala Ala Ala Ser Met Pro Met Pro Ala Arg Phe Ala Pro Val Ala	
20 25 30	
aag aga gct ttc agc aac tcg atg caa cag ccc aag aag tcg gag gtc	144
Lys Arg Ala Phe Ser Asn Ser Met Gln Gln Pro Lys Lys Ser Glu Val	
35 40 45	
atc aag gag acc gag gtg ccc gtc tcg gtg tat aca cct gac tct aag	192
Ile Lys Glu Thr Glu Val Pro Val Ser Val Tyr Thr Pro Asp Ser Lys	
50 55 60	
gga gtt gct tct ggc aac tcg gac cac ttc agc att ccc gtc aag ggc	240
Gly Val Ala Ser Gly Asn Ser Asp His Phe Ser Ile Pro Val Lys Gly	
65 70 75 80	
agc agc aga gcc gct gtt gct caa cca ccg acc ccg gag gag gat gag	288
Ser Ser Arg Ala Ala Val Ala Gln Pro Pro Thr Pro Glu Glu Asp Glu	
85 90 95	
ccg gtc gtc cct cta tcc tcc aag gtg tac tcg caa atg cct ggc acc	336
Pro Val Val Pro Leu Ser Ser Lys Val Tyr Ser Gln Met Pro Gly Thr	
100 105 110	
atg cag aag atg tcg gtt tac ggc aag acc atc atc att acc gga ggc	384
Met Gln Lys Met Ser Val Tyr Gly Lys Thr Ile Ile Ile Thr Gly Gly	
115 120 125	
gca cga gga ctg ggc aac tac atg gct cgt gcc tgt gct gag gcc ggc	432
Ala Arg Gly Leu Gly Asn Tyr Met Ala Arg Ala Cys Ala Glu Ala Gly	
130 135 140	
gcc aaa gcc att atc atc ttc gat gcc aac cag gag ctt gga gac gag	480
Ala Lys Ala Ile Ile Ile Phe Asp Ala Asn Gln Glu Leu Gly Asp Glu	
145 150 155 160	
tct gct gct gag ctg cat cag aag acc ggt ctt cct gtc acc ttc ttc	528
Ser Ala Ala Glu Leu His Gln Lys Thr Gly Leu Pro Val Thr Phe Phe	
165 170 175	
aag gtc gat gtg cgt gac gga gca gcc atc aac gcc gcc gta gat cgg	576
Lys Val Asp Val Arg Asp Gly Ala Ala Ile Asn Ala Ala Val Asp Arg	
180 185 190	
gtc gtt gag ctg ttc ggc gct cct gac gtc ttg gtc aac tcg gcc ggt	624
Val Val Glu Leu Phe Gly Ala Pro Asp Val Leu Val Asn Ser Ala Gly	
195 200 205	
att gcc gac tcg aac atc aag gcc gag acc tac gat ccc gcc atg ttc	672
Ile Ala Asp Ser Asn Ile Lys Ala Glu Thr Tyr Asp Pro Ala Met Phe	
210 215 220	
cgt cgc ctg atc gac atc aac ctc aca ggc tca ttc ctg atg tcc cag	720
Arg Arg Leu Ile Asp Ile Asn Leu Thr Gly Ser Phe Leu Met Ser Gln	
225 230 235 240	
gct gtc ggc cgc gcc atg atg gca gct ggc aag cct ggt tcc atc gtc	768
Ala Val Gly Arg Ala Met Met Ala Ala Gly Lys Pro Gly Ser Ile Val	
245 250 255	
ctg gtg gct tcc atg tcg ggc agc atc gtc aac tac ccg cag gag cag	816
Leu Val Ala Ser Met Ser Gly Ser Ile Val Asn Tyr Pro Gln Glu Gln	
260 265 270	
tca tgc tac aac gca tcc aag gct ggc gtc atc cag ctc ggc aag tct	864
Ser Cys Tyr Asn Ala Ser Lys Ala Gly Val Ile Gln Leu Gly Lys Ser	
275 280 285	
ctc gcc gct gag tgg gcc aag tac gac att cgt gtc aac tgc atc tcc	912
Leu Ala Ala Glu Trp Ala Lys Tyr Asp Ile Arg Val Asn Cys Ile Ser	
290 295 300 305	
cct ggg tac atg gac acc gcc ctc aac aag gtt ccc gcg ctc gac gct	960
Pro Gly Tyr Met Asp Thr Ala Leu Asn Lys Val Pro Ala Leu Asp Ala	
310 315 320	
cag aag aag atc tgg aag tcg ctc act ccc caa cag cga ctg ggc aac	1008
Gln Lys Lys Ile Trp Lys Ser Leu Thr Pro Gln Gln Arg Leu Gly Asn	
325 330 335	
gtc gat gac ctc aat ggt ctc tgc atc ttc ctc gct tcg gac tca agc	1056
Val Asp Asp Leu Asn Gly Leu Cys Ile Phe Leu Ala Ser Asp Ser Ser	
340 345 350	

## PhoenixTemp32470.tmp.txt

ggt ttc atg acc ggc tcc aac gtc atc att gac ggt ggc tac aca tgc 1104  
 Gly Phe Met Thr Gly Ser Asn Val Ile Ile Asp Gly Gly Tyr Thr Cys  
 355 360 365  
 tac taa 1110  
 Tyr

<210> 3060  
 <211> 369  
 <212> PRT  
 <213> Magnaporthe grisea 70-15

<400> 3060  
 Met Val Ala Ala Arg Ser Val Met Arg Leu Ala Gly Ile Pro Cys Arg  
 1 5 10 15  
 Ala Ala Ala Ser Met Pro Met Pro Ala Ala Arg Phe Ala Pro Val Ala  
 20 25 30  
 Lys Arg Ala Phe Ser Asn Ser Met Gln Gln Pro Lys Lys Ser Glu Val  
 35 40 45  
 Ile Lys Glu Thr Glu Val Pro Val Ser Val Tyr Thr Pro Asp Ser Lys  
 50 55 60  
 Gly Val Ala Ser Gly Asn Ser Asp His Phe Ser Ile Pro Val Lys Gly  
 65 70 75 80  
 Ser Ser Arg Ala Ala Val Ala Gln Pro Pro Thr Pro Glu Glu Asp Glu  
 85 90 95  
 Pro Val Val Pro Leu Ser Ser Lys Val Tyr Ser Gln Met Pro Gly Thr  
 100 105 110  
 Met Gln Lys Met Ser Val Tyr Gly Lys Thr Ile Ile Ile Thr Gly Gly  
 115 120 125  
 Ala Arg Gly Leu Gly Asn Tyr Met Ala Arg Ala Cys Ala Glu Ala Gly  
 130 135 140  
 Ala Lys Ala Ile Ile Ile Phe Asp Ala Asn Gln Glu Leu Gly Asp Glu  
 145 150 155 160  
 Ser Ala Ala Glu Leu His Gln Lys Thr Gly Leu Pro Val Thr Phe Phe  
 165 170 175  
 Lys Val Asp Val Arg Asp Gly Ala Ala Ile Asn Ala Ala Val Asp Arg  
 180 185 190  
 Val Val Glu Leu Phe Gly Ala Pro Asp Val Leu Val Asn Ser Ala Gly  
 195 200 205  
 Ile Ala Asp Ser Asn Ile Lys Ala Glu Thr Tyr Asp Pro Ala Met Phe  
 210 215 220  
 Arg Arg Leu Ile Asp Ile Asn Leu Thr Gly Ser Phe Leu Met Ser Gln  
 225 230 235 240  
 Ala Val Gly Arg Ala Met Met Ala Ala Gly Lys Pro Gly Ser Ile Val  
 245 250 255  
 Leu Val Ala Ser Met Ser Gly Ser Ile Val Asn Tyr Pro Gln Glu Gln  
 260 265 270  
 Ser Cys Tyr Asn Ala Ser Lys Ala Gly Val Ile Gln Leu Gly Lys Ser  
 275 280 285  
 Leu Ala Ala Glu Trp Ala Lys Tyr Asp Ile Arg Val Asn Cys Ile Ser  
 290 295 300  
 Pro Gly Tyr Met Asp Thr Ala Leu Asn Lys Val Pro Ala Leu Asp Ala  
 305 310 315 320  
 Gln Lys Lys Ile Trp Lys Ser Leu Thr Pro Gln Gln Arg Leu Gly Asn  
 325 330 335  
 Val Asp Asp Leu Asn Gly Leu Cys Ile Phe Leu Ala Ser Asp Ser Ser  
 340 345 350  
 Gly Phe Met Thr Gly Ser Asn Val Ile Ile Asp Gly Gly Tyr Thr Cys  
 355 360 365  
 Tyr

<210> 3061  
 <211> 816  
 <212> DNA  
 <213> Magnaporthe grisea 70-15

<220>  
 <221> CDS



&lt;222&gt; (1)..(816)

```

<400> 3061
atg tcg tcc acg tcc aga ttc agc ctc gcc ggc aaa acc gtc gcc atc      48
Met Ser Ser Thr Ser Arg Phe Ser Leu Ala Gly Lys Thr Val Ala Ile
1      5      10      15
aca ggt ggc gga cga ggc ctg ggt atc aca ctt gcg ctc gcc gtg gtc      96
Thr Gly Gly Gly Arg Gly Leu Gly Ile Thr Leu Ala Leu Ala Val Val
20      25      30
gaa gcc ggc ggc cac gtc gcc tgt ctc gac atc ctc cca gag ccc gcc      144
Glu Ala Gly Gly His Val Ala Cys Leu Asp Ile Leu Pro Glu Pro Ala
35      40      45
gca gac gag tgg gag gcc ctc cag aag acg gca gcc tcc gca cgg ggc      192
Ala Asp Glu Trp Glu Ala Leu Gln Lys Thr Ala Ser Ala Arg Gly
50      55      60
ggg ccg ctc ggc tgc tca tac cac cgg tgc gac gtg aca tcc gag gcc      240
Gly Pro Leu Gly Cys Ser Tyr His Arg Cys Asp Val Thr Ser Glu Ala
65      70      75      80
gag atg gaa aag atg atc gac tcc atc gcg gag gag gcg gca ggc cgg      288
Glu Met Glu Lys Met Ile Asp Ser Ile Ala Glu Glu Ala Ala Gly Arg
85      90      95
ggc gcc gag ctg gcg ggg tgc gtg gcc tgc gcg ggg ata caa caa aag      336
Gly Ala Glu Leu Ala Gly Cys Val Ala Cys Ala Gly Ile Gln Gln Lys
100      110
acg ccg gcg ctc gac tac ccg gcc gcc gac ttt gag cgg atc ctc cgg      384
Thr Pro Ala Leu Asp Tyr Pro Ala Ala Asp Phe Glu Arg Ile Leu Arg
115      120      125
gtc aac gtg acg ggg gtg ttc atc acg gcc aag tac gcg gcg cgg gtc      432
Val Asn Val Thr Gly Val Phe Ile Thr Ala Lys Tyr Ala Ala Arg Val
130      135      140
atg gtc cgg cga ggg gtc aag ggt agc atc gtg ctg atc ggc agc atg      480
Met Val Arg Arg Gly Val Lys Gly Ser Ile Val Leu Ile Gly Ser Met
145      150      155      160
agc ggc gag att gcc aat cgc ggg ctc acg tgc acc gcc tac aac agc      528
Ser Gly Glu Ile Ala Asn Arg Gly Leu Thr Cys Thr Ala Tyr Asn Ser
165      170      175
agc aag gcg gcg gtc cag cag atg tgc aga tct ctg gct caa gaa tgg      576
Ser Lys Ala Ala Val Gln Gln Met Cys Arg Ser Leu Ala Gln Glu Trp
180      185      190
gga aag cat ggc atc agg gtt aac acg tta tct ccc ggg tac atc cga      624
Gly Lys His Gly Ile Arg Val Asn Thr Leu Ser Pro Gly Tyr Ile Arg
195      200      205
acc gcc atg acg gac gaa ctg ttg gca gca gaa ccc tcg ttg gag gag      672
Thr Ala Met Thr Asp Glu Leu Leu Ala Ala Glu Pro Ser Leu Glu Glu
210      215      220
aca tgg atg gcg ggc gcc ctt ctg gga agg tta gga acg ccc gag gat      720
Thr Trp Met Ala Gly Ala Leu Leu Gly Arg Leu Gly Thr Pro Glu Asp
225      230      235      240
ttc atg agc ccc gcc gtg ttt ttg ctg gcg gac ggc agc tct ttc atg      768
Phe Met Ser Pro Ala Val Phe Leu Leu Ala Asp Gly Ser Ser Phe Met
245      250      255
acg ggt agc gac ctg cgc gtt gat gga ggg cat tgc gcg tcg gct      813
Thr Gly Ser Asp Leu Arg Val Asp Gly Gly His Cys Ala Ser Ala
260      265      270
tag
816

```

&lt;210&gt; 3062

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Magnaporthe grisea 70-15

&lt;400&gt; 3062

```

Met Ser Ser Thr Ser Arg Phe Ser Leu Ala Gly Lys Thr Val Ala Ile
1      5      10      15
Thr Gly Gly Gly Arg Gly Leu Gly Ile Thr Leu Ala Leu Ala Val Val
20      25      30
Glu Ala Gly Gly His Val Ala Cys Leu Asp Ile Leu Pro Glu Pro Ala

```

## PhoenixTemp32470.tmp.txt

35 40 45  
 Ala Asp Glu Trp Glu Ala Leu Gln Lys Thr Ala Ala Ser Ala Arg Gly  
 50 55 60  
 Gly Pro Leu Gly Cys Ser Tyr His Arg Cys Asp Val Thr Ser Glu Ala  
 65 70 75 80  
 Glu Met Glu Lys Met Ile Asp Ser Ile Ala Glu Glu Ala Ala Gly Arg  
 85 90 95  
 Gly Ala Glu Leu Ala Gly Cys Val Ala Cys Ala Gly Ile Gln Lys  
 100 105 110  
 Thr Pro Ala Leu Asp Tyr Pro Ala Ala Asp Phe Glu Arg Ile Leu Arg  
 115 120 125  
 Val Asn Val Thr Gly Val Phe Ile Thr Ala Lys Tyr Ala Ala Arg Val  
 130 135 140  
 Met Val Arg Arg Gly Val Lys Gly Ser Ile Val Leu Ile Gly Ser Met  
 145 150 155 160  
 Ser Gly Glu Ile Ala Asn Arg Gly Leu Thr Cys Thr Ala Tyr Asn Ser  
 165 170 175  
 Ser Lys Ala Ala Val Gln Gln Met Cys Arg Ser Leu Ala Gln Glu Trp  
 180 185 190  
 Gly Lys His Gly Ile Arg Val Asn Thr Leu Ser Pro Gly Tyr Ile Arg  
 195 200 205  
 Thr Ala Met Thr Asp Glu Leu Leu Ala Ala Glu Pro Ser Leu Glu Glu  
 210 215 220  
 Thr Trp Met Ala Gly Ala Leu Leu Gly Arg Leu Gly Thr Pro Glu Asp  
 225 230 235 240  
 Phe Met Ser Pro Ala Val Phe Leu Leu Ala Asp Gly Ser Ser Phe Met  
 245 250 255  
 Thr Gly Ser Asp Leu Arg Val Asp Gly Gly His Cys Ala Ser Ala  
 260 265 270

&lt;210&gt; 3063

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 3063

atg tct gct cct cgt ggt cgt ctc gct ggc aaa aac gcc gtc atc acc	48
Met Ser Ala Pro Arg Gly Arg Leu Ala Gly Lys Asn Ala Val Ile Thr	
1 5 10 15	
ggc gct ggt ggt ggc att ggt ctt gag acc tcc atc ctc ttc gca aag	96
Gly Ala Gly Gly Ile Gly Leu Glu Thr Ser Ile Leu Phe Ala Lys	
20 25 30	
gag ggc gct tca atc ctc atg tcc gac atc tcc cag cct gct ctc gaa	144
Glu Gly Ala Ser Ile Leu Met Ser Asp Ile Ser Gln Pro Ala Leu Glu	
35 40 45	
aag gcc gcc gca aag gtc aag cag ctc gtc ccc gat gca ccc cgc gtt	192
Lys Ala Ala Ala Lys Val Lys Gln Leu Val Pro Asp Ala Pro Arg Val	
50 55 60	
gag atc ctg aaa gtc gac gtc tcc aag gaa tca gag gtc cag gcc atg	240
Glu Ile Leu Lys Val Asp Val Ser Lys Glu Ser Glu Val Gln Ala Met	
65 70 75 80	
atc gag tca ctc gac tct tgg ggc ggc atc gac gtc ctc ttc aac aac	288
Ile Glu Ser Leu Asp Ser Trp Gly Gly Ile Asp Val Leu Phe Asn Asn	
85 90	
gcc ggt atc atg cac gcc cag gat gac gac gcc gtc aac acc ccc gag	336
Ala Gly Ile Met His Ala Gln Asp Asp Asp Ala Val Asn Thr Pro Glu	
100 105 110	
aac atc tgg gat ctc acc caa aac atc aac gtc aag ggt gtg tgg ttc	384
Asn Ile Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe	
115 120 125	
ggc tgc aag cac gcc gtt ctt tct ctg cgc cgc aac aaa aag tca aag	432
Gly Cys Lys His Ala Val Leu Ser Leu Arg Arg Asn Lys Lys Ser Lys	
130 135 140	
gct tcc atc atc aac acc gct tcc gtc gtc gct ctt gtc gga gct gcc	480
Ala Ser Ile Ile Asn Thr Ala Ser Val Val Ala Leu Val Gly Ala Ala	

## PhoenixTemp32470.tmp.txt

145	aca	ccc	cag	ctt	gcc	150	tac	act	gcc	tcc	155	ggt	gct	gtc	ctc	gct	160	ctc	
	Thr	Pro	Gln	Leu	Ala		Tyr	Thr	Ala	Ser		Gly	Ala	Val	Leu	Ala		Leu	528
					165						170								
	acc	cgt	gag	ctc	gcc	175	atg	ggt	cac	gcc	180	aga	gag	ggc	ttc	cgc	ttc	aac	576
	Thr	Arg	Glu	Leu	Ala		Met	Val	His	Ala		Arg	Glu	Gly	Phe	Arg	Phe	Asn	
				180						185						190			
	aac	ctc	tgc	cct	gcg	195	ccg	ctc	aac	aca	200	cct	ctt	ctg	cag	gac	tggt	ctt	624
	Asn	Leu	Cys	Pro	Ala		Pro	Leu	Asn	Thr		Pro	Leu	Leu	Gln	Asp	Trp	Leu	
			195						200						205				
	ggt	gat	gac	cag	gct	210	aag	cga	cac	cga	215	cgt	gag	gtc	cac	ttc	ccc	atg	672
	Gly	Asp	Asp	Gln	Ala		Lys	Arg	His	Arg		Arg	Glu	Val	His	Phe	Pro	Met	
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	Gly	Arg	Phe	Gly	Glu		Ala	Ile	Glu	Gln		Ala	His	Ala	Val	Val	Phe	Leu	
							230					235						240	
	gct	agt	gat	gag	tct	245	agc	ttt	gtc	aac	250	ggt	cat	gac	ttt	gcc	gtc	gac	768
	Ala	Ser	Asp	Glu	Ser		Ser	Phe	Val	Asn		Gly	His	Asp	Phe	Ala	Val	Asp	
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	Gly	Gly	Met	Thr	Lys		Gly	Tyr	Val	Thr		Ala	Glu	Gly	Ala	Ala	Pro	Pro	
										270									
	cct	ccc	cag	aac	aac	275	gcc	agc	aag	gat	tca	ttg	taa						852
	Pro	Pro	Gln	Asn	Asn		Ala	Ser	Lys	Asp	Ser	Leu							
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&lt;210&gt; 3064

&lt;211&gt; 283

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3064

Met	Ser	Ala	Pro	Arg	Gly	Arg	Leu	Ala	Gly	Lys	Asn	Ala	Val	Ile	Thr
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			20				25					30			
Glu	Gly	Ala	Ser	Ile	Leu	Met	Ser	Asp	Ile	Ser	Gln	Pro	Ala	Leu	Glu
		35				40					45				
Lys	Ala	Ala	Ala	Lys	Val	Lys	Gln	Leu	Val	Pro	Asp	Ala	Pro	Arg	Val
	50					55					60				
Glu	Ile	Leu	Lys	Val	Asp	Val	Ser	Lys	Glu	Ser	Glu	Val	Gln	Ala	Met
65					70				75					80	
Ile	Glu	Ser	Leu	Asp	Ser	Trp	Gly	Gly	Ile	Asp	Val	Leu	Phe	Asn	Asn
				85					90					95	
Ala	Gly	Ile	Met	His	Ala	Gln	Asp	Asp	Ala	Val	Asn	Thr	Pro	Glu	
			100				105				110				
Asn	Ile	Trp	Asp	Leu	Thr	Gln	Asn	Ile	Asn	Val	Lys	Gly	Val	Trp	Phe
		115					120					125			
Gly	Cys	Lys	His	Ala	Val	Leu	Ser	Leu	Arg	Arg	Asn	Lys	Lys	Ser	Lys
	130					135					140				
Ala	Ser	Ile	Ile	Asn	Thr	Ala	Ser	Val	Val	Ala	Leu	Val	Gly	Ala	Ala
145					150					155				160	
Thr	Pro	Gln	Leu	Ala	Tyr	Thr	Ala	Ser	Lys	Gly	Ala	Val	Leu	Ala	Leu
				165					170					175	
Thr	Arg	Glu	Leu	Ala	Met	Val	His	Ala	Arg	Glu	Gly	Phe	Arg	Phe	Asn
			180					185				190			
Asn	Leu	Cys	Pro	Ala	Pro	Leu	Asn	Thr	Pro	Leu	Leu	Gln	Asp	Trp	Leu
		195					200					205			
Gly	Asp	Asp	Gln	Ala	Lys	Arg	His	Arg	Arg	Glu	Val	His	Phe	Pro	Met
	210					215					220				
Gly	Arg	Phe	Gly	Glu	Ala	Ile	Glu	Gln	Ala	His	Ala	Val	Val	Phe	Leu
225					230					235					240
Ala	Ser	Asp	Glu	Ser	Phe	Val	Asn	Gly	His	Asp	Phe	Ala	Val	Asp	
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Gly	Gly	Met	Thr	Lys	Gly	Tyr	Val	Thr	Ala	Glu	Gly	Ala	Ala	Pro	Pro
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 <212> DNA  
 <213> Gibberella zeae PH-1

<220>  
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gcc gtc cgc gtc gag tac ccc gag cat cat gaa ctt ccc gct agc aag      96
Ala Val Arg Val Glu Tyr Pro Glu His His Glu Leu Pro Ala Ser Lys
 20      25      30
ccc tta att ggt caa ggt gga cag ttc tcc aag ccc act cta gct tcc      144
Pro Leu Ile Gly Gln Gly Gly Gln Phe Ser Lys Pro Thr Leu Ala Ser
 35      40      45
ctt tca ctc gaa ggc aag aca att gtc atc act ggg ggt gca aga ggt      192
Leu Ser Leu Glu Gly Lys Thr Ile Val Ile Thr Gly Gly Ala Arg Gly
 50      55      60
ctt ggt ctt gtc atg ggt cag gga gta gtc tat tcg ggt gct gat cta      240
Leu Gly Leu Val Met Gly Gln Gly Val Val Tyr Ser Gly Ala Asp Leu
 65      70      75
gcc atc gtc gat ttg aac aag gac gaa gca cag tct caa gta ggc caa      288
Ala Ile Val Asp Leu Asn Lys Asp Glu Ala Gln Ser Gln Val Gly Gln
 85      90      95
ttg aca gat gct ttc aag aga gag aac cca aac agc gag aaa atc ccg      336
Leu Thr Asp Ala Phe Lys Arg Glu Asn Pro Asn Ser Glu Lys Ile Pro
100      105      110
aga gtt act gct cac tat gca gat gtc tct gat cca gac tcg gta acg      384
Arg Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Asp Ser Val Thr
115      120      125
aat tgt atc acc gag att ctc aag att cat cat aag atc gat ggt tta      432
Asn Cys Ile Thr Glu Ile Leu Lys Ile His His Lys Ile Asp Gly Leu
130      135      140
gtt aca tcg gct gga ttc aca gag aat ttc gag gca atc aac tat cct      480
Val Thr Ser Ala Gly Phe Thr Glu Asn Phe Glu Ala Ile Asn Tyr Pro
145      150      155
atc gat cgt atg cga tta tgg ggc gtc aat gtt gac ggc act tat      528
Ile Asp Arg Met Arg Lys Leu Trp Gly Val Asn Val Asp Gly Thr Tyr
165      170      175
ctc ttt gca gtt gct gta gcc aag cat ctc atg gag cgt cag gtg ccc      576
Leu Phe Ala Val Ala Val Ala Lys His Leu Met Glu Arg Gln Val Pro
180      185      190
ggt agt att gtg gtt att gga agc atg tct ggt gcc att gtc aat gtc      624
Gly Ser Ile Val Val Ile Gly Ser Met Ser Gly Ala Ile Val Asn Val
195      200      205
cca cag cca caa gcc cca tat aac gcg gca aaa gca gct gtt cga cac      672
Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Ala Val Arg His
210      215      220
ctg gct gct tcc ctt gca gtg gag tgg gct cac gct gga atc cgt gtc      720
Leu Ala Ala Ser Leu Ala Val Glu Trp Ala His Ala Gly Ile Arg Val
225      230      235
aac tgc atc tct cct ggc tat atg ttg act gct ttg aca cag aag atc      768
Asn Cys Ile Ser Pro Gly Tyr Met Leu Thr Ala Leu Thr Gln Lys Ile
245      250      255
ctc gac gac aac cct gat tta gag aga acc tgg aca tcc ctc att cct      816
Leu Asp Asp Asn Pro Asp Leu Glu Arg Thr Trp Thr Ser Leu Ile Pro
260      265      270
cag ggt cgc atg gga ctg cct caa gat ttg atg gga ccc gta acc ttt      864
Gln Gly Arg Met Gly Leu Pro Gln Asp Leu Met Gly Pro Val Thr Phe
275      280      285
ctg cta tca gat gcg tca tct tat atg act ggg gca gat gtt cga gtt      912
Leu Leu Ser Asp Ala Ser Ser Tyr Met Thr Gly Ala Asp Val Arg Val
290      295      300
gat gga gga tac act gtg acc tag
Asp Gly Gly Tyr Thr Val Thr

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305

310

<210> 3066  
 <211> 311  
 <212> PRT  
 <213> Gibberella zeae PH-1

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 20 25 30  
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 35 40 45  
 Leu Ser Leu Glu Gly Lys Thr Ile Val Ile Thr Gly Gly Ala Arg Gly  
 50 55 60  
 Leu Gly Leu Val Met Gly Gln Gly Val Val Tyr Ser Gly Ala Asp Leu  
 65 70 75 80  
 Ala Ile Val Asp Leu Asn Lys Asp Glu Ala Gln Ser Gln Val Gly Gln  
 85 90 95  
 Leu Thr Asp Ala Phe Lys Arg Glu Asn Pro Asn Ser Glu Lys Ile Pro  
 100 105 110  
 Arg Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Asp Ser Val Thr  
 115 120 125  
 Asn Cys Ile Thr Glu Ile Leu Lys Ile His His Lys Ile Asp Gly Leu  
 130 135 140  
 Val Thr Ser Ala Gly Phe Thr Glu Asn Phe Glu Ala Ile Asn Tyr Pro  
 145 150 155 160  
 Ile Asp Arg Met Arg Lys Leu Trp Gly Val Asn Val Asp Gly Thr Tyr  
 165 170 175  
 Leu Phe Ala Val Ala Val Ala Lys His Leu Met Glu Arg Gln Val Pro  
 180 185 190  
 Gly Ser Ile Val Val Ile Gly Ser Met Ser Gly Ala Ile Val Asn Val  
 195 200 205  
 Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Ala Val Arg His  
 210 215 220  
 Leu Ala Ala Ser Leu Ala Val Glu Trp Ala His Ala Gly Ile Arg Val  
 225 230 235 240  
 Asn Cys Ile Ser Pro Gly Tyr Met Leu Thr Ala Leu Thr Gln Lys Ile  
 245 250 255  
 Leu Asp Asp Asn Pro Asp Leu Glu Arg Thr Trp Thr Ser Leu Ile Pro  
 260 265 270  
 Gln Gly Arg Met Gly Leu Pro Gln Asp Leu Met Gly Pro Val Thr Phe  
 275 280 285  
 Leu Leu Ser Asp Ala Ser Ser Tyr Met Thr Gly Ala Asp Val Arg Val  
 290 300 305  
 Asp Gly Gly Tyr Thr Val Thr  
 305 310

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 <211> 882  
 <212> DNA  
 <213> Gibberella zeae PH-1

<220>  
 <221> CDS  
 <222> (1)..(882)

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 gag tcc caa gag aca ccc gcc tca aaa gca tca acc tac aag ctc ttc 96  
 Glu Ser Gln Glu Thr Pro Ala Ser Lys Ala Ser Thr Tyr Lys Leu Phe  
 20 25 30  
 tca ctc gag aac aag acc atc gcc atc aca gga gga gcc cgt ggt ctg 144  
 Ser Leu Glu Asn Lys Thr Ile Ala Ile Thr Gly Gly Ala Arg Gly Leu  
 35 40 45  
 ggt att acc cta gcc ctc gcc gtt gtt gaa gct ggt ggc agc gta gcc 192  
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## PhoenixTemp32470.tmp.txt

Gly	Ile	Thr	Leu	Ala	Leu	Ala	Val	Val	Glu	Ala	Gly	Gly	Ser	Val	Ala		
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tgt	cta	gac	att	ctc	gaa	gag	cca	tcg	caa	gca	gag	tgg	gca	cag	ctc	240	
Cys	Leu	Asp	Ile	Leu	Glu	Glu	Pro	Ser	Gln	Ala	Glu	Trp	Ala	Gln	Leu		
65					70					75					80		
aac	aag	atc	gcc	aca	gcc	aac	aaa	gtg	tcc	gtg	tct	tac	cgg	aaa	tgc	288	
Asn	Lys	Ile	Ala	Thr	Ala	Asn	Lys	Val	Ser	Val	Ser	Tyr	Arg	Lys	Cys		
				85					90					95			
gat	gtc	aca	gaa	gag	caa	tct	gtc	gag	aca	gcg	atg	aag	gag	att	gca	336	
Asp	Val	Thr	Glu	Glu	Gln	Ser	Val	Glu	Thr	Ala	Met	Lys	Glu	Ile	Ala		
			100					105				110					
gcc	gaa	gcc	gat	aag	ttt	gaa	gcg	ccg	ttc	tgg	ggg	acc	att	gct	tgc	384	
Ala	Glu	Ala	Asp	Lys	Phe	Glu	Ala	Pro	Phe	Trp	Gly	Thr	Ile	Ala	Cys		
		115					120					125					
gcc	ggg	atc	cag	cag	caa	att	gca	gcg	ctt	gac	tat	cct	gct	gcc	gac	432	
Ala	Gly	Ile	Gln	Gln	Gln	Ile	Ala	Ala	Leu	Asp	Tyr	Pro	Ala	Ala	Asp		
	130					135					140						
ttt	gac	cga	att	cta	cga	gtc	aat	gtg	act	ggg	gtc	ttt	aat	act	tgc	480	
Phe	Asp	Arg	Ile	Leu	Arg	Val	Asn	Val	Thr	Gly	Val	Phe	Asn	Thr	Cys		
145					150					155					160		
aag	tat	gct	gcg	aga	gta	cta	cga	gaa	aac	aac	agc	cct	ggg	agc	att	528	
Lys	Tyr	Ala	Ala	Arg	Val	Leu	Arg	Glu	Asn	Asn	Ser	Pro	Gly	Ser	Ile		
				165				170						175			
gtg	att	att	ggc	agc	atg	tcg	ggc	aac	att	gcc	aat	cga	ggc	ctt	tca	576	
Val	Ile	Ile	Gly	Ser	Met	Ser	Gly	Asn	Ile	Ala	Asn	Arg	Gly	Leu	Ser		
			180				185						190				
tgc	acg	gca	tac	aac	tcc	agt	aaa	gct	gca	gtc	cag	caa	atg	tgc	cga	624	
Cys	Thr	Ala	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	Gln	Gln	Met	Cys	Arg		
		195					200				205						
tcg	gtc	gct	cag	gaa	tgg	ggg	caa	tac	ggg	atc	cga	gtc	aac	aca	ttg	672	
Ser	Val	Ala	Gln	Glu	Trp	Gly	Gln	Tyr	Gly	Ile	Arg	Val	Asn	Thr	Leu		
	210				215						220						
tct	ccc	ggc	tac	att	cga	act	gcc	atg	aca	gac	cag	ttg	ctc	caa	gag	720	
Ser	Pro	Gly	Tyr	Ile	Arg	Thr	Ala	Met	Thr	Asp	Gln	Leu	Leu	Gln	Glu		
				230					235					240			
aac	ccc	gag	gtc	gag	aag	acg	tgg	atg	gct	ggg	gct	ctg	ctg	gga	cgt	768	
Asn	Pro	Glu	Val	Glu	Lys	Thr	Trp	Met	Ala	Gly	Ala	Leu	Leu	Gly	Arg		
				245				250						255			
ttg	ggc	gcc	ccc	gag	gac	ttc	aaa	gca	cca	gct	gtg	ttc	tta	cta	tct	816	
Leu	Gly	Ala	Pro	Glu	Asp	Phe	Lys	Ala	Pro	Ala	Val	Phe	Leu	Leu	Ser		
			260					265					270				
gag	ggg	gct	tct	ttt	gtg	aca	gga	acc	gac	ctg	cgg	gta	gat	gga	ggg	864	
Glu	Gly	Ala	Ser	Phe	Val	Thr	Gly	Thr	Asp	Leu	Arg	Val	Asp	Gly	Gly		
		275					280					285					
cac	tgc	gca	tct	gca	tag											882	
His	Cys	Ala	Ser	Ala													
	290																

&lt;210&gt; 3068

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3068

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Glu	Ser	Gln	Glu	Thr	Pro	Ala	Ser	Lys	Ala	Ser	Thr	Tyr	Lys	Leu	Phe		
			20					25					30				
Ser	Leu	Glu	Asn	Lys	Thr	Ile	Ala	Ile	Thr	Gly	Gly	Ala	Arg	Gly	Leu		
		35					40					45					
Gly	Ile	Thr	Leu	Ala	Leu	Ala	Val	Val	Glu	Ala	Gly	Gly	Ser	Val	Ala		
	50					55					60						
Cys	Leu	Asp	Ile	Leu	Glu	Glu	Pro	Ser	Gln	Ala	Glu	Trp	Ala	Gln	Leu		
65					70				75						80		
Asn	Lys	Ile	Ala	Thr	Ala	Asn	Lys	Val	Ser	Val	Ser	Tyr	Arg	Lys	Cys		
				85					90					95			
Asp	Val	Thr	Glu	Glu	Gln	Ser	Val	Glu	Thr	Ala	Met	Lys	Glu	Ile	Ala		
			100					105					110				
Ala	Glu	Ala	Asp	Lys	Phe	Glu	Ala	Pro	Phe	Trp	Gly	Thr	Ile	Ala	Cys		

## PhoenixTemp32470.tmp.txt

115  
 Ala Gly Ile Gln Gln Gln Ile 120 Ala Ala Leu Asp Tyr 125 Pro Ala Ala Asp  
 130 Phe Asp Arg Ile Leu Arg Val Asn Val Thr Gly Val Phe Asn Thr Cys  
 145 Lys Tyr Ala Ala Arg Val Leu Arg Glu Asn Asn Ser Pro Gly Ser Ile  
 165 Val Ile Ile Gly Ser Met Ser Gly Asn Ile Ala Asn Arg Gly Leu Ser  
 180 Cys Thr Ala Tyr Asn Ser Ser Lys Ala Ala Val Gln Gln Met Cys Arg  
 195 Ser Val Ala Gln Glu Trp Gly Gln Tyr Gly Ile Arg Val Asn Thr Leu  
 210 Ser Pro Gly Tyr Ile Arg Thr Ala Met Thr Asp Gln Leu Leu Gln Glu  
 225 Asn Pro Glu Val Glu Lys Thr Trp Met Ala Gly Ala Leu Leu Gly Arg  
 240 Leu Gly Ala Pro Glu Asp Phe Lys Ala Pro Ala Val Phe Leu Leu Ser  
 255 Glu Gly Ala Ser Phe Val Thr Gly Thr Asp Leu Arg Val Asp Gly Gly  
 270 His Cys Ala Ser Ala 285

&lt;210&gt; 3069

&lt;211&gt; 807

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(807)

&lt;400&gt; 3069

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Met	Leu	Asn	Leu	Lys	Asn	Lys	Val	Ala	Leu	Val	Ile	Gly	Leu	Gly	Gln	
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aca	aac	acc	gaa	ggg	tgg	ggg	atc	ggg	gca	gca	agc	gcc	gta	acc	ctt	96
Thr	Asn	Thr	Glu	Gly	Trp	Gly	Ile	Gly	Ala	Ala	Ser	Ala	Val	Thr	Leu	
			20					25					30			
gca	cga	caa	gga	gcc	atc	atc	ttt	ggc	ggc	aac	aga	aca	atc	gct	tca	144
Ala	Arg	Gln	Gly	Ala	Ile	Ile	Phe	Gly	Gly	Asn	Arg	Thr	Ile	Ala	Ser	
		35					40					45				
act	aca	aag	aca	aaa	gaa	acc	atc	caa	caa	caa	ggc	ggc	caa	tgt	gat	192
Thr	Thr	Lys	Thr	Lys	Glu	Thr	Ile	Gln	Gln	Gln	Gly	Gly	Gln	Cys	Asp	
		50				55					60					
gtc	gtc	gcc	aca	aac	gct	aca	gac	tct	gca	tcc	gtc	aag	gct	gtc	gtc	240
Val	Val	Ala	Thr	Asn	Ala	Thr	Asp	Ser	Ala	Ser	Val	Lys	Ala	Val	Val	
		65			70				75						80	
gac	gct	tgc	atg	gaa	aaa	cat	gga	agg	att	gat	atc	ctg	tta	aca	agc	288
Asp	Ala	Cys	Met	Glu	Lys	His	Gly	Arg	Ile	Asp	Ile	Leu	Leu	Thr	Ser	
				85				90						95		
gtt	ggg	caa	tct	caa	cca	ggg	gat	cct	gca	tcc	atg	aca	gaa	gac	gta	336
Val	Gly	Gln	Ser	Gln	Pro	Gly	Asp	Pro	Ala	Ser	Met	Thr	Glu	Asp	Val	
			100				105					110				
tgg	gat	tcg	cag	atg	gat	att	aat	ctc	aaa	agt	gtg	tat	ctt	gca	tgt	384
Trp	Asp	Ser	Gln	Met	Asp	Ile	Asn	Leu	Lys	Ser	Val	Tyr	Leu	Ala	Cys	
		115					120					125				
cac	cat	gtt	ctt	ccc	att	atg	gag	tcc	caa	gga	agt	ggg	tca	att	att	432
His	His	Val	Leu	Pro	Ile	Met	Glu	Ser	Gln	Gly	Ser	Gly	Ser	Ile	Ile	
		130				135					140					
tgc	atc	tcc	agc	atc	gcc	ggg	ctt	cgg	tac	att	ggc	aag	ccg	cag	ata	480
Cys	Ile	Ser	Ser	Ile	Ala	Gly	Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Ile	
145					150				155						160	
gcg	tac	aac	acg	agc	aaa	gcg	gcg	ata	ctc	cag	ttc	gtc	aaa	gct	acg	528
Ala	Tyr	Asn	Thr	Ser	Lys	Ala	Ala	Ile	Leu	Gln	Phe	Val	Lys	Ala	Thr	
				165				170						175		
gca	gtt	ata	tac	gcg	cca	aag	ggg	ata	cgg	ctc	aac	act	gtt	gtt	ccg	576
Ala	Val	Ile	Tyr	Ala	Pro	Lys	Gly	Ile	Arg	Leu	Asn	Thr	Val	Val	Pro	

## PhoenixTemp32470.tmp.txt

			180					185				190							
gga	ctc	atg	gat	acg	cct	tac	aca	aag	agt	ctg	gcg	cag	aga	ttt	gct				
Gly	Leu	Met	Asp	Thr	Pro	Tyr	Thr	Lys	Ser	Leu	Ala	Gln	Arg	Phe	Ala				
		195					200					205							
acg	cca	ggg	ggt	tat	gat	gag	ttt	tgt	agc	atg	agg	gag	gga	cag	gtt				
Thr	Pro	Gly	Gly	Tyr	Asp	Glu	Phe	Cys	Ser	Met	Arg	Glu	Gly	Gln	Val				
	210					215					220								
cct	atg	ggg	agg	atg	gga	gat	gcg	tgg	gat	gtt	gct	aat	acg	gtt	gtg				
Pro	Met	Gly	Arg	Met	Gly	Asp	Ala	Trp	Asp	Val	Ala	Asn	Thr	Val	Val				
	225				230					235					240				
ttt	ttg	gcg	gcg	gat	gag	acg	agg	tat	atc	acg	gga	caa	aag	att	gtt				
Phe	Leu	Ala	Ala	Asp	Glu	Thr	Arg	Tyr	Ile	Thr	Gly	Gln	Lys	Ile	Val				
				245					250					255					
gtt	gat	ggg	ggg	atc	act	tca	tct	acg	ggg	cgg	act	tga							
Val	Asp	Gly	Gly	Ile	Thr	Ser	Ser	Thr	Gly	Arg	Thr								
			260					265											

&lt;210&gt; 3070

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3070

Met	Leu	Asn	Leu	Lys	Asn	Lys	Val	Ala	Leu	Val	Ile	Gly	Leu	Gly	Gln				
1				5				10					15						
Thr	Asn	Thr	Glu	Gly	Trp	Gly	Ile	Gly	Ala	Ala	Ser	Ala	Val	Thr	Leu				
			20					25				30							
Ala	Arg	Gln	Gly	Ala	Ile	Ile	Phe	Gly	Gly	Asn	Arg	Thr	Ile	Ala	Ser				
		35					40					45							
Thr	Thr	Lys	Thr	Lys	Glu	Thr	Ile	Gln	Gln	Gln	Gly	Gly	Gln	Cys	Asp				
	50				55						60								
Val	Val	Ala	Thr	Asn	Ala	Thr	Asp	Ser	Ala	Ser	Val	Lys	Ala	Val	Val				
	65			70					75						80				
Asp	Ala	Cys	Met	Glu	Lys	His	Gly	Arg	Ile	Asp	Ile	Leu	Leu	Thr	Ser				
			85						90					95					
Val	Gly	Gln	Ser	Gln	Pro	Gly	Asp	Pro	Ala	Ser	Met	Thr	Glu	Asp	Val				
			100					105					110						
Trp	Asp	Ser	Gln	Met	Asp	Ile	Asn	Leu	Lys	Ser	Val	Tyr	Leu	Ala	Cys				
	115						120					125							
His	His	Val	Leu	Pro	Ile	Met	Glu	Ser	Gln	Gly	Ser	Gly	Ser	Ile	Ile				
	130				135						140								
Cys	Ile	Ser	Ser	Ile	Ala	Gly	Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Ile				
	145				150				155					160					
Ala	Tyr	Asn	Thr	Ser	Lys	Ala	Ala	Ile	Leu	Gln	Phe	Val	Lys	Ala	Thr				
				165					170					175					
Ala	Val	Ile	Tyr	Ala	Pro	Lys	Gly	Ile	Arg	Leu	Asn	Thr	Val	Val	Pro				
			180					185					190						
Gly	Leu	Met	Asp	Thr	Pro	Tyr	Thr	Lys	Ser	Leu	Ala	Gln	Arg	Phe	Ala				
	195						200					205							
Thr	Pro	Gly	Gly	Tyr	Asp	Glu	Phe	Cys	Ser	Met	Arg	Glu	Gly	Gln	Val				
	210				215						220								
Pro	Met	Gly	Arg	Met	Gly	Asp	Ala	Trp	Asp	Val	Ala	Asn	Thr	Val	Val				
	225				230				235						240				
Phe	Leu	Ala	Ala	Asp	Glu	Thr	Arg	Tyr	Ile	Thr	Gly	Gln	Lys	Ile	Val				
				245					250					255					
Val	Asp	Gly	Gly	Ile	Thr	Ser	Ser	Thr	Gly	Arg	Thr								
			260					265											

&lt;210&gt; 3071

&lt;211&gt; 1038

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1038)

&lt;400&gt; 3071

atg	tct	ttt	gca	cct	tct	ttg	cgt	ctc	tgt	gtg	cgg	cgt	gtt	gct	gct				
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--	--	--	--

48



## PhoenixTemp32470.tmp.txt

Met 1	Ser	Phe	Ala	Pro 5	Ser	Leu	Arg	Leu	Cys 10	Val	Arg	Arg	Val	Ala 15	Ala		
tca	cct	gct	att	cgc	ccc	tgt	ttc	act	ttt	act	gct	gcg	cga	aag	ctt		96
Ser	Pro	Ala	Ile 20	Arg	Pro	Cys	Phe	Thr 25	Phe	Thr	Ala	Ala	Arg 30	Lys	Leu		
cac	aat	gtc	cct	ccc	cga	cag	gac	aaa	cca	gga	aaa	tat	gcc	cag	acc		144
His	Asn	Val 35	Pro	Pro	Arg	Gln	Asp 40	Lys	Pro	Gly	Lys	Tyr 45	Ala	Gln	Thr		
gat	ccc	cag	atc	gag	gtt	gag	tac	cca	gaa	gat	cat	gag	ctc	cct	agc		192
Asp	Pro	Gln	Ile	Glu	Val	Glu	Tyr 55	Pro	Glu	Asp	His 60	Glu	Leu	Pro	Ser		
agt	gag	cct	gtc	tct	ggc	gct	ggg	ggc	cag	tat	gtg	aag	cca	act	ctg		240
Ser	Glu	Pro	Val	Ser	Gly 70	Ala	Gly	Gly	Gln	Tyr 75	Val	Lys	Pro	Thr	Leu 80		
ccc	acc	ttt	aca	ctc	gac	ggg	cat	gtt	ggc	atc	gtc	acc	ggg	ggg	gca		288
Pro	Thr	Phe	Thr	Leu 85	Asp	Gly	His	Val	Gly 90	Ile	Val	Thr	Gly	Gly 95	Ala		
cgt	ggg	ttg	ggg	ctt	gtt	atg	ggg	caa	gga	atg	gta	ttc	tct	gga	tcc		336
Arg	Gly	Leu	Gly 100	Leu	Val	Met	Gly	Gln 105	Gly	Met	Val	Phe	Ser 110	Gly	Ser		
aac	ctt	gct	ctt	gtt	gat	atg	aat	aag	gaa	gaa	gca	gag	aag	cag	act		384
Asn	Leu	Ala 115	Leu	Val	Asp	Met	Asn 120	Lys	Glu	Glu	Ala	Glu	Lys 125	Gln	Thr		
agc	ttg	atc	att	gaa	gag	ttc	aaa	aag	gag	aac	cct	cga	gcc	cga	cga		432
Ser	Leu	Ile 130	Ile	Glu	Glu	Phe 135	Lys	Lys	Glu	Asn	Pro 140	Arg	Ala	Arg	Arg		
atc	cca	aag	gtc	act	gcc	cat	tat	gct	gat	gta	tct	gat	cct	gaa	tct		480
Ile	Pro	Lys	Val	Thr	Ala 150	His	Tyr	Ala	Asp	Val 155	Ser	Asp	Pro	Glu	Ser 160		
gtc	gag	gct	tgt	gta	gcc	gag	gtt	gtt	aag	gag	cac	gga	aag	atc	gac		528
Val	Glu	Ala	Cys	Val 165	Ala	Glu	Val	Val	Lys 170	Glu	His	Gly	Lys	Ile 175	Asp		
aac	ctg	gtc	acc	tca	gct	ggc	ttc	acg	gag	aac	ttc	gaa	gcc	gtt	aac		576
Asn	Leu	Val 180	Thr	Ser	Ala	Gly	Phe	Thr 185	Glu	Asn	Phe	Glu	Ala 190	Val	Asn		
tac	ccc	atc	gac	cgt	ctc	cgt	aag	ctt	tgg	gct	gtt	aac	gtt	gac	ggg		624
Tyr	Pro	Ile 195	Asp	Arg	Leu	Arg	Lys 200	Leu	Trp	Ala	Val	Asn 205	Val	Asp	Gly		
aca	tat	ctc	ttt	gca	aca	tca	gtc	gcc	agg	cac	ttg	atg	caa	aga	aag		672
Thr	Tyr 210	Leu	Phe	Ala	Thr	Ser 215	Val	Ala	Arg	His	Leu 220	Met	Gln	Arg	Lys		
gct	cct	ggg	agc	atc	gtc	atg	att	ggg	agc	atg	tcc	gga	tcc	att	gtc		720
Ala	Pro	Gly	Ser	Ile 230	Val	Met	Ile	Gly	Ser	Met 235	Ser	Gly	Ser	Ile 240	Val		
aac	gtt	cct	cag	cct	cag	gct	ccc	tat	aat	gcc	gcc	aaa	gcc	ggg	gtg		768
Asn	Val	Pro	Gln	Pro 245	Gln	Ala	Pro	Tyr	Asn 250	Ala	Ala	Lys	Ala	Gly 255	Val		
cgc	cat	ctc	gct	gct	tcc	ttg	gcc	gtc	gaa	tgg	gct	cag	gca	aac	atc		816
Arg	His	Leu 260	Ala	Ala	Ser	Leu	Ala 265	Val	Glu	Trp	Ala	Gln	Ala 270	Asn	Ile		
cga	gtc	aac	tgc	atc	tct	ccc	ggg	tac	atg	ttg	act	gca	ctc	act	cag		864
Arg	Val 275	Asn	Cys	Ile	Ser	Pro	Gly 280	Tyr	Met	Leu	Thr	Ala 285	Leu	Thr	Gln		
aag	att	ctt	gac	gac	aac	ccg	gat	ctc	aag	gcc	aag	tgg	act	tcc	ctt		912
Lys	Ile 290	Leu	Asp	Asp	Asn	Pro 295	Asp	Leu	Lys	Ala 300	Lys	Trp	Thr	Ser	Leu		
atc	ccc	cag	ggc	aaa	atg	gga	caa	cca	cag	gac	ctc	atg	ggg	ccc	gtg		960
Ile	Pro	Gln	Gly	Lys	Met 310	Gly	Gln	Pro	Gln	Asp 315	Leu	Met	Gly	Pro	Val 320		
gca	ttc	ctc	cta	tca	gat	gct	tct	tcg	tat	gtg	act	ggg	gcc	gac	atc		1008
Ala	Phe	Leu	Leu	Ser 325	Asp	Ala	Ser	Ser	Tyr 330	Val	Thr	Gly	Ala 335	Asp	Ile		
cga	gtc	gat	ggc	ggc	tac	acc	gtt	acc	tag								1038
Arg	Val	Asp	Gly 340	Gly	Tyr	Thr	Val	Thr 345									

&lt;210&gt; 3072

&lt;211&gt; 345

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3072

Met Ser Phe Ala Pro Ser Leu Arg Leu Cys Val Arg Arg Val Ala Ala  
 1 5 10 15  
 Ser Pro Ala Ile Arg Pro Cys Phe Thr Phe Thr Ala Ala Arg Lys Leu  
 20 25 30  
 His Asn Val Pro Pro Arg Gln Asp Lys Pro Gly Lys Tyr Ala Gln Thr  
 35 40 45  
 Asp Pro Gln Ile Glu Val Glu Tyr Pro Glu Asp His Glu Leu Pro Ser  
 50 55 60  
 Ser Glu Pro Val Ser Gly Ala Gly Gly Gln Tyr Val Lys Pro Thr Leu  
 65 70 75 80  
 Pro Thr Phe Thr Leu Asp Gly His Val Gly Ile Val Thr Gly Gly Ala  
 85 90 95  
 Arg Gly Leu Gly Leu Val Met Gly Gln Gly Met Val Phe Ser Gly Ser  
 100 105 110  
 Asn Leu Ala Leu Val Asp Met Asn Lys Glu Glu Ala Glu Lys Gln Thr  
 115 120 125  
 Ser Leu Ile Ile Glu Glu Phe Lys Lys Glu Asn Pro Arg Ala Arg Arg  
 130 135 140  
 Ile Pro Lys Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Glu Ser  
 145 150 155 160  
 Val Glu Ala Cys Val Ala Glu Val Val Lys Glu His Gly Lys Ile Asp  
 165 170 175  
 Asn Leu Val Thr Ser Ala Gly Phe Thr Glu Asn Phe Glu Ala Val Asn  
 180 185 190  
 Tyr Pro Ile Asp Arg Leu Arg Lys Leu Trp Ala Val Asn Val Asp Gly  
 195 200 205  
 Thr Tyr Leu Phe Ala Thr Ser Val Ala Arg His Leu Met Gln Arg Lys  
 210 215 220  
 Ala Pro Gly Ser Ile Val Met Ile Gly Ser Met Ser Gly Ser Ile Val  
 225 230 235 240  
 Asn Val Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Gly Val  
 245 250 255  
 Arg His Leu Ala Ala Ser Leu Ala Val Glu Trp Ala Gln Ala Asn Ile  
 260 265 270  
 Arg Val Asn Cys Ile Ser Pro Gly Tyr Met Leu Thr Ala Leu Thr Gln  
 275 280 285  
 Lys Ile Leu Asp Asp Asn Pro Asp Leu Lys Ala Lys Trp Thr Ser Leu  
 290 295 300  
 Ile Pro Gln Gly Lys Met Gly Gln Pro Gln Asp Leu Met Gly Pro Val  
 305 310 315 320  
 Ala Phe Leu Leu Ser Asp Ala Ser Ser Tyr Val Thr Gly Ala Asp Ile  
 325 330 335  
 Arg Val Asp Gly Tyr Thr Val Thr  
 340 345

&lt;210&gt; 3073

&lt;211&gt; 1086

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1086)

&lt;400&gt; 3073

atg tct ttc gca gct cgc aat gcc ctc cgt ctg act cgg gct gcc gcc	48
Met Ser Phe Ala Ala Arg Asn Ala Leu Arg Leu Thr Arg Ala Ala Ala	
1 5 10 15	
cct gct ctc ccc aga aac gct gct cga tgc ttc tca gcc act cgt att	96
Pro Ala Leu Pro Arg Asn Ala Ala Arg Cys Phe Ser Ala Thr Arg Ile	
20 25 30	
cag cgt gtc aat gac aca aac atg aag aag aac gtg gtt cgt gag aag	144
Gln Arg Val Asn Asp Thr Asn Met Lys Lys Asn Val Val Arg Glu Lys	
35 40 45	
gag att cct gtc act gtc tac gct gca ggt cag ggt acc ggc gat aag	192
Glu Ile Pro Val Thr Val Tyr Ala Ala Gly Gln Gly Thr Gly Asp Lys	

## PhoenixTemp32470.tmp.txt

	50					55					60						
cac His 65	aca Thr	gtc Val	aac Asn	gta Val	tcc Ser 70	gag Glu	gct Ala	gct Ala	gct Ala	cgc Arg 75	att Ile	ccc Pro	agt Ser	gag Glu	act Thr 80		240
cct Pro	gtt Val	cct Pro	act Thr	cct Pro 85	gac Asp	agc Ser	gat Asp	gtg Val	gtt Val 90	cag Gln	ccc Pro	ctc Leu	acc Thr	cgc Arg 95	aag Lys		288
acc Thr	ttc Phe	gag Glu	caa Gln 100	ctc Leu	cct Pro	cag Gln	act Thr	atg Met 105	cgc Arg	aac Asn	atg Met	agt Ser	gtc Val 110	tac Tyr	ggc Gly		336
aag Lys	act Thr	atc Ile 115	tta Leu	ctc Leu	act Thr	ggg Gly	gct Ala 120	gcc Ala	cgt Arg	ggg Gly	ctc Leu	gga Gly 125	aac Asn	tac Tyr	atg Met		384
gct Ala	cgc Arg 130	gcc Ala	tgt Cys	gct Ala	gag Glu	gcc Ala 135	ggg Gly	gcc Ala	aag Lys	aac Asn	atc Ile 140	gtc Val	ctc Leu	ttt Phe	gat Asp		432
gcc Ala 145	aac Asn	cag Gln	gag Glu	ctt Leu	ggg Gly 150	gac Asp	caa Gln	gca Ala	gct Ala	gct Ala 155	gag Glu	ctt Leu	cat His	gac Asp	aag Lys 160		480
act Thr	ggc Gly	cta Leu	ccc Pro	gtc Val 165	tca Ser	ttc Phe	ttc Phe	aag Lys	gtc Val 170	gac Asp	gtc Val	cgt Arg	gac Asp	ggg Gly 175	gct Ala		528
gca Ala	atc Ile	aac Asn	gct Ala 180	gct Ala	gtc Val	gac Asp	gag Glu	gtt Val 185	gtt Val	gag Glu	cac His	tat Tyr	ggc Gly 190	gcc Ala	cct Pro		576
gat Asp	gtt Val	ctt Leu 195	gtc Val	aac Asn	tcg Ser	gcc Ala	ggg Gly 200	gtc Ile	gcc Ala	gat Asp	tca Ser	aac Asn 205	atc Ile	aag Lys	gct Ala		624
gag Glu	aca Thr 210	tac Tyr	gac Asp	cct Pro	gcc Ala	atg Met 215	ttt Phe	cgc Arg	cgt Arg	ctc Leu	att Ile 220	gac Asp	att Ile	aac Asn	ctc Leu		672
acg Thr 225	gga Gly	tct Ser	ttc Phe	ctc Leu	atg Met 230	tcc Ser	cag Gln	gcc Ala	gtc Val	ggg Gly 235	cgt Arg	gct Ala	atg Met	atg Met	gcc Ala 240		720
gct Ala	gga Gly	aag Lys	cct Pro	ggc Gly 245	agc Ser	atc Ile	atc Ile	ctg Leu	gtt Val 250	gct Ala	tct Ser	atg Met	tct Ser	ggc Gly 255	tca Ser		768
gtt Val	gtc Val	aac Asn	ttc Phe 260	cct Pro	cag Gln	gag Glu	cag Gln	agc Ser 265	tgc Cys	tac Tyr	aac Asn	gcc Ala 270	tcc Ser	aag Lys	gcg Ala		816
ggg Gly	gtc Val	atc Ile 275	caa Gln	ctc Leu	ggc Gly	aag Lys	tcc Ser 280	ctc Leu	gct Ala	gct Ala	gag Glu	tgg Trp 285	gct Ala	aag Lys	ttc Phe		864
gac Asp	atc Ile 290	cga Arg	gtc Val	aac Asn	tgt Cys	atc Ile 295	tcc Ser	cct Pro	gga Gly	tat Tyr	atg Met 300	gac Asp	act Thr	gct Ala	ctc Leu		912
aac Asn 305	cgt Arg	gta Val	ccc Pro	gct Ala	ctc Leu 310	gac Asp	gca Ala	cag Gln	aag Lys	aag Lys 315	atc Ile	tgg Trp	aag Lys	tct Ser	ctt Leu 320		960
act Thr	ccc Pro	cag Gln	aat Asn	cgc Arg 325	ctt Leu	ggg Gly	aac Asn	gtt Val	gac Asp 330	gag Glu	ctc Leu	aac Asn	ggg Gly	ctc Leu 335	tgc Cys		1008
atc Ile	ttc Phe	ctt Leu	gcc Ala 340	tcc Ser	gac Asp	tct Ser	tcc Ser	aag Lys 345	ttc Phe	atg Met	act Thr	ggg Gly 350	tcc Ser	aac Asn	tgc Cys		1056
atc Ile	atc Ile	gac Asp 355	ggg Gly	ggc Gly	tac Tyr	aca Thr	tgc Cys 360	tac Tyr	taa								1086

<210> 3074  
<211> 361  
<212> PRT  
<213> Gibberella zeae PH-1

<400> 3074  
Met Ser Phe Ala Ala Arg Asn Ala Leu Arg Leu Thr Arg Ala Ala Ala  
1 5 10 15  
Pro Ala Leu Pro Arg Asn Ala Ala Arg Cys Phe Ser Ala Thr Arg Ile  
20 25 30

## PhoenixTemp32470.tmp.txt

Gln Arg Val<sub>35</sub> Asn Asp Thr Asn Met<sub>40</sub> Lys Lys Asn Val<sub>45</sub> Val<sub>45</sub> Arg Glu Lys  
 Glu Ile<sub>50</sub> Pro Val Thr Val Tyr<sub>55</sub> Ala Ala Gly Gln Gly<sub>60</sub> Thr Gly Asp Lys  
 His Thr Val Asn Val Ser<sub>70</sub> Glu Ala Ala Ala Arg<sub>75</sub> Ile Pro Ser Glu Thr<sub>80</sub>  
 Pro Val Pro Thr<sub>85</sub> Asp Ser Asp Val<sub>90</sub> Gln Pro Leu Thr Arg<sub>95</sub> Lys  
 Thr Phe Glu Gln<sub>100</sub> Leu Pro Gln Thr Met<sub>105</sub> Arg Asn Met Ser Val Tyr Gly  
 Lys Thr Ile<sub>115</sub> Leu Leu Thr Gly Ala<sub>120</sub> Ala Arg Gly Leu Gly<sub>125</sub> Asn Tyr Met  
 Ala Arg<sub>130</sub> Ala Cys Ala Glu Ala<sub>135</sub> Gly Ala Lys Asn Ile<sub>140</sub> Val Leu Phe Asp  
 Ala Asn Gln Glu Leu Gly<sub>150</sub> Asp Gln Ala Ala Ala<sub>155</sub> Glu Leu His Asp Lys<sub>160</sub>  
 Thr Gly Leu Pro Val<sub>165</sub> Ser Phe Phe Lys Val<sub>170</sub> Asp Val Arg Asp Gly<sub>175</sub> Ala  
 Ala Ile Asn Ala<sub>180</sub> Val Val Asp Glu Val<sub>185</sub> Val Glu His Tyr Gly<sub>190</sub> Ala Pro  
 Asp Val Leu Val<sub>195</sub> Asn Ser Ala Gly<sub>200</sub> Ile Ala Asp Ser Asn Ile Lys Ala  
 Glu Thr Tyr Asp Pro Ala Met<sub>215</sub> Phe Arg Arg Leu Ile<sub>220</sub> Asp Ile Asn Leu  
 Thr Gly Ser Phe Leu Met<sub>230</sub> Ser Gln Ala Val Gly<sub>235</sub> Arg Ala Met Met Ala<sub>240</sub>  
 Ala Gly Lys Pro Gly<sub>245</sub> Ser Ile Ile Leu Val<sub>250</sub> Ala Ser Met Ser Gly<sub>255</sub> Ser  
 Val Val Asn Phe<sub>260</sub> Pro Gln Glu Gln Ser<sub>265</sub> Cys Tyr Asn Ala Ser Lys Ala  
 Gly Val Ile Gln Leu Gly Lys Ser<sub>280</sub> Leu Ala Ala Glu Trp<sub>285</sub> Ala Lys Phe  
 Asp Ile Arg Val Asn Cys Ile<sub>295</sub> Ser Pro Gly Tyr Met<sub>300</sub> Asp Thr Ala Leu  
 Asn Arg Val Pro Ala Leu<sub>310</sub> Asp Ala Gln Lys Lys<sub>315</sub> Ile Trp Lys Ser Leu<sub>320</sub>  
 Thr Pro Gln Asn Arg<sub>325</sub> Leu Gly Asn Val Asp<sub>330</sub> Glu Leu Asn Gly Leu Cys<sub>335</sub>  
 Ile Phe Leu Ala<sub>340</sub> Ser Asp Ser Ser Lys<sub>345</sub> Phe Met Thr Gly Ser<sub>350</sub> Asn Cys  
 Ile Ile Asp<sub>355</sub> Gly Gly Tyr Thr Cys<sub>360</sub> Tyr

&lt;210&gt; 3075

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 3075

atg	ttg	atg	cca	gca	ggt	ctt	ctc	gcc	aac	aag	act	gcc	atc	att	acc	48
Met	Leu	Met	Pro	Ala	Gly	Leu	Leu	Ala	Asn	Lys	Thr	Ala	Ile	Ile	Thr	
1				5				10						15		
ggc	ggc	acg	acg	ggt	att	ggt	cgt	gct	atc	tgc	ctc	gag	ttt	cta	cgg	96
Gly	Gly	Thr	Thr	Gly	Ile	Gly	Arg	Ala	Ile	Cys	Leu	Glu	Phe	Leu	Arg	
			20					25					30			
caa	ggc	gcc	aat	gtc	gtg	gta	aac	cac	ttg	ggc	ctt	gaa	aaa	gac	cag	144
Gln	Gly	Ala	Asn	Val	Val	Val	Asn	His	Leu	Gly	Leu	Glu	Lys	Asp	Gln	
			35				40					45				
act	cac	ctc	gac	tca	ctc	atc	gtc	gag	gcc	gac	gaa	atc	cga	aaa	gca	192
Thr	His	Leu	Asp	Ser	Leu	Ile	Val	Glu	Ala	Asp	Glu	Ile	Arg	Lys	Ala	
			50			55					60					
tca	ccc	act	gct	ggg	cac	ctc	gat	cac	caa	gcg	ggc	gac	gtt	cgt	gac	240
Ser	Pro	Thr	Ala	Gly	His	Leu	Asp	His	Gln	Ala	Gly	Asp	Val	Arg	Asp	
			65		70				75						80	
cca	gcg	aca	gcg	aca	gaa	tta	gtc	aaa	aag	gcc	gtc	gag	cac	tcc	ccc	288

## PhoenixTemp32470.tmp.txt

Pro	Ala	Thr	Ala	Thr	Glu	Leu	Val	Lys	Lys	Ala	Val	Glu	His	Ser	Pro	
aag	aag	cg	ctt	gac	atc	tgc	gtg	tct	aat	gcc	ggt	atc	tgc	aca	ttc	336
Lys	Lys	Arg	Leu	Asp	Ile	Cys	Val	Ser	Asn	Ala	Gly	Ile	Cys	Thr	Phe	
			100					105					110			
gct	gat	ttc	ctc	acg	ctc	gag	ccg	gat	ttg	ctt	cac	tca	acg	gtg	cga	384
Ala	Asp	Phe	Leu	Thr	Leu	Glu	Pro	Asp	Leu	Leu	His	Ser	Thr	Val	Arg	
			115					120				125				
aca	aac	ctg	gat	ggt	gcc	ttc	tac	gtg	act	cag	gct	gct	gca	cga	caa	432
Thr	Asn	Leu	Asp	Gly	Ala	Phe	Tyr	Val	Thr	Gln	Ala	Ala	Ala	Arg	Gln	
			130			135					140					
atg	gct	ctt	cac	caa	gag	ccc	aag	gga	gga	agt	atc	atc	ggc	gtc	tgc	480
Met	Ala	Leu	His	Gln	Glu	Pro	Lys	Gly	Gly	Ser	Ile	Ile	Gly	Val	Ser	
					150					155					160	
tcc	atc	tca	gcc	ctt	gtc	ggt	ggt	ggc	caa	cag	aca	cac	tat	aca	ccc	528
Ser	Ile	Ser	Ala	Leu	Val	Gly	Gly	Gly	Gln	Gln	Thr	His	Tyr	Thr	Pro	
				165					170					175		
acc	aag	gca	ggc	gtc	ttg	agc	ttg	atg	cag	agc	aca	gcg	tgc	gcc	ctg	576
Thr	Lys	Ala	Gly	Val	Leu	Ser	Leu	Met	Gln	Ser	Thr	Ala	Cys	Ala	Leu	
			180					185					190			
gga	gaa	cac	ggt	atc	cgg	tgc	aat	gcg	ctt	ctc	cca	ggc	acg	atc	cg	624
Gly	Glu	His	Gly	Ile	Arg	Cys	Asn	Ala	Leu	Leu	Pro	Gly	Thr	Ile	Arg	
			195				200					205				
acg	cag	ctt	aac	gac	gca	gac	ctg	gct	gat	gat	aca	aag	aga	gct	tat	672
Thr	Gln	Leu	Asn	Asp	Ala	Asp	Leu	Ala	Asp	Asp	Thr	Lys	Arg	Ala	Tyr	
			210			215					220					
atg	gaa	ggt	cg	atc	cct	tta	gga	cgt	act	ggt	tgc	ccc	tcc	gat	atg	720
Met	Glu	Gly	Arg	Ile	Pro	Leu	Gly	Arg	Thr	Gly	Ser	Pro	Ser	Asp	Met	
					230					235					240	
gct	ggc	ccg	gcc	gtc	ttt	ctg	gcg	tgt	cca	gag	ctg	agc	gga	tac	gtg	768
Ala	Gly	Pro	Ala	Val	Phe	Leu	Ala	Cys	Pro	Glu	Leu	Ser	Gly	Tyr	Val	
				245					250					255		
acg	ggt	gcg	cag	ctt	ctc	gtc	gat	ggt	ggt	ctg	ttc	gtc	aat	ctt	cag	816
Thr	Gly	Ala	Gln	Leu	Leu	Val	Asp	Gly	Gly	Leu	Phe	Val	Asn	Leu	Gln	
			260					265					270			
tga																819

&lt;210&gt; 3076

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3076

Met	Leu	Met	Pro	Ala	Gly	Leu	Leu	Ala	Asn	Lys	Thr	Ala	Ile	Ile	Thr	
1				5				10						15		
Gly	Gly	Thr	Thr	Gly	Ile	Gly	Arg	Ala	Ile	Cys	Leu	Glu	Phe	Leu	Arg	
			20					25					30			
Gln	Gly	Ala	Asn	Val	Val	Val	Asn	His	Leu	Gly	Leu	Glu	Lys	Asp	Gln	
			35				40					45				
Thr	His	Leu	Asp	Ser	Leu	Ile	Val	Glu	Ala	Asp	Glu	Ile	Arg	Lys	Ala	
						55					60					
Ser	Pro	Thr	Ala	Gly	His	Leu	Asp	His	Gln	Ala	Gly	Asp	Val	Arg	Asp	
65					70					75					80	
Pro	Ala	Thr	Ala	Thr	Glu	Leu	Val	Lys	Lys	Ala	Val	Glu	His	Ser	Pro	
				85					90					95		
Lys	Lys	Arg	Leu	Asp	Ile	Cys	Val	Ser	Asn	Ala	Gly	Ile	Cys	Thr	Phe	
			100					105					110			
Ala	Asp	Phe	Leu	Thr	Leu	Glu	Pro	Asp	Leu	Leu	His	Ser	Thr	Val	Arg	
			115				120					125				
Thr	Asn	Leu	Asp	Gly	Ala	Phe	Tyr	Val	Thr	Gln	Ala	Ala	Ala	Arg	Gln	
			130			135					140					
Met	Ala	Leu	His	Gln	Glu	Pro	Lys	Gly	Gly	Ser	Ile	Ile	Gly	Val	Ser	
145					150					155					160	
Ser	Ile	Ser	Ala	Leu	Val	Gly	Gly	Gly	Gln	Gln	Thr	His	Tyr	Thr	Pro	
				165					170					175		
Thr	Lys	Ala	Gly	Val	Leu	Ser	Leu	Met	Gln	Ser	Thr	Ala	Cys	Ala	Leu	
			180					185					190			

## PhoenixTemp32470.tmp.txt

Gly Glu His Gly Ile Arg Cys Asn Ala Leu Leu Pro Gly Thr Ile Arg  
 195 200 205  
 Thr Gln Leu Asn Asp Ala Asp Leu Ala Asp Thr Lys Arg Ala Tyr  
 210 215 220  
 Met Glu Gly Arg Ile Pro Leu Gly Arg Thr Gly Ser Pro Ser Asp Met  
 225 230 235 240  
 Ala Gly Pro Ala Val Phe Leu Ala Cys Pro Glu Leu Ser Gly Tyr Val  
 245 250 255  
 Thr Gly Ala Gln Leu Leu Val Asp Gly Gly Leu Phe Val Asn Leu Gln  
 260 265 270

&lt;210&gt; 3077

&lt;211&gt; 885

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(885)

&lt;400&gt; 3077

atg	tct	gat	ctt	cac	cct	ctc	aac	aga	ggt	aac	ttc	gtc	cac	gat	aac	48
Met	Ser	Asp	Leu	His	Pro	Leu	Asn	Arg	Gly	Asn	Phe	Val	His	Asp	Asn	
1				5					10					15		
aac	cgc	tta	gtc	gat	ggc	ggt	tct	atc	ctc	aag	cgt	ttc	tct	ctc	tca	96
Asn	Arg	Leu	Val	Asp	Gly	Gly	Ser	Ile	Leu	Lys	Arg	Phe	Ser	Leu	Ser	
			20					25					30			
ggc	aag	acc	gca	att	atc	act	ggc	gct	gct	gcc	ggt	att	ggc	ttc	tct	144
Gly	Lys	Thr	Ala	Ile	Ile	Thr	Gly	Ala	Ala	Ala	Gly	Ile	Gly	Phe	Ser	
			35				40					45				
att	gct	gaa	gca	tat	gcc	gag	act	ggt	gcc	aat	att	gct	att	tgg	tac	192
Ile	Ala	Glu	Ala	Tyr	Ala	Glu	Thr	Gly	Ala	Asn	Ile	Ala	Ile	Trp	Tyr	
			50			55				60						
cgt	acc	agc	aac	aag	gct	cag	gag	cgt	gcc	gaa	gag	ctc	tcc	aac	aag	240
Arg	Thr	Ser	Asn	Lys	Ala	Gln	Glu	Arg	Ala	Glu	Glu	Leu	Ser	Asn	Lys	
65				70						75					80	
tac	aat	gtc	act	gtc	aag	gcg	tat	cag	gtt	gat	atg	cga	gac	gcc	gaa	288
Tyr	Asn	Val	Thr	Val	Lys	Ala	Tyr	Gln	Val	Asp	Met	Arg	Asp	Ala	Glu	
			85					90						95		
gcc	gtt	gaa	cag	gcc	gtc	gac	caa	tca	gtc	aaa	gac	ctc	aac	ggt	cgg	336
Ala	Val	Glu	Gln	Ala	Val	Asp	Gln	Ser	Val	Lys	Asp	Leu	Asn	Gly	Arg	
			100					105					110			
cta	gat	atc	ttt	gtt	gcc	aat	gct	ggt	att	ccc	tgg	acc	aaa	ggc	cct	384
Leu	Asp	Ile	Phe	Val	Ala	Asn	Ala	Gly	Ile	Pro	Trp	Thr	Lys	Gly	Pro	
			115				120					125				
atg	gta	gat	ggc	ccc	att	gac	cac	tat	cgc	gat	gtt	gtc	cag	acc	aac	432
Met	Val	Asp	Gly	Pro	Ile	Asp	His	Tyr	Arg	Asp	Val	Val	Gln	Thr	Asn	
			130			135					140					
cta	gat	ggc	acc	tac	tac	tgt	gca	aag	tcc	gca	gcg	aag	cac	tgg	cgt	480
Leu	Asp	Gly	Thr	Tyr	Tyr	Cys	Ala	Lys	Ser	Ala	Ala	Lys	His	Trp	Arg	
145				150					155						160	
cgt	cag	aag	ctt	gag	ggt	act	gac	ctc	aac	ggc	caa	cct	cta	agc	aac	528
Arg	Gln	Lys	Leu	Glu	Gly	Thr	Asp	Leu	Asn	Gly	Gln	Pro	Leu	Ser	Asn	
				165				170						175		
tac	aca	tca	ggc	agt	ttc	att	gcc	acc	gct	tcc	atg	agc	gga	ggt	atc	576
Tyr	Thr	Ser	Gly	Ser	Phe	Ile	Ala	Thr	Ala	Ser	Met	Ser	Gly	Gly	Ile	
			180				185						190			
gtg	aat	att	cca	caa	ctt	cag	gct	gct	tat	aat	gcc	gcc	aag	gca	gga	624
Val	Asn	Ile	Pro	Gln	Leu	Gln	Ala	Ala	Tyr	Asn	Ala	Ala	Lys	Ala	Gly	
			195				200					205				
gtt	att	cat	ctc	atc	aag	agt	ttg	gct	gtt	gaa	tgg	gct	cgg	ttt	gct	672
Val	Ile	His	Leu	Ile	Lys	Ser	Leu	Ala	Val	Glu	Trp	Ala	Arg	Phe	Ala	
			210			215					220					
cga	gcc	aac	gcc	atc	tct	cct	ggt	tac	atc	atc	act	gag	atc	tcc	aac	720
Arg	Ala	Asn	Ala	Ile	Ser	Pro	Gly	Tyr	Ile	Ile	Thr	Glu	Ile	Ser	Asn	
225				230					235						240	
ttt	gtc	aac	cag	gag	acc	aaa	gac	atg	tgg	aag	gat	aag	att	ccc	gta	768
Phe	Val	Asn	Gln	Glu	Thr	Lys	Asp	Met	Trp	Lys	Asp	Lys	Ile	Pro	Val	
				245					250					255		

## PhoenixTemp32470.tmp.txt

ggt cgc gaa ggc gag cct cat gag ctt caa ggt gca tat cta ttc ctg 816  
 Gly Arg Glu Gly Glu Pro His Glu Leu Gln Gly Ala Tyr Leu Phe Leu  
 260 265 270  
 gca tca gac gct tcc acg tat gcc act ggt gcc aat ttt gtt atc gat 864  
 Ala Ser Asp Ala Ser Thr Tyr Ala Thr Gly Ala Asn Phe Val Ile Asp  
 275 280 285  
 ggt ggt tac agc gct cct tag 885  
 Gly Gly Tyr Ser Ala Pro  
 290

&lt;210&gt; 3078

&lt;211&gt; 294

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3078

Met Ser Asp Leu His Pro Leu Asn Arg Gly Asn Phe Val His Asp Asn  
 1 5 10 15  
 Asn Arg Leu Val Asp Gly Gly Ser Ile Leu Lys Arg Phe Ser Leu Ser  
 20 25 30  
 Gly Lys Thr Ala Ile Ile Thr Gly Ala Ala Gly Ile Gly Phe Ser  
 35 40 45  
 Ile Ala Glu Ala Tyr Ala Glu Thr Gly Ala Asn Ile Ala Ile Trp Tyr  
 50 55 60  
 Arg Thr Ser Asn Lys Ala Gln Glu Arg Ala Glu Glu Leu Ser Asn Lys  
 65 70 75 80  
 Tyr Asn Val Thr Val Lys Ala Tyr Gln Val Asp Met Arg Asp Ala Glu  
 85 90 95  
 Ala Val Glu Gln Ala Val Asp Gln Ser Val Lys Asp Leu Asn Gly Arg  
 100 105 110  
 Leu Asp Ile Phe Val Ala Asn Ala Gly Ile Pro Trp Thr Lys Gly Pro  
 115 120 125  
 Met Val Asp Gly Pro Ile Asp His Tyr Arg Asp Val Val Gln Thr Asn  
 130 135 140  
 Leu Asp Gly Thr Tyr Tyr Cys Ala Lys Ser Ala Lys His Trp Arg  
 145 150 155 160  
 Arg Gln Lys Leu Glu Gly Thr Asp Leu Asn Gly Gln Pro Leu Ser Asn  
 165 170 175  
 Tyr Thr Ser Gly Ser Phe Ile Ala Thr Ala Ser Met Ser Gly Gly Ile  
 180 185 190  
 Val Asn Ile Pro Gln Leu Gln Ala Tyr Asn Ala Ala Lys Ala Gly  
 195 200 205  
 Val Ile His Leu Ile Lys Ser Leu Ala Val Glu Trp Ala Arg Phe Ala  
 210 215 220  
 Arg Ala Asn Ala Ile Ser Pro Gly Tyr Ile Ile Thr Glu Ile Ser Asn  
 225 230 235 240  
 Phe Val Asn Gln Glu Thr Lys Asp Met Trp Lys Asp Lys Ile Pro Val  
 245 250 255  
 Gly Arg Glu Gly Glu Pro His Glu Leu Gln Gly Ala Tyr Leu Phe Leu  
 260 265 270  
 Ala Ser Asp Ala Ser Thr Tyr Ala Thr Gly Ala Asn Phe Val Ile Asp  
 275 280 285  
 Gly Gly Tyr Ser Ala Pro  
 290

&lt;210&gt; 3079

&lt;211&gt; 813

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(813)

&lt;400&gt; 3079

atg gac gtc cca ggc ttt gct ttg att aca gga ggc gcc tct gga atc 48  
 Met Asp Val Pro Gly Phe Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile  
 1 5 10 15  
 ggc cgt gcg tgt gct agg gct ttc gca aga gac ggg tct gct ggt atc 96  
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## PhoenixTemp32470.tmp.txt

Gly	Arg	Ala	Cys	Ala	Arg	Ala	Phe	Ala	Arg	Asp	Gly	Ser	Ala	Gly	Ile		
			20					25					30				
gcc	ctc	ata	gat	ctc	aat	ctc	gaa	gcg	cta	caa	gct	gtc	aag	tcc	gag	144	
Ala	Leu	Ile	Asp	Leu	Asn	Leu	Glu	Ala	Leu	Gln	Ala	Val	Lys	Ser	Glu		
		35					40					45					
ata	gaa	caa	gag	aag	cta	tca	cca	aac	aac	aat	ttt	cgg	att	gag	ctt	192	
Ile	Glu	Gln	Glu	Lys	Leu	Ser	Pro	Asn	Asn	Asn	Phe	Arg	Ile	Glu	Leu		
		50				55					60						
tac	cct	gca	gat	gtt	aca	gac	gag	acc	aga	atc	aat	gaa	atc	gtc	aac	240	
Tyr	Pro	Ala	Asp	Val	Thr	Asp	Glu	Thr	Arg	Ile	Asn	Glu	Ile	Val	Asn		
		65			70					75					80		
gac	atg	gtg	cag	aaa	ttt	ggg	cg	ata	gac	tac	gtc	gtc	aat	gca	gct	288	
Asp	Met	Val	Gln	Lys	Phe	Gly	Arg	Ile	Asp	Tyr	Val	Val	Asn	Ala	Ala		
				85					90					95			
ggc	atc	gcc	atc	aaa	cat	caa	ggg	gga	gca	gca	ttc	gct	caa	aca	gct	336	
Gly	Ile	Ala	Ile	Lys	His	Gln	Gly	Gly	Ala	Ala	Phe	Ala	Gln	Thr	Ala		
		100					105					110					
gac	tgg	aac	cgt	gtc	ctc	aac	att	aac	ctc	aac	gga	act	ttc	ttc	gtt	384	
Asp	Trp	Asn	Arg	Val	Leu	Asn	Ile	Asn	Leu	Asn	Gly	Thr	Phe	Phe	Val		
		115					120					125					
ctt	aga	gct	gct	gca	aga	gtc	atg	ctc	aag	caa	gac	cca	atc	aag	tca	432	
Leu	Arg	Ala	Ala	Ala	Arg	Val	Met	Leu	Lys	Gln	Asp	Pro	Ile	Lys	Ser		
		130				135					140						
tca	atc	aac	gga	agg	gat	cta	cag	cg	ggc	tcc	atc	atc	aac	ttt	tct	480	
Ser	Ile	Asn	Gly	Arg	Asp	Leu	Gln	Arg	Gly	Ser	Ile	Ile	Asn	Phe	Ser		
		145			150				155						160		
tcc	atc	cag	ggg	gtt	gtc	ggg	atc	cca	tta	tcc	acg	tcg	tac	act	gct	528	
Ser	Ile	Gln	Gly	Val	Val	Gly	Ile	Pro	Leu	Ser	Thr	Ser	Tyr	Thr	Ala		
				165				170						175			
gca	aag	cac	gcc	atc	atc	ggg	ctc	aca	cg	tct	gcc	tcg	gag	gat	tat	576	
Ala	Lys	His	Ala	Ile	Ile	Gly	Leu	Thr	Arg	Ser	Ala	Ser	Glu	Asp	Tyr		
			180				185						190				
gca	aag	gac	ggg	ctg	cg	atc	aat	gcc	atc	tgt	cct	ggg	tat	acg	gaa	624	
Ala	Lys	Asp	Gly	Leu	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Thr	Glu		
		195					200					205					
acg	cca	atg	aca	acg	aag	aat	ccg	gac	gta	ctc	aag	gcg	atg	caa	gag	672	
Thr	Pro	Met	Thr	Thr	Lys	Asn	Pro	Asp	Val	Leu	Lys	Ala	Met	Gln	Glu		
		210				215					220						
agg	ata	tct	acg	gcg	gtt	cct	atg	cat	agg	atg	gga	cag	cct	gag	gag	720	
Arg	Ile	Ser	Thr	Ala	Val	Pro	Met	His	Arg	Met	Gly	Gln	Pro	Glu	Glu		
		225			230					235				240			
att	gca	gat	ggg	gtg	ttg	tat	ttg	gct	gga	gga	aga	agc	tcg	ttt	gtc	768	
Ile	Ala	Asp	Gly	Val	Leu	Tyr	Leu	Ala	Gly	Gly	Arg	Ser	Ser	Phe	Val		
				245				250						255			
act	ggg	tca	gcc	ttg	gct	gtt	gat	gga	ggc	tac	act	cag	agg	tga		813	
Thr	Gly	Ser	Ala	Leu	Ala	Val	Asp	Gly	Gly	Tyr	Thr	Gln	Arg				
			260					265					270				

&lt;210&gt; 3080

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Gibberella zeae PH-1

&lt;400&gt; 3080

Met	Asp	Val	Pro	Gly	Phe	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile		
1				5				10						15			
Gly	Arg	Ala	Cys	Ala	Arg	Ala	Phe	Ala	Arg	Asp	Gly	Ser	Ala	Gly	Ile		
			20					25					30				
Ala	Leu	Ile	Asp	Leu	Asn	Leu	Glu	Ala	Leu	Gln	Ala	Val	Lys	Ser	Glu		
		35					40					45					
Ile	Glu	Gln	Glu	Lys	Leu	Ser	Pro	Asn	Asn	Asn	Phe	Arg	Ile	Glu	Leu		
		50				55					60						
Tyr	Pro	Ala	Asp	Val	Thr	Asp	Glu	Thr	Arg	Ile	Asn	Glu	Ile	Val	Asn		
					70					75					80		
Asp	Met	Val	Gln	Lys	Phe	Gly	Arg	Ile	Asp	Tyr	Val	Val	Asn	Ala	Ala		
				85					90					95			
Gly	Ile	Ala	Ile	Lys	His	Gln	Gly	Gly	Ala	Ala	Phe	Ala	Gln	Thr	Ala		
			100				105						110				
Asp	Trp	Asn	Arg	Val	Leu	Asn	Ile	Asn	Leu	Asn	Gly	Thr	Phe	Phe	Val		



## PhoenixTemp32470.tmp.txt

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      115      120      125
Leu Arg Ala Ala Arg Val Met Leu Lys Gln Asp Pro Ile Lys Ser
130 135 140
Ser Ile Asn Gly Arg Asp Leu Gln Arg Gly Ser Ile Ile Asn Phe Ser
145 150 155 160
Ser Ile Gln Gly Val Val Gly Ile Pro Leu Ser Thr Ser Tyr Thr Ala
165 170 175
Ala Lys His Ala Ile Ile Gly Leu Thr Arg Ser Ala Ser Glu Asp Tyr
180 185 190
Ala Lys Asp Gly Leu Arg Ile Asn Ala Ile Cys Pro Gly Tyr Thr Glu
195 200 205
Thr Pro Met Thr Thr Lys Asn Pro Asp Val Leu Lys Ala Met Gln Glu
210 215 220
Arg Ile Ser Thr Ala Val Pro Met His Arg Met Gly Gln Pro Glu Glu
225 230 235 240
Ile Ala Asp Gly Val Leu Tyr Leu Ala Gly Gly Arg Ser Ser Phe Val
245 250 255
Thr Gly Ser Ala Leu Ala Val Asp Gly Gly Tyr Thr Gln Arg
260 265 270

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&lt;210&gt; 3081

&lt;211&gt; 729

&lt;212&gt; DNA

&lt;213&gt; Gibberella zeae PH-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(729)

&lt;400&gt; 3081

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atg act tct ttc gac ggc aaa gtg att gcc gtg act ggc gct gca tcc      48
Met Thr Ser Phe Asp Gly Lys Val Ile Ala Val Thr Gly Ala Ala Ser
1 5 10 15
ggc atg ggt cta gcc act gcc caa ctc ctc gcg tcg aga gga gca ata      96
Gly Met Gly Leu Ala Thr Ala Gln Leu Leu Ala Ser Arg Gly Ala Ile
20 25 30
atc tct ctc gca gat atc aac gaa gaa gtc cta aag tcc gtc ctc gat      144
Ile Ser Leu Ala Asp Ile Asn Glu Glu Val Leu Lys Ser Val Leu Asp
35 40 45
tcg ctt cca ggt aat ggg cat att tat cag gta gtc gac gtc agt caa      192
Ser Leu Pro Gly Asn Gly His Ile Tyr Gln Val Val Asp Val Ser Gln
50 55 60
agt gaa tca gtg aat gca tgg atc aaa cag acc atc gac aag ttt ggc      240
Ser Glu Ser Val Asn Ala Trp Ile Lys Gln Thr Ile Asp Lys Phe Gly
65 70 75 80
aag cta gat ggt gct gtt aat atg gct ggt ata gct gaa ccg aca      288
Lys Leu Asp Gly Ala Val Asn Met Ala Gly Ile Ile Ala Glu Pro Thr
85 90 95
cca ctc act gag tac acc gat gaa gtc tgg gat agg atg ttt gca gtt      336
Pro Leu Thr Glu Tyr Thr Asp Glu Val Trp Asp Arg Met Phe Ala Val
100 105 110
aat aca cgg gga gta ttc aat tgt tta cgc gca gag ttg aag acc ata      384
Asn Thr Arg Gly Val Phe Asn Cys Leu Arg Ala Glu Leu Lys Thr Ile
115 120 125
acg gct ggt gga agt att gta tct gct gca agc gtc ttt ggt cag ttc      432
Thr Ala Gly Gly Ser Ile Val Ser Ala Ala Ser Val Phe Gly Gln Phe
130 135 140
gga gca ccc ggc cac gtc gct tac tgt gcc agc aaa gca gcc gtt att      480
Gly Ala Pro Gly His Val Ala Tyr Cys Ala Ser Lys Ala Ala Val Ile
145 150 155 160
gga ctg tcc agg acg gct gct aag gag aat gaa cat att cga gtg aac      528
Gly Leu Ser Arg Thr Ala Ala Lys Glu Asn Glu His Ile Arg Val Asn
165 170 175
tgt gtc tcg cca ggc tct gtg agc acc gct atg aat caa cac gat gac      576
Cys Val Ser Pro Gly Ser Val Ser Thr Ala Met Asn Gln His Asp Asp
180 185 190
ccc gag cat gtg aag cgt agt ctt gca ggg act gtg caa aaa agg agg      624
Pro Glu His Val Lys Arg Ser Leu Ala Gly Thr Val Gln Lys Arg Arg
195 200 205

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## PhoenixTemp32470.tmp.txt

gcg gaa cca att gaa gtc gct cgt gtt atc gct ttc ctt ctt agc gat	672
Ala Glu Pro Ile Glu Val Ala Arg Val Ile Ala Phe Leu Leu Ser Asp	
210 215 220	
gag gca tct ttc gtg aca ggt gct gtg tac aac gtg gat ggc ggt tgg	720
Glu Ala Ser Phe Val Thr Gly Ala Val Tyr Asn Val Asp Gly Gly Trp	
225 230 235 240	
gta tgc taa	729
Val Cys	

<210> 3082  
 <211> 242  
 <212> PRT  
 <213> Gibberella zeae PH-1

<400> 3082

Met Thr Ser Phe Asp Gly Lys Val Ile Ala Val Thr Gly Ala Ala Ser	
1 5 10 15	
Gly Met Gly Leu Ala Thr Ala Gln Leu Ala Ser Arg Gly Ala Ile	
20 25 30	
Ile Ser Leu Ala Asp Ile Asn Glu Glu Val Leu Lys Ser Val Leu Asp	
35 40 45	
Ser Leu Pro Gly Asn Gly His Ile Tyr Gln Val Val Asp Val Ser Gln	
50 55 60	
Ser Glu Ser Val Asn Ala Trp Ile Lys Gln Thr Ile Asp Lys Phe Gly	
65 70 75 80	
Lys Leu Asp Gly Ala Val Asn Met Ala Gly Ile Ile Ala Glu Pro Thr	
85 90 95	
Pro Leu Thr Glu Tyr Thr Asp Glu Val Trp Asp Arg Met Phe Ala Val	
100 105 110	
Asn Thr Arg Gly Val Phe Asn Cys Leu Arg Ala Glu Leu Lys Thr Ile	
115 120 125	
Thr Ala Gly Gly Ser Ile Val Ser Ala Ala Ser Val Phe Gly Gln Phe	
130 135 140	
Gly Ala Pro Gly His Val Ala Tyr Cys Ala Ser Lys Ala Ala Val Ile	
145 150 155 160	
Gly Leu Ser Arg Thr Ala Ala Lys Glu Asn Glu His Ile Arg Val Asn	
165 170 175	
Cys Val Ser Pro Gly Ser Val Ser Thr Ala Met Asn Gln His Asp Asp	
180 185 190	
Pro Glu His Val Lys Arg Ser Leu Ala Gly Thr Val Gln Lys Arg Arg	
195 200 205	
Ala Glu Pro Ile Glu Val Ala Arg Val Ile Ala Phe Leu Leu Ser Asp	
210 215 220	
Glu Ala Ser Phe Val Thr Gly Ala Val Tyr Asn Val Asp Gly Gly Trp	
225 230 235 240	
Val Cys	

<210> 3083  
 <211> 771  
 <212> DNA  
 <213> Kluyveromyces lactis NRRL Y-1140

<220>  
 <221> CDS  
 <222> (1)..(771)

<400> 3083

atg tca gaa tat tcg ttt gct gga aaa ata gcc ttg gtt aca gga gcc	48
Met Ser Glu Tyr Ser Phe Ala Gly Lys Ile Ala Leu Val Thr Gly Ala	
1 5 10 15	
tcc aca ggg gtt gga gag ggc att gct cgt gca ctt ttt gta aga gga	96
Ser Thr Gly Val Gly Glu Gly Ile Ala Arg Ala Leu Phe Val Arg Gly	
20 25 30	
gct act gtg gtc att act tcg aga cac tta tcc gaa gtg caa gag aca	144
Ala Thr Val Val Ile Thr Ser Arg His Leu Ser Glu Val Gln Glu Thr	
35 40 45	
gcg ggc aat att gat ccc agt ggg agc aga gtg att ggg aaa gaa gtg	192

## PhoenixTemp32470.tmp.txt

Ala	Gly	Asn	Ile	Asp	Pro	Ser	Gly	Ser	Arg	Val	Ile	Gly	Lys	Glu	Val		
	50					55					60						
gat	gta	act	gtt	gca	aaa	gcg	gtg	gaa	gac	tta	atc	caa	gag	ata	aga		240
Asp	Val	Thr	Val	Ala	Lys	Ala	Val	Glu	Asp	Leu	Ile	Gln	Glu	Ile	Arg		
	65				70					75					80		
gaa	gaa	ttt	gga	gca	tta	cac	tat	tta	gta	aat	aat	gca	gga	att	aca		288
Glu	Glu	Phe	Gly	Ala	Leu	His	Tyr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr		
				85				90						95			
ggt	cct	cat	cag	aca	gga	att	gaa	gat	tac	gat	att	gat	tcc	tgg	agg		336
Gly	Pro	His	Gln	Thr	Gly	Ile	Glu	Asp	Tyr	Asp	Ile	Asp	Ser	Trp	Arg		
			100				105					110					
caa	gtc	att	gat	acg	aac	att	aat	ggt	acc	ttc	tac	aca	cta	aaa	tat		384
Gln	Val	Ile	Asp	Thr	Asn	Ile	Asn	Gly	Thr	Phe	Tyr	Thr	Leu	Lys	Tyr		
		115					120					125					
gcg	cta	cca	ttg	atg	gaa	agc	tct	tcg	agt	cca	gac	tct	gag	gca	gcg		432
Ala	Leu	Pro	Leu	Met	Glu	Ser	Ser	Ser	Ser	Pro	Asp	Ser	Glu	Ala	Ala		
	130				135					140							
gtg	gtg	aat	ctc	tct	gca	gtt	aat	ggt	ctt	ggt	att	ccc	ggt	att			480
Val	Val	Asn	Leu	Ser	Ala	Val	Asn	Gly	Leu	Val	Gly	Ile	Pro	Gly	Ile		
	145				150			155						160			
tcc	ccg	tat	aca	gca	acg	aag	cat	gca	gta	ata	ggg	ata	act	cag	agt		528
Ser	Pro	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Ile	Gly	Ile	Thr	Gln	Ser		
				165				170						175			
gtt	gca	tta	gaa	tac	gca	gaa	aga	aat	ggt	aga	gtg	aac	gca	gtt	gcg		576
Val	Ala	Leu	Glu	Tyr	Ala	Glu	Arg	Asn	Val	Arg	Val	Asn	Ala	Val	Ala		
			180					185				190					
cca	gga	tat	gtt	tcc	aca	ccc	aag	att	caa	gct	ttg	cca	aag	gaa	acg		624
Pro	Gly	Tyr	Val	Ser	Thr	Pro	Lys	Ile	Gln	Ala	Leu	Pro	Lys	Glu	Thr		
		195					200					205					
caa	caa	tggt	atg	tcg	agt	cag	cac	ccg	atg	aag	cgt	atg	gca	aca	atg		672
Gln	Gln	Trp	Met	Ser	Ser	Gln	His	Pro	Met	Lys	Arg	Met	Ala	Thr	Met		
	210					215					220						
aca	gaa	gtt	tcg	aac	act	gtc	tta	ttc	tta	ctt	tcc	cca	ctg	acc	ggt		720
Thr	Glu	Val	Ser	Asn	Thr	Val	Leu	Phe	Leu	Leu	Ser	Pro	Leu	Thr	Gly		
	225				230				235					240			
ttc	act	aca	ggt	tca	gtg	tat	cca	atc	gat	ggt	gga	ttt	ttg	gct	cag		768
Phe	Thr	Thr	Gly	Ser	Val	Tyr	Pro	Ile	Asp	Gly	Gly	Phe	Leu	Ala	Gln		
				245					250					255			
tga																	771

&lt;210&gt; 3084

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;400&gt; 3084

Met	Ser	Glu	Tyr	Ser	Phe	Ala	Gly	Lys	Ile	Ala	Leu	Val	Thr	Gly	Ala		
				5					10					15			
Ser	Thr	Gly	Val	Gly	Glu	Gly	Ile	Ala	Arg	Ala	Leu	Phe	Val	Arg	Gly		
			20					25					30				
Ala	Thr	Val	Val	Ile	Thr	Ser	Arg	His	Leu	Ser	Glu	Val	Gln	Glu	Thr		
			35				40					45					
Ala	Gly	Asn	Ile	Asp	Pro	Ser	Gly	Ser	Arg	Val	Ile	Gly	Lys	Glu	Val		
	50					55					60						
Asp	Val	Thr	Val	Ala	Lys	Ala	Val	Glu	Asp	Leu	Ile	Gln	Glu	Ile	Arg		
	65				70					75				80			
Glu	Glu	Phe	Gly	Ala	Leu	His	Tyr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr		
				85				90						95			
Gly	Pro	His	Gln	Thr	Gly	Ile	Glu	Asp	Tyr	Asp	Ile	Asp	Ser	Trp	Arg		
			100					105				110					
Gln	Val	Ile	Asp	Thr	Asn	Ile	Asn	Gly	Thr	Phe	Tyr	Thr	Leu	Lys	Tyr		
		115					120					125					
Ala	Leu	Pro	Leu	Met	Glu	Ser	Ser	Ser	Ser	Pro	Asp	Ser	Glu	Ala	Ala		
	130					135					140						
Val	Val	Asn	Leu	Ser	Ala	Val	Asn	Gly	Leu	Val	Gly	Ile	Pro	Gly	Ile		
	145				150				155					160			
Ser	Pro	Tyr	Thr	Ala	Thr	Lys	His	Ala	Val	Ile	Gly	Ile	Thr	Gln	Ser		

## PhoenixTemp32470.tmp.txt

Val Ala Leu Glu Tyr Ala Glu Arg Asn Val Arg Val Asn Ala Val Ala  
 165 170 175  
 Pro Gly Tyr Val Ser Thr Pro Lys Ile Gln Ala Leu Pro Lys Glu Thr  
 180 185 190  
 Gln Gln Trp Met Ser Ser Gln His Pro Met Lys Arg Met Ala Thr Met  
 195 200 205  
 Thr Glu Val Ser Asn Thr Val Leu Phe Leu Leu Ser Pro Leu Thr Gly  
 210 215 220 225 230 235 240  
 Phe Thr Thr Gly Ser Val Tyr Pro Ile Asp Gly Gly Phe Leu Ala Gln  
 245 250 255

&lt;210&gt; 3085

&lt;211&gt; 870

&lt;212&gt; DNA

&lt;213&gt; Debaryomyces hansenii CBS767

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(870)

&lt;400&gt; 3085

atg	aca	ctc	ccc	gat	aag	aga	gaa	aca	gac	att	act	gtg	ggt	tca	tac	48
Met	Thr	Leu	Pro	Asp	Lys	Arg	Glu	Thr	Asp	Ile	Thr	Val	Val	Ser	Tyr	
1				5					10					15		
att	tcc	aac	gaa	ttc	acg	gat	gag	ctc	cct	aga	gca	tcg	cca	cca	aaa	96
Ile	Ser	Asn	Glu	Phe	Thr	Asp	Glu	Leu	Pro	Arg	Ala	Ser	Pro	Pro	Lys	
			20					25					30			
aga	cac	ata	atg	gac	ttg	ttg	tct	tta	aaa	ggt	aaa	gta	gca	ggt	gtc	144
Arg	His	Ile	Met	Asp	Leu	Leu	Ser	Leu	Lys	Gly	Lys	Val	Ala	Val	Val	
			35				40					45				
acc	ggt	gct	gcg	aga	ggt	att	ggc	ctt	gcg	att	gcg	gaa	acg	ttt	gct	192
Thr	Gly	Ala	Ala	Arg	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Glu	Thr	Phe	Ala	
	50					55				60						
gaa	gca	ggt	gct	gct	gtc	gcc	ctt	gta	gat	tac	acc	gac	tgc	tca	gag	240
Glu	Ala	Gly	Ala	Ala	Val	Ala	Leu	Val	Asp	Tyr	Thr	Asp	Cys	Ser	Glu	
	65				70					75					80	
caa	gct	ctc	aag	tta	gca	acc	agg	ctc	aag	gtg	tgt	acc	aag	gca	ttc	288
Gln	Ala	Leu	Lys	Leu	Ala	Thr	Arg	Leu	Lys	Val	Cys	Thr	Lys	Ala	Phe	
				85					90					95		
caa	tgt	gac	gtt	gcc	gat	tta	aaa	cga	gtc	gaa	gga	aca	gtt	cag	gcc	336
Gln	Cys	Asp	Val	Ala	Asp	Leu	Lys	Arg	Val	Glu	Gly	Thr	Val	Gln	Ala	
			100					105					110			
atc	gaa	aag	gaa	ttt	ggt	acc	att	gat	gtt	ttt	gtc	gct	aat	gct	ggt	384
Ile	Glu	Lys	Glu	Phe	Gly	Thr	Ile	Asp	Val	Phe	Val	Ala	Asn	Ala	Gly	
		115					120					125				
ata	gta	tgg	aaa	act	ggt	aac	atc	ata	gac	gaa	gtc	aac	cga	gat	ggt	432
Ile	Val	Trp	Lys	Thr	Gly	Asn	Ile	Ile	Asp	Glu	Val	Asn	Arg	Asp	Gly	
	130					135					140					
aag	act	tgg	caa	act	att	atg	gat	gtt	aac	ttg	aac	ggt	gct	tac	tac	480
Lys	Thr	Trp	Gln	Thr	Ile	Met	Asp	Val	Asn	Leu	Asn	Gly	Ala	Tyr	Tyr	
	145				150					155				160		
tgt	gcc	cag	gcg	gtt	ggc	aga	ata	ttt	aag	aaa	aat	ggt	aaa	ggc	tct	528
Cys	Ala	Gln	Ala	Val	Gly	Arg	Ile	Phe	Lys	Lys	Asn	Gly	Lys	Gly	Ser	
				165					170					175		
ttc	att	gtt	act	tcc	tcc	atg	tct	gct	tct	att	gtc	aat	att	cct	atg	576
Phe	Ile	Val	Thr	Ser	Ser	Met	Ser	Ala	Ser	Ile	Val	Asn	Ile	Pro	Met	
			180					185					190			
aac	ttg	acc	cca	tat	aac	gtc	agc	aaa	gct	ggt	gtt	aaa	cat	ctt	gcc	624
Asn	Leu	Thr	Pro	Tyr	Asn	Val	Ser	Lys	Ala	Gly	Val	Lys	His	Leu	Ala	
		195					200					205				
aaa	tcc	tta	gct	atc	gaa	tgg	gct	ggt	ttt	gct	aga	gca	aac	tcc	att	672
Lys	Ser	Leu	Ala	Ile	Glu	Trp	Ala	Gly	Phe	Ala	Arg	Ala	Asn	Ser	Ile	
	210					215					220					
tct	cca	ggt	tat	tgc	gac	act	ggt	ctt	aac	gat	cat	tta	cca	aga	gaa	720
Ser	Pro	Gly	Tyr	Cys	Asp	Thr	Gly	Leu	Asn	Asp	His	Leu	Pro	Arg	Glu	
	225				230					235					240	
tcc	cgt	ggt	aag	atg	tgg	gct	cta	atc	cca	gct	ggc	aga	gaa	gct	tta	768
Ser	Arg	Gly	Lys	Met	Trp	Ala	Leu	Ile	Pro	Ala	Gly	Arg	Glu	Ala	Leu	

## PhoenixTemp32470.tmp.txt

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      245      250      255
cca tac gaa atc gcc agt gct tat tta tac ttg gct tct gac gct gct      816
Pro Tyr Glu Ile Ala Ser Ala Tyr Leu Tyr Leu Ala Ser Asp Ala Ala
      260      265      270
tct tat att acc ggt tct gac ata gcc att gat ggt ggc tac aca tcc      864
Ser Tyr Ile Thr Gly Ser Asp Ile Ala Ile Asp Gly Gly Tyr Thr Ser
      275      280      285
atc taa
ile
      870

```

<210> 3086  
 <211> 289  
 <212> PRT  
 <213> Debaryomyces hansenii CBS767

```

<400> 3086
Met Thr Leu Pro Asp Lys Arg Glu Thr Asp Ile Thr Val Val Ser Tyr
1      5      10      15
Ile Ser Asn Glu Phe Thr Asp Glu Leu Pro Arg Ala Ser Pro Pro Lys
      20      25      30
Arg His Ile Met Asp Leu Leu Ser Leu Lys Gly Lys Val Ala Val Val
      35      40      45
Thr Gly Ala Ala Arg Gly Ile Gly Leu Ala Ile Ala Glu Thr Phe Ala
      50      55      60
Glu Ala Gly Ala Ala Val Ala Leu Val Asp Tyr Thr Asp Cys Ser Glu
65      70      75      80
Gln Ala Leu Lys Leu Ala Thr Arg Leu Lys Val Cys Thr Lys Ala Phe
      85      90      95
Gln Cys Asp Val Ala Asp Leu Lys Arg Val Glu Gly Thr Val Gln Ala
      100      105      110
Ile Glu Lys Glu Phe Gly Thr Ile Asp Val Phe Val Ala Asn Ala Gly
      115      120      125
Ile Val Trp Lys Thr Gly Asn Ile Ile Asp Glu Val Asn Arg Asp Gly
      130      135      140
Lys Thr Trp Gln Thr Ile Met Asp Val Asn Leu Asn Gly Ala Tyr Tyr
145      150      155      160
Cys Ala Gln Ala Val Gly Arg Ile Phe Lys Lys Asn Gly Lys Gly Ser
      165      170      175
Phe Ile Val Thr Ser Ser Met Ser Ala Ser Ile Val Asn Ile Pro Met
      180      185      190
Asn Leu Thr Pro Tyr Asn Val Ser Lys Ala Gly Val Lys His Leu Ala
      195      200      205
Lys Ser Leu Ala Ile Glu Trp Ala Gly Phe Ala Arg Ala Asn Ser Ile
      210      215      220
Ser Pro Gly Tyr Cys Asp Thr Gly Leu Asn Asp His Leu Pro Arg Glu
225      230      235      240
Ser Arg Gly Lys Met Trp Ala Leu Ile Pro Ala Gly Arg Glu Ala Leu
      245      250      255
Pro Tyr Glu Ile Ala Ser Ala Tyr Leu Tyr Leu Ala Ser Asp Ala Ala
      260      265      270
Ser Tyr Ile Thr Gly Ser Asp Ile Ala Ile Asp Gly Gly Tyr Thr Ser
      275      280      285
ile

```

<210> 3087  
 <211> 825  
 <212> DNA  
 <213> Yarrowia lipolytica CLIB122

<220>  
 <221> CDS  
 <222> (1)..(825)

```

<400> 3087
atg ttc ttg aga ccg cta cag aac tcc cag aga gtg ata aac cca ctc
Met Phe Leu Arg Pro 5      10      15
1

```

48

## PhoenixTemp32470.tmp.txt

```

gtt cga aag tac tca ata tcc gcg tct tct ctc tct gga aaa acc gct      96
Val Arg Lys Tyr 20 Ser Ile Ser Ala Ser 25 Ser Leu Ser Gly Lys 30 Thr Ala
ctg gtg acc ggc ggt tcg gga gga atc ggg cta gtc att gct aag aag      144
Leu Val Thr 35 Gly Gly Ser Gly 40 Gly Ile Gly Leu Val Ile 45 Ala Lys Lys
ctg gca gca aac gga gct cga gtg atc ctg ctt gct aga gat gaa acc      192
Leu 50 Ala Ala Asn Gly Ala Arg 55 Val Ile Leu Leu 60 Arg Asp Glu Thr
aag ttg aat gga gct ctg gag gag ctg aca cac act ctt aag gat gag      240
Lys 65 Leu Asn Gly Ala Leu 70 Glu Glu Leu Thr His 75 Thr Leu Lys Asp Glu
cag aca caa agg gat atc aca cag acc gcc cac agc acg ata tct tac      288
Gln Thr Gln Arg 85 Ile Thr Gln Thr 90 Ala His Ser Thr Ile Ser Tyr
gac att gct aaa gca acg aca cca cca gaa atc gac ttc aag atg gta      336
Asp Ile Ala Lys 100 Ala Thr Thr Pro Pro 105 Glu Ile Asp Phe Lys 110 Met Val
gat ctg ctc gtc aac tgt gcc gga gtc acg caa aca tcg ctg ctt atg      384
Asp Leu Leu 115 Val Asn Cys Ala Gly 120 Val Thr Gln Thr Ser Leu Leu Met
acc acc aaa aac att gac cag atc atc ggc aca aat ctc gcc gga gcc      432
Thr Thr Lys Asn Ile Asp Gln Ile Ile Gly Thr Asn 140 Leu Ala Gly Ala
att aaa atg agc cag tat gcc atg cgt ccg tgg atg aaa cga aag tcg      480
Ile Lys Met Ser Gln Tyr 150 Ala Met Arg Pro Trp Met Lys Arg Lys Ser
ggc tgt att gtc aac atc tcc tcg gtt ttg gga tta cgt ggc ctt aca      528
Gly Cys Ile Val Asn 165 Ile Ser Ser Val Leu Gly Leu Arg Gly 175 Leu Thr
ggc ggg tct acg gtc tac agt gca gcc aag gct ggt ctt gtg ggc ttc      576
Gly Gly Ser Thr 180 Val Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Phe
acg aag gct ctc gcg gtc gaa gtg ggc gct aga ggt atc cgt gtc aat      624
Thr Lys Ala Leu Ala Val Glu Val 200 Gly Ala Arg Gly Ile Arg Val Asn
tgc gtg tgt cct gga ctg gtc gag acg gaa atg aca cag aac gtg act      672
Cys Val Cys Pro Gly Leu Val 215 Glu Thr Glu Met Thr 220 Gln Asn Val Thr
gtc cag aat ggg ttt gcg aca cct ctt cag ggc atg gga aag gat aat      720
Val Gln Asn Gly Phe 230 Thr Pro Leu Gln Gly Met Gly Lys Asp Asn
tac gta tct gct gac tcg gtg gcc gac gct gtc ctc tac ctt gct gct      768
Tyr Val Ser Ala Asp 245 Ser Val Ala Asp Ala Val Leu Tyr Leu Ala Ala
agt gag gag cag acc gga agc att ctc acc ata gac aag ggc ttg tct      816
Ser Glu Glu Gln Thr 260 Gly Ser Ile Leu 265 Thr Ile Asp Lys Gly Leu Ser
gcg gta tag      825
Ala Val

```

&lt;210&gt; 3088

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;400&gt; 3088

```

Met Phe Leu Arg Pro Leu Gln Asn Ser Gln Arg Val Ile Asn Pro Leu
1 5 10 15
Val Arg Lys Tyr 20 Ser Ile Ser Ala Ser 25 Ser Leu Ser Gly Lys 30 Thr Ala
Leu Val Thr 35 Gly Gly Ser Gly 40 Ile Gly Leu Val Ile 45 Ala Lys Lys
Leu Ala Ala Asn Gly Ala Arg Val Ile Leu Leu Ala Arg Asp Glu Thr
50 55 60
Lys Leu Asn Gly Ala Leu Glu Glu Leu Thr His 75 Thr Leu Lys Asp Glu
65 70 80
Gln Thr Gln Arg Asp Ile Thr Gln Thr Ala His Ser Thr Ile Ser Tyr

```

## PhoenixTemp32470.tmp.txt

85 90 95  
 Asp Ile Ala Lys Thr Thr Pro Pro Glu Ile Asp Phe Lys Met Val  
 100 105 110  
 Asp Leu Leu Val Asn Cys Ala Gly Val Thr Gln Thr Ser Leu Leu Met  
 115 120 125  
 Thr Thr Lys Asn Ile Asp Gln Ile Ile Gly Thr Asn Leu Ala Gly Ala  
 130 135 140  
 Ile Lys Met Ser Gln Tyr Ala Met Arg Pro Trp Met Lys Arg Lys Ser  
 145 150 155 160  
 Gly Cys Ile Val Asn Ile Ser Ser Val Leu Gly Leu Arg Gly Leu Thr  
 165 170 175  
 Gly Gly Ser Thr Val Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Phe  
 180 185 190  
 Thr Lys Ala Leu Ala Val Glu Val Gly Ala Arg Gly Ile Arg Val Asn  
 195 200 205  
 Cys Val Cys Pro Gly Leu Val Glu Thr Glu Met Thr Gln Asn Val Thr  
 210 215 220  
 Val Gln Asn Gly Phe Ala Thr Pro Leu Gln Gly Met Gly Lys Asp Asn  
 225 230 235 240  
 Tyr Val Ser Ala Asp Ser Val Ala Asp Ala Val Leu Tyr Leu Ala Ala  
 245 250 255  
 Ser Glu Glu Gln Thr Gly Ser Ile Leu Thr Ile Asp Lys Gly Leu Ser  
 260 265 270  
 Ala Val

&lt;210&gt; 3089

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;400&gt; 3089

atg tcc aac tcc gcc aaa gcc gct gtc gtg ccc ccc gcc ccc acc gcc	48
Met Ser Asn Ser Ala Lys Ala Ala Val Val Pro Pro Ala Pro Thr Ala	
1 5 10	
gaa gat atc gcc cga gcc aac gcc gga tcc aag gaa gag ccc gtt ttc	96
Glu Asp Ile Ala Arg Ala Asn Ala Gly Ser Lys Glu Glu Pro Val Phe	
20 25 30	
cag gct aag aac ttt ctg tcc aag ttc cga ctc gat ggc aag gta gcc	144
Gln Ala Lys Asn Phe Leu Ser Lys Phe Arg Leu Asp Gly Lys Val Ala	
35 40 45	
att gtg act ggt gga gct cga gga ctc gga ttc tcc atg gcc gag ggt	192
Ile Val Thr Gly Gly Ala Arg Gly Leu Gly Phe Ser Met Ala Glu Gly	
50 55 60	
ctg tgt tcg gtc ggc ctc aag ggc att gcc att ctg gat gtg cag cag	240
Leu Cys Ser Val Gly Leu Lys Gly Ile Ala Ile Leu Asp Val Gln Gln	
65 70 75 80	
gac ctg ggt ctg gat gcc att gag aag ctg cac aag gcc tac gga gtg	288
Asp Leu Gly Leu Asp Ala Ile Glu Lys Leu His Lys Ala Tyr Gly Val	
85 90 95	
cag gcc cag ttc tac aag gcc gac gtc cga gac gag gag tcc gtc aac	336
Gln Ala Gln Phe Tyr Lys Ala Asp Val Arg Asp Glu Glu Ser Val Asn	
100 105 110	
gag atc atc gac cga gtt gtg cac gat ctc ggg tcc gtc gac gtt gtg	384
Glu Ile Ile Asp Arg Val Val His Asp Leu Gly Ser Val Asp Val Val	
115 120 125	
gtc aac tcc gcc ggt gtt gct gac ctt gtt cac gca gct gag tac ccc	432
Val Asn Ser Ala Gly Val Ala Asp Leu Val His Ala Ala Glu Tyr Pro	
130 135 140	
gca gac aag ttc cga cga gtc atc gac atc aac ctt aac gga tcc ttc	480
Ala Asp Lys Phe Arg Arg Val Ile Asp Ile Asn Leu Asn Gly Ser Phe	
145 150 155 160	
ttg gtg acc cag gcc gcc gcc cga cac atg atc aag cag ggc acc ggc	528
Leu Val Thr Gln Ala Ala Ala Arg His Met Ile Lys Gln Gly Thr Gly	
165 170 175	

## PhoenixTemp32470.tmp.txt

gga	acc	gtg	gtg	ttc	atc	gcc	tcc	atg	tcc	gga	tcc	att	gtc	aac	tgg	576
Gly	Thr	Val	Val	Phe	Ile	Ala	Ser	Met	Ser	Gly	Ser	Ile	Val	Asn	Trp	
			180					185					190			
ccc	cag	cct	cag	agc	gct	tac	aac	gcc	tcc	aag	gct	gcc	gtc	aag	cac	624
Pro	Gln	Pro	Gln	Ser	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Lys	His	
		195					200					205				
ctg	tct	aag	tcg	ctg	gcc	gcc	gag	tgg	gcc	gtc	cac	aac	atc	cga	tgc	672
Leu	Ser	Lys	Ser	Leu	Ala	Ala	Glu	Trp	Ala	Val	His	Asn	Ile	Arg	Cys	
		210				215					220					
aac	tcc	atc	tcg	cct	gga	tac	atg	gat	acc	gct	ctt	aac	cga	gcc	tac	720
Asn	Ser	Ile	Ser	Pro	Gly	Tyr	Met	Asp	Thr	Ala	Leu	Asn	Arg	Ala	Tyr	
		225			230					235					240	
aac	act	ctg	ttt	gag	gag	tgg	aag	gac	cga	acc	ccc	ctc	ggc	cga	ctc	768
Asn	Thr	Leu	Phe	Glu	Glu	Trp	Lys	Asp	Arg	Thr	Pro	Leu	Gly	Arg	Leu	
				245					250					255		
gga	gac	ccc	gac	gag	ctc	acc	ggc	gcc	tgc	atc	tac	ctg	gct	tcc	gat	816
Gly	Asp	Pro	Asp	Glu	Leu	Thr	Gly	Ala	Cys	Ile	Tyr	Leu	Ala	Ser	Asp	
			260					265					270			
gcc	tct	tcg	gtg	acc	gga	tcc	gac	att	atc	att	gat	ggg	ggg	ggg	tac	864
Ala	Ser	Ser	Tyr	Val	Thr	Gly	Ser	Asp	Ile	Ile	Ile	Asp	Gly	Gly	Tyr	
		275				280						285				
act	att	att	taa													876
Thr	Ile	Ile														
		290														

&lt;210&gt; 3090

&lt;211&gt; 291

&lt;212&gt; PRT

&lt;213&gt; Yarrowia lipolytica CLIB122

&lt;400&gt; 3090

Met	Ser	Asn	Ser	Ala	Lys	Ala	Ala	Val	Val	Pro	Pro	Ala	Pro	Thr	Ala	
1				5				10						15		
Glu	Asp	Ile	Ala	Arg	Ala	Asn	Ala	Gly	Ser	Lys	Glu	Glu	Pro	Val	Phe	
			20					25					30			
Gln	Ala	Lys	Asn	Phe	Leu	Ser	Lys	Phe	Arg	Leu	Asp	Gly	Lys	Val	Ala	
		35					40					45				
Ile	Val	Thr	Gly	Gly	Ala	Arg	Gly	Leu	Gly	Phe	Ser	Met	Ala	Glu	Gly	
		50				55					60					
Leu	Cys	Ser	Val	Gly	Leu	Lys	Gly	Ile	Ala	Ile	Leu	Asp	Val	Gln	Gln	
65					70					75					80	
Asp	Leu	Gly	Leu	Asp	Ala	Ile	Glu	Lys	Leu	His	Lys	Ala	Tyr	Gly	Val	
				85					90					95		
Gln	Ala	Gln	Phe	Tyr	Lys	Ala	Asp	Val	Arg	Asp	Glu	Glu	Ser	Val	Asn	
			100					105					110			
Glu	Ile	Ile	Asp	Arg	Val	Val	His	Asp	Leu	Gly	Ser	Val	Asp	Val	Val	
		115					120					125				
Val	Asn	Ser	Ala	Gly	Val	Ala	Asp	Leu	Val	His	Ala	Ala	Glu	Tyr	Pro	
		130				135					140					
Ala	Asp	Lys	Phe	Arg	Arg	Val	Ile	Asp	Ile	Asn	Leu	Asn	Gly	Ser	Phe	
145				150						155					160	
Leu	Val	Thr	Gln	Ala	Ala	Ala	Arg	His	Met	Ile	Lys	Gln	Gly	Thr	Gly	
			165						170					175		
Gly	Thr	Val	Val	Phe	Ile	Ala	Ser	Met	Ser	Gly	Ser	Ile	Val	Asn	Trp	
			180					185					190			
Pro	Gln	Pro	Gln	Ser	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Lys	His	
		195					200					205				
Leu	Ser	Lys	Ser	Leu	Ala	Ala	Glu	Trp	Ala	Val	His	Asn	Ile	Arg	Cys	
		210				215					220					
Asn	Ser	Ile	Ser	Pro	Gly	Tyr	Met	Asp	Thr	Ala	Leu	Asn	Arg	Ala	Tyr	
225					230					235					240	
Asn	Thr	Leu	Phe	Glu	Glu	Trp	Lys	Asp	Arg	Thr	Pro	Leu	Gly	Arg	Leu	
			245						250					255		
Gly	Asp	Pro	Asp	Glu	Leu	Thr	Gly	Ala	Cys	Ile	Tyr	Leu	Ala	Ser	Asp	
			260					265					270			
Ala	Ser	Ser	Tyr	Val	Thr	Gly	Ser	Asp	Ile	Ile	Ile	Asp	Gly	Gly	Tyr	
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Thr	Ile	Ile														
		290														



<210> 3091  
 <211> 942  
 <212> DNA  
 <213> Yarrowia lipolytica CLIB122

<220>  
 <221> CDS  
 <222> (1)..(942)

<400> 3091  
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 Met Val Ser Ser Ala Ala Thr Ser Ala Leu Pro Ile Ser Ala Pro Tyr  
 1 5 10 15  
 acc ttc tac cct cag gct cga gtt cct gcc ccc aag aag ctc gtt gga 96  
 Thr Phe Tyr Pro Gln Ala Arg Val Pro Ala Pro Lys Lys Leu Val Gly  
 20 25 30  
 ctc aat gct gct ctg gag gcc cag aag aac ccc gag ttc gag gtg aag 144  
 Leu Asn Ala Ala Leu Glu Ala Gln Lys Asn Pro Glu Phe Glu Val Lys  
 35 40 45  
 ccc gag atc ttt aag gag ttc tct ctg ccc gac ggt gtt gcc att gtc 192  
 Pro Glu Ile Phe Lys Glu Phe Ser Leu Pro Asp Gly Val Ala Ile Val  
 50 55 60  
 acc ggt gga aac tcc ggt att ggt ctt gag tac tca gtc tgc ctc gcc 240  
 Thr Gly Gly Asn Ser Gly Ile Gly Leu Glu Tyr Ser Val Cys Leu Ala  
 65 70 75 80  
 gag ctc ggt gcc act gtc tac tgt ctt gac atg ccc gag act ccc tct 288  
 Glu Leu Gly Ala Thr Val Tyr Cys Leu Asp Met Pro Glu Thr Pro Ser  
 85 90 95  
 gag gag ttc ctg gct tgc cag tcc tac gtt aag cga atg ccc ggc aac 336  
 Glu Glu Phe Leu Ala Cys Gln Ser Tyr Val Lys Arg Met Pro Gly Asn  
 100 105 110  
 gcc tct ctg gtc ttc aag cga gcc gac gtc act gac gag gag act atg 384  
 Ala Ser Leu Val Phe Lys Arg Ala Asp Val Thr Asp Glu Glu Thr Met  
 115 120 125  
 aac tcc ctc ttc cag aac att gcc gag acc cac ggc aag att gac gtt 432  
 Asn Ser Leu Phe Gln Asn Ile Ala Glu Thr His Gly Lys Ile Asp Val  
 130 135 140  
 gtc atc gct aac gcc ggt gtg ctt gga cct cga gcc tct tgc aac gag 480  
 Val Ile Ala Asn Ala Gly Val Leu Gly Pro Arg Ala Ser Cys Asn Glu  
 145 150 155 160  
 tac ccc gct gac tgg ttc cga aag gtc atg gac gtc aac gtc acc ggt 528  
 Tyr Pro Ala Asp Trp Phe Arg Lys Val Met Asp Val Asn Val Thr Gly  
 165 170 175  
 gtc ttt atc acc gcc cag gcc gcc tct cga cag atg att gcc acc aag 576  
 Val Phe Ile Thr Ala Gln Ala Ala Ser Arg Gln Met Ile Ala Thr Lys  
 180 185 190  
 act tct ggt tct atc att gtc acc gcc tcc atg tcc ggc tcc att gtc 624  
 Thr Ser Gly Ser Ile Ile Val Thr Ala Ser Met Ser Gly Ser Ile Val  
 195 200 205  
 aac cga gac atg ccc tgg tgc gcc tac aac gcc tcc aag gcc gct gct 672  
 Asn Arg Asp Met Pro Trp Cys Ala Tyr Asn Ala Ser Lys Ala Ala Ala  
 210 215 220  
 gct cat ctt gtc aag tcc atg gct gct gag ctc ggc cag ttt gag att 720  
 Ala His Leu Val Lys Ser Met Ala Ala Glu Leu Gly Gln Phe Glu Ile  
 225 230 235 240  
 cga gtc aac tcc atc tcc ccc ggt cac atc cag act gct atg act gac 768  
 Arg Val Asn Ser Ile Ser Pro Gly His Ile Gln Thr Ala Met Thr Asp  
 245 250 255  
 gtc tgt ctt gac gct gag ccc ggt ctt ggt aac cag tgg gcc ttc cag 816  
 Val Cys Leu Asp Ala Glu Pro Gly Leu Gly Asn Gln Trp Ala Phe Gln  
 260 265 270  
 aac ccc atg ggc cga ctt gga ggt gtc tcc gag ctt cga gga gtc tgc 864  
 Asn Pro Met Gly Arg Leu Gly Gly Val Ser Glu Leu Arg Gly Val Cys  
 275 280 285  
 gcc tac ctt gca tct tcc gcc tcc tcc tac acc acc ggc tct gac att 912  
 Ala Tyr Leu Ala Ser Ser Ala Ser Ser Tyr Thr Thr Gly Ser Asp Ile  
 290 295 300  
 ctt gtc tgc ggt ggc cac cac gtc tgg taa 942

Leu Val Cys Gly Gly His His Val Trp  
305 310

<210> 3092  
<211> 313  
<212> PRT  
<213> Yarrowia lipolytica CLIB122

<400> 3092  
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Thr Phe Tyr Pro Gln Ala Arg Val Pro Ala Pro Lys Lys Leu Val Gly  
20 25 30  
Leu Asn Ala Ala Leu Glu Ala Gln Lys Asn Pro Glu Phe Glu Val Lys  
35 40 45  
Pro Glu Ile Phe Lys Glu Phe Ser Leu Pro Asp Gly Val Ala Ile Val  
50 55 60  
Thr Gly Gly Asn Ser Gly Ile Gly Leu Glu Tyr Ser Val Cys Leu Ala  
65 70 75 80  
Glu Leu Gly Ala Thr Val Tyr Cys Leu Asp Met Pro Glu Thr Pro Ser  
85 90 95  
Glu Glu Phe Leu Ala Cys Gln Ser Tyr Val Lys Arg Met Pro Gly Asn  
100 105 110  
Ala Ser Leu Val Phe Lys Arg Ala Asp Val Thr Asp Glu Thr Met  
115 120 125  
Asn Ser Leu Phe Gln Asn Ile Ala Glu Thr His Gly Lys Ile Asp Val  
130 135 140  
Val Ile Ala Asn Ala Gly Val Leu Gly Pro Arg Ala Ser Cys Asn Glu  
145 150 155 160  
Tyr Pro Ala Asp Trp Phe Arg Lys Val Met Asp Val Asn Val Thr Gly  
165 170 175  
Val Phe Ile Thr Ala Gln Ala Ala Ser Arg Gln Met Ile Ala Thr Lys  
180 185 190  
Thr Ser Gly Ser Ile Ile Val Thr Ala Ser Met Ser Gly Ser Ile Val  
195 200 205  
Asn Arg Asp Met Pro Trp Cys Ala Tyr Asn Ala Ser Lys Ala Ala Ala  
210 215 220  
Ala His Leu Val Lys Ser Met Ala Ala Glu Leu Gly Gln Phe Glu Ile  
225 230 235 240  
Arg Val Asn Ser Ile Ser Pro Gly His Ile Gln Thr Ala Met Thr Asp  
245 250 255  
Val Cys Leu Asp Ala Glu Pro Gly Leu Gly Asn Gln Trp Ala Phe Gln  
260 265 270  
Asn Pro Met Gly Arg Leu Gly Gly Val Ser Glu Leu Arg Gly Val Cys  
275 280 285  
Ala Tyr Leu Ala Ser Ser Ala Ser Ser Tyr Thr Thr Gly Ser Asp Ile  
290 295 300  
Leu Val Cys Gly Gly His His Val Trp  
305 310

<210> 3093  
<211> 864  
<212> DNA  
<213> Aspergillus nidulans FGSC A4

<220>  
<221> CDS  
<222> (1)..(864)

<400> 3093  
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Met Ser Val Ser Ile Glu Thr Thr Ser Thr Pro Val Val Pro Leu Lys  
1 5 10 15  
cag gag gca ccc gca gtt gct acc acc aat aga ctg ccc gag ttc agt 96  
Gln Glu Ala Pro Ala Val Ala Thr Thr Asn Arg Leu Pro Glu Phe Ser  
20 25 30  
ctg gcc gga aag gtc gtt tgc gtt tcc ggt ggt gct cgt ggc ctt gga 144  
Leu Ala Gly Lys Val Val Cys Val Ser Gly Gly Ala Arg Gly Leu Gly  
35 40 45

## PhoenixTemp32470.tmp.txt

ttg	acc	cag	gca	gag	gct	ctg	ctt	gaa	gcc	ggt	gcc	cgc	gtc	tac	gct	192
Leu	Thr	Gln	Ala	Glu	Ala	Leu	Leu	Glu	Ala	Gly	Ala	Arg	Val	Tyr	Ala	
	50					55				60						
ctt	gac	cgt	ctc	gag	gag	cct	tct	ccc	gat	ttc	tac	act	att	cag	aag	240
Leu	Asp	Arg	Leu	Glu	Glu	Pro	Ser	Pro	Asp	Phe	Tyr	Thr	Ile	Gln	Lys	
65				70					75					80		
cgt	gcc	aga	gag	gaa	ctc	ggc	act	gag	ctc	cag	tac	cgc	cgc	atc	gat	288
Arg	Ala	Arg	Glu	Glu	Leu	Gly	Thr	Glu	Leu	Gln	Tyr	Arg	Arg	Ile	Asp	
				85				90						95		
gtt	cgt	gac	aca	gag	ctc	ttg	cac	agc	act	atc	gaa	gca	atc	gcc	aac	336
Val	Arg	Asp	Thr	Glu	Leu	Leu	His	Ser	Thr	Ile	Glu	Ala	Ile	Ala	Asn	
			100				105						110			
gcc	gag	ggt	cgc	atg	gat	ggc	ttg	gtg	gct	gct	gga	att	cag	cag		384
Ala	Glu	Gly	Arg	Met	Asp	Gly	Leu	Val	Ala	Ala	Ala	Gly	Ile	Gln	Gln	
		115					120					125				
gag	acc	cct	gcc	ctg	gag	tac	aca	gcc	caa	gac	gcc	aac	agg	atg	ttc	432
Glu	Thr	Pro	Ala	Leu	Glu	Tyr	Thr	Ala	Gln	Asp	Ala	Asn	Arg	Met	Phe	
		130				135					140					
gaa	gtc	aat	atc	acc	ggt	gtc	atg	atg	acc	gcg	caa	gcg	ggt	gct	aaa	480
Glu	Val	Asn	Ile	Thr	Gly	Val	Met	Met	Thr	Ala	Gln	Ala	Val	Ala	Lys	
145				150					155						160	
cag	atg	att	cgc	ttt	gga	aac	gga	gga	agc	att	gca	ctg	att	gcc	agt	528
Gln	Met	Ile	Arg	Phe	Gly	Asn	Gly	Gly	Ser	Ile	Ala	Leu	Ile	Ala	Ser	
				165					170					175		
atg	agc	ggc	act	att	gcc	aat	cgc	ggt	ctc	atc	tgc	tct	gcc	tac	aac	576
Met	Ser	Gly	Thr	Ile	Ala	Asn	Arg	Gly	Leu	Ile	Cys	Ser	Ala	Tyr	Asn	
			180					185					190			
gct	agc	aaa	gcg	gcc	gtc	atc	caa	ctc	gcc	cgc	aac	ctt	gcc	tcc	gag	624
Ala	Ser	Lys	Ala	Ala	Val	Ile	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Ser	Glu	
		195					200					205				
tgg	ggc	cag	tac	aac	atc	cgt	gtc	aac	act	atc	tct	ccc	ggt	tat	atc	672
Trp	Gly	Gln	Tyr	Asn	Ile	Arg	Val	Asn	Thr	Ile	Ser	Pro	Gly	Tyr	Ile	
		210				215					220					
gtc	acc	gct	atg	gtt	gag	cag	ctc	ttc	gtc	cag	tac	ccc	gag	cgc	cgc	720
Val	Thr	Ala	Met	Val	Glu	Gln	Leu	Phe	Val	Gln	Tyr	Pro	Glu	Arg	Arg	
225				230					235					240		
gac	gag	tgg	ccc	aag	cac	aac	atg	ctt	gga	cgt	ctg	tcc	tct	ccg	cag	768
Asp	Glu	Trp	Pro	Lys	His	Asn	Met	Leu	Gly	Arg	Leu	Ser	Ser	Pro	Gln	
				245				250					255			
gag	tac	cgc	gga	gca	gct	gtc	ttc	ctt	ctc	agc	gat	gct	agc	agt	ttc	816
Glu	Tyr	Arg	Gly	Ala	Ala	Val	Phe	Leu	Leu	Ser	Asp	Ala	Ser	Ser	Phe	
			260				265						270			
atg	acc	gga	agc	gac	ctg	cgc	atc	gat	gga	ggc	cac	gcc	gcg	tgg		861
Met	Thr	Gly	Ser	Asp	Leu	Arg	Ile	Asp	Gly	Gly	His	Ala	Ala	Trp		
		275					280					285				
tag																864

&lt;210&gt; 3094

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 3094

Met	Ser	Val	Ser	Ile	Glu	Thr	Thr	Ser	Thr	Pro	Val	Val	Pro	Leu	Lys	
1				5				10						15		
Gln	Glu	Ala	Pro	Ala	Val	Ala	Thr	Thr	Asn	Arg	Leu	Pro	Glu	Phe	Ser	
			20				25						30			
Leu	Ala	Gly	Lys	Val	Val	Cys	Val	Ser	Gly	Gly	Ala	Arg	Gly	Leu	Gly	
		35				40						45				
Leu	Thr	Gln	Ala	Glu	Ala	Leu	Leu	Glu	Ala	Gly	Ala	Arg	Val	Tyr	Ala	
		50				55					60					
Leu	Asp	Arg	Leu	Glu	Glu	Pro	Ser	Pro	Asp	Phe	Tyr	Thr	Ile	Gln	Lys	
65				70					75					80		
Arg	Ala	Arg	Glu	Glu	Leu	Gly	Thr	Glu	Leu	Gln	Tyr	Arg	Arg	Ile	Asp	
				85				90						95		
Val	Arg	Asp	Thr	Glu	Leu	Leu	His	Ser	Thr	Ile	Glu	Ala	Ile	Ala	Asn	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Ala Glu Gly Arg Met Asp Gly Leu Val Ala Ala Ala Gly Ile Gln Gln  
 115 120 125  
 Glu Thr Pro Ala Leu Glu Tyr Thr Ala Gln Asp Ala Asn Arg Met Phe  
 130 135 140  
 Glu Val Asn Ile Thr Gly Val Met Met Thr Ala Gln Ala Val Ala Lys  
 145 150 155 160  
 Gln Met Ile Arg Phe Gly Asn Gly Gly Ser Ile Ala Leu Ile Ala Ser  
 165 170 175  
 Met Ser Gly Thr Ile Ala Asn Arg Gly Leu Ile Cys Ser Ala Tyr Asn  
 180 185 190  
 Ala Ser Lys Ala Ala Val Ile Gln Leu Ala Arg Asn Leu Ala Ser Glu  
 195 200 205  
 Trp Gly Gln Tyr Asn Ile Arg Val Asn Thr Ile Ser Pro Gly Tyr Ile  
 210 215 220  
 Val Thr Ala Met Val Glu Gln Leu Phe Val Gln Tyr Pro Glu Arg Arg  
 225 230 235 240  
 Asp Glu Trp Pro Lys His Asn Met Leu Gly Arg Leu Ser Ser Pro Gln  
 245 250 255  
 Glu Tyr Arg Gly Ala Ala Val Phe Leu Ser Asp Ala Ser Ser Phe  
 260 265 270  
 Met Thr Gly Ser Asp Leu Arg Ile Asp Gly Gly His Ala Ala Trp  
 275 280 285

&lt;210&gt; 3095

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 3095

atg gcc acc aac ggg tcc tca tgc tca gaa gcg acg ccc gtc gtc agc	48
Met Ala Thr Asn Gly Ser Ser Ser Ser Glu Ala Thr Pro Val Val Ser	
1 5 10 15	
acg ctt ccc ggt cct gac cat aac tgg cag gtt acg ctt gct gga aag	96
Thr Leu Pro Gly Pro Asp His Asn Trp Gln Val Thr Leu Ala Gly Lys	
20 25 30	
gtc att gcc atc acc ggt gca aac caa ggc att ggg ctc ggg atc gca	144
Val Ile Ala Ile Thr Gly Ala Asn Gln Gly Ile Gly Leu Gly Ile Ala	
35 40 45	
gaa gtc att ctg gcc aac tct gca gcg cac gtc tac tct ctc gac atc	192
Glu Val Ile Leu Ala Asn Ser Ala Ala His Val Tyr Ser Leu Asp Ile	
50 55 60	
tcc acg ccc ggc gac ccc ttt aac gag ctc gcg cag aag aac ccg aag	240
Ser Thr Pro Gly Asp Pro Phe Asn Glu Leu Ala Gln Lys Asn Pro Lys	
65 70 75 80	
cgc ttc tcc ttc atc cag aca gac gtg acc tct gaa gaa tcc gtc cag	288
Arg Phe Ser Phe Ile Gln Thr Asp Val Thr Ser Glu Glu Ser Val Gln	
85 90 95	
gct gct ctc gac cag atc gtc tct gaa caa ggc cgg ttg gac ggg atg	336
Ala Ala Leu Asp Gln Ile Val Ser Glu Gln Gly Arg Leu Asp Gly Met	
100 105 110	
att gcc aat gcc ggc gca aca aag cac cag ccc gcg ttg gac ttc acc	384
Ile Ala Asn Ala Gly Ala Thr Lys His Gln Pro Ala Leu Asp Phe Thr	
115 120 125	
atg gat cag gtc aag cgc ctc ttc gag ctc aac gtc ttc ggt gcc tgg	432
Met Asp Gln Val Lys Arg Leu Phe Glu Leu Asn Val Phe Gly Ala Trp	
130 135 140	
aac tgc gca act gcg gcg gcg aag aca ttc atc aaa ctc ggc atc aag	480
Asn Cys Ala Thr Ala Ala Lys Thr Phe Ile Lys Leu Gly Ile Lys	
145 150 155 160	
ggc tca att gtc ttt act gct agc atg aca tct tac aga ccg aac cgc	528
Gly Ser Ile Val Phe Thr Ala Ser Met Thr Ser Tyr Arg Pro Asn Arg	
165 170 175	
gcg gcg ccg agc gcg cca tat gga ggc acg aaa gcg gcg gta cgg aac	576
Ala Ala Pro Ser Ala Pro Tyr Gly Thr Lys Ala Ala Val Arg Asn	
180 185 190	

## PhoenixTemp32470.tmp.txt

atg	acg	cat	acc	ttg	gcg	atg	gag	tgg	gcg	aag	cat	gga	atc	cgg	gtg	624
Met	Thr	His	Thr	Leu	Ala	Met	Glu	Trp	Ala	Lys	His	Gly	Ile	Arg	Val	
		195					200					205				
aac	agt	atc	tcg	ccc	ggg	ttt	gtg	aag	act	gca	ttg	acg	tat	tat	gtt	672
Asn	Ser	Ile	Ser	Pro	Gly	Phe	Val	Lys	Thr	Ala	Leu	Thr	Tyr	Tyr	Val	
		210				215					220					
gag	aca	agt	ccc	gac	tgg	gat	acc	aag	atg	aag	tac	tat	ggg	ggg	atg	720
Glu	Thr	Ser	Pro	Asp	Trp	Asp	Thr	Lys	Met	Lys	Tyr	Tyr	Gly	Gly	Met	
225					230					235					240	
ccg	aga	ctg	gcg	att	ccg	cag	gag	tgg	ggg	ggc	gcg	tat	gtt	tac	ctg	768
Pro	Arg	Leu	Ala	Ile	Pro	Gln	Glu	Leu	Gly	Gly	Ala	Tyr	Val	Tyr	Leu	
			245						250					255		
ctt	agt	gac	act	gcg	acg	tat	acg	acg	gga	atc	gat	att	cca	att	gcg	816
Leu	Ser	Asp	Thr	Ala	Thr	Tyr	Thr	Thr	Gly	Ile	Asp	Ile	Pro	Ile	Ala	
			260					265					270			
ggg	atc	gtg	ggg	gct	tgg	tag										837
Gly	Ile	Val	Gly	Ala	Trp											
		275														

&lt;210&gt; 3096

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 3096

Met	Ala	Thr	Asn	Gly	Ser	Ser	Ser	Ser	Glu	Ala	Thr	Pro	Val	Val	Ser	
1				5					10					15		
Thr	Leu	Pro	Gly	Pro	Asp	His	Asn	Trp	Gln	Val	Thr	Leu	Ala	Gly	Lys	
			20					25					30			
Val	Ile	Ala	Ile	Thr	Gly	Ala	Asn	Gln	Gly	Ile	Gly	Leu	Gly	Ile	Ala	
		35					40					45				
Glu	Val	Ile	Leu	Ala	Asn	Ser	Ala	Ala	His	Val	Tyr	Ser	Leu	Asp	Ile	
	50				55					60						
Ser	Thr	Pro	Gly	Asp	Pro	Phe	Asn	Glu	Leu	Ala	Gln	Lys	Asn	Pro	Lys	
65				70				75						80		
Arg	Phe	Ser	Phe	Ile	Gln	Thr	Asp	Val	Thr	Ser	Glu	Glu	Ser	Val	Gln	
			85					90						95		
Ala	Ala	Leu	Asp	Gln	Ile	Val	Ser	Glu	Gln	Gly	Arg	Leu	Asp	Gly	Met	
		100					105					110				
Ile	Ala	Asn	Ala	Gly	Ala	Thr	Lys	His	Gln	Pro	Ala	Leu	Asp	Phe	Thr	
		115					120					125				
Met	Asp	Gln	Val	Lys	Arg	Leu	Phe	Glu	Leu	Asn	Val	Phe	Gly	Ala	Trp	
	130					135				140						
Asn	Cys	Ala	Thr	Ala	Ala	Ala	Lys	Thr	Phe	Ile	Lys	Leu	Gly	Ile	Lys	
145				150					155					160		
Gly	Ser	Ile	Val	Phe	Thr	Ala	Ser	Met	Thr	Ser	Tyr	Arg	Pro	Asn	Arg	
			165					170						175		
Ala	Ala	Pro	Ser	Ala	Pro	Tyr	Gly	Gly	Thr	Lys	Ala	Ala	Val	Arg	Asn	
		180					185						190			
Met	Thr	His	Thr	Leu	Ala	Met	Glu	Trp	Ala	Lys	His	Gly	Ile	Arg	Val	
		195				200						205				
Asn	Ser	Ile	Ser	Pro	Gly	Phe	Val	Lys	Thr	Ala	Leu	Thr	Tyr	Tyr	Val	
	210					215					220					
Glu	Thr	Ser	Pro	Asp	Trp	Asp	Thr	Lys	Met	Lys	Tyr	Tyr	Gly	Gly	Met	
225				230					235						240	
Pro	Arg	Leu	Ala	Ile	Pro	Gln	Glu	Leu	Gly	Gly	Ala	Tyr	Val	Tyr	Leu	
			245						250					255		
Leu	Ser	Asp	Thr	Ala	Thr	Tyr	Thr	Thr	Gly	Ile	Asp	Ile	Pro	Ile	Ala	
		260						265					270			
Gly	Ile	Val	Gly	Ala	Trp											
		275														

&lt;210&gt; 3097

&lt;211&gt; 885

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(885)

&lt;400&gt; 3097

atg	gct	tcc	cgt	ctc	tcc	caa	cta	aac	gct	cac	ctc	aac	tac	ccg	cgc	48
Met	Ala	Ser	Arg	Leu	Ser	Gln	Leu	Asn	Ala	His	Leu	Asn	Tyr	Pro	Arg	
1				5					10					15		
ggc	ctc	cta	gcc	gac	caa	gtc	gcc	atc	acc	ggc	gca	ggc	caa	ggc	96	
Gly	Leu	Leu	Ala	Asp	Gln	Val	Ala	Ile	Thr	Gly	Ala	Gly	Gln	Gly		
			20					25				30				
att	ggt	gca	gaa	gca	gcg	cgc	cta	ttc	gca	aac	gag	ggc	gca	aag	gtc	144
Ile	Gly	Ala	Glu	Ala	Ala	Arg	Leu	Phe	Ala	Asn	Glu	Gly	Ala	Lys	Val	
		35					40				45					
gtg	att	gct	gat	atc	gac	ggc	gaa	aag	gcc	aac	gct	gtc	gcc	aac	gcc	192
Val	Ile	Ala	Asp	Ile	Asp	Gly	Glu	Lys	Ala	Asn	Ala	Val	Ala	Asn	Ala	
		50				55					60					
atc	aac	tcc	gcc	tca	cct	aat	cgc	gct	att	gcc	gtc	gtt	ggc	gac	atc	240
Ile	Asn	Ser	Ala	Ser	Pro	Asn	Arg	Ala	Ile	Ala	Val	Val	Gly	Asp	Ile	
		65			70					75					80	
ctt	aac	gac	aag	tac	atc	acg	act	ctt	gtt	gaa	aag	gcc	gcc	gaa	ttc	288
Leu	Asn	Asp	Lys	Tyr	Ile	Thr	Thr	Leu	Val	Glu	Lys	Ala	Ala	Glu	Phe	
				85					90					95		
ggg	aac	ggc	aag	atc	cac	att	atc	gtc	aat	aat	gcg	ggt	ttt	acg	tgg	336
Gly	Asn	Gly	Lys	Ile	His	Ile	Ile	Val	Asn	Asn	Ala	Gly	Phe	Thr	Trp	
			100					105					110			
gat	gga	gtt	att	cac	aag	atc	aca	gat	aaa	caa	tgg	gac	acc	atg	att	384
Asp	Gly	Val	Ile	His	Lys	Ile	Thr	Asp	Lys	Gln	Trp	Asp	Thr	Met	Ile	
		115					120					125				
gcg	gtg	cac	aac	aca	gcg	ccg	ttc	aaa	ctc	att	cgc	gcg	gca	gca	aag	432
Ala	Val	His	Asn	Thr	Ala	Pro	Phe	Lys	Leu	Ile	Arg	Ala	Ala	Ala	Lys	
		130				135					140					
tac	ttc	cgc	gtc	aag	gac	ggg	gag	cca	cgt	gtg	att	atc	aac	atc	tcg	480
Tyr	Phe	Arg	Val	Lys	Asp	Gly	Glu	Pro	Arg	Val	Ile	Ile	Asn	Ile	Ser	
					150					155					160	
agt	acg	agc	ggg	att	cac	ggg	aat	gcc	ggg	caa	gca	aac	tac	gcc	ctt	528
Ser	Thr	Ser	Gly	Ile	His	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Leu	
				165					170					175		
gcc	aaa	gcg	ggc	gtt	gtg	ggc	ctg	aca	cgt	aca	atc	gca	aag	gaa	tgg	576
Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Arg	Thr	Ile	Ala	Lys	Glu	Trp	
			180				185						190			
ggt	ccg	caa	ttc	ggc	gtc	cgc	tcg	aat	acc	att	gcg	ttc	ggg	ttc	gtg	624
Gly	Pro	Gln	Phe	Gly	Val	Arg	Ser	Asn	Thr	Ile	Ala	Phe	Gly	Phe	Val	
		195					200					205				
cag	aca	cgt	ctg	acc	gct	gcg	aag	gag	aag	ggg	gcg	ttc	att	acc	acg	672
Gln	Thr	Arg	Leu	Thr	Ala	Ala	Lys	Glu	Lys	Gly	Ala	Phe	Ile	Thr	Thr	
		210				215					220					
ccc	gac	gga	acg	aag	gtt	gcc	ctt	ggt	ata	ccc	ggg	cag	cag	ctt	ggg	720
Pro	Asp	Gly	Thr	Lys	Val	Ala	Leu	Gly	Ile	Pro	Gly	Gln	Gln	Leu	Gly	
		225			230				235					240		
gcg	aag	gag	ggc	gcg	aag	gat	ggg	aag	ccg	gcg	tat	ccg	gat	att	ccg	768
Ala	Lys	Glu	Gly	Ala	Lys	Asp	Gly	Lys	Pro	Ala	Tyr	Pro	Asp	Ile	Pro	
				245					250					255		
tta	ggc	agg	ccg	gcg	agt	cct	gag	gag	gcg	agg	agg	agt	gtg	ctt	gct	816
Leu	Gly	Arg	Pro	Ala	Ser	Pro	Glu	Glu	Ala	Ala	Arg	Ser	Val	Leu	Ala	
			260				265						270			
gtg	gcc	agt	ccg	ttg	ttt	agt	tat	gtt	aac	gga	gag	aca	att	cgg	gtt	864
Val	Ala	Ser	Pro	Leu	Phe	Ser	Tyr	Val	Asn	Gly	Glu	Thr	Ile	Arg	Val	
		275					280					285				
act	gga	ggc	cgg	aat	atg	tag										885
Thr	Gly	Gly	Arg	Asn	Met											
		290														

&lt;210&gt; 3098

&lt;211&gt; 294

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 3098

Met	Ala	Ser	Arg	Leu	Ser	Gln	Leu	Asn	Ala	His	Leu	Asn	Tyr	Pro	Arg
1				5					10					15	

## PhoenixTemp32470.tmp.txt

Gly Leu Leu Ala Asp Gln Val Ala Ile Ile Thr Gly Ala Gly Gln Gly  
 20 25 30  
 Ile Gly Ala Glu Ala Ala Arg Leu Phe Ala Asn Glu Gly Ala Lys Val  
 35 40 45  
 Val Ile Ala Asp Ile Asp Gly Glu Lys Ala Asn Ala Val Ala Asn Ala  
 50 55 60  
 Ile Asn Ser Ala Ser Pro Asn Arg Ala Ile Ala Val Val Gly Asp Ile  
 65 70 75 80  
 Leu Asn Asp Lys Tyr Ile Thr Thr Leu Val Glu Lys Ala Ala Glu Phe  
 85 90 95  
 Gly Asn Gly Lys Ile His Ile Ile Val Asn Asn Ala Gly Phe Thr Trp  
 100 105 110  
 Asp Gly Val Ile His Lys Ile Thr Asp Lys Gln Trp Asp Thr Met Ile  
 115 120 125  
 Ala Val His Asn Thr Ala Pro Phe Lys Leu Ile Arg Ala Ala Ala Lys  
 130 135 140  
 Tyr Phe Arg Val Lys Asp Gly Glu Pro Arg Val Ile Ile Asn Ile Ser  
 145 150 155 160  
 Ser Thr Ser Gly Ile His Gly Asn Ala Gly Gln Ala Asn Tyr Ala Leu  
 165 170 175  
 Ala Lys Ala Gly Val Val Gly Leu Thr Arg Thr Ile Ala Lys Glu Trp  
 180 185 190  
 Gly Pro Gln Phe Gly Val Arg Ser Asn Thr Ile Ala Phe Gly Phe Val  
 195 200 205  
 Gln Thr Arg Leu Thr Ala Ala Lys Glu Lys Gly Ala Phe Ile Thr Thr  
 210 215 220  
 Pro Asp Gly Thr Lys Val Ala Leu Gly Ile Pro Gly Gln Gln Leu Gly  
 225 230 235 240  
 Ala Lys Glu Gly Ala Lys Asp Gly Lys Pro Ala Tyr Pro Asp Ile Pro  
 245 250 255  
 Leu Gly Arg Pro Ala Ser Pro Glu Glu Ala Ala Arg Ser Val Leu Ala  
 260 265 270  
 Val Ala Ser Pro Leu Phe Ser Tyr Val Asn Gly Glu Thr Ile Arg Val  
 275 280 285  
 Thr Gly Gly Arg Asn Met  
 290

&lt;210&gt; 3099

&lt;211&gt; 993

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(993)

&lt;400&gt; 3099

atg	ctg	tcg	cga	cgt	ttt	gga	gtt	tcc	ctg	ctg	cag	tca	tcc	gtg	ccg	48
Met	Leu	Ser	Arg	Arg	Phe	Gly	Val	Ser	Leu	Leu	Gln	Ser	Ser	Val	Pro	
1				5			10							15		
aag	ctg	gcg	cgg	tcc	agc	tgc	agg	gcg	caa	tac	aac	aga	gtt	ggt	ttt	96
Lys	Leu	Ala	Arg	Ser	Ser	Cys	Arg	Ala	Gln	Tyr	Asn	Arg	Val	Gly	Phe	
			20				25						30			
atc	aag	ccg	ccg	acg	ccg	gtc	gtc	tgg	gcg	gcc	agg	acg	atg	gct	ggt	144
Ile	Lys	Pro	Pro	Thr	Pro	Val	Val	Trp	Ala	Ala	Arg	Thr	Met	Ala	Gly	
		35				40					45					
cca	gcg	aat	ctg	aaa	gag	aaa	ctg	ccc	gag	aag	gat	ggg	aat	cag	cga	192
Pro	Ala	Asn	Leu	Lys	Glu	Lys	Leu	Pro	Glu	Lys	Asp	Gly	Asn	Gln	Arg	
		50				55					60					
ttc	cgg	gag	ttc	atg	ctg	gag	ggg	aaa	gtt	ttc	gca	gtg	act	gga	ggg	240
Phe	Arg	Glu	Phe	Met	Leu	Glu	Gly	Lys	Val	Phe	Ala	Val	Thr	Gly	Gly	
		65			70					75				80		
gca	cgg	gga	ctg	ggc	ttg	acg	atg	gcg	gag	gct	ctg	gtt	gaa	gct	gga	288
Ala	Arg	Gly	Leu	Gly	Leu	Thr	Met	Ala	Glu	Ala	Leu	Val	Glu	Ala	Gly	
				85					90					95		
gga	gag	gtg	tac	tgc	ctc	gac	aga	cta	ccc	gaa	cca	gac	gac	gag	ttt	336
Gly	Glu	Val	Tyr	Cys	Leu	Asp	Arg	Leu	Pro	Glu	Pro	Asp	Asp	Glu	Phe	
			100					105					110			
tac	gcc	gca	caa	aag	cgc	gcg	aat	cct	gac	ttc	ggg	ggc	gcc	ctc	cac	384

## PhoenixTemp32470.tmp.txt

Tyr	Ala	Ala	Gln	Lys	Arg	Ala	Asn	Pro	Asp	Phe	Gly	Gly	Ala	Leu	His	
tac	cg	cg	atg	gac	gtc	act	gac	gac	gct	aac	acc	gaa	gct	atc	ttg	432
Tyr	Arg	Arg	Met	Asp	Val	Thr	Asp	Asp	Ala	Asn	Thr	Glu	Ala	Ile	Leu	
gat	gat	att	gcg	agc	aag	aag	gac	cg	ctc	gat	gga	ctg	atc	gca	gcc	480
Asp	Asp	Ile	Ala	Ser	Lys	Lys	Asp	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	
145					150					155					160	
gcg	ggc	gtc	aac	cac	gtc	aaa	gat	gca	ttc	gac	ctg	acg	cct	gag	atg	528
Ala	Gly	Val	Asn	His	Val	Lys	Asp	Ala	Phe	Asp	Leu	Thr	Pro	Glu	Met	
				165					170					175		
gtc	gat	aag	ctc	atc	cac	atc	aac	tat	acc	ggc	gtc	ttc	agg	agc	gcg	576
Val	Asp	Lys	Leu	Ile	His	Ile	Asn	Tyr	Thr	Gly	Val	Phe	Arg	Ser	Ala	
			180					185					190			
gta	gca	gcc	gcg	cg	gca	atg	acg	gct	cga	aaa	tgc	ccc	ggc	tca	atc	624
Val	Ala	Ala	Ala	Arg	Ala	Met	Thr	Ala	Arg	Lys	Cys	Pro	Gly	Ser	Ile	
		195					200					205				
ctc	ctt	gtg	gct	agc	atg	agc	ggt	ctg	atc	gcg	aac	aag	gga	atg	gcg	672
Leu	Leu	Val	Ala	Ser	Met	Ser	Gly	Leu	Ile	Ala	Asn	Lys	Gly	Met	Ala	
	210					215					220					
tcg	gcg	atc	tac	aac	tcc	tcc	aag	gca	gca	gtt	gtc	caa	ttg	agc	cg	720
Ser	Ala	Ile	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	Val	Gln	Leu	Ser	Arg	
225				230						235					240	
agc	ctt	gca	atg	gaa	tgg	tca	gaa	tct	cg	aag	gac	gga	acg	gga	ggg	768
Ser	Leu	Ala	Met	Glu	Trp	Ser	Glu	Ser	Arg	Lys	Asp	Gly	Thr	Gly	Gly	
				245					250					255		
atc	cg	gtg	aac	gct	ctg	tgt	ccg	gga	cat	att	gag	acg	tcg	atg	gcg	816
Ile	Arg	Val	Asn	Ala	Leu	Cys	Pro	Gly	His	Ile	Glu	Thr	Ser	Met	Ala	
			260					265					270			
cag	atg	gtg	atg	gag	aag	gat	ccg	gag	acg	agg	gtc	atc	tgg	gaa	agc	864
Gln	Met	Val	Met	Glu	Lys	Asp	Pro	Glu	Thr	Arg	Val	Ile	Trp	Glu	Ser	
		275					280					285				
gag	aat	atg	atg	aag	agg	ctg	gca	agg	cca	gag	gag	ttt	agg	ggg	att	912
Glu	Asn	Met	Met	Lys	Arg	Leu	Ala	Arg	Pro	Glu	Glu	Phe	Arg	Gly	Ile	
	290					295					300					
acg	ctg	cta	ctg	atg	agt	gat	gcg	agc	agc	ttc	atg	act	ggc	agt	acg	960
Thr	Leu	Leu	Leu	Met	Ser	Asp	Ala	Ser	Ser	Phe	Met	Thr	Gly	Ser	Thr	
305				310						315					320	
gtt	gtt	gtg	gat	gga	ggg	cat	aca	gct	tgg	tag						993
Val	Val	Val	Asp	Gly	Gly	His	Thr	Ala	Trp							
				325					330							

&lt;210&gt; 3100

&lt;211&gt; 330

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 3100

Met	Leu	Ser	Arg	Arg	Phe	Gly	Val	Ser	Leu	Leu	Gln	Ser	Ser	Val	Pro	
1				5					10					15		
Lys	Leu	Ala	Arg	Ser	Ser	Cys	Arg	Ala	Gln	Tyr	Asn	Arg	Val	Gly	Phe	
			20					25					30			
Ile	Lys	Pro	Pro	Thr	Pro	Val	Val	Trp	Ala	Ala	Arg	Thr	Met	Ala	Gly	
		35					40					45				
Pro	Ala	Asn	Leu	Lys	Glu	Lys	Leu	Pro	Glu	Lys	Asp	Gly	Asn	Gln	Arg	
	50					55					60					
Phe	Arg	Glu	Phe	Met	Leu	Glu	Gly	Lys	Val	Phe	Ala	Val	Thr	Gly	Gly	
65				70						75					80	
Ala	Arg	Gly	Leu	Gly	Leu	Thr	Met	Ala	Glu	Ala	Leu	Val	Glu	Ala	Gly	
				85					90					95		
Gly	Glu	Val	Tyr	Cys	Leu	Asp	Arg	Leu	Pro	Glu	Pro	Asp	Asp	Glu	Phe	
			100					105					110			
Tyr	Ala	Ala	Gln	Lys	Arg	Ala	Asn	Pro	Asp	Phe	Gly	Gly	Ala	Leu	His	
		115					120					125				
Tyr	Arg	Arg	Met	Asp	Val	Thr	Asp	Asp	Ala	Asn	Thr	Glu	Ala	Ile	Leu	
	130					135					140					
Asp	Asp	Ile	Ala	Ser	Lys	Lys	Asp	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	
145				150						155					160	
Ala	Gly	Val	Asn	His	Val	Lys	Asp	Ala	Phe	Asp	Leu	Thr	Pro	Glu	Met	



## PhoenixTemp32470.tmp.txt

Val Asp Lys Leu<sup>165</sup> Ile His Ile Asn Tyr<sup>170</sup> Thr Gly Val Phe Arg<sup>175</sup> Ser Ala  
 Val Ala Ala<sup>180</sup> Arg Ala Met Thr Ala Arg Lys Cys Pro Gly<sup>190</sup> Ser Ile  
 Leu Leu Val<sup>195</sup> Ala Ser Met Ser<sup>200</sup> Gly Leu Ile Ala Asn<sup>205</sup> Lys Gly Met Ala  
 Ser<sup>210</sup> Ala Ile Tyr Asn Ser<sup>215</sup> Lys Ala Ala Val<sup>220</sup> Val Gln Leu Ser Arg  
 Ser<sup>225</sup> Leu Ala Met Glu Trp Ser Glu Ser Arg Lys Asp Gly Thr Gly<sup>240</sup> Gly  
 Ile Arg Val<sup>245</sup> Asn Ala Leu Cys Pro Gly<sup>250</sup> His Ile Glu Thr Ser Met Ala  
 Gln Met Val<sup>260</sup> Met Glu Lys Asp Pro Gly<sup>265</sup> Thr Arg Val Ile Trp Glu Ser  
 Glu Asn Met<sup>275</sup> Met Lys Arg Leu Ala Arg Pro Glu Glu<sup>285</sup> Phe Arg Gly Ile  
 Thr<sup>290</sup> Leu Leu Leu Met Ser<sup>295</sup> Asp Ala Ser Ser Phe<sup>300</sup> Met Thr Gly Ser Thr  
 Val<sup>305</sup> Val Val Asp Gly<sup>310</sup> Gly His Thr Ala Trp<sup>315</sup> Trp<sup>320</sup>  
 Val Val Val Asp Gly<sup>325</sup> Gly His Thr Ala Trp<sup>330</sup>

&lt;210&gt; 3101

&lt;211&gt; 840

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(840)

&lt;400&gt; 3101

atg gct acc ccc cga ggc cgt ctc caa ggc aag aat gcc atc atc acc	48
Met Ala Thr Pro Arg <sup>5</sup> Gly Arg Leu Gln Gly <sup>10</sup> Lys Asn Ala Ile Ile Thr <sup>15</sup>	
ggt gcc gca ggc ggt att gga ctc gaa act agc atc tta ttc gcc cgc	96
Gly Ala Ala Gly <sup>20</sup> Gly Ile Gly Leu Glu Thr Ser Ile Leu Phe Ala Arg <sup>30</sup>	
gaa ggc gcc aat gtc ctg atg gca gac atc tcc gcg tcg gct ctc gaa	144
Glu Gly Ala <sup>35</sup> Asn Val Leu Met Ala Asp Ile Ser Ala Ser Ala Leu Glu <sup>45</sup>	
aaa gcc ctc gcg aag gtc aga gag ctc gtc cct gac gcg ccc cgt gtt	192
Lys Ala Leu Ala Lys Val Arg <sup>55</sup> Glu Leu Val Pro Asp <sup>60</sup> Ala Pro Arg Val <sup>65</sup>	
gag acc atc aag tgc gac gtc tcc aag gaa tcc gag gtt cag gct atg	240
Glu Thr Ile Lys Cys Asp <sup>70</sup> Val Ser Lys Glu Ser <sup>75</sup> Glu Val Gln Ala Met <sup>80</sup>	
gtc gag tcc cag gac tcc tgg ggc ggc aca gat gtg atc ttc aac aat	288
Val Glu Ser Gln Asp <sup>85</sup> Ser Trp Gly Gly Thr Asp Val Ile Phe Asn Asn <sup>95</sup>	
gcc gga atc atg cac gcg gac gac gcc gat gcc atc gac act cct gag	336
Ala Gly Ile Met <sup>100</sup> His Ala Asp Asp <sup>105</sup> Ala Asp Ala Ile Asp Thr Pro Glu <sup>110</sup>	
aaa att tgg gac ttg acg cag aac atc aac gtc aag ggc gtg tgg ttt	384
Lys Ile Trp Asp Leu Thr Gln Asn <sup>120</sup> Ile Asn Val Lys Gly <sup>125</sup> Val Trp Phe <sup>130</sup>	
gga tgt aaa cat gcg gta ctg agc atg cgg aga cac aag agc aag	432
Gly Cys Lys His Ala Val Leu <sup>135</sup> Ser Met Arg Arg His <sup>140</sup> Lys Lys Ser Lys <sup>145</sup>	
ggc agt atc atc aac acg gcg agt gtt gtt gcg ctg gtc ggg agt gcc	480
Gly Ser Ile Ile Asn Thr <sup>150</sup> Ala Ser Val Val Ala Leu Val Gly Ser Ala <sup>160</sup>	
acg ccg cag ctg gcg tac acg gcg tcc aag ggt gct gtg ctg gcg ctg	528
Thr Pro Gln Leu Ala Tyr Thr Ala Ser Lys <sup>165</sup> Gly Ala Val Leu Ala Leu <sup>175</sup>	
acg agg gag ctg gcg atc gtg cat gct cgg gag gga atc cgg ttc aat	576
Thr Arg Glu Leu <sup>180</sup> Ala Ile Val His Ala Arg Glu Gly Ile Arg Phe Asn <sup>190</sup>	
gca ctg tgc ccg gca cca ttg aac act cca ctc ttg caa gac tgg ctg	624

## PhoenixTemp32470.tmp.txt

Ala	Leu	Cys	Pro	Ala	Pro	Leu	Asn	Thr	Pro	Leu	Leu	Gln	Asp	Trp	Leu		
		195					200					205					
ggt	gac	gac	cag	gcc	aag	cgt	cac	cgc	cgc	gaa	gtg	cat	ttc	ccc	atg		672
Gly	Asp	Asp	Gln	Ala	Lys	Arg	His	Arg	Arg	Glu	Val	His	Phe	Pro	Met		
	210					215					220						
gga	cgg	ttc	gga	gag	gcc	att	gag	cag	gct	cat	gcg	gtg	gtc	ttc	ctg		720
Gly	Arg	Phe	Gly	Glu	Ala	Ile	Glu	Gln	Ala	His	Ala	Val	Val	Phe	Leu		
	225				230					235					240		
gcc	agt	gac	gag	agc	agc	ttt	gtc	aat	gga	gcc	gac	ttt	gtt	gtt	gac		768
Ala	Ser	Asp	Glu	Ser	Ser	Phe	Val	Asn	Gly	Ala	Asp	Phe	Val	Val	Asp		
				245					250					255			
ggt	ggc	atg	agc	aag	gcg	tac	gtt	acc	cct	gag	gga	ccg	gct	cct	ccg		816
Gly	Gly	Met	Ser	Lys	Ala	Tyr	Val	Thr	Pro	Glu	Gly	Pro	Ala	Pro	Pro		
			260					265					270				
gct	cct	aag	aac	cag	gct	caa	tag										840
Ala	Pro	Lys	Asn	Gln	Ala	Gln											
		275															

&lt;210&gt; 3102

&lt;211&gt; 279

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 3102

Met	Ala	Thr	Pro	Arg	Gly	Arg	Leu	Gln	Gly	Lys	Asn	Ala	Ile	Ile	Thr		
1				5					10					15			
Gly	Ala	Ala	Gly	Gly	Ile	Gly	Leu	Glu	Thr	Ser	Ile	Leu	Phe	Ala	Arg		
			20					25					30				
Glu	Gly	Ala	Asn	Val	Leu	Met	Ala	Asp	Ile	Ser	Ala	Ser	Ala	Leu	Glu		
		35					40					45					
Lys	Ala	Leu	Ala	Lys	Val	Arg	Glu	Leu	Val	Pro	Asp	Ala	Pro	Arg	Val		
	50					55					60						
Glu	Thr	Ile	Lys	Cys	Asp	Val	Ser	Lys	Glu	Ser	Glu	Val	Gln	Ala	Met		
65				70					75					80			
Val	Glu	Ser	Gln	Asp	Ser	Trp	Gly	Gly	Thr	Asp	Val	Ile	Phe	Asn	Asn		
			85					90					95				
Ala	Gly	Ile	Met	His	Ala	Asp	Asp	Ala	Asp	Ala	Ile	Asp	Thr	Pro	Glu		
			100					105					110				
Lys	Ile	Trp	Asp	Leu	Thr	Gln	Asn	Ile	Asn	Val	Lys	Gly	Val	Trp	Phe		
	115						120					125					
Gly	Cys	Lys	His	Ala	Val	Leu	Ser	Met	Arg	Arg	His	Lys	Lys	Ser	Lys		
	130					135					140						
Gly	Ser	Ile	Ile	Asn	Thr	Ala	Ser	Val	Val	Ala	Leu	Val	Gly	Ser	Ala		
145				150					155					160			
Thr	Pro	Gln	Leu	Ala	Tyr	Thr	Ala	Ser	Lys	Gly	Ala	Val	Leu	Ala	Leu		
			165					170					175				
Thr	Arg	Glu	Leu	Ala	Ile	Val	His	Ala	Arg	Glu	Gly	Ile	Arg	Phe	Asn		
			180					185					190				
Ala	Leu	Cys	Pro	Ala	Pro	Leu	Asn	Thr	Pro	Leu	Leu	Gln	Asp	Trp	Leu		
		195					200					205					
Gly	Asp	Asp	Gln	Ala	Lys	Arg	His	Arg	Arg	Glu	Val	His	Phe	Pro	Met		
	210					215					220						
Gly	Arg	Phe	Gly	Glu	Ala	Ile	Glu	Gln	Ala	His	Ala	Val	Val	Phe	Leu		
225				230					235					240			
Ala	Ser	Asp	Glu	Ser	Ser	Phe	Val	Asn	Gly	Ala	Asp	Phe	Val	Val	Asp		
			245						250				255				
Gly	Gly	Met	Ser	Lys	Ala	Tyr	Val	Thr	Pro	Glu	Gly	Pro	Ala	Pro	Pro		
			260					265					270				
Ala	Pro	Lys	Asn	Gln	Ala	Gln											
		275															

&lt;210&gt; 3103

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

## PhoenixTemp32470.tmp.txt

```

<400> 3103
atg ccg cag caa gtc ccc acc gcc tcc cac ctc tcc gac ctc ttc agc      48
Met Pro Gln Gln Val Pro Thr Ala Ser His Leu Ser Asp Leu Phe Ser
1      5      10      15
cta aag ggc aaa gtc gtc gta att acc ggc gct tcc ggc ccc cga ggc      96
Leu Lys Gly Lys Val Val Val Ile Thr Gly Ala Ser Gly Pro Arg Gly
20      25      30
atg ggc atc gaa gca gcg cgc ggg tgc gct gag atg ggc gcc aat gtc      144
Met Gly Ile Glu Ala Ala Arg Gly Cys Ala Glu Met Gly Ala Asn Val
35      40      45
gca att acc tac gcc tca cgc cca gaa gga ggc gag aag aac gcc gcc      192
Ala Ile Thr Tyr Ala Ser Arg Pro Glu Gly Gly Glu Lys Asn Ala Ala
50      55      60
gag cta gcg cgc gac tac ggc gtc aaa gcc aag gct tat aag tgc gac      240
Glu Leu Ala Arg Asp Tyr Gly Val Lys Ala Lys Ala Tyr Lys Cys Asp
65      70      75      80
gtc ggc gac ttc aag agc gtt gag aag cta gta cag gac gtg att gcc      288
Val Gly Asp Phe Lys Ser Val Glu Lys Leu Val Gln Asp Val Ile Ala
85      90      95
gag ttc ggg caa atc gat gct ttc att gca aat gcc ggc cgg act gcg      336
Glu Phe Gly Gln Ile Asp Ala Phe Ile Ala Asn Ala Gly Arg Thr Ala
100      105      110
tcc gcg ggc gtt ctt gat ggt tct gtt aag gac tgg gag gag gtc gtg      384
Ser Ala Gly Val Leu Asp Gly Ser Val Lys Asp Trp Glu Glu Val Val
115      120      125
cag acg gat ttg aac ggg aca ttc cac tgc gcg aag gcg gta gga ccg      432
Gln Thr Asp Leu Asn Gly Thr Phe His Cys Ala Lys Ala Val Gly Pro
130      135      140
cac ttt aag cag cgt ggg aag ggg tcc ctt gtt atc act gct agt atg      480
His Phe Lys Gln Arg Gly Lys Gly Ser Leu Val Ile Thr Ala Ser Met
145      150      155      160
agc ggg cac att gcc aac tac ccg caa gag cag act agc tac aat gtt      528
Ser Gly His Ile Ala Asn Tyr Pro Gln Glu Gln Thr Ser Tyr Asn Val
165      170      175
gcg aag gcg ggc tgc att cat atg gcg cgg tcg ctg gcg aac gag tgg      576
Ala Lys Ala Gly Cys Ile His Met Ala Arg Ser Leu Ala Asn Glu Trp
180      185      190
agg gac ttt gcg cgc gtc aac tct att tcg ccc ggt tat att gat acc      624
Arg Asp Phe Ala Arg Val Asn Ser Ile Ser Pro Gly Tyr Ile Asp Thr
195      200      205
ggt ctg agt gac ttt gtc gac aaa aag acg cag gat ctg tgg ctg agt      672
Gly Leu Ser Asp Phe Val Asp Lys Lys Thr Gln Asp Leu Trp Leu Ser
210      215      220
atg att cct atg ggg cgc cat ggt gat gcg aag gag ctt aag gga gcg      720
Met Ile Pro Met Gly Arg His Gly Asp Ala Lys Glu Leu Lys Gly Ala
225      230      235      240
tat gtt tac ctg gtc agc gat gcg agt acg tac acc act ggt gcg gat      768
Tyr Val Tyr Leu Val Ser Asp Ala Ser Thr Tyr Thr Thr Gly Ala Asp
245      250      255
ctg gtt att gat ggc ggt tac acc tgc cga taa
Leu Val Ile Asp Gly Gly Tyr Thr Cys Arg
260      265

```

```

<210> 3104
<211> 266
<212> PRT
<213> Aspergillus nidulans FGSC A4

```

```

<400> 3104
Met Pro Gln Gln Val Pro Thr Ala Ser His Leu Ser Asp Leu Phe Ser
1      5      10      15
Leu Lys Gly Lys Val Val Val Ile Thr Gly Ala Ser Gly Pro Arg Gly
20      25      30
Met Gly Ile Glu Ala Ala Arg Gly Cys Ala Glu Met Gly Ala Asn Val
35      40      45
Ala Ile Thr Tyr Ala Ser Arg Pro Glu Gly Gly Glu Lys Asn Ala Ala
50      55      60
Glu Leu Ala Arg Asp Tyr Gly Val Lys Ala Lys Ala Tyr Lys Cys Asp
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```

## PhoenixTemp32470.tmp.txt

```

65      70      75      80
Val Gly Asp Phe Lys Ser Val Glu Lys Leu Val Gln Asp Val Ile Ala
      85      90      95
Glu Phe Gly Gln Ile Asp Ala Phe Ile Ala Asn Ala Gly Arg Thr Ala
      100      105      110
Ser Ala Gly Val Leu Asp Gly Ser Val Lys Asp Trp Glu Glu Val Val
      115      120      125
Gln Thr Asp Leu Asn Gly Thr Phe His Cys Ala Lys Ala Val Gly Pro
      130      135      140
His Phe Lys Gln Arg Gly Lys Gly Ser Leu Val Ile Thr Ala Ser Met
      145      150      155      160
Ser Gly His Ile Ala Asn Tyr Pro Gln Glu Gln Thr Ser Tyr Asn Val
      165      170      175
Ala Lys Ala Gly Cys Ile His Met Ala Arg Ser Leu Ala Asn Glu Trp
      180      185      190
Arg Asp Phe Ala Arg Val Asn Ser Ile Ser Pro Gly Tyr Ile Asp Thr
      195      200      205
Gly Leu Ser Asp Phe Val Asp Lys Lys Thr Gln Asp Leu Trp Leu Ser
      210      215      220
Met Ile Pro Met Gly Arg His Gly Asp Ala Lys Glu Leu Lys Gly Ala
      225      230      235      240
Tyr Val Tyr Leu Val Ser Asp Ala Ser Thr Tyr Thr Thr Gly Ala Asp
      245      250      255
Leu Val Ile Asp Gly Gly Tyr Thr Cys Arg
      260      265

```

&lt;210&gt; 3105

&lt;211&gt; 897

&lt;212&gt; DNA

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(897)

&lt;400&gt; 3105

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atg cag cac ttg act caa ggt aat caa gat aac aat ggc agc ctc atc      48
Met Gln His Leu Thr Gln Gly Asn Gln Asp Asn Asn Gly Ser Leu Ile
1      5      10
aaa ccc tcc cag cca agt tac tgg cac cgc ttt tat cac tgg cgg tgc      96
Lys Pro Ser Gln Pro Ser Tyr Trp His Arg Phe Tyr His Trp Arg Cys
      20      25      30
ctc tgg tat tac att ttc ctc ccc tcg tca gtc gag gcc acg ttg aca      144
Leu Trp Tyr Tyr Ile Phe Leu Pro Ser Ser Val Glu Ala Thr Leu Thr
      35      40      45
tat cca gga atc ggc agg tca atc gcc cac acc tac gcc cag aac ggg      192
Tyr Pro Gly Ile Gly Arg Ser Ile Ala His Thr Tyr Ala Gln Asn Gly
      50      55      60
ata tcc gcc ctt gct cta gca gat atc agt ctc ccc gct cta gaa gca      240
Ile Ser Ala Leu Ala Leu Ala Asp Ile Ser Leu Pro Ala Leu Glu Ala
      65      70      75      80
acc cag gca gag ctt ctc cag agc cac cca cac ctt gct gac cgg att      288
Thr Gln Ala Glu Leu Leu Gln Ser His Pro His Leu Ala Asp Arg Ile
      85      90      95
gcg atc tat aca gtc aat gtg acg aag gaa gaa gag atc tca gca gca      336
Ala Ile Tyr Thr Val Asn Val Thr Lys Glu Glu Glu Ile Ser Ala Ala
      100      105      110
gta cag tgc gcg gct cac agg ttc ggc cgc atc gat atc tcc atc cat      384
Val Gln Cys Ala Ala His Arg Phe Gly Arg Ile Asp Ile Ser Ile His
      115      120      125
ggc gcg ggg att act ggt act ggc gcg cac acg cac gag ctg gac ctg      432
Gly Ala Gly Ile Thr Gly Thr Gly Ala His Thr His Glu Leu Asp Leu
      130      135      140
aag gaa tgg cag aga gtc atc gat gtc aac cag aca ggt gtt atg ctt      480
Lys Glu Trp Gln Arg Val Ile Asp Val Asn Gln Thr Gly Val Met Leu
      145      150      155      160
tgt gat aaa tgg atg gtc aag caa atg ctc agc cag gag ttg att aca      528
Cys Asp Lys Trp Met Val Lys Gln Met Leu Ser Gln Glu Leu Ile Thr
      165      170      175

```

## PhoenixTemp32470.tmp.txt

ggg	tat	cgc	ggc	cgc	ggg	att	att	gtg	aat	atc	tcg	tcc	att	tat	ggg	576
Gly	Tyr	Arg	Gly	Arg	Gly	Ile	Ile	Val	Asn	Ile	Ser	Ser	Ile	Tyr	Gly	
			180					185					190			
gtt	gtc	cgc	cca	gac	ggg	aga	cta	ggg	gct	gcg	gca	tac	gcg	gcg	tcg	624
Val	Val	Ala	Pro	Asp	Gly	Arg	Leu	Gly	Ala	Ala	Ala	Tyr	Ala	Ala	Ser	
		195					200					205				
aag	cac	gct	gtt	att	gga	tta	acg	aag	ctc	gac	gca	aaa	aac	tac	gcc	672
Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Lys	Leu	Asp	Ala	Lys	Asn	Tyr	Ala	
	210					215					220					
aaa	gac	ggt	gtc	cgc	atc	aac	gcc	gtc	tgt	ccg	ggc	ttc	gtc	gac	acg	720
Lys	Asp	Gly	Val	Arg	Ile	Asn	Ala	Val	Cys	Pro	Gly	Phe	Val	Asp	Thr	
225					230					235					240	
ccc	ctt	acc	cac	cgc	aac	ctc	gaa	gaa	ggc	gtg	ctt	tca	ccc	gag	att	768
Pro	Leu	Thr	His	Arg	Asn	Leu	Glu	Glu	Gly	Val	Leu	Ser	Pro	Glu	Ile	
				245					250					255		
gaa	aac	acg	gtg	ctg	aag	cgc	ccg	gcg	agg	cca	gag	gag	att	gca	gac	816
Glu	Asn	Thr	Val	Leu	Lys	Arg	Pro	Ala	Arg	Pro	Glu	Glu	Ile	Ala	Asp	
			260					265					270			
gcg	gtg	ctg	ttc	ctg	acc	tcg	cgg	atg	ggc	agt	tat	atg	tgt	gcg	gca	864
Ala	Val	Leu	Phe	Leu	Thr	Ser	Arg	Met	Gly	Ser	Tyr	Met	Cys	Ala	Ala	
		275					280					285				
gct	tta	gtc	gtt	gac	ggg	ggt	tat	act	gct	tga						897
Ala	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala							
	290					295										

&lt;210&gt; 3106

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Aspergillus nidulans FGSC A4

&lt;400&gt; 3106

Met	Gln	His	Leu	Thr	Gln	Gly	Asn	Gln	Asp	Asn	Asn	Gly	Ser	Leu	Ile	
1				5					10					15		
Lys	Pro	Ser	Gln	Pro	Ser	Tyr	Trp	His	Arg	Phe	Tyr	His	Trp	Arg	Cys	
			20					25					30			
Leu	Trp	Tyr	Tyr	Ile	Phe	Leu	Pro	Ser	Ser	Val	Glu	Ala	Thr	Leu	Thr	
		35					40					45				
Tyr	Pro	Gly	Ile	Gly	Arg	Ser	Ile	Ala	His	Thr	Tyr	Ala	Gln	Asn	Gly	
	50					55					60					
Ile	Ser	Ala	Leu	Ala	Leu	Ala	Asp	Ile	Ser	Leu	Pro	Ala	Leu	Glu	Ala	
65					70					75				80		
Thr	Gln	Ala	Glu	Leu	Leu	Gln	Ser	His	Pro	His	Leu	Ala	Asp	Arg	Ile	
				85					90					95		
Ala	Ile	Tyr	Thr	Val	Asn	Val	Thr	Lys	Glu	Glu	Glu	Ile	Ser	Ala	Ala	
			100					105					110			
Val	Gln	Cys	Ala	Ala	His	Arg	Phe	Gly	Arg	Ile	Asp	Ile	Ser	Ile	His	
		115					120					125				
Gly	Ala	Gly	Ile	Thr	Gly	Thr	Gly	Ala	His	Thr	His	Glu	Leu	Asp	Leu	
	130				135						140					
Lys	Glu	Trp	Gln	Arg	Val	Ile	Asp	Val	Asn	Gln	Thr	Gly	Val	Met	Leu	
145					150				155					160		
Cys	Asp	Lys	Trp	Met	Val	Lys	Gln	Met	Leu	Ser	Gln	Glu	Leu	Ile	Thr	
				165					170					175		
Gly	Tyr	Arg	Gly	Arg	Gly	Ile	Ile	Val	Asn	Ile	Ser	Ser	Ile	Tyr	Gly	
			180					185					190			
Val	Val	Ala	Pro	Asp	Gly	Arg	Leu	Gly	Ala	Ala	Ala	Tyr	Ala	Ala	Ser	
		195					200					205				
Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Lys	Leu	Asp	Ala	Lys	Asn	Tyr	Ala	
	210					215					220					
Lys	Asp	Gly	Val	Arg	Ile	Asn	Ala	Val	Cys	Pro	Gly	Phe	Val	Asp	Thr	
225					230					235				240		
Pro	Leu	Thr	His	Arg	Asn	Leu	Glu	Glu	Gly	Val	Leu	Ser	Pro	Glu	Ile	
				245					250					255		
Glu	Asn	Thr	Val	Leu	Lys	Arg	Pro	Ala	Arg	Pro	Glu	Glu	Ile	Ala	Asp	
			260					265					270			
Ala	Val	Leu	Phe	Leu	Thr	Ser	Arg	Met	Gly	Ser	Tyr	Met	Cys	Ala	Ala	
		275					280					285				
Ala	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala							
	290					295										

<210> 3107  
 <211> 891  
 <212> DNA  
 <213> Aspergillus nidulans FGSC A4

<220>  
 <221> CDS  
 <222> (1)..(891)

<400> 3107  
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 1 5 10 15  
 cag aca caa aat aca ccg ggc ctg gaa agc aaa atg caa ccc gcc agc 96  
 Gln Thr Gln Asn Thr Pro Gly Leu Glu Ser Lys Met Gln Pro Ala Ser  
 20 25 30  
 gaa gca acc aag ctc gag act tcc gac gga att aaa gat tac aag ggc 144  
 Glu Ala Thr Lys Leu Glu Thr Ser Asp Gly Ile Lys Asp Tyr Lys Gly  
 35 40 45  
 tcc ggt aag ctg cag ggc aag aag gca ctc att acc ggc gga gac tcc 192  
 Ser Gly Lys Leu Gln Gly Lys Lys Ala Leu Ile Thr Gly Gly Asp Ser  
 50 55 60  
 ggc att ggc cgc tcc gtc gca gcc ctg tac gcc aaa gaa ggc gct gac 240  
 Gly Ile Gly Arg Ser Val Ala Ala Leu Tyr Ala Lys Glu Gly Ala Asp  
 65 70 75 80  
 ata aca atc gtc tac ctc cct gtt gaa gaa gaa gac gcg caa gag aca 288  
 Ile Thr Ile Val Tyr Leu Pro Val Glu Glu Glu Asp Ala Gln Glu Thr  
 85 90 95  
 aaa aga ctc gtt gag gcc gaa gga cgc caa tgc ctg ctg ctg agc ggg 336  
 Lys Arg Leu Val Glu Ala Glu Gly Arg Gln Cys Leu Leu Leu Ser Gly  
 100 105 110  
 gac ctc cgc gac cgg ggg ttc tgc aag cag gcc gtc gat tcg cac gta 384  
 Asp Leu Arg Asp Arg Gly Phe Cys Lys Gln Ala Val Asp Ser His Val  
 115 120 125  
 cag aaa tat gga cac atc aac atc cta gtt aac aat gcc tcg cag caa 432  
 Gln Lys Tyr Gly His Ile Asn Ile Leu Val Asn Asn Ala Ser Gln Gln  
 130 135 140  
 ttc agc tgt ccc gac ctg gcg cag ata aac ctc gac acc gtc act gat 480  
 Phe Ser Cys Pro Asp Leu Ala Gln Ile Asn Leu Asp Thr Val Thr Asp  
 145 150 155 160  
 gtc ttt cag aca aat atc atc cag atg ttt gcg atg acg aag ttt tcc 528  
 Val Phe Gln Thr Asn Ile Ile Gln Met Phe Ala Met Thr Lys Phe Ser  
 165 170 175  
 ctc ccg cat atg agc aaa gga gat agt atc atc aat aat act tcg gtc 576  
 Leu Pro His Met Ser Lys Gly Asp Ser Ile Ile Asn Asn Thr Ser Val  
 180 185 190  
 aca gcg ttc aga ggg aca ggt agc atg gtg gat tat gca tcg acc aag 624  
 Thr Ala Phe Arg Gly Thr Gly Ser Met Val Asp Tyr Ala Ser Thr Lys  
 195 200 205  
 ggg gcg att gta ggt ttc acg cgg tct gct gct ctc caa ctt att ccc 672  
 Gly Ala Ile Val Gly Phe Thr Arg Ser Ala Ala Leu Gln Leu Ile Pro  
 210 215 220  
 aag gga att agg gtc aac gcg gtt gct cct ggc tca act tat acg cct 720  
 Lys Gly Ile Arg Val Asn Ala Val Ala Pro Gly Ser Thr Tyr Thr Pro  
 225 230 235 240  
 atc caa gtc gat acg cgc gat gca gag cag atg cag ggg tgg gcg agt 768  
 Ile Gln Val Asp Thr Arg Asp Ala Glu Gln Met Gln Gly Trp Ala Ser  
 245 250 255  
 tcg aag ccg ctg ggc cgg cca ggg cag cca agc gag gtg gcg acc agc 816  
 Ser Lys Pro Leu Gly Arg Pro Gly Gln Pro Ser Glu Val Ala Thr Ser  
 260 265 270  
 ttt gtc ttt ttg gcc agt tcg gat gcg tcc ctg ttc tac gga cag atc 864  
 Phe Val Phe Leu Ala Ser Ser Asp Ala Ser Leu Phe Tyr Gly Gln Ile  
 275 280 285  
 ctg cat ccg tat ccg ctg ggt gag tga 891  
 Leu His Pro Tyr Pro Leu Gly Glu  
 290 295

<210> 3108  
 <211> 296  
 <212> PRT  
 <213> Aspergillus nidulans FGSC A4

<400> 3108  
 Met Ser Arg Met Ala Lys Asp Asn Thr Phe Gln Ala Pro Glu Ser Ala  
 1 5 10 15  
 Gln Thr Gln Asn Thr Pro Gly Leu Glu Ser Lys Met Gln Pro Ala Ser  
 20 25 30  
 Glu Ala Thr Lys Leu Glu Thr Ser Asp Gly Ile Lys Asp Tyr Lys Gly  
 35 40 45  
 Ser Gly Lys Leu Gln Gly Lys Lys Ala Leu Ile Thr Gly Gly Asp Ser  
 50 55 60  
 Gly Ile Gly Arg Ser Val Ala Ala Leu Tyr Ala Lys Glu Gly Ala Asp  
 65 70 75 80  
 Ile Thr Ile Val Tyr Leu Pro Val Glu Glu Asp Ala Gln Glu Thr  
 85 90 95  
 Lys Arg Leu Val Glu Ala Glu Gly Arg Gln Cys Leu Leu Leu Ser Gly  
 100 105 110  
 Asp Leu Arg Asp Arg Gly Phe Cys Lys Gln Ala Val Asp Ser His Val  
 115 120 125  
 Gln Lys Tyr Gly His Ile Asn Ile Leu Val Asn Asn Ala Ser Gln Gln  
 130 135 140  
 Phe Ser Cys Pro Asp Leu Ala Gln Ile Asn Leu Asp Thr Val Thr Asp  
 145 150 155 160  
 Val Phe Gln Thr Asn Ile Ile Gln Met Phe Ala Met Thr Lys Phe Ser  
 165 170 175  
 Leu Pro His Met Ser Lys Gly Asp Ser Ile Ile Asn Asn Thr Ser Val  
 180 185 190  
 Thr Ala Phe Arg Gly Thr Gly Ser Met Val Asp Tyr Ala Ser Thr Lys  
 195 200 205  
 Gly Ala Ile Val Gly Phe Thr Arg Ser Ala Ala Leu Gln Leu Ile Pro  
 210 215 220  
 Lys Gly Ile Arg Val Asn Ala Val Ala Pro Gly Ser Thr Tyr Thr Pro  
 225 230 235 240  
 Ile Gln Val Asp Thr Arg Asp Ala Glu Gln Met Gln Gly Trp Ala Ser  
 245 250 255  
 Ser Lys Pro Leu Gly Arg Pro Gly Gln Pro Ser Glu Val Ala Thr Ser  
 260 265 270  
 Phe Val Phe Leu Ala Ser Ser Asp Ala Ser Leu Phe Tyr Gly Gln Ile  
 275 280 285  
 Leu His Pro Tyr Pro Leu Gly Glu  
 290 295

<210> 3109  
 <211> 1122  
 <212> DNA  
 <213> Ustilago maydis 521

<220>  
 <221> CDS  
 <222> (1)..(1122)

<400> 3109  
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 Met Leu Asn Ala Thr Val Ser Ala Ser Arg Ala Ala Arg Ser Ile Val 15  
 1 5 10 15  
 agc gtt gcc cag gtg gcg cgc ccg gca ttg tac ggc tct gcg cga ccc 96  
 Ser Val Ala Gln Val Ala Arg Pro Ala Leu Tyr Gly Ser Ala Arg Pro 20 25 30  
 tcg aac acc cta gcc cat acc tct ccc agc tca tct cga gct ttg agc 144  
 Ser Asn Thr Leu Ala His Thr Ser Pro Ser Ser Ser Arg Ala Leu Ser 35 40 45  
 aaa acc cat aac ttt ggc aag gcc aag aag atc aaa acg cct cca ttt 192  
 Lys Thr His Asn Phe Gly Lys Ala Lys Lys Ile Lys Thr Pro Pro Phe 50 55 60  
 gct tcc acc gac gac gat gta gtc gtt ccg tac ccg gaa gat agc tca 240  
 Ala Ser Thr Asp Asp Asp Val Val Val Pro Tyr Pro Glu Asp Ser Ser 60 65 70  
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## PhoenixTemp32470.tmp.txt

65	70	75	80	
cgt	gac	ggt	gga	gac
Arg	His	Val	Gly	His
ccg	ccg	gac	aac	aca
Pro	Arg	Asp	Asn	Thr
cgc	gac	ggt	gga	ggc
Arg	Asp	Val	Gly	Gly
85	90	95		
gga	cgt	aca	caa	cga
Gly	Arg	Thr	Gln	Arg
100	105	110		
gtc	tgc	gtc	act	ggt
Val	Cys	Val	Thr	Gly
115	120	125		
cgt	acc	ttt	ggt	gag
Arg	Thr	Phe	Gly	Val
130	135	140		
gat	gaa	ggc	gaa	agc
Asp	Glu	Gly	Glu	Ser
145	150	155		
acc	aac	cat	ggt	ggt
Thr	Asn	His	Gly	Gly
160	165	170		
ggc	tgt	gac	ata	tcg
Gly	Cys	Asp	Ile	Ser
175	180	185		
atc	cat	cag	cgc	ttc
Ile	His	Gln	Arg	Phe
190	195	200		
atc	gtg	gaa	aac	ttc
Ile	Val	Glu	Asn	Phe
205	210	215		
aag	ctt	ttt	gac	atc
Lys	Leu	Phe	Asp	Ile
220	225	230		
gtg	gcc	aag	cgc	atg
Val	Ala	Lys	Arg	Met
235	240	245		
att	gct	tcc	atg	tct
Ile	Ala	Ser	Met	Ser
250	255	260		
ccg	tac	aat	gca	tcc
Pro	Tyr	Asn	Ala	Ser
265	270	275		
gcg	gtg	gag	tgg	gcc
Ala	Val	Glu	Trp	Ala
280	285	290		
gga	tac	atg	ctc	acg
Gly	Tyr	Met	Leu	Thr
295	300	305		
aac	ggt	aaa	gag	ctc
Asn	Gly	Lys	Glu	Leu
310	315	320		
cgt	cta	ggc	aat	cct
Arg	Leu	Gly	Asn	Pro
325	330	335		
agt	gac	gct	tcc	gcc
Ser	Asp	Ala	Ser	Ala
340	345	350		
ggc	tac	acg	tct	gtg
Gly	Tyr	Thr	Ser	Val
355	360	365		

&lt;210&gt; 3110

&lt;211&gt; 373

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 3110

Met	Leu	Asn	Ala	Thr	Val	Ser	Ala	Ser	Arg	Ala	Ala	Arg	Ser	Ile	Val
1				5					10					15	
Ser	Val	Ala	Gln	Val	Ala	Arg	Pro	Ala	Leu	Tyr	Gly	Ser	Ala	Arg	Pro
			20					25					30		



## PhoenixTemp32470.tmp.txt

Ser Asn Thr Leu Ala His Thr Ser Pro Ser Ser Ser Arg Ala Leu Ser  
 35 40 45  
 Lys Thr His Asn Phe Gly Lys Ala Lys Lys Ile Lys Thr Pro Pro Phe  
 50 55 60  
 Ala Ser Thr Asp Asp Asp Val Val Val Pro Tyr Pro Glu Asp Ser Ser  
 65 70 75 80  
 Arg His Pro Arg Asp Asp Val Gly His Asn Thr Thr Gly Gly Arg Val  
 85 90 95  
 Gly Arg His Thr Gln Arg Thr Leu Ala Ser Phe Ser Met Glu Gly Lys  
 100 105 110  
 Val Cys Val Val Thr Gly Ala Ala Arg Gly Ile Gly Asn Leu Ile Ala  
 115 120 125  
 Arg Thr Phe Val Glu Ser Gly Ala Asn His Val Ala Ile Val Asp Leu  
 130 135 140  
 Asp Glu Gly Glu Ser Gln His Ala Ala Lys Glu Val Asp Glu Trp Phe  
 145 150 155 160  
 Thr Asn His Gly Gly Val Lys Pro Gly Glu Leu Asp Ile Gln Gly Tyr  
 165 170 175  
 Gly Cys Asp Ile Ser Asp Glu Val Gln Val Gln Asp Val Ile Asn Arg  
 180 185 190  
 Ile His Gln Arg Phe Gly Lys Ile Asn Val Ala Val Asn Ser Ala Gly  
 195 200 205  
 Ile Val Glu Asn Phe Pro Ala Thr Glu Tyr Pro Thr Ala Lys Leu Lys  
 210 215 220  
 Lys Leu Phe Asp Ile Asn Ile Asn Gly Ser Tyr Phe Val Ala Arg Glu  
 225 230 235 240  
 Val Ala Lys Arg Met Met Gln Asp Lys Val Gln Gly Ser Ile Val Met  
 245 250 255  
 Ile Ala Ser Met Ser Ala Ser Val Val Asn Val Pro Gln Ala Gln Ala  
 260 265 270  
 Pro Tyr Asn Ala Ser Lys Ala Ala Val Lys His Leu Ala Lys Ser Met  
 275 280 285  
 Ala Val Glu Trp Ala Lys Ala Gly Ile Arg Val Asn Ser Leu Ser Pro  
 290 295 300  
 Gly Tyr Met Leu Thr Ser Leu Ser Arg Ala Val Leu Glu Asn Ser Pro  
 305 310 315 320  
 Asn Gly Lys Glu Leu Arg Thr Asn Trp Glu Asn Met Thr Pro Met Gly  
 325 330 335  
 Arg Leu Gly Asn Pro Glu Asp Leu Lys Gly Ala Val Val Tyr Leu Ser  
 340 345 350  
 Ser Asp Ala Ser Ala Phe Thr Thr Gly Ala Asp Leu Ile Val Asp Gly  
 355 360 365  
 Gly Tyr Thr Ser Val  
 370

&lt;210&gt; 3111

&lt;211&gt; 879

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(879)

&lt;400&gt; 3111

atg	ccc	aag	gac	gca	gct	ccc	gaa	gtg	atg	cct	gag	ctt	ggt	gct	cag	48
Met	Pro	Lys	Asp	Ala	Ala	Pro	Glu	Val	Met	Pro	Glu	Leu	Gly	Ala	Gln	
1				5				10					15			
cgc	ctc	ttc	tcg	ctt	gat	gga	aag	atc	gcc	ctt	gtc	acc	ggt	ggt	ggc	96
Arg	Leu	Phe	Ser	Leu	Asp	Gly	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Gly	
			20					25					30			
acg	ggt	att	ggc	aag	atg	atc	gcc	acc	tat	atc	cgc	aac	ggt	gcc		144
Thr	Gly	Ile	Gly	Lys	Met	Ile	Ala	Thr	Tyr	Ile	Arg	Asn	Gly	Ala		
			35				40				45					
aag	gtc	tac	att	gcc	agt	cgc	aag	ctc	tct	gat	ctg	cag	aac	gtg	gcc	192
Lys	Val	Tyr	Ile	Ala	Ser	Arg	Lys	Leu	Ser	Asp	Leu	Gln	Asn	Val	Ala	
			50			55					60					
aag	cag	ctc	agt	aag	ctc	gct	ccc	agc	gat	ccc	gag	ggt	aaa	aaa	ggt	240
Lys	Gln	Leu	Ser	Lys	Leu	Ala	Pro	Ser	Asp	Pro	Glu	Gly	Lys	Lys	Gly	

## PhoenixTemp32470.tmp.txt

65	ctc	tgt	gta	gcg	ctt	70	cag	gcc	gat	gtg	ggc	75	agc	aag	gca	ggg	tgt	80	gat	
	Leu	Cys	Val	Ala	Leu		Gln	Ala	Asp	Val	Gly		Ser	Lys	Ala	Gly	Cys	Asp		288
					85						90						95			
	gcg	ctc	gct	gac	cag	gtc	aaa	aag	gcc	gag	tcc	aga	ctc	gac	atc	ctg				336
	Ala	Leu	Ala	Asp	Gln	Val	Lys	Lys	Ala	Glu	Ser	Arg	Leu	Asp	Ile	Leu				
				100					105						110					
	gtc	aac	aac	tcg	ggg	ctc	act	tgg	ggc	gca	ccc	atg	gac	aat	ttc	cca				384
	Val	Asn	Asn	Ser	Gly	Leu	Thr	Trp	Gly	Ala	Pro	Met	Asp	Asn	Phe	Pro				
				115				120					125							
	gag	gac	aag	ggg	tgg	aat	aag	gta	ttc	gac	ctc	aac	gtc	aag	agt	cag				432
	Glu	Asp	Lys	Gly	Trp	Asn	Lys	Val	Phe	Asp	Leu	Asn	Val	Lys	Ser	Gln				
							135						140							
	ttc	tac	ctc	aca	gtg	gcg	ctg	ctg	ccg	ttg	ctc	gaa	aag	ggc	aag	agc				480
	Phe	Tyr	Leu	Thr	Val	Ala	Leu	Leu	Pro	Leu	Leu	Glu	Lys	Gly	Lys	Ser				
						150					155					160				
	aat	acc	gag	cat	gcc	acc	gtg	ctc	aac	att	gcc	tct	acc	gct	gct	atc				528
	Asn	Thr	Glu	His	Ala	Thr	Val	Leu	Asn	Ile	Ala	Ser	Thr	Ala	Ala	Ile				
					165					170					175					
	gtt	cct	ctc	gcc	gaa	gct	ggg	ctg	tct	gcc	ccc	ggg	cac	ggg	acc	tac				576
	Val	Pro	Leu	Ala	Glu	Ala	Gly	Leu	Ser	Ala	Pro	Gly	His	Gly	Thr	Tyr				
				180				185						190						
	tcc	tac	caa	ccg	tca	aag	gcc	gca	tcg	ctg	cac	ctt	acc	aaa	gtg	ctc				624
	Ser	Tyr	Gln	Pro	Ser	Lys	Ala	Ala	Ser	Leu	His	Leu	Thr	Lys	Val	Leu				
				195				200					205							
	gcc	aac	tcg	ctc	gct	gac	aaa	ttc	atc	atg	gtc	aac	gcc	atc	tgc	ccc				672
	Ala	Asn	Ser	Leu	Ala	Asp	Lys	Phe	Ile	Met	Val	Asn	Ala	Ile	Cys	Pro				
							215					220								
	ggc	gtc	ttc	cct	tcg	cg	atg	act	gca	tac	ggg	ctc	gag	gag	aac	cg				720
	Gly	Val	Phe	Pro	Ser	Arg	Met	Thr	Ala	Tyr	Gly	Leu	Glu	Glu	Asn	Arg				
						230					235					240				
	gac	ctg	ctc	gaa	ggg	gtc	caa	ccc	acc	ggc	cg	att	ggg	acg	ccc	gag				768
	Asp	Leu	Leu	Glu	Gly	Val	Gln	Pro	Thr	Gly	Arg	Ile	Gly	Thr	Pro	Glu				
					245					250					255					
	gac	att	ggg	ggg	gtc	gcc	atg	ttc	ttc	gct	tct	cg	gca	ggg	gct	cac				816
	Asp	Ile	Gly	Gly	Val	Ala	Met	Phe	Phe	Ala	Ser	Arg	Ala	Gly	Ala	His				
					260				265					270						
	tgc	acc	ggg	acc	ggc	atc	gtt	gtc	gat	ggg	ggc	cag	agc	atc	cag	ttc				864
	Cys	Thr	Gly	Thr	Gly	Ile	Val	Val	Asp	Gly	Gly	Gln	Ser	Ile	Gln	Phe				
								280					285							
	cag	cct	cg	ctg	taa															879
	Gln	Pro	Arg	Leu																
					290															

&lt;210&gt; 3112

&lt;211&gt; 292

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 3112

Met	Pro	Lys	Asp	Ala	Ala	Pro	Glu	Val	Met	Pro	Glu	Leu	Gly	Ala	Gln
1				5					10					15	
Arg	Leu	Phe	Ser	Leu	Asp	Gly	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Gly
				20				25					30		
Thr	Gly	Ile	Gly	Lys	Met	Ile	Ala	Ala	Thr	Tyr	Ile	Arg	Asn	Gly	Ala
				35			40					45			
Lys	Val	Tyr	Ile	Ala	Ser	Arg	Lys	Leu	Ser	Asp	Leu	Gln	Asn	Val	Ala
				50		55					60				
Lys	Gln	Leu	Ser	Lys	Leu	Ala	Pro	Ser	Asp	Pro	Glu	Gly	Lys	Lys	Gly
65					70				75					80	
Leu	Cys	Val	Ala	Leu	Gln	Ala	Asp	Val	Gly	Ser	Lys	Ala	Gly	Cys	Asp
				85					90					95	
Ala	Leu	Ala	Asp	Gln	Val	Lys	Lys	Ala	Glu	Ser	Arg	Leu	Asp	Ile	Leu
			100					105					110		
Val	Asn	Asn	Ser	Gly	Leu	Thr	Trp	Gly	Ala	Pro	Met	Asp	Asn	Phe	Pro
							120					125			
Glu	Asp	Lys	Gly	Trp	Asn	Lys	Val	Phe	Asp	Leu	Asn	Val	Lys	Ser	Gln
	130					135					140				
Phe	Tyr	Leu	Thr	Val	Ala	Leu	Leu	Pro	Leu	Leu	Glu	Lys	Gly	Lys	Ser

## PhoenixTemp32470.tmp.txt

145 Asn Thr Glu His Ala 150 Thr Val Leu Asn Ile 155 Ala Ser Thr Ala Ala 160 Ile  
 Val Pro Leu Ala 165 Glu Ala Gly Leu Ser 170 Ala Pro Gly His Gly Thr Tyr  
 Ser Tyr Gln 180 Pro Ser Lys Ala Ala 185 Ser Leu His Leu Thr 190 Lys Val Leu  
 Ala Asn 210 Ser Leu Ala Asp Lys 215 Phe Ile Met Val Asn 220 Ala Ile Cys Pro  
 Gly Val Phe Pro Ser Arg Met Thr Ala Tyr Gly Leu Glu Glu Asn Arg  
 225 Asp Leu Leu Glu Gly Val Gln Pro Thr Gly Arg Ile Gly Thr Pro Glu  
 Asp Ile Gly Gly 245 Val Ala Met Phe Phe 250 Ala Ser Arg Ala Gly 255 His  
 Cys Thr Gly Thr Gly Ile Val Val 265 Asp Gly Gly Gln Ser 270 Ile Gln Phe  
 Gln Pro Arg Leu 280 285 290

&lt;210&gt; 3113

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Ustilago maydis 521

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 3113

atg gcg acc aca gac gca gct tgc gaa aag aca cct tcg acg tcg tcg	48
Met Ala Thr Thr Asp Ala Ala Cys Glu Lys Thr Pro Ser Thr Ser Ser	
1 5 10 15	
ttg gga ttg ttc aac ctc tct ggt aaa acg gct ctg ctc act ggt ggc	96
Leu Gly Leu Phe Asn Leu Ser Gly Lys Thr Ala Leu Leu Thr Gly Gly	
20 25 30	
act cgc ggc atc ggc caa gca tgt gct gtg gct ctt gtc gag gca ggg	144
Thr Arg Gly Ile Gly Gln Ala Cys Ala Val Ala Leu Val Glu Ala Gly	
35 40 45	
gct tcg gtg att ctc gcg gtt cgc cct ggc acc gcc act tct ggc gct	192
Ala Ser Val Ile Leu Ala Val Arg Pro Gly Thr Ala Thr Ser Gly Ala	
50 55 60	
cat cca gct ctt gcg cct ctc act gcg gtt gcc aac caa tct tgc tcg	240
His Pro Ala Leu Ala Pro Leu Thr Ala Val Ala Asn Gln Ser Cys Ser	
65 70 75 80	
caa aaa cac tct acc gtc gat gct gat ctt tcc gac ctc tcc caa gtc	288
Gln Lys His Ser Thr Val Asp Ala Asp Leu Ser Asp Leu Ser Gln Val	
85 90 95	
aag acg ctc ttc gac cga gct ctc tcg cag tcg cct act tct gcg att	336
Lys Thr Leu Phe Asp Arg Ala Leu Ser Gln Ser Pro Thr Ser Ala Ile	
100 105 110	
gac att ttg gtc aac tgc ggc gga att caa cgt cga cac cca tcg gtc	384
Asp Ile Leu Val Asn Cys Gly Gly Ile Gln Arg Arg His Pro Ser Val	
115 120 125	
gac ttt ccc gag tcc gac tgg gac gaa gtg ctc aac gtc aac ctg aaa	432
Asp Phe Pro Glu Ser Asp Trp Asp Glu Val Leu Asn Val Asn Leu Lys	
130 135 140	
gct gtt tgg ctt gtc tcg caa gca gcg ggt cgc cac atg gtc gca cgt	480
Ala Val Trp Leu Val Ser Gln Ala Ala Gly Arg His Met Val Ala Arg	
145 150 155 160	
cgt tcc gga aaa atc atc aac ttt ggc tct ctg ctt acc ttc caa ggt	528
Arg Ser Gly Lys Ile Ile Asn Phe Gly Ser Leu Leu Thr Phe Gln Gly	
165 170 175	
ggg ctt aca gtg cct gcg tac gct tcg gca aag gga gca gtg gga cag	576
Gly Leu Thr Val Pro Ala Tyr Ala Ser Ala Lys Gly Ala Val Gly Gln	
180 185 190	
ctg acc aaa gca ctc agc aac gag tgg gca aaa cat aac gtc cag gtc	624
Leu Thr Lys Ala Leu Ser Asn Glu Trp Ala Lys His Asn Val Gln Val	
195 200 205	

## PhoenixTemp32470.tmp.txt

aac ggt att gct cct ggt tac att gct acg gat atg aac gaa aag ctg	672
Asn Gly Ile Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Lys Leu	
210 215 220	
ctc gcc gac ccg acc agg ctg agg cag atc agc gaa agg att ccc gcg	720
Leu Ala Asp Pro Thr Arg Leu Arg Gln Ile Ser Glu Arg Ile Pro Ala	
225 230 235 240	
ggc aga tgg ggt gat ccg gcc gac ttc aaa ggg cca ttg ctg ttc ttg	768
Gly Arg Trp Gly Asp Pro Ala Asp Phe Lys Gly Pro Leu Leu Phe Leu	
245 250 255	
gcc agc cag gca agc cag tac gtg agc ggt gag atg ttg gtt gtt gat	816
Ala Ser Gln Ala Ser Gln Tyr Val Ser Gly Glu Met Leu Val Val Asp	
260 265 270	
ggt ggt tgg atg ggt cgt tga	837
Gly Gly Trp Met Gly Arg	
275	

&lt;210&gt; 3114

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Ustilago maydis 521

&lt;400&gt; 3114

Met Ala Thr Thr Asp Ala Ala Cys Glu Lys Thr Pro Ser Thr Ser Ser	
1 5 10 15	
Leu Gly Leu Phe Asn Leu Ser Gly Lys Thr Ala Leu Leu Thr Gly Gly	
20 25 30	
Thr Arg Gly Ile Gly Gln Ala Cys Ala Val Ala Leu Val Glu Ala Gly	
35 40 45	
Ala Ser Val Ile Leu Ala Val Arg Pro Gly Thr Ala Thr Ser Gly Ala	
50 55 60	
His Pro Ala Leu Ala Pro Leu Thr Ala Val Ala Asn Gln Ser Cys Ser	
65 70 75 80	
Gln Lys His Ser Thr Val Asp Ala Asp Leu Ser Asp Leu Ser Gln Val	
85 90 95	
Lys Thr Leu Phe Asp Arg Ala Leu Ser Gln Ser Pro Thr Ser Ala Ile	
100 105 110	
Asp Ile Leu Val Asn Cys Gly Gly Ile Gln Arg Arg His Pro Ser Val	
115 120 125	
Asp Phe Pro Glu Ser Asp Trp Asp Glu Val Leu Asn Val Asn Leu Lys	
130 135 140	
Ala Val Trp Leu Val Ser Gln Ala Ala Gly Arg His Met Val Ala Arg	
145 150 155 160	
Arg Ser Gly Lys Ile Ile Asn Phe Gly Ser Leu Leu Thr Phe Gln Gly	
165 170 175	
Gly Leu Thr Val Pro Ala Tyr Ala Ser Ala Lys Gly Ala Val Gly Gln	
180 185 190	
Leu Thr Lys Ala Leu Ser Asn Glu Trp Ala Lys His Asn Val Gln Val	
195 200 205	
Asn Gly Ile Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Lys Leu	
210 215 220	
Leu Ala Asp Pro Thr Arg Leu Arg Gln Ile Ser Glu Arg Ile Pro Ala	
225 230 235 240	
Gly Arg Trp Gly Asp Pro Ala Asp Phe Lys Gly Pro Leu Leu Phe Leu	
245 250 255	
Ala Ser Gln Ala Ser Gln Tyr Val Ser Gly Glu Met Leu Val Val Asp	
260 265 270	
Gly Gly Trp Met Gly Arg	
275	

&lt;210&gt; 3115

&lt;211&gt; 1068

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1068)

&lt;400&gt; 3115

PhoenixTemp32470.tmp.txt

atg	tcc	ttc	atc	cgc	tct	agc	ctt	ttc	aag	gcc	act	gcc	aat	ccc	atc	48
Met	Ser	Phe	Ile	Arg	Ser	Ser	Leu	Phe	Lys	Ala	Thr	Ala	Asn	Pro	Ile	
1				5					10					15		
agg	cga	tct	gcc	ttt	gct	acc	act	cca	ctt	cga	gcc	ttc	acc	agg	tcc	96
Arg	Arg	Ser	Ala	Phe	Ala	Thr	Thr	Pro	Leu	Arg	Ala	Phe	Thr	Arg	Ser	
			20					25					30			
gct	ctt	gtc	agc	aac	aac	aag	aag	gac	gat	ggg	tac	gag	gag	cat	cga	144
Ala	Leu	Val	Ser	Asn	Asn	Lys	Lys	Asp	Asp	Gly	Tyr	Glu	Glu	His	Arg	
		35					40					45				
gtc	gag	att	gag	ccc	aag	atc	gct	gct	gtc	gac	gag	agt	ttc	acg	ttt	192
Val	Glu	Ile	Glu	Pro	Lys	Ile	Ala	Ala	Val	Asp	Glu	Ser	Phe	Thr	Phe	
	50					55				60						
gaa	cac	cct	gag	aaa	tgg	gta	gac	aag	cat	cct	ggg	cat	gat	atg	cag	240
Glu	His	Pro	Glu	Lys	Trp	Val	Asp	Lys	His	Pro	Gly	His	Asp	Met	Gln	
	65				70					75					80	
cga	ggg	gat	ttt	ggg	cga	cac	acc	aag	cga	act	ctt	gca	tct	ttc	tct	288
Arg	Gly	Asp	Phe	Gly	Arg	His	Thr	Lys	Arg	Thr	Leu	Ala	Ser	Phe	Ser	
				85					90					95		
atg	gac	ggc	aag	gtc	tgc	ctt	gtc	act	ggg	gca	gct	cga	ggg	ctt	ggg	336
Met	Asp	Gly	Lys	Val	Cys	Leu	Val	Thr	Gly	Ala	Ala	Arg	Gly	Leu	Gly	
			100					105					110			
aac	atg	atg	gcc	agg	act	ttt	gtt	gaa	tcc	ggc	gcg	aac	gcc	att	gtc	384
Asn	Met	Met	Ala	Arg	Thr	Phe	Val	Glu	Ser	Gly	Ala	Asn	Ala	Ile	Val	
		115					120					125				
ctt	gtc	gat	ctc	aag	aag	gag	gat	gcc	gag	cgt	gca	gcc	aag	gag	ctc	432
Leu	Val	Asp	Leu	Lys	Lys	Glu	Asp	Ala	Glu	Arg	Ala	Ala	Lys	Glu	Leu	
	130					135					140					
gtt	gac	tgg	ttt	gtc	gag	aac	ggg	caa	gcc	gag	aag	ggg	gaa	att	gag	480
Val	Asp	Trp	Phe	Val	Glu	Asn	Gly	Gln	Ala	Glu	Lys	Gly	Glu	Ile	Glu	
	145				150					155					160	
gct	att	ggg	ctc	ggg	tgc	gac	gtt	tcc	gac	gag	gcc	tct	gtc	aag	cag	528
Ala	Ile	Gly	Leu	Gly	Cys	Asp	Val	Ser	Asp	Glu	Ala	Ser	Val	Lys	Gln	
				165					170					175		
gtc	ttt	agc	acc	gtc	aag	gag	aga	ttc	ggc	cgg	ctt	gac	gct	gtc	gtc	576
Val	Phe	Ser	Thr	Val	Lys	Glu	Arg	Phe	Gly	Arg	Leu	Asp	Ala	Val	Val	
			180					185					190			
act	gct	gcc	ggg	att	gtc	gaa	aac	ttt	gtc	gct	cac	gag	tac	ccc	atc	624
Thr	Ala	Ala	Gly	Ile	Val	Glu	Asn	Phe	Val	Ala	His	Glu	Tyr	Pro	Ile	
		195					200					205				
gat	aag	atc	aag	aag	ctg	ttg	gac	atc	aac	att	atg	ggg	act	tgg	tat	672
Asp	Lys	Ile	Lys	Lys	Leu	Leu	Asp	Ile	Asn	Ile	Met	Gly	Thr	Trp	Tyr	
	210				215						220					
tgc	gca	ctt	gag	gct	gcc	aag	ctt	atg	cct	gaa	ggg	ggg	tcc	att	acc	720
Cys	Ala	Leu	Glu	Ala	Ala	Lys	Leu	Met	Pro	Glu	Gly	Gly	Ser	Ile	Thr	
	225			230					235					240		
ctc	gtc	gca	tct	atg	agc	ggg	agc	att	gtc	aac	gtt	cct	caa	cct	caa	768
Leu	Val	Ala	Ser	Met	Ser	Gly	Ser	Ile	Val	Asn	Val	Pro	Gln	Pro	Gln	
				245					250					255		
acc	cct	tac	aac	ttt	tcc	aag	gct	gct	gtg	cga	cac	atg	gct	cga	tcc	816
Thr	Pro	Tyr	Asn	Phe	Ser	Lys	Ala	Ala	Val	Arg	His	Met	Ala	Arg	Ser	
			260				265					270				
ctc	gcc	gtc	gaa	tgg	gct	ctc	aag	ggg	atc	cgt	gtc	aac	gct	ctt	agt	864
Leu	Ala	Val	Glu	Trp	Ala	Leu	Lys	Gly	Ile	Arg	Val	Asn	Ala	Leu	Ser	
		275					280					285				
ccg	ggg	tac	gtc	ctc	acc	aac	ttg	act	aag	gtc	att	ctc	gac	gcc	aac	912
Pro	Gly	Tyr	Val	Leu	Thr	Asn	Leu	Thr	Lys	Val	Ile	Leu	Asp	Ala	Asn	
	290					295					300					
ccc	gtt	ctc	cgt	gac	gag	tgg	ctc	aac	cgt	atc	ccc	atg	ggg	cga	atg	960
Pro	Val	Leu	Arg	Asp	Glu	Trp	Leu	Asn	Arg	Ile	Pro	Met	Gly	Arg	Met	
	305				310					315				320		
gcc	gac	cct	tct	gat	ctc	aag	ggg	gcc	gtc	att	tac	ctt	gct	tct	gac	1008
Ala	Asp	Pro	Ser	Asp	Leu	Lys	Gly	Ala	Val	Ile	Tyr	Leu	Ala	Ser	Asp	
				325					330					335		
agc	tcc	aag	tac	acc	act	ggg	gct	gag	atc	atg	att	gac	ggg	ggg	tac	1056
Ser	Ser	Lys	Tyr	Thr	Thr	Gly	Ala	Glu	Ile	Met	Ile	Asp	Gly	Gly	Tyr	
			340					345					350			
act	tgc	ttg	taa													1068
Thr	Cys															
		355														

<210> 3116  
 <211> 355  
 <212> PRT  
 <213> Cryptococcus neoformans var. neoformans B-3501A

<400> 3116  
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 1 5 10 15  
 Arg Arg Ser Ala Phe Ala Thr Thr Pro Leu Arg Ala Phe Thr Arg Ser  
 20 25 30  
 Ala Leu Val Ser Asn Asn Lys Lys Asp Asp Gly Tyr Glu Glu His Arg  
 35 40 45  
 Val Glu Ile Glu Pro Lys Ile Ala Ala Val Asp Glu Ser Phe Thr Phe  
 50 55 60  
 Glu His Pro Glu Lys Trp Val Asp Lys His Pro Gly His Asp Met Gln  
 65 70 75 80  
 Arg Gly Asp Phe Gly Arg His Thr Lys Arg Thr Leu Ala Ser Phe Ser  
 85 90 95  
 Met Asp Gly Lys Val Cys Leu Val Thr Gly Ala Ala Arg Gly Leu Gly  
 100 105 110  
 Asn Met Met Ala Arg Thr Phe Val Glu Ser Gly Ala Asn Ala Ile Val  
 115 120 125  
 Leu Val Asp Leu Lys Lys Glu Asp Ala Glu Arg Ala Ala Lys Glu Leu  
 130 135 140  
 Val Asp Trp Phe Val Glu Asn Gly Gln Ala Glu Lys Gly Glu Ile Glu  
 145 150 155 160  
 Ala Ile Gly Leu Gly Cys Asp Val Ser Asp Glu Ala Ser Val Lys Gln  
 165 170 175  
 Val Phe Ser Thr Val Lys Glu Arg Phe Gly Arg Leu Asp Ala Val Val  
 180 185 190  
 Thr Ala Ala Gly Ile Val Glu Asn Phe Val Ala His Glu Tyr Pro Ile  
 195 200 205  
 Asp Lys Ile Lys Lys Leu Leu Asp Ile Asn Ile Met Gly Thr Trp Tyr  
 210 215 220  
 Cys Ala Leu Glu Ala Ala Lys Leu Met Pro Glu Gly Gly Ser Ile Thr  
 225 230 235 240  
 Leu Val Ala Ser Met Ser Gly Ser Ile Val Asn Val Pro Gln Pro Gln  
 245 250 255  
 Thr Pro Tyr Asn Phe Ser Lys Ala Ala Val Arg His Met Ala Arg Ser  
 260 265 270  
 Leu Ala Val Glu Trp Ala Leu Lys Gly Ile Arg Val Asn Ala Leu Ser  
 275 280 285  
 Pro Gly Tyr Val Leu Thr Asn Leu Thr Lys Val Ile Leu Asp Ala Asn  
 290 295 300  
 Pro Val Leu Arg Asp Glu Trp Leu Asn Arg Ile Pro Met Gly Arg Met  
 305 310 315 320  
 Ala Asp Pro Ser Asp Leu Lys Gly Ala Val Ile Tyr Leu Ala Ser Asp  
 325 330 335  
 Ser Ser Lys Tyr Thr Thr Gly Ala Glu Ile Met Ile Asp Gly Gly Tyr  
 340 345 350  
 Thr Cys Leu  
 355

<210> 3117  
 <211> 879  
 <212> DNA  
 <213> Cryptococcus neoformans var. neoformans B-3501A

<220>  
 <221> CDS  
 <222> (1)..(879)

<400> 3117  
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 Met Pro Ala Ala Arg Leu Arg Leu Glu His Lys Val Ala Ile Ile Thr 15  
 1 5 10  
 ggt gcc ggc tcc ggt atc ggt ctt gag acc gcc ctc caa ttt gcc gct 96  
 Gly Ala Gly Ser Gly Ile Gly Leu Glu Thr Ala Leu Gln Phe Ala Ala 30

## PhoenixTemp32470.tmp.txt

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      20      25      30
gag ggc gcc cga ctc gtc att tct gac atc aac ctc cgc aat gtc gag 144
Glu Gly Ala Arg Leu Val Ile Ser Asp Ile Asn Leu Arg Asn Val Glu
      35      40      45
gct gct gcc cag ctc atc aac act cat ttc cca gaa tgc ggt gct gtc 192
Ala Ala Ala Gln Leu Ile Asn Thr His Phe Pro Glu Cys Gly Ala Val
      50      55      60
gcc atc aag tgt gat gtg agc aag gag gag gag gtg aag gcc atg gtc 240
Ala Ile Lys Cys Asp Val Ser Lys Glu Glu Glu Val Lys Ala Met Val
      65      70      75      80
gat aag gcc gtg gag gtg ttt gga agg ttg gat gtg ctc ttc aac aac 288
Asp Lys Ala Val Glu Val Phe Gly Arg Leu Asp Val Leu Phe Asn Asn
      85      90      95
gcc ggt atc atg cac ccc gct gat gac aat gcc atc act acc gag gag 336
Ala Gly Ile Met His Pro Ala Asp Asp Asn Ala Ile Thr Thr Glu Glu
      100      105      110
aag gtc tgg gac ctt act cag aat att aac gtc aag ggt gtc tgg ttt 384
Lys Val Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe
      115      120      125
gga tgc aag tat ggt atc ttg gcc atg aag aaa aac aag ccc gat cct 432
Gly Cys Lys Tyr Gly Ile Leu Ala Met Lys Lys Asn Lys Pro Asp Pro
      130      135      140
tcc aag ggc ctc ggc att ggt ggt tct atc atc aac gtc gct tcc ttc 480
Ser Lys Gly Leu Gly Ile Gly Gly Ser Ile Ile Asn Val Ala Ser Phe
      145      150      155      160
gtc gcc atc ttg ggt gct gcc acc cct caa ctt gct tac acc gcc tcc 528
Val Ala Ile Leu Gly Ala Ala Thr Pro Gln Leu Ala Tyr Thr Ala Ser
      165      170      175
aag ggt gct gtc ctc gcc atg act cgc gaa ctt gca atg gtc cac gcc 576
Lys Gly Ala Val Leu Ala Met Thr Arg Glu Leu Ala Met Val His Ala
      180      185      190
cgt gaa ggt atc cga ttt aac tct ctc tgt ccc ggt cct atc cga acc 624
Arg Glu Gly Ile Arg Phe Asn Ser Leu Cys Pro Gly Pro Ile Arg Thr
      195      200      205
cct ctc ttg atg gat ttc ctc aac acc cct gaa aag ttg aac agg cga 672
Pro Leu Leu Met Asp Phe Leu Asn Thr Pro Glu Lys Leu Asn Arg Arg
      210      215      220
atg gtg cat gta ccc atg ggc agg ttc ggt gag gct gta gag cag gcc 720
Met Val His Val Pro Met Gly Arg Phe Gly Glu Ala Val Glu Gln Ala
      225      230      235
aag gct gtt gtc ttc gct tcc gat gac tct tcc ttc att aac ggt 768
Lys Ala Val Val Phe Leu Ala Ser Asp Asp Ser Ser Phe Ile Asn Gly
      245      250      255
acc gac ttc ttg gta gat ggt ggt ctt cac aag tgt tat gtt act ccc 816
Thr Asp Phe Leu Val Asp Gly Gly Leu His Lys Cys Tyr Val Thr Pro
      260      265      270
gaa ggc gag cct gcc cag ccc ggc cct acc gga ttg ctc gcc acc ctg 864
Glu Gly Glu Pro Ala Gln Pro Gly Pro Thr Gly Leu Leu Ala Thr Leu
      275      280      285
tcc aaa act gct taa
Ser Lys Thr Ala
      290

```

&lt;210&gt; 3118

&lt;211&gt; 292

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 3118

```

Met Pro Ala Ala Arg Leu Arg Leu Glu His Lys Val Ala Ile Ile Thr
1      5      10      15
Gly Ala Gly Ser Gly Ile Gly Leu Glu Thr Ala Leu Gln Phe Ala Ala
      20      25      30
Glu Gly Ala Arg Leu Val Ile Ser Asp Ile Asn Leu Arg Asn Val Glu
      35      40      45
Ala Ala Ala Gln Leu Ile Asn Thr His Phe Pro Glu Cys Gly Ala Val
      50      55      60
Ala Ile Lys Cys Asp Val Ser Lys Glu Glu Glu Val Lys Ala Met Val
65      70      75      80

```

## PhoenixTemp32470.tmp.txt

Asp Lys Ala Val Glu Val Phe Gly Arg Leu Asp Val Leu Phe Asn Asn  
 85 90  
 Ala Gly Ile Met His Pro Ala Asp Asp Asn Ala Ile Thr Thr Glu Glu  
 100 105  
 Lys Val Trp Asp Leu Thr Gln Asn Ile Asn Val Lys Gly Val Trp Phe  
 115 120 125  
 Gly Cys Lys Tyr Gly Ile Leu Ala Met Lys Lys Asn Lys Pro Asp Pro  
 130 135 140  
 Ser Lys Gly Leu Gly Ile Gly Gly Ser Ile Ile Asn Val Ala Ser Phe  
 145 150 155 160  
 Val Ala Ile Leu Gly Ala Ala Thr Pro Gln Leu Ala Tyr Thr Ala Ser  
 165 170 175  
 Lys Gly Ala Val Leu Ala Met Thr Arg Glu Leu Ala Met Val His Ala  
 180 185 190  
 Arg Glu Gly Ile Arg Phe Asn Ser Leu Cys Pro Gly Pro Ile Arg Thr  
 195 200 205  
 Pro Leu Leu Met Asp Phe Leu Asn Thr Pro Glu Lys Leu Asn Arg Arg  
 210 215 220  
 Met Val His Val Pro Met Gln Arg Phe Gly Glu Ala Val Glu Gln Ala  
 225 230 235 240  
 Lys Ala Val Val Phe Leu Ala Ser Asp Asp Ser Ser Phe Ile Asn Gly  
 245 250 255  
 Thr Asp Phe Leu Val Asp Gly Gly Leu His Lys Cys Tyr Val Thr Pro  
 260 265 270  
 Glu Gly Glu Pro Ala Gln Pro Gly Pro Thr Gly Leu Leu Ala Thr Leu  
 275 280 285  
 Ser Lys Thr Ala  
 290

&lt;210&gt; 3119

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 3119

atg tcc tac tta caa aac ctc ttt ggc ctt aca gga aaa act gct ttg	48
Met Ser Tyr Leu Gln Asn Leu Phe Gly Leu Thr Gly Lys Thr Ala Leu	
1 5 10 15	
atc act ggc gcc acc cgg ggt att ggg gct cga atg gcc ctt gct ctc	96
Ile Thr Gly Ala Thr Arg Gly Ile Gly Ala Arg Met Ala Leu Ala Leu	
20 25 30	
gcc aaa gcc ggt gcc gac atc atc ctt gtc cag cgt aac acc agc aac	144
Ala Lys Ala Gly Ala Asp Ile Ile Leu Val Gln Arg Asn Thr Ser Asn	
35 40 45	
acc gcg acc cga gac gat att att gct gcg ggg ggc aag gct gac att	192
Thr Ala Thr Arg Asp Asp Ile Ile Ala Ala Gly Gly Lys Ala Asp Ile	
50 55 60	
gtt gtt tgc gac ctc ggt gat gcg gcc tct gtt gcc aag ctc att ccc	240
Val Val Cys Asp Leu Gly Asp Ala Ala Ser Val Ala Lys Leu Ile Pro	
65 70 75 80	
cac gtt acc aag gag ctt gga cga act ctt gac att gtc gtc aac tgt	288
His Val Thr Lys Glu Leu Gly Arg Thr Leu Asp Ile Val Val Asn Cys	
85 90 95	
ggg ggt atc cag cgt cga cac ccc gtt gag aac ttc cct gag aat gat	336
Gly Gly Ile Gln Arg Arg His Pro Val Glu Asn Phe Pro Glu Asn Asp	
100 105 110	
tgg aac gac gtt ctc cag gtc aac ttg aac act gtc ttc act atc act	384
Trp Asn Asp Val Leu Gln Val Asn Leu Asn Thr Val Phe Thr Ile Thr	
115 120 125	
cga gat gct ggt agg cac atg ctc gaa tct cga ggt ggt gtc gct ggt	432
Arg Asp Ala Gly Arg His Met Leu Glu Ser Arg Gly Gly Val Ala Gly	
130 135 140	
gag ccc gtc ccc gaa ggc ggc gct gct ggc aac ccc aga ggc ttc ggc	480
Glu Pro Val Pro Glu Gly Gly Ala Ala Gly Asn Pro Arg Gly Phe Gly	
145 150 155 160	



## PhoenixTemp32470.tmp.txt

```

aag atc atc aac atc tcc agc cta gtg gcc tac cag ggt ggt ttg aac 528
Lys Ile Ile Asn Ile Ser Ser Leu Val Ala Tyr Gln Gly Gly Leu Asn
165 170 175
gtt gtg gct tac gcc gct gcc aag cac ggt gtc caa ggc att gtc aag 576
Val Val Ala Tyr Ala Ala Ala Lys His Gly Val Gln Gly Ile Val Lys
180 185 190
tcc ttc tct aac ggt tgg gct tct aaa ggc gtc tgt gtc aat gcc att 624
Ser Phe Ser Asn Gly Trp Ala Ser Lys Gly Val Cys Val Asn Ala Ile
195 200 205
gcc ccc ggt tac atc gct acc gac atg aac gaa gct ctc ata gca gac 672
Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Ala Leu Ile Ala Asp
210 215 220
aag gac cga gct cgt caa atc ctc gaa cgt att cct gcc ggc cga tgg 720
Lys Asp Arg Ala Arg Gln Ile Leu Glu Arg Ile Pro Ala Gly Arg Trp
225 230 235
gga tct cct gaa gac ttt gag ggt gcc att gtc ttc ctt gct tct cga 768
Gly Ser Pro Glu Asp Phe Glu Gly Ala Ile Val Phe Leu Ala Ser Arg
245 250 255
gcg agt gac tac gtc acc ggt gaa tgt ctg gtt gtt gac ggc gga tgg 816
Ala Ser Asp Tyr Val Thr Gly Glu Cys Leu Val Val Asp Gly Gly Trp
260 265 270
atg gct cgt gag tgt gtt taa
Met Ala Arg Glu Cys Val
275

```

&lt;210&gt; 3120

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Cryptococcus neoformans var. neoformans B-3501A

&lt;400&gt; 3120

```

Met Ser Tyr Leu Gln Asn Leu Phe Gly Leu Thr Gly Lys Thr Ala Leu
1 5 10 15
Ile Thr Gly Ala Thr Arg Gly Ile Gly Ala Arg Met Ala Leu Ala Leu
20 25 30
Ala Lys Ala Gly Ala Asp Ile Ile Leu Val Gln Arg Asn Thr Ser Asn
35 40 45
Thr Ala Thr Arg Asp Asp Ile Ile Ala Ala Gly Gly Lys Ala Asp Ile
50 55 60
Val Val Cys Asp Leu Gly Asp Ala Ala Ser Val Ala Lys Leu Ile Pro
65 70 75 80
His Val Thr Lys Glu Leu Gly Arg Thr Leu Asp Ile Val Val Asn Cys
85 90 95
Gly Gly Ile Gln Arg Arg His Pro Val Glu Asn Phe Pro Glu Asn Asp
100 105 110
Trp Asn Asp Val Leu Gln Val Asn Leu Asn Thr Val Phe Thr Ile Thr
115 120 125
Arg Asp Ala Gly Arg His Met Leu Glu Ser Arg Gly Gly Val Ala Gly
130 135 140
Glu Pro Val Pro Glu Gly Gly Ala Ala Gly Asn Pro Arg Gly Phe Gly
145 150 155 160
Lys Ile Ile Asn Ile Ser Ser Leu Val Ala Tyr Gln Gly Gly Leu Asn
165 170 175
Val Val Ala Tyr Ala Ala Ala Lys His Gly Val Gln Gly Ile Val Lys
180 185 190
Ser Phe Ser Asn Gly Trp Ala Ser Lys Gly Val Cys Val Asn Ala Ile
195 200 205
Ala Pro Gly Tyr Ile Ala Thr Asp Met Asn Glu Ala Leu Ile Ala Asp
210 215 220
Lys Asp Arg Ala Arg Gln Ile Leu Glu Arg Ile Pro Ala Gly Arg Trp
225 230 235 240
Gly Ser Pro Glu Asp Phe Glu Gly Ala Ile Val Phe Leu Ala Ser Arg
245 250 255
Ala Ser Asp Tyr Val Thr Gly Glu Cys Leu Val Val Asp Gly Gly Trp
260 265 270
Met Ala Arg Glu Cys Val
275

```

&lt;210&gt; 3121

<211> 819  
 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (1)..(819)

```

<400> 3121
atg gcg tca tca gct cca gca ttg ctc ggg ggt tcg ttg aag gga aaa      48
Met Ala Ser Ser Ala Pro Ala Leu Leu Gly Gly Ser Leu Lys Gly Lys
  1          5          10          15
ggt gcc ctc atc aca gga gcc agc tca gga ata gga gcc gag act gct      96
Val Ala Leu Ile Thr Gly Ala Ser Ser Gly Ile Gly Ala Glu Thr Ala
          20          25          30
cgt cat ttt gct tcc ctt gga tgc cga ttg gcg ttg aca gga cgt aac      144
Arg His Phe Ala Ser Leu Gly Cys Arg Leu Ala Leu Thr Gly Arg Asn
          35          40          45
atg gaa acg ctt gag gaa gta acc aat gaa tgt att agg aga ggg ctc      192
Met Glu Thr Leu Glu Glu Val Thr Asn Glu Cys Ile Arg Arg Gly Leu
          50          55          60
gac aaa gac aag att tta atg atc caa gca gac ttt gag ctg gaa gct      240
Asp Lys Asp Lys Ile Leu Met Ile Gln Ala Asp Phe Glu Leu Glu Ala
          65          70          75
gat gtg aag aga act gca gaa gaa acc ata cag aaa ttc aac cag att      288
Asp Val Lys Arg Thr Ala Glu Glu Thr Ile Gln Lys Phe Asn Gln Ile
          85          90          95
gat gtg cta gtc aat aat gca gga atg tat gca aca aac aca gtc gag      336
Asp Val Leu Val Asn Asn Ala Gly Met Tyr Ala Thr Asn Thr Val Glu
          100          105          110
acc gtt act tta gaa tgt ttt gat aaa atc ttt gca gtg aat gtg aga      384
Thr Val Thr Leu Glu Cys Phe Asp Lys Ile Phe Ala Val Asn Val Arg
          115          120          125
gcg ccc ctc cag ctc acc cag ctc cta gcg cca cat ctg atc aaa act      432
Ala Pro Leu Gln Leu Thr Gln Leu Leu Ala Pro His Leu Ile Lys Thr
          130          135          140
aaa ggg act gtg gta aat gta tca agt gtg gtg ggc aag gta tcg atg      480
Lys Gly Thr Val Val Asn Val Ser Ser Val Val Gly Lys Val Ser Met
          145          150          155
act gac aac tta gcc tat agt atg tct aag aca gcg ttg gat cat atg      528
Thr Asp Asn Leu Ala Tyr Ser Met Ser Lys Thr Ala Leu Asp His Met
          165          170          175
aca agg tct ata gct gaa gaa cta gcg ccc cat gga gtt cgg gtt aac      576
Thr Arg Ser Ile Ala Glu Glu Leu Ala Pro His Gly Val Arg Val Asn
          180          185          190
gca gtg aac cct ggt att att acg act cct ctc ttc aag agg tca ttc      624
Ala Val Asn Pro Gly Ile Ile Thr Thr Pro Leu Phe Lys Arg Ser Phe
          195          200          205
ggg gtg act gat gag gca gta gct cag ttt tta gag gaa atg aag aag      672
Gly Val Thr Asp Glu Ala Val Ala Gln Phe Leu Glu Glu Met Lys Lys
          210          215          220
cat cat gcc atg cga agg acc ggt acc gta gat gaa gta tcc cgg acg      720
His His Ala Met Arg Arg Thr Gly Thr Val Asp Glu Val Ser Arg Thr
          225          230          235
ata gca ttc ctc gca tcc aac gac tcg tct ttc acc acg gga gaa acc      768
Ile Ala Phe Leu Ala Ser Asn Asp Ser Ser Phe Thr Thr Gly Glu Thr
          245          250          255
gtt ggg act gaa gga ggg ttg cat ctt ttg gtt aca aaa gtt cag att      816
Val Gly Thr Glu Gly Gly Leu His Leu Leu Val Thr Lys Val Gln Ile
          260          265          270
tag
      819

```

<210> 3122  
 <211> 272  
 <212> PRT  
 <213> Strongylocentrotus purpuratus

## PhoenixTemp32470.tmp.txt

```

<400> 3122
Met Ala Ser Ser Ala Pro Ala Leu Leu Gly Gly Ser Leu Lys Gly Lys
1      5      10      15
Val Ala Leu Ile Thr Gly Ala Ser Ser Gly Ile Gly Ala Glu Thr Ala
20      25      30
Arg His Phe Ala Ser Leu Gly Cys Arg Leu Ala Leu Thr Gly Arg Asn
35      40      45
Met Glu Thr Leu Glu Glu Val Thr Asn Glu Cys Ile Arg Arg Gly Leu
50      55      60
Asp Lys Asp Lys Ile Leu Met Ile Gln Ala Asp Phe Glu Leu Glu Ala
65      70      75      80
Asp Val Lys Arg Thr Ala Glu Glu Thr Ile Gln Lys Phe Asn Gln Ile
85      90      95
Asp Val Leu Val Asn Asn Ala Gly Met Tyr Ala Thr Asn Thr Val Glu
100     105     110
Thr Val Thr Leu Glu Cys Phe Asp Lys Ile Phe Ala Val Asn Val Arg
115     120     125
Ala Pro Leu Gln Leu Thr Gln Leu Leu Ala Pro His Leu Ile Lys Thr
130     135     140
Lys Gly Thr Val Val Asn Val Ser Ser Val Val Gly Lys Val Ser Met
145     150     155     160
Thr Asp Asn Leu Ala Tyr Ser Met Ser Lys Thr Ala Leu Asp His Met
165     170     175
Thr Arg Ser Ile Ala Glu Glu Leu Ala Pro His Gly Val Arg Val Asn
180     185     190
Ala Val Asn Pro Gly Ile Ile Thr Thr Pro Leu Phe Lys Arg Ser Phe
195     200     205
Gly Val Thr Asp Glu Ala Val Ala Gln Phe Leu Glu Glu Met Lys Lys
210     215     220
His His Ala Met Arg Arg Thr Gly Thr Val Asp Glu Val Ser Arg Thr
225     230     235     240
Ile Ala Phe Leu Ala Ser Asn Asp Ser Ser Phe Thr Thr Gly Glu Thr
245     250     255
Val Gly Thr Glu Gly Gly Leu His Leu Leu Val Thr Lys Val Gln Ile
260     265     270

```

```

<210> 3123
<211> 801
<212> DNA
<213> Tribolium castaneum

```

```

<220>
<221> CDS
<222> (1)..(801)

```

```

<400> 3123
atg ccc cca aca aaa atc ctc aca ctt ttc agg aca atg agt tcg gct      48
Met Pro Pro Thr Lys Ile Leu Thr Leu Phe Arg Thr Met Ser Ser Ala
1      5      10      15
tcc tca cag cgt ctt tgt ggc aga aca gca ata gtt acg gca tcg acc      96
Ser Ser Gln Arg Leu Cys Gly Arg Thr Ala Ile Val Thr Ala Ser Thr
20      25      30
gaa gga atc ggt ttt gcg att gcc caa cgt ttt gca caa gaa gga gca      144
Glu Gly Ile Gly Phe Ala Ile Ala Gln Arg Phe Ala Gln Glu Gly Ala
35      40      45
aag gtg ata atc agc agc cgc aag gaa aag aat gtc gaa gcg gcg gtt      192
Lys Val Ile Ile Ser Ser Arg Lys Glu Lys Asn Val Glu Ala Ala Val
50      55      60
tct aaa tta aaa tcg gaa ggt ttg gac gtt tgt ggg ctc gta tgt cat      240
Ser Lys Leu Lys Ser Glu Gly Leu Asp Val Cys Gly Leu Val Cys His
65      70      75      80
gtc tcc aat tca gaa cac cgt aaa aaa ttg ttc gaa aag gca aca ggg      288
Val Ser Asn Ser Glu His Arg Lys Lys Leu Phe Glu Lys Ala Thr Gly
85      90      95
ggt tta gat att ttg gtc tcc aat gct gct gta aac ccc tcg gca acg      336
Gly Leu Asp Ile Leu Val Ser Asn Ala Ala Val Asn Pro Ser Ala Thr
100     105     110
gcg gtc ttg gac tgt gac gaa aaa gcg tgg gac aaa att ttc gat gta      384
Ala Val Leu Asp Cys Asp Glu Lys Ala Trp Asp Lys Ile Phe Asp Val

```

## PhoenixTemp32470.tmp.txt

aac	gtg	115	aaa	gct	gct	ttc	atg	120	tta	gcg	aaa	gaa	gct	125	tta	ccg	tta	ctt	432
Asn	Val	Lys	Ala	Ala	Phe	Met	Met	Leu	Ala	Lys	Glu	Ala	Leu	Pro	Leu	Leu			
cgc	aaa	agt	agc	tgc	ggt	cga	att	att	ttc	atc	tcg	tcc	att	ggt	ggt			480	
Arg	Lys	Ser	Ser	Cys	Gly	Arg	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Gly	Gly				
145	ttc	cag	cct	ttg	gat	ttg	att	ggg	gct	tac	tgt	gtg	agc	aag	tgt	gca		528	
Phe	Gln	Pro	Leu	Asp	Leu	Ile	Gly	Ala	Tyr	Cys	Val	Ser	Lys	Cys	Ala				
	ctc	ttt	gga	ctc	act	aaa	aca	gca	gca	gcc	cag	tta	gct	aaa	gaa	aat		576	
Leu	Phe	Gly	Leu	Thr	Lys	Thr	Ala	Ala	Ala	Gln	Leu	Ala	Lys	Glu	Asn				
	atc	acc	gtt	aat	tgc	ata	gcc	ccg	ggt	tta	ata	aaa	acc	aag	ttt	tcg		624	
Ile	Thr	Val	Asn	Cys	Ile	Ala	Pro	Gly	Leu	Ile	Lys	Thr	Lys	Phe	Ser				
	cac	ttt	ctg	gtc	gag	aaa	gag	gaa	gac	aaa	aag	aaa	ggt	tta	tca	atg		672	
His	Phe	Leu	Val	Glu	Lys	Glu	Glu	Asp	Lys	Lys	Lys	Val	Leu	Ser	Met				
	att	ccg	atg	gga	aga	atg	gga	atg	cca	cat	gaa	ata	gct	ggc	gca	gct		720	
Ile	Pro	Met	Gly	Arg	Met	Gly	Met	Pro	His	Glu	Ile	Ala	Gly	Ala	Ala				
225	gca	ttt	tta	gca	tca	gac	gac	gcc	agt	tac	atg	act	ggg	gaa	aca	att		768	
Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr	Met	Thr	Gly	Glu	Thr	Ile				
	gta	gta	gca	ggt	ggc	atg	cta	tca	aga	tta	taa							801	
Val	Val	Ala	Gly	Gly	Met	Leu	Ser	Arg	Leu										
			260						265										

&lt;210&gt; 3124

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Tribolium castaneum

&lt;400&gt; 3124

Met	Pro	Pro	Thr	Lys	Ile	Leu	Thr	Leu	Phe	Arg	Thr	Met	Ser	Ser	Ala			
1	Ser	Ser	Gln	Arg	Leu	Cys	Gly	Arg	Thr	Ala	Ile	Val	Thr	Ala	Ser	Thr		
	Glu	Gly	Ile	Gly	Phe	Ala	Ile	Ala	Gln	Arg	Phe	Ala	Gln	Glu	Gly	Ala		
	Lys	Val	Ile	Ile	Ser	Ser	Arg	Lys	Glu	Lys	Asn	Val	Glu	Ala	Ala	Val		
	Ser	Lys	Leu	Lys	Ser	Glu	Gly	Leu	Asp	Val	Cys	Gly	Leu	Val	Cys	His		
65	Val	Ser	Asn	Ser	Glu	His	Arg	Lys	Lys	Leu	Phe	Glu	Lys	Ala	Thr	Gly		
	Gly	Leu	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala	Val	Asn	Pro	Ser	Ala	Thr		
	Ala	Val	Leu	Asp	Cys	Asp	Glu	Lys	Ala	Trp	Asp	Lys	Ile	Phe	Asp	Val		
	Asn	Val	Lys	Ala	Ala	Phe	Met	Leu	Ala	Lys	Glu	Ala	Leu	Pro	Leu	Leu		
	Arg	Lys	Ser	Ser	Cys	Gly	Arg	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Gly	Gly		
145	Phe	Gln	Pro	Leu	Asp	Leu	Ile	Gly	Ala	Tyr	Cys	Val	Ser	Lys	Cys	Ala		
	Leu	Phe	Gly	Leu	Thr	Lys	Thr	Ala	Ala	Ala	Gln	Leu	Ala	Lys	Glu	Asn		
	Ile	Thr	Val	Asn	Cys	Ile	Ala	Pro	Gly	Leu	Ile	Lys	Thr	Lys	Phe	Ser		
	His	Phe	Leu	Val	Glu	Lys	Glu	Asp	Lys	Lys	Lys	Val	Leu	Ser	Met			
	Ile	Pro	Met	Gly	Arg	Met	Gly	Met	Pro	His	Glu	Ile	Ala	Gly	Ala	Ala		
225	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr	Met	Thr	Gly	Glu	Thr	Ile		
	Val	Val	Ala	Gly	Met	Leu	Ser	Arg	Leu									
				260					265									

## PhoenixTemp32470.tmp.txt

<210> 3125  
 <211> 753  
 <212> DNA  
 <213> Prochlorococcus marinus str. NATL1A

<220>  
 <221> CDS  
 <222> (1)..(753)  
 <223> transl\_table=11

```

<400> 3125
atg aca tta tca aaa tta ctt gaa gga cag act gca att gta act ggc      48
Met Thr Leu Ser Lys Leu Leu Glu Gly Gln Thr Ala Ile Val Thr Gly
1      5      10      15
gca agc aga ggt att ggt aaa gct att gca att ttt cta gcg aag gaa      96
Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Ile Phe Leu Ala Lys Glu
20      25      30
gga gca gaa gta atc atc aat tat tct tca tct ttg gaa aat gca aat      144
Gly Ala Glu Val Ile Ile Asn Tyr Ser Ser Ser Leu Glu Asn Ala Asn
35      40      45
aaa gtc gta tca gaa ata aac tcc ttt gga ggg aag gca tac cct ctt      192
Lys Val Val Ser Glu Ile Asn Ser Phe Gly Gly Lys Ala Tyr Pro Leu
50      55      60
caa gct gat att tct aat gaa aac tcg gta aat gac tta ata aaa aca      240
Gln Ala Asp Ile Ser Asn Glu Asn Ser Val Asn Asp Leu Ile Lys Thr
65      70      75      80
gta ttg gag aaa aat aat aaa att gat gtt ctc gtc aat aac gct ggg      288
Val Leu Glu Lys Asn Asn Lys Ile Asp Val Leu Val Asn Asn Ala Gly
85      90      95
ata act aaa gat ggc ctt tta atg aga atg aaa acg gac gat tgg cag      336
Ile Thr Lys Asp Gly Leu Leu Met Arg Met Lys Thr Asp Asp Trp Gln
100      105      110
aaa gtt tta gat ctt aac ttg agt ggt gtt ttt tat tgc aca aga gcg      384
Lys Val Leu Asp Leu Asn Leu Ser Gly Val Phe Tyr Cys Thr Arg Ala
115      120      125
gta tct agg cag atg ttg aag caa aaa aaa gga aga att atc aac ata      432
Val Ser Arg Gln Met Leu Lys Gln Lys Lys Gly Arg Ile Ile Asn Ile
130      135      140
act tct gta gtt ggg ttg atg ggc aac cca ggg caa gca aat tat tct      480
Thr Ser Val Val Gly Leu Met Gly Asn Pro Gly Gln Ala Asn Tyr Ser
145      150      155      160
gcg gcc aag gca gga gta gta ggt ctc aca caa agc gct gca aaa gaa      528
Ala Ala Lys Ala Gly Val Val Gly Leu Thr Gln Ser Ala Ala Lys Glu
165      170      175
ttt gcc agc aga gga att act gta aat gca gtt gct cct ggt ttt att      576
Phe Ala Ser Arg Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile
180      185      190
tca act gat atg acc aaa gat ctg gat agt gaa tca atc ctt tct gct      624
Ser Thr Asp Met Thr Lys Asp Leu Asp Ser Glu Ser Ile Leu Ser Ala
195      200      205
atc ccg ctt gga cga ttc ggc aac cct gaa gat gtt gca ggg gca gtg      672
Ile Pro Leu Gly Arg Phe Gly Asn Pro Glu Asp Val Ala Gly Ala Val
210      215      220
agg ttt tta gca gcg gat cct tcg gcg tct tac ata aca ggt cag gta      720
Arg Phe Leu Ala Ala Asp Pro Ser Ala Ser Tyr Ile Thr Gly Gln Val
225      230      235      240
att caa gtt gat ggt ggg atg gtt atg agt taa
Ile Gln Val Asp Gly Gly Met Val Met Ser
245      250

```

<210> 3126  
 <211> 250  
 <212> PRT  
 <213> Prochlorococcus marinus str. NATL1A

```

<400> 3126
Met Thr Leu Ser Lys Leu Leu Glu Gly Gln Thr Ala Ile Val Thr Gly
1      5      10      15

```

## PhoenixTemp32470.tmp.txt

Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Ile Phe Leu Ala Lys Glu  
 20 25 30  
 Gly Ala Glu Val Ile Ile Asn Tyr Ser Ser Ser Leu Glu Asn Ala Asn  
 35 40 45  
 Lys Val Val Ser Glu Ile Asn Ser Phe Gly Gly Lys Ala Tyr Pro Leu  
 50 55 60  
 Gln Ala Asp Ile Ser Asn Glu Asn Ser Val Asn Asp Leu Ile Lys Thr  
 65 70 75 80  
 Val Leu Glu Lys Asn Asn Lys Ile Asp Val Leu Val Asn Asn Ala Gly  
 85 90 95  
 Ile Thr Lys Asp Gly Leu Leu Met Arg Met Lys Thr Asp Asp Trp Gln  
 100 105 110  
 Lys Val Leu Asp Leu Asn Leu Ser Gly Val Phe Tyr Cys Thr Arg Ala  
 115 120 125  
 Val Ser Arg Gln Met Leu Lys Gln Lys Lys Gly Arg Ile Ile Asn Ile  
 130 135 140  
 Thr Ser Val Val Gly Leu Met Gly Asn Pro Gly Gln Ala Asn Tyr Ser  
 145 150 155 160  
 Ala Ala Lys Ala Gly Val Val Gly Leu Thr Gln Ser Ala Ala Lys Glu  
 165 170 175  
 Phe Ala Ser Arg Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile  
 180 185 190  
 Ser Thr Asp Met Thr Lys Asp Leu Asp Ser Glu Ser Ile Leu Ser Ala  
 195 200 205  
 Ile Pro Leu Gly Arg Phe Gly Asn Pro Glu Asp Val Ala Gly Ala Val  
 210 215 220  
 Arg Phe Leu Ala Ala Asp Pro Ser Ala Ser Tyr Ile Thr Gly Gln Val  
 225 230 235 240  
 Ile Gln Val Asp Gly Gly Met Val Met Ser  
 245 250

&lt;210&gt; 3127

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. JLS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3127

atg acc cgg gaa cat ggg cgc ctc cac ggc aag tcc gcg gtg atc acc	48
Met Thr Arg Glu His Gly Arg Leu His Gly Lys Ser Ala Val Ile Thr	
1 5 10 15	
ggg gcg gcg ttc ggc atc ggc cgg gcc acc gcc gtg ctc ttc gca cga	96
Gly Ala Ala Phe Gly Ile Gly Arg Ala Thr Ala Val Leu Phe Ala Arg	
20 25 30	
gag ggc gcg cgg ctg gtc gtg acc gat att cag agc gag ccg ctg ctg	144
Glu Gly Ala Arg Leu Val Val Thr Asp Ile Gln Ser Glu Pro Leu Leu	
35 40 45	
gcg ctt gcc gat gaa ctg cgg cac gcc gga gcg gac gtc gag ccc gtc	192
Ala Leu Ala Asp Glu Leu Arg His Ala Gly Ala Asp Val Glu Pro Val	
50 55 60	
gtc ggc gac gtc tcg gtg gag tat gac gcg ggg cgg atg atc ggg gcg	240
Val Gly Asp Val Ser Val Glu Tyr Asp Ala Gly Arg Met Ile Gly Ala	
65 70 75 80	
gcg gtc gac cgc ttc gga cgg ctc gat gtg ctg gtc gcc aac gca ggc	288
Ala Val Asp Arg Phe Gly Arg Leu Asp Val Leu Val Ala Asn Ala Gly	
85 90 95	
atc atc ccg ctc ggc gac gcg ctg gaa atg acc gcc gcc ggc tgg gac	336
Ile Ile Pro Leu Gly Asp Ala Leu Glu Met Thr Ala Ala Gly Trp Asp	
100 105 110	
gaa gtg atg gcc atc gac ggg cgc ggc atg ttc ctg tgc tgc aaa ttc	384
Glu Val Met Ala Ile Asp Gly Arg Gly Met Phe Leu Cys Cys Lys Phe	
115 120 125	
gcg atc gag gcg atg ttg ccg acc ggg ggt ggc gcc atc gtc tgc ctc	432
Ala Ile Glu Ala Met Leu Pro Thr Gly Gly Gly Ile Val Cys Leu	
130 135 140	

## PhoenixTemp32470.tmp.txt

tcc	tcg	atc	tcc	gga	ctg	gcg	ggg	cag	aag	cgg	cag	gcg	gcc	tac	ggt	480
Ser	Ser	Ile	Ser	Gly	Leu	Ala	Gly	Gln	Lys	Arg	Gln	Ala	Ala	Tyr	Gly	
145				150				155							160	
ccc	gcc	aag	ttc	atc	gcc	acc	ggc	ttg	acc	aag	cac	ctg	gca	gtc	gag	528
Pro	Ala	Lys	Phe	Ile	Ala	Thr	Gly	Leu	Thr	Lys	His	Leu	Ala	Val	Glu	
				165				170							175	
tgg	gcc	gac	cgg	ggt	atc	aga	gtc	aac	gcc	gtc	gcc	ccc	ggg	acg	att	576
Trp	Ala	Asp	Arg	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Thr	Ile	
				180				185							190	
cga	acc	gag	cgg	gtc	aag	cgg	ttc	ccg	gag	gag	ccg	ggt	ggc	tcg	gag	624
Arg	Thr	Glu	Arg	Val	Lys	Arg	Phe	Pro	Glu	Glu	Pro	Gly	Gly	Ser	Glu	
				195			200					205				
tac	ctg	gcg	gcg	gtc	gag	cgt	atg	cac	ccg	atg	ggc	cgc	atc	ggc	gaa	672
Tyr	Leu	Ala	Ala	Val	Glu	Arg	Met	His	Pro	Met	Gly	Arg	Ile	Gly	Glu	
	210					215					220					
cca	gcc	gaa	gtc	gcc	agc	gcc	atc	gtc	ttt	ctc	gcc	tcc	gac	gac	gcc	720
Pro	Ala	Glu	Val	Ala	Ser	Ala	Ile	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ala	
225					230					235					240	
tcc	ttc	atc	acc	ggc	gcc	gtg	ctg	ccg	gtc	gac	ggg	gga	tat	cta	gcg	768
Ser	Phe	Ile	Thr	Gly	Ala	Val	Leu	Pro	Val	Asp	Gly	Gly	Tyr	Leu	Ala	
				245					250					255		
cag	tag															774
Gln																

&lt;210&gt; 3128

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. JLS

&lt;400&gt; 3128

Met	Thr	Arg	Glu	His	Gly	Arg	Leu	His	Gly	Lys	Ser	Ala	Val	Ile	Thr	
1				5				10						15		
Gly	Ala	Ala	Phe	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Val	Leu	Phe	Ala	Arg	
			20					25					30			
Glu	Gly	Ala	Arg	Leu	Val	Val	Thr	Asp	Ile	Gln	Ser	Glu	Pro	Leu	Leu	
		35					40					45				
Ala	Leu	Ala	Asp	Glu	Leu	Arg	His	Ala	Gly	Ala	Asp	Val	Glu	Pro	Val	
	50					55				60						
Val	Gly	Asp	Val	Ser	Val	Glu	Tyr	Asp	Ala	Gly	Arg	Met	Ile	Gly	Ala	
65					70					75					80	
Ala	Val	Asp	Arg	Phe	Gly	Arg	Leu	Asp	Val	Leu	Val	Ala	Asn	Ala	Gly	
				85					90					95		
Ile	Ile	Pro	Leu	Gly	Asp	Ala	Leu	Glu	Met	Thr	Ala	Ala	Gly	Trp	Asp	
		100						105					110			
Glu	Val	Met	Ala	Ile	Asp	Gly	Arg	Gly	Met	Phe	Leu	Cys	Cys	Lys	Phe	
		115					120					125				
Ala	Ile	Glu	Ala	Met	Leu	Pro	Thr	Gly	Gly	Gly	Ala	Ile	Val	Cys	Leu	
	130					135					140					
Ser	Ser	Ile	Ser	Gly	Leu	Ala	Gly	Gln	Lys	Arg	Gln	Ala	Ala	Tyr	Gly	
145				150						155					160	
Pro	Ala	Lys	Phe	Ile	Ala	Thr	Gly	Leu	Thr	Lys	His	Leu	Ala	Val	Glu	
				165					170					175		
Trp	Ala	Asp	Arg	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Thr	Ile	
			180					185					190			
Arg	Thr	Glu	Arg	Val	Lys	Arg	Phe	Pro	Glu	Glu	Pro	Gly	Gly	Ser	Glu	
		195					200					205				
Tyr	Leu	Ala	Ala	Val	Glu	Arg	Met	His	Pro	Met	Gly	Arg	Ile	Gly	Glu	
	210					215					220					
Pro	Ala	Glu	Val	Ala	Ser	Ala	Ile	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ala	
225					230					235					240	
Ser	Phe	Ile	Thr	Gly	Ala	Val	Leu	Pro	Val	Asp	Gly	Gly	Tyr	Leu	Ala	
				245					250					255		
Gln																

&lt;210&gt; 3129

&lt;211&gt; 750

&lt;212&gt; DNA

&lt;213&gt; Clostridium difficile 630

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(750)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3129

```

atg ata aat ctt aca gga caa gta gca gtt gtt act ggt ggc tct agg      48
Met Ile Asn Leu Thr Gly Gln Val Ala Val Val Thr Gly Gly Ser Arg
  1          5          10          15
ggt ata gga aaa gaa ata gca aaa aaa cta gca tct ttt ggg gct gat      96
Gly Ile Gly Lys 20 Glu Ile Ala Lys 25 Leu Ala Ser Phe Gly 30 Ala Asp
gta gta atc aat tat act tct aaa gaa gat gaa gca cta aaa act aaa      144
Val Val Ile Asn Tyr Thr Ser Lys 40 Glu Asp Glu Ala Leu Lys Thr Lys
  35          40          45
aat gaa ata gaa agt atg ggg gta aag tgt acc tct ata aaa tgt gat      192
Asn Glu Ile Glu Ser Met Gly 55 Val Lys Cys Thr 60 Ile Lys Cys Asp
  50          55          60
gtg tct aaa ttt gat gaa gtg aat caa atg ata gat tct gtt gta agc      240
Val Ser Lys Phe Asp Glu Val Asn Gln Met Ile Asp Ser Val Val Ser
  65          70          75          80
gaa ttt gga aaa att gat ata ttg gtt aat aat gca ggc ata act aaa      288
Glu Phe Gly Lys 85 Ile Asp Ile Leu Val Asn 90 Asn Ala Gly Ile Thr Lys
  85          90          95
gat ggt ctg ctt atg aga atg aaa gaa gaa gat ttt gat aga gtt ata      336
Asp Gly Leu Leu Met Arg Met Lys Glu Glu Asp Phe Asp Arg Val Ile
  100          105          110
gat ata aac tta aaa ggt gtc ttt aat tgt aca aaa gca gtt act aaa      384
Asp Ile Asn Leu Lys Gly Val Phe Asn Cys Thr Lys Ala Val Thr Lys
  115          120          125
cct atg atg aaa aag aag tat gga aga ata ata aat atg act tca gta      432
Pro Met Met Lys Lys Lys Tyr Gly Arg Ile Ile Asn Met Thr Ser Val
  130          135          140
gtt gga att atg ggt aat gca ggg caa act aat tat tgt gca tca aaa      480
Val Gly Ile Met Gly Asn Ala Gly Gln Thr Asn Tyr Cys Ala Ser Lys
  145          150          155          160
gca ggt gta att gga ttt aca aaa gct tct gca aga gag tta gca tca      528
Ala Gly Val Ile Gly Phe Thr Lys Ala Ser 170 Ala Arg Glu Leu Ala Ser
  165          170          175
aga aac ata aat ata aat gca gta gca cct gga ttt ata gaa aca gat      576
Arg Asn Ile Asn Ile Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Asp
  180          185          190
atg act aaa gta cta agt gat gat gta aaa gaa tca aca cta gca aac      624
Met Thr Lys Val Leu Ser Asp Asp Val Lys Glu Ser Thr Leu Ala Asn
  195          200          205
ata cca aag aaa tct tat ggt aaa cca gaa gat gta gcc aat gcc gta      672
Ile Pro Lys Lys Ser Tyr Gly Lys Pro Glu Asp Val Ala Asn Ala Val
  210          215          220
gca ttt tta gtt agt gac atg tca agt tat ata aca gga caa gta ata      720
Ala Phe Leu Val Ser Asp Met Ser Ser Tyr Ile Thr Gly Gln Val Ile
  225          230          235          240
aat gta gat ggt gga atg gta atg caa taa      750
Asn Val Asp Gly Gly Met Val Met Gln
  245

```

&lt;210&gt; 3130

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Clostridium difficile 630

&lt;400&gt; 3130

```

Met Ile Asn Leu Thr Gly Gln Val Ala Val Val Thr Gly Gly Ser Arg
  1          5          10          15
Gly Ile Gly Lys 20 Glu Ile Ala Lys 25 Leu Ala Ser Phe Gly 30 Ala Asp
Val Val Ile 35 Asn Tyr Thr Ser Lys 40 Glu Asp Glu Ala Leu Lys Thr Lys
  35          40          45

```



## PhoenixTemp32470.tmp.txt

Asn Glu Ile Glu Ser Met Gly Val Lys Cys Thr Ser Ile Lys Cys Asp  
 50 55 60  
 Val Ser Lys Phe Asp Glu Val Asn Gln Met Ile Asp Ser Val Val Ser  
 65 70 75 80  
 Glu Phe Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys  
 85 90 95  
 Asp Gly Leu Leu Met Arg Met Lys Glu Asp Phe Asp Arg Val Ile  
 100 105 110  
 Asp Ile Asn Leu Lys Gly Val Phe Asn Cys Thr Lys Ala Val Thr Lys  
 115 120 125  
 Pro Met Met Lys Lys Lys Tyr Gly Arg Ile Ile Asn Met Thr Ser Val  
 130 135 140  
 Val Gly Ile Met Gly Asn Ala Gly Gln Thr Asn Tyr Cys Ala Ser Lys  
 145 150 155 160  
 Ala Gly Val Ile Gly Phe Thr Lys Ala Ser Ala Arg Glu Leu Ala Ser  
 165 170 175  
 Arg Asn Ile Asn Ile Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Asp  
 180 185 190  
 Met Thr Lys Val Leu Ser Asp Asp Val Lys Glu Ser Thr Leu Ala Asn  
 195 200 205  
 Ile Pro Lys Lys Ser Tyr Gly Lys Pro Glu Asp Val Ala Asn Ala Val  
 210 215 220  
 Ala Phe Leu Val Ser Asp Met Ser Ser Tyr Ile Thr Gly Gln Val Ile  
 225 230 235 240  
 Asn Val Asp Gly Gly Met Val Met Gln  
 245

&lt;210&gt; 3131

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3131

atg aga ttg cag ggc aag cgt gcg ctg gtg acg gcg gct gga cag ggc	48
Met Arg Leu Gln Gly Lys Arg Ala Leu Val Thr Ala Ala Gly Gln Gly	
1 5 10 15	
atc ggc cgc gcg acc gcg ctg cgg ttc gca agc gag ggc gcc gac gtg	96
Ile Gly Arg Ala Thr Ala Leu Arg Phe Ala Ser Glu Gly Ala Asp Val	
20 25 30 35	
ctg gcg acc gac atc aac gac acc gcg ctc gag cag ctc gca gcc gat	144
Leu Ala Thr Asp Ile Asn Asp Thr Ala Leu Glu Gln Ala Ala Asp	
40 45 50 55	
gcg caa cgt gcg ggc ggc cgg ctg tcc acg cgc cgg ctc gac gtg acc	192
Ala Gln Arg Ala Gly Gly Arg Leu Ser Thr Arg Arg Leu Asp Val Thr	
60 65 70 75	
gct gcg gcc gac gtg gcg gcg ctg gca gcg cgg gaa cgc gcg ttc gac	240
Ala Ala Ala Asp Val Ala Ala Leu Ala Ala Arg Glu Arg Ala Phe Asp	
80 85 90 95	
gtg ctg ttc aac tgc gcg ggc ttc gtg cat cac ggc tcg atc ctc gac	288
Val Leu Phe Asn Cys Ala Gly Phe Val His His Gly Ser Ile Leu Asp	
100 105 110 115	
tgc gac gag cgc gcg tgg gcg ttt tcg ttc gat ctg aac gtc acg tcg	336
Cys Asp Glu Arg Ala Trp Ala Phe Ser Phe Asp Leu Asn Val Thr Ser	
120 125 130 135	
atg tac cgg ctg atc cgc gcg ctg ctg ccg gcg atg ctg gag gcg ggc	384
Met Tyr Arg Leu Ile Arg Ala Leu Leu Pro Ala Met Leu Glu Ala Gly	
140 145 150 155	
ggc gcg tcg atc gtc aac atg gcg tcc gcc gcg tcg agc gtg aag ggc	432
Gly Ala Ser Ile Val Asn Met Ala Ser Ala Ala Ser Ser Val Lys Gly	
160 165 170 175	
gtg ccg aac cgt ttc gtc tac ggc acg acc aag gcg gcc gtg atc ggc	480
Val Pro Asn Arg Phe Val Tyr Gly Thr Thr Lys Ala Ala Val Ile Gly	
180 185 190 195	
ctc acc aag tcg gtc gcc gcc gat ttc gtc gaa cgg cgc att cgc tgc	528

## PhoenixTemp32470.tmp.txt

Leu	Thr	Lys	Ser	Val	Ala	Ala	Asp	Phe	Val	Glu	Arg	Arg	Ile	Arg	Cys		
				165					170					175			
aac	gcg	atc	tgt	ccc	ggc	acg	atc	gcg	tcg	ccg	tcg	ctc	gaa	cag	cg	576	
Asn	Ala	Ile	Cys	Pro	Gly	Thr	Ile	Ala	Ser	Pro	Ser	Leu	Glu	Gln	Arg		
			180					185					190				
atc	gcc	gag	cag	gcg	cg	gca	cg	gag	gtg	tcg	acc	gac	agc	gtg	cg	624	
Ile	Ala	Glu	Gln	Ala	Arg	Ala	Arg	Glu	Val	Ser	Thr	Asp	Ser	Val	Arg		
		195					200					205					
gcg	gcc	ttc	gtc	gcg	cg	cag	ccg	atg	ggc	cg	atc	ggc	acc	gcc	gac	672	
Ala	Ala	Phe	Val	Ala	Arg	Gln	Pro	Met	Gly	Arg	Ile	Gly	Thr	Ala	Asp		
	210					215					220						
gaa	gtg	gcc	gcg	ctc	gcc	gcg	tat	ctc	gcg	tcc	gac	gaa	gcg	tcg	ttc	720	
Glu	Val	Ala	Ala	Leu	Ala	Ala	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe		
	225				230					235					240		
acc	acc	ggc	acg	att	cac	gtg	atc	gac	ggc	ggc	tgg	tcg	aac	tga		765	
Thr	Thr	Gly	Thr	Ile	His	Val	Ile	Asp	Gly	Gly	Trp	Ser	Asn				
				245					250								

&lt;210&gt; 3132

&lt;211&gt; 254

&lt;212&gt; PRT

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;400&gt; 3132

Met	Arg	Leu	Gln	Gly	Lys	Arg	Ala	Leu	Val	Thr	Ala	Ala	Gly	Gln	Gly		
1				5					10					15			
Ile	Gly	Arg	Ala	Thr	Ala	Leu	Arg	Phe	Ala	Ser	Glu	Gly	Ala	Asp	Val		
			20					25					30				
Leu	Ala	Thr	Asp	Ile	Asn	Asp	Thr	Ala	Leu	Glu	Gln	Leu	Ala	Ala	Asp		
		35					40					45					
Ala	Gln	Arg	Ala	Gly	Gly	Arg	Leu	Ser	Thr	Arg	Arg	Leu	Asp	Val	Thr		
	50					55					60						
Ala	Ala	Ala	Asp	Val	Ala	Ala	Leu	Ala	Ala	Arg	Glu	Arg	Ala	Phe	Asp		
65					70				75					80			
Val	Leu	Phe	Asn	Cys	Ala	Gly	Phe	Val	His	His	Gly	Ser	Ile	Leu	Asp		
			85					90					95				
Cys	Asp	Glu	Arg	Ala	Trp	Ala	Phe	Ser	Phe	Asp	Leu	Asn	Val	Thr	Ser		
		100						105					110				
Met	Tyr	Arg	Leu	Ile	Arg	Ala	Leu	Leu	Pro	Ala	Met	Leu	Glu	Ala	Gly		
	115						120					125					
Gly	Ala	Ser	Ile	Val	Asn	Met	Ala	Ser	Ala	Ala	Ser	Val	Lys	Gly			
	130					135					140						
Val	Pro	Asn	Arg	Phe	Val	Tyr	Gly	Thr	Thr	Lys	Ala	Ala	Val	Ile	Gly		
145					150					155				160			
Leu	Thr	Lys	Ser	Val	Ala	Ala	Asp	Phe	Val	Glu	Arg	Arg	Ile	Arg	Cys		
			165						170					175			
Asn	Ala	Ile	Cys	Pro	Gly	Thr	Ile	Ala	Ser	Pro	Ser	Leu	Glu	Gln	Arg		
		180						185					190				
Ile	Ala	Glu	Gln	Ala	Arg	Ala	Arg	Glu	Val	Ser	Thr	Asp	Ser	Val	Arg		
	195						200					205					
Ala	Ala	Phe	Val	Ala	Arg	Gln	Pro	Met	Gly	Arg	Ile	Gly	Thr	Ala	Asp		
	210					215					220						
Glu	Val	Ala	Ala	Leu	Ala	Ala	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe		
225					230					235					240		
Thr	Thr	Gly	Thr	Ile	His	Val	Ile	Asp	Gly	Gly	Trp	Ser	Asn				
				245					250								

&lt;210&gt; 3133

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3133

atg	gcg	cgg	ctg	gcc	ggc	aag	gtc	gcc	gcg	gtg	acg	ggc	gcg	gca	cg	48	
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----	----	--

## PhoenixTemp32470.tmp.txt

Met	Ala	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ala	Val	Thr	Gly	Ala	Ala	Arg	
1				5				10					15			
ggc	atc	ggc	gcg	gcg	atc	gcg	cat	gcg	ttc	gcg	cgc	gag	ggc	gcg	tgc	96
Gly	Ile	Gly	Ala	Ala	Ile	Ala	His	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Cys	
			20					25					30			
gtc	gcg	ctg	ctc	gac	gtc	gac	gtc	gag	cac	gcg	cag	cgc	acc	gcc	gcc	144
Val	Ala	Leu	Leu	Asp	Val	Asp	Val	Glu	His	Ala	Gln	Arg	Thr	Ala	Ala	
			35					40					45			
gcg	atc	gcc	gcc	gag	gtc	gac	ggc	gcg	cgc	gtg	ctc	gca	ctg	cat	gcg	192
Ala	Ile	Ala	Ala	Glu	Val	Asp	Gly	Ala	Arg	Val	Leu	Ala	Leu	His	Ala	
			50				55				60					
gac	gtc	acg	cgc	cag	gac	tcg	gtg	cgc	gct	gcg	ctg	gcg	cgg	acc	gaa	240
Asp	Val	Thr	Arg	Gln	Asp	Ser	Val	Arg	Ala	Ala	Leu	Ala	Arg	Thr	Glu	
					70					75					80	
gcc	gaa	ttc	ggc	ccg	ctc	gac	gtg	ctg	gtg	aac	aac	gcg	ggc	atc	aac	288
Ala	Glu	Phe	Gly	Pro	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Asn	
				85				90						95		
gtg	ttc	gcc	gat	ccg	ctg	acg	atg	agc	gac	gac	gac	tgg	cgc	cgc	tgc	336
Val	Phe	Ala	Asp	Pro	Leu	Thr	Met	Ser	Asp	Asp	Asp	Trp	Arg	Arg	Cys	
			100					105					110			
ttc	gcg	gtc	gac	ctc	gac	ggc	gtg	tgg	cac	ggc	tgc	cgc	gcg	gcg	ctg	384
Phe	Ala	Val	Asp	Leu	Asp	Gly	Val	Trp	His	Gly	Cys	Arg	Ala	Ala	Leu	
			115				120					125				
ccg	ggc	atg	gtc	gaa	cgt	ggc	cgc	ggc	tgc	atc	gtg	aac	atc	gcg	tcg	432
Pro	Gly	Met	Val	Glu	Arg	Gly	Arg	Gly	Cys	Ile	Val	Asn	Ile	Ala	Ser	
			130			135					140					
acg	cat	gcg	ttc	agc	atc	att	ccg	ggc	tgc	ttt	ccg	tac	ccg	gtc	gcg	480
Thr	His	Ala	Phe	Ser	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	
					150					155					160	
aaa	cac	ggc	gtg	ctc	ggg	ctc	acg	cgt	gcg	ctc	ggc	atc	gaa	tac	gcg	528
Lys	His	Gly	Val	Leu	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala	
				165					170					175		
gcg	cac	aac	gtg	cgg	gtg	aac	gcg	atc	gcg	ccc	ggc	tac	atc	gac	acg	576
Ala	His	Asn	Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Asp	Thr	
			180					185					190			
cag	ctc	acc	cgc	gac	tgg	tgg	gag	gcg	cag	gac	gac	ccg	gcg	gca	gca	624
Gln	Leu	Thr	Arg	Asp	Trp	Trp	Glu	Ala	Gln	Asp	Asp	Pro	Ala	Ala	Ala	
			195				200					205				
cgc	gcg	cag	acg	ctc	gcg	ctg	cag	ccg	atg	aag	cgc	atc	ggc	cag	ccg	672
Arg	Ala	Gln	Thr	Leu	Ala	Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Gln	Pro	
			210			215					220					
gac	gaa	gtc	gcg	atg	acg	gcc	gtg	ttc	ctc	gcg	tcc	gac	gag	gcg	ccg	720
Asp	Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	
					230					235					240	
ttc	atc	aat	gcc	acg	tgc	atc	acc	gtc	gac	ggc	ggg	cgc	gcg	gcg	ctg	768
Phe	Ile	Asn	Ala	Thr	Cys	Ile	Thr	Val	Asp	Gly	Gly	Arg	Ala	Ala	Leu	
				245					250					255		
tac	cac	gac	tga													780
Tyr	His	Asp														

&lt;210&gt; 3134

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Burkholderia vietnamiensis G4

&lt;400&gt; 3134

Met	Ala	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ala	Val	Thr	Gly	Ala	Ala	Arg	
1				5				10					15			
Gly	Ile	Gly	Ala	Ala	Ile	Ala	His	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Cys	
			20					25					30			
Val	Ala	Leu	Leu	Asp	Val	Asp	Val	Glu	His	Ala	Gln	Arg	Thr	Ala	Ala	
			35					40					45			
Ala	Ile	Ala	Ala	Glu	Val	Asp	Gly	Ala	Arg	Val	Leu	Ala	Leu	His	Ala	
						55					60					
Asp	Val	Thr	Arg	Gln	Asp	Ser	Val	Arg	Ala	Ala	Leu	Ala	Arg	Thr	Glu	
					70					75					80	
Ala	Glu	Phe	Gly	Pro	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Asn	
				85					90					95		

## PhoenixTemp32470.tmp.txt

Val Phe Ala Asp Pro Leu Thr Met Ser Asp Asp Asp Trp Arg Arg Cys  
 100 105 110  
 Phe Ala Val Asp Leu Asp Gly Val Trp His Gly Cys Arg Ala Ala Leu  
 115 120 125  
 Pro Gly Met Val Glu Arg Gly Arg Gly Cys Ile Val Asn Ile Ala Ser  
 130 135 140  
 Thr His Ala Phe Ser Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala  
 145 150 155 160  
 Lys His Gly Val Leu Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala  
 165 170 175  
 Ala His Asn Val Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Asp Thr  
 180 185 190  
 Gln Leu Thr Arg Asp Trp Trp Glu Ala Gln Asp Asp Pro Ala Ala Ala  
 195 200 205  
 Arg Ala Gln Thr Leu Ala Leu Gln Pro Met Lys Arg Ile Gly Gln Pro  
 210 215 220  
 Asp Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro  
 225 230 235 240  
 Phe Ile Asn Ala Thr Cys Ile Thr Val Asp Gly Gly Arg Ala Ala Leu  
 245 250 255  
 Tyr His Asp

&lt;210&gt; 3135

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Streptococcus pyogenes str. Manfredo

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 3135

atg	aca	cat	act	aaa	gaa	gtt	gca	ttt	atc	act	ggt	gct	gca	agc	gga	48
Met	Thr	His	Thr	Lys	Glu	Val	Ala	Phe	Ile	Thr	Gly	Ala	Ala	Ser	Gly	
1				5				10						15		
att	gga	aaa	caa	atc	ggg	gaa	acc	ttc	tta	aaa	gaa	ggt	aaa	acg	gtt	96
Ile	Gly	Lys	Gln	Ile	Gly	Glu	Thr	Phe	Leu	Lys	Glu	Gly	Lys	Thr	Val	
			20					25					30			
gtc	ttc	tca	gat	att	aat	aaa	gaa	aag	cta	gat	gag	gtt	gtt	gct	gac	144
Val	Phe	Ser	Asp	Ile	Asn	Lys	Glu	Lys	Leu	Asp	Glu	Val	Val	Ala	Asp	
		35				40					45					
tat	act	aaa	gaa	ggc	tat	gac	gct	ttt	agt	gtt	gtg	tgc	gat	gtc	acc	192
Tyr	Thr	Lys	Glu	Gly	Tyr	Asp	Ala	Phe	Ser	Val	Val	Cys	Asp	Val	Thr	
	50			55				60								
aaa	gaa	gaa	gcc	atc	aat	gct	gct	att	gat	acg	gtt	gtt	gaa	aaa	tat	240
Lys	Glu	Glu	Ala	Ile	Asn	Ala	Ala	Ile	Asp	Thr	Val	Val	Glu	Lys	Tyr	
	65			70				75							80	
ggt	cgt	att	gat	att	ttg	gtt	aac	aac	gca	ggc	ctt	caa	cat	gtt	gcc	288
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Leu	Gln	His	Val	Ala	
			85				90						95			
atg	att	gaa	gat	ttt	cca	act	gaa	aaa	ttt	gaa	ttc	atg	att	aaa	atc	336
Met	Ile	Glu	Asp	Phe	Pro	Thr	Glu	Lys	Phe	Glu	Phe	Met	Ile	Lys	Ile	
			100				105					110				
atg	ttg	aca	gca	cca	ttt	att	gcc	att	aaa	cgt	gct	ttt	cct	aca	atg	384
Met	Leu	Thr	Ala	Pro	Phe	Ile	Ala	Ile	Lys	Arg	Ala	Phe	Pro	Thr	Met	
	115						120					125				
aaa	gct	caa	aaa	cac	ggt	cgt	att	att	aat	atg	gct	tct	atc	aat	ggt	432
Lys	Ala	Gln	Lys	His	Gly	Arg	Ile	Ile	Asn	Met	Ala	Ser	Ile	Asn	Gly	
	130				135			140								
gtc	att	ggt	ttt	gct	ggc	aaa	tcc	gcc	tac	aat	tca	gct	aaa	cac	ggc	480
Val	Ile	Gly	Phe	Ala	Gly	Lys	Ser	Ala	Tyr	Asn	Ser	Ala	Lys	His	Gly	
	145			150					155						160	
ttg	atc	ggt	ctg	acc	aaa	gta	act	gcc	tta	gaa	gct	gct	gat	tca	ggc	528
Leu	Ile	Gly	Leu	Thr	Lys	Val	Thr	Ala	Leu	Glu	Ala	Ala	Asp	Ser	Gly	
			165					170					175			
att	acg	gtc	aat	gcc	att	tgt	cct	gga	tat	gtt	gac	aca	cca	ctg	gtt	576
Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Pro	Leu	Val	
			180					185					190			

## PhoenixTemp32470.tmp.txt

```

cgt ggc cag ttt gaa gac ctt tcc aaa aca aga ggt att ccc ctt gaa      624
Arg Gly Gln Phe Glu Asp Leu Ser Lys Thr Arg Gly Ile Pro Leu Glu
195 200 205
aat gtt ctt gaa gaa gtg cta tac cca ctt gtt cct caa aaa cgc ctc      672
Asn Val Leu Glu Glu Val Leu Tyr Pro Leu Val Pro Gln Lys Arg Leu
210 215 220
att gac gtt caa gaa att gca gac tat gtg tct ttc ctt gcc agt gat      720
Ile Asp Val Gln Glu Ile Ala Asp Tyr Val Ser Phe Leu Ala Ser Asp
225 230 235 240
aag gca aaa ggt gtt aca ggt caa gcc tgt atc tta gac ggt ggc tac      768
Lys Ala Lys Gly Val Thr Gly Gln Ala Cys Ile Leu Asp Gly Gly Tyr
245 250 255
act gct caa taa
Thr Ala Gln
780

```

```

<210> 3136
<211> 259
<212> PRT
<213> Streptococcus pyogenes str. Manfredo

```

```

<400> 3136
Met Thr His Thr Lys Glu Val Ala Phe Ile Thr Gly Ala Ala Ser Gly
1 5 10 15
Ile Gly Lys Gln Ile Gly Glu Thr Phe Leu Lys Gly Gly Lys Thr Val
20 25 30
Val Phe Ser Asp Ile Asn Lys Glu Lys Leu Asp Glu Val Val Ala Asp
35 40 45
Tyr Thr Lys Glu Gly Tyr Asp Ala Phe Ser Val Val Cys Asp Val Thr
50 55 60
Lys Glu Glu Ala Ile Asn Ala Ala Ile Asp Thr Val Val Glu Lys Tyr
65 70 75 80
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Leu Gln His Val Ala
85 90 95
Met Ile Glu Asp Phe Pro Thr Glu Lys Phe Glu Phe Met Ile Lys Ile
100 105 110
Met Leu Thr Ala Pro Phe Ile Ala Ile Lys Arg Ala Phe Pro Thr Met
115 120 125
Lys Ala Gln Lys His Gly Arg Ile Ile Asn Met Ala Ser Ile Asn Gly
130 135 140
Val Ile Gly Phe Ala Gly Lys Ser Ala Tyr Asn Ser Ala Lys His Gly
145 150 155 160
Leu Ile Gly Leu Thr Lys Val Thr Ala Leu Glu Ala Ala Asp Ser Gly
165 170 175
Ile Thr Val Asn Ala Ile Cys Pro Gly Tyr Val Asp Thr Pro Leu Val
180 185 190
Arg Gly Gln Phe Glu Asp Leu Ser Lys Thr Arg Gly Ile Pro Leu Glu
195 200 205
Asn Val Leu Glu Glu Val Leu Tyr Pro Leu Val Pro Gln Lys Arg Leu
210 215 220
Ile Asp Val Gln Glu Ile Ala Asp Tyr Val Ser Phe Leu Ala Ser Asp
225 230 235 240
Lys Ala Lys Gly Val Thr Gly Gln Ala Cys Ile Leu Asp Gly Gly Tyr
245 250 255
Thr Ala Gln

```

```

<210> 3137
<211> 801
<212> DNA
<213> Bradyrhizobium sp. ORS278

```

```

<220>
<221> CDS
<222> (1)..(801)
<223> transl_table=11

```

```

<400> 3137
atg gcc gtg acg gaa tca cct gag ctc acc gac aag gtc gcc ttg atc      48
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```

## PhoenixTemp32470.tmp.txt

Met 1	Ala	Val	Thr	Glu 5	Ser	Pro	Glu	Leu	Thr 10	Asp	Lys	Val	Ala	Leu 15	Ile	
acc	ggc	gcc	gca	cgc	ggc	atc	ggg	ctc	gcg	acc	gcc	aag	cgg	ttt	ttg	96
Thr	Gly	Ala	Ala	Arg	Gly	Ile	Gly	Leu	Ala	Thr	Ala	Lys	Arg	Phe	Leu	
			20					25					30			
cac	gaa	ggc	tgg	cgg	gtg	gcg	ctg	ctc	gac	ata	gag	gcc	aag	ctg	ctc	144
His	Glu	Gly	Trp	Arg	Val	Ala	Leu	Leu	Asp	Ile	Glu	Ala	Lys	Leu	Leu	
		35					40					45				
gcg	gat	tcg	gcc	gct	gcg	ctc	aaa	tgt	ccc	gat	cgc	acg	ctg	gcg	ctg	192
Ala	Asp	Ser	Ala	Ala	Ala	Leu	Lys	Cys	Pro	Asp	Arg	Thr	Leu	Ala	Leu	
	50					55					60					
cat	tgc	gac	gtt	gca	gat	gca	gcc	atg	gtc	gcc	gac	gcg	ctg	gag	cgt	240
His	Cys	Asp	Val	Ala	Asp	Ala	Ala	Met	Val	Ala	Asp	Ala	Leu	Glu	Arg	
	65				70					75				80		
atc	gcc	acg	cga	ttc	ggc	cgg	ctc	gat	gcg	ctc	gtc	aac	aat	gcc	ggg	288
Ile	Ala	Thr	Arg	Phe	Gly	Arg	Leu	Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	
				85					90					95		
gtc	gcg	cgg	ttc	gcg	tcg	gtg	atg	gaa	acc	agc	gag	acc	gat	tgg	cag	336
Val	Ala	Arg	Phe	Ala	Ser	Val	Met	Glu	Thr	Ser	Glu	Thr	Asp	Trp	Gln	
			100					105					110			
cgc	atc	ctg	gac	gtc	aac	ttg	acc	gga	cca	ttc	ctg	tgc	acc	cgg	gcg	384
Arg	Ile	Leu	Asp	Val	Asn	Leu	Thr	Gly	Pro	Phe	Leu	Cys	Thr	Arg	Ala	
		115				120						125				
gcg	gtg	ccg	ctg	atg	cgc	gag	cat	ggc	gga	gcc	atc	gtc	aac	atc	acc	432
Ala	Val	Pro	Leu	Met	Arg	Glu	His	Gly	Gly	Ala	Ile	Val	Asn	Ile	Thr	
	130					135					140					
tcg	atc	tcg	gcc	gtg	cgc	gcc	tcg	acg	ctg	cgc	tcc	gcc	tac	ggc	acc	480
Ser	Ile	Ser	Ala	Val	Arg	Ala	Ser	Thr	Leu	Arg	Ser	Ala	Tyr	Gly	Thr	
	145				150					155				160		
agc	aag	gcg	gcg	ctc	gcg	cat	ctg	acc	aag	caa	ctc	gca	gtg	gag	ctg	528
Ser	Lys	Ala	Ala	Leu	Ala	His	Leu	Thr	Lys	Gln	Leu	Ala	Val	Glu	Leu	
				165					170					175		
gcc	tcg	gcc	ggc	atc	cgc	gtc	aac	gcg	gtg	gcg	ccc	ggt	ccg	gtc	gag	576
Ala	Ser	Ala	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Glu	
			180					185					190			
acc	gcg	atg	gcg	cgg	gcc	gtg	cac	acg	ccg	gaa	atc	cgc	gcc	gac	tat	624
Thr	Ala	Met	Ala	Arg	Ala	Val	His	Thr	Pro	Glu	Ile	Arg	Ala	Asp	Tyr	
		195					200					205				
cac	gac	gcc	att	ccg	ctc	aat	cgc	tac	ggg	ctt	gaa	gag	gag	ctg	gcc	672
His	Asp	Ala	Ile	Pro	Leu	Asn	Arg	Tyr	Gly	Leu	Glu	Glu	Glu	Leu	Ala	
	210					215					220					
gag	gcc	atc	ttc	ttc	ctc	agt	tcg	gag	cgg	tcg	agc	tac	atc	acc	ggc	720
Glu	Ala	Ile	Phe	Phe	Leu	Ser	Ser	Glu	Arg	Ser	Ser	Tyr	Ile	Thr	Gly	
	225				230					235				240		
cag	gtg	ctg	gcc	gtg	gat	ggc	ggc	ttc	gat	gcc	gcg	gga	atc	ggt	ctg	768
Gln	Val	Leu	Ala	Val	Asp	Gly	Gly	Phe	Asp	Ala	Ala	Gly	Ile	Gly	Leu	
				245					250					255		
ccg	acc	ttg	cgc	ggc	caa	cgc	cgg	aac	gcc	tga						801
Pro	Thr	Leu	Arg	Gly	Gln	Arg	Arg	Asn	Ala							
			260					265								

&lt;210&gt; 3138

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Bradyrhizobium sp. ORS278

&lt;400&gt; 3138

Met 1	Ala	Val	Thr	Glu 5	Ser	Pro	Glu	Leu	Thr 10	Asp	Lys	Val	Ala	Leu 15	Ile	
Thr	Gly	Ala	Ala	Arg	Gly	Ile	Gly	Leu	Ala	Thr	Ala	Lys	Arg	Phe	Leu	
			20					25					30			
His	Glu	Gly	Trp	Arg	Val	Ala	Leu	Leu	Asp	Ile	Glu	Ala	Lys	Leu	Leu	
		35					40					45				
Ala	Asp	Ser	Ala	Ala	Ala	Leu	Lys	Cys	Pro	Asp	Arg	Thr	Leu	Ala	Leu	
	50					55					60					
His	Cys	Asp	Val	Ala	Asp	Ala	Ala	Met	Val	Ala	Asp	Ala	Leu	Glu	Arg	
	65				70				75					80		
Ile	Ala	Thr	Arg	Phe	Gly	Arg	Leu	Asp	Ala	Leu	Val	Asn	Asn	Ala	Gly	
				85					90					95		

## PhoenixTemp32470.tmp.txt

Val Ala Arg Phe Ala Ser Val Met Glu Thr Ser Glu Thr Asp Trp Gln  
 100 110  
 Arg Ile Leu Asp Val Asn Leu Thr Gly Pro Phe Leu Cys Thr Arg Ala  
 115 120 125  
 Ala Val Pro Leu Met Arg Glu His Gly Gly Ala Ile Val Asn Ile Thr  
 130 135 140  
 Ser Ile Ser Ala Val Arg Ala Ser Thr Leu Arg Ser Ala Tyr Gly Thr  
 145 150 155 160  
 Ser Lys Ala Ala Leu Ala His Leu Thr Lys Gln Leu Ala Val Glu Leu  
 165 170 175  
 Ala Ser Ala Gly Ile Arg Val Asn Ala Val Ala Pro Gly Pro Val Glu  
 180 185 190  
 Thr Ala Met Ala Arg Ala Val His Thr Pro Glu Ile Arg Ala Asp Tyr  
 195 200 205  
 His Asp Ala Ile Pro Leu Asn Arg Tyr Gly Leu Glu Glu Glu Leu Ala  
 210 215 220  
 Glu Ala Ile Phe Phe Leu Ser Ser Glu Arg Ser Ser Tyr Ile Thr Gly  
 225 230 235 240  
 Gln Val Leu Ala Val Asp Gly Gly Phe Asp Ala Ala Gly Ile Gly Leu  
 245 250 255  
 Pro Thr Leu Arg Gly Gln Arg Arg Asn Ala  
 260 265

&lt;210&gt; 3139

&lt;211&gt; 735

&lt;212&gt; DNA

&lt;213&gt; Bradyrhizobium sp. ORS278

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(735)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3139

atg tcc gac cgc ctc aag ggc aag cgc gcc ttt gtc acc gcc gcc gct	48
Met Ser Asp Arg Leu Lys Gly Lys Arg Ala Phe Val Thr Ala Ala Ala	
1 5 10 15	
gcc ggc atc ggc cgc gcc tgc gcc atc gcc ttc gcg cgc cag gcc gcc	96
Ala Gly Ile Gly Arg Ala Cys Ala Ile Ala Phe Ala Arg Gln Gly Ala	
20 25 30	
acc gtg ttt gcc acc gac atc gat gag aag ggc ctg gcg acg ctg aag	144
Thr Val Phe Ala Thr Asp Ile Asp Glu Lys Gly Leu Ala Thr Leu Lys	
35 40 45	
agc gag ggc atc gcc gag gtt acc acg ctc gac gtg cgc aac aca gcc	192
Ser Glu Gly Ile Ala Glu Val Thr Thr Leu Asp Val Arg Asn Thr Ala	
50 55 60	
gcc gtg aac gcg atg gcc gaa cgg gtc gcc aag gtc gag atc ctg ctc	240
Ala Val Asn Ala Met Ala Glu Arg Val Gly Lys Val Glu Ile Leu Leu	
65 70 75 80	
aat gct gcc ggc ttc gtg cac aac ggc acc atc ctc gac tgc tcg gac	288
Asn Ala Ala Gly Phe Val His Asn Gly Thr Ile Leu Asp Cys Ser Asp	
85 90 95	
ggc gat tgg gac ttc tcg ttc gac ctg aac gtc aaa tcg atg cac cgc	336
Gly Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg	
100 105 110	
acg atc cgc gcc ttc ctg ccg aaa atg ctc gat cag gcc gcc gcc gcc	384
Thr Ile Arg Ala Phe Leu Pro Lys Met Leu Asp Gln Gly Gly Gly Ala	
115 120 125	
atc gtc aac atc gcc tcc gcc gcc ggc gtc ttc aag gcg gcg ccg aac	432
Ile Val Asn Ile Ala Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn	
130 135 140	
cgc tac gtc tat ggc gcc acc aaa gcc gct gtc gcg gcg ctg acg cgc	480
Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg	
145 150 155 160	
tcg gtc gcg gcc gac ttc gtg gcc agg aag atc cgc tgc aac tgc atc	528
Ser Val Ala Ala Asp Phe Val Ala Arg Lys Ile Arg Cys Asn Cys Ile	
165 170 175	
tgc cca ggc acg atc gaa acg ccg tcg atg ctg gga cgc gcg gca tcg	576
Cys Pro Gly Thr Ile Glu Thr Pro Ser Met Leu Gly Arg Ala Ala Ser	

## PhoenixTemp32470.tmp.txt

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180
gcc ggt ccg aac ggc ctc gag atg ttc atc tcg cgc cag ccg atg ggc 624
Ala Gly Pro Asn Gly Leu Glu Met Phe Ile Ser Arg Gln Pro Met Gly
195
cgg ctc ggc acc gcc gaa gag atc gcg cat ctc gcc gtg tat ctc gcc 672
Arg Leu Gly Thr Ala Glu Glu Ile Ala His Leu Ala Val Tyr Leu Ala
210
agc gac gag agc gcg ttc acc ggc gtc gcg cac acg atc gac ggc 720
Ser Asp Glu Ser Ala Phe Thr Thr Gly Val Ala His Thr Ile Asp Gly
225
ggc tgg acg ctg tag 735
Gly Trp Thr Leu

```

<210> 3140  
 <211> 244  
 <212> PRT  
 <213> Bradyrhizobium sp. ORS278

```

<400> 3140
Met Ser Asp Arg Leu Lys Gly Lys Arg Ala Phe Val Thr Ala Ala Ala
1      5      10      15
Ala Gly Ile Gly Arg Ala Cys Ala Ile Ala Phe Ala Arg Gln Gly Ala
20     25     30
Thr Val Phe Ala Thr Asp Ile Asp Glu Lys Gly Leu Ala Thr Leu Lys
35     40     45
Ser Glu Gly Ile Ala Glu Val Thr Thr Leu Asp Val Arg Asn Thr Ala
50     55     60
Ala Val Asn Ala Met Ala Glu Arg Val Gly Lys Val Glu Ile Leu Leu
65     70     75
Asn Ala Ala Gly Phe Val His Asn Gly Thr Ile Leu Asp Cys Ser Asp
85     90     95
Gly Asp Trp Asp Phe Ser Phe Asp Leu Asn Val Lys Ser Met His Arg
100    105    110
Thr Ile Arg Ala Phe Leu Pro Lys Met Leu Asp Gln Gly Gly Ala
115    120    125
Ile Val Asn Ile Ala Ser Ala Ala Gly Val Phe Lys Ala Ala Pro Asn
130    135    140
Arg Tyr Val Tyr Gly Ala Thr Lys Ala Ala Val Ala Ala Leu Thr Arg
145    150    155
Ser Val Ala Ala Asp Phe Val Ala Arg Lys Ile Arg Cys Asn Cys Ile
165    170    175
Cys Pro Gly Thr Ile Glu Thr Pro Ser Met Leu Gly Arg Ala Ala Ser
180    185    190
Ala Gly Pro Asn Gly Leu Glu Met Phe Ile Ser Arg Gln Pro Met Gly
195    200    205
Arg Leu Gly Thr Ala Glu Glu Ile Ala His Leu Ala Val Tyr Leu Ala
210    215    220
Ser Asp Glu Ser Ala Phe Thr Thr Gly Val Ala His Thr Ile Asp Gly
225    230    235
Gly Trp Thr Leu

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<210> 3141  
 <211> 744  
 <212> DNA  
 <213> Xanthobacter autotrophicus Py2

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

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<400> 3141
atg gct gga cga ctt cag ggt aag acc gcg ctg gtg acg gcg gcg gga 48
Met Ala Gly Arg Leu Gln Gly Lys Thr Ala Leu Val Thr Ala Ala Gly
1      5      10      15
cag ggc atc ggc cgg gcc atc gcc gag gcc ttc gtg cgc gag ggc ggc 96
Gln Gly Ile Gly Arg Ala Ile Ala Glu Ala Phe Val Arg Glu Gly Ala

```



## PhoenixTemp32470.tmp.txt

```

      20      25      30
agc  gtg  atc  gcc  acc  gac  ctc  gac  acc  gcc  aag  ctc  gaa  gcc  ttt  ccc      144
Ser  Val  Ile  Ala  Thr  Asp  Leu  Asp  Thr  Ala  Lys  Leu  Glu  Gly  Phe  Pro
      35      40      45
ggc  acc  gcc  cgc  aag  ctc  gac  gtg  cgc  tcc  agc  gag  gcc  gtc  gcc  gcg      192
Gly  Thr  Ala  Arg  Lys  Leu  Asp  Val  Arg  Ser  Ser  Glu  Ala  Val  Ala  Ala
      50      55      60
ctg  gcg  aag  gag  atc  ggc  ccg  gtg  gac  gtg  ctg  gtg  aat  gcc  gct  ggc      240
Leu  Ala  Lys  Glu  Ile  Gly  Pro  Val  Asp  Val  Leu  Val  Asn  Ala  Ala  Gly
      65      70      75      80
tac  gtc  cac  cag  ggc  aat  atc  ttc  gac  act  tcg  gag  aag  gac  tgg  gac      288
Tyr  Val  His  Gln  Gly  Asn  Ile  Phe  Asp  Thr  Ser  Glu  Lys  Asp  Trp  Asp
      85      90      95
ttc  tcc  ttc  gac  ctc  aat  gtg  aag  gcc  atg  cac  cgc  acc  atc  tcg  gcc      336
Phe  Ser  Phe  Asp  Leu  Asn  Val  Lys  Ala  Met  His  Arg  Thr  Ile  Ser  Ala
      100      105      110
ttc  ctg  ccg  ggc  atg  ctg  gag  aag  ggc  aaa  ggc  tcc  atc  gtc  aac  atc      384
Phe  Leu  Pro  Gly  Met  Leu  Glu  Lys  Gly  Lys  Gly  Ser  Ile  Val  Asn  Ile
      115      120      125
gcc  tcg  gcg  gcg  tcc  tcc  atc  cgc  ggc  gtg  ccg  aac  cgc  tat  gtc  tac      432
Ala  Ser  Ala  Ala  Ser  Ser  Ile  Arg  Gly  Val  Pro  Asn  Arg  Tyr  Val  Tyr
      130      135      140
ggc  gcc  tcc  aag  gcg  gcg  gtc  atc  ggc  ctc  acc  aag  gca  gtg  gcg  gcg      480
Gly  Ala  Ser  Lys  Ala  Val  Ile  Gly  Leu  Thr  Lys  Ala  Val  Ala  Ala
      145      150      155      160
gac  ttc  atc  ctg  aag  ggc  gtt  cgc  gcc  aac  gtc  atc  tgc  ccc  ggc  acc      528
Asp  Phe  Ile  Leu  Lys  Gly  Val  Arg  Ala  Asn  Val  Ile  Cys  Pro  Gly  Thr
      165      170      175
atc  cag  tcg  ccc  tcg  ctg  gac  gag  cgc  atc  gcc  gcc  gtc  tcg  gcc  cag      576
Ile  Gln  Ser  Pro  Ser  Leu  Asp  Glu  Arg  Ile  Ala  Ala  Val  Ser  Ala  Gln
      180      185      190
acc  ggc  cgc  tcg  ctg  gac  gac  gtg  ccg  gcc  gat  ttc  gtc  ggc  cgc  cag      624
Thr  Gly  Arg  Ser  Leu  Asp  Asp  Val  Arg  Ala  Asp  Phe  Val  Gly  Arg  Gln
      195      200      205
ccc  atg  ggc  cgg  ctc  ggc  acg  ccg  gag  gag  atc  gcg  gcg  ctc  gcg  ctc      672
Pro  Met  Gly  Arg  Leu  Gly  Thr  Pro  Glu  Glu  Ile  Ala  Ala  Leu  Ala  Leu
      210      215      220
tat  ctc  gcc  tcc  gac  gag  agc  gcc  ttc  acc  acc  ggg  cag  atc  cac  atc      720
Tyr  Leu  Ala  Ser  Asp  Glu  Ser  Ala  Phe  Thr  Thr  Gly  Gln  Ile  His  Ile
      225      230      235      240
atc  gac  ggc  ggc  tgg  gcg  ctc  tag
Ile  Asp  Gly  Gly  Trp  Ala  Leu
      245

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&lt;210&gt; 3142

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Xanthobacter autotrophicus Py2

&lt;400&gt; 3142

```

Met  Ala  Gly  Arg  Leu  Gln  Gly  Lys  Thr  Ala  Leu  Val  Thr  Ala  Ala  Gly
1      5      10      15
Gln  Gly  Ile  Gly  Arg  Ala  Ile  Ala  Glu  Ala  Phe  Val  Arg  Glu  Gly  Ala
      20      25      30
Ser  Val  Ile  Ala  Thr  Asp  Leu  Asp  Thr  Ala  Lys  Leu  Glu  Gly  Phe  Pro
      35      40      45
Gly  Thr  Ala  Arg  Lys  Leu  Asp  Val  Arg  Ser  Ser  Glu  Ala  Val  Ala  Ala
      50      55      60
Leu  Ala  Lys  Glu  Ile  Gly  Pro  Val  Asp  Val  Leu  Val  Asn  Ala  Ala  Gly
      65      70      75      80
Tyr  Val  His  Gln  Gly  Asn  Ile  Phe  Asp  Thr  Ser  Glu  Lys  Asp  Trp  Asp
      85      90      95
Phe  Ser  Phe  Asp  Leu  Asn  Val  Lys  Ala  Met  His  Arg  Thr  Ile  Ser  Ala
      100      105      110
Phe  Leu  Pro  Gly  Met  Leu  Glu  Lys  Gly  Lys  Gly  Ser  Ile  Val  Asn  Ile
      115      120      125
Ala  Ser  Ala  Ala  Ser  Ser  Ile  Arg  Gly  Val  Pro  Asn  Arg  Tyr  Val  Tyr
      130      135      140
Gly  Ala  Ser  Lys  Ala  Ala  Val  Ile  Gly  Leu  Thr  Lys  Ala  Val  Ala  Ala

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## PhoenixTemp32470.tmp.txt

145 Asp Phe Ile Leu Lys 150 Gly Val Arg Ala Asn 155 Val Ile Cys Pro Gly 160 Thr  
 165 Ser Leu Asp Glu Arg Ile Ala Ala Val Ser Ala Gln  
 180 Thr Gly Arg Ser Leu Asp Asp Val Arg Ala Asp Phe Val Gly Arg Gln  
 195 Pro Met Gly Arg Leu Gly Thr 200 Pro Glu Glu Ile Ala Ala Leu Ala Leu  
 210 Tyr Leu Ala Ser Asp Glu Ser Ala Phe Thr Thr Gly Gln Ile His Ile  
 225 Ile Asp Gly Gly Trp 230 Ala Leu 235 240

&lt;210&gt; 3143

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Symbiobacterium thermophilum IAM 14863

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3143

atg cag ctc ttc tcg ctg gaa ggc cgg gtc gcc ctg gtg acc ggg gct	48
Met Gln Leu Phe Ser 5 Leu Glu Gly Arg Val 10 Ala Leu Val Thr Gly Ala 15	
ggg cgg ggg atc ggc cgg gcc ctg gcg ctg ggc ctg gcg gac gcc ggg	96
Gly Arg Gly Ile 20 Gly Arg Ala Leu 25 Ala Leu Gly Leu Ala Asp Ala Gly 30	
gcg gac gtg gtt tgc ctg gcc agg acc ggc tcc gag gtg gag gcc gcg	144
Ala Asp Val Val Cys Leu Ala Arg Thr Gly Ser Glu Val Glu Ala Ala 45	
gcg gag gag gtc cgg gcc agg ggc cgc cgg gcg ctg gcg gtg acc gca	192
Ala Glu Glu Val Arg Ala Arg Gly Arg Arg Ala Leu Ala Val Thr Ala 60	
gac gtg acg agc cag gcg cag gtg acg gag gcc gtc gag gcg gcc ctg	240
Asp Val Thr Ser Gln Ala Gln Val Thr Glu Ala Val Glu Ala Ala Leu 80	
gac cgg ttc ggc aag atc gac atc ctg gtg aac aac gcg ggc atc aac	288
Asp Arg Phe Gly Lys 85 Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Asn 95	
atc cgc aag ccg gcg ctg gag gtg gcg gag gcg gac tgg gac cgg gtg	336
Ile Arg Lys Pro 100 Ala Leu Glu Val Ala Glu Ala Asp Trp Asp Arg Val 110	
gtg cag acc aat ctg aag ggt ccc ttc ctg gtc gcc cag acg gtg ggc	384
Val Gln Thr Asn Leu Lys Gly Pro Phe Leu Val Ala Gln Thr Val Gly 125	
cgg cac atg tgc gag cgg ggc tac ggc cgg atc atc aac gtc gca tcg	432
Arg His Met Cys Glu Arg Gly Tyr Gly Arg Ile Ile Asn Val Ala Ser 140	
gta ggc gga gcg gtg gcg ctg cgc acc ggg gtt gcc tac ggc gcc agc	480
Val Gly Gly Ala Val Ala Leu Arg Thr Gly Val Ala Tyr Gly Ala Ser 160	
aag gcg ggg ctg atg cac atg acc cgt atc ctg gcc atg gag tgg gcc	528
Lys Ala Gly Leu Met 165 His Met Thr Arg Ile Leu Ala Met Glu Trp Ala 175	
cgg tac ggg gtg acg gtg aac ggc atc ggc ccc tgg tac ttc cgc acg	576
Arg Tyr Gly Val Thr Val Asn Gly Ile Gly Pro Trp Tyr Phe Arg Thr 190	
ccg ctg acg gag aag ctg ctg cag gac gaa cag tac gtg gcg gag att	624
Pro Leu Thr 195 Glu Lys Leu Leu 200 Asp Glu Gln Tyr 205 Val Ala Glu Ile	
ctg gcc cgc acg ccg atg cgg cgc atc ggc gac ctg gcg gag ctg gtg	672
Leu Ala Arg Thr Pro Met Arg Arg Ile Gly Asp Leu Ala Glu Leu Val 220	
ggg ccg gtg gtg ttc ctc gcg tcg gac gcg tcc agc tac gtc acc ggg	720
Gly Pro Val Val Phe Leu Ala Ser Asp Ala Ser Ser Tyr Val Thr Gly	

## PhoenixTemp32470.tmp.txt

225 230 235 240 765  
 cag gtg ctg atg gtg gac ggg ggc atg tct gtc tac ggg ttc tga  
 Gln Val Leu Met Val Asp Gly Gly Met Ser Val Tyr Gly Phe

<210> 3144  
 <211> 254  
 <212> PRT  
 <213> Symbiobacterium thermophilum IAM 14863

<400> 3144  
 Met Gln Leu Phe Ser Leu Glu Gly Arg Val Ala Leu Val Thr Gly Ala  
 1 5 10 15  
 Gly Arg Gly Ile Gly Arg Ala Leu Ala Leu Gly Leu Ala Asp Ala Gly  
 20 25 30  
 Ala Asp Val Val Cys Leu Ala Arg Thr Gly Ser Glu Val Glu Ala Ala  
 35 40 45  
 Ala Glu Glu Val Arg Ala Arg Gly Arg Arg Ala Leu Ala Val Thr Ala  
 50 55 60  
 Asp Val Thr Ser Gln Ala Gln Val Thr Glu Ala Val Glu Ala Ala Leu  
 65 70 75 80  
 Asp Arg Phe Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Asn  
 85 90 95  
 Ile Arg Lys Pro Ala Leu Glu Val Ala Glu Ala Asp Trp Asp Arg Val  
 100 105 110  
 Val Gln Thr Asn Leu Lys Gly Pro Phe Leu Val Ala Gln Thr Val Gly  
 115 120 125  
 Arg His Met Cys Glu Arg Gly Tyr Gly Arg Ile Ile Asn Val Ala Ser  
 130 135 140  
 Val Gly Gly Ala Val Ala Leu Arg Thr Gly Val Ala Tyr Gly Ala Ser  
 145 150 155 160  
 Lys Ala Gly Leu Met His Met Thr Arg Ile Leu Ala Met Glu Trp Ala  
 165 170 175  
 Arg Tyr Gly Val Thr Val Asn Gly Ile Gly Pro Trp Tyr Phe Arg Thr  
 180 185 190  
 Pro Leu Thr Glu Lys Leu Leu Gln Asp Glu Gln Tyr Val Ala Glu Ile  
 195 200 205  
 Leu Ala Arg Thr Pro Met Arg Arg Ile Gly Asp Leu Ala Glu Leu Val  
 210 215 220  
 Gly Pro Val Val Phe Leu Ala Ser Asp Ala Ser Ser Tyr Val Thr Gly  
 225 230 235 240  
 Gln Val Leu Met Val Asp Gly Gly Met Ser Val Tyr Gly Phe

<210> 3145  
 <211> 729  
 <212> DNA  
 <213> Agrobacterium tumefaciens

<220>  
 <221> CDS  
 <222> (1)..(729)  
 <223> transl\_table=11

<400> 3145  
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 Met Thr Arg Lys Thr Ala Phe Val Leu Gly Gly Ser Lys Gly Ile Gly  
 1 5 10 15  
 gct gaa atc gtt cgc acc ttg gca gtg gcc ggc cac gat gtg gct ttc 96  
 Ala Glu Ile Val Arg Thr Leu Ala Val Ala Gly His Asp Val Ala Phe  
 20 25 30  
 acc tac aac tca tcg acg gac cta gcc gca gcc tta tgc gat gag ctg 144  
 Thr Tyr Asn Ser Ser Thr Asp Leu Ala Ala Ala Leu Cys Asp Glu Leu  
 35 40 45  
 aga gct gca ggg ctt act tgt ttt tgt ttt aga gcg gat gtt cga gat 192  
 Arg Ala Ala Gly Leu Thr Cys Phe Cys Phe Arg Ala Asp Val Arg Asp  
 50 55 60  
 ctt tct agc gtg ccg caa gcg ata gcg aag gcg gca tcg caa cta ggg 240  
 Leu Ser Ser Val Pro Gln Ala Ile Ala Lys Ala Ala Ser Gln Leu Gly

## PhoenixTemp32470.tmp.txt

65	cat	atc	aac	atc	ctc	70	ata	aac	aat	gcc	gga	75	tta	aaa	cgt	ggc	80		
	His	Ile	Asn	Ile	Leu		Ile	Asn	Asn	Ala	Gly		Ile	Leu	Lys	Arg	Gly	Lys	288
					85						90					95			
	ctg	caa	gaa	ttc	gat	ctt	ctg	gcg	ttc	gac	gaa	att	ttc	aat	gta	aat			336
	Leu	Gln	Glu	Phe	Asp	Leu	Leu	Ala	Phe	Asp	Glu	Ile	Phe	Asn	Val	Asn			
				100					105						110				
	gtg	agg	ggg	cct	ttc	att	gct	tcg	caa	gct	gtc	ctg	cca	ttc	atg	cca			384
	Val	Arg	Gly	Pro	Phe	Ile	Ala	Ser	Gln	Ala	Val	Leu	Pro	Phe	Met	Pro			
			115					120					125						
	aac	ggc	gga	aga	ata	ctt	atg	atg	gga	agt	gtt	gca	gca	gac	aga	tcg			432
	Asn	Gly	Gly	Arg	Ile	Leu	Met	Met	Gly	Ser	Val	Ala	Ala	Asp	Arg	Ser			
							135					140							
	gcg	atc	gaa	ggt	tca	gca	ttc	tat	gca	gcc	acc	aag	gca	gca	ctg	tct			480
	Ala	Ile	Glu	Gly	Ser	Ala	Phe	Tyr	Ala	Ala	Thr	Lys	Ala	Ala	Leu	Ser			
	145					150					155					160			
	tct	atg	gct	cgc	ggg	ttt	gcc	cgg	gac	gtt	gcg	ccc	ttg	ggg	atc	aca			528
	Ser	Met	Ala	Arg	Gly	Phe	Ala	Arg	Asp	Val	Ala	Pro	Leu	Gly	Ile	Thr			
					165					170					175				
	gtc	aat	acc	atc	caa	cca	ggt	gtt	atc	gaa	aca	aac	atg	gta	tcg	ccc			576
	Val	Asn	Thr	Ile	Gln	Pro	Gly	Val	Ile	Glu	Thr	Asn	Met	Val	Ser	Pro			
				180					185					190					
	ggt	gct	ctc	agt	cga	gac	gcg	tat	cat	gca	att	ccg	gcc	ggg	cga	aaa			624
	Gly	Ala	Leu	Ser	Arg	Asp	Ala	Tyr	His	Ala	Ile	Pro	Ala	Gly	Arg	Lys			
				195				200					205						
	ggt	ctg	ccg	agc	gat	gtg	gcg	aac	ctc	gtc	agg	ttt	tta	gtc	agt	gac			672
	Gly	Leu	Pro	Ser	Asp	Val	Ala	Asn	Leu	Val	Arg	Phe	Leu	Val	Ser	Asp			
							215					220							
	gaa	tct	tct	tat	ata	acc	gga	aca	agt	ctc	aac	ata	gat	ggc	ggt	tat			720
	Glu	Ser	Ser	Tyr	Ile	Thr	Gly	Thr	Ser	Leu	Asn	Ile	Asp	Gly	Gly	Tyr			
	225					230					235				240				
	ttg	gcc	tag																729
	Leu	Ala																	

&lt;210&gt; 3146

&lt;211&gt; 242

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens

&lt;400&gt; 3146

Met	Thr	Arg	Lys	Thr	Ala	Phe	Val	Leu	Gly	Gly	Ser	Lys	Gly	Ile	Gly			
1				5					10					15				
Ala	Glu	Ile	Val	Arg	Thr	Leu	Ala	Val	Ala	Gly	His	Asp	Val	Ala	Phe			
			20					25					30					
Thr	Tyr	Asn	Ser	Ser	Thr	Asp	Leu	Ala	Ala	Ala	Leu	Cys	Asp	Glu	Leu			
		35					40					45						
Arg	Ala	Ala	Gly	Leu	Thr	Cys	Phe	Cys	Phe	Arg	Ala	Asp	Val	Arg	Asp			
		50				55					60							
Leu	Ser	Ser	Val	Pro	Gln	Ala	Ile	Ala	Lys	Ala	Ala	Ser	Gln	Leu	Gly			
65					70				75					80				
His	Ile	Asn	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Ile	Leu	Lys	Arg	Gly	Lys			
				85					90					95				
Leu	Gln	Glu	Phe	Asp	Leu	Leu	Ala	Phe	Asp	Glu	Ile	Phe	Asn	Val	Asn			
			100					105					110					
Val	Arg	Gly	Pro	Phe	Ile	Ala	Ser	Gln	Ala	Val	Leu	Pro	Phe	Met	Pro			
		115					120					125						
Asn	Gly	Gly	Arg	Ile	Leu	Met	Met	Gly	Ser	Val	Ala	Ala	Asp	Arg	Ser			
		130				135					140							
Ala	Ile	Glu	Gly	Ser	Ala	Phe	Tyr	Ala	Ala	Thr	Lys	Ala	Ala	Leu	Ser			
145					150					155				160				
Ser	Met	Ala	Arg	Gly	Phe	Ala	Arg	Asp	Val	Ala	Pro	Leu	Gly	Ile	Thr			
				165					170					175				
Val	Asn	Thr	Ile	Gln	Pro	Gly	Val	Ile	Glu	Thr	Asn	Met	Val	Ser	Pro			
			180					185					190					
Gly	Ala	Leu	Ser	Arg	Asp	Ala	Tyr	His	Ala	Ile	Pro	Ala	Gly	Arg	Lys			
		195					200					205						
Gly	Leu	Pro	Ser	Asp	Val	Ala	Asn	Leu	Val	Arg	Phe	Leu	Val	Ser	Asp			
		210				215					220							

Glu Ser Ser Tyr Ile Thr Gly Thr Ser Leu Asn Ile Asp Gly Gly Tyr  
 225 230 235 240  
 Leu Ala

<210> 3147  
 <211> 744  
 <212> DNA  
 <213> Bacillus licheniformis ATCC 14580

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

<400> 3147  
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 Met Leu Glu Asn Lys Thr Ala Val Val Thr Gly Ala Ser Arg Gly Ile  
 1 5 10 15  
 ggc cgc gcg atc gcc ctg gac ctg gcg aaa aac gga gca aat gtc gtc 96  
 Gly Arg Ala Ile Ala Leu Asp Leu Ala Lys Asn Gly Ala Asn Val Val  
 20 25 30  
 gtc aac tac gcg gga aat gaa gcg aaa gcg aac gaa gtc gta gac gaa 144  
 Val Asn Tyr Ala Gly Asn Glu Ala Lys Ala Asn Glu Val Val Asp Glu  
 35 40 45  
 atc aaa gcg ctc ggc cgc gat gcg ttt gct ttt aaa gcg gac gtt tcc 192  
 Ile Lys Ala Leu Gly Arg Asp Ala Phe Ala Phe Lys Ala Asp Val Ser  
 50 55 60  
 aat gcg gat gag gtt cag gcg atg atg aag gaa gcg gtc gga cgc ttc 240  
 Asn Ala Asp Glu Val Gln Ala Met Met Lys Glu Ala Val Gly Arg Phe  
 65 70 75 80  
 ggc acg ctt gac atc ctt gtc aac aat gcg ggc att act aaa gac aat 288  
 Gly Thr Leu Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Asn  
 85 90 95  
 ctg ttc atg aga atg aaa gaa gat gaa tgg gac gac gtc att aac ata 336  
 Leu Phe Met Arg Met Lys Glu Asp Glu Trp Asp Asp Val Ile Asn Ile  
 100 105 110  
 aac tta aaa ggt gtg ttc aat tgt tca aaa gct gtg aca aga cag atg 384  
 Asn Leu Lys Gly Val Phe Asn Cys Ser Lys Ala Val Thr Arg Gln Met  
 115 120 125  
 atg aaa caa aga agc ggc cgg atc atc aat atc acc tcg gtt gta ggc 432  
 Met Lys Gln Arg Ser Gly Arg Ile Ile Asn Ile Thr Ser Val Val Gly  
 130 135 140  
 gtc gtc ggt aac gcc ggg cag gcc aac tat gtc gcg gct aaa tca ggc 480  
 Val Val Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ser Gly  
 145 150 155 160  
 gtg atc ggc ttg acg aaa acg ctg gca aaa gaa ctg gcg tca aga aac 528  
 Val Ile Gly Leu Thr Lys Thr Leu Ala Lys Glu Leu Ala Ser Arg Asn  
 165 170 175  
 atc act gtg aat gcg atc gct ccg gga ttc att tcg acg gaa atg acg 576  
 Ile Thr Val Asn Ala Ile Ala Pro Gly Phe Ile Ser Thr Glu Met Thr  
 180 185 190  
 gac aag ctg aca aaa gac att caa gac gaa atg ctg aag cag att ccg 624  
 Asp Lys Leu Thr Lys Asp Ile Gln Asp Glu Met Leu Lys Gln Ile Pro  
 195 200 205  
 ctt gcg cgg ttc ggc gag ccg tct gac atc agc agc gcc gtt gtt ttc 672  
 Leu Ala Arg Phe Gly Glu Pro Ser Asp Ile Ser Ser Ala Val Val Phe  
 210 215 220  
 ctc gca tct gac cat gcg agc tac atg acc ggc cag acg ctg aac atc 720  
 Leu Ala Ser Asp His Ala Ser Tyr Met Thr Gly Gln Thr Leu Asn Ile  
 225 230 235 240  
 aac ggc gga atg gct atg gtt taa 744  
 Asn Gly Gly Met Ala Met Val  
 245

<210> 3148  
 <211> 247  
 <212> PRT  
 <213> Bacillus licheniformis ATCC 14580

## PhoenixTemp32470.tmp.txt

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<400> 3148
Met Leu Glu Asn Lys Thr Ala Val Val Thr Gly Ala Ser Arg Gly Ile
1      5      10      15
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20      25      30
Val Asn Tyr Ala Gly Asn Glu Ala Lys Ala Asn Glu Val Val Asp Glu
35      40      45
Ile Lys Ala Leu Gly Arg Asp Ala Phe Ala Phe Lys Ala Asp Val Ser
50      55      60
Asn Ala Asp Glu Val Gln Ala Met Met Lys Glu Ala Val Gly Arg Phe
65      70      75      80
Gly Thr Leu Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Asn
85      90      95
Leu Phe Met Arg Met Lys Glu Asp Glu Trp Asp Asp Val Ile Asn Ile
100     105     110
Asn Leu Lys Gly Val Phe Asn Cys Ser Lys Ala Val Thr Arg Gln Met
115     120     125
Met Lys Gln Arg Ser Gly Arg Ile Ile Asn Ile Thr Ser Val Val Gly
130     135     140
Val Val Gly Asn Ala Gly Gln Ala Asn Tyr Val Ala Ala Lys Ser Gly
145     150     155     160
Val Ile Gly Leu Thr Lys Thr Leu Ala Lys Glu Leu Ala Ser Arg Asn
165     170     175
Ile Thr Val Asn Ala Ile Ala Pro Gly Phe Ile Ser Thr Glu Met Thr
180     185     190
Asp Lys Leu Thr Lys Asp Ile Gln Asp Glu Met Leu Lys Gln Ile Pro
195     200     205
Leu Ala Arg Phe Gly Glu Pro Ser Asp Ile Ser Ser Ala Val Val Phe
210     215     220
Leu Ala Ser Asp His Ala Ser Tyr Met Thr Gly Gln Thr Leu Asn Ile
225     230     235     240
Asn Gly Gly Met Ala Met Val
245

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<210> 3149
<211> 780
<212> DNA
<213> Burkholderia pseudomallei K96243

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<220>
<221> CDS
<222> (1)..(780)
<223> transl_table=11

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<400> 3149
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1      5      10      15
ggc atc ggc gcg gcg atc gcg cgc gcg ttc gtg cgc gaa ggc gcg gcc      96
Gly Ile Gly Ala Ala Ile Ala Arg Ala Phe Val Arg Glu Gly Ala Ala
20      25      30
gtc gcg atc gcg gag ctc gac gcg gcg ctc gcc gaa gag agc gcc gac      144
Val Ala Ile Ala Glu Leu Asp Ala Ala Leu Ala Glu Glu Ser Ala Asp
35      40      45
gcg atc gcg cgc gac acg gcc ggc gcg cgg gtg ctc gcg gtg ccg acg      192
Ala Ile Ala Arg Asp Thr Ala Gly Ala Arg Val Leu Ala Val Pro Thr
50      55      60
gac gtc gcg cag gcc gag tcg gtc gcg gcg gcg ctc gcg cgc acg gag      240
Asp Val Ala Gln Ala Glu Ser Val Ala Ala Ala Leu Ala Arg Thr Glu
65      70      75      80
cgc gca ttc ggc ccg ctc gac gtg ctc gtg aac aac gcc ggc gtc aac      288
Arg Ala Phe Gly Pro Leu Asp Val Leu Val Asn Asn Ala Gly Val Asn
85      90      95
gtg ttc ggc gat ccg ctc gcg ctc acc gac gaa gac tgg cgg cgc tgc      336
Val Phe Gly Asp Pro Leu Ala Leu Thr Asp Glu Asp Trp Arg Arg Cys
100     105     110
ttc gcg atc gat ctc gac ggc gtc tgg aac ggc tgc cgc gcg gcg ctg      384
Phe Ala Ile Asp Leu Asp Gly Val Trp Asn Gly Cys Arg Ala Ala Leu
215     220     225     230     235     240

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## PhoenixTemp32470.tmp.txt

ccc	ggc	115	atg	gtc	gag	cgc	ggg	120	cgc	ggc	agc	atc	gtg	125	aac	atc	gcg	tcg	432
Pro	Gly	Met	Val	Glu	Arg	Arg	Gly	Arg	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser			
	130						135						140						
acg	cat	gcg	ttc	aag	atc	att	ccg	ggc	tgt	ttc	ccg	tac	ccg	gtc	gcg			480	
Thr	His	Ala	Phe	Lys	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala				
145					150					155					160				
aag	cat	ggc	gtg	ctg	ggc	ctc	acg	cgc	gcg	ctc	ggc	atc	gaa	tac	gcg			528	
Lys	His	Gly	Val	Leu	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala				
				165					170					175					
ccg	cgc	aac	gtg	cgc	gtg	aac	cgc	atc	gcg	ccc	ggc	tac	atc	gag	acg			576	
Pro	Arg	Asn	Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr				
			180					185					190						
cag	ttg	acg	cat	gac	tgg	tgg	agc	gcg	cag	ccc	gat	ccg	cag	gcc	gcg			624	
Gln	Leu	Thr	His	Asp	Trp	Trp	Ser	Ala	Gln	Pro	Asp	Pro	Gln	Ala	Ala				
		195					200					205							
cgc	cgc	gag	acg	ctc	gcg	ctg	cag	ccg	atg	aag	cgg	atc	ggg	cgt	ccc			672	
Arg	Arg	Glu	Thr	Leu	Ala	Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Arg	Pro				
	210					215					220								
gac	gaa	gtc	gcg	atg	acc	gcg	gta	ttc	ctc	gcg	tcg	gac	gaa	gcg	ccg			720	
Asp	Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro				
225					230					235					240				
ttc	atc	aac	gcg	agc	tgc	atc	acg	atc	gac	ggc	ggc	cgc	tcg	gtg	ctg			768	
Phe	Ile	Asn	Ala	Ser	Cys	Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Leu				
				245					250					255					
tac	cac	gac	tga															780	
Tyr	His	Asp																	

&lt;210&gt; 3150

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Burkholderia pseudomallei K96243

&lt;400&gt; 3150

Met	Asn	Arg	Leu	Ala	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Ala	Gly	Arg				
1				5					10					15					
Gly	Ile	Gly	Ala	Ala	Ile	Ala	Arg	Ala	Phe	Val	Arg	Glu	Gly	Ala	Ala				
			20					25					30						
Val	Ala	Ile	Ala	Glu	Leu	Asp	Ala	Ala	Leu	Ala	Glu	Glu	Ser	Ala	Asp				
		35					40					45							
Ala	Ile	Ala	Arg	Asp	Thr	Ala	Gly	Ala	Arg	Val	Leu	Ala	Val	Pro	Thr				
	50				55						60								
Asp	Val	Ala	Gln	Ala	Glu	Ser	Val	Ala	Ala	Ala	Leu	Ala	Arg	Thr	Glu				
65					70				75					80					
Arg	Ala	Phe	Gly	Pro	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Asn				
			85					90						95					
Val	Phe	Gly	Asp	Pro	Leu	Ala	Leu	Thr	Asp	Glu	Asp	Trp	Arg	Arg	Cys				
		100						105					110						
Phe	Ala	Ile	Asp	Leu	Asp	Gly	Val	Trp	Asn	Gly	Cys	Arg	Ala	Ala	Leu				
		115					120					125							
Pro	Gly	Met	Val	Glu	Arg	Gly	Arg	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser				
	130					135					140								
Thr	His	Ala	Phe	Lys	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala				
145					150					155					160				
Lys	His	Gly	Val	Leu	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala				
				165					170					175					
Pro	Arg	Asn	Val	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr				
		180						185					190						
Gln	Leu	Thr	His	Asp	Trp	Trp	Ser	Ala	Gln	Pro	Asp	Pro	Gln	Ala	Ala				
		195					200					205							
Arg	Arg	Glu	Thr	Leu	Ala	Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Arg	Pro				
	210					215						220							
Asp	Glu	Val	Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro				
225					230					235					240				
Phe	Ile	Asn	Ala	Ser	Cys	Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Leu				
				245					250					255					
Tyr	His	Asp																	

<210> 3151  
 <211> 738  
 <212> DNA  
 <213> Silicibacter pomeroyi DSS-3

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

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<400> 3151
atg ttt gat ctg acc gga aag aat gcc ctg atc acc ggt gcc tcg ggt      48
Met Phe Asp Leu Thr Gly Lys Asn Ala Leu Ile Thr Gly Ala Ser Gly
   1           5          10          15
ggc atc ggg ggc gcc atc gcg cgc gcg ctg cat gct gcc ggc gcc tcg      96
Gly Ile Gly Gly Ala Ile Ala Arg Ala Leu His Ala Ala Gly Ala Ser
           20          25          30
gtg gtg ctg tcg ggc acc cgg gtc gag ggc ctt cag gcg ctg gcc gac      144
Val Val Leu Ser Gly Thr Arg Val Glu Pro Leu Gln Ala Leu Ala Asp
           35          40          45
gag ctg ggc gaa cgc gcc cat gtg ctg acc tgc aat ctg agc gat atg      192
Glu Leu Gly Glu Arg Ala His Val Leu Thr Cys Asn Leu Ser Asp Met
           50          55          60
gcg gcc gtc gag gcg ctg ccg aaa cag gcc gcc gac ctg ttg ggc tcg      240
Ala Ala Val Glu Ala Leu Pro Lys Gln Ala Ala Asp Leu Leu Gly Ser
           65          70          75          80
gtc gat atc ctg gtg aac aat gcc ggc atc acg cgc gac aac ctg ttc      288
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn Leu Phe
           85          90          95
atg cgt atg tcg gat gac gaa tgg caa agc gtg atc gac gtc aac ctg      336
Met Arg Met Ser Asp Asp Glu Trp Gln Ser Val Ile Asp Val Asn Leu
           100          105          110
acc gcc acc atg aaa ctg tgc aag ggc gtg ctg cgc ggc atg atg aag      384
Thr Ala Thr Met Lys Leu Cys Lys Gly Val Leu Arg Gly Met Met Lys
           115          120          125
gcg cgc tgg ggc cgg atc gtg aat atc tcg tct gtg gtg ggt gcc atc      432
Ala Arg Trp Gly Arg Ile Val Asn Ile Ser Ser Val Val Gly Ala Ile
           130          135          140
ggc aac ccg ggg cag ggc aat tat gcc gcc tcc aag gcg ggt gtc gtc      480
Gly Asn Pro Gly Gln Gly Asn Tyr Ala Ala Ser Lys Ala Gly Val Val
           145          150          155          160
ggc atg tcc aag gcg ctg gcc tat gag gtc gcc agc cgg gga atc acc      528
Gly Met Ser Lys Ala Leu Ala Tyr Glu Val Ala Ser Arg Gly Ile Thr
           165          170          175
gtc aac gcg gtg gca ccg ggc ttt atc acc acg gca atg acc gac aag      576
Val Asn Ala Val Ala Pro Gly Phe Ile Thr Thr Ala Met Thr Asp Lys
           180          185          190
ctg acg gat gag cag aaa tcg ggc ctg ctg acg cag gtt ccc gct ggc      624
Leu Thr Asp Glu Gln Lys Ser Gly Leu Leu Thr Gln Val Pro Ala Gly
           195          200          205
cgc atg ggt tcg ccc gag gaa atc gcg gcg gcg gtc ctg tat ctt gcc      672
Arg Met Gly Ser Pro Glu Glu Ile Ala Ala Ala Val Leu Tyr Leu Ala
           210          215          220
agt ccc gag gcc gct tat gtg acc ggt gcc acc ttg cat gtg aac ggc      720
Ser Pro Glu Ala Ala Tyr Val Thr Gly Ala Thr Leu His Val Asn Gly
           225          230          235          240
ggt atg gcc atg ttg tga
Gly Met Ala Met Leu
           245

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<210> 3152  
 <211> 245  
 <212> PRT  
 <213> Silicibacter pomeroyi DSS-3

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<400> 3152
Met Phe Asp Leu Thr Gly Lys Asn Ala Leu Ile Thr Gly Ala Ser Gly
1           5          10          15

```



## PhoenixTemp32470.tmp.txt

Gly Ile Gly Gly Ala Ile Ala Arg Ala Leu His Ala Ala Gly Ala Ser  
 Val Val Leu Ser Gly Thr Arg Val Glu Pro Leu Gln Ala Leu Ala Asp  
 Glu Leu Gly Glu Arg Ala His Val Leu Thr Cys Asn Leu Ser Asp Met  
 Ala Ala Val Glu Ala Leu Pro Lys Gln Ala Ala Asp Leu Leu Gly Ser  
 Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn Leu Phe  
 Met Arg Met Ser Asp Asp Glu Trp Gln Ser Val Ile Asp Val Asn Leu  
 Thr Ala Thr Met Lys Leu Cys Lys Gly Val Leu Arg Gly Met Met Lys  
 Ala Arg Trp Gly Arg Ile Val Asn Ile Ser Ser Val Val Gly Ala Ile  
 Gly Asn Pro Gly Gln Gly Asn Tyr Ala Ala Ser Lys Ala Gly Val Val  
 Gly Met Ser Lys Ala Leu Ala Tyr Glu Val Ala Ser Arg Gly Ile Thr  
 Val Asn Ala Val Ala Pro Gly Phe Ile Thr Thr Ala Met Thr Asp Lys  
 Leu Thr Asp Glu Gln Lys Ser Gly Leu Leu Thr Gln Val Pro Ala Gly  
 Arg Met Gly Ser Pro Glu Glu Ile Ala Ala Ala Val Leu Tyr Leu Ala  
 Ser Pro Glu Ala Ala Tyr Val Thr Gly Ala Thr Leu His Val Asn Gly  
 Gly Met Ala Met Leu

&lt;210&gt; 3153

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Bacillus clausii KSM-K16

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3153

atg tta aca gga aaa acg gct gtt gta aca ggc gct tca cgt gga att	48
Met Leu Thr Gly Lys Thr Ala Val Val Thr Gly Ala Ser Arg Gly Ile	
ggc aaa gcg atc gcc ctt gaa ctt gct gcc aaa ggg gcg aat atc gtc	96
Gly Lys Ala Ile Ala Leu Glu Leu Ala Lys Gly Ala Asn Ile Val	
gtc aat tat gca gga aat cga gac cgt gct gaa gaa gta gtg gcc aac	144
Val Asn Tyr Ala Gly Asn Arg Asp Arg Ala Glu Glu Val Val Ala Asn	
att aaa gcg ctt ggc caa gag gcg ttt gcg tat cag gca gac gtt gcc	192
Ile Lys Ala Leu Gly Gln Glu Ala Phe Ala Tyr Gln Ala Asp Val Ala	
tcc gaa ggg gaa gtg gca gcg atg atg aaa gaa gcg atc ggc cgc ttt	240
Ser Glu Gly Glu Val Ala Ala Met Met Lys Glu Ala Ile Gly Arg Phe	
caa tca att gat att tta gta aac aat gca ggc att acg cgc gat aac	288
Gln Ser Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn	
ttg cta atg aga atg aaa gaa gac gat tgg gat gcc gtc atc aat acg	336
Leu Leu Met Arg Met Lys Glu Asp Asp Trp Asp Ala Val Ile Asn Thr	
aac tta aaa ggg gtg ttc cac tgc gcg aaa gca gtc agc cgg caa atg	384
Asn Leu Lys Gly Val Phe His Cys Ala Lys Ala Val Ser Arg Gln Met	
atg aaa caa cgt gct ggc aga atc atc aat gtc tcg tct gtc gtt ggc	432
Met Lys Gln Arg Ala Gly Ile Ile Asn Val Ser Val Val Gly	

## PhoenixTemp32470.tmp.txt

gta	atg	ggt	aac	gct	ggg	caa	gcg	aat	tat	gtt	gcc	gcc	aaa	gca	ggc	480
Val	Met	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly	
145					150					155					160	
gtc	att	ggc	ttg	act	aag	tct	ttg	gcg	cgg	gaa	ttg	gca	ggg	cga	ggc	528
Val	Ile	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Arg	Glu	Leu	Ala	Gly	Arg	Gly	
				165					170					175		
att	ctt	gtc	aat	gcg	gtg	gcg	cca	ggc	ttt	att	acg	aca	gat	atg	aca	576
Ile	Leu	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Thr	Thr	Asp	Met	Thr	
			180					185					190			
gat	gag	cta	gca	agc	gaa	aca	aag	gaa	cag	ctg	ctt	caa	caa	atc	cca	624
Asp	Glu	Leu	Ala	Ser	Glu	Thr	Lys	Glu	Gln	Leu	Leu	Gln	Gln	Ile	Pro	
		195					200					205				
ttg	gcg	aag	ctt	ggc	gaa	cca	gag	gat	atc	gcc	cgt	gtt	cgg	ttt		672
Leu	Ala	Lys	Leu	Gly	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Val	Val	Arg	Phe	
	210					215					220					
ttg	gca	agc	gat	gac	gcc	gct	tac	tta	acc	ggg	caa	acg	atc	cac	gtt	720
Leu	Ala	Ser	Asp	Asp	Ala	Ala	Tyr	Leu	Thr	Gly	Gln	Thr	Ile	His	Val	
225					230					235					240	
gac	ggc	ggc	atg	gtc	atg	cct	taa									744
Asp	Gly	Gly	Met	Val	Met	Pro										
				245												

&lt;210&gt; 3154

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Bacillus clausii KSM-K16

&lt;400&gt; 3154

Met	Leu	Thr	Gly	Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	
1				5					10					15		
Gly	Lys	Ala	Ile	Ala	Leu	Glu	Leu	Ala	Ala	Lys	Gly	Ala	Asn	Ile	Val	
			20					25					30			
Val	Asn	Tyr	Ala	Gly	Asn	Arg	Asp	Arg	Ala	Glu	Glu	Val	Val	Ala	Asn	
		35					40					45				
Ile	Lys	Ala	Leu	Gly	Gln	Glu	Ala	Phe	Ala	Tyr	Gln	Ala	Asp	Val	Ala	
	50					55					60					
Ser	Glu	Gly	Glu	Val	Ala	Ala	Met	Met	Lys	Glu	Ala	Ile	Gly	Arg	Phe	
65					70					75				80		
Gln	Ser	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn	
			85					90						95		
Leu	Leu	Met	Arg	Met	Lys	Glu	Asp	Asp	Trp	Asp	Ala	Val	Ile	Asn	Thr	
		100						105					110			
Asn	Leu	Lys	Gly	Val	Phe	His	Cys	Ala	Lys	Ala	Val	Ser	Arg	Gln	Met	
		115					120					125				
Met	Lys	Gln	Arg	Ala	Gly	Arg	Ile	Ile	Asn	Val	Ser	Val	Val	Gly		
	130					135					140					
Val	Met	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly	
145					150					155					160	
Val	Ile	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Arg	Glu	Leu	Ala	Gly	Arg	Gly	
			165						170					175		
Ile	Leu	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Thr	Thr	Asp	Met	Thr	
			180					185					190			
Asp	Glu	Leu	Ala	Ser	Glu	Thr	Lys	Glu	Gln	Leu	Leu	Gln	Gln	Ile	Pro	
	195						200					205				
Leu	Ala	Lys	Leu	Gly	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Val	Val	Arg	Phe	
	210					215					220					
Leu	Ala	Ser	Asp	Asp	Ala	Ala	Tyr	Leu	Thr	Gly	Gln	Thr	Ile	His	Val	
225					230					235					240	
Asp	Gly	Gly	Met	Val	Met	Pro										
				245												

&lt;210&gt; 3155

&lt;211&gt; 804

&lt;212&gt; DNA

&lt;213&gt; Thermobifida fusca YX

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(804)

&lt;223&gt; transl\_table=11

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<400> 3155
atg gcc att tca ggc cgt ttg acg gac aag atc gca ctc atc acc gga      48
Met Ala Ile Ser Gly Arg Leu Thr Asp Lys Ile Ala Leu Ile Thr Gly
1      5      10      15
gcc gga tcg gga ttc gga cgc gcc agc gcc ctg cgt ttc gca gct gaa      96
Ala Gly Ser Gly Phe Gly Arg Ala Ser Ala Leu Arg Phe Ala Ala Glu
20      25      30
gga gcc tcc gtg gtc tgc gtc gac cgc aac gcc gac gct gcc cac agc      144
Gly Ala Ser Val Val Cys Val Asp Arg Asn Ala Asp Ala Ala His Ser
35      40      45
gcc gct gac gac atc gcc gcc gca ggc ggc acc gcc ctc gca ctc acc      192
Ala Ala Asp Asp Ile Ala Ala Gly Gly Thr Ala Leu Ala Leu Thr
50      55      60
gcc gac gtg tcc tcc gct gcc gac gcg gaa cga atg act acc acc acg      240
Ala Asp Val Ser Ser Ala Ala Asp Ala Glu Arg Met Thr Thr Thr Thr
65      70      75      80
ctg gaa cac ttc ggc cgc atc gac atc gtc ttc gcc aac gcg ggc atc      288
Leu Glu His Phe Gly Arg Ile Asp Ile Val Phe Ala Asn Ala Gly Ile
85      90      95
ccc ggc tcc ggc gac gcc cac acc acc acc gaa gaa gaa tgg gac cgg      336
Pro Gly Ser Gly Asp Ala His Thr Thr Thr Glu Glu Glu Trp Asp Arg
100      105      110
gtc atc gcc atc aac ctc aaa ggc gtc tgg ctg acc tcc aaa tac gcg      384
Val Ile Ala Ile Asn Leu Lys Gly Val Trp Leu Thr Ser Lys Tyr Ala
115      120      125
ctg ccg cac atg gtc gaa cgc cgc agc ggc gtc atc acc aac cag gcc      432
Leu Pro His Met Val Glu Arg Arg Ser Gly Val Ile Thr Asn Gln Ala
130      135      140
agc gtc ggc ggc ctc atc ggc atc ccc ggc atc ttc ccc tac gcc gca      480
Ser Val Gly Gly Leu Ile Gly Ile Pro Gly Ile Phe Pro Tyr Ala Ala
145      150      155      160
gcc aaa ggc ggc gtg atc tcc atg acc cgg caa atg gcc gcc gcc tac      528
Ala Lys Gly Gly Val Ile Ser Met Thr Arg Gln Met Ala Ala Ala Tyr
165      170      175
gca ccc cac aac atc cgg gtc aat gcg atc tgc ccg ggc ggc gtc tac      576
Ala Pro His Asn Ile Arg Val Asn Ala Ile Cys Pro Gly Gly Val Tyr
180      185      190
acc ccg ctg gtg gaa ctg tcc cgt caa aag cgc ggc ctg acc gcc agc      624
Thr Pro Leu Val Glu Leu Ser Arg Gln Lys Arg Gly Leu Thr Ala Ser
195      200      205
agc gtc gag gaa gcc aac gct atc gcc gca cgc aac tac ccc ctg ggc      672
Ser Val Glu Glu Ala Asn Ala Ile Ala Ala Arg Asn Tyr Pro Leu Gly
210      215      220
cgt ctc ggc aca gtg gag gag atc gcc tcc ctc gcc ctc ttc ctc gcc      720
Arg Leu Gly Thr Val Glu Glu Ile Ala Ser Leu Ala Leu Phe Leu Ala
225      230      235      240
agc gac gaa gcc gcc tgg atc acc ggc ggc atc tac ccc gtt gac ggc      768
Ser Asp Glu Ala Ala Trp Ile Thr Gly Gly Ile Tyr Pro Val Asp Gly
245      250      255
gga cgc ggc gcg gta ggc acc att ccc acc gac tga      804
Gly Arg Gly Ala Val Gly Thr Ile Pro Thr Asp
260      265

```

&lt;210&gt; 3156

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Thermobifida fusca YX

```

<400> 3156
Met Ala Ile Ser Gly Arg Leu Thr Asp Lys Ile Ala Leu Ile Thr Gly
1      5      10      15
Ala Gly Ser Gly Phe Gly Arg Ala Ser Ala Leu Arg Phe Ala Ala Glu
20      25      30
Gly Ala Ser Val Val Cys Val Asp Arg Asn Ala Asp Ala Ala His Ser
35      40      45
Ala Ala Asp Asp Ile Ala Ala Gly Gly Thr Ala Leu Ala Leu Thr
50      55      60

```

## PhoenixTemp32470.tmp.txt

Ala 65 Asp Val Ser Ser Ala 70 Ala 75 Asp Ala Glu Arg Met Thr Thr Thr Thr  
 Leu 65 Glu His Phe Gly 85 Arg Ile Asp Ile Val Phe 75 Ala Asn Ala Gly 95 Ile  
 Pro Gly Ser Gly 100 Asp Ala His Thr Thr 105 Thr Glu Glu Glu Trp 110 Asp Arg  
 Val Ile Ala 115 Ile Asn Leu Lys Gly 120 Val Trp Leu Thr Ser 125 Lys Tyr Ala  
 Leu 130 Pro His Met Val Glu Arg 135 Arg Ser Gly Val Ile Thr Asn Gln Ala  
 Ser 145 Val Gly Gly Leu Ile 150 Gly Ile Pro Gly Ile Phe Pro Tyr Ala Ala 160  
 Ala Lys Gly Gly Val 165 Ile Ser Met Thr Arg 170 Gln Met Ala Ala Ala Tyr 175  
 Ala Pro His Asn 180 Ile Arg Val Asn Ala 185 Ile Cys Pro Gly Gly Val Tyr  
 Thr Pro Leu 195 Val Glu Leu Ser Arg 200 Gln Lys Arg Gly Leu Thr Ala Ser  
 Ser Val 210 Glu Glu Ala Asn Ala 215 Ile Ala Ala Arg Asn Tyr Pro Leu Gly  
 Arg 225 Leu Gly Thr Val Glu Glu Ile Ala Ser Leu 235 Ala Leu Phe Leu Ala 240  
 Ser Asp Glu Ala 245 Trp Ile Thr Gly Gly Ile Tyr Pro Val Asp Gly 255  
 Gly Arg Gly Ala 260 Val Gly Thr Ile Pro Thr Asp 265

&lt;210&gt; 3157

&lt;211&gt; 753

&lt;212&gt; DNA

&lt;213&gt; Prochlorococcus marinus str. NATL2A

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(753)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3157

atg	aca	tta	tca	aaa	tta	ctt	gaa	gga	cag	act	gca	att	gta	act	ggc	48
Met	Thr	Leu	Ser	Lys	Leu	Leu	Glu	Gly	Gln	Thr	Ala	Ile	Val	Thr	Gly	
1				5					10					15		
gca	agc	aga	ggt	att	ggt	aaa	gct	att	gca	att	ttt	cta	gcg	aag	gaa	96
Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Ile	Phe	Leu	Ala	Lys	Glu	
			20				25						30			
gga	gca	gaa	gta	atc	atc	aat	tat	tct	tca	tct	ttg	gag	aat	gca	aat	144
Gly	Ala	Glu	Val	Ile	Ile	Asn	Tyr	Ser	Ser	Ser	Leu	Glu	Asn	Ala	Asn	
			35				40					45				
aaa	gtc	gta	tca	gaa	ata	aac	tcc	ttt	gga	ggc	aaa	gca	tac	cct	ctt	192
Lys	Val	Val	Ser	Glu	Ile	Asn	Ser	Phe	Gly	Gly	Lys	Ala	Tyr	Pro	Leu	
			50			55					60					
caa	gct	gat	att	tct	aat	gaa	aac	tcg	gta	aat	gaa	tta	ata	aaa	aca	240
Gln	Ala	Asp	Ile	Ser	Asn	Glu	Asn	Ser	Val	Asn	Glu	Leu	Ile	Lys	Thr	
					70				75						80	
gta	ctg	gag	aaa	aat	aat	aaa	att	gat	gtc	ctc	gtc	aat	aac	gct	ggt	288
Val	Leu	Glu	Lys	Asn	Asn	Lys	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	
				85					90					95		
ata	act	aaa	gat	ggc	ctt	tta	atg	aga	atg	aaa	acg	gac	gat	tgg	cag	336
Ile	Thr	Lys	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Thr	Asp	Asp	Trp	Gln	
			100				105						110			
aaa	gtt	tta	gat	ctt	aac	ttg	agt	ggt	ggt	ttt	tat	tgc	aca	aga	gcg	384
Lys	Val	Leu	Asp	Leu	Asn	Leu	Ser	Gly	Val	Phe	Tyr	Cys	Thr	Arg	Ala	
			115				120					125				
gta	tca	agg	cag	atg	ttg	aag	caa	aaa	aaa	gga	aga	att	atc	aac	ata	432
Val	Ser	Arg	Gln	Met	Leu	Lys	Gln	Lys	Lys	Gly	Arg	Ile	Ile	Asn	Ile	
						135				140						
act	tct	gtc	gtt	ggg	ttg	atg	ggc	aac	cca	ggg	caa	gca	aat	tat	tct	480
Thr	Ser	Val	Val	Gly	Leu	Met	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Ser	
					150					155					160	
gca	gcc	aag	gca	gga	gta	gta	ggt	ctc	aca	caa	agt	gct	gca	aaa	gaa	528

PhoenixTemp32470.tmp.txt

Ala	Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Gln	Ser	Ala	Ala	Lys	Glu		
165				175				185						190			
ttt	gcc	agc	aga	gga	att	act	gta	aat	gca	ggt	gcc	cct	ggg	ttt	att	576	
Phe	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile		
180				190				200					205				
tca	act	gat	atg	aca	aaa	gat	ctg	aat	agt	gaa	tca	atc	ctt	tct	gct	624	
Ser	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asn	Ser	Glu	Ser	Ile	Leu	Ser	Ala		
195				205				215					220				
atc	ccg	ctt	gga	cga	ttc	ggc	aac	cct	gaa	gat	ggt	gca	ggg	gca	gtg	672	
Ile	Pro	Leu	Gly	Arg	Phe	Gly	Asn	Pro	Glu	Asp	Val	Ala	Gly	Ala	Val		
210				215				220					225				
aag	ttt	tta	gca	gcg	gat	cct	tcg	gct	tct	tac	ata	aca	ggg	cag	gta	720	
Lys	Phe	Leu	Ala	Ala	Asp	Pro	Ser	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val		
225				230				235							240		
att	caa	ggt	gat	gga	ggg	atg	ggt	atg	agt	taa						753	
Ile	Gln	Val	Asp	Gly	Gly	Met	Val	Met	Ser								
245				250													

<210> 3158  
 <211> 250  
 <212> PRT  
 <213> Prochlorococcus marinus str. NATL2A

<400> 3158

Met	Thr	Leu	Ser	Lys	Leu	Leu	Glu	Gly	Gln	Thr	Ala	Ile	Val	Thr	Gly		
1				5				10					15				
Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Ile	Phe	Leu	Ala	Lys	Glu		
			20					25				30					
Gly	Ala	Glu	Val	Ile	Ile	Asn	Tyr	Ser	Ser	Ser	Leu	Glu	Asn	Ala	Asn		
		35					40					45					
Lys	Val	Val	Ser	Glu	Ile	Asn	Ser	Phe	Gly	Gly	Lys	Ala	Tyr	Pro	Leu		
	50					55					60						
Gln	Ala	Asp	Ile	Ser	Asn	Glu	Asn	Ser	Val	Asn	Glu	Leu	Ile	Lys	Thr		
65					70					75					80		
Val	Leu	Glu	Lys	Asn	Asn	Lys	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly		
			85						90					95			
Ile	Thr	Lys	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Thr	Asp	Asp	Trp	Gln		
			100					105					110				
Lys	Val	Leu	Asp	Leu	Asn	Leu	Ser	Gly	Val	Phe	Tyr	Cys	Thr	Arg	Ala		
	115						120					125					
Val	Ser	Arg	Gln	Met	Leu	Lys	Gln	Lys	Lys	Gly	Arg	Ile	Ile	Asn	Ile		
	130					135					140						
Thr	Ser	Val	Val	Gly	Leu	Met	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Ser		
145					150					155					160		
Ala	Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Gln	Ser	Ala	Ala	Lys	Glu		
			165					170						175			
Phe	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile		
			180					185					190				
Ser	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asn	Ser	Glu	Ser	Ile	Leu	Ser	Ala		
		195					200					205					
Ile	Pro	Leu	Gly	Arg	Phe	Gly	Asn	Pro	Glu	Asp	Val	Ala	Gly	Ala	Val		
	210					215					220						
Lys	Phe	Leu	Ala	Ala	Asp	Pro	Ser	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val		
225					230					235					240		
Ile	Gln	Val	Asp	Gly	Gly	Met	Val	Met	Ser								
				245					250								

<210> 3159  
 <211> 741  
 <212> DNA  
 <213> Ralstonia eutropha JMP134

<220>  
 <221> CDS  
 <222> (1)..(741)  
 <223> transl\_table=11

<400> 3159  
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 Page 2878

## PhoenixTemp32470.tmp.txt

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att	ggg	cag	gcg	act	gcg	cgg	aag	ttc	gca	ggg	gaa	ggc	gct	acg	gtg	96
Ile	Gly	Gln	Ala	Thr	Ala	Arg	Lys	Phe	Ala	Gly	Glu	Gly	Ala	Thr	Val	
			20					25					30			
att	ctc	tgc	gac	cga	gcg	gca	gat	gca	gta	cag	caa	gag	gcc	aaa	agc	144
Ile	Leu	Cys	Asp	Arg	Ala	Ala	Asp	Ala	Val	Gln	Gln	Glu	Ala	Lys	Ser	
		35					40					45				
ctg	agg	tcg	gag	ggc	tat	agg	gtc	gct	gcc	tat	tcg	ttg	gac	gtc	acc	192
Leu	Arg	Ser	Glu	Gly	Tyr	Arg	Val	Ala	Ala	Tyr	Ser	Leu	Asp	Val	Thr	
	50					55					60					
gac	cgc	gcg	ggc	gtg	gac	gct	ttg	gcc	gcg	gat	atc	ctg	ggg	aat	ttt	240
Asp	Arg	Ala	Gly	Val	Asp	Ala	Leu	Ala	Ala	Asp	Ile	Leu	Gly	Asn	Phe	
	65				70					75					80	
ggg	cgc	atc	gac	ata	ctg	gtc	aac	aac	gcg	ggc	atc	acg	ctg	gat	gca	288
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Leu	Asp	Ala	
				85				90						95		
aag	gtc	acc	cgc	atg	aca	gaa	gag	cag	ttt	gac	cgg	gtg	atc	gat	gtc	336
Lys	Val	Thr	Arg	Met	Thr	Glu	Glu	Gln	Phe	Asp	Arg	Val	Ile	Asp	Val	
			100					105					110			
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Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Gln	Ala	Val	Ile	Gly	Ala	Met	
		115					120					125				
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Leu	Glu	Gln	Gln	Ser	Gly	Val	Ile	Leu	Asn	Ala	Ser	Ser	Val	Val	Gly	
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Leu	Tyr	Gly	Asn	Phe	Gly	Gln	Ser	Asn	Tyr	Ala	Ala	Ser	Lys	Phe	Gly	
	145				150					155					160	
gtc	atc	gga	ttt	acc	aag	acc	tgg	gcg	aga	gag	ctc	ggg	ccg	aaa	ggg	528
Val	Ile	Gly	Phe	Thr	Lys	Thr	Trp	Ala	Arg	Glu	Leu	Gly	Pro	Lys	Gly	
				165				170						175		
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Ile	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Phe	Ile	Glu	Thr	Asp	Ile	Leu	
			180					185					190			
aag	acg	atg	cct	gag	aag	gtg	ctt	gac	gga	ttt	cgt	tcc	aat	tgc	tgg	624
Lys	Thr	Met	Pro	Glu	Lys	Val	Leu	Asp	Gly	Phe	Arg	Ser	Asn	Cys	Trp	
		195					200					205				
cag	cga	cgc	ctc	ggc	tct	ccg	aaa	gag	att	gcg	aac	gtc	tat	gcg	ttt	672
Gln	Arg	Arg	Leu	Gly	Ser	Pro	Lys	Glu	Ile	Ala	Asn	Val	Tyr	Ala	Phe	
		210				215					220					
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Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Val	Asn	Gly	Glu	Ala	Ile	Glu	Val	
	225				230					235					240	
tcg	gga	ggg	ctt	tcg	atc	tga										741
Ser	Gly	Gly	Leu	Ser	Ile											
				245												

&lt;210&gt; 3160

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Ralstonia eutropha JMP134

&lt;400&gt; 3160

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			20					25					30			
Ile	Leu	Cys	Asp	Arg	Ala	Ala	Asp	Ala	Val	Gln	Gln	Glu	Ala	Lys	Ser	
		35					40					45				
Leu	Arg	Ser	Glu	Gly	Tyr	Arg	Val	Ala	Ala	Tyr	Ser	Leu	Asp	Val	Thr	
	50					55					60					
Asp	Arg	Ala	Gly	Val	Asp	Ala	Leu	Ala	Ala	Asp	Ile	Leu	Gly	Asn	Phe	
	65				70					75					80	
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Leu	Asp	Ala	
				85				90						95		
Lys	Val	Thr	Arg	Met	Thr	Glu	Glu	Gln	Phe	Asp	Arg	Val	Ile	Asp	Val	
			100					105					110			
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Gln	Ala	Val	Ile	Gly	Ala	Met	

## PhoenixTemp32470.tmp.txt

115  
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 145  
 Val Ile Gly Phe Thr 150 Lys Thr Trp Ala Arg 155 Glu Leu Gly Pro Lys Gly  
 160  
 Ile Arg Val Asn 165 Ala Val Cys Pro Gly 170 Phe Ile Glu Thr Asp 175 Ile Leu  
 180  
 Lys Thr Met Pro Glu Lys Val 185 Leu Asp Gly Phe Arg Ser 190 Asn Cys Trp  
 195  
 Gln Arg Arg Leu Gly Ser Pro 200 Lys Glu Ile Ala Asn 205 Val Tyr Ala Phe  
 210  
 Leu Ala Ser Asp Asp Ala 215 Ser Phe Val Asn Gly 220 Glu Ala Ile Glu Val  
 225  
 Ser Gly Gly Leu Ser 230 Ile 235 240  
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&lt;210&gt; 3161

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Ralstonia eutropha JMP134

&lt;220&gt;

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&lt;222&gt; (1)..(756)

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&lt;400&gt; 3161

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1				5					10					15			
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Ile	Gly	Arg	Ala	Thr	Ala	Leu	Gly	Phe	Ala	Arg	Glu	Gly	Ala	Ser	Ile		
			20					25					30				
gtg	gtg	acc	gac	atc	aac	cgc	gac	ggc	gcg	cag	gaa	gtc	gcc	gac	acg		144
Val	Val	Thr	Asp	Ile	Asn	Arg	Asp	Gly	Ala	Gln	Glu	Val	Ala	Asp	Thr		
			35				40					45					
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Ile	Asn	Ala	Ala	Gly	Gly	Arg	Ala	Met	Ala	Leu	Ala	His	Asp	Val	Gly		
			50			55					60						
tgc	gaa	acg	cag	tgg	acg	cga	gtt	gtc	gac	gct	gcg	gtc	gag	gca	ttc		240
Cys	Glu	Thr	Gln	Trp	Thr	Arg	Val	Val	Asp	Ala	Ala	Val	Glu	Ala	Phe		
			65		70				75					80			
ggc	acg	gtc	gac	gtt	ctt	ttc	aac	aat	gcg	ggc	atc	ttc	gtg	ctc	aag		288
Gly	Thr	Val	Asp	Val	Leu	Phe	Asn	Asn	Ala	Gly	Ile	Phe	Val	Leu	Lys		
			85					90						95			
ccg	ctt	gcc	gaa	acg	acg	ctg	gac	gag	tgg	aac	cgc	ctc	atg	gcg	atc		336
Pro	Leu	Ala	Glu	Thr	Thr	Leu	Asp	Glu	Trp	Asn	Arg	Leu	Met	Ala	Ile		
			100				105					110					
aac	gtc	acg	ggc	gtg	ttc	ctt	ggc	atg	aag	cac	gtg	atg	ccg	ctg	atg		384
Asn	Val	Thr	Gly	Val	Phe	Leu	Gly	Met	Lys	His	Val	Met	Pro	Leu	Met		
			115				120					125					
gcg	cgc	gcc	ggg	aag	ggc	tcg	gtc	atc	aac	gtg	tct	tcg	gtc	gcc	ggc		432
Ala	Arg	Ala	Gly	Lys	Gly	Ser	Val	Ile	Asn	Val	Ser	Ser	Val	Ala	Gly		
			130			135					140						
ctg	gtc	ggc	tcg	ccg	cgg	tcc	acg	atg	tac	agc	gcc	agc	aag	ggg	gcc		480
Leu	Val	Gly	Ser	Pro	Arg	Ser	Thr	Met	Tyr	Ser	Ala	Ser	Lys	Gly	Ala		
			145		150				155					160			
gtg	cgt	gcc	atg	acg	aag	ggc	gca	gca	ctg	gag	tat	gcg	gcg	aag	ggc		528
Val	Arg	Ala	Met	Thr	Lys	Gly	Ala	Ala	Leu	Glu	Tyr	Ala	Ala	Lys	Gly		
			165				170							175			
gtg	agg	gtc	aat	tcg	atc	cat	ccc	ggc	ctt	atc	gat	acg	gcc	atg	gcc		576
Val	Arg	Val	Asn	Ser	Ile	His	Pro	Gly	Leu	Ile	Asp	Thr	Ala	Met	Ala		
			180				185					190					
gac	tac	gct	tcg	ggc	acg	gcg	gga	cgc	agc	aag	cag	gat	ctg	ggc	cag		624
Asp	Tyr	Ala	Ser	Gly	Thr	Ala	Gly	Arg	Ser	Lys	Gln	Asp	Leu	Gly	Gln		
			195			200						205					
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## PhoenixTemp32470.tmp.txt

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Leu	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Met	Asn	Gly	Ala		
225					230					235					240		
gag	ttg	gtg	ctg	gac	ggc	gga	ttc	acg	gcg	gcc	tag					756	
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&lt;210&gt; 3162

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; Ralstonia eutropha JMP134

&lt;400&gt; 3162

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			20					25					30				
Val	Val	Thr	Asp	Ile	Asn	Arg	Asp	Gly	Ala	Gln	Glu	Val	Ala	Asp	Thr		
		35					40					45					
Ile	Asn	Ala	Ala	Gly	Gly	Arg	Ala	Met	Ala	Leu	Ala	His	Asp	Val	Gly		
	50					55					60						
Cys	Glu	Thr	Gln	Trp	Thr	Arg	Val	Val	Asp	Ala	Ala	Val	Glu	Ala	Phe		
65					70				75						80		
Gly	Thr	Val	Asp	Val	Leu	Phe	Asn	Asn	Ala	Gly	Ile	Phe	Val	Leu	Lys		
			85						90					95			
Pro	Leu	Ala	Glu	Thr	Thr	Leu	Asp	Glu	Trp	Asn	Arg	Leu	Met	Ala	Ile		
			100					105					110				
Asn	Val	Thr	Gly	Val	Phe	Leu	Gly	Met	Lys	His	Val	Met	Pro	Leu	Met		
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Ala	Arg	Ala	Gly	Lys	Gly	Ser	Val	Ile	Asn	Val	Ser	Ser	Val	Ala	Gly		
	130					135					140						
Leu	Val	Gly	Ser	Pro	Arg	Ser	Thr	Met	Tyr	Ser	Ala	Ser	Lys	Gly	Ala		
145					150					155					160		
Val	Arg	Ala	Met	Thr	Lys	Gly	Ala	Ala	Leu	Glu	Tyr	Ala	Ala	Lys	Gly		
			165						170					175			
Val	Arg	Val	Asn	Ser	Ile	His	Pro	Gly	Leu	Ile	Asp	Thr	Ala	Met	Ala		
		180						185					190				
Asp	Tyr	Ala	Ser	Gly	Thr	Ala	Gly	Arg	Ser	Lys	Gln	Asp	Leu	Gly	Gln		
	195						200					205					
Val	Met	Ser	Pro	Met	Gly	Arg	Leu	Gly	Thr	Ala	Asp	Glu	Val	Gly	Gly		
	210					215					220						
Leu	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Met	Asn	Gly	Ala		
225					230					235					240		
Glu	Leu	Val	Leu	Asp	Gly	Gly	Phe	Thr	Ala	Ala							
				245					250								

&lt;210&gt; 3163

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas fluorescens Pf0-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3163

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1				5					10					15			
gga	atc	ggg	ctg	ggc	atc	gcc	ctg	acg	ctg	gcc	aag	gct	ggc	gcc	aac		
Gly	Ile	Gly	Leu	Gly	Ile	Ala	Leu	Thr	Leu	Ala	Lys	Ala	Gly	Ala	Asn	96	
			20					25					30				
ctg	atc	cta	aac	ggc	ttt	ggc	gac	gcc	tcc	aag	gtg	atc	gcc	gaa	gtc		
Leu	Ile	Leu	Asn	Gly	Phe	Gly	Asp	Ala	Ser	Lys	Val	Ile	Ala	Glu	Val	144	
		35					40					45					
gag	cag	ttc	ggc	ggc	aag	gtc	ggc	cat	cac	ccg	gcg	gac	gtc	agc	gat		
																192	



## PhoenixTemp32470.tmp.txt

Glu	Gln	Phe	Gly	Gly	Lys	Val	Gly	His	His	Pro	Ala	Asp	Val	Ser	Asp		
50						55					60						
ccc	gcc	cag	atc	gcc	gac	atg	att	gcc	tac	gcc	gaa	cgc	gag	ttc	ggc	240	
Pro	Ala	Gln	Ile	Ala	Asp	Met	Ile	Ala	Tyr	Ala	Glu	Arg	Glu	Phe	Gly		
65					70					75					80		
ggc	gtg	gac	att	ctg	gtc	aac	aac	gcc	ggc	atc	cag	cac	gtc	gcg	gcg	288	
Gly	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Ala		
				85					90					95			
gtg	gaa	gaa	ttt	ccg	gtg	gag	cgc	tgg	gat	tcg	atc	atc	gcg	atc	aac	336	
Val	Glu	Glu	Phe	Pro	Val	Glu	Arg	Trp	Asp	Ser	Ile	Ile	Ala	Ile	Asn		
			100					105					110				
ctg	tcg	tcg	gtg	ttt	cac	agc	act	cgc	ctg	agt	ttg	ccg	ggc	atg	cgc	384	
Leu	Ser	Ser	Val	Phe	His	Ser	Thr	Arg	Leu	Ser	Leu	Pro	Gly	Met	Arg		
			115				120					125					
gcc	aag	ggc	tgg	ggg	cga	atc	gtc	aac	atc	gcc	tcg	gtg	cat	ggt	ctg	432	
Ala	Lys	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Val	His	Gly	Leu		
			130			135				140							
gtc	ggc	tcc	acc	ggc	aaa	gcc	gcg	tac	gtg	gca	gcc	aag	cat	ggg	gtg	480	
Val	Gly	Ser	Thr	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val		
					150				155						160		
atc	ggc	ttg	acc	aaa	gtg	gtc	ggc	ctg	gaa	acc	gcc	gcc	agc	aac	gtc	528	
Ile	Gly	Leu	Thr	Lys	Val	Val	Gly	Leu	Glu	Thr	Ala	Ala	Ser	Asn	Val		
				165					170					175			
acc	tgc	aac	gcc	atc	tgc	ccg	ggc	tgg	gtg	ctg	acg	ccg	ctg	gtg	cag	576	
Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln		
			180					185					190				
aag	cag	atc	gat	gat	cgc	gca	gcc	aag	ggc	gtc	gac	ccg	cag	cag	gcg	624	
Lys	Gln	Ile	Asp	Asp	Arg	Ala	Ala	Lys	Gly	Val	Asp	Pro	Gln	Gln	Ala		
			195			200						205					
caa	cac	gat	ctg	ctg	gcc	gaa	aag	cag	ccg	tcg	ctg	gag	ttc	gtc	acg	672	
Gln	His	Asp	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Leu	Glu	Phe	Val	Thr		
						215					220						
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Pro	Ala	His	Leu	Gly	Glu	Leu	Val	Leu	Phe	Leu	Cys	Ser	Glu	Ala	Gly		
				230					235						240		
agc	cag	gtg	cgt	ggc	gcc	gcg	tgg	aat	atc	gat	ggc	ggg	tgg	ctc	gcg	768	
Ser	Gln	Val	Arg	Gly	Ala	Ala	Trp	Asn	Ile	Asp	Gly	Gly	Trp	Leu	Ala		
				245					250					255			
cag	taa															774	
Gln																	

&lt;210&gt; 3164

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas fluorescens PfO-1

&lt;400&gt; 3164

Met	Thr	Thr	Leu	Ser	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser		
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Gly	Ile	Gly	Leu	Gly	Ile	Ala	Leu	Thr	Leu	Ala	Lys	Ala	Gly	Ala	Asn		
			20					25					30				
Leu	Ile	Leu	Asn	Gly	Phe	Gly	Asp	Ala	Ser	Lys	Val	Ile	Ala	Glu	Val		
			35				40					45					
Glu	Gln	Phe	Gly	Gly	Lys	Val	Gly	His	His	Pro	Ala	Asp	Val	Ser	Asp		
	50					55					60						
Pro	Ala	Gln	Ile	Ala	Asp	Met	Ile	Ala	Tyr	Ala	Glu	Arg	Glu	Phe	Gly		
65					70				75						80		
Gly	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Ala		
				85					90					95			
Val	Glu	Glu	Phe	Pro	Val	Glu	Arg	Trp	Asp	Ser	Ile	Ile	Ala	Ile	Asn		
			100					105					110				
Leu	Ser	Ser	Val	Phe	His	Ser	Thr	Arg	Leu	Ser	Leu	Pro	Gly	Met	Arg		
			115				120					125					
Ala	Lys	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Val	His	Gly	Leu		
	130					135					140						
Val	Gly	Ser	Thr	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val		
145					150				155						160		
Ile	Gly	Leu	Thr	Lys	Val	Val	Gly	Leu	Glu	Thr	Ala	Ala	Ser	Asn	Val		

## PhoenixTemp32470.tmp.txt

Thr Cys Asn Ala<sup>165</sup> Ile Cys Pro Gly Trp<sup>170</sup> Val Leu Thr Pro Leu<sup>175</sup> Val Gln  
 Lys Gln Ile Asp<sup>180</sup> Asp Arg Ala Ala<sup>185</sup> Lys Gly Val Asp Pro Gln<sup>190</sup> Gln Ala  
 Gln His Asp<sup>195</sup> Leu Leu Ala Glu<sup>200</sup> Lys Gln Pro Ser Leu<sup>205</sup> Glu Phe Val Thr  
 Pro<sup>210</sup> Ala His Leu Gly Glu<sup>215</sup> Leu Val Leu Phe Leu<sup>220</sup> Cys Ser Glu Ala Gly  
 225 Ser Gln Val Arg Gly<sup>230</sup> Ala Ala Trp Asn Ile<sup>235</sup> Asp Gly Gly Trp Leu<sup>240</sup> Ala  
 Gln<sup>245</sup>

&lt;210&gt; 3165

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas fluorescens Pf0-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3165

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Met Ala Glu Pro Leu <sup>5</sup> Ser Leu Pro Pro Val <sup>10</sup> Pro Glu Pro Pro Lys <sup>15</sup> Gly	
gag cgt ctg aaa aac aag gtt gtg ttg ctg acc ggc gcc gcc caa ggc	96
Glu Arg Leu Lys <sup>20</sup> Asn Lys Val Val <sup>25</sup> Leu Thr Gly Ala <sup>30</sup> Gln Gly	
atc ggc gaa gca atc gtc gcg acc ttc gcc tcc cag cag gcc aaa ctg	144
Ile Gly Glu Ala <sup>35</sup> Ile Val Ala Thr <sup>40</sup> Phe Ala Ser Gln <sup>45</sup> Gln Ala Lys Leu	
gtg atc agc gat atc cag gcc gaa aag gtc gag aaa gtc gcc gcc cac	192
Val Ile Ser Asp Ile Gln Ala <sup>55</sup> Glu Lys Val Glu Lys <sup>60</sup> Val Ala Ala His	
tgg cgc gag cag ggc gcc gat gtg caa gcg atc aag gcc gac gta tcg	240
Trp Arg Glu Gln Gly Ala <sup>70</sup> Asp Val Gln Ala Ile Lys Ala Asp Val Ser <sup>80</sup>	
cgt cag cag gat ctg cac gcc atg gcc aaa ctg gcc atc gaa ctg cac	288
Arg Gln Gln Asp Leu <sup>85</sup> His Ala Met Ala Lys <sup>90</sup> Leu Ala Ile Glu Leu His	
ggg cgc atc gac gtg ctg gtc aat tgc gcc ggg gtc aac gtg ttc cgt	336
Gly Arg Ile Asp <sup>100</sup> Val Leu Val Asn Cys Ala Gly Val Asn Val <sup>110</sup> Phe Arg	
gat ccg ctg gaa atg acc gaa gaa gac tgg aaa cgc tgc ttc gcg atc	384
Asp Pro Leu Glu Met Thr Glu Glu Asp Trp Lys Arg Cys Phe Ala Ile	
gac ctc gac ggc gcc tgg tat ggc tgc aag gcc gta ttg ccg cag atg	432
Asp Leu Asp Gly Ala Trp Tyr <sup>135</sup> Gly Cys Lys Ala Val Leu Pro Gln Met	
atc gag cag ggc atc ggc agc atc atc aac att gcc tcg acc cat tcc	480
Ile Glu Gln Gly Ile Gly Ser Ile Ile Asn Ile Ala Ser Thr His Ser <sup>160</sup>	
acg aac atc att ccc ggc tgc ttc ccg tac ccg gtg gcc aag cat ggc	528
Thr Asn Ile Ile Pro <sup>165</sup> Gly Cys Phe Pro Tyr <sup>170</sup> Pro Val Ala Lys <sup>175</sup> His Gly	
ctg ctc ggc ctg acc cgc gcg ctg ggc atc gag tac gcg ccg aag ggt	576
Leu Leu Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala Pro Lys Gly	
att cgg gtc aac gcg att gca ccg ggc tac atc gaa acc cag ctc aac	624
Ile Arg Val Asn Ala Ile Ala Pro <sup>200</sup> Gly Tyr Ile Glu Thr <sup>205</sup> Gln Leu Asn	
gtc gat tac tgg aac ggt ttc gcc gac ccg cac gcc gaa cgt cag cgc	672
Val Asp Tyr Trp Asn Gly Phe Ala Asp Pro His Ala Glu Arg Gln Arg	
gct ttc gat ctg cac cca ccg aaa cgc atc ggc caa ccg atc gaa gtg	720
Ala Phe Asp Leu His Pro Pro Lys Arg Ile Gly Gln Pro Ile Glu Val	

PhoenixTemp32470.tmp.txt

225											230						235						240	
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Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe	Ile	Asn									
				245					250					255										
gcc	tcg	tgc	atc	atc	gat	ggt	ggt	cgc	tcg	gtc	atg	tac	cac	gac		816								
Ala	Ser	Cys	Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Met	Tyr	His	Asp									
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tga																819								

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<213> Pseudomonas fluorescens Pf0-1

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			20					25					30		
Ile	Gly	Glu	Ala	Ile	Val	Ala	Thr	Phe	Ala	Ser	Gln	Gln	Ala	Lys	Leu
		35					40					45			
Val	Ile	Ser	Asp	Ile	Gln	Ala	Glu	Lys	Val	Glu	Lys	Val	Ala	Ala	His
	50					55					60				
Trp	Arg	Glu	Gln	Gly	Ala	Asp	Val	Gln	Ala	Ile	Lys	Ala	Asp	Val	Ser
65					70					75					80
Arg	Gln	Gln	Asp	Leu	His	Ala	Met	Ala	Lys	Leu	Ala	Ile	Glu	Leu	His
				85					90					95	
Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Cys	Ala	Gly	Val	Asn	Val	Phe	Arg
			100					105					110		
Asp	Pro	Leu	Glu	Met	Thr	Glu	Glu	Asp	Trp	Lys	Arg	Cys	Phe	Ala	Ile
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Asp	Leu	Asp	Gly	Ala	Trp	Tyr	Gly	Cys	Lys	Ala	Val	Leu	Pro	Gln	Met
	130					135					140				
Ile	Glu	Gln	Gly	Ile	Gly	Ser	Ile	Ile	Asn	Ile	Ala	Ser	Thr	His	Ser
145					150				155					160	
Thr	Asn	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	Lys	His	Gly
				165					170					175	
Leu	Leu	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala	Pro	Lys	Gly
			180					185					190		
Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Gln	Leu	Asn
		195					200					205			
Val	Asp	Tyr	Trp	Asn	Gly	Phe	Ala	Asp	Pro	His	Ala	Glu	Arg	Gln	Arg
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Ala	Met	Thr	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe	Ile	Asn
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cag	ggg	atc	ggg	cgc	gcc	tct	gcg	ctg	gcc	atg	gcg	cgc	gag	ggc	gcg	
Gln	Gly	Ile	Gly	Arg	Ala	Ser	Ala	Leu	Ala	Met	Ala	Arg	Glu	Gly	Ala	96
			20					25					30			

## PhoenixTemp32470.tmp.txt

cgt	gtg	ctg	gcg	acc	gac	ctg	aat	gcg	gca	gcg	ctc	gaa	ggg	ctt	gcg	144
Arg	Val	Leu	Ala	Thr	Asp	Leu	Asn	Ala	Ala	Ala	Leu	Glu	Gly	Leu	Ala	
		35					40					45				
gcc	gaa	ggg	ctc	gag	gtg	cag	ccg	ctc	gat	gtg	cgc	gat	ccg	gcc	tcg	192
Ala	Glu	Gly	Leu	Glu	Val	Gln	Pro	Leu	Asp	Val	Arg	Asp	Pro	Ala	Ser	
	50					55					60					
atc	gcg	gcc	gct	gtc	gcg	gca	ggg	ccg	ctc	gac	gtg	ctc	ttc	aac		240
Ile	Ala	Ala	Ala	Val	Ala	Ala	Gly	Pro	Leu	Asp	Val	Leu	Phe	Asn		
	65				70				75					80		
tgc	gcg	ggc	ttc	gtg	gcc	tcg	ggc	acg	atc	ctc	gac	tgc	gac	gag	gag	288
Cys	Ala	Gly	Phe	Val	Ala	Ser	Gly	Thr	Ile	Leu	Asp	Cys	Asp	Glu	Glu	
				85					90					95		
gac	tgg	gcc	ttc	tcc	gtc	ggg	ctg	aac	ctc	acc	ggc	atg	tat	cgg	atg	336
Asp	Trp	Ala	Phe	Ser	Val	Gly	Leu	Asn	Leu	Thr	Gly	Met	Tyr	Arg	Met	
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tgc	cgc	gcc	ttc	ctg	ccg	ggc	atg	atc	gcg	ggc	ggc	ggc	ggg	tcg	atc	384
Cys	Arg	Ala	Phe	Leu	Pro	Gly	Met	Ile	Ala	Gly	Gly	Gly	Gly	Ser	Ile	
		115				120						125				
atc	aac	atg	gcc	tcg	gtc	gtg	tcc	gcg	gcc	atc	gcg	gcc	ccc	aac	cgc	432
Ile	Asn	Met	Ala	Ser	Val	Val	Ser	Ala	Ala	Ile	Ala	Ala	Pro	Asn	Arg	
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Phe	Val	Tyr	Gly	Thr	Thr	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Lys	Ser	
	145				150					155					160	
atc	gcc	gcc	gat	ttc	atc	ggg	cag	ggc	atc	cgc	tgc	aac	gcg	atc	tgc	528
Ile	Ala	Ala	Asp	Phe	Ile	Gly	Gln	Gly	Ile	Arg	Cys	Asn	Ala	Ile	Cys	
				165					170					175		
ccc	ggc	acc	gtc	gaa	agc	ccc	tcg	ctc	gag	gac	cgg	ctc	cgc	gcc	acc	576
Pro	Gly	Thr	Val	Glu	Ser	Pro	Ser	Leu	Glu	Asp	Arg	Leu	Arg	Ala	Thr	
			180					185					190			
ggc	gat	tac	gag	gcc	gcg	cgg	cgc	gcc	ttc	gtg	gcc	cgc	cag	ccc	atc	624
Gly	Asp	Tyr	Glu	Ala	Ala	Arg	Arg	Ala	Phe	Val	Ala	Arg	Gln	Pro	Ile	
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ggc	cgc	atc	ggc	cgc	ccg	gag	gag	atc	gcg	gcg	ctt	gtc	gtc	tat	ctc	672
Gly	Arg	Ile	Gly	Arg	Pro	Glu	Glu	Ile	Ala	Ala	Leu	Val	Val	Tyr	Leu	
		210				215					220					
gct	tcg	gac	gaa	tcc	gcc	tac	acc	acc	ggg	gtc	gcc	cat	gtc	atc	gac	720
Ala	Ser	Asp	Glu	Ser	Ala	Tyr	Thr	Thr	Gly	Val	Ala	His	Val	Ile	Asp	
	225				230					235					240	
ggg	ggc	tgg	tcc	aat	atc	tga										741
Gly	Gly	Trp	Ser	Asn	Ile											
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&lt;210&gt; 3168

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Rhodobacter sphaeroides 2.4.1

&lt;400&gt; 3168

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Arg	Val	Leu	Ala	Thr	Asp	Leu	Asn	Ala	Ala	Ala	Leu	Glu	Gly	Leu	Ala	
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Ala	Glu	Gly	Leu	Glu	Val	Gln	Pro	Leu	Asp	Val	Arg	Asp	Pro	Ala	Ser	
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Ile	Ala	Ala	Ala	Val	Ala	Ala	Gly	Pro	Leu	Asp	Val	Leu	Phe	Asn		
	65				70				75					80		
Cys	Ala	Gly	Phe	Val	Ala	Ser	Gly	Thr	Ile	Leu	Asp	Cys	Asp	Glu	Glu	
				85					90					95		
Asp	Trp	Ala	Phe	Ser	Val	Gly	Leu	Asn	Leu	Thr	Gly	Met	Tyr	Arg	Met	
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Cys	Arg	Ala	Phe	Leu	Pro	Gly	Met	Ile	Ala	Gly	Gly	Gly	Gly	Ser	Ile	
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Ile	Asn	Met	Ala	Ser	Val	Val	Ser	Ala	Ala	Ile	Ala	Ala	Pro	Asn	Arg	
	130					135					140					
Phe	Val	Tyr	Gly	Thr	Thr	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Lys	Ser	
	145				150				155						160	

## PhoenixTemp32470.tmp.txt

Ile Ala Ala Asp Phe Ile Gly Gln Gly Ile Arg Cys Asn Ala Ile Cys  
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 180 185 190  
 Gly Asp Tyr Glu Ala Ala Arg Arg Ala Phe Val Ala Arg Gln Pro Ile  
 195 200 205  
 Gly Arg Ile Gly Arg Pro Glu Glu Ile Ala Ala Leu Val Val Tyr Leu  
 210 215 220  
 Ala Ser Asp Glu Ser Ala Tyr Thr Thr Gly Val Ala His Val Ile Asp  
 225 230 235 240  
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 245

&lt;210&gt; 3169

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Burkholderia sp. 383

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

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Gly Thr Gly Met Gly Ala Val Ile Ala Arg Val Phe Ala Ala Glu Gly	
20 25 30	
gcc acg gtg gtc gtg acg gcc aac gcc aat cgc cag gac aac atg gac	144
Ala Thr Val Val Val Thr Ala Asn Ala Asn Arg Gln Asp Asn Met Asp	
35 40 45	
acg ctg gtt cgg gag atc acc gac ctc ggc cag agc gcg tcg tcg gcg	192
Thr Leu Val Arg Glu Ile Thr Asp Leu Gly Gln Ser Ala Ser Ser Ala	
50 55 60	
gtg ctc gac gtg acc cgt cag gac cag tgg gcg tcg gtc gtg gcg gat	240
Val Leu Asp Val Thr Arg Gln Asp Gln Trp Ala Ser Val Val Ala Asp	
65 70 75 80	
acg gtg cag cgc cat ggc cgc atc gac atc ctg atc aac aac gca ggc	288
Thr Val Gln Arg His Gly Arg Ile Asp Ile Leu Ile Asn Asn Ala Gly	
85 90 95	
acg ccg ggc ccg cgc gac ggc agc tgg gac aag gcg acg gcc gaa gat	336
Thr Pro Gly Pro Arg Asp Gly Ser Trp Asp Lys Ala Thr Ala Glu Asp	
100 105 110	
ttc cat cat gtg atc gac gtg aac ctg aac agc cag ttc tac gga atc	384
Phe His His Val Ile Asp Val Asn Leu Asn Ser Gln Phe Tyr Gly Ile	
115 120 125	
aag gcc gtc acg ccg cat atg gag cgc cag ggc aac ggc gcg atc gtc	432
Lys Ala Val Thr Pro His Met Glu Arg Gln Gly Asn Gly Ala Ile Val	
130 135 140	
aat atc tcg tcg gcg gcg ggc atc atc gtg ttc ccc gac gtg ccc ccg	480
Asn Ile Ser Ser Ala Ala Gly Ile Ile Val Phe Pro Asp Val Pro Pro	
145 150 155 160	
ggt tac agc gcc tcc aag ggc gcc agc cgt cat ctg acc aag gcg gcc	528
Gly Tyr Ser Ala Ser Lys Gly Ala Ser Arg His Leu Thr Lys Ala Ala	
165 170 175	
gcc gtg gat ttc gcc cgc cga ggc atc cgc gtc aac gga atc tat ccc	576
Ala Val Asp Phe Ala Arg Arg Gly Ile Arg Val Asn Gly Ile Tyr Pro	
180 185 190	
ggg ctg atc gaa acg ccg atg gcc gct cat ttc acc gag aat ccg gag	624
Gly Leu Ile Glu Thr Pro Met Ala Ala His Phe Thr Glu Asn Pro Glu	
195 200 205	
atg ctg gcg ggc ctg ctc aag ggc att ccg atc ggc cgg gtc ggg acg	672
Met Leu Ala Gly Leu Leu Lys Gly Ile Pro Ile Gly Arg Val Gly Thr	
210 215 220	
tcc gag gaa atc gcc aag gcc gcg ctg ttc ctg gcc agc gac gat gcg	720
Ser Glu Glu Ile Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ala	
225 230 235 240	

tcc tac gtc atc ggt gcc gag ctg gtg gtc gat ggc ggc ttg acg agc 768  
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 35 40 45  
 Thr Leu Val Arg Glu Ile Thr Asp Leu Gly Gln Ser Ala Ser Ser Ala  
 50 55 60  
 Val Leu Asp Val Thr Arg Gln Asp Gln Trp Ala Ser Val Val Ala Asp  
 65 70 75 80  
 Thr Val Gln Arg His Gly Arg Ile Asp Ile Leu Ile Asn Asn Ala Gly  
 85 90 95  
 Thr Pro Gly Pro Arg Asp Gly Ser Trp Asp Lys Ala Thr Ala Glu Asp  
 100 105 110  
 Phe His His Val Ile Asp Val Asn Leu Asn Ser Gln Phe Tyr Gly Ile  
 115 120 125  
 Lys Ala Val Thr Pro His Met Gly Arg Gln Gly Asn Gly Ala Ile Val  
 130 135 140  
 Asn Ile Ser Ser Ala Ala Gly Ile Ile Val Phe Pro Asp Val Pro Pro  
 145 150 155 160  
 Gly Tyr Ser Ala Ser Lys Gly Ala Ser Arg His Leu Thr Lys Ala Ala  
 165 170 175  
 Ala Val Asp Phe Ala Arg Arg Gly Ile Arg Val Asn Gly Ile Tyr Pro  
 180 185 190  
 Gly Leu Ile Glu Thr Pro Met Ala Ala His Phe Thr Glu Asn Pro Glu  
 195 200 205  
 Met Leu Ala Gly Leu Leu Lys Gly Ile Pro Ile Gly Arg Val Gly Thr  
 210 215 220  
 Ser Glu Glu Ile Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ala  
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 245 250 255  
 Ile

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 agc ggc ggc gcc ggt ggc tgt ggc ggc gcg gcg tcc gaa ctg ttc gcc 96  
 Ser Gly Gly Ala Gly Gly Cys Gly Gly Ala Ala Ser Glu Leu Phe Ala 20 25 30  
 gca cag ggc gcg aag gtc gcg atc atc gac cgc gac ggc gac gcc gct 144  
 Ala Gln Gly Ala Lys Val Ala Ile Ile Asp Arg Asp Gly Asp Ala Ala 35 40 45  
 gaa aca ctc gca tcc cgg ctg cgc gac gcg ggc ctg cag gcg atc gcc 192  
 Page 2887

## PhoenixTemp32470.tmp.txt

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Phe	Gly	Ala	Asp	Val	Ser	Lys	Gln	Ala	Glu	Val	Gln	Gln	Ala	Val	Asn	
65					70					75					80	
gcc	gcg	cgg	gag	cag	tac	ggc	aac	gcg	gac	atc	ctg	ttc	aat	cac	gcc	288
Ala	Ala	Arg	Glu	Gln	Tyr	Gly	Asn	Ala	Asp	Ile	Leu	Phe	Asn	His	Ala	
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ggc	acg	ctg	atc	gtc	aaa	ccg	ttc	ctc	gac	atc	gag	gag	tcg	gaa	tgg	336
Gly	Thr	Leu	Ile	Val	Lys	Pro	Phe	Leu	Asp	Ile	Glu	Glu	Ser	Glu	Trp	
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gac	tgg	ctg	atg	ggc	gtg	aac	gtg	aag	agc	atg	ttc	ctg	atg	acg	aaa	384
Asp	Trp	Leu	Met	Gly	Val	Asn	Val	Lys	Ser	Met	Phe	Leu	Met	Thr	Lys	
			115				120					125				
gcg	gtg	ctg	ccg	cag	atg	ctg	gag	aag	ggg	cgg	ggc	agc	atc	gtc	tgc	432
Ala	Val	Leu	Pro	Gln	Met	Leu	Glu	Lys	Gly	Arg	Gly	Ser	Ile	Val	Cys	
	130					135					140					
acg	tcg	tcg	att	tcc	gcg	gta	tgc	gcg	acg	ccg	ggc	gag	gtg	ctg	tat	480
Thr	Ser	Ser	Ile	Ser	Ala	Val	Cys	Ala	Thr	Pro	Gly	Glu	Val	Leu	Tyr	
145					150					155					160	
gac	gcg	acc	aag	ggc	gcg	tgc	cac	atg	ttc	gcg	cgg	gcg	att	gcg	gtc	528
Asp	Ala	Thr	Lys	Gly	Ala	Cys	His	Met	Phe	Ala	Arg	Ala	Ile	Ala	Val	
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gag	tac	cgc	gac	cgc	ggc	att	cgg	tgc	aac	gcg	ctc	gca	ccg	ggg	ttc	576
Glu	Tyr	Arg	Asp	Arg	Gly	Ile	Arg	Cys	Asn	Ala	Leu	Ala	Pro	Gly	Phe	
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atc	cgc	acg	ccg	cac	ggg	atg	cgc	gaa	ctg	aag	gac	ctg	cag	gcg	atg	624
Ile	Arg	Thr	Pro	His	Gly	Met	Arg	Glu	Leu	Lys	Asp	Leu	Gln	Ala	Met	
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ggt	gtc	gac	gcg	acc	gag	gcg	gcg	atc	gcg	ggt	cag	caa	ggc	cgc	ctg	672
Gly	Val	Asp	Ala	Thr	Glu	Ala	Ala	Ile	Ala	Val	Gln	Gln	Gly	Arg	Leu	
	210					215					220					
tgc	gag	ccg	tcg	gaa	gtc	gcg	gcg	gcg	gca	ctg	ttc	ctc	gct	tcc	gac	720
Cys	Glu	Pro	Ser	Glu	Val	Ala	Ala	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	
225					230					235					240	
gag	tcg	agt	ttc	gtc	aac	ggc	acc	cac	ctg	ttc	gtc	gac	aac	tgc	ttc	768
Glu	Ser	Ser	Phe	Val	Asn	Gly	Thr	His	Leu	Phe	Val	Asp	Asn	Cys	Phe	
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tcc	gcc	gtc	tga													780
Ser	Ala	Val														

&lt;210&gt; 3172

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Burkholderia sp. 383

&lt;400&gt; 3172

Met	Asn	Val	Lys	Ile	Asp	Gly	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Val	
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			20					25					30			
Ala	Gln	Gly	Ala	Lys	Val	Ala	Ile	Ile	Asp	Arg	Asp	Gly	Asp	Ala	Ala	
		35					40					45				
Glu	Thr	Leu	Ala	Ser	Arg	Leu	Arg	Asp	Ala	Gly	Leu	Gln	Ala	Ile	Gly	
	50					55					60					
Phe	Gly	Ala	Asp	Val	Ser	Lys	Gln	Ala	Glu	Val	Gln	Gln	Ala	Val	Asn	
65					70					75					80	
Ala	Ala	Arg	Glu	Gln	Tyr	Gly	Asn	Ala	Asp	Ile	Leu	Phe	Asn	His	Ala	
				85					90					95		
Gly	Thr	Leu	Ile	Val	Lys	Pro	Phe	Leu	Asp	Ile	Glu	Glu	Ser	Glu	Trp	
			100					105					110			
Asp	Trp	Leu	Met	Gly	Val	Asn	Val	Lys	Ser	Met	Phe	Leu	Met	Thr	Lys	
		115					120					125				
Ala	Val	Leu	Pro	Gln	Met	Leu	Glu	Lys	Gly	Arg	Gly	Ser	Ile	Val	Cys	
	130					135					140					
Thr	Ser	Ser	Ile	Ser	Ala	Val	Cys	Ala	Thr	Pro	Gly	Glu	Val	Leu	Tyr	
145					150					155					160	
Asp	Ala	Thr	Lys	Gly	Ala	Cys	His	Met	Phe	Ala	Arg	Ala	Ile	Ala	Val	

## PhoenixTemp32470.tmp.txt

Glu Tyr Arg Asp 165 Arg Gly Ile Arg Cys 170 Asn Ala Leu Ala Pro 175 Gly Phe  
 Ile Arg Thr Pro 180 His Gly Met Arg Glu 185 Leu Lys Asp Leu 190 Gln Ala Met  
 Gly Val Asp 195 Ala Thr Glu Ala 200 Ala Ile Ala Val Gln 205 Gln Gly Arg Leu  
 Cys 210 Glu Pro Ser Glu Val 215 Ala Ala Ala Leu 220 Phe Leu Ala Ser Asp  
 225 Glu Ser Ser Phe Val 230 Asn Gly Thr His Leu 235 Phe Val Asp Asn Cys 240 Phe  
 Ser Ala Val 245 250 255

&lt;210&gt; 3173

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Burkholderia sp. 383

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3173

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Met	Lys	Leu	Lys	Asp	Lys	Val	Ala	Ile	Ile	Thr	Gly	Ala	Ala	Ala	Gly	
1				5				10						15		
atc	ggg	cag	gca	acg	gcc	agg	acc	ttc	gcg	agc	gaa	ggg	gcg	atc	gtc	96
Ile	Gly	Gln	Ala	Thr	Ala	Arg	Thr	Phe	Ala	Ser	Glu	Gly	Ala	Ile	Val	
			20					25					30			
gtg	ttg	tgc	gac	cgt	tcc	gca	gac	gcg	gtg	cga	cac	gag	gcg	cgg	cac	144
Val	Leu	Cys	Asp	Arg	Ser	Ala	Asp	Ala	Val	Arg	His	Glu	Ala	Arg	His	
		35					40					45				
ctg	aac	gag	cg	ggc	cat	tcg	gcg	gtc	gcg	cat	acg	ctc	gac	gtg	acc	192
Leu	Asn	Glu	Arg	Gly	His	Ser	Ala	Val	Ala	His	Thr	Leu	Asp	Val	Thr	
	50					55					60					
gac	cgg	gcc	ggc	atc	gac	gcg	gta	atc	gcg	aac	gtg	aag	gcg	cag	ttc	240
Asp	Arg	Ala	Gly	Ile	Asp	Ala	Val	Ile	Ala	Asn	Val	Lys	Ala	Gln	Phe	
	65			70						75					80	
ggc	cgg	atc	gac	att	ctc	gtc	aac	aac	gcg	ggc	att	acg	cag	gat	gcg	288
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Gln	Asp	Ala	
			85						90					95		
cgg	ctc	gtg	aac	atg	agc	gag	gaa	cag	ttc	gac	aag	gtc	atc	gac	gtc	336
Arg	Leu	Val	Asn	Met	Ser	Glu	Glu	Gln	Phe	Asp	Lys	Val	Ile	Asp	Val	
			100					105					110			
aac	ctg	aag	ggc	gtg	ttc	aac	tgc	acg	cag	gcg	gtc	gtc	gac	acg	atg	384
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Gln	Ala	Val	Val	Asp	Thr	Met	
		115					120					125				
atc	gag	cag	aag	cg	ggc	gtg	gtg	ctc	aac	gcg	tcg	agc	gtc	gtc	ggc	432
Ile	Glu	Gln	Lys	Arg	Gly	Val	Val	Leu	Asn	Ala	Ser	Val	Val	Gly		
	130					135					140					
atc	tac	ggg	aat	ttc	ggc	cag	acg	aac	tac	gcg	gcc	agc	aaa	ttc	ggc	480
Ile	Tyr	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	Phe	Gly	
	145				150					155					160	
gtg	atc	ggt	ttc	acc	aag	acg	tgg	gcc	agg	gag	ctc	ggc	cct	aaa	ggc	528
Val	Ile	Gly	Phe	Thr	Lys	Thr	Trp	Ala	Arg	Glu	Leu	Gly	Pro	Lys	Gly	
			165						170					175		
att	cg	gtc	aat	gcg	gtg	tgc	ccg	ggc	ttc	atc	gag	acg	gac	atc	ctc	576
Ile	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Phe	Ile	Glu	Thr	Asp	Ile	Leu	
			180					185					190			
aag	aca	atg	ccg	gac	aaa	gtg	ctc	gac	ggg	ttt	cgg	gac	gca	tgc	tgg	624
Lys	Thr	Met	Pro	Asp	Lys	Val	Leu	Asp	Gly	Phe	Arg	Asp	Ala	Cys	Trp	
		195					200					205				
cag	cgg	cgg	ttg	ggt	acg	ccg	agc	gaa	att	gcg	agc	gtt	tac	gcg	ttc	672
Gln	Arg	Arg	Leu	Gly	Thr	Pro	Ser	Glu	Ile	Ala	Ser	Val	Tyr	Ala	Phe	
	210					215					220					
ctc	gcg	tcg	gac	gaa	gcc	agt	ttc	gtg	aac	ggg	acg	gcg	atc	gag	gtg	720
Leu	Ala	Ser	Asp	Glu	Ala	Ser	Phe	Val	Asn	Gly	Thr	Ala	Ile	Glu	Val	



225		230		235		240		741
tgc ggc ggg ttg tgc gtg tag								
Ser Gly Gly Leu Ser Val								
		245						

<210> 3174  
<211> 246  
<212> PRT  
<213> Burkholderia sp. 383

[illegible]

<210> 3175  
<211> 792  
<212> DNA  
<213> Burkholderia thailandensis E264

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<220>
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<222> (1)..(792)
<223> transl_table=11
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Met	Thr	Lys	Asn	Leu	Ala	Pro	Arg	Leu	Ala	Gly	Lys	Arg	Ala	Phe	Ile		
1				5					10					15			
acc	ggc	gcg	gcg	ggc	ggc	ctt	ggg	cgc	atc	gcg	cgt	cgg	atg	gcg	96		
Thr	Gly	Ala	Ala	Gly	Gly	Leu	Gly	Arg	Ala	Ile	Ala	Arg	Arg	Met	Ala		
			20					25				30					
gaa	cag	ggc	gcg	aag	gtg	ttc	ttg	acc	gac	atc	gtc	gac	gcg	gcc	gtg	144	
Glu	Gln	Gly	Ala	Lys	Val	Phe	Leu	Thr	Asp	Ile	Val	Asp	Ala	Ala	Val		
		35					40					45					
ctc	gac	gcg	ttc	gcg	gcc	gag	ctc	aac	gat	gcg	gcg	ggg	gag	cgc	gtc	192	
Leu	Asp	Ala	Phe	Ala	Ala	Glu	Leu	Asn	Asp	Ala	Ala	Gly	Glu	Arg	Val		
		50				55					60						
gcg	tgg	gcg	gcc	gtg	cat	gac	gtc	acc	gac	gaa	gcg	cag	tgg	gcg	tcg	240	
Ala	Trp	Ala	Ala	Val	His	Asp	Val	Thr	Asp	Glu	Ala	Gln	Trp	Ala	Ser		

## PhoenixTemp32470.tmp.txt

65					70					75					80	
cgg	ctt	tcg	cag	gcg	aac	gac	gcg	atg	ggc	ggg	ctg	tcg	gtg	ctc	gtg	
Arg	Leu	Ser	Gln	Ala	Asn	Asp	Ala	Met	Gly	Gly	Leu	Ser	Val	Leu	Val	288
				85					90					95		
cac	aac	gcg	ggc	atc	ggc	tcg	ttc	ggc	gcc	gtc	ggg	cag	atc	gag	cgc	336
His	Asn	Ala	Gly	Ile	Gly	Ser	Phe	Gly	Ala	Val	Gly	Gln	Ile	Glu	Arg	
			100					105					110			
gac	gaa	tgg	cgg	cgc	gtg	atg	gcg	atc	aac	gtc	gag	agc	atc	gtg	ctc	384
Asp	Glu	Trp	Arg	Arg	Val	Met	Ala	Ile	Asn	Val	Glu	Ser	Ile	Val	Leu	
		115					120					125				
ggc	acg	aag	cgc	gcg	ctg	ccg	tat	ctg	gag	gcg	ggc	gcg	ccc	gcg	tcg	432
Gly	Thr	Lys	Arg	Ala	Leu	Pro	Tyr	Leu	Glu	Ala	Gly	Ala	Pro	Ala	Ser	
		130				135					140					
atc	gtc	aac	atc	tcg	tcg	gtc	gcc	gcg	ttc	aag	cag	gag	ccc	gac	tac	480
Ile	Val	Asn	Ile	Ser	Ser	Val	Ala	Ala	Phe	Lys	Gln	Glu	Pro	Asp	Tyr	
145				150						155					160	
acc	gcg	tac	aac	gcg	tcg	aag	gcg	gcg	gtc	gct	tcg	ctg	acg	aag	tcg	528
Thr	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Ala	Ser	Leu	Thr	Lys	Ser	
				165					170					175		
atc	gcg	gtc	gac	tgc	gcg	cgc	cgg	cag	acc	gag	gtg	cgc	tgc	aac	tcg	576
Ile	Ala	Val	Asp	Cys	Ala	Arg	Arg	Gln	Thr	Glu	Val	Arg	Cys	Asn	Ser	
			180					185					190			
atc	cat	ccg	tcg	ttc	atc	atg	acg	ggc	atc	gtc	gcg	ccg	atc	gtc	cgg	624
Ile	His	Pro	Ser	Phe	Ile	Met	Thr	Gly	Ile	Val	Ala	Pro	Ile	Val	Arg	
		195					200					205				
cag	gtc	ggc	gag	aag	gag	gcg	gcg	cgc	aag	ctc	gcg	cgc	ggc	gtg	ccg	672
Gln	Val	Gly	Glu	Lys	Glu	Ala	Ala	Arg	Lys	Leu	Ala	Arg	Gly	Val	Pro	
		210				215					220					
atg	cgc	cgg	ctc	ggc	gag	ccg	gac	gat	gtc	gcg	tat	gcg	gcc	gtc	tat	720
Met	Arg	Arg	Leu	Gly	Glu	Pro	Asp	Asp	Val	Ala	Tyr	Ala	Ala	Val	Tyr	
225				230					235						240	
ctc	gca	tcc	gac	gag	agc	cgt	tac	gtg	acg	ggc	gcg	gag	ctc	gtg	atc	768
Leu	Ala	Ser	Asp	Glu	Ser	Arg	Tyr	Val	Thr	Gly	Ala	Glu	Leu	Val	Ile	
			245						250					255		
gac	ggc	ggg	atg	tgc	gcg	gtc	tga									792
Asp	Gly	Gly	Met	Cys	Ala	Val										
			260													

&lt;210&gt; 3176

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Burkholderia thailandensis E264

&lt;400&gt; 3176

Met	Thr	Lys	Asn	Leu	Ala	Pro	Arg	Leu	Ala	Gly	Lys	Arg	Ala	Phe	Ile
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Thr	Gly	Ala	Ala	Gly	Gly	Leu	Gly	Arg	Ala	Ile	Ala	Arg	Arg	Met	Ala
			20					25					30		
Glu	Gln	Gly	Ala	Lys	Val	Phe	Leu	Thr	Asp	Ile	Val	Asp	Ala	Ala	Val
		35					40					45			
Leu	Asp	Ala	Phe	Ala	Ala	Glu	Leu	Asn	Asp	Ala	Ala	Gly	Glu	Arg	Val
	50					55					60				
Ala	Trp	Ala	Ala	Val	His	Asp	Val	Thr	Asp	Glu	Ala	Gln	Trp	Ala	Ser
65					70					75				80	
Arg	Leu	Ser	Gln	Ala	Asn	Asp	Ala	Met	Gly	Gly	Leu	Ser	Val	Leu	Val
			85						90					95	
His	Asn	Ala	Gly	Ile	Gly	Ser	Phe	Gly	Ala	Val	Gly	Gln	Ile	Glu	Arg
			100					105					110		
Asp	Glu	Trp	Arg	Arg	Val	Met	Ala	Ile	Asn	Val	Glu	Ser	Ile	Val	Leu
		115					120					125			
Gly	Thr	Lys	Arg	Ala	Leu	Pro	Tyr	Leu	Glu	Ala	Gly	Ala	Pro	Ala	Ser
	130					135					140				
Ile	Val	Asn	Ile	Ser	Ser	Val	Ala	Ala	Phe	Lys	Gln	Glu	Pro	Asp	Tyr
145				150						155					160
Thr	Ala	Tyr	Asn	Ala	Ser	Lys	Ala	Ala	Val	Ala	Ser	Leu	Thr	Lys	Ser
			165						170					175	
Ile	Ala	Val	Asp	Cys	Ala	Arg	Arg	Gln	Thr	Glu	Val	Arg	Cys	Asn	Ser
			180					185					190		
Ile	His	Pro	Ser	Phe	Ile	Met	Thr	Gly	Ile	Val	Ala	Pro	Ile	Val	Arg

## PhoenixTemp32470.tmp.txt

195  
 Gln Val Gly Glu Lys Glu Ala 200  
 210 Arg Lys Leu Ala 205  
 Met Arg Arg Leu Gly Glu 215  
 225 Tyr Asp Asp Val Ala Tyr 220  
 Leu Ala Ser Asp Glu 230  
 235 Thr Val Thr Gly Ala Glu Leu Val 240  
 250 Ile  
 Asp Gly Gly Met 245  
 260 Cys Ala Val

&lt;210&gt; 3177

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Burkholderia thailandensis E264

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3177

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Met Gly Asp Arg Leu 5 Ala Gly Lys Thr Ala 10 Leu Val Thr Ala Ala Ala	
1 cag ggc atc ggc cgc gcg gcg gcc gag cgg ctc gcg cgc gaa ggc gcg	96
Gln Gly Ile Gly Arg Ala Ala Ala Glu 25 Arg Leu Ala Arg Glu Gly Ala	
20 cgc gtg atc gcg acg gat ctg cgc atc gac gcg ttg cgc gac ggc ccg	144
Arg Val Ile 35 Ala Thr Asp Leu Arg 40 Ile Asp Ala Leu 45 Arg Asp Gly Pro	
ttc gac gcg cgc gtg ctc gac gtg cgc gac ggc gcg gcg atc ggc gcg	192
Phe Asp Ala Arg Val 55 Leu Asp Val Arg Asp Gly Ala Ala Ile Gly Ala	
50 ctc gcc gac gcg atc ggc ccc gtc gac gcg ctc ttc aac tgc gcg ggc	240
Leu Ala Asp Ala Ile Gly 70 Pro Val Asp Ala Leu 75 Phe Asn Cys Ala Gly	
65 ttc gtc cac gcg ggc tcg gtg ctc gac gcg acc gag gac gaa tgg gac	288
Phe Val His Ala Gly 85 Ser Val Leu Asp Ala Thr Glu Asp Glu Trp Asp	
90 ttc ggc ttc gat ctg aac gtg aag tcg atg tac cgg acg atc cgc gcg	336
Phe Gly Phe 100 Leu Asn Val Lys Ser 105 Met Tyr Arg Thr 110 Arg Ala	
ttc ctg ccc gcg atg ctc gcg cgc gag cgc ggc tcg atc atc aac atg	384
Phe Leu Pro 115 Ala Met Leu Ala Arg 120 Glu Arg Gly Ser 125 Ile Ile Asn Met	
gcg tcc gcc gcg tcg agc gtg aag ggc gtg ccg gac cgg ttc gtc tac	432
Ala Ser 130 Ala Ala Ser Ser Val 135 Lys Gly Val Pro 140 Asp Arg Phe Val Tyr	
ggt gcg acg aag gcg gcc gtg atc ggc ctg acg aag tcg gtc gcc gcc	480
Gly Ala Thr Lys Ala 150 Val Ile Gly Leu 155 Thr Lys Ser Val Ala Ala	
145 gat ttc gtc acg cac ggc att cgc tgc aat gcg atc tgc ccg ggc acc	528
Asp Phe Val Thr 165 His Gly Ile Arg Cys Asn 170 Ala Ile Cys Pro Gly Thr	
175 gtc gaa tcg ccg tcg ctc gat gcg cgc atc gtc gag cag gcg cgc gcg	576
Val Glu Ser Pro 180 Ser Leu Asp Ala Arg 185 Ile Val Glu Gln Ala Arg Ala	
cgc ggc gaa tcg gtc gac gcg gtg cgc gcg ttc gtc gcg cgc cag	624
Arg Gly Glu Ser Val Asp Ala Val 200 Arg Ala Ala Phe Val Ala Arg Gln	
195 ccg atg ggg cgc atc ggc aag ccg cag gaa atc gcg gcg ctc gtc gca	672
Pro Met Gly Arg Ile Gly Lys 215 Pro Gln Glu Ile Ala Ala Leu Val Ala	
210 tat ctc gcg tcc gac gaa tcg tcg ttc acg acg ggc gcg atc cat ctg	720
Tyr Leu Ala Ser Asp Glu 230 Ser Ser Phe Thr 235 Gly Ala Ile His Leu	
225 atc gac ggc ggc tgg tcg aac tga	744
Ile Asp Gly Gly 245 Trp Ser Asn	

<210> 3178  
 <211> 247  
 <212> PRT  
 <213> Burkholderia thailandensis E264

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 Gln Gly Ile Gly Arg Ala Ala Ala Glu Arg Leu Ala Arg Glu Gly Ala  
 20 25 30  
 Arg Val Ile Ala Thr Asp Leu Arg Ile Asp Ala Leu Arg Asp Gly Pro  
 35 40 45  
 Phe Asp Ala Arg Val Leu Asp Val Arg Asp Gly Ala Ala Ile Gly Ala  
 50 55 60  
 Leu Ala Asp Ala Ile Gly Pro Val Asp Ala Leu Phe Asn Cys Ala Gly  
 65 70 75 80  
 Phe Val His Ala Gly Ser Val Leu Asp Ala Thr Glu Asp Glu Trp Asp  
 85 90 95  
 Phe Gly Phe Asp Leu Asn Val Lys Ser Met Tyr Arg Thr Ile Arg Ala  
 100 105 110  
 Phe Leu Pro Ala Met Leu Ala Arg Glu Arg Gly Ser Ile Ile Asn Met  
 115 120 125  
 Ala Ser Ala Ala Ser Ser Val Lys Gly Val Pro Asp Arg Phe Val Tyr  
 130 135 140  
 Gly Ala Thr Lys Ala Ala Val Ile Gly Leu Thr Lys Ser Val Ala Ala  
 145 150 155 160  
 Asp Phe Val Thr His Gly Ile Arg Cys Asn Ala Ile Cys Pro Gly Thr  
 165 170 175  
 Val Glu Ser Pro Ser Leu Asp Ala Arg Ile Val Glu Gln Ala Arg Ala  
 180 185 190  
 Arg Gly Glu Ser Val Asp Ala Val Arg Ala Ala Phe Val Ala Arg Gln  
 195 200 205  
 Pro Met Gly Arg Ile Gly Lys Pro Gln Glu Ile Ala Ala Leu Val Ala  
 210 215 220  
 Tyr Leu Ala Ser Asp Glu Ser Ser Phe Thr Thr Gly Ala Ile His Leu  
 225 230 235 240  
 Ile Asp Gly Gly Trp Ser Asn  
 245

<210> 3179  
 <211> 810  
 <212> DNA  
 <213> Burkholderia thailandensis E264

<220>  
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 aag gtc gcc ctc gtg acg ggc gcg gga cgc ggc atc ggc gcg atc 96  
 Lys Val Ala Leu Val Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Ile  
 20 25 30  
 gcg cgt gcg ttc gcg cgc gaa ggc gcg gcc gtc gcg att gcg gag ctc 144  
 Ala Arg Ala Phe Ala Arg Glu Gly Ala Ala Val Ala Ile Ala Glu Leu  
 35 40 45  
 gac gcg gcg ctc gcc gac gaa acc gtc gac gcg atc gcg cgc gac gtg 192  
 Asp Ala Ala Leu Ala Asp Glu Thr Val Asp Ala Ile Ala Arg Asp Val  
 50 55 60  
 gcc gat gcg cgc gtg ctc gcg gtg cca gcg gac gtc gcg caa gcc gag 240  
 Ala Asp Ala Arg Val Leu Ala Val Pro Ala Asp Val Ala Gln Ala Glu  
 65 70 75 80  
 tcg gtc gcg gcg gcg ctc gcg tgc acg gag cgc gcg ttc ggc ccg ctc 288  
 Ser Val Ala Ala Ala Leu Ala Cys Thr Glu Arg Ala Phe Gly Pro Leu  
 85 90 95

## PhoenixTemp32470.tmp.txt

gac	gtg	ctc	gtc	aac	aac	gca	ggc	gtc	aac	gtg	ttc	ggc	gat	ccg	ctc	336
Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Asn	Val	Phe	Gly	Asp	Pro	Leu	
			100					105					110			
gcg	ctt	gcc	gaa	gaa	gac	tgg	cgg	cgc	tgc	ttc	gcg	atc	gat	ctc	gac	384
Ala	Leu	Ala	Glu	Glu	Asp	Trp	Arg	Arg	Cys	Phe	Ala	Ile	Asp	Leu	Asp	
		115					120					125				
ggc	gtc	tgg	cac	ggc	tgc	cgc	gcg	gcg	ctg	ccg	ggc	atg	gtc	gag	cgc	432
Gly	Val	Trp	His	Gly	Cys	Arg	Ala	Ala	Leu	Pro	Gly	Met	Val	Glu	Arg	
	130					135					140					
ggt	cgg	ggc	agc	atc	gtg	aac	atc	gcg	tgc	acg	cac	gcg	ttc	aag	atc	480
Gly	Arg	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	His	Ala	Phe	Lys	Ile	
	145				150					155					160	
atc	ccg	ggc	tgc	ttt	ccg	tac	ccg	gtc	gag	aag	cac	ggc	gtg	ctg	ggc	528
Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	Lys	His	Gly	Val	Leu	Gly	
				165					170					175		
ctc	acg	cgc	gcg	ctc	ggc	gtc	gaa	tat	gcg	ccg	cgc	aac	gtg	cgc	gtg	576
Leu	Thr	Arg	Ala	Leu	Gly	Val	Glu	Tyr	Ala	Pro	Arg	Asn	Val	Arg	Val	
			180					185					190			
aac	gcg	atc	gcg	ccc	ggc	tac	atc	gag	acg	caa	tgc	aca	cat	gac	tgg	624
Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Gln	Ser	Thr	His	Asp	Trp	
		195					200					205				
tgg	aac	gcg	cag	ccc	gac	ccc	gag	gcc	gcg	cgc	cgc	gaa	acg	ctc	gca	672
Trp	Asn	Ala	Gln	Pro	Asp	Pro	Glu	Ala	Ala	Arg	Arg	Glu	Thr	Leu	Ala	
	210					215						220				
ctg	cag	ccg	atg	aag	cgg	atc	ggg	cgt	gcg	gac	gaa	gtc	gcg	atg	acc	720
Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Arg	Ala	Asp	Glu	Val	Ala	Met	Thr	
	225				230					235					240	
gcg	gtg	ttt	ctc	gca	tgc	gac	gag	gcg	ccg	ttc	atc	aac	gcg	agc	tgc	768
Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Pro	Phe	Ile	Asn	Ala	Ser	Cys	
				245					250					255		
atc	acg	atc	gac	ggc	ggc	cga	tgc	gtg	ctg	tac	cac	gac	tga			810
Ile	Thr	Ile	Asp	Gly	Gly	Arg	Ser	Val	Leu	Tyr	His	Asp				
			260					265								

&lt;210&gt; 3180

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Burkholderia thailandensis E264

&lt;400&gt; 3180

Met	Ala	Asp	Arg	Pro	Lys	Gly	Ser	Gly	Ala	Val	Asn	Arg	Leu	Ala	Gly	
1				5					10					15		
Lys	Val	Ala	Leu	Val	Thr	Gly	Ala	Gly	Arg	Gly	Ile	Gly	Ala	Ala	Ile	
			20					25					30			
Ala	Arg	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Ala	Val	Ala	Ile	Ala	Glu	Leu	
		35					40					45				
Asp	Ala	Ala	Leu	Ala	Asp	Glu	Thr	Val	Asp	Ala	Ile	Ala	Arg	Asp	Val	
	50					55					60					
Ala	Asp	Ala	Arg	Val	Leu	Ala	Val	Pro	Ala	Asp	Val	Ala	Gln	Ala	Glu	
	65				70					75					80	
Ser	Val	Ala	Ala	Ala	Leu	Ala	Cys	Thr	Glu	Arg	Ala	Phe	Gly	Pro	Leu	
			85						90					95		
Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Val	Asn	Val	Phe	Gly	Asp	Pro	Leu	
		100						105					110			
Ala	Leu	Ala	Glu	Glu	Asp	Trp	Arg	Arg	Cys	Phe	Ala	Ile	Asp	Leu	Asp	
		115					120					125				
Gly	Val	Trp	His	Gly	Cys	Arg	Ala	Ala	Leu	Pro	Gly	Met	Val	Glu	Arg	
	130					135					140					
Gly	Arg	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	His	Ala	Phe	Lys	Ile	
	145				150					155					160	
Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	Lys	His	Gly	Val	Leu	Gly	
				165					170					175		
Leu	Thr	Arg	Ala	Leu	Gly	Val	Glu	Tyr	Ala	Pro	Arg	Asn	Val	Arg	Val	
			180					185					190			
Asn	Ala	Ile	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	Gln	Ser	Thr	His	Asp	Trp	
		195					200					205				
Trp	Asn	Ala	Gln	Pro	Asp	Pro	Glu	Ala	Ala	Arg	Arg	Glu	Thr	Leu	Ala	
	210				215						220					
Leu	Gln	Pro	Met	Lys	Arg	Ile	Gly	Arg	Ala	Asp	Glu	Val	Ala	Met	Thr	

## PhoenixTemp32470.tmp.txt

225 Ala Val Phe Leu Ala 230 Ser Asp Glu Ala Pro 235 Phe Ile Asn Ala Ser 240 Cys  
 245 Gly Gly Arg Ser Val Leu Tyr His Asp 255  
 260 265

&lt;210&gt; 3181

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Novosphingobium aromaticivorans DSM 12444

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3181

atg gga cgc ttg aat ggc aag gtc gcg atc atc acc ggc gcg gca cgc	48
Met Gly Arg Leu Asn Gly Lys Val Ala Ile Ile Thr Gly Ala Ala Arg	
1 5 10 15	
ggg atg ggc gaa tcc cat gcg cgc acc ttt gtc cgg gaa ggc gcc cgg	96
Gly Met Gly Glu Ser His Ala Arg Thr Phe Val Arg Glu Gly Ala Arg	
20 25 30	
gtc gtg ctg acc gat ctc agc gag gag gcc gga aag gcc ctc gtc gca	144
Val Val Leu Thr Asp Leu Ser Glu Glu Ala Gly Lys Ala Leu Val Ala	
35 40 45	
gaa ctg ggc gac aac gca gtg ttc ctg aag cag gac gtc acg gac cca	192
Glu Leu Gly Asp Asn Ala Val Phe Leu Lys Gln Asp Val Thr Asp Pro	
50 55 60	
caa tcc tgg aat gcc gtc gtc gaa acc gca gtt cga gag ttt ggg acg	240
Gln Ser Trp Asn Ala Val Val Glu Thr Ala Val Arg Glu Phe Gly Thr	
65 70 75 80	
atc gat atc ctc gtc aac aac gcg ggc atc ctt ggc ccc atg gcg ccg	288
Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Leu Gly Pro Met Ala Pro	
85 90 95	
acg gac agc ctc gac gac gaa gga tat cgc aag gtc tgc gcg gta aac	336
Thr Asp Ser Leu Asp Asp Glu Gly Tyr Arg Lys Val Cys Ala Val Asn	
100 105 110	
cag gac tcg gtc ttc ttc ggc atg cgc gcc gtc ctg ccc gtg atg gta	384
Gln Asp Ser Val Phe Phe Gly Met Arg Ala Val Leu Pro Val Met Val	
115 120 125	
aag gcc cgc agg ggt tcc atc gtg aac atc tcc tcg atc gcc ggc atg	432
Lys Ala Arg Arg Gly Ser Ile Val Asn Ile Ser Ser Ile Ala Gly Met	
130 135 140	
gcc gca aac tac ggc ttc cca agc ctc gcc tat gtt gcc agc aag ttt	480
Ala Ala Asn Tyr Gly Phe Pro Ser Leu Ala Tyr Val Ala Ser Lys Phe	
145 150 155 160	
gcg gtc cgc ggc atg acc aag gca act gcg gtc gag ttc ggc aag cac	528
Ala Val Arg Gly Met Thr Lys Ala Thr Ala Val Glu Phe Gly Lys His	
165 170 175	
aac atc cgc gtc aac tcg gtg cac ccg ggc ttc atc cag acc ccc atg	576
Asn Ile Arg Val Asn Ser Val His Pro Gly Phe Ile Gln Thr Pro Met	
180 185 190	
atg gtc gag gca acc gac gag gta ggc ggc gaa gcg ctc gca cag atc	624
Met Val Glu Ala Thr Asp Glu Val Gly Gly Glu Ala Leu Ala Gln Ile	
195 200 205	
ccc ctg ggc cgc atc gcc gat ccg tcc gag gtt tcg aac ctc gtg ctc	672
Pro Leu Gly Arg Ile Ala Asp Pro Ser Glu Val Ser Asn Leu Val Leu	
210 215 220	
ttt ctg gcc tcg gac gag tcc tcc tac atc acc ggc tca gag cat ctg	720
Phe Leu Ala Ser Asp Glu Ser Ser Tyr Ile Thr Gly Ser Glu His Leu	
225 230 235 240	
gtc gat gcc ggc atg ctg gcc cac tga	747
Val Asp Ala Gly Met Leu Ala His	
245	

&lt;210&gt; 3182

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Novosphingobium aromaticivorans DSM 12444

&lt;400&gt; 3182

Met Gly Arg Leu Asn Gly Lys Val Ala Ile Ile Thr Gly Ala Ala Arg  
 1 5 10 15  
 Gly Met Gly Glu Ser His Ala Arg Thr Phe Val Arg Glu Gly Ala Arg  
 20 25 30  
 Val Val Leu Thr Asp Leu Ser Glu Ala Gly Lys Ala Leu Val Ala  
 35 40 45  
 Glu Leu Gly Asp Asn Ala Val Phe Leu Lys Gln Asp Val Thr Asp Pro  
 50 55 60  
 Gln Ser Trp Asn Ala Val Val Glu Thr Ala Val Arg Glu Phe Gly Thr  
 65 70 75 80  
 Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Leu Gly Pro Met Ala Pro  
 85 90 95  
 Thr Asp Ser Leu Asp Asp Glu Gly Tyr Arg Lys Val Cys Ala Val Asn  
 100 105 110  
 Gln Asp Ser Val Phe Phe Gly Met Arg Ala Val Leu Pro Val Met Val  
 115 120 125  
 Lys Ala Arg Arg Gly Ser Ile Val Asn Ile Ser Ser Ile Ala Gly Met  
 130 135 140  
 Ala Ala Asn Tyr Gly Phe Pro Ser Leu Ala Tyr Val Ala Ser Lys Phe  
 145 150 155 160  
 Ala Val Arg Gly Met Thr Lys Ala Thr Ala Val Glu Phe Gly Lys His  
 165 170 175  
 Asn Ile Arg Val Asn Ser Val His Pro Gly Phe Ile Gln Thr Pro Met  
 180 185 190  
 Met Val Glu Ala Thr Asp Glu Val Gly Gly Glu Ala Leu Ala Gln Ile  
 195 200 205  
 Pro Leu Gly Arg Ile Ala Asp Pro Ser Glu Val Ser Asn Leu Val Leu  
 210 215 220  
 Phe Leu Ala Ser Asp Glu Ser Ser Tyr Ile Thr Gly Ser Glu His Leu  
 225 230 235 240  
 Val Asp Ala Gly Met Leu Ala His  
 245

&lt;210&gt; 3183

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Desulfitobacterium hafniense Y51

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;400&gt; 3183

atg ttg ctg aat aat agc gta gcc att gtc acc gga gga agt cgc ggc	48
Met Leu Leu Asn Asn Ser Val Ala Ile Val Thr Gly Gly Ser Arg Gly	
1 5 10 15	
att gga cgt gcc att gcc ttg gaa ctg gcc cgt gca ggg gct aaa gtg	96
Ile Gly Arg Ala Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val	
20 25 30	
gtg gtg aac tat gcc gga cat ggg gaa aag gcg gaa gag act ctg agc	144
Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Glu Thr Leu Ser	
35 40 45	
ctg att cag gaa gcg ggc gga gag gct ttg gca gtt cag gct gat gtc	192
Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val	
50 55 60	
agc cag gtt gaa gat gtg gaa cgg ctg att cag acc acc ctt aaa acc	240
Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr	
65 70 75 80	
tat ggc aag atc gat att ctg gtc aat aat gcc gga att acc cgt gac	288
Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp	
85 90 95	
acc ttg ctg ctg cgg atg aag gaa aca gat tgg gat gcg gtg ctg gat	336
Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp	
100 105 110	
acc aat ctc aaa ggg gtt ttc tta tgc acg aag gcg gtc agc aag tcc	384
Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser	

PhoenixTemp32470.tmp.txt

atg	atg	115	caa	cgc	tcc	gga	120	att	atc	aat	atc	125	tct	gtg	gtc	432	
Met	Met	Lys	Gln	Arg	Ser	Gly	Val	Ile	Ile	Asn	Ile	tcc	Ser	Val	Val		
ggt	att	acc	ggc	aat	gcg	gga	135	caa	gcg	aat	tac	gcg	gcg	gcc	aaa	gcg	480
Gly	Ile	Thr	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Lys	Ala		
145					150					155					160		
gga	atc	atc	ggc	ttt	acc	aaa	tcc	atc	gcc	aaa	gag	ctg	ggc	tcc	cgt	528	
Gly	Ile	Ile	Gly	Phe	Thr	Lys	Ser	Ile	Ala	Lys	Glu	Leu	Gly	Ser	Arg		
				165					170						175		
ggc	atc	cgg	gtc	aat	gca	gtg	gct	cgg	ggg	tat	att	tct	aca	gat	atg	576	
Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Tyr	Ile	Ser	Thr	Asp	Met		
				180				185						190			
acg	gaa	tcc	tta	gga	gaa	gag	gtc	cgg	gag	cag	gtc	atg	acc	cag	att	624	
Thr	Glu	Ser	Leu	Gly	Glu	Glu	Val	Arg	Glu	Gln	Val	Met	Thr	Gln	Ile		
				195			200					205					
ccg	ctg	ggc	aga	atg	ggt	cag	cct	gaa	gat	ata	gcc	aag	acg	gtt	gtc	672	
Pro	Leu	Gly	Arg	Met	Gly	Gln	Pro	Glu	Asp	Ile	Ala	Lys	Thr	Val	Val		
				210		215					220						
ttt	ttg	gct	tca	ccg	gcc	gct	tcc	tac	atc	acc	ggg	caa	aca	tta	gcc	720	
Phe	Leu	Ala	Ser	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Leu	Ala		
225					230					235					240		
gta	gac	ggc	ggc	atg	gct	atg	taa									744	
Val	Asp	Gly	Gly	Met	Ala	Met											
				245													

<210> 3184  
 <211> 247  
 <212> PRT  
 <213> Desulfitobacterium hafniense Y51

<400> 3184

Met	Leu	Leu	Asn	Asn	Ser	Val	Ala	Ile	Val	Thr	Gly	Gly	Ser	Arg	Gly
1				5					10					15	
Ile	Gly	Arg	Ala	Ile	Ala	Leu	Glu	Leu	Ala	Arg	Ala	Gly	Ala	Lys	Val
			20					25					30		
Val	Val	Asn	Tyr	Ala	Gly	His	Gly	Glu	Lys	Ala	Glu	Glu	Thr	Leu	Ser
		35				40						45			
Leu	Ile	Gln	Glu	Ala	Gly	Gly	Glu	Ala	Leu	Ala	Val	Gln	Ala	Asp	Val
	50				55					60					
Ser	Gln	Val	Glu	Asp	Val	Glu	Arg	Leu	Ile	Gln	Thr	Thr	Leu	Lys	Thr
65				70						75					80
Tyr	Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp
				85				90						95	
Thr	Leu	Leu	Leu	Arg	Met	Lys	Glu	Thr	Asp	Trp	Asp	Ala	Val	Leu	Asp
			100					105					110		
Thr	Asn	Leu	Lys	Gly	Val	Phe	Leu	Cys	Thr	Lys	Ala	Val	Ser	Lys	Ser
		115					120					125			
Met	Met	Lys	Gln	Arg	Ser	Gly	Val	Ile	Ile	Asn	Ile	Ser	Ser	Val	Val
	130					135				140					
Gly	Ile	Thr	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Lys	Ala
145				150						155					160
Gly	Ile	Ile	Gly	Phe	Thr	Lys	Ser	Ile	Ala	Lys	Glu	Leu	Gly	Ser	Arg
				165				170						175	
Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Tyr	Ile	Ser	Thr	Asp	Met
			180					185					190		
Thr	Glu	Ser	Leu	Gly	Glu	Glu	Val	Arg	Glu	Gln	Val	Met	Thr	Gln	Ile
		195					200					205			
Pro	Leu	Gly	Arg	Met	Gly	Gln	Pro	Glu	Asp	Ile	Ala	Lys	Thr	Val	Val
	210					215					220				
Phe	Leu	Ala	Ser	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Leu	Ala
225					230					235					240
Val	Asp	Gly	Gly	Met	Ala	Met									
				245											

<210> 3185  
 <211> 744  
 <212> DNA  
 <213> Burkholderia xenovorans LB400



<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

<400> 3185  
 atg aca caa aga ctg gcc ggc aag acg gcc ctg atc acg gcg gca gga 48  
 Met Thr Gln Arg Leu Ala Gly Lys Thr Ala Leu Ile Thr Ala Ala Gly  
 1 5 10 15  
 caa ggc atc gga ctc gcc acc gcc gaa ctc ttc gcc cgc gaa ggc gcg 96  
 Gln Gly Ile Gly Leu Ala Thr Ala Glu Leu Phe Ala Arg Glu Gly Ala  
 20 25 30  
 cgc gtg atc gcc acg gac atc cgc atc gac gga ctc gcc ggc aag ccg 144  
 Arg Val Ile Ala Thr Asp Ile Arg Ile Asp Gly Leu Ala Gly Lys Pro  
 35 40 45  
 gtc gac gcg cgc aaa ctc gac gtg cgc gac aac gcg gcg atc aac gcg 192  
 Val Asp Ala Arg Lys Leu Asp Val Arg Asp Asn Ala Ala Ile Asn Ala  
 50 55 60  
 ctg gcc gcc gaa ctc ggc gcg atc gac gtg ctg ttc aac tgc gcg ggt 240  
 Leu Ala Ala Glu Leu Gly Ala Ile Asp Val Leu Phe Asn Cys Ala Gly  
 65 70 75 80  
 ttc gtg cat gcg ggc aac att ctc gaa tgc agc gaa gaa gat tgg gac 288  
 Phe Val His Ala Gly Asn Ile Leu Glu Cys Ser Glu Glu Asp Trp Asp  
 85 90 95  
 ttt gcg ttc gac ctg aac gcg aag gcg atg tac cgc acg atc cgc gcg 336  
 Phe Ala Phe Asp Leu Asn Ala Lys Ala Met Tyr Arg Thr Ile Arg Ala  
 100 105 110  
 ttt ctg cct gcc atg ctg gac aac ggc ggc ggc tgc atc atc aat atg 384  
 Phe Leu Pro Ala Met Leu Asp Asn Gly Gly Gly Ser Ile Ile Asn Met  
 115 120 125  
 tcg tcg gcg gcg tcg agt gtg aag ggt gtg ccg aac cgc ttt gcc tat 432  
 Ser Ser Ala Ala Ser Ser Val Lys Gly Val Pro Asn Arg Phe Ala Tyr  
 130 135 140  
 agc gcc tcc aag gcg gcg gtg atc ggc ctg acc aag tcc gtt gct gcg 480  
 Ser Ala Ser Lys Ala Ala Val Ile Gly Leu Thr Lys Ser Val Ala Ala  
 145 150 155 160  
 gac ttc atc acg cgt ggt gta cgc tgt aac gcg atc tgc ccg ggc acg 528  
 Asp Phe Ile Thr Arg Gly Val Arg Cys Asn Ala Ile Cys Pro Gly Thr  
 165 170 175  
 gtg gct tcg ccg tcg ctc gaa cag cgc atc gtc gcg cag gct cag gcg 576  
 Val Ala Ser Pro Ser Leu Glu Gln Arg Ile Val Ala Gln Ala Gln Ala  
 180 185 190  
 cag ggc gcg acg ctc gac gcc gtg cag gct gcc ttc gtg gcg ccg cag 624  
 Gln Gly Ala Thr Leu Asp Ala Val Gln Ala Ala Phe Val Ala Arg Gln  
 195 200 205  
 cca atg ggc gcg atc ggc aag ccg gaa gag atc gcc gcg ttg gcg ctg 672  
 Pro Met Gly Arg Ile Gly Lys Pro Glu Glu Ile Ala Ala Leu Ala Leu  
 210 215 220  
 tat ctc gcg tcc gac gaa tcg tcg ttc acc acg ggc cat gcg cat gtg 720  
 Tyr Leu Ala Ser Asp Glu Ser Ser Phe Thr Thr Gly His Ala His Val  
 225 230 235 240  
 atc gac ggc ggc tgg tcg aac tga 744  
 Ile Asp Gly Gly Trp Ser Asn  
 245

<210> 3186  
 <211> 247  
 <212> PRT  
 <213> Burkholderia xenovorans LB400

<400> 3186  
 Met Thr Gln Arg Leu Ala Gly Lys Thr Ala Leu Ile Thr Ala Ala Gly  
 1 5 10 15  
 Gln Gly Ile Gly Leu Ala Thr Ala Glu Leu Phe Ala Arg Glu Gly Ala  
 20 25 30  
 Arg Val Ile Ala Thr Asp Ile Arg Ile Asp Gly Leu Ala Gly Lys Pro  
 35 40 45  
 Val Asp Ala Arg Lys Leu Asp Val Arg Asp Asn Ala Ala Ile Asn Ala

## PhoenixTemp32470.tmp.txt

50 55 60  
 Leu Ala Ala Glu Leu Gly Ala Ile Asp Val Leu Phe Asn Cys Ala Gly  
 65 70 75 80  
 Phe Val His Ala Gly Asn Ile Leu Glu Cys Ser Glu Glu Asp Trp Asp  
 85 90 95  
 Phe Ala Phe Asp Leu Asn Ala Lys Ala Met Tyr Arg Thr Ile Arg Ala  
 100 105 110  
 Phe Leu Pro Ala Met Leu Asp Asn Gly Gly Ser Ile Ile Asn Met  
 115 120 125  
 Ser Ser Ala Ala Ser Ser Val Lys Gly Val Pro Asn Arg Phe Ala Tyr  
 130 135 140  
 Ser Ala Ser Lys Ala Ala Val Ile Gly Leu Thr Lys Ser Val Ala Ala  
 145 150 155 160  
 Asp Phe Ile Thr Arg Gly Val Arg Cys Asn Ala Ile Cys Pro Gly Thr  
 165 170 175  
 Val Ala Ser Pro Ser Leu Glu Gln Arg Ile Val Ala Gln Ala Gln Ala  
 180 185 190  
 Gln Gly Ala Thr Leu Asp Ala Val Gln Ala Ala Phe Val Ala Arg Gln  
 195 200 205  
 Pro Met Gly Arg Ile Gly Lys Pro Glu Glu Ile Ala Ala Leu Ala Leu  
 210 215 220  
 Tyr Leu Ala Ser Asp Glu Ser Ser Phe Thr Thr Gly His Ala His Val  
 225 230 235 240  
 Ile Asp Gly Gly Trp Ser Asn  
 245

&lt;210&gt; 3187

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Burkholderia xenovorans LB400

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3187

atg	aaa	cgg	ctc	gcc	ggc	aaa	gtc	gcg	ctt	gtc	acc	gga	gcg	gga	cgc	48
Met	Lys	Arg	Leu	Ala	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	Ala	Gly	Arg	
1				5					10					15		
ggc	atc	ggc	gcg	gcg	atc	gcg	tac	gcg	ttc	gcg	cgc	gag	ggg	gcg	cgc	96
Gly	Ile	Gly	Ala	Ala	Ile	Ala	Tyr	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Ala	
			20					25					30			
gtg	gtg	ctg	gcg	gaa	ctg	gat	atc	gaa	acc	gcg	cag	cag	aca	gcg	gag	144
Val	Val	Leu	Ala	Glu	Leu	Asp	Ile	Glu	Thr	Ala	Gln	Gln	Thr	Ala	Glu	
			35				40					45				
cac	atc	agg	tcg	cag	acc	ggc	gcg	cgc	gtg	ctc	gcg	gta	cac	acc	gac	192
His	Ile	Arg	Ser	Gln	Thr	Gly	Ala	Arg	Val	Leu	Ala	Val	His	Thr	Asp	
			50			55				60						
gtg	acg	cag	gcg	gcc	tcg	gtt	caa	cac	gcg	gtg	agc	gag	gcc	gaa	cgc	240
Val	Thr	Gln	Ala	Ala	Ser	Val	Gln	His	Ala	Val	Ser	Glu	Ala	Glu	Arg	
			65			70				75					80	
gca	ttc	ggc	gcg	ctg	gac	gtg	ctg	gtg	aac	aac	gcc	ggc	atc	aac	gtg	288
Ala	Phe	Gly	Ala	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Asn	Val	
				85					90					95		
ttc	tgc	gac	ccg	ttg	acc	atg	acc	gac	gac	gac	tgg	cgc	cgc	tgc	ttc	336
Phe	Cys	Asp	Pro	Leu	Thr	Met	Thr	Asp	Asp	Asp	Trp	Arg	Arg	Cys	Phe	
			100					105					110			
gcg	gtc	gat	ctc	gac	ggc	gtc	tgg	aac	ggg	tgc	cgc	gcg	gtg	ttg	ccg	384
Ala	Val	Asp	Leu	Asp	Gly	Val	Trp	Asn	Gly	Cys	Arg	Ala	Val	Leu	Pro	
			115				120					125				
cgc	atg	gtg	gag	cgc	ggc	gcg	ggg	agc	atc	gtg	aat	atc	gcg	tcg	acg	432
Arg	Met	Val	Glu	Arg	Gly	Ala	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	
			130			135					140					
cac	tcg	ttc	aag	atc	att	ccg	ggc	tgc	ttt	ccg	tac	ccc	gtg	gcc	aag	480
His	Ser	Phe	Lys	Ile	Ile	Pro	Gly	Cys	Phe	Pro	Tyr	Pro	Val	Ala	Lys	
					150					155					160	
cac	ggc	gtg	atc	ggc	ctg	acg	cgc	gcg	ctc	ggc	atc	gaa	tac	gcg	ccg	528
His	Gly	Val	Ile	Gly	Leu	Thr	Arg	Ala	Leu	Gly	Ile	Glu	Tyr	Ala	Pro	

## PhoenixTemp32470.tmp.txt

165	170	175	
cgc aat gtg cgg gtc aac gcg atc gcg ccg ggt tac atc gaa acg caa	576		
Arg Asn Val Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln			
180	185	190	
ttg acg cac gac tgg tgg aac gaa cag gcc gat ccg gcc gcc gcg cag	624		
Leu Thr His Asp Trp Trp Asn Glu Gln Ala Asp Pro Ala Ala Ala Gln			
195	200	205	
cag gcg acg ctg gat ctg cag ccg atg aag cgc atc ggc cgc ccg gaa	672		
Gln Ala Thr Leu Asp Leu Gln Pro Met Lys Arg Ile Gly Arg Pro Glu			
210	215	220	
gaa gtg gcg atg acg gcg gta ttc ctc gcc tcg gac gaa gcg ccg ttc	720		
Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe			
225	230	235	
atc aac gcc acc tgc atc acg gtg gat ggc ggc cgc tcg gcg ctg tat	768		
Ile Asn Ala Thr Cys Ile Thr Val Asp Gly Gly Arg Ser Ala Leu Tyr			
245	250	255	
cac gac tga			
His Asp			777

&lt;210&gt; 3188

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Burkholderia xenovorans LB400

&lt;400&gt; 3188

Met Lys Arg Leu Ala Gly Lys Val Ala Leu Val Thr Gly Ala Gly Arg	
1 5 10 15	
Gly Ile Gly Ala Ile Ala Tyr Ala Phe Ala Arg Glu Gly Ala Ala	
20 25 30	
Val Val Leu Ala Glu Leu Asp Ile Glu Thr Ala Gln Gln Thr Ala Glu	
35 40 45	
His Ile Arg Ser Gln Thr Gly Ala Arg Val Leu Ala Val His Thr Asp	
50 55 60	
Val Thr Gln Ala Ala Ser Val Gln His Ala Val Ser Glu Ala Glu Arg	
65 70 75 80	
Ala Phe Gly Ala Leu Asp Val Leu Val Asn Asn Ala Gly Ile Asn Val	
85 90 95	
Phe Cys Asp Pro Leu Thr Met Thr Asp Asp Trp Arg Arg Cys Phe	
100 105 110	
Ala Val Asp Leu Asp Gly Val Trp Asn Gly Cys Arg Ala Val Leu Pro	
115 120 125	
Arg Met Val Glu Arg Gly Ala Gly Ser Ile Val Asn Ile Ala Ser Thr	
130 135 140	
His Ser Phe Lys Ile Ile Pro Gly Cys Phe Pro Tyr Pro Val Ala Lys	
145 150 155 160	
His Gly Val Ile Gly Leu Thr Arg Ala Leu Gly Ile Glu Tyr Ala Pro	
165 170 175	
Arg Asn Val Arg Val Asn Ala Ile Ala Pro Gly Tyr Ile Glu Thr Gln	
180 185 190	
Leu Thr His Asp Trp Trp Asn Glu Gln Ala Asp Pro Ala Ala Gln	
195 200 205	
Gln Ala Thr Leu Asp Leu Gln Pro Met Lys Arg Ile Gly Arg Pro Glu	
210 215 220	
Glu Val Ala Met Thr Ala Val Phe Leu Ala Ser Asp Glu Ala Pro Phe	
225 230 235 240	
Ile Asn Ala Thr Cys Ile Thr Val Asp Gly Gly Arg Ser Ala Leu Tyr	
245 250 255	
His Asp	

&lt;210&gt; 3189

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Ralstonia metallidurans CH34

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

```

<400> 3189
atg aaa ttg cag gga cgc gta gcg atc atc acc ggc gcc gcc gcc gcc ggc 48
Met Lys Leu Gln Gly Arg Val Ala Ile Ile Thr Gly Ala Ala Ala Ala Gly
1 5 10 15
atc ggt ttt gcc acc gcc gaa cgt ttc gcc gcc gaa ggc gcg aag ctc 96
Ile Gly Phe Ala Thr Ala Glu Arg Phe Ala Ala Glu Gly Ala Lys Leu
20 25 30
atc atg tgc gat gtg cag gag gcc cgc gtg cgc gag gcc gcc gag cgg 144
Ile Met Cys Asp Val Gln Glu Ala Arg Val Arg Glu Ala Ala Glu Arg
35 40 45
ctg gcc gcc aag ggc gcg cag gtc gag gcg cac aag gtc gac gtc acg 192
Leu Ala Ala Lys Gly Ala Gln Val Glu Ala His Lys Val Asp Val Thr
50 55 60
cgc cgc gac gag gtc gat gcc atg gtg gca gcc acg ctg gcc cgc cac 240
Arg Arg Asp Glu Val Asp Ala Met Val Ala Ala Thr Leu Ala Arg His
65 70 75 80
ggt cgc atc gat gtt ctc gtc aac aac gcc ggc atc acc aag gac gcg 288
Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Ala
85 90 95
cgc ctc gcc aag atg acc gag gca cag ttc gat gcg gtc atc gac gtc 336
Arg Leu Ala Lys Met Thr Glu Ala Gln Phe Asp Ala Val Ile Asp Val
100 105 110
aac ctg aag ggc gtg ttc aac tgc tca cag gcc gtg gcc agc atc atg 384
Asn Leu Lys Gly Val Phe Asn Cys Ser Gln Ala Val Ala Ser Ile Met
115 120 125
tcc gag cag ggc agc ggc gtg atc ctg aac gca tcg agc gtg gtt ggc 432
Ser Glu Gln Gly Ser Gly Val Ile Leu Asn Ala Ser Val Val Gly
130 135 140
ctg tat ggc aac ttc ggc cag acc aat tac gcg gct tcc aag ttc ggc 480
Leu Tyr Gly Asn Phe Gly Gln Thr Asn Tyr Ala Ala Ser Lys Phe Gly
145 150 155 160
gtg atc ggc ttc acc aag acc tgg gcg cgc gaa ctg ggt ccg aag ggc 528
Val Ile Gly Phe Thr Lys Thr Trp Ala Arg Glu Leu Gly Pro Lys Gly
165 170 175
gtg cgc gtg aac gcg gta tgc ccg ggc ttt gtc aat acc gag atc ctg 576
Val Arg Val Asn Ala Val Cys Pro Gly Phe Val Asn Thr Glu Ile Leu
180 185 190
cag acc gtg ccg gag aag gtg ctc gac ggc atg aag gaa cat tgc tgg 624
Gln Thr Val Pro Glu Lys Val Leu Asp Gly Met Lys Glu His Cys Trp
195 200 205
atg cgc cgc ctg gcc gag ccg tcg gag atc gcc gcg atc tac acg ttc 672
Met Arg Arg Leu Ala Glu Pro Ser Glu Ile Ala Ala Ile Tyr Thr Phe
210 215 220
ctg gcc agc gac gac gcc agc tac gtc aac ggc acg acg atc gaa gcc 720
Leu Ala Ser Asp Asp Ala Ser Tyr Val Asn Gly Thr Thr Ile Glu Ala
225 230 235 240
agc ggc ggc atg tcg ctg taa
Ser Gly Gly Met Ser Leu
245

```

&lt;210&gt; 3190

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Ralstonia metallidurans CH34

```

<400> 3190
Met Lys Leu Gln Gly Arg Val Ala Ile Ile Thr Gly Ala Ala Ala Gly
1 5 10 15
Ile Gly Phe Ala Thr Ala Glu Arg Phe Ala Ala Glu Gly Ala Lys Leu
20 25 30
Ile Met Cys Asp Val Gln Glu Ala Arg Val Arg Glu Ala Ala Glu Arg
35 40 45
Leu Ala Ala Lys Gly Ala Gln Val Glu Ala His Lys Val Asp Val Thr
50 55 60
Arg Arg Asp Glu Val Asp Ala Met Val Ala Ala Thr Leu Ala Arg His
65 70 75 80
Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Ala

```

## PhoenixTemp32470.tmp.txt

```

      85      90      95
Arg Leu Ala Lys Met Thr Glu Ala Gln Phe Asp Ala Val Ile Asp Val
      100      105      110
Asn Leu Lys Gly Val Phe Asn Cys Ser Gln Ala Val Ala Ser Ile Met
      115      120      125
Ser Glu Gln Gly Ser Gly Val Ile Leu Asn Ala Ser Ser Val Val Gly
      130      135      140
Leu Tyr Gly Asn Phe Gly Gln Thr Asn Tyr Ala Ala Ser Lys Phe Gly
      145      150      155
Val Ile Gly Phe Thr Lys Thr Trp Ala Arg Glu Leu Gly Pro Lys Gly
      160      165      170
Val Arg Val Asn Ala Val Cys Pro Gly Phe Val Asn Thr Glu Ile Leu
      175      180      185
Gln Thr Val Pro Glu Lys Val Leu Asp Gly Met Lys Glu His Cys Trp
      190      195      200
Met Arg Arg Leu Ala Glu Pro Ser Glu Ile Ala Ala Ile Tyr Thr Phe
      205      210      215
Leu Ala Ser Asp Asp Ala Ser Tyr Val Asn Gly Thr Thr Ile Glu Ala
      220      225      230
Ser Gly Gly Met Ser Leu
      235      240      245

```

<210> 3191  
 <211> 759  
 <212> DNA  
 <213> Silicibacter sp. TM1040  
  
 <220>  
 <221> CDS  
 <222> (1)..(759)  
 <223> transl\_table=11

```

<400> 3191
ttg aac acg atg aca cag aac aca ggc cgg ctg gcc gaa aaa aca gct      48
Met Asn Thr Met Thr Gln Asn Thr Gly Arg Leu Ala Glu Lys Thr Ala
      1      5      10
ttg att act gct gcg ggg cag ggg atc ggt cgc gcc agc gcg gaa ctc      96
Leu Ile Thr Ala Ala Gly Gln Gly Ile Gly Arg Ala Ser Ala Glu Leu
      15      20      25
ttt gcg gct gag ggc gcc aag gtg atc gcc tgc gac atc aat gca gag      144
Phe Ala Ala Glu Gly Ala Lys Val Ile Ala Cys Asp Ile Asn Ala Glu
      30      35      40
tca ttg gca gaa ctc gcg gag gtc gat ggg atc acg gcc ctt gcg ctt      192
Ser Leu Ala Glu Leu Ala Glu Val Asp Gly Ile Thr Ala Leu Ala Leu
      45      50      55
gat gtc acg gat gca tcc gca gtt gcg cgc gca atc caa gat gca ggg      240
Asp Val Thr Asp Ala Ser Ala Val Ala Arg Ala Ile Gln Asp Ala Gly
      60      65      70
cca ttg aat gtg ttg ttc aac tgc gcg gga tat gtc gca agt ggc agc      288
Pro Leu Asn Val Leu Phe Asn Cys Ala Gly Tyr Val Ala Ser Gly Ser
      75      80      85
att ttg gac tgc gat gag aac gac tgg gac ttc agt ttc gac ctc aac      336
Ile Leu Asp Cys Asp Glu Asn Asp Trp Asp Phe Ser Phe Asp Leu Asn
      90      95      100
gtc aaa gcc atg tat cgc ctc acg aaa ctg gtt ttg ccc ggc atg ctg      384
Val Lys Ala Met Tyr Arg Leu Thr Lys Leu Val Leu Pro Gly Met Leu
      105      110      115
gaa aac ggc ggt ggc tct atc atc aac atg tcg tcg gtg gcc tcc tcc      432
Glu Asn Gly Gly Gly Ser Ile Ile Asn Met Ser Ser Val Ala Ser Ser
      120      125      130
ctg aaa ggg gtg cca aat cgc ttt gcc tat tgc gcg tca aag gcg gcg      480
Leu Lys Gly Val Pro Asn Arg Phe Ala Tyr Cys Ala Ser Lys Ala Ala
      135      140      145
gtg atc ggc atg acc aaa tcc att gcc gca gat ttt gtg acc caa ggt      528
Val Ile Gly Met Thr Lys Ser Ile Ala Ala Asp Phe Val Thr Gln Gly
      150      155      160
atc cgt tgc aac gcg att tgc ccc ggc acg gtg gac agt ccc agc ctg      576
Ile Arg Cys Asn Ala Ile Cys Pro Gly Thr Val Asp Ser Pro Ser Leu
      165      170      175
      180      185      190

```

## PhoenixTemp32470.tmp.txt

cat	gat	cgg	ctg	cgc	gct	acg	ggc	gat	tat	gag	cag	gcc	cgc	aag	gat	624
His	Asp	Arg	Leu	Arg	Ala	Thr	Gly	Asp	Tyr	Glu	Gln	Ala	Arg	Lys	Asp	
		195					200					205				
ttc	atc	gca	cgt	cag	ccc	atg	ggg	cgc	att	ggc	aag	gct	gaa	gag	att	672
Phe	Ile	Ala	Arg	Gln	Pro	Met	Gly	Arg	Ile	Gly	Lys	Ala	Glu	Glu	Ile	
		210				215					220					
gcg	gcg	ctc	gcg	ctc	tat	ctc	gcc	agc	gat	gag	agc	ggc	ttt	acc	act	720
Ala	Ala	Leu	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Gly	Phe	Thr	Thr	
225					230					235					240	
gga	cag	acc	cac	gcc	atc	gac	ggc	ggc	tgg	gcg	att	tga				759
Gly	Gln	Thr	His	Ala	Ile	Asp	Gly	Gly	Trp	Ala	Ile					
				245					250							

&lt;210&gt; 3192

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Silicibacter sp. TM1040

&lt;400&gt; 3192

Met	Asn	Thr	Met	Thr	Gln	Asn	Thr	Gly	Arg	Leu	Ala	Glu	Lys	Thr	Ala	
1				5					10					15		
Leu	Ile	Thr	Ala	Ala	Gly	Gln	Gly	Ile	Gly	Arg	Ala	Ser	Ala	Glu	Leu	
			20					25					30			
Phe	Ala	Ala	Glu	Gly	Ala	Lys	Val	Ile	Ala	Cys	Asp	Ile	Asn	Ala	Glu	
		35				40					45					
Ser	Leu	Ala	Glu	Leu	Ala	Glu	Val	Asp	Gly	Ile	Thr	Ala	Leu	Ala	Leu	
	50				55					60						
Asp	Val	Thr	Asp	Ala	Ser	Ala	Val	Ala	Arg	Ala	Ile	Gln	Asp	Ala	Gly	
65				70				75							80	
Pro	Leu	Asn	Val	Leu	Phe	Asn	Cys	Ala	Gly	Tyr	Val	Ala	Ser	Gly	Ser	
			85					90					95			
Ile	Leu	Asp	Cys	Asp	Glu	Asn	Asp	Trp	Asp	Phe	Ser	Phe	Asp	Leu	Asn	
		100						105				110				
Val	Lys	Ala	Met	Tyr	Arg	Leu	Thr	Lys	Leu	Val	Leu	Pro	Gly	Met	Leu	
	115						120					125				
Glu	Asn	Gly	Gly	Gly	Ser	Ile	Ile	Asn	Met	Ser	Ser	Val	Ala	Ser	Ser	
	130				135					140						
Leu	Lys	Gly	Val	Pro	Asn	Arg	Phe	Ala	Tyr	Cys	Ala	Ser	Lys	Ala	Ala	
145				150				155							160	
Val	Ile	Gly	Met	Thr	Lys	Ser	Ile	Ala	Ala	Asp	Phe	Val	Thr	Gln	Gly	
			165					170					175			
Ile	Arg	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Thr	Val	Asp	Ser	Pro	Ser	Leu	
		180						185					190			
His	Asp	Arg	Leu	Arg	Ala	Thr	Gly	Asp	Tyr	Glu	Gln	Ala	Arg	Lys	Asp	
	195						200					205				
Phe	Ile	Ala	Arg	Gln	Pro	Met	Gly	Arg	Ile	Gly	Lys	Ala	Glu	Glu	Ile	
	210				215						220					
Ala	Ala	Leu	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Gly	Phe	Thr	Thr	
225				230						235					240	
Gly	Gln	Thr	His	Ala	Ile	Asp	Gly	Gly	Trp	Ala	Ile					
				245					250							

&lt;210&gt; 3193

&lt;211&gt; 738

&lt;212&gt; DNA

&lt;213&gt; Silicibacter sp. TM1040

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(738)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3193

atg	ttt	gat	ctg	aca	ggt	aag	aac	gcg	ctg	atc	aca	ggc	gca	tcc	ggt	48
Met	Phe	Asp	Leu	Thr	Gly	Lys	Asn	Ala	Leu	Ile	Thr	Gly	Ala	Ser	Gly	
1				5					10					15		
ggc	atc	ggt	ggc	gac	att	gcg	cgc	gcg	ctc	cac	gca	gcg	ggg	gcg	act	96
Gly	Ile	Gly	Gly	Asp	Ile	Ala	Arg	Ala	Leu	His	Ala	Ala	Gly	Ala	Thr	
			20					25					30			

## PhoenixTemp32470.tmp.txt

```

gtt gcg ctc tcc ggc acc cgg cca gac ccg ctg cac gcc ttg gcc gag      144
Val Ala Leu 35 Ser Gly Thr Arg Pro 40 Asp Pro Leu His 45 Ala Leu Ala Glu
gag ctt ggc gag cgg gct cat gtt gtg acc tgc aac ctc tcc gac gcc      192
Glu Leu Gly 50 Glu Arg Ala His 55 Val Val Thr Cys Asn 60 Leu Ser Asp Ala
gag gcc gtc gag gcg ctg ccg aaa cag gcc gca gag gcg atg ggc tct      240
Glu 65 Ala Val Glu Ala 70 Leu Pro Lys Gln Ala 75 Glu Ala Met Gly Ser 80
gtt gac atc ctg gtc aac aac gcc ggg atc acc aag gac aac ctc ttt      288
Val Asp Ile Leu Val 85 Asn Asn Ala Gly 90 Ile Thr Lys Asp Asn Leu Phe 95
atg cgg atg aag gat gaa gag tgg cag agc gtt ctc gat gtg aac ctc      336
Met Arg Met Lys 100 Asp Glu Glu Trp 105 Gln Ser Val Leu Asp Val Asn Leu
acc tcc acc atg cgc ctg tgc cgc ggt gtg ctg cgc gcc atg atg aag      384
Thr Ser Thr 115 Met Arg Leu Cys Arg 120 Gly Val Leu Arg Gly Met Met Lys
gca cgc tgg ggc cgg atc gtg aat atc tcc tcc gtt gtg ggc gcc acc      432
Ala Arg Trp Gly Arg Ile Val 135 Asn Ile Ser Ser Val 140 Val Gly Ala Thr
ggc aac ccc ggt cag ggc aac tat gcg gcc tcc aag gcg ggc atg gtc      480
Gly Asn Pro Gly Gln Gly Asn Tyr Ala Ala Ser 155 Lys Ala Gly Met Val 160
ggc atg tcc aag tcg ctg gcc tat gag gtt gca aac cgt ggc atc acc      528
Gly Met Ser Lys Ser 165 Leu Ala Tyr Glu Val 170 Ala Asn Arg Gly Ile Thr 175
gtg aac gcc gtg gcg ccg ggc ttc atc gcg acc gcc atg acc gac aaa      576
Val Asn Ala Val 180 Ala Pro Gly Phe Ile Ala Thr Ala Met Thr Asp Lys 190
ctc aac gac acc cag aaa gag gcg atc ctc agc cag atc ccc gca ggc      624
Leu Asn Asp Thr Gln Lys Glu Ala Ile Leu Ser Gln Ile Pro Ala Gly 205
cgt atg ggg gat tcg aaa gaa atc gcc gcc gca gtg ctt tat ctg gcg      672
Arg Met Gly Asp Ser Lys 215 Glu Ile Ala Ala Ala 220 Val Leu Tyr Leu Ala
tcg caa gaa gcc gcc tat gtc acc ggc acc acg ctg cat gtg aat ggc      720
Ser Gln Glu Ala Ala Tyr 230 Val Thr Gly Thr 235 Leu His Val Asn Gly 240
ggc atg gcg atg ctc taa
Gly Met Ala Met Leu 245

```

&lt;210&gt; 3194

&lt;211&gt; 245

&lt;212&gt; PRT

<213> *Silicibacter* sp. TM1040

&lt;400&gt; 3194

```

Met Phe Asp Leu Thr Gly Lys Asn Ala Leu Ile Thr Gly Ala Ser Gly
1      5      10      15
Gly Ile Gly 20 Asp Ile Ala Arg Ala 25 Leu His Ala Ala 30 Gly Ala Thr
Val Ala Leu Ser Gly Thr Arg Pro Asp Pro Leu His Ala Leu Ala Glu
35      40      45
Glu Leu Gly Glu Arg Ala His 55 Val Val Thr Cys Asn 60 Leu Ser Asp Ala
50      55      60
Glu Ala Val Glu Ala Leu 70 Pro Lys Gln Ala Ala 75 Glu Ala Met Gly Ser
65      70      75
Val Asp Ile Leu Val 85 Asn Asn Ala Gly Ile Thr Lys Asp Asn Leu Phe 95
80      85      90
Met Arg Met Lys 100 Asp Glu Glu Trp 105 Gln Ser Val Leu Asp Val Asn Leu
105      110
Thr Ser Thr Met Arg Leu Cys Arg 120 Gly Val Leu Arg Gly Met Met Lys
115      120      125
Ala Arg Trp Gly Arg Ile Val 135 Asn Ile Ser Ser Val 140 Val Gly Ala Thr
130      135      140
Gly Asn Pro Gly Gln Gly 150 Asn Tyr Ala Ala Ser 155 Lys Ala Gly Met Val 160
145      150      155

```

## PhoenixTemp32470.tmp.txt

Gly Met Ser Lys Ser Leu Ala Tyr Glu Val Ala Asn Arg Gly Ile Thr  
 165 170 175  
 Val Asn Ala Val Ala Pro Gly Phe Ile Ala Thr Ala Met Thr Asp Lys  
 180 185 190  
 Leu Asn Asp Thr Gln Lys Glu Ala Ile Leu Ser Gln Ile Pro Ala Gly  
 195 200 205  
 Arg Met Gly Asp Ser Lys Glu Ile Ala Ala Ala Val Leu Tyr Leu Ala  
 210 215 220  
 Ser Gln Glu Ala Ala Tyr Val Thr Gly Thr Thr Leu His Val Asn Gly  
 225 230 235 240  
 Gly Met Ala Met Leu  
 245

&lt;210&gt; 3195

&lt;211&gt; 804

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(804)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3195

ttg atg ccg cgc ctc ctc gac aag gtg gtc gtg gtg acc ggg gcg gcc	48
Met Met Pro Arg Leu Leu Asp Lys Val Val Val Val Thr Gly Ala Ala	
1 5 10 15	
cgg ggg acc ggc cgg gtg cac tgc gag cgg ttc gcc gag gaa ggc gcc	96
Arg Gly Thr Gly Arg Val His Cys Glu Arg Phe Ala Glu Glu Gly Ala	
20 25 30 35	
gac gtc atc gcg ctc gac gtc gcg gcg gtg gcc gac gag ctg tcg gga	144
Asp Val Ile Ala Leu Asp Val Ala Ala Val Ala Asp Glu Leu Ser Gly	
40 45 50 55	
acg gcg gcc gca gtg gca cga cac ggc cga cgg tgt gtg acg gga gag	192
Thr Ala Ala Ala Val Ala Arg His Gly Arg Arg Cys Val Thr Gly Glu	
60 65 70 75	
gcc gac gtg cgt gac ttc gcc gcc ttg acg gcc gcg atc gat cgc ggg	240
Ala Asp Val Arg Asp Phe Ala Ala Leu Thr Ala Ala Ile Asp Arg Gly	
80 85 90 95	
gtc gag gag ctc ggt cgg ctc gac gtc gtc gtg gcg aat gcg ggc gtc	288
Val Glu Glu Leu Gly Arg Leu Asp Val Val Val Ala Asn Ala Gly Val	
100 105 110 115	
cac ccg gct ggt gcg ccg gcc tgg gaa ctg acg ggc gag gcc tgg cgg	336
His Pro Ala Gly Ala Pro Ala Trp Glu Leu Thr Gly Glu Ala Trp Arg	
120 125 130 135	
caa gca ctc gac gtc aac gtg acc ggt gta tgg cat acg gtc aaa gca	384
Gln Ala Leu Asp Val Asn Val Thr Gly Val Trp His Thr Val Lys Ala	
140 145 150 155	
gct gcg cgg cac atg gat tca ggt ggt ggg gcg gtg atc gtc atc agc	432
Ala Ala Arg His Met Asp Ser Gly Gly Gly Ala Val Ile Val Ile Ser	
160 165 170 175	
tcc acg aat ggc ctg cgc ggg acc ccg aac tcc gcg cac tac acc acg	480
Ser Thr Asn Gly Leu Arg Gly Thr Pro Asn Ser Ala His Tyr Thr Thr	
180 185 190 195	
agc aag cac gcc gtg gtc ggg ttg gcc cgg acc ctg gcc aac gaa ctg	528
Ser Lys His Ala Val Val Gly Leu Ala Arg Thr Leu Ala Asn Glu Leu	
200 205 210 215	
ggt ccc cgc agc atc cgg gtc aac aca gtc cac ccg ggc gcc gtc gcg	576
Gly Pro Arg Ser Ile Arg Val Asn Thr Val His Pro Gly Ala Val Ala	
220 225 230 235	
acg ccg atg gtg ctc aac gaa gcc acc ttc aga cgg tta cgc ccg gac	624
Thr Pro Met Val Leu Asn Glu Ala Thr Phe Arg Arg Leu Arg Pro Asp	
240 245 250 255	
ctc gaa gaa ccc acc gcc gac gac gcc gcg gag gtg ctc cga gcg cgg	672
Leu Glu Glu Pro Thr Ala Asp Asp Ala Ala Glu Val Leu Arg Ala Arg	
260 265 270 275	
aac ctc ctt ccg gtg ccg tgg gtc gat ccg gtc gac gtc gcc aac gcg	720
Asn Leu Leu Pro Val Trp Val Asp Pro Val Asp Val Ala Asn Ala	
280 285 290 295	



## PhoenixTemp32470.tmp.txt

```

gtg gtg ttc ctc gcc tca gac gag gcg cgc tac atc acc ggc tca cag      768
Val Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Thr Gly Ser Gln
                245                250                255
ctc gtc gtc gac gcg ggc ctg acg cag aag gta tga      804
Leu Val Val Asp Ala Gly Leu Thr Gln Lys Val
                260                265

```

```

<210> 3196
<211> 267
<212> PRT
<213> Mycobacterium sp. MCS

```

```

<400> 3196
Met Met Pro Arg Leu Leu Asp Lys Val Val Val Val Thr Gly Ala Ala
1      5      10      15
Arg Gly Thr Gly Arg Val His Cys Glu Arg Phe Ala Glu Glu Gly Ala
                20      25      30
Asp Val Ile Ala Leu Asp Val Ala Val Ala Asp Glu Leu Ser Gly
                35      40      45
Thr Ala Ala Ala Val Ala Arg His Gly Arg Arg Cys Val Thr Gly Glu
                50      55      60
Ala Asp Val Arg Asp Phe Ala Ala Leu Thr Ala Ala Ile Asp Arg Gly
65      70      75      80
Val Glu Glu Leu Gly Arg Leu Asp Val Val Ala Asn Ala Gly Val
                85      90      95
His Pro Ala Gly Ala Pro Ala Trp Glu Leu Thr Gly Glu Ala Trp Arg
                100     105     110
Gln Ala Leu Asp Val Asn Val Thr Gly Val Trp His Thr Val Lys Ala
                115     120     125
Ala Ala Arg His Met Asp Ser Gly Gly Gly Ala Val Ile Val Ile Ser
130      135      140
Ser Thr Asn Gly Leu Arg Gly Thr Pro Asn Ser Ala His Tyr Thr Thr
145      150      155      160
Ser Lys His Ala Val Gly Leu Ala Arg Thr Leu Ala Asn Glu Leu
                165      170      175
Gly Pro Arg Ser Ile Arg Val Asn Thr Val His Pro Gly Ala Val Ala
                180     185     190
Thr Pro Met Val Leu Asn Glu Ala Thr Phe Arg Arg Leu Arg Pro Asp
195      200      205
Leu Glu Glu Pro Thr Ala Asp Ala Ala Glu Val Leu Arg Ala Arg
210      215      220
Asn Leu Leu Pro Val Pro Trp Val Asp Pro Val Asp Val Ala Asn Ala
225      230      235      240
Val Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Thr Gly Ser Gln
                245      250      255
Leu Val Val Asp Ala Gly Leu Thr Gln Lys Val
                260      265

```

```

<210> 3197
<211> 840
<212> DNA
<213> Mycobacterium sp. MCS

```

```

<220>
<221> CDS
<222> (1)..(840)
<223> transl_table=11

```

```

<400> 3197
atg aca gtg gga cgt ctg gcc ggc aag gtg gcg ctg atc acc gga gcg      48
Met Thr Val Gly Arg Leu Ala Gly Lys Val Ala Leu Ile Thr Gly Ala
1      5      10      15
gca cgc ggc atc ggc cga gcg cag gcc gtg cgc ttc gcg caa gag ggg      96
Ala Arg Gly Ile Gly Arg Ala Gln Ala Val Arg Phe Ala Gln Glu Gly
                20      25      30
gcg gac atc atc gcc ctg gac atc tgc ggg ccc gtc gac gac acc gtg      144
Ala Asp Ile Ile Ala Leu Asp Ile Cys Gly Pro Val Asp Asp Thr Val
                35      40      45
gtg gtt cct tct gcg acc cgg cgg gac ctc gac gag acc gct tgc ctg      192

```

## PhoenixTemp32470.tmp.txt

Val	Val	Pro	Ser	Ala	Thr	Arg	Arg	Asp	Leu	Asp	Glu	Thr	Ala	Cys	Leu		
gtc	gcc	gag	gtc	ggc	gtc	cgc	gtc	gtc	acc	gag	gtc	gtc	gac	gtg	cgc	240	
Val	Ala	Glu	Val	Gly	Val	Arg	Val	Val	Thr	Glu	Val	Val	Asp	Val	Arg		
65					70					75					80		
gac	ccc	gat	gcg	ctg	caa	gcg	gcc	acc	gac	gcg	gcg	gtg	acg	gat	ctg	288	
Asp	Pro	Asp	Ala	Leu	Gln	Ala	Ala	Thr	Asp	Ala	Ala	Val	Thr	Asp	Leu		
				85					90					95			
ggt	ggt	atc	gac	atc	gtg	tgc	gcc	acc	gca	ggc	atc	acc	tcc	agg	ggt	336	
Gly	Gly	Ile	Asp	Ile	Val	Cys	Ala	Thr	Ala	Gly	Ile	Thr	Ser	Arg	Gly		
			100					105					110				
gcg	gcg	acg	cag	atg	ccg	gag	gac	acc	tgg	cag	acc	atg	ctc	gat	gtg	384	
Ala	Ala	Thr	Gln	Met	Pro	Glu	Asp	Thr	Trp	Gln	Thr	Met	Leu	Asp	Val		
			115				120					125					
aac	ctc	acc	ggt	gtc	tgg	cac	acg	tgc	aag	gtg	tcc	gcc	ccg	cac	ctg	432	
Asn	Leu	Thr	Gly	Val	Trp	His	Thr	Cys	Lys	Val	Ser	Ala	Pro	His	Leu		
130						135				140							
atc	gcg	cgg	ggc	gcc	gga	tcg	gtg	atc	ctg	gtc	agt	tcg	atc	gcc	ggc	480	
Ile	Ala	Arg	Gly	Ala	Gly	Ser	Val	Ile	Leu	Val	Ser	Ser	Ile	Ala	Gly		
145					150					155					160		
ctg	cgc	ggg	ctg	gtc	ggc	gtt	gcc	cac	tac	acc	gcg	gcc	aaa	cac	ggt	528	
Leu	Arg	Gly	Leu	Val	Gly	Val	Ala	His	Tyr	Thr	Ala	Ala	Lys	His	Gly		
				165					170					175			
gtg	gtc	ggc	ctc	atg	cgc	agc	ctc	gcc	cac	gac	ctg	gca	ccg	cac	ggc	576	
Val	Val	Gly	Leu	Met	Arg	Ser	Leu	Ala	His	Asp	Leu	Ala	Pro	His	Gly		
			180					185					190				
att	cgc	gtc	aac	tcc	gtg	cat	ccg	acg	aac	gtc	gac	aca	cca	ttg	atc	624	
Ile	Arg	Val	Asn	Ser	Val	His	Pro	Thr	Asn	Val	Asp	Thr	Pro	Leu	Ile		
			195				200					205					
cag	aac	acg	gcc	gtc	agc	agc	gct	ttc	cgc	cca	gac	ctg	gac	cggt	cca	672	
Gln	Asn	Thr	Ala	Val	Ser	Ser	Ala	Phe	Arg	Pro	Asp	Leu	Asp	Arg	Pro		
			210			215					220						
cct	aca	agg	gcg	gag	ttc	gcg	gcg	gcc	gcg	agg	ccg	atg	aac	ctg	ctc	720	
Pro	Thr	Arg	Ala	Glu	Phe	Ala	Ala	Ala	Ala	Arg	Pro	Met	Asn	Leu	Leu		
225					230					235					240		
gcg	atc	ccc	tgg	atc	gac	ccc	gtc	gac	gtg	gcc	aac	gcc	tcg	ctg	ttc	768	
Ala	Ile	Pro	Trp	Ile	Asp	Pro	Val	Asp	Val	Ala	Asn	Ala	Ser	Leu	Phe		
				245				250						255			
ctg	gcg	tcc	gac	gaa	gct	cgc	tac	atc	acg	gcg	gtg	tcg	cta	ccc	gtt	816	
Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Thr	Ala	Val	Ser	Leu	Pro	Val		
				260				265					270				
gac	gcg	ggc	agc	acg	caa	cgc	tga									840	
Asp	Ala	Gly	Ser	Thr	Gln	Arg											
				275													

&lt;210&gt; 3198

&lt;211&gt; 279

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 3198

Met	Thr	Val	Gly	Arg	Leu	Ala	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala		
1				5					10					15			
Ala	Arg	Gly	Ile	Gly	Arg	Ala	Gln	Ala	Val	Arg	Phe	Ala	Gln	Glu	Gly		
			20					25					30				
Ala	Asp	Ile	Ile	Ala	Leu	Asp	Ile	Cys	Gly	Pro	Val	Asp	Asp	Thr	Val		
			35				40					45					
Val	Val	Pro	Ser	Ala	Thr	Arg	Arg	Asp	Leu	Asp	Glu	Thr	Ala	Cys	Leu		
			50			55					60						
Val	Ala	Glu	Val	Gly	Val	Arg	Val	Val	Thr	Glu	Val	Val	Asp	Val	Arg		
65					70					75					80		
Asp	Pro	Asp	Ala	Leu	Gln	Ala	Ala	Thr	Asp	Ala	Ala	Val	Thr	Asp	Leu		
				85					90					95			
Gly	Gly	Ile	Asp	Ile	Val	Cys	Ala	Thr	Ala	Gly	Ile	Thr	Ser	Arg	Gly		
			100					105					110				
Ala	Ala	Thr	Gln	Met	Pro	Glu	Asp	Thr	Trp	Gln	Thr	Met	Leu	Asp	Val		
			115				120					125					
Asn	Leu	Thr	Gly	Val	Trp	His	Thr	Cys	Lys	Val	Ser	Ala	Pro	His	Leu		
130						135					140						

## PhoenixTemp32470.tmp.txt

Ile Ala Arg Gly Ala Gly Ser Val Ile Leu Val Ser Ser Ile Ala Gly  
 145 150 155 160  
 Leu Arg Gly Leu Val Gly Val Ala His Tyr Thr Ala Ala Lys His Gly  
 165 170 175  
 Val Val Gly Leu Met Arg Ser Leu Ala His Asp Leu Ala Pro His Gly  
 180 185 190  
 Ile Arg Val Asn Ser Val His Pro Thr Asn Val Asp Thr Pro Leu Ile  
 195 200 205  
 Gln Asn Thr Ala Val Ser Ser Ala Phe Arg Pro Asp Leu Asp Arg Pro  
 210 215 220  
 Pro Thr Arg Ala Glu Phe Ala Ala Ala Arg Pro Met Asn Leu Leu  
 225 230 235 240  
 Ala Ile Pro Trp Ile Asp Pro Val Asp Val Ala Asn Ala Ser Leu Phe  
 245 250 255  
 Leu Ala Ser Asp Glu Ala Arg Tyr Ile Thr Ala Val Ser Leu Pro Val  
 260 265 270  
 Asp Ala Gly Ser Thr Gln Arg  
 275

&lt;210&gt; 3199

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3199

ttg	tcg	acc	gag	acg	acg	agc	aat	gcc	gtg	acc	cgg	gaa	cat	ggg	cgc	48
Met	Ser	Thr	Glu	Thr	Thr	Ser	Asn	Ala	Val	Thr	Arg	Glu	His	Gly	Arg	
1				5					10					15		
ctc	cac	ggc	aag	tcc	gcg	gtg	atc	acc	ggg	gcg	gcg	ttc	ggc	atc	ggc	96
Leu	His	Gly	Lys	Ser	Ala	Val	Ile	Thr	Gly	Ala	Ala	Phe	Gly	Ile	Gly	
			20					25					30			
cgg	gcc	acc	gcc	gtg	ctc	ttc	gca	cga	gag	ggc	gcg	cgg	ctg	gtc	gtg	144
Arg	Ala	Thr	Ala	Val	Leu	Phe	Ala	Arg	Glu	Gly	Ala	Arg	Leu	Val	Val	
			35				40					45				
acc	gat	att	cag	agc	gag	ccg	ctg	ctg	gcg	ctt	gcc	gat	gaa	ctg	cgg	192
Thr	Asp	Ile	Gln	Ser	Glu	Pro	Leu	Leu	Ala	Leu	Ala	Asp	Glu	Leu	Arg	
	50					55					60					
cac	gcc	gga	gcg	gac	gtc	gag	ccc	gtc	gtc	ggc	gac	gtc	tcg	gtg	gag	240
His	Ala	Gly	Ala	Asp	Val	Glu	Pro	Val	Val	Gly	Asp	Val	Ser	Val	Glu	
	65			70				75							80	
tat	gac	gcg	ggg	cgg	atg	atc	ggg	gcg	gcg	gtc	gac	cgc	ttc	gga	cgg	288
Tyr	Asp	Ala	Gly	Arg	Met	Ile	Gly	Ala	Ala	Val	Asp	Arg	Phe	Gly	Arg	
				85				90						95		
ctc	gat	gtg	ctg	gtc	gcc	aac	gca	ggc	atc	atc	ccg	ctc	ggc	gac	gcg	336
Leu	Asp	Val	Leu	Val	Ala	Asn	Ala	Gly	Ile	Ile	Pro	Leu	Gly	Asp	Ala	
			100					105					110			
ctg	gaa	atg	acc	gcc	gcc	ggc	tgg	gac	gaa	gtg	atg	gcc	atc	gac	ggg	384
Leu	Glu	Met	Thr	Ala	Ala	Gly	Trp	Asp	Glu	Val	Met	Ala	Ile	Asp	Gly	
		115					120					125				
cgc	ggc	atg	ttc	ctg	tgc	tgc	aaa	ttc	gcg	atc	gag	gcg	atg	ttg	ccg	432
Arg	Gly	Met	Phe	Leu	Cys	Cys	Lys	Phe	Ala	Ile	Glu	Ala	Met	Leu	Pro	
	130					135					140					
acc	ggg	ggt	ggc	gcc	atc	gtc	tgc	ctc	tcc	tcg	atc	tcc	gga	ctg	gcg	480
Thr	Gly	Gly	Gly	Ala	Ile	Val	Cys	Leu	Ser	Ser	Ile	Ser	Gly	Leu	Ala	
	145			150						155					160	
ggg	cag	aag	cgg	cag	gcg	gcc	tac	ggt	ccc	gcc	aag	ttc	atc	gcc	acc	528
Gly	Gln	Lys	Arg	Gln	Ala	Ala	Tyr	Gly	Pro	Ala	Lys	Phe	Ile	Ala	Thr	
				165				170						175		
ggc	ttg	acc	aag	cac	ctg	gca	gtc	gag	tgg	gcc	gac	cgg	ggt	atc	aga	576
Gly	Leu	Thr	Lys	His	Leu	Ala	Val	Glu	Trp	Ala	Asp	Arg	Gly	Ile	Arg	
			180					185					190			
gtc	aac	gcc	gtc	gcc	ccc	ggg	acg	att	cga	acc	gag	cgg	gtc	aag	cgg	624
Val	Asn	Ala	Val	Ala	Pro	Gly	Thr	Ile	Arg	Thr	Glu	Val	Val	Lys	Arg	
		195					200					205				

## PhoenixTemp32470.tmp.txt

ttc	ccg	gag	gag	ccg	ggt	ggc	tcg	gag	tac	ctg	gcg	gcg	gtc	gag	cgt	672
Phe	Pro	Glu	Glu	Pro	Gly	Gly	Ser	Glu	Tyr	Leu	Ala	Ala	Val	Glu	Arg	
	210					215					220					
atg	cac	ccg	atg	ggc	cgc	atc	ggc	gaa	cca	gcc	gaa	gtc	gcc	agc	gcc	720
Met	His	Pro	Met	Gly	Arg	Ile	Gly	Glu	Pro	Ala	Glu	Val	Ala	Ser	Ala	
225					230					235					240	
atc	gtc	ttt	ctc	gcc	tcc	gac	gac	gcc	tcc	ttc	atc	acc	ggc	gcc	gtg	768
Ile	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Gly	Ala	Val	
				245					250					255		
ctg	ccg	gtc	gac	ggg	gga	tat	cta	gcg	cag	tag						801
Leu	Pro	Val	Asp	Gly	Gly	Tyr	Leu	Ala	Gln							
			260					265								

&lt;210&gt; 3200

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 3200

Met	Ser	Thr	Glu	Thr	Thr	Ser	Asn	Ala	Val	Thr	Arg	Glu	His	Gly	Arg	
1				5					10					15		
Leu	His	Gly	Lys	Ser	Ala	Val	Ile	Thr	Gly	Ala	Ala	Phe	Gly	Ile	Gly	
			20					25					30			
Arg	Ala	Thr	Ala	Val	Leu	Phe	Ala	Arg	Glu	Gly	Ala	Arg	Leu	Val	Val	
			35				40					45				
Thr	Asp	Ile	Gln	Ser	Glu	Pro	Leu	Leu	Ala	Leu	Ala	Asp	Glu	Leu	Arg	
	50				55					60						
His	Ala	Gly	Ala	Asp	Val	Glu	Pro	Val	Val	Gly	Asp	Val	Ser	Val	Glu	
65					70					75					80	
Tyr	Asp	Ala	Gly	Arg	Met	Ile	Gly	Ala	Ala	Val	Asp	Arg	Phe	Gly	Arg	
				85				90						95		
Leu	Asp	Val	Leu	Val	Ala	Asn	Ala	Gly	Ile	Ile	Pro	Leu	Gly	Asp	Ala	
			100					105					110			
Leu	Glu	Met	Thr	Ala	Ala	Gly	Trp	Asp	Glu	Val	Met	Ala	Ile	Asp	Gly	
		115					120					125				
Arg	Gly	Met	Phe	Leu	Cys	Cys	Lys	Phe	Ala	Ile	Glu	Ala	Met	Leu	Pro	
	130					135					140					
Thr	Gly	Gly	Gly	Ala	Ile	Val	Cys	Leu	Ser	Ser	Ile	Ser	Gly	Leu	Ala	
145					150					155					160	
Gly	Gln	Lys	Arg	Gln	Ala	Ala	Tyr	Gly	Pro	Ala	Lys	Phe	Ile	Ala	Thr	
				165					170					175		
Gly	Leu	Thr	Lys	His	Leu	Ala	Val	Glu	Trp	Ala	Asp	Arg	Gly	Ile	Arg	
			180					185					190			
Val	Asn	Ala	Val	Ala	Pro	Gly	Thr	Ile	Arg	Thr	Glu	Arg	Val	Lys	Arg	
		195					200					205				
Phe	Pro	Glu	Glu	Pro	Gly	Gly	Ser	Glu	Tyr	Leu	Ala	Ala	Val	Glu	Arg	
	210					215					220					
Met	His	Pro	Met	Gly	Arg	Ile	Gly	Glu	Pro	Ala	Glu	Val	Ala	Ser	Ala	
225					230					235					240	
Ile	Val	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Gly	Ala	Val	
				245					250					255		
Leu	Pro	Val	Asp	Gly	Gly	Tyr	Leu	Ala	Gln							
			260					265								

&lt;210&gt; 3201

&lt;211&gt; 795

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(795)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3201

atg	tat	gcc	gac	cgg	gcc	cct	cgg	agg	ccc	ccg	acg	agt	cag	gta	ggg	48
Met	Tyr	Ala	Asp	Arg	Ala	Pro	Arg	Arg	Pro	Pro	Thr	Ser	Gln	Val	Gly	
1				5					10					15		
gat	cga	gtg	tcg	ttg	ctg	agc	gga	cag	acc	gcg	gtc	gtc	acg	ggc	ggg	96

## PhoenixTemp32470.tmp.txt

Asp	Arg	Val	Ser 20	Leu	Leu	Ser	Gly	Gln 25	Thr	Ala	Val	Val	Thr 30	Gly	Gly		
gcg	cag	gga	ctg	gga	tac	gcg	atc	gcg	gaa	cgc	ttc	gtg	tcc	gag	ggg	144	
Ala	Gln	Gly 35	Leu	Gly	Tyr	Ala	Ile 40	Ala	Glu	Arg	Phe	Val 45	Ser	Glu	Gly		
gcg	cgg	gtc	gtg	ctc	ggc	gac	ctc	gac	ctc	gac	gcc	acc	gag	gcg	gcg	192	
Ala	Arg	Val 50	Val	Leu	Gly	Asp 55	Leu	Asp	Leu	Asp	Ala	Thr 60	Glu	Ala	Ala		
gcc	aaa	cgc	ctc	ggt	gga	ccg	gac	gtg	gcc	acc	gcg	gtc	cgg	tgc	gac	240	
Ala	Lys	Arg	Leu	Gly	Gly 70	Pro	Asp	Val	Ala	Thr 75	Ala	Val	Arg	Cys	Asp 80		
gtc	acc	cgg	gcc	gac	gag	gtg	gat	gcg	ctc	gtg	gcc	gcg	gcg	gtg	gag	288	
Val	Thr	Arg	Ala	Asp 85	Glu	Val	Asp	Ala	Leu 90	Val	Ala	Ala	Ala	Val 95	Glu		
cgc	ttc	ggc	ggc	ctc	gac	gtc	atg	gtg	aac	aac	gcg	ggg	atc	acc	cgc	336	
Arg	Phe	Gly 100	Gly	Leu	Asp	Val	Met 105	Val	Asn	Asn	Ala	Gly	Ile 110	Thr	Arg		
gac	gcc	acc	ctg	cgc	aag	atg	acc	gag	gaa	cag	ttc	gac	cag	gtg	atc	384	
Asp	Ala	Thr 115	Leu	Arg	Lys	Met 120	Thr	Glu	Glu	Gln	Phe	Asp 125	Gln	Val	Ile		
gcc	gtc	cac	ctc	aag	ggc	acc	tgg	aac	ggg	ctg	aag	tcg	gcg	gcg	gcg	432	
Ala	Val	His 130	Leu	Lys	Gly	Thr 135	Trp	Asn	Gly	Leu	Lys 140	Ser	Ala	Ala	Ala		
atc	atg	cgc	gag	aac	aag	cgc	ggt	gcc	atg	gtc	aac	atg	tcg	tcg	atc	480	
Ile	Met	Arg	Glu	Asn	Lys 150	Arg	Gly	Ala	Met	Val 155	Asn	Met	Ser	Ser	Ile 160		
tcg	ggc	aag	gtc	ggg	ctc	gtc	gga	cag	acc	aac	tac	tcg	gcg	gcc	aag	528	
Ser	Gly	Lys	Val 165	Gly	Leu	Val	Gly	Gln 170	Thr	Asn	Tyr	Ser	Ala 175	Ala	Lys		
gcc	ggg	atc	gtc	ggg	atg	acg	aag	gcc	gcg	gcc	aag	gaa	ctg	gct	cac	576	
Ala	Gly	Ile 180	Val	Gly	Met	Thr	Lys	Ala 185	Ala	Ala	Lys	Glu 190	Leu	Ala	His		
ctc	ggg	gtg	cgc	gtg	aac	gcg	atc	cag	ccc	ggc	ctc	atc	cgg	tcg	gcg	624	
Leu	Gly	Val 195	Arg	Val	Asn	Ala	Ile 200	Gln	Pro	Gly	Leu	Ile 205	Arg	Ser	Ala		
atg	acc	gag	gcg	atg	ccg	cag	cac	atc	tgg	gac	cag	aag	ctc	gcc	gag	672	
Met	Thr	Glu	Ala	Met	Pro	Gln 215	His	Ile	Trp	Asp	Gln 220	Lys	Leu	Ala	Glu		
ata	ccg	atg	ggc	cgg	gcc	ggc	gaa	ccg	gcc	gag	gtg	gcc	aag	gtc	gcc	720	
Ile	Pro	Met	Gly	Arg	Ala 230	Gly	Glu	Pro	Ala	Glu	Val 235	Ala	Lys	Val	Ala 240		
ctc	ttc	ctc	gcc	tcg	gac	ctc	tcc	tcg	tac	atg	acc	ggc	acc	gtg	ctg	768	
Leu	Phe	Leu	Ala 245	Ser	Asp	Leu	Ser	Ser	Tyr 250	Met	Thr	Gly	Thr	Val 255	Leu		
gaa	gtc	acg	ggc	ggg	agg	cac	atc	tga								795	
Glu	Val	Thr 260	Gly	Gly	Arg	His	Ile										

&lt;210&gt; 3202

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium sp. MCS

&lt;400&gt; 3202

Met	Tyr	Ala	Asp	Arg 5	Ala	Pro	Arg	Arg	Pro 10	Pro	Thr	Ser	Gln	Val 15	Gly		
Asp	Arg	Val	Ser 20	Leu	Leu	Ser	Gly	Gln 25	Thr	Ala	Val	Val	Thr 30	Gly	Gly		
Ala	Gln	Gly 35	Leu	Gly	Tyr	Ala	Ile 40	Ala	Glu	Arg	Phe	Val 45	Ser	Glu	Gly		
Ala	Arg	Val 50	Val	Leu	Gly	Asp 55	Leu	Asp	Leu	Asp	Ala 60	Thr	Glu	Ala	Ala		
Ala	Lys	Arg	Leu	Gly	Gly 70	Pro	Asp	Val	Ala	Thr 75	Ala	Val	Arg	Cys	Asp 80		
Val	Thr	Arg	Ala	Asp 85	Glu	Val	Asp	Ala	Leu 90	Val	Ala	Ala	Ala	Val 95	Glu		
Arg	Phe	Gly	Gly 100	Leu	Asp	Val	Met 105	Val	Asn	Asn	Ala	Gly	Ile 110	Thr	Arg		
Asp	Ala	Thr	Leu	Arg	Lys	Met	Thr	Glu	Gln	Phe	Asp	Gln	Val	Ile			

## PhoenixTemp32470.tmp.txt

115  
 Ala Val His Leu Lys Gly Thr 120 Trp Asn Gly Leu Lys 125 Ser Ala Ala Ala  
 130 135 140  
 Ile Met Arg Glu Asn Lys Arg Gly Ala Met Val Asn Met Ser Ser Ile  
 145 150 155 160  
 Ser Gly Lys Val Gly Leu Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys  
 165 170 175  
 Ala Gly Ile Val Gly Met Thr Lys Ala Ala Lys Glu Leu Ala His  
 180 185 190  
 Leu Gly Val Arg Val Asn Ala Ile Gln Pro Gly Leu Ile Arg Ser Ala  
 195 200 205  
 Met Thr Glu Ala Met Pro Gln His Ile Trp Asp Gln Lys Leu Ala Glu  
 210 215 220  
 Ile Pro Met Gly Arg Ala Gly Glu Pro Ala Glu Val Ala Lys Val Ala  
 225 230 235 240  
 Leu Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu  
 245 250 255  
 Glu Val Thr Gly Gly Arg His Ile  
 260

&lt;210&gt; 3203

&lt;211&gt; 771

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium sp. MCS

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(771)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3203

atg acc gac gcc gaa atg acc gtg gat ctc gac ttc tca ctg acc ggg	48
Met Thr Asp Ala Glu Met Thr Val Asp Leu Asp Phe Ser Leu Thr Gly	
1 5 10 15	
aag gtc gca ctg gtc acc ggc ggc gca tcg ggc atc ggt gcg gcg atc	96
Lys Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Ala Ala Ile	
20 25 30	
gca tcg gcg ttc gcc gcc aag ggc gcc cgc gtg gcc gtg gcc gac ctc	144
Ala Ser Ala Phe Ala Ala Lys Gly Ala Arg Val Ala Val Ala Asp Leu	
35 40 45	
aac gaa ccc ggt gca cag gcg cac gcc gcg gcg ttg gcc acc gag agt	192
Asn Glu Pro Gly Ala Gln Ala His Ala Ala Ala Leu Ala Thr Glu Ser	
50 55 60	
tcg gga ttc cgt tgc gat gtc agc gat ccc gcg tcc gtc gcg gcg acc	240
Ser Gly Phe Arg Cys Asp Val Ser Asp Pro Ala Ser Val Ala Ala Thr	
65 70 75 80	
gtc gac gcc gtg gcc ggc acc ttc ggc agg atc gac atc ctg gtc aac	288
Val Asp Ala Val Ala Gly Thr Phe Gly Arg Ile Asp Ile Leu Val Asn	
85 90 95	
agt gcc ggg gtg gcc cgg ctg gcg ccc gcc gag gac ctc acg ctc acc	336
Ser Ala Gly Val Ala Arg Leu Ala Pro Ala Glu Asp Leu Thr Leu Thr	
100 105 110	
gac tgg gag tcg acg atc gac atc aac ctc aag ggc acg ttc ctg atg	384
Asp Trp Glu Ser Thr Ile Asp Ile Asn Leu Lys Gly Thr Phe Leu Met	
115 120 125	
tgc cag gcg gtg ggc cgc cgc atg ctg gcc gac ggt ggc ggc agc atc	432
Cys Gln Ala Val Gly Arg Arg Met Leu Ala Asp Gly Gly Ser Ile	
130 135 140	
gtc aac ctg gcg tct cag gcc gcc tcc gtg gca ctc gac cag cac gtg	480
Val Asn Leu Ala Ser Gln Ala Ala Ser Val Ala Leu Asp Gln His Val	
145 150 155 160	
gcg tac tgc gcg tcg aag ttc ggg gtg gtc ggg gtg tcg aag gtc ctg	528
Ala Tyr Cys Ala Ser Lys Phe Gly Val Val Gly Val Ser Lys Val Leu	
165 170 175	
gcc gcc gaa tgg ggc ggc cgg ggc atc cgg gtc aac acg atc tcg ccc	576
Ala Ala Glu Trp Gly Gly Arg Gly Ile Arg Val Asn Thr Ile Ser Pro	
180 185 190	
acg gtg gtc ctc acc gaa ctg ggc cac aag gcc tgg gac gga ccg cgc	624
Thr Val Val Leu Thr Glu Leu Gly His Lys Ala Trp Asp Gly Pro Arg	

## PhoenixTemp32470.tmp.txt

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      195
ggc gat gcc ctc aag aag ctg 200 ccc atc gcc cgg ttc gcc tac ccg 672
Gly Asp Ala Leu Lys Lys Leu Ile Pro Ile Gly Arg Phe Ala Tyr Pro
      210
ccc gag atc gcc gcc gcc gcg gtc tac ctc gcc tcc gac gcg gcc gcg 720
Pro Glu Ile Ala Ala Ala Ala Val Tyr Leu Ala Ser Asp Ala Ala Ala
      225
atg gtc acc ggc gcc gac ctg gtc gtc gac 235 ggc tac acc gtc aaa 768
Met Val Thr Gly Ala Asp Leu Val Val Asp Gly Gly Tyr Thr Val Lys
      245
tag 771

```

<210> 3204  
 <211> 256  
 <212> PRT  
 <213> Mycobacterium sp. MCS

```

<400> 3204
Met Thr Asp Ala Glu Met Thr Val Asp Leu Asp Phe Ser Leu Thr Gly
1      5      10      15
Lys Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Ala Ala Ile
      20
Ala Ser Ala Phe Ala Ala Lys Gly Ala Arg Val Ala Val Ala Asp Leu
      35
Asn Glu Pro Gly Ala Gln Ala His Ala Ala Ala Leu Ala Thr Glu Ser
      50
Ser Gly Phe Arg Cys Asp Val Ser Asp Pro Ala Ser Val Ala Ala Thr
65      70      75      80
Val Asp Ala Val Ala Gly Thr Phe Gly Arg Ile Asp Ile Leu Val Asn
      85
Ser Ala Gly Val Ala Arg Leu Ala Pro Ala Glu Asp Leu Thr Leu Thr
      100
Asp Trp Glu Ser Thr Ile Asp Ile Asn Leu Lys Gly Thr Phe Leu Met
      115
Cys Gln Ala Val Gly Arg Arg Met Leu Ala Asp Gly Gly Gly Ser Ile
      130
Val Asn Leu Ala Ser Gln Ala Ala Ser Val Ala Leu Asp Gln His Val
145      150      155      160
Ala Tyr Cys Ala Ser Lys Phe Gly Val Val Gly Val Ser Lys Val Leu
      165
Ala Ala Glu Trp Gly Gly Arg Gly Ile Arg Val Asn Thr Ile Ser Pro
      180
Thr Val Val Leu Thr Glu Leu Gly His Lys Ala Trp Asp Gly Pro Arg
      195
Gly Asp Ala Leu Lys Lys Leu Ile Pro Ile Gly Arg Phe Ala Tyr Pro
      210
Pro Glu Ile Ala Ala Ala Ala Val Tyr Leu Ala Ser Asp Ala Ala Ala
225      230      235      240
Met Val Thr Gly Ala Asp Leu Val Val Asp Gly Gly Tyr Thr Val Lys
      245
      255

```

<210> 3205  
 <211> 738  
 <212> DNA  
 <213> Mesorhizobium sp. BNC1

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

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<400> 3205
atg ttt gat ctc aat ggc cgc aag gct ctc gtc acg gga gca acc ggg 48
Met Phe Asp Leu Asn Gly Arg Lys Ala Leu Val Thr Gly Ala Thr Gly
1      5      10      15
ggc atc ggc gag gcg atc gcc agg gcg ctt cac aag cag ggc gcg att 96
Gly Ile Gly Glu Ala Ile Ala Arg Ala Leu His Lys Gln Gly Ala Ile

```

## PhoenixTemp32470.tmp.txt

																20																	25																	30																
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Val	Gly	Leu	His	Gly	Thr	Arg	Val	Glu	Lys	Leu	Glu	Ala	Leu	Ala	Gly																																																			
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gaa	ctt	ggc	gaa	agg	gca	aag	ata	ttt	gcc	gcg	aat	ctt	tcg	gac	cgc		192																																																	
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gat	gac	gtg	aag	gct	ttc	gcc	gag	cgc	gcc	gaa	tca	gag	ctc	gaa	ggg		240																																																	
Asp	Asp	Val	Lys	Ala	Phe	Ala	Glu	Arg	Ala	Glu	Ser	Glu	Leu	Glu	Gly																																																			
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atc	gac	att	ctc	gtc	aac	aat	gca	ggg	atc	acc	cgc	gac	ggg	ctt	ttc		288																																																	
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gtg	cgc	atg	agc	gac	gag	gac	tgg	gac	gcg	gtg	atc	gaa	acc	aat	ctg		336																																																	
Val	Arg	Met	Ser	Asp	Glu	Asp	Trp	Asp	Ala	Val	Ile	Glu	Thr	Asn	Leu																																																			
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Thr	Ala	Ala	Phe	Arg	Leu	Thr	Arg	Ala	Leu	Thr	His	Pro	Met	Met	Arg																																																			
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cgc	cgc	tgg	ggc	cgc	atc	atc	aac	att	tcc	tcc	gtg	gtg	ggc	gtg	gcc		432																																																	
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Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Thr	Ala	Met	Thr	Asp	Lys																																																			
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Arg	Met	Gly	Ser	Gly	Glu	Glu	Ile	Ala	Thr	Ala	Val	Val	Tyr	Leu	Ala																																																			
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<210> 3206  
<211> 245  
<212> PRT  
<213> Mesorhizobium sp. BNC1

<400>	3206														
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Gly	Ile	Gly	Glu <sub>20</sub>	Ala	Ile	Ala	Arg	Ala <sub>25</sub>	Leu	His	Lys	Gln	Gly <sub>30</sub>	Ala	Ile
Val	Gly	Leu <sub>35</sub>	His	Gly	Thr	Arg	Val <sub>40</sub>	Glu	Lys	Leu	Glu	Ala <sub>45</sub>	Leu	Ala	Gly
Glu	Leu <sub>50</sub>	Gly	Glu	Arg	Ala	Lys <sub>55</sub>	Ile	Phe	Ala	Ala	Asn <sub>60</sub>	Leu	Ser	Asp	Arg
Asp <sub>65</sub>	Asp	Val	Lys	Ala	Phe <sub>70</sub>	Ala	Glu	Arg	Ala	Glu <sub>75</sub>	Ser	Glu	Leu	Glu	Gly <sub>80</sub>
Ile	Asp	Ile	Leu	Val <sub>85</sub>	Asn	Asn	Ala	Gly	Ile <sub>90</sub>	Thr	Arg	Asp	Gly	Leu <sub>95</sub>	Phe
Val	Arg	Met	Ser <sub>100</sub>	Asp	Glu	Asp	Trp	Asp <sub>105</sub>	Ala	Val	Ile	Glu	Thr <sub>110</sub>	Asn	Leu
Thr	Ala	Ala <sub>115</sub>	Phe	Arg	Leu	Thr	Arg <sub>120</sub>	Ala	Leu	Thr	His	Pro <sub>125</sub>	Met	Met	Arg
Arg	Arg <sub>130</sub>	Trp	Gly	Arg	Ile	Ile <sub>135</sub>	Asn	Ile	Ser	Ser	Val <sub>140</sub>	Val	Gly	Val	Ala
Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Leu	Ile



## PhoenixTemp32470.tmp.txt

145 Gly Phe Ser Lys Ser 150 Leu Ala Gln Glu Val 155 Ala Ser Arg Asn Ile 160 Thr  
 Val Asn Cys Val 165 Ala Pro Gly Phe Ile Glu Thr Ala Met Thr Asp Lys  
 Leu Asn Glu 180 Lys Gln Arg Glu Ser 185 Ile Met Gly Ala Ile 190 Pro Met Arg  
 Arg Met 195 Gly Ser Gly Glu Glu 200 Ile Ala Thr Ala Val 205 Val Tyr Leu Ala  
 Ser Glu Glu Ala Ala Tyr Val Thr Gly Gln Thr Ile His Val Asn Gly  
 225 Gly Met Leu Met Val 230 235 240 245

<210> 3207  
 <211> 786  
 <212> DNA  
 <213> Mesorhizobium sp. BNC1

<220>  
 <221> CDS  
 <222> (1)..(786)  
 <223> transl\_table=11

<400> 3207  
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 aag atg acg ata cga ttt gac ggg aaa acc gcg ctg atc aca gcc gca 96  
 Lys Met Thr Ile Arg Phe Asp Gly Lys 25 Thr Ala Leu Ile Thr Ala Ala 30  
 gct caa ggg atc ggc cgt gca agc gcg ctg gct ttc gcg gaa gcc ggc 144  
 Ala Gln Gly Ile Gly Arg Ala Ser Ala Leu Ala Phe Ala Glu Ala Gly 35 40 45  
 gca aaa gtc tat gca acc gac atc aac atg ggc gcg ctg aag gag atc 192  
 Ala Lys 50 Val Tyr Ala Thr Asp Ile Asn Met Gly Ala Leu Lys Glu Ile 55 60  
 gaa ggc gtt tcg gga atc atc acg cgc aag ctc aac gtt ctc gac gag 240  
 Glu Gly Val Ser Gly Ile Ile Thr Arg Lys Leu Asn Val Leu Asp Glu 65 70 75 80  
 acg gaa gtc aag gca atc gtc gct gaa atc ggg cag gtc gac att ctg 288  
 Thr Glu Val Lys Ala Ile Val Ala Glu Ile Gly Gln Val Asp Ile Leu 85 90 95  
 ttc aac tgt gcg ggc gtc gtt cac ggc ggc aca att ctt gag atg aag 336  
 Phe Asn Cys Ala Gly Val Val His Gly Gly Thr Ile Leu Glu Met Lys 100 105 110  
 gac gaa gat ctc gat ttc gca gtt aat ctc aat gtc aag gcg atg att 384  
 Asp Glu Asp Leu Asp Phe Ala Val Asn Leu Asn Val Lys Ala Met Ile 115 120 125  
 cgc acc atc cgt gca ata ttg ccg ggc atg ttg gaa cgc aag gac ggc 432  
 Arg Thr Ile Arg Ala Ile Leu Pro Gly Met Leu Glu Arg Lys Asp Gly 130 135 140 145  
 gct atc atc aat atg gcc tcc gtt gca tcg agc gtt aag ggt gtg ccg 480  
 Ala Ile Ile Asn Met Ala Ser Val Ala Ser Ser Val Lys Gly Val Pro 150 155 160  
 aac cgc ttt gcc tat agc gtc acg aag gct gcg gtc atc ggg ctg acc 528  
 Asn Arg Phe Ala Tyr Ser Val Thr Lys Ala Val Ile Gly Leu Thr 165 170 175  
 aag gcc gtt gct gcc gat tat gtc acc aaa ggc atc cgc tgt aac gcg 576  
 Lys Ala Val Ala Ala Asp Tyr Val Thr Lys Gly Ile Arg Cys Asn Ala 180 185 190  
 atc tgc ccc ggc acg gtc gaa agc ccg tcg ctg cag gat cgt ctc cgc 624  
 Ile Cys Pro 195 Gly Thr Val Glu Ser 200 Pro Ser Leu Gln Asp Arg Leu Arg 205  
 gca cag ggg aat tat gaa gag cag cgt gcg gcc ttt att gct cgt caa 672  
 Ala Gln Gly Asn Tyr Glu Glu Gln Arg Ala Ala Phe Ile Ala Arg Gln 210 215 220  
 ccg att ggc cgt ata ggc cct gaa gag atc gcc gat ctc gtc gtc 720  
 Pro Ile Gly Arg Ile Gly Gln Pro Glu Glu Ile Ala Asp Leu Val Val

PhoenixTemp32470.tmp.txt

[illegible]

<210> 3208  
<211> 261  
<212> PRT  
<213> Mesorhizobium sp. BNC1

[illegible]

<210> 3209  
<211> 777  
<212> DNA  
<213> Mesorhizobium sp. BNC1

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<220>
<221> CDS
<222> (1)..(777)
<223> transl_table=11
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Met	Tyr	Leu	Glu	Lys	Leu	Arg	Leu	Asp	Gly	Arg	Val	Ala	Val	Ile	Thr	
1				5					10					15		
ggc	ggc	ggg	cag	ggc	ata	ggt	gct	gcc	tgc	gcg	cgg	gcg	ctc	ggc	gag	96
Gly	Gly	Gly	Gln	Gly	Ile	Gly	Ala	Ala	Cys	Ala	Arg	Ala	Leu	Gly	Glu	
			20					25					30			
gcc	ggt	gcc	acg	gtg	atc	gtg	gcg	gac	ctc	ctg	gcc	gaa	cgg	gcc	gag	144
Ala	Gly	Ala	Thr	Val	Ile	Val	Ala	Asp	Leu	Leu	Ala	Glu	Arg	Ala	Glu	
		35					40					45				

## PhoenixTemp32470.tmp.txt

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gcc acc gcc aag gag ctc tcc acc gcc ggg atc aag gcg cag ggc att 192
Ala Thr 50 Ala Lys Glu Leu Ser 55 Thr Ala Gly Ile 60 Lys Ala Gln Gly Ile
gga ctc gac gtc acg aaa tcc gcc gat gta gat gcc gcg gcg gac gaa 240
Gly Leu Asp Val Thr Lys 70 Ser Ala Asp Val Asp 75 Ala Ala Ala Asp Glu 80
atc gcg cgc cag cac ggc agg atc gat atc ctc gtc aac aat gcg ggc 288
Ile Ala Arg Gln His 85 Gly Arg Ile Asp 90 Leu Val Asn Asn Ala Gly 95
gtg gcc aag agc gac gtg cgg gcg gaa gat acc agc gac gaa cac tgg 336
Val Ala Lys Ser Asp Val Arg Ala Glu 105 Asp Thr Ser Asp Glu His Trp 110
cgc ttc cat atg gac gtc aat ttg gac ggt gtg ttc tgg tgt tgc cgc 384
Arg Phe His 115 Met Asp Val Asn Leu 120 Asp Gly Val Phe Trp 125 Cys Cys Arg
gcg ttc ggc cgg cac atg ctg gag aag gaa cgc ggc gcg atc gtg aat 432
Ala Phe 130 Gly Arg His Met Leu 135 Glu Lys Glu Arg Gly 140 Ala Ile Val Asn
atc ggc tcc atg tcg ggc gtc atc gtc aac aag ccg cag ccg cag agc 480
Ile Gly Ser Met Ser Gly 150 Phe Ile Val Asn Lys 155 Pro Gln Pro Gln Ser 160
ttc tac aat gcc tcg aag gcg gcc gtg cat cac ctc acg aag tcg ctt 528
Phe Tyr Asn Ala Ser 165 Lys Ala Ala Val His 170 His Leu Thr Lys Ser 175 Leu
gct gcc gaa tgg ggc cgg cgc ggc gtg cgc gtc aat gcc gtg gcg ccc 576
Ala Ala Glu Trp 180 Gly Arg Arg Gly Val 185 Arg Val Asn Ala Val Ala Pro 190
acc tat atc gag acg ccg ctg acg gcc ttc ggc atc aaa gaa agc ccg 624
Thr Tyr Ile Glu Thr Pro Leu Thr 200 Ala Phe Gly Ile Lys 205 Glu Ser Pro
gag atg tac aag gta tgg ctc gag atg acg ccg atg ggg cgc gtt ggc 672
Glu Met Tyr Lys Val Trp 215 Glu Met Thr Pro Met Gly Arg Val Gly 220
cag ccg gac gag atc gct tcc gtc gtg cat ttc ctg gca tcc gac gcc 720
Gln Pro Asp Glu Ile Ala 230 Ser Val Val His 235 Leu Ala Ser Asp Ala 240
tcc agc ctg atg act ggc tcg atc gtg ctg gcc gac gcc ggc tat acc 768
Ser Ser Leu Met Thr 245 Gly Ser Ile Val Leu 250 Ala Asp Ala Gly Tyr 255 Thr
tgc tgg tga 777
Cys Trp

```

&lt;210&gt; 3210

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Mesorhizobium sp. BNC1

&lt;400&gt; 3210

```

Met Tyr Leu Glu Lys 5 Leu Arg Leu Asp Gly Arg Val Ala Val Ile Thr
1 Gly Gly Gly Gln Gly 20 Ile Gly Ala Ala 25 Cys Ala Arg Ala 30 Leu Gly Glu
Ala Gly Ala Thr Val Ile Val Ala Asp Leu Leu Ala Glu Arg Ala Glu
35 40 45
Ala Thr 50 Ala Lys Glu Leu Ser 55 Thr Ala Gly Ile 60 Ala Gln Gly Ile
Gly Leu Asp Val Thr Lys 70 Ser Ala Asp Val Asp 75 Ala Ala Asp Glu 80
65 Ile Ala Arg Gln His 85 Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly 95
Val Ala Lys Ser Asp Val Arg Ala Glu Asp Thr Ser Asp Glu His Trp
100 105 110
Arg Phe His Met Asp Val Asn Leu Asp Gly Val Phe Trp Cys Cys Arg
115 120 125
Ala Phe Gly Arg His Met Leu 135 Glu Lys Glu Arg Gly Ala Ile Val Asn
130 140
Ile Gly Ser Met Ser Gly 150 Phe Ile Val Asn Lys 155 Pro Gln Pro Gln Ser 160
145

```

## PhoenixTemp32470.tmp.txt

Phe Tyr Asn Ala Ser Lys Ala Ala Val His His Leu Thr Lys Ser Leu  
 165 170 175  
 Ala Ala Glu Trp Gly Arg Arg Gly Val Arg Val Asn Ala Val Ala Pro  
 180 185 190  
 Thr Tyr Ile Glu Thr Pro Leu Thr Ala Phe Gly Ile Lys Glu Ser Pro  
 195 200 205  
 Glu Met Tyr Lys Val Trp Leu Glu Met Thr Pro Met Gly Arg Val Gly  
 210 215 220  
 Gln Pro Asp Glu Ile Ala Ser Val Val His Phe Leu Ala Ser Asp Ala  
 225 230 235 240  
 Ser Ser Leu Met Thr Gly Ser Ile Val Leu Ala Asp Ala Gly Tyr Thr  
 245 250 255  
 Cys Trp

&lt;210&gt; 3211

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Cytophaga hutchinsonii ATCC 33406

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(747)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3211

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Met Gly Leu Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Lys	
1 5 10 15	
ggc ata gga aaa tcg atc gcg atg cgt tac gca cag gaa ggt gct aat	96
Gly Ile Gly Lys Ser Ile Ala Met Arg Tyr Ala Gln Glu Gly Ala Asn	
20 25 30	
gtg gcg ttc acc tat ctt tca agc gtt gaa aaa ggt cag gca tta gaa	144
Val Ala Phe Thr Tyr Leu Ser Ser Val Glu Lys Gly Gln Ala Leu Glu	
35 40 45	
aaa gaa tta cag gca ttg ggt atc aaa gca aaa gga tac cgc tca gat	192
Lys Glu Leu Gln Ala Leu Gly Ile Lys Ala Lys Gly Tyr Arg Ser Asp	
50 55 60	
gca tct aaa tat aca gaa gca gaa gaa tta gta act tcc gta tta gca	240
Ala Ser Lys Tyr Thr Glu Ala Glu Glu Leu Val Thr Ser Val Leu Ala	
65 70 75 80	
gac ttt gga cag ctt gat att gtt gta aac aat gca ggt att aca aaa	288
Asp Phe Gly Gln Leu Asp Ile Val Val Asn Asn Ala Gly Ile Thr Lys	
85 90 95	
gat ggc tta tta atg cgt atg aca gaa gaa caa tgg gat tct gtt atg	336
Asp Gly Leu Leu Met Arg Met Thr Glu Glu Gln Trp Asp Ser Val Met	
100 105 110	
gaa gta aat tta aaa tcg gta ttt aac ctg aca aaa gcg gca tta aaa	384
Glu Val Asn Leu Lys Ser Val Phe Asn Leu Thr Lys Ala Ala Leu Lys	
115 120 125	
cca atg atg aaa gcg aaa gca ggt tct att ata aat atg act tct gtt	432
Pro Met Met Lys Ala Lys Gly Ser Ile Ile Asn Met Thr Ser Val	
130 135 140	
gtg ggc atc agc ggt aac gcc gcc cag aca aac tac gct gcc tct aaa	480
Val Gly Ile Ser Gly Asn Ala Gly Gln Thr Asn Tyr Ala Ala Ser Lys	
145 150 155 160	
gca ggt atc att ggt ttc aca aaa tca gta gcg cag gaa ttg ggt tca	528
Ala Gly Ile Ile Gly Phe Thr Lys Ser Val Ala Gln Glu Leu Gly Ser	
165 170 175	
cgc aac atc cgc tca aac gca att gcc ccg ggt ttt att gaa aca gaa	576
Arg Asn Ile Arg Ser Asn Ala Ile Ala Pro Gly Phe Ile Glu Thr Glu	
180 185 190	
atg acg gaa gta ctg gac ccg aaa gtg aaa gct gaa tgg gaa aac gga	624
Met Thr Glu Val Leu Asp Pro Lys Val Lys Ala Glu Trp Glu Asn Gly	
195 200 205	
att ccg ttg aaa cgt gcc gga aaa agt gaa gat gta gcg aat gcc tgt	672
Ile Pro Leu Lys Arg Ala Gly Lys Ser Glu Asp Val Ala Asn Ala Cys	
210 215 220	
gta ttc ctt gca tca gat ctt tca aca tac att acc gga cag gta tta	720

Val Phe Leu Ala Ser Asp Leu Ser Thr Tyr Ile Thr Gly Gln Val Leu  
 225 230 235 240  
 cag gtt gat ggc gga atg ctg acc tag  
 Gln Val Asp Gly Gly Met Leu Thr  
 245

747

&lt;210&gt; 3212

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Cytophaga hutchinsonii ATCC 33406

&lt;400&gt; 3212

Met Gly Leu Leu Ser Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Lys  
 1 5 10 15  
 Gly Ile Gly Lys Ser Ile Ala Met Arg Tyr Ala Gln Glu Gly Ala Asn  
 20 25 30  
 Val Ala Phe Thr Tyr Leu Ser Ser Val Glu Lys Gly Gln Ala Leu Glu  
 35 40 45  
 Lys Glu Leu Gln Ala Leu Gly Ile Lys Ala Lys Gly Tyr Arg Ser Asp  
 50 55 60  
 Ala Ser Lys Tyr Thr Glu Ala Glu Glu Leu Val Thr Ser Val Leu Ala  
 65 70 75 80  
 Asp Phe Gly Gln Leu Asp Ile Val Val Asn Asn Ala Gly Ile Thr Lys  
 85 90 95  
 Asp Gly Leu Leu Met Arg Met Thr Glu Gln Trp Asp Ser Val Met  
 100 105 110  
 Glu Val Asn Leu Lys Ser Val Phe Asn Leu Thr Lys Ala Ala Leu Lys  
 115 120 125  
 Pro Met Met Lys Ala Lys Ala Gly Ser Ile Ile Asn Met Thr Ser Val  
 130 135 140  
 Val Gly Ile Ser Gly Asn Ala Gly Gln Thr Asn Tyr Ala Ala Ser Lys  
 145 150 155 160  
 Ala Gly Ile Ile Gly Phe Thr Lys Ser Val Ala Gln Glu Leu Gly Ser  
 165 170 175  
 Arg Asn Ile Arg Ser Asn Ala Ile Ala Pro Gly Phe Ile Glu Thr Glu  
 180 185 190  
 Met Thr Glu Val Leu Asp Pro Lys Val Lys Ala Glu Trp Glu Asn Gly  
 195 200 205  
 Ile Pro Leu Lys Arg Ala Gly Lys Ser Glu Asp Val Ala Asn Ala Cys  
 210 215 220  
 Val Phe Leu Ala Ser Asp Leu Ser Thr Tyr Ile Thr Gly Gln Val Leu  
 225 230 235 240  
 Gln Val Asp Gly Gly Met Leu Thr  
 245

&lt;210&gt; 3213

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Clostridium perfringens ATCC 13124

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3213

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 1 5 10 15  
 gga aga gca atc gct tta aaa tta gca gat cat gga gct aat att gtt  
 Gly Arg Ala Ile Ala Leu Lys Leu Ala Asp His Gly Ala Asn Ile Val  
 20 25 30  
 ata aat tat aga aat tct gat aaa gag gca gaa gaa tta aaa gcc att  
 Ile Asn Tyr Arg Asn Ser Asp Lys Glu Ala Glu Glu Leu Lys Ala Ile  
 35 40 45  
 tta gaa gga aaa ggg gta aaa gtt ctt act gta aaa tgt gat ata agt  
 Leu Glu Gly Lys Gly Val Lys Val Leu Thr Val Lys Cys Asp Ile Ser  
 50 55 60  
 aat ttt gaa gat tct aaa aat ctt atg gat aaa tgt aag gaa gta ttt  
 65 70 75 80  
 48  
 96  
 144  
 192  
 240

## PhoenixTemp32470.tmp.txt

Asn 65	Phe	Glu	Asp	Ser	Lys 70	Asn	Leu	Met	Asp	Lys 75	Cys	Lys	Glu	Val	Phe 80	
ggg	aaa	ata	gat	ata	ctt	gta	aat	aat	gca	ggg	ata	aca	aag	gat	acc	288
Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	Asp	Thr	
				85					90					95		
tta	att	atg	aga	atg	aag	gaa	gaa	gac	ttt	gat	aat	gta	ata	gat	gta	336
Leu	Ile	Met	Arg	Met	Lys	Glu	Glu	Asp	Phe	Asp	Asn	Val	Ile	Asp	Val	
			100					105					110			
aac	tta	aaa	ggg	aca	ttt	aat	tgt	gca	aag	cat	gct	tct	gcc	ata	atg	384
Asn	Leu	Lys	Gly	Thr	Phe	Asn	Cys	Ala	Lys	His	Ala	Ser	Ala	Ile	Met	
		115					120				125					
ttg	aaa	caa	agg	ttt	ggg	aaa	att	ata	aac	atg	act	tct	ggt	gta	ggg	432
Leu	Lys	Gln	Arg	Phe	Gly	Lys	Ile	Ile	Asn	Met	Thr	Ser	Val	Val	Gly	
	130					135					140					
ata	gct	ggg	aat	gct	ggg	caa	gta	aat	tat	gca	gca	tca	aag	gct	ggg	480
Ile	Ala	Gly	Asn	Ala	Gly	Gln	Val	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly	
145					150					155					160	
gtt	ata	gga	tta	act	aaa	tct	tta	gct	aaa	gaa	tta	gga	agt	aga	gga	528
Val	Ile	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Leu	Gly	Ser	Arg	Gly	
				165					170					175		
ata	act	gta	aat	gct	gta	gca	cct	gga	ttt	ata	aat	act	gat	atg	aca	576
Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Asn	Thr	Asp	Met	Thr	
			180					185					190			
gct	tct	tta	tct	gaa	aaa	gtt	aaa	gag	gaa	gct	tct	aaa	aat	att	cct	624
Ala	Ser	Leu	Ser	Glu	Lys	Val	Lys	Glu	Glu	Ala	Ser	Lys	Asn	Ile	Pro	
		195					200					205				
tta	aaa	aga	tta	gga	gac	cct	gaa	gac	gtt	gct	aac	tta	gta	gga	ttc	672
Leu	Lys	Arg	Leu	Gly	Asp	Pro	Glu	Asp	Val	Ala	Asn	Leu	Val	Gly	Phe	
	210					215					220					
tta	gca	tca	gat	gca	gca	aat	tat	ata	aca	ggg	caa	gtc	ata	aat	gta	720
Leu	Ala	Ser	Asp	Ala	Ala	Asn	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Asn	Val	
225				230						235					240	
gat	ggc	gga	atg	gta	atg	tag										741
Asp	Gly	Gly	Met	Val	Met											
				245												

&lt;210&gt; 3214

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Clostridium perfringens ATCC 13124

&lt;400&gt; 3214

Met	Leu	Lys	Asp	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile
1				5					10					15	
Gly	Arg	Ala	Ile	Ala	Leu	Lys	Leu	Ala	Asp	His	Gly	Ala	Asn	Ile	Val
			20					25					30		
Ile	Asn	Tyr	Arg	Asn	Ser	Asp	Lys	Glu	Ala	Glu	Glu	Leu	Lys	Ala	Ile
		35					40					45			
Leu	Glu	Gly	Lys	Gly	Val	Lys	Val	Leu	Thr	Val	Lys	Cys	Asp	Ile	Ser
	50					55					60				
Asn	Phe	Glu	Asp	Ser	Lys	Asn	Leu	Met	Asp	Lys	Cys	Lys	Glu	Val	Phe
65					70				75					80	
Gly	Lys	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	Asp	Thr
				85					90					95	
Leu	Ile	Met	Arg	Met	Lys	Glu	Glu	Asp	Phe	Asp	Asn	Val	Ile	Asp	Val
			100					105					110		
Asn	Leu	Lys	Gly	Thr	Phe	Asn	Cys	Ala	Lys	His	Ala	Ser	Ala	Ile	Met
		115					120					125			
Leu	Lys	Gln	Arg	Phe	Gly	Lys	Ile	Ile	Asn	Met	Thr	Ser	Val	Val	Gly
	130					135					140				
Ile	Ala	Gly	Asn	Ala	Gly	Gln	Val	Asn	Tyr	Ala	Ala	Ser	Lys	Ala	Gly
145					150					155					160
Val	Ile	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Leu	Gly	Ser	Arg	Gly
				165					170					175	
Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Asn	Thr	Asp	Met	Thr
			180					185					190		
Ala	Ser	Leu	Ser	Glu	Lys	Val	Lys	Glu	Glu	Ala	Ser	Lys	Asn	Ile	Pro
		195					200					205			
Leu	Lys	Arg	Leu	Gly	Asp	Pro	Glu	Asp	Val	Ala	Asn	Leu	Val	Gly	Phe

## PhoenixTemp32470.tmp.txt

210  
 Leu Ala Ser Asp Ala Ala 215  
 225 Asn Tyr Ile Thr Gly 220  
 Asp Gly Gly Met Val Met 235  
 240  
 245

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 <211> 831  
 <212> DNA  
 <213> Rhodococcus sp. RHA1

<220>  
 <221> CDS  
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 <223> transl\_table=11

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 1 5 10 15  
 cgg ggg atc ggc cgt gcc tgc gcc gtc gag ttc gcg gcg gct ggg gcc 96  
 Arg Gly Ile Gly Arg Ala Cys Ala Val Glu Phe Ala Ala Ala Gly Ala  
 20 25 30  
 gac ctc atg ctc gtc gac atc acc cga aac ctg cca ggg gtg ccg tac 144  
 Asp Leu Met Leu Val Asp Ile Thr Arg Asn Leu Pro Gly Val Pro Tyr  
 35 40 45  
 cca ctc ggt tcg cag agt cag ctc gac tac acc gcg gag ttg tgc cgc 192  
 Pro Leu Gly Ser Gln Ser Gln Leu Asp Tyr Thr Ala Glu Leu Cys Arg  
 50 55 60  
 gag cac ggt gcg acg gtt ctg acc cag gcg gtg gat gtc cgc gag ctc 240  
 Glu His Gly Ala Thr Val Leu Thr Gln Ala Val Asp Val Arg Glu Leu  
 65 70 75 80  
 gca gag atc acg gca gcg gtg cag gtc gcc cac gaa cga ttc ggt cgc 288  
 Ala Glu Ile Thr Ala Ala Val Gln Val Ala His Glu Arg Phe Gly Arg  
 85 90 95  
 ctc gac gtg ctc ctc aac aat gcg gga atc gcc gca ccg tcc gga aag 336  
 Leu Asp Val Leu Leu Asn Asn Ala Gly Ile Ala Ala Pro Ser Gly Lys  
 100 105 110  
 gcc gct cac gac atc gcc gaa tcc gag tgg cgt ctg atg atc gac gtc 384  
 Ala Ala His Asp Ile Ala Glu Ser Glu Trp Arg Leu Met Ile Asp Val  
 115 120 125  
 gac ctc tcc ggg gcg tgg cgg acg atc gcg acg gcc gga cgg atc atg 432  
 Asp Leu Ser Gly Ala Trp Arg Thr Ile Ala Thr Ala Gly Arg Ile Met  
 130 135 140  
 gtc acc cag gcg agc gga agc atc atc aat atc gcc tcg acg gcc ggg 480  
 Val Thr Gln Arg Ser Gly Ser Ile Ile Asn Ile Ala Ser Thr Ala Gly  
 145 150 155 160  
 ctc gtc ggg tac cgc cac ttc gcc ggg tac gtt gcg gct aag cac ggc 528  
 Leu Val Gly Tyr Arg His Phe Ala Gly Tyr Val Ala Ala Lys His Gly  
 165 170 175  
 ctg gtc ggc ctc acc aag gcc gtc gcc ctc gac tac gcg ccg agc ggg 576  
 Leu Val Gly Leu Thr Lys Ala Val Ala Leu Asp Tyr Ala Pro Ser Gly  
 180 185 190  
 gtc cgg gtg aat gcg ctg tgc ccg gga tcg gtg cgg gac agc agt gag 624  
 Val Arg Val Asn Ala Leu Cys Pro Gly Ser Val Arg Asp Ser Ser Glu  
 195 200 205  
 tac gaa ggg cgg atg ctg gcg gag atc gca cgc tcc ctg ggt gtc ggc 672  
 Tyr Glu Gly Arg Met Leu Ala Glu Ile Ala Arg Ser Leu Gly Val Gly  
 210 215 220  
 gtc gat gag cac gag tcg gtt ttc gtg cag gcc cag ccg acc aac aag 720  
 Val Asp Glu His Glu Ser Val Phe Val Gln Ala Gln Pro Thr Asn Lys  
 225 230 235 240  
 ctc gtc gaa ccc ggc gag gtc gcg gca gcg cgc gcg tgg ctc gcg tcc 768  
 Leu Val Glu Pro Gly Glu Val Ala Ala Ala Arg Trp Leu Ala Ser  
 245 250 255  
 gac gat gcg cgt gga gtc acg ggt tcc gtg gtg acg gtg gac ggc ggt 816  
 Asp Asp Ala Arg Gly Val Thr Gly Ser Val Val Thr Val Asp Gly Gly  
 260 265 270  
 ttc acg gcc cgg tga 831

Phe Thr Ala Arg  
275

<210> 3216  
<211> 276  
<212> PRT  
<213> Rhodococcus sp. RHA1

<400> 3216  
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Arg Gly Ile Gly Arg Ala Cys Ala Val Glu Phe Ala Ala Ala Gly Ala  
20 25 30  
Asp Leu Met Leu Val Asp Ile Thr Arg Asn Leu Pro Gly Val Pro Tyr  
35 40 45  
Pro Leu Gly Ser Gln Ser Gln Leu Asp Tyr Thr Ala Glu Leu Cys Arg  
50 55 60  
Glu His Gly Ala Thr Val Leu Thr Gln Ala Val Asp Val Arg Glu Leu  
65 70 75 80  
Ala Glu Ile Thr Ala Ala Val Gln Val Ala His Glu Arg Phe Gly Arg  
85 90 95  
Leu Asp Val Leu Leu Asn Asn Ala Gly Ile Ala Ala Pro Ser Gly Lys  
100 105 110  
Ala Ala His Asp Ile Ala Glu Ser Glu Trp Arg Leu Met Ile Asp Val  
115 120 125  
Asp Leu Ser Gly Ala Trp Arg Thr Ile Ala Thr Ala Gly Arg Ile Met  
130 135 140  
Val Thr Gln Arg Ser Gly Ser Ile Ile Asn Ile Ala Ser Thr Ala Gly  
145 150 155 160  
Leu Val Gly Tyr Arg His Phe Ala Gly Tyr Val Ala Ala Lys His Gly  
165 170 175  
Leu Val Gly Leu Thr Lys Ala Val Ala Leu Asp Tyr Ala Pro Ser Gly  
180 185 190  
Val Arg Val Asn Ala Leu Cys Pro Gly Ser Val Arg Asp Ser Ser Glu  
195 200 205  
Tyr Glu Gly Arg Met Leu Ala Glu Ile Ala Arg Ser Leu Gly Val Gly  
210 215 220  
Val Asp Glu His Glu Ser Val Phe Val Gln Ala Gln Pro Thr Asn Lys  
225 230 235 240  
Leu Val Glu Pro Gly Glu Val Ala Ala Ala Arg Trp Leu Ala Ser  
245 250 255  
Asp Asp Ala Arg Gly Val Thr Gly Ser Val Val Thr Val Asp Gly Gly  
260 265 270  
Phe Thr Ala Arg  
275

<210> 3217  
<211> 744  
<212> DNA  
<213> Rhodococcus sp. RHA1

<220>  
<221> CDS  
<222> (1)..(744)  
<223> transl\_table=11

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ggc atc ggt ttc gag atg gcc cgg aag ttc gcg agc gag ggc gcg tcg 96  
Gly Ile Gly Phe Glu Met Ala Arg Lys Phe Ala Ser Glu Gly Ala Ser  
20 25 30  
gtg gtc ctc ggt gac atg cat gcc gag aac gtc aag gcc gcc gcc gga 144  
Val Val Leu Gly Asp Met His Ala Glu Asn Val Lys Ala Ala Ala Gly  
35 40 45  
aag ctg gag gcc gac ggc ttc cag gcc gtc gcc gtc gcc tgc gac gtg 192  
Lys Leu Glu Ala Asp Gly Phe Gln Ala Val Ala Val Ala Cys Asp Val  
50 55 60



## PhoenixTemp32470.tmp.txt

acc	gat	ccg	gat	caa	atg	cag	aac	ctg	gga	aag	acg	gcg	atc	gac	gcg	240
Thr	Asp	Pro	Asp	Gln	Met	Gln	Asn	Leu	Gly	Lys	Thr	Ala	Ile	Asp	Ala	
65					70					75					80	
ttc	ggc	gcg	atg	gac	gtg	tgg	gtc	aac	aac	gcc	ggc	atc	acc	cgc	gac	288
Phe	Gly	Ala	Met	Asp	Val	Trp	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
				85					90					95		
gcg	acg	ctg	cgc	aag	atg	tcg	ctc	gcc	gat	ttc	cga	tcc	gtc	atc	gac	336
Ala	Thr	Leu	Arg	Lys	Met	Ser	Leu	Ala	Asp	Phe	Arg	Ser	Val	Ile	Asp	
				100				105					110			
gtg	cac	ctg	cag	ggc	gcg	tgg	ctg	ggc	acc	cag	atc	gcg	tcg	atc	gcg	384
Val	His	Leu	Gln	Gly	Ala	Trp	Leu	Gly	Thr	Gln	Ile	Ala	Ser	Ile	Ala	
		115					120					125				
atg	cgg	gag	gca	ggc	aag	ggt	tcg	atc	gtg	aac	atg	tcg	tcg	atc	tcc	432
Met	Arg	Glu	Ala	Gly	Lys	Gly	Ser	Ile	Val	Asn	Met	Ser	Ser	Ile	Ser	
	130					135					140					
ggc	aag	gtc	ggc	atg	gtc	ggg	cag	acc	aac	tac	agc	gcc	gcg	aag	gca	480
Gly	Lys	Val	Gly	Met	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	
145				150						155					160	
ggc	atg	gtg	ggc	ctg	acc	aag	gcg	gcc	gcg	aag	gag	gtc	gcc	cac	ctc	528
Gly	Met	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Val	Ala	His	Leu	
				165				170						175		
ggg	gtg	cgg	gtc	aac	gcg	atc	cag	ccc	ggc	gtg	gtg	aac	acc	gac	atg	576
Gly	Val	Arg	Val	Asn	Ala	Ile	Gln	Pro	Gly	Val	Val	Asn	Thr	Asp	Met	
			180					185					190			
atc	cgc	gcc	ctg	cgc	gcc	gac	atc	atc	gag	gcg	aag	ctc	aag	gag	gtc	624
Ile	Arg	Ala	Leu	Arg	Ala	Asp	Ile	Ile	Glu	Ala	Lys	Leu	Lys	Glu	Val	
		195					200					205				
ccg	atg	ggc	cgc	ggt	gcc	gag	ccc	gaa	gag	atc	gcg	aac	gtc	gca	ctg	672
Pro	Met	Gly	Arg	Gly	Ala	Glu	Pro	Glu	Glu	Ile	Ala	Asn	Val	Ala	Leu	
		210				215					220					
ttc	ctc	gcg	tcc	gat	ctg	tcc	agc	tac	atg	acg	ggc	acc	ggt	ctc	gaa	720
Phe	Leu	Ala	Ser	Asp	Leu	Ser	Ser	Tyr	Met	Thr	Gly	Thr	Val	Leu	Glu	
225				230						235					240	
gtc	acc	ggc	gga	cgt	cac	atc	tga									744
Val	Thr	Gly	Gly	Arg	His	Ile										
				245												

&lt;210&gt; 3218

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 3218

Met	Thr	Leu	Leu	Glu	Gly	Arg	Val	Ala	Val	Val	Thr	Gly	Ala	Ala	Gln	
1				5					10					15		
Gly	Ile	Gly	Phe	Glu	Met	Ala	Arg	Lys	Phe	Ala	Ser	Glu	Gly	Ala	Ser	
			20					25					30			
Val	Val	Leu	Gly	Asp	Met	His	Ala	Glu	Asn	Val	Lys	Ala	Ala	Ala	Gly	
		35					40					45				
Lys	Leu	Glu	Ala	Asp	Gly	Phe	Gln	Ala	Val	Ala	Val	Ala	Cys	Asp	Val	
	50					55					60					
Thr	Asp	Pro	Asp	Gln	Met	Gln	Asn	Leu	Gly	Lys	Thr	Ala	Ile	Asp	Ala	
65				70						75				80		
Phe	Gly	Ala	Met	Asp	Val	Trp	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
				85					90					95		
Ala	Thr	Leu	Arg	Lys	Met	Ser	Leu	Ala	Asp	Phe	Arg	Ser	Val	Ile	Asp	
			100					105					110			
Val	His	Leu	Gln	Gly	Ala	Trp	Leu	Gly	Thr	Gln	Ile	Ala	Ser	Ile	Ala	
		115					120					125				
Met	Arg	Glu	Ala	Gly	Lys	Gly	Ser	Ile	Val	Asn	Met	Ser	Ser	Ile	Ser	
	130					135					140					
Gly	Lys	Val	Gly	Met	Val	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	
145				150						155					160	
Gly	Met	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Val	Ala	His	Leu	
				165				170						175		
Gly	Val	Arg	Val	Asn	Ala	Ile	Gln	Pro	Gly	Val	Val	Asn	Thr	Asp	Met	
		180						185					190			
Ile	Arg	Ala	Leu	Arg	Ala	Asp	Ile	Glu	Ala	Lys	Leu	Lys	Glu	Val		
		195					200				205					

## PhoenixTemp32470.tmp.txt

Pro Met Gly Arg Gly Ala Glu Pro Glu Glu Ile Ala Asn Val Ala Leu  
 210 220  
 Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Glu  
 225 230 240  
 Val Thr Gly Gly Arg His Ile  
 245

<210> 3219  
 <211> 849  
 <212> DNA  
 <213> Rhodococcus sp. RHA1

<220>  
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 <222> (1)..(849)  
 <223> transl\_table=11

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 1 5 10 15  
 ggg cag ggg cgg gcg cat gcg gtg cgt ttc gcc gag gaa ggc gcc gac 96  
 Gly Gln Gly Arg Ala His Ala Val Arg Phe Ala Glu Glu Gly Ala Asp  
 20 25 30  
 atc gtg gtc gtc gat cat tgc gcg gac atc gat tcc gtt ccc tac gcc 144  
 Ile Val Val Val Asp His Cys Ala Asp Ile Asp Ser Val Pro Tyr Ala  
 35 40 45  
 ttg gcg acc acc gat gat ctg gat gag acc gtg cgt ctc gtg aaa gac 192  
 Leu Ala Thr Thr Asp Asp Leu Asp Glu Thr Val Arg Leu Val Lys Asp  
 50 55 60  
 cgc gga gtg tct gtc ctg agt gtt cag gcg gat gtt cgc gac ctc gcc 240  
 Arg Gly Val Ser Val Leu Ser Val Gln Ala Asp Val Arg Asp Leu Ala  
 65 70 75 80  
 tca ctc gag cat gcg cac cga ctg gcg atc gac gag ttc ggc aag atc 288  
 Ser Leu Glu His Ala His Arg Leu Ala Ile Asp Glu Phe Gly Lys Ile  
 85 90 95  
 gac gtg ctc gtc gcc aat gcc ggt gtc gga agt ttc ggt ccc gct ctg 336  
 Asp Val Leu Val Ala Asn Ala Gly Val Gly Ser Phe Gly Pro Ala Leu  
 100 105 110  
 gag atc agc gag cag caa tgg cag gac gtc atc gac atc gac ctg acc 384  
 Glu Ile Ser Glu Gln Gln Trp Gln Asp Val Ile Asp Ile Asp Leu Thr  
 115 120 125  
 ggt gtc tgg aag acc gtg cgc gcg gtg gcc ccg gcg atg gtg gag cga 432  
 Gly Val Trp Lys Thr Val Arg Ala Val Ala Pro Ala Met Val Glu Arg  
 130 135 140  
 ggc gag ggc ggt tcg gtg atc ttg acg agt tcg gtt gcc ggt ctc gtc 480  
 Gly Glu Gly Gly Ser Val Ile Leu Thr Ser Ser Val Ala Gly Leu Val  
 145 150 155 160  
 gcc ttc ctc aat ttg gcc cac tac acc gcg gcc aaa cac ggg gtg gtc 528  
 Ala Phe Leu Asn Leu Ala His Tyr Thr Ala Ala Lys His Gly Val Val  
 165 170 175  
 ggg ctc atg cgc gct ctg gcg gcc gaa ctt gcc ccc cac cgc atc cgc 576  
 Gly Leu Met Arg Ala Leu Ala Ala Glu Leu Ala Pro His Arg Ile Arg  
 180 185 190  
 gtc aat tcg att cac ccc acg acc gtg gac acc ccc atg gtc gac aac 624  
 Val Asn Ser Ile His Pro Thr Thr Val Asp Thr Pro Met Val Asp Asn  
 195 200 205  
 gcc gag aca cgc gag ctg ttc ctc ccg gga gtg gag agt ccg aac cgc 672  
 Ala Glu Thr Arg Glu Leu Phe Leu Pro Gly Val Glu Ser Pro Asn Arg  
 210 215 220  
 gag gta gcg gcg gag ctg atg aag aac ctg aat gcg ttg ccc gtg ccg 720  
 Glu Val Ala Ala Glu Leu Met Lys Asn Leu Asn Ala Leu Pro Val Pro  
 225 230 235 240  
 tgg atc gag gac gtc gat gtc agc aac gcg gcg cta tgg ctc gcc tcc 768  
 Trp Ile Glu Asp Val Asp Val Ser Asn Ala Ala Leu Trp Leu Ala Ser  
 245 250 255  
 gag gaa gcc cgc tac gtc acc ggt gtc gcc cta ccg atc gac gcc ggc 816  
 Glu Glu Ala Arg Tyr Val Thr Gly Val Ala Leu Pro Ile Asp Ala Gly  
 260 265 270

gcg acc gca cca ttc aag atg ccc cac cag tag  
 Ala Thr Ala Pro Phe Lys Met Pro His Gln  
 275 280

<210> 3220  
 <211> 282  
 <212> PRT  
 <213> Rhodococcus sp. RHA1

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 20 25 30  
 Ile Val Val Val Asp His Cys Ala Asp Ile Asp Ser Val Pro Tyr Ala  
 35 40 45  
 Leu Ala Thr Thr Asp Asp Leu Asp Glu Thr Val Arg Leu Val Lys Asp  
 50 55 60  
 Arg Gly Val Ser Val Leu Ser Val Gln Ala Asp Val Arg Asp Leu Ala  
 65 70 75 80  
 Ser Leu Glu His Ala His Arg Leu Ala Ile Asp Glu Phe Gly Lys Ile  
 85 90 95  
 Asp Val Leu Val Ala Asn Ala Gly Val Gly Ser Phe Gly Pro Ala Leu  
 100 105 110  
 Glu Ile Ser Glu Gln Gln Trp Gln Asp Val Ile Asp Ile Asp Leu Thr  
 115 120 125  
 Gly Val Trp Lys Thr Val Arg Ala Val Ala Pro Ala Met Val Glu Arg  
 130 135 140  
 Gly Glu Gly Gly Ser Val Ile Leu Thr Ser Ser Val Ala Gly Leu Val  
 145 150 155 160  
 Ala Phe Leu Asn Leu Ala His Tyr Thr Ala Ala Lys His Gly Val Val  
 165 170 175  
 Gly Leu Met Arg Ala Leu Ala Ala Glu Leu Ala Pro His Arg Ile Arg  
 180 185 190  
 Val Asn Ser Ile His Pro Thr Thr Val Asp Thr Pro Met Val Asp Asn  
 195 200 205  
 Ala Glu Thr Arg Glu Leu Phe Leu Pro Gly Val Glu Ser Pro Asn Arg  
 210 215 220  
 Glu Val Ala Ala Glu Leu Met Lys Asn Leu Asn Ala Leu Pro Val Pro  
 225 230 235 240  
 Trp Ile Glu Asp Val Asp Val Ser Asn Ala Ala Leu Trp Leu Ala Ser  
 245 250 255  
 Glu Glu Ala Arg Tyr Val Thr Gly Val Ala Leu Pro Ile Asp Ala Gly  
 260 265 270  
 Ala Thr Ala Pro Phe Lys Met Pro His Gln  
 275 280

<210> 3221  
 <211> 750  
 <212> DNA  
 <213> Rhodococcus sp. RHA1

<220>  
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 <223> transl\_table=11

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 cgt ggc atg ggt gag tcg cac gcg aag gca ttc gtc gag cac ggg gcg 96  
 Arg Gly Met Gly Glu Ser His Ala Lys Ala Phe Val Glu His Gly Ala  
 20 25 30  
 aag gtc gta ctg gcg gac atc acg gac gac gca ggg gag ctg ctt gcc 144  
 Lys Val Val Leu Ala Asp Ile Thr Asp Asp Ala Gly Glu Leu Leu Ala  
 35 40 45  
 aag gag ctg ggg gag aat gca gtc ttc gtg cat cac gac gtc acg caa 192  
 Lys Glu Leu Gly Glu Asn Ala Val Phe Val His His Asp Val Thr Gln  
 260 265 270

## PhoenixTemp32470.tmp.txt

50	55	60		
ctc gat tca tgg acc aat gtc gtc gaa cgg agt gtg aac gcg ttc ggc	240			
Leu Asp Ser Trp Thr Asn Val Val Glu Arg Ser Val Asn Ala Phe Gly				
65	70	75	80	
gag atc aat gtg ctg gtg aac aat gca ggg gtt ctc ggc ccg ctg gcc	288			
Glu Ile Asn Val Leu Val Asn Asn Ala Gly Val Leu Gly Pro Leu Ala				
85	90	95		
acg acg gca gag ctt acc gag ggc gac tac cgg aag gtg tgc agt atc	336			
Thr Thr Ala Glu Leu Thr Glu Gly Asp Tyr Arg Lys Val Cys Ser Ile				
100	105	110		
aac cag gac ggt gtg ttc ttc ggg atg aaa gct gtt ctg ccc tcc atg	384			
Asn Gln Asp Gly Val Phe Phe Gly Met Lys Ala Val Leu Pro Ser Met				
115	120	125		
gaa cga gcc ggt atc ggc tcc atc gtc aac atc tcg tcg atc gcc ggc	432			
Glu Arg Ala Gly Ile Gly Ser Ile Val Asn Ile Ser Ser Ile Ala Gly				
130	135	140		
atg gcc gcg aac tac ggg ttc ccc agt ttg gcg tac gtc gca agc aag	480			
Met Ala Ala Asn Tyr Gly Phe Pro Ser Leu Ala Tyr Val Ala Ser Lys				
145	150	155	160	
ttc gca gtc cgc ggc atg acg aaa gcg aca gcc gtc gaa tac gga ccc	528			
Phe Ala Val Arg Gly Met Thr Lys Ala Thr Ala Val Glu Tyr Gly Pro				
165	170	175		
aag aac att cgc gtc aat tcc gtg cac cct ggg ttc atc cag act ccg	576			
Lys Asn Ile Arg Val Asn Ser Val His Pro Gly Phe Ile Gln Thr Pro				
180	185	190		
atg atg gtg gag gcc acc aac gaa gag ggc ggc gac gcc ttg gct cag	624			
Met Met Val Glu Ala Thr Asn Glu Glu Gly Gly Asp Ala Leu Ala Gln				
195	200	205		
att ccc ctc ggt cgc atc gca gat ccg cag gag gtg tcc aac ctc gtt	672			
Ile Pro Leu Gly Arg Ile Ala Asp Pro Gln Glu Val Ser Asn Leu Val				
210	215	220		
ctg ttc ctc gcg tcg gac gaa tcc tcc tac atc acc gga tcg gag cat	720			
Leu Phe Leu Ala Ser Asp Glu Ser Ser Tyr Ile Thr Gly Ser Glu His				
225	230	235	240	
ctg gtc gac gcg ggc atg ctc gcg cag tag	750			
Leu Val Asp Ala Gly Met Leu Ala Gln				
245				

&lt;210&gt; 3222

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus sp. RHA1

&lt;400&gt; 3222

Met Thr Lys Arg Leu Glu Gly Lys Val Ala Leu Ile Thr Gly Ala Ser	
1	5
Arg Gly Met Gly Glu Ser His Ala Lys Ala Phe Val Glu His Gly Ala	
20	25
Lys Val Val Leu Ala Asp Ile Thr Asp Asp Ala Gly Glu Leu Leu Ala	
35	40
Lys Glu Leu Gly Glu Asn Ala Val Phe Val His His Asp Val Thr Gln	
50	55
Leu Asp Ser Trp Thr Asn Val Val Glu Arg Ser Val Asn Ala Phe Gly	
65	70
Glu Ile Asn Val Leu Val Asn Asn Ala Gly Val Leu Gly Pro Leu Ala	
85	90
Thr Thr Ala Glu Leu Thr Glu Gly Asp Tyr Arg Lys Val Cys Ser Ile	
100	105
Asn Gln Asp Gly Val Phe Phe Gly Met Lys Ala Val Leu Pro Ser Met	
115	120
Glu Arg Ala Gly Ile Gly Ser Ile Val Asn Ile Ser Ser Ile Ala Gly	
130	135
Met Ala Ala Asn Tyr Gly Phe Pro Ser Leu Ala Tyr Val Ala Ser Lys	
145	150
Phe Ala Val Arg Gly Met Thr Lys Ala Thr Ala Val Glu Tyr Gly Pro	
165	170
Lys Asn Ile Arg Val Asn Ser Val His Pro Gly Phe Ile Gln Thr Pro	
180	185
Met Met Val Glu Ala Thr Asn Glu Glu Gly Gly Asp Ala Leu Ala Gln	

## PhoenixTemp32470.tmp.txt

195  
 Ile Pro Leu Gly Arg Ile Ala 200  
 210 Leu Phe Leu Ala Ser Asp Glu Ser Ser Tyr Ile Val Ser Asn Leu Val  
 225 230 235 240  
 Leu Val Asp Ala Gly Met Leu Ala Gln

<210> 3223  
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 <212> DNA  
 <213> Rhodococcus sp. RHA1

<220>  
 <221> CDS  
 <222> (1)..(807)  
 <223> transl\_table=11

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 Met Ala Gly Gln Leu Glu Asn Arg Ser Val Val Ile Thr Gly Val Ala  
 1 5 10 15  
 gat cct cag ggc atc ggc ttc ggg agc gcc cgg gtg ctg gcg cag aaa 96  
 Asp Pro Gln Gly Ile Gly Phe Gly Ser Ala Arg Val Leu Ala Gln Lys  
 20 25 30  
 ggt gca ttg ctc act ctg gtg gac att tcc gag cag gtc cac gag cga 144  
 Gly Ala Leu Leu Thr Leu Val Asp Ile Ser Glu Gln Val His Glu Arg  
 35 40 45  
 cga gat gat ctc gcg cgg gaa ggg ttc gac gtc cga tcc cac acc gtg 192  
 Arg Asp Asp Leu Ala Arg Glu Gly Phe Asp Val Arg Ser His Thr Val  
 50 55 60  
 gat ctg acg aat cat tcg gat gtc gtc gac ctg atc gac cac gta gtc 240  
 Asp Leu Thr Asn His Ser Asp Val Val Asp Leu Ile Asp His Val Val  
 65 70 75 80  
 aaa ggc gcc ggt gtc atc gac ggc ctg gtg aat ctc gca gga atc gca 288  
 Lys Gly Ala Gly Val Ile Asp Gly Leu Val Asn Leu Ala Gly Ile Ala  
 85 90 95  
 gcg cgc gca aag aag ggt gac gat gtc gat ttc gag gta ccg atc ctt 336  
 Ala Arg Ala Lys Lys Gly Asp Asp Val Asp Phe Glu Val Pro Ile Leu  
 100 105 110  
 gcc acg act tcg atc gaa tca tgg gag gtc act ctc gcc att aac ctc 384  
 Ala Thr Thr Ser Ile Glu Ser Trp Glu Arg Thr Leu Ala Ile Asn Leu  
 115 120 125  
 acc act caa ttc aat tgt gtg cga gcg gtg tta ccg cac atg att gaa 432  
 Thr Thr Gln Phe Asn Cys Val Arg Ala Val Leu Pro His Met Ile Glu  
 130 135 140  
 cag cgg tac ggc cgc atc gtc aac ttc tcc tct gtg acc ggg ccg gtc 480  
 Gln Arg Tyr Gly Arg Ile Val Asn Phe Ser Ser Val Thr Gly Pro Val  
 145 150 155 160  
 ggc gcg atc gct ggg ttg ggc gcc tac gcg gca gcc aaa gca ggt gtt 528  
 Gly Ala Ile Ala Gly Leu Gly Ala Tyr Ala Ala Lys Ala Gly Val  
 165 170 175  
 gtc ggt ctc acc aag tcc atc gca ctg gag aac ggc cag ttc gga atc 576  
 Val Gly Leu Thr Lys Ser Ile Ala Leu Glu Asn Gly Gln Phe Gly Ile  
 180 185 190  
 aca gcg aac gcg atc gcg ccc gga tac gtc aac act gca gcg ttg act 624  
 Thr Ala Asn Ala Ile Ala Pro Gly Tyr Val Asn Thr Ala Ala Leu Thr  
 195 200 205  
 ccc gga atg cat atc ggt ggc gaa aac aca cca ctc aag cga agc ggt 672  
 Pro Gly Met His Ile Gly Gly Glu Asn Thr Pro Leu Lys Arg Ser Gly  
 210 215 220  
 gaa ccc cgt gaa att ggt gct ctc gtt ggc ttt ctc gca tcg gaa gag 720  
 Glu Pro Arg Glu Ile Gly Ala Leu Val Gly Phe Leu Ala Ser Glu Glu  
 225 230 235 240  
 tct tcg tac gta acg ggt caa ctc atc acc atc gat ggc gga aac atg 768  
 Ser Ser Tyr Val Thr Gly Gln Leu Ile Thr Ile Asp Gly Gly Asn Met  
 245 250 255  
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 Ile Gln Glu Tyr Lys Gly Pro Gly Glu Leu Val Leu

260

265

<210> 3224  
 <211> 268  
 <212> PRT  
 <213> Rhodococcus sp. RHA1

<400> 3224  
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 1 5 10 15  
 Asp Pro Gln Gly Ile Gly Phe Gly Ser Ala Arg Val Leu Ala Gln Lys  
 20 25 30  
 Gly Ala Leu Thr Leu Val Asp Ile Ser Glu Gln Val His Glu Arg  
 35 40 45  
 Arg Asp Asp Leu Ala Arg Glu Gly Phe Asp Val Arg Ser His Thr Val  
 50 55 60  
 Asp Leu Thr Asn His Ser Asp Val Val Asp Leu Ile Asp His Val Val  
 65 70 75 80  
 Lys Gly Ala Gly Val Ile Asp Gly Leu Val Asn Leu Ala Gly Ile Ala  
 85 90 95  
 Ala Arg Ala Lys Lys Gly Asp Asp Val Asp Phe Glu Val Pro Ile Leu  
 100 105 110  
 Ala Thr Thr Ser Ile Glu Ser Trp Glu Arg Thr Leu Ala Ile Asn Leu  
 115 120 125  
 Thr Thr Gln Phe Asn Cys Val Arg Ala Val Leu Pro His Met Ile Glu  
 130 135 140  
 Gln Arg Tyr Gly Arg Ile Val Asn Phe Ser Ser Val Thr Gly Pro Val  
 145 150 155 160  
 Gly Ala Ile Ala Gly Leu Gly Ala Tyr Ala Ala Lys Ala Gly Val  
 165 170 175  
 Val Gly Leu Thr Lys Ser Ile Ala Leu Glu Asn Gly Gln Phe Gly Ile  
 180 185 190  
 Thr Ala Asn Ala Ile Ala Pro Gly Tyr Val Asn Thr Ala Ala Leu Thr  
 195 200 205  
 Pro Gly Met His Ile Gly Gly Glu Asn Thr Pro Leu Lys Arg Ser Gly  
 210 215 220  
 Glu Pro Arg Glu Ile Gly Ala Leu Val Gly Phe Leu Ala Ser Glu Glu  
 225 230 235 240  
 Ser Ser Tyr Val Thr Gly Gln Leu Ile Thr Ile Asp Gly Gly Asn Met  
 245 250 255  
 Ile Gln Glu Tyr Lys Gly Pro Gly Glu Leu Val Leu  
 260 265

<210> 3225  
 <211> 744  
 <212> DNA  
 <213> Alkalilimnicola ehrlichei MLHE-1

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

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 Met Gln Lys Leu Asp Asp Lys Ile Ala Leu Val Thr Gly Gly Ser Arg  
 1 5 10 15  
 ggt atc ggc aaa tcc atc gcg ctg gag ctg gcc aag ctg ggc gcc aaa 96  
 Gly Ile Gly Lys Ser Ile Ala Leu Glu Leu Ala Lys Leu Gly Ala Lys  
 20 25 30  
 gtg gct att aac tac cac ggc agc aag gac aag gcc gag gcc gtc gcc 144  
 Val Ala Ile Asn Tyr His Gly Ser Lys Asp Lys Ala Ala Val Ala  
 35 40 45  
 gac gag att cgt ggc ctg ggg acc gag gcc ctg gtg ctg cag gcc gat 192  
 Asp Glu Ile Arg Gly Leu Gly Thr Glu Ala Leu Val Leu Gln Ala Asp  
 50 55 60  
 gtg ggc gat gcg gac tct gca cgc aat ctg gtc aag cag gtt atc gac 240  
 Val Gly Asp Ala Asp Ser Ala Arg Asn Leu Val Lys Gln Val Ile Asp  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

cag	tgg	ggg	cgg	gtg	gat	gta	ctg	gtc	aac	aac	gcc	ggt	atc	acc	cgg	288
Gln	Trp	Gly	Arg	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	
				85					90					95		
gac	acc	acc	ttc	aag	aag	atg	acc	gac	gag	gcc	tgg	cac	gag	gtc	atc	336
Asp	Thr	Thr	Phe	Lys	Lys	Met	Thr	Asp	Glu	Ala	Trp	His	Glu	Val	Ile	
			100					105					110			
aac	acc	aac	ctg	aac	agc	gta	ttt	tac	gtc	acc	agc	gcc	gcc	ctg	ccc	384
Asn	Thr	Asn	Leu	Asn	Ser	Val	Phe	Tyr	Val	Thr	Ser	Ala	Ala	Leu	Pro	
		115					120					125				
tcc	atg	ctg	gag	aac	aag	ttc	ggg	cgg	atc	atc	aac	atc	agc	tcc	ttc	432
Ser	Met	Leu	Glu	Asn	Lys	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Phe	
	130					135					140					
gtg	ggt	cag	gcc	ggc	aac	ttc	ggt	cag	acc	aac	tac	gcc	gcc	agc	aag	480
Val	Gly	Gln	Ala	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	
	145				150					155					160	
ggc	gcg	gtg	atc	gcg	ttc	acc	aag	agc	ctg	gcg	aag	gaa	gtg	gcc	cgc	528
Gly	Ala	Val	Ile	Ala	Phe	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Val	Ala	Arg	
				165					170					175		
aat	aac	atc	acc	gtg	aac	gcg	gtg	gcg	ccg	ggc	ttt	acc	gcc	acc	gag	576
Asn	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Thr	Ala	Thr	Glu	
			180					185					190			
atg	gtc	gcc	gcc	atc	ccg	gag	aag	gtg	cag	gag	aag	atc	ctg	tcc	acg	624
Met	Val	Ala	Ala	Ile	Pro	Glu	Lys	Val	Gln	Glu	Lys	Ile	Leu	Ser	Thr	
							200					205				
gtg	ccg	cag	aac	cgt	ttc	ggc	gag	ccg	gag	gaa	gtc	gcg	ggc	gtc		672
Val	Pro	Gln	Asn	Arg	Phe	Gly	Glu	Pro	Glu	Glu	Val	Ala	Arg	Gly	Val	
	210					215					220					
gcc	tac	ctg	gct	tcg	gac	ggc	gac	tac	atc	acc	ggt	cag	cag	ctc	aac	720
Ala	Tyr	Leu	Ala	Ser	Asp	Gly	Asp	Tyr	Ile	Thr	Gly	Gln	Gln	Leu	Asn	
	225				230					235					240	
att	aac	ggt	ggt	gtt	tac	atg	taa									744
Ile	Asn	Gly	Gly	Val	Tyr	Met										
				245												

&lt;210&gt; 3226

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Alkalilimnicola ehrlichei MLHE-1

&lt;400&gt; 3226

Met	Gln	Lys	Leu	Asp	Asp	Lys	Ile	Ala	Leu	Val	Thr	Gly	Gly	Ser	Arg	
1				5					10					15		
Gly	Ile	Gly	Lys	Ser	Ile	Ala	Leu	Glu	Leu	Ala	Lys	Leu	Gly	Ala	Lys	
			20					25					30			
Val	Ala	Ile	Asn	Tyr	His	Gly	Ser	Lys	Asp	Lys	Ala	Glu	Ala	Val	Ala	
			35				40					45				
Asp	Glu	Ile	Arg	Gly	Leu	Gly	Thr	Glu	Ala	Leu	Val	Leu	Gln	Ala	Asp	
	50					55					60					
Val	Gly	Asp	Ala	Asp	Ser	Ala	Arg	Asn	Leu	Val	Lys	Gln	Val	Ile	Asp	
	65				70					75					80	
Gln	Trp	Gly	Arg	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	
				85					90					95		
Asp	Thr	Thr	Phe	Lys	Lys	Met	Thr	Asp	Glu	Ala	Trp	His	Glu	Val	Ile	
			100					105					110			
Asn	Thr	Asn	Leu	Asn	Ser	Val	Phe	Tyr	Val	Thr	Ser	Ala	Ala	Leu	Pro	
		115					120					125				
Ser	Met	Leu	Glu	Asn	Lys	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ser	Ser	Phe	
	130					135					140					
Val	Gly	Gln	Ala	Gly	Asn	Phe	Gly	Gln	Thr	Asn	Tyr	Ala	Ala	Ser	Lys	
	145				150					155					160	
Gly	Ala	Val	Ile	Ala	Phe	Thr	Lys	Ser	Leu	Ala	Lys	Glu	Val	Ala	Arg	
				165					170					175		
Asn	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Thr	Ala	Thr	Glu	
			180					185					190			
Met	Val	Ala	Ala	Ile	Pro	Glu	Lys	Val	Gln	Glu	Lys	Ile	Leu	Ser	Thr	
			195				200					205				
Val	Pro	Gln	Asn	Arg	Phe	Gly	Glu	Pro	Glu	Glu	Val	Ala	Arg	Gly	Val	
	210				215						220					
Ala	Tyr	Leu	Ala	Ser	Asp	Gly	Asp	Tyr	Ile	Thr	Gly	Gln	Gln	Leu	Asn	





## PhoenixTemp32470.tmp.txt

Met Gly Arg Leu Ala Gly Lys Lys Ala Leu Ile Thr Ala Ala Gly Ala  
 1 5 10 15  
 Gly Ile Gly Arg Ala Ser Ala Glu Ala Phe Ala Arg Glu Gly Ala Arg  
 20 25 30  
 Ile Ile Ala Thr Asp Ile Ser Ala Glu Ala Leu Ala Ala Leu Lys Gly  
 35 40 45  
 Thr Ala Asn Ile Glu Thr Gln Leu Leu Asp Val Thr Asp Pro Ala Ala  
 50 55 60  
 Ile Ala Ala Leu Phe Thr Thr His Pro Asp Leu Asp Ile Leu Phe Asn  
 65 70 75 80  
 Val Ala Gly Trp Val His His Gly Thr Ile Glu Thr Cys Gly Arg Asp  
 85 90 95  
 Asp Trp Asp Arg Ser Leu Leu Val Asn Leu Thr Ser Met Tyr Glu Thr  
 100 105 110  
 Ser Arg Ala Ala Leu Pro Asn Met Leu Ala His Gly Gly Gly Val Ile  
 115 120 125  
 Leu Asn Met Ser Ser Val Ala Ser Ser Val Val Gly Ala Pro Asn Arg  
 130 135 140  
 Phe Ala Tyr Gly Ala Thr Lys Ala Gly Val Ile Gly Leu Thr Lys Ala  
 145 150 155 160  
 Ile Ala Ala Asp Tyr Ala Gly Arg Asn Ile Arg Cys Asn Ala Ile Cys  
 165 170 175  
 Pro Gly Thr Val Asp Thr Pro Ser Leu Gln Gly Arg Met Ser Ala Gln  
 180 185 190  
 Gly Asp Tyr Asp Ser Ala Arg Gln Met Phe Ile Ala Arg Gln Pro Met  
 195 200 205  
 Gly Arg Leu Gly Thr Ala Glu Glu Ile Ala His Leu Ala Val Tyr Leu  
 210 215 220  
 Ala Ser Asp Glu Ala Ser Phe Thr Thr Gly Ala Ile His Val Val Asp  
 225 230 235 240  
 Gly Gly Trp Thr Asn  
 245

&lt;210&gt; 3229

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Rhizobium leguminosarum bv. viciae 3841

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3229

atg ggc ggc cgc ctg cag ggc aag aac atc ctg ata aca ggt gct gcg	48
Met Gly Gly Arg Leu Gln Gly Lys Asn Ile Leu Ile Thr Gly Ala Ala	
1 5 10 15	
cag ggt atc ggc ctt gcg atc gcg aag gct ttc ctg cgg gag gat gcc	96
Gln Gly Ile Gly Leu Ala Ile Ala Lys Ala Phe Leu Arg Glu Asp Ala	
20 25 30	
gcc gtc ttt ctc gtc gat cgc gat gcg gcg ctg ctg gcg cag gcg gcg	144
Ala Val Phe Leu Val Asp Arg Asp Ala Ala Leu Leu Ala Gln Ala Ala	
35 40 45	
aaa gag ctc cag agc agt ggc ggc cag ctt ggt tat ctg ccg gcc gat	192
Lys Glu Leu Gln Ser Ser Gly Gly Gln Leu Gly Tyr Leu Pro Ala Asp	
50 55 60	
att acc gat gcc ggc acg atc acg aca ttg gtc gct cag gcg aat gaa	240
Ile Thr Asp Ala Gly Thr Ile Thr Thr Leu Val Ala Gln Ala Asn Glu	
65 70 75 80	
gaa atc ggg cag ctg aat gcg ctc gtc aac aat gcc ggg gtg aat gtc	288
Glu Ile Gly Gln Leu Asn Ala Leu Val Asn Asn Ala Gly Val Asn Val	
85 90 95	
ttc gcc gaa ccg ctc gag acg acg gac gag gaa tgg aac cgc tgc ttc	336
Phe Ala Glu Pro Leu Glu Thr Thr Asp Glu Glu Trp Asn Arg Cys Phe	
100 105 110	
gac atc aat ctg aag ggc gca tgg aac tgc tgc aag gcg gtg ctg ccg	384
Asp Ile Asn Leu Lys Gly Ala Trp Asn Cys Cys Lys Ala Val Leu Pro	
115 120 125	
ggc ctg atc gaa cag ggc ggc ggc gtt atc ctc aac atc gcc tcg acg	432

## PhoenixTemp32470.tmp.txt

Gly	Leu	Ile	Glu	Gln	Gly	Gly	Gly	Val	Ile	Leu	Asn	Ile	Ala	Ser	Thr		
130	130				135	135				140	140						
cac	gct	ttc	acc	atc	atc	ccg	cac	aca	ttt	ccc	tat	ccg	ctg	gca	aaa	480	
His	Ala	Phe	Thr	Ile	Ile	Pro	His	Thr	Phe	Pro	Tyr	Pro	Leu	Ala	Lys		
145					150					155					160		
cac	gcc	ctg	ctc	gga	atg	acg	aaa	tcc	ttg	ggc	ctc	gaa	tat	gcc	gcc	528	
His	Ala	Leu	Leu	Gly	Met	Thr	Lys	Ser	Leu	Gly	Leu	Glu	Tyr	Ala	Ala		
				165					170					175			
cgc	aat	atc	cgc	gtg	aac	gcg	ctg	gcg	ccg	ggc	tat	gtc	tcg	acg	cag	576	
Arg	Asn	Ile	Arg	Val	Asn	Ala	Leu	Ala	Pro	Gly	Tyr	Val	Ser	Thr	Gln		
			180					185					190				
aag	gtg	atc	gat	tac	tgg	aac	ggc	ttt	cct	gat	ccg	gag	gcg	gca	aag	624	
Lys	Val	Ile	Asp	Tyr	Trp	Asn	Gly	Phe	Pro	Asp	Pro	Glu	Ala	Ala	Lys		
		195					200					205					
gcc	gaa	acg	atg	aaa	ctg	cat	cct	ggc	ggg	cgc	atc	gcg	acg	ccg	gag	672	
Ala	Glu	Thr	Met	Lys	Leu	His	Pro	Gly	Gly	Arg	Ile	Ala	Thr	Pro	Glu		
210						215					220						
gag	att	gcc	atg	gcg	gcc	gtg	ttc	atg	atc	tcc	gac	gag	tgc	ccg	ttc	720	
Glu	Ile	Ala	Met	Ala	Ala	Val	Phe	Met	Ile	Ser	Asp	Glu	Cys	Pro	Phe		
225					230					235					240		
atc	aat	gcc	acc	tgc	ctg	acg	atc	gat	ggc	ggc	ctc	agc	gtg	ctg	cag	768	
Ile	Asn	Ala	Thr	Cys	Leu	Thr	Ile	Asp	Gly	Gly	Leu	Ser	Val	Leu	Gln		
				245					250					255			
cat	ccc	gcc	tga													780	
His	Pro	Ala															

&lt;210&gt; 3230

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Rhizobium leguminosarum bv. viciae 3841

&lt;400&gt; 3230

Met	Gly	Gly	Arg	Leu	Gln	Gly	Lys	Asn	Ile	Leu	Ile	Thr	Gly	Ala	Ala		
1				5				10						15			
Gln	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Lys	Ala	Phe	Leu	Arg	Glu	Asp	Ala		
			20					25					30				
Ala	Val	Phe	Leu	Val	Asp	Arg	Asp	Ala	Ala	Leu	Leu	Ala	Gln	Ala	Ala		
		35					40					45					
Lys	Glu	Leu	Gln	Ser	Ser	Gly	Gln	Leu	Gly	Tyr	Leu	Pro	Ala	Asp			
	50					55				60							
Ile	Thr	Asp	Ala	Gly	Thr	Ile	Thr	Thr	Leu	Val	Ala	Gln	Ala	Asn	Glu		
65					70					75				80			
Glu	Ile	Gly	Gln	Leu	Asn	Ala	Leu	Val	Asn	Asn	Ala	Gly	Val	Asn	Val		
				85					90					95			
Phe	Ala	Glu	Pro	Leu	Glu	Thr	Thr	Asp	Glu	Glu	Trp	Asn	Arg	Cys	Phe		
		100						105					110				
Asp	Ile	Asn	Leu	Lys	Gly	Ala	Trp	Asn	Cys	Cys	Lys	Ala	Val	Leu	Pro		
		115					120					125					
Gly	Leu	Ile	Glu	Gln	Gly	Gly	Gly	Val	Ile	Leu	Asn	Ile	Ala	Ser	Thr		
	130				135						140						
His	Ala	Phe	Thr	Ile	Ile	Pro	His	Thr	Phe	Pro	Tyr	Pro	Leu	Ala	Lys		
145					150					155					160		
His	Ala	Leu	Leu	Gly	Met	Thr	Lys	Ser	Leu	Gly	Leu	Glu	Tyr	Ala	Ala		
				165					170					175			
Arg	Asn	Ile	Arg	Val	Asn	Ala	Leu	Ala	Pro	Gly	Tyr	Val	Ser	Thr	Gln		
			180					185					190				
Lys	Val	Ile	Asp	Tyr	Trp	Asn	Gly	Phe	Pro	Asp	Pro	Glu	Ala	Ala	Lys		
		195					200					205					
Ala	Glu	Thr	Met	Lys	Leu	His	Pro	Gly	Gly	Arg	Ile	Ala	Thr	Pro	Glu		
	210					215					220						
Glu	Ile	Ala	Met	Ala	Ala	Val	Phe	Met	Ile	Ser	Asp	Glu	Cys	Pro	Phe		
225					230					235					240		
Ile	Asn	Ala	Thr	Cys	Leu	Thr	Ile	Asp	Gly	Gly	Leu	Ser	Val	Leu	Gln		
				245					250					255			
His	Pro	Ala															

&lt;210&gt; 3231

<211> 750  
 <212> DNA  
 <213> Rhizobium leguminosarum bv. viciae 3841

<220>  
 <221> CDS  
 <222> (1)..(750)  
 <223> transl\_table=11

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<400> 3231
atg aca acc ccc gat ttg aca agc aga ctt gcc ggc aag acc gtt ctc      48
Met Thr Thr Pro Asp Leu Thr Ser Arg Leu Ala Gly Lys Thr Val Leu
  1          5          10          15
atc acc gcc gcc ggc cag ggc atc ggc cgg gca acg gcg gcg gcc ttt      96
Ile Thr Ala Ala Gly Gln Gly Ile Gly Arg Ala Thr Ala Ala Phe
          20          25          30
gcc gcg atc ggc gcc aag gtc cac ggc acc gat atc aac acc gag gcc      144
Ala Ala Ile Gly Ala Lys Val His Ala Thr Asp Ile Asn Thr Glu Ala
          35          40          45
ttg gcg acg ctt gcc gcc gaa acc ggc gtc tcc acc cat aag ctg aac      192
Leu Ala Thr Leu Ala Ala Glu Thr Gly Val Ser Thr His Lys Leu Asn
          50          55          60
gtg ctc gaa gag gat gcg gtc aag gcc ctg gtc gcc gag atc ggc gcc      240
Val Leu Glu Glu Asp Ala Val Lys Ala Leu Val Ala Glu Ile Gly Ala
          65          70          75          80
gtc gac gtg ctg ttc aac tgc gcc ggt ttc gtc cat gcc ggc tcg atc      288
Val Asp Val Leu Phe Asn Cys Ala Gly Phe Val His Ala Gly Ser Ile
          85          90          95
ctg gag atg acg gat tcc gat ctc gaa ttc gcc ttc gac ctc aac gtc      336
Leu Glu Met Thr Asp Ser Asp Leu Glu Phe Ala Phe Asp Leu Asn Val
          100          105          110
aag gcg atg atc cgc acc atc cgc gcc gtg ctg ccg ggc atg atc gag      384
Lys Ala Met Ile Arg Thr Ile Arg Ala Val Leu Pro Gly Met Ile Glu
          115          120          125
cgc aag gac gga gcg atc atc aac atg gcc tcc gtc gcc tcc agc atc      432
Arg Lys Asp Gly Ala Ile Ile Asn Met Ala Ser Val Ala Ser Ser Ile
          130          135          140
aag ggc gtg ccg aac cgc ttc gcc tat ggc gtc acc aag gcg gcg gtg      480
Lys Gly Val Pro Asn Arg Phe Ala Tyr Gly Val Thr Lys Ala Ala Val
          145          150          155          160
atc ggg ctc acc aag gcc gtc gcc gcc gat tac gtc ggt cag ggc atc      528
Ile Gly Leu Thr Lys Ala Val Ala Ala Asp Tyr Val Gly Gln Gly Ile
          165          170          175
cgc tgc aac gcc atc tgc ccc ggc acg gtg gaa agc ccg tcg ctg cag      576
Arg Cys Asn Ala Ile Cys Pro Gly Thr Val Glu Ser Pro Ser Leu Gln
          180          185          190
gac cgc atg cgg gcg cag ggc gac tac gac gcg gcg cgt gcc gcc ttc      624
Asp Arg Met Arg Ala Gln Gly Asp Tyr Asp Ala Ala Arg Ala Ala Phe
          195          200          205
atc gcc cgc cag ccg atg ggc cgg ctg ggc tca ccg gaa gag atc gcc      672
Ile Ala Arg Gln Pro Met Gly Arg Leu Gly Ser Pro Glu Glu Ile Ala
          210          215          220
gat ctc gcc gtc tat ctc gcc ggc gcg acc tac acg tcg ggc cag gcg      720
Asp Leu Ala Val Tyr Leu Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala
          225          230          235          240
atc gcc atc gac ggc ggc tgg acg atc tga
Ile Ala Ile Asp Gly Gly Trp Thr Ile
          245

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<210> 3232  
 <211> 249  
 <212> PRT  
 <213> Rhizobium leguminosarum bv. viciae 3841

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<400> 3232
Met Thr Thr Pro Asp Leu Thr Ser Arg Leu Ala Gly Lys Thr Val Leu
  1          5          10          15
Ile Thr Ala Ala Gly Gln Gly Ile Gly Arg Ala Thr Ala Ala Phe
          20          25          30

```

## PhoenixTemp32470.tmp.txt

Ala Ala Ile Gly Ala Lys Val His Ala Thr Asp Ile Asn Thr Glu Ala  
 35 40 45  
 Leu Ala Thr Leu Ala Ala Glu Thr Gly Val Ser Thr His Lys Leu Asn  
 50 55 60  
 Val Leu Glu Glu Asp Ala Val Lys Ala Leu Val Ala Glu Ile Gly Ala  
 65 70 75 80  
 Val Asp Val Leu Phe Asn Cys Ala Gly Phe Val His Ala Gly Ser Ile  
 85 90 95  
 Leu Glu Met Thr Asp Ser Asp Leu Glu Phe Ala Phe Asp Leu Asn Val  
 100 105 110  
 Lys Ala Met Ile Arg Thr Ile Arg Ala Val Leu Pro Gly Met Ile Glu  
 115 120 125  
 Arg Lys Asp Gly Ala Ile Ile Asn Met Ala Ser Val Ala Ser Ser Ile  
 130 135 140  
 Lys Gly Val Pro Asn Arg Phe Ala Tyr Gly Val Thr Lys Ala Ala Val  
 145 150 155 160  
 Ile Gly Leu Thr Lys Ala Val Ala Ala Asp Tyr Val Gly Gln Gly Ile  
 165 170 175  
 Arg Cys Asn Ala Ile Cys Pro Gly Thr Val Glu Ser Pro Ser Leu Gln  
 180 185 190  
 Asp Arg Met Arg Ala Gln Gly Asp Tyr Asp Ala Ala Arg Ala Ala Phe  
 195 200 205  
 Ile Ala Arg Gln Pro Met Gly Arg Leu Gly Ser Pro Glu Glu Ile Ala  
 210 215 220  
 Asp Leu Ala Val Tyr Leu Ala Gly Ala Thr Tyr Thr Ser Gly Gln Ala  
 225 230 235 240  
 Ile Ala Ile Asp Gly Gly Trp Thr Ile  
 245

&lt;210&gt; 3233

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas aeruginosa UCBPP-PA14

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3233

atg aac gat ttt ccg aag tgg aca ggc cag gtc gcg ctc atc agc ggc	48
Met Asn Asp Phe Pro Lys Trp Thr Gly Gln Val Ala Leu Ile Ser Gly	
1 5 10 15	
gcc ggc agc gaa ctc ggc atc ggt ttc gcc att gcc cgg cgg ctg gcc	96
Ala Gly Ser Glu Leu Gly Ile Gly Phe Ala Ile Ala Arg Arg Leu Ala	
20 25 30	
cgc gaa ggc gtg cgc ctg ctg atc acc gcc agc agc gag cgg att agg	144
Arg Glu Gly Val Arg Leu Leu Ile Thr Ala Ser Ser Glu Arg Ile Arg	
35 40 45	
caa cga gcg gag gaa ctg agc gca tgt ggt cac gac gtg cgc gcc gcg	192
Gln Arg Ala Glu Glu Leu Ser Ala Cys Gly His Asp Val Arg Ala Ala	
50 55 60	
agc gcc gac ctg acc gac gaa gcc cag gtg cag ggt ctg ctg gac tgg	240
Ser Ala Asp Leu Thr Asp Glu Ala Gln Val Gln Gly Leu Leu Asp Trp	
65 70 75 80	
gcc gaa gcc cag tgg gga cgg gtc gac atc ctg gtg aac aat gcc ggc	288
Ala Glu Ala Gln Trp Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly	
85 90 95	
atg gcc cag ttg gac agc gcg gag ccc ttc agc gca gtg gaa gcg acc	336
Met Ala Gln Leu Asp Ser Ala Glu Pro Phe Ser Ala Val Glu Ala Thr	
100 105 110	
tcg ctg cgg gat tgg caa ctg tcc ctg tcg cgc aac ctg acc agt gct	384
Ser Leu Arg Asp Trp Gln Leu Ser Leu Ser Arg Asn Leu Thr Ser Ala	
115 120 125	
ttc ctg ctc acc cgc ggc ctg ctg ccg ggc atg cgc gag cgc ggc tac	432
Phe Leu Leu Thr Arg Gly Leu Leu Pro Gly Met Arg Glu Arg Gly Tyr	
130 135 140	
ggg cgg atc gtc aac gtc gcc tcc acc acc gga acc cgc ggc agc aac	480
Gly Arg Ile Val Asn Val Ala Ser Thr Thr Gly Thr Arg Gly Ser Asn	

## PhoenixTemp32470.tmp.txt

145	ccg ggc gaa gcc gcg	150	tat agc gcg gcc aag gcc	155	ggt ctg gtc ggc	160	tgg	528
Pro Gly Glu Ala	Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Trp							
	165		170		175			
agc atg ggc ctg gcg	ctg gag gtg gcg aag agc ggc atc acg gtg aac	576						
Ser Met Gly Leu Ala Leu Glu Val Ala Lys Ser Gly Ile Thr Val Asn								
	180		185		190			
agc gtc gcg ccg ggc tgg atc gcc acc gcc tcg agc acc gcc gaa gaa	624							
Ser Val Ala Pro Gly Trp Ile Ala Thr Ala Ser Ser Thr Ala Glu Glu								
	195		200		205			
cgc cag gcc gcc ctg gcc agc ccc agc gga cgt gcc ggc cgg ccc gaa	672							
Arg Gln Ala Ala Leu Ala Ser Pro Ser Gly Arg Ala Gly Arg Pro Glu								
	210		215		220			
gag gtg gcc gcc gcg gtt gcc ttc ctc gcc tcg ccc gaa gcc agc ttc	720							
Glu Val Ala Ala Ala Val Ala Phe Leu Ala Ser Pro Glu Ala Ser Phe								
	225		230		235			
gtc aac ggc gaa ctg ctg gtg gtg gac ggc ggc aac tgc ctg atc gaa	768							
Val Asn Gly Glu Leu Leu Val Val Asp Gly Gly Asn Cys Leu Ile Glu								
	245		250		255			
aac aaa cgg agc tga	783							
Asn Lys Arg Ser								
	260							

&lt;210&gt; 3234

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas aeruginosa UCBPP-PA14

&lt;400&gt; 3234

Met Asn Asp Phe Pro Lys Trp Thr Gly Gln Val Ala Leu Ile Ser Gly	
1 5 10 15	
Ala Gly Ser Glu Leu Gly Ile Gly Phe Ala Ile Ala Arg Arg Leu Ala	
	20 25 30
Arg Glu Gly Val Arg Leu Leu Ile Thr Ala Ser Ser Glu Arg Ile Arg	
	35 40 45
Gln Arg Ala Glu Glu Leu Ser Ala Cys Gly His Asp Val Arg Ala Ala	
	50 55 60
Ser Ala Asp Leu Thr Asp Glu Ala Gln Val Gln Gly Leu Leu Asp Trp	
65 70 75 80	
Ala Glu Ala Gln Trp Gly Arg Val Asp Ile Leu Val Asn Asn Ala Gly	
	85 90 95
Met Ala Gln Leu Asp Ser Ala Glu Pro Phe Ser Ala Val Glu Ala Thr	
	100 105 110
Ser Leu Arg Asp Trp Gln Leu Ser Leu Ser Arg Asn Leu Thr Ser Ala	
	115 120 125
Phe Leu Leu Thr Arg Gly Leu Leu Pro Gly Met Arg Glu Arg Gly Tyr	
	130 135 140
Gly Arg Ile Val Asn Val Ala Ser Thr Thr Gly Thr Arg Gly Ser Asn	
145 150 155 160	
Pro Gly Glu Ala Ala Tyr Ser Ala Ala Lys Ala Gly Leu Val Gly Trp	
	165 170 175
Ser Met Gly Leu Ala Leu Glu Val Ala Lys Ser Gly Ile Thr Val Asn	
	180 185 190
Ser Val Ala Pro Gly Trp Ile Ala Thr Ala Ser Ser Thr Ala Glu Glu	
	195 200 205
Arg Gln Ala Ala Leu Ala Ser Pro Ser Gly Arg Ala Gly Arg Pro Glu	
	210 215 220
Glu Val Ala Ala Ala Val Ala Phe Leu Ala Ser Pro Glu Ala Ser Phe	
225 230 235 240	
Val Asn Gly Glu Leu Leu Val Val Asp Gly Gly Asn Cys Leu Ile Glu	
	245 250 255
Asn Lys Arg Ser	
	260

&lt;210&gt; 3235

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium avium 104

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3235

atg tcc ttg ctc agt ggt cag acc gcg gtc atc aca ggt ggc gca caa	48
Met Ser Leu Leu Ser Gly Gln Thr Ala Val Ile Thr Gly Gly Ala Gln	
1 5 10 15	
ggt ttg ggg ttc gcg atc gcc gaa cgg ttc gtc gcc gaa ggg gcg cgg	96
Gly Leu Gly Phe Ala Ile Ala Glu Arg Phe Val Ala Glu Gly Ala Arg	
20 25 30	
gtc gtc ctc ggc gac gtc aat ctg gag gcg acg caa acc gcg gcc aaa	144
Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Gln Thr Ala Ala Lys	
35 40 45	
cag ctg ggc ggt gac cag gtg gcg ctg gcc gtg cgc tgc gac gtc acc	192
Gln Leu Gly Gly Asp Gln Val Ala Leu Ala Val Arg Cys Asp Val Thr	
50 55 60	
aag tcg tcc gag gtc gaa acg ctg atc cag acc gcc gtc gag cgg ttc	240
Lys Ser Ser Glu Val Glu Thr Leu Ile Gln Thr Ala Val Glu Arg Phe	
65 70 75 80	
ggc ggc ctg gac atc atg gtc aac aac gcc ggg atc acc cgg gac gcc	288
Gly Gly Leu Asp Ile Met Val Asn Asn Ala Gly Ile Thr Arg Asp Ala	
85 90 95	
acc atg cgc aag atg acc gag gag cag ttc gat cag gtc atc gcc gtg	336
Thr Met Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala Val	
100 105 110	
cac ttg aag ggc acc tgg aac ggc acc cgg ttg gcg gcg gcg atc atg	384
His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala Ile Met	
115 120 125	
cgg gaa aac aag cgc ggc gcc atc atc aac atg tcc tcg gtg tcg ggc	432
Arg Glu Asn Lys Arg Gly Ala Ile Ile Asn Met Ser Ser Val Ser Gly	
130 135 140	
aag gtc ggc atg gtc ggc cag acc aac tac tcg gcg gcc aag gcc gcc	480
Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala Gly	
145 150 155 160	
atc gtg ggc atg acc aag gcg gcc gcc aag gag ctg gcc tac ctg ggt	528
Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala Tyr Leu Gly	
165 170 175	
gtg cgg gtg aac gcg atc gcc ccc ggt ttg atc cgc tcg gcg atg aca	576
Val Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser Ala Met Thr	
180 185 190	
gag gcc atg ccg caa cgc att tgg gac tcc aag gtg gcc gag gtg ccg	624
Glu Ala Met Pro Gln Arg Ile Trp Asp Ser Lys Val Ala Glu Val Pro	
195 200 205	
atg ggc cgg gcc ggc gag ccc agc gag gtc gcc agc gtg gcg ctg ttt	672
Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val Ala Leu Phe	
210 215 220	
ttg gcc tcc gac atg tcg tcg tac atg acc ggc acc gtc atg gag atc	720
Leu Ala Ser Asp Met Ser Ser Tyr Met Thr Gly Thr Val Met Glu Ile	
225 230 235 240	
acg ggc ggc cgg cac ctg tga	741
Thr Gly Gly Arg His Leu	
245	

&lt;210&gt; 3236

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium avium 104

&lt;400&gt; 3236

Met Ser Leu Leu Ser Gly Gln Thr Ala Val Ile Thr Gly Gly Ala Gln
1 5 10 15
Gly Leu Gly Phe Ala Ile Ala Glu Arg Phe Val Ala Glu Gly Ala Arg
20 25 30
Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Gln Thr Ala Ala Lys
35 40 45
Gln Leu Gly Gly Asp Gln Val Ala Leu Ala Val Arg Cys Asp Val Thr
50 55 60

## PhoenixTemp32470.tmp.txt

Lys Ser Ser Glu Val Glu Thr Leu Ile Gln Thr Ala Val Glu Arg Phe  
 65 70 75 80  
 Gly Gly Leu Asp Ile Met Val Asn Asn Ala Gly Ile Thr Arg Asp Ala  
 85 90 95  
 Thr Met Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala Val  
 100 105 110  
 His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala Ile Met  
 115 120 125  
 Arg Glu Asn Lys Arg Gly Ala Ile Ile Asn Met Ser Ser Val Ser Gly  
 130 135 140  
 Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala Gly  
 145 150 155 160  
 Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala Tyr Leu Gly  
 165 170 175  
 Val Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser Ala Met Thr  
 180 185 190  
 Glu Ala Met Pro Gln Arg Ile Trp Asp Ser Lys Val Ala Glu Val Pro  
 195 200 205  
 Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val Ala Leu Phe  
 210 215 220  
 Leu Ala Ser Asp Met Ser Ser Tyr Met Thr Gly Thr Val Met Glu Ile  
 225 230 235 240  
 Thr Gly Gly Arg His Leu  
 245

<210> 3237  
 <211> 750  
 <212> DNA  
 <213> Mycobacterium avium 104

<220>  
 <221> CDS  
 <222> (1)..(750)  
 <223> transl\_table=11

<400> 3237  
 atg gcg gag tcg cta ctg ctt ggc aaa gtc gcg gtg gtg acg ggc gcg 48  
 Met Ala Glu Ser Leu Leu Leu Gly Lys Val Ala Val Val Thr Gly Ala  
 1 5 10 15  
 ggg caa ggt atc ggt cgt gag att gcc cgg gcg ctg cac cgc cac ggc 96  
 Gly Gln Gly Ile Gly Arg Glu Ile Ala Arg Ala Leu His Arg His Gly  
 20 25 30  
 gcg cgg gtc gtg ctg gca gac ctc gac ggc agc gcc gcc cga tcc gcg 144  
 Ala Arg Val Val Leu Ala Asp Leu Asp Gly Ser Ala Ala Arg Ser Ala  
 35 40 45  
 gcg gca cag atc gac gac agc ggc gca aac tgc act gga ttg gcg tgc 192  
 Ala Ala Gln Ile Asp Asp Ser Gly Ala Asn Cys Thr Gly Leu Ala Cys  
 50 55 60  
 gat gtg acg tcg gag gag cag gtg ggc gct ctg gtg gct ggc acg gtg 240  
 Asp Val Thr Ser Glu Glu Gln Val Gly Ala Leu Val Ala Gly Thr Val  
 65 70 75 80  
 cgt gag cat ggt ggg ctg gac gtg ttc gtc aac aac gcc ggc atc aca 288  
 Arg Glu His Gly Gly Leu Asp Val Phe Val Asn Asn Ala Gly Ile Thr  
 85 90 95  
 cgc gac gca tcg ctg aaa agg atg acg gta gcc gac ttc gac gcg gtc 336  
 Arg Asp Ala Ser Leu Lys Arg Met Thr Val Ala Asp Phe Asp Ala Val  
 100 105 110  
 atc gcc gtc cac ctt cgc ggc acc tgg ctc ggc gta cgg gaa gcc gcc 384  
 Ile Ala Val His Leu Arg Gly Thr Trp Leu Gly Val Arg Glu Ala Ala  
 115 120 125  
 gcg gtg atg cgt gag cgc aag acg ggc agc atc gtc aac atg tcg tcc 432  
 Ala Val Met Arg Glu Arg Lys Thr Gly Ser Ile Val Asn Met Ser Ser  
 130 135 140  
 ctt tcg ggc aaa gcc ggt aat ccg ggt cag acg aat tac agc gcc gcc 480  
 Leu Ser Gly Lys Ala Gly Asn Pro Gly Gln Thr Asn Tyr Ser Ala Ala  
 145 150 155 160  
 aaa gcc ggc atc gtc ggg ctc acg aaa gcg gcc gca aaa gag ttg gcg 528  
 Lys Ala Gly Ile Val Gly Leu Thr Lys Ala Ala Ala Lys Glu Leu Ala  
 165 170 175

## PhoenixTemp32470.tmp.txt

cat	cac	aat	ggt	cgt	gtc	aac	gcg	atc	cag	ccg	ggc	ttg	atc	cgc	acg	576
His	His	Asn	Val	Arg	Val	Asn	Ala	Ile	Gln	Pro	Gly	Leu	Ile	Arg	Thr	
			180					185					190			
ccc	atg	aca	gcg	gcg	atg	ccg	ccg	gac	gtc	ttt	gcc	gag	cga	gag	gct	624
Pro	Met	Thr	Ala	Ala	Met	Pro	Pro	Asp	Val	Phe	Ala	Glu	Arg	Glu	Ala	
			195				200					205				
gcg	gta	ccg	atg	aaa	cgt	gcg	ggc	gaa	ccc	gag	gag	gtc	gcg	ggg	gca	672
Ala	Val	Pro	Met	Lys	Arg	Ala	Gly	Glu	Pro	Glu	Glu	Val	Ala	Gly	Ala	
	210					215					220					
gtg	gtg	ttc	ctg	gct	tcc	gaa	ctc	tct	agc	tac	atc	acc	ggg	acg	gtc	720
Val	Val	Phe	Leu	Ala	Ser	Glu	Leu	Ser	Ser	Tyr	Ile	Thr	Gly	Thr	Val	
225					230					235					240	
ctc	gga	gtc	ggg	ggc	agg	tat	atg	tga								750
Leu	Gly	Val	Gly	Gly	Gly	Arg	Tyr	Met								
				245												

&lt;210&gt; 3238

&lt;211&gt; 249

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium avium 104

&lt;400&gt; 3238

Met	Ala	Glu	Ser	Leu	Leu	Leu	Gly	Lys	Val	Ala	Val	Val	Thr	Gly	Ala	
1				5					10					15		
Gly	Gln	Gly	Ile	Gly	Arg	Glu	Ile	Ala	Arg	Ala	Leu	His	Arg	His	Gly	
			20					25					30			
Ala	Arg	Val	Val	Leu	Ala	Asp	Leu	Asp	Gly	Ser	Ala	Ala	Arg	Ser	Ala	
			35				40					45				
Ala	Ala	Gln	Ile	Asp	Asp	Ser	Gly	Ala	Asn	Cys	Thr	Gly	Leu	Ala	Cys	
			50			55					60					
Asp	Val	Thr	Ser	Glu	Glu	Gln	Val	Gly	Ala	Leu	Val	Ala	Gly	Thr	Val	
65				70						75					80	
Arg	Glu	His	Gly	Gly	Leu	Asp	Val	Phe	Val	Asn	Asn	Ala	Gly	Ile	Thr	
			85					90						95		
Arg	Asp	Ala	Ser	Leu	Lys	Arg	Met	Thr	Val	Ala	Asp	Phe	Asp	Ala	Val	
			100					105					110			
Ile	Ala	Val	His	Leu	Arg	Gly	Thr	Trp	Leu	Gly	Val	Arg	Glu	Ala	Ala	
			115				120					125				
Ala	Val	Met	Arg	Glu	Arg	Lys	Thr	Gly	Ser	Ile	Val	Asn	Met	Ser	Ser	
	130					135					140					
Leu	Ser	Gly	Lys	Ala	Gly	Asn	Pro	Gly	Gln	Thr	Asn	Tyr	Ser	Ala	Ala	
145				150					155						160	
Lys	Ala	Gly	Ile	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Lys	Glu	Leu	Ala	
			165					170						175		
His	His	Asn	Val	Arg	Val	Asn	Ala	Ile	Gln	Pro	Gly	Leu	Ile	Arg	Thr	
			180					185					190			
Pro	Met	Thr	Ala	Ala	Met	Pro	Pro	Asp	Val	Phe	Ala	Glu	Arg	Glu	Ala	
			195				200					205				
Ala	Val	Pro	Met	Lys	Arg	Ala	Gly	Glu	Pro	Glu	Glu	Val	Ala	Gly	Ala	
	210					215					220					
Val	Val	Phe	Leu	Ala	Ser	Glu	Leu	Ser	Ser	Tyr	Ile	Thr	Gly	Thr	Val	
225					230					235					240	
Leu	Gly	Val	Gly	Gly	Gly	Arg	Tyr	Met								
				245												

&lt;210&gt; 3239

&lt;211&gt; 735

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(735)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3239

ttg	ctg	acc	gga	cag	act	gcg	gtg	gtc	acg	ggc	gga	gcc	cag	ggg	ctc	
Met	Leu	Thr	Gly	Gln	Thr	Ala	Val	Val	Thr	Gly	Gly	Ala	Gln	Gly	Leu	
1				5					10					15		

48



PhoenixTemp32470.tmp.txt

ggt ctc gcc atc gcg aag cgc ttc atc tcc gaa ggc gcc cgc gtg gtg	96
Gly Leu Ala Ile 20 Ala Lys Arg Phe Ile 25 Ser Glu Gly Ala Arg 30 Val Val	
ctg ggc gac ctc aac tcc gag gcc acc gag gcc gcg gtg gag gag ctc	144
Leu Gly Asp 35 Leu Asn Ser Glu Ala 40 Thr Glu Ala Ala Val 45 Glu Glu Leu	
ggc gga tcc gag gtg gcc gcg gcc gtg cgc tgc gac gtg acg tcg tcg	192
Gly Gly 50 Ser Glu Val Ala 55 Ala Val Arg Cys 60 Val Thr Ser Ser	
gcc gac gtc gac gct ttg gtg caa gcc gcg gtc gag cgg ttc ggc ggt	240
Ala Asp Val Asp Ala Leu 70 Val Gln Ala Ala Val 75 Glu Arg Phe Gly Gly 80	
ctg gac atc atg gtc aac aac gcg ggc atc aca cgt gat gcg aca ttg	288
Leu Asp Ile Met Val 85 Asn Asn Ala Gly 90 Thr Arg Asp Ala Thr 95 Leu	
cgc aag atg acc gag gag cag ttc gac cag gtc atc gcg gtc cat ctg	336
Arg Lys Met Thr 100 Glu Glu Gln Phe Asp 105 Gln Val Ile Ala Val 110 His Leu	
aag ggc acg tgg aac ggc acc aag gcg gcc gcg gcg atc atg cgg gag	384
Lys Gly Thr 115 Trp Asn Gly Thr Lys 120 Ala Ala Ala Ala Ile 125 Met Arg Glu	
aac aag cgc ggc gcg atc gtg aac atg tcc tcg atc tcc ggc aag gtc	432
Asn Lys 130 Arg Gly Ala Ile Val 135 Asn Met Ser Ser Ile 140 Ser Gly Lys Val	
gga ctg atc gga cag acc aac tac tcg gcg gcc aag gcc ggc atc gtc	480
Gly Leu Ile Gly Gln Thr 150 Asn Tyr Ser Ala Ala Lys Ala Gly Ile Val 160	
ggc atg acc aag gcc gcg gcc aag gaa ctc gcg tac ctc ggg gtg cgg	528
Gly Met Thr Lys Ala 165 Ala Ala Lys Glu Leu 170 Tyr Leu Gly Val 175 Arg	
gtg aac gcg atc cag ccc ggg ctc atc cgt tcg gcc atg acc gag gcc	576
Val Asn Ala Ile Gln Pro Gly Leu Ile 185 Arg Ser Ala Met Thr 190 Glu Ala	
atg ccg caa cgc atc tgg gac gag aag ctc gcc gag atc ccg atg ggg	624
Met Pro Gln Arg Ile Trp Asp 200 Lys Leu Ala Glu Ile 205 Pro Met Gly	
cgt gcc ggt gaa ccc gac gag gtg gcc aag gtg gcg ctg ttc ctc gcg	672
Arg Ala Gly Glu Pro Asp 215 Glu Val Ala Lys Val 220 Ala Leu Phe Leu Ala	
agc gat ctg tcg tcg tac atg acc ggc acc gtg ctc gag gtc acc ggc	720
Ser Asp Leu Ser Ser Tyr 230 Met Thr Gly Thr 235 Leu Glu Val Thr 240 Gly	
ggt cgg cac gta tga	735
Gly Arg His Val	

<210> 3240  
 <211> 244  
 <212> PRT  
 <213> Mycobacterium smegmatis str. MC2 155

<400> 3240  
 Met Leu Thr Gly Gln Thr Ala Val Val Thr Gly Gly Ala Gln Gly Leu  
 1 5 10 15  
 Gly Leu Ala Ile Ala Lys Arg Phe Ile Ser Glu Gly Ala Arg Val Val  
 20 25 30  
 Leu Gly Asp Leu Asn Ser Glu Ala Thr Glu Ala Ala Val Glu Leu  
 35 40 45  
 Gly Gly Ser Glu Val Ala Ala Val Arg Cys Asp Val Thr Ser Ser  
 50 55 60  
 Ala Asp Val Asp Ala Leu Val Gln Ala Ala Val Glu Arg Phe Gly Gly  
 65 70 75 80  
 Leu Asp Ile Met Val Asn Asn Ala Gly Ile Thr Arg Asp Ala Thr Leu  
 85 90 95  
 Arg Lys Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala Val His Leu  
 100 105 110  
 Lys Gly Thr Trp Asn Gly Thr Lys Ala Ala Ala Ala Ile Met Arg Glu  
 115 120 125  
 Asn Lys Arg Gly Ala Ile Val Asn Met Ser Ser Ile Ser Gly Lys Val

## PhoenixTemp32470.tmp.txt

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      130      135      140
Gly Leu Ile Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala Gly Ile Val
145 Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala Tyr Leu Gly Val Arg
      165      170      175
Val Asn Ala Ile Gln Pro Gly Leu Ile Arg Ser Ala Met Thr Glu Ala
      180      185      190
Met Pro Gln Arg Ile Trp Asp Glu Lys Leu Ala Glu Ile Pro Met Gly
      195      200      205
Arg Ala Gly Glu Pro Asp Glu Val Ala Lys Val Ala Leu Phe Leu Ala
      210      215      220
Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Glu Val Thr Gly
225 Gly Arg His Val      235      240

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&lt;210&gt; 3241

&lt;211&gt; 768

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium smegmatis str. MC2 155

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(768)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3241

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atg gat gtg cgt tcg gca ttc gat ctg agc ggg cgc act gcg ctg gtg      48
Met Asp Val Arg Ser Ala Phe Asp Leu Ser Gly Arg Thr Ala Leu Val
      1      5      10      15
acc ggc gga aac cag ggc ctg ggc aag gct ttc gcg atc gca ctc gca      96
Thr Gly Gly Asn Gln Gly Leu Gly Lys Ala Phe Ala Ile Ala Leu Ala
      20      25      30
cag gcc ggt gcc cgt gtg tcc ttc tcg ggc cgc aac gcc gaa cgc aac      144
Gln Ala Gly Ala Arg Val Ser Phe Ser Gly Arg Asn Ala Glu Arg Asn
      35      40      45
gag aag acc gcg gcc gag gcc gcc gcg gca gga cac caa ctg cac gcg      192
Glu Lys Thr Ala Ala Glu Ala Ala Ala Ala Gly His Gln Leu His Ala
      50      55      60
atc acg gcc gac atc acc agg gcc gag gac gtc gag cgc atg acg gcc      240
Ile Thr Ala Asp Ile Thr Arg Ala Glu Asp Val Glu Arg Met Thr Ala
      65      70      75      80
gag gcc atc gaa gcg ctc ggt cac atc gac atc ctg gtc aac aac gcg      288
Glu Ala Ile Glu Ala Leu Gly His Ile Asp Ile Leu Val Asn Asn Ala
      85      90      95
ggc acg tgc cac ggt gag tcc tgg acg gtc acc gaa gag cag tgg      336
Gly Thr Cys His His Gly Glu Ser Trp Thr Val Thr Glu Glu Gln Trp
      100      105      110
gac gac gtg ttc gac ctc aac gtc aag gcg ctg tgg gcg tgt tcg ctc      384
Asp Asp Val Phe Asp Leu Asn Val Lys Ala Leu Trp Ala Cys Ser Leu
      115      120      125
gcc gtc ggt gcg cac atg cgc gag gag agc ggt tcg gtg gtc aac      432
Ala Val Gly Ala His Met Arg Glu Arg Gly Ser Gly Ser Val Val Asn
      130      135      140
atc ggc tcg atg tcg ggc atc atc gtc aac cgc ccc cag atg cag ccc      480
Ile Gly Ser Met Ser Gly Ile Ile Val Asn Arg Pro Gln Met Gln Pro
      145      150      155
gcg tac aac gcc tcc aag gcc gcg gtg cac cac ctc acg aaa tcc ctt      528
Ala Tyr Asn Ala Ser Lys Ala Ala Val His His Leu Thr Lys Ser Leu
      165      170      175
gcc gcc gag tgg gcc ccg ttg gga atc ccg gtc aac gcg ctg gct ccc      576
Ala Ala Glu Trp Ala Pro Leu Gly Ile Arg Val Asn Ala Leu Ala Pro
      180      185      190
gga tac gtg aag acc gac atg gcc ccg gtt gac ccg gag ttc aag      624
Gly Tyr Val Lys Thr Asp Met Ala Pro Val Asp Arg Pro Glu Phe Lys
      195      200      205
cgg tac tgg atc gac gac acc ccg cag ctg cgc tac gcg gtg ccc gag      672
Arg Tyr Trp Ile Asp Asp Pro Gln Leu Arg Tyr Ala Val Pro Glu
      210      215

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## PhoenixTemp32470.tmp.txt

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 Glu Ile Ala Pro Ser Val Val Phe Leu Ala Ser Asp Ala Ala Ser Phe  
 225 230 235 240  
 atc acc ggc tcg gtg ctc gtc gcg gac ggc gga tac acc gca tgg 765  
 Ile Thr Gly Ser Val Leu Val Ala Asp Gly Gly Tyr Thr Ala Trp  
 245 250 255  
 tag 768

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 <213> Mycobacterium smegmatis str. MC2 155

<400> 3242  
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 Gln Ala Gly Ala Arg Val Ser Phe Ser Gly Arg Asn Ala Glu Arg Asn  
 35 40 45  
 Glu Lys Thr Ala Ala Glu Ala Ala Ala Gly His Gln Leu His Ala  
 50 55 60  
 Ile Thr Ala Asp Ile Thr Arg Ala Glu Asp Val Glu Arg Met Thr Ala  
 65 70 75 80  
 Glu Ala Ile Glu Ala Leu Gly His Ile Asp Ile Leu Val Asn Asn Ala  
 85 90 95  
 Gly Thr Cys His Gly Glu Ser Trp Thr Val Thr Glu Glu Gln Trp  
 100 105 110  
 Asp Asp Val Phe Asp Leu Asn Val Lys Ala Leu Trp Ala Cys Ser Leu  
 115 120 125  
 Ala Val Gly Ala His Met Arg Glu Arg Gly Ser Gly Ser Val Val Asn  
 130 135 140  
 Ile Gly Ser Met Ser Gly Ile Ile Val Asn Arg Pro Gln Met Gln Pro  
 145 150 155 160  
 Ala Tyr Asn Ala Ser Lys Ala Ala Val His His Leu Thr Lys Ser Leu  
 165 170 175  
 Ala Ala Glu Trp Ala Pro Leu Gly Ile Arg Val Asn Ala Leu Ala Pro  
 180 185 190  
 Gly Tyr Val Lys Thr Asp Met Ala Pro Val Asp Arg Pro Glu Phe Lys  
 195 200 205  
 Arg Tyr Trp Ile Asp Asp Thr Pro Gln Leu Arg Tyr Ala Val Pro Glu  
 210 215 220  
 Glu Ile Ala Pro Ser Val Val Phe Leu Ala Ser Asp Ala Ala Ser Phe  
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 <212> DNA  
 <213> Nocardioides sp. JS614

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 <222> (1)..(774)  
 <223> transl\_table=11

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 tcc ggg atc gga cgg gcg acc gcc gaa ctg ctc gcc acc gaa ggc ggc 96  
 Ser Gly Ile Gly Arg Ala Thr Ala Glu Leu Leu Ala Thr Glu Gly Gly  
 20 25 30  
 gcc ata ggc gta ctt gac ctg cgc atc gag gcc gcg gag gag act gtc 144  
 Ala Ile Gly Val Leu Asp Leu Arg Ile Glu Ala Ala Glu Glu Thr Val  
 35 40 45

## PhoenixTemp32470.tmp.txt

gcg	gcc	atc	acc	gcc	gct	gga	ggc	cgt	gca	att	gcc	ctc	gcc	gcc	aac	192
Ala	Ala	Ile	Thr	Ala	Ala	Gly	Gly	Arg	Ala	Ile	Ala	Leu	Ala	Ala	Asn	
	50					55					60					
gtg	gcc	gac	acc	gct	gaa	gtc	gaa	gcg	gcc	gtc	gcc	aag	gtc	gtg	gcg	240
Val	Ala	Asp	Thr	Ala	Glu	Val	Glu	Ala	Ala	Val	Ala	Lys	Val	Val	Ala	
65					70					75					80	
gag	tac	ggc	ggg	ttg	cac	gtg	ctc	tat	aac	aac	gcc	ggc	tgc	gac	tcc	288
Glu	Tyr	Gly	Gly	Leu	His	Val	Leu	Tyr	Asn	Asn	Ala	Gly	Cys	Asp	Ser	
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aag	ggg	tcg	gtc	gcg	gac	gcc	agc	gat	gcc	gac	tgg	gag	cgc	gcg	atg	336
Lys	Gly	Ser	Val	Ala	Asp	Ala	Ser	Asp	Ala	Asp	Trp	Glu	Arg	Ala	Met	
			100					105					110			
gcg	gtc	aac	gcc	aag	ggc	act	ttc	gtc	tgc	tcg	cgc	gcg	gca	gtc	ccc	384
Ala	Val	Asn	Ala	Lys	Gly	Thr	Phe	Val	Cys	Ser	Arg	Ala	Ala	Val	Pro	
		115					120					125				
cac	atg	gcc	gcc	tcg	gga	ggc	ggg	gcc	atc	gtc	aac	cag	gga	tcg	gtg	432
His	Met	Ala	Ala	Ser	Gly	Gly	Gly	Ala	Ile	Val	Asn	Gln	Gly	Ser	Val	
	130					135					140					
gcc	gcc	ctc	gta	ggc	gtg	ccc	aac	ttc	gcc	gcg	tac	tgc	gcc	gcc	aag	480
Ala	Ala	Leu	Val	Gly	Val	Pro	Asn	Phe	Ala	Ala	Tyr	Cys	Ala	Ala	Lys	
145					150					155					160	
gga	gct	gtc	gtt	gcg	ctc	act	cgg	tcg	atg	gcc	gtc	gac	ttg	gcg	cca	528
Gly	Ala	Val	Val	Ala	Leu	Thr	Arg	Ser	Met	Ala	Val	Asp	Leu	Ala	Pro	
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gtc	aag	atc	cgg	gtc	aac	gtg	atc	tgc	ccg	ggg	acc	gtc	ttt	acc	ccg	576
Val	Lys	Ile	Arg	Val	Asn	Val	Ile	Cys	Pro	Gly	Thr	Val	Phe	Thr	Pro	
			180					185					190			
ctg	atg	gag	ccg	atg	ctt	cgg	gca	cga	ggc	gat	ggg	gat	ctc	gag	gcc	624
Leu	Met	Glu	Pro	Met	Leu	Arg	Ala	Arg	Gly	Asp	Gly	Asp	Leu	Glu	Ala	
			195				200					205				
ggg	ctg	gcc	aag	aca	ctc	gtg	aag	tac	ccc	atc	gga	cgg	ctg	ggc	act	672
Gly	Leu	Ala	Lys	Thr	Leu	Val	Lys	Tyr	Pro	Ile	Gly	Arg	Leu	Gly	Thr	
	210					215					220					
ccc	gag	gaa	atc	gct	cgg	gtt	gca	gcg	ttc	ctc	gcg	tcc	gac	gat	tcc	720
Pro	Glu	Glu	Ile	Ala	Arg	Val	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ser	
225					230					235					240	
tcc	ttc	ctg	acc	ggg	tcc	gtc	atc	gcc	gcc	gat	ggc	gga	atg	aca	gcg	768
Ser	Phe	Leu	Thr	Gly	Ser	Val	Ile	Ala	Ala	Asp	Gly	Gly	Met	Thr	Ala	
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Gln																

&lt;210&gt; 3244

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Nocardioides sp. JS614

&lt;400&gt; 3244

Met	Ser	Thr	Arg	Phe	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	Ala	Gly	
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Ala	Ile	Gly	Val	Leu	Asp	Leu	Arg	Ile	Glu	Ala	Ala	Glu	Glu	Thr	Val	
		35					40					45				
Ala	Ala	Ile	Thr	Ala	Ala	Gly	Arg	Ala	Ile	Ala	Leu	Ala	Ala	Asn		
	50					55				60						
Val	Ala	Asp	Thr	Ala	Glu	Val	Glu	Ala	Ala	Val	Ala	Lys	Val	Val	Ala	
65					70					75					80	
Glu	Tyr	Gly	Gly	Leu	His	Val	Leu	Tyr	Asn	Asn	Ala	Gly	Cys	Asp	Ser	
				85					90					95		
Lys	Gly	Ser	Val	Ala	Asp	Ala	Ser	Asp	Ala	Asp	Trp	Glu	Arg	Ala	Met	
			100					105					110			
Ala	Val	Asn	Ala	Lys	Gly	Thr	Phe	Val	Cys	Ser	Arg	Ala	Ala	Val	Pro	
		115					120					125				
His	Met	Ala	Ala	Ser	Gly	Gly	Gly	Ala	Ile	Val	Asn	Gln	Gly	Ser	Val	
	130					135					140					
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145					150					155					160	

## PhoenixTemp32470.tmp.txt

Gly Ala Val Val Ala Leu Thr Arg Ser Met Ala Val Asp Leu Ala Pro  
 Val Lys Ile Arg Val Asn Val Ile Cys Pro Gly Thr Val Phe Thr Pro  
 Leu Met Glu Pro Met Leu Arg Ala Arg Gly Asp Gly Asp Leu Glu Ala  
 Gly Leu Ala Lys Thr Leu Val Lys Tyr Pro Ile Gly Arg Leu Gly Thr  
 Pro Glu Glu Ile Ala Arg Val Ala Ala Phe Leu Ala Ser Asp Asp Ser  
 Ser Phe Leu Thr Gly Ser Val Ile Ala Ala Asp Gly Gly Met Thr Ala  
 Gln

&lt;210&gt; 3245

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Nocardioides sp. JS614

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3245

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1				5				10						15		
gga	tcc	ggg	atc	ggc	cgc	gcc	gcg	gcc	gag	ctc	ctc	gcc	tcc	gag	ggg	96
Gly	Ser	Gly	Ile	Gly	Arg	Ala	Ala	Ala	Glu	Leu	Leu	Ala	Ser	Glu	Gly	
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gcc	gcc	gtc	ggc	gta	ctc	gac	ctg	cgc	gca	gaa	tcc	gca	gag	gag	acc	144
Ala	Ala	Val	Gly	Val	Leu	Asp	Leu	Arg	Ala	Glu	Ser	Ala	Glu	Glu	Thr	
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gtc	gcg	gcg	atc	gtc	gac	tca	gga	gga	cgc	gcc	atc	gcc	ctg	gcc	gcg	192
Val	Ala	Ala	Ile	Val	Asp	Ser	Gly	Gly	Arg	Ala	Ile	Ala	Leu	Ala	Ala	
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aac	gtc	gcg	gat	tcc	gcc	gag	gtc	gag	gca	gcc	att	gcc	aag	gtc	gtc	240
Asn	Val	Ala	Asp	Ser	Ala	Glu	Val	Glu	Ala	Ala	Ile	Ala	Lys	Val	Val	
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gcc	gag	tac	ggc	ggc	ctg	aac	gtg	ctc	tac	aac	aac	gct	ggc	tgc	gac	288
Ala	Glu	Tyr	Gly	Gly	Leu	Asn	Val	Leu	Tyr	Asn	Asn	Ala	Gly	Cys	Asp	
			85					90					95			
tct	cgc	ggg	tcg	gtc	gcc	gac	gcc	acc	gat	gag	gac	tgg	gaa	cgg	gcc	336
Ser	Arg	Gly	Ser	Val	Ala	Asp	Ala	Thr	Asp	Glu	Asp	Trp	Glu	Arg	Ala	
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ttc	tcg	gtc	aac	gcc	aag	ggc	act	ttt	gtc	tgc	tcc	cgt	gcg	gcc	gtc	384
Phe	Ser	Val	Asn	Ala	Lys	Gly	Thr	Phe	Val	Cys	Ser	Arg	Ala	Ala	Val	
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ccc	cat	ctg	acc	gca	tcc	ggc	gga	gga	gcc	atc	gtc	aac	caa	gga	tcg	432
Pro	His	Leu	Thr	Ala	Ser	Gly	Gly	Gly	Ala	Ile	Val	Asn	Gln	Gly	Ser	
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gtt	gct	gcg	ctt	gtc	gga	gtg	ccc	aac	ttc	gcc	gcc	tac	tgc	gcc	gcg	480
Val	Ala	Ala	Leu	Val	Gly	Val	Pro	Asn	Phe	Ala	Ala	Tyr	Cys	Ala	Ala	
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aag	ggg	gcc	gtg	gtc	gcg	ctg	acc	agg	tca	atg	gcg	atc	gac	cta	gcg	528
Lys	Gly	Ala	Val	Val	Ala	Leu	Thr	Arg	Ser	Met	Ala	Ile	Asp	Leu	Ala	
				165				170						175		
ccg	cgc	aag	atc	cgg	gtg	aac	gtg	atc	tgc	ccc	ggc	acc	gtg	ttc	acc	576
Pro	Arg	Lys	Ile	Arg	Val	Asn	Val	Ile	Cys	Pro	Gly	Thr	Val	Phe	Thr	
			180					185					190			
ccc	ttg	atg	gag	ccg	atg	ctg	cga	gcc	cgc	ggc	gac	gga	gac	ctt	gag	624
Pro	Leu	Met	Glu	Pro	Met	Leu	Arg	Ala	Arg	Gly	Asp	Gly	Asp	Leu	Glu	
			195				200					205				
gcc	ggt	ctg	gcc	aag	acc	ctg	gtg	aag	tac	ccc	atc	gga	cgg	ctc	ggc	672
Ala	Gly	Leu	Ala	Lys	Thr	Leu	Val	Lys	Tyr	Pro	Ile	Gly	Arg	Leu	Gly	
			210			215					220					
acc	ccc	gag	gag	atc	gcc	cgc	gtg	gcc	gcc	ttc	cta	gcc	tcg	gac	gac	720

PhoenixTemp32470.tmp.txt

Thr	Pro	Glu	Glu	Ile	Ala	Arg	Val	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	
225					230					235					240	
tcc	tcg	ttc	ctc	acc	ggc	tcg	gtg	atc	gcc	gcc	gac	ggc	ggc	atg	acg	
Ser	Ser	Phe	Leu	Thr	Gly	Ser	Val	Ile	Ala	Ala	Asp	Gly	Gly	Met	Thr	
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Ala	Gln															

768

777

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 <213> Nocardioides sp. JS614

<400> 3246

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			20					25					30			
Ala	Ala	Val	Gly	Val	Leu	Asp	Leu	Arg	Ala	Glu	Ser	Ala	Glu	Glu	Thr	
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Val	Ala	Ala	Ile	Val	Asp	Ser	Gly	Gly	Arg	Ala	Ile	Ala	Leu	Ala	Ala	
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Asn	Val	Ala	Asp	Ser	Ala	Glu	Val	Glu	Ala	Ala	Ile	Ala	Lys	Val	Val	
65					70				75						80	
Ala	Glu	Tyr	Gly	Gly	Leu	Asn	Val	Leu	Tyr	Asn	Asn	Ala	Gly	Cys	Asp	
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Ser	Arg	Gly	Ser	Val	Ala	Asp	Ala	Thr	Asp	Glu	Asp	Trp	Glu	Arg	Ala	
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Phe	Ser	Val	Asn	Ala	Lys	Gly	Thr	Phe	Val	Cys	Ser	Arg	Ala	Ala	Val	
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Pro	His	Leu	Thr	Ala	Ser	Gly	Gly	Gly	Ala	Ile	Val	Asn	Gln	Gly	Ser	
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Val	Ala	Ala	Leu	Val	Gly	Val	Pro	Asn	Phe	Ala	Ala	Tyr	Cys	Ala	Ala	
145					150				155						160	
Lys	Gly	Ala	Val	Val	Ala	Leu	Thr	Arg	Ser	Met	Ala	Ile	Asp	Leu	Ala	
			165						170					175		
Pro	Arg	Lys	Ile	Arg	Val	Asn	Val	Ile	Cys	Pro	Gly	Thr	Val	Phe	Thr	
		180						185					190			
Pro	Leu	Met	Glu	Pro	Met	Leu	Arg	Ala	Arg	Gly	Asp	Gly	Asp	Leu	Glu	
		195					200					205				
Ala	Gly	Leu	Ala	Lys	Thr	Leu	Val	Lys	Tyr	Pro	Ile	Gly	Arg	Leu	Gly	
	210					215					220					
Thr	Pro	Glu	Glu	Ile	Ala	Arg	Val	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	
225					230					235					240	
Ser	Ser	Phe	Leu	Thr	Gly	Ser	Val	Ile	Ala	Ala	Asp	Gly	Gly	Met	Thr	
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 <211> 801  
 <212> DNA  
 <213> Mycobacterium sp. KMS

<220>  
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 <222> (1)..(801)  
 <223> transl\_table=11

<400> 3247

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ggg	acc	ggc	cgg	gtg	cac	tgc	gag	cgg	ttc	gcc	gag	gaa	ggc	gcc	gac	
Gly	Thr	Gly	Arg	Val	His	Cys	Glu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	Asp	
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gtc	atc	gcg	ctc	gac	gtc	gcg	gcg	gtg	gcc	gac	gag	ctg	tcg	gga	acg	
Val	Ile	Ala	Leu	Asp	Val	Ala	Ala	Val	Ala	Asp	Glu	Leu	Ser	Gly	Thr	

48

96

144

## PhoenixTemp32470.tmp.txt

		35					40					45					
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Ala	Ala	Ala	Val	Ala	Arg	His	Gly	Arg	Arg	Cys	Val	Thr	Gly	Glu	Ala		
	50					55					60						
gac	gtg	cgt	gac	ttc	gcc	gcc	ttg	acg	gcc	gcg	atc	gat	cgc	ggg	gtc		240
Asp	Val	Arg	Asp	Phe	Ala	Ala	Leu	Thr	Ala	Ala	Ile	Asp	Arg	Gly	Val		
65					70					75					80		
gag	gag	ctc	ggt	cgg	ctc	gac	gtc	gtc	gtg	gcg	aat	gcg	ggc	gtc	cac		288
Glu	Glu	Leu	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	His		
				85					90					95			
ccg	gct	ggt	gcg	ccg	gcc	tgg	gaa	ctg	acg	ggc	gag	gcc	tgg	cgg	caa		336
Pro	Ala	Gly	Ala	Pro	Ala	Trp	Glu	Leu	Thr	Gly	Glu	Ala	Trp	Arg	Gln		
		100					105					110					
gca	ctc	gac	gtc	aac	gtg	acc	ggt	gta	tgg	cat	acg	gtc	aaa	gca	gct		384
Ala	Leu	Asp	Val	Asn	Val	Thr	Gly	Val	Trp	His	Thr	Val	Lys	Ala	Ala		
		115					120					125					
gcg	cgg	cac	atg	gat	tca	ggt	ggt	ggg	gcg	gtg	atc	gtc	atc	agc	tcc		432
Ala	Arg	His	Met	Asp	Ser	Gly	Gly	Gly	Ala	Val	Ile	Val	Ile	Ser	Ser		
	130					135					140						
acg	aat	ggc	ctg	cgc	ggg	acc	ccg	aac	tcc	gcg	cac	tac	acc	acg	agc		480
Thr	Asn	Gly	Leu	Arg	Gly	Thr	Pro	Asn	Ser	Ala	His	Tyr	Thr	Thr	Ser		
145					150					155					160		
aag	cac	gcc	gtg	gtc	ggg	ttg	gcc	cgg	acc	ctg	gcc	aac	gaa	ctg	ggt		528
Lys	His	Ala	Val	Val	Gly	Leu	Ala	Arg	Thr	Leu	Ala	Asn	Glu	Leu	Gly		
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ccc	cgc	agc	atc	cgg	gtc	aac	aca	gtc	cac	ccg	ggc	gcc	gtc	gcg	acg		576
Pro	Arg	Ser	Ile	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Val	Ala	Thr		
			180					185					190				
ccg	atg	gtg	ctc	aac	gaa	gcc	acc	ttc	aga	cgg	tta	cgc	ccg	gac	ctc		624
Pro	Met	Val	Leu	Asn	Glu	Ala	Thr	Phe	Arg	Arg	Leu	Arg	Pro	Asp	Leu		
		195					200					205					
gaa	gaa	ccc	acc	gcc	gac	gac	gcc	gcg	gag	gtg	ctc	cga	gcg	cgg	aac		672
Glu	Glu	Pro	Thr	Ala	Asp	Asp	Ala	Ala	Glu	Val	Leu	Arg	Ala	Arg	Asn		
	210					215					220						
ctc	ctt	ccg	gtg	ccg	tgg	gtc	gat	ccg	gtc	gac	gtc	gcc	aac	gcg	gtg		720
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<210> 3248

<211> 266

<212> PRT  
212

<213> Mycobacterium sp. KMS

<400> 3248

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Gly	Thr	Gly	Arg	Val	His	Cys	Glu	Arg	Phe	Ala	Glu	Glu	Gly	Ala	Asp
		20					25					30			
Val	Ile	Ala	Leu	Asp	Val	Ala	Ala	Val	Ala	Asp	Glu	Leu	Ser	Gly	Thr
	35					40					45				
Ala	Ala	Ala	Val	Ala	Arg	His	Gly	Arg	Arg	Cys	Val	Thr	Gly	Glu	Ala
	50					55				60					
Asp	Val	Arg	Asp	Phe	Ala	Ala	Leu	Thr	Ala	Ala	Ile	Asp	Arg	Gly	Val
65				70					75						80
Glu	Glu	Leu	Gly	Arg	Leu	Asp	Val	Val	Val	Ala	Asn	Ala	Gly	Val	His
			85					90					95		
Pro	Ala	Gly	Ala	Pro	Ala	Trp	Glu	Leu	Thr	Gly	Glu	Ala	Trp	Arg	Gln
			100				105					110			
Ala	Leu	Asp	Val	Asn	Val	Thr	Gly	Val	Trp	His	Thr	Val	Lys	Ala	Ala
		115					120					125			
Ala	Arg	His	Met	Asp	Ser	Gly	Gly	Gly	Ala	Val	Ile	Val	Ile	Ser	Ser
	130					135				140					
Thr	Asn	Gly	Leu	Arg	Gly	Thr	Pro	Asn	Ser	Ala	His	Tyr	Thr	Thr	Ser

## PhoenixTemp32470.tmp.txt

145	Lys	His	Ala	Val	Val	150	Gly	Leu	Ala	Arg	Thr	155	Leu	Ala	Asn	Glu	Leu	160	Gly
	Pro	Arg	Ser	Ile	Arg	165	Val	Asn	Thr	Val	His	170	Pro	Gly	Ala	Val	Ala	175	Thr
	Pro	Met	Val	Leu	Asn	180	Glu	Ala	Thr	Phe	Arg	185	Arg	Leu	Arg	Pro	Asp	190	Leu
	Glu	Glu	Pro	Thr	Ala	195	Asp	Asp	Ala	Ala	Glu	200	Val	Leu	Arg	Ala	Arg	205	Asn
	Leu	Leu	Pro	Val	Pro	210	Trp	Val	Asp	Pro	Val	215	Asp	Val	Ala	Asn	Ala	220	Val
225	Val	Phe	Leu	Ala	Ser	230	Glu	Ala	Arg	Tyr	Ile	235	Thr	Gly	Ser	Gln	240	Leu	
	Val	Val	Asp	Ala	Gly	245	Leu	Thr	Gln	Lys	Val	250					255		
				260						265									

&lt;210&gt; 3249

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Acidovorax sp. JS42

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3249

atg	ctg	aac	ggc	aaa	acc	gcc	ctc	gtc	acc	ggc	tcc	acc	agc	ggc	atc	48
Met	Leu	Asn	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	Gly	Ile	
1				5					10					15		
ggc	ctg	ggc	atc	gcc	aag	gcg	ctc	gcg	cgc	cag	ggg	gcg	aac	atc	gtg	96
Gly	Leu	Gly	Ile	Ala	Lys	Ala	Leu	Ala	Arg	Gln	Gly	Ala	Asn	Ile	Val	
			20					25					30			
ctc	aac	ggc	ttt	ggc	gac	gtg	gac	ggt	ccg	cgc	gcc	gag	gtg	ctg	gcc	144
Leu	Asn	Gly	Phe	Gly	Asp	Val	Asp	Gly	Pro	Arg	Ala	Glu	Val	Leu	Ala	
			35				40					45				
gcc	ggc	gag	gcc	gca	ggc	gcc	cgc	gtg	gcc	tac	cac	ggc	gcg	gac	atg	192
Ala	Gly	Glu	Ala	Ala	Gly	Ala	Arg	Val	Ala	Tyr	His	Gly	Ala	Asp	Met	
	50				55				60							
agc	cgc	ccc	gcg	gag	atc	gag	gac	atg	ctc	aag	tac	gcc	gca	tcc	cag	240
Ser	Arg	Pro	Ala	Glu	Ile	Glu	Asp	Met	Leu	Lys	Tyr	Ala	Ala	Ser	Gln	
	65				70				75						80	
ttc	ggc	cgc	gtg	gac	atc	ctg	gtc	aac	aac	gcc	ggc	atc	cag	cac	gtg	288
Phe	Gly	Arg	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	
				85				90					95			
gcc	agc	gtg	cag	gac	ttc	ccc	gtg	gag	aag	tgg	gac	gcc	atc	atc	gcc	336
Ala	Ser	Val	Gln	Asp	Phe	Pro	Val	Glu	Lys	Trp	Asp	Ala	Ile	Ile	Ala	
			100				105					110				
atc	aac	ttg	acc	agc	gcc	ttc	cac	acc	acg	cgc	ctg	gcg	ctg	ccc	ggc	384
Ile	Asn	Leu	Thr	Ser	Ala	Phe	His	Thr	Thr	Arg	Leu	Ala	Leu	Pro	Gly	
	115						120					125				
atg	ctg	ggc	aat	gac	tgg	ggc	Arg	Ile	Ile	Asn	Val	gag	tcg	gtg	cac	432
Met	Leu	Ala	Asn	Asp	Trp	Gly	Arg				140				His	
	130					135										
ggc	ctg	gtg	ggc	tcg	gcg	cag	aag	tcg	gcc	tac	gtg	gcg	gcc	aag	cac	480
Gly	Leu	Val	Gly	Ser	Ala	Gln	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys	His	
	145				150					155					160	
ggc	atc	gtg	ggc	ctg	acc	aag	gtg	acg	gcg	ctg	gag	acc	gcc	ccg	acg	528
Gly	Ile	Val	Gly	Leu	Thr	Lys	Val	Thr	Ala	Leu	Glu	Thr	Ala	Pro	Thr	
				165					170					175		
ggc	gtg	acc	tgc	aac	gcg	atc	tgc	ccc	ggc	tgg	gtg	ctc	acg	ccg	ctg	576
Gly	Val	Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	
			180				185					190				
gtg	caa	aag	cag	gtg	gac	gcc	aag	gcc	gcc	gcg	ctg	ggc	atc	tcc	aat	624
Val	Gln	Lys	Gln	Val	Asp	Ala	Lys	Ala	Ala	Ala	Leu	Gly	Ile	Ser	Asn	
		195					200					205				
gaa	gaa	gcc	aag	aaa	gtg	ctg	ctg	ggc	gag	aag	gag	ccc	tcc	atg	cag	672
Glu	Glu	Ala	Lys	Lys	Val	Leu	Gly	Gly	Glu	Lys	Glu	Pro	Ser	Met	Gln	
	210					215					220					



## PhoenixTemp32470.tmp.txt

ttc	acc	aca	ccc	gaa	gag	ctg	ggt	gaa	ctg	gcc	gtg	ttc	ttc	tgc	tcg	720
Phe	Thr	Thr	Pro	Glu	Glu	Leu	Gly	Glu	Leu	Ala	Val	Phe	Phe	Cys	Ser	
225					230					235					240	
gcc	gcc	gcc	aac	aac	gtg	cgc	ggc	gtg	gca	tgg	aat	atg	gac	ggc	ggc	768
Ala	Ala	Ala	Asn	Asn	Val	Arg	Gly	Val	Ala	Trp	Asn	Met	Asp	Gly	Gly	
				245					250					255		
tgg	gtg	gcg	cag	taa												783
Trp	Val	Ala	Gln		260											

&lt;210&gt; 3250

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Acidovorax sp. JS42

&lt;400&gt; 3250

Met	Leu	Asn	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	Gly	Ile	
1				5					10					15		
Gly	Leu	Gly	Ile	Ala	Lys	Ala	Leu	Ala	Arg	Gln	Gly	Ala	Asn	Ile	Val	
			20					25					30			
Leu	Asn	Gly	Phe	Gly	Asp	Val	Asp	Gly	Pro	Arg	Ala	Glu	Val	Leu	Ala	
		35					40					45				
Ala	Gly	Glu	Ala	Ala	Gly	Ala	Arg	Val	Ala	Tyr	His	Gly	Ala	Asp	Met	
	50					55					60					
Ser	Arg	Pro	Ala	Glu	Ile	Glu	Asp	Met	Leu	Lys	Tyr	Ala	Ala	Ser	Gln	
65					70					75					80	
Phe	Gly	Arg	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	
				85				90						95		
Ala	Ser	Val	Gln	Asp	Phe	Pro	Val	Glu	Lys	Trp	Asp	Ala	Ile	Ile	Ala	
			100					105					110			
Ile	Asn	Leu	Thr	Ser	Ala	Phe	His	Thr	Thr	Arg	Leu	Ala	Leu	Pro	Gly	
	115						120					125				
Met	Leu	Ala	Asn	Asp	Trp	Gly	Arg	Ile	Ile	Asn	Val	Ala	Ser	Val	His	
	130					135					140					
Gly	Leu	Val	Gly	Ser	Ala	Gln	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys	His	
145					150					155					160	
Gly	Ile	Val	Gly	Leu	Thr	Lys	Val	Thr	Ala	Leu	Glu	Thr	Ala	Pro	Thr	
				165					170					175		
Gly	Val	Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	
			180					185					190			
Val	Gln	Lys	Gln	Val	Asp	Ala	Lys	Ala	Ala	Ala	Leu	Gly	Ile	Ser	Asn	
		195					200					205				
Glu	Glu	Ala	Lys	Lys	Val	Leu	Leu	Gly	Glu	Lys	Glu	Pro	Ser	Met	Gln	
	210					215					220					
Phe	Thr	Thr	Pro	Glu	Glu	Leu	Gly	Glu	Leu	Ala	Val	Phe	Phe	Cys	Ser	
225					230					235					240	
Ala	Ala	Ala	Asn	Asn	Val	Arg	Gly	Val	Ala	Trp	Asn	Met	Asp	Gly	Gly	
				245					250					255		
Trp	Val	Ala	Gln		260											

&lt;210&gt; 3251

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Exiguobacterium sibiricum 255-15

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;400&gt; 3251

atg	aaa	caa	ctt	gaa	gga	aaa	gtc	gca	ttg	att	acc	gga	gca	gca	agc	48
Met	Lys	Gln	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Ser	
1				5					10					15		
gga	atc	ggt	ctc	gaa	att	gcg	gaa	gaa	ttt	gca	cag	gaa	ggt	gca	aaa	96
Gly	Ile	Gly	Leu	Glu	Ile	Ala	Glu	Glu	Phe	Ala	Gln	Glu	Gly	Ala	Lys	
			20					25					30			
gtc	gtc	atc	ggt	gat	tta	cag	gag	aat	gca	gcc	aaa	cag	gcg	gcg	gaa	144
Val	Val	Ile	Val	Asp	Leu	Gln	Glu	Asn	Ala	Ala	Lys	Gln	Ala	Ala	Glu	

## PhoenixTemp32470.tmp.txt

		35				40			45										
aca	ctt	caa	agt	aaa	gga	ttc	gaa	gcc	ttt	gct	gtc	gca	ggg	gac	gtc				192
Thr	Leu	Gln	Ser	Lys	Gly	Phe	Glu	Ala	Phe	Ala	Val	Ala	Gly	Asp	Val				
	50					55					60								
aca	agt	gaa	acg	gcg	att	cag	tca	agc	att	gaa	caa	acg	atg	aat	cac				240
Thr	Ser	Glu	Thr	Ala	Ile	Gln	Ser	Ser	Ile	Glu	Gln	Thr	Met	Asn	His				
	65				70					75					80				
tac	gga	cgg	atc	gat	atc	gtc	atc	aac	aat	gcc	ggc	atg	caa	cat	ggt				288
Tyr	Gly	Arg	Ile	Asp	Ile	Val	Ile	Asn	Asn	Ala	Gly	Met	Gln	His	Val				
				85					90					95					
tca	cca	atc	gaa	gag	ttc	tcg	act	gaa	aaa	ttt	gat	tta	ctt	caa	agc				336
Ser	Pro	Ile	Glu	Glu	Phe	Ser	Thr	Glu	Lys	Phe	Asp	Leu	Leu	Gln	Ser				
			100					105				110							
atc	atg	tta	cgg	gca	ccg	ttc	ctc	tat	acg	aaa	tac	gtg	ttc	ccg	atc				384
Ile	Met	Leu	Arg	Ala	Pro	Phe	Leu	Tyr	Thr	Lys	Tyr	Val	Phe	Pro	Ile				
		115					120					125							
atg	aaa	aaa	caa	gga	ttc	ggt	cgt	atc	ctg	aac	atg	tca	tcc	att	aac				432
Met	Lys	Lys	Gln	Gly	Phe	Gly	Arg	Ile	Leu	Asn	Met	Ser	Ser	Ile	Asn				
	130					135					140								
ggt	ttg	atc	gga	ttt	gcc	ggt	aaa	gcc	gct	tac	aac	agt	gcg	aaa	cac				480
Gly	Leu	Ile	Gly	Phe	Ala	Gly	Lys	Ala	Ala	Tyr	Asn	Ser	Ala	Lys	His				
	145				150				155					160					
ggt	gtc	atc	ggt	ttg	acg	aaa	ggt	gcc	gca	cta	gaa	ggg	gca	acg	tcc				528
Gly	Val	Ile	Gly	Leu	Thr	Lys	Val	Ala	Ala	Leu	Glu	Gly	Ala	Thr	Ser				
				165				170						175					
ggt	att	acc	gtc	aat	gcg	att	tgt	ccg	ggt	tat	ggt	gat	aca	ccg	ctc				576
Gly	Ile	Thr	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Pro	Leu				
			180				185					190							
gtc	caa	aaa	caa	ttg	tct	tcg	ctt	gcc	gaa	aca	cgg	aat	gtg	ccg	ctc				624
Val	Gln	Lys	Gln	Leu	Ser	Ser	Leu	Ala	Glu	Thr	Arg	Asn	Val	Pro	Leu				
		195					200					205							
gac	cgg	gta	ctt	gaa	gaa	gtc	atc	tac	ccg	ctc	ggt	ccg	caa	cat	cgc				672
Asp	Arg	Val	Leu	Glu	Glu	Val	Ile	Tyr	Pro	Leu	Val	Pro	Gln	His	Arg				
	210					215					220								
tta	ctg	caa	gtc	aaa	gag	att	gcc	gac	tac	gcg	atc	ttc	ctc	gca	agt				720
Leu	Leu	Gln	Val	Lys	Glu	Ile	Ala	Asp	Tyr	Ala	Ile	Phe	Leu	Ala	Ser				
	225				230					235					240				
gac	aaa	gca	gcc	ggt	gtc	acc	ggt	caa	gct	gtc	ggt	ctt	gac	ggc	gga				768
Asp	Lys	Ala	Ala	Gly	Val	Thr	Gly	Gln	Ala	Val	Val	Leu	Asp	Gly	Gly				
				245					250					255					
tat	acc	gct	caa	taa															783
Tyr	Thr	Ala	Gln																
			260																

&lt;210&gt; 3252

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Exiguobacterium sibiricum 255-15

&lt;400&gt; 3252

Met	Lys	Gln	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Ser
1				5					10				15		
Gly	Ile	Gly	Leu	Glu	Ile	Ala	Glu	Glu	Phe	Ala	Gln	Glu	Gly	Ala	Lys
			20					25					30		
Val	Val	Ile	Val	Asp	Leu	Gln	Glu	Asn	Ala	Ala	Lys	Gln	Ala	Ala	Glu
		35					40					45			
Thr	Leu	Gln	Ser	Lys	Gly	Phe	Glu	Ala	Phe	Ala	Val	Ala	Gly	Asp	Val
	50					55					60				
Thr	Ser	Glu	Thr	Ala	Ile	Gln	Ser	Ser	Ile	Glu	Gln	Thr	Met	Asn	His
	65				70					75				80	
Tyr	Gly	Arg	Ile	Asp	Ile	Val	Ile	Asn	Asn	Ala	Gly	Met	Gln	His	Val
				85					90				95		
Ser	Pro	Ile	Glu	Glu	Phe	Ser	Thr	Glu	Lys	Phe	Asp	Leu	Leu	Gln	Ser
			100					105				110			
Ile	Met	Leu	Arg	Ala	Pro	Phe	Leu	Tyr	Thr	Lys	Tyr	Val	Phe	Pro	Ile
		115					120					125			
Met	Lys	Lys	Gln	Gly	Phe	Gly	Arg	Ile	Leu	Asn	Met	Ser	Ser	Ile	Asn
	130					135					140				
Gly	Leu	Ile	Gly	Phe	Ala	Gly	Lys	Ala	Ala	Tyr	Asn	Ser	Ala	Lys	His

## PhoenixTemp32470.tmp.txt

145 Gly Val Ile Gly Leu 150 Thr Lys Val Ala Ala 155 Leu Glu Gly Ala Thr 160 Ser  
 Gly Ile Thr Val Asn 165 Ala Ile Cys Pro 170 Gly Tyr Val Asp Thr 175 Pro Leu  
 Val Gln Lys 180 Gln Leu Ser Ser Leu 185 Ala Glu Thr Arg Asn 190 Val Pro Leu  
 Asp Arg 195 Val Leu Glu Glu Val 200 Tyr Pro Leu Val 205 Pro Gln His Arg  
 Leu 210 Val Gln Val Lys Glu Ile Ala Asp Tyr Ala Ile Phe Leu Ala Ser  
 225 Asp Lys Ala Ala Gly 230 Val Thr Gly Gln Ala Val Val Leu Asp Gly 240 Gly  
 Tyr Thr Ala Gln 245 250 255 260

&lt;210&gt; 3253

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Roseovarius nubinhibens ISM

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3253

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Met	Arg	Leu	Ala	Gly	Lys	Arg	Ala	Val	Val	Thr	Gly	Gly	Arg	Gln	Gly	
1				5					10					15		
atc	ggg	cgc	ggc	atc	gtc	gac	ggc	ttt	ctc	gac	cat	ggc	gca	gag	gtc	96
Ile	Gly	Arg	Gly	Ile	Val	Asp	Gly	Phe	Leu	Asp	His	Gly	Ala	Glu	Val	
			20					25					30			
atc	acc	tgt	ggc	cgg	ggg	gcg	cgg	ccc	gaa	ggg	ctg	ccc	gag	ggc	tgc	144
Ile	Thr	Cys	Gly	Arg	Gly	Ala	Arg	Pro	Glu	Gly	Leu	Pro	Glu	Gly	Cys	
			35				40					45				
ggc	tgg	gtg	acg	gcg	gat	gtg	tcg	gac	gcg	gcg	cag	gtg	gcg	cag	ctg	192
Gly	Trp	Val	Thr	Ala	Asp	Val	Ser	Asp	Ala	Ala	Gln	Val	Ala	Gln	Leu	
	50					55					60					
gtc	tct	gag	gcc	ggc	gcc	atc	gac	att	ctg	gtc	aac	aac	gcg	ggc	gtg	240
Val	Ser	Glu	Ala	Gly	Ala	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	
	65				70				75						80	
cag	gtg	gaa	aag	acc	gtg	gcc	gac	agc	acg	gat	gcc	gat	tgg	gat	ctg	288
Gln	Val	Glu	Lys	Thr	Val	Ala	Asp	Ser	Thr	Asp	Ala	Asp	Trp	Asp	Leu	
				85				90					95			
gtg	atc	ggg	gcc	aat	tgc	cag	ggc	gtg	ttc	aac	gcc	tgc	cgg	ggc	ttt	336
Val	Ile	Gly	Ala	Asn	Cys	Gln	Gly	Val	Phe	Asn	Ala	Cys	Arg	Gly	Phe	
			100				105					110				
atc	ccg	gtg	ctg	cgc	gac	ggc	ggt	gtg	atc	ctc	aac	atg	ggg	tcg	atc	384
Ile	Pro	Val	Leu	Arg	Asp	Gly	Gly	Val	Ile	Leu	Asn	Met	Gly	Ser	Ile	
			115				120					125				
tcg	gcc	aat	cac	gcc	gat	ccc	tcc	atg	gcg	ctc	tat	aac	gcg	tcc	aag	432
Ser	Ala	Asn	His	Ala	Asp	Pro	Ser	Met	Ala	Leu	Tyr	Asn	Ala	Ser	Lys	
	130					135					140					
ggg	ttc	gtg	cat	ggg	ctc	acc	cgc	tcg	atc	gcg	gtc	gat	cac	ggg	ccg	480
Gly	Phe	Val	His	Gly	Leu	Thr	Arg	Ser	Ile	Ala	Val	Asp	His	Gly	Pro	
	145				150					155					160	
cgg	ctg	cgc	tgc	aat	gcg	atc	tgc	ccg	ggc	tgg	atc	aac	acc	ggc	atg	528
Arg	Leu	Arg	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Ile	Asn	Thr	Gly	Met	
				165					170					175		
ctc	gag	gcg	ggg	ttc	gac	ctc	gcc	caa	aac	ccg	gag	gcg	gcg	cgc	gcc	576
Leu	Glu	Ala	Gly	Phe	Asp	Leu	Ala	Gln	Asn	Pro	Glu	Ala	Ala	Arg	Ala	
			180					185					190			
gat	gcg	atc	cgc	cgc	cac	ccg	gcg	cgg	cgc	ttt	ggc	gaa	ccg	gcg	gat	624
Asp	Ala	Ile	Arg	Arg	His	Pro	Ala	Arg	Arg	Phe	Gly	Glu	Pro	Ala	Asp	
			195				200					205				
att	gcc	gcc	atg	gcg	gtc	tgg	ctg	gcg	tcg	gac	gag	gcg	cgg	ttc	gtc	672
Ile	Ala	Ala	Met	Ala	Val	Trp	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Phe	Val	
	210					215					220					

## PhoenixTemp32470.tmp.txt

tcg ggg cag ttt ttc acc gtg gat ggc ggc ctg acg gcg gcc tcc cct	720
Ser Gly Gln Phe Phe Thr Val Asp Gly Gly Leu Thr Ala Ala Ser Pro	
225 230 235 240	
ttg caa ccg ggg tta ttt tga	741
Leu Gln Pro Gly Leu Phe	
245	

<210> 3254  
 <211> 246  
 <212> PRT  
 <213> Roseovarius nubinihibens ISM

<400> 3254  
 Met Arg Leu Ala Gly Lys Arg Ala Val Val Thr Gly Gly Arg Gln Gly  
 1 5 10 15  
 Ile Gly Arg Gly Ile Val Asp Gly Phe Leu Asp His Gly Ala Glu Val  
 20 25 30  
 Ile Thr Cys Gly Arg Gly Ala Arg Pro Glu Gly Leu Pro Glu Gly Cys  
 35 40 45  
 Gly Trp Val Thr Ala Asp Val Ser Asp Ala Ala Gln Val Ala Gln Leu  
 50 55 60  
 Val Ser Glu Ala Gly Ala Ile Asp Ile Leu Val Asn Asn Ala Gly Val  
 65 70 75 80  
 Gln Val Glu Lys Thr Val Ala Asp Ser Thr Asp Ala Asp Trp Asp Leu  
 85 90 95  
 Val Ile Gly Ala Asn Cys Gln Gly Val Phe Asn Ala Cys Arg Gly Phe  
 100 105 110  
 Ile Pro Val Leu Arg Asp Gly Gly Val Ile Leu Asn Met Gly Ser Ile  
 115 120 125  
 Ser Ala Asn His Ala Asp Pro Ser Met Ala Leu Tyr Asn Ala Ser Lys  
 130 135 140  
 Gly Phe Val His Gly Leu Thr Arg Ser Ile Ala Val Asp His Gly Pro  
 145 150 155 160  
 Arg Leu Arg Cys Asn Ala Ile Cys Pro Gly Trp Ile Asn Thr Gly Met  
 165 170 175  
 Leu Glu Ala Gly Phe Asp Leu Ala Gln Asn Pro Glu Ala Ala Arg Ala  
 180 185 190  
 Asp Ala Ile Arg Arg His Pro Ala Arg Arg Phe Gly Glu Pro Ala Asp  
 195 200 205  
 Ile Ala Ala Met Ala Val Trp Leu Ala Ser Asp Glu Ala Arg Phe Val  
 210 215 220  
 Ser Gly Gln Phe Phe Thr Val Asp Gly Gly Leu Thr Ala Ala Ser Pro  
 225 230 235 240  
 Leu Gln Pro Gly Leu Phe  
 245

<210> 3255  
 <211> 753  
 <212> DNA  
 <213> Synechococcus sp. WH 7805

<220>  
 <221> CDS  
 <222> (1)..(753)  
 <223> transl\_table=11

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gcc agc cgg gga atc ggg cgt gcc gtg gct ctg gcc ctg gct gaa tgc	96
Ala Ser Arg Gly Ile Gly Arg Ala Val Ala Leu Ala Leu Ala Glu Cys	
20 25 30	
ggc gcg gaa gtg gtg gtg aat tac gcc agc tcc ccg gat gcg gcc gaa	144
Gly Ala Glu Val Val Val Asn Tyr Ala Ser Ser Pro Asp Ala Ala Glu	
35 40 45	
gcc gtg gtg aag gag atc gaa agc atg ggg caa aag gcc tat gcc ctt	192
Ala Val Val Lys Glu Ile Glu Ser Met Gly Gln Lys Gly Tyr Ala Leu	
50 55 60	

## PhoenixTemp32470.tmp.txt

cag	gcc	gac	gtg	ggc	gat	gaa	gac	gcc	gtg	gac	gca	ctg	atc	aaa	acg	240
Gln	Ala	Asp	Val	Gly	Asp	Glu	Asp	Ala	Val	Asp	Ala	Leu	Ile	Lys	Thr	
65					70					75					80	
gtg	ctt	gag	cgc	agc	ggg	cgc	atc	gat	gta	cta	gtc	aat	aac	gcg	ggc	288
Val	Leu	Glu	Arg	Ser	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	
			85						90					95		
atc	acg	cgc	gat	ggg	ctg	ctg	atg	cgg	atg	aaa	tcc	acc	gac	tgg	aac	336
Ile	Thr	Arg	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Ser	Thr	Asp	Trp	Asn	
			100					105					110			
gcg	gtg	atc	aat	ctc	aat	ctc	acc	ggg	gtg	ttt	ctc	tgc	acc	cgc	gct	384
Ala	Val	Ile	Asn	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Arg	Ala	
		115					120					125				
gtg	acc	cgg	ccg	atg	ctc	aag	caa	aaa	agc	ggg	cgg	atc	atc	aac	atc	432
Val	Thr	Arg	Pro	Met	Leu	Lys	Gln	Lys	Ser	Gly	Arg	Ile	Ile	Asn	Ile	
	130					135					140					
acc	tca	gtc	gtt	gga	ctg	atg	ggc	aat	gca	ggg	cag	gct	aat	tac	gcc	480
Thr	Ser	Val	Val	Gly	Leu	Met	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	
145					150					155					160	
gct	gcc	aag	gcc	ggg	gtc	gtg	ggc	ctg	acc	cgc	agt	gct	gcg	aag	gaa	528
Ala	Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Arg	Ser	Ala	Ala	Lys	Glu	
				165				170						175		
atg	gca	agc	cga	ggg	atc	acg	gtg	aat	gcc	gta	gcc	ccg	gga	ttc	atc	576
Met	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	
			180					185					190			
gcc	acc	gac	atg	acc	aag	gac	ctt	gac	agc	gag	ggc	att	ctc	acg	gct	624
Ala	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asp	Ser	Glu	Gly	Ile	Leu	Thr	Ala	
		195					200					205				
atc	ccg	ctt	ggg	acg	ttc	ggg	acc	ccg	gag	cag	gtg	gca	ggg	gcg	gtg	672
Ile	Pro	Leu	Gly	Thr	Phe	Gly	Thr	Pro	Glu	Gln	Val	Ala	Gly	Ala	Val	
	210					215					220					
cgc	ttc	ctt	gcc	gca	gat	tcg	gcc	gcg	gct	tac	atc	acc	ggg	cag	gtt	720
Arg	Phe	Leu	Ala	Ala	Asp	Ser	Ala	Ala	Ala	Tyr	Ile	Thr	Gly	Gln	Val	
225					230					235					240	
ctt	cag	gtg	gat	ggc	ggc	atg	gtg	atg	ggg	tga						753
Leu	Gln	Val	Asp	Gly	Gly	Met	Val	Met	Gly							
				245					250							

&lt;210&gt; 3256

&lt;211&gt; 250

&lt;212&gt; PRT

&lt;213&gt; Synechococcus sp. WH 7805

&lt;400&gt; 3256

Met	Asn	Pro	Thr	Arg	Thr	Leu	Asp	Gly	Gln	Thr	Ala	Leu	Val	Thr	Gly	
1				5					10					15		
Ala	Ser	Arg	Gly	Ile	Gly	Arg	Ala	Val	Ala	Leu	Ala	Leu	Ala	Glu	Cys	
			20					25					30			
Gly	Ala	Glu	Val	Val	Val	Asn	Tyr	Ala	Ser	Ser	Pro	Asp	Ala	Ala	Glu	
		35					40					45				
Ala	Val	Val	Lys	Glu	Ile	Glu	Ser	Met	Gly	Gln	Lys	Gly	Tyr	Ala	Leu	
	50					55					60					
Gln	Ala	Asp	Val	Gly	Asp	Glu	Asp	Ala	Val	Asp	Ala	Leu	Ile	Lys	Thr	
65					70					75					80	
Val	Leu	Glu	Arg	Ser	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	
			85					90						95		
Ile	Thr	Arg	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Ser	Thr	Asp	Trp	Asn	
			100					105					110			
Ala	Val	Ile	Asn	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Arg	Ala	
		115					120					125				
Val	Thr	Arg	Pro	Met	Leu	Lys	Gln	Lys	Ser	Gly	Arg	Ile	Ile	Asn	Ile	
	130					135					140					
Thr	Ser	Val	Val	Gly	Leu	Met	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	
145					150					155					160	
Ala	Ala	Lys	Ala	Gly	Val	Val	Gly	Leu	Thr	Arg	Ser	Ala	Ala	Lys	Glu	
			165					170						175		
Met	Ala	Ser	Arg	Gly	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	
			180					185					190			
Ala	Thr	Asp	Met	Thr	Lys	Asp	Leu	Asp	Ser	Glu	Gly	Ile	Leu	Thr	Ala	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Ile Pro Leu Gly Thr Phe Gly Thr Pro Glu Gln Val Ala Gly Ala Val  
 210 215 220  
 Arg Phe Leu Ala Ala Asp Ser Ala Ala Ala Tyr Ile Thr Gly Gln Val  
 225 230 235 240  
 Leu Gln Val Asp Gly Gly Met Val Met Gly  
 245 250

<210> 3257  
 <211> 744  
 <212> DNA  
 <213> Desulfitobacterium hafniense DCB-2

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

<400> 3257  
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 Met Leu Leu Asn Asn Ser Val Ala Ile Val Thr Gly Gly Ser Arg Gly  
 1 5 10 15  
 att gga cgt gcc att gcc ttg gaa ctg gcc cgt gcc ggg gct aaa gtg 96  
 Ile Gly Arg Ala Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val  
 20 25 30  
 gtg gtg aac tat gcc gga cat ggg gaa aag gcg gaa gag act ctg agc 144  
 Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Glu Thr Leu Ser  
 35 40 45  
 ctc att cag gaa gcg ggc gga gag gct ttg gca gtt cag gct gat gtc 192  
 Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val  
 50 55 60  
 agc cag gtt gaa gat gtg gaa cgg ctg att cag acc acc ctt aaa acc 240  
 Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr  
 65 70 75 80  
 tat ggc aag atc gat att ctg gtc aat aat gcc gga att acc cgc gac 288  
 Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp  
 85 90 95  
 acc ctg ctg ctg cgt atg aag gaa acg gat tgg gat gcg gta ctg gat 336  
 Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp  
 100 105 110  
 acc aat ctc aaa ggc gtt ttc tta tgc acg aag gcg gtc agc aag tcc 384  
 Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser  
 115 120 125  
 atg atg aag caa cgc tcc gga gtg att atc aat atc tcc tct gtg gtc 432  
 Met Met Lys Gln Arg Ser Gly Val Ile Ile Asn Ile Ser Ser Val Val  
 130 135 140  
 ggt att acc ggc aat gca gga caa gca aat tac tca gcg gcc aaa gcg 480  
 Gly Ile Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ser Ala Ala Lys Ala  
 145 150 155 160  
 gga atc att ggc ttt acc aaa tcc att gcc aag gag ctg ggc tcc cgt 528  
 Gly Ile Ile Gly Phe Thr Lys Ser Ile Ala Lys Glu Leu Gly Ser Arg  
 165 170 175  
 ggc atc cgg gtc aat gca gtg gct ccg ggg tat att tct aca gat atg 576  
 Gly Ile Arg Val Asn Ala Val Ala Pro Gly Tyr Ile Ser Thr Asp Met  
 180 185 190  
 acg gaa tcc tta gga gaa gag gtc cgg gag cag gtc atg acc cag att 624  
 Thr Glu Ser Leu Gly Glu Glu Val Arg Glu Gln Val Met Thr Gln Ile  
 195 200 205  
 cct ctg ggc aga atg ggt cag cct gag gat ata gcc agg acg gtc gtc 672  
 Pro Leu Gly Arg Met Gly Gln Pro Glu Asp Ile Ala Arg Thr Val Val  
 210 215 220  
 ttt ttg gct tca ccg gcc gct tcc tac atc act ggg caa act tta gcc 720  
 Phe Leu Ala Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Leu Ala  
 225 230 235 240  
 gta gac ggc ggc atg gct atg taa 744  
 Val Asp Gly Gly Met Ala Met  
 245

<210> 3258  
 <211> 247

&lt;212&gt; PRT

&lt;213&gt; Desulfitobacterium hafniense DCB-2

&lt;400&gt; 3258

```

Met Leu Leu Asn Asn Ser Val Ala Ile Val Thr Gly Gly Ser Arg Gly
1      5      10      15
Ile Gly Arg Ala Ile Ala Leu Glu Leu Ala Arg Ala Gly Ala Lys Val
20      25      30
Val Val Asn Tyr Ala Gly His Gly Glu Lys Ala Glu Glu Thr Leu Ser
35      40      45
Leu Ile Gln Glu Ala Gly Gly Glu Ala Leu Ala Val Gln Ala Asp Val
50      55      60
Ser Gln Val Glu Asp Val Glu Arg Leu Ile Gln Thr Thr Leu Lys Thr
65      70      75      80
Tyr Gly Lys Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp
85      90      95
Thr Leu Leu Leu Arg Met Lys Glu Thr Asp Trp Asp Ala Val Leu Asp
100      105      110
Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Lys Ser
115      120      125
Met Met Lys Gln Arg Ser Gly Val Ile Ile Asn Ile Ser Ser Val Val
130      135      140
Gly Ile Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ser Ala Ala Lys Ala
145      150      155      160
Gly Ile Ile Gly Phe Thr Lys Ser Ile Ala Lys Glu Leu Gly Ser Arg
165      170      175
Gly Ile Arg Val Asn Ala Val Ala Pro Gly Tyr Ile Ser Thr Asp Met
180      185      190
Thr Glu Ser Leu Gly Glu Glu Val Arg Glu Gln Val Met Thr Gln Ile
195      200      205
Pro Leu Gly Arg Met Gly Gln Pro Glu Asp Ile Ala Arg Thr Val Val
210      215      220
Phe Leu Ala Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Leu Ala
225      230      235      240
Val Asp Gly Gly Met Ala Met
245

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&lt;210&gt; 3259

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; marine gamma proteobacterium HTCC2080

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3259

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atg ttt tca gag ttg aaa gga aaa gtt gct gtt gtt acg ggt ggc ggt      48
Met Phe Ser Glu Leu Lys Gly Lys Val Ala Val Val Thr Gly Gly Gly
1      5      10      15
gct ggc atc ggc ctt gct tgc gcg gca cgg ctt gca gaa gct ggt gtc      96
Ala Gly Ile Gly Leu Ala Cys Ala Ala Arg Leu Ala Glu Ala Gly Val
20      25      30
gca gtg ggc gtc gca gac att gat agc gct gcg gcg cat caa gcc gct      144
Ala Val Gly Val Ala Asp Ile Asp Ser Ala Ala Ala His Gln Ala Ala
35      40      45
gca gac tta acg tcc caa ggt cat cgt tgc gtg gcg ata gtt acc gat      192
Ala Asp Leu Thr Ser Gln Gly His Arg Cys Val Ala Ile Val Thr Asp
50      55      60
gtc agc aag gcc aaa gag gtt gaa aag tta ttt caa ata acc aac gaa      240
Val Ser Lys Ala Lys Glu Val Glu Lys Leu Phe Gln Ile Thr Asn Glu
65      70      75      80
gct ttt ggc cct atc aac att gct gtc aac aat gca ggg gtt ggc gcg      288
Ala Phe Gly Pro Ile Asn Ile Ala Val Asn Asn Ala Gly Val Gly Ala
85      90      95
cca cta aca ccg ctt ggt gat act gag gag gaa gat ttt gac cga gtc      336
Pro Leu Thr Pro Leu Gly Asp Thr Glu Glu Asp Phe Asp Arg Val
100

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## PhoenixTemp32470.tmp.txt

atg	gct	gtc	aat	ttg	aaa	ggg	gta	tgg	ctg	tgc	atg	agg	gca	gca	ttg	384
Met	Ala	Val	Asn	Leu	Lys	Gly	Val	Trp	Leu	Cys	Met	Arg	Ala	Ala	Leu	
		115					120					125				
cgt	cac	atg	gca	ccg	caa	aaa	tca	ggc	tcc	att	atc	aac	atg	gcg	tcg	432
Arg	His	Met	Ala	Pro	Gln	Lys	Ser	Gly	Ser	Ile	Ile	Asn	Met	Ala	Ser	
		130				135					140					
gca	ctg	agt	acc	acc	aca	ttt	cca	ggc	agc	ggc	ctt	tac	aca	gca	agt	480
Ala	Leu	Ser	Thr	Thr	Thr	Phe	Pro	Gly	Ser	Gly	Leu	Tyr	Thr	Ala	Ser	
					150					155					160	
aag	cac	ggg	gtc	gcg	gga	ctg	act	cga	agc	gct	gcc	gtc	gag	tat	ggc	528
Lys	His	Gly	Val	Ala	Gly	Leu	Thr	Arg	Ser	Ala	Ala	Val	Glu	Tyr	Gly	
				165					170					175		
gag	agt	ggg	atc	cgt	ata	aat	gct	atc	tgc	ccc	ggc	ttc	att	tcc	acg	576
Glu	Ser	Gly	Ile	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Gly	Phe	Ile	Ser	Thr	
			180					185					190			
cca	ctg	ctg	cac	agc	aca	gtt	acc	gag	gag	gcg	gcc	aaa	tcg	atg	gcg	624
Pro	Leu	Leu	His	Ser	Thr	Val	Thr	Glu	Glu	Ala	Ala	Lys	Ser	Met	Ala	
			195			200						205				
gca	agg	cac	cct	atg	aac	cg	tta	ggc	acc	cca	gca	gaa	atc	gct	gac	672
Ala	Arg	His	Pro	Met	Asn	Arg	Leu	Gly	Thr	Pro	Ala	Glu	Ile	Ala	Asp	
		210				215					220					
gcg	gtt	act	tac	ttg	gca	tca	gat	gcc	tcg	tca	ttc	gtc	act	ggc	agc	720
Ala	Val	Thr	Tyr	Leu	Ala	Ser	Asp	Ala	Ser	Ser	Phe	Val	Thr	Gly	Ser	
				225		230				235					240	
cta	ttc	tca	att	gat	ggc	ggc	tgg	aca	gcg	acc	taa					756
Leu	Phe	Ser	Ile	Asp	Gly	Gly	Trp	Thr	Ala	Thr						
				245					250							

&lt;210&gt; 3260

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; marine gamma proteobacterium HTCC2080

&lt;400&gt; 3260

Met	Phe	Ser	Glu	Leu	Lys	Gly	Lys	Val	Ala	Val	Val	Thr	Gly	Gly	Gly	
1				5					10					15		
Ala	Gly	Ile	Gly	Leu	Ala	Cys	Ala	Ala	Arg	Leu	Ala	Glu	Ala	Gly	Val	
			20					25					30			
Ala	Val	Gly	Val	Ala	Asp	Ile	Asp	Ser	Ala	Ala	Ala	His	Gln	Ala	Ala	
		35					40					45				
Ala	Asp	Leu	Thr	Ser	Gln	Gly	His	Arg	Cys	Val	Ala	Ile	Val	Thr	Asp	
	50					55				60						
Val	Ser	Lys	Ala	Lys	Glu	Val	Glu	Lys	Leu	Phe	Gln	Ile	Thr	Asn	Glu	
65					70					75					80	
Ala	Phe	Gly	Pro	Ile	Asn	Ile	Ala	Val	Asn	Asn	Ala	Gly	Val	Gly	Ala	
				85					90					95		
Pro	Leu	Thr	Pro	Leu	Gly	Asp	Thr	Glu	Glu	Glu	Asp	Phe	Asp	Arg	Val	
			100					105					110			
Met	Ala	Val	Asn	Leu	Lys	Gly	Val	Trp	Leu	Cys	Met	Arg	Ala	Ala	Leu	
		115					120					125				
Arg	His	Met	Ala	Pro	Gln	Lys	Ser	Gly	Ser	Ile	Ile	Asn	Met	Ala	Ser	
		130				135					140					
Ala	Leu	Ser	Thr	Thr	Thr	Phe	Pro	Gly	Ser	Gly	Leu	Tyr	Thr	Ala	Ser	
				150						155					160	
Lys	His	Gly	Val	Ala	Gly	Leu	Thr	Arg	Ser	Ala	Ala	Val	Glu	Tyr	Gly	
				165					170					175		
Glu	Ser	Gly	Ile	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Gly	Phe	Ile	Ser	Thr	
			180					185					190			
Pro	Leu	Leu	His	Ser	Thr	Val	Thr	Glu	Glu	Ala	Ala	Lys	Ser	Met	Ala	
		195				200						205				
Ala	Arg	His	Pro	Met	Asn	Arg	Leu	Gly	Thr	Pro	Ala	Glu	Ile	Ala	Asp	
	210					215					220					
Ala	Val	Thr	Tyr	Leu	Ala	Ser	Asp	Ala	Ser	Ser	Phe	Val	Thr	Gly	Ser	
				225		230				235					240	
Leu	Phe	Ser	Ile	Asp	Gly	Gly	Trp	Thr	Ala	Thr						
				245					250							

&lt;210&gt; 3261

&lt;211&gt; 771



## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida GB-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(771)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3261

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Met Thr Leu Asn Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser Gly
 1          5          10          15
atc ggc ctg ggc atc gcc cag gtg ttg gcc cgc gcg ggt gcc aac atc      96
Ile Gly Leu Gly Ile Ala Gln Val Leu Ala Arg Ala Gly Ala Asn Ile
          20          25          30
gtg ctc aac ggc ttt ggc gac ccg gca ccg gcc atg gcc gag att gcc      144
Val Leu Asn Gly Phe Gly Asp Pro Ala Pro Ala Met Ala Glu Ile Ala
          35          40          45
cgg cac ggg gtg aag gtg gtc cat cac ccg gca gac ctg tgc gac gtg      192
Arg His Gly Val Lys Val Val His His Pro Ala Asp Leu Ser Asp Val
          50          55          60
gcc cag atc gag gcc ttg ttc aac ctg gca gaa ggc caa ttt ggc ggc      240
Ala Gln Ile Glu Ala Leu Phe Asn Leu Ala Glu Gly Gln Phe Gly Gly
          65          70          75          80
gtc gac att ctg gtc aac aac gcc ggt att cag cat gtg gcg ccg gtg      288
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Val
          85          90          95
gag cag ttc ccc acc gaa agc tgg gac aag atc att gcc ctg aac ctg      336
Glu Gln Phe Pro Thr Glu Ser Trp Asp Lys Ile Ile Ala Leu Asn Leu
          100          105          110
tcg gct gta ttc cat ggc acc cgt ttg gcg ctg ccg ggc atg cgc acg      384
Ser Ala Val Phe His Gly Thr Arg Leu Ala Leu Pro Gly Met Arg Thr
          115          120          125
cgc aac tgg ggg cgg atc atc aac atc gct tcg gtg cat ggt ttg gtg      432
Arg Asn Trp Gly Arg Ile Ile Asn Ile Ala Ser Val His Gly Leu Val
          130          135          140
ggg tcg acc ggc aag gca gcc tac gtg gcg gcc aag cac ggt gta gtc      480
Gly Ser Thr Gly Lys Ala Ala Tyr Val Ala Ala Lys His Gly Val Val
          145          150          155          160
ggg ctg acc aag gtg gta ggc ctg gaa acc gcc acc agc aag gtc acc      528
Gly Leu Thr Lys Val Val Gly Leu Glu Thr Ala Thr Ser Lys Val Thr
          165          170          175          180
tgc aac gcg atc tgc cca ggt tgg gta ttg acc ccg ctg gta cag aaa      576
Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu Val Gln Lys
          185          190          195
cag atc gac gat cgt gcc gcc aac ggt ggc gat cca ctg caa gcg caa      624
Gln Ile Asp Arg Ala Ala Asn Gly Gly Asp Pro Leu Gln Ala Gln
          195          200          205
cac gat cta ttg gca gaa aag caa ccg tcc ttg gcc ttc gtt acc ccc      672
His Asp Leu Leu Ala Glu Lys Gln Pro Ser Leu Ala Phe Val Thr Pro
          210          215          220
gag cac ttg ggt gaa ctg gta cta ttc ttg tgc agc gag gcc ggt agc      720
Glu His Leu Gly Glu Leu Val Leu Phe Leu Cys Ser Glu Ala Gly Ser
          225          230          235          240
cag gtt cgc ggc gcc gcc tgg aac gtc gat ggt ggc tgg ttg gcc cag      768
Gln Val Arg Gly Ala Ala Trp Asn Val Asp Gly Gly Trp Leu Ala Gln
          245          250          255
tga                                                                 771

```

&lt;210&gt; 3262

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida GB-1

&lt;400&gt; 3262

```

Met Thr Leu Asn Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser Gly
 1          5          10          15

```

## PhoenixTemp32470.tmp.txt

Ile Gly Leu Gly Ile Ala Gln Val Leu Ala Arg Ala Gly Ala Asn Ile  
 20 25 30  
 Val Leu Asn Gly Phe Gly Asp Pro Ala Pro Ala Met Ala Glu Ile Ala  
 35 40 45  
 Arg His Gly Val Lys Val Val His His Pro Ala Asp Leu Ser Asp Val  
 50 55 60  
 Ala Gln Ile Glu Ala Leu Phe Asn Leu Ala Glu Gly Gln Phe Gly Gly  
 65 70 75 80  
 Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Val  
 85 90 95  
 Glu Gln Phe Pro Thr Glu Ser Trp Asp Lys Ile Ile Ala Leu Asn Leu  
 100 105 110  
 Ser Ala Val Phe His Gly Thr Arg Leu Ala Leu Pro Gly Met Arg Thr  
 115 120 125  
 Arg Asn Trp Gly Arg Ile Ile Asn Ile Ala Ser Val His Gly Leu Val  
 130 135 140  
 Gly Ser Thr Gly Lys Ala Ala Tyr Val Ala Ala Lys His Gly Val Val  
 145 150 155 160  
 Gly Leu Thr Lys Val Gly Leu Glu Thr Ala Thr Ser Lys Val Thr  
 165 170 175  
 Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu Val Gln Lys  
 180 185 190  
 Gln Ile Asp Asp Arg Ala Ala Asn Gly Gly Asp Pro Leu Gln Ala Gln  
 195 200 205  
 His Asp Leu Leu Ala Glu Lys Gln Pro Ser Leu Ala Phe Val Thr Pro  
 210 215 220  
 Glu His Leu Gly Glu Leu Val Leu Phe Leu Cys Ser Glu Ala Gly Ser  
 225 230 235 240  
 Gln Val Arg Gly Ala Ala Trp Asn Val Asp Gly Gly Trp Leu Ala Gln  
 245 250 255

&lt;210&gt; 3263

&lt;211&gt; 774

&lt;212&gt; DNA

&lt;213&gt; Pseudomonas putida GB-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(774)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3263

atg	ctg	act	tca	cta	caa	ggc	aaa	agc	gta	ttg	gtc	acc	ggc	ggt	acc	48
Met	Leu	Thr	Ser	Leu	Gln	Gly	Lys	Ser	Val	Leu	Val	Thr	Gly	Gly	Thr	
1				5					10					15		
agc	ggt	atc	ggc	ctg	ggc	atc	gcc	gtc	ggc	ttc	gcc	cgc	cag	ggc	gcc	96
Ser	Gly	Ile	Gly	Leu	Gly	Ile	Ala	Val	Gly	Phe	Ala	Arg	Gln	Gly	Ala	
			20					25					30			
aag	gtg	gcg	atc	agt	ggc	cgg	cac	cgg	gac	aag	gtt	gag	gct	gtc	gcc	144
Lys	Val	Ala	Ile	Ser	Gly	Arg	His	Arg	Asp	Lys	Val	Glu	Ala	Val	Ala	
		35				40					45					
agc	cgc	ttg	cgt	gat	caa	ggc	ctg	gcc	gtc	atc	ggc	ctg	gtg	gcc	gat	192
Ser	Arg	Leu	Arg	Asp	Gln	Gly	Leu	Ala	Val	Ile	Gly	Leu	Val	Ala	Asp	
	50				55					60						
gtg	ggt	gac	cgc	gcg	cag	gtg	ctg	cgg	atg	atc	gaa	gag	gtg	gcg	cag	240
Val	Gly	Asp	Arg	Ala	Gln	Val	Leu	Arg	Met	Ile	Glu	Glu	Val	Ala	Gln	
	65				70				75						80	
gcc	cag	ggc	ggg	ctc	gat	gta	ctg	tgc	gcc	aat	gcc	ggg	gtc	ttc	ccc	288
Ala	Gln	Gly	Gly	Leu	Asp	Val	Leu	Cys	Ala	Asn	Ala	Gly	Val	Phe	Pro	
			85					90						95		
tct	gcc	gca	ctg	gcc	gag	atg	agc	gat	acc	gac	tgg	gac	aag	gtg	ctc	336
Ser	Ala	Ala	Leu	Ala	Glu	Met	Ser	Asp	Thr	Asp	Trp	Asp	Lys	Val	Leu	
			100					105					110			
ggc	acc	aat	gcc	aaa	ggc	acc	ttc	ctc	tgc	gtg	cag	gcg	gcg	ctg	ccg	384
Gly	Thr	Asn	Ala	Lys	Gly	Thr	Phe	Leu	Cys	Val	Gln	Ala	Ala	Leu	Pro	
		115					120				125					
tat	ttg	cgc	agg	gcc	gag	tac	ggc	cgg	gtg	atc	ctg	acc	tcg	tcc	atc	432
Tyr	Leu	Arg	Arg	Ala	Glu	Tyr	Gly	Arg	Val	Ile	Leu	Thr	Ser	Ser	Ile	
	130					135					140					

## PhoenixTemp32470.tmp.txt

acc	ggg	cca	gtc	acc	ggc	ttt	cca	ggc	tgg	gcg	cac	tac	ggc	gcg	agc	480
Thr	Gly	Pro	Val	Thr	Gly	Phe	Pro	Gly	Trp	Ala	His	Tyr	Gly	Ala	Ser	
145					150					155					160	
aag	gca	gcg	cag	ctg	ggt	ttc	atg	cgt	acc	gca	gcg	atc	gag	ctg	gcc	528
Lys	Ala	Ala	Gln	Leu	Gly	Phe	Met	Arg	Thr	Ala	Ala	Ile	Glu	Leu	Ala	
				165					170						175	
cgc	gat	ggc	atc	acc	atc	aat	gcc	ctg	cca	ggc	aac	atc	ggt	acc		576
Arg	Asp	Gly	Ile	Thr	Ile	Asn	Ala	Leu	Pro	Gly	Asn	Ile	Val	Thr		
			180					185					190			
gaa	ggc	ttg	cag	ggc	atg	ggc	gag	gac	tac	cag	gcc	agc	atg	gcc	gcg	624
Glu	Gly	Leu	Gln	Gly	Met	Gly	Glu	Asp	Tyr	Gln	Ala	Ser	Met	Ala	Ala	
		195					200					205				
tcc	att	ccg	ctc	aag	cgc	ctc	ggc	cag	gtc	gag	gac	att	gcc	aat	gcc	672
Ser	Ile	Pro	Leu	Lys	Arg	Leu	Gly	Gln	Val	Glu	Asp	Ile	Ala	Asn	Ala	
	210					215					220					
gcg	ttg	ttc	ttt	gct	tcc	aga	gag	gcc	ggc	tac	atc	act	ggg	caa	agc	720
Ala	Leu	Phe	Phe	Ala	Ser	Arg	Glu	Ala	Gly	Tyr	Ile	Thr	Gly	Gln	Ser	
225					230					235					240	
ctg	atc	atc	gat	ggt	ggg	cag	atc	ctg	ccc	gag	tcc	ctg	caa	gca	ctg	768
Leu	Ile	Ile	Asp	Gly	Gly	Gln	Ile	Leu	Pro	Glu	Ser	Leu	Gln	Ala	Leu	
				245					250					255		
gcc	tga															774
Ala																

&lt;210&gt; 3264

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida GB-1

&lt;400&gt; 3264

Met	Leu	Thr	Ser	Leu	Gln	Gly	Lys	Ser	Val	Leu	Val	Thr	Gly	Gly	Thr	
1				5					10					15		
Ser	Gly	Ile	Gly	Leu	Gly	Ile	Ala	Val	Gly	Phe	Ala	Arg	Gln	Gly	Ala	
			20					25					30			
Lys	Val	Ala	Ile	Ser	Gly	Arg	His	Arg	Asp	Lys	Val	Glu	Ala	Val	Ala	
		35					40					45				
Ser	Arg	Leu	Arg	Asp	Gln	Gly	Leu	Ala	Val	Ile	Gly	Leu	Val	Ala	Asp	
	50				55					60						
Val	Gly	Asp	Arg	Ala	Gln	Val	Leu	Arg	Met	Ile	Glu	Glu	Val	Ala	Gln	
65					70				75						80	
Ala	Gln	Gly	Gly	Leu	Asp	Val	Leu	Cys	Ala	Asn	Ala	Gly	Val	Phe	Pro	
				85					90					95		
Ser	Ala	Ala	Leu	Ala	Glu	Met	Ser	Asp	Thr	Asp	Trp	Asp	Lys	Val	Leu	
			100					105					110			
Gly	Thr	Asn	Ala	Lys	Gly	Thr	Phe	Leu	Cys	Val	Gln	Ala	Ala	Leu	Pro	
		115					120				125					
Tyr	Leu	Arg	Arg	Ala	Glu	Tyr	Gly	Arg	Val	Ile	Leu	Thr	Ser	Ser	Ile	
	130					135				140						
Thr	Gly	Pro	Val	Thr	Gly	Phe	Pro	Gly	Trp	Ala	His	Tyr	Gly	Ala	Ser	
145					150				155						160	
Lys	Ala	Ala	Gln	Leu	Gly	Phe	Met	Arg	Thr	Ala	Ala	Ile	Glu	Leu	Ala	
				165					170					175		
Arg	Asp	Gly	Ile	Thr	Ile	Asn	Ala	Leu	Leu	Pro	Gly	Asn	Ile	Val	Thr	
			180					185					190			
Glu	Gly	Leu	Gln	Gly	Met	Gly	Glu	Asp	Tyr	Gln	Ala	Ser	Met	Ala	Ala	
		195					200					205				
Ser	Ile	Pro	Leu	Lys	Arg	Leu	Gly	Gln	Val	Glu	Asp	Ile	Ala	Asn	Ala	
	210					215					220					
Ala	Leu	Phe	Phe	Ala	Ser	Arg	Glu	Ala	Gly	Tyr	Ile	Thr	Gly	Gln	Ser	
225					230					235					240	
Leu	Ile	Ile	Asp	Gly	Gly	Gln	Ile	Leu	Pro	Glu	Ser	Leu	Gln	Ala	Leu	
				245					250					255		
Ala																

&lt;210&gt; 3265

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Bacillus sp. SG-1

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(744)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3265

```

atg aat ctt gaa gga aaa act gca cta gta aca ggt gcg tca cgt gga      48
Met Asn Leu Glu Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Arg Gly
  1          5          10          15
atc gga aga gag ata gca ctt gag ctt gca cgc cag ggt gcc aat gta      96
Ile Gly Arg Glu Ile Ala Leu Glu Leu Ala Arg Gln Gly Ala Asn Val
          20          25          30
gct gtt aat tat gca gga agt gaa gcg aaa gcc aat gaa gtg aca gaa      144
Ala Val Asn Tyr Ala Gly Ser Glu Ala Lys Ala Asn Glu Val Thr Glu
          35          40          45
gaa atc aag gca atg ggg aga gaa gca ttt gcc att caa tgc aac gtc      192
Glu Ile Lys Ala Met Gly Arg Glu Ala Phe Ala Ile Gln Cys Asn Val
          50          55          60
gct gat gga gaa tct gtc caa gcc atg gtc aag gaa tcc atc tcc cgg      240
Ala Asp Gly Glu Ser Val Gln Ala Met Val Lys Glu Ser Ile Ser Arg
          65          70          75          80
ttt ggt tct ctc gat att ctt gtt aat aac gct ggg att acc agg gac      288
Phe Gly Ser Leu Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp
          85          90          95
aac ctg ttg atg aga atg aag gaa agt gaa tgg gat gaa gtt att gat      336
Asn Leu Leu Met Arg Met Lys Glu Ser Glu Trp Asp Glu Val Ile Asp
          100          105          110
aca aac tta aaa ggt gta ttc ctc tgc aca aag gca gtc agc cgc caa      384
Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Arg Gln
          115          120          125
atg atg aaa cag cga agc ggt aga atc att aac att tct tcc att gtc      432
Met Met Lys Gln Arg Ser Gly Arg Ile Ile Asn Ile Ser Ser Ile Val
          130          135          140
ggg gta agc gga aac cct gga caa gca aat tac gtt gcg gct aag tca      480
Gly Val Ser Gly Asn Pro Gly Gln Ala Asn Tyr Val Ala Ala Lys Ser
          145          150          155          160
ggt gta atc gga ttg aca aag aca tca gca aga gag ctt gct gca aga      528
Gly Val Ile Gly Leu Thr Lys Thr Ser Ala Arg Glu Leu Ala Ala Arg
          165          170          175
gga att aca gta aat gct gtc gca cct ggc ttc atc tcg act gac atg      576
Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Ser Thr Asp Met
          180          185          190
acc gac gag ctg agt gaa gaa gtc aag act gaa atg ctt aaa ggg atc      624
Thr Asp Glu Leu Ser Glu Glu Val Lys Thr Glu Met Leu Lys Gly Ile
          195          200          205
cct ctt agt cgt ttt ggc gaa gca aaa gat atc gcg aga gtc gtc agc      672
Pro Leu Ser Arg Phe Gly Glu Ala Lys Asp Ile Ala Arg Val Val Ser
          210          215          220
ttc ctt gct tcg gaa gac tct tcc tac atg aca ggg caa acc ctt cac      720
Phe Leu Ala Ser Glu Asp Ser Ser Tyr Met Thr Gly Gln Thr Leu His
          225          230          235          240
gtt gac ggc gga atg gtt atg taa
Val Asp Gly Gly Met Val Met
          245

```

&lt;210&gt; 3266

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Bacillus sp. SG-1

&lt;400&gt; 3266

```

Met Asn Leu Glu Gly Lys Thr Ala Leu Val Thr Gly Ala Ser Arg Gly
  1          5          10          15
Ile Gly Arg Glu Ile Ala Leu Glu Leu Ala Arg Gln Gly Ala Asn Val
          20          25          30
Ala Val Asn Tyr Ala Gly Ser Glu Ala Lys Ala Asn Glu Val Thr Glu
          35          40          45

```

## PhoenixTemp32470.tmp.txt

Glu Ile Lys Ala Met Gly Arg Glu Ala Phe Ala Ile Gln Cys Asn Val  
 50 55 60  
 Ala Asp Gly Glu Ser Val Gln Ala Met Val Lys Glu Ser Ile Ser Arg  
 65 70 75 80  
 Phe Gly Ser Leu Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp  
 85 90 95  
 Asn Leu Leu Met Arg Met Lys Glu Ser Glu Trp Asp Glu Val Ile Asp  
 100 105 110  
 Thr Asn Leu Lys Gly Val Phe Leu Cys Thr Lys Ala Val Ser Arg Gln  
 115 120 125  
 Met Met Lys Gln Arg Ser Gly Arg Ile Ile Asn Ile Ser Ser Ile Val  
 130 135 140  
 Gly Val Ser Gly Asn Pro Gly Gln Ala Asn Tyr Val Ala Ala Lys Ser  
 145 150 155 160  
 Gly Val Ile Gly Leu Thr Lys Thr Ser Ala Arg Glu Leu Ala Ala Arg  
 165 170 175  
 Gly Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Ser Thr Asp Met  
 180 185 190  
 Thr Asp Glu Leu Ser Glu Glu Val Lys Thr Glu Met Leu Lys Gly Ile  
 195 200 205  
 Pro Leu Ser Arg Phe Gly Glu Ala Lys Asp Ile Ala Arg Val Val Ser  
 210 215 220  
 Phe Leu Ala Ser Glu Asp Ser Ser Tyr Met Thr Gly Gln Thr Leu His  
 225 230 235 240  
 Val Asp Gly Gly Met Val Met  
 245

&lt;210&gt; 3267

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Streptomyces echinatus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3267

atg	gtg	aac	gac	gat	cgg	cgg	gtg	gcc	ctc	gtc	acg	ggc	gcc	acc	agc	48
Met	Val	Asn	Asp	Asp	Arg	Arg	Val	Ala	Leu	Val	Thr	Gly	Ala	Thr	Ser	
1				5					10					15		
ggc	atc	ggg	ctg	tcc	gtc	gcc	cgg	gac	ctg	gcc	cgc	gcg	ggc	ctg	gcg	96
Gly	Ile	Gly	Leu	Ser	Val	Ala	Arg	Asp	Leu	Ala	Arg	Ala	Gly	Leu	Ala	
			20					25					30			
gtg	ttc	ctc	tgc	gcc	cgg	gac	acg	gac	gcc	gtg	aag	cgg	acg	gtg	gag	144
Val	Phe	Leu	Cys	Ala	Arg	Asp	Thr	Asp	Ala	Val	Lys	Arg	Thr	Val	Glu	
		35					40					45				
gaa	ctg	cgg	gcc	gtc	ggc	cac	gag	gcc	gac	ggc	acg	tcg	tgc	gac	gta	192
Glu	Leu	Arg	Ala	Val	Gly	His	Glu	Ala	Asp	Gly	Thr	Ser	Cys	Asp	Val	
		50				55					60					
cgg	gac	aag	acc	tcg	gtc	cgg	gcc	ctg	gtg	gac	tcc	gcc	ctc	ggg	gcg	240
Arg	Asp	Lys	Thr	Ser	Val	Arg	Ala	Leu	Val	Asp	Ser	Ala	Leu	Gly	Ala	
		65			70					75					80	
tac	ggc	cgg	gtc	gac	gtc	ctg	gtg	aac	aac	gcc	ggc	cgc	aac	ggc	ggc	288
Tyr	Gly	Arg	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Arg	Asn	Gly	Gly	
				85				90						95		
ggg	gtc	acc	gcc	gat	ctc	ccc	gac	gag	acc	tgg	tac	gac	gtc	atc	gac	336
Gly	Val	Thr	Ala	Asp	Leu	Pro	Asp	Glu	Thr	Trp	Tyr	Asp	Val	Ile	Asp	
			100					105					110			
acc	aac	ctc	aac	agc	gtc	ttc	ctg	gtc	acc	cgt	gag	gtg	ctc	aag	cgc	384
Thr	Asn	Leu	Asn	Ser	Val	Phe	Leu	Val	Thr	Arg	Glu	Val	Leu	Lys	Arg	
		115					120					125				
tcc	ggt	atg	cgg	gag	cgc	ggc	tgg	ggc	cgg	gtc	atc	agc	atc	gcc	tcc	432
Ser	Gly	Met	Arg	Glu	Arg	Gly	Trp	Gly	Arg	Val	Ile	Ser	Ile	Ala	Ser	
		130				135					140					
acc	ggc	ggc	aaa	cag	ggc	gtg	gtg	ctc	gcg	gcg	ccc	tac	tcg	gcg	tcc	480
Thr	Gly	Gly	Lys	Gln	Gly	Val	Val	Leu	Ala	Ala	Pro	Tyr	Ser	Ala	Ser	
					150					155					160	
aag	cac	ggg	gtg	atc	ggc	ttc	tcc	aaa	gcg	ctc	ggc	aag	gag	ctc	gcg	528

## PhoenixTemp32470.tmp.txt

Lys	His	Gly	Val	Ile	Gly	Phe	Ser	Lys	Ala	Leu	Gly	Lys	Glu	Leu	Ala		
ccg	acc	ggc	gtc	acc	gtc	aac	gcg	gtg	tgc	ccg	ggc	tac	gtc	gag	acc	576	
Pro	Thr	Gly	Val	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr		
			180					185					190				
ccg	atg	gcc	cag	cgg	gtg	cgg	gcc	ggc	tac	gcc	gcc	gcc	tgg	gag	acc	624	
Pro	Met	Ala	Gln	Arg	Val	Arg	Ala	Gly	Tyr	Ala	Ala	Ala	Trp	Glu	Thr		
		195					200					205					
acc	gag	gag	gac	gta	ctg	gag	cag	ttc	cag	gcc	aag	atc	ccg	ctg	ggg	672	
Thr	Glu	Glu	Asp	Val	Leu	Glu	Gln	Phe	Gln	Ala	Lys	Ile	Pro	Leu	Gly		
	210				215						220						
cgc	tac	tcc	acg	ccg	gag	gag	gtg	gcc	ggc	ctc	gtc	ggc	tat	ctg	gtg	720	
Arg	Tyr	Ser	Thr	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Gly	Tyr	Leu	Val		
	225				230					235					240		
agc	gac	acg	gcg	gcg	tcc	atc	acg	gcc	cag	gcg	ctg	aac	gtc	tgc	ggc	768	
Ser	Asp	Thr	Ala	Ala	Ser	Ile	Thr	Ala	Gln	Ala	Leu	Asn	Val	Cys	Gly		
			245						250					255			
ggc	ctg	ggc	aac	tac	tga											786	
Gly	Leu	Gly	Asn	Tyr													
			260														

&lt;210&gt; 3268

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Streptomyces echinatus

&lt;400&gt; 3268

Met	Val	Asn	Asp	Asp	Arg	Arg	Val	Ala	Leu	Val	Thr	Gly	Ala	Thr	Ser		
1				5					10					15			
Gly	Ile	Gly	Leu	Ser	Val	Ala	Arg	Asp	Leu	Ala	Arg	Ala	Gly	Leu	Ala		
			20					25					30				
Val	Phe	Leu	Cys	Ala	Arg	Asp	Thr	Asp	Ala	Val	Lys	Arg	Thr	Val	Glu		
		35					40					45					
Glu	Leu	Arg	Ala	Val	Gly	His	Glu	Ala	Asp	Gly	Thr	Ser	Cys	Asp	Val		
	50				55					60							
Arg	Asp	Lys	Thr	Ser	Val	Arg	Ala	Leu	Val	Asp	Ser	Ala	Leu	Gly	Ala		
	65				70					75					80		
Tyr	Gly	Arg	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Arg	Asn	Gly	Gly		
				85					90					95			
Gly	Val	Thr	Ala	Asp	Leu	Pro	Asp	Glu	Thr	Trp	Tyr	Asp	Val	Ile	Asp		
			100					105					110				
Thr	Asn	Leu	Asn	Ser	Val	Phe	Leu	Val	Thr	Arg	Glu	Val	Leu	Lys	Arg		
	115						120					125					
Ser	Gly	Met	Arg	Glu	Arg	Gly	Trp	Gly	Arg	Val	Ile	Ser	Ile	Ala	Ser		
	130					135					140						
Thr	Gly	Gly	Lys	Gln	Gly	Val	Val	Leu	Ala	Ala	Pro	Tyr	Ser	Ala	Ser		
	145				150					155					160		
Lys	His	Gly	Val	Ile	Gly	Phe	Ser	Lys	Ala	Leu	Gly	Lys	Glu	Leu	Ala		
				165					170					175			
Pro	Thr	Gly	Val	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr		
			180					185					190				
Pro	Met	Ala	Gln	Arg	Val	Arg	Ala	Gly	Tyr	Ala	Ala	Ala	Trp	Glu	Thr		
		195					200					205					
Thr	Glu	Glu	Asp	Val	Leu	Glu	Gln	Phe	Gln	Ala	Lys	Ile	Pro	Leu	Gly		
	210				215						220						
Arg	Tyr	Ser	Thr	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Gly	Tyr	Leu	Val		
	225				230					235					240		
Ser	Asp	Thr	Ala	Ala	Ser	Ile	Thr	Ala	Gln	Ala	Leu	Asn	Val	Cys	Gly		
			245						250					255			
Gly	Leu	Gly	Asn	Tyr													
			260														

&lt;210&gt; 3269

&lt;211&gt; 846

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(846)

```

<400> 3269
atg gca gcg tcg acg ccg gcg gcg agc aga gag cgg cgg tgg agc cgc      48
Met Ala Ala Ser Thr Pro Ala Ala Ser Arg Glu Arg Arg Trp Ser Arg
  1      5      10      15
gcc ggc aag acg gcg ctc gtc acc ggc ggc acc aaa ggc atc ggg cgc      96
Ala Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly Arg
      20      25      30
gcg atc gtg gag gag ctc gcc ggg ttc ggg gtg agg gtg cac acg tgt      144
Ala Ile Val Glu Glu Leu Ala Gly Phe Gly Val Arg Val His Thr Cys
      35      40      45
tca cgc cac gac gcc gac ctg cag gac tgc ctc cgc cgg tgg aac gcc      192
Ser Arg His Asp Ala Asp Leu Gln Asp Cys Leu Arg Arg Trp Asn Ala
      50      55      60
gcc gac ggt ggc ggc ctc ggc ggc ggc gcg gcg gcg ccc gtc acg gcg      240
Ala Asp Gly Gly Gly Leu Gly Gly Gly Ala Ala Ala Pro Val Thr Ala
      65      70      75      80
tcc gtc tgc gac gtg tcg gtg cgc ggc gac agg gag gcg ctg gtg gcg      288
Ser Val Cys Asp Val Ser Val Arg Gly Asp Arg Glu Ala Leu Val Ala
      85      90      95
gcg gcg cgc gcc gcg ctc ggc ggg agg ctg gac ata ctc gtc aac aac      336
Ala Ala Arg Ala Ala Leu Gly Gly Arg Leu Asp Ile Leu Val Asn Asn
      100      105      110
gtc ggc cag acg ctg ttc ggc gcg gcc gcg tgc gcg gcg gag gac      384
Val Gly Gln Thr Leu Phe Gly Ala Ala Ala Ala Cys Ala Ala Glu Asp
      115      120      125
tac gcg cgc atc atg gcg acc aac ctc gag tcc tgc ttc cac ctc gcc      432
Tyr Ala Arg Ile Met Ala Thr Asn Leu Glu Ser Cys Phe His Leu Ala
      130      135      140
cag ctc gcg cac cct ctc ctc ctc ggc gcc ggc ggc gcc gcc gcg agc      480
Gln Leu Ala His Pro Leu Leu Leu Gly Ala Gly Gly Ala Ala Ala Ser
      145      150      155      160
gtg gtg aac atc tcc tcc gtc gca ggg ttc atc gcc tac ccg gcg ctg      528
Val Val Asn Ile Ser Ser Val Ala Gly Phe Ile Ala Tyr Pro Ala Leu
      165      170      175
tcc gtc tac tcg gcg acg aag ggc gcc atg aac cag ctc acg cgg agc      576
Ser Val Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Thr Arg Ser
      180      185      190
ctc gcc gcc gag tgg gcg cgc gac ggc atc cgc gtc aac tgc gtc gcg      624
Leu Ala Ala Glu Trp Ala Arg Asp Gly Ile Arg Val Asn Cys Val Ala
      195      200      205
ccg ggc ggc gtc ccg acc gac atc gcc ggc agc agc ggc gtg gcg ctg      672
Pro Gly Gly Val Arg Thr Asp Ile Ala Gly Ser Ser Gly Val Ala Leu
      210      215      220
gag ccg ggg gcg gcg ccg gcg atg gag gag agg gag gcg gcg ccg gtc      720
Glu Pro Gly Ala Ala Arg Ala Met Glu Glu Arg Glu Ala Ala Arg Val
      225      230      235      240
gcc atg ggc cgc atc ggc gag ccc gag gag gtg gcg tcg ctc gtc gcg      768
Ala Met Gly Arg Ile Gly Glu Pro Glu Glu Val Ala Ser Leu Val Ala
      245      250      255
ttc ctc tgc atg ccg gcg gcg tcg tac atc acc ggg cag gtc atc tgc      816
Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile Cys
      260      265      270
gtc gac ggt ggc cgc acc atc acc gcc tag
Val Asp Gly Gly Arg Thr Ile Thr Ala
      275      280

```

&lt;210&gt; 3270

&lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3270

```

Met Ala Ala Ser Thr Pro Ala Ala Ser Arg Glu Arg Arg Trp Ser Arg
1      5      10      15
Ala Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly Arg
20      25      30
Ala Ile Val Glu Glu Leu Ala Gly Phe Gly Val Arg Val His Thr Cys

```

## PhoenixTemp32470.tmp.txt

```

      35      40      45
Ser Arg His Asp Ala Asp Leu Gln Asp Cys Leu Arg Arg Trp Asn Ala
  50  55  60
Ala Asp Gly Gly Gly Leu Gly Gly Gly Ala Ala Ala Pro Val Thr Ala
  65  70  75  80
Ser Val Cys Asp Val Ser Val Arg Gly Asp Arg Glu Ala Leu Val Ala
  85  90  95
Ala Ala Arg Ala Ala Leu Gly Gly Arg Leu Asp Ile Leu Val Asn Asn
 100 105 110
Val Gly Gln Thr Leu Phe Gly Ala Ala Ala Ala Cys Ala Ala Glu Asp
 115 120 125
Tyr Ala Arg Ile Met Ala Thr Asn Leu Glu Ser Cys Phe His Leu Ala
 130 135 140
Gln Leu Ala His Pro Leu Leu Gly Ala Gly Glu Ala Ala Ala Ser
 145 150 155 160
Val Val Asn Ile Ser Ser Val Ala Gly Phe Ile Ala Tyr Pro Ala Leu
 165 170 175
Ser Val Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Thr Arg Ser
 180 185 190
Leu Ala Ala Glu Trp Ala Arg Asp Gly Ile Arg Val Asn Cys Val Ala
 195 200 205
Pro Gly Gly Val Arg Thr Asp Ile Ala Gly Ser Ser Gly Val Ala Leu
 210 215 220
Glu Pro Gly Ala Ala Arg Ala Met Glu Glu Arg Glu Ala Ala Arg Val
 225 230 235 240
Ala Met Gly Arg Ile Gly Glu Pro Glu Glu Val Ala Ser Leu Val Ala
 245 250 255 260
Phe Leu Cys Met Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile Cys
 265 270 275
Val Asp Gly Gly Arg Thr Ile Thr Ala
 280

```

&lt;210&gt; 3271

&lt;211&gt; 963

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(963)

&lt;400&gt; 3271

```

atg cct gcc gcc gca ctc gac ctc ctc cct gac aag gcg cac cag ccg      48
Met Pro Ala Ala Ala Leu Asp Leu Leu Pro Asp Lys Ala His Gln Pro
 1  5 10
tcc atg gcg ccg tcg ctc cac gcc tgg gac tcc ccc aat ggc gcc ccc      96
Ser Met Ala Pro Ser Leu His Ala Trp Asp Ser Pro Asn Gly Ala Pro
 20 25 30
act ccc atg ccc aag agg ctg gaa ggg aag gtg gcc att gtc acc ggc      144
Thr Pro Met Pro Lys Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly
 35 40 45
ggg gcg agg ggg atc ggg gag gcg atc gtg agg ctg ttc gtt aag cac      192
Gly Ala Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Lys His
 50 55 60
ggg gcc aag gtg gtg atc gcg gac atc gac gac gcg gcg ggc gag gcg      240
Gly Ala Lys Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala
 65 70 75 80
ctg gcg gcg gcg ctg ggg ccg cac gtc ggg ttc gtg cgg tgc gac gtg      288
Leu Ala Ala Ala Leu Gly Pro His Val Gly Phe Val Arg Cys Asp Val
 85 90 95
tcg gtg gag gag gac gtg gag cgc gcc gtc gag cgc gcc gtg gcg ccg      336
Ser Val Glu Glu Asp Val Glu Arg Ala Val Glu Arg Ala Val Ala Arg
 100 105 110
tac ggg ccg ctg gac gtg ctg tgc aac aac gcc ggg gtg ctg ggc cgc      384
Tyr Gly Arg Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly Arg
 115 120 125
cag acg cgc gcc gcc aag agc atc ctg tcg ttc gac gcc ggg gag ttc      432
Gln Thr Arg Ala Ala Lys Ile Leu Ser Phe Asp Ala Gly Glu Phe
 130 135 140

```



## PhoenixTemp32470.tmp.txt

gac	cg	gtg	ctc	cg	gtc	aac	gcg	ctg	ggc	gcc	gcg	ctc	ggc	atg	aag	480
Asp	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	Lys	
145					150					155					160	
cac	gcg	gcg	ctc	gcc	atg	acc	cag	cg	cg	gcc	ggc	agc	atc	atc	tcc	528
His	Ala	Ala	Leu	Ala	Met	Thr	Gln	Arg	Arg	Ala	Gly	Ser	Ile	Ile	Ser	
				165					170					175		
gtc	gcc	agc	gtc	gcc	ggc	gtg	ctc	ggc	ggc	ctc	ggc	ccg	cac	gcc	tac	576
Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	
			180					185					190			
acc	gcc	tcc	aag	cac	gcc	atc	gtg	ggg	ctc	acc	aag	aac	gcc	gcc	tgc	624
Thr	Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	
		195					200					205				
gag	ctc	ggc	gcc	cac	ggc	atc	gtg	ggg	ctc	acc	aag	aac	gcc	gcc	tgc	672
Glu	Leu	Gly	Ala	His	Gly	Ile	Arg	Val	Asn	Cys	Ile	tcc	ccc	ttc	ggc	
	210					215					220				Gly	
gtc	gcc	acc	ccg	atg	ctc	atc	aac	gcc	tgg	cg	cag	ggc	cac	gac	gcc	720
Val	Ala	Thr	Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Ala	
225					230					235					240	
tcc	acc	gcc	gac	gac	gcc	gac	gcc	gac	atc	gac	ctc	gac	atc	gcc	gtg	768
Ser	Thr	Ala	Asp	Asp	Ala	Asp	Ala	Asp	Ile	Asp	Leu	Asp	Ile	Ala	Val	
				245					250					255		
ccc	agc	gac	cag	gag	gtg	gag	aag	atg	gag	gag	gtg	gtc	agg	ggc	ctc	816
Pro	Ser	Asp	Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	
			260					265					270			
gcc	acg	ctc	aag	ggc	gcg	acg	ctg	aga	ccc	agg	gac	atc	gcc	gag	gcg	864
Ala	Thr	Leu	Lys	Gly	Ala	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	
		275					280					285				
gcg	ctc	ttc	ctc	gcc	agc	gac	gac	tcc	aga	tac	att	tcc	ggc	cac	aac	912
Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Arg	Tyr	Ile	Ser	Gly	His	Asn	
	290					295					300					
ctc	gtc	gtc	gac	ggc	ggc	gtc	acc	acc	tcc	aga	aac	cta	att	ggc	ctt	960
Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu	
305					310					315					320	
tga																963

&lt;210&gt; 3272

&lt;211&gt; 320

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3272

Met	Pro	Ala	Ala	Ala	Leu	Asp	Leu	Leu	Pro	Asp	Lys	Ala	His	Gln	Pro	
1				5					10					15		
Ser	Met	Ala	Pro	Ser	Leu	His	Ala	Trp	Asp	Ser	Pro	Asn	Gly	Ala	Pro	
			20					25					30			
Thr	Pro	Met	Pro	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	
		35					40					45				
Gly	Ala	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Leu	Phe	Val	Lys	His	
	50				55						60					
Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Ile	Asp	Asp	Ala	Ala	Gly	Glu	Ala	
65					70					75				80		
Leu	Ala	Ala	Ala	Leu	Gly	Pro	His	Val	Gly	Phe	Val	Arg	Cys	Asp	Val	
				85					90					95		
Ser	Val	Glu	Glu	Asp	Val	Glu	Arg	Ala	Val	Glu	Arg	Ala	Val	Ala	Arg	
			100					105					110			
Tyr	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	Ala	Gly	Val	Leu	Gly	Arg	
		115					120					125				
Gln	Thr	Arg	Ala	Ala	Lys	Ser	Ile	Leu	Ser	Phe	Asp	Ala	Gly	Glu	Phe	
	130					135					140					
Asp	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	Lys	
145					150					155					160	
His	Ala	Ala	Leu	Ala	Met	Thr	Gln	Arg	Arg	Ala	Gly	Ser	Ile	Ile	Ser	
				165					170					175		
Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	
			180					185					190			
Thr	Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Glu Leu Gly Ala His Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly  
 210 215 220  
 Val Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Ala  
 225 230 235 240  
 Ser Thr Ala Asp Asp Ala Asp Ala Asp Ile Asp Leu Asp Ile Ala Val  
 245 250 255  
 Pro Ser Asp Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu  
 260 265 270  
 Ala Thr Leu Lys Gly Ala Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala  
 275 280 285  
 Ala Leu Phe Leu Ala Ser Asp Asp Ser Arg Tyr Ile Ser Gly His Asn  
 290 295 300  
 Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 305 310 315 320

&lt;210&gt; 3273

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(837)

&lt;400&gt; 3273

atg tcc gcc gcc gcc gca tcc tcc ccc gct ccc cgg ttg gaa agc aag	48
Met Ser Ala Ala Ala Ala Ser Ser Pro Ala Pro Arg Leu Glu Ser Lys	
1 5 10 15	
gtt gcg ctg gtt acc ggt ggt gct tca ggt att ggt gaa gca att gtt	96
Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Ile Val	
20 25 30	
cgc ctc ttt aga gag cat ggt gca aag gta tgt att gca gat atc caa	144
Arg Leu Phe Arg Glu His Gly Ala Lys Val Cys Ile Ala Asp Ile Gln	
35 40 45	
gat gaa gca ggt cag aag ctc cgg gac tcc ctt gga ggt gac caa gat	192
Asp Glu Ala Gly Gln Lys Leu Arg Asp Ser Leu Gly Gly Asp Gln Asp	
50 55 60	
gtc tta ttt gtc cac tgc gat gtt tcg gtg gaa gag gat gta gcc cga	240
Val Leu Phe Val His Cys Asp Val Ser Val Glu Glu Asp Val Ala Arg	
65 70 75 80	
gcg gtc gat gca aca gct gaa aag ttt ggt act ctt gac atc atg gtc	288
Ala Val Asp Ala Thr Ala Glu Lys Phe Gly Thr Leu Asp Ile Met Val	
85 90 95	
aac aat gct ggc ttt aca ggc cag aaa atc aca gat atc cga aac atc	336
Asn Asn Ala Gly Phe Thr Gly Gln Lys Ile Thr Asp Ile Arg Asn Ile	
100 105 110	
gac ttt tct gaa gtc agg aag gta atc gac atc aat tta gtt ggt gta	384
Asp Phe Ser Glu Val Arg Lys Val Ile Asp Ile Asn Leu Val Gly Val	
115 120 125	
ttc cac ggg atg aaa cac gca gcc cgc atc atg atc ccc aat aag aag	432
Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro Asn Lys Lys	
130 135 140	
ggg tcc atc atc tca ttg gga agt gtt tct agt gtc att gga ggg ttg	480
Gly Ser Ile Ile Ser Leu Gly Ser Val Ser Ser Val Ile Gly Gly Leu	
145 150 155 160	
gga cct cat tca tac aca gca acc aag cat gct gtg gtg ggt cta acc	528
Gly Pro His Ser Tyr Thr Ala Thr Lys His Ala Val Val Gly Leu Thr	
165 170 175	
aag aat gta gct ggg gaa ttg ggg aag cat ggg ata cgc gtg aac tgc	576
Lys Asn Val Ala Gly Glu Leu Gly Lys His Gly Ile Arg Val Asn Cys	
180 185 190	
gta tct ccc tat gca gtg ccc acg gct ctc tcc atg ccg tat ctg ccc	624
Val Ser Pro Tyr Ala Val Pro Thr Ala Leu Ser Met Pro Tyr Leu Pro	
195 200 205	
cag ggc gag cgc aag gat gat gcc ctg aaa gac ttt ttc gcc ttt gtt	672
Gln Gly Glu Arg Lys Asp Asp Ala Leu Lys Asp Phe Phe Ala Phe Val	
210 215 220	
ggt ggt gaa gca aac ctg aaa ggt gtg gat ctg cta cct aag gat gtt	720
Gly Gly Glu Ala Asn Leu Lys Gly Val Asp Leu Leu Pro Lys Asp Val	

## PhoenixTemp32470.tmp.txt

225 gct caa gca gtg ctc 230 ttg gca agc gat 235 gaa gcg agg tac atc agc 240  
 Ala Gln Ala Val Leu Tyr Leu Ala Ser Asp Glu Ala Arg Tyr Ile Ser 768  
 gcg ctc aac ctc atg gtg gat ggt ggc ttt acc tct gtg aat cac aat 816  
 Ala Leu Asn Leu Met Val Asp Gly Gly Phe Thr Ser Val Asn His Asn  
 ttg aga gca ttt gaa gat taa 837  
 Leu Arg Ala Phe Glu Asp  
 275

&lt;210&gt; 3274

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3274

Met Ser Ala Ala Ala Ser Ser Pro Ala Pro Arg Leu Glu Ser Lys  
 1 Val Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Ile Val  
 Arg Leu Phe Arg Glu His Gly Ala Lys Val Cys Ile Ala Asp Ile Gln  
 35 Asp Glu Ala Gly Gln Lys Leu Arg Asp Ser Leu Gly Gly Asp Gln Asp  
 50 Val Leu Phe Val His Cys Asp Val Ser Val Glu Glu Asp Val Ala Arg  
 65 Ala Val Asp Ala Thr Ala Glu Lys Phe Gly Thr Leu Asp Ile Met Val  
 85 Asn Asn Ala Gly Phe Thr Gly Gln Lys Ile Thr Asp Ile Arg Asn Ile  
 100 Asp Phe Ser Glu Val Arg Lys Val Ile Asp Ile Asn Leu Val Gly Val  
 115 Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro Asn Lys Lys  
 130 Gly Ser Ile Ile Ser Leu Gly Ser Val Ser Ser Val Ile Gly Gly Leu  
 145 Gly Pro His Ser Tyr Thr Ala Thr Lys His Ala Val Val Gly Leu Thr  
 165 Lys Asn Val Ala Gly Glu Leu Gly Lys His Gly Ile Arg Val Asn Cys  
 180 Val Ser Pro Tyr Ala Val Pro Thr Ala Leu Ser Met Pro Tyr Leu Pro  
 195 Gln Gly Glu Arg Lys Asp Asp Ala Leu Lys Asp Phe Phe Ala Phe Val  
 210 Gly Gly Glu Ala Asn Leu Lys Gly Val Asp Leu Leu Pro Lys Asp Val  
 225 Ala Gln Ala Val Leu Tyr Leu Ala Ser Asp Glu Ala Arg Tyr Ile Ser  
 245 Ala Leu Asn Leu Met Val Asp Gly Gly Phe Thr Ser Val Asn His Asn  
 260 Leu Arg Ala Phe Glu Asp  
 275

&lt;210&gt; 3275

&lt;211&gt; 1179

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1179)

&lt;400&gt; 3275

atg agg gtt ctt cct ctt cgt gcc acc acg gct ctc ctg gcc acc ctc 48  
 Met Arg Val Leu Pro Leu Arg Ala Thr Thr Ala Leu Leu Ala Thr Leu  
 1 ctg gtc gcc gcc tcg ttc cag gat ctc acc gtc gct gca gac ggc ggc 96  
 Leu Val Ala Ala Ser Phe Gln Asp Leu Thr Val Ala Ala Asp Gly Gly  
 250

25

Page 2965

385

390

<210> 3276  
 <211> 392  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 3276  
 Met Arg Val Leu Pro Leu Arg Ala Thr Thr Ala Leu Leu Ala Thr Leu  
 1 5 10 15  
 Leu Val Ala Ala Ser Phe Gln Asp Leu Thr Val Ala Ala Asp Gly Gly  
 20 25 30  
 Gly Gly Val Val Pro Val Pro Asp Ser Val Cys Asp Ala Lys Cys Gln  
 35 40 45  
 Lys Arg Cys Ser Leu Lys Val Ala Gly Arg Cys Met Gly Leu Cys Lys  
 50 55 60  
 Met Cys Cys His Asp Cys Gly Gly Cys Val Pro Ser Gly Pro Tyr Ala  
 65 70 75 80  
 Ser Lys Asp Glu Cys Pro Cys Tyr Arg Asp Met Val Ser Pro Lys Ser  
 85 90 95  
 Arg Arg Pro Lys Cys Pro Arg Glu Lys Ser Gly Ala Met Gly Ala Leu  
 100 105 110  
 Cys Gly Leu Gly Ser His Phe Ser Thr Ala Ser Ser Cys Gln Arg Leu  
 115 120 125  
 Pro Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys  
 130 135 140  
 Ala Thr Ala Ala Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Leu Ala  
 145 150 155 160  
 Asp Ile Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Pro  
 165 170 175  
 Asp Ala Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Ile Ala  
 180 185 190  
 Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp Ile Leu  
 195 200 205  
 Tyr Ser Asn Ala Gly Ile Ser Gly Ser Ser Ala Pro Ala Pro Leu Ala  
 210 215 220  
 Ser Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Ala Asn Ala Arg  
 225 230 235 240  
 Ser Ala Val Ala Ala Val Lys His Ala Ala Arg Val Met Val Pro Arg  
 245 250 255  
 Arg Gly Gly Cys Val Leu Cys Thr Gly Ser Thr Thr Gly Met Leu Gly  
 260 265 270  
 Gly Leu Ala Ala Leu Pro Tyr Ser Leu Ser Lys Ala Ala Val Val Gly  
 275 280 285  
 Val Val Arg Leu Ala Ala Glu Leu Ala Arg Ser Gly Val Arg Val  
 290 295 300  
 Asn Ala Ile Ser Pro His Ala Ile Ala Thr Pro Leu Leu Val Arg Ser  
 305 310 315 320  
 Leu Ala Arg Met Asn Pro Gly Val Ser Asp Glu Gln Leu Lys Glu Met  
 325 330 335  
 Val Glu Arg Gly Met Ser Glu Leu His Gly Ala Val Leu Glu Leu Glu  
 340 345 350  
 Asp Val Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Phe  
 355 360 365  
 Val Thr Gly Gln Asn His Val Ile Asp Gly Gly Phe Thr Val Gly Lys  
 370 375 380  
 Pro Met Asp Met Arg Val Pro Arg  
 385 390

<210> 3277  
 <211> 897  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(897)

<400> 3277

## PhoenixTemp32470.tmp.txt

atg	cat	cgc	atc	ctc	agc	agg	ggg	agg	agg	aca	cct	gca	gct	tcg	tct	48
Met	His	Arg	Ile	Leu	Ser	Arg	Gly	Arg	Arg	Thr	Pro	Ala	Ala	Ser	Ser	
1				5				10					15			
tcc	tcc	gtc	act	gcc	ttc	gcc	acc	gcc	tcc	gat	tca	cag	agg	ttg	gcc	96
Ser	Ser	Val	Thr	Ala	Phe	Ala	Thr	Ala	Ser	Asp	Ser	Gln	Arg	Leu	Ala	
			20				25					30				
ggg	aag	gtc	gcc	gtc	atc	acc	ggc	ggc	gcc	agc	ggc	atc	ggc	agg	gcg	144
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Arg	Ala	
		35					40				45					
acg	gcg	gag	gag	ttc	gtc	agg	aat	ggc	gcc	aag	gtc	atc	ctc	gcc	gat	192
Thr	Ala	Glu	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	
	50					55				60						
gtg	cag	gac	gac	ctg	gga	cac	gcc	gtc	gcc	gag	gag	ctc	ggc	gcg	gac	240
Val	Gln	Asp	Asp	Leu	Gly	His	Ala	Val	Ala	Ala	Glu	Leu	Gly	Ala	Asp	
	65				70				75						80	
gcg	gcg	tcg	tac	gcg	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	gtc	gcg	288
Ala	Ala	Ser	Tyr	Ala	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	
				85					90				95			
gcc	gcc	gtg	gac	ctc	gcc	gtg	gca	cgg	cac	ggg	cgt	ctc	gac	gtc	gtc	336
Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Val	
			100					105					110			
ttc	aac	aac	gcc	ggc	atc	ccc	ggt	gac	ctc	acg	ccg	acc	ccc	gtg	ggc	384
Phe	Asn	Asn	Ala	Gly	Ile	Pro	Gly	Asp	Leu	Thr	Pro	Thr	Pro	Val	Gly	
		115					120					125				
gcg	ctg	gac	ctc	gct	gac	ttc	gac	cgc	gtg	atg	gcg	gtg	aac	acc	agg	432
Ala	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Thr	Arg	
	130					135					140					
gcg	gtg	gtg	gcg	ggc	gtc	aag	cac	gcc	gcg	cgc	gtc	atg	gtg	ccg	cgc	480
Ala	Val	Val	Ala	Gly	Val	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Arg	
	145				150				155						160	
cgc	cgc	ggc	agc	atc	atc	tgc	acg	gcg	agc	acg	gcg	ggg	gtg	atc	ggt	528
Arg	Arg	Gly	Ser	Ile	Ile	Cys	Thr	Ala	Ser	Thr	Ala	Gly	Val	Ile	Gly	
			165					170					175			
ggc	gtg	gcg	gtc	ccg	cac	tac	agc	gtg	tcc	aag	gcc	gcg	gtg	ctc	ggg	576
Gly	Val	Ala	Val	Pro	His	Tyr	Ser	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	
			180					185					190			
ctg	gtg	cgc	gcc	gtg	gcg	ggc	gag	atg	gcg	cgc	tcc	ggc	gtg	cgc	gtg	624
Leu	Val	Arg	Ala	Val	Ala	Gly	Glu	Met	Ala	Arg	Ser	Gly	Val	Arg	Val	
		195					200					205				
aac	gcc	atc	tcc	ccc	aac	tac	atc	tgg	acg	ccc	atg	gcg	gcg	gtc	gcc	672
Asn	Ala	Ile	Ser	Pro	Asn	Tyr	Ile	Trp	Thr	Pro	Met	Ala	Ala	Val	Ala	
	210					215					220					
ttc	gca	agg	tgg	tac	ccc	agc	cgg	agc	gcc	gac	gac	cac	cgc	cgg	atc	720
Phe	Ala	Arg	Trp	Tyr	Pro	Ser	Arg	Ser	Ala	Asp	Asp	His	Arg	Arg	Ile	
	225				230				235						240	
gtg	gag	aat	gac	ata	aac	gag	atg	gat	ggc	gtg	aca	ctg	gag	gcc	gag	768
Val	Glu	Asn	Asp	Ile	Asn	Glu	Met	Asp	Gly	Val	Thr	Leu	Glu	Ala	Glu	
				245					250					255		
gac	gtg	gca	agg	gcg	gcg	gtg	ttc	ctc	gcc	tcc	gac	gag	gct	aag	tac	816
Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	
			260					265					270			
gtg	aac	ggg	cac	aac	ctc	gtt	gtc	gac	ggc	ggg	tac	acc	gtc	ggc	aag	864
Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	Val	Gly	Lys	
		275					280					285				
gtg	ccc	aac	atg	ccg	gtc	cca	gat	ggc	cat	tga						897
Val	Pro	Asn	Met	Pro	Val	Pro	Asp	Gly	His							
	290					295										

&lt;210&gt; 3278

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3278

Met	His	Arg	Ile	Leu	Ser	Arg	Gly	Arg	Arg	Thr	Pro	Ala	Ala	Ser	Ser
1				5				10						15	
Ser	Ser	Val	Thr	Ala	Phe	Ala	Thr	Ala	Ser	Asp	Ser	Gln	Arg	Leu	Ala
			20					25				30			
Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Arg	Ala

## PhoenixTemp32470.tmp.txt

35  
 Thr Ala Glu Glu Phe Val Arg 40 Asn Gly Ala Lys Val 45 Ile Leu Ala Asp  
 50  
 Val Gln Asp Asp Leu Gly 55 His Ala Val Ala Ala Glu 60 Leu Gly Ala Asp  
 65  
 Ala Ala Ser Tyr Ala 70 Arg Cys Asp Val Thr 75 Asp Glu Ala Gln Val Ala  
 85  
 Ala Ala Val Asp 100 Leu Ala Val Ala Arg 105 His Gly Arg Leu Asp 110 Val Val  
 Phe Asn Asn Ala Gly Ile Pro Gly 120 Asp Leu Thr Pro Thr 125 Pro Val Gly  
 115  
 Ala Leu Asp Leu Ala Asp Phe 135 Asp Arg Val Met Ala Val Asn Thr Arg  
 130  
 Ala Val Val Ala Gly Val 150 Lys His Ala Ala Arg 155 Val Met Val Pro Arg  
 145  
 Arg Arg Gly Ser Ile 165 Ile Cys Thr Ala Ser Thr 170 Ala Gly Val Ile Gly  
 Gly Val Ala Val 180 Pro His Tyr Ser Val 185 Ser Lys Ala Ala Val Leu Gly  
 Leu Val Arg Ala Val Ala Gly Glu 200 Met Ala Arg Ser Gly 205 Val Arg Val  
 195  
 Asn Ala Ile Ser Pro Asn Tyr 215 Ile Trp Thr Pro Met Ala Ala Val Ala  
 210  
 Phe Ala Arg Trp Tyr Pro 230 Ser Arg Ser Ala Asp 235 His Arg Arg Ile  
 225  
 Val Glu Asn Asp Ile Asn Glu Met Asp Gly Val Thr Leu Glu Ala Glu  
 245  
 Asp Val Ala Arg Ala Ala Val Phe Leu 250 Ala Ser Asp Glu Ala Lys Tyr  
 260  
 Val Asn Gly His Asn Leu Val Val 280 Asp Gly Gly Tyr Thr 285 Val Gly Lys  
 275  
 Val Pro Asn Met Pro Val Pro 295 Asp Gly His  
 290

&lt;210&gt; 3279

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 3279

atg	acg	tcg	act	tcg	cct	gaa	agt	cta	atc	gcc	ggt	gga	ttc	tcc	acg	48
Met	Thr	Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	
1				5				10					15			
gcg	gcg	agc	tcc	cac	cag	agg	ttg	gcc	ggc	aag	gtg	gcc	gtc	atc	acc	96
Ala	Ala	Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	
			20					25					30			
ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	acc	gcc	gcg	gag	ttc	atc	agg	144
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	
			35				40					45				
aac	ggc	gcc	aag	gtg	atc	atc	acc	gac	gtc	aac	gac	gac	ctc	ggc	cac	192
Asn	Gly	Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	
	50				55			60								
gcc	gcg	gcg	gcg	gag	ctc	ggc	ccg	gac	gcc	acg	tac	gcg	cgc	tgc	gac	240
Ala	Ala	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	
	65				70				75						80	
gtc	gcc	gac	gag	gcg	cag	gtc	gcc	gcc	gcc	gtc	gac	ctc	gcc	gtg	gcg	288
Val	Ala	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
			85				90						95			
cgc	cac	ggc	cgc	ctc	gac	gtc	atg	cac	aac	aac	gcc	gcc	atc	ccg	ggg	336
Arg	His	Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	
			100				105						110			
agg	ttc	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ctc	gcc	gac	ttc	gac	384
Arg	Phe	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asp	Phe	Asp	
		115					120					125				
gcc	atg	atg	gcg	gtg	aac	gcc	cgc	gcg	tcg	ctc	gcc	ggc	atc	aag	cac	432

## PhoenixTemp32470.tmp.txt

Ala	Met	Met	Ala	Val	Asn	Ala	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	His	
130						135					140					
gcc	gcg	cgc	gtc	atg	gcg	ccc	cgc	cgc	gcc	ggc	gtc	atc	ctc	tgc	acg	480
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	
145					150					155					160	
gcc	agc	gcc	gtc	ggc	gtc	ctc	ccg	ctc	ccg	gcg	gtc	gcc	acg	cac	tcc	528
Ala	Ser	Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	
				165					170					175		
atc	acc	aag	gcc	acc	atc	atc	gcc	atc	gtg	cgc	gca	gcg	gcg	gag	ccc	576
Ile	Thr	Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	
			180				185						190			
ctg	gcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	ggc	gcc	gtc	624
Leu	Ala	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	
			195				200					205				
agg	acg	ccg	gtc	ctg	cag	ggc	aag	gtg	tcg	gtg	atg	tcg	gcg	tcg	tct	672
Arg	Thr	Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	
210					215						220					
cct	acc	atg	agc	gac	gag	ctg	aag	cag	atg	atc	gac	gtc	gac	gcg	aac	720
Pro	Thr	Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	
225					230					235					240	
gac	atg	atg	atg	ggg	ccg	gag	gag	gtg	gcc	atg	gcg	gcg	gtg	tac	ctc	768
Asp	Met	Met	Met	Gly	Pro	Glu	Glu	Val	Ala	Met	Ala	Ala	Val	Tyr	Leu	
				245					250					255		
gcc	tcc	gac	gag	gcc	agg	tac	gtg	acc	ggc	cac	aac	ctc	gtc	gtc	gac	816
Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	
			260				265						270			
ggc	ggg	tac	acc	gtg	cac	aaa	gga	gct	gac	aca	ccg	gcg	gcg	cgt		861
Gly	Gly	Tyr	Thr	Val	His	Lys	Gly	Ala	Asp	Thr	Pro	Ala	Ala	Arg		
		275					280					285				
tga																864

&lt;210&gt; 3280

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3280

Met	Thr	Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	
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Ala	Ala	Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	
			20					25				30				
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	
		35					40					45				
Asn	Gly	Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	
	50					55				60						
Ala	Ala	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	
65				70						75				80		
Val	Ala	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
			85					90					95			
Arg	His	Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	
			100					105					110			
Arg	Phe	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Leu	Ala	Asp	Phe	Asp	
		115					120					125				
Ala	Met	Met	Ala	Val	Asn	Ala	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	His	
	130					135					140					
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	
145				150						155				160		
Ala	Ser	Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	
			165						170					175		
Ile	Thr	Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	
			180					185					190			
Leu	Ala	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	
		195					200					205				
Arg	Thr	Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	
	210					215					220					
Pro	Thr	Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	240
225					230					235						



## PhoenixTemp32470.tmp.txt

Asp Met Met Met Gly Pro Glu Glu Val Ala Met Ala Ala Val Tyr Leu  
 245 250 255  
 Ala Ser Asp Glu Ala Arg Tyr Val Thr Gly His Asn Leu Val Val Asp  
 260 265 270  
 Gly Gly Tyr Thr Val His Lys Gly Ala Asp Thr Pro Ala Ala Arg  
 275 280 285

&lt;210&gt; 3281

&lt;211&gt; 873

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(873)

&lt;400&gt; 3281

atg	cag	ctc	gtt	ctc	agg	gtg	aag	aga	tcg	tcg	ggt	tta	cta	cac	caa	48
Met	Gln	Leu	Val	Leu	Arg	Val	Lys	Arg	Ser	Ser	Gly	Leu	Leu	His	Gln	
1				5				10						15		
ttc	tcc	act	gcg	gcg	aac	tcg	cag	agg	ttg	gcc	ggg	aag	gtg	gcc	gtc	96
Phe	Ser	Thr	Ala	Ala	Asn	Ser	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	
			20					25					30			
atc	acc	ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	tcg	gcg	aag	gag	ttc	144
Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Ser	Ala	Lys	Glu	Phe	
		35					40					45				
atc	ggc	aat	ggc	gcc	aag	gtt	ata	ctc	gcc	gac	gtc	cag	gac	gac	ctc	192
Ile	Gly	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Val	Gln	Asp	Asp	Leu	
	50					55					60					
ggc	cgc	gcc	gtc	gcc	gcc	gag	ctc	ggc	cct	ggc	gcg	acg	tac	acg	cgg	240
Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	Gly	Ala	Thr	Tyr	Thr	Arg	
	65				70					75					80	
tgc	gac	gtc	acg	gac	gag	gcg	cag	gtc	gcc	gcg	gcg	gtg	gac	ctc	gcc	288
Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	
				85					90					95		
gtg	gcg	cgc	cac	ggg	gcg	ctc	gac	gtg	ttc	tac	agc	aac	gcc	ggc	gtc	336
Val	Ala	Arg	His	Gly	Ala	Leu	Asp	Val	Phe	Tyr	Ser	Asn	Ala	Gly	Val	
			100					105					110			
ctg	ggc	tcc	atc	gcg	ccg	gcg	ccg	ctc	gcc	tcc	ctg	gac	ctg	ggc	gag	384
Leu	Gly	Ser	Ile	Ala	Pro	Ala	Pro	Leu	Ala	Ser	Leu	Asp	Leu	Gly	Glu	
			115				120					125				
ttc	gac	cgc	gtc	atg	gcc	gtg	aac	gcc	cgc	gcc	gcc	gtc	gcc	gcc	gcc	432
Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	Ala	Val	Ala	Ala	Ala	
	130					135					140					
aag	cac	gcg	gcg	cgc	gcc	atg	gtg	ccg	cgc	cgg	agc	ggg	tgc	gtc	ctc	480
Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	Ser	Gly	Cys	Val	Leu	
	145				150				155						160	
ttc	acg	ggg	agc	gtg	tcg	ggc	gtg	gtg	ggc	ggc	acg	ggg	ccg	acg	tcg	528
Phe	Thr	Gly	Ser	Val	Ser	Gly	Val	Val	Gly	Gly	Thr	Gly	Pro	Thr	Ser	
			165					170						175		
tac	ggc	gtg	tcg	aag	gcg	gcc	gtg	ctg	ggc	gtg	gtg	cgc	gcc	gtg	gcc	576
Tyr	Gly	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Val	Val	Arg	Ala	Val	Ala	
			180					185					190			
ggg	gag	ctg	gcg	cgc	cac	ggc	gtg	cgg	gcg	aac	gcc	gtc	tcg	ccg	tgc	624
Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Ala	Asn	Ala	Val	Ser	Pro	Cys	
		195					200					205				
ggc	gtc	gcg	acg	ccg	ctg	tcc	atg	gtg	cag	gtc	ctt	gag	gcc	tac	ccc	672
Gly	Val	Ala	Thr	Pro	Leu	Ser	Met	Val	Gln	Val	Leu	Glu	Ala	Tyr	Pro	
	210					215					220					
ggg	atg	agc	ttc	gag	gag	ctc	aag	aac	gcc	atg	gcg	gcg	tcc	atg	gag	720
Gly	Met	Ser	Phe	Glu	Glu	Leu	Lys	Asn	Ala	Met	Ala	Ala	Ser	Met	Glu	
	225				230					235					240	
cag	atg	gaa	gct	ggc	ccg	ttg	atc	gac	ccc	gag	gac	gtg	gcg	agg	gcg	768
Gln	Met	Glu	Ala	Gly	Pro	Leu	Ile	Asp	Pro	Glu	Asp	Val	Ala	Arg	Ala	
			245						250					255		
gcc	gtc	ttc	ctg	gcg	tcc	gac	gag	gcc	agg	tac	atc	aac	ggc	cat	aac	816
Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Asn	Gly	His	Asn	
			260					265					270			
ctc	gtc	gtc	gac	ggc	ggc	ttc	acg	gtg	ggg	aag	ctg	ctc	aaa	atc	ccc	864

Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Leu Leu Lys Ile Pro  
 275 280 285  
 aag gag tag  
 Lys Glu  
 290

873

<210> 3282  
 <211> 290  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 3282  
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 Phe Ser Thr Ala Ala Asn Ser Gln Arg Leu Ala Gly Lys Val Ala Val  
 20 25 30  
 Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala Ser Ala Lys Glu Phe  
 35 40 45  
 Ile Gly Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp Leu  
 50 55 60  
 Gly Arg Ala Val Ala Ala Glu Leu Gly Pro Gly Ala Thr Tyr Thr Arg  
 65 70 75 80  
 Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala  
 85 90 95  
 Val Ala Arg His Gly Ala Leu Asp Val Phe Tyr Ser Asn Ala Gly Val  
 100 105 110  
 Leu Gly Ser Ile Ala Pro Ala Pro Leu Ala Ser Leu Asp Leu Gly Glu  
 115 120 125  
 Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala Val Ala Ala Ala  
 130 135 140  
 Lys His Ala Ala Arg Ala Met Val Pro Arg Arg Ser Gly Cys Val Leu  
 145 150 155 160  
 Phe Thr Gly Ser Val Ser Gly Val Val Gly Gly Thr Gly Pro Thr Ser  
 165 170 175  
 Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val Val Arg Ala Val Ala  
 180 185 190  
 Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn Ala Val Ser Pro Cys  
 195 200 205  
 Gly Val Ala Thr Pro Leu Ser Met Val Gln Val Leu Glu Ala Tyr Pro  
 210 215 220  
 Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met Ala Ala Ser Met Glu  
 225 230 235 240  
 Gln Met Glu Ala Gly Pro Leu Ile Asp Pro Glu Asp Val Ala Arg Ala  
 245 250 255  
 Ala Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Asn Gly His Asn  
 260 265 270  
 Leu Val Val Asp Gly Gly Phe Thr Val Gly Lys Leu Leu Lys Ile Pro  
 275 280 285  
 Lys Glu  
 290

<210> 3283  
 <211> 843  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(843)

<400> 3283  
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 Met Leu Thr Gly Phe Val Asn Ser Phe Ser Ser Val Ser Arg Pro Glu  
 1 5 10 15  
 agg ttg gct gga aag gtg gcc gtg atc acc ggt ggc gca agc ggc atc 96  
 Arg Leu Ala Gly Lys Val Ala Val Ile Thr Gly Gly Ala Ser Gly Ile  
 20 25 30  
 ggc gag gcg acg gcc aag gag ttc atc cgc aat ggc gcc aag gtc atc 144  
 Gly Glu Ala Thr Ala Lys Glu Phe Ile Arg Asn Gly Ala Lys Val Ile  
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## PhoenixTemp32470.tmp.txt

		35				40			45									
atc	gcc	gac	gta	caa	gac	gat	ctc	ggc	cac	acc	gtc	gct	gcc	gag	ctc			
Ile	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Ala	Glu	Leu			192
	50					55					60							
ggc	ccg	ggc	tcg	gcc	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag			240
Gly	Pro	Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln			
	65					70				75					80			
atc	gcg	gcg	acc	gtg	gac	ctt	gcc	gtg	gcg	cgc	cac	ggc	cac	ctt	gac			288
Ile	Ala	Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	Leu	Asp			
				85					90					95				
atc	ctg	tac	aac	aac	gcc	ggg	atc	aca	agc	tcc	tct	gtg	ggg	cac	ctt			336
Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	His	Leu			
			100					105					110					
gcc	tcc	ctc	gac	ctc	gcc	gac	ttc	gac	cgc	gtc	atg	gcg	gtg	aac	gcc			384
Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala			
			115				120					125						
cgg	gcg	gtg	ctc	gcc	ggc	atc	aag	cac	gcc	gcg	cgc	gtg	atg	gca	cca			432
Arg	Ala	Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro			
						135						140						
cga	cgc	acc	ggc	tcc	atc	ctc	tgc	acg	gcc	agc	gtg	gcg	ggc	atg	atg			480
Arg	Arg	Thr	Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	Met	Met			
					150				155						160			
ggc	ggc	gag	atg	ccc	cac	gcg	tac	aac	gtc	tcc	aag	gcg	gcg	gtc	ata			528
Gly	Gly	Glu	Met	Pro	His	Ala	Tyr	Asn	Val	Ser	Lys	Ala	Ala	Val	Ile			
				165					170					175				
ggt	gtg	gtg	cgg	tcc	gcc	gcc	ggc	gag	ctg	gca	cgc	cac	ggc	gtg	cgg			576
Gly	Val	Val	Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg			
			180				185						190					
ctg	aac	gcg	atc	tcg	ccg	ctc	ggc	atc	gcg	acg	cca	ctg	gcg	atg	cgc			624
Leu	Asn	Ala	Ile	Ser	Pro	Leu	Gly	Ile	Ala	Thr	Pro	Leu	Ala	Met	Arg			
			195				200					205						
ggg	ttc	ggc	gac	atg	ctg	gcg	tgg	gcg	gac	gcc	gag	cgg	gtg	agg	cgg			672
Gly	Phe	Gly	Asp	Met	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Val	Arg	Arg			
	210					215				220								
ctc	atc	gag	gag	gac	atg	aac	gag	cta	gag	ggc	gcg	acg	ctg	gag	gcg			720
Leu	Ile	Glu	Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Thr	Leu	Glu	Ala			
					230					235					240			
gag	gac	atc	gcg	agg	gcg	gcg	gtg	tac	ctc	gcc	tcc	gac	gag	gcc	aag			768
Glu	Asp	Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys			
				245					250					255				
tac	gtc	acc	ggg	cat	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acc	gtc	ggg			816
Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly			
			260				265						270					
aag	cgg	ctc	aac	gtg	gcg	cgt	gct	tga										843
Lys	Arg	Leu	Asn	Val	Ala	Arg	Ala											
		275					280											

&lt;210&gt; 3284

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3284

Met	Leu	Thr	Gly	Phe	Val	Asn	Ser	Phe	Ser	Ser	Val	Ser	Arg	Pro	Glu
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Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile
			20					25				30			
Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile
			35				40					45			
Ile	Ala	Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Ala	Glu	Leu
	50					55					60				
Gly	Pro	Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln
	65				70				75					80	
Ile	Ala	Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	Leu	Asp
				85					90				95		
Ile	Leu	Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	His	Leu
			100				105					110			
Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala
		115					120					125			

## PhoenixTemp32470.tmp.txt

Arg Ala Val Leu Ala Gly Ile Lys His Ala Ala Arg Val Met Ala Pro  
 130 140  
 Arg Arg Thr Gly Ser Ile Leu Cys Thr Ala Ser Val Ala Gly Met Met  
 145 155 160  
 Gly Gly Glu Met Pro His Ala Tyr Asn Val Ser Lys Ala Ala Val Ile  
 165 175  
 Gly Val Val Arg Ser Ala Ala Gly Glu Leu Ala Arg His Gly Val Arg  
 180 185 190  
 Leu Asn Ala Ile Ser Pro Leu Gly Ile Ala Thr Pro Leu Ala Met Arg  
 195 205  
 Gly Phe Gly Asp Met Leu Ala Trp Ala Asp Ala Glu Arg Val Arg Arg  
 210 220  
 Leu Ile Glu Glu Asp Met Asn Glu Leu Glu Gly Ala Thr Leu Glu Ala  
 225 235 240  
 Glu Asp Ile Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys  
 245 255  
 Tyr Val Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Val Gly  
 260 270  
 Lys Arg Leu Asn Val Ala Arg Ala 280

&lt;210&gt; 3285

&lt;211&gt; 924

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(924)

&lt;400&gt; 3285

atg	aaa	ggc	gcc	gag	tgc	tct	cat	cgc	agg	ggg	agg	agc	aga	ggt	gtt	48
Met	Lys	Gly	Ala	Glu	Cys	Ser	His	Arg	Arg	Gly	Arg	Ser	Arg	Gly	Val	
1				5					10					15		
cgt	ccg	atg	ttc	tct	tcc	ggc	ctg	gcc	gat	cgc	tcc	ttc	tcc	tcg	tcg	96
Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Ser	Phe	Ser	Ser	Ser	
			20					25					30			
gcg	tca	agc	tcc	aga	aag	ttg	gat	ggg	aaa	gtg	gcc	gtg	atc	acc	ggc	144
Ala	Ser	Ser	Ser	Arg	Lys	Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	
			35				40					45				
gcg	gcg	agc	ggc	atc	ggc	gag	gcc	acg	gcg	aag	gag	ttc	gtc	agg	aac	192
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	
			50			55					60					
ggc	gcc	aag	gtc	atc	ctt	gcc	gat	atc	cag	gac	gac	ctc	ggc	cgc	gcg	240
Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	
			65		70				75						80	
gtg	gcc	ggc	gag	ctc	ggc	gcc	gac	gcc	gcg	tcg	tac	acg	cac	tgc	gac	288
Val	Ala	Gly	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	
				85					90					95		
gtc	acg	gtg	gag	gcg	gat	gtc	gcc	gcg	gcc	gtc	gac	ctc	gcc	gtg	gcg	336
Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
			100					105					110			
cgc	cac	ggt	cgt	ctc	gac	gtc	gtg	tac	agc	aac	gcc	ggc	atc	gcc	ggc	384
Arg	His	Gly	Arg	Leu	Asp	Val	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala	Gly	
			115				120					125				
ggc	gca	cct	ccg	gcc	acg	ctc	gcg	gcg	ctc	gac	ctc	gac	gac	tac	gac	432
Gly	Ala	Pro	Pro	Ala	Thr	Leu	Ala	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	Asp	
			130			135					140					
cgc	gtc	atg	gcc	gtc	aac	gcc	agg	tcc	atg	gtg	gcg	tgc	ctc	aag	cac	480
Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	His	
					150				155						160	
gcg	gcg	cg	gtc	atg	gcg	ccg	cg	cg	gcc	ggc	tgc	atc	ctc	tgc	acg	528
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	
				165					170					175		
gcg	agc	tcc	acg	gcg	gtg	ctc	ggc	aac	atc	ggg	ccc	ctc	gcg	tac	tcc	576
Ala	Ser	Ser	Thr	Ala	Val	Leu	Gly	Asn	Ile	Gly	Pro	Leu	Ala	Tyr	Ser	
			180					185					190			
atg	tcg	aag	gcg	gcc	gtc	gtc	ggc	atg	gtg	cag	acg	acg	gtg	gcg	agg	624
Met	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Gln	Thr	Thr	Val	Ala	Arg	

[illegible]

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<210> 3286
<211> 307
<212> PRT
<213> Oryza sativa subsp
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[illegible]

## PhoenixTemp32470.tmp.txt

<210> 3287  
 <211> 954  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(954)

<400> 3287  
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 1 5 10 15  
 att tac aaa tgt tta ctg ctg ttc ttg aca cca caa aac aca tgg ggg 96  
 Ile Tyr Lys Cys Leu Leu Leu Phe Leu Thr Pro Gln Asn Thr Trp Gly  
 20 25 30  
 aag agc ata gct gct cac gta ttc tcc tcg tcg tca aga tcc aga 144  
 Lys Ser Ile Ala Ala His Val Phe Ser Ser Ser Arg Ser Arg  
 35 40 45  
 aag ttg gat ggc aaa gtg gcc gtg ata acc ggc gca gcg agc ggc atc 192  
 Lys Leu Asp Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile  
 50 55 60  
 ggc gag gcc acg gcg aag gag ggc ggc aag gtt atc 240  
 Gly Glu Ala Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile  
 65 70 75 80  
 att gcc gat atc aag gat gat ctc ggc cgc gcc gtg gcc ggc gag ctc 288  
 Ile Ala Asp Ile Lys Asp Asp Leu Gly Arg Ala Val Ala Gly Glu Leu  
 85 90 95  
 ggc gcc gac gcc gcg tcg tac acg cac tgc gac gtc acc gtc gag aag 336  
 Gly Ala Asp Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys  
 100 105 110  
 gat gtc gcc tcg gcc gtc gac ctc gcc gtg gcg cga cac ggc cgc ctc 384  
 Asp Val Ala Ser Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu  
 115 120 125  
 gac gtc gtg tac agc aac gcc gcc atc gcg ggt ggc gcg cct ccg gcc 432  
 Asp Val Val Tyr Ser Asn Ala Ala Ile Ala Gly Ala Pro Pro Ala  
 130 135 140  
 acg ctc gcg gcg ctc gac ctc gac gag tac gac cgc gtc atg gcc gtc 480  
 Thr Leu Ala Ala Leu Asp Leu Asp Glu Tyr Asp Arg Val Met Ala Val  
 145 150 155 160  
 aac gcc agg tcc atg ttg gcg tgc gtc aag cac gcg gcg cgc gtc atg 528  
 Asn Ala Arg Ser Met Leu Ala Cys Val Lys His Ala Ala Arg Val Met  
 165 170 175  
 gcg ccc cgc cgc gcc ggt tgc atc ctc tgc acg gcc agc acg gcg gcg 576  
 Ala Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr Ala Ser Thr Ala Ala  
 180 185 190  
 gtg ctc ggc ggc atg gcg gcg ccg gcg tac tcc atg tcg aag gcg gcc 624  
 Val Leu Gly Gly Met Ala Ala Pro Ala Tyr Ser Met Ser Lys Ala Ala  
 195 200 205  
 gtc gtc ggc atg gtg cgg acg gtg gcg agg cag ctg gcg cgc gac ggc 672  
 Val Val Gly Met Val Arg Thr Val Ala Arg Gln Leu Ala Arg Asp Gly  
 210 215 220  
 gtg cgg gtg aac gcc atc tcg ccg cac gca gtc ccg acg ccg atg gcg 720  
 Val Arg Val Asn Ala Ile Ser Pro His Ala Val Pro Thr Pro Met Ala  
 225 230 235 240  
 ata ggt ctc ttc tcc gag acg ttc ccg gcg acc gcg gag gag gtg 768  
 Ile Gly Leu Phe Ser Glu Thr Phe Pro Ala Thr Ala Glu Glu Val  
 245 250 255  
 agg agg atg gtg acg agg gag atg cag gag ctg gaa ggg gcg tcg ctg 816  
 Arg Arg Met Val Thr Arg Glu Met Gln Glu Leu Glu Gly Ala Ser Leu  
 260 265 270  
 gag gtg gaa gac gtg gcg agg gcg gtc ttc ttg gcg tcc gac gag 864  
 Glu Val Glu Asp Val Ala Arg Ala Val Phe Leu Ala Ser Asp Glu  
 275 280 285  
 gcc aag ttc atc acc ggc cac aac ctc gtc gtc gac ggc ggg ttc acg 912  
 Ala Lys Phe Ile Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr  
 290 295 300  
 gca ggc aag gtg ctc gtc cgg gat cct ccg gcc tct gct tga 954

Ala Gly Lys Val Leu Val Arg Asp Pro Pro Gly Ser Ala  
305 310 315

<210> 3288  
<211> 317  
<212> PRT  
<213> Oryza sativa subsp

<400> 3288  
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Ile Tyr Lys Cys Leu Leu Leu Phe Leu Thr Pro Gln Asn Thr Trp Gly  
20 25 30  
Lys Ser Ile Ala Ala His Val Phe Phe Ser Ser Ser Arg Ser Arg  
35 40 45  
Lys Leu Asp Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile  
50 55 60  
Gly Glu Ala Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile  
65 70 75 80  
Ile Ala Asp Ile Lys Asp Asp Leu Gly Arg Ala Val Ala Gly Glu Leu  
85 90 95  
Gly Ala Asp Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys  
100 105 110  
Asp Val Ala Ser Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu  
115 120 125  
Asp Val Val Tyr Ser Asn Ala Ala Ile Ala Gly Gly Ala Pro Pro Ala  
130 135 140  
Thr Leu Ala Ala Leu Asp Leu Asp Glu Tyr Asp Arg Val Met Ala Val  
145 150 155 160  
Asn Ala Arg Ser Met Leu Ala Cys Val Lys His Ala Ala Arg Val Met  
165 170 175  
Ala Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr Ala Ser Thr Ala Ala  
180 185 190  
Val Leu Gly Gly Met Ala Ala Pro Ala Tyr Ser Met Ser Lys Ala Ala  
195 200 205  
Val Val Gly Met Val Arg Thr Val Ala Arg Gln Leu Ala Arg Asp Gly  
210 215 220  
Val Arg Val Asn Ala Ile Ser Pro His Ala Val Pro Thr Pro Met Ala  
225 230 235 240  
Ile Gly Leu Phe Ser Glu Thr Phe Pro Ala Thr Ala Glu Glu Val  
245 250 255  
Arg Arg Met Val Thr Arg Glu Met Gln Glu Leu Glu Gly Ala Ser Leu  
260 265 270  
Glu Val Glu Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu  
275 280 285  
Ala Lys Phe Ile Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr  
290 295 300  
Ala Gly Lys Val Leu Val Arg Asp Pro Pro Gly Ser Ala  
305 310 315

<210> 3289  
<211> 1044  
<212> DNA  
<213> Oryza sativa subsp

<220>  
<221> CDS  
<222> (1)..(1044)

<400> 3289  
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Met Thr Ala Val Asp Leu Met Pro Ala Ala Asp Asp Asp Asn Asn Lys  
1 5 10 15  
cag tca tcc acc ggc ctc ctc cac ccc cac cag ctc ccc gcc gcc gcc 96  
Gln Ser Ser Thr Gly Leu Leu His Pro His Gln Leu Pro Ala Ala Ala  
20 25 30  
gac aac gcc ata cta cac aat acc agg cat cca ttc att tct act act 144  
Asp Asn Ala Ile Leu His Asn Thr Arg His Pro Phe Ile Ser Thr Thr  
35 40 45

## PhoenixTemp32470.tmp.txt

cta	gct	aat	tca	ttc	ttc	aat	cga	tcg	atc	agc	gcg	cga	gta	att	cat	192
Leu	Ala	Asn	Ser	Phe	Phe	Asn	Arg	Ser	Ile	Ser	Ala	Arg	Val	Ile	His	
	50					55					60					
tct	tcg	att	tgc	agg	cgg	ctg	gag	ggg	aag	gtg	gcc	atc	gtc	acc	ggc	240
Ser	Ser	Ile	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Val	Thr	Gly	
	65				70				75						80	
ggc	tcg	cgt	ggc	atc	ggc	gaa	gcc	atc	gta	agg	gcc	ttc	ggt	cac	cac	288
Gly	Ser	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Ala	Phe	Val	His	His	
				85					90					95		
ggc	gct	ctc	gtc	gtc	gtc	gcc	gac	atc	gac	gac	gcc	ggg	ggc	cac	gcg	336
Gly	Ala	Leu	Val	Val	Val	Ala	Asp	Ile	Asp	Asp	Ala	Gly	Gly	His	Ala	
			100					105					110			
ctg	gcc	gcc	gcg	ctc	ggc	ccg	cac	gcc	tgc	acc	tac	gtc	cac	tgc	gac	384
Leu	Ala	Ala	Ala	Leu	Gly	Pro	His	Ala	Cys	Thr	Tyr	Val	His	Cys	Asp	
		115					120					125				
gtg	gcc	gag	gag	gcc	gac	gtg	gaa	cgc	gcc	gtc	gcc	acc	acg	ctg	gag	432
Val	Ala	Glu	Glu	Ala	Asp	Val	Glu	Arg	Ala	Val	Ala	Thr	Thr	Leu	Glu	
	130					135					140					
cag	cac	ggc	cgc	ctg	gac	gtg	ctg	tgc	aac	aac	gcc	ggg	gtg	ctg	ggc	480
Gln	His	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	Ala	Gly	Val	Leu	Gly	
	145				150				155						160	
cgc	cag	acg	cgc	ggc	gcc	aag	agc	atc	gcg	tcc	ctc	gac	gcc	gcc	gag	528
Arg	Gln	Thr	Arg	Gly	Ala	Lys	Ser	Ile	Ala	Ser	Leu	Asp	Ala	Ala	Glu	
				165					170					175		
ttc	gcc	cgc	gtg	ctg	cgc	gtc	aac	gcg	ctg	ggc	gcc	gcc	ctc	ggc	atg	576
Phe	Ala	Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	
			180					185					190			
aag	cac	gcg	gcg	cgt	gcc	atg	gtg	ccc	cgc	cgc	tcc	ggg	agc	atc	gtg	624
Lys	His	Ala	Ala	Arg	Ala	Met	Val	Pro	Arg	Arg	Ser	Gly	Ser	Ile	Val	
		195					200					205				
tcg	gtg	gcg	agc	gtg	gcg	ggc	gtg	atg	ggc	ggc	ctc	ggc	ccg	cac	gcg	672
Ser	Val	Ala	Ser	Val	Ala	Gly	Val	Met	Gly	Gly	Leu	Gly	Pro	His	Ala	
	210					215					220					
tac	acg	gcc	tcc	aag	cac	gcc	cta	gtg	ggg	ctc	acc	aag	aac	gcc	gcc	720
Tyr	Thr	Ala	Ser	Lys	His	Ala	Leu	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	
	225				230				235					240		
tgc	gag	ctc	ggg	gag	cac	ggc	atc	cgc	gtc	aac	tgc	atc	tcc	ccc	ttc	768
Cys	Glu	Leu	Gly	Glu	His	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	
			245						250					255		
ggc	gtg	gcg	acg	ccg	atg	ctg	gtg	aac	gcg	tgg	cgg	cag	ggg	cag	gga	816
Gly	Val	Ala	Thr	Pro	Met	Leu	Val	Asn	Ala	Trp	Arg	Gln	Gly	Gln	Gly	
			260					265					270			
gga	gat	cac	gcg	gat	gag	gat	cag	gcg	gcg	gcg	agc	gag	gag	gag	gag	864
Gly	Asp	His	Ala	Asp	Glu	Asp	Gln	Ala	Ala	Ala	Ser	Glu	Glu	Glu	Glu	
		275					280					285				
gtg	gag	aag	atg	gag	gag	atg	gtg	cgg	agg	ctg	gcg	acg	ctc	aag	ggg	912
Val	Glu	Lys	Met	Glu	Glu	Met	Val	Arg	Arg	Leu	Ala	Thr	Leu	Lys	Gly	
	290					295					300					
ccg	acg	ctg	cgg	gca	ggc	gac	atc	gcg	gag	gcg	gcg	gtg	ttc	ctg	gcc	960
Pro	Thr	Leu	Arg	Ala	Gly	Asp	Ile	Ala	Glu	Ala	Ala	Val	Phe	Leu	Ala	
	305				310				315						320	
agc	gac	gag	tcc	agg	tac	gtg	tcc	ggc	cac	ctc	gtc	gtc	gac	ggc		1008
Ser	Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	
				325					330					335		
ggc	gtc	acc	acc	tcc	aga	aac	gtc	atc	ggc	ctc	tga					1044
Gly	Val	Thr	Thr	Ser	Arg	Asn	Val	Ile	Gly	Leu						
			340					345								

&lt;210&gt; 3290

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3290

Met Thr Ala Val Asp Leu Met Pro Ala Ala Asp Asp Asp Asn Asn Lys

1 5 10 15

Gln Ser Ser Thr Gly Leu Leu His Pro His Gln Leu Pro Ala Ala Ala

20 25 30

Asp Asn Ala Ile Leu His Asn Thr Arg His Pro Phe Ile Ser Thr Thr



## PhoenixTemp32470.tmp.txt

35  
 Leu Ala Asn Ser Phe Phe Asn Arg Ser Ile Ser Ala Arg Val Ile His  
 50 55 60  
 Ser Ser Ile Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly  
 65 70 75 80  
 Gly Ser Arg Gly Ile Gly Glu Ala Ile Val Arg Ala Phe Val His His  
 85 90 95  
 Gly Ala Leu Val Val Ala Asp Ile Asp Asp Ala Gly Gly His Ala  
 100 105 110  
 Leu Ala Ala Ala Leu Gly Pro His Ala Cys Thr Tyr Val His Cys Asp  
 115 120 125  
 Val Ala Glu Glu Ala Asp Val Glu Arg Ala Val Ala Thr Thr Leu Glu  
 130 135 140  
 Gln His Gly Arg Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly  
 145 150 155 160  
 Arg Gln Thr Arg Gly Ala Lys Ser Ile Ala Ser Leu Asp Ala Ala Glu  
 165 170 175  
 Phe Ala Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met  
 180 185 190  
 Lys His Ala Ala Arg Ala Met Val Pro Arg Arg Ser Gly Ser Ile Val  
 195 200 205  
 Ser Val Ala Ser Val Ala Gly Val Met Gly Gly Leu Gly Pro His Ala  
 210 215 220  
 Tyr Thr Ala Ser Lys His Ala Leu Val Gly Leu Thr Lys Asn Ala Ala  
 225 230 235 240  
 Cys Glu Leu Gly Glu His Gly Ile Arg Val Asn Cys Ile Ser Pro Phe  
 245 250 255  
 Gly Val Ala Thr Pro Met Leu Val Asn Ala Trp Arg Gln Gly Gln Gly  
 260 265 270  
 Gly Asp His Ala Asp Glu Asp Gln Ala Ala Ala Ser Glu Glu Glu  
 275 280 285  
 Val Glu Lys Met Glu Glu Met Val Arg Arg Leu Ala Thr Leu Lys Gly  
 290 295 300  
 Pro Thr Leu Arg Ala Gly Asp Ile Ala Glu Ala Ala Val Phe Leu Ala  
 305 310 315 320  
 Ser Asp Glu Ser Arg Tyr Val Ser Gly His Asn Leu Val Val Asp Gly  
 325 330 335  
 Gly Val Thr Thr Ser Arg Asn Val Ile Gly Leu  
 340 345

&lt;210&gt; 3291

&lt;211&gt; 1134

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1134)

&lt;400&gt; 3291

atg	agg	gtt	cct	cct	ctt	cgt	gcc	acc	acg	gct	ctc	ctg	gcc	acc	ctc	48
Met	Arg	Val	Pro	Pro	Leu	Arg	Ala	Thr	Thr	Ala	Leu	Leu	Ala	Thr	Leu	
1				5				10					15			
ctg	gtc	gcc	gcc	tcg	ttc	cag	gat	ctc	acc	gtc	gct	gca	gac	ggc	ggc	96
Leu	Val	Ala	Ala	Ser	Phe	Gln	Asp	Leu	Thr	Val	Ala	Ala	Asp	Gly	Gly	
		20					25					30				
ggc	ggc	gtg	gtt	ccg	gtc	ccg	gat	agc	gtg	tgc	gac	gcc	aag	tgc	cag	144
Gly	Gly	Val	Val	Pro	Val	Pro	Asp	Ser	Val	Cys	Asp	Ala	Lys	Cys	Gln	
		35					40				45					
aag	cgg	tgc	tcg	ctg	aag	gtg	gcc	ggg	cgg	tgc	atg	ggg	ctg	tgc	aag	192
Lys	Arg	Cys	Ser	Leu	Lys	Val	Ala	Gly	Arg	Cys	Met	Gly	Leu	Cys	Lys	
	50					55				60						
atg	tgc	tgc	cac	gac	tgc	ggc	tgc	gtg	ccg	tcg	ggg	ccg	tac	gcc		240
Met	Cys	Cys	His	Asp	Cys	Gly	Gly	Cys	Val	Pro	Ser	Gly	Pro	Tyr	Ala	
	65				70				75					80		
agc	aag	gac	gag	tgc	ccc	tgc	tac	cgc	gac	atg	gtc	tcc	ccc	aag	agc	288
Ser	Lys	Asp	Glu	Cys	Pro	Cys	Tyr	Arg	Asp	Met	Val	Ser	Pro	Lys	Ser	
		85							90					95		
cga	cgg	ccc	aag	tgc	ccg	agg	gag	aag	agc	gga	gct	atg	gga	gct	ctg	336

## PhoenixTemp32470.tmp.txt

Arg	Arg	Pro	Lys	Cys	Pro	Arg	Glu	Lys	Ser	Gly	Ala	Met	Gly	Ala	Leu	
tgt	ggt	tgt	ggc	agc	cac	ttc	tcg	act	gcc	tcg	agt	tgc	cag	agg	tta	384
Cys	Gly	Leu	Gly	Ser	His	Phe	Ser	Thr	Ala	Ser	Ser	Cys	Gln	Arg	Leu	
		115					120					125				
ccc	ggc	aag	gtc	gcg	gtg	atc	acc	ggc	gcg	gcc	agc	ggc	atc	ggc	aag	432
Pro	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	
		130					135					140				
gcg	acg	gcc	gcc	gag	ttc	atc	cgc	aac	ggc	gcc	aag	gtc	atc	ctg	gcc	480
Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	
145					150					155					160	
gat	ata	cag	gac	gac	ctc	ggc	cgc	gcc	gtc	gcg	gcc	gag	ctg	ggc	ccg	528
Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly	Pro	
				165					170					175		
gac	gcc	gcg	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	atc	gcc	576
Asp	Ala	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	
			180					185					190			
gcg	gcg	gca	acg	ccg	gca	tct	cgg	ggc	tcc	tcg	gcg	ccc	gcg	ccg	ctc	624
Ala	Ala	Ala	Thr	Pro	Ala	Ser	Arg	Gly	Ser	Ser	Ala	Pro	Ala	Pro	Leu	
		195					200					205				
gcg	tcg	ctc	gac	ctc	gcg	gac	ttc	gac	cgc	gtc	atg	gcg	gcc	aac	gcg	672
Ala	Ser	Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Ala	Asn	Ala	
	210					215					220					
cgg	tcc	gcg	gtg	gcg	gcc	gtc	aag	cac	gcc	gcg	cgc	gtc	atg	gtg	ccc	720
Arg	Ser	Ala	Val	Ala	Ala	Val	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	
	225				230				235						240	
cgg	cgc	ggc	ggc	tgc	gtc	ctc	tgc	acg	ggg	agc	acc	acg	ggc	atg	ctc	768
Arg	Arg	Gly	Gly	Cys	Val	Leu	Cys	Thr	Gly	Ser	Thr	Thr	Gly	Met	Leu	
				245					250				255			
ggc	ggg	ctc	gcg	gcg	ctg	ccg	tac	agc	ctc	tcg	aag	gcg	gcg	gtg	gtg	816
Gly	Gly	Leu	Ala	Ala	Leu	Pro	Tyr	Ser	Leu	Ser	Lys	Ala	Ala	Val	Val	
			260					265					270			
ggc	gtg	gtg	cgg	ctg	gcg	gcg	gcc	gag	ctg	gcg	cgc	tcc	ggc	gtg	cgc	864
Gly	Val	Val	Arg	Leu	Ala	Ala	Ala	Glu	Leu	Ala	Arg	Ser	Gly	Val	Arg	
		275					280					285				
gtg	aac	gcc	atc	tcg	ccg	cac	gcc	atc	gcg	acg	ccg	ctg	gtc	cgg		912
Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Ala	Thr	Pro	Leu	Leu	Val	Arg	
	290					295					300					
tcg	ctg	gcg	agg	atg	aac	ccg	ggg	gtc	agc	gac	gag	cag	ctg	aag	gag	960
Ser	Leu	Ala	Arg	Met	Asn	Pro	Gly	Val	Ser	Asp	Glu	Gln	Leu	Lys	Glu	
					310					315					320	
atg	gtg	gag	agg	ggg	atg	agc	gag	ctc	cat	ggc	gcg	gtg	ctg	gag	ctg	1008
Met	Val	Glu	Arg	Gly	Met	Ser	Glu	Leu	His	Gly	Ala	Val	Leu	Glu	Leu	
				325					330				335			
gag	gac	gtg	gcg	agg	gcg	gcc	gtc	tac	ctg	gcg	tcc	gac	gag	gcc	aag	1056
Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	
			340					345					350			
ttc	gtc	acc	ggg	cag	aac	cac	gtc	atc	gac	ggc	ggg	ttc	acg	gtc	ggg	1104
Phe	Val	Thr	Gly	Gln	Asn	His	Val	Ile	Asp	Gly	Gly	Phe	Thr	Val	Gly	
		355					360					365				
aag	ccg	atg	gac	atg	cgg	gtt	cca	cgt	tga							1134
Lys	Pro	Met	Asp	Met	Arg	Val	Pro	Arg								
		370				375										

&lt;210&gt; 3292

&lt;211&gt; 377

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3292

Met	Arg	Val	Pro	Pro	Leu	Arg	Ala	Thr	Thr	Ala	Leu	Leu	Ala	Thr	Leu	
1				5					10					15		
Leu	Val	Ala	Ala	Ser	Phe	Gln	Asp	Leu	Thr	Val	Ala	Ala	Asp	Gly	Gly	
			20					25					30			
Gly	Gly	Val	Val	Pro	Val	Pro	Asp	Ser	Val	Cys	Asp	Ala	Lys	Cys	Gln	
		35					40					45				
Lys	Arg	Cys	Ser	Leu	Lys	Val	Ala	Gly	Arg	Cys	Met	Gly	Leu	Cys	Lys	
	50					55					60					
Met	Cys	Cys	His	Asp	Cys	Gly	Gly	Cys	Val	Pro	Ser	Gly	Pro	Tyr	Ala	

## PhoenixTemp32470.tmp.txt

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65      70      75      80
Ser Lys Asp Glu Cys Pro Cys Tyr Arg Asp Met Val Ser Pro Lys Ser
      85      90      95
Arg Arg Pro Lys Cys Pro Arg Glu Lys Ser Gly Ala Met Gly Ala Leu
      100      105      110
Cys Gly Leu Gly Ser His Phe Ser Thr Ala Ser Ser Cys Gln Arg Leu
      115      120      125
Pro Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys
      130      135      140
Ala Thr Ala Ala Glu Phe Ile Arg Asn Gly Ala Lys Val Ile Leu Ala
      145      150      155
Asp Ile Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Pro
      160      165      170
Asp Ala Ala Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Ile Ala
      175      180      185
Ala Ala Ala Thr Pro Ala Ser Arg Gly Ser Ser Ala Pro Ala Pro Leu
      190      195      200
Ala Ser Leu Asp Leu Ala Asp Phe Asp Arg Val Met Ala Ala Asn Ala
      205      210      215
Arg Ser Ala Val Ala Ala Val Lys His Ala Ala Arg Val Met Val Pro
      220      225      230
Arg Arg Gly Gly Cys Val Leu Cys Thr Gly Ser Thr Thr Gly Met Leu
      235      240      245
Gly Gly Leu Ala Ala Leu Pro Tyr Ser Leu Ser Lys Ala Ala Val Val
      250      255      260
Gly Val Val Arg Leu Ala Ala Ala Glu Leu Ala Arg Ser Gly Val Arg
      265      270      275
Val Asn Ala Ile Ser Pro His Ala Ile Ala Thr Pro Leu Leu Val Arg
      280      285      290
Ser Leu Ala Arg Met Asn Pro Gly Val Ser Asp Glu Gln Leu Lys Glu
      295      300      305
Met Val Glu Arg Gly Met Ser Glu Leu His Gly Ala Val Leu Glu Leu
      310      315      320
Glu Asp Val Ala Arg Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys
      325      330      335
Phe Val Thr Gly Gln Asn His Val Ile Asp Gly Gly Phe Thr Val Gly
      340      345      350
Lys Pro Met Asp Met Arg Val Pro Arg
      355      360      365
      370      375

```

&lt;210&gt; 3293

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;400&gt; 3293

```

atg gag aag aag aag cag aag aga cag atc aaa gat caa gat gtt cag      48
Met Glu Lys Lys Lys Gln Lys Arg Gln Ile Lys Asp Gln Asp Val Gln
      1      5      10      15
agc att gca gat cgt cct cag ggg ttg cct ggg aag gtg gcg gtg atc      96
Ser Ile Ala Asp Arg Pro Gln Gly Leu Pro Gly Lys Val Ala Val Ile
      20      25      30
acc ggc gcg gca acc ggc atc ggc aag gcg acc gcg gcg gag ttc gtc      144
Thr Gly Ala Thr Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Val
      35      40      45
agg aat ggc gcc aag gtc atc ctc gcc gac gtc cag gac gac gtc ggc      192
Arg Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp Val Gly
      50      55      60
cgc gcc gtc gcc tcg gag ctc ggc gcg gac gcg gcg tcg tac aac cgc      240
Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ala Ser Tyr Asn Arg
      65      70      75      80
tgc gac gtc acc gac gag gcg cag gtc gcg gcg gcc cgt gga ctc gcc      288
Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Ala Arg Gly Leu Ala
      85      90      95
gtt gcc cgg aag ggg caa ctc gac gtc atg gtc aac aac gcc gcc atc      336

```

## PhoenixTemp32470.tmp.txt

Val	Ala	Arg	Lys	Gly	Gln	Leu	Asp	Val	Met	Val	Asn	Asn	Ala	Gly	Ile		
gtg	ggc	tcc	ctg	tcg	cgc	ccc	ccg	ctc	ggc	gcc	ctc	gac	ctc	gcc	gac	384	
Val	Gly	Ser	Leu	Ser	Arg	Pro	Pro	Leu	Gly	Ala	Leu	Asp	Leu	Ala	Asp		
ttc	gac	gcc	gtc	atg	gcg	gtg	aac	acg	cgc	ggc	gtc	ctc	gcg	ggc	gtc	432	
Phe	Asp	Ala	Val	Met	Ala	Val	Asn	Thr	Arg	Gly	Val	Leu	Ala	Gly	Val		
aag	cac	gcc	gcg	cgc	gtc	atg	gcg	ccg	cgc	cgc	cgc	ggc	acc	atc	atc	480	
Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Arg	Gly	Thr	Ile	Ile		
145					150					155					160		
tgc	gtg	gcg	agc	gtc	gcc	ggg	gtg	ctc	ggc	agc	gtg	acg	ccg	cac	ccg	528	
Cys	Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Ser	Val	Thr	Pro	His	Pro		
tac	agc	gtg	tcc	aag	gcc	gcc	gtg	ctc	ggc	gcg	gtc	cgc	gcc	gcc	gcc	576	
Tyr	Ser	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Ala	Val	Arg	Ala	Ala	Ala		
ggc	gag	atg	gcg	cgc	tcc	ggc	gtg	cgc	gtg	aac	gcc	atc	tcc	ccc	aac	624	
Gly	Glu	Met	Ala	Arg	Ser	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	Asn		
tac	atc	ccc	acg	ccg	ctg	gtg	atg	cgc	atc	atg	gcg	gag	tgg	tac	ccc	672	
Tyr	Ile	Pro	Thr	Pro	Leu	Val	Met	Arg	Ile	Met	Ala	Glu	Trp	Tyr	Pro		
210					215					220							
ggg	gcg	agc	gcc	gac	gag	cac	cgc	cgc	gtc	gtg	gag	cgg	gag	atc	aac	720	
Gly	Ala	Ser	Ala	Asp	Glu	His	Arg	Arg	Val	Val	Glu	Arg	Glu	Ile	Asn		
225					230					235					240		
gag	atg	gag	ggc	gcg	acg	ctg	gag	ccc	gag	gac	atc	gcg	agg	gcg	gcg	768	
Glu	Met	Glu	Gly	Ala	Thr	Leu	Glu	Pro	Glu	Asp	Ile	Ala	Arg	Ala	Ala		
245					250									255			
gtg	tac	ctg	gcc	tcc	gac	gag	gcc	aag	tac	gtg	aac	ggc	cac	aac	ctc	816	
Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	Asn	Gly	His	Asn	Leu		
260								265					270				
gtc	gtc	gac	ggc	ggg	tac	acc	gtc	ggc	aag	gcg	ccc	aac	ctg	ccg	gcg	864	
Val	Val	Asp	Gly	Gly	Tyr	Thr	Val	Gly	Lys	Ala	Pro	Asn	Leu	Pro	Ala		
275							280					285					
ccg	ccg	caa	taa													876	
Pro	Pro	Gln															
290																	

&lt;210&gt; 3294

&lt;211&gt; 291

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3294

Met	Glu	Lys	Lys	Lys	Gln	Lys	Arg	Gln	Ile	Lys	Asp	Gln	Asp	Val	Gln		
1				5					10					15			
Ser	Ile	Ala	Asp	Arg	Pro	Gln	Gly	Leu	Pro	Gly	Lys	Val	Ala	Val	Ile		
			20					25					30				
Thr	Gly	Ala	Ala	Thr	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Val		
		35					40					45					
Arg	Asn	Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Val	Gln	Asp	Asp	Val	Gly		
	50					55					60						
Arg	Ala	Val	Ala	Ser	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Asn	Arg		
65					70				75					80			
Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Arg	Gly	Leu	Ala		
				85					90					95			
Val	Ala	Arg	Lys	Gly	Gln	Leu	Asp	Val	Met	Val	Asn	Asn	Ala	Gly	Ile		
			100					105					110				
Val	Gly	Ser	Leu	Ser	Arg	Pro	Pro	Leu	Gly	Ala	Leu	Asp	Leu	Ala	Asp		
		115					120					125					
Phe	Asp	Ala	Val	Met	Ala	Val	Asn	Thr	Arg	Gly	Val	Leu	Ala	Gly	Val		
	130					135					140						
Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Arg	Gly	Thr	Ile	Ile		
145					150					155				160			
Cys	Val	Ala	Ser	Val	Ala	Gly	Val	Leu	Gly	Ser	Val	Thr	Pro	His	Pro		
				165					170					175			
Tyr	Ser	Val	Ser	Lys	Ala	Ala	Val	Leu	Gly	Ala	Val	Arg	Ala	Ala	Ala		
			180					185					190				

## PhoenixTemp32470.tmp.txt

Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser Pro Asn  
 195 200 205  
 Tyr Ile Pro Thr Pro Leu Val Met Arg Ile Met Ala Glu Trp Tyr Pro  
 210 215 220  
 Gly Ala Ser Ala Asp Glu His Arg Arg Val Val Glu Arg Glu Ile Asn  
 225 230 235 240  
 Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg Ala Ala  
 245 250 255  
 Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His Asn Leu  
 260 265 270  
 Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu Pro Ala  
 275 280 285  
 Pro Pro Gln  
 290

&lt;210&gt; 3295

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 3295

atg	acg	tcg	act	tcg	cct	gaa	agt	cta	atc	gcc	ggt	gga	ttc	tcc	acg	48
Met	Thr	Ser	Thr	Ser	Pro	Glu	Ser	Leu	Ile	Ala	Gly	Gly	Phe	Ser	Thr	
1				5				10					15			
gcg	gcg	agc	tcc	cac	cag	agg	ttg	gcc	ggc	aag	gtg	gcc	gtc	atc	acc	96
Ala	Ala	Ser	Ser	His	Gln	Arg	Leu	Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	
			20					25					30			
ggc	gcc	gcc	agc	ggc	atc	ggc	aag	gcg	acc	gcc	gcg	gag	ttc	atc	agg	144
Gly	Ala	Ala	Ser	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Ala	Glu	Phe	Ile	Arg	
			35				40					45				
aac	ggc	gcc	aag	gtg	atc	atc	acc	gac	gtc	aac	gac	gac	ctc	ggc	cac	192
Asn	Gly	Ala	Lys	Val	Ile	Ile	Thr	Asp	Val	Asn	Asp	Asp	Leu	Gly	His	
	50					55				60						
gcc	gcg	gcg	gcg	gag	ctc	ggc	ccg	gac	gcc	acg	tac	gcg	cgc	tgc	gac	240
Ala	Ala	Ala	Ala	Glu	Leu	Gly	Pro	Asp	Ala	Thr	Tyr	Ala	Arg	Cys	Asp	
	65			70					75					80		
gtc	gcc	gac	gag	gcg	cag	gtc	gcc	gcc	gcc	gtc	gac	ctc	gcc	gtg	gcg	288
Val	Ala	Asp	Glu	Ala	Gln	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
				85				90						95		
cgc	cac	ggc	cgc	ctc	gac	gtc	atg	cac	aac	aac	gcc	gcc	atc	ccg	ggg	336
Arg	His	Gly	Arg	Leu	Asp	Val	Met	His	Asn	Asn	Ala	Ala	Ile	Pro	Gly	
			100					105					110			
agg	ttc	ccg	cag	gac	gac	atg	gcg	tcc	gtc	gac	ttc	gcc	gat	ttc	gac	384
Arg	Phe	Pro	Gln	Asp	Asp	Met	Ala	Ser	Val	Asp	Phe	Ala	Asp	Phe	Asp	
			115				120					125				
gcc	atg	atg	gcc	gtg	aac	ccc	cgc	gcg	tcg	ctc	gcc	ggc	atc	aag	caa	432
Ala	Met	Met	Ala	Val	Asn	Pro	Arg	Ala	Ser	Leu	Ala	Gly	Ile	Lys	Gln	
	130					135					140					
gcc	gcg	cgc	gtc	atg	gcg	ccc	cgc	cgc	gcc	ggc	gtc	atc	ctc	tgc	acg	480
Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	Ala	Gly	Val	Ile	Leu	Cys	Thr	
	145			150					155					160		
gcc	agc	gcc	gtc	ggc	gtc	ctc	ccg	ctc	ccg	gcg	gtc	gcc	acg	cac	tcc	528
Ala	Ser	Ala	Val	Gly	Val	Leu	Pro	Leu	Pro	Ala	Val	Ala	Thr	His	Ser	
				165				170						175		
atc	acc	aag	gcc	acc	atc	atc	gcc	atc	gtg	cgc	gca	gcg	gcg	gag	ccc	576
Ile	Thr	Lys	Ala	Thr	Ile	Ile	Ala	Ile	Val	Arg	Ala	Ala	Ala	Glu	Pro	
			180				185						190			
ctg	gcg	cgc	cac	ggc	ctg	cgg	gtg	aac	gcc	atc	tcg	ccg	ggc	gcc	gtc	624
Leu	Ala	Arg	His	Gly	Leu	Arg	Val	Asn	Ala	Ile	Ser	Pro	Gly	Ala	Val	
			195				200					205				
agg	acg	ccg	gtc	ctg	cag	ggc	aag	gtg	tcg	gtg	atg	tcg	gcg	tcg	tct	672
Arg	Thr	Pro	Val	Leu	Gln	Gly	Lys	Val	Ser	Val	Met	Ser	Ala	Ser	Ser	
	210			215							220					
cct	acc	atg	agc	gac	gag	ctg	aag	cag	atg	atc	gac	gtc	gac	gcg	aac	720
Pro	Thr	Met	Ser	Asp	Glu	Leu	Lys	Gln	Met	Ile	Asp	Val	Asp	Ala	Asn	

## PhoenixTemp32470.tmp.txt

225	gac	atg	atg	atg	ggg	230	ccg	gag	gag	gtg	gcc	235	atg	gcg	gcg	gtg	tac	240	ctc	768
Asp	Met	Met	Met	Gly	245	Pro	Glu	Glu	Val	Ala	250	Met	Ala	Ala	Val	Tyr	255	Leu		
gcc	tcc	gac	gag	gcc	agg	tac	gtg	acc	ggc	cac	aac	ctc	gtc	gtc	gac	816				
Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp					
ggc	ggg	tac	acc	gtg	cac	aaa	gga	gct	gac	aca	ccg	gcg	gcg	cgt	861					
Gly	Gly	Tyr	Thr	Val	His	Lys	Gly	Ala	Asp	Thr	Pro	Ala	Ala	Arg						
tga							280					285			864					

<210> 3296  
 <211> 287  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 3296  
 Met Thr Ser Thr Ser Pro Glu Ser Leu Ile Ala Gly Gly Phe Ser Thr  
 1 5 10 15  
 Ala Ala Ser Ser His Gln Arg Leu Ala Gly Lys Val Ala Val Ile Thr  
 20 25 30  
 Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu Phe Ile Arg  
 35 40 45  
 Asn Gly Ala Lys Val Ile Ile Thr Asp Val Asn Asp Asp Leu Gly His  
 50 55 60  
 Ala Ala Ala Ala Glu Leu Gly Pro Asp Ala Thr Tyr Ala Arg Cys Asp  
 65 70 75 80  
 Val Ala Asp Glu Ala Gln Val Ala Ala Val Asp Leu Ala Val Ala  
 85 90 95  
 Arg His Gly Arg Leu Asp Val Met His Asn Asn Ala Ala Ile Pro Gly  
 100 105 110  
 Arg Phe Pro Gln Asp Asp Met Ala Ser Val Asp Phe Ala Asp Phe Asp  
 115 120 125  
 Ala Met Met Ala Val Asn Pro Arg Ala Ser Leu Ala Gly Ile Lys Gln  
 130 135 140  
 Ala Ala Arg Val Met Ala Pro Arg Arg Ala Gly Val Ile Leu Cys Thr  
 145 150 155 160  
 Ala Ser Ala Val Gly Val Leu Pro Leu Pro Ala Val Ala Thr His Ser  
 165 170 175  
 Ile Thr Lys Ala Thr Ile Ile Ala Ile Val Arg Ala Ala Ala Glu Pro  
 180 185 190  
 Leu Ala Arg His Gly Leu Arg Val Asn Ala Ile Ser Pro Gly Ala Val  
 195 200 205  
 Arg Thr Pro Val Leu Gln Gly Lys Val Ser Val Met Ser Ala Ser Ser  
 210 215 220  
 Pro Thr Met Ser Asp Glu Leu Lys Gln Met Ile Asp Val Asp Ala Asn  
 225 230 235 240  
 Asp Met Met Met Gly Pro Glu Glu Val Ala Met Ala Ala Val Tyr Leu  
 245 250 255  
 Ala Ser Asp Glu Ala Arg Tyr Val Thr Gly His Asn Leu Val Val Asp  
 260 265 270  
 Gly Gly Tyr Thr Val His Lys Gly Ala Asp Thr Pro Ala Ala Arg  
 275 280 285

<210> 3297  
 <211> 1167  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(1167)

<220>  
 <221> misc\_feature  
 <222> (202)..(202)

&lt;223&gt; y is t or c

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (250)..(250)

&lt;223&gt; s is g or c

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (431)..(431)

&lt;223&gt; k is g or t

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (576)..(576)

&lt;223&gt; r is g or a

&lt;400&gt; 3297

atg gcc ttg tgg aat aat gtt gaa att gag att gat ttg gag gtt gca	48
Met Ala Leu Trp Asn Asn Val Glu Ile Glu Ile Asp Leu Glu Val Ala	
1 5 10 15	
tgt gag gtt gta gtg gag atg gcc aat gtt gaa gtt gtt gtg gct gaa	96
Cys Glu Val Val Val Glu Met Ala Asn Val Glu Val Val Val Ala Glu	
20 25 30	
gag atg atg aaa act gtt gat tat gtg cat gtg gtg gag att gga aat	144
Glu Met Met Lys Thr Val Asp Tyr Val His Val Val Glu Ile Gly Asn	
35 40 45	
aca tat caa aac agt gga aac act tta ttg ggc atc caa att cat ggc	192
Thr Tyr Gln Asn Ser Gly Asn Thr Leu Leu Gly Ile Gln Ile His Gly	
50 55 60	
ttc aca tgc yat tcg cgg ttt gga caa gga gaa cca ctg ttg ccg aaa	240
Phe Thr Cys Xaa Ser Arg Phe Gly Gln Gly Glu Pro Leu Leu Pro Lys	
65 70 75 80	
gtg ctc gga sac ttt cgt gaa gga gtt ttg agt aag att ctt att ttg	288
Val Leu Gly Xaa Phe Arg Glu Gly Val Leu Ser Lys Ile Leu Ile Leu	
85 90 95	
gcg gtt cgc tcc cta gga gtg cga gac aat gtt gaa gat ggg agc aaa	336
Ala Val Arg Ser Leu Gly Val Arg Asp Asn Val Glu Asp Gly Ser Lys	
100 105 110	
gcc atg gca gcc tcg tca ttt ctt gta ttc aca aga agg cta gag	384
Ala Met Ala Ala Ser Ser Phe Leu Ser Val Phe Thr Arg Arg Leu Glu	
115 120 125	
ggc aag gtg gca ctc ata acc gga ggg gcc agc ggc atc ggc aaa tkc	432
Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Lys Xaa	
130 135 140	
act gct gaa acc ttc acc caa cac gga gcc aaa gtg gtc att gct gac	480
Thr Ala Glu Thr Phe Thr Gln His Gly Ala Lys Val Val Ile Ala Asp	
145 150 155 160	
atc caa gac gaa ctg ggt cac tcc gtg att gaa gct cta ggc caa acc	528
Ile Gln Asp Glu Leu Gly His Ser Val Ile Glu Ala Leu Gly Gln Thr	
165 170 175	
aat gca tca tac gtc cac tgt gat gtc act gat gaa tcc caa atc aar	576
Asn Ala Ser Tyr Val His Cys Asp Val Thr Asp Glu Ser Gln Ile Lys	
180 185 190	
gct gcc gtt gac aag act gca gca acc cac gga aag ctg gac atc atg	624
Ala Ala Val Asp Lys Thr Ala Ala Thr His Gly Lys Leu Asp Ile Met	
195 200 205	
ttc aac aat gcg gga ata gtt aac aac tac aag ccc cgc att atg gat	672
Phe Asn Asn Ala Gly Ile Val Asn Asn Tyr Lys Pro Arg Ile Met Asp	
210 215 220	
aac gag aag gca gac ttt gag cgt gtc ctt agc atc aac gtc acc ggt	720
Asn Glu Lys Ala Asp Phe Glu Arg Val Leu Ser Ile Asn Val Thr Gly	
225 230 235 240	
gtt ttc ctg ggc atg aag cac gct gcc agg gtc atg gtt ccg gca aaa	768
Val Phe Leu Gly Met Lys His Ala Ala Arg Val Met Val Pro Ala Lys	
245 250 255	
agt ggg agc ata atc tca acc gcc agt gta agc tcg aat gta ggg gct	816
Ser Gly Ser Ile Ser Thr Ala Ser Val Ser Ser Asn Val Gly Ala	
260 265 270	

## PhoenixTemp32470.tmp.txt

```

gcg gct aca cat gct tac tgc tgc tct aag cat gct gta tta ggg ctc      864
Ala Ala Thr His Ala Tyr Cys Cys Ser Lys His Ala Val Leu Gly Leu
275 280 285
acc aga aat gct gca atc gag ctt gga caa ttt gga att agg gtt aat      912
Thr Arg Asn Ala Ala Ile Glu Leu Gly Gln Phe Gly Ile Arg Val Asn
290 295 300
tgc tta tca ccc tat gca ctt gca acg cct tta gct acc aat ttt ctt      960
Cys Leu Ser Pro Tyr Ala Leu Ala Thr Pro Leu Ala Thr Asn Phe Leu
305 310 315 320
aat ctt act gct gaa gag ctg gag act gcc atg aat gcg acc gcc aac      1008
Asn Leu Thr Ala Glu Glu Leu Glu Thr Ala Met Asn Ala Thr Ala Asn
325 330 335
ctt aag ggc gtg aca ctt aag gca caa gat gtg gcc aac gct gcg ctt      1056
Leu Lys Gly Val Thr Leu Lys Ala Gln Asp Val Ala Asn Ala Ala Leu
340 345 350
tat tta gcg agt gat gag tcc aga tat gtg agt ggg cac aac ctt ttc      1104
Tyr Leu Ala Ser Asp Glu Ser Arg Tyr Val Ser Gly His Asn Leu Phe
355 360 365
ata gat ggg ggt ttc act gtc gct aat ccc tca ttc cac ctg ttc cag      1152
Ile Asp Gly Gly Phe Thr Val Ala Asn Pro Ser Phe His Leu Phe Gln
370 375 380
tat cca gac tct tga
Tyr Pro Asp Ser
385

```

&lt;210&gt; 3298

&lt;211&gt; 388

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (68)..(68)

&lt;223&gt; The Xaa at location 68 stands for His, or Tyr.

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (84)..(84)

&lt;223&gt; The Xaa at location 84 stands for Asp, or His.

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (144)..(144)

&lt;223&gt; The Xaa at location 144 stands for Cys, or Phe.

&lt;400&gt; 3298

```

Met Ala Leu Trp Asn Asn Val Glu Ile Glu Ile Asp Leu Glu Val Ala
1 5 10 15
Cys Glu Val Val Val Glu Met Ala Asn Val Glu Val Val Val Ala Glu
20 25 30
Glu Met Met Lys Thr Val Asp Tyr Val His Val Val Glu Ile Gly Asn
35 40 45
Thr Tyr Gln Asn Ser Gly Asn Thr Leu Leu Gly Ile Gln Ile His Gly
50 55 60
Phe Thr Cys Xaa Ser Arg Phe Gly Gln Gly Glu Pro Leu Leu Pro Lys
65 70 75 80
Val Leu Gly Xaa Phe Arg Glu Gly Val Leu Ser Lys Ile Leu Ile Leu
85 90 95
Ala Val Arg Ser Leu Gly Val Arg Asp Asn Val Glu Asp Gly Ser Lys
100 105 110
Ala Met Ala Ala Ser Ser Phe Leu Ser Val Phe Thr Arg Arg Leu Glu
115 120 125
Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Lys Xaa
130 135 140
Thr Ala Glu Thr Phe Thr Gln His Gly Ala Lys Val Val Ile Ala Asp
145 150 155 160
Ile Gln Asp Glu Leu Gly His Ser Val Ile Glu Ala Leu Gly Gln Thr
165 170 175
Asn Ala Ser Tyr Val His Cys Asp Val Thr Asp Glu Ser Gln Ile Lys

```



## PhoenixTemp32470.tmp.txt

Ala Ala Val 180 Asp Lys Thr Ala 185 Thr His Gly Lys Leu 190 Asp Ile Met  
 Phe Asn Asn 195 Ala Gly Ile Val 200 Asn Asn Tyr Lys Pro Arg Ile Met Asp  
 Asn 210 Glu Lys Ala Asp Phe 215 Glu Arg Val Leu Ser 220 Ile Asn Val Thr Gly  
 Val 225 Phe Leu Gly Met 230 Lys His Ala Ala Arg Val Met Val Pro Ala Lys  
 Ser Gly Ser 245 Ile Ile Ser Thr Ala Ser Val Ser Ser Asn Val Gly Ala  
 Ala Ala Thr 260 His Ala Tyr Cys 265 Cys Ser Lys His Ala Val Leu Gly Leu  
 Thr Arg 275 Asn Ala Ala Ile Glu 280 Leu Gly Gln Phe Gly Ile Arg Val Asn  
 Cys 290 Leu Ser Pro Tyr Ala 295 Leu Ala Thr Pro Leu Ala Thr Asn Phe Leu  
 Asn 305 Leu Thr Ala Glu 310 Glu Leu Glu Thr Ala Met Asn Ala Thr Ala Asn  
 Leu Lys Gly Val 325 Thr Leu Lys Ala Gln Asp Val Ala Asn Ala Ala Leu  
 Tyr Leu Ala 340 Ser Asp Glu Ser Arg Tyr Val Ser Gly His Asn Leu Phe  
 Ile Asp 355 Gly Gly Phe Thr Val 360 Ala Asn Pro Ser Phe His Leu Phe Gln  
 Tyr 370 Pro Asp Ser 375 380  
 385

&lt;210&gt; 3299

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Agrobacterium tumefaciens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3299

atg	act	tat	gaa	agc	ttg	ctg	aaa	agg	ttc	cgc	ttg	gac	aag	aaa	gtt	48
Met	Thr	Tyr	Glu	Ser	Leu	Leu	Lys	Arg	Phe	Arg	Leu	Asp	Lys	Lys	Val	
1				5				10						15		
gct	ttg	atc	acc	ggc	ggg	acg	cgc	ggc	att	ggt	cta	gcg	acg	gct	cac	96
Ala	Leu	Ile	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	Leu	Ala	Thr	Ala	His	
			20					25					30			
gca	ttc	ggg	gag	gct	ggt	gcc	agg	ctc	tac	ctg	agt	gct	cgc	cgc	gag	144
Ala	Phe	Gly	Glu	Ala	Gly	Ala	Arg	Leu	Tyr	Leu	Ser	Ala	Arg	Arg	Glu	
		35					40					45				
gaa	ttt	gaa	gat	ggc	ggc	gcc	ata	ctc	agg	gcg	ggc	tac	gac	gtg	acc	192
Glu	Phe	Glu	Asp	Gly	Gly	Ala	Ile	Leu	Arg	Ala	Gly	Tyr	Asp	Val	Thr	
	50					55					60					
ttc	tat	ccc	gcg	gac	ctg	gcg	acg	cgc	gct	gcg	gcg	agc	gcg	ctt	gtg	240
Phe	Tyr	Pro	Ala	Asp	Leu	Ala	Thr	Arg	Ala	Ala	Ala	Ser	Ala	Leu	Val	
	65				70				75						80	
aat	agg	gtg	ata	cgt	gac	gca	ggg	aga	ata	gat	atc	ctt	atc	aac	aat	288
Asn	Arg	Val	Ile	Arg	Asp	Ala	Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	
				85				90						95		
gct	ggt	ctt	gcc	aac	ggc	ggc	gac	acg	cct	cgc	ttc	act	gaa	gaa	cag	336
Ala	Gly	Leu	Ala	Asn	Gly	Gly	Asp	Thr	Pro	Arg	Phe	Thr	Glu	Glu	Gln	
			100					105					110			
tgg	cgc	gac	gtt	atg	gcg	ttg	aac	gtc	gac	tcg	gtg	ttt	tgg	tgc	tcg	384
Trp	Arg	Asp	Val	Met	Ala	Leu	Asn	Val	Asp	Ser	Val	Phe	Trp	Cys	Ser	
		115					120					125				
caa	gct	gtc	atc	gct	tcg	atg	cgc	gat	acg	gga	ggc	ggg	aag	att	gtc	432
Gln	Ala	Val	Ile	Ala	Ser	Met	Arg	Asp	Thr	Gly	Gly	Gly	Lys	Ile	Val	
	130					135					140					
aac	gtc	gga	tcg	atg	tcc	ggg	att	gtc	tcc	aac	att	ccg	caa	aat	cag	480
Asn	Val	Gly	Ser	Met	Gly	Ile	Val	Ser	Ser	Asn	Ile	Pro	Gln	Asn	Gln	
	145				150				155						160	

## PhoenixTemp32470.tmp.txt

gtc	gcc	tat	aat	agt	tcc	aag	gca	gcg	gtg	cac	atg	atg	acc	aag	agc	528
Val	Ala	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	His	Met	Met	Thr	Lys	Ser	
				165					170					175		
ctc	gcc	agc	gag	ttg	gcg	cta	gac	aac	atc	agg	gtc	aac	gct	gtc	gca	576
Leu	Ala	Ser	Glu	Leu	Ala	Leu	Asp	Asn	Ile	Arg	Val	Asn	Ala	Val	Ala	
			180					185					190			
ccc	ggc	tac	atc	gac	act	gaa	atg	tcg	cga	gag	ggg	atg	gtc	cat	cct	624
Pro	Gly	Tyr	Ile	Asp	Thr	Glu	Met	Ser	Arg	Glu	Gly	Met	Val	His	Pro	
		195					200					205				
atc	agg	ggg	ccc	atc	tgg	cg	gaa	atg	acc	cct	atg	cag	cg	ttt	gga	672
Ile	Arg	Gly	Pro	Ile	Trp	Arg	Glu	Met	Thr	Pro	Met	Gln	Arg	Phe	Gly	
		210				215					220					
aaa	ccc	gac	gag	gtt	gca	gcg	gca	ata	ctt	ttc	cta	gcc	tcg	gat	gcc	720
Lys	Pro	Asp	Glu	Val	Ala	Ala	Ala	Ile	Leu	Phe	Leu	Ala	Ser	Asp	Ala	
225					230					235					240	
tca	agt	tat	gtc	acg	gga	gat	att	ctc	gtt	gtc	gat	ggc	ggc	tac	acg	768
Ser	Ser	Tyr	Val	Thr	Gly	Asp	Ile	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	
				245					250					255		
acc	cgt	tag														777
Thr	Arg															

&lt;210&gt; 3300

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Agrobacterium tumefaciens

&lt;400&gt; 3300

Met	Thr	Tyr	Glu	Ser	Leu	Leu	Lys	Arg	Phe	Arg	Leu	Asp	Lys	Lys	Val	
1				5					10					15		
Ala	Leu	Ile	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	Leu	Ala	Thr	Ala	His	
			20					25					30			
Ala	Phe	Gly	Glu	Ala	Gly	Ala	Arg	Leu	Tyr	Leu	Ser	Ala	Arg	Arg	Glu	
		35					40					45				
Glu	Phe	Glu	Asp	Gly	Gly	Ala	Ile	Leu	Arg	Ala	Gly	Tyr	Asp	Val	Thr	
	50				55					60						
Phe	Tyr	Pro	Ala	Asp	Leu	Ala	Thr	Arg	Ala	Ala	Ala	Ser	Ala	Leu	Val	
65					70				75						80	
Asn	Arg	Val	Ile	Arg	Asp	Ala	Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	
				85					90					95		
Ala	Gly	Leu	Ala	Asn	Gly	Gly	Asp	Thr	Pro	Arg	Phe	Thr	Glu	Glu	Gln	
			100					105					110			
Trp	Arg	Asp	Val	Met	Ala	Leu	Asn	Val	Asp	Ser	Val	Phe	Trp	Cys	Ser	
		115					120					125				
Gln	Ala	Val	Ile	Ala	Ser	Met	Arg	Asp	Thr	Gly	Gly	Lys	Ile	Val		
	130					135					140					
Asn	Val	Gly	Ser	Met	Ser	Gly	Ile	Val	Ser	Asn	Ile	Pro	Gln	Asn	Gln	
145					150					155					160	
Val	Ala	Tyr	Asn	Ser	Ser	Lys	Ala	Ala	Val	His	Met	Met	Thr	Lys	Ser	
			165						170					175		
Leu	Ala	Ser	Glu	Leu	Ala	Leu	Asp	Asn	Ile	Arg	Val	Asn	Ala	Val	Ala	
			180					185					190			
Pro	Gly	Tyr	Ile	Asp	Thr	Glu	Met	Ser	Arg	Glu	Gly	Met	Val	His	Pro	
		195					200					205				
Ile	Arg	Gly	Pro	Ile	Trp	Arg	Glu	Met	Thr	Pro	Met	Gln	Arg	Phe	Gly	
	210					215					220					
Lys	Pro	Asp	Glu	Val	Ala	Ala	Ala	Ile	Leu	Phe	Leu	Ala	Ser	Asp	Ala	
225					230					235					240	
Ser	Ser	Tyr	Val	Thr	Gly	Asp	Ile	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	
				245					250					255		
Thr	Arg															

&lt;210&gt; 3301

&lt;211&gt; 858

&lt;212&gt; DNA

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(858)

&lt;400&gt; 3301

atg	caa	gct	caa	gtc	atg	aca	gag	aaa	acc	ctt	caa	gga	gaa	aac	atc	48
Met	Gln	Ala	Gln	Val	Met	Thr	Glu	Lys	Thr	Leu	Gln	Gly	Glu	Asn	Ile	
1				5					10					15		
tct	tcc	tca	cct	aaa	agg	ttg	gaa	gga	aaa	ggt	gcc	ctt	gtg	acc	ggc	96
Ser	Ser	Ser	Pro	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly	
			20					25					30			
ggt	gct	aga	gga	att	ggt	gag	gca	ata	gtg	aga	ctc	ttc	ggt	cga	cat	144
Gly	Ala	Arg	Gly	Ile	Gly	Glu	Ala	Ile	Val	Arg	Leu	Phe	Val	Arg	His	
		35					40					45				
gga	gcc	aag	gtc	att	atc	gcc	gac	att	gat	gat	gct	act	ggc	ctt	cct	192
Gly	Ala	Lys	Val	Ile	Ile	Ala	Asp	Ile	Asp	Asp	Ala	Thr	Gly	Leu	Pro	
	50					55					60					
cta	gct	aac	ctg	tta	cac	ccc	tcc	aca	gtg	tac	gcg	cac	tgt	gac	gtg	240
Leu	Ala	Asn	Leu	Leu	His	Pro	Ser	Thr	Val	Tyr	Ala	His	Cys	Asp	Val	
	65				70					75					80	
acc	gta	gaa	ggg	gac	atc	gaa	aat	tca	atc	aat	cta	gca	ggt	tcc	cag	288
Thr	Val	Glu	Gly	Asp	Ile	Glu	Asn	Ser	Ile	Asn	Leu	Ala	Val	Ser	Gln	
			85						90					95		
tac	gga	aaa	ctc	gac	att	ctc	ttc	aat	aat	gct	ggg	gtc	ctc	gga	aat	336
Tyr	Gly	Lys	Leu	Asp	Ile	Leu	Phe	Asn	Asn	Ala	Gly	Val	Leu	Gly	Asn	
			100					105					110			
caa	tcc	aag	aac	aag	atc	tgc	ata	gcc	aat	ttc	gat	gcc	gat	gag	ttt	384
Gln	Ser	Lys	Asn	Lys	Ile	Cys	Ile	Ala	Asn	Phe	Asp	Ala	Asp	Glu	Phe	
		115				120					125					
gat	cat	atc	atg	cgc	gtc	aac	gtg	aga	gga	ggt	gcc	tta	gga	atg	aag	432
Asp	His	Ile	Met	Arg	Val	Asn	Val	Arg	Gly	Val	Ala	Leu	Gly	Met	Lys	
	130					135					140					
cat	gca	gcg	aga	gta	atg	gtg	cct	aag	aga	agt	ggc	tgc	atc	ata	tcc	480
His	Ala	Ala	Arg	Val	Met	Val	Pro	Lys	Arg	Ser	Gly	Cys	Ile	Ile	Ser	
	145				150					155					160	
acc	gcc	agt	gta	gct	ggc	ctc	atg	gga	ggc	ctt	ggc	ccg	cat	gca	tac	528
Thr	Ala	Ser	Val	Ala	Gly	Leu	Met	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	
				165				170						175		
aca	gct	tca	aag	cac	gcc	att	gta	ggg	ctt	aca	aaa	aac	aca	gct	tgt	576
Thr	Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Thr	Ala	Cys	
			180					185					190			
gag	ctg	ggc	agg	tat	ggg	att	agg	ggt	aac	tgc	atc	tcc	cca	ttc	gga	624
Glu	Leu	Gly	Arg	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	
		195					200					205				
gtg	gcc	act	tcc	atg	ctt	gta	aac	gca	tgg	agg	aag	tct	gag	gaa	gaa	672
Val	Ala	Thr	Ser	Met	Leu	Val	Asn	Ala	Trp	Arg	Lys	Ser	Glu	Glu	Glu	
	210					215					220					
gat	gat	gta	gag	gaa	atg	gaa	gag	ttt	gta	ggg	ggg	ata	gcc	aat	ttg	720
Asp	Asp	Val	Glu	Glu	Met	Glu	Glu	Phe	Val	Gly	Gly	Ile	Ala	Asn	Leu	
	225				230					235					240	
aag	ggt	ggt	aag	ctc	agg	gct	gaa	tgt	ata	gct	gag	gct	gca	gtc	tat	768
Lys	Gly	Val	Lys	Leu	Arg	Ala	Glu	Cys	Ile	Ala	Glu	Ala	Ala	Val	Tyr	
				245					250					255		
ctt	gct	agt	gat	gaa	tca	gag	tat	gta	agt	ggc	cat	aac	ctt	ggt	gtg	816
Leu	Ala	Ser	Asp	Glu	Ser	Glu	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Val	
			260					265					270			
gat	ggt	gga	ggt	acc	acc	tca	aaa	aac	ttt	gtg	ggc	ttg	tag			858
Asp	Gly	Gly	Val	Thr	Thr	Ser	Lys	Asn	Phe	Val	Gly	Leu				
		275					280					285				

&lt;210&gt; 3302

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 3302

Met	Gln	Ala	Gln	Val	Met	Thr	Glu	Lys	Thr	Leu	Gln	Gly	Glu	Asn	Ile
1				5					10					15	
Ser	Ser	Ser	Pro	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Leu	Val	Thr	Gly
			20					25					30		

## PhoenixTemp32470.tmp.txt

Gly Ala Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Arg His  
 35 40 45  
 Gly Ala Lys Val Ile Ile Ala Asp Ile Asp Asp Ala Thr Gly Leu Pro  
 50 55 60  
 Leu Ala Asn Leu Leu His Pro Ser Thr Val Tyr Ala His Cys Asp Val  
 65 70 75 80  
 Thr Val Glu Gly Asp Ile Glu Asn Ser Ile Asn Leu Ala Val Ser Gln  
 85 90 95  
 Tyr Gly Lys Leu Asp Ile Leu Phe Asn Asn Ala Gly Val Leu Gly Asn  
 100 105 110  
 Gln Ser Lys Asn Lys Ile Cys Ile Ala Asn Phe Asp Ala Asp Glu Phe  
 115 120 125  
 Asp His Ile Met Arg Val Asn Val Arg Gly Val Ala Leu Gly Met Lys  
 130 135 140  
 His Ala Ala Arg Val Met Val Pro Lys Arg Ser Gly Cys Ile Ile Ser  
 145 150 155 160  
 Thr Ala Ser Val Ala Gly Leu Met Gly Gly Leu Gly Pro His Ala Tyr  
 165 170 175  
 Thr Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Thr Ala Cys  
 180 185 190  
 Glu Leu Gly Arg Tyr Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly  
 195 200 205  
 Val Ala Thr Ser Met Leu Val Asn Ala Trp Arg Lys Ser Glu Glu Glu  
 210 215 220  
 Asp Asp Val Glu Glu Met Glu Glu Phe Val Gly Gly Ile Ala Asn Leu  
 225 230 235 240  
 Lys Gly Val Lys Leu Arg Ala Glu Cys Ile Ala Glu Ala Ala Val Tyr  
 245 250 255  
 Leu Ala Ser Asp Glu Ser Glu Tyr Val Ser Gly His Asn Leu Val Val  
 260 265 270  
 Asp Gly Gly Val Thr Thr Ser Lys Asn Phe Val Gly Leu  
 275 280 285

&lt;210&gt; 3303

&lt;211&gt; 849

&lt;212&gt; DNA

&lt;213&gt; Vitis vinifera

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(849)

&lt;400&gt; 3303

atg	aaa	tgt	ttc	ctt	tgt	ttg	aat	tgc	agg	tta	gca	ggg	aaa	gtg	gca	48
Met	Lys	Cys	Phe	Leu	Cys	Leu	Asn	Cys	Arg	Leu	Ala	Gly	Lys	Val	Ala	
1				5					10					15		
cta	ata	act	ggt	gga	gcc	agt	ggc	ata	ggc	gcc	tgc	act	gcc	aag	tta	96
Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Cys	Thr	Ala	Lys	Leu	
			20					25					30			
ttt	gtg	aaa	cat	ggt	gcc	aag	gtc	ata	gtg	gca	gat	gtc	caa	gac	caa	144
Phe	Val	Lys	His	Gly	Ala	Lys	Val	Ile	Val	Ala	Asp	Val	Gln	Asp	Gln	
			35				40					45				
ctt	ggg	cgc	tcc	ctt	tgc	caa	gaa	att	ggt	ccc	gca	gaa	acc	gtt	ttc	192
Leu	Gly	Arg	Ser	Leu	Cys	Gln	Glu	Ile	Gly	Pro	Ala	Glu	Thr	Val	Phe	
	50				55					60						
cat	gtc	cac	tgc	gat	gta	aca	tgt	gac	tcc	gac	gtc	caa	aac	gcc	gtc	240
His	Val	His	Cys	Asp	Val	Thr	Cys	Asp	Ser	Asp	Val	Gln	Asn	Ala	Val	
	65				70				75					80		
gac	act	gcc	ata	tcc	aaa	tat	ggg	aaa	ctc	gac	atc	atg	ttc	agc	aac	288
Asp	Thr	Ala	Ile	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Ser	Asn	
				85				90					95			
gcc	ggc	gtc	cat	ggc	gaa	atg	gag	tca	aga	atc	ata	ctc	tct	gat	aac	336
Ala	Gly	Val	His	Gly	Glu	Met	Glu	Ser	Arg	Ile	Ile	Leu	Ser	Asp	Asn	
			100					105				110				
aca	aac	ttt	aaa	agg	ggt	ttc	gat	gtg	aat	gtg	tat	ggg	gcc	ttc	ttg	384
Thr	Asn	Phe	Lys	Arg	Val	Phe	Asp	Val	Asn	Val	Tyr	Gly	Ala	Phe	Leu	
		115					120					125				
gcc	gct	aag	cat	gcc	gct	aga	gtt	atg	att	cca	gct	aag	aca	gga	tgc	432
Ala	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Thr	Gly	Cys	

## PhoenixTemp32470.tmp.txt

130	att	ata	ttt	acg	tca	agt	135	gtg	gct	tca	ggt	ggt	140	tcg	gag	gag	atc	tca	480
Ile	Ile	Phe	Thr	Ser	Ser	Ser	Val	Ala	Ser	Val	Val	Val	Ser	Glu	Glu	Ile	Ser		
145	cat	gca	tat	gtg	gca	tcg	150	aag	cat	gct	gtg	gtg	155	gga	ctt	gcc	aac	aac	528
His	Ala	Tyr	Val	Ala	Ser	Lys	His	Ala	Val	Val	Val	Gly	Leu	Ala	Asn	Asn			
	tta	tgt	gtg	gag	ttg	gga	caa	tat	ggg	ata	aga	ggt	aat	tgc	ata	tct		576	
Leu	Cys	Val	Glu	Leu	Gly	Gln	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser				
	ccg	ttc	gga	gtg	gca	aca	cct	atg	tta	cag	aaa	gga	ttg	gga	ata	atg		624	
Pro	Phe	Gly	Val	Ala	Thr	Pro	Met	Leu	Gln	Lys	Gly	Leu	Gly	Ile	Met				
	gag	aag	agg	aag	gtt	gaa	gag	tta	ggt	tcc	tct	gcg	gcc	aac	cta	aaa		672	
Glu	Lys	Arg	Lys	Val	Glu	Glu	Leu	Val	Ser	Ser	Ser	Ala	Ala	Asn	Leu	Lys			
	ggt	gcg	gtg	tta	gag	gcg	gaa	gac	atc	gca	gag	gca	gcc	ttg	tat	ctg		720	
Gly	Ala	Val	Leu	Glu	Ala	Glu	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Tyr	Leu				
225	ggg	agc	gat	gac	tcc	aag	tac	ggt	agc	ggg	atc	aac	ttg	gtg	gtg	gat		768	
Gly	Ser	Asp	Asp	Ser	Lys	Tyr	Val	Ser	Ser	Gly	Ile	Asn	Leu	Val	Val	Asp			
	ggc	ggt	tac	agc	att	act	aat	ccc	tct	gct	gga	atg	gta	ttt	aaa	tct		816	
Gly	Gly	Tyr	Ser	Ile	Thr	Asn	Pro	Ser	Ala	Gly	Met	Val	Phe	Lys	Ser				
	cac	ttg	tca	tca	acc	cat	cca	tcc	caa	aac	taa						849		
His	Leu	Ser	Ser	Thr	His	Pro	Ser	Gln	Asn										
	275						280												

&lt;210&gt; 3304

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 3304

Met	Lys	Cys	Phe	Leu	Cys	Leu	Asn	Cys	Arg	Leu	Ala	Gly	Lys	Val	Ala		
1	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Ala	Cys	Thr	Ala	Lys	Leu	
	Phe	Val	Lys	His	Gly	Ala	Lys	Val	Ile	Val	Ala	Asp	Val	Gln	Asp	Gln	
	Leu	Gly	Arg	Ser	Leu	Cys	Gln	Glu	Ile	Gly	Pro	Ala	Glu	Thr	Val	Phe	
	His	Val	His	Cys	Asp	Val	Thr	Cys	Asp	Ser	Asp	Val	Gln	Asn	Ala	Val	
65	Asp	Thr	Ala	Ile	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Ser	Asn	
	Ala	Gly	Val	His	Gly	Glu	Met	Glu	Ser	Arg	Ile	Ile	Leu	Ser	Asp	Asn	
	Thr	Asn	Phe	Lys	Arg	Val	Phe	Asp	Val	Asn	Val	Tyr	Gly	Ala	Phe	Leu	
	Ala	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Thr	Gly	Cys	
	Ile	Ile	Phe	Thr	Ser	Ser	Val	Ala	Ser	Val	Val	Ser	Glu	Glu	Ile	Ser	
145	His	Ala	Tyr	Val	Ala	Ser	Lys	His	Ala	Val	Val	Gly	Leu	Ala	Asn	Asn	
	Leu	Cys	Val	Glu	Leu	Gly	Gln	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	
	Pro	Phe	Gly	Val	Ala	Thr	Pro	Met	Leu	Gln	Lys	Gly	Leu	Gly	Ile	Met	
	Glu	Lys	Arg	Lys	Val	Glu	Glu	Leu	Val	Ser	Ser	Ala	Ala	Asn	Leu	Lys	
	Gly	Ala	Val	Leu	Glu	Ala	Glu	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	
225	Gly	Ser	Asp	Asp	Ser	Lys	Tyr	Val	Ser	Gly	Ile	Asn	Leu	Val	Val	Asp	
	Gly	Gly	Tyr	Ser	Ile	Thr	Asn	Pro	Ser	Ala	Gly	Met	Val	Phe	Lys	Ser	
				260					265					270			

His Leu Ser Ser Thr His Pro Ser Gln Asn  
275 280

<210> 3305  
<211> 777  
<212> DNA  
<213> Vitis vinifera

<220>  
<221> CDS  
<222> (1)..(777)

<400> 3305  
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Met Lys Leu Lys Gly Ser Asp Asn Tyr Ser Tyr Pro Phe Tyr Asn Arg  
1 5 10 15  
ttg gag ggg aaa att gca gtt gtc acc ggt ggc gct aga ggg att gga 96  
Leu Glu Gly Lys Ile Ala Val Val Thr Gly Gly Ala Arg Gly Ile Gly  
20 25 30  
gag gcg acg gtg aga ctc ttt gca aga cac ggt gcc aag gtg gtc ata 144  
Glu Ala Thr Val Arg Leu Phe Ala Arg His Gly Ala Lys Val Val Ile  
35 40 45  
gct gat gtt gaa gac aca ctc gga gct gca ctt gct agc tca tta gct 192  
Ala Asp Val Glu Asp Thr Leu Gly Ala Ala Leu Ala Ser Ser Leu Ala  
50 55 60  
ccc tca gtt acc ttt gtt cac tgt gat gtt agc ttg gaa gag gat att 240  
Pro Ser Val Thr Phe Val His Cys Asp Val Ser Leu Glu Glu Asp Ile  
65 70 75 80  
gag aac gta atc aat tct acg gtg tcc cgg tac gga cgc ctc gat atc 288  
Glu Asn Val Ile Asn Ser Thr Val Ser Arg Tyr Gly Arg Leu Asp Ile  
85 90 95  
ctt ttc aac aat gct ggg gtg ctg gga aat caa tca aag cac aag agc 336  
Leu Phe Asn Asn Ala Gly Val Leu Gly Asn Gln Ser Lys His Lys Ser  
100 105 110  
ata att gac ttt gat ata gat gaa ttc gat cag gtg atg cgt gtg aat 384  
Ile Ile Asp Phe Asp Ile Asp Glu Phe Asp Gln Val Met Arg Val Asn  
115 120 125  
gta aga ggg atg gct cta gga atc aag cac gcg gcg aga gtc atg gtc 432  
Val Arg Gly Met Ala Leu Gly Ile Lys His Ala Ala Arg Val Met Val  
130 135 140  
cca aga gga atg gga tgt ata atc tcc acg gct agt gta gca gga gtg 480  
Pro Arg Gly Met Gly Cys Ile Ile Ser Thr Ala Ser Val Ala Gly Val  
145 150 155 160  
atg gga ggg ctt ggt cct cat gct tac aca gct tca aag cat gca att 528  
Met Gly Gly Leu Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile  
165 170 175  
gtg ggg ctg acg aag aac act gcc tgc gag ctt ggg cgg tat ggg att 576  
Val Gly Leu Thr Lys Asn Thr Ala Cys Glu Leu Gly Arg Tyr Gly Ile  
180 185 190  
aga gta aac tgc att tct cca ttt ggg gtg gct act tcc atg ctt gtg 624  
Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr Ser Met Leu Val  
195 200 205  
aat gca tgg agg agc atg gag aag atg gag gag gct aaa gat ata gcc 672  
Asn Ala Trp Arg Ser Met Glu Lys Met Glu Glu Ala Lys Asp Ile Ala  
210 215 220  
gag gct gct ctt tat ctt gct agt gat gag tcc aaa tat gta agt gga 720  
Glu Ala Ala Leu Tyr Leu Ala Ser Asp Glu Ser Lys Tyr Val Ser Gly  
225 230 235 240  
cat aac ctt gta gta gat ggt ggg att acc act tcg aga aat tgt gtt 768  
His Asn Leu Val Val Asp Gly Gly Ile Thr Thr Ser Arg Asn Cys Val  
245 250 255  
ggc ttg tag 777  
Gly Leu

<210> 3306  
<211> 258  
<212> PRT  
<213> Vitis vinifera

## PhoenixTemp32470.tmp.txt

<400> 3306  
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 1 5 10 15  
 Leu Glu Gly Lys Ile Ala Val Val Thr Gly Gly Ala Arg Gly Ile Gly  
 20 25 30  
 Glu Ala Thr Val Arg Leu Phe Ala Arg His Gly Ala Lys Val Val Ile  
 35 40 45  
 Ala Asp Val Glu Asp Thr Leu Gly Ala Ala Leu Ala Ser Ser Leu Ala  
 50 55 60  
 Pro Ser Val Thr Phe Val His Cys Asp Val Ser Leu Glu Glu Asp Ile  
 65 70 75 80  
 Glu Asn Val Ile Asn Ser Thr Val Ser Arg Tyr Gly Arg Leu Asp Ile  
 85 90 95  
 Leu Phe Asn Asn Ala Gly Val Leu Gly Asn Gln Ser Lys His Lys Ser  
 100 105 110  
 Ile Ile Asp Phe Asp Ile Asp Glu Phe Asp Gln Val Met Arg Val Asn  
 115 120 125  
 Val Arg Gly Met Ala Leu Gly Ile Lys His Ala Ala Arg Val Met Val  
 130 135 140  
 Pro Arg Gly Met Gly Cys Ile Ile Ser Thr Ala Ser Val Ala Gly Val  
 145 150 155 160  
 Met Gly Gly Leu Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile  
 165 170 175  
 Val Gly Leu Thr Lys Asn Thr Ala Cys Glu Leu Gly Arg Tyr Gly Ile  
 180 185 190  
 Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr Ser Met Leu Val  
 195 200 205  
 Asn Ala Trp Arg Ser Met Glu Lys Met Glu Glu Ala Lys Asp Ile Ala  
 210 215 220  
 Glu Ala Ala Leu Tyr Leu Ala Ser Asp Glu Ser Lys Tyr Val Ser Gly  
 225 230 235 240  
 His Asn Leu Val Val Asp Gly Gly Ile Thr Thr Ser Arg Asn Cys Val  
 245 250 255  
 Gly Leu

<210> 3307  
 <211> 789  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(789)

<400> 3307  
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 Met Thr Asp Pro Thr Pro Phe Asn Lys Lys Leu Gln Gly Lys Val Ala  
 1 5 10 15  
 atc atc acc ggc ggc gca agc ggc atc ggc gag gct acg gca cgt ctc 96  
 Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr Ala Arg Leu  
 20 25 30  
 ttc gcc gat cac ggc gca cga gcc gtc gtt gta gcc gac atc caa gac 144  
 Phe Ala Asp His Gly Ala Arg Ala Val Val Val Ala Asp Ile Gln Asp  
 35 40 45  
 gag ctg ggc cgt ggc gtc gcc gag tca atc ggc tta cac cgc tgc agg 192  
 Glu Leu Gly Arg Gly Val Ala Glu Ser Ile Gly Leu His Arg Cys Arg  
 50 55 60  
 tac att cac tgt gat gta acc gat gag cag cag atc aaa gcg atg gtg 240  
 Tyr Ile His Cys Asp Val Thr Asp Glu Gln Gln Ile Lys Ala Met Val  
 65 70 75 80  
 gaa tcg acg gtg aag atg ttc gga caa ctc gac atc atg ttc agc aac 288  
 Glu Ser Thr Val Lys Met Phe Gly Gln Leu Asp Ile Met Phe Ser Asn  
 85 90 95  
 gct ggg gtt atg agt atg ggc gac cag acc ata ctg gag ctg gat cta 336  
 Ala Gly Val Met Ser Met Gly Asp Gln Thr Ile Leu Glu Leu Asp Leu  
 100 105 110  
 tca gct tcc gac aag gtg ttt gca gta aac gca cgc ggc atg gcg gcg 384  
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## PhoenixTemp32470.tmp.txt

Ser	Ala	Ser	Asp	Lys	Val	Phe	Ala	Val	Asn	Ala	Arg	Gly	Met	Ala	Ala		
tgt	gtg	aag	cac	gcg	gcg	cgt	gcg	atg	gtg	gag	ggt	ggt	ggt	aaa	ggg	432	
Cys	Val	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Gly	Val	Lys	Gly		
agc	ata	gtg	tgc	acg	gcg	agc	gtg	gct	gcg	acg	gtg	ggg	aat	gac	aag	480	
Ser	Ile	Val	Cys	Thr	Ala	Ser	Val	Ala	Ala	Thr	Val	Gly	Asn	Asp	Lys		
145					150					155					160		
ttc	act	gac	tac	ata	atg	tcg	aag	cac	gcg	gtg	ttg	ggg	cta	gtg	aga	528	
Phe	Thr	Asp	Tyr	Ile	Met	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Arg		
				165					170					175			
tcg	gcg	agt	aag	cag	ctg	ggc	gcg	tac	gga	ata	agg	gtg	aat	tgc	gtg	576	
Ser	Ala	Ser	Lys	Gln	Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Val		
				180				185					190				
tca	ccg	acg	gca	gtg	gcg	acg	cca	atg	ctt	tgc	agc	gca	ttt	aag	atg	624	
Ser	Pro	Thr	Ala	Val	Ala	Thr	Pro	Met	Leu	Cys	Ser	Ala	Phe	Lys	Met		
				195			200					205					
ggc	gtg	gag	gag	gcg	gag	aaa	ttt	gta	gag	gac	atg	gat	tta	aaa		672	
Gly	Val	Glu	Glu	Ala	Glu	Lys	Phe	Phe	Val	Glu	Asp	Met	Asp	Leu	Lys		
	210					215				220							
ggg	aga	ggg	gca	gtg	caa	gtg	aga	cac	gtg	ggg	gat	gca	gcg	ttg	ttt	720	
Gly	Arg	Gly	Ala	Val	Gln	Val	Arg	His	Val	Gly	Asp	Ala	Ala	Leu	Phe		
225					230					235					240		
ctt	gct	tcc	gac	gat	tct	gag	ttt	ata	acg	gga	cat	aac	ttg	gcc	atc	768	
Leu	Ala	Ser	Asp	Asp	Ser	Glu	Phe	Ile	Thr	Gly	His	Asn	Leu	Ala	Ile		
				245					250					255			
gac	ggg	ggc	ttc	cgc	cgg	tga										789	
Asp	Gly	Gly	Phe	Arg	Arg												
				260													

&lt;210&gt; 3308

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Vitis vinifera

&lt;400&gt; 3308

Met	Thr	Asp	Pro	Thr	Pro	Phe	Asn	Lys	Lys	Leu	Gln	Gly	Lys	Val	Ala		
1				5					10					15			
Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Arg	Leu		
			20					25					30				
Phe	Ala	Asp	His	Gly	Ala	Arg	Ala	Val	Val	Val	Ala	Asp	Ile	Gln	Asp		
			35				40					45					
Glu	Leu	Gly	Arg	Gly	Val	Ala	Glu	Ser	Ile	Gly	Leu	His	Arg	Cys	Arg		
			50			55				60							
Tyr	Ile	His	Cys	Asp	Val	Thr	Asp	Glu	Gln	Gln	Ile	Lys	Ala	Met	Val		
65					70				75					80			
Glu	Ser	Thr	Val	Lys	Met	Phe	Gly	Gln	Leu	Asp	Ile	Met	Phe	Ser	Asn		
				85				90						95			
Ala	Gly	Val	Met	Ser	Met	Gly	Asp	Gln	Thr	Ile	Leu	Glu	Leu	Asp	Leu		
			100				105					110					
Ser	Ala	Ser	Asp	Lys	Val	Phe	Ala	Val	Asn	Ala	Arg	Gly	Met	Ala	Ala		
			115				120					125					
Cys	Val	Lys	His	Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Gly	Val	Lys	Gly		
	130					135					140						
Ser	Ile	Val	Cys	Thr	Ala	Ser	Val	Ala	Ala	Thr	Val	Gly	Asn	Asp	Lys		
145					150					155					160		
Phe	Thr	Asp	Tyr	Ile	Met	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Arg		
				165					170					175			
Ser	Ala	Ser	Lys	Gln	Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Cys	Val		
			180					185					190				
Ser	Pro	Thr	Ala	Val	Ala	Thr	Pro	Met	Leu	Cys	Ser	Ala	Phe	Lys	Met		
			195				200					205					
Gly	Val	Glu	Glu	Ala	Glu	Lys	Phe	Phe	Val	Glu	Asp	Met	Asp	Leu	Lys		
	210					215					220						
Gly	Arg	Gly	Ala	Val	Gln	Val	Arg	His	Val	Gly	Asp	Ala	Ala	Leu	Phe		
225					230					235					240		
Leu	Ala	Ser	Asp	Asp	Ser	Glu	Phe	Ile	Thr	Gly	His	Asn	Leu	Ala	Ile		
				245					250					255			
Asp	Gly	Gly	Phe	Arg	Arg												



260

<210> 3309  
 <211> 996  
 <212> DNA  
 <213> *Tripsacum dactyloides*

<220>  
 <221> CDS  
 <222> (1)..(996)

<400> 3309  
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 gac ctc cgc ccc gag ata gcg cac gcg cac cag ccc gtc atg tcg ccc 96  
 Asp Leu Arg Pro Glu Ile Ala His Ala His Gln Pro Val Met Ser Pro  
 20 25 30  
 tcg cac cac ggc tgg gac ggc aat ggc gcc gca gcc gtg ccc aca cct 144  
 Ser His His Gly Trp Asp Gly Asn Gly Ala Ala Ala Val Pro Thr Pro  
 35 40 45  
 atg ccc aag agg ctg gac ggc aag gtg gcc att gtg acg ggc ggc gcg 192  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 cgg ggc atc ggc gag gcc atc gtg cgt ctg ttc gcc aag cac ggc gcc 240  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 cgg gtg gtg atc gcg gac atc gac gac gcc gcc ggc gag gcg ctg gcg 288  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala  
 85 90 95  
 gcg gcg ctg ggc ccg cag gtc agc ttc gtg cgc tgc gac gtg tcg gtg 336  
 Ala Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 gag gag gac gtc cgg cgc gcc gtg gac tgg gcg ctg tcg cgc cac ggc 384  
 Glu Glu Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 ggc cgg ctc gac gtg tac tgc aac aac gcc ggc gtg ctg ggc cgg cag 432  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 acg cgc gcc gcc aag agc atc ctg tcc ttc gac gcg ggc gag ttc gac 480  
 Thr Arg Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe Asp  
 145 150 155 160  
 cgc gtg ctc cgc gtc aac gcg ctg ggc gcc gcg ctc ggc atg aag cac 528  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 gcg gcg cgg gcc atg gcg ccg cgc gcg ggc agc atc gtc tcc gtc 576  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190  
 gcc agc gtc gcg ggc gtg ctc ggc ggc ctc ggc ccg cac gcc tac acc 624  
 Ala Ser Val Ala Gly Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 gcc tcc aag cac gcc atc gtg ggc ggc ctc acc aag aac gcc tgc gag 672  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 ctc ggc gcg cac ggc gtc cgg gtc aac tgc gtc tcg ccc ttc ggc gtc 720  
 Leu Gly Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 gcc acg ccc atg ctc atc aac gcc tgg cgc cag ggc cac gac ggc gcc 768  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Gly Ala  
 245 250 255  
 gcc gac gcg gaa ctc gac ctc gac atc aac gtg ccc agc gac cag gag 816  
 Ala Asp Ala Glu Leu Asp Leu Asp Ile Asn Val Pro Ser Asp Gln Glu  
 260 265 270  
 gtg gag aag atg gag gag gtg gtc agg ggc ctg gcc acg ctc aag ggc 864  
 Val Glu Lys Met Glu Glu Val Val Arg Gly Leu Ala Thr Leu Lys Gly  
 275 280 285  
 ccc acg ctg agg ccc agg gac atc gcc gag gcg gtg ctg ttc ctg gcc 912  
 Pro Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala Val Leu Phe Leu Ala  
 290 295 300

## PhoenixTemp32470.tmp.txt

agc gac gag gcc agg tat ata tcc ggc cac aac ctc gtc gtg gac ggc 960  
 Ser Asp Glu Ala Arg Tyr Ile Ser Gly His Asn Leu Val Val Asp Gly  
 305 310 315 320  
 ggc gtc acc acc tcc agg aac ctc atc ggc ttg tga 996  
 Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330

<210> 3310  
 <211> 331  
 <212> PRT  
 <213> *Tripsacum dactyloides*

<400> 3310  
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 20 25 30  
 Ser His His Gly Trp Asp Gly Asn Gly Ala Ala Ala Val Pro Thr Pro  
 35 40 45  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Gly Glu Ala Leu Ala  
 85 90 95  
 Ala Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 Glu Glu Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 Thr Arg Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe Asp  
 145 150 155 160  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190  
 Ala Ser Val Ala Gly Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 Leu Gly Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Gly Ala  
 245 250 255  
 Ala Asp Ala Glu Leu Asp Leu Asp Ile Asn Val Pro Ser Asp Gln Glu  
 260 265 270  
 Val Glu Lys Met Glu Glu Val Val Arg Gly Leu Ala Thr Leu Lys Gly  
 275 280 285  
 Pro Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala Val Leu Phe Leu Ala  
 290 295 300  
 Ser Asp Glu Ala Arg Tyr Ile Ser Gly His Asn Leu Val Val Asp Gly  
 305 310 315 320  
 Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330

<210> 3311  
 <211> 825  
 <212> DNA  
 <213> *Streptomyces fungicidicus*

<220>  
 <221> CDS  
 <222> (1)..(825)  
 <223> transl\_table=11

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 Met Gln Leu Ala Gly Lys Thr Ala Ile Val Thr Gly Ala Ala Arg Gly  
 48  
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## PhoenixTemp32470.tmp.txt

1	ctg	ggg	cgc	gcc	tgc	gcg	gtc	gcc	ttc	gcc	cgt	gag	ggc	gcc	15		
	Leu	Gly	Arg	Ala	Cys	Ala	Val	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Asp	Leu	96
				20					25					30			
	gtc	ctc	ctc	gac	ctc	tgc	gcg	gac	ctg	ccc	ggc	gtt	ccg	tac	ccg	ctc	144
	Val	Leu	Leu	Asp	Leu	Cys	Ala	Asp	Leu	Pro	Gly	Val	Pro	Tyr	Pro	Leu	
			35					40					45				
	ggc	ggc	ccc	ggc	cag	ctc	gcc	cac	acc	gcc	gac	ctg	tgc	cgc	ggg	cac	192
	Gly	Gly	Pro	Gly	Gln	Leu	Ala	His	Thr	Ala	Asp	Leu	Cys	Arg	Gly	His	
		50					55					60					
	ggc	gcg	gcc	gtc	ctc	gtc	cgg	cag	gcc	gac	gta	cgg	gac	ctc	ggc	gcg	240
	Gly	Ala	Ala	Val	Leu	Val	Arg	Gln	Ala	Asp	Val	Arg	Asp	Leu	Gly	Ala	
	65					70					75					80	
	ctg	cgg	cac	gcc	gtg	gac	gac	gcc	cac	ggc	cgg	ttc	gga	cgc	atc	gac	288
	Leu	Arg	His	Ala	Val	Asp	Asp	Ala	His	Gly	Arg	Phe	Gly	Arg	Ile	Asp	
					85					90					95		
	gtg	ctg	ctc	aac	aac	gcc	ggg	atc	gcc	gcg	ccc	tcc	ggc	aaa	ccc	gtc	336
	Val	Leu	Leu	Asn	Asn	Ala	Gly	Ile	Ala	Ala	Pro	Ser	Gly	Lys	Pro	Val	
				100				105						110			
	gac	gag	atc	gac	gag	gac	gag	tgg	cag	ctg	atg	atc	gac	gtg	gac	ctg	384
	Asp	Glu	Ile	Asp	Glu	Asp	Glu	Trp	Gln	Leu	Met	Ile	Asp	Val	Asp	Leu	
			115					120					125				
	tcc	ggc	gcg	tgg	cgc	gcg	acg	aag	gcg	gtc	ggc	aag	atc	atg	acc	gcc	432
	Ser	Gly	Ala	Trp	Arg	Ala	Thr	Lys	Ala	Val	Gly	Lys	Ile	Met	Thr	Ala	
		130					135					140					
	cag	cgg	gcc	ggc	agc	atc	atc	aac	gtc	gcc	tcc	acc	gcc	ggg	cag	gtc	480
	Gln	Arg	Ala	Gly	Ser	Ile	Ile	Asn	Val	Ala	Ser	Thr	Ala	Gly	Gln	Val	
	145				150						155					160	
	gga	tac	cgc	aac	ttc	gcg	ggc	tac	gtg	gcg	gcc	aaa	cac	ggt	gtc	atc	528
	Gly	Tyr	Arg	Asn	Phe	Ala	Gly	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Ile	
				165						170					175		
	ggg	ctc	acc	agg	gcc	acg	gcg	ctc	gac	ttc	gcg	ccg	atg	agg	gtc	cgc	576
	Gly	Leu	Thr	Arg	Ala	Thr	Ala	Leu	Asp	Phe	Ala	Pro	Met	Arg	Val	Arg	
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	gcc	aac	gcc	ctg	tgc	ccg	ggc	tcg	gtc	cgg	gac	gac	cct	gcc	gtc	gag	624
	Ala	Asn	Ala	Leu	Cys	Pro	Gly	Ser	Val	Arg	Asp	Asp	Pro	Ala	Val	Glu	
			195					200					205				
	ggc	cgg	atg	ctc	tcc	gag	atc	gcc	agg	tcc	ctc	cag	gtg	ccg	gtc	gcc	672
	Gly	Arg	Met	Leu	Ser	Glu	Ile	Ala	Arg	Ser	Leu	Gln	Val	Pro	Val	Ala	
		210					215					220					
	gaa	cac	gag	gag	gcc	ttc	gtc	cag	tcg	cag	ccc	atg	aac	gcc	ctg	atc	720
	Glu	His	Glu	Glu	Ala	Phe	Val	Gln	Ser	Gln	Pro	Met	Asn	Ala	Leu	Ile	
	225					230					235					240	
	gag	ccc	gat	gac	gtc	gcc	tcg	gcc	gcc	gtc	tgg	ctc	gcc	tcc	gac	gga	768
	Glu	Pro	Asp	Asp	Val	Ala	Ser	Ala	Ala	Val	Trp	Leu	Ala	Ser	Asp	Gly	
				245						250					255		
	tcc	cgg	cag	gtc	acg	ggg	tcg	gtc	atc	acc	gtc	gac	ggc	ggg	ttc	acc	816
	Ser	Arg	Gln	Val	Thr	Gly	Ser	Val	Ile	Thr	Val	Asp	Gly	Gly	Phe	Thr	
				260					265					270			
	act	cgc	tga														825
	Thr	Arg															

&lt;210&gt; 3312

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Streptomyces fungicidicus

&lt;400&gt; 3312

Met	Gln	Leu	Ala	Gly	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ala	Arg	Gly
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	Leu	Gly	Arg	Ala	Cys	Ala	Val	Ala	Phe	Ala	Arg	Glu	Gly	Ala	Asp
				20					25					30	
	Val	Leu	Leu	Asp	Leu	Cys	Ala	Asp	Leu	Pro	Gly	Val	Pro	Tyr	Pro
			35					40					45		
	Gly	Gly	Pro	Gly	Gln	Leu	Ala	His	Thr	Ala	Asp	Leu	Cys	Arg	Gly
		50					55					60			
	Gly	Ala	Ala	Val	Leu	Val	Arg	Gln	Ala	Asp	Val	Arg	Asp	Leu	Gly
	65					70				75					80

## PhoenixTemp32470.tmp.txt

Leu Arg His Ala Val<sup>85</sup> Asp Asp Ala His Gly<sup>90</sup> Arg Phe Gly Arg Ile<sup>95</sup> Asp  
 Val<sup>100</sup> Leu Leu Asn Ala Gly Ile Ala<sup>105</sup> Pro Ser Gly Lys<sup>110</sup> Pro Val<sup>115</sup>  
 Asp Glu Ile<sup>115</sup> Asp Glu Asp Glu Trp<sup>120</sup> Gln Leu Met Ile<sup>125</sup> Val Asp Leu<sup>130</sup>  
 Ser Gly<sup>130</sup> Ala Trp Arg Ala Thr<sup>135</sup> Lys Ala Val Gly Lys<sup>140</sup> Ile Met Thr Ala<sup>145</sup>  
 Gln Arg Ala Gly Ser Ile<sup>150</sup> Ile Asn Val Ala Ser Thr Ala Gly Gln Val<sup>160</sup>  
 Gly Tyr Arg Asn Phe<sup>165</sup> Ala Gly Tyr Val Ala<sup>170</sup> Lys His Gly Val<sup>175</sup> Ile<sup>180</sup>  
 Gly Leu Thr Arg<sup>180</sup> Ala Thr Ala Leu Asp<sup>185</sup> Phe Ala Pro Met Arg Val Arg<sup>190</sup>  
 Ala Asn Ala<sup>195</sup> Leu Cys Pro Gly Ser Val Arg Asp Asp Pro Ala Val Glu<sup>200</sup>  
 Gly Arg Met<sup>210</sup> Leu Ser Glu Ile<sup>215</sup> Ala Arg Ser Leu Gln Val Pro Val Ala<sup>220</sup>  
 Glu His Glu Glu Ala Phe<sup>230</sup> Val Gln Ser Gln Pro Met Asn Ala Leu Ile<sup>240</sup>  
 Glu Pro Asp Asp Val<sup>245</sup> Ala Ser Ala Ala Val<sup>250</sup> Trp Leu Ala Ser Asp Gly<sup>255</sup>  
 Ser Arg Gln Val<sup>260</sup> Thr Gly Ser Val Ile<sup>265</sup> Thr Val Asp Gly Gly<sup>270</sup> Phe Thr  
 Thr Arg

&lt;210&gt; 3313

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Phaeosphaeria nodorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 3313

atg gca gat ata cca tcc gaa cct cca tcg cga ggt ctt agg ggg aaa	48
Met Ala Asp Ile Pro <sup>5</sup> Ser Glu Pro Pro Ser <sup>10</sup> Arg Gly Leu Arg Gly <sup>15</sup> Lys	
gcg gcc atc gtg aca ggt gct ggt tgt gca gga gaa gga att ggt aat	96
Ala Ala Ile Val <sup>20</sup> Thr Gly Ala Gly Cys <sup>25</sup> Ala Gly Glu Gly Ile <sup>30</sup> Gly Asn	
ggt cgc gca att tct atc atg ctc gca gac gag ggg tgt aac ata ctc	144
Gly Arg Ala <sup>35</sup> Ile Ser Ile Met Leu <sup>40</sup> Ala Asp Glu Gly Cys <sup>45</sup> Asn Ile Leu	
tgc tta gac atg aat ctg gaa tgg gca caa aag aca gtg gca att tcg	192
Cys Leu Asp Met Asn Leu <sup>55</sup> Glu Trp Ala Gln Lys Thr Val Ala Ile Ser	
tca tcg aag cca ggt cga gga aga gca ata gcg ttc aag gct gat gtt	240
Ser Ser Lys Pro Gly Arg <sup>70</sup> Gly Arg Ala Ile Ala <sup>75</sup> Phe Lys Ala Asp Val <sup>80</sup>	
acg aaa gcc aca gac tgc gaa gca gcc gtg cag ttg gcc ctg aat gag	288
Thr Lys Ala Thr Asp <sup>85</sup> Cys Glu Ala Ala Val <sup>90</sup> Gln Leu Ala Leu Asn Glu <sup>95</sup>	
ttt gga aga ctg gac gtg ttg atc aac aat gtt ggt att ggt gga gca	336
Phe Gly Arg Leu Asp Val Leu Ile Asn <sup>105</sup> Val Gly Ile <sup>110</sup> Gly Ala	
gct ggc aca gct gtc gac gtc gat atg gaa gcc tgg acc aaa ggc cta	384
Ala Gly Thr Ala Val Asp Val Asp Met Glu Ala Trp Thr <sup>125</sup> Lys Gly Leu	
gag atc aat gtc agc agt atg gta cag atg gca aag tac gct ata cca	432
Glu Ile Asn Val Ser Ser Met <sup>135</sup> Val Gln Met Ala Lys Tyr Ala Ile Pro	
gcg atg ctg aag aat gag ggt gaa acg aga ggc agt att atc aat atg	480
Ala Met Leu Lys Asn Glu <sup>150</sup> Gly Glu Thr Arg Gly Ser Ile Ile Asn Met <sup>160</sup>	
ggg tcg gtt gcc ggt ctc aaa ggt gga acg cct cac ttg ctg tat ccg	528
Gly Ser Val Ala Gly Leu Lys Gly Gly Thr Pro His Leu Leu Tyr Pro	

## PhoenixTemp32470.tmp.txt

aca	agc	aaa	ggc	165	gct	ggt	gtc	aac	atg	170	aca	aga	gcg	atg	tcc	175	gca	cat	576
Thr	Ser	Lys	Gly	Ala	Val	Val	Val	Asn	Met	Thr	Arg	Ala	Met	Ser	Ala	His			
cac	gcc	gca	gac	180	ggc	att	cga	gta	aat	tgt	gtc	tgt	cct	ggg	atg	ctg	624		
His	Ala	Ala	Asp	Gly	Ile	Arg	Val	Val	Asn	Cys	Val	Cys	Pro	Gly	Met	Leu			
tac	acc	ccg	atg	195	ttg	tac	gct	ggg	ggt	atg	agt	gaa	gag	gcg	cgc	gaa	672		
Tyr	Thr	Pro	Met	Leu	Tyr	Ala	Gly	Gly	Gly	Met	Ser	Glu	Glu	Ala	Arg	Glu			
gcg	agg	cgg	aaa	210	cga	agt	cta	cta	ggc	acc	gag	gga	aca	gcg	tgg	gac	720		
Ala	Arg	Arg	Lys	Arg	Ser	Leu	Leu	Gly	Thr	Glu	Gly	Thr	Ala	Trp	Asp	240			
225																			
gca	gct	tgt	gcg	245	gtg	gcc	ttc	tta	gca	agc	gac	cat	gca	cgg	tgg	att	768		
Ala	Ala	Cys	Ala	Val	Ala	Phe	Leu	Ala	Ala	Ser	Asp	His	Ala	Arg	Trp	Ile			
aca	gga	gct	atc	260	ctt	ccg	gtg	gac	gcg	ggt	acg	act	gct	gct	ggt	ggg	816		
Thr	Gly	Ala	Ile	Leu	Pro	Val	Asp	Ala	Ala	Gly	Thr	Thr	Ala	Ala	Val	Gly			
att	ggg	atg	ccc	275	aaa	agt	gcc	agc	gtc	aac	gga	tga					852		
Ile	Gly	Met	Pro	Lys	Ser	Ala	Ser	Ser	Val	Asn	Gly								

&lt;210&gt; 3314

&lt;211&gt; 283

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 3314

Met	Ala	Asp	Ile	Pro	Ser	Glu	Pro	Pro	Ser	Arg	Gly	Leu	Arg	Gly	Lys				
1	Ala	Ala	Ile	Val	Thr	Gly	Ala	Gly	Cys	Ala	Gly	Glu	Gly	Ile	Gly	Asn			
				20					25					30					
Gly	Arg	Ala	Ile	Ser	Ile	Met	Leu	Ala	Asp	Glu	Gly	Cys	Asn	Ile	Leu				
		35					40					45							
Cys	Leu	Asp	Met	Asn	Leu	Glu	Trp	Ala	Gln	Lys	Thr	Val	Ala	Ile	Ser				
		50				55					60								
Ser	Ser	Lys	Pro	Gly	Arg	Gly	Arg	Ala	Ile	Ala	Phe	Lys	Ala	Asp	Val				
65					70					75					80				
Thr	Lys	Ala	Thr	Asp	Cys	Glu	Ala	Ala	Val	Gln	Leu	Ala	Leu	Asn	Glu				
				85					90					95					
Phe	Gly	Arg	Leu	Asp	Val	Leu	Ile	Asn	Asn	Val	Gly	Ile	Gly	Gly	Ala				
			100					105					110						
Ala	Gly	Thr	Ala	Val	Asp	Val	Asp	Met	Glu	Ala	Trp	Thr	Lys	Gly	Leu				
		115					120					125							
Glu	Ile	Asn	Val	Ser	Ser	Met	Val	Gln	Met	Ala	Lys	Tyr	Ala	Ile	Pro				
		130				135					140								
Ala	Met	Leu	Lys	Asn	Glu	Gly	Glu	Thr	Arg	Gly	Ser	Ile	Ile	Asn	Met				
145					150					155					160				
Gly	Ser	Val	Ala	Gly	Leu	Lys	Gly	Gly	Thr	Pro	His	Leu	Leu	Tyr	Pro				
				165					170					175					
Thr	Ser	Lys	Gly	Ala	Val	Val	Asn	Met	Thr	Arg	Ala	Met	Ser	Ala	His				
			180					185					190						
His	Ala	Ala	Asp	Gly	Ile	Arg	Val	Asn	Cys	Val	Cys	Pro	Gly	Met	Leu				
		195					200					205							
Tyr	Thr	Pro	Met	Leu	Tyr	Ala	Gly	Gly	Met	Ser	Glu	Glu	Ala	Arg	Glu				
		210				215					220								
Ala	Arg	Arg	Lys	Arg	Ser	Leu	Leu	Gly	Thr	Glu	Gly	Thr	Ala	Trp	Asp				
225					230					235					240				
Ala	Ala	Cys	Ala	Val	Ala	Phe	Leu	Ala	Ser	Asp	His	Ala	Arg	Trp	Ile				
				245					250					255					
Thr	Gly	Ala	Ile	Leu	Pro	Val	Asp	Ala	Gly	Thr	Thr	Ala	Ala	Val	Gly				
			260					265					270						
Ile	Gly	Met	Pro	Lys	Ser	Ala	Ser	Val	Asn	Gly									
		275					280												

&lt;210&gt; 3315

&lt;211&gt; 759

&lt;212&gt; DNA

&lt;213&gt; Phaeosphaeria nodorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(759)

&lt;400&gt; 3315

atg	tcc	aaa	ctt	ttc	caa	gac	aaa	gtc	gtg	ctg	gta	acc	gga	ggc	gca	48
Met	Ser	Lys	Leu	Phe	Gln	Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Gly	Ala	
1				5				10						15		
agt	ggc	ata	ggg	cgc	gca	aca	gcg	ctc	aaa	atg	gcc	acc	ctc	ggc	gcc	96
Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Lys	Met	Ala	Thr	Leu	Gly	Ala	
			20					25					30			
tct	atc	gcc	ctc	tgc	gac	atc	aac	acg	ctc	gca	ctc	gca	gcc	gtc	gca	144
Ser	Ile	Ala	Leu	Cys	Asp	Ile	Asn	Thr	Leu	Ala	Leu	Ala	Ala	Val	Ala	
			35				40					45				
tct	gaa	ctc	tcc	aca	ccc	aca	cac	acg	caa	caa	gtc	gac	ggt	ggt	agc	192
Ser	Glu	Leu	Ser	Thr	Pro	Thr	His	Thr	Gln	Gln	Val	Asp	Val	Gly	Ser	
	50					55					60					
acc	tcc	caa	gtg	caa	tcc	ttc	gta	cga	tcc	acg	atc	gaa	aag	ttc	ggt	240
Thr	Ser	Gln	Val	Gln	Ser	Phe	Val	Arg	Ser	Thr	Ile	Glu	Lys	Phe	Gly	
					70			75							80	
cga	atc	gat	cac	gtc	ttc	aac	tgc	gcc	ggc	gta	aat	ccc	aca	tcc	atc	288
Arg	Ile	Asp	His	Val	Phe	Asn	Cys	Ala	Gly	Val	Asn	Pro	Thr	Ser	Ile	
				85					90					95		
cct	ctt	gag	gat	acg	cac	gac	gag	tac	tgg	gac	aga	ctg	gtc	aac	acg	336
Pro	Leu	Glu	Asp	Thr	His	Asp	Glu	Tyr	Trp	Asp	Arg	Leu	Val	Asn	Thr	
			100					105					110			
aat	ctc	aag	ggc	gtg	ttc	ttg	gtt	acg	agg	gag	tgt	ctg	ccg	cac	ctg	384
Asn	Leu	Lys	Gly	Val	Phe	Leu	Val	Thr	Arg	Glu	Cys	Leu	Pro	His	Leu	
			115				120					125				
agg	cgc	ggc	gcg	agt	atc	gtc	aac	gtg	tcg	tcg	ata	tct	gga	att	cgt	432
Arg	Arg	Gly	Ala	Ser	Ile	Val	Asn	Val	Ser	Ser	Ile	Ser	Gly	Ile	Arg	
			130			135					140					
ggg	tcc	gcg	atg	caa	tct	gtg	tac	tgc	acg	acc	aag	ttt	ggg	ctg	att	480
Gly	Ser	Ala	Met	Gln	Ser	Val	Tyr	Cys	Thr	Thr	Lys	Phe	Gly	Leu	Ile	
					150				155						160	
ggc	atg	tcc	aag	tct	ctt	gcg	ctg	gaa	ctt	ggg	ccc	aag	gga	att	cgc	528
Gly	Met	Ser	Lys	Ser	Leu	Ala	Leu	Glu	Leu	Gly	Pro	Lys	Gly	Ile	Arg	
				165					170					175		
gtc	aac	tgc	gtg	gca	ccg	ggg	tac	atc	gat	acg	ccg	tca	aat	gcg	ggc	576
Val	Asn	Cys	Val	Ala	Pro	Gly	Tyr	Ile	Asp	Thr	Pro	Ser	Asn	Ala	Gly	
			180					185					190			
ata	gtg	aag	ggt	ggg	gag	gcg	atc	gag	cgc	atg	aga	ttg	ggt	aat	gcg	624
Ile	Val	Lys	Gly	Gly	Glu	Ala	Ile	Glu	Arg	Met	Arg	Leu	Gly	Asn	Ala	
			195				200					205				
ctg	gaa	agg	ctg	ggc	acc	ccg	gag	gag	gta	gcg	gat	ggt	gtg	gcg	ttc	672
Leu	Glu	Arg	Leu	Gly	Thr	Pro	Glu	Glu	Val	Ala	Asp	Val	Val	Ala	Phe	
			210			215					220					
ttg	ttt	ggg	gag	gag	agt	agg	tat	gtg	aac	ggt	gca	gtg	ctg	gag	att	720
Leu	Phe	Gly	Glu	Glu	Ser	Arg	Tyr	Val	Asn	Gly	Ala	Val	Leu	Glu	Ile	
					230					235					240	
gat	ggc	gcg	gtt	aaa	atg	agt	agc	aca	acg	agt	aag	tag				759
Asp	Gly	Ala	Val	Lys	Met	Ser	Ser	Thr	Thr	Ser	Lys					
				245					250							

&lt;210&gt; 3316

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 3316

Met	Ser	Lys	Leu	Phe	Gln	Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Gly	Ala	
1				5				10						15		
Ser	Gly	Ile	Gly	Arg	Ala	Thr	Ala	Leu	Lys	Met	Ala	Thr	Leu	Gly	Ala	
			20					25					30			
Ser	Ile	Ala	Leu	Cys	Asp	Ile	Asn	Thr	Leu	Ala	Leu	Ala	Ala	Val	Ala	
			35				40					45				
Ser	Glu	Leu	Ser	Thr	Pro	Thr	His	Thr	Gln	Gln	Val	Asp	Val	Gly	Ser	

## PhoenixTemp32470.tmp.txt

50 55 60  
 Thr Ser Gln Val Gln Ser Phe Val Arg Ser Thr Ile Glu Lys Phe Gly  
 65 70 75 80  
 Arg Ile Asp His Val Phe Asn Cys Ala Gly Val Asn Pro Thr Ser Ile  
 85 90 95  
 Pro Leu Glu Asp Thr His Asp Glu Tyr Trp Asp Arg Leu Val Asn Thr  
 100 105 110  
 Asn Leu Lys Gly Val Phe Leu Val Thr Arg Glu Cys Leu Pro His Leu  
 115 120 125  
 Arg Arg Gly Ala Ser Ile Val Asn Val Ser Ser Ile Ser Gly Ile Arg  
 130 135 140  
 Gly Ser Ala Met Gln Ser Val Tyr Cys Thr Thr Lys Phe Gly Leu Ile  
 145 150 155 160  
 Gly Met Ser Lys Ser Leu Ala Leu Glu Leu Gly Pro Lys Gly Ile Arg  
 165 170 175  
 Val Asn Cys Val Ala Pro Gly Tyr Ile Asp Thr Pro Ser Asn Ala Gly  
 180 185 190  
 Ile Val Lys Gly Gly Glu Ala Ile Glu Arg Met Arg Leu Gly Asn Ala  
 195 200 205  
 Leu Glu Arg Leu Gly Thr Pro Glu Glu Val Ala Asp Val Val Ala Phe  
 210 215 220  
 Leu Phe Gly Glu Glu Ser Arg Tyr Val Asn Gly Ala Val Leu Glu Ile  
 225 230 235 240  
 Asp Gly Ala Val Lys Met Ser Ser Thr Thr Ser Lys  
 245 250

&lt;210&gt; 3317

&lt;211&gt; 900

&lt;212&gt; DNA

&lt;213&gt; Phaeosphaeria nodorum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(900)

&lt;400&gt; 3317

atg tca tca agc aaa gga caa ttc gag cag ggc cac cag ccc gag gtc	48
Met Ser Ser Ser Lys Gly Gln Phe Glu Gln Gly His Gln Pro Glu Val	
1 5 10 15	
cag cac cag aag gtc cca gga tgg cag aca gta atg gac cct cca ccc	96
Gln His Gln Val Pro Gly Trp Gln Thr Val Met Asp Pro Pro	
20 25 30	
caa gtc gac cat ctt ccc acc gcc gaa ggc ggc cgc gaa ctc tac aaa	144
Gln Val Asp His Leu Pro Thr Ala Glu Gly Gly Arg Glu Leu Tyr Lys	
35 40 45	
gcc gcc ggg aag ctc aag ggc aag aaa gca ctc atc acc ggc ggc gac	192
Ala Ala Gly Lys Leu Lys Gly Lys Lys Ala Leu Ile Thr Gly Gly Asp	
50 55 60	
tct gga atc ggc cgc tca atc gcc gtc ctt tac gcc atg gag ggt gcc	240
Ser Gly Ile Gly Arg Ser Ile Ala Val Leu Tyr Ala Met Glu Gly Ala	
65 70 75 80	
gac agc ttc atc gcc tac ctg ccc gaa gaa gaa gac gac gcg aaa	288
Asp Ser Phe Ile Ala Tyr Leu Pro Glu Glu Glu Glu Asp Asp Ala Lys	
85 90 95	
gag aca gtc aag ctc gtg gaa gag aaa gga gca aga tgc tac aca tac	336
Glu Thr Val Lys Leu Val Glu Glu Lys Gly Ala Arg Cys Tyr Thr Tyr	
100 105 110	
ccc act gac ctc acc agc cgt gac aac tgc aag aag gtt gtc gag gcg	384
Pro Thr Asp Leu Thr Ser Arg Asp Asn Cys Lys Lys Val Val Glu Ala	
115 120 125	
gcg gtc aag cag atg ggc ggc att gac atc ctc gta aac aac cac gcg	432
Ala Val Lys Gln Met Gly Gly Ile Asp Ile Leu Val Asn Asn His Ala	
130 135 140	
tat cag atg atg gtt gag gat atc aag gat ctt tct gag gac cag tgg	480
Tyr Gln Met Met Val Glu Asp Ile Lys Asp Leu Ser Glu Asp Gln Trp	
145 150 155 160	
gag cgc acg ttc aac acc aac atc cac ccg ttc ttc tac ttg tca aag	528
Glu Arg Thr Phe Asn Thr Asn Ile His Pro Phe Phe Tyr Leu Ser Lys	
165 170 175	

## PhoenixTemp32470.tmp.txt

tat	acc	ctg	cca	cat	atg	aag	aag	gga	tcg	acg	atc	atc	aac	aac	gct	576
Tyr	Thr	Leu	Pro	His	Met	Lys	Lys	Gly	Ser	Thr	Ile	Ile	Asn	Asn	Ala	
			180					185					190			
tcc	atc	aac	gcg	tac	att	ggc	cgt	ccg	gat	ctt	ctc	gac	tac	acc	tcg	624
Ser	Ile	Asn	Ala	Tyr	Ile	Gly	Arg	Pro	Asp	Leu	Leu	Asp	Tyr	Thr	Ser	
		195					200					205				
acc	aag	ggc	gcg	att	gtt	tcg	ttt	acc	cgt	ggc	ctg	tcg	aat	cag	tat	672
Thr	Lys	Gly	Ala	Ile	Val	Ser	Phe	Thr	Arg	Gly	Leu	Ser	Asn	Gln	Tyr	
	210					215					220					
gtt	ggc	cga	ggc	att	cgt	gtc	aat	gct	gtt	gcg	ccc	ggg	cca	gtt	tgg	720
Val	Gly	Arg	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Trp	
225					230			235							240	
aca	cct	ctt	att	cca	gcg	acg	atg	aac	gat	gag	gcg	atc	aag	cag	ttc	768
Thr	Pro	Leu	Ile	Pro	Ala	Thr	Met	Asn	Asp	Glu	Ala	Ile	Lys	Gln	Phe	
				245				250						255		
act	tcg	ccg	atg	ggc	agg	ccg	gct	cag	cca	agt	gag	atc	gcg	act	tgc	816
Thr	Ser	Pro	Met	Gly	Arg	Pro	Ala	Gln	Pro	Ser	Glu	Ile	Ala	Thr	Cys	
			260					265					270			
ttt	gtc	ttc	ttg	gct	agc	agt	gac	agc	tgc	atc	agt	gga	cag	acc		864
Phe	Val	Phe	Leu	Ala	Ser	Ser	Asp	Ser	Ser	Cys	Ile	Ser	Gly	Gln	Thr	
		275					280					285				
atc	cat	gca	aac	ggc	ggc	act	att	gtg	aat	ggc	taa					900
Ile	His	Ala	Asn	Gly	Gly	Thr	Ile	Val	Asn	Gly						
	290					295										

&lt;210&gt; 3318

&lt;211&gt; 299

&lt;212&gt; PRT

&lt;213&gt; Phaeosphaeria nodorum

&lt;400&gt; 3318

Met	Ser	Ser	Ser	Lys	Gly	Gln	Phe	Glu	Gln	Gly	His	Gln	Pro	Glu	Val	
1				5				10						15		
Gln	His	Gln	Lys	Val	Pro	Gly	Trp	Gln	Thr	Val	Met	Asp	Pro	Pro	Pro	
			20					25					30			
Gln	Val	Asp	His	Leu	Pro	Thr	Ala	Glu	Gly	Gly	Arg	Glu	Leu	Tyr	Lys	
		35					40					45				
Ala	Ala	Gly	Lys	Leu	Lys	Gly	Lys	Lys	Ala	Leu	Ile	Thr	Gly	Gly	Asp	
		50				55					60					
Ser	Gly	Ile	Gly	Arg	Ser	Ile	Ala	Val	Leu	Tyr	Ala	Met	Glu	Gly	Ala	
65				70						75					80	
Asp	Ser	Phe	Ile	Ala	Tyr	Leu	Pro	Glu	Glu	Glu	Glu	Asp	Asp	Ala	Lys	
				85				90						95		
Glu	Thr	Val	Lys	Leu	Val	Glu	Glu	Lys	Gly	Ala	Arg	Cys	Tyr	Thr	Tyr	
			100					105					110			
Pro	Thr	Asp	Leu	Thr	Ser	Arg	Asp	Asn	Cys	Lys	Lys	Val	Val	Glu	Ala	
		115					120					125				
Ala	Val	Lys	Gln	Met	Gly	Gly	Ile	Asp	Ile	Leu	Val	Asn	Asn	His	Ala	
		130				135					140					
Tyr	Gln	Met	Met	Val	Glu	Asp	Ile	Lys	Asp	Leu	Ser	Glu	Asp	Gln	Trp	
145				150					155						160	
Glu	Arg	Thr	Phe	Asn	Thr	Asn	Ile	His	Pro	Phe	Phe	Tyr	Leu	Ser	Lys	
			165						170					175		
Tyr	Thr	Leu	Pro	His	Met	Lys	Lys	Gly	Ser	Thr	Ile	Ile	Asn	Asn	Ala	
			180					185					190			
Ser	Ile	Asn	Ala	Tyr	Ile	Gly	Arg	Pro	Asp	Leu	Leu	Asp	Tyr	Thr	Ser	
		195					200					205				
Thr	Lys	Gly	Ala	Ile	Val	Ser	Phe	Thr	Arg	Gly	Leu	Ser	Asn	Gln	Tyr	
	210					215					220					
Val	Gly	Arg	Gly	Ile	Arg	Val	Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Trp	
225					230					235					240	
Thr	Pro	Leu	Ile	Pro	Ala	Thr	Met	Asn	Asp	Glu	Ala	Ile	Lys	Gln	Phe	
				245					250					255		
Thr	Ser	Pro	Met	Gly	Arg	Pro	Ala	Gln	Pro	Ser	Glu	Ile	Ala	Thr	Cys	
			260					265					270			
Phe	Val	Phe	Leu	Ala	Ser	Ser	Asp	Ser	Ser	Cys	Ile	Ser	Gly	Gln	Thr	
		275					280					285				
Ile	His	Ala	Asn	Gly	Gly	Thr	Ile	Val	Asn	Gly						
	290					295										



## PhoenixTemp32470.tmp.txt

<210> 3319  
 <211> 744  
 <212> DNA  
 <213> Phaeosphaeria nodorum

<220>  
 <221> CDS  
 <222> (1)..(744)

<400> 3319  
 atg aaa gac aaa gtc gtc gtt gtc acg ggc gcg gcc tca ggc att ggg 48  
 Met Lys Asp Lys Val Val Val Val Thr Gly Ala Ala Ser Gly Ile Gly  
 1 5 10 15  
 ctc gag acc gcg cga ctt ctc gca agc aaa ggc gcc aaa ctt tct ctc 96  
 Leu Glu Thr Ala Arg Leu Leu Ala Ser Lys Gly Ala Lys Leu Ser Leu  
 20 25 30  
 gcg gat gtg cag gaa gat tta ttg aaa gag ttg gaa gct gaa ctc aaa 144  
 Ala Asp Val Gln Glu Asp Leu Leu Lys Glu Leu Glu Glu Leu Lys  
 35 40 45  
 caa tca gga gct gat gtt gta acc cac gtg gtg gat atc agg gac cgc 192  
 Gln Ser Gly Ala Asp Val Val Thr His Val Val Asp Ile Arg Asp Arg  
 50 55 60  
 aag gct gtc gaa gct tgg atc gct gca acg gtc gaa aag ttt ggc aag 240  
 Lys Ala Val Glu Ala Trp Ile Ala Ala Thr Val Glu Lys Phe Gly Lys  
 65 70 75 80  
 ctg gat ggt gcc gcc aat ctt gca ggt gtc aca gga aag caa tcc aac 288  
 Leu Asp Gly Ala Ala Asn Leu Ala Gly Val Thr Gly Lys Gln Ser Asn  
 85 90 95  
 gcc gtt gag att gag gat att gac gac gat gat tgg gac ttg gtc atg 336  
 Ala Val Glu Ile Glu Asp Ile Asp Asp Asp Asp Trp Asp Leu Val Met  
 100 105 110  
 gac gtg aac gtc acc ggc ctt cgc aac tgt ctc cga gct cag gtg acg 384  
 Asp Val Asn Val Thr Gly Leu Arg Asn Cys Leu Arg Ala Gln Val Thr  
 115 120 125  
 cag ttc aac gaa gga gct gcg att gtg aat gct tcc agt atc ctc ggc 432  
 Gln Phe Asn Glu Gly Ala Ala Ile Val Asn Ala Ser Ser Ile Leu Gly  
 130 135 140  
 gtg ata ggc gca ccc aag aac ttg gcg tat tgt gcg tca aaa cat gct 480  
 Val Ile Gly Ala Pro Lys Asn Leu Ala Tyr Cys Ala Ser Lys His Ala  
 145 150 155 160  
 gtt gtt ggt atg acc aga gtt gcg gcg aag gag ctt ggg cca aaa aag 528  
 Val Val Gly Met Thr Arg Val Ala Ala Lys Glu Leu Gly Pro Lys Lys  
 165 170 175  
 att cgc gtc aac tgc atc tgc cca ggc ccg att gac acg cct atg ctg 576  
 Ile Arg Val Asn Cys Ile Cys Pro Gly Pro Ile Asp Thr Pro Met Leu  
 180 185 190  
 cga aac gcg tct gcg att caa ggc cat gcg aca gac ttc agt ttc ctt 624  
 Arg Asn Ala Ser Ala Ile Gln Gly His Ala Thr Asp Phe Ser Phe Leu  
 195 200 205  
 cca ctt gga cga aag gcg cac cag aaa gaa gtg ccg cca ctc atc gag 672  
 Pro Leu Gly Arg Lys Ala His Gln Lys Glu Val Pro Pro Leu Ile Glu  
 210 215 220  
 ttc ttg ttg tcc gat gcg tcg tcc ttt ata aca gga aat gcg atg cag 720  
 Phe Leu Leu Ser Asp Ala Ser Ser Phe Ile Thr Gly Asn Ala Met Gln  
 225 230 235 240  
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 Ile Asp Gly Gly Trp Phe Cys  
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<210> 3320  
 <211> 247  
 <212> PRT  
 <213> Phaeosphaeria nodorum

<400> 3320  
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 1 5 10 15  
 Leu Glu Thr Ala Arg Leu Leu Ala Ser Lys Gly Ala Lys Leu Ser Leu  
 Page 3002

## PhoenixTemp32470.tmp.txt

20 25 30  
 Ala Asp Val Gln Glu Asp Leu Leu Lys Glu Leu Glu Ala Glu Leu Lys  
 35 40 45  
 Gln Ser Gly Ala Asp Val Val Thr His Val Val Asp Ile Arg Asp Arg  
 50 55 60  
 Lys Ala Val Glu Ala Trp Ile Ala Ala Thr Val Glu Lys Phe Gly Lys  
 65 70 75 80  
 Leu Asp Gly Ala Ala Asn Leu Ala Gly Val Thr Gly Lys Gln Ser Asn  
 85 90 95  
 Ala Val Glu Ile Glu Asp Ile Asp Asp Asp Trp Asp Leu Val Met  
 100 105 110  
 Asp Val Asn Val Thr Gly Leu Arg Asn Cys Leu Arg Ala Gln Val Thr  
 115 120 125  
 Gln Phe Asn Glu Gly Ala Ala Ile Val Asn Ala Ser Ser Ile Leu Gly  
 130 135 140  
 Val Ile Gly Ala Pro Lys Asn Leu Ala Tyr Cys Ala Ser Lys His Ala  
 145 150 155 160  
 Val Val Gly Met Thr Arg Val Ala Ala Lys Glu Leu Gly Pro Lys Lys  
 165 170 175  
 Ile Arg Val Asn Cys Ile Cys Pro Gly Pro Ile Asp Thr Pro Met Leu  
 180 185 190  
 Arg Asn Ala Ser Ala Ile Gln Gly His Ala Thr Asp Phe Ser Phe Leu  
 195 200 205  
 Pro Leu Gly Arg Lys Ala His Gln Lys Glu Val Pro Pro Leu Ile Glu  
 210 215 220  
 Phe Leu Leu Ser Asp Ala Ser Ser Phe Ile Thr Gly Asn Ala Met Gln  
 225 230 235 240  
 Ile Asp Gly Gly Trp Phe Cys  
 245

&lt;210&gt; 3321

&lt;211&gt; 975

&lt;212&gt; DNA

&lt;213&gt; Buchloe dactyloides

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(975)

&lt;400&gt; 3321

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Met	Gln	Ala	Ala	Ala	Met	Pro	Ala	Leu	Asp	Pro	Leu	Pro	Glu	Lys	Ser	
1				5					10					15		
cac	gcg	cac	cag	acc	ccg	cac	cac	ggc	tgg	gag	agc	aat	ggc	ggc	gca	96
His	Ala	His	Gln	Thr	Pro	His	His	Gly	Trp	Glu	Ser	Asn	Gly	Gly	Ala	
			20					25					30			
gcc	gcc	gtc	gtc	gcg	ccc	acg	ccc	gcg	ccc	cgg	aag	ctg	gac	ggg	aag	144
Ala	Ala	Val	Val	Ala	Pro	Thr	Pro	Ala	Pro	Arg	Lys	Leu	Asp	Gly	Lys	
		35					40					45				
gtg	gcc	att	gtg	acg	ggc	ggc	gcg	cgc	ggg	atc	ggc	gag	gcc	atc	gtg	192
Val	Ala	Ile	Val	Thr	Gly	Gly	Ala	Arg	Gly	Ile	Glu	Glu	Ala	Ile	Val	
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cgg	ctg	ttc	gcg	aag	cac	ggc	gcg	cgg	gtg	gtg	atc	gcg	gac	atc	gac	240
Arg	Leu	Phe	Ala	Lys	His	Gly	Ala	Arg	Val	Val	Ile	Ala	Asp	Ile	Asp	
		65			70				75					80		
gcg	gcc	gcg	ggg	gac	gcg	ctg	gcg	gcg	ctg	ggc	ccg	cag	gtc	agc		288
Ala	Ala	Ala	Gly	Asp	Ala	Leu	Ala	Ala	Leu	Gly	Pro	Gln	Val	Ser		
				85				90					95			
tgc	gtg	cgg	tgc	gac	gtg	tcc	gtg	gag	gac	gac	gtg	ggg	cgc	gcc	gtg	336
Cys	Val	Arg	Cys	Asp	Val	Ser	Val	Glu	Asp	Asp	Val	Gly	Arg	Ala	Val	
			100					105				110				
gag	tgg	gcg	gtg	gcg	cgg	cac	ggc	cgg	ctg	gac	gtg	ctg	tgc	aac	aac	384
Glu	Trp	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	Val	Leu	Cys	Asn	Asn	
		115					120					125				
gcg	ggg	gtg	ctg	ggc	cgg	cag	acg	cgc	gcg	gcc	aag	agc	atc	ctg	tcc	432
Ala	Gly	Val	Leu	Gly	Arg	Gln	Thr	Arg	Ala	Ala	Lys	Ser	Ile	Leu	Ser	
		130				135					140					
ttc	gac	gcg	gcc	gag	ttc	gac	gcc	gtg	ctc	cgc	gtc	aac	gcg	ctg	ggc	480
Phe	Asp	Ala	Ala	Glu	Phe	Asp	Ala	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	

## PhoenixTemp32470.tmp.txt

145	gcc gcg ctc ggg atg	150	aag cac gcc gcg ctc	155	gcc atg gcg ccg cgc	160	cgc	528
Ala Ala Leu Gly Met	Lys His Ala Ala Leu	Ala Met Ala Pro Arg	Arg					
	165		170		175			
gcg ggc agc atc gtc tcc gtc tcc agc gtc gcc ggc gtg ctc ggc ggc	Val Ser Val Ser Ser Val Ala Gly Val Leu Gly Gly							576
Ala Gly Ser Ile Val								
	180		185		190			
ctg ggc ccg cac gcg tac acc gcc tcc aag cac gcc atc gtc ggc ctc	Leu Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile Val Gly Leu							624
Leu Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile Val Gly Leu								
	195		200		205			
acc aag aac gcc gcc tgc gag ctc ggc gcg cac ggc atc cgc gtc aac	Thr Lys Asn Ala Ala Cys Glu Leu Gly Ala His Gly Ile Arg Val Asn							672
Thr Lys Asn Ala Ala Cys Glu Leu Gly Ala His Gly Ile Arg Val Asn								
	210		215		220			
tgc gtc tcg ccc ttc ggc gtc gcc acg aac atg ctc atc aac gcg tgg	Cys Val Ser Pro Phe Gly Val Ala Thr Asn Met Leu Ile Asn Ala Trp							720
Cys Val Ser Pro Phe Gly Val Ala Thr Asn Met Leu Ile Asn Ala Trp								
	225		230		235			
cgc cag ggc cac gcc gac ggc ggc ggc ggc gac gac gac gtc gac atc	Arg Gln Gly His Ala Asp Gly Gly Gly Gly Asp Asp Asp Val Asp Ile							768
Arg Gln Gly His Ala Asp Gly Gly Gly Gly Asp Asp Asp Val Asp Ile								
	245		250		255			
gac atc gcc gtg ccc agc gac gag gag gtg gag aag atg gag gag gtg	Asp Ile Ala Val Pro Ser Asp Glu Glu Val Glu Lys Met Glu Glu Val							816
Asp Ile Ala Val Pro Ser Asp Glu Glu Val Glu Lys Met Glu Glu Val								
	260		265		270			
gtc agg ggc ttc gcc acg ctc aag gga ccc acg ctc agg ccc agg gac	Val Arg Gly Phe Ala Thr Leu Lys Gly Pro Thr Leu Arg Pro Arg Asp							864
Val Arg Gly Phe Ala Thr Leu Lys Gly Pro Thr Leu Arg Pro Arg Asp								
	275		280		285			
atc gca gag gcc gtg ctc ttc ctg gcc agc gac gag tcc aga tac gtc	Ile Ala Glu Ala Val Leu Phe Leu Ala Ser Asp Glu Ser Arg Tyr Val							912
Ile Ala Glu Ala Val Leu Phe Leu Ala Ser Asp Glu Ser Arg Tyr Val								
	290		295		300			
tcc ggc cac aac ctc gtc gtg gac ggc ggc gtc acg acc tcc aga aac	Ser Gly His Asn Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn							960
Ser Gly His Asn Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn								
	305		310		315			
ctc atc ggc ttg tga	Leu Ile Gly Leu							975
Leu Ile Gly Leu								

&lt;210&gt; 3322

&lt;211&gt; 324

&lt;212&gt; PRT

&lt;213&gt; Buchloe dactyloides

&lt;400&gt; 3322

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Ala Ala Val Val Ala Pro Thr Pro Ala Pro Arg Lys Leu Asp Gly Lys		35	40	45
Val Ala Ile Val Thr Gly Gly Ala Arg Gly Ile Gly Glu Ala Ile Val		50	55	60
Arg Leu Phe Ala Lys His Gly Ala Arg Val Val Ile Ala Asp Ile Asp	65	70	75	80
Ala Ala Ala Gly Asp Ala Leu Ala Ala Leu Gly Pro Gln Val Ser		85	90	95
Cys Val Arg Cys Asp Val Ser Val Glu Asp Asp Val Gly Arg Ala Val		100	105	110
Glu Trp Ala Val Ala Arg His Gly Arg Leu Asp Val Leu Cys Asn Asn		115	120	125
Ala Gly Val Leu Gly Arg Gln Thr Arg Ala Ala Lys Ser Ile Leu Ser	130	135	140	
Phe Asp Ala Ala Glu Phe Asp Ala Val Leu Arg Val Asn Ala Leu Gly	145	150	155	160
Ala Ala Leu Gly Met Lys His Ala Ala Leu Ala Met Ala Pro Arg Arg		165	170	175
Ala Gly Ser Ile Val Ser Val Ser Ser Val Ala Gly Val Leu Gly Gly		180	185	190
Leu Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile Val Gly Leu		195	200	205
Thr Lys Asn Ala Ala Cys Glu Leu Gly Ala His Gly Ile Arg Val Asn	210	215	220	

## PhoenixTemp32470.tmp.txt

Cys Val Ser Pro Phe Gly Val Ala Thr Asn Met Leu Ile Asn Ala Trp  
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 245 250 255  
 Asp Ile Ala Val Pro Ser Asp Glu Glu Val Glu Lys Met Glu Glu Val  
 260 265 270  
 Val Arg Gly Phe Ala Thr Leu Lys Gly Pro Thr Leu Arg Pro Arg Asp  
 275 280 285  
 Ile Ala Glu Ala Val Leu Phe Leu Ala Ser Asp Glu Ser Arg Tyr Val  
 290 295 300  
 Ser Gly His Asn Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn  
 305 310 315 320  
 Leu Ile Gly Leu

&lt;210&gt; 3323

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 3323

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Met	Leu	Arg	Leu	Asp	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Leu	Gly	Gln	
1				5				10					15			
acc	agt	gaa	gat	gga	tgg	gga	att	ggg	gca	gcg	att	gca	atg	caa	ctg	96
Thr	Ser	Glu	Asp	Gly	Trp	Gly	Ile	Gly	Ala	Ala	Ile	Ala	Met	Gln	Leu	
			20					25					30			
tct	caa	cag	ggg	gca	gtg	atc	tac	ggg	ggc	aat	cgc	tcg	ttg	gcc	tcg	144
Ser	Gln	Gln	Gly	Ala	Val	Ile	Tyr	Gly	Gly	Asn	Arg	Ser	Leu	Ala	Ser	
			35				40					45				
gct	gaa	aga	acg	aaa	gcg	cgg	atc	gaa	cga	gag	gga	ggc	gtg	tgt	gac	192
Ala	Glu	Arg	Thr	Lys	Ala	Arg	Ile	Glu	Arg	Glu	Gly	Gly	Val	Cys	Asp	
			50			55					60					
gtc	cag	gaa	acc	gac	gtg	acc	gat	tca	gca	tcc	gtg	aag	gct	ctg	gtc	240
Val	Gln	Glu	Thr	Asp	Val	Thr	Asp	Ser	Ala	Ser	Val	Lys	Ala	Leu	Val	
			65		70			75						80		
gac	ggc	tgc	atc	caa	cga	cat	ggg	cg	att	gat	att	ctg	atc	aat	aat	288
Asp	Gly	Cys	Ile	Gln	Arg	His	Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	
			85					90						95		
gtc	ggc	aag	tcc	gag	cct	gga	tgt	ccg	gcg	gag	atg	agg	gaa	gaa	atc	336
Val	Gly	Lys	Ser	Glu	Pro	Gly	Cys	Pro	Ala	Glu	Met	Arg	Glu	Glu	Ile	
			100					105					110			
tgg	gat	caa	cag	gtc	gat	ttg	aat	ctg	aaa	agc	ata	tac	ttg	acg	tgt	384
Trp	Asp	Gln	Gln	Val	Asp	Leu	Asn	Leu	Lys	Ser	Ile	Tyr	Leu	Thr	Cys	
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His	Tyr	Val	Leu	Pro	Ile	Met	Glu	Lys	Gln	Glu	Thr	Gly	Gly	Ser	Val	
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gtc	aat	gtt	tcc	agc	att	gca	gga	cta	cga	tat	atc	gga	aag	ccc	caa	480
Val	Asn	Val	Ser	Ser	Ile	Ala	Gly	Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	
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gtg	gct	tac	tcg	gct	aca	aag	gct	gcg	att	atg	cag	ttc	acc	aag	gcc	528
Val	Ala	Tyr	Ser	Ala	Thr	Lys	Ala	Ala	Ile	Met	Gln	Phe	Thr	Lys	Ala	
			165					170						175		
acg	gcc	gtg	atc	tat	gcg	cca	aag	aat	gtc	cga	ctg	aac	acg	ata	gta	576
Thr	Ala	Val	Ile	Tyr	Ala	Pro	Lys	Asn	Val	Arg	Leu	Asn	Thr	Ile	Val	
			180				185					190				
cct	ggg	ttg	atc	tat	acg	ccg	tat	act	caa	gcg	ctc	gcc	aag	cga	tat	624
Pro	Gly	Leu	Ile	Tyr	Thr	Pro	Tyr	Thr	Gln	Ala	Leu	Ala	Lys	Arg	Tyr	
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gct	ccg	gga	ggt	aat	gag	gag	gag	tat	atg	aag	atg	cgt	gat	gcc	cag	672
Ala	Pro	Gly	Gly	Asn	Glu	Glu	Glu	Tyr	Met	Lys	Met	Arg	Asp	Ala	Gln	
			210		215			220								
gtt	cct	atg	gga	cgg	atg	gga	gac	gct	tgg	gat	gtg	gcc	cac	gcc	gcc	720
Val	Pro	Met	Gly	Arg	Met	Gly	Asp	Ala	Trp	Asp	Val	Ala	His	Ala	Ala	

PhoenixTemp32470.tmp.txt

225					230					235					240	
ctt	ttc	ctt	gtc	tct	gat	gcg	gca	cag	tat	ata	acg	ggg	cag	gag	ctg	768
Leu	Phe	Leu	Val	Ser 245	Asp	Ala	Ala	Gln	Tyr 250	Ile	Thr	Gly	Gln	Glu 255	Leu	
gtg	gtg	gat	ggt	gga	atc	aca	tcg	tct	aca	ggg	aga	aca	taa			810
Val	Val	Asp	Gly 260	Gly	Ile	Thr	Ser	Ser 265	Thr	Gly	Arg	Thr				

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<210> 3324
<211> 269
<212> PRT
<213> Aspergillus oryzae
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Thr	Ser	Glu	Asp	Gly	Trp	Gly	Ile	Gly	Ala	Ala	Ile	Ala	Met	Gln	Leu	
			20					25					30			
Ser	Gln	Gln	Gly	Ala	Val	Ile	Tyr	Gly	Gly	Asn	Arg	Ser	Leu	Ala	Ser	
		35					40					45				
Ala	Glu	Arg	Thr	Lys	Ala	Arg	Ile	Glu	Arg	Glu	Gly	Gly	Val	Cys	Asp	
	50					55					60					
Val	Gln	Glu	Thr	Asp	Val	Thr	Asp	Ser	Ala	Ser	Val	Lys	Ala	Leu	Val	
65					70					75						
Asp	Gly	Cys	Ile	Gln	Arg	His	Gly	Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	
			85						90					95		
Val	Gly	Lys	Ser	Glu	Pro	Gly	Cys	Pro	Ala	Glu	Met	Arg	Glu	Glu	Ile	
			100					105					110			
Trp	Asp	Gln	Gln	Val	Asp	Leu	Asn	Leu	Lys	Ser	Ile	Tyr	Leu	Thr	Cys	
		115					120					125				
His	Tyr	Val	Leu	Pro	Ile	Met	Glu	Lys	Gln	Glu	Thr	Gly	Gly	Ser	Val	
	130					135					140					
Val	Asn	Val	Ser	Ser	Ile	Ala	Gly	Leu	Arg	Tyr	Ile	Gly	Lys	Pro	Gln	
145					150					155				160		
Val	Ala	Tyr	Ser	Ala	Thr	Lys	Ala	Ala	Ile	Met	Gln	Phe	Thr	Lys	Ala	
				165					170					175		
Thr	Ala	Val	Ile	Tyr	Ala	Pro	Lys	Asn	Val	Arg	Leu	Asn	Thr	Ile	Val	
			180					185					190			
Pro	Gly	Leu	Ile	Tyr	Thr	Pro	Tyr	Thr	Gln	Ala	Leu	Ala	Lys	Arg	Tyr	
		195					200					205				
Ala	Pro	Gly	Gly	Asn	Glu	Glu	Glu	Tyr	Met	Lys	Met	Arg	Asp	Ala	Gln	
	210					215					220					
Val	Pro	Met	Gly	Arg	Met	Gly	Asp	Ala	Trp	Asp	Val	Ala	His	Ala	Ala	
225					230					235				240		
Leu	Phe	Leu	Val	Ser	Asp	Ala	Ala	Gln	Tyr	Ile	Thr	Gly	Gln	Glu	Leu	
				245					250					255		
Val	Val	Asp	Gly	Gly	Ile	Thr	Ser	Ser	Thr	Gly	Arg	Thr				
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<210> 3325
<211> 882
<212> DNA
<213> Aspergillus oryzae
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<220>  
<221> CDS  
<222> (1)..(882)

[illegible]

## PhoenixTemp32470.tmp.txt

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Arg	Asn	Ser	Lys	Ala	Val	Glu	Glu	Ala	Ala	Asn	Ile	Glu	Ser	Lys	Tyr		
65					70					75					80		
ggc	gtt	aag	tgc	cgt	gca	tac	caa	ata	aac	atc	cgc	gaa	agc	gaa	aag		288
Gly	Val	Lys	Cys	Arg	Ala	Tyr	Gln	Ile	Asn	Ile	Arg	Glu	Ser	Glu	Lys		
				85					90					95			
gtt	gaa	gag	ctg	ttg	aat	aca	tgc	gtc	cgc	gaa	ttg	aac	ggg	cgc	ctg		336
Val	Glu	Glu	Leu	Leu	Asn	Thr	Cys	Val	Arg	Glu	Leu	Asn	Gly	Arg	Leu		
			100				105					110					
gac	att	ttc	atc	gcc	aac	tcc	ggg	att	ccg	tgg	act	caa	gga	ccc	atg		384
Asp	Ile	Phe	Ile	Ala	Asn	Ser	Gly	Ile	Pro	Trp	Thr	Gln	Gly	Pro	Met		
		115					120					125					
atc	gat	gct	ccg	ctt	gac	cac	tac	aga	gac	gtg	aca	caa	acc	gat	cta		432
Ile	Asp	Ala	Pro	Leu	Asp	His	Tyr	Arg	Asp	Val	Thr	Gln	Thr	Asp	Leu		
		130				135				140							
gat	gga	aca	ttc	tat	tgt	gcc	aga	gcc	gct	ggc	gct	cat	tgg	aga	agg		480
Asp	Gly	Thr	Phe	Tyr	Cys	Ala	Arg	Ala	Ala	Gly	Ala	His	Trp	Arg	Arg		
145					150					155					160		
cag	aag	acc	gag	ggg	aca	gat	att	ttt	ggc	aac	cct	cta	caa	ggc	ttc		528
Gln	Lys	Thr	Glu	Gly	Thr	Asp	Ile	Phe	Gly	Asn	Pro	Leu	Gln	Gly	Phe		
			165						170					175			
aca	tac	ggg	agt	ttc	gtt	gcg	act	gct	tcc	atg	agt	gga	cac	att	gtc		576
Thr	Tyr	Gly	Ser	Phe	Val	Ala	Thr	Ala	Ser	Met	Ser	Gly	His	Ile	Val		
			180					185					190				
aat	ata	cca	cag	ctc	caa	gct	gcg	tat	aat	gcg	gct	aag	gcc	gga	gtg		624
Asn	Ile	Pro	Gln	Leu	Gln	Ala	Ala	Tyr	Asn	Ala	Ala	Lys	Ala	Gly	Val		
		195				200						205					
atc	cat	ttg	tgt	aaa	tca	ctt	gcc	gtg	gaa	tgg	gtt	cag	ttt	gcg	cgc		672
Ile	His	Leu	Cys	Lys	Ser	Leu	Ala	Val	Glu	Trp	Val	Gln	Phe	Ala	Arg		
		210				215					220						
gcg	aat	aca	gtc	tcg	cct	gga	tac	att	att	act	gat	att	tcc	acg	ttt		720
Ala	Asn	Thr	Val	Ser	Pro	Gly	Tyr	Ile	Ile	Thr	Asp	Ile	Ser	Thr	Phe		
225					230					235					240		
gtt	cct	gac	gag	aca	aag	gat	att	tgg	aaa	ggg	aaa	att	ccg	atg	ggg		768
Val	Pro	Asp	Glu	Thr	Lys	Asp	Ile	Trp	Lys	Gly	Lys	Ile	Pro	Met	Gly		
			245						250					255			
cgg	gaa	gct	ctg	cca	cat	gag	ctc	aaa	ggg	gcc	tat	ctg	tat	ctg	gct		816
Arg	Glu	Ala	Leu	Pro	His	Glu	Leu	Lys	Gly	Ala	Tyr	Leu	Tyr	Leu	Ala		
			260					265				270					
tcg	gat	gcg	tca	agt	tat	act	acc	ggg	gcg	gat	ctt	gtt	gtg	gat	gga		864
Ser	Asp	Ala	Ser	Ser	Tyr	Thr	Thr	Gly	Ala	Asp	Leu	Val	Val	Asp	Gly		
		275					280					285					
ggg	tat	act	cta	ccc	tga												882
Gly	Tyr	Thr	Leu	Pro													
		290															

&lt;210&gt; 3326

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 3326

Met	Pro	Glu	Gly	Pro	Val	Val	Asn	Gly	Leu	Phe	Arg	His	Asn	Asn	Thr		
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Thr	Pro	Pro	Ala	Gln	Glu	Ser	Val	Met	Ala	Leu	Phe	Ser	Leu	Lys	Gly		
			20					25					30				
Lys	Thr	Ala	Val	Val	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	Leu	Ser	Val		
		35					40					45					
Ala	His	Ala	Leu	Ala	Glu	Ala	Gly	Ala	Asn	Val	Ala	Ile	Trp	Tyr	Asn		
	50				55						60						
Arg	Asn	Ser	Lys	Ala	Val	Glu	Ala	Ala	Asn	Ile	Glu	Ser	Lys	Tyr			
65					70				75					80			
Gly	Val	Lys	Cys	Arg	Ala	Tyr	Gln	Ile	Asn	Ile	Arg	Glu	Ser	Glu	Lys		
			85						90					95			
Val	Glu	Glu	Leu	Leu	Asn	Thr	Cys	Val	Arg	Glu	Leu	Asn	Gly	Arg	Leu		
			100					105					110				
Asp	Ile	Phe	Ile	Ala	Asn	Ser	Gly	Ile	Pro	Trp	Thr	Gln	Gly	Pro	Met		

## PhoenixTemp32470.tmp.txt

```

115
Ile Asp Ala Pro Leu Asp His 120 Tyr Arg Asp Val Thr 125 Gln Thr Asp Leu
130
Asp Gly Thr Phe Tyr Cys 135 Ala Arg Ala Ala Gly Ala His Trp Arg Arg
145
Gln Lys Thr Glu Gly 150 Thr Asp Ile Phe Gly 155 Asn Pro Leu Gln Gly Phe
165
Thr Tyr Gly Ser 180 Phe Val Ala Thr Ala 185 Ser Met Ser Gly His 190 Ile Val
Asn Ile Pro Gln Leu Gln Ala 200 Tyr Asn Ala Ala Lys 205 Ala Gly Val
210
Ile His Leu Cys Lys Ser 215 Leu Ala Val Glu Trp Val 220 Gln Phe Ala Arg
Ala 225 Asn Thr Val Ser Pro 230 Gly Tyr Ile Ile Thr 235 Asp Ile Ser Thr Phe
240
Val Pro Asp Glu Thr 245 Lys Asp Ile Trp Lys 250 Gly Lys Ile Pro Met Gly
Arg Glu Ala Leu 260 Pro His Glu Leu 265 Gly Ala Tyr Leu 270 Tyr Leu Ala
Ser Asp Ala 275 Ser Ser Tyr Thr 280 Gly Ala Asp Leu 285 Val Val Asp Gly
Gly Tyr Thr Leu Pro
290

```

<210> 3327  
 <211> 816  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(816)

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<400> 3327
atg gac gtc ccc ggc ata gcc cta ata aca ggc gca gca tcc ggc atc      48
Met Asp Val Pro Gly Ile Ala Leu Ile Thr Gly Ala Ala Ser Gly Ile
1
ggc cgc gcc tgc gcc cat aca ttc gcg cgc gat ggc gca agc ggc atc      96
Gly Arg Ala Cys Ala His Thr Phe Ala Arg Asp Gly Ala Ser Gly Ile
20
gcc ctc ctc gac ctg gac aaa aca gcc cta gag acc gtg caa gcc gag    144
Ala Leu Leu Asp Leu Asp Lys Thr Ala Leu Glu Thr Val Gln Ala Glu
35
atc aac tcc caa tca agc caa gac aaa aca gcc cgc tgc cgc gta gaa    192
Ile Asn Ser Gln Ser Ser Gln Asp Lys Thr Ala Arg Cys Arg Val Glu
50
atc tac ccg gtc aac gta acc gac gaa aac cgg gta gac gaa gtc atc    240
Ile Tyr Pro Val Asn Val Thr Asp Glu Asn Arg Val Asp Glu Val Ile
65
aac agc gca gcg caa acc ttc agc cga tta gac tac gtg gtc aac gcg    288
Asn Ser Ala Ala Gln Thr Phe Ser Arg Leu Asp Tyr Val Val Asn Ala
85
gcc gga ata gca atg aag cac caa ggc gga gcg gca ttc gcc gaa acc    336
Ala Gly Ile Ala Met Lys His Gln Gly Gly Ala Ala Phe Ala Glu Thr
100
tcc gac tgg caa cgc atc ctt gac gtc aat ctc acg ggg acg ttc ttc    384
Ser Asp Trp Gln Arg Ile Leu Asp Val Asn Leu Thr Gly Thr Phe Phe
115
gtc ctg cgg gct gcg gct cgg att atg ttg agc cag gag ccg atc cgg    432
Val Leu Arg Ala Ala Ala Arg Ile Met Leu Ser Gln Glu Pro Ile Arg
130
tcg agt att gat gga cgg ccg ttg cag cgg ggg tcg att gtg aat ttc    480
Ser Ser Ile Asp Gly Arg Pro Leu Gln Arg Gly Ser Ile Val Asn Phe
145
tcg agt att cag gga gtc gca ggg att ccg ttg tcg act gct tat acc    528
Ser Ser Ile Gln Gly Val Ala Gly Ile Pro Leu Ser Thr Ala Tyr Thr
165
gcg acg aag cat gcg gtt att ggg ttg acg agg acg gcg tcg gag gac    576
Ala Thr Lys His Ala Val Ile Gly Leu Thr Arg Thr Ala Ser Glu Asp

```

PhoenixTemp32470.tmp.txt

[illegible]

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<210> 3328
<211> 271
<212> PRT
<213> Aspergillus oryzae
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<400>	3328														
Met	Asp	Val	Pro	Gly	Ile	Ala	Leu	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile
1				5				10					15		
Gly	Arg	Ala	Cys	Ala	His	Thr	Phe	Ala	Arg	Asp	Gly	Ala	Ser	Gly	Ile
			20					25					30		
Ala	Leu	Leu	Asp	Leu	Asp	Lys	Thr	Ala	Leu	Glu	Thr	Val	Gln	Ala	Glu
		35					40					45			
Ile	Asn	Ser	Gln	Ser	Ser	Gln	Asp	Lys	Thr	Ala	Arg	Cys	Arg	Val	Glu
	50					55					60				
Ile	Tyr	Pro	Val	Asn	Val	Thr	Asp	Glu	Asn	Arg	Val	Asp	Glu	Val	Ile
65				70						75					80
Asn	Ser	Ala	Ala	Gln	Thr	Phe	Ser	Arg	Leu	Asp	Tyr	Val	Val	Asn	Ala
				85					90					95	
Ala	Gly	Ile	Ala	Met	Lys	His	Gln	Gly	Gly	Ala	Ala	Phe	Ala	Glu	Thr
			100					105				110			
Ser	Asp	Trp	Gln	Arg	Ile	Leu	Asp	Val	Asn	Leu	Thr	Gly	Thr	Phe	Phe
		115					120					125			
Val	Leu	Arg	Ala	Ala	Ala	Arg	Ile	Met	Leu	Ser	Gln	Glu	Pro	Ile	Arg
	130					135					140				
Ser	Ser	Ile	Asp	Gly	Arg	Pro	Leu	Gln	Arg	Gly	Ser	Ile	Val	Asn	Phe
145				150						155				160	
Ser	Ser	Ile	Gln	Gly	Val	Ala	Gly	Ile	Pro	Leu	Ser	Thr	Ala	Tyr	Thr
				165					170					175	
Ala	Thr	Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Arg	Thr	Ala	Ser	Glu	Asp
			180					185					190		
Tyr	Ala	Lys	Asp	Gly	Leu	Arg	Ile	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Thr
		195					200					205			
Glu	Thr	Pro	Met	Thr	Thr	Lys	Ser	Pro	Leu	Val	Leu	Gln	Ala	Met	Gln
	210					215					220				
Glu	Arg	Val	Ala	Thr	Ala	Val	Pro	Met	Gln	Arg	Met	Gly	Glu	Pro	Arg
225				230						235				240	
Glu	Ile	Ala	Asp	Gly	Val	Val	Tyr	Leu	Ser	Gly	Gly	Arg	Ser	Ser	Phe
				245					250					255	
Val	Thr	Gly	Thr	Ala	Leu	Phe	Val	Asp	Gly	Gly	Tyr	Thr	Gln	Arg	
			260					265					270		

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<210> 3329
<211> 732
<212> DNA
<213> Aspergillus oryzae
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<220>  
<221> CDS  
<222> (1)..(732)



## PhoenixTemp32470.tmp.txt

<400> 3329  
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 Met Ala Ser Phe Glu Gly Lys Val Ile Ala Ile Thr Gly Ala Ala Ser  
 1 5 10 15  
 ggc atg gga ctt gca aca gca aag ttg ctc gca tcc cgt gga gca att 96  
 Gly Met Gly Leu Ala Thr Ala Lys Leu Leu Ala Ser Arg Gly Ala Ile  
 20 25 30  
 atc tcg ctc gcc gat ata aac gaa gcg gca gtc aag gag gca aca gcg 144  
 Ile Ser Leu Ala Asp Ile Asn Glu Ala Ala Val Lys Glu Ala Thr Ala  
 35 40 45  
 tca ttg acc gga agc gat aag cac atg tac acc gtg gtc gat gtg cgt 192  
 Ser Leu Thr Gly Ser Asp Lys His Met Tyr Thr Val Val Asp Val Arg  
 50 55 60  
 agc agc cag tca gtt gac tca tgg atc aaa tca aca gtg gaa agg ttg 240  
 Ser Ser Gln Ser Val Asp Ser Trp Ile Lys Ser Thr Val Glu Arg Leu  
 65 70 75 80  
 ggc aaa ctc gac ggc gcg gtc aat atg gct ggg gtc atc aca cct acc 288  
 Gly Lys Leu Asp Gly Ala Val Asn Met Ala Gly Val Ile Thr Pro Thr  
 85 90 95  
 aaa cca att acc gaa gaa acc gac gat act tgg gac ttc aat ttt gct 336  
 Lys Pro Ile Thr Glu Glu Thr Asp Asp Thr Trp Asp Phe Asn Phe Ala  
 100 105 110  
 gtg aat aca cga ggt gtc ttc ttc tgc ctg agg gcc cag ttg aag gcc 384  
 Val Asn Thr Arg Gly Val Phe Phe Cys Leu Arg Ala Gln Leu Lys Ala  
 115 120 125  
 atg aca gct ggt ggt agc att gtt tct gcg gct agt gca ttt ggc cag 432  
 Met Thr Ala Gly Gly Ser Ile Val Ser Ala Ala Ser Ala Phe Gly Gln  
 130 135 140  
 atg ggc tcg cct ggg gtt gcg gtc ccg tac tgc gcc agt aaa gca gct gtg 480  
 Met Gly Ser Pro Gly Val Ala Pro Tyr Cys Ala Ser Lys Ala Ala Val  
 145 150 155 160  
 atc gga ttg acg aga aca gcg gcg aaa gaa aac cag cat ata agg gtc 528  
 Ile Gly Leu Thr Arg Thr Ala Ala Lys Glu Asn Gln His Ile Arg Val  
 165 170 175  
 aac tgc gtt gca cca ggt tcc gtt aac acc ccc atg tct cag ggg gag 576  
 Asn Cys Val Ala Pro Gly Ser Val Asn Thr Pro Met Ser Gln Gly Glu  
 180 185 190  
 aac ccc gag gat gtg aag cgc ggc ctg caa gca acg gtg caa aag cga 624  
 Asn Pro Glu Asp Val Lys Arg Gly Leu Gln Ala Thr Val Gln Lys Arg  
 195 200 205  
 agg gct gag gct agt gag ata gct act gtg att gtg cat ttg ttg agc 672  
 Arg Ala Glu Ala Ser Glu Ile Ala Thr Val Ile Val His Leu Leu Ser  
 210 215 220  
 gac gag gca tct ttc gtg acg ggt acc gtt tat aat gtt gat ggc ggt 720  
 Asp Glu Ala Ser Phe Val Thr Gly Thr Val Tyr Asn Val Asp Gly Gly  
 225 230 235 240  
 tgg ctt tgc tga  
 Trp Leu Cys 732

<210> 3330  
 <211> 243  
 <212> PRT  
 <213> Aspergillus oryzae

<400> 3330  
 Met Ala Ser Phe Glu Gly Lys Val Ile Ala Ile Thr Gly Ala Ala Ser  
 1 5 10 15  
 Gly Met Gly Leu Ala Thr Ala Lys Leu Leu Ala Ser Arg Gly Ala Ile  
 20 25 30  
 Ile Ser Leu Ala Asp Ile Asn Glu Ala Ala Val Lys Glu Ala Thr Ala  
 35 40 45  
 Ser Leu Thr Gly Ser Asp Lys His Met Tyr Thr Val Val Asp Val Arg  
 50 55 60  
 Ser Ser Gln Ser Val Asp Ser Trp Ile Lys Ser Thr Val Glu Arg Leu  
 65 70 75 80  
 Gly Lys Leu Asp Gly Ala Val Asn Met Ala Gly Val Ile Thr Pro Thr  
 85 90 95

## PhoenixTemp32470.tmp.txt

Lys Pro Ile Thr Glu Glu Thr Asp Asp Thr Trp Asp Phe Asn Phe Ala  
 100 105 110  
 Val Asn Thr Arg Gly Val Phe Phe Cys Leu Arg Ala Gln Leu Lys Ala  
 115 120 125  
 Met Thr Ala Gly Gly Ser Ile Val Ser Ala Ala Ser Ala Phe Gly Gln  
 130 135 140  
 Met Gly Ser Pro Gly Val Ala Pro Tyr Cys Ala Ser Lys Ala Ala Val  
 145 150 155 160  
 Ile Gly Leu Thr Arg Thr Ala Ala Lys Glu Asn Gln His Ile Arg Val  
 165 170 175  
 Asn Cys Val Ala Pro Gly Ser Val Asn Thr Pro Met Ser Gln Gly Glu  
 180 185 190  
 Asn Pro Glu Asp Val Lys Arg Gly Leu Gln Ala Thr Val Gln Lys Arg  
 195 200 205  
 Arg Ala Glu Ala Ser Glu Ile Ala Thr Val Ile Val His Leu Leu Ser  
 210 215 220  
 Asp Glu Ala Ser Phe Val Thr Gly Thr Val Tyr Asn Val Asp Gly Gly  
 225 230 235 240  
 Trp Leu Cys

<210> 3331  
 <211> 1131  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(1131)

<400> 3331  
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 Met Phe Lys Ser Pro Ala Ala Arg Gln Ala Val Lys Ala Leu Ser Ile  
 1 5 10 15  
 aac aca cgc cct gct gca gta aca gca gca tcc cga cca gcg gtg gcc 96  
 Asn Thr Arg Pro Ala Ala Val Thr Ala Ser Arg Pro Ala Val Ala  
 20 25 30  
 aat act ttc ttc cga ggt ctc tca tcg aca gct ccc cgt gcc aac gat 144  
 Asn Thr Phe Phe Arg Gly Leu Ser Ser Thr Ala Pro Arg Ala Asn Asp  
 35 40 45  
 gag aag tcg aag gca gca aag gac ccc atc ttg gct gcc acc aac aaa 192  
 Glu Lys Ser Lys Ala Ala Lys Asp Pro Ile Leu Ala Ala Thr Asn Lys  
 50 55 60  
 gct cct gag ggt gcc ttg gac tca gag ggc cgt ttc gcc cgt gtc gac 240  
 Ala Pro Glu Gly Ala Leu Asp Ser Glu Gly Arg Phe Ala Arg Val Asp  
 65 70 75 80  
 gag agt ttg cag atc gaa tac ccc gat gat gag aac atg cct cgt agt 288  
 Glu Ser Leu Gln Ile Glu Tyr Pro Asp Asp Glu Asn Met Pro Arg Ser  
 85 90 95  
 cct atc gtc cag ggc cgc gga gga atg cac ttc aaa cgt acc ctg gct 336  
 Pro Ile Val Gln Gly Arg Gly Gly Met His Phe Lys Arg Thr Leu Ala  
 100 105 110  
 caa ttc tcc cta gag aac aag gtc acc ctg gtt acc gga ggt gcc cgt 384  
 Gln Phe Ser Leu Glu Asn Lys Val Thr Leu Val Thr Gly Gly Ala Arg  
 115 120 125  
 ggt ctc ggt ttg gtc atg gct cag gcg atc gtt gca tcg gga tcg gac 432  
 Gly Leu Gly Leu Val Met Ala Gln Ala Ile Val Ala Ser Gly Ser Asp  
 130 135 140  
 ctt gca att gtc gat ctt aac aag gcg gaa gct gag gag caa gcc cag 480  
 Leu Ala Ile Val Asp Leu Asn Lys Ala Glu Ala Glu Glu Gln Ala Gln  
 145 150 155 160  
 aag ttg gtg gaa cag ttt agg aag gag aac ccc ggt ttg gaa caa atg 528  
 Lys Leu Val Glu Gln Phe Arg Lys Glu Asn Pro Gly Leu Glu Gln Met  
 165 170 175  
 ccc aac gtc acc gcc cac tac gct gat gtt tcc gac cct aac tcc gtc 576  
 Pro Asn Val Thr Ala His Tyr Ala Asp Val Ser Asp Pro Asn Ser Val  
 180 185 190  
 aac gat gcc ctc tcc gat att atc tcc aag cac ggc aag atc gac aac 624  
 Asn Asp Ala Leu Ser Asp Ile Ile Ser Lys His Gly Lys Ile Asp Asn

## PhoenixTemp32470.tmp.txt

ctg	gtc	195	tcc	gcc	gga	ttc	200	gaa	aac	ttc	gat	gcc	atc	tcc	tac	672
Leu	Val	Thr	Ser	Ala	Gly	Phe	Thr	Glu	Asn	Phe	Asp	Ala	Ile	Ser	Tyr	
	210					215					220					
cct	cac	gac	cgt	ctg	caa	aag	ctt	tgg	ggc	ggt	aat	gtc	gat	gga	aca	720
Pro	His	Asp	Arg	Leu	Gln	Lys	Leu	Trp	Gly	Val	Asn	Val	Asp	Gly	Thr	
225					230					235					240	
tac	ctt	ttc	gcc	acc	ggg	gtc	gcc	aag	cac	ctc	atg	gag	cgc	aag	ggt	768
Tyr	Leu	Phe	Ala	Thr	Gly	Val	Ala	Lys	His	Leu	Met	Glu	Arg	Lys	Val	
			245						250					255		
ccg	ggc	agc	att	gtc	atg	att	ggg	agc	atg	tct	ggg	gct	atc	gtc	aac	816
Pro	Gly	Ser	Ile	Val	Met	Ile	Gly	Ser	Met	Ser	Gly	Ala	Ile	Val	Asn	
			260					265					270			
gtg	ccg	cag	ccc	cag	gct	cct	tac	aac	gcc	gcc	aag	gcc	gct	ggt	cgt	864
Val	Pro	Gln	Pro	Gln	Ala	Pro	Tyr	Asn	Ala	Ala	Lys	Ala	Ala	Val	Arg	
		275					280					285				
caa	ctt	gcc	gcg	tcc	ttc	gcc	gtc	gaa	tgg	gcc	ggg	cac	gac	atc	cgg	912
Gln	Leu	Ala	Ala	Ser	Phe	Ala	Val	Glu	Trp	Ala	Gly	His	Asp	Ile	Arg	
	290					295					300					
gtg	aac	tgc	atc	agc	cct	gga	tac	atg	ctt	act	gcc	ctg	acc	cgc	aag	960
Val	Asn	Cys	Ile	Ser	Pro	Gly	Tyr	Met	Leu	Thr	Ala	Leu	Thr	Arg	Lys	
305					310					315					320	
att	ttg	gat	gag	aac	ccc	gaa	ttg	cgg	gac	aag	tgg	atc	tcg	ctc	atc	1008
Ile	Leu	Asp	Glu	Asn	Pro	Glu	Leu	Arg	Asp	Lys	Trp	Ile	Ser	Leu	Ile	
				325					330					335		
ccc	acc	ggc	aag	atg	ggg	act	ccc	gag	gac	ctg	atg	ggg	ccc	ggt	acc	1056
Pro	Thr	Gly	Lys	Met	Gly	Thr	Pro	Glu	Asp	Leu	Met	Gly	Pro	Val	Thr	
			340					345					350			
ttc	ctg	ctc	agt	gat	gcc	tcc	aag	tac	atg	act	ggg	gcc	gat	atc	cgc	1104
Phe	Leu		Ser	Asp	Ala	Ser	Lys	Tyr	Met	Thr	Gly	Ala	Asp	Ile	Arg	
		355					360					365				
ggt	gac	ggg	ggc	tac	acc	ctc	acc	tag								1131
Val	Asp	Gly	Gly	Tyr	Thr	Leu	Thr									
	370					375										

&lt;210&gt; 3332

&lt;211&gt; 376

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 3332

Met	Phe	Lys	Ser	Pro	Ala	Ala	Arg	Gln	Ala	Val	Lys	Ala	Leu	Ser	Ile	
1				5					10					15		
Asn	Thr	Arg	Pro	Ala	Ala	Val	Thr	Ala	Ala	Ser	Arg	Pro	Ala	Val	Ala	
			20					25					30			
Asn	Thr	Phe	Arg	Gly	Leu	Ser	Thr	Ala	Pro	Arg	Ala	Asn	Asp			
		35				40				45						
Glu	Lys	Ser	Lys	Ala	Ala	Lys	Asp	Pro	Ile	Leu	Ala	Ala	Thr	Asn	Lys	
	50					55				60						
Ala	Pro	Glu	Gly	Ala	Leu	Asp	Ser	Glu	Gly	Arg	Phe	Ala	Arg	Val	Asp	
65					70				75						80	
Glu	Ser	Leu	Gln	Ile	Glu	Tyr	Pro	Asp	Asp	Glu	Asn	Met	Pro	Arg	Ser	
			85					90						95		
Pro	Ile	Val	Gln	Gly	Arg	Gly	Gly	Met	His	Phe	Lys	Arg	Thr	Leu	Ala	
			100					105					110			
Gln	Phe	Ser	Leu	Glu	Asn	Lys	Val	Thr	Leu	Val	Thr	Gly	Gly	Ala	Arg	
		115					120					125				
Gly	Leu	Gly	Leu	Val	Met	Ala	Gln	Ala	Ile	Val	Ala	Ser	Gly	Ser	Asp	
	130					135					140					
Leu	Ala	Ile	Val	Asp	Leu	Asn	Lys	Ala	Glu	Ala	Glu	Glu	Gln	Ala	Gln	
145					150				155						160	
Lys	Leu	Val	Glu	Gln	Phe	Arg	Lys	Glu	Asn	Pro	Gly	Leu	Glu	Gln	Met	
			165					170						175		
Pro	Asn	Val	Thr	Ala	His	Tyr	Ala	Asp	Val	Ser	Asp	Pro	Asn	Ser	Val	
			180					185					190			
Asn	Asp	Ala	Leu	Ser	Asp	Ile	Ile	Ser	Lys	His	Gly	Lys	Ile	Asp	Asn	
		195					200					205				
Leu	Val	Thr	Ser	Ala	Gly	Phe	Thr	Glu	Asn	Phe	Asp	Ala	Ile	Ser	Tyr	
	210					215					220					

## PhoenixTemp32470.tmp.txt

Pro His Asp Arg Leu Gln Lys Leu Trp Gly Val Asn Val Asp Gly Thr  
 225 230  
 Tyr Leu Phe Ala Thr Gly Val Ala Lys His Leu Met Glu Arg Lys Val  
 245 250  
 Pro Gly Ser Ile Val Met Ile Gly Ser Met Ser Gly Ala Ile Val Asn  
 260 265  
 Val Pro Gln Pro Gln Ala Pro Tyr Asn Ala Ala Lys Ala Val Arg  
 275 280  
 Gln Leu Ala Ala Ser Phe Ala Val Glu Trp Ala Gly His Asp Ile Arg  
 290 295  
 Val Asn Cys Ile Ser Pro Gly Tyr Met Leu Thr Ala Leu Thr Arg Lys  
 305 310  
 Ile Leu Asp Glu Asn Pro Glu Leu Arg Asp Lys Trp Ile Ser Leu Ile  
 325 330  
 Pro Thr Gly Lys Met Gly Thr Pro Glu Asp Leu Met Gly Pro Val Thr  
 340 345  
 Phe Leu Leu Ser Asp Ala Ser Lys Tyr Met Thr Gly Ala Asp Ile Arg  
 355 360  
 Val Asp Gly Gly Tyr Thr Leu Thr  
 370 375

&lt;210&gt; 3333

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 3333

atg gtc gca gac ccc aga ccc caa aca cta gcc ggc aaa gtc gcc att	48
Met Val Ala Asp Pro Arg Pro Gln Thr Leu Ala Gly Lys Val Ala Ile	
1 5 10 15	
gtg aca ggc gca acg aga gga atc ggc gcc ggg ctg gct gaa gaa tta	96
Val Thr Gly Ala Thr Arg Gly Ile Gly Ala Gly Leu Ala Glu Glu Leu	
20 25 30	
gcc cgt cga gga gcc aaa gtc ttg atc aca tac aca tca gcg agc agc	144
Ala Arg Arg Gly Ala Lys Val Leu Ile Thr Tyr Thr Ser Ala Ser Ser	
35 40 45	
gaa ccc atc gct gat aaa cta atc gag aaa atc aaa aac ttc aac aac	192
Glu Pro Ile Ala Asp Lys Leu Ile Glu Lys Ile Lys Asn Phe Asn Asn	
50 55 60	
ggc tcc aag gca gcc aaa gtc cgc gcc gat ctc cgc gat cta tca gct	240
Gly Ser Lys Ala Ala Lys Val Arg Ala Asp Leu Arg Asp Leu Ser Ala	
65 70 75 80	
gga gaa acg atc gtc gaa gcc tca atc caa gca ttc ggc ccc aac atc	288
Gly Glu Thr Ile Val Glu Ala Ser Ile Gln Ala Phe Gly Pro Asn Ile	
85 90 95	
gat atc ctg gtt aac aac gcc ggc gtg gaa gta gtg aag ccc ctt tca	336
Asp Ile Leu Val Asn Asn Ala Gly Val Glu Val Val Lys Pro Leu Ser	
100 105 110	
gat ctc acg gtg gaa gac tac aac ctc gtt tac gac ctg aac gtc cgc	384
Asp Leu Thr Val Glu Asp Tyr Asn Leu Val Tyr Asp Leu Asn Val Arg	
115 120 125	
ggg gct atc ttt ctg acg cag gct gtt ctc ccg cat cta cgt gca ccc	432
Gly Ala Ile Phe Leu Thr Gln Ala Val Leu Pro His Leu Arg Ala Pro	
130 135 140	
ggt cgg atc atc aat atc agt tca gtt ggt gca cgg gcg gga ttc gct	480
Gly Arg Ile Ile Asn Ile Ser Ser Val Gly Ala Arg Ala Gly Phe Ala	
145 150 155 160	
aat ttg tcg att tat tgc tcg tcc aag gcg gcc ttg gag ggc ttg acg	528
Asn Leu Ser Ile Tyr Cys Ser Ser Lys Ala Leu Glu Gly Leu Thr	
165 170 175	
cga tgc tgg gct gcg gag ttg ggt gat gct ggg cat acg gtg aat gct	576
Arg Cys Trp Ala Ala Glu Leu Gly Asp Ala Gly His Thr Val Asn Ala	
180 185 190	
gtt aat ccg ggg cca gtg cag acg gct ttg ctg gag aat att ccg aag	624
Val Asn Pro Gly Pro Val Gln Thr Ala Leu Leu Glu Asn Ile Pro Lys	

PhoenixTemp32470.tmp.txt

<div> <div>195</div> <div>200</div> <div>205</div> </div>																
gag	ttg	gtg	gag	atg	cag	aag	tct	gct	acg	ccg	gtt	gag	cat	cgg	gtg	672
Glu	Leu	Val	Glu	Met	Gln	Lys	Ser	Ala	Thr	Pro	Val	Glu	His	Arg	Val	
<div> <div>210</div> <div>215</div> <div>220</div> </div>																
ggg	acg	att	gat	gat	gtt	gcg	cag	gtg	gtg	gcg	gtt	ctt	gct	tct	gag	720
Gly	Thr	Ile	Asp	Asp	Val	Gln	Gln	Val	Val	Ala	Trp	Leu	Ala	Ser	Glu	
<div> <div>225</div> <div>230</div> <div>235</div> </div>																
gag	agt	cgg	tgg	gtt	tct	ggg	cag	gcg	att	gct	gct	tct	ggg	ggg	ttt	768
Glu	Ser	Arg	Trp	Val	Ser	Gly	Gln	Ala	Ile	Ala	Ala	Ser	Gly	Gly	Phe	
<div> <div>245</div> <div>250</div> <div>255</div> </div>																
gcg	atg	tat	tga												780	
Ala	Met	Tyr														

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<210> 3334
<211> 259
<212> PRT
<213> Aspergillus oryzae
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[illegible]

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<210> 3335
<211> 822
<212> DNA
<213> Aspergillus oryzae
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$\langle 220 \rangle$   
 $\langle 221 \rangle$  CDS  
 $\langle 222 \rangle$  (1) .. (822)

<400> 3335  
atg aca gat cac att ggt aca ttc ccc gag ctc aag ggc aag gtt gcc 48  
Met Thr Asp His Ile Gly Thr Phe Pro Glu Leu Lys Gly Lys Val Ala  
1 5 10 15  
ctc gtc act ggc att ggc caa atg ggc gat cct caa atg tgg gga aat 96  
Page 3014

## PhoenixTemp32470.tmp.txt

Leu	Val	Thr	Gly 20	Ile	Gly	Gln	Met	Gly 25	Asp	Pro	Gln	Met	Trp 30	Gly	Asn		
ggt	gct	gca	aca	gca	cga	gtg	tta	agt	cgc	aac	ggt	gcc	aaa	ata	ttt		144
Gly	Ala	Ala	Thr	Ala	Arg	Val	Leu	Ser	Arg	Asn	Gly	Ala	Lys	Ile	Phe		
		35					40					45					
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Gly	Cys	Asp	Leu	Gln	Leu	Glu	Ser	Ala	Leu	His	Thr	Lys	Lys	Arg	Leu		
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gag	gcc	gag	ggc	ggc	gtg	tgt	gag	gta	aca	aca	gcg	aat	ggt	aca	tct		240
Glu	Ala	Glu	Gly	Gly	Val	Cys	Glu	Val	Thr	Thr	Ala	Asn	Val	Thr	Ser		
65					70				75						80		
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Ser	Glu	Asp	Val	Lys	Arg	Met	Val	Glu	Val	Cys	Val	Ala	Lys	Phe	Gly		
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cgt	atc	gat	atc	ctg	atc	aac	aat	gtt	ggc	cgc	tca	gag	cca	ggt	ggg		336
Arg	Ile	Asp	Ile	Leu	Ile	Asn	Asn	Val	Gly	Arg	Ser	Glu	Pro	Gly	Gly		
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Pro	Ala	Glu	Met	Thr	Glu	Lys	Val	Trp	Asp	Ala	Gln	Thr	Asp	Ile	Asn		
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ctg	aaa	tct	gtc	tat	ctt	tcc	tgc	cac	gaa	gtc	ctc	ccg	atc	atg	gaa		432
Leu	Lys	Ser	Val	Tyr	Leu	Ser	Cys	His	Glu	Val	Leu	Pro	Ile	Met	Glu		
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Lys	Gln	Gly	Gly	Gly	Ala	Ile	Val	Asn	Val	Ala	Ser	Ile	Ala	Gly	Ile		
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Arg	Tyr	Ile	Gly	Lys	Pro	Gln	Val	Ala	Tyr	Ser	Ala	Ala	Lys	Ser	Ala		
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Val	Ile	Gln	Phe	Thr	Lys	Ala	Thr	Ala	Val	Ile	Tyr	Ala	Asn	Arg	Asn		
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Ile	Arg	Leu	Asn	Val	Val	Val	Pro	Gly	Leu	Met	His	Thr	Pro	Leu	Val		
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agt	tat	ctt	gca	gac	aag	tac	gca	ggt	ggg	gat	cta	gaa	gga	ttc	atc		672
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Ile	Thr	Gly	Gln	Lys	Ile	Val	Val	Asp	Gly	Gly	Ile	Thr	Ser	Ser	Thr		
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Gly																	

&lt;210&gt; 3336

&lt;211&gt; 273

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 3336

Met	Thr	Asp	His	Ile	Gly	Thr	Phe	Pro	Glu	Leu	Lys	Gly	Lys	Val	Ala		
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			20					25					30				
Gly	Ala	Ala	Thr	Ala	Arg	Val	Leu	Ser	Arg	Asn	Gly	Ala	Lys	Ile	Phe		
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Gly	Cys	Asp	Leu	Gln	Leu	Glu	Ser	Ala	Leu	His	Thr	Lys	Lys	Arg	Leu		
	50					55					60						
Glu	Ala	Glu	Gly	Gly	Val	Cys	Glu	Val	Thr	Thr	Ala	Asn	Val	Thr	Ser		
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Ser	Glu	Asp	Val	Lys	Arg	Met	Val	Glu	Val	Cys	Val	Ala	Lys	Phe	Gly		
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## PhoenixTemp32470.tmp.txt

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 100 105 110  
 Pro Ala Glu Met Thr Glu Lys Val Trp Asp Ala Gln Thr Asp Ile Asn  
 115 120 125  
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 130 135 140  
 Lys Gln Gly Gly Gly Ala Ile Val Asn Val Ala Ser Ile Ala Gly Ile  
 145 150 155 160  
 Arg Tyr Ile Gly Lys Pro Gln Val Ala Tyr Ser Ala Ala Lys Ser Ala  
 165 170 175  
 Val Ile Gln Phe Thr Lys Ala Thr Ala Val Ile Tyr Ala Asn Arg Asn  
 180 185 190  
 Ile Arg Leu Asn Val Val Val Pro Gly Leu Met His Thr Pro Leu Val  
 195 200 205  
 Ser Tyr Leu Ala Asp Lys Tyr Ala Gly Gly Asp Leu Glu Gly Phe Ile  
 210 215 220  
 Ala Lys Arg Asn Lys Ala Val Pro Met Gly Arg Met Gly Asp Ser Phe  
 225 230 235 240  
 Asp Val Ala Asn Cys Ala Ala Phe Leu Leu Ser Asp Ser Ala Arg Tyr  
 245 250 255  
 Ile Thr Gly Gln Lys Ile Val Val Asp Gly Gly Ile Thr Ser Ser Thr  
 260 265 270  
 Gly

&lt;210&gt; 3337

&lt;211&gt; 954

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(954)

&lt;400&gt; 3337

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caa	cca	agc	aca	acc	ctc	cg	cca	ctc	aca	cga	ctc	tca	tat	tcc	aca	96
Gln	Pro	Ser	Thr	Thr	Leu	Arg	Pro	Leu	Thr	Arg	Leu	Ser	Tyr	Ser	Thr	
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act	act	act	acc	cat	gga	g	cat	cac	att	caa	acg	cgg	atg	cct	cca	144
Thr	Thr	Thr	Thr	His	Gly	Ala	His	His	Ile	Gln	Thr	Arg	Met	Pro	Pro	
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aag	gaa	tca	atc	aag	aac	ggg	cat	cgt	ttt	aag	gag	ttc	gac	ctc	aat	192
Lys	Glu	Ser	Ile	Lys	Asn	Gly	His	Arg	Phe	Lys	Glu	Phe	Asp	Leu	Asn	
	50					55					60					
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Met	Ala	Glu	Ala	Leu	Met	Glu	Ala	Gly	Ala	Lys	Val	Tyr	Cys	Leu	Asp	
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Arg	Leu	Glu	Asn	Pro	His	Pro	Asp	Phe	Met	Ala	Ala	Lys	Glu	His	Ser	
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Glu	Thr	Asn	Tyr	Gly	Gly	Ser	Leu	Glu	Tyr	Tyr	Arg	Ile	Asp	Val	Arg	
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gat	gat	gca	gaa	gta	aac	aac	gtg	ttc	gcc	gaa	att	gcc	ggc	cag	aac	432
Asp	Asp	Ala	Glu	Val	Asn	Asn	Val	Phe	Ala	Glu	Ile	Ala	Gly	Gln	Asn	
	130					135					140					
aag	cgt	ctt	gat	ggt	ctg	atc	gcc	gcc	gcc	gga	atc	aac	cat	ctc	cag	480
Lys	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	Ala	Gly	Ile	Asn	His	Leu	Gln	
	145				150					155					160	
agc	gcc	ctc	gag	cac	tcc	caa	acc	gcc	atg	aac	gaa	gtc	atg	cag	atc	528
Ser	Ala	Leu	Glu	His	Ser	Gln	Thr	Ala	Met	Asn	Glu	Val	Met	Gln	Ile	
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## PhoenixTemp32470.tmp.txt

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Phe	Asn	Tyr	Gln	Gln	Lys	Gly	Ser	Ile	Leu	Leu	Ile	Ala	Ser	Met	Ser		
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ggt	ctc	atc	gcc	aac	aag	ggc	atg	act	tcc	cct	gtc	tac	aac	tcc	tcc	672	
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Lys	Ala	Ala	Val	Ile	Gln	Leu	Ala	Arg	Ser	Leu	Ala	Met	Glu	Trp	Gly		
225					230					235					240		
cg	cac	ggt	atc	cgt	gtg	aac	agt	ctc	tgc	cct	ggt	cac	atc	atc	acc	768	
Arg	His	Gly	Ile	Arg	Val	Asn	Ser	Leu	Cys	Pro	Gly	His	Ile	Ile	Thr		
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Pro	Met	Val	Glu	Gln	Val	Phe	Gln	Gln	Asn	Pro	Ala	Ser	Arg	Ala	Val		
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Trp	Glu	Ala	Glu	Asn	Met	Leu	Gly	Arg	Leu	Ala	Tyr	Pro	Glu	Glu	Phe		
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Arg	Gly	Ala	Ala	Leu	Phe	Ala	Leu	Ser	Asp	Ala	Ser	Ser	Phe	Met	Thr		
	290					295				300							
ggc	agc	acg	atg	ctc	att	gat	ggg	ggc	cac	acc	gcg	tgg	taa			954	
Gly	Ser	Thr	Met	Leu	Ile	Asp	Gly	Gly	His	Thr	Ala	Trp					
305					310					315							

&lt;210&gt; 3338

&lt;211&gt; 317

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 3338

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Gln	Pro	Ser	Thr	Thr	Leu	Arg	Pro	Leu	Thr	Arg	Leu	Ser	Tyr	Ser	Thr		
			20					25					30				
Thr	Thr	Thr	Thr	His	Gly	Ala	His	His	Ile	Gln	Thr	Arg	Met	Pro	Pro		
			35				40					45					
Lys	Glu	Ser	Ile	Lys	Asn	Gly	His	Arg	Phe	Lys	Glu	Phe	Asp	Leu	Asn		
	50					55					60						
Asp	Arg	Val	Tyr	Ala	Ile	Thr	Gly	Gly	Gly	Arg	Gly	Leu	Gly	Leu	Ala		
65				70				75							80		
Met	Ala	Glu	Ala	Leu	Met	Glu	Ala	Gly	Ala	Lys	Val	Tyr	Cys	Leu	Asp		
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Arg	Leu	Glu	Asn	Pro	His	Pro	Asp	Phe	Met	Ala	Ala	Lys	Glu	His	Ser		
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		115				120						125					
Asp	Asp	Ala	Glu	Val	Asn	Asn	Val	Phe	Ala	Glu	Ile	Ala	Gly	Gln	Asn		
	130				135						140						
Lys	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	Ala	Gly	Ile	Asn	His	Leu	Gln		
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Ser	Ala	Leu	Glu	His	Ser	Gln	Thr	Ala	Met	Asn	Glu	Val	Met	Gln	Ile		
				165				170						175			
Asn	Tyr	Asn	Gly	Val	Phe	Asn	Ser	Ala	Thr	Ala	Ala	Ala	Arg	Gln	Met		
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Phe	Asn	Tyr	Gln	Gln	Lys	Gly	Ser	Ile	Leu	Leu	Ile	Ala	Ser	Met	Ser		
		195					200					205					
Gly	Leu	Ile	Ala	Asn	Lys	Gly	Met	Thr	Ser	Pro	Val	Tyr	Asn	Ser	Ser		
	210				215						220						
Lys	Ala	Ala	Val	Ile	Gln	Leu	Ala	Arg	Ser	Leu	Ala	Met	Glu	Trp	Gly		
225					230					235					240		
Arg	His	Gly	Ile	Arg	Val	Asn	Ser	Leu	Cys	Pro	Gly	His	Ile	Ile	Thr		
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Pro	Met	Val	Glu	Gln	Val	Phe	Gln	Gln	Asn	Pro	Ala	Ser	Arg	Ala	Val		
			260				265						270				
Trp	Glu	Ala	Glu	Asn	Met	Leu	Gly	Arg	Leu	Ala	Tyr	Pro	Glu	Glu	Phe		
		275				280						285					



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 Gly Ser Thr Met Leu Ile Asp Gly Gly His Thr Ala Trp  
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<210> 3339

<211> 786

<212> DNA

<213> Aspergillus oryzae

<220>

<221> CDS

<222> (1)..(786)

<400> 3339

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gtg	acc	ggt	gct	ggg	tcc	gga	att	gga	aga	gaa	acg	gca	ttg	tgt	ctc	96
Val	Thr	Gly	Ala	Gly	Ser	Gly	Ile	Gly	Arg	Glu	Thr	Ala	Leu	Cys	Leu	
			20					25					30			
gcc	aat	gct	ggg	gca	aat	gta	gtc	gtg	gct	gaa	gct	aat	gaa	acg	acg	144
Ala	Asn	Ala	Gly	Ala	Asn	Val	Val	Val	Ala	Glu	Ala	Asn	Glu	Thr	Thr	
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Gly	Lys	Glu	Thr	Ala	Ala	Lys	Val	Ser	Ala	Gln	Thr	Gly	Ser	Arg	Gly	
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Leu	Phe	Ile	Leu	Thr	Asp	Val	Ser	Arg	Ser	Glu	Ser	Val	Gln	Ala	Met	
	65				70					75					80	
gtc	atc	gcc	acc	atc	gag	gcc	ttt	ggg	cgt	ctc	gat	att	gca	gtg	aac	288
Val	Ile	Ala	Thr	Ile	Glu	Ala	Phe	Gly	Arg	Leu	Asp	Ile	Ala	Val	Asn	
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aac	gcc	gcc	ctg	cac	cca	gac	gca	tcc	cct	atc	gca	gaa	ctc	cac	gag	336
Asn	Ala	Ala	Leu	His	Pro	Asp	Ala	Ser	Pro	Ile	Ala	Glu	Leu	His	Glu	
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Asp	His	Trp	Gln	Lys	Ile	Ile	Gly	Val	Asn	Leu	Val	Gly	Val	Ala	Phe	
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tgt	ctc	aag	tgg	gaa	ctt	cag	cag	atg	atc	cag	caa	ggg	ggg	ggg	ggc	432
Cys	Leu	Lys	Trp	Glu	Leu	Gln	Gln	Met	Ile	Gln	Gln	Gly	Gly	Gly	Gly	
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Ser	Ile	Ile	Asn	Ile	Ser	Ser	Ala	Thr	Ile	Asn	Arg	Pro	Gln	Glu	Lys	
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atg	tca	gcg	tac	atc	gcc	gcg	aag	cac	ggg	atc	act	ggg	ttg	act	cag	528
Met	Ser	Ala	Tyr	Ile	Ala	Ala	Lys	His	Gly	Ile	Thr	Gly	Leu	Thr	Gln	
				165					170					175		
acg	gct	gct	gtc	gag	aat	gga	cga	cac	gga	att	cgg	ggt	aat	gcg	ctc	576
Thr	Ala	Ala	Val	Glu	Asn	Gly	Arg	His	Gly	Ile	Arg	Val	Asn	Ala	Leu	
			180					185					190			
gcc	cca	ggg	ggg	gtg	gcc	act	gat	ctg	acg	atg	gcg	acc	atg	cag	gaa	624
Ala	Pro	Gly	Gly	Val	Ala	Thr	Asp	Leu	Thr	Met	Ala	Thr	Met	Gln	Glu	
		195					200					205				
tta	ggg	ctc	acc	gag	gaa	aac	gag	gcg	gcc	cgg	agt	agc	ctc	ttc	aaa	672
Leu	Gly	Leu	Thr	Glu	Glu	Asn	Glu	Ala	Ala	Arg	Ser	Ser	Leu	Phe	Lys	
	210					215					220					
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Arg	Phe	Ala	Lys	Pro	Glu	Glu	Ile	Ala	Gln	Ser	Val	Leu	Trp	Leu	Ala	
					230					235					240	
tca	gat	gct	gct	tcg	tac	gtt	act	ggg	gcc	act	att	gcc	gtg	gat	tca	768
Ser	Asp	Ala	Ala	Ser	Tyr	Val	Thr	Gly	Ala	Thr	Ile	Ala	Val	Asp	Ser	
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Gly	Leu	Ser	Leu	Ile												
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<210> 3340

<211> 261

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 3340

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35      40      45
Gly Lys Glu Thr Ala Ala Lys Val Ser Ala Gln Thr Gly Ser Arg Gly
50      55      60
Leu Phe Ile Leu Thr Asp Val Ser Arg Ser Glu Ser Val Gln Ala Met
65      70      75      80
Val Ile Ala Thr Ile Glu Ala Phe Gly Arg Leu Asp Ile Ala Val Asn
85      90      95
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Asp His Trp Gln Lys Ile Ile Gly Val Asn Leu Val Gly Val Ala Phe
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Cys Leu Lys Trp Glu Leu Gln Gln Met Ile Gln Gln Gly Gly Gly Gly
130     135     140
Ser Ile Ile Asn Ile Ser Ser Ala Thr Ile Asn Arg Pro Gln Glu Lys
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Met Ser Ala Tyr Ile Ala Ala Lys His Gly Ile Thr Gly Leu Thr Gln
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Thr Ala Ala Val Glu Asn Gly Arg His Gly Ile Arg Val Asn Ala Leu
180     185     190
Ala Pro Gly Val Ala Thr Asp Leu Thr Met Ala Thr Met Gln Glu
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&lt;210&gt; 3341

&lt;211&gt; 927

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(927)

&lt;400&gt; 3341

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Gln Glu Glu Leu Glu Asp Pro Lys Pro Val Ser Thr Tyr Ile Pro Thr
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50      55      60
aaa aga gcc atc atc aca ggt ggt gac tct ggc atc ggc cgc gcc gtt      240
Lys Arg Ala Ile Ile Thr Gly Gly Asp Ser Gly Ile Gly Arg Ala Val
65      70      75      80
gcc tta ttg ttt gca atg gaa gga gca tct agc ttg atc gtc tac tta      288
Ala Leu Leu Phe Ala Met Glu Gly Ala Ser Ser Leu Ile Val Tyr Leu
85      90      95
ccc gaa gaa gaa aaa gac gca caa gag aca aaa aga agg gtc caa ggc      336
Pro Glu Glu Glu Lys Asp Ala Gln Glu Thr Lys Arg Arg Val Gln Gly

```

## PhoenixTemp32470.tmp.txt

[illegible]

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<210> 3342
<211> 308
<212> PRT
<213> Aspergillus oryzae
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<400>	3342															
Met	Gln	Asp	Tyr	Thr	Glu	Arg	Ala	Ala	Arg	Gly	Thr	Glu	Ser	Gln	Phe	
1				5					10					15		
Gln	Thr	Gly	His	Gln	Ile	Pro	Val	Gln	His	Gln	Lys	Lys	Pro	Gly	Leu	
			20					25					30			
Gln	Glu	Glu	Leu	Glu	Asp	Pro	Lys	Pro	Val	Ser	Thr	Tyr	Ile	Pro	Thr	
			35				40					45				
Glu	Glu	Gly	Gly	Tyr	Thr	Thr	Tyr	Lys	Ala	Ala	Gly	Lys	Leu	Val	Gly	
			50			55					60					
Lys	Arg	Ala	Ile	Ile	Thr	Gly	Gly	Asp	Ser	Gly	Ile	Gly	Arg	Ala	Val	
65					70					75					80	
Ala	Leu	Leu	Phe	Ala	Met	Glu	Gly	Ala	Ser	Ser	Leu	Ile	Val	Tyr	Leu	
				85					90					95		
Pro	Glu	Glu	Glu	Lys	Asp	Ala	Gln	Glu	Thr	Lys	Arg	Arg	Val	Gln	Gly	
			100					105					110			
Thr	Gly	His	Asp	Cys	His	Cys	Leu	Ala	Val	Asp	Val	Arg	Lys	Lys	Glu	
			115				120					125				
Asn	Cys	Arg	Lys	Val	Val	Asp	Thr	Ala	Val	Gln	Cys	Met	Gly	Gly	Ile	
			130			135					140					
Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Phe	Gln	Asn	Met	Ile	Gly	Asp	Ile	
145				150						155					160	
Ser	Gly	Leu	Glu	Glu	Asp	Gln	Trp	Glu	Arg	Thr	Phe	Asp	Thr	Asn	Ile	
				165					170					175		

## PhoenixTemp32470.tmp.txt

His Pro Phe Phe Tyr Leu Ser Lys Tyr Ala Leu Pro His Met Lys Ser  
 180 190  
 Gly Ser Thr Ile Ile Asn Cys Gly Ser Val Asn Ala Tyr Ile Gly Arg  
 195 200 205  
 Pro Asp Leu Leu Asp Tyr Thr Ala Thr Lys Gly Ala Ile Val Ala Phe  
 210 215 220  
 Thr Arg Gly Leu Ser Asn Gln Gln Val Gly Arg Gly Ile Arg Val Asn  
 225 230 235 240  
 Cys Val Cys Pro Gly Pro Ile Trp Thr Pro Leu Ile Pro Ser Thr Met  
 245 250 255  
 Thr Ser Ser Ala Met Asp Gln Phe Ser Ser Val Pro Met Gly Arg Pro  
 260 265 270  
 Gly Gln Pro Ser Glu Val Ala Thr Cys Phe Val Phe Leu Ala Ser Gln  
 275 280 285  
 Asp Ser Ser Tyr Ile Ser Gly Gln Ser Leu His Pro Asn Gly Gly Val  
 290 295 300  
 Val Val Asn Gly  
 305

&lt;210&gt; 3343

&lt;211&gt; 867

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(867)

&lt;400&gt; 3343

atg	tct	gtc	tcc	att	gaa	acc	cac	gac	att	gcc	ccc	gcc	gct	ccc	acc	48
Met	Ser	Val	Ser	Ile	Glu	Thr	His	Asp	Ile	Ala	Pro	Ala	Ala	Pro	Thr	
1				5					10					15		
aca	cag	gcg	gcc	ccc	tgc	ctc	gga	ttt	aag	aac	aga	atg	cct	gag	ttc	96
Thr	Gln	Ala	Ala	Pro	Cys	Leu	Gly	Phe	Lys	Asn	Arg	Met	Pro	Glu	Phe	
			20					25					30			
agc	ttg	gct	gga	aag	gtc	gtc	tgt	ggt	tct	ggt	gct	gcc	cgt	ggt	ctt	144
Ser	Leu	Ala	Gly	Lys	Val	Val	Cys	Val	Ser	Gly	Ala	Ala	Arg	Gly	Leu	
			35				40					45				
ggt	cta	act	cag	gct	gaa	gcg	ctt	ttg	gag	gcc	ggg	gcc	aag	gta	tat	192
Gly	Leu	Thr	Gln	Ala	Glu	Ala	Leu	Leu	Glu	Ala	Gly	Ala	Lys	Val	Tyr	
			50			55					60					
gct	ttg	gac	cg	ctg	gag	gaa	ccc	tcc	cct	gaa	ttc	ttc	gaa	atc	caa	240
Ala	Leu	Asp	Arg	Leu	Glu	Glu	Pro	Ser	Pro	Glu	Phe	Phe	Glu	Ile	Gln	
				70					75						80	
aaa	cgt	gcc	aag	gaa	gag	ctg	gga	acg	gag	ctg	caa	tac	cgt	cg	att	288
Lys	Arg	Ala	Lys	Glu	Glu	Leu	Gly	Thr	Glu	Leu	Gln	Tyr	Arg	Arg	Ile	
				85				90						95		
gat	gtc	cgt	gac	acc	gaa	ctt	ctc	gac	agt	act	atc	gaa	gcc	atc	gcc	336
Asp	Val	Arg	Asp	Thr	Glu	Leu	Leu	Asp	Ser	Thr	Ile	Glu	Ala	Ile	Ala	
			100					105					110			
gat	tcc	gag	ggt	cg	ttg	gat	ggc	ttg	att	gct	g	gca	ggc	att	caa	384
Asp	Ser	Glu	Gly	Arg	Leu	Asp	Gly	Leu	Ile	Ala	Ala	Ala	Gly	Ile	Gln	
			115				120					125				
cag	gaa	act	cca	gcc	ctc	gag	tat	acg	gcc	cag	gac	gcc	aac	acg	atg	432
Gln	Glu	Thr	Pro	Ala	Leu	Glu	Tyr	Thr	Ala	Gln	Asp	Ala	Asn	Thr	Met	
			130			135					140					
ttc	gaa	gtc	aac	gtc	act	ggt	gtg	ttc	atg	act	tcc	aag	gcc	gtt	gct	480
Phe	Glu	Val	Asn	Val	Thr	Gly	Val	Phe	Met	Thr	Ser	Lys	Ala	Val	Ala	
				150					155						160	
aag	caa	atg	att	cg	ttc	ggc	aat	gga	ggt	agc	atc	gca	cta	att	gcg	528
Lys	Gln	Met	Ile	Arg	Phe	Gly	Asn	Gly	Gly	Ser	Ile	Ala	Leu	Ile	Ala	
				165				170						175		
agc	atg	agt	ggt	act	att	gcc	aat	cg	ggt	ctt	atc	tgc	cct	gct	tac	576
Ser	Met	Ser	Gly	Thr	Ile	Ala	Asn	Arg	Gly	Leu	Ile	Cys	Pro	Ala	Tyr	
			180					185					190			
aat	gct	agc	aag	gct	gca	gtg	ctt	caa	ctt	gcc	cgt	aac	ctc	gcc	atg	624
Asn	Ala	Ser	Lys	Ala	Ala	Val	Leu	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Met	
			195				200					205				
gag	tgg	ggc	ccg	tac	aac	att	cga	gtc	aac	acc	atc	tcg	ccc	ggc	tac	672

## PhoenixTemp32470.tmp.txt

Glu	Trp	Gly	Pro	Tyr	Asn	Ile	Arg	Val	Asn	Thr	Ile	Ser	Pro	Gly	Tyr	
210	210					215					220					
att	gtt	act	gcc	atg	gtt	gag	aag	ctc	ttc	gtt	gag	ttc	cct	gag	cgt	720
Ile	Val	Thr	Ala	Met	Val	Glu	Lys	Leu	Phe	Val	Glu	Phe	Pro	Glu	Arg	
225					230					235					240	
cgc	gag	gaa	tgg	ccc	aaa	cat	aac	atg	ctg	gga	cgt	ctg	tct	acc	cct	768
Arg	Glu	Glu	Trp	Pro	Lys	His	Asn	Met	Leu	Gly	Arg	Leu	Ser	Thr	Pro	
				245					250					255		
aac	gag	tac	cgt	ggc	gct	gcc	gtc	ttc	ctt	ctc	agt	gac	gcc	agc	agc	816
Asn	Glu	Tyr	Arg	Gly	Ala	Ala	Val	Phe	Leu	Leu	Ser	Asp	Ala	Ser	Ser	
			260				265						270			
ttc	atg	act	gga	agc	gat	cta	cgt	atg	gac	gga	ggg	cac	gcc	gct	tgg	864
Phe	Met	Thr	Gly	Ser	Asp	Leu	Arg	Met	Asp	Gly	Gly	His	Ala	Ala	Trp	
		275					280					285				
tag																867

<210> 3344  
 <211> 288  
 <212> PRT  
 <213> Aspergillus oryzae

<400> 3344  
 Met Ser Val Ser Ile Glu Thr His Asp Ile Ala Pro Ala Ala Pro Thr  
 1 5 10 15  
 Thr Gln Ala Ala Pro Cys Leu Gly Phe Lys Asn Arg Met Pro Glu Phe  
 20 25 30  
 Ser Leu Ala Gly Lys Val Val Cys Val Ser Gly Ala Ala Arg Gly Leu  
 35 40 45  
 Gly Leu Thr Gln Ala Glu Ala Leu Leu Glu Ala Gly Ala Lys Val Tyr  
 50 55 60  
 Ala Leu Asp Arg Leu Glu Glu Pro Ser Pro Glu Phe Phe Glu Ile Gln  
 65 70 75 80  
 Lys Arg Ala Lys Glu Leu Gly Thr Glu Leu Gln Tyr Arg Arg Ile  
 85 90 95  
 Asp Val Arg Asp Thr Glu Leu Leu Asp Ser Thr Ile Glu Ala Ile Ala  
 100 105 110  
 Asp Ser Glu Gly Arg Leu Asp Gly Leu Ile Ala Ala Ala Gly Ile Gln  
 115 120 125  
 Gln Glu Thr Pro Ala Leu Glu Tyr Thr Ala Gln Asp Ala Asn Thr Met  
 130 135 140  
 Phe Glu Val Asn Val Thr Gly Val Phe Met Thr Ser Lys Ala Val Ala  
 145 150 155 160  
 Lys Gln Met Ile Arg Phe Gly Asn Gly Gly Ser Ile Ala Leu Ile Ala  
 165 170 175  
 Ser Met Ser Gly Thr Ile Ala Asn Arg Gly Leu Ile Cys Pro Ala Tyr  
 180 185 190  
 Asn Ala Ser Lys Ala Ala Val Leu Gln Leu Ala Arg Asn Leu Ala Met  
 195 200 205  
 Glu Trp Gly Pro Tyr Asn Ile Arg Val Asn Thr Ile Ser Pro Gly Tyr  
 210 215 220  
 Ile Val Thr Ala Met Val Glu Lys Leu Phe Val Glu Phe Pro Glu Arg  
 225 230 235 240  
 Arg Glu Glu Trp Pro Lys His Asn Met Leu Gly Arg Leu Ser Thr Pro  
 245 250 255  
 Asn Glu Tyr Arg Gly Ala Ala Val Phe Leu Leu Ser Asp Ala Ser Ser  
 260 265 270  
 Phe Met Thr Gly Ser Asp Leu Arg Met Asp Gly Gly His Ala Ala Trp  
 275 280 285

<210> 3345  
 <211> 822  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(822)

## PhoenixTemp32470.tmp.txt

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<400> 3345
atg gcc aac ttc cca aaa tac cct gac ctt caa ggc aaa gtc gcc ctg      48
Met Ala Asn Phe Pro Lys Tyr Pro Asp Leu Gln Gly Lys Val Ala Leu
1      5      10      15
ata atg ggt gcc ggc caa aca cat gta cca ggc tcc gaa gca cgg ggt      96
Ile Met Gly Ala Gly Gln Thr His Val Pro Gly Ser Glu Ala Arg Gly
20      25      30
aac gga gca gcc atc gct caa tgc ctc gcc caa aac ggt gtc caa gta      144
Asn Gly Ala Ala Ile Ala Gln Cys Leu Ala Gln Asn Gly Val Gln Val
35      40      45
ttc ggc tgc gac gtg aat ctc cag gct gca gag ctt act gct tca agg      192
Phe Gly Cys Asp Val Asn Leu Gln Ala Ala Glu Leu Thr Ala Ser Arg
50      55      60
atc caa gca gaa ggc ggg aaa tgc gac att gcc caa gcc gat gtg acc      240
Ile Gln Ala Glu Gly Gly Lys Cys Asp Ile Ala Gln Ala Asp Val Thr
65      70      75      80
tcg gaa aag gac gtg agg aga gtc gtg gac gcc gtg atg tca aag tat      288
Ser Glu Lys Asp Val Arg Arg Val Val Asp Ala Val Met Ser Lys Tyr
85      90      95
ggc cga att gat atc tta atc aac aac gta ggc gcc aca gtg gcc ggt      336
Gly Arg Ile Asp Ile Leu Ile Asn Asn Val Gly Ala Thr Val Ala Gly
100      105      110
gat cca gcc agc atg cct tcc gac gta tgg gac aaa caa atc gat ctc      384
Asp Pro Ala Ser Met Pro Ser Asp Val Trp Asp Lys Gln Ile Asp Leu
115      120      125
aat tta aaa agc gtc tac ctc gcc tgc cat gtg gtg ctt ccg ata atg      432
Asn Leu Lys Ser Val Tyr Leu Ala Cys His Val Val Leu Pro Ile Met
130      135      140
gaa aag caa ggg tcg ggg tgc gtc gtc aac aat gcg tct att gcg ggc      480
Glu Lys Gln Gly Ser Gly Cys Val Val Asn Asn Ala Ser Ile Ala Gly
145      150      155      160
ttg agg tat att gga aag cca cag gtt gcg tat tct gcg gca aag gct      528
Leu Arg Tyr Ile Gly Lys Pro Gln Val Ala Tyr Ser Ala Ala Lys Ala
165      170      175
gcg gtg att cag ttt acg aag gtt aca gcg gtc atg tac gcg cca aaa      576
Ala Val Ile Gln Phe Thr Lys Val Thr Ala Val Met Tyr Ala Pro Lys
180      185      190
ggc gtt cga ttg aat acg gta gta ccg ggc ttc att cac acg cct ttg      624
Gly Val Arg Leu Asn Thr Val Val Pro Gly Phe Ile His Thr Pro Leu
195      200      205
gtg gat aac ttc aaa ttc aac ggt cag aaa gaa gtt tat gat aag att      672
Val Asp Asn Phe Lys Phe Asn Gly Gln Lys Glu Val Tyr Asp Lys Ile
210      215      220
aca cga cag cct gtc ccc ttg ggg cgc atg gga gat gcg ttt gat gta      720
Thr Arg Gln Pro Val Pro Leu Gly Arg Met Gly Asp Ala Phe Asp Val
225      230      235      240
gct aat tct acg gtg ttt ttg gct agc gat gcg gcc aag tat atc act      768
Ala Asn Ser Thr Val Phe Leu Ala Ser Asp Ala Ala Lys Tyr Ile Thr
245      250      255
ggg cag att ttg gtg gtg gat ggt gga ttt aca agt tcc gct gcg tct      816
Gly Gln Ile Leu Val Val Asp Gly Gly Phe Thr Ser Ser Ala Ala Ser
260      265      270
cta tag
Leu
822

```

```

<210> 3346
<211> 273
<212> PRT
<213> Aspergillus oryzae

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<400> 3346
Met Ala Asn Phe Pro Lys Tyr Pro Asp Leu Gln Gly Lys Val Ala Leu
1      5      10      15
Ile Met Gly Ala Gly Gln Thr His Val Pro Gly Ser Glu Ala Arg Gly
20      25      30
Asn Gly Ala Ala Ile Ala Gln Cys Leu Ala Gln Asn Gly Val Gln Val
35      40      45

```

## PhoenixTemp32470.tmp.txt

Phe Gly Cys Asp Val Asn Leu Gln Ala Ala Glu Leu Thr Ala Ser Arg  
 50 55 60  
 Ile Gln Ala Glu Gly Gly Lys Cys Asp Ile Ala Gln Ala Asp Val Thr  
 65 70 75 80  
 Ser Glu Lys Asp Val Arg Arg Val Val Asp Ala Val Met Ser Lys Tyr  
 85 90 95  
 Gly Arg Ile Asp Ile Leu Ile Asn Asn Val Gly Ala Thr Val Ala Gly  
 100 105 110  
 Asp Pro Ala Ser Met Pro Ser Asp Val Trp Asp Lys Gln Ile Asp Leu  
 115 120 125  
 Asn Leu Lys Ser Val Tyr Leu Ala Cys His Val Val Leu Pro Ile Met  
 130 135 140  
 Glu Lys Gln Gly Ser Gly Cys Val Val Asn Asn Ala Ser Ile Ala Gly  
 145 150 155 160  
 Leu Arg Tyr Ile Gly Lys Pro Gln Val Ala Tyr Ser Ala Ala Lys Ala  
 165 170 175  
 Ala Val Ile Gln Phe Thr Lys Val Thr Ala Val Met Tyr Ala Pro Lys  
 180 185 190  
 Gly Val Arg Leu Asn Thr Val Val Pro Gly Phe Ile His Thr Pro Leu  
 195 200 205  
 Val Asp Asn Phe Lys Phe Asn Gly Gln Lys Glu Val Tyr Asp Lys Ile  
 210 215 220  
 Thr Arg Gln Pro Val Pro Leu Gly Arg Met Gly Asp Ala Phe Asp Val  
 225 230 235 240  
 Ala Asn Ser Thr Val Phe Leu Ala Ser Asp Ala Ala Lys Tyr Ile Thr  
 245 250 255  
 Gly Gln Ile Leu Val Val Asp Gly Gly Phe Thr Ser Ser Ala Ala Ser  
 260 265 270  
 Leu

&lt;210&gt; 3347

&lt;211&gt; 873

&lt;212&gt; DNA

&lt;213&gt; Aspergillus oryzae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(873)

&lt;400&gt; 3347

atg cct cct gcc gcg acc gag aat gtt cca gct ccg gct cca gct gca	48
Met Pro Pro Ala Ala Thr Glu Asn Val Pro Ala Pro Ala Pro Ala Ala	
1 5 10 15	
gct gca gct cct aag cct gaa gca cag cca tat ctc agc acg atg cct	96
Ala Ala Ala Pro Lys Pro Glu Ala Gln Pro Tyr Leu Ser Thr Met Pro	
20 25 30	
tct tcg gac ttc agc tgg cag att acc ctc gcg aac aaa gta atc gca	144
Ser Ser Asp Phe Ser Trp Gln Ile Thr Leu Ala Asn Lys Val Ile Ala	
35 40 45	
att acg ggc gcc aac cgc gga atc ggt ttg gga atc gcg gag gtc tgt	192
Ile Thr Gly Ala Asn Arg Gly Ile Gly Leu Gly Ile Ala Glu Val Cys	
50 55 60	
ctc gcg aac tcg gcc aag ttc gta tac tct ttc gac ctg atg gag cct	240
Leu Ala Asn Ser Ala Lys Phe Val Tyr Ser Phe Asp Leu Met Glu Pro	
65 70 75 80	
gga gag gac ttt gcg gag ctc cag aag aga tac agc aac ttc cgc tat	288
Gly Glu Asp Phe Ala Glu Leu Gln Lys Arg Tyr Ser Asn Phe Arg Tyr	
85 90 95	
att caa act gat gtg acg agc gaa gaa agt att gag aat gct atc aac	336
Ile Gln Thr Asp Val Thr Ser Glu Glu Ser Ile Glu Asn Ala Ile Asn	
100 105 110	
aaa gtg att gag gaa acg ggt cgg atc gat ggc ttg gtg gcc aac gct	384
Lys Val Ile Glu Glu Thr Gly Arg Ile Asp Gly Leu Val Ala Asn Ala	
115 120 125	
gga atg acc aag cat cag cct gca ctc aag ttt gac cgt gaa caa ttg	432
Gly Met Thr Lys His Gln Pro Ala Leu Lys Phe Asp Arg Glu Gln Leu	
130 135 140	
gat aaa ctc ttc aat ctc aat gtt ttt ggt gca tac ttc tgc gct caa	480

## PhoenixTemp32470.tmp.txt

Asp 145	Lys	Leu	Phe	Asn	Leu 150	Asn	Val	Phe	Gly	Ala 155	Tyr	Phe	Cys	Ala	Gln 160	
att	gtc	gca	cgc	aaa	ttc	att	gag	ctt	ggc	atc	aag	ggg	tct	atc	gtc	528
Ile	Val	Ala	Arg	Lys 165	Phe	Ile	Glu	Leu	Gly 170	Ile	Lys	Gly	Ser	Ile 175	Val	
atg	act	tcc	agt	atg	act	tct	tat	cga	cca	aat	agg	gct	gcc	cct	tct	576
Met	Thr	Ser	Ser 180	Met	Thr	Ser	Tyr	Arg 185	Pro	Asn	Arg	Ala	Ala 190	Pro	Ser	
gcc	cct	tac	ggt	gcg	acc	aag	gcc	gca	gtc	cgg	aat	atg	tgt	cac	aca	624
Ala	Pro	Tyr 195	Gly	Ala	Thr	Lys	Ala 200	Ala	Val	Arg	Asn	Met 205	Cys	His	Thr	
ctg	gcc	atg	gag	tgg	agc	caa	cat	ggc	atc	cgc	gtc	aac	agc	att	tct	672
Leu	Ala	Met	Glu	Trp	Ser	Gln 215	His	Gly	Ile	Arg	Val 220	Asn	Ser	Ile	Ser	
ccc	ggc	ttc	gtt	cgt	acc	gca	atg	aca	tac	tac	gtt	gag	aag	tct	ccg	720
Pro	Gly	Phe	Val	Arg	Thr 230	Ala	Met	Thr	Tyr	Tyr 235	Val	Glu	Lys	Ser	Pro 240	
225	gac	tgg	gat	ctc	aag	atg	caa	tac	tac	ggg	ggg	atg	cct	cgt	ctg	gcc
Asp	Trp	Asp	Leu	Lys 245	Met	Gln	Tyr	Tyr	Gly 250	Gly	Met	Pro	Arg	Arg 255	Ala	768
gac	cca	cgg	gag	ctt	ggt	gga	gcg	tac	gtg	tac	ctc	ctc	agc	gac	gcg	816
Asp	Pro	Arg	Glu 260	Leu	Gly	Gly	Ala 265	Tyr	Val	Tyr	Leu	Leu	Ser 270	Asp	Ala	
agc	tcc	tac	aca	act	ggt	att	gat	atc	cca	atc	gct	gga	att	gtg	ggt	864
Ser	Ser	Tyr 275	Thr	Thr	Gly	Ile	Asp 280	Ile	Pro	Ile	Ala	Gly 285	Ile	Val	Gly	
gcg	tgg	taa														873
Ala	Trp 290															

&lt;210&gt; 3348

&lt;211&gt; 290

&lt;212&gt; PRT

&lt;213&gt; Aspergillus oryzae

&lt;400&gt; 3348

Met	Pro	Pro	Ala	Ala	Thr	Glu	Asn	Val	Pro	Ala	Pro	Ala	Pro	Ala	Ala	
1				5					10					15		
Ala	Ala	Ala	Pro	Lys	Pro	Glu	Ala	Gln	Pro	Tyr	Leu	Ser	Thr	Met	Pro	
			20					25					30			
Ser	Ser	Asp	Phe	Ser	Trp	Gln	Ile	Thr	Leu	Ala	Asn	Lys	Val	Ile	Ala	
		35					40					45				
Ile	Thr	Gly	Ala	Asn	Arg	Gly	Ile	Gly	Leu	Gly	Ile	Ala	Glu	Val	Cys	
		50				55					60					
Leu	Ala	Asn	Ser	Ala	Lys	Phe	Val	Tyr	Ser	Phe	Asp	Leu	Met	Glu	Pro	
65					70					75					80	
Gly	Glu	Asp	Phe	Ala	Glu	Leu	Gln	Lys	Arg	Tyr	Ser	Asn	Phe	Arg	Tyr	
				85					90					95		
Ile	Gln	Thr	Asp	Val	Thr	Ser	Glu	Glu	Ser	Ile	Glu	Asn	Ala	Ile	Asn	
			100					105					110			
Lys	Val	Ile	Glu	Glu	Thr	Gly	Arg	Ile	Asp	Gly	Leu	Val	Ala	Asn	Ala	
		115					120					125				
Gly	Met	Thr	Lys	His	Gln	Pro	Ala	Leu	Lys	Phe	Asp	Arg	Glu	Gln	Leu	
	130				135						140					
Asp	Lys	Leu	Phe	Asn	Leu	Asn	Val	Phe	Gly	Ala	Tyr	Phe	Cys	Ala	Gln	
145					150					155					160	
Ile	Val	Ala	Arg	Lys	Phe	Ile	Glu	Leu	Gly	Ile	Lys	Gly	Ser	Ile	Val	
				165					170					175		
Met	Thr	Ser	Ser	Met	Thr	Ser	Tyr	Arg	Pro	Asn	Arg	Ala	Ala	Pro	Ser	
			180					185					190			
Ala	Pro	Tyr	Gly	Ala	Thr	Lys	Ala	Ala	Val	Arg	Asn	Met	Cys	His	Thr	
		195					200					205				
Leu	Ala	Met	Glu	Trp	Ser	Gln	His	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser	
	210					215					220					
Pro	Gly	Phe	Val	Arg	Thr	Ala	Met	Thr	Tyr	Tyr	Val	Glu	Lys	Ser	Pro	
225					230					235					240	
Asp	Trp	Asp	Leu	Lys	Met	Gln	Tyr	Tyr	Gly	Gly	Met	Pro	Arg	Leu	Ala	
				245					250					255		
Asp	Pro	Arg	Glu	Leu	Gly	Gly	Ala	Tyr	Val	Tyr	Leu	Leu	Ser	Asp	Ala	



## PhoenixTemp32470.tmp.txt

Ser Ser Tyr 260 Thr Thr Gly Ile Asp 265 Ile Pro Ile Ala Gly 270 Ile Val Gly  
 275 280 285  
 Ala Trp 290

<210> 3349  
 <211> 816  
 <212> DNA  
 <213> Aspergillus oryzae

<220>  
 <221> CDS  
 <222> (1)..(816)

<400> 3349  
 atg acg tca tcg acc cgt caa gac gaa caa ggt gga tgc aag gtt ttt 48  
 Met Thr Ser Ser Thr Arg Gln Asp Glu Gln Gly Gly Cys Lys Val Phe  
 1 5 10 15  
 gct gtg acg ggc gga gca cgg ggg ctg ggg ttg tct atg gcc gag gcc 96  
 Ala Val Thr Gly Gly Ala Arg Gly Leu Gly Leu Ser Met Ala Glu Ala  
 20 25 30  
 ttg gtc gaa gcg ggt gga caa gtc tac tgc ctg gac aga cta cct gaa 144  
 Leu Val Glu Ala Gly Gly Gln Val Tyr Cys Leu Asp Arg Leu Pro Glu  
 35 40 45  
 cca gac ggg gaa ttc cgc gcg gcc gaa gca cgc gcc aac ccg gac ttc 192  
 Pro Asp Gly Glu Phe Arg Ala Ala Glu Ala Arg Ala Asn Pro Asp Phe  
 50 55 60  
 ggg ggc tca cta cac tac cgc tgc atg gac gtg acg gac gat gca aac 240  
 Gly Gly Ser Leu His Tyr Arg Cys Met Asp Val Thr Asp Asp Ala Asn  
 65 70 75 80  
 acc gaa gct gtc atc gcc gac att gga gcg cag cag aac cgt ctc gac 288  
 Thr Glu Ala Val Ile Ala Asp Ile Gly Ala Gln Gln Asn Arg Leu Asp  
 85 90 95  
 ggc ctg att gca gcc gcg ggt ata aac cac gtc gct agc gca att gac 336  
 Gly Leu Ile Ala Ala Ala Gly Ile Asn His Val Ala Ser Ala Ile Asp  
 100 105 110  
 cac cga ccc aag aac gtt gac gac gtc atc cac atc aac tac acg ggc 384  
 His Arg Pro Lys Asn Val Asp Asp Val Ile His Ile Asn Tyr Thr Gly  
 115 120 125  
 gtc ttt cgc agt gcg gtt tca gcc gcg aag gta atg cta gac cgg aaa 432  
 Val Phe Arg Ser Ala Val Ser Ala Ala Lys Val Met Leu Asp Arg Lys  
 130 135 140  
 tgc cac ggc tcg att ctc ctc gtg gca agt atg agc ggc atc gtt gcc 480  
 Cys His Gly Ser Ile Leu Leu Val Ala Ser Met Ser Gly Ile Val Ala  
 145 150 155 160  
 aac aag ggc atg gcg tct gct atc tat aat tcg tca aaa gcg gca gtc 528  
 Asn Lys Gly Met Ala Ser Ala Ile Tyr Asn Ser Ser Lys Ala Ala Val  
 165 170 175  
 atc cag ttg acg cgt agt ctg gcc atg gag tgg tct gaa gcc aaa gaa 576  
 Ile Gln Leu Thr Arg Ser Leu Ala Met Glu Trp Ser Glu Ala Lys Glu  
 180 185 190  
 gat ggc aca ggg gga atc cgt gta aac tgt ctt tgt ccc ggg cat att 624  
 Asp Gly Thr Gly Gly Ile Arg Val Asn Cys Leu Cys Pro Gly His Ile  
 195 200 205  
 gaa aca ccg atg gca aag atg gtg atg gag aag gat cca gat aca cgg 672  
 Glu Thr Pro Met Ala Lys Met Val Met Glu Lys Asp Pro Asp Thr Arg  
 210 215 220  
 gcg ctt tgg gag tcc gaa aac atg atg aag agg tta gca agg ccg gag 720  
 Ala Leu Trp Glu Ser Glu Asn Met Met Lys Arg Leu Ala Arg Pro Glu  
 225 230 235 240  
 gag ttt aga ggc atc act ttg tta ctt atg agc gat gct tcg agc ttc 768  
 Glu Phe Arg Gly Ile Thr Leu Leu Leu Met Ser Asp Ala Ser Ser Phe  
 245 250 255  
 atg act ggc agc act gtg gtg gtt gat ggg ggt cat acg gcc tgg 813  
 Met Thr Gly Ser Thr Val Val Val Asp Gly Gly His Thr Ala Trp  
 260 265 270  
 tag 816

<210> 3350  
 <211> 271  
 <212> PRT  
 <213> Aspergillus oryzae

<400> 3350  
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 1 5 10 15  
 Ala Val Thr Gly Gly Ala Arg Gly Leu Gly Leu Ser Met Ala Glu Ala  
 20 25 30  
 Leu Val Glu Ala Gly Gly Gln Val Tyr Cys Leu Asp Arg Leu Pro Glu  
 35 40 45  
 Pro Asp Gly Glu Phe Arg Ala Ala Glu Ala Arg Ala Asn Pro Asp Phe  
 50 55 60  
 Gly Gly Ser Leu His Tyr Arg Cys Met Asp Val Thr Asp Asp Ala Asn  
 65 70 75 80  
 Thr Glu Ala Val Ile Ala Asp Ile Gly Ala Gln Gln Asn Arg Leu Asp  
 85 90 95  
 Gly Leu Ile Ala Ala Ala Gly Ile Asn His Val Ala Ser Ala Ile Asp  
 100 105 110  
 His Arg Pro Lys Asn Val Asp Asp Val Ile His Ile Asn Tyr Thr Gly  
 115 120 125  
 Val Phe Arg Ser Ala Val Ser Ala Lys Val Met Leu Asp Arg Lys  
 130 135 140  
 Cys His Gly Ser Ile Leu Leu Val Ala Ser Met Ser Gly Ile Val Ala  
 145 150 155 160  
 Asn Lys Gly Met Ala Ser Ala Ile Tyr Asn Ser Ser Lys Ala Ala Val  
 165 170 175  
 Ile Gln Leu Thr Arg Ser Leu Ala Met Glu Trp Ser Glu Ala Lys Glu  
 180 185 190  
 Asp Gly Thr Gly Gly Ile Arg Val Asn Cys Leu Cys Pro Gly His Ile  
 195 200 205  
 Glu Thr Pro Met Ala Lys Met Val Met Glu Lys Asp Pro Asp Thr Arg  
 210 215 220  
 Ala Leu Trp Glu Ser Glu Asn Met Met Lys Arg Leu Ala Arg Pro Glu  
 225 230 235 240  
 Glu Phe Arg Gly Ile Thr Leu Leu Leu Met Ser Asp Ala Ser Ser Phe  
 245 250 255  
 Met Thr Gly Ser Thr Val Val Val Asp Gly Gly His Thr Ala Trp  
 260 265 270

<210> 3351  
 <211> 774  
 <212> DNA  
 <213> Streptomyces natalensis

<220>  
 <221> CDS  
 <222> (1)..(774)  
 <223> transl\_table=11

<400> 3351  
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 Met Thr His Gln His Gly Leu Leu Ser Gly Lys Val Ser Leu Ile Thr 15  
 1 5 10  
 gga gcc agt agt ggg att ggc gcg gca acc gcg agg ctt ttt gcg cga 96  
 Gly Ala Ser Ser Gly Ile Gly Ala Ala Thr Ala Arg Leu Phe Ala Arg 20 25 30  
 gaa ggt gcg gcg gtg gtg ctt gcg gcc cgc cgg gtg gac cgc ctc cgc 144  
 Glu Gly Ala Ala Val Val Leu Ala Ala Arg Arg Val Asp Arg Leu Arg 35 40 45  
 gct ctt gtg tcg gag ata cgt cgg acc gga gcc gag gcg gcg tac atc 192  
 Ala Leu Val Ser Glu Ile Arg Arg Thr Gly Ala Glu Ala Ala Tyr Ile 50 55 60  
 gcg acg gat gtg tct cag gag gag gac gtg aga cgt gcc gtg gaa ttc 240  
 Ala Thr Asp Val Ser Gln Glu Glu Asp Val Arg Arg Ala Val Glu Phe 65 70 75 80

## PhoenixTemp32470.tmp.txt

act	gtg	gag	aag	tac	ggg	cg	ctg	gat	ctg	gca	ttc	aac	aac	gcg	ggc	288
Thr	Val	Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Leu	Ala	Phe	Asn	Asn	Ala	Gly	
				85					90					95		
gtc	ggc	tgt	gat	cac	gag	tcc	atg	cac	ttg	atg	caa	cag	gat	acg	tac	336
Val	Gly	Cys	Asp	His	Glu	Ser	Met	His	Leu	Met	Gln	Gln	Asp	Thr	Tyr	
			100					105					110			
gac	gac	gtg	atg	gga	acc	aat	gtc	cgt	ggg	gtg	tgg	cat	tgc	ctg	caa	384
Asp	Asp	Val	Met	Gly	Thr	Asn	Val	Arg	Gly	Val	Trp	His	Cys	Leu	Gln	
		115					120					125				
cac	gag	att	tcc	gcg	atg	ctg	cac	aac	ggc	gtg	ggc	ggg	tcc	atc	gtc	432
His	Glu	Ile	Ser	Ala	Met	Leu	His	Asn	Gly	Val	Gly	Gly	Ser	Ile	Val	
	130					135				140						
aac	aac	agc	agt	gtc	gcc	gga	ctg	cag	gcg	atc	cct	gcc	ggg	gcg	cct	480
Asn	Asn	Ser	Ser	Val	Ala	Gly	Leu	Gln	Ala	Ile	Pro	Ala	Gly	Ala	Pro	
145					150					155					160	
tac	atc	gcc	tcc	aag	cac	gcc	gtc	atc	ggg	ctg	acc	aag	gcg	gct	gcg	528
Tyr	Ile	Ala	Ser	Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Lys	Ala	Ala	Ala	
				165					170					175		
gcc	gaa	tac	gcg	ccg	cag	ggc	atc	cg	gtc	aac	tcc	gtg	gcg	ccc	ggg	576
Ala	Glu	Tyr	Ala	Pro	Gln	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Gly	
			180					185					190			
acg	acc	cgt	acc	gag	atc	att	gcc	ggg	tgg	ttc	gat	cgg	aac	ccc	ggg	624
Thr	Thr	Arg	Thr	Glu	Ile	Ile	Ala	Gly	Trp	Phe	Asp	Arg	Asn	Pro	Gly	
		195					200					205				
ctg	gag	gag	cag	ttg	cac	cgt	gcg	acg	ccg	cag	gcc	cgt	acc	gcc	gaa	672
Leu	Glu	Glu	Gln	Leu	His	Arg	Ala	Thr	Pro	Gln	Ala	Arg	Thr	Ala	Glu	
	210					215					220					
ccc	gag	gag	ata	gcc	cag	gcc	gtc	gcc	tgg	ttg	tgc	agc	gac	cgg	tct	720
Pro	Glu	Glu	Ile	Ala	Gln	Ala	Val	Ala	Trp	Leu	Cys	Ser	Asp	Arg	Ser	
225					230					235					240	
tcc	ttc	gtc	acg	ggg	gcg	gtg	ctg	ccc	gtg	gac	ggc	ggg	tac	acc	ctg	768
Ser	Phe	Val	Thr	Gly	Ala	Val	Leu	Pro	Val	Asp	Gly	Gly	Tyr	Thr	Leu	
				245					250					255		
gtg	tga															774
Val																

&lt;210&gt; 3352

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Streptomyces natalensis

&lt;400&gt; 3352

Met	Thr	His	Gln	His	Gly	Leu	Leu	Ser	Gly	Lys	Val	Ser	Leu	Ile	Thr	
1				5					10					15		
Gly	Ala	Ser	Ser	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Arg	Leu	Phe	Ala	Arg	
			20				25						30			
Glu	Gly	Ala	Ala	Val	Val	Leu	Ala	Ala	Arg	Arg	Val	Asp	Arg	Leu	Arg	
		35				40					45					
Ala	Leu	Val	Ser	Glu	Ile	Arg	Arg	Thr	Gly	Ala	Glu	Ala	Ala	Tyr	Ile	
	50				55					60						
Ala	Thr	Asp	Val	Ser	Gln	Glu	Glu	Asp	Val	Arg	Arg	Ala	Val	Glu	Phe	
65					70					75					80	
Thr	Val	Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Leu	Ala	Phe	Asn	Asn	Ala	Gly	
			85						90					95		
Val	Gly	Cys	Asp	His	Glu	Ser	Met	His	Leu	Met	Gln	Gln	Asp	Thr	Tyr	
			100					105					110			
Asp	Asp	Val	Met	Gly	Thr	Asn	Val	Arg	Gly	Val	Trp	His	Cys	Leu	Gln	
		115					120					125				
His	Glu	Ile	Ser	Ala	Met	Leu	His	Asn	Gly	Val	Gly	Gly	Ser	Ile	Val	
	130					135				140						
Asn	Asn	Ser	Ser	Val	Ala	Gly	Leu	Gln	Ala	Ile	Pro	Ala	Gly	Ala	Pro	
145					150					155					160	
Tyr	Ile	Ala	Ser	Lys	His	Ala	Val	Ile	Gly	Leu	Thr	Lys	Ala	Ala	Ala	
				165					170					175		
Ala	Glu	Tyr	Ala	Pro	Gln	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Gly	
			180					185					190			
Thr	Thr	Arg	Thr	Glu	Ile	Ile	Ala	Gly	Trp	Phe	Asp	Arg	Asn	Pro	Gly	
		195					200					205				

## PhoenixTemp32470.tmp.txt

Leu Glu Glu Gln Leu His Arg Ala Thr Pro Gln Ala Arg Thr Ala Glu  
 210 220  
 Pro Glu Glu Ile Ala Gln Ala Val Ala Trp Leu Cys Ser Asp Arg Ser  
 225 235 240  
 Ser Phe Val Thr Gly Ala Val Leu Pro Val Asp Gly Gly Tyr Thr Leu  
 245 255  
 Val

&lt;210&gt; 3353

&lt;211&gt; 939

&lt;212&gt; DNA

&lt;213&gt; Ixodes scapularis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(939)

&lt;400&gt; 3353

atg tta aag att cgc caa tgt gtt ttc tcg ctt ctc ctt tgc tgc ata	48
Met Leu Lys Ile Arg Gln Cys Val Phe Ser Leu Leu Leu Cys Cys Ile	
1 5 10 15	
att acg gga cgt gcg tcg aat gct gat gat tct gct gat tca cct ccg	96
Ile Thr Gly Arg Ala Ser Asn Ala Asp Ser Ala Asp Pro Pro	
20 25 30	
tcg gag tca cgc gcg aaa agt gga aat gaa aaa agt gag tca agc aaa	144
Ser Glu Ser Arg Ala Lys Ser Gly Asn Glu Lys Ser Glu Ser Ser Lys	
35 40 45	
aag tca caa tac gat cct gga acc tcc tcc ctg gaa ctg caa ggt cgg	192
Lys Ser Gln Tyr Asp Pro Gly Thr Ser Ser Leu Leu Gln Gly Arg	
50 55 60	
ctg gca ctt gtg act ggg gga gct agc ggc att ggc cgt agc gtc gcc	240
Leu Ala Leu Val Thr Gly Gly Ala Ser Gly Ile Gly Arg Ser Val Ala	
65 70 75 80	
atg gtc ctc gca cgt gag aac gtc acc gtc att gta gct gac atc aat	288
Met Val Leu Ala Arg Glu Asn Val Thr Val Ile Val Ala Asp Ile Asn	
85 90 95	
cag acc gga gga gcg caa act atc aaa tat cta aac ctg tta agc agt	336
Gln Thr Gly Gly Ala Gln Thr Ile Lys Tyr Leu Asn Leu Leu Ser Ser	
100 105 110	
cac ctc aaa cac aag gcg atc tac gtg gat gtt cga aat tca act tcg	384
His Leu Lys His Lys Ala Ile Tyr Val Asp Val Arg Asn Ser Thr Ser	
115 120 125	
gta gaa ttt ctc atc aaa tgc ata gag ctg gag tac agc aat atg acc	432
Val Glu Phe Leu Ile Lys Cys Ile Glu Leu Glu Tyr Ser Asn Met Thr	
130 135 140	
atc agc att gta gtg aac agc gct ggc att ttg cat gag att aca cca	480
Ile Ser Ile Val Val Asn Ser Ala Gly Ile Leu His Glu Ile Thr Pro	
145 150 155 160	
gtc gtc aat cta gct gac gaa aca ttc aat gac gtc atc agc acc aat	528
Val Val Asn Leu Ala Asp Glu Thr Phe Asn Asp Val Ile Ser Thr Asn	
165 170 175	
ctt aag ggt act ttt ctg gtg acc aaa gaa gcg gtg aag cac atg cta	576
Leu Lys Gly Thr Phe Leu Val Thr Lys Glu Ala Val Lys His Met Leu	
180 185 190	
gct cgg aat gtc acc gga gca gct atc gtg aac att gcg agc ata ctc	624
Ala Arg Asn Val Thr Gly Ala Ala Ile Val Asn Ile Ala Ser Ile Leu	
195 200 205	
ggc aag ggt ggc ttt cca gga ctc tcc gcc tac aca gcc tcc aag ggt	672
Gly Lys Gly Gly Phe Pro Gly Leu Ser Ala Tyr Thr Ala Ser Lys Gly	
210 215 220	
ggt gtc gtt gcg ttc acc aag gcc gtc gcc gtt gaa ctg gct aca agg	720
Gly Val Val Ala Phe Thr Lys Ala Val Ala Val Glu Leu Ala Thr Arg	
225 230 235 240	
ggt atc cgg gtt aat gcg att ctg ccc ggc ctt acc aac act ccc atg	768
Gly Ile Arg Val Asn Ala Ile Leu Pro Gly Leu Thr Asn Thr Pro Met	
245 250 255	
att cga aag tac gga aac gat act ata agg gag agg ctg gcg aag atg	816
Ile Arg Lys Tyr Gly Asn Asp Thr Ile Arg Glu Arg Leu Ala Lys Met	

PhoenixTemp32470.tmp.txt

												260													265													270	
att	cct	ctg	cag	cgt	att	gcg	gag	cca	ctc	gaa	atc	tcg	gaa	aca	att		864																						
Ile	Pro	Leu	Gln	Arg	Ile	Ala	Glu	Pro	Leu	Glu	Ile	Ser	Glu	Thr	Ile																								
																275																							
gtg	ttc	atg	tgc	agc	gtg	aaa	gca	tcc	tac	atg	act	gga	tct	aca	gtg		912																						
Val	Phe	Met	Cys	Ser	Val	Lys	Ala	Ser	Tyr	Met	Thr	Gly	Ser	Thr	Val																								
																290																							
gat	gtt	gcg	gga	gga	agc	atg	cta	tga										939																					
Asp	Val	Ala	Gly	Gly	Ser	Met	Leu																																
																305																							
																310																							

<210> 3354  
<211> 312  
<212> PRT  
<213> Ixodes scapularis

[illegible]

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<210> 3355
<211> 786
<212> DNA
<213> Streptomyces chartreusis
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<220>
<221> CDS
<222> (1)..(786)
<223> transl_table=11
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<400> 3355

## PhoenixTemp32470.tmp.txt

atg	acg	gac	aac	att	gag	cgg	aca	gcc	atc	gtc	acc	ggc	gcg	agc	aat		48
Met	Thr	Asp	Asn	Ile	Glu	Arg	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Asn		
1				5					10					15			
ggg	atc	ggc	cgg	gcg	atc	gcc	gcc	aca	ctg	gcg	gcg	gaa	ggc	gta	cgc		96
Gly	Ile	Gly	Arg	Ala	Ile	Ala	Ala	Thr	Leu	Ala	Ala	Glu	Gly	Val	Arg		
			20					25					30				
gta	cat	atc	tgc	ggc	agg	gac	gcc	gaa	acc	gtc	gag	aag	acg	gtg	acc		144
Val	His	Ile	Cys	Gly	Arg	Asp	Ala	Glu	Thr	Val	Glu	Lys	Thr	Val	Thr		
		35					40					45					
gaa	ctg	cgg	gcg	gac	aga	ggc	cag	gtc	agt	ggc	cag	gcg	tgc	gac	gtc		192
Glu	Leu	Arg	Ala	Asp	Arg	Gly	Gln	Val	Ser	Gly	Gln	Ala	Cys	Asp	Val		
	50					55				60							
acc	aag	ccc	gac	cag	gtg	acc	gcg	ttg	gtg	gcg	gac	tgc	gtc	gca	cgg		240
Thr	Lys	Pro	Asp	Gln	Val	Thr	Ala	Leu	Val	Ala	Asp	Cys	Val	Ala	Arg		
	65				70				75						80		
tac	gga	ccg	gtg	gac	atc	ctg	gtg	aac	aac	gcc	ggc	cgg	ccc	ggc	gga		288
Tyr	Gly	Pro	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Arg	Pro	Gly	Gly		
				85				90						95			
gga	atc	acc	gcg	aac	atc	gac	aac	gaa	ttg	tgg	tac	gcc	acc	atc	gac		336
Gly	Ile	Thr	Ala	Asn	Ile	Asp	Asn	Glu	Leu	Trp	Tyr	Ala	Thr	Ile	Asp		
			100					105					110				
acc	aat	ctc	aac	ggt	gtt	ttc	ctg	atg	tcc	aaa	tcc	gtg	ctg	aac	gaa		384
Thr	Asn	Leu	Asn	Gly	Val	Phe	Leu	Met	Ser	Lys	Ser	Val	Leu	Asn	Glu		
		115					120					125					
ggg	cg	atg	acg	gag	cgg	cag	aac	ggc	cg	atc	atc	aac	atc	gcc	tcg		432
Gly	Arg	Met	Thr	Glu	Arg	Gln	Asn	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser		
	130					135					140						
gtg	tgg	gga	aaa	cag	gga	acg	atc	gga	ggc	gcg	ccc	tac	gcg	gcc	gcc		480
Val	Trp	Gly	Lys	Gln	Gly	Thr	Ile	Gly	Gly	Ala	Pro	Tyr	Ala	Ala	Ala		
	145				150					155					160		
aaa	cac	ggc	gtc	atc	gga	ttc	agc	cg	tgc	ctc	gcg	ctg	gaa	ctc	gcg		528
Lys	His	Gly	Val	Ile	Gly	Phe	Ser	Arg	Cys	Leu	Ala	Leu	Glu	Leu	Ala		
				165				170						175			
aag	acc	ggg	atc	acg	gtc	aat	gct	gtg	tgc	ccc	gga	tat	gtc	gag	acc		576
Lys	Thr	Gly	Ile	Thr	Val	Asn	Ala	Val	Cys	Pro	Gly	Tyr	Val	Glu	Thr		
			180					185					190				
ccg	atg	tcg	gtc	aac	gta	cg	gcc	tgc	cag	gcg	ggc	atc	tgg	cag	gtg		624
Pro	Met	Ser	Val	Asn	Val	Arg	Ala	Cys	Gln	Ala	Gly	Ile	Trp	Gln	Val		
		195					200					205					
gac	gag	gag	gag	gcc	ctg	cg	cg	ctg	gcc	tcc	gac	atc	ccc	atc	ggc		672
Asp	Glu	Glu	Glu	Ala	Leu	Arg	Arg	Leu	Ala	Ser	Asp	Ile	Pro	Ile	Gly		
	210					215					220						
cgg	tac	agc	gag	ccg	gag	gag	gtc	gcc	tgg	atg	gtc	tcc	tac	ctc	gcc		720
Arg	Tyr	Ser	Glu	Pro	Glu	Glu	Val	Ala	Trp	Met	Val	Ser	Tyr	Leu	Ala		
	225				230				235					240			
tcg	tcc	aag	gcc	gcc	tcg	gtc	acc	ggc	cag	gcg	ctc	aac	gtg	tgc	ggc		768
Ser	Ser	Lys	Ala	Ala	Ser	Val	Thr	Gly	Gln	Ala	Leu	Asn	Val	Cys	Gly		
				245				250						255			
ggc	ttc	ggt	gtc	cac	tga												786
Gly	Phe	Gly	Val	His													
			260														

&lt;210&gt; 3356

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Streptomyces chartreusis

&lt;400&gt; 3356

Met	Thr	Asp	Asn	Ile	Glu	Arg	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Asn	
1				5					10					15		
Gly	Ile	Gly	Arg	Ala	Ile	Ala	Ala	Thr	Leu	Ala	Ala	Glu	Gly	Val	Arg	
			20					25					30			
Val	His	Ile	Cys	Gly	Arg	Asp	Ala	Glu	Thr	Val	Glu	Lys	Thr	Val	Thr	
		35					40					45				
Glu	Leu	Arg	Ala	Asp	Arg	Gly	Gln	Val	Ser	Gly	Gln	Ala	Cys	Asp	Val	
	50					55					60					
Thr	Lys	Pro	Asp	Gln	Val	Thr	Ala	Leu	Val	Ala	Asp	Cys	Val	Ala	Arg	
	65				70				75						80	
Tyr	Gly	Pro	Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Arg	Pro	Gly	Gly	

## PhoenixTemp32470.tmp.txt

85 90 95  
 Gly Ile Thr Ala Asn Ile Asp Asn Glu Leu Trp Tyr Ala Thr Ile Asp  
 100 105 110  
 Thr Asn Leu Asn Gly Val Phe Leu Met Ser Lys Ser Val Leu Asn Glu  
 115 120 125  
 Gly Arg Met Thr Glu Arg Gln Asn Gly Arg Ile Ile Asn Ile Ala Ser  
 130 135 140  
 Val Trp Gly Lys Gln Gly Thr Ile Gly Gly Ala Pro Tyr Ala Ala Ala  
 145 150 155 160  
 Lys His Gly Val Ile Gly Phe Ser Arg Cys Leu Ala Leu Glu Leu Ala  
 165 170 175  
 Lys Thr Gly Ile Thr Val Asn Ala Val Cys Pro Gly Tyr Val Glu Thr  
 180 185 190  
 Pro Met Ser Val Asn Val Arg Ala Cys Gln Ala Gly Ile Trp Gln Val  
 195 200 205  
 Asp Glu Glu Glu Ala Leu Arg Arg Leu Ala Ser Asp Ile Pro Ile Gly  
 210 215 220  
 Arg Tyr Ser Glu Pro Glu Val Ala Trp Met Val Ser Tyr Leu Ala  
 225 230 235 240  
 Ser Ser Lys Ala Ala Ser Val Thr Gly Gln Ala Leu Asn Val Cys Gly  
 245 250 255  
 Gly Phe Gly Val His  
 260

&lt;210&gt; 3357

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Digitalis purpurea

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 3357

atg	tcg	tca	aag	cca	agg	ttg	gat	ggt	aaa	gtg	gca	atc	atc	acc	gga	48
Met	Ser	Ser	Lys	Pro	Arg	Leu	Asp	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
1				5				10						15		
gct	gct	agc	ggc	atc	ggc	gag	gag	gcg	gca	aga	ttg	ttc	gtg	gag	cat	96
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Ala	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
ggc	gct	tca	gtg	gtg	gtg	gcg	gac	gtc	cag	gac	gaa	ttg	ggt	cgc	cag	144
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40					45				
gtc	gtc	gct	tcc	gta	aac	tct	gac	gac	aag	ata	agt	tac	cac	cac	tgc	192
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	His	His	Cys	
		50				55					60					
gac	gtc	aga	gat	gaa	aaa	caa	gtg	gag	gcc	acc	gtc	cgc	tac	gcg	gtg	240
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Glu	Ala	Thr	Val	Arg	Tyr	Ala	Val	
				70				75						80		
gag	aaa	tac	ggg	cgc	ctc	gac	gtc	atg	gtg	agc	aac	gcc	gga	gtc	ttc	288
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Val	Met	Val	Ser	Asn	Ala	Gly	Val	Phe	
				85				90						95		
ggg	gcc	ttg	atg	acg	acc	gta	atc	gat	ctc	gac	atg	ggt	gac	ttt	gaa	336
Gly	Ala	Leu	Met	Thr	Thr	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			
aat	gta	ttg	gcg	act	aac	gtg	cgc	ggg	ggt	gcc	aat	act	ata	aag	cac	384
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
			115				120					125				
gcg	gca	cgc	gcc	atg	gtg	gag	ggg	aat	gtc	aag	ggg	tcc	atc	att	tgc	432
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Asn	Val	Lys	Gly	Ser	Ile	Ile	Cys	
			130			135					140					
acc	gcc	agc	gtg	tcg	gcg	agt	ctt	gga	ggc	atg	ggc	ccg	ccc	gct	tac	480
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
					150				155					160		
acg	gct	tcc	aaa	cac	gcc	ggt	ctg	ggc	ctg	gtc	aag	gcg	gct	tgc	gcc	528
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Ala	Ala	Cys	Ala	
				165				170						175		
gag	ttg	ggg	gtg	cac	ggg	atc	cga	gtc	aac	tcg	gtg	gcg	ccg	tac	ggt	576
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	

## PhoenixTemp32470.tmp.txt

gtg	gcg	acc	180	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	624
			195				200					205				
atg	gag	gac	gcc	aac	tgc	tcc	agg	gct	aat	ttg	aag	ggg	gtg	ggt	ttg	672
Met	Glu	Asp	Ala	Asn	Cys	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
			210			215					220					
aag	gct	aag	cat	gta	gct	gag	gcg	gct	ctc	ttc	ctt	gct	tcc	gat	gag	720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
					230					235					240	
tcg	gct	tat	gtc	agt	ggg	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
gtc	gtg	cgt	tag													780
Val	Val	Arg														

&lt;210&gt; 3358

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis purpurea

&lt;400&gt; 3358

Met	Ser	Ser	Lys	Pro	Arg	Leu	Asp	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
1				5					10					15		
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Ala	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40					45				
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	His	His	Cys	
	50					55					60					
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Glu	Ala	Thr	Val	Arg	Tyr	Ala	Val	
65				70					75						80	
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Val	Met	Val	Ser	Asn	Ala	Gly	Val	Phe	
				85				90						95		
Gly	Ala	Leu	Met	Thr	Thr	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
		115					120					125				
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Asn	Val	Lys	Gly	Ser	Ile	Ile	Cys	
	130					135					140					
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
145					150					155					160	
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Ala	Ala	Cys	Ala	
			165					170						175		
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
		195					200					205				
Met	Glu	Asp	Ala	Asn	Cys	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
	210					215					220					
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
225					230					235					240	
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
Val	Val	Arg														

&lt;210&gt; 3359

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Digitalis thapsi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 3359

atg	tcg	tca	aag	cca	agg	ttg	gag	ggt	aaa	gtg	gca	atc	atc	acc	ggg	
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--

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## PhoenixTemp32470.tmp.txt

Met 1	Ser	Ser	Lys	Pro 5	Arg	Leu	Glu	Gly	Lys 10	Val	Ala	Ile	Ile	Thr 15	Gly	
gcc Ala	gct Ala	agc Ser	ggc Gly 20	atc Ile	ggc Gly	gag Glu	gag Glu	gcg Ala 25	gca Ala	aga Arg	ttg Leu	ttc Phe	gtg Val 30	gag Glu	cat His	96
ggc Gly	gcc Ala	tca Ser 35	gtg Val	gtg Val	gtg Val	gcg Ala	gac Asp 40	gtc Val	cag Gln	gac Asp	gaa Glu	ttg Leu 45	ggg Gly	cgc Arg	cag Gln	144
gtc Val	gtc Val	gct Ala	tcc Ser	gta Val	aac Asn	tct Ser 55	gac Asp	gac Asp	aag Lys	ata Ile	agt Ser 60	tac Tyr	tac Tyr	cac His	tgc Cys	192
gac Asp 65	gtc Val	aga Arg	gat Asp	gaa Glu	aaa Lys 70	caa Gln	gtg Val	gcg Ala	gcc Ala	acc Thr 75	gtc Val	cgc Arg	tac Tyr	gcg Ala	gtg Val 80	240
gag Glu	aaa Lys	tac Tyr	ggg Gly	cgc Arg 85	ctc Leu	gac Asp	gtc Val	atg Met	atg Met 90	agc Ser	aac Asn	gcc Ala	gga Gly	gtc Val 95	ttc Phe	288
ggt Gly	gcc Ala	ttg Leu 100	atg Met	acg Thr	aat Asn	gta Val	atc Ile	gat Asp 105	ctc Leu	gac Asp	atg Met	gtt Val 110	gac Asp	ttt Phe	gaa Glu	336
aat Asn	gta Val	ttg Leu 115	gcg Ala	act Thr	aac Asn	gtg Val	cgc Arg 120	gga Gly	ggt Val	gcc Ala	aac Asn	act Thr 125	ata Ile	aag Lys	cac His	384
gcg Ala	gca Ala 130	cga Arg	gcc Ala	atg Met	gtg Val	gag Glu 135	ggg Gly	aag Lys	gtc Val	aag Lys	ggg Gly 140	tcc Ser	atc Ile	att Ile	tgc Cys	432
acc Thr 145	gcc Ala	agc Ser	gtg Val	tcg Ser	gcg Ala 150	agc Ser	ctt Leu	gga Gly	ggc Gly	atg Met 155	ggc Gly	ccg Pro	ccc Pro	gct Ala	tac Tyr 160	480
acg Thr	gct Ala	tcc Ser	aaa Lys	cac His 165	gcc Ala	gtc Val	ctg Leu	ggc Gly	cta Leu 170	gtc Val	aag Lys	ggc Gly	gct Ala	tgc Cys 175	gcc Ala	528
gag Glu	ttg Leu	ggg Gly	gtg Val 180	cac His	ggg Gly	atc Ile	cga Arg	gtc Val 185	aac Asn	tcg Ser	gtg Val	gcg Ala	ccg Pro 190	tac Tyr	ggt Gly	576
gtg Val	gcg Ala	acc Thr 195	ccg Pro	atg Met	ccg Pro	tgc Cys	agt Ser 200	gct Ala	tac Tyr	gga Gly	atg Met	aca Thr 205	ccg Pro	agt Ser	cag Gln	624
atg Met	gag Glu 210	gag Glu	gcc Ala	aat Asn	aac Asn	tcc Ser 215	agg Arg	gct Ala	aac Asn	ttg Leu	aag Lys 220	ggg Gly	gtg Val	gtt Val	ttg Leu	672
aag Lys 225	gct Ala	aag Lys	cat His	gta Val	gct Ala 230	gag Glu	gcg Ala	gct Ala	ctc Leu	ttc Phe 235	ttg Leu	gct Ala	tcc Ser	gat Asp	gag Glu 240	720
tcg Ser	gct Ala	tat Tyr	gtc Val	agt Ser 245	ggg Gly	caa Gln	aac Asn	ttg Leu	gct Ala 250	gtc Val	gac Asp	ggc Gly	ggc Gly	ttc Phe 255	acc Thr	768
gtc Val	gtg Val	cgt Arg	tag													780

&lt;210&gt; 3360

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis thapsi

&lt;400&gt; 3360

Met 1	Ser	Ser	Lys	Pro 5	Arg	Leu	Glu	Gly	Lys 10	Val	Ala	Ile	Ile	Thr 15	Gly	
Ala	Ala	Ser	Gly 20	Ile	Gly	Glu	Glu	Ala 25	Ala	Arg	Leu	Phe	Val 30	Glu	His	
Gly	Ala	Ser 35	Val	Val	Val	Ala	Asp 40	Val	Gln	Asp	Glu	Leu 45	Gly	Arg	Gln	
Val	Val	Ala	Ser	Val	Asn	Ser 55	Asp	Asp	Lys	Ile	Ser	Tyr 60	Tyr	His	Cys	
Asp 65	Val	Arg	Asp	Glu	Lys 70	Gln	Val	Ala	Ala	Thr 75	Val	Arg	Tyr	Ala	Val 80	
Glu	Lys	Tyr	Gly	Arg 85	Leu	Asp	Val	Met	Met 90	Ser	Asn	Ala	Gly	Val 95	Phe	

## PhoenixTemp32470.tmp.txt

Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu  
 100 110  
 Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His  
 115 120 125  
 Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys  
 130 135 140  
 Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr  
 145 150 155 160  
 Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Gly Ala Cys Ala  
 165 170 175  
 Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly  
 180 185 190  
 Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln  
 195 200 205  
 Met Glu Glu Ala Asn Asn Ser Arg Ala Asn Leu Lys Gly Val Val Leu  
 210 215 220  
 Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr  
 245 250 255  
 Val Val Arg

<210> 3361  
 <211> 780  
 <212> DNA  
 <213> Digitalis parviflora

<220>  
 <221> CDS  
 <222> (1)..(780)

<400> 3361  
 atg tcg tca aag cca agg ttg gag ggt aaa gtg gca atc atc acc ggg 48  
 Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Ala Ile Ile Thr Gly 15  
 1 5 10  
 gcc gct agc ggc atc ggc gag gag gcg gca aga ttg ttc gtg gag cat 96  
 Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His 20 25 30  
 ggc gcc tca gtg gtg gtg gcg gac gtc cag gac gaa ttg ggg cgc cag 144  
 Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly Arg Gln 35 40 45  
 gtc gtc gct tcc gta aac tct gac gac aag ata agt tac tac cac tgc 192  
 Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr Tyr His Cys 50 55 60  
 gac gtc aga gat gaa aaa caa gtg gcg gcc acc gtc cgc tac gcg gtg 240  
 Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val 65 70 75 80  
 gag aaa tac ggg cgc ctc gac gtc atg atg agc aac gcc gga gtc ttc 288  
 Glu Lys Tyr Gly Arg Leu Asp Val Met Met Ser Asn Ala Gly Val Phe 85 90 95  
 ggt gcc ttg atg acg aat gta atc gat ctc gac atg gtt gac ttt gaa 336  
 Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu 100 105 110  
 aat gta ttg gcg act aac gtg cgc gga gtt gcc aac act ata aag cac 384  
 Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His 115 120 125  
 gcg gca cga gcc atg gtg gag ggg aag gtc aag ggg tcc atc att tgc 432  
 Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys 130 135 140  
 acc gcc agc gtg tcg gcg agc ctt gga ggc atg ggc ccg ccc gct tac 480  
 Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr 145 150 155 160  
 acg gct tcc aaa cac gcc gtc ctg ggc ctg gtc aag gcg gct tgc gcc 528  
 Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Ala Ala Cys Ala 165 170 175  
 gag ttg ggg gtg cac ggg atc cga gtc aac tcg gtg gcg ccg tac ggt 576  
 Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly 180 185 190

## PhoenixTemp32470.tmp.txt

gtg	gcg	acc	ccg	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	624
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
		195					200					205				
atg	gag	gac	gcc	aat	aac	tcc	agg	gct	aac	ttg	aag	ggg	gtg	ggt	ttg	672
Met	Glu	Asp	Ala	Asn	Asn	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
	210					215					220					
aag	gct	aag	cat	gtg	gct	gag	gcg	gct	ctc	ttc	ttg	gct	tcc	gat	gag	720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
	225				230					235					240	
tcg	gct	tat	gtc	agt	ggg	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
gtc	gtg	cgt	tag													780
Val	Val	Arg														

&lt;210&gt; 3362

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis parviflora

&lt;400&gt; 3362

Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
1				5					10					15		
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Ala	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
		35					40					45				
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	Tyr	His	Cys	
	50				55					60						
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Ala	Ala	Thr	Val	Arg	Tyr	Ala	Val	
65				70						75					80	
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Val	Met	Met	Ser	Asn	Ala	Gly	Val	Phe	
			85					90						95		
Gly	Ala	Leu	Met	Thr	Asn	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
		100						105					110			
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
	115						120					125				
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
	130					135				140						
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
145				150						155					160	
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Ala	Ala	Cys	Ala	
			165					170						175		
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
		180						185					190			
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
	195						200					205				
Met	Glu	Asp	Ala	Asn	Asn	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
	210					215					220					
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
225					230					235					240	
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
Val	Val	Arg														

&lt;210&gt; 3363

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Digitalis grandiflora

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 3363

atg	tcg	tca	aag	cca	agg	ttg	gag	ggt	aaa	gtg	gta	atc	atc	acc	gga	
Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Val	Ile	Ile	Thr	Gly	

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## PhoenixTemp32470.tmp.txt

1	5	10	15	
gcc gct agc ggc atc ggc gag gag gcg gca aga ttg ttc gtg gag cat				96
Ala Ala Ser Gly Ile Gly Glu Glu Ala Arg Leu Phe Val Glu His				
20	25	30		
ggc gcc tcg gtg gtg gtg gcg gac gtc cag gac gaa ttg ggg cac cag				144
Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly His Gln				
35	40	45		
gtc gtc gct tcc gta aac tct gac gac aag ata agt tac cac cac tgc				192
Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr His His Cys				
50	55	60		
gac gtc aga gat gaa aaa caa gtg gcg gcc acc gtc cgc tac gcg gtg				240
Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val				
65	70	75		
gag aaa tac ggg cgc ctc gac gtc atg atg agc aac gcc gga gtc ttc				288
Glu Lys Tyr Gly Arg Leu Asp Val Met Met Ser Asn Ala Gly Val Phe				
85	90	95		
ggg gcc ttg atg acg aac gta atc gat ctc gac atg gtt gac ttt gaa				336
Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Phe Glu				
100	105	110		
aat gta ttg gcg act aac gtg cgc gga gtt gcc aac act ata aag cac				384
Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His				
115	120	125		
gcg gca cga gcc atg gtg gag ggg aag gtc aag ggg tcc atc att tgc				432
Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys				
130	135	140		
acc gcc agc gtg tcg gcg agc ctt gga ggc atg ggc ccg ccc gct tac				480
Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr				
145	150	155		
acg gct tcc aaa cac gcc gtc ctg ggc ctg gtc aag gct gct tgc gcc				528
Thr Ala Ser Lys His Ala Val Leu Gly Val Lys Ala Ala Cys Ala				
165	170	175		
gag ttg ggg gtg cac ggg atc cga gtc aac tcg gtg gcg ccg tac ggt				576
Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly				
180	185	190		
gtg gcg acc ccg atg ccg tgc agt gct tac gga atg aca ccg agt cag				624
Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln				
195	200	205		
atg gag gac gcc aat agc tcc agg gct aac ttg aag ggc gtg gtt ttg				672
Met Glu Asp Ala Asn Ser Ser Arg Ala Asn Leu Lys Gly Val Val Leu				
210	215	220		
aag gct aag cat gta gct gag gcg gct ctc ttc ttg gct tcc gat gag				720
Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu				
225	230	235		
tcg gct tat gtc agt ggg caa aac ttg gct gtc gac ggc ggc ttc acc				768
Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr				
245	250	255		
gtc gtg cgt tag				780
Val Val Arg				

&lt;210&gt; 3364

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Digitalis grandiflora

&lt;400&gt; 3364

Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Val Ile Ile Thr Gly	
1	5
Ala Ala Ser Gly Ile Gly Glu Glu Ala Ala Arg Leu Phe Val Glu His	
20	25
Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly His Gln	
35	40
Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr His His Cys	
50	55
Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val	
65	70
Glu Lys Tyr Gly Arg Leu Asp Val Met Met Ser Asn Ala Gly Val Phe	
85	90
Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu	

## PhoenixTemp32470.tmp.txt

```

      100      105      110
Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His
115
Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys
130
Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr
145
Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Ala Ala Cys Ala
165
Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly
180
Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln
195
Met Glu Asp Ala Asn Ser Ser Arg Ala Asn Leu Lys Gly Val Val Leu
210
Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu
225
Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr
245
Val Val Arg
250
255

```

&lt;210&gt; 3365

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; uncultured bacterium

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(783)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3365

```

atg ctg aag aac aag acc gcc atc gtg acc ggc tcg acc agc ggg atc      48
Met Leu Lys Asn Lys Thr Ala Ile Val Thr Gly Ser Thr Ser Gly Ile
1      5      10      15
ggc ctg ggt atc gcc cgc gcg ctc ggc ggt gcg ggc gcc aac ctg atg      96
Gly Leu Gly Ile Ala Arg Ala Leu Gly Gly Ala Gly Ala Asn Leu Met
20      25      30
ctc aac ggc ttc ggc gag gcg cag gag atc gaa cgc ctg cgt gcg gcg      144
Leu Asn Gly Phe Gly Glu Ala Gln Glu Ile Glu Arg Leu Arg Ala Ala
35      40      45
ctg gcg gcc gaa ttc aaa gtg aac gtc gcc tac agc ggc gcc gac atg      192
Leu Ala Ala Glu Phe Lys Val Asn Val Ala Tyr Ser Gly Ala Asp Met
50      55      60
tcc aag ccg gcg cag att cag gac atg gtg cgc atg gcg acg aag gaa      240
Ser Lys Pro Ala Gln Ile Gln Asp Met Val Arg Met Ala Thr Lys Glu
65      70      75      80
ctg ggg tcg gtc gac att ctc gtc aac aac gcc ggc atc cag cac acg      288
Leu Gly Ser Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Thr
85      90      95
gcg tcg gtc gaa gag ttt ccg gac gat cgc tgg gat gcc gtg atc gcc      336
Ala Ser Val Glu Glu Phe Pro Asp Asp Arg Trp Asp Ala Val Ile Ala
100      105      110
atc aac ctg tcg tcc aac ttt cat gcg atc aag gcg gtg ctg ccg cag      384
Ile Asn Leu Ser Ser Asn Phe His Ala Ile Lys Ala Val Leu Pro Gln
115      120      125
atg aag agc cgc aac tgg ggc cgg atc gtc aac atc gct tcg gtg cac      432
Met Lys Ser Arg Asn Trp Gly Arg Ile Val Asn Ile Ala Ser Val His
130      135      140
gga ctg gtc gcc tcg aca cac aag gcc gcc tac gtc gct gcc aag cac      480
Gly Leu Val Ala Ser Thr His Lys Ala Ala Tyr Val Ala Ala Lys His
145      150      155      160
ggt gtg gtt ggg ttg acc aag gta gtg gcc ctg gaa atg gcc agg aca      528
Gly Val Val Gly Leu Thr Lys Val Val Ala Leu Glu Met Ala Arg Thr
165      170      175
ggc atc acc tgc aac gcc atc tgc ccc ggc tgg gtg ctg acg ccg ctc      576
Gly Ile Thr Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu
180      185      190

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## PhoenixTemp32470.tmp.txt

gtg	caa	aag	cag	atc	gac	gac	cgg	gcc	aag	gcc	gaa	agc	att	gcg	gcc	624
Val	Gln	Lys	Gln	Ile	Asp	Asp	Arg	Ala	Lys	Ala	Glu	Ser	Ile	Ala	Ala	
		195					200					205				
gac	aag	gcg	aag	gcg	gaa	ctg	ctg	gcc	gaa	aag	cag	cct	tcc	ggc	gaa	672
Asp	Lys	Ala	Lys	Ala	Glu	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Gly	Glu	
		210				215					220					
ttc	gcc	acg	ccc	gag	cag	atg	ggc	gcc	ctg	tgc	gtg	ttc	ctg	tgc	tcg	720
Phe	Ala	Thr	Pro	Glu	Gln	Met	Gly	Ala	Leu	Cys	Val	Phe	Leu	Cys	Ser	
225					230					235					240	
gag	gcc	gcg	gcg	cag	atg	cgc	ggc	gtg	gcg	ctg	ccg	gtc	gac	ggc	ggc	768
Glu	Ala	Ala	Ala	Gln	Met	Arg	Gly	Val	Ala	Leu	Pro	Val	Asp	Gly	Gly	
				245					250					255		
tgg	ctg	gcg	caa	tag												783
Trp	Leu	Ala	Gln													
			260													

<210> 3366  
 <211> 260  
 <212> PRT  
 <213> uncultured bacterium

<400> 3366  
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 1 5 10 15  
 Gly Leu Gly Ile Ala Arg Ala Leu Gly Gly Ala Gly Ala Asn Leu Met  
 20 25 30  
 Leu Asn Gly Phe Gly Glu Ala Gln Glu Ile Glu Arg Leu Arg Ala Ala  
 35 40 45  
 Leu Ala Ala Glu Phe Lys Val Asn Val Ala Tyr Ser Gly Ala Asp Met  
 50 55 60  
 Ser Lys Pro Ala Gln Ile Gln Asp Met Val Arg Met Ala Thr Lys Glu  
 65 70 75 80  
 Leu Gly Ser Val Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Thr  
 85 90 95  
 Ala Ser Val Glu Phe Pro Asp Asp Arg Trp Asp Ala Val Ile Ala  
 100 105 110  
 Ile Asn Leu Ser Ser Asn Phe His Ala Ile Lys Ala Val Leu Pro Gln  
 115 120 125  
 Met Lys Ser Arg Asn Trp Gly Arg Ile Val Asn Ile Ala Ser Val His  
 130 135 140  
 Gly Leu Val Ala Ser Thr His Lys Ala Ala Tyr Val Ala Ala Lys His  
 145 150 155 160  
 Gly Val Val Gly Leu Thr Lys Val Val Ala Leu Glu Met Ala Arg Thr  
 165 170 175  
 Gly Ile Thr Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu  
 180 185 190  
 Val Gln Lys Gln Ile Asp Asp Arg Ala Lys Ala Glu Ser Ile Ala Ala  
 195 200 205  
 Asp Lys Ala Lys Ala Glu Leu Leu Ala Glu Lys Gln Pro Ser Gly Glu  
 210 215 220  
 Phe Ala Thr Pro Glu Gln Met Gly Ala Leu Cys Val Phe Leu Cys Ser  
 225 230 235 240  
 Glu Ala Ala Ala Gln Met Arg Gly Val Ala Leu Pro Val Asp Gly Gly  
 245 250 255  
 Trp Leu Ala Gln  
 260

<210> 3367  
 <211> 780  
 <212> DNA  
 <213> Streptomyces griseoruber

<220>  
 <221> CDS  
 <222> (1)..(780)  
 <223> transl\_table=11

<400> 3367  
 atg tcc cgt ccc cag acc gcc ttc gtc acc ggg gtc agc agc gga atc  
 Page 3039

## PhoenixTemp32470.tmp.txt

Met 1	Ser	Arg	Pro	Gln 5	Thr	Ala	Phe	Val	Thr 10	Gly	Val	Ser	Ser	Gly 15	Ile	
ggc Gly	ctg Leu	gcg Ala	gtc Val 20	gcc Ala	cgc Arg	acc Thr	ctc Leu	gcc Ala 25	gcc Ala	cgg Arg	ggg Gly	atc Ile	gcc Ala 30	gtc Val	tac Tyr	96
gga Gly	tgc Cys	gcc Ala 35	cgg Arg	gac Asp	gcc Ala	aag Lys	aac Asn 40	gtc Val	tgc Ser	gcc Ala	gcg Ala	gtc Val 45	gac Asp	ggc Gly	ctg Leu	144
cgc Arg	gcc Ala 50	gcc Ala	ggt Gly	cac His	gac Asp	gtc Val 55	gac Asp	ggg Gly	tcc Ser	tcc Ser	tgc Cys 60	gac Asp	gtc Val	acg Thr	tgc Ser	192
acc Thr 65	gac Asp	gag Glu	gtg Val	cat His	gcc Ala 70	gcc Ala	gtc Val	gcg Ala	gcc Ala	gcc Ala 75	ggt Val	gag Glu	cgc Arg	ttc Phe	ggc Gly 80	240
ccc Pro	atc Ile	ggc Gly	att Ile 85	ctg Leu	gtc Val	aac Asn	agc Ser	gcc Ala	ggc Gly 90	cgc Arg	aac Asn	ggc Gly	ggc Gly	ggg Gly 95	gag Glu	288
acc Thr	gcc Ala	gac Asp	ctc Leu 100	gac Asp	gac Asp	gcc Ala	ctc Leu	tgg Trp 105	gcg Ala	gac Asp	gtc Val	ctc Leu	gac Asp 110	acc Thr	aac Asn	336
ctg Leu	acc Thr 115	ggt Gly	gtc Val	ttc Phe	cgg Arg	gtc Val	acc Thr 120	cgg Arg	gag Glu	gtg Val	ctg Leu	cgg Arg 125	gcc Ala	ggg Gly	ggc Gly	384
atg Met 130	cgc Arg	gag Glu	gag Ala	ggc Gly	tgg Trp	ggc Gly 135	agg Arg	atc Ile	gtc Val	aac Asn	atc Ile 140	gcc Ala	tcc Ser	acc Thr	ggg Gly	432
ggc Gly 145	aag Lys	cag Gln	gga Gly	gtg Val 150	atg Met	tac Tyr	gcc Ala	gcc Ala	ccc Pro	tac Tyr 155	acg Thr	gcc Ala	tcg Ser	aag Lys	cac His 160	480
ggt Gly	gtc Val	gtc Val	ggc Gly	ttc Phe 165	acc Thr	aag Lys	tcc Ser	gtc Val	ggc Gly 170	ttc Phe	gaa Glu	ctg Leu	gcc Ala	aag Lys 175	acg Thr	528
ggc Gly	atc Ile	acc Thr	gtc Val 180	aac Asn	gcc Ala	gtc Val	tgc Cys	ccc Pro 185	ggt Gly	tac Tyr	gtg Val	gag Glu	acg Thr 190	ccg Pro	atg Met	576
gcg Ala	gag Glu	cgg Arg 195	gtc Val	cgc Arg	gag Glu	ggc Gly	tac Tyr 200	gca Ala	cgg Arg	cac His	tgg Trp	ggc Gly 205	gtg Val	acc Thr	gag Glu	624
cag Gln	gag Glu 210	gtc Val	cat His	gag Glu	cgc Arg	ttc Phe 215	aac Asn	gcc Ala	aag Lys	atc Ile	ccg Pro 220	ttg Leu	ggc Gly	cgt Arg	tac Tyr	672
tcc Ser 225	acc Thr	cct Pro	gag Glu	gag Glu	gtg Val 230	gag Ala	ggc Gly	ctc Leu	gtg Val	ggc Gly 235	tac Tyr	ctg Leu	gtc Val	acg Thr	gac Asp 240	720
gcc Ala	gcc Ala	gcc Ala	tcc Ser 245	atc Ile	acg Thr	gag Ala	cag Gln	gcc Ala	ctg Leu 250	aac Asn	gtc Val	tgc Cys	ggc Gly	ggc Gly 255	ctg Leu	768
ggc Gly	aac Asn	tac Tyr	tga													780

&lt;210&gt; 3368

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Streptomyces griseoruber

&lt;400&gt; 3368

Met 1	Ser	Arg	Pro	Gln 5	Thr	Ala	Phe	Val	Thr 10	Gly	Val	Ser	Ser	Gly 15	Ile	
Gly	Leu	Ala	Val 20	Ala	Arg	Thr	Leu	Ala 25	Ala	Arg	Gly	Ile	Ala 30	Val	Tyr	
Gly	Cys	Ala 35	Arg	Asp	Ala	Lys	Asn 40	Val	Ser	Ala	Ala	Val 45	Asp	Gly	Leu	
Arg	Ala 50	Ala	Gly	His	Asp	Val 55	Asp	Gly	Ser	Ser	Cys 60	Asp	Val	Thr	Ser	
Thr 65	Asp	Glu	Val	His	Ala 70	Ala	Val	Ala	Ala	Ala 75	Val	Glu	Arg	Phe	Gly 80	
Pro	Ile	Gly	Ile	Leu 85	Val	Asn	Ser	Ala	Gly 90	Arg	Asn	Gly	Gly	Gly 95	Glu	

## PhoenixTemp32470.tmp.txt

Thr Ala Asp Leu Asp Asp Ala Leu Trp Ala Asp Val Leu Asp Thr Asn  
 100 105 110  
 Leu Thr Gly Val Phe Arg Val Thr Arg Glu Val Leu Arg Ala Gly Gly  
 115 120 125  
 Met Arg Glu Ala Gly Trp Gly Arg Ile Val Asn Ile Ala Ser Thr Gly  
 130 135 140  
 Gly Lys Gln Gly Val Met Tyr Ala Ala Pro Tyr Thr Ala Ser Lys His  
 145 150 155 160  
 Gly Val Val Gly Phe Thr Lys Ser Val Gly Phe Glu Leu Ala Lys Thr  
 165 170 175  
 Gly Ile Thr Val Asn Ala Val Cys Pro Gly Tyr Val Glu Thr Pro Met  
 180 185 190  
 Ala Glu Arg Val Arg Glu Gly Tyr Ala Arg His Trp Gly Val Thr Glu  
 195 200 205  
 Gln Glu Val His Glu Arg Phe Asn Ala Lys Ile Pro Leu Gly Arg Tyr  
 210 215 220  
 Ser Thr Pro Glu Glu Val Ala Gly Leu Val Gly Tyr Leu Val Thr Asp  
 225 230 235 240  
 Ala Ala Ala Ser Ile Thr Ala Gln Ala Leu Asn Val Cys Gly Gly Leu  
 245 250 255  
 Gly Asn Tyr

&lt;210&gt; 3369

&lt;211&gt; 885

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(885)

&lt;400&gt; 3369

atg	gtg	atg	ggg	caa	gaa	cag	agc	agg	gtt	gac	gat	gtt	gac	tgg	att	48
Met	Val	Met	Gly	Gln	Glu	Gln	Ser	Arg	Val	Asp	Asp	Val	Asp	Trp	Ile	
1				5					10					15		
cgt	caa	cag	ttt	ctc	ctc	tgt	gtc	aag	acc	cga	aag	gtt	tac	acg	ttg	96
Arg	Gln	Gln	Phe	Leu	Leu	Cys	Val	Lys	Thr	Arg	Lys	Val	Tyr	Thr	Leu	
			20					25					30			
gct	gga	aag	gtg	gcc	gtg	atc	acc	ggg	ggc	gca	agc	ggc	atc	ggc	gag	144
Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
		35				40						45				
gcg	acg	gcc	aag	gag	ttc	atc	cgc	aat	ggc	gcc	aag	gtc	atc	atc	gcc	192
Ala	Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	Ala	
	50				55				60							
gac	gta	caa	gac	gat	ctc	ggc	cac	acc	gtc	gct	gcc	gag	ctc	ggc	ccg	240
Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Glu	Glu	Leu	Gly	Pro	
	65				70				75						80	
ggc	tcg	gcc	tac	acc	cgc	tgc	gac	gtc	acc	gac	gag	gcg	cag	atc	gcg	288
Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	
			85					90					95			
gcg	acc	gtg	gac	ctt	gcc	gtg	gcg	cgc	cac	ggc	cac	ctt	gac	atc	ctg	336
Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	Leu	Asp	Ile	Leu	
			100					105					110			
tac	aac	aac	gcc	ggg	atc	aca	agc	tcc	tct	gtg	ggg	cac	ctt	gcc	tcc	384
Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	His	Leu	Ala	Ser	
			115				120					125				
ctc	gac	ctc	gcc	gac	ttc	gac	cgc	gtc	atg	gcg	gtg	aac	gcc	cgg	gcg	432
Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	
	130					135					140					
gtg	ctc	gcc	ggc	atc	aag	cac	gcc	gcg	cgc	gtg	atg	gca	cca	cga	cgc	480
Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	
	145				150					155					160	
acc	ggc	tcc	atc	ctc	tgc	acg	gcc	agc	gtg	gcg	ggc	atg	atg	ggc	ggc	528
Thr	Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	Met	Met	Gly	Gly	
				165					170					175		
gag	atg	ccc	cac	gcg	tac	aac	gtc	tcc	aag	gcg	gcg	gtc	ata	ggg	gtg	576
Glu	Met	Pro	His	Ala	Tyr	Asn	Val	Ser	Lys	Ala	Ala	Val	Ile	Gly	Val	
			180					185					190			



## PhoenixTemp32470.tmp.txt

gtg	cgg	tcc	gcc	gcc	ggc	gag	ctg	gca	cgc	cac	ggc	gtg	cgg	ctg	aac	624
Val	Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Leu	Asn	
		195					200					205				
gcg	atc	tcg	ccg	ctc	ggc	atc	gcg	acg	cca	ctg	gcg	atg	cgc	ggg	ttc	672
Ala	Ile	Ser	Pro	Leu	Gly	Ile	Ala	Thr	Pro	Leu	Ala	Met	Arg	Gly	Phe	
	210					215					220					
ggc	gac	atg	ctg	gcg	tgg	gcg	gac	gcc	gag	cgg	gtg	agg	cgg	ctc	atc	720
Gly	Asp	Met	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Val	Arg	Arg	Leu	Ile	
225					230					235					240	
gag	gag	gac	atg	aac	gag	cta	gag	ggc	gcg	acg	ctg	gag	gcg	gag	gac	768
Glu	Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Thr	Leu	Glu	Ala	Glu	Asp	
				245				250						255		
atc	gcg	agg	gcg	gcg	gtg	tac	ctc	gcc	tcc	gac	gag	gcc	aag	tac	gtc	816
Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	
			260					265					270			
acc	ggg	cat	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acc	gtc	ggg	aag	cgg	864
Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Arg	
		275					280					285				
ctc	aac	gtg	gcg	cgt	gct	tga										885
Leu	Asn	Val	Ala	Arg	Ala											
		290														

&lt;210&gt; 3370

&lt;211&gt; 294

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3370

Met	Val	Met	Gly	Gln	Glu	Gln	Ser	Arg	Val	Asp	Asp	Val	Asp	Trp	Ile	
1				5					10					15		
Arg	Gln	Gln	Phe	Leu	Leu	Cys	Val	Lys	Thr	Arg	Lys	Val	Tyr	Thr	Leu	
			20					25					30			
Ala	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	
		35					40					45				
Ala	Thr	Ala	Lys	Glu	Phe	Ile	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	Ala	
	50					55					60					
Asp	Val	Gln	Asp	Asp	Leu	Gly	His	Thr	Val	Ala	Ala	Glu	Leu	Gly	Pro	
65					70					75					80	
Gly	Ser	Ala	Tyr	Thr	Arg	Cys	Asp	Val	Thr	Asp	Glu	Ala	Gln	Ile	Ala	
			85						90					95		
Ala	Thr	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	His	Leu	Asp	Ile	Leu	
			100					105					110			
Tyr	Asn	Asn	Ala	Gly	Ile	Thr	Ser	Ser	Ser	Val	Gly	His	Leu	Ala	Ser	
		115					120					125				
Leu	Asp	Leu	Ala	Asp	Phe	Asp	Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ala	
	130					135				140						
Val	Leu	Ala	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ala	Pro	Arg	Arg	
145				150						155					160	
Thr	Gly	Ser	Ile	Leu	Cys	Thr	Ala	Ser	Val	Ala	Gly	Met	Met	Gly	Gly	
			165						170					175		
Glu	Met	Pro	His	Ala	Tyr	Asn	Val	Ser	Lys	Ala	Ala	Val	Ile	Gly	Val	
			180					185					190			
Val	Arg	Ser	Ala	Ala	Gly	Glu	Leu	Ala	Arg	His	Gly	Val	Arg	Leu	Asn	
		195					200					205				
Ala	Ile	Ser	Pro	Leu	Gly	Ile	Ala	Thr	Pro	Leu	Ala	Met	Arg	Gly	Phe	
	210					215					220					
Gly	Asp	Met	Leu	Ala	Trp	Ala	Asp	Ala	Glu	Arg	Val	Arg	Arg	Leu	Ile	
225					230					235					240	
Glu	Glu	Asp	Met	Asn	Glu	Leu	Glu	Gly	Ala	Thr	Leu	Glu	Ala	Glu	Asp	
				245					250					255		
Ile	Ala	Arg	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ala	Lys	Tyr	Val	
			260					265					270			
Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Arg	
		275					280					285				
Leu	Asn	Val	Ala	Arg	Ala											
		290														

&lt;210&gt; 3371

&lt;211&gt; 738

&lt;212&gt; DNA

&lt;213&gt; Neurospora crassa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(738)

&lt;400&gt; 3371

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atg gat ctc act ggt tcg gca ttc gtc atc gga gca agc ggt att ggc      48
Met Asp Leu Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly
  1          5          10          15
aag gca tgc gcg ttg gcc ttt gcc cgg tat ggc gtt cga ggc atc gtc      96
Lys Ala Cys Ala Leu Ala Phe Ala Arg Tyr Gly Val Arg Gly Ile Val
          20          25          30
ata gca gat ctc acg ctc gaa gct gct tct gcg gtg gca gca gag tca      144
Ile Ala Asp Leu Thr Leu Glu Ala Ala Ser Ala Val Ala Ala Glu Ser
          35          40          45
att gca tac gca cat cag gtc ctc ggt cgg atc gac tac gca gtg aac      192
Ile Ala Tyr Ala His Gln Val Leu Gly Arg Ile Asp Tyr Ala Val Asn
          50          55          60
agc gct ggt gtc gga gtc caa ttg gcc aat gaa atc gcc gaa gcc agc      240
Ser Ala Gly Val Gly Val Gln Leu Ala Asn Glu Ile Ala Glu Ala Ser
          65          70          75          80
gtc tcc gag ttt gaa aag atg ttc aag gtc aac gta act ggc acc ttc      288
Val Ser Glu Phe Glu Lys Met Phe Lys Val Asn Val Thr Gly Thr Phe
          85          90          95
atc gtc acc cgc gct ctc tcc gcc ctc atg aag acc caa gac ccc gtt      336
Ile Val Thr Arg Ala Leu Ser Ala Leu Met Lys Thr Gln Asp Pro Val
          100          105          110
ccc gtt gac gaa gcc gtt ccc gcg cgg ggt gtc tca cgg ggt agc att      384
Pro Val Asp Glu Ala Val Pro Ala Arg Gly Val Ser Arg Gly Ser Ile
          115          120          125
gtc aac gtg ggg tca gct tcg ggg ttt gtt gct acc cca ggc atg gtt      432
Val Asn Val Gly Ser Ala Ser Gly Phe Val Ala Thr Pro Gly Met Val
          130          135          140
caa tac aca gcc gcc aag cat gca gtc gtt gga atc acc aag aat gct      480
Gln Tyr Thr Ala Ala Lys His Ala Val Val Gly Ile Thr Lys Asn Ala
          145          150          155          160
gca ctt gat aac gcc aaa cat ggt atc cgg gtc aat agt gtg tgt cca      528
Ala Leu Asp Asn Ala Lys His Gly Ile Arg Val Asn Ser Val Cys Pro
          165          170          175          180
tcc tgg gtc gat aca ccc atg atc cgc aag gcc atg gat gac atc cct      576
Ser Trp Val Asp Thr Pro Met Ile Arg Lys Ala Met Asp Asp Ile Pro
          180          185          190
gaa ctc gga gag atg atc cag aaa gcc gtt ccg ctc gga agg att gcg      624
Glu Leu Gly Glu Met Ile Gln Lys Ala Val Pro Leu Gly Arg Ile Ala
          195          200          205
cta gcc gag gaa gtt gcc gat gcg gtc atg ttc ctc tct agt ccg aaa      672
Leu Ala Glu Glu Val Ala Asp Ala Val Met Phe Leu Ser Ser Pro Lys
          210          215          220
gcg agt tat gct acg ggg tgc aac atg atc ttg gat ggg ggt aca acg      720
Ala Ser Tyr Ala Thr Gly Cys Asn Met Ile Leu Asp Gly Gly Thr Thr
          225          230          235          240
ctt gct gct cat gtc tga
Leu Ala Ala His Val
          245

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&lt;210&gt; 3372

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 3372

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Met Asp Leu Thr Gly Ser Ala Phe Val Ile Gly Ala Ser Gly Ile Gly
  1          5          10          15
Lys Ala Cys Ala Leu Ala Phe Ala Arg Tyr Gly Val Arg Gly Ile Val
          20          25          30
Ile Ala Asp Leu Thr Leu Glu Ala Ala Ser Ala Val Ala Ala Glu Ser
          35          40          45

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## PhoenixTemp32470.tmp.txt

Ile Ala Tyr Ala His Gln Val Leu Gly Arg Ile Asp Tyr Ala Val Asn  
 50 55 60  
 Ser Ala Gly Val Gly Val Gln Leu Ala Asn Glu Ile Ala Glu Ala Ser  
 65 70 75 80  
 Val Ser Glu Phe Glu Lys Met Phe Lys Val Asn Val Thr Gly Thr Phe  
 85 90 95  
 Ile Val Thr Arg Ala Leu Ser Ala Leu Met Lys Thr Gln Asp Pro Val  
 100 105 110  
 Pro Val Asp Glu Ala Val Pro Ala Arg Gly Val Ser Arg Gly Ser Ile  
 115 120 125  
 Val Asn Val Gly Ser Ala Ser Gly Phe Val Ala Thr Pro Gly Met Val  
 130 135 140  
 Gln Tyr Thr Ala Ala Lys His Ala Val Val Gly Ile Thr Lys Asn Ala  
 145 150 155 160  
 Ala Leu Asp Asn Ala Lys His Gly Ile Arg Val Asn Ser Val Cys Pro  
 165 170 175  
 Ser Trp Val Asp Thr Pro Met Ile Arg Lys Ala Met Asp Asp Ile Pro  
 180 185 190  
 Glu Leu Gly Glu Met Ile Gln Lys Ala Val Pro Leu Gly Arg Ile Ala  
 195 200 205  
 Leu Ala Glu Glu Val Ala Asp Ala Val Met Phe Leu Ser Ser Pro Lys  
 210 215 220  
 Ala Ser Tyr Ala Thr Gly Cys Asn Met Ile Leu Asp Gly Gly Thr Thr  
 225 230 235 240  
 Leu Ala Ala His Val  
 245

&lt;210&gt; 3373

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Sinorhizobium sp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3373

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Met	Thr	Lys	Thr	Ala	Val	Ile	Thr	Gly	Ser	Thr	Ser	Gly	Ile	Gly	Leu	
1				5				10				15				
gca	atc	gcc	aag	gca	ttt	gcg	aag	acc	ggg	gcc	aat	atc	gtg	ctg	aat	96
Ala	Ile	Ala	Lys	Ala	Phe	Ala	Lys	Thr	Gly	Ala	Asn	Ile	Val	Leu	Asn	
			20					25				30				
ggt	ttc	ggt	tcg	gcc	gac	gag	atc	agg	acg	gtg	acg	gac	gag	gtg	gcg	144
Gly	Phe	Gly	Ser	Ala	Asp	Glu	Ile	Arg	Thr	Val	Thr	Asp	Glu	Val	Ala	
		35				40						45				
ggt	ctc	ggc	gcc	ggc	acg	gtg	ctg	cac	cat	ccg	gcc	gac	atg	acg	aag	192
Gly	Leu	Gly	Ala	Gly	Thr	Val	Leu	His	His	Pro	Ala	Asp	Met	Thr	Lys	
		50				55					60					
ccg	gcc	gag	atc	gcc	gac	ctg	atg	gcg	acc	gcc	gtc	gcg	cgc	ttc	ggc	240
Pro	Ala	Glu	Ile	Ala	Asp	Leu	Met	Ala	Thr	Ala	Val	Ala	Arg	Phe	Gly	
		65				70				75					80	
ggt	gcc	gat	atc	ctc	gtc	aac	aat	gcc	ggc	gta	cag	ttc	gtc	gaa	aag	288
Gly	Ala	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Phe	Val	Glu	Lys	
			85					90						95		
atc	gag	gat	ttt	ccg	gtc	gag	caa	tgg	gac	cgg	atc	atc	gcc	atc	aac	336
Ile	Glu	Asp	Phe	Pro	Val	Glu	Gln	Trp	Asp	Arg	Ile	Ile	Ala	Ile	Asn	
			100					105					110			
ctc	tcc	tcc	tcc	ttc	cac	acg	atc	cgg	gcg	gcg	att	ccc	gcc	atg	aaa	384
Leu	Ser	Ser	Ser	Phe	His	Thr	Ile	Arg	Ala	Ala	Ile	Pro	Ala	Met	Lys	
			115				120					125				
cag	aag	ggc	tgg	ggc	cgc	atc	gtc	aac	atc	gcc	tcg	gcg	cat	ggc	ctc	432
Gln	Lys	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Ala	His	Gly	Leu	
		130				135					140					
gtc	gcc	tca	ccc	ttc	aaa	tcc	gcc	tat	gtg	gcg	gcc	aag	cat	ggt	atc	480
Val	Ala	Ser	Pro	Phe	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Ile	
				145						155					160	
atg	ggc	ctc	acg	aag	acc	gtg	gcg	ctc	gag	gtg	gcg	gaa	aac	ggc	atc	528

PhoenixTemp32470.tmp.txt

Met	Gly	Leu	Thr	Lys	Thr	Val	Ala	Leu	Glu	Val	Ala	Glu	Asn	Gly	Ile		
				165					170					175			
acc	gtg	aac	tcg	atc	tgc	ccc	ggc	tat	gtg	ctg	acg	ccg	ctt	gtc	gaa	576	
Thr	Val	Asn	Ser	Ile	Cys	Pro	Gly	Tyr	Val	Leu	Thr	Pro	Leu	Val	Glu		
			180					185					190				
aag	cag	ata	ccg	gac	cag	gcg	agg	acg	cgc	ggc	atc	acc	gag	gaa	cag	624	
Lys	Gln	Ile	Pro	Asp	Gln	Ala	Arg	Thr	Arg	Gly	Ile	Thr	Glu	Glu	Gln		
		195					200					205					
gtg	atc	aac	gag	gtg	atg	ctc	aag	ggc	cag	ccg	acc	aag	aaa	ttc	ata	672	
Val	Ile	Asn	Glu	Val	Met	Leu	Lys	Gly	Gln	Pro	Thr	Lys	Lys	Phe	Ile		
	210					215					220						
acc	gtc	gag	cag	gtc	gcc	tcg	ctg	gcg	ctc	tat	ctc	gcc	agc	gac	gag	720	
Thr	Val	Glu	Gln	Val	Ala	Ser	Leu	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu		
	225				230					235					240		
gcg	gcg	caa	atc	acc	ggc	acg	cat	gtc	tcg	atg	gac	ggc	ggc	tgg	acg	768	
Ala	Ala	Gln	Ile	Thr	Gly	Thr	His	Val	Ser	Met	Asp	Gly	Gly	Trp	Thr		
				245					250					255			
gcg	caa	tag														777	
Ala	Gln																

<210> 3374  
 <211> 258  
 <212> PRT  
 <213> Sinorhizobium sp

<400> 3374

Met	Thr	Lys	Thr	Ala	Val	Ile	Thr	Gly	Ser	Thr	Ser	Gly	Ile	Gly	Leu		
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Ala	Ile	Ala	Lys	Ala	Phe	Ala	Lys	Thr	Gly	Ala	Asn	Ile	Val	Leu	Asn		
			20					25					30				
Gly	Phe	Gly	Ser	Ala	Asp	Glu	Ile	Arg	Thr	Val	Thr	Asp	Glu	Val	Ala		
		35					40					45					
Gly	Leu	Gly	Ala	Gly	Thr	Val	Leu	His	His	Pro	Ala	Asp	Met	Thr	Lys		
	50					55					60						
Pro	Ala	Glu	Ile	Ala	Asp	Leu	Met	Ala	Thr	Ala	Val	Ala	Arg	Phe	Gly		
	65				70					75					80		
Gly	Ala	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Gln	Phe	Val	Glu	Lys		
			85						90					95			
Ile	Glu	Asp	Phe	Pro	Val	Glu	Gln	Trp	Asp	Arg	Ile	Ile	Ala	Ile	Asn		
			100					105					110				
Leu	Ser	Ser	Ser	Phe	His	Thr	Ile	Arg	Ala	Ala	Ile	Pro	Ala	Met	Lys		
		115					120					125					
Gln	Lys	Gly	Trp	Gly	Arg	Ile	Val	Asn	Ile	Ala	Ser	Ala	His	Gly	Leu		
	130					135					140						
Val	Ala	Ser	Pro	Phe	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Ile		
	145				150					155					160		
Met	Gly	Leu	Thr	Lys	Thr	Val	Ala	Leu	Glu	Val	Ala	Glu	Asn	Gly	Ile		
				165					170					175			
Thr	Val	Asn	Ser	Ile	Cys	Pro	Gly	Tyr	Val	Leu	Thr	Pro	Leu	Val	Glu		
		180						185					190				
Lys	Gln	Ile	Pro	Asp	Gln	Ala	Arg	Thr	Arg	Gly	Ile	Thr	Glu	Glu	Gln		
		195					200					205					
Val	Ile	Asn	Glu	Val	Met	Leu	Lys	Gly	Gln	Pro	Thr	Lys	Lys	Phe	Ile		
	210					215					220						
Thr	Val	Glu	Gln	Val	Ala	Ser	Leu	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu		
	225				230					235					240		
Ala	Ala	Gln	Ile	Thr	Gly	Thr	His	Val	Ser	Met	Asp	Gly	Gly	Trp	Thr		
				245					250					255			
Ala	Gln																

<210> 3375  
 <211> 936  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS

&lt;222&gt; (1)..(936)

&lt;400&gt; 3375

atg	gcc	gcg	gct	gcg	gag	acc	tcg	gcg	aag	gtg	ggg	gcg	ccg	aga	aga	48
Met	Ala	Ala	Ala	Ala	Glu	Thr	Ser	Ala	Lys	Val	Gly	Ala	Pro	Arg	Arg	
1				5					10					15		
tgg	tct	ctt	caa	ggg	aag	acg	gcg	ctc	gtc	acc	ggc	ggc	acc	cgc	gga	96
Trp	Ser	Leu	Gln	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Gly	Thr	Arg	Gly	
			20					25					30			
atc	ggg	cgt	gcg	gtg	gtg	gag	gag	ctg	gcg	gcg	ctg	ggg	gcc	acc	gtg	144
Ile	Gly	Arg	Ala	Val	Val	Glu	Glu	Leu	Ala	Ala	Leu	Gly	Ala	Thr	Val	
		35				40					45					
cac	aca	tgc	tcc	cgg	aag	gag	gag	ctg	agc	gag	cgc	ctc	aag	gag		192
His	Thr	Cys	Ser	Arg	Lys	Glu	Glu	Leu	Ser	Glu	Arg	Leu	Lys	Glu		
	50				55			60								
tgg	gag	gcc	cgg	gga	ttc	cgc	gtc	acc	acc	tcc	gtc	tgc	gat	ctc	tcg	240
Trp	Glu	Ala	Arg	Gly	Phe	Arg	Val	Thr	Thr	Ser	Val	Cys	Asp	Leu	Ser	
65				70				75						80		
gtt	cgg	gac	cag	cgt	gag	cgc	ctc	ctc	cgc	caa	gtc	gct	gac	ctc	ttc	288
Val	Arg	Asp	Gln	Arg	Glu	Arg	Leu	Leu	Arg	Gln	Val	Ala	Asp	Leu	Phe	
			85					90						95		
ggc	ggc	aag	ctc	gat	atc	ctc	gta	aac	aat	gtg	ggg	aca	aac	ata	agg	336
Gly	Gly	Lys	Leu	Asp	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Ile	Arg	
			100					105					110			
aag	cca	acc	act	gaa	ttt	tct	gcc	gag	gaa	tac	tct	ttt	atg	gcg		384
Lys	Pro	Thr	Thr	Glu	Phe	Ser	Ala	Glu	Glu	Tyr	Ser	Phe	Met	Met	Ala	
		115					120					125				
act	aat	ctt	gaa	tct	gcg	tat	cat	ctg	tgc	caa	ctt	tcg	cat	cct	ctt	432
Thr	Asn	Leu	Glu	Ser	Ala	Tyr	His	Leu	Cys	Gln	Leu	Ser	His	Pro	Leu	
		130				135					140					
ctg	aaa	gca	tct	ggg	tca	ggg	agc	att	gtt	ttc	ata	tca	tca	gtc	tgt	480
Leu	Lys	Ala	Ser	Gly	Ser	Gly	Ser	Ile	Val	Phe	Ile	Ser	Ser	Val	Cys	
145				150				155						160		
gga	ttg	gta	gct	gta	ttt	agt	ggt	tct	ctc	tat	gct	atg	aca	aaa	ggt	528
Gly	Leu	Val	Ala	Val	Phe	Ser	Gly	Ser	Leu	Tyr	Ala	Met	Thr	Lys	Gly	
			165					170						175		
gca	atc	aac	caa	tta	acc	aag	aac	cta	gca	tgc	gaa	tgg	gcg	aga	gac	576
Ala	Ile	Asn	Gln	Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Arg	Asp	
			180				185					190				
aac	ata	cga	tcc	aac	tct	att	gcc	ccg	tgg	tat	atc	agg	act	tca	ctt	624
Asn	Ile	Arg	Ser	Asn	Ser	Ile	Ala	Pro	Trp	Tyr	Ile	Arg	Thr	Ser	Leu	
		195					200					205				
acc	gaa	gga	gta	aag	ctt	ttg	ctt	atc	aac	cat	cct	gat	tta	tca	tgt	672
Thr	Glu	Gly	Val	Lys	Leu	Leu	Leu	Ile	Asn	His	Pro	Asp	Leu	Ser	Cys	
	210				215						220					
ttg	gat	act	tgt	cat	ttt	aag	tca	gaa	cat	gta	gtc	aag	tat	tca	act	720
Leu	Asp	Thr	Cys	His	Phe	Lys	Ser	Glu	His	Val	Val	Lys	Tyr	Ser	Thr	
225				230						235					240	
aat	tgt	cag	gat	acg	ctt	ttg	gca	aat	aag	gac	ttt	gaa	ggg	gct	gtg	768
Asn	Cys	Gln	Asp	Thr	Leu	Leu	Ala	Asn	Lys	Asp	Phe	Glu	Gly	Ala	Val	
			245					250					255			
gtg	agc	cga	act	cca	ctt	agg	cgt	gtt	gga	gaa	cct	gaa	gaa	gta	tca	816
Val	Ser	Arg	Thr	Pro	Leu	Arg	Arg	Val	Gly	Glu	Pro	Glu	Glu	Val	Ser	
			260				265					270				
tcg	ctg	gtt	gct	ttt	ctt	tgc	atg	cct	ggt	tcc	agt	tac	att	act	ggc	864
Ser	Leu	Val	Ala	Phe	Leu	Cys	Met	Pro	Gly	Ser	Ser	Tyr	Ile	Thr	Gly	
		275					280					285				
cag	acg	atc	tcg	gtt	gat	gga	ggc	aac	cgg	tac	aag	tcg	agc	gta	agc	912
Gln	Thr	Ile	Ser	Val	Asp	Gly	Gly	Asn	Arg	Tyr	Lys	Ser	Ser	Val	Ser	
	290				295						300					
atg	atg	gtt	ctc	gca	gag	caa	taa									936
Met	Met	Val	Leu	Ala	Glu	Gln										
305					310											

&lt;210&gt; 3376

&lt;211&gt; 311

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

## PhoenixTemp32470.tmp.txt

<400> 3376  
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 1 Trp Ser Leu Gln Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg Gly  
 20 Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Thr Val  
 35 His Thr Cys Ser Arg Lys Glu 40 Glu Glu Leu Ser Glu 45 Arg Leu Lys Glu  
 50 Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu Ser  
 65 Val Arg Asp Gln Arg 85 Glu Arg Leu Leu Arg Gln Val Ala Asp Leu Phe  
 90 Gly Gly Lys Leu 100 Asp Ile Leu Val Asn 105 Asn Val Gly Thr Asn Ile Arg  
 110 Lys Pro Thr Thr Glu Phe Ser Ala Glu Glu Tyr Ser Phe 125 Met Met Ala  
 130 Thr Asn Leu Glu Ser Ala Tyr 135 His Leu Cys Gln Leu Ser His Pro Leu  
 145 Leu Lys Ala Ser Gly Ser 150 Gly Ser Ile Val Phe 155 Ile Ser Ser Val Cys  
 Gly Leu Val Ala Val 165 Phe Ser Gly Ser Leu Tyr Ala Met Thr Lys Gly  
 175 Ala Ile Asn Gln 180 Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Arg Asp  
 190 Asn Ile Arg Ser Asn Ser Ile Ala 200 Pro Trp Tyr Ile Arg Thr Ser Leu  
 210 Thr Glu Gly Val Lys Leu 215 Leu Ile Asn His Pro 220 Asp Leu Ser Cys  
 225 Leu Asp Thr Cys His Phe 230 Lys Ser Glu His Val 235 Val Lys Tyr Ser Thr  
 Asn Cys Gln Asp Thr 245 Leu Leu Ala Asn Lys Asp Phe Glu Gly Ala Val  
 255 Val Ser Arg Thr 260 Pro Leu Arg Arg Val Gly Glu Pro Glu Glu Val Ser  
 270 Ser Leu Val 275 Ala Phe Leu Cys Met 280 Pro Gly Ser Ser Tyr Ile Thr Gly  
 Gln Thr Ile Ser Val Asp Gly 295 Gly Asn Arg Tyr Lys 300 Ser Ser Val Ser  
 Met Met Val Leu Ala Glu Gln  
 305 310

<210> 3377  
 <211> 831  
 <212> DNA  
 <213> Streptomyces atroolivaceus

<220>  
 <221> CDS  
 <222> (1)..(831)  
 <223> transl\_table=11

<400> 3377  
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 cgg ggc gtc ggg cgt gcc tgc gcc acg gcg ttc gcc gcg cag ggc gcc 96  
 Arg Gly Val 20 Arg Ala Cys Ala Thr 25 Ala Phe Ala Ala Gln Gly Ala  
 gac ctg gtc ctg gtc gac atc gcc gcc gac ctc ccg cac gtc ccc tac 144  
 Asp Leu Val 35 Leu Val Asp Ile Ala Ala Asp Leu Pro His Val Pro Tyr  
 40 45  
 ccc gcg gcc acc ccg agc cag ctc gat cac acc gcc cgg ctg tgc cgc 192  
 Pro Ala Ala Thr Pro Ser Gln Leu Asp His Thr Ala Arg Leu Cys Arg  
 50 55 60  
 gag cag ggg gcc gcc gtg ctc acc gca cgc gcg gac gtg cgg gac gcg 240  
 Glu Gln Gly Ala Ala Val Leu Thr Ala Arg Ala Asp Val Arg Asp Ala  
 65 70 75 80  
 gcg gcc tgc gag cgg gtg gtg gcc gat gcc gtg gac cgc ttc ggt tcg 288

## PhoenixTemp32470.tmp.txt

Ala	Ala	Cys	Glu	Arg	Val	Val	Ala	Asp	Ala	Val	Asp	Arg	Phe	Gly	Ser		
ctg	gac	gtg	ctg	gtc	aac	aac	gcg	ggg	atc	gcg	ggt	cct	tcg	ggc	cg	336	
Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Pro	Ser	Gly	Arg		
			100					105					110				
atc	gtg	cac	gag	gtc	acc	gag	gac	gag	tgg	gcg	gtg	atg	atc	gac	gtc	384	
Ile	Val	His	Glu	Val	Thr	Glu	Asp	Glu	Trp	Ala	Val	Met	Ile	Asp	Val		
			115				120					125					
aac	ctc	aac	ggc	gcc	tgg	cgg	atg	ctg	aag	gcc	gcg	ggg	gcg	tcg	atg	432	
Asn	Leu	Asn	Gly	Ala	Trp	Arg	Met	Leu	Lys	Ala	Ala	Gly	Ala	Ser	Met		
	130					135				140							
gtg	gcg	gcc	cgc	tcc	ggc	tcc	atc	gtc	aac	atc	gcc	tcc	acc	gcc	gga	480	
Val	Ala	Ala	Arg	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	Ala	Gly		
	145				150				155						160		
ctg	gtg	gga	tac	cgc	aac	ttc	gcc	ggc	tac	gtg	gcg	tcc	aag	cac	ggc	528	
Leu	Val	Gly	Tyr	Arg	Asn	Phe	Ala	Gly	Tyr	Val	Ala	Ser	Lys	His	Gly		
			165				170							175			
ctg	gtc	ggc	ctg	acg	aag	gcc	gcc	gac	ctc	gac	tac	gcg	ccc	tac	cgg	576	
Leu	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Leu	Asp	Tyr	Ala	Pro	Tyr	Arg		
			180				185						190				
gtg	cgg	gtg	aac	gcg	gtc	tgc	ccc	ggc	tcg	gtg	cgc	gac	ggc	gag	gcg	624	
Val	Arg	Val	Asn	Ala	Val	Cys	Pro	Gly	Ser	Val	Arg	Asp	Gly	Glu	Ala		
	195						200					205					
tgg	gag	ggc	cgg	atg	ctg	gtg	gag	atc	ggc	cgc	agc	atc	ggg	atc	gaa	672	
Trp	Glu	Gly	Arg	Met	Leu	Val	Glu	Ile	Gly	Arg	Ser	Ile	Gly	Ile	Glu		
	210				215					220							
ccg	gcc	gac	cac	gaa	gcc	gag	ttc	atc	acg	cag	atg	ccc	atg	aac	acg	720	
Pro	Ala	Asp	His	Glu	Ala	Glu	Phe	Ile	Thr	Gln	Met	Pro	Met	Asn	Thr		
	225			230					235					240			
ctg	gtg	gag	gcg	gac	gat	gtg	gcg	ggg	gcc	ctg	tgg	ctc	gcc	tcc		768	
Leu	Val	Glu	Ala	Asp	Asp	Val	Ala	Gly	Ala	Ala	Leu	Trp	Leu	Ala	Ser		
				245				250					255				
gag	gag	tcc	cgt	cac	tcc	acc	ggc	ggt	gtg	atc	acc	gtc	gac	gcc	ggc	816	
Glu	Glu	Ser	Arg	His	Ser	Thr	Gly	Gly	Val	Ile	Thr	Val	Asp	Ala	Gly		
			260				265						270				
tac	agc	gcc	cgt	tga												831	
Tyr	Ser	Ala	Arg														
		275															

&lt;210&gt; 3378

&lt;211&gt; 276

&lt;212&gt; PRT

&lt;213&gt; Streptomyces atroolivaceus

&lt;400&gt; 3378

Met	Ser	Gly	Arg	Leu	Thr	Gly	Arg	Thr	Ala	Ile	Val	Thr	Gly	Ala	Gly		
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Arg	Gly	Val	Gly	Arg	Ala	Cys	Ala	Thr	Ala	Phe	Ala	Ala	Gln	Gly	Ala		
			20					25					30				
Asp	Leu	Val	Leu	Val	Asp	Ile	Ala	Ala	Asp	Leu	Pro	His	Val	Pro	Tyr		
		35					40					45					
Pro	Ala	Ala	Thr	Pro	Ser	Gln	Leu	Asp	His	Thr	Ala	Arg	Leu	Cys	Arg		
	50					55				60							
Glu	Gln	Gly	Ala	Ala	Val	Leu	Thr	Ala	Arg	Ala	Asp	Val	Arg	Asp	Ala		
	65			70					75					80			
Ala	Ala	Cys	Glu	Arg	Val	Val	Ala	Asp	Ala	Val	Asp	Arg	Phe	Gly	Ser		
			85					90						95			
Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Pro	Ser	Gly	Arg		
			100					105				110					
Ile	Val	His	Glu	Val	Thr	Glu	Asp	Glu	Trp	Ala	Val	Met	Ile	Asp	Val		
		115					120					125					
Asn	Leu	Asn	Gly	Ala	Trp	Arg	Met	Leu	Lys	Ala	Ala	Gly	Ala	Ser	Met		
	130					135				140							
Val	Ala	Ala	Arg	Ser	Gly	Ser	Ile	Val	Asn	Ile	Ala	Ser	Thr	Ala	Gly		
	145				150				155						160		
Leu	Val	Gly	Tyr	Arg	Asn	Phe	Ala	Gly	Tyr	Val	Ala	Ser	Lys	His	Gly		
			165					170						175			
Leu	Val	Gly	Leu	Thr	Lys	Ala	Ala	Ala	Leu	Asp	Tyr	Ala	Pro	Tyr	Arg		
			180					185					190				

## PhoenixTemp32470.tmp.txt

Val Arg Val Asn Ala Val Cys Pro Gly Ser Val Arg Asp Gly Glu Ala  
 195 200 205  
 Trp Glu Gly Arg Met Leu Val Glu Ile Gly Arg Ser Ile Gly Ile Glu  
 210 215 220  
 Pro Ala Asp His Glu Ala Glu Phe Ile Thr Gln Met Pro Met Asn Thr  
 225 230 235 240  
 Leu Val Glu Ala Asp Val Ala Gly Ala Leu Trp Leu Ala Ser  
 245 250 255  
 Glu Glu Ser Arg His Ser Thr Gly Gly Val Ile Thr Val Asp Ala Gly  
 260 265 270  
 Tyr Ser Ala Arg  
 275

&lt;210&gt; 3379

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Phaseolus lunatus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;400&gt; 3379

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Met Ala His Val Ser Ala Val Ser Ala Ala Val Lys Arg Leu Glu Gly	
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aaa gtg gcc att atc act ggt ggt gcc agc ggt att ggt gcc gcc act	96
Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Ala Thr	
20 25 30	
gca aga ctc ttc tct gag cat gga gct cat gtg gtg ata gct gat att	144
Ala Arg Leu Phe Ser Glu His Gly Ala His Val Val Ile Ala Asp Ile	
35 40 45	
caa gac gat ttg ggt ctt tct gtt tgc aat gaa ttg aaa tct gct gtg	192
Gln Asp Asp Leu Gly Leu Ser Val Cys Asn Glu Leu Lys Ser Ala Val	
50 55 60	
tat gtt cat tgt gat gtg aca aag gaa gaa gac gtt gaa aag tgc gtg	240
Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Lys Cys Val	
65 70 75 80	
aac gta aca gtt tcc aag tat ggg aag ctg gac atc atg ctt aat aac	288
Asn Val Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn	
85 90 95	
gct ggt aca tgc cat gag ctc aaa gat agc ata gtg gac aac atc acg	336
Ala Gly Thr Cys His Glu Leu Lys Asp Ser Ile Val Asp Asn Ile Thr	
100 105 110	
tct gag ttt gag aga gtg atc agt gtg aac gtg gtt ggt cca ttt ctg	384
Ser Glu Phe Glu Arg Val Ile Ser Val Asn Val Val Gly Pro Phe Leu	
115 120 125	
gga aca aag cac gca gca agg gta atg att cct gct aaa agg ggt tgc	432
Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Cys	
130 135 140	
ata att aac aca tct agt att gct gga tgc agg ggt aca ggg tct cca	480
Ile Ile Asn Thr Ser Ile Ala Gly Cys Arg Gly Thr Gly Ser Pro	
145 150 155 160	
cat gcg tac gtc gtc tca aag cat gga cta gag gga ctg acg aaa aac	528
His Ala Tyr Val Val Ser Lys His Gly Leu Glu Gly Leu Thr Lys Asn	
165 170 175	
aca gcg gtg gag ctt gga caa ttc ggt att cgg gtg aac tgt gtg tct	576
Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Val Ser	
180 185 190	
cct tat ttg gtt gcc aca ccg atg ttg aag aag tat ttc aat ctt gat	624
Pro Tyr Leu Val Ala Thr Pro Met Leu Lys Lys Tyr Phe Asn Leu Asp	
195 200 205	
gaa gaa gga gtt cgt gag gct tat tcc aac cta aaa ggt tct tat cta	672
Glu Glu Gly Val Arg Glu Ala Tyr Ser Asn Leu Lys Gly Ser Tyr Leu	
210 215 220	
gtg ccc aac gat gtg gcc gaa gct gct ctt ttc ttg gca ggt gat gag	720
Val Pro Asn Asp Val Ala Glu Ala Ala Leu Phe Leu Ala Gly Asp Glu	
225 230 235 240	
tct aat tat gtt agt ggt cac agt ctt ctg tta gat gga ggc tac acc	768



## PhoenixTemp32470.tmp.txt

Ser Asn Tyr Val Ser Gly His Ser Leu Leu Leu Asp Gly Gly Tyr Thr  
 245 250 255  
 att aca aat gca ggc ttt tct cca aat gca ggc ttt tct cct ggc cag 816  
 ile thr asn ala gly phe ser pro asn ala gly phe ser pro gly gln  
 260 265 270  
 tct gag taa  
 ser glu 825

<210> 3380  
 <211> 274  
 <212> PRT  
 <213> Phaseolus lunatus

<400> 3380  
 Met Ala His Val Ser Ala Val Ser Ala Ala Val Lys Arg Leu Glu Gly  
 1 5 10 15  
 Lys Val Ala Ile Thr Gly Gly Ala Ser Gly Ile Gly Ala Thr  
 20 25 30  
 Ala Arg Leu Phe Ser Glu His Gly Ala His Val Val Ile Ala Asp Ile  
 35 40 45  
 Gln Asp Asp Leu Gly Leu Ser Val Cys Asn Glu Leu Lys Ser Ala Val  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Lys Cys Val  
 65 70 75 80  
 Asn Val Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 Ala Gly Thr Cys His Glu Leu Lys Asp Ser Ile Val Asp Asn Ile Thr  
 100 105 110  
 Ser Glu Phe Glu Arg Val Ile Ser Val Asn Val Val Gly Pro Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Cys  
 130 135 140  
 Ile Ile Asn Thr Ser Ser Ile Ala Gly Cys Arg Gly Thr Gly Ser Pro  
 145 150 155 160  
 His Ala Tyr Val Val Ser Lys His Gly Leu Glu Gly Leu Thr Lys Asn  
 165 170 175  
 Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Val Ser  
 180 185 190  
 Pro Tyr Leu Val Ala Thr Pro Met Leu Lys Lys Tyr Phe Asn Leu Asp  
 195 200 205  
 Glu Glu Gly Val Arg Glu Ala Tyr Ser Asn Leu Lys Gly Ser Tyr Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Phe Leu Ala Gly Asp Glu  
 225 230 235 240  
 Ser Asn Tyr Val Ser Gly His Ser Leu Leu Leu Asp Gly Gly Tyr Thr  
 245 250 255  
 Ile Thr Asn Ala Gly Phe Ser Pro Asn Ala Gly Phe Ser Pro Gly Gln  
 260 265 270  
 ser glu

<210> 3381  
 <211> 951  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(951)

<400> 3381  
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 Met Gly Arg Ala Ala Trp His Gly Leu Leu Asn Gly Arg Val Glu Gln  
 1 5 10 15  
 cgc cag ccc act tgc agg ggg aag agc ata gct gct cag gtg ttc tcc 96  
 Arg Gln Pro Thr Cys Arg Gly Lys Ser Ile Ala Ala Gln Val Phe Ser  
 20 25 30  
 aac ggc ttg gcc gat cgc ctc ttc tcc tcg tcg tca agc tcc aga aag 144  
 Page 3050

## PhoenixTemp32470.tmp.txt

Asn	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	Ser	Ser	Ser	Arg	Lys	
35							40					45			
ttg	gat	ggc	aaa	gtg	gcc	gtg	atc	acc	ggc	gcg	gcg	agc	ggc	atc	ggc
Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly
50						55					60				
gag	gcc	acg	gcg	aag	gag	ttc	gtc	agg	aac	ggc	gcc	aag	gtt	atc	att
Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile
65					70					75					80
gcc	gat	atc	cag	gac	gac	ctc	ggc	cgc	gcc	gtg	gcc	gcc	gag	ctc	ggc
Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	Val	Ala	Ala	Glu	Leu	Gly
				85					90					95	
gcc	gac	gcc	gcg	tcg	tac	acg	cac	tgc	gac	gtc	acc	gtc	gag	aag	gat
Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	Val	Thr	Val	Glu	Lys	Asp
				100				105					110		
gtc	gcc	gcg	gcc	gtc	gac	ctc	gcc	gtg	gcg	cgc	cac	ggc	cgc	ctc	gac
Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp
				115			120					125			
gtc	gtc	tac	agc	aac	gcc	ggc	gtc	ata	gga	gca	ccg	gct	ccg	gcc	tcg
Val	Val	Tyr	Ser	Asn	Ala	Gly	Val	Ile	Gly	Ala	Pro	Ala	Pro	Ala	Ser
				130		135					140				
ctc	gcg	gcg	ctc	gac	ctc	gac	gag	tac	gac	cgc	gtc	atg	gcc	gtc	aac
Leu	Ala	Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn
145					150					155					160
gcc	cgg	tcg	atg	ttg	gcg	tgc	gtc	aag	cac	gcg	gcg	gct	atg	gcg	gag
Ala	Arg	Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala
				165					170					175	
ccg	cgc	cgc	gcc	ggc	tgc	atc	ctc	tgc	acg	gcc	agc	tcg	gag	gag	gtg
Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Ser	Ala	Ala	Val
				180				185					190		
ctc	ggc	ggc	gtg	gag	tcg	ccg	gtg	tac	atg	tcg	aag	gag	gag	gag	atc
Leu	Gly	Gly	Val	Ala	Ser	Pro	Val	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Ile
				195			200					205			
gtc	ggc	atg	gtg	cgc	gag	gtg	gag	agg	cag	ctg	gag	cgc	gac	ggc	gtg
Val	Gly	Met	Val	Arg	Ala	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val
				210		215					220				
cgg	gtg	aac	gcc	atc	tcg	ccg	cac	gcc	atc	ccg	acg	ccg	atg	gag	cta
Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Ile	Pro	Thr	Pro	Met	Ala	Leu
225					230					235					240
ggc	atc	atc	gcc	gag	acg	ttc	ccg	gag	gcc	acc	gag	gag	gag	gtg	agg
Gly	Ile	Ile	Ala	Glu	Thr	Phe	Pro	Ala	Ala	Thr	Ala	Glu	Glu	Val	Arg
				245					250					255	
agg	atg	gtg	acg	agg	gag	atg	cag	gag	ctg	gaa	ggg	aca	tcg	ctg	gag
Arg	Met	Val	Thr	Arg	Glu	Met	Gln	Glu	Leu	Glu	Gly	Thr	Ser	Leu	Glu
				260			265						270		
gtg	gaa	gac	gtg	gag	agg	gag	gcc	gtg	ttc	ttg	gag	tcc	gac	gag	gcc
Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala
				275			280					285			
aag	ttc	gtc	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggc	ttc	acg	gtg
Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Val
				290		295					300				
ggc	aaa	gac	ctc	ctc	cga	aat	cca	ccg	agc	tct	act	tga			
Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	Ser	Ser	Thr				
305					310					315					

&lt;210&gt; 3382

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3382

Met	Gly	Arg	Ala	Ala	Trp	His	Gly	Leu	Leu	Asn	Gly	Arg	Val	Glu	Gln
1				5					10					15	
Arg	Gln	Pro	Thr	Cys	Arg	Gly	Lys	Ser	Ile	Ala	Ala	Gln	Val	Phe	Ser
			20					25					30		
Asn	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	Ser	Ser	Ser	Ser	Arg	Lys
		35					40					45			
Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly
	50					55					60				
Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile

## PhoenixTemp32470.tmp.txt

65 70 75 80  
 Ala Asp Ile Gln Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly  
 85 90 95  
 Ala Asp Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys Asp  
 100 105 110  
 Val Ala Ala Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp  
 115 120 125  
 Val Val Tyr Ser Asn Ala Gly Val Ile Gly Ala Pro Ala Pro Ala Ser  
 130 135 140  
 Leu Ala Ala Leu Asp Leu Asp Glu Tyr Asp Arg Val Met Ala Val Asn  
 145 150 155 160  
 Ala Arg Ser Met Leu Ala Cys Val Lys His Ala Ala Arg Val Met Ala  
 165 170 175  
 Pro Arg Arg Ala Gly Cys Ile Leu Cys Thr Ala Ser Ser Ala Ala Val  
 180 185 190  
 Leu Gly Gly Val Ala Ser Pro Val Tyr Ser Met Ser Lys Ala Ala Ile  
 195 200 205  
 Val Gly Met Val Arg Ala Val Ala Arg Gln Leu Ala Arg Asp Gly Val  
 210 215 220  
 Arg Val Asn Ala Ile Ser Pro His Ala Ile Pro Thr Pro Met Ala Leu  
 225 230 235 240  
 Gly Ile Ile Ala Glu Thr Phe Pro Ala Ala Thr Ala Glu Glu Val Arg  
 245 250 255  
 Arg Met Val Thr Arg Glu Met Gln Glu Leu Glu Gly Thr Ser Leu Glu  
 260 265 270  
 Val Glu Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala  
 275 280 285  
 Lys Phe Val Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Val  
 290 295 300  
 Gly Lys Asp Leu Leu Arg Asn Pro Pro Ser Ser Thr  
 305 310 315

&lt;210&gt; 3383

&lt;211&gt; 951

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(951)

&lt;400&gt; 3383

atg ggg tca ctt cac aaa tat gcc gta caa gca tca atc cat aat gga	48
Met Gly Ser Leu His Lys Tyr Ala Val Gln Ala Ser Ile His Asn Gly	
1 5 10 15	
att tac aaa tgt tta ctg ctg ttc ttg aca cca caa aac aca ggg aag	96
Ile Tyr Lys Cys Leu Leu Leu Phe Leu Thr Pro Gln Asn Thr Gly Lys	
20 25 30	
agc ata gct gct cac gta ttc ttc tcc tcg tcg tca aga tcc aga aag	144
Ser Ile Ala Ala His Val Phe Phe Ser Ser Ser Ser Arg Ser Arg Lys	
35 40 45	
ttg gat ggc aaa gtg gcc gtg ata acc ggc gca gcg agc ggc atc ggc	192
Leu Asp Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly	
50 55 60	
gag gcc acg gcg aag gag ttc gtc agg aat ggc gcc aag gtt atc att	240
Glu Ala Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile Ile	
65 70 75 80	
gcc gat atc aag gat gat ctc ggc cgc gcc gtg gcc ggc gag ctc ggc	288
Ala Asp Ile Lys Asp Asp Leu Gly Arg Ala Val Ala Gly Glu Leu Gly	
85 90 95	
gcc gac gcc gcg tcg tac acg cac tgc gac gtc acc gtc gag aag gat	336
Ala Asp Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys Asp	
100 105 110	
gtc gcc tcg gcc gtc gac ctc gcc gtg gcg cga cac ggc cgc ctc gac	384
Val Ala Ser Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp	
115 120 125	
gtc gtg tac agc aac gcc gcc atc gcg ggt ggc gcg cct ccg gcc acg	432
Val Val Tyr Ser Asn Ala Ile Ala Gly Gly Ala Pro Pro Ala Thr	
130 135 140	

## PhoenixTemp32470.tmp.txt

ctc	gcg	gcg	ctc	gac	ctc	gac	gag	tac	gac	cgc	gtc	atg	gcc	gtc	aac	480
Leu	Ala	Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn	
145					150					155					160	
gcc	agg	tcc	atg	ttg	gcg	tgc	gtc	aag	cac	gcg	gcg	cgc	gtc	atg	gcg	528
Ala	Arg	Ser	Met	Leu	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala	
				165					170						175	
ccc	cgc	cgc	gcc	ggt	tgc	atc	ctc	tgc	acg	gcc	agc	acg	gcg	gcg	gtg	576
Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Thr	Ala	Ala	Val	
			180					185					190			
ctc	ggc	ggc	atg	gcg	gcg	ccg	gcg	tac	tcc	atg	tcg	aag	gcg	gcc	gtc	624
Leu	Gly	Gly	Met	Ala	Ala	Pro	Ala	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Val	
			195				200					205				
gtc	ggc	atg	gtg	cgg	acg	gtg	gcg	agg	cag	ctg	gcg	cgc	gac	ggc	gtg	672
Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val	
	210					215				220						
cgg	gtg	aac	gcc	atc	tcg	ccg	cac	gca	gtc	ccg	acg	ccg	atg	gcg	ata	720
Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Val	Pro	Thr	Pro	Met	Ala	Ile	
225					230					235					240	
ggt	ctc	ttc	tcc	gag	acg	ttc	ccg	gcg	gcg	acc	gcg	gag	gag	gtg	agg	768
Gly	Leu	Phe	Ser	Glu	Thr	Phe	Pro	Ala	Ala	Thr	Ala	Glu	Glu	Val	Arg	
				245					250					255		
agg	atg	gtg	acg	agg	gag	atg	cag	gag	ctg	gaa	ggg	gcg	tcg	ctg	gag	816
Arg	Met	Val	Thr	Arg	Glu	Met	Gln	Glu	Leu	Glu	Gly	Ala	Ser	Leu	Glu	
			260					265					270			
gtg	gaa	gac	gtg	gcg	agg	gcg	gcc	gtc	ttc	ttg	gcg	tcc	gac	gag	gcc	864
Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe	Leu	Ala	Ser	Asp	Glu	Ala	
			275				280					285				
aag	ttc	atc	acc	ggc	cac	aac	ctc	gtc	gtc	gac	ggc	ggg	ttc	acg	gca	912
Lys	Phe	Ile	Thr	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ala	
	290					295					300					
ggc	aag	gtg	ctc	gtc	cgg	gat	cct	ccg	ggc	tct	gct	tga				951
Gly	Lys	Val	Leu	Val	Arg	Asp	Pro	Pro	Gly	Ser	Ala					
305					310					315						

&lt;210&gt; 3384

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3384

Met	Gly	Ser	Leu	His	Lys	Tyr	Ala	Val	Gln	Ala	Ser	Ile	His	Asn	Gly	
1				5					10					15		
Ile	Tyr	Lys	Cys	Leu	Leu	Leu	Phe	Leu	Thr	Pro	Gln	Asn	Thr	Gly	Lys	
			20					25					30			
Ser	Ile	Ala	Ala	His	Val	Phe	Phe	Ser	Ser	Ser	Ser	Arg	Ser	Arg	Lys	
			35				40					45				
Leu	Asp	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	Ala	Ala	Ser	Gly	Ile	Gly	
	50					55					60					
Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	Gly	Ala	Lys	Val	Ile	Ile	
65				70					75					80		
Ala	Asp	Ile	Lys	Asp	Leu	Gly	Arg	Ala	Val	Ala	Gly	Glu	Leu	Gly		
				85				90					95			
Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	Val	Thr	Val	Glu	Lys	Asp	
			100					105					110			
Val	Ala	Ser	Ala	Val	Asp	Leu	Ala	Val	Ala	Arg	His	Gly	Arg	Leu	Asp	
		115					120					125				
Val	Val	Tyr	Ser	Asn	Ala	Ala	Ile	Ala	Gly	Gly	Ala	Pro	Pro	Ala	Thr	
	130					135					140					
Leu	Ala	Ala	Leu	Asp	Leu	Asp	Glu	Tyr	Asp	Arg	Val	Met	Ala	Val	Asn	
145				150						155					160	
Ala	Arg	Ser	Met	Ala	Cys	Val	Lys	His	Ala	Ala	Arg	Val	Met	Ala		
			165					170					175			
Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	Ala	Ser	Thr	Ala	Ala	Val	
			180					185					190			
Leu	Gly	Gly	Met	Ala	Ala	Pro	Ala	Tyr	Ser	Met	Ser	Lys	Ala	Ala	Val	
		195					200					205				
Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	Gln	Leu	Ala	Arg	Asp	Gly	Val	
	210					215					220					
Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ala	Val	Pro	Thr	Pro	Met	Ala	Ile	

## PhoenixTemp32470.tmp.txt

225 Gly Leu Phe Ser Glu 230 Thr Phe Pro Ala Ala 235 Thr Ala Glu Glu Val 240 Arg  
 Arg Met Val Thr 245 Arg Glu Met Gln Glu 250 Leu Glu Gly Ala Ser 255 Leu Glu  
 Val Glu Asp 260 Val Ala Arg Ala 265 Val Phe Leu Ala Ser 270 Asp Glu Ala  
 Lys Phe 275 Ile Thr Gly His Asn 280 Leu Val Val Asp Gly 285 Gly Phe Thr Ala  
 Gly Lys Val Leu Val Arg 295 Asp Pro Pro Gly Ser 300 Ala  
 305 310 315

&lt;210&gt; 3385

&lt;211&gt; 921

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(921)

&lt;400&gt; 3385

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Met	Met	Ser	Val	Ala	Ala	Asn	Lys	Ile	Leu	Gly	Arg	Ser	Arg	Gly	Val	
1				5				10						15		
cgt	ccg	atg	ttc	tct	tcc	ggc	ttg	gcc	gat	cgc	ctc	ttc	tcc	tcg	tcg	96
Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	Ser	
			20					25					30			
gcg	tca	agc	tcc	aaa	agg	ttg	gaa	ggg	aaa	gtg	gcc	gtg	atc	acc	ggc	144
Ala	Ser	Ser	Ser	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly	
			35				40					45				
gcg	gtg	ggc	ggc	atc	ggc	gag	gcc	acg	gcg	aag	gag	ttc	gtc	agg	aat	192
Ala	Val	Gly	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn	
	50				55						60					
ggc	gcc	aag	gtc	atc	ctc	gcc	gat	atc	cag	gac	gac	ctt	ggc	cgc	gcc	240
Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Asp	Leu	Gly	Arg	Ala	
	65				70				75						80	
atg	gcc	gcc	gag	ctc	ggc	gcg	gac	gcc	gcg	tcg	tac	acg	cac	tgc	gac	288
Met	Ala	Ala	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp	
			85					90						95		
gtc	acc	gtc	gag	gcg	gac	gtc	gcc	gcg	gcc	gtc	gac	ctc	gcc	gtg	gcg	336
Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala	
			100					105					110			
cgc	cac	ggc	cgc	ctc	gac	gtc	gtc	tac	agc	aac	gcc	ggc	atc	gcc	ggc	384
Arg	His	Gly	Arg	Leu	Asp	Val	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala	Gly	
		115					120					125				
gcc	gcg	gcc	ccg	ccc	acg	ctc	tcg	gcg	ctc	gac	ctc	gac	tac	gac		432
Ala	Ala	Ala	Pro	Pro	Thr	Leu	Ser	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	Asp	
	130					135					140					
cgc	gtc	atg	gcc	gtc	aac	gcc	cgg	tcc	atg	gtg	gcc	tgc	ctc	aag	cac	480
Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	His	
	145				150					155				160		
gcg	gcg	cgc	gtc	atg	tcc	ccg	gcg	gcg	gcc	ggc	tgc	atc	ctc	tgc	acg	528
Ala	Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr	
			165						170				175			
gcg	agc	tcc	acg	gcg	ctg	atc	ggc	gac	ctg	gcg	gcg	ccg	gcg	tac	tgc	576
Ala	Ser	Ser	Thr	Ala	Leu	Ile	Gly	Asp	Leu	Ala	Ala	Pro	Ala	Tyr	Cys	
			180					185					190			
atc	tcg	aag	gcg	gcc	gtc	gtc	gga	atg	gtg	cgg	acg	gtg	gca	agg	cag	624
Ile	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	Gln	
		195					200					205				
ctg	gcg	cgc	gac	ggc	gtg	cgc	gtg	aac	gcc	atc	tcg	ccg	cac	atc	atc	672
Leu	Ala	Arg	Asp	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ile	Ile	
	210					215					220					
ccg	acg	gcg	ctg	gtg	acg	cgc	gtc	atc	tcc	gag	acg	ttc	ccg	gcg	gcc	720
Pro	Thr	Ala	Leu	Val	Thr	Arg	Val	Ile	Ser	Glu	Thr	Phe	Pro	Ala	Ala	
	225				230					235					240	
acc	gcg	gag	gag	gtg	agg	atg	gtg	acg	agg	gac	atg	cag	gag	ctg		768
Thr	Ala	Glu	Glu	Val	Arg	Arg	Met	Val	Thr	Arg	Asp	Met	Gln	Glu	Leu	

## PhoenixTemp32470.tmp.txt

gaa	ggg	gcg	tcg	245	ctg	gag	gtg	gag	gac	250	gtg	gcg	agg	gcg	gcc	255	gtc	ttc	816
Glu	Gly	Ala	Ser	260	Leu	Glu	Val	Glu	Asp	265	Val	Ala	Arg	Ala	Ala	270	Val	Phe	
ttg	gcg	tcc	gac	gag	gcc	aag	ttc	gtc	acc	ggc	cac	aac	ctc	gtc	gtc			864	
Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	Val				
		275					280					285							
gat	ggc	ggc	ttc	acg	gtc	ggc	aag	gac	ctc	ctc	cgg	aat	cca	ccg	agc			912	
Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	Ser				
	290					295					300								
ttt	gct	tga																921	
Phe	Ala																		
305																			

&lt;210&gt; 3386

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3386

Met	Met	Ser	Val	Ala	Ala	Asn	Lys	Ile	Leu	Gly	Arg	Ser	Arg	Gly	Val			
1				5					10					15				
Arg	Pro	Met	Phe	Ser	Ser	Gly	Leu	Ala	Asp	Arg	Leu	Phe	Ser	Ser	Ser			
			20					25					30					
Ala	Ser	Ser	Ser	Lys	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Ile	Thr	Gly			
		35					40					45						
Ala	Val	Gly	Gly	Ile	Gly	Glu	Ala	Thr	Ala	Lys	Glu	Phe	Val	Arg	Asn			
	50					55				60								
Gly	Ala	Lys	Val	Ile	Leu	Ala	Asp	Ile	Gln	Asp	Leu	Gly	Arg	Ala				
65				70					75					80				
Met	Ala	Ala	Glu	Leu	Gly	Ala	Asp	Ala	Ala	Ser	Tyr	Thr	His	Cys	Asp			
			85					90					95					
Val	Thr	Val	Glu	Ala	Asp	Val	Ala	Ala	Ala	Val	Asp	Leu	Ala	Val	Ala			
			100				105						110					
Arg	His	Gly	Arg	Leu	Asp	Val	Val	Tyr	Ser	Asn	Ala	Gly	Ile	Ala	Gly			
		115				120						125						
Ala	Ala	Ala	Pro	Pro	Thr	Leu	Ser	Ala	Leu	Asp	Leu	Asp	Asp	Tyr	Asp			
	130					135				140								
Arg	Val	Met	Ala	Val	Asn	Ala	Arg	Ser	Met	Val	Ala	Cys	Leu	Lys	His			
145				150					155					160				
Ala	Ala	Arg	Val	Met	Ser	Pro	Arg	Arg	Ala	Gly	Cys	Ile	Leu	Cys	Thr			
			165					170					175					
Ala	Ser	Ser	Thr	Ala	Leu	Ile	Gly	Asp	Leu	Ala	Ala	Pro	Ala	Tyr	Cys			
		180					185					190						
Ile	Ser	Lys	Ala	Ala	Val	Val	Gly	Met	Val	Arg	Thr	Val	Ala	Arg	Gln			
	195						200					205						
Leu	Ala	Arg	Asp	Gly	Val	Arg	Val	Asn	Ala	Ile	Ser	Pro	His	Ile	Ile			
	210					215					220							
Pro	Thr	Ala	Leu	Val	Thr	Arg	Val	Ile	Ser	Glu	Thr	Phe	Pro	Ala	Ala			
225				230						235				240				
Thr	Ala	Glu	Glu	Val	Arg	Arg	Met	Val	Thr	Arg	Asp	Met	Gln	Glu	Leu			
			245					250					255					
Glu	Gly	Ala	Ser	Leu	Glu	Val	Glu	Asp	Val	Ala	Arg	Ala	Ala	Val	Phe			
		260					265					270						
Leu	Ala	Ser	Asp	Glu	Ala	Lys	Phe	Val	Thr	Gly	His	Asn	Leu	Val	Val			
	275						280					285						
Asp	Gly	Gly	Phe	Thr	Val	Gly	Lys	Asp	Leu	Leu	Arg	Asn	Pro	Pro	Ser			
	290					295					300							
Phe	Ala																	
305																		

&lt;210&gt; 3387

&lt;211&gt; 930

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(930)

## PhoenixTemp32470.tmp.txt

```

<400> 3387
atg gag ata aga agc aga aga gac aga tca aag atc aag atg ttc aga      48
Met Glu Ile Arg Ser Arg Arg Asp Arg Ser Lys Ile Lys Met Phe Arg
1      5      10      15
gca ttg cag atc gtc ctc agg ggt aag agc cga gga ttt gtc agt cac      96
Ala Leu Gln Ile Val Leu Arg Gly Lys Ser Arg Gly Phe Val Ser His
20      25      30
ttc tcc tcc acg gct tca aat tct gaa agg ttg gct ggg aag gtg gcg      144
Phe Ser Ser Thr Ala Ser Asn Ser Glu Arg Leu Ala Gly Lys Val Ala
35      40      45
gtg atc acc ggc gcg gcg agc ggc atc ggc aag gcg acc gcg gcg gag      192
Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu
50      55      60
ttc gtc agg aat ggc gcc aag gtc atc ctc gcc gac gtc cag gac gac      240
Phe Val Arg Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp
65      70      75      80
gtc ggc cgc gcc gtc gcc tcg gag ctc ggc gcg gac gcg gcg tcg tac      288
Val Gly Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ala Ser Tyr
85      90      95
acc cgc tgc gac gtc acc gac gag gcg cag gtc gcg gcg gcc gtg gac      336
Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Val Asp
100      105      110
ctc gcc gtg gcg cgg cac ggg cag ctc gac gtc atg gtc aac gcc      384
Leu Ala Val Ala Arg His Gly Gln Leu Asp Val Met Val Asn Asn Ala
115      120      125
ggc atc gtg ggc tcc ctg tcg cgc ccc ccg ctc ggc gcc ctc gac ctc      432
Gly Ile Val Gly Ser Leu Ser Arg Pro Pro Leu Gly Ala Leu Asp Leu
130      135      140
gcc gac ttc gac gcc gtc atg gcg gtg aac acg gcg gtc ctc gcg      480
Ala Asp Phe Asp Ala Val Met Ala Val Asn Thr Arg Gly Val Leu Ala
145      150      155      160
ggc gtc aag cac gcc gcg cgc gtc atg gcg ccg cgc cgc cgc gcc agc      528
Gly Val Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Arg Gly Ser
165      170      175
atc atc tgc gtg gcg agc gtc gcc ggg gtg ctc ggc agc gtg acg ccg      576
Ile Ile Cys Val Ala Ser Val Ala Gly Val Leu Gly Ser Val Thr Pro
180      185      190
cac ccg tac agc gtg tcc aag gcc gcc gtg ctc ggc gcg gtc cgc gcc      624
His Pro Tyr Ser Val Ser Lys Ala Ala Val Leu Gly Ala Val Arg Ala
195      200      205
gcc gcc ggc gag atg gcg cgc tcc ggc gtg cgc gtg aac gcc atc tcc      672
Ala Ala Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser
210      215      220
ccc aac tac atc ccc acg ccg ctg gtg atg cgc atc atg gcg gag tgg      720
Pro Asn Tyr Ile Pro Thr Pro Leu Val Met Arg Ile Met Ala Glu Trp
225      230      235      240
tac ccc ggg gcg agc gcc gac gag cac cgc cgc gtc gtg gag cgg gag      768
Tyr Pro Gly Ala Ser Ala Asp Glu His Arg Arg Val Val Glu Arg Glu
245      250      255
atc aac gag atg gag ggc gcg acg ctg gag gcc gag gac atc gcg agg      816
Ile Asn Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg
260      265      270
gcg gcg gtg tac ctg gcc tcc gac gag gcc aag tac gtg aac ggc cac      864
Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His
275      280      285
aac ctc gtc gac ggc ggg tac acc gtc ggc aag gcg ccc aac ctg      912
Asn Leu Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu
290      295      300
ccg gcg ccg ccg caa taa
Pro Ala Pro Pro Gln
305

```

```

<210> 3388
<211> 309
<212> PRT
<213> Oryza sativa subsp

```

```
<400> 3388
```

## PhoenixTemp32470.tmp.txt

Met Glu Ile Arg Ser Arg Arg Asp Arg Ser Lys Ile Lys Met Phe Arg  
 1 5 10 15  
 Ala Leu Gln Ile Val Leu Arg Gly Lys Ser Arg Gly Phe Val Ser His  
 20 25 30  
 Phe Ser Ser Thr Ala Ser Asn Ser Glu Arg Leu Ala Gly Lys Val Ala  
 35 40 45  
 Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala Thr Ala Ala Glu  
 50 55 60  
 Phe Val Arg Asn Gly Ala Lys Val Ile Leu Ala Asp Val Gln Asp Asp  
 65 70 75 80  
 Val Gly Arg Ala Val Ala Ser Glu Leu Gly Ala Asp Ala Ser Tyr  
 85 90 95  
 Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala Val Asp  
 100 105 110  
 Leu Ala Val Ala Arg His Gly Gln Leu Asp Val Met Val Asn Asn Ala  
 115 120 125  
 Gly Ile Val Gly Ser Leu Ser Arg Pro Pro Leu Gly Ala Leu Asp Leu  
 130 135 140  
 Ala Asp Phe Asp Ala Val Met Ala Val Asn Thr Arg Gly Val Leu Ala  
 145 150 155 160  
 Gly Val Lys His Ala Ala Arg Val Met Ala Pro Arg Arg Arg Gly Ser  
 165 170 175  
 Ile Ile Cys Val Ala Ser Val Ala Gly Val Leu Gly Ser Val Thr Pro  
 180 185 190  
 His Pro Tyr Ser Val Ser Lys Ala Val Leu Gly Ala Val Arg Ala  
 195 200 205  
 Ala Ala Gly Glu Met Ala Arg Ser Gly Val Arg Val Asn Ala Ile Ser  
 210 215 220  
 Pro Asn Tyr Ile Pro Thr Pro Leu Val Met Arg Ile Met Ala Glu Trp  
 225 230 235 240  
 Tyr Pro Gly Ala Ser Ala Asp Glu His Arg Arg Val Val Glu Arg Glu  
 245 250 255  
 Ile Asn Glu Met Glu Gly Ala Thr Leu Glu Pro Glu Asp Ile Ala Arg  
 260 265 270  
 Ala Ala Val Tyr Leu Ala Ser Asp Glu Ala Lys Tyr Val Asn Gly His  
 275 280 285  
 Asn Leu Val Val Asp Gly Gly Tyr Thr Val Gly Lys Ala Pro Asn Leu  
 290 295 300  
 Pro Ala Pro Pro Gln  
 305

&lt;210&gt; 3389

&lt;211&gt; 786

&lt;212&gt; DNA

&lt;213&gt; Azospirillum brasilense

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(786)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3389

atg acc ttg act cag aag gtc gcg gtg gtc acc ggc tcg acc agc ggg	48
Met Thr Leu Thr Gln Lys Val Ala Val Val Thr Gly Ser Thr Ser Gly	
1 5 10 15	
atc ggc ttg ggc atc gcg cgg gcg ttg gcc gga gcc ggg gcg gac gtg	96
Ile Gly Leu Gly Ile Ala Arg Ala Leu Ala Gly Ala Gly Ala Asp Val	
20 25 30	
gtg ctg aac ggt ttc ggc gac gcg gcc gcc atc gag gag ctg cgc gcc	144
Val Leu Asn Gly Phe Gly Asp Ala Ala Ala Ile Glu Glu Leu Arg Ala	
35 40 45	
ggt ctg gcg gcg gag ttc ggc gtg cgc gtc ggc tat cac ggc gcc gac	192
Gly Leu Ala Ala Glu Phe Gly Val Arg Val Gly Tyr His Gly Ala Asp	
50 55 60	
ctg tcc aag ccg gcg gag atc gcc gcg ctg atc ggc cac gcg gag gag	240
Leu Ser Lys Pro Ala Glu Ile Ala Ala Leu Ile Gly His Ala Glu Glu	
65 70 75 80	
acg ttc ggt tcg gtc gat gtg ctg gtg aac aac gcc ggc atc cag cac	288
Thr Phe Gly Ser Val Asp Val Leu Val Asn Asn Ala Gly Ile Gln His	



## PhoenixTemp32470.tmp.txt

[illegible]

```
<210> 3390
<211> 261
<212> PRT
<213> Azospirillum brasilense
```

<400>	3390														
Met	Thr	Leu	Thr	Gln	Lys	Val	Ala	Val	Val	Thr	Gly	Ser	Thr	Ser	Gly
1				5					10					15	
Ile	Gly	Leu	Gly	Ile	Ala	Arg	Ala	Leu	Ala	Gly	Ala	Gly	Ala	Asp	Val
			20					25					30		
Val	Leu	Asn	Gly	Phe	Gly	Asp	Ala	Ala	Ala	Ile	Glu	Glu	Leu	Arg	Ala
		35					40					45			
Gly	Leu	Ala	Ala	Glu	Phe	Gly	Val	Arg	Val	Gly	Tyr	His	Gly	Ala	Asp
	50					55					60				
Leu	Ser	Lys	Pro	Ala	Glu	Ile	Ala	Ala	Leu	Ile	Gly	His	Ala	Glu	Glu
65					70					75					80
Thr	Phe	Gly	Ser	Val	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His
				85					90					95	
Val	Ala	Pro	Val	Glu	Asp	Phe	Pro	Ala	Asp	Arg	Trp	Asp	Ala	Val	Ile
			100					105					110		
Ala	Leu	Asn	Leu	Ser	Ala	Val	Phe	His	Gly	Thr	His	His	Ala	Leu	Pro
		115					120					125			
Gly	Met	Lys	Arg	Arg	Gly	Trp	Gly	Arg	Ile	Leu	Asn	Ile	Ala	Ser	Val
	130					135					140				
His	Gly	His	Val	Ala	Ser	Val	Asn	Lys	Ser	Ala	Tyr	Val	Ala	Ala	Lys
145					150					155				160	
His	Gly	Val	Val	Gly	Leu	Thr	Lys	Thr	Val	Ala	Leu	Glu	Thr	Ala	Ser
				165					170					175	
Thr	Gly	Val	Thr	Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro
			180					185					190		
Leu	Val	Gln	Lys	Gln	Ile	Asp	Ala	Ile	Ala	Ser	Thr	Lys	Asn	Ile	Pro
		195					200					205			
Glu	Pro	Gln	Ala	Lys	Ala	Glu	Leu	Leu	Gly	Ala	Lys	Gln	Pro	Ser	Gly
	210					215					220				

## PhoenixTemp32470.tmp.txt

Ala Phe Val Thr Pro Asp Glu Leu Gly Gly Leu Ala Val Phe Leu Cys  
 225 235 240  
 Ser Asp Ser Ala Ala Gln Met Thr Gly Ala Ser Leu Leu Met Asp Gly  
 250 255  
 Gly Trp Thr Ala Gln  
 260

&lt;210&gt; 3391

&lt;211&gt; 780

&lt;212&gt; DNA

&lt;213&gt; Digitalis lanata

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(780)

&lt;400&gt; 3391

atg	tcg	tca	aag	cca	agg	ttg	gag	ggt	aaa	gtg	gca	atc	atc	acc	gga	48
Met	Ser	Ser	Lys	Pro	Arg	Leu	Glu	Gly	Lys	Val	Ala	Ile	Ile	Thr	Gly	
1				5					10					15		
gcc	gct	agc	ggc	atc	ggc	gag	gag	acg	gca	aga	ttg	ttc	gtg	gag	cat	96
Ala	Ala	Ser	Gly	Ile	Gly	Glu	Glu	Thr	Ala	Arg	Leu	Phe	Val	Glu	His	
			20					25					30			
ggc	gcc	tca	gtg	gtg	gcg	gac	gtc	cag	gac	gaa	ttg	ggg	cgc	cag		144
Gly	Ala	Ser	Val	Val	Val	Ala	Asp	Val	Gln	Asp	Glu	Leu	Gly	Arg	Gln	
			35				40					45				
gtc	gtc	gct	tcc	gta	aac	tct	gac	gac	aag	ata	agt	tac	tac	cac	tgc	192
Val	Val	Ala	Ser	Val	Asn	Ser	Asp	Asp	Lys	Ile	Ser	Tyr	Tyr	His	Cys	
			50			55					60					
gac	gtc	aga	gat	gaa	aaa	caa	gtg	gcg	gcc	acc	gtc	cgc	tac	gcg	gtg	240
Asp	Val	Arg	Asp	Glu	Lys	Gln	Val	Ala	Ala	Thr	Val	Arg	Tyr	Ala	Val	
					70					75					80	
gag	aaa	tac	ggg	cgc	ctc	gac	atc	atg	ctg	agc	aac	gcc	gga	gtc	ttc	288
Glu	Lys	Tyr	Gly	Arg	Leu	Asp	Ile	Met	Leu	Ser	Asn	Ala	Gly	Val	Phe	
				85					90					95		
ggg	gcc	ttg	atg	acg	aac	gta	atc	gat	ctc	gac	atg	ggt	gac	ttt	gaa	336
Gly	Ala	Leu	Met	Thr	Asn	Val	Ile	Asp	Leu	Asp	Met	Val	Asp	Phe	Glu	
			100					105					110			
aat	gta	ttg	gcg	act	aac	gtg	cgc	gga	ggt	gcc	aac	act	ata	aag	cac	384
Asn	Val	Leu	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Asn	Thr	Ile	Lys	His	
							120					125				
gcg	gca	cga	gcc	atg	gtg	gag	ggg	aag	gtc	aag	ggg	tcc	atc	att	tgc	432
Ala	Ala	Arg	Ala	Met	Val	Glu	Gly	Lys	Val	Lys	Gly	Ser	Ile	Ile	Cys	
			130			135					140					
acc	gcc	agc	gtg	tcg	gcg	agc	ctt	gga	ggc	atg	ggc	ccg	ccc	gct	tac	480
Thr	Ala	Ser	Val	Ser	Ala	Ser	Leu	Gly	Gly	Met	Gly	Pro	Pro	Ala	Tyr	
					150					155					160	
acg	gct	tcc	aaa	cac	gcc	gtc	ctg	ggc	cta	gtc	aag	ggc	gct	tgc	gcc	528
Thr	Ala	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Val	Lys	Gly	Ala	Cys	Ala	
				165				170						175		
gaa	ttg	ggg	gtg	cac	ggg	atc	cga	gtc	aac	tcg	gtg	gcg	ccg	tac	ggt	576
Glu	Leu	Gly	Val	His	Gly	Ile	Arg	Val	Asn	Ser	Val	Ala	Pro	Tyr	Gly	
			180					185					190			
gtg	gcg	acc	ccg	atg	ccg	tgc	agt	gct	tac	gga	atg	aca	ccg	agt	cag	624
Val	Ala	Thr	Pro	Met	Pro	Cys	Ser	Ala	Tyr	Gly	Met	Thr	Pro	Ser	Gln	
			195			200						205				
atg	gag	gag	gcc	aat	aac	tcc	agg	gct	aac	ttg	aag	ggg	gtg	gtt	ttg	672
Met	Glu	Glu	Ala	Asn	Asn	Ser	Arg	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	
			210			215					220					
aag	gct	aag	cat	gta	gct	gag	gcg	gct	ctc	ttc	ttg	gct	tcc	gat	gag	720
Lys	Ala	Lys	His	Val	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	
					230					235					240	
tcg	gct	tat	gtc	agt	gga	caa	aac	ttg	gct	gtc	gac	ggc	ggc	ttc	acc	768
Ser	Ala	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Ala	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
gtc	gtg	cgt	tag													780
Val	Val	Arg														

<210> 3392  
 <211> 259  
 <212> PRT  
 <213> Digitalis lanata

<400> 3392  
 Met Ser Ser Lys Pro Arg Leu Glu Gly Lys Val Ala Ile Ile Thr Gly  
 1 5 10 15  
 Ala Ala Ser Gly Ile Gly Glu Glu Thr Ala Arg Leu Phe Val Glu His  
 20 25 30  
 Gly Ala Ser Val Val Val Ala Asp Val Gln Asp Glu Leu Gly Arg Gln  
 35 40 45  
 Val Val Ala Ser Val Asn Ser Asp Asp Lys Ile Ser Tyr Tyr His Cys  
 50 55 60  
 Asp Val Arg Asp Glu Lys Gln Val Ala Ala Thr Val Arg Tyr Ala Val  
 65 70 75 80  
 Glu Lys Tyr Gly Arg Leu Asp Ile Met Leu Ser Asn Ala Gly Val Phe  
 85 90 95  
 Gly Ala Leu Met Thr Asn Val Ile Asp Leu Asp Met Val Asp Phe Glu  
 100 105 110  
 Asn Val Leu Ala Thr Asn Val Arg Gly Val Ala Asn Thr Ile Lys His  
 115 120 125  
 Ala Ala Arg Ala Met Val Glu Gly Lys Val Lys Gly Ser Ile Ile Cys  
 130 135 140  
 Thr Ala Ser Val Ser Ala Ser Leu Gly Gly Met Gly Pro Pro Ala Tyr  
 145 150 155 160  
 Thr Ala Ser Lys His Ala Val Leu Gly Leu Val Lys Gly Ala Cys Ala  
 165 170 175  
 Glu Leu Gly Val His Gly Ile Arg Val Asn Ser Val Ala Pro Tyr Gly  
 180 185 190  
 Val Ala Thr Pro Met Pro Cys Ser Ala Tyr Gly Met Thr Pro Ser Gln  
 195 200 205  
 Met Glu Glu Ala Asn Asn Ser Arg Ala Asn Leu Lys Gly Val Val Leu  
 210 215 220  
 Lys Ala Lys His Val Ala Glu Ala Ala Leu Phe Leu Ala Ser Asp Glu  
 225 230 235 240  
 Ser Ala Tyr Val Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Phe Thr  
 245 250 255  
 Val Val Arg

<210> 3393  
 <211> 921  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(921)

<400> 3393  
 atg gcg gcc ata gta ctg atc aga tct atc gtc aga aac ttt aaa cgg 48  
 Met Ala Ala Ile Val Leu Ile Arg Ser Ile Val Arg Asn Phe Lys Arg  
 1 5 10 15  
 cca gcc acc gca gcc tca gcc gct tac tcg aca ggt ggt ggt ggc ggc 96  
 Pro Ala Thr Ala Ala Ser Ala Ala Tyr Ser Thr Gly Gly Gly Gly Gly  
 20 25 30  
 ggt tgt act tgt acg agt aaa aag cta gaa ggc aaa gta gct ctc ata 144  
 Gly Cys Thr Cys Thr Ser Lys Lys Leu Glu Gly Lys Val Ala Leu Ile  
 35 40 45  
 act ggt ggt gct agc ggg ctc ggt aag gcc acg gcc agc gag ttt ctc 192  
 Thr Gly Gly Ala Ser Gly Leu Gly Lys Ala Thr Ala Ser Glu Phe Leu  
 50 55 60  
 cgc cat ggt gcc cga gtc gtg atc gcc gac tta gac gcg gaa acc ggg 240  
 Arg His Gly Ala Arg Val Val Ile Ala Asp Leu Asp Ala Glu Thr Gly  
 65 70 75 80  
 aca aaa acc gct aaa gaa cta ggc tcg gag gca gag ttt gtg cgg tgt 288  
 Thr Lys Thr Ala Lys Glu Leu Gly Ser Glu Ala Glu Phe Val Arg Cys  
 85 90 95

## PhoenixTemp32470.tmp.txt

gat	gtc	acg	gtg	gag	gct	gat	atc	gct	ggg	acg	gtg	gaa	ata	acg	gtg	336
Asp	Val	Thr	Val	Glu	Ala	Asp	Ile	Ala	Gly	Thr	Val	Glu	Ile	Thr	Val	
			100					105					110			
gag	cgg	tat	ggg	aag	cta	gac	gtg	atg	tac	aat	aac	gct	ggg	att	gtt	384
Glu	Arg	Tyr	Gly	Lys	Leu	Asp	Val	Met	Tyr	Asn	Asn	Ala	Gly	Ile	Val	
		115					120					125				
gga	cct	atg	act	cca	gcg	agc	ata	tcg	cag	ctt	gat	atg	aca	gaa	ttc	432
Gly	Pro	Met	Thr	Pro	Ala	Ser	Ile	Ser	Gln	Leu	Asp	Met	Thr	Glu	Phe	
	130					135					140					
gag	aga	gta	atg	agg	att	aat	gtt	ttt	ggg	gtt	gtc	tcc	ggc	atc	aaa	480
Glu	Arg	Val	Met	Arg	Ile	Asn	Val	Phe	Gly	Val	Val	Ser	Gly	Ile	Lys	
145					150				155						160	
cac	gcc	gct	aag	ttt	att	ccg	gct	agg	tct	gga	tgc	att	ttg	tgc		528
His	Ala	Ala	Lys	Phe	Met	Ile	Pro	Ala	Arg	Ser	Gly	Cys	Ile	Leu	Cys	
				165				170						175		
aca	tca	agc	gtt	gca	ggc	gtg	act	gga	ggg	ttg	gct	cca	cat	tca	tac	576
Thr	Ser	Ser	Val	Ala	Gly	Val	Thr	Gly	Gly	Leu	Ala	Pro	His	Ser	Tyr	
			180					185					190			
aca	atc	tca	aag	ttc	aca	act	ccc	gga	ata	gtc	aag	tcg	gca	gca	agc	624
Thr	Ile	Ser	Lys	Phe	Thr	Thr	Pro	Gly	Ile	Val	Lys	Ser	Ala	Ala	Ser	
			195				200					205				
gag	ctc	tgc	gaa	cac	ggc	gtg	cgt	ata	aac	tgt	atc	tca	ccg	ggg	acg	672
Glu	Leu	Cys	Glu	His	Gly	Val	Arg	Ile	Asn	Cys	Ile	Ser	Pro	Gly	Thr	
	210					215					220					
gtg	gct	aca	ccg	ctc	act	ctc	agt	tac	ctt	cag	aaa	gtg	ttt	ccg	aag	720
Val	Ala	Thr	Pro	Leu	Thr	Leu	Ser	Tyr	Leu	Gln	Lys	Val	Phe	Pro	Lys	
225					230					235					240	
gta	tcg	gag	gag	aag	cta	cgc	gaa	aca	gtg	aaa	gga	atg	ggg	gag	tta	768
Val	Ser	Glu	Glu	Lys	Leu	Arg	Glu	Thr	Val	Lys	Gly	Met	Gly	Glu	Leu	
				245					250					255		
aaa	gga	gct	gag	tgt	gaa	gaa	gct	gac	gtg	gct	aag	gct	gct	ttg	tat	816
Lys	Gly	Ala	Glu	Cys	Glu	Glu	Ala	Asp	Val	Ala	Lys	Ala	Ala	Leu	Tyr	
			260					265					270			
ttg	gct	tcc	aac	gac	ggg	aaa	tac	gtt	act	ggc	cat	aac	ttg	gtc	gtg	864
Leu	Ala	Ser	Asn	Asp	Gly	Lys	Tyr	Val	Thr	Gly	His	Asn	Leu	Val	Val	
			275				280					285				
gat	ggg	ggc	atg	act	gct	ttc	aaa	ata	gct	ggg	ttt	cct	ttt	cct	tcg	912
Asp	Gly	Gly	Met	Thr	Ala	Phe	Lys	Ile	Ala	Gly	Phe	Pro	Phe	Pro	Ser	
	290					295					300					
gat	tca	tga														921
Asp	Ser															
305																

&lt;210&gt; 3394

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 3394

Met	Ala	Ala	Ile	Val	Leu	Ile	Arg	Ser	Ile	Val	Arg	Asn	Phe	Lys	Arg	
1				5					10					15		
Pro	Ala	Thr	Ala	Ala	Ser	Ala	Ala	Tyr	Ser	Thr	Gly	Gly	Gly	Gly	Gly	
			20					25					30			
Gly	Cys	Thr	Cys	Thr	Ser	Lys	Lys	Leu	Glu	Gly	Lys	Val	Ala	Leu	Ile	
		35					40					45				
Thr	Gly	Gly	Ala	Ser	Gly	Leu	Gly	Lys	Ala	Thr	Ala	Ser	Glu	Phe	Leu	
	50					55					60					
Arg	His	Gly	Ala	Arg	Val	Val	Ile	Ala	Asp	Leu	Asp	Ala	Glu	Thr	Gly	
65					70				75						80	
Thr	Lys	Thr	Ala	Lys	Glu	Leu	Gly	Ser	Glu	Ala	Glu	Phe	Val	Arg	Cys	
				85					90					95		
Asp	Val	Thr	Val	Glu	Ala	Asp	Ile	Ala	Gly	Thr	Val	Glu	Ile	Thr	Val	
			100					105					110			
Glu	Arg	Tyr	Gly	Lys	Leu	Asp	Val	Met	Tyr	Asn	Asn	Ala	Gly	Ile	Val	
		115					120					125				
Gly	Pro	Met	Thr	Pro	Ala	Ser	Ile	Ser	Gln	Leu	Asp	Met	Thr	Glu	Phe	
	130					135					140					
Glu	Arg	Val	Met	Arg	Ile	Asn	Val	Phe	Gly	Val	Val	Ser	Gly	Ile	Lys	
145					150				155						160	

## PhoenixTemp32470.tmp.txt

His Ala Ala Lys Phe Met Ile Pro Ala Arg Ser Gly Cys Ile Leu Cys  
 165 170 175  
 Thr Ser Ser Val Ala Gly Val Thr Gly Gly Leu Ala Pro His Ser Tyr  
 180 185 190  
 Thr Ile Ser Lys Phe Thr Thr Pro Gly Ile Val Lys Ser Ala Ala Ser  
 195 200 205  
 Glu Leu Cys Glu His Gly Val Arg Ile Asn Cys Ile Ser Pro Gly Thr  
 210 215 220  
 Val Ala Thr Pro Leu Thr Leu Ser Tyr Leu Gln Lys Val Phe Pro Lys  
 225 230 235 240  
 Val Ser Glu Glu Lys Leu Arg Glu Thr Val Lys Gly Met Gly Glu Leu  
 245 250 255  
 Lys Gly Ala Glu Cys Glu Glu Ala Asp Val Ala Lys Ala Ala Tyr  
 260 265 270  
 Leu Ala Ser Asn Asp Gly Lys Tyr Val Thr Gly His Asn Leu Val Val  
 275 280 285  
 Asp Gly Gly Met Thr Ala Phe Lys Ile Ala Gly Phe Pro Phe Pro Ser  
 290 295 300  
 Asp Ser  
 305

&lt;210&gt; 3395

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Ophiostoma floccosum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 3395

atg tct cct gca act gtc aag gac gcc gcc cgc cct ctt gct ggc aag	48
Met Ser Pro Ala Thr Val Lys Asp Ala Ala Arg Pro Leu Ala Gly Lys	
1 5 10 15	
ggt gcc atc atc act ggt gct ggc cgt ggt att ggt cgc ggt att gcc	96
Val Ala Ile Ile Thr Gly Ala Gly Arg Gly Ile Gly Arg Gly Ile Ala	
20 25 30	
acc gag ctt ggc cgt cgt ggc gca aat gtt att gtc aac tac ggt agc	144
Thr Glu Leu Gly Arg Arg Gly Ala Asn Val Ile Val Asn Tyr Gly Ser	
35 40 45	
agc agt gcc gct gct gag gaa gtt gtt gcc gac ctc aaa gct ctt ggc	192
Ser Ser Ala Ala Glu Glu Val Val Ala Asp Leu Lys Ala Leu Gly	
50 55 60	
act gac gct gtc gcc atg cag gcc gat atc agc aag ccc gat gaa gtt	240
Thr Asp Ala Val Ala Met Gln Ala Asp Ile Ser Lys Pro Asp Glu Val	
65 70 75 80	
gtc aag ctg ttc gac cgt gca gtt gcc cac ttt ggc gga att gac att	288
Val Lys Leu Phe Asp Arg Ala Val Ala His Phe Gly Gly Ile Asp Ile	
85 90 95	
gtc gtc tcc aac tct ggc atg gag gtc tgg tcc tcg gag ctt gac gtc	336
Val Val Ser Asn Ser Gly Met Glu Val Trp Ser Ser Glu Leu Asp Val	
100 105 110	
acc cag gag ctt ttt gac aag gtc ttc aac ctg aac tgc cgg ggc cag	384
Thr Gln Glu Leu Phe Asp Lys Val Phe Asn Leu Asn Cys Arg Gly Gln	
115 120 125	
ttc ttt gtt gcc cag caa ggc ctc aag cac tgc cgt cgt ggt ggc agc	432
Phe Phe Val Ala Gln Gln Gly Leu Lys His Cys Arg Gly Gly Ser	
130 135 140	
atc atc ctg acc tca tca gtc gct gcg tcg ctc agc ggt atc ccc aac	480
Ile Ile Leu Thr Ser Ser Val Ala Ala Ser Leu Ser Gly Ile Pro Asn	
145 150 155 160	
cac gct cta tac gca ggc tca aag gct gct gtc gag ggc ttc acg cgt	528
His Ala Leu Tyr Ala Gly Ser Lys Ala Val Glu Glu Phe Thr Arg	
165 170 175	
gcc ttc tcc gtt gac tgc ggc gag aag ggc gtc act gtc aat gcc att	576
Ala Phe Ser Val Asp Cys Gly Glu Lys Gly Val Thr Val Asn Ala Ile	
180 185 190	
gcc ccg ggc ggt gtc aag acg gac atg tac gac gag aac tcg tgg cac	624
Ala Pro Gly Gly Val Lys Thr Asp Met Tyr Asp Glu Asn Ser Trp His	

## PhoenixTemp32470.tmp.txt

```

      195      200      205
tac gtt ccc ggt ggc tac aag ggc atg tcg caa gat gtc atc gac gag
Tyr Val Pro Gly Gly Tyr Lys Gly Met Ser Gln Asp Val Ile Asp Glu
      210      215      220
ggc att ctc aag gct tgc ccg ctc aag cgc gtc ggt acc ccg agc gac
Gly Ile Leu Lys Ala Cys Pro Leu Lys Arg Val Gly Thr Pro Ser Asp
225      230      235      240
atc ggc aag gct gtt gct ctg ctt gtt agc gag gag gga gaa tgg atc
Ile Gly Lys Ala Val Ala Leu Leu Val Ser Glu Glu Gly Glu Trp Ile
      245      250      255
aac ggc cag att atc aag ctg tct ggc ggt tct gcc gtt tga
Asn Gly Gln Ile Ile Lys Leu Ser Gly Gly Ser Ala Val
      260      265

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672

720

768

810

<210> 3396  
 <211> 269  
 <212> PRT  
 <213> Ophiostoma floccosum

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<400> 3396
Met Ser Pro Ala Thr Val Lys Asp Ala Ala Arg Pro Leu Ala Gly Lys
1      5      10      15
Val Ala Ile Ile Thr Gly Ala Gly Arg Gly Ile Gly Arg Gly Ile Ala
      20      25      30
Thr Glu Leu Gly Arg Arg Gly Ala Asn Val Ile Val Asn Tyr Gly Ser
      35      40      45
Ser Ser Ala Ala Ala Glu Glu Val Val Ala Asp Leu Lys Ala Leu Gly
      50      55      60
Thr Asp Ala Val Ala Met Gln Ala Asp Ile Ser Lys Pro Asp Glu Val
65      70      75      80
Val Lys Leu Phe Asp Arg Ala Val Ala His Phe Gly Gly Ile Asp Ile
      85      90      95
Val Val Ser Asn Ser Gly Met Glu Val Trp Ser Ser Glu Leu Asp Val
      100      105      110
Thr Gln Glu Leu Phe Asp Lys Val Phe Asn Leu Asn Cys Arg Gly Gln
      115      120      125
Phe Phe Val Ala Gln Gln Gly Leu Lys His Cys Arg Arg Gly Gly Ser
      130      135      140
Ile Ile Leu Thr Ser Ser Val Ala Ala Ser Leu Ser Gly Ile Pro Asn
145      150      155      160
His Ala Leu Tyr Ala Gly Ser Lys Ala Ala Val Glu Gly Phe Thr Arg
      165      170      175
Ala Phe Ser Val Asp Cys Gly Glu Lys Gly Val Thr Val Asn Ala Ile
      180      185      190
Ala Pro Gly Gly Val Lys Thr Asp Met Tyr Asp Glu Asn Ser Trp His
      195      200      205
Tyr Val Pro Gly Gly Tyr Lys Gly Met Ser Gln Asp Val Ile Asp Glu
      210      215      220
Gly Ile Leu Lys Ala Cys Pro Leu Lys Arg Val Gly Thr Pro Ser Asp
225      230      235      240
Ile Gly Lys Ala Val Ala Leu Leu Val Ser Glu Glu Gly Glu Trp Ile
      245      250      255
Asn Gly Gln Ile Ile Lys Leu Ser Gly Gly Ser Ala Val
      260      265

```

<210> 3397  
 <211> 771  
 <212> DNA  
 <213> Pseudomonas putida

<220>  
 <221> CDS  
 <222> (1)..(771)  
 <223> transl\_table=11

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<400> 3397
atg acc ctc aaa ggc aag acc gca ctc gtc acc ggt tcc acc agc ggc
Met Thr Leu Lys Gly Lys Thr Ala Leu Val Thr Gly Ser Thr Ser Gly
1      5      10      15

```

48

## PhoenixTemp32470.tmp.txt

atc	ggc	ctg	ggc	att	gcc	cag	gtg	ctg	gcc	cgc	gca	ggc	ggc	aac	atc	96
Ile	Gly	Leu	Gly	Ile	Ala	Gln	Val	Leu	Ala	Arg	Ala	Gly	Ala	Asn	Ile	
			20					25					30			
gtg	ctc	aac	ggc	ttc	ggc	gac	cct	gcc	ccg	gcg	ctg	gcc	gag	ata	gcc	144
Val	Leu	Asn	Gly	Phe	Gly	Asp	Pro	Ala	Pro	Ala	Leu	Ala	Glu	Ile	Ala	
		35					40					45				
cgg	cac	ggg	gta	aag	gca	gtc	cat	cac	ccg	gcc	gac	ctg	tcg	gac	gtg	192
Arg	His	Gly	Val	Lys	Ala	Val	His	His	Pro	Ala	Asp	Leu	Ser	Asp	Val	
	50					55					60					
gcc	cag	atc	gaa	gcg	ctg	ttc	gcc	ctg	gcc	gag	cgc	gag	ttc	ggc	ggc	240
Ala	Gln	Ile	Glu	Ala	Leu	Phe	Ala	Leu	Ala	Glu	Arg	Glu	Phe	Gly	Gly	
65					70				75					80		
gtc	gac	atc	ctg	gtc	aac	gcc	ggg	atc	cag	cac	gtg	gcg	ccg	gtg		288
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Val	
				85				90						95		
gag	cag	ttc	ccg	ctg	gaa	agc	tgg	gac	aag	atc	atc	gcc	ctc	aac	ctg	336
Glu	Gln	Phe	Pro	Leu	Glu	Ser	Trp	Asp	Lys	Ile	Ile	Ala	Leu	Asn	Leu	
			100					105					110			
tcg	gcc	gtg	ttc	cat	ggg	acg	cgc	ctg	gcc	ctg	ccc	ggc	atg	cga	gcg	384
Ser	Ala	Val	Phe	His	Gly	Thr	Arg	Leu	Ala	Leu	Pro	Gly	Met	Arg	Ala	
		115					120					125				
cgc	aac	tgg	ggg	cgc	atc	atc	aac	atc	gcc	tcg	gtg	cac	ggc	ctg	gtc	432
Arg	Asn	Trp	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	His	Gly	Leu	Val	
		130				135					140					
ggc	tcc	acc	ggc	aag	gcg	gcc	tat	gtg	gcg	gcc	aag	cac	ggc	gtg	gtc	480
Gly	Ser	Thr	Gly	Lys	Ala	Ala	Tyr	Val	Ala	Ala	Lys	His	Gly	Val	Val	
145				150					155						160	
ggc	ctg	acc	aag	gtg	gtg	ggc	ctg	gaa	acc	gcc	acc	agc	aac	gtc	acc	528
Gly	Leu	Thr	Lys	Val	Val	Gly	Leu	Glu	Thr	Ala	Thr	Ser	Asn	Val	Thr	
				165				170						175		
tgc	aat	gcc	atc	tgc	cca	ggc	tgg	gtg	ttg	acc	ccg	ctg	gtg	cag	aaa	576
Cys	Asn	Ala	Ile	Cys	Pro	Gly	Trp	Val	Leu	Thr	Pro	Leu	Val	Gln	Lys	
			180				185						190			
cag	atc	gac	gat	cgt	gct	gcc	aac	ggg	ggc	gat	ccg	ctg	caa	gcg	caa	624
Gln	Ile	Asp	Arg	Ala	Ala	Ala	Asn	Gly	Gly	Asp	Pro	Leu	Gln	Ala	Gln	
		195					200					205				
cac	gat	ctg	ctg	gca	gaa	aaa	cag	cca	tcg	ttg	gcc	ttc	gtc	acc	ccc	672
His	Asp	Leu	Leu	Ala	Glu	Lys	Gln	Pro	Ser	Leu	Ala	Phe	Val	Thr	Pro	
		210				215					220					
gaa	cac	ctg	ggg	gag	ctg	gta	cta	ttc	ctg	tgc	agc	gag	gcc	ggg	agc	720
Glu	His	Leu	Gly	Glu	Leu	Val	Leu	Phe	Leu	Cys	Ser	Glu	Ala	Gly	Ser	
225				230						235					240	
cag	gtt	cgc	ggg	gcc	gcc	tgg	aac	gtc	gat	ggg	ggc	tgg	ttg	gcc	cag	768
Gln	Val	Arg	Gly	Ala	Ala	Trp	Asn	Val	Asp	Gly	Gly	Trp	Leu	Ala	Gln	
				245				250						255		
tga																771

&lt;210&gt; 3398

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Pseudomonas putida

&lt;400&gt; 3398

Met	Thr	Leu	Lys	Gly	Lys	Thr	Ala	Leu	Val	Thr	Gly	Ser	Thr	Ser	Gly	
1				5					10					15		
Ile	Gly	Leu	Gly	Ile	Ala	Gln	Val	Leu	Ala	Arg	Ala	Gly	Ala	Asn	Ile	
			20					25					30			
Val	Leu	Asn	Gly	Phe	Gly	Asp	Pro	Ala	Pro	Ala	Leu	Ala	Glu	Ile	Ala	
		35					40					45				
Arg	His	Gly	Val	Lys	Ala	Val	His	His	Pro	Ala	Asp	Leu	Ser	Asp	Val	
	50					55					60					
Ala	Gln	Ile	Glu	Ala	Leu	Phe	Ala	Leu	Ala	Glu	Arg	Glu	Phe	Gly	Gly	
65					70					75				80		
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Val	
				85					90					95		
Glu	Gln	Phe	Pro	Leu	Glu	Ser	Trp	Asp	Lys	Ile	Ile	Ala	Leu	Asn	Leu	
			100					105					110			

## PhoenixTemp32470.tmp.txt

Ser Ala Val Phe His Gly Thr Arg Leu Ala Leu Pro Gly Met Arg Ala  
 115 120 125  
 Arg Asn Trp Gly Arg Ile Ile Asn Ile Ala Ser Val His Gly Leu Val  
 130 135 140  
 Gly Ser Thr Gly Lys Ala Ala Tyr Val Ala Ala Lys His Gly Val Val  
 145 150 155 160  
 Gly Leu Thr Lys Val Val Gly Leu Glu Thr Ala Thr Ser Asn Val Thr  
 165 170 175  
 Cys Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu Val Gln Lys  
 180 185 190  
 Gln Ile Asp Asp Arg Ala Ala Asn Gly Gly Asp Pro Leu Gln Ala Gln  
 195 200 205  
 His Asp Leu Leu Ala Glu Lys Gln Pro Ser Leu Ala Phe Val Thr Pro  
 210 215 220  
 Glu His Leu Gly Glu Leu Val Leu Phe Leu Cys Ser Glu Ala Gly Ser  
 225 230 235 240  
 Gln Val Arg Gly Ala Ala Trp Asn Val Asp Gly Gly Trp Leu Ala Gln  
 245 250 255

&lt;210&gt; 3399

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Candida magnoliae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 3399

atg gct aag aac ttc tcc aac gtc gag tac ccc gcc ccg cct ccg gcc	48
Met Ala Lys Asn Phe Ser Asn Val Glu Tyr Pro Ala Pro Pro Pro Ala	
1 5 10 15	
cac acc aag aac gag tcg ctg cag gtc ctt gac ctg ttc aag ctg aat	96
His Thr Lys Asn Glu Ser Leu Gln Val Leu Asp Leu Phe Lys Leu Asn	
20 25 30	
ggc aag gtt gcc agc atc act ggc tcg tcc agc ggt att ggc tac gct	144
Gly Lys Val Ala Ser Ile Thr Gly Ser Ser Ser Gly Ile Gly Tyr Ala	
35 40 45	
ctg gct gag gcc ttc gcg cag gtc ggc gct gac gtc gcc atc tgg tac	192
Leu Ala Glu Ala Phe Ala Gln Val Gly Ala Asp Val Ala Ile Trp Tyr	
50 55 60	
aac agc cac gac gct act ggc aag gct gag gcc ctc gcc aag aag tac	240
Asn Ser His Asp Ala Thr Gly Lys Ala Glu Ala Leu Ala Lys Lys Tyr	
65 70 75 80	
ggc gtc aag gtc aag gcc tac aag gcg aac gtg agc agc tct gac gcc	288
Gly Val Lys Val Lys Ala Tyr Lys Ala Asn Val Ser Ser Ser Asp Ala	
85 90 95	
gtg aag cag acg atc gag cag cag atc aag gac ttc ggc cac ctc gac	336
Val Lys Gln Thr Ile Glu Gln Gln Ile Lys Asp Phe Gly His Leu Asp	
100 105 110	
att gtc gtg gcg aac gcc ggc att ccc tgg acg aag ggt gcc tac atc	384
Ile Val Val Ala Asn Ala Gly Ile Pro Trp Thr Lys Gly Ala Tyr Ile	
115 120 125	
gac cag gac gac gac aag cac ttc gac cag gtc gtt gac gtc gat ctg	432
Asp Gln Asp Asp Asp Lys His Phe Asp Gln Val Val Asp Val Asp Leu	
130 135 140	
aag ggt gtt gga tac gtc gcg aag cac gct ggc cgt cac ttc cgc gag	480
Lys Gly Val Gly Tyr Val Ala Lys His Ala Gly Arg His Phe Arg Glu	
145 150 155 160	
cgc ttc gag aag gag ggc aag aag ggc gcc ctt gtg ttc acg gcc tcc	528
Arg Phe Glu Lys Glu Gly Lys Lys Gly Ala Leu Val Phe Thr Ala Ser	
165 170 175	
atg tct ggc cac att gtg aac gtg ccc cag ttc cag gcc acg tac aac	576
Met Ser Gly His Ile Val Asn Val Pro Gln Phe Gln Ala Thr Tyr Asn	
180 185 190	
gcg gcc aag gct ggc gtg cgc cac ttc gcg aag tcg ctg gcc gtc gag	624
Ala Ala Lys Ala Gly Val Arg His Phe Ala Lys Ser Leu Ala Val Glu	
195 200 205	
ttc gcg ccg ttc gcg cgc gtg aac tct gtg tcg ccg ggc tac atc aac	672



## PhoenixTemp32470.tmp.txt

Phe	Ala	Pro	Phe	Ala	Arg	Val	Asn	Ser	Val	Ser	Pro	Gly	Tyr	Ile	Asn		
210	210					215				220							
acg	gag	atc	tcg	gac	ttc	gtg	ccc	cag	gag	acg	cag	aac	aag	tgg	tgg	720	
Thr	Glu	Ile	Ser	Asp	Phe	Val	Pro	Gln	Glu	Thr	Gln	Asn	Lys	Trp	Trp		
225					230					235					240		
tcg	ctc	gtg	ccc	ctt	ggc	cgc	ggc	gga	gag	acg	gcc	gag	ctc	ggt	ggc	768	
Ser	Leu	Val	Pro	Leu	Gly	Arg	Gly	Gly	Glu	Thr	Ala	Glu	Leu	Val	Gly		
				245					250					255			
gcc	tac	ctg	ttc	ctt	gca	tct	gac	gcc	ggc	tcg	tac	gcc	act	ggt	acg	816	
Ala	Tyr	Leu	Phe	Leu	Ala	Ser	Asp	Ala	Gly	Ser	Tyr	Ala	Thr	Gly	Thr		
			260					265					270				
gac	atc	att	gtt	gac	ggc	ggc	tac	acg	ctt	ccc	taa					852	
Asp	Ile	Ile	Val	Asp	Gly	Gly	Tyr	Thr	Leu	Pro							
		275					280										

&lt;210&gt; 3400

&lt;211&gt; 283

&lt;212&gt; PRT

&lt;213&gt; Candida magnoliae

&lt;400&gt; 3400

Met	Ala	Lys	Asn	Phe	Ser	Asn	Val	Glu	Tyr	Pro	Ala	Pro	Pro	Pro	Ala		
1				5				10					15				
His	Thr	Lys	Asn	Glu	Ser	Leu	Gln	Val	Leu	Asp	Leu	Phe	Lys	Leu	Asn		
			20					25					30				
Gly	Lys	Val	Ala	Ser	Ile	Thr	Gly	Ser	Ser	Ser	Gly	Ile	Gly	Tyr	Ala		
		35					40					45					
Leu	Ala	Glu	Ala	Phe	Ala	Gln	Val	Gly	Ala	Asp	Val	Ala	Ile	Trp	Tyr		
	50					55				60							
Asn	Ser	His	Asp	Ala	Thr	Gly	Lys	Ala	Glu	Ala	Leu	Ala	Lys	Lys	Tyr		
65					70				75						80		
Gly	Val	Lys	Val	Lys	Ala	Tyr	Lys	Ala	Asn	Val	Ser	Ser	Ser	Asp	Ala		
			85					90						95			
Val	Lys	Gln	Thr	Ile	Glu	Gln	Gln	Ile	Lys	Asp	Phe	Gly	His	Leu	Asp		
			100					105					110				
Ile	Val	Val	Ala	Asn	Ala	Gly	Ile	Pro	Trp	Thr	Lys	Gly	Ala	Tyr	Ile		
	115					120						125					
Asp	Gln	Asp	Asp	Asp	Lys	His	Phe	Asp	Gln	Val	Val	Asp	Val	Asp	Leu		
	130				135				140								
Lys	Gly	Val	Gly	Tyr	Val	Ala	Lys	His	Ala	Gly	Arg	His	Phe	Arg	Glu		
145					150				155						160		
Arg	Phe	Glu	Lys	Glu	Gly	Lys	Lys	Gly	Ala	Leu	Val	Phe	Thr	Ala	Ser		
			165					170						175			
Met	Ser	Gly	His	Ile	Val	Asn	Val	Pro	Gln	Phe	Gln	Ala	Thr	Tyr	Asn		
			180					185					190				
Ala	Ala	Lys	Ala	Gly	Val	Arg	His	Phe	Ala	Lys	Ser	Leu	Ala	Val	Glu		
	195						200					205					
Phe	Ala	Pro	Phe	Ala	Arg	Val	Asn	Ser	Val	Ser	Pro	Gly	Tyr	Ile	Asn		
	210				215					220							
Thr	Glu	Ile	Ser	Asp	Phe	Val	Pro	Gln	Glu	Thr	Gln	Asn	Lys	Trp	Trp		
225					230				235					240			
Ser	Leu	Val	Pro	Leu	Gly	Arg	Gly	Gly	Glu	Thr	Ala	Glu	Leu	Val	Gly		
			245					250						255			
Ala	Tyr	Leu	Phe	Leu	Ala	Ser	Asp	Ala	Gly	Ser	Tyr	Ala	Thr	Gly	Thr		
			260					265					270				
Asp	Ile	Ile	Val	Asp	Gly	Gly	Tyr	Thr	Leu	Pro							
		275					280										

&lt;210&gt; 3401

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus erythropolis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3401

## PhoenixTemp32470.tmp.txt

gtg	agt	tac	gca	ctc	gag	ggc	aag	ggt	gct	gtg	ggt	acc	ggt	ggc	gga	48
Met	Ser	Tyr	Ala	Leu	Glu	Gly	Lys	Val	Ala	Val	Val	Thr	Gly	Gly	Gly	
1				5				10					15			
tcc	ggt	atc	ggc	gca	gca	tgt	gtg	cgc	cag	ctt	tgt	gcg	ctc	ggc	gcc	96
Ser	Gly	Ile	Gly	Ala	Ala	Cys	Val	Arg	Gln	Leu	Cys	Ala	Leu	Gly	Ala	
			20					25					30			
agc	ggt	gtc	ggt	gcc	gac	atc	gtc	ttc	gac	aac	gcc	act	ttg	gtg	gcg	144
Ser	Val	Val	Val	Ala	Asp	Ile	Val	Phe	Asp	Asn	Ala	Thr	Leu	Val	Ala	
			35				40					45				
aag	gaa	ttc	ggc	gac	cga	gct	gta	gct	gtc	gaa	gtg	gac	gtg	gcg	cgt	192
Lys	Glu	Phe	Gly	Asp	Arg	Ala	Val	Ala	Val	Glu	Val	Asp	Val	Ala	Arg	
	50					55				60						
gtc	gag	gac	gcc	gaa	cgg	atg	ggt	gag	acg	gcg	gtg	gac	cac	ttc	ggt	240
Val	Glu	Asp	Ala	Glu	Arg	Met	Val	Glu	Thr	Ala	Val	Ala	His	Phe	Gly	
	65				70				75						80	
gga	ctc	gac	atc	gct	gtc	aac	aat	gcc	ggt	gtg	gga	gta	ccg	gtc	aag	288
Gly	Leu	Asp	Ile	Ala	Val	Asn	Asn	Ala	Gly	Val	Gly	Val	Pro	Val	Lys	
				85				90					95			
gcc	tcc	gtg	gga	gat	aca	ggg	ttc	gaa	gaa	tgg	cga	cgt	gtg	ctc	gac	336
Ala	Ser	Val	Gly	Asp	Thr	Gly	Phe	Glu	Glu	Trp	Arg	Arg	Val	Leu	Asp	
			100				105						110			
gtc	aac	ctc	gat	ggc	gca	ttc	ttc	tgt	atg	cgg	gcc	gaa	ttg	cga	cga	384
Val	Asn	Leu	Asp	Gly	Ala	Phe	Phe	Cys	Met	Arg	Ala	Glu	Leu	Arg	Arg	
			115				120					125				
atg	agg	aag	ggt	ggt	tcg	gtg	gtc	aat	ctc	gcc	tcc	gtg	atg	ggc	gcg	432
Met	Arg	Lys	Gly	Gly	Ser	Val	Val	Asn	Leu	Ala	Ser	Val	Met	Gly	Ala	
	130				135					140						
gtg	gca	gcg	gaa	ggc	tcg	agt	agc	tat	gtc	gct	tcc	aaa	cat	gct	ctg	480
Val	Ala	Ala	Glu	Gly	Ser	Ser	Ser	Tyr	Val	Ala	Ser	Lys	His	Ala	Leu	
	145				150					155					160	
gtc	ggg	ttg	acc	aaa	acg	gcg	gcc	ctc	gat	tac	gcg	acg	gcc	gga	atc	528
Val	Gly	Leu	Thr	Lys	Thr	Ala	Ala	Leu	Asp	Tyr	Ala	Thr	Ala	Gly	Ile	
				165				170						175		
cga	gtg	aac	gcg	gtg	ggc	gct	ggg	ttc	gtc	gat	acc	ccg	ctg	atg	gcc	576
Arg	Val	Asn	Ala	Val	Gly	Ala	Gly	Phe	Val	Asp	Thr	Pro	Leu	Met	Ala	
			180				185						190			
ggg	cgg	gac	cct	gaa	tgg	ctt	gcc	gcc	gtg	gcg	gcc	agt	cac	ccc	ttg	624
Gly	Arg	Asp	Pro	Glu	Trp	Leu	Ala	Ala	Val	Ala	Ala	Ser	His	Pro	Leu	
		195				200						205				
ggc	agg	ttg	gct	caa	ccg	gac	gaa	att	gca	tca	gta	gta	gcc	ttt	ttg	672
Gly	Arg	Leu	Ala	Gln	Pro	Asp	Glu	Ile	Ala	Ser	Val	Val	Ala	Phe	Leu	
	210				215					220						
gct	tcg	tcg	gcg	gca	tcg	ttc	gtc	act	ggt	gca	ttc	atc	cca	gtc	gat	720
Ala	Ser	Ser	Ala	Ala	Ser	Phe	Val	Thr	Gly	Ala	Phe	Ile	Pro	Val	Asp	
	225				230					235					240	
gga	ggt	tac	ctc	gcc	cgc	tga										741
Gly	Gly	Tyr	Leu	Ala	Arg											
				245												

&lt;210&gt; 3402

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus erythropolis

&lt;400&gt; 3402

Met	Ser	Tyr	Ala	Leu	Glu	Gly	Lys	Val	Ala	Val	Val	Thr	Gly	Gly	Gly	
1				5					10					15		
Ser	Gly	Ile	Gly	Ala	Ala	Cys	Val	Arg	Gln	Leu	Cys	Ala	Leu	Gly	Ala	
			20					25					30			
Ser	Val	Val	Val	Ala	Asp	Ile	Val	Phe	Asp	Asn	Ala	Thr	Leu	Val	Ala	
			35				40					45				
Lys	Glu	Phe	Gly	Asp	Arg	Ala	Val	Ala	Val	Glu	Val	Asp	Val	Ala	Arg	
	50					55				60						
Val	Glu	Asp	Ala	Glu	Arg	Met	Val	Glu	Thr	Ala	Val	Ala	His	Phe	Gly	
	65				70				75						80	
Gly	Leu	Asp	Ile	Ala	Val	Asn	Asn	Ala	Gly	Val	Gly	Val	Pro	Val	Lys	
				85				90					95			
Ala	Ser	Val	Gly	Asp	Thr	Gly	Phe	Glu	Trp	Arg	Arg	Val	Leu	Asp		
			100				105					110				

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Val	Asn	Leu	Asp	Gly	Ala	Phe	Phe	Cys	Met	Arg	Ala	Glu	Leu	Arg	Arg
		115					120					125			
Met	Arg	Lys	Gly	Gly	Ser	Val	Val	Asn	Leu	Ala	Ser	Val	Met	Gly	Ala
	130					135					140				
Val	Ala	Ala	Glu	Gly	Ser	Ser	Ser	Tyr	Val	Ala	Ser	Lys	His	Ala	Leu
	145				150					155					160
Val	Gly	Leu	Thr	Lys	Thr	Ala	Ala	Leu	Asp	Tyr	Ala	Thr	Ala	Gly	Ile
				165					170					175	
Arg	Val	Asn	Ala	Val	Gly	Ala	Gly	Phe	Val	Asp	Thr	Pro	Leu	Met	Ala
			180					185					190		
Gly	Arg	Asp	Pro	Glu	Trp	Leu	Ala	Ala	Val	Ala	Ala	Ser	His	Pro	Leu
		195					200					205			
Gly	Arg	Leu	Ala	Gln	Pro	Asp	Glu	Ile	Ala	Ser	Val	Val	Ala	Phe	Leu
	210					215					220				
Ala	Ser	Ser	Ala	Ala	Ser	Phe	Val	Thr	Gly	Ala	Phe	Ile	Pro	Val	Asp
	225				230					235					240
Gly	Gly	Tyr	Leu	Ala	Arg										
				245											

<210> 3403  
 <211> 822  
 <212> DNA  
 <213> Streptomyces antibioticus

<220>  
 <221> CDS  
 <222> (1)..(822)  
 <223> transl\_table=11

<400> 3403

gtg	aat	cag	ccc	tgg	ccc	gcg	acc	cgg	gca	gac	cga	ccg	aac	att	tgc	48
Met	Asn	Gln	Pro	Trp	Pro	Ala	Thr	Arg	Ala	Asp	Arg	Pro	Asn	Ile	Cys	
1				5					10					15		
agg	gaa	gga	gca	cga	atg	agc	ctc	ggg	gcc	gac	acc	gtc	gcg	atc	gtc	96
Arg	Glu	Gly	Ala	Arg	Met	Ser	Leu	Gly	Ala	Asp	Thr	Val	Ala	Ile	Val	
			20					25					30			
acc	gga	gcc	gga	cgg	ggc	atc	ggc	gcc	gcc	acg	gcg	cag	cgg	ctc	gcc	144
Thr	Gly	Ala	Gly	Arg	Gly	Ile	Gly	Ala	Ala	Thr	Ala	Gln	Arg	Leu	Ala	
			35				40					45				
gcg	gag	ggc	gcg	acc	gtg	gca	gtc	gtc	gac	cgg	acc	gag	gcg	gac	acg	192
Ala	Glu	Gly	Ala	Thr	Val	Ala	Val	Val	Asp	Arg	Thr	Glu	Ala	Asp	Thr	
	50					55					60					
gcc	gac	acc	gtg	gcg	tcg	atc	cgg	gcg	gcc	ggt	ggc	cgc	gcc	ctc	ggc	240
Ala	Asp	Thr	Val	Ala	Ser	Ile	Arg	Ala	Ala	Gly	Gly	Arg	Ala	Leu	Gly	
	65				70					75				80		
atc	ggg	tgc	gac	gtg	aca	gtc	acc	gac	ctg	gag	gag	gcg	gcg	gtc	gac	288
Ile	Gly	Cys	Asp	Val	Thr	Val	Thr	Asp	Leu	Val	Glu	Ala	Ala	Val	Asp	
				85					90					95		
cgc	acg	gtc	gcg	gag	ttc	ggt	cgt	ctg	gac	gtc	ctc	gtc	aac	aac	gcc	336
Arg	Thr	Val	Ala	Glu	Phe	Gly	Arg	Leu	Asp	Val	Leu	Val	Asn	Asn	Ala	
			100					105					110			
ggg	gta	acc	cgg	gac	agc	ctc	gtc	ttc	atg	atg	ggc	gac	gag	gac	tgg	384
Gly	Val	Thr	Arg	Asp	Ser	Leu	Val	Phe	Met	Met	Gly	Asp	Glu	Asp	Trp	
		115					120					125				
gat	acg	gtc	atc	gac	gtg	cac	ctg	aac	ggc	gcc	gcc	cgg	acc	gtc	cgc	432
Asp	Thr	Val	Ile	Asp	Val	His	Leu	Asn	Gly	Ala	Ala	Arg	Thr	Val	Arg	
	130					135					140					
gcg	gca	cgg	cgc	cag	atg	gtg	cgt	caa	ggt	tcc	ggg	cgg	ata	gtg	aac	480
Ala	Ala	Arg	Arg	Gln	Met	Val	Arg	Gln	Gly	Ser	Gly	Arg	Ile	Val	Asn	
	145				150					155					160	
ttg	agc	tcg	atc	gcg	gct	ctg	ggc	aac	cag	ggg	cag	gcc	aac	tac	gcc	528
Leu	Ser	Ser	Ile	Ala	Ala	Leu	Gly	Asn	Gln	Gly	Gln	Ala	Asn	Tyr	Ala	
				165					170					175		
act	gcc	aag	gcc	gcg	atc	cag	ggc	tac	acc	cgc	acc	ctg	gcc	gtg	gaa	576
Thr	Ala	Lys	Ala	Ala	Ile	Gln	Gly	Tyr	Thr	Arg	Thr	Leu	Ala	Val	Glu	
			180					185					190			
ctt	ggc	ccg	cac	ggt	att	acg	gtc	aat	gcg	atc	gcg	cct	ggg	ttc	atc	624
Leu	Gly	Pro	His	Gly	Ile	Thr	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile	
		195					200					205				

## PhoenixTemp32470.tmp.txt

```

gcc acg acc atg acg gac gac acg gct cgc cgg atg ggc tcc gat ccg      672
Ala Thr Thr Met Thr Asp Asp Thr Ala Arg Arg Met Gly Ser Asp Pro
210 215 220
gtg gcg ctg cgg aag gcg gtg gcg tcg cgg gtg ccg atg cgc agg gtt      720
Val Ala Leu Arg Lys Ala Val Ala Ser Arg Val Pro Met Arg Arg Val
225 230 235 240
ggc agg ccg gag gac atc gcc ggc ctg gtg gcc ttc ctg gcc ggg cct      768
Gly Arg Pro Glu Asp Ile Ala Gly Leu Val Ala Phe Leu Ala Gly Pro
245 250 255
gat gcg agc tat ctc aca ggg cag acg atc tac gtc gac ggc gga ccg      816
Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile Tyr Val Asp Gly Gly Pro
260 265 270
cag tga
Gln
822

```

```

<210> 3404
<211> 273
<212> PRT
<213> Streptomyces antibioticus

```

```

<400> 3404
Met Asn Gln Pro Trp Pro Ala Thr Arg Ala Asp Arg Pro Asn Ile Cys
1 5 10 15
Arg Glu Gly Ala Arg Met Ser Leu Gly Ala Asp Thr Val Ala Ile Val
20 25 30
Thr Gly Ala Gly Arg Gly Ile Gly Ala Ala Thr Ala Gln Arg Leu Ala
35 40 45
Ala Glu Gly Ala Thr Val Ala Val Val Asp Arg Thr Glu Ala Asp Thr
50 55 60
Ala Asp Thr Val Ala Ser Ile Arg Ala Ala Gly Gly Arg Ala Leu Gly
65 70 75 80
Ile Gly Cys Asp Val Thr Val Thr Asp Leu Val Glu Ala Ala Val Asp
85 90 95
Arg Thr Val Ala Glu Phe Gly Arg Leu Asp Val Leu Val Asn Asn Ala
100 105 110
Gly Val Thr Arg Asp Ser Leu Val Phe Met Met Gly Asp Glu Asp Trp
115 120 125
Asp Thr Val Ile Asp Val His Leu Asn Gly Ala Ala Arg Thr Val Arg
130 135 140
Ala Ala Arg Arg Gln Met Val Arg Gln Gly Ser Gly Arg Ile Val Asn
145 150 155 160
Leu Ser Ser Ile Ala Ala Leu Gly Asn Gln Gly Gln Ala Asn Tyr Ala
165 170 175
Thr Ala Lys Ala Ala Ile Gln Gly Tyr Thr Arg Thr Leu Ala Val Glu
180 185 190
Leu Gly Pro His Gly Ile Thr Val Asn Ala Ile Ala Pro Gly Phe Ile
195 200 205
Ala Thr Thr Met Thr Asp Asp Thr Ala Arg Arg Met Gly Ser Asp Pro
210 215 220
Val Ala Leu Arg Lys Ala Val Ala Ser Arg Val Pro Met Arg Arg Val
225 230 235 240
Gly Arg Pro Glu Asp Ile Ala Gly Leu Val Ala Phe Leu Ala Gly Pro
245 250 255
Asp Ala Ser Tyr Leu Thr Gly Gln Thr Ile Tyr Val Asp Gly Gly Pro
260 265 270
Gln

```

```

<210> 3405
<211> 768
<212> DNA
<213> Pseudomonas sp

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```

<220>
<221> CDS
<222> (1)..(768)
<223> transl_table=11

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## PhoenixTemp32470.tmp.txt

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<400> 3405
atg ctc aat gga aag acc gct ctg atc acc ggc tcg acc agc ggg atc      48
Met Leu Asn Gly Lys Thr Ala Leu Ile Thr Gly Ser Thr Ser Gly Ile
1      5      10      15
ggc ctc ggc atc gcc gag gtg ctg gcg cgc aac ggc gcc agc gtc att      96
Gly Leu Gly Ile Ala Glu Val Leu Ala Arg Asn Gly Ala Ser Val Ile
20      25      30
ctc aac ggt ttc ggc gac tgg cag gcc gcg gcc gaa cag ctg gcg cgc      144
Leu Asn Gly Phe Gly Asp Trp Gln Ala Ala Ala Glu Gln Leu Ala Arg
35      40      45
cac gag gga cgc gtc ggc tac cac gcc gcc gac ctc gcc gac ccg gcg      192
His Glu Gly Arg Val Gly Tyr His Ala Ala Asp Leu Ala Asp Pro Ala
50      55      60
cag atc gag gcg ctg ttc gac tac gcc cgg cgc gag ttc ggc cgc gtc      240
Gln Ile Glu Ala Leu Phe Asp Tyr Ala Arg Arg Glu Phe Gly Arg Val
65      70      75      80
gat atc ctg gtc aac aat gcc ggc atc cag cat gtc gcg ccg ctg cag      288
Asp Ile Leu Val Asn Asn Ala Gly Ile Gln His Val Ala Pro Leu Gln
85      90      95
gac ttc ccg gcc gaa cgc tgg gac gcc atc ctc gcg ctc aac ctc agc      336
Asp Phe Pro Ala Glu Arg Trp Asp Ala Ile Leu Ala Leu Asn Leu Ser
100      105      110
gcg gta ttc cat tgc acg cgc ctg gcc ctg ccg gac atg cgc gcg cag      384
Ala Val Phe His Cys Thr Arg Leu Ala Leu Pro Asp Met Arg Ala Gln
115      120      125
gac tgg ggg cgc atc atc aac atc gcc tcg gtg cac ggc agc atc ggc      432
Asp Trp Gly Arg Ile Ile Asn Ile Ala Ser Val His Gly Ser Ile Gly
130      135      140
tcg ctc ggc aag gcg gcc tat gtc gcg gcc aag cac ggc gtg ctc ggc      480
Ser Leu Gly Lys Ala Ala Tyr Val Ala Ala Lys His Gly Val Leu Gly
145      150      155      160
ctg acc aag gtg gtg gcg ctg gaa acc gcc ctg agc ggg gtt acc tgc      528
Leu Thr Lys Val Val Ala Leu Glu Thr Ala Leu Ser Gly Val Thr Cys
165      170      175
aat gcc atc tgt ccc ggc tgg gtg ctc acg ccc ctg gtg cag cgg cag      576
Asn Ala Ile Cys Pro Gly Trp Val Leu Thr Pro Leu Val Gln Arg Gln
180      185      190
atc gac gcg cgc atc gcc gca ggc gaa tcg ccc gag cag gcg cgc acg      624
Ile Asp Ala Arg Ile Ala Ala Gly Glu Ser Pro Glu Gln Ala Arg Thr
195      200      205
gcg ctg ctg gcg gag aag cag cca tcg cag gcc ttc gtc acc ccg cag      672
Ala Leu Leu Ala Glu Lys Gln Pro Ser Gln Ala Phe Val Thr Pro Gln
210      215      220
cag ctc ggc gag ctg gcg ctg ttt ctg tgc agt tcg gcg gcg cag cag      720
Gln Leu Gly Glu Leu Ala Leu Phe Leu Cys Ser Ser Ala Ala Gln Gln
225      230      235      240
gtg cgt ggc gca gca tgg aac atc gat ggt ggc tgg ctg gcg cag      765
Val Arg Gly Ala Ala Trp Asn Ile Asp Gly Gly Trp Leu Ala Gln
245      250      255
tga
768

```

```

<210> 3406
<211> 255
<212> PRT
<213> Pseudomonas sp

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<400> 3406
Met Leu Asn Gly Lys Thr Ala Leu Ile Thr Gly Ser Thr Ser Gly Ile
1      5      10      15
Gly Leu Gly Ile Ala Glu Val Leu Ala Arg Asn Gly Ala Ser Val Ile
20      25      30
Leu Asn Gly Phe Gly Asp Trp Gln Ala Ala Ala Glu Gln Leu Ala Arg
35      40      45
His Glu Gly Arg Val Gly Tyr His Ala Ala Asp Leu Ala Asp Pro Ala
50      55      60
Gln Ile Glu Ala Leu Phe Asp Tyr Ala Arg Arg Glu Phe Gly Arg Val
65      70      75      80

```

## PhoenixTemp32470.tmp.txt

Asp Ile Leu Val Asn 85 Asn Ala Gly Ile Gln 90 His Val Ala Pro Leu Gln 95  
 Asp Phe Pro Ala 100 Glu Arg Trp Asp Ala 105 Ile Leu Ala Leu Asn 110 Leu Ser  
 Ala Val Phe 115 His Cys Thr Arg Leu 120 Ala Leu Pro Asp Met 125 Arg Ala Gln  
 Asp Trp 130 Gly Arg Ile Ile Asn 135 Ile Ala Ser Val His 140 Gly Ser Ile Gly  
 Ser 145 Leu Gly Lys Ala 150 Tyr Val Ala Ala Lys 155 His Gly Val Leu Gly 160  
 Leu Thr Lys Val 165 Val Ala Leu Glu Thr Ala 170 Leu Ser Gly Val Thr Cys 175  
 Asn Ala Ile Cys 180 Pro Gly Trp Val Leu 185 Thr Pro Leu Val Gln 190 Arg Gln  
 Ile Asp Ala 195 Arg Ile Ala Ala Gly 200 Glu Ser Pro Glu Gln Ala Arg Thr  
 Ala Leu 210 Leu Ala Glu Lys Gln 215 Pro Ser Gln Ala Phe 220 Val Thr Pro Gln  
 Gln 225 Leu Gly Glu Leu Ala 230 Leu Phe Leu Cys Ser 235 Ser Ala Ala Gln Gln 240  
 Val Arg Gly Ala Ala 245 Trp Asn Ile Asp Gly 250 Gly Trp Leu Ala Gln 255

&lt;210&gt; 3407

&lt;211&gt; 825

&lt;212&gt; DNA

&lt;213&gt; Streptomyces griseus subsp

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(825)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3407

atg acc agc ggc ttc gca ccc acc ctg ctc cag ggc agg acc acc ttt	48
Met Thr Ser Gly Phe 5 Ala Pro Thr Leu 10 Gln Gly Arg Thr 15 Phe	
ctg acc ggc gcc agc agc ggg atc ggc gcg gtc ctg gcg acg atg ctc	96
Leu Thr Gly Ala 20 Ser Ser Gly Ile 25 Gly Ala Val Leu Ala Thr Met Leu	
gcc gcc cac ggc tcc agc gtg gcg ctc atg gcc cgc agc gag aag gag	144
Ala Ala His 35 Gly Ser Ser Val 40 Ala Leu Met Ala Arg Ser Glu Lys Glu	
ctc cgg ctg ctg gcc gag cgg atc gag gcg gac ggc ggg cgg gcg gtg	192
Leu Arg 50 Leu Leu Ala Glu Arg 55 Ile Glu Ala Asp Gly 60 Gly Arg Ala Val	
gcg gtc ccc ggt gac ctc acc gac ggc gac agt gtg cgc gcc gcc gtc	240
Ala Val Pro Gly Asp Leu Thr Asp Gly Asp Ser Val Arg Ala Ala Val 80	
cgc gag gcc gag gaa cag ctc ggc ccg atc gac cgc ctg gtg cac tgc	288
Arg Glu Ala Glu 85 Glu Gln Leu Gly Pro Ile 90 Asp Arg Leu Val His Cys	
gcg ggc gag gcc cgc aac cag gcg ttc ctg tgc gac cag gac gag gag	336
Ala Gly Glu Ala Arg Asn Gln Ala Phe 105 Leu Cys Asp Gln Asp Glu Glu	
cag tgg acg gcc acc ctc gac atc aac ctg ctg ggc gcc ttc cgg gtc	384
Gln Trp Thr 115 Ala Thr Leu Asp Ile 120 Asn Leu Leu Gly 125 Phe Arg Val	
gcc cgt gcg gtg gtg ccg ggg atg atg gag cgc cgc gag ggc aac atc	432
Ala Arg Ala Val Val Pro Gly Met Met Glu Arg Arg Glu Gly Asn Ile	
gtg atg gtc tcc tcc atc gcc ggg aag cgc ggc ctg ccc gcc aac acc	480
Val Met Val Ser Ser 150 Ile Ala Gly Lys Arg 155 Gly Leu Pro Ala Asn Thr	
tcg tac tgc gcc tcg aag ttc ggg ctc aac ggc atg acg cag gcg ctc	528
Ser Tyr Cys Ala Ser 165 Lys Phe Gly Leu Asn 170 Gly Met Thr Gln Ala Leu	
gcc tcc gag ctg gcc tcc ttc ggc gtg gtc aac gcg gtc tgc ccc	576
Ala Ser Glu Leu Gly Ser Phe Gly Val Arg Val Asn Ala Val Cys Pro	

## PhoenixTemp32470.tmp.txt

180	185	190	
ggg ctc acc gac agc ccc gcc gcc acg gac ggc gga cgg tac ggc gac	624		
Gly Leu Thr Asp Ser Pro Ala Ala Thr Asp Gly Gly Arg Tyr Gly Asp			
195	200	205	
gcc ttc atg gcc gcc atc gcc aag cac cac ggc ccc ccg gac ctg acc	672		
Ala Phe Met Ala Ala Ile Ala Lys His His Gly Pro Pro Asp Leu Thr			
210	215	220	
tgg gag cgg tac ctc agg cgc gcg gtc aac agc acc atc ctg cgg cgc	720		
Trp Glu Arg Tyr Leu Arg Arg Ala Val Asn Ser Thr Ile Leu Arg Arg			
225	230	235	
ctg gtg cgc ccc gag gag atc gcc gcc cag gtc ctg ttc ctg ctc tcc	768		
Leu Val Arg Pro Glu Glu Ile Ala Ala Gln Val Leu Phe Leu Leu Ser			
245	250	255	
gac ctc tcc ggc ggg atg acc gga cag gcc gtc aac gtg gac gcg ggg	816		
Asp Leu Ser Gly Gly Met Thr Gly Gln Ala Val Asn Val Asp Ala Gly			
260	265	270	
gct ctg tga	825		
Ala Leu			

&lt;210&gt; 3408

&lt;211&gt; 274

&lt;212&gt; PRT

&lt;213&gt; Streptomyces griseus subsp

&lt;400&gt; 3408

Met Thr Ser Gly Phe Ala Pro Thr Leu Leu Gln Gly Arg Thr Thr Phe	
1 5 10 15	
Leu Thr Gly Ala Ser Ser Gly Ile Gly Ala Val Leu Ala Thr Met Leu	
20 25 30	
Ala Ala His Gly Ser Ser Val Ala Leu Met Ala Arg Ser Glu Lys Glu	
35 40 45	
Leu Arg Leu Leu Ala Glu Arg Ile Glu Ala Asp Gly Gly Arg Ala Val	
50 55 60	
Ala Val Pro Gly Asp Leu Thr Asp Gly Asp Ser Val Arg Ala Ala Val	
65 70 75 80	
Arg Glu Ala Glu Glu Gln Leu Gly Pro Ile Asp Arg Leu Val His Cys	
85 90 95	
Ala Gly Glu Ala Arg Asn Gln Ala Phe Leu Cys Asp Gln Asp Glu Glu	
100 105 110	
Gln Trp Thr Ala Thr Leu Asp Ile Asn Leu Leu Gly Ala Phe Arg Val	
115 120 125	
Ala Arg Ala Val Val Pro Gly Met Met Glu Arg Arg Glu Gly Asn Ile	
130 135 140	
Val Met Val Ser Ser Ile Ala Gly Lys Arg Gly Leu Pro Ala Asn Thr	
145 150 155 160	
Ser Tyr Cys Ala Ser Lys Phe Gly Leu Asn Gly Met Thr Gln Ala Leu	
165 170 175	
Ala Ser Glu Leu Gly Ser Phe Gly Val Arg Val Asn Ala Val Cys Pro	
180 185 190	
Gly Leu Thr Asp Ser Pro Ala Ala Thr Asp Gly Gly Arg Tyr Gly Asp	
195 200 205	
Ala Phe Met Ala Ala Ile Ala Lys His His Gly Pro Pro Asp Leu Thr	
210 215 220	
Trp Glu Arg Tyr Leu Arg Arg Ala Val Asn Ser Thr Ile Leu Arg Arg	
225 230 235 240	
Leu Val Arg Pro Glu Glu Ile Ala Ala Gln Val Leu Phe Leu Leu Ser	
245 250 255	
Asp Leu Ser Gly Gly Met Thr Gly Gln Ala Val Asn Val Asp Ala Gly	
260 265 270	
Ala Leu	

&lt;210&gt; 3409

&lt;211&gt; 738

&lt;212&gt; DNA

&lt;213&gt; Rhizobium leguminosarum

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(738)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3409

atg	ctc	gat	ctt	tcc	ggc	cgc	aag	gct	ctc	gtc	aca	ggc	gca	tcg	ggc	48
Met	Leu	Asp	Leu	Ser	Gly	Arg	Lys	Ala	Leu	Val	Thr	Gly	Ala	Ser	Gly	
1				5				10						15		
ggt	atc	ggc	gag	gaa	atc	gcc	cgc	ctt	ctt	cat	agg	cag	ggc	gcc	atc	96
Gly	Ile	Gly	Glu	Glu	Ile	Ala	Arg	Leu	Leu	His	Arg	Gln	Gly	Ala	Ile	
			20					25					30			
gtc	ggc	ctg	cat	ggc	acc	cgc	gtc	gag	aaa	ctg	gaa	gcg	ctg	gcc	gcc	144
Val	Gly	Leu	His	Gly	Thr	Arg	Val	Glu	Lys	Leu	Glu	Ala	Leu	Ala	Ala	
			35				40					45				
gat	ctc	ggc	gag	cgc	gtc	aag	atc	ttc	ccg	gcg	aac	ctt	tca	gac	cgc	192
Asp	Leu	Gly	Glu	Arg	Val	Lys	Ile	Phe	Pro	Ala	Asn	Leu	Ser	Asp	Arg	
			50			55					60					
gat	gag	gtc	aag	gcg	ctc	ggc	cag	aag	gcc	gag	gcc	gat	ctc	gaa	ggc	240
Asp	Glu	Val	Lys	Ala	Leu	Gly	Gln	Lys	Ala	Glu	Ala	Asp	Leu	Glu	Gly	
65				70					75					80		
gtc	gac	atc	ctc	gtc	aac	aat	gcc	ggc	atc	acc	cgc	gac	ggc	ctg	ttc	288
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Phe	
			85				90						95			
gtg	cgc	atg	agc	gac	gag	gac	tgg	gac	agc	gtc	atc	gaa	gtg	aac	ctg	336
Val	Arg	Met	Ser	Asp	Glu	Asp	Trp	Asp	Ser	Val	Ile	Glu	Val	Asn	Leu	
			100				105						110			
acg	gcg	acc	ttc	cgc	ctg	acg	cgc	gaa	ttg	acg	cat	ccg	atg	atg	cgt	384
Thr	Ala	Thr	Phe	Arg	Leu	Thr	Arg	Glu	Leu	Thr	His	Pro	Met	Met	Arg	
			115				120					125				
cgc	cgc	tat	ggc	cgc	atc	atc	aat	atc	acc	tcg	gtc	gtc	ggc	gtc	acc	432
Arg	Arg	Tyr	Gly	Arg	Ile	Ile	Asn	Ile	Thr	Ser	Val	Val	Gly	Val	Thr	
			130			135					140					
ggc	aat	ccg	ggc	cag	gcc	aat	tac	tgc	gcc	tcc	aag	gcc	ggc	atg	atc	480
Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Met	Ile	
145				150					155					160		
ggc	ttc	acc	aag	tcc	ctg	gcg	cag	gaa	att	gcc	acc	cgc	aac	gtg	acg	528
Gly	Phe	Thr	Lys	Ser	Leu	Ala	Gln	Glu	Ile	Ala	Thr	Arg	Asn	Val	Thr	
			165					170						175		
gtc	aat	tgc	gtg	gcg	ccc	ggt	ttc	atc	gaa	agc	gcc	atg	acc	ggc	aag	576
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Ser	Ala	Met	Thr	Gly	Lys	
			180				185						190			
ctg	aac	gac	aag	cag	aag	gaa	gcg	atc	atg	gga	gcg	att	ccg	atg	aag	624
Leu	Asn	Asp	Lys	Gln	Lys	Glu	Ala	Ile	Met	Gly	Ala	Ile	Pro	Met	Lys	
			195			200					205					
cgc	atg	ggc	aca	ggc	ggc	gag	gtc	gct	tcg	gcg	gtc	gct	tac	ctt	gcg	672
Arg	Met	Gly	Thr	Gly	Gly	Glu	Val	Ala	Ser	Ala	Val	Ala	Tyr	Leu	Ala	
			210			215				220						
tcc	tcc	gag	gct	gct	tat	atg	acg	ggc	cag	acg	ctg	cac	gta	aac	ggc	720
Ser	Ser	Glu	Ala	Ala	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Val	Asn	Gly	
225				230				235						240		
ggc	atg	gcg	atg	atc	tga											738
Gly	Met	Ala	Met	Ile												
				245												

&lt;210&gt; 3410

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Rhizobium leguminosarum

&lt;400&gt; 3410

Met	Leu	Asp	Leu	Ser	Gly	Arg	Lys	Ala	Leu	Val	Thr	Gly	Ala	Ser	Gly	
1				5					10					15		
Gly	Ile	Gly	Glu	Glu	Ile	Ala	Arg	Leu	Leu	His	Arg	Gln	Gly	Ala	Ile	
			20					25					30			
Val	Gly	Leu	His	Gly	Thr	Arg	Val	Glu	Lys	Leu	Glu	Ala	Leu	Ala	Ala	
			35				40					45				
Asp	Leu	Gly	Glu	Arg	Val	Lys	Ile	Phe	Pro	Ala	Asn	Leu	Ser	Asp	Arg	
			50			55					60					
Asp	Glu	Val	Lys	Ala	Leu	Gly	Gln	Lys	Ala	Glu	Ala	Asp	Leu	Glu	Gly	



## PhoenixTemp32470.tmp.txt

```

65      70      75      80
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Phe
      85      90      95
Val Arg Met Ser Asp Glu Asp Trp Asp Ser Val Ile Glu Val Asn Leu
      100      105      110
Thr Ala Thr Phe Arg Leu Thr Arg Glu Leu Thr His Pro Met Met Arg
      115      120      125
Arg Arg Tyr Gly Arg Ile Ile Asn Ile Thr Ser Val Val Gly Val Thr
      130      135      140
Gly Asn Pro Gly Gln Ala Asn Tyr Cys Ala Ser Lys Ala Gly Met Ile
      145      150      155      160
Gly Phe Thr Lys Ser Leu Ala Gln Glu Ile Ala Thr Arg Asn Val Thr
      165      170      175
Val Asn Cys Val Ala Pro Gly Phe Ile Glu Ser Ala Met Thr Gly Lys
      180      185      190
Leu Asn Asp Lys Gln Lys Glu Ala Ile Met Gly Ala Ile Pro Met Lys
      195      200      205
Arg Met Gly Thr Gly Gly Glu Val Ala Ser Ala Val Ala Tyr Leu Ala
      210      215      220
Ser Ser Glu Ala Ala Tyr Met Thr Gly Gln Thr Leu His Val Asn Gly
      225      230      235      240
Gly Met Ala Met Ile
      245

```

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<210> 3411
<211> 774
<212> DNA
<213> Streptomyces virginiae

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<220>
<221> CDS
<222> (1)..(774)
<223> transl_table=11

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<400> 3411
atg act gat cga caa ggg ctt ctg aca gac agg atc gca ctg ata acg      48
Met Thr Asp Arg Gln Gly Leu Leu Thr Asp Arg Ile Ala Leu Ile Thr
      1      5      10      15
gga gcc agc agc ggc atc ggc gcg gcg cag cgc ggg ttg ttc gcc agg      96
Gly Ala Ser Ser Gly Ile Gly Ala Ala Gln Arg Gly Leu Phe Ala Arg
      20      25      30
gag ggc gcg gcg gtg gtg gtc acc gcc cgc cgc gag gag cgg ctg gcc      144
Glu Gly Ala Ala Val Val Val Thr Ala Arg Arg Glu Glu Arg Leu Ala
      35      40      45
ggg ctg gtg gac gag ttg cgg gcg cag ggc gcc cga gcc gca tac gtg      192
Gly Leu Val Asp Glu Leu Arg Ala Gln Gly Ala Arg Ala Ala Tyr Val
      50      55      60
gtc gcc gac gtg acc cgg tcc gag gac gcg gta cgt gcc gtc gag ttc      240
Val Ala Asp Val Thr Arg Ser Glu Asp Ala Val Arg Ala Val Glu Phe
      65      70      75      80
acg gtg gaa cgt ttc ggc agg ctc gat gcc gcg ttc aac aaa cgc cgg      288
Thr Val Glu Arg Phe Gly Arg Leu Asp Ala Ala Phe Asn Lys Arg Arg
      85      90      95
cac ggg gcc ggc cgc aca ccg ctg cac ctg atg gac gac ccg gtc tac      336
His Gly Ala Gly Arg Thr Pro Leu His Leu Met Asp Asp Pro Val Tyr
      100      105      110
gac gac atc atg gac acc aac gtg gcg ggg gtg ttc aac tgc ctg cgc      384
Asp Asp Ile Met Asp Thr Asn Val Arg Gly Val Phe Asn Cys Leu Arg
      115      120      125
ccg gag atc gcg gcg atg ctc gca tcc gga gca ggc ggt tcg atc gtc      432
Pro Glu Ile Ala Ala Met Leu Ala Ser Gly Ala Gly Gly Ser Ile Val
      130      135      140
aac acc agc agc acc ggc ggc ttg gtc gcc act ccg gtc gcc gcg ccg      480
Asn Thr Ser Ser Thr Gly Gly Leu Val Ala Thr Pro Val Ala Ala Pro
      145      150      155      160
tac gtg gtg tcc aag cac gcg gtg ctc ggt ctg acc aaa ggg cct gcc      528
Tyr Val Val Ser Lys His Ala Val Leu Gly Leu Thr Lys Gly Pro Ala
      165      170      175
gcc gag tac ggc gcc cac ggc att cgg gtc aac gcg ata gcc ccc ggc      576

```

PhoenixTemp32470.tmp.txt

Ala	Glu	Tyr	Gly	Ala	His	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	
acg	acc	cgc	agc	gag	atg	gtg	gcg	gac	tgg	ttc	gcg	cag	aac	ccg	gat	624
Thr	Thr	Arg	Ser	Glu	Met	Val	Ala	Asp	Trp	Phe	Ala	Gln	Asn	Pro	Asp	
		195					200					205				
gcc	gag	gag	ctg	ctg	cac	cgg	gcc	acg	ccg	cag	ccc	cgt	acc	gcc	gaa	672
Ala	Glu	Glu	Leu	Leu	His	Arg	Ala	Thr	Pro	Gln	Pro	Arg	Thr	Ala	Glu	
	210					215					220					
ccc	cag	gag	atc	gcc	gag	gcc	gct	gcg	tgg	ctg	tgc	agc	gag	cgg	gcg	720
Pro	Gln	Glu	Ile	Ala	Glu	Ala	Ala	Ala	Trp	Leu	Cys	Ser	Glu	Arg	Ala	
225				230						235					240	
tcc	ttc	gtc	acc	ggg	tcg	acc	ctg	gtg	gtc	gac	ggc	ggg	ttc	acc	atc	768
Ser	Phe	Val	Thr	Gly	Ser	Thr	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ile	
				245					250					255		
ctc	tga															774
Leu																

<210> 3412  
 <211> 257  
 <212> PRT  
 <213> Streptomyces virginiae

<400> 3412

Met	Thr	Asp	Arg	Gln	Gly	Leu	Leu	Thr	Asp	Arg	Ile	Ala	Leu	Ile	Thr	
1				5					10					15		
Gly	Ala	Ser	Ser	Gly	Ile	Gly	Ala	Ala	Gln	Arg	Gly	Leu	Phe	Ala	Arg	
			20					25					30			
Glu	Gly	Ala	Val	Val	Val	Thr	Ala	Arg	Arg	Glu	Glu	Arg	Leu	Ala		
		35				40					45					
Gly	Leu	Val	Asp	Glu	Leu	Arg	Ala	Gln	Gly	Ala	Arg	Ala	Ala	Tyr	Val	
	50					55				60						
Val	Ala	Asp	Val	Thr	Arg	Ser	Glu	Asp	Ala	Val	Arg	Ala	Val	Glu	Phe	
65					70					75					80	
Thr	Val	Glu	Arg	Phe	Gly	Arg	Leu	Asp	Ala	Phe	Asn	Lys	Arg	Arg		
			85						90				95			
His	Gly	Ala	Gly	Arg	Thr	Pro	Leu	His	Leu	Met	Asp	Asp	Pro	Val	Tyr	
			100					105					110			
Asp	Asp	Ile	Met	Asp	Thr	Asn	Val	Arg	Gly	Val	Phe	Asn	Cys	Leu	Arg	
		115					120					125				
Pro	Glu	Ile	Ala	Ala	Met	Leu	Ala	Ser	Gly	Ala	Gly	Gly	Ser	Ile	Val	
	130					135					140					
Asn	Thr	Ser	Ser	Thr	Gly	Gly	Leu	Val	Ala	Thr	Pro	Val	Ala	Ala	Pro	
145					150					155					160	
Tyr	Val	Val	Ser	Lys	His	Ala	Val	Leu	Gly	Leu	Thr	Lys	Gly	Pro	Ala	
			165						170					175		
Ala	Glu	Tyr	Gly	Ala	His	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	
			180					185					190			
Thr	Thr	Arg	Ser	Glu	Met	Val	Ala	Asp	Trp	Phe	Ala	Gln	Asn	Pro	Asp	
		195					200					205				
Ala	Glu	Glu	Leu	Leu	His	Arg	Ala	Thr	Pro	Gln	Pro	Arg	Thr	Ala	Glu	
	210					215					220					
Pro	Gln	Glu	Ile	Ala	Glu	Ala	Ala	Ala	Trp	Leu	Cys	Ser	Glu	Arg	Ala	
225				230						235					240	
Ser	Phe	Val	Thr	Gly	Ser	Thr	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Ile	
				245					250					255		
Leu																

<210> 3413  
 <211> 828  
 <212> DNA  
 <213> Rhodococcus erythropolis

<220>  
 <221> CDS  
 <222> (1)..(828)  
 <223> transl\_table=11

## PhoenixTemp32470.tmp.txt

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<400> 3413
atg aca cag ggt tca gtt cgt tcg ctc gaa ggt cgc gtt gct ttc atc      48
Met Thr Gln Gly Ser Val Arg Ser Leu Glu Gly Arg Val Ala Phe Ile
1      5      10      15
acc ggc gca gcg cgc ggt caa gga cgt gcg cac cgc gtc aag atg gcg      96
Thr Gly Ala Ala Arg Gly Gln Gly Arg Ala His Ala Val Lys Met Ala
20      25      30
cgc gag gga gca gcg atc atc gca gtc gac gtg tgc gcg tcg gtg gcg      144
Arg Glu Gly Ala Ala Ile Ile Ala Val Asp Val Cys Ala Ser Val Ala
35      40      45
tcg gac aat tct tac gac gca gca act tcc gag gac ttt gcc gag acg      192
Ser Asp Asn Ser Tyr Asp Ala Ala Thr Ser Glu Asp Phe Ala Glu Thr
50      55      60
ata cgt ctg gtc gaa gcg gag ggt ggg aag atc ctc gcc cgc gag gta      240
Ile Arg Leu Val Glu Ala Glu Gly Gly Lys Ile Leu Ala Arg Glu Val
65      70      75
gat gtc cgt gac ggc gca cgg ctc acc gcg gtg gtc aag gac ggt gtc      288
Asp Val Arg Asp Gly Ala Arg Leu Thr Ala Val Val Lys Asp Gly Val
85      90      95
gag cag ttc gga cgc ctt gac atc gtg gtc gcc aat gcc ggg gtc tgt      336
Glu Gln Phe Gly Arg Leu Asp Ile Val Val Ala Asn Ala Gly Val Cys
100      105      110
aac tgg aat cga ttc tgg gaa atg tcg gac gag cag tgg gaa acc ctg      384
Asn Trp Asn Arg Phe Trp Glu Met Ser Asp Glu Gln Trp Glu Thr Leu
115      120      125
atc gac atc aac ctg acc gga gtc tgg aaa acc ctc aag gca tcg gtg      432
Ile Asp Ile Asn Leu Thr Gly Val Trp Lys Thr Leu Lys Ala Ser Val
130      135      140
ccg gcg atc atc gaa ggt ggg cgc ggt gga tcg atc atc gtg gtc agt      480
Pro Ala Ile Ile Glu Gly Gly Arg Gly Ser Ile Ile Val Val Ser
145      150      155
tcg gtg gcc gga ctc aag gcg ctg ccc gga cag gcg cac tac gcg agc      528
Ser Val Ala Gly Leu Lys Ala Leu Pro Gly Gln Ala His Tyr Ala Ser
165      170      175
gcc aag ttc ggt ctc gtc ggt ctg acg cag gcc gcg gca aag gaa ctg      576
Ala Lys Phe Gly Leu Val Gly Leu Thr Gln Ala Ala Ala Lys Glu Leu
180      185      190
ggg gag tac aag atc agg gtc aac tcg atc cac cct tac gga gta aat      624
Gly Glu Tyr Lys Ile Arg Val Asn Ser Ile His Pro Tyr Gly Val Asn
195      200      205
acg ccg atg ggg gtc gac cag ggc gcg ctc gag gta ttt gca aag ttt      672
Thr Pro Met Gly Val Asp Gln Gly Ala Leu Glu Val Phe Ala Lys Phe
210      215      220
ccg cag tac ctt ccc aac ttc act ccg atc ctc tcg gac atc gcg ttc      720
Pro Gln Tyr Leu Pro Asn Phe Thr Pro Ile Leu Ser Asp Ile Ala Phe
225      230      235
gcc gaa ccc gac gag atc gcc gat acc gtt ctg tgg ctc gcg ggt gac      768
Ala Glu Pro Asp Glu Ile Ala Asp Thr Val Leu Trp Leu Ala Gly Asp
245      250      255
ggt tca cgc acc gtc acg gca agt cat atc gct ctc gat cag gga aac      816
Gly Ser Arg Thr Val Thr Ala Ser His Ile Ala Leu Asp Gln Gly Asn
260      265      270
tcc aag gtc tga
Ser Lys Val
275

```

```

<210> 3414
<211> 275
<212> PRT
<213> Rhodococcus erythropolis

```

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<400> 3414
Met Thr Gln Gly Ser Val Arg Ser Leu Glu Gly Arg Val Ala Phe Ile
1      5      10      15
Thr Gly Ala Ala Arg Gly Gln Gly Arg Ala His Ala Val Lys Met Ala
20      25      30
Arg Glu Gly Ala Ala Ile Ile Ala Val Asp Val Cys Ala Ser Val Ala
35      40      45
Ser Asp Asn Ser Tyr Asp Ala Ala Thr Ser Glu Asp Phe Ala Glu Thr

```

## PhoenixTemp32470.tmp.txt

50 55 60  
 Ile Arg Leu Val Glu Ala Glu Gly Gly Lys Ile Leu Ala Arg Glu Val  
 65 70 75 80  
 Asp Val Arg Asp Gly Ala Arg Leu Thr Ala Val Val Lys Asp Gly Val  
 85 90 95  
 Glu Gln Phe Gly Arg Leu Asp Ile Val Val Ala Asn Ala Gly Val Cys  
 100 105 110  
 Asn Trp Asn Arg Phe Trp Glu Met Ser Asp Glu Gln Trp Glu Thr Leu  
 115 120 125  
 Ile Asp Ile Asn Leu Thr Gly Val Trp Lys Thr Leu Lys Ala Ser Val  
 130 135 140  
 Pro Ala Ile Ile Glu Gly Gly Arg Gly Gly Ser Ile Ile Val Val Ser  
 145 150 155 160  
 Ser Val Ala Gly Leu Lys Ala Leu Pro Gly Gln Ala His Tyr Ala Ser  
 165 170 175  
 Ala Lys Phe Gly Leu Val Gly Leu Thr Gln Ala Ala Ala Lys Glu Leu  
 180 185 190  
 Gly Glu Tyr Lys Ile Arg Val Asn Ser Ile His Pro Tyr Gly Val Asn  
 195 200 205  
 Thr Pro Met Gly Val Asp Gln Gly Ala Leu Glu Val Phe Ala Lys Phe  
 210 215 220  
 Pro Gln Tyr Leu Pro Asn Phe Thr Pro Ile Leu Ser Asp Ile Ala Phe  
 225 230 235 240  
 Ala Glu Pro Asp Glu Ile Ala Asp Thr Val Leu Trp Leu Ala Gly Asp  
 245 250 255  
 Gly Ser Arg Thr Val Thr Ala Ser His Ile Ala Leu Asp Gln Gly Asn  
 260 265 270  
 Ser Lys Val  
 275

&lt;210&gt; 3415

&lt;211&gt; 852

&lt;212&gt; DNA

&lt;213&gt; Arabidopsis thaliana

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(852)

&lt;400&gt; 3415

atg tta att gtt agc ttt ctg tcg ggt tat gaa gat ggt att ggt agg	48
Met Leu Ile Val Ser Phe Leu Ser Gly Tyr Glu Asp Gly Ile Gly Arg	
1 5 10 15	
aag cta gaa ggt aaa gta gca ctc atc act gga gga gca agt ggg att	96
Lys Leu Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile	
20 25 30 35	
ggc aaa gca aca gcc gga aaa ttc atc agt cat gga gcc aaa gtt atc	144
Gly Lys Ala Thr Ala Gly Lys Phe Ile Ser His Gly Ala Lys Val Ile	
40 45 50 55	
att gcc gat atc caa ccg cag att ggg cga gaa acc gag caa gaa ctc	192
Ile Ala Asp Ile Gln Pro Gln Ile Gly Arg Glu Thr Glu Gln Glu Leu	
60 65 70 75	
ggt ccc agt tgt gct tac ttc cca tgc gat gtg acc aaa gaa tca gac	240
Gly Pro Ser Cys Ala Tyr Phe Pro Cys Asp Val Thr Lys Glu Ser Asp	
80 85 90 95	
att gct aac gca gtt gac ttc gct gtc tcg ctc cat aca aag ctc gac	288
Ile Ala Asn Ala Val Asp Phe Ala Val Ser Leu His Thr Lys Leu Asp	
100 105 110 115	
att atg tac aac aat gct ggt att ccc tgc aaa acg cct cct agt atc	336
Ile Met Tyr Asn Asn Ala Gly Ile Pro Cys Lys Thr Pro Pro Ser Ile	
120 125 130 135	
gtt gat ctt gat ctc aat gtt ttc gac aag gta atc aac aca aat gtc	384
Val Asp Leu Asp Leu Asn Val Phe Asp Lys Val Ile Asn Thr Asn Val	
140 145 150 155	
cgt gga gtc atg gca gga atc aaa cat gct gct cgt gtg atg atc ccg	432
Arg Gly Val Met Ala Gly Ile Lys His Ala Ala Arg Val Met Ile Pro	
160 165 170 175	
cgt aac tct gga tcc atc att tgt gca ggg agt gtc acg ggg atg atg	480
Arg Asn Ser Gly Ser Ile Ile Cys Ala Gly Ser Val Thr Gly Met Met	

PhoenixTemp32470.tmp.txt

145	ggc	ggt	tta	gcc	caa	cat	act	tac	agc	gtc	tca	aaa	tcc	gct	gtt	atc	528
	Gly	Gly	Leu	Ala	Gln	His	Thr	Tyr	Ser	Val	Ser	Lys	Ser	Ala	Val	Ile	
				165						170					175		576
gga	att	gta	aga	tca	aca	gct	tca	gaa	cta	tgc	aag	cac	agg	atc	cgg		
Gly	Ile	Val	Arg	Ser	Thr	Ala	Ser	Glu	Leu	Cys	Lys	His	Arg	Ile	Arg		
			180					185					190				624
gtc	aac	tgc	att	tct	cct	ttt	gcg	atc	aca	aca	tca	ttc	gtg	atg	gat		
Val	Asn	Cys	Ile	Ser	Pro	Phe	Ala	Ile	Thr	Thr	Ser	Phe	Val	Met	Asp		
		195					200					205					672
gag	atg	cga	cag	att	tac	ccc	ggt	gtt	gat	gac	tca	agg	ctg	atc	cag		
Glu	Met	Arg	Gln	Ile	Tyr	Pro	Gly	Val	Asp	Asp	Ser	Arg	Leu	Ile	Gln		
		210				215					220						720
ata	gtg	cag	agt	aca	gga	gtg	tta	aat	gga	gag	gtt	tgt	gaa	cca	acc		
Ile	Val	Gln	Ser	Thr	Gly	Val	Leu	Asn	Gly	Glu	Val	Cys	Glu	Pro	Thr		
					230					235					240		768
gat	gta	gct	aat	gca	gcg	gtg	tat	ctc	gct	tcc	gat	gat	tca	aag	tat		
Asp	Val	Ala	Asn	Ala	Ala	Val	Tyr	Leu	Ala	Ser	Asp	Asp	Ser	Lys	Tyr		
				245					250					255			816
gta	aat	ggg	cat	aat	ctg	gtg	gta	gat	gga	gga	ttc	aca	act	gta	aag		
Val	Asn	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	Thr	Val	Lys		
			260					265					270				852
acg	tta	gat	ttc	cct	gca	cct	gac	caa	gtg	aag	taa						
Thr	Leu	Asp	Phe	Pro	Ala	Pro	Asp	Gln	Val	Lys							
		275					280										

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<210> 3416
<211> 283
<212> PRT
<213> Arabidopsis thaliana
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<400>	3416														
Met	Leu	Ile	Val	Ser <sub>5</sub>	Phe	Leu	Ser	Gly	Tyr <sub>10</sub>	Glu	Asp	Gly	Ile	Gly <sub>15</sub>	Arg
Lys	Leu	Glu	Gly <sub>20</sub>	Lys	Val	Ala	Leu	Ile <sub>25</sub>	Thr	Gly	Gly	Ala	Ser <sub>30</sub>	Gly	Ile
Gly	Lys	Ala <sub>35</sub>	Thr	Ala	Gly	Lys	Phe <sub>40</sub>	Ile	Ser	His	Gly	Ala <sub>45</sub>	Lys	Val	Ile
Ile	Ala <sub>50</sub>	Asp	Ile	Gln	Pro	Gln <sub>55</sub>	Ile	Gly	Arg	Glu	Thr <sub>60</sub>	Glu	Gln	Glu	Leu
Gly <sub>65</sub>	Pro	Ser	Cys	Ala	Tyr <sub>70</sub>	Phe	Pro	Cys	Asp	Val <sub>75</sub>	Thr	Lys	Glu	Ser	Asp <sub>80</sub>
Ile	Ala	Asn	Ala	Val <sub>85</sub>	Asp	Phe	Ala	Val	Ser <sub>90</sub>	Leu	His	Thr	Lys	Leu <sub>95</sub>	Asp
Ile	Met	Tyr	Asn <sub>100</sub>	Asn	Ala	Gly	Ile	Pro <sub>105</sub>	Cys	Lys	Thr	Pro	Pro <sub>110</sub>	Ser	Ile
Val	Asp	Leu <sub>115</sub>	Asp	Leu	Asn	Val	Phe <sub>120</sub>	Asp	Lys	Val	Ile	Asn <sub>125</sub>	Thr	Asn	Val
Arg	Gly <sub>130</sub>	Val	Met	Ala	Gly	Ile <sub>135</sub>	Lys	His	Ala	Ala	Arg <sub>140</sub>	Val	Met	Ile	Pro
Arg <sub>145</sub>	Asn	Ser	Gly	Ser	Ile <sub>150</sub>	Ile	Cys	Ala	Gly	Ser <sub>155</sub>	Val	Thr	Gly	Met	Met <sub>160</sub>
Gly	Gly	Leu	Ala	Gln <sub>165</sub>	His	Thr	Tyr	Ser	Val <sub>170</sub>	Ser	Lys	Ser	Ala	Val <sub>175</sub>	Ile
Gly	Ile	Val	Arg <sub>180</sub>	Ser	Thr	Ala	Ser	Glu <sub>185</sub>	Leu	Cys	Lys	His	Arg <sub>190</sub>	Ile	Arg
Val	Asn	Cys <sub>195</sub>	Ile	Ser	Pro	Phe	Ala <sub>200</sub>	Ile	Thr	Thr	Ser	Phe <sub>205</sub>	Val	Met	Asp
Glu	Met <sub>210</sub>	Arg	Gln	Ile	Tyr	Pro <sub>215</sub>	Gly	Val	Asp	Asp	Ser <sub>220</sub>	Arg	Leu	Ile	Gln
Ile <sub>225</sub>	Val	Gln	Ser	Thr	Gly <sub>230</sub>	Val	Leu	Asn	Gly	Glu <sub>235</sub>	Val	Cys	Glu	Pro	Thr <sub>240</sub>
Asp	Val	Ala	Asn	Ala <sub>245</sub>	Ala	Val	Tyr	Leu	Ala <sub>250</sub>	Ser	Asp	Asp	Ser	Lys <sub>255</sub>	Tyr
Val	Asn	Gly	His <sub>260</sub>	Asn	Leu	Val	Val	Asp <sub>265</sub>	Gly	Gly	Phe	Thr	Thr <sub>270</sub>	Val	Lys
Thr	Leu	Asp <sub>275</sub>	Phe	Pro	Ala	Pro	Asp <sub>280</sub>	Gln	Val	Lys					

<210> 3417  
 <211> 858  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(858)

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<400> 3417
atg tca acg aac act gaa tct tct tct tat tct tct ctt cct agt caa      48
Met Ser Thr Asn Thr 5 Glu Ser Ser Ser Tyr 10 Ser Ser Leu Pro Ser 15 Gln
agg ctt ttg ggt aaa gtg gca ttg atc act gga gga gcc aca ggg ata      96
Arg Leu Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile
ggt gag agc att gtt cgt ctg ttc cac aag cac ggt gcc aaa gtc tgc      144
Gly Glu Ser 35 Ile Val Arg Leu Phe 40 His Lys His Gly Ala Lys Val Cys
att gtt gat ctg caa gat gat ctc gga ggt gag gtg tgt aaa agt ctg      192
Ile Val Asp Leu Gln Asp Asp Leu Gly Gly Glu Val Cys Lys Ser Leu
ctt cgt ggt gag tcc aag gag acg gct ttt ttc atc cat ggc gat gtt      240
Leu Arg Gly Glu Ser Lys 70 Glu Thr Ala Phe 75 Ile His Gly Asp Val
aga gtg gaa gat gac att agc aat gcg gtt gac ttt gca gtc aaa aat      288
Arg Val Glu Asp Asp 85 Ile Ser Asn Ala Val 90 Asp Phe Ala Val Lys Asn
ttt ggg acg ctt gat ata ctt atc aac aat gca gga tta tgt gga gca      336
Phe Gly Thr 100 Asp Ile Leu Ile Asn 105 Asn Ala Gly Leu Cys Gly Ala
ccg tgc cct gat att cgt aat tat agt ttg agt gag ttc gag atg acc      384
Pro Cys Pro 115 Asp Ile Arg Asn Tyr 120 Ser Leu Ser Glu Phe Glu Met Thr
ttt gat gtg aat gtg aaa gga gct ttt cta agc atg aaa cat gca gct      432
Phe Asp Val Asn Val Lys 135 Gly Ala Phe Leu Ser Met 140 Lys His Ala Ala
cgt gta atg ata ccg gag aag aaa ggg tcg ata gtt tcc tta tgt agt      480
Arg Val Met Ile Pro Glu 150 Lys Lys Gly Ser Ile Val Ser Leu Cys Ser
gtg gga ggt gtt gtg gga ggc gtt ggt cca tct tat gtt ggt tcc      528
Val Gly Gly Val 165 Gly Gly Val Gly Pro 170 His Ser Tyr Val Gly Ser
aag cat gct gtt cta ggc ttg act agg agt gtt gca gcg gag ctt gga      576
Lys His Ala Val 180 Leu Gly Leu Thr Arg 185 Ser Val Ala Ala Glu Leu Gly
cag cac ggg ata cgt gtg aac tgt gtt tcg cct tac gcg gtt gca act      624
Gln His Gly Ile Arg Val Asn Cys 200 Val Ser Pro Tyr Ala Val Ala Thr
aaa ctc gct ttg gct cat ttg ccg gag gaa gaa aga acg gag gat gca      672
Lys Leu Ala Leu Ala His Leu 215 Pro Glu Glu Glu Arg Thr Glu Asp Ala
ttt gtt ggt ttc agg aat ttt gct gct gca aac gcg aat cta aaa ggg      720
Phe Val Gly Phe Arg Asn Phe Ala Ala Ala Asn Ala Asn Leu Lys Gly
gtg gaa ctg acg gtt gat gat gta gcg aac gct gtt ctg ttt ttg gct      768
Val Glu Leu Thr 245 Val Asp Asp Val Ala Asn 250 Ala Val Leu Phe Leu Ala
agc gat gac tcg cgg tac ata agc gga gat aat ttg atg att gat gga      816
Ser Asp Asp Ser Arg Tyr Ile Ser Gly Asp Asn Leu Met Ile Asp Gly
gga ttc act tgc act aac cac tcc ttt aaa gtc ttc aga tga      858
Gly Phe Thr 275 Cys Thr Asn His Ser 280 Phe Lys Val Phe Arg 285

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<210> 3418  
 <211> 285  
 <212> PRT  
 <213> Arabidopsis thaliana

## PhoenixTemp32470.tmp.txt

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<400> 3418
Met Ser Thr Asn Thr Glu Ser Ser Ser Tyr Ser Ser Leu Pro Ser Gln
1      5      10      15
Arg Leu Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile
      20      25      30
Gly Glu Ser Ile Val Arg Leu Phe His Lys His Gly Ala Lys Val Cys
      35      40      45
Ile Val Asp Leu Gln Asp Asp Leu Gly Gly Glu Val Cys Lys Ser Leu
      50      55      60
Leu Arg Gly Glu Ser Lys Glu Thr Ala Phe Phe Ile His Gly Asp Val
65      70      75      80
Arg Val Glu Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Asn
      85      90      95
Phe Gly Thr Leu Asp Ile Leu Ile Asn Asn Ala Gly Leu Cys Gly Ala
      100      105      110
Pro Cys Pro Asp Ile Arg Asn Tyr Ser Leu Ser Glu Phe Glu Met Thr
      115      120      125
Phe Asp Val Asn Val Lys Gly Ala Phe Leu Ser Met Lys His Ala Ala
      130      135      140
Arg Val Met Ile Pro Glu Lys Lys Gly Ser Ile Val Ser Leu Cys Ser
145      150      155      160
Val Gly Gly Val Val Gly Gly Val Gly Pro His Ser Tyr Val Gly Ser
      165      170      175
Lys His Ala Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly
      180      185      190
Gln His Gly Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Ala Thr
      195      200      205
Lys Leu Ala Leu Ala His Leu Pro Glu Glu Glu Arg Thr Glu Asp Ala
      210      215      220
Phe Val Gly Phe Arg Asn Phe Ala Ala Ala Asn Ala Asn Leu Lys Gly
225      230      235      240
Val Glu Leu Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala
      245      250      255
Ser Asp Asp Ser Arg Tyr Ile Ser Gly Asp Asn Leu Met Ile Asp Gly
      260      265      270
Gly Phe Thr Cys Thr Asn His Ser Phe Lys Val Phe Arg
      275      280      285

```

```

<210> 3419
<211> 768
<212> DNA
<213> Bacillus subtilis

```

```

<220>
<221> CDS
<222> (7)..(768)
<223> transl_table=11

```

```

<400> 3419
atgac atg aac ctc acc gat aaa acc gtc ctc atc aca gga ggc gca      48
      Met Asn Leu Thr Asp Lys Thr Val Leu Ile Thr Gly Gly Ala
      1      5      10
tca ggc att ggt tat gct gcg gtt cag gct ttt ttg ggc cag cag gcc      96
Ser Gly Ile Gly Tyr Ala Ala Val Gln Ala Phe Leu Gly Gln Gln Ala
      15      20      25      30
aat gtg gtt gtg gcg gat att gat gaa gcg caa gga gaa gca atg gta      144
Asn Val Val Val Ala Asp Ile Asp Glu Ala Gln Gly Glu Ala Met Val
      35      40      45
cga aaa gaa aat aat gac agg ctg cac ttt gtg caa acg gac atc aca      192
Arg Lys Glu Asn Asn Asp Arg Leu His Phe Val Gln Thr Asp Ile Thr
      50      55      60
gac gaa gct gcc tgc cag cac gca gtt gaa tcg gcg gtt cat aca ttt      240
Asp Glu Ala Ala Cys Gln His Ala Val Glu Ser Ala Val His Thr Phe
      65      70      75
ggc ggg ctc gat gtc ttg att aat aat gca ggc atc gaa atc gtg gcg      288
Gly Gly Leu Asp Val Leu Ile Asn Asn Ala Gly Ile Glu Ile Val Ala
      80      85      90
cct att cac gag atg gag ctc agc gat tgg aac aag gtg ctg caa gtc      336

```

## PhoenixTemp32470.tmp.txt

Pro 95	Ile	His	Glu	Met	Glu 100	Leu	Ser	Asp	Trp	Asn 105	Lys	Val	Leu	Gln	Val 110	
aat	ttg	acc	ggc	atg	ttt	tta	atg	agc	aaa	cat	gca	ctc	aag	cat	atg	384
Asn	Leu	Thr	Gly	Met 115	Phe	Leu	Met	Ser	Lys 120	His	Ala	Leu	Lys	His 125	Met	
ctg	gcc	gcc	ggc	aag	ggc	aac	atc	att	aat	acg	tgc	tct	gtc	ggc	gga	432
Leu	Ala	Ala	Gly 130	Lys	Gly	Asn	Ile	Ile 135	Asn	Thr	Cys	Ser	Val 140	Gly	Gly	
ctc	gtg	gca	tgg	cct	gat	att	cct	gct	tat	aac	gcc	agc	aaa	ggc	ggg	480
Leu	Val 145	Ala	Trp	Pro	Asp	Ile	Pro 150	Ala	Tyr	Asn	Ala	Ser 155	Lys	Gly	Gly	
gtt	ttg	cag	ctg	act	aaa	tca	atg	gcc	gtt	gat	tat	gcg	aaa	cat	caa	528
Val 160	Leu	Gln	Leu	Thr	Lys	Ser 165	Met	Ala	Val	Asp	Tyr 170	Ala	Lys	His	Gln	
att	cgg	gtg	aac	tgc	gta	tgc	ccg	ggg	atc	atc	gac	aca	ccg	ctg	aat	576
Ile 175	Arg	Val	Asn	Cys	Val 180	Cys	Pro	Gly	Ile	Ile 185	Asp	Thr	Pro	Leu	Asn 190	
gaa	aaa	tca	ttc	ctt	gaa	aat	aat	gaa	ggc	aca	ctt	gaa	gag	att	aaa	624
Glu	Lys	Ser	Phe 195	Leu	Glu	Asn	Asn	Glu	Gly 200	Thr	Leu	Glu	Glu	Ile 205	Lys	
aaa	gaa	aaa	gcg	aag	gta	aat	ccg	ctg	ctg	agg	ctt	ggg	aaa	cct	gaa	672
Lys	Glu	Lys	Ala 210	Lys	Val	Asn	Pro	Leu 215	Leu	Arg	Leu	Gly	Lys 220	Pro	Glu	
gaa	atc	gca	aat	gtg	atg	ctg	ttt	tta	gcc	tcg	gat	tta	tca	agc	tat	720
Glu	Ile 225	Ala	Asn	Val	Met	Leu	Phe 230	Leu	Ala	Ser	Asp	Leu 235	Ser	Ser	Tyr	
atg	acc	gga	agc	gcc	atc	acc	gca	gac	gga	gga	tac	acc	gca	caa		765
Met	Thr 240	Gly	Ser	Ala	Ile	Thr 245	Ala	Asp	Gly	Gly	Tyr 250	Thr	Ala	Gln		
tag																768

&lt;210&gt; 3420

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Bacillus subtilis

&lt;400&gt; 3420

Met 1	Asn	Leu	Thr	Asp 5	Lys	Thr	Val	Leu	Ile 10	Thr	Gly	Gly	Ala	Ser 15	Gly
Ile	Gly	Tyr	Ala 20	Ala	Val	Gln	Ala	Phe 25	Leu	Gly	Gln	Gln	Ala 30	Asn	Val
Val	Val	Ala 35	Asp	Ile	Asp	Glu	Ala 40	Gln	Gly	Glu	Ala	Met 45	Val	Arg	Lys
Glu	Asn 50	Asn	Asp	Arg	Leu	His 55	Phe	Val	Gln	Thr	Asp 60	Ile	Thr	Asp	Glu
Ala 65	Ala	Cys	Gln	His 70	Ala	Val	Glu	Ser	Ala	Val	His 75	Thr	Phe	Gly	Gly 80
Leu	Asp	Val	Leu	Ile 85	Asn	Asn	Ala	Gly	Ile 90	Glu	Ile	Val	Ala	Pro 95	Ile
His	Glu	Met	Glu 100	Leu	Ser	Asp	Trp	Asn 105	Lys	Val	Leu	Gln	Val 110	Asn	Leu
Thr	Gly	Met 115	Phe	Leu	Met	Ser	Lys 120	His	Ala	Leu	Lys	His 125	Met	Leu	Ala
Ala	Gly 130	Lys	Gly	Asn	Ile	Ile 135	Asn	Thr	Cys	Ser	Val	Gly	Gly	Leu	Val
Ala 145	Trp	Pro	Asp	Ile	Pro 150	Ala	Tyr	Asn	Ala	Ser 155	Lys	Gly	Gly	Val	Leu 160
Gln	Leu	Thr	Lys	Ser 165	Met	Ala	Val	Asp	Tyr 170	Ala	Lys	His	Gln	Ile 175	Arg
Val	Asn	Cys	Val 180	Cys	Pro	Gly	Ile	Ile 185	Asp	Thr	Pro	Leu	Asn 190	Glu	Lys
Ser	Phe	Leu 195	Glu	Asn	Asn	Glu	Gly 200	Thr	Leu	Glu	Glu	Ile 205	Lys	Lys	Glu
Lys	Ala 210	Lys	Val	Asn	Pro	Leu 215	Leu	Arg	Leu	Gly	Lys 220	Pro	Glu	Glu	Ile
Ala 225	Asn	Val	Met	Leu	Phe 230	Leu	Ala	Ser	Asp	Leu 235	Ser	Ser	Tyr	Met	Thr 240



Gly Ser Ala Ile Thr Ala Asp Gly Gly Tyr Thr Ala Gln  
245 250

<210> 3421  
<211> 777  
<212> DNA  
<213> Rhizobium meliloti

<220>  
<221> CDS  
<222> (1)..(777)  
<223> transl\_table=11

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<400> 3421
atg acc aag act gcg gtg ata acg ggt tcc acg agc ggc atc gga ttg      48
Met Thr Lys Thr Ala Val Ile Thr Gly Ser Thr Ser Gly Ile Gly Leu
  1          5          10          15
gcg atc gcc cgg acc ctg gcg aag gcc ggt gcc aat atc gtc ctg aac      96
Ala Ile Ala Arg Thr Leu Ala Lys Ala Gly Ala Asn Ile Val Leu Asn
          20          25          30
ggc ttc ggt gcg ccg gac gag atc agg acc gtc acg gat gaa gtc gca      144
Gly Phe Gly Ala Pro Asp Glu Ile Arg Thr Val Thr Asp Glu Val Ala
          35          40          45
ggc ctg agc tcc ggt acg gtg ctt cat cac ccg gcc gac atg acc aag      192
Gly Leu Ser Ser Gly Thr Val Leu His His Pro Ala Asp Met Thr Lys
          50          55          60
ccc tcc gaa atc gcc gac atg atg gcg atg gtt gcc gat cgc ttc ggc      240
Pro Ser Glu Ile Ala Asp Met Met Ala Met Val Ala Asp Arg Phe Gly
  65          70          75          80
ggc gcc gat atc ctc gtc aac aat gcc ggc gtg cag ttc gtt gaa aag      288
Gly Ala Asp Ile Leu Val Asn Asn Ala Gly Val Gln Phe Val Glu Lys
          85          90          95
atc gag gat ttt ccg gtc gag caa tgg gac cgg atc atc gcc gtc aat      336
Ile Glu Asp Phe Pro Val Glu Gln Trp Asp Arg Ile Ile Ala Val Asn
          100          105          110
ctc tcc tcc tcc ttt cac acc att cgt ggc gcc att ccg ccg atg aag      384
Leu Ser Ser Ser Phe His Thr Ile Arg Gly Ala Ile Pro Pro Met Lys
          115          120          125
aag aag ggc tgg ggc cgg atc atc aat atc gcg tcc gct cat ggc ctc      432
Lys Lys Gly Trp Gly Arg Ile Ile Asn Ile Ala Ser Ala His Gly Leu
          130          135          140
gtg gcc tcc ccc ttc aag tcc gcc tat gtc gcc gcc aag cat ggt atc      480
Val Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Ala Lys His Gly Ile
  145          150          155          160
atg ggg ttg acg aag act gtg gcg ctg gag gtg gcg gag agc ggt gtc      528
Met Gly Leu Thr Lys Thr Val Ala Leu Glu Val Ala Glu Ser Gly Val
          165          170          175
acc gtg aac tcg atc tgc ccc ggc tac gtt ctg acg ccg ctc gtc gaa      576
Thr Val Asn Ser Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu
          180          185          190
aag cag ata ccg gat cag gcg aga acg cgc ggc atc acc gag gaa cag      624
Lys Gln Ile Pro Asp Gln Ala Arg Thr Arg Gly Ile Thr Glu Glu Gln
          195          200          205
gtg atc aac gag gtg atg ctc aag gga cag ccg acg aaa aag ttc atc      672
Val Ile Asn Glu Val Met Leu Lys Gly Gln Pro Thr Lys Lys Phe Ile
  210          215          220
acc gtc gaa cag gtt gcc tcc ctg gcg ctc tat ctt gca ggc gac gat      720
Thr Val Glu Gln Val Ala Ser Leu Ala Leu Tyr Leu Ala Gly Asp Asp
  225          230          235          240
gcc gcc cag atc acc ggg acg cat gtt tcg atg gat ggc ggc tgg acg      768
Ala Ala Gln Ile Thr Gly Thr His Val Ser Met Asp Gly Gly Trp Thr
          245          250          255

gcg cag tag      777
Ala Gln

```

<210> 3422  
<211> 258  
<212> PRT

&lt;213&gt; Rhizobium meliloti

&lt;400&gt; 3422

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Met Thr Lys Thr Ala Val Ile Thr Gly Ser Thr Ser Gly Ile Gly Leu
1      5      10      15
Ala Ile Ala Arg Thr Leu Ala Lys Ala Gly Ala Asn Ile Val Leu Asn
20      25      30
Gly Phe Gly Ala Pro Asp Glu Ile Arg Thr Val Thr Asp Glu Val Ala
35      40      45
Gly Leu Ser Ser Gly Thr Val Leu His His Pro Ala Asp Met Thr Lys
50      55      60
Pro Ser Glu Ile Ala Asp Met Met Ala Met Val Ala Asp Arg Phe Gly
65      70      75      80
Gly Ala Asp Ile Leu Val Asn Asn Ala Gly Val Gln Phe Val Glu Lys
85      90      95
Ile Glu Asp Phe Pro Val Glu Gln Trp Asp Arg Ile Ile Ala Val Asn
100     105     110
Leu Ser Ser Ser Phe His Thr Ile Arg Gly Ala Ile Pro Met Lys
115     120     125
Lys Lys Gly Trp Gly Arg Ile Ile Asn Ile Ala Ser Ala His Gly Leu
130     135     140
Val Ala Ser Pro Phe Lys Ser Ala Tyr Val Ala Ala Lys His Gly Ile
145     150     155     160
Met Gly Leu Thr Lys Thr Val Ala Leu Glu Val Ala Glu Ser Gly Val
165     170     175
Thr Val Asn Ser Ile Cys Pro Gly Tyr Val Leu Thr Pro Leu Val Glu
180     185     190
Lys Gln Ile Pro Asp Gln Ala Arg Thr Arg Gly Ile Thr Glu Glu Gln
195     200     205
Val Ile Asn Glu Val Met Leu Lys Gly Gln Pro Thr Lys Lys Phe Ile
210     215     220
Thr Val Glu Gln Val Ala Ser Leu Ala Leu Tyr Leu Ala Gly Asp Asp
225     230     235     240
Ala Ala Gln Ile Thr Gly Thr His Val Ser Met Asp Gly Gly Trp Thr
245     250     255
Ala Gln

```

&lt;210&gt; 3423

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3423

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atg tac aaa gat tta acc gga aaa aca gcg att gtg aca ggg tct tca      48
Met Tyr Lys Asp Leu Thr Gly Lys Thr Ala Ile Val Thr Gly Ser Ser
1      5      10      15
aaa gga atc ggg aaa gcc att gcg gaa cgg ttc gga aag gag aaa atg      96
Lys Gly Ile Gly Lys Ala Ile Ala Glu Arg Phe Gly Lys Glu Lys Met
20      25      30
aat gtt gtt gta aat tac cac agc gac ccg tct gga gca gat gaa act      144
Asn Val Val Val Asn Tyr His Ser Asp Pro Ser Gly Ala Asp Glu Thr
35      40      45
ctg gaa atc att aag cag aac gga ggg aaa gcc gtc tca gtt gag gcg      192
Leu Glu Ile Ile Lys Gln Asn Gly Gly Lys Ala Val Ser Val Glu Ala
50      55      60
gac gtg tca aaa gaa gag ggg att cag gcg ctc ttg gac aca gct tta      240
Asp Val Ser Lys Glu Glu Gly Ile Gln Ala Leu Leu Asp Thr Ala Leu
65      70      75      80
gag cat ttc ggc acg ctc gat gtg atg gta aac aac tcc ggt ttt aac      288
Glu His Phe Gly Thr Leu Asp Val Met Val Asn Asn Ser Gly Phe Asn
85      90      95
ggc gtt gag gcg atg ccg cat gag atg ctt gaa gat tgg cag aga      336
Gly Val Glu Ala Met Pro His Glu Met Ser Leu Glu Asp Trp Gln Arg

```

## PhoenixTemp32470.tmp.txt

gtg	att	gat	100	aat	gtt	acc	gga	105	ttt	ctg	gga	110	gca	gca	384	
Val	Ile	Asp	Val	Asn	Val	Thr	Gly	Thr	Phe	Leu	Gly	Lys	Ala	Ala		
		115					120					125				
ctt	aac	cac	atg	atg	aaa	aac	aat	atc	aag	ggc	aat	gtg	ctg	aat	atc	432
Leu	Asn	His	Met	Met	Lys	Asn	Asn	Ile	Lys	Gly	Asn	Val	Leu	Asn	Ile	
	130					135					140					
tca	agt	gtt	cat	cag	cag	att	ccg	cgc	cct	gta	aac	gtt	cag	tat	tcc	480
Ser	Ser	Val	His	Gln	Gln	Ile	Pro	Arg	Pro	Val	Asn	Val	Gln	Tyr	Ser	
145				150						155					160	
aca	tcc	aaa	ggc	ggc	atc	aag	atg	atg	acg	gaa	acg	ctg	gcg	ctc	aat	528
Thr	Ser	Lys	Gly	Gly	Ile	Lys	Met	Met	Thr	Glu	Thr	Leu	Ala	Leu	Asn	
			165						170					175		
tat	gcg	gat	aag	gga	atc	cgc	gtc	aat	gcg	ata	gcg	ccc	ggc	acc	att	576
Tyr	Ala	Asp	Lys	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Thr	Ile	
			180					185					190			
gcc	aca	gaa	tca	aat	gtt	gat	acg	aaa	aag	gaa	gag	agc	agg	caa	aaa	624
Ala	Thr	Glu	Ser	Asn	Val	Asp	Thr	Lys	Lys	Glu	Glu	Ser	Arg	Gln	Lys	
		195					200					205				
caa	ttg	aaa	aaa	atc	ccg	atg	aaa	gcc	ttc	gga	aag	cct	gaa	gaa	gtg	672
Gln	Leu	Lys	Lys	Ile	Pro	Met	Lys	Ala	Phe	Gly	Lys	Pro	Glu	Glu	Val	
	210				215					220						
gcg	gca	gca	gca	gct	tgg	ctc	gta	tct	gag	gaa	gca	agc	tat	gtg	acc	720
Ala	Ala	Ala	Ala	Ala	Trp	Leu	Val	Ser	Glu	Glu	Ala	Ser	Tyr	Val	Thr	
225				230					235					240		
ggc	gca	aca	ctt	ttc	gtc	gac	ggc	gga	atg	aca	ctt	tat	cca	tct	cag	768
Gly	Ala	Thr	Leu	Phe	Val	Asp	Gly	Gly	Met	Thr	Leu	Tyr	Pro	Ser	Gln	
			245					250					255			
ctt	gaa	tag														777
Leu	Glu															

&lt;210&gt; 3424

&lt;211&gt; 258

&lt;212&gt; PRT

&lt;213&gt; Bacillus subtilis

&lt;400&gt; 3424

Met	Tyr	Lys	Asp	Leu	Thr	Gly	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ser	Ser	
1				5					10					15		
Lys	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Glu	Arg	Phe	Gly	Lys	Glu	Lys	Met	
			20					25					30			
Asn	Val	Val	Val	Asn	Tyr	His	Ser	Asp	Pro	Ser	Gly	Ala	Asp	Glu	Thr	
		35					40					45				
Leu	Glu	Ile	Ile	Lys	Gln	Asn	Gly	Gly	Lys	Ala	Val	Ser	Val	Glu	Ala	
	50					55					60					
Asp	Val	Ser	Lys	Glu	Glu	Gly	Ile	Gln	Ala	Leu	Leu	Asp	Thr	Ala	Leu	
65				70					75						80	
Glu	His	Phe	Gly	Thr	Leu	Asp	Val	Met	Val	Asn	Asn	Ser	Gly	Phe	Asn	
			85					90						95		
Gly	Val	Glu	Ala	Met	Pro	His	Glu	Met	Ser	Leu	Glu	Asp	Trp	Gln	Arg	
			100					105					110			
Val	Ile	Asp	Val	Asn	Val	Thr	Gly	Thr	Phe	Leu	Gly	Ala	Lys	Ala	Ala	
		115					120					125				
Leu	Asn	His	Met	Met	Lys	Asn	Asn	Ile	Lys	Gly	Asn	Val	Leu	Asn	Ile	
	130					135					140					
Ser	Ser	Val	His	Gln	Gln	Ile	Pro	Arg	Pro	Val	Asn	Val	Gln	Tyr	Ser	
145				150						155					160	
Thr	Ser	Lys	Gly	Gly	Ile	Lys	Met	Met	Thr	Glu	Thr	Leu	Ala	Leu	Asn	
			165					170					175			
Tyr	Ala	Asp	Lys	Gly	Ile	Arg	Val	Asn	Ala	Ile	Ala	Pro	Gly	Thr	Ile	
			180					185					190			
Ala	Thr	Glu	Ser	Asn	Val	Asp	Thr	Lys	Lys	Glu	Glu	Ser	Arg	Gln	Lys	
		195					200					205				
Gln	Leu	Lys	Lys	Ile	Pro	Met	Lys	Ala	Phe	Gly	Lys	Pro	Glu	Glu	Val	
	210				215					220						
Ala	Ala	Ala	Ala	Ala	Trp	Leu	Val	Ser	Glu	Glu	Ala	Ser	Tyr	Val	Thr	
225				230					235					240		
Gly	Ala	Thr	Leu	Phe	Val	Asp	Gly	Gly	Met	Thr	Leu	Tyr	Pro	Ser	Gln	

245

250

255

Leu Glu

<210> 3425  
 <211> 786  
 <212> DNA  
 <213> Streptomyces cinnamonensis

<220>  
 <221> CDS  
 <222> (1)..(786)  
 <223> transl\_table=11

<400> 3425  
 atg aca cag tcc acc tcc cgc gtc gcg ctc gtc acc ggc gcc acc agc 48  
 Met Thr Gln Ser Thr Ser Arg Val Ala Leu Val Thr Gly Ala Thr Ser  
 1 5 10 15  
 ggc atc ggc ctg gcc acc gcc cgg ctg ctg gcc gcc cag ggc cac ctg 96  
 Gly Ile Gly Leu Ala Thr Ala Arg Leu Leu Ala Ala Gln Gly His Leu  
 20 25 30  
 gtc ttc ctg ggc gcg cgc acc gag agc gac gtc atc gcg acc gtc aag 144  
 Val Phe Leu Gly Ala Arg Thr Glu Ser Asp Val Ile Ala Thr Val Lys  
 35 40 45  
 gcc ctg cgc aac gac ggc ctg gag gcc gag ggc cag gtg ctc gat gtg 192  
 Ala Leu Arg Asn Asp Gly Leu Glu Ala Glu Gly Gln Val Leu Asp Val  
 50 55 60  
 cgc gac ggc gcc tcc gtc acc gcc ttc gtc cag gcc gcc gtc gac cgg 240  
 Arg Asp Gly Ala Ser Val Thr Ala Phe Val Gln Ala Ala Val Asp Arg  
 65 70 75 80  
 tac ggc cgc atc gac gtc ctg gtc aac aac gcc ggc cgc tcc ggc ggc 288  
 Tyr Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Arg Ser Gly Gly  
 85 90 95  
 ggc gtc acc gcg gac ctc acc gac gag ctg tgg gac gac gtg atc gac 336  
 Gly Val Thr Ala Asp Leu Thr Asp Glu Leu Trp Asp Asp Val Ile Asp  
 100 105 110  
 acc aac ctc aac agc gtc ttc cgc atg acc cgc gcg gtg ctc acc acc 384  
 Thr Asn Leu Asn Ser Val Phe Arg Met Thr Arg Ala Val Leu Thr Thr  
 115 120 125  
 ggc ggc atg cgc acc cgg gag cgg ggc cgc atc atc aac gtc gcc tcc 432  
 Gly Gly Met Arg Thr Arg Glu Arg Gly Arg Ile Ile Asn Val Ala Ser  
 130 135 140  
 acc gcg ggc aag cag ggc gtc gtg ctc ggc gcc ccc tac tcc gcc tcc 480  
 Thr Ala Gly Lys Gln Gly Val Val Leu Gly Ala Pro Tyr Ser Ala Ser  
 145 150 155 160  
 aag cac ggc gtc gtc ggc ttc acc aag gca ctc ggc aac gaa ctg gcc 528  
 Lys His Gly Val Val Gly Phe Thr Lys Ala Leu Gly Asn Glu Leu Ala  
 165 170 175  
 ccc acc ggc atc acc gtc aac gcc gtc tgc ccc ggc tat gtc gag acg 576  
 Pro Thr Gly Ile Thr Val Asn Ala Val Cys Pro Gly Tyr Val Glu Thr  
 180 185 190  
 ccg atg gcc cag cgg gtg cgc cag ggc ggc ggc gcc tac gac acc 624  
 Pro Met Ala Gln Arg Val Arg Gln Gly Tyr Ala Ala Ala Tyr Asp Thr  
 195 200 205  
 acc gag gag gcg atc ctc acc aag ttc cag gcc aag atc ccc ctc ggc 672  
 Thr Glu Glu Ala Ile Leu Thr Lys Phe Gln Ala Lys Ile Pro Leu Gly  
 210 215 220  
 cgc tac agc acc ccc gag gaa gtc gcc ggc ctg atc ggc tac ctg gcc 720  
 Arg Tyr Ser Thr Pro Glu Glu Val Ala Gly Leu Ile Gly Tyr Leu Ala  
 225 230 235 240  
 tcc gac acc gcc gcc tcc atc acc tcc cag gcg ctc aac gtc tgc ggc 768  
 Ser Asp Thr Ala Ala Ser Ile Thr Ser Gln Ala Leu Asn Val Cys Gly  
 245 250 255  
 ggc ctc ggc aac ttc tga 786  
 Gly Leu Gly Asn Phe  
 260

<210> 3426  
 <211> 261

&lt;212&gt; PRT

&lt;213&gt; Streptomyces cinnamonensis

&lt;400&gt; 3426

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Met Thr Gln Ser Thr Ser Arg Val Ala Leu Val Thr Gly Ala Thr Ser
1      5      10      15
Gly Ile Gly Leu Ala Thr Ala Arg Leu Leu Ala Ala Gln Gly His Leu
20      25      30
Val Phe Leu Gly Ala Arg Thr Glu Ser Asp Val Ile Ala Thr Val Lys
35      40      45
Ala Leu Arg Asn Asp Gly Leu Glu Ala Glu Gly Gln Val Leu Asp Val
50      55      60
Arg Asp Gly Ala Ser Val Thr Ala Phe Val Gln Ala Ala Val Asp Arg
65      70      75      80
Tyr Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Arg Ser Gly Gly
85      90      95
Gly Val Thr Ala Asp Leu Thr Asp Glu Leu Trp Asp Asp Val Ile Asp
100      105      110
Thr Asn Leu Asn Ser Val Phe Arg Met Thr Arg Ala Val Leu Thr Thr
115      120      125
Gly Gly Met Arg Thr Arg Glu Arg Gly Arg Ile Ile Asn Val Ala Ser
130      135      140
Thr Ala Gly Lys Gln Gly Val Val Leu Gly Ala Pro Tyr Ser Ala Ser
145      150      155      160
Lys His Gly Val Val Gly Phe Thr Lys Ala Leu Gly Asn Glu Leu Ala
165      170      175
Pro Thr Gly Ile Thr Val Asn Ala Val Cys Pro Gly Tyr Val Glu Thr
180      185      190
Pro Met Ala Gln Arg Val Arg Gln Gly Tyr Ala Ala Tyr Asp Thr
195      200      205
Thr Glu Glu Ala Ile Leu Thr Lys Phe Gln Ala Lys Ile Pro Leu Gly
210      215      220
Arg Tyr Ser Thr Pro Glu Glu Val Ala Gly Leu Ile Gly Tyr Leu Ala
225      230      235      240
Ser Asp Thr Ala Ala Ser Ile Thr Ser Gln Ala Leu Asn Val Cys Gly
245      250      255
Gly Leu Gly Asn Phe
260

```

&lt;210&gt; 3427

&lt;211&gt; 741

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(741)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3427

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atg ctt aat gat aaa acg gct att gtc act ggc gca tcc cgc gga atc      48
Met Leu Asn Asp Lys Thr Ala Ile Val Thr Gly Ala Ser Arg Gly Ile
1      5      10      15
ggc cgc tca atc gcc ctt gat ctg gca aaa agc gga gca aat gtt gtc      96
Gly Arg Ser Ile Ala Leu Asp Leu Ala Lys Ser Gly Ala Asn Val Val
20      25      30
gtg aac tac tcc ggc aat gaa gcg aaa gca aat gaa gtg gta gat gaa      144
Val Asn Tyr Ser Gly Asn Glu Ala Lys Ala Asn Glu Val Val Asp Glu
35      40      45
atc aaa tca atg ggc aga aaa gca att gct gta aaa gcg gat gta tca      192
Ile Lys Ser Met Gly Arg Lys Ala Ile Ala Val Lys Ala Asp Val Ser
50      55      60
aat ccc gaa gat gta caa aac atg ata aaa gaa aca ttg tct gtt ttt      240
Asn Pro Glu Asp Val Gln Asn Met Ile Lys Glu Thr Leu Ser Val Phe
65      70      75      80
tct acg att gac att ctg gtt aat aat gcg gga att aca aga gac aat      288
Ser Thr Ile Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Asn
85      90      95
ctc atc atg aga atg aaa gaa gac gaa tgg gat gac gtc att aac att      336

```

PhoenixTemp32470.tmp.txt

Leu	Ile	Met	Arg	Met	Lys	Glu	Asp	Glu	Trp	Asp	Asp	Val	Ile	Asn	Ile		
aac	ctg	aag	ggt	gtt	ttc	aac	tgc	aca	aaa	gct	gtt	aca	aga	caa	atg		384
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Lys	Ala	Val	Thr	Arg	Gln	Met		
		115					120					125					
atg	aaa	cag	cgt	tca	ggc	cgc	att	att	aac	gta	tcg	tct	atc	gtc	ggc		432
Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Val	Ser	Ser	Ile	Val	Gly		
		130					135				140						
gtc	agc	gga	aac	cct	gga	caa	gcc	aac	tac	gtg	gct	gca	aaa	gcc	ggc		480
Val	Ser	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly		
		145				150				155					160		
gtc	atc	ggt	tta	acc	aaa	tct	tct	gct	aaa	gag	ctc	gcc	agc	cga	aat		528
Val	Ile	Gly	Leu	Thr	Lys	Ser	Ser	Ala	Lys	Glu	Leu	Ala	Ser	Arg	Asn		
				165						170					175		
att	acg	gta	aac	gca	ata	gcg	cca	gga	ttt	atc	tca	act	gat	atg	aca		576
Ile	Thr	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Asp	Met	Thr		
			180					185					190				
gat	aaa	ctt	gca	aaa	gac	gtt	caa	gac	gaa	atg	ctg	aaa	caa	att	ccg		624
Asp	Lys	Leu	Ala	Lys	Asp	Val	Gln	Asp	Glu	Met	Leu	Lys	Gln	Ile	Pro		
		195					200					205					
ctc	gcg	cgc	ttt	ggt	gaa	cct	agc	gat	gtc	agc	agt	gtt	gtc	acg	ttc		672
Leu	Ala	Arg	Phe	Gly	Glu	Pro	Ser	Asp	Val	Ser	Ser	Val	Val	Thr	Phe		
		210				215					220						
cta	gct	tca	gag	gga	gct	cg	tat	atg	aca	ggc	caa	acg	ctt	cat	att		720
Leu	Ala	Ser	Glu	Gly	Ala	Arg	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Ile		
		225			230					235					240		
gac	ggc	gga	atg	gtg	atg	taa											741
Asp	Gly	Gly	Met	Val	Met												
				245													

<210> 3428  
 <211> 246  
 <212> PRT  
 <213> Bacillus subtilis

<400> 3428

Met	Leu	Asn	Asp	Lys	Thr	Ala	Ile	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile		
1				5					10					15			
Gly	Arg	Ser	Ile	Ala	Leu	Asp	Leu	Ala	Lys	Ser	Gly	Ala	Asn	Val	Val		
			20					25					30				
Val	Asn	Tyr	Ser	Gly	Asn	Glu	Ala	Lys	Ala	Asn	Glu	Val	Val	Asp	Glu		
		35					40					45					
Ile	Lys	Ser	Met	Gly	Arg	Lys	Ala	Ile	Ala	Val	Lys	Ala	Asp	Val	Ser		
		50				55					60						
Asn	Pro	Glu	Asp	Val	Gln	Asn	Met	Ile	Lys	Glu	Thr	Leu	Ser	Val	Phe		
65					70					75					80		
Ser	Thr	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Asn		
				85					90					95			
Leu	Ile	Met	Arg	Met	Lys	Glu	Asp	Glu	Trp	Asp	Asp	Val	Ile	Asn	Ile		
			100					105					110				
Asn	Leu	Lys	Gly	Val	Phe	Asn	Cys	Thr	Lys	Ala	Val	Thr	Arg	Gln	Met		
		115					120					125					
Met	Lys	Gln	Arg	Ser	Gly	Arg	Ile	Ile	Asn	Val	Ser	Ser	Ile	Val	Gly		
		130				135					140						
Val	Ser	Gly	Asn	Pro	Gly	Gln	Ala	Asn	Tyr	Val	Ala	Ala	Lys	Ala	Gly		
145					150					155					160		
Val	Ile	Gly	Leu	Thr	Lys	Ser	Ser	Ala	Lys	Glu	Leu	Ala	Ser	Arg	Asn		
				165					170					175			
Ile	Thr	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile	Ser	Thr	Asp	Met	Thr		
			180					185					190				
Asp	Lys	Leu	Ala	Lys	Asp	Val	Gln	Asp	Glu	Met	Leu	Lys	Gln	Ile	Pro		
		195					200					205					
Leu	Ala	Arg	Phe	Gly	Glu	Pro	Ser	Asp	Val	Ser	Ser	Val	Val	Thr	Phe		
		210				215					220						
Leu	Ala	Ser	Glu	Gly	Ala	Arg	Tyr	Met	Thr	Gly	Gln	Thr	Leu	His	Ile		
225					230					235					240		
Asp	Gly	Gly	Met	Val	Met												
				245													

<210> 3429  
 <211> 741  
 <212> DNA  
 <213> Thermotoga maritima

<220>  
 <221> CDS  
 <222> (1)..(741)  
 <223> transl\_table=11

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<400> 3429
atg agg ctt gaa ggg aaa gtg tgt ctg atc aca ggg gct gca agc ggg      48
Met Arg Leu Glu Gly Lys Val Cys Leu Ile Thr Gly Ala Ala Ser Gly
1      5      10      15
ata ggg aaa gcc acc acg ctt ctt ttc gca cag gaa gga gct acg gtg      96
Ile Gly Lys Ala Thr Thr Leu Leu Phe Ala Gln Glu Gly Ala Thr Val
20      25      30
atc gct ggc gat atc tcg aaa gaa aat ctc gac tct ctt gtg aaa gag      144
Ile Ala Gly Asp Ile Ser Lys Glu Asn Leu Asp Ser Leu Val Lys Glu
35      40      45
gca gaa gga ctt ccg ggg aag gtt gat ccc tac gtt ttg aac gtg acc      192
Ala Glu Gly Leu Pro Gly Lys Val Asp Pro Tyr Val Leu Asn Val Thr
50      55      60
gac agg gat cag ata aag gaa gtt gtg gaa aaa gtc gtt caa aag tac      240
Asp Arg Asp Gln Ile Lys Glu Val Val Glu Lys Val Val Gln Lys Tyr
65      70      75      80
ggg cga atc gat gtt ctg gtg aac aac gcg gga ata aca agg gat gcg      288
Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Ala
85      90      95
ctt ctt gtg agg atg aaa gaa gaa gac tgg gat gcg gta ata aac gtg      336
Leu Leu Val Arg Met Lys Glu Glu Asp Trp Asp Ala Val Ile Asn Val
100      105      110
aat ctg aag ggt gtt ttc aac gtg act cag atg gtg gtg ccc tac atg      384
Asn Leu Lys Gly Val Phe Asn Val Thr Gln Met Val Val Pro Tyr Met
115      120      125
atc aaa cag agg aac ggt tcg atc gtg aac gtc tcc tct gtc gtt gga      432
Ile Lys Gln Arg Asn Gly Ser Ile Val Asn Val Ser Ser Val Val Gly
130      135      140
ata tac ggg aat cct ggt cag acg aat tac gcg gcg tcg aag gcg gga      480
Ile Tyr Gly Asn Pro Gly Gln Thr Asn Tyr Ala Ala Ser Lys Ala Gly
145      150      155      160
gtc ata gga atg acc aag acg tgg gcg aag gaa ctc gct gga aga aac      528
Val Ile Gly Met Thr Lys Thr Trp Ala Lys Glu Leu Ala Gly Arg Asn
165      170      175
atc agg gtg aac gct gtg gca ccc gga ttc ata gaa acc ccc atg acc      576
Ile Arg Val Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Pro Met Thr
180      185      190
gaa aaa ctt cca gaa aaa gcc cgt gaa acg gcc ctt tcc aga ata ccg      624
Glu Lys Leu Pro Glu Lys Ala Arg Glu Thr Ala Leu Ser Arg Ile Pro
195      200      205
ctg gga agg ttt ggg aag cca gaa gag gtg gcg cag gtt ata ctc ttc      672
Leu Gly Arg Phe Gly Lys Pro Glu Glu Val Ala Gln Val Ile Leu Phe
210      215      220
ctc gca tcg gac gag tcg agt tac gtc acc gga cag gtg ata gga ata      720
Leu Ala Ser Asp Glu Ser Ser Tyr Val Thr Gly Gln Val Ile Gly Ile
225      230      235      240
gat ggg ggc ctc gtg atc tga
Asp Gly Gly Leu Val Ile
245

```

<210> 3430  
 <211> 246  
 <212> PRT  
 <213> Thermotoga maritima

```

<400> 3430
Met Arg Leu Glu Gly Lys Val Cys Leu Ile Thr Gly Ala Ala Ser Gly
1      5      10      15
Ile Gly Lys Ala Thr Thr Leu Leu Phe Ala Gln Glu Gly Ala Thr Val

```

## PhoenixTemp32470.tmp.txt

```

      20      25      30
Ile Ala Gly Asp Ile Ser Lys Glu Asn Leu Asp Ser Leu Val Lys Glu
      35      40      45
Ala Glu Gly Leu Pro Gly Lys Val Asp Pro Tyr Val Leu Asn Val Thr
      50      55      60
Asp Arg Asp Gln Ile Lys Glu Val Val Glu Lys Val Val Gln Lys Tyr
      65      70      75      80
Gly Arg Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp Ala
      85      90      95
Leu Leu Val Arg Met Lys Glu Glu Asp Trp Asp Ala Val Ile Asn Val
      100      105      110
Asn Leu Lys Gly Val Phe Asn Val Thr Gln Met Val Val Pro Tyr Met
      115      120      125
Ile Lys Gln Arg Asn Gly Ser Ile Val Asn Val Ser Ser Val Val Gly
      130      135      140
Ile Tyr Gly Asn Pro Gly Gln Thr Asn Tyr Ala Ala Ser Lys Ala Gly
      145      150      155      160
Val Ile Gly Met Thr Lys Thr Trp Ala Lys Glu Leu Ala Gly Arg Asn
      165      170      175
Ile Arg Val Asn Ala Val Ala Pro Gly Phe Ile Glu Thr Pro Met Thr
      180      185      190
Glu Lys Leu Pro Glu Lys Ala Arg Glu Thr Ala Leu Ser Arg Ile Pro
      195      200      205
Leu Gly Arg Phe Gly Lys Pro Glu Glu Val Ala Gln Val Ile Leu Phe
      210      215      220
Leu Ala Ser Asp Glu Ser Ser Tyr Val Thr Gly Gln Val Ile Gly Ile
      225      230      235      240
Asp Gly Gly Leu Val Ile
      245

```

<210> 3431  
 <211> 738  
 <212> DNA  
 <213> Rhizobium meliloti

<220>  
 <221> CDS  
 <222> (1)..(738)  
 <223> transl\_table=11

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<400> 3431
atg ttc gaa ttg acc ggg cgc aag gcg ctc gtc acg ggc gca tca gga      48
Met Phe Glu Leu Thr Gly Arg Lys Ala Leu Val Thr Gly Ala Ser Gly
      1      5      10      15
gcc ata gga ggg gct atc gcc cgc gtg ctg cat gct cag ggc gct atc      96
Ala Ile Gly Gly Ala Ile Ala Arg Val Leu His Ala Gln Gly Ala Ile
      20      25      30
gtc gga ctg cac ggc acc caa att gaa aaa ctg gag aca ctg gca act      144
Val Gly Leu His Gly Thr Gln Ile Glu Lys Leu Glu Thr Leu Ala Thr
      35      40      45
gag ctt gga gac cgg gtc aag ctg ttc ccg gct aat ctg gcc aat cga      192
Glu Leu Gly Asp Arg Val Lys Leu Phe Pro Ala Asn Leu Ala Asn Arg
      50      55      60
gac gaa gtc aag gcg ctt ggt cag aga gcg gaa gcc gat ctt gaa ggc      240
Asp Glu Val Lys Ala Leu Gly Gln Arg Ala Glu Ala Asp Leu Glu Gly
      65      70      75      80
gtc gac atc ctg gtc aac aat gct ggc atc acc aag gat gga ttg ttc      288
Val Asp Ile Leu Val Asn Asn Ala Gly Ile Thr Lys Asp Gly Leu Phe
      85      90      95
ttg cac atg gca gac ccc gac tgg gac att gtg ctg gag gtc aac ctc      336
Leu His Met Ala Asp Pro Asp Trp Asp Ile Val Leu Glu Val Asn Leu
      100      105      110
acc gcc atg ttc cga ctg acc cgc gag gac atc acc cag cag atg ata cgc      384
Thr Ala Met Phe Arg Leu Thr Arg Glu Ile Thr Gln Gln Met Ile Arg
      115      120      125
cgt cga aat ggc cgc atc atc aat gtc act tcg gtc gcc ggc gcc atc      432
Arg Arg Asn Gly Arg Ile Ile Asn Val Thr Ser Val Ala Gly Ala Ile
      130      135      140
ggc aat cca ggc cag acc aat tac tgc gcc tcc aag gcc ggt atg atc      480

```



## PhoenixTemp32470.tmp.txt

Gly	Asn	Pro	Gly	Gln	Thr	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Met	Ile		
145					150					155					160		
ggc	ttt	tcc	aag	tcg	ctg	gcg	cag	gag	atc	gct	acg	cga	aac	atc	act	528	
Gly	Phe	Ser	Lys	Ser	Leu	Ala	Gln	Glu	Ile	Ala	Thr	Arg	Asn	Ile	Thr		
				165					170					175			
gtc	aac	tgc	gtc	gcc	ccg	ggc	ttc	atc	gaa	tcg	gca	atg	acc	gat	aag	576	
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Ser	Ala	Met	Thr	Asp	Lys		
			180					185					190				
ctc	aat	cac	aaa	cag	aag	gag	aaa	atc	atg	gtg	gcg	atc	ccg	atc	cac	624	
Leu	Asn	His	Lys	Gln	Lys	Glu	Lys	Ile	Met	Val	Ala	Ile	Pro	Ile	His		
		195					200					205					
cgc	atg	ggc	acc	ggc	acc	gaa	gtc	gcg	tcc	gcc	gtt	gcg	tat	ctc	gct	672	
Arg	Met	Gly	Thr	Gly	Thr	Glu	Val	Ala	Ser	Ala	Val	Ala	Tyr	Leu	Ala		
	210					215					220						
tcc	gat	cac	gcc	gcc	tat	gtc	acc	gga	cag	acc	att	cac	gtg	aac	ggc	720	
Ser	Asp	His	Ala	Ala	Tyr	Val	Thr	Gly	Gln	Thr	Ile	His	Val	Asn	Gly		
225					230					235					240		
ggc	atg	gca	atg	att	tga											738	
Gly	Met	Ala	Met	Ile													
				245													

&lt;210&gt; 3432

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Rhizobium meliloti

&lt;400&gt; 3432

Met	Phe	Glu	Leu	Thr	Gly	Arg	Lys	Ala	Leu	Val	Thr	Gly	Ala	Ser	Gly		
1				5					10					15			
Ala	Ile	Gly	Gly	Ala	Ile	Ala	Arg	Val	Leu	His	Ala	Gln	Gly	Ala	Ile		
			20					25					30				
Val	Gly	Leu	His	Gly	Thr	Gln	Ile	Glu	Lys	Leu	Glu	Thr	Leu	Ala	Thr		
		35				40						45					
Glu	Leu	Gly	Asp	Arg	Val	Lys	Leu	Phe	Pro	Ala	Asn	Leu	Ala	Asn	Arg		
	50					55					60						
Asp	Glu	Val	Lys	Ala	Leu	Gly	Gln	Arg	Ala	Glu	Ala	Asp	Leu	Glu	Gly		
65					70					75					80		
Val	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Lys	Asp	Gly	Leu	Phe		
				85					90					95			
Leu	His	Met	Ala	Asp	Pro	Asp	Trp	Asp	Ile	Val	Leu	Glu	Val	Asn	Leu		
		100						105					110				
Thr	Ala	Met	Phe	Arg	Leu	Thr	Arg	Glu	Ile	Thr	Gln	Gln	Met	Ile	Arg		
		115					120					125					
Arg	Arg	Asn	Gly	Arg	Ile	Ile	Asn	Val	Thr	Ser	Val	Ala	Gly	Ala	Ile		
	130					135					140						
Gly	Asn	Pro	Gly	Gln	Thr	Asn	Tyr	Cys	Ala	Ser	Lys	Ala	Gly	Met	Ile		
145					150					155					160		
Gly	Phe	Ser	Lys	Ser	Leu	Ala	Gln	Glu	Ile	Ala	Thr	Arg	Asn	Ile	Thr		
				165					170					175			
Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Glu	Ser	Ala	Met	Thr	Asp	Lys		
			180					185					190				
Leu	Asn	His	Lys	Gln	Lys	Glu	Lys	Ile	Met	Val	Ala	Ile	Pro	Ile	His		
		195					200					205					
Arg	Met	Gly	Thr	Gly	Thr	Glu	Val	Ala	Ser	Ala	Val	Ala	Tyr	Leu	Ala		
	210					215					220						
Ser	Asp	His	Ala	Ala	Tyr	Val	Thr	Gly	Gln	Thr	Ile	His	Val	Asn	Gly		
225					230					235					240		
Gly	Met	Ala	Met	Ile													
				245													

&lt;210&gt; 3433

&lt;211&gt; 846

&lt;212&gt; DNA

&lt;213&gt; Candida albicans

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(846)

&lt;223&gt; transl\_table=12

## PhoenixTemp32470.tmp.txt

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<400> 3433
atg agt gaa gaa atc att tca ttt aca aat cct gct tta ggt cca tta      48
Met Ser Glu Glu Ile Ile Ser Phe Thr Asn Pro Ala Leu Gly Pro Leu
1      5      10      15
cca aca aaa gct cca caa tta cca tca aat gtt ctt gat ttg ttt tct      96
Pro Thr Lys Ala Pro Gln Leu Pro Ser Asn Val Leu Asp Leu Phe Ser
20      25      30
tta aaa ggt aaa gtc gct tcc gtg acg gga tca tct gga gga att ggt      144
Leu Lys Gly Lys Val Ala Ser Val Thr Gly Ser Ser Gly Gly Ile Gly
35      40      45
tgg gct gtc gcc gaa gca ttt gct caa gct ggt gct gat gtt gcc atc      192
Trp Ala Val Ala Glu Ala Phe Ala Gln Ala Gly Ala Asp Val Ala Ile
50      55      60
tgg tat aat tcg aaa cca gca gat gcc aaa gct gaa tat tta act gaa      240
Trp Tyr Asn Ser Lys Pro Ala Asp Ala Lys Ala Glu Tyr Leu Thr Glu
65      70      75      80
aaa tat ggt gtc aaa gcc aaa gct tat aaa tgt aat gta act gat cct      288
Lys Tyr Gly Val Lys Ala Lys Ala Tyr Lys Cys Asn Val Thr Asp Pro
85      90      95
aat gat gtt tct aaa gtg att aat gaa att gaa aaa gat ttc ggt act      336
Asn Asp Val Ser Lys Val Ile Asn Glu Ile Glu Lys Asp Phe Gly Thr
100
att gat ata ttt gtt gct aat gct gga gtt gca tgg act gat gga cca      384
Ile Asp Ile Phe Val Ala Asn Ala Gly Val Ala Trp Thr Asp Gly Pro
115      120      125
gaa att gat gtt caa ggc tat gat caa tgg aaa aag atc gtt gat tgt      432
Glu Ile Asp Val Gln Gly Tyr Asp Gln Trp Lys Lys Ile Val Asp Cys
130      135      140
gat tta aat gga gtt tat tat tgt gct cat acc gtg gga caa atc ttt      480
Asp Leu Asn Gly Val Tyr Tyr Cys Ala His Thr Val Gly Gln Ile Phe
145      150      155      160
aaa aag aat aaa tct ggt tca tta att att act tca tca atg tca ggg      528
Lys Lys Asn Lys Ser Gly Ser Leu Ile Ile Thr Ser Ser Met Ser Gly
165      170      175
aca att gtt aat atc cct caa tta caa gct cct tat aat gct gct aaa      576
Thr Ile Val Asn Ile Pro Gln Leu Gln Ala Pro Tyr Asn Ala Ala Lys
180      185      190
gct gca tgt act cat tta gcc aaa tca ttg agt gtg gaa tgg gct agt      624
Ala Ala Cys Thr His Leu Ala Lys Ser Leu Ser Val Glu Trp Ala Ser
195      200      205
ttt ggt gct aga gta aat tca att tct cca ggg tat ata ttg act gat      672
Phe Gly Ala Arg Val Asn Ser Ile Ser Pro Gly Tyr Ile Leu Thr Asp
210      215      220
att gct gat ttt gct gat cca gaa atg aaa aag aaa tgg tgg caa ttg      720
Ile Ala Asp Phe Ala Asp Pro Glu Met Lys Lys Lys Trp Trp Gln Leu
225      230      235
aca cct ttg gga aga gaa gga tta cca caa gaa tta gtg ggg gca tat      768
Thr Pro Leu Gly Arg Glu Gly Leu Pro Gln Glu Leu Val Gly Ala Tyr
245      250      255
tta tac ttg gcc tca aat gca tca act tat act act ggt tca aat att      816
Leu Tyr Leu Ala Ser Asn Ala Ser Thr Tyr Thr Thr Gly Ser Asn Ile
260      265      270
gct gtt gat ggg ggt tat aca tgt cca taa
Ala Val Asp Gly Gly Tyr Thr Cys Pro
275      280

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<210> 3434
<211> 281
<212> PRT
<213> Candida albicans

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<400> 3434
Met Ser Glu Glu Ile Ile Ser Phe Thr Asn Pro Ala Leu Gly Pro Leu
1      5      10      15
Pro Thr Lys Ala Pro Gln Leu Pro Ser Asn Val Leu Asp Leu Phe Ser
20      25      30
Leu Lys Gly Lys Val Ala Ser Val Thr Gly Ser Ser Gly Ile Gly
35      40      45

```

## PhoenixTemp32470.tmp.txt

Trp Ala Val Ala Glu Ala Phe Ala Gln Ala Gly Ala Asp Val Ala Ile  
 50 55 60  
 Trp Tyr Asn Ser Lys Pro Ala Asp Ala Lys Ala Glu Tyr Leu Thr Glu  
 65 70 75 80  
 Lys Tyr Gly Val Lys Ala Lys Ala Tyr Lys Cys Asn Val Thr Asp Pro  
 85 90 95  
 Asn Asp Val Ser Lys Val Ile Asn Glu Ile Glu Lys Asp Phe Gly Thr  
 100 105 110  
 Ile Asp Ile Phe Val Ala Asn Ala Gly Val Ala Trp Thr Asp Gly Pro  
 115 120 125  
 Glu Ile Asp Val Gln Gly Tyr Asp Gln Trp Lys Lys Ile Val Asp Cys  
 130 135 140  
 Asp Leu Asn Gly Val Tyr Tyr Cys Ala His Thr Val Gly Gln Ile Phe  
 145 150 155 160  
 Lys Lys Asn Lys Ser Gly Ser Leu Ile Ile Thr Ser Ser Met Ser Gly  
 165 170 175  
 Thr Ile Val Asn Ile Pro Gln Leu Gln Ala Pro Tyr Asn Ala Ala Lys  
 180 185 190  
 Ala Ala Cys Thr His Leu Ala Lys Ser Leu Ser Val Glu Trp Ala Ser  
 195 200 205  
 Phe Gly Ala Arg Val Asn Ser Ile Ser Pro Gly Tyr Ile Leu Thr Asp  
 210 215 220  
 Ile Ala Asp Phe Ala Asp Pro Glu Met Lys Lys Lys Trp Trp Gln Leu  
 225 230 235 240  
 Thr Pro Leu Gly Arg Glu Gly Leu Pro Gln Glu Leu Val Gly Ala Tyr  
 245 250 255  
 Leu Tyr Leu Ala Ser Asn Ala Ser Thr Tyr Thr Thr Gly Ser Asn Ile  
 260 265 270  
 Ala Val Asp Gly Gly Tyr Thr Cys Pro  
 275 280

<210> 3435  
 <211> 1011  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1011)

<400> 3435  
 atg cac gct agc ctc gcc tcc tac gcc gcg gca gct atg ccg gcg ctg 48  
 Met His Ala Ser Leu Ala Ser Tyr Ala Ala Ala Ala Met Pro Ala Leu  
 1 5 10 15  
 gac ctc cgc ccc gag ata gcg cac gcg cac cag ccc gtc atg tcg ccc 96  
 Asp Leu Arg Pro Glu Ile Ala His Ala His Gln Pro Val Met Ser Pro  
 20 25 30  
 tct cac cac ggc tgg gac ggc aat ggc gcc aca gcc gtg ccc aca ccg 144  
 Ser His His Gly Trp Asp Gly Asn Gly Ala Thr Ala Val Pro Thr Pro  
 35 40 45  
 atg ccc aag agg ctg gac ggg aag gtg gcc att gtg acg ggc ggc gcg 192  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 cgc ggg atc ggc gag gcc atc gtg cgg ctg ttc gcc aag cac ggg gcc 240  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 cgg gtg gtg atc gcg gac atc gac gac gcc gcg ggg gag gcg ctg gcg 288  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala  
 85 90 95  
 tcg gcg ctg ggc ccg cag gtc agc ttc gtg gcg tgc gac gtg tcc gtg 336  
 Ser Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 gag gac gac gtc cgg cgc gcc gtg gac tgg gcg ctg tcg cgc cac ggc 384  
 Glu Asp Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 ggc cgc ctc gac gtc tac tgc aac aac gcc ggg gtg ctg ggc cgc cag 432  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 acg cgc gcc gcc agg agc atc ctg tcc ttc gac gcg gcc gag ttc gac 480

## PhoenixTemp32470.tmp.txt

Thr 145	Arg	Ala	Ala	Arg	Ser 150	Ile	Leu	Ser	Phe	Asp 155	Ala	Ala	Glu	Phe	Asp 160	
cgc	gtg	ctc	cgc	gtc	aac	gcg	ctg	ggc	gcc	gcg	ctc	ggg	atg	aag	cac	528
Arg	Val	Leu	Arg	Val	Asn	Ala	Leu	Gly	Ala	Ala	Leu	Gly	Met	Lys	His	
				165					170						175	
gcg	gcg	cgc	gcc	atg	gcg	ccg	cgc	cgc	gcg	ggg	agc	atc	gtc	tcc	gtc	576
Ala	Ala	Arg	Ala	Met	Ala	Pro	Arg	Arg	Ala	Gly	Ser	Ile	Val	Ser	Val	
				180					185						190	
gcc	agc	gtc	gcg	gcc	gtg	ctg	ggc	ggc	ctc	ggc	ccg	cac	gcc	tac	acc	624
Ala	Ser	Val	Ala	Ala	Val	Leu	Gly	Gly	Leu	Gly	Pro	His	Ala	Tyr	Thr	
		195					200					205				
gcc	tcc	aag	cac	gcc	atc	gtc	ggg	ctc	acc	aag	aac	gcc	gcc	tgc	gag	672
Ala	Ser	Lys	His	Ala	Ile	Val	Gly	Leu	Thr	Lys	Asn	Ala	Ala	Cys	Glu	
		210				215					220					
ctg	cgc	gcg	cac	ggg	gtc	cgg	gtc	aac	tgc	gtc	tcg	ccc	ttc	ggc	gtc	720
Leu	Arg	Ala	His	Gly	Val	Arg	Val	Asn	Cys	Val	Ser	Pro	Phe	Gly	Val	
				230					235						240	
gcc	acg	ccc	atg	ctc	atc	aac	gcc	tgg	cgc	cag	ggc	cac	gac	gac	gcc	768
Ala	Thr	Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Asp	Ala	
				245					250					255		
acc	gcc	gac	gcc	gac	cga	gac	ctc	gac	ctc	gac	ctc	gac	gtc	acc	gtg	816
Thr	Ala	Asp	Ala	Asp	Arg	Asp	Leu	Asp	Leu	Asp	Leu	Asp	Val	Thr	Val	
				260				265					270			
ccc	agc	gac	cag	gag	gtg	gag	aag	atg	gag	gag	gtg	gtc	agg	ggc	ctg	864
Pro	Ser	Asp	Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	
		275					280					285				
gcc	acg	ctc	aag	ggc	ccc	acg	ctc	agg	ccc	agg	gac	atc	gcc	gag	gcg	912
Ala	Thr	Leu	Lys	Gly	Pro	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	
		290				295					300					
gtg	ctc	ttc	ctg	gcc	agc	gac	gag	gcc	agg	tat	ata	tcg	ggc	cac	aac	960
Val	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ala	Arg	Tyr	Ile	Ser	Gly	His	Asn	
		305			310					315					320	
ctt	gtc	gtg	gac	ggc	ggc	gtc	acc	aca	tcc	agg	aac	ctc	atc	ggc	ttg	1008
Leu	Val	Val	Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu	
				325					330					335		
tga																1011

<210> 3436  
 <211> 336  
 <212> PRT  
 <213> Zea mays

<400> 3436  
 Met His Ala Ser Leu Ala Ser Tyr Ala Ala Ala Ala Met Pro Ala Leu  
 1 5 10 15  
 Asp Leu Arg Pro Glu Ile Ala His Ala His Gln Pro Val Met Ser Pro  
 20 25 30  
 Ser His His Gly Trp Asp Gly Asn Gly Ala Thr Ala Val Pro Thr Pro  
 35 40 45  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Gly Glu Ala Leu Ala  
 85 90 95  
 Ser Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 Glu Asp Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 Thr Arg Ala Ala Arg Ser Ile Leu Ser Phe Asp Ala Ala Glu Phe Asp  
 145 150 155 160  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190

## PhoenixTemp32470.tmp.txt

Ala Ser Val Ala Ala Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 Leu Arg Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Asp Ala  
 245 250 255  
 Thr Ala Asp Ala Asp Arg Asp Leu Asp Leu Asp Leu Asp Val Thr Val  
 260 265 270  
 Pro Ser Asp Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu  
 275 280 285  
 Ala Thr Leu Lys Gly Pro Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala  
 290 295 300  
 Val Leu Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Ser Gly His Asn  
 305 310 315 320  
 Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330 335

&lt;210&gt; 3437

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3437

atg ggt aaa ctc acg ggc aag aca gca ctg att acg ggc gca ttg cag	48
Met Gly Lys Leu Thr Gly Lys Thr Ala Leu Ile Thr Gly Ala Leu Gln	
1 5 10 15	
gga att ggc gaa gga att gcc aga act ttt gca cgt cat ggc gcg aac	96
Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe Ala Arg His Gly Ala Asn	
20 25 30	
cta atc ttg ctg gat atc tcc cct gag atc gaa aag ctg gcg gac gaa	144
Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile Glu Lys Leu Ala Asp Glu	
35 40 45	
ctg tgt ggt cgt ggt cat cgc tgt acg gcg gtt gtc gcc gat gtg cgt	192
Leu Cys Gly Arg Gly His Arg Cys Thr Ala Val Val Ala Asp Val Arg	
50 55 60	
gac ccg gcg tcg gta gcc gca gct atc aaa cgc gcg aag gaa aaa gaa	240
Asp Pro Ala Ser Val Ala Ala Ala Ile Lys Arg Ala Lys Glu Lys Glu	
65 70 75 80	
ggg cgc att gat atc ctg gtg aat aac gca ggc gtt tgt cgt ctg ggc	288
Gly Arg Ile Asp Ile Leu Val Asn Asn Ala Gly Val Cys Arg Leu Gly	
85 90 95	
agt ttc ctc gat atg agc gat gac gat cgc gat ttc cat att gac atc	336
Ser Phe Leu Asp Met Ser Asp Asp Arg Asp Phe His Ile Asp Ile	
100 105 110	
aat att aaa ggc gta tgg aac gtc acg gcg gtg ctg ccg gag atg	384
Asn Ile Lys Gly Val Trp Asn Val Thr Lys Ala Val Leu Pro Glu Met	
115 120 125	
att gcc cgc aaa gat ggt cgc att gtg atg atg tct tca gtc act ggt	432
Ile Ala Arg Lys Asp Gly Arg Ile Val Met Met Ser Ser Val Thr Gly	
130 135 140	
gat atg gtg gcc gat cct ggc gaa acg gcg tac gcc tta acg aaa gcg	480
Asp Met Val Ala Asp Pro Gly Glu Thr Ala Tyr Ala Leu Thr Lys Ala	
145 150 155 160	
gcg att gtt ggc ctg aca aaa tcg ctg gcg gtg gag tac gcg cag tct	528
Ala Ile Val Gly Leu Thr Lys Ser Leu Ala Val Glu Tyr Ala Gln Ser	
165 170 175	
ggt att cgc gtt aac gcc att tgc ccg gga tac gtg cgc aca cca atg	576
Gly Ile Arg Val Asn Ala Ile Cys Pro Gly Tyr Val Arg Thr Pro Met	
180 185 190	
gcg gaa agc att gcc cgc cag tcg aac ccg gaa gat cca gag tcg gtg	624
Ala Glu Ser Ile Ala Arg Gln Ser Asn Pro Glu Asp Pro Glu Ser Val	
195 200 205	

## PhoenixTemp32470.tmp.txt

ctg	act	gaa	atg	gcg	aaa	gca	atc	ccg	atg	cgt	cgc	ctc	gcc	gat	ccg	672
Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met	Arg	Arg	Leu	Ala	Asp	Pro	
	210					215				220						
ctg	gaa	gtc	ggc	gaa	ctg	gcg	gcc	ttc	ctc	gca	tcg	gat	gaa	tcc	agc	720
Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	
	225				230					235					240	
tat	tta	acc	ggg	aca	cag	aat	gtg	att	gat	ggc	ggc	agc	aca	ctg	ccg	768
Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro	
				245					250					255		
gag	acg	gtt	agc	gtc	ggg	atc	tga									792
Glu	Thr	Val	Ser	Val	Gly	Ile										
			260													

&lt;210&gt; 3438

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Escherichia coli

&lt;400&gt; 3438

Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Gly	Ala	Leu	Gln	
1				5					10					15		
Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Thr	Phe	Ala	Arg	His	Gly	Ala	Asn	
			20					25				30				
Leu	Ile	Leu	Leu	Asp	Ile	Ser	Pro	Glu	Ile	Glu	Lys	Leu	Ala	Asp	Glu	
		35					40					45				
Leu	Cys	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Val	Ala	Asp	Val	Arg	
	50					55				60						
Asp	Pro	Ala	Ser	Val	Ala	Ala	Ala	Ile	Lys	Arg	Ala	Lys	Glu	Lys	Glu	
65					70				75						80	
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Cys	Arg	Leu	Gly	
				85					90					95		
Ser	Phe	Leu	Asp	Met	Ser	Asp	Asp	Asp	Arg	Asp	Phe	His	Ile	Asp	Ile	
			100					105				110				
Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	Ala	Val	Leu	Pro	Glu	Met	
		115					120					125				
Ile	Ala	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met	Met	Ser	Ser	Val	Thr	Gly	
	130					135					140					
Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	Tyr	Ala	Leu	Thr	Lys	Ala	
145					150				155						160	
Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Val	Glu	Tyr	Ala	Gln	Ser	
				165					170					175		
Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Arg	Thr	Pro	Met	
			180					185					190			
Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	Glu	Asp	Pro	Glu	Ser	Val	
		195					200					205				
Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met	Arg	Arg	Leu	Ala	Asp	Pro	
	210					215					220					
Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	
	225				230				235						240	
Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro	
				245					250					255		
Glu	Thr	Val	Ser	Val	Gly	Ile										
			260													

&lt;210&gt; 3439

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Salmonella typhi

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3439

atg	ggt	aaa	ctc	acg	ggc	aag	aca	gca	ttg	att	acg	ggc	gca	tcg	cag	48
Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Gly	Ala	Ser	Gln	
	1			5					10					15		
ggc	att	ggc	gaa	ggg	atc	gct	cgc	gta	ttc	gca	cgc	cac	ggc	gcg	aac	96

## PhoenixTemp32470.tmp.txt

Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Val	Phe	Ala	Arg	His	Gly	Ala	Asn	
tta	atc	ttg	ctg	gat	atc	tcc	gat	gag	att	gaa	aag	ctg	gcg	gat	gag	144
Leu	Ile	Leu	Leu	Asp	Ile	Ser	Asp	Glu	Ile	Glu	Lys	Leu	Ala	Asp	Glu	
		35					40					45				
ctg	ggc	ggg	cgc	ggg	cat	cgc	tgt	act	gcc	gtt	aaa	gcc	gac	gtc	aga	192
Leu	Gly	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Lys	Ala	Asp	Val	Arg	
	50					55					60					
gat	ttt	gct	tcg	gtg	cag	gcg	gcg	gtt	gcg	cgc	gcc	aaa	gag	act	gaa	240
Asp	Phe	Ala	Ser	Val	Gln	Ala	Ala	Val	Ala	Arg	Ala	Lys	Glu	Thr	Glu	
	65				70				75						80	
ggg	aga	att	gat	att	ttg	gtg	aat	aac	gct	ggc	gtg	tgc	cgt	ctg	ggc	288
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Cys	Arg	Leu	Gly	
				85					90					95		
aac	ttc	ctc	gat	atg	agt	gaa	gaa	gat	cgc	gat	ttc	cac	att	gat	att	336
Asn	Phe	Leu	Asp	Met	Ser	Glu	Glu	Asp	Arg	Asp	Phe	His	Ile	Asp	Ile	
			100					105					110			
aat	att	aaa	ggg	gtc	tgg	aac	gtc	acc	aaa	gcc	gtc	ctg	ccg	gag	atg	384
Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	Ala	Val	Leu	Pro	Glu	Met	
		115					120					125				
atc	aaa	cgt	aaa	gat	ggc	cgc	att	gtg	atg	atg	tct	tcc	gtc	acg	gga	432
Ile	Lys	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met	Met	Ser	Ser	Val	Thr	Gly	
	130				135						140					
gat	atg	gtg	gcg	gac	ccg	ggg	gaa	acg	gcc	tat	gcg	ctg	tca	aaa	gcc	480
Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	Tyr	Ala	Leu	Ser	Lys	Ala	
	145				150				155						160	
gcc	att	gtc	ggg	tta	acc	aaa	tcg	ctg	gcg	gta	gag	tac	gcg	cag	tcc	528
Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	Val	Glu	Tyr	Ala	Gln	Ser	
			165					170						175		
ggg	att	cgt	gtg	aat	gcc	att	tgc	ccc	ggg	tat	gta	aga	acg	ccg	atg	576
Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	Tyr	Val	Arg	Thr	Pro	Met	
			180					185					190			
gcg	gaa	agc	att	gcc	cgt	cag	tct	aac	cct	gac	gat	ccg	gaa	tcg	gta	624
Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	Asp	Asp	Pro	Glu	Ser	Val	
		195					200					205				
tta	acg	gaa	atg	gca	aaa	gcc	att	ccg	cta	cgc	cgt	ctt	gcc	gat	ccg	672
Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Leu	Arg	Arg	Leu	Ala	Asp	Pro	
	210					215					220					
ctg	gaa	gta	ggg	gaa	ctg	gcg	gca	ttt	ctg	gct	tcc	gat	gag	tcc	agc	720
Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Ser	
	225				230					235					240	
tat	ctt	acc	gga	acg	caa	aac	gtc	att	gat	ggc	ggc	agt	acc	ctg	cct	768
Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	Gly	Gly	Ser	Thr	Leu	Pro	
			245						250					255		
gaa	agc	gta	agc	gta	ggc	gtc	tga									792
Glu	Ser	Val	Ser	Val	Gly	Val										
			260													

&lt;210&gt; 3440

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Salmonella typhi

&lt;400&gt; 3440

Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	Ile	Thr	Gly	Ala	Ser	Gln	
1				5					10					15		
Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Val	Phe	Ala	Arg	His	Gly	Ala	Asn	
			20					25					30			
Leu	Ile	Leu	Leu	Asp	Ile	Ser	Asp	Glu	Ile	Glu	Lys	Leu	Ala	Asp	Glu	
		35					40					45				
Leu	Gly	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	Val	Lys	Ala	Asp	Val	Arg	
	50					55					60					
Asp	Phe	Ala	Ser	Val	Gln	Ala	Ala	Val	Ala	Arg	Ala	Lys	Glu	Thr	Glu	
	65				70				75						80	
Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Val	Cys	Arg	Leu	Gly	
			85						90					95		
Asn	Phe	Leu	Asp	Met	Ser	Glu	Glu	Asp	Arg	Asp	Phe	His	Ile	Asp	Ile	
			100					105					110			
Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	Ala	Val	Leu	Pro	Glu	Met	

## PhoenixTemp32470.tmp.txt

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115
Ile Lys Arg Lys Asp Gly Arg 120 Ile Val Met Met Ser 125 Val Thr Gly
130
Asp Met Val Ala Asp Pro Gly 135 Glu Thr Ala Tyr Ala 140 Leu Ser Lys Ala
145
Ala Ile Val Gly Leu 150 Thr Lys Ser Leu Ala 155 Val Glu Tyr Ala Gln Ser
165
Gly Ile Arg Val 165 Asn Ala Ile Cys Pro 170 Gly Tyr Val Arg Thr 175 Pro Met
180
Ala Glu Ser Ile 180 Ala Arg Gln Ser 185 Asn Pro Asp Asp 190 Pro Glu Ser Val
195
Leu Thr Glu Met Ala Lys Ala 200 Ile Pro Leu Arg Arg 205 Leu Ala Asp Pro
210
Leu Glu Val Gly Glu Leu 215 Ala Ala Phe Leu Ala 220 Ser Asp Glu Ser Ser
225
Tyr Leu Thr Gly Thr 230 Gln Asn Val Ile Asp 235 Gly Gly Ser Thr Leu Pro
245
Glu Ser Val Ser 245 Val Gly Val 255
260

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 <211> 744  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<220>  
 <221> CDS  
 <222> (1)..(744)  
 <223> transl\_table=11

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<400> 3441
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caa ggg ctg ggg tta gct atc ggc cag cga ttc gtt gcc gag ggt gca      96
Gln Gly Leu 20 Leu Ala Ile Gly 25 Arg Phe Val Ala Glu Gly Ala
25
cgg gtt gtg ctt ggt gat gtg aat ctc gaa gcg acc gag gtc gca gcc      144
Arg Val 35 Val Leu Gly Asp Val Asn Leu Glu Ala Thr Glu Val Ala Ala
40
aag cgg ctg ggc ggc gat gac gtt gct ctg gcg gtg cgg tgc gat gtg      192
Lys Arg Leu Gly Gly Asp Asp Val Ala Leu Ala Val Arg Cys Asp Val
50
act caa gcc gac gac gtc gac atc ctc atc cgg acc gct gtc gag cgt      240
Thr Gln Ala Asp Asp Val 70 Asp Ile Leu Ile Arg Thr Ala Val Glu Arg
65
ttc ggc ggt ctg gat gtc atg gtc aac aac gcc ggg atc acc cgc gac      288
Phe Gly Gly Leu Asp 85 Val Met Val Asn Asn Ala Gly Ile Thr Arg Asp
90
gca acg atg cgc acg atg acc gaa gag cag ttc gat cag gtc atc gcg      336
Ala Thr Met Arg Thr Met Thr Glu 105 Gln Phe Asp Gln Val Ile Ala
100
gtg cat ctg aag gga aca tgg aac ggt acc cgg ctg gcg gcg gca atc      384
Val His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala Ala Ile
115
atg cgg gaa cgc aag cgg ggc gcc att gtg aac atg tct tcg gtg tca      432
Met Arg Glu Arg Lys Arg Gly 135 Ala Ile Val Asn Met Ser Ser Val Ser
130
ggc aag gtc ggt atg gtc ggc caa acc aac tac tca gcg gcc aag gcc      480
Gly Lys Val Gly Met Val 150 Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala
145
ggc atc gta gga atg acc aag gcg gcc gcc aaa gaa ctt gca cac ctc      528
Gly Ile Val Gly Met 165 Thr Lys Ala Ala 170 Lys Glu Leu Ala His Leu
165
ggc att cgg gta aac gca ata gct ccg ggg ttg atc cgt tca gcg atg      576
Gly Ile Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser Ala Met
180
aca gaa gct atg ccg caa cgc att tgg gac cag aag ctt gcc gaa gtt      624
Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Gln Lys Leu Ala Glu Val

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## PhoenixTemp32470.tmp.txt

195	200	205		
ccg atg ggt cgc gcc ggc gag ccc agc gaa gtc gct agc gtg gcc gtg	672			
Pro Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val Ala Val				
210 215 220				
ttc ttg gct tcg gat cta tcc tcg tac atg acc ggc acc gtg ttg gac	720			
Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Asp				
225 230 235 240				
gtg act ggc ggc cgg ttc ata tga	744			
Val Thr Gly Gly Arg Phe Ile				
245				

&lt;210&gt; 3442

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis

&lt;400&gt; 3442

Met Ala Ser Leu Leu Asn Ala Arg Thr Ala Val Ile Thr Gly Gly Ala	
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Gln Gly Leu Gly Leu Ala Ile Gly Gln Arg Phe Val Ala Glu Gly Ala	
20 25 30	
Arg Val Val Leu Gly Asp Val Asn Leu Glu Ala Thr Glu Val Ala Ala	
35 40 45	
Lys Arg Leu Gly Gly Asp Asp Val Ala Leu Ala Val Arg Cys Asp Val	
50 55 60	
Thr Gln Ala Asp Asp Val Asp Ile Leu Ile Arg Thr Ala Val Glu Arg	
65 70 75 80	
Phe Gly Gly Leu Asp Val Met Val Asn Asn Ala Gly Ile Thr Arg Asp	
85 90 95	
Ala Thr Met Arg Thr Met Thr Glu Glu Gln Phe Asp Gln Val Ile Ala	
100 105 110	
Val His Leu Lys Gly Thr Trp Asn Gly Thr Arg Leu Ala Ala Ala Ile	
115 120 125	
Met Arg Glu Arg Lys Arg Gly Ala Ile Val Asn Met Ser Ser Val Ser	
130 135 140	
Gly Lys Val Gly Met Val Gly Gln Thr Asn Tyr Ser Ala Ala Lys Ala	
145 150 155 160	
Gly Ile Val Gly Met Thr Lys Ala Ala Ala Lys Glu Leu Ala His Leu	
165 170 175	
Gly Ile Arg Val Asn Ala Ile Ala Pro Gly Leu Ile Arg Ser Ala Met	
180 185 190	
Thr Glu Ala Met Pro Gln Arg Ile Trp Asp Gln Lys Leu Ala Glu Val	
195 200 205	
Pro Met Gly Arg Ala Gly Glu Pro Ser Glu Val Ala Ser Val Ala Val	
210 215 220	
Phe Leu Ala Ser Asp Leu Ser Ser Tyr Met Thr Gly Thr Val Leu Asp	
225 230 235 240	
Val Thr Gly Gly Arg Phe Ile	
245	

&lt;210&gt; 3443

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Thermotoga maritima

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(756)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3443

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Met Asn Phe Gln Gly Lys Val Val Leu Ile Thr Gly Ala Gly Ser Gly	
1 5 10 15	
att gga aag aaa gca gcc gtt atg ttc gca gaa aga ggg gca aaa gta	96
Ile Gly Lys Lys Ala Ala Val Met Phe Ala Glu Arg Gly Ala Lys Val	
20 25 30	
gcg atc aac gat atc tct gaa gaa aaa gga aaa gaa act gtg gag ctg	144
Ala Ile Asn Asp Ile Ser Glu Glu Lys Gly Lys Glu Thr Val Glu Leu	

## PhoenixTemp32470.tmp.txt

		35					40					45					
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Ile	Lys	Ser	Met	Gly	Gly	Glu	Ala	Ala	Phe	Ile	Phe	Gly	Asp	Val	Ala		
	50					55					60						
aaa	gat	gca	gaa	cag	ata	gtg	aag	aaa	acg	gtg	gaa	acg	ttc	gga	agg		240
Lys	Asp	Ala	Glu	Gln	Ile	Val	Lys	Lys	Thr	Val	Glu	Thr	Phe	Gly	Arg		
	65				70					75					80		
ctc	gac	atc	ctg	gtg	aac	aac	gct	ggc	atc	gta	cct	tat	gga	aac	ata		288
Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Val	Pro	Tyr	Gly	Asn	Ile		
				85					90					95			
gaa	gag	act	tcg	gag	gaa	gat	ttt	gat	aaa	aca	atg	gct	gtg	aat	gtc		336
Glu	Glu	Thr	Ser	Glu	Glu	Asp	Phe	Asp	Lys	Thr	Met	Ala	Val	Asn	Val		
			100					105				110					
aaa	ggg	cct	ttt	ctt	ctc	tca	aaa	tat	gcc	gtt	gag	cag	atg	aaa	aag		384
Lys	Gly	Pro	Phe	Leu	Leu	Ser	Lys	Tyr	Ala	Val	Glu	Gln	Met	Lys	Lys		
		115					120					125					
cag	ggc	gga	gga	gtc	att	gta	aac	gtt	tcc	tcc	gaa	gca	gga	ctc	ata		432
Gln	Gly	Gly	Gly	Val	Ile	Val	Asn	Val	Ser	Ser	Glu	Ala	Gly	Leu	Ile		
						135					140						
gga	att	cca	aga	agg	tgt	gtc	tac	agt	gtt	tca	aaa	gct	gca	ctc	ctg		480
Gly	Ile	Pro	Arg	Arg	Cys	Val	Tyr	Ser	Val	Ser	Lys	Ala	Ala	Leu	Leu		
					150				155						160		
gga	ctt	aca	aga	tct	ctt	gcc	gtc	gat	tac	gtc	gat	tat	gga	atc	agg		528
Gly	Leu	Thr	Arg	Ser	Leu	Ala	Val	Asp	Tyr	Val	Asp	Tyr	Gly	Ile	Arg		
				165					170					175			
gtc	aac	gcg	gtg	tcg	ccg	ggg	acc	act	cag	tct	gag	gga	ctc	atg	gcg		576
Val	Asn	Ala	Val	Cys	Pro	Gly	Thr	Thr	Gln	Ser	Glu	Gly	Leu	Met	Ala		
			180					185					190				
agg	gtg	aag	gct	tct	cca	aat	cca	gaa	ctc	ctg	aaa	aaa	atg	acc			624
Arg	Val	Lys	Ala	Ser	Pro	Asn	Pro	Glu	Glu	Leu	Leu	Lys	Lys	Met	Thr		
		195					200					205					
tcc	agg	atc	cct	atg	aag	aga	ctg	gga	aaa	gag	gag	gaa	atc	gcc	ttc		672
Ser	Arg	Ile	Pro	Met	Lys	Arg	Leu	Gly	Lys	Glu	Glu	Glu	Ile	Ala	Phe		
						215					220						
gcg	atc	ctc	ttt	gca	gcg	tgt	gac	gaa	gcc	gga	ttt	atg	acg	ggc	agt		720
Ala	Ile	Leu	Phe	Ala	Ala	Cys	Asp	Glu	Ala	Gly	Phe	Met	Thr	Gly	Ser		
				230						235					240		
atc	ata	aac	ata	gat	gga	ggg	tct	acc	gct	gta	tga						756
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<210> 3444  
<211> 251  
<212> PRT  
<213> Thermotoga maritima

<400> 3444

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			20					25					30		
Ala	Ile	Asn	Asp	Ile	Ser	Glu	Glu	Lys	Gly	Lys	Glu	Thr	Val	Glu	Leu
		35					40					45			
Ile	Lys	Ser	Met	Gly	Gly	Glu	Ala	Ala	Phe	Ile	Phe	Gly	Asp	Val	Ala
	50					55					60				
Lys	Asp	Ala	Glu	Gln	Ile	Val	Lys	Lys	Thr	Val	Glu	Thr	Phe	Gly	Arg
65				70						75					80
Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Val	Pro	Tyr	Gly	Asn	Ile
				85					90					95	
Glu	Glu	Thr	Ser	Glu	Glu	Asp	Phe	Asp	Lys	Thr	Met	Ala	Val	Asn	Val
			100					105					110		
Lys	Gly	Pro	Phe	Leu	Leu	Ser	Lys	Tyr	Ala	Val	Glu	Gln	Met	Lys	Lys
		115					120					125			
Gln	Gly	Gly	Gly	Val	Ile	Val	Asn	Val	Ser	Ser	Glu	Ala	Gly	Leu	Ile
	130					135					140				
Gly	Ile	Pro	Arg	Arg	Cys	Val	Tyr	Ser	Val	Ser	Lys	Ala	Ala	Leu	Leu
145				150						155				160	
Gly	Leu	Thr	Arg	Ser	Leu	Ala	Val	Asp	Tyr	Val	Asp	Tyr	Gly	Ile	Arg
				165					170					175	

## PhoenixTemp32470.tmp.txt

Val Asn Ala Val Cys Pro Gly Thr Thr Gln Ser Glu Gly Leu Met Ala  
 180 185 190  
 Arg Val Lys Ala Ser Pro Asn Pro Glu Leu Leu Lys Lys Met Thr  
 195 200 205  
 Ser Arg Ile Pro Met Lys Arg Leu Gly Lys Glu Glu Glu Ile Ala Phe  
 210 215 220  
 Ala Ile Leu Phe Ala Ala Cys Asp Glu Ala Gly Phe Met Thr Gly Ser  
 225 230 235 240  
 Ile Ile Asn Ile Asp Gly Gly Ser Thr Ala Val  
 245 250

&lt;210&gt; 3445

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Bacillus subtilis

&lt;220&gt;

&lt;221&gt; CDS

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&lt;223&gt; transl\_table=11

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1				5					10					15		
ggc	att	ggt	caa	gcg	acg	gcg	gag	gtt	ttt	gcc	aat	gaa	ggc	gcg	cgt	96
Gly	Ile	Gly	Gln	Ala	Thr	Ala	Glu	Val	Phe	Ala	Asn	Glu	Gly	Ala	Arg	
			20					25					30			
gtg	atc	atc	gga	gat	atc	aat	aaa	gat	caa	atg	gaa	gaa	aca	gtt	gac	144
Val	Ile	Ile	Gly	Asp	Ile	Asn	Lys	Asp	Gln	Met	Glu	Glu	Thr	Val	Asp	
			35				40					45				
gca	atc	aga	aaa	aac	gga	gga	cag	gcc	gaa	tcc	ttt	cac	ctc	gat	gtg	192
Ala	Ile	Arg	Lys	Asn	Gly	Gly	Gln	Ala	Glu	Ser	Phe	His	Leu	Asp	Val	
			50			55					60					
tca	gat	gaa	aac	agt	gtg	aaa	gca	ttt	gct	gat	caa	atc	aag	gat	gca	240
Ser	Asp	Glu	Asn	Ser	Val	Lys	Ala	Phe	Ala	Asp	Gln	Ile	Lys	Asp	Ala	
					70					75					80	
tgc	gga	acg	att	gat	att	ctg	ttt	aat	aat	gcc	ggc	gtt	gat	cag	gaa	288
Cys	Gly	Thr	Ile	Asp	Ile	Leu	Phe	Asn	Asn	Ala	Gly	Val	Asp	Gln	Glu	
				85					90					95		
ggc	gga	aag	gtg	cac	gaa	tat	ccg	gtt	gac	ctg	ttt	gac	cgc	att	atc	336
Gly	Gly	Lys	Val	His	Glu	Tyr	Pro	Val	Asp	Leu	Phe	Asp	Arg	Ile	Ile	
			100					105					110			
gcc	gtc	gac	ctg	cgc	ggc	aca	ttc	ctt	tgc	agc	aaa	tat	ttg	att	ccg	384
Ala	Val	Asp	Leu	Arg	Gly	Thr	Phe	Leu	Cys	Ser	Lys	Tyr	Leu	Ile	Pro	
			115				120					125				
ctc	atg	ctc	gaa	aat	gga	ggc	tcc	atc	atc	aac	acc	tcc	tcc	atg	tca	432
Leu	Met	Leu	Glu	Asn	Gly	Gly	Ser	Ile	Ile	Asn	Thr	Ser	Ser	Met	Ser	
			130			135					140					
ggc	cgt	gcc	gcg	gac	ctt	gac	cgc	tcc	ggc	tac	aac	gcc	gca	aaa	ggc	480
Gly	Arg	Ala	Ala	Asp	Leu	Asp	Arg	Ser	Gly	Tyr	Asn	Ala	Ala	Lys	Gly	
					150					155					160	
ggt	atc	acc	aac	ctg	aca	aag	gca	atg	gca	atc	gac	tac	gca	cga	aac	528
Gly	Ile	Thr	Asn	Leu	Thr	Lys	Ala	Met	Ala	Ile	Asp	Tyr	Ala	Arg	Asn	
				165				170						175		
ggc	atc	cgc	gtc	aat	tcc	att	tca	ccg	ggc	acg	atc	gaa	aca	ccg	ctg	576
Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Thr	Ile	Glu	Thr	Pro	Leu	
			180					185					190			
att	gac	aaa	tta	gca	ggc	aca	aaa	gaa	cag	gaa	atg	ggc	gaa	caa	ttc	624
Ile	Asp	Lys	Leu	Ala	Gly	Thr	Lys	Glu	Gln	Glu	Met	Gly	Glu	Gln	Phe	
			195				200					205				
cgc	gaa	gcc	aac	aaa	tgg	atc	acg	ccg	ctc	gga	cgt	ctt	ggc	cag	ccc	672
Arg	Glu	Ala	Asn	Lys	Trp	Ile	Thr	Pro	Leu	Gly	Arg	Leu	Gly	Gln	Pro	
			210			215					220					
aaa	gaa	atg	gca	aca	gtg	gca	ctg	ttc	ctc	gca	tca	gac	gac	agc	tca	720
Lys	Glu	Met	Ala	Thr	Val	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ser	Ser	
					230					235					240	
tac	gtc	aca	gga	gaa	gac	atc	acc	gca	gac	ggc	ggc	atc	atg	gcg	tac	768
Tyr	Val	Thr	Gly	Glu	Asp	Ile	Thr	Ala	Asp	Gly	Gly	Ile	Met	Ala	Tyr	

## PhoenixTemp32470.tmp.txt

245 250 255  
 aca tgg cct ggg aag atg ctg att gag gag aaa tgg aag gaa gaa acg 816  
 Thr Trp Pro Gly Lys Met Leu Ile Glu Glu Lys Trp Lys Glu Glu Thr  
 260 265 270  
 aaa taa 822  
 Lys

<210> 3446  
 <211> 273  
 <212> PRT  
 <213> Bacillus subtilis

<400> 3446  
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 Gly Ile Gly Gln Ala Thr Ala Glu Val Phe Ala Asn Glu Gly Ala Arg  
 20 25 30  
 Val Ile Ile Gly Asp Ile Asn Lys Asp Gln Met Glu Glu Thr Val Asp  
 35 40 45  
 Ala Ile Arg Lys Asn Gly Gly Gln Ala Glu Ser Phe His Leu Asp Val  
 50 55 60  
 Ser Asp Glu Asn Ser Val Lys Ala Phe Ala Asp Gln Ile Lys Asp Ala  
 65 70 75 80  
 Cys Gly Thr Ile Asp Ile Leu Phe Asn Asn Ala Gly Val Asp Gln Glu  
 85 90 95  
 Gly Gly Lys Val His Glu Tyr Pro Val Asp Leu Phe Asp Arg Ile Ile  
 100 105 110  
 Ala Val Asp Leu Arg Gly Thr Phe Leu Cys Ser Lys Tyr Leu Ile Pro  
 115 120 125  
 Leu Met Leu Glu Asn Gly Gly Ser Ile Ile Asn Thr Ser Ser Met Ser  
 130 135 140  
 Gly Arg Ala Ala Asp Leu Asp Arg Ser Gly Tyr Asn Ala Ala Lys Gly  
 145 150 155 160  
 Gly Ile Thr Asn Leu Thr Lys Ala Met Ala Ile Asp Tyr Ala Arg Asn  
 165 170 175  
 Gly Ile Arg Val Asn Ser Ile Ser Pro Gly Thr Ile Glu Thr Pro Leu  
 180 185 190  
 Ile Asp Lys Leu Ala Gly Thr Lys Glu Gln Glu Met Gly Glu Gln Phe  
 195 200 205  
 Arg Glu Ala Asn Lys Trp Ile Thr Pro Leu Gly Arg Leu Gly Gln Pro  
 210 215 220  
 Lys Glu Met Ala Thr Val Ala Leu Phe Leu Ala Ser Asp Asp Ser Ser  
 225 230 235 240  
 Tyr Val Thr Gly Glu Asp Ile Thr Ala Asp Gly Gly Ile Met Ala Tyr  
 245 250 255  
 Thr Trp Pro Gly Lys Met Leu Ile Glu Glu Lys Trp Lys Glu Glu Thr  
 260 265 270  
 Lys

<210> 3447  
 <211> 774  
 <212> DNA  
 <213> Bacillus subtilis

<220>  
 <221> CDS  
 <222> (1)..(774)  
 <223> transl\_table=11

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 ttc gaa atc gca aga gaa ttc gcc cgg gaa ggt gcc agc gtc atc gtt 96  
 Phe Glu Ile Ala Arg Glu Phe Ala Arg Glu Gly Ala Ser Val Ile Val  
 20 25 30  
 tca gac ctc cgt ccg gaa gca tgt gaa aaa gca gcc tcc aag ctt gca 144  
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PhoenixTemp32470.tmp.txt

Ser	Asp	Leu <sub>35</sub>	Arg	Pro	Glu	Ala	Cys <sub>40</sub>	Glu	Lys	Ala	Ala	Ser <sub>45</sub>	Lys	Leu	Ala	
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Glu	Glu	Gly	Phe	Asp	Ala	Ala <sub>55</sub>	Ala	Ile	Pro	Tyr	Asp	Val	Thr	Lys	Glu	
	<sub>50</sub>										<sub>60</sub>					
gcg	caa	ggt	gct	gat	acg	gtg	aac	gtc	atc	caa	aaa	caa	tac	ggc	cgc	240
Ala	Gln	Val	Ala	Asp	Thr	Val	Asn	Val	Ile	Gln	Lys	Gln	Tyr	Gly	Arg	
<sub>65</sub>					<sub>70</sub>					<sub>75</sub>					<sub>80</sub>	
ttg	gat	att	ctg	gtg	aac	aat	gcc	ggt	att	cag	cac	gtc	gct	ccg	att	288
Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Ile	
			<sub>85</sub>					<sub>90</sub>						<sub>95</sub>		
gaa	gag	ttt	ccg	aca	gac	acc	ttt	gaa	cag	ctg	atc	aag	gtc	atg	ctg	336
Glu	Glu	Phe	Pro	Thr	Asp	Thr	Phe	Glu	Gln	Leu	Ile	Lys	Val	Met	Leu	
			<sub>100</sub>					<sub>105</sub>					<sub>110</sub>			
acg	gct	ccc	ttt	att	gca	atg	aag	cat	ggt	ttt	ccg	atc	atg	aaa	aaa	384
Thr	Ala	Pro	Phe	Ile	Ala	Met	Lys	His	Val	Phe	Pro	Ile	Met	Lys	Lys	
		<sub>115</sub>					<sub>120</sub>				<sub>125</sub>					
cag	cag	ttt	ggc	aga	atc	att	aat	att	gcg	tct	ggt	aat	gga	tta	gtg	432
Gln	Gln	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Asn	Gly	Leu	Val	
<sub>130</sub>						<sub>135</sub>					<sub>140</sub>					
ggc	ttt	gca	ggg	aaa	tcc	gct	tat	aat	agc	gcc	aag	cac	ggc	gtc	att	480
Gly	Phe	Ala	Gly	Lys	Ser	Ala	Tyr	Asn	Ser	Ala	Lys	His	Gly	Val	Ile	
<sub>145</sub>					<sub>150</sub>				<sub>155</sub>						<sub>160</sub>	
gga	ctc	aca	aaa	gta	ggg	gcg	ctg	gaa	ggc	gcg	ccc	cac	ggc	ata	aca	528
Gly	Leu	Thr	Lys	Val	Gly	Ala	Leu	Glu	Gly	Ala	Pro	His	Gly	Ile	Thr	
			<sub>165</sub>					<sub>170</sub>						<sub>175</sub>		
gtc	aat	gcg	ctc	tgt	ccg	ggt	tat	gtc	gat	acc	cag	ctt	gta	cgc	aat	576
Val	Asn	Ala	Leu	Cys	Pro	Gly	Tyr	Val	Asp	Thr	Gln	Leu	Val	Arg	Asn	
			<sub>180</sub>				<sub>185</sub>						<sub>190</sub>			
cag	ctt	agc	gat	cta	tcg	aaa	act	aga	aat	gtc	cct	tac	gac	tct	gta	624
Gln	Leu	Ser	Asp	Leu	Ser	Lys	Thr	Arg	Asn	Val	Pro	Tyr	Asp	Ser	Val	
		<sub>195</sub>					<sub>200</sub>					<sub>205</sub>				
ctt	gaa	caa	gtc	att	ttt	ccg	ctt	gtg	ccg	caa	aag	cga	ctg	ctt	tcc	672
Leu	Glu	Gln	Val	Ile	Phe	Pro	Leu	Val	Pro	Gln	Lys	Arg	Leu	Leu	Ser	
	<sub>210</sub>					<sub>215</sub>					<sub>220</sub>					
gtc	aag	gaa	att	gcg	gat	tat	gcc	gtg	ttt	ttg	gca	agc	gag	aag	gcg	720
Val	Lys	Glu	Ile	Ala	Asp	Tyr	Ala	Val	Phe	Leu	Ala	Ser	Glu	Lys	Ala	
<sub>225</sub>					<sub>230</sub>				<sub>235</sub>						<sub>240</sub>	
aag	ggc	gtc	act	ggg	cag	gct	gtc	gtc	ctt	gat	ggg	ggc	tac	acc	gca	768
Lys	Gly	Val	Thr	Gly	Gln	Ala	Val	Val	Leu	Asp	Gly	Gly	Tyr	Thr	Ala	
				<sub>245</sub>					<sub>250</sub>					<sub>255</sub>		
caa	tga															774
Gln																

<210> 3448  
 <211> 257  
 <212> PRT  
 <213> Bacillus subtilis

<400> 3448

Met	Arg	Lys	Gln	Val <sub>5</sub>	Ala	Leu	Val	Thr	Gly <sub>10</sub>	Ala	Ala	Gly	Gly	Ile <sub>15</sub>	Arg	
Phe	Glu	Ile	Ala	Arg	Glu	Phe	Ala	Arg	Glu	Gly	Ala	Ser	Val	Ile	Val	
			<sub>20</sub>					<sub>25</sub>					<sub>30</sub>			
Ser	Asp	Leu	Arg	Pro	Glu	Ala	Cys <sub>40</sub>	Glu	Lys	Ala	Ala	Ser	Lys	Leu	Ala	
		<sub>35</sub>					<sub>40</sub>					<sub>45</sub>				
Glu	Glu	Gly	Phe	Asp	Ala	Ala <sub>55</sub>	Ala	Ile	Pro	Tyr	Asp	Val	Thr	Lys	Glu	
	<sub>50</sub>										<sub>60</sub>					
Ala	Gln	Val	Ala	Asp	Thr	Val	Asn	Val	Ile	Gln	Lys	Gln	Tyr	Gly	Arg	
<sub>65</sub>					<sub>70</sub>				<sub>75</sub>						<sub>80</sub>	
Leu	Asp	Ile	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gln	His	Val	Ala	Pro	Ile	
			<sub>85</sub>					<sub>90</sub>						<sub>95</sub>		
Glu	Glu	Phe	Pro	Thr	Asp	Thr	Phe	Glu	Gln	Leu	Ile	Lys	Val	Met	Leu	
			<sub>100</sub>					<sub>105</sub>					<sub>110</sub>			
Thr	Ala	Pro	Phe	Ile	Ala	Met	Lys	His	Val	Phe	Pro	Ile	Met	Lys	Lys	
		<sub>115</sub>					<sub>120</sub>					<sub>125</sub>				
Gln	Gln	Phe	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Asn	Gly	Leu	Val	
<sub>130</sub>						<sub>135</sub>					<sub>140</sub>					

## PhoenixTemp32470.tmp.txt

Gly Phe Ala Gly Lys Ser Ala Tyr Asn Ser Ala Lys His Gly Val Ile  
 145 150 155 160  
 Gly Leu Thr Lys Val Gly Ala Leu Glu Gly Ala Pro His Gly Ile Thr  
 165 170 175  
 Val Asn Ala Leu Cys Pro Gly Tyr Val Asp Thr Gln Leu Val Arg Asn  
 180 185 190  
 Gln Leu Ser Asp Leu Ser Lys Thr Arg Asn Val Pro Tyr Asp Ser Val  
 195 200 205  
 Leu Glu Gln Val Ile Phe Pro Leu Val Pro Gln Lys Arg Leu Leu Ser  
 210 215 220  
 Val Lys Glu Ile Ala Asp Tyr Ala Val Phe Leu Ala Ser Glu Lys Ala  
 225 230 235 240  
 Lys Gly Val Thr Gly Gln Ala Val Val Leu Asp Gly Gly Tyr Thr Ala  
 245 250 255  
 Gln

<210> 3449  
 <211> 1002  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(1002)

<400> 3449  
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 Met His Thr Thr Leu Ala Ser Tyr Ala Gln Asp Leu Ala Met Pro Ala  
 1 5 10 15  
 gcc gca ctc gac ctc ctc cct gac aag gcg cac cag ccg tcc atg gcg 96  
 Ala Ala Leu Asp Leu Leu Pro Asp Lys Ala His Gln Pro Ser Met Ala  
 20 25 30  
 ccg tcg ctc cac gcc tgg gac tcc ccc aat ggc gcc ccc act ccc atg 144  
 Pro Ser Leu His Ala Trp Asp Ser Pro Asn Gly Ala Pro Thr Pro Met  
 35 40 45  
 ccc aag agg ctg gaa ggg aag gtg gcc att gtc acc ggc ggg gcg agg 192  
 Pro Lys Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly Gly Ala Arg  
 50 55 60  
 ggg atc ggg gag gcg atc gtg agg ctg ttc gtg aag cac ggg gcc aag 240  
 Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Lys His Gly Ala Lys  
 65 70 75 80  
 gtg gtg atc gcg gac atc gac gac gcg gcg ggc gag gcg ctg gcg gcg 288  
 Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala Ala  
 85 90 95  
 gcg ctg ggg ccg cac gtc ggg ttc gtg cgg tgc gac gtg tcg gtg gag 336  
 Ala Leu Gly Pro His Val Gly Phe Val Arg Cys Asp Val Ser Val Glu  
 100 105 110  
 gag gac gtg gag cgc gcc gtc gag cgc gcc gtg gcg ccg tac ggg ccg 384  
 Glu Asp Val Glu Arg Ala Val Glu Arg Ala Val Ala Arg Tyr Gly Arg  
 115 120 125  
 ttg gac gtg ctg tgc aac aac gcc ggg gtg ctg ggc cgc cag acg cgc 432  
 Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly Arg Gln Thr Arg  
 130 135 140  
 gcc gcc aag agc atc ctg tcg ttc gac gcc ggg gag ttc gac cgc gtg 480  
 Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe Asp Arg Val  
 145 150 155 160  
 ctc cgc gtc aac gcg ctg ggc gcc gcg ctc ggc atg aag cac gcg gcg 528  
 Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His Ala Ala  
 165 170 175  
 ctc gcc atg acc cag cgc cgc gcc ggc agc atc atc tcc gtc gcc agc 576  
 Leu Ala Met Thr Gln Arg Arg Ala Gly Ser Ile Ile Ser Val Ala Ser  
 180 185 190  
 gtc gcc ggc gtg ctc ggc ggc ctc ggc ccg cac gcc tac acc gcc tcc 624  
 Val Ala Gly Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr Ala Ser  
 195 200 205  
 aag cac gcc atc gtg ggg ctc acc aag aac gcc gcc tgc gag ctc ggc 672  
 Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu Gly  
 210 215 220

## PhoenixTemp32470.tmp.txt

gcc	cac	ggc	atc	cgc	gtc	aac	tgc	atc	tcc	ccc	ttc	ggc	gtc	gcc	acc	720
Ala	His	Gly	Ile	Arg	Val	Asn	Cys	Ile	Ser	Pro	Phe	Gly	Val	Ala	Thr	
225					230					235					240	
ccg	atg	ctc	atc	aac	gcc	tgg	cgc	cag	ggc	cac	gac	gcc	tcc	acc	gcc	768
Pro	Met	Leu	Ile	Asn	Ala	Trp	Arg	Gln	Gly	His	Asp	Ala	Ser	Thr	Ala	
				245					250					255		
gac	gac	gcc	gac	gcc	gac	atc	gac	ctc	gac	atc	gcc	gtg	ccc	agc	gac	816
Asp	Asp	Ala	Asp	Ala	Asp	Ile	Asp	Leu	Asp	Ile	Ala	Val	Pro	Ser	Asp	
				260				265					270			
cag	gag	gtg	gag	aag	atg	gag	gag	gtg	gtc	agg	ggc	ctc	gcc	acg	ctc	864
Gln	Glu	Val	Glu	Lys	Met	Glu	Glu	Val	Val	Arg	Gly	Leu	Ala	Thr	Leu	
		275				280						285				
aag	ggc	gcg	acg	ctg	aga	ccc	agg	gac	atc	gcc	gag	gcg	ctc	ttc		912
Lys	Gly	Ala	Thr	Leu	Arg	Pro	Arg	Asp	Ile	Ala	Glu	Ala	Ala	Leu	Phe	
	290					295				300						
ctc	gcc	agc	gac	gac	tcc	aga	tac	att	tcc	ggc	cac	aac	ctc	gtc	gtc	960
Leu	Ala	Ser	Asp	Asp	Ser	Arg	Tyr	Ile	Ser	Gly	His	Asn	Leu	Val	Val	
305				310						315					320	
gac	ggc	ggc	gtc	acc	tcc	aga	aac	cta	att	ggc	ctt	tga				1002
Asp	Gly	Gly	Val	Thr	Thr	Ser	Arg	Asn	Leu	Ile	Gly	Leu				
				325				330								

<210> 3450  
 <211> 333  
 <212> PRT  
 <213> Oryza sativa

<400> 3450  
 Met His Thr Thr Leu Ala Ser Tyr Ala Gln Asp Leu Ala Met Pro Ala  
 1 5 10 15  
 Ala Ala Leu Asp Leu Leu Pro Asp Lys Ala His Gln Pro Ser Met Ala  
 20 25 30  
 Pro Ser Leu His Ala Trp Asp Ser Pro Asn Gly Ala Pro Thr Pro Met  
 35 40 45  
 Pro Lys Arg Leu Glu Gly Lys Val Ala Ile Val Thr Gly Gly Ala Arg  
 50 55 60  
 Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Val Lys His Gly Ala Lys  
 65 70 75 80  
 Val Val Ile Ala Asp Ile Asp Asp Ala Ala Gly Glu Ala Leu Ala Ala  
 85 90 95  
 Ala Leu Gly Pro His Val Gly Phe Val Arg Cys Asp Val Ser Val Glu  
 100 105 110  
 Glu Asp Val Glu Arg Ala Val Glu Arg Ala Val Ala Arg Tyr Gly Arg  
 115 120 125  
 Leu Asp Val Leu Cys Asn Asn Ala Gly Val Leu Gly Arg Gln Thr Arg  
 130 135 140  
 Ala Ala Lys Ser Ile Leu Ser Phe Asp Ala Gly Glu Phe Asp Arg Val  
 145 150 155 160  
 Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His Ala Ala  
 165 170 175  
 Leu Ala Met Thr Gln Arg Arg Ala Gly Ser Ile Ile Ser Val Ala Ser  
 180 185 190  
 Val Ala Gly Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr Ala Ser  
 195 200 205  
 Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu Gly  
 210 215 220  
 Ala His Gly Ile Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr  
 225 230 235 240  
 Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Ala Ser Thr Ala  
 245 250 255  
 Asp Asp Ala Asp Ala Asp Ile Asp Leu Asp Ile Ala Val Pro Ser Asp  
 260 265 270  
 Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu Ala Thr Leu  
 275 280 285  
 Lys Gly Ala Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala Ala Leu Phe  
 290 295 300  
 Leu Ala Ser Asp Asp Ser Arg Tyr Ile Ser Gly His Asn Leu Val Val  
 305 310 315 320  
 Asp Gly Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu

325

330

<210> 3451  
 <211> 960  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(960)

<400> 3451  
 atg acc gcc gtc gac ttg atg cct gca gct gac gac gac aac aac aag 48  
 Met Thr Ala Val Asp Leu Met Pro Ala Ala Asp Asp Asp Asn Asn Lys  
 1 5 10 15  
 cag tca tcc acc ggc ctc ctc cac cac cac cag ctc ccc gcc gcc gcc 96  
 Gln Ser Ser Thr Gly Leu Leu His His His Gln Leu Pro Ala Ala Ala  
 20 25 30  
 gac aac gcc ata cta cac aat acc agg cgg ctg gag ggg aag gtg gcc 144  
 Asp Asn Ala Ile Leu His Asn Thr Arg Arg Leu Glu Gly Lys Val Ala  
 35 40 45  
 atc gtc acc ggc ggc tcg cgt ggc atc ggc gaa gcc atc gta agg gcc 192  
 Ile Val Thr Gly Gly Ser Arg Gly Ile Gly Glu Ala Ile Val Arg Ala  
 50 55 60  
 ttc gtt cac cac ggc gct ctc gtc gtc gtc gcc gac atc gac gac gcc 240  
 Phe Val His His Gly Ala Leu Val Val Val Ala Asp Ile Asp Asp Ala  
 65 70 75 80  
 ggg ggc cac gcg ctg gcc gcc gcg ctc ggc ccg cac gcc tgc acc tac 288  
 Gly Gly His Ala Leu Ala Ala Leu Gly Pro His Ala Cys Thr Tyr  
 85 90 95  
 gtc cac tgc gac gtg gcc gag gag gcc gac gtg gaa cgc gcc gtc gcc 336  
 Val His Cys Asp Val Ala Glu Glu Ala Asp Val Glu Arg Ala Val Ala  
 100 105 110  
 acc acg ctg gag cag cac ggc cgc ctg gac gtg ctg tgc aac aac gcc 384  
 Thr Thr Leu Glu Gln His Gly Arg Leu Asp Val Leu Cys Asn Asn Ala  
 115 120 125  
 ggg gtg ctg ggc gcg cag acg cgc ggc gcc aag agc atc gcg tcc ctc 432  
 Gly Val Leu Gly Arg Gln Thr Arg Gly Ala Lys Ser Ile Ala Ser Leu  
 130 135 140  
 gac gcc gcc gag ttc gcc gcg gtg ctg cgc gtc aac gcg ctg ggc gcc 480  
 Asp Ala Ala Glu Phe Ala Arg Val Leu Arg Val Asn Ala Leu Gly Ala  
 145 150 155 160  
 gcc ctc gga atg aag cac gcg gcg cgt gcc atg gtg ccc cgc cgc tcc 528  
 Ala Leu Gly Met Lys His Ala Ala Arg Ala Met Val Pro Arg Arg Ser  
 165 170 175  
 ggg agc atc gtg tcg gtg gcg agc gtg gcg ggc gtg ctg ggc ggc ctc 576  
 Gly Ser Ile Val Ser Val Ala Ser Val Ala Gly Val Leu Gly Gly Leu  
 180 185 190  
 ggc ccg cac gcg tac acg gcc tcc aag cac gcc cta gtg ggg ctc acc 624  
 Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Leu Val Gly Leu Thr  
 195 200 205  
 aag aac gcc ggc tgc gag ctc ggc gag cac ggc atc cgc gtc aac tgc 672  
 Lys Asn Ala Ala Cys Glu Leu Gly Glu His Gly Ile Arg Val Asn Cys  
 210 215 220  
 atc tcc ccc ttc ggc gtg gcg acg ccg atg ctg gtg aac gcg tgg cgg 720  
 Ile Ser Pro Phe Gly Val Ala Thr Pro Met Leu Val Asn Ala Trp Arg  
 225 230 235 240  
 cag ggg cag gga gga gat cac gcg gat gag gat cag gcg gcg gcg agc 768  
 Gln Gly Gln Gly Gly Asp His Ala Asp Glu Asp Gln Ala Ala Ala Ser  
 245 250 255  
 gag gag gag gag gtg gag aag atg gag gag atg gtg cgg agg ctg gcg 816  
 Glu Glu Glu Glu Val Glu Lys Met Glu Glu Met Val Arg Leu Ala  
 260 265 270  
 acg ctc aag ggg ccg acg ctg cgg gca ggc gac atc gcg gag gcg gcg 864  
 Thr Leu Lys Gly Pro Thr Leu Arg Ala Gly Asp Ile Ala Glu Ala Ala  
 275 280 285  
 gtg ttc ctg gcc agc gac gag tcc agg tac gtg tcc ggc cac aac ctc 912  
 Val Phe Leu Ala Ser Asp gag Ser Arg Tyr Val Ser Gly His Asn Leu  
 290 295 300



gtc gtc gac ggc ggc gtc acc acc tcc aga aac gtc atc ggc ctc  
 Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn Val Ile Gly Leu  
 305 310 315  
 tga

957

960

<210> 3452  
 <211> 319  
 <212> PRT  
 <213> Oryza sativa

<400> 3452  
 Met Thr Ala Val Asp<sub>5</sub> Leu Met Pro Ala Ala<sub>10</sub> Asp Asp Asp Asn Asn<sub>15</sub> Lys  
 1 Gln Ser Ser Thr<sub>20</sub> Gly Leu Leu His His<sub>25</sub> His Gln Leu Pro Ala<sub>30</sub> Ala Ala  
 Asp Asn Ala<sub>35</sub> Ile Leu His Asn Thr<sub>40</sub> Arg Arg Leu Glu Gly<sub>45</sub> Lys Val Ala  
 Ile Val Thr Gly Gly Ser Arg<sub>55</sub> Gly Ile Gly Glu Ala<sub>60</sub> Ile Val Arg Ala  
 Phe Val His His Gly Ala<sub>70</sub> Leu Val Val Val Ala<sub>75</sub> Asp Ile Asp Asp Ala<sub>80</sub>  
 65 Gly Gly His Ala Leu<sub>85</sub> Ala Ala Ala Leu Gly<sub>90</sub> Pro His Ala Cys Thr Tyr  
 Val His Cys Asp<sub>100</sub> Val Ala Glu Glu Ala<sub>105</sub> Asp Val Glu Arg Ala Val Ala  
 Thr Thr Leu<sub>115</sub> Glu Gln His Gly Arg<sub>120</sub> Leu Asp Val Leu Cys Asn Asn Ala  
 Gly Val<sub>130</sub> Leu Gly Arg Gln Thr<sub>135</sub> Arg Gly Ala Lys Ser<sub>140</sub> Ile Ala Ser Leu  
 Asp Ala Ala Glu Phe Ala<sub>150</sub> Arg Val Leu Arg Val Asn Ala Leu Gly Ala<sub>160</sub>  
 145 Ala Leu Gly Met Lys<sub>165</sub> His Ala Ala Arg Ala<sub>170</sub> Met Val Pro Arg Arg Ser  
 Gly Ser Ile Val<sub>180</sub> Ser Val Ala Ser Val<sub>185</sub> Ala Gly Val Leu Gly<sub>190</sub> Gly Leu  
 Gly Pro His<sub>195</sub> Ala Tyr Thr Ala Ser<sub>200</sub> Lys His Ala Leu Val Gly Leu Thr  
 Lys Asn Ala Ala Cys Glu Leu<sub>215</sub> Gly Glu His Gly Ile<sub>220</sub> Arg Val Asn Cys  
 225 Ile Ser Pro Phe Gly Val<sub>230</sub> Ala Thr Pro Met Leu Val Asn Ala Trp Arg  
 Gln Gly Gln Gly Gly<sub>245</sub> Asp His Ala Asp Glu<sub>250</sub> Asp Gln Ala Ala Ala Ser  
 Glu Glu Glu Glu<sub>260</sub> Val Glu Lys Met Glu<sub>265</sub> Glu Met Val Arg Arg Leu Ala  
 Thr Leu Lys<sub>275</sub> Gly Pro Thr Leu Arg Ala Gly Asp Ile Ala Glu Ala Ala  
 Val Phe<sub>290</sub> Leu Ala Ser Asp Glu<sub>295</sub> Ser Arg Tyr Val Ser<sub>300</sub> Gly His Asn Leu  
 Val Val Asp Gly Gly Val<sub>310</sub> Thr Thr Ser Arg Asn<sub>315</sub> Val Ile Gly Leu  
 305 310 315

<210> 3453  
 <211> 897  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(897)

<400> 3453  
 atg atg ctt aac gca gca gcc aaa aaa ctt gtc agg ggg aag agc ata  
 Met Met Leu Asn Ala<sub>5</sub> Ala Ala Lys Lys<sub>10</sub> Leu Val Arg Gly Lys<sub>15</sub> Ser Ile  
 1 gct gct cac gta ttc ttc tcc tcc tca aga tcc aga aag ttg gat  
 Ala Ala His Val Phe Phe Ser Ser Ser Arg Arg Ser Arg Lys Leu Asp

48

96

## PhoenixTemp32470.tmp.txt

```

      20      25      30
ggc aaa gtg gcc gtg ata acc ggc gca gcg agc ggc atc ggc gag gcc 144
Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala
      35      40      45
acg gcg aag gag ttc gtc agg aat ggc gcc aag gtt atc att gcc gat 192
Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp
      50      55      60
atc aag gat gat ctc ggc cgc gcc gtg gcc ggc gag ctc ggc gcc gac 240
Ile Lys Asp Asp Leu Gly Arg Ala Val Ala Gly Glu Leu Gly Ala Asp
      65      70      75      80
gcc gcg tcg tac acg cac tgc gac gtc acc gtc gag aag gat gtc gcc 288
Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala
      85      90      95
tcg gcc gtc gac ctc gcc gtg gcg cga cac ggc cgc ctc gac gtc gtg 336
Ser Ala Val Asp Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val
      100      105
tac agc aac gcc gcc atc gcg ggt ggc gcg cct ccg gcc acg ctc gcg 384
Tyr Ser Asn Ala Ala Ile Ala Gly Gly Ala Pro Pro Ala Thr Leu Ala
      115      120      125
gcg ctc gac ctc gac gag tac gac cgc gtc atg gcc gtc aac gcc agg 432
Ala Leu Asp Leu Asp Glu Tyr Asp Arg Val Met Ala Val Asn Ala Arg
      130      135      140
tcc atg ttg gcg tgc gtc aag cac gcg gcg cgc gtc atg gcg ccc cgc 480
Ser Met Leu Ala Cys Val Lys His Ala Ala Arg Val Met Ala Pro Arg
      145      150      155      160
cgc gcc ggt tgc atc ctc tgc acg gcc agc acg gcg gcg gtg ctc ggc 528
Arg Ala Gly Cys Ile Leu Cys Thr Ala Ser Thr Ala Ala Val Leu Gly
      165      170      175
ggc atg gcg gcg ccg gcg tac tcc atg tcg aag gcg gcc gtc gtc ggc 576
Gly Met Ala Ala Pro Ala Tyr Ser Met Ser Lys Ala Ala Val Val Gly
      180      185      190
atg gtg cgg acg gtg gcg agg cag ctg gcg cgc gac ggc gtg cgg gtg 624
Met Val Arg Thr Val Ala Arg Gln Leu Ala Arg Asp Gly Val Arg Val
      195      200      205
aac gcc atc tcg ccg cac gca gtc ccg acg ccg atg gcg ata ggt ctc 672
Asn Ala Ile Ser Pro His Ala Val Pro Thr Pro Met Ala Ile Gly Leu
      210      215      220
ttc tcc gag acg ttc ccg gcg gcg acc gcg gag gag gtg agg agg atg 720
Phe Ser Glu Thr Phe Pro Ala Ala Thr Ala Glu Glu Val Arg Arg Met
      225      230      235      240
gtg acg agg gag atg cag gag ctg gaa ggg gcg tcg ctg gag gtg gaa 768
Val Thr Arg Glu Met Gln Glu Leu Glu Gly Ala Ser Leu Glu Val Glu
      245      250      255
gac gtg gcg agg gcg gcc gtc ttc ttg gcg tcc gac gag gcc aag ttc 816
Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Lys Phe
      260      265      270
atc acc ggc cac aac ctc gtc gtc gac ggc ggg ttc acg gca ggc aag 864
Ile Thr Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Ala Gly Lys
      275      280      285
gtg ctc gtc cgg gat cct ccg ggc tct gct tga 897
Val Leu Val Arg Asp Pro Pro Gly Ser Ala
      290      295

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<210> 3454  
 <211> 298  
 <212> PRT  
 <213> Oryza sativa

<400> 3454  
 Met Met Leu Asn Ala Ala Ala Lys Lys Leu Val Arg Gly Lys Ser Ile  
 1 5 10 15  
 Ala Ala His Val Phe Phe Ser Ser Ser Arg Ser Arg Lys Leu Asp  
 20 25 30  
 Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Glu Ala  
 35 40 45  
 Thr Ala Lys Glu Phe Val Arg Asn Gly Ala Lys Val Ile Ile Ala Asp  
 50 55 60  
 Ile Lys Asp Asp Leu Gly Arg Ala Val Ala Gly Glu Leu Gly Ala Asp  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

Ala Ala Ser Tyr Thr His Cys Asp Val Thr Val Glu Lys Asp Val Ala  
 Ser Ala Val Asp 85 Leu Ala Val Ala Arg His Gly Arg Leu Asp Val Val  
 Tyr Ser Asn 100 Ala Ala Ile Ala Gly 105 Gly Ala Pro Pro Ala Thr Leu Ala  
 Ala Leu Asp 115 Leu Asp Glu Tyr 120 Asp Arg Val Met Ala Val Asn Ala Arg  
 Ser Met Leu Ala Cys Val 135 Lys His Ala Ala Arg Val Met Ala Pro Arg  
 145 Arg Ala Gly Cys Ile 150 Leu Cys Thr Ala Ser Thr Ala Ala Val Leu Gly  
 Gly Met Ala Ala 165 Pro Ala Tyr Ser Met 170 Ser Lys Ala Ala Val Val Gly  
 Met Val Arg Thr Val Ala Arg Gln Leu Ala Arg Asp Gly Val Arg Val  
 Asn Ala Ile Ser Pro His Ala 185 Val Pro Thr Pro Met Ala Ile Gly Leu  
 Phe 210 Ser Glu Thr Phe Pro 215 Ala Ala Thr Ala Glu 220 Glu Val Arg Arg Met  
 225 Val Thr Arg Glu Met 230 Gln Glu Leu Glu Gly Ala Ser Leu Glu Val Glu  
 Asp Val Ala Arg 245 Ala Ala Val Phe Leu 250 Ala Ser Asp Glu Ala Lys Phe  
 Ile Thr Gly 260 His Asn Leu Val Val 265 Asp Gly Gly Phe Thr Ala Gly Lys  
 Val Leu Val Arg Asp Pro Pro Gly Ser Ala 280 285 290 295

&lt;210&gt; 3455

&lt;211&gt; 855

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(855)

&lt;400&gt; 3455

atg tca act gaa aac att caa cat tct tcc ctc cct tct caa agg ctt	48
Met Ser Thr Glu Asn Ile Gln His Ser Ser 10 Leu Pro Ser Gln Arg Leu	
1 5 10 15	
ttg ggc aaa gtg gca ttg ata acc gga gga gcc aca ggg ata ggc gaa	96
Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu	
20 25 30	
agc atc gct cgt ctc ttc cac aag ggt gcc aaa gtc tgc atc ttc	144
Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Phe	
35 40 45	
gac gtc caa gac gat ctc gga gac aaa gta ctc aaa act ctg tta gcc	192
Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala	
50 55 60	
aac tcg gag gat gat gag tca gct tgt ttc atc cac ggt gac gtc aca	240
Asn Ser Glu Asp Asp Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr	
65 70 75 80	
caa gaa gac gac atc agc aac gct gtt gac ttc gcc gtc aaa cgt ttc	288
Gln Glu Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Arg Phe	
85 90 95	
ggg acc ctc gac ata ctc atc aac aac gca gga gta agc gga gca ccc	336
Gly Thr Leu Asp Ile Leu Ile Asn Asn Ala Gly Val Ser Gly Ala Pro	
100 105 110	
tgc ccc gac atc cgc aac aac agt tta acc gag ttc gaa acc gtc ttc	384
Cys Pro Asp Ile Arg Asn Asn Ser Leu Thr Glu Phe Glu Thr Val Phe	
115 120 125	
aac gtc aac gtg aaa gga gct ttc cta ggg atg aaa cac gcg gcg cgt	432
Asn Val Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg	
130 135 140	
gtg atg atc ccc gcc aag aaa ggc tcc ata gtc tct tta tgc agc gtt	480
Val Met Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val	
145 150 155 160	

## PhoenixTemp32470.tmp.txt

ggt	ggt	gtt	gtc	gga	ggc	gtc	ggt	ccg	cac	gct	tac	gtc	ggt	tcc	aag	528
Gly	Gly	Val	Val	Gly	Gly	Val	Gly	Pro	His	Ala	Tyr	Val	Gly	Ser	Lys	
				165					170					175		
cac	gcg	gtt	cta	ggt	ttg	act	agg	agc	ggt	gcg	gcg	gag	ctg	gga	cag	576
His	Ala	Val	Leu	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Glu	Leu	Gly	Gln	
			180					185					190			
cat	ggg	ata	cgc	gtg	aac	tgc	gtt	tct	cct	tac	gcg	gtt	gcg	act	aac	624
His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Asn	
		195					200					205				
ctc	gcg	ttg	gct	cat	ttg	cct	gag	gac	gag	agg	aat	gaa	ggc	gtg	gtc	672
Leu	Ala	Leu	Ala	His	Leu	Pro	Glu	Asp	Glu	Arg	Asn	Glu	Gly	Val	Val	
	210					215					220					
gct	ggt	ttc	agg	agt	ttc	gcg	gct	gcg	aac	gcg	aat	ctg	aaa	ggt	gtt	720
Ala	Gly	Phe	Arg	Ser	Phe	Ala	Ala	Ala	Asn	Ala	Asn	Leu	Lys	Gly	Val	
225					230				235						240	
gag	ttg	acg	gtt	gat	gac	gtg	gcc	aac	gcg	gtt	ttg	ttt	ctt	gcg	agt	768
Glu	Leu	Thr	Val	Asp	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala	Ser	
				245					250					255		
gat	gag	tcg	cgg	tac	gtg	agt	ggt	gat	aat	ctg	atg	gtt	gat	ggt	ggg	816
Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	Asp	Asn	Leu	Met	Val	Asp	Gly	Gly	
			260					265					270			
ttt	act	tgc	act	aac	cac	tcc	ttt	aaa	gtt	ttt	agg	tga				855
Phe	Thr	Cys	Thr	Asn	His	Ser	Phe	Lys	Val	Phe	Arg					
		275					280									

&lt;210&gt; 3456

&lt;211&gt; 284

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3456

Met	Ser	Thr	Glu	Asn	Ile	Gln	His	Ser	Ser	Leu	Pro	Ser	Gln	Arg	Leu	
1				5					10					15		
Leu	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Thr	Gly	Ile	Gly	Glu	
			20					25					30			
Ser	Ile	Ala	Arg	Leu	Phe	His	Lys	His	Gly	Ala	Lys	Val	Cys	Ile	Phe	
		35					40					45				
Asp	Val	Gln	Asp	Asp	Leu	Gly	Asp	Lys	Val	Leu	Lys	Thr	Leu	Leu	Ala	
		50				55					60					
Asn	Ser	Glu	Asp	Asp	Glu	Ser	Ala	Cys	Phe	Ile	His	Gly	Asp	Val	Thr	
65					70					75					80	
Gln	Glu	Asp	Asp	Ile	Ser	Asn	Ala	Val	Asp	Phe	Ala	Val	Lys	Arg	Phe	
				85					90					95		
Gly	Thr	Leu	Asp	Ile	Leu	Ile	Asn	Asn	Ala	Gly	Val	Ser	Gly	Ala	Pro	
			100					105					110			
Cys	Pro	Asp	Ile	Arg	Asn	Asn	Ser	Leu	Thr	Glu	Phe	Glu	Thr	Val	Phe	
		115					120					125				
Asn	Val	Asn	Val	Lys	Gly	Ala	Phe	Leu	Gly	Met	Lys	His	Ala	Ala	Arg	
		130				135					140					
Val	Met	Ile	Pro	Ala	Lys	Lys	Gly	Ser	Ile	Val	Ser	Leu	Cys	Ser	Val	
145					150					155					160	
Gly	Gly	Val	Val	Gly	Gly	Val	Gly	Pro	His	Ala	Tyr	Val	Gly	Ser	Lys	
				165					170					175		
His	Ala	Val	Leu	Gly	Leu	Thr	Arg	Ser	Val	Ala	Ala	Glu	Leu	Gly	Gln	
			180					185					190			
His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Asn	
		195					200					205				
Leu	Ala	Leu	Ala	His	Leu	Pro	Glu	Asp	Glu	Arg	Asn	Glu	Gly	Val	Val	
	210					215					220					
Ala	Gly	Phe	Arg	Ser	Phe	Ala	Ala	Ala	Asn	Ala	Asn	Leu	Lys	Gly	Val	
225					230					235					240	
Glu	Leu	Thr	Val	Asp	Val	Ala	Asn	Ala	Val	Leu	Phe	Leu	Ala	Ser		
				245					250				255			
Asp	Glu	Ser	Arg	Tyr	Val	Ser	Gly	Asp	Asn	Leu	Met	Val	Asp	Gly	Gly	
			260					265					270			
Phe	Thr	Cys	Thr	Asn	His	Ser	Phe	Lys	Val	Phe	Arg					
		275					280									

&lt;210&gt; 3457

<211> 903  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(903)

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<400> 3457
atg ccg gct caa gtg atc act gag cag acc ttt caa tcc ctc cac gac      48
Met Pro Ala Gln Val Ile Thr Glu Gln Thr Phe Gln Ser Leu His Asp
1      5      10      15
acc atc atg gag gat aca aat tca act tta ttt cat aag agg ttg gaa      96
Thr Ile Met Glu Asp Thr Asn Ser Thr Leu Phe His Lys Arg Leu Glu
20      25      30
gga aaa gta gcc atc ata acc gga gga gca cat ggg atc ggc aaa gct      144
Gly Lys Val Ala Ile Ile Thr Gly Gly Ala His Gly Ile Gly Lys Ala
35      40      45
acc gtc aag ata ttc gcg aga cac ggt gcc acg gtg gtg atc gct gac      192
Thr Val Lys Ile Phe Ala Arg His Gly Ala Thr Val Val Ile Ala Asp
50      55      60
gtg gac gcc aca gcc gga tct tcc ctg gct aaa tcg atc tca tca tcc      240
Val Asp Ala Thr Ala Gly Ser Ser Leu Ala Lys Ser Ile Ser Ser Ser
65      70      75
caa gtc gcc ttc ata agc tgc gat gtc tcg gtc gaa gct gac gtg gaa      288
Gln Val Ala Phe Ile Ser Cys Asp Val Ser Val Glu Ala Asp Val Glu
85      90      95
aac cta gtg aac gtg acc atc gca cgt tac ggt cgg ctt gac gtg cta      336
Asn Leu Val Asn Val Thr Ile Ala Arg Tyr Gly Arg Leu Asp Val Leu
100
ttc aac aac gca gga gtt ctc gga gac cag aag aaa cac aaa agc ata      384
Phe Asn Asn Ala Gly Val Leu Gly Asp Gln Lys Lys His Lys Ser Ile
115      120      125
tta gac ttc aac gct gaa gag ttc gac caa gtg atg cgt gtg aac gtg      432
Leu Asp Phe Asn Ala Glu Phe Asp Gln Val Met Arg Val Asn Val
130      135      140
cga ggc gca ggg ctc ggc atg aaa cac gcg gca cgt gcc atg att aaa      480
Arg Gly Ala Gly Leu Gly Met Lys His Ala Ala Arg Ala Met Ile Lys
145      150      155
aga ggc ttt aaa ggt tgc ata atc tcg acg gcg agt gtg gcg ggc gtt      528
Arg Gly Phe Lys Gly Cys Ile Ile Ser Thr Ala Ser Val Ala Gly Val
165      170      175
atg ggt ggt atg ggc cca cat gct tac acg gcg tcg aag cat gcg atc      576
Met Gly Gly Met Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile
180      185      190
gtt gga ctg acc aag aac gca gct tgt gag ctc ggg agg tat ggg att      624
Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu Gly Arg Tyr Gly Ile
195      200      205
agg gtt aac tgc ata tca ccg ttt gga gtt gct acg tcg atg ctg gtg      672
Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr Ser Met Leu Val
210      215      220
aac gcg tgg agg aag acg agt gga tgt ggt gac atg gaa gat ggt gat      720
Asn Ala Trp Arg Lys Thr Ser Gly Cys Gly Asp Met Glu Asp Gly Asp
225      230      235
gat gta gag gag atg gag gag ttc gtg agg agt ttg gct aat ttg aaa      768
Asp Val Glu Glu Met Glu Glu Phe Val Arg Ser Leu Ala Asn Leu Lys
245      250      255
gga gag aca ttg aga gcg acg gat ata gct gaa gcg gcg ttg tat ttg      816
Gly Glu Thr Leu Arg Ala Thr Asp Ile Ala Glu Ala Ala Leu Tyr Leu
260      265      270
gcg agt gat gag tca aag tat gtt aat gga cat aac ctt gtt gtt gac      864
Ala Ser Asp Glu Ser Lys Tyr Val Asn Gly His Asn Leu Val Val Asp
275      280      285
ggg ggt gtt acg act gcg agg aac tgt gtt ggt ttg tga
Gly Gly Val Thr Thr Ala Arg Asn Cys Val Gly Leu
290      295      300

```

<210> 3458  
 <211> 300

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3458

```

Met Pro Ala Gln Val Ile Thr Glu Gln Thr Phe Gln Ser Leu His Asp
1      5      10
Thr Ile Met Glu Asp Thr Asn Ser Thr Leu Phe His Lys Arg Leu Glu
20      25      30
Gly Lys Val Ala Ile Ile Thr Gly Gly Ala His Gly Ile Gly Lys Ala
35      40      45
Thr Val Lys Ile Phe Ala Arg His Gly Ala Thr Val Val Ile Ala Asp
50      55      60
Val Asp Ala Thr Ala Gly Ser Ser Leu Ala Lys Ser Ile Ser Ser Ser
65      70      75
Gln Val Ala Phe Ile Ser Cys Asp Val Ser Val Glu Ala Asp Val Glu
85      90      95
Asn Leu Val Asn Val Thr Ile Ala Arg Tyr Gly Arg Leu Asp Val Leu
100     105
Phe Asn Asn Ala Gly Val Leu Gly Asp Gln Lys Lys His Lys Ser Ile
115     120     125
Leu Asp Phe Asn Ala Glu Glu Phe Asp Gln Val Met Arg Val Asn Val
130     135     140
Arg Gly Ala Gly Leu Gly Met Lys His Ala Ala Arg Ala Met Ile Lys
145     150     155
Arg Gly Phe Lys Gly Cys Ile Ile Ser Thr Ala Ser Val Ala Gly Val
165     170     175
Met Gly Gly Met Gly Pro His Ala Tyr Thr Ala Ser Lys His Ala Ile
180     185     190
Val Gly Leu Thr Lys Asn Ala Ala Cys Glu Leu Gly Arg Tyr Gly Ile
195     200     205
Arg Val Asn Cys Ile Ser Pro Phe Gly Val Ala Thr Ser Met Leu Val
210     215     220
Asn Ala Trp Arg Lys Thr Ser Gly Cys Gly Asp Met Glu Asp Gly Asp
225     230     235
Asp Val Glu Glu Met Glu Glu Phe Val Arg Ser Leu Ala Asn Leu Lys
245     250     255
Gly Glu Thr Leu Arg Ala Thr Asp Ile Ala Glu Ala Ala Leu Tyr Leu
260     265     270
Ala Ser Asp Glu Ser Lys Tyr Val Asn Gly His Asn Leu Val Val Asp
275     280     285
Gly Gly Val Thr Thr Ala Arg Asn Cys Val Gly Leu
290     295     300

```

&lt;210&gt; 3459

&lt;211&gt; 789

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(789)

&lt;400&gt; 3459

```

atg gat agc cgg tgg agt ctt cga ggt atg aca ggt ctt gta acc ggt      48
Met Asp Ser Arg Trp Ser Leu Arg Gly Met Thr Gly Leu Val Thr Gly
1      5      10
gga acc aag gga att ggg tat gcg ata gtg gag gaa ctt gct ggt ttt      96
Gly Thr Lys Gly Ile Gly Tyr Ala Ile Val Glu Glu Leu Ala Gly Phe
20      25      30
ggt gca aga gtt cac acg tgt gcc aga gac caa act ctg ctt gat gaa      144
Gly Ala Arg Val His Thr Cys Ala Arg Asp Gln Thr Leu Leu Asp Glu
35      40      45
tgc tta aat gaa tgg aaa gcc aaa ggg tat caa gtc act ggc tca gtc      192
Cys Leu Asn Glu Trp Lys Ala Lys Gly Tyr Gln Val Thr Gly Ser Val
50      55      60
tgt gat gtt tcc tct cga cct cag aga gat gag ttg atg aag act gtc      240
Cys Asp Val Ser Ser Arg Pro Gln Arg Asp Glu Leu Met Lys Thr Val
65      70      75
tct tct cta ttc agt ggc aaa ctc aac atc ctt atc aac aat gtt ggt      288

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## PhoenixTemp32470.tmp.txt

Ser	Ser	Leu	Phe	Ser <sub>85</sub>	Gly	Lys	Leu	Asn	Ile <sub>90</sub>	Leu	Ile	Asn	Asn	Val <sub>95</sub>	Gly		
acc	ctt	acg	tca	aag	ccg	gct	aca	gag	ttt	aca	gca	caa	gat	ttc	tca	336	
Thr	Leu	Thr	Ser <sub>100</sub>	Lys	Pro	Ala	Thr	Glu <sub>105</sub>	Phe	Thr	Ala	Gln	Asp <sub>110</sub>	Phe	Ser		
agt	caa	ata	gct	acc	aat	ttg	gag	tct	gct	tat	cat	tta	tct	caa	ttg	384	
Ser	Gln	Ile <sub>115</sub>	Ala	Thr	Asn	Leu	Glu <sub>120</sub>	Ser	Ala	Tyr	His	Leu <sub>125</sub>	Ser	Gln	Leu		
gcc	cat	cct	tta	ctt	aag	gca	tct	gga	ttt	ggt	agc	att	gtg	ttc	atg	432	
Ala	His	Pro	Leu	Leu	Lys	Ala <sub>135</sub>	Ser	Gly	Phe	Gly	Ser <sub>140</sub>	Ile	Val	Phe	Met		
tct	tca	gta	tgt	ggg	gtt	gta	tca	gcc	ggt	acc	gta	tcc	ata	tac	agc	480	
Ser	Ser	Val	Cys	Gly <sub>150</sub>	Val	Val	Ser	Ala	Gly	Thr <sub>155</sub>	Val	Ser	Ile	Tyr	Ser <sub>160</sub>		
tta	aca	aaa	gga	ggc	atg	aat	caa	ttg	gca	aga	aac	ttg	gca	tgt	gaa	528	
Leu	Thr	Lys	Gly <sub>165</sub>	Gly	Met	Asn	Gln	Leu	Ala <sub>170</sub>	Arg	Asn	Leu	Ala	Cys <sub>175</sub>	Glu		
tgg	gca	agt	gat	ggc	ata	agg	gct	aac	tct	gta	gct	cct	tgg	gtg	act	576	
Trp	Ala	Ser	Asp <sub>180</sub>	Gly	Ile	Arg	Ala	Asn <sub>185</sub>	Ser	Val	Ala	Pro	Trp <sub>190</sub>	Val	Thr		
aga	act	cct	ctt	gcc	caa	gat	cgt	ctt	gat	gac	aag	aaa	tat	gct	gaa	624	
Arg	Thr	Pro <sub>195</sub>	Leu	Ala	Gln	Asp	Arg <sub>200</sub>	Leu	Asp	Asp	Lys	Lys <sub>205</sub>	Tyr	Ala	Glu		
gct	atc	tgc	tca	aga	acc	cca	tta	ggc	cgt	acg	tgt	gag	ccg	agt	gag	672	
Ala	Ile <sub>210</sub>	Cys	Ser	Arg	Thr	Pro <sub>215</sub>	Leu	Gly	Arg	Thr	Cys <sub>220</sub>	Glu	Pro	Ser	Glu		
gtt	gcc	tcg	ctg	gtt	acg	ttt	ctt	tgt	ctc	cct	gca	gct	tct	tat	ata	720	
Val <sub>225</sub>	Ala	Ser	Leu	Val <sub>230</sub>	Thr	Phe	Leu	Cys	Leu	Pro <sub>235</sub>	Ala	Ala	Ser	Tyr	Ile <sub>240</sub>		
aca	gga	caa	acc	att	ttt	att	gat	ggt	ggt	ctc	act	gtt	aat	ggc	ttc	768	
Thr	Gly	Gln	Thr	Ile <sub>245</sub>	Phe	Ile	Asp	Gly	Gly <sub>250</sub>	Leu	Thr	Val	Asn	Gly <sub>255</sub>	Phe		
tcc	tac	aag	cca	gaa	gtt	taa										789	
Ser	Tyr	Lys	Pro <sub>260</sub>	Glu	Val												

&lt;210&gt; 3460

&lt;211&gt; 262

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3460

Met	Asp	Ser	Arg	Trp <sub>5</sub>	Ser	Leu	Arg	Gly	Met <sub>10</sub>	Thr	Gly	Leu	Val	Thr <sub>15</sub>	Gly		
Gly	Thr	Lys	Gly <sub>20</sub>	Ile	Gly	Tyr	Ala	Ile <sub>25</sub>	Val	Glu	Glu	Leu	Ala <sub>30</sub>	Gly	Phe		
Gly	Ala	Arg <sub>35</sub>	Val	His	Thr	Cys	Ala <sub>40</sub>	Arg	Asp	Gln	Thr	Leu <sub>45</sub>	Leu	Asp	Glu		
Cys	Leu	Asn	Glu	Trp	Lys	Ala <sub>55</sub>	Lys	Gly	Tyr	Gln	Val <sub>60</sub>	Thr	Gly	Ser	Val		
Cys	Asp	Val	Ser	Ser	Arg <sub>70</sub>	Pro	Gln	Arg	Asp	Glu <sub>75</sub>	Leu	Met	Lys	Thr	Val <sub>80</sub>		
Ser	Ser	Leu	Phe	Ser <sub>85</sub>	Gly	Lys	Leu	Asn	Ile <sub>90</sub>	Leu	Ile	Asn	Asn	Val <sub>95</sub>	Gly		
Thr	Leu	Thr	Ser <sub>100</sub>	Lys	Pro	Ala	Thr	Glu <sub>105</sub>	Phe	Thr	Ala	Gln	Asp <sub>110</sub>	Phe	Ser		
Ser	Gln	Ile <sub>115</sub>	Ala	Thr	Asn	Leu	Glu <sub>120</sub>	Ser	Ala	Tyr	His	Leu <sub>125</sub>	Ser	Gln	Leu		
Ala	His	Pro	Leu	Leu	Lys	Ala <sub>135</sub>	Ser	Gly	Phe	Gly	Ser <sub>140</sub>	Ile	Val	Phe	Met		
Ser	Ser	Val	Cys	Gly	Val <sub>150</sub>	Val	Ser	Ala	Gly	Thr <sub>155</sub>	Val	Ser	Ile	Tyr	Ser <sub>160</sub>		
Leu	Thr	Lys	Gly	Gly <sub>165</sub>	Met	Asn	Gln	Leu	Ala <sub>170</sub>	Arg	Asn	Leu	Ala	Cys <sub>175</sub>	Glu		
Trp	Ala	Ser	Asp <sub>180</sub>	Gly	Ile	Arg	Ala	Asn <sub>185</sub>	Ser	Val	Ala	Pro	Trp <sub>190</sub>	Val	Thr		
Arg	Thr	Pro <sub>195</sub>	Leu	Ala	Gln	Asp	Arg <sub>200</sub>	Leu	Asp	Asp	Lys	Lys <sub>205</sub>	Tyr	Ala	Glu		
Ala	Ile	Cys	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Thr	Cys	Glu	Pro	Ser	Glu		

## PhoenixTemp32470.tmp.txt

210  
 Val Ala Ser Leu Val Thr 215  
 225 Thr Gly Gln Thr Ile Phe Phe Leu Cys Leu Pro 220  
 Thr Gly Gln Thr Ile Phe Ile Asp Gly Gly Leu Thr Val Asn Gly Tyr Ile  
 Ser Tyr Lys Pro Glu Val 240  
 255

<210> 3461  
 <211> 786  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(786)

<400> 3461  
 atg tcg gaa cta aga ctg gat ggc aag atc gta att ata aca ggc gga 48  
 Met Ser Glu Leu Arg Leu Asp Gly Lys Ile Val Ile Ile Thr Gly Gly  
 1 5 10 15  
 gcc agc ggt atc gga gcc gag gcg gct agg cta ttc acc gac cac gga 96  
 Ala Ser Gly Ile Gly Ala Glu Ala Ala Arg Leu Phe Thr Asp His Gly  
 20 25 30  
 gct aaa gtg gtc ata gtc gat ata caa gag gag cta ggc caa aac gtc 144  
 Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn Val  
 35 40 45  
 gcc gtt tcc atc ggg aaa gag aga gcc agt ttc tac cgt tgc gac gta 192  
 Ala Val Ser Ile Gly Lys Glu Arg Ala Ser Phe Tyr Arg Cys Asp Val  
 50 55  
 aca gag gag aca gaa gtg gag aac gcc gtc aag ttc acc gtc gag aag 240  
 Thr Glu Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu Lys  
 60 65 70 75 80  
 cac gga aag ctc gac gtt ctt ttc agc aac gcc ggc gtc ttg gac ccg 288  
 His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp Pro  
 85 90 95  
 cgg gga agc atc ctc gac ttg gat ctt gac cgg ttc gac cgc ata atg 336  
 Arg Gly Ser Ile Leu Asp Leu Asp Leu Asp Arg Phe Asp Arg Ile Met  
 100 105 110  
 gcg gtt aac gtg cgc ggc gcg gct gcg ttt atc aaa cac gcg gca cgt 384  
 Ala Val Asn Val Arg Gly Ala Ala Phe Ile Lys His Ala Ala Arg  
 115 120 125  
 gcg atg gtg gag aaa ggc acg cgt ggg tct atc gtg tgt acc acg agc 432  
 Ala Met Val Glu Lys Gly Thr Arg Gly Ser Ile Val Cys Thr Thr Ser  
 130 135 140  
 gtg tcg tcg gag att ggt ggt ggg aga cgt cac ggg tac acg gcg tct 480  
 Val Ser Ser Glu Ile Gly Gly Gly Arg Arg His Gly Tyr Thr Ala Ser  
 145 150 155 160  
 aaa cat gga ctg ctc ggg ctg atc aga acg gcg tgt ggg gag ctg ggg 528  
 Lys His Gly Leu Leu Gly Leu Ile Arg Thr Ala Cys Gly Glu Leu Gly  
 165 170 175  
 aag tat ggg att aga gtc aac ggt gtg gca ccg tac gcg ctc gcg acg 576  
 Lys Tyr Gly Ile Arg Val Asn Gly Val Ala Pro Tyr Ala Leu Ala Thr  
 180 185 190  
 ccg ttg act agc cac gac gag gaa acg gcg agg cag gtg gag gaa gaa 624  
 Pro Leu Thr Ser His Asp Glu Glu Thr Ala Arg Gln Val Glu Glu Glu  
 195 200 205  
 ttt gcg gcc aag ggg gtg ctc aag ggt gtg gtg ctt aac gct cgc cac 672  
 Phe Ala Ala Lys Gly Val Leu Lys Gly Val Val Leu Asn Ala Arg His  
 210 215 220  
 gtg gcg caa gtg gct ctg ttt ttg gct tct gat gag tcg gtt tat gtc 720  
 Val Ala Gln Val Ala Leu Phe Leu Ala Ser Asp Glu Ser Val Tyr Val  
 225 230 235 240  
 agt ggt cag aat ttg gcg gtg gat gga ggt tat agt atg tgt cgt tca 768  
 Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Tyr Ser Met Cys Arg Ser  
 245 250 255  
 ggc aat gtt caa att tag 786  
 Gly Asn Val Gln Ile 260



<210> 3462  
 <211> 261  
 <212> PRT  
 <213> Brassica napus

<400> 3462  
 Met Ser Glu Leu Arg Leu Asp Gly Lys Ile Val Ile Ile Thr Gly Gly  
 1 5 10 15  
 Ala Ser Gly Ile Gly Ala Glu Ala Ala Arg Leu Phe Thr Asp His Gly  
 20 25 30  
 Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn Val  
 35 40 45  
 Ala Val Ser Ile Gly Lys Glu Arg Ala Ser Phe Tyr Arg Cys Asp Val  
 50 55 60  
 Thr Glu Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu Lys  
 65 70 75 80  
 His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp Pro  
 85 90 95  
 Arg Gly Ser Ile Leu Asp Leu Asp Leu Asp Arg Phe Asp Arg Ile Met  
 100 105 110  
 Ala Val Asn Val Arg Gly Ala Ala Ala Phe Ile Lys His Ala Ala Arg  
 115 120 125  
 Ala Met Val Glu Lys Gly Thr Arg Gly Ser Ile Val Cys Thr Thr Ser  
 130 135 140  
 Val Ser Ser Glu Ile Gly Gly Gly Arg Arg His Gly Tyr Thr Ala Ser  
 145 150 155 160  
 Lys His Gly Leu Leu Gly Leu Ile Arg Thr Ala Cys Gly Glu Leu Gly  
 165 170 175  
 Lys Tyr Gly Ile Arg Val Asn Gly Val Ala Pro Tyr Ala Leu Ala Thr  
 180 185 190  
 Pro Leu Thr Ser His Asp Glu Glu Thr Ala Arg Gln Val Glu Glu Glu  
 195 200 205  
 Phe Ala Ala Lys Gly Val Leu Lys Gly Val Val Leu Asn Ala Arg His  
 210 215 220  
 Val Ala Gln Val Ala Leu Phe Leu Ala Ser Asp Glu Ser Val Tyr Val  
 225 230 235 240  
 Ser Gly Gln Asn Leu Ala Val Asp Gly Gly Tyr Ser Met Cys Arg Ser  
 245 250 255  
 Gly Asn Val Gln Ile  
 260

<210> 3463  
 <211> 1044  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(1044)

<400> 3463  
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 Met Ala Thr Ser Ser Gly Phe His Ile Ser Ser Ser Pro Phe Leu Arg  
 1 5 10 15  
 ctt cgc tct tcc tcc gtc gca tac gcc gct caa cct ccg ttt ctc tcc 96  
 Leu Arg Ser Ser Val Ala Tyr Ala Gln Pro Pro Phe Leu Ser  
 20 25 30  
 cct tgt aac ggt cgt tca cta gca gaa agc ttc ggt ctc gca act gta 144  
 Pro Cys Asn Gly Arg Ser Leu Ala Glu Ser Phe Gly Leu Ala Thr Val  
 35 40 45  
 act gtt tcg cgc caa aac ctc tcg gtt tct ccg ccg tct gcg gtg gtg 192  
 Thr Val Ser Arg Gln Asn Leu Ser Val Ser Pro Pro Ser Ala Val Val  
 50 55 60  
 gaa gct cgc att tcg ggg aca aga gag ccg atg acg cct ccc tat aac 240  
 Glu Ala Arg Ile Ser Gly Thr Arg Glu Pro Met Thr Pro Pro Tyr Asn  
 65 70 75 80  
 gtc ttg atc act ggc tcg acc aaa ggt ata gga cat gcg tta gct aga 288  
 Val Leu Ile Thr Gly Ser Thr Lys Gly Ile Gly His Ala Leu Ala Arg

## PhoenixTemp32470.tmp.txt

																85																	90																	95																
gag Glu	ttt Phe	ctg Leu	aaa Lys 100	gca Ala	gga Gly	gac Asp	aac Asn	gtt Val 105	gtc Val	ata Ile	tgt Cys	tcc Ser	aga Arg 110	tca Ser	gct Ala	336																																																		
gaa Glu	cga Arg	gtt Val 115	gag Glu	tct Ser	gtt Val	gtt Val	aag Lys 120	agt Ser	ctt Leu	aag Lys	gaa Glu	gaa Glu 125	tat Tyr	ggg Gly	gag Glu	384																																																		
cat His	gtg Val 130	tgg Trp	gga Gly	act Thr	aag Lys	tgt Cys 135	gat Asp	gtt Val	aga Arg	gaa Glu	ggg Gly 140	aag Lys	gat Asp	gtg Val	aag Lys	432																																																		
gat Asp 145	ctt Leu	gta Val	tct Ser	tat Tyr	tgt Cys 150	cag Gln	aag Lys	aat Asn	ctt Leu	aaa Lys 155	tac Tyr	att Ile	gat Asp	att Ile	tgg Trp 160	480																																																		
att Ile	aat Asn	aat Asn	gct Ala 165	gga Gly	tct Ser	aat Asn	gca Ala	tac Tyr	agc Ser 170	ttt Phe	aaa Lys	cct Pro	ttg Leu	tct Ser 175	gag Glu	528																																																		
gcc Ala	tct Ser	gat Asp	gag Glu 180	gat Asp	ctt Leu	att Ile	gaa Glu	gtt Val 185	gtg Val	aaa Lys	aca Thr	aac Asn	act Thr 190	ctt Leu	ggg Gly	576																																																		
ctg Leu	atg Met	tta Leu 195	tgt Cys	tcg Cys	cga Arg	gag Glu	gca Ala 200	atg Met	aat Asn	atg Met	atg Met	ctg Leu 205	acc Thr	caa Gln	tct Ser	624																																																		
cgg Arg	ggg Gly 210	ggg Gly	cat His	atc Ile	ttc Phe	aat Asn 215	att Ile	gat Asp	gga Gly	gct Ala	ggc Gly 220	tca Ser	gat Asp	ggg Gly	aga Arg	672																																																		
cca Pro 225	aca Thr	ccc Pro	agg Arg	ttt Phe	gct Ala 230	gca Ala	tat Tyr	ggg Gly	gca Ala	aca Thr 235	aaa Lys	cgg Arg	agt Ser	gtt Val 240	gtt Val 240	720																																																		
cac His	ctg Leu	aca Thr	aag Lys	tca Ser 245	tta Leu	caa Gln	gca Ala	gag Glu	ttg Leu 250	cag Gln	atg Met	caa Gln	gat Asp	gtc Val 255	aaa Lys	768																																																		
aat Asn	gtt Val	gtg Val	gta Val 260	cac His	aat Asn	cta Leu	tcg Ser	cct Pro 265	gga Gly	atg Met	gtc Val	aca Thr	act Thr 270	gat Asp	cta Leu	816																																																		
ctc Leu	atg Met	tct Ser 275	gga Gly	gct Ala	aca Thr	act Thr	aaa Lys 280	caa Gln	gcc Ala	aaa Lys	ttc Phe 285	ttc Phe	atc Ile	aat Asn	gtt Val	864																																																		
ttg Leu	gct Ala 290	gag Glu	cca Pro	gct Ala	gaa Glu	gtg Val 295	gtt Val	gct Ala	gag Glu	tat Tyr	ctt Leu 300	gtc Val	ccg Pro	aac Asn	att Ile	912																																																		
aga Arg 305	gca Ala	ata Ile	cca Pro	gct Ala	agt Ser 310	gga Gly	tct Ser	atg Met	aag Lys	ccg Pro 315	act Thr	tac Tyr	atc Ile	cgt Arg	ttc Phe 320	960																																																		
cta Leu	acc Thr	gga Gly	atc Ile	aaa Lys 325	gcc Ala	tat Tyr	acc Thr	aaa Lys	ata Ile 330	ttc Phe	tca Ser	aga Arg	gtt Val	gca Ala 335	ttg Leu	1008																																																		
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<210> 3464
<211> 347
<212> PRT
<213> Brassica napus
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[illegible]

## PhoenixTemp32470.tmp.txt

100 105 110  
 Glu Arg Val Glu Ser Val Val Lys Ser Leu Lys Glu Glu Tyr Gly Glu  
 115 120 125  
 His Val Trp Gly Thr Lys Cys Asp Val Arg Glu Gly Lys Asp Val Lys  
 130 135 140  
 Asp Leu Val Ser Tyr Cys Gln Lys Asn Leu Lys Tyr Ile Asp Ile Trp  
 145 150 155 160  
 Ile Asn Asn Ala Gly Ser Asn Ala Tyr Ser Phe Lys Pro Leu Ser Glu  
 165 170 175  
 Ala Ser Asp Glu Asp Leu Ile Glu Val Val Lys Thr Asn Thr Leu Gly  
 180 185 190  
 Leu Met Leu Cys Cys Arg Glu Ala Met Asn Met Met Leu Thr Gln Ser  
 195 200 205  
 Arg Gly Gly His Ile Phe Asn Ile Asp Gly Ala Gly Ser Asp Gly Arg  
 210 215 220  
 Pro Thr Pro Arg Phe Ala Ala Tyr Gly Ala Thr Lys Arg Ser Val Val  
 225 230 235 240  
 His Leu Thr Lys Ser Leu Gln Ala Glu Leu Gln Met Gln Asp Val Lys  
 245 250 255  
 Asn Val Val Val His Asn Leu Ser Pro Gly Met Val Thr Thr Asp Leu  
 260 265 270  
 Leu Met Ser Gly Ala Thr Thr Lys Gln Ala Lys Phe Phe Ile Asn Val  
 275 280 285  
 Leu Ala Glu Pro Ala Glu Val Val Ala Glu Tyr Leu Val Pro Asn Ile  
 290 295 300  
 Arg Ala Ile Pro Ala Ser Gly Ser Met Lys Pro Thr Tyr Ile Arg Phe  
 305 310 315 320  
 Leu Thr Gly Ile Lys Ala Tyr Thr Lys Ile Phe Ser Arg Val Ala Leu  
 325 330 335  
 Gly Ala Arg Lys Asn Arg Tyr Val Thr Glu Glu  
 340 345

&lt;210&gt; 3465

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(777)

&lt;400&gt; 3465

atg tca gga agc aga aga ttg gat ggc aaa gtc gtg att ata aca ggc	48
Met Ser Gly Ser Arg Arg Leu Asp Gly Lys Val Val Ile Ile Thr Gly	
1 5 10 15	
gga gcc agc ggg att gga gca gaa tct agg cta ttc act gac cac	96
Gly Ala Ser Gly Ile Gly Ala Glu Ser Ala Arg Leu Phe Thr Asp His	
20 25 30	
gga gct aaa gtg gtt att gtt gac ata caa gag gag tta ggc cag aac	144
Gly Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn	
35 40 45	
gtt gcc gtt tca ata ggt aaa gac aaa gca agt tat tac aaa tgc gat	192
Val Ala Val Ser Ile Gly Lys Asp Lys Ala Ser Tyr Tyr Lys Cys Asp	
50 55 60	
atc aca aac gaa aca gag gta gag aat gct gtt aag ttc acc gtc gaa	240
Ile Thr Asn Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu	
65 70 75 80	
atg cat gga aaa ctc gac gtt ctg ttc agc aac gcc ggc gtc tta gat	288
Met His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp	
85 90 95	
acg ccg gga agc atc ctc gac ttg aat ctc gaa cat ttt gac cgt gta	336
Thr Pro Gly Ser Ile Leu Asp Leu Asn Leu Glu His Phe Asp Arg Val	
100 105 110	
atg ggg gtt aac gtt cgc ggt gca gct gcg ttt atc aaa cat gca gca	384
Met Gly Val Asn Val Arg Gly Ala Ala Ala Phe Ile Lys His Ala Ala	
115 120 125	
cgt gcc atg gtg ggt agt ggc aca cgt ggt tcc att gtt tgt acg act	432
Arg Ala Met Val Gly Ser Gly Thr Arg Gly Ser Ile Val Cys Thr Thr	
130 135 140	

## PhoenixTemp32470.tmp.txt

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agc gtt acg gcg gag att ggt ggt cag gga cct cat gga tac aca gcg      480
Ser Val Thr Ala Glu Ile Gly Gly Gln Gly Pro His Gly Tyr Thr Ala
145 150 155 160
tcg aag cat gcc ctc ctg ggg ctg att aag tca gct tgt ggt gag ttg      528
Ser Lys His Ala Leu Leu Gly Leu Ile Lys Ser Ala Cys Gly Glu Leu
165 170 175
ggg aaa cat ggc att aga gta aac ggc gtg gcg ccg ttt gcg gtg gcg      576
Gly Lys His Gly Ile Arg Val Asn Gly Val Ala Pro Phe Ala Val Ala
180 185 190
acg agt atg act agc cgt gat gag gag acg gcg aag cag gtg gag gga      624
Thr Ser Met Thr Ser Arg Asp Glu Glu Thr Ala Lys Gln Val Glu Gly
195 200 205
tat tgt gaa gcc gtg gga att ctg aag ggt gtt gcg ttg aaa ccc aat      672
Tyr Cys Glu Ala Val Gly Ile Leu Lys Gly Val Ala Leu Lys Pro Asn
210 215 220
cac gtg gcg aag gct gct ttg ttt cta gct tct gat gat tct att tat      720
His Val Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ser Ile Tyr
225 230 235 240
att agt ggg cat aat cta gtt ttg gac ggt gga ttt agc gtc gtt aag      768
Ile Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Ser Val Val Lys
245 250 255
cct ctt taa
Pro Leu
777

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<210> 3466  
 <211> 258  
 <212> PRT  
 <213> Brassica napus

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<400> 3466
Met Ser Gly Ser Arg Arg Leu Asp Gly Lys Val Val Ile Ile Thr Gly
1 5 10 15
Gly Ala Ser Gly Ile Gly Ala Glu Ser Ala Arg Leu Phe Thr Asp His
20 25 30
Gly Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn
35 40 45
Val Ala Val Ser Ile Gly Lys Asp Lys Ala Ser Tyr Tyr Lys Cys Asp
50 55 60
Ile Thr Asn Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu
65 70 75 80
Met His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp
85 90 95
Thr Pro Gly Ser Ile Leu Asp Leu Asn Leu Glu His Phe Asp Arg Val
100 105 110
Met Gly Val Asn Val Arg Gly Ala Ala Phe Ile Lys His Ala Ala
115 120 125
Arg Ala Met Val Gly Ser Gly Thr Arg Gly Ser Ile Val Cys Thr Thr
130 135 140
Ser Val Thr Ala Glu Ile Gly Gly Gln Gly Pro His Gly Tyr Thr Ala
145 150 155 160
Ser Lys His Ala Leu Gly Leu Ile Lys Ser Ala Cys Gly Glu Leu
165 170 175
Gly Lys His Gly Ile Arg Val Asn Gly Val Ala Pro Phe Ala Val Ala
180 185 190
Thr Ser Met Thr Ser Arg Asp Glu Glu Thr Ala Lys Gln Val Glu Gly
195 200 205
Tyr Cys Glu Ala Val Gly Ile Leu Lys Gly Val Ala Leu Lys Pro Asn
210 215 220
His Val Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ser Ile Tyr
225 230 235 240
Ile Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Ser Val Val Lys
245 250 255
Pro Leu

```

<210> 3467  
 <211> 828  
 <212> DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(828)

&lt;400&gt; 3467

atg	gca	act	tca	acc	tct	gca	ctc	aat	aaa	agg	ctg	gaa	gga	aaa	gtt	48
Met	Ala	Thr	Ser	Thr	Ser	Ala	Leu	Asn	Lys	Arg	Leu	Glu	Gly	Lys	Val	
1				5					10					15		
gca	ctg	atc	aca	gga	gga	gct	agt	ggc	atc	ggc	aaa	cgc	act	gca	gaa	96
Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Lys	Arg	Thr	Ala	Glu	
			20					25					30			
gtg	ttc	gct	cag	caa	gga	gcc	aaa	gta	gtg	atc	gct	gac	atc	caa	gac	144
Val	Phe	Ala	Gln	Gln	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Ile	Gln	Asp	
			35				40					45				
gaa	ctg	gga	cat	tcc	gtt	gct	cag	tcc	ata	ggg	cca	tca	aca	tgt	tgt	192
Glu	Leu	Gly	His	Ser	Val	Ala	Gln	Ser	Ile	Gly	Pro	Ser	Thr	Cys	Cys	
			50				55				60					
tat	gtc	cat	tgc	gat	gtc	acc	gat	gag	aac	caa	ata	aaa	aat	gcc	gtc	240
Tyr	Val	His	Cys	Asp	Val	Thr	Asp	Glu	Asn	Gln	Ile	Lys	Asn	Ala	Val	
				70						75					80	
caa	aaa	gcc	gta	gat	gct	tat	ggg	aag	cta	gac	atc	atg	ttc	aac	aac	288
Gln	Lys	Ala	Val	Asp	Ala	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Asn	Asn	
				85					90					95		
gcc	ggc	att	gtt	gat	ccc	aac	aag	aac	cga	atc	att	gac	aac	gat	aag	336
Ala	Gly	Ile	Val	Asp	Pro	Asn	Lys	Asn	Arg	Ile	Ile	Asp	Asn	Asp	Lys	
			100					105					110			
gca	gat	ttc	gaa	cgt	gtc	cta	agc	gtc	aat	gtc	acg	ggg	gtt	ttc	ctt	384
Ala	Asp	Phe	Glu	Arg	Val	Leu	Ser	Val	Asn	Val	Thr	Gly	Val	Phe	Leu	
			115				120					125				
ggg	atg	aag	cat	gcg	gcg	cag	gcg	atg	atc	cca	gca	cgc	agt	ggg	agc	432
Gly	Met	Lys	His	Ala	Ala	Gln	Ala	Met	Ile	Pro	Ala	Arg	Ser	Gly	Ser	
			130			135				140						
atc	atc	tct	acg	gcc	agc	ata	agc	tcc	tac	gtt	ggg	gca	gcc	tcg		480
Ile	Ile	Ser	Thr	Ala	Ser	Ile	Ser	Ser	Tyr	Val	Gly	Gly	Ala	Ala	Ser	
				150						155					160	
cat	gct	tac	tgt	tgt	gct	aag	cat	gct	gtg	gtt	ggg	cta	act	aaa	aat	528
His	Ala	Tyr	Cys	Cys	Ala	Lys	His	Ala	Val	Val	Gly	Leu	Thr	Lys	Asn	
				165					170					175		
gca	gca	gtt	gag	ctt	gga	cag	ttc	gga	ata	agg	gtg	aat	tgt	ttg	tca	576
Ala	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser	
			180					185					190			
cct	tac	gct	ctt	gct	aca	cct	ttg	gcc	acc	aag	ttt	gtt	gga	gct	aat	624
Pro	Tyr	Ala	Leu	Ala	Thr	Pro	Leu	Ala	Thr	Lys	Phe	Val	Gly	Ala	Asn	
			195				200					205				
gat	gag	gag	ctt	gag	act	atc	atg	aac	tca	ctg	gct	aat	ctc	aag	ggg	672
Asp	Glu	Glu	Leu	Glu	Thr	Ile	Met	Asn	Ser	Leu	Ala	Asn	Leu	Lys	Gly	
			210			215					220					
gtc	act	ctt	aaa	gct	gag	gat	gtg	gct	aat	gcc	gca	ctt	tat	ttt	gct	720
Val	Thr	Leu	Lys	Ala	Glu	Asp	Val	Ala	Asn	Ala	Ala	Leu	Tyr	Phe	Ala	
				225		230				235					240	
agt	gat	gat	tcc	agg	tac	gtc	agt	ggg	caa	aat	ttg	ctc	ata	gat	gga	768
Ser	Asp	Asp	Ser	Arg	Tyr	Val	Ser	Gly	Gln	Asn	Leu	Leu	Ile	Asp	Gly	
				245					250					255		
ggc	ttc	agc	att	gtt	aat	cct	tcc	ttt	cac	atg	ttt	cag	tac	ccg	gac	816
Gly	Phe	Ser	Ile	Val	Asn	Pro	Ser	Phe	His	Met	Phe	Gln	Tyr	Pro	Asp	
			260					265					270			
tcg	gag	tct	tga													828
Ser	Glu	Ser														
			275													

&lt;210&gt; 3468

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3468

Met Ala Thr Ser Thr Ser Ala Leu Asn Lys Arg Leu Glu Gly Lys Val

## PhoenixTemp32470.tmp.txt

1 Ala Leu Ile Thr 5 Gly Gly Ala Ser Gly 10 Ile Gly Lys Arg Thr 15 Ala Glu  
 Val Phe Ala Gln Gln Gly Ala Lys Val Val Ile Ala Asp Ile Gln Asp  
 Glu Leu 35 Gly His Ser Val Ala 40 Gln Ser Ile Gly Pro Ser Thr Cys Cys  
 Tyr Val His Cys Asp Val 55 Thr Asp Glu Asn Gln 60 Ile Lys Asn Ala Val  
 65 Gln Lys Ala Val Asp 70 Ala Tyr Gly Lys Leu Asp Ile Met Phe Asn Asn  
 Ala Gly Ile Val Asp 85 Pro Asn Lys Asn Arg Ile Ile Asp Asn Asp Lys  
 Ala Asp Phe 100 Glu Arg Val Leu Ser 105 Val Asn Val Thr Gly Val Phe Leu  
 Gly Met Lys His Ala Ala Gln 120 Ala Met Ile Pro Ala Arg Ser Gly Ser  
 Ile Ile Ser Thr Ala Ser 135 Ile Ser Ser Tyr Val 140 Gly Gly Ala Ala Ser  
 145 His Ala Tyr Cys Cys 150 Ala Lys His Ala Val Val Gly Leu Thr Lys Asn  
 Ala Ala Val Glu 165 Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Leu Ser  
 Pro Tyr Ala 180 Leu Ala Thr Pro Leu 185 Ala Thr Lys Phe Val Gly Ala Asn  
 Asp Glu Glu Leu Glu Thr Ile 200 Met Asn Ser Leu Ala Asn Leu Lys Gly  
 Val Thr Leu Lys Ala Glu 215 Asp Val Ala Asn Ala Ala Leu Tyr Phe Ala  
 225 Ser Asp Asp Ser Arg 230 Tyr Val Ser Gly Gln 235 Asn Leu Leu Ile Asp Gly  
 Gly Phe Ser Ile Val Asn Pro Ser Phe 250 His Met Phe Gln Tyr Pro Asp  
 Ser Glu Ser 260 275

<210> 3469  
 <211> 987  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(987)

<400> 3469  
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 Met Leu Thr Leu Leu Phe Ser Ser Leu Gly Leu Leu Leu Leu Gly  
 1 5 10 15  
 ctt ctc ctc aaa ttc gca ttc gcc gat ggg gat tta acg ctg att tcg 96  
 Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr Leu Ile Ser  
 20 25 30  
 aag aag cat gtg aaa cga gaa gcc ata gaa gga aag gtg gtt tgg atc 144  
 Lys Lys His Val Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile  
 35 40 45  
 aca ggg gct agc cgt gga att gga gaa gtt ctt gct aaa cag ttt gcg 192  
 Thr Gly Ala Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 agt tta ggt gcc aag ctt att ctc tct gct agg aac gaa gct gag ttg 240  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 gtt cgt gtt aag agt gag ctc aaa ggt aag tat gca cca gaa gat gtc 288  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 aag gtt ttg cct tta gat cta gct agc ggc gaa gag ggt ctc aaa ggt 336  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Glu Glu Gly Leu Lys Gly  
 100 105 110  
 gtt gta gag aga gca gtg tcg ctt ttc cct ggg gct ggg gtt gat tat 384  
 Val Val Glu Arg Ala Val Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125

PhoenixTemp32470.tmp.txt

				115				120				125					
ttg	gtt	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat		432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp		
	130					135											
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	gtt	aat	gta	ttt	ggg		480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly		
145					150					155					160		
acc	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga		528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly		
				165					170					175			
ggc	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca		576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser		
			180					185					190				
cct	gga	cag	gct	ata	tat	gct	gct	tca	aag	cat	gct	ctg	cag	ggc	tat		624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr		
		195				200						205					
ttc	cac	agc	tta	cgt	tct	gag	ttt	ttt	cag	aag	gga	atc	aag	gtt	act		672
Phe	His	Ser	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr		
		210				215					220						
gtt	gtt	tcg	ccg	ggt	cca	ata	gag	acc	tca	aat	ggt	aca	gga	aca	tca		720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser		
225				230						235			240				
act	tcg	gaa	gac	aag	aag	tct	cct	gag	aag	cgt	gtg	tca	tct	gaa	cga		768
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg		
				245					250					255			
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct		816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala		
			260					265				270					
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac		864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr		
		275				280						285					
atg	cct	ttc	ctt	ggc	ttc	tgg	ctt	atg	gac	aag	gtt	gga	gga	aaa	cgt		912
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg		
		290				295					300						
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ttg	ctc		960
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu		
305				310						315					320		
ttc	cag	aag	aag	act	aaa	aca	aac	tga									987
Phe	Gln	Lys	L														

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<210> 3470
<211> 328
<212> PRT
<213> Brassica napus
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<400>	3470															
Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5					10					15		
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
65					70					75					80	
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
				85					90					95		
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
145					150					155					160	
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
				165					170					175		

## PhoenixTemp32470.tmp.txt

Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 Phe His Ser Leu Arg Ser Glu Phe Phe Gln Lys Gly Ile Lys Val Thr  
 210 215 220  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr  
 275 280 285  
 Met Pro Phe Leu Gly Phe Trp Leu Met Asp Lys Val Gly Gly Lys Arg  
 290 295 300  
 Val Glu Val Ala Glu Lys Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
 305 310 315 320  
 Phe Gln Lys Lys Thr Lys Thr Asn 325

&lt;210&gt; 3471

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;400&gt; 3471

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Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5				10						15		
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acc	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gcg	aaa	cgt	gaa	gcc	ata	gaa	ggc	aag	gtg	ggt	tgg	atc	144
Lys	Lys	His	Ala	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35				40					45					
aca	ggg	gct	agc	cgt	gga	att	ggg	gaa	ggt	ctt	gct	aaa	cag	ttt	gca	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50				55			60								
agt	tta	ggt	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gaa	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
65				70				75							80	
ggt	cgt	ggt	aag	agt	gag	ctc	aaa	ggt	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
			85					90						95		
aag	ggt	ttg	cct	tta	gat	cta	gct	agc	ggc	gta	gag	ggg	ctc	aaa	ggt	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Val	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
ggt	gta	gag	cgg	gca	gtg	tcg	ctt	ttc	cct	ggg	gct	ggt	ggt	gat	tat	384
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
ttg	gtc	cac	aac	gct	gcc	tat	gag	cgt	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
gcg	agt	gag	gag	aat	ctt	aag	act	aca	ttc	gag	ggt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
145				150					155						160	
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
			165					170						175		
ggt	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180					185					190			
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac	624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	



ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	gtt	act	672
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
ggt	ggt	tgt	ccc	ggc	cca	ata	gag	acc	tca	aat	ggc	aca	gga	aca	tca	720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser	
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgc	gtg	tca	tct	gaa	cga	768
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg	
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala	
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	gga	aaa	cgt	912
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg	
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ttg	ctc	960
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu	
ttc	cag	aag	aag	act	aaa	aca	aac	tga								987
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn									

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<210> 3472
<211> 328
<212> PRT
<213> Brassica napus
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	Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser
				20					25					30		
	Lys	Lys	His	Ala	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile
			35					40					45			
	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala
		50				55						60				
	Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu
	65					70					75					80
	Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val
				85						90					95	
	Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Val	Glu	Gly	Leu	Lys	Gly
				100					105					110		
	Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr
			115					120					125			
	Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp
		130					135					140				
	Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly
	145					150					155					160
	Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly
				165						170					175	
	Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser
				180					185					190		
	Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr
			195				200						205			
	Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr
		210					215					220				
	Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser
	225				230						235					240
	Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg
				245						250					255	
	Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala
				260					265					270		
	Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr
		275						280					285			
	Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg

## PhoenixTemp32470.tmp.txt

290 295 300  
 Val Glu Val Ala Glu Lys Gly Asn Thr Tyr Ser Trp Asn Leu Leu  
 305 310 315 320  
 Phe Gln Lys Lys Thr Lys Thr Asn

<210> 3473  
 <211> 897  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(897)

<400> 3473  
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 1 5 10 15  
 atc acc ggt gga gcc tcc gga atc gga ttc gaa att tcc acc caa ttc 96  
 Ile Thr Gly Gly Ala Ser Gly Ile Gly Phe Glu Ile Ser Thr Gln Phe  
 20 25 30  
 ggc aaa cat gga gcc tcg gtc gcg ctc atg ggc cgc cgc aag caa gtt 144  
 Gly Lys His Gly Ala Ser Val Ala Leu Met Gly Arg Arg Lys Gln Val  
 35 40 45  
 ctt cag tcc gct gtc tcc gtt ctc caa tcc ctc gcc att ccc gcg gtt 192  
 Leu Gln Ser Ala Val Ser Val Leu Gln Ser Leu Ala Ile Pro Ala Val  
 50 55 60  
 ggg ttt gag ggg gat gtg cgg aag caa gag gat gcg gtg agg gtg gtg 240  
 Gly Phe Glu Gly Asp Val Arg Lys Gln Glu Asp Ala Val Arg Val Val  
 65 70 75 80  
 gaa tcg act ttc aag cat ttt gga agg att gat ata ctt gtg aat gct 288  
 Glu Ser Thr Phe Lys His Phe Gly Arg Ile Asp Ile Leu Val Asn Ala  
 85 90 95  
 gca gct ggg aac ttt ctc gtt tct gca gag gat ttg tcc cca aat ggc 336  
 Ala Ala Gly Asn Phe Leu Val Ser Ala Glu Asp Leu Ser Pro Asn Gly  
 100 105 110  
 ttt cgg aca gtt ctg gac att gat tct gtt ggc aca ttc aca atg tgc 384  
 Phe Arg Thr Val Leu Asp Ile Asp Ser Val Gly Thr Phe Thr Met Cys  
 115 120 125  
 cat gaa gca cta aaa tat ctc aaa aag ggg gga gaa gga agg agc aac 432  
 His Glu Ala Leu Lys Tyr Leu Lys Lys Gly Gly Glu Gly Arg Ser Asn  
 130 135 140  
 tct tct agt ggg gga tca ata ata aac att agt gct acc ttg cat tac 480  
 Ser Ser Ser Gly Gly Ser Ile Ile Asn Ile Ser Ala Thr Leu His Tyr  
 145 150 155 160  
 aca gct tct tgg tat caa att cac gtg tct gca gca aag gct gca gtt 528  
 Thr Ala Ser Trp Tyr Gln Ile His Val Ser Ala Ala Lys Ala Ala Val  
 165 170 175  
 gat gcc act acg aga aac ttg gca cta gaa tgg gga aca gac tat gat 576  
 Asp Ala Thr Thr Arg Asn Leu Ala Leu Glu Trp Gly Thr Asp Tyr Asp  
 180 185 190  
 att aga gtc aat ggg att gca cca ggt cca ata agt gac acc cct ggc 624  
 Ile Arg Val Asn Gly Ile Ala Pro Gly Pro Ile Ser Asp Thr Pro Gly  
 195 200 205  
 atg agt aaa ctg gct cct gat gaa ata agt agc aaa gcc aga gat tac 672  
 Met Ser Lys Leu Ala Pro Asp Glu Ile Ser Ser Lys Ala Arg Asp Tyr  
 210 215 220  
 atg ccg ctg tat aaa ctt ggg gag aag tgg gat att gcc atg gct gca 720  
 Met Pro Leu Tyr Lys Leu Gly Glu Lys Trp Asp Ile Ala Met Ala Ala  
 225 230 235 240  
 ctt ttc cta gta tca gat gca gga aaa ttc att aat ggc gac att atg 768  
 Leu Phe Leu Val Ser Asp Ala Gly Lys Phe Ile Asn Gly Asp Ile Met  
 245 250 255  
 att gtt gac gga gga ctt tgg ctg agt cgg cct cgc cat tta gca aaa 816  
 Ile Val Asp Gly Gly Leu Trp Leu Ser Arg Pro Arg His Leu Ala Lys  
 260 265 270  
 gag gct gtg aag cag gta tct cga gta gaa aac aga tcc aga aat 864  
 Glu Ala Val Lys Gln Val Ser Arg Ser Val Glu Asn Arg Ser Arg Asn

275  
gca tct gtc agt gtt cca aaa 280 agc aag ctg tga 285  
Ala Ser Val Ser Val Pro Lys Ser Lys Leu  
290 295

897

<210> 3474  
<211> 298  
<212> PRT  
<213> Glycine max

<400> 3474  
Met Glu Ser Pro Phe Arg Pro Glu Ile Leu Lys Gly Lys Val Ala Leu  
1 5 10 15  
Ile Thr Gly Gly Ala Ser Gly Ile Gly Phe Glu Ile Ser Thr Gln Phe  
20 25 30  
Gly Lys His Gly Ala Ser Val Ala Leu Met Gly Arg Arg Lys Gln Val  
35 40 45  
Leu Gln Ser Ala Val Ser Val Leu Gln Ser Leu Ala Ile Pro Ala Val  
50 55 60  
Gly Phe Glu Gly Asp Val Arg Lys Gln Glu Asp Ala Val Arg Val Val  
65 70 75 80  
Glu Ser Thr Phe Lys His Phe Gly Arg Ile Asp Ile Leu Val Asn Ala  
85 90 95  
Ala Ala Gly Asn Phe Leu Val Ser Ala Glu Asp Leu Ser Pro Asn Gly  
100 105 110  
Phe Arg Thr Val Leu Asp Ile Asp Ser Val Gly Thr Phe Thr Met Cys  
115 120 125  
His Glu Ala Leu Lys Tyr Leu Lys Lys Gly Gly Glu Gly Arg Ser Asn  
130 135 140  
Ser Ser Ser Gly Gly Ser Ile Ile Asn Ile Ser Ala Thr Leu His Tyr  
145 150 155 160  
Thr Ala Ser Trp Tyr Gln Ile His Val Ser Ala Ala Lys Ala Ala Val  
165 170 175  
Asp Ala Thr Thr Arg Asn Leu Ala Leu Glu Trp Gly Thr Asp Tyr Asp  
180 185 190  
Ile Arg Val Asn Gly Ile Ala Pro Gly Pro Ile Ser Asp Thr Pro Gly  
195 200 205  
Met Ser Lys Leu Ala Pro Asp Glu Ile Ser Ser Lys Ala Arg Asp Tyr  
210 215 220  
Met Pro Leu Tyr Lys Leu Gly Glu Lys Trp Asp Ile Ala Met Ala Ala  
225 230 235 240  
Leu Phe Leu Val Ser Asp Ala Gly Lys Phe Ile Asn Gly Asp Ile Met  
245 250 255  
Ile Val Asp Gly Gly Leu Trp Leu Ser Arg Pro Arg His Leu Ala Lys  
260 265 270  
Glu Ala Val Lys Gln Val Ser Arg Ser Val Glu Asn Arg Ser Arg Asn  
275 280 285  
Ala Ser Val Ser Val Pro Lys Ser Lys Leu  
290 295

<210> 3475  
<211> 816  
<212> DNA  
<213> Glycine max

<220>  
<221> CDS  
<222> (1)..(816)

<400> 3475  
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aaa gtg gcg att atc act ggt ggt gca agc ggc ata ggt gag gcc act 96  
Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr 20 25 30  
gca aga ctc ttc tct aag cac gga gca cac ctt gtc ata gct gac att 144  
Ala Arg Leu Phe Ser Lys His Gly 40 Ala His Leu Val 45 Ile Ala Asp Ile 45

## PhoenixTemp32470.tmp.txt

caa	gac	gat	ttg	ggc	ctc	tct	ctt	tgc	aaa	cac	ttg	gaa	tcc	gct	tcc	192
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Leu	Cys	Lys	His	Leu	Glu	Ser	Ala	Ser	
	50					55					60					
tat	gtt	cac	tgc	gac	gtg	aca	aag	gaa	gag	gac	gtt	gaa	aac	tgc	gtg	240
Tyr	Val	His	Cys	Asp	Val	Thr	Lys	Glu	Glu	Asp	Val	Glu	Asn	Cys	Val	
65					70					75					80	
aac	aca	gcg	gtt	tcc	aag	tat	gga	aaa	cta	gac	atc	atg	ctt	aat	aac	288
Asn	Thr	Ala	Val	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Leu	Asn	Asn	
				85					90					95		
gca	ggt	ata	tgt	gat	gag	atc	aaa	aca	agc	ata	cta	gac	aac	aac	aag	336
Ala	Gly	Ile	Cys	Asp	Glu	Ile	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Asn	Lys	
			100					105					110			
tct	gat	ttt	gag	agt	gtc	ata	agc	gtg	aac	ttg	gtt	ggt	cct	ttt	ctg	384
Ser	Asp	Phe	Glu	Ser	Val	Ile	Ser	Val	Asn	Leu	Val	Gly	Pro	Phe	Leu	
		115					120					125				
gga	aca	aag	cac	gct	gca	aga	gtc	atg	atc	cct	gct	aaa	agg	gga	agc	432
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Arg	Gly	Ser	
	130					135					140					
ata	att	aac	aca	gct	agt	gct	gga	acc	tta	ggt	gga	gtg	gct	aca		480
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Thr	Leu	Gly	Gly	Val	Ala	Thr	
145					150					155					160	
cat	gcc	tac	aca	agt	tca	aag	cac	gcg	cta	att	gga	ctg	atg	aaa	aac	528
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Met	Lys	Asn	
				165					170					175		
act	gcg	gtg	gag	ctt	gga	cag	ttt	ggt	att	cgg	gtg	aat	tgt	gtg	tcc	576
Thr	Ala	Val	Glu	Leu	Gly	Gln	Phe	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	
			180					185					190			
cct	tat	gtg	gtt	ccc	aca	ccg	ttg	acc	aag	aaa	cat	gcc	aat	att	gac	624
Pro	Tyr	Val	Val	Pro	Thr	Pro	Leu	Thr	Lys	Lys	His	Ala	Asn	Ile	Asp	
		195					200					205				
gaa	gaa	gga	gtt	cgt	gag	att	tat	tcc	aac	cta	aaa	ggt	gtt	cat	ctt	672
Glu	Glu	Gly	Val	Arg	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Val	His	Leu	
	210					215					220					
gtg	ccg	aac	gat	gtg	gcc	gaa	gct	gct	ctt	tac	ttg	gca	ggt	gat	gag	720
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu	
225					230					235					240	
tct	aag	tat	gtt	agt	ggt	cac	aat	ctc	gtg	tta	gat	ggt	ggg	tac	act	768
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Leu	Asp	Gly	Gly	Tyr	Thr	
				245					250					255		
gat	gta	aat	ata	gga	ttt	tct	gtg	ttt	gat	caa	aat	aaa	ctt	aac	taa	816
Asp	Val	Asn	Ile	Gly	Phe	Ser	Val	Phe	Asp	Gln	Asn	Lys	Leu	Asn		
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 <211> 271  
 <212> PRT  
 <213> Glycine max

<400> 3476  
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 Ala Arg Leu Phe Ser Lys His Gly Ala His Leu Val Ile Ala Asp Ile  
 35 40 45  
 Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val  
 65 70 75 80  
 Asn Thr Ala Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Leu Asn Asn  
 85 90 95  
 Ala Gly Ile Cys Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Asn Lys  
 100 105 110  
 Ser Asp Phe Glu Ser Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser  
 130 135 140  
 Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Leu Gly Gly Val Ala Thr  
 145 150 155 160

## PhoenixTemp32470.tmp.txt

His Ala Tyr Thr Ser Ser Lys His Ala Leu Ile Gly Leu Met Lys Asn  
 165 170 175  
 Thr Ala Val Glu Gly Gln Phe Gly Ile Arg Val Asn Cys Val Ser  
 180 185 190  
 Pro Tyr Val Val Pro Thr Pro Leu Thr Lys Lys His Ala Asn Ile Asp  
 195 200 205  
 Glu Glu Gly Val Arg Glu Ile Tyr Ser Asn Leu Lys Gly Val His Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu  
 225 230 235 240  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Tyr Thr  
 245 250 255  
 Asp Val Asn Ile Gly Phe Ser Val Phe Asp Gln Asn Lys Leu Asn  
 260 265 270

&lt;210&gt; 3477

&lt;211&gt; 795

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(795)

&lt;400&gt; 3477

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Met Ala Glu Thr Lys 5 Leu Ser Phe Lys Asp 10 Lys Arg Trp Ser 15 Leu His	
ggg atg act gct cta gtc aca gga gcc acc cgc ggc ata ggg cat gcc	96
Gly Met Thr 20 Ala Leu Val Thr Gly 25 Ala Thr Arg Gly Ile 30 Gly His Ala	
att gtt gaa gaa ttg gca gaa ttt ggg gca gct gtt cat att tgt gca	144
Ile Val Glu Glu Leu Ala Glu Phe Gly Ala Ala Val His 45 Ile Cys Ala	
cgg aac caa gat gat att gat aaa tgt ttg gaa gag tgg aaa agc aag	192
Arg Asn Gln Asp Asp Ile Asp 55 Lys Cys Leu Glu 60 Trp Lys Ser Lys	
gga ctt act gtg acg agt tca gta tgt gat tta caa tgt tct gac caa	240
Gly Leu Thr Val Thr Ser 70 Ser Val Cys Asp Leu 75 Gln Cys Ser Asp Gln 80	
cgt ata aga tta atg gaa att ctt tcc tcc atc ttc cac gga aag ctc	288
Arg Ile Arg Leu Met 85 Glu Ile Leu Ser Ser 90 Ile Phe His Gly Lys 95 Leu	
aat att tta gtg aac aat gct gcg aca act ata aca aag aaa ata ata	336
Asn Ile Leu Val 100 Asn Asn Ala Ala Thr 105 Thr Ile Thr Lys 110 Lys Ile Ile	
gat tac act gca gaa gat ata tca acc ata atg ggt act aat ttt gag	384
Asp Tyr Thr 115 Ala Glu Asp Ile Ser Thr Ile Met Gly Thr Asn Phe Glu	
tcc gtt tat cat ttg act caa ctt gca cac ccg ctt cta aaa gaa tct	432
Ser Val Tyr His Leu Thr Gln 135 Leu Ala His Pro 140 Leu Lys Glu Ser	
gga caa gga agc ata gta tct att tcg tcc att gca ggt tta aaa gcc	480
Gly Gln Gly Ser Ile Val Ser Ile Ser Ser Ile Ala Gly Leu Lys Ala 160	
ctt ccc gtt ttc tct gtt tat gca gct tcc aaa gga gcc atg aat caa	528
Leu Pro Val Phe 165 Ser Val Tyr Ala Ala Ser Lys 170 Gly Ala Met 175 Asn Gln	
ttc acc aaa aac tta gca ttg gaa tgg gca aag gat aat att cgt gca	576
Phe Thr Lys Asn Leu Ala Leu Glu Trp 185 Ala Lys Asp Asn Ile Arg Ala	
aat gct gtg gca cct gga cct gtt atg aca aaa ctt ttg gac tct atc	624
Asn Ala Val 195 Ala Pro Gly Pro 200 Val Met Thr Lys Leu 205 Asp Ser Ile	
atg aat tct tct gga ggg gat gag tct gtg gat gga ata gtg tct caa	672
Met Asn Ser Ser Gly Gly Asp 215 Glu Ser Val Asp Gly Ile Val Ser Gln	
aca ctt gtt ggt cgc atg gga gaa gct aaa gag ata tca gca tta gtt	720
Thr Leu Val Gly Arg Met Gly Glu Ala Lys Glu Ile Ser Ala Leu Val	

[illegible]

<210>	3478
<211>	264
<212>	PRT
<213>	Glycine max

<400> 1	3478															
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Gly	Met	Thr	Ala	Leu	Val	Thr	Gly	Ala	Thr	Arg	Gly	Ile	Gly	His	Ala	
Ile	Val	Glu	Glu	Leu	Ala	Glu	Phe	Gly	Ala	Ala	Val	His	Ile	Cys	Ala	
Arg	Asn	Gln	Asp	Asp	Ile	Asp	Lys	Cys	Leu	Glu	Glu	Trp	Lys	Ser	Lys	
Gly	Leu	Thr	Val	Thr	Ser	Ser	Val	Cys	Asp	Leu	Gln	Cys	Ser	Asp	Gln	
Arg	Ile	Arg	Leu	Met	Glu	Ile	Leu	Ser	Ser	Ile	Phe	His	Gly	Lys	Leu	
Asn	Ile	Leu	Val	Asn	Asn	Ala	Ala	Thr	Thr	Ile	Thr	Lys	Lys	Ile	Ile	
Asp	Tyr	Thr	Ala	Glu	Asp	Ile	Ser	Thr	Ile	Met	Gly	Thr	Asn	Phe	Glu	
Ser	Val	Tyr	His	Leu	Thr	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Glu	Ser	
Gly	Gln	Gly	Ser	Ile	Val	Ser	Ile	Ser	Ser	Ile	Ala	Gly	Leu	Lys	Ala	
Leu	Pro	Val	Phe	Ser	Val	Tyr	Ala	Ala	Ser	Lys	Gly	Ala	Met	Asn	Gln	
Phe	Thr	Lys	Asn	Leu	Ala	Leu	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Ala	
Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Met	Thr	Lys	Leu	Leu	Asp	Ser	Ile	
Met	Asn	Ser	Ser	Gly	Gly	Asp	Glu	Ser	Val	Asp	Gly	Ile	Val	Ser	Gln	
Thr	Leu	Val	Gly	Arg	Met	Gly	Glu	Ala	Lys	Glu	Ile	Ser	Ala	Leu	Val	
Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	
Cys	Ala	Asp	Gly	Gly	Phe	Thr	Thr									

<210> 3479  
<211> 852  
<212> DNA  
<213> Glycine max

<220>  
<221> CDS  
<222> (1)..(852)

[illegible]

## PhoenixTemp32470.tmp.txt

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50						55					60						
gac	aac	aac	att	tcc	tac	gtt	cac	tgc	gac	gtc	acc	aac	gat	aac	gac	240	
Asp	Asn	Asn	Ile	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Asp	Asn	Asp		
65					70					75					80		
gtc	caa	aac	gcc	gtc	aac	gcc	gcc	gtc	tgc	cgt	cac	ggc	aag	ctc	gac	288	
Val	Gln	Asn	Ala	Val	Asn	Ala	Ala	Val	Ser	Arg	His	Gly	Lys	Leu	Asp		
				85					90					95			
atc	ctg	ttc	agt	aac	gcc	ggc	act	gtt	ggc	cgt	gtg	agc	cct	tcc	atc	336	
Ile	Leu	Phe	Ser	Asn	Ala	Gly	Thr	Val	Gly	Arg	Val	Ser	Pro	Ser	Ile		
			100					105					110				
acg	gcg	ttt	gac	aac	gct	gac	ttg	aag	agg	gtt	ttc	gag	gtg	aat	gtc	384	
Thr	Ala	Phe	Asp	Asn	Ala	Asp	Leu	Lys	Arg	Val	Phe	Glu	Val	Asn	Val		
			115				120					125					
ttc	ggt	gct	ttc	tac	gcc	gcc	aaa	cac	gcg	gct	aag	gta	atg	att	cct	432	
Phe	Gly	Ala	Phe	Tyr	Ala	Ala	Lys	His	Ala	Ala	Lys	Val	Met	Ile	Pro		
			130			135					140						
gaa	aag	aga	ggg	agc	att	gtg	ctc	acc	tca	agt	gtt	gct	tcg	gtg	act	480	
Glu	Lys	Arg	Gly	Ser	Ile	Val	Leu	Thr	Ser	Ser	Val	Ala	Ser	Val	Thr		
145					150					155					160		
cac	gcg	gtt	tcg	ccg	cat	gca	tac	act	gcg	tcg	aag	cac	gcg	gtg	gtg	528	
His	Ala	Val	Ser	Pro	His	Ala	Tyr	Thr	Ala	Ser	Lys	His	Ala	Val	Val		
				165					170					175			
ggt	ctg	atg	aag	aac	ctg	tgc	gtg	gaa	ctg	ggg	aat	cat	gga	atc	aga	576	
Gly	Leu	Met	Lys	Asn	Leu	Cys	Val	Glu	Leu	Gly	Asn	His	Gly	Ile	Arg		
			180					185					190				
gtt	aac	tgt	gtt	tca	ccg	tac	gcg	gtg	gcc	act	cct	ctg	atg	aca	cgt	624	
Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Ala	Thr	Pro	Leu	Met	Thr	Arg		
		195				200						205					
gga	acc	agg	atg	aag	aag	gag	atg	gta	gag	aaa	gtg	tat	tct	gag	gcg	672	
Gly	Thr	Arg	Met	Lys	Lys	Glu	Met	Val	Glu	Lys	Val	Tyr	Ser	Glu	Ala		
			210			215					220						
ggg	aac	ctg	aag	gga	gtg	gtt	ttg	aag	gaa	gag	gat	ttg	gca	gaa	gca	720	
Gly	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	Glu	Glu	Asp	Leu	Ala	Glu	Ala		
225				230						235				240			
gct	ctg	ttt	ctg	gct	agt	gat	gag	tca	aag	tac	gtg	agt	ggg	gtt	aac	768	
Ala	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	Val	Asn		
				245					250					255			
cta	gtt	gtg	gat	gga	ggt	tac	agt	gtc	acc	aat	gtt	tct	gtt	aaa	gaa	816	
Leu	Val	Val	Asp	Gly	Gly	Tyr	Ser	Val	Thr	Asn	Val	Ser	Val	Lys	Glu		
			260					265					270				
gct	gtg	aga	aag	ttt	tct	ggt	aag	ccc	aag	ttg	taa					852	
Ala	Val	Arg	Lys	Phe	Ser	Gly	Lys	Pro	Lys	Leu							
		275					280										

<210> 3480  
 <211> 283  
 <212> PRT  
 <213> Glycine max

<400> 3480  
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 20 Thr Ala Arg Leu Phe Leu Cys His Gly Ala Lys Val Ile Ile Ala Asp  
 35 Ile Gln Asp Asn Leu Gly His Ser Leu Cys Gln Asn Leu Asn Ser Ser  
 50 Asp Asn Asn Ile Ser Tyr Val His Cys Asp Val Thr Asn Asp Asn Asp  
 65 Val Gln Asn Ala Val Asn Ala Ala Val Ser Arg His Gly Lys Leu Asp  
 80 Ile Leu Phe Ser Asn Ala Gly Thr Val Gly Arg Val Ser Pro Ser Ile  
 100 Thr Ala Phe Asp Asn Ala Asp Leu Lys Arg Val Phe Glu Val Asn Val  
 115 Phe Gly Ala Phe Tyr Ala Ala Lys His Ala Ala Lys Val Met Ile Pro  
 130

## PhoenixTemp32470.tmp.txt

Glu Lys Arg Gly Ser Ile Val Leu Thr Ser Ser Val Ala Ser Val Thr  
 145 150 155 160  
 His Ala Val Ser Pro His Ala Tyr Thr Ala Ser Lys His Ala Val Val  
 165 170 175  
 Gly Leu Met Lys Asn Leu Cys Val Glu Leu Gly Asn His Gly Ile Arg  
 180 185 190  
 Val Asn Cys Val Ser Pro Tyr Ala Val Ala Thr Pro Leu Met Thr Arg  
 195 200 205  
 Gly Thr Arg Met Lys Lys Glu Met Val Glu Lys Val Tyr Ser Glu Ala  
 210 215 220  
 Gly Asn Leu Lys Gly Val Val Leu Lys Glu Glu Asp Leu Ala Glu Ala  
 225 230 235 240  
 Ala Leu Phe Leu Ala Ser Asp Glu Ser Lys Tyr Val Ser Gly Val Asn  
 245 250 255  
 Leu Val Val Asp Gly Gly Tyr Ser Val Thr Asn Val Ser Val Lys Glu  
 260 265 270  
 Ala Val Arg Lys Phe Ser Gly Lys Pro Lys Leu  
 275 280

<210> 3481  
 <211> 810  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(810)

<400> 3481  
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 Met Ala Ser Val Ser Leu Val Ser Ala Thr Gly Arg Arg Leu Glu Gly  
 1 5 10 15  
 aaa gtg gct att atc act ggt ggt gca agc ggc ata ggt gag gcc act 96  
 Lys Val Ala Ile Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr  
 20 25 30  
 gca aga ctc ttc tct aag cac gga gca cac gtt gtc ata gct gat att 144  
 Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile  
 35 40 45  
 caa gac gat ttg ggt ctc tct att tgc aaa cac ttg gaa tcc gct tcc 192  
 Gln Asp Asp Leu Gly Leu Ser Ile Cys Lys His Leu Glu Ser Ala Ser  
 50 55 60  
 tat gtt cac tgc gac gtg aca aac gaa acc gac gtt gaa aac tgc gtg 240  
 Tyr Val His Cys Asp Val Thr Asn Glu Thr Asp Val Glu Asn Cys Val  
 65 70 75 80  
 aac acc acc gtt tcc aaa cac ggc aaa cta gat atc atg ttc aac aac 288  
 Asn Thr Thr Val Ser Lys His Gly Lys Leu Asp Ile Met Phe Asn Asn  
 85 90 95  
 gct ggc ata acc ggt gtg aac aaa acc agc atc ctc gac aac aca aag 336  
 Ala Gly Ile Thr Gly Val Asn Lys Thr Ser Ile Leu Asp Asn Thr Lys  
 100 105 110  
 tca gag ttt gag gaa gtg atc aac gtt aac cta gtt ggt gtc ttt ctg 384  
 Ser Glu Phe Glu Glu Val Ile Asn Val Asn Leu Val Gly Val Phe Leu  
 115 120 125  
 gga aca aag cac gcc gca agg gta atg atc cct gct aga aga gga agc 432  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Arg Arg Gly Ser  
 130 135 140  
 ata gtt aac act gca agt gtt tgt gga agc ata ggt ggt gta gca tca 480  
 Ile Val Asn Thr Ala Ser Val Cys Gly Ser Ile Gly Gly Val Ala Ser  
 145 150 155 160  
 cat gca tac aca agt tcc aaa cac gcc gtg gtg ggg ctc aca aag aac 528  
 His Ala Tyr Thr Ser Ser Lys His Ala Val Val Gly Leu Thr Lys Asn  
 165 170 175  
 act gcg gtg gag ctt gga gca ttt ggt gtt agg gtt aac tgc gtg tca 576  
 Thr Ala Val Glu Leu Gly Ala Phe Gly Val Arg Val Asn Cys Val Ser  
 180 185 190  
 ccc tac gtg gtt gcc acg ccc ttg gct aag aat ttt ttt aag ctt gat 624  
 Pro Tyr Val Val Ala Thr Pro Leu Ala Lys Asn Phe Phe Lys Leu Asp  
 195 200 205  
 gat gac gga gtt cag ggg att tat tca aac ctt aag ggt act gat ctt 672



## PhoenixTemp32470.tmp.txt

Asp	Asp	Gly	Val	Gln	Gly	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Thr	Asp	Leu	
210	210					215					220					
gtg	cct	aat	gat	gta	gcc	gaa	gct	gct	ttg	tac	ctg	gca	agt	gat	gag	720
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	
225					230					235					240	
tcc	aag	tat	gtt	agt	ggg	cac	aat	ctt	gtg	gtt	gat	gga	ggc	ttc	act	768
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
gtg	gtc	aat	agt	ggg	ttt	tgt	gtc	ctt	ggg	caa	tct	tcg	tga			810
Val	Val	Asn	Ser	Gly	Phe	Cys	Val	Leu	Gly	Gln	Ser	Ser				
			260					265								

&lt;210&gt; 3482

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3482

Met	Ala	Ser	Val	Ser	Leu	Val	Ser	Ala	Thr	Gly	Arg	Arg	Leu	Glu	Gly	
1				5					10					15		
Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	
			20					25					30			
Ala	Arg	Leu	Phe	Ser	Lys	His	Gly	Ala	His	Val	Val	Ile	Ala	Asp	Ile	
		35					40					45				
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Ile	Cys	Lys	His	Leu	Glu	Ser	Ala	Ser	
	50					55					60					
Tyr	Val	His	Cys	Asp	Val	Thr	Asn	Glu	Thr	Asp	Val	Glu	Asn	Cys	Val	
65				70						75					80	
Asn	Thr	Thr	Val	Ser	Lys	His	Gly	Lys	Leu	Asp	Ile	Met	Phe	Asn	Asn	
				85					90					95		
Ala	Gly	Ile	Thr	Gly	Val	Asn	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Thr	Lys	
			100					105					110			
Ser	Glu	Phe	Glu	Glu	Val	Ile	Asn	Val	Asn	Leu	Val	Gly	Val	Phe	Leu	
		115					120					125				
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Arg	Arg	Gly	Ser	
		130				135					140					
Ile	Val	Asn	Thr	Ala	Ser	Val	Cys	Gly	Ser	Ile	Gly	Gly	Val	Ala	Ser	
145				150						155					160	
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Val	Val	Gly	Leu	Thr	Lys	Asn	
				165					170					175		
Thr	Ala	Val	Glu	Leu	Gly	Ala	Phe	Gly	Val	Arg	Val	Asn	Cys	Val	Ser	
			180					185					190			
Pro	Tyr	Val	Val	Ala	Thr	Pro	Leu	Ala	Lys	Asn	Phe	Phe	Lys	Leu	Asp	
		195					200					205				
Asp	Asp	Gly	Val	Gln	Gly	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Thr	Asp	Leu	
	210					215					220					
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Glu	
225					230					235					240	
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Thr	
				245					250					255		
Val	Val	Asn	Ser	Gly	Phe	Cys	Val	Leu	Gly	Gln	Ser	Ser				
			260					265								

&lt;210&gt; 3483

&lt;211&gt; 810

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 3483

atg	gct	agt	gtt	tct	tcg	gtt	tta	gct	cca	ttt	aga	agg	ctt	gat	ggg	48
Met	Ala	Ser	Val	Ser	Ser	Val	Leu	Ala	Pro	Phe	Arg	Arg	Leu	Asp	Gly	
1				5					10					15		
aag	gtg	gcg	att	atc	act	ggg	ggg	gcg	agt	ggg	cta	ggg	gca	gcc	act	96
Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Leu	Gly	Ala	Ala	Thr	
			20					25					30			

## PhoenixTemp32470.tmp.txt

gca	aga	ctc	ttc	tct	aag	cat	gga	gca	tat	gta	gtc	ata	gct	gat	att	144
Ala	Arg	Leu	Phe	Ser	Lys	His	Gly	Ala	Tyr	Val	Val	Ile	Ala	Asp	Ile	
		35					40					45				
caa	gac	gac	ttg	ggt	ctc	tct	gtt	gcc	aaa	gag	tta	gaa	tct	gct	tcc	192
Gln	Asp	Asp	Leu	Gly	Leu	Ser	Val	Ala	Lys	Glu	Leu	Glu	Ser	Ala	Ser	
	50					55					60					
tat	gtc	cat	tgc	gat	gtg	aca	aag	gaa	gag	gac	gtt	gaa	aac	tgc	gtg	240
Tyr	Val	His	Cys	Asp	Val	Thr	Lys	Glu	Glu	Asp	Val	Glu	Asn	Cys	Val	
	65				70					75					80	
aac	aca	acg	gtt	tcc	aag	tat	ggc	aaa	tta	gat	atc	atg	ttt	aac	aat	288
Asn	Thr	Thr	Val	Ser	Lys	Tyr	Gly	Lys	Leu	Asp	Ile	Met	Phe	Asn	Asn	
				85					90					95		
gca	ggt	gta	tct	gat	gag	atc	aaa	aca	agc	att	ctt	gac	aac	aac	aag	336
Ala	Gly	Val	Ser	Asp	Glu	Ile	Lys	Thr	Ser	Ile	Leu	Asp	Asn	Asn	Lys	
			100					105						110		
tct	gat	ttt	gag	aga	gtg	ata	agt	gtt	aac	ttg	gtt	ggt	cct	ttt	ctg	384
Ser	Asp	Phe	Glu	Arg	Val	Ile	Ser	Val	Asn	Leu	Val	Gly	Pro	Phe	Leu	
		115					120					125				
gga	aca	aag	cat	gct	gca	agg	gtc	atg	att	cct	gct	aaa	aag	gga	tgc	432
Gly	Thr	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ala	Lys	Lys	Gly	Cys	
	130					135					140					
ata	atc	aac	aca	gct	agt	gtt	gct	gga	tgc	ata	ggt	gga	ggt	gct	aca	480
Ile	Ile	Asn	Thr	Ala	Ser	Val	Ala	Gly	Cys	Ile	Gly	Gly	Gly	Ala	Thr	
	145				150					155					160	
cat	gcc	tac	aca	agt	tca	aag	cac	gca	cta	att	gga	ctg	aca	aaa	aac	528
His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Ala	Leu	Ile	Gly	Leu	Thr	Lys	Asn	
				165					170					175		
act	gcg	gtg	gag	ctt	gga	caa	cat	ggt	att	agg	gta	aat	tgt	ttg	tca	576
Thr	Ala	Val	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	Asn	Cys	Leu	Ser	
			180					185					190			
cct	tat	ctt	gtt	gtc	aca	ccg	tta	agt	aag	aaa	tat	ttc	aat	att	gat	624
Pro	Tyr	Leu	Val	Val	Thr	Pro	Leu	Ser	Lys	Lys	Tyr	Phe	Asn	Ile	Asp	
		195					200					205				
gaa	gac	aaa	att	cgt	gag	ata	tat	tca	aac	cta	aaa	ggt	gct	cat	ctt	672
Glu	Asp	Lys	Ile	Arg	Glu	Ile	Tyr	Ser	Asn	Leu	Lys	Gly	Ala	His	Leu	
	210					215					220					
gtg	cct	aac	gat	gtg	gcc	gaa	gct	gct	ctt	tac	ttg	gca	ggt	gat	gag	720
Val	Pro	Asn	Asp	Val	Ala	Glu	Ala	Ala	Leu	Tyr	Leu	Ala	Gly	Asp	Glu	
	225				230					235					240	
tcc	aag	tat	gtt	agt	ggt	cac	aat	ctt	gtg	ata	gat	gga	ggg	tac	act	768
Ser	Lys	Tyr	Val	Ser	Gly	His	Asn	Leu	Val	Ile	Asp	Gly	Gly	Tyr	Thr	
				245					250					255		
gat	gta	aat	gca	gga	ttt	acc	gtg	ttt	ggg	cag	tct	cag	taa			810
Asp	Val	Asn	Ala	Gly	Phe	Thr	Val	Phe	Gly	Gln	Ser	Gln				
			260					265								

<210> 3484  
 <211> 269  
 <212> PRT  
 <213> Glycine max

<400> 3484  
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 Ala Arg Leu Phe Ser Lys His Gly Ala Tyr Val Val Ile Ala Asp Ile  
 35 40 45  
 Gln Asp Asp Leu Gly Leu Ser Val Ala Lys Glu Leu Glu Ser Ala Ser  
 50 55 60  
 Tyr Val His Cys Asp Val Thr Lys Glu Glu Asp Val Glu Asn Cys Val  
 65 70 75 80  
 Asn Thr Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile Met Phe Asn Asn  
 85 90 95  
 Ala Gly Val Ser Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Asn Lys  
 100 105 110  
 Ser Asp Phe Glu Arg Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu  
 115 120 125  
 Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Lys Gly Cys

## PhoenixTemp32470.tmp.txt

130 135 140  
 Ile Ile Asn Thr Ala Ser Val Ala Gly Cys Ile Gly Gly Ala Thr  
 145 150 155 160  
 His Ala Tyr Thr Ser Ser Lys His Ala Leu Ile Gly Leu Thr Lys Asn  
 165 170 175  
 Thr Ala Val Glu Leu Gly Gln His Gly Ile Arg Val Asn Cys Leu Ser  
 180 185 190  
 Pro Tyr Leu Val Val Thr Pro Leu Ser Lys Lys Tyr Phe Asn Ile Asp  
 195 200 205  
 Glu Asp Lys Ile Arg Glu Ile Tyr Ser Asn Leu Lys Gly Ala His Leu  
 210 215 220  
 Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu  
 225 230 235 240  
 Ser Lys Tyr Val Ser Gly His Asn Leu Val Ile Asp Gly Gly Tyr Thr  
 245 250 255  
 Asp Val Asn Ala Gly Phe Thr Val Phe Gly Gln Ser Gln  
 260 265

&lt;210&gt; 3485

&lt;211&gt; 915

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(915)

&lt;400&gt; 3485

atg gca tca acc atg ccg ttc tcc gct ggc ctc gtt tct ctt ggg tct	48
Met Ala Ser Thr Met Pro Phe Ser Ala Gly Leu Val Ser Leu Gly Ser	
1 5 10 15	
ccg ccg ccg cag cgc cac agc tgc agg ttc cag cga tat cat cga ccg	96
Pro Pro Pro Gln Arg His Ser Cys Arg Phe Gln Arg Tyr His Arg Pro	
20 25 30	
ggc act ctc att tca tca gct ata agg cat ggt cag gtt aaa gct atg	144
Gly Thr Leu Ile Ser Ser Ala Ile Arg His Gly Gln Val Lys Ala Met	
35 40 45	
gct gga gtg agc atg gat ggc ttg gca cag cct caa gcc cca gtt gca	192
Ala Gly Val Ser Met Asp Gly Leu Ala Gln Pro Gln Ala Pro Val Ala	
50 55 60	
gtg gtt acc gga gca tgc agg ggg att ggg cga gcg ata gct gtg gct	240
Val Val Thr Gly Ala Ser Arg Gly Ile Gly Arg Ala Ile Ala Val Ala	
65 70 75 80	
ctt ggc aaa gca ggg tgc aag gta gtt gtg aac tat gcc aag tca ggc	288
Leu Gly Lys Ala Gly Cys Lys Val Val Val Asn Tyr Ala Lys Ser Gly	
85 90 95	
atg gaa gct gaa gaa gtg tgc aga gag atc atg gag tcc ggt ggc act	336
Met Glu Ala Glu Glu Val Cys Arg Glu Ile Met Glu Ser Gly Gly Thr	
100 105 110	
gcc atc tcc ttt tca gcc gat gtc tcc att gaa gcc gag gtt gaa acc	384
Ala Ile Ser Phe Ser Ala Asp Val Ser Ile Glu Ala Glu Val Glu Thr	
115 120 125	
atg atg aga gcg gta att gat act tgg gga acg ctg gac gtg atg gtg	432
Met Met Arg Ala Val Ile Asp Thr Trp Gly Thr Leu Asp Val Met Val	
130 135 140	
aac aat gca ggg atc acg cga gat gct ctg cta atg cgg atg aag aag	480
Asn Asn Ala Gly Ile Thr Arg Asp Ala Leu Met Arg Met Lys Lys	
145 150 155 160	
gcg cag tgg cag gaa gta gtg gac gta aac ctt acc ggt gtt tac ctc	528
Ala Gln Trp Gln Glu Val Val Asp Val Asn Leu Thr Gly Val Tyr Leu	
165 170 175	
tgc gcc cag gct gcg gcg gca gtg atg atg aag agg aag aag gga aga	576
Cys Ala Gln Ala Ala Ala Val Met Met Lys Arg Lys Lys Gly Arg	
180 185 190	
atc atc aac atc gcc tca gtt gcc ggg atg atc ggc aac att ggc cag	624
Ile Ile Asn Ile Ala Ser Val Ala Gly Met Ile Gly Asn Ile Gly Gln	
195 200 205	
gcc aac tac tgc gcc gcc aag gcc ggg gtg att gga ttg acc aag gcc	672
Ala Asn Tyr Cys Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Ala	

## PhoenixTemp32470.tmp.txt

210	atg gcc cgg gaa tac ggt	215	ggc aga aac ata aat	220	gtg aat gca gtt tcc	720
Met Ala Arg Glu Tyr Gly	Gly Arg Asn Ile Asn Val Asn Ala Val Ser					
225	ccg ggc tgg gtc gcg tct	230	gac atg acc gca aaa cta	235	ggc gac gac atc	768
Pro Gly Trp Val Ala Ser	Asp Met Thr Ala Lys Leu Gly Asp Asp Ile					
245	gaa cga aag gcg ctc gag	250	aca ata cca cta gga	255	cga ttc ggc aag cca	816
Glu Arg Lys Ala Leu Glu	Thr Ile Pro Leu Gly Arg Phe Gly Lys Pro					
260	gag gag att gct gga ctg	265	gtg gag ttc ttg gct gtt	270	cat ccg gct gca	864
Glu Glu Ile Ala Gly Leu	Val Glu Phe Leu Ala Val His Pro Ala Ala					
275	agc tac atg acc ggg cag	280	gtg ctc cca gtt gat	285	ggc ctg tcc att	912
Ser Tyr Met Thr Gly Gln	Val Leu Pro Val Asp Gly Gly Leu Ser Ile					
290	tga	295		300		915

<210> 3486  
 <211> 304  
 <212> PRT  
 <213> Triticum aestivum

<400> 3486  
 Met Ala Ser Thr Met Pro Phe Ser Ala Gly Leu Val Ser Leu Gly Ser  
 1 5 10 15  
 Pro Pro Pro Gln Arg His Ser Cys Arg Phe Gln Arg Tyr His Arg Pro  
 20 25 30  
 Gly Thr Leu Ile Ser Ser Ala Ile Arg His Gly Gln Val Lys Ala Met  
 35 40 45  
 Ala Gly Val Ser Met Asp Gly Leu Ala Gln Pro Gln Ala Pro Val Ala  
 50 55 60  
 Val Val Thr Gly Ala Ser Arg Gly Ile Gly Arg Ala Ile Ala Val Ala  
 65 70 75 80  
 Leu Gly Lys Ala Gly Cys Lys Val Val Val Asn Tyr Ala Lys Ser Gly  
 85 90 95  
 Met Glu Ala Glu Glu Val Cys Arg Glu Ile Met Glu Ser Gly Gly Thr  
 100 105 110  
 Ala Ile Ser Phe Ser Ala Asp Val Ser Ile Glu Ala Glu Val Glu Thr  
 115 120 125  
 Met Met Arg Ala Val Ile Asp Thr Trp Gly Thr Leu Asp Val Met Val  
 130 135 140  
 Asn Asn Ala Gly Ile Thr Arg Asp Ala Leu Leu Met Arg Met Lys Lys  
 145 150 155 160  
 Ala Gln Trp Gln Glu Val Val Asp Val Asn Leu Thr Gly Val Tyr Leu  
 165 170 175  
 Cys Ala Gln Ala Ala Ala Ala Val Met Met Lys Arg Lys Lys Gly Arg  
 180 185 190  
 Ile Ile Asn Ile Ala Ser Val Ala Gly Met Ile Gly Asn Ile Gly Gln  
 195 200 205  
 Ala Asn Tyr Cys Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Ala  
 210 215 220  
 Met Ala Arg Glu Tyr Gly Gly Arg Asn Ile Asn Val Asn Ala Val Ser  
 225 230 235 240  
 Pro Gly Trp Val Ala Ser Asp Met Thr Ala Lys Leu Gly Asp Asp Ile  
 245 250 255  
 Glu Arg Lys Ala Leu Glu Thr Ile Pro Leu Gly Arg Phe Gly Lys Pro  
 260 265 270  
 Glu Glu Ile Ala Gly Leu Val Glu Phe Leu Ala Val His Pro Ala Ala  
 275 280 285  
 Ser Tyr Met Thr Gly Gln Val Leu Pro Val Asp Gly Gly Leu Ser Ile  
 290 295 300

<210> 3487  
 <211> 804  
 <212> DNA  
 <213> Glycine max

## PhoenixTemp32470.tmp.txt

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(804)

&lt;400&gt; 3487

atg gct gag gca agc att ggc agc aaa agc agc aga tgg tct tta cag	48
Met Ala Glu Ala Ser Ile Gly Ser Lys Ser Ser Arg Trp Ser Leu Gln	
1 5 10 15	
gga atg aca gct ctc gtc acc ggt gga tcc aaa gga atc gga tat gct	96
Gly Met Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Tyr Ala	
20 25 30	
atc gtg gag gag ttg gca cag ctt gga gcc act gtg cac act tgc gct	144
Ile Val Glu Glu Leu Ala Gln Leu Gly Ala Thr Val His Thr Cys Ala	
35 40 45	
cgg aac gaa gct gaa ctc aat gaa tcc tta aat gaa tgg aac aca aaa	192
Arg Asn Glu Ala Glu Leu Asn Glu Ser Leu Asn Glu Trp Asn Thr Lys	
50 55 60	
gga tac aga gta act ggt tcc gtc tgt gac gtg gcg tct cgt gca gaa	240
Gly Tyr Arg Val Thr Gly Ser Val Cys Asp Val Ala Ser Arg Ala Glu	
65 70 75 80	
aga caa gac ctc att gct aga ctc tcc aat gag ttt aat ggc aaa ctc	288
Arg Gln Asp Leu Ile Ala Arg Leu Ser Asn Glu Phe Asn Gly Lys Leu	
85 90 95	
aat atc ctt gta aac aac gtg gga aca aac gta ccg aaa cat acc ctt	336
Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Pro Lys His Thr Leu	
100 105 110	
gat gtt acg gag gaa gac ttc tca ttt ctg ata aat acg aat ctt gaa	384
Asp Val Thr Glu Glu Asp Phe Ser Phe Leu Ile Asn Thr Asn Leu Glu	
115 120 125	
tct gct tac cac cta agc cag ctt gca cat cct ctc ctg aaa gct tca	432
Ser Ala Tyr His Leu Ser Gln Leu Ala His Pro Leu Leu Lys Ala Ser	
130 135 140	
gag gct gca aac atc att ttt ata tcc tcc att gct ggt gtg cta tca	480
Glu Ala Ala Asn Ile Ile Phe Ile Ser Ser Ile Ala Gly Val Leu Ser	
145 150 155 160	
ata gga gta gga tcc act tat ggt gca aca aaa gga gca atg aac caa	528
Ile Gly Val Gly Ser Thr Tyr Gly Ala Thr Lys Gly Ala Met Asn Gln	
165 170 175	
ctg act aaa aat ttg gca tgt gag tgg gcc aaa gac aat ata agg act	576
Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg Thr	
180 185 190	
aat tgc gtt gca cca ggg cca atc aaa acc cct ctc ggt gac aag cat	624
Asn Cys Val Ala Pro Gly Pro Ile Lys Thr Pro Leu Gly Asp Lys His	
195 200 205	
ttt aaa aat gaa aaa ctt ctt aat gct ttc att tcg caa acc ccc ctt	672
Phe Lys Asn Glu Lys Leu Leu Asn Ala Phe Ile Ser Gln Thr Pro Leu	
210 215 220	
gga cgg att gga gaa gca gag gaa gtg tct tca ttg gtg gca ttc ctc	720
Gly Arg Ile Gly Glu Ala Glu Glu Val Ser Ser Leu Val Ala Phe Leu	
225 230 235 240	
tgc tta cct gca gcc tct tac ata aca gga cag acc att tgt gtt gat	768
Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Ile Cys Val Asp	
245 250 255	
ggt gga tta aca gtg aat ggt ctc tat ata aat tag	804
Gly Gly Leu Thr Val Asn Gly Leu Tyr Ile Asn	
260 265	

&lt;210&gt; 3488

&lt;211&gt; 267

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3488

Met Ala Glu Ala Ser Ile Gly Ser Lys Ser Ser Arg Trp Ser Leu Gln
1 5 10 15
Gly Met Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Tyr Ala
20 25 30
Ile Val Glu Glu Leu Ala Gln Leu Gly Ala Thr Val His Thr Cys Ala

## PhoenixTemp32470.tmp.txt

35 40 45  
 Arg Asn Glu Ala Glu Leu Asn Glu Ser Leu Asn Glu Trp Asn Thr Lys  
 50 55 60  
 Gly Tyr Arg Val Thr Gly Ser Val Cys Asp Val Ala Ser Arg Ala Glu  
 65 70 75 80  
 Arg Gln Asp Leu Ile Ala Arg Leu Ser Asn Glu Phe Asn Gly Lys Leu  
 85 90 95  
 Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Pro Lys His Thr Leu  
 100 105 110  
 Asp Val Thr Glu Glu Asp Phe Ser Phe Leu Ile Asn Thr Asn Leu Glu  
 115 120 125  
 Ser Ala Tyr His Leu Ser Gln Leu Ala His Pro Leu Leu Lys Ala Ser  
 130 135 140  
 Glu Ala Ala Asn Ile Ile Phe Ile Ser Ser Ile Ala Gly Val Leu Ser  
 145 150 155 160  
 Ile Gly Val Gly Ser Thr Tyr Gly Ala Thr Lys Gly Ala Met Asn Gln  
 165 170 175  
 Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg Thr  
 180 185 190  
 Asn Cys Val Ala Pro Gly Pro Ile Lys Thr Pro Leu Gly Asp Lys His  
 195 200 205  
 Phe Lys Asn Glu Lys Leu Leu Asn Ala Phe Ile Ser Gln Thr Pro Leu  
 210 215 220  
 Gly Arg Ile Gly Glu Ala Glu Glu Val Ser Ser Leu Val Ala Phe Leu  
 225 230 235 240  
 Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Thr Ile Cys Val Asp  
 245 250 255  
 Gly Gly Leu Thr Val Asn Gly Leu Tyr Ile Asn  
 260 265

<210> 3489  
 <211> 951  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(951)

<400> 3489  
 atg gcc acc gcc gcc gcc acc gca gca gca gta gtc tcc tcc ccg gct 48  
 Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Val Val Ser Ser Pro Ala  
 1 5 10 15  
 gcc cca cgc gcc ggg gcc gcc gcc gcc tcc cgc cgg ggg ttc gtc acg 96  
 Ala Pro Arg Ala Gly Ala Ala Ala Ala Ser Arg Arg Gly Phe Val Thr  
 20 25 30  
 ttt ggt gga ggc gcc gcc cgc ttc tct ccc acg ctg cgg tcc ggc cgt 144  
 Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser Gly Arg  
 35 40 45  
 ggg ttc tct ggt gtg caa acc cat gtt gcc gct gtt gaa caa gca att 192  
 Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln Ala Ile  
 50 55 60  
 gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt aca ggt 240  
 Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val Thr Gly  
 65 70 75 80  
 gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga aaa gca 288  
 Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly Lys Ala  
 85 90 95  
 gga tgc aag gtt ctg gta aac tat gcc cgg tcc tcg aaa gag gct gaa 336  
 Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu Ala Glu  
 100 105 110  
 gag gtc tcc aaa gag att gaa gca tct ggt ggt gag gct atc acc ttc 384  
 Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile Thr Phe  
 115 120 125  
 gga gga gat gtt tca aaa gaa gct gat gta gag tct atg atg aaa gca 432  
 Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met Lys Ala  
 130 135 140  
 gct cta gat aaa tgg gga aca ata gat gtg ctg gta aat aat gca ggg 480  
 Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly

## PhoenixTemp32470.tmp.txt

145	att	aca	cga	gac	aca	150	ttg	atg	agg	atg	155	aaa	tct	cag	tgg	160		
Ile	Thr	Arg	Asp	Thr	165	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	Trp	caa		528
	gac	gta	att	gat	ctg	aat	ctt	act	ggg	gtc	ttc	ctt	tgt	aca	cag	gct		576
	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Gln	Ala		
	gca	aca	aaa	gta	atg	atg	aaa	aag	aga	aag	gga	aaa	att	atc	aac	att		624
	Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Arg	Lys	Gly	Lys	Ile	Ile	Asn	Ile		
	gca	tct	gta	gtt	ggg	ctt	act	ggc	aat	gtt	ggc	caa	gct	aat	tat	agc		672
	Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Val	Gly	Gln	Ala	Asn	Tyr	Ser		
	gca	gcc	aag	gct	gga	gtg	att	ggg	ttc	aca	aaa	aca	gtt	gcc	agg	gag		720
	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	Arg	Glu		
	tat	gca	agc	aga	aat	atc	aat	gtg	aat	gct	att	gca	cca	ggg	ttc	att		768
	Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	Phe	Ile		
	gca	tct	gat	atg	act	gcc	gaa	ctt	gga	gaa	gag	ctt	gag	aag	aaa	atc		816
	Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	Lys	Ile		
	ttg	tca	acc	att	ccg	tta	ggg	aga	tat	ggc	caa	cca	gag	gaa	gtt	gca		864
	Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu	Glu	Val	Ala		
	ggg	ttg	gtc	gag	ttc	ctg	gcc	ctt	aac	ccc	gca	gct	agc	tat	atg	act		912
	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	Ala	Ala	Ser	Tyr	Met	Thr		
	gga	cag	gtg	ctt	aca	att	gac	gga	ggg	atg	gta	atg	taa					951
	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met						

<210> 3490  
 <211> 316  
 <212> PRT  
 <213> Zea mays

<400> 3490  
 Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Val Val Ser Ser Pro Ala  
 1 5 10 15  
 Ala Pro Arg Ala Gly Ala Ala Ala Ser Arg Arg Gly Phe Val Thr  
 20 25 30  
 Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser Gly Arg  
 35 40 45  
 Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln Ala Ile  
 50 55 60  
 Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Thr Gly  
 65 70 75 80  
 Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly Lys Ala  
 85 90 95  
 Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu Ala Glu  
 100 105 110  
 Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile Thr Phe  
 115 120 125  
 Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met Lys Ala  
 130 135 140  
 Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly  
 145 150 155 160  
 Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln Trp Gln  
 165 170 175  
 Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Gln Ala  
 180 185 190  
 Ala Thr Lys Val Met Met Lys Lys Arg Lys Gly Lys Ile Ile Asn Ile  
 195 200 205  
 Ala ser Val Val Gly Leu Thr Gly Asn Val Gly Gln Ala Asn Tyr Ser  
 210 215 220  
 Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala Arg Glu  
 225 230 235 240  
 Tyr Ala Ser Arg Asn Ile Asn Val Asn Ala Ile Ala Pro Gly Phe Ile

## PhoenixTemp32470.tmp.txt

Ala Ser Asp Met<sup>245</sup> Thr Ala Glu Leu Gly<sup>250</sup> Glu Glu Leu Glu Lys<sup>255</sup> Ile  
 Leu Ser Thr Ile<sup>260</sup> Pro Leu Gly Arg<sup>265</sup> Tyr Gly Gln Pro Glu Glu<sup>270</sup> Val Ala  
 Gly Leu Val Glu Phe Leu Ala<sup>280</sup> Leu Asn Pro Ala Ala<sup>285</sup> Ser Tyr Met Thr  
 Gly<sup>290</sup> Gln Val Leu Thr Ile<sup>295</sup> Asp Gly Gly Met Val<sup>300</sup> Met  
 305 310 315

&lt;210&gt; 3491

&lt;211&gt; 969

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(969)

&lt;400&gt; 3491

atg gct gct agt acc gga tcc acc gcc gtc gta ttc aaa tcc gcc ggc	48
Met Ala Ala Ser Thr <sup>5</sup> Gly Ser Thr Ala Val <sup>10</sup> Val Phe Lys Ser Ala Gly <sup>15</sup>	
ttc gcc acc tcc tcc ggc gaa agg agc att aac cag ttc cgc cac tgg	96
Phe Ala Thr <sup>20</sup> Ser Gly Glu Arg Ser <sup>25</sup> Ile Asn Gln Phe Arg His Trp <sup>30</sup>	
tct ccg gtt ccc gcc agc ctc cac tcc tcc cgc gct ggc ctc cgc tgt	144
Ser Pro Val <sup>35</sup> Pro Ala Ser Leu His <sup>40</sup> Ser Ser Arg Ala Gly <sup>45</sup> Leu Arg Cys	
aga tcg aga agc tcg gta tcc tct tcc ggt gtg aga gct cag gtt gct	192
Arg Ser Arg Ser Ser Val Ser <sup>55</sup> Ser Ser Gly Val <sup>60</sup> Arg Ala Gln Val Ala	
gca gtt gaa cca gtc agc agt gag tca gtt aag aag gtg gaa tct cca	240
Ala Val Glu Pro Val Ser <sup>70</sup> Ser Glu Ser Val Lys <sup>75</sup> Lys Val Glu Ser Pro <sup>80</sup>	
gta gtt att gta act gga gct tcc aga gga atc ggg aaa gcg att gca	288
Val Val Ile Val Thr <sup>85</sup> Gly Ala Ser Arg Gly <sup>90</sup> Ile Gly Lys Ala Ile Ala <sup>95</sup>	
ttg tcg ttg ggg aaa gca ggt tgc aag gtt ctg gtt aac tat gca agg	336
Leu Ser Leu Gly <sup>100</sup> Lys Ala Gly Cys Lys <sup>105</sup> Val Leu Val Asn Tyr Ala Arg <sup>110</sup>	
tca tct aag gag gct gag gaa gtc tcc aaa gag att gaa gct tcc ggt	384
Ser Ser Lys <sup>115</sup> Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly <sup>125</sup>	
ggt caa gct gta acc ttt ggt ggt gat gtc tct aaa gaa gag gat gtg	432
Gly Gln Ala Val Thr Phe <sup>135</sup> Gly Asp Val Ser Lys <sup>140</sup> Glu Glu Asp Val	
gag gcc atg atg aaa act gct att gat gct ttt gga aca gtt gac ata	480
Glu Ala Met Met Lys Thr <sup>150</sup> Ala Ile Asp Ala Phe <sup>155</sup> Gly Thr Val Asp Ile <sup>160</sup>	
ctg ata aac aat gca ggg atc aca agg gac act ttg ttg atg cgg atg	528
Leu Ile Asn Asn Ala <sup>165</sup> Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met <sup>175</sup>	
aag aaa cag cag tgg cag gat gtt att gac ctc aat ctt act ggt gtc	576
Lys Lys Gln Gln Trp Gln Asp Val Ile <sup>185</sup> Asp Leu Asn Leu Thr Gly Val <sup>190</sup>	
ttc ctt tgt aca cag gct gca gcc aag atc atg atg aag aaa aga aag	624
Phe Leu Cys Thr <sup>195</sup> Gln Ala Ala Ala Lys Ile Met Met Lys Lys Arg Lys <sup>205</sup>	
gga agg att atc aat atc gct tca gtt gtt ggt ttg gtt ggt aac gtt	672
Gly Arg Ile Ile Asn Ile Ala <sup>215</sup> Ser Val Val Gly Leu Val Gly Asn Val <sup>220</sup>	
ggg caa gct aac tac agt gct gca aag gca gga gtc att gga ttc aca	720
Gly Gln Ala Asn Tyr Ser <sup>230</sup> Ala Ala Lys Ala Gly Val Ile Gly Phe Thr <sup>240</sup>	
aag agt gtc gca aag gaa tat tca agc aga aat atc aac gtc aat gct	768
Lys Ser Val Ala Lys <sup>245</sup> Glu Tyr Ser Ser Arg Asn Ile Asn Val Asn Ala <sup>255</sup>	
gtt gct cct gga ttc att gca tct gac atg act gcc aag ctt ggg gat	816



PhoenixTemp32470.tmp.txt

Val	Ala	Pro	Gly 260	Phe	Ile	Ala	Ser	Asp 265	Met	Thr	Ala	Lys	Leu 270	Gly	Asp		
gac	att	gaa	aag	aaa	atc	ttg	gag	acg	att	cct	tta	ggg	cgg	tac	ggt	864	
Asp	Ile	Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly		
		275					280					285					
cag	ccg	gaa	gag	gtg	gcc	gga	ttg	gtg	gaa	ttc	ctc	gct	ctg	aac	cca	912	
Gln	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro		
		290				295					300						
gct	gct	ggc	tac	atg	acc	ggg	cag	gtg	ctt	acc	atc	gac	gga	gga	atg	960	
Ala	Ala	Gly	Tyr	Met	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met		
305					310					315					320		
gtg	atg	taa														969	
Val	Met																

<210> 3492  
 <211> 322  
 <212> PRT  
 <213> Linum usitatissimum

<400> 3492

Met	Ala	Ala	Ser	Thr	Gly	Ser	Thr	Ala	Val	Val	Phe	Lys	Ser	Ala	Gly		
1				5					10					15			
Phe	Ala	Thr	Ser	Gly	Glu	Arg	Ser	Ile	Asn	Gln	Phe	Arg	His	Trp			
			20				25					30					
Ser	Pro	Val	Pro	Ala	Ser	Leu	His	Ser	Ser	Arg	Ala	Gly	Leu	Arg	Cys		
		35				40						45					
Arg	Ser	Arg	Ser	Ser	Val	Ser	Ser	Ser	Gly	Val	Arg	Ala	Gln	Val	Ala		
	50				55					60							
Ala	Val	Glu	Pro	Val	Ser	Glu	Ser	Val	Lys	Lys	Val	Glu	Ser	Pro			
65				70					75					80			
Val	Val	Ile	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala		
			85						90					95			
Leu	Ser	Leu	Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg		
			100				105					110					
Ser	Ser	Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Ala	Ser	Gly		
		115				120						125					
Gly	Gln	Ala	Val	Thr	Phe	Gly	Gly	Asp	Val	Ser	Lys	Glu	Glu	Asp	Val		
	130				135					140							
Glu	Ala	Met	Met	Lys	Thr	Ala	Ile	Asp	Ala	Phe	Gly	Thr	Val	Asp	Ile		
145				150						155					160		
Leu	Ile	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met		
			165						170					175			
Lys	Lys	Gln	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val		
		180					185						190				
Phe	Leu	Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys		
		195				200						205					
Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Gly	Asn	Val		
	210				215					220							
Gly	Gln	Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr		
225				230					235					240			
Lys	Ser	Val	Ala	Lys	Glu	Tyr	Ser	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala		
			245						250					255			
Val	Ala	Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Asp		
			260					265					270				
Asp	Ile	Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly		
		275				280						285					
Gln	Pro	Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro		
	290				295						300						
Ala	Ala	Gly	Tyr	Met	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met		
305					310				315						320		
Val	Met																

<210> 3493  
 <211> 834  
 <212> DNA  
 <213> Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(834)

&lt;400&gt; 3493

atg	agt	gcc	act	aac	gcc	gct	agt	tcc	gtc	att	aga	agg	ctg	gaa	ggc	48
Met	Ser	Ala	Thr	Asn	Ala	Ala	Ser	Ser	Val	Ile	Arg	Arg	Leu	Glu	Gly	
1				5					10					15		
aaa	gtg	gcg	ctg	atc	acc	ggc	gga	gct	agc	ggg	ata	gga	gaa	gcc	acg	96
Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	
			20					25					30			
gcc	aag	ctg	ttc	gtc	caa	cac	ggc	gcc	aag	gtc	gtc	atc	gcc	gat	gtc	144
Ala	Lys	Leu	Phe	Val	Gln	His	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	Val	
			35				40					45				
aaa	gac	caa	ctc	ggc	ggg	tca	ctc	act	gag	aag	ctg	ggg	ggc	cca	cac	192
Lys	Asp	Gln	Leu	Gly	Gly	Ser	Leu	Thr	Glu	Lys	Leu	Gly	Gly	Pro	His	
	50					55					60					
gcg	gcc	acc	tac	gtc	cac	tgc	gac	gtc	aca	cat	cct	gcc	cac	gtc	agc	240
Ala	Ala	Thr	Tyr	Val	His	Cys	Asp	Val	Thr	His	Pro	Ala	His	Val	Ser	
	65				70					75					80	
gat	gcg	gtt	gac	gcg	gca	gtg	tcc	acg	tat	ggc	cag	ctg	gac	atc	atg	288
Asp	Ala	Val	Asp	Ala	Ala	Val	Ser	Thr	Tyr	Gly	Gln	Leu	Asp	Ile	Met	
				85					90					95		
cac	aac	aat	gcc	ggc	atc	gcc	ggc	aac	ttt	gat	cct	cgc	atc	ctc	aac	336
His	Asn	Asn	Ala	Gly	Ile	Ala	Gly	Asn	Phe	Asp	Pro	Arg	Ile	Leu	Asn	
			100					105					110			
tcc	gac	gac	gat	aat	ttt	aag	cga	gtc	atc	gac	att	aac	ctc	ttc	ggc	384
Ser	Asp	Asp	Asp	Asn	Phe	Lys	Arg	Val	Ile	Asp	Ile	Asn	Leu	Phe	Gly	
			115				120					125				
gcc	ttc	cta	ggt	gcc	aag	cat	gcc	gcc	agg	gtg	atg	gta	ccg	gcg	ggg	432
Ala	Phe	Leu	Gly	Ala	Lys	His	Ala	Ala	Arg	Val	Met	Val	Pro	Ala	Gly	
	130					135					140					
aga	ggc	ggc	tgc	atc	ctg	ttc	aca	gcc	agt	gca	gtc	tcg	gtg	act	agc	480
Arg	Gly	Gly	Cys	Ile	Leu	Phe	Thr	Ala	Ser	Ala	Val	Ser	Val	Thr	Ser	
	145				150					155					160	
ggc	aac	att	tcg	tac	gca	tac	aag	gtg	tcg	aag	aac	ggg	gta	gtg	ggg	528
Gly	Asn	Ile	Ser	Tyr	Ala	Tyr	Lys	Val	Ser	Lys	Asn	Gly	Val	Val	Gly	
				165					170				175			
ctg	gcc	aac	aat	ctg	tgc	gcg	gag	ctg	gga	cag	cat	ggg	att	cga	gtc	576
Leu	Ala	Asn	Asn	Leu	Cys	Ala	Glu	Leu	Gly	Gln	His	Gly	Ile	Arg	Val	
			180					185					190			
aac	gcg	ata	tcg	cct	ttc	gcg	ctg	gcg	acg	ccg	tta	ctg	agg	gcg	gcg	624
Asn	Ala	Ile	Ser	Pro	Phe	Ala	Leu	Ala	Thr	Pro	Leu	Leu	Arg	Ala	Ala	
		195					200					205				
ctg	ggc	ggg	atg	gga	aag	gag	gag	ggt	gac	gcg	ttc	gtc	gag	aag	ata	672
Leu	Gly	Gly	Met	Gly	Lys	Glu	Glu	Gly	Asp	Ala	Phe	Val	Glu	Lys	Ile	
	210					215					220					
ggg	aac	ttg	aaa	ggg	act	gtt	ctg	aaa	gag	ggg	gat	att	gca	gcg	gcg	720
Gly	Asn	Leu	Lys	Gly	Thr	Val	Leu	Lys	Glu	Gly	Asp	Ile	Ala	Ala	Ala	
	225				230					235					240	
gca	ttg	tac	ctg	gct	agc	gac	gat	gct	aag	tac	gtg	agc	ggg	atg	aat	768
Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Asp	Ala	Lys	Tyr	Val	Ser	Gly	Met	Asn	
				245					250					255		
ttg	gtc	gtg	gat	gga	ggt	cac	agg	cag	aac	aac	ccc	ata	ttt	cct	gct	816
Leu	Val	Val	Asp	Gly	Gly	His	Arg	Gln	Asn	Asn	Pro	Ile	Phe	Pro	Ala	
			260					265					270			
tcg	acg	ttc	act	aag	tag											834
Ser	Thr	Phe	Thr	Lys												
			275													

&lt;210&gt; 3494

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 3494

Met	Ser	Ala	Thr	Asn	Ala	Ala	Ser	Ser	Val	Ile	Arg	Arg	Leu	Glu	Gly	
1				5					10					15		
Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	Thr	

## PhoenixTemp32470.tmp.txt

20 25 30  
 Ala Lys Leu Phe Val Gln His Gly Ala Lys Val Val Ile Ala Asp Val  
 35 40 45  
 Lys Asp Gln Leu Gly Gly Ser Leu Thr Glu Lys Leu Gly Gly Pro His  
 50 55 60  
 Ala Ala Thr Tyr Val His Cys Asp Val Thr His Pro Ala His Val Ser  
 65 70 75 80  
 Asp Ala Val Asp Ala Val Ser Thr Tyr Gly Gln Leu Asp Ile Met  
 85 90 95  
 His Asn Asn Ala Gly Ile Ala Gly Asn Phe Asp Pro Arg Ile Leu Asn  
 100 105 110  
 Ser Asp Asp Asp Asn Phe Lys Arg Val Ile Asp Ile Asn Leu Phe Gly  
 115 120 125  
 Ala Phe Leu Gly Ala Lys His Ala Ala Arg Val Met Val Pro Ala Gly  
 130 135 140  
 Arg Gly Gly Cys Ile Leu Phe Thr Ala Ser Ala Val Ser Val Thr Ser  
 145 150 155 160  
 Gly Asn Ile Ser Tyr Ala Tyr Lys Val Ser Lys Asn Gly Val Val Gly  
 165 170 175  
 Leu Ala Asn Asn Leu Cys Ala Glu Leu Gly Gln His Gly Ile Arg Val  
 180 185 190  
 Asn Ala Ile Ser Pro Phe Ala Leu Ala Thr Pro Leu Leu Arg Ala Ala  
 195 200 205  
 Leu Gly Gly Met Gly Lys Glu Glu Gly Asp Ala Phe Val Glu Lys Ile  
 210 215 220  
 Gly Asn Leu Lys Gly Thr Val Leu Lys Glu Gly Asp Ile Ala Ala Ala  
 225 230 235 240  
 Ala Leu Tyr Leu Ala Ser Asp Asp Ala Lys Tyr Val Ser Gly Met Asn  
 245 250 255  
 Leu Val Val Asp Gly Gly His Arg Gln Asn Asn Pro Ile Phe Pro Ala  
 260 265 270  
 Ser Thr Phe Thr Lys  
 275

&lt;210&gt; 3495

&lt;211&gt; 870

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(870)

&lt;400&gt; 3495

atg gct agc gag gtg tca gcc cag ctg gag cca cgg tgc aac tta cca	48
Met Ala Ser Glu Val Ser Ala Gln Leu Glu Pro Arg Cys Asn Leu Pro	
1 5 10 15	
gac aaa gta gtc ctt gta acc ggt gct tct tca ggt ata ggc cga gag	96
Asp Lys Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg Glu	
20 25 30	
ttc tgc ctt gac cta gcc aaa gct ggg tgc aag att gtg gcg gct gct	144
Phe Cys Leu Asp Leu Ala Lys Ala Gly Cys Lys Ile Val Ala Ala Ala	
35 40 45	
agg cgt att gac cgc cta caa tct ttg tgc aaa gag atc aat atg att	192
Arg Arg Ile Asp Arg Leu Gln Ser Leu Cys Lys Glu Ile Asn Met Ile	
50 55 60	
cag ttt ccg acc agt gct tct tca tct gcc gga gag cta agt ggc aca	240
Gln Phe Pro Thr Ser Ala Ser Ser Ala Gly Glu Leu Ser Gly Thr	
65 70 75 80	
cgt gct gtg gcc gtg gag ctg gat gtg tcc gca gac ggg gtt gca att	288
Arg Ala Val Ala Val Glu Leu Asp Val Ser Ala Asp Gly Val Ala Ile	
85 90 95	
gat aag gct gtg cag agc tct tgg gaa gca ttt gga agg ata gat gtg	336
Asp Lys Ala Val Gln Ser Ser Trp Glu Ala Phe Gly Arg Ile Asp Val	
100 105 110	
ttg atc aac aat gct ggc att agt ggt aac tcg aag aac tcg tta gat	384
Leu Ile Asn Asn Ala Gly Ile Ser Gly Asn Ser Lys Asn Ser Leu Asp	
115 120 125	
ttg tct gaa gag gaa tgg aat cat ttg atc aag aca aat ttg aaa gga	432

## PhoenixTemp32470.tmp.txt

Leu	Ser	Glu	Glu	Glu	Trp	Asn	His	Leu	Ile	Lys	Thr	Asn	Leu	Lys	Gly		
130	130					135					140						
act	tgg	tgt	gtt	tcc	aag	tca	ggt	ggg	ata	cgg	atg	cgt	gat	gca	aag	480	
Thr	Trp	Leu	Val	Ser	Lys	Ser	Val	Gly	Ile	Arg	Met	Arg	Asp	Ala	Lys		
145					150					155					160		
ctt	gga	ggt	tcc	ata	atc	aat	atc	tca	tcg	atc	ttt	ggt	ctt	aat	cgt	528	
Leu	Gly	Gly	Ser	Ile	Ile	Asn	Ile	Ser	Ser	Ile	Phe	Gly	Leu	Asn	Arg		
				165					170					175			
ggc	tat	gca	ccc	gga	gtt	gtc	ggt	tat	gct	tct	tcg	aag	acc	ggt	gta	576	
Gly	Tyr	Ala	Pro	Gly	Val	Val	Gly	Tyr	Ala	Ser	Ser	Lys	Thr	Gly	Val		
			180					185					190				
aat	tcc	atg	acg	aag	gtg	atg	gct	ttg	gag	ttg	ggg	gtt	tac	aag	atc	624	
Asn	Ser	Met	Thr	Lys	Val	Met	Ala	Leu	Glu	Leu	Gly	Val	Tyr	Lys	Ile		
			195				200					205					
aga	gtt	aac	tct	ata	tca	cct	gga	ctg	ttc	aaa	tcc	gag	atc	aca	gaa	672	
Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu		
						215				220							
agt	ctc	atg	aat	aaa	ccc	tgg	atg	act	acc	gtt	gct	gag	aag	acg	gtc	720	
Ser	Leu	Met	Asn	Lys	Pro	Trp	Met	Thr	Thr	Val	Ala	Glu	Lys	Thr	Val		
225					230					235					240		
cca	cta	cga	aca	ttt	gga	act	gta	gat	cca	gca	ttg	aca	tca	ctc	gtt	768	
Pro	Leu	Arg	Thr	Phe	Gly	Thr	Val	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Val		
				245					250					255			
cga	tac	ctc	atc	cat	gat	tca	acc	cag	tat	gtg	acg	ggc	aat	att	ttc	816	
Arg	Tyr	Leu	Ile	His	Asp	Ser	Thr	Gln	Tyr	Val	Thr	Gly	Asn	Ile	Phe		
			260					265					270				
att	gta	gat	gcc	gga	aca	acc	tta	tca	ggt	gtc	cct	att	ttc	tca	tca	864	
Ile	Val	Asp	Ala	Gly	Thr	Thr	Leu	Ser	Gly	Val	Pro	Ile	Phe	Ser	Ser		
		275					280					285					
ctc	tga															870	
Leu																	

&lt;210&gt; 3496

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Linum usitatissimum

&lt;400&gt; 3496

Met	Ala	Ser	Glu	Val	Ser	Ala	Gln	Leu	Glu	Pro	Arg	Cys	Asn	Leu	Pro		
1				5					10					15			
Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Ile	Gly	Arg	Glu		
			20					25					30				
Phe	Cys	Leu	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Lys	Ile	Val	Ala	Ala	Ala		
		35					40					45					
Arg	Arg	Ile	Asp	Arg	Leu	Gln	Ser	Leu	Cys	Lys	Glu	Ile	Asn	Met	Ile		
		50				55					60						
Gln	Phe	Pro	Thr	Ser	Ala	Ser	Ser	Ser	Ala	Gly	Glu	Leu	Ser	Gly	Thr		
65					70					75					80		
Arg	Ala	Val	Ala	Val	Glu	Leu	Asp	Val	Ser	Ala	Asp	Gly	Val	Ala	Ile		
				85					90					95			
Asp	Lys	Ala	Val	Gln	Ser	Ser	Trp	Glu	Ala	Phe	Gly	Arg	Ile	Asp	Val		
			100					105					110				
Leu	Ile	Asn	Asn	Ala	Gly	Ile	Ser	Gly	Asn	Ser	Lys	Asn	Ser	Leu	Asp		
		115					120					125					
Leu	Ser	Glu	Glu	Glu	Trp	Asn	His	Leu	Ile	Lys	Thr	Asn	Leu	Lys	Gly		
						135					140						
Thr	Trp	Leu	Val	Ser	Lys	Ser	Val	Gly	Ile	Arg	Met	Arg	Asp	Ala	Lys		
145					150					155					160		
Leu	Gly	Gly	Ser	Ile	Ile	Asn	Ile	Ser	Ser	Ile	Phe	Gly	Leu	Asn	Arg		
				165					170					175			
Gly	Tyr	Ala	Pro	Gly	Val	Val	Gly	Tyr	Ala	Ser	Ser	Lys	Thr	Gly	Val		
			180					185					190				
Asn	Ser	Met	Thr	Lys	Val	Met	Ala	Leu	Glu	Leu	Gly	Val	Tyr	Lys	Ile		
		195					200					205					
Arg	Val	Asn	Ser	Ile	Ser	Pro	Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu		
		210				215					220						
Ser	Leu	Met	Asn	Lys	Pro	Trp	Met	Thr	Thr	Val	Ala	Glu	Lys	Thr	Val		
225					230					235					240		

## PhoenixTemp32470.tmp.txt

Pro Leu Arg Thr Phe Gly Thr Val Asp Pro Ala Leu Thr Ser Leu Val  
 245 250  
 Arg Tyr Leu Ile His Asp Ser Thr Gln Tyr Val Thr Gly Asn Ile Phe  
 260 270  
 Ile Val Asp Ala Gly Thr Thr Leu Ser Gly Val Pro Ile Phe Ser Ser  
 275 280 285  
 Leu

&lt;210&gt; 3497

&lt;211&gt; 843

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(843)

&lt;400&gt; 3497

atg gct agc gag gtg tca gcc cag ctg gag cca tgg tat aac ttg gaa	48
Met Ala Ser Glu Val Ser Ala Gln Leu Glu Pro Trp Tyr Asn Leu Glu	
1 5 10 15	
gac aaa gtg gtc ttt gta act ggt gct tct tca ggt ttg ggc aga gat	96
Asp Lys Val Val Phe Val Thr Gly Ala Ser Ser Gly Leu Gly Arg Asp	
20 25 30	
ttc tgc ctc gac ctg gcg aaa gct ggg tgc aag att gtg gct gct gct	144
Phe Cys Leu Asp Leu Ala Lys Ala Gly Cys Lys Ile Val Ala Ala Ala	
35 40 45	
agg cgt att gac cgc cta caa tct ttg tgc gat gaa atc aat ctg act	192
Arg Arg Ile Asp Arg Leu Gln Ser Leu Cys Asp Glu Ile Asn Leu Thr	
50 55 60	
gct gga gag cca agt ggt tta cgt gct gcc gct gtg gag ctg gat gtg	240
Ala Gly Glu Pro Ser Gly Leu Arg Ala Ala Val Glu Leu Asp Val	
65 70 75 80	
tcg gca gac ggt gct tcg atc gac aag gct gta cag acc gct tgg gaa	288
Ser Ala Asp Gly Ala Ser Ile Asp Lys Ala Val Gln Thr Ala Trp Glu	
85 90 95	
gcc ttt gga aag ata gat gcg ttg atc aac aat gct gga gtt aga ggt	336
Ala Phe Gly Lys Ile Asp Ala Leu Ile Asn Asn Ala Gly Val Arg Gly	
100 105 110	
agt gtg aag acc cca ttg gat ttt tct gaa gaa gag tgg aat cac acg	384
Ser Val Lys Thr Pro Leu Asp Phe Ser Glu Glu Glu Trp Asn His Thr	
115 120 125	
atc aag acg aat ctg aca gga gtt tgg ttg gtt tcc aag tca gtt ggg	432
Ile Lys Thr Asn Leu Thr Gly Val Trp Leu Val Ser Lys Ser Val Gly	
130 135 140	
att cgg atg cgt gat gcg aag ctg gga ggt tcc ata atc aat att tca	480
Ile Arg Met Arg Asp Ala Lys Leu Gly Gly Ser Ile Ile Asn Ile Ser	
145 150 155 160	
tcg ata gct ggt ctg aat cgt ggt cta tta cct gga gct gtt ggc tat	528
Ser Ile Ala Gly Leu Asn Arg Gly Leu Leu Pro Gly Ala Val Gly Tyr	
165 170 175	
gct tct tcg aag act gga gta aac gcc atg aca aag gtg atg gca ctg	576
Ala Ser Ser Lys Thr Gly Val Asn Ala Met Thr Lys Val Met Ala Leu	
180 185 190	
gag ttg ggg gtt cac aag atc aga gtt aac tct ata tca cct gga ctt	624
Glu Leu Gly Val His Lys Ile Arg Val Asn Ser Ile Ser Pro Gly Leu	
195 200 205	
ttc aaa tct gag atc acg caa ggt ctt atg cag aaa gac tgg ctc agt	672
Phe Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Asp Trp Leu Ser	
210 215 220	
aac gtt gct gag aag acg gtt cct cta cta aca tat gga act gca gac	720
Asn Val Ala Glu Lys Thr Val Pro Leu Leu Thr Tyr Gly Thr Ala Asp	
225 230 235 240	
cca gca ttg aca tca atc gcc cga tac ctc atc cac gat tca tcc cag	768
Pro Ala Leu Thr Ser Ile Ala Arg Tyr Leu Ile His Asp Ser Ser Gln	
245 250 255	
tat gtg acg ggt aat atc ttc att gtg gac gct gga gcc acc tta cct	816
Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ala Gly Ala Thr Leu Pro	

260  
 ggt gtc cct att ttc tca tcg ctc tga  
 Gly Val Pro Ile Phe Ser Ser Leu  
 275 280

843

<210> 3498  
 <211> 280  
 <212> PRT  
 <213> Linum usitatissimum

<400> 3498  
 Met Ala Ser Glu Val Ser Ala Gln Leu Glu Pro Trp Tyr Asn Leu Glu  
 1 5 10 15  
 Asp Lys Val Val Phe Val Thr Gly Ala Ser Ser Gly Leu Gly Arg Asp  
 20 25 30  
 Phe Cys Leu Asp Leu Ala Lys Ala Gly Cys Lys Ile Val Ala Ala Ala  
 35 40 45  
 Arg Arg Ile Asp Arg Leu Gln Ser Leu Cys Asp Glu Ile Asn Leu Thr  
 50 55 60  
 Ala Gly Glu Pro Ser Gly Leu Arg Ala Ala Val Glu Leu Asp Val  
 65 70 75 80  
 Ser Ala Asp Gly Ala Ser Ile Asp Lys Ala Val Gln Thr Ala Trp Glu  
 85 90 95  
 Ala Phe Gly Lys Ile Asp Ala Leu Ile Asn Asn Ala Gly Val Arg Gly  
 100 105 110  
 Ser Val Lys Thr Pro Leu Asp Phe Ser Glu Glu Glu Trp Asn His Thr  
 115 120 125  
 Ile Lys Thr Asn Leu Thr Gly Val Trp Leu Val Ser Lys Ser Val Gly  
 130 135 140  
 Ile Arg Met Arg Asp Ala Lys Leu Gly Gly Ser Ile Ile Asn Ile Ser  
 145 150 155 160  
 Ser Ile Ala Gly Leu Asn Arg Gly Leu Leu Pro Gly Ala Val Gly Tyr  
 165 170 175  
 Ala Ser Ser Lys Thr Gly Val Asn Ala Met Thr Lys Val Met Ala Leu  
 180 185 190  
 Glu Leu Gly Val His Lys Ile Arg Val Asn Ser Ile Ser Pro Gly Leu  
 195 200 205  
 Phe Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Asp Trp Leu Ser  
 210 215 220  
 Asn Val Ala Glu Lys Thr Val Pro Leu Leu Thr Tyr Gly Thr Ala Asp  
 225 230 235 240  
 Pro Ala Leu Thr Ser Ile Ala Arg Tyr Leu Ile His Asp Ser Ser Gln  
 245 250 255  
 Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ala Gly Ala Thr Leu Pro  
 260 265 270  
 Gly Val Pro Ile Phe Ser Ser Leu  
 275 280

<210> 3499  
 <211> 819  
 <212> DNA  
 <213> Hordeum vulgare

<220>  
 <221> CDS  
 <222> (1)..(819)

<400> 3499  
 atg gct gcg gcg gag acg tcg gga tcg agc cag ccg ggc gct cca gga  
 Met Ala Ala Ala Glu Thr Ser Gly Ser Ser Gln Pro Gly Ala Pro Gly  
 1 5 10 15  
 cgg tgg tct ctt cac ggc aaa acg gct ctc gtc acc gga ggc acc cgc  
 Arg Trp Ser Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg  
 20 25 30  
 ggg atc ggg cgt gcg gtg gtg gag gag ctt gcc gcg ctg ggg gcg gcc  
 Gly Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala  
 35 40 45  
 gtg cac acc tgc tcc cgg aag gag gcg gag ctt ggc gag cgc ctc aag  
 Val His Thr Cys Ser Arg Lys Glu Ala Glu Leu Gly Glu Arg Leu Lys  
 48 96 144 192

## PhoenixTemp32470.tmp.txt

50	55	60		
gag tgg gag gcc agg ggc ttc cgc gtc aca acc tcc gtc tgc gac ctc				240
Glu Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu				
65	70	75	80	
tcc gtc cgg gag cag cgg gag cgc ctg att ggc gag gtc gcc gaa cgc				288
Ser Val Arg Glu Gln Arg Glu Arg Leu Ile Gly Glu Val Ala Glu Arg				
85	90	95		
ttc gga ggc aag ctc aac atc ctc gta aat aat gtg ggg aca aac ata				336
Phe Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile				
100	105	110		
agg aaa cca act act gaa ttt tct gct gaa gat tac tct ttt ttg atg				384
Arg Lys Pro Thr Thr Glu Phe Ser Ala Glu Asp Tyr Ser Phe Leu Met				
115	120	125		
gcc act aac ctt gaa tct gca tat cat ctg tgc caa ctt gca cat cct				432
Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro				
130	135	140		
ctt cta aaa gca tct ggt ttg ggc agc att gtt ttt gta tca tct gtc				480
Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Val Ser Ser Val				
145	150	155	160	
tgt gga tta gta gcc gta ttt agc ggc tct ata tat gct atg acc aaa				528
Cys Gly Leu Val Ala Val Phe Ser Gly Ser Ile Tyr Ala Met Thr Lys				
165	170	175		
ggt gcc atc aac caa tta acc aag aac cta gca tgt gaa tgg gcg aaa				576
Gly Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys				
180	185	190		
gat ggc ata aga aca aac tct gtt gct cca tgg tac ata aca acg tca				624
Asp Gly Ile Arg Thr Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser				
195	200	205		
ctt aca gaa gga ctt ttg gct aac aag gaa ttt gag gcc tcc gtt gtg				672
Leu Thr Glu Gly Leu Leu Ala Asn Lys Glu Phe Glu Ala Ser Val Val				
210	215	220		
agt cga aca cca ctt ggg cgt gtc gga gaa cca gga gaa gta tca tcg				720
Ser Arg Thr Pro Leu Gly Arg Val Gly Glu Pro Gly Glu Val Ser Ser				
225	230	235	240	
ctg gtt gct ttt ctt tgc atg cct ggt gcc act tac ata aca ggc cag				768
Leu Val Ala Phe Leu Cys Met Pro Gly Ala Thr Tyr Ile Thr Gly Gln				
245	250	255		
acg atc tca gtg gat gga ggt atg act gtc aat ggg atg tat cca gca				816
Thr Ile Ser Val Asp Gly Gly Met Thr Val Asn Gly Met Tyr Pro Ala				
260	265	270		
taa				819

<210> 3500  
 <211> 272  
 <212> PRT  
 <213> Hordeum vulgare

<400> 3500  
 Met Ala Ala Ala Glu Thr Ser Gly Ser Ser Gln Pro Gly Ala Pro Gly  
 1 5 10 15  
 Arg Trp Ser Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg  
 20 25 30  
 Gly Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala  
 35 40 45  
 Val His Thr Cys Ser Arg Lys Glu Ala Glu Leu Gly Glu Arg Leu Lys  
 50 55 60  
 Glu Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu  
 65 70 75 80  
 Ser Val Arg Glu Gln Arg Glu Arg Leu Ile Gly Glu Val Ala Glu Arg  
 85 90 95  
 Phe Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile  
 100 105 110  
 Arg Lys Pro Thr Thr Glu Phe Ser Ala Glu Asp Tyr Ser Phe Leu Met  
 115 120 125  
 Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro  
 130 135 140  
 Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Val Ser Ser Val

## PhoenixTemp32470.tmp.txt

145 Cys Gly Leu Val Ala 150 Val Phe Ser Gly Ser 155 Ile Tyr Ala Met Thr 160 Lys  
 Gly Ala Ile Asn 165 Gln Leu Thr Lys Asn 170 Leu Ala Cys Glu Trp 175 Ala Lys  
 Asp Gly Ile 180 Arg Thr Asn Ser Val 185 Ala Pro Trp Tyr Ile 190 Thr Thr Ser  
 Leu Thr 195 Glu Gly Leu Leu Ala 200 Asn Lys Glu Phe Glu 205 Ala Ser Val Val  
 Ser Arg Thr Pro Leu Gly 210 Arg Val Gly Glu Pro Gly Glu Val Ser Ser  
 225 Leu Val Ala Phe Leu 230 Cys Met Pro Gly Ala 235 Thr Tyr Ile Thr Gly 240 Gln  
 Thr Ile Ser Val 245 Asp Gly Gly Met Thr 250 Val Asn Gly Met Tyr 255 Pro Ala  
 260 270

&lt;210&gt; 3501

&lt;211&gt; 984

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(984)

&lt;400&gt; 3501

atg	ctc	ctc	ctc	ctc	gct	ttc	ctc	gcc	gcc	gcc	gcc	gcc	gcc	gcc	ttc	48
Met	Leu	Leu	Leu	Leu	Ala	Phe	Leu	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Phe	
1				5				10						15		
ttc	ctc	ttc	aag	ttc	gtc	acc	gcc	gat	ggg	gat	ttc	acc	ctc	ttg	tcg	96
Phe	Leu	Phe	Lys	Phe	Val	Thr	Ala	Asp	Gly	Asp	Phe	Thr	Leu	Leu	Ser	
			20					25					30			
tgc	ggc	cgg	ccg	cgg	cgg	gac	aaa	gtg	gac	ggc	aag	gtt	gtg	tgg	ata	144
Cys	Gly	Arg	Pro	Arg	Arg	Asp	Lys	Val	Asp	Gly	Lys	Val	Val	Trp	Ile	
			35				40					45				
acg	gga	gcg	agc	cgt	ggg	att	ggg	gag	gtt	ctt	tcg	atg	cag	ttt	gcg	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ser	Met	Gln	Phe	Ala	
			50			55				60						
agt	tta	gga	gca	aag	ctc	ata	cta	tct	gca	cgt	aac	aag	gag	gag	ctt	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Lys	Glu	Glu	Leu	
			65		70				75						80	
gag	aga	gtg	aaa	cat	aac	atc	atg	agc	aag	cat	cca	gat	agc	aaa	gtt	288
Glu	Arg	Val	Lys	His	Asn	Ile	Met	Ser	Lys	His	Pro	Asp	Ser	Lys	Val	
				85					90					95		
gaa	gtg	tta	ccc	atg	gat	tta	tca	tct	gat	gaa	aaa	tct	ctg	aaa	gaa	336
Glu	Val	Leu	Pro	Met	Asp	Leu	Ser	Ser	Asp	Glu	Lys	Ser	Leu	Lys	Glu	
			100					105					110			
gtt	gta	cat	tca	gcg	gaa	tct	ctc	ttt	tcc	agt	gct	ggc	att	gac	tat	384
Val	Val	His	Ser	Ala	Glu	Ser	Leu	Phe	Ser	Ser	Ala	Gly	Ile	Asp	Tyr	
			115			120						125				
atg	atg	cac	aat	gca	gcc	ttt	gag	cgt	cca	aaa	agg	gga	gcc	ctg	gaa	432
Met	Met	His	Asn	Ala	Ala	Phe	Glu	Arg	Pro	Lys	Arg	Gly	Ala	Leu	Glu	
			130			135					140					
gaa	acc	gag	gaa	ggt	ctt	aag	gct	act	ttt	aag	gtc	aat	gtc	ttt	gga	480
Glu	Thr	Glu	Glu	Gly	Leu	Lys	Ala	Thr	Phe	Lys	Val	Asn	Val	Phe	Gly	
				145	150					155					160	
aca	att	act	ttg	act	cgc	ctt	ctt	gca	ccc	ttc	atg	ttg	gat	aga	ggg	528
Thr	Ile	Thr	Leu	Thr	Arg	Leu	Leu	Ala	Pro	Phe	Met	Leu	Asp	Arg	Gly	
				165					170					175		
atg	ggt	cat	ttt	gtt	gtg	atg	agt	agt	gca	gct	gga	aag	gtg	ccc	aca	576
Met	Gly	His	Phe	Val	Val	Met	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Thr	
			180				185						190			
cct	ggt	cag	gct	ctt	tac	tct	gct	tcc	aaa	cat	gct	ctc	aat	ggg	tac	624
Pro	Gly	Gln	Ala	Leu	Tyr	Ser	Ala	Ser	Lys	His	Ala	Leu	Asn	Gly	Tyr	
			195				200					205				
ttt	gct	tct	ctg	cgt	tct	gag	tta	tgt	acg	aaa	ggc	att	aag	gtc	act	672
Phe	Ala	Ser	Leu	Arg	Ser	Glu	Leu	Cys	Thr	Lys	Gly	Ile	Lys	Val	Thr	
			210			215					220					
gtt	gtc	tgt	cct	gga	cct	att	gaa	aca	cca	gaa	tct	tct	ggt	gca	act	720



## PhoenixTemp32470.tmp.txt

Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Pro	Glu	Ser	Ser	Gly	Ala	Thr	
225					230					235					240	
tct	tca	tca	caa	agg	cat	tcg	tcc	gag	aaa	cgt	gtt	tca	gtg	gaa	aga	768
Ser	Ser	Ser	Gln	Arg	His	Ser	Ser	Glu	Lys	Arg	Val	Ser	Val	Glu	Arg	
				245					250					255		
tgt	gct	gaa	ctg	aca	ata	gtt	gcc	gca	act	cat	gga	cta	aaa	gaa	gca	816
Cys	Ala	Glu	Leu	Thr	Ile	Val	Ala	Ala	Thr	His	Gly	Leu	Lys	Glu	Ala	
				260					265					270		
tgg	ata	tca	tat	cag	cct	gtg	ctg	gct	gtt	atg	tac	gtg	gtg	caa	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Ala	Val	Met	Tyr	Val	Val	Gln	Tyr	
				275					280					285		
atg	cca	aca	att	gga	tgc	tgg	ctt	atg	gat	aag	gtt	ggt	gcg	aag	cga	912
Met	Pro	Thr	Ile	Gly	Cys	Trp	Leu	Met	Asp	Lys	Val	Gly	Ala	Lys	Arg	
						295						300				
gtt	gat	gcc	gct	gca	aag	aaa	ggc	aac	gcc	tac	agc	tgg	aat	ctc	ctc	960
Val	Asp	Ala	Ala	Ala	Lys	Lys	Gly	Asn	Ala	Tyr	Ser	Trp	Asn	Leu	Leu	
305					310					315					320	
ttc	ggg	ggc	aaa	aag	tcg	gct	tga									984
Phe	Gly	Gly	Lys	Lys	Ser	Ala										
				325												

&lt;210&gt; 3502

&lt;211&gt; 327

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 3502

Met	Leu	Leu	Leu	Leu	Ala	Phe	Leu	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Phe	
1				5				10					15			
Phe	Leu	Phe	Lys	Phe	Val	Thr	Ala	Asp	Gly	Asp	Phe	Thr	Leu	Leu	Ser	
			20					25					30			
Cys	Gly	Arg	Pro	Arg	Arg	Asp	Lys	Val	Asp	Gly	Lys	Val	Val	Trp	Ile	
			35				40					45				
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ser	Met	Gln	Phe	Ala	
	50					55					60					
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Lys	Glu	Glu	Leu	
65					70					75					80	
Glu	Arg	Val	Lys	His	Asn	Ile	Met	Ser	Lys	His	Pro	Asp	Ser	Lys	Val	
				85					90					95		
Glu	Val	Leu	Pro	Met	Asp	Leu	Ser	Ser	Asp	Glu	Lys	Ser	Leu	Lys	Glu	
			100					105					110			
Val	Val	His	Ser	Ala	Glu	Ser	Leu	Phe	Ser	Ser	Ala	Gly	Ile	Asp	Tyr	
		115					120					125				
Met	Met	His	Asn	Ala	Ala	Phe	Glu	Arg	Pro	Lys	Arg	Gly	Ala	Leu	Glu	
	130					135				140						
Glu	Thr	Glu	Glu	Gly	Leu	Lys	Ala	Thr	Phe	Lys	Val	Asn	Val	Phe	Gly	
145					150					155					160	
Thr	Ile	Thr	Leu	Thr	Arg	Leu	Leu	Ala	Pro	Phe	Met	Leu	Asp	Arg	Gly	
				165					170					175		
Met	Gly	His	Phe	Val	Val	Met	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Thr	
			180					185					190			
Pro	Gly	Gln	Ala	Leu	Tyr	Ser	Ala	Ser	Lys	His	Ala	Leu	Asn	Gly	Tyr	
		195					200					205				
Phe	Ala	Ser	Leu	Arg	Ser	Glu	Leu	Cys	Thr	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Pro	Glu	Ser	Ser	Gly	Ala	Thr	
225					230					235					240	
Ser	Ser	Ser	Gln	Arg	His	Ser	Ser	Glu	Lys	Arg	Val	Ser	Val	Glu	Arg	
				245					250					255		
Cys	Ala	Glu	Leu	Thr	Ile	Val	Ala	Ala	Thr	His	Gly	Leu	Lys	Glu	Ala	
			260					265					270			
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Ala	Val	Met	Tyr	Val	Val	Gln	Tyr	
		275					280					285				
Met	Pro	Thr	Ile	Gly	Cys	Trp	Leu	Met	Asp	Lys	Val	Gly	Ala	Lys	Arg	
	290					295					300					
Val	Asp	Ala	Ala	Ala	Lys	Lys	Gly	Asn	Ala	Tyr	Ser	Trp	Asn	Leu	Leu	
305					310					315					320	
Phe	Gly	Gly	Lys	Lys	Ser	Ala										
				325												

## PhoenixTemp32470.tmp.txt

<210> 3503  
 <211> 789  
 <212> DNA  
 <213> Hordeum vulgare

<220>  
 <221> CDS  
 <222> (1)..(789)

<400> 3503  
 atg gcg gcc ggc ggc atg agc agg gag gag agg tgg agc ctg gcc ggc 48  
 Met Ala Ala Gly Gly Met Ser Arg Glu Glu Arg Trp Ser Leu Ala Gly  
 1 5 10 15  
 gcg acg gcg ctc gtc acc ggc ggc agc aaa ggc atc ggc cag gcg atc 96  
 Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Gln Ala Ile  
 20 25 30  
 gtg gag gag ctg gcg ggg cac ggg gcg cgg gtg cac acg tgc gcc agg 144  
 Val Glu Glu Leu Ala Gly His Gly Ala Arg Val His Thr Cys Ala Arg  
 35 40 45  
 agc gcg gcg gag ctg gag gag tgc cgc cgc cgg tgg gag gcc aag ggg 192  
 Ser Ala Ala Glu Leu Glu Glu Cys Arg Arg Arg Trp Glu Ala Lys Gly  
 50 55 60  
 ctc ccg gtc acc gtc tcc gtc tgc gac gtc tcc ctg cgc gcc agc agg 240  
 Leu Pro Val Thr Val Ser Val Cys Asp Val Ser Leu Arg Ala Ser Arg  
 65 70 75 80  
 gag cag ctc gtg gag acg gtc aag caa gtc ttc ggc ggc aag ctc gac 288  
 Glu Gln Leu Val Glu Thr Val Lys Gln Val Phe Gly Gly Lys Leu Asp  
 85 90 95  
 ata ctg gtg aac aac gcg gca cag att ctt gcc aag gcg gcc gtg gag 336  
 Ile Leu Val Asn Asn Ala Ala Gln Ile Leu Ala Lys Ala Ala Val Glu  
 100 105 110  
 tgg aca tcg gag gag tac tcg cac ctc atg gcg acc aat cta gag tcg 384  
 Trp Thr Ser Glu Glu Tyr Ser His Leu Met Ala Thr Asn Leu Glu Ser  
 115 120 125  
 tgc ttc cac ctc agc cag ctc gcg cac ccc ttg ctc ctc aac gcc tcc 432  
 Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Asn Ala Ser  
 130 135 140  
 atc gct gga ggt agc atc gtc aac ata tcc tcc ctt ggg ggc aca ctt 480  
 Ile Ala Gly Gly Ser Ile Val Asn Ile Ser Ser Leu Gly Gly Thr Leu  
 145 150 155 160  
 ggt ttc acg ggc ctt gcg ctt tac agt atg aca aaa gga gga ata aac 528  
 Gly Phe Thr Gly Leu Ala Leu Tyr Ser Met Thr Lys Gly Gly Ile Asn  
 165 170 175  
 cag ctt aca agg agc ctt gct act gaa tgg gcc cag aac aag atc cgg 576  
 Gln Leu Thr Arg Ser Leu Ala Thr Glu Trp Ala Gln Asn Lys Ile Arg  
 180 185 190  
 gtg aat tgc gtc gcc ccg ggc gcg acc aag agt gac atg tta agc agt 624  
 Val Asn Cys Val Ala Pro Gly Ala Thr Lys Ser Asp Met Leu Ser Ser  
 195 200 205  
 ctc cca ctg gag att aga gag aac gag ttg gcg agg act cca atg cgg 672  
 Leu Pro Leu Glu Ile Arg Glu Asn Glu Leu Ala Arg Thr Pro Met Arg  
 210 215 220  
 cgg gca ggc gag cca gcg gag gtg gct gca atg gtg tcg ttc ctc tgc 720  
 Arg Ala Gly Glu Pro Ala Glu Val Ala Met Val Ser Phe Leu Cys  
 225 230 235 240  
 atg ccg gcg gca tcc ttc gtc acc ggc cag gtc atc gcc gtc gac ggt 768  
 Met Pro Ala Ala Ser Phe Val Thr Gly Gln Val Ile Ala Val Asp Gly  
 245 250 255  
 ggt cgg aca att agt gct tag 789  
 Gly Arg Thr Ile Ser Ala  
 260

<210> 3504  
 <211> 262  
 <212> PRT  
 <213> Hordeum vulgare

<400> 3504

## PhoenixTemp32470.tmp.txt

Met Ala Ala Gly Gly Met Ser Arg Glu Glu Arg Trp Ser Leu Ala Gly  
 1 15  
 Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Gln Ala Ile  
 20 30  
 Val Glu Glu Leu Ala Gly His Gly Ala Arg Val His Thr Cys Ala Arg  
 35 40 45  
 Ser Ala Ala Glu Leu Glu Glu Cys Arg Arg Arg Trp Glu Ala Lys Gly  
 50 55 60  
 Leu Pro Val Thr Val Ser Val Cys Asp Val Ser Leu Arg Ala Ser Arg  
 65 70 75 80  
 Glu Gln Leu Val Glu Thr Val Lys Gln Val Phe Gly Gly Lys Leu Asp  
 85 90 95  
 Ile Leu Val Asn Ala Ala Gln Ile Leu Ala Lys Ala Ala Val Glu  
 100 105 110  
 Trp Thr Ser Glu Glu Tyr Ser His Leu Met Ala Thr Asn Leu Glu Ser  
 115 120 125  
 Cys Phe His Leu Ser Gln Leu Ala His Pro Leu Leu Leu Asn Ala Ser  
 130 135 140  
 Ile Ala Gly Gly Ser Ile Val Asn Ile Ser Ser Leu Gly Gly Thr Leu  
 145 150 155 160  
 Gly Phe Thr Gly Leu Ala Leu Tyr Ser Met Thr Lys Gly Gly Ile Asn  
 165 170 175  
 Gln Leu Thr Arg Ser Leu Ala Thr Glu Trp Ala Gln Asn Lys Ile Arg  
 180 185 190  
 Val Asn Cys Val Ala Pro Gly Ala Thr Lys Ser Asp Met Leu Ser Ser  
 195 200 205  
 Leu Pro Leu Glu Ile Arg Glu Asn Glu Leu Ala Arg Thr Pro Met Arg  
 210 215 220  
 Arg Ala Gly Glu Pro Ala Glu Val Ala Ala Met Val Ser Phe Leu Cys  
 225 230 235 240  
 Met Pro Ala Ala Ser Phe Val Thr Gly Gln Val Ile Ala Val Asp Gly  
 245 250 255  
 Gly Arg Thr Ile Ser Ala  
 260

<210> 3505  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

<400> 3505  
 atg gat gtc aag tgc cgg cgt ctg gag ggg aag gtg gcc atc gtg acg 48  
 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr 15  
 1 5  
 gcg tcc acg atg ggg atc ggc ctc gcc atc gcc gag cgc ctc ggt ctg 96  
 Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu 20 25 30  
 gag ggc gcc gtg gtc atc tcc tcc cgc aag cag aag aac gtt aac 144  
 Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Lys Asn Val Asn 35 40 45  
 gag gcg gtg gag ggg ctc agg gcc aag ggt atc acc gcg gtt ggt gcc 192  
 Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala 50 55 60  
 ctc tgc cac gtc tcc gac gca cag cag cgc aag agc ctc atc gag acg 240  
 Leu Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr 65 70 75 80  
 gcc gtc aag agc ttt ggg cac ata gat atc ctt gtc tcc aat gct gcc 288  
 Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala 85 90 95  
 gca aat cct tct gta gat agc ata ctt gaa atg aaa gag tct gtt ctc 336  
 Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu 100 105 110  
 gat aag ctg tgg gat att aac gtc aag gct tct atc ctt ctt att cag 384  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Ile Gln 115 120 125

## PhoenixTemp32470.tmp.txt

gat	gct	gct	cct	cac	cta	cgg	aag	ggg	tca	tct	gtg	att	att	att	tct	432
Asp	Ala	Ala	Pro	His	Leu	Arg	Lys	Gly	Ser	Ser	Val	Ile	Ile	Ile	Ser	
	130					135					140					
tca	att	gct	ggg	tac	aat	cca	gaa	caa	gga	ttg	aca	atg	tat	ggg	gtc	480
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val	
	145				150					155					160	
aca	aag	act	gct	ctc	ttt	ggg	ctc	acg	aag	gct	ctt	gct	ggg	gag	atg	528
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met	
				165						170				175		
gga	ccc	gat	act	cgt	gtt	aac	tgt	gta	gcc	cct	ggg	ttt	gtt	cct	aca	576
Gly	Pro	Asp	Thr	Arg	Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Val	Pro	Thr	
			180					185					190			
cgg	ttt	gct	agt	ttc	ctc	aca	gaa	aat	gag	acc	att	agg	aaa	gag	ctt	624
Arg	Phe	Ala	Ser	Phe	Leu	Thr	Glu	Asn	Glu	Thr	Ile	Arg	Lys	Glu	Leu	
		195					200					205				
aac	gag	agg	acc	aag	ctt	aag	aga	ttg	ggg	act	gtg	gaa	gac	atg	gct	672
Asn	Glu	Arg	Thr	Lys	Leu	Lys	Arg	Leu	Gly	Thr	Val	Glu	Asp	Met	Ala	
	210					215					220					
gcg	gct	gcg	gct	ttt	ctg	gcg	tct	gac	gac	gca	tca	tac	att	acg	gct	720
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Tyr	Ile	Thr	Ala	
	225				230				235						240	
gaa	acc	att	gtt	gtt	gct	gga	ggg	gtg	cag	tct	agg	ctg	taa			762
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Gln	Ser	Arg	Leu				
				245					250							

<210> 3506  
 <211> 253  
 <212> PRT  
 <213> Zea mays

<400> 3506  
 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr  
 1 5 10 15  
 Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn  
 35 40 45  
 Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala  
 50 55 60  
 Leu Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr  
 65 70 75 80  
 Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
 100 105 110  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln  
 115 120 125  
 Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
 130 135 140  
 Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
 145 150 155 160  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165 170 175  
 Gly Pro Asp Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
 195 200 205  
 Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
 210 215 220  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
 225 230 235 240  
 Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
 245 250

<210> 3507  
 <211> 792  
 <212> DNA  
 <213> Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;400&gt; 3507

atg	gag	aat	aat	gac	aag	aga	tgg	tcc	ctc	gcc	gga	aaa	acc	gct	ctg	48
Met	Glu	Asn	Asn	Asp	Lys	Arg	Trp	Ser	Leu	Ala	Gly	Lys	Thr	Ala	Leu	
1				5					10					15		
gta	acc	ggt	ggt	act	cgc	gga	atc	ggg	cga	gcg	gtc	gtg	gag	gag	cta	96
Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	Arg	Ala	Val	Val	Glu	Glu	Leu	
			20					25					30			
gcg	aga	ttc	ggg	gca	acg	gtt	cat	aca	tgt	tca	agg	agc	cag	gag	gag	144
Ala	Arg	Phe	Gly	Ala	Thr	Val	His	Thr	Cys	Ser	Arg	Ser	Gln	Glu	Glu	
			35				40					45				
ctc	aaa	tca	tgc	ttg	gat	gat	tgg	aag	tcc	aat	ggt	tta	gtg	gta	acc	192
Leu	Lys	Ser	Cys	Leu	Asp	Asp	Trp	Lys	Ser	Asn	Gly	Leu	Val	Val	Thr	
			50			55					60					
ggt	tcg	gtt	tgc	gat	gct	tcg	gat	agg	gat	cag	agg	gag	aag	ttg	att	240
Gly	Ser	Val	Cys	Asp	Ala	Ser	Asp	Arg	Asp	Gln	Arg	Glu	Lys	Leu	Ile	
					70					75					80	
cag	gag	gtt	tcg	tct	gcc	ttt	agc	ggc	aag	att	aac	atc	ctt	gta	aac	288
Gln	Glu	Val	Ser	Ser	Ala	Phe	Ser	Gly	Lys	Ile	Asn	Ile	Leu	Val	Asn	
				85				90						95		
aat	gtt	gga	act	aat	tta	agg	aag	cca	acg	gtc	gag	tat	tcg	agt	gag	336
Asn	Val	Gly	Thr	Asn	Leu	Arg	Lys	Pro	Thr	Val	Glu	Tyr	Ser	Ser	Glu	
			100					105					110			
gat	tat	gct	aaa	atc	atg	tcg	acc	aat	ttg	gaa	tcc	gct	ttc	cat	ttt	384
Asp	Tyr	Ala	Lys	Ile	Met	Ser	Thr	Asn	Leu	Glu	Ser	Ala	Phe	His	Phe	
			115				120					125				
tcc	caa	att	gca	cat	cct	ctt	tta	aaa	gca	tct	ggg	gtt	ggg	agc	att	432
Ser	Gln	Ile	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Val	Gly	Ser	Ile	
			130			135					140					
gtg	ttc	atc	tcc	tct	gta	gct	ggc	ctg	gtg	cat	ctt	agt	agt	gga	tct	480
Val	Phe	Ile	Ser	Ser	Val	Ala	Gly	Leu	Val	His	Leu	Ser	Ser	Gly	Ser	
					150					155					160	
gtc	tat	ggt	gca	act	aaa	gga	gca	ctt	aat	cag	ctt	aca	agg	aat	cta	528
Val	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Leu	Asn	Gln	Leu	Thr	Arg	Asn	Leu	
				165					170					175		
gct	tgc	gag	tgg	gca	gga	gac	aac	att	aga	acc	aat	tgt	gtg	gcg	cca	576
Ala	Cys	Glu	Trp	Ala	Gly	Asp	Asn	Ile	Arg	Thr	Asn	Cys	Val	Ala	Pro	
			180					185					190			
tgg	tac	atc	aag	acc	tca	ctt	gtg	aaa	ccg	cta	ctc	gag	aag	aaa	ggt	624
Trp	Tyr	Ile	Lys	Thr	Ser	Leu	Val	Lys	Pro	Leu	Leu	Glu	Lys	Lys	Gly	
			195				200					205				
ttt	gag	gag	gcg	ata	gtt	tcg	cgt	acc	cca	ctt	ggg	cgc	gtt	gga	gaa	672
Phe	Glu	Glu	Ala	Ile	Val	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Val	Gly	Glu	
			210			215					220					
cca	gag	gaa	gtc	tcg	tcg	cta	gtg	gct	ttc	ctc	tgc	ctt	ccc	gca	gcg	720
Pro	Glu	Glu	Val	Ser	Ser	Leu	Val	Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	
					230				235						240	
tct	tac	atc	acc	ggt	cag	gtc	att	tct	gtt	gat	gga	gga	ttc	aca	gtc	768
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Ser	Val	Asp	Gly	Gly	Phe	Thr	Val	
				245					250					255		
aac	ggc	ttc	agt	tac	acc	atg	taa									792
Asn	Gly	Phe	Ser	Tyr	Thr	Met										
				260												

&lt;210&gt; 3508

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3508

Met	Glu	Asn	Asn	Asp	Lys	Arg	Trp	Ser	Leu	Ala	Gly	Lys	Thr	Ala	Leu	
1				5					10					15		
Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	Arg	Ala	Val	Val	Glu	Glu	Leu	
			20					25					30			
Ala	Arg	Phe	Gly	Ala	Thr	Val	His	Thr	Cys	Ser	Arg	Ser	Gln	Glu	Glu	
			35				40					45				

## PhoenixTemp32470.tmp.txt

Leu Lys Ser Cys Leu Asp Asp Trp Lys Ser Asn Gly Leu Val Val Thr  
 50 55 60  
 Gly Ser Val Cys Asp Ala Ser Asp Arg Asp Gln Arg Glu Lys Leu Ile  
 65 70 75 80  
 Gln Glu Val Ser Ser Ala Phe Ser Gly Lys Ile Asn Ile Leu Val Asn  
 85 90 95  
 Asn Val Gly Thr Asn Leu Arg Lys Pro Thr Val Glu Tyr Ser Ser Glu  
 100 105 110  
 Asp Tyr Ala Lys Ile Met Ser Thr Asn Leu Glu Ser Ala Phe His Phe  
 115 120 125  
 Ser Gln Ile Ala His Pro Leu Leu Lys Ala Ser Gly Val Gly Ser Ile  
 130 135 140  
 Val Phe Ile Ser Ser Val Ala Gly Leu Val His Leu Ser Ser Gly Ser  
 145 150 155 160  
 Val Tyr Gly Ala Thr Lys Gly Ala Leu Asn Gln Leu Thr Arg Asn Leu  
 165 170 175  
 Ala Cys Glu Trp Ala Gly Asp Asn Ile Arg Thr Asn Cys Val Ala Pro  
 180 185 190  
 Trp Tyr Ile Lys Thr Ser Leu Val Lys Pro Leu Leu Glu Lys Lys Gly  
 195 200 205  
 Phe Glu Glu Ala Ile Val Ser Arg Thr Pro Leu Gly Arg Val Gly Glu  
 210 215 220  
 Pro Glu Glu Val Ser Ser Leu Val Ala Phe Leu Cys Leu Pro Ala Ala  
 225 230 235 240  
 Ser Tyr Ile Thr Gly Gln Val Ile Ser Val Asp Gly Gly Phe Thr Val  
 245 250 255  
 Asn Gly Phe Ser Tyr Thr Met  
 260

<210> 3509  
 <211> 849  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 3509  
 atg agc aat cat caa acc acg gtg ttg aaa caa cta gag cca tgg tgt 48  
 Met Ser Asn His Gln Thr Thr Val Leu Lys Gln Leu Glu Pro Trp Cys 15  
 1 5 10  
 gag cta aac ggc aaa gtg gtt ctt ctg acc gga gct tct tct ggt ata 96  
 Glu Leu Asn Gly Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile 20 25 30  
 gga agt gag gtc tgt ctc gat ctg ggc aaa gct ggc tgt aag att atc 144  
 Gly Ser Glu Val Cys Leu Asp Leu Gly Lys Ala Gly Cys Lys Ile Ile 35 40 45  
 gca gca gct cgt cgc gtc cac cgt ctc gaa tct ctc tgc tcc gaa atc 192  
 Ala Ala Ala Arg Arg Val His Arg Leu Glu Ser Leu Cys Ser Glu Ile 50 55 60  
 aac agc tta agc tca acc ggg atc caa tta gcc gca ccg ctc gag cta 240  
 Asn Ser Leu Ser Ser Thr Gly Ile Gln Leu Ala Ala Pro Leu Glu Leu 65 70 75 80  
 gac gtt tca tca gac gca gcc acc att caa aaa gct gtc aaa caa gct 288  
 Asp Val Ser Ser Asp Ala Ala Thr Ile Gln Lys Ala Val Lys Gln Ala 85 90 95  
 tgg gac atc tac gga aag ata gat gtg ttg atc aac aac gct gga atc 336  
 Trp Asp Ile Tyr Gly Lys Ile Asp Val Leu Ile Asn Asn Ala Gly Ile 100 105 110  
 aga ggc aat gtc aag acg agt tta gat ctg act gaa gac gag tgg aac 384  
 Arg Gly Asn Val Lys Thr Ser Leu Asp Leu Thr Glu Asp Glu Trp Asn 115 120 125  
 aca gtg ttc aga acc aac tta acc gga cct tgg tta gta tcc aaa tac 432  
 Thr Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys Tyr 130 135 140  
 gtc tgc agt cta atg cgt gac gca aaa cgc ggc ggc tca gta ata aac 480  
 Val Cys Ser Leu Met Arg Asp Ala Lys Arg Gly Gly Ser Val Ile Asn 145 150 155 160

## PhoenixTemp32470.tmp.txt

gtc	tcc	tcc	atc	gcc	ggt	ctc	cac	cga	ggt	ttg	tta	ccc	ggt	gga	gtc	528
Val	Ser	Ser	Ile	Ala	Gly	Leu	His	Arg	Gly	Leu	Leu	Pro	Gly	Gly	Val	
				165					170					175		
gcc	tat	gct	tgt	tcc	aaa	ggt	ggt	ggt	gac	acc	atg	acg	agg	atg	atg	576
Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Val	Asp	Thr	Met	Thr	Arg	Met	Met	
			180					185					190			
gct	att	gag	tta	ggt	gta	tac	aac	atc	aga	gtg	aac	tcg	atc	gca	ccg	624
Ala	Ile	Glu	Leu	Gly	Val	Tyr	Asn	Ile	Arg	Val	Asn	Ser	Ile	Ala	Pro	
			195				200					205				
ggg	ctt	ctc	aag	tca	gag	atc	acg	caa	ggt	ctt	atg	caa	aaa	gag	tgg	672
Gly	Leu	Leu	Lys	Ser	Glu	Ile	Thr	Gln	Gly	Leu	Met	Gln	Lys	Glu	Trp	
	210				215					220						
ctc	aag	aac	gtg	acc	gag	agg	act	atc	ccg	tta	aag	gtg	caa	cag	acc	720
Leu	Lys	Asn	Val	Thr	Glu	Arg	Thr	Ile	Pro	Leu	Lys	Val	Gln	Gln	Thr	
225					230					235					240	
gtg	gat	ccg	ggg	ctt	acc	tcg	ctc	ggt	cg	tat	ctc	agt	cat	gac	tct	768
Val	Asp	Pro	Gly	Leu	Thr	Ser	Leu	Val	Arg	Tyr	Leu	Ser	His	Asp	Ser	
				245					250					255		
tct	caa	tat	gtc	tcc	ggc	aac	aca	tac	ata	ctt	gac	tcc	gga	gct	aca	816
Ser	Gln	Tyr	Val	Ser	Gly	Asn	Thr	Tyr	Ile	Leu	Asp	Ser	Gly	Ala	Thr	
			260					265					270			
ata	cct	ggc	ctg	cct	att	ttt	tct	tct	ctt	tga						849
Ile	Pro	Gly	Leu	Pro	Ile	Phe	Ser	Ser	Leu							
		275					280									

&lt;210&gt; 3510

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3510

Met	Ser	Asn	His	Gln	Thr	Thr	Val	Leu	Lys	Gln	Leu	Glu	Pro	Trp	Cys	
1				5					10					15		
Glu	Leu	Asn	Gly	Lys	Val	Val	Leu	Leu	Thr	Gly	Ala	Ser	Ser	Gly	Ile	
			20					25					30			
Gly	Ser	Glu	Val	Cys	Leu	Asp	Leu	Gly	Lys	Ala	Gly	Cys	Lys	Ile	Ile	
		35					40					45				
Ala	Ala	Ala	Arg	Arg	Val	His	Arg	Leu	Glu	Ser	Leu	Cys	Ser	Glu	Ile	
		50				55					60					
Asn	Ser	Leu	Ser	Ser	Thr	Gly	Ile	Gln	Leu	Ala	Ala	Pro	Leu	Glu	Leu	
65				70						75				80		
Asp	Val	Ser	Ser	Asp	Ala	Ala	Thr	Ile	Gln	Lys	Ala	Val	Lys	Gln	Ala	
				85				90						95		
Trp	Asp	Ile	Tyr	Gly	Lys	Ile	Asp	Val	Leu	Ile	Asn	Asn	Ala	Gly	Ile	
		100					105					110				
Arg	Gly	Asn	Val	Lys	Thr	Ser	Leu	Asp	Leu	Thr	Glu	Asp	Glu	Trp	Asn	
		115					120					125				
Thr	Val	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Pro	Trp	Leu	Val	Ser	Lys	Tyr	
		130			135						140					
Val	Cys	Ser	Leu	Met	Arg	Asp	Ala	Lys	Arg	Gly	Gly	Ser	Val	Ile	Asn	
145				150						155				160		
Val	Ser	Ser	Ile	Ala	Gly	Leu	His	Arg	Gly	Leu	Leu	Pro	Gly	Gly	Val	
				165					170					175		
Ala	Tyr	Ala	Cys	Ser	Lys	Gly	Gly	Val	Asp	Thr	Met	Thr	Arg	Met	Met	
		180						185					190			
Ala	Ile	Glu	Leu	Gly	Val	Tyr	Asn	Ile	Arg	Val	Asn	Ser	Ile	Ala	Pro	
		195					200					205				
Gly	Leu	Leu	Lys	Ser	Glu	Ile	Thr	Gln	Gly	Leu	Met	Gln	Lys	Glu	Trp	
	210				215					220						
Leu	Lys	Asn	Val	Thr	Glu	Arg	Thr	Ile	Pro	Leu	Lys	Val	Gln	Gln	Thr	
225					230					235					240	
Val	Asp	Pro	Gly	Leu	Thr	Ser	Leu	Val	Arg	Tyr	Leu	Ser	His	Asp	Ser	
				245					250					255		
Ser	Gln	Tyr	Val	Ser	Gly	Asn	Thr	Tyr	Ile	Leu	Asp	Ser	Gly	Ala	Thr	
		260						265					270			
Ile	Pro	Gly	Leu	Pro	Ile	Phe	Ser	Ser	Leu							
		275					280									

&lt;210&gt; 3511

<211> 960  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(960)

<400> 3511  
 atg gcc acc acc gtc gca gca acg aaa ctc acc tcc ttg aaa gcc acc 48  
 Met Ala Thr Thr Val Ala Ala Thr Lys Leu Thr Ser Leu Lys Ala Thr  
 1 5 10 15  
 gcc ggg aag ctc ggt tac cgt gag atc tgc cag gtc cgg caa tgg gct 96  
 Ala Gly Lys Leu Gly Tyr Arg Glu Ile Cys Gln Val Arg Gln Trp Ala  
 20 25 30  
 ccg ctt aag tct gcg atg cct cat ttc ggt atg ctg cga tgt gcg aca 144  
 Pro Leu Lys Ser Ala Met Pro His Phe Gly Met Leu Arg Cys Ala Thr  
 35 40 45  
 tcc act gtt gtg aaa gct caa gct caa gct caa gcc acg gct act gag 192  
 Ser Thr Val Val Lys Ala Gln Ala Gln Ala Gln Ala Thr Ala Thr Glu  
 50 55 60  
 caa aca aca gaa gaa gct gtt cca aaa gtg gaa tct cca gtt gtg gtt 240  
 Gln Thr Thr Glu Glu Ala Val Pro Lys Val Glu Ser Pro Val Val Val  
 65 70 75 80  
 gtg act ggt gcc tct aga ggc att ggt aaa gct att gct ctt tcc ttg 288  
 Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser Leu  
 85 90 95  
 ggc aaa gct ggc tgt aag gtc ttg gtg aac tat gct agg tcg gca aag 336  
 Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ala Lys  
 100 105 110  
 gaa gct gaa gaa gtt tcc aaa cag att gag gca tat ggt ggc cag gct 384  
 Glu Ala Glu Glu Val Ser Lys Gln Ile Glu Ala Tyr Gly Gly Gln Ala  
 115 120 125  
 att act ttt ggg ggt gat gtc tcc aaa gag gct gat gtg gat gcc atg 432  
 Ile Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Asp Ala Met  
 130 135 140  
 atg aaa acc gct gtt gat gca tgg gga acc att gat gtc gtc gtt aac 480  
 Met Lys Thr Ala Val Asp Ala Trp Gly Thr Ile Asp Val Val Val Asn  
 145 150 155 160  
 aat gca gga att act cgg gat acc ttg ttg ata cga atg aag aag tcc 528  
 Asn Ala Gly Ile Thr Arg Asp Thr Leu Ile Arg Met Lys Lys Ser  
 165 170 175  
 caa tgg gat gaa gtg att gat ttg aat ctc act gga gtc ttt ctc tgt 576  
 Gln Trp Asp Glu Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys  
 180 185 190  
 acc cag gca gca aca aag atc atg aag aag aga aag gga aga atc 624  
 Thr Gln Ala Ala Thr Lys Ile Met Met Lys Lys Arg Lys Gly Arg Ile  
 195 200 205  
 atc aac att gcg tca gtt gtt ggt ctc att ggt aat att ggc caa gca 672  
 Ile Asn Ile Ala Ser Val Val Gly Leu Ile Gly Asn Ile Gly Gln Ala  
 210 215 220  
 aac tac gct gct gct aaa gct ggt gtt att ggg ttc tcc aag act gcc 720  
 Asn Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Ser Lys Thr Ala  
 225 230 235 240  
 gcc aga gag ggt gcg agc agg aat ata aat gtc aat gtg gtt tgc cct 768  
 Ala Arg Glu Gly Ala Ser Arg Asn Ile Asn Val Asn Val Val Cys Pro  
 245 250 255  
 ggg ttc att gca tct gac atg act gcc aag ctt gga gaa gac atg gaa 816  
 Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Glu Asp Met Glu  
 260 265 270  
 aag aaa atc ttg gga aca atc cca tta gga cga tat gga caa cct gaa 864  
 Lys Lys Ile Leu Gly Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu  
 275 280 285  
 gat gtg gct ggc ttg gta gaa ttc ttg gct ctc agt cct gca gcc agt 912  
 Asp Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser  
 290 295 300  
 tac atc aca gga cag gca ttc acc att gat gga ggt att gcc atc tag 960  
 Tyr Ile Thr Gly Gln Ala Phe Thr Ile Asp Gly Gly Ile Ala Ile  
 305 310 315



## PhoenixTemp32470.tmp.txt

<210> 3512  
 <211> 319  
 <212> PRT  
 <213> Brassica napus

<400> 3512  
 Met Ala Thr Thr Val Ala Ala Thr Lys Leu Thr Ser Leu Lys Ala Thr  
 1 5 10 15  
 Ala Gly Lys Leu Gly Tyr Arg Glu Ile Cys Gln Val Arg Gln Trp Ala  
 20 25 30  
 Pro Leu Lys Ser Ala Met Pro His Phe Gly Met Leu Arg Cys Ala Thr  
 35 40 45  
 Ser Thr Val Val Lys Ala Gln Ala Gln Ala Thr Ala Thr Glu  
 50 55 60  
 Gln Thr Thr Glu Glu Ala Val Pro Lys Val Glu Ser Pro Val Val Val  
 65 70 75 80  
 Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser Leu  
 85 90 95  
 Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ala Lys  
 100 105 110  
 Glu Ala Glu Glu Val Ser Lys Gln Ile Glu Ala Tyr Gly Gly Gln Ala  
 115 120 125  
 Ile Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Asp Ala Met  
 130 135 140  
 Met Lys Thr Ala Val Asp Ala Trp Gly Thr Ile Asp Val Val Val Asn  
 145 150 155 160  
 Asn Ala Gly Ile Thr Arg Asp Thr Leu Leu Ile Arg Met Lys Lys Ser  
 165 170 175  
 Gln Trp Asp Glu Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys  
 180 185 190  
 Thr Gln Ala Ala Thr Lys Ile Met Met Lys Lys Arg Lys Gly Arg Ile  
 195 200 205  
 Ile Asn Ile Ala Ser Val Val Gly Leu Ile Gly Asn Ile Gly Gln Ala  
 210 215 220  
 Asn Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Ser Lys Thr Ala  
 225 230 235 240  
 Ala Arg Glu Gly Ala Ser Arg Asn Ile Asn Val Asn Val Val Cys Pro  
 245 250 255  
 Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Glu Asp Met Glu  
 260 265 270  
 Lys Lys Ile Leu Gly Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu  
 275 280 285  
 Asp Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser  
 290 295 300  
 Tyr Ile Thr Gly Gln Ala Phe Thr Ile Asp Gly Gly Ile Ala Ile  
 305 310 315

<210> 3513  
 <211> 849  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 3513  
 atg agc aat cat caa acc acg gtg ttg aaa caa cta gag cca tgg tgt 48  
 Met Ser Asn His Gln Thr Thr Val Leu Lys Gln Leu Glu Pro Trp Cys  
 1 5 10 15  
 gag cta aac ggc aaa gtg gtt ctt ctg acc gga gct tct tct ggt ata 96  
 Glu Leu Asn Gly Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile  
 20 25 30  
 gga agt gag gtc tgt ctc gat ctg ggc aaa gct ggc tgt aag att atc 144  
 Gly Ser Glu Val Cys Leu Asp Leu Gly Lys Ala Gly Cys Lys Ile Ile  
 35 40 45  
 gca gca gct cgt cgc gtc cac cgt ctc gaa tct ctc tgc tcc gaa atc 192  
 Ala Ala Ala Arg Arg Val His Arg Leu Glu Ser Leu Cys Ser Glu Ile

## PhoenixTemp32470.tmp.txt

50	55	60		
aac agc tta agc tca acc ggg atc caa tta gcc gca ccg ctc gag cta	240			
Asn Ser Leu Ser Ser Thr Gly Ile Gln Leu Ala Pro Leu Glu Leu				
65 70 75 80				
gac gtt tca tca gac gca gcc acc att caa aaa gct gtc aaa caa gct	288			
Asp Val Ser Ser Asp Ala Ala Thr Ile Gln Lys Ala Val Lys Gln Ala				
85 90 95				
tgg gac atc tac gga aag ata gat gtg ttg atc aac aac gct gga atc	336			
Trp Asp Ile Tyr Gly Lys Ile Asp Val Leu Ile Asn Asn Ala Gly Ile				
100 105 110				
aga ggc aat gtc aag acg agt tta gat ctg act gaa gac gag tgg aac	384			
Arg Gly Asn Val Lys Thr Ser Leu Asp Leu Thr Glu Asp Glu Trp Asn				
115 120 125				
aca gtg ttc aga acc aac tta acc gga cct tgg tta gta tcc aaa tac	432			
Thr Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys Tyr				
130 135 140				
gtc tgc agt cta atg cgt gac gca aaa cgc ggc ggc tca gta ata aac	480			
Val Cys Ser Leu Met Arg Asp Ala Lys Arg Gly Gly Ser Val Ile Asn				
145 150 155 160				
gtc tcc tcc atc gcc ggt ctc cac cga ggt ttg tta ccc ggt gga gtc	528			
Val Ser Ser Ile Ala Gly Leu His Arg Gly Leu Leu Pro Gly Gly Val				
165 170 175				
gcc tat gct tgt tcc aaa ggt ggt gtt gac acc atg acg agg atg atg	576			
Ala Tyr Ala Cys Ser Lys Gly Gly Val Asp Thr Met Thr Arg Met Met				
180 185 190				
gct att gag tta ggt gta tac aac atc aga gtg aac tcg atc gca cca	624			
Ala Ile Glu Leu Gly Val Tyr Asn Ile Arg Val Asn Ser Ile Ala Pro				
195 200 205				
ggg ctt ctc aag tca gag atc acg caa ggt ctt atg caa aaa gag tgg	672			
Gly Leu Leu Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Glu Trp				
210 215 220				
ctt aag aac gtg acc gag agg act atc ccg tta aag gtg caa cag acc	720			
Leu Lys Asn Val Thr Glu Arg Thr Ile Pro Leu Lys Val Gln Gln Thr				
225 230 235 240				
gtg gat ccg gga ctt acc tcg ctg gtt cgc tat ctc att cat gac tct	768			
Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile His Asp Ser				
245 250 255				
tcc caa tat gtc tca ggc aac aca tac att ctc gac tcc gga gct aca	816			
Ser Gln Tyr Val Ser Gly Asn Thr Tyr Ile Leu Asp Ser Gly Ala Thr				
260 265 270				
ata cct ggc ctg cct att ttt tct tct tga	849			
Ile Pro Gly Leu Pro Ile Phe Ser Ser Leu				
275 280				

&lt;210&gt; 3514

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3514

Met Ser Asn His Gln Thr Thr Val Leu Lys Gln Leu Glu Pro Trp Cys	
1 5 10 15	
Glu Leu Asn Gly Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile	
20 25 30	
Gly Ser Glu Val Cys Leu Asp Leu Gly Lys Ala Gly Cys Lys Ile Ile	
35 40 45	
Ala Ala Ala Arg Arg Val His Arg Leu Glu Ser Leu Cys Ser Glu Ile	
50 55 60	
Asn Ser Leu Ser Ser Thr Gly Ile Gln Leu Ala Ala Pro Leu Glu Leu	
65 70 75 80	
Asp Val Ser Ser Asp Ala Ala Thr Ile Gln Lys Ala Val Lys Gln Ala	
85 90 95	
Trp Asp Ile Tyr Gly Lys Ile Asp Val Leu Ile Asn Asn Ala Gly Ile	
100 105 110	
Arg Gly Asn Val Lys Thr Ser Leu Asp Leu Thr Glu Asp Glu Trp Asn	
115 120 125	
Thr Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys Tyr	
130 135 140	
Val Cys Ser Leu Met Arg Asp Ala Lys Arg Gly Gly Ser Val Ile Asn	

## PhoenixTemp32470.tmp.txt

145 Val Ser Ser Ile Ala 150 Gly Leu His Arg Gly 155 Leu Leu Pro Gly Gly 160 Val  
 Ala Tyr Ala Cys Ser Lys Gly Gly Val Asp Thr Met Thr Arg Met Met  
 Ala Ile Glu Leu Gly Val Tyr Asn Ile Arg Val Asn Ser Ile Ala Pro  
 Gly Leu Lys Ser Glu Ile Thr Gln Gly Leu Met Gln Lys Glu Trp  
 Leu Lys Asn Val Thr Glu Arg Thr Ile Pro Leu Lys Val Gln Gln Thr  
 Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile His Asp Ser  
 Ser Gln Tyr Val Ser Gly Asn Thr Tyr Ile Leu Asp Ser Gly Ala Thr  
 Ile Pro Gly Leu Pro Ile Phe Ser Ser Leu

<210> 3515  
 <211> 801  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(801)

<400> 3515  
 atg gct gga gaa gag caa aga cga aga tgg agc ctt caa ggc aaa acc 48  
 Met Ala Gly Glu Glu Gln Arg Arg Arg Trp Ser Leu Gln Gly Lys Thr  
 1 5 10 15  
 gca ctt gtc acc ggt gga acc aaa ggc att ggg cat gct ata gta gag 96  
 Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly His Ala Ile Val Glu  
 20 25 30  
 gaa ctt gca gga ttt gga gca ata ata cat aca tgt gct gca gac gaa 144  
 Glu Leu Ala Gly Phe Gly Ala Ile Ile His Thr Cys Ala Arg Asp Glu  
 35 40 45  
 gca cat ctc aac gag tgt tta agc aac tgg aaa aat aaa ggg ttt caa 192  
 Ala His Leu Asn Glu Cys Leu Ser Asn Trp Lys Asn Lys Gly Phe Gln  
 50 55 60  
 gtc act ggt tca gtc tgt gac gca tcg tcc tgg acc gaa aga gag aag 240  
 Val Thr Gly Ser Val Cys Asp Ala Ser Ser Trp Thr Glu Arg Glu Lys  
 65 70 75 80  
 ctg atg caa act gtg tac act ttg ttt gat gcc aag ctc agt atc ctc 288  
 Leu Met Gln Thr Val Tyr Thr Leu Phe Asp Ala Lys Leu Ser Ile Leu  
 85 90 95  
 atc aac aac gtt ggc gca atc cgg tca aag cca aca att gaa aat acg 336  
 Ile Asn Asn Val Gly Ala Ile Arg Ser Lys Pro Thr Ile Glu Asn Thr  
 100 105 110  
 gca gag gat ttc tcg ttc cac att tcc acc aac ttg gaa tct gca tac 384  
 Ala Glu Asp Phe Ser Phe His Ile Ser Thr Asn Leu Glu Ser Ala Tyr  
 115 120 125  
 cat ttt agc cag ctt gca cat cct ctg ctc aag tct tca ggg tgt ggt 432  
 His Phe Ser Gln Leu Ala His Pro Leu Leu Lys Ser Ser Gly Cys Gly  
 130 135 140  
 aat atc gtc ttc ata tcc tcc att act ggg gtc gtc tca cgt agc atc 480  
 Asn Ile Val Phe Ile Ser Ser Ile Thr Gly Val Val Ser Arg Ser Ile  
 145 150 155 160  
 agc tcc atc tac agt gcc aca aaa ggg gca atg aat cag cta gca agg 528  
 Ser Ser Ile Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Ala Arg  
 165 170 175  
 aat ttg gca tgc gag tgg gcg agc gac agc ata aga gct aat tct gta 576  
 Asn Leu Ala Cys Glu Trp Ala Ser Asp Ser Ile Arg Ala Asn Ser Val  
 180 185 190  
 gct cct aca ttc att gcc act cca ctg gtt gat aat gcg ttt gat gat 624  
 Ala Pro Thr Phe Ile Ala Thr Pro Leu Val Asp Asn Ala Phe Asp Asp  
 195 200 205  
 gaa ttt aaa aaa gtg gta gaa tca aca aat ccc ttg ggg cgc ata gga 672  
 Glu Phe Lys Lys Val Val Glu Ser Thr Asn Pro Leu Gly Arg Ile Gly

## PhoenixTemp32470.tmp.txt

210	aaa cca gag gag gta gca	215	tcg gtg gtg gca ttt	220	ctt tgt atg cct gca	720
Lys Pro Glu Glu Val Ala	Ser Val Val Ala Phe	Leu Cys Met Pro Ala				
225	gct tct tac ata acg ggt	230	cag acc att tgc gtt	235	gat gga ggt ctt tcg	768
Ala Ser Tyr Ile Thr Gly	Gln Thr Ile Cys Val	Asp Gly Gly Leu Ser				
	245	tat cag cca cac gct	250	taa		801
Val Asn Gly Phe Ser Tyr Gln Pro His Ala						
	260		265			

<210> 3516  
 <211> 266  
 <212> PRT  
 <213> Brassica napus

<400> 3516  
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 Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly His Ala Ile Val Glu  
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 Glu Leu Ala Gly Phe Gly Ala Ile Ile His Thr Cys Ala Arg Asp Glu  
 35 40 45  
 Ala His Leu Asn Glu Cys Leu Ser Asn Trp Lys Asn Lys Gly Phe Gln  
 50 55 60  
 Val Thr Gly Ser Val Cys Asp Ala Ser Ser Trp Thr Glu Arg Glu Lys  
 65 70 75 80  
 Leu Met Gln Thr Val Tyr Thr Leu Phe Asp Ala Lys Leu Ser Ile Leu  
 85 90 95  
 Ile Asn Asn Val Gly Ala Ile Arg Ser Lys Pro Thr Ile Glu Asn Thr  
 100 105 110  
 Ala Glu Asp Phe Ser Phe His Ile Ser Thr Asn Leu Glu Ser Ala Tyr  
 115 120 125  
 His Phe Ser Gln Leu Ala His Pro Leu Leu Lys Ser Gly Cys Gly  
 130 135 140  
 Asn Ile Val Phe Ile Ser Ser Ile Thr Gly Val Val Ser Arg Ser Ile  
 145 150 155 160  
 Ser Ser Ile Tyr Ser Ala Thr Lys Gly Ala Met Asn Gln Leu Ala Arg  
 165 170 175  
 Asn Leu Ala Cys Glu Trp Ala Ser Asp Ser Ile Arg Ala Asn Ser Val  
 180 185 190  
 Ala Pro Thr Phe Ile Ala Thr Pro Leu Val Asp Asn Ala Phe Asp Asp  
 195 200 205  
 Glu Phe Lys Lys Val Val Glu Ser Thr Asn Pro Leu Gly Arg Ile Gly  
 210 215 220  
 Lys Pro Glu Glu Val Ala Ser Val Val Ala Phe Leu Cys Met Pro Ala  
 225 230 235 240  
 Ala Ser Tyr Ile Thr Gly Gln Thr Ile Cys Val Asp Gly Gly Leu Ser  
 245 250 255  
 Val Asn Gly Phe Ser Tyr Gln Pro His Ala  
 260 265

<210> 3517  
 <211> 789  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(789)

<400> 3517	atg gat aaa aga tgg agc ctt caa ggg atg acc gcc ctt gta aac ggt	48
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gga gcc agc gga atc ggg tat gcc ata gta gaa gag tta gct agt ttt	96	
Gly Ala Ser Gly Ile Gly Tyr Ala Ile Val Glu Glu Leu Ala Ser Phe		
20 25 30		
gga gct aga atc cac gta tgc gac atc tct gaa aca ttt ctc aat caa	144	

PhoenixTemp32470.tmp.txt

Gly	Ala	Arg	Ile	His	Val	Cys	Asp	Ile	Ser	Glu	Thr	Phe	Leu	Asn	Gln		
agc	tta	agc	gaa	tgg	gaa	aag	aaa	ggg	ttt	caa	gtg	agt	ggc	tca	atc	192	
Ser	Leu	Ser	Glu	Trp	Glu	Lys	Lys	Gly	Phe	Gln	Val	Ser	Gly	Ser	Ile		
	50					55					60						
tgt	gat	gta	acc	tct	cgt	ccc	cag	aga	gaa	aca	tta	ata	caa	aaa	gtc	240	
Cys	Asp	Val	Thr	Ser	Arg	Pro	Gln	Arg	Glu	Thr	Leu	Ile	Gln	Lys	Val		
	65				70					75					80		
tcc	gcg	cta	ttc	gat	ggc	aaa	ctc	aac	att	ctt	gtg	aac	aat	gtg	gga	288	
Ser	Ala	Leu	Phe	Asp	Gly	Lys	Leu	Asn	Ile	Leu	Val	Asn	Asn	Val	Gly		
				85					90					95			
gta	ctt	cgt	gga	aag	cca	aca	aca	gaa	tat	gcg	aaa	gag	gat	ttc	aat	336	
Val	Leu	Arg	Gly	Lys	Pro	Thr	Thr	Glu	Tyr	Ala	Lys	Glu	Asp	Phe	Asn		
			100					105					110				
ttc	cac	atc	tca	aca	aac	tta	gaa	cct	gct	ttc	aat	ttt	tcc	cag	ctt	384	
Phe	His	Ile	Ser	Thr	Asn	Leu	Glu	Pro	Ala	Phe	Asn	Phe	Ser	Gln	Leu		
	115						120				125						
tca	cat	cct	cta	cta	aag	gct	tca	ggc	tat	gga	agc	atc	atc	ttc	att	432	
Ser	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Tyr	Gly	Ser	Ile	Ile	Phe	Ile		
	130					135					140						
tcc	tct	gtt	gca	gga	att	gta	tca	ttt	gac	tgt	gga	tcc	att	tat	agt	480	
Ser	Ser	Val	Ala	Gly	Ile	Val	Ser	Phe	Asp	Cys	Gly	Ser	Ile	Tyr	Ser		
	145				150				155						160		
cta	gca	aaa	gga	gct	ctg	aat	cag	cta	gca	aga	aat	ttg	gca	tgt	gaa	528	
Leu	Ala	Lys	Gly	Ala	Leu	Asn	Gln	Leu	Ala	Arg	Asn	Leu	Ala	Cys	Glu		
			165					170						175			
tgg	gca	aaa	gac	ggc	ata	aga	gcc	aac	gct	gtt	gcc	cct	aat	gct	atc	576	
Trp	Ala	Lys	Asp	Gly	Ile	Arg	Ala	Asn	Ala	Val	Ala	Pro	Asn	Ala	Ile		
			180					185					190				
agg	act	cct	ctg	tct	caa	caa	tat	ctt	gat	gac	gtc	agt	ttc	aag	gag	624	
Arg	Thr	Pro	Leu	Ser	Gln	Gln	Tyr	Leu	Asp	Asp	Val	Ser	Phe	Lys	Glu		
	195						200					205					
gaa	ttg	ttc	agt	aga	act	cca	ctt	ggt	cgc	gct	gga	gag	cca	aat	gaa	672	
Glu	Leu	Phe	Ser	Arg	Thr	Pro	Leu	Gly	Arg	Ala	Gly	Glu	Pro	Asn	Glu		
	210					215					220						
gtt	gca	tca	cta	gtg	gca	ttc	ttg	tgt	cta	cct	gcg	gct	tct	tat	ata	720	
Val	Ala	Ser	Leu	Val	Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile		
	225				230					235					240		
act	ggt	caa	acc	att	tgt	gtt	gat	gga	ggc	ctc	act	gtt	aac	ggt	ttc	768	
Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	Gly	Gly	Leu	Thr	Val	Asn	Gly	Phe		
				245				250						255			
tcc	tat	caa	cca	cat	gct	tga										789	
Ser	Tyr	Gln	Pro	His	Ala												
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<210> 3518  
 <211> 262  
 <212> PRT  
 <213> Brassica napus

<400> 3518

Met	Asp	Lys	Arg	Trp	Ser	Leu	Gln	Gly	Met	Thr	Ala	Leu	Val	Asn	Gly		
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Gly	Ala	Ser	Gly	Ile	Gly	Tyr	Ala	Ile	Val	Glu	Glu	Leu	Ala	Ser	Phe		
			20					25					30				
Gly	Ala	Arg	Ile	His	Val	Cys	Asp	Ile	Ser	Glu	Thr	Phe	Leu	Asn	Gln		
		35					40					45					
Ser	Leu	Ser	Glu	Trp	Glu	Lys	Lys	Gly	Phe	Gln	Val	Ser	Gly	Ser	Ile		
	50					55					60						
Cys	Asp	Val	Thr	Ser	Arg	Pro	Gln	Arg	Glu	Thr	Leu	Ile	Gln	Lys	Val		
	65				70					75					80		
Ser	Ala	Leu	Phe	Asp	Gly	Lys	Leu	Asn	Ile	Leu	Val	Asn	Asn	Val	Gly		
				85					90					95			
Val	Leu	Arg	Gly	Lys	Pro	Thr	Thr	Glu	Tyr	Ala	Lys	Glu	Asp	Phe	Asn		
			100					105					110				
Phe	His	Ile	Ser	Thr	Asn	Leu	Glu	Pro	Ala	Phe	Asn	Phe	Ser	Gln	Leu		
		115					120					125					
Ser	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Tyr	Gly	Ser	Ile	Ile	Phe	Ile		
	130					135					140						

## PhoenixTemp32470.tmp.txt

Ser 145 Ser Val Ala Gly Ile Val Ser Phe Asp Cys Gly Ser Ile Tyr Ser 160  
 Leu Ala Lys Gly Ala 165 Leu Asn Gln Leu Ala 170 Arg Asn Leu Ala Cys Glu 175  
 Trp Ala Lys Asp 180 Gly Ile Arg Ala Asn 185 Ala Val Ala Pro Asn Ala Ile 190  
 Arg Thr Pro 195 Leu Ser Gln Gln Tyr 200 Leu Asp Asp Val Ser Phe Lys Glu 205  
 Glu Leu Phe Ser Arg Thr Pro 215 Leu Gly Arg Ala Gly Glu Pro Asn Glu 220  
 Val 225 Ala Ser Leu Val Ala 230 Phe Leu Cys Leu Pro Ala Ala Ser Tyr Ile 240  
 Thr Gly Gln Thr Ile 245 Cys Val Asp Gly Gly 250 Leu Thr Val Asn Gly 255 Phe  
 Ser Tyr Gln Pro His Ala 260

&lt;210&gt; 3519

&lt;211&gt; 987

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(987)

&lt;400&gt; 3519

atg	ctg	act	cta	ctc	ttc	tcc	tct	ctc	gga	ctc	ctc	ctg	ctt	ctc	ggt	48
Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
1				5					10					15		
ctt	ctc	ctc	aaa	ttc	gca	ttc	gcc	gat	ggg	gat	tta	acg	ctg	att	tcg	96
Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
aag	aag	cat	gtg	aaa	cga	gaa	gcc	ata	gaa	gga	aag	gtg	gtt	tgg	atc	144
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
aca	ggg	gct	agc	cgt	gga	att	gga	gaa	gtt	ctt	gct	aaa	cag	ttt	gcg	192
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
agt	tta	ggt	gcc	aag	ctt	att	ctc	tct	gct	agg	aac	gaa	gct	gag	ttg	240
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
	65				70					75					80	
gtt	cgt	gtt	aag	agt	gag	ctc	aaa	ggt	aag	tat	gca	cca	gaa	gat	gtc	288
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
				85				90						95		
aag	gtt	ttg	cct	tta	gat	cta	gct	agc	ggc	gaa	gag	ggt	ctc	aaa	ggt	336
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
gtt	gta	gag	aga	gca	gtg	tcg	ctt	ttc	cct	ggg	gct	ggg	gtt	gat	tat	384
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
ttg	gtt	cac	aac	gct	gcc	tat	gag	cg	ccg	aaa	tca	aat	gca	gtg	gat	432
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
gcg	agt	gag	gaa	aat	ctt	aag	act	aca	ttc	gag	gtt	aat	gta	ttt	ggg	480
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
	145				150					155					160	
aca	ata	tct	ctc	aca	aag	ttg	gta	act	cct	cat	atg	ctg	aaa	caa	gga	528
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
				165					170					175		
ggc	ggt	cat	ttt	gtt	gtg	att	agc	agt	gcc	gca	ggg	aag	gta	cca	tca	576
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180				185					190				
cct	gga	cag	gct	ata	tat	gct	gct	tca	aaa	cat	gct	ctg	cag	ggc	tac	624
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195				200						205				
ttc	cac	acc	tta	cgt	tct	gag	ttc	ttt	cag	aag	gga	atc	aag	gtt	act	672
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					

## PhoenixTemp32470.tmp.txt

gtg	ggt	tgt	ccg	ggt	cca	ata	gag	acc	tca	aat	ggt	aca	gga	aca	tca	720
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser	
225					230					235					240	
act	tcc	gaa	gac	aag	aag	tct	cct	gag	aag	cgt	gtg	tca	tct	gaa	cga	768
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg	
				245					250					255		
tgt	gca	gaa	ctg	acc	ata	atc	gct	gca	tct	cat	aac	tta	aaa	gaa	gct	816
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala	
			260					265					270			
tgg	att	tca	tat	cag	cca	gta	ctg	ctc	gtg	atg	tat	cta	gtg	cag	tac	864
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
	275						280					285				
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	ggg	aaa	cgt	912
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg	
	290					295					300					
gtg	gag	ggt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ctg	ctc	960
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu	
305					310					315					320	
ttc	cag	aag	aag	act	aaa	aca	aac	tga								987
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn									
				325												

&lt;210&gt; 3520

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3520

Met	Leu	Thr	Leu	Leu	Phe	Ser	Ser	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Gly	
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Leu	Leu	Leu	Lys	Phe	Ala	Phe	Ala	Asp	Gly	Asp	Leu	Thr	Leu	Ile	Ser	
			20					25					30			
Lys	Lys	His	Val	Lys	Arg	Glu	Ala	Ile	Glu	Gly	Lys	Val	Val	Trp	Ile	
		35					40					45				
Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Glu	Val	Leu	Ala	Lys	Gln	Phe	Ala	
	50					55					60					
Ser	Leu	Gly	Ala	Lys	Leu	Ile	Leu	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	
65					70					75				80		
Val	Arg	Val	Lys	Ser	Glu	Leu	Lys	Gly	Lys	Tyr	Ala	Pro	Glu	Asp	Val	
				85					90					95		
Lys	Val	Leu	Pro	Leu	Asp	Leu	Ala	Ser	Gly	Glu	Glu	Gly	Leu	Lys	Gly	
			100					105					110			
Val	Val	Glu	Arg	Ala	Val	Ser	Leu	Phe	Pro	Gly	Ala	Gly	Val	Asp	Tyr	
		115					120					125				
Leu	Val	His	Asn	Ala	Ala	Tyr	Glu	Arg	Pro	Lys	Ser	Asn	Ala	Val	Asp	
	130					135					140					
Ala	Ser	Glu	Glu	Asn	Leu	Lys	Thr	Thr	Phe	Glu	Val	Asn	Val	Phe	Gly	
145					150					155					160	
Thr	Ile	Ser	Leu	Thr	Lys	Leu	Val	Thr	Pro	His	Met	Leu	Lys	Gln	Gly	
				165					170					175		
Gly	Gly	His	Phe	Val	Val	Ile	Ser	Ser	Ala	Ala	Gly	Lys	Val	Pro	Ser	
			180					185					190			
Pro	Gly	Gln	Ala	Ile	Tyr	Ala	Ala	Ser	Lys	His	Ala	Leu	Gln	Gly	Tyr	
		195				200						205				
Phe	His	Thr	Leu	Arg	Ser	Glu	Phe	Phe	Gln	Lys	Gly	Ile	Lys	Val	Thr	
	210					215					220					
Val	Val	Cys	Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Gly	Thr	Gly	Thr	Ser	
225					230					235					240	
Thr	Ser	Glu	Asp	Lys	Lys	Ser	Pro	Glu	Lys	Arg	Val	Ser	Ser	Glu	Arg	
				245					250					255		
Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	Ala	Ser	His	Asn	Leu	Lys	Glu	Ala	
			260					265					270			
Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	Leu	Val	Met	Tyr	Leu	Val	Gln	Tyr	
		275					280					285				
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg	
	290					295					300					
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu	
305					310					315					320	
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn									

325

<210> 3521  
 <211> 849  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 3521  
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 ttg ggt aaa gtg gca ttg ata acc gga gga gcc aca ggg ata ggc gaa 96  
 Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu  
 20 25 30  
 agc atc gct cgt ctg ttc cac aag cac ggt gcc aaa gtc tgc atc gtc 144  
 Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Val  
 35 40 45  
 gac gtc caa gac gat ctc gga gac aaa gtt ctc aaa act ctg tta gcc 192  
 Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala  
 50 55 60  
 aac tcg gag gag tca gct tgt ttc atc cac ggt gac gtc aca caa gaa 240  
 Asn Ser Glu Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr Gln Glu  
 65 70 75 80  
 gac gac atc agt aac gct gtt gac ttc gcc gtc aag cgt ttc ggg aca 288  
 Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Arg Phe Gly Thr  
 85 90 95  
 ctt gac ata ctc atc aac aac gca gga gta agc gaa gca ccg tgt ccg 336  
 Leu Asp Ile Leu Ile Asn Asn Ala Gly Val Ser Glu Ala Pro Cys Pro  
 100 105 110  
 gac atc cgc aac aac agt tta acc gag ttc gag atg gtc ttc aac gtc 384  
 Asp Ile Arg Asn Asn Ser Leu Thr Glu Phe Glu Met Val Phe Asn Val  
 115 120 125  
 aac gtg aaa gga gct ttc cta ggg atg aaa cat gcg gcg cgt gtg atg 432  
 Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg Val Met  
 130 135 140  
 atc ccc gcc aag aaa ggc tcg ata gtc tct tta tgc agc gtt ggc ggc 480  
 Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val Gly Gly  
 145 150 155 160  
 gtt gtc gga ggc gtt ggt ccg cac gct tac gtc ggc tcc aag cac gcg 528  
 Val Val Gly Gly Val Gly Pro His Ala Tyr Val Gly Ser Lys His Ala  
 165 170 175  
 gtt cta ggt ttg act agg agc gtt gcg gcg gag cta gga cag cat ggg 576  
 Val Leu Gly Leu Thr Arg Ser Val Ala Glu Leu Gly Gln His Gly  
 180 185 190  
 ata cgc gtg aac tgc gtt tct cct tac gcg gtt ttg act aac ctc gcg 624  
 Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Leu Thr Asn Leu Ala  
 195 200 205  
 ttg gct cat ttg cct gag gat gag agg aag gaa ggc gtg gtc gct ggt 672  
 Leu Ala His Leu Pro Glu Asp Glu Arg Lys Glu Gly Val Val Ala Gly  
 210 215 220  
 ttc agg agt ttc gcc gct gcg aac gcg aat ctg aaa ggt gtt gag ttg 720  
 Phe Arg Ser Phe Ala Ala Ala Asn Ala Asn Leu Lys Gly Val Glu Leu  
 225 230 235 240  
 acg gtt gat gac gtg gcg aac gcg gtt ttg ttt ctg gcg agt gat gag 768  
 Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Glu  
 245 250 255  
 tcg cgg tat gtg agt gga gat aat ctg atg gtt gat ggt ggg ttc act 816  
 Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly Phe Thr  
 260 265 270  
 tgc act aac cac tcc ttt aaa gtt ttt aga tga 849  
 Cys Thr Asn His Ser Phe Lys Val Phe Arg  
 275 280

<210> 3522  
 <211> 282



&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3522

```

Met Ser Thr Glu Asn Ile Gln His Ser Ser Leu Pro Thr Gln Arg Leu
1      5      10      15
Leu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Thr Gly Ile Gly Glu
20      25      30
Ser Ile Ala Arg Leu Phe His Lys His Gly Ala Lys Val Cys Ile Val
35      40      45
Asp Val Gln Asp Asp Leu Gly Asp Lys Val Leu Lys Thr Leu Leu Ala
50      55      60
Asn Ser Glu Glu Ser Ala Cys Phe Ile His Gly Asp Val Thr Gln Glu
65      70      75      80
Asp Asp Ile Ser Asn Ala Val Asp Phe Ala Val Lys Arg Phe Gly Thr
85      90      95
Leu Asp Ile Leu Ile Asn Asn Ala Gly Val Ser Glu Ala Pro Cys Pro
100      105      110
Asp Ile Arg Asn Asn Ser Leu Thr Glu Phe Glu Met Val Phe Asn Val
115      120      125
Asn Val Lys Gly Ala Phe Leu Gly Met Lys His Ala Ala Arg Val Met
130      135      140
Ile Pro Ala Lys Lys Gly Ser Ile Val Ser Leu Cys Ser Val Gly Gly
145      150      155      160
Val Val Gly Gly Val Gly Pro His Ala Tyr Val Gly Ser Lys His Ala
165      170      175
Val Leu Gly Leu Thr Arg Ser Val Ala Ala Glu Leu Gly Gln His Gly
180      185      190
Ile Arg Val Asn Cys Val Ser Pro Tyr Ala Val Leu Thr Asn Leu Ala
195      200      205
Leu Ala His Leu Pro Glu Asp Glu Arg Lys Glu Gly Val Val Ala Gly
210      215      220
Phe Arg Ser Phe Ala Ala Ala Asn Ala Asn Leu Lys Gly Val Glu Leu
225      230      235      240
Thr Val Asp Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Glu
245      250      255
Ser Arg Tyr Val Ser Gly Asp Asn Leu Met Val Asp Gly Gly Phe Thr
260      265      270
Cys Thr Asn His Ser Phe Lys Val Phe Arg
275      280

```

&lt;210&gt; 3523

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(801)

&lt;400&gt; 3523

```

atg gct gga gaa gag caa aga cgt aga tgg agc ctt caa ggc aag acc      48
Met Ala Gly Glu Glu Gln Arg Arg Arg Trp Ser Leu Gln Gly Lys Thr
1      5      10      15
gca ctt gtc acc ggt gga acc aaa ggc att ggg cat gct ata gta gag      96
Ala Leu Val Thr Gly Gly Thr Lys Gly Ile Gly His Ala Ile Val Glu
20      25      30
gaa ctt gca gga ttt ggg gtg ata ata cat aca tgt gct cga gac gaa      144
Glu Leu Ala Gly Phe Gly Val Ile Ile His Thr Cys Ala Arg Asp Glu
35      40      45
gca cat ctc aac gag tgt tta agc aag tgg aag aat aaa ggg ttt caa      192
Ala His Leu Asn Glu Cys Leu Ser Lys Trp Lys Asn Lys Gly Phe Gln
50      55      60
gtc act ggt tca gtc tgt gac gta tcg tcc tgg acc gaa aga gag aag      240
Val Thr Gly Ser Val Cys Asp Val Ser Ser Trp Thr Glu Arg Glu Lys
65      70      75      80
cta atg caa act gtg tac tct ttg ttt gat gcc aag ctc agt atc ctt      288
Leu Met Gln Thr Val Tyr Ser Leu Phe Asp Ala Lys Leu Ser Ile Leu
85      90      95

```

## PhoenixTemp32470.tmp.txt

atc	aac	aat	gct	ggc	gca	atc	cgg	tca	aag	cca	aca	ata	gag	cat	acg	336
Ile	Asn	Asn	Ala	Gly	Ala	Ile	Arg	Ser	Lys	Pro	Thr	Ile	Glu	His	Thr	
			100					105					110			
gct	gag	gat	ttc	tcg	ttc	cac	att	tcg	acc	aac	ttg	gaa	tct	gcg	tat	384
Ala	Glu	Asp	Phe	Ser	Phe	His	Ile	Ser	Thr	Asn	Leu	Glu	Ser	Ala	Tyr	
		115					120					125				
cat	ttt	agc	cag	ctt	gca	cat	cct	ctg	ctc	aaa	gct	tca	gga	tgt	ggc	432
His	Phe	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Cys	Gly	
	130					135					140					
aac	atc	gtg	ttc	ata	tcc	tcc	att	tct	ggg	gtc	gtc	tca	ctt	agc	atc	480
Asn	Ile	Val	Phe	Ile	Ser	Ser	Ile	Ser	Gly	Val	Val	Ser	Leu	Ser	Ile	
145					150				155						160	
agc	tcc	atc	tac	agt	gcc	aca	aaa	ggg	gca	atg	aat	cag	cta	gca	agg	528
Ser	Ser	Ile	Tyr	Ser	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	Leu	Ala	Arg	
				165				170						175		
aat	ttg	gca	tgc	gag	tgg	gcg	agc	gac	agc	ata	aga	gct	aat	tct	gta	576
Asn	Leu	Ala	Cys	Glu	Trp	Ala	Ser	Asp	Ser	Ile	Arg	Ala	Asn	Ser	Val	
			180					185					190			
gct	cct	aca	ttc	att	gcc	act	cca	ctg	ggt	gat	aat	gcg	ttt	gat	gat	624
Ala	Pro	Thr	Phe	Ile	Ala	Thr	Pro	Leu	Val	Asp	Asn	Ala	Phe	Asp	Asp	
		195					200					205				
gaa	ttt	aaa	aaa	gtg	gta	gaa	tca	aca	aat	ccc	ttg	ggg	cgc	ata	gga	672
Glu	Phe	Lys	Lys	Val	Val	Glu	Ser	Thr	Asn	Pro	Leu	Gly	Arg	Ile	Gly	
210					215						220					
aaa	cca	gag	gag	gta	gca	tcg	gtg	gtg	gca	ttt	ctt	tgt	atg	cct	gca	720
Lys	Pro	Glu	Glu	Val	Ala	Ser	Val	Val	Ala	Phe	Leu	Cys	Met	Pro	Ala	
225					230				235						240	
gct	tct	tac	ata	acg	ggc	cag	acc	att	tgc	ggt	gat	gga	ggc	ctt	tcg	768
Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp	Gly	Gly	Leu	Ser	
				245					250					255		
gtc	aat	ggc	ttc	tcg	tat	cag	cca	cac	gct	taa						801
Val	Asn	Gly	Phe	Ser	Tyr	Gln	Pro	His	Ala							
			260					265								

&lt;210&gt; 3524

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3524

Met	Ala	Gly	Glu	Glu	Gln	Arg	Arg	Arg	Trp	Ser	Leu	Gln	Gly	Lys	Thr	
1				5					10					15		
Ala	Leu	Val	Thr	Gly	Gly	Thr	Lys	Gly	Ile	Gly	His	Ala	Ile	Val	Glu	
			20					25					30			
Glu	Leu	Ala	Gly	Phe	Gly	Val	Ile	Ile	His	Thr	Cys	Ala	Arg	Asp	Glu	
		35					40					45				
Ala	His	Leu	Asn	Glu	Cys	Leu	Ser	Lys	Trp	Lys	Asn	Lys	Gly	Phe	Gln	
	50					55					60					
Val	Thr	Gly	Ser	Val	Cys	Asp	Val	Ser	Ser	Trp	Thr	Glu	Arg	Glu	Lys	
65					70				75						80	
Leu	Met	Gln	Thr	Val	Tyr	Ser	Leu	Phe	Asp	Ala	Lys	Leu	Ser	Ile	Leu	
				85					90					95		
Ile	Asn	Asn	Ala	Gly	Ala	Ile	Arg	Ser	Lys	Pro	Thr	Ile	Glu	His	Thr	
			100					105				110				
Ala	Glu	Asp	Phe	Ser	Phe	His	Ile	Ser	Thr	Asn	Leu	Glu	Ser	Ala	Tyr	
		115					120					125				
His	Phe	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser	Gly	Cys	Gly	
	130					135					140					
Asn	Ile	Val	Phe	Ile	Ser	Ser	Ile	Ser	Gly	Val	Val	Ser	Leu	Ser	Ile	
145					150				155						160	
Ser	Ser	Ile	Tyr	Ser	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln	Leu	Ala	Arg	
				165					170					175		
Asn	Leu	Ala	Cys	Glu	Trp	Ala	Ser	Asp	Ser	Ile	Arg	Ala	Asn	Ser	Val	
			180					185					190			
Ala	Pro	Thr	Phe	Ile	Ala	Thr	Pro	Leu	Val	Asp	Asn	Ala	Phe	Asp	Asp	
		195					200					205				
Glu	Phe	Lys	Lys	Val	Val	Glu	Ser	Thr	Asn	Pro	Leu	Gly	Arg	Ile	Gly	
	210					215					220					
Lys	Pro	Glu	Glu	Val	Ala	Ser	Val	Val	Ala	Phe	Leu	Cys	Met	Pro	Ala	

## PhoenixTemp32470.tmp.txt

225 Ala Ser Tyr Ile Thr 230 Gly Gln Thr Ile Cys 235 Val Asp Gly Gly Leu 240  
 Val Asn Gly Phe Ser 245 Tyr Gln Pro His 250 Ala 255 Ser  
 260 265

<210> 3525  
 <211> 987  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(987)

<400> 3525  
 atg ctg act cta ctc ttc tcc tct ctc gga ctc ctc ctt ctc ctt ggc 48  
 Met Leu Thr Leu Leu Phe Ser Ser Leu Gly Leu Leu Leu Leu Gly  
 1 5 10 15  
 ctt ctc ctc aaa ttc gca ttc gcc gat ggg gat tta acc ctg att tcg 96  
 Leu Leu Leu Lys Phe Ala Phe Ala Asp Gly Asp Leu Thr Leu Ile Ser  
 20 25 30  
 aag aag cat gcg aaa cgt gaa gcc ata gaa ggc aag gtg gtt tgg atc 144  
 Lys Lys His Ala Lys Arg Glu Ala Ile Glu Gly Lys Val Val Trp Ile  
 35 40 45  
 aca ggg tct agc cgt gga att gga gaa gtt ctt gct aaa cag ttt gca 192  
 Thr Gly Ser Ser Arg Gly Ile Gly Glu Val Leu Ala Lys Gln Phe Ala  
 50 55 60  
 agt tta ggt gcc aag ctt att ctc tct gct agg aac gaa gct gag ttg 240  
 Ser Leu Gly Ala Lys Leu Ile Leu Ser Ala Arg Asn Glu Ala Glu Leu  
 65 70 75 80  
 gtt cgt gtt aag agt gag ctc aaa ggt aag tat gca cca gaa gat gtc 288  
 Val Arg Val Lys Ser Glu Leu Lys Gly Lys Tyr Ala Pro Glu Asp Val  
 85 90 95  
 aag gtt ttg cct tta gat cta gct agc ggc gaa gag ggg ctc aaa ggt 336  
 Lys Val Leu Pro Leu Asp Leu Ala Ser Gly Glu Glu Gly Leu Lys Gly  
 100 105 110  
 gtt gta gag caa gca ttg tcg ctt ttc cct ggg gct ggt gtt gat tat 384  
 Val Val Glu Gln Ala Leu Ser Leu Phe Pro Gly Ala Gly Val Asp Tyr  
 115 120 125  
 ttg gtt cac aac gct gcc tat gag cgt ccg aaa tca aat gca gtg gat 432  
 Leu Val His Asn Ala Ala Tyr Glu Arg Pro Lys Ser Asn Ala Val Asp  
 130 135 140  
 gcg agt gag gaa aat ctt aag act aca ttc gag gtt aat gta ttt ggg 480  
 Ala Ser Glu Glu Asn Leu Lys Thr Thr Phe Glu Val Asn Val Phe Gly  
 145 150 155 160  
 aca ata tct ctc aca aag ttg gta act cct cat atg ctg aaa caa gga 528  
 Thr Ile Ser Leu Thr Lys Leu Val Thr Pro His Met Leu Lys Gln Gly  
 165 170 175  
 ggc ggt cat ttt gtt gtg att agc agt gcc gca ggg aag gta cca tca 576  
 Gly Gly His Phe Val Val Ile Ser Ser Ala Ala Gly Lys Val Pro Ser  
 180 185 190  
 cct gga cag gct ata tat gct gct tca aaa cat gct ctg cag ggc tac 624  
 Pro Gly Gln Ala Ile Tyr Ala Ala Ser Lys His Ala Leu Gln Gly Tyr  
 195 200 205  
 ttc cac acc tta cgt tct gag ttc ttt cag aag gga atc aag gtt act 672  
 Phe His Thr Leu Arg Ser Glu Phe Phe Gln Lys Ile Lys Val Thr  
 210 215 220  
 gtg gtt tgt ccg ggt cca ata gag acc tca aat ggt aca gga aca tca 720  
 Val Val Cys Pro Gly Pro Ile Glu Thr Ser Asn Gly Thr Gly Thr Ser  
 225 230 235 240  
 act tcc gaa gac aag aag tct cct gag aag cgt gtg tca tct gaa cga 768  
 Thr Ser Glu Asp Lys Lys Ser Pro Glu Lys Arg Val Ser Ser Glu Arg  
 245 250 255  
 tgt gca gaa ctg acc ata atc gct gca tct cat aac tta aaa gaa gct 816  
 Cys Ala Glu Leu Thr Ile Ile Ala Ala Ser His Asn Leu Lys Glu Ala  
 260 265 270  
 tgg att tca tat cag cca gta ctg gtg atg tat cta gtg cag tac 864  
 Trp Ile Ser Tyr Gln Pro Val Leu Leu Val Met Tyr Leu Val Gln Tyr

PhoenixTemp32470.tmp.txt																		
275							280							285				
atg	cct	ttc	ctt	ggc	ttc	tgg	ctc	atg	gac	aag	gtt	gga	ggg	aaa	cgt	912		
Met	Pro	Phe	Leu	Gly	Phe	Trp	Leu	Met	Asp	Lys	Val	Gly	Gly	Lys	Arg			
290							295							300				
gtg	gag	gtt	gct	gag	aag	aaa	ggc	aac	aca	tac	tca	tgg	aac	ctg	ctc	960		
Val	Glu	Val	Ala	Glu	Lys	Lys	Gly	Asn	Thr	Tyr	Ser	Trp	Asn	Leu	Leu			
305							310							315		320		
ttc	cag	aag	aag	act	aaa	aca	aac	tga								987		
Phe	Gln	Lys	Lys	Thr	Lys	Thr	Asn											
325																		

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<210> 3526
<211> 328
<212> PRT
<213> Brassica napus
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<400>	3526														
Met 1	Leu	Thr	Leu	Leu 5	Phe	Ser	Ser	Leu	Gly 10	Leu	Leu	Leu	Leu	Leu 15	Gly
Leu	Leu	Leu	Lys 20	Phe	Ala	Phe	Ala	Asp 25	Gly	Asp	Leu	Thr	Leu 30	Ile	Ser
Lys	Lys	His 35	Ala	Lys	Arg	Glu	Ala 40	Ile	Glu	Gly	Lys	Val 45	Val	Trp	Ile
Thr	Gly 50	Ser	Ser	Arg	Gly	Ile 55	Gly	Glu	Val	Leu	Ala 60	Lys	Gln	Phe	Ala
Ser 65	Leu	Gly	Ala	Lys	Leu 70	Ile	Leu	Ser	Ala	Arg 75	Asn	Glu	Ala	Glu	Leu 80
Val	Arg	Val	Lys	Ser 85	Glu	Leu	Lys	Gly	Lys 90	Tyr	Ala	Pro	Glu	Asp 95	Val
Lys	Val	Leu	Pro 100	Leu	Asp	Leu	Ala	Ser 105	Gly	Glu	Glu	Gly	Leu 110	Lys	Gly
Val	Val	Glu 115	Gln	Ala	Leu	Ser	Leu 120	Phe	Pro	Gly	Ala	Gly 125	Val	Asp	Tyr
Leu	Val 130	His	Asn	Ala	Ala	Tyr 135	Glu	Arg	Pro	Lys	Ser 140	Asn	Ala	Val	Asp
Ala 145	Ser	Glu	Glu	Asn	Leu 150	Lys	Thr	Thr	Phe	Glu 155	Val	Asn	Val	Phe	Gly 160
Thr	Ile	Ser	Leu	Thr 165	Lys	Leu	Val	Thr	Pro 170	His	Met	Leu	Lys	Gln 175	Gly
Gly	Gly	His	Phe 180	Val	Val	Ile	Ser	Ser 185	Ala	Ala	Gly	Lys	Val 190	Pro	Ser
Pro	Gly	Gln 195	Ala	Ile	Tyr	Ala	Ala 200	Ser	Lys	His	Ala	Leu 205	Gln	Gly	Tyr
Phe	His 210	Thr	Leu	Arg	Ser	Glu 215	Phe	Phe	Gln	Lys	Gly 220	Ile	Lys	Val	Thr
Val 225	Val	Cys	Pro	Gly	Pro 230	Ile	Glu	Thr	Ser	Asn 235	Gly	Thr	Gly	Thr	Ser 240
Thr	Ser	Glu	Asp	Lys 245	Lys	Ser	Pro	Glu	Lys 250	Arg	Val	Ser	Ser	Glu 255	Arg
Cys	Ala	Glu	Leu	Thr 260	Ile	Ile	Ala	Ala 265	Ser	His	Asn	Leu	Lys 270	Glu	Ala
Trp	Ile	Ser 275	Tyr	Gln	Pro	Val	Leu 280	Leu	Val	Met	Tyr	Leu 285	Val	Gln	Tyr
Met	Pro 290	Phe	Leu	Gly	Phe	Trp 295	Leu	Met	Asp	Lys	Val 300	Gly	Gly	Lys	Arg
Val 305	Glu	Val	Ala	Glu	Lys 310	Lys	Gly	Asn	Thr	Tyr 315	Ser	Trp	Asn	Leu	Leu 320
Phe	Gln	Lys	Lys	Thr 325	Lys	Thr	Asn								

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<210> 3527
<211> 858
<212> DNA
<213> Brassica napus
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<220>  
<221> CDS  
<222> (1)..(858)

## PhoenixTemp32470.tmp.txt

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<400> 3527
atg agc agc aat cat cag act gtg atg aag caa cta gag cca tgg tgc      48
Met Ser Ser Asn His 5 Gln Thr Val Met Lys 10 Gln Leu Glu Pro Trp Cys 15
1
gag ctc aaa gac aaa gtg gtt ctc cta aca gga gct tca tcc ggc atc      96
Glu Leu Lys Asp 20 Lys Val Val Leu Leu Thr Gly Ala Ser Ser 30 Gly Ile
gga aga gag atc tgc ctc gat cta gcc aaa tcc ggc tgc aag atc atc      144
Gly Arg Glu Ile Cys Leu Asp Leu Ala Lys Ser Gly Cys 45 Lys Ile Ile
gca gca gct cgt cgt ctc gac cgt ctc caa tcc ctc tgc tcc gag atc      192
Ala Ala Ala Arg Arg Leu Asp 55 Arg Leu Gln Ser Leu Cys Ser Glu Ile
aac gcc tta ttc tcc cca aca aaa acc aaa caa gcc gca cct ctc gag      240
Asn Ala Leu Phe Ser Pro Thr Lys Thr Lys Gln Ala Ala Pro Leu Glu 80
cta gac gtc tcc tca gac tca tcc acc atc cga aac gca gtc aaa caa      288
Leu Asp Val Ser Ser 85 Asp Ser Ser Thr 90 Arg Asn Ala Val Lys Gln
gct tgg gac atc ttc gga aac atc gac gtc ttg atc aac aac gca ggc      336
Ala Trp Asp Ile Phe Gly Asn Ile Asp Val Leu Ile Asn Asn Ala Gly
atc aga ggc aac gtc aag tcg agt ctg gac cta tcc gaa gaa gaa tgg      384
Ile Arg Gly 115 Asn Val Lys Ser 120 Leu Asp Leu Ser 125 Glu Glu Trp
gaa aga gtc ttc aga aca aac cta acc gga cct tgg cta gta tca aaa      432
Glu Arg Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys
cac gtc tgc gtt ctg atg cgc gac gcc aaa cgc ggc gga gga tcg      480
His Val Cys Val Leu Met 150 Arg Asp Ala Lys Arg Gly Gly Gly Ser
gtg ata aac gtt tcc tcc atc gcg ggg ctt cag cgc ggg aag cta ccc      528
Val Ile Asn Val Ser Ser Ile Ala Gly Leu Gln Arg Gly Lys Leu Pro
ggc gcg ttg gcg tac gcg tgt tcg aaa gga ggt ctt gat att atg acg      576
Gly Ala Leu Ala 180 Tyr Ala Cys Ser Lys 185 Gly Gly Leu Asp Ile Met Thr
aag atg atg gcg gtt gag ctg ggt gag tat ggt ata aga gtg aac tcg      624
Lys Met Met Ala Val Glu Leu Gly Glu Tyr Gly Ile Arg Val Asn Ser
ata gct ccg ggg ctg ttt aag tcg gag atc acg gaa ggt ctg gtg agg      672
Ile Ala Pro Gly Leu Phe Lys 215 Ser Glu Ile Thr Glu Gly Leu Val Arg
aaa gag tgg atg aag aat gtg agg aag agg att gtt ccg ttg aag gtg      720
Lys Glu Trp Met Lys Asn Val Arg Lys Arg Ile Val Pro Leu Lys Val
cag cag act gtg gac ccg ggg ctt acc tcg ctg gtt agg tat ctg att      768
Gln Gln Thr Val Asp 245 Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile
ccc cac tct tcc agg tat gtc tct cgc aat gtt tac att gtt gac gcg      816
Pro His Ser Ser 260 Arg Tyr Val Ser Arg 265 Asn Val Tyr Ile Val Asp Ala
ggt gct aca ttg tct ggt cta acg att ttt tct tca ctt tga      858
Gly Ala Thr 275 Leu Ser Gly Leu Thr 280 Ile Phe Ser Ser Leu

```

```

<210> 3528
<211> 285
<212> PRT
<213> Brassica napus

```

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<400> 3528
Met Ser Ser Asn His 5 Gln Thr Val Met Lys 10 Gln Leu Glu Pro Trp Cys
1
Glu Leu Lys Asp 20 Lys Val Val Leu Leu Thr Gly Ala Ser Ser 30 Gly Ile
Gly Arg Glu Ile Cys Leu Asp Leu Ala Lys Ser Gly Cys 45 Lys Ile Ile
Ala Ala Ala Arg Arg Leu Asp Arg Leu Gln Ser Leu Cys Ser Glu Ile
Page 3166

```

## PhoenixTemp32470.tmp.txt

50 55 60  
 Asn Ala Leu Phe Ser Pro Thr Lys Thr Lys Gln Ala Ala Pro Leu Glu  
 65 70 75 80  
 Leu Asp Val Ser Ser Asp Ser Ser Thr Ile Arg Asn Ala Val Lys Gln  
 85 90 95  
 Ala Trp Asp Ile Phe Gly Asn Ile Asp Val Leu Ile Asn Asn Ala Gly  
 100 105 110  
 Ile Arg Gly Asn Val Lys Ser Ser Leu Asp Leu Ser Glu Glu Trp  
 115 120 125  
 Glu Arg Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys  
 130 135 140  
 His Val Cys Val Leu Met Arg Asp Ala Lys Arg Arg Gly Gly Gly Ser  
 145 150 155 160  
 Val Ile Asn Val Ser Ser Ile Ala Gly Leu Gln Arg Gly Lys Leu Pro  
 165 170 175  
 Gly Ala Leu Ala Tyr Ala Cys Ser Lys Gly Gly Leu Asp Ile Met Thr  
 180 185 190  
 Lys Met Met Ala Val Glu Leu Gly Glu Tyr Gly Ile Arg Val Asn Ser  
 195 200 205  
 Ile Ala Pro Gly Leu Phe Lys Ser Glu Ile Thr Glu Gly Leu Val Arg  
 210 215 220  
 Lys Glu Trp Met Lys Asn Val Arg Lys Arg Ile Val Pro Leu Lys Val  
 225 230 235 240  
 Gln Gln Thr Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile  
 245 250 255  
 Pro His Ser Ser Arg Tyr Val Ser Arg Asn Val Tyr Ile Val Asp Ala  
 260 265 270  
 Gly Ala Thr Leu Ser Gly Leu Thr Ile Phe Ser Ser Leu  
 275 280 285

&lt;210&gt; 3529

&lt;211&gt; 798

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(798)

&lt;400&gt; 3529

atg gct tct agt tca gaa tct caa tct cag tct aaa ccg ctc caa gac	48
Met Ala Ser Ser Ser Glu Ser Gln Ser Gln Ser Lys Pro Leu Gln Asp	
1 5 10 15	
cga gtt gca atc gtc acc ggc tcg tcc cgc gga atc ggc cga gaa atc	96
Arg Val Ala Ile Val Thr Gly Ser Ser Arg Gly Ile Gly Arg Glu Ile	
20 25 30	
gcg ctt cac ctc gcc tca ctc ggc gcg cga ctc gtc gtc aac tac acc	144
Ala Leu His Leu Ala Ser Leu Gly Ala Arg Leu Val Val Asn Tyr Thr	
35 40 45	
tcc aac tcg gcc caa gcc gac tca gtc gcg gcg cag atc aac gcc ggt	192
Ser Asn Ser Ala Gln Ala Asp Ser Val Ala Ala Gln Ile Asn Ala Gly	
50 55 60	
tcc gcc acc acg aca ccg cgc gcc gtc gtg gtc caa gcc gac gtg tcc	240
Ser Ala Thr Thr Thr Pro Arg Ala Val Val Val Gln Ala Asp Val Ser	
65 70 75 80	
gat ccg gct cag gtg aag tcg ctc ttc gac tcg gcc gag cgc gcc ttc	288
Asp Pro Ala Gln Val Lys Ser Leu Phe Asp Ser Ala Glu Arg Ala Phe	
85 90 95	
gac tcg ccg atc cac atc ctt gtc aac tcg gcg ggc gtg atc gac ggc	336
Asp Ser Pro Ile His Ile Leu Val Asn Ser Ala Gly Val Ile Asp Gly	
100 105 110	
acg tat ccc tcc gtc gcc gac acc gtg gag tcc ttc gac cgc act	384
Thr Tyr Pro Ser Val Ala Asp Thr Val Glu Ser Phe Asp Arg Thr	
115 120 125	
ttc gcg gtg aac gcg cgt ggc gcc ttc gcg tgc gcc agg gag gcc gcg	432
Phe Ala Val Asn Ala Arg Gly Ala Phe Ala Cys Ala Arg Glu Ala Ala	
130 135 140	
aac cgc ctc aag cgc gcc ggc gga ggg cgg atc att cta ctg acg aca	480
Asn Arg Leu Lys Arg Gly Gly Gly Arg Ile Ile Leu Leu Thr Thr	

## PhoenixTemp32470.tmp.txt

145	tcg	cag	gtg	gtg	gcg	150	ctg	agg	ccg	ggg	tac	155	ggg	gcg	tac	gcg	gcg	160	tcg		528
	Ser	Gln	Val	Val	Ala		Leu	Arg	Pro	Gly	Tyr		Gly	Ala	Tyr	Ala	Ala		Ser		
					165						170							175			
	aag	gcg	gcg	gtg	gag	gca	atg	gtg	aag	atc	ctg	gcg	aag	gaa	ctg	aaa					576
	Lys	Ala	Ala	Val	Glu	Ala	Met	Val	Lys	Ile	Leu	Ala	Lys	Glu	Leu	Lys					
				180						185								190			
	ggg	acg	cag	ata	acg	gcg	aat	tgc	ggt	gcg	ccg	gga	ccg	att	gcg	acg					624
	Gly	Thr	Gln	Ile	Thr	Ala	Asn	Cys	Val	Ala	Pro	Gly	Pro	Ile	Ala	Thr					
			195					200					205								
	gag	atg	ttc	ttc	gag	ggt	aag	acg	gag	gag	gtg	gtg	aat	cgg	atc	gtg					672
	Glu	Met	Phe	Phe	Glu	Gly	Lys	Thr	Glu	Glu	Val	Val	Asn	Arg	Ile	Val					
		210					215					220									
	caa	gag	agt	ccc	tgg	ggg	agg	ctc	ggt	gag	acc	aaa	gac	gtg	gca	ccc					720
	Gln	Glu	Ser	Pro	Leu	Gly	Arg	Leu	Gly	Glu	Thr	Lys	Asp	Val	Ala	Pro					
	225					230					235					240					
	ggt	gtg	gga	ttc	tgg	gcc	act	gat	gct	tct	gaa	tgg	gtc	aac	ggt	caa					768
	Val	Val	Gly	Phe	Leu	Ala	Thr	Asp	Ala	Ser	Glu	Trp	Val	Asn	Gly	Gln					
				245						250					255						
	att	ggt	cgt	gtc	aac	ggt	ggc	tat	att	tag											798
	Ile	Val	Arg	Val	Asn	Gly	Gly	Tyr	Ile												
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 <212> PRT  
 <213> Glycine max

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				20					25					30							
	Ala	Leu	His	Leu	Ala	Ser	Leu	Gly	Ala	Arg	Leu	Val	Val	Asn	Tyr	Thr					
			35					40					45								
	Ser	Asn	Ser	Ala	Gln	Ala	Asp	Ser	Val	Ala	Ala	Gln	Ile	Asn	Ala	Gly					
		50					55					60									
	Ser	Ala	Thr	Thr	Thr	Pro	Arg	Ala	Val	Val	Val	Gln	Ala	Asp	Val	Ser					
65						70					75					80					
	Asp	Pro	Ala	Gln	Lys	Ser	Leu	Phe	Asp	Ser	Ala	Glu	Arg	Ala	Phe						
				85					90					95							
	Asp	Ser	Pro	Ile	His	Ile	Leu	Val	Asn	Ser	Ala	Gly	Val	Ile	Asp	Gly					
			100						105					110							
	Thr	Tyr	Pro	Ser	Val	Ala	Asp	Thr	Thr	Val	Glu	Ser	Phe	Asp	Arg	Thr					
			115					120					125								
	Phe	Ala	Val	Asn	Ala	Arg	Gly	Ala	Phe	Ala	Cys	Ala	Arg	Glu	Ala	Ala					
		130					135					140									
	Asn	Arg	Leu	Lys	Arg	Gly	Gly	Gly	Gly	Arg	Ile	Ile	Leu	Leu	Thr	Thr					
145					150					155					160						
	Ser	Gln	Val	Val	Ala	Leu	Arg	Pro	Gly	Tyr	Gly	Ala	Tyr	Ala	Ala	Ser					
					165					170					175						
	Lys	Ala	Ala	Val	Glu	Ala	Met	Val	Lys	Ile	Leu	Ala	Lys	Glu	Leu	Lys					
				180					185					190							
	Gly	Thr	Gln	Ile	Thr	Ala	Asn	Cys	Val	Ala	Pro	Gly	Pro	Ile	Ala	Thr					
			195					200					205								
	Glu	Met	Phe	Phe	Glu	Gly	Lys	Thr	Glu	Glu	Val	Val	Asn	Arg	Ile	Val					
		210					215					220									
	Gln	Glu	Ser	Pro	Leu	Gly	Arg	Leu	Gly	Glu	Thr	Lys	Asp	Val	Ala	Pro					
225					230					235					240						
	Val	Val	Gly	Phe	Leu	Ala	Thr	Asp	Ala	Ser	Glu	Trp	Val	Asn	Gly	Gln					
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<210> 3531  
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 <212> DNA  
 <213> Glycine max

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&lt;221&gt; CDS

&lt;222&gt; (1)..(882)

&lt;400&gt; 3531

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Met Ala Ser Gly Glu Lys Lys Phe Pro Pro Gln Gln Gln Gln Thr Gln	
1 5 10 15	
cct ggg aag gag cat gct atg aat cca gta ccc caa ttc act agc cct	96
Pro Gly Lys Glu His Ala Met Asn Pro Val Pro Gln Phe Thr Ser Pro	
20 25 30	
gac tac aag cct tca aat aaa ctt caa gga aag ata gca tta gtg act	144
Asp Tyr Lys Pro Ser Asn Lys Leu Gln Gly Lys Ile Ala Leu Val Thr	
35 40 45	
ggg ggt gac tct ggg att gga cga gcg gtg tgt aac ttg ttt gcc tta	192
Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Asn Leu Phe Ala Leu	
50 55 60	
gaa ggt gct acc gtg ggc ttc aca tat gtg aag ggg cat gag gac aag	240
Glu Gly Ala Thr Val Gly Phe Thr Tyr Val Lys Gly His Glu Asp Lys	
65 70 75 80	
gac gcg agg gac acg ttg gaa atg atc aag agg gca aag act tcg gat	288
Asp Ala Arg Asp Thr Leu Glu Met Ile Lys Arg Ala Lys Thr Ser Asp	
85 90 95	
gct aaa gat cca atg gcg gta cca gct gat ttg ggt tac gac gag aat	336
Ala Lys Asp Pro Met Ala Val Pro Ala Asp Leu Gly Tyr Asp Glu Asn	
100 105 110	
tgc aag aga gtg gtt gat gag gtc gtg aat gct tat ggt tgt att gac	384
Cys Lys Arg Val Val Asp Glu Val Val Asn Ala Tyr Gly Cys Ile Asp	
115 120 125	
att ctg gtc aac aat gca gct gag caa tac gag tgt gga aca gtg gag	432
Ile Leu Val Asn Asn Ala Ala Glu Gln Tyr Glu Cys Gly Thr Val Glu	
130 135 140	
gac att gat gag cct agg ctt gag agg gtc ttt cgt aca aat atc ttc	480
Asp Ile Asp Glu Pro Arg Leu Glu Arg Val Phe Arg Thr Asn Ile Phe	
145 150 155 160	
tcc tat ttc ttc atg acc agg cat gcc ttg aag cac atg aag gaa gga	528
Ser Tyr Phe Phe Met Thr Arg His Ala Leu Lys His Met Lys Glu Gly	
165 170 175	
agc agc att atc aac acg aca tcg gtg aat gca tac aag gga aat gcg	576
Ser Ser Ile Ile Asn Thr Thr Ser Val Asn Ala Tyr Lys Gly Asn Ala	
180 185 190 195	
aaa cta ttg gac tac acg tcc acg aag gga gca att gtg gcc tat aca	624
Lys Leu Leu Asp Tyr Thr Ser Thr Lys Gly Ala Ile Val Ala Tyr Thr	
200 205	
agg gga ctt gct ctt cag ttg gtg agt aag gga att cgg gtt aat ggg	672
Arg Gly Leu Ala Leu Gln Leu Val Ser Lys Gly Ile Arg Val Asn Gly	
210 215 220	
gtg gct cct ggg cct att tgg acc cca ttg ata ccc tcc tct ttc aag	720
Val Ala Pro Gly Pro Ile Trp Thr Pro Leu Ile Pro Ser Ser Phe Lys	
225 230 235 240	
gag gaa gaa acg gct caa ttt ggt gcc cag gtg cca atg aag aga gct	768
Glu Glu Glu Thr Ala Gln Phe Gly Ala Val Pro Met Lys Arg Ala	
245 250 255	
ggc cag cct att gag gtt gct ccg tct tat gtt ttt ctt gct tgc aac	816
Gly Gln Pro Ile Glu Val Ala Pro Ser Tyr Val Phe Leu Ala Cys Asn	
260 265 270	
caa tgc tcc tct tac ata act gga cca gtc ctt cac ccc aat ggt gga	864
Gln Cys Ser Ser Tyr Ile Thr Gly Gln Val Leu His Pro Asn Gly Gly	
275 280 285	
acc gtt gtc aat ggt taa	882
Thr Val Val Asn Gly	
290	

&lt;210&gt; 3532

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3532



## PhoenixTemp32470.tmp.txt

Met Ala Ser Gly Glu Lys Lys Phe Pro Pro Gln Gln Gln Gln Thr Gln  
 1 5 10 15  
 Pro Gly Lys Glu His Ala Met Asn Pro Val Pro Gln Phe Thr Ser Pro  
 20 25 30  
 Asp Tyr Lys Pro Ser Asn Lys Leu Gln Gly Lys Ile Ala Leu Val Thr  
 35 40 45  
 Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Asn Leu Phe Ala Leu  
 50 55 60  
 Glu Gly Ala Thr Val Gly Phe Thr Tyr Val Lys Gly His Glu Asp Lys  
 65 70 75 80  
 Asp Ala Arg Asp Thr Leu Glu Met Ile Lys Arg Ala Lys Thr Ser Asp  
 85 90 95  
 Ala Lys Asp Pro Met Ala Val Pro Ala Asp Leu Gly Tyr Asp Glu Asn  
 100 105 110  
 Cys Lys Arg Val Val Asp Glu Val Val Asn Ala Tyr Gly Cys Ile Asp  
 115 120 125  
 Ile Leu Val Asn Asn Ala Ala Glu Gln Tyr Glu Cys Gly Thr Val Glu  
 130 135 140  
 Asp Ile Asp Glu Pro Arg Leu Glu Arg Val Phe Arg Thr Asn Ile Phe  
 145 150 155 160  
 Ser Tyr Phe Phe Met Thr Arg His Ala Leu Lys His Met Lys Glu Gly  
 165 170 175  
 Ser Ser Ile Ile Asn Thr Thr Ser Val Asn Ala Tyr Lys Gly Asn Ala  
 180 185 190  
 Lys Leu Leu Asp Tyr Thr Ser Thr Lys Gly Ala Ile Val Ala Tyr Thr  
 195 200 205  
 Arg Gly Leu Ala Leu Gln Leu Val Ser Lys Gly Ile Arg Val Asn Gly  
 210 215 220  
 Val Ala Pro Gly Pro Ile Trp Thr Pro Leu Ile Pro Ser Ser Phe Lys  
 225 230 235 240  
 Glu Glu Glu Thr Ala Gln Phe Gly Ala Gln Val Pro Met Lys Arg Ala  
 245 250 255  
 Gly Gln Pro Ile Glu Val Ala Pro Ser Tyr Val Phe Leu Ala Cys Asn  
 260 265 270  
 Gln Cys Ser Ser Tyr Ile Thr Gly Gln Val Leu His Pro Asn Gly Gly  
 275 280 285  
 Thr Val Val Asn Gly  
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<210> 3533  
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 <212> DNA  
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<400> 3533  
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 1 5 10  
 cct ggg aag gag cat gct atg act cca gta ccc caa ttc act agc cct 96  
 Pro Gly Lys Glu His Ala Met Thr Pro Val Pro Gln Phe Thr Ser Pro 20 25 30  
 gac tac aag cct tca aat aaa ctt caa ggg aag att gca tta gtc act 144  
 Asp Tyr Lys Pro Ser Asn Lys Leu Gln Gly Lys Ile Ala Leu Val Thr 35 40 45  
 ggg ggt gat tct ggg att gga cga gcg gtg tgt aac ttg ttt gcc tta 192  
 Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Asn Leu Phe Ala Leu 50 55 60  
 gaa ggt gct acc gtg gcc ttc acg tat gtg aag ggg cat gag gac aag 240  
 Glu Gly Ala Thr Val Ala Phe Thr Tyr Val Lys Gly His Glu Asp Lys 65 70 75 80  
 gac gcg agg gac aca ttg gaa atg atc aag aga gca aag act tcg gat 288  
 Asp Ala Arg Asp Thr Leu Glu Met Ile Lys Arg Ala Lys Thr Ser Asp 85 90 95  
 gcc aag gat cca atg gca ata cca tct ttg ggt tac gat gag aac 336  
 Ala Lys Asp Pro Met Ala Ile Pro Ser Asp Leu Gly Tyr Asp Glu Asn 275 280 285

## 105

<210> 3534  
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<213> Glycine max

<400> 3534

Met 1	Ala	Ser	Gly	Glu 5	Gln	Lys	Phe	Pro	Pro 10	Gln	Gln	Gln	Gln	Thr 15	Gln
Pro	Gly	Lys	Glu 20	His	Ala	Met	Thr	Pro 25	Val	Pro	Gln	Phe	Thr 30	Ser	Pro
Asp	Tyr	Lys 35	Pro	Ser	Asn	Lys	Leu 40	Gln	Gly	Lys	Ile	Ala 45	Leu	Val	Thr
Gly	Gly 50	Asp	Ser	Gly	Ile	Gly 55	Arg	Ala	Val	Cys	Asn 60	Leu	Phe	Ala	Leu
Glu 65	Gly	Ala	Thr	Val	Ala 70	Phe	Thr	Tyr	Val	Lys 75	Gly	His	Glu	Asp	Lys 80
Asp	Ala	Arg	Asp	Thr 85	Leu	Glu	Met	Ile	Lys 90	Arg	Ala	Lys	Thr	Ser 95	Asp
Ala	Lys	Asp	Pro 100	Met	Ala	Ile	Pro	Ser 105	Asp	Leu	Gly	Tyr	Asp 110	Glu	Asn
Cys	Lys	Arg 115	Val	Val	Asp	Glu	Val 120	Val	Ser	Ala	Tyr	Gly 125	Arg	Ile	Asp
Ile	Leu 130	Val	Asn	Asn	Ala	Ala 135	Glu	Gln	Tyr	Glu	Cys 140	Gly	Thr	Val	Glu
Asp 145	Ile	Asp	Glu	Pro	Arg 150	Leu	Glu	Arg	Val	Phe 155	Arg	Thr	Asn	Ile	Phe 160
Ser	Tyr	Phe	Phe	Met 165	Ala	Arg	His	Ala	Leu 170	Lys	His	Met	Lys	Glu 175	Gly
Ser	Ser	Ile	Ile 180	Asn	Thr	Thr	Ser	Val 185	Asn	Ala	Tyr	Lys	Gly 190	His	Ala
Lys	Leu	Leu	Asp	Tyr	Thr	Ser	Thr	Lys	Gly	Ala	Ile	Val	Ala	Tyr	Thr

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## PhoenixTemp32470.tmp.txt

195  
 Arg Gly Leu Ala Leu Gln Leu Val Ser Lys Gly Ile Arg Val Asn Gly  
 210 215 220  
 Val Ala Pro Gly Pro Ile Trp Thr Pro Leu Ile Pro Ala Ser Phe Lys  
 225 230 235 240  
 Glu Glu Glu Thr Ala Gln Phe Gly Ala Gln Val Pro Met Lys Arg Ala  
 245 255  
 Gly Gln Pro Ile Glu Val Ala Pro Ser Tyr Val Phe Leu Ala Ser Asn  
 260 265 270  
 Gln Cys Ser Ser Tyr Ile Thr Gly Gln Val Leu His Pro Asn Gly Gly  
 275 285  
 Thr Val Val Asn Gly  
 290

<210> 3535  
 <211> 849  
 <212> DNA  
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<220>  
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 <222> (1)..(849)

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 gga aaa gtc gta atg gtc acc ggc gcc tcc tcc ggc ctc ggc cgc gac 96  
 Gly Lys Val Val Met Val Thr Gly Ala Ser Ser Gly Leu Gly Arg Asp  
 20 25 30  
 ttc tgc ctc gac ctc ggt cgg gct ggc tgt cgg gtc gtc gtg gcg gcc 144  
 Phe Cys Leu Asp Leu Gly Arg Ala Gly Cys Arg Val Val Val Ala Ala  
 35 40 45  
 cgc aga gtc gac cgc ctc gag tcc ctg tgc gac gaa att aac agc atg 192  
 Arg Arg Val Asp Arg Leu Glu Ser Leu Cys Asp Glu Ile Asn Ser Met  
 50 55 60  
 gcc gcc gga gac ggt ggc cga agc cgc cgc gcc gtc gcc gtt gaa ctc 240  
 Ala Ala Gly Asp Gly Gly Arg Ser Arg Arg Ala Val Ala Val Glu Leu  
 65 70 75 80  
 gat gtc gct gcc gat gac ccc gcc gtc gac aaa tac gtg cag aag gcg 288  
 Asp Val Ala Ala Asp Pro Ala Val Asp Lys Tyr Val Gln Lys Ala  
 85 90 95  
 tgg gag gcg ttt ggt cac att gat gct ctt atc aac aac gct ggt gtc 336  
 Trp Glu Ala Phe Gly His Ile Asp Ala Leu Ile Asn Asn Ala Gly Val  
 100 105 110  
 aga ggg aat gtc aaa tca cct ttg gaa ttg tct gag gag gaa tgg aac 384  
 Arg Gly Asn Val Lys Ser Pro Leu Glu Leu Ser Glu Glu Trp Asn  
 115 120 125  
 cat gcg ttc aga aca aac tta act ggg aca tgg ttg gtc tca aaa tat 432  
 His Ala Phe Arg Thr Asn Leu Thr Gly Thr Trp Leu Val Ser Lys Tyr  
 130 135 140  
 gta tgc aaa cgc atg cgt gat gca caa aga aaa gga tca atc att aat 480  
 Val Cys Lys Arg Met Arg Asp Ala Gln Arg Lys Gly Ser Ile Ile Asn  
 145 150 155 160  
 att gct tca att gct ggt ttg aac cgt ggt caa ttg cct gga ggt gct 528  
 Ile Ala Ser Ile Ala Gly Leu Asn Arg Gly Gln Leu Pro Gly Gly Ala  
 165 170 175  
 gca tat tca tcc tca aaa gca ggc gtc aat atg cta aca agg gtc atg 576  
 Ala Tyr Ser Ser Ser Lys Ala Gly Val Asn Met Leu Thr Arg Val Met  
 180 185 190  
 gca tta gaa ttg ggg gca cac aaa atc aga gtg aat tcc ata tca cct 624  
 Ala Leu Glu Leu Gly Ala His Lys Ile Arg Val Asn Ser Ile Ser Pro  
 195 200 205  
 gga ctt ttc aaa tct gaa atc act gaa aaa cta atg gag aaa aat tgg 672  
 Gly Leu Phe Lys Ser Glu Ile Thr Glu Lys Leu Met Glu Lys Asn Trp  
 210 215 220  
 ttg aat aat gtg gcc atg aaa aca gta ccc ttg aga aaa ttt ggc act 720  
 Leu Asn Asn Val Ala Met Lys Thr Val Pro Leu Arg Lys Phe Gly Thr  
 225 230 235 240

## PhoenixTemp32470.tmp.txt

tct	gat	cca	gca	tta	aca	tcg	ctg	gct	cgt	tat	tta	att	cac	gat	tct	768
Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser	
				245					250					255		
tct	gag	tat	gtg	tca	ggc	aac	aat	ttt	gtt	gtg	gat	gct	gga	gcc	acc	816
Ser	Glu	Tyr	Val	Ser	Gly	Asn	Asn	Phe	Val	Val	Asp	Ala	Gly	Ala	Thr	
			260					265					270			
tta	cca	ggg	gtg	cct	att	tat	tcc	tcc	cta	taa						849
Leu	Pro	Gly	Val	Pro	Ile	Tyr	Ser	Ser	Leu							
		275					280									

<210> 3536  
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 <212> PRT  
 <213> Glycine max

<400> 3536

Met	Ala	Thr	Gln	Leu	Ser	Asp	Arg	Leu	Glu	Pro	Trp	His	Thr	Leu	Ala	
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Gly	Lys	Val	Val	Met	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg	Asp	
			20					25					30			
Phe	Cys	Leu	Asp	Leu	Gly	Arg	Ala	Gly	Cys	Arg	Val	Val	Val	Ala	Ala	
		35					40					45				
Arg	Arg	Val	Asp	Arg	Leu	Glu	Ser	Leu	Cys	Asp	Glu	Ile	Asn	Ser	Met	
	50					55				60						
Ala	Ala	Gly	Asp	Gly	Gly	Arg	Ser	Arg	Arg	Ala	Val	Ala	Val	Glu	Leu	
65				70					75					80		
Asp	Val	Ala	Ala	Asp	Asp	Pro	Ala	Val	Asp	Lys	Tyr	Val	Gln	Lys	Ala	
			85						90				95			
Trp	Glu	Ala	Phe	Gly	His	Ile	Asp	Ala	Leu	Ile	Asn	Asn	Ala	Gly	Val	
		100						105					110			
Arg	Gly	Asn	Val	Lys	Ser	Pro	Leu	Glu	Leu	Ser	Glu	Glu	Glu	Trp	Asn	
		115					120					125				
His	Ala	Phe	Arg	Thr	Asn	Leu	Thr	Gly	Thr	Trp	Leu	Val	Ser	Lys	Tyr	
	130				135					140						
Val	Cys	Lys	Arg	Met	Arg	Asp	Ala	Gln	Arg	Lys	Gly	Ser	Ile	Ile	Asn	
145				150					155					160		
Ile	Ala	Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	Gln	Leu	Pro	Gly	Gly	Ala	
			165					170					175			
Ala	Tyr	Ser	Ser	Ser	Lys	Ala	Gly	Val	Asn	Met	Leu	Thr	Arg	Val	Met	
		180					185						190			
Ala	Leu	Glu	Leu	Gly	Ala	His	Lys	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	
	195						200					205				
Gly	Leu	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Lys	Leu	Met	Glu	Lys	Asn	Trp	
	210				215					220						
Leu	Asn	Asn	Val	Ala	Met	Lys	Thr	Val	Pro	Leu	Arg	Lys	Phe	Gly	Thr	
225				230					235					240		
Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser	
			245						250					255		
Ser	Glu	Tyr	Val	Ser	Gly	Asn	Asn	Phe	Val	Val	Asp	Ala	Gly	Ala	Thr	
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Leu	Pro	Gly	Val	Pro	Ile	Tyr	Ser	Ser	Leu							
		275					280									

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 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(963)

<400> 3537

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Met	Ala	Ser	Ile	Ala	Gly	Ser	Asn	Cys	Val	Ala	Leu	Arg	Thr	Ala	Asn	
1				5				10						15		
ttc	ggc	gcc	tcc	ggg	aac	cgg	aaa	atc	ggc	cag	atc	cgc	caa	tgg	tct	96
Phe	Gly	Ala	Ser	Gly	Asn	Arg	Lys	Ile	Gly	Gln	Ile	Arg	Gln	Trp	Ser	
			20					25					30			

## PhoenixTemp32470.tmp.txt

ccg	att	ctc	acg	aat	ctc	cgt	ccc	ggt	tcc	ggt	ctt	cgt	cac	cga	tcg	144
Pro	Ile	Leu	Thr	Asn	Leu	Arg	Pro	Val	Ser	Gly	Leu	Arg	His	Arg	Ser	
		35					40					45				
aat	act	ccg	ttt	agc	tcc	tcc	ggt	gtg	aga	gca	cag	ggt	gct	act	ctg	192
Asn	Thr	Pro	Phe	Ser	Ser	Ser	Gly	Val	Arg	Ala	Gln	Val	Ala	Thr	Leu	
	50					55					60					
gag	gaa	gca	gga	acc	gga	gca	act	cag	aaa	gtg	gaa	gcg	ccg	ggt	gca	240
Glu	Glu	Ala	Gly	Thr	Gly	Ala	Thr	Gln	Lys	Val	Glu	Ala	Pro	Val	Ala	
	65				70					75					80	
gtg	gtg	acc	gga	gct	tcc	aga	ggc	att	gga	aaa	gcg	att	gca	ctg	tca	288
Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Leu	Ser	
			85					90						95		
tta	ggt	aaa	gca	ggt	tgc	aag	ggt	ctg	gtc	aac	tat	gca	agg	tca	tcc	336
Leu	Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	
			100					105					110			
aag	gaa	gct	gag	gag	ggt	tcc	aag	gag	att	gag	gag	ttt	ggt	ggt	caa	384
Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Glu	Phe	Gly	Gly	Gln	
		115					120					125				
gct	ctt	aca	ttt	ggt	gga	gat	ggt	tct	aac	gag	gct	gat	gtg	gag	tct	432
Ala	Leu	Thr	Phe	Gly	Gly	Asp	Val	Ser	Asn	Glu	Ala	Asp	Val	Glu	Ser	
	130					135					140					
atg	att	aaa	act	gca	ggt	gat	gct	tgg	gga	aca	ggt	gat	gta	tta	ata	480
Met	Ile	Lys	Thr	Ala	Val	Asp	Ala	Trp	Gly	Thr	Val	Asp	Val	Leu	Ile	
					150										160	
aac	aat	gca	gga	ata	aca	aga	gat	ggt	tta	tta	atg	aga	atg	aag	aaa	528
Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Lys	
			165						170					175		
tct	caa	tgg	cag	gat	ggt	att	gat	cta	aat	ctc	act	ggt	ggt	ttt	ctt	576
Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	
			180					185					190			
tgc	aca	cag	gct	gct	gct	aag	att	atg	atg	aag	aaa	aag	aag	gga	agg	624
Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Lys	Lys	Gly	Arg	
		195					200					205				
atc	gtc	aat	att	gca	tca	ggt	ggt	ttg	ggt	ggc	aat	ggt	gga	caa		672
Ile	Val	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Gly	Asn	Val	Gly	Gln	
	210					215				220						
gcc	aat	tat	agt	gct	gca	aaa	gca	gga	gta	att	ggc	ctg	aca	aaa	act	720
Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr	
					230					235					240	
ggt	gcg	aag	gaa	tat	gct	agt	aga	aac	atc	act	ggt	aat	gca	ggt	gct	768
Val	Ala	Lys	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	
				245					250					255		
cca	ggg	ttt	att	gca	tct	gac	atg	act	gcc	aag	cta	gga	caa	gac	att	816
Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Gln	Asp	Ile	
			260					265					270			
gag	aaa	aag	att	ttg	gag	aca	atc	cca	gga	aga	tat	ggc	cag	cca		864
Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	
		275					280					285				
gag	gaa	ggt	gct	gga	ctg	ggt	gaa	ttc	ttg	gct	ctt	aat	caa	gct	gcc	912
Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Gln	Ala	Ala	
	290				295						300					
agt	tac	atc	act	ggg	cag	ggt	ttc	acc	att	gat	gga	ggt	atg	gtg	atg	960
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Phe	Thr	Ile	Asp	Gly	Gly	Met	Val	Met	
					310					315					320	
taa																963

<210> 3538  
 <211> 320  
 <212> PRT  
 <213> Glycine max

<400> 3538  
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 1 5 10 15  
 Phe Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser  
 20 25 30  
 Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser  
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## PhoenixTemp32470.tmp.txt

35  
 Asn Thr Pro Phe Ser Ser Ser 40 Gly Val Arg Ala Gln 45 Val Ala Thr Leu  
 50  
 Glu Glu Ala Gly Thr Gly 55 Ala Thr Gln Lys Val 60 Glu Ala Pro Val Ala  
 65  
 Val Val Thr Gly Ala 70 Ser Arg Gly Ile Gly 75 Lys Ala Ile Ala Leu Ser  
 85  
 Leu Gly Lys Ala 100 Gly Cys Lys Val 105 Val Asn Tyr Ala Arg 110 Ser Ser  
 Lys Glu Ala Glu Glu Val Ser 120 Lys Glu Ile Glu Glu Phe 125 Gly Gly Gln  
 115  
 Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Ala 140 Asp Val Glu Ser  
 130  
 Met Ile Lys Thr Ala Val 150 Asp Ala Trp Gly Thr 155 Val Asp Val Leu Ile  
 145  
 Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu 170 Leu Met Arg Met Lys Lys  
 165  
 Ser Gln Trp Gln Asp Val Ile Asp Leu 185 Asn Leu Thr Gly Val Phe Leu  
 180  
 Cys Thr Gln Ala Ala Ala Lys 200 Ile Met Met Lys Lys Lys Lys Gly Arg  
 195  
 Ile Val Asn Ile Ala Ser Val 215 Val Gly Leu Val Gly Asn Val Gly Gln  
 210  
 Ala Asn Tyr Ser Ala Ala Lys Ala Gly Val Ile 220 Gly Leu Thr Lys Thr  
 225  
 Val Ala Lys Glu Tyr Ala Ser Arg Asn Ile Thr Val Asn Ala Val Ala  
 245  
 Pro Gly Phe Ile Ala Ser Asp Met Thr 265 Ala Lys Leu Gly Gln Asp Ile  
 260  
 Glu Lys Lys Ile Leu Glu Thr Ile 280 Pro Leu Gly Arg Tyr Gly Gln Pro  
 275  
 Glu Glu Val Ala Gly Leu Val 295 Glu Phe Leu Ala Leu Asn Gln Ala Ala  
 290  
 Ser Tyr Ile Thr Gly Gln Val Phe Thr Ile Asp 315 Gly Gly Met Val Met  
 305  
 310  
 320

<210> 3539  
 <211> 861  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(861)

<400> 3539  
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 5  
 10  
 15  
 gtg gtt cta atc aca gga tgt tcc acg gga ggg ata ggc cac gcg ctt 96  
 Val Val Leu Ile Thr Gly Cys Ser Thr Gly Gly Ile Gly His Ala Leu  
 20  
 25  
 30  
 gca cga tcc ttc gca gcg aac agg tgc agg gtg gtg gcc acc agc agg 144  
 Ala Arg Ser Phe Ala Ala Asn Arg Cys Arg Val Val Ala Thr Ser Arg  
 35  
 40  
 45  
 tcg cgg tgg agc atg gcg gat ctg gaa cac gac cac agg ttc ttc ttg 192  
 Ser Arg Trp Ser Met Ala Asp Leu Glu His Asp His Arg Phe Phe Leu  
 50  
 55  
 60  
 caa gaa ttg gat gtt cag tcc gat gag agc gtg cgt aag gtg gtc gat 240  
 Gln Glu Leu Asp Val Gln Ser Asp Glu Ser Val Arg Lys Val Val Asp  
 65  
 70  
 75  
 80  
 gct gtt gtc aac aag ttc ggt cgc atc gac gtg ctt gtt aac aac gct 288  
 Ala Val Val Asn Lys Phe Gly Arg Ile Asp Val Leu Val Asn Asn Ala  
 85  
 90  
 95  
 ggt gtt cag tgt gtg ggc ccc ctt gcc gag gtt cct ctc tct gcc att 336  
 Gly Val Gln Cys Val Gly Pro Leu Ala Glu Val Pro Leu Ser Ala Ile  
 100  
 105  
 110  
 caa aac act ttc gat acc aat gtc ttc ggt tcg ttg aga atg att cag 384  
 Gln Asn Thr Phe Asp Thr Asn Val Phe Gly Ser Leu Arg Met Ile Gln

## PhoenixTemp32470.tmp.txt

gcc	gtt	115	cct	cat	atg	gct	120	agg	aaa	cag	ggg	125	ata	gtc	aac	432
Ala	Val	Val	Pro	His	Met	Ala	Val	Arg	Lys	Gln	Gly	Lys	Ile	Val	Asn	
	130					135					140					
gtt	ggt	agc	gtt	gct	gcc	ttg	gcc	tct	gga	cct	tgg	tca	ggc	act	tac	480
Val	Gly	Ser	Val	Ala	Ala	Leu	Ala	Ser	Gly	Pro	Trp	Ser	Gly	Thr	Tyr	
145					150					155					160	
aat	gct	tcc	aaa	gct	gct	ctt	cat	gct	ttc	act	gat	aca	tta	aga	ttg	528
Asn	Ala	Ser	Lys	Ala	Ala	Leu	His	Ala	Phe	Thr	Asp	Thr	Leu	Arg	Leu	
				165					170					175		
gaa	ctt	gga	cac	ttt	gga	atc	gac	gtt	gtg	aat	gta	gtt	cct	gga	gcc	576
Glu	Leu	Gly	His	Phe	Gly	Ile	Asp	Val	Val	Asn	Val	Val	Pro	Gly	Ala	
			180					185					190			
atc	act	tcc	aat	att	gca	aat	aat	gcc	ctt	gcc	aat	tac	aat	cga	atg	624
Ile	Thr	Ser	Asn	Ile	Ala	Asn	Asn	Ala	Leu	Ala	Asn	Tyr	Asn	Arg	Met	
		195					200					205				
cct	gaa	tgg	aag	tta	ttc	aag	cct	ttt	gaa	gca	gca	atc	cga	gac	aga	672
Pro	Glu	Trp	Lys	Leu	Phe	Lys	Pro	Phe	Glu	Ala	Ala	Ile	Arg	Asp	Arg	
	210					215				220						
gct	tct	ttg	tct	cag	ggg	tcc	aag	tcg	acc	cct	tcg	gag	gag	ttt	gct	720
Ala	Ser	Leu	Ser	Gln	Gly	Ser	Lys	Ser	Thr	Pro	Ser	Glu	Glu	Phe	Ala	
225				230					235						240	
aaa	aac	aca	gta	gca	gct	gtt	ctt	aag	aag	aat	cca	cct	gca	tgg	ttc	768
Lys	Asn	Thr	Val	Ala	Ala	Val	Leu	Lys	Lys	Asn	Pro	Pro	Ala	Trp	Phe	
				245				250						255		
tcc	tat	ggc	cat	tac	tct	acc	ttc	atg	gct	atc	atg	tat	cat	tta	cca	816
Ser	Tyr	Gly	His	Tyr	Ser	Thr	Phe	Met	Ala	Ile	Met	Tyr	His	Leu	Pro	
			260				265						270			
ctc	ttt	ctt	aga	gac	ttt	ttt	ttg	aag	aaa	ttg	atg	aaa	tgc	tga		861
Leu	Phe	Leu	Arg	Asp	Phe	Phe	Leu	Lys	Lys	Leu	Met	Lys	Cys			
		275					280					285				

&lt;210&gt; 3540

&lt;211&gt; 286

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3540

Met	Cys	Met	Glu	Lys	His	Gly	His	Asp	Glu	Glu	Glu	Gln	Pro	Lys	Pro	
1				5					10					15		
Val	Val	Leu	Ile	Thr	Gly	Cys	Ser	Thr	Gly	Gly	Ile	Gly	His	Ala	Leu	
			20					25					30			
Ala	Arg	Ser	Phe	Ala	Ala	Asn	Arg	Cys	Arg	Val	Val	Ala	Thr	Ser	Arg	
		35					40					45				
Ser	Arg	Trp	Ser	Met	Ala	Asp	Leu	Glu	His	Asp	His	Arg	Phe	Phe	Leu	
		50				55				60						
Gln	Glu	Leu	Asp	Val	Gln	Ser	Asp	Glu	Ser	Val	Arg	Lys	Val	Val	Asp	
65					70				75						80	
Ala	Val	Val	Asn	Lys	Phe	Gly	Arg	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	
				85					90					95		
Gly	Val	Gln	Cys	Val	Gly	Pro	Leu	Ala	Glu	Val	Pro	Leu	Ser	Ala	Ile	
			100					105					110			
Gln	Asn	Thr	Phe	Asp	Thr	Asn	Val	Phe	Gly	Ser	Leu	Arg	Met	Ile	Gln	
		115				120						125				
Ala	Val	Val	Pro	His	Met	Ala	Val	Arg	Lys	Gln	Gly	Lys	Ile	Val	Asn	
	130					135					140					
Val	Gly	Ser	Val	Ala	Ala	Leu	Ala	Ser	Gly	Pro	Trp	Ser	Gly	Thr	Tyr	
145					150				155						160	
Asn	Ala	Ser	Lys	Ala	Ala	Leu	His	Ala	Phe	Thr	Asp	Thr	Leu	Arg	Leu	
				165					170					175		
Glu	Leu	Gly	His	Phe	Gly	Ile	Asp	Val	Val	Asn	Val	Val	Pro	Gly	Ala	
			180					185					190			
Ile	Thr	Ser	Asn	Ile	Ala	Asn	Asn	Ala	Leu	Ala	Asn	Tyr	Asn	Arg	Met	
		195				200						205				
Pro	Glu	Trp	Lys	Leu	Phe	Lys	Pro	Phe	Glu	Ala	Ala	Ile	Arg	Asp	Arg	
	210					215				220						
Ala	Ser	Leu	Ser	Gln	Gly	Ser	Lys	Ser	Thr	Pro	Ser	Glu	Glu	Phe	Ala	
225				230					235						240	
Lys	Asn	Thr	Val	Ala	Ala	Val	Leu	Lys	Lys	Asn	Pro	Pro	Ala	Trp	Phe	

## PhoenixTemp32470.tmp.txt

245  
 Ser Tyr Gly His Tyr Ser Thr Phe Met Ala Ile Met Tyr His 255  
 260  
 Leu Phe Leu Arg Asp Phe Phe Leu Lys Lys Leu Met Lys Cys 270  
 275  
 280  
 285

<210> 3541  
 <211> 759  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(759)

<400> 3541  
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 tcc aca cag gga atc ggc tta gca ata gcc gag agg ctt ggc ctc gag 96  
 Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu Glu  
 20 25 30  
 ggt gca tct gtc gtc atc tct tct cgc aaa cag caa aat gtt gat gcg 144  
 Gly Ala Ser Val Val Ile Ser Ser Arg Lys Gln Gln Asn Val Asp Ala  
 35 40 45  
 gcc gcg gaa caa ctg agg gcc aaa gga att caa gtg ttg ggg gtt gtt 192  
 Ala Ala Glu Gln Leu Arg Ala Lys Gly Ile Gln Val Leu Gly Val Val  
 50 55 60  
 tgc cat gtt tca agt gct cag caa agg aag aat ttg atc gac aaa act 240  
 Cys His Val Ser Ser Ala Gln Gln Arg Lys Asn Leu Ile Asp Lys Thr  
 65 70 75 80  
 gtc cag aag tat gga aag ata gat gtt gtt gtg tcc aat gct gct gca 288  
 Val Gln Lys Tyr Gly Lys Ile Asp Val Val Val Ser Asn Ala Ala Ala  
 85 90 95  
 aat cct tct gtt gat gcc atc ttg caa aca aaa gac tcg gtc ctt gac 336  
 Asn Pro Ser Val Asp Ala Ile Leu Gln Thr Lys Asp Ser Val Leu Asp  
 100 105 110  
 aag cta tgg gag ata aat gtc aaa gcc act ata ctt ctt ctg aag gac 384  
 Lys Leu Trp Glu Ile Asn Val Lys Ala Thr Ile Leu Leu Lys Asp  
 115 120 125  
 gca gtg cct cac ttg cag aag ggt tct tct gtt gtt atc att tcc tca 432  
 Ala Val Pro His Leu Gln Lys Gly Ser Ser Val Val Ile Ile Ser Ser  
 130 135 140  
 att gca ggt ttt aac ccg cca cct tct ctg gct atg tat gga gtg acc 480  
 Ile Ala Gly Phe Asn Pro Pro Pro Ser Leu Ala Met Tyr Gly Val Thr  
 145 150 155 160  
 aaa aca gcc ctt ctt gga ctt act aaa gcc ctg gct gct gag atg gcc 528  
 Lys Thr Ala Leu Leu Gly Leu Thr Lys Ala Leu Ala Ala Glu Met Ala  
 165 170 175  
 cca aac act cgt gta aac tgt gtt gct cct ggt ttt gtg cca acc aat 576  
 Pro Asn Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr Asn  
 180 185 190  
 ttt gct tca ttc att aca agt aac gat gct gtg aag aaa gaa ctg gaa 624  
 Phe Ala Ser Phe Ile Thr Ser Asn Asp Ala Val Lys Lys Glu Leu Glu  
 195 200 205  
 gag aag aca tta ctt gga agg ctt ggt aca aca gaa gac atg ggt gct 672  
 Glu Lys Thr Leu Leu Gly Arg Leu Gly Thr Thr Glu Asp Met Gly Ala  
 210 215 220  
 gca gca gct ttt ttg gca tct gac gat gct gct tat ata aca gga gag 720  
 Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ala Tyr Ile Thr Gly Glu  
 225 230 235 240  
 acc att gta gtt gct ggg gga acg cct tcc agg ttg tag 759  
 Thr Ile Val Val Ala Gly Gly Thr Pro Ser Arg Leu  
 245 250

<210> 3542  
 <211> 252  
 <212> PRT  
 <213> Glycine max



## PhoenixTemp32470.tmp.txt

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<400> 3542
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Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu Glu
      20      25      30
Gly Ala Ser Val Val Ile Ser Ser Arg Lys Gln Gln Asn Val Asp Ala
      35      40      45
Ala Ala Glu Gln Leu Arg Ala Lys Gly Ile Gln Val Leu Gly Val Val
      50      55      60
Cys His Val Ser Ser Ala Gln Gln Arg Lys Asn Leu Ile Asp Lys Thr
65      70      75      80
Val Gln Lys Tyr Gly Lys Ile Asp Val Val Ser Asn Ala Ala Ala
      85      90      95
Asn Pro Ser Val Asp Ala Ile Leu Gln Thr Lys Asp Ser Val Leu Asp
      100      105      110
Lys Leu Trp Glu Ile Asn Val Lys Ala Thr Ile Leu Leu Leu Lys Asp
      115      120      125
Ala Val Pro His Leu Gln Lys Gly Ser Ser Val Val Ile Ile Ser Ser
      130      135      140
Ile Ala Gly Phe Asn Pro Pro Pro Ser Leu Ala Met Tyr Gly Val Thr
145      150      155      160
Lys Thr Ala Leu Leu Gly Leu Thr Lys Ala Leu Ala Ala Glu Met Ala
      165      170      175
Pro Asn Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr Asn
      180      185      190
Phe Ala Ser Phe Ile Thr Ser Asn Asp Ala Val Lys Lys Glu Leu Glu
      195      200      205
Glu Lys Thr Leu Leu Gly Arg Leu Gly Thr Thr Glu Asp Met Gly Ala
      210      215      220
Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ala Tyr Ile Thr Gly Glu
225      230      235      240
Thr Ile Val Val Ala Gly Gly Thr Pro Ser Arg Leu
      245      250

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<210> 3543
<211> 885
<212> DNA
<213> Glycine max

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<220>
<221> CDS
<222> (1)..(885)

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<400> 3543
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1      5      10      15
cag cca gga aaa gaa cat gta atg aat cca ctc cca caa gcc aca aat      96
Gln Pro Gly Lys Glu His Val Met Asn Pro Leu Pro Gln Ala Thr Asn
      20      25      30
cct gat cac aag gcc gcc aat aaa ctc cag gga aag gtg gcg ttg gtg      144
Pro Asp His Lys Ala Ala Asn Lys Leu Gln Gly Lys Val Ala Leu Val
      35      40      45
aca gga ggt gac tca gga att ggc aga gcg gtt tgc ctg tgt ttc gca      192
Thr Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe Ala
      50      55      60
aaa gag ggt gca acc gtg gcc ttt aca tac gta aag ggc cat gag gac      240
Lys Glu Gly Ala Thr Val Ala Phe Thr Tyr Val Lys Gly His Glu Asp
      65      70      75      80
agg gat aaa gat gat act ctg aag atg ctg ctt gaa gct aag aca agt      288
Arg Asp Lys Asp Asp Thr Leu Lys Met Leu Leu Glu Ala Lys Thr Ser
      85      90      95
ggt gca gac aat cca ttg gca ata gca gcg gat att ggc ttt gat gag      336
Gly Ala Asp Asn Pro Leu Ala Ile Ala Ala Asp Ile Gly Phe Asp Glu
      100      105      110
aac tgc aaa cag gtc att gac ctt gtt gtc aaa gaa tat ggc cgc ctt      384
Asn Cys Lys Gln Val Ile Asp Leu Val Val Lys Glu Tyr Gly Arg Leu
      115      120

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## PhoenixTemp32470.tmp.txt

gat	ggt	ctg	gtc	aac	aat	gca	gct	gag	cag	cat	ttg	aca	aac	tct	ggt	432
Asp	Val	Leu	Val	Asn	Asn	Ala	Ala	Glu	Gln	His	Leu	Thr	Asn	Ser	Val	
	130					135					140					
gag	gaa	atc	aca	caa	cag	cag	ctt	gag	aga	gtc	ttc	gga	acc	aac	atc	480
Glu	Glu	Ile	Thr	Gln	Gln	Gln	Leu	Glu	Arg	Val	Phe	Gly	Thr	Asn	Ile	
145					150					155					160	
ttt	tct	cag	ttc	ttt	ttg	gtc	aag	cat	gct	ctg	aag	cac	atg	aaa	gaa	528
Phe	Ser	Gln	Phe	Phe	Leu	Val	Lys	His	Ala	Leu	Lys	His	Met	Lys	Glu	
				165					170					175		
ggg	agc	tgc	atc	ata	aac	tct	act	tca	ggt	aat	gca	tac	aat	ggg	aat	576
Gly	Ser	Cys	Ile	Ile	Asn	Ser	Thr	Ser	Val	Asn	Ala	Tyr	Asn	Gly	Asn	
			180					185					190			
cca	gaa	gcg	ttg	gac	tac	act	gct	acc	aag	gga	gca	att	gtg	gcc	ttc	624
Pro	Glu	Ala	Leu	Asp	Tyr	Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	
		195					200					205				
acc	aga	ggt	ctt	tct	cag	cag	cta	gcg	agt	agg	gga	att	agg	gtg	aat	672
Thr	Arg	Gly	Leu	Ser	Gln	Gln	Leu	Ala	Ser	Arg	Gly	Ile	Arg	Val	Asn	
210					215					220						
ggt	gtg	gca	cct	ggc	cca	ggt	tgg	acg	cca	ata	caa	gca	gct	tca	aag	720
Gly	Val	Ala	Pro	Gly	Pro	Val	Trp	Thr	Pro	Ile	Gln	Pro	Ala	Ser	Lys	
225				230					235					240		
cct	gct	gag	atg	att	cag	aac	ttg	ggg	tgt	gag	gtg	cca	atg	aac	cgc	768
Pro	Ala	Glu	Met	Ile	Gln	Asn	Leu	Gly	Cys	Glu	Val	Pro	Met	Asn	Arg	
				245				250						255		
gtg	gct	cag	cct	tgt	gag	att	gca	cca	tgt	tat	ttg	ttc	ttg	gca	act	816
Val	Ala	Gln	Pro	Cys	Glu	Ile	Ala	Pro	Cys	Tyr	Leu	Phe	Leu	Ala	Thr	
			260				265					270				
tgt	cag	gac	tct	tcc	tac	ttt	act	ggc	caa	gtc	ctc	cat	cca	aat	ggg	864
Cys	Gln	Asp	Ser	Ser	Tyr	Phe	Thr	Gly	Gln	Val	Leu	His	Pro	Asn	Gly	
		275					280					285				
ggg	atg	gtc	gtc	aac	gct	taa										885
Gly	Met	Val	Val	Asn	Ala											
	290															

&lt;210&gt; 3544

&lt;211&gt; 294

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3544

Met	Ala	Ser	Asn	Lys	Glu	Ser	Lys	Phe	Pro	Ala	Gln	Ser	Gln	Lys	Thr	
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Gln	Pro	Gly	Lys	Glu	His	Val	Met	Asn	Pro	Leu	Pro	Gln	Ala	Thr	Asn	
			20					25					30			
Pro	Asp	His	Lys	Ala	Ala	Asn	Lys	Leu	Gln	Gly	Lys	Val	Ala	Leu	Val	
		35					40					45				
Thr	Gly	Gly	Asp	Ser	Gly	Ile	Gly	Arg	Ala	Val	Cys	Leu	Cys	Phe	Ala	
	50					55					60					
Lys	Glu	Gly	Ala	Thr	Val	Ala	Phe	Thr	Tyr	Val	Lys	Gly	His	Glu	Asp	
65					70				75					80		
Arg	Asp	Lys	Asp	Asp	Thr	Leu	Lys	Met	Leu	Leu	Glu	Ala	Lys	Thr	Ser	
			85					90						95		
Gly	Ala	Asp	Asn	Pro	Leu	Ala	Ile	Ala	Ala	Asp	Ile	Gly	Phe	Asp	Glu	
			100					105					110			
Asn	Cys	Lys	Gln	Val	Ile	Asp	Leu	Val	Val	Lys	Glu	Tyr	Gly	Arg	Leu	
		115					120					125				
Asp	Val	Leu	Val	Asn	Asn	Ala	Glu	Gln	His	Leu	Thr	Asn	Ser	Val		
	130					135					140					
Glu	Glu	Ile	Thr	Gln	Gln	Gln	Leu	Glu	Arg	Val	Phe	Gly	Thr	Asn	Ile	
145					150					155					160	
Phe	Ser	Gln	Phe	Phe	Leu	Val	Lys	His	Ala	Leu	Lys	His	Met	Lys	Glu	
				165					170					175		
Gly	Ser	Cys	Ile	Asn	Ser	Thr	Ser	Val	Asn	Ala	Tyr	Asn	Gly	Asn		
			180				185					190				
Pro	Glu	Ala	Leu	Asp	Tyr	Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	
		195					200					205				
Thr	Arg	Gly	Leu	Ser	Gln	Gln	Leu	Ala	Ser	Arg	Gly	Ile	Arg	Val	Asn	
	210					215					220					
Gly	Val	Ala	Pro	Gly	Pro	Val	Trp	Thr	Pro	Ile	Gln	Pro	Ala	Ser	Lys	

## PhoenixTemp32470.tmp.txt

225 Pro Ala Glu Met Ile 230 Gln Asn Leu Gly Cys 235 Glu Val Pro Met Asn 240 Arg  
 Val Ala Gln Pro Cys 245 Glu Ile Ala Pro Cys Tyr Leu Phe Leu Ala Thr  
 Cys Gln Asp Ser Ser Tyr Phe Thr 265 Gly Gln Val Leu His 270 Pro Asn Gly  
 Gly Met 275 Val Val Asn Ala 280 285 290

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 <211> 768  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(768)

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 1 5 10 15  
 gtg aca gct tcc acc ctt gga att ggc ttt agc ata gca gag agg ctt 96  
 Val Thr Ala Ser Thr Leu Gly Ile Gly Phe Ser Ile Ala Glu Arg Leu  
 20 25 30  
 ggc ttg gag ggt gca tct gtt gtc atc tct tct cgc aaa cag caa aat 144  
 Gly Leu Glu Gly Ala Ser Val Val Ile Ser Ser Arg Lys Gln Gln Asn  
 35 40 45  
 gtt gat gag gct gct ggt aaa ctg aga gct aaa gga atc gaa gta ttg 192  
 Val Asp Glu Ala Ala Gly Lys Leu Arg Ala Lys Gly Ile Glu Val Leu  
 50 55 60  
 gcg gtt gtt tgc cac gtt tca aat gct caa caa agg aag aat ttg ata 240  
 Ala Val Val Cys His Val Ser Asn Ala Gln Gln Arg Lys Asn Leu Ile  
 65 70 75 80  
 gac aaa act tta cag aag tat gga aag ata gat gtt gtt gtg tcc aat 288  
 Asp Lys Thr Leu Gln Lys Tyr Gly Lys Ile Asp Val Val Val Ser Asn  
 85 90 95  
 gct gcc gta cat cct tct gta gat ccc att ttg caa aca caa gaa tcg 336  
 Ala Ala Val His Pro Ser Val Asp Pro Ile Leu Gln Thr Gln Glu Ser  
 100 105 110  
 atc ctt gac aag ttg tgg gag ata aat gtc aaa tcc act ata ctt ctt 384  
 Ile Leu Asp Lys Leu Trp Glu Ile Asn Val Lys Ser Thr Ile Leu Leu  
 115 120 125  
 ctc aag gat gca gct cct cac ttg aag aag ggt tct tct gtt gtt ctc 432  
 Leu Lys Asp Ala Ala Pro His Leu Lys Lys Gly Ser Val Val Leu  
 130 135 140  
 att gcc tca ctt gtt gct tat aat cca cca cct act atg gct atg tat 480  
 Ile Ala Ser Leu Val Ala Tyr Asn Pro Pro Pro Thr Met Ala Met Tyr  
 145 150 155 160  
 gga gtg acc aaa aca gca gtt ctt gga ctt acc aaa gct atg gct agt 528  
 Gly Val Thr Lys Thr Ala Val Leu Gly Thr Lys Ala Met Ala Ser  
 165 170 175  
 gaa atg ggc cct aat act cgg gtg aat tgt gtt gtt cct ggg att gtg 576  
 Glu Met Gly Pro Asn Thr Arg Val Asn Cys Val Val Pro Gly Ile Val  
 180 185 190  
 cca act cat ttt gtt gca ctt tat acc tca aat gat gct aca aga gag 624  
 Pro Thr His Phe Val Ala Leu Tyr Thr Ser Asn Asp Ala Thr Arg Glu  
 195 200 205  
 gaa ctt gaa aga aag gca ttg ctt gga agg ctt ggt aca act gaa gac 672  
 Glu Leu Glu Arg Lys Ala Leu Leu Gly Arg Leu Gly Thr Thr Glu Asp  
 210 215 220  
 atg gct gct gcg aca gcg ttt ttg gcg tct gat gat gct tct tac ata 720  
 Met Ala Ala Thr Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile  
 225 230 235 240  
 aca gga gaa aat cta gtg gtt tct ggg gga atg cct tct agg ttg tag 768  
 Thr Gly Glu Asn Leu Val Val Ser Gly Gly Met Pro Ser Arg Leu  
 245 250 255

<210> 3546  
 <211> 255  
 <212> PRT  
 <213> Glycine max

<400> 3546  
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 Val Thr Ala Ser Thr Leu Gly Ile Gly Phe Ser Ile Ala Glu Arg Leu  
 20 25 30  
 Gly Leu Glu Gly Ala Ser Val Val Ile Ser Ser Arg Lys Gln Gln Asn  
 35 40 45  
 Val Asp Glu Ala Ala Gly Lys Leu Arg Ala Lys Gly Ile Glu Val Leu  
 50 55 60  
 Ala Val Val Cys His Val Ser Asn Ala Gln Gln Arg Lys Asn Leu Ile  
 65 70 75 80  
 Asp Lys Thr Leu Gln Lys Tyr Gly Lys Ile Asp Val Val Val Ser Asn  
 85 90 95  
 Ala Ala Val His Pro Ser Val Asp Pro Ile Leu Gln Thr Gln Glu Ser  
 100 105 110  
 Ile Leu Asp Lys Leu Trp Glu Ile Asn Val Lys Ser Thr Ile Leu Leu  
 115 120 125  
 Leu Lys Asp Ala Ala Pro His Leu Lys Lys Gly Ser Val Val Leu  
 130 135 140  
 Ile Ala Ser Leu Val Ala Tyr Asn Pro Pro Thr Met Ala Met Tyr  
 145 150 155 160  
 Gly Val Thr Lys Thr Ala Val Leu Gly Leu Thr Lys Ala Met Ala Ser  
 165 170 175  
 Glu Met Gly Pro Asn Thr Arg Val Asn Cys Val Val Pro Gly Ile Val  
 180 185 190  
 Pro Thr His Phe Val Ala Leu Tyr Thr Ser Asn Asp Ala Thr Arg Glu  
 195 200 205  
 Glu Leu Glu Arg Lys Ala Leu Leu Gly Arg Leu Gly Thr Thr Glu Asp  
 210 215 220  
 Met Ala Ala Ala Thr Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile  
 225 230 235 240  
 Thr Gly Glu Asn Leu Val Val Ser Gly Gly Met Pro Ser Arg Leu  
 245 250 255

<210> 3547  
 <211> 804  
 <212> DNA  
 <213> Glycine max

<220>  
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 <222> (1)..(804)

<400> 3547  
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 Met Ala Glu Ala Ser Ile Gly Ser Lys Ser Ser Arg Trp Ser Leu Gln  
 1 5 10 15  
 gga atg aca gct ctc gtc acc ggt gga tcc aaa gga atc gga tat gct 96  
 Gly Met Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Tyr Ala  
 20 25 30  
 atc gtg gag gag ttg gca cag ctt gga gcc act gtg cac act tgc gct 144  
 Ile Val Glu Glu Leu Ala Gln Leu Gly Ala Thr Val His Thr Cys Ala  
 35 40 45  
 cgg aac gaa gct gaa ctc aat gaa tcc tta aat gaa tgg aac aca aaa 192  
 Arg Asn Glu Ala Glu Leu Asn Glu Ser Leu Asn Glu Trp Asn Thr Lys  
 50 55 60  
 gga tac aga gta act ggt tcc gtc tgt gac gtg gcg tct cgt gca gaa 240  
 Gly Tyr Arg Val Thr Gly Ser Val Cys Asp Val Ala Ser Arg Ala Glu  
 65 70 75 80  
 aga caa gac ctc ata gct aga gtc tcc aat gag ttt aat ggc aaa ctc 288  
 Arg Gln Asp Leu Ile Ala Arg Val Ser Asn Glu Phe Asn Gly Lys Leu  
 85 90 95  
 aat atc ctt gta aac gtg gga aca aac gta ccg aaa cat acc ctt 336  
 Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Pro Lys His Thr Leu

## 105

<210> 3548  
<211> 267  
<212> PRT  
<213> Glycine max

<400> 3548

Met	Ala	Glu	Ala	Ser	Ile	Gly	Ser	Lys	Ser	Ser	Arg	Trp	Ser	Leu	Gln
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Gly	Met	Thr	Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Tyr	Ala
			20					25					30		
Ile	Val	Glu	Glu	Leu	Ala	Gln	Leu	Gly	Ala	Thr	Val	His	Thr	Cys	Ala
		35					40					45			
Arg	Asn	Glu	Ala	Glu	Leu	Asn	Glu	Ser	Leu	Asn	Glu	Trp	Asn	Thr	Lys
	50					55				60					
Gly	Tyr	Arg	Val	Thr	Gly	Ser	Val	Cys	Asp	Val	Ala	Ser	Arg	Ala	Glu
65					70				75						80
Arg	Gln	Asp	Leu	Ile	Ala	Arg	Val	Ser	Asn	Glu	Phe	Asn	Gly	Lys	Leu
			85						90					95	
Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Val	Pro	Lys	His	Thr	Leu
			100					105					110		
Asp	Val	Thr	Glu	Glu	Asp	Phe	Ser	Phe	Leu	Ile	Asn	Thr	Asn	Leu	Glu
		115					120					125			
Ser	Ala	Tyr	His	Leu	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Lys	Ala	Ser
	130					135					140				
Glu	Ala	Ala	Asn	Ile	Ile	Phe	Ile	Ser	Ser	Ile	Ala	Gly	Val	Leu	Ser
145					150					155					160
Ile	Gly	Ile	Gly	Ser	Thr	Tyr	Gly	Ala	Thr	Lys	Gly	Ala	Met	Asn	Gln
				165					170					175	
Leu	Thr	Lys	Asn	Leu	Ala	Cys	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Thr
			180					185					190		
Asn	Cys	Val	Ala	Pro	Gly	Pro	Ile	Lys	Thr	Pro	Leu	Gly	Asp	Lys	His
		195					200					205			
Phe	Lys	Asn	Glu	Lys	Leu	Leu	Asn	Ala	Phe	Ile	Ser	Gln	Thr	Pro	Leu
	210					215					220				
Gly	Arg	Ile	Gly	Glu	Ala	Glu	Glu	Val	Ser	Ser	Leu	Val	Ala	Phe	Leu
225					230					235					240
Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Thr	Ile	Cys	Val	Asp

Gly Gly Leu Thr Val Asn Gly Leu Tyr Ile Asn  
 245 250 255  
 260 265

<210> 3549  
 <211> 843  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(843)

<400> 3549

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Met Ser Thr Thr Gly Thr Val Leu Ala Ser Thr Pro Thr Gln Arg Leu	
1 5 10 15	
tta ggc aaa gtg gca ttg gtt act ggt gga gcg tct gga att gga gaa	96
Leu Gly Lys Val Ala Leu Val Thr Gly Ala Ser Gly Ile Gly Glu	
20 25 30	
agc att gtg cgc ctc ttc cat atc cat ggt gct aaa ata tgt ata gct	144
Ser Ile Val Arg Leu Phe His Ile His Gly Ala Lys Ile Cys Ile Ala	
35 40 45	
gat gtg caa gac aac ctt gga aag cag gtc tgt cag tct ctt ggt gat	192
Asp Val Gln Asp Asn Leu Gly Lys Gln Val Cys Gln Ser Leu Gly Asp	
50 55 60	
gaa gca aat gtt gtt ttt gtc cat tgt gat gtt aca gta gag gat gat	240
Glu Ala Asn Val Val Phe Val His Cys Asp Val Thr Val Glu Asp Asp	
65 70 75 80	
gtt tcc cat gca gtg gac ttc act gtg ggt aaa ttt ggc acc ctt cac	288
Val Ser His Ala Val Asp Phe Thr Val Gly Lys Phe Gly Thr Leu His	
85 90 95	
atc ata gtc aac aat gcc gga att tct gga tca cct tgt tcc gat atc	336
Ile Ile Val Asn Asn Ala Gly Ile Ser Gly Ser Pro Cys Ser Asp Ile	
100 105 110	
cgc aat gca gac tta tca gaa ttc gat aag gtg ttt agt gta aat acg	384
Arg Asn Ala Asp Leu Ser Glu Phe Asp Lys Val Phe Ser Val Asn Thr	
115 120 125	
aag gga gtg ttc cac ggg atg aaa cac gct gct cga att atg atc ccg	432
Lys Gly Val Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro	
130 135 140	
aag aag aag ggc tca atc att tct tta tgc agt gta gca agt gcc ata	480
Lys Lys Lys Gly Ser Ile Ile Ser Leu Cys Ser Val Ala Ser Ala Ile	
145 150 155 160	
ggt ggc tta gga ccg cat gca tac aca ggg tcc aag tat gct gta ttg	528
Gly Gly Leu Gly Pro His Ala Tyr Thr Gly Ser Lys Tyr Ala Val Leu	
165 170 175	
ggg ctc aca aag aat gtt gca gct gaa ttg ggg aaa cat gct ata aga	576
Gly Leu Thr Lys Asn Val Ala Ala Glu Leu Gly Lys His Ala Ile Arg	
180 185 190	
gtg aac tgt gtg tca cct tat ggt gtt gca aca ggt ttg gcc ttg gct	624
Val Asn Cys Val Ser Pro Tyr Gly Val Ala Thr Gly Leu Ala Leu Ala	
195 200 205	
cat ttg cct gag gat gag aga act gat gat gcc ttg gtc agt ttt cgt	672
His Leu Pro Glu Asp Glu Arg Thr Asp Asp Ala Leu Val Ser Phe Arg	
210 215 220	
gat ttt act ggg aga atg gcc aac ttg cag ggg gta gaa tta act act	720
Asp Phe Thr Gly Arg Met Ala Asn Leu Gln Gly Val Glu Leu Thr Thr	
225 230 235 240	
cac gat gtg gct aat gct gtg ctc ttc ctt gca agt gat gat gct aaa	768
His Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Asp Ala Lys	
245 250 255	
tat ata agt gga gag aat ctc atg gtt gat gga ggc ttc aca agt gca	816
Tyr Ile Ser Gly Glu Asn Leu Met Val Asp Gly Gly Phe Thr Ser Ala	
260 265 270	
aat cac tca ctc caa gtt ttt aga tga	843
Asn His Ser Leu Gln Val Phe Arg	
275 280	

<210> 3550  
 <211> 280  
 <212> PRT  
 <213> Glycine max

<400> 3550  
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 20 25 30  
 Ser Ile Val Arg Leu Phe His Ile His Gly Ala Lys Ile Cys Ile Ala  
 35 40 45  
 Asp Val Gln Asp Asn Leu Gly Lys Gln Val Cys Gln Ser Leu Gly Asp  
 50 55 60  
 Glu Ala Asn Val Val Phe Val His Cys Asp Val Thr Val Glu Asp Asp  
 65 70 75 80  
 Val Ser His Ala Val Asp Phe Thr Val Gly Lys Phe Gly Thr Leu His  
 85 90 95  
 Ile Ile Val Asn Asn Ala Gly Ile Ser Gly Ser Pro Cys Ser Asp Ile  
 100 105 110  
 Arg Asn Ala Asp Leu Ser Glu Phe Asp Lys Val Phe Ser Val Asn Thr  
 115 120 125  
 Lys Gly Val Phe His Gly Met Lys His Ala Ala Arg Ile Met Ile Pro  
 130 135 140  
 Lys Lys Lys Gly Ser Ile Ile Ser Leu Cys Ser Val Ala Ser Ala Ile  
 145 150 155 160  
 Gly Gly Leu Gly Pro His Ala Tyr Thr Gly Ser Lys Tyr Ala Val Leu  
 165 170 175  
 Gly Leu Thr Lys Asn Val Ala Ala Glu Leu Gly Lys His Ala Ile Arg  
 180 185 190  
 Val Asn Cys Val Ser Pro Tyr Gly Val Ala Thr Gly Leu Ala Leu Ala  
 195 200 205  
 His Leu Pro Glu Asp Glu Arg Thr Asp Asp Ala Leu Val Ser Phe Arg  
 210 215 220  
 Asp Phe Thr Gly Arg Met Ala Asn Leu Gln Gly Val Glu Leu Thr Thr  
 225 230 235 240  
 His Asp Val Ala Asn Ala Val Leu Phe Leu Ala Ser Asp Asp Ala Lys  
 245 250 255  
 Tyr Ile Ser Gly Glu Asn Leu Met Val Asp Gly Gly Phe Thr Ser Ala  
 260 265 270  
 Asn His Ser Leu Gln Val Phe Arg  
 275 280

<210> 3551  
 <211> 795  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(795)

<400> 3551  
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 Met Ala Glu Thr Lys Trp Val Met Lys Asp Lys Arg Trp Ser Leu His  
 1 5 10 15  
 gga atg aca gct cta gtc aca gga ggc acc cga ggc ata ggg cat gcc 96  
 Gly Met Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His Ala  
 20 25 30  
 att gtt gaa gag tta gct gag ttt gga gca act gtt cat ata tgt gca 144  
 Ile Val Glu Glu Leu Ala Glu Phe Gly Ala Thr Val His Ile Cys Ala  
 35 40 45  
 cgt aat caa gat gat ata gat aaa tgt tta gaa gag tgg aaa agc aag 192  
 Arg Asn Gln Asp Asp Ile Asp Lys Cys Leu Glu Glu Trp Lys Ser Lys  
 50 55 60  
 gga ctt aat gtg act ggt tca gta tgt gat tta cta tgt tct gac caa 240  
 Gly Leu Asn Val Thr Gly Ser Val Cys Asp Leu Leu Cys Ser Asp Gln  
 65 70 75 80  
 cgt aaa aga tta atg gaa att gtt ggc tcc atc ttt cat gga aag ctc 288

## PhoenixTemp32470.tmp.txt

Arg	Lys	Arg	Leu	Met 85	Glu	Ile	Val	Gly	Ser 90	Ile	Phe	His	Gly	Lys 95	Leu	
aat	att	cta	gtg	aac	aat	gct	gct	aca	aat	ata	aca	aag	aag	ata	aca	336
Asn	Ile	Leu	Val	Asn	Asn	Ala	Ala	Thr	Asn	Ile	Thr	Lys	Lys	Ile	Thr	
			100					105					110			
gat	tac	aca	gca	gag	gat	ata	tca	gcc	ata	atg	ggc	acc	aat	ttt	gag	384
Asp	Tyr	Thr	Ala	Glu	Asp	Ile	Ser	Ala	Ile	Met	Gly	Thr	Asn	Phe	Glu	
		115					120					125				
tcc	gtt	tac	cat	ttg	tgt	caa	gtt	gca	cac	cca	ctt	cta	aaa	gat	tct	432
Ser	Val	Tyr	His	Leu	Cys	Gln	Val	Ala	His	Pro	Leu	Leu	Lys	Asp	Ser	
	130					135					140					
ggg	aat	ggg	agc	ata	gta	ttt	att	tct	tcc	gta	gca	ggt	tta	aaa	gct	480
Gly	Asn	Gly	Ser	Ile	Val	Phe	Ile	Ser	Ser	Val	Ala	Gly	Leu	Lys	Ala	
145					150					155					160	
ctt	cct	gtg	ttc	tct	gtt	tat	gca	gcc	tct	aaa	gga	gcc	atg	aat	caa	528
Leu	Pro	Val	Phe	Ser	Val	Tyr	Ala	Ala	Ser	Lys	Gly	Ala	Met	Asn	Gln	
			165						170					175		
ttc	acc	aaa	aac	ttg	gca	ttg	gaa	tgg	gca	aag	gat	aat	att	cgt	gca	576
Phe	Thr	Lys	Asn	Leu	Ala	Leu	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Ala	
			180					185					190			
aat	gct	gtt	gcc	cct	gga	cct	gtt	aag	act	aaa	ctt	ttg	gag	tgt	atc	624
Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Lys	Thr	Lys	Leu	Leu	Glu	Cys	Ile	
		195					200					205				
gtg	aat	tct	tcg	gaa	ggg	aat	gag	tct	ata	aat	gga	gta	gtg	tct	caa	672
Val	Asn	Ser	Ser	Glu	Gly	Asn	Glu	Ser	Ile	Asn	Gly	Val	Val	Ser	Gln	
	210					215					220					
aca	ttt	gtt	ggt	cgc	atg	gga	gaa	act	aaa	gag	ata	tcag	gca	tta	gtt	720
Thr	Phe	Val	Gly	Arg	Met	Gly	Glu	Thr	Lys	Glu	Ile	Ser	Ala	Leu	Val	
225					230					235					240	
gct	ttt	ctt	tgc	ctt	ccg	gct	gca	tca	tac	atc	act	gga	cag	gtt	ata	768
Ala	Phe	Leu	Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	
				245					250					255		
tgt	gta	gat	ggg	ggt	ttc	aca	act	tag								795
Cys	Val	Asp	Gly	Gly	Phe	Thr	Thr									
			260													

&lt;210&gt; 3552

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3552

Met	Ala	Glu	Thr	Lys 5	Trp	Val	Met	Lys	Asp 10	Lys	Arg	Trp	Ser	Leu 15	His	
Gly	Met	Thr	Ala	Leu	Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	His	Ala	
			20					25					30			
Ile	Val	Glu	Glu	Leu	Ala	Glu	Phe	Gly	Ala	Thr	Val	His	Ile	Cys	Ala	
		35					40					45				
Arg	Asn	Gln	Asp	Asp	Ile	Asp	Lys	Cys	Leu	Glu	Glu	Trp	Lys	Ser	Lys	
	50					55				60						
Gly	Leu	Asn	Val	Thr	Gly	Ser	Val	Cys	Asp	Leu	Leu	Cys	Ser	Asp	Gln	
65					70					75					80	
Arg	Lys	Arg	Leu	Met	Glu	Ile	Val	Gly	Ser	Ile	Phe	His	Gly	Lys	Leu	
				85					90					95		
Asn	Ile	Leu	Val	Asn	Asn	Ala	Ala	Thr	Asn	Ile	Thr	Lys	Lys	Ile	Thr	
		100						105					110			
Asp	Tyr	Thr	Ala	Glu	Asp	Ile	Ser	Ala	Ile	Met	Gly	Thr	Asn	Phe	Glu	
		115					120					125				
Ser	Val	Tyr	His	Leu	Cys	Gln	Val	Ala	His	Pro	Leu	Leu	Lys	Asp	Ser	
	130					135					140					
Gly	Asn	Gly	Ser	Ile	Val	Phe	Ile	Ser	Ser	Val	Ala	Gly	Leu	Lys	Ala	
145					150					155					160	
Leu	Pro	Val	Phe	Ser	Val	Tyr	Ala	Ala	Ser	Lys	Gly	Ala	Met	Asn	Gln	
			165						170					175		
Phe	Thr	Lys	Asn	Leu	Ala	Leu	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Ala	
			180					185					190			
Asn	Ala	Val	Ala	Pro	Gly	Pro	Val	Lys	Thr	Lys	Leu	Leu	Glu	Cys	Ile	
		195					200					205				
Val	Asn	Ser	Ser	Glu	Gly	Asn	Glu	Ser	Ile	Asn	Gly	Val	Val	Ser	Gln	



## PhoenixTemp32470.tmp.txt

210 215 220  
 Thr Phe Val Gly Arg Met Gly Glu Thr Lys Glu Ile Ser Ala Leu Val  
 225 230 235 240  
 Ala Phe Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile  
 245 250 255  
 Cys Val Asp Gly Gly Phe Thr Thr

<210> 3553  
 <211> 963  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(963)

<400> 3553  
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 Met Ala Ser Ile Ala Gly Ser Asn Cys Val Ala Leu Arg Thr Ala Asn  
 1 5 10 15  
 ttc ggc gcc tcc ggt aac cgg aaa atc ggc cag atc cgc caa tgg tct 96  
 Phe Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser  
 20 25 30  
 ccg att ctc acg aat ctc cgt ccc gtt tcc ggt ctt cgt cac cga tcg 144  
 Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser  
 35 40 45  
 aat act ccg ttt agc tcc tcc ggt gtg aga gca cag gtt gct act ctg 192  
 Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu  
 50 55 60  
 gag gaa gca gga acc gga gca act cag aaa gtg gaa gcg ccg gtt gca 240  
 Glu Glu Ala Gly Thr Gly Ala Thr Gln Lys Val Glu Ala Pro Val Ala  
 65 70 75 80  
 gtg gtg acc gga gct tcc aga ggc att ggc aaa gcg att gca ctg tca 288  
 Val Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser  
 85 90 95  
 tta ggt aaa gca ggt tgc aag gtt ctg gtc aac tat gca agg tca tcc 336  
 Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser  
 100 105 110  
 aag gaa gct gag gag gtt tcc aag gag att gag gag ttt ggt ggt caa 384  
 Lys Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Glu Phe Gly Gly Gln  
 115 120 125  
 gct ctt aca ttt ggt gga gat gtt tct aac gag gat gac gtg gag tct 432  
 Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Asp Asp Val Glu Ser  
 130 135 140  
 atg att aaa act gca gtt gat gct tgg gga aca gtt gat gta tta ata 480  
 Met Ile Lys Thr Ala Val Asp Ala Trp Gly Thr Val Asp Val Leu Ile  
 145 150 155 160  
 aac aat gca gga ata act aga gat ggt tta tta atg aga atg aag aaa 528  
 Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Leu Met Arg Met Lys Lys  
 165 170 175  
 tct caa tgg cag gat gtt att gat cta aat ctc act ggt gtt ttt ctt 576  
 Ser Gln Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu  
 180 185 190  
 tgc acc cag gct gct gct aag att atg atg aag aaa aga aag gga aga 624  
 Cys Thr Gln Ala Ala Ala Lys Ile Met Met Lys Lys Arg Lys Gly Arg  
 195 200 205  
 att gtc aat att gca tca gtt gtt ggt ttg gtt ggc aat gtt gga caa 672  
 Ile Val Asn Ile Ala Ser Val Val Gly Leu Val Gly Asn Val Gly Gln  
 210 215 220  
 gcc aat tat agt gct gcg aaa gca gga gta att ggc ctg aca aaa act 720  
 Ala Asn Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Thr  
 225 230 235 240  
 gtt gca aag gaa tat gct agc aga aac atc act gtt aat gca gtt gct 768  
 Val Ala Lys Glu Tyr Ala Ser Arg Asn Ile Thr Val Asn Ala Val Ala  
 245 250 255  
 cca ggg ttt att gca tcc gac atg act gcc aag cta gga caa gac att 816  
 Pro Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Gln Asp Ile  
 260 265 270

## PhoenixTemp32470.tmp.txt

gag	aaa	aag	att	ttg	gag	acg	atc	cca	tta	gga	aga	tat	ggc	caa	cca	864
Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	
		275					280					285				
gaa	gaa	gtt	gcc	gga	ctg	gtt	gaa	ttc	ttg	gct	ctt	aat	caa	gct	gcc	912
Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Gln	Ala	Ala	
	290					295					300					
agt	tac	atc	act	ggg	cag	gtt	ttc	acc	att	gat	gga	ggg	atg	gtg	atg	960
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Phe	Thr	Ile	Asp	Gly	Gly	Met	Val	Met	
305					310					315					320	
taa																963

<210> 3554  
 <211> 320  
 <212> PRT  
 <213> Glycine max

<400> 3554

Met	Ala	Ser	Ile	Ala	Gly	Ser	Asn	Cys	Val	Ala	Leu	Arg	Thr	Ala	Asn	
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Phe	Gly	Ala	Ser	Gly	Asn	Arg	Lys	Ile	Gly	Gln	Ile	Arg	Gln	Trp	Ser	
			20					25					30			
Pro	Ile	Leu	Thr	Asn	Leu	Arg	Pro	Val	Ser	Gly	Leu	Arg	His	Arg	Ser	
		35					40					45				
Asn	Thr	Pro	Phe	Ser	Ser	Ser	Gly	Val	Arg	Ala	Gln	Val	Ala	Thr	Leu	
	50				55						60					
Glu	Glu	Ala	Gly	Thr	Gly	Ala	Thr	Gln	Lys	Val	Glu	Ala	Pro	Val	Ala	
65					70				75						80	
Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Leu	Ser	
			85					90						95		
Leu	Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	
		100					105					110				
Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Glu	Phe	Gly	Gly	Gln	
	115						120					125				
Ala	Leu	Thr	Phe	Gly	Gly	Asp	Val	Ser	Asn	Glu	Asp	Asp	Val	Glu	Ser	
	130					135					140					
Met	Ile	Lys	Thr	Ala	Val	Asp	Ala	Trp	Gly	Thr	Val	Asp	Val	Leu	Ile	
145				150					155						160	
Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Met	Arg	Met	Lys	Lys		
			165					170					175			
Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	
		180					185						190			
Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys	Gly	Arg	
	195					200						205				
Ile	Val	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Gly	Asn	Val	Gly	Gln	
	210				215						220					
Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr	
225				230					235						240	
Val	Ala	Lys	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	
			245					250					255			
Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Gln	Asp	Ile	
		260					265						270			
Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	
	275					280						285				
Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Gln	Ala	Ala	
	290				295						300					
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Phe	Thr	Ile	Asp	Gly	Gly	Met	Val	Met	
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<210> 3555  
 <211> 810  
 <212> DNA  
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<220>  
 <221> CDS  
 <222> (1)..(810)

## PhoenixTemp32470.tmp.txt

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<400> 3555
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Met Ala Ser Ile Ser Thr Val Ser Val Leu Asp Arg Arg Leu Glu Gly
1      5      10      15
aaa gtg gct ctt atc agt ggt ggt gct agc ggt ata ggt gag gcc act      96
Lys Val Ala Leu Ile Ser Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr
20      25      30
gca aga ctc ttc tct aag cat gga gca cac gtt gtg ata gct gat att      144
Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile
35      40      45
caa gac gat ttg ggt ctc tct ctt tgc aaa cac ttg gaa tcc gct tcc      192
Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser
50      55      60
tat gtc cat tgc gat gtc aca aac gaa aac gac gtt caa aac gcc gtt      240
Tyr Val His Cys Asp Val Thr Asn Glu Asn Asp Val Gln Asn Ala Val
65      70      75      80
aac aca gcg att tcc aag tat ggc aat cta gat atc atg ttt aat aat      288
Asn Thr Ala Ile Ser Lys Tyr Gly Asn Leu Asp Ile Met Phe Asn Asn
85      90      95
gct ggc ata att gat gag ata aaa aca agc ata ctt gac aac agc aag      336
Ala Gly Ile Ile Asp Glu Ile Lys Thr Ser Ile Leu Asp Asn Ser Lys
100      105      110
ttt gat ttt gag aga gtg ata agt gtg aac ttg gtt ggt cct ttt ctg      384
Phe Asp Phe Glu Arg Val Ile Ser Val Asn Leu Val Gly Pro Phe Leu
115      120      125
gga aca aag cac gct gct agg gtt atg att cct gct aaa agg gga agc      432
Gly Thr Lys His Ala Ala Arg Val Met Ile Pro Ala Lys Arg Gly Ser
130      135      140
ata att aac act gct agt gtt gct gga acc ttt agt gga ggg gct tca      480
Ile Ile Asn Thr Ala Ser Val Ala Gly Thr Phe Ser Gly Gly Ala Ser
145      150      155      160
cat gcc tac aca agt tca aag cac gca cta att gga ctg atg aaa aac      528
His Ala Tyr Thr Ser Ser Lys His Ala Leu Ile Gly Leu Met Lys Asn
165      170      175
act gcg gtg gag ctt gga cag ttt ggt att agg gta aat tgc ttg tcc      576
Thr Ala Val Glu Leu Gly Gln Phe Gly Ile Arg Val Asn Cys Leu Ser
180      185      190
cct tat gtg gtt gcc aca cca ttg act aag aaa tgt ttc aat ctt gat      624
Pro Tyr Val Val Ala Thr Pro Leu Thr Lys Lys Cys Phe Asn Leu Asp
195      200      205
gaa gac cga aat ggt gag att tat tcc aac cta aaa ggt gtt cat ctt      672
Glu Asp Arg Asn Gly Glu Ile Tyr Ser Asn Leu Lys Gly Val His Leu
210      215      220
gtg cca aac gat gtg gcc gaa gct gct cta tat ttg gca ggt gat gag      720
Val Pro Asn Asp Val Ala Glu Ala Ala Leu Tyr Leu Ala Gly Asp Glu
225      230      235      240
tca aag tat gtt agt ggt cac aat ctt gtg tta gat gga ggg ttc acc      768
Ser Lys Tyr Val Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Thr
245      250      255
aat cta aat gta gga ttt tct gtg ttt ggg cag tct gag taa
Asn Leu Asn Val Gly Phe Ser Val Phe Gly Gln Ser Glu
260      265

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<210> 3556
<211> 269
<212> PRT
<213> Glycine max

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<400> 3556
Met Ala Ser Ile Ser Thr Val Ser Val Leu Asp Arg Arg Leu Glu Gly
1      5      10      15
Lys Val Ala Leu Ile Ser Gly Gly Ala Ser Gly Ile Gly Glu Ala Thr
20      25      30
Ala Arg Leu Phe Ser Lys His Gly Ala His Val Val Ile Ala Asp Ile
35      40      45
Gln Asp Asp Leu Gly Leu Ser Leu Cys Lys His Leu Glu Ser Ala Ser
50      55      60
Tyr Val His Cys Asp Val Thr Asn Glu Asn Asp Val Gln Asn Ala Val
65      70      75      80

```

## PhoenixTemp32470.tmp.txt

Asn Thr Ala Ile Ser<sup>85</sup> Lys Tyr Gly Asn<sup>90</sup> Leu Asp Ile Met Phe Asn<sup>95</sup> Asn  
 Ala Gly Ile Ile<sup>100</sup> Asp Glu Ile Lys Thr<sup>105</sup> Ser Ile Leu Asp Asn<sup>110</sup> Ser Lys  
 Phe Asp Phe<sup>115</sup> Glu Arg Val Ile Ser<sup>120</sup> Val Asn Leu Val Gly<sup>125</sup> Pro Phe Leu  
 Gly Thr<sup>130</sup> Lys His Ala Ala Arg<sup>135</sup> Val Met Ile Pro Ala<sup>140</sup> Lys Arg Gly Ser  
 Ile<sup>145</sup> Ile Asn Thr Ala Ser<sup>150</sup> Val Ala Gly Thr Phe<sup>155</sup> Ser Gly Gly Ala Ser<sup>160</sup>  
 His Ala Tyr Thr Ser<sup>165</sup> Ser Lys His Ala Leu<sup>170</sup> Ile Gly Leu Met Lys<sup>175</sup> Asn  
 Thr Ala Val<sup>180</sup> Glu Leu Gly Gln Phe Gly<sup>185</sup> Ile Arg Val Asn Cys<sup>190</sup> Leu Ser  
 Pro Tyr Val<sup>195</sup> Val Ala Thr Pro Leu<sup>200</sup> Thr Lys Lys Cys Phe<sup>205</sup> Asn Leu Asp  
 Glu Asp<sup>210</sup> Arg Asn Gly Glu Ile<sup>215</sup> Tyr Ser Asn Leu Lys<sup>220</sup> Gly Val His Leu  
 Val<sup>225</sup> Pro Asn Asp Val Ala<sup>230</sup> Glu Ala Ala Leu Tyr<sup>235</sup> Leu Ala Gly Asp Glu<sup>240</sup>  
 Ser Lys Tyr Val Ser<sup>245</sup> Gly His Asn Leu Val<sup>250</sup> Leu Asp Gly Gly Phe<sup>255</sup> Thr  
 Asn Leu Asn Val<sup>260</sup> Gly Phe Ser Val Phe<sup>265</sup> Gly Gln Ser Glu

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 <211> 816  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(816)

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 Met Ala Asn Pro Glu Gly Ser Ser Arg Gly Ser Arg Trp Ser Leu Lys  
 1 5 10 15  
 gga acc act gct ctc gtt act gga gga acg cgt gga att ggg cac gct 96  
 Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His Ala  
 20 25 30  
 gtg gtg gag gaa cta gcg gag ttt ggt gcc aca gtg tac act tgt tcg 144  
 Val Val Glu Glu Leu Ala Glu Phe Gly Ala Thr Val Tyr Thr Cys Ser  
 35 40 45  
 agg aat gaa gaa gag ctg aat gca tgc ttg aag gag tgg aaa gag aag 192  
 Arg Asn Glu Glu Glu Leu Asn Ala Cys Leu Lys Trp Lys Glu Lys  
 50 55 60  
 gga ttt tcg gtt tct ggg ttg gtt tgt gat gcg tct tct cca ccc cat 240  
 Gly Phe Ser Val Ser Gly Leu Val Cys Asp Ala Ser Ser Pro Pro His  
 65 70 75 80  
 aga gag aac ctc att caa caa gtg gcc tct gct ttc aac ggc aag ctc 288  
 Arg Glu Asn Leu Ile Gln Gln Val Ala Ser Ala Phe Asn Gly Lys Leu  
 85 90 95  
 aac ata ctt gta aac aat gtt gga aca aat gtg agg aag ccg aca att 336  
 Asn Ile Leu Val Asn Asn Val Gly Thr Asn Val Arg Lys Pro Thr Ile  
 100 105 110  
 gag tat aca gcc gaa gaa tat tca aaa ttg atg gca act aac ttg gac 384  
 Glu Tyr Thr Ala Glu Glu Tyr Ser Lys Leu Met Ala Thr Asn Leu Asp  
 115 120 125  
 tcc aca tac cat ttg tgc caa ctt gca tat cct ctt ctt aaa gca tct 432  
 Ser Thr Tyr His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala Ser  
 130 135 140  
 gga aat gga agt att gtg tcc att tcc tct gtt gca agt cag aca agc 480  
 Gly Asn Gly Ser Ile Val Ser Ile Ser Ser Val Ala Ser Gln Thr Ser  
 145 150 155 160  
 gta ggt tct gga gcc att tac gca gca act aaa gct gct att gat cag 528  
 Val Gly Ser Gly Ala Ile Tyr Ala Ala Thr Lys Ala Ala Ile Asp Gln  
 165 170 175  
 ctt acc aaa tat ttt gct tgt gaa tgg gca aaa gac aat ata agg agc 576

## PhoenixTemp32470.tmp.txt

Leu	Thr	Lys	Tyr	Phe	Ala	Cys	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Ser		
aac	ggt	gtt	gca	ccc	tgg	tat	acc	ata	act	tca	ctt	gtg	gaa	cct	ttg	624	
Asn	Gly	Val	Ala	Pro	Trp	Tyr	Thr	Ile	Thr	Ser	Leu	Val	Glu	Pro	Leu		
		195					200					205					
ctt	gcg	aac	aaa	cag	ctt	gtt	agt	gag	ata	ata	tct	cga	acg	ccg	ata	672	
Leu	Ala	Asn	Lys	Gln	Leu	Val	Ser	Glu	Ile	Ile	Ser	Arg	Thr	Pro	Ile		
		210				215					220						
aag	cgg	atg	gca	gaa	aca	cat	gaa	gtt	tca	tcc	ttg	gtg	act	ttc	ctt	720	
Lys	Arg	Met	Ala	Glu	Thr	His	Glu	Val	Ser	Ser	Leu	Val	Thr	Phe	Leu		
225					230					235					240		
tgc	ctg	cca	gca	gca	tcc	tac	atc	act	gga	cag	att	gtt	tca	gtt	gat	768	
Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Ile	Val	Ser	Val	Asp		
				245					250					255			
gga	gga	ttc	act	gct	aat	gga	ttt	caa	ccc	agc	atg	aga	att	tct	taa	816	
Gly	Gly	Phe	Thr	Ala	Asn	Gly	Phe	Gln	Pro	Ser	Met	Arg	Ile	Ser			
			260					265					270				

&lt;210&gt; 3558

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3558

Met	Ala	Asn	Pro	Glu	Gly	Ser	Ser	Arg	Gly	Ser	Arg	Trp	Ser	Leu	Lys		
1				5					10					15			
Gly	Thr	Thr	Ala	Leu	Val	Thr	Gly	Gly	Thr	Arg	Gly	Ile	Gly	His	Ala		
			20					25					30				
Val	Val	Glu	Glu	Leu	Ala	Glu	Phe	Gly	Ala	Thr	Val	Tyr	Thr	Cys	Ser		
		35					40					45					
Arg	Asn	Glu	Glu	Glu	Leu	Asn	Ala	Cys	Leu	Lys	Glu	Trp	Lys	Glu	Lys		
	50					55					60						
Gly	Phe	Ser	Val	Ser	Gly	Leu	Val	Cys	Asp	Ala	Ser	Ser	Pro	Pro	His		
65				70					75					80			
Arg	Glu	Asn	Leu	Ile	Gln	Gln	Val	Ala	Ser	Ala	Phe	Asn	Gly	Lys	Leu		
			85					90					95				
Asn	Ile	Leu	Val	Asn	Asn	Val	Gly	Thr	Asn	Val	Arg	Lys	Pro	Thr	Ile		
		100					105						110				
Glu	Tyr	Thr	Ala	Glu	Glu	Tyr	Ser	Lys	Leu	Met	Ala	Thr	Asn	Leu	Asp		
	115						120					125					
Ser	Thr	Tyr	His	Leu	Cys	Gln	Leu	Ala	Tyr	Pro	Leu	Leu	Lys	Ala	Ser		
	130				135						140						
Gly	Asn	Gly	Ser	Ile	Val	Ser	Ile	Ser	Ser	Val	Ala	Ser	Gln	Thr	Ser		
145				150					155					160			
Val	Gly	Ser	Gly	Ala	Ile	Tyr	Ala	Ala	Thr	Lys	Ala	Ala	Ile	Asp	Gln		
			165					170						175			
Leu	Thr	Lys	Tyr	Phe	Ala	Cys	Glu	Trp	Ala	Lys	Asp	Asn	Ile	Arg	Ser		
		180						185					190				
Asn	Gly	Val	Ala	Pro	Trp	Tyr	Thr	Ile	Thr	Ser	Leu	Val	Glu	Pro	Leu		
	195						200					205					
Leu	Ala	Asn	Lys	Gln	Leu	Val	Ser	Glu	Ile	Ile	Ser	Arg	Thr	Pro	Ile		
	210				215						220						
Lys	Arg	Met	Ala	Glu	Thr	His	Glu	Val	Ser	Ser	Leu	Val	Thr	Phe	Leu		
225				230					235					240			
Cys	Leu	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Ile	Val	Ser	Val	Asp		
			245						250					255			
Gly	Gly	Phe	Thr	Ala	Asn	Gly	Phe	Gln	Pro	Ser	Met	Arg	Ile	Ser			
			260					265					270				

&lt;210&gt; 3559

&lt;211&gt; 963

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(963)

&lt;400&gt; 3559

## PhoenixTemp32470.tmp.txt

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Met	Ala	Ser	Ile	Ala	Gly	Ser	Asn	Cys	Val	Ala	Leu	Arg	Thr	Ala	Asn	
1				5				10						15		
ttc	ggc	gcc	tcc	ggt	aac	cgg	aaa	atc	ggc	cag	atc	cgc	caa	tgg	tct	96
Phe	Gly	Ala	Ser	Gly	Asn	Arg	Lys	Ile	Gly	Gln	Ile	Arg	Gln	Trp	Ser	
			20					25					30			
ccg	att	ctc	acg	aat	ctc	cgt	ccc	ggt	tcc	ggt	ctt	cgt	cac	cga	tcg	144
Pro	Ile	Leu	Thr	Asn	Leu	Arg	Pro	Val	Ser	Gly	Leu	Arg	His	Arg	Ser	
			35				40					45				
aat	act	ccg	ttt	agc	tcc	tcc	ggt	gtg	aga	gca	cag	ggt	gct	act	ctg	192
Asn	Thr	Pro	Phe	Ser	Ser	Ser	Gly	Val	Arg	Ala	Gln	Val	Ala	Thr	Leu	
	50					55				60						
gag	gaa	gca	gga	acc	gga	gca	act	cag	aaa	gtg	gaa	gca	ccg	ggt	gca	240
Glu	Glu	Ala	Gly	Thr	Gly	Ala	Thr	Gln	Lys	Val	Glu	Ala	Pro	Val	Ala	
	65				70				75						80	
gtg	gtg	acc	gga	gct	tcc	aga	ggc	att	ggc	aaa	gca	att	gca	ctg	tca	288
Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Leu	Ser	
				85				90						95		
tta	ggt	aaa	gca	ggt	tgc	aag	ggt	ctg	gtc	aac	tat	gca	agg	tca	tcc	336
Leu	Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	
			100					105					110			
aag	gaa	gct	gag	gag	ggt	tcc	aag	gag	att	gag	gag	ttt	ggt	ggt	caa	384
Lys	Glu	Ala	Glu	Glu	Val	Ser	Lys	Glu	Ile	Glu	Glu	Phe	Gly	Gly	Gln	
			115				120					125				
gct	ctt	aca	ttt	ggt	gga	gat	ggt	tct	aac	gag	gct	gat	gtg	gag	tct	432
Ala	Leu	Thr	Phe	Gly	Gly	Asp	Val	Ser	Asn	Glu	Ala	Asp	Val	Glu	Ser	
	130					135					140					
atg	att	aaa	act	gca	ggt	gat	gct	tgg	gga	aca	ggt	gat	gta	tta	ata	480
Met	Ile	Lys	Thr	Ala	Val	Asp	Ala	Trp	Gly	Thr	Val	Asp	Val	Leu	Ile	
	145				150					155				160		
aac	aat	gca	gga	ata	act	aga	gat	ggt	tta	tta	atg	aga	atg	aag	aaa	528
Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	Gly	Leu	Leu	Met	Arg	Met	Lys	Lys	
				165				170						175		
tct	caa	tgg	cag	gat	ggt	att	gat	cta	aat	ctc	act	ggt	ggt	ttt	ctt	576
Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	
			180					185					190			
tgc	acc	cag	gct	gct	gct	aag	att	atg	atg	aag	aaa	aga	aag	gga	aga	624
Cys	Thr	Gln	Ala	Ala	Ala	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys	Gly	Arg	
			195				200					205				
att	gtc	aat	att	gca	tca	ggt	ggt	ttg	ggt	ggc	aat	ggt	gga	caa		672
Ile	Val	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Val	Asn	Val	Gly	Gln		
	210					215				220						
gcc	aat	tat	agt	gct	gca	aaa	gca	gga	gta	att	ggc	ctg	aca	aaa	act	720
Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Leu	Thr	Lys	Thr	
				225		230			235					240		
ggt	gca	aag	gaa	tat	gct	agc	aga	aac	atc	act	ggt	aat	gca	ggt	gct	768
Val	Ala	Lys	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	
				245				250						255		
cca	ggg	ttt	att	gca	tct	gac	atg	act	gcc	aag	cta	gga	caa	gac	att	816
Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Gln	Asp	Ile	
			260				265						270			
gag	aaa	aag	att	ttg	gag	acg	atc	cca	tta	gga	aga	tat	ggc	caa	cca	864
Glu	Lys	Lys	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	
			275				280					285				
gag	gaa	ggt	gct	gga	ctg	ggt	gaa	ttc	ttg	gct	ctt	aat	caa	gct	gcc	912
Glu	Glu	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Gln	Ala	Ala	
			290			295					300					
agt	tac	atc	act	ggg	cag	ggt	ttc	acc	att	gat	gga	ggt	atg	gtg	atg	960
Ser	Tyr	Ile	Thr	Gly	Gln	Val	Phe	Thr	Ile	Asp	Gly	Gly	Met	Val	Met	
					310					315					320	
taa																963

<210> 3560  
 <211> 320  
 <212> PRT  
 <213> Glycine max

## PhoenixTemp32470.tmp.txt

&lt;400&gt; 3560

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Met Ala Ser Ile Ala Gly Ser Asn Cys Val Ala Leu Arg Thr Ala Asn
1      5      10      15
Phe Gly Ala Ser Gly Asn Arg Lys Ile Gly Gln Ile Arg Gln Trp Ser
      20      25      30
Pro Ile Leu Thr Asn Leu Arg Pro Val Ser Gly Leu Arg His Arg Ser
      35      40      45
Asn Thr Pro Phe Ser Ser Ser Gly Val Arg Ala Gln Val Ala Thr Leu
      50      55      60
Glu Glu Ala Gly Thr Gly Ala Thr Gln Lys Val Glu Ala Pro Val Ala
65      70      75      80
Val Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser
      85      90      95
Leu Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser
      100      105      110
Lys Glu Ala Glu Glu Val Ser Lys Glu Ile Glu Glu Phe Gly Gly Gln
      115      120      125
Ala Leu Thr Phe Gly Gly Asp Val Ser Asn Glu Ala Asp Val Glu Ser
      130      135      140
Met Ile Lys Thr Ala Val Asp Ala Trp Gly Thr Val Asp Val Leu Ile
145      150      155      160
Asn Asn Ala Gly Ile Thr Arg Asp Gly Leu Leu Met Arg Met Lys Lys
      165      170      175
Ser Gln Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu
      180      185      190
Cys Thr Gln Ala Ala Ala Lys Ile Met Met Lys Lys Arg Lys Gly Arg
      195      200      205
Ile Val Asn Ile Ala Ser Val Val Gly Leu Val Gly Asn Val Gly Gln
      210      215      220
Ala Asn Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Leu Thr Lys Thr
225      230      235      240
Val Ala Lys Glu Tyr Ala Ser Arg Asn Ile Thr Val Asn Ala Val Ala
      245      250      255
Pro Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Gln Asp Ile
      260      265      270
Glu Lys Lys Ile Leu Glu Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro
      275      280      285
Glu Glu Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Gln Ala Ala
      290      295      300
Ser Tyr Ile Thr Gly Gln Val Phe Thr Ile Asp Gly Gly Met Val Met
305      310      315      320

```

&lt;210&gt; 3561

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;400&gt; 3561

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atg gga agt gtt cca ttg gcc tcc gct gct gct ctt gcc aga agg cta      48
Met Gly Ser Val Pro Leu Ala Ser Ala Ala Ala Leu Ala Arg Arg Leu
1      5      10      15
gaa ggg aag gtg gca ctg ata act ggt gga gca agt ggt ata ggt gag      96
Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu
      20      25      30
tgc aca gca aga ctt ttc tcc aag cat gga gcc aaa gtg gtg att gct      144
Cys Thr Ala Arg Leu Phe Ser Lys His Gly Ala Lys Val Val Ile Ala
      35      40      45
gat atc caa gac gag tta ggc cac tca att tgc aaa gac ttg gat tca      192
Asp Ile Gln Asp Glu Leu Gly His Ser Ile Cys Lys Asp Leu Asp Ser
      50      55      60
tct tca gct act tac att cat tgt gat gtc aca aaa gaa gaa aac atc      240
Ser Ser Ala Thr Tyr Ile His Cys Asp Val Thr Lys Glu Glu Asn Ile
      65      70      75      80
gaa cac gcc gtg aac acg acc gtt tcc aag tac ggt aaa cta gac atc      288
Glu His Ala Val Asn Thr Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile

```

## PhoenixTemp32470.tmp.txt

				85				90						95			
atg	cac	agc	agc	gca	ggt	ata	ggt	ggc	gca	tgg	aac	ccc	agc	ata	ttg		336
Met	His	Ser	Ser	Ala	Gly	Ile	Val	Gly	Ala	Trp	Asn	Pro	Ser	Ile	Leu		
			100					105					110				
cac	aac	aag	aag	tct	cac	ttt	gag	caa	ggt	atc	agt	gtc	aac	ctg	gtg		384
His	Asn	Lys	Lys	Ser	His	Phe	Glu	Gln	Val	Ile	Ser	Val	Asn	Leu	Val		
		115					120					125					
ggc	aca	ttc	ctg	gga	atc	aag	cac	gcc	gcg	agg	gtg	atg	atc	cct	tct		432
Gly	Thr	Phe	Leu	Gly	Ile	Lys	His	Ala	Ala	Arg	Val	Met	Ile	Pro	Ser		
	130					135					140						
ggg	cgt	ggc	agc	ata	ggt	gca	atg	gct	agc	att	tgt	gga	aga	att	ggt		480
Gly	Arg	Gly	Ser	Ile	Val	Ala	Met	Ala	Ser	Ile	Cys	Gly	Arg	Ile	Gly		
	145				150					155					160		
ggc	gtg	gct	tcg	cat	gcc	tat	acg	agc	tcg	aag	cac	ggc	atc	gtg	gga		528
Gly	Val	Ala	Ser	His	Ala	Tyr	Thr	Ser	Ser	Lys	His	Gly	Ile	Val	Gly		
				165					170					175			
ctg	gtg	cga	aac	act	gcc	gtg	gag	ctt	gga	acc	tta	ggg	atc	aga	gtg		576
Leu	Val	Arg	Asn	Thr	Ala	Val	Glu	Leu	Gly	Thr	Leu	Gly	Ile	Arg	Val		
			180					185					190				
aat	agt	gtg	tct	cct	tat	gcg	gtc	cct	acg	ccc	atg	agt	aaa	act	ttc		624
Asn	Ser	Val	Ser	Pro	Tyr	Ala	Val	Pro	Thr	Pro	Met	Ser	Lys	Thr	Phe		
		195					200				205						
ctc	aac	act	gat	gat	gag	ggg	att	gct	gca	ctg	tat	tcc	aat	ctt	aaa		672
Leu	Asn	Thr	Asp	Asp	Glu	Gly	Ile	Ala	Ala	Leu	Tyr	Ser	Asn	Leu	Lys		
	210				215						220						
ggg	act	ggt	ctt	aag	ccc	cag	gat	gtg	gct	gaa	gct	ggt	ctt	tac	ttg		720
Gly	Thr	Val	Leu	Lys	Pro	Gln	Asp	Val	Ala	Glu	Ala	Val	Leu	Tyr	Leu		
	225				230				235						240		
gga	agt	gac	gag	tcc	aag	tat	ggt	agt	ggc	cat	gac	ctt	ggt	gta	gat		768
Gly	Ser	Asp	Glu	Ser	Lys	Tyr	Val	Ser	Gly	His	Asp	Leu	Val	Val	Asp		
				245					250					255			
ggg	ggt	ttc	act	gtc	gta	aac	cct	ggt	ttg	tgt	gtg	ttt	ggg	caa	tcc		816
Gly	Gly	Phe	Thr	Val	Val	Asn	Pro	Gly	Leu	Cys	Val	Phe	Gly	Gln	Ser		
			260					265					270				
gtg	tag																822
Val																	

<210> 3562  
 <211> 273  
 <212> PRT  
 <213> Glycine max

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 Glu Gly Lys Val Ala Leu Ile Thr Gly Gly Ala Ser Gly Ile Gly Glu  
 20 25 30  
 Cys Thr Ala Arg Leu Phe Ser Lys His Gly Ala Lys Val Val Ile Ala  
 35 40 45  
 Asp Ile Gln Asp Glu Leu Gly His Ser Ile Cys Lys Asp Leu Asp Ser  
 50 55 60  
 Ser Ser Ala Thr Tyr Ile His Cys Asp Val Thr Lys Glu Glu Asn Ile  
 65 70 75 80  
 Glu His Ala Val Asn Thr Thr Val Ser Lys Tyr Gly Lys Leu Asp Ile  
 85 90 95  
 Met His Ser Ser Ala Gly Ile Val Gly Ala Trp Asn Pro Ser Ile Leu  
 100 105 110  
 His Asn Lys Lys Ser His Phe Glu Gln Val Ile Ser Val Asn Leu Val  
 115 120 125  
 Gly Thr Phe Leu Gly Ile Lys His Ala Ala Arg Val Met Ile Pro Ser  
 130 135 140  
 Gly Arg Gly Ser Ile Val Ala Met Ala Ser Ile Cys Gly Arg Ile Gly  
 145 150 155 160  
 Gly Val Ala Ser His Ala Tyr Thr Ser Ser Lys His Gly Ile Val Gly  
 165 170 175  
 Leu Val Arg Asn Thr Ala Val Glu Leu Gly Thr Leu Gly Ile Arg Val  
 180 185 190  
 Asn Ser Val Ser Pro Tyr Ala Val Pro Thr Pro Met Ser Lys Thr Phe  
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## PhoenixTemp32470.tmp.txt

195  
 Leu Asn Thr Asp Asp Glu Gly 200  
 210 Thr Val Leu Lys Pro 215 Ile Ala Ala Leu Tyr 205  
 225 Gly Thr Val Leu Lys Pro 230 Tyr Val Ser Gly 235 His Asp Leu Val Val 240  
 Gly Ser Asp Glu Ser 245 Val Val Asn Pro Gly 250 Leu Cys Val Phe Gly 255  
 260 Val Val Asn Pro Gly 265 Leu Cys Val Phe Gly 270  
 Val

<210> 3563  
 <211> 819  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(819)

<400> 3563  
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 Met Ala Glu Ala Gly 5 Ser Ser Ile Asn Arg 10 Gly Ala Arg Trp Ser 15 Leu  
 1 aat gga acg acg gct ctc gtc acc ggc ggc acc cgt ggg atc ggg cac 96  
 Asn Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His  
 20 gcc ata gtg agt gac ttg gcc gcg ttt ggc gct gct gtg cac act tgc 144  
 Ala Ile Val Ser Asp Leu Ala Phe Gly Ala Ala Val His Thr Cys  
 35 tcc agg acc caa aca gag ctc aac aaa tgc tta caa gag tgg cag agt 192  
 Ser Arg Thr Gln Thr Glu Leu Asn Lys Cys Leu Gln Glu Trp Gln Ser  
 50 ctg ggc ttt cag gta act ggg tcg gtg tgt gac gtg tcc tca cca tcc 240  
 Leu Gly Phe Gln Val Thr Gly Ser Val Cys Asp Val Ser Ser Pro Ser  
 65 cag aga gag aag ctc att gag gaa gtc act tcc atc ttg aat ggc aag 288  
 Gln Arg Glu Lys Leu Ile Glu Glu Val Thr Ser Ile Leu Asn Gly Lys  
 85 ctt aac atc tat gtg aac aat gtt gga aca aac ttt aga aag cca acc 336  
 Leu Asn Ile Tyr Val Asn Asn Val Gly Thr Asn Phe Arg Lys Pro Thr  
 100 att gag tac act gct gaa gaa tat tca cag ctt atg aca gtt aat tta 384  
 Ile Glu Tyr Thr Ala Glu Glu Tyr Ser Gln Leu Met Thr Val Asn Leu  
 115 gac tcc tca ttc cat ctg tgc caa ctt gca tat cct ctt ctg aaa gca 432  
 Asp Ser Ser Phe His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala  
 130 tct gaa aat gga agc att gtg ttt att tca tct gtt gct ggt gtg gtg 480  
 Ser Glu Asn Gly Ser Ile Val Phe Ile Ser Val Ala Gly Val Val  
 145 agc ttg ggt act gga gct gtt tat gca gca agt aaa gct gca att aat 528  
 Ser Leu Gly Thr Gly Ala Val Tyr Ala Ala Ser Lys Ala Ala Ile Asn  
 165 cag ctt aca aaa aac ctg gct tgt gaa tgg gcc aaa gac aac ata agg 576  
 Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg  
 180 agc aac tgt gtt gta cca tgg gca acc aga acc cca ctt gta gaa cat 624  
 Ser Asn Cys Val Val Pro Trp Ala Thr Arg Thr Pro Leu Val Glu His  
 195 ttg ttg aga gac caa aag ttt gtg gat gat att atg tct cga act ccg 672  
 Leu Leu Arg Asp Gln Lys Phe Val Asp Asp Ile Met Ser Arg Thr Pro  
 210 att aaa cgt ata gca gaa ccc gaa gaa gtg tca tcg ttg gtg act gtc 720  
 Ile Lys Arg Ile Ala Glu Pro Glu Glu Val Ser Ser Leu Val Thr Val  
 225 ctt tgc ttg cct gct gct tct tac atc act gga cag gtt att tgt gtt 768  
 Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile Cys Val

## PhoenixTemp32470.tmp.txt

gat gga gga tta 245 acg gtg aat gga tgt 250 caa ccc agc atg aga 255 att acc 816  
 Asp Gly Gly Leu Thr Val Asn Gly Cys Gln Pro Ser Met Arg Ile Thr  
 tga 819

<210> 3564  
 <211> 272  
 <212> PRT  
 <213> Glycine max

<400> 3564  
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 1 5 10 15  
 Asn Gly Thr Thr Ala Leu Val Thr Gly Gly Thr Arg Gly Ile Gly His  
 20 25 30  
 Ala Ile Val Ser Asp Leu Ala Ala Phe Gly Ala Ala Val His Thr Cys  
 35 40 45  
 Ser Arg Thr Gln Thr Glu Leu Asn Lys Cys Leu Gln Glu Trp Gln Ser  
 50 55 60  
 Leu Gly Phe Gln Val Thr Gly Ser Val Cys Asp Val Ser Ser Pro Ser  
 65 70 75 80  
 Gln Arg Glu Lys Leu Ile Glu Glu Val Thr Ser Ile Leu Asn Gly Lys  
 85 90 95  
 Leu Asn Ile Tyr Val Asn Asn Val Gly Thr Asn Phe Arg Lys Pro Thr  
 100 105 110  
 Ile Glu Tyr Thr Ala Glu Glu Tyr Ser Gln Leu Met Thr Val Asn Leu  
 115 120 125  
 Asp Ser Ser Phe His Leu Cys Gln Leu Ala Tyr Pro Leu Leu Lys Ala  
 130 135 140  
 Ser Glu Asn Gly Ser Ile Val Phe Ile Ser Ser Val Ala Gly Val Val  
 145 150 155 160  
 Ser Leu Gly Thr Gly Ala Val Tyr Ala Ala Ser Lys Ala Ala Ile Asn  
 165 170 175  
 Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp Asn Ile Arg  
 180 185 190  
 Ser Asn Cys Val Val Pro Trp Ala Thr Arg Thr Pro Leu Val Glu His  
 195 200 205  
 Leu Leu Arg Asp Gln Lys Phe Val Asp Asp Ile Met Ser Arg Thr Pro  
 210 215 220  
 Ile Lys Arg Ile Ala Glu Pro Glu Glu Val Ser Ser Leu Val Thr Val  
 225 230 235 240  
 Leu Cys Leu Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Ile Cys Val  
 245 250 255  
 Asp Gly Gly Leu Thr Val Asn Gly Cys Gln Pro Ser Met Arg Ile Thr  
 260 265 270

<210> 3565  
 <211> 804  
 <212> DNA  
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<220>  
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 <222> (1)..(804)

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 1 5 10 15  
 gga gca gca agt ggg att ggt gaa gag aca gtg aga ttg ttc gct gaa 96  
 Gly Ala Ala Ser Gly Ile Gly Glu Glu Thr Val Arg Leu Phe Ala Glu  
 20 25 30  
 cat gga gca ctt att gtt gca aca gat att caa gat gaa caa ggt cac 144  
 His Gly Ala Leu Ile Val Ala Thr Asp Ile Gln Asp Glu Gln Gly His  
 35 40 45  
 cga gtt gct gct tca ata ggg tca gag aga gtg act tac cat cat tgt 192  
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## PhoenixTemp32470.tmp.txt

Arg	Val	Ala	Ala	Ser	Ile	Gly	Ser	Glu	Arg	Val	Thr	Tyr	His	His	Cys	
gat	gtg	aga	gat	gaa	aac	caa	ggt	gaa	gaa	aca	atc	aat	ttc	act	ttg	240
Asp	Val	Arg	Asp	Glu	Asn	Gln	Val	Glu	Glu	Thr	Ile	Asn	Phe	Thr	Leu	
65				70						75					80	
gaa	aaa	cat	ggt	cgc	ata	gat	ggt	ttg	ttc	agc	aac	gct	gga	gta	ata	288
Glu	Lys	His	Gly	Arg	Ile	Asp	Val	Leu	Phe	Ser	Asn	Ala	Gly	Val	Ile	
				85					90					95		
ggt	tcc	tta	tct	ggg	atc	ctt	gac	ctt	gat	ctg	aat	gag	ttt	gac	aac	336
Gly	Ser	Leu	Ser	Gly	Ile	Leu	Asp	Leu	Asp	Leu	Asn	Glu	Phe	Asp	Asn	
			100					105					110			
acc	atg	gcc	aca	aat	ggt	cgt	ggt	gta	gct	gcc	aca	att	aag	cac	acg	384
Thr	Met	Ala	Thr	Asn	Val	Arg	Gly	Val	Ala	Ala	Thr	Ile	Lys	His	Thr	
		115					120					125				
gca	cgt	gcc	atg	ggt	gct	aaa	agc	acc	cgt	gga	tcc	atc	ata	tgc	acc	432
Ala	Arg	Ala	Met	Val	Ala	Lys	Ser	Thr	Arg	Gly	Ser	Ile	Ile	Cys	Thr	
	130					135					140					
act	agt	gtg	gct	gct	act	att	ggt	gga	aca	ggt	cct	cat	ggt	tat	acc	480
Thr	Ser	Val	Ala	Ala	Thr	Ile	Gly	Gly	Thr	Gly	Pro	His	Gly	Tyr	Thr	
145					150					155					160	
aca	tca	aaa	cat	gct	ctt	ctg	ggg	ttg	gtg	aaa	tca	gct	tgt	agt	gaa	528
Thr	Ser	Lys	His	Ala	Leu	Leu	Gly	Leu	Val	Lys	Ser	Ala	Cys	Ser	Glu	
				165				170						175		
ctt	ggt	gct	tat	gga	ata	aga	ggt	aat	agc	ata	tcc	cct	ttc	gga	ggt	576
Leu	Gly	Ala	Tyr	Gly	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro	Phe	Gly	Val	
			180					185					190			
gca	aca	cct	ctt	gca	tgc	aaa	gct	ttc	aac	ttt	gag	cct	gag	caa	ggt	624
Ala	Thr	Pro	Leu	Ala	Cys	Lys	Ala	Phe	Asn	Phe	Glu	Pro	Glu	Gln	Val	
		195					200					205				
gaa	gct	aat	agc	tgc	tca	cag	gct	aat	ctg	aag	ggt	ggt	gtg	ttg	aag	672
Glu	Ala	Asn	Ser	Cys	Ser	Gln	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	
	210					215					220					
gct	agg	cat	ata	gct	gaa	gca	gct	ttg	ttt	ctt	gct	tct	gat	gat	gct	720
Ala	Arg	His	Ile	Ala	Glu	Ala	Ala	Leu	Phe	Leu	Ala	Ser	Asp	Asp	Ala	
225					230					235					240	
gct	ggt	tac	atc	agt	ggt	cac	aac	ttg	gtg	gtg	gat	ggt	ggg	ttc	tct	768
Ala	Val	Tyr	Ile	Ser	Gly	His	Asn	Leu	Val	Val	Asp	Gly	Gly	Phe	Ser	
				245				250						255		
gtg	ggt	aat	aga	agt	tat	tct	ttc	aca	cca	gct	taa					804
Val	Val	Asn	Arg	Ser	Tyr	Ser	Phe	Thr	Pro	Ala						
			260					265								

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 <212> PRT  
 <213> Glycine max

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 20 25 30  
 His Gly Ala Leu Ile Val Ala Thr Asp Ile Gln Asp Glu Gln Gly His  
 35 40 45  
 Arg Val Ala Ala Ser Ile Gly Ser Glu Arg Val Thr Tyr His His Cys  
 50 55 60  
 Asp Val Arg Asp Glu Asn Gln Val Glu Glu Thr Ile Asn Phe Thr Leu  
 65 70 75 80  
 Glu Lys His Gly Arg Ile Asp Val Leu Phe Ser Asn Ala Gly Val Ile  
 85 90 95  
 Gly Ser Leu Ser Gly Ile Leu Asp Leu Asp Leu Asn Glu Phe Asp Asn  
 100 105 110  
 Thr Met Ala Thr Asn Val Arg Gly Val Ala Ala Thr Ile Lys His Thr  
 115 120 125  
 Ala Arg Ala Met Val Ala Lys Ser Thr Arg Gly Ser Ile Ile Cys Thr  
 130 135 140  
 Thr Ser Val Ala Ala Thr Ile Gly Gly Thr Gly Pro His Gly Tyr Thr  
 145 150 155 160  
 Thr Ser Lys His Ala Leu Leu Gly Leu Val Lys Ser Ala Cys Ser Glu

## PhoenixTemp32470.tmp.txt

165 170 175  
 Leu Gly Ala Tyr Gly Ile Arg Val Asn Ser Ile Ser Pro Phe Gly Val  
 180 185 190  
 Ala Thr Pro Leu Ala Cys Lys Ala Phe Asn Phe Glu Pro Glu Gln Val  
 195 200 205  
 Glu Ala Asn Ser Cys Ser Gln Ala Asn Leu Lys Gly Val Val Leu Lys  
 210 215 220  
 Ala Arg His Ile Ala Glu Ala Leu Phe Leu Ala Ser Asp Asp Ala  
 225 230 235 240  
 Ala Val Tyr Ile Ser Gly His Asn Leu Val Val Asp Gly Gly Phe Ser  
 245 250 255  
 Val Val Asn Arg Ser Tyr Ser Phe Thr Pro Ala  
 260 265

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 1 5 10 15  
 aag ttc ctc atc gct tat ggc gat ttc act ttg atg tct aag aag caa 96  
 Lys Phe Leu Ile Ala Tyr Gly Asp Phe Thr Leu Met Ser Lys Lys Gln  
 20 25 30  
 cct aag cgc caa gag att gaa gat aag gtt gtt tgg att act ggt gct 144  
 Pro Lys Arg Gln Glu Ile Glu Asp Lys Val Val Trp Ile Thr Gly Ala  
 35 40 45  
 agc cgt gga att ggg gag att ctg gct aaa cag ttt gca agt tta ggg 192  
 Ser Arg Gly Ile Gly Glu Ile Leu Ala Lys Gln Phe Ala Ser Leu Gly  
 50 55 60  
 gcc aag ctt att atc tct gca agg aat gaa gct gag cta aac cga gta 240  
 Ala Lys Leu Ile Ile Ser Ala Arg Asn Glu Ala Glu Leu Asn Arg Val  
 65 70 75 80  
 agg aca cag ctg aaa ggt aag cat gca cct gat gac gtc aag atc tta 288  
 Arg Thr Gln Leu Lys Gly Lys His Ala Pro Asp Asp Val Lys Ile Leu  
 85 90 95  
 cca ttg gat tta tca tct gga gag gat tct ctt agg ata gct gtt gag 336  
 Pro Leu Asp Leu Ser Ser Gly Glu Asp Ser Leu Arg Ile Ala Val Glu  
 100 105 110  
 aaa gca gaa tcc ttt ttt ccg gat tct ggt gtt gat tac atg gtc cat 384  
 Lys Ala Glu Ser Phe Phe Pro Asp Ser Gly Val Asp Tyr Met Val His  
 115 120 125  
 aat gca gct ttt gag cgt cct aaa aca tca att tta gat gta act gag 432  
 Asn Ala Ala Phe Glu Arg Pro Lys Thr Ser Ile Leu Asp Val Thr Glu  
 130 135 140  
 gaa ggt ctt aag gct acc ttt gat gtc aat gtt ctg ggg aca ata act 480  
 Glu Gly Leu Lys Ala Thr Phe Asp Val Asn Val Leu Gly Thr Ile Thr  
 145 150 155 160  
 ctc aca aag ctc ttg gca cct ttc atg ttg aag agg ggg cat ggt cat 528  
 Leu Thr Lys Leu Leu Ala Pro Phe Met Leu Lys Arg Gly His Gly His  
 165 170 175  
 ttt gtg gtg atg agt agt gca gca gga aag aca cct gcc cca ggt cag 576  
 Phe Val Val Met Ser Ser Ala Ala Gly Lys Thr Pro Ala Pro Gly Gln  
 180 185 190  
 gct gta tac tct gct tct aaa tat gcg ctc aat ggt tac ttc cat acc 624  
 Ala Val Tyr Ser Ala Ser Lys Tyr Ala Leu Asn Gly Tyr Phe His Thr  
 195 200 205  
 ttg cgt tca gag ctt tgt cag aaa gga atc cag gta act gtg gtc tgt 672  
 Leu Arg Ser Glu Leu Cys Gln Lys Gly Ile Gln Val Thr Val Val Cys  
 210 215 220  
 cct ggt cca ata gaa aca tca aat aat gct gga tca agg gtt cca tct 720  
 Pro Gly Pro Ile Glu Thr Ser Asn Asn Ala Gly Ser Arg Val Pro Ser  
 225 230 235 240

## PhoenixTemp32470.tmp.txt

gag	aag	cgt	gtg	cca	tct	gaa	agg	tgt	gca	gag	ctg	act	att	att	gct	768
Glu	Lys	Arg	Val	Pro	Ser	Glu	Arg	Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	
				245					250					255		
gca	act	cat	ggc	tta	aag	gaa	gct	tgg	ata	tca	tat	cag	cct	gtg	ctt	816
Ala	Thr	His	Gly	Leu	Lys	Glu	Ala	Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	
			260					265					270			
gct	gtc	atg	tat	ctc	gtt	cag	tac	atg	cca	act	att	ggg	tat	tgg	gtc	864
Ala	Val	Met	Tyr	Leu	Val	Gln	Tyr	Met	Pro	Thr	Ile	Gly	Tyr	Trp	Val	
		275					280					285				
atg	gac	aag	att	ggc	aaa	agt	cga	gta	gaa	gct	gct	gaa	cag	aag	gga	912
Met	Asp	Lys	Ile	Gly	Lys	Ser	Arg	Val	Glu	Ala	Ala	Glu	Gln	Lys	Gly	
	290					295					300					
aac	aca	tat	tct	ttg	agc	tta	ctg	ctc	gga	aaa	aag	aag	gcc	act	tga	960
Asn	Thr	Tyr	Ser	Leu	Ser	Leu	Leu	Leu	Gly	Lys	Lys	Lys	Ala	Thr		
305					310					315						

&lt;210&gt; 3568

&lt;211&gt; 319

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3568

Met	Leu	Ile	Val	Phe	Ile	Cys	Ile	Phe	Leu	Phe	Phe	Ile	Phe	Leu	Tyr	
1				5					10					15		
Lys	Phe	Leu	Ile	Ala	Tyr	Gly	Asp	Phe	Thr	Leu	Met	Ser	Lys	Lys	Gln	
			20					25					30			
Pro	Lys	Arg	Gln	Glu	Ile	Glu	Asp	Lys	Val	Val	Trp	Ile	Thr	Gly	Ala	
		35					40					45				
Ser	Arg	Gly	Ile	Gly	Glu	Ile	Leu	Ala	Lys	Gln	Phe	Ala	Ser	Leu	Gly	
	50					55					60					
Ala	Lys	Leu	Ile	Ile	Ser	Ala	Arg	Asn	Glu	Ala	Glu	Leu	Asn	Arg	Val	
65					70					75					80	
Arg	Thr	Gln	Leu	Lys	Gly	Lys	His	Ala	Pro	Asp	Asp	Val	Lys	Ile	Leu	
			85						90					95		
Pro	Leu	Asp	Leu	Ser	Ser	Gly	Glu	Asp	Ser	Leu	Arg	Ile	Ala	Val	Glu	
		100						105					110			
Lys	Ala	Glu	Ser	Phe	Phe	Pro	Asp	Ser	Gly	Val	Asp	Tyr	Met	Val	His	
	115						120					125				
Asn	Ala	Ala	Phe	Glu	Arg	Pro	Lys	Thr	Ser	Ile	Leu	Asp	Val	Thr	Glu	
	130					135					140					
Glu	Gly	Leu	Lys	Ala	Thr	Phe	Asp	Val	Asn	Val	Leu	Gly	Thr	Ile	Thr	
145					150					155					160	
Leu	Thr	Lys	Leu	Leu	Ala	Pro	Phe	Met	Leu	Lys	Arg	Gly	His	Gly	His	
			165						170					175		
Phe	Val	Val	Met	Ser	Ser	Ala	Ala	Gly	Lys	Thr	Pro	Ala	Pro	Gly	Gln	
		180						185					190			
Ala	Val	Tyr	Ser	Ala	Ser	Lys	Tyr	Ala	Leu	Asn	Gly	Tyr	Phe	His	Thr	
	195						200					205				
Leu	Arg	Ser	Glu	Leu	Cys	Gln	Lys	Gly	Ile	Gln	Val	Thr	Val	Val	Cys	
	210					215					220					
Pro	Gly	Pro	Ile	Glu	Thr	Ser	Asn	Asn	Ala	Gly	Ser	Arg	Val	Pro	Ser	
225					230					235					240	
Glu	Lys	Arg	Val	Pro	Ser	Glu	Arg	Cys	Ala	Glu	Leu	Thr	Ile	Ile	Ala	
			245						250					255		
Ala	Thr	His	Gly	Leu	Lys	Glu	Ala	Trp	Ile	Ser	Tyr	Gln	Pro	Val	Leu	
		260						265					270			
Ala	Val	Met	Tyr	Leu	Val	Gln	Tyr	Met	Pro	Thr	Ile	Gly	Tyr	Trp	Val	
	275						280					285				
Met	Asp	Lys	Ile	Gly	Lys	Ser	Arg	Val	Glu	Ala	Ala	Glu	Gln	Lys	Gly	
	290					295					300					
Asn	Thr	Tyr	Ser	Leu	Ser	Leu	Leu	Leu	Gly	Lys	Lys	Lys	Ala	Thr		
305					310					315						

&lt;210&gt; 3569

&lt;211&gt; 864

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 3569

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Met	Gln	Ala	Cys	Ser	Ser	Ser	Asp	Ala	Pro	Leu	Ser	Lys	Arg	Leu	Asp	
1				5					10					15		
ggc	aaa	gta	gca	ctc	ata	atc	ggc	gga	gcc	agt	ggc	atc	ggg	gaa	gcc	96
Gly	Lys	Val	Ala	Leu	Ile	Ile	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala	
			20					25					30			
acc	gcc	aag	ctt	ttc	ctt	cg	tac	ggt	gcc	aag	gtc	gtc	atc	gcc	gac	144
Thr	Ala	Lys	Leu	Phe	Leu	Arg	Tyr	Gly	Ala	Lys	Val	Val	Ile	Ala	Asp	
			35				40					45				
atc	caa	gac	aac	ctc	gga	cac	tcc	cta	tgc	caa	agt	ctc	aat	tcc	tcc	192
Ile	Gln	Asp	Asn	Leu	Gly	His	Ser	Leu	Cys	Gln	Ser	Leu	Asn	Ser	Ser	
	50					55					60					
gac	aaa	aac	aac	aac	gac	gac	att	tcc	tat	ggt	cac	tgc	gac	gtc	acc	240
Asp	Lys	Asn	Asn	Asn	Asp	Asp	Ile	Ser	Tyr	Val	His	Cys	Asp	Val	Thr	
65					70					75					80	
aac	gac	aaa	gac	gtc	gaa	acc	gcc	gtc	aac	gct	gcc	gtc	tcg	cga	cac	288
Asn	Asp	Lys	Asp	Val	Glu	Thr	Ala	Val	Asn	Ala	Ala	Val	Ser	Arg	His	
				85					90					95		
ggc	aag	ctc	gac	atc	ctc	ttc	agc	aac	gcc	ggc	atc	acg	ggc	cgt	tcc	336
Gly	Lys	Leu	Asp	Ile	Leu	Phe	Ser	Asn	Ala	Gly	Ile	Thr	Gly	Arg	Ser	
			100					105					110			
gac	tgt	tct	aac	tcc	atc	acg	gcc	atc	gac	agc	ggg	gac	ctg	aag	agg	384
Asp	Cys	Ser	Asn	Ser	Ile	Thr	Ala	Ile	Asp	Ser	Gly	Asp	Leu	Lys	Arg	
			115				120					125				
gtc	ttc	gag	gtg	aac	gtc	ttc	ggg	gcc	ttc	tac	gcc	gcc	aaa	cac	gcc	432
Val	Phe	Glu	Val	Asn	Val	Phe	Gly	Ala	Phe	Tyr	Ala	Ala	Lys	His	Ala	
			130			135					140					
gct	aag	gtc	atg	att	ccc	aga	aag	aaa	ggg	agc	att	ggt	ttc	act	gct	480
Ala	Lys	Val	Met	Ile	Pro	Arg	Lys	Lys	Gly	Ser	Ile	Val	Phe	Thr	Ala	
					150				155						160	
agc	atc	gct	tct	gtg	tcg	aat	gcg	ggg	tgg	gcg	cac	ccg	tac	gcg	gcg	528
Ser	Ile	Ala	Ser	Val	Ser	Asn	Ala	Gly	Trp	Ala	His	Pro	Tyr	Ala	Ala	
				165					170					175		
tcg	aag	aac	gca	gtg	gtg	ggt	ttg	atg	aag	aac	ctg	tgc	gtg	gaa	ttg	576
Ser	Lys	Asn	Ala	Val	Val	Gly	Leu	Met	Lys	Asn	Leu	Cys	Val	Glu	Leu	
			180					185					190			
ggg	aaa	cat	gga	atc	aga	gtt	aac	gtt	tcg	ccc	tat	gcg	gtg	ggg		624
Gly	Lys	His	Gly	Ile	Arg	Val	Asn	Cys	Val	Ser	Pro	Tyr	Ala	Val	Gly	
		195					200				205					
act	cca	atg	ctg	aca	cgt	gcg	atg	agg	atg	gag	aag	gag	aaa	gca	gag	672
Thr	Pro	Met	Leu	Thr	Arg	Ala	Met	Arg	Met	Glu	Lys	Glu	Lys	Ala	Glu	
			210			215					220					
gag	ata	tat	ttg	gag	gcg	gcg	aac	ttg	aag	gga	gtg	ggt	tta	aag	gaa	720
Glu	Ile	Tyr	Leu	Glu	Ala	Ala	Asn	Leu	Lys	Gly	Val	Val	Leu	Lys	Glu	
				230						235					240	
aag	gat	gtg	gca	gaa	gca	act	ttg	ttt	ttg	gct	agt	gat	gag	tca	aaa	768
Lys	Asp	Val	Ala	Glu	Ala	Thr	Leu	Phe	Leu	Ala	Ser	Asp	Glu	Ser	Lys	
				245					250					255		
tac	gtg	agt	gga	gtg	aat	cta	gtt	gtg	gac	gga	ggt	tat	act	acc	acc	816
Tyr	Val	Ser	Gly	Val	Asn	Leu	Val	Val	Asp	Gly	Gly	Tyr	Thr	Thr	Thr	
			260				265						270			
aat	tct	tct	tcc	aaa	caa	gct	ttc	aca	aag	ttt	tct	ttt	aat	gtt	taa	864
Asn	Ser	Ser	Ser	Lys	Gln	Ala	Phe	Thr	Lys	Phe	Ser	Phe	Asn	Val		
			275				280					285				

&lt;210&gt; 3570

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3570

Met	Gln	Ala	Cys	Ser	Ser	Ser	Asp	Ala	Pro	Leu	Ser	Lys	Arg	Leu	Asp
1				5					10					15	
Gly	Lys	Val	Ala	Leu	Ile	Ile	Gly	Gly	Ala	Ser	Gly	Ile	Gly	Glu	Ala
			20					25					30		

## PhoenixTemp32470.tmp.txt

Thr Ala Lys<sub>35</sub> Leu Phe Leu Arg Tyr<sub>40</sub> Gly Ala Lys Val<sub>45</sub> Val<sub>45</sub> Ile Ala Asp  
 Ile Gln<sub>50</sub> Asp Asn Leu Gly His<sub>55</sub> Ser Leu Cys Gln Ser<sub>60</sub> Leu Asn Ser Ser  
 Asp Lys Asn Asn Asn Asp<sub>70</sub> Asp Ile Ser Tyr Val<sub>75</sub> His Cys Asp Val Thr<sub>80</sub>  
 Asn Asp Lys Asp Val<sub>85</sub> Glu Thr Ala Val Asn<sub>90</sub> Ala Ala Val Ser Arg<sub>95</sub> His  
 Gly Lys Leu Asp<sub>100</sub> Ile Leu Phe Ser Asn<sub>105</sub> Ala Gly Ile Thr Gly Arg Ser  
 Asp Cys Ser<sub>115</sub> Asn Ser Ile Thr Ala<sub>120</sub> Ile Asp Ser Gly Asp<sub>125</sub> Leu Lys Arg  
 Val Phe<sub>130</sub> Glu Val Asn Val Phe<sub>135</sub> Gly Ala Phe Tyr Ala<sub>140</sub> Ala Lys His Ala  
 Ala Lys Val Met Ile Pro Arg Lys Lys Gly Ser<sub>155</sub> Ile Val Phe Thr Ala<sub>160</sub>  
 Ser Ile Ala Ser Val<sub>165</sub> Ser Asn Ala Gly Trp<sub>170</sub> Ala His Pro Tyr Ala<sub>175</sub> Ala  
 Ser Lys Asn Ala<sub>180</sub> Val Val Gly Leu Met<sub>185</sub> Lys Asn Leu Cys Val<sub>190</sub> Glu Leu  
 Gly Lys His<sub>195</sub> Gly Ile Arg Val Asn<sub>200</sub> Cys Val Ser Pro Tyr<sub>205</sub> Ala Val Gly  
 Thr Pro Met Leu Thr Arg Ala<sub>215</sub> Met Arg Met Glu Lys<sub>220</sub> Glu Lys Ala Glu  
 Glu Ile Tyr Leu Glu Ala<sub>230</sub> Asn Leu Lys Gly<sub>235</sub> Val Val Leu Lys Glu<sub>240</sub>  
 Lys Asp Val Ala Glu<sub>245</sub> Ala Thr Leu Phe Leu<sub>250</sub> Ala Ser Asp Glu Ser<sub>255</sub> Lys  
 Tyr Val Ser Gly<sub>260</sub> Val Asn Leu Val<sub>265</sub> Asp Gly Gly Tyr Thr<sub>270</sub> Thr Thr  
 Asn Ser Ser<sub>275</sub> Ser Lys Gln Ala Phe<sub>280</sub> Thr Lys Phe Ser Phe<sub>285</sub> Asn Val

<210> 3571  
 <211> 849  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> CDS  
 <222> (1)..(849)

<400> 3571  
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 Met Asn Ala Ile Ala<sub>5</sub> Ala Glu Gln Val<sub>10</sub> Leu<sub>10</sub> Glu Pro Trp His<sub>15</sub> Lys<sub>15</sub> Leu  
 gac gac aaa gtc gtt ttg gtg acg ggt gct tcc tcg ggg ctc ggg cga 96  
 Asp Asp Lys Val<sub>20</sub> Val<sub>20</sub> Leu Val<sub>25</sub> Thr Gly<sub>25</sub> Ala Ser Ser Gly<sub>30</sub> Leu Gly Arg  
 gat ttc tgc atc gac ctc gcc aaa gct ggc tgc tgt gtc gtc gcg gca 144  
 Asp Phe Cys<sub>35</sub> Ile Asp Leu Ala Lys<sub>40</sub> Ala Gly Cys Cys Val<sub>45</sub> Val Ala Ala  
 gct cgt cgc ctc gat cgc ctc act tcc ctc tgc cac gaa atc aac cac 192  
 Ala Arg Arg Leu Asp Arg Leu<sub>55</sub> Thr Ser Leu Cys His<sub>60</sub> Glu Ile Asn His  
 cga tgg ccc tcg aac gtc gga atc cac cgc gcg gtg gcg gtg gag ctt 240  
 Arg Trp Pro Ser Asn Val<sub>70</sub> Gly Ile His Arg Ala Val<sub>75</sub> Ala Val Glu Leu<sub>80</sub>  
 gat gtc gcc gcc gat ggc ccc gcc atc gac agg gct gtg cag aag gcc 288  
 Asp Val Ala Ala Asp<sub>85</sub> Gly Pro Ala Ile Asp<sub>90</sub> Arg Ala Val<sub>95</sub> Gln Lys<sub>95</sub> Ala  
 tgg gac gcc ttt ggc cgc gtt gat tcc Ser<sub>105</sub> ttg att aac aac gct ggt gtc 336  
 Trp Asp Ala Phe<sub>100</sub> Gly Arg Val Asp<sub>105</sub> Leu Ile Asn Asn<sub>110</sub> Ala Gly Val  
 aga gga agt gtt aaa tca ccc ttg aaa ttg tct gaa gag gaa tgg gat 384  
 Arg Gly Ser<sub>115</sub> Val Lys Ser Pro Leu<sub>120</sub> Lys Leu Ser Glu Glu<sub>125</sub> Glu Trp Asp  
 cat gtc ttc aag act aac cta act ggt tgt tgg ttg gtg tca aaa tat 432  
 His Val Phe Lys Thr Asn Leu Thr Gly Cys Trp Leu Val Ser Lys Tyr

## PhoenixTemp32470.tmp.txt

130	gta	tgc	aaa	cgc	atg	tgt	135	gat	atc	cag	ctt	aag	140	gga	tca	att	att	aat	480
Val	Cys	Lys	Arg	Met	Cys	Asp	Asp	Ile	Gln	Leu	Lys	Gly	Ser	Ile	Ile	Asn			
145	att	tct	tca	gtt	tct	ggg	150	tta	aat	cgg	ggg	caa	155	ttg	cct	gga	gct	gct	528
Ile	Ser	Ser	Val	Ser	Gly	Leu	Leu	Asn	Arg	Gly	Gln	Leu	Pro	Gly	Ala	Ala			
				165						170					175				
gca	tat	gca	tct	tcg	aag	gca	ggg	gta	aac	atg	ctg	act	aag	gtc	atg			576	
Ala	Tyr	Ala	Ser	Ser	Lys	Ala	Gly	Val	Asn	Met	Leu	Thr	Lys	Val	Met				
			180					185					190						
gct	atg	gaa	ttg	ggg	atg	cac	aaa	att	aga	gta	aat	tcc	ata	tcc	cct			624	
Ala	Met	Glu	Leu	Gly	Met	His	Lys	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro				
			195				200					205							
gga	att	ttc	aaa	tct	gaa	ata	act	gaa	aat	tta	tta	caa	aaa	gat	tgg			672	
Gly	Ile	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Asn	Leu	Leu	Gln	Lys	Asp	Trp				
	210					215					220								
ctg	aat	gat	gtg	gtc	agg	aaa	ata	atg	cct	ttg	aga	aga	tta	ggg	act			720	
Leu	Asn	Asp	Val	Val	Arg	Lys	Ile	Met	Pro	Leu	Arg	Arg	Leu	Gly	Thr				
					230					235					240				
tca	gat	cca	gca	tta	aca	tct	cta	gct	cgt	tat	ctt	att	cat	gat	tct			768	
Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser				
				245				250						255					
tct	gag	tac	gtc	acg	ggc	aac	aat	ttt	att	gtc	gat	tat	gga	ggc	acc			816	
Ser	Glu	Tyr	Val	Thr	Gly	Asn	Asn	Phe	Ile	Val	Asp	Tyr	Gly	Gly	Thr				
			260					265					270						
tta	cca	ggg	gta	cca	att	tat	tct	tct	ctg	taa								849	
Leu	Pro	Gly	Val	Pro	Ile	Tyr	Ser	Ser	Leu										
		275					280												

<210> 3572  
 <211> 282  
 <212> PRT  
 <213> Glycine max

<400> 3572

Met	Asn	Ala	Ile	Ala	Ala	Glu	Gln	Val	Leu	Glu	Pro	Trp	His	Lys	Leu
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Asp	Asp	Lys	Val	Val	Leu	Val	Thr	Gly	Ala	Ser	Ser	Gly	Leu	Gly	Arg
			20					25					30		
Asp	Phe	Cys	Ile	Asp	Leu	Ala	Lys	Ala	Gly	Cys	Cys	Val	Val	Ala	Ala
		35					40					45			
Ala	Arg	Arg	Leu	Asp	Arg	Leu	Thr	Ser	Leu	Cys	His	Glu	Ile	Asn	His
						55					60				
Arg	Trp	Pro	Ser	Asn	Val	Gly	Ile	His	Arg	Ala	Val	Ala	Val	Glu	Leu
65					70				75						80
Asp	Val	Ala	Ala	Asp	Gly	Pro	Ala	Ile	Asp	Arg	Ala	Val	Gln	Lys	Ala
				85					90					95	
Trp	Asp	Ala	Phe	Gly	Arg	Val	Asp	Ser	Leu	Ile	Asn	Asn	Ala	Gly	Val
			100				105					110			
Arg	Gly	Ser	Val	Lys	Ser	Pro	Leu	Lys	Leu	Ser	Glu	Glu	Glu	Trp	Asp
		115					120					125			
His	Val	Phe	Lys	Thr	Asn	Leu	Thr	Gly	Cys	Trp	Leu	Val	Ser	Lys	Tyr
					135						140				
Val	Cys	Lys	Arg	Met	Cys	Asp	Ile	Gln	Leu	Lys	Gly	Ser	Ile	Ile	Asn
145					150					155					160
Ile	Ser	Ser	Val	Ser	Gly	Leu	Asn	Arg	Gly	Gln	Leu	Pro	Gly	Ala	Ala
				165					170					175	
Ala	Tyr	Ala	Ser	Lys	Ala	Gly	Val	Asn	Met	Leu	Thr	Lys	Val	Met	
			180				185					190			
Ala	Met	Glu	Leu	Gly	Met	His	Lys	Ile	Arg	Val	Asn	Ser	Ile	Ser	Pro
		195					200					205			
Gly	Ile	Phe	Lys	Ser	Glu	Ile	Thr	Glu	Asn	Leu	Leu	Gln	Lys	Asp	Trp
	210					215					220				
Leu	Asn	Asp	Val	Val	Arg	Lys	Ile	Met	Pro	Leu	Arg	Arg	Leu	Gly	Thr
225					230					235					240
Ser	Asp	Pro	Ala	Leu	Thr	Ser	Leu	Ala	Arg	Tyr	Leu	Ile	His	Asp	Ser
				245					250					255	
ser	Glu	Tyr	Val	Thr	Gly	Asn	Asn	Phe	Ile	Val	Asp	Tyr	Gly	Gly	Thr
			260					265					270		



Leu Pro Gly Val Pro Ile Tyr Ser Ser Leu  
275 280

<210> 3573  
<211> 858  
<212> DNA  
<213> Brassica napus

<220>  
<221> CDS  
<222> (1)..(858)

<400> 3573  
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gag ctc aaa gac aaa gtg gtt ctc cta aca gga gct tca tcc ggc atc 96  
Glu Leu Lys Asp Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile  
20 25 30  
gga aga gag atc tgc ctc gat cta gcc aaa tcc ggc tgc aag atc atc 144  
Gly Arg Glu Ile Cys Leu Asp Leu Ala Lys Ser Gly Cys Lys Ile Ile  
35 40 45  
gcc gca gct cgc cgt ctc gac cgt ctc caa tcc ctc tgc tcc gag atc 192  
Ala Ala Ala Arg Arg Leu Asp Arg Leu Gln Ser Leu Cys Ser Glu Ile  
50 55 60  
aac gcc tta ttc tcc cca aca aaa acc aaa caa gcc gca cct ctc gag 240  
Asn Ala Leu Phe Ser Pro Thr Lys Thr Lys Gln Ala Ala Pro Leu Glu  
65 70 75 80  
cta gac gtc tcc tca gac tca tcc acc atc cga aac gca gtc aaa caa 288  
Leu Asp Val Ser Ser Asp Ser Ser Thr Ile Arg Asn Ala Val Lys Gln  
85 90 95  
gct tgg gac atc ttc gga aac atc gac gtc ttg atc aac aac gca ggc 336  
Ala Trp Asp Ile Phe Gly Asn Ile Asp Val Leu Ile Asn Asn Ala Gly  
100 105 110  
atc aga ggc aac gtc aag tcg agt ctg gac cta tcc gaa gaa gaa tgg 384  
Ile Arg Gly Asn Val Lys Ser Ser Leu Asp Leu Ser Glu Glu Glu Trp  
115 120 125  
gaa aga gtc ttc aga aca aac cta acc gga cct tgg cta gta tca aaa 432  
Glu Arg Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys  
130 135 140  
cac gtc tgc gtt ctg atg cgc gac gcc aaa cgc ggc gga gga tcg 480  
His Val Cys Val Leu Met Arg Asp Ala Lys Arg Gly Gly Gly Ser  
145 150 155 160  
gtg ata aac gtt tcc tcc atc gcg ggg ctt cag cgc ggg aag cta ccc 528  
Val Ile Asn Val Ser Ser Ile Ala Gly Leu Gln Arg Gly Lys Leu Pro  
165 170 175  
ggc gcg ttg gcg tac gcg tgt tcg aaa gga ggt ctt gat att atg acg 576  
Gly Ala Leu Ala Tyr Ala Cys Ser Lys Gly Gly Leu Asp Ile Met Thr  
180 185 190  
aag atg atg gcg gtt gag ctg ggt gag tat ggt ata aga gtg aac tcg 624  
Lys Met Met Ala Val Glu Leu Gly Glu Tyr Gly Ile Arg Val Asn Ser  
195 200 205  
ata gcc ccg ggg ctg ttt aag tcg gag atc acg gaa ggt ctg atg agg 672  
Ile Ala Pro Gly Leu Phe Lys Ser Glu Ile Thr Glu Gly Leu Met Arg  
210 215 220  
aaa gag tgg atg aag aat gtg agg gag agg att gtt ccg ttg aag gtg 720  
Lys Glu Trp Met Lys Asn Val Arg Glu Arg Ile Val Pro Leu Lys Val  
225 230 235 240  
cag cag agt gtg gac ccg ggg ctt acc tcg ctg gtt agg tat ctg att 768  
Gln Gln Ser Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile  
245 250 255  
cat gac tct tcc agg tat gtc tct ggg aat gtt tac att gtt gac gct 816  
His Asp Ser Ser Arg Tyr Val Ser Gly Asn Val Tyr Ile Val Asp Ala  
260 265 270  
ggt gct acg ttg tct ggt ctg ccg att ttt tct tct ctt tga 858  
Gly Ala Thr Leu Ser Gly Leu Pro Ile Phe Ser Ser Leu  
275 280 285

<210> 3574

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3574

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Glu Leu Lys Asp Lys Val Val Leu Leu Thr Gly Ala Ser Ser Gly Ile
20      25      30
Gly Arg Glu Ile Cys Leu Asp Leu Ala Lys Ser Gly Cys Lys Ile Ile
35      40      45
Ala Ala Ala Arg Arg Leu Asp Arg Leu Gln Ser Leu Cys Ser Glu Ile
50      55      60
Asn Ala Leu Phe Ser Pro Thr Lys Thr Lys Gln Ala Ala Pro Leu Glu
65      70      75      80
Leu Asp Val Ser Ser Asp Ser Ser Thr Ile Arg Asn Ala Val Lys Gln
85      90      95
Ala Trp Asp Ile Phe Gly Asn Ile Asp Val Leu Ile Asn Asn Ala Gly
100     105     110
Ile Arg Gly Asn Val Lys Ser Ser Leu Asp Leu Ser Glu Glu Glu Trp
115     120     125
Glu Arg Val Phe Arg Thr Asn Leu Thr Gly Pro Trp Leu Val Ser Lys
130     135     140
His Val Cys Val Leu Met Arg Asp Ala Lys Arg Arg Gly Gly Gly Ser
145     150     155     160
Val Ile Asn Val Ser Ser Ile Ala Gly Leu Gln Arg Gly Lys Leu Pro
165     170     175
Gly Ala Leu Ala Tyr Ala Cys Ser Lys Gly Gly Leu Asp Ile Met Thr
180     185     190
Lys Met Met Ala Val Glu Leu Gly Glu Tyr Gly Ile Arg Val Asn Ser
195     200     205
Ile Ala Pro Gly Leu Phe Lys Ser Glu Ile Thr Glu Gly Leu Met Arg
210     215     220
Lys Glu Trp Met Lys Asn Val Arg Glu Arg Ile Val Pro Leu Lys Val
225     230     235     240
Gln Gln Ser Val Asp Pro Gly Leu Thr Ser Leu Val Arg Tyr Leu Ile
245     250     255
His Asp Ser Ser Arg Tyr Val Ser Gly Asn Val Tyr Ile Val Asp Ala
260     265     270
Gly Ala Thr Leu Ser Gly Leu Pro Ile Phe Ser Ser Leu
275     280     285

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&lt;210&gt; 3575

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;400&gt; 3575

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Met Glu Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr
1      5      10      15
gcc tcc acg cag ggc atc ggt ctc gcc atc gcc gag cgc ctc ggc ctc      96
Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu
20      25      30
gag ggc gcc gcc gtc gtc atc tcc tcc cgc aag aag aag aac gtc gac      144
Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Lys Lys Asn Val Asp
35      40      45
gag gcg gtc gtg ggc ctc agg gcg aag ggg atc acc gtc gtc ggg gtg      192
Glu Ala Val Val Gly Leu Arg Ala Lys Gly Ile Thr Val Val Gly Val
50      55      60
gtc tgc cat gtc tcc atc ccg gag cag cgc aag aac ctc atc gac acg      240
Val Cys His Val Ser Ile Pro Glu Gln Arg Lys Asn Leu Ile Asp Thr
65      70      75      80
gcg gtc aag aat ttt ggg cat atc gac ata gtt gtc tcc aat gct gct      288
Ala Val Lys Asn Phe Gly His Ile Asp Ile Val Val Ser Asn Ala Ala

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## PhoenixTemp32470.tmp.txt

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Ala	Asn	Pro	Ser	Val	Asp	Asn	Ile	Leu	Glu	Met	Lys	Glu	Pro	Ile	Leu		
			100					105					110				
gac	aaa	cta	tgg	gat	att	aat	gtt	aag	gca	tct	att	ctt	ctt	ctt	cag		384
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Leu	Gln		
		115					120					125					
gat	gct	gca	tat	ttg	cgg	aag	gga	tca	tcc	gtg	ata	ttg	att	tct			432
Asp	Ala	Ala	Tyr	Leu	Arg	Lys	Gly	Ser	Ser	Val	Ile	Leu	Ile	Ser			
	130				135					140							
tca	att	act	ggc	tat	aat	cca	gaa	cca	gca	ttg	tcg	atg	tat	gct	gtt		480
Ser	Ile	Thr	Gly	Tyr	Asn	Pro	Glu	Pro	Ala	Leu	Ser	Met	Tyr	Ala	Val		
145					150					155					160		
aca	aaa	act	gcc	ctg	ctt	ggt	ctc	aca	aag	gct	ctt	gct	gct	gag	atg		528
Thr	Lys	Thr	Ala	Leu	Leu	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Ala	Glu	Met		
			165						170					175			
ggg	cca	aat	act	cgt	gtt	aac	tgt	ata	gcc	cct	ggt	ttt	gtt	cct	aca		576
Gly	Pro	Asn	Thr	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr		
			180					185					190				
aat	ttt	gct	cgt	ttc	ctc	aca	act	aat	gac	acc	att	aaa	aat	gag	ctt		624
Asn	Phe	Ala	Arg	Phe	Leu	Thr	Thr	Asn	Asp	Thr	Ile	Lys	Asn	Glu	Leu		
	195						200					205					
att	gac	agg	agc	aca	ctt	aag	aga	ttg	ggt	act	gtg	gaa	gac	atg	gct		672
Ile	Asp	Arg	Ser	Thr	Leu	Lys	Arg	Leu	Gly	Thr	Val	Glu	Asp	Met	Ala		
	210					215					220						
gca	gcc	gca	gct	ttc	ttg	gca	tca	gac	gat	gca	tca	ttc	att	aca	gct		720
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
225				230					235						240		
gaa	act	att	gtt	gtt	gct	gga	gga	act	cga	tct	agg	ctg	tag				762
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Thr	Arg	Ser	Arg	Leu					
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 <213> Oryza sativa

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 Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Lys Lys Asn Val Asp  
 35 40 45  
 Glu Ala Val Val Gly Leu Arg Ala Lys Gly Ile Thr Val Val Gly Val  
 50 55 60  
 Val Cys His Val Ser Ile Pro Glu Gln Arg Lys Asn Leu Ile Asp Thr  
 65 70 75 80  
 Ala Val Lys Asn Phe Gly His Ile Asp Ile Val Val Ser Asn Ala Ala  
 85 90 95  
 Ala Asn Pro Ser Val Asp Asn Ile Leu Glu Met Lys Glu Pro Ile Leu  
 100 105 110  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Leu Gln  
 115 120 125  
 Asp Ala Ala Ala Tyr Leu Arg Lys Gly Ser Ser Val Ile Leu Ile Ser  
 130 135 140  
 Ser Ile Thr Gly Tyr Asn Pro Glu Pro Ala Leu Ser Met Tyr Ala Val  
 145 150 155 160  
 Thr Lys Thr Ala Leu Leu Gly Leu Thr Lys Ala Leu Ala Ala Glu Met  
 165 170 175  
 Gly Pro Asn Thr Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 Asn Phe Ala Arg Phe Leu Thr Thr Asn Asp Thr Ile Lys Asn Glu Leu  
 195 200 205  
 Ile Asp Arg Ser Thr Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
 210 215 220  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Phe Ile Thr Ala  
 225 230 235 240  
 Glu Thr Ile Val Val Ala Gly Gly Thr Arg Ser Arg Leu

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 ggt tta cta cac caa ttc tcc act gcg gcg aac tcg cag agg ttg gcc 96  
 Gly Leu Leu His Gln Phe Ser Thr Ala Ala Asn Ser Gln Arg Leu Ala  
 20 25 30  
 ggg aag gtg gcc gtc atc acc ggc gcc ggc agc ggc atc ggc aag gcg 144  
 Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala  
 35 40 45  
 tcg gcg aag gag ttc atc ggc aat ggc gcc aag gtt ata ctc gcc gac 192  
 Ser Ala Lys Glu Phe Ile Gly Asn Gly Ala Lys Val Ile Leu Ala Asp  
 50 55 60  
 gtc cag gac gac ctc ggc cgc gcc gtc gcc gcc gag ctc ggc cct gcc 240  
 Val Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Pro Gly  
 65 70 75 80  
 gcg acg tac acg cgg tgc gac gtc acg gac gag gcg cag gtc gcc gcg 288  
 Ala Thr Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala  
 85 90 95  
 gcg gtg gac ctc gcc gtg gcg cgc cac ggg gcg ctc gac gtg ttc tac 336  
 Ala Val Asp Leu Ala Val Ala Arg His Gly Ala Leu Asp Val Phe Tyr  
 100 105 110  
 agc aac gcc ggc gtc ctg ggc tcc atc gcg ccg gcg ccg ctc gcc tcc 384  
 Ser Asn Ala Gly Val Leu Gly Ser Ile Ala Pro Ala Pro Leu Ala Ser  
 115 120 125  
 ctg gac ctg ggc gag ttc gac cgc gtc atg gcc gtg aac gcc cgc gcc 432  
 Leu Asp Leu Gly Glu Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala  
 130 135 140  
 gcc gtc gcc gcc gcc aag cac gcg gcg cgc gcc atg gtg ccg cgc cgg 480  
 Ala Val Ala Ala Ala Lys His Ala Ala Arg Ala Met Val Pro Arg Arg  
 145 150 155 160  
 agc ggg tgc gtc ctc ttc acg ggg agc gtg tcg ggc gtg gtg ggc ggc 528  
 Ser Gly Cys Val Leu Phe Thr Gly Ser Val Ser Gly Val Val Gly Gly  
 165 170 175  
 acg ggg ccg acg tcg tac ggc gtg tcg aag gcg gcc gtg ctg ggc gtg 576  
 Thr Gly Pro Thr Ser Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val  
 180 185 190  
 gtg cgc gcc gtg gcc ggg gag ctg gcg cgc cac ggc gtg cgg gcg aac 624  
 Val Arg Ala Val Ala Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn  
 195 200 205  
 gcc gtc tcg ccg tgc ggc gtc gcg acg ccg ctg tcc atg gtg cag gtc 672  
 Ala Val Ser Pro Cys Gly Val Ala Thr Pro Leu Ser Met Val Gln Val  
 210 215 220  
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 Leu Glu Ala Tyr Pro Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met  
 225 230 235 240  
 gcg gcg tcc atg gag cag atg gaa gct ggc ccg ttg atc gac ccc gag 768  
 Ala Ala Ser Met Glu Gln Met Glu Ala Gly Pro Leu Ile Asp Pro Glu  
 245 250 255  
 gac gtg gcg agg gcg gcc gtc ttc ctg gcg tcc gac gag gcc agg tac 816  
 Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr  
 260 265 270  
 atc aac ggc cat aac ctc gtc gtc gac ggc ggc ttc aca acg cat aaa 864  
 Ile Asn Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Thr His Lys  
 275 280 285  
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 Gly Lys Val Ala Val Ile Thr Gly Ala Ala Ser Gly Ile Gly Lys Ala  
 35 40 45  
 Ser Ala Lys Glu Phe Ile Gly Asn Gly Ala Lys Val Ile Leu Ala Asp  
 50 55 60  
 Val Gln Asp Asp Leu Gly Arg Ala Val Ala Ala Glu Leu Gly Pro Gly  
 65 70 75 80  
 Ala Thr Tyr Thr Arg Cys Asp Val Thr Asp Glu Ala Gln Val Ala Ala  
 85 90 95  
 Ala Val Asp Leu Ala Val Ala Arg His Gly Ala Leu Asp Val Phe Tyr  
 100 105 110  
 Ser Asn Ala Gly Val Leu Gly Ser Ile Ala Pro Ala Pro Leu Ala Ser  
 115 120 125  
 Leu Asp Leu Gly Glu Phe Asp Arg Val Met Ala Val Asn Ala Arg Ala  
 130 135 140  
 Ala Val Ala Ala Ala Lys His Ala Ala Arg Ala Met Val Pro Arg Arg  
 145 150 155 160  
 Ser Gly Cys Val Leu Phe Thr Gly Ser Val Ser Gly Val Val Gly Gly  
 165 170 175  
 Thr Gly Pro Thr Ser Tyr Gly Val Ser Lys Ala Ala Val Leu Gly Val  
 180 185 190  
 Val Arg Ala Val Ala Gly Glu Leu Ala Arg His Gly Val Arg Ala Asn  
 195 200 205  
 Ala Val Ser Pro Cys Gly Val Ala Thr Pro Leu Ser Met Val Gln Val  
 210 215 220  
 Leu Glu Ala Tyr Pro Gly Met Ser Phe Glu Glu Leu Lys Asn Ala Met  
 225 230 235 240  
 Ala Ala Ser Met Glu Gln Met Glu Ala Gly Pro Leu Ile Asp Pro Glu  
 245 250 255  
 Asp Val Ala Arg Ala Ala Val Phe Leu Ala Ser Asp Glu Ala Arg Tyr  
 260 265 270  
 Ile Asn Gly His Asn Leu Val Val Asp Gly Gly Phe Thr Thr His Lys  
 275 280 285  
 Gly Asp Asp Asn Arg Met Asn  
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 ctt cac ctc cga cga gcc ctt gca ccc gcg tcg tcg tct tct ccg gcg 96  
 Leu His Leu Arg Arg Ala Leu Ala Pro Ala Ser Ser Ser Ser Pro Ala  
 20 25 30  
 ccg gtg ctg ttg ctg cgt cct gcg gtt tct tgt tct tct ttg ttt gtt 144  
 Pro Val Leu Leu Arg Pro Ala Val Ser Cys Ser Ser Leu Phe Val  
 35 40 45  
 agc gac agg gcg gcg gcg gcg gcg gct cgc cgg agc agc ggc agc 192  
 Ser Asp Arg Ala Ala Ala Ala Ala Ala Arg Arg Ser Ser Gly Ser  
 50 55 60  
 agc agg aga agc atg gcg tcg cag cag ttc ccg ccg cag aag cag gag 240  
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## PhoenixTemp32470.tmp.txt

Ser 65	Arg	Arg	Ser	Met	Ala 70	Ser	Gln	Gln	Phe	Pro 75	Pro	Gln	Lys	Gln	Glu 80	
acg	cag	ccg	ggg	aag	gag	cac	gcc	atg	gat	ccc	cgc	ccc	gag	gcc	atc	288
Thr	Gln	Pro	Gly	Lys 85	Glu	His	Ala	Met	Asp 90	Pro	Arg	Pro	Glu	Ala 95	Ile	
atc	cag	agc	tac	aag	cca	gcc	aac	aag	ctg	aag	gac	aag	gtg	gcg	atc	336
Ile	Gln	Ser	Tyr 100	Lys	Pro	Ala	Asn	Lys 105	Leu	Lys	Asp	Lys	Val 110	Ala	Ile	
gtg	acc	ggc	ggc	gac	tcc	ggc	atc	ggg	cgg	gcg	gtg	tgc	ctg	tgc	ttc	384
Val	Thr	Gly 115	Gly	Asp	Ser	Gly	Ile 120	Gly	Arg	Ala	Val	Cys 125	Leu	Cys	Phe	
gcg	ctg	gag	ggc	gcg	acg	gtg	gcg	ttc	acg	tac	gtg	aag	ggg	cag	gag	432
Ala	Leu 130	Glu	Gly	Ala	Thr	Val 135	Ala	Phe	Thr	Tyr	Val 140	Lys	Gly	Gln	Glu	
gag	aag	gac	gcg	gag	gag	acg	ctc	cgc	gcg	ctg	cgc	gac	atc	agg	gcg	480
Glu	Lys	Asp	Ala	Glu	Glu 150	Thr	Leu	Arg	Ala 155	Leu	Arg	Asp	Ile	Arg	Ala 160	
145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	
cgc	acc	ggc	gcc	aag	gac	ccc	atg	gcg	atc	ccc	gcc	gac	ctc	ggg	tac	528
Arg	Thr	Gly	Ala 165	Lys	Asp	Pro	Met	Ala 170	Ile	Pro	Ala	Asp	Leu 175	Gly	Tyr	
gac	gac	aac	tgc	cg	aag	gtg	gtc	gac	gag	gtc	gcc	ggc	gcg	tac	ggc	576
Asp	Asp	Asn 180	Cys	Arg	Lys	Val	Val 185	Asp	Glu	Val	Ala	Gly 190	Ala	Tyr	Gly	
ggc	gcc	atc	gac	atc	ctc	gtc	aac	aac	gcc	gcc	gag	cag	tac	gag	cg	624
Gly	Ala 195	Ile	Asp	Ile	Leu	Val 200	Asn	Asn	Ala	Ala	Glu	Gln 205	Tyr	Glu	Arg	
ccc	tcc	atc	acc	gac	atc	acc	gag	gac	gac	ctg	gaa	cgc	gtg	ttc	cg	672
Pro	Ser 210	Ile	Thr	Asp	Ile	Thr 215	Glu	Asp	Asp	Leu	Glu 220	Arg	Val	Phe	Arg	
acc	aac	atc	ttc	tcc	tac	ttc	atg	tcg	aag	cac	gcc	gtg	aag	cg	720	
Thr	Asn	Ile	Phe	Ser	Tyr 230	Phe	Phe	Met	Lys 235	His	Ala	Val	Lys	Arg 240		
225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	
atg	cg	gat	cg	cg	ggc	ggc	gcc	ggc	gcc	ggc	ggg	tgc	agc	atc	atc	768
Met	Arg	Asp	Arg	Arg 245	Gly	Gly	Ala	Gly	Ala 250	Gly	Gly	Cys	Ser 255	Ile	Ile	
aac	acg	tcg	tcg	atc	aac	gcg	tac	aag	ggg	aac	aag	acg	ctg	ctg	gac	816
Asn	Thr	Ser	Ser 260	Ile	Asn	Ala	Tyr	Lys 265	Gly	Asn	Lys	Thr	Leu 270	Leu	Asp	
tac	acg	gcg	acc	aag	ggc	gcc	atc	gtg	gcg	ttc	acg	agg	gcg	ctg	gcg	864
Tyr	Thr	Ala 275	Thr	Lys	Gly	Ala	Ile 280	Val	Ala	Phe	Thr	Arg 285	Ala	Leu	Ala	
ctg	cag	ctg	gcg	gag	gag	ggg	atc	cg	gtg	aac	ggc	gtc	gcg	ccg	ggg	912
Leu	Gln 290	Leu	Ala	Glu	Glu 295	Gly	Ile	Arg	Val	Asn	Gly 300	Val	Ala	Pro	Gly	
ccg	atc	tgg	acg	ccg	ctg	atc	ccg	gcg	tcg	ttc	gcg	gag	gag	aag	gtg	960
Pro	Ile	Trp	Thr	Pro 310	Leu	Ile	Pro	Ala	Ser	Phe 315	Ala	Glu	Glu	Lys	Val 320	
agg	cag	ttc	ggc	tcc	cag	gtg	ccc	atg	ggc	cgc	gcc	ggc	cag	ccg	tcg	1008
Arg	Gln	Phe 325	Gly	Ser	Gln	Val	Pro	Met	Gly 330	Arg	Ala	Gly	Gln 335	Pro	Ser	
gag	gtg	gcg	ccc	agc	ttc	gtc	ttc	ctc	gcc	agc	gac	gac	gcc	tcc	tac	1056
Glu	Val	Ala 340	Pro	Ser	Phe	Val	Phe 345	Leu	Ala	Ser	Asp	Asp	Ala 350	Ser	Tyr	
atg	tcc	ggc	cag	atg	ctg	cac	gtc	aac	ggc	ggc	gtc	atc	gtc	aac	ggc	1104
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tag																1107

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## PhoenixTemp32470.tmp.txt

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 Pro Val Leu Leu Arg Pro Ala Val Ser Cys Ser Ser Leu Phe Val  
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 Ser Arg Arg Ser Met Ala Ser Gln Gln Phe Pro Pro Gln Lys Gln Glu  
 65 70 75 80  
 Thr Gln Pro Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile  
 85 90 95  
 Ile Gln Ser Tyr Lys Pro Ala Asn Lys Leu Lys Asp Lys Val Ala Ile  
 100 105 110  
 Val Thr Gly Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe  
 115 120 125  
 Ala Leu Glu Gly Ala Thr Val Phe Thr Tyr Val Lys Gly Gln Glu  
 130 135 140  
 Glu Lys Asp Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Arg Ala  
 145 150 155 160  
 Arg Thr Gly Ala Lys Asp Pro Met Ala Ile Pro Ala Asp Leu Gly Tyr  
 165 170 175  
 Asp Asp Asn Cys Arg Lys Val Val Asp Glu Val Ala Gly Ala Tyr Gly  
 180 185 190  
 Gly Ala Ile Asp Ile Leu Val Asn Asn Ala Ala Glu Gln Tyr Glu Arg  
 195 200 205  
 Pro Ser Ile Thr Asp Ile Thr Glu Asp Asp Leu Glu Arg Val Phe Arg  
 210 215 220  
 Thr Asn Ile Phe Ser Tyr Phe Phe Met Ser Lys His Ala Val Lys Arg  
 225 230 235 240  
 Met Arg Asp Arg Arg Gly Gly Ala Gly Ala Gly Gly Cys Ser Ile Ile  
 245 250 255  
 Asn Thr Ser Ser Ile Asn Ala Tyr Lys Gly Asn Lys Thr Leu Leu Asp  
 260 265 270  
 Tyr Thr Ala Thr Lys Gly Ala Ile Val Ala Phe Thr Arg Ala Leu Ala  
 275 280 285  
 Leu Gln Leu Ala Glu Glu Gly Ile Arg Val Asn Gly Val Ala Pro Gly  
 290 295 300  
 Pro Ile Trp Thr Pro Leu Ile Pro Ala Ser Phe Ala Glu Glu Lys Val  
 305 310 315 320  
 Arg Gln Phe Gly Ser Gln Val Pro Met Gly Arg Ala Gly Gln Pro Ser  
 325 330 335  
 Glu Val Ala Pro Ser Phe Val Phe Leu Ala Ser Asp Asp Ala Ser Tyr  
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 Ala Leu Val Thr Gly Gly Gly Ser Gly Ile Gly Phe Glu Ile Ala Ala  
 20 25 30  
 cag ctc gcc cgc cac ggc gcg cac gtc gcc atc atg ggc cgc cgc cgc 144  
 Gln Leu Ala Arg His Gly Ala His Val Ala Ile Met Gly Arg Arg Arg  
 35 40 45  
 gag gtc ctc gac aag gcc gtc gcc gcc ctc cgc tcc cac ggc ctc cgg 192  
 Glu Val Leu Asp Lys Ala Val Ala Ala Leu Arg Ser His Gly Leu Arg  
 50 55 60  
 gct gtt ggt ttt gag gga gat gtg cgc aag cag gaa gat gcc gcg aga 240  
 Ala Val Gly Phe Glu Gly Asp Val Arg Lys Gln Glu Asp Ala Ala Arg  
 65 70 75 80

## PhoenixTemp32470.tmp.txt

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Val	Val	Ala	Ala	Thr	Val	Gln	His	Phe	Gly	Lys	Leu	Asp	Ile	Leu	Val	
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aat	ggg	gca	gct	ggc	aat	ttc	ctt	gct	tcc	ccg	gag	gat	ttg	acg	ccc	336
Asn	Gly	Ala	Ala	Gly	Asn	Phe	Leu	Ala	Ser	Pro	Glu	Asp	Leu	Thr	Pro	
				100				105					110			
aaa	ggg	ttc	agg	aca	gtc	ggt	gac	att	gac	aca	gtg	ggt	aca	tac	act	384
Lys	Gly	Phe	Arg	Thr	Val	Val	Asp	Ile	Asp	Thr	Val	Gly	Thr	Tyr	Thr	
				115				120				125				
atg	tgc	tat	gaa	gct	cta	aag	tat	ctg	aaa	aag	ggt	ggc	cct	ggg	aaa	432
Met	Cys	Tyr	Glu	Ala	Leu	Lys	Tyr	Leu	Lys	Lys	Gly	Gly	Pro	Gly	Lys	
				130				135				140				
ggt	ccc	tct	act	ggt	ggc	gtc	atc	atc	aac	ata	agt	gct	act	ttg	cat	480
Gly	Pro	Ser	Thr	Gly	Gly	Val	Ile	Ile	Asn	Ile	Ser	Ala	Thr	Leu	His	
				145					155						160	
tac	act	gcg	gcc	tgg	tac	caa	att	cat	gtc	tct	gct	gct	aag	gcg	ggc	528
Tyr	Thr	Ala	Ala	Trp	Tyr	Gln	Ile	His	Val	Ser	Ala	Ala	Lys	Ala	Gly	
				165					170					175		
ggt	gat	agt	ata	aca	aga	tca	ttg	gct	ctg	gaa	tgg	gga	aca	gat	tat	576
Val	Asp	Ser	Ile	Thr	Arg	Ser	Leu	Ala	Leu	Glu	Trp	Gly	Thr	Asp	Tyr	
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gac	atc	agg	gtc	aat	gga	att	gca	cca	ggg	cca	att	gaa	ggc	act	cca	624
Asp	Ile	Arg	Val	Asn	Gly	Ile	Ala	Pro	Gly	Pro	Ile	Glu	Gly	Thr	Pro	
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gga	atg	agg	aag	ctt	gca	cct	gag	gaa	atg	gcc	aag	ggg	agt	cgg	gaa	672
Gly	Met	Arg	Lys	Leu	Ala	Pro	Glu	Glu	Met	Ala	Lys	Gly	Ser	Arg	Glu	
				210				215				220				
ata	atg	cct	tta	ttt	aag	ttg	ggt	gaa	aaa	tgg	gac	ata	gct	atg	gct	720
Ile	Met	Pro	Leu	Phe	Lys	Leu	Gly	Glu	Lys	Trp	Asp	Ile	Ala	Met	Ala	
				225						235				240		
gca	ctt	tac	ctt	gct	tct	gat	gca	gga	aaa	tat	gta	aat	ggg	act	aca	768
Ala	Leu	Tyr	Leu	Ala	Ser	Asp	Ala	Gly	Lys	Tyr	Val	Asn	Gly	Thr	Thr	
				245					250					255		
gtg	ggt	ggt	gat	gga	ggt	ctt	tgg	cta	agt	cgc	cct	cgc	cat	att	ccg	816
Val	Val	Val	Asp	Gly	Gly	Leu	Trp	Leu	Ser	Arg	Pro	Arg	His	Ile	Pro	
				260				265					270			
aag	gag	gaa	gtg	aag	gag	ctc	tca	aag	ggt	gtc	gag	aag	aag	ggt	agg	864
Lys	Glu	Glu	Val	Lys	Glu	Leu	Ser	Lys	Val	Val	Glu	Lys	Lys	Val	Arg	
				275				280				285				
gcc	tct	ggt	ggt	ggt	gtg	cca	tca	agc	aaa	ttg	tga					900
Ala	Ser	Gly	Val	Gly	Val	Pro	Ser	Ser	Lys	Leu						
				290			295									

<210> 3582  
 <211> 299  
 <212> PRT  
 <213> Oryza sativa

<400> 3582  
 Met Ala Val Glu Ser Pro Phe Arg Ala Asp Val Leu Arg Gly Lys Ala  
 1 5 10 15  
 Ala Leu Val Thr Gly Gly Gly Ser Gly Ile Gly Phe Glu Ile Ala Ala  
 20 25 30  
 Gln Leu Ala Arg His Gly Ala His Val Ala Ile Met Gly Arg Arg Arg  
 35 40 45  
 Glu Val Leu Asp Lys Ala Val Ala Ala Leu Arg Ser His Gly Leu Arg  
 50 55 60  
 Ala Val Gly Phe Glu Gly Asp Val Arg Lys Gln Glu Asp Ala Ala Arg  
 65 70 75 80  
 Val Val Ala Ala Thr Val Gln His Phe Gly Lys Leu Asp Ile Leu Val  
 85 90 95  
 Asn Gly Ala Ala Gly Asn Phe Leu Ala Ser Pro Glu Asp Leu Thr Pro  
 100 105 110  
 Lys Gly Phe Arg Thr Val Val Asp Ile Asp Thr Val Gly Thr Tyr Thr  
 115 120 125  
 Met Cys Tyr Glu Ala Leu Lys Tyr Leu Lys Lys Gly Gly Pro Gly Lys  
 130 135 140  
 Gly Pro Ser Thr Gly Gly Val Ile Ile Asn Ile Ser Ala Thr Leu His  
 145 150 155 160



## PhoenixTemp32470.tmp.txt

Tyr Thr Ala Ala Trp Tyr Gln Ile His Val Ser Ala Ala Lys Ala Gly  
 165 170 175  
 Val Asp Ser Ile Thr Arg Ser Leu Ala Leu Glu Trp Gly Thr Asp Tyr  
 180 185 190  
 Asp Ile Arg Val Asn Gly Ile Ala Pro Gly Pro Ile Glu Gly Thr Pro  
 195 200 205  
 Gly Met Arg Lys Leu Ala Pro Glu Glu Met Ala Lys Gly Ser Arg Glu  
 210 215 220  
 Ile Met Pro Leu Phe Lys Leu Gly Glu Lys Trp Asp Ile Ala Met Ala  
 225 230 235 240  
 Ala Leu Tyr Leu Ala Ser Asp Ala Gly Lys Tyr Val Asn Gly Thr Thr  
 245 255  
 Val Val Val Asp Gly Gly Leu Trp Leu Ser Arg Pro Arg His Ile Pro  
 260 265 270  
 Lys Glu Glu Val Lys Glu Leu Ser Lys Val Val Glu Lys Lys Val Arg  
 275 285  
 Ala Ser Gly Val Gly Val Pro Ser Ser Lys Leu  
 290 295

<210> 3583  
 <211> 795  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(795)

<400> 3583  
 atg gcc atg gcg act acc agc tct aaa aac gag agg tgg agc ctc gcc 48  
 Met Ala Met Ala Thr Thr Ser Ser Lys Asn Glu Arg Trp Ser Leu Ala  
 1 5 10 15  
 ggc gcc acc gcg ctc gtc acc ggc ggc agc aaa ggc atc ggc cgc gcc 96  
 Gly Ala Thr Ala Leu Val Thr Gly Gly Ser Lys Gly Ile Gly Arg Ala  
 20 25 30  
 atc gtc gag gag ctc gcc agc ttg ggc gcg acg gtg cac acc tgc gcc 144  
 Ile Val Glu Glu Leu Ala Ser Leu Gly Ala Thr Val His Thr Cys Ala  
 35 40 45  
 cgg acc gag gcg ccg ctg aac aga tgc cgg gag gag ttg acg gcc aag 192  
 Arg Thr Glu Ala Pro Leu Asn Arg Cys Arg Glu Glu Leu Thr Ala Lys  
 50 55 60  
 ggc ctt gcc gtc acc gtc tcc gtc tgt gac gtc tcg ttg cgt gcc gac 240  
 Gly Leu Ala Val Thr Val Ser Val Cys Asp Val Ser Leu Arg Ala Asp  
 65 70 75 80  
 agg gag gcg ctc gcc ggc acg gtg cgc gag ctc ttc ggc ggc aag ctc 288  
 Arg Glu Ala Leu Ala Gly Thr Val Arg Glu Leu Phe Gly Gly Lys Leu  
 85 90 95  
 agc atc ctg gtg aac tgc gcc ggg atg tcg ttc ctg aag ccg gcg gtg 336  
 Ser Ile Leu Val Asn Cys Ala Gly Met Ser Phe Leu Lys Pro Ala Val  
 100 105 110  
 gag ctg acg ccg gac gat tgc tcg cag gtg atg ggg atg aac ttc gag 384  
 Glu Leu Thr Pro Asp Asp Cys Ser Gln Val Met Gly Met Asn Phe Glu  
 115 120 125  
 tcg tgc ttc cac ttg agc cag ctg gcg tac cct ctc ctc aag gcc tct 432  
 Ser Cys Phe His Leu Ser Gln Leu Ala Tyr Pro Leu Leu Lys Ala Ser  
 130 135 140  
 cag aga ggt tgt atc atc aac atc tcg tcc att gct tcg gtg gtc gcg 480  
 Gln Arg Gly Cys Ile Ile Asn Ile Ser Ser Ile Ala Ser Val Val Ala  
 145 150 155 160  
 ttc tgc tct ctt ccc aac gcc gtc tac tca gct gct aaa gga gca atg 528  
 Phe Cys Ser Leu Pro Asn Ala Val Tyr Ser Ala Ala Lys Gly Ala Met  
 165 170 175  
 aac caa gtc aca agg aac ctg gct gct gag tgg gcg aac gat ggg atc 576  
 Asn Gln Val Thr Arg Asn Leu Ala Ala Glu Trp Ala Asn Asp Gly Ile  
 180 185 190  
 aga gtt aac tgt gtt gcg cca ggc ttc att cgt act ccg ctc cta tct 624  
 Arg Val Asn Cys Val Ala Pro Gly Phe Ile Arg Thr Pro Leu Leu Ser  
 195 200 205  
 gaa ttc gtg gag ggt aac gag ttg ggg cga gca gag ttc agc cgt gtt 672

## PhoenixTemp32470.tmp.txt

Glu	Phe	Val	Glu	Gly	Asn	Glu	Leu	Gly	Arg	Ala	Glu	Phe	Ser	Arg	Val		
210						215					220						
ccc	atg	ggc	cgt	ctc	ggt	gaa	cca	gag	gac	atc	gca	tcg	ctg	gtg	gcg		720
Pro	Met	Gly	Arg	Leu	Gly	Glu	Pro	Glu	Asp	Ile	Ala	Ser	Leu	Val	Ala		
225					230					235					240		
ttt	ctg	tca	atg	cca	gcg	tcc	tcc	tat	ata	acc	ggg	cag	gtc	ata	tgc		768
Phe	Leu	Ser	Met	Pro	Ala	Ser	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Cys		
				245					250					255			
gcc	gac	ggc	ggt	cgc	tgc	ctt	tct	tga									795
Ala	Asp	Gly	Gly	Arg	Cys	Leu	Ser										
			260														

&lt;210&gt; 3584

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa

&lt;400&gt; 3584

Met	Ala	Met	Ala	Thr	Thr	Ser	Ser	Lys	Asn	Glu	Arg	Trp	Ser	Leu	Ala		
1				5					10					15			
Gly	Ala	Thr	Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Arg	Ala		
			20					25					30				
Ile	Val	Glu	Glu	Leu	Ala	Ser	Leu	Gly	Ala	Thr	Val	His	Thr	Cys	Ala		
		35					40					45					
Arg	Thr	Glu	Ala	Pro	Leu	Asn	Arg	Cys	Arg	Glu	Glu	Leu	Thr	Ala	Lys		
	50					55					60						
Gly	Leu	Ala	Val	Thr	Val	Ser	Val	Cys	Asp	Val	Ser	Leu	Arg	Ala	Asp		
65					70				75					80			
Arg	Glu	Ala	Leu	Ala	Gly	Thr	Val	Arg	Glu	Leu	Phe	Gly	Gly	Lys	Leu		
			85					90					95				
Ser	Ile	Leu	Val	Asn	Cys	Ala	Gly	Met	Ser	Phe	Leu	Lys	Pro	Ala	Val		
		100						105					110				
Glu	Leu	Thr	Pro	Asp	Asp	Cys	Ser	Gln	Val	Met	Gly	Met	Asn	Phe	Glu		
		115					120					125					
Ser	Cys	Phe	His	Leu	Ser	Gln	Leu	Ala	Tyr	Pro	Leu	Leu	Lys	Ala	Ser		
	130					135					140						
Gln	Arg	Gly	Cys	Ile	Ile	Asn	Ile	Ser	Ser	Ile	Ala	Ser	Val	Val	Ala		
145				150						155					160		
Phe	Cys	Ser	Leu	Pro	Asn	Ala	Val	Tyr	Ser	Ala	Ala	Lys	Gly	Ala	Met		
			165					170						175			
Asn	Gln	Val	Thr	Arg	Asn	Leu	Ala	Ala	Glu	Trp	Ala	Asn	Asp	Gly	Ile		
		180						185					190				
Arg	Val	Asn	Cys	Val	Ala	Pro	Gly	Phe	Ile	Arg	Thr	Pro	Leu	Leu	Ser		
		195					200					205					
Glu	Phe	Val	Glu	Gly	Asn	Glu	Leu	Gly	Arg	Ala	Glu	Phe	Ser	Arg	Val		
	210					215					220						
Pro	Met	Gly	Arg	Leu	Gly	Glu	Pro	Glu	Asp	Ile	Ala	Ser	Leu	Val	Ala		
225					230					235					240		
Phe	Leu	Ser	Met	Pro	Ala	Ser	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ile	Cys		
				245					250					255			
Ala	Asp	Gly	Gly	Arg	Cys	Leu	Ser										
			260														

&lt;210&gt; 3585

&lt;211&gt; 966

&lt;212&gt; DNA

&lt;213&gt; Oryza sativa

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(966)

&lt;400&gt; 3585

atg	ggg	acc	atc	acc	gcc	gcc	aaa	gca	gcc	gcg	gcg	gcg	gcc	gtc	ttc		48
Met	Gly	Thr	Ile	Thr	Ala	Ala	Lys	Ala	Ala	Ala	Ala	Ala	Ala	Val	Phe		
1				5				10						15			
cag	tct	ccg	tgc	tcc	cct	gcg	cct	gcg	gcc	agc	ttc	ccc	gcc	cgc	agc		96
Gln	Ser	Pro	Cys	Ser	Pro	Ala	Pro	Ala	Ala	Ser	Phe	Pro	Ala	Arg	Ser		
			20					25					30				

## PhoenixTemp32470.tmp.txt

gtc	cgg	ccg	gat	cgc	cgc	cgc	gcc	gtc	tcg	ctc	tca	gtc	tca	ggt	gta	144
Val	Arg	Pro	Asp	Arg	Arg	Arg	Ala	Val	Ser	Leu	Ser	Val	Ser	Gly	Val	
		35					40					45				
aga	act	cat	gtt	gca	gct	gtt	gaa	caa	gca	gtg	gta	caa	gat	gct	att	192
Arg	Thr	His	Val	Ala	Ala	Val	Glu	Gln	Ala	Val	Val	Gln	Asp	Ala	Ile	
	50					55					60					
gca	cag	tca	gag	gct	cca	gtt	gtt	gtt	gtt	aca	ggt	gct	tcc	agg	gga	240
Ala	Gln	Ser	Glu	Ala	Pro	Val	Val	Val	Val	Thr	Gly	Ala	Ser	Arg	Gly	
	65				70					75					80	
att	ggg	aaa	gcc	att	gca	ttg	gct	ttt	gga	aaa	gcc	ggc	tgc	aag	gtc	288
Ile	Gly	Lys	Ala	Ile	Ala	Leu	Ala	Phe	Gly	Lys	Ala	Gly	Cys	Lys	Val	
			85					90						95		
tta	gtg	aat	tat	gct	cgg	tct	tca	aca	gat	gct	gaa	gaa	gtc	tgc	aaa	336
Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	Thr	Asp	Ala	Glu	Glu	Val	Cys	Lys	
			100					105					110			
gag	att	gaa	gga	ttt	ggt	ggt	cag	gca	att	acc	ttc	cga	gga	gat	gtt	384
Glu	Ile	Glu	Gly	Phe	Gly	Gly	Gln	Ala	Ile	Thr	Phe	Arg	Gly	Asp	Val	
		115					120					125				
tct	aat	gaa	gcc	gat	gtg	gat	tct	atg	att	aaa	gca	gct	ggt	gat	aca	432
Ser	Asn	Glu	Ala	Asp	Val	Asp	Ser	Met	Ile	Lys	Ala	Ala	Val	Asp	Thr	
	130					135					140					
tggt	ggt	aca	att	gat	gta	ctt	gta	aac	aat	gca	gga	atc	aca	cgg	gat	480
Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
	145				150					155					160	
aca	ttg	ttg	ctg	aga	atg	aag	aaa	tct	cag	tggt	caa	gat	gta	gtt	gat	528
Thr	Leu	Leu	Leu	Arg	Met	Lys	Lys	Ser	Gln	Trp	Gln	Asp	Val	Val	Asp	
				165					170					175		
ctt	aat	ctt	acg	ggc	gta	ttc	ctt	tgc	aca	cag	gct	gcg	aca	aaa	gta	576
Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Gln	Ala	Ala	Thr	Lys	Val	
			180					185					190			
atg	atg	aag	aag	aaa	aag	gga	aga	gtt	atc	aac	ata	gca	tca	gtt	gtt	624
Met	Met	Lys	Lys	Lys	Lys	Gly	Arg	Val	Ile	Asn	Ile	Ala	Ser	Val	Val	
		195				200						205				
ggc	ctt	act	ggc	aat	ctt	ggc	caa	gtt	aat	tat	gct	gct	gcc	aag	gct	672
Gly	Leu	Thr	Gly	Asn	Leu	Gly	Gln	Val	Asn	Tyr	Ala	Ala	Ala	Lys	Ala	
	210					215					220					
gca	gtt	att	ggg	tta	aca	aaa	aca	act	gct	agg	gaa	ttt	gca	agc	aga	720
Ala	Val	Ile	Gly	Leu	Thr	Lys	Thr	Thr	Ala	Arg	Glu	Phe	Ala	Ser	Arg	
	225				230					235					240	
aat	att	aca	gtg	aat	gct	gtt	gct	cct	gga	ttt	att	tca	tca	gat	atg	768
Asn	Ile	Thr	Val	Asn	Ala	Val	Ala	Pro	Gly	Phe	Ile	Ser	Ser	Asp	Met	
				245					250					255		
acc	tcc	caa	ctt	ggg	gag	gag	att	gag	aag	aaa	aat	ctg	ata	act	att	816
Thr	Ser	Gln	Leu	Gly	Glu	Glu	Ile	Glu	Lys	Lys	Asn	Leu	Ile	Thr	Ile	
			260					265					270			
ccc	tta	ggg	aga	tat	ggt	gaa	cca	gag	gaa	gtt	gct	gat	ctg	gtt	gag	864
Pro	Leu	Gly	Arg	Tyr	Gly	Glu	Pro	Glu	Glu	Val	Ala	Asp	Leu	Val	Glu	
		275					280					285				
ttc	tta	gca	ctt	agc	cct	ggt	gga	agc	tac	atc	act	ggg	cag	gtc	tca	912
Phe	Leu	Ala	Leu	Ser	Pro	Gly	Gly	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Ser	
	290					295					300					
tac	tct	cgt	gtc	acc	ata	cag	gtc	ctc	act	att	gat	gga	gga	atg	gta	960
Tyr	Ser	Arg	Val	Thr	Ile	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	
	305				310					315					320	
atg	taa															966
Met																

<210> 3586  
 <211> 321  
 <212> PRT  
 <213> Oryza sativa

<400> 3586  
 Met Gly Thr Ile Thr Ala Ala Lys Ala Ala Ala Ala Ala Val Phe  
 1 5 10 15  
 Gln Ser Pro Cys Ser Pro Ala Pro Ala Ser Phe Pro Ala Arg Ser  
 20 25 30  
 Val Arg Pro Asp Arg Arg Arg Ala Val Ser Leu Ser Val Ser Gly Val

## PhoenixTemp32470.tmp.txt

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      35      40      45
Arg Thr His Val Ala Ala Val Glu Gln Ala Val Val Gln Asp Ala Ile
   50
Ala Gln Ser Glu Ala Pro Val Val Val Val Thr Gly Ala Ser Arg Gly
  65
Ile Gly Lys Ala Ile Ala Leu Ala Phe Gly Lys Ala Gly Cys Lys Val
   85
Leu Val Asn Tyr Ala Arg Ser Ser Thr Asp Ala Glu Glu Val Cys Lys
   100
Glu Ile Glu Gly Phe Gly Gly Gln Ala Ile Thr Phe Arg Gly Asp Val
   115
Ser Asn Glu Ala Asp Val Asp Ser Met Ile Lys Ala Ala Val Asp Thr
   130
Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp
  145
Thr Leu Leu Leu Arg Met Lys Lys Ser Gln Trp Gln Asp Val Val Asp
   165
Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Gln Ala Ala Thr Lys Val
   180
Met Met Lys Lys Lys Lys Gly Arg Val Ile Asn Ile Ala Ser Val Val
   195
Gly Leu Thr Gly Asn Leu Gly Gln Val Asn Tyr Ala Ala Ala Lys Ala
   210
Ala Val Ile Gly Leu Thr Lys Thr Thr Ala Arg Glu Phe Ala Ser Arg
  225
Asn Ile Thr Val Asn Ala Val Ala Pro Gly Phe Ile Ser Ser Asp Met
   245
Thr Ser Gln Leu Gly Glu Glu Ile Glu Lys Lys Asn Leu Ile Thr Ile
   260
Pro Leu Gly Arg Tyr Gly Glu Pro Glu Glu Val Ala Asp Leu Val Glu
   275
Phe Leu Ala Leu Ser Pro Gly Gly Ser Tyr Ile Thr Gly Gln Val Ser
   290
Tyr Ser Arg Val Thr Ile Gln Val Leu Thr Ile Asp Gly Gly Met Val
  305
Met                               310                               315                               320

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<210> 3587  
 <211> 1077  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1077)

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<400> 3587
atg cgc gcg cta ctg cat ctg cgg ctc atc aat ccg tgc agt ccc aga      48
Met Arg Ala Leu Leu His Leu Arg Leu Ile Asn Pro Cys Ser Pro Arg
   1
gca ccc cgt ctt ccc gct act ccc gca agg gcg ctc gtc gct tcc ttc      96
Ala Pro Arg Leu Pro Ala Thr Pro Ala Arg Ala Leu Val Ala Ser Phe
   20
tcc ggg gcg tgg cag gca cct tct ggt aga gcg aga gcg aga gca gcg      144
Ser Gly Ala Trp Gln Ala Pro Ser Gly Arg Ala Arg Ala Arg Ala Ala
   35
ccg ccg gca gtt cgc gct atg gcg tcc cag cag gtg ttc ccg gct cag      192
Pro Pro Ala Val Arg Ala Met Ala Ser Gln Gln Val Phe Arg Ala Gln
   50
cag cag cag cag cag cag ttc ccg gct cag cag cag gag tcc cag ccg      240
Gln Gln Gln Gln Gln Gln Phe Pro Ala Gln Gln Gln Glu Ser Gln Pro
   65
ggg aag gag cac gcg atg gac ccc ccg ccc gag gcc atc gtc cag gac      288
Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile Val Gln Asp
   85
tac aag gcc gcc aac aag ctc aag gac aag gtg gcg ctc gtg acc ggc      336
Tyr Lys Ala Ala Asn Lys Leu Lys Asp Lys Val Ala Leu Val Thr Gly
   100                               105                               110

```

## PhoenixTemp32470.tmp.txt

```

ggc gac tcc ggc atc ggg cgc gcc gtg tgc ctg tgc ttc gcg aag gag 384
Gly Asp Ser 115 Gly Ile Gly Arg Ala Val Cys Leu Cys Phe Ala Lys Glu
ggc gcg acg gtg gcc ttc acc ttc gtg agg ggg cag gag gag aag gac 432
Gly Ala Thr Val Ala Phe Thr Phe Val Arg Gly Gln Glu Glu Lys Asp
130 135 140
gcg gag gag acg ctg cgt gcg ctg cgc gac atc ggg tcc gag acg ggc 480
Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Gly Ser Glu Thr Gly
145 150 155 160
gcg cgc gag ccg atg gcc ctg ccc gcc gac ctc ggg tac gag gcc aac 528
Ala Arg Glu Pro Met Ala Leu Pro Ala Asp Leu Gly Tyr Glu Ala Asn
165 170 175
tgc cgg gag gtg gtg gag cgg gtg gcg tgc gcg tac ggc ggg cgc atc 576
Cys Arg Glu Val Val Glu Arg Val Ala Ser Ala Tyr Gly Gly Arg Ile
180 185 190
gac gtg gtg gtg aac aac gcg gcg gag cag tac gag cgg gag agc atc 624
Asp Val Val Val Asn Asn Ala Ala Glu Gln Tyr Glu Arg Glu Ser Ile
195 200 205
ggg gac gtg acg gag gcg gac ctg gag cgc gtg ttc cgc acc aac atc 672
Gly Asp Val Thr Glu Ala Asp Leu Glu Arg Val Phe Arg Thr Asn Ile
210 215 220
ttc tcc tac ttc ctg gtg tcc aag cac gcg gtg ccg cgc atg gag ccc 720
Phe Ser Tyr Phe Leu Val Ser Lys His Ala Val Pro Arg Met Glu Pro
225 230 235 240
ggc gcc tgc atc atc acc tcc tcc gtc aac gcg tac aag ggc aac 768
Gly Ala Cys Ile Ile Asn Thr Ser Ser Val Asn Ala Tyr Lys Gly Asn
245 250 255
aag acg ctg ctg gac tac acg gcc acc aag ggc gcc atc gtg gcc ttc 816
Lys Thr Leu Leu Asp Tyr Thr Ala Thr Lys Gly Ala Ile Val Ala Phe
260 265 270
acg cgc gcg ctc tcg ctg cag ctg gcc gac agg ggc atc cgc gtc aac 864
Thr Arg Ala Leu Ser Leu Gln Leu Ala Asp Arg Gly Ile Arg Val Asn
275 280 285
ggc gtc gcg ccg ggc ccc gtc tgg acg ccg ctc atc ccg gcg tcc ttc 912
Gly Val Ala Pro Gly Pro Val Trp Thr Pro Leu Ile Pro Ala Ser Phe
290 295 300
ggc aag gag aag gtg gag cag ttc ggg tcc cag gtg ccc atg aag cgc 960
Gly Lys Glu Lys Val Glu Gln Phe Gly Ser Gln Val Pro Met Lys Arg
305 310 315 320
gcc gcg cag ccg gcc gag atc gcg ccc agc ttc gtc ttc ctc gcc agc 1008
Ala Ala Gln Pro Ala Glu Ile Ala Pro Ser Phe Val Phe Leu Ala Ser
325 330 335
aac cag gat tcg tcc tac atg tcc ggc cag atc ctc cac gtc aac gga 1056
Asn Gln Asp Ser Ser Tyr Met Ser Gly Gln Ile Leu His Val Asn Gly
340 345 350
ggc gtc atc gtc aat agc tag 1077
Gly Val Ile Val Asn Ser
355

```

&lt;210&gt; 3588

&lt;211&gt; 358

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3588

```

Met Arg Ala Leu Leu His Leu Arg Leu Ile Asn Pro Cys Ser Pro Arg
1 5 10 15
Ala Pro Arg Leu Pro Ala Thr Pro Ala Arg Ala Leu Val Ala Ser Phe
20 25 30
Ser Gly Ala Trp Gln Ala Pro Ser Gly Arg Ala Arg Ala Arg Ala Ala
35 40 45
Pro Pro Ala Val Arg Ala Met Ala Ser Gln Gln Val Phe Arg Ala Gln
50 55 60
Gln Gln Gln Gln Gln Gln Phe Pro Ala Gln Gln Gln Glu Ser Gln Pro
65 70 75 80
Gly Lys Glu His Ala Met Asp Pro Arg Pro Glu Ala Ile Val Gln Asp
85 90 95
Tyr Lys Ala Ala Asn Lys Leu Lys Asp Lys Val Ala Leu Val Thr Gly
100 105 110

```

## PhoenixTemp32470.tmp.txt

Gly Asp Ser Gly Ile Gly Arg Ala Val Cys Leu Cys Phe Ala Lys Glu  
 115  
 Gly Ala Thr Val Ala Phe Thr Phe Val Arg Gly Gln Glu Lys Asp  
 130 135 140  
 Ala Glu Glu Thr Leu Arg Ala Leu Arg Asp Ile Gly Ser Glu Thr Gly  
 145 150 155 160  
 Ala Arg Glu Pro Met Ala Leu Pro Ala Asp Leu Gly Tyr Glu Ala Asn  
 165 170 175  
 Cys Arg Glu Val Val Glu Arg Val Ala Ser Ala Tyr Gly Gly Arg Ile  
 180 185 190  
 Asp Val Val Val Asn Asn Ala Ala Glu Gln Tyr Glu Arg Glu Ser Ile  
 195 200 205  
 Gly Asp Val Thr Glu Ala Asp Leu Glu Arg Val Phe Arg Thr Asn Ile  
 210 215 220  
 Phe Ser Tyr Phe Leu Val Ser Lys His Ala Val Pro Arg Met Glu Pro  
 225 230 235 240  
 Gly Ala Cys Ile Ile Asn Thr Ser Ser Val Asn Ala Tyr Lys Gly Asn  
 245 250 255  
 Lys Thr Leu Leu Asp Tyr Thr Ala Thr Lys Gly Ala Ile Val Ala Phe  
 260 265 270  
 Thr Arg Ala Leu Ser Leu Gln Leu Ala Asp Arg Gly Ile Arg Val Asn  
 275 280 285  
 Gly Val Ala Pro Gly Pro Val Trp Thr Pro Leu Ile Pro Ala Ser Phe  
 290 295 300  
 Gly Lys Glu Lys Val Glu Gln Phe Gly Ser Gln Val Pro Met Lys Arg  
 305 310 315 320  
 Ala Ala Gln Pro Ala Glu Ile Ala Pro Ser Phe Val Phe Leu Ala Ser  
 325 330 335  
 Asn Gln Asp Ser Tyr Met Ser Gly Gln Ile Leu His Val Asn Gly  
 340 345 350  
 Gly Val Ile Val Asn Ser  
 355

&lt;210&gt; 3589

&lt;211&gt; 762

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(762)

&lt;400&gt; 3589

atg gat gtc aag tgc cgg cgt ctg gag ggg aag gtg gcc atc gtg acg	48
Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr	
1 5 10 15	
gcg tcc acg atg ggg atc ggc ctc gcc atc gcc gag cgc ctc ggt ctg	96
Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu	
20 25 30	
gag ggc gcc gcc gtc gtc atc tcc tcc cgc aag cag aag aac gtg aac	144
Glu Gly Ala Ala Val Val Ile Ser Arg Lys Lys Asn Val Asn	
35 40 45	
gag gcg gtg gag ggg ctc agg gcc aag ggt atc acc gcg gtt ggt gcc	192
Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala	
50 55 60	
gtc tgc cac gtc tcc gac gca cag cag cgc aag agc ctc atc gag acg	240
Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr	
65 70 75 80	
gcc gtc aag agc ttt ggg cac ata gat att ctt gtc tcc aat gct gcc	288
Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala	
85 90 95	
gca aat cct tct gta gat agc ata ctt gaa atg aaa gag tct gtt ctc	336
Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu	
100 105 110	
gat aag ctg tgg gat att aac gtc aag gct tct atc ctt ctt att cag	384
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln	
115 120 125	
gat gct gct cct cac cta cgg aag ggg tca tct gtg att att att tct	432
Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser	

## PhoenixTemp32470.tmp.txt

130	tca att gct ggt tac aat	135	cca gaa caa gga ttg aca atg tat ggt gtc	140		
Ser Ile Ala Gly Tyr Asn	Pro Glu Gln Gly Leu Thr Met Tyr Gly Val					480
145	aca aag act gct ctc ttt ggt ctc acg aag gct ctt gct ggt gag atg	150		155		528
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met						
165	gga ccc gat act cgt gtt aac tgt ata gcc cct ggt ttt gtt cct aca	170		175		576
Gly Pro Asp Thr Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr						
180	cgg ttt gct agt ttc ctc aca gaa aat gag acc att agg aaa gag ctt	185		190		624
Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu						
195	aac gag agg acc aag ctt aag aga ttg ggt act gtg gaa gac atg gct	200		205		672
Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala						
210	gcg gct gcg gct ttt ctg gcg tct gac gac gca tca tac att acg gct	215		220		720
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala						
225	gaa acc att gtt gtt gct gga ggg gtg cag tct agg ctg taa	230		235		762
Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu						
245		250				

<210> 3590  
 <211> 253  
 <212> PRT  
 <213> Zea mays

<400> 3590  
 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr  
 1 5 10 15  
 Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 Glu Gly Ala Val Val Ile Ser Arg Lys Gln Lys Asn Val Asn  
 35 40 45  
 Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala  
 50 55 60  
 Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr  
 65 70 75 80  
 Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
 100 105 110  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln  
 115 120 125  
 Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
 130 135 140  
 Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
 145 150 155 160  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165 170 175  
 Gly Pro Asp Thr Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
 195 200 205  
 Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
 210 215 220  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
 225 230 235 240  
 Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
 245 250

<210> 3591  
 <211> 843  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS

&lt;222&gt; (1)..(843)

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<400> 3591
atg tcg tcg gcg ggg cca ccg ccg ccg ctg ccg ccg tgg agc agg ctg      48
Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu
1      5      10      15
gag ggg cag gtg ctg gtg acg ggc gct tcc tcc ggc atc gga cgc      96
Glu Gly Gln Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg
20      25      30
gac ttc tgc ctc gac ctg gcg cgc gcc ggc tgc cgc gtc gtc gcc gcc      144
Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala
35      40      45
gcc cgc cgc gcc gat cgt ctc cgc tgc ctc tgc gac gag atc aac ccc      192
Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro
50      55      60
tcc gct gcc tcc cga gcc ccc cgc gcg gtg gct gtg gag gtc gac gtc      240
Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val
65      70      75      80
gcc gcc ggt ggt tgc gcc ctg gag gcg gcg gtg cag aag gcc tgg gac      288
Ala Ala Gly Gly Ser Ala Leu Glu Ala Ala Val Gln Lys Ala Trp Asp
85
gcc ttt ggc cgt atc gac gcc ttg gtc aac aac gcc ggc ata cga ggt      336
Ala Phe Gly Arg Ile Asp Ala Leu Val Asn Asn Ala Gly Ile Arg Gly
100      105      110
gca gtg cat tct cca tta gat tgg ccc gag gat gag tgg gac aga atc      384
Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile
115      120      125
atc aag acg aac ctt acc gga tca tgg ctc gtg gcc aaa cat gtc tgt      432
Ile Lys Thr Asn Leu Thr Gly Ser Trp Leu Val Ala Lys His Val Cys
130      135      140
cga cgc atg cgt gat gcc aag ctg aag ggt tca gtg gtt aac atc acc      480
Arg Arg Met Arg Asp Ala Lys Leu Lys Gly Ser Val Val Asn Ile Thr
145      150      155      160
tct att gct ggc ctt aac cgt ggg cat ctg cct ggc tcc acg gga tac      528
Ser Ile Ala Gly Leu Asn Arg Gly His Leu Pro Gly Ser Thr Gly Tyr
165      170      175
gca tcc tca aag gct gct gtg cat tat gcc acc aag att atg gct ttg      576
Ala Ser Ser Lys Ala Ala Val His Tyr Ala Thr Lys Ile Met Ala Leu
180      185      190
gaa ttg ggc gcg gat cgc atc aga gtg aac tcg att gca cct gga ctc      624
Glu Leu Gly Ala Asp Arg Ile Arg Val Asn Ser Ile Ala Pro Gly Leu
195      200      205
ttc aaa tca gag ata act gct cct ctg ttt caa aag agg tgg ttg agc      672
Phe Lys Ser Glu Ile Thr Ala Pro Leu Phe Gln Lys Arg Trp Leu Ser
210      215      220
acc gtt gct tca aag ata gtg ccg ctt aag gag cat ggc gct act gat      720
Thr Val Ala Ser Lys Ile Val Pro Leu Lys Glu His Gly Ala Thr Asp
225      230      235      240
cct gca ttg acg tgc ctg gtc cgt ttt ctg atc cat gaa gca tgc tgc      768
Pro Ala Leu Thr Ser Leu Val Arg Phe Leu Ile His Glu Ala Ser Ser
245      250      255
tat gtg act ggc aac atc ttc att gta tca ggt gcc acc ata cct      816
Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ser Gly Ala Thr Ile Pro
260      265      270
ggt gtt ccg ata ttc tca tcc ctg taa
Gly Val Pro Ile Phe Ser Ser Leu
275      280

```

&lt;210&gt; 3592

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3592

```

Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu
1      5      10      15
Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg
20      25      30
Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala

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## PhoenixTemp32470.tmp.txt

35  
 Ala Arg Arg Ala Asp Arg Leu 40 Arg Ser Leu Cys Asp 45 Glu Ile Asn Pro  
 50  
 Ser Ala Ala Ser Arg Ala 55 Pro Arg Ala Val Ala 60 Val Glu Val Asp Val  
 65  
 Ala Ala Gly Gly Ser 70 Ala Leu Glu Ala Ala 75 Val Gln Lys Ala Trp Asp  
 85  
 Ala Phe Gly Arg 100 Ile Asp Ala Leu Val 105 Asn Asn Ala Gly Ile Arg Gly  
 115  
 Ala Val His Ser Pro Leu Asp Trp 120 Pro Glu Asp Glu Trp Asp Arg Ile  
 130  
 Ile Lys Thr Asn Leu Thr Gly 135 Ser Trp Leu Val Ala Lys His Val Cys  
 145  
 Arg Arg Met Arg Asp Ala 150 Lys Leu Lys Gly Ser 155 Val Val Asn Ile Thr  
 160  
 Ser Ile Ala Gly Leu 165 Asn Arg Gly His Leu 170 Pro Gly Ser Thr Gly Tyr  
 180  
 Ala Ser Ser Lys Ala Ala Val His Tyr 185 Ala Thr Lys Ile Met Ala Leu  
 195  
 Glu Leu Gly Ala Asp Arg Ile Arg 200 Val Asn Ser Ile Ala Pro Gly Leu  
 210  
 Phe Lys Ser Glu Ile Thr Ala 215 Pro Leu Phe Gln Lys Arg Trp Leu Ser  
 225  
 Thr Val Ala Ser Lys Ile 230 Val Pro Leu Lys Glu His Gly Ala Thr Asp  
 240  
 Pro Ala Leu Thr Ser 245 Leu Val Arg Phe Leu 250 Ile His Glu Ala Ser Ser  
 255  
 Tyr Val Thr Gly Asn Ile Phe Ile Val 265 Asp Ser Gly Ala Thr Ile Pro  
 270  
 Gly Val Pro 275 Ile Phe Ser Ser Leu 280

<210> 3593  
 <211> 939  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(939)

<400> 3593  
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 Met Ala Ala Ala Thr 5 Ala Ala Ala Ala Ala 10 Leu Ala Ser Pro Ala Gly  
 15  
 ctc tcc aca tcg ctg gcg cgc cgc ggc ctc gtc agc ttc gca ccc gcg 96  
 Leu Ser Thr 20 Leu Ala Arg Arg Gly 25 Leu Val Ser Phe 30 Ala Pro Ala  
 ctc cgc ccc ggc cct gac cgc agc tct cgc gcc gtc gcc ctc ctc ggt 144  
 Leu Arg Pro 35 Gly Pro Asp Arg Ser 40 Ser Arg Ala Val 45 Ala Leu Leu Gly  
 gta cga act cat gtc acg gct gtt gat caa gcc att gta aaa ggt gat 192  
 Val Arg Thr His Val Thr Ala 55 Val Asp Gln Ala Ile Val Lys Gly Asp  
 60  
 aca aag ttg gaa ggt cct gtg gtt gtt gtt act ggt gct tcc agg ggg 240  
 Thr Lys Leu Glu Gly Pro 70 Val Val Val Val Thr 75 Gly Ala Ser Arg Gly  
 80  
 att gga aaa gcc act gca ttg gct ctt gga aaa gca ggc tgc aag gtc 288  
 Ile Gly Lys Ala Thr 85 Ala Leu Ala Leu Gly Lys Ala Gly Cys Lys Val  
 95  
 ttg gtg aat tat gct cga tct tca aag gag gct gaa gaa gtc tcc aag 336  
 Leu Val Asn Tyr 100 Ala Arg Ser Ser Lys 105 Glu Ala Glu Glu 110 Val Ser Lys  
 gag att gaa gca tct gga ggc cag gcc att acc ttt gga gga gat gtt 384  
 Glu Ile Glu Ala Ser Gly Gly Gln Ala Ile Thr Phe 125 Gly Gly Asp Val  
 115  
 tcc aaa gag gct gat gtt gaa tct atg ata aaa gtg gct gtt gat aca 432  
 Ser Lys Glu Ala Asp Val 135 Ser Met Ile Lys Val 140 Ala Val Asp Thr  
 150

## PhoenixTemp32470.tmp.txt

tgg	gga	acg	att	gat	gta	cta	gta	aat	aat	gca	gga	atc	aca	cgg	gac	480
Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn	Ala	Gly	Ile	Thr	Arg	Asp	
145					150					155					160	
aca	tgt	tgt	atg	aga	atg	aag	aaa	tca	cag	tgg	caa	gat	gtg	att	gat	528
Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	Trp	Gln	Asp	Val	Ile	Asp	
				165					170					175		
tgt	aat	ctt	aca	ggc	gtt	ttc	ctt	tgc	acg	cag	gct	gca	aca	aaa	gta	576
Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	Gln	Ala	Ala	Thr	Lys	Val	
			180					185					190			
atg	atg	aag	aag	aaa	aag	gga	aga	att	atc	aat	ata	gca	tcg	gtt	gtt	624
Met	Met	Lys	Lys	Lys	Lys	Gly	Arg	Ile	Ile	Asn	Ile	Ala	Ser	Val	Val	
		195					200					205				
ggt	ctt	act	ggt	aat	gct	gga	caa	gct	aat	tat	gct	gct	gcc	aag	gct	672
Gly	Leu	Thr	Gly	Asn	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Lys	Ala	
	210					215					220					
ggg	gtt	att	ggg	ttc	aca	aaa	aca	gtt	gct	agg	gag	tat	gcc	agc	aga	720
Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	Arg	Glu	Tyr	Ala	Ser	Arg	
225					230					235					240	
aat	att	aat	gca	aac	gtt	atc	gct	cct	gga	ttt	att	gct	tca	gat	atg	768
Asn	Ile	Asn	Ala	Asn	Val	Ile	Ala	Pro	Gly	Phe	Ile	Ala	Ser	Asp	Met	
				245					250					255		
act	gct	gaa	ctt	ggt	gaa	gag	tta	gag	aag	aaa	att	ctg	tca	act	att	816
Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	Lys	Ile	Leu	Ser	Thr	Ile	
			260					265					270			
cct	tta	ggg	cgc	tat	ggt	cgg	cca	gag	gat	gta	gca	ggc	ctg	gtg	gaa	864
Pro	Leu	Gly	Arg	Tyr	Gly	Arg	Pro	Glu	Asp	Val	Ala	Gly	Leu	Val	Glu	
		275					280					285				
ttc	tta	gcc	ctc	agc	cct	gct	gca	agc	tac	atc	act	gga	cag	gtc	ctc	912
Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser	Tyr	Ile	Thr	Gly	Gln	Val	Leu	
		290				295					300					
acc	atc	gat	gga	gga	atg	gta	atg	taa								939
Thr	Ile	Asp	Gly	Gly	Met	Val	Met									
305					310											

<210> 3594  
 <211> 312  
 <212> PRT  
 <213> Zea mays

<400> 3594  
 Met Ala Ala Ala Thr Ala Ala Ala Ala Ala Leu Ala Ser Pro Ala Gly  
 1 5 10 15  
 Leu Ser Thr Ser Leu Ala Arg Arg Gly Leu Val Ser Phe Ala Pro Ala  
 20 25 30  
 Leu Arg Pro Gly Pro Asp Arg Ser Arg Ala Val Ala Leu Leu Gly  
 35 40 45  
 Val Arg Thr His Val Thr Ala Val Asp Gln Ala Ile Val Lys Gly Asp  
 50 55 60  
 Thr Lys Leu Glu Gly Pro Val Val Val Val Thr Gly Ala Ser Arg Gly  
 65 70 75 80  
 Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly Lys Ala Gly Cys Lys Val  
 85 90 95  
 Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu Ala Glu Glu Val Ser Lys  
 100 105 110  
 Glu Ile Glu Ala Ser Gly Gly Gln Ala Ile Thr Phe Gly Gly Asp Val  
 115 120 125  
 Ser Lys Glu Ala Asp Val Glu Ser Met Ile Lys Val Ala Val Asp Thr  
 130 135 140  
 Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp  
 145 150 155 160  
 Thr Leu Leu Met Arg Met Lys Lys Ser Gln Trp Gln Asp Val Ile Asp  
 165 170 175  
 Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Gln Ala Ala Thr Lys Val  
 180 185 190  
 Met Met Lys Lys Lys Lys Gly Arg Ile Ile Asn Ile Ala Ser Val Val  
 195 200 205  
 Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Lys Ala  
 210 215 220  
 Gly Val Ile Gly Phe Thr Lys Thr Val Ala Arg Glu Tyr Ala Ser Arg

## PhoenixTemp32470.tmp.txt

225 Asn Ile Asn Ala Asn 230 Val Ile Ala Pro Gly 235 Phe Ile Ala Ser Asp 240 Met  
 Thr Ala Glu Leu Gly 245 Glu Glu Leu Glu Lys Lys Ile Leu Ser Thr Ile  
 Pro Leu Gly Arg Tyr Gly Arg Pro Glu Asp Val Ala Gly Leu Val Glu  
 Phe Leu Ala Leu Ser Pro Ala Ser Tyr Ile Thr Gln Val Leu  
 Thr Ile Asp Gly Gly Met Val Met  
 305 310

<210> 3595  
 <211> 843  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(843)

<400> 3595  
 atg tcg tcg gcg ggg cca ccg ccg ccg ctg ccg ccg tgg agc agg ctg 48  
 Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu  
 1 5 10 15  
 gag ggg cag gtg gtg ctg gtg acg ggc gct tcc tcc ggc atc gga cgc 96  
 Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg  
 20 25 30  
 gac ttc tgc ctc gac ctg gcg cgc gcc ggc tgc cgc gtc gtc gcc gcc 144  
 Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala  
 35 40 45  
 gcc cgc cgc gcc gat cgt ctc cgc tcg ctc tgc gac gag atc aac ccc 192  
 Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro  
 50 55 60  
 tcc gct gcc tcc cga gcc ccc cgc gcg gtg gct gtg gag gtc gac gtc 240  
 Ser Ala Ala Ser Arg Pro Arg Ala Val Ala Val Glu Val Asp Val  
 65 70 75 80  
 gcc gcc ggt ggt tcg gcc ctg gag gcg gcg gtg cag aag gcc tgg gac 288  
 Ala Ala Gly Gly Ser Ala Leu Glu Ala Ala Val Gln Lys Ala Trp Asp  
 85 90 95  
 gcc ttt ggc cgt atc gac ccc ttg gtc aac aac gcc ggc ata cga ggt 336  
 Ala Phe Gly Arg Ile Asp Pro Leu Val Asn Asn Ala Gly Ile Arg Gly  
 100 105 110  
 gca gtg cat tct cca tta gat tgg ccc gag gat gag tgg gac aga atc 384  
 Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile  
 115 120 125  
 atc aag acg aac ctt acc gga tca tgg ctc gtg gcc aaa cat gtc tgt 432  
 Ile Lys Thr Asn Leu Thr Gly Ser Trp Leu Val Ala Lys His Val Cys  
 130 135 140  
 cga cgc atg cgt gat gcc aag ctg aag ggt tca gtg gtt aac atc acc 480  
 Arg Arg Met Arg Asp Ala Lys Leu Lys Gly Ser Val Val Asn Ile Thr  
 145 150 155 160  
 tct att gct ggc ctt aac cgt ggg cat ctg cct ggc tcc acg gga tac 528  
 Ser Ile Ala Gly Leu Asn Arg Gly His Leu Pro Gly Ser Thr Gly Tyr  
 165 170 175  
 gca tcc tca aag gct gct gtg cat tat gcc acc aag att atg gct ttg 576  
 Ala Ser Ser Lys Ala Ala Val His Tyr Ala Thr Lys Ile Met Ala Leu  
 180 185 190  
 gaa ttg ggc gcg gat cgc atc aga gtg aac tcg att gca cct gga ctc 624  
 Glu Leu Gly Ala Asp Arg Ile Arg Val Asn Ser Ile Ala Pro Gly Leu  
 195 200 205  
 ttc aaa tca gag ata act gct cct ctg ttt caa aag agg tgg ttg agc 672  
 Phe Lys Ser Glu Ile Thr Ala Pro Leu Phe Gln Lys Arg Trp Leu Ser  
 210 215 220  
 acc gtt gct tca aag ata gtg ccg ctt aag gag cat ggc gct act gat 720  
 Thr Val Ala Ser Lys Ile Val Pro Leu Lys Glu His Gly Ala Thr Asp  
 225 230 235 240  
 cct gca ttg acg tcg ctg gtc cgt ttt ctg atc cat gaa gca tcg tcg 768  
 Pro Ala Leu Thr Ser Leu Val Arg Phe Leu Ile His Glu Ala Ser Ser

## PhoenixTemp32470.tmp.txt

tat	gtg	act	ggc	245	aac	atc	ttc	att	gta	250	gac	tca	ggg	gcc	acc	255	ata	cct	816
Tyr	Val	Thr	Gly	Asn	Ile	Phe	Ile	Ile	Val	Asp	Ser	Gly	Ala	Thr	Ile	Pro			
			260						265						270				
ggg	gtt	ccg	ata	ttc	tca	tcc	ctg	taa											843
Gly	Val	Pro	Ile	Phe	Ser	Ser	Leu												
		275					280												

<210> 3596  
 <211> 280  
 <212> PRT  
 <213> Zea mays

<400> 3596  
 Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu  
 1 5 10 15  
 Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg  
 20 25 30  
 Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala  
 35 40 45  
 Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Pro  
 50 55 60  
 Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val  
 65 70 75 80  
 Ala Ala Gly Gly Ser Ala Leu Glu Ala Ala Val Gln Lys Ala Trp Asp  
 85 90 95  
 Ala Phe Gly Arg Ile Asp Pro Leu Val Asn Asn Ala Gly Ile Arg Gly  
 100 105 110  
 Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile  
 115 120 125  
 Ile Lys Thr Asn Leu Thr Gly Ser Trp Leu Val Ala Lys His Val Cys  
 130 135 140  
 Arg Arg Met Arg Asp Ala Lys Leu Lys Gly Ser Val Val Asn Ile Thr  
 145 150 155 160  
 Ser Ile Ala Gly Leu Asn Arg Gly His Leu Pro Gly Ser Thr Gly Tyr  
 165 170 175  
 Ala Ser Ser Lys Ala Ala Val His Tyr Ala Thr Lys Ile Met Ala Leu  
 180 185 190  
 Glu Leu Gly Ala Asp Arg Ile Arg Val Asn Ser Ile Ala Pro Gly Leu  
 195 200 205  
 Phe Lys Ser Glu Ile Thr Ala Pro Leu Phe Gln Lys Arg Trp Leu Ser  
 210 215 220  
 Thr Val Ala Ser Lys Ile Val Pro Leu Lys Glu His Gly Ala Thr Asp  
 225 230 235 240  
 Pro Ala Leu Thr Ser Leu Val Arg Phe Leu Ile His Glu Ala Ser Ser  
 245 250 255  
 Tyr Val Thr Gly Asn Ile Phe Ile Val Asp Ser Gly Ala Thr Ile Pro  
 260 265 270  
 Gly Val Pro Ile Phe Ser Ser Leu  
 275 280

<210> 3597  
 <211> 1011  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1011)

atg	cac	gct	agc	ctc	gcc	tcc	tac	gcc	gcg	gca	gct	atg	ccg	gcg	ctg				48
Met	His	Ala	Ser	Leu	Ala	Ser	Tyr	Ala	Ala	Ala	Ala	Met	Pro	Ala	Leu				
				5				10						15					
gac	ctc	cg	ccc	gag	ata	gcg	cac	gcg	cac	cag	ccc	gtc	atg	tcg	ccc				96
Asp	Leu	Arg	Pro	Glu	Ile	Ala	His	Ala	His	Gln	Pro	Val	Met	Ser	Pro				
			20					25					30						
tct	cac	cac	ggc	tgg	gac	ggc	aat	ggc	aca	gcc	gtg	ccc	aca	ccg					144
Ser	His	His	Gly	Trp	Asp	Gly	Asn	Gly	Ala	Thr	Ala	Val	Pro	Thr	Pro				

## PhoenixTemp32470.tmp.txt

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<210> 3598
<211> 336
<212> PRT
<213> Zea mays

<400> 3598
Met His Ala Ser Leu Ala Ser Tyr Ala Ala Ala Ala Met Pro Ala Leu
1          5          10          15
Asp Leu Arg Pro Glu Ile Ala His Ala His Gln Pro Val Met Ser Pro
          20          25          30

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## PhoenixTemp32470.tmp.txt

Ser His His Gly Trp Asp Gly Asn Gly Ala Thr Ala Val Pro Thr Pro  
 35 40 45  
 Met Pro Lys Arg Leu Asp Gly Lys Val Ala Ile Val Thr Gly Gly Ala  
 50 55 60  
 Arg Gly Ile Gly Glu Ala Ile Val Arg Leu Phe Ala Lys His Gly Ala  
 65 70 75 80  
 Arg Val Val Ile Ala Asp Ile Asp Asp Ala Gly Glu Ala Leu Ala  
 85 90 95  
 Ser Ala Leu Gly Pro Gln Val Ser Phe Val Arg Cys Asp Val Ser Val  
 100 105 110  
 Glu Asp Asp Val Arg Arg Ala Val Asp Trp Ala Leu Ser Arg His Gly  
 115 120 125  
 Gly Arg Leu Asp Val Tyr Cys Asn Asn Ala Gly Val Leu Gly Arg Gln  
 130 135 140  
 Thr Arg Ala Ala Arg Ser Ile Leu Ser Phe Asp Ala Ala Glu Phe Asp  
 145 150 155 160  
 Arg Val Leu Arg Val Asn Ala Leu Gly Ala Ala Leu Gly Met Lys His  
 165 170 175  
 Ala Ala Arg Ala Met Ala Pro Arg Arg Ala Gly Ser Ile Val Ser Val  
 180 185 190  
 Ala Ser Val Ala Ala Val Leu Gly Gly Leu Gly Pro His Ala Tyr Thr  
 195 200 205  
 Ala Ser Lys His Ala Ile Val Gly Leu Thr Lys Asn Ala Ala Cys Glu  
 210 215 220  
 Leu Arg Ala His Gly Val Arg Val Asn Cys Val Ser Pro Phe Gly Val  
 225 230 235 240  
 Ala Thr Pro Met Leu Ile Asn Ala Trp Arg Gln Gly His Asp Asp Thr  
 245 250 255  
 Thr Ala Asp Ala Asp Arg Asp Leu Asp Leu Asp Leu Asp Val Thr Val  
 260 265 270  
 Pro Ser Asp Gln Glu Val Glu Lys Met Glu Glu Val Val Arg Gly Leu  
 275 280 285  
 Ala Thr Leu Lys Gly Pro Thr Leu Arg Pro Arg Asp Ile Ala Glu Ala  
 290 295 300  
 Val Leu Phe Leu Ala Ser Asp Glu Ala Arg Tyr Ile Ser Gly His Asn  
 305 310 315 320  
 Leu Val Val Asp Gly Gly Val Thr Thr Ser Arg Asn Leu Ile Gly Leu  
 325 330 335

&lt;210&gt; 3599

&lt;211&gt; 1026

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1026)

&lt;400&gt; 3599

atg gct gcc acc ttc acc gtc gcc gcc cgc ctc ccg ctg cgg ggc ccc	48
Met Ala Ala Thr Phe Thr Val Ala Ala Arg Leu Pro Leu Arg Gly Pro	
1 5 10 15	
gcg cgc gct ccg tcc cgg ccg gcc gtc gct gct gta acc cgg ctt cga	96
Ala Arg Ala Pro Ser Arg Pro Ala Val Ala Ala Val Thr Arg Leu Arg	
20 25 30	
agc cgg cag gag cgg cgc ggc cta gca gcg aca ggc ggg agg gga cct	144
Ser Arg Gln Glu Arg Arg Gly Leu Ala Ala Thr Gly Arg Gly Pro	
35 40 45	
gcc cgg gtt cgg gcc gag act ttc tcc ggt ggt gga ggc gtg ggg cgg	192
Ala Arg Val Arg Ala Glu Thr Phe Ser Gly Gly Gly Val Gly Arg	
50 55 60	
agg gac ccc atg gcg ccg cct tac aat gtc ctc atc acc ggc tct acg	240
Arg Asp Pro Met Ala Pro Tyr Asn Val Leu Ile Thr Gly Ser Thr	
65 70 75 80	
aaa ggt ata gga tat gca ttg gca agg aaa ttt ctg gag gct ggt gat	288
Lys Gly Ile Gly Tyr Ala Leu Ala Arg Lys Phe Leu Glu Ala Gly Asp	
85 90 95	
aac gtt ata atc tgc tcg aga tca gct caa aag gta gaa tct gtg gtc	336
Asn Val Ile Ile Cys Ser Arg Ser Ala Gln Lys Val Glu Ser Val Val	

## PhoenixTemp32470.tmp.txt

[illegible]

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<212>	PRT
<213>	Zea mays

<400>	3600														
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Ala	Arg	Ala	Pro	Ser	Arg	Pro	Ala	Val	Ala	Ala	Val	Thr	Arg	Leu	Arg
			20					25					30		
Ser	Arg	Gln	Glu	Arg	Arg	Gly	Leu	Ala	Ala	Thr	Gly	Gly	Arg	Gly	Pro
		35					40					45			
Ala	Arg	Val	Arg	Ala	Glu	Thr	Phe	Ser	Gly	Gly	Gly	Gly	Val	Gly	Arg
	50					55					60				
Arg	Asp	Pro	Met	Ala	Pro	Tyr	Asn	Val	Leu	Ile	Thr	Gly	Ser	Thr	
65					70				75					80	
Lys	Gly	Ile	Gly	Tyr	Ala	Leu	Ala	Arg	Lys	Phe	Leu	Glu	Ala	Gly	Asp
				85					90					95	
Asn	Val	Ile	Ile	Cys	Ser	Arg	Ser	Ala	Gln	Lys	Val	Glu	Ser	Val	Val
			100					105					110		
Gly	Asp	Leu	Lys	Glu	Glu	Tyr	Gly	Glu	Gln	His	Val	Trp	Gly	Thr	Val
		115					120					125			

## PhoenixTemp32470.tmp.txt

Cys Asp Val Arg Asn Gly Lys Asp Val Lys Ala Leu Val Glu Phe Ala  
 130 140  
 Arg Asp Lys Leu Lys His Ile Asp Ile Trp Ile Asn Asn Ala Gly Ser  
 145 150 155 160  
 Asn Ala Tyr Thr Tyr Lys Pro Leu Val Glu Thr Ser Asp Glu Ala Leu  
 165 170 175  
 Met Glu Ile Ile Thr Thr Asn Thr Leu Glu Leu Met Ile Cys Arg  
 180 185 190  
 Glu Ala Ile Asn Met Met Arg Asn Gln Pro Arg Gly Gly His Ile Phe  
 195 200 205  
 Asn Leu Asp Gly Ala Gly Ser Asp Gly Arg Pro Thr Pro Arg Phe Ala  
 210 215 220  
 Ala Tyr Gly Ala Thr Lys Arg Ser Val Val His Leu Thr Lys Ser Leu  
 225 230 235 240  
 Gln Ala Glu Leu Gln Met Asn Glu Val Asn Asn Val Met Val His Asn  
 245 250 255  
 Leu Ser Pro Gly Met Val Thr Thr Asp Leu Leu Met Ser Gly Ala Thr  
 260 265 270  
 Thr Lys Gln Ala Lys Phe Phe Ile Asn Ile Leu Ala Glu Pro Pro Asp  
 275 280 285  
 Val Val Ala Asp Tyr Leu Val Pro Asn Val Arg Glu Ile Pro Thr Lys  
 290 295 300  
 Gln Ser Met Lys Pro Thr Tyr Ile Arg Phe Leu Thr Gly Leu Lys Ala  
 305 310 315 320  
 Tyr Ser Arg Ile Phe Ser Arg Leu Ala Phe Gly Ala Arg Arg Asn Lys  
 325 330 335  
 Tyr Val Thr Glu Asp  
 340

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 <212> DNA  
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 Ala Ala Pro Arg Ala Ala Gly Ala Ala Ala Ala Ser Arg Arg Gly Phe  
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 gtc acg ttt ggt gga ggc gcc gcc ttc tct ccc acg ctg cgg tcc 144  
 Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser  
 35 40 45  
 ggc cgt ggg ttc tct ggt gtg caa acc cat gtt gcc gct gtt gaa caa 192  
 Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln  
 50 55 60  
 gca att gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt 240  
 Ala Ile Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val  
 65 70 75 80  
 aca ggt gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga 288  
 Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly  
 85 90 95  
 aaa gca gga tgc aag gtt ctg gta aac tat gcc cgg tcc tcg aaa gag 336  
 Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu  
 100 105 110  
 gct gaa gag gtc tcc aaa gag att gaa gca tct ggt ggt gag gct atc 384  
 Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile  
 115 120 125  
 acc ttc gga gga gat gtt tca aaa gaa gct gat gta gag tct atg atg 432  
 Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met  
 130 135 140  
 aaa gca gct cta gat aaa tgg gga aca ata gat gtg ctg gta aat aat 480  
 Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn  
 145 150 155 160



## PhoenixTemp32470.tmp.txt

gca	ggg	att	aca	cga	gac	aca	ttg	ttg	atg	agg	atg	aag	aaa	tct	cag	528
Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	
				165					170					175		
tgg	caa	gac	gta	att	gat	ctg	aat	ctt	act	ggg	gtc	ttc	ctt	tgt	aca	576
Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	
			180					185					190			
cag	gct	gca	aca	aaa	gta	atg	atg	aaa	aag	aga	aag	gga	aaa	att	atc	624
Gln	Ala	Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Arg	Lys	Gly	Lys	Ile	Ile	
			195				200					205				
aac	att	gca	tct	gta	gtt	ggg	ctt	act	ggc	aat	gtt	ggc	caa	gct	aat	672
Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Val	Gly	Gln	Ala	Asn	
	210					215					220					
tat	agc	gca	gcc	aag	gct	gga	gtg	att	ggg	ttc	aca	aaa	aca	gtt	gcc	720
Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	
225					230					235					240	
agg	gag	tat	gca	agc	aga	aat	atc	aat	gtg	aat	gct	att	gca	cca	ggg	768
Arg	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	
				245					250					255		
ttc	att	gca	tct	gat	atg	act	gcc	gaa	ctt	gga	gaa	gag	ctt	gag	aag	816
Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	
			260					265					270			
aaa	atc	ttg	tca	acc	att	ccg	tta	ggg	aga	tat	ggc	caa	cca	gag	gaa	864
Lys	Ile	Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu	Glu	
			275				280					285				
gtt	gca	ggg	ttg	gtc	gag	ttc	ctg	gcc	ctt	aac	ccc	gca	gct	agc	tat	912
Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	Ala	Ala	Ser	Tyr	
	290					295					300					
atg	act	gga	cag	gtg	ctt	aca	att	gac	gga	ggg	atg	gta	atg	taa		957
Met	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met			
305					310					315						

<210> 3602  
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 <213> Zea mays

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 Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser  
 35 40 45  
 Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln  
 50 55 60  
 Ala Ile Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val  
 65 70 75 80  
 Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly  
 85 90 95  
 Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu  
 100 105 110  
 Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile  
 115 120 125  
 Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met  
 130 135 140  
 Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn  
 145 150 155 160  
 Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln  
 165 170 175  
 Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr  
 180 185 190  
 Gln Ala Ala Thr Lys Val Met Met Lys Lys Arg Lys Gly Lys Ile Ile  
 195 200 205  
 Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Val Gly Gln Ala Asn  
 210 215 220  
 Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala  
 225 230 235 240  
 Arg Glu Tyr Ala Ser Arg Asn Ile Asn Val Asn Ala Ile Ala Pro Gly  
 245 250 255

## PhoenixTemp32470.tmp.txt

Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys  
 260 270  
 Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu Glu  
 275 285  
 Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Pro Ala Ala Ser Tyr  
 290 295 300  
 Met Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met  
 305 315

<210> 3603  
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 <212> DNA  
 <213> Zea mays

<220>  
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<400> 3603  
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 Met Ala Ala Ala Thr Ala Ala Ala Ala Ala Leu Ala Ser Pro Ala Cys  
 1 5 10 15  
 ctc tcc aca tcg ctg gcg cgc cgc ggc ctc gac agc ttc gca ccc gcg 96  
 Leu Ser Thr Ser Leu Ala Arg Arg Gly Leu Asp Ser Phe Ala Pro Ala  
 20 25 30  
 ctc cgc ccc ggc cct gac cgc agc tct cgc gcc gtc gcc ctc ctc ggt 144  
 Leu Arg Pro Gly Pro Asp Arg Ser Ser Arg Ala Val Ala Leu Leu Gly  
 35 40 45  
 gta cga act cat gtc acg gct gtt gat caa gcc att gta aaa ggt gat 192  
 Val Arg Thr His Val Thr Ala Val Asp Gln Ala Ile Val Lys Gly Asp  
 50 55 60  
 aca aag ttg gaa ggt cct gtg gtt gtt gtt act ggt gct tcc agg ggg 240  
 Thr Lys Leu Glu Gly Pro Val Val Val Val Thr Gly Ala Ser Arg Gly  
 65 70 75 80  
 att gga aaa gcc act gca ttg gct ctt gga aaa gca ggc tgc aag gtc 288  
 Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly Lys Ala Gly Cys Lys Val  
 85 90 95  
 ttg gtg aat tat gct cga tct tca aag gag gct gaa gaa gtc tcc aag 336  
 Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu Ala Glu Glu Val Ser Lys  
 100 105 110  
 gag att gaa gca tct gga ggc cag gcc att acc ttt gga gga gat gtt 384  
 Glu Ile Glu Ala Ser Gly Gly Gln Ala Ile Thr Phe Gly Gly Asp Val  
 115 120 125  
 tcc aaa gag gct gat gtt gaa tct atg ata aaa gtg gct gtt gat aca 432  
 Ser Lys Glu Ala Asp Val Glu Ser Met Ile Lys Val Ala Val Asp Thr  
 130 135 140  
 tgg gga acg att gat gta cta gta aat aat gca gga atc aca cgg gac 480  
 Trp Gly Thr Ile Asp Val Leu Val Asn Asn Ala Gly Ile Thr Arg Asp  
 145 150 155 160  
 aca ttg ttg atg aga atg aag aaa tca cag tgg caa gat gtg att gat 528  
 Thr Leu Leu Met Arg Met Lys Lys Ser Gln Trp Gln Asp Val Ile Asp  
 165 170 175  
 ttg aat ctt aca ggc gtt ttc ctt tgc acg cag gct gca aca aaa gta 576  
 Leu Asn Leu Thr Gly Val Phe Leu Cys Thr Gln Ala Ala Thr Lys Val  
 180 185 190  
 atg atg aag aag aaa aag gga aga att atc aat ata gca tcg gtt gtt 624  
 Met Met Lys Lys Lys Gly Arg Ile Ile Asn Ile Ala Ser Val Val  
 195 200 205  
 ggt ctt act ggt aat gct gga caa gct aat tat gct gct gcc aag gct 672  
 Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ala Lys Ala  
 210 215 220  
 ggg gtt att ggg ttc aca aaa aca gtt gct agg gag tat gcc agc aga 720  
 Gly Val Ile Gly Phe Thr Lys Thr Val Ala Arg Glu Tyr Ala Ser Arg  
 225 230 235 240  
 aat att aat gca aac gtt atc gct cct gga ttt att gct tca gat atg 768  
 Asn Ile Asn Ala Asn Val Ile Ala Pro Gly Phe Ile Ala Ser Asp Met  
 245 250 255  
 act gct gaa ctt ggt gaa gag tta gag aaa att ctg tca act att 816  
 Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys Ile Leu Ser Thr Ile

## PhoenixTemp32470.tmp.txt

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      260      265      270
cct tta ggg cgc tat ggt cgg cca gag gat gta gca ggc ctg gtg gaa      864
Pro Leu Gly Arg Tyr Gly Arg Pro Glu Asp Val Ala Gly Leu Val Glu
      275      280      285
ttc tta gcc ctc agc cct gct gca agc tac atc act gga cag gtc ctc      912
Phe Leu Ala Leu Ser Pro Ala Ala Ser Tyr Ile Thr Gly Gln Val Leu
      290      295      300
acc atc gat gga gga atg gta atg taa      939
Thr Ile Asp Gly Gly Met Val Met
305      310

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<210> 3604  
 <211> 312  
 <212> PRT  
 <213> Zea mays

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<400> 3604
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1 Leu Ser Thr Ser 20 Leu Ala Arg Arg Gly 25 Leu Asp Ser Phe Ala Pro Ala
Leu Arg Pro 35 Gly Pro Asp Arg Ser 40 Ser Arg Ala Val Ala Leu Leu Gly
Val Arg 50 Thr His Val Thr 55 Val Asp Gln Ala Ile Val Lys Gly Asp
Thr Lys Leu Glu Gly Pro 70 Val Val Val Val 75 Thr Gly Ala Ser Arg Gly
65 Ile Gly Lys Ala Thr 85 Ala Leu Ala Leu Gly 90 Lys Ala Gly Cys Lys Val
Leu Val Asn Tyr 100 Ala Arg Ser Ser Lys 105 Glu Ala Glu Glu Val Ser Lys
Glu Ile Glu Ala Ser Gly Gly Gln Ala Ile Thr Phe Gly Gly Asp Val
115 Ser Lys Glu Ala Asp Val Glu 120 Ser Met Ile Lys Val Ala Val Asp Thr
130 Trp Gly Thr Ile Asp Val 135 Leu Val Asn Asn Ala Gly Ile Thr Arg Asp
145 Thr Leu Leu Met Arg 165 Met Lys Lys Ser Gln Trp Gln Asp Val Ile Asp
Leu Asn Leu Thr 180 Gly Val Phe Leu Cys 185 Thr Gln Ala Ala Thr Lys Val
Met Met Lys Lys Lys Lys Gly Arg 200 Ile Ile Asn Ile Ala Ser Val Val
Gly Leu Thr Gly Asn Ala Gly 215 Gln Ala Asn Tyr Ala Ala Ala Lys Ala
225 Gly Val Ile Gly Phe Thr 230 Lys Thr Val Ala Arg Glu Tyr Ala Ser Arg
Asn Ile Asn Ala Asn Val Ile Ala Pro Gly Phe Ile Ala Ser Asp Met
245 Thr Ala Glu Leu Gly Glu Glu Leu Glu 250 Lys Lys Ile Leu Ser Thr Ile
Pro Leu Gly 260 Arg Tyr Gly Arg Pro 280 Glu Asp Val Ala Gly 285 Leu Val Glu
Phe Leu Ala Leu Ser Pro Ala 295 Ala Ala Ser Tyr Ile Thr Gly Gln Val Leu
305 Thr Ile Asp Gly Gly Met Val Met
310

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<210> 3605  
 <211> 915  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(915)

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## PhoenixTemp32470.tmp.txt

Met	Ala	Ser	Gln	Gln	Val	Phe	Arg	Ala	Gln	Gln	Gln	Gln	Gln	Gln	Gln		
1				5					10				15				
ttc	ccg	gct	cag	cag	cag	gag	tcc	cag	ccg	ggg	aag	gag	cac	gcg	atg	96	
Phe	Pro	Ala	Gln	Gln	Gln	Glu	Ser	Gln	Pro	Gly	Lys	Glu	His	Ala	Met		
			20					25					30				
gac	ccc	cgg	ccc	gag	gcc	atc	gtc	cag	gac	tac	aag	gcc	gcc	aac	aag	144	
Asp	Pro	Arg	Pro	Glu	Ala	Ile	Val	Gln	Asp	Tyr	Lys	Ala	Ala	Asn	Lys		
			35				40					45					
ctc	aag	gac	aag	gtg	gcg	ctc	gtg	acc	ggc	ggc	gac	tcc	ggc	atc	ggg	192	
Leu	Lys	Asp	Lys	Val	Ala	Leu	Val	Thr	Gly	Gly	Asp	Ser	Gly	Ile	Gly		
	50					55					60						
cgc	gcc	gtg	tgc	ctg	tgc	ttc	gcg	aag	gag	ggc	gcg	acg	gtg	gcc	ttc	240	
Arg	Ala	Val	Cys	Leu	Cys	Phe	Ala	Lys	Glu	Gly	Ala	Thr	Val	Ala	Phe		
	65				70					75					80		
acc	ttc	gtg	agg	ggg	cag	gag	gag	aag	gac	gcg	gag	gag	acg	ctg	cgt	288	
Thr	Phe	Val	Arg	Gly	Gln	Glu	Glu	Lys	Asp	Ala	Glu	Glu	Thr	Leu	Arg		
				85					90					95			
gcg	ctg	cg	gac	atc	ggg	tcc	gag	acg	ggc	gcg	cg	gag	ccg	atg	gcc	336	
Ala	Leu	Arg	Asp	Ile	Gly	Ser	Glu	Thr	Gly	Ala	Arg	Glu	Pro	Met	Ala		
			100				105						110				
ctg	ccc	gcc	gac	ctc	ggg	tac	gag	gcc	aac	tgc	cg	gag	gtg	gtg	gag	384	
Leu	Pro	Ala	Asp	Leu	Gly	Tyr	Glu	Ala	Asn	Cys	Arg	Glu	Val	Val	Glu		
		115				120						125					
cg	gtg	gcg	tcg	gcg	tac	ggc	ggg	cg	atc	gac	gtg	gtg	gtg	aac	aac	432	
Arg	Val	Ala	Ser	Ala	Tyr	Gly	Gly	Arg	Ile	Asp	Val	Val	Val	Asn	Asn		
	130				135					140							
gcg	gcg	gag	cag	tac	gag	cg	gag	agc	atc	ggg	gac	gtg	acg	gag	gcg	480	
Ala	Ala	Glu	Gln	Tyr	Glu	Arg	Glu	Ser	Ile	Gly	Asp	Val	Thr	Glu	Ala		
	145				150					155				160			
gac	ctg	gag	cg	gtg	ttc	cg	acc	aac	atc	ttc	tcc	tac	ttc	ctg	gtg	528	
Asp	Leu	Glu	Arg	Val	Phe	Arg	Thr	Asn	Ile	Phe	Ser	Tyr	Phe	Leu	Val		
				165					170					175			
tcc	aag	cac	gcg	gtg	ccg	cg	atg	gag	ccc	ggc	gcc	tgc	atc	atc	aac	576	
Ser	Lys	His	Ala	Val	Pro	Arg	Met	Glu	Pro	Gly	Ala	Cys	Ile	Ile	Asn		
			180				185						190				
acc	tcc	tcc	gtc	aac	gcg	tac	aag	ggc	aac	aag	acg	ctg	ctg	gac	tac	624	
Thr	Ser	Ser	Val	Asn	Ala	Tyr	Lys	Gly	Asn	Lys	Thr	Leu	Leu	Asp	Tyr		
		195				200						205					
acg	gcc	acc	aag	ggc	gcc	atc	gtg	gcc	ttc	acg	cg	gcg	ctc	tcg	ctg	672	
Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	Thr	Arg	Ala	Leu	Ser	Leu		
		210				215					220						
cag	ctg	gcc	gac	agg	ggc	atc	cg	gtc	aac	ggc	gtc	gcg	ccg	ggc	ccc	720	
Gln	Leu	Ala	Asp	Arg	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Gly	Pro		
	225			230					235					240			
gtc	tgg	acg	ccg	ctc	atc	ccg	gcg	tcc	ttc	ggc	aag	gag	aag	gtg	gag	768	
Val	Trp	Thr	Pro	Leu	Ile	Pro	Ala	Ser	Phe	Gly	Lys	Glu	Lys	Val	Glu		
				245				250						255			
cag	ttc	ggg	tcc	cag	gtg	ccc	atg	aag	cg	gcc	gcg	cag	ccg	gcc	gag	816	
Gln	Phe	Gly	Ser	Gln	Val	Pro	Met	Lys	Arg	Ala	Ala	Gln	Pro	Ala	Glu		
			260				265						270				
atc	gcg	ccc	agc	ttc	gtc	ttc	ctc	gcc	agc	aac	cag	gat	tcg	tcc	tac	864	
Ile	Ala	Pro	Ser	Phe	Val	Phe	Leu	Ala	Ser	Asn	Gln	Asp	Ser	Ser	Tyr		
		275				280						285					
atg	tcc	ggc	cag	atc	ctc	cac	gtc	aac	gga	ggc	gtc	atc	gtc	aat	agc	912	
Met	Ser	Gly	Gln	Ile	Leu	His	Val	Asn	Gly	Gly	Val	Ile	Val	Asn	Ser		
	290					295					300						
tag																915	

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 <212> PRT  
 <213> Zea mays

<400> 3606  
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 1 Phe Pro Ala Gln Gln Gln Glu Ser Gln Pro Gly Lys Glu His Ala Met  
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## PhoenixTemp32470.tmp.txt

20 25 30  
 Asp Pro Arg Pro Glu Ala Ile Val Gln Asp Tyr Lys Ala Ala Asn Lys  
 35 40 45  
 Leu Lys Asp Lys Val Ala Leu Val Thr Gly Gly Asp Ser Gly Ile Gly  
 50 55 60  
 Arg Ala Val Cys Leu Cys Phe Ala Lys Glu Gly Ala Thr Val Ala Phe  
 65 70 75 80  
 Thr Phe Val Arg Gly Gln Glu Glu Lys Asp Ala Glu Glu Thr Leu Arg  
 85 90 95  
 Ala Leu Arg Asp Ile Gly Ser Glu Thr Gly Ala Arg Glu Pro Met Ala  
 100 105 110  
 Leu Pro Ala Asp Leu Gly Tyr Glu Ala Asn Cys Arg Glu Val Val Glu  
 115 120 125  
 Arg Val Ala Ser Ala Tyr Gly Gly Arg Ile Asp Val Val Asn Asn  
 130 135 140  
 Ala Ala Glu Gln Tyr Glu Arg Glu Ser Ile Gly Asp Val Thr Glu Ala  
 145 150 155 160  
 Asp Leu Glu Arg Val Phe Arg Thr Asn Ile Phe Ser Tyr Phe Leu Val  
 165 170 175  
 Ser Lys His Ala Val Pro Arg Met Glu Pro Gly Ala Cys Ile Ile Asn  
 180 185 190  
 Thr Ser Ser Val Asn Ala Tyr Lys Gly Asn Lys Thr Leu Leu Asp Tyr  
 195 200 205  
 Thr Ala Thr Lys Gly Ala Ile Val Ala Phe Thr Arg Ala Leu Ser Leu  
 210 215 220  
 Gln Leu Ala Asp Arg Gly Ile Arg Val Asn Gly Val Ala Pro Gly Pro  
 225 230 235 240  
 Val Trp Thr Pro Leu Ile Pro Ala Ser Phe Gly Lys Glu Lys Val Glu  
 245 250 255  
 Gln Phe Gly Ser Gln Val Pro Met Lys Arg Ala Ala Gln Pro Ala Glu  
 260 265 270  
 Ile Ala Pro Ser Phe Val Phe Leu Ala Ser Asn Gln Asp Ser Ser Tyr  
 275 280 285  
 Met Ser Gly Gln Ile Leu His Val Asn Gly Gly Val Ile Val Asn Ser  
 290 295 300

<210> 3607  
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 <212> DNA  
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<220>  
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 <222> (1)..(843)

<400> 3607  
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 Met Ser Ser Ala Gly Pro Pro Pro Pro Leu Pro Pro Trp Ser Arg Leu  
 1 5 10 15  
 gag ggg cag gtg gtg ctg gtg acg ggc gct tcc tcc ggc atc gga cgc 96  
 Glu Gly Gln Val Val Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Arg  
 20 25 30  
 gac ttc tgc ctc gac ctg gcg cgc gcc ggc tgc cgc gtc gtc gcc gcc 144  
 Asp Phe Cys Leu Asp Leu Ala Arg Ala Gly Cys Arg Val Val Ala Ala  
 35 40 45  
 gcc cgc cgc gcc gat cgt ctc cgc tgc ctc tgc gac gag atc aac gcc 192  
 Ala Arg Arg Ala Asp Arg Leu Arg Ser Leu Cys Asp Glu Ile Asn Ala  
 50 55 60  
 tcc gct gcc tcc cga gcc ccc cgc gcg gtg gct gtg gag gtc gac gtc 240  
 Ser Ala Ala Ser Arg Ala Pro Arg Ala Val Ala Val Glu Val Asp Val  
 65 70 75 80  
 gcc gcc ggt ggt tcg gcc ctg gag gcg gcg gtg cag aag gcc tgg gac 288  
 Ala Ala Gly Gly Ser Ala Leu Glu Ala Val Gln Lys Ala Trp Asp  
 85 90 95  
 gcc ttt ggc cgt atc gac gcc ttg gtc aac aac gcc ggc ata cga ggt 336  
 Ala Phe Gly Arg Ile Asp Ala Leu Val Asn Asn Ala Gly Ile Arg Gly  
 100 105 110  
 gca gtg cat tct cca tta gat tgg gcc gag gat gag tgg gac aga atc 384  
 Ala Val His Ser Pro Leu Asp Trp Pro Glu Asp Glu Trp Asp Arg Ile

## PhoenixTemp32470.tmp.txt

atc	aag	115	aac	ctt	acc	gga	120	tgg	ctc	gtg	gcc	125	cat	gtc	tgt	432
Ile	Lys	Thr	Asn	Leu	Thr	Gly	125	tca	Trp	Leu	Val	Ala	Lys	His	Val	Cys
cga	cg	130	atg	cgt	gat	gcc	135	ctg	aag	ggt	tca	gtg	ggt	aac	atc	acc
Arg	Arg	Met	Arg	Asp	Ala	Lys	140	Leu	Lys	Gly	Ser	Val	Val	Asn	Ile	Thr
145	tct	att	gct	ggc	ctt	aac	150	ctg	ggg	cat	ctg	cct	ggc	tcc	acg	gga
Ser	Ile	Ala	Gly	Leu	Asn	Arg	155	Gly	His	Leu	Pro	Gly	Ser	Thr	Gly	Tyr
gca	tcc	tca	aag	gct	gct	gtg	165	cat	tat	gcc	acc	aag	att	atg	gct	ttg
Ala	Ser	Ser	Lys	Ala	Ala	Val	170	His	Tyr	Ala	Thr	Lys	Ile	Met	Ala	Leu
gaa	ttg	ggc	gcg	gat	cg	atc	175	aga	gtg	aac	tcg	att	gca	cct	gga	ctc
Glu	Leu	Gly	Ala	Asp	Arg	Ile	180	Arg	Val	Asn	Ser	Ile	Ala	Pro	Gly	Leu
ttc	aaa	tca	gag	ata	act	gct	185	cct	ctg	ttt	caa	aag	agg	ttg	ttg	agc
Phe	Lys	Ser	Glu	Ile	Thr	Ala	190	Pro	Leu	Phe	Gln	Lys	Arg	Trp	Leu	Ser
acc	gtt	gct	tca	aag	ata	gtg	195	ccg	ctt	aag	gag	cat	ggc	gct	act	gat
Thr	Val	Ala	Ser	Lys	Ile	Val	200	Pro	Leu	Lys	Glu	His	Gly	Ala	Thr	Asp
225	cct	gca	ttg	acg	tcg	ctg	205	gtt	ctg	ttt	ctg	atc	cat	gaa	gca	tcg
Pro	Ala	Leu	Thr	Ser	Leu	Val	210	Arg	Phe	Leu	Ile	His	Glu	Ala	Ser	Ser
tat	gtg	act	ggc	aac	atc	ttc	215	gta	gac	tca	ggt	gcc	acc	ata	cct	816
Tyr	Val	Thr	Gly	Asn	Ile	Phe	220	Val	Asp	Ser	Gly	Ala	Thr	Ile	Pro	
ggt	gtt	ccg	ata	ttc	tca	tcc	225	taa								843
Gly	Val	Pro	Ile	Phe	Ser	Ser	230	Leu								
		275					280									

&lt;210&gt; 3608

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3608

Met	Ser	Ser	Ala	Gly	Pro	Pro	Pro	Pro	Leu	Pro	Pro	Trp	Ser	Arg	Leu
1	Glu	Gly	Gln	Val	5	Leu	Val	Thr	25	Ala	Ser	Ser	Gly	15	Arg
Asp	Phe	Cys	Leu	Asp	Leu	Ala	Arg	Ala	40	Gly	Cys	Arg	Val	30	Ala
Ala	Arg	35	Ala	Asp	Arg	Leu	Arg	Ser	Leu	Cys	Asp	Glu	Ile	Asn	Ala
Ser	Ala	Ala	Ser	Arg	Ala	Pro	Arg	Ala	Val	Ala	Val	Glu	Val	Asp	Val
65	Ala	Ala	Gly	Gly	70	Ala	Leu	Glu	Ala	Val	Gln	Lys	Ala	Trp	Asp
Ala	Phe	Gly	Arg	Ile	85	Ala	Leu	Val	90	Asn	Asn	Ala	Gly	95	Gly
Ala	Val	His	Ser	Pro	Leu	Asp	Trp	Pro	105	Glu	Asp	Glu	Trp	110	Ile
Ile	Lys	Thr	Asn	Leu	Thr	Gly	Ser	Trp	120	Leu	Val	Ala	Lys	His	Val
130	Arg	Arg	Met	Arg	Ala	Lys	Leu	Lys	135	Gly	Ser	Val	Val	Asn	Ile
145	Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	150	His	Leu	Pro	Gly	Ser	Thr
145	Ser	Ile	Ala	Gly	Leu	Asn	Arg	Gly	155	His	Leu	Pro	Gly	Ser	Thr
Ala	Ser	Ser	Lys	Ala	Ala	Val	His	Tyr	160	Ala	Thr	Lys	Ile	Met	Ala
Glu	Leu	Gly	Ala	Asp	Arg	Ile	Arg	Val	165	Asn	Ser	Ile	Ala	Pro	Gly
Phe	Lys	Ser	Glu	Ile	Thr	Ala	Pro	Leu	170	Phe	Gln	Lys	Arg	Trp	Leu
210	Thr	Val	Ala	Ser	Lys	Ile	Val	Pro	175	Glu	His	Gly	Ala	Thr	Asp
225	Pro	Ala	Leu	Thr	Ser	Leu	Val	Arg	180	Leu	Ile	His	Glu	Ala	Ser
Pro	Ala	Leu	Thr	Ser	Leu	Val	Arg	Phe	185	Leu	Ile	His	Glu	Ala	Ser

## PhoenixTemp32470.tmp.txt

Tyr Val Thr Gly 245 Asn Ile Phe Ile Val 250 Asp Ser Gly Ala Thr 255  
 Gly Val Pro Ile Phe Ser Ser Leu 265 Ile Pro  
 260 270 275 280

<210> 3609  
 <211> 813  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(813)

<400> 3609  
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 ggc tcg ggc aga gaa aat ggc att ggc gct gcc atc gcc aga gct ttt 96  
 Gly Ser Gly Arg Glu Asn Gly Ile Gly Ala Ala Ile Ala Arg Ala Phe 20 25 30  
 gcc cgg aac ggt gca gct gtt gca atc cac tat gtc tcg gag agc tcc 144  
 Ala Arg Asn 35 Gly Ala Ala Val Ala 40 Ile His Tyr Val 45 Ser Glu Ser Ser  
 aag gtg cgg gct gag aag gtt gca gca gac att agt cgg gag ttt gga 192  
 Lys Val Arg Ala Glu Lys Val 55 Ala Ala Asp Ile Ser Arg Glu Phe Gly 50 55 60  
 acc aaa act acc gtt gta caa ggg gcg gtg gag aaa gct agc aat gcg 240  
 Thr Lys Thr Thr Val Val 70 Gln Gly Ala Val 75 Lys Ala Ser Asn Ala 80  
 acg aag ata gtc aaa gaa acc ttg gaa gga ctt ggc gct tcc cac att 288  
 Thr Lys Ile Val Lys 85 Glu Thr Leu Glu Gly 90 Leu Gly Ala Ser His Ile 95  
 gac att ctc gtg aat aac gct gga tat gga aat cct aaa agt ctc ttg 336  
 Asp Ile Leu Val 100 Asn Asn Ala Gly Tyr 105 Gly Asn Pro Lys Ser Leu Leu 110  
 gag gca acg cca gaa ttg ctc gaa gcc gaa ttc ggg atc aat gtc ttt 384  
 Glu Ala Thr Pro Glu Leu Leu Glu Ala Glu Phe Gly Ile Asn Val Phe 115 120 125  
 ggc tca gtt tac cta aca caa gct gtc att gga ata ggg aaa atg cct 432  
 Gly Ser Val Tyr Leu Thr Gln 135 Ala Val Ile Gly Ile Gly Lys Met Pro 130 140  
 aga ggc ggg cgt ata atc aat gtc ggc tct att tcc tca aaa ctt ggt 480  
 Arg Gly Gly Arg Ile Ile Asn Val Gly Ser Ile Ser Ser Lys Leu Gly 145 150 155 160  
 cct gaa gtc agt gca gtc tac ggc gca tca aag gct gcg caa gat agt 528  
 Pro Glu Val Ser Ala Val Tyr Gly Ala Ser Lys Ala Ala Gln Asp Ser 165 170 175  
 ctc acg gca tcc tgg gct ggc cag ctt ggc cgt agc cgc gga att acc 576  
 Leu Thr Ala Ser Trp Ala Gly Gln Leu 185 Gly Arg Ser Arg Gly Ile Thr 180 190  
 gtt aac acc ctt gcc ccg ggg cca atc cta acc gac atg gcg aaa ccg 624  
 Val Asn Thr Leu Ala Pro Gly Pro 200 Ile Leu Thr Asp Met Ala Lys Pro 195 205  
 ttc ttg gag gca aag gaa gga gct tca gct gat ttg ttg aaa gcg gta 672  
 Phe Leu Glu Ala Lys Glu 215 Ala Ser Ala Asp Leu Lys Ala Val 210 220  
 gag gcg cag acg cga gct gag gca cga att ggg aca gtt gag gac atg 720  
 Glu Ala Gln Thr Arg Ala Glu Ala Arg Ile Gly Thr Val Glu Asp Met 225 230 235 240  
 gcc gac gct gcg ttg ctc cta gtt tcg gag aag agc cgc tgg ctt acc 768  
 Ala Asp Ala Ala 245 Leu Leu Val Ser Glu Lys Ser Arg Trp Leu Thr 250 255  
 gcc caa tgg atc tcg gtc agc ggt ggg gtc aca gga act atg taa 813  
 Ala Gln Trp Ile Ser Val Ser Gly Gly Val Thr Gly Thr Met 260 265 270

<210> 3610

<211> 270  
 <212> PRT  
 <213> Zea mays

<400> 3610  
 Met Thr Ala Glu Thr Leu Ser Leu Glu Gly Lys Thr Ala Leu Ile Thr  
 1 5 10 15  
 Gly Ser Gly Arg Glu Asn Gly Ile Gly Ala Ala Ile Ala Arg Ala Phe  
 20 25 30  
 Ala Arg Asn Gly Ala Ala Val Ala Ile His Tyr Val Ser Glu Ser Ser  
 35 40 45  
 Lys Val Arg Ala Glu Lys Val Ala Ala Asp Ile Ser Arg Glu Phe Gly  
 50 55 60  
 Thr Lys Thr Thr Val Val Gln Gly Ala Val Glu Lys Ala Ser Asn Ala  
 65 70 75 80  
 Thr Lys Ile Val Lys Glu Thr Leu Glu Gly Leu Gly Ala Ser His Ile  
 85 90 95  
 Asp Ile Leu Val Asn Asn Ala Gly Tyr Gly Asn Pro Lys Ser Leu Leu  
 100 105 110  
 Glu Ala Thr Pro Glu Leu Leu Glu Ala Glu Phe Gly Ile Asn Val Phe  
 115 120 125  
 Gly Ser Val Tyr Leu Thr Gln Ala Val Ile Gly Ile Gly Lys Met Pro  
 130 135 140  
 Arg Gly Gly Arg Ile Ile Asn Val Gly Ser Ile Ser Ser Lys Leu Gly  
 145 150 155 160  
 Pro Glu Val Ser Ala Val Tyr Gly Ala Ser Lys Ala Ala Gln Asp Ser  
 165 170 175  
 Leu Thr Ala Ser Trp Ala Gly Gln Leu Gly Arg Ser Arg Gly Ile Thr  
 180 185 190  
 Val Asn Thr Leu Ala Pro Gly Pro Ile Leu Thr Asp Met Ala Lys Pro  
 195 200 205  
 Phe Leu Glu Ala Lys Glu Gly Ala Ser Ala Asp Leu Leu Lys Ala Val  
 210 215 220  
 Glu Ala Gln Thr Arg Ala Glu Ala Arg Ile Gly Thr Val Glu Asp Met  
 225 230 235 240  
 Ala Asp Ala Ala Leu Leu Val Ser Glu Lys Ser Arg Trp Leu Thr  
 245 250 255  
 Ala Gln Trp Ile Ser Val Ser Gly Gly Val Thr Gly Thr Met  
 260 265 270

<210> 3611  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

<400> 3611  
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 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr  
 1 5 10 15  
 gcg tcc acg cag ggg atc ggc ctc gcc atc gcc gag cgc ctc ggc ctg 96  
 Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 gag ggc gcc gcc gtc gtc gtc tcc cgc aag cag aag aac gtg gac 144  
 Glu Gly Ala Ala Val Val Val Ser Arg Lys Gln Lys Asn Val Asp  
 35 40 45  
 gag gcc gtg gag ggg ctc aag gcc aag ggg atc acc gtg gtg ggc gcc 192  
 Glu Ala Val Glu Gly Leu Lys Ala Lys Gly Ile Thr Val Val Gly Ala  
 50 55 60  
 gtc tgc cac gta tcc gac gca cag caa cgc aag aac ctc gtc gag acg 240  
 Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Asn Leu Val Glu Thr  
 65 70 75 80  
 gcc gtc aag aac ttt ggg cac att gat att ctt gtc tcc aac gct gct 288  
 Ala Val Lys Asn Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 gca aat cct act gtg aat gtc ata ctt gaa atg aaa gag gtt gtt ctc 336  
 265 270



## PhoenixTemp32470.tmp.txt

Ala	Asn	Pro	Thr	Val	Asn	Val	Ile	Leu	Glu	Met	Lys	Glu	Val	Val	Leu		
gat	aag	ttg	tg	gat	att	aac	gtc	aag	gct	tct	att	ctt	ctt	att	cag	384	
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln		
		115					120					125					
gat	gct	gct	ccc	cac	cta	cga	gca	agg	tca	tct	gtg	atc	ctt	att	tct	432	
Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Arg	Ser	Ser	Val	Ile	Leu	Ile	Ser		
		130					135				140						
tca	att	gct	ggt	tac	aat	cct	gag	caa	gga	ttg	aca	atg	tat	ggt	ggt	480	
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val		
		145				150				155					160		
aca	aag	acc	gct	ctc	ttt	ggt	ctc	aca	aag	gct	ctt	gct	ggt	gag	atg	528	
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met		
				165					170					175			
gga	ccc	gat	att	cgt	ggt	aat	tgt	ata	gcc	cct	ggt	ttt	ggt	ccg	aca	576	
Gly	Pro	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr		
			180					185					190				
cgg	ttt	gct	agt	ttc	ttc	ata	gac	aac	gag	acc	att	agg	aaa	aag	ctt	624	
Arg	Phe	Ala	Ser	Phe	Phe	Ile	Asp	Asn	Glu	Thr	Ile	Arg	Lys	Lys	Leu		
		195					200					205					
aac	gag	agg	act	atg	ctt	aag	aga	ttg	ggt	tcc	gtg	gaa	gat	atg	gcg	672	
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala		
		210				215					220						
gca	gct	gcc	gca	ttc	ctg	gca	tct	gac	gat	gca	tca	ttc	atc	aca	gct	720	
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
		225			230					235					240		
gaa	acc	att	gtt	gtt	gct	gga	ggg	gtg	ccg	tcg	aga	ttg	taa			762	
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Pro	Ser	Arg	Leu					
				245					250								

&lt;210&gt; 3612

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3612

Met	Asp	Val	Lys	Cys	Arg	Arg	Leu	Glu	Gly	Lys	Val	Ala	Val	Val	Thr		
1				5					10					15			
Ala	Ser	Thr	Gln	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Glu	Arg	Leu	Gly	Leu		
			20					25					30				
Glu	Gly	Ala	Val	Val	Val	Val	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asp			
		35					40					45					
Glu	Ala	Val	Glu	Gly	Leu	Lys	Ala	Lys	Gly	Ile	Thr	Val	Val	Gly	Ala		
		50				55					60						
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Asn	Leu	Val	Glu	Thr		
65					70					75				80			
Ala	Val	Lys	Asn	Phe	Gly	His	Ile	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala		
				85					90					95			
Ala	Asn	Pro	Thr	Val	Asn	Val	Ile	Leu	Glu	Met	Lys	Glu	Val	Val	Leu		
			100					105					110				
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln		
		115					120					125					
Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Arg	Ser	Ser	Val	Ile	Leu	Ile	Ser		
		130				135					140						
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val		
145					150					155					160		
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met		
				165					170					175			
Gly	Pro	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr		
			180					185					190				
Arg	Phe	Ala	Ser	Phe	Phe	Ile	Asp	Asn	Glu	Thr	Ile	Arg	Lys	Lys	Leu		
		195					200					205					
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala		
		210				215					220						
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala		
225					230					235					240		
Glu	Thr	Ile	Val	Val	Ala	Gly	Gly	Val	Pro	Ser	Arg	Leu					
				245					250								

<210> 3613  
 <211> 969  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(969)

<400> 3613  
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 Met Met His Arg Leu Val Val Glu Ala Arg Arg Ala Ala Pro Val  
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 gcg atg gcc gcc ggc ggg gtg gcg ggc ggc gag ccg tgg atg tcg tcg 96  
 Ala Met Ala Ala Gly Gly Val Ala Gly Gly Glu Arg Trp Met Ser Ser  
 20 25 30  
 tcg gca gcc agc aaa gga agg cta gta ggg aag att gcg ctg atc acc 144  
 Ser Ala Ala Ser Lys Gly Arg Leu Val Gly Lys Ile Ala Leu Ile Thr  
 35 40 45  
 gga ggc gcg agc ggg ctg ggc aag gcc gcg gcc cgc gag ttc atc gag 192  
 Gly Gly Ala Ser Gly Leu Gly Lys Ala Ala Ala Arg Glu Phe Ile Glu  
 50 55 60  
 gaa ggc gcg ggg gcc gta gtc ctc gcg gac atc aac tcc aag ctg ggc 240  
 Glu Gly Ala Gly Ala Val Val Leu Ala Asp Ile Asn Ser Lys Leu Gly  
 65 70 75  
 ctc gag acg gcc cac gag ctg ggc ccg gac gcc cac ttc gtg cac tgc 288  
 Leu Glu Thr Ala His Glu Leu Gly Pro Asp Ala His Phe Val His Cys  
 85 90 95  
 gac gtg gcc gtc gag gac agc gtc gcc gcg gcc gtg gac gcc gcc gtg 336  
 Asp Val Ala Val Glu Asp Ser Val Ala Ala Val Asp Ala Ala Val  
 100 105 110  
 gcg cgc cac ggc ccg ctg gac gtc atg ctc aac agc gcc ggc gta gtg 384  
 Ala Arg His Gly Arg Leu Asp Val Met Leu Asn Ser Ala Gly Val Val  
 115 120 125  
 ggc ccg ctg acc cca ggc acg tcg ccg gtc gcc agc ctg gac ctg gcg 432  
 Gly Pro Leu Thr Pro Gly Thr Ser Arg Val Ala Ser Leu Asp Leu Ala  
 130 135 140  
 cag ttc gac tcc gtc atg tcc gtg aac gtg cgc ggc acg ctg gcc ggg 480  
 Gln Phe Asp Ser Val Met Ser Val Asn Val Arg Gly Thr Leu Ala Gly  
 145 150 155 160  
 atc aag cac gcc gcg gcc atg ctg gcg gcg gcc ccc gcg ggc gca 528  
 Ile Lys His Ala Ala Arg Ala Met Leu Ala Ala Pro Ala Gly Ala  
 165 170 175  
 gga gga gga gga gga gga gca gga ggc tgc atc ctc tgc atg gcg agc 576  
 Gly Gly Gly Gly Gly Gly Ala Gly Gly Ser Ile Leu Cys Met Ala Ser  
 180 185 190  
 gtc agc ggc atc ctc ggc ggg ctg ggc acg tac ctg tac tcg gtg tcc 624  
 Val Ser Gly Ile Leu Gly Gly Leu Gly Thr Tyr Leu Tyr Ser Val Ser  
 195 200 205  
 aag ttc gcc atc gcg ggg atc gtc aag gcc gcg gcg gcc gag ctg tcg 672  
 Lys Phe Ala Ile Ala Gly Ile Val Lys Ala Ala Ala Glu Leu Ser  
 210 215 220  
 cgc ctc ggc gtc cgc gtc aac tgc atc tcg ccg tac gcg gtg ccc acg 720  
 Arg Leu Gly Val Arg Val Asn Cys Ile Ser Pro Tyr Ala Val Pro Thr  
 225 230 235 240  
 ccg atg gtg ctg ggc cag ttt tcc gcg atg ctg ggc ggc gca gcc gac 768  
 Pro Met Val Leu Gly Gln Phe Ser Ala Met Leu Gly Gly Ala Ala Asp  
 245 250 255  
 gag gcg cag gtg gcg gcc atc gtc agg ggc ctc ggc gag ctc agg ggc 816  
 Glu Ala Gln Val Ala Ala Ile Val Arg Gly Leu Gly Glu Leu Arg Gly  
 260 265 270  
 gcc acc tgc gag gcc gtc gac atc gcc agg gcc gcc gtg tac ctg gcc 864  
 Ala Thr Cys Glu Ala Val Asp Ile Ala Arg Ala Ala Val Tyr Leu Ala  
 275 280 285  
 tcc gac gac gcc aag tac gtg tct ggc cac aac ctt gtg gtc gac ggt 912  
 Ser Asp Asp Ala Lys Tyr Val Ser Gly His Asn Leu Val Val Asp Gly  
 290 295 300  
 ggc ttc acg agc tac aag atg aac ctg ccc ttc cct acc aag cca 960  
 Gly Phe Thr Ser Tyr Lys His Met Asn Leu Pro Phe Pro Thr Lys Pro

305  
cat gag tga  
His Glu

310

315

320

969

<210> 3614  
<211> 322  
<212> PRT  
<213> Zea mays

<400> 3614  
Met Met His Arg Leu Val Val Glu Ala Arg Arg Arg Ala Ala Pro Val  
1 5 10 15  
Ala Met Ala Ala Gly Gly Val Ala Gly Gly Glu Arg Trp Met Ser Ser  
20 25 30  
Ser Ala Ala Ser Lys Gly Arg Leu Val Gly Lys Ile Ala Leu Ile Thr  
35 40 45  
Gly Gly Ala Ser Gly Leu Gly Lys Ala Ala Ala Arg Glu Phe Ile Glu  
50 55 60  
Glu Gly Ala Gly Ala Val Val Leu Ala Asp Ile Asn Ser Lys Leu Gly  
65 70 75 80  
Leu Glu Thr Ala His Glu Leu Gly Pro Asp Ala His Phe Val His Cys  
85 90 95  
Asp Val Ala Val Glu Asp Ser Val Ala Ala Val Asp Ala Val  
100 105 110  
Ala Arg His Gly Arg Leu Asp Val Met Leu Asn Ser Ala Gly Val Val  
115 120 125  
Gly Pro Leu Thr Pro Gly Thr Ser Arg Val Ala Ser Leu Asp Leu Ala  
130 135 140  
Gln Phe Asp Ser Val Met Ser Val Asn Val Arg Gly Thr Leu Ala Gly  
145 150 155 160  
Ile Lys His Ala Ala Arg Ala Met Leu Ala Ala Ala Pro Ala Gly Ala  
165 170 175  
Gly Gly Gly Gly Gly Ala Gly Gly Ser Ile Leu Cys Met Ala Ser  
180 185 190  
Val Ser Gly Ile Leu Gly Gly Leu Gly Thr Tyr Leu Tyr Val Ser  
195 200 205  
Lys Phe Ala Ile Ala Gly Ile Val Lys Ala Ala Ala Glu Leu Ser  
210 215 220  
Arg Leu Gly Val Arg Val Asn Cys Ile Ser Pro Tyr Ala Val Pro Thr  
225 230 235 240  
Pro Met Val Leu Gly Gln Phe Ser Ala Met Leu Gly Gly Ala Ala Asp  
245 250 255  
Glu Ala Gln Val Ala Ala Ile Val Arg Gly Leu Gly Glu Leu Arg Gly  
260 265 270  
Ala Thr Cys Glu Ala Val Asp Ile Ala Arg Ala Ala Val Tyr Leu Ala  
275 280 285  
Ser Asp Asp Ala Lys Tyr Val Ser Gly His Asn Leu Val Val Asp Gly  
290 295 300  
Gly Phe Thr Ser Tyr Lys His Met Asn Leu Pro Phe Pro Thr Lys Pro  
305 310 315 320  
His Glu

<210> 3615  
<211> 762  
<212> DNA  
<213> Zea mays

<220>  
<221> CDS  
<222> (1)..(762)

<400> 3615  
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Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr  
1 5 10 15  
gcg tcc acg cag ggg atc ggc cta gcc gag cgc ctc ggc ctg  
Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu

48

96

## PhoenixTemp32470.tmp.txt

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Glu	Gly	Ala	Ala	Ala	Val	Val	Ser	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asp																																																																					
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gag	gcc	gtg	gag	ggg	ctc	aag	gcc	aag	ggg	atc	acc	gtg	gtg	ggc	gcc		192																																																																			
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gtc	tgc	cac	gta	tcc	gac	gca	cag	caa	cgc	aag	aac	atc	atc	gag	acg		240																																																																			
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Asn	Ile	Ile	Glu	Thr																																																																					
																65																	70																	75																	80																	
gcc	gtc	aag	aac	ttt	ggg	cac	att	gat	att	ctt	gtc	tcc	aac	gct	gct		288																																																																			
Ala	Val	Lys	Asn	Phe	Gly	His	Ile	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala																																																																					
																85																	90																	95																																		
gca	aat	cct	act	gtg	aat	gtc	ata	ctt	gaa	atg	aaa	gag	gtt	gtt	ctc		336																																																																			
Ala	Asn	Pro	Thr	Val	Asn	Val	Ile	Leu	Glu	Met	Lys	Glu	Val	Val	Leu																																																																					
																100																	105																	110																																		
gat	aag	ttg	tgg	gat	att	aac	gtc	aag	gct	tct	att	ctt	ctt	att	cag		384																																																																			
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln																																																																					
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gat	gct	gct	ccc	cac	cta	cgg	gca	ggg	tca	tct	gtg	atc	ctt	att	tct		432																																																																			
Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Gly	Ser	Ser	Val	Ile	Leu	Ile	Ser																																																																					
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tca	att	gct	ggg	tac	aat	cct	gag	caa	gga	ttg	aca	atg	tat	ggg	gtt		480																																																																			
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aca	aag	acc	gct	ctc	ttt	ggg	ctc	aca	aag	gct	ctt	gct	ggg	gag	atg		528																																																																			
Thr	Lys	Thr	Ala	Leu	Phe	Gly	Leu	Thr	Lys	Ala	Leu	Ala	Gly	Glu	Met																																																																					
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gga	ccc	gat	att	cgt	gtt	aat	tgt	ata	gcc	cct	ggg	ttt	gtt	ccg	aca		576																																																																			
Gly	Pro	Asp	Ile	Arg	Val	Asn	Cys	Ile	Ala	Pro	Gly	Phe	Val	Pro	Thr																																																																					
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Arg	Phe	Ala	Ser	Phe	Phe	Ile	Asp	Asn	Glu	Thr	Ile	Arg	Lys	Lys	Leu																																																																					
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aac	gag	agg	act	atg	ctt	aag	aga	ttg	ggg	tcc	gtg	gaa	gat	atg	gcg		672																																																																			
Asn	Glu	Arg	Thr	Met	Leu	Lys	Arg	Leu	Gly	Ser	Val	Glu	Asp	Met	Ala																																																																					
																210																	215																	220																																		
gca	gct	gcc	gca	ttc	ctg	gca	tct	gac	gat	gca	tca	ttc	atc	aca	gct		720																																																																			
Ala	Ala	Ala	Ala	Phe	Leu	Ala	Ser	Asp	Asp	Ala	Ser	Phe	Ile	Thr	Ala																																																																					
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gaa	acc	att	gtt	gtt	gct	gga	ggg	gtg	ccg	tcg	aga	ttg	taa				762																																																																			
Glu	Thr																																																																																			

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<210> 3616
<211> 253
<212> PRT
<213> Zea mays
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<400>	3616															
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			20					25					30			
Glu	Gly	Ala	Ala	Val	Val	Ser	Arg	Lys	Gln	Lys	Asn	Val	Asp			
		35				40					45					
Glu	Ala	Val	Glu	Gly	Leu	Lys	Ala	Lys	Gly	Ile	Thr	Val	Val	Gly	Ala	
	50				55						60					
Val	Cys	His	Val	Ser	Asp	Ala	Gln	Gln	Arg	Lys	Asn	Ile	Ile	Glu	Thr	
65					70					75					80	
Ala	Val	Lys	Asn	Phe	Gly	His	Ile	Asp	Ile	Leu	Val	Ser	Asn	Ala	Ala	
				85					90					95		
Ala	Asn	Pro	Thr	Val	Asn	Val	Ile	Leu	Glu	Met	Lys	Glu	Val	Val	Leu	
			100					105					110			
Asp	Lys	Leu	Trp	Asp	Ile	Asn	Val	Lys	Ala	Ser	Ile	Leu	Leu	Ile	Gln	
		115					120					125				
Asp	Ala	Ala	Pro	His	Leu	Arg	Ala	Gly	Ser	Ser	Val	Ile	Leu	Ile	Ser	
	130					135					140					
Ser	Ile	Ala	Gly	Tyr	Asn	Pro	Glu	Gln	Gly	Leu	Thr	Met	Tyr	Gly	Val	

## PhoenixTemp32470.tmp.txt

145 Thr Lys Thr Ala Leu 150 Phe Gly Leu Thr Lys 155 Ala Leu Ala Gly Glu 160 Met  
 Gly Pro Asp Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
 Arg Phe Ala Ser Phe Phe Ile Asp Asn Glu Thr Ile Arg Lys Lys Leu  
 Asn Glu Arg Thr Met Leu Lys Arg Leu Gly Ser Val Glu Asp Met Ala  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Phe Ile Thr Ala  
 225 Glu Thr Ile Val Val Ala Gly Gly Val Pro Ser Arg Leu 240  
 245 250

<210> 3617  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

<400> 3617  
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 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Ile Val Thr  
 1 5 10 15  
 gcg tcc acg atg ggg atc ggc ctc gcc atc gcc gag cgc ctc ggt ctg 96  
 Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 gag ggc gcc gcc gtc gtc atc tcc tcc cgc aag cag aag aac gtg aac 144  
 Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn  
 35 40 45  
 gag gcg gtg gag ggg ctc agg gcc aag ggt atc acc gcg gtt ggt gcc 192  
 Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala  
 50 55 60  
 gtc tgc cac gtc tcc gac gca cag cag cgc aag agc ctc atc gag acg 240  
 Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr  
 65 70 75 80  
 gcc gtc aag agc ttt ggg cac ata gat att ctt gtc tcc aat gct gcc 288  
 Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 gca aat cct tct gta gat agc ata ctt gaa atg aaa gag tct gtt ctc 336  
 Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
 100 105 110  
 gat aag ctg tgg gat att aac gtc aag gct tct atc ctt att cag 384  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Ile Gln  
 115 120 125  
 gat gct gct cct cac cta cgg aag ggg tca tct gtg att att att tct 432  
 Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
 130 135 140  
 tca att gct ggt tac aat cca gaa caa gga ttg aca atg tat ggt gtc 480  
 Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
 145 150 155 160  
 aca aag act gct ctc ttt ggt ctc acg aag gct ctt gct ggt gag atg 528  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165 170 175  
 gga ccc gat act cgt gtt aac tgt gta gcc cct ggt ttt gtt cct aca 576  
 Gly Pro Asp Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 cgg ttt gct agt ttc ctc aca gaa aat gag acc att agg aaa gag ctt 624  
 Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
 195 200 205  
 aac gag agg acc aag ctt aag aga ttg ggt act gtg gaa gac atg gct 672  
 Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
 210 215 220  
 gcg gct gcg gct ttt ctg gcg tct gac gac gca tca tac att acg gct 720  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
 225 230 235 240

gaa acc att gtt gtt gct gga ggg gtg cag tct agg ctg taa  
 Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
 245 250

<210> 3618  
 <211> 253  
 <212> PRT  
 <213> Zea mays

<400> 3618  
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 Ala Ser Thr Met Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 Glu Gly Ala Ala Val Val Ile Ser Ser Arg Lys Gln Lys Asn Val Asn  
 35 40 45  
 Glu Ala Val Glu Gly Leu Arg Ala Lys Gly Ile Thr Ala Val Gly Ala  
 50 55 60  
 Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Ser Leu Ile Glu Thr  
 65 70 75 80  
 Ala Val Lys Ser Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 Ala Asn Pro Ser Val Asp Ser Ile Leu Glu Met Lys Glu Ser Val Leu  
 100 105 110  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Ile Gln  
 115 120 125  
 Asp Ala Ala Pro His Leu Arg Lys Gly Ser Ser Val Ile Ile Ile Ser  
 130 135 140  
 Ser Ile Ala Gly Tyr Asn Pro Glu Gln Gly Leu Thr Met Tyr Gly Val  
 145 150 155 160  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165 170 175  
 Gly Pro Asp Thr Arg Val Asn Cys Val Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 Arg Phe Ala Ser Phe Leu Thr Glu Asn Glu Thr Ile Arg Lys Glu Leu  
 195 200 205  
 Asn Glu Arg Thr Lys Leu Lys Arg Leu Gly Thr Val Glu Asp Met Ala  
 210 215 220  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Tyr Ile Thr Ala  
 225 230 235 240  
 Glu Thr Ile Val Val Ala Gly Gly Val Gln Ser Arg Leu  
 245 250

<210> 3619  
 <211> 957  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(957)

<400> 3619  
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 Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Ala Ala Val Ser Ser Pro  
 1 5 10 15  
 gct gcg cgt gga gca gcc ggg gcc gcc gcc tcc cgc cgg ggg ttc 96  
 Ala Ala Arg Gly Ala Ala Gly Ala Ala Ser Arg Arg Gly Phe  
 20 25 30  
 gtc acg ttt ggt gga ggc gcc gcc cgc ttc tct ccc acg ctg cgg tcc 144  
 Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser  
 35 40 45  
 ggc cgt ggg ttc tct ggt gtg caa acc cat gtt gct gct gtt gaa caa 192  
 Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln  
 50 55 60  
 gca gtt gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt 240  
 Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val  
 65 70 75 80  
 aca ggt gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga 288

## PhoenixTemp32470.tmp.txt

Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Thr	Ala	Leu	Ala	Leu	Gly	
				85					90					95		
aaa	gca	gga	tgc	aag	gtt	ctg	gta	aac	tat	gcc	cgg	tcc	tcg	aaa	gag	336
Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ser	Lys	Glu	
			100					105					110			
gct	gaa	gag	gtc	tcc	aaa	gag	att	gaa	gca	tct	ggt	ggt	gag	gct	atc	384
Ala	Glu	Gly	Val	Ser	Lys	Glu	Ile	Glu	Ala	Ser	Gly	Gly	Glu	Ala	Ile	
		115					120					125				
acc	ttc	gga	gga	gat	gtt	tca	aaa	gaa	gct	gat	gta	gag	tct	atg	atg	432
Thr	Phe	Gly	Gly	Asp	Val	Ser	Lys	Glu	Ala	Asp	Val	Glu	Ser	Met	Met	
	130					135					140					
aaa	gca	gct	cta	gat	aaa	tgg	gga	aca	ata	gat	gtg	ctg	gta	aat	aat	480
Lys	Ala	Ala	Leu	Asp	Lys	Trp	Gly	Thr	Ile	Asp	Val	Leu	Val	Asn	Asn	
					150					155					160	
gca	ggg	att	aca	cga	gac	aca	ttg	ttg	atg	agg	atg	aag	aaa	tct	cag	528
Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Met	Arg	Met	Lys	Lys	Ser	Gln	
				165					170					175		
tgg	caa	gac	gta	att	gat	ctg	aat	ctt	act	ggc	gtc	ttc	ctt	tgt	aca	576
Trp	Gln	Asp	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys	Thr	
			180					185					190			
cag	gct	gca	aca	aaa	gta	atg	atg	aaa	aag	aga	aag	gga	aaa	att	atc	624
Gln	Ala	Ala	Thr	Lys	Val	Met	Met	Lys	Lys	Arg	Lys	Gly	Lys	Ile	Ile	
		195				200						205				
aac	att	gca	tct	gta	gtt	ggt	ctt	act	ggc	aat	gtt	ggc	caa	gct	aat	672
Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Thr	Gly	Asn	Val	Gly	Gln	Ala	Asn	
	210					215					220					
tat	agc	gca	gcc	aag	gct	gga	gtg	att	ggt	ttc	aca	aaa	aca	gtt	gcc	720
Tyr	Ser	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Thr	Lys	Thr	Val	Ala	
					230					235					240	
agg	gag	tat	gca	agc	aga	aat	atc	aat	gtg	aat	gct	att	gca	cca	ggg	768
Arg	Glu	Tyr	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Ala	Ile	Ala	Pro	Gly	
				245					250					255		
ttc	att	gca	tct	gat	atg	act	gcc	gaa	ctt	gga	gaa	gag	ctt	gag	aag	816
Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Glu	Leu	Gly	Glu	Glu	Leu	Glu	Lys	
			260					265					270			
aaa	atc	ttg	tca	acc	att	ccg	tta	ggg	aga	tat	ggc	caa	cca	gag	gaa	864
Lys	Ile	Leu	Ser	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu	Glu	
		275					280					285				
gtt	gca	ggg	ttg	gtc	gag	ttc	ctg	gcc	ctt	aac	ccc	gca	gct	agc	tat	912
Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Asn	Pro	Ala	Ala	Ser	Tyr	
		290				295					300					
atg	act	gga	cag	gtg	ctt	aca	att	gac	gga	ggg	atg	gta	atg	taa		957
Met	Thr	Gly	Gln	Val	Leu	Thr	Ile	Asp	Gly	Gly	Met	Val	Met			
					310					315						

<210> 3620  
 <211> 318  
 <212> PRT  
 <213> Zea mays

<400> 3620  
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 Ala Ala Arg Gly Ala Ala Gly Ala Ala Ala Ser Arg Arg Gly Phe  
 20 25 30  
 Val Thr Phe Gly Gly Gly Ala Arg Phe Ser Pro Thr Leu Arg Ser  
 35 40 45  
 Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Val Glu Gln  
 50 55 60  
 Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val  
 65 70 75 80  
 Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly  
 85 90 95  
 Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu  
 100 105 110  
 Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile  
 115 120 125  
 Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met  
 130 135 140

## PhoenixTemp32470.tmp.txt

Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn  
 145 150 155 160  
 Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln  
 165 170 175  
 Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr  
 180 185 190  
 Gln Ala Ala Thr Lys Val Met Met Lys Lys Arg Lys Gly Lys Ile Ile  
 195 200 205  
 Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Val Gly Gln Ala Asn  
 210 215 220  
 Tyr Ser Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala  
 225 230 235 240  
 Arg Glu Tyr Ala Ser Arg Asn Ile Asn Val Asn Ala Ile Ala Pro Gly  
 245 250 255  
 Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys  
 260 265 270  
 Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu Glu  
 275 280 285  
 Val Ala Gly Leu Val Glu Phe Leu Ala Leu Asn Pro Ala Ala Ser Tyr  
 290 295 300  
 Met Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met  
 305 310 315

&lt;210&gt; 3621

&lt;211&gt; 822

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(822)

&lt;400&gt; 3621

atg gcc acg gtg gag acc tcg ggc acg gcg ata ggg tcc tcc ggg aga	48
Met Ala Thr Val Glu Thr Ser Gly Thr Ala Ile Gly Ser Ser Gly Arg	
1 5 10 15	
tgg gca cta cac ggc aag aca gcc ctc gtc acc ggc ggc acc cgc ggc	96
Trp Ala Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg Gly	
20 25 30	
atc ggg cgt gcg gta gtg gag gag ctc gcg gcg ctg ggg gcg gcc gtg	144
Ile Gly Arg Ala Val Val Glu Leu Ala Ala Leu Gly Ala Ala Val	
35 40 45	
cac aca tgc tcc cgg aag gcg gag gag ctc ggc gag cgc atc aag gag	192
His Thr Cys Ser Arg Lys Ala Glu Glu Leu Gly Glu Arg Ile Lys Glu	
50 55 60	
tgg gag gcc agg gga ttc agc gtt acc ggg tcc gtc tgc gac ctc tcc	240
Trp Glu Ala Arg Gly Phe Ser Val Thr Gly Ser Val Cys Asp Leu Ser	
65 70 75 80	
gag agg gac cag cgg gag cgg ttg ctc cgc gag gtt gcc gac cgc ttc	288
Glu Arg Asp Gln Arg Glu Arg Leu Leu Arg Glu Val Ala Asp Arg Phe	
85 90 95	
ggc ggc aag ctc aac atc ctc gta aac aat gta gga aca aac ata agg	336
Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile Arg	
100 105 110	
aaa cca act act gag ttt act gca gag gaa tac tcg ttt ctg atg gct	384
Lys Pro Thr Thr Glu Phe Thr Ala Glu Glu Tyr Ser Phe Leu Met Ala	
115 120 125	
act aat ctt gaa tct gca tat cac ttg tgc caa att gca cat cct ctt	432
Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Ile Ala His Pro Leu	
130 135 140	
ttg aaa tta tct ggg tca ggc agc att ata ttc ata tca tct gtt gct	480
Leu Lys Leu Ser Gly Ser Gly Ser Ile Ile Phe Ile Ser Ser Val Ala	
145 150 155 160	
gga gcg ata gga atc ttt agt gga act ata tat gct atg act aaa ggt	528
Gly Ala Ile Gly Ile Phe Ser Gly Thr Ile Tyr Ala Met Thr Lys Gly	
165 170 175	
gcc att aac cag cta acc aag aat tta gct tgt gaa tgg gct aag gac	576
Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp	
180 185 190	



## PhoenixTemp32470.tmp.txt

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aac ata aga gcc aac tct gtc gct ccg tgg tac atc acc act tca ctt      624
Asn Ile Arg Ala Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser Leu
195 200 205
acg gaa gga att ttg gca aat aag aac ttt gag gaa caa gtt gtg agt      672
Thr Glu Gly Ile Leu Ala Asn Lys Asn Phe Glu Glu Gln Val Val Ser
210 215 220
cga act ccg ctt gga cgt gtc gga gaa cct gga gaa gta tcg gca ctt      720
Arg Thr Pro Leu Gly Arg Val Gly Glu Pro Gly Glu Val Ser Ala Leu
225 230 235 240
gtt gct ttt ctt tgc atg ccg ggt tcc act tat att agc ggc cag acg      768
Val Ala Phe Leu Cys Met Pro Gly Ser Thr Tyr Ile Ser Gly Gln Thr
245 250 255
att gcg gtc gac gga ggt atg act gtg aac ggg ttt tac cct ccc aag      816
Ile Ala Val Asp Gly Gly Met Thr Val Asn Gly Phe Tyr Pro Pro Lys
260 265 270
ccc tag
Pro

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<210> 3622  
 <211> 273  
 <212> PRT  
 <213> Zea mays

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<400> 3622
Met Ala Thr Val Glu Thr Ser Gly Thr Ala Ile Gly Ser Ser Gly Arg
1 5 10 15
Trp Ala Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg Gly
20 25 30
Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala Val
35 40 45
His Thr Cys Ser Arg Lys Ala Glu Glu Leu Gly Glu Arg Ile Lys Glu
50 55 60
Trp Glu Ala Arg Gly Phe Ser Val Thr Gly Ser Val Cys Asp Leu Ser
65 70 75 80
Glu Arg Asp Gln Arg Glu Arg Leu Leu Arg Glu Val Ala Asp Arg Phe
85 90 95
Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile Arg
100 105 110
Lys Pro Thr Thr Glu Phe Thr Ala Glu Glu Tyr Ser Phe Leu Met Ala
115 120 125
Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Ile Ala His Pro Leu
130 135 140
Leu Lys Leu Ser Gly Ser Gly Ser Ile Ile Phe Ile Ser Ser Val Ala
145 150 155 160
Gly Ala Ile Gly Ile Phe Ser Gly Thr Ile Tyr Ala Met Thr Lys Gly
165 170 175
Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys Asp
180 185 190
Asn Ile Arg Ala Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser Leu
195 200 205
Thr Glu Gly Ile Leu Ala Asn Lys Asn Phe Glu Glu Gln Val Val Ser
210 215 220
Arg Thr Pro Leu Gly Arg Val Gly Glu Pro Gly Glu Val Ser Ala Leu
225 230 235 240
Val Ala Phe Leu Cys Met Pro Gly Ser Thr Tyr Ile Ser Gly Gln Thr
245 250 255
Ile Ala Val Asp Gly Gly Met Thr Val Asn Gly Phe Tyr Pro Pro Lys
260 265 270
Pro

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<210> 3623  
 <211> 792  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS

&lt;222&gt; (1)..(792)

&lt;400&gt; 3623

atg	gcg	cca	gga	ggc	agc	ggc	gag	cgg	tgg	agc	ctg	gcc	ggc	gcg	aca	48
Met	Ala	Pro	Gly	Gly	Ser	Gly	Glu	Arg	Trp	Ser	Leu	Ala	Gly	Ala	Thr	
1				5				10						15		
gcg	ctg	gtc	acc	ggg	ggc	agc	aag	ggg	atc	ggg	caa	gcc	gtc	gtg	gag	96
Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Gln	Ala	Val	Val	Glu	
			20					25					30			
gag	ctg	gcc	agg	ctc	ggc	gcg	cgc	gtg	cac	acg	tgc	gcc	cgc	agc	gcg	144
Glu	Leu	Ala	Arg	Leu	Gly	Ala	Arg	Val	His	Thr	Cys	Ala	Arg	Ser	Ala	
			35				40					45				
gcg	gac	ctg	gag	gag	tgc	cgc	cgg	cgg	tgg	gcc	gag	aag	ggg	ctc	cgc	192
Ala	Asp	Leu	Glu	Glu	Cys	Arg	Arg	Arg	Trp	Ala	Glu	Lys	Gly	Leu	Arg	
	50					55					60					
gtc	acc	gtc	tcc	gtg	tgc	gac	gtc	gcc	gtg	cgc	gcc	gac	cgg	gag	agg	240
Val	Thr	Val	Ser	Val	Cys	Asp	Val	Ala	Val	Arg	Ala	Asp	Arg	Glu	Arg	
	65				70					75					80	
ctc	gtc	ctg	gac	acg	gtc	agc	gcg	gcc	ttc	gac	ggc	aag	ctc	gat	atc	288
Leu	Val	Leu	Asp	Thr	Val	Ser	Ala	Ala	Phe	Asp	Gly	Lys	Leu	Asp	Ile	
				85					90					95		
ctg	gtc	aac	aac	gct	gcg	ctg	ctg	ctg	ctc	aag	ccg	gcg	gcg	gag	tgg	336
Leu	Val	Asn	Asn	Ala	Ala	Leu	Leu	Leu	Leu	Lys	Pro	Ala	Ala	Glu	Trp	
			100					105					110			
gcg	gcg	gag	gac	tac	gcg	cgg	atc	atg	gcg	acc	aac	ctg	gag	tcg	tgc	384
Ala	Ala	Glu	Asp	Tyr	Ala	Arg	Ile	Met	Ala	Thr	Asn	Leu	Glu	Ser	Cys	
			115				120					125				
ttg	cac	atc	tcc	cag	ctc	gcg	cac	ccg	ctg	ctc	ctc	aac	gcc	tcc	gtc	432
Leu	His	Ile	Ser	Gln	Leu	Ala	His	Pro	Leu	Leu	Leu	Asn	Ala	Ser	Val	
	130					135						140				
gcc	gga	ggg	gcg	agc	atc	gtc	aac	gtc	tcc	tcc	atc	gcc	agc	gtc	ctt	480
Ala	Gly	Gly	Ala	Ser	Ile	Val	Asn	Val	Ser	Ser	Ile	Ala	Ser	Val	Leu	
	145				150				155						160	
ggc	ttc	ccg	cag	gaa	gtt	atg	tac	agc	gtc	acc	aaa	gga	gga	ctg	aat	528
Gly	Phe	Pro	Gln	Glu	Val	Met	Tyr	Ser	Val	Thr	Lys	Gly	Gly	Leu	Asn	
				165					170					175		
cag	atg	acg	aga	agt	cta	gct	gtg	gag	tgg	gcc	tgc	gat	agg	atc	cgt	576
Gln	Met	Thr	Arg	Ser	Leu	Ala	Val	Glu	Trp	Ala	Cys	Asp	Arg	Ile	Arg	
			180					185					190			
gtg	aac	tgc	gtc	gcg	ccg	ggc	gtg	atc	atg	acg	gac	atg	ggg	aaa	gag	624
Val	Asn	Cys	Val	Ala	Pro	Gly	Val	Ile	Met	Thr	Asp	Met	Gly	Lys	Glu	
		195					200					205				
cta	ccg	gcg	gcg	ttg	gtg	gag	cag	gag	cgg	tca	cgc	atc	ccg	ctg	cgg	672
Leu	Pro	Ala	Ala	Leu	Val	Glu	Gln	Glu	Arg	Ser	Arg	Ile	Pro	Leu	Arg	
	210					215					220					
cgg	acc	ggc	gag	ccg	gag	gag	gtg	gcg	tcc	ctg	gtg	tcg	ttc	ctc	tgc	720
Arg	Thr	Gly	Glu	Pro	Glu	Glu	Val	Ala	Ser	Leu	Val	Ser	Phe	Leu	Cys	
	225				230					235					240	
atg	ccg	gcg	gcg	tcc	tac	gtc	acc	ggg	cag	gtc	atc	ttc	gtc	gac	ggc	768
Met	Pro	Ala	Ala	Ser	Tyr	Val	Thr	Gly	Gln	Val	Ile	Phe	Val	Asp	Gly	
				245					250					255		
ggc	cgg	acc	att	agt	ggc	gcc	tga									792
Gly	Arg	Thr	Ile	Ser	Gly	Ala										
			260													

&lt;210&gt; 3624

&lt;211&gt; 263

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3624

Met	Ala	Pro	Gly	Gly	Ser	Gly	Glu	Arg	Trp	Ser	Leu	Ala	Gly	Ala	Thr	
1				5					10					15		
Ala	Leu	Val	Thr	Gly	Gly	Ser	Lys	Gly	Ile	Gly	Gln	Ala	Val	Val	Glu	
			20					25					30			
Glu	Leu	Ala	Arg	Leu	Gly	Ala	Arg	Val	His	Thr	Cys	Ala	Arg	Ser	Ala	
		35					40					45				
Ala	Asp	Leu	Glu	Glu	Cys	Arg	Arg	Arg	Trp	Ala	Glu	Lys	Gly	Leu	Arg	
	50					55					60					

## PhoenixTemp32470.tmp.txt

Val Thr Val Ser Val Cys Asp Val Ala Val Arg Ala Asp Arg Glu Arg  
 65 70 75 80  
 Leu Val Leu Asp Thr Val Ser Ala Ala Phe Asp Gly Lys Leu Asp Ile  
 85 90 95  
 Leu Val Asn Asn Ala Ala Leu Leu Leu Lys Pro Ala Ala Glu Trp  
 100 105 110  
 Ala Ala Glu Asp Tyr Ala Arg Ile Met Ala Thr Asn Leu Glu Ser Cys  
 115 120 125  
 Leu His Ile Ser Gln Leu Ala His Pro Leu Leu Leu Asn Ala Ser Val  
 130 135 140  
 Ala Gly Gly Ala Ser Ile Val Asn Val Ser Ser Ile Ala Ser Val Leu  
 145 150 155 160  
 Gly Phe Pro Gln Glu Val Met Tyr Ser Val Thr Lys Gly Gly Leu Asn  
 165 170 175  
 Gln Met Thr Arg Ser Leu Ala Val Glu Trp Ala Cys Asp Arg Ile Arg  
 180 185 190  
 Val Asn Cys Val Ala Pro Gly Val Ile Met Thr Asp Met Gly Lys Glu  
 195 200 205  
 Leu Pro Ala Ala Leu Val Glu Gln Glu Arg Ser Arg Ile Pro Leu Arg  
 210 215 220  
 Arg Thr Gly Glu Pro Glu Glu Val Ala Ser Leu Val Ser Phe Leu Cys  
 225 230 235 240  
 Met Pro Ala Ala Ser Tyr Val Thr Gly Gln Val Ile Phe Val Asp Gly  
 245 250 255  
 Gly Arg Thr Ile Ser Gly Ala  
 260

&lt;210&gt; 3625

&lt;211&gt; 957

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(957)

&lt;400&gt; 3625

atg gcc acc gcc gcc gcc acc gca gca gca gca gca gtc tcc tcc ccg	48
Met Ala Thr Ala Ala Ala Thr Ala Ala Ala Ala Ala Val Ser Ser Pro	
1 5 10 15	
gct gcg cgt gga gca gcc ggg gcc gcc gcc tcc cgc cgg ggg ttc	96
Ala Ala Arg Gly Ala Ala Gly Ala Ala Ala Ser Arg Arg Gly Phe	
20 25 30	
gtc acg ttt ggt gga ggc gcc gcc cgc ttc tct ccc acg ctg cgg tcc	144
Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser	
35 40 45	
ggc cgt ggg ttc tct ggt gtg caa acc cat gtt gct gct gtt gaa caa	192
Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln	
50 55 60	
gca gtt gta aaa gat gct acc aag ctg gaa gct cca gtt gtt gtt gtt	240
Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val	
65 70 75 80	
aca ggt gca tct aga ggg att ggt aag gca act gct cta gcc ctt gga	288
Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly	
85 90 95	
aaa gca gga tgc aag gtt ctg gta aac tat gcc cgg tcc tcg aaa gag	336
Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Lys Glu	
100 105 110	
gct gaa gag gtc tcc aaa gag att gaa gca tct ggt ggt gag gct atc	384
Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile	
115 120 125	
acc ttc gga gga gat gtt tca aaa gaa gct gat gta gag tct atg atg	432
Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met	
130 135 140	
aaa gca gct cta gat aaa tgg gga aca ata gat gtg ctg gta aat aat	480
Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn	
145 150 155 160	
gca gga atc aca cgg gac aca ttg ttg atg aga atg aag aaa tca cag	528
Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln	

## PhoenixTemp32470.tmp.txt

165	170	175	
ttg caa gat gtg att gat ttg aat ctt aca ggc gtt ttc ctt tgc acg	576		
Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr			
180	185	190	
cag gct gca aca aaa gta atg atg aag aag aaa aag gga aga att atc	624		
Gln Ala Ala Thr Lys Val Met Met Lys Lys Lys Lys Gly Arg Ile Ile			
195	200	205	
aat ata gca tcg gtt gtt ggt ctt act ggt aat gct gga caa gct aat	672		
Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn			
210	215	220	
tat gct gct gcc aag gct ggg gtt att ggg ttc aca aaa aca gtt gct	720		
Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala			
225	230	235	
agg gag tat gcc agc aga aat att aat gca aac gtt atc gct cct gga	768		
Arg Glu Tyr Ala Ser Arg Asn Ile Asn Ala Asn Val Ile Ala Pro Gly			
245	250	255	
ttt att gct tca gat atg act gct gaa ctt ggt gaa gag tta gag aag	816		
Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys			
260	265	270	
aaa att ctg tca act att cct tta ggg cgc tat ggt cgg cca gag gat	864		
Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Arg Pro Glu Asp			
275	280	285	
gta gcg ggc ctg gtg gaa ttc tta gcc ctc agc cct gct gca agc tac	912		
Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser Tyr			
290	295	300	
atc act gga cag gtc ctc acc atc gat gga gga atg gta atg taa	957		
Ile Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met			
305	310	315	

<210> 3626  
 <211> 318  
 <212> PRT  
 <213> Zea mays

<400> 3626

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20 25 30	
Val Thr Phe Gly Gly Gly Ala Ala Arg Phe Ser Pro Thr Leu Arg Ser	
35 40 45	
Gly Arg Gly Phe Ser Gly Val Gln Thr His Val Ala Ala Val Glu Gln	
50 55 60	
Ala Val Val Lys Asp Ala Thr Lys Leu Glu Ala Pro Val Val Val Val	
65 70 75 80	
Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Thr Ala Leu Ala Leu Gly	
85 90 95	
Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ser Lys Glu	
100 105 110	
Ala Glu Glu Val Ser Lys Glu Ile Glu Ala Ser Gly Gly Glu Ala Ile	
115 120 125	
Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Glu Ser Met Met	
130 135 140	
Lys Ala Ala Leu Asp Lys Trp Gly Thr Ile Asp Val Leu Val Asn Asn	
145 150 155 160	
Ala Gly Ile Thr Arg Asp Thr Leu Leu Met Arg Met Lys Lys Ser Gln	
165 170 175	
Trp Gln Asp Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys Thr	
180 185 190	
Gln Ala Ala Thr Lys Val Met Met Lys Lys Lys Lys Gly Arg Ile Ile	
195 200 205	
Asn Ile Ala Ser Val Val Gly Leu Thr Gly Asn Ala Gly Gln Ala Asn	
210 215 220	
Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Thr Lys Thr Val Ala	
225 230 235 240	
Arg Glu Tyr Ala Ser Arg Asn Ile Asn Ala Asn Val Ile Ala Pro Gly	
245 250 255	
Phe Ile Ala Ser Asp Met Thr Ala Glu Leu Gly Glu Glu Leu Glu Lys	
260 265 270	

## PhoenixTemp32470.tmp.txt

Lys Ile Leu Ser Thr Ile Pro Leu Gly Arg Tyr Gly Arg Pro Glu Asp  
 275 280 285  
 Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser Tyr  
 290 295 300  
 Ile Thr Gly Gln Val Leu Thr Ile Asp Gly Gly Met Val Met  
 305 310 315

<210> 3627  
 <211> 762  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(762)

<400> 3627  
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 Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr  
 1 5 10 15  
 gcg tcc acg cag ggg atc ggc ctc gcc atc gcc gag cgc ctc ggc ctg 96  
 Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu  
 20 25 30  
 gag ggc gcc gcc gtc gtc gtc tcc cgc aag cag aag aac gtg gac 144  
 Glu Gly Ala Val Val Val Ser Arg Lys Gln Lys Asn Val Asp  
 35 40 45  
 gag gcc gtg gag ggg ctc aag gcc aag ggg atc acc gtg gtg ggc gcc 192  
 Glu Ala Val Glu Gly Leu Lys Ala Lys Gly Ile Thr Val Val Gly Ala  
 50 55 60  
 gtc tgc cac gta tcc gac gca cag caa cgc aag aac ctc gtc gag acg 240  
 Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Asn Leu Val Glu Thr  
 65 70 75 80  
 gcc gtc aag aac ttt ggg cac att gat att ctt gtc tcc aac gct gct 288  
 Ala Val Lys Asn Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala  
 85 90 95  
 gca aat cct act gtg aat gtc ata ctt gaa atg aaa gag gtt gtt ctc 336  
 Ala Asn Pro Thr Val Asn Val Ile Leu Glu Met Lys Glu Val Val Leu  
 100 105 110  
 gat aag ttg tgg gat att aac gtc aag gct tct att ctt ctt att cag 384  
 Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Leu Ile Gln  
 115 120 125  
 gat gct gct ccc cac cta cga gca agg tca tct gtg atc ctt att tct 432  
 Asp Ala Ala Pro His Leu Arg Ala Arg Ser Ser Val Ile Leu Ile Ser  
 130 135 140  
 tca att gct ggt tac aat cct gag cac gga ttg aca atg tat ggt gtt 480  
 Ser Ile Ala Gly Tyr Asn Pro Glu His Gly Leu Thr Met Tyr Gly Val  
 145 150 155 160  
 aca aag acc gct ctc ttt ggt ctc aca aag gct ctt gct ggt gag atg 528  
 Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met  
 165 170 175  
 gga ccc gat att cgt gtt aac tgt ata gcc cct ggt ttt gtt ccg aca 576  
 Gly Pro Asp Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr  
 180 185 190  
 cgg ttt gct agt ttc ttc gta gac aac gag acc att agg aaa aag ctt 624  
 Arg Phe Ala Ser Phe Phe Val Asp Asn Glu Thr Ile Arg Lys Lys Leu  
 195 200 205  
 aac gag agg act atg ctt aag aga ttg ggt tcc gtg gaa gat atg gcg 672  
 Asn Glu Arg Thr Met Leu Lys Arg Leu Gly Ser Val Glu Asp Met Ala  
 210 215 220  
 gca gct gcc gca ttc ctg gca tct gac gat gca tca ttc atc aca gct 720  
 Ala Ala Ala Ala Phe Leu Ala Ser Asp Ala Ser Phe Ile Thr Ala  
 225 230 235 240  
 gaa acc att gtt gtt gct gga ggg gtg ccg tcg aga ttg taa 762  
 Glu Thr Ile Val Val Ala Gly Gly Val Pro Ser Arg Leu  
 245 250

<210> 3628  
 <211> 253  
 <212> PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3628

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Met Asp Val Lys Cys Arg Arg Leu Glu Gly Lys Val Ala Val Val Thr
1      5      10      15
Ala Ser Thr Gln Gly Ile Gly Leu Ala Ile Ala Glu Arg Leu Gly Leu
20      25      30
Glu Gly Ala Val Val Val Ser Arg Lys Gln Lys Asn Val Asp
35      40      45
Glu Ala Val Glu Gly Leu Lys Ala Lys Gly Ile Thr Val Val Gly Ala
50      55      60
Val Cys His Val Ser Asp Ala Gln Gln Arg Lys Asn Leu Val Glu Thr
65      70      75      80
Ala Val Lys Asn Phe Gly His Ile Asp Ile Leu Val Ser Asn Ala Ala
85      90      95
Ala Asn Pro Thr Val Asn Val Ile Leu Glu Met Lys Glu Val Val Leu
100      105      110
Asp Lys Leu Trp Asp Ile Asn Val Lys Ala Ser Ile Leu Ile Gln
115      120      125
Asp Ala Ala Pro His Leu Arg Ala Arg Ser Ser Val Ile Leu Ile Ser
130      135      140
Ser Ile Ala Gly Tyr Asn Pro Glu His Gly Leu Thr Met Tyr Gly Val
145      150      155      160
Thr Lys Thr Ala Leu Phe Gly Leu Thr Lys Ala Leu Ala Gly Glu Met
165      170      175
Gly Pro Asp Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Val Pro Thr
180      185      190
Arg Phe Ala Ser Phe Phe Val Asp Asn Glu Thr Ile Arg Lys Lys Leu
195      200      205
Asn Glu Arg Thr Met Leu Lys Arg Leu Gly Ser Val Glu Asp Met Ala
210      215      220
Ala Ala Ala Ala Phe Leu Ala Ser Asp Asp Ala Ser Phe Ile Thr Ala
225      230      235      240
Glu Thr Ile Val Val Ala Gly Gly Val Pro Ser Arg Leu
245      250

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&lt;210&gt; 3629

&lt;211&gt; 26

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 3629

atgtttatcc tgtattttca gaggga

26

&lt;210&gt; 3630

&lt;211&gt; 24

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 3630

ttagataaccg acgctaaccg tctc

24

&lt;210&gt; 3631

&lt;211&gt; 354

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; consensus sequence

&lt;220&gt;

&lt;221&gt; Variant

<222> (2)..(8)  
<223> Xaa in position 2 to 8 is any amino acid

<220>  
<221> Variant  
<222> (11)..(12)  
<223> Xaa in position 11 to 12 is any amino acid

<220>  
<221> Variant  
<222> (13)..(22)  
<223> Xaa in position 13 to 22 is any or no amino acid

<220>  
<221> Variant  
<222> (26)..(35)  
<223> Xaa in position 26 to 35 is any amino acid

<220>  
<221> Variant  
<222> (37)..(57)  
<223> Xaa in position 37 to 57 is any amino acid

<220>  
<221> Variant  
<222> (58)..(81)  
<223> Xaa in position 58 to 81 is any or no amino acid

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<221> Variant  
<222> (83)..(93)  
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<220>  
<221> Variant  
<222> (94)..(109)  
<223> Xaa in position 94 to 109 is any or no amino acid

<220>  
<221> Variant  
<222> (111)..(114)  
<223> Xaa in position 111 to 114 is any amino acid

<220>  
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<222> (118)..(136)  
<223> Xaa in position 118 to 136 is any amino acid

<220>  
<221> Variant  
<222> (137)..(149)  
<223> Xaa in position 137 to 149 is any or no amino acid

<220>  
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<222> (151)..(168)  
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<221> Variant  
<222> (169)..(189)  
<223> Xaa in position 169 to 189 is any or no amino acid

<220>  
<221> Variant  
<222> (191)..(191)  
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<221> Variant  
<222> (193)..(196)  
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<220>  
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<222> (198)..(208)  
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<220>  
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<222> (209)..(212)  
<223> Xaa in position 209 to 212 is any or no amino acid

<220>  
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<222> (214)..(216)  
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<220>  
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<222> (218)..(236)  
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<220>  
<221> Variant  
<222> (237)..(244)  
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<220>  
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<222> (246)..(248)  
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<220>  
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<222> (250)..(253)  
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<220>  
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<222> (280)..(325)  
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<220>  
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<222> (327)..(333)  
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<220>  
<221> Variant  
<222> (334)..(336)  
<223> Xaa in position 334 to 336 is any or no amino acid

<220>  
<221> Variant  
<222> (338)..(341)  
<223> Xaa in position 338 to 341 is any amino acid

<220>  
<221> Variant  
<222> (342)..(351)  
<223> Xaa in position 342 to 351 is any or no amino acid



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 3631

Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Gly Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Gly Ile Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55 60  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 65 70 75 80  
 Xaa Asp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 85 90 95  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa  
 100 105 110  
 Xaa Xaa Asn Ala Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 115 120 125  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 130 135 140  
 Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 145 150 155 160  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 165 170 175  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Ile  
 180 185 190  
 Xaa Xaa Xaa Xaa Ser Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 195 200 205  
 Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 210 215 220  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 225 230 235 240  
 Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Thr Xaa Xaa  
 245 250 255  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 260 265 270  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 275 280 285  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 290 295 300  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 305 310 315 320  
 Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 325 330 335  
 Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp  
 340 345 350  
 Gly Gly

&lt;210&gt; 3632

&lt;211&gt; 258

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(258)

&lt;400&gt; 3632

atg gct cgc gca gga ggg ata aca aac gca gtg aac gtg gga atc gcg	48
Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala	
1 5 10 15	
gtg caa gcc gat tgg gag aac cgc gaa ttc atc tct cac att tct ctc	96
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu	
20 25 30	
aac gtt cat cgc ctc ttc gac ttc ctt gtc caa ttc gag gct acg acg	144
Asn Val His Arg Leu Phe Asp Phe Leu Val Gln Phe Glu Ala Thr Thr	
35 40 45	
aag agc aag ttg gcg tct ttg aat gag aag ctg gat gtg ttg gag cgg	192
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Val Leu Glu Arg	

## PhoenixTemp32470.tmp.txt

```

      50      55      60
agg ttg gag ctg ctt gaa gtt caa gtg ggc aat gct tcg gct aat cct      240
Arg Leu Glu Leu Leu Glu Val Gln Val Gly Asn Ala Ser Ala Asn Pro
      65      70      75      80
tct ctt ttt gcc act tga
Ser Leu Phe Ala Thr
      85

```

<210> 3633  
 <211> 85  
 <212> PRT  
 <213> Glycine max

```

<400> 3633
Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala
1      5      10      15
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu
      20      25      30
Asn Val His Arg Leu Phe Asp Phe Leu Val Gln Phe Glu Ala Thr Thr
      35      40      45
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Val Leu Glu Arg
      50      55      60
Arg Leu Glu Leu Leu Glu Val Gln Val Gly Asn Ala Ser Ala Asn Pro
65      70      75      80
Ser Leu Phe Ala Thr
      85

```

<210> 3634  
 <211> 414  
 <212> DNA  
 <213> Zea mays subsp. mays

<220>  
 <221> CDS  
 <222> (61)..(297)

```

<400> 3634
cggtgtgctgg tggaggaaga agcagcgcag caggtggcag ggatgggtcg cggcggcggg      60

atg ggg aac cca gtc aac gtg ggc atc gcg gtg cag gcg gac tgg gag      108
Met Gly Asn Pro Val Asn Val Gly Ile Ala Val Gln Ala Asp Trp Glu
1      5      10      15
aac cgc gag ttc atc tcc aac atc tcc ctc aac gtc cga cgc ctc ttc      156
Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu Asn Val Arg Arg Leu Phe
      20      25      30
gac ttc ctc ctc aga ttc gaa gct acg acg aag agc aag ctg gca agt      204
Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr Lys Ser Lys Leu Ala Ser
      35      40      45
ttg aac gag aag ctg gac atc cta gag cgg aag ctg gag gtg ctt gaa      252
Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg Lys Leu Glu Val Leu Glu
      50      55      60
gtc caa gtg ggc agc gcg acg acc aac cct tcc gtc ttc aac taggaggggc      304
Val Gln Val Gly Ser Ala Thr Thr Asn Pro Ser Val Phe Asn
      65      70      75
gggtttatat gtttaaataa ataaatgtag gtatgaatgt tgcttgtagc aacgaattct      364

ggtcgctatc tatcgtgtag tgtgttgtgg aggatgttat tattaatgtg      414

```

<210> 3635  
 <211> 78  
 <212> PRT  
 <213> Zea mays subsp. mays

```

<400> 3635
Met Gly Asn Pro Val Asn Val Gly Ile Ala Val Gln Ala Asp Trp Glu

```

1	Asn	Arg	Glu	Phe	Ile	Ser	Asn	Ile	Ser	Leu	Asn	Val	Arg	Arg	Leu	Phe
				20					25					30		
	Asp	Phe	Leu	Leu	Arg	Phe	Glu	Ala	Thr	Thr	Lys	Ser	Lys	Leu	Ala	Ser
			35					40					45			
	Leu	Asn	Glu	Lys	Leu	Asp	Ile	Leu	Glu	Arg	Lys	Leu	Glu	Val	Leu	Glu
		50					55					60				
	Val	Gln	Val	Gly	Ser	Ala	Thr	Thr	Asn	Pro	Ser	Val	Phe	Asn		
65					70						75					

<400> 3636  
acagttttatt tgggtgctggt gctgggtggag gaagaagcag cgcagcaggt ggcaggg 57

tcc gtc ttc aac taggaatcgc gggtttatat gcttgtagca acgaattctg 349  
Ser Val Phe Asn

aaagatgtgc agaatcg 426

<400> 3637  
Met Gly Arg Gly Gly Gly Met Gly Asn Pro Val Asn Val Gly Ile Ala  
1 5 10 15  
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu  
20 25 30  
Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr  
35 40 45  
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg  
50 55 60  
Lys Leu Glu Met Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro  
65 70 75 80  
Ser Val Phe Asn

## PhoenixTemp32470.tmp.txt

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(267)

&lt;400&gt; 3638

atg gct cgc gcg ggg caa ggg ggc ggg atg ggg agc gcg gtg aac gtc	48
Met Ala Arg Ala Gly Gln Gly Gly Gly Met Gly Ser Ala Val Asn Val	
1 5 10 15	
ggg atc gcg gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac	96
Gly Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn	
20 25 30	
atc tcc ctc aac gtc cgc cgc ctc ttc gac ttc ctc ctc cga ttc gag	144
Ile Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu	
35 40 45	
gcc acg acg aag agc aag ctg gcg tcg ctg aac gag aaa cta gac agc	192
Ala Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ser	
50 55 60	
cta gag cgg aag ctg gag gtg ctg gag gtc caa gtg agc agc gcc acc	240
Leu Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr	
65 70 75 80	
acc aac ccc tcc gtt ttc aac aac tag	267
Thr Asn Pro Ser Val Phe Asn Asn	
85	

&lt;210&gt; 3639

&lt;211&gt; 88

&lt;212&gt; PRT

&lt;213&gt; Triticum aestivum

&lt;400&gt; 3639

Met Ala Arg Ala Gly Gln Gly Gly Gly Met Gly Ser Ala Val Asn Val	
1 5 10 15	
Gly Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn	
20 25 30	
Ile Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu	
35 40 45	
Ala Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ser	
50 55 60	
Leu Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr	
65 70 75 80	
Thr Asn Pro Ser Val Phe Asn Asn	
85	

&lt;210&gt; 3640

&lt;211&gt; 358

&lt;212&gt; DNA

&lt;213&gt; Gossypium hirsutum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (45)..(302)

&lt;400&gt; 3640

gatctgaaaa atcgcatct ctttagggga aaaaagggga agaa atg gca aga gca	56
Met Ala Arg Ala	
1	
gga ggg ata acg aac gcc gtt aac gta ggg ata gca gtc caa gcc gat	104
Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala Val Gln Ala Asp	
5 10 15 20	
tgg gag aat cgc gaa ttc atc tct cac att tcc ctc aat gtt cgt cgc	152
Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu Asn Val Arg Arg	
25 30 35	
ctc ttt gaa ttt ctc ctc caa ttc gag gct aca acg aag agc aaa tta	200
Leu Phe Glu Phe Leu Leu Gln Phe Glu Ala Thr Thr Lys Ser Lys Leu	
40 45 50	
gca tcc ttg aac gag aaa ctg gac acc ctg gaa cgt cgt ttg gag ctt	248

## PhoenixTemp32470.tmp.txt

Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg Arg Leu Glu Leu  
 55 60 65  
 ctt gaa gtt caa gtt gga act gcg tcc gct aac cct tct ctt ttc agt 296  
 Leu Glu Val Gln Val Gly Thr Ala Ser Ala Asn Pro Ser Leu Phe Ser  
 70 75 80  
 acg tgattcatat ttaaaagttg tatttgtttc catatctttg tcgggatttt 349  
 Thr  
 85  
 gttcctctc 358

<210> 3641  
 <211> 85  
 <212> PRT  
 <213> Gossypium hirsutum

<400> 3641  
 Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala  
 1 5 10 15  
 Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
 20 25 30  
 Asn Val Arg Arg Leu Phe Glu Phe Leu Leu Gln Phe Glu Ala Thr Thr  
 35 40 45  
 Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg  
 50 55 60  
 Arg Leu Glu Leu Leu Glu Val Gln Val Gly Thr Ala Ser Ala Asn Pro  
 65 70 75 80  
 Ser Leu Phe Ser Thr  
 85

<210> 3642  
 <211> 231  
 <212> DNA  
 <213> Drosophila melanogaster

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 3642  
 atg agt ggg gct cac aga gag gcg atc caa aag cag atc cac cag gac 48  
 Met Ser Gly Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp  
 1 5 10 15  
 tgg gcg aac agg gag tat atc gaa gtg ata act gcc agc ata aag aga 96  
 Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg  
 20 25 30  
 atc acc gac ttt ctg aac tct ttc gat atg tcc tgt cgc tcc cgt ctg 144  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu  
 35 40 45  
 gcg gtg ctg aac gaa aaa cta acg atc ctg gag cgg cgc ata gac tat 192  
 Ala Val Leu Asn Glu Lys Leu Thr Ile Leu Glu Arg Arg Ile Asp Tyr  
 50 55 60  
 ctg gag gcg tgc gtc gcc cag ggt gaa aca tta acg taa 231  
 Leu Glu Ala Cys Val Ala Gln Gly Glu Thr Leu Thr  
 65 70 75

<210> 3643  
 <211> 76  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 3643  
 Met Ser Gly Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp  
 1 5 10 15  
 Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg  
 20 25 30  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu  
 35 40 45

Ala Val Leu Asn Glu Lys Leu Thr Ile Leu Glu Arg Ile Asp Tyr  
 50 55 60  
 Leu Glu Ala Cys Val Ala Gln Gly Glu Thr Leu Thr  
 65 70 75

<210> 3644  
 <211> 234  
 <212> DNA  
 <213> Strongylocentrotus purpuratus

<220>  
 <221> CDS  
 <222> (1)..(234)

<400> 3644  
 atg tct cga cca atg cca caa tcc tcc gtt cgg aat caa att caa gaa 48  
 Met Ser Arg Pro Met Pro Gln Ser Ser Val Arg Asn Gln Ile Gln Glu  
 1 5 10 15  
 gac tgg gcg aac aga gag tac ata gaa att atc aca acg aat att aaa 96  
 Asp Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Thr Thr Asn Ile Lys  
 20 25 30  
 aag ata gcg gat ttt ctc aac tct ttt gat aca tca tgc aga tca aga 144  
 Lys Ile Ala Asp Phe Leu Asn Ser Phe Asp Thr Ser Cys Arg Ser Arg  
 35 40 45  
 ctt gcc ata ttg aat gaa aaa tta aca gga ctt gag aga agg ata gag 192  
 Leu Ala Ile Leu Asn Glu Lys Leu Thr Gly Leu Glu Arg Arg Ile Glu  
 50 55 60  
 tac ctt gaa gct aga gta aca aga ggg gac aca ctg gtc tga 234  
 Tyr Leu Glu Ala Arg Val Thr Arg Gly Asp Thr Leu Val  
 65 70 75

<210> 3645  
 <211> 77  
 <212> PRT  
 <213> Strongylocentrotus purpuratus

<400> 3645  
 Met Ser Arg Pro Met Pro Gln Ser Ser Val Arg Asn Gln Ile Gln Glu  
 1 5 10 15  
 Asp Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Thr Thr Asn Ile Lys  
 20 25 30  
 Lys Ile Ala Asp Phe Leu Asn Ser Phe Asp Thr Ser Cys Arg Ser Arg  
 35 40 45  
 Leu Ala Ile Leu Asn Glu Lys Leu Thr Gly Leu Glu Arg Arg Ile Glu  
 50 55 60  
 Tyr Leu Glu Ala Arg Val Thr Arg Gly Asp Thr Leu Val  
 65 70 75

<210> 3646  
 <211> 384  
 <212> DNA  
 <213> Nasonia vitripennis

<220>  
 <221> CDS  
 <222> (56)..(286)

<400> 3646  
 gcttgtcaaa agaaaacgca aattgaaaga aaaagtacct cttactgtt cgaaa atg 58  
 Met  
 1  
 tcg act gga cac aga gaa gcg att caa aag cag ata caa caa gat tgg 106  
 Ser Thr Gly His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp Trp  
 5 10 15  
 gca aat cga gag tac att gaa gtt atc acg ggc agt att aaa aaa atc 154  
 Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Gly Ser Ile Lys Lys Ile  
 20 25 30  
 act gat ttt ctt aat tct ttt gat atg tct tgt aga tcc cga tta gct 202  
 Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu Ala

## PhoenixTemp32470.tmp.txt

```

      35              40              45
gtt cta aac gaa aag ctg acc aca ttg gaa cga aga att gaa tat tta      250
Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Glu Tyr Leu
      50              55              60              65
gaa gca tgc gtt aca aaa ggc gaa aca ctt aca tagataatga gtttgccgac      303
Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Thr
      70              75
gagtatgttc tatttattct acgctttttt acttgattca ttgtacataa ccataggttt      363

caataactaa ttaaattcaa a      384

```

<210> 3647  
 <211> 76  
 <212> PRT  
 <213> *Nasonia vitripennis*

```

<400> 3647
Met Ser Thr Gly His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp
1              5              10              15
Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Gly Ser Ile Lys Lys
      20              25              30
Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu
      35              40              45
Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Glu Tyr
      50              55              60
Leu Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Thr
65              70              75

```

<210> 3648  
 <211> 228  
 <212> DNA  
 <213> *Anopheles gambiae* str. PEST

<220>  
 <221> CDS  
 <222> (1)..(228)

```

<400> 3648
atg gat gcc cat cgg gaa gcg atc cag aaa cag ata cac cag gac tgg      48
Met Asp Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp Trp
1              5              10              15
gcc aat cga gag tac atc gaa gtg ata acg gcc agc atc aag cgt atc      96
Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg Ile
      20              25              30
acc gat ttc ctc aac tcc ttc gat atg tcc tgc cga tcc cgg ctg gcg      144
Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu Ala
      35              40              45
gtg ctg aac gag aag cta act acg ctg gaa cga cgg atc gac tat ctg      192
Val Leu Asn Glu Lys Leu Thr Leu Glu Arg Arg Ile Asp Tyr Leu
      50              55              60
gag gcg tgc gtc acg aaa ggc gaa acg ctg caa tag      228
Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Gln
65              70              75

```

<210> 3649  
 <211> 75  
 <212> PRT  
 <213> *Anopheles gambiae* str. PEST

```

<400> 3649
Met Asp Ala His Arg Glu Ala Ile Gln Lys Gln Ile His Gln Asp Trp
1              5              10              15
Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Ala Ser Ile Lys Arg Ile
      20              25              30
Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu Ala
      35              40              45

```

Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Asp Tyr Leu  
 50 55 60  
 Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Gln  
 65 70 75

<210> 3650  
 <211> 231  
 <212> DNA  
 <213> Tribolium castaneum

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 3650  
 atg gct gct cct aga gga gag aca gtc ccc aag ccc atc caa caa gac 48  
 Met Ala Ala Pro Arg Gly Glu Thr Val Pro Lys Pro Ile Gln Gln Asp  
 1 5 10 15  
 tgg gta aac cgc gaa tac atc gaa gtg ata acc gtc agc ata aaa aag 96  
 Trp Val Asn Arg Glu Tyr Ile Glu Val Ile Thr Val Ser Ile Lys Lys  
 20 25 30  
 atc acc gat ttc ctc aat tct ttc gac tta tct tgt cga tca aaa ctc 144  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Leu Ser Cys Arg Ser Lys Leu  
 35 40 45  
 gcc gtt tta aac gaa aag ttg aca act ctc gag cga aag atc gac tat 192  
 Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Lys Ile Asp Tyr  
 50 55 60  
 ttg gaa gct tgt gtc acc aaa ggg gaa acc ttg aca taa 231  
 Leu Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Thr  
 65 70 75

<210> 3651  
 <211> 76  
 <212> PRT  
 <213> Tribolium castaneum

<400> 3651  
 Met Ala Ala Pro Arg Gly Glu Thr Val Pro Lys Pro Ile Gln Gln Asp  
 1 5 10 15  
 Trp Val Asn Arg Glu Tyr Ile Glu Val Ile Thr Val Ser Ile Lys Lys  
 20 25 30  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Leu Ser Cys Arg Ser Lys Leu  
 35 40 45  
 Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Lys Ile Asp Tyr  
 50 55 60  
 Leu Glu Ala Cys Val Thr Lys Gly Glu Thr Leu Thr  
 65 70 75

<210> 3652  
 <211> 948  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(948)

<400> 3652  
 atg gct cgc gcg ggc ggg cat ggg atg ggg aac ccg gtg aac gtg ggg 48  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 atc gcg gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc 96  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 tcc ctc aac gtc cgt cgc ctc ttc gac ttc ctc ctc cga ttc gaa gct 144  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45  
 act acg aag agc aaa ctt gcg tcc ttg aat gag aag ctg gac atc cta 192  
 Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu



## PhoenixTemp32470.tmp.txt

50	55	60		
gag cgg aaa ctg gag gtg ctt gag gtt caa gtg agc gca aca acc				240
Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr Thr				
65	70	75	80	
aat cca tcc gtt ttc aac tat tgc tca tca atg aat gaa tca atc aat				288
Asn Pro Ser Val Phe Asn Tyr Cys Ser Ser Met Asn Glu Ser Ile Asn				
85	90	95		
ggg aaa atg aat gag tta ttc gca gtg gca ggt agg gcg ggg gtg gcg				336
Gly Lys Met Asn Glu Leu Phe Ala Val Ala Gly Arg Ala Gly Val Ala				
100	105	110		
atg atg aat atg gtg tcg agc agc agc atc caa ccg ggg cag ata cat				384
Met Met Asn Met Val Ser Ser Ser Ser Ile Gln Pro Gly Gln Ile His				
115	120	125		
agc ata tgg cag cga cga caa gga ggt gag agt aga ggg aga tat gtg				432
Ser Ile Trp Gln Arg Arg Gln Gly Gly Glu Ser Arg Gly Arg Tyr Val				
130	135	140		
gtg atg agc agc ggc agc gtc agg aag agc agc agc agc agg agg agg				480
Val Met Ser Ser Gly Ser Val Arg Lys Ser Ser Ser Arg Arg Arg				
145	150	155	160	
gtg gtg gcg gtt atc cgg gcc gtg ggc gac ggc gca ggt gaa tcg acg				528
Val Val Ala Val Ile Arg Ala Val Gly Asp Gly Ala Gly Glu Ser Thr				
165	170	175		
agc ggc aag gac gag gag gag gag aag agg agt agt agt agt agt agt				576
Ser Gly Lys Asp Glu Glu Glu Glu Lys Arg Arg Arg Arg Arg Arg				
180	185	190		
gag cgg ttg gtg ggt gga ccg gag gac gcg acg ttc agc ggg gcg gac				624
Glu Arg Leu Val Gly Gly Pro Glu Asp Ala Thr Phe Ser Gly Ala Asp				
195	200	205		
ctg gcg gcg ctg ata agg agc aag tac ggg agg tcg tac gac gtg acg				672
Leu Ala Ala Leu Ile Arg Ser Lys Tyr Gly Arg Ser Tyr Asp Val Thr				
210	215	220		
ctg ata aag aag gag ttc atg ggg ccg aac ctg ctg gcc atg aac gtc				720
Leu Ile Lys Lys Glu Phe Met Gly Arg Asn Leu Leu Ala Met Asn Val				
225	230	235	240	
atg tgg aag tac cgg gag cag ccg tcc ttc ccg ctg acg gag gag gag				768
Met Trp Lys Tyr Arg Glu Gln Arg Ser Phe Pro Leu Thr Glu Glu Glu				
245	250	255		
tac ctg ctc cgc ctc gac gac gtc gcc gcc tcc ctc cgc tgc tgg ggc				816
Tyr Leu Leu Arg Leu Asp Asp Val Ala Ala Ser Leu Arg Cys Trp Gly				
260	265	270		
gcc gtc gcc cac gtc cgc tcc tcc ctc gcc aag ctc aag gac cgc ccc				864
Ala Val Ala His Val Arg Ser Ser Leu Ala Lys Leu Lys Asp Arg Pro				
275	280	285		
cgc atc ggc aag gcc gtc agc atc ttc atc gac atg ccc acc gac gac				912
Arg Ile Gly Lys Ala Val Ser Ile Phe Ile Asp Met Pro Thr Asp Asp				
290	295	300		
tcc ggc gcc cgc tcc aac gag tgg atc tac aaa taa				948
Ser Gly Ala Arg Ser Asn Glu Trp Ile Tyr Lys				
305	310	315		

&lt;210&gt; 3653

&lt;211&gt; 315

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa subsp

&lt;400&gt; 3653

Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly	
1	5
Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile	
	20
Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala	
	35
Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu	
	50
Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr Thr	
65	70
Asn Pro Ser Val Phe Asn Tyr Cys Ser Ser Met Asn Glu Ser Ile Asn	
	85
Gly Lys Met Asn Glu Leu Phe Ala Val Ala Gly Arg Ala Gly Val Ala	
	95

## PhoenixTemp32470.tmp.txt

```

      100      105      110
Met Met Asn Met Val Ser Ser Ser Ser Ile Gln Pro Gly Gln Ile His
      115      120      125
Ser Ile Trp Gln Arg Arg Gln Gly Gly Glu Ser Arg Gly Arg Tyr Val
      130      135      140
Val Met Ser Ser Gly Ser Val Arg Lys Ser Ser Ser Arg Arg Arg
145      150      155      160
Val Val Ala Val Ile Arg Ala Val Gly Asp Gly Ala Gly Glu Ser Thr
      165      170      175
Ser Gly Lys Asp Glu Glu Glu Glu Glu Lys Arg Arg Arg Glu Glu Leu
      180      185      190
Glu Arg Leu Val Gly Gly Pro Glu Asp Ala Thr Phe Ser Gly Ala Asp
      195      200      205
Leu Ala Ala Leu Ile Arg Ser Lys Tyr Gly Arg Ser Tyr Asp Val Thr
      210      215      220
Leu Ile Lys Lys Glu Phe Met Gly Arg Asn Leu Leu Ala Met Asn Val
225      230      235      240
Met Trp Lys Tyr Arg Glu Gln Arg Ser Phe Pro Leu Thr Glu Glu Glu
      245      250      255
Tyr Leu Leu Arg Leu Asp Asp Val Ala Ala Ser Leu Arg Cys Trp Gly
      260      265      270
Ala Val Ala His Val Arg Ser Ser Leu Ala Lys Leu Lys Asp Arg Pro
      275      280      285
Arg Ile Gly Lys Ala Val Ser Ile Phe Ile Asp Met Pro Thr Asp Asp
      290      295      300
Ser Gly Ala Arg Ser Asn Glu Trp Ile Tyr Lys
305      310      315

```

<210> 3654  
 <211> 258  
 <212> DNA  
 <213> Vitis vinifera

<220>  
 <221> CDS  
 <222> (1)..(258)

```

<400> 3654
atg gcg aga gcg ggt ggg atc acc aac gcg gtg aat gtg gga att gca      48
Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala
      1      5      10      15
gtg caa gca gat tgg gag aac cgg gaa ttc atc tct cac att tcc ctc      96
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu
      20      25      30
aat atc cgt cgc ctc ttc gaa ttc ctc gtc caa ttc gag gct aca aca      144
Asn Ile Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ala Thr Thr
      35      40      45
aag agc aaa ttg gca tca ttg aat gag aag ctt gat acg cta gag cgt      192
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg
      50      55      60
cgt cta gaa ttg ctt gaa gtt caa gtg ggt act gca tca tcc aac cca      240
Arg Leu Glu Leu Leu Glu Val Gln Val Gly Thr Ala Ser Ser Asn Pro
      65      70      75      80
tct ctt ttt gct aca tga
Ser Leu Phe Ala Thr
      85

```

<210> 3655  
 <211> 85  
 <212> PRT  
 <213> Vitis vinifera

```

<400> 3655
Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala
      1      5      10      15
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu
      20      25      30
Asn Ile Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ala Thr Thr
      35      40      45

```

## PhoenixTemp32470.tmp.txt

Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Thr Leu Glu Arg  
 50 55 60  
 Arg Leu Glu Leu Leu Glu Val Gln Val Gly Thr Ala Ser Ser Asn Pro  
 65 70 75 80  
 Ser Leu Phe Ala Thr  
 85

<210> 3656  
 <211> 231  
 <212> DNA  
 <213> *Triatoma infestans*

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 3656  
 atg gcc ggt gta cat aga gaa gca ata caa aaa caa atc caa cag gat 48  
 Met Ala Gly Val His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 tgg gca aat cgt gaa tat att gaa gta att act ggc agt atc aag aaa 96  
 Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Gly Ser Ile Lys Lys  
 20 25 30  
 ata aca gat ttt tta aat tca ttt gat atg tct tgc aga tct agg ttg 144  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu  
 35 40 45  
 gct gta ctg aat gaa aaa ttg act aca ctg gaa aga cgt att gaa tat 192  
 Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Glu Tyr  
 50 55 60  
 ctt gaa gca cgg gtt acg aaa gga gaa acc ctt act tga 231  
 Leu Glu Ala Arg Val Thr Lys Gly Glu Thr Leu Thr  
 65 70 75

<210> 3657  
 <211> 76  
 <212> PRT  
 <213> *Triatoma infestans*

<400> 3657  
 Met Ala Gly Val His Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 Trp Ala Asn Arg Glu Tyr Ile Glu Val Ile Thr Gly Ser Ile Lys Lys  
 20 25 30  
 Ile Thr Asp Phe Leu Asn Ser Phe Asp Met Ser Cys Arg Ser Arg Leu  
 35 40 45  
 Ala Val Leu Asn Glu Lys Leu Thr Thr Leu Glu Arg Arg Ile Glu Tyr  
 50 55 60  
 Leu Glu Ala Arg Val Thr Lys Gly Glu Thr Leu Thr  
 65 70 75

<210> 3658  
 <211> 240  
 <212> DNA  
 <213> *Physcomitrella patens*

<220>  
 <221> CDS  
 <222> (1)..(240)

<400> 3658  
 atg gcg aag aac ggg att aat aac agt gtc gcc gtc ggc att gct gta 48  
 Met Ala Lys Asn Gly Ile Asn Asn Ser Val Ala Val Gly Ile Ala Val  
 1 5 10 15  
 caa tct gac tgg gac aat cgc cat ttt tcg agc tcc ctg tcg ctg aac 96  
 Gln Ser Asp Trp Asp Asn Arg His Phe Ser Ser Ser Leu Ser Leu Asn  
 20 25 30  
 gtc cgg cgc ctt ttc gag ttc ctt ttg cag ttt gaa tcg tcc acc agg 144  
 Val Arg Arg Leu Phe Glu Phe Leu Leu Gln Phe Glu Ser Thr Arg  
 35 40 45

## PhoenixTemp32470.tmp.txt

agt aag cta gca acc ctg aac gag aag cta acg gtg ctg gag cgt cag 192  
 Ser Lys 50 Leu Ala Thr Leu Asn 55 Glu Lys Leu Thr Val 60 Leu Glu Arg Gln  
 ctg gag ttt cta gag gct cag ttt agc act gcc att aac cct gtc 237  
 Leu Glu Phe Leu Glu Ala 70 Gln Phe Ser Thr Ala 75 Ile Asn Pro Val  
 taa 240

<210> 3659  
 <211> 79  
 <212> PRT  
 <213> Physcomitrella patens

<400> 3659  
 Met Ala Lys Asn Gly Ile Asn Asn Ser Val Ala Val Gly Ile Ala Val  
 1 5 10 15  
 Gln Ser Asp Trp Asp Asn Arg His Phe Ser Ser Ser Leu Ser Leu Asn  
 20 25 30  
 Val Arg Arg Leu Phe Glu Phe Leu Leu Gln Phe Glu Ser Ser Thr Arg  
 35 40 45  
 Ser Lys Leu Ala Thr Leu Asn Glu Lys Leu Thr Val Leu Glu Arg Gln  
 50 55 60  
 Leu Glu Phe Leu Glu Ala Gln Phe Ser Thr Ala Ile Asn Pro Val  
 65 70 75

<210> 3660  
 <211> 231  
 <212> DNA  
 <213> Ixodes scapularis

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 3660  
 atg tct gtg tcg gaa aga gaa gcg atc cag aaa cag ata cag cag gac 48  
 Met Ser Val Ser Glu Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 tgg gcc aac cga gaa tac atc gaa ata atc agt gga agc atc aaa aag 96  
 Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ile Ser Gly Ser Ile Lys Lys  
 20 25 30  
 atc gca gac ttc ctg aca tca ttc gac atg tca tgc aga gca cga ctc 144  
 Ile Ala Asp Phe Leu Thr Ser Phe Asp Met Ser Cys Arg Ala Arg Leu  
 35 40 45  
 gca acc cta aac gaa aag ctt acg tcc ctg gaa aga aga ata gag tat 192  
 Ala Thr Leu Asn Glu Lys Leu Thr Ser Leu Glu Arg Arg Ile Glu Tyr  
 50 55 60  
 ttg gag gcc agg gtc aca aaa gga gaa acc ttg tcc tag 231  
 Leu Glu Ala Arg Val Thr Lys Gly Glu Thr Leu Ser  
 65 70 75

<210> 3661  
 <211> 76  
 <212> PRT  
 <213> Ixodes scapularis

<400> 3661  
 Met Ser Val Ser Glu Arg Glu Ala Ile Gln Lys Gln Ile Gln Gln Asp  
 1 5 10 15  
 Trp Ala Asn Arg Glu Tyr Ile Glu Ile Ser Gly Ser Ile Lys Lys  
 20 25 30  
 Ile Ala Asp Phe Leu Thr Ser Phe Asp Met Ser Cys Arg Ala Arg Leu  
 35 40 45  
 Ala Thr Leu Asn Glu Lys Leu Thr Ser Leu Glu Arg Arg Ile Glu Tyr  
 50 55 60  
 Leu Glu Ala Arg Val Thr Lys Gly Glu Thr Leu Ser  
 65 70 75

## PhoenixTemp32470.tmp.txt

<210> 3662  
 <211> 258  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> CDS  
 <222> (1)..(258)

```
<400> 3662
atg gcg aaa gct gga ggg atc acg aac gca gta aac gta gga atc gct      48
Met Ala Lys Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala
1      5      10      15
gtt caa gca gat tgg gag aat cga gaa ttt atc tca cat atc tct ctt      96
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu
20      25      30
aat gtt cgt cgt ctc ttc gaa ttc ctt gtt caa ttt gaa tca acc aca      144
Asn Val Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ser Thr Thr
35      40      45
aag agc aag ttg gct tct ttg aat gag aag ttg gat ctg ttg gaa cgt      192
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Leu Leu Glu Arg
50      55      60
cgc ttg gaa atg ctg gag gtg caa gta agt acc gcg aca gca aat cct      240
Arg Leu Glu Met Leu Glu Val Gln Val Ser Thr Ala Thr Ala Asn Pro
65      70      75      80
tct ctg ttt gcg acg tga
Ser Leu Phe Ala Thr
85
```

<210> 3663  
 <211> 85  
 <212> PRT  
 <213> Arabidopsis thaliana

```
<400> 3663
Met Ala Lys Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala
1      5      10      15
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu
20      25      30
Asn Val Arg Arg Leu Phe Glu Phe Leu Val Gln Phe Glu Ser Thr Thr
35      40      45
Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Leu Leu Glu Arg
50      55      60
Arg Leu Glu Met Leu Glu Val Gln Val Ser Thr Ala Thr Ala Asn Pro
65      70      75      80
Ser Leu Phe Ala Thr
85
```

<210> 3664  
 <211> 255  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(255)

```
<400> 3664
atg ggt cgc ggc ggc ggg atg ggg aac cca gtc aac gtg ggc atc gcg      48
Met Gly Arg Gly Gly Gly Met Gly Asn Pro Val Asn Val Gly Ile Ala
1      5      10      15
gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc tcc ctc      96
Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu
20      25      30
aac gtc cga cgc ctc ttc gac ttc ctc ctc aga ttc gaa gct acg acg      144
Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr
35      40      45
aag agc aag ctg gca agt ttg aac gag aag ctg gac atc cta gag cgg      192
```

## PhoenixTemp32470.tmp.txt

Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg  
 50 55 60  
 aag ctg gag gtg ctt gaa gtc caa gtg ggc agc gcg acc aac cct 240  
 Lys Leu Glu Val Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro  
 65 70 75 80  
 tcc gtc ttc aac tag 255  
 Ser Val Phe Asn

<210> 3665  
 <211> 84  
 <212> PRT  
 <213> Zea mays

<400> 3665  
 Met Gly Arg Gly Gly Gly Met Gly Asn Pro Val Asn Val Gly Ile Ala  
 1 5 10 15  
 Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile Ser Leu  
 20 25 30  
 Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala Thr Thr  
 35 40 45  
 Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu Glu Arg  
 50 55 60  
 Lys Leu Glu Val Leu Glu Val Gln Val Gly Ser Ala Thr Thr Asn Pro  
 65 70 75 80  
 Ser Val Phe Asn

<210> 3666  
 <211> 261  
 <212> DNA  
 <213> Oryza sativa subsp

<220>  
 <221> CDS  
 <222> (1)..(261)

<400> 3666  
 atg gct cgc gcg ggc ggg cat ggg atg ggg aac ccg gtg aac gtg ggg 48  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 atc gcg gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc 96  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 tcc ctc aac gtc cgt cgc ctc ttc gac ttc ctc ctc cga ttc gaa gct 144  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45  
 act acg aag agc aaa ctt gcg tcc ttg aat gag aag ctg gac atc cta 192  
 Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu  
 50 55 60  
 gag cgg aaa ctg gag gtg ctt gag gtt caa gtg agc agc gca aca acc 240  
 Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr Thr  
 65 70 75 80  
 aat cca tcc gtt ttc aac tag 261  
 Asn Pro Ser Val Phe Asn  
 85

<210> 3667  
 <211> 86  
 <212> PRT  
 <213> Oryza sativa subsp

<400> 3667  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45

## PhoenixTemp32470.tmp.txt

Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu  
 50 55 60  
 Glu Arg Lys Leu Glu Val Leu Glu Val Gln Val Ser Ser Ala Thr Thr  
 65 70 75 80  
 Asn Pro Ser Val Phe Asn  
 85

<210> 3668  
 <211> 231  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(231)

<400> 3668  
 atg gct cgc gcg ggc ggg cat ggg atg ggg aac ccg gtg aac gtg ggg 48  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 atc gcg gtg cag gcg gac tgg gag aac cgc gag ttc atc tcc aac atc 96  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 tcc ctc aac gtc cgt cgc ctc ttc gac ttc ctc ctc cga ttc gaa gct 144  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45  
 act acg aag agc aaa ctt gcg tcc ttg aat gag aag ctg gac atc cta 192  
 Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu  
 50 55 60  
 gag cgg aaa ctg gag gtg ctt gag gtt caa tgc cag tag 231  
 Glu Arg Lys Leu Glu Val Leu Glu Val Gln Cys Gln  
 65 70 75

<210> 3669  
 <211> 76  
 <212> PRT  
 <213> Oryza sativa

<400> 3669  
 Met Ala Arg Ala Gly Gly His Gly Met Gly Asn Pro Val Asn Val Gly  
 1 5 10 15  
 Ile Ala Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser Asn Ile  
 20 25 30  
 Ser Leu Asn Val Arg Arg Leu Phe Asp Phe Leu Leu Arg Phe Glu Ala  
 35 40 45  
 Thr Thr Lys Ser Lys Leu Ala Ser Leu Asn Glu Lys Leu Asp Ile Leu  
 50 55 60  
 Glu Arg Lys Leu Glu Val Leu Glu Val Gln Cys Gln  
 65 70 75

<210> 3670  
 <211> 258  
 <212> DNA  
 <213> GLYCINE MAX

<220>  
 <221> CDS  
 <222> (1)..(258)

<400> 3670  
 atg gct cgc gca gga ggg ata aca aac gca gtg aac gtg gga atc gca 48  
 Met Ala Arg Ala Gly Gly Ile Thr Asn Ala Val Asn Val Gly Ile Ala  
 1 5 10 15  
 gtg caa gcc gat tgg gag aac cgc gaa ttc atc tct cac att tct ctc 96  
 Val Gln Ala Asp Trp Glu Asn Arg Glu Phe Ile Ser His Ile Ser Leu  
 20 25 30  
 aac gtt cgt cgc ctc ttc gac ttc ctc gtc caa ttc gag gct acg acg 144  
 Asn Val Arg Arg Leu Phe Asp Phe Leu Val Gln Phe Glu Ala Thr Thr  
 35 40 45

## PhoenixTemp32470.tmp.txt

aag	agc	aag	ttg	gcg	tct	ttg	aat	gag	aag	ctg	gat	gtg	ttg	gag	cgg	192
Lys	Ser	Lys	Leu	Ala	Ser	Leu	Asn	Glu	Lys	Leu	Asp	Val	Leu	Glu	Arg	
	50					55				60						
agg	ttg	gag	ctg	ctt	gaa	gtt	caa	gtg	ggc	aat	gct	tcg	gct	aat	cct	240
Arg	Leu	Glu	Leu	Leu	Glu	Val	Gln	Val	Gly	Asn	Ala	Ser	Ala	Asn	Pro	
65					70				75						80	
tct	ctt	ttt	gcc	act	tga											258
Ser	Leu	Phe	Ala	Thr												
				85												

<210> 3671  
 <211> 85  
 <212> PRT  
 <213> GLYCINE MAX

<400> 3671																
Met	Ala	Arg	Ala	Gly	Gly	Ile	Thr	Asn	Ala	Val	Asn	Val	Gly	Ile	Ala	
1				5					10					15		
Val	Gln	Ala	Asp	Trp	Glu	Asn	Arg	Glu	Phe	Ile	Ser	His	Ile	Ser	Leu	
			20					25					30			
Asn	Val	Arg	Arg	Leu	Phe	Asp	Phe	Leu	Val	Gln	Phe	Glu	Ala	Thr	Thr	
			35				40					45				
Lys	Ser	Lys	Leu	Ala	Ser	Leu	Asn	Glu	Lys	Leu	Asp	Val	Leu	Glu	Arg	
	50					55					60					
Arg	Leu	Glu	Leu	Leu	Glu	Val	Gln	Val	Gly	Asn	Ala	Ser	Ala	Asn	Pro	
65					70				75						80	
Ser	Leu	Phe	Ala	Thr												
				85												

<210> 3672  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 3672	
atggctcgcg caggaggat aac	23

<210> 3673  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 3673	
tcaagtggca aaaagagaag	20

<210> 3674  
 <211> 76  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> consensus sequence

<220>  
 <221> Variant  
 <222> (2)..(12)  
 <223> Xaa in position 2 to 12 is any amino acid

<220>  
 <221> Variant  
 <222> (13)..(20)  
 <223> Xaa in position 13 to 20 is any or no amino acid



<220>  
 <221> Variant  
 <222> (22)..(22)  
 <223> Xaa in position 22 is any amino acid

<220>  
 <221> Variant  
 <222> (25)..(25)  
 <223> Xaa in position 25 is any amino acid

<220>  
 <221> Variant  
 <222> (29)..(29)  
 <223> Xaa in position 29 is any amino acid

<220>  
 <221> Variant  
 <222> (31)..(32)  
 <223> Xaa in position 31 to 32 is any amino acid

<220>  
 <221> Variant  
 <222> (34)..(42)  
 <223> Xaa in position 34 to 42 is any amino acid

<220>  
 <221> Variant  
 <222> (45)..(46)  
 <223> Xaa in position 45 to 46 is any amino acid

<220>  
 <221> Variant  
 <222> (48)..(52)  
 <223> Xaa in position 48 to 52 is any amino acid

<220>  
 <221> Variant  
 <222> (54)..(54)  
 <223> Xaa in position 54 is any amino acid

<220>  
 <221> Variant  
 <222> (57)..(57)  
 <223> Xaa in position 57 is any amino acid

<220>  
 <221> Variant  
 <222> (63)..(64)  
 <223> Xaa in position 63 to 64 is any amino acid

<220>  
 <221> Variant  
 <222> (68)..(69)  
 <223> Xaa in position 68 to 69 is any amino acid

<220>  
 <221> Variant  
 <222> (71)..(71)  
 <223> Xaa in position 71 is any amino acid

<220>  
 <221> Variant  
 <222> (74)..(75)  
 <223> Xaa in position 74 to 75 is any amino acid

<400> 3674  
 Met Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

PhoenixTemp32470.tmp.txt

Xaa	Xaa	Xaa	Xaa	Gln	Xaa	Asp	Trp	Xaa	Asn	Arg	Glu	Xaa	Ile	Xaa	Xaa
			20					25					30		
Ile	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Leu	Xaa	Xaa	Phe	Xaa
		35					40					45			
Xaa	Xaa	Xaa	Xaa	Ser	Xaa	Leu	Ala	Xaa	Leu	Asn	Glu	Lys	Leu	Xaa	Xaa
		50				55					60				
Leu	Glu	Arg	Xaa	Xaa	Glu	Xaa	Leu	Glu	Xaa	Xaa	Val				
65					70					75					

<210> 3675

<211> 59

<212> PRT

<213> Artificial sequence

<220>

<223> protein pattern

<220>

<221> Variant

<222> (2)..(2)

<223> Xaa in position 2 is any amino acid

<220>

<221> Variant

<222> (3)..(3)

<223> Xaa in position 3 is any or no amino acid

<220>

<221> Variant

<222> (5)..(5)

<223> Xaa in position 5 is any or no amino acid

<220>

<221> Variant

<222> (8)..(8)

<223> Xaa in position 8 is any amino acid

<220>

<221> Variant

<222> (12)..(12)

<223> Xaa in position 12 is Phe or Tyr

<220>

<221> Variant

<222> (14)..(14)

<223> Xaa in position 14 is Glu or Ser

<220>

<221> Variant

<222> (15)..(15)

<223> Xaa in position 15 is any amino acid

<220>

<221> Variant

<222> (17)..(17)

<223> Xaa in position 17 is Ser or Thr

<220>

<221> Variant

<222> (18)..(18)

<223> Xaa in position 18 is Ala, Gly, Leu or Val

<220>

<221> Variant

<222> (19)..(19)

<223> Xaa in position 19 is Asn or Ser

<220>

<221> Variant  
<222> (20)..(20)  
<223> Xaa in position 20 is Ile or Val

<220>  
<221> Variant  
<222> (21)..(22)  
<223> Xaa in position 21 to 22 is Lys or Arg

<220>  
<221> Variant  
<222> (23)..(23)  
<223> Xaa in position 23 is Ile or Leu

<220>  
<221> Variant  
<222> (24)..(24)  
<223> Xaa in position 24 is any amino acid

<220>  
<221> Variant  
<222> (25)..(25)  
<223> Xaa in position 25 is Asp or Glu

<220>  
<221> Variant  
<222> (28)..(28)  
<223> Xaa in position 28 is any amino acid

<220>  
<221> Variant  
<222> (29)..(29)  
<223> Xaa in position 29 is Gln, Arg or Ser

<220>  
<221> Variant  
<222> (31)..(31)  
<223> Xaa in position 31 is Asp or Glu

<220>  
<221> Variant  
<222> (32)..(32)  
<223> Xaa in position 32 is any amino acid

<220>  
<221> Variant  
<222> (33)..(33)  
<223> Xaa in position 33 is Ser or Thr

<220>  
<221> Variant  
<222> (34)..(34)  
<223> Xaa in position 34 is Cys or Thr

<220>  
<221> Variant  
<222> (35)..(35)  
<223> Xaa in position 35 is Lys or Arg

<220>  
<221> Variant  
<222> (37)..(37)  
<223> Xaa in position 37 is Lys or Arg

<220>  
<221> Variant  
<222> (40)..(40)  
<223> Xaa in position 40 is Ser or Val

<220>  
 <221> Variant  
 <222> (46)..(46)  
 <223> Xaa in position 46 is Asp or Thr

<220>  
 <221> Variant  
 <222> (47)..(47)  
 <223> Xaa in position 47 is any amino acid

<220>  
 <221> Variant  
 <222> (51)..(51)  
 <223> Xaa in position 51 is Lys or Arg

<220>  
 <221> Variant  
 <222> (52)..(52)  
 <223> Xaa in position 52 is Ile or Leu

<220>  
 <221> Variant  
 <222> (53)..(53)  
 <223> Xaa in position 53 is Asp or Glu

<220>  
 <221> Variant  
 <222> (54)..(54)  
 <223> Xaa in position 54 is any amino acid

<220>  
 <221> Variant  
 <222> (57)..(57)  
 <223> Xaa in position 57 is Ala or Val

<220>  
 <221> Variant  
 <222> (58)..(58)  
 <223> Xaa in position 58 is any amino acid

<220>  
 <221> Variant  
 <222> (59)..(59)  
 <223> Xaa in position 59 is Cys or Val

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 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Leu Xaa Xaa Phe Xaa Xaa  
 20 25 30  
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 50 55

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 <211> 2322  
 <212> DNA  
 <213> Saccharomyces cerevisiae

<220>  
 <221> CDS  
 <222> (1)..(2322)

<400> 3676  
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 Met Ser Arg Glu Ser Asn Asp Thr Ile Gln Ser Asp Thr Val Arg Ser  
 1 5 10 15  
 tcc tct aaa tca gac tat ttt aga atc cag cta aat aat caa gac tac 96  
 Page 3269

## PhoenixTemp32470.tmp.txt

Ser	Ser	Lys	Ser 20	Asp	Tyr	Phe	Arg	Ile 25	Gln	Leu	Asn	Asn	Gln 30	Asp	Tyr	
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Tyr	Met	Ser	Lys	Pro	Thr	Phe	Leu	Asp	Pro	Ser	His	Gly	Glu	Ser	Leu	
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Pro	Leu	Asn	Gln	Phe	Ser	Gln	Val	Pro	Asn	Ile	Arg	Val	Phe	Gly	Ala	
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Tyr	Met	Phe	Ile	Lys	Tyr	Asp	Gly	Gln	Ile	Thr	Asp	Thr	Ser	Thr	Leu	
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Asp	Lys	Leu	Gly	Asn	Leu	Asn	Phe	Val	Ala	Asp	Val	Ser	Val	Val	Lys	
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Arg	Asp	Gly	Lys	Ile	Phe	Gly	Lys	Lys	Phe	Glu	Ile	Tyr	Glu	Ser	His	
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Ile	Pro	Tyr	Leu	Leu	Gln	Trp	Thr	Ala	Asp	Phe	Asn	Leu	Phe	Gly	Cys	
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Ser	Trp	Ile	Asn	Val	Asp	Arg	Cys	Tyr	Phe	Arg	Ser	Pro	Val	Leu	Asn	
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## PhoenixTemp32470.tmp.txt

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gaa Glu	ggt Gly	gta Val 435	aaa Lys	gga Gly	agc Ser	aat Asn	ata Ile 440	aag Lys	tct Ser	cgg Arg	tct Ser	tat Tyr 445	tca Ser	tggt Trp	tta Leu	1344
ccg Pro	gaa Glu 450	agc Ser	att Ile	gcg Ala	tct Ser	ccg Pro 455	aaa Lys	gat Asp	tct Ser	act Thr	ata Ile 460	cta Leu	tta Leu	gat Asp	cat His	1392
caa Gln 465	aca Thr	aaa Lys	tat Tyr	cac His	aat Asn 470	acg Thr	ata Ile	aat Asn	ttt Phe 475	tca Ser	atg Met	gat Asp	tgt Cys	gct Ala 480	atg Met	1440
acg Thr	caa Gln	aat Asn	atg Met	gca Ala 485	agt Ser	aaa Lys	cga Arg	aaa Lys	ctt Leu 490	aga Arg	tca Ser	tct Ser	ggt Val	tct Ser 495	gct Ala	1488
aat Asn	aaa Lys	aca Thr	tcg Ser 500	ttg Leu	ctg Leu	tct Ser	cgg Arg	aaa Lys 505	aga Arg	aag Lys	aag Lys	ggt Val	atg Met 510	gct Ala	gcg Ala	1536
gga Gly	tta Leu	cg Arg 515	tat Tyr	gga Gly	aaa Lys	aga Arg	gcc Ala 520	ttt Phe	ggt Val	tat Tyr	ggt Gly	gag Glu 525	cct Pro	cct Pro	ttc Phe	1584
ggt Gly	tat Tyr 530	caa Gln	gat Asp	att Ile	ctg Leu	aat Asn 535	aaa Lys	ttg Leu	gaa Glu	gac Asp	gag Glu 540	gga Gly	ttc Phe	cca Pro	aaa Lys	1632
ata Ile 545	gac Asp	tat Tyr	aag Lys	gac Asp	cct Pro 550	ttc Phe	ttt Phe	tcg Ser	aat Asn	cca Pro 555	ggt Val	gat Asp	cta Leu	gaa Glu	aat Asn 560	1680
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aaa Lys	aga Arg	aaa Lys 660	aaa Lys	agt Ser	agc Ser	ggt Val	cac His	gat Asp 665	tct Ser	ctt Leu	act Thr	cat His	ctg Leu 670	aca Thr	ctt Leu	2016
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tct Ser	gag Glu	gat Asp	agt Ser	aca Thr 725	ttt Phe	cct Pro	act Thr	aaa Lys	att Ile 730	caa Gln	cat His	tgt Cys	att Ile 735	aac Asn	gaa Glu	2208
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act	gat	ttg	gta	tta	ctt	ctt	gat	cct	gat	att	ctt	tcc	ggt	ttc	gaa	2304

Thr Asp Leu Val Leu Leu Leu Asp Pro Asp Ile Leu Ser Gly Phe Glu  
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 Ile His Asn Phe Ser  
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2322

&lt;210&gt; 3677

&lt;211&gt; 773

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 3677

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 Tyr Met Ser Lys Pro Thr Phe Leu Asp Pro Ser His Gly Glu Ser Leu  
 35 40 45  
 Pro Leu Asn Gln Phe Ser Gln Val Pro Asn Ile Arg Val Phe Gly Ala  
 50 55 60  
 Leu Pro Thr Gly His Gln Val Leu Cys His Val His Gly Ile Leu Pro  
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 Tyr Met Phe Ile Lys Tyr Asp Gly Gln Ile Thr Asp Thr Ser Thr Leu  
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 180 185 190  
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 Tyr Val Ser Ser Ala Arg Asp Met Ile Asn Glu Leu Thr Met Gln Arg  
 305 310 315 320  
 Glu Glu Leu Ser Leu Lys Glu Tyr Lys Glu Pro Pro Glu Thr Lys Arg  
 325 330 335  
 His Val Ser Gly His Gln Trp Gln Ser Ser Gly Glu Phe Glu Ala Phe  
 340 345 350  
 Tyr Lys Lys Ala Gln His Lys Thr Ser Thr Phe Asp Gly Gln Ile Pro  
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 385 390 395 400  
 Glu Ile Asn Asn Asn Ser Met Gln Asp Lys Lys Asn Asp Asp Gln Val  
 405 410 415  
 Asn Ala Ser Phe Thr Glu Tyr Glu Ile Cys Gly Val Asp Asn Glu Asn  
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 Glu Gly Val Lys Gly Ser Asn Ile Lys Ser Arg Ser Tyr Ser Trp Leu  
 435 440 445  
 Pro Glu Ser Ile Ala Ser Pro Lys Asp Ser Thr Ile Leu Leu Asp His

## PhoenixTemp32470.tmp.txt

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 Asn Lys Thr Ser Leu Leu Ser Arg Lys Arg Lys Lys Val Met Ala Ala  
 500 505 510  
 Gly Leu Arg Tyr Gly Lys Arg Ala Phe Val Tyr Gly Glu Pro Pro Phe  
 515 520 525  
 Gly Tyr Gln Asp Ile Leu Asn Lys Leu Glu Asp Glu Gly Phe Pro Lys  
 530 535 540  
 Ile Asp Tyr Lys Asp Pro Phe Phe Ser Asn Pro Val Asp Leu Glu Asn  
 545 550 555  
 Lys Pro Tyr Ala Tyr Ala Gly Lys Arg Phe Glu Ile Ser Ser Thr His  
 565 570 575  
 Val Ser Thr Arg Ile Pro Val Gln Phe Gly Gly Glu Thr Val Ser Val  
 580 585 590  
 Tyr Asn Lys Pro Thr Phe Asp Met Phe Ser Ser Trp Lys Tyr Ala Leu  
 595 600 605  
 Lys Pro Pro Thr Tyr Asp Ala Val Gln Lys Trp Tyr Asn Lys Val Pro  
 610 615 620  
 Ser Met Gly Asn Lys Lys Thr Glu Ser Gln Ile Ser Met His Thr Pro  
 625 630 635  
 His Ser Lys Phe Leu Tyr Lys Phe Ala Ser Asp Val Ser Gly Lys Gln  
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 Lys Arg Lys Lys Ser Ser Val His Asp Ser Leu Thr His Leu Thr Leu  
 660 665 670  
 Glu Ile His Ala Asn Thr Arg Ser Asp Lys Ile Pro Asp Pro Ala Ile  
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 Asp Glu Val Ser Met Ile Ile Trp Cys Leu Glu Glu Thr Phe Pro  
 690 695 700  
 Leu Asp Leu Asp Ile Ala Tyr Glu Gly Ile Met Ile Val His Lys Ala  
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&lt;210&gt; 3678

&lt;211&gt; 4446

&lt;212&gt; DNA

&lt;213&gt; Candida glabrata CBS 138

&lt;220&gt;

&lt;221&gt; CDS

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&lt;400&gt; 3678

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Phe	Phe	Val	Lys	Tyr	Asp	Gly	Lys	Glu	Asp	Asp	Thr	Ser	Ile	Ile	Ile	



## PhoenixTemp32470.tmp.txt

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																145																													
tcg	ttg	tta	aac	cct	agc	tta	agt	gaa	cag	gtt	tgt	aat	att	att	agg		528																												
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Phe	Pro	Tyr	Leu	Leu	Lys	Phe	Thr	Ala	Asp	Phe	Asn	Leu	Phe	Ala	Cys																														
																195																													
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Ser	Trp	Ile	Asn	Phe	Lys	Val	Tyr	Tyr	Phe	Arg	Ala	Pro	Val	Leu	Asn																														
																210																													
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																225																													
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Leu	Ser	Glu	Lys	Lys	Glu	Ser	Val	Asn	Tyr	Leu	Asp	Asp	Gly	Pro	Tyr																														
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gtt	tct	tct	act	aaa	aat	atg	ctt	aag	gac	gtt	gaa	ata	cag	cgt	aag		960																												
Val	Ser	Ser	Thr	Lys	Asn	Met	Leu	Lys	Asp	Val	Glu	Ile	Gln	Arg	Lys																														
																305																													
ttg	tat	tca	ctg	gaa	gaa	tac	aaa	aaa	gca	gct	gat	ata	tca	agg	aat		1008																												
Leu	Tyr	Ser	Leu	Glu	Glu	Tyr	Lys	Lys	Ala	Ala	Asp	Ile	Ser	Arg	Asn																														
																325																													
gaa	aac	gat	atg	att	tgg	aac	tca	agt	cat	cag	ttt	gag	atg	ttt	tta		1056																												
Glu	Asn	Asp	Met	Ile	Trp	Asn	Ser	Ser	His	Gln	Phe	Glu	Met	Phe	Leu																														
																340																													
agg	aaa	gct	tta	tcc	agt	gtt	aaa	gtt	tca	gat	aag	gat	tcg	aat	ttt		1104																												
Arg	Lys	Ala	Leu	Ser	Ser	Val	Lys	Val	Ser	Asp	Lys	Asp	Ser	Asn	Phe																														
																355																													
ctt	tca	ggt	cat	ttt	aat	gcg	aat	gac	ttt	ctt	aaa	aca	cca	ttt	gaa		1152																												
Leu	Ser	Gly	His	Phe	Asn	Ala	Asn	Asp	Phe	Leu	Lys	Thr	Pro	Phe	Glu																														
																370																													
atg	att	gat	gag	ctg	tgg	ccc	act	aaa	ttt	gaa	tcc	tct	ata	gat	ttg		1200																												
Met	Ile	Asp	Glu	Leu	Trp	Pro	Thr	Lys	Phe	Glu	Ser	Ser	Ile	Asp	Leu																														
																385																													
aac	gat	gaa	aac	gaa	cga	cat	gat	aaa	aat	gat	cag	ctg	tta	gat	gtt		1248																												
Asn	Asp	Glu	Asn	Glu	Arg	His	Asp	Lys	Asn	Asp	Gln	Leu	Leu	Asp	Val																														
																405																													
ggc	gaa	gat	ttt	gat	aag	gcg	gaa	gag	cga	gac	gaa	gac	ata	ctg	ggt		1296																												
Gly	Glu	Asp	Phe	Asp	Lys	Ala	Glu	Glu	Arg	Asp	Glu	Asp	Ile	Leu	Gly																														
																420																													
gaa	cca	aat	gag	gat	gat	tat	atc	gag	aaa	gaa	atg	cat	tct	cag	gat		1344																												
Glu	Pro	Asn	Glu	Asp	Asp	Tyr	Ile	Glu	Lys	Glu	Met	His	Ser	Gln	Asp																														
																435																													
aat	ggc	caa	ttc	ata	aat	gtg	agt	aca	tca	gtt	atc	aca	aca	cag			1392																												
Asn	Gly	Gln	Phe	Ile	Asn	Val	Ser	Thr	Ser	Val	Ile	Thr	Thr	Gln																															

## PhoenixTemp32470.tmp.txt

450	tca	ttg	gat	aag	ctt	ttg	455	aca	agt	ata	ggt	460	aaa	aat	caa	cga	aag	1440
	Ser	Leu	Asp	Lys	Leu	Leu		Thr	Gln	Ser	Ile	Val	Lys	Asn	Gln	Arg	Lys	
465	tta	aag	ata	ggg	aat	ggt	470	ctg	tct	gat	tta	475	aat	ggt	gct	act	aat	1488
	Leu	Lys	Ile	Gly	Asn	Val		Leu	Ser	Asp	Leu	Gly	Asn	Val	Ala	Thr	Asn	
	tac	cat	aat	tat	ttt	cca	485	tct	aac	ata	aag	490	tac	tat	agg	tat	aaa	1536
	Tyr	His	Asn	Tyr	Phe	Pro		Ser	Asn	Ile	Lys	Lys	Tyr	Tyr	Arg	Tyr	Lys	
	caa	tgc	aat	ata	tct	tat	495	agt	tct	atg	aat	500	gat	ctt	caa	gat	aat	1584
	Gln	Cys	Asn	Ile	Ser	Tyr		Ser	Ser	Met	Asn	Glu	Asp	Leu	Gln	Asp	Asn	
	ggg	ctt	cct	att	aat	gat	505	tat	atg	ggc	cca	510	ttc	tcc	gat	cct	tgt	1632
	Gly	Leu	Pro	Ile	Asn	Asp		Tyr	Met	Gly	Pro	Phe	Phe	Ser	Asp	Pro	Cys	
	gat	ctc	cat	aaa	aaa	gac	515	tat	cag	tac	gct	520	aaa	caa	ttt	gat	ata	1680
	Asp	Leu	His	Lys	Lys	Asp		Tyr	Gln	Tyr	Ala	Gly	Lys	Gln	Phe	Asp	Ile	
	aca	tca	aca	cat	tta	atg	525	aaa	agg	tac	cca	530	tta	gac	ttc	aaa	gag	1728
	Thr	Ser	Thr	His	Leu	Met		Lys	Arg	Tyr	Pro	Leu	Asp	Phe	Lys	Glu	Asp	
	cta	gta	cgg	ttg	act	aag	535	caa	aga	ctt	gat	540	aat	gat	gta	ctt	ttt	1776
	Leu	Val	Arg	Leu	Thr	Lys		Gln	Arg	Asp	Asn	Asp	Asp	Val	Leu	Phe	Ala	
	tcg	tgg	aaa	tat	ttg	aag	545	atg	ccg	cca	tca	550	ttt	aat	gat	ggt	gca	1824
	Ser	Trp	Lys	Tyr	Leu	Lys		Met	Pro	Pro	Ser	Phe	Asn	Asp	Val	Ala	Glu	
	tcc	ggt	act	aga	aaa	gag	555	cga	gcc	aga	cat	560	att	tcc	caa	att	aaa	1872
	Ser	Val	Thr	Arg	Lys	Glu		Ala	Ala	Arg	His	Ser	Ile	Ser	Gln	Ile	Lys	
	aaa	ccc	aca	gct	aca	aag	565	agt	ttg	gga	aat	570	act	tcc	tcc	ata	aaa	1920
	Lys	Pro	Thr	Ala	Thr	Lys		Ser	Leu	Gly	Asn	Thr	Ser	Ser	Ile	Lys	Arg	
	tcg	gaa	tca	att	cac	gat	575	aat	tta	acg	cat	580	ttt	tcg	ctc	gaa	atc	1968
	Ser	Glu	Ser	Ile	His	Asp		Asn	Leu	Thr	His	Phe	Ser	Leu	Glu	Ile	His	
	gta	aat	act	aga	ggt	gac	585	ctt	tta	cca	gat	590	ccc	agg	aaa	gat	gaa	2016
	Val	Asn	Thr	Arg	Gly	Asp		Leu	Leu	Pro	Asp	Pro	Arg	Lys	Asp	Glu	Val	
	tca	ggt	ata	ttt	tgg	aag	595	gta	gac	agt	gac	600	act	ttt	cct	ttc	agt	2064
	Ser	Val	Ile	Phe	Trp	Lys		Val	Asp	Ser	Asp	Thr	Phe	Pro	Phe	Ser	Ile	
	gat	tta	cag	ctt	gaa	gga	605	att	atg	tat	aca	610	aac	aag	ctt	gaa	agg	2112
	Asp	Leu	Gln	Leu	Glu	Gly		Ile	Met	Tyr	Thr	Asn	Lys	Leu	Glu	Arg	Glu	
	aat	ctt	att	gaa	act	ttg	615	gaa	tct	ata	tcc	620	ggg	gta	cca	atc	atg	2160
	Asn	Leu	Ile	Glu	Thr	Leu		Glu	Ser	Ile	Ser	Gly	Gly	Val	Pro	Ile	Met	
	gag	tat	gag	gac	gaa	ttt	625	tct	atg	ttt	gat	630	gcc	ctg	aca	gat	ctc	2208
	Glu	Tyr	Glu	Asp	Glu	Phe		Ser	Met	Phe	Asp	Ala	Leu	Thr	Asp	Leu	Ile	
	cta	tta	ttt	gat	cct	gat	635	tta	ttg	tcc	ggt	640	tat	gaa	ata	cac	aac	2256
	Leu	Leu	Phe	Asp	Pro	Asp		Leu	Leu	Ser	Gly	Tyr	Glu	Ile	His	Asn	Ser	
	tct	tgg	ggc	tac	ata	ttt	645	gaa	aga	agt	ctg	650	agc	gtg	cat	aaa	ttt	2304
	Ser	Trp	Gly	Tyr	Ile	Phe		Glu	Arg	Ser	Leu	Ser	Val	His	Lys	Phe	Asn	
	att	gct	aat	gaa	ata	tct	655	cgg	gta	aac	atg	660	ggt	gct	cag	ttc	aaa	2352
	Ile	Ala	Asn	Glu	Ile	Ser		Arg	Val	Asn	Met	Gly	Ala	Gln	Phe	Lys	Leu	
	cga	gat	tca	tgg	ggt	ttt	665	aaa	aag	agt	tct	670	att	agc	atc	act	gga	2400
	Arg	Asp	Ser	Trp	Gly	Phe		Lys	Lys	Ser	Ser	Gly	Ile	Ser	Ile	Thr	Gly	
	cgt	tat	gtg	ctg	aat	att	675	tgg	agg	ttg	tta	680	agg	aaa	gaa	att	gct	2448
	Arg	Tyr	Val	Leu	Asn	Ile		Trp	Arg	Leu	Leu	Arg	Lys	Glu	Ile	Ala	Val	
	act	cag	tac	tct	ttt	gaa	685	aat	atg	ggt	cat	690	ctc	ctc	aag	ata	cga	2496
	Thr	Gln	Tyr	Ser	Phe	Glu		Asn	Met	Val	Leu	Leu	Leu	Lys	Ile	Arg		

Protein 1 (2544 amino acids)																820	Protein 2 (2592 amino acids)																825	Protein 3 (2640 amino acids)																830	Protein 4 (2688 amino acids)																835	Protein 5 (2736 amino acids)																840	Protein 6 (2784 amino acids)																845	Protein 7 (2832 amino acids)																850	Protein 8 (2880 amino acids)																855	Protein 9 (2928 amino acids)																860	Protein 10 (2976 amino acids)																865	Protein 11 (3024 amino acids)																870	Protein 12 (3072 amino acids)																875	Protein 13 (3120 amino acids)																880	Protein 14 (3168 amino acids)																885	Protein 15 (3216 amino acids)																890	Protein 16 (3264 amino acids)																895	Protein 17 (3312 amino acids)																900	Protein 18 (3360 amino acids)																905	Protein 19 (3408 amino acids)																910	Protein 20 (3456 amino acids)																915	Protein 21 (3504 amino acids)																920	Protein 22 (3552 amino acids)																925	Protein 23 (3600 amino acids)																930																																								
cta	cct	aaa	tac	tcc	tgc	agt	cat	tta	aca	tcg	ctc	tgg	agc	aat	ttt		2544	aag	aca	ggt	aac	gaa	cta	aaa	aca	ttc	ctt	aac	tat	ttg	acg	cgt		2592	gta	aga	cta	aat	att	gga	atc	cta	aag	aaa	att	agc	ttt	aca	tta	aat		2640	gtg	atg	gaa	gag	gcc	aga	ttg	ata	ggt	atc	gat	ttt	caa	tct	gta	tat		2688	aat	cgc	ggc	tcc	caa	tac	aaa	gtg	gaa	tca	ttt	ttg	att	cgt	att	tgc		2736	aaa	agt	gaa	aat	tat	ata	ctg	ctc	tca	cct	tca	aaa	gtt	gct	gtg	cag		2784	aaa	caa	aaa	cct	tta	gaa	tgt	gtt	cca	cta	gtg	atg	gaa	cca	gaa	tca		2832	gca	ttt	tac	aag	agt	cca	ttg	ctt	gtt	ttg	gac	ttc	caa	tca	ttg	tat		2880	cca	tct	att	atg	tca	ggc	tat	aat	tat	tgt	tat	tct	aca	atg	atg	ggt		2928	aga	gtg	cga	gaa	ctt	gac	gga	aca	aaa	cga	aca	ctt	ggt	gta	aca	aat		2976	ttt	gaa	ctg	aag	tcg	gag	ctg	ttg	aaa	aaa	ctt	cga	gat	gat	att	cgt		3024	ata	gca	cca	aat	ggt	gtt	att	tat	gct	aaa	gag	cac	ttg	agg	aag	tca		3072	aca	tta	tcc	aaa	atg	ctt	tct	gaa	ata	ctg	gag	ata	aga	ttt	atg	att		3120	aag	aag	acg	att	tca	gat	ctt	ggt	tct	gat	cat	caa	gcg	ctc	aag	aaa		3168	ttg	cta	gaa	tcc	aaa	cag	ctg	gct	ttg	aaa	ctt	ttg	gct	aat	gtt	acc		3216	tat	ggt	tat	act	tct	gcc	tca	ttt	tca	ggt	aga	atg	cca	tgc	tcg	gat		3264	ttg	gcc	gat	agc	att	gtt	caa	act	ggt	aga	gaa	aca	tta	gaa	aag	gct		3312	gtc	aaa	atg	att	gaa	agt	act	gca	tcc	tgg	ggt	gcc	aaa	gtt	gtg	tat		3360	ggg	gat	aca	gat	agt	ttg	ttc	gtc	tac	tta	cca	ggg	aaa	acg	aaa	gaa		3408	gac	gca	ttc	aga	att	ggc	gct	gaa	att	tcc	aat	agt	att	aca	gca	tct		3456	aac	cca	aaa	cca	ata	aca	tta	aaa	ttt	gaa	aag	gtc	tac	ttt	cct	tgt		3504	att	ctt	ttg	agt	aaa	aag	agg	tat	gtt	gga	tat	tcc	tat	ttg	tcg	agt		3552	tcc	caa	ctt	aac	ccc	cat	ttt	gat	gca	aaa	ggt	att	gag	acg	gtt	aga		3600	Ser	Gln	Leu	Asn	Pro	His	Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg		

## PhoenixTemp32470.tmp.txt

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1185          1190          1195          1200
aga gac gga aca cca gct caa cag aaa gtg gta gaa aat gcc tta cgg      3648
Arg Asp Gly Thr Pro Ala Gln Gln Lys Val Glu Asn Ala Leu Arg
          1205          1210          1215
att ttg ttc gag aca aag gat ttg agt aag gta aaa aat tat gta gtt      3696
Ile Leu Phe Glu Thr Lys Asp Leu Ser Lys Val Lys Asn Tyr Val Val
          1220          1225          1230
gac act ttc acc aag ata cgg agt gga aat att tct att cag gat ttc      3744
Asp Thr Phe Thr Lys Ile Arg Ser Gly Asn Ile Ser Ile Gln Asp Phe
          1235          1240          1245
tgt ttt gct aaa gaa atc aaa ctt ggg cat tat aaa agt gag agc aca      3792
Cys Phe Ala Lys Glu Ile Lys Leu Gly His Tyr Lys Ser Glu Ser Thr
          1250          1255          1260
atg cct cct ggt gca gta gtg gca aag agg ctt aag aaa caa gac agt      3840
Met Pro Pro Gly Ala Val Val Ala Lys Arg Leu Lys Lys Gln Asp Ser
1265          1270          1275          1280
aga gct gaa ccc cag tac aaa gaa aga ctc tcg tat cta gta gtg aaa      3888
Arg Ala Glu Pro Gln Tyr Lys Glu Arg Leu Ser Tyr Leu Val Val Lys
          1285          1290          1295
ggt aaa tct gga cag ata tta aga gaa aga tgt gta tca gta tca gaa      3936
Gly Lys Ser Gly Gln Ile Leu Arg Glu Arg Cys Val Ser Val Ser Glu
          1300          1305          1310
tat ttt tca aat gac cat ttt gcc ctc gat tcg gaa tac tat ata aca      3984
Tyr Phe Ser Asn Asp His Phe Ala Leu Asp Ser Glu Tyr Tyr Ile Thr
          1315          1320          1325
aaa acg ctg att ccc cca ctc gat cgg ttg ttt aat ata gtt ggt ata      4032
Lys Thr Leu Ile Pro Pro Leu Asp Arg Leu Phe Asn Ile Val Gly Ile
1330          1335          1340
agt gta tcc gat tgg aat caa gag ggg cct atg ttt gtt gag ggt tcc      4080
Ser Val Ser Asp Trp Asn Gln Glu Gly Pro Met Phe Val Glu Gly Ser
1345          1350          1355          1360
att aaa cca tat act ggc gca gac aat atc ccc act tcg act aga tgt      4128
Ile Lys Pro Tyr Thr Gly Ala Asp Asn Ile Pro Thr Ser Thr Arg Cys
          1365          1370          1375
aaa gcc tgt gaa caa aac aca gtt tct ggt gat agc tat ctt tgt gac      4176
Lys Ala Cys Glu Gln Asn Thr Val Ser Gly Asp Ser Tyr Leu Cys Asp
          1380          1385          1390
aat tgt gtt tct aat gag aaa atg gct gca tca aag ctt att att aag      4224
Asn Cys Val Ser Asn Glu Lys Met Ala Ala Ser Lys Leu Ile Ile Lys
1395          1400          1405
att caa gcc agc gct agt aag tta aag gta cta aat gat ata tgc aga      4272
Ile Gln Ala Ser Ala Ser Lys Leu Lys Val Leu Asn Asp Ile Cys Arg
          1410          1415          1420
ata tgc agt aga caa tat aca gga gac atg ggg cta ctg agc tcc aat      4320
Ile Cys Ser Arg Gln Tyr Thr Gly Asp Met Gly Leu Leu Ser Ser Asn
1425          1430          1435          1440
aat gca ttg aag tgt gta tct tat gat tgt cct aat tat tat tcc aag      4368
Asn Ala Leu Lys Cys Val Ser Tyr Asp Cys Pro Asn Tyr Tyr Ser Lys
          1445          1450          1455
ctt aaa gct cag aga tta atg caa tct aag cac tat tat tct tgg aat      4416
Leu Lys Ala Gln Arg Leu Met Gln Ser Lys His Tyr Tyr Trp Asn
          1460          1465          1470
gag ctg ttg cac aat atg gat cat tgg taa      4446
Glu Leu Leu His Asn Met Asp His Trp
1475          1480

```

&lt;210&gt; 3679

&lt;211&gt; 1481

&lt;212&gt; PRT

&lt;213&gt; Candida glabrata CBS 138

&lt;400&gt; 3679

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Met Ile Ser Gly Glu Glu Thr Asp Ser Ile Gln Asp Gly Ala Asn Glu
1 5 10 15
Val Glu Phe Asp Ser Phe Asp Leu Gln Leu Asn Asn Tyr Asp His Tyr
20 25 30
Met Ala Tyr Pro Thr Ser Leu Asp Arg Thr His Gly Ser Leu Pro
35 40 45
Leu Lys Lys Phe His Lys Val Pro Val Ile Arg Ile Phe Gly Cys Leu

```

## PhoenixTemp32470.tmp.txt

50	55	60													
Arg 65	Thr 50	Gly	His	Gln	Leu 70	Leu 55	Cys	His	Val	His 75	Gly	Ile	Phe	Pro	Tyr 80
Phe	Phe	Val	Lys	Tyr 85	Asp	Gly	Lys	Glu	Asp 90	Asp	Thr	Ser	Ile	Ile 95	Ile
Asn	Glu	Lys	Cys 100	Ala	Lys	Leu	His	Gln 105	Leu	Leu	Glu	Gln	Ile 110	Leu	Arg
Asp	Lys	Met 115	Lys	Ser	Lys	Gly	Ser 120	Arg	Asn	Asp	Lys	Gln 125	Asp	Glu	Thr
Asn	Leu 130	Asn	Glu	Leu	Val	Tyr 135	Ile	Ala	Asn	Val	Ser 140	Val	Val	Lys	Gly
Val 145	Pro	Phe	Tyr	Gly	Tyr 150	His	Val	Gly	Trp	Thr 155	Pro	Phe	Tyr	Lys	Ile 160
Ser	Leu	Leu	Asn	Pro 165	Ser	Leu	Ser	Glu	Gln 170	Val	Cys	Asn	Ile	Ile 175	Arg
Glu	Gln	Asn	Val 180	Leu	Gln	Asn	Gly	Gln 185	Asn	Glu	Val	Tyr	Glu 190	Ser	Gln
Phe	Pro	Tyr 195	Leu	Leu	Lys	Phe	Thr 200	Ala	Asp	Phe	Asn	Leu	Phe	Ala	Cys
Ser	Trp 210	Ile	Asn	Phe	Lys	Lys 215	Val	Tyr	Phe	Arg	Ala 220	Pro	Val	Leu	Asn
Glu 225	Met	Leu	Asn	Met	Asp 230	Glu	Ile	Met	Met	Thr 235	Lys	Glu	Leu	Arg	Val 240
Leu	Leu	Asp	Arg	Phe 245	His	Ser	Lys	Asp	Thr 250	Val	Leu	Lys	Lys	Thr 255	Met
Phe	Pro	Arg	Ile 260	Gly	Asn	Gly	Leu	Leu 265	Glu	Ile	Asp	Val	Ile 270	Pro	Gln
Phe	Ile	Lys 275	Asn	Ile	Asp	Gln	Ile 280	Lys	Ile	Arg	Asn	Ile 285	His	His	Asp
Leu	Ser 290	Glu	Lys	Lys	Glu	Ser 295	Val	Asn	Tyr	Leu	Asp 300	Asp	Gly	Pro	Tyr
Val 305	Ser	Ser	Thr	Lys	Asn 310	Met	Leu	Lys	Asp	Val 315	Glu	Ile	Gln	Arg	Lys 320
Leu	Tyr	Ser	Leu	Glu 325	Glu	Tyr	Lys	Lys	Ala 330	Ala	Asp	Ile	Ser	Arg 335	Asn
Glu	Asn	Asp	Met 340	Ile	Trp	Asn	Ser	Ser 345	His	Gln	Phe	Glu	Met 350	Phe	Leu
Arg	Lys	Ala 355	Leu	Ser	Ser	Val	Lys 360	Val	Ser	Asp	Lys	Asp 365	Ser	Asn	Phe
Leu	Ser 370	Gly	His	Phe	Asn	Ala 375	Asn	Asp	Phe	Leu	Lys 380	Thr	Pro	Phe	Glu
Met 385	Ile	Asp	Glu	Leu	Trp 390	Pro	Thr	Lys	Phe	Glu 395	Ser	Ser	Ile	Asp	Leu 400
Asn	Asp	Glu	Asn	Glu 405	Arg	His	Asp	Lys	Asn 410	Asp	Gln	Leu	Leu	Asp 415	Val
Gly	Glu	Asp	Phe 420	Asp	Lys	Ala	Glu	Glu 425	Arg	Asp	Glu	Asp	Ile 430	Leu	Gly
Glu	Pro	Asn 435	Glu	Asp	Asp	Tyr	Ile 440	Glu	Lys	Glu	Met	His 445	Ser	Gln	Asp
Asn	Gly 450	Gln	Phe	Ile	Asn	Val 455	Ser	Thr	Ser	Val	Ile 460	Ser	Thr	Thr	Gln
Ser 465	Leu	Asp	Lys	Leu	Leu 470	Thr	Gln	Ser	Ile	Val 475	Lys	Asn	Gln	Arg	Lys 480
Leu	Lys	Ile	Gly	Asn 485	Val	Leu	Ser	Asp	Leu 490	Gly	Asn	Val	Ala	Thr 495	Asn
Tyr	His	Asn	Tyr 500	Phe	Pro	Ser	Asn	Ile 505	Lys	Lys	Tyr	Tyr	Arg 510	Tyr	Lys
Gln	Cys	Asn 515	Ile	Ser	Tyr	Ser	Ser 520	Met	Asn	Glu	Asp	Leu 525	Gln	Asp	Asn
Gly	Leu 530	Pro	Ile	Asn	Asp	Tyr 535	Met	Gly	Pro	Phe	Phe 540	Ser	Asp	Pro	Cys
Asp 545	Leu	His	Lys	Lys	Asp 550	Tyr	Gln	Tyr	Ala	Gly 555	Lys	Gln	Phe	Asp	Ile 560
Thr	Ser	Thr	His	Leu 565	Met	Lys	Arg	Tyr	Pro 570	Leu	Asp	Phe	Lys	Glu 575	Asp
Leu	Val	Arg	Leu 580	Thr	Lys	Gln	Arg	Leu 585	Asp	Asn	Asp	Val	Leu 590	Phe	Ala
Ser	Trp	Lys 595	Tyr	Leu	Lys	Met	Pro 600	Pro	Ser	Phe	Asn	Asp 605	Val	Ala	Glu

## PhoenixTemp32470.tmp.txt

Ser Val Thr Arg Lys Glu Arg Ala Arg His Ser Ile Ser Gln Ile Lys  
 610 615 620  
 Lys Pro Thr Ala Thr Lys Ser Leu Gly Asn Thr Ser Ser Ile Lys Arg  
 625 630 635 640  
 Ser Glu Ser Ile His Asp Asn Leu Thr His Phe Ser Leu Glu Ile His  
 645 650 655  
 Val Asn Thr Arg Gly Asp Leu Leu Pro Asp Pro Arg Lys Asp Glu Val  
 660 665 670  
 Ser Val Ile Phe Trp Lys Val Asp Ser Asp Thr Phe Pro Phe Ser Ile  
 675 680 685  
 Asp Leu Gln Leu Glu Gly Ile Met Tyr Thr Asn Lys Leu Glu Arg Glu  
 690 695 700  
 Asn Leu Ile Glu Thr Leu Glu Ser Ile Ser Gly Gly Val Pro Ile Met  
 705 710 715 720  
 Glu Tyr Glu Asp Glu Phe Ser Met Phe Asp Ala Leu Thr Asp Leu Ile  
 725 730 735  
 Leu Leu Phe Asp Pro Asp Leu Leu Ser Gly Tyr Glu Ile His Asn Ser  
 740 745 750  
 Ser Trp Gly Tyr Ile Phe Glu Arg Ser Leu Ser Val His Lys Phe Asn  
 755 760 765  
 Ile Ala Asn Glu Ile Ser Arg Val Asn Met Gly Ala Gln Phe Lys Leu  
 770 775 780  
 Arg Asp Ser Trp Gly Phe Lys Lys Ser Ser Gly Ile Ser Ile Thr Gly  
 785 790 795 800  
 Arg Tyr Val Leu Asn Ile Trp Arg Leu Leu Arg Lys Glu Ile Ala Val  
 805 810 815  
 Thr Gln Tyr Ser Phe Glu Asn Met Val His Leu Leu Leu Lys Ile Arg  
 820 825 830  
 Leu Pro Lys Tyr Ser Cys Ser His Leu Thr Ser Leu Trp Ser Asn Phe  
 835 840 845  
 Lys Thr Gly Asn Glu Leu Lys Thr Phe Leu Asn Tyr Tyr Leu Thr Arg  
 850 855 860  
 Val Arg Leu Asn Ile Gly Ile Leu Lys Lys Ile Ser Phe Thr Leu Asn  
 865 870 875 880  
 Val Met Glu Glu Ala Arg Leu Ile Gly Ile Asp Phe Gln Ser Val Tyr  
 885 890 895  
 Asn Arg Gly Ser Gln Tyr Lys Val Glu Ser Phe Leu Ile Arg Ile Cys  
 900 905 910  
 Lys Ser Glu Asn Tyr Ile Leu Leu Ser Pro Ser Lys Val Ala Val Gln  
 915 920 925  
 Lys Gln Lys Pro Leu Glu Cys Val Pro Leu Val Met Glu Pro Glu Ser  
 930 935 940  
 Ala Phe Tyr Lys Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr  
 945 950 955 960  
 Pro Ser Ile Met Ser Gly Tyr Asn Tyr Cys Tyr Ser Thr Met Met Gly  
 965 970 975  
 Arg Val Arg Glu Leu Asp Gly Thr Lys Arg Thr Leu Gly Val Thr Asn  
 980 985 990  
 Phe Glu Leu Lys Ser Glu Leu Leu Lys Lys Leu Arg Asp Asp Ile Arg  
 995 1000 1005  
 Ile Ala Pro Asn Gly Val Ile Tyr Ala Lys Glu His Leu Arg Lys Ser  
 1010 1015 1020  
 Thr Leu Ser Lys Met Leu Ser Glu Ile Leu Glu Ile Arg Phe Met Ile  
 1025 1030 1035 1040  
 Lys Lys Thr Ile Ser Asp Leu Gly Ser Asp His Gln Ala Leu Lys Lys  
 1045 1050 1055  
 Leu Leu Glu Ser Lys Gln Leu Ala Leu Lys Leu Leu Ala Asn Val Thr  
 1060 1065 1070  
 Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Asp  
 1075 1080 1085  
 Leu Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr Leu Glu Lys Ala  
 1090 1095 1100  
 Val Lys Met Ile Glu Ser Thr Ala Ser Trp Gly Ala Lys Val Val Tyr  
 1105 1110 1115 1120  
 Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu Pro Gly Lys Thr Lys Glu  
 1125 1130 1135  
 Asp Ala Phe Arg Ile Gly Ala Glu Ile Ser Asn Ser Ile Thr Ala Ser  
 1140 1145 1150  
 Asn Pro Lys Pro Ile Thr Leu Lys Phe Glu Lys Val Tyr Phe Pro Cys

## PhoenixTemp32470.tmp.txt

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1155      1160      1165
Ile Leu Ser Lys Lys Arg Tyr Val Gly Tyr Ser Tyr Leu Ser Ser
1170      1175      1180
Ser Gln Leu Asn Pro His Phe Asp Ala Lys Gly Ile Glu Thr Val Arg
1185      1190      1195      1200
Arg Asp Gly Thr Pro Ala Gln Gln Lys Val Val Glu Asn Ala Leu Arg
1205      1210      1215
Ile Leu Phe Glu Thr Lys Asp Leu Ser Lys Val Lys Asn Tyr Val Val
1220      1225      1230
Asp Thr Phe Thr Lys Ile Arg Ser Gly Asn Ile Ser Ile Gln Asp Phe
1235      1240      1245
Cys Phe Ala Lys Glu Ile Lys Leu Gly His Tyr Lys Ser Glu Ser Thr
1250      1255      1260
Met Pro Pro Gly Ala Val Val Ala Lys Arg Leu Lys Lys Gln Asp Ser
1265      1270      1275      1280
Arg Ala Glu Pro Gln Tyr Lys Glu Arg Leu Ser Tyr Leu Val Val Lys
1285      1290      1295
Gly Lys Ser Gly Gln Ile Leu Arg Glu Arg Cys Val Ser Val Ser Glu
1300      1305      1310
Tyr Phe Ser Asn Asp His Phe Ala Leu Asp Ser Glu Tyr Tyr Ile Thr
1315      1320      1325
Lys Thr Leu Ile Pro Pro Leu Asp Arg Leu Phe Asn Ile Val Gly Ile
1330      1335      1340
Ser Val Ser Asp Trp Asn Gln Glu Gly Pro Met Phe Val Glu Gly Ser
1345      1350      1355      1360
Ile Lys Pro Tyr Thr Gly Ala Asp Asn Ile Pro Thr Ser Thr Arg Cys
1365      1370      1375
Lys Ala Cys Glu Gln Asn Thr Val Ser Gly Asp Ser Tyr Leu Cys Asp
1380      1385      1390
Asn Cys Val Ser Asn Glu Lys Met Ala Ala Ser Lys Leu Ile Ile Lys
1395      1400      1405
Ile Gln Ala Ser Ala Ser Lys Leu Lys Val Leu Asn Asp Ile Cys Arg
1410      1415      1420
Ile Cys Ser Arg Gln Tyr Thr Gly Asp Met Gly Leu Leu Ser Ser Asn
1425      1430      1435      1440
Asn Ala Leu Lys Cys Val Ser Tyr Asp Cys Pro Asn Tyr Tyr Ser Lys
1445      1450      1455
Leu Lys Ala Gln Arg Leu Met Gln Ser Lys His Tyr Tyr Ser Trp Asn
1460      1465      1470
Glu Leu Leu His Asn Met Asp His Trp
1475      1480

```

&lt;210&gt; 3680

&lt;211&gt; 4356

&lt;212&gt; DNA

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4356)

&lt;400&gt; 3680

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atg agt gat att ttt ggt tct tta gac tcc agc tta gac tcc aat gaa      48
Met Ser Asp Ile Phe Gly Ser Leu Asp Ser Ser Leu Asp Ser Asn Glu
1      5      10      15
atc aac ata cag att aat aat tca gac agc tat caa tgc ttc cca act      96
Ile Asn Ile Gln Ile Asn Asn Ser Asp Ser Tyr Gln Cys Phe Pro Thr
20      25      30
cta ttg gat tgt aaa act agt aag agc ctt cct gga ctt cga ttt gtt      144
Leu Leu Asp Cys Lys Thr Ser Lys Ser Leu Pro Gly Leu Arg Phe Val
35      40      45
cag gtg cca gta cta agg ttc tat gga tgt tta tct acc gga cac aaa      192
Gln Val Pro Val Leu Arg Phe Tyr Gly Cys Leu Ser Thr Gly His Lys
50      55      60
gtt cta att cat tgc cat ggc att ttc cct tac ata ttc atc aaa tat      240
Val Leu Ile His Cys His Gly Ile Phe Pro Tyr Ile Phe Ile Lys Tyr
65      70      75      80
gac gga cat tcg aat gat aaa gca tca gta ata cgg aat aga tgt acc      288
Asp Gly His Ser Asn Asp Lys Ala Ser Val Ile Arg Asn Arg Cys Thr

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## PhoenixTemp32470.tmp.txt

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Ser	Leu	His	Lys	Ile	Leu	Glu	Thr	Arg	Met	Ile	Glu	Thr	Phe	Thr	Lys		
			100					105					110				
aca	gat	ttt	aaa	gag	aag	cta	act	tcc	ctg	aaa	tac	att	gct	aat	gtg		384
Thr	Asp	Phe	Lys	Glu	Lys	Leu	Thr	Ser	Leu	Lys	Tyr	Ile	Ala	Asn	Val		
		115					120					125					
tcc	gtt	gtc	aaa	ggc	gtt	cca	ttt	tac	gga	tac	cac	gta	gga	tat	gaa		432
Ser	Val	Val	Lys	Gly	Val	Pro	Phe	Tyr	Gly	Tyr	His	Val	Gly	Tyr	Glu		
	130					135					140						
cct	tac	tat	aaa	att	act	ctt	ttg	aat	ggt	tca	tat	agt	aat	aaa	ctc		480
Pro	Tyr	Tyr	Lys	Ile	Thr	Leu	Leu	Asn	Gly	Ser	Tyr	Ser	Asn	Lys	Leu		
				150						155					160		
tct	gaa	tta	ctt	aga	gat	ggc	aga	ata	ttc	acc	tca	aaa	gtg	gat	gtc		528
Ser	Glu	Leu	Leu	Arg	Asp	Gly	Arg	Ile	Phe	Thr	Ser	Lys	Val	Asp	Val		
				165					170					175			
ttt	gag	gct	cat	ata	cct	tat	tta	ttg	caa	atg	atg	gct	gac	tat	aac		576
Phe	Glu	Ala	His	Ile	Pro	Tyr	Leu	Leu	Gln	Met	Met	Ala	Asp	Tyr	Asn		
			180					185					190				
tta	ttt	ggt	tgc	gga	tgg	tta	aaa	cta	tcc	aaa	tgc	tat	ttt	cgg	caa		624
Leu	Phe	Gly	Cys	Gly	Trp	Leu	Lys	Leu	Ser	Lys	Cys	Tyr	Phe	Arg	Gln		
		195					200					205					
cct	gtt	ctg	tta	act	gat	cta	gat	atg	aat	gaa	ata	ttg	cac	acg	gac		672
Pro	Val	Leu	Leu	Thr	Asp	Leu	Asp	Met	Asn	Glu	Ile	Leu	His	Thr	Asp		
		210				215					220						
tct	ttg	gaa	cgt	ttt	ttg	aaa	aaa	cac	ttg	cat	ccg	aat	caa	aat	gtt		720
Ser	Leu	Glu	Arg	Phe	Leu	Lys	Lys	His	Leu	His	Pro	Asn	Gln	Asn	Val		
				230					235						240		
tta	gac	ata	gat	cca	ttt	cat	cga	att	gga	aag	acc	ttt	ctt	gaa	atg		768
Leu	Asp	Ile	Asp	Pro	Phe	His	Arg	Ile	Gly	Lys	Thr	Phe	Leu	Glu	Met		
				245					250					255			
gat	att	att	cca	cag	ttc	att	tta	aac	aga	gaa	gaa	att	caa	ttc	agg		816
Asp	Ile	Ile	Pro	Gln	Phe	Ile	Leu	Asn	Arg	Glu	Glu	Ile	Gln	Phe	Arg		
			260					265					270				
gat	tta	cac	cat	gat	ttt	gtt	gag	ctt	aag	aaa	gac	ctt	caa	aca	tca		864
Asp	Leu	His	His	Asp	Phe	Val	Glu	Leu	Lys	Lys	Asp	Leu	Gln	Thr	Ser		
			275				280					285					
gat	caa	gga	tat	gtt	aat	tct	aca	aaa	gat	ata	tgg	aaa	gag	ata	caa		912
Asp	Gln	Gly	Tyr	Val	Asn	Ser	Thr	Lys	Asp	Ile	Trp	Lys	Glu	Ile	Gln		
			290			295					300						
ctg	ctt	agg	aaa	agg	aaa	ggg	ctt	gct	gaa	tat	gaa	gga	tta	aaa	gaa		960
Leu	Leu	Arg	Lys	Arg	Lys	Gly	Leu	Ala	Glu	Tyr	Glu	Gly	Leu	Lys	Glu		
					310					315					320		
ata	ttt	cga	gaa	tct	caa	tta	caa	tat	aat	tgg	aaa	gaa	gat	gaa	agg		1008
Ile	Phe	Arg	Glu	Ser	Gln	Leu	Gln	Tyr	Asn	Trp	Lys	Glu	Asp	Glu	Arg		
				325					330					335			
ttg	gtg	aaa	cac	ttt	gat	gaa	gct	aag	aaa	cga	atg	tct	tcc	ctt	ttt		1056
Leu	Val	Lys	His	Phe	Asp	Glu	Ala	Lys	Lys	Arg	Met	Ser	Ser	Leu	Phe		
			340					345					350				
aac	aaa	gaa	aaa	gct	tta	aat	ttt	gac	aac	ttt	gtg	gat	cct	ttc	att		1104
Asn	Lys	Glu	Lys	Ala	Leu	Asn	Phe	Asp	Asn	Phe	Val	Asp	Pro	Phe	Ile		
			355				360					365					
aat	gag	aat	ttt	ttt	gca	agt	acc	aaa	gac	gcc	ctt	caa	gaa	tta	tgg		1152
Asn	Glu	Asn	Phe	Phe	Ala	Ser	Thr	Lys	Asp	Ala	Leu	Gln	Glu	Leu	Trp		
						375					380						
ccc	aaa	ata	cca	agg	aat	gct	agt	agt	aaa	gta	ttc	tgt	tgg	tca	gaa		1200
Pro	Lys	Ile	Pro	Arg	Asn	Ala	Ser	Ser	Lys	Val	Phe	Cys	Trp	Ser	Glu		
					390					395					400		
gta	gaa	ttc	aaa	ttg	aac	aac	caa	tat	act	tct	gtt	cgt	gaa	caa	aaa		1248
Val	Glu	Phe	Lys	Leu	Asn	Asn	Gln	Tyr	Thr	Ser	Val	Arg	Glu	Gln	Lys		
				405					410					415			
gta	gcg	tct	aca	aac	act	aaa	aat	att	ccc	att	ttg	cta	aat	att	tcc		1296
Val	Ala	Ser	Thr	Asn	Thr	Lys	Asn	Ile	Pro	Ile	Leu	Leu	Asn	Ile	Ser		
			420					425					430				
tcc	aat	gaa	tcg	cac	tct	tca	cat	gtc	agt	tcc	aaa	cgt	gcg	gag	gaa		1344
Ser	Asn	Glu	Ser	His	Ser	Ser	His	Val	Ser	Ser	Lys	Arg	Ala	Glu	Glu		
			435				440					445					
tct	tca	tgt	cat	gac	gat	att	gct	aat	gaa	gca	att	gct	agg	aaa	ctg		1392
Ser	Ser	Cys	His	Asp	Asp	Ile	Ala	Asn	Glu	Ala	Ile	Ala	Arg	Lys	Leu		



## PhoenixTemp32470.tmp.txt

450	gca	aaa	cga	aaa	aca	tct	455	gct	att	aga	aag	tca	460	ttt	cgc	ccg	atg	1440
Ala	Lys	Arg	Lys	Thr	Thr	Ser	Ala	Ile	Arg	Lys	Ser	Thr	Thr	Phe	Arg	Pro	Met	
465	atc	aga	cct	agc	gta	aca	470	cac	gct	aac	atc	aag	475	gag	agt	tta	tct	1488
Ile	Arg	Pro	Ser	Val	Thr	His	Thr	Ala	Asn	Ile	Lys	Glu	Lys	Ser	Leu	Ser	Ala	
				485							490					495		
aac	caa	att	gaa	gaa	ggt	cag	tat	aac	gat	cca	ttt	ttc	tcc	aat	cca			1536
Asn	Gln	Ile	Glu	Glu	Val	Gln	Tyr	Asn	Asp	Pro	Phe	Phe	Ser	Asn	Pro			
			500					505					510					
ctt	gat	tgt	aaa	agg	cta	caa	acg	gaa	atg	gct	ggg	cga	gtg	ttc	aag			1584
Leu	Asp	Cys	Lys	Arg	Leu	Gln	Thr	Glu	Met	Ala	Gly	Arg	Val	Phe	Lys			
		515					520					525						
cta	tca	agt	gat	cat	atc	ctc	ttt	aaa	aga	agc	atc	cgt	agt	aac	gat			1632
Leu	Ser	Ser	Asp	His	Ile	Leu	Phe	Lys	Arg	Ser	Ile	Arg	Ser	Asn	Asp			
	530					535					540							
aca	aca	gca	aca	tta	act	tct	tca	gga	agt	gta	tat	gca	aga	agc	aga			1680
Thr	Thr	Ala	Thr	Leu	Thr	Ser	Ser	Gly	Ser	Val	Tyr	Ala	Arg	Ser	Arg			
	545				550					555					560			
tgg	aaa	tat	ata	aga	cca	aag	ccg	tct	ttt	aaa	aga	ata	gcc	aat	gcg			1728
Trp	Lys	Tyr	Ile	Arg	Pro	Lys	Pro	Ser	Phe	Lys	Arg	Ile	Ala	Asn	Ala			
			565					570						575				
atg	aag	cct	ttc	aaa	ggt	aaa	ttc	tcg	atg	gtg	gag	ggg	aaa	aca	cca			1776
Met	Lys	Pro	Phe	Lys	Gly	Lys	Phe	Ser	Met	Val	Glu	Gly	Lys	Thr	Pro			
			580					585					590					
gaa	cta	cca	ttc	gga	tac	aag	ttc	aag	agc	aat	aaa	ata	gaa	aaa	aat			1824
Glu	Leu	Pro	Phe	Gly	Tyr	Lys	Phe	Lys	Ser	Asn	Lys	Ile	Glu	Lys	Asn			
		595					600					605						
aat	aac	gct	tct	aat	aga	atg	acc	cat	ttc	acc	atg	gaa	att	cac	gtc			1872
Asn	Asn	Ala	Ser	Asn	Arg	Met	Thr	His	Phe	Thr	Met	Glu	Ile	His	Val			
		610				615					620							
aat	act	cgt	gaa	gat	aag	ttt	cca	gat	cct	aaa	tat	gat	gct	gtc	agg			1920
Asn	Thr	Arg	Glu	Asp	Lys	Phe	Pro	Asp	Pro	Lys	Tyr	Asp	Ala	Val	Arg			
			625		630					635					640			
atg	ata	ttt	tgg	aaa	gtg	caa	gat	gga	act	ttt	cca	ttc	gac	ctg	gat			1968
Met	Ile	Phe	Trp	Lys	Val	Gln	Asp	Gly	Thr	Phe	Pro	Phe	Asp	Leu	Asp			
			645					650						655				
att	act	caa	gaa	ggt	ggt	ttg	ata	ttt	cta	gac	gat	gtc	tcg	aca	gaa			2016
Ile	Thr	Gln	Glu	Gly	Val	Leu	Ile	Phe	Leu	Asp	Asp	Val	Ser	Thr	Glu			
			660					665					670					
aat	tca	tgg	aaa	act	gcc	gat	cct	agt	ggt	cat	ata	act	gct	tat	tac			2064
Asn	Ser	Trp	Lys	Thr	Ala	Asp	Pro	Ser	Val	His	Ile	Thr	Ala	Tyr	Tyr			
		675					680					685						
gat	gaa	ttg	gaa	atg	ata	tat	gca	tta	gaa	gat	tta	gtg	agg	ttt	ttc			2112
Asp	Glu	Leu	Glu	Met	Ile	Tyr	Ala	Leu	Glu	Asp	Leu	Val	Arg	Phe	Phe			
		690				695					700							
gat	cct	gat	atc	ttg	tca	gga	tac	gaa	ata	cac	tct	tcc	tcg	tgg	ggc			2160
Asp	Pro	Asp	Ile	Leu	Ser	Gly	Tyr	Glu	Ile	His	Ser	Ser	Ser	Trp	Gly			
					710					715				720				
tac	ttg	att	gat	aga	tgt	cac	aag	gga	cat	gat	tat	gat	gtg	gaa	gat			2208
Tyr	Leu	Ile	Asp	Arg	Cys	His	Lys	Gly	His	Asp	Tyr	Asp	Val	Glu	Asp			
				725					730					735				
gaa	ctc	tct	cga	gtc	gat	tat	aac	cag	agt	agc	aaa	aaa	aaa	gac	aga			2256
Glu	Leu	Ser	Arg	Val	Asp	Tyr	Asn	Gln	Ser	Ser	Lys	Lys	Lys	Asp	Arg			
			740					745					750					
tgg	ggt	tac	act	cac	gca	aca	gca	ttt	tcg	ata	acg	gga	aga	caa	atg			2304
Trp	Gly	Tyr	Thr	His	Ala	Thr	Ala	Phe	Ser	Ile	Thr	Gly	Arg	Gln	Met			
		755					760					765						
cta	aac	ata	tgg	agg	cct	ctc	cgc	tct	tct	ttg	aat	ctt	ctc	gat	tat			2352
Leu	Asn	Ile	Trp	Arg	Pro	Leu	Arg	Ser	Ser	Leu	Asn	Leu	Leu	Asp	Tyr			
					775						780							
aca	tta	gaa	aat	att	gca	ttt	cat	ggt	tta	cac	caa	cgg	tta	cct	ttt			2400
Thr	Leu	Glu	Asn	Ile	Ala	Phe	His	Val	Leu	His	Gln	Arg	Leu	Pro	Phe			
					790					795					800			
tat	tcg	tac	aaa	acc	agg	aca	gag	ttc	tat	gaa	tct	atg	gac	gaa	act			2448
Tyr	Ser	Tyr	Lys	Thr	Arg	Thr	Glu	Phe	Tyr	Glu	Ser	Met	Asp	Glu	Thr			
				805					810					815				
tca	aaa	agg	tgt	ctc	cta	ttt	tac	tgg	atc	aca	aga	ctt	cga	gta	aat			2496
Ser	Lys	Arg	Cys	Leu	Leu	Phe	Tyr	Trp	Ile	Thr	Arg	Leu	Arg	Val	Asn			

## PhoenixTemp32470.tmp.txt

ttc	aag	ctt	820	tta	gag	act	cag	aat	825	ata	att	gga	aaa	acc	830	atc	gag	caa	2544
Phe	Lys	Leu	835	Leu	Glu	Thr	Gln	Asn	840	Ile	Ile	Gly	Lys	Thr	845	Ile	Glu	Gln	
gca	aga	ctt	atc	ggg	att	gac	ttt	tat	tct	gtc	ctt	tac	cgt	ggc	tca				2592
Ala	Arg	Leu	Ile	Gly	Ile	Asp	Phe	Tyr	Ser	Val	Leu	Tyr	Arg	Gly	Ser				
caa	tac	aag	ggt	gaa	tcc	ttt	tta	att	aga	ctt	tgc	aaa	tca	gaa	caa				2640
Gln	Tyr	Lys	Val	Glu	Ser	Phe	Leu	Ile	Arg	Leu	Cys	Lys	Ser	Glu	Gln				
865				870						875					880				
ttc	att	ctg	att	tct	cca	agc	cga	atg	cag	gtc	cgt	aac	caa	aaa	gca				2688
Phe	Ile	Leu	Ile	Ser	Pro	Ser	Arg	Met	Gln	Val	Arg	Asn	Gln	Lys	Ala				
				885					890					895					
ctc	gaa	tgt	ata	cca	ctt	gtg	atg	gaa	cct	tca	tct	gcc	ttt	tac	aag				2736
Leu	Glu	Cys	Ile	Pro	Leu	Val	Met	Glu	Pro	Ser	Ser	Ala	Phe	Tyr	Lys				
			900					905					910						
agt	cct	tta	tta	ggt	tta	gac	ttt	caa	tca	tta	tac	cca	tcc	att	ggt				2784
Ser	Pro	Leu	Leu	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Ile	Val				
			915					920					925						
atg	gca	tat	aat	tat	tgt	tac	agc	act	att	atc	gga	aga	ggt	gaa	tca				2832
Met	Ala	Tyr	Asn	Tyr	Cys	Tyr	Ser	Thr	Ile	Ile	Gly	Arg	Val	Glu	Ser				
			930		935						940								
tta	aat	act	aaa	aat	aat	gaa	ata	ggt	atc	aca	agg	tat	gat	atc	cct				2880
Leu	Asn	Thr	Lys	Asn	Asn	Glu	Ile	Gly	Ile	Thr	Arg	Tyr	Asp	Ile	Pro				
945				950						955					960				
gaa	gat	tta	cta	act	tta	ata	tct	gat	tat	atc	acc	atc	tca	cca	aat				2928
Glu	Asp	Leu	Leu	Thr	Leu	Ile	Ser	Asp	Tyr	Ile	Thr	Ile	Ser	Pro	Asn				
			965					970					975						
ggt	atc	gtc	ttt	gtc	aaa	aaa	gaa	ctg	aga	aag	tca	ggt	ttg	gct	aag				2976
Gly	Ile	Val	Phe	Val	Lys	Lys	Glu	Leu	Arg	Lys	Ser	Val	Leu	Ala	Lys				
			980					985					990						
atg	tta	aag	gac	att	ctt	gat	acg	aga	ttt	cta	atg	aaa	agt	act	atg				3024
Met	Leu	Lys	Asp	Ile	Leu	Asp	Thr	Arg	Phe	Leu	Met	Lys	Ser	Thr	Met				
			995				1000					1005							
aag	gaa	ctt	aat	gat	gaa	cat	aac	ctt	att	aat	atg	ttg	gat	aat	agg				3072
Lys	Glu	Leu	Asn	Asp	Glu	His	Asn	Leu	Ile	Asn	Met	Leu	Asp	Asn	Arg				
			1010			1015				1020									
cag	gaa	gcc	tta	aaa	tta	ctt	gct	aat	gtc	acg	tac	gga	tac	aca	tct				3120
Gln	Glu	Ala	Leu	Lys	Leu	Leu	Ala	Asn	Val	Thr	Tyr	Gly	Tyr	Thr	Ser				
1025				1030						1035				1040					
gct	tca	ttc	tct	ggg	cgt	atg	cca	tgt	tcc	gac	att	gca	gat	agt	ata				3168
Ala	Ser	Phe	Ser	Gly	Arg	Met	Pro	Cys	Ser	Asp	Ile	Ala	Asp	Ser	Ile				
			1045					1050					1055						
ggt	cag	act	ggc	agg	gaa	aca	tta	gag	agg	gcg	atc	gag	ggt	ata	gaa				3216
Val	Gln	Thr	Gly	Arg	Glu	Thr	Leu	Glu	Arg	Ala	Ile	Glu	Val	Ile	Glu				
			1060					1065					1070						
act	act	aaa	gaa	tgg	ggg	gct	aaa	gta	ggt	tat	gga	gat	aca	gat	agt				3264
Thr	Thr	Lys	Glu	Trp	Gly	Ala	Lys	Val	Val	Tyr	Gly	Asp	Thr	Asp	Ser				
			1075			1080					1085								
tta	ttt	ggt	tac	ctt	cca	ggg	aaa	tcg	aaa	gat	gaa	gca	ttt	gta	atc				3312
Leu	Phe	Val	Tyr	Leu	Pro	Gly	Lys	Ser	Lys	Asp	Glu	Ala	Phe	Val	Ile				
			1090			1095				1100									
gga	agg	cag	atc	gct	gaa	gaa	ata	aca	aga	cag	aat	ccg	aaa	ccc	ata				3360
Gly	Arg	Gln	Ile	Ala	Glu	Glu	Ile	Thr	Arg	Gln	Asn	Pro	Lys	Pro	Ile				
1105				1110					1115					1120					
gag	ttg	aag	ttt	gag	aaa	gtg	tat	cat	ccg	tgc	ttt	tta	gta	acc	aag				3408
Glu	Leu	Lys	Phe	Glu	Lys	Val	Tyr	His	Pro	Cys	Phe	Leu	Val	Thr	Lys				
			1125					1130					1135						
aaa	cgt	tat	gta	ggc	ttt	tcc	tat	gag	tct	gaa	tat	caa	aaa	gaa	cca				3456
Lys	Arg	Tyr	Val	Gly	Phe	Ser	Tyr	Glu	Ser	Glu	Tyr	Gln	Lys	Glu	Pro				
			1140					1145					1150						
aaa	ttc	gat	gca	aag	ggt	ata	gaa	act	ggt	cga	agg	gat	gga	aca	cca				3504
Lys	Phe	Asp	Ala	Lys	Gly	Ile	Glu	Thr	Val	Arg	Arg	Asp	Gly	Thr	Pro				
			1155			1160						1165							
gca	caa	caa	aaa	atc	gtg	gaa	aag	gca	ctt	aga	att	atg	ttt	gaa	acc				3552
Ala	Gln	Gln	Lys	Ile	Val	Glu	Lys	Ala	Leu	Arg	Ile	Met	Phe	Glu	Thr				
			1170			1175				1180									
act	gat	tta	tcc	atg	gta	aaa	gaa	tac	tta	att	gga	gaa	ttt	gac	aaa				3600
Thr	Asp	Leu	Ser	Met	Val	Lys	Glu	Tyr	Leu	Ile	Gly	Glu	Phe	Asp	Lys				

## PhoenixTemp32470.tmp.txt

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1185      1190      1195      1200
att atc acc ggc aga gtt aat att caa gat ttc tgt ttc gct aga gaa      3648
Ile Ile Thr Gly Arg Val Asn Ile Gln Asp Phe Cys Phe Ala Arg Glu
      1205      1210      1215
gtt aag cta ggc cat tat aaa agt gaa aag act gct ccc cct ggt gcc      3696
Val Lys Leu Gly His Tyr Lys Ser Glu Lys Thr Ala Pro Pro Gly Ala
      1220      1225      1230
caa att gcc atg caa atg atg gaa gaa gat gca cgt aca gaa ccc caa      3744
Gln Ile Ala Met Gln Met Met Glu Glu Asp Ala Arg Thr Glu Pro Gln
      1235      1240      1245
tac aag cag aga gta ccg tat gtc gtg aaa atg gga aaa ata ggt gaa      3792
Tyr Lys Gln Arg Val Pro Tyr Val Val Lys Met Gly Lys Ile Gly Glu
      1250      1255      1260
act ttg agc tct aga tgc ctc tca ccg gag gct ttc tta agg tct aaa      3840
Thr Leu Ser Ser Arg Cys Leu Ser Pro Glu Ala Phe Leu Arg Ser Lys
1265      1270      1275
acg tct agg ttg gat tat aca tac tac att gtc aaa aac att ata cct      3888
Thr Ser Arg Leu Asp Tyr Thr Tyr Tyr Val Lys Asn Ile Ile Pro
      1285      1290      1295
cct ctt cag cgg ttt ttc cag tta gta gga gtt gat atc atg gat tgg      3936
Pro Leu Gln Arg Phe Phe Gln Leu Val Gly Val Asp Ile Met Asp Trp
      1300      1305      1310
tat ata tcg atg aaa cat act ctt aat cct cta aaa gta gac tct gat      3984
Tyr Ile Ser Met Lys His Thr Leu Asn Pro Leu Lys Val Asp Ser Asp
      1315      1320      1325
gac ggc agc cat gaa gga agg tct ttg act tca atc gtc aaa ggc aaa      4032
Asp Gly Ser His Glu Gly Arg Ser Leu Thr Ser Ile Val Lys Gly Lys
1330      1335      1340
tct tgt ctg cgc tgt cgc aag aaa gtt cac cca aaa ttc att agt cct      4080
Ser Cys Leu Arg Cys Arg Lys Lys Val His Pro Lys Phe Ile Ser Pro
1345      1350      1355
ata tgt ggt gaa tgc agg atc gat aaa agc aac acc acc ctt ttt ttg      4128
Ile Cys Gly Glu Cys Arg Ile Asp Lys Ser Asn Thr Thr Leu Phe Leu
      1365      1370      1375
gaa gag tca gtc aga cta aaa cag tct aag atg cat tct gtt atg agg      4176
Glu Glu Ser Val Arg Leu Lys Gln Ser Lys Met His Ser Val Met Arg
      1380      1385      1390
acc tgt caa acc tgt tca tac aag ttt cat aaa gat gct atg gca cct      4224
Thr Cys Gln Thr Cys Ser Tyr Lys Phe His Lys Asp Ala Met Ala Pro
1395      1400      1405
ttg gac caa att gca ctc aag tgc caa tct aaa gac tgt ccg gta tac      4272
Leu Asp Gln Ile Ala Leu Lys Cys Gln Ser Lys Asp Cys Pro Val Tyr
1410      1415      1420
ttc agt aaa ttc aaa tac atg aac ggt ctc aag gat aat gat atg aga      4320
Phe Ser Lys Phe Lys Tyr Met Asn Gly Leu Lys Asp Asn Asp Met Arg
1425      1430      1435
gat ctc ttg atg gga ctg ata gat ttg gac tat tga      4356
Asp Leu Leu Met Gly Leu Ile Asp Leu Asp Tyr
      1445      1450

```

&lt;210&gt; 3681

&lt;211&gt; 1451

&lt;212&gt; PRT

&lt;213&gt; Kluyveromyces lactis NRRL Y-1140

&lt;400&gt; 3681

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Met Ser Asp Ile Phe Gly Ser Leu Asp Ser Ser Leu Asp Ser Asn Glu
1 5 10 15
Ile Asn Ile Gln Ile Asn Asn Ser Asp Ser Tyr Gln Cys Phe Pro Thr
20 25 30
Leu Leu Asp Cys Lys Thr Ser Lys Ser Leu Pro Gly Leu Arg Phe Val
35 40 45
Gln Val Pro Val Leu Arg Phe Tyr Gly Cys Leu Ser Thr Gly His Lys
50 55 60
Val Leu Ile His Cys His Gly Ile Phe Pro Tyr Ile Phe Ile Lys Tyr
65 70 75 80
Asp Gly His Ser Asn Asp Lys Ala Ser Val Ile Arg Asn Arg Cys Thr
85 90 95
Ser Leu His Lys Ile Leu Glu Thr Arg Met Ile Glu Thr Phe Thr Lys

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## PhoenixTemp32470.tmp.txt

			100					105					110		
Thr	Asp	Phe	Lys	Glu	Lys	Leu	Thr	Ser	Leu	Lys	Tyr	Ile	Ala	Asn	Val
		115					120					125			
Ser	Val	Val	Lys	Gly	Val	Pro	Phe	Tyr	Gly	Tyr	His	Val	Gly	Tyr	Glu
	130					135					140				
Pro	Tyr	Tyr	Lys	Ile	Thr	Leu	Leu	Asn	Gly	Ser	Tyr	Ser	Asn	Lys	Leu
145					150					155					160
Ser	Glu	Leu	Leu	Arg	Asp	Gly	Arg	Ile	Phe	Thr	Ser	Lys	Val	Asp	Val
				165					170					175	
Phe	Glu	Ala	His	Ile	Pro	Tyr	Leu	Leu	Gln	Met	Met	Ala	Asp	Tyr	Asn
			180					185					190		
Leu	Phe	Gly	Cys	Gly	Trp	Leu	Lys	Leu	Ser	Lys	Cys	Tyr	Phe	Arg	Gln
		195					200					205			
Pro	Val	Leu	Leu	Thr	Asp	Leu	Asp	Met	Asn	Glu	Ile	Leu	His	Thr	Asp
	210					215					220				
Ser	Leu	Glu	Arg	Phe	Leu	Lys	Lys	His	Leu	His	Pro	Asn	Gln	Asn	Val
225					230					235					240
Leu	Asp	Ile	Asp	Pro	Phe	His	Arg	Ile	Gly	Lys	Thr	Phe	Leu	Glu	Met
				245					250					255	
Asp	Ile	Ile	Pro	Gln	Phe	Ile	Leu	Asn	Arg	Glu	Glu	Ile	Gln	Phe	Arg
			260					265					270		
Asp	Leu	His	His	Asp	Phe	Val	Glu	Leu	Lys	Lys	Asp	Leu	Gln	Thr	Ser
		275					280					285			
Asp	Gln	Gly	Tyr	Val	Asn	Ser	Thr	Lys	Asp	Ile	Trp	Lys	Glu	Ile	Gln
	290					295					300				
Leu	Leu	Arg	Lys	Arg	Lys	Gly	Leu	Ala	Glu	Tyr	Glu	Gly	Leu	Lys	Glu
305					310					315					320
Ile	Phe	Arg	Glu	Ser	Gln	Leu	Gln	Tyr	Asn	Trp	Lys	Glu	Asp	Glu	Arg
				325					330					335	
Leu	Val	Lys	His	Phe	Asp	Glu	Ala	Lys	Lys	Arg	Met	Ser	Ser	Leu	Phe
			340					345					350		
Asn	Lys	Glu	Lys	Ala	Leu	Asn	Phe	Asp	Asn	Phe	Val	Asp	Pro	Phe	Ile
		355					360					365			
Asn	Glu	Asn	Phe	Phe	Ala	Ser	Thr	Lys	Asp	Ala	Leu	Gln	Glu	Leu	Trp
	370					375					380				
Pro	Lys	Ile	Pro	Arg	Asn	Ala	Ser	Ser	Lys	Val	Phe	Cys	Trp	Ser	Glu
385					390					395					400
Val	Glu	Phe	Lys	Leu	Asn	Asn	Gln	Tyr	Thr	Ser	Val	Arg	Glu	Gln	Lys
			405						410					415	
Val	Ala	Ser	Thr	Asn	Thr	Lys	Asn	Ile	Pro	Ile	Leu	Leu	Asn	Ile	Ser
			420					425					430		
Ser	Asn	Glu	Ser	His	Ser	Ser	His	Val	Ser	Ser	Lys	Arg	Ala	Glu	Glu
		435					440					445			
Ser	Ser	Cys	His	Asp	Asp	Ile	Ala	Asn	Glu	Ala	Ile	Ala	Arg	Lys	Leu
	450														

Ile Thr Gln Glu Gly Val Leu Ile Phe Leu Asp Asp Val Ser Thr Glu  
 660 665 670  
 Asn Ser Trp Lys Thr Ala Asp Pro Ser Val His Ile Thr Ala Tyr Tyr  
 675 680 685  
 Asp Glu Leu Glu Met Ile Tyr Ala Leu Glu Asp Leu Val Arg Phe Phe  
 690 695 700  
 Asp Pro Asp Ile Leu Ser Gly Tyr Glu Ile His Ser Ser Ser Trp Gly  
 705 710 715 720  
 Tyr Leu Ile Asp Arg Cys His Lys Gly His Asp Tyr Asp Val Glu Asp  
 725 730 735  
 Glu Leu Ser Arg Val Asp Tyr Asn Gln Ser Ser Lys Lys Lys Asp Arg  
 740 745 750  
 Trp Gly Tyr Thr His Ala Thr Ala Phe Ser Ile Thr Gly Arg Gln Met  
 755 760 765  
 Leu Asn Ile Trp Arg Pro Leu Arg Ser Ser Leu Asn Leu Leu Asp Tyr  
 770 775 780  
 Thr Leu Glu Asn Ile Ala Phe His Val Leu His Gln Arg Leu Pro Phe  
 785 790 800  
 Tyr Ser Tyr Lys Thr Arg Thr Glu Phe Tyr Glu Ser Met Asp Glu Thr  
 805 810 815  
 Ser Lys Arg Cys Leu Leu Phe Tyr Trp Ile Thr Arg Leu Arg Val Asn  
 820 825 830  
 Phe Lys Leu Leu Glu Thr Gln Asn Ile Ile Gly Lys Thr Ile Glu Gln  
 835 840 845  
 Ala Arg Leu Ile Gly Ile Asp Phe Tyr Ser Val Leu Tyr Arg Gly Ser  
 850 855 860  
 Gln Tyr Lys Val Glu Ser Phe Leu Ile Arg Leu Cys Lys Ser Glu Gln  
 865 870 875 880  
 Phe Ile Leu Ile Ser Pro Ser Arg Met Gln Val Arg Asn Gln Lys Ala  
 885 890 895  
 Leu Glu Cys Ile Pro Leu Val Met Glu Pro Ser Ser Ala Phe Tyr Lys  
 900 905 910  
 Ser Pro Leu Leu Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Ile Val  
 915 920 925  
 Met Ala Tyr Asn Tyr Cys Tyr Ser Thr Ile Ile Gly Arg Val Glu Ser  
 930 935 940  
 Leu Asn Thr Lys Asn Asn Glu Ile Gly Ile Thr Arg Tyr Asp Ile Pro  
 945 950 955 960  
 Glu Asp Leu Leu Thr Leu Ile Ser Asp Tyr Ile Thr Ile Ser Pro Asn  
 965 970 975  
 Gly Ile Val Phe Val Lys Lys Glu Leu Arg Lys Ser Val Leu Ala Lys  
 980 985 990  
 Met Leu Lys Asp Ile Leu Asp Thr Arg Phe Leu Met Lys Ser Thr Met  
 995 1000 1005  
 Lys Glu Leu Asn Asp Glu His Asn Leu Ile Asn Met Leu Asp Asn Arg  
 1010 1015 1020  
 Gln Glu Ala Leu Lys Leu Ala Asn Val Thr Tyr Gly Tyr Thr Ser  
 1025 1030 1035 1040  
 Ala Ser Phe Ser Gly Arg Met Pro Cys Ser Asp Ile Ala Asp Ser Ile  
 1045 1050 1055  
 Val Gln Thr Gly Arg Glu Thr Leu Glu Arg Ala Ile Glu Val Ile Glu  
 1060 1065 1070  
 Thr Thr Lys Glu Trp Gly Ala Lys Val Val Tyr Gly Asp Thr Asp Ser  
 1075 1080 1085  
 Leu Phe Val Tyr Leu Pro Gly Lys Ser Lys Asp Glu Ala Phe Val Ile  
 1090 1095 1100  
 Gly Arg Gln Ile Ala Glu Ile Thr Arg Gln Asn Pro Lys Pro Ile  
 1105 1110 1115 1120  
 Glu Leu Lys Phe Glu Lys Val Tyr His Pro Cys Phe Leu Val Thr Lys  
 1125 1130 1135  
 Lys Arg Tyr Val Gly Phe Ser Tyr Glu Ser Glu Tyr Gln Lys Glu Pro  
 1140 1145 1150  
 Lys Phe Asp Ala Lys Gly Ile Glu Thr Val Arg Arg Asp Gly Thr Pro  
 1155 1160 1165  
 Ala Gln Gln Lys Ile Val Glu Lys Ala Leu Arg Ile Met Phe Glu Thr  
 1170 1175 1180  
 Thr Asp Leu Ser Met Val Lys Glu Tyr Leu Ile Gly Glu Phe Asp Lys  
 1185 1190 1195 1200  
 Ile Ile Thr Gly Arg Val Asn Ile Gln Asp Phe Cys Phe Ala Arg Glu

## PhoenixTemp32470.tmp.txt

Val Lys Leu Gly His Tyr Lys Ser Glu Lys Thr Ala Pro Pro Gly Ala  
 Gln Ile Ala Met Gln Met Met Glu Glu Asp Ala Arg Thr Glu Pro Gln  
 Tyr Lys Gln Arg Val Pro Tyr Val Val Lys Met Gly Lys Ile Gly Glu  
 Thr Leu Ser Ser Arg Cys Leu Ser Pro Glu Ala Phe Leu Arg Ser Lys  
 Thr Ser Arg Leu Asp Tyr Thr Tyr Tyr Ile Val Lys Asn Ile Ile Pro  
 Pro Leu Gln Arg Phe Phe Gln Leu Val Gly Val Asp Ile Met Asp Trp  
 Tyr Ile Ser Met Lys His Thr Leu Asn Pro Leu Lys Val Asp Ser Asp  
 Asp Gly Ser His Glu Gly Arg Ser Leu Thr Ser Ile Val Lys Gly Lys  
 Ser Cys Leu Arg Cys Arg Lys Lys Val His Pro Lys Phe Ile Ser Pro  
 Ile Cys Gly Glu Cys Arg Ile Asp Lys Ser Asn Thr Thr Leu Phe Leu  
 Glu Glu Ser Val Arg Leu Lys Gln Ser Lys Met His Ser Val Met Arg  
 Thr Cys Gln Thr Cys Ser Tyr Lys Phe His Lys Asp Ala Met Ala Pro  
 Leu Asp Gln Ile Ala Leu Lys Cys Gln Ser Lys Asp Cys Pro Val Tyr  
 Phe Ser Lys Phe Lys Tyr Met Asn Gly Leu Lys Asp Asn Asp Met Arg  
 Asp Leu Leu Met Gly Leu Ile Asp Leu Asp Tyr

&lt;210&gt; 3682

&lt;211&gt; 3786

&lt;212&gt; DNA

&lt;213&gt; Candida albicans SC5314

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(3786)

&lt;223&gt; transl\_table=12

&lt;400&gt; 3682

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tct gta aat tgg agt aac aat caa att aat tct tct ttt tcc agt ttg	96
Ser Val Asn Trp Ser Asn Asn Gln Ile Asn Ser Ser Phe Ser Ser Leu	
20 25 30	
cga gtg caa att aat gat tat gat act tat caa act ctc cca acc aga	144
Arg Val Gln Ile Asn Asp Tyr Asp Thr Tyr Gln Thr Leu Pro Thr Arg	
35 40 45	
ttg gac caa cta tgt act caa gtc act caa gtt ccg ata atc aga atc	192
Leu Asp Gln Leu Cys Thr Gln Val Thr Gln Val Pro Ile Ile Arg Ile	
50 55 60	
tat ggg tct tta tcg gta caa aac tct tta agt aac aca gat tcg cct	240
Tyr Gly Ser Leu Ser Val Gln Asn Ser Leu Ser Asn Thr Asp Ser Pro	
65 70 75 80	
aac aag aag aag cgg aaa ata gat gag act aca tca cca gca gtt ttt	288
Asn Lys Lys Lys Arg Lys Ile Asp Glu Thr Thr Ser Pro Ala Val Phe	
85 90 95	
aat gtt gtt att cat gta cat aat ttc tat cca tat atc tat gtt gac	336
Asn Val Val Ile His Val His Asn Phe Tyr Pro Tyr Ile Tyr Val Asp	
100 105 110	
tgt cac gaa act gat ttt acg aaa ttg gaa aat gac gat ttt atc aaa	384
Cys His Glu Thr Asp Phe Thr Lys Leu Glu Asn Asp Asp Phe Ile Lys	
115 120 125	
tta ata aca gac tat tta gaa act gtt tta gag gaa tct ttt aaa tat	432
Leu Ile Thr Asp Tyr Leu Glu Thr Val Leu Glu Glu Ser Phe Lys Tyr	

## PhoenixTemp32470.tmp.txt

130	aga	aaa	tcc	tca	aag	aat	135	cta	gat	gat	gat	140	gaa	cag	aac	cat	ggt	gaa	480
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Asn	Leu	Lys	Arg	Ser	Gly	Gln	Arg	Lys	Tyr	Ile	Ala	Asn	Val	Ser	Val	175			
	tgt	aaa	gga	gta	ccc	att	tat	ggg	ttt	caa	tta	gga	tac	aga	ttt	ttt	576		
Cys	Lys	Gly	Val	Pro	Ile	Tyr	Gly	Phe	Gln	Leu	Gly	Tyr	Arg	Phe	Phe	180			
	tac	aaa	ata	tct	ttg	tta	tcg	cca	ctt	tac	aaa	tcc	aga	ttg	gca	aaa	624		
Tyr	Lys	Ile	Ser	Leu	Leu	Ser	Pro	Leu	Tyr	Lys	Ser	Arg	Leu	Ala	Lys	200			
	ctc	ttt	cag	gaa	aac	aca	att	tca	tta	ttt	aga	ata	ggc	atg	gaa	aag	672		
Leu	Phe	Gln	Glu	Asn	Thr	Ile	Ser	Leu	Phe	Arg	Ile	Gly	Met	Glu	Lys	210			
	aag	aaa	aat	gta	act	tac	aat	cct	gaa	cca	gct	tat	gta	tat	gag	gca	720		
Lys	Lys	Asn	Val	Thr	Tyr	Asn	Pro	Glu	Pro	Ala	Tyr	Val	Tyr	Glu	Ala	235			
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His	Ile	Pro	Tyr	Leu	Leu	Gln	Phe	Leu	Thr	Asp	Tyr	Asn	Leu	Phe	Gly	245			
	tgt	gga	tgg	gta	aat	atc	gac	aag	gat	ttt	ggt	agc	cag	gaa	gat	gca	816		
Cys	Gly	Trp	Val	Asn	Ile	Asp	Lys	Asp	Phe	Val	Ser	Gln	Glu	Asp	Ala	260			
	aag	act	cgt	ggg	tta	tat	ttc	cga	tcc	cca	att	ttt	aca	aat	ata	cat	864		
Lys	Thr	Arg	Gly	Leu	Tyr	Phe	Arg	Ser	Pro	Ile	Phe	Thr	Asn	Ile	His	275			
	aaa	tca	ttt	cat	agt	ccc	aac	gat	ttg	ctt	gca	cta	cgt	cag	tgt	tta	912		
Lys	Ser	Phe	His	Ser	Pro	Asn	Asp	Leu	Leu	Ala	Leu	Arg	Gln	Cys	Leu	290			
	tca	aat	tat	att	act	gcg	gat	aat	gta	tta	tat	aat	ggg	cag	ctt	gat	960		
Ser	Asn	Tyr	Ile	Thr	Ala	Asp	Asn	Val	Leu	Tyr	Asn	Gly	Gln	Leu	Asp	310			
	aat	ggg	aac	ccg	tgt	cct	ttt	aat	cga	atc	ggg	aaa	tcc	act	ctt	gag	1008		
Asn	Gly	Asn	Pro	Cys	Pro	Phe	Asn	Arg	Ile	Gly	Lys	Ser	Thr	Leu	Glu	325			
	atg	gat	att	acc	aca	aat	agt	ata	gtc	aac	cgt	aca	tgg	ctt	agt	cct	1056		
Met	Asp	Ile	Thr	Thr	Asn	Ser	Ile	Val	Val	Asn	Arg	Thr	Trp	Leu	Pro	340			
	cga	gag	ctt	cat	gat	gat	ttt	ata	gag	aaa	gca	gag	ttt	ctc	gaa	tac	1104		
Arg	Glu	Leu	His	Asp	Asp	Phe	Ile	Glu	Lys	Ala	Glu	Phe	Leu	Glu	Tyr	355			
	aaa	aga	gca	att	gag	ctg	gga	agt	cat	aag	tat	ggt	tac	aag	tat	gat	1152		
Lys	Arg	Ala	Ile	Glu	Ser	Gly	Ser	His	Lys	Tyr	Gly	Tyr	Lys	Tyr	Asp	370			
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Gln	Asp	Gly	Gln	Pro	Arg	Ile	Tyr	Leu	Ser	Ser	Leu	Lys	Gln	Ile	Tyr	385			
	aac	gat	cta	aaa	tat	cag	tgt	cga	tca	aga	gat	tca	ctg	ttt	aat	ggt	1248		
Asn	Asp	Leu	Lys	Tyr	Gln	Cys	Arg	Ser	Arg	Asp	Ser	Ser	Phe	Asn	Val	400			
	gct	gca	gat	ggt	tta	gaa	acc	gaa	aac	tcg	tcg	tat	ttt	ggt	act	gga	1296		
Ala	Ala	Asp	Val	Leu	Glu	Thr	Glu	Asn	Ser	Ser	Tyr	Phe	Gly	Thr	Gly	420			
	tct	aca	aac	tgg	tcg	aat	caa	gaa	cag	ttg	aac	gag	cta	ttt	gat	tac	1344		
Ser	Thr	Asn	Trp	Ser	Asn	Gln	Gln	Gln	Leu	Asn	Glu	Leu	Phe	Asp	Tyr	435			
	ttg	aag	aag	cta	aat	ggt	gat	gtc	aaa	ttg	gat	tca	ctg	aag	tat	tcc	1392		
Leu	Lys	Lys	Leu	Asn	Gly	Asp	Val	Lys	Leu	Asp	Ser	Ser	Lys	Tyr	Ser	445			
	aaa	aag	tac	cta	caa	gcg	aga	aaa	ttg	aaa	cag	cca	gct	ggt	ttt	tca	1440		
Lys	Lys	Tyr	Leu	Gln	Ala	Arg	Lys	Leu	Lys	Gln	Pro	Ala	Val	Phe	Ser	460			
	aga	ata	cct	acg	gct	ttc	caa	ttg	ggt	gac	att	gag	aaa	tca	ata	gtg	1488		
Arg	Ile	Pro	Thr	Ala	Phe	Gln	Leu	Val	Asp	Ile	Glu	Lys	Ser	Ile	Val	475			
	caa	cat	aag	ctt	aaa	atg	aga	ttt	gat	agt	gat	tta	tta	aat	tgg	act	1536		
Gln	His	Lys	Leu	Lys	Met	Arg	Phe	Asp	Ser	Asp	Leu	Leu	Asn	Trp	Thr	485			

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## PhoenixTemp32470.tmp.txt

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	Leu	Lys	Met	Ile	Thr	Lys	Leu	Val	Thr	Leu	2688
					885						
	gat	att	tta	tcg	gga	tat	gaa	gtc	aat	tca	2736
	Asp	Ile	Leu	Ser	Gly	Tyr	Glu	Val	Asn	Ser	
				900					905		
	ggt	gag	aga	cta	aga	gat	gta	ttt	ggt	ata	2784
	Val	Glu	Arg	Leu	Arg	Asp	Val	Phe	Gly	Ile	
			915								
	agt	cgg	gga	agt	ttc	aag	agt	aac	ggg	aag	2832
	Ser	Arg	Gly	Ser	Phe	Lys	Ser	Asn	Gly	Lys	
		930							935		
	tac	aca	cac	aca	tcg	aat	atc	gag	att	tcg	2880
	Tyr	Thr	His	Thr	Ser	Asn	Ile	Glu	Ile	Ser	
	945					950				955	
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	Arg	Gln	Leu	Ala	Leu	Lys	Leu	Ile	Ala	Asn	
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	Ser	Ala	Thr	Phe	Ser	Gly	Arg	Met	Pro	Asn	

1235 1240 1245  
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 Ile Val Ser Thr Gly Arg Glu Ile Phe Gln His Ile Lys  
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 Arg Val Gln Ile Asn Asp Tyr Asp Thr Tyr Gln Thr Leu Pro Thr Arg  
 35 40 45  
 Leu Asp Gln Leu Cys Thr Gln Val Thr Gln Val Pro Ile Ile Arg Ile  
 50 55 60  
 Tyr Gly Ser Leu Ser Val Gln Asn Ser Leu Ser Asn Thr Asp Ser Pro  
 65 70 75 80  
 Asn Lys Lys Lys Arg Lys Ile Asp Glu Thr Thr Ser Pro Ala Val Phe  
 85 90 95  
 Asn Val Val Ile His Val His Asn Phe Tyr Pro Tyr Ile Tyr Val Asp  
 100 105 110  
 Cys His Glu Thr Asp Phe Thr Lys Leu Glu Asn Asp Asp Phe Ile Lys  
 115 120 125  
 Leu Ile Thr Asp Tyr Leu Glu Thr Val Leu Glu Glu Ser Phe Lys Tyr  
 130 135 140  
 Arg Lys Ser Ser Lys Asn Leu Asp Asp Asp Glu Gln Asn His Val Glu  
 145 150 155 160  
 Asn Leu Lys Arg Ser Gly Gln Arg Lys Tyr Ile Ala Asn Val Ser Val  
 165 170 175  
 Cys Lys Gly Val Pro Ile Tyr Gly Phe Gln Leu Gly Tyr Arg Phe Phe  
 180 185 190  
 Tyr Lys Ile Ser Leu Leu Ser Pro Leu Tyr Lys Ser Arg Leu Ala Lys  
 195 200 205  
 Leu Phe Gln Glu Asn Thr Ile Ser Leu Phe Arg Ile Gly Met Glu Lys  
 210 215 220  
 Lys Lys Asn Val Thr Tyr Asn Pro Glu Pro Ala Tyr Val Tyr Glu Ala  
 225 230 235 240  
 His Ile Pro Tyr Leu Leu Gln Phe Leu Thr Asp Tyr Asn Leu Phe Gly  
 245 250 255  
 Cys Gly Trp Val Asn Ile Asp Lys Asp Phe Val Ser Gln Glu Asp Ala  
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 Lys Thr Arg Gly Leu Tyr Phe Arg Ser Pro Ile Phe Thr Asn Ile His  
 275 280 285  
 Lys Ser Phe His Ser Pro Asn Asp Leu Leu Ala Leu Arg Gln Cys Leu  
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 Ser Asn Tyr Ile Thr Ala Asp Asn Val Leu Tyr Asn Gly Gln Leu Asp  
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 Asn Gly Asn Pro Cys Pro Phe Asn Arg Ile Gly Lys Ser Thr Leu Glu  
 325 330 335  
 Met Asp Ile Thr Thr Asn Ser Ile Val Asn Arg Thr Trp Leu Ser Pro  
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 Arg Glu Leu His Asp Asp Phe Ile Glu Lys Ala Glu Phe Leu Glu Tyr  
 355 360 365  
 Lys Arg Ala Ile Glu Ser Gly Ser His Lys Tyr Gly Tyr Lys Tyr Asp  
 370 375 380  
 Gln Asp Gly Gln Pro Arg Ile Tyr Leu Ser Ser Leu Lys Gln Ile Tyr  
 385 390 395 400  
 Asn Asp Leu Lys Tyr Gln Cys Arg Ser Arg Asp Ser Ser Phe Asn Val  
 405 410 415  
 Ala Ala Asp Val Leu Glu Thr Glu Asn Ser Ser Tyr Phe Gly Thr Gly  
 420 425 430  
 Ser Thr Asn Trp Ser Asn Gln Glu Gln Leu Asn Glu Leu Phe Asp Tyr  
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 Leu Lys Lys Leu Asn Gly Asp Val Lys Leu Asp Ser Ser Lys Tyr Ser  
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## PhoenixTemp32470.tmp.txt

Lys 465 Lys Tyr Leu Gln Ala 470 Arg Lys Leu Lys Gln 475 Pro Ala Val Phe 480 Ser  
 Arg Ile Pro Thr Ala 485 Phe Gln Leu Val Asp 490 Ile Glu Lys Ser Ile 495 Val  
 Gln His Lys Leu Lys Met Arg Phe Asp 505 Ser Asp Leu Leu Asn 510 Trp Thr  
 Asn Tyr Val 515 Lys Leu Phe Asp 520 Gln Asn Ser Gln Val 525 Leu Asn Asn  
 Asp Glu 530 Pro Val Ala Ile Asn 535 Ile Leu Pro Glu Glu 540 Asn Leu Ser Asp  
 Asn Glu 545 Ile Ser Asp Asn 550 Asn Gly Arg Glu Thr 555 Met Asn Glu Asn Thr 560  
 Asn Ser Asp Ala Asp 565 Glu Asn Leu Val Ile 570 Asp Asn Gln Leu Glu 575 Val  
 Glu Pro Thr Glu 580 Asn Ile Pro Lys Glu 585 Asp Asn Lys Glu Pro 590 Asp Asp  
 Tyr Glu Leu 595 Thr Gln Leu His Gln 600 Phe Asp Glu Ser Leu 605 Met Arg Asn  
 Leu Thr 610 Gln Ile Gln Ala Thr 615 Lys Thr Ala Asn Phe 620 Leu Gly Val Glu  
 Asp Leu 625 Ser Tyr Leu Asp 630 Asp Phe Ser Phe Thr 635 Ser Ser Gln Ser Gln 640  
 Ser Asp Phe Lys Asn 645 Phe Gln Ile Thr Asp 650 Asn Thr Tyr Glu Val 655 Pro  
 Ile Pro Asp Gln 660 Leu Lys Pro Glu Asn 665 Ile Asp Gln Thr Phe 670 Gln Ser  
 Ala Gly Leu 675 Leu Lys Val Asn Tyr 680 Ser Asp Pro Phe Tyr 685 Asp Asn Gln  
 Asn Asp 690 Val Pro Ala Lys Pro 695 Leu Val Phe Ala Asn 700 Gln Lys Ile Val  
 Val Pro Leu Lys Asn Glu 710 Ser Ser Ile Pro Ser 715 Leu Glu Met Ser Gln 720  
 Leu Ile Lys Gln Asn 725 Thr His Ile Thr Lys 730 Pro Ile Ser Gln Ile Phe 735  
 Ser Thr Trp Gln 740 Tyr Val Pro Glu Pro 745 Pro Ser Lys Arg Glu 750 Val Ser  
 Lys Trp Leu Lys His Asp Glu Ala Tyr Thr Leu Lys Lys 765 Asn Thr Lys  
 Tyr Gln Phe Gln Ile Glu Pro 775 Gly Val Thr Gln Ser Tyr Asp Tyr Lys  
 Tyr Ser Tyr Asn Ser Met 790 Lys Ile Ser Arg Arg 795 Pro Asp Glu Phe Asn 800  
 Cys Leu Thr Asn Phe 805 His Met Glu Leu His Ala Asn Pro Pro Asn Ser 815  
 Lys Leu Thr Val 820 Asp Pro Leu Arg Asp 825 Pro Ile Ser Leu Ile Phe Tyr  
 Ser Phe Asp 835 Ala Asn Asn Met 840 Phe Arg His Leu Asn 845 Phe Ala Ser  
 Gly Ile Leu Ile Phe Asn Asn 855 Thr Asn Ile Asp Met 860 Asn Leu Ile Gln  
 Arg Leu Ser His Thr Leu Asn 870 Lys His Ile Glu Ile Phe Asp Asp Glu 880  
 Leu Lys Met Ile Thr Lys Leu Val Thr Leu Val Glu Leu Phe Asp Pro 895  
 Asp Ile Leu Ser Gly Tyr Glu Val Asn 905 Ser Met Ser Trp Gly Tyr Ile  
 Val Glu Arg 915 Leu Arg Asp Val Phe 920 Gly Ile Asn Ile Met Ser Asp Leu  
 Ser Arg Gly Ser Phe Lys Ser Asn 935 Gly Lys Phe Gly Asp Arg Trp Gly  
 Tyr Thr His Thr Ser Asn 950 Ile Glu Ile Ser Gly Arg His Met Leu Asn 960  
 Val Trp Arg Pro Leu 965 Arg Ser Glu Leu Ser 970 Leu Thr Ser Tyr Ser Leu  
 Glu Asn Val Thr Tyr His Leu Leu His 985 Lys Ser Leu Pro Arg Tyr Ser  
 Asn Tyr Arg 995 Leu Ser Glu Trp Leu Lys Glu Gly Thr Phe 1005 Ser Ser Ile  
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## PhoenixTemp32470.tmp.txt

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Leu Ile Gly Ile Glu Phe Asn Ser Asn Phe Tyr Arg Gly Ser Gln Tyr
      1045      1050      1055
Lys Val Glu Ser Ile Leu Ala Arg Ile Cys Lys Pro Glu Ser Leu Leu
      1060      1065      1070
Leu Asn Ser Pro Ser Lys Gln Gln Val His Glu Met Arg Pro Ile Glu
      1075      1080      1085
Cys Ile Pro Leu Ile Leu Glu Pro Lys Ser Asn Phe Tyr Lys Ser Pro
      1090      1095      1100
Leu Val Val Leu Asp Phe Gln Ser Leu Tyr Pro Ser Ile Met Ile Ala
1105      1110      1115      1120
Tyr Asn Tyr Cys Tyr Ser Thr Leu Val Gly Lys Leu His Asn Tyr Arg
      1125      1130      1135
Pro Thr Lys Asn Asn Ile Gly Tyr Leu Arg Asn Leu Lys Ile Pro Tyr
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Gly Leu Val Asn Leu Leu Gln Arg Glu Asp Gly Phe Asn Ile Ser Pro
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Asn Gly Phe Val Phe Val Lys Ser His Ile Arg Lys Ser Val Leu Ala
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Lys Met Leu Glu Glu Ile Leu Ser Ile Arg Ile Lys Ile Lys Gln Val
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Met Lys Leu Phe Lys Glu Asp Ala Glu Leu Thr Lys Leu Tyr Asn Ser
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Arg Gln Leu Ala Leu Lys Leu Ile Ala Asn Val Thr Tyr Gly Tyr Thr
      1220      1225      1230
Ser Ala Thr Phe Ser Gly Arg Met Pro Asn Ser Asp Ile Ala Asp Ala
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Ile Val Ser Thr Gly Arg Glu Ile Phe Gln His Ile Lys
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Ser Phe Tyr Ser His Ser Phe Gln Phe Phe Leu Ser Ala Leu Leu Ser
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Thr Gln Cys Met Gly Phe Lys Val Gln Phe Asn Asp Tyr Asp Thr Tyr
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cag tcg cta ccg ctg gat ata gac tgc ttg tat gga cag gta cat gtg      192
Gln Ser Leu Pro Ser Asp Ile Asp Cys Leu Tyr Gly Gln Val His Val
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Val Pro Ile Val Arg Ile Tyr Gly Ser Phe Ser Val Ser Asn Thr Glu
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ccc caa tct tcg gtt gca act tct tcc tca act act gca tct gca acc      288
Pro Gln Ser Ser Val Ala Thr Ser Ser Ser Thr Thr Ala Ser Ala Thr
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Ile Leu Asp Glu Ser Ala Leu Ser Phe Thr Thr Val Leu His Val His
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Asn Phe Phe Pro Tyr Phe Tyr Ile Asp Ala Pro Val His Ser Val Pro
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## PhoenixTemp32470.tmp.txt

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Asn	Thr	Asn	Leu	Pro
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Arg	Phe	Ile	Ala	Ile
	180	185	190	
tac	caa	gtg	ggt	aac
Tyr	Gln	Val	Gly	Asn
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Val	Tyr	Lys	Thr	Arg
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Phe	Ala	Asn	Phe	Cys
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Glu	Thr	His	Leu	Pro
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Tyr	Gly	Cys	Gly	Trp
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Val	Leu	Asp	Tyr	Asn
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Thr	Ala	His	Leu	Lys
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gtg	ctc	aat	cct	cga
Val	Leu	Asn	Pro	Arg
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ata	gac	gct	atc	act
Ile	Asp	Ala	Ile	Thr
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agg	cat	ctt	cac	cat
Arg	His	Leu	His	His
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Ser	Val	Glu	Thr	Pro
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Asp	Leu	Lys	Tyr	Gln
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Gln	Asn	Ile	Gly	Asn
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Ser	Thr	Glu	Leu	Arg
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Ala	Tyr	Glu	Thr	Asp
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Asp	His	Pro	Glu	Leu
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Thr	Tyr	Asp	Pro	Lys
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Leu	Phe	Ser	Glu	Lys
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Ser	Gln	Ala	Lys	Glu
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tca	gat	gct	ttg	agt
Ser	Asp	Ala	Leu	Ser
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## 505

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## PhoenixTemp32470.tmp.txt

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	Trp	Gly	Tyr	Thr	His	Thr	Ser	Ala	Leu	Lys	Ile	Asn	Gly	Arg	His	Leu					
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	Leu	Leu	Leu	Asn	Ser	Pro	Ser	Lys	Thr	Gln	Val	Ser	Asn	Met	Lys	Pro					
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	ctc	gag	gct	ata	tcg	ttg	ata	ttg	gaa	cct	gac	gca	aac	ttt	tac	aag					3168
	Leu	Glu	Ala	Ile	Ser	Leu	Ile	Leu	Glu	Pro	Asp	Ala	Asn	Phe	Tyr	Lys					
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	tcg	cct	ttg	gtg	gtt	ttg	gat	ttt	caa	tct	ttg	tat	cca	tcc	atc	atg					3216
	Ser	Pro	Leu	Val	Val	Leu	Asp	Phe	Gln	Ser	Leu	Tyr	Pro	Ser	Ile	Met					
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	Ile	Ala	Tyr	Asn	Tyr	Cys	Phe	Thr	Thr	Leu	Leu	Gly	Arg	Leu	Asp	Gly					
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	Phe	Asp	Pro	Lys	Lys	Asn	Thr	Ile	Gly	Phe	Leu	Lys	His	Leu	Asp	Leu					
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	ctt	tcc	aag	atg	ctt	gag	gaa	atc	ttg	aat	aca	aga	ata	cag	gtg	aaa					3456
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	acg	gtt	atg	ctg	atg	ttt	aaa	gac	gac	acc	aat	ctc	gcc	aaa	ttg	ctc					3504
	Thr	Val	Met	Ser	Met	Phe	Lys	Asp	Asp	Thr	Asn	Leu	Ala	Lys	Leu	Leu					
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	Ile	Ile	Glu	Ser	Ala	Asn	Tyr	Gly	Ala	Lys	Val	Val	Tyr	Gly	Asp	Thr					
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	gac	tct	ttg	ttc	atg	tat	ttg	cct	gga	cga	agc	aag	gaa	gac	tca	ttt					3744
	Asp	Ser	Leu	Phe	Met	Tyr	Leu	Pro	Gly	Arg	Ser	Lys	Glu	Asp	Ser	Phe					

## PhoenixTemp32470.tmp.txt

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 Pro Ile Gln Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu  
 1265 1270 1275 1280  
 agc aaa aag agg tat gtt ggt aac tgc ttt gag tat gag tcc caa caa 3888  
 Ser Lys Lys Arg Tyr Val Gly Asn Cys Phe Glu Tyr Glu Ser Gln Gln  
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 1300 1305 1310  
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 Ile Pro Ala Gln Gln Lys Ile Val Glu Lys Ala Leu Arg Ile Leu Phe  
 1315 1320 1325  
 act acc aaa gac ttg tcg ctc gtc aag gac tac act ctc act cag ttc 4032  
 Thr Thr Lys Asp Leu Ser Val Lys Asp Tyr Thr Leu Thr Gln Phe  
 1330 1335 1340  
 cgc aaa atc ata gcc aac cga ata tcg ata cgg gac ttt tgc ttt gca 4080  
 Arg Lys Ile Ile Ala Asn Arg Ile Ser Ile Arg Asp Phe Cys Phe Ala  
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 aag gaa gtc cgt ttt gga acc tac aaa agc ttg aac cac ata cct gct 4128  
 Lys Glu Val Arg Phe Gly Thr Tyr Lys Ser Leu Asn His Ile Pro Ala  
 1365 1370 1375  
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 Gly Ala Met Val Ala Met Arg Lys Val Ala Arg Asp Pro Arg Ser Glu  
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 cct cag tat aga gaa aga gta ccg tat gtg gtt att gaa gat gcc gag 4224  
 Pro Gln Tyr Arg Glu Arg Val Tyr Val Val Ile Glu Asp Ala Glu  
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 Lys Pro Arg Ile Arg Asp Arg Ser Val Pro Pro Glu Glu Phe Ile Glu  
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 Ala Tyr Arg His Leu Arg Pro Val Arg Leu Asp Tyr Glu Tyr Tyr Ile  
 1425 1430 1435 1440  
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 Gly Arg Val Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly  
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 Ala Asp Ile Arg Gly Trp Tyr Lys Glu Ile Pro Lys Gln Thr Ala Thr  
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 Asp Leu His Thr Gly Val Leu Lys Met Ser Arg His Ile Lys Ser Lys  
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 Val Met Ser Thr Arg Tyr Arg Glu Arg His Leu Thr Glu Val Ala Arg  
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 Thr Cys Tyr His Cys Ile Ser Ser Thr Tyr Ala Cys Gly Ser Ser Ile  
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 gaa agg att cga agc gtt gtg ttt aag tcg cag ctc gac cag aaa cac 4752  
 Glu Arg Ile Arg Ser Val Phe Lys Ser Gln Leu Asp Gln Lys His  
 1570 1575 1580  
 cag aca ata gag gaa gct gtg ggg tgg tag 4782  
 Gln Thr Ile Glu Glu Ala Val Gly Trp  
 1585 1590

&lt;210&gt; 3685



&lt;211&gt; 1593

&lt;212&gt; PRT

<213> *Pichia guilliermondii*

&lt;400&gt; 3685

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Met Cys Ser Leu His Phe Val Ile Cys Ser Leu Phe Ser His Ser His
1      5      10      15      20      25      30      35      40      45      50      55      60      65      70      75      80
Ser Phe Tyr Ser His Ser Phe Gln Phe Leu Ser Ala Leu Ser
Thr Gln Cys Met Gly Phe Lys Val Gln Phe Asn Asp Tyr Asp Thr Tyr
35      40      45      50      55      60      65      70      75      80      85      90      95      100      105      110      115
Gln Ser Leu Pro Ser Asp Ile Asp Cys Leu Tyr Gly Gln Val His Val
Val Pro Ile Val Arg Ile Tyr Gly Ser Phe Ser Val Ser Asn Thr Glu
65      70      75      80      85      90      95      100      105      110      115      120      125      130      135      140      145
Pro Gln Ser Ser Val Ala Thr Ser Ser Ser Thr Thr Ala Ser Ala Thr
Ile Leu Asp Glu Ser Ala Leu Ser Phe Thr Thr Val Leu His Val His
100      105      110      115      120      125      130      135      140      145      150      155      160      165      170      175      180
Asn Phe Phe Pro Tyr Phe Tyr Ile Asp Ala Pro Val His Ser Val Pro
Leu Gln Thr Ile Ile Ser Tyr Leu Glu Ser Cys Leu Gly Glu Ser Phe
115      120      125      130      135      140      145      150      155      160      165      170      175      180      185      190      195
Leu Arg Asn Pro Gly Asp Asp Glu Tyr Glu Asn Glu Lys Gly Thr
Asn Thr Asn Leu Pro Glu Ala Thr Ala Gly Gly Ser Asp Gln Lys Arg
145      150      155      160      165      170      175      180      185      190      195      200      205      210      215      220      225
Arg Phe Ile Ala Arg Ile Ser Arg Cys Lys Gly Thr Pro Val Tyr Gly
Tyr Gln Val Gly Asn Lys Cys Met Leu Lys Val Ser Leu Leu Ser Pro
195      200      205      210      215      220      225      230      235      240      245      250      255      260      265      270      275
Val Tyr Lys Thr Arg Leu Val Arg Leu Ile His Asp Lys Lys Ile Asn
Phe Ala Asn Phe Cys Ser Thr Lys Gln Lys Phe Lys Pro Asn Val Tyr
225      230      235      240      245      250      255      260      265      270      275      280      285      290      295      300      305
Glu Thr His Leu Pro Met Leu Leu Gln Phe Leu Thr Asp Phe Asn Leu
Tyr Gly Cys Gly Trp Val Glu Leu Asp Ser Phe Trp Phe Arg Ser Pro
260      265      270      275      280      285      290      295      300      305      310      315      320      325      330      335      340
Val Leu Asp Tyr Asn Ser Pro Ala Leu Ser Phe Ile Ser Thr Thr Asn
Thr Ala His Leu Lys His Ser Leu Arg Lys Tyr Leu Thr Gln Lys Ser
305      310      315      320      325      330      335      340      345      350      355      360      365      370      375      380      385
Val Leu Asn Pro Arg His Tyr Pro Arg Ile Ala Asn Ser Val Leu Glu
Ile Asp Ala Ile Thr Ala Ser Ile Ala Asn Arg Asn Thr Leu His Ala
325      330      335      340      345      350      355      360      365      370      375      380      385      390      395      400      405
Arg His Leu His His Asp Phe Val Glu Arg Tyr Asn Phe Asn Pro Asn
Ser Val Glu Thr Pro Thr Tyr Leu Thr Ser Thr Ser His Ile Val Lys
340      345      350      355      360      365      370      375      380      385      390      395      400      405      410      415      420
Asp Leu Lys Tyr Gln Cys Glu Ile Arg Gly Arg Gln Pro Val Ser Ser
Gln Asn Ile Gly Asn Asn Leu Gly Phe Arg Ser Thr Glu Trp Ala Asn
385      390      395      400      405      410      415      420      425      430      435      440      445      450      455      460      465
Ser Thr Glu Leu Arg Lys Ser Leu Asp Tyr Val Ile Thr Leu Thr Gly
Ala Tyr Glu Thr Asp Tyr Lys Ser Tyr Ser Lys Ala Arg Ile Lys Asp
420      425      430      435      440      445      450      455      460      465      470      475      480      485      490      495      500
Asp His Pro Glu Leu Pro Ser Ser Phe Ala Leu Val Asp Ile Glu Lys
Thr Tyr Asp Pro Lys Pro Lys Leu Leu Gln Trp Ser Gly Tyr Asp Ser
450      455      460      465      470      475      480      485      490      495      500      505      510      515      520      525      530
Leu Phe Ser Glu Lys Gln Glu Ser Phe Gln Ser Gln Leu Ser Gln Leu
Ser Gln Ala Lys Glu Gln Lys Lys Val Leu Ser Ser Phe Asp Ser Leu
465      470      475      480      485      490      495      500      505      510      515      520      525      530      535      540      545
Ser Asp Ala Leu Ser Ser Ser Lys Glu Val Ser Asp Ser Pro Trp Asp
500      505      510      515      520      525      530      535      540      545      550      555      560      565      570      575      580

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Ser	Asp	Gln	Asn	Glu	Thr	Glu	Glu	Lys	Ser	Glu	Gln	Asn	Glu	Glu	Lys
		515					520					525			
Ser	Glu	Gln	Asn	Glu	Pro	Leu	Ala	Ile	Asn	Ser	Glu	Thr	Asp	Glu	Pro
	530					535					540				
Glu	Glu	His	Ser	Gln	Ile	Ile	Asn	Asp	Glu	Ala	Met	Leu	Gln	Met	Thr
	545				550					555					560
Gln	Arg	His	Ser	Leu	Lys	Arg	Pro	Leu	Glu	Glu	Pro	Pro	Ser	Ser	Pro
				565					570					575	
Val	Leu	Gln	Val	Asn	Ser	Ser	Phe	Ser	Glu	Leu	Glu	Pro	Gln	Gln	Glu
			580					585					590		
Leu	Val	Ser	Gln	Ile	Glu	Leu	Ser	Ser	Cys	Asn	Gly	Tyr	Cys	Tyr	Glu
		595					600					605			
Leu	Lys	Gln	Pro	Ala	Ala	Ile	Gln	Lys	Glu	Cys	Phe	Lys	Asp	Gly	Leu
	610					615					620				
Asp	Ser	Glu	Gly	Ile	Leu	Gln	Val	Asp	Tyr	Val	Asp	Pro	Phe	Tyr	Ser
	625				630					635					640
Lys	Ser	Val	Asp	Gly	Ala	Ala	Lys	Pro	Leu	Val	Phe	Ala	Asn	Lys	Lys
				645					650					655	
Ile	Val	Val	Pro	Cys	Leu	Asn	Asp	Ser	Thr	Ile	Ala	Pro	Phe	Arg	Leu
			660					665						670	
Gln	Gly	Gln	Ser	Thr	Pro	Ser	Phe	Ser	Val	Lys	Ser	Val	Leu	Lys	Ser
		675					680					685			
Ala	Ser	Gly	Gly	Met	Gly	Leu	Asn	Lys	Lys	Ser	Tyr	Leu	Trp	Glu	Tyr
	690					695					700				
Ala	Val	Thr	Pro	Pro	Ser	Ala	Ser	Ile	Lys	Asp	Trp	Leu	Ala	Thr	
	705				710				715					720	
Glu	Lys	Lys	Lys	Arg	Asn	Thr	Tyr	Thr	Gln	Ile	Glu	His	Pro	Asn	Ser
				725					730					735	
Gly	Thr	Ala	Ala	Lys	Phe	Lys	Tyr	Ser	Tyr	Arg	Ser	Glu	Ser	Ser	Ser
			740					745					750		
Arg	Arg	Pro	Asp	Ser	Phe	Ile	Arg	Leu	Thr	Asn	Phe	His	Ala	Glu	Ile
		755					760					765			
His	Val	Asn	Thr	Asp	Ser	Asn	Ser	Leu	Pro	Asp	Pro	Glu	Leu	Asn	Ser
	770					775					780				
Val	Ser	Ala	Ile	Phe	Tyr	His	Phe	Asp	Asp	Ala	Asn	Leu	Met	Phe	Asp
	785				790					795					800
Lys	Ile	Pro	Val	Thr	Gly	Val	Leu	Val	Asn	Arg	Glu	Thr	Cys	Asn	Asn
				805					810					815	
Val	His	Leu	Leu	Lys	Ser	Ala	Val	Asp	Met	Lys	Ile	Glu	Thr	Phe	Glu
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Asp	Glu	Lys	Ser	Met	Val	Asp	Arg	Leu	Leu	Phe	Leu	Val	Glu	Ala	Phe
		835					840					845			
Asp	Pro	Asp	Ile	Leu	Cys	Gly	Tyr	Glu	Ile	Asn	Ala	Ser	Ser	Trp	Gly
	850					855					860				
Tyr	Leu	Val	Glu	Arg	Phe	Arg	Ala	Ala	Tyr	Asp	Ile	Asn	Leu	Leu	Pro
	865				870					875					880
Leu	Leu	Ser	Arg	Cys	Thr	Phe	Lys	Ser	Asn	Gly	Lys	Phe	Gly	Asp	Arg
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Trp	Gly	Tyr	Thr	His	Thr	Ser	Ala	Leu	Lys	Ile	Asn	Gly	Arg	His	Leu
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Leu	Asn	Val	Trp	Arg	Val	Phe	Arg	Ser	Asn	Val	Thr	Leu	Thr	Ser	Tyr
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Ser	Leu	Glu	Asn	Val	Val	Phe	His	Ile	Leu	His	Gln	Thr	Ile	Ala	Lys
	930					935					940				
Cys	Ser	Asn	Arg	Ser	Leu	Ser	Lys	Trp	Phe	Arg	Ser	Asp	Asn	Ala	Ser
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Lys	Leu	Leu	Phe	Val	Leu	Asn	Tyr	Tyr	Met	Gln	Arg	Ile	Leu	Leu	Val
				965					970					975	
Gln	Lys	Ile	Leu	Asp	Val	Arg	Glu	Ile	Ile	Thr	Lys	Asn	Val	Glu	Glu
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Ala	Arg	Phe	Ile	Gly	Val	Asp	Phe	Tyr	Ser	Val	Phe	Phe	Arg	Gly	Ser
		995				1000					1005				
Gln	Tyr	Lys	Val	Glu	Ser	Ile	Leu	Ser	Arg	Ile	Ser	Lys	Val	Glu	Ser
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Leu	Leu	Leu	Asn	Ser	Pro	Ser	Lys	Thr	Gln	Val	Ser	Asn	Met	Lys	Pro
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Leu	Glu	Ala	Ile	Ser	Leu	Ile	Leu	Glu	Pro	Asp	Ala	Asn	Phe	Tyr	Lys
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## PhoenixTemp32470.tmp.txt

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 Phe Asp Pro Lys Lys Asn Thr Ile Gly Phe Leu Lys His Leu Asp Leu  
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 Pro Pro Gly Leu Val Asn Leu Leu Lys Glu Asn Asp Asp Ile Asn Leu  
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 Ser Pro Asn Gly Tyr Met Phe Ala Lys Ser Ser Val Arg Lys Ser Leu  
 1125 1130 1135  
 Leu Ser Lys Met Leu Glu Glu Ile Leu Asn Thr Arg Ile Gln Val Lys  
 1140 1145 1150  
 Thr Val Met Ser Met Phe Lys Asp Asp Thr Asn Leu Ala Lys Leu Leu  
 1155 1160 1165  
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 1170 1175 1180  
 Tyr Ala Ser Ala Ser Phe Ser Gly Arg Met Pro Asn Ser Ala Ile Ala  
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 Asp Ala Ile Val Ser Thr Gly Arg Glu Ile Leu Thr Lys Ser Ile Asn  
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 Ile Ile Glu Ser Ala Asn Tyr Gly Ala Lys Val Val Tyr Gly Asp Thr  
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 Asp Ser Leu Phe Met Tyr Leu Pro Gly Arg Ser Lys Glu Asp Ser Phe  
 1235 1240 1245  
 Lys Ile Gly Arg Glu Val Ala Ala His Ile Thr Ser Leu Phe Pro Asp  
 1250 1255 1260  
 Pro Ile Gln Leu Lys Phe Glu Lys Val Tyr His Pro Cys Val Leu Leu  
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 Ser Lys Lys Arg Tyr Val Gly Asn Cys Phe Glu Tyr Glu Ser Gln Gln  
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 Ile Pro Ala Gln Gln Lys Ile Val Glu Lys Ala Leu Arg Ile Leu Phe  
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 Thr Thr Lys Asp Leu Ser Leu Val Lys Asp Tyr Thr Leu Thr Gln Phe  
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 Arg Lys Ile Ile Ala Asn Arg Ile Ser Ile Arg Asp Phe Cys Phe Ala  
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 Lys Glu Val Arg Phe Gly Thr Tyr Lys Ser Leu Asn His Ile Pro Ala  
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 Gly Ala Met Val Ala Met Arg Lys Val Ala Arg Asp Pro Arg Ser Glu  
 1380 1385 1390  
 Pro Gln Tyr Arg Glu Arg Val Pro Tyr Val Val Ile Glu Asp Ala Glu  
 1395 1400 1405  
 Lys Pro Arg Ile Arg Asp Arg Ser Val Pro Pro Glu Glu Phe Ile Glu  
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 Ala Tyr Arg His Leu Arg Pro Val Arg Leu Asp Tyr Glu Tyr Tyr Ile  
 1425 1430 1435 1440  
 Gly Arg Val Leu Ile Pro Pro Leu Glu Arg Ile Phe Asn Leu Val Gly  
 1445 1450 1455  
 Ala Asp Ile Arg Gly Trp Tyr Lys Glu Ile Pro Lys Gln Thr Ala Thr  
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 Thr Cys Ile Asn Cys Gly Gly Gln Val Ala Glu Gly Glu Ser Thr Ser  
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 1585 1590

&lt;211&gt; 4515

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(4515)

&lt;400&gt; 3686

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Tyr	Met	Ser	Lys	Pro	Thr	Phe	Leu	Asp	Pro	Ser	His	Gly	Glu	Ser	Leu	
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Pro	Leu	Asn	Gln	Phe	Ser	Gln	Val	Pro	Asn	Ile	Arg	Val	Phe	Gly	Ala	
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Tyr	Met	Phe	Ile	Lys	Tyr	Asp	Gly	Gln	Ile	Thr	Asp	Thr	Ser	Thr	Leu	
				85					90					95		
aga	cac	caa	aga	tgt	gcc	caa	ggt	cat	aaa	acg	ctg	gaa	gta	aaa	att	336
Arg	His	Gln	Arg	Cys	Ala	Gln	Val	His	Lys	Thr	Leu	Glu	Val	Lys	Ile	
			100					105					110			
agg	gca	tcc	ttt	aaa	agg	aaa	aaa	gat	gat	aaa	cac	gat	tta	gcc	ggc	384
Arg	Ala	Ser	Phe	Lys	Arg	Lys	Lys	Asp	Asp	Lys	His	Asp	Leu	Ala	Gly	
			115				120					125				
gac	aaa	ctt	gga	aat	ctc	aat	ttt	gtc	gct	gat	gtc	tct	gtt	gta	aag	432
Asp	Lys	Leu	Gly	Asn	Leu	Asn	Phe	Val	Ala	Asp	Val	Ser	Val	Val	Lys	
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Gly	Ile	Pro	Phe	Tyr	Gly	Tyr	His	Val	Gly	Trp	Asn	Leu	Phe	Tyr	Lys	
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Ile	Ser	Leu	Leu	Asn	Pro	Ser	Cys	Leu	Ser	Arg	Ile	Ser	Glu	Leu	Ile	
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aga	gat	ggc	aag	att	ttc	gga	aag	aaa	ttc	gaa	att	tat	gaa	tca	cat	576
Arg	Asp	Gly	Lys	Ile	Phe	Gly	Lys	Lys	Phe	Glu	Ile	Tyr	Glu	Ser	His	
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Ile	Pro	Tyr	Leu	Leu	Gln	Trp	Thr	Ala	Asp	Phe	Asn	Leu	Phe	Gly	Cys	
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Ser	Trp	Ile	Asn	Val	Asp	Arg	Cys	Tyr	Phe	Arg	Ser	Pro	Val	Leu	Asn	
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agt	ata	ctg	gac	ata	gat	aag	ctg	aca	att	aat	gat	gat	ctt	cag	ttg	720
Ser	Ile	Leu	Asp	Ile	Asp	Lys	Leu	Thr	Ile	Asn	Asp	Asp	Leu	Gln	Leu	
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Leu	Leu	Asp	Arg	Phe	Cys	Asp	Phe	Lys	Cys	Asn	Val	Leu	Ser	Arg	Arg	
				245					250					255		
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Asp	Phe	Pro	Arg	Val	Gly	Asn	Gly	Leu	Ile	Glu	Ile	Asp	Ile	Leu	Pro	
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Gln	Phe	Ile	Lys	Asn	Arg	Glu	Lys	Leu	Gln	His	Arg	Asp	Ile	His	His	
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Asp	Phe	Leu	Glu	Lys	Leu	Gly	Asp	Ile	Ser	Asp	Ile	Pro	Val	Lys	Pro	
	290					295					300					
tat	gta	tcc	tct	gct	agg	gac	atg	ata	aat	gaa	ctt	acc	atg	caa	cga	960
Tyr	Val	Ser	Ser	Ala	Arg	Asp	Met	Ile	Asn	Glu	Leu	Thr	Met	Gln	Arg	
305					310					315					320	

## PhoenixTemp32470.tmp.txt

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cat His	gtg Val	agt Ser	ggt Gly 340	cat His	caa Gln	tgg Trp	caa Gln	tct Ser 345	tct Ser	gga Gly	gag Glu	ttc Phe	gaa Glu 350	gcg Ala	ttt Phe	1056
tat Tyr	aag Lys	aaa Lys 355	gca Ala	caa Gln	cat His	aaa Lys	aca Thr 360	agt Ser	act Thr	ttt Phe	gat Asp	ggt Gly 365	caa Gln	ata Ile	cca Pro	1104
aat Asn 370	ttt Phe	gag Glu	aac Asn	ttt Phe	ata Ile	gat Asp 375	aag Lys	aat Asn	caa Gln	aaa Lys	ttc Phe 380	tca Ser	gcc Ala	ata Ile	aat Asn	1152
acg Thr 385	ccc Pro	tat Tyr	gaa Glu	gca Ala	tta Leu 390	ccg Pro	caa Gln	ttg Leu	tgg Trp	cca Pro 395	agg Arg	ctt Leu	cca Pro	cag Gln	att Ile 400	1200
gaa Glu	ata Ile	aac Asn	aat Asn	aat Asn 405	agt Ser	atg Met	caa Gln	gat Asp	aaa Lys 410	aag Lys	aac Asn	gac Asp	gac Asp	caa Gln 415	ggt Val	1248
aat Asn	gca Ala	tcg Ser	ttc Phe 420	gaa Thr	tac Glu	gag Tyr	ata Glu 425	tgt Cys	ggt Gly	ggt Val	gat Asp	aat Asn 430	gag Glu	aac Asn		1296
gaa Glu	ggt Gly	gta Val 435	aaa Lys	gga Gly	agc Ser	aat Asn	ata Ile 440	aag Lys	tct Ser	cgg Arg	tct Ser	tat Tyr 445	tca Ser	tgg Trp	tta Leu	1344
ccg Pro 450	gaa Glu	agc Ser	att Ile	gcg Ala	tct Ser	ccg Pro 455	aaa Lys	gat Asp	tct Ser	act Thr	ata Ile 460	cta Leu	tta Leu	gat Asp	cat His	1392
caa Gln 465	aca Thr	aaa Lys	tat Tyr	cac His	aat Asn 470	acg Thr	ata Ile	aat Asn	ttt Phe	tca Ser 475	atg Met	gat Asp	tgt Cys	gct Ala	atg Met 480	1440
acg Thr	caa Gln	aat Asn	atg Met	gca Ala 485	agt Ser	aaa Lys	cga Arg	aaa Lys	ctt Leu 490	aga Arg	tca Ser	tct Ser	ggt Val	tct Ser 495	gct Ala	1488
aat Asn	aaa Lys	aca Thr	tcg Ser 500	ttg Leu	ctg Leu	tct Ser	cgg Arg	aaa Lys 505	aga Arg	aag Lys	aag Lys	ggt Val	atg Met 510	gct Ala	gcg Ala	1536
gga Gly 515	tta Leu	cgc Arg	tat Tyr	gga Gly	aaa Lys	aga Arg	gcc Ala 520	ttt Phe	ggt Val	tat Tyr	ggt Gly	gag Glu 525	cct Pro	cct Pro	ttc Phe	1584
ggt Gly 530	tat Tyr	caa Gln	gat Asp	att Ile	ctg Leu	aat Asn 535	aaa Lys	ttg Leu	gaa Glu	gac Asp	gag Glu 540	gga Gly	ttc Phe	cca Pro	aaa Lys	1632
ata Ile 545	gac Asp	tat Tyr	aag Lys	gac Asp	cct Pro 550	ttc Phe	ttt Phe	tcg Ser	aat Asn	cca Pro 555	ggt Val	gat Asp	cta Leu	gaa Glu	aat Asn 560	1680
aaa Lys	cct Pro	tac Tyr	gcg Ala	tac Tyr 565	gca Ala	ggt Gly	aag Lys	agg Arg	ttt Phe 570	gaa Glu	ata Ile	agc Ser	tcg Ser	aca Thr 575	cat His	1728
gta Val	tca Ser	acg Thr	aga Arg 580	ata Ile	ccc Pro	gtc Val	caa Gln	ttt Phe 585	ggg Gly	gga Gly	gag Glu	acc Thr	gta Val 590	tca Ser	ggt Val	1776
tat Tyr	aac Asn	aag Lys 595	cca Pro	act Thr	ttc Phe	gac Asp	atg Met 600	ttt Phe	tcc Ser	tcc Ser	tgg Trp	aaa Lys 605	tat Tyr	gag Ala	tta Leu	1824
aaa Lys 610	cca Pro	cct Pro	acg Thr	tat Tyr	gat Asp	gct Ala 615	ggt Val	caa Gln	aaa Lys	tgg Trp	tac Tyr 620	aat Asn	aaa Lys	gta Val	ccc Pro	1872
tcg Ser 625	atg Met	gga Gly	aac Asn	aaa Lys 630	aaa Lys	act Thr	gag Glu	tct Ser	cag Gln	ata Ile 635	agc Ser	atg Met	cac His	acc Thr	cct Pro 640	1920
cat His	agt Ser	aag Lys	ttt Phe	tta Leu 645	tac Tyr	aaa Lys	ttt Phe	gct Ala	agt Ser 650	gac Asp	ggt Val	tct Ser	gga Gly	aaa Lys 655	caa Gln	1968
aaa Lys	aga Arg	aaa Lys	aaa Lys 660	agt Ser	agc Ser	ggt Val	cac His	gat Asp 665	tct Ser	ctt Leu	act Thr	cat His	ctg Leu 670	aca Thr	ctt Leu	2016
gag Glu	att Ile	cat His 675	gca Ala	aac Asn	acg Thr	aga Arg	agt Ser 680	gat Asp	aaa Lys	att Ile	cca Pro	gac Asp 685	cct Pro	gca Ala	ata Ile	2064

## PhoenixTemp32470.tmp.txt

gat	gaa	gtt	tcc	atg	att	ata	tgg	tgt	ctt	gaa	gaa	gaa	act	ttc	cct	2112
Asp	Glu	Val	Ser	Met	Ile	Ile	Trp	Cys	Leu	Glu	Glu	Glu	Thr	Phe	Pro	
	690					695					700					
tta	gat	ttg	gat	atc	gct	tac	gaa	ggg	att	atg	ata	gtc	cac	aaa	gct	2160
Leu	Asp	Leu	Asp	Ile	Ala	Tyr	Glu	Gly	Ile	Met	Ile	Val	His	Lys	Ala	
705					710					715					720	
tct	gag	gat	agt	aca	ttt	cct	act	aaa	att	caa	cat	tgt	att	aac	gaa	2208
Ser	Glu	Asp	Ser	Thr	Phe	Pro	Thr	Lys	Ile	Gln	His	Cys	Ile	Asn	Glu	
				725					730					735		
att	ccc	gtg	atg	ttc	tat	gaa	agt	gaa	ttt	gaa	atg	ttt	gag	gct	cta	2256
Ile	Pro	Val	Met	Phe	Tyr	Glu	Ser	Glu	Phe	Glu	Met	Phe	Glu	Ala	Leu	
		740						745					750			
act	gat	ttg	gta	tta	ctt	ctt	gat	cct	gat	att	ctt	tcc	ggt	ttc	gaa	2304
Thr	Asp	Leu	Val	Leu	Leu	Leu	Asp	Pro	Asp	Ile	Leu	Ser	Gly	Phe	Glu	
		755					760					765				
ata	cat	aat	ttt	tcg	tgg	ggt	tat	ata	att	gaa	agg	tgt	caa	aaa	ata	2352
Ile	His	Asn	Phe	Ser	Trp	Gly	Tyr	Ile	Ile	Glu	Arg	Cys	Gln	Lys	Ile	
	770					775					780					
cat	caa	ttt	gac	att	gtc	agg	gaa	ctt	gcc	aga	gtc	aaa	tgc	caa	att	2400
His	Gln	Phe	Asp	Ile	Val	Arg	Glu	Leu	Ala	Arg	Val	Lys	Cys	Gln	Ile	
785					790					795					800	
aag	acg	aag	ttg	tca	gat	act	tgg	gga	tat	gcc	cat	tcc	tca	gga	att	2448
Lys	Thr	Lys	Leu	Ser	Asp	Thr	Trp	Gly	Tyr	Ala	His	Ser	Ser	Gly	Ile	
				805					810					815		
atg	att	acc	gga	aga	cat	atg	att	aat	ata	tgg	aga	gcg	ttg	agg	tcc	2496
Met	Ile	Thr	Gly	Arg	His	Met	Ile	Asn	Ile	Trp	Arg	Ala	Leu	Arg	Ser	
			820					825						830		
gac	gta	aat	tta	acg	caa	tat	act	att	gaa	agt	gct	gcg	ttc	aat	atc	2544
Asp	Val	Asn	Leu	Thr	Gln	Tyr	Thr	Ile	Glu	Ser	Ala	Ala	Phe	Asn	Ile	
		835										845				
ctc	cat	aaa	cga	tta	cct	cac	ttt	tca	ttt	gag	tca	tta	act	aat	atg	2592
Leu	His	Lys	Arg	Leu	Pro	His	Phe	Ser	Phe	Glu	Ser	Leu	Thr	Asn	Met	
	850					855					860					
tgg	aac	gct	aaa	aag	agc	aca	acc	gaa	tta	aag	act	gtg	tta	aat	tat	2640
Trp	Asn	Ala	Lys	Lys	Ser	Thr	Thr	Glu	Leu	Lys	Thr	Val	Leu	Asn	Tyr	
865					870					875					880	
tgg	tta	tca	aga	gct	cag	ata	aat	ata	caa	cta	tta	aga	aag	cag	gat	2688
Trp	Leu	Ser	Arg	Ala	Gln	Ile	Asn	Ile	Gln	Leu	Leu	Arg	Lys	Gln	Asp	
				885					890					895		
tac	att	gct	cga	aat	atc	gaa	cag	gca	aga	ttg	ata	gga	ata	gat	ttc	2736
Tyr	Ile	Ala	Arg	Asn	Ile	Glu	Gln	Ala	Arg	Leu	Ile	Gly	Ile	Asp	Phe	
			900					905					910			
cat	tct	gta	tat	tac	aga	gga	tca	caa	ttt	aaa	gtt	gag	tct	ttt	tta	2784
His	Ser	Val	Tyr	Tyr	Arg	Gly	Ser	Gln	Phe	Lys	Val	Glu	Ser	Phe	Leu	
		915					920					925				
atc	cga	ata	tgc	aag	tcc	gaa	agt	ttt	atc	ctt	ctt	tct	cca	ggc	aaa	2832
Ile	Arg	Ile	Cys	Lys	Ser	Glu	Ser	Phe	Ile	Leu	Leu	Ser	Pro	Gly	Lys	
	930					935					940					
aag	gat	gtt	cgt	aag	caa	aaa	gca	ctt	gaa	tgt	gtg	cct	ttg	gtt	atg	2880
Lys	Asp	Val	Arg	Lys	Gln	Lys	Ala	Leu	Glu	Cys	Val	Pro	Leu	Val	Met	
945					950					955					960	
gag	cca	gaa	tct	gct	ttc	tac	aaa	agt	cct	tta	att	gtg	ctg	gat	ttc	2928
Glu	Pro	Glu	Ser	Ala	Phe	Tyr	Lys	Ser	Pro	Leu	Ile	Val	Leu	Asp	Phe	
				965					970					975		
caa	tca	ttg	tat	cca	tcc	att	atg	att	gga	tac	aac	tat	tgc	tat	tcg	2976
Gln	Ser	Leu	Tyr	Pro	Ser	Ile	Met	Ile	Gly	Tyr	Asn	Tyr	Cys	Tyr	Ser	
			980					985					990			
act	atg	ata	gga	aga	gtg	cga	gaa	ata	aac	tta	acg	gaa	aat	aac	ctt	3024
Thr	Met	Ile	Gly	Arg	Val	Arg	Glu	Ile	Asn	Leu	Thr	Glu	Asn	Asn	Leu	
		995				1000						1005				
gga	gta	tct	aag	ttt	tca	tta	cca	aga	aac	att	tta	gct	tta	tta	aaa	3072
Gly	Val	Ser	Lys	Phe	Ser	Leu	Pro	Arg	Asn	Ile	Leu	Ala	Leu	Leu	Lys	
	1010					1015					1020					
aat	gat	gta	act	atc	gct	cca	aat	ggt	gtt	gtt	tat	gcc	aag	acc	tct	3120
Asn	Asp	Val	Thr	Ile	Ala	Pro	Asn	Gly	Val	Val	Tyr	Ala	Lys	Thr	Ser	
1025					1030					1035					1040	
gtt	aga	aaa	tca	acg	tta	tcc	aaa	atg	tta	aca	gat	atc	ctt	gat	gtc	3168
Val	Arg	Lys	Ser	Thr	Leu	Ser	Lys	Met	Leu	Thr	Asp	Ile	Leu	Asp	Val	
			1045						1050					1055		

## PhoenixTemp32470.tmp.txt

aga gtg atg ata aag aaa aca atg aac gaa ata ggt gat gac aac act 3216  
 Arg Val Met Ile Lys Lys Thr Met Asn Glu Ile Gly Asp Asp Asn Thr  
 1060 1065 1070  
 acc cta aaa agg ctt ttg aat aac aaa cag tta gca cta aaa tta ttg 3264  
 Thr Leu Lys Arg Leu Leu Asn Asn Lys Gln Leu Ala Leu Lys Leu Leu  
 1075 1080 1085  
 gcg aat gtc acc tac ggt tat aca tca gct tca ttt tct gga cga atg 3312  
 Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met  
 1090 1095 1100  
 cca tgc tct gat tta gct gat agc att gta caa aca ggc aga gaa aca 3360  
 Pro Cys Ser Asp Leu Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr  
 1105 1110 1115 1120  
 ttg gag aaa gca ata gat att att gag aaa gat gaa act tgg aac gcc 3408  
 Leu Glu Lys Ala Ile Asp Ile Ile Glu Lys Asp Glu Thr Trp Asn Ala  
 1125 1130 1135  
 aaa gtt gtc tat gga gac aca gat agt tta ttt gta tat cta cct gga 3456  
 Lys Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu Pro Gly  
 1140 1145 1150  
 aaa act gct att gag gct ttt tct ata gga cat gct atg gca gaa aga 3504  
 Lys Thr Ala Ile Glu Ala Phe Ser Ile Gly His Ala Met Ala Glu Arg  
 1155 1160 1165  
 gtt act caa aac aat cca aaa cca atc ttt ttg aag ttt gaa aaa gta 3552  
 Val Thr Gln Asn Asn Pro Lys Pro Ile Phe Leu Lys Phe Glu Lys Val  
 1170 1175 1180  
 tac cat ccc tcc ata tta att agc aaa aaa agg tac gta gga ttt tcc 3600  
 Tyr His Pro Ser Ile Leu Ile Ser Lys Lys Arg Tyr Val Gly Phe Ser  
 1185 1190 1195 1200  
 tat gaa agt cct tcg cag acc ctt cct att ttt gat gct aag ggt att 3648  
 Tyr Glu Ser Pro Ser Gln Thr Leu Pro Ile Phe Asp Ala Lys Gly Ile  
 1205 1210 1215  
 gaa act gtt aga agg gat ggt atc cca gcc cag cag aag att att gaa 3696  
 Glu Thr Val Arg Arg Asp Gly Ile Pro Ala Gln Gln Lys Ile Ile Glu  
 1220 1225 1230  
 aaa tgt att cga tta ctt ttt caa acc aaa gac ctg tca aaa ata aaa 3744  
 Lys Cys Ile Arg Leu Leu Phe Gln Thr Lys Asp Leu Ser Lys Ile Lys  
 1235 1240 1245  
 aag tat ctt caa aat gaa ttt ttt aag att caa ata gga aag gta tct 3792  
 Lys Tyr Leu Gln Asn Glu Phe Phe Lys Ile Gln Ile Gly Lys Val Ser  
 1250 1255 1260  
 gcc caa gat ttt tgt ttt gca aaa gaa gtt aaa tta gga gcg tat aaa 3840  
 Ala Gln Asp Phe Cys Phe Ala Lys Glu Val Lys Leu Gly Ala Tyr Lys  
 1265 1270 1275 1280  
 agc gaa aag aca gcc cct gca ggt gcc gtg gtt gta aaa aga aga ata 3888  
 Ser Glu Lys Thr Ala Pro Ala Gly Ala Val Val Val Lys Arg Arg Ile  
 1285 1290 1295  
 aat gaa gac cat aga gca gaa ccc caa tac aag gag cgt ata cct tac 3936  
 Asn Glu Asp His Arg Ala Glu Pro Gln Tyr Lys Glu Arg Ile Pro Tyr  
 1300 1305 1310  
 ctt gtt gtt aaa gga aag caa gga caa ctg ctt cgg gaa aga tgc gta 3984  
 Leu Val Val Lys Gly Lys Gln Gly Gln Leu Leu Arg Glu Arg Cys Val  
 1315 1320 1325  
 tca cca gaa gag ttc tta gaa ggt gag aat tta gag tta gat tcg gag 4032  
 Ser Pro Glu Glu Phe Leu Glu Gly Glu Asn Leu Glu Leu Asp Ser Glu  
 1330 1335 1340  
 tat tat ata aac aaa att ctg ata cct cct ctt gat aga ttg ttc aat 4080  
 Tyr Tyr Ile Asn Lys Ile Leu Ile Pro Pro Leu Asp Arg Leu Phe Asn  
 1345 1350 1355 1360  
 ttg att ggt ata aat gtt ggc aac tgg gct cag gaa ata gta aaa tcc 4128  
 Leu Ile Gly Ile Asn Val Gly Asn Trp Ala Gln Glu Ile Val Lys Ser  
 1365 1370 1375  
 aaa agg gcg agc aca act act aca aaa gtg gaa aac ata aca aga gta 4176  
 Lys Arg Ala Ser Thr Thr Thr Thr Val Glu Asn Ile Thr Arg Val  
 1380 1385 1390  
 gga act tct gca aca tgt tgt aat tgt ggt gaa gaa ttg act aaa ata 4224  
 Gly Thr Ser Ala Thr Cys Cys Asn Cys Gly Glu Glu Leu Thr Lys Ile  
 1395 1400 1405  
 tgt tca ctt cag tta tgt gat gac tgt tta gag aaa aga agc acc aca 4272  
 Cys Ser Leu Gln Leu Cys Asp Asp Cys Leu Glu Lys Arg Ser Thr Thr  
 1410 1415 1420

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acc tta tca ttt ctc ata aag aaa tta aag aga caa aaa gaa tac caa 4320  
 Thr Leu Ser Phe Leu Ile Lys Lys Leu Lys Arg Gln Lys Glu Tyr Gln  
 1425 1430 1435 1440  
 aca cta aag acc gtg tgc agg acg tgc agt tat cgt tac act tcc gat 4368  
 Thr Leu Lys Thr Val Cys Arg Thr Cys Ser Tyr Arg Tyr Thr Ser Asp  
 1445 1450 1455  
 gca ggc atc gaa aat gac cat ata gct agt aaa tgc aat tca tat gac 4416  
 Ala Gly Ile Glu Asn Asp His Ile Ala Ser Lys Cys Asn Ser Tyr Asp  
 1460 1465 1470  
 tgt cca gta ttt tac tct cgt gtc aaa gca gaa aga tac ttg aga gat 4464  
 Cys Pro Val Phe Tyr Ser Arg Val Lys Ala Glu Arg Tyr Leu Arg Asp  
 1475 1480 1485  
 aat caa tct gtt caa agg gaa gaa gca tta ata tct cta aat gat tgg 4512  
 Asn Gln Ser Val Gln Arg Glu Glu Ala Leu Ile Ser Leu Asn Asp Trp  
 1490 1495 1500  
 taa 4515

&lt;210&gt; 3687

&lt;211&gt; 1504

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 3687

Met Ser Arg Glu Ser Asn Asp Thr Ile Gln Ser Asp Thr Val Arg Ser  
 1 5 10 15  
 Ser Ser Lys Ser Asp Tyr Phe Arg Ile Gln Leu Asn Asn Gln Asp Tyr  
 20 25 30  
 Tyr Met Ser Lys Pro Thr Phe Leu Asp Pro Ser His Gly Glu Ser Leu  
 35 40 45  
 Pro Leu Asn Gln Phe Ser Gln Val Pro Asn Ile Arg Val Phe Gly Ala  
 50 55 60  
 Leu Pro Thr Gly His Gln Val Leu Cys His Val His Gly Ile Leu Pro  
 65 70 75 80  
 Tyr Met Phe Ile Lys Tyr Asp Gly Gln Ile Thr Asp Thr Ser Thr Leu  
 85 90 95  
 Arg His Gln Arg Cys Ala Gln Val His Lys Thr Leu Glu Val Lys Ile  
 100 105 110  
 Arg Ala Ser Phe Lys Arg Lys Lys Asp Asp Lys His Asp Leu Ala Gly  
 115 120 125  
 Asp Lys Leu Gly Asn Leu Asn Phe Val Ala Asp Val Ser Val Val Lys  
 130 135 140  
 Gly Ile Pro Phe Tyr Gly Tyr His Val Gly Trp Asn Leu Phe Tyr Lys  
 145 150 155 160  
 Ile Ser Leu Leu Asn Pro Ser Cys Leu Ser Arg Ile Ser Glu Leu Ile  
 165 170 175  
 Arg Asp Gly Lys Ile Phe Gly Lys Lys Phe Glu Ile Tyr Glu Ser His  
 180 185 190  
 Ile Pro Tyr Leu Leu Gln Trp Thr Ala Asp Phe Asn Leu Phe Gly Cys  
 195 200 205  
 Ser Trp Ile Asn Val Asp Arg Cys Tyr Phe Arg Ser Pro Val Leu Asn  
 210 215 220  
 Ser Ile Leu Asp Ile Asp Lys Leu Thr Ile Asn Asp Asp Leu Gln Leu  
 225 230 235 240  
 Leu Leu Asp Arg Phe Cys Asp Phe Lys Cys Asn Val Leu Ser Arg Arg  
 245 250 255  
 Asp Phe Pro Arg Val Gly Asn Gly Leu Ile Glu Ile Asp Ile Leu Pro  
 260 265 270  
 Gln Phe Ile Lys Asn Arg Glu Lys Leu Gln His Arg Asp Ile His His  
 275 280 285  
 Asp Phe Leu Glu Lys Leu Gly Asp Ile Ser Asp Ile Pro Val Lys Pro  
 290 295 300  
 Tyr Val Ser Ser Ala Arg Asp Met Ile Asn Glu Leu Thr Met Gln Arg  
 305 310 315 320  
 Glu Glu Leu Ser Leu Lys Glu Tyr Lys Glu Pro Pro Glu Thr Lys Arg  
 325 330 335  
 His Val Ser Gly His Gln Trp Gln Ser Gly Glu Phe Glu Ala Phe  
 340 345 350



## PhoenixTemp32470.tmp.txt

Tyr Lys Lys Ala Gln His Lys Thr Ser Thr Phe Asp Gly Gln Ile Pro  
 355 360 365  
 Asn Phe Glu Asn Phe Ile Asp Lys Asn Gln Lys Phe Ser Ala Ile Asn  
 370 375 380  
 Thr Pro Tyr Glu Ala Leu Pro Gln Leu Trp Pro Arg Leu Pro Gln Ile  
 385 390 400  
 Glu Ile Asn Asn Asn Ser Met Gln Asp Lys Lys Asn Asp Asp Gln Val  
 405 410 415  
 Asn Ala Ser Phe Thr Glu Tyr Glu Ile Cys Gly Val Asp Asn Glu Asn  
 420 425 430  
 Glu Gly Val Lys Gly Ser Asn Ile Lys Ser Arg Ser Tyr Ser Trp Leu  
 435 440 445  
 Pro Glu Ser Ile Ala Ser Pro Lys Asp Ser Thr Ile Leu Leu Asp His  
 450 455 460  
 Gln Thr Lys Tyr His Asn Thr Ile Asn Phe Ser Met Asp Cys Ala Met  
 465 470 475 480  
 Thr Gln Asn Met Ala Ser Lys Arg Lys Leu Arg Ser Ser Val Ser Ala  
 485 490 495  
 Asn Lys Thr Ser Leu Leu Ser Arg Lys Arg Lys Lys Val Met Ala Ala  
 500 505 510  
 Gly Leu Arg Tyr Gly Lys Arg Ala Phe Val Tyr Gly Glu Pro Pro Phe  
 515 520 525  
 Gly Tyr Gln Asp Ile Leu Asn Lys Leu Glu Asp Glu Gly Phe Pro Lys  
 530 535 540  
 Ile Asp Tyr Lys Asp Pro Phe Phe Ser Asn Pro Val Asp Leu Glu Asn  
 545 550 555 560  
 Lys Pro Tyr Ala Tyr Ala Gly Lys Arg Phe Glu Ile Ser Ser Thr His  
 565 570 575  
 Val Ser Thr Arg Ile Pro Val Gln Phe Gly Gly Glu Thr Val Ser Val  
 580 585 590  
 Tyr Asn Lys Pro Thr Phe Asp Met Phe Ser Ser Trp Lys Tyr Ala Leu  
 595 600 605  
 Lys Pro Pro Thr Tyr Asp Ala Val Gln Lys Trp Tyr Asn Lys Val Pro  
 610 615 620  
 Ser Met Gly Asn Lys Lys Thr Glu Ser Gln Ile Ser Met His Thr Pro  
 625 630 635 640  
 His Ser Lys Phe Leu Tyr Lys Phe Ala Ser Asp Val Ser Gly Lys Gln  
 645 650 655  
 Lys Arg Lys Lys Ser Ser Val His Asp Ser Leu Thr His Leu Thr Leu  
 660 665 670  
 Glu Ile His Ala Asn Thr Arg Ser Asp Lys Ile Pro Asp Pro Ala Ile  
 675 680 685  
 Asp Glu Val Ser Met Ile Ile Trp Cys Leu Glu Glu Glu Thr Phe Pro  
 690 695 700  
 Leu Asp Leu Asp Ile Ala Tyr Glu Gly Ile Met Ile Val His Lys Ala  
 705 710 715 720  
 Ser Glu Asp Ser Thr Phe Pro Thr Lys Ile Gln His Cys Ile Asn Glu  
 725 730 735  
 Ile Pro Val Met Phe Tyr Glu Ser Glu Phe Glu Met Phe Glu Ala Leu  
 740 745 750  
 Thr Asp Leu Val Leu Leu Leu Asp Pro Asp Ile Leu Ser Gly Phe Glu  
 755 760 765  
 Ile His Asn Phe Ser Trp Gly Tyr Ile Ile Glu Arg Cys Gln Lys Ile  
 770 775 780  
 His Gln Phe Asp Ile Val Arg Glu Leu Ala Arg Val Lys Cys Gln Ile  
 785 790 795 800  
 Lys Thr Lys Leu Ser Asp Thr Trp Gly Tyr Ala His Ser Ser Gly Ile  
 805 810 815  
 Met Ile Thr Gly Arg His Met Ile Asn Ile Trp Arg Ala Leu Arg Ser  
 820 825 830  
 Asp Val Asn Leu Thr Gln Tyr Thr Ile Glu Ser Ala Ala Phe Asn Ile  
 835 840 845  
 Leu His Lys Arg Leu Pro His Phe Ser Phe Glu Ser Leu Thr Asn Met  
 850 855 860  
 Trp Asn Ala Lys Lys Ser Thr Thr Glu Leu Lys Thr Val Leu Asn Tyr  
 865 870 875 880  
 Trp Leu Ser Arg Ala Gln Ile Asn Ile Gln Leu Leu Arg Lys Gln Asp  
 885 890 895  
 Tyr Ile Ala Arg Asn Ile Glu Gln Ala Arg Leu Ile Gly Ile Asp Phe

## PhoenixTemp32470.tmp.txt

900 905 910  
 His Ser Val Tyr Tyr Arg Gly Ser Gln Phe Lys Val Glu Ser Phe Leu  
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 Ile Arg Ile Cys Lys Ser Glu Ser Phe Ile Leu Leu Ser Pro Gly Lys  
 930 935 940  
 Lys Asp Val Arg Lys Gln Lys Ala Leu Glu Cys Val Pro Leu Val Met  
 945 950 955 960  
 Glu Pro Glu Ser Ala Phe Tyr Lys Ser Pro Leu Ile Val Leu Asp Phe  
 965 970 975  
 Gln Ser Leu Tyr Pro Ser Ile Met Ile Gly Tyr Asn Tyr Cys Tyr Ser  
 980 985 990  
 Thr Met Ile Gly Arg Val Arg Glu Ile Asn Leu Thr Glu Asn Asn Leu  
 995 1000 1005  
 Gly Val Ser Lys Phe Ser Leu Pro Arg Asn Ile Leu Ala Leu Leu Lys  
 1010 1015 1020  
 Asn Asp Val Thr Ile Ala Pro Asn Gly Val Val Tyr Ala Lys Thr Ser  
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 Val Arg Lys Ser Thr Leu Ser Lys Met Leu Thr Asp Ile Leu Asp Val  
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 Arg Val Met Ile Lys Lys Thr Met Asn Glu Ile Gly Asp Asp Asn Thr  
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 Thr Leu Lys Arg Leu Leu Asn Asn Lys Gln Leu Ala Leu Lys Leu Leu  
 1075 1080 1085  
 Ala Asn Val Thr Tyr Gly Tyr Thr Ser Ala Ser Phe Ser Gly Arg Met  
 1090 1095 1100  
 Pro Cys Ser Asp Leu Ala Asp Ser Ile Val Gln Thr Gly Arg Glu Thr  
 1105 1110 1115 1120  
 Leu Glu Lys Ala Ile Asp Ile Ile Glu Lys Asp Glu Thr Trp Asn Ala  
 1125 1130 1135  
 Lys Val Val Tyr Gly Asp Thr Asp Ser Leu Phe Val Tyr Leu Pro Gly  
 1140 1145 1150  
 Lys Thr Ala Ile Glu Ala Phe Ser Ile Gly His Ala Met Ala Glu Arg  
 1155 1160 1165  
 Val Thr Gln Asn Asn Pro Lys Pro Ile Phe Leu Lys Phe Glu Lys Val  
 1170 1175 1180  
 Tyr His Pro Ser Ile Leu Ile Ser Lys Lys Arg Tyr Val Gly Phe Ser  
 1185 1190 1195 1200  
 Tyr Glu Ser Pro Ser Gln Thr Leu Pro Ile Phe Asp Ala Lys Gly Ile  
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 Glu Thr Val Arg Asp Gly Ile Pro Ala Gln Gln Lys Ile Ile Glu  
 1220 1225 1230  
 Lys Cys Ile Arg Leu Leu Phe Gln Thr Lys Asp Leu Ser Lys Ile Lys  
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 Lys Tyr Leu Gln Asn Glu Phe Phe Lys Ile Gln Ile Gly Lys Val Ser  
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 Ala Gln Asp Phe Cys Phe Ala Lys Glu Val Lys Leu Gly Ala Tyr Lys  
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 Ser Glu Lys Thr Ala Pro Ala Gly Ala Val Val Val Lys Arg Arg Ile  
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 Asn Glu Asp His Arg Ala Glu Pro Gln Tyr Lys Glu Arg Ile Pro Tyr  
 1300 1305 1310  
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Xaa	Xaa	Xaa	Tyr	Phe	Arg	Xaa	Pro	Val	Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			260					265						270	
Leu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Xaa	Xaa	Leu
			275					280					285		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			290				295						300		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Xaa	Arg	Xaa	Gly	Xaa	Xaa	Xaa	Xaa	Glu
305					310					315					320
Xaa	Asp	Xaa	Xaa	Xaa	Xaa	Xaa	Ile	Xaa	Asn	Arg	Xaa	Xaa	Xaa	Xaa	Xaa
				325					330					335	
Arg	Xaa	Xaa	His	His	Asp	Phe	Xaa	Glu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			340					345						350	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			355				360						365		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Tyr	Xaa	Xaa	Ser	Xaa	Xaa	Xaa	Xaa	Xaa
			370				375				380				
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385					390					395					400
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				405										415	
Xaa	Xaa	Xaa	Trp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			420					425						430	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			435				440						445		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			450				455						460		
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465					470					475					480
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Trp	Xaa
				485					490					495	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				500				505						510	
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			515				520						525		
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Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
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			595				600						605		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
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## PhoenixTemp32470.tmp.txt

Xaa 625	Xaa	Xaa	Xaa	Xaa	Xaa 630	Xaa	Xaa	Xaa	Xaa	Xaa 635	Xaa	Xaa	Xaa	Xaa 640
Xaa	Xaa	Xaa	Xaa	Xaa 645	Xaa	Xaa	Xaa	Xaa	Xaa 650	Xaa	Xaa	Leu	Xaa 655	Xaa
Xaa	Gly	Xaa	Xaa 660	Xaa	Xaa	Xaa	Tyr	Xaa 665	Asp	Pro	Phe	Xaa	Ser 670	Xaa
Xaa	Asp	Xaa 675	Xaa	Xaa	Lys	Xaa	Xaa 680	Xaa	Xaa	Ala	Xaa	Xaa 685	Xaa	Xaa
Xaa	Xaa 690	Xaa	Xaa	Xaa	Xaa	Xaa 695	Xaa	Xaa	Xaa	Xaa	Xaa 700	Xaa	Xaa	Xaa
Xaa 705	Xaa	Xaa	Xaa	Xaa 710	Xaa	Xaa	Xaa	Xaa	Xaa 715	Xaa	Xaa	Xaa	Xaa	Xaa 720
Xaa	Xaa	Xaa	Xaa	Xaa 725	Xaa	Xaa	Xaa	Xaa 730	Xaa	Trp	Xaa	Tyr	Xaa 735	Xaa
Xaa	Pro	Pro	Xaa 740	Xaa	Xaa	Xaa	Xaa 745	Xaa	Xaa	Xaa	Xaa	Xaa 750	Xaa	Xaa
Xaa	Xaa	Xaa 755	Xaa	Lys	Lys	Xaa	Xaa 760	Xaa	Xaa	Xaa	Xaa	Xaa 765	Xaa	Pro
Xaa	Xaa 770	Xaa	Xaa	Xaa	Xaa	Lys 775	Xaa	Xaa	Xaa	Xaa	Xaa 780	Xaa	Xaa	Xaa
Xaa 785	Xaa	Xaa	Xaa	Xaa 790	Xaa	Xaa	Xaa	Xaa	Xaa 795	Leu	Thr	Xaa	Xaa	Xaa 800
Glu	Ile	His	Xaa	Asn 805	Xaa	Thr	Xaa	Xaa	Xaa 810	Xaa	Xaa	Pro	Asp	Pro 815
Xaa	Asp	Xaa	Val 820	Ser	Xaa	Ile	Xaa	Xaa 825	Xaa	Xaa	Xaa	Xaa 830	Xaa	Xaa
Xaa	Xaa	Xaa 835	Xaa	Xaa	Xaa	Xaa	Xaa 840	Xaa	Gly	Xaa	Xaa	Xaa 845	Xaa	Xaa
Xaa	Xaa	Xaa 850	Xaa	Xaa	Xaa	Xaa 855	Xaa	Xaa	Xaa	Xaa 860	Xaa	Xaa	Xaa	Xaa
Xaa 865	Xaa	Xaa	Xaa	Xaa 870	Xaa	Xaa	Xaa	Xaa	Glu	Xaa 875	Xaa	Met	Xaa	Xaa 880
Leu	Xaa	Xaa	Leu	Val 885	Xaa	Xaa	Xaa	Asp	Pro 890	Asp	Ile	Leu	Ser	Gly 895
Glu	Ile	Xaa 900	Xaa	Ser	Trp	Gly	Tyr 905	Xaa	Xaa	Xaa	Arg	Xaa 910	Xaa	Xaa
Xaa	Xaa 915	Xaa	Xaa	Xaa	Xaa	Xaa 920	Xaa	Xaa	Xaa	Xaa	Arg	Xaa 925	Xaa	Xaa
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Xaa	Leu	Xaa	Xaa 980	Xaa	Xaa	Xaa	Xaa 985	Xaa	Ser	Xaa	Xaa	Xaa 990	Xaa	Xaa
Xaa	Xaa 995	Xaa	Xaa	Xaa	Xaa	Xaa 1000	Xaa	Xaa	Xaa	Xaa	Xaa 1005	Xaa	Leu	Xaa
Tyr 1010	Xaa	Xaa	Xaa	Arg	Xaa 1015	Xaa	Xaa	Xaa	Xaa	Xaa 1020	Xaa	Xaa	Xaa	Xaa
Xaa 1025	Xaa	Xaa	Xaa	Xaa 1030	Xaa	Glu	Xaa	Xaa	Arg	Xaa 1035	Xaa	Ile	Gly	Xaa 1040
Phe	Xaa	Ser	Xaa 1045	Xaa	Xaa	Arg	Gly	Ser	Gln	Xaa 1050	Lys	Val	Glu	Ser 1055
Leu	Xaa	Arg	Xaa 1060	Xaa	Lys	Xaa	Glu	Xaa 1065	Xaa	Xaa	Leu	Xaa 1070	Ser	Pro
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Xaa	Glu	Pro	Xaa 1090	Xaa	Xaa	Phe 1095	Tyr	Lys	Ser	Pro	Leu	Xaa 1100	Val	Leu
Phe 1105	Gln	Ser	Leu	Tyr	Pro 1110	Ser	Ile	Xaa	Xaa 1115	Xaa	Tyr	Asn	Tyr	Cys
Xaa	Thr	Xaa	Xaa 1125	Xaa	Xaa	Xaa	Xaa	Xaa 1130	Xaa	Xaa	Xaa	Xaa 1135	Xaa	Xaa
Xaa	Gly	Xaa	Xaa 1140	Xaa	Xaa	Xaa 1145	Xaa	Xaa	Xaa	Xaa 1150	Xaa	Xaa	Xaa	Xaa
Xaa	Xaa 1155	Xaa	Xaa	Xaa	Xaa	Xaa 1160	Xaa	Xaa	Pro	Asn	Gly	Xaa 1165	Xaa	Xaa
Xaa	Lys	Xaa	Xaa	Xaa	Arg	Lys	Ser	Xaa	Leu	Xaa	Lys	Met	Leu	Xaa



PhoenixTemp32470.tmp.txt

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1170      1175      1180
Ile Leu Xaa Xaa Arg Xaa Xaa Lys Xaa Xaa Xaa Xaa Xaa Xaa
1185      1190      1195      1200
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln Xaa Ala
      1205      1210      1215
Leu Lys Leu Xaa Ala Asn Val Thr Tyr Gly Tyr Xaa Ser Ala Xaa Phe
      1220      1225      1230
Ser Gly Arg Met Pro Xaa Ser Xaa Xaa Ala Asp Xaa Ile Val Xaa Thr
      1235      1240      1245
Gly Arg Glu
1250

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<222> (34)..(34)

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<220>

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<222> (35)..(35)

<223> Xaa in position 35 is Pro or Gln

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Xaa	Asn	Leu	Xaa	Gly	Cys	Xaa	Trp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe
		20					25					30		
Xaa	Xaa	Xaa												
		35												

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<211> 39

<212> PRT

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<220>

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<220>

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<220>

<221> Variant

<222> (7)..(7)

<223> Xaa in position 7 is Ile or Val

<220>

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<223> Xaa in position 9 is Phe or Ile

<220>

<221> Variant

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Xaa Xaa Xaa Tyr Lys Ile Xaa Leu Leu Xaa Xaa Xaa Xaa Xaa Ser Xaa
20      25      30
Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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Val Leu Xaa Xaa Xaa Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Glu
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20      25      30
Xaa Arg Xaa Xaa His His Asp Xaa Xaa Glu
35      40

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<223> Xaa in position 24 is Ile or Leu

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<222> (26)..(26)

<223> Xaa in position 26 is Cys or Ser

<220>

<221> Variant

<222> (28)..(28)

<223> Xaa in position 28 is Phe or Tyr

<220>

<221> Variant

<222> (30)..(30)

<223> Xaa in position 30 is Ile or Val

<220>

<221> Variant

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<222> (32)..(32)

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1				5				10						15	
Xaa	Xaa	Xaa	Xaa	Asp	Pro	Asp	Xaa	Leu	Xaa	Gly	Xaa	Glu	Xaa	Xaa	Xaa
			20					25					30		
Xaa	Ser														

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<222> (6)..(6)

<223> Xaa in position 6 is Phe or Leu

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<222> (9)..(9)

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 1 5 10 15  
  
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 <223> Xaa in position 21 is Asp, Pro or Gln



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<220>  
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 <223> Xaa in position 33 is Cys or Ser

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 Ile Xaa Xaa Xaa Xaa Tyr Xaa Xaa Pro Phe Xaa Ser Xaa Xaa Xaa Asp  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Xaa

<210> 3697  
 <211> 29  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> protein pattern

<220>  
 <221> Variant  
 <222> (2)..(2)  
 <223> Xaa in position 2 is Ile or Leu

<220>  
 <221> Variant

<222> (4)..(4)  
<223> Xaa in position 4 is Asp or Asn

<220>  
<221> Variant  
<222> (5)..(5)  
<223> Xaa in position 5 is any amino acid

<220>  
<221> Variant  
<222> (7)..(7)  
<223> Xaa in position 7 is any or no amino acid

<220>  
<221> Variant  
<222> (9)..(11)  
<223> Xaa in position 9 to 11 is any amino acid

<220>  
<221> Variant  
<222> (12)..(12)  
<223> Xaa in position 12 is any or no amino acid

<220>  
<221> Variant  
<222> (15)..(15)  
<223> Xaa in position 15 is any amino acid

<220>  
<221> Variant  
<222> (18)..(20)  
<223> Xaa in position 18 to 20 is any amino acid

<220>  
<221> Variant  
<222> (21)..(21)  
<223> Xaa in position 21 is Gly, Ser or Thr

<220>  
<221> Variant  
<222> (22)..(22)  
<223> Xaa in position 22 is any amino acid

<220>  
<221> Variant  
<222> (23)..(23)  
<223> Xaa in position 23 is Ser or Val

<220>  
<221> Variant  
<222> (24)..(24)  
<223> Xaa in position 24 is any amino acid

<220>  
<221> Variant  
<222> (25)..(25)  
<223> Xaa in position 25 is Pro or Gln

<220>  
<221> Variant  
<222> (26)..(26)  
<223> Xaa in position 26 is Gly, Leu or Val

<220>  
<221> Variant  
<222> (27)..(28)  
<223> Xaa in position 27 to 28 is any amino acid

<220>

&lt;221&gt; Variant

&lt;222&gt; (29)..(29)

&lt;223&gt; Xaa in position 29 is Phe or Ile

&lt;400&gt; 3697

Gln Xaa Asn Xaa Xaa Asp Xaa Tyr Xaa Xaa Xaa Xaa Pro Thr Xaa Leu  
 1 5 10 15  
 Asp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25

&lt;210&gt; 3698

&lt;211&gt; 541

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;220&gt;

&lt;221&gt; exon

&lt;222&gt; (1)..(16)

&lt;220&gt;

&lt;221&gt; exon

&lt;222&gt; (255)..(541)

&lt;400&gt; 3698

atg gct gtc aag act g gtatgtttac ctgaactaat gaactgtaga gcaaaagcaa 56  
 Met Ala Val Lys Thr  
 1 5  
 aatgaactga accactaagc caacaacaga aatacaaaca ggatgagatt aagctccaga 116  
 gatatgcaaa catcgtttat atcctgcacc cagcgttgca gtactccgtg gagtctttgt 176  
 ttatttattt tgctcgata ctacgtgagt actagtgtgc ttgttactaa cataagatat 236  
 tctatTTTTT tcctctag gt atc gct att ggt ttg aac aag ggt aag aaa 286  
 Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys  
 10 15  
 gtc acc caa atg act cca gcc cca aag atc tcc tac aag aag ggt gct 334  
 Val Thr Gln Met Thr Pro Ala Pro Lys Ile Ser Tyr Lys Lys Gly Ala  
 20 25 30  
 gcc tcc aac aga acc aag ttc gtc aga tct ttg gtt aga gaa atc gcc 382  
 Ala Ser Asn Arg Thr Lys Phe Val Arg Ser Leu Val Arg Glu Ile Ala  
 35 40 45  
 ggt ttg tcc cca tat gaa aga aga ttg atc gat ttg atc aga aac tcc 430  
 Gly Leu Ser Pro Tyr Glu Arg Arg Leu Ile Asp Leu Ile Arg Asn Ser  
 50 55 60  
 ggt gaa aag aga gcc aga aag gtc gcc aag aag aga ttg ggt tct ttc 478  
 Gly Glu Lys Arg Ala Arg Lys Val Ala Lys Lys Arg Leu Gly Ser Phe  
 65 70 75 80  
 acc aga gcc aag gct aag gtc gaa gaa atg aac aac atc att gct gcc 526  
 Thr Arg Ala Lys Ala Lys Val Glu Glu Met Asn Asn Ile Ile Ala Ala  
 85 90 95  
 tct cgt cgt cat taa 541  
 Ser Arg Arg His  
 100

&lt;210&gt; 3699

&lt;211&gt; 100

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 3699

Met Ala Val Lys Thr Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys  
 1 5 10 15  
 Val Thr Gln Met Thr Pro Ala Pro Lys Ile Ser Tyr Lys Lys Gly Ala  
 20 25 30  
 Ala Ser Asn Arg Thr Lys Phe Val Arg Ser Leu Val Arg Glu Ile Ala

## PhoenixTemp32470.tmp.txt

35 40 45  
 Gly Leu Ser Pro Tyr Glu Arg Leu Ile Asp Leu Ile Arg Asn Ser  
 50 55 60  
 Gly Glu Lys Arg Ala Arg Lys Val Ala Lys Lys Arg Leu Gly Ser Phe  
 65 70 75 80  
 Thr Arg Ala Lys Ala Lys Val Glu Glu Met Asn Asn Ile Ile Ala Ala  
 85 90 95  
 Ser Arg Arg His  
 100

<210> 3700  
 <211> 24  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 3700  
 atggctgtca agactggtat cgct

24

<210> 3701  
 <211> 24  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> primer

<400> 3701  
 ttaatgacga cgagaggcag caat

24

<210> 3702  
 <211> 417  
 <212> DNA  
 <213> ARABIDOPSIS THALIANA

<220>  
 <221> CDS  
 <222> (1)..(417)

<400> 3702  
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 1 5 10 15  
 atc aaa acc aat gct cct act cta cct cag cag acc ctt ctc gga att 96  
 Ile Lys Thr Asn Ala Pro Thr Leu Pro Gln Gln Thr Leu Leu Gly Ile  
 20 25 30  
 cga aga aat tcc ttt aga att aac gcc gtt tcc acc aaa tgg gaa ccg 144  
 Arg Arg Asn Ser Phe Arg Ile Asn Ala Val Ser Thr Lys Trp Glu Pro  
 35 40 45  
 gca aag gtt gta cca caa gca gac agg gtc ctt gtc cgc ctt gaa gtg 192  
 Ala Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu Val  
 50 55 60  
 ctt cct gag aaa tcc tca gga gga gta ctg ttg cct aaa tca gct gtg 240  
 Leu Pro Glu Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ser Ala Val  
 65 70 75 80  
 aaa ttc gag agg tac cta aca ggc gag gtt gtc tct gtt ggg tct gag 288  
 Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser Glu  
 85 90 95  
 gtt ggg gaa gtg gaa cct ggc aag aag gtt ttg ttc tct gat atg agc 336  
 Val Gly Glu Val Glu Pro Gly Lys Lys Val Leu Phe Ser Asp Met Ser  
 100 105 110  
 gcc tat gag gtt gat ttt gga aca gaa gat gct aag cat tgc ttt tgc 384  
 Ala Tyr Glu Val Asp Phe Gly Thr Glu Asp Ala Lys His Cys Phe Cys  
 115 120 125  
 aaa gaa agc gac ttg tta gct atc gtc cag tga 417  
 Lys Glu Ser Asp Leu Leu Ala Ile Val Gln

130

135

<210> 3703  
 <211> 138  
 <212> PRT  
 <213> ARABIDOPSIS THALIANA

<400> 3703  
 Met Ala Ser Ser Phe Ile Thr Val Pro Lys Pro Phe Leu Ser Phe Pro  
 1 5 10 15  
 Ile Lys Thr Asn Ala Pro Thr Leu Pro Gln Gln Thr Leu Leu Gly Ile  
 20 25 30  
 Arg Arg Asn Ser Phe Arg Ile Asn Ala Val Ser Thr Lys Trp Glu Pro  
 35 40 45  
 Ala Lys Val Val Pro Gln Ala Asp Arg Val Leu Val Arg Leu Glu Val  
 50 55 60  
 Leu Pro Glu Lys Ser Ser Gly Gly Val Leu Leu Pro Lys Ser Ala Val  
 65 70 75 80  
 Lys Phe Glu Arg Tyr Leu Thr Gly Glu Val Val Ser Val Gly Ser Glu  
 85 90 95  
 Val Gly Glu Val Glu Pro Gly Lys Lys Val Leu Phe Ser Asp Met Ser  
 100 105 110  
 Ala Tyr Glu Val Asp Phe Gly Thr Glu Asp Ala Lys His Cys Phe Cys  
 115 120 125  
 Lys Glu Ser Asp Leu Leu Ala Val Gln  
 130 135

<210> 3704  
 <211> 612  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(612)

<400> 3704  
 atg aat atg ttc gca agg tct atg gtg aat tta ctg ctc tct gta tat 48  
 Met Asn Met Phe Ala Arg Ser Met Val Asn Leu Leu Leu Ser Val Tyr  
 1 5 10 15  
 caa tct tgg tta gaa tgg gtt att act gat aag aat cat gtg gtt ctt 96  
 Gln Ser Trp Leu Glu Trp Val Ile Thr Asp Lys Asn His Val Val Leu  
 20 25 30  
 gtt ttt gtc tca gtt cag cac gcg acg caa cta tcc tct aga gag aga 144  
 Val Phe Val Ser Val Gln His Ala Thr Gln Leu Ser Ser Arg Glu Arg  
 35 40 45  
 gag gaa gcc cgt cgt tct gga agt ttc cac gct ccg cgc ctc cgc ccc 192  
 Glu Glu Ala Arg Arg Ser Gly Ser Phe His Ala Pro Arg Leu Arg Pro  
 50 55 60  
 ctg gtc tcc gct cca atg gcg ccc tca ctc ctc gcc gcc atg tcc acc 240  
 Leu Val Ser Ala Pro Met Ala Pro Ser Leu Leu Ala Ala Met Ser Thr  
 65 70 75 80  
 tcg ccc ttc cta gcc agc agc ggc agc agc cgc agg ccg cta ggc gct 288  
 Ser Pro Phe Leu Ala Ser Ser Gly Ser Ser Arg Arg Pro Leu Gly Ala  
 85 90 95  
 gcc cac acc cga cgg gct gga ctg cgc gtg gcc gcg ctt aag tac gac 336  
 Ala His Thr Arg Arg Ala Gly Leu Val Ala Ala Leu Lys Tyr Asp  
 100 105 110  
 cct gcc aag gtg gcg ccg cag aac gac cgg gtt ctc gtc cgt ctt gag 384  
 Pro Ala Lys Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu Glu  
 115 120 125  
 cag atc cct gag aaa tct gct ggc ggt gta ttg cta cca aaa tct gct 432  
 Gln Ile Pro Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala  
 130 135 140  
 gtt aag ttt gag aga tat ctg atg ggt gag att cta tcg atc ggt gct 480  
 Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Ile Gly Ala  
 145 150 155 160  
 gaa gtc agt gaa gtt gag gct ggg aag aag gtt ctc ttc tca gac atc 528  
 Glu Val Ser Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile

## PhoenixTemp32470.tmp.txt

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          165          170          175
aat gct tat gag gtg gag ctt ggt act gat gac gag aag cac tgc ttc
Asn Ala Tyr Glu Val Glu Leu Gly Thr Asp Asp Glu Lys His Cys Phe
          180          185          190
tgc cgt gag tca gac ttg tta gct gta gtt gaa tga
Cys Arg Glu Ser Asp Leu Leu Ala Val Val Glu
          195          200

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<210> 3705  
 <211> 203  
 <212> PRT  
 <213> Zea mays

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<400> 3705
Met Asn Met Phe Ala Arg Ser Met Val Asn Leu Leu Leu Ser Val Tyr
1      5      10      15
Gln Ser Trp Leu Glu Trp Val Ile Thr Asp Lys Asn His Val Val Leu
20      25      30
Val Phe Val Ser Val Gln His Ala Thr Gln Leu Ser Ser Arg Glu Arg
35      40      45
Glu Glu Ala Arg Arg Ser Gly Ser Phe His Ala Pro Arg Leu Arg Pro
50      55      60
Leu Val Ser Ala Pro Met Ala Pro Ser Leu Leu Ala Ala Met Ser Thr
65      70      75
Ser Pro Phe Leu Ala Ser Ser Gly Ser Ser Arg Arg Pro Leu Gly Ala
85      90      95
Ala His Thr Arg Arg Ala Gly Leu Arg Val Ala Ala Leu Lys Tyr Asp
100     105     110
Pro Ala Lys Val Ala Pro Gln Asn Asp Arg Val Leu Val Arg Leu Glu
115     120     125
Gln Ile Pro Glu Lys Ser Ala Gly Gly Val Leu Leu Pro Lys Ser Ala
130     135     140
Val Lys Phe Glu Arg Tyr Leu Met Gly Glu Ile Leu Ser Ile Gly Ala
145     150     155
Glu Val Ser Glu Val Glu Ala Gly Lys Lys Val Leu Phe Ser Asp Ile
165     170     175
Asn Ala Tyr Glu Val Glu Leu Gly Thr Asp Asp Glu Lys His Cys Phe
180     185     190
Cys Arg Glu Ser Asp Leu Leu Ala Val Val Glu
195     200

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<210> 3706  
 <211> 756  
 <212> DNA  
 <213> AZOTOBACTER VINELANDII

<220>  
 <221> CDS  
 <222> (1)..(756)  
 <223> transl\_table=11

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<400> 3706
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Met His Arg Lys Val Phe Ala Gly Arg Val Phe Glu Arg Gln Val Ala
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ctg atc ggc ggc ggc tgc tcc gac gtc ggc cgg gcg ctg gcg gta cgc
Leu Ile Gly Gly Gly Cys Ser Asp Val Gly Arg Ala Leu Ala Val Arg
20      25      30
ctg gcg cag gcc ggc gcg agc ctg gcg ctg ctc gac ctc gat gca act
Leu Ala Gln Ala Gly Ala Ser Leu Ala Leu Leu Asp Leu Asp Ala Thr
35      40      45
gcg ctg gac agc ctg gtc gag cac ctg gcc gac cat cac aac tgc gcg
Ala Leu Asp Ser Leu Val Glu His Leu Ala Asp His Asn Cys Ala
50      55      60
gcg ctc gga ttg ccc tgc gac ctg acc gac gcg caa gcg gtg gag cgc
Ala Leu Gly Leu Pro Cys Asp Leu Thr Asp Ala Gln Ala Val Glu Arg
65      70      75
gcc gta acg ctg gtc ggc gag cgt ttc ggc ggc atc gat ctg ctc gcc
Ala Val Thr Leu Val Gly Glu Arg Phe Gly Gly Ile Asp Leu Leu Ala
80

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## PhoenixTemp32470.tmp.txt

85	90	95														
tgc Cys	tgc Cys	gcc Ala	gtc Val 100	gtc Val	cat His	cac His	tgc Cys	ggc Gly 105	ggc Gly	atc Ile	tgc Cys	gac Asp	acc Thr 110	gcg Ala	cgc Pro	336
gaa Glu	gtg Val	ttc Phe 115	cgg Arg	cgg Arg	gtc Val	atg Met	gag Glu 120	gtc Val	aac Asn	ttt Phe	ttc Phe	ggc Gly 125	gcc Ala	ctg Leu	cat His	384
tgc Cys	gcc Ala 130	cgg Arg	gcg Ala	gcg Ala	cta Leu	ccc Pro 135	ggc Gly	ctg Leu	ctc Leu	gcg Ala	cgg Arg 140	cgc Arg	ggg Gly	cag Gln	atc Ile	432
gtc Val 145	gtg Val	gcc Ala	ggg Gly	gcg Ala	ctg Leu 150	ccc Pro	gcc Ala	ttc Phe	ggt Gly	ccg Pro 155	ccg Pro	cag Gln	gcc Ala	ggc Gly	cgt Arg 160	480
ggc Gly	gcc Ala	gag Glu	gcc Ala	gcc Ala 165	agc Ser	cgg Arg	cag Gln	gcg Ala	ctg Leu 170	ctc Leu	ggg Gly	ttg Leu	ttc Phe	gag Glu 175	acg Thr	528
ctg Leu	cgc Arg	ctg Leu	gag Glu 180	gtc Val	gcg Ala	gcg Ala	gac Asp	ggt Gly 185	gtc Val	aac Asn	gtg Val	atg Met	ctg Leu 190	gtg Val	tgt Cys	576
ccc Pro	ggc Gly	cgc Arg 195	gcc Ala	ggc Gly	gat Asp	ccg Pro	gcg Ala 200	tgc Cys	gac Asp	gac Asp	ccg Pro	tcc Ser 205	ggc Gly	gcc Ala	gag Glu	624
gcg Ala	gcg Ala 210	ggc Gly	cgc Arg	ttg Leu	ccc Pro	tcg Ser 215	gcg Ala	cag Gln	gac Asp	atc Ile	gcc Ala 220	gag Glu	gcg Ala	atc Ile	ttc Phe	672
cag Gln 225	gga Gly	gcg Ala	ttg Leu	cgc Arg	cgc Arg 230	cgc Arg	cat His	ctg Leu	ctg Leu	atg Met 235	ctg Leu	ccc Pro	ggc Gly	tac Tyr	gac Asp 240	720
tggt Trp	cgc Arg	gcc Ala	cgg Arg	ctg Leu 245	ctg Leu	gcg Ala	cgg Arg	ctc Leu	gcg Ala 250	caa Gln	tag					756

<210> 3707

<211> 251

<212> PRT

<213> AZOTOBACTER VINELANDII

<400> 3707

Met	His	Arg	Lys	Val	Phe	Ala	Gly	Arg	Val	Phe	Glu	Arg	Gln	Val	Ala
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Leu	Ile	Gly	Gly	Gly	Cys	Ser	Asp	Val	Gly	Arg	Ala	Leu	Ala	Val	Arg
			20					25					30		
Leu	Ala	Gln	Ala	Gly	Ala	Ser	Leu	Ala	Leu	Leu	Asp	Leu	Asp	Ala	Thr
		35					40					45			
Ala	Leu	Asp	Ser	Leu	Val	Glu	His	Leu	Ala	Asp	His	His	Asn	Cys	Ala
	50					55					60				
Ala	Leu	Gly	Leu	Pro	Cys	Asp	Leu	Thr	Asp	Ala	Gln	Ala	Val	Glu	Arg
65					70					75					80
Ala	Val	Thr	Leu	Val	Gly	Glu	Arg	Phe	Gly	Gly	Ile	Asp	Leu	Leu	Ala
			85						90					95	
Cys	Cys	Ala	Val	Val	His	His	Cys	Gly	Gly	Ile	Cys	Asp	Thr	Ala	Pro
			100					105					110		
Glu	Val	Phe	Arg	Arg	Val	Met	Glu	Val	Asn	Phe	Phe	Gly	Ala	Leu	His
		115					120					125			
Cys	Ala	Arg	Ala	Ala	Leu	Pro	Gly	Leu	Leu	Ala	Arg	Arg	Gly	Gln	Ile
	130					135					140				
Val	Val	Ala	Gly	Ala	Leu	Pro	Ala	Phe	Gly	Pro	Pro	Gln	Ala	Gly	Arg
145					150					155					160
Gly	Ala	Glu	Ala	Ala	Ser	Arg	Gln	Ala	Leu	Leu	Gly	Leu	Phe	Glu	Thr
			165						170					175	
Leu	Arg	Leu	Glu	Val	Ala	Ala	Asp	Gly	Val	Asn	Val	Met	Leu	Val	Cys
			180					185					190		
Pro	Gly	Arg	Ala	Gly	Asp	Pro	Ala	Cys	Asp	Asp	Pro	Ser	Gly	Ala	Glu
		195					200					205			
Ala	Ala	Gly	Arg	Leu	Pro	Ser	Ala	Gln	Asp	Ile	Ala	Glu	Ala	Ile	Phe
	210					215					220				
Gln	Gly	Ala	Leu	Arg	Arg	His	Leu	Leu	Met	Leu	Pro	Gly	Tyr	Asp	
225				230					235					240	
Trp	Arg	Ala	Arg	Leu	Leu	Ala	Arg	Leu	Ala	Gln					

245

250

<210> 3708  
 <211> 777  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(777)

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 Met Ser Gly Ser Arg Arg Leu Asp Gly Lys Val Val Ile Ile Thr Gly  
 1 5 10 15  
 gga gcc agc ggg att gga gca gaa tct gct agg cta ttc act gac cac 96  
 Gly Ala Ser Gly Ile Gly Ala Glu Ser Ala Arg Leu Phe Thr Asp His  
 20 25 30  
 gga gct aaa gtg gtt att gtt gac ata caa gag gag tta ggc cag aac 144  
 Gly Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn  
 35 40 45  
 gtt gcc gtt tca ata ggt aaa gac aaa gca agt tat tac aaa tgc gat 192  
 Val Ala Val Ser Ile Gly Lys Asp Lys Ala Ser Tyr Tyr Lys Cys Asp  
 50 55 60  
 atc aca aac gaa aca gag gta gag aat gct gtt aag ttc acc gtc gaa 240  
 Ile Thr Asn Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu  
 65 70 75 80  
 atg cat gga aaa ctc gac gtt ctg ttc agc aac gcc ggc gtc tta gat 288  
 Met His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp  
 85 90 95  
 acg ccg gga agc atc ctc gac ttg aat ctc gaa cat ttt gac cgt gta 336  
 Thr Pro Gly Ser Ile Leu Asp Leu Asn Leu Glu His Phe Asp Arg Val  
 100 105 110  
 atg ggg gtt aac gtt cgc ggt gca gct gcg ttt atc aaa cat gca gca 384  
 Met Gly Val Asn Val Arg Gly Ala Ala Phe Ile Lys His Ala Ala  
 115 120 125  
 cgt gcc atg gtg ggt agt ggc aca cgt ggt tcc att gtt tgt acg act 432  
 Arg Ala Met Val Gly Ser Gly Thr Arg Gly Ser Ile Val Cys Thr Thr  
 130 135 140  
 agc gtt acg gcg gag att ggt ggt cag gga cct cat gga tac aca gcg 480  
 Ser Val Thr Ala Glu Ile Gly Gly Gln Gly Pro His Gly Tyr Thr Ala  
 145 150 155 160  
 tcg aag cat gcc ctc ctg ggg ctg att aag tca gct tgt ggt gag ttg 528  
 Ser Lys His Ala Leu Leu Gly Leu Ile Lys Ser Ala Cys Gly Glu Leu  
 165 170 175  
 ggg aaa cat ggc att aga gta aac ggc gtg gcg ccg ttt gcg gtg gcg 576  
 Gly Lys His Gly Ile Arg Val Asn Gly Val Ala Pro Phe Ala Val Ala  
 180 185 190  
 acg agt atg act agc cgt gat gag gag acg gcg aag cag gtg gag gga 624  
 Thr Ser Met Thr Ser Arg Asp Glu Glu Thr Ala Lys Gln Val Glu Gly  
 195 200 205  
 tat tgt gaa gcc gtg gga att ctg aag ggt gtt gcg ttg aaa ccc aat 672  
 Tyr Cys Glu Ala Val Gly Ile Leu Lys Gly Val Ala Leu Lys Pro Asn  
 210 215 220  
 cac gtg gcg aag gct gct ttg ttt cta gct tct gat gat tct att tat 720  
 His Val Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ser Ile Tyr  
 225 230 235 240  
 att agt ggg cat aat cta gtt ttg gac ggt gga ttt agc gtc gtt aag 768  
 Ile Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Ser Val Val Lys  
 245 250 255  
 cct ctt taa 777  
 Pro Leu

<210> 3709  
 <211> 258  
 <212> PRT  
 <213> Brassica napus



## PhoenixTemp32470.tmp.txt

&lt;400&gt; 3709

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Met Ser Gly Ser Arg Arg Leu Asp Gly Lys Val Val Ile Ile Thr Gly
1      5      10      15
Gly Ala Ser Gly Ile Gly Ala Glu Ser Ala Arg Leu Phe Thr Asp His
20      25      30
Gly Ala Lys Val Val Ile Val Asp Ile Gln Glu Glu Leu Gly Gln Asn
35      40      45
Val Ala Val Ser Ile Gly Lys Asp Lys Ala Ser Tyr Tyr Lys Cys Asp
50      55      60
Ile Thr Asn Glu Thr Glu Val Glu Asn Ala Val Lys Phe Thr Val Glu
65      70      75      80
Met His Gly Lys Leu Asp Val Leu Phe Ser Asn Ala Gly Val Leu Asp
85      90      95
Thr Pro Gly Ser Ile Leu Asp Leu Asn Leu Glu His Phe Asp Arg Val
100     105     110
Met Gly Val Asn Val Arg Gly Ala Ala Ala Phe Ile Lys His Ala Ala
115     120     125
Arg Ala Met Val Gly Ser Gly Thr Arg Gly Ser Ile Val Cys Thr Thr
130     135     140
Ser Val Thr Ala Glu Ile Gly Gly Gln Gly Pro His Gly Tyr Thr Ala
145     150     155     160
Ser Lys His Ala Leu Leu Gly Leu Ile Lys Ser Ala Cys Gly Glu Leu
165     170     175
Gly Lys His Gly Ile Arg Val Asn Gly Val Ala Pro Phe Ala Val Ala
180     185     190
Thr Ser Met Thr Ser Arg Asp Glu Glu Thr Ala Lys Gln Val Glu Gly
195     200     205
Tyr Cys Glu Ala Val Gly Ile Leu Lys Gly Val Ala Leu Lys Pro Asn
210     215     220
His Val Ala Lys Ala Ala Leu Phe Leu Ala Ser Asp Asp Ser Ile Tyr
225     230     235     240
Ile Ser Gly His Asn Leu Val Leu Asp Gly Gly Phe Ser Val Val Lys
245     250     255
Pro Leu

```

&lt;210&gt; 3710

&lt;211&gt; 858

&lt;212&gt; DNA

&lt;213&gt; ESCHERICHIA COLI

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(858)

&lt;223&gt; transl\_table=11

&lt;400&gt; 3710

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atg ttt atc ctg tat ttt cag agg gaa tgg agt gta acg ctc tgt att      48
Met Phe Ile Leu Tyr Phe Gln Arg Glu Trp Ser Val Thr Leu Cys Ile
1      5      10      15
aac aag gag agc att aaa atg ggt aaa ctc acg ggc aag aca gca ctg      96
Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu
20      25      30
att acg ggc gca ttg cag gga att ggc gaa gga att gcc aga act ttt      144
Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe
35      40      45
gca cgt cat ggc gcg aac cta atc ttg ctg gat atc tcc cct gag atc      192
Ala Arg His Gly Ala Asn Ile Leu Leu Asp Ile Ser Pro Glu Ile
50      55      60
gaa aag ctg gcg gac gaa ctg tgt ggt cgt ggt cat cgc tgt acg gcg      240
Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala
65      70      75      80
gtt gtc gcc gat gtg cgt gac ccg gcg tcg gta gcc gca gct atc aaa      288
Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys
85      90      95
cgc gcg aag gaa aaa gaa ggg cgc att gat atc ctg gtg aat aac gca      336
Arg Ala Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala
100     105     110
ggc gtt tgt cgt ctg ggc agt ttc ctc gat atg agc gat gac gat cgc      384

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## PhoenixTemp32470.tmp.txt

Gly	Val	Cys	Arg	Leu	Gly	Ser	Phe	Leu	Asp	Met	Ser	Asp	Asp	Asp	Arg	
gat	ttc	cat	att	gac	atc	aat	att	aaa	ggc	gta	tgg	aac	gtc	acg	aag	432
Asp	Phe	His	Ile	Asp	Ile	Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	
130						135					140					
gcg	gtg	ctg	ccg	gag	atg	att	gcc	cgc	aaa	gat	ggt	cgc	att	gtg	atg	480
Ala	Val	Leu	Pro	Glu	Met	Ile	Ala	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met	
145					150					155					160	
atg	tct	tca	gtc	act	ggg	gat	atg	gtg	gcc	gat	cct	ggc	gaa	acg	gcg	528
Met	Ser	Ser	Val	Thr	Gly	Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	
				165					170					175		
tac	gcc	tta	acg	aaa	gcg	gcg	att	gtt	ggc	ctg	aca	aaa	tcg	ctg	gcg	576
Tyr	Ala	Leu	Thr	Lys	Ala	Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	
			180					185					190			
gtg	gag	tac	gcg	cag	tct	ggg	att	cgc	gtt	aac	gcc	att	tgc	ccg	gga	624
Val	Glu	Tyr	Ala	Gln	Ser	Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	
		195				200					205					
cac	gtg	cgc	aca	cca	atg	gcg	gaa	agc	att	gcc	cgc	cag	tcg	aac	ccg	672
His	Val	Arg	Thr	Pro	Met	Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	
		210				215					220					
gaa	gat	cca	gag	tcg	gtg	ctg	act	gaa	atg	gcg	aaa	gca	atc	ccg	atg	720
Glu	Asp	Pro	Glu	Ser	Val	Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met	
225					230					235					240	
cgt	cgc	ctc	gcc	gat	ccg	ctg	gaa	gtc	ggc	gaa	ctg	gcg	gcc	ttc	ctc	768
Arg	Arg	Leu	Ala	Asp	Pro	Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu	
				245					250					255		
gca	tcg	gat	gaa	tcc	agc	tat	tta	acc	ggg	aca	cag	aat	gtg	att	gat	816
Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp	
			260					265					270			
ggc	ggc	agc	aca	ctg	ccg	gag	acg	gtt	agc	gtc	ggg	atc	taa			858
Gly	Gly	Ser	Thr	Leu	Pro	Glu	Thr	Val	Ser	Val	Gly	Ile				
		275					280					285				

&lt;210&gt; 3711

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; ESCHERICHIA COLI

&lt;400&gt; 3711

Met	Phe	Ile	Leu	Tyr	Phe	Gln	Arg	Glu	Trp	Ser	Val	Thr	Leu	Cys	Ile	
1				5					10					15		
Asn	Lys	Glu	Ser	Ile	Lys	Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu	
			20					25					30			
Ile	Thr	Gly	Ala	Leu	Gln	Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Thr	Phe	
		35				40					45					
Ala	Arg	His	Gly	Ala	Asn	Leu	Ile	Leu	Leu	Asp	Ile	Ser	Pro	Glu	Ile	
		50				55				60						
Glu	Lys	Leu	Ala	Asp	Glu	Leu	Cys	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala	
65					70					75					80	
Val	Val	Ala	Asp	Val	Arg	Asp	Pro	Ala	Ser	Val	Ala	Ala	Ala	Ile	Lys	
				85					90					95		
Arg	Ala	Lys	Glu	Lys	Glu	Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala	
			100					105					110			
Gly	Val	Cys	Arg	Leu	Gly	Ser	Phe	Leu	Asp	Met	Ser	Asp	Asp	Asp	Arg	
		115					120					125				
Asp	Phe	His	Ile	Asp	Ile	Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys	
	130					135					140					
Ala	Val	Leu	Pro	Glu	Met	Ile	Ala	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met	
145					150					155					160	
Met	Ser	Ser	Val	Thr	Gly	Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala	
				165					170					175		
Tyr	Ala	Leu	Thr	Lys	Ala	Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala	
			180					185					190			
Val	Glu	Tyr	Ala	Gln	Ser	Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly	
		195				200						205				
His	Val	Arg	Thr	Pro	Met	Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro	
	210					215					220					
Glu	Asp	Pro	Glu	Ser	Val	Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met	
225					230					235					240	

## PhoenixTemp32470.tmp.txt

Arg Arg Leu Ala Asp Pro Leu Glu Val Gly Glu Leu Ala Ala Phe Leu  
 245 255  
 Ala Ser Asp Glu Ser Ser Tyr Leu Thr Gly Thr Gln Asn Val Ile Asp  
 260 265 270  
 Gly Gly Ser Thr Leu Pro Glu Thr Val Ser Val Gly Ile  
 275 280 285

&lt;210&gt; 3712

&lt;211&gt; 960

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(960)

&lt;400&gt; 3712

atg gcc acc acc gtc gca gca acg aaa ctc acc tcc ttg aaa gcc acc	48
Met Ala Thr Thr Val Ala Ala Thr Lys Leu Thr Ser Leu Lys Ala Thr	
1 5 10 15	
gcc ggg aag ctc ggt tac cgt gag atc tgc cag gtc cgg caa tgg gct	96
Ala Gly Lys Leu Gly Tyr Arg Glu Ile Cys Gln Val Arg Gln Trp Ala	
20 25 30	
ccg ctt aag tct gcg atg cct cat ttc ggt atg ctg cga tgt gcg aca	144
Pro Leu Lys Ser Ala Met Pro His Phe Gly Met Leu Arg Cys Ala Thr	
35 40 45	
tcc act gtt gtg aaa gct caa gct caa gct caa gcc acg gct act gag	192
Ser Thr Val Val Lys Ala Gln Ala Gln Ala Gln Ala Thr Ala Thr Glu	
50 55 60	
caa aca aca gaa gaa gct gtt cca aaa gtg gaa tct cca gtt gtg gtt	240
Gln Thr Thr Glu Glu Ala Val Pro Lys Val Glu Ser Pro Val Val Val	
65 70 75 80	
gtg act ggt gcc tct aga ggc att ggt aaa gct att gct ctt tcc ttg	288
Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser Leu	
85 90 95	
ggc aaa gct ggc tgt aag gtc ttg gtg aac tat gct agg tcg gca aag	336
Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ala Lys	
100 105 110	
gaa gct gaa gaa gtt tcc aaa cag att gaa gaa tat ggt ggc gag gct	384
Glu Ala Glu Glu Val Ser Lys Gln Ile Glu Glu Tyr Gly Gly Glu Ala	
115 120 125	
att act ttt gga ggc gat gtc tcg aaa gag gct gat gtg gac gcc atg	432
Ile Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Asp Ala Met	
130 135 140	
atg aaa act gct gtt gat aaa tgg gga acc att gac gtc gtg gtt aac	480
Met Lys Thr Ala Val Asp Lys Trp Gly Thr Ile Asp Val Val Val Asn	
145 150 155 160	
aat gca gga att acc agg gat acc ttg ttg att cga atg aag aaa tct	528
Asn Ala Gly Ile Thr Arg Asp Thr Leu Leu Ile Arg Met Lys Lys Ser	
165 170 175	
caa tgg gat gaa gtg ata gat ttg aat ctc act gga gtg ttt ctc tgt	576
Gln Trp Asp Glu Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys	
180 185 190	
acc cag gca gca aca aag atc atg atg aag aag aga aag gga agg atc	624
Thr Gln Ala Ala Thr Lys Ile Met Met Lys Lys Arg Lys Gly Arg Ile	
195 200 205	
atc aac ata gcg tca gtt gtt ggt ctc att ggt aac att ggg caa gca	672
Ile Asn Ile Ala Ser Val Val Gly Leu Ile Gly Asn Ile Gly Gln Ala	
210 215 220	
aac tac gct gca gct aaa gct gga gtt att ggg ttt tcc aag act gcc	720
Asn Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Ser Lys Thr Ala	
225 230 235 240	
gcc aga gag ggt gct agc agg aat ata aat gtg aat gtg tgc cct	768
Ala Arg Glu Gly Ala Ser Arg Asn Ile Asn Val Asn Val Val Cys Pro	
245 250 255	
gga ttc att gca tct gac atg act gcc aag ctt gga gaa gac atg gaa	816
Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Glu Asp Met Glu	
260 265 270	
aag aaa atc ttg gga aca atc cca tta gga cga tat gga caa cca gaa	864

## PhoenixTemp32470.tmp.txt

Lys	Lys	Ile	Leu	Gly	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu		
gat	gtg	gct	ggc	ttg	gta	gaa	ttc	ttg	gct	ctg	agc	ccg	gca	gcg	agt		912
Asp	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser		
	290					295					300						
tac	ata	act	gga	cag	aca	ttc	acc	atc	gat	gga	ggt	att	gca	atc	tag		960
Tyr	Ile	Thr	Gly	Gln	Thr	Phe	Thr	Ile	Asp	Gly	Gly	Ile	Ala	Ile			
305					310					315							

&lt;210&gt; 3713

&lt;211&gt; 319

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3713

Met	Ala	Thr	Thr	Val	Ala	Ala	Thr	Lys	Leu	Thr	Ser	Leu	Lys	Ala	Thr		
1				5					10					15			
Ala	Gly	Lys	Leu	Gly	Tyr	Arg	Glu	Ile	Cys	Gln	Val	Arg	Gln	Trp	Ala		
			20					25					30				
Pro	Leu	Lys	Ser	Ala	Met	Pro	His	Phe	Gly	Met	Leu	Arg	Cys	Ala	Thr		
		35					40					45					
Ser	Thr	Val	Val	Lys	Ala	Gln	Ala	Gln	Ala	Gln	Ala	Thr	Ala	Thr	Glu		
	50					55					60						
Gln	Thr	Thr	Glu	Glu	Ala	Val	Pro	Lys	Val	Glu	Ser	Pro	Val	Val	Val		
65					70					75					80		
Val	Thr	Gly	Ala	Ser	Arg	Gly	Ile	Gly	Lys	Ala	Ile	Ala	Leu	Ser	Leu		
				85					90					95			
Gly	Lys	Ala	Gly	Cys	Lys	Val	Leu	Val	Asn	Tyr	Ala	Arg	Ser	Ala	Lys		
			100					105					110				
Glu	Ala	Glu	Glu	Val	Ser	Lys	Gln	Ile	Glu	Glu	Tyr	Gly	Gly	Glu	Ala		
		115					120					125					
Ile	Thr	Phe	Gly	Gly	Asp	Val	Ser	Lys	Glu	Ala	Asp	Val	Asp	Ala	Met		
	130				135						140						
Met	Lys	Thr	Ala	Val	Asp	Lys	Trp	Gly	Thr	Ile	Asp	Val	Val	Val	Asn		
145					150					155					160		
Asn	Ala	Gly	Ile	Thr	Arg	Asp	Thr	Leu	Leu	Ile	Arg	Met	Lys	Lys	Ser		
			165						170					175			
Gln	Trp	Asp	Glu	Val	Ile	Asp	Leu	Asn	Leu	Thr	Gly	Val	Phe	Leu	Cys		
		180						185					190				
Thr	Gln	Ala	Ala	Thr	Lys	Ile	Met	Met	Lys	Lys	Arg	Lys	Gly	Arg	Ile		
		195					200					205					
Ile	Asn	Ile	Ala	Ser	Val	Val	Gly	Leu	Ile	Gly	Asn	Ile	Gly	Gln	Ala		
	210					215					220						
Asn	Tyr	Ala	Ala	Ala	Lys	Ala	Gly	Val	Ile	Gly	Phe	Ser	Lys	Thr	Ala		
225					230					235					240		
Ala	Arg	Glu	Gly	Ala	Ser	Arg	Asn	Ile	Asn	Val	Asn	Val	Val	Cys	Pro		
			245						250					255			
Gly	Phe	Ile	Ala	Ser	Asp	Met	Thr	Ala	Lys	Leu	Gly	Glu	Asp	Met	Glu		
		260						265					270				
Lys	Lys	Ile	Leu	Gly	Thr	Ile	Pro	Leu	Gly	Arg	Tyr	Gly	Gln	Pro	Glu		
		275					280					285					
Asp	Val	Ala	Gly	Leu	Val	Glu	Phe	Leu	Ala	Leu	Ser	Pro	Ala	Ala	Ser		
	290					295					300						
Tyr	Ile	Thr	Gly	Gln	Thr	Phe	Thr	Ile	Asp	Gly	Gly	Ile	Ala	Ile			
305					310					315							

&lt;210&gt; 3714

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 3714

atg	gct	gcg	gcg	ggg	acg	tcg	gga	tcg	agc	cag	ccg	ggt	gct	cca	gga		
Met	Ala	Ala	Ala	Gly	Thr	Ser	Gly	Ser	Ser	Gln	Pro	Gly	Ala	Pro	Gly		48
1				5					10					15			

## PhoenixTemp32470.tmp.txt

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agg tgg tct ctt cac ggc aag acg gct ctc gtc acc ggc ggc acc cgc 96
Arg Trp Ser Leu 20 His Gly Lys Thr Ala 25 Leu Val Thr Gly Gly Thr Arg
ggg atc ggg cgt gcg gtg gtg gag gaa ctt gcg gcg ctg ggg gcg gcc 144
Gly Ile Gly 35 Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala
gtg cac acc tgc tcc cgg aag gag gcg gag ctg ggc gag cgc ctc aag 192
Val His 50 Thr Cys Ser Arg Lys 55 Glu Ala Glu Leu 60 Glu Arg Leu Lys
gag tgg gag gcc agg ggc ttc cgc gtc aca acc tcc gtc tgc gac ctc 240
Glu Trp Glu Ala Arg Gly 70 Phe Arg Val Thr Thr Ser Val Cys Asp Leu
tcc gtc cgg gag cag cgg gag cgc ctg att ggc gac gtc gcc gaa cgc 288
Ser Val Arg Glu 85 Gln Arg Glu Arg Leu 90 Ile Gly Asp Val Ala Glu Arg
ttc ggc ggc aag ctc aac atc ctc gta aac aat gtg ggg aca aac ata 336
Phe Gly Gly Lys 100 Leu Asn Ile Leu Val 105 Asn Asn Val Gly Thr Asn Ile
agg aaa cca act act gaa tat tcc gct gaa gat tac tct ttt ttg atg 384
Arg Lys Pro Thr Thr Glu Tyr Ser 120 Ala Glu Asp Tyr Ser Phe Leu Met
gcc act aat ctt gaa tct gca tat cat ctt tgc caa ctt gca cat cct 432
Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro
ctt cta aaa gca tct ggc ttg ggc agc att gtt ttc ata tca tct gtc 480
Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Ile Ser Ser Val
tgt gga tta gta gcc gta ttt agc ggt act cta tat gcc atg act aaa 528
Cys Gly Leu Val Ala Val Phe Ser Gly Thr Leu Tyr Ala Met Thr Lys
ggt gcc atc aac cag tta acc aag aac cta gca tgt gaa tgg gca aaa 576
Gly Ala Ile Asn Gln Leu Thr Lys Asn 185 Leu Ala Cys Glu Trp Ala Lys
gat ggc ata aga aca aac tct gtt gct cca tgg tac ata acg act tcg 624
Asp Gly Ile Arg Thr Asn Ser Val 200 Ala Pro Trp Tyr Ile Thr Thr Ser
ctt aca gaa gga ctt ttg gct aac aag gaa ttt gag gcc tcc gtt gtg 672
Leu Thr Glu Gly Leu Leu Ala Asn Lys Glu Phe Glu Ala Ser Val Val
agt cga act cca ctg agg cgt gtc gga gaa cca gga gag gta tca tcg 720
Ser Arg Thr Pro Leu Arg Val Gly Glu Glu Gly Glu Val Ser Ser
ctg gtt gct ttt ctt tgc atg cct ggt tcc act tac ata aca ggc cag 768
Leu Val Ala Phe Leu Cys Met Pro Gly Ser 250 Thr Tyr Ile Thr Gly Gln
acg atc tca gtg gat gga ggt atg agt gtc aat ggg ctc tat cca gct 816
Thr Ile Ser Val 260 Asp Gly Gly Met Ser 265 Val Asn Gly Leu Tyr Pro Ala
tga 819

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&lt;210&gt; 3715

&lt;211&gt; 272

&lt;212&gt; PRT

&lt;213&gt; Triticum aestivum

&lt;400&gt; 3715

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Met Ala Ala Ala Gly Thr Ser Gly Ser Ser Gln Pro Gly Ala Pro Gly
1 5 10 15
Arg Trp Ser Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg
20 25 30
Gly Ile Gly Arg Ala Val Val Glu Leu Ala Ala Leu Gly Ala Ala
35 40 45
Val His Thr Cys Ser Arg Lys Glu Ala Glu Leu Gly Glu Arg Leu Lys
50 55 60
Glu Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu
65 70 75 80
Ser Val Arg Glu Gln Arg Glu Arg Leu Ile Gly Asp Val Ala Glu Arg

```

## PhoenixTemp32470.tmp.txt

85 90 95  
 Phe Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile  
 100 105 110  
 Arg Lys Pro Thr Thr Glu Tyr Ser Ala Glu Asp Tyr Ser Phe Leu Met  
 115 120 125  
 Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro  
 130 135 140  
 Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Ile Ser Ser Val  
 145 150 155 160  
 Cys Gly Leu Val Ala Val Phe Ser Gly Thr Leu Tyr Ala Met Thr Lys  
 165 170 175  
 Gly Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys  
 180 185 190  
 Asp Gly Ile Arg Thr Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser  
 195 200 205  
 Leu Thr Glu Gly Leu Leu Ala Asn Lys Glu Phe Glu Ala Ser Val Val  
 210 215 220  
 Ser Arg Thr Pro Leu Arg Arg Val Gly Glu Pro Gly Glu Val Ser Ser  
 225 230 235 240  
 Leu Val Ala Phe Leu Cys Met Pro Gly Ser Thr Tyr Ile Thr Gly Gln  
 245 250 255  
 Thr Ile Ser Val Asp Gly Gly Met Ser Val Asn Gly Leu Tyr Pro Ala  
 260 265 270

<210> 3716  
 <211> 858  
 <212> DNA  
 <213> ESCHERICHIA COLI

<220>  
 <221> CDS  
 <222> (1)..(858)  
 <223> transl\_table=11

<400> 3716  
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 1 5 10 15  
 aac aag gag agc att aaa atg ggt aaa ctc acg ggc aag aca gca ctg 96  
 Asn Lys Glu Ser Ile Lys Met Gly Lys Leu Thr Gly Lys Thr Ala Leu  
 20 25 30  
 att acg ggc gca ttg cag gga att ggc gaa gga att gcc aga act ttt 144  
 Ile Thr Gly Ala Leu Gln Gly Ile Gly Glu Gly Ile Ala Arg Thr Phe  
 35 40 45  
 gca cgt cat ggc gcg aac cta atc ttg ctg gat atc tcc cct gag atc 192  
 Ala Arg His Gly Ala Asn Leu Ile Leu Leu Asp Ile Ser Pro Glu Ile  
 50 55 60  
 gaa aag ctg gcg gac gaa ctg tgt ggt cgt ggt cat cgc tgt acg gcg 240  
 Glu Lys Leu Ala Asp Glu Leu Cys Gly Arg Gly His Arg Cys Thr Ala  
 65 70 75 80  
 gtt gtc gcc gat gtg cgt gac ccg gcg tcg gta gcc gca gct atc aaa 288  
 Val Val Ala Asp Val Arg Asp Pro Ala Ser Val Ala Ala Ala Ile Lys  
 85 90 95  
 cgc gcg aag gaa aaa gaa ggg cgc att gat atc ctg gtg aat aac gca 336  
 Arg Ala Lys Glu Lys Glu Gly Arg Ile Asp Ile Leu Val Asn Asn Ala  
 100 105 110  
 ggc gtt tgt cgt ctg ggc agt ttc ctc gat atg agc gat gac gat cgc 384  
 Gly Val Cys Arg Leu Gly Ser Phe Leu Asp Met Ser Asp Asp Asp Arg  
 115 120 125  
 gat ttc cat att gac atc aat att aaa ggc gta tgg aac gtc acg aag 432  
 Asp Phe His Ile Asp Ile Asn Ile Lys Gly Val Trp Asn Val Thr Lys  
 130 135 140  
 gcg gtg ctg ccg gag atg att gcc cgc aaa gat ggt cgc att gtg atg 480  
 Ala Val Leu Pro Glu Met Ile Ala Arg Lys Asp Gly Arg Ile Val Met  
 145 150 155 160  
 atg tct tca gtc act ggt gat atg gtg gcc gat cct ggc gaa acg gcg 528  
 Met Ser Ser Val Thr Gly Asp Met Val Ala Asp Pro Gly Glu Thr Ala  
 165 170 175  
 tac gcc tta acg aaa gcg gcg att gtt ggc ctg aca aaa tcg ctg gcg 576

PhoenixTemp32470.tmp.txt

Tyr	Ala	Leu	Thr	Lys	Ala	Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala		
gtg	gag	tac	gcg	cag	tct	ggt	att	cgc	ggt	aac	gcc	att	tgc	ccg	gga		624
Val	Glu	Tyr	Ala	Gln	Ser	Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly		
		195					200					205					
tac	gtg	cgc	aca	cca	atg	gcg	gaa	agc	att	gcc	cgc	cag	tcg	aac	ccg		672
Tyr	Val	Arg	Thr	Pro	Met	Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro		
		210				215					220						
gaa	gat	cca	gag	tcg	gtg	ctg	act	gaa	atg	gcg	aaa	gca	atc	ccg	atg		720
Glu	Asp	Pro	Glu	Ser	Val	Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met		
225					230					235					240		
cgt	cgc	ctc	gcc	gat	ccg	ctg	gaa	gtc	ggc	gaa	ctg	gcg	gcc	ttc	ctc		768
Arg	Arg	Leu	Ala	Asp	Pro	Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu		
				245					250					255			
gca	tcg	gat	gaa	tcc	agc	tat	tta	acc	ggg	aca	cag	aat	gtg	att	gat		816
Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp		
			260				265						270				
ggc	ggc	agc	aca	ctg	ccg	gag	acg	gtt	agc	gtc	ggg	atc	taa				858
Gly	Gly	Ser	Thr	Leu	Pro	Glu	Thr	Val	Ser	Val	Gly	Ile					
		275					280					285					

<210> 3717

<211> 285

<212> PRT

<213> ESCHERICHIA COLI

<400> 3717

Met	Phe	Ile	Leu	Tyr	Phe	Gln	Arg	Glu	Trp	Ser	Val	Thr	Leu	Cys	Ile		
1				5					10					15			
Asn	Lys	Glu	Ser	Ile	Lys	Met	Gly	Lys	Leu	Thr	Gly	Lys	Thr	Ala	Leu		
			20					25					30				
Ile	Thr	Gly	Ala	Leu	Gln	Gly	Ile	Gly	Glu	Gly	Ile	Ala	Arg	Thr	Phe		
		35					40					45					
Ala	Arg	His	Gly	Ala	Asn	Leu	Ile	Leu	Leu	Asp	Ile	Ser	Pro	Glu	Ile		
	50				55					60							
Glu	Lys	Leu	Ala	Asp	Glu	Leu	Cys	Gly	Arg	Gly	His	Arg	Cys	Thr	Ala		
65				70					75						80		
Val	Val	Ala	Asp	Val	Arg	Asp	Pro	Ala	Ser	Val	Ala	Ala	Ala	Ile	Lys		
			85						90					95			
Arg	Ala	Lys	Glu	Lys	Glu	Gly	Arg	Ile	Asp	Ile	Leu	Val	Asn	Asn	Ala		
			100					105					110				
Gly	Val	Cys	Arg	Leu	Gly	Ser	Phe	Leu	Asp	Met	Ser	Asp	Asp	Asp	Arg		
		115					120					125					
Asp	Phe	His	Ile	Asp	Ile	Asn	Ile	Lys	Gly	Val	Trp	Asn	Val	Thr	Lys		
	130					135					140						
Ala	Val	Leu	Pro	Glu	Met	Ile	Ala	Arg	Lys	Asp	Gly	Arg	Ile	Val	Met		
145				150					155					160			
Met	Ser	Ser	Val	Thr	Gly	Asp	Met	Val	Ala	Asp	Pro	Gly	Glu	Thr	Ala		
			165					170					175				
Tyr	Ala	Leu	Thr	Lys	Ala	Ala	Ile	Val	Gly	Leu	Thr	Lys	Ser	Leu	Ala		
			180					185					190				
Val	Glu	Tyr	Ala	Gln	Ser	Gly	Ile	Arg	Val	Asn	Ala	Ile	Cys	Pro	Gly		
		195					200					205					
Tyr	Val	Arg	Thr	Pro	Met	Ala	Glu	Ser	Ile	Ala	Arg	Gln	Ser	Asn	Pro		
	210					215					220						
Glu	Asp	Pro	Glu	Ser	Val	Leu	Thr	Glu	Met	Ala	Lys	Ala	Ile	Pro	Met		
225				230						235				240			
Arg	Arg	Leu	Ala	Asp	Pro	Leu	Glu	Val	Gly	Glu	Leu	Ala	Ala	Phe	Leu		
				245					250					255			
Ala	Ser	Asp	Glu	Ser	Ser	Tyr	Leu	Thr	Gly	Thr	Gln	Asn	Val	Ile	Asp		
			260				265						270				
Gly	Gly	Ser	Thr	Leu	Pro	Glu	Thr	Val	Ser	Val	Gly	Ile					
		275					280					285					

<210> 3718

<211> 960

<212> DNA

<213> Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(960)

&lt;400&gt; 3718

atg gcc acc acc gtc gca gca acg aaa ctc acc tcc ttg aaa gcc acc	48
Met Ala Thr Thr Val Ala Ala Thr Lys Leu Thr Ser Leu Lys Ala Thr	
1 5 10 15	
gcc ggg aag ctc ggt tac cgt gag atc tgc cag gtc cgg caa tgg gct	96
Ala Gly Lys Leu Gly Tyr Arg Glu Ile Cys Gln Val Arg Gln Trp Ala	
20 25 30	
ccg ctt aag tct gcg atg cct cat ttc ggt atg ctg cga tgt gcg aca	144
Pro Leu Lys Ser Ala Met Pro His Phe Gly Met Leu Arg Cys Ala Thr	
35 40 45	
tcc act gtt gtg aaa gct caa gct caa gct caa gcc acg gct act gag	192
Ser Thr Val Val Lys Ala Gln Ala Gln Ala Gln Ala Thr Ala Thr Glu	
50 55 60	
caa aca aca gaa gaa gct gtt cca aaa gtg gaa tct cca gtt gtg gtt	240
Gln Thr Thr Glu Glu Val Pro Lys Val Glu Ser Pro Val Val Val	
65 70 75 80	
gtg act ggt gcc tct aga ggc att ggt aaa gct att gct ctt tcc ttg	288
Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser Leu	
85 90 95	
ggc aaa gct ggc tgt aag gtc ttg gtg aac tat gct agg tcg gca aag	336
Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ala Lys	
100 105 110	
gaa gct gaa gaa gtt tcc aaa cag att gaa gaa tat ggt ggc gag gct	384
Glu Ala Glu Glu Val Ser Lys Gln Ile Glu Glu Tyr Gly Gly Glu Ala	
115 120 125	
att act ttt gga ggc gat gtc aaa gag gct gat gtg gac gcc atg	432
Ile Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Asp Ala Met	
130 135 140	
atg aaa act gct gtt gat aaa tgg gga acc att gac gtc gtg gtt aac	480
Met Lys Thr Ala Val Asp Lys Trp Gly Thr Ile Asp Val Val Val Asn	
145 150 155 160	
aat gca gga att acc agg gat acc ttg ttg att cga atg aag aaa tct	528
Asn Ala Gly Ile Thr Arg Asp Thr Leu Leu Ile Arg Met Lys Lys Ser	
165 170 175	
caa tgg gat gaa gtg ata gat ttg aat ctc act gga gtg ttt ctc tgt	576
Gln Trp Asp Glu Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys	
180 185 190	
acc cag gca gca aca aag atc atg atg aag aag aga aag gga agg atc	624
Thr Gln Ala Ala Thr Lys Ile Met Met Lys Lys Arg Lys Gly Arg Ile	
195 200 205	
atc aac ata gcg tca gtt gtt ggt ctc att ggt aac att ggg caa gca	672
Ile Asn Ile Ala Ser Val Val Gly Leu Ile Gly Asn Ile Gly Gln Ala	
210 215 220	
aac tac gct gca gct aaa gct gga gtt att ggg ttt tcc aag act gcc	720
Asn Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Ser Lys Thr Ala	
225 230 235 240	
gcc aga gag ggt gct agc agg aat ata aat gtg aat gtg gtg tgc cct	768
Ala Arg Glu Gly Ala Ser Arg Asn Ile Asn Val Asn Val Val Cys Pro	
245 250 255	
gga ttc att gca tct gac atg act gcc aag ctt gga gaa gac atg gaa	816
Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Glu Asp Met Glu	
260 265 270	
aag aaa atc ttg gga aca atc cca tta gga cga tat gga caa cca gaa	864
Lys Lys Ile Leu Gly Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu	
275 280 285	
gat gtg gct ggc ttg gta gaa ttc ttg gct ctg agc ccg gca gcg agt	912
Asp Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser	
290 295 300	
tac ata act gga cag aca ttc atc gat gga ggt att gca atc tag	960
Tyr Ile Thr Gly Gln Thr Phe Thr Ile Asp Gly Gly Ile Ala Ile	
305 310 315	

&lt;210&gt; 3719

&lt;211&gt; 319

&lt;212&gt; PRT



&lt;213&gt; Brassica napus

&lt;400&gt; 3719

```

Met Ala Thr Thr Val Ala Ala Thr Lys Leu Thr Ser Leu Lys Ala Thr
1      5      10      15
Ala Gly Lys Leu Gly Tyr Arg Glu Ile Cys Gln Val Arg Gln Trp Ala
20      25      30
Pro Leu Lys Ser Ala Met Pro His Phe Gly Met Leu Arg Cys Ala Thr
35      40      45
Ser Thr Val Val Lys Ala Gln Ala Gln Ala Gln Ala Thr Ala Thr Glu
50      55      60
Gln Thr Thr Glu Glu Ala Val Pro Lys Val Glu Ser Pro Val Val Val
65      70      75
Val Thr Gly Ala Ser Arg Gly Ile Gly Lys Ala Ile Ala Leu Ser Leu
85      90      95
Gly Lys Ala Gly Cys Lys Val Leu Val Asn Tyr Ala Arg Ser Ala Lys
100     105     110
Glu Ala Glu Glu Val Ser Lys Gln Ile Glu Glu Tyr Gly Gly Glu Ala
115     120     125
Ile Thr Phe Gly Gly Asp Val Ser Lys Glu Ala Asp Val Asp Ala Met
130     135     140
Met Lys Thr Ala Val Asp Lys Trp Gly Thr Ile Asp Val Val Val Asn
145     150     155
Asn Ala Gly Ile Thr Arg Asp Thr Leu Leu Ile Arg Met Lys Lys Ser
165     170     175
Gln Trp Asp Glu Val Ile Asp Leu Asn Leu Thr Gly Val Phe Leu Cys
180     185     190
Thr Gln Ala Ala Thr Lys Ile Met Met Lys Lys Arg Lys Gly Arg Ile
195     200     205
Ile Asn Ile Ala Ser Val Val Gly Leu Ile Gly Asn Ile Gly Gln Ala
210     215     220
Asn Tyr Ala Ala Ala Lys Ala Gly Val Ile Gly Phe Ser Lys Thr Ala
225     230     235
Ala Arg Glu Gly Ala Ser Arg Asn Ile Asn Val Asn Val Val Cys Pro
245     250     255
Gly Phe Ile Ala Ser Asp Met Thr Ala Lys Leu Gly Glu Asp Met Glu
260     265     270
Lys Lys Ile Leu Gly Thr Ile Pro Leu Gly Arg Tyr Gly Gln Pro Glu
275     280     285
Asp Val Ala Gly Leu Val Glu Phe Leu Ala Leu Ser Pro Ala Ala Ser
290     295     300
Tyr Ile Thr Gly Gln Thr Phe Thr Ile Asp Gly Gly Ile Ala Ile
305     310     315

```

&lt;210&gt; 3720

&lt;211&gt; 819

&lt;212&gt; DNA

&lt;213&gt; Triticum aestivum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(819)

&lt;400&gt; 3720

```

atg gct gcg gcg ggg acg tcg gga tcg agc cag ccg ggt gct cca gga      48
Met Ala Ala Ala Gly Thr Ser Gly Ser Ser Gln Pro Gly Ala Pro Gly
1      5      10      15
agg tgg tct ctt cac ggc aag acg gct ctc gtc acc ggc ggc acc cgc      96
Arg Trp Ser Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg
20      25      30
ggg atc ggg cgt gcg gtg gtg gag gaa ctt gcg gcg ctg ggg gcg gcc      144
Gly Ile Gly Arg Ala Val Val Glu Glu Leu Ala Ala Leu Gly Ala Ala
35      40      45
gtg cac acc tgc tcc cgg aag gag gcg gag ctg ggc gag cgc ctc aag      192
Val His Thr Cys Ser Arg Lys Glu Ala Glu Leu Gly Glu Arg Leu Lys
50      55      60
gag tgg gag gcc agg ggc ttc cgc gtc aca acc tcc gtc tgc gac ctc      240
Glu Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu
65      70      75      80

```

PhoenixTemp32470.tmp.txt

tcc gtc cgg gag cag cgg gag cgc ctg att ggc gac gtc gcc gaa cgc	288
Ser Val Arg Glu Gln Arg Glu Arg Leu Ile Gly Asp Val Ala Glu Arg	
85 90 95	
ttc ggc ggc aag ctc aac atc ctc gta aac aat gtg ggg aca aac ata	336
Phe Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile	
100 105 110	
agg aaa cca act act gaa tat tcc gct gaa gat tac tct ttt ttg atg	384
Arg Lys Pro Thr Thr Glu Tyr Ser Ala Glu Asp Tyr Ser Phe Leu Met	
115 120 125	
gcc act aat ctt gaa tct gca tat cat ctt tgc caa ctt gca cat cct	432
Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro	
130 135 140	
ctt cta aaa gca tct ggc ttg ggc agc att gtt ttc ata tca tct gtc	480
Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Ile Ser Ser Val	
145 150 155 160	
tgt gga tta gta gcc gta ttt agc ggt act cta tat gcc atg act aaa	528
Cys Gly Leu Val Ala Val Phe Ser Gly Thr Leu Tyr Ala Met Thr Lys	
165 170 175	
ggt gcc atc aac cag tta acc aag aac cta gca tgt gaa tgg gca aaa	576
Gly Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys	
180 185 190	
gat ggc ata aga aca aac tct gtt gct cca tgg tac ata acg act tcg	624
Asp Gly Ile Arg Thr Asn Ser Val Ala Pro Trp Tyr Ile Thr Thr Ser	
195 200 205	
ctt aca gaa gga ctt ttg gct aac aag gaa ttt gag gcc tcc gtt gtg	672
Leu Thr Glu Gly Leu Leu Ala Asn Lys Glu Phe Glu Ala Ser Val Val	
210 215 220	
agt cga act cca ctg agg cgt gtc gga gaa cca gga gag gta tca tcg	720
Ser Arg Thr Pro Leu Arg Arg Val Gly Glu Pro Gly Glu Val Ser Ser	
225 230 235 240	
ctg gtt gct ttt ctt tgc atg cct ggt tcc act tac ata aca ggc cag	768
Leu Val Ala Phe Leu Cys Met Pro Gly Ser Thr Tyr Ile Thr Gly Gln	
245 250 255	
acg atc tca gtg gat gga ggt atg agt gtc aat ggg ctc tat cca gct	816
Thr Ile Ser Val Asp Gly Gly Met Ser Val Asn Gly Leu Tyr Pro Ala	
260 265 270	
tga	819

<210> 3721  
 <211> 272  
 <212> PRT  
 <213> Triticum aestivum

<400> 3721  
 Met Ala Ala Ala Gly Thr Ser Gly Ser Ser Gln Pro Gly Ala Pro Gly  
 1 5 10 15  
 Arg Trp Ser Leu His Gly Lys Thr Ala Leu Val Thr Gly Gly Thr Arg  
 20 25 30  
 Gly Ile Gly Arg Ala Val Val Glu Leu Ala Ala Leu Gly Ala Ala  
 35 40 45  
 Val His Thr Cys Ser Arg Lys Glu Ala Glu Leu Gly Glu Arg Leu Lys  
 50 55 60  
 Glu Trp Glu Ala Arg Gly Phe Arg Val Thr Thr Ser Val Cys Asp Leu  
 65 70 75 80  
 Ser Val Arg Glu Gln Arg Glu Arg Leu Ile Gly Asp Val Ala Glu Arg  
 85 90 95  
 Phe Gly Gly Lys Leu Asn Ile Leu Val Asn Asn Val Gly Thr Asn Ile  
 100 105 110  
 Arg Lys Pro Thr Thr Glu Tyr Ser Ala Glu Asp Tyr Ser Phe Leu Met  
 115 120 125  
 Ala Thr Asn Leu Glu Ser Ala Tyr His Leu Cys Gln Leu Ala His Pro  
 130 135 140  
 Leu Leu Lys Ala Ser Gly Leu Gly Ser Ile Val Phe Ile Ser Ser Val  
 145 150 155 160  
 Cys Gly Leu Val Ala Val Phe Ser Gly Thr Leu Tyr Ala Met Thr Lys  
 165 170 175  
 Gly Ala Ile Asn Gln Leu Thr Lys Asn Leu Ala Cys Glu Trp Ala Lys

## PhoenixTemp32470.tmp.txt

Asp	Gly	Ile	180	Thr	Asn	Ser	Val	185	Ala	Pro	Trp	Tyr	Ile	190	Thr	Thr	Ser
Leu	Thr	Glu	195	Gly	Leu	Leu	Ala	200	Asn	Lys	Glu	Phe	Glu	205	Ala	Ser	Val
Ser	Arg	Thr	210	Pro	Leu	Arg	Arg	215	Val	Gly	Glu	Pro	Gly	220	Glu	Val	Ser
225	Val	Ala	Phe	Leu	230	Cys	Met	Pro	Gly	Ser	235	Thr	Tyr	Ile	Thr	Gly	240
Leu	Val	Ala	Phe	Leu	245	Cys	Met	Pro	Gly	Ser	250	Thr	Tyr	Ile	Thr	Gly	255
Thr	Ile	Ser	Val	260	Asp	Gly	Gly	Met	Ser	265	Val	Asn	Gly	Leu	Tyr	Pro	Ala

&lt;210&gt; 3722

&lt;211&gt; 1284

&lt;212&gt; DNA

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1284)

&lt;400&gt; 3722

atg	cat	cat	aac	tca	cag	tct	ttg	agc	tct	gga	cac	atc	agg	agc	ccc		48
Met	His	His	Asn	Ser	Gln	Ser	Leu	Ser	Ser	Gly	His	Ile	Arg	Ser	Pro		
1				5				10						15			
gag	gat	gaa	aat	gtg	gca	cct	ata	ggc	aat	ctt	aaa	cac	agg	act	gga		96
Glu	Asp	Glu	Asn	Val	Ala	Pro	Ile	Gly	Asn	Leu	Lys	His	Arg	Thr	Gly		
			20					25					30				
tcc	ctc	agt	cat	att	tca	tct	gcg	cac	ccg	agg	gtc	gca	ctt	agc	gac		144
Ser	Leu	Ser	His	Ile	Ser	Ser	Ala	His	Pro	Arg	Val	Ala	Leu	Ser	Asp		
			35				40					45					
gtt	acc	aat	ata	gtt	gcg	aca	aac	tct	agc	aac	aac	agc	ata	agt	aag		192
Val	Thr	Asn	Ile	Val	Ala	Thr	Asn	Ser	Ser	Asn	Asn	Ser	Ile	Ser	Lys		
			50			55					60						
cca	aaa	gtc	gcc	cca	att	aaa	gaa	aga	ttg	gat	tca	gct	gcg	ata	att		240
Pro	Lys	Val	Ala	Pro	Ile	Lys	Glu	Arg	Leu	Asp	Ser	Ala	Ala	Ile	Ile		
					70				75						80		
gag	gaa	gaa	agg	ctg	gat	gcg	aat	agt	gtt	gca	cag	aga	aaa	gaa	gct		288
Glu	Glu	Glu	Arg	Leu	Asp	Ala	Asn	Ser	Val	Ala	Gln	Arg	Lys	Glu	Ala		
				85					90					95			
gat	cat	aac	gat	ttg	tta	acg	gac	agg	gaa	caa	gag	gaa	ccc	gtt	gaa		336
Asp	His	Asn	Asp	Leu	Leu	Thr	Asp	Arg	Glu	Gln	Glu	Glu	Pro	Val	Glu		
			100					105					110				
gac	gac	gga	gaa	agc	gaa	gag	gat	gaa	gaa	gaa	gac	cag	gag	cct	cta		384
Asp	Asp	Gly	Glu	Ser	Glu	Glu	Asp	Glu	Glu	Glu	Asp	Gln	Glu	Pro	Leu		
			115				120					125					
ctg	ttg	caa	cat	tat	gct	agt	gat	aca	ttg	gtc	ttg	gag	cat	gca	ttt		432
Leu	Leu	Gln	His	Tyr	Ala	Ser	Asp	Thr	Leu	Val	Trp	Glu	His	Ala	Phe		
			130			135					140						
aga	act	tac	tat	aga	act	aca	tta	gat	ccc	aat	gat	gat	gac	gtg	tac		480
Arg	Thr	Tyr	Tyr	Arg	Thr	Thr	Leu	Asp	Pro	Asn	Asp	Asp	Asp	Val	Tyr		
					150					155				160			
gat	gtg	gtc	atg	gtt	gcc	gaa	tta	tct	aat	gag	ata	ttc	gag	tat	atg		528
Asp	Val	Val	Met	Val	Ala	Glu	Leu	Ser	Asn	Glu	Ile	Phe	Glu	Tyr	Met		
				165					170					175			
agg	aaa	ttg	gaa	gac	ctg	tat	aaa	ccc	aac	ccg	tac	tac	atg	gat	aaa		576
Arg	Lys	Leu	Asp	Leu	Tyr	Lys	Lys	Pro	Asn	Pro	Tyr	Tyr	Met	Asp	Lys		
			180					185						190			
caa	cca	gag	tta	aga	tgg	tcg	ttt	cga	agc	aca	ctg	att	gat	tgg	atc		624
Gln	Pro	Glu	Leu	Arg	Trp	Ser	Phe	Arg	Ser	Thr	Leu	Ile	Asp	Trp	Ile		
			195				200					205					
gtc	caa	gta	cat	gaa	aaa	ttt	caa	ctt	tta	cct	gaa	act	cta	tat	ctc		672
Val	Gln	Val	His	Glu	Lys	Phe	Gln	Leu	Leu	Pro	Glu	Thr	Leu	Tyr	Leu		
			210			215					220						
tgc	att	aat	ata	ata	gac	aga	tat	ctg	tgc	aaa	gaa	gtt	gtt	cct	gta		720
Cys	Ile	Asn	Ile	Ile	Asp	Arg	Tyr	Leu	Cys	Lys	Glu	Val	Val	Pro	Val		
					230				235						240		
aat	aag	ttc	caa	ctt	gtg	ggt	gca	gcc	tca	ctc	ttc	att	gct	gct	aaa		768
Asn	Lys	Phe	Gln	Leu	Val	Gly	Ala	Ala	Ser	Leu	Phe	Ile	Ala	Ala	Lys		

## PhoenixTemp32470.tmp.txt

tat	gag	gaa	atc	245	aac	tgt	cct	aca	atc	250	aag	gat	ttc	gta	tac	255	atg	tca	816
Tyr	Glu	Glu	Ile	260	Asn	Cys	Pro	Thr	Ile	265	Lys	Asp	Phe	Val	Tyr	270	Met	Ser	
gaa	aac	tgc	tac	260	tca	agg	aac	gac	ctg	ctg	gac	gca	gaa	aga	act	att	864		
Glu	Asn	Cys	Tyr	275	Ser	Arg	Asn	Asp	Leu	Leu	Asp	Ala	Glu	Arg	Thr	Ile			
ttg	aac	ggc	tta	280	gaa	ttt	gaa	ttg	ggg	tgg	cct	ggg	ccg	atg	tca	ttt	912		
Leu	Asn	Gly	Leu	295	Glu	Phe	Glu	Leu	Gly	Trp	Pro	Gly	Pro	Met	Ser	Phe			
tta	cga	aga	atc	300	agt	aag	gca	gac	gat	tac	gag	cat	gat	acg	aga	aca	960		
Leu	Arg	Arg	Ile	310	Ser	Lys	Ala	Asp	Asp	Tyr	Glu	His	Asp	Thr	Arg	Thr			
ctg	gcc	aaa	tat	320	cta	ttg	gaa	tcc	aca	ata	atg	gac	cat	cga	ctg	gtt	1008		
Leu	Ala	Lys	Tyr	325	Leu	Leu	Glu	Ser	Thr	Ile	Met	Asp	His	Arg	Leu	Val			
tcc	gct	caa	cct	330	agt	tgg	tta	gct	gcc	ggg	gca	tac	ttt	cta	agt	aag	1056		
Ser	Ala	Gln	Pro	340	Ser	Trp	Leu	Ala	Ala	Gly	Ala	Tyr	Phe	Leu	Ser	Lys			
att	att	ctg	ggc	345	caa	aat	cag	tgg	tct	ctg	gcg	cac	gtc	tac	tat	tcc	1104		
Ile	Ile	Leu	Gly	355	Gln	Asn	Gln	Trp	Ser	Leu	Ala	His	Val	Tyr	Tyr	Ser			
aat	tat	aca	caa	360	gaa	caa	att	ctt	ccg	ttg	gcc	acc	att	att	tta	gaa	1152		
Asn	Tyr	Thr	Gln	370	Glu	Gln	Ile	Leu	Pro	Leu	Ala	Thr	Ile	Ile	Leu	Glu			
aat	tgc	aga	tat	375	gcc	tct	aaa	cgt	cat	aac	gcc	ata	tgg	aga	aaa	tat	1200		
Asn	Cys	Arg	Tyr	385	Ala	Ser	Lys	Arg	His	Asn	Ala	Ile	Trp	Arg	Lys	Tyr			
tct	tca	cgt	cgt	390	tat	ttg	cat	tct	tca	cag	atc	gta	gcg	aag	tgg	ata	1248		
Ser	Ser	Arg	Arg	400	Tyr	Leu	His	Ser	Ser	Gln	Ile	Val	Ala	Lys	Trp	Ile			
gca	tta	gct	gaa	405	cac	aga	gta	gaa	aga	tct	aac	taa					1284		
Ala	Leu	Ala	Glu	420	His	Arg	Val	Glu	Arg	Ser	Asn								

&lt;210&gt; 3723

&lt;211&gt; 427

&lt;212&gt; PRT

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;400&gt; 3723

Met	His	His	Asn	Ser	Gln	Ser	Leu	Ser	Ser	Gly	His	Ile	Arg	Ser	Pro				
1				5				10					15						
Glu	Asp	Glu	Asn	Val	Ala	Pro	Ile	Gly	Asn	Leu	Lys	His	Arg	Thr	Gly				
			20					25					30						
Ser	Leu	Ser	His	Ile	Ser	Ser	Ala	His	Pro	Arg	Val	Ala	Leu	Ser	Asp				
			35				40					45							
Val	Thr	Asn	Ile	Val	Ala	Thr	Asn	Ser	Ser	Asn	Asn	Ser	Ile	Ser	Lys				
			50			55				60									
Pro	Lys	Val	Ala	Pro	Ile	Lys	Glu	Arg	Leu	Asp	Ser	Ala	Ala	Ile	Ile				
65				70				75						80					
Glu	Glu	Glu	Arg	Leu	Asp	Ala	Asn	Ser	Val	Ala	Gln	Arg	Lys	Glu	Ala				
			85					90					95						
Asp	His	Asn	Asp	Leu	Leu	Thr	Asp	Arg	Glu	Gln	Glu	Glu	Pro	Val	Glu				
			100				105					110							
Asp	Asp	Gly	Glu	Ser	Glu	Glu	Asp	Glu	Glu	Glu	Asp	Gln	Glu	Pro	Leu				
		115					120					125							
Leu	Leu	Gln	His	Tyr	Ala	Ser	Asp	Thr	Leu	Val	Trp	Glu	His	Ala	Phe				
		130				135					140								
Arg	Thr	Tyr	Tyr	Arg	Thr	Thr	Leu	Asp	Pro	Asn	Asp	Asp	Asp	Val	Tyr				
145				150				155						160					
Asp	Val	Val	Met	Val	Ala	Glu	Leu	Ser	Asn	Glu	Ile	Phe	Glu	Tyr	Met				
			165					170					175						
Arg	Lys	Leu	Glu	Asp	Leu	Tyr	Lys	Pro	Asn	Pro	Tyr	Tyr	Met	Asp	Lys				
		180					185					190							
Gln	Pro	Glu	Leu	Arg	Trp	Ser	Phe	Arg	Ser	Thr	Leu	Ile	Asp	Trp	Ile				
		195					200					205							
Val	Gln	Val	His	Glu	Lys	Phe	Gln	Leu	Leu	Pro	Glu	Thr	Leu	Tyr	Leu				
		210				215					220								

## PhoenixTemp32470.tmp.txt

Cys Ile Asn Ile Ile Asp Arg Tyr Leu Cys Lys Glu Val Val Pro Val  
 225 230 245 250 255 260 265 270 275 280 285 290 300 305 310 315 320  
 Asn Lys Phe Gln Leu Val Gly Ala Ala Ser Leu Phe Ile Ala Ala Lys  
 Tyr Glu Glu Ile Asn Cys Pro Thr Ile Lys Asp Phe Val Tyr Met Ser  
 Glu Asn Cys Tyr Ser Arg Asn Asp Leu Leu Asp Ala Glu Arg Thr Ile  
 Leu Asn Gly Leu Glu Phe Glu Leu Gly Trp Pro Gly Pro Met Ser Phe  
 290 300 310 320 330 340 350 360 370 380 390 400 410 415 420 425  
 Leu Arg Arg Ile Ser Lys Ala Asp Asp Tyr Glu His Asp Thr Arg Thr  
 Leu Ala Lys Tyr Leu Glu Ser Thr Ile Met Asp His Arg Leu Val  
 Ser Ala Gln Pro Ser Trp Leu Ala Ala Gly Ala Tyr Phe Leu Ser Lys  
 Ile Ile Leu Gly Gln Asn Gln Trp Ser Leu Ala His Val Tyr Tyr Ser  
 Asn Tyr Thr Gln Glu Gln Ile Leu Pro Leu Ala Thr Ile Ile Leu Glu  
 370 380 390 400 410 415 420 425  
 Asn Cys Arg Tyr Ala Ser Lys Arg His Asn Ala Ile Trp Arg Lys Tyr  
 Ser Ser Arg Arg Tyr Leu His Ser Ser Gln Ile Val Ala Lys Trp Ile  
 Ala Leu Ala Glu His Arg Val Glu Arg Ser Asn

&lt;210&gt; 3724

&lt;211&gt; 1206

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1206)

&lt;400&gt; 3724

atg gtt aat caa gaa ccc att aca gcg att ctt caa gat gaa acg aga	48
Met Val Asn Gln Glu Pro Ile Thr Ala Ile Leu Gln Asp Glu Thr Arg	
1 5 10 15	
aga agc aca aag ttc ggt tta gag atg aaa aga cag aac agg aga gca	96
Arg Ser Thr Lys Phe Gly Leu Glu Met Lys Arg Gln Asn Arg Arg Ala	
20 25 30 35	
ttg tct gta att aac cag aac ctt gtt aat cct tgc gtt gtt aac aag	144
Leu Ser Val Ile Asn Gln Asn Leu Val Asn Pro Cys Val Val Asn Lys	
40 45 50 55	
aga aga ggc ttg tct gaa tct caa gaa gag aca aag aaa ctg aaa cca	192
Arg Arg Gly Leu Ser Glu Ser Gln Glu Glu Thr Lys Lys Leu Lys Pro	
60 65 70 75	
tcg att cca agt ggg aac gcg ttt ggt gat tgt ata ttc atc gat gaa	240
Ser Ile Pro Ser Gly Asn Ala Phe Gly Asp Cys Ile Phe Ile Asp Glu	
80 85 90 95	
gac gaa gag gaa gag gaa gca gct aca ttg gac caa cct atg cca atg	288
Asp Glu Glu Glu Glu Glu Ala Ala Thr Leu Asp Gln Pro Met Pro Met	
100 105 110 115	
tca tta gag gaa cct tac ata gaa tct gat cca atg gag gaa gaa gtt	336
Ser Leu Glu Glu Pro Tyr Ile Glu Ser Asp Pro Met Glu Glu Val	
120 125 130 135	
gag atg gag gag gag gaa caa gaa cct gtt ttg gat att gat gta gac	384
Glu Met Glu Glu Glu Glu Gln Glu Pro Val Leu Asp Ile Asp Val Asp	
140 145 150 155	
gac gca cac aac cct ctt gca gtc gtt gaa tat gtc caa gat cta cac	432
Asp Ala His Asn Pro Leu Val Val Glu Tyr Val Gln Asp Leu His	
160 165 170 175	
gac ttc tac aga aaa aac gag agg ttt agt tgt gtt cct caa gat tac	480
Asp Phe Tyr Arg Lys Asn Glu Arg Phe Ser Cys Val Pro Gln Asp Tyr	
180 185 190 195	
atg gag caa cag ttt gac ata aca gac aaa atg aga gct ata ctt atc	528
Met Glu Gln Gln Phe Asp Ile Thr Asp Lys Met Arg Ala Ile Leu Ile	

## PhoenixTemp32470.tmp.txt

gat	tgg	ctc	atc	165	gat	cat	gac	aaa	170	gag	cta	atg	aac	175	gag	aca	576
Asp	Trp	Leu	Ile	Glu	Val	His	Asp	Lys	Phe	Glu	Leu	Met	Asn	Glu	Thr		
ttg	tat	cta	aca	180	gtg	aac	ctt	ata	gat	aga	ttt	tta	tcc	aag	caa	gct	624
Leu	Tyr	Leu	Thr	Val	Asn	Leu	Ile	Asp	Arg	Phe	Leu	Ser	Lys	Gln	Ala		
gtt	gta	aga	aag	195	aag	ctt	cag	ctt	ggt	tta	gtt	gcc	ttg	cta	tta		672
Val	Val	Arg	Lys	Lys	Leu	Gln	Leu	Val	Gly	Leu	Val	Ala	Leu	Leu	Leu		
gct	tgc	aag	tac	210	gaa	gag	gtt	tct	gta	cct	att	gtt	gaa	gat	tta	gtt	720
Ala	Cys	Lys	Tyr	Glu	Glu	Val	Ser	Val	Pro	Ile	Val	Glu	Asp	Leu	Val		
225				230						235					240		
gtc	atc	tct	gac	245	aaa	gcc	tat	acc	aga	aac	gat	gtt	tta	gaa	atg	gag	768
Val	Ile	Ser	Asp	Lys	Ala	Tyr	Thr	Arg	Asn	Asp	Val	Leu	Glu	Met	Glu		
aag	att	atg	ctt	260	aat	act	ttg	caa	ttc	aac	atg	tcg	tta	ccg	aca	caa	816
Lys	Ile	Met	Leu	Asn	Thr	Leu	Gln	Phe	Asn	Met	Ser	Leu	Pro	Thr	Gln		
tac	cct	ttc	ttg	275	aag	agg	ttc	ctc	aag	gca	gct	caa	tca	gac	aag	aag	864
Tyr	Pro	Phe	Leu	Lys	Arg	Phe	Leu	Lys	Ala	Ala	Gln	Ser	Asp	Lys	Lys		
ctc	gag	atc	ttg	290	gca	tcg	ttc	ttg	atg	gag	ctg	gct	ctc	gtg	gac	tac	912
Leu	Glu	Ile	Leu	Ala	Ser	Phe	Leu	Met	Glu	Leu	Ala	Leu	Val	Asp	Tyr		
gaa	atg	ctt	cgt	310	tat	cca	cca	tcg	tta	cta	gca	gcc	agt	gca	gtg	tac	960
Glu	Met	Leu	Arg	Tyr	Pro	Pro	Ser	Leu	Leu	Ala	Ala	Ser	Ala	Val	Tyr		
305				325						315					320		
aca	gct	caa	tgt	335	aca	atc	cat	ggc	ttc	agc	gaa	tgg	aac	agc	act	tgt	1008
Thr	Ala	Gln	Cys	Thr	Ile	His	Gly	Phe	Ser	Glu	Trp	Asn	Ser	Thr	Cys		
gaa	ttc	cac	agc	340	cac	tac	tct	gag	agc	caa	ctc	aga	gaa	tgt	agt	aga	1056
Glu	Phe	His	Ser	His	Tyr	Ser	Glu	Ser	Gln	Leu	Arg	Glu	Cys	Ser	Arg		
aaa	atg	gtg	agt	355	ctg	cat	cag	aag	gca	gcg	act	gat	aaa	cta	aca	gaa	1104
Lys	Met	Val	Ser	Leu	His	Gln	Lys	Ala	Ala	Ala	Thr	Asp	Lys	Leu	Thr	Glu	
gtg	cgt	aga	aaa	370	tac	agc	tca	tct	aag	ttc	gga	tac	ata	gca	aca	aag	1152
Val	Arg	Arg	Lys	Tyr	Ser	Ser	Ser	Lys	Phe	Gly	Tyr	Ile	Ala	Thr	Lys		
tat	gaa	gct	gct	390	gca	His	ttt	ctt	ctt	gtg	tca	gat	tct	cca	aag		1200
Tyr	Glu	Ala	Ala	Ala	Ala	His	Phe	Leu	Leu	Val	Ser	Asp	Ser	Pro	Lys		
385				400						395							
cta	tag																1206
Leu																	

<210> 3725  
 <211> 401  
 <212> PRT  
 <213> Brassica napus

<400> 3725  
 Met Val Asn Gln Glu Pro Ile Thr Ala Ile Leu Gln Asp Glu Thr Arg  
 1 5 10 15  
 Arg Ser Thr Lys Phe Gly Leu Glu Met Lys Arg Gln Asn Arg Arg Ala  
 20 25 30  
 Leu Ser Val Ile Asn Gln Asn Leu Val Asn Pro Cys Val Val Asn Lys  
 35 40 45  
 Arg Arg Gly Leu Ser Glu Ser Gln Glu Glu Thr Lys Lys Leu Lys Pro  
 50 55 60  
 Ser Ile Pro Ser Gly Asn Ala Phe Gly Asp Cys Ile Phe Ile Asp Glu  
 65 70 75 80  
 Asp Glu Glu Glu Glu Glu Ala Ala Thr Leu Asp Gln Pro Met Pro Met  
 85 90 95  
 Ser Leu Glu Glu Pro Tyr Ile Glu Ser Asp Pro Met Glu Glu Glu Val  
 100 105 110  
 Glu Met Glu Glu Glu Gln Glu Val Leu Asp Ile Asp Val Asp  
 115 120 125

## PhoenixTemp32470.tmp.txt

Asp Ala His Asn Pro Leu Ala Val Val Glu Tyr Val Gln Asp Leu His  
 130 135 140  
 Asp Phe Tyr Arg Lys Asn Glu Arg Phe Ser Cys Val Pro Gln Asp Tyr  
 145 150 155 160  
 Met Glu Gln Gln Phe Asp Ile Thr Asp Lys Met Arg Ala Ile Leu Ile  
 165 170 175  
 Asp Trp Leu Ile Glu Val His Asp Lys Phe Glu Leu Met Asn Glu Thr  
 180 185 190  
 Leu Tyr Leu Thr Val Asn Leu Ile Asp Arg Phe Leu Ser Lys Gln Ala  
 195 200 205  
 Val Val Arg Lys Lys Leu Gln Leu Val Gly Leu Val Ala Leu Leu Leu  
 210 215 220  
 Ala Cys Lys Tyr Glu Glu Val Ser Val Pro Ile Val Glu Asp Leu Val  
 225 230 235 240  
 Val Ile Ser Asp Lys Ala Tyr Thr Arg Asn Asp Val Leu Glu Met Glu  
 245 250 255  
 Lys Ile Met Leu Asn Thr Leu Gln Phe Asn Met Ser Leu Pro Thr Gln  
 260 265 270  
 Tyr Pro Phe Leu Lys Arg Phe Leu Lys Ala Ala Gln Ser Asp Lys Lys  
 275 280 285  
 Leu Glu Ile Leu Ala Ser Phe Leu Met Glu Leu Ala Leu Val Asp Tyr  
 290 295 300  
 Glu Met Leu Arg Tyr Pro Pro Ser Leu Leu Ala Ser Ala Val Tyr  
 305 310 315 320  
 Thr Ala Gln Cys Thr Ile His Gly Phe Ser Glu Trp Asn Ser Thr Cys  
 325 330 335  
 Glu Phe His Ser His Tyr Ser Glu Ser Gln Leu Arg Glu Cys Ser Arg  
 340 345 350  
 Lys Met Val Ser Leu His Gln Lys Ala Ala Thr Asp Lys Leu Thr Glu  
 355 360 365  
 Val Arg Arg Lys Tyr Ser Ser Ser Lys Phe Gly Tyr Ile Ala Thr Lys  
 370 375 380  
 Tyr Glu Ala Ala Ala Ala His Phe Leu Leu Val Ser Asp Ser Pro Lys  
 385 390 395 400  
 Leu

&lt;210&gt; 3726

&lt;211&gt; 303

&lt;212&gt; DNA

&lt;213&gt; SACCHAROMYCES CEREVISIAE

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(303)

&lt;400&gt; 3726

atg gct gtc aag act ggt atc gct att ggt ttg aac aag ggt aag aaa	48
Met Ala Val Lys Thr Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys	
1 5 10 15	
gtc acc caa atg act cca gcc cca aag atc tcc tac aag aag ggt gct	96
Val Thr Gln Met Thr Pro Ala Pro Lys Ile Ser Tyr Lys Lys Gly Ala	
20 25 30	
gcc tcc aac aga acc aag ttc gtc aga tct ttg gtt aga gaa atc gcc	144
Ala Ser Asn Arg Thr Lys Phe Val Arg Ser Leu Val Arg Glu Ile Ala	
35 40 45	
ggt ttg tcc cca tat gaa aga arg ttg atc gat ttg atc aga aac tcc	192
Gly Leu Ser Pro Tyr Glu Arg Arg Leu Ile Asp Leu Ile Arg Asn Ser	
50 55 60	
ggt gaa aag aga gcc aga aag gtc gcc aag aag aga ttg ggt tct ttc	240
Gly Glu Lys Arg Ala Arg Lys Val Ala Lys Lys Arg Leu Gly Ser Phe	
65 70 75 80	
acc aga gcc aag gct aag gtc gaa gaa atg aac atc att gct gcc	288
Thr Arg Ala Lys Ala Lys Val Glu Glu Met Asn Asn Ile Ile Ala Ala	
85 90 95	
tct cgt cgt cat taa	303
Ser Arg Arg His	
100	

## PhoenixTemp32470.tmp.txt

<210> 3727  
 <211> 100  
 <212> PRT  
 <213> SACCHAROMYCES CEREVISIAE

<400> 3727  
 Met Ala Val Lys Thr Gly Ile Ala Ile Gly Leu Asn Lys Gly Lys Lys  
 1 5 10 15  
 Val Thr Gln Met Thr Pro Ala Pro Lys Ile Ser Tyr Lys Lys Gly Ala  
 20 25 30  
 Ala Ser Asn Arg Thr Lys Phe Val Arg Ser Leu Val Arg Glu Ile Ala  
 35 40 45  
 Gly Leu Ser Pro Tyr Glu Arg Arg Leu Ile Asp Leu Ile Arg Asn Ser  
 50 55 60  
 Gly Glu Lys Arg Ala Arg Lys Val Ala Lys Lys Arg Leu Gly Ser Phe  
 65 70 75 80  
 Thr Arg Ala Lys Ala Lys Val Glu Glu Met Asn Asn Ile Ile Ala Ala  
 85 90 95  
 Ser Arg Arg His  
 100

<210> 3728  
 <211> 333  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(333)

<400> 3728  
 atg gcg ccg ccg cag ccc aag tcg ggg ctc ttc gtc ggc atc aac aag 48  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggc cac gtc gtc acc aag cgc gag ctg cca cct cgc ccg tcc gac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 aag ggg aaa agt acc aag aga gtg aat ttt gtc agg ggc ttg att agg 144  
 Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg  
 35 40 45  
 gag gtt gtg gga ttt gct cca tat gag aaa cga atc act gag ctt ctg 192  
 Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt gga aag gac aag cgt gca ctg aag gtc gct aag aga aag ctc 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 ggt acc cac aag aga gca aag aag aag aga gag gag atg gcg ggt gtc 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 atc agg aag atg agg tct gct ggt act act gac aag aag aaa tag 333  
 Ile Arg Lys Met Arg Ser Ala Gly Thr Thr Asp Lys Lys Lys  
 100 105 110

<210> 3729  
 <211> 110  
 <212> PRT  
 <213> Oryza sativa

<400> 3729  
 Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Ser Thr Lys Arg Val Asn Phe Val Arg Gly Leu Ile Arg  
 35 40 45  
 Glu Val Val Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80



## PhoenixTemp32470.tmp.txt

Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Ile Arg Lys Met Arg Ser Ala Gly Thr Thr Asp Lys Lys Lys  
 100 105 110

<210> 3730  
 <211> 342  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> CDS  
 <222> (1)..(342)

<400> 3730  
 atg gcg ccg tcg cag ccg aag tcc ggg ctc ttc gtg ggc atc aac aag 48  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 ggc cac gtc gtc acc aag cgc gag ctg ccg cct cgc ccg tcc gac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 aag ggg aaa tcc acc aag agg gtg acc ttt gtc agg aac ttg atc agg 144  
 Lys Gly Lys Ser Thr Lys Arg Val Thr Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 gag gtt gct gga ttt gct ccc tat gag aag cgt atc act gag ctt ctc 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aaa gtt ggc aag gac aag cgt gca ctg aag gtg gca aag aga aag ctt 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 ggc acc cac aag agg gcc aag aag aag aga gag gag atg gct ggt gtc 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 ctc agg aag atg agg tct ggt ggc ggt cac gct cac acc gag aag aag 336  
 Leu Arg Lys Met Arg Ser Gly Gly Gly His Ala His Thr Glu Lys Lys  
 100 105 110  
 aaa tag 342  
 Lys

<210> 3731  
 <211> 113  
 <212> PRT  
 <213> Oryza sativa

<400> 3731  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Ser Thr Lys Arg Val Thr Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Gly Gly Gly His Ala His Thr Glu Lys Lys  
 100 105 110  
 Lys

<210> 3732  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>

## PhoenixTemp32470.tmp.txt

&lt;221&gt; CDS

&lt;222&gt; (1)..(339)

&lt;400&gt; 3732

atg	gca	gca	cca	caa	gta	aag	act	ggt	ctg	ttc	gtg	ggg	ttg	aac	aaa		48
Met	Ala	Ala	Pro	Gln	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys		
1				5				10					15				
gga	cac	gtg	acg	aca	aga	cgc	gag	cta	gct	cct	cg	ccc	aac	tct	cg		96
Gly	His	Val	Thr	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Asn	Ser	Arg		
			20					25					30				
aaa	ggg	aaa	acg	agc	aag	agg	aca	ctg	ttc	atc	aga	tct	ttg	atc	agg		144
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Thr	Leu	Phe	Ile	Arg	Ser	Leu	Ile	Arg		
			35				40					45					
gaa	gtt	gct	gga	ttc	gct	cct	tac	gag	aag	aga	atc	act	gag	ctt	ctc		192
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu		
			50			55					60						
aag	gtt	ggt	aaa	gac	aag	agg	gct	ctc	aag	gtt	gcc	aag	agg	aag	ttg		240
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu		
			65		70					75					80		
ggt	act	cac	aag	aga	gcc	aag	cga	aag	aga	gag	gag	atg	tct	agt	gtt		288
Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val		
				85				90					95				
ctc	cg	aag	atg	agg	tct	ggt	ggt	ggt	ggt	gtt	act	gag	aag	aag	aag		336
Leu	Arg	Lys	Met	Arg	Ser	Gly	Gly	Gly	Gly	Val	Thr	Glu	Lys	Lys	Lys		
			100					105					110				
taa																	339

&lt;210&gt; 3733

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3733

Met	Ala	Ala	Pro	Gln	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys		
1				5				10					15				
Gly	His	Val	Thr	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Asn	Ser	Arg		
			20					25					30				
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Thr	Leu	Phe	Ile	Arg	Ser	Leu	Ile	Arg		
			35				40					45					
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu		
			50			55					60						
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu		
			65		70					75					80		
Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val		
				85				90					95				
Leu	Arg	Lys	Met	Arg	Ser	Gly	Gly	Gly	Gly	Val	Thr	Glu	Lys	Lys	Lys		
			100					105					110				

&lt;210&gt; 3734

&lt;211&gt; 348

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(348)

&lt;400&gt; 3734

atg	aca	gct	cct	caa	gtg	aag	acc	ggt	ttg	ttc	gtg	ggg	ttg	aac	aag		48
Met	Thr	Ala	Pro	Gln	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys		
1				5				10					15				
gga	cat	gtt	gtc	acc	aga	cg	gag	ttg	gct	cct	cg	ccc	cg	gct	cg		96
Gly	His	Val	Val	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Arg	Ala	Arg		
			20					25					30				
aaa	gga	caa	acg	agc	aag	agg	aca	ctc	ttt	atc	aga	tca	ttg	ata	agg		144
Lys	Gly	Gln	Thr	Ser	Lys	Arg	Thr	Leu	Phe	Ile	Arg	Ser	Leu	Ile	Arg		
			35				40					45					

## PhoenixTemp32470.tmp.txt

gaa	ggt	gcc	ggt	ttt	gct	ccc	tac	gag	aag	aga	atc	act	gag	ctt	ctt	192
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu	
	50					55					60					
aag	ggt	ggt	aaa	gac	aaa	cgt	gct	ctc	aag	gtg	gct	aag	cga	aag	ttg	240
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu	
	65				70					75					80	
gga	aca	cac	aag	aga	gcc	aag	agg	aag	aga	gag	gag	atg	tct	agc	ggt	288
Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val	
				85					90					95		
ctc	cg	aag	atg	agg	tct	ggt	ggt	ggt	ggt	ggt	ggc	ggt	gct	act	gag	336
Leu	Arg	Lys	Met	Arg	Ser	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Ala	Thr	Glu	
			100					105					110			
aag	aag	aag	tga													348
Lys	Lys	Lys														
		115														

&lt;210&gt; 3735

&lt;211&gt; 115

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 3735

Met	Thr	Ala	Pro	Gln	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys	
1				5					10					15		
Gly	His	Val	Val	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Arg	Ala	Arg	
			20					25					30			
Lys	Gly	Gln	Thr	Ser	Lys	Arg	Thr	Leu	Phe	Ile	Arg	Ser	Leu	Ile	Arg	
		35					40					45				
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu	
	50					55					60					
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu	
65					70					75					80	
Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val	
				85					90					95		
Leu	Arg	Lys	Met	Arg	Ser	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Ala	Thr	Glu	
			100					105					110			
Lys	Lys	Lys														
		115														

&lt;210&gt; 3736

&lt;211&gt; 339

&lt;212&gt; DNA

&lt;213&gt; Brassica napus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(339)

&lt;400&gt; 3736

atg	aca	act	ccg	caa	gta	aag	acc	ggt	ttg	ttt	gtc	ggt	ttg	aac	aag	48
Met	Thr	Thr	Pro	Gln	Val	Lys	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys	
1				5					10					15		
gga	cat	ggt	gtc	acc	aga	cg	gag	ttg	gct	cct	cg	ccc	cg	gct	cg	96
Gly	His	Val	Val	Thr	Arg	Arg	Glu	Leu	Ala	Pro	Arg	Pro	Arg	Ala	Arg	
			20					25					30			
aaa	gga	aaa	aca	agc	aag	agg	aca	ctt	ttc	atc	aga	tct	ttg	atc	agg	144
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Thr	Leu	Phe	Ile	Arg	Ser	Leu	Ile	Arg	
		35					40					45				
gaa	ggt	gct	ggt	ttt	gct	ccc	tac	gag	aag	aga	atc	act	gag	ctt	cta	192
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu	
	50					55					60					
aag	ggt	ggt	aaa	gac	aag	cgt	gct	ctt	aag	gtg	gct	aag	cga	aag	ttg	240
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu	
	65				70					75					80	
ggt	acc	cac	aag	aga	gcc	aag	agg	aag	aga	gag	gtg	atg	tct	agc	gtc	288
Gly	Thr	His	Lys	Arg	Ala	Lys	Arg	Lys	Arg	Glu	Val	Met	Ser	Ser	Val	
				85					90					95		
ctc	cg	aag	atg	agg	tct	ggt	ggt	ggt	gta	acc	gag	aag	aag	aaa		336
Leu	Arg	Lys	Met	Arg	Ser	Gly	Gly	Gly	Gly	Val	Thr	Glu	Lys	Lys	Lys	

tga 100 105 110 339

<210> 3737  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

<400> 3737  
 Met Thr Thr Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Arg Ala Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Val Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Val Thr Glu Lys Lys Lys  
 100 105 110

<210> 3738  
 <211> 339  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(339)

<400> 3738  
 atg gca gca cca caa gtg aag act ggt ttg ttc gtt ggt ctg aac aaa 48  
 Met Ala Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 gga cac gtt gtc acc aga cgc gag ttg gct cct cgt cct aac tct cgc 96  
 Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg  
 20 25 30  
 aaa ggg aaa acg agc aag agg acg ttg ttc atc agg tca ctg atc aga 144  
 Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg  
 35 40 45  
 gaa gtt gct gga ttt gct ccc tac gag aag aga atc act gag ctt ctc 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt ggt aaa gac aag agg gct ctt aag gtt gct aag agg aag ttg 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 ggt acc cac aag aga gcc aag agg aag aga gag gag atg tct agt gtt 288  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 ctc cgc aag atg agg tct ggt gga ggt gct act act gag aag aag aag 336  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Ala Thr Thr Glu Lys Lys Lys  
 100 105 110  
 taa 339

<210> 3739  
 <211> 112  
 <212> PRT  
 <213> Brassica napus

<400> 3739  
 Met Ala Ala Pro Gln Val Lys Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15

## PhoenixTemp32470.tmp.txt

Gly His Val Val Thr Arg Arg Glu Leu Ala Pro Arg Pro Asn Ser Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Thr Leu Phe Ile Arg Ser Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Arg Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Gly Gly Gly Ala Thr Thr Glu Lys Lys Lys  
 100 105 110

<210> 3740  
 <211> 336  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 3740  
 atg gct ccg tcg cag ccc aag tcg ggc ctc ttc gtg ggc atc aac aag 48  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys 15  
 1 5  
 ggc cac gtc gtc acc aag cgc gag ctg ccg cca cgc ccg tcc gac cgc 96  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg 30  
 20 25  
 aag ggg aaa ggt acc aag agg gtg cat ttc gtc agg aac ttg atc agg 144  
 Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg 45  
 35 40  
 gag gtc gct ggg ttt gct ccg tat gag aag cgt atc act gag ctt ctc 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu 60  
 50 55  
 aag gtt ggc aag gac aag cgt gcc ctg aag gtg gcg aag cga aag ttg 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu 75 80  
 65 70  
 ggt acc cac aag agg gcg aag aag aag aga gag gag atg tcc agt gtc 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val 95  
 85 90  
 ctc agg aag atg aga tct gct gga act gga acc gag aag aag aaa tag 336  
 Leu Arg Lys Met Arg Ser Ala Gly Thr Gly Thr Glu Lys Lys Lys 110  
 100 105 110

<210> 3741  
 <211> 111  
 <212> PRT  
 <213> Triticum aestivum

<400> 3741  
 Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ser Ala Gly Thr Gly Thr Glu Lys Lys Lys  
 100 105 110

<210> 3742  
 <211> 333  
 <212> DNA

&lt;213&gt; Glycine max

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(333)

&lt;400&gt; 3742

atg	gct	ccc	aaa	ccg	cct	agt	acg	ggt	ctg	ttt	ggt	gga	ctg	aac	aag	48
Met	Ala	Pro	Lys	Pro	Pro	Ser	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys	
1				5					10					15		
ggt	cac	gtc	gtc	acc	aag	aag	gaa	tgt	ccc	cca	cgc	ccc	tca	gat	cgt	96
Gly	His	Val	Val	Thr	Lys	Lys	Glu	Leu	Pro	Pro	Arg	Pro	Ser	Asp	Arg	
			20					25					30			
aag	ggg	aaa	aca	agc	aag	agg	gtg	cac	ttt	gtg	agg	aac	ctc	ata	aga	144
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Val	His	Phe	Val	Arg	Asn	Leu	Ile	Arg	
			35				40					45				
gag	gtt	gct	ggt	ttt	gca	ccc	tat	gaa	aag	cgt	ata	act	gag	ttg	ctg	192
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu	
			50			55					60					
aag	gtt	ggg	aag	gat	aag	agg	gca	ctg	aag	gtt	gca	aag	aga	aag	ctt	240
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu	
					70					75					80	
gga	acc	cac	aaa	cgt	gca	aag	aag	aag	cgt	gag	gaa	atg	tcc	agt	gtt	288
Gly	Thr	His	Lys	Arg	Ala	Lys	Lys	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val	
				85					90					95		
ctc	agg	aag	atg	agg	gct	ggt	ggt	gct	gga	gac	aag	aag	aaa	taa		333
Leu	Arg	Lys	Met	Arg	Ala	Gly	Gly	Ala	Gly	Asp	Lys	Lys	Lys			
			100					105					110			

&lt;210&gt; 3743

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Glycine max

&lt;400&gt; 3743

Met	Ala	Pro	Lys	Pro	Pro	Ser	Thr	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys	
1				5					10					15		
Gly	His	Val	Val	Thr	Lys	Lys	Glu	Leu	Pro	Pro	Arg	Pro	Ser	Asp	Arg	
			20					25					30			
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Val	His	Phe	Val	Arg	Asn	Leu	Ile	Arg	
			35				40					45				
Glu	Val	Ala	Gly	Phe	Ala	Pro	Tyr	Glu	Lys	Arg	Ile	Thr	Glu	Leu	Leu	
			50			55					60					
Lys	Val	Gly	Lys	Asp	Lys	Arg	Ala	Leu	Lys	Val	Ala	Lys	Arg	Lys	Leu	
65					70					75					80	
Gly	Thr	His	Lys	Arg	Ala	Lys	Lys	Lys	Arg	Glu	Glu	Met	Ser	Ser	Val	
				85					90					95		
Leu	Arg	Lys	Met	Arg	Ala	Gly	Gly	Ala	Gly	Asp	Lys	Lys	Lys			
			100					105					110			

&lt;210&gt; 3744

&lt;211&gt; 333

&lt;212&gt; DNA

&lt;213&gt; Linum usitatissimum

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(333)

&lt;400&gt; 3744

atg	gct	cct	gct	cag	gcg	aag	agt	ggt	ctg	ttc	gtc	gga	ctg	aac	aaa	48
Met	Ala	Pro	Ala	Gln	Ala	Lys	Ser	Gly	Leu	Phe	Val	Gly	Leu	Asn	Lys	
1				5					10					15		
gga	cac	atc	gtc	act	aag	cgc	gag	ctg	cca	cct	cgt	cct	tcc	gat	aga	96
Gly	His	Ile	Val	Thr	Lys	Arg	Glu	Leu	Pro	Pro	Arg	Pro	Ser	Asp	Arg	
			20					25					30			
aag	ggg	aaa	aca	agc	aag	agg	gtg	cac	ctt	gtg	agg	aac	ctt	atc	agg	144
Lys	Gly	Lys	Thr	Ser	Lys	Arg	Val	His	Leu	Val	Arg	Asn	Leu	Ile	Arg	
			35				40					45				

PhoenixTemp32470.tmp.txt

gaa gta gct ggt ttt gct cca tat gag aag aga gtt att gag ctc ctg	192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Val Ile Glu Leu Leu	
50 55 60	
aag gtt gga aag gac aag cga gct ctg aaa ctt tct aag aga aag ctc	240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ser Lys Arg Lys Leu	
65 70 75 80	
ggt acc cac aag agg ggc aag aag aag aga gag gag ctg gcc acc gca	288
Gly Thr His Lys Arg Gly Lys Lys Lys Arg Glu Glu Leu Ala Thr Ala	
85 90 95	
ctc cgc aag atg agg gct gca gga gga ggc gag aag aag aag tga	333
Leu Arg Lys Met Arg Ala Ala Gly Gly Glu Lys Lys Lys	
100 105 110	

<210> 3745  
 <211> 110  
 <212> PRT  
 <213> Linum usitatissimum

<400> 3745

Met Ala Pro Ala Gln Ala Lys Ser Gly Leu Phe Val Gly Leu Asn Lys	
1 5 10 15	
Gly His Ile Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg	
20 25 30	
Lys Gly Lys Thr Ser Lys Arg Val His Leu Val Arg Asn Leu Ile Arg	
35 40 45	
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Val Ile Glu Leu Leu	
50 55 60	
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ser Lys Arg Lys Leu	
65 70 75 80	
Gly Thr His Lys Arg Gly Lys Lys Lys Arg Glu Glu Leu Ala Thr Ala	
85 90 95	
Leu Arg Lys Met Arg Ala Ala Gly Gly Gly Glu Lys Lys Lys	
100 105 110	

<210> 3746  
 <211> 336  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(336)

<400> 3746

atg gcg ccg ccg cag cca aag tcg ggc ctc ttc gtt ggc atc aac aag	48
Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys	
1 5 10 15	
ggt cat gtc gtc acc aag cgc gag ctg cct ccc cgc ccg tgc cac cgc	96
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Cys His Arg	
20 25 30	
aag ggg aaa tca acg aag agg gtg tct atg gtc agg ggc ctg atc aga	144
Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg	
35 40 45	
gag gtt gct ggg ttt gct cct tat gag aag cgt atc act gag ctt ctg	192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu	
50 55 60	
aag gtt ggc aag gac aag cgt gcc ctg aag ctt gct aag aga aag ctt	240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu	
65 70 75 80	
gga act cac aag agg gca aag aag aag aga gag gag atg gcg ggc gtc	288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val	
85 90 95	
ctc agg aag atg agg tcg gct ggt acg cac act gac aag aag aaa tag	336
Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys	
100 105 110	

<210> 3747  
 <211> 111  
 <212> PRT

&lt;213&gt; Zea mays

&lt;400&gt; 3747

```

Met Ala Pro Pro Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
Gly His Val Val Thr Lys Arg Glu Leu Pro Pro Arg Pro Cys His Arg
20
Lys Gly Lys Ser Thr Lys Arg Val Ser Met Val Arg Gly Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Leu Ala Lys Arg Lys Leu
65      70      75      80
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ala Gly Val
85      90      95
Leu Arg Lys Met Arg Ser Ala Gly Thr His Thr Asp Lys Lys Lys
100      105      110

```

&lt;210&gt; 3748

&lt;211&gt; 342

&lt;212&gt; DNA

&lt;213&gt; Hordeum vulgare

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(342)

&lt;400&gt; 3748

```

atg gcg ccg tcg cag ccc aag tca ggg ctc ttc gtg ggc atc aac aag      48
Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
ggc cac gtc atc acc aag cgc gag ctg ccg ccc cgc ccg tcc gac cgc      96
Gly His Val Ile Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20      25      30
aag ggg aaa ggc aca aag agg gtg cat ttt gtc agg aac ttg atc agg      144
Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
35      40      45
gag gtt gct gga ttc gct cca tat gag aaa cgc atc act gag ctt ctt      192
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
aag gtt gga aag gac aag cgt gca ctc aag gtc gcc aag aga aag ctt      240
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80
ggt act cac aag aga gca aag aag aag aga gag gag atg tca agt gtc      288
Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val
85      90      95
ctg agg aag atg agg tct gct ggt ggt ggt ggt gct ggt gac aag aag      336
Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Gly Ala Gly Asp Lys Lys
100      105      110
aaa tag      342
Lys

```

&lt;210&gt; 3749

&lt;211&gt; 113

&lt;212&gt; PRT

&lt;213&gt; Hordeum vulgare

&lt;400&gt; 3749

```

Met Ala Pro Ser Gln Pro Lys Ser Gly Leu Phe Val Gly Ile Asn Lys
1      5      10      15
Gly His Val Ile Thr Lys Arg Glu Leu Pro Pro Arg Pro Ser Asp Arg
20      25      30
Lys Gly Lys Gly Thr Lys Arg Val His Phe Val Arg Asn Leu Ile Arg
35      40      45
Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu
50      55      60
Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu
65      70      75      80

```



## PhoenixTemp32470.tmp.txt

Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 Leu Arg Lys Met Arg Ser Ala Gly Gly Gly Gly Ala Gly Asp Lys Lys  
 Lys

<210> 3750  
 <211> 333  
 <212> DNA  
 <213> Helianthus annuus

<220>  
 <221> CDS  
 <222> (1)..(333)

<400> 3750  
 atg gcg ccc aag cag cct aac aca ggc ctc ttt gtt gga ttg aac aag 48  
 Met Ala Pro Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 ggc cat gtt gtc acc aag aag gag ttg gcc cct cgt cca tct gac agg 96  
 Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asp Arg  
 20 25 30  
 aaa ggc aaa aca agc aaa agg gtt cat ttt gtg agg agt ttg atc cgt 144  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Ser Leu Ile Arg  
 35 40 45  
 gaa gta gct gga ttt gcg cca tat gag aag agg att act gag ctg ttg 192  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 aag gtt gga aag gac aag cgg gca ttg aag gtg gct aag aga aag ttg 240  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 ggc acc cac aag agg gca aag aag aag aga gag gag atg tcc agc gtt 288  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90  
 ctc cgc aag atg aga gct ggt gga ggt gca gaa aag aag aag tga 333  
 Leu Arg Lys Met Arg Ala Gly Gly Gly Ala Glu Lys Lys Lys  
 100 105 110

<210> 3751  
 <211> 110  
 <212> PRT  
 <213> Helianthus annuus

<400> 3751  
 Met Ala Pro Lys Gln Pro Asn Thr Gly Leu Phe Val Gly Leu Asn Lys  
 1 5 10 15  
 Gly His Val Val Thr Lys Lys Glu Leu Ala Pro Arg Pro Ser Asp Arg  
 20 25 30  
 Lys Gly Lys Thr Ser Lys Arg Val His Phe Val Arg Ser Leu Ile Arg  
 35 40 45  
 Glu Val Ala Gly Phe Ala Pro Tyr Glu Lys Arg Ile Thr Glu Leu Leu  
 50 55 60  
 Lys Val Gly Lys Asp Lys Arg Ala Leu Lys Val Ala Lys Arg Lys Leu  
 65 70 75 80  
 Gly Thr His Lys Arg Ala Lys Lys Lys Arg Glu Glu Met Ser Ser Val  
 85 90 95  
 Leu Arg Lys Met Arg Ala Gly Gly Gly Ala Glu Lys Lys Lys  
 100 105 110

<210> 3752  
 <211> 8975  
 <212> DNA  
 <213> Artificial

<220>  
 <223> plasmid VC-MME445-1qcz

<220>  
 <221> transit\_peptide  
 <222> (1964)..(2053)

<220>  
 <221> CDS  
 <222> (1964)..(2053)

<220>  
 <221> CDS  
 <222> (2054)..(2062)  
 <223> adapter

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<400> 3752
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gtgatataatt cattagaatg aaccgaaacc ggcggtaagg atctgagcta cacatgctca      120
ggtttttttac aacgtgcaca acagaattga aagcaaatat catgcatca taggcgtctc      180
gcataatctca ttaaagcagg gcatgccggg cgagtcaaat ctccggtgacg ggcaggaccg      240
gacggggcgcg taccggcagg ctgaagtcca gctgccagaa acccacgtca tgccagttcc      300
cgtgcttgaa gccggccgcc cgcagcatgc cgcggggggc atatccgagc gcctcgtgca      360
tgcgacacgct cgggtcgttg ggcagcccga tgacagcgac cacgctcttg aagccctgtg      420
cctccaggga cttcagcagg tgggtgtaga gcgtggagcc cagtcccgtc cgctggtggc      480
gggggggagac gtacacggtc gactcggccg tccagtcgta ggcgttgctg gccttccagg      540
ggcccgcgta ggcgatgccg gcgacctgc cgtccacctc ggcgacgagc cagggatagc      600
gctcccgagc acggacgagg tcgtccgtcc actcctgcgg ttcctgcggc tcggtacgga      660
agttgaccgt gcttgctctg atgtagtggg tgacgatggg gcagaccgcc ggcagtgtccg      720
cctcgggtggc acggcggatg tcggccgggc gtcgttcttg gctcatggta gactcgacgg      780
atccacgtgt ggaagatatg aatTTTTTTT agaaactaga taagattaat gaatatcggt      840
gttttggttt tttcttgtag ccgtctttgt ttatatagag atttttcaaa tcagtgcgca      900
agacgtgacg taagtatccg agtcagtttt ttttttctta ctaatttggt cgaagctttg      960
ggcggatcct ctagaattcg aatccaaaaa ttacggatat gaatataggc atatccgtat     1020
ccgaattatc cgtttgacag ctacgaacga ttgtacaatt gcttctttta aaaaggaaga     1080
aagaaagaaa gaaaagaatc aacatcagcg ttaacaaacg gcccgttac ggcccaaacg     1140
gtcatataga gtaacggcgt taagcgttga aagactccta tcgaaatacg taaccgcaaa     1200
cgtgtcatag tcagatcccc tcttcttca cgcctcaaa cacaaaaata atcttctaca     1260
gcctatatat acaaccccc cttctatctc tcctttctca caattcatca tctttctttc     1320
tctaccccca attttaagaa atcctctctt ctctcttca ttttcaagg aaatctctct     1380
ctctctctct ctctctgta ttccttggtt taattaggta tgtattattg ctagtttggt     1440
aatctgctta tcttatgtat gccttatgtg aatatcttta tcttgttcat ctcatccgtt     1500
tagaagctat aaatttggtg atttgactgt gtatctacac gtgggttatgt ttatatctaa     1560
tcagatatga atttcttcat attgttgctg ttgtgtgtac caatccgaaa tcgttgattt     1620

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## PhoenixTemp32470.tmp.txt

```

ttttcattta atcgtgtagc taattgtacg tatacatatg gatctacgta tcaattgttc 1680
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tgttacatac atagatatag atctgttata tcattttttt tattaattgt gtatatatat 1800
atgtgcatag atctggatta catgattgtg attatttaca tgattttggt atttacgtat 1860
gtatatatgt agatctggac tttttggagt tgttgacttg attgtatttg tgtgtgtata 1920
tgtgtgttct gatcttgata tgttatgtat gtgcagccca aac atg cag agg ttt 1975
                                     Met Gln Arg Phe
                                     1

ttc tcc gcc aga tcg att ctc ggt tac gcc gtc aag acg cgg agg agg 2023
Phe Ser Ala Arg Ser Ile Leu Gly Tyr Ala Val Lys Thr Arg Arg Arg
5          10          15          20

tct ttc tct tct cgt tct tcg tct ctc ctt tgc tct tcc atggcaatga 2072
Ser Phe Ser Ser Arg Ser Ser Ser Leu Leu Cys Ser Ser
          25          30

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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## PhoenixTemp32470.tmp.txt

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